

Critical Release Notice

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Publication release: Standard 18.02

The content of this customer NTP supports the
SN07 (DMS) software release.

Bookmarks used in this NTP highlight the changes between the NA015 baseline and the current release. The bookmarks provided are color-coded to identify release-specific content changes. NTP volumes that do not contain bookmarks indicate that the NA015 baseline remains unchanged and is valid for the current release.

Bookmark Color Legend

Black: Applies to content for the NA015 baseline that is valid through the current release.

Red: Applies to new or modified content for NA017 that is valid through the current release.

Blue: Applies to new or modified content for NA018 (SN05 DMS) that is valid through the current release.

Green: Applies to new or modified content for SN06 (DMS) that is valid through the current release.

Purple: Applies to new or modified content for SN07 (DMS) that is valid through the current release.

Attention!

Adobe Acrobat Reader 5.0 or higher is required to view bookmarks in color.

Publication History

***Note:** Refer to the NA015 baseline document for Publication History prior to the NA017 software release.*

December 2004

Standard release 18.02 for software release SN07 (DMS). Updates made for this release are shown below:

Volume 1-12

No changes

Volume 13

Added Virtual Office Worker (VOW) by A00002011

Volume 14-16

No changes

Volume 17

Universal Access to Call Forwarding (UCFW) changes to AMA billing by CR Q00982215

Volume 18-23

No changes

Volume 24

Added OSSAIN XA-Core Data Messaging Capacity Enhancements by A00005160

Volume 25

No changes

September 2004

Preliminary release 18.01 for software release SN07 (DMS). Updates made for this release are shown below:

Volume 1

Modified – Introduction to trunk tables (ES trunk groups) by CR Q00838215-1

Volume 2-3

No changes

Volume 4

Modified – Datafilling Trunk Signaling (ISUP Hop Counter) by CR Q00760514-10

Volume 5-10

No changes

Volume 11

Modified – Datafilling MDC Minimum (Call Pickup) by CR Q00879738

Volume 12

Modified – Datafilling MDC MSAC (Do Not Disturb) by A00002196

Volume 13-15

No changes

Volume 16

Modified – Datafilling ACD Base (Base automatic call distribution) by CR Q00812364

Volume 17

Modified – Datafilling RES Advanced Custom Calling (900 FP) by CR Q00834222

Modified – Datafilling RES Advanced Custom Calling (CSMI) by CR Q00683891

Modified – Datafilling RES Advanced Custom Calling (CWAS) by CR Q00891675-01

Modified – Datafilling RES Advanced Custom Calling (Enhanced CSMI) by CR Q00683891

Volume 18

No changes

Volume 19

Modified – Datafilling RES Service Enablers (SLE) by CR Q00760256

Volume 20

Modified – Datafilling Emergency Number Services (E911 Wireless ALI Interface) by CR Q00856825

Volume 21-24

No changes

Volume 25

Modified – Datafilling Unbundling (UNBN OPTRANS and EA) by A00002765

March 2004

Standard release 17.03 for software release SN06 (DMS). Updates made for this release are shown below:

Volume 1- 9

No changes

Volume 10

Changes due to CR Q00757372, which clarifies the applicability of the AUDTRMT option. The changes are in sections:

- 7 Datafilling NI0 NI-2 PRI, PRI Call Screening
- 8 Datafilling NI0 ISDN PRI Base, Flexible Digit Analysis
- 8 Datafilling NI0 ISDN PRI Base, PRI ISDN Treatments
- 9 Datafilling NI0 ISDN PRI CNAM, PRI SUSP for CNAME

Volume 11-16

No changes

Volume 17

Modified - Call Screening, Monitoring, and Intercept (CSMI) for Q00659151

Modified - RES Simultaneous Ringing for Q00715967.

Modified - Usage Sensitive Three-way Calling (U3WC) for Q00703423-03.

Volume 18

Changes to Chapter 1 - Datafilling RES Display Functionality and Privacy, Anonymous Caller Rejection (ACRJ) as follows:

- change to description of interaction with Call Forwarding Don't Answer (CFDA) for CR Q00773476

- change to description of interaction with SOC RES00011 for CR Q00735537.

Volume 19

Changes due to CR Q00735537, which shows the interaction of various services with SOC RES00011. The changes are in Chapter 1 – Datafilling RES non-display services, and the affected services are:

- Distinctive Ringing/Call Waiting (DRCW)

- Selective Call Acceptance (SCA)

- Selective Call Forwarding (SCF)

- Selective Call Rejection (SCJ)

Volume 20

Changes due to CR Q00757372, which clarifies the applicability of the AUDTRMT option. The changes are in section:

- 2 Datafilling Emergency Number Services, E911 PRI PSAP Delivery

Volume 21-25

No changes

September 2003

Standard release 17.02 for software release SN06 (DMS). Updates made for this release are shown below:

Volume 1

New - Panther support for third-party RMs

Modified - E911 trunk groups

Volume 2-11

No changes

Volume 12

Modified - Query Functional Station Grouping

Volume 13-14

No changes

Volume 15

Modified - VMX Interface

Volume 16

No changes

Volume 17

Modified - Call Screening, Monitoring, and Intercept (CSMI)

Modified - Enhanced CSMI

Modified - Long Distance Alerting

Modified - Long Distance Alerting Enhancement (LDAE)

Modified - Service Order Simplification for MADN Extension Bridging

Volume 18

Modified - Call Logging (CALLOG) Modified - Universal Voice Messaging

Modified - Voice Mail Easy Access (VMEA)

Volume 19

Modified - CMS AR Screening of Private Calls (CASOP)

Modified - In-Session Activation (ISA)

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Modified - DMS Integrated E911 PSAP Functionality

Modified - E911 Incoming Wireless Calls

Modified - E911 Incoming Wireless Calls (MF)

Modified - E911 ISUP Parameter Enhancements

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Modified - E911 ISUP Trunking

Modified - E911 Tandem

Modified - E911 Translations Robustness

Modified - VFG Support for E911 (LOC and/or ISUP/ANI Call)

Volume 21-25

No changes

June 2003

Preliminary release 17.01 for software release SN06 (DMS). Updates made for this release are shown below.

New Critical Release Notice added.

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No changes

297-8021-350

DMS-100 Family

North American DMS-100

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LET0015 and up Standard 14.02 May 2001

DMS-100 Family

North American DMS-100

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1 Datafilling Operator Services AIN (continued)

This chapter contains the operator services advanced intelligent network (AIN) functionalities.

OSSAIN 09 Enhancements

Ordering codes

Functional group ordering code: OSAN0101

Functionality ordering code: not applicable

Release applicability

TOPS09 and up

OSSAIN 09 Enhancements was introduced in TOPS09.

Prerequisites

To operate, OSSAIN 09 Enhancements has the following prerequisites:

- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- BAS Generic, BAS00003
- OSSAIN Initial Release, OSAN0101, and table TOPSFTR parameter OSSAIN_INITIAL_RELEASE = Y
- OSSAIN 07 Enhancements, OSAN0101, and table TOPSFTR parameter OSSAIN_RELEASE_07 = Y
- GR317/GR394 ISUP to/from TOPS, OSEA0102 (for changes to the CgPN parameter in the outgoing IAM)

Description

This functionality provides enhancements to the Operator Services System Advanced Intelligent Network (OSSAIN) product as follows:

- The switch can connect up to 1023 calls at the same time to a single OSSAIN voice link. The name of this capability is Voice Link Broadcasting, which only has one-way transmission.
- The switch can trigger directly to an operator.
- The service node (SN) can change the base service of a call from Toll and Assistance Service (TASERV) to Directory Assistance Service (DASERV). Or, the SN can change from DA service to TA service.
- The SN can change the Calling Party Number (CgPN) parameter in the outgoing Integrated Services Digital Network User Part (ISUP) Initial Address Message (IAM). For details on ISUP in the traffic operator position system (TOPS) environment, refer to functionality GR317/GR394 ISUP to/from TOPS, OSEA0102. There is no datafill for this capability; therefore, this functionality contains no additional information.

OSSAIN 09 Enhancements (continued)

- The SN receives terminating trunk information from the Open Automated Protocol (OAP). The terminating trunk group and member number are sent to the SN in the OAP during connection of the terminating party. Datafill is not required; therefore, this functionality contains no additional information.
- The intelligent workstation (IWS) position specifies the personal identification number (PIN) length for custom calling cards in the OAP protocol. A variable length custom card PIN is an existing capability of the OAP protocol. The switch stores the custom card PIN size provided by the open position protocol (OPP) or OAP. Automatic message accounting (AMA) then uses the PIN size to remove the PIN before recording the custom card on the AMA record. Datafill is not required; therefore, this functionality contains no additional information.
- The IWS position receives the original SN function provider. This notification occurs when a session with the SN is not available and rerouting of the call to an operator. Calls redirect to an operator because of SN queue overflow, deflection, DN blocking, or other failure. Call redirection is datafilled in table OAFNDISP. Datafill is not required for informing the IWS; therefore, this functionality contains no additional information.
- An SN can perform three-way calling (3WC). 3WC is when an SN initiates a session with a floated call and merges two calls together.
- The notification timer can run during call connection to the SN in addition to call float.
- A session begin timer is an addition to table OAFUNDEF. This timer operates during a session with an SN. If the SN does not respond within the time period, the call routes to another OSSAIN function provider. Refer to the datafill procedure section for additional details.
- SN audit controls are an addition to table OANODINV. Also, table OANODINV field AUDFREQ now applies to all OSSAIN node types. Before, all node types except OSAC were acceptable. Refer to the datafill procedure section for more details.

This functionality consists of the following features:

Feature number	Feature name
AF7154	OSSAIN 3-Way conferencing
AF7155	OSSAIN Enhancements III
AF7156	OSSAIN SOC Enhancements

OSSAIN 09 Enhancements (continued)

For additional information, refer to the *TOPS OSSAIN User Guide*, 297-8403-901. This guide contains all of the information in this translations guide plus provisioning, signaling protocol, maintenance, and operator use.

Operation

This section provides details on the capabilities that require datafill or affect billing.

Voice link broadcasting

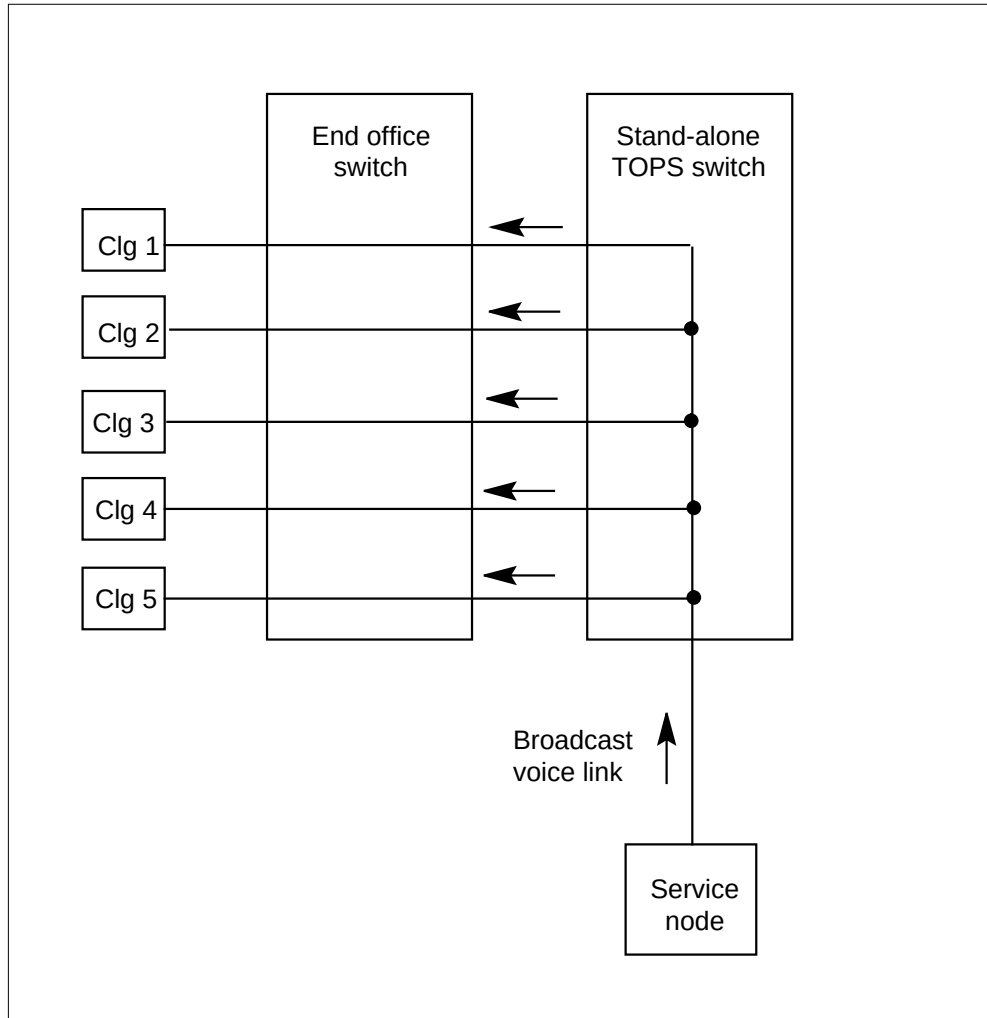
OSSAIN voice connections are normally two-way in order to obtain information from the calling, called, or alternate-billing party. But, some parts of a call only require a one-way connection, for example, playing a branding announcement or music. For music, all calls that require music can have the same voice link. This type of connection results in a important savings in voice links between the switch and service node.

Broadcast voice links are datafilled in table OAVLMAP with new field BCSTAREA. Refer to the datafill procedure section for details.

The following figure is an example broadcast network where a service node is playing music to five calling parties. Without the broadcast capability, there would be five two-way voice links between the service node and switch.

OSSAIN 09 Enhancements (continued)

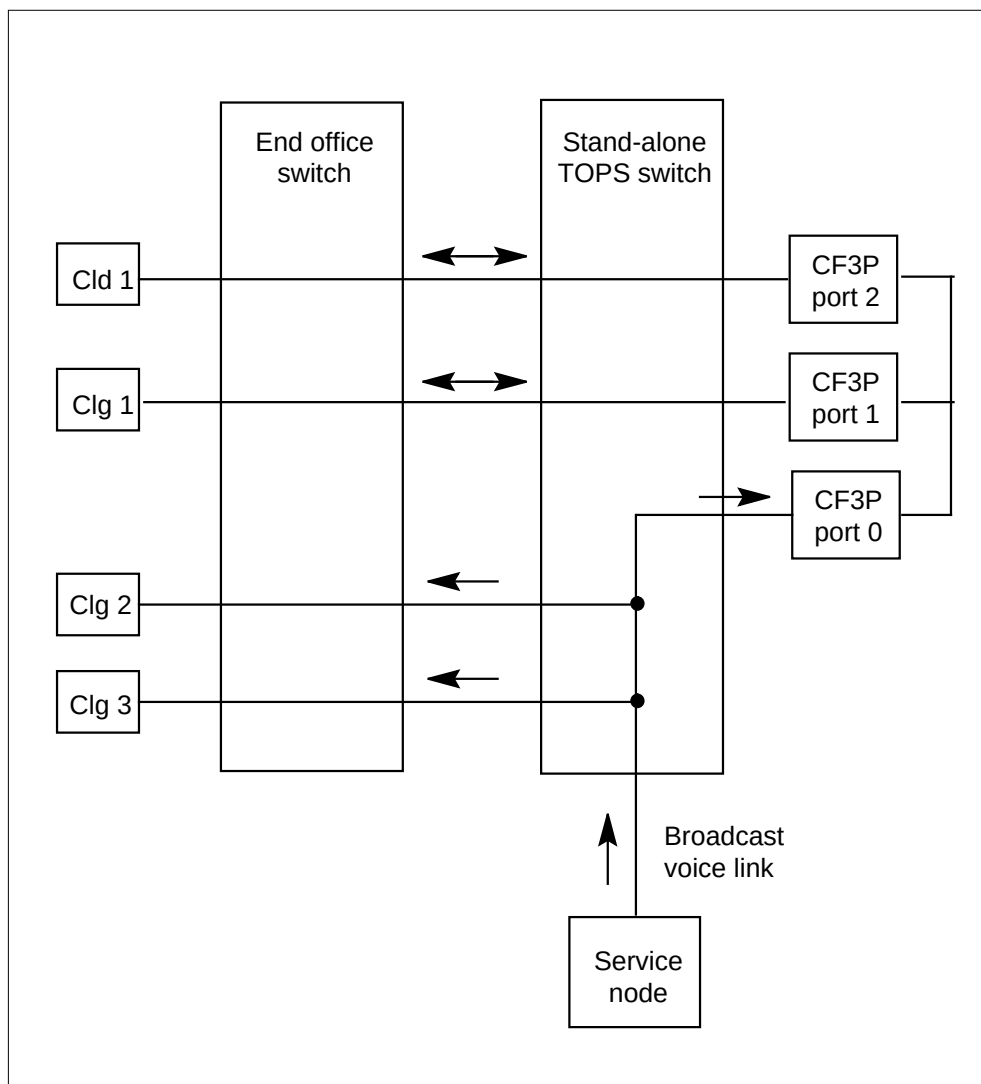
Example broadcast to 5 calling parties in a stand-alone configuration



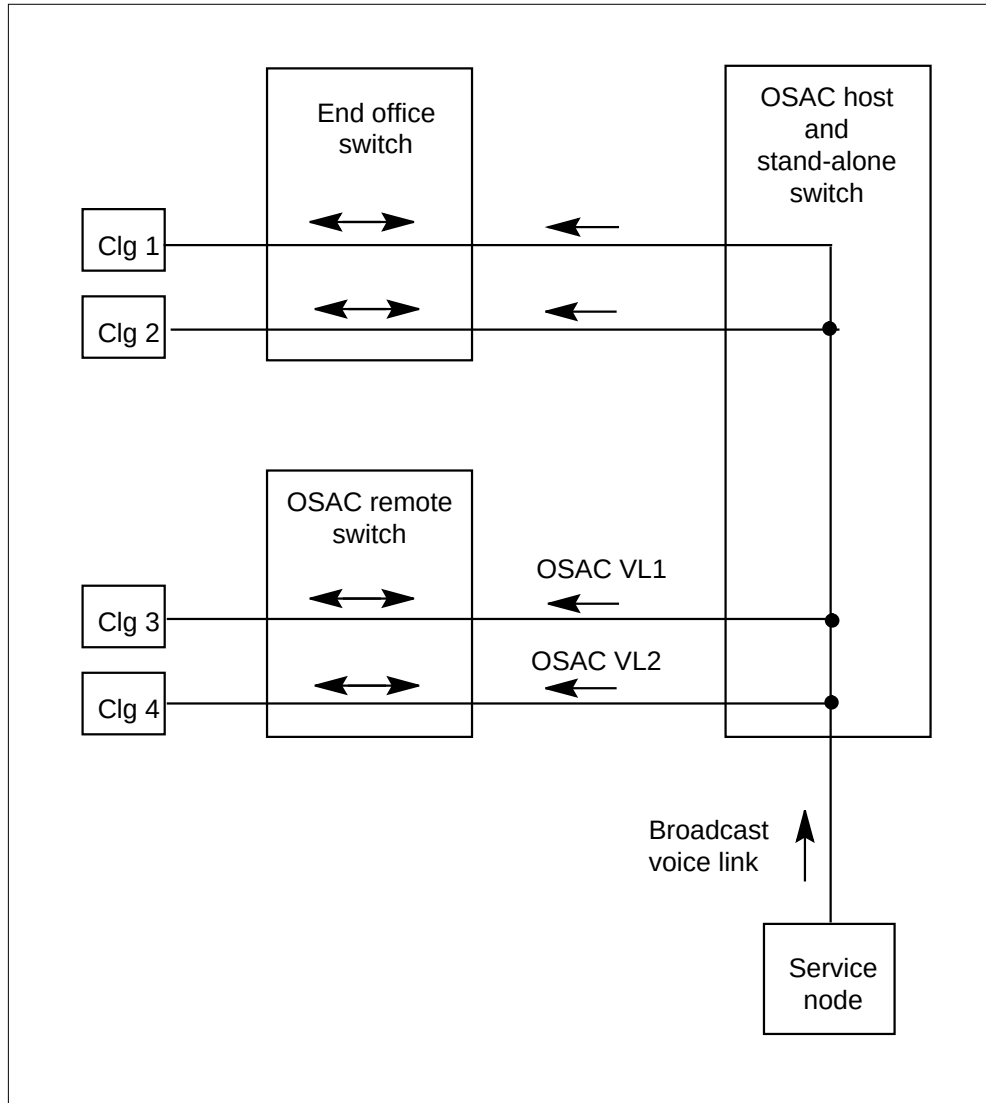
The following figure is an example broadcast configuration with a call on a three-port conference circuit and two other calls.

OSSAIN 09 Enhancements (continued)

Example broadcast with a CF3P in 1 call and 2 other calls in a stand-alone configuration



The following figure is an example broadcast network for an OSSAIN centralization (OSAC) configuration.

OSSAIN 09 Enhancements (continued)**Example broadcast in an OSAC configuration**

The above example shows four calls that are connected to a single broadcast voice link. Broadcast voice links are limited to connections between the service node and OSAC host switch. The broadcast link is not allowed between the OSAC host and OSAC remote switches. Instead, normal two-way links are required. The example shows two calls that originate at the remote and two calls that connect directly to the host. For these two types, the host is acting as an OSAC host and stand-alone OSSAIN office. The broadcast voice links are only datafilled in the host.

OSSAIN 09 Enhancements (continued)

Hardware provisioning

In an ENET office, there are no different provisioning requirements for using broadcast voice links. The links are assigned by the same rules used for standard, non-broadcasting voice links (as before this feature).

For a JNET office, it may be necessary to deload some ports in order to remain non-blocking. Refer to the OSSAIN User Guide, 297-8403-901.

Direct triggering to an operator

Before this capability, calls could only trigger during call float to an SN. So the trigger profile tables could only reference functions that were set to SN in table OAFUNDEF field FUNCTYPE. Therefore, if a call required an operator, the call first triggered to an SN and then transferred to an operator.

The trigger profile tables can now reference a function set to TOPSOPER in table OAFUNDEF field FUNCTYPE. This new reference allows direct transfer to an operator (DA or TA).

For a TA call with the B party attached, the B party may remain with the call according to trigger datafill. Whether to release the B party and, or generate an AMA record depends on trigger datafill. Also, the SN may transfer a call to a TA operator without forcing release of the B party.

If the call triggers to the operator during the trigger connection phase, the B party connection releases. And, an AMA record generates before the call routes to the operator. The trigger connection phase is before the B party answers.

Base service change by an SN

Before this capability, if a toll call at an SN needed DA processing it could be transferred to a DA operator. But billing was not satisfied at the SN before the transfer for the following reasons:

- Class charging was normally not allowed (for example, 0- calls) because a called number is not available. A TASERV call requires a called number when class charging.
- Call details were not correct. Some of the call details sent at the beginning of the call were set based on the call being TASERV. These details could be different if the call is DASERV. Example call details are the billing restrictions and the billable/not billable status.

Therefore, all billable calls transferred from an SN to a DA operator were not qualified for Automated Directory Assistance Service (ADAS) or ADASPLUS processing. It was possible to avoid these systems if a call was

OSSAIN 09 Enhancements (continued)

not class charged. The calls routed to an operator to satisfy billing before the call received any basic DA handling.

Now, class charging becomes possible^{1*} since the SN is allowed to change the service from TASERV to DASERV. Also, since the SN is updated with the appropriate DA call details, the SN can accurately prompt the user for billing information before transferring the call to the DA operator. Thus, the call becomes eligible for ADAS and the operator is not required to perform any billing function.

Likewise, consider a subscriber at an SN who wants to make a toll call after they receive DA service. The SN can request a base service change to TA. This service change allows a subscriber to receive the full range of OSSAIN processing. This change provides better service than the limited processing available as a DA call.

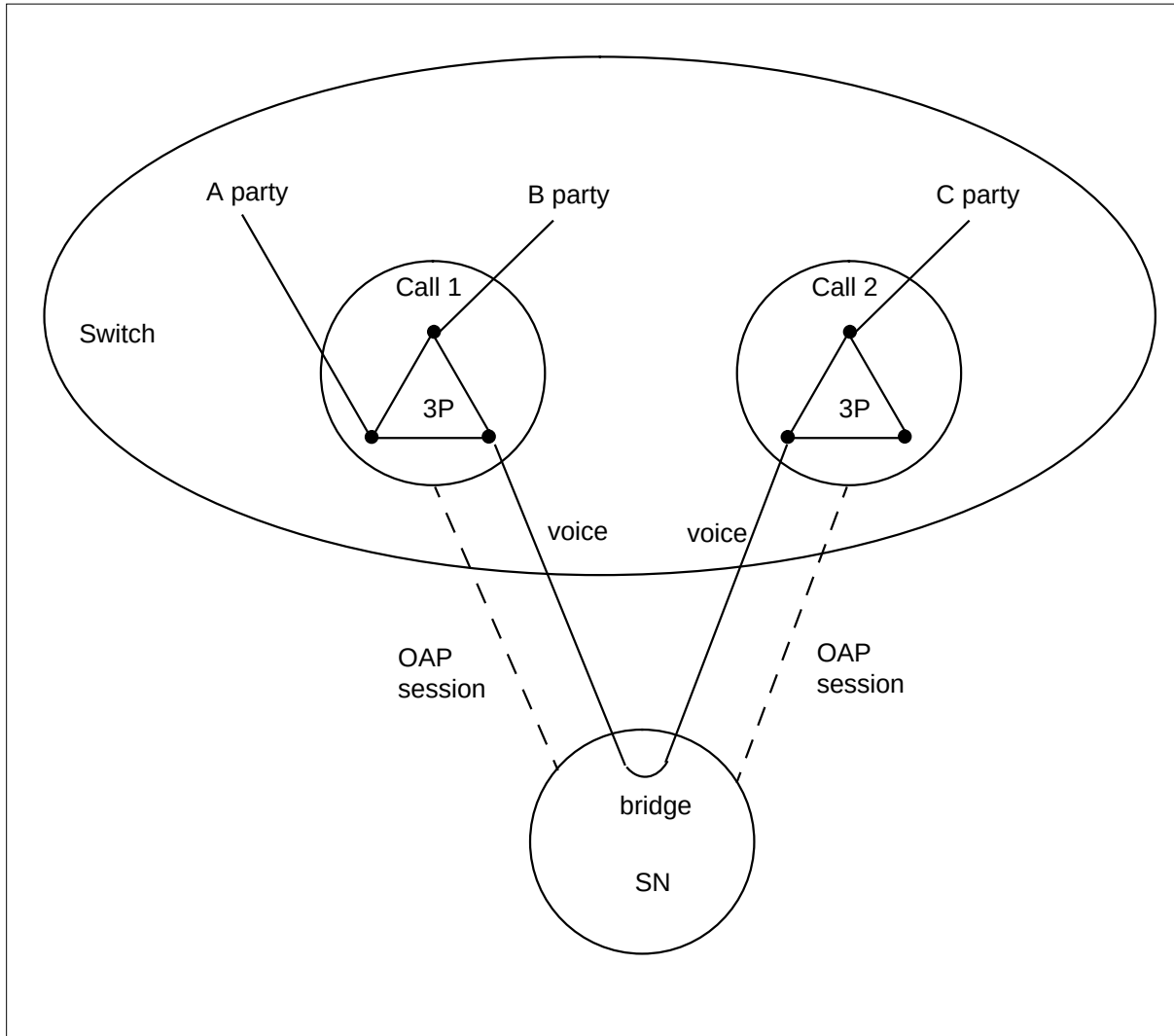
3WC

Before this functionality, an SN could only provide three-way calling by bridging the voice in the SN. See the following figure.

^{1*} DASERV calls do not require a called number for class charging purposes; however, this feature does not change the requirement for TASERV calls. These calls still need a called number in order to class charge.

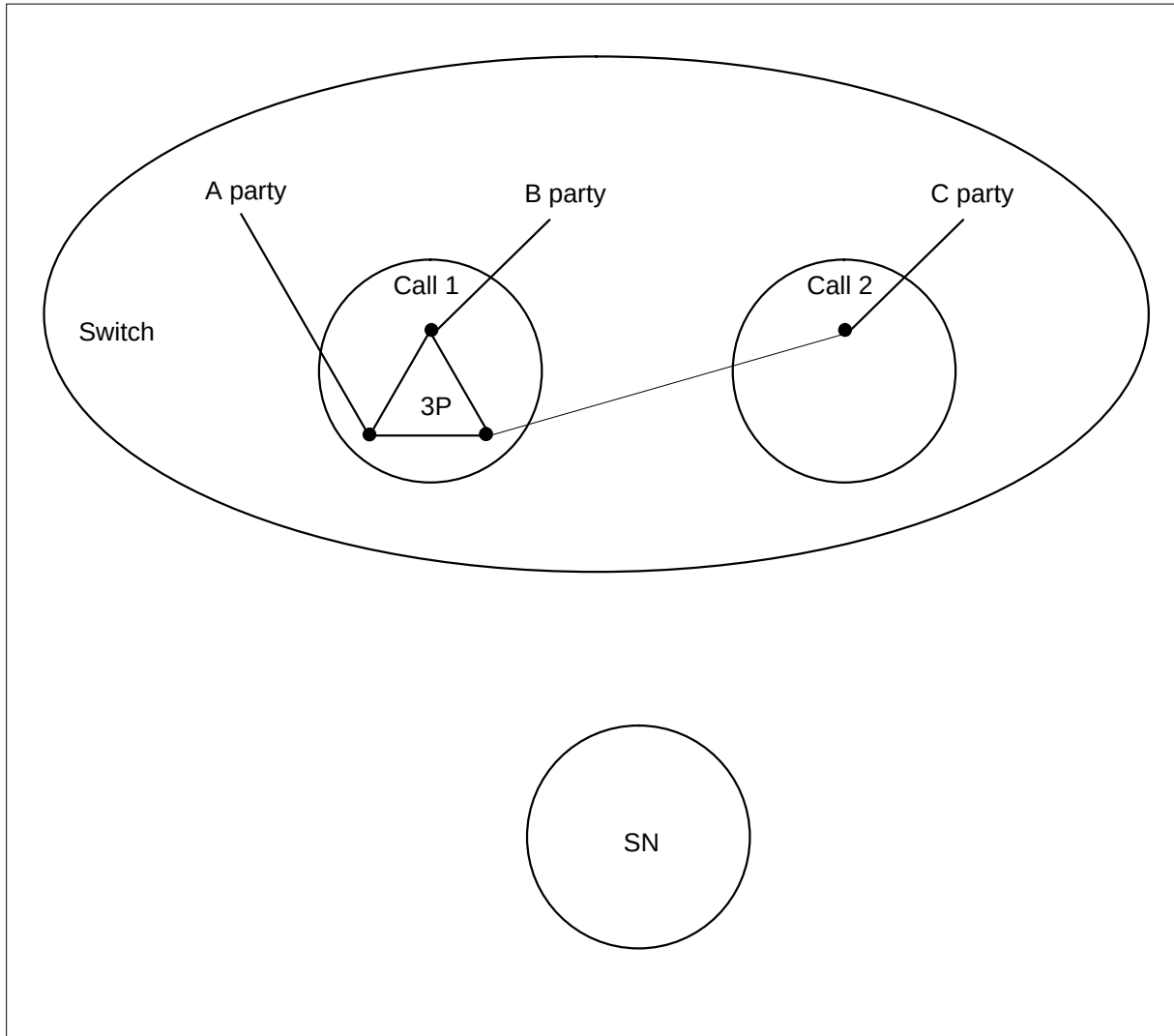
OSSAIN 09 Enhancements (continued)

Earlier OSSAIN 3WC configuration



For the above figure, both OAP sessions and both voice links to the SN must remain up. This requirement applies for the duration of the three-way call. Therefore, two three-port conference circuits in the TOPS switch are required.

This functionality allows an SN to configure a three-way call for the following condition. When the call floats, no OAP sessions or voice links are used, as in the following figure. This functionality does not preclude the SN from providing three-way calling as before this functionality.

OSSAIN 09 Enhancements (continued)**New OSSAIN 3WC configuration**

This capability requires no datafill.

Notification timer enhancement

Before this functionality, a notification timer could be started at call float. If the timer expired, the call triggered back to the SN for additional processing. This functionality maintains this function.

Now, the timer also can start while the call has a session with an SN. If the timer expires, a new Inform message is sent to the SN.

OSSAIN 09 Enhancements (continued)

Table OAINPARM existing parameter NOTIFY_TIMER sets the timer only for timers started at float.

SOC

SOC OSAN0101 controls this functionality.

Part of this functionality depends on functionality GR317/GR394 ISUP to/from TOPS, OSEA0102.

For additional information on SOC, refer to the Software Optionality Control User's Manual, 297-8991-901.

LOGS

Before this functionality, an OAIN303 log generated under three conditions. These conditions were when a call attempted to trigger to an operator, TOPS automated system or treatment. Now, the OAIN303 log is not produced when triggering to an operator. But, the OAIN303 log generates under the following condition. The call attempts to trigger to an operator while the call is in an OSSAIN Conference.

The OAIN303 log generates when triggering to a TOPS automated system or treatment.

OMs

Registers are added to new OM group OAPCALP8 to track the new OAP operation and responses. Also the OSACCP2 group contains a new register to track a new OSAC operation/response.

3WC adds groups OAPCALP7 and OAPCALP8, and modifies OAPCALP6 for each new OAP message.

OM group OASVNDP has new register SBTIMOUT.

Translations table flow

The OSSAIN 09 Enhancements translations tables are described in the following list:

- Table ENTYPES defines node types.
- Table ENSITES defines node sites.
- Table OANODNAM defines node ids and names.
- Table OANODINV defines OSSAIN node information.
- Table CLLI defines service node and host-remote voice links.

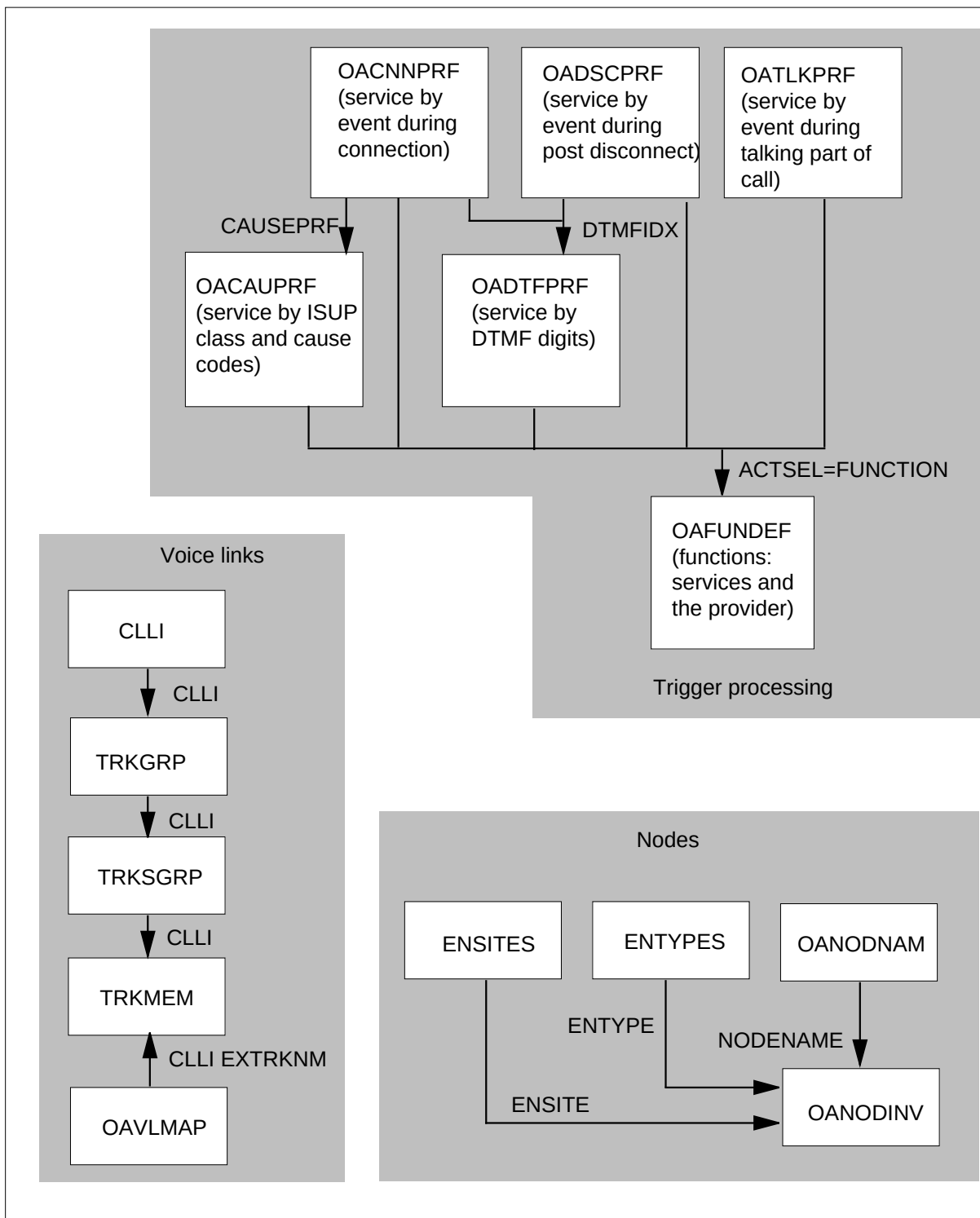
OSSAIN 09 Enhancements (continued)

- Table TRKGRP defines service node and host-remote voice links.
- Table TRKSGRP defines service node and host-remote voice links.
- Table TRKMEM defines service node and host-remote voice links.
- Table OAVLMAP defines voice links between the stand-alone or OSAC host switch and service nodes and between the OSAC host and OSAC remotes.
- Table OAFUNDEF lists OSSAIN functions (services) and the provider.
- Table OADTFPRF selects services by DTMF digits.
- Table OACAUPRF selects services by ISUP class and cause codes.
- Table OADSCPRF selects services by types of events during post disconnect.
- Table OATLKPRF selects services by types of events during the talking portion of a call.
- Table OACNNPRF selects services by types of events during call connection.

The OSSAIN 09 Enhancements translation process is shown in the flowchart that follows.

OSSAIN 09 Enhancements (continued)

Table flow for OSSAIN 09 Enhancements



OSSAIN 09 Enhancements (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for OSSAIN 09 Enhancements

Datafill table	Example data
ENTYPES	SWITCH
ENSITES	SWITCH_SITEB
OANODNAM	0 TO_HOST
OANODINV	TO_HOST OSAC OTHER 32 UDP IPV4 47 245 9 1 HPWS 1 B 11 NASH TO_THE_HOST 8 6 30
CLLI	OSSAINVL1 258 24 OSSAIN_VOICE_LINK_1 OSACVL1 300 20 OSAC_VOICE_LINK_1
TRKGRP	OSSAINVL1 TOPSVL 31 NPDGP NCRT MIDL OG OSACVL1 TOPSVL 31 NPDGP NCRT MIDL OG
TRKSGRP	OSSAINVL1 0 DS1SIG STD OG NP IM 0 0 NO NO N N Y 70 UNEQ \$ OSACVL1 0 DS1SIG STD OG NP IM 0 0 NO NO N N Y 70 UNEQ \$
TRKMEM	OSSAINVL1 2 0 DCM 0 0 21 OSACVL1 1 0 DCM 0 0 22
OAVLMAP	NODE_1 10 OSSAINVL1 2 N REMOTE1 1 OSACVL1 1 N
OACNNPRF	4 (NOANS Y FUNCTION ROUTE_NODE) Y 7 Y 3
OATLKPRF	2 (FLASH N N N Y FUNCTION TOLL_OPER) (NTFY Y N N N FUNCTION NEW_ACTS) \$ N N N
OADSCPRF	6 (PTYD Y FUNCTION ROUTE_NODE) \$ Y 7
OADTFPRF	8 (0 N N FUNCTION TOLL_OPR) (STAR N N FUNCTION MDS_NODE) \$ N
OACAUPRF	3 (NORM 17 Y FUNCTION MDS_NODE) \$
OAFUNDEF	100 TOLL_OPR SN TASERV N Y 3 Y CQ1

OSSAIN 09 Enhancements (continued)

Limitations and restrictions

The following limitations and restrictions apply to OSSAIN 09 Enhancements:

- In TOP09, calls using a broadcast voice link on an XPM do not survive a warm swact of that PM. This limitation only applies to broadcast voice links assigned to an XPM, not a DCM or TM8. No limitation of the same type exists for standard voice links.
- The loss of a broadcast voice link may result in lost or ignored messages from a PM involved in a broadcast. An example of a voice link loss is a DS1 carrier failure. Voice link failure results in the generation of an error message for each call that connects to the voice link. Therefore, voice links with a large number of simultaneous connections generate a large amount of messaging to the CM. These messages occur as each call detects the problem. This condition also applies to DS1 links with more than a single broadcast voice link. In order to limit the possibility of lost messages, the following are recommended guidelines during assignment of broadcast voice links:
 - Assign only one broadcast voice link on a DS1, especially if the link has a MAXCONNS value greater than 255.
 - If more than one broadcast voice link on a DS1, there is a rule to follow. Try to keep the total number of all broadcast connections on the DS1 to less than 255.
- The request to change the CgPN only occurs if the following occur:
 - the SN using OAP version 4 or above requests the forward connection
 - an outgoing ISUP trunk made the forward connection
 - SOC option OSEA0102 (GR317/GR394 ISUP TO/FROM TOPS) is onThis capability does not affect calls outpulsed on MF trunks.

This capability does not affect calls not connected by an SN as in the following examples:

TOPS RLT Transfer in functionalities GR317/GR394 ISUP
TO/FROM TOPS (OSEA0102) and TOPS Carrier RLT (OSEA0102)

calls floated by an operator or TOPS automated system (for example, AABS).

- The number supplied by the SN for use in the CgPN parameter is not recorded in the AMA record. If the SN needs to record this number in the AMA record, the SN should use the OSSAIN custom AMA capability.
- When a call triggers to an operator, the TOPS call origination remains the same as when the call triggered. This condition includes a floated toll call that triggers to a DA operator. The base service, but, changes to DASERV.

OSSAIN 09 Enhancements (continued)

- When a call triggers to a DA operator with the called party attached, two events occur. These events are release of the called party and then automatic generation of an AMA record.
- The switch does NOT launch another LIDB query under the following condition. A call bills to a calling card or third number (alternate billing) and the call triggers to the operator. But, the operator may again class charge the call at the position to force another LIDB query.
- If the call triggers to the operator during the trigger connection phase, the B party connection releases. Also, an AMA record generates before call display to the operator. The connection phase is before the B party answers.
- When a call triggers to a TA operator during the talking or disconnecting phase, the following restriction is in effect. The operator must ensure release of the current forward party and generation of an AMA record before starting another call. An example call would be a sequence TA call.
- Datafill of a TOPSOPER function/control list against the CLGD trigger event in table OACNNPRF is not allowed.
- A call cannot trigger to an operator during an OSSAIN Conference.
- When triggering to an operator, if the operator position is a TOPS 4 position, the switch ends the call.
- In a JNET office, a Network Subgroup (NSG) with a port assigned to a DRAM that has Broadcasting announcements on it should not have any OSSAIN broadcasting voice links mapped to the NSG.
- The BCST field in table OAVLMAP does not allow Y for nodes of PM type OSAC. Only OSNM nodes can have broadcasting assigned to their voice links.
- A logical voice channel set up for broadcasting must map to a physical trunk member that has no duplicate in datafill. A logical voice channel is the VOICENUM part of the index in table OAVLMAP. Fields CLLI and EXTRKNM in table OAVLMAP define physical trunk members. An attempt to assign a trunk already in use by another logical channel is not allowed. This restriction does not apply to non-broadcast voice links, which can have multiple logical channels assigned to the same physical trunk.
- The SN should collect usage control counts for voice link trunks used for broadcasting.
- An SN cannot remote make-busy (RMB) a voice link during a call on a broadcast voice link. An off-hook received from an idle broadcast voice link results in the link changing to an RMB state. Non-broadcast voice links are not changed. These links allow RMB with or without a call.

OSSAIN 09 Enhancements (continued)

- For OSSAIN calls, three entities may use a voice link. These are the Active Service Node, Passive Service Node, and Passive Operator.*² When a call uses a broadcast voice link, it is the only voice link allowed. This means that if a call is using a broadcast voice link to either an Active or Passive Service Node, then it is not possible to add a standard or broadcast voice link to the other SN (Active or Passive). Nor is addition of a Passive Operator allowed. Likewise, if a call already has a standard voice link (Active or Passive) or includes a Passive Operator, addition of a broadcast voice link is not allowed. Note, however, that any combination of voice links are possible on a call as long as none of the SN voice connections is a broadcast. The allowable configurations for calls using only standard voice links are not changed by this feature.
- TASERV to DASERV service changes are not allowed during connection of a forward party.
- TASERV to DASERV service changes are allowed if a forward number exists but is not connected. After the change, the forward number becomes cleared (that is, replaced with the NIL value).
- AMA is not automatically generated as a result of a service change from TASERV to DASERV. If AMA requires a record, it is up to the SN to make this request using current OAP AMA operations. This request should be done before to the request to change the service in order to bill for the old service.
- The class charge of a call changes to unspecified when a SN requests a change of the base service of the call. The call must be class charged again in the new service to satisfy billing. Note, unspecified means no class charge.
- For a TA to DA service change, the Call Origination Type is not changed.
- For a DA to TA service change, the Call Origination Type resets to zero-minus.
- For a DA to TA service change, the charge status of the call resets to billable.

² * For a complete discussion of Active and Passive Service Nodes, and Passive Operators, see feature AN1926, OSSAIN Simultaneous Interactions in functionality OSSAIN 07 Enhancements, OSAN0101.

OSSAIN 09 Enhancements (continued)

- Service change to a base service of INTCSEV is not allowed while at the SN.
- 3WC
 - The conference size limit is three subscribers.
 - Each session allows only one conference.
 - Call float is not allowed without a B party.
 - Release Link Trunking (RLT) has no support on conference calls.
 - The Call Merge Request (CMR) has a restriction. The CMR only can merge a calling party from one call with a called party from another call. Also, the called party call cannot have a calling party connected. If these requirements are met, the system disconnects the calling party as part of merging the two calls together.
 - Calls in different DMS switches cannot conference together. That is, a call in an OSAC Remote switch can not conference with a call in an OSAC Host switch.
 - The extensions to the OAP notification timers are not supported on any TOPS operator positions.
 - Calls with a party in a conference call are subject to the following restrictions:
 - The call cannot be transferred to an operator position.
 - The call cannot be transferred to a carrier.
 - The call cannot route to treatment by an explicit operation from the SN (that is, Route to Treatment Request). But, DNs may route to treatment.
 - Start of a simultaneous interaction is not allowed nor can one be in progress during creation of the conference. This restriction also applies when adding a party to an existing conference. Refer to Simultaneous Interactions (AN1926) in functionality OSSAIN 07 Enhancements (OSAN0101) for more information on simultaneous interactions.

Interactions

The following interactions apply to OSSAIN 09 Enhancements:

- The SN Control field in the trigger tables indicates if the SN acquires control of the call for this trigger event. These trigger tables are OACNNPRF, OATLKPRF and OADSCPRF. When the trigger action leads

OSSAIN 09 Enhancements (continued)

to a TOPSOPER function, the SN Control field is no longer applicable and is not validated.

- The Hold Receiver field in the trigger tables indicates whether to have a DTMF receiver connected when transferring to a SN. These trigger tables are OATLKPRF and OADTFPRF. When the trigger action leads to a TOPSOPER function, the Hold Receiver field is no longer applicable and is not validated.
- This functionality does not use the MULTREQ value datafilled in table DATRKOPT. This value controls the number of times the call can trigger to a DA operator.
- When triggering to a DA operator, if the call is ADAS/ADAS+ eligible, ADAS/ADAS+ is offered before the call is presented to the DA operator.
- The connection of a broadcast voice link stops a subscriber from transmitting voice. And, or, DTMF tones are disabled over the voice link, regardless of the status of the speech path of the subscriber. This link does not affect a subscriber while speaking or listening to any other party in the call.
- The SN can alter the speech path status of any party in a call using a broadcast voice link. But, the DMS Network connection may limit some requests. One-way Network connections affect the speaking or transmitting DTMF tones on the voice link.

Activation/deactivation by the end user

OSSAIN 09 Enhancements requires no activation or deactivation by the end user.

Billing

In a 3-way conference call, there are two billable calls:

- The original calling and called parties. The AMA for this leg occurs using the same mechanisms as for a standard 2-party call.
- The leg between the original calling party and the called party of another call started by an SN. The AMA for this leg resets in the second call and sent by the SN during creation of the second call.

There are no AMA changes.

Station Message Detail Recording

OSSAIN 09 Enhancements does not affect Station Message Detail Recording.

OSSAIN 09 Enhancements (continued)

Datafilling office parameters

OSSAIN 09 Enhancements does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement OSSAIN 09 Enhancements. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for OSSAIN 09 Enhancements

Table	Purpose of table
OANODINV	OSSAIN Node Inventory defines OSSAIN node device hardware.
OAFUNDEF	OSSAIN Function Definition indicates the OSSAIN service provider.
OAVLMAP	OSSAIN Voice Link Mapping defines voice links to service nodes and remote switches. Host-remote voice links must be datafilled in both the host and remote switches.
OADTFPRF	OSSAIN DTMF Profile selects services by DTMF digits.
OACAUPRF	OSSAIN Cause Profile selects services by ISUP class and cause codes.
OADSCPRF	OSSAIN Post Disconnect Profile selects services by types of post disconnects.
OATLKPRF	OSSAIN Talking Profile selects services by types of events during the talking portion of a call.
OACNNPRF	OSSAIN Connecting Profile selects services by types of call connects.

Datafilling table OANODINV

The following table shows the datafill specific to OSSAIN 09 Enhancements for table OANODINV. Only those fields that apply directly to OSSAIN 09

OSSAIN 09 Enhancements (continued)

Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OANODINV

Field	Subfield or refinement	Entry	Explanation and action
AUDTRIES		2 to 255	Audit tries. This new field indicates how many times an SN fails to respond to an OSSAIN audit. Then, the session pool or node becomes system busy (SYSB). This field applies to all OSSAIN node types and session pools they contain. For a one night process (ONP), this field resets to 8.
AUDRTIMR		1 to 600	Audit reply timer. This new field indicates how long the switch waits in seconds for a reply from an SN after an audit request. When the timer ends, the correct node or session pools on the node are made SYSB. For a one night process (ONP), this field sets to 6.
AUDFREQ		1 to 600	Audit frequency. This existing field only used to appear for ONPMTYPE = OSN or OSNM. Now, this field appears for all values of ONPMTYPE. Also, the range is expanded from 20-600 to 1-600. This field indicates how often the session pool and node audits occur for this node and session pools on this node. For a one night process (ONP) on OSAC nodes, this field sets to 30.

Datafill example for table OANODINV

The following example shows sample datafill for table OANODINV.

OSSAIN 09 Enhancements (continued)**MAP display example for table OANODINV**

NODENAME	NODEAREA	AUDTRIES	AUDRTIMR	AUDFREQ
TO_HOST	OSAC OTHER 32 UDP IPV4 47 245 9 1 HPWS 1 B 11 NASH	8	6	30
BRANDING_SN	TO_THE_HOST	8	6	15
CALL_CENTER_SN	OSN 50 UDP IPV4 47 17 16 82 TO_HOST Y 2 OAIN 2 B 11	8	6	15
	TO_THE_HOST	8	6	10
	OSNM 74 UDP IPV4 47 19 3 74 7000 N 30 30 HPWS 2 B 11	8	6	10
	NYC BIG_A	8	6	10

Datafilling table OAFUNDEF

The following table shows the datafill specific to OSSAIN 09 Enhancements for table OAFUNDEF. Only those fields that apply directly to OSSAIN 09

OSSAIN 09 Enhancements (continued)

Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OAFUNDEF

Field	Subfield or refinement	Entry	Explanation and action
	SBTIMOUT	Y or N	Session begin time out. This new field only appears if FUNCTYPE = SN. This field enables a timer when an OSSAIN call is routed to the function. If the SN does not respond in the timer period, the call is routed to an alternate function in table OAFNDISP field ORFLACTN. The values are: - Y - Enable timer. Datafill refinement SBTIMER. - N - Do not start timer. The DMS switch assumes the SN received the Session Begin message and has control of the call. If the SN has not received the message, the call remains connected to the SN session. This connection continues until OSSAIN on-hook and call sanity timers take effect. Or, the connection continues until the SN goes out of service. The default is N.
	SBTIMER	1 to 7	Session begin timer period. Datafill this field if SBTIMOUT = Y. Enter the time in seconds the switch waits for a reply from a SN before the call is routed to an alternate function.

Datafill example for table OAFUNDEF

The following example shows sample datafill for table OAFUNDEF.

MAP display example for table OAFUNDEF

FUNCID	FUNCNAME	FUNCAREA
100	TOLL_OPR	SN TASERV N Y 3 Y CQ1

Datafilling table OAVLMAP

Table OSSAIN Voice Link Mapping contains voice connection information for OSSAIN calls. OAVLMAP maps the logical voice channel number to an

OSSAIN 09 Enhancements (continued)

actual voice link in a voice link group. In the host, datafill trunk groups for voice channels to service nodes and remotes. In a remote, datafill a trunk group voice channel to the host.

The following table shows the datafill specific to OSSAIN 09 Enhancements for table OAVLMAP. Only those fields that apply directly to OSSAIN 09 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OAVLMAP

Field	Subfield or refinement	Entry	Explanation and action
	VOICENUM	0 to 8191	Logical voice channel number. This field is part of the key into the table. This field is the logical voice channel number received from the service node. Allocation of broadcast voice link data is one block at a time. A block can store up to 1024 broadcast voice links. Therefore, in order to save memory, the following is a recommendation. All broadcast voice links assigned to a node should have assignment in the same group. The groups are as follows: • Group 0 = VOICENUM 0 - 1023 • Group 1 = VOICENUM 1024 - 2047 • Group 2 = VOICENUM 2048 - 3071 • Group 3 = VOICENUM 3072 - 4095 • Group 4 = VOICENUM 4096 - 5119 • Group 5 = VOICENUM 5120 - 6143 • Group 6 = VOICENUM 6144 - 7167 • Group 7 = VOICENUM 7168 - 8191 Any group is available for use but the most memory savings is if all broadcast voice link assignments are to group 0. This comment is not a restriction, only a recommendation. Table control does not enforce this recommendation in any way. Note, if there is no broadcast voice link assignment to a node, there is no requirement for voice link data. The above only applies to broadcast voice links.

OSSAIN 09 Enhancements (continued)

Datafilling table OAVLMAP

Field	Subfield or refinement	Entry	Explanation and action
BCSTAREA		see subfield	Broadcast area. This new field consists of subfield BCST_SEL and refinements. Broadcast voice links (BVLs) connect between a service node and either a host or stand-alone switch. Therefore, in an OSAC environment, BVLs are not allowed between the OSAC host and OSAC remote switches.
	BCST_SEL	Y or N	Broadcast select. This field indicates use of voice links for broadcasting. A BVL only transmits and normally connects to many callers. Example uses are playing music during call hold or playing a branding announcement. The values are: - Y - Use for broadcasting if the trunk does not exceed the maximum number of simultaneous connections allowed in field MAXCONNS for the voice link. Datafill refinements CUTTHRU and MAXCONNS. - N - Do not use for broadcasting. This link is a two-way link. This value is the default value. No refinements require datafill. In order to change a broadcast voice link tuple, the trunk must be INB at the MAP display.

OSSAIN 09 Enhancements (continued)**Datafilling table OAVLMAP**

Field	Subfield or refinement	Entry	Explanation and action
	CUTTHRU	IMMEDIATE or HKCHG	Cut through. Datafill this field if field BCST_SEL = Y. This field indicates when voice transmission occurs. The values are: - IMMEDIATE - Immediately. Voice transmission is immediate on connection. Use this value for music because music can start at any point. - HKCHG - Hook change. Voice transmission starts when the switch detects an off-hook of at least 10 milliseconds on the voice link. Use this value for branding announcements because they must start at the beginning of the message. In order to change a broadcast voice link tuple, the trunk must be INB at the MAP display.
	MAXCONNS	2 -1023 or 2-255	Maximum connections. Datafill this field if field BCST_SEL = Y. Enter the maximum number of simultaneous connections allowed on the broadcasting voice link. The range is one of the following: 2 -1023: Use this range for an enhanced network (ENET) and set field CUTTHRU to IMMEDIATE. 2-255: Use this range if the above conditions are not met. That is, for an ENET and field CUTTHRU = HKCHG; or, for a junctored network (JNET), regardless of the value in field CUTTHRU. In order to change a broadcast voice link tuple, the trunk must be INB at the MAP display.

Datafill example for table OAVLMAP

The following example shows sample datafill for table OAVLMAP.

OSSAIN 09 Enhancements (continued)

MAP display example for table OAVLMAP

NDANDCH		CLLI	EXTRKNM	BCSTAREA
BILLING_SN	10	BILLING_VL	1	N
BRANDING_SN	9	BRANDING_VL	0	Y HKCHG 250
CALL_CENTER_SN	8	CALL_CTR_VL	5	Y IMMEDIATE 1023

In the above example, the first tuple is a non-broadcast, two-way voice link that only connects to a single call. Therefore, this voice link performs the same as before this functionality. The other entries have the broadcasting capability. These voice links have one-way connections to several calls at the same time.

Error messages for table OAVLMAP

The following error messages apply to table OAVLMAP.

Error messages for table OAVLMAP

Error message	Explanation and action
This CLLI and external trunk name must be datafilled in table TRKMEM before datafilling this table.	Table TRKMEM must be datafilled before table OAVLMAP. The CLLI and EXTRKNM require deletion in table TRKMEM before using them in table OAVLMAP. This message indicates an attempt to datafill values that are not defined in table TRKMEM.
Trunk group type for CLLI must be TOPSVL.	The CLLI in table OAVLMAP must be of trunk group type TOPSVL. This error message indicates an attempt to enter a CLLI that does not meet this requirement.
Only nodes of PM type OSNM or OSAC may have datafill in this table.	Field NODENAME requires consideration of the node type in table OANODINV. Only OSNM and OSAC node types are allowed for voice link connectivity. This message indicates an attempt to datafill a NODENAME that is not a type OSNM or OSAC.
Only nodes of PM type OSNM can have the BCST field set to Y.	The BCST field does not allow Y for the voice link of a node that is a PM type OSAC or OSN. This message indicates an attempt to enter Y with this condition.

OSSAIN 09 Enhancements (continued)**Error messages for table OAVLMAP**

Error message	Explanation and action
The MAXCONNS value cannot exceed 255 in a JNET office.	Field MAXCONNS does not allow more than 255 in an office equipped with JNET type Network Modules. This message indicates an attempt to enter a value that does not meet this requirement.
Voice link audit in progress – try again later.	The voice link audit is operating and an attempt is made to change the MAXCONNS field. This change includes deletion of the tuple. The audit should finish within a few seconds, then retry the command.
The MAXCONNS value cannot exceed 255 when the CUTTHRU field is set to HKCHG.	Field MAXCONNS does not allow more than 255 on a voice link with field CUTTHRU = HKCHG in an ENET office. This message indicates an attempted entry that does not meet this requirement.
The CLLI and EXTRKNM is already in use by another voice link. This is not allowed for voice links used for broadcasting.	A logical voice channel set up for broadcasting must map to a physical trunk member that has no duplicate. A logical voice channel is the VOICENUM part of the index in table OAVLMAP. Fields CLLI and EXTRKNM in table OAVLMAP define the physical trunk member. This message indicates an attempt to assign a trunk already in use by another logical channel. This restriction does not apply to non-broadcast voice links, which can have multiple logical channels assigned to the same physical trunk.

Datafilling tables OADTFPRF, OACAUPRF, OADSCPRF, OATLKPRF, and OACNNPRF

The following table shows the datafill specific to OSSAIN 09 Enhancements for tables OADTFPRF, OACAUPRF, OADSCPR, OATLKPRF, and OACNNPRF. Only those fields that apply directly to OSSAIN 09

OSSAIN 09 Enhancements (continued)

Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OADTFPRF, OACAUPRF, OADSCPR, OATLKPRF, or OACNNPRF

Field	Subfield or refinement	Entry	Explanation and action
	CTRLLIST	name from table OACTLDEF	Control list. If ACTTYPE = CTRLLIST, datafill this refinement. Enter a control list name from table OACTLDEF. A control list is a list of services (defined in table OAFUNDEF) that are applied sequentially. Before this functionality, the entered name only could be for an SN function provider. That is, field FUNCTYPE = SN in table OAFUNDEF. Now, the function provider can also be a TOPS operator, indicated by field FUNCTYPE = TOPSOPER in table OAFUNDEF.
	FUNCTION	name from table OAFUNDEF	Function. If ACTTYPE = FUNCTION, datafill this refinement. Enter a function name from table OAFUNDEF. A function is a service. Before this functionality, the entered name only could be for an SN function provider. That is, field FUNCTYPE = SN in table OAFUNDEF. Now, the function provider can also be a TOPS operator, indicated by field FUNCTYPE = TOPSOPER in table OAFUNDEF.

Datafill examples for tables OADTFPRF, OACAUPRF, OADSCPR, OATLKPRF, and OACNNPRF

The following examples show sample datafill for tables OADTFPRF, OACAUPRF, OADSCPR, OATLKPRF, and OACNNPRF.

MAP display example for table OADTFPRF

DTMFIDX	PROFILE	HOLDRCVR

0	(0 N N FUNCTION TOLL_OPR) (STAR N N FUNCTION MDS_NODE)\$	N

OSSAIN 09 Enhancements (end)**MAP display example for table OACAUPRF**

IDX	PROFILE
0	(NORM 17 FUNCTION MDS_NODE) (NORM 18 FUNCTION MDS_NODE) (NORM 19 FUNCTION MDS_NODE) (CL2 FUNCTION MDS_NODE) \$

MAP display example for table OADSCPRF

DISCIDX	PROFILE	DTMFPRF
0	(PTYD Y FUNCTION ROUTE_NODE) \$	Y 7
1	\$	Y 4

MAP display example for table OATLKPRF

TALKIDX	PROFILE STAR OCTO	HOLDRCVR
0	(FLASH N N N Y FUNCTION TOLL_OPER) (NTFY Y N N N FUNCTION NEW_ACTS) \$ N N	N
1	(PTYD N N N Y CTRLLIST ROUTE_NODE) \$ Y N Y Y CTRLLIST RTE_NODE N	N

MAP display example for table OACNNPRF

CONNIDX	PROFILE	DTMFPRF	CAUSEPRF
0	(NOANS Y FUNCTION ROUTE_NODE)\$	Y 7	Y 3
1	(NOANS Y CTRLLIST Y_PAGES)\$	N	Y 3

Translation verification tools

OSSAIN 09 Enhancements does not use translation verification tools.

SERVORD

OSSAIN 09 Enhancements does not use SERVORD.

OSSAIN 10 Enhancements

Ordering codes

Functional group ordering code: OSAN0001

Functionality ordering code: OSAN0005

Release applicability

TOPS10 and up

OSSAIN 10 Enhancements was introduced in TOPS10.

Prerequisites

To operate, OSSAIN 10 Enhancements has the following prerequisites:

- Operator Services Basic, OSB00001
- BAS Generic, BAS00003
- OSSAIN Initial Release, OSAN0002
- OSSAIN 07 Enhancements, OSAN0003
- OSSAIN 09 Enhancements, OSAN0004
- Auto Country Direct, ENSV0010
- Host Queue Management System, ADVQ0003
- Remote Queue Management System, ADVQ0004

Description

This functionality provides enhancements to the Operator Services System Advanced Intelligent Network (OSSAIN) product as follows:

- OSSAIN processing of international inbound country direct calls
- Queue Management System Management Information System (QMS MIS) processing of calls serviced by OSSAIN Service Nodes.

This functionality is provided by the following features:

Feature number	Feature name
AF7592	OSSAIN International Inbound Country Direct
AF7439	OSSAIN QMS MIS

OSSAIN 10 Enhancements (continued)

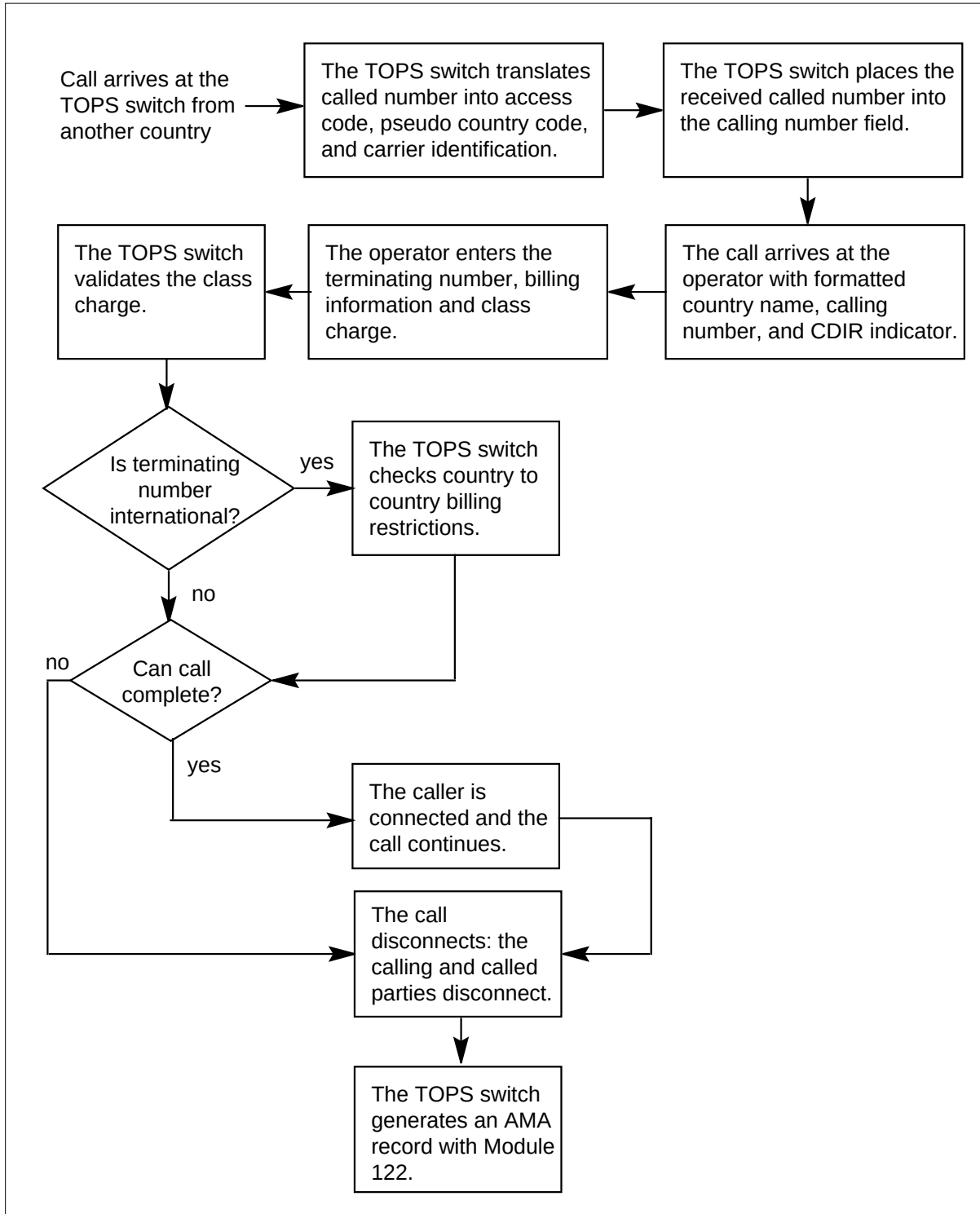
Operation

Country direct calls

The existing Country Direct functionality on a TOPS switch permits an end user in a foreign country to dial an access code and reach an operator in the country where the call is to be billed, usually the home country. For further information, refer to functionality Auto Country Direct, ENSV0010. The following figure shows the call flow.

OSSAIN 10 Enhancements (continued)

Country direct call flow

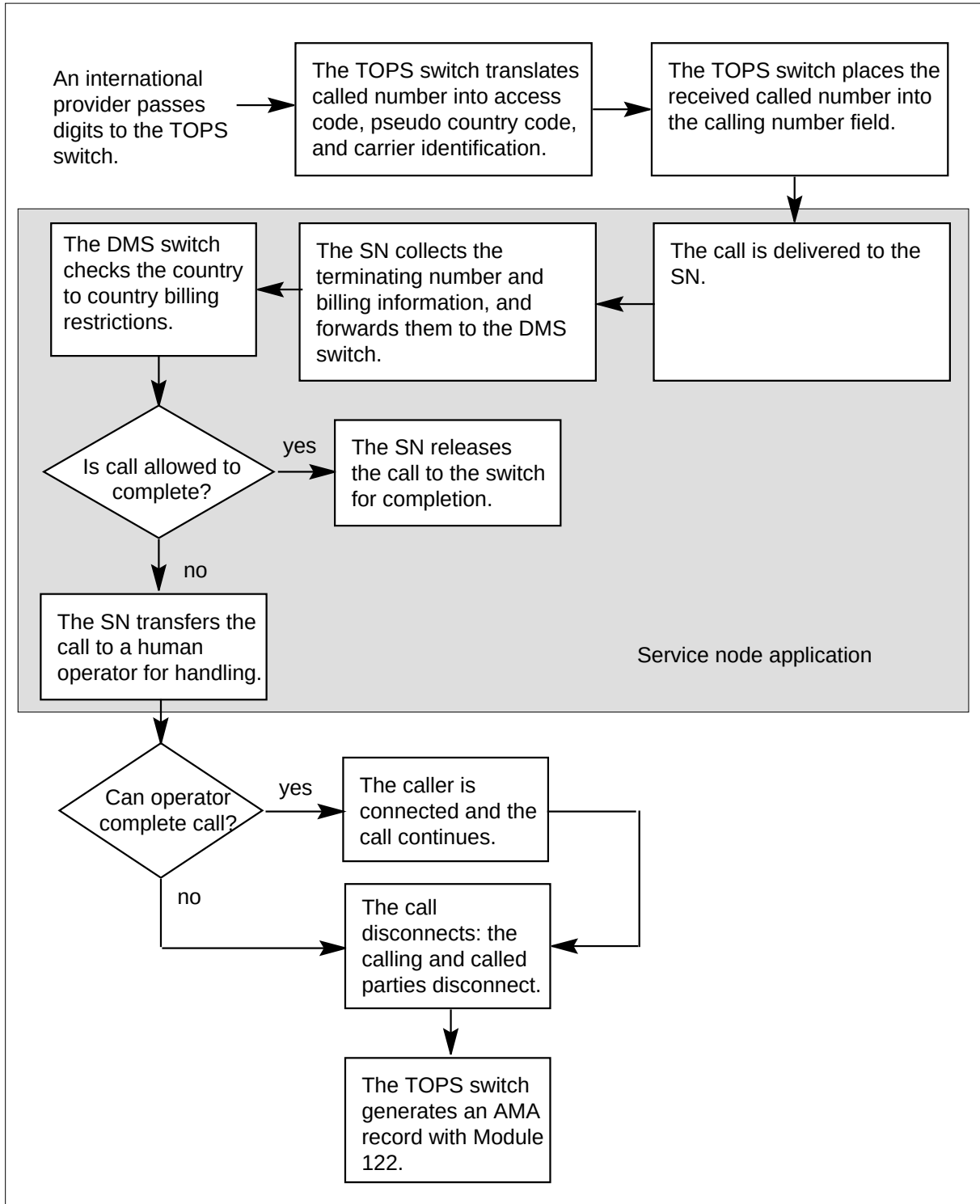


OSSAIN 10 Enhancements (continued)

This functionality replaces the live operator with the service node (SN). Therefore, the calls goes directly to the SN using the normal queuing system. The SN prompts the subscriber for the terminating number and the billing information, bypassing the operator. If the call is allowed to complete, the SN releases the call to the switch for completion. But, if there is an invalid entry and re-prompt, the SN may transfer the call to a human operator and indicate that the call is a Country Direct call. The following figure shows the call flow.

OSSAIN 10 Enhancements (continued)

OSSAIN country direct call flow



OSSAIN 10 Enhancements (continued)

Note that the SN, using existing mechanisms, can handoff the call to the Automated Alternate Billing System (AABS) instead of completing the call. It can also support sequence calls, using existing trigger mechanisms.

Also note that a TOPS operator, if presented with a Country Direct call, can transfer the call to an SN.

This functionality works in the Centralized OSSAIN (OSAC) environment.

Datafill

Datafill for incoming trunks, screening, and routing to the queue management system (QMS) are described in functionality Auto Country Direct, ENSV0010. Then, datafill must be added to route the call to an SN instead of an operator. The remainder of the call handling is performed by the service node. That is, no further datafill is required to return the call to either an operator or the switch, as shown in the previous figure.

Although the service node performs rating, the switch rating tables described in Auto Country Direct require datafill since the switch verifies rating for the service node.

Datafill to route a country direct call from the QMS system to an SN requires tables CT4QNAMS, OAINCTLA, OACTLDEF, and OAFUNDEF. Refer to the datafill procedure section for details.

Optionality

Optionality is achieved by software optionality control (SOC) option OSAN0005. SOC optionality provides two possible states for this functionality, Idle and On.

For an OSSAIN Country Direct call to route to a Service Node, both TOPS Auto Country Direct option (ENSV0010) and OSSAIN 10 Enhancements (OSAN0005) must be On.

If ENSV0010 is Idle, then all Country Direct calls that attempt to terminate to that TOPS switch are converted to 0-plus calls. This functionality is provided by feature AN1340.

If ENSV0010 is On, OSAN0005 is Idle, and a Country Direct call is routed to OSSAIN, the call is sent to treatment.

Operational measurements (OM)

The existing OM group, CTRYDIR, is expanded to contain new register CDIRSN, which tracks the number of Country Direct calls handed off to an OSSAIN SN.

OSSAIN 10 Enhancements (continued)

QMS MIS

For a standalone switch, MIS data is collected and sent to the MIS system. For an OSSAIN Centralization environment, when a call originates in the Remote, call information is sent from the Remote to the Host. Then the Host collects the information and sends it to the MIS system.

Optionality

When this SOC option (OSAN0005) is Idle, all fields and tables modified by this feature are present and data can be entered. But, OSSAIN MIS messages can NOT be generated and routed through the Ethernet by the OSSAIN Host or Stand-alone switch. And, the OSSAIN Remote switch can NOT send MIS call information to the OSAC Host.

When this SOC option is set to On, data can be entered in the new data fields and tables. Also, OSSAIN MIS messages are routed to an OSSAIN service node through Ethernet connectivity based on the QMS MIS datafill.

Logs

Log QMIS100 is modified by a minor rewording of the header. This log is generated when an MPC datalink is unable to transmit a TOPS QMS MIS buffer.

Log QMIS101 is created. This log is generated when an Ethernet connection is unable to transmit a QMS MIS buffer due to insufficient resources.

OAIN624 is generated when an OAPMIS message dump is selected for an MIS node.

Operational measurements (OM)

OM Groups QMSMIS, OADATCOM, and OSACCP2 are modified. The QMSMIS group is changed to display the QMS MIS application identifier. OADATCOM has an additional key field based on the transport protocol. OSACCP2 has new registers for the MIS update inform operation.

New OAPNMIS records the number of times each outgoing MIS operation is used.

Translations table flow

The OSSAIN 10 Enhancements translations tables are described in the following list:

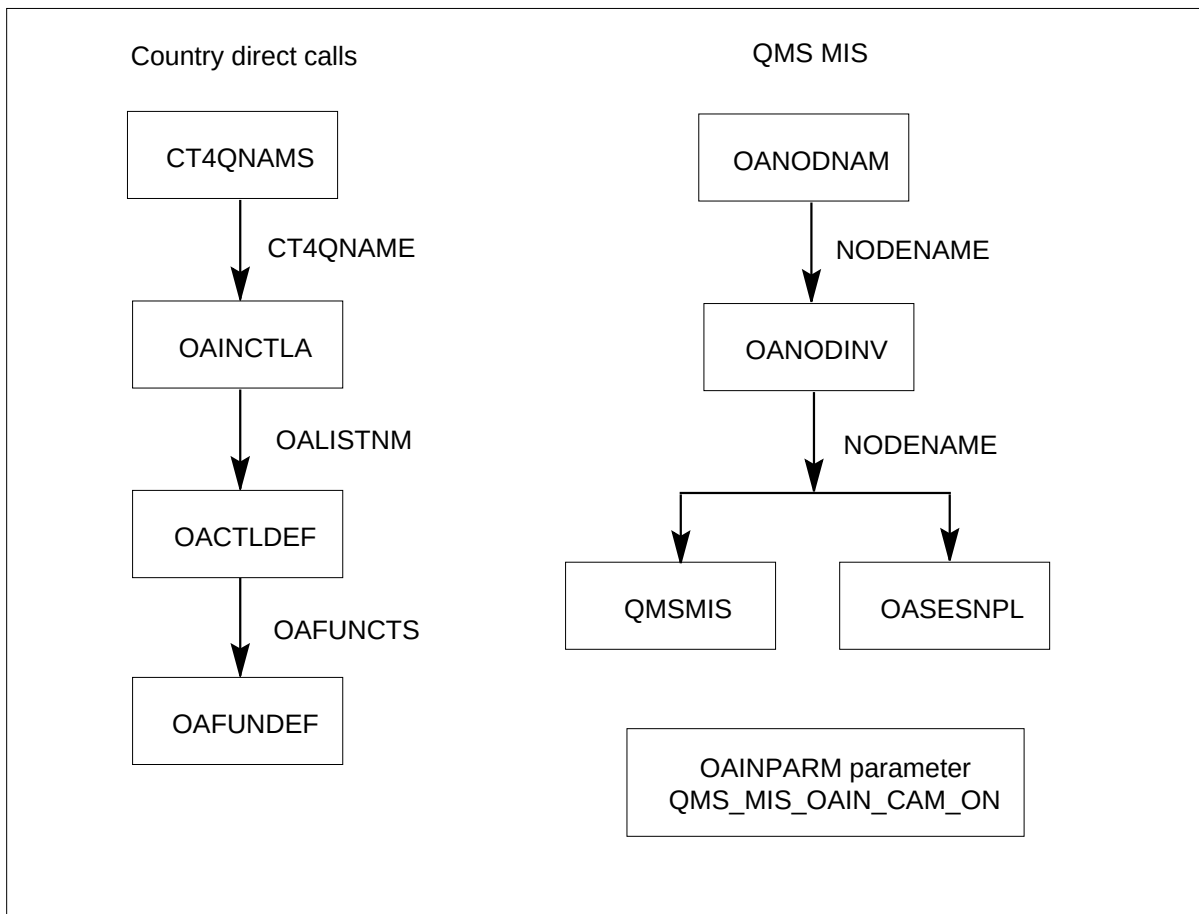
- Table OANODNAM defines OSSAIN node names.
- Table OANODINV defines characteristics of OSSAIN nodes.
- Table QMSMIS defines links and audit frequencies for the MIS links.

OSSAIN 10 Enhancements (continued)

- Table OASESNPL defines characteristics of session pools for OSSAIN calls.
- Table OAINPARM contains parameter QMS_MIS_OAIN_CAM_ON which must be ON to enable QMS MIS.
- Table CT4QNAMS marks the QMS final CT4Q for OSSAIN.
- Table OAINCTLA points to an OSSAIN service in OACTLDEF.
- Table OACTLDEF contains a list of sequentially performed services.
- Table OAFUNDEF indicates the OSSAIN service provider.

The OSSAIN 10 Enhancements translation process is shown in the flowchart that follows.

Table flow for OSSAIN 10 Enhancements



OSSAIN 10 Enhancements (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for OSSAIN 10 Enhancements

Datafill table	Example data
OANODNAM	34 MIS_OSSAIN 45 BRAND_01
OANODINV	MIS_OSSAIN OSNM 1 UDP IPV4 47 245 1 5 7000 Y 5 300 60 SN 3 JJ 2 LOCAL OSSAIN 8 6 30 BRAND_01 OSNM 0 UDP IPV4 47 245 1 34 7000 Y 2 240 60 SN 4 BB 3 LOCAL RTP_1 8 6 20
QMSMIS	OSSAIN ETHERNET MIS_OSSAIN 24
OASESNPL	1 BRAND_SP 100 BRAND_01 SUBSCRIBER S USEDEFLT USEDEFLT N 41 UDP 7001 7002
OAINPARM	QMS_MIS_OAIN_CAM_ON Y
CT4QNAMS	35 OA_CDIR N OSSAIN
OAINCTLA	OA_CDIR CDIR_SN N
OACTLDEF	50 CDIR_SN 0 (CDIR) \$
OAFUNDEF	40 CDIR SN TASERV N N Y CQ119

Limitations and restrictions

Country direct

The following restrictions apply to Country Direct calls at a service node:

- Calls are alternately billed only - station paid and person paid are not allowed
- The service node cannot change service to Directory Assistance.

It is recommended that Service Nodes not change the calling number, release the calling party or connect back to the calling party for Country Direct calls.

OSSAIN Country Direct is supported for any TOPS trunks that support OSSAIN. It is also supported for ISUP IT and ISUP ATC trunks, provided that SOC option OSEA0005, ISUP to TOPS Enhancements is ON.

OSSAIN 10 Enhancements (continued)

QMS MIS

For this feature, data connectivity to the TOPS MIS can only be achieved by an X.25 datalink, while the OSSAIN MIS uses an Ethernet connection.

Interactions

The following paragraphs describe the interactions between OSSAIN 10 Enhancements and other functionalities.

This functionality requires the existing Auto Country Direct functionality, ENSV0010.

This functionality interacts with the existing TOPS QMS MIS functionality, providing similar functions for OSSAIN. Also, existing OSSAIN node maintenance is used for the service node receiving the MIS data.

Consider the case where SOC ENSV0010 (Auto Country Direct) and OSAN0005 are both ON and a Country Direct call is routed to an OSSAIN Service Node whose OAP version is less than 5.0. The call is presented to the SN with a Call Origination type of UNSPEC instead of CDIR.

Activation/deactivation by the end user

OSSAIN 10 Enhancements requires no activation or deactivation by the end user.

Billing

Refer to functionality Auto Country Direct, ENSV0010.

Station Message Detail Recording

OSSAIN 10 Enhancements does not affect Station Message Detail Recording.

Datafilling office parameters

OSSAIN 10 Enhancements does not affect office parameters.

OSSAIN 10 Enhancements (continued)

Datafill sequence

The following table lists the tables that require datafill to implement OSSAIN 10 Enhancements. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for OSSAIN 10 Enhancements

Table	Purpose of table
OANODINV	OSSAIN Node Inventory defines characteristics of OSSAIN nodes.
QMSMIS	Queue Management System Management Information System defines links and audit frequencies for the MIS links.
OAINPARM	OSSAIN Parameters defines office-wide parameters for OSSAIN.
OASESNPL	OSSAIN Session Pool defines OSSAIN sessions.
CT4QNAMS	Call Type for Queueing Names marks the QMS final CT4Q for OSSAIN.
OAFUNDEF	OSSAIN Function Definition indicates the OSSAIN service provider.
OACTLDEF	OSSAIN Control List Definition contains a list of sequentially performed services.
OAINCTLA	OSSAIN Control List Assignment points to an OSSAIN service in OACTLDEF.

Datafilling table OANODINV

The following table shows the datafill specific to OSSAIN 10 Enhancements for table OANODINV. Only those fields that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafill tables OAFNUNDEF, OASESNPL, OAVLMAP, and QMSMIS after table OANODINV. Also, nodes must be removed from these tables before corresponding tuples can be removed from table OANODINV.

Datafilling table OANODINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
			The fields and values are not changed. However, a new restriction is added as described in the error message (given after the datafill example).

Field	Subfield or refinement	Entry	Explanation and action
NODEAREA		see subfield ONPMTYPE	Node area. This field consists of subfield ONPMTYPE and refinements.
	ONPMTYPE	OSNM	OSSAIN node peripheral module type. Nodes used for OSSAIN MIS messaging must be of ONPMTYPE of OSNM.

The following example shows sample datafill for table OANODINV.

NODENAME																	NODEAREA							
AUDTRIES																	AUDRTIMR				AUDFREQ			

MIS_OSSAIN																								
OSNM 1 UDP IPV4 47 245 1 5 7000 Y 5 300 60 SN 3 JJ 2 LOCAL OSSAIN																								
8 6 30																								
BRAND_01																								
OSNM 0 UDP IPV4 47 245 1 34 7000 Y 2 240 60 SN 4 BB 3 LOCAL RTP_1																								
8 6 20																								

The following error messages apply to table OANODINV.

Error message	Explanation and action
This node name is in use in table XXXXXXXX. You must remove all references to this node name before you can delete it.	Tuples may not be deleted from table OANODINV until all references to that node name are removed from tables OAFUNDEF, OASESNPL, OAVLMAP, and QMSMIS. This error message is displayed if an attempt is made to delete a node name from OANODINV that is in use by any of these tables.

OSSAIN 10 Enhancements (continued)

Datafilling table QMSMIS

This existing table is changed as follows:

- Field INDEX, subfield K has new value OSSAIN.
- Field DATALINK is new, which has existing value MPC and new value ETHERNET plus refinements.

When field DATALINK = MPC, enter datafill in tables MPC and MPCLINK before table QMSMIS.

When field DATALINK = ETHERNET, datafill tables OANODNAM and OANODINV before table QMSMIS.

The fields are defined as follows:

Datafilling table QMSMIS (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
INDEX		see subfield	QMS Management Information System index. This field consists of subfield K.
	K	TOPS, QMSNILAP, OSSAIN	QMS Management Information System application in use. This is the key field of the table. The entries are: • TOPS - Traffic Operator Position System. This entry is used for MIS statistics accumulated for calls handled by operators. This entry requires that field DATALINK is set to MPC. • QMSNILAP - non-TOPS QMS application • OSSAIN - Operator Services System Advanced Intelligent Network. This entry is used for MIS statistics accumulated for calls handled by OSSAIN Service Nodes. This entry requires that field DATALINK is set to ETHERNET.
DATALINK		see subfield	Data link. This field consists of subfield DATALINK and refinements.

OSSAIN 10 Enhancements (continued)

Datafilling table QMSMIS (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	DATALINK	MPC, ETHERNET	Datalink. This field indicates the type of datalink used by the application to send MIS statistics. The values are the following: - MPC - Multiprotocol controller link conversation list, which uses an X.25 datalink. This link is used by the TOPS MIS application. This entry requires that subfield K is set to TOPS or QMSNILAP. Enter datafill in subfield MLCLIST and refinements. - ETHERNET - An Ethernet link, which is used by the OSSAIN MIS application. This entry requires that subfield K is set to OSSAIN. Enter datafill in refinements NODENAME, MISNETID, and MISPORT.
	MLCLIST	see subfields	Multiprotocol controller link conversation list. This field consists of subfields M, L, and C. Separate each subfield with a single space. Up to 16 multiples of the subfields can be entered. If less than 16 multiples are entered, end with a \$ (dollar sign). Entries in field MLCLIST must match entries in tables MPC and MPCLINK. Only permanent virtual circuits (PVC) are supported by the Queue Management System Management Information System (QMS MIS) application. At least two links should always be datafilled for the TOPS application to guarantee that data is not lost if one link fails. A maximum of 16 links can be entered for the TOPS application. When more than one link has datafill against the TOPS application, the DMS switch shares the data transmission load, sending buffers across the least recently used link.
	M	0 to 255	Multiprotocol controller number. Enter the multiprotocol controller (MPC) number. This entry must first be entered in table MPC.

OSSAIN 10 Enhancements (continued)**Datafilling table QMSMIS (Sheet 3 of 3)**

Field	Subfield or refinement	Entry	Explanation and action
	L	0 to 3	Link number. Enter the link number. This entry must first be entered in table MPCLINK. Note: All link numbers must be 2 or 3 for QMS MIS applications.
	C	0 to 255	Conversation number. Enter the conversation number.
	NODENAME	name from table OANODINV	OSSAIN node name. Enter the source name of the MIS data. The node must be entered in tables OANODNAM and OANODINV. For table OANODINV, set field ONPMTYPE = OSNM.
	MISNETID	0 to 32,766	Management information system (MIS) network identification. This field enables a unique identifier to be specified within the header of the MIS data stream. Enter a source identifier for the MIS data. In the OSAC environment, where multiple Host nodes may be connected, the MIS network Id can be used to uniquely identify the source of the MIS statistics.
	MISPORT	1024 to 32,767	MIS port. This field specifies the port number for sending an MIS class message to the given node.

Datafill example for table QMSMIS

The following example shows sample datafill for table QMSMIS.

MAP display example for table QMSMIS

INDEX	DATALINK			
TOPS	MPC	(22 3 1)	(10 3 1)	\$
OSSAIN	ETHERNET	MIS_OSSAIN	24	7001

OSSAIN 10 Enhancements (continued)**Error messages for table QMSMIS**

The following error messages apply to table QMSMIS.

Error messages for table QMSMIS

Error message	Explanation and action
You must set DATALINK to MPC for TOPS MIS nodes.	The index and DATALINK fields must match. If the index is set to TOPS, the DATALINK field must be MPC. And if the index is OSSAIN, the DATALINK needs to be ETHERNET. Failure to do so results in one of these messages.
You must set DATALINK to ETHERNET for OSSAIN MIS nodes.	
The node specified must be datafilled with PMTYPE of OSNM in Table OANODINV.	The specified node name must be datafilled with a PMTYPE of OSNM in table OANODINV or this message is displayed.
You must OFFL the new node before changing the node name.	The node name can not be changed unless the node specified by node name is off-line. Otherwise, one of these messages is displayed.
You must OFFL the old node before changing the node name.	
You must OFFL this node before changing the MISPORT.	The MISPORT can not be changed unless the node specified by NODENAME is off-line. Otherwise, this message is displayed.
You must OFFL this node before deleting the tuple.	The tuple cannot be deleted unless the node specified by NODENAME is off-line. Otherwise, this message is displayed.
You must OFFL this node before adding the tuple.	The tuple cannot be added unless the node specified by NODENAME is off-line. Otherwise, this message is displayed.
The NODENAME specified is in use in Table OASESNPL.	The specified node name cannot be in use in table OASESNPL. Otherwise, this error message is displayed.

OSSAIN 10 Enhancements (continued)

Datafilling table OAINPARM

The following table shows the datafill specific to OSSAIN 10 Enhancements for table OAINPARM. Only those parameters that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OAINPARM

Parameter name	Explanation and action
QMS_MIS_OAIN_CALL_IN_Q_THRESH	This new parameter indicates if an OSSAIN OAP MIS data block is encoded, buffered, and sent to the MIS system for calls placed in queue. The range is 0 to 32,767. For 0, all calls placed in queue generate an MIS queue event data block. For values above 0, the entry is the number of calls must be sequentially placed in queue, with no calls exiting the queue, to generate the MIS queue event data block. The range is 0 to 32,767 and the default is 5.
QMS_MIS_OAIN_CAM_ON	This new parameter indicates if OSSAIN OAP MIS data blocks are encoded, buffered, and sent to the MIS system. The values are Y (send) and N (do not send). The default is N.
QMS_MIS_OAIN_REMOTE_SEND	This new parameter indicates if OSSAIN MIS data is encoded and sent from the OSAC Remote switch to the OSAC Host switch. The range is Y (send) and N (do not send). The default is N.
QMS_MIS_OAIN_XMIT_TIME_OUT	This new parameter indicates the maximum amount of time to accumulate data blocks in an OSSAIN OAP MIS buffer. The timer starts during periods of low traffic volume when an MIS buffer could take a significant amount of time to fill. When this timer ends, the accumulated data blocks in the buffer are sent. An information data block is always sent regardless of whether any queue or session data blocks are accumulated. The range is 0 to 255 seconds and the default is 10.

Datafill example for table OAINPARM

The following example shows sample datafill for table OAINPARM.

OSSAIN 10 Enhancements (continued)**MAP display example for table OAINPARM**

PARMNAME	PARMVAL
-----	-----
QMS_MIS_OAIN_CALL_IN_Q_THRESH	5
QMS_MIS_OAIN_CAM_ON	Y
QMS_MIS_OAIN_REMOTE_SEND	Y
QMS_MIS_OAIN_XMIT_TIMEOUT	10

Datafilling table OASESNPL

The following table shows the datafill specific to OSSAIN 10 Enhancements for table OASESNPL. Only those fields that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OASESNPL

Field	Subfield or refinement	Entry	Explanation and action
NODENAME		from table OANODINV	Node name. Enter a node name from table OANODINV. A new restriction is that a NODENAME cannot be entered that is datafilled in table QMSMIS.

Datafill example for table OASESNPL

The following example shows sample datafill for table OASESNPL.

MAP display example for table OASESNPL

SESNPLID	SESNPLNM	MAXSESN	NODENAME	ORIGAREA
-----	-----	-----	-----	-----
1	BRAND_SP	100	BRAND_01	
		SUBSCRIBER S	USEDEFLT USEDEFLT	N 41 UDP 7001 7002

OSSAIN 10 Enhancements (continued)

Error messages for table OASESNPL

The following error messages apply to table OASESNPL.

Error messages for table OASESNPL

Error message	Explanation and action
The node name specified is already in use in Table QMSMIS.	Tuples may not be added that specify a NODENAME already in use by the MIS application in table QMSMIS. If an attempt is made to add a tuple specifying a nodename already in use in table QMSMIS, this error message is displayed.

Datafilling table CT4QNAMS

The following table shows the datafill specific to OSSAIN 10 Enhancements for table CT4QNAMS. Only those fields that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CT4QNAMS

Field	Subfield or refinement	Entry	Explanation and action
SYSAREA		see subfield	This table is not changed. Determine the country direct CT4Qs and redirect the calls from the operator to OSSAIN in subfield SYSAREA_SEL.
	SYSAREA_SEL	TOPSOPR or OSSAIN	System area. This field consists of subfield SYSAREA_SEL and refinements. System area selector. Change this field from TOPSOPR to OSSAIN.

Datafill example for table CT4QNAMS

The following example shows sample datafill for table CT4QNAMS.

MAP display example for table CT4QNAMS

CT4QNUM	CT4QNAME	NOAMA	SYSAREA
35	OA_CDIR	N	OSSAIN

OSSAIN 10 Enhancements (continued)**Datafilling table OAFUNDEF**

The following table shows the datafill specific to OSSAIN 10 Enhancements for table OAFUNDEF. Only those fields that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OAFUNDEF

Field	Subfield or refinement	Entry	Explanation and action
FUNCAREA		see subfield	This table is not changed.
	FUNCTYPE	SN	Function area. This field consists of subfield FUNCTYPE and refinements. Function type. Route country direct calls to the service node.

Datafill example for table OAFUNDEF

The following example shows sample datafill for table OFUNDEF.

MAP display example for table OAFUNDEF

FUNCID	FUNCNAME	FUNCAREA
40	CDIR	SN TASERV N N Y CQ119

Datafilling table OACTLDEF

The following table shows the datafill specific to OSSAIN 10 Enhancements for table OACTLDEF. Only those fields that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OACTLDEF

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Route country direct calls to the service node.

Datafill example for table OACTLDEF

The following example shows sample datafill for table OACTLDEF.

OSSAIN 10 Enhancements (end)

MAP display example for table OACTLDEF

OACTLNUM	OACTLNAM	NETWRKID	OAFUNCTS
50	CDIR_SN	0	(CDIR) \$

Datafilling table OAINCTLA

The following table shows the datafill specific to OSSAIN 10 Enhancements for table OAINCTLA. Only those fields that apply directly to OSSAIN 10 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OAINCTLA

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Route country direct calls to the service node.

Datafill example for table OAINCTLA

The following example shows sample datafill for table OAINCTLA.

MAP display example for table OAINCTLA

CT4Q	OALISTNM	OATPRFIX
OA_CDIR	CDIR_SN	N

Translation verification tools

OSSAIN 10 Enhancements does not use translation verification tools.

SERVORD

OSSAIN 10 Enhancements does not use SERVORD.

OSSAIN 11 Enhancements

Ordering codes

Functional group ordering code: OSAN0001

Functionality ordering code: OSAN0006

Release applicability

TOPS11 and up

OSSAIN 11 Enhancements was introduced in TOPS11.

Prerequisites

To operate, OSSAIN 11 Enhancements has the following prerequisites:

- Operator Services Basic, OSB00001
- BAS Generic, BAS00003
- OSSAIN Initial Release, OSAN0002
- OSSAIN 07 Enhancements, OSAN0003
- OSSAIN 09 Enhancements, OSAN0004
- OSSAIN 10 Enhancements, OSAN0005

Description

This functionality provides the following:

- Alternate routing by the operator services system advanced intelligent network (OSSAIN) service node (SN).
- Queue Management System (QMS) Call Types for Queueing (CT4Q) refinements for calls that route through OSSAIN to an operator.
- OSSAIN voice connection enhancements
- E800/800+ change (no datafill is required)
- Connection of up to 4 parties for an OSSAIN conference simultaneously (no datafill is required)
- OSSAIN switch ID transmission to Traffic Operator Position System (TOPS) Open Position Protocol (OPP) compatible positions in the OSSAIN centralization (OSAC) environment. (no datafill is required)
- A variable number of domestic North American digits (0 to 10) can be sent by the SN to the switch.
- Explicit connection to treatment or tone for a SN call, while the SN keeps control.

OSSAIN 11 Enhancements (continued)

- Outpulse to a called number when a session is not available with a SN. This addition is a new disposition for table OAFNDISP.
- Refloat calls that fail to connect to a SN or operator upon triggering.
- Automatically move session pools from the INSV to MANB state when a session pool DRAIN command is completed. The DRAIN command is complete when all sessions in the session pool are no longer connected to any call.
- Allow trigger detection during the talking phase of DTMF * and # for the calling or called parties in table OATLKPRF fields STAR and OCTO. Before this functionality, only the calling party was supported.

This functionality is provided by the following features:

Feature number	Feature name
AF7631	OSSAIN Translations Enhancements
AF7712	OSSAIN Disposition & Connection Enhancements
AF7714	OSSAIN Enhancements IV
AF7804	800-To-TOPS Productization

Operation

The contents of this section are as follows:

- Alternate routing by SN
 - Call processing
 - LOGS
- QMS CT4Q refinement
 - LOGS
- OSSAIN voice connection enhancements
 - OSAC interactions
 - Voice link maintenance
 - Other considerations
 - LOGS

OSSAIN 11 Enhancements (continued)

- E800 or 800+
 - E800/800+ change
 - 800 background: call processing steps
 - 800 background: NORTEL 800 products
 - Enhanced 800
 - 800+
 - 800 background: TOPS/OSSAIN support for 800 products
 - Enhanced 800 features
 - 800+ features
 - 800 AMA
- Four party conference
- Send switch ID to an OPP compatible position
- Variable number of digits sent by SN
 - AMA
- Connect to treatment
- Outpulse to a called number
- Refloat call
 - Logs and OMs
- DRAIN change
- STAR and OCTO detection
- SOC

Alternate routing by SN

Sometimes a service requires a different call route from the route derived by translations, although the termination (called) number is unchanged. For example, a Non-published Message Delivery call must route to the terminating trunk group dedicated to this service. Otherwise, if the call routes to another trunk group, the call does not receive this service.

The SN indicates a route change to the switch by sending one of the following:

- RN (routing number) - The switch processes this number through translations and screening to determine the route. The SN indicates the applicability of the RN: called, calling, or third number.
- RI (routing index) - This number specifies an index into new table OAINRTE which points to a route in table OFRT, OFR2, OFR3, or OFR4.

OSSAIN 11 Enhancements (continued)

For further information on table OAINRTE, refer to the datafill procedure section.

The following are notes about alternate routing:

- The SN can send any number of route changes and the last one sent is used.
- If the SN sends an RI and RN during the same operation, neither is accepted and an error message is sent to the SN. The only exception is a Session Initiation Request. If multiple RI and, or, RNs are sent for a connection, the last one processed is used.
- The SN can cancel a route change and leave the route unchanged. The unchanged route is determined by the DN or location routing number (LRN) if applicable.
- Standard routing number checks are performed on RNs and RIs. If either is invalid, an error message is sent to the SN and the route
- The route change is used over the regular DN/LRN derived route, even if the route change leads to treatment.
- The RN is checked by the switch for the proper format using standard DN checks. And, the RI is checked for a valid index into table OAINRTE. If the RN or RI is not correct, the SN is notified and the RN or RI is not used.
- If an RI or RN is invalid and a prior RI or RN was sent, the prior one is used.
- If a connection is established, cancelled, and re-established but the DN remains the same, the RI or RN is retained.
- A call can have up to three connections: called, calling, and alternate (third number) parties. There are no restrictions on RIs or RNs; therefore, any of these connections can have an RI or RN.
- An exception to the above notes is for calls being transferred to a carrier. A called party RI can be added to the call regardless of the presence of a called party DN.

Call processing

The RI or RN (as applicable) is used during regular and then (if indicated) equal access (EA) translations and screening to determine the following:

- directory number (DN) type, local call area (LCA), and EA information
This processing is used only for calling and called DNs, not alternate numbers.
- route to the terminating office

OSSAIN 11 Enhancements (continued)

After translations and screening, the switch outputs the DN or LRN (if the number is ported and the trunk is ISUP), not the RI/RN.

The following table shows the use of the RI or RN (as applicable).

RI/RN use

Call DN type (note 1)	DN type, LCA, and EA information (regular XLA and screening)	Route (regular XLA and screening)	DN type (EA XLA and screening)	Route (EA XLA and screening)	Outputted DN
B (no RI/RN)	DN	DN/LRN	DN	DN	DN/LRN (local) or DN (EA)
B (RI/RN)	DN	RI/RN	DN	RI/RN	DN/LRN (local) or DN (EA)
A/Alt (no RI/RN)	na	DN/LRN	na	DN/LRN	DN/LRN
A/Alt (RI/RN)	na	RI/RN	na	na	DN/LRN
Note 1: A = calling, B = called, Alt = alternate, third party					
Note 2: na = not applicable					

The following are notes about call processing:

- If a route cannot be determined, the call routes to treatment as before this functionality.
- Translations and screening perform digit manipulation on the DN/LRN according to the RN/RI route. Digit manipulation includes digit deletion, appending digits, and marking a call as toll free according to the route.

LOGS

When an RN or RI routes to treatment, new log TOPS132 and existing log TRK138 are generated. These logs indicate the following:

- TOPS132 - This log indicates an alternately routed call with an invalid RN has caused the call to route to treatment.
- TRK138 - This log is generated when a call is sent to treatment after call processing busy. This log is controlled by tables TMTCNTL and TMTMAP.

OSSAIN 11 Enhancements (continued)

QMS CT4Q refinement

For a call that routes through OSSAIN to an operator, the call first routes through the QMS refinement tables to a CT4Q. Then, table CT4QNAMS marks the call for OSSAIN, which uses table OAFUNDEF to select an operator. Without this feature, multiple functions must be datafilled to segregate OSSAIN operator traffic. For example, to segregate OSSAIN operator traffic based on the time of day, a function must be datafilled for each time slot. Also, for SNs involved in the call, the correct function must be selected based on the time of day criteria.

To ease the complexity of the OSSAIN application and reduce the number of functions required, this feature allows CT4Q refinements for OSSAIN calls that are routed to the operator. By providing the CT4Q refinements, the existing QMS capability of segregating operator traffic becomes available for OSSAIN. Using the same 'time of day' example from above, with this feature, instead of datafilling multiple functions for all the time slots needed, one function can be used to funnel the calls to an operator CT4Q that is refined based on the desired time criterion in table CT4QTIME.

This selection is made in table OAFUNDEF with new field QREFINMT set to Y. Then, refinement starts with the OSSAIN operator CT4Q and continues with the the call queue refinement order given in table OAFUNDEF new field CQORDER. The choices are PREOPR, POSTAUTO, RECALL and ASST. These choices map to the existing CT4Q ordering columns in tables TQORDERA and TQORDERB. Refer to the datafill procedure section for further details.

These new fields are consulted when routing an OSSAIN call to the operator as a result of the following:

- Trigger processing
These calls are floated calls that use the OSSAIN trigger to route to a TOPSOPER function.
- SN transfer to an operator
These calls are transferred to the operator (by an OAP Transfer to Control List) by the SN. The control list that routes the call to the TOPSOPER function.
- Disposition routing processing

OSSAIN 11 Enhancements (continued)

These calls failed to reach the SN and the disposition routing datafill routes or points to a TOPSOPER function.

- Initial call presentation using OSSAIN

These calls occur during the initial call setup stage and do not route directly to an operator using an operator CT4Q. Instead, the calls route to an OSSAIN CT4Q that points to a TOPSOPER function.

Other considerations are the following:

- One of the CT4Q refinement tables, CT4QAUTO, refines the CT4Q by the automated service that was received. Table CT4QAUTO allows all of the automated services that TOPS provides to be used as a criterion for queueing. It also allows a NO_AUTO criterion for calls that have not been to any automated services.

When applying the CT4QAUTO refinement for an OSSAIN call, the system considers the automated service criterion as set to NO_AUTO, regardless of whether the call had received any TOPS automated services before OSSAIN.

- The ASST CT4Q refinement ordering is part of the TOPS QMS CASE functionalities. This functionality (OSSAIN 11 Enhancements) is not dependent on TOPS QMS CASE. And, TOPS QMS CASE is not dependent on OSSAIN 11 Enhancements. However, in order to receive CT4Q refinements based on the ASST ordering, the Software Optionality Control (SOC) option, QMS Customer Assistance Service Enhancements (ADVQ0006) must be turned on.

If the call attempts to use the ASST refinement ordering and the ADVQ0006 SOC option is not turned on, the existing OAIN302 log is produced to indicate the SOC problem and the call is routed using the CT4Q from table OAFUNDEF as the final operator CT4Q for the call.

- When applying CT4Q refinements to a TOPSOPER CT4Q for an OSSAIN call, if the result of the refinements leads to an OSSAIN CT4Q instead of an operator CT4Q, the existing OAIN206 log is produced to indicate invalid CT4Q refinement and the call is taken down. This is done to avoid any potential recursive refinement conditions due to incorrect QMS datafill.
- Consider a call that routes through QMS refinements to an OSSAIN CT4Q to reach an operator for initial call presentation. This route takes place during the call setup stage. If this OSSAIN CT4Q leads to a TOPSOPER function with the QREFINMT set to Y, CT4Q refinements are applied a second time to the call.

OSSAIN 11 Enhancements (continued)

LOGS

As mentioned above, the following logs are produced:

- OAIN206 - This log is produced when the result of the TOPS CT4Q refinements leads to an OSSAIN CT4Q.
- OAIN302 - This existing log is produced when the call attempts to use the QMS ASST refinement ordering but the ADVQ0006 SOC option is not turned on.

This log is also produced when a call attempts to use any other OSSAIN functionality that is not SOCd on.

OSSAIN voice connection enhancements

Before this feature, voice link connections between the switch and the service node were made at the request of the service node at any time after data connection. Then, the SN sent an OAP message with the logical voice channel number to request a connection. The switch mapped the logical voice channel to an actual voice circuit datafilled in existing table TRKMEM. The switch and service node require parallel datafill to ensure that both sides connect to the same voice circuit. The operating company and service node vendor are responsible for engineering the number of voice links that are used for a given node. Therefore, this initial OSSAIN voice connection implementation allowed the SN to select the exact voice channel for the call.

However, some applications may prefer the switch to make the voice channel selection. This feature allows the switch to make the voice channel selection and connection without requiring the SN to indicate the exact voice channel. This capability can establish the voice link connection before routing the call to the SN, therefore saving OAP messaging and realtime. This capability can also be used when the SN explicitly requests for the voice link connection when the call is at the SN.

Note: The capability only applies to regular voice links, broadcast voice links are not supported.

These enhancements are enabled by the following table changes, described in detail in the datafill procedure section:

- Table OAFUNDEF new field CONVOICE enables automatic voice link selection for the given function. Also, new field DISPROUT indicates disposition routing for a failed connection.
- New table SNVLGRP identifies the voice link group for the given node and function. The switch uses the most idle selection sequence for selecting a voice link member from the group.

OSSAIN 11 Enhancements (continued)

This capability can be used for a new SN session between the switch and SN. For example:

- a subscriber origination to a SN
- a call triggers back to the SN
- a passive SN is brought into the call
- the SN initiates a session with the switch
- a SN transfers a call to another SN
- a session is recalled to a SN
- an OSSAIN preprocessing session with the SN

For details on the above call scenarios, refer to the *TOPS OSSAIN User Guide*, 297-8403-901.

For details on the OAP changes, refer to the OAP specification.

OSAC interactions

These enhancements are supported in the stand-alone and OSAC environments. In the OSAC environment, the centralized SN node voice link connection and maintenance is done at the OSAC host. For OSAC calls, the switch uses tables OAFUNDEF and SNVLGRP at the OSAC host for the new connection capability. For a failed connection with disposition routing enabled in table OAFUNDEF at the OSAC host, table OAFNDISP at the OSAC remote is consulted and disposition routing is performed at the OSAC remote.

Voice link maintenance

OSSAIN voice trunks use a very simple maintenance strategy. In order to use a given voice trunk, both the switch and the service node must be on hook at that facility. If the service node goes off hook towards the switch, the trunk is shown on the MAP display as being in the RMB state.. Trunks in this state are not used by the switch for call processing.

When both the switch and the service node are on hook on the voice trunk facility, the trunk can be selected for call processing. Once the service node has received a positive acknowledgment to its voice connection request, it can proceed to use that facility immediately. Since OSSAIN voice trunks do not use standard supervision and signaling, the switch does not seize the trunk group facility nor does the switch expect a wink response from the node.

Other considerations

The switch and service node must have parallel datafill to ensure that both sides connect to the same voice circuit. The operating company and service

OSSAIN 11 Enhancements (continued)

node vendor are responsible for engineering the number of voice links that are used for a given node.

For SN applications, functions that require a voice link connection on every call, it is recommended that the number of voice links available for the function is equivalent to the maximum number of SN sessions serving that function.

LOGS

The following new logs are created:

- OAIN208: Bad SNVLGRP datafill.

This log is generated when the switch cannot make the voice link connection because the required voice link information is not datafilled in table SNVLGRP. This log may be produced in either the stand-alone or OSAC host switch.

- OAIN625 - Voice Trunk Busy.

This log is generated when the switch makes the voice link selection but cannot connect to a voice channel because all circuits are busy.

E800 or 800+

This section describes the E800/800+ change and background information, which includes the processing steps in an 800 call, available 800 features, and which features are supported by TOPS/OSSAIN.

E800/800+ change

When an 800 query returns a routing number for an E800 or 800+ call, translations can route this call to TOPS/OSSAIN without accessing a loop around trunk. This is a new path for E800/800+ calls to enter TOPS/OSSAIN.

For these E800/800+ calls that enter TOPS/OSSAIN, there may be some AMA related extension blocks attached to the call from the previous phase of the call. TOPS AMA software currently does not process these extension blocks. Any AMA related extension blocks attached to the E800/800+ call are removed before entering TOPS/OSSAIN. Any AMA information recorded on these extension blocks is not reflected in the AMA record for the call. Examples of such extension blocks include, but not limited to, are: Local Number Portability (LNP), Advance Intelligent Network (AIN) and 800 query. For these calls, the AMA record that contains the 800 information is not produced (that is, AMA record with Structure Code 364/365 and Call Code 142).

800 background: call processing steps

These background sections describe TOPS/OSSAIN support for incoming 800 calls to a TOPS switch, where an OSSAIN Service Node provides a service

OSSAIN 11 Enhancements (continued)

before completing the 800 call. To help illustrate the OSSAIN interaction taking place, start with the basic steps in a toll free call without OSSAIN interaction:

1. A subscriber dials a toll free number and the call is routed to a Service Switching Point (SSP) that is connected to a toll free Service Control Point (SCP).
2. The SSP initiates a toll free query to the SCP, sending the dialed 800 number in the query to the SCP.
3. The SCP responds to the SSP with a routing number that the SSP can use to complete the call.
4. The SSP completes the toll free call to the routing number returned by the SCP.

Rather than completing the call in step 4, the SSP can route the call to TOPS software using the routing number returned by the SCP. For illustration purposes, assume that DMS datafill indicates OSSAIN processing by a service node. Step 4 above is then replaced with the following steps:

1. The SSP routes the call to TOPS software using the routing number returned by the SCP.
2. TOPS software determines that an OSSAIN service node is required to service the call and the call is presented to an SN.
3. The service node instructs the TOPS switch on providing the service. The service actions may include changing the routing number returned by the SCP.
4. The service node instructs the TOPS switch to complete the call.

800 background: NORTEL 800 products

NORTEL (Northern Telecom) has two products for providing 800 service in North America. Enhanced 800 (also known as E800) is the U.S. variant of the 800 service. 800+ is the Canadian variant of the 800 service. Each of these products is discussed in this section and the feature set for each is described. Later sections identify the TOPS support for each of the 800 features.

Enhanced 800: The Enhanced 800 product provides toll-free number service in the U.S.. Toll-free calls are identified by the first three digits of the dialed number during translations. Once a call is identified as toll-free, an SCP query can be launched for the call to obtain the 10 digit routing number. The call can then be completed and charged to the routing number.

OSSAIN 11 Enhancements (continued)

The Enhanced 800 product has many optional features. These optional features are activated by table NSCDEFS in some cases or by explicit request from the SCP in other cases:

- **Ten Digit Routing** - Under normal circumstances, if the numbering plan area (NPA) of the routing number that is returned by the SCP is the same as the NPA of the caller, then the NPA is removed from the routing number before retranslation. Under some circumstances, it is desirable to retranslate the full ten digit routing number. This is accomplished by adding the ten digit routing option to the E800 tuple in table NSCDEFS.
- **Comfort Tones** - Comfort tones are generated to indicate to the calling party that call processing is being carried out. They are used especially with MF signalling. For MF calls, call set-up may take a few seconds. To prevent the subscriber going on-hook and re-dialing, tones are generated to indicate call processing is taking place. Comfort tones are only applicable for toll free calls terminating on an MF trunk. The comfort tone option is set in table NSCDEFS.
- **Call Forward** - The Call Forward functionality allows call forwarding to a toll-free number. The call originator pays for the call from the originating DN to the call-forwarding point. The E800 subscriber pays for the leg of the call from the call forwarding point to the terminating toll-free DN.
- **Four-digit Carrier Identification Codes** - In the U.S., the increasing number of independent carriers has caused NORTEL to expand its Carrier Identification Codes (CICs) to include 4-digit CICs as well as 3-digit CICs. An SCP response for an 800 query may optionally contain a CIC. The E800 product has an option in table NSCDEFS that allows the toll-free service to process 4-digit CICs from the SCP.
- **Automatic Call Gapping** - Automatic Call Gapping (ACG) provides a form of network management. An SSP may have to reduce the number of queries sent to the SCP at the request of the SCP. The request from the SCP comes in the form of an ACG component appended to a response message. The ACG component is sent from an SCP number services application when the application is overloaded, detects mass calling to a number services destination, or receives a manual control initiation from a Service Management System (SMS).
- **International 800** - The International 800 functionality allows toll-free calls that are dialed in North America to terminate on Freephone access lines in countries outside North America.
- **Northbound** - The Northbound functionality allows 800 calls that originate from the continental U.S. (including Alaska and Hawaii) to terminate on a subscriber's line in Canada. This is done in cases where a toll-free call originates in the U.S., but the SCP query must be launched from a Canadian SSP because the U.S. SSPs do not have access to the required

OSSAIN 11 Enhancements (continued)

SCP. Therefore, the toll-free call still looks like a toll free call after it has crossed the border (that is, the routing number is still unknown until AFTER the call reaches the Canadian SSP).

800 calls that originate in the U.S. and terminate in Canada must cross the border using a cross-border link. In 1991, cross-border links were upgraded from MF Intertoll to ISUP signalling. One problem with this conversion was the U.S. side had ISUP trunks that used a modified version of Bellcore TR317 (also known as TR317MOD), while Telecom Canada used the original TR317 ISUP protocol. The TR317MOD ISUP trunks support all parameters normally supported by TR317 trunks, plus they support the Charge Number (CHG) parameter and the Originating Line ID (OLI) parameter. AT&T uses the CHG parameter to provide originating number information (that is, database queries) and for billing purposes. Telecom Canada uses the Calling Party Number (CPN) for these purposes, since the TR317 protocol does not allow for the CHG and OLI parameters.

In order to terminate a U.S. originated 800 call in Canada, the CHG parameter must be converted to a CPN parameter. This conversion functionality is referred to as Northbound.

- Termination Notification - Termination Notification (TN) supplies the SCP with information from the SSP about how and when an E800 call ended. If the SCP needs this information for a given call, the SCP sends a Send_Notification component in the response message to the SCP, which contains the following:
 - information about the call that has ended
 - an indication if the ACG control list has overflowed

800+: The 800+ product provides toll-free number service in Canada. Toll-free calls are identified by the first three digits of the dialled number during translations. Once a call is identified as toll-free, an SCP query can be launched for the call to obtain the 10 digit routing number. The call can then be completed and charged to the routing number.

The 800+ product has feature capabilities as follows:

- Automatic Call Gapping - The same as for Enhanced 800.
- International 800 - The same as for Enhanced 800.
- Southbound - Southbound is the reverse of the Northbound feature discussed with the E800 product. It provides the conversion of the CPN parameter to a CHG parameter for toll-free calls originating in Canada and terminating in the U.S. As with Northbound, Southbound exists so that certain toll-free calls can be queried from an SSP that has access to the required SCP.

OSSAIN 11 Enhancements (continued)

- **Call Prompter** - The Call Prompter functionality lets toll-free callers select specific answering locations, using interactive prompts. Callers respond to prompts using the touch-tone buttons on their telephones. This functionality only works with ISUP connectivity.
- **Courtesy Response** - The Courtesy Response functionality plays a voice announcement to toll-free number callers. The Enhanced Courtesy Response functionality can play a voice announcement and receive voice messages from callers.
- **Call Forward** - The Call Forward functionality allows call forwarding to a toll-free number. The call originator pays for the call from the originating DN to the call forwarding point. The 800+ subscriber pays for the leg of the call from the call forwarding point to the terminating toll-free DN.
- **Overflow Call Routing** - The Overflow Call Routing (OCR) functionality specifies alternate terminating DNs for a toll-free number. 800+ subscribers can select to divert calls when the primary toll-free number is busy, no outgoing trunks are available, or if the terminating party does not answer within a specified period of time. This functionality increases the completion rate for toll-free calls, providing the subscriber with more effective service.

With OCR, the SCP can return 1 to 4 terminating DNs. The SSP tries each one in turn until it finds one that is idle and is answered within the timeout period.

800 background: TOPS/OSSAIN support for 800 products

This section describes the TOPS/OSSAIN support for each of the toll free features described in the previous section. Throughout this section, it is assumed that the call flow described at the beginning of the 800 background sections is being used. Toll free feature interactions are slightly different for calls tandeming through the TOPS switch and those interactions are beyond the scope of this document.

Enhanced 800 features: TOPS/OSSAIN supports the following E800 features:

- **Ten Digit Routing** - The NPA of the routing number may have been stripped off by the SSP that initiated the toll free query, depending on datafill in table NSCDEFS. TOPS/OSSAIN supports the reception of either 7 or 10 digit routing numbers and TOPS/OSSAIN can complete calls to either 7 or 10 digit destinations. Also note that an OSSAIN service node can overwrite the routing number with a new number if required by the service.
- **Comfort Tones** - Comfort Tones do not apply to toll free calls being routed to the TOPS switch, since the destination in that case is not an MF trunk.

OSSAIN 11 Enhancements (continued)

Once the call has received service node processing, Comfort Tones are not supported, regardless of whether the outgoing trunk is MF or not.

- Call Forwarding - Call Forwarding could have occurred in a toll free call before the call arrives at the TOPS switch. Once the call is presented to a service node for processing, the concept of toll free call forwarding is no longer applicable.
- 4-Digit CIC Codes - A 4-Digit CIC code could be returned by the SCP and used to route the call to the TOPS switch. In this case, the CIC is not available to the TOPS software and it is not sent to the OSSAIN service node. However, the OSSAIN service node can choose to set a 3 or 4 digit CIC code for completing the call if it is required by the service.
- Automatic Call Gapping - ACG would occur at the SSP that initiated the toll free query and it is supported for toll free calls with TOPS/OSSAIN interaction.
- International 800 - If the SCP returns an international number, it can be used to route the call to the TOPS switch. TOPS/OSSAIN can complete the call to the international number after the call receives processing from a service node.
- Northbound - The Northbound ISUP parameter conversion required for toll free calls terminating in Canada would occur at the SSP before the call is routed to the TOPS switch. In the rare event that TOPS software is performing the SCP query, Northbound ISUP parameter conversion does not take place. If Northbound is required, care should be taken to ensure that the SCP query is launched by an SSP with Northbound functionality.
- Termination Notification - The TOPS switch does not support notification of the SCP when a toll free call is ended.

800+ features: TOPS/OSSAIN supports the 800+ features as follows:

- Automatic Call Gapping - The same as for Enhanced 800.
- International 800 - The same as for Enhanced 800.
- Southbound - The Southbound ISUP parameter conversion required for toll free calls terminating in the U.S. would occur at the SSP before the call is routed to the TOPS switch. In the rare event that TOPS software is performing the SCP query, Southbound ISUP parameter conversion does not take place. If Southbound is required, care should be taken to ensure that the SCP query is launched by an SSP with Southbound functionality.
- Call Prompter - The TOPS switch does not support the call prompter functionality.
- Courtesy Response - The TOPS switch does not support the courtesy response functionality.

OSSAIN 11 Enhancements (continued)

- Call Forwarding - Call Forwarding could have occurred in a toll free call before the call arrives at TOPS. Once the call has been presented to a service node for processing, the concept of toll free call forwarding is no longer applicable.
- Overflow Call Routing - OCR is not supported for toll free calls that require TOPS/OSSAIN interaction. Although OCR can occur in the SSP prior to the call being routed to TOPS, it is difficult to envision a toll free service that would only want to route calls to TOPS after first trying other non-TOPS destinations. Once a routing number is encountered that routes the call to TOPS, OCR is no longer applicable to the call because TOPS is considered to be a successful destination with respect to OCR. TOPS/OSSAIN does not support OCR for the call termination initiated by the OSSAIN service node.

800 AMA: Without TOPS/OSSAIN interaction, an SCP response is received for an 800 query and the SCP data is saved for later inclusion in an 800 AMA record. This record contains the dialed number, the routing number returned from the SCP, and the calling number. If any 800 features are used by the caller, feature activation AMA records are generated for the call.

TOPS/OSSAIN does not support the generation of any 800 specific AMA records. However, normal TOPS billing records are generated for the call. The AMA records generated for 800-to-TOPS calls contains both the routing number and calling number, among other data. For a description of AMA records generated for TOPS calls, please refer to NTP *Bellcore Format Automatic Message Accounting*, 297-1001-830

If the dialed number is required in AMA, OSSAIN service nodes can produce Custom AMA records at the TOPS switch for inclusion with the AMA for the call. The Custom AMA records are essentially blank AMA modules whose format can vary depending on the service. The content of the Custom AMA modules must be coordinated between the OSSAIN service node and the downstream AMA processing. DMS TOPS software does not read or modify these modules in any way, they are simply appended to the normal AMA for the call and sent to downstream processing.

Four party conference

This capability allows connection of up to 4 parties to an OSSAIN conference simultaneously when no SN voice link is connected to the conference. Without this capability, up to 3 parties and 1 SN voice link can be connected. There is no change to the limit of one SN voice link for a conference.

No datafill is required for this capability.

OSSAIN 11 Enhancements (continued)

Send switch ID to OPP

The OSSAIN switch identifier is sent to TOPS open position protocol (OPP) compatible positions which may be providing operator back-up services for the SNs in an OSAC network. This information allows the position to provide call handling or branding information based on the unique switch ID.

The OSSAIN switch ID corresponds to the service node ID in table OANODINV with ONPMTYPE = OSAC and RELATION = SELF. For a switch in the OSSAIN standalone configuration, if the OSAC switch ID is not datafilled, the nil switch-id (#FFFF) is used.

Refer to the OPP Protocol Specification for details.

No datafill is required for this capability.

This capability is not controlled by SOC.

Variable number of digits sent by SN

Before this feature, a service node sent domestic North American called and calling numbers to the DMS switch in a 10 digit format only. With this feature, the SN can send a variable length format of 0 to 10 digits.

This change permits the service node to send directory numbers in the local seven digit format and service code format (for example, 411, 511), and so forth. Translations are now performed regardless of directory number lengths. For a 7 digit directory number, the local NPA is assumed. The service node also must screen operator access codes before they are sent to the switch in the directory number request as stated in the OAP specification.

Local number portability (LNP) queries can be launched on 7 or 10 digit Directory Numbers from the Service Node according to the TOPS LNP functionality, OSEA0008. Directory Numbers that are not 7 or 10 digits receive no LNP processing.

OSSAIN continues to require 10 digit billing numbers with collect and third party calls. For collect calls, the 10 digit called directory number and the 10 digit billing number must match. For collect call to a 7 digit number, the billing number must be 10 digits, if not, billing is not accepted. The 7 digit billing number is not expanded. Calls sent from the service node in this format can also be sent to an operator.

AMA

For messages with up to 7 digits, the digits are placed into either the ORIG or TERM NUMBER fields of the AMA record. And, a number is derived for the

OSSAIN 11 Enhancements (continued)

TERM and ORIG NPA fields. For greater than 7 digits, the digits overflow into the NPA fields, replacing any derived NPA numbers.

No datafill is required for this feature.

Connect to treatment

Before this feature, the SN routed a call to a treatment or tone with the requests as follows:

- route to treatment - The call is routed to the tone or announcement specified in the message and then the SN is automatically released
- connect DN - The switch translates on the call, routes the call to a treatment or tone, and automatically releases the SN. This method requires parallel datafill between the switch and SN related to directory numbers and associated treatments.

The above methods release the SN. However, the SN can keep control of the call by sending B party DN and connect DN requests. Therefore, the SN had control of the call after the treatment.

With this feature, new request Connect to Treatment allows the SN to keep control of the call. This method saves switch resources and time. This method can connect either the calling or called party, which must be present. Also, a 3-way conference can be connected to treatment.

No datafill is required for this feature.

Outpulse to a called number

Before this feature, if a switch request for a session with a SN failed, table OAFNDISP provided dispositions as follows:

- route to function
- route to control list
- route to treatment

With this feature, when an SN session request fails, the switch can route to the called number. This ability only applies to calls that have not received processing from an SN. Therefore, only calls in initial setup are allowed. This state is when a call has passed through CT4Q refinement and reached a final CT4Q that is marked for OSSAIN in table CT4QNAMS. After that, during triggering and transfers, calls may have received SN processing.

Note: If translations or outpulsing fail on the called number, a default treatment is applied.

OSSAIN 11 Enhancements (continued)

This capability is provided by changes to table OAFNDISP. Refer to the datafill procedure section for details.

Refloat call

Before this feature, the following problems were present:

- If a switch request for a session with a SN failed, table OAFNDISP provided disposition routing. When the session request was due to a trigger, the trigger could not be ignored. Therefore, the call could not continue.
- If a trigger sent a call to an operator but they were not available due to deflection or overflow, the call was sent to treatment. The call could not continue.

With this feature, the trigger tables are changed to allow refloat on failure. Refer to the datafill procedure section for details. The changed trigger tables are OACNNPRF, OATLKPRF, OADTFPRF, and OACAUPRF.

Logs and OMs

New log OAIN209 indicates an outpulse disposition routing failure.

New OM OAPCALP8 indicates a connect to treatment request.

DRAIN change

This feature provides changes for CI increment DRAIN command tool as follows:

- prevent queuing during DRAIN
- move to MANB when done DRAINing

Prevent queuing during DRAIN

The DRAIN command at the MAP display is used to stop routing new calls to a specified session pool. Calls that are in progress and using one of the session pool's sessions when the DRAIN command is issued are allowed to complete normally. Before this feature, new calls destined for a DRAINED session pool were queued in the DMS switch (provided the call queue for the service was datafilled to allow queuing in the first place). This feature changes the DRAIN functionality so that those new calls receive disposition routing as indicated in table OAFNDISP, rather than having those calls queued. Disposition routing starts immediately after the DRAIN command is issued.

Move to MANB when done DRAINing

Before this feature, a DRAINED session pool remained in the INSV state both during and after the DRAIN command. The BSY command was required at the MAP display before the session pool could be brought back into service. If the

OSSAIN 11 Enhancements (continued)

DRAIN was in progress (that is, some sessions in the pool were finishing up with their last call), the manual BSY action caused a warning message to be displayed that indicated the number of active calls still using sessions in the pool. Therefore, repeat tries of BSY and waiting were required until all calls had finished. This feature enhances OSSAIN to automatically transition from the INSV to MANB states when all sessions in the session pool are finished with call processing. Once the session pool is in the MANB state, manual action is still required to bring the session pool back into service.

STAR and OCTO detection

At call float the service node, operator, or automated system releases from the call to establish a connection between the parties in a call. Trigger processing enables a call to be brought back to a service node or operator when a datafillable trigger event occurs. For calls in the talking state, table OATLKPRF fields STAR and OCTO enable detection of a * or # digit (respectively) by the calling or called party. Before this feature, only the calling party could key the digits.

Table OAINPARAM parameter STR_PARTY selects either the calling or called party for detection of a * or # digit, as enabled in table OATLKPRF.

STR cards are required in the DTC of the originating or terminating party in order to detect a * or # digit keyed by the respective party.

SOC

This functionality is controlled by software optionality code (SOC) OSAN0006. When, this SOC is idle, tables can be datafilled, but the SOC must be ON to use this functionality.

The following are additional notes:

- Automatic host to service node voice link connection. If the SOC is idle and the SN attempts to use this capability, an OAP error response message is returned to the SN. For an OSAC environment, this SOC must also be on in the OSAC remote.
- Four party conference: If the SOC is idle and the SN attempts to connect a forth party, an OAP error response message is returned to the SN.
- An exception to the above is that the OSSAIN switch ID for OPP capability is not controlled by SOC.

OSSAIN 11 Enhancements (continued)

Translations table flow

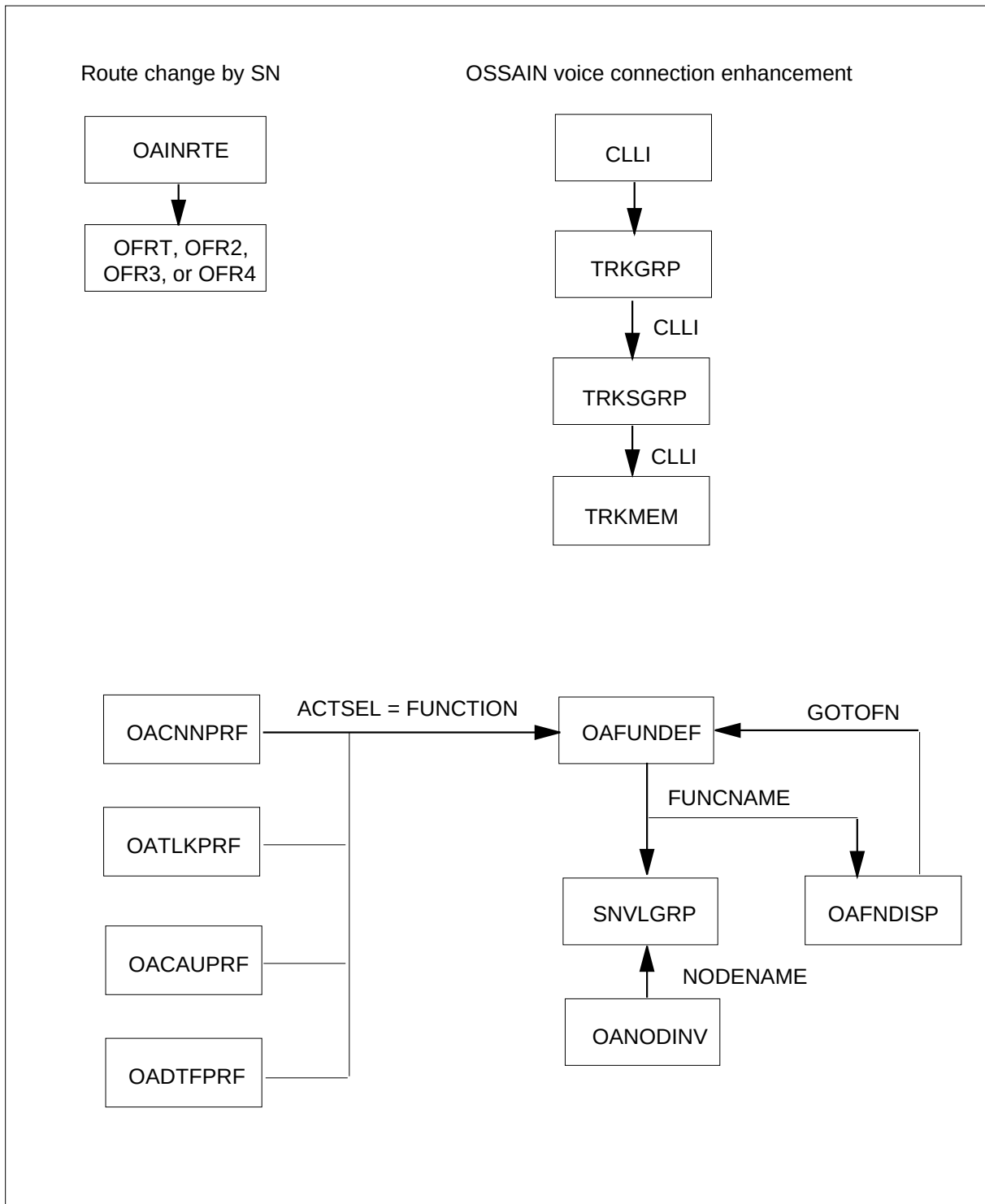
The OSSAIN 11 Enhancements translations tables are described in the following list:

- Table OAINRTE maps an index, specified by a service node to a route in an office route table.
- Tables OFRT, OFR2, OFR3, and OFR4 define a routes.
- Table OANODINV defines OSSAIN nodes.
- Table CLLI defines service node and host-remote voice links.
- Table TRKGRP defines service node and host-remote voice links.
- Table TRKSGRP defines service node and host-remote voice links.
- Table TRKMEM defines service node and host-remote voice links.
- Table OAFUNDEF defines the service and service provider.
- Table SNVLGRP defines a voice link according to the service node and service function.
- Table OACNNPRF selects services by types of events during call connect.
- Table OATLKPRF selects services by types of events during the talking portion of a call.
- Table OADTFPRF selects services by DTMF digits.
- Table OACAUPRF selects services by ISUP class and cause codes.
- Table OAFNDISP determines handling of call deflection or overflow, blocked functions, or failure to send a session begin.

The OSSAIN 11 Enhancements translation process is shown in the flowchart that follows.

OSSAIN 11 Enhancements (continued)

Table flow for OSSAIN 11 Enhancements



OSSAIN 11 Enhancements (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for OSSAIN 11 Enhancements

Datafill table	Example data
OAINRTE	2 OFRT 200
OFRT	200 (S D TERM102T) (S D T120) \$
OANODINV	SN_A OSNM 1 UDP IPV4 47 245 1 34 7000 Y 2 20 240 60 SN 4 BB 3 RTP_1 CARD_01
CLLI	VL_1 300 20 VOICE_LINK_1
TRKGRP	VL_1 TOPSVL 31 NPDGP NCRT MIDL OG
TRKSGRP	VL_1 0 DS1SIG STD OG NP IM 0 0 NO NO N N Y 70
TRKMEM	VL_1 1 0 DCM 0 0 22
OAFUNDEF	0 CLG_CARD SN TASERV N N Y CQ0 Y Y
SNVLGRP	SN_A CLG_CARD VL_1
OACNNPRF	4 (NOANS Y FUNCTION ROUTE_NODE) \$ Y 8 Y 3
OATLKPRF	2 (FLASH N N N Y FUNCTION CLG_CARD) (NTFY Y N N N FUNCTION NEW_ACTS) \$ N N Y
OADTFPRF	8 (0 N N FUNCTION TOLL_OPR) (STAR N N FUNCTION MDS_NODE) \$ Y
OACAUPRF	3 (NORM 17 FUNCTION MDS_NODE) \$
OAFNDISP	YELLOW_PAGES TREAT VACT GOTOFN YELPGS_OPER GOTOCTL CTLLIST3 TREAT VACT

Limitations and restrictions

The following paragraphs describe the limitations and restrictions of OSSAIN 11 Enhancements.

Alternate routing by SN

Automated systems (for example, ACTS) are not changed to support alternate routing. Alternate routing information is removed upon transfer to these systems.

Alternate routing information is removed upon transfer to operators.

OSSAIN 11 Enhancements (continued)

Table OAINRTE only supports 2046 tuples. Thus, a maximum of 2046 alternate routing indices can be sent by the service node.

Only the OFRx tables (OFRT, OFR2, OFR3, and OFR4) are supported by table OAINRTE. IBN tables (and therefore IBN trunks) are not supported.

Call rating is not affected. If a called RN has a different rate center than the called DN, the DN rate is used.

There are no checks in the OFRx tables to verify that references to tuples in OAINRTE are deleted or changed before OFRx tuples are deleted. If only an OFRx tuple is deleted, then if an RI points to the deleted tuple, an error message is sent to the source of the RI or SN.

Universal translations are not supported. Therefore, route changes are limited to North American offices.

QMS CT4Q refinement

When applying CT4Q refinements to a TOPSOPER CT4Q for an OSSAIN call, if the result of the refinements leads to an OSSAIN CT4Q instead of an operator CT4Q, the existing OAIN206 log is produced to indicate invalid CT4Q refinement and the call is taken down. This is done to avoid any potential recursive refinement conditions due to incorrect QMS datafill.

The ASST CT4Q refinement ordering is part of the TOPS QMS CASE functionality. In order to receive CT4Q refinements based on the ASST ordering, the SOC option, QMS Customer Assistance Service Enhancements (ADVQ0006) must be turned on. If the call attempts to use the ASST refinement ordering and the ADVQ0006 SOC option is not turned on, the existing OAIN302 log is produced to indicate the SOC problem and the call is routed using the CT4Q from table OAFUNDEF as the final operator CT4Q for the call.

OSSAIN voice connection enhancements

The capability for the switch to select the voice link only applies to regular voice links, broadcast voice links are not supported.

Variable number of digits sent by SN

When a Service Node is sending variable length format numbers to the switch, it is required to perform screening on operator access codes if they are dialed by the subscriber as stated in the OAP specification.

Preprocessing calls are not affected by this feature, as they do not receive disposition routing.

OSSAIN 11 Enhancements (continued)

If a TOPS operator cannot be obtained as a result of a trigger during the connecting phase of the call (that is, prior to answer), the call is not eligible for the refloat capability provided by this feature. This restriction is enforced because the called party is always disconnected when triggering to an operator during the connecting phase of the call.

Billing numbers sent in OAP are still required to be 10 digits in length. The variable length DN enhancements added by this activity do not apply to billing numbers.

STR supervision

When applying STR supervision to a party using an ISUP trunk, the STR card in the DTC listens in on both sides of the conversation. This action results in either party being able to key the STR digit trigger. The DMS switch receives the digit from the party that was supervised to report the digit and this is how the trigger is reported to the service node. For MF trunks this limitation does not exist since the STR supervision is explicit as it listens in on only one port of the connection. With MF trunks the party supervised is the only party able to key the STR digit trigger.

Interactions

The following paragraphs describe the interactions between OSSAIN 11 Enhancements and other functionalities.

Alternate routing by SN

As this feature involves the translations, screening, and routing of calls through TOPS switches, it has interactions with most of the other translations and screening features.

Open numbering (global) interactions

This feature is designed to work only in North American (NA) markets. Universal Translations and Open Numbering are not supported. This feature does not affect translations in non-NA environments. The SOC for this feature shows up in non-NA markets (as it affects more than just OSSAIN alternate routing) and table OAINRTE is datafillable; however, RNs and RIs cannot be sent in by the SN.

Advanced translation scheme

This feature does not have any adverse affects on the new advanced translation scheme (The "XLAGRP" Translation Scheme) introduced in TOP09 feature AF7159. Routing indices override the route obtained from table TOPSDP. Routing numbers are processed by the new translations scheme just as are DNs and LRNs.

OSSAIN 11 Enhancements (continued)

Equal Access

For a carrier (or EA) call, standard translations are run first on the DN and then the RN (if present). Note, since LNP does not apply to EA calls, an LRN cannot be associated with this DN. The called DN is used for Local Access and Transport Area (LATA) screening which determines if the call is inter or intra-LATA. The calling party information determines the carrier (unless the SN overrides the carrier with another). The RN is used for EA screening to determine the EA route. Therefore, it is impossible for the RN to affect the EA status of the call or the carrier assignment. If an RI is present on the B-party connection, the RI route is taken regardless of the call's EA status or carrier. However, the carrier assignment and EA status of the call remain unchanged. When routing a call, an SN is aware if a call is a carrier call and the carrier name. If an SN does not use the RN or RI, the SN clears the RN/RI and runs translations again on the DN, resulting in a new route.

Local Number Portability (LNP)

On a North American switch with the LNP SOC on, a DN (calling, called, or 3rd/Alt) can be ported. LNP queries are done on all numbers regardless of the alternate routing status if query requirements are met. The LRN(s), if obtained, are placed in the LNP AMA record module codes (719 and 720) and signalled out on ANSI ISUP (SS7) calls as before this functionality.

If a called number is ported, translations are run first on the DN. The called number type remains unchanged from initial translations on the DN. If an RI route is present, it replaces the LRN route. If the ported call routes to treatment, normal logs on the DN and, or LRN are generated. If an RN routes the call to treatment, an additional log listing the RN is generated.

For called connections, SNs determine the LNP status (and the LRN if it exists) before releasing a call. (On A and 3rd/Alt connections, the SN must specifically request the LNP information.) If the SN removes or modifies the alternate routing according to the LNP status of the call, the SN can send another RN/RI. Then, all translations (DN, LRN, [RN]) are run again using the new alternate routing information.

Automated systems (AABS, MCCS, and so forth)

The new alternate routing information (either an RN or an OAINRTE index) are not kept upon transfer to an automated system. An SN should not transfer the call to an automated service if alternate routing is needed for a service.

Operator support

The new alternate routing information (either an RN or RI) is not kept upon transfer to operators. If a SN transfers the call to an operator, all alternate routing information is lost. If the routing information is needed for the service, the operator should transfer the call back to the SN.

OSSAIN 11 Enhancements (continued)

Local Call Area (LCA) screening

Local Call Area LCA Screening (LCAS) is done on called DN's to determine if they are local calls (to the calling DN). If LCAS determines the call to be local, then toll charge may not apply. LCA screening is performed on the DN's regardless of whether alternate routing is present.

QMS CT4Q refinement

In order to receive CT4Q refinements based on the ASST ordering, the SOC option, QMS Customer Assistance Service Enhancements (ADVQ0006) must be turned on.

For calls that route through OSSAIN CT4Q to reach the operator for the initial call presentation, the switch must go through QMS CT4Q refinements to reach the OSSAIN CT4Q during the call setup stage. If this OSSAIN CT4Q leads to a TOPSOPER function that has the QREFINMT set to Y, CT4Q refinements are applied a second time for the calls.

OSSAIN voice connection enhancements

The automatic voice link connection capability is supported in the OSSAIN simultaneous interactions environment. When the switch requests a passive SN, the switch may automatically connect a voice link for the passive SN. If the voice link connection attempt fails and new field DISPROUT = N, the passive SN is brought into the call. If the DISPROUT = Y, the passive SN is NOT brought into the call. OSSAIN disposition routing does not apply in this situation and is not performed for the call.

The automatic voice link connection capability is supported for OSSAIN preprocessing calls. If the voice link connection attempt fails and DISPROUT = N, the call is routed to the SN. If the DISPROUT = Y, the call continues to the TOPS environment. OSSAIN disposition routing does not apply for OSSAIN preprocessing sessions and is not performed for the call.

The automatic voice link connection capability is supported for SN initiated calls and calls that recall to the SN. OSSAIN disposition routing does not apply in these call scenarios. If the voice link connection attempt fails, field DISPROUT is not checked and the call remains at the SN.

The automatic voice link connection capability is supported for an OSSAIN call that triggers to the SN. However, this capability does not apply to trigger events where the SN is merely informed of the trigger events but does not acquire control of the call (that is, SNCONTRL is set to N in the trigger profile).

For information on simultaneous interactions and OSSAIN triggers, refer to functionality OSSAIN 07 Enhancements, OSAN0003 in this manual. For

OSSAIN 11 Enhancements (continued)

information on broadcast voice links, refer to functionality OSSAIN 09 Enhancements, OSAN0004. Simultaneous interactions was released in TOPS07 and triggers in TOPS06.

Variable number of digits sent by SN

LNP queries can be launched on 7 or 10 digit Directory Numbers from the Service Node according to the criteria in the TOPS LNP functionality, OSEA0008. Directory Numbers that are not 7 or 10 digits receive no LNP processing.

Activation/deactivation by the end user

OSSAIN 11 Enhancements requires no activation or deactivation by the end user.

Billing

Alternate routing by SN

No specific automatic message accounting (AMA) module is created for alternate routing information. The SN can supply this alternate routing information (either RN or RI) by generating custom AMA module code 186 or 187.

Also, AMA module Code 104 shows the outgoing trunk according to an RN or RI route. This alternate route trunk appears in the Trunk Member ID and Trunk Group ID.

There are no changes to the LNP AMA module. However, the LRN in the module is not be used in routing if an RN or RI is used. But, if neither an RN nor RI is used, an LNP AMA module does not indicate if an LRN was used in routing.

E800/800+ change

All AMA related extension blocks attached to an E800/800+ call are removed before entering TOPS, OSSAIN environment. Any AMA information recorded on these extension blocks is not be reflected in the AMA record for the call. Example of such extension blocks include, but not limited to are: LNP, AIN and 800 queries.

Variable number of digits sent by SN

For messages with up to 7 digits, the digits are placed into either the ORIG or TERM NUMBER fields of the AMA record. And, a number is derived for the TERM and ORIG NPA fields. For greater than 7 digits, the digits overflow into the NPA fields, replacing any derived NPA numbers.

OSSAIN 11 Enhancements (continued)

Outpulse to a called number

All calls completed by the DIRECTDN option in table OAFNDISP are billed as toll free, regardless of whether the called number was signaled to the TOPS switch or obtained through datafill in table OAFNDISP. Downstream AMA can identify these records by the network service ID contained in module 185. The network service ID is obtained from datafill against the OSSAIN control list in table OACTLDEF.

Station Message Detail Recording

OSSAIN 11 Enhancements does not affect Station Message Detail Recording.

Datafilling office parameters

OSSAIN 11 Enhancements does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement OSSAIN 11 Enhancements. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for OSSAIN 11 Enhancements (Sheet 1 of 2)

Table	Purpose of table
OFRT, OFR2, OFR3, or OFR4	Office route tables define a routes.
OAINRTE	Operator Services System Advanced Intelligent Network (OSSAIN) Route points to a route in table OFRT, OFRT2, OFRT3, or OFRT4.
OANODINV	OSSAIN Node Inventory defines OSSAIN nodes.
CLLI	Common Language Location Identifier names voice links to service nodes.
TRKGRP	Trunk group defines service node voice links.
TRKSGRP	Trunk subgroup defines service node voice links.
TRKMEM	Trunk Member defines service node voice links.
OAFUNDEF	OSSAIN Function Definition indicates the service and service provider.
SNVLGRP	OSSAIN Service Node Voice Link Group defines a voice link according to the service node and service function. This table is used by the switch to select a voice link for an SN.
OAVLMAP	OSSAIN Voice Link Map associates the logical voice channel number to an actual voice link in a voice link group.

OSSAIN 11 Enhancements (continued)**Datafill tables required for OSSAIN 11 Enhancements (Sheet 2 of 2)**

Table	Purpose of table
OSCVLGRP	OSSAIN Centralization Voice Link Group identifies voice link groups that connect between an OSAC host and OSAC remote.
OAFNDISP	OSSAIN Function Definition for treatment of call deflection or overflow, blocking, or failure to send a session begin message.
OADTFPRF	OSSAIN DTMF Profile selects services by DTMF digits.
OACAUPRF	OSSAIN Cause Profile selects services by ISUP class and cause codes.
OATLKPRF	OSSAIN Talking Profile selects services by types of events during the talking portion of a call.
OACNNPRF	OSSAIN Connecting Profile selects services by types of call connects.
OAINPARM	OSSAIN Parameters contains office wide parameters for OSSAIN.

Datafilling table OFRT, OFR2, OFR3, or OFR4

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OFRT, OFR2, OFR3, or OFR4. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OFRT, OFR2, OFR3, or OFR4

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Add new routes as necessary.

Datafill example for table OFRT

The following example shows sample datafill for table OFRT.

MAP display example for table OFRT

RTE	RTELIST
5	(N D ISUP2WATC11 15 D088 N)\$
7	(S D T120) \$
32	(N D ISUP2WIT 0 N N)\$
1000	(S D VCA) \$
1005	(N D ISUP2WIT 0 N N) (N D MF2WIT 0 N N)\$

OSSAIN 11 Enhancements (continued)**Datafilling table OAINRTE**

OSSAIN Route is a new table that points to a route in one of the OFRx tables (OFRT, OFR2, OFR3, or OFR4). OAINRTE is used by an OSSAIN service node to change the route of a call, but not the outpulsed number, for support of a route dependent service. The table is indexed by a route index sent by the service node.

Table OAINRTE datafill must match with the service node, but OFRx datafill have no requirements. The SN service developer must inform the operating company of what a given routing index should do so that the operating company can map it to the appropriate office route.

The table indicated by field RTETABID must be datafilled before table OAINRTE.

Datafilling table OAINRTE

Field	Subfield or refinement	Entry	Explanation and action
RTEIDX		0 to 2045	Route index. This field is the key field. This index is specified by the service node.
RTETABID		OFRT, OFR2, OFR3, or OFR4	Route table identifier. This field indicates the table with the required route.
OFRTIDX		0 to 1023	Office route index. This field indicates an index into the table indicated by field RTETABID. This route must previously be defined in the indicated table.

Datafill example for table OAINRTE

The following examples shows sample datafill for tables OAINRTE and OFRT.

MAP display example for table OAINRTE

RTEIDX	RTETABID	OFRTIDX
0	OFRT	32
3	OFRT	1000
78	OFR2	50
1234	OFR2	50

OSSAIN 11 Enhancements (continued)

The above example shows indexes 78 and 1234 pointing to the same office route, which could be a temporary condition during changes in the service node. Therefore, the table can provide as much or as little support to the SN as necessary.

MAP display example for table OFRT

RTE	RTELIST
5	(N D ISUP2WATC11 15 D088 N)\$
7	(S D T120) \$
32	(N D ISUP2WIT 0 N N)\$
1000	(S D VCA) \$
1005	(N D ISUP2WIT 0 N N) (N D MF2WIT 0 N N)\$

In order to show how the switch handles different RIs sent by the service node, assume the following:

- Table OFRT route 1000 routes to treatment.
- The default route for all calls is table OFRT route 5.
- Table OFRT routes 5 and 32 are valid routes.
- Table OFR2 has no datafill (empty table).

The following indicates the result of RIs sent by the service node:

- RI = 0 : The switch replaces the route with OFRT 32.
- RI = 5 : The switch sends an error message to the SN since the index is not present in table OAINRTE.
- RI = 1234 : The switch sends an error message to the SN since the index points to table OFR2, which does not have the route index.
- RI = 3 : The switch replaces the route with OFRT 1000, which routes to treatment.

Note: The next TABAUDIT on the switch would flag the two OAINRTE tuples pointing to the two non-existent OFR2 tuples.

OSSAIN 11 Enhancements (continued)

Error messages for table OAINRTE

The following error messages apply to table OAINRTE.

Error messages for table OAINRTE

Error message	Explanation and action
ERROR: OFRTIDX not in specified office routing table.	This message is given if an attempt is made to enter a value in field OFRTIDX that is not a previously defined index into the table defined in field RTETABID. That is, table OAINRTE must point to a previously defined route in table OFRT, OFR2, OFR3, or OFR4.

Datafilling table OANODINV

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OANODINV. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OANODINV

Field	Subfield or refinement	Entry	Explanation and action
			A new datafill dependency is created. Table OANODINV must be datafilled before new table SNVLGRP.

Datafill example for table OANODINV

The following example shows sample datafill for table OANODINV.

OSSAIN 11 Enhancements (continued)

MAP display example for table OANODINV

```

NODENAME  NODEAREA
-----
HOST1      OSAC SELF
REMOTE1    OSAC OTHER 0 UDP IPV4  47 187 01 01  SWITCH
                2 B 11 DALLAS_1  REM_1
REMOTE2    OSAC OTHER 1 UDP IPV4  52 192 01 01  SWITCH
                23 HH 01  WASH_1 REM_2
SN_A       OSNM 1 UDP IPV4  47 245 1 34  7000 Y 2 20 240 60 SN
                4 BB 3  RTP_1  CARD_01
SN_B       OSNM 1 UDP IPV4  23 278 2 87  7002 Y 2 20 240 60 SN
                4 BB 3  RTP_2  BRANDING_01
DEBIT_01   OSN 0 UDP IPV4  47 187 02 10  2  HOST1 Y 2 60 SN
                1 A 01 DALLAS_2  DEBIT_01
AABS_01    OSN 1 UDP IPV4  52 192 02  9  3  HOST1  Y 1 60 SN
                1 A 33 WASH_2  AABS_01

```

Error messages for table OANODINV

The following error messages apply to table OANODINV.

Error messages for table OANODINV

Error message	Explanation and action
This node name is in use in table XXXXXXXX. You must remove all references to this node before you can delete it.	Before a node name can be used in table SNVLGRP, it must be datafilled in table OANODINV. Once the node name is used in table SNVLGRP, it cannot be deleted from table OANODINV. When attempting to delete a tuple from OANODINV that is referenced by table SNVLGRP, this error message is displayed. This is an existing error message. The XXXXXXXX is the name of the table using the node name; in this case, table SNVLGRP.

Datafilling table CLLI

This table is not changed. Datafill new voice link trunks for the new automatic voice link connection capability. New links must be added since they must be dedicated, that is, they cannot appear in tables OAVLMAP and OSCVLGRP.

OSSAIN 11 Enhancements (continued)**Datafill example for table CLLI**

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
VL_1	258	24	VOICE_LINK_1
VL_2	259	24	VOICE_LINK_2
VL_3	260	24	VOICE_LINK_3

Datafilling table TRKGRP

The following table shows the datafill specific to OSSAIN 11 Enhancements for table TRKGRP. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
GRPINFO	GRPTYP	TOPSVL	This table is not changed. Datafill must match with the service node. Datafill new voice link trunks for the new automatic voice link connection capability.
	DIR	OG	Group type. The dedicated voice trunks for OSSAIN must be trunk group type TOPSVL.
	SELSEQ	MIDL	Direction. The voice trunks must be OG (outgoing circuit) for the circuit direction.
			Selection sequence. Enter MIDL, most idle.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

MAP display example for table TRKGRP

GRPKEY	GRPINFO						
VL_1	TOPSVL	31	NPDGP	NCRT	MIDL	OG	
VL_2	TOPSVL	31	NPDGP	NCRT	MIDL	OG	
VL_3	TOPSVL	31	NPDGP	NCRT	MIDL	OG	

OSSAIN 11 Enhancements (continued)

Datafilling table TRKSGRP

The following table shows the datafill specific to OSSAIN 11 Enhancements for table TRKSGRP. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
SGRPVAR	SIGDATA	STD	This table is not changed. Datafill must match with the service node. Datafill new voice link trunks for the new automatic voice link connection capability.
	DIR	OG	Signaling data. Use standard signalling.
	OPULSTYP	NP	Direction. The voice trunks must be OG (outgoing circuit) for the circuit direction.
	OSTARTSG	IM	Outgoing type of pulsing. Set to NP (No Pulse), because the DMS switch does not outpulse over trunks of group type TOPSVL.
	REMBSY	Y	Outgoing start dial signal. Set to IM (immediate).
			Remote make busy. Set to Y. This field causes the voice trunk to go to the RMB state at the MAP display when the service node goes on hook towards the switch.

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
VL_1	0 DS1SIG	STD OG NP IM 0 0 NO NO N N Y 70
VL_2	0 DS1SIG	STD OG NP IM 0 0 NO NO N N Y 70
VL_3	0 DS1SIG	STD OG NP IM 0 0 NO NO N N Y 70

Datafilling table TRKMEM

This table is not changed. Datafill must match with the service node. Datafill new voice link trunks for the new automatic voice link connection capability.

OSSAIN 11 Enhancements (continued)**Datafill example for table TRKMEM**

The following example shows sample datafill for table TRKMEM.

MAP display example for table TRKMEM

CLLI	EXTRKMN	SGRP	MEMVAR
VL_1	2	0	DCM 0 0 21
VL_2	3	0	DCM 0 0 22
VL_3	4	0	DCM 0 0 23

Datafilling table OAFUNDEF

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OAFUNDEF. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Table OAFUNDEF must be datafilled before table SNVLGRP.

The changes are as follows:

- For subfield FUNCTYPE = SN and refinement CAMHERE = Y, a new area is VOICE_AREA.
- For subfield FUNCTYPE = TOPSOPER, a new area is QMS_AREA.

Datafilling table OAFUNDEF (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
FUNCAREA		see subfield FUNCTYPE	Function area. This field consists of subfield FUNCTYPE and refinements.
	FUNCTYPE	SN, TOPSOPER, TOPSAUTO	Function type. The function provider. Following are the values: • SN - service node. Datafill refinements ORIGSERV, TRIGGER_AREA, SBTIMER_AREA, and CAMHERE. • TOPSAUTO - existing TOPS automated system. Datafill refinements AUTOSYS and OPRONFL. • TOPSOPER - a live operator. Datafill refinements OPRCT4Q and QMS_AREA.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFUNDEF (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	CAMHERE	N or Y	QMS CAM here. If FUNCTYPE = SN, datafill this refinement. This field indicates the location of the QMS CAM. The values are: - N (no) - QMS CAM is centralized at an OSAC host switch, not in this switch. Datafill refinement HRSESNPL. - Y (yes) - QMS CAM is located in this switch. Datafill refinements CALLQ and VOICE_AREA.
	VOICE_ AREA	see subfield	Voice connection area. This area only appears if CAMHERE = Y. This area consists of subfield CONVOICE.
	CONVOICE	Y or N	Connect voice link. This field indicates if the switch should select and connect a voice link for an SN before routing the call to the SN. Enter Y to enable this capability. The default is N.
	DISPROUT	Y or N	Disposition routing. Datafill this field if field CONVOICE = Y. This field indicates if the switch should perform disposition routing when the voice link connection attempt fails. Enter Y to enable this capability.
	QMS_AREA	see subfield	Voice connect area. This field only appears if FUNCTYPE = TOPSOPER. This field consists of subfield QREFINMT.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFUNDEF (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	QREFINMT	Y or N	QMS refinement. This field indicates if the switch should apply QMS refinements to the TOPSOPER CT4Q before routing the call to the operator. Enter Y to enable this capability. The default is N.
	CQORDER	PREOPR, POSTAUTO, RECALL, or ASST	Call queue refinement order. Datafill this field if field QREFINMT = Y. Indicate the order of call queue refinement. The values refer to the fields in tables TQORDERA and TQORDERB, which are the following: • PREOPR - pre-operator • POSTAUTO - post automated service • RECALL - recall or transfer to an operator • ASST - a QMS Customer Assistance Service Expert (CASE) operator

Datafill example for table OAFUNDEF

The following example shows sample datafill for table OAFUNDEF.

MAP display example for table OAFUNDEF

FUNCID	FUNCNAME	FUNCAREA
0	CLG_CARD	SN TASERV N N Y CQ0 Y Y
1	CUS_CARD	SN TASERV N N Y CQ1 N
2	AUTO_BILL	SN TASERV N N N OSAC_HOST1_SP
3	DA_OPR	TOPSOPER DA_CT4Q Y PREOPR
4	OTHR_OPR	TOPSOPER OTHR_Q N

OSSAIN 11 Enhancements (continued)

Error messages for table OAFUNDEF

The following error messages apply to table OAFUNDEF.

Error messages for table OAFUNDEF

Error message	Explanation and action
This function name is in use in table XXXXXXXX. You must remove all references to this function name before you can delete it.	This message is displayed if an attempt is made to delete a tuple from table OAFUNDEF that has a function name used in one of the following tables: OAFNDISP, OAFUNBLK, OACNNPRF, OATLKPRF, OADTFPRF, OACAUPRF, OADSCPRF, OACTLDEF, or SNVLGRP. Tuples may not be deleted from table OAFUNDEF until all datafill references to that function name are deleted from all of the above tables. Table OAFUNDEF must be datafilled before the above tables. Standard table control error messages are displayed if an attempt is made to datafill those tables with a function name that has not been defined in table OAFUNDEF.

Datafilling table SNVLGRP

Service Node Voice Link Group is a new table that defines a voice link for a function on a service node. This distinction is necessary since each SN may serve multiple functions and multiple SNs may serve the same function. This table is used by the switch to select a voice link for an SN.

Tables OANODINV, OAFUNDEF, and CLLI must be datafilled before table SNVLGRP.

OSSAIN 11 Enhancements (continued)

The fields are described in the following table:

Datafilling table SNVLGRP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
NODEFUNC		see subfields	Node name and function. This field is the key to the table and consists of subfields NODENAME and FUNCNAME.
	NODENAME	name from table OANODINV	Node name. This field specifies the service node name from table OANODINV for this voice link group. The node must be datafilled in table OANODINV as a PM type of OSNM.
	FUNCNAME	name from table OAFUNDEF	Function name. This field specifies the function name from table OAFUNDEF for this voice link group. The function must be datafilled in table OAFUNDEF as an SN function with field CAMHERE = Y.

OSSAIN 11 Enhancements (continued)**Datafilling table SNVLGRP (Sheet 2 of 2)**

Field	Subfield or refinement	Entry	Explanation and action
CLLI		name from table CLLI	Common language location identifier. This field identifies the voice link group to use when making the SN voice link selection and connection for the service node and function pair. The switch uses the most idle selection sequence for selecting a voice link member from the group. The requirements for this CLLI are as follows: • The CLLI must be datafilled in tables CLLI and TRKGRP. • The CLLI must be datafilled in table TRKGRP as — GRPTYP = TOPSVL (group type) — DIR = OG (direction is outgoing) — SELSEQ = MIDL (selection sequence is most idle) • The CLLI must be datafilled in table TRKSGRP as follows: — DIR = OG (direction is outgoing) — OPULSTYP = NP (Outgoing type of pulsing is no pulse) — OSTARTSG = IM (outgoing start dial signal is immediate) — REMBSY = Y (remote make busy is enabled) • The CLLI cannot be an existing OSAC host-remote voice link datafilled in table OSCVLGRP or SN voice link datafilled in table OAVLMAP.

Datafill example for table SNVLGRP

The following example shows sample datafill for table SNVLGRP.

OSSAIN 11 Enhancements (continued)**MAP display example for table SNVLGRP**

NODEFUNC		CLLI

SN_A	CLG_CARD	VL_1
SN_A	OTHR_SVS	VL_2
SN_B	CLG_CARD	VL_1

Error messages for table SNVLGRP

The following error messages apply to table SNVLGRP.

Error messages for table SNVLGRP (Sheet 1 of 2)

Error message	Explanation and action
The node for the voice link must be first datafilled in table OANODINV.	Table OANODINV must be datafilled with the node name before being used in table SNVLGRP. This error message is displayed if the node name is not datafilled in table OANODINV.
Only node ids of PM type OSMN can be datafilled in this table.	The node name must be datafilled as an OSMN switch. This error reason is displayed if the node name is not datafilled in table OANODINV as an OSMN switch.
Only SN functions can be datafilled in this table.	Table OAFUNDEF must be datafilled with the function name before being used in table SNVLGRP. The function name must be datafilled as a SN function with CAMHERE filed set to Y. This error reason is displayed if the function name is not datafilled as a SN function.
Only SN functions with the CAMHERE field set to Y can be datafilled in this table.	This error message is displayed if the function name is not datafilled as an SN function with the CAMHERE field set to Y.
This CLLI must be datafilled in Table TRKGRP before datafilling this table.	The CLLI must be datafilled in table TRKGRP before being used in this table. This error message is displayed if it is not datafilled in table TRKGRP.

OSSAIN 11 Enhancements (continued)**Error messages for table SNVLGRP (Sheet 2 of 2)**

Error message	Explanation and action
Trunk group type for CLLI must be TOPSVL.	The trunk group type for the CLLI must be TOPSVL. This error message is displayed if the trunk group is of another type.
The TOPSVL trunk group circuit must be datafilled as outgoing in table TRKSGRP.	The voice link trunk group circuit must be datafilled as outgoing in table TRKSGRP. This error message is displayed if the voice link trunk group circuit is not datafilled as outgoing in table TRKSGRP.
The CLLI name is used in table XXXXXXXX, it cannot be reused here.	Existing OSAC host-remote voice links datafilled in table OSCVLGRP or SN voice links datafilled in table OAVLMAP can not be reused in table SNVLGRP. This error message is displayed when attempting to datafill table SNVLGRP with a voice link that is used in table OSCVLGRP or OAVLMAP. In the error message, XXXXXXXX is the name of the table containing the CLLI.

Datafilling table OAVLMAP

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OAVLMAP. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Table OAVLMAP is used in making voice connections for OSSAIN calls. OAVLMAP maps the logical voice channel number to an actual voice link in a voice link group.

Datafilling table OAVLMAP

Field	Subfield or refinement	Entry	Explanation and action
			A new datafill interaction is added between table OAVLMAP and new table SNVLGRP. An existing CLLI in table SNVLGRP cannot be datafilled in table OAVLMAP.

OSSAIN 11 Enhancements (continued)**Datafill example for table OAVLMAP**

The following example shows sample datafill for table OAVLMAP.

MAP display example for table OAVLMAP

NDANDCH		CLLI	EXTRKNM
OSAC_SW1	1	OSACVL1	1
OSAC_SW1	2	OSACVL1	2
OSAC_SW1	3	OSACVL1	3
OSAC_SW2	1	OSACVL2	1
OSAC_SW2	2	OSACVL2	2
OSAC_SW3	1	OSACVL3	1
OSAC_SW3	2	OSACVL3	2
OSAC_SW3	3	OSACVL4	3
OSAC_SW3	4	OSACVL4	4

Error messages for table OAVLMAP

The following error messages apply to table OAVLMAP.

Error messages for table

Error message	Explanation and action
The CLLI name is used in table XXXXXXXX, it cannot be reused here.	If a CLLI is referenced in table SNVLGRP, it cannot be datafilled in table OAVLMAP. And, if a CLLI is referenced in table OAVLMAP, it cannot be datafilled in table SNVLGRP. The following error message is displayed when attempting to datafill table OAVLMAP with a CLLI that is used in table SNVLGRP: In the error message, XXXXXXXX is the name of the table containing the CLLI; in this case, SNVLGRP.
CLLI and external trunk name is already datafilled against this node.	This error message is displayed if an attempt is made to datafill a duplicate CLLI and external trunk member against the same node.

Datafilling table OSCVLGRP

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OSCVLGRP. Only those fields that apply directly to OSSAIN 11

OSSAIN 11 Enhancements (continued)

Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Table OSCVLGRP identifies voice link groups that are used by an OSAC host to connect to OSAC remote switches.

Datafilling table OSCVLGRP

Field	Subfield or refinement	Entry	Explanation and action
			A new datafill interaction is added between table OSCVLGRP and new table SNVLGRP. An existing CLLI in table SNVLGRP cannot be datafilled in table OSCVLGRP.

Datafill example for table OSCVLGRP

The following example shows sample datafill for table OSCVLGRP.

MAP display example for table OSCVLGRP

NODENAME	CLLI
-----	-----
OSAC_SW1	OSACVL1
OSAC_SW2	OSACVL2
OSAC_SW3	OSACVL3
OSAC_SW4	OSACVL4

OSSAIN 11 Enhancements (continued)

Error messages for table OSCVLGRP

The following error messages apply to table OSCVLGRP.

Error messages for table OSCVLGRP

Error message	Explanation and action
The CLLI name is used in table XXXXXXXX, it cannot be reused here.	If a CLLI is referenced in table SNVLGRP, it cannot be datafilled in table OSCVLGRP. And, if a CLLI is referenced in table OSCVLGRP, it cannot be datafilled in table SNVLGRP. This error message is displayed when attempting to datafill table OSCVLGRP with a CLLI that is used in table SNVLGRP: In the error message, XXXXXXXX is the name of the table containing the CLLI; in this case, SNVLGRP.

Datafilling table OAFNDISP

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OAFNDISP. Only those fields that apply directly to OSSAIN 11

OSSAIN 11 Enhancements (continued)

Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OAFNDISP (Sheet 1 of 10)

Field	Subfield or refinement	Entry	Explanation and action
			The changes are as follows: - Fields DEFLACTN, OVRFACTN, BLCACTN, and ORFLACTN are renamed for use with calls in initial setup. The new names are IDFLACTN, IOVFACTN, IBLKACTN, and IOFLACTN. - Value CLDOUTP is added to the above fields for disposition routing. - New fields TDEFLACT, TOVRFACT, TBLCACT, and TORFLACT are added for transition calls, which is after initial setup. Note, these fields do not have the new DIRECTDN disposition. Disposition routing does not apply to preprocessing calls.
FUNCNAME		name from table OAFUNDEF	Function name. Enter a function name defined in table OAFUNDEF. This field is not changed.
IDFLACTN		see subfield IDFLDISP	Initial call deflection action. This field consists of subfield IDFLDISP. This field is renamed from DEFLACTN. This field now only applies to calls during initial call setup.
			Initial calls have passed through CT4Q refinement and reached a final CT4Q that is marked for OSSAIN by table CT4QNAMS. Also, the associated control list in table OAINCTLA routes to a function provided by a service node.
	IDFLDISP	TREAT, GOTOFN, GOTOCTL, CLDOUTP	Initial call deflection disposition. This field has new value CLDOUTP (called outpulsed). This disposition, which routes the call out of the office, specifies the number to be outpulsed. For CLDOUTP, datafill subfields USEOPLUS, DNAREA, and ALLOWTRG.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 2 of 10)

Field	Subfield or refinement	Entry	Explanation and action
	USE0PLUS	N or Y	Use 0 plus. This value indicates whether to use the called party number if it is available from call details. Enter Y to use this number. Enter N to not use this number. If Y is entered, this number is always used if available, regardless of the value of field DIRECTDN.
	DNAREA	see subfield	Directory number area. Field DNAREA consists of subfield DIRECTDN.
	DIRECTDN	N or Y	Direct directory number. Indicate if a DN is specified in field CLDDN for the called party number. Enter Y for a specified DN and datafill subfield CLDDN. Otherwise, enter N. When CLDDN is specified, it is used if USE0PLUS = Y and no called party number is available or if USE0PLUS = N. If DIRECTDN = N, USE0PLUS = Y, and no called party number is available, the call is routed to treatment. The system does not allow USE0PLUS = N and DIRECTDN = N at the same time.
	CLDDN	up to 18 digits	Called directory number. Datafill this field if field DIRECTDN = Y. Enter a directory number for the called number. When the CLDDN is outpulsed, the following occurs: • AMA is updated for the new CLDDN value. The overwritten number module contains the original called party number. • LATA screening applies to the new DN.
	ALLOWTRG	N or Y	Allow trigger. Enter Y to use the trigger profile index before outpulsing. Enter N to not use the index before outpulsing. Value N is effective only during outpulsing.
IOVFACTN		see subfield IOVFDISP	Initial call overflow action. This field consists of subfield OVFLDISP. This field is renamed from OVRFACTN. This field now only applies to calls during initial call setup. Refer to field IDFLACTN for a description of this phase.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 3 of 10)

Field	Subfield or refinement	Entry	Explanation and action
	IOVFDISP	TREAT, GOTOFN, GOTOCTL, CLDOUTP	Initial call overflow disposition. This field has new value CLDOUTP. This disposition, which routes the call out of the office, specifies the number to be outpulsed. For CLDOUTP, datafill subfields USE0PLUS, DNAREA, and ALLOWTRG.
	USE0PLUS	N or Y	Use 0 plus. This value indicates whether to use the called party number if it is available from call details. Enter Y to use this number. Enter N to not use this number. If Y is entered, this number is always used if available, regardless of the value of field DIRECTDN.
	DNAREA	see subfield	Directory number area. Field DNAREA consists of subfield DIRECTDN.
	DIRECTDN	N or Y	Direct directory number. Indicate if a DN is specified in field CLDDN for the called party number. Enter Y for a specified DN and datafill subfield CLDDN. Otherwise, enter N. When CLDDN is specified, it is used if USE0PLUS = Y and no called party number is available or if USE0PLUS = N. If DIRECTDN = N, USE0PLUS = Y, and no called party number is available, the call is routed to treatment. The system does not allow USE0PLUS = N and DIRECTDN = N at the same time.
	CLDDN	up to 18 digits	Called directory number. Datafill this field if field DIRECTDN = Y. Enter a directory number for the called number. When the CLDDN is outpulsed, the following occurs: • AMA is updated for the new CLDDN value. The overwritten number module contains the original called party number. • LATA screening applies to the new DN.
	ALLOWTRG	N or Y	Allow trigger. Enter Y to use the trigger profile index before outpulsing. Enter N to not use the index before outpulsing. Value N is effective only during outpulsing.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 4 of 10)

Field	Subfield or refinement	Entry	Explanation and action
IBLKACTN		see subfield IBLKDISP	Initial blocked function action. This field consists of subfield IBLKDISP. This field is renamed from BLCKACTN. This field now only applies to calls during initial call setup. Refer to field IDFLACTN for a description of this phase.
	IBLKDISP	TREAT, GOTOFN, GOTOCTL, CLDOUTP	Initial call blocked function disposition. This field has new value CLDOUTP. This disposition, which routes the call out of the office, specifies the number to be outpulsed. For CLDOUTP, datafill subfields USE0PLUS, DNAREA, and ALLOWTRG.
	USE0PLUS	N or Y	Use 0 plus. This value indicates whether to use the called party number if it is available from call details. Enter Y to use this number. Enter N to not use this number. If Y is entered, this number is always used if available, regardless of the value of field DIRECTDN.
	DNAREA	see subfield	Directory number area. Field DNAREA consists of subfield DIRECTDN.
	DIRECTDN	N or Y	Direct directory number. Indicate if a DN is specified in field CLDDN for the called party number. Enter Y for a specified DN and datafill subfield CLDDN. Otherwise, enter N. When CLDDN is specified, it is used if USE0PLUS = Y and no called party number is available or if USE0PLUS = N. If DIRECTDN = N, USE0PLUS = Y, and no called party number is available, the call is routed to treatment. The system does not allow USE0PLUS = N and DIRECTDN = N at the same time.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 5 of 10)

Field	Subfield or refinement	Entry	Explanation and action
IOFLACTN	CLDDN	up to 18 digits	Called directory number. Datafill this field if field DIRECTDN = Y. Enter a directory number for the called number. When the CLDDN is outpulsed, the following occurs: • AMA is updated for the new CLDDN value. The overwritten number module contains the original called party number. • LATA screening applies to the new DN.
	ALLOWTRG	N or Y	Allow trigger. Enter Y to use the trigger profile index before outpulsing. Enter N to not use the index before outpulsing. Value N is effective only during outpulsing.
		see subfield IOFLDISP	Initial origination failure action. This field consists of subfield IOFLDISP. This field is renamed from ORFLACTN. This field now only applies to calls during initial call setup. Refer to field IDFLACTN for a description of this phase.
	IOFLDISP	TREAT, GOTOFN, GOTOCTL, CLDOUTP	Initial call origination failure disposition. This field has new value CLDOUTP. This disposition, which routes the call out of the office, specifies the number to be outpulsed. For CLDOUTP, datafill subfields USE0PLUS, DNAREA, and ALLOWTRG.
	USE0PLUS	N or Y	Use 0 plus. This value indicates whether to use the called party number if it is available from call details. Enter Y to use this number. Enter N to not use this number. If Y is entered, this number is always used if available, regardless of the value of field DIRECTDN.
	DNAREA	see subfield	Directory number area. Field DNAREA consists of subfield DIRECTDN.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 6 of 10)

Field	Subfield or refinement	Entry	Explanation and action
TDFLACTN	DIRECTDN	N or Y	Direct directory number. Indicate if a DN is specified in field CLDDN for the called party number. Enter Y for a specified DN and datafill subfield CLDDN. Otherwise, enter N. When CLDDN is specified, it is used if USE0PLUS = Y and no called party number is available or if USE0PLUS = N. If DIRECTDN = N, USE0PLUS = Y, and no called party number is available, the call is routed to treatment. The system does not allow USE0PLUS = N and DIRECTDN = N at the same time.
	CLDDN	up to 18 digits	Called directory number. Datafill this field if field DIRECTDN = Y. Enter a directory number for the called number. When the CLDDN is outputted, the following occurs: • AMA is updated for the new CLDDN value. The overwritten number module contains the original called party number. • LATA screening applies to the new DN.
	ALLOWTRG	N or Y	Allow trigger. Enter Y to use the trigger profile index before outputting. Enter N to not use the index before outputting. Value N is effective only during outputting.
		see subfield TDFLDISP	Transition call deflection action. This field consists of subfield TDFLDISP. Note, this field does not apply to functions with field FUNCTYPE = TOPSOPR or TOPSAUTO in table OAFUNDEF. Transition calls apply to transfer and trigger calls, which are being routed to a service node. Examples are a transfer from an operator to a service node, a service node transfer to another service node, and a trigger to a service node.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 7 of 10)

Field	Subfield or refinement	Entry	Explanation and action
TOVFACTN	TDFLDISP	TREAT, GOTOFN, or GOTOCTL	Transition call deflection disposition. This action is taken for the following reasons: - An OSSAIN call is deflected from an OSSAIN queue. Queue deflection occurs if deflection is enabled for the queue and the predicted wait time before the call is connected to an agent exceeds the limit set in table QMSCQDEF for that call queue. This deflection criteria is determined by the QMS CAM the same way as for TOPS operator calls. - Communication is down between the host and remote, preventing the remote from requesting a session from the host. Following are the actions: - TREAT - Route to treatment. Datafill refinement TREATMENT. - GOTOCTL - Route to another control list. Datafill refinement CTLLIST. - GOTOFN - Route to another function. Datafill refinement FUNCTION.
	TREATMENT	name from table TMTCNTL	Treatment. If field TDFLDISP=TREAT, datafill this refinement with a name defined in table TMTCNTL.
	CTLLIST	name from table OACTLDEF	Control list. If field TDFLDISP = CTLLIST, datafill this refinement with a control list name defined in table OACTLDEF.
	FUNCTION	name from table OAFUNDEF	Function. If field TDFLDISP = FUNCTION, datafill this refinement with a function name defined in table OAFUNDEF.
		see subfield TOVFDISP	Transition call overflow action. This field consists of subfield TOVFDISP. Note, this field does not apply to functions with FUNCTYPE = TOPSOPR or TOPSAUTO in table OAFUNDEF. For a description of a transition call, refer to field TDFLACTN.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 8 of 10)

Field	Subfield or refinement	Entry	Explanation and action
TBLKACTN	TOVFDISP	TREAT, GOTOFN, or GOTOCTL	Call overflow disposition. This action is taken for the following reasons: - The QMS CAM indicates that the OSSAIN queue for this call is in an overflow state. Queue overflow occurs when no agents are available for an OSSAIN call queue and the call queue would exceed its maximum size in table QMSCQDEF if this call were queued. This overflow criteria is determined by the QMS CAM the same way as for TOPS operator calls. - A host-remote session is not available at the remote to request a SN session for an active service node.
	TREATMENT	name from table TMTCNTL.	Treatment. If field TOVFDISP = TREAT, datafill this refinement with a name defined in table TMTCNTL.
	CTLLIST	name from table OACTLDEF	Control list. If field TOVFDISP = CTLLIST, datafill this refinement with a control list name defined in table OACTLDEF.
	FUNCTION	name from table OAFUNDEF	Function. If field TOVFDISP = FUNCTION, datafill this refinement with a function name defined in table OAFUNDEF.
		see subfield TBLKDISP	Transition blocked function action. This field consists of subfield TBLKDISP. For a description of a transition call, refer to field TDFLACTN.
	TBLKDISP	TREAT, GOTOFN, or GOTOCTL	Transition blocked function disposition. This action is taken if an OSSAIN call is blocked from the requested function.
	TREATMENT	name from table TMTCNTL.	Treatment. If field TBLKDISP = TREAT, datafill this refinement with a name defined in table TMTCNTL.
	CTLLIST	name from table OACTLDEF	Control list. If field TBLKDISP = CTLLIST, datafill this refinement with a control list name defined in table OACTLDEF.

OSSAIN 11 Enhancements (continued)

Datafilling table OAFNDISP (Sheet 9 of 10)

Field	Subfield or refinement	Entry	Explanation and action
TOFLACTN	FUNCTION	name from table OAFUNDEF	Function. If field TBLKDISP = FUNCTION, datafill this refinement with a function name defined in table OAFUNDEF.
		see subfield TOFLDISP	Transition origination failure action. This field consists of subfield TOFLDISP. Note, this field does not apply to functions with FUNCTYPE = TOPSOPR or TOPSAUTO in table OAFUNDEF. For a description of a transition call, refer to field TDFLACTN.
	TOFLDISP	TREAT, GOTOFN, or GOTOCTL	Transition OAP routing failure disposition. This action is taken for the following reasons: • A failure when sending the OAP Session Begin message to the service node after the session for the call has already been selected. • The OSAC host returns a service node session to the remote for a subscriber originated call but the session cannot be used by the remote. The remote may not use the session due to any of the following reasons: — invalid service node state — invalid session pool state — invalid session id — OAP protocol version not negotiable • A returned service node session pool id or session id returned from the host to the remote is not valid. That is, the origination type is not valid. • If the remote times out waiting for a response to a session request for an active service node.
	TREATMENT	name from table TMTCNTL	Treatment. If field TOFLDISP = TREAT, datafill this refinement with a name defined in table TMTCNTL.

OSSAIN 11 Enhancements (continued)**Datafilling table OAFNDISP (Sheet 10 of 10)**

Field	Subfield or refinement	Entry	Explanation and action
	CTLLIST	name from table OACTLDEF	Control list. If field TOFLDISP = CTLLIST, datafill this refinement with a control list name defined in table OACTLDEF.
	FUNCTION	name from table OAFUNDEF	Function. If field TOFLDISP = FUNCTION, datafill this refinement with a function name defined in table OAFUNDEF.

Datafill example for table OAFNDISP

The following example shows sample datafill for table OAFNDISP.

MAP display example for table OAFNDISP

FUNCNAME	IDFLACTN		IOVFACTN
	IBLKACTN	IOFLACTN	
	TDFLACTN		TOVFACTN
	TBLKACTN	TOFLACTN	

BRANDING	CLDOUTP Y Y 9191234567 Y	CLDOUTP Y N N	
	GOTOFN ALT_NODE	CLDOUTP N Y 9191234567 Y	
	GOTOCTL CTLLIST2	GOTOFN LIVE_OPER	
	GOTOFN ALT_NODE	GOTOFN ALT_NODE	

For the above datafill, the initial fields with CLDOUTP have the following meanings:

- IDFLACTN: (CLDOUTP Y Y 9191234567 Y) - Output the called number if available; otherwise, use the DIRECTDN value for outpulsing.
- IOVFACTN: (CLDOUTP Y N N) - Output the called number if available; otherwise, route the call to treatment.
- IOFLACTN: (CLDOUTP N Y 9191234567 Y) - Output the DIRECTDN value and override the called number if present.

Note, the combination of (N N) in (CLDOUTP N N Y) is not allowed, it is blocked by datafill.

Datafilling table OADTFPRF

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OADTFPRF. Only those fields that apply directly to OSSAIN 11

OSSAIN 11 Enhancements (continued)

Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OADTFPRF

Field	Subfield or refinement	Entry	Explanation and action
PROFILE		see subfields	New subfield RFLTONFL is added. Profile. This field consists of subfields DIGIT, GENAMA, RLSFWD, RFLTONFL, and ACTSEL.
	RFLTONFL	Y or N	Refloat on failure. This field indicates if a call should refloat when a trigger event leads to a failure. A failure is when the call cannot be presented to a SN or operator, or cannot be queued for a SN or operator and queueing is active. The values are Y (refloat) and N (do not refloat). Failures are due to the following: • Presentation failure to a SN occurs when a session cannot be obtained with the SN. If RFLTONFL = N, disposition routing is used from table OAFNDISP. • Queue failure occurs from queue overflow or deflection. If RFLTONFL = N, the call is sent to treatment. The exceptions and restrictions on this field are as follows: • If a call triggers, that trigger has RFLTONFL = Y, and the switch is attempting to obtain a session with a service node, field RFLTONFL is ignored. • A refloat is only attempted if RFLTONFL = Y, the calling party is attached, and the called party is either connecting or already connected. • Field RLSFWD must set to Y in order to set RFLTONFL to N.

Datafill example for table OADTFPRF

The following example shows sample datafill for table OADTFPRF.

OSSAIN 11 Enhancements (continued)**MAP display example for table OADTFPRF**

```

DTMFIDX
                                     PROFILE
HOLDRCVR
-----
      0
(0 Y N Y FUNCTION TRIGGER_FN)
(1 Y N Y FUNCTION TRIGGER_FN)(STAR Y N Y FUNCTION TRIGGER_FN)
(OCTO Y N N FUNCTION TRIGGER_FN) $
      Y

```

Error messages for table OADTFPRF

The following error messages apply to table OADTFPRF.

Error messages for table OADTFPRF

Error message	Explanation and action
RLSFWD MUST BE N TO PERMIT RFLTONFL SETTING OF Y.	Field RLSFWD must set to Y in order to set RFLTONFL to N. If this requirement is not followed, the attempt to set RFLTONFL is denied and this error message is displayed.

Datafilling table OACAUPRF

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OACAUPRF. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OACAUPRF (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
			New subfield RFLTONFL is added.
PROFILE		see subfield	Profile. This field consists of subfield RELCLASS.

OSSAIN 11 Enhancements (continued)

Datafilling table OACAUPRF (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	RELCLASS	NORM	Release class. New subfield RFLTONFL is available only when RELCLASS = NORM. Then, the subfields are RELCAUSE, RFLTONFL, and ACTSEL.
	RFLTONFL	Y or N	Refloat on failure. This field indicates if a call should refloat when a trigger event leads to a failure. A failure is when the call cannot be presented to a SN or operator, or cannot be queued for a SN or operator and queueing is active. The values are Y (refloat) and N (do not refloat). Failures are due to the following: • Presentation failure to a SN occurs when a session cannot be obtained with the SN. If RFLTONFL = N, disposition routing is used from table OAFNDISP. • Queue failure occurs from queue overflow or deflection. If RFLTONFL = N, the call is sent to treatment. The exceptions and restrictions on this field are as follows: • If a call triggers, that trigger has RFLTONFL = Y, and the switch is attempting to obtain a session with a service node, field RFLTONFL is ignored. • A refloat is only attempted if RFLTONFL = Y, the calling party is attached, and the called party is either connecting or already connected.

Datafill example for table OACAUPRF

The following example shows sample datafill for table OACAUPRF.

OSSAIN 11 Enhancements (continued)**MAP display example for table OACAUPRF**

IDX	PROFILE
0	(NORM 17 Y FUNCTION TRIGGER_FN)\$

Datafilling table OATLKPRF

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OATLKPRF. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OATLKPRF (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
PROFILE		see subfields	New subfield RFLTONFL is added to fields PROFILE, STAR, and OCTO. Profile. This field consists of subfields TRIGGER, SNCONTRL, STOPCNVT, GENAMA, RLSFWD, RFLTONFL and ACTSEL.
	RFLTONFL	Y or N	Refloat on failure. This field indicates if a call should refloat when a trigger leads to a failure. A failure is when the call cannot be presented to a SN or operator, or cannot be queued for a SN or operator and queueing is active. The values are Y (refloat) and N (do not refloat). Failures are due to the following: - Presentation failure to a SN occurs when a session cannot be obtained with the SN. If RFLTONFL = N, disposition routing is used from table OAFNDISP. - Queue failure occurs from queue overflow or deflection. If RFLTONFL = N, the call is sent to treatment.

OSSAIN 11 Enhancements (continued)

Datafilling table OATLKPRF (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	RFLTONFL (continued)		The exceptions and restrictions on this field are as follows: • If a call triggers, that trigger has RFLTONFL = Y, and the switch is attempting to obtain a session with a service node, field RFLTONFL is ignored. • A refloat is only attempted if RFLTONFL = Y, the calling party is attached, and the called party is either connecting or already connected. • Field RLSFWD must set to Y in order to set RFLTONFL to N. • The RFLTONFL value is applicable if the call triggers to an operator and fails. However, if the call triggers to a service node, fails, and subfield SNCONTRL = N, the call remains floated regardless of the RFLTONFL setting. • If a call is queued for an OSSAIN session, the notify timer expires, and that trigger tuple has RFLTONFL = N, field RFLTONFL is ignored. The notify trigger is selected with field TRIGGER = NTFY. The timer is set by table OAINPARAM parameter NOTIFY_TIMER.
STAR		see subfield DIGITSEL	Star key. Service selection associated with DTMF * digit. This field consists of subfield DIGITSEL. This field now applies to the calling and called party. Before this functionality, it only applied to the calling party.
	DIGITSEL	Y or N	Digit select. Enter Y to enable trigger by DTMF * digit. Otherwise, enter N. If set to Y, datafill subfields STOPCNVT, GENAMA, RLSFWD, RFLTONF, and ACTSEL.

OSSAIN 11 Enhancements (continued)

Datafilling table OATLKPRF (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
OCTO	RFLTONFL	Y or N	Refloat on failure. This field indicates if a call should refloat when a trigger leads to a failure. A failure is when the call cannot be presented to a SN or operator, or cannot be queued for a SN or operator and queueing is active. The values are Y (refloat) and N (do not refloat). Field RLSFWD must set to Y in order to set RFLTONFL to N.
		see subfield DIGITSEL	Octothorpe key. Service selection associated with DTMF # digit. This field consists of subfield DIGITSEL. This field now applies to the calling and called party. Before this functionality, it only applied to the calling party.
	DIGITSEL	Y or N	Digit select. Enter Y to enable trigger by DTMF # digit. Otherwise, enter N. If set to Y, datafill subfields STOPCNVT, GENAMA, RLSFWD, RFLTONF, and ACTSEL.
	RFLTONFL	Y or N	Refloat on failure. This field indicates if a call should refloat when a trigger leads to a failure. A failure is when the call cannot be presented to a SN or operator, or cannot be queued for a SN or operator and queueing is active. The values are Y (refloat) and N (do not refloat). Field RLSFWD must set to Y in order to set RFLTONFL to N.

Datafill example for table OATLKPRF

The following example shows sample datafill for table OATLKPRF.

OSSAIN 11 Enhancements (continued)

MAP display example for table OATLKPRF

TALKIDX			PROFILE HOLDRCVR
	STAR	OCTO	

0			
(NTFY Y N Y Y N FUNCTION TRIGGER_FN)			
(FLASH Y N Y N Y FUNCTION TRIGGER_FN)	(CLGD Y N N N N FUNCTION TRIGGER_FN)		
(PTYD Y N Y N N FUNCTION TRIGGER_FN)	\$		
(Y N Y N Y FUNCTION	TRIGGER_FN)	N	Y

Error messages for table OATLKPRF

The following error messages apply to table OATLKPRF.

Error messages for table OATLKPRF

Error message	Explanation and action
RLSFWD MUST BE N TO PERMIT RFLTONFL SETTING OF Y.	Field RLSFWD must set to Y in order to set RFLTONFL to N. If this requirement is not followed, the attempt to set RFLTONFL is denied and this error message is displayed.

Datafilling table OACNNPRF

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OACNNPRF. Only those fields that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OACNNPRF (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
PROFILE		see subfields	New subfield RFLTONFL is added. Profile. This field consists of subfields TRIGGER, SNCONTRL, RFLTONFL, and ACTSEL.

OSSAIN 11 Enhancements (continued)

Datafilling table OACNNPRF (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	RFLTONFL	Y or N	Refloat on failure. This field indicates if a call should refloat when a trigger event leads to a failure. A failure is when the call cannot be presented to a SN or operator, or cannot be queued for a SN or operator and queueing is active. The values are Y (refloat) and N (do not refloat). Failures are due to the following: • Presentation failure to a SN occurs when a session cannot be obtained with the SN. If RFLTONFL = N, disposition routing is used from table OAFNDISP. • Queue failure occurs from queue overflow or deflection. If RFLTONFL = N, the call is sent to treatment.

OSSAIN 11 Enhancements (continued)

Datafilling table OACNNPRF (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
			The exceptions and restrictions on this field are as follows: • If a call triggers, that trigger has RFLTONFL = Y, and the switch is attempting to obtain a session with a service node, field RFLTONFL is ignored. • A refloat is only attempted if RFLTONFL = Y, the calling party is attached, and the called party is either connecting or already connected. • If a call is queued for an OSSAIN session, the notify timer expires, and that trigger tuple has RFLTONFL = N, field RFLTONFL is ignored. • The RFLTONFL value is applicable if the call triggers to an operator and fails. However, if the call triggers to a service node, fails, and subfield SNCONTRL = N, the call remains floated regardless of the RFLTONFL setting. • If the switch is performing a refloat on failure in the connecting phase, a trigger event from the no answer timer can be lost, the service node is not be informed. The no answer trigger is selected with field TRIGGER = NOANS. The timer is set by table OAINPARM parameter NOANS_TIMER.

Datafill example for table OACNNPRF

The following example shows sample datafill for table OACNNPRF.

OSSAIN 11 Enhancements (continued)**MAP display example for table OACNNPRF**

```

CONNIDX
DTMFPRF      CAUSEPRF      PROFILE
-----
      0
(RING Y Y FUNCTION TRIGGER_FN) (OPLSF Y N FUNCTION TRIGGER_FN)
(FLASH Y N FUNCTION TRIGGER_FN) (CLGD Y N FUNCTION TRIGGER_FN)
(TRMT Y N FUNCTION TRIGGER_FN) $
Y 0      Y 0

```

Datafilling table OAINPARM

The following table shows the datafill specific to OSSAIN 11 Enhancements for table OACNNPRF. Only those parameters that apply directly to OSSAIN 11 Enhancements are shown. For a description of the other parameters, refer to the data schema section of this document.

Datafilling table OAINPARM

Parameter name	Explanation and action
STR_PARTY	At call float the service node, operator, or automated system releases the call to establish a connection between the parties in a call. Trigger processing enables a call to be brought back to a service node or operator when a datafillable trigger event occurs. For calls in the talking state, table OATLKPRF fields STAR and OCTO enable detection of a * or # digit (respectively) by the calling or called party. This parameter selects either the calling or called party for detection of a * or # digit, as enabled in table OATLKPRF. The values are CALLED and CALLING. The default is CALLING.

Datafill example

The following example shows sample datafill for table OSSAIN 11 Enhancements.

OSSAIN 11 Enhancements (end)

MAP display example for table OSSAIN 11 Enhancements

PARMNAME	PARMVAL

STR_PARTY	CALLED

Translation verification tools

OSSAIN 11 Enhancements does not use translation verification tools.

SERVORD

OSSAIN 11 Enhancements does not use SERVORD.

OSSAIN 12 Enhancements

Ordering codes

Functional group ordering code: OSAN0001

Functionality ordering code: OSAN0007

Release applicability

TOPS14 and up

TOPS12 introduced OSSAIN 12 Enhancements.

Note: OSSAIN 12 Enhancements actually includes features after TOPS12.

Requirements

To operate, OSSAIN 12 Enhancements requires the functional groups that follow:

- Operator Services Basic, OSB00001
- BAS Generic, BAS00003
- OSSAIN Initial Release, OSAN0002
- OSSAIN 07 Enhancements, OSAN0003
- OSSAIN 09 Enhancements, OSAN0004
- OSSAIN 10 Enhancements, OSAN0005
- OSSAIN 11 Enhancements, OSAN0006

Description

This functionality provides the following:

- TOPS14

Table OAINPARM has new parameter SEND_BILLSPID_W_CLASSCHG to enable the Service Provider Identifier (SPID) datablocks for the billing party to be included with the Class Charge Success Response message in Open Automated Protocol (OAP) version 8. Refer to the datafill procedure section, table OAINPARM.

- TOPS13

With the introduction of the TOPS13 feature OSSAIN Support of DA Automation, the functionality of OSSAIN 12 Enhancements allows Operator Services System Advanced Intelligent Network (OSSAIN) software to support use of Directory Assistance (DA) automation services. The intent of the TOPS13 feature, 59011611, is to provide services that

OSSAIN 12 Enhancements (continued)

work in a similar manner as ADAS and ADAS Plus work. This feature does not function based on assumptions of how OSSAIN service nodes (SNs) handle a call. The control of a call is at the SN. Additional information about feature 59011611 is located in the section “Operation” and throughout this description.

- TOPS12
 - allow the trigger profile index to be used for TOPS operator calls.
 - allow service nodes and operator terminals to limit the number of operator handoffs to a service node for a call.
 - transmission of the called number to the DAS for OSSAIN DA calls.
 - allow selection of the called or calling party in table OATLKPRF for triggering on the * or # digit during the talking state.
 - allow triggering on the * or # digit in table OAVLMAP when the calling party listens over a broadcast voice link.
 - allow OSNM voice links to be two-way so either end can detect remote make busy (RMB).
 - allow the service nodes to enable or disable Calling Number Delivery Blocking on a call.
 - allow the service node to request the generation of an AMA record when the forward party is connected and timing has been started.
 - support special location routing number services (SLRNS) as follows:
 - create a Call Origination (CO) type for SLRNS
 - add queue management system (QMS) refinement tables for SLRNS.
 - make returning an answer on a voice link connection to a service node (SN) optional for accurate billing
 - perform a BNS query on the calling party for billing
 - get a direct dialed SLRNS call to route to an OSSAIN switch for SLRNS.

This functionality consists of the features as follows:

(Sheet 1 of 2)

Feature number	Feature name
59011611	OSSAIN Support for DA Automation (TOPS13)

OSSAIN 12 Enhancements (continued)

(Sheet 2 of 2)

Feature number	Feature name
59006766	OSSAIN Enhancements 12 (TOPS12)
59007166	TOPS Enhancements for Special Location Routing Number Services (TOPS12)

Operation

This section provides details about the OSSAIN Support for DA Automation feature and other capabilities related to OSSAIN12 Enhancements.

OSSAIN Support for DA Automation (TOPS13)

This section provides the following information:

- Initial call presentation
- Passive DA operator
- Establishing the call session with the DAS
- DAS message processing in OSSAIN
- Ending the call session with the DAS
- OSSAIN and DA call completion
- Ringing while on hold
- ISUP REL RLT
- ADAS/ADAS Plus bypass
- Operator display
- Hardware requirements

For the TOPS13 feature, the billing section was updated to reflect how AMA module 55 is used to record listing services. There is a table that lists fields in module 55, and there is also a description of the fields. The logs and OM sections were also updated. The TOPS13 feature created log OAIN210 and added registers to the OAPCALP9 OM group for an OAP operation.

Initial call presentation

At initial call presentation, OSSAIN Support for DA Automation provides the SN with additional call information related to directory assistance (DA) calls. The SN is responsible for interpreting the call information and for handling the

OSSAIN 12 Enhancements (continued)

call appropriately. Through Open Automated Protocol (OAP), the following information is provided to the SN:

- originally dialed DA number. This is the number that the subscriber dialed to get the service. In TOPS, this number is sent to the directory assistance system (DAS) in the call begin message.
- whether calling DN required. This value can be datafilled through DATRKOPT and DABILL. This value specifies whether the calling number is required for this DA call. In TOPS, if the calling number is required but missing, the call bypasses ADAS Plus and is presented to the operator at the DA billing screen.
- requested DN required. This value can be datafilled through table DATRKOPT and DABILL. This value specifies whether the requested number is required for billing purposes. In TOPS, if the requested number is required but missing, the operator must enter it before releasing the call (for example, POS Release).
- multiple requests limit. This value can be datafilled through table DATRKOPT. This value specifies the number of multiple DA requests allowed per call. In TOPS, this value controls how many times the GEN AMA function can be used in a single DA call.
- Directory Assistance Call Completion (DACC) handling options. This value can be datafilled through table DATRKOPT and DABILL. This value specifies the type of DA call completion that a given DA call can receive. The possible values are: OH, AUTO, ALL or NONE. In TOPS, if this value is not set to ALL or AUTO, ADACC is not offered.
- language preference. This information is part of the DAS call begin message. This value is obtained from table DATRKOPT. The possible values are: primary, secondary, primary/secondary or secondary/primary.

If the SN receives these call details through the OAP, then the SN can handle a call appropriately. OAP datablocks are designed to group the information. The datablocks are sent in the initial call presentation to the SN and in other OAP operations.

Passive DA operator

Before OSSAIN Support for DA Automation was introduced, the service node (SN) could only connect to a passive function provider that was another SN or a toll assistance (TA) operator. This TOPS13 feature allows a directory assistance (DA) operator to serve as a passive function provider in the simultaneous interaction configuration. The term simultaneous interaction refers to the capability to attach a call to two adjunct nodes at the same time. The two adjunct nodes can either be two SNs or an SN and an operator.

OSSAIN 12 Enhancements (continued)

OSSAIN Support for DA Automation does not change the existing passive operator restrictions. Unless the SN is released from the call, the passive operator is only allowed to perform the following actions:

- disconnecting from the call (Pos Release key function)
- releasing the active SN (Release Operator key function)
- pass-through messaging (Pass-thru key function)

Note: Pass-through messaging is only supported for open position protocol (OPP)-compatible positions only.

If the SN is released from the call, existing TOPS DA processing resumes control of the call. The OSSAIN Support for DA Automation feature does not change this characteristic.

Existing interactions between the position and the DA system (DAS) are not changed by this feature.

Establishing the call session with the DAS

In TOPS, when a DA call is routed to the operator, the DMS switch begins a call session with the directory assistance system (DAS). The DMS switch sends various call information such as the position ID, call ID, and calling number to the DAS. Then the DAS sends an initial connect message to the position to establish a call session between the DAS and the position.

With OSSAIN Support for DA Automation, when a passive DA operator is brought into the call, the DMS switch also attempts to establish a call session with the DAS.

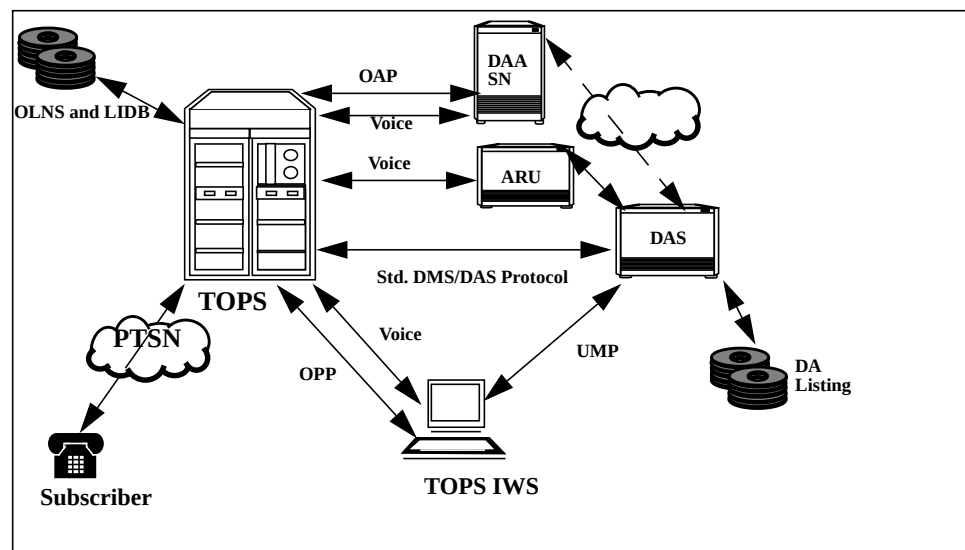
The protocol that is in effect when the DA operator is brought into the call is an important factor because the OSSAIN Support for DA Automation only supports the Standard Nortel-DMS/DAS protocol. Standard Nortel-DMS/DAS protocol is also referred to as the CCI protocol.

OSSAIN 12 Enhancements (continued)

If Standard Nortel-DMS/DAS protocol is not used, then the following occurs:

- No call session is established with the DAS.
- Service node (SN) is informed that the DAS call session is not established.
- The log OAIN210 is generated.

Example of OSSAIN DA Automatic Configuration



DAS message processing in OSSAIN

In the simultaneous interactions configuration, the SN has main control of the call. In this configuration, the Position Release message is the only DAS message that is processed. If the Position Release message is received from the DAS:

- the operator is released from the call
- the SN is informed through the OAP Passive Node Status Inform message
- the DAS call session is ended

Other DAS message are handled differently. If the OSSAIN does not expect the message, then log TOPS102 is generated and the message is ignored. This log already existed before the OSSAIN Support for DA Automation feature.

OSSAIN 12 Enhancements (continued)

If the message is possible, then a Call Status message is sent to the DAS to indicate that the message is not accepted during the simultaneous interactions mode. The status code of INVALID SERVICE is returned in the Detail field of the Call Status message to the DAS.

With OSSAIN Support for DA Automation, if the SN is connected, it controls the call. In this case, most DAS message are ignored. If the SN is not connected, then the call is treated like a regular DA call.

Ending the call session with the DAS

If the SN is released from the call, and the operator is controlling the call, then TOPS ends the call session with the DAS. If the SN maintains control of the call, OSSAIN Support for DA Automation ensures the call session ends with the DAS when all of the following circumstances occur:

- when the passive DA operator is released
- when the call ends
- when the call leaves the SN — when the call is transferred or floated

OSSAIN and DA call completion

In TOPS, an operator can initiate DA call completion or DA call completion can occur through Automatic Directory Assistance Call Completion (ADACC). The TOPS13 feature OSSAIN Support for DA Automation adds a third method to provide DA Call Completion: DA call completion at the SN.

This feature follows the ADACC model for DA call completion at the SN. For details on ADACC, refer to documentation for functionality Automated DACC with Alternate Billing, OSDA0002. When the SN enters a requested number, call completion eligibility checks are performed. Then the SN receives the results of the check, interprets the results, and handles the call.

OSSAIN Support for DA Automation provides the information in the following fields to the SN. It performs this task by using an OAP datablock.

- DACC allowed — this field indicates whether the call passed call completion eligibility checks.
- DACC billing options — this field contains billing options for call completion. Table ADACCOPT is references to provide this information.
- DACC surcharge — this field specifies a call completion surcharge for the call. Table DACCSUR provides information for this field when the CCSURCHG field in table DABILL is set to Y (Yes).

OSSAIN 12 Enhancements (continued)

Note: External Rater is another way to obtain the call completion surcharge. External Rater can also rate coin and hotel coins. However, OSSAIN does not support External Rater or SentPd coin and hotel calls.

- ISUP REL Release Link Trunk (RLT) eligibility — this field indicates whether the call is eligible for ISUP REL RLT. If the call is eligible for ISUP REL RLT, then the SN can use the OAP Call Float Request to request the switch to perform the RLT functionality.

When the SN receives the information provided in the above list, it can use OAP operations to provide call completion. Consider the following scenarios and recommendations for steps to handle call completion:

- If the SN offers call completion, it needs to use the OAP Gen AMA Request to provide the AMA record for the DA portion of the call.
- The OAP service change request is an optional tool to change service type to TA for the call completion phase of the call.
- When the service changes to TA, the SN can satisfy billing for call completion by using Billing Number and Class Charge Requests.
- OAP Call Float is an optional tool to complete the call.

Note: The DMS switch does not perform any ADACC checks when it floats the call. The SN is responsible for handling call completion appropriately.

Ringling while on hold

OSSAIN Support for DA Automation allows the SN to apply audible ringback tone to the calling party when the SN sets the calling party's speech path to 0-way. This TOPS13 feature can provide this capability through the OAP Speech Path Request. If the SN is released during simultaneous interactions, and the calling party is the only party left to interact with the operator, then the calling party's speech path is automatically restored to two-way.

ISUP REL RLT

Feature AN1515 (functionality GR317/GR394 ISUP to/from TOPS, OSEA0005) implemented ISUP REL RLT for ADACC. This variant of RLT sends an ISUP REL message containing the service activation parameter (SAP) and generic activation parameter (GAP) to the end office. When the ISUP REL is sent, TOPS considers the call complete. The TOPS13 feature OSSAIN Support for DA Automation enhances the OAP Call Float Request to support the ISUP REL RLT for eligible DA calls. This TOPS13 feature does not affect other variants of RLT.

OSSAIN 12 Enhancements (continued)

ADAS and ADAS Plus Bypass

Before the TOPS13 feature OSSAIN Support for DA Automation, when OSSAIN transferred a call to the operator and if the call was eligible for ADAS or ADAS Plus processing, the call was routed to the automated system first. With this feature, the service node (SN) is able to bypass ADAS and ADAS Plus processing through the OAP Transfer to Control List Request.

Operator display

The feature OSSAIN Support for DA Automation does not change the operator display. It also does not change the display that indicates that an operator is involved in a simultaneous interaction.

Hardware requirements

OSSAIN Support for DA Automation does not change hardware requirements.

Trigger profile index for all TOPS calls (TOPS12)

Before this functionality, TOPS calls routed through the queue management system (QMS) to a final CT4Q, which was marked as OSSAIN or TOPSOPR (TOPS operator) in table CT4QNAMS to indicate the next step of processing. The OSSAIN calls used table OAINCTLA to obtain an OSSAIN control list and trigger profile index during initial call setup. The TOPS operator calls used table TQMSFCQA for call queue assignment and did not have a trigger profile index assignment except by office wide parameter OPR_TRIGGER_PROFILE_INDEX.

Note: Triggers can also be set at the IWS position in table XPCCTRIG. This capability is not changed.

This functionality allows assignment of a trigger profile index to a TOPS operator call. This enhancement is provided by moving the trigger profile index assignment from table OAINCTLA to table CT4QNAMS. Note that table OAINCTLA applied only to initial call setup. Therefore, all TOPS calls (TOPS operator and OSSAIN) can have this assignment, which only applies during initial call setup. This trigger profile index assignment is stored for each call and can be changed by the service node or operator. Refer to the datafill procedure section for details.

This change allows a trigger profile assignment without an OSSAIN CT4Q and the associated OSSAIN control list, function, and network service id. Calls that route to OSSAIN get an OSSAIN CT4Q and calls that route to a TOPS operator do not get an OSSAIN CT4Q. Since the network service id is recorded in AMA module 185, TOPS operator calls do not make this record.

OSSAIN 12 Enhancements (continued)

The trigger profile index in CT4QNAMS is not changed when the CT4Q is changed, which can occur as follows:

- transfers—operator to operator, service node to operator, and operator to service node
- trigger to an operator
- recalls

Since the above change accounts for all calls types, table OAINPARM parameters OPR_TRIGGER_PROFILE_INDEX and AUTO_ALT_BILL_TRIG_PROFILE_INDEX are deleted. This change provides more explicit control. Refer to the datafill procedure section for details.

Operator handoff to service node limit (TOPS12)

Before this functionality, table OAINPARM parameter MAX_ALLOWED_TRANSITIONS limited the number of call transfers. A transfer counter is enabled at the beginning of the call and cleared at call float. The types of transfer are as follow:

- SN to SN
- SN to operator
- operator to SN
- SN to automated system

Now, the SN or operator can limit the number of successful call transfers from the operator to the SN. If a transfer is attempted above the limit, the transfer is blocked and the operator is notified. A transfer counter is enabled at the beginning of the call, but not cleared at call float. The limit cannot be above the OAINPARM parameter, since the parameter takes precedence.

The TOPS13 feature OSSAIN Support for DA Automation adds the option to bypass ADAS or ADAS Plus when a call is transferred to an operator.

No datafill is required for this enhancement.

Transmission of called number to DAS (TOPS12)

Before this functionality, OSSAIN DA calls had the called number erased before call control was sent to the directory assistance system (DAS). Sometimes, the DAS required the called number for the search. Now, the called number is sent to the DAS for all stages of call processing, initial and subsequent presentation due to a trigger event.

OSSAIN 12 Enhancements (continued)

No datafill is required for this enhancement.

Select party for trigger detection (TOPS12)

Before this functionality, table OATLKPRF allowed trigger detection of either the * or # digit of either the calling or called party (selected in table OAINPARM parameter STR_PARTY). Now, a field in table OATLKPRF allows selection of the party. Refer to the datafill procedure section for details.

Specialized Tone Receiver (STR) cards are required in the DTC or PDTC of the originating and or terminating party in order to detect a '*' or '#' digit keyed by the respective party.

Enable trigger detection over broadcast voice links (TOPS12)

This capability allows a subscriber to key a * or # digit while listening to a broadcast voice link. When the call is at the service node the switch detects the digits and passes the information to the service node with an existing OAP operation. In order to detect the digits, an STR is connected to the call at the service node. Refer to table OAVLMAP in the datafill procedure section for details.

OSNM two-way voice link (TOPS12)

Before this functionality, OSNM voice links could only be outgoing. Therefore, the switch could not signal remote make busy (RMB) to the service node. So, the service node was not aware that a voice link was out of service due to switch maintenance. This causes various call failures.

Now, the OSNM voice links can be datafilled with a direction of two-way in table TRKSGRP to signal RMB from the switch.

Calling number delivery blocking (TOPS12)**Background**

Calling Number Delivery (CND) allows the terminating subscriber to have the directory number of the calling subscriber displayed on their terminal equipment. CND Blocking (CNDB) allows a calling subscriber to block the forwarding of the number upon completion to the called party. Therefore, CNDB keeps the number from being displayed on the terminating party's equipment.

OSSAIN 12 Enhancements (continued)

Before this feature, CDNB was achieved in the TOPS office as follows:

- ISUP signalling on the incoming TOPS trunk specifies CNDB. See feature AN1515 in functionality GR317/GR394 ISUP to/from TOPS (OSEA0005) for more information.
- Trunk group or directory number datafill specifies CNDB. See feature AN1515.
- CNDB is set by the operator upon request by the calling subscriber. See feature AN1515 in functionality GR317/GR394 ISUP to/from TOPS (OSEA0005) for more information.

When a forward connection is made and the outgoing trunk is an ISUP trunk, the TOPS office may pass the CNDB status to the terminating office. The status is passed by the Presentation Indicator field of the Calling Party Number parameter in the Initial Address Message (IAM).

Before this feature, calls presented to a service node were not informed of the CNDB status, nor could the SN modify the status in a manner similar to a TOPS operator. In some circumstances, particularly on service node originated calls, the SN may need to turn on CND Blocking before connecting to the called party.

CND blocking in OSSAIN

This activity provides the service node with the current CND status for the call when a new session is started with the SN. Additional functionality allows an SN to block the forwarding of the calling party's number before completion to the called party.

If the service node specifies CND Blocking for a call, the IAM sent to the terminating office sets the Presentation Indicator field of the message to 'Presentation Restricted'.

The SN also can disable CND Blocking for a call that is signalled in or datafilled with CNDB, or was previously blocked by the operator. In such a case, the IAM message contains a value of 'Presentation Allowed' in the Presentation Indicator field.

GEN AMA request with forward party connected (TOPS12)

Before this feature, a request from a service node to generate an AMA record for a call was not allowed if the terminating party was connected and timing had been started. In order to successfully get an AMA record, the SN had to first release the forward party.

OSSAIN 12 Enhancements (continued)

This functionality removes the restriction against generating an AMA record when the terminating party is connected and timing has been started. The SN no longer has to release the forward party before sending a Generate AMA Request.

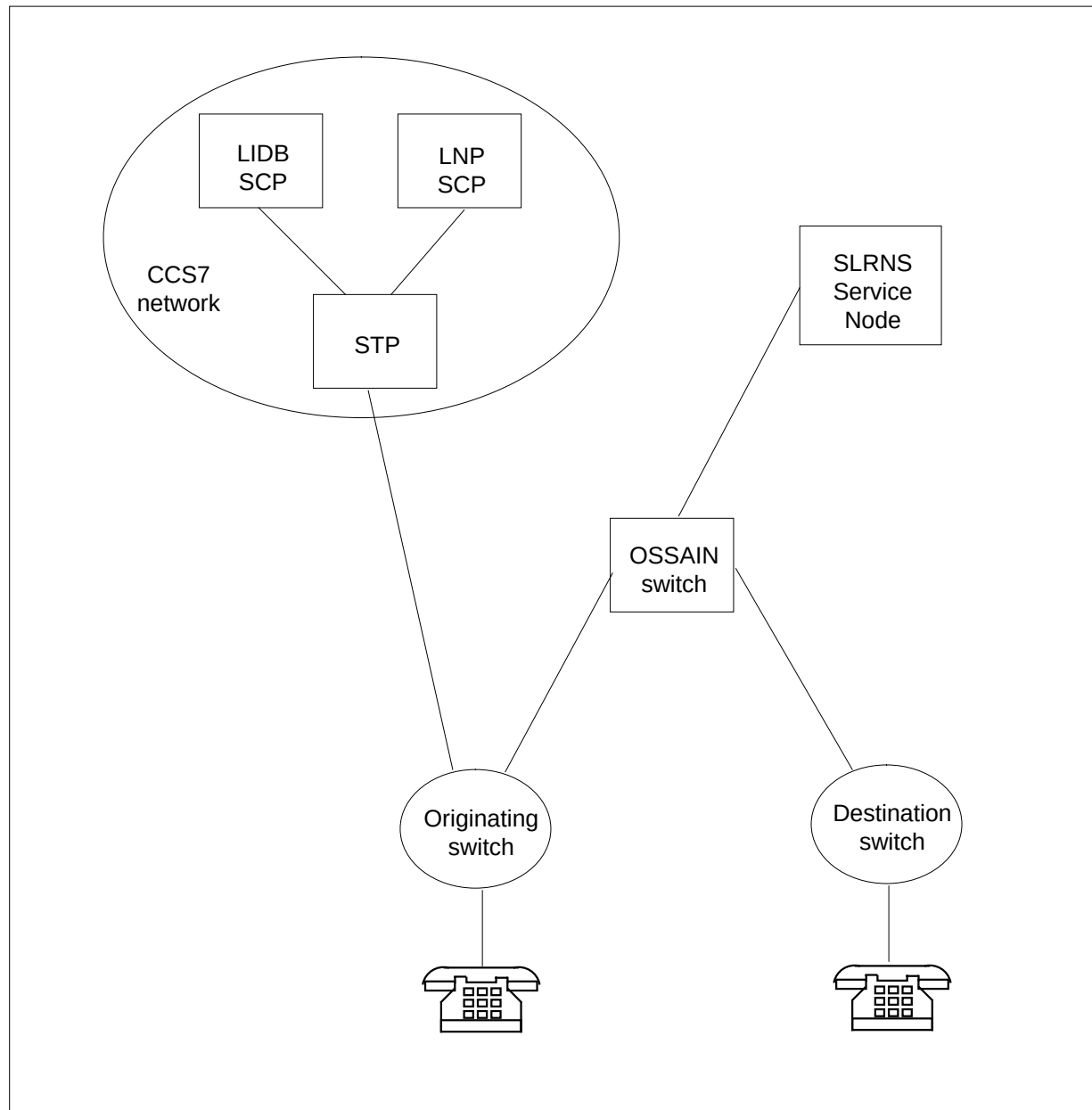
If a call is in the talking state, the time of the request is used as the disconnect time for the AMA record. The time of the request also is used as the connect time on the subsequent AMA record.

Special LRN services (TOPS12)

Special LRN services are provided by OSSAIN and used for calls that route to an OSSAIN switch based on the called party's LRN. Note, SLRNS calls must arrive at the TOPS switch over ISUP trunks. Then, the TOPS switch routes the call to the service node. The network configuration is shown in the diagram as follows.

OSSAIN 12 Enhancements (continued)

SLRNS network configuration



Call origination type

Calls can be routed by the call origination (CO) type since they require the same processing. The CO type is assigned in the standard pretranslator according to the SLRN digits. Table QMSTOPS uses the CO type for an initial CT4Q assignment.

OSSAIN 12 Enhancements (continued)

CO type CO_SLRN was created for special LRN services. Therefore, this CO type indicates the call is destined for SLRNS. This CO type can be used in tables STDPRT, QMSTOPS, ADACCOPT, AMASRVID, DABILL, TDBNORM TOPS, TOPSAMA, and TOPSOIC.

QMS refinements

QMS refinement tables were created for SLRNS as follows:

- TQSRNNAM—defines the names of the SLRN criteria
- TQSRNDIG—relates the SLRN criteria name with the SLRN digits
- CT4QSLRN—refines the old CT4Q by the SLRN criteria

Return answer on connection of voice link (billing)

Returning answer to the originator marks the start of the billable part of a call. In the past, connecting a voice link to the SN to allow the calling party to interact with it would return answer. SLRNS calls can be long distance, and returning answer before the called party answers can cause a call to be billed even if the call did not complete, or overbilled if a call does complete. This condition is separate from any charges associated with the SLRNS itself. For example, CPP includes separate charges for the called party's air-time.

Therefore, to avoid overcharging, returning answer on connection of a voice link to a SN is made optional in table OAFUNDEF field ANSONVLC. If answer was not previously returned then it is returned when both the call is floated and the called party answers.

Note 1: OSSAIN calls transferred to the operator return answer upon operator connection. The SN is expected to warn the caller before making this transfer to avoid overbilling LD charges.

Note 2: OSSAIN calls sent to the operator based on table OAFNDISP are not able to warn the caller that the billable portion of the call will begin.

Perform BNS query on the calling party (billing)

There are three methods of checking if a call can be billed sent paid to the calling number; however, these methods have problems. These methods and problems are as follow:

- Check the ISUP Originating Line Information (OLI) data
The OLI data was not included in the original definition of ISUP for intraLATA calls, and since then has not found widespread use.
- Perform an Originating Line Number Screening (OLNS) query

OSSAIN 12 Enhancements (continued)

OLNS is only used by part of the Local Exchange Carriers (LECs), so it also cannot be relied upon.

- The switch can screen based on datafill in table DNSCRN.

This method is usually used only for intraLATA calls. Table DNSCRN can be used based on the trunk group datafill or signalled ANI digits.

Due to the above difficulties, the switch can now perform a BNS query for billing restrictions to determine if the calling party can be billed. The results are returned to the SN, which also indicate the service provider. The service provider id can be used for inter-collection between telephone companies.

Alternate billing

If the SN determines that the calling party cannot be billed, the SN can prompt the party for alternate billing information. However, the network may not support two-way speech before returning answer. Therefore, if the caller requires alternate billing, then the SN must be able to indicate that answer be returned. This requirement creates a two-way speech path for collection of the billing information.

No datafill is required for this capability.

Route direct dial SLRNS call to SN

Normally, direct dial calls do not route through a TOPS/OSSAIN switch. And, an SLRNS subscriber call requires services in a SN. Therefore, SLRNS subscriber called numbers are logically ported in an LNP database. That is, a different LRN is used to route the call to the SLRNS switch. After call processing at the switch, the original dialed digits are used to route the call to the called party.

So, when an SLRNS subscriber is called, an LNP query is performed early in the call. The query yields an LRN that is used to route the call to the OSSAIN switch through standard LNP call processing.

Before sending an SLRNS call to the called party, the TOPS switch must set the ISUP Translated Called Number Indicator (TCNI) parameter. This ability is based on a CO type. The TCNI parameter is used to inform later switches that no further LNP queries should be performed, thus preventing the call from being sent back to the TOPS switch providing the SLRNS.

Translations

When a call routes to the TOPS switch, translations route the call to the SN as follows:

OSSAIN 12 Enhancements (continued)

Incoming trunk Translations start with the incoming trunk group, by looking up the standard pretranslator name, shown in bold, defined for the tuple in table TRKGRP, that is associated with the incoming trunk.

MAP example for table TRKGRP

GRPKEY	GRPINFO
ISUPTRK1	IT 0 ELO NCRT 2W NIL MIDL 419 ISIT NSCR 619 000 N N \$
ISUPTRK2	ATC 0 ELO NCRT 2W NIL MIDL ISAT NSCR 619 C111 Y EAPLAN Y 0 COMB N \$

Standard pretranslator The pretranslator name taken from the PRTNM field in table TRKGRP is used to index table STDPRTCT.

MAP example for table STDPRTCT

EXTPRTNM	STDPRT	AMAPRT
ISIT	(1)	(65021)
ISAT	(1)	(65021)

Note: Because it is not important which incoming trunk was used, each ISUP trunk index from TRKGRP into table STDPRTCT must be set up to handle calls for an LRN based service. Thus, it is necessary to make additions to subtable STDPRT for every tuple in table STDPRTCT indexed by any trunk group which can carry this service.

The necessary additions to STDPRT are described in the following two paragraphs.

- Digits of the LRN

The LRN digits should be included in a STDPRT tuple as both the FROMDIGS and TODIGS fields. Thus, only calls routing on this LRN

OSSAIN 12 Enhancements (continued)

translate based on this tuple. In the example below, 9087654321 and 9087651234 are LRNs routing to a SLRNS SN.

- Pretranslator route

The tuple in STDPRT is completed with a pretranslator route. The tuple using the LRN as its FROMDIGS and TODIGS should route the call on to TOPS. Also, the pretranslator route should specify that the call origination type is the CO_SLRN call origination type.

MAP example for table STDPRTCT.STDPRT

FROMDIGS	TODIGS	PRETRTE
9087651234	9087651234	T DD 0 TOPS SLRN 10 10 NONE
9087654321	9087654321	T DD 0 TOPS SLRN 10 10 NONE

Queue refinements The CO type, from STDPRT, is passed to the ordered TOPS queueing refinement tables. First, an initial CT4Q is assigned based on the call origination type in table QMSTOPS, shown in the example as follows.

MAP example for table QMSTOPS

CO	CT4Q
SLRN	SLRN_CT4Q

This initial CT4Q is passed into the QMS refinement tables which can make refinements. For calls with the CO type of SLRN, refinements may be performed based on the special LRN, using the table CT4QSLRN. Table CT4QSLRN requires tables TQSRNNAM (to define the SLRN names) and TQSRNDIG (to define the SLRN digits). Example datafill follows.

MAP example for table TQSRNNAM

SRNCODE	SRNCRIT
1	CPP_PROVIDER1
2	SLRNS_PROVIDER2

OSSAIN 12 Enhancements (continued)**MAP example for table TQSRNDIG**

SRNDIGS	SRNCRIT
9087651234	SLRNS_PROVIDER2
9087654321	CPP_PROVIDER1

MAP example for table CT4QSLRN

SRNKEY	NEWCT4Q
SLRN_CT4Q	CPP_PROVIDER1
SLRN_CT4Q	SLRNS_PROVIDER2
	SLRN_CPP1_CT4Q
	SLRNS_CT4Q

The CT4Q resulting from the refinements in table CT4QSLRN field NEWCT4Q is used for the SLRNS calls. It must be defined in table CT4QNAMS with the system area selector set to OSSAIN, if the call is to translate to a SN, and not to an operator. An example follows.

MAP example for table CT4QNAMS

CT4QNUM	CT4QNAME	NOAMA	ITRIGIDX	SYSAREA
0	SLRN_CT4Q	N	N	OSSAIN
1	SLRN_CPP1_CT4Q	N	N	OSSAIN
2	SLRN2_CT4Q	N	N	OSSAIN

OSSAIN tables The CT4Q resulting from the QMS refinements is used as an index into the OSSAIN tables to route the call to an SN, if the SYSAREA selector is set to OSSAIN. Information for OSSAIN datafill can be found in the OSSAIN user's guide.

SOC

Only the SLRN capability is under software optionality control (SOC). The remainder of this functionality is not controlled by SOC.

Calls with the CO type of SLRN also require functionality GR317/GR394 ISUP to/from TOPS, OSEA0005, to be on in order to receive and process the incoming ISUP parameters such as the LRN.

OSSAIN 12 Enhancements (continued)

Logs

Logs are generated as follows:

- OAIN210, which the TOPS13 release introduced, is generated when an unsupported DAS protocol is used in the OSSAIN environment.
- OAIN204 is generated when an attempt is made to assign a call (for example, in table CT4QNAMS) with a trigger profile index not datafilled in table OATPREFIX.
- TOPS610 is generated when an SLRN call is received over a trunk other than a North American ISUP trunk.

OMs

OM group OAPCALP9 generates OM registers for an OAP operation.

OM group OAPCP10 counts OAP operations.

Translations table flow

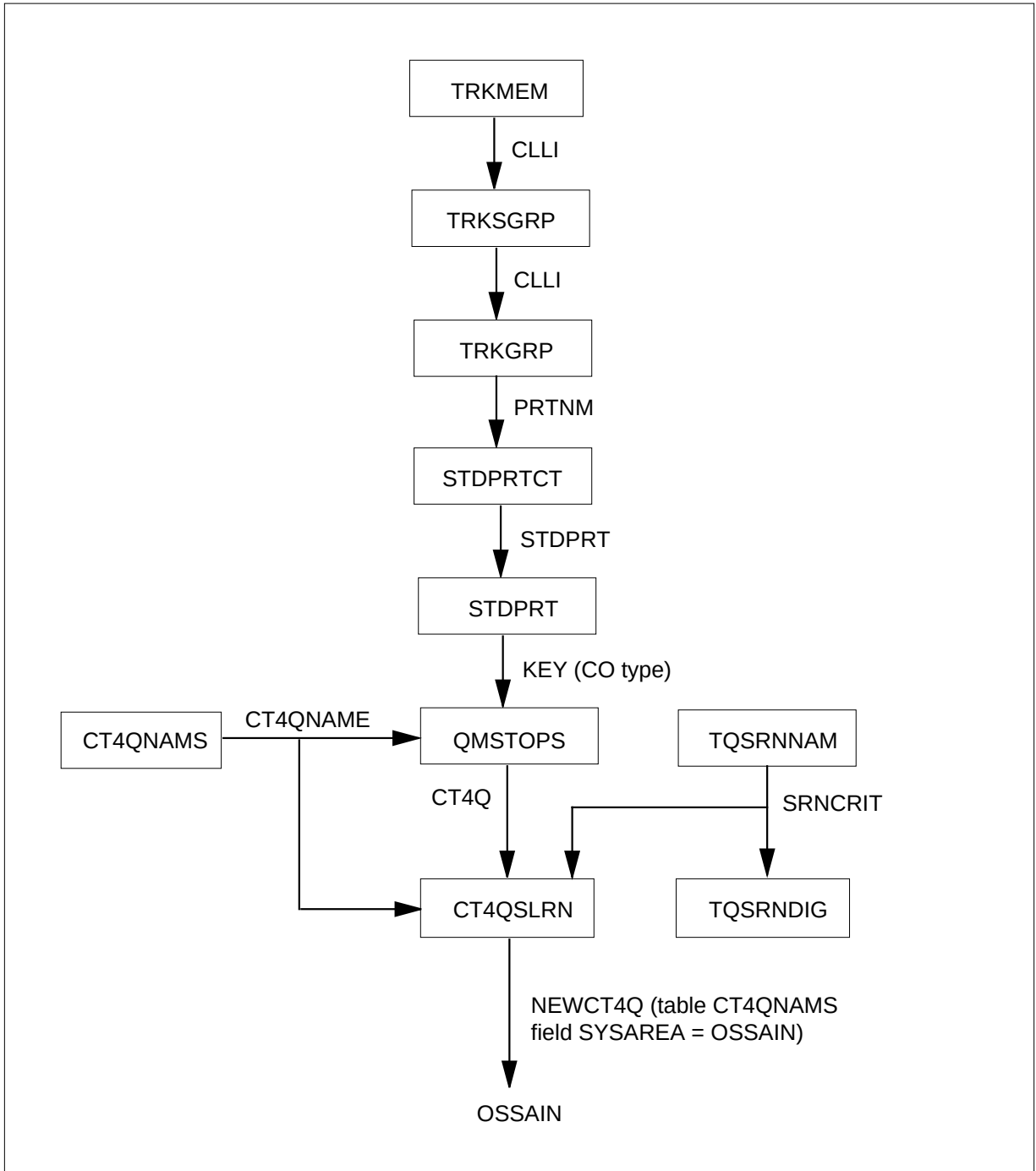
The list that follows includes the OSSAIN 12 Enhancements translations tables:

- Table TRKMEM defines hardware characteristics of trunk groups
- Table TRKSGRP defines software characteristics of trunk groups
- Table TRKGRP defines more software characteristics of trunk groups
- Table STDPRTCT lists the standard pretranslators
- Subtable STDPRT contains the standard pretranslators
- Table CT4QNAMS defines QMS call type for queueing names
- Table QMSTOPS assigns an initial CT4Q by call origination type
- Table TQSRNNAM defines SLRN service names
- Table TQSRNDIG associates SLRN service names with called number
- Table CT4QSLRN refines a CT4Q by the SLRN service criteria

The flowchart that follows provides the OSSAIN 12 Enhancements translations process.

OSSAIN 12 Enhancements (continued)

Table flow for OSSAIN 12 Enhancements



OSSAIN 12 Enhancements (continued)

The table that follows lists the datafill content used in the flowchart.

Datafill example for OSSAIN 12 Enhancements

Datafill table	Example data
TRKMEM	ISUPTRK1 0 0 DTC 0 5 15
TRKGRP	ISUPTRK1 0 DS1SIG C7UP 2W F N UNEQ ACTIVEA Q764 THRL 0 ISUP \$ NIL CIC
TRKGRP	ISUPTRK1 IT 0 ELO NCRT 2W NIL MIDL 419 ISIT NSCR 619 000 N N \$
STDPRTCT	ISIT (1) (65021)
STDPRT	9087654321 9087654321 T DD 0 TOPS SLRN 10 10 NONE
CT4QNAMS	0 LRN_CT4Q N N OSSAIN 1 LRN_CPP1_CT4Q N N OSSAIN
QMSTOPS	SLRN LRN_CT4Q
TQSRNNAM	1 CPP_PROVIDER1
TQSRNDIG	9876543210 CPP_PROVIDER1
CT4QSLRN	LRN_CT4Q CPP_PROVIDER1 LRN_CPP1_CT4Q

Limitations and restrictions

The limitations and restrictions that follow apply to OSSAIN 12 Enhancements:

OSSAIN Support for DA Automation

OSSAIN Support for DA Automation does not remove the following OSSAIN restrictions (those types of call that OSSAIN did not support before the TOPS13 feature):

- SentPd coin and hotel calls
- inward calls
- Centralized Automatic Message Accounting (CAMA)
- Remote Operator Number Identification (RONI)
- intercept (INTC) calls

OSSAIN Support for DA Automation does not support External Rating.

OSSAIN 12 Enhancements (continued)

OSSAIN Support for DA Automation only supports the Standard Nortel-DMS/DAS protocol.

OSSAIN 12 Enhancements

Calls floated by ACTS do not receive OSSAIN trigger processing. This limitation existed before this activity and is still in effect.

When applying STR supervision to a party using an ISUP trunk, the STR card in the DTC listens in on both sides of the conversation. This results in either party being able to key the STR digit trigger. The switch receives the digit from the party that was supervised to report the digit to the service node as a trigger. For MF trunks this limitation does not exist since the STR supervision is explicit as it listens in on only one port of the connection. With MF trunks the supervised party is the only party able to key the STR digit trigger. This limitation existed before this activity and is still in effect.

The STR enhancements on calls connected to a broadcast voice link in the OSAC environment require OSAC protocol release 5.

SLRNS

The LRN is used to route to the SLRNS switch and must be signalled when the call arrives at the OSSAIN switch. While the LRN is used to route to the switch, it not considered resident on this switch. Table HOMELRN is used to define the resident LRNs and should not include any SLRNS LRNs. Inclusion of a SLRNS LRN generates the existing LNP 303 log and sends the call to treatment. The resulting treatment prevents translations from then routing the call to the SLRNS SN.

If the call routes through any LNP capable switches after leaving the switch providing SLRNS, then all of the switches between the SLRNS switch and the LNP capable switch must support LNP and be connected by ISUP trunks. Also, any applicable datafill must reflect the support of LNP. For example, the Signal Ported Number (SPN) option, in table ADJNODE, should not be set. The SPN option, which specifies that no LNP information should be signalled, is usually used when the next switch does not support LNP. These restrictions ensure that LNP routing information (for example, the TCNI parameter) survives. Therefore, these restrictions prevent the call from routing back to the SLRNS switch due to a subsequent LNP query.

Note: If the call does not route through any LNP capable switches after leaving the SLRNS switch, then no LNP routing information needs to be signalled. If no LNP information is necessary, MF trunks can be used to connect the SLRNS switch to the terminating switch.

OSSAIN 12 Enhancements (continued)

SLRNS calls going to an operator return answer immediately, possibly starting LD billing. Return answer occurs whether the call goes to operator directly based on datafill or after going to a SN.

The Calling Number BNS query OAP operation does not launch a LIDB query if Automatic Call Gapping is in effect. Also, that OAP operation does not launch a query if the automated calling card service (ACCS) subsystem is out of service.

Interactions

The paragraphs that follow describe how OSSAIN 12 Enhancements interacts with other functionalities.

OSSAIN Support for DA Automation

Standard OSSAIN routing and queueing is used to route the call to the service node (SN). For SNs that are providing ADAS/ADAS Plus equivalent services, this means:

- Sentpd coin and hotel calls are not supported
- Inwards calls are not supported.
- Billing is not verified.
- ADAS/ADAS Plus related datafill/parms are ignored.

For details about OSSAIN routing and queueing, refer to the OSSAIN User's Guide, 297-8403-901.

If the passive operator is brought into the call and billing is unsatisfied, then the call will arrive at the operator's DA billing screen, instead of the DA search screen.

OSSAIN Support for DA Automation does not provide any call arrival tone when the passive operator is brought into the call. It also does not provide any caller join tone when the SN updates the caller's speech path. The SN is responsible for providing these tones.

The call context block is a generic block of data that contains additional information about the call. OSSAIN supports distribution of this context block between the following:

- SN
- open position protocol (OPP)-compatible position
- directory assistance system (DAS)

OSSAIN 12 Enhancements (continued)

The content block can coordinate call processing between the different systems. For example, the SN can use the context block to inform the DAS about what information needs to be displayed in the top line of the position.

Note 1: The ability to pass the context block information to DAS requires version 4 or higher of Standard Nortel-DMS/DAS protocol.

Note 2: Development of DAS or positions of both of them is necessary in order to populate the position with the information from the context block.

The OAP Text to Operator Request message allows a small block of text to be passed to the operator position when the operator becomes involved in the call. The manner in which this block of text appears depends on the position.

For OSSAIN calls, when OSSAIN Support for DA Automation is active, an entry of NONE in the BILTYPES field of table ADACCOPT indicates that no billing types are valid, with the exception of auto-collect.

OSSAIN 12 Enhancements

Assignment of a trigger profile index with parameters OPR_TRIGGER_PROFILE_INDEX and AUTO_ALT_BILL_TRIG_PROFILE_INDEX is changed. This assignment is replaced with a more explicit method based on the CT4Q. Therefore, calls that used these parameters should have datafill in table CT4QNAMS field ITRIGIDX.

Operator screen displays relating to CND blocking are unchanged by this feature. If the service node updates the caller ID status to 'blocked' and subsequently transfers the call to an operator, the operator screen display does NOT indicate that the status had been set to 'blocked'. Only if the operator blocks the call does the screen give any indication of blocking.

Receipt of the Caller ID Blocking key function from the operator negates any previous setting of the CND Blocking status by the service node. Likewise, updating of the status by the service node negates any previous setting by the operator.

The surcharge applicable to calls blocked by an operator (using table DNBKSUR) do not apply to calls blocked by the service node.

When AMA is generated on a call with the forward party connected, the charge status of the call for the next period is always set to 'Billable'. This condition is the case even if the charge status at the time of the Generate AMA Request is 'Not Billable'.

OSSAIN 12 Enhancements (continued)

Multiple GEN AMA requests with the forward party connected may impact AMA record correlation of calls that use Release Link Trunking (RLT). In other words, the existence of multiple AMA records for the same call may make it difficult to match AMA records between the TOPS switch and the previous switch when the two switches are involved in RLT.

SLRNS

An SLRNS subscriber who also has undergone LNP Service Provider Portability (SPP) does not have their LRN stored in the LNP database, as would be expected. This condition is because the LRN of the SLRNS switch is stored there. Instead, the SPP LRN needs to be stored in a local database accessible to the SN. The SN then is able return this LRN to the switch. Returning such a number, that is different from the dialed digits, sets up the data to cause an LNP AMA module to be appended to the billing record.

Activation and deactivation by the user

OSSAIN 12 Enhancements does not require activation or deactivation by the user.

Billing

OSSAIN Support for DA Automation

In a Bellcore format DA Automatic Message Accounting (AMA) record, AMA module code 55 is used to record listing services. The TOPS13 feature OSSAIN Support for DA Automation does not change AMA. For additional information about AMA, refer to the Bellcore Format AMA Reference, 297-1001-830. OSSAIN Support for DA Automation allows the service node (SN) to optionally populate some fields in module code 55. The SN can populate:

- service identification —identifies service that the customer requests.
- Means of Info. Input — identifies method that a subscriber uses to request information from a listing service.
- LSDB's BOC ID — records the identification code of the corporate entity
- Listing Responses — records method of listing response
- Listing Status — records values returned from the Listing Status field from DAS

The feature OSSAIN Support for DA Automation introduces a datablock to enable the service node (SN) to update the fields in the list above. The datablock is included in the following OAP operations:

- DN request
- Passive Function Provider Request

OSSAIN 12 Enhancements (continued)

- Gen AMA Request
- End Call Request

If the SN updates the AMA fields and then routes the call to the operator, then some fields are possibly updated again due to interaction with the operator. For example, if the operator queries the DA database, the result from that query will replace existing values in the Listing Status field.

In addition to the Bellcore AMA format (BAF), TOPS also supports the TOPS Call Detail Recording (TDR) billing format. TDR uses a less complex structure to record TOPS billing data. All BAF fields are not supported in TDR. For additional information, refer to the TDR User's Guide, 297-8403-904.

Trigger profile index for all TOPS calls

If an office is changed from routing TOPS calls through an OSSAIN CT4Q to routing directly to a TOPS operator, downstream processing should adjust for this change in AMA.

This change allows a trigger profile assignment without an OSSAIN CT4Q and the associated OSSAIN control list, function, and network service id. Calls that route to OSSAIN get an OSSAIN CT4Q and calls that route to a TOPS operator do not get an OSSAIN CT4Q. Since the network service id is recorded in AMA module 185, TOPS operator calls do not make this record.

SLRNS

The call origination type SLRN changes field 432, Origination Call Type, in module code 311. Value 63 is added which means Special LRN.

Modules 719 and 720 can now be appended without the standard LNP database query. This ability is possible if an SLRNS subscriber is ported. Instead of getting the called party's information from the LNP database, the SN is able to return the LNP information that routes the call and appends the AMA module.

Standard LNP processing continues to be performed. For example, if the calling LRN is signalled, AMA module 719 or 720 is appended for the calling party.

Table TOPLNPOP parameter AMAPARM selects either module 719 or 720 to append the AMA module.

OSSAIN 12 Enhancements (continued)

Station Message Detail Recording

OSSAIN 12 Enhancements does not require Station Message Detail Recording.

Office parameters used by OSSAIN 12 Enhancements

OSSAIN 12 Enhancements does not generate office parameters.

Datafill sequence

The table that follows lists the tables that require datafill to put OSSAIN 12 Enhancements into operation. You must enter data into the tables in this order.

Datafill requirements for OSSAIN 12 Enhancements (Sheet 1 of 2)

Table	Purpose of table
STDPRTCT. STDPRT	Subtable STDPRT contains standard pretranslators
CT4QNAMS	Call type for queueing names defines queue names and their characteristics.
QMSTOPS	QMS TOPS assigns an initial CT4Q according to the call origination type
OAFUNDEF	OSSAIN function definition indicates the OSSAIN service provider
OATLKPRF	OSSAIN talking profile enables OSSAIN triggering during talking.
OAINCTLA	OSSAIN control list assignment selects services and control lists for CT4Qs marked for an OSSAIN service node.
OAINPARM	OSSAIN parameters contains office wide parameters for OSSAIN.
TRKGRP	Trunk group defines properties of trunk groups.
TRKSGRP	Trunk subgroup defines properties of trunk subgroups.
OAVLMAP	OSSAIN voice link map associates the logical voice channel to an index in table TRKMEM.
TQSRNNAM	TOPS QMS signaled LRN name defines the names of the SLRNS criteria.
TQSRNDIG	TOPS QMS signaled LRN digilator relates the SLRN criteria name with the SLRNS digits.
CT4QSLRN	Call type for queueing refinements on signaled location routing number refines calls by the SLRNS.

OSSAIN 12 Enhancements (continued)**Datafill requirements for OSSAIN 12 Enhancements (Sheet 2 of 2)**

Table	Purpose of table
TQORDERA and TQORDERB	TOPS QMS order A and B indicate the ordering of the QMS refinement tables
TOPS	TOPS defines call origination types and operator displays for these types.

Datafill related to OSSAIN 12 Enhancements for subtable STDPRT

The table that follows provides the datafill related to OSSAIN 12 Enhancements for subtable STDPRT. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to subtable STDPRT

Field	Subfield	Entry	Explanation and action
FROMDIGS and TODIGS			This table is not changed. Make additions for every tuple in table STDPRTCT indexed by any trunk group which can carry the SLRN service.
			The LRN digits should be included as both the FROMDIGS and TODIGS fields. Thus, only calls routing on this LRN translate based on this tuple. In the example below, 9087654321 and 9087651234 are LRNs routing to a SLRNS SN.
	PRERTSEL	T	Route the call to the TOPS system.
	KEY	SLRN	The pretranslator route should specify the SLRN call origination type.

Datafill example for subtable STDPRT

The figure that follows shows sample datafill for subtable STDPRT.

MAP example for subtable STDPRT

FROMDIGS	TODIGS	PRETRTE
9087654321	9087654321	T DD 0 TOPS SLRN 10 10 NONE
9087651234	9087651234	T DD 0 TOPS SLRN 10 10 NONE

OSSAIN 12 Enhancements (continued)

Datafill related to OSSAIN 12 Enhancements for table CT4QNAMS

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table CT4QNAMS. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to table CT4QNAMS

Field	Subfield	Entry	Explanation and action
ITRIGIDX		see subfield	Add tuples for the SLRN queues.
	PROFSEL	N or Y	Initial call setup trigger profile index. This field consists of subfield PROFSEL. Profile select. This field indicates if float trigger processing is required. Enter Y to perform the processing and datafill subfield IDXVAL. Otherwise, enter N for no processing.
	IDXVAL	0 to 2046	For dump and restore of releases before this functionality, if SYSAREA has TOPSOPR, subfield PROFSEL is set to N. If SYSAREA has OSSAIN, subfield PROFSEL is set to Y. Index value. Datafill this subfield if subfield PROFSEL = Y. Enter a trigger profile index into table OATPRFIX. For dump and restore of releases before this functionality, the value of IDXVAL in table OAINCTLA is copied to IDXVAL in table CT4QNAM.
SYSAREA		see subfield	System area. This field consists of subfield SYSAREA_SEL.
	SYSAREA_SEL	OSSAIN	System area selector. Assign the SLRN queues to OSSAIN.

Datafill example for table CT4QNAMS

The figure that follows shows sample datafill for table CT4QNAMS.

OSSAIN 12 Enhancements (continued)**MAP example for table CT4QNAMS**

CT4QNUM	CT4QNAME	NOAMA	ITRIGIDX	SYSAREA
0	UNSPEC	N	N	TOPSOPR N N N N
1	DA_411	N	N	TOPSOPR 411_OPR N N N
2	0+YELLOW	N	N	OSSAIN
3	OSS_DA	N	Y 534	OSSAIN
4	PCS_OPR	N	Y 1039	TOPSOPR PCSOPR N N N

Error messages for table CT4QNAMS

The error messages that follow apply to table CT4QNAMS.

Error messages for table CT4QNAMS

Error message	Explanation and action
WARNING: The trigger index specified is not activated until datafilled in Table OATPREFIX. Table OATPREFIX and its associated trigger tables must be datafilled to activate this trigger index.	This warning message is displayed if a trigger profile index is entered in subfield IDXVAL that is not datafilled in table OATPREFIX.

Datafill related to OSSAIN 12 Enhancements for table QMSTOPS

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table QMSTOPS. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to table QMSTOPS

Field	Subfield	Entry	Explanation and action
CO		SLRN	This table is not changed. Add a tuple for the SLRN call origination type.

Datafill example for table QMSTOPS

The figure that follows shows sample datafill for table QMSTOPS.

OSSAIN 12 Enhancements (continued)**MAP example for table QMSTOPS**

C0	CT4Q

SLRN	SLRN_CT4Q

Datafill related to OSSAIN 12 Enhancements for table OAFUNDEF

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table OAFUNDEF. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to table OAFUNDEF

Field	Subfield	Entry	Explanation and action
	FUNCTYPE	SN, TOPSOPER, TOPSAUTO	Function type. When this field is set to SN, subfield ANSONVLC is present.
	ANSONVLC	Y or N	Answer on voice link connection. This field indicates whether to return answer on connection of a voice link. Enter Y to return answer or N to not return answer. The default is Y.

Datafill example for table OAFUNDEF

The figure that follows shows sample datafill for table OAFUNDEF.

MAP example for table OAFUNDEF

FUNCID	FUNCNAME	FUNCAREA

1	BRANDING	SN TASERV N N N Y Y CQ0 N
2	0_MINUS_OPER	TOPSOPER 0_MINUS
3	CPP_1	SN TASERV N N N N Y QC7 N
4	CPP_2	SN TASERV N N N N Y QC8 N

The field is shown in bold in the above example.

OSSAIN 12 Enhancements (continued)**Datafill related to OSSAIN 12 Enhancements for table OATLKPRF**

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table OATLKPRF. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to table OATLKPRF

Field	Subfield	Entry	Explanation and action
STAR		see subfields	Star key. Service selection associated with DTMF * digit. This field has subfield STRPARY. The dump and restore rules are as follows: • Pre-TOPS11 to TOPS12: Set STRPARY to CALLING. • TOPS11 to TOPS12 or later: Use value in table OAINPARM parameter STR_PARTY.
	STRPARY	CALLING or CALLED	Specialized tone receiver party. This subfield indicates which party to monitor for a * and trigger on it during the talking phase.
OCTO		see subfields	Octothorpe key. Service selection associated with DTMF # digit. This field has subfield STRPARY.
	STRPARTY	CALLING or CALLED	Specialized tone receiver party. This subfield indicates which party to trigger on when they enter a # during the talking phase.

Datafill example for table OATLKPRF

The figure that follows shows sample datafill for table OATLKPRF.

TALKIDX	STAR	PROFILE
	OCTO HOLDRCVR	
0	(FLASH Y N N N FUNCTION SN_Y) (NTFY Y N N N FUNCTION NEW_ACTS)	
	N	
	N N	
1	(PTYD Y N N N CTRLLIST ROUTE_NODE)	
	Y N Y Y Y CALLING CTRLLIST RTE_NODE	
	N Y	

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table OAINCTLA. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Field	Subfield	Entry	Explanation and action
OATPRFIX		see subfield	OSSAIN profile prefix. This field is removed since equivalent field ITRIGIDX is added to table CT4QNAMS. Deleted field OATPRIFX consisted of subfields PROFSEL and IDXVAL. For dump and restore of releases before this functionality, the value of IDXVAL below is copied to table CT4QNAM subfield IDXVAL.
	PROFSEL	N or Y	Profile select. This subfield is deleted since it is part of deleted field OATPRFIX.
	IDXVAL	0 to 2046	Trigger profile index value. This subfield is deleted since it is part of deleted field OATPRFIX.

The figure that follows shows sample datafill for table OAINCTLA.

OSSAIN 12 Enhancements (continued)**MAP example for table OAINCTLA**

CT4Q	OALISTNM

OSS_YEL	YEL_PAGE
OSS_DA	DA_SYSTEM

Datafill related to OSSAIN 12 Enhancements for table OAINPARAM

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table OAINPARAM. This table includes only those parameters that apply directly to OSSAIN 12 Enhancements.

Datafill related to table OAINPARAM

Parameter name	Explanation and action
AUTO_ALT_BILL_TRIG_PROFILE_INDEX	This parameter is deleted. It selected OSSAIN floated trigger processing for calls floated by the Automated Alternate Billing System (AABS) or Mechanized Credit Card System (MCCS). This capability is now provided by table CT4QNAM field ITRIGIDX. For dump and restore, no values are copied over to table CT4QNAM field ITRIGIDX.
OPR_TRIGGER_PROFILE_INDEX	This parameter is deleted. It selected OSSAIN floated trigger processing for calls floated by the operator. This capability is now provided by table CT4QNAM field ITRIGIDX. For dump and restore, no values are copied over to table CT4QNAM field ITRIGIDX.
SEND_BILLSPID_W_CLASSCHG	This parameter enables/disables the SPID datablocks for the billing party to be sent with the Class Charge Success Response in OAP version 8. This parameter has no effect on other OAP versions. The values are as follows: - Y - If the Account Owner SPID and/or the Billing Service Provider SPID for the billing party are available and the OAP protocol version is 8, the SPID datablock(s) are included with the Class Charge Success Response. - N - The SPID datablocks are not sent.
STR_PARTY	This parameter is deleted. It selected either the called or calling party to triggering on the * digit in table OATLKPRF. This capability is moved to table OATLKPRF field STRPARTY

OSSAIN 12 Enhancements (continued)

Datafill example for table OAINPARM

The figure that follows shows sample datafill for table OAINPARM.

MAP example for table OAINPARM

PARMNAME	PARMVAL
ADACC_ALT_BILL_INDEX	Y 100
ALT_BILL_HANDOFF_METHOD	OSSAIN DA_411
CALL_SANITY_TIMER_DURATION	423
DEFAULT_TREATMENT	TREAT VACT
MAX_ALLOWED_TRANSITIONS	15
MAX_NUM_TRIGGERS	15
MAX_TRANSFERS_BEFORE_CONNECT	5
NOANS_TIMER	20
NOTIFY_TIMER	180
ON_HOOK_TIMER_DURATION	368
QMS_MIS_OAIN_CALL_IN_Q_THRESH	5
QMS_MIS_OAIN_CAM_ON	Y
QMS_MIS_OAIN_REMOTE_SEND	Y
QMS_MIS_OAIN_XMIT_TIMEOUT	10
SEND_BILLSPID_W_CLASSCHG	Y

Datafill related to OSSAIN 12 Enhancements for table TRKGRP

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table TRKGRP. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

TRKGRP datafill

Field	Subfield	Entry	Explanation and action
	GRPTYP	TOPSVL	Trunk group type. The change to this table applies to type TOPSVL.
	DIR	OG, IC, or 2W	Direction. Trunk groups of type TOPSVL can now set the direction to two-way. Before this functionality, only outgoing and incoming were allowed.

Datafill example for table TRKGRP

The figure that follows shows sample datafill for table TRKGRP.

OSSAIN 12 Enhancements (continued)**MAP example for table TRKGRP**

GRPKEY	GRPINFO					

OAIN	TOPSVL	0	NPDGP	NCRT	MIDL	2W

Datafill related to OSSAIN 12 Enhancements for table TRKSGRP

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table TRKSGRP. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

TRKSGRP datafill

Field	Subfield	Entry	Explanation and action
	DIR	OG, IC, or 2W	Direction. Trunk groups of type TOPSVL can now set the direction to two-way. Before this functionality, only outgoing and incoming were allowed.
	IPULSTYP	DP	Incoming type of pulse. This field must be set to DP for a 2W trunk.
	ISTARTSIG	IM	Incoming start dial signal. This field must be set to IM for a 2W trunk.
	OPULSTYP	NP	Outgoing type of pulse. This field must be set to NP (the same as for an OG TOPSVL trunk) for a 2W trunk.
	OSTARTSG	IM	Outgoing start dial signal. This field must be set to IM (the same as for an OG TOPSVL trunk) for a 2W trunk.
	REMBSY	Y	Remote make busy. This field must be set to Y if the remote make busy capability is desired for a 2W trunk.

Datafill example for table TRKSGRP

The figure that follows shows sample datafill for table TRKSGRP.

OSSAIN 12 Enhancements (continued)

MAP example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR

OAIN 0	2X82AA	
STD 2W DP IM N 10 10 NP IM 0 2 N NO NO N N Y M 70 UNEQ \$		

Datafill related to OSSAIN 12 Enhancements for table OAVLMAP

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table OAVLMAP. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

OAVLMAP datafill

Field	Subfield	Entry	Explanation and action
	STRCLG	see subfield	Specialized tone receiver (STR) supervision digit calling party. This field is present only when field BCST_SEL = Y. Field STRCLG consists of subfield STRSEL.
	STRSEL	Y or N	STR supervision select. This field indicates if STR supervision is used to monitor for a * or # digit by a calling party who is connected to a broadcast voice link. The values are Y (enable) and N (disable). For Y, enter datafill in field STRDIGIT. The default is N.
	STRDIGIT	OCTO or STAR	STR supervision digit. This field is present only when field STRSEL = Y. This field selects the type of digit for supervision.

Datafill example for table OAVLMAP

The figure that follows shows sample datafill for table OAVLMAP.

MAP example for table OAVLMAP

NDANDCH	CLLI	EXTRKNM	BCSTAREA

BILLING_SN 10	BILLING_VL 1	N	
BRANDING_SN 9	BRANDING_VL 0	Y HKCHG 250 Y OCTO	
CALL_CENTER_SN 8	CALL_CTR_VL 5	Y IMMED 1023 Y OCTO	

OSSAIN 12 Enhancements (continued)**Datafill for OSSAIN 12 Enhancements in table TQSRNNAM**

TOPS QMS special location routing number (SLRN) name is a table that defines names of SLRN service criteria for use in other QMS tables.

Datafill tables TQSRNDIG and CT4QSLRN after table TQSRNNAM.

The fields are described in the table that follows.

Datafill related to table TQSRNNAM

Field	Subfield	Entry	Explanation and action
SRNCODE		0 to 126	SLRN code. This field is the key to the table.
SRNCRIT		up to 32 alphanumeric characters	SLRN criteria. Define an SLRN refinement criteria for use in QMS tables TQSRNDIG and CT4QSLRN.

Datafill example for table TQSRNNAM

The figure that follows shows sample datafill for table TQSRNNAM.

MAP example for table TQSRNNAM

SRNCODE	SRNCRIT
1	CPP_WIRELESS_C01
2	CPP_WIRELESS_C02
3	OTHER_CPP

Datafill for OSSAIN 12 Enhancements in table TQSRNDIG

TOPS QMS special location routing number (SLRN) digilator is a table that associates an SLRN criteria name defined in table TQSRNNAM with SLRN digits.

Datafill table TQSRNNAM before table TQSRNDIG and datafill table CT4QSLRN after table TQSRNDIG.

OSSAIN 12 Enhancements (continued)

The fields are described in the table that follows.

Datafill related to table TQSRNDIG

Field	Subfield	Entry	Explanation and action
SRNDIGS		see subfields	SLRN digits. This field is the key to the table and consists of subfield DIGILATOR_KEY.
	DIGILATOR_KEY	up to 18 digits	Digilator key. Enter signalled (called) digits to associate with the SRNCRIT. This field is a digilator, similar to subtable STDPRTCT.STDPRT. Therefore, it is not possible to datafill two tuples that begin with the same digits and have different digit lengths. For example, tuples 23 and 231 cannot be used in the same table.
SRNCRIT		name from TQSRNNAM	SLRN criteria. Enter an SLRN refinement criteria from table TQSRNNAM.

Datafill example for table TQSRNDIG

The figure that follows shows sample datafill for table TQSRNDIG.

MAP example for table TQSRNDIG

SRNDIGS	SRNCRIT
-----	-----
6194361234	CPP_SORELESS_C01
6192312345	CPP_SORELESS_C02
3045521212	OTHER_CPP

Datafill for OSSAIN 12 Enhancements in table CT4QSLRN

QMS call type for queueing refinements on special location routing number (SLRN) is a QMS table that refines calls by the SLRN.

Datafill table TQSRNNAM and TQSRNDIG before table CT4QSLRN.

OSSAIN 12 Enhancements (continued)

The fields are described in the table that follows.

Datafill related to table CT4QSLRN

Field	Subfield	Entry	Explanation and action
OLDCT4Q		name from table CT4QNAMS	Old call type for queueing. Enter a CT4Q to receive this refinement. The name must be defined in table CT4QNAMS.
SRNCRIT		name from TQSRNNAM	SLRN criteria. Enter an SLRN refinement criteria from table TQSRNNAM for refinement of the OLDCT4Q.
NEWCT4Q		name from table CT4QNAMS	New call type for queueing. Enter a CT4Q that results from the refinement of field SRNCRIT. The name must be defined in table CT4QNAMS.

Datafill example for table CT4QSLRN

The figure that follows shows sample datafill for table CT4QSLRN.

MAP example for table CT4QSLRN

OLDCT4Q	SRNCRIT	NEWCT4Q
-----	-----	-----
INIT_LRN	CPP_WIRELESS_C01	LRN_CPP_C01
INIT_LRN	CPP_WIRELESS_C02	LRN_CPP_C02
INIT_LRN	OTHER_CPP	LRN_CPP_OTHER

Datafill related to OSSAIN 12 Enhancements for tables TQORDERA and TQORDERB

The table that follows provides the datafill related to OSSAIN 12 Enhancements for tables TQORDERA and TQORDERB. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to tables TQORDERA and TQORDERB

Field	Subfield	Entry	Explanation and action
CT4QTABL		CT4QSLRN	Call type for queueing. Value CT4QSLRN automatically appears with default values (zeros) for the fields.

Datafill example for tables TQORDERA and TQORDERB

The figure that follows shows sample datafill for tables TQORDERA and TQORDERB.

OSSAIN 12 Enhancements (continued)**MAP example for table TQORDERA**

CT4QTABL	PREOPR	POSTAUTO	RECALL	ASST
CT4QCLAS	1	0	0	0
CT4QREST	0	0	0	0
CT4QPFXT	0	0	0	0
CT4QCAR	0	0	0	0
CT4QCLD	0	0	0	0
CT4QORIG	0	0	0	0
CT4QTIME	0	0	0	0
CT4QLANG	0	2	2	0
CT4QAUTO	0	1	1	0
CT4QSPID	0	0	0	0
CT4QBLST	0	0	0	0
CT4QCALT	2	0	0	0
CT4QSLRN	3	0	0	0

Datafill related to OSSAIN 12 Enhancements for table TOPS

The table that follows provides the datafill related to OSSAIN 12 Enhancements for table TOPS. This table includes only those fields that apply directly to OSSAIN 12 Enhancements.

Datafill related to table TOPS

Field	Subfield	Entry	Explanation and action
CO		SLRN	Call origination type. Value special location routing number is added. This call type can be used in tables ADACCOPT, AMASRVID, DABILL, QMSTOPS, STDPRTCT, TDBNORM, TOPSAMA, and TOPSOIC.

Datafill example for table TOPS

The figure that follows shows sample datafill for table TOPS.

MAP example for table TOPS

CO	DISPLAY	HOLDREQ
SLRN	S	N

OSSAIN 12 Enhancements (end)

Translation verification tools

OSSAIN 12 Enhancements does not use translation verification tools.

SERVORD

OSSAIN 12 Enhancements does not use the Service Order System (SERVORD).

OSSAIN XA-Core Data Messaging Capacity Enhancements

Ordering codes

Functional group ordering code: OSAN

Functionality ordering code: OSAN0101

Release applicability

SN07 (DMS) and up

SN07 (DMS) introduced OSSAIN XA-Core Data Messaging Capacity Enhancements.

Requirements

Hardware

This functionality is available only on XA-Core equipped with Ethernet interface cards such as HIOP (NTLX04CA) or HCMIC (NTLX17AA).

Software

To operate, XA-Core Data Messaging Capacity Enhancements requires:

- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- OSSAIN Base, OSAN0101, and TOPSFTR parameter OSSAIN_INITIAL_RELEASE = Y

Description

This activity makes it possible for OSSAIN data messaging to use XA-Core Ethernet interfaces such as the HIOP and the new HCMIC card. Prior to this activity, all OSSAIN messaging used the EIU (Ethernet Interface Unit). The EIU has insufficient capacity to support some service providers' requirements for OSSAIN.

OSSAIN background

The OSSAIN product uses a messaging protocol between TOPS (Traffic Office Position System) switches and external service nodes (SNs), allowing the SNs to provide services for and control switch functionality associated with directory and operator services calls. In an OSAC (OSSAIN centralization) configuration, one or more centralized SNs provide services for multiple TOPS switches. These TOPS switches are referred to as OSAC hosts and OSAC remotes, and they exchange messages with each other as well as with SNs. All of this messaging uses the UDP protocol at the transport level.

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

Until recently, OSSAIN was used mainly for toll and assistance (TA) calls. Now service providers are beginning to use OSSAIN for directory assistance automation (DAA) as well. Since most TOPS switches handle many more DA than TA calls, and since DAA calls may use OSSAIN for both front end and back end automation, service providers are requiring more OSSAIN messaging capacity than EIUs can provide. Throughput of an EIU is between roughly 10 and 40 KBytes/second in each direction, depending on how heavily the LPP or FLIS is used for other applications besides OSSAIN. And because of the way EIU selection is done, adding more EIUs for OSSAIN may not increase the messaging capacity. For more information about EIU capacity, refer to *OSSAIN User's Guide* (297-8403-901) and *Ethernet Interface Unit User Guide* (297-8991-910).

XA-Core Ethernet interface background

In the XA-Core architecture, I/O processor cards in the core can be used to provide Ethernet LAN connectivity. These cards communicate directly with the PEs (processing elements) using a shared memory system. The first-generation card was the IOP, a host card that accommodates specialized packets for different interfaces. An IOP with Ethernet packet(s) is called an EIOP. The second-generation card is the HIOP. HIOP cards do not host packets. Three versions of HIOP have been developed—one with only an Ethernet interface, and two with both Ethernet and AMDI (for ATM). Next-generation HCMIC cards with CMIC, RTIF, and Ethernet interfaces are under test at the time of this writing.

XA-Core Ethernet interface cards are datafilled in switch table CMIPADDR. The datafill includes two active host CM IP addresses, which the switch dynamically associates with physical links. As long as at least two links are in-service, the two IP addresses are always associated with different links. If a link fails while another is in-service, the IP address that was associated with the failed link is automatically reassigned to a different one. Unsolicited ARP (Address Resolution Protocol) replies are used to inform the network of the association between IP addresses and physical interfaces.

XA-Core I/O cards are maintained from the switch at MAP level MAPCI;MTC;XAC;IO. Their functional components, including Ethernet ports and links, are maintained at level MAPCI;MTC;XAC;ETHR. Port refers to a hardware interface on the card, and link represents the transmission medium connecting the XA-Core to other nodes.

Operation

This feature adds new fields to switch table OANODINV, the inventory table for OSSAIN SNs and OSAC nodes, to allow the service provider to specify the data path to be used for messaging with each node. Thus it is possible for a

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

TOPS switch to use EIU for messaging with some OSSAIN nodes and XA-Core Ethernet interface cards for messaging with others. This enables a gradual transition, on a node-by-node basis, to using XA-Core Ethernet interface cards.

Which data path the switch uses is transparent to the far-end node, except that the far-end node must be configured to use a different IP address for the switch depending on which data path the switch uses when messaging with that node.

For the EIU data path, far-end nodes are configured to send messages to the IP address in the CMIPADDR tuple of table IPNETWRK. This is existing functionality, and is unchanged.

For the XA-Core Ethernet interface data path, each far-end node is configured to send messages to one of the two active CM host IP addresses datafilled in table CMIPADDR. That address is also datafilled against the node in table OANODINV, and is used as the source IP address when the switch sends messages to the node.

Under normal conditions of no failure, traffic should be balanced over the physical links. This is accomplished by configuring half of the far-end nodes to use one of the active CM host IP addresses, and the other half to use the other active CM host IP address.

TOPS does not restrict which XA-Core Ethernet interface cards can be used. However, some of the earlier XA-Core I/O cards have been or will soon be manufacture discontinued, and the product platform on which TOPS runs may have restrictions on which cards are supported. Contact your Nortel Networks representative for more information.

This activity also adds a new OM group, TDGTHRU (TOPS Datagram Throughput), which counts the number of UDP messages sent and received in each of several “buckets” or message size ranges. The OM group has tuples for several TOPS applications, and it has separate tuples for OSSAIN using EIU and OSSAIN using XA-Core Ethernet interface. The pegs are meant to help in studies of messaging bandwidth utilization of TOPS applications.

Capacity engineering considerations

Paper studies suggest that if the LPP or FLIS that houses the EIU is used primarily for OSSAIN messaging, an OSAC remote can process roughly 100,000 DA busy hour calls/hour, with DA front and back end automation using Nortel Networks service nodes, before it approaches EIU messaging capacity limits. If the LPP or FLIS is also used heavily for ISUP signaling or other applications, the OSSAIN traffic limit may be closer to 25,000 calls/hour. Capacity decreases if the SNs send a significant number of SMS

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

(Short Message Service) requests to the switch. Other features may also decrease capacity.

Similar studies suggest that a pure OSAC host can process roughly a million busy hour OAP sessions for its remotes if the EIU in the host is used primarily for OSSAIN traffic. Using Nortel Networks service nodes, separate OAP sessions are used for DA front end and back end automation, so this translates to 500,000 DA calls/hour. If the LPP or FLIS housing the EIU in the OSAC host is also used heavily for ISUP signaling or other applications, the OSAC host's limit is closer to 125,000 DA calls/hour from its OSAC remotes. The host's capacity decreases if it is also processing standalone OSSAIN calls.

Messaging patterns may be different if service nodes from other vendors are used. Nortel Networks does not have message flows for calls that are serviced by other vendors' SNs, and does not do capacity engineering for these SNs.

Ethernet throughput capacity of XA-Core interface cards depends on factors such as the extent to which other interfaces on the card are used and the sizes of the individual messages. Committed throughput numbers for NTLX04CA (HIOP) and NTLX17AA (HCMIC) were not available at the time of this writing, but both cards will have Ethernet throughput capacity much higher than the EIU, even if other interfaces on the card are used.

It is anticipated that in offices that are not using XA-Core interfaces for Succession packet call signaling, a pair of NTLX04CA or NTLX17AA cards (for redundancy) can easily accommodate both CBM (Core and Billing Manager, the next-generation Supernode Data Manager replacement) and all existing DA traffic, using OSSAIN for both front and back end automation, with no capacity concerns.

In TOPS CS2000 switches in which OSSAIN messaging is sharing the available Ethernet interface bandwidth with high-runner Succession call signaling, the CS2000 capacity for handling non-TOPS calls is decreased. At the time of this writing, Succession CS2000 capacity numbers published by Nortel Networks were based on office models that did not include OSSAIN. Contact your Nortel Networks representative for the status of capacity engineering work for CS2000 switches that use Ethernet interface cards for both OSSAIN and Succession packet call signaling.

Translations table flow

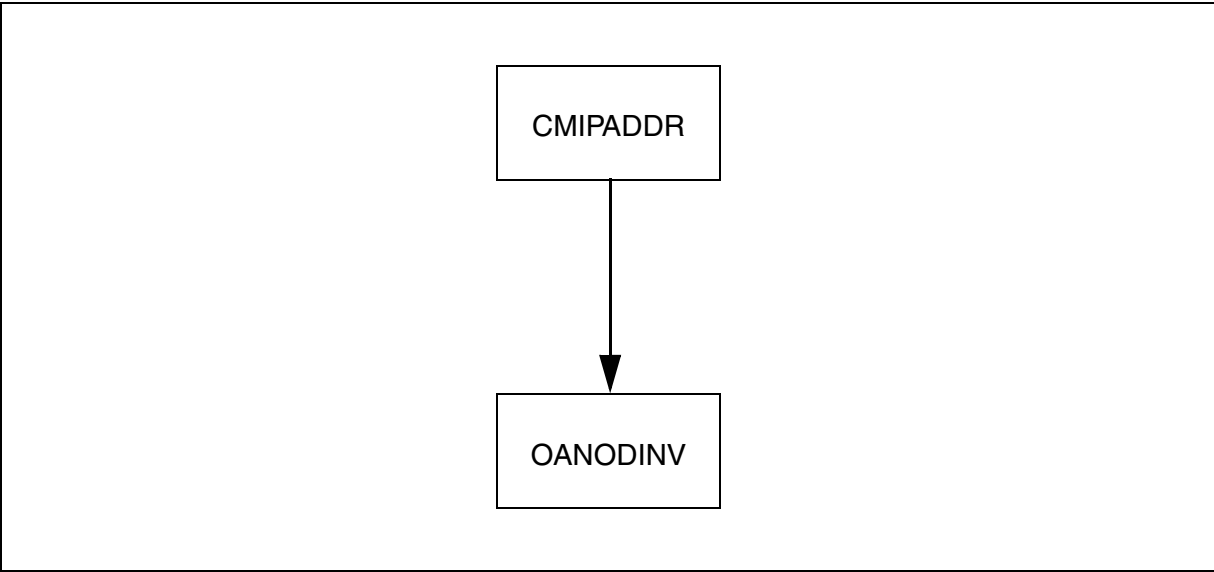
The list that follows includes the OSSAIN XA-Core Data Messaging Capacity Enhancements translations tables:

- Table CMIPADDR
- Table OANODINV

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

The flowchart that follows provides the OSSAIN XA-Core Data Messaging Capacity Enhancements translations process. The flowchart does not show all OSSAIN translations. It shows only the tables that are specific to this activity.

Table flow for OSSAIN XA-Core Data Messaging Capacity Enhancements



OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

The tables that follow give examples of datafill content used in the flowchart.

Datafill example for OSSAIN XA-Core Data Messaging Capacity Enhancements - table CMIPADDR

KEY	DATA
GATEWAY 0	GW (172 16 0 1) 0
CMHOST 0	HOST (172 16 14 108) 20 0
CMHOST 1	HOST (172 16 14 109) 20 0
ETHRLNK 1	ETHR 12 REAR NONE (172 16 14 104) 20 (172 16 14 110) 20 (172 16 0 2) 0
ETHRLNK 2	ETHR 6 REAR NONE (172 16 14 109) 20 (172 16 14 112) 20 (172 16 0 3) 0

Datafill example for OSSAIN XA-Core Data Messaging Capacity Enhancements - table OANODINV

NODENAME	NODEAREA	AUDTRIES	AUDRTIMR	AUDFREQ
DAA_01	OSN 1 UDP IPV4 172 16 20 205 7000 XAETHR 172 16 14 106 SWITCH_C Y 2 SN 1 DD 33 CITYC DAA1	4	5	60

Limitations and restrictions

From an end user's perspective, this activity introduces no limitations or restrictions that were not present in OSSAIN using EIU.

From a service provider's perspective, the following limitations and restrictions apply:

- Use of XA-Core Ethernet interface cards is supported only for OSSAIN applications that use the UDP protocol. It is not supported for OSSAIN QMS MIS, which uses TCP.
- Unlike EIUs, XA-Core Ethernet interface cards do not provide screening capabilities. (EIUs can be configured to protect the core by screening out incoming messages from unwanted IP addresses, including addresses that do not match datafilled nodes and addresses of nodes that are off-line or have been declared babblers.)
- Since call processing can be adversely affected if the core is flooded with unwanted messages, it is especially important that the network be properly

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

configured with firewalls and router filters when XA-Core Ethernet interfaces are used.

- In TOPS CS2000 switches in which OSSAIN is sharing the Ethernet interface cards with high-runner Succession calls, OSSAIN decreases the capacity of the CS2000 for non-TOPS calls. CS2000 capacity numbers published by Nortel Networks engineering groups do not apply in this case, unless the office model has specifically included OSSAIN calls.
- The XA-Core does not provide a way to reserve portions of its total Ethernet interface bandwidth for specific applications. All applications compete for the same bandwidth.
- An SN cannot be on the same subnet as a core Ethernet interface if an EIU router is to be used for messaging with the SN.
- This limitation applies when (a) an OSAC remote switch is being changed to use XA-Core Ethernet interface to communicate with a centralized SN, and (b) either the OSAC host is below SN07/ISN07, the centralized SN is at an OAP release below 9, or both. In this situation, if the service node is incorrectly configured (in the service node) to use the wrong IP address for the OSAC remote, the mismatch is not detected when the links to the centralized SN are returned to service in the OSAC remote. The OSAC remote will present calls to the centralized SN. The incorrectly configured SN will probably not attempt to send the switch any messages regarding these calls. Depending on datafill for OSSAIN time-outs and on how quickly callers abandon these calls, there may be no logs in the OSAC remote indicating any problem. However, the incorrectly configured SN should be raising alarms using its own event reporting system if this happens.
- This is not a new problem with XA-Core Ethernet interface; however, the configuration mismatch may be more likely to be introduced with this feature, since the service provider now has to be aware of more than one IP address for any particular switch.
- The OSAC and OAP protocols are enhanced in SN07 and OAP Release 9 to eliminate this limitation. If the SN is at OAP 9 or higher, and both the OSAC remote and host are at SN07 or higher, then the OSAC remote cannot RTS its links to the centralized SN if the SN has incorrect datafill for the OSAC remote's IP address.

Interactions

OSSAIN XA-Core Data Messaging Capacity Enhancements does not interact with other functionalities.

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

Activation and deactivation by the user

OSSAIN XA-Core Data Messaging Capacity Enhancements does not require activation or deactivation by the user.

Billing

OSSAIN XA-Core Data Messaging Capacity Enhancements does not generate billing records or changes.

Station Message Detail Recording

OSSAIN XA-Core Data Messaging Capacity Enhancements does not require Station Message Detail Recording.

Office parameters used by OSSAIN XA-Core Data Messaging Capacity Enhancements

OSSAIN XA-Core Data Messaging Capacity Enhancements does not generate office parameters.

Datafill sequence

Table CMIPADDR is datafilled during commissioning of the core Ethernet interface. Changing the gateway or host address information after that may cause data mismatches between various nodes in the IP network. There is no requirement to enter datafill any other tables before table CMIPADDR.

Translation verification tools

OSSAIN XA-Core Data Messaging Capacity Enhancements does not use translation verification tools.

SERVORD

OSSAIN XA-Core Data Messaging Capacity Enhancements does not use the Service Order System (SERVORD).

Glossary

The table below explains the abbreviations used in this description.

Term	Description
AMDI	ATM Multi-mode Data Interface
ARP	Address Resolution Protocol
ATM	Asynchronous Time Multiplexing
CBM	Core and Billing Manager

OSSAIN XA-Core Data Messaging Capacity Enhancements (continued)

Term	Description
CM	Computing Module
CMIC	Computing Module Interface Card
CS2000	Communication Server 2000
DA	Directory Assistance
DAA	Directory Assistance Automation
EIOP	Ethernet Input Output Processor
EIU	Ethernet Interface Unit
FLIS	Fiber Link Interface Shelf
HCMIC	High Performance Computing Module Interface Card
HIOP	High Speed Input Output Processor
IOP	Input Output Processor
IP	Internet Protocol
ISUP	Integrated Services Digital Network
LAN	Local Area Network
LPP	Link Peripheral Processor
MAP	Maintenance and Administration Position
OAP	Open Automated Protocol
OSAC	OSSAIN Centralization
OSSAIN	Operator Services System Advanced Intelligent Network
QMS MIS	Queue Management System Management Information System
RTIF	Reset (or Remote) Terminal Interface
SMS	Short Message Service
SN	Service Node
TA	Toll and Assistance
TCP	Transmission Control Protocol
TOPS	Traffic Office Position System
UDP	User Datagram Protocol
XA-Core	Extended Architecture Core

OSSAIN XA-Core Data Messaging Capacity Enhancements (end)

History

SN07 (DMS)

OSSAIN XA-Core Data Messaging Capacity Enhancements introduced by A00005160.

OSSAIN Session Pricing

Ordering codes

Functional group ordering code: OSAN0001

Functionality ordering code: OSAN0100

Release applicability

TOPS09 and up

OSSAIN Session Pricing was introduced in TOPS09.

Prerequisites

To operate, OSSAIN Session Pricing has the following prerequisites:

- Operator Services Basic, OSB00001
- BAS Generic, BAS00003
- OSSAIN 07 Enhancements, OSAN0003
- OSSAIN Initial Release, OSAN0002
- GR317/GR394 ISUP to/from TOPS, OSEA0005 (for changes to the CgPN parameter in the outgoing IAM)

Description

The software optionality codes and names are changed for the OSSAIN functionalities.

This functionality consists of the following feature:

Feature number	Feature name
AF7156	OSSAIN SOC Enhancements

For additional information, refer to the *TOPS OSSAIN User Guide*, 297-8403-901. This guide contains all of the information in this translations guide plus provisioning, signaling protocol, maintenance, and operator use.

OSSAIN Session Pricing (continued)**Operation**

The software optionality codes and names are changed for the OSSAIN functionalities as follows:

SOC changes

Prior SOC	Prior type of SOC control	New SOC	New type of SOC control
not applicable	not applicable	OSAN0001 (new group ordering code)	RTU order code setting
OSSAIN, ENSV0014	Operate in two modes: state and usage control	OSSAIN Initial Release, OSAN0002	Operate in two modes: state and event
OSSAIN Enhancements, ENSV0020	State only	OSSAIN 07 Enhancements, OSAN0003	State only
not applicable	not applicable	OSSAIN 09 Enhancements, OSAN0004 (this functionality)	State only

The following are notes about the new SOC codes:

- ENSV0014 and ENSV0020 map to OSAN0002 and OSAN0003 for upgrades from TOPS06, TOPS07 and TOPS08 to TOPS09.
- Each of the OSAN options depend on each other in an ascending order. OSAN0002 requires setting of OSAN0001 before use. OSAN0003 requires setting of OSAN0001 and OSAN0002, and so on through the rest of the OSAN options.
- For OSAN0004, changes to the CgPN parameter in the outgoing IAM depends on functionality GR317/GR394 ISUP to/from TOPS, OSEA0005.
- ENSV0014 was under usage control and converted to OSAN0002 under event control. Usage control counted messages but it was not a reflection of usage control. Event control counts messages for each billing cycle.

For additional information on SOC, refer to the Software Optionality Control User's Manual, 297-8991-901.

LOGS

A new field in log OAIN302 identifies the SOC option that is not enabled.

Translations table flow

The OSSAIN Session Pricing does not have a translations table flow.

OSSAIN Session Pricing (end)

Limitations and restrictions

The following limitations and restrictions apply to OSSAIN Session Pricing:

OSAN0001, the option order code RTU for the whole group requires manual turn on during the one night process (ONP). This requirement applies for upgrades from TOPS06, TOPS07 and TOPS08 to TOPS09 if ENSV0014 is on.

Interactions

The following interactions apply to OSSAIN Session Pricing:

- SOC accounting and auditing mechanisms require updating to reference the new OSAN codes:OSAN0002 and OSAN0003 instead of ENSV0014 and ENSV0020.
- Functionality OSSAIN 09 Enhancements is controlled by SOC code OSAN0004. Any new messages processed as a result of this functionality is recorded by event based counting in OSAN0002.

Activation/deactivation by the end user

OSSAIN Session Pricing requires no activation or deactivation by the end user.

Billing

OSSAIN Session Pricing does not affect billing.

Station Message Detail Recording

OSSAIN Session Pricing does not affect Station Message Detail Recording.

Datafilling office parameters

OSSAIN Session Pricing does not affect office parameters.

Datafill sequence

OSSAIN Session Pricing does not affect datafill.

Translation verification tools

OSSAIN Session Pricing does not use translation verification tools.

SERVORD

OSSAIN Session Pricing does not use SERVORD.

2 Datafilling Operator Services Directory Assistance

This chapter contains the operator services directory assistance functionalities.

Automated DA Service

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: OSDA0004

Release applicability

TOPS07 and up

Automated DA Service was introduced in BCS36.

Prerequisites

To operate, Automated DA Service requires the following functional groups:

NTG320AA (ADAS APU Software) functional group prerequisites

Functional group	Functional group name
NTG320	ADAS APU Software
NTG321AA	ADAS OAM Position
NTG322AA	ADAS VPU Software
NTXQ23AA	TOPS ADAS
NTXS29AA	APU Maintenance
NTXS30AA	UNIX Application Environment
NTXS31AA	Enhanced service resource management
NTXS32AA	APU SOS, UNIX Base

NTG321AA (ADAS OAM Position) functional group prerequisites

Functional group	Functional group name
None	

NTG322AA (ADAS VPU Software) functional group prerequisites

Functional group	Functional group name
None	

Automated DA Service (continued)**NTXQ23AA (TOPS ADAS) functional group prerequisites**

Functional group	Functional group name
NTXA62AA	TOPS Audio Response Call Handling
NTXH77AA	Channelized Access on LPP/LIS
NTG310AA	Ethernet TELNET
NTXF20AA	Local Message Switch on LPP
NTXS31AA	Enhanced Service Resource Management

NTXS29AA (APU Maintenance) functional group prerequisites

Functional group	Functional group name
NTXF19AA	TCP/IP Protocols
NTXF05AA	Ethernet Communication Processor
NTXN18AA	Line Interface Unit (LIU) Base

NTXS30AA (UNIX Application Environment) functional group prerequisites

Functional group	Functional group name
NTXS29AA	APU Maintenance

NTXS31AA (Enhanced Service Resource Management) functional group prerequisites

Functional group	Functional group name
NTXS11AA	File Transfer Protocol - DARPA
NTXS30AA	UAE/UNIX Conversant Software

NTXS32AA (APU SOS/UNIX Base) functional group prerequisites

Functional group	Functional group name
NTXS30AA	UAE/UNIX Conversant Software

Description

Automated Directory Assistance Service (ADAS) automates the greeting for a customer and requests the locality and name of the needed listing. By

Automated DA Service (continued)

involving the operator only after this information has been received, ADAS trims valuable time from the caller and operator interaction.

ADAS works with TOPS MP, TOPS MPX and other Open Position Protocol (OPP) positions. Because functionality is contained within the switch, ADAS is usable with any commercially available DA system.

As a voice processing service, ADAS is built on experience of Nortel (Northern Telecom) with Automated Alternate Billing Service (AABS). ADAS fits into a group of like services such as Voice Mail, Message Delivery and Interactive Automatic Call Distribution (ACD).

ADAS uses the multicomputing capabilities of the DMS200 SuperNode architecture with the flexible modular resources of the Link Peripheral Processor (LPP). In addition, a UNIX based workstation on the Ethernet LAN provides improved methods of OAM, including tools to manage audio loads.

This functionality is provided by the following features:

(Sheet 1 of 3)

Feature number	Feature name
AF3048	ADAS communication interface (no translations)
AF3050	ADAS CPE internals (no translations)
AF3291	APU process management (no translations)
AF3381	ADAS APU call processing application (no translations)
AF3382	ADAS data manager (no translations)
AF3384	ADAS voice/CM libraries (no translations)
AN0056	ADAS service data MMI (no translations)
AN0182	VDS to VREC Conversion Tool (no translations)
AF3005	VPU local maintenance (no translations)
AF3007	VPU services circuit processing (no translations)
AF3031	VPU RAP/CBI Low Level I/O (no translations)
AF3033	VPU RAP and CBI diagnostic support (no translations)
AF3035	VPU local resource management (no translations)

Automated DA Service (continued)

(Sheet 2 of 3)

Feature number	Feature name
AF3394	RAP DTMF (no translations)
AN0016	RAP play and record processing (no translations)
AN0046	RAP Application and Diagnostics (no translations)
AF3011	AABS VSN XP restructure
AF3204	ADAS MTS message composer/interpreter
AF3205	ADAS VSN XP
AF3206	ADAS TOPS XP
AN0327	ADAS APU Software installation - Phase II
AF2689	APU maintenance for SNIX
AL2010	APU Maintenance
AF2980	OM Transmission
AF3379	Supernode/UNIX File System Access to IOC disk
AF3391	LOG Transfer - UNIX-SOS (no translations)
AN0069	ADAS Software Installation for UNIX components (no translations)
AF3006	VPU service circuit resource management (no translations)
AF3049	APU resource management (no translations)
AF3532	VPU MAP and table control
AN0047	Enhanced services resource management (no translations)
AN0178	ADAS MMI data transfer (no translations)
AF3290	Log and alarms transfer (no translations)
AL1579	UNIX kernel initialization (no translations)
AL1982	Messaging access for UNIX (no translations)
AL2016	Enhanced VM Scheduler (no translations)
AL2479	FPX VM modifications (no translations)

Automated DA Service (continued)

(Sheet 3 of 3)

Feature number	Feature name
AL1047	Support for non-SOS Operating Systems in Supernode (no translations)
AL1580	Support for non-SOS Operating Systems in Supernode, Phase 2 (no translations)
AN1027	ADAS CM MMI Enhancements (TOPS03)
AN1013	More ADAS AWT Savings (TOPS03)
AN1028	ADAS Service Monitor (TOPS03)
UT50786	VROPT parm DA_AUTO_POS_RLS affects ADAS
AF6544	ADAS Per Line Blocking (TOPS07)
50039957	DA positions in an OC network
59006865	EOL Notification & EOL of TOPS ACD

Operation

The contents of this section are as follows:

- Overview
- Prerequisites of an ADAS call
- ADAS devices
- Overview of tables
 - ESRVATTR
 - ESRVCAP
 - IPNETWRK
 - IPROUTER
 - IPHOST
 - IPTHRON
 - RMCONFIG
 - SNIXINFO
 - SNIXVOLS
 - SNIXAPPL

Automated DA Service (continued)

- VPSRVDEF
- VPUSERV
- NIUINV
- LIUINV
- EXNDINV
- OFCENG
- TOPSTOPT
- TOPSPARM
- BRANDOPT
- VSNOPT
- SUSHELF
- MSCDINV
- LIMINV
- LIMPTINV
- LIMCDINV
- RLOGDEV
- RLOGTAB
- PMLOADS (Peripheral module loads)
- VROPT
- ADAS software installation
- Preliminary ADAS software installation
 - Provisioning for the PEC
 - Table PECINV
 - Provisioning for the Link Interface Module
 - Table PMLOADS
 - Table LIMINV
 - Table LIMCDINV
 - Table LIMPTINV
 - Table SUSHELF
 - Provisioning NIU hardware
 - Provisioning Link Interface Units

Automated DA Service (continued)

- Trunk Provisioning
 - Table CLLI
 - Table TRKGRP
 - Table TRKSGRP
 - Table TRKMEM
 - Table TOPSTOPT
- General ADAS datafill
 - Table TOPSVNIN
 - Table OFCENG
 - Table OFCOPT
 - Table TOPSPARM
- Initial ADAS software installation
 - Bringing up ADAS peripherals
 - Table VPSRVDEF
 - Table RMCONFIG
 - Table TOPSTOPT
 - Table ENSITES
 - Table ENTYPES
 - Table EXNDINV
 - LAN/Workstation Configuration
 - Table IPNETWRK
 - Table IPROUTER
 - Table IPHOST
 - Table IPTHRON
 - Table ENSITES
 - Table ENTYPES
 - Table EXNDINV
 - APU configuration
 - Table ESRVATTR (read-only)
 - Table ESRVCAP (read-only)
 - Table SNIXINFO

Automated DA Service (continued)

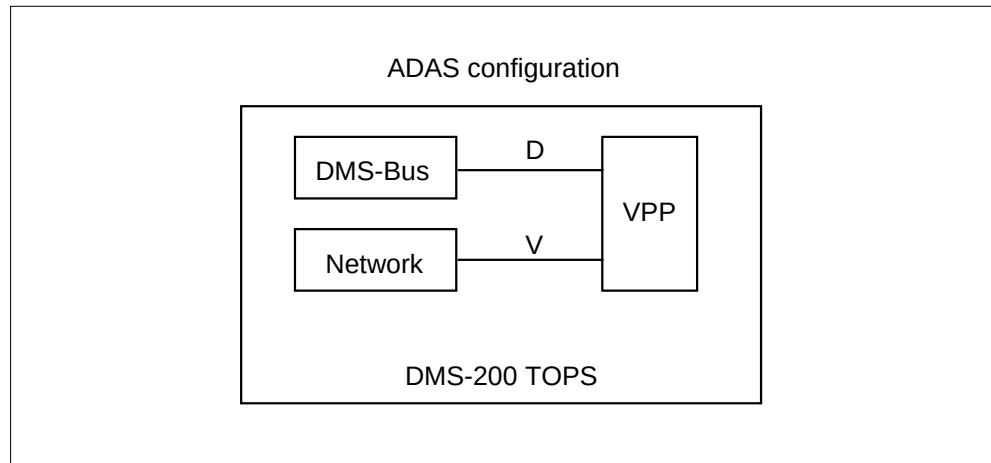
- Table SNIXVOLS
 - Table SNIXAPPL
 - Provision logs on a printer
- Installing an ADAS upgrade - non-service affecting
 - Datafill procedure for an ADAS upgrade - non-service affecting
- Installing an ADAS upgrade - service affecting
 - Installing an ADAS upgrade to a working system
 - Datafill procedure for an ADAS upgrade - service affecting
- Verification
- Optional configurations
- Add/delete an APU
- Drop call
- Operational Measurements
- Queuing for an operator
- Queue deflection and overflow
- ADAS in an OC environment
- Multiple file servers to minimize APU loading times
- BCS36 ONP: Increasing # APU channels from 30 to 40
- AF6544: ADAS per line blocking (new in TOPS07)

Overview

ADAS uses a DMS processor called the Voice Processing Platform (VPP). The VPP is connected by voice and data links that get the subscriber's search parameters and provide database playback. The following diagram shows these connections.

Automated DA Service (continued)

VPP connections



Prerequisites of an ADAS call

The DA call must pass the following checks to route to ADAS:

- The call must require DA service.
- Fields ADASERV and CLLI in table TOPSTOPT must be set to Y and the trunk group of the call, respectively, indicating ADAS service is provided for the call.
- Billing requirements must be satisfied for the call. Calls not covered by proper billing are given to the operator in the billing screen.
- If the above checks are passed, the call is considered qualified for ADAS. Then, the DMS attempts to set up the voice and data links to the VPP.

If all of the above checks and data link connections are successful, then the call will receive ADAS handling. Otherwise, the call is routed to an operator for manual DA handling.

ADAS devices

The following devices are used by ADAS:

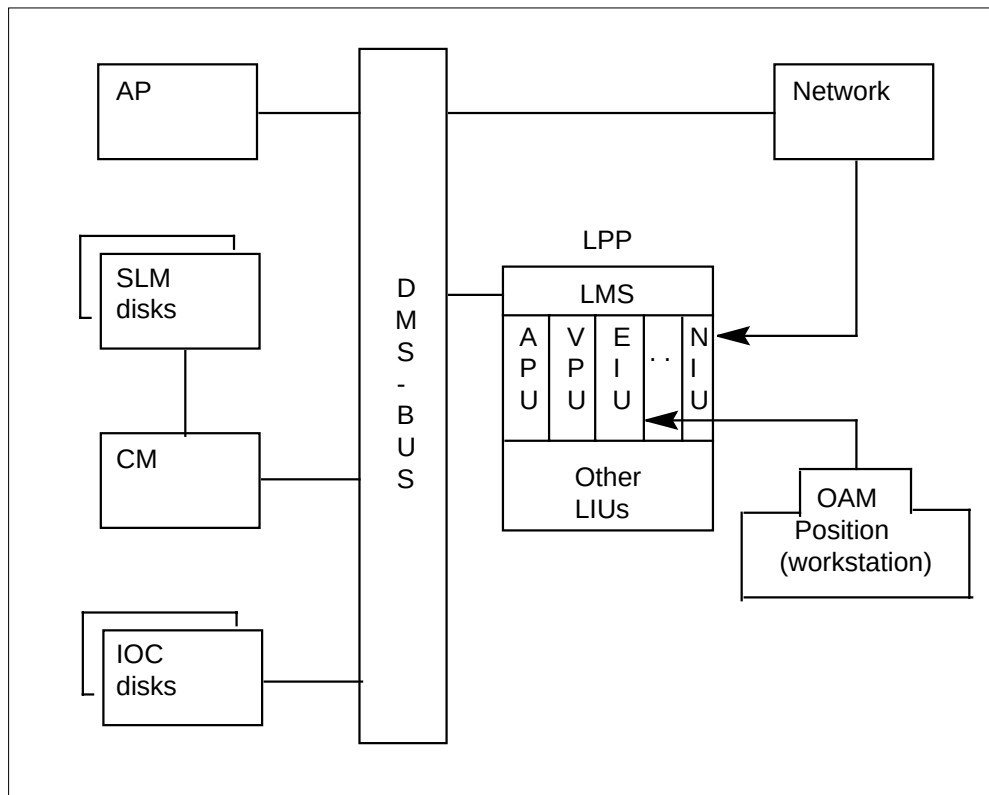
- APU - An application processor unit that runs SuperNode/UNIX (SNIX) software. The APU controls the resources of the LPP, ADAS application and voice processors.
- VPU - A voice processing unit that stores and plays prompts, tones, and caller responses and detects dual-tone multi-frequency (DTMF) tones.

Automated DA Service (continued)

- EIU - An Ethernet interface unit that provides a link to the Ethernet LAN serving the OAM workstation.
- NIU - Network interface unit that provides an interface to switch network DS-30 links.

These devices are located in the link peripheral processor (LPP) cabinet shown in the following diagram.

ADAS hardware configuration



A minimum ADAS configuration includes one Link Interface Shelf (LIS) containing the following interface units:

- 1 VPU that can handle up to 20 channels
- 1 Application Processor Platform (APP) APU that can handle 30 channels.
- 2 VPP APUs

One APU handles APU process management for all APUs in all LPPs and the other APU collects and transmits logs and alarms for the LPP in which they exist.

Automated DA Service (continued)

- 1 EIU
- 1 NIU

This configuration can develop within a single LPP from a one-shelf ADAS system capable of 19,200 BHCs, to a two-shelf capable of 48,000 BHCs, and to a three-shelf capable of 76,800 BHCs. With future growth to multiple LPP systems, capability can be a system total of 163,200 BHCs.

Overview of tables

ESRVATTR

This table defines components that are required for an enhanced service. Each tuple defines a service circuit component by service name, component type, object descriptor, and service data. This table is read-only.

ESRVCAP

This table defines enhanced service wide configuration parameters for enhanced services. Only services datafilled in table ESRVATTR can be datafilled in table ESRVCAP. This table is read-only.

IPNETWRK

This table stores all Internet-specific information about the Internet network and the SuperNode subnetwork. Any changes made to IPNETWRK after the initial datafill will not require a reload restart.

Table IPNETWRK is part of the implementation of the TCP/IP (Transport Control Protocol/Internet Protocol) feature on the SuperNode. To datafill this table, the EIU to be used as the default routing device must first be datafilled in table LIUINV. The EIU must also be taken offline. Table IPROUTER must be empty. If any of these conditions are not met, an error message indicates which condition has not been met.

Table IPNETWRK defines the subnet address for the DMS switch. As there is only one subnet per DMS switch, this table contains only one tuple. Subnet addressing allows a single IP address to route through an external LAN and through SuperNode's internal LAN to a destination.

In BCS36, the table is modified to simplify datafill by eliminating the calculation. Also, no restart is required after changing the table. However, the affected node(s) should be offline, otherwise the node(s) will be dropped. Following are the fields:

- KEYREF (unchanged) - Uniquely describes the tuple within the table. This table can only have one tuple, therefore, the key is always 0.
- CMIPADDR (new) - Full 4-part IP address of CM.

Automated DA Service (continued)

- SUBNET (unchanged) - Number of bits in the subnet mask, 0-23. The network identifier is the first part of the IP address for the CM. The network class is either A, B, or C. For the A network class, a 16-bit subnet mask sets up a *sub* subnet for the DMS switch. For B or C network classes, a 10-bit subnet mask sets up a *sub* subnet for the DMS switch.
- OPTION (unchanged) - Identifies the name and number of the default EIU.
- PARMAREA (unchanged) - Identifies mode of the screen flag.

As an example, consider a DMS whose CM address is 47.245.9.3. Its IP addresses are partitioned in the following manner.

- 47 - Internet part
- 245.9 - physical network identifier (subnet mask)
- 3 - host identifier

The following tuple defines this switch's subnet mask of 245.9.

```
0 47 245 9 1 16 (EIU 0)$ (SCRNFLAG Y)$
```

This tuple contains the following information:

- 0 - Tuple key
- 47 245 9 1 - CM IP address
- 16 - Number of bits (i.e., length in decimal) in subnet mask. By using a 16 bit subnet mask, it becomes a *sub* subnet.
- EIU 0 - The applied subnet address.
- SCRFLAG Y - If packet screening is on, (SCRFLAG=Y), only IP packets to/from the nodes specified in table EXNDINV are allowed. This setting is recommended as a security precaution. If this field is set to N, non-datafilled nodes are able to TELNET to the switch.

IPROUTER

Table IPROUTER is part of the implementation of the TCP/IP feature on the SuperNode. The table stores the Internet specific information of each of the EIU's, or routers, in the SuperNode subset. The minimum number of tuples in table IPROUTER is 0 and the maximum is 64.

Automated DA Service (continued)

Table IPROUTER cannot be datafilled until table LIUINV and table IPNETWRK have been datafilled.

Note: The corresponding EIUs referenced in the datafill must be offlined before this table can be datafilled.

This table defines the EIUs that will be used as routers. The router IP address and its associated Ethernet parameters are defined.

In BCS36, the table is modified to simplify datafill. Also, no restart is required after changing the table. However, the affected node(s) should be offline, otherwise the node(s) will be dropped. Following are the fields:

- RKEY (unchanged)
- ROUTER (unchanged)
- SNIPADR (new) - EIU SuperNode side 4-part IP address. Same value as field SNADDR in table IPHOST for the EIU.
- ETHIPADR (unchanged) - EIU Ethernet side 4-part IP address. Same value as field LANADDR in table IPHOST for the EIU.
- ETHARP (unchanged)
- ETHPARP (unchanged)

IPHOST

Table IPHOST is responsible for configuring SuperNode-based nodes as Internet hosts. It activates the TCP layer and its applications on those nodes, and defines the host identifier part of the Internet address for each DMS node.

There is one tuple per DMS Internode such as CM, MS, APU or EIU. The network part of the Internet address is received from the datafill of table IPNETWRK. All DMS nodes that will be accessed from the LAN need to be described here.

Tables IPNETWRK and IPROUTER must be datafilled before table IPHOST.

Automated DA Service (continued)

In BCS36, the table is modified to simplify datafill. Also, no restart is required after changing the table. However, the changed node(s) should be offline, or the node(s) will be dropped.

- INDEX (unchanged)
- NODENAME (changed) - Value APUX is changed to APU.
- NODEINFO (changed)
 - If NODENAME=CM, following are the fields:
 - CMINDEX (unchanged)
 - TCPCONN (unchanged)
 - FTPCLCON (unchanged)
 - FTPSVCON (unchanged)
 - If NODENAME=MS, following are the fields:
 - MSINDEX (unchanged)
 - SNADDR (changed) - 4-part IP address of SuperNode side.
 - TCPCONN (unchanged)
 - FTPCLCON (unchanged)
 - FTPSVCON (unchanged)
 - If NODENAME=EIU, following are the fields:
 - EIUINDEX (unchanged)
 - SNADDR (changed) - 4-part IP address of SuperNode side. Same value as field SNIPADR in table IPROUTER.
 - LNADDR (unchanged) - 4-part IP address of LAN side. Same value as field ETHIPADR in table IPROUTER.
 - TCPCONN (unchanged)
 - FTPCLCON (unchanged)
 - FTPSVCON (unchanged)
 - If NODENAME=FP, following are the fields:
 - FPINDEX (unchanged)
 - SNADDR (changed) - 4-part IP address of SuperNode side.
 - TCPCONN (unchanged)
 - FTPCLCON (unchanged)
 - FTPSVCON (unchanged)

Automated DA Service (continued)

- UNIXADDR (changed) - UNIX full 4-part address
- If NODENAME=AP, following are the fields:
 - SMNINDEX (unchanged)
 - SNADDR (changed) - 4-part IP address of SuperNode side.
 - TCPCONN (unchanged)
 - FTPCLCON (unchanged)
 - FTPSVCON (unchanged)
 - UNIXADDR (changed) - UNIX full 4-part address
- If NODENAME=APU, following are the fields:
 - APUINDEX (unchanged)
 - SOSADDR (changed) - 4-part IP address of SuperNode side.
 - UNIXADDR (changed) - 4-part IP address of UNIX side
 - TCPCONN (unchanged)
 - FTPCLCON (unchanged)
 - FTPSVCON (unchanged)

IPTHRON

Table IPTHRON provides a mechanism to avoid congestion on DS30 links between the MS (Message Switch) and the LMS (Local Message Switch) in the LPP (Link Peripheral Processor). Potential congestion caused by IP traffic to and from the EIUs is eliminated.

RMCONFIG

Table RMCONFIG (remote map configuration) specifies the number of desired TELNET sessions (remote maps) on the CM, and which EIUs will connect these remote maps.

Note: If no tuples are datafilled in RMCONFIG, the default of 8 sessions on the CM and each host EIU is allowed. To use an EIU for TELNET, it must be loaded with the ETC (EIU with TELNET) load, and datafilled in table IPHOST with at least as many TCP connections as the number of sessions in table RMCONFIG.

SNIXINFO

Table SNIXINFO provides basic configuration data for nodes running SuperNode/UNIX. This table contains *base data* applicable to all SNIX nodes, and *node data* applicable only to specific node types.

Automated DA Service (continued)

SNIXVOLS

Table SNIXVOLS contains the SOS filename(s) that represents the SNIX file system. SNIX applications are expected to use the IOC disks to store the application load. Therefore, this table is for all SNIX nodes.

SNIXAPPL

Table SNIXAPPL contains information about the type of application running on a particular SNIX node, including the names of file systems corresponding to actual application load files. When datafilling APU's in this table, designate two APU's as central VPP (Voice Processing Platform) APU's, two as central LPP APU's (if there is more than 1 LPP), and the remaining APU's as local APU's.

VPSRVDEF

Table VPSRVDEF (VPU service definitions) datafills default configurations/options for VPU services. This table supports a single option, which is the name of the default audio load for the service.

Each default option specified in VPSRVDEF can be overridden on a per VPU basis by specifying the option in VPUSERV. If a VPU is to run the default configuration, then no options need to be specified in VPUSERV. On the other hand, if the option is specified for every VPU running a service in VPUSERV, no default needs to be defined in VPSRVDEF.

VPUSERV

Table VPUSERV contains information relating to the services provided by VPU nodes. This table specifies the service provided by each VPU in the system and identifies service configuration data, e.g., the name of the file that contains the audio load information.

NIUINV

Table NIUINV contains the NIU inventory. Each NIU is specified with its physical location, load name, and PEC information.

After the NIU is datafilled and RTSd, the network ports must also be RTSd.

LIUINV

Table LIUINV contains information about each of the link interface units (LIUs) in the system including location, hardware configuration, and software load.

EXNDINV

Table EXNDINV (external node inventory) identifies IP addresses and hostnames of nodes external to the switch. It also contains the information to flag alarms if a failure condition should arise, i.e., a ping fails.

Automated DA Service (continued)

OFCENG

The tuple TOPS_BRAND_OPT was added.

The tuple OMXFR corresponds to the value for the timing of OM collection and transfer may be set to 15 or 30 (min).

TOPSTOPT

Table TOPSTOPT specifies different options for TOPS trunks. Field ACD specifies the ACD processing (TOPSACD, QMSCAM) to be used on a per trunk basis. The ACD is assumed to be TOPSACD for trunks not datafilled in this table.

Tables CLLI and TRKGRP must be datafilled before table TOPSTOPT.

Note: No live trunks should have ADAS service enabled until ADAS has been tested and verified. After ADAS has been verified, trunk groups can have ADAS service enabled at the operating company's discretion.

Table TOPSTOPT must indicate that ADAS is provided for the trunk group before an ADAS call can arrive on that trunk.

TOPSPARM

Following are the applicable parameters. The default value (Y/N) for each is N.

- ADAS_CASSETTE_ICON

This parameter enables or disables the cassette icon on the operators' screens for an ADAS call. If the parameter value is Y, the cassette icon will be visible to the operator for all successful ADAS calls.

Note: If you are using IBM DA, a text string will appear instead of an icon.

- ADAS_ENABLE

This parameter allows or disallows ADAS calls on an office wide basis.

- ADAS_INWARDS_ENABLE

This parameter allows calls being transferred to an inward operator to go through ADAS.

- ADAS_OPR_PROFILE_ICON

Automated DA Service (continued)

This parameter enables or disables the operator profile on the operator's screen. If the parameter value is Y, the operator profile icon will be visible to the operator for all calls that fail out of ADAS for any reason.

Note: If you are using IBM DA, a text string will appear instead of an icon.

- ADAS_WITH_PARS_ENABLE

This parameter allows or disallows ADAS in conjunction with PARS.

- ADAS_RINGING_DURING_PLAYBACK

This parameter allows ringing to the subscriber during ADAS playback to the operator.

BRANDOPT

Table BRANDOPT contains branding optionality. ADAS adds field OPERSYS, a set of operator systems that may have branding.

VSNOPT

Table VSNOPT (voice service node options) contains the parameters required by the TOPS AABS (automated alternate billing service) using the VSN (voice service node).

This table contains fields PARM and VALUE. Field PARM contains parameters. The entry in field VALUE depends on the parameter datafilled in field PARM.

SUSHELF

Table SUSHELF describes the LIU (link interface unit) shelves in a Link Interface Module (LIM) and a Message Switch (MS) cabinet. A LIM is also known as a Link Peripheral Processor (LPP).

The LIM can support three LIU shelves and the MS cabinet can support up to two shelves. Table SUSHELF identifies the LIU shelves to the controlling MS or LIM.

The following information must be taken into account when datafilling this table.

- Both FBUSes of an LPP or MS must be in the offline state.
- No LIUs can be datafilled in table LIUINV on the shelf being added/deleted/modified by table SUSHELF.

Automated DA Service (continued)

- The LIU shelf PEC must be compatible with the supporting TFI (TBus/FBus interface) cards and other LIU shelves of the same FBUS.
- The physical location of an LIU shelf within an LPP must have the same cabinet location as the specified LPP.

MSCDINV

Table MSCDINV enables alterations to the characteristic information of the system cards and bus extension unit as well as additions and deletion of the interface units. The system cards are vital to the operation of the owner Message Switch node.

The bus extension units are vital to the operation of the owner extension shelf. The slot positions of these extension units are fixed by the system and cannot be changed by the users. The changeable fields of these units are restricted to their PECs.

For ADAS, this table allows the MS to communicate with the LPP(s).

LIMINV

Table LIMINV lists the Link Interface Modules (LIMs) in an office. Each tuple includes the location in the building, type of cabinet it is housed in, and the type of Local Message Switch (LMS) shelf.

LIMPTINV

Table LIMPTINV describes the port connection on each LIM. For each port the description includes:

- The link interface module number
- The location of the port on the link interface module
- The shelf number of the port, which is 0
- The description of the port connection in terms of the name, number, card and port of the node at the other end of the link. To change the configuration of a PORT, the LIM must be manually busy or offline. To delete a PORT entry from LIMPTINV, the LIM must be offline.

When defining an inter-LIM UNIT link (a link that connects the two UNITS of a LIM), only one tuple is added manually to the table. The other tuple represents the link from the point of view of the destination port, and is datafilled automatically using the information given in the first tuple. Similarly, when deleting an inter-LIM UNIT link, only one of the tuples is deleted manually. The other tuples are automatically deleted.

Automated DA Service (continued)

Before datafilling table LIMPTINV, tables LIMINV and LIMCDINV must first be datafilled.

LIMCDINV

Table LIMCDINV describes the type of cards in the LIM cabinet. Each slot holds a front and back card

RLOGDEV

Table RLOGDEV (remote log device table) lists the log (output message) classes for remote nodes. This table is similar to table LOGDEV.

RLOGTAB

Table RLOGTAB (remote log table) assigns up to 3 output devices to receive logs from remote SOS-based nodes. All nodes defined must be present in table NODNMTAB (node name table). Entries in NODNMTAB are usually achieved by adding the appropriate information in the corresponding inventory table. Any output device specified must be datafilled in table RLOGDEV.

Tuples representing SOS nodes other than the CM are added to table RLOGTAB automatically as these nodes become known to the log subsystem. The nodes become known to the log subsystem by changing from OFFL to MANB for the first time. Operating Company personnel cannot add tuples to or delete tuples from this table. Any attempt to do so results in the following rejection message:

Only device assignments can be changed in Table RLOGTAB

PMLOADS (Peripheral module loads)

Table PMLOADS defines the software loads used in tables LIUINV, VPSRVDEF, ESRVATTR, NIUINV, and VPUSERV.

VROPT

It is recommended that table VROPT parameter DA_AUTO_POS_RLS be set to N when handling ADAS calls.

If the parameter is set to Y, the following call scenario may result: A DA operator receives an ADAS call and while listening to the ADAS playback, the subscriber goes on-hook at the end of the playback. If the operator immediately receives a non-ADAS call, he/she may think the first call is still being handled when in fact, it is a brand new non-ADAS DA call. The operator would hear the call arrival tone but think it is the ADAS caller joined tone with the first caller. Then, the operator would announce "here is your listing" and the customer would say "I haven't asked for a listing yet".

Automated DA Service (continued)

This scenario is mostly seen on MPX AOSS positions because there are no icons or other displays to let the operator know the state of the call. If ANI is provided, the calling number display will change but may not be apparent to the operator. With all other positions such as MPs and IWS, icons are displayed to let the operator know when a customer goes on-hook.

If the parameter is set to N, the above scenario would be as follows: A caller goes on-hook at the end of an ADAS playback. The operator would hear silence and then hit the Pos Rls key. Then, if a non-ADAS call was received, the arrival tone would be heard and not confused with the first call.

The original intent of DA_AUTO_POS_RLS was to decrease operator work time by allowing the subscriber control of when a call can end.

ADAS software installation

This section describes datafill related procedures for installing initial and upgrade (non-service and service affecting) ADAS software releases.

For initial ADAS software installation, perform:

- preliminary ADAS software installation. This section contains provisioning and general datafill.
- initial ADAS software installation
- verification

For an ADAS software upgrade (non-service affecting), perform:

- preliminary ADAS software installation. This section contains provisioning and general datafill.
- installing an ADAS software upgrade - non-service affecting.
- verification.

For an ADAS software upgrade (service affecting), perform:

- preliminary ADAS software installation. This section contains provisioning and general datafill.
- installing an ADAS software upgrade - service affecting.
- Verification.

Preliminary ADAS software installation

Provisioning links: table MSCDINV.

Automated DA Service (continued)

Provision two inter-MS links on the DMS-Bus component on two different port cards for stability during NIU software installation. Several guidelines are described below.

When provisioning the first LPP in the office, add two 4-port NT9X23BA cards to DMS-Bus 0 and two of the same to DMS-Bus 1. The port cards must occupy the same slot numbers of each DMS-Bus plane. For example, if the two cards on DMS-Bus 0 occupy slots x and y, the two cards on DMS-Bus 1 must also occupy slots x and y.

Follow these rules when provisioning ports (links):

- A DS-30 Inter-MS link can be provisioned on any unused DS-30 port on either a NT9X23AA, a NT9X23BA, or a NT9X69BA paddleboard but is subject to the next rule.
- DS-30 ports selected must be on different paddlecards. That is, if the only free DS-30 ports are on the same paddleboard, they both cannot be used for the links. Another port must be freed up on another paddleboard in order to equip the links.
- Paddlecards and ports selected can be in any slot or port in which DS-30 paddleboards are allowed with the following exceptions:
 - Port 0 on NT9X23's in slots 28 and 29 is reserved for links to IOCs. The remaining links can be used for inter-MS links.
 - Do not connect an LMS port 0 to a DMS-Bus port card that already has an LMS port 0 connected to it. Port 0 on an LMS port card is the one that receives the clock and out of band reset signal from the DMS-Bus.
 - Ports 0 and 1 on an LMS port card are used for connection to the DMS-Bus, one of the ports to DMS-Bus 0 and one of them to DMS-Bus 1. Port 2 is reserved for the interconnection of LMS units and port 3 is not used.
 - All ports on LMS 0 are connected to the same numbered port on the DMS-Bus. All ports on LMS 1 are also connected to the same numbered port on the DMS-Bus. The DMS-Bus port number to which the LMS 0 ports are connected is different from the DMS-Bus port number to which the LMS 1 ports are connected.

To see the ports that are available to be provisioned on the MS, go to the shelf level of the MAP and enter: **>mapci;mtc;ms;shelf <shelf #>**

Cards with a dash (-) instead of a dot (.) are available to be provisioned. Note the slot and shelf of this card space.

Automated DA Service (continued)

To provision the link, datafill table MSCDINV. Each card in each MS is listed in this table.

The following example shows sample datafill for table MSCDINV.

MAP display example for table MSCDINV

MSNUM	SHELFNUM	CARDNUM	CARD TYPE	PROT OCOL	FRONT PEC	BACK PEC	HEAD BACK PEC
MID BACK PEC	TERM BACK PEC	EXTENT	NUMLINKS				
0	0	01	DS30		NT9X17AA	NT9X23BA	

For fields FRONT and BACK PEC, enter the PECs shown in the sample datafill or the subsequent hardware release.

Provisioning for the PEC

Table PECINV Table PECINV must be datafilled to provision PEC.

Add the following datafill to table PECINV.

Note: NT9X14DB, NTEX22BA, and NTEX22BB may already exist. If so, add LISHW to field SSYSABASE.

The following example shows sample datafill for table PECINV.

MAP display example for table PECINV

PEC	SSYSBASE
NT9X14DB	(LISHW 01 \$) \$
NTEX22BA	(LISHW 01 \$) \$
NTEX25AA	(LISHW 01 \$) \$
NTEX25BA	(LISHW 01 \$) \$
NTEX28AA	(LISHW 01 \$) \$
NTEX84AA	(LISHW 01 \$) \$
NTEX85AA	(LISHW 01 \$) \$
NTMX99AA	(LISHW 01 \$) \$
NTMX97AA	(LISHW 01 \$) \$

Automated DA Service (continued)

Provisioning for the Link Interface Module

Table PMLOADS The following tables are necessary for the LIM to function properly and to communicate with the MS.

Table PMLOADS contains load names for all peripherals and the location of the load file. Add the following loads to this table with the location to allow the load file name to be entered. This temporary load file location is changed after the load actually is put on disk.

Note: nn stands for the letters appended to the load name indicating the load release.

The following example shows sample datafill for table PMLOADS.

MAP display example for table PMLOADS

LOADNAME	DEV
LPC36nn	T0
NRS36nn	T0
VPC36nn	T0
ULC36nn	T0
ETC36nn	T0
ADSAUDDA	T0

Table LIMINV Table LIMINV is associated with the LPP hardware. Datafill in this table is dependent on the physical location of the cabinet and the circuit cards in the frame. Any new LIMs will be added to this table. The load name specified needs to be the new peripheral load.

The following example shows sample datafill for table LIMINV.

MAP display example for table LIMINV

LIM	FLOOR	ROW	POSITION	CABTYPE	CABNUM	LOAD	CABPEC
SHLF0PEC							
0	2	B	41	LIM	0	LPC36nn	NT9X70BA
NT9X71AB							

Table LIMCDINV Circuit card information for each LIM must be datafilled in table LIMCDINV. This information should not be different between LIMs, but should be the same regardless of the applications.

Automated DA Service (continued)

The following example shows sample datafill for table LIMCDINV.

Note: This may not be the exact datafill for every switch, as it is hardware dependent.

MAP display example for table LIMCDINV

LIM	SHELF	SLOT	CARDTYPE	CARDINFO
0	0	7	PBUS	NT9X49CA
0	0	8	TFI	NT9X73BA NT9X79BA
0	0	9	DS30	NT9X17AA NT9X23BA
0	0	10	DS30	NT9X17AA NT9X23BA
0	0	15	MAPPER	T9X15AA
0	0	16	MEMORY	T9X14BB
0	0	17	MSP	NT9X13DB NT9X26AA
0	0	18	CLOCK	T9X53AA
0	0	19	TBUSACC	T9X52AA
0	0	20	TBUSACC	T9X52AA
0	0	21	CLOCK	T9X53AA
0	0	22	MSP	NT9X13DB NT9X26AA
0	0	23	MEMORY	T9X14BB
0	0	24	MAPPER	T9X15AA
0	0	29	DS30	NT9X17AA NT9X23BA
0	0	30	DS30	NT9X17AA NT9X23BA
0	0	31	TFI	NT9X73BA NT9X79BA
0	0	32	PBUS	NT9X49CA

Table LIMPTINV The port information for each of the LIMs is specified in table LIMPTINV and is necessary for the LIM to communicate with the MS and with other units within the same LPP, as well as other LPPs (LIMs).

The following example shows sample datafill for table LIMPTINV.

Automated DA Service (continued)**MAP display example for table LIMPTINV**

LIM	SLOT	PORT	SHELF	PROTOCOL	LINKDEST	LINKINFO
0	9	0	0	DMSY	MS 1	20 0
0	9	1	0	DMSY	MS 0	20 0
0	9	2	0	DMSY	LIM 0	30 2
0	10	0	0	DMSY	MS 0	21 1
0	10	1	0	DMSY	MS 1	21 1
0	10	2	0	DMSY	LIM 0	29 2
0	29	0	0	DMSY	MS 0	20 2
0	29	1	0	DMSY	MS 1	20 2
0	29	2	0	DMSY	LIM 0	10 2
0	30	0	0	DMSY	MS 1	21 3
0	30	1	0	DMSY	MS 0	21 3
0	30	2	0	DMSY	LIM 0	9 2

Table SUSHELF Table SUSHELF describes the Link Interface Unit (LIU) shelves in a Link Interface Module (LIM) and a Message Switch (MS) cabinet. A LIM is also known as a Link Peripheral Processor (LPP).

The physical location of the LIM is specified, as well as the PEC of the shelf. The PEC for both the front and back circuit boards for the FBUS are also specified.

The following information must be taken into consideration when using table SUSHELF.

- Both FBUSes of an LPP must be in the Offline state.
- NO LIUs can be datafilled in table LIUINV on the shelf being added/deleted/modified by table SUSHELF.
- The LIU shelf PEC must be compatible with the supporting TFI cards and other LIU shelves of the same FBUS.
- The physical location of an LIU shelf within an LPP must have the same cabinet location as the specified LPP.

The following example shows sample datafill for table SUSHELF.

Automated DA Service (continued)

MAP display example for table SUSHELF

```

SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS
SHELFPEC
CARDINFO

```

```

LIM 0 12 0 1      2  B      41      LIM      0      0
NT9X72BA
( 7 NT9X74DA NT9X79AA)$      (32 NT9X74DA NT9X79AA)$
LIM 0 12 0 2      2  B      41      LIM      0      20
NT9X72BA
( 7 NT9X74DA NT9X79AA)$      (32 NT9X74DA NT9X79AA)$
LIM 0 12 0 3      2  B      41      LIM      0      40
NT9X72BA
( 7 NT9X74DA NT9X79BA)$      (32 NT9X74DA NT9X79BA)$

```

Note: The terminating shelf needs NT9X79BAs to be datafilled instead of the AA version. The BA version designates the terminating shelf in the event the LPP is not fully configured with three shelves.

Provisioning NIU hardware

Table NIUINV must be datafilled to provision NUI hardware.

The Network Interface Unit (NIU) is a peripheral necessary for communication with the network. The Voice Processing Units (VPUs) are dependent on the NIU to function. To bring up a VPU, its associated NIU must be in service. The associated NIU is the NIU residing on the same shelf as the VPU.

Add any new NIUs in table NIUINV. The location, load, PEC codes, and Netlinks are specified. The Netlinks should be provisioned off of more than one network and should be entered without parentheses.

The following example shows sample datafill for table NIUINV.

Automated DA Service (continued)**MAP display example for table NIUINV**

NUMBER	LOCATION	LOAD	U0INFO	U1INFO
0	LIM 0 1	NRS36nn NTEX22BB NTEX25AA NTEX28AA		
		NTEX22BB NTEX25BA NTEX28AA (0 9)(0 26)(0 41)(0 57)\$		
1	LIM 0 2	NRS36nn NTEX22BB NTEX25AA NTEX28AA		
		NTEX22BB NTEX25BA NTEX28AA (1 9)(1 26)(1 41)(1 57)\$		
2	LIM 0 3	NRS36nn NTEX22BB NTEX25AA NTEX28AA		
		NTEX22BB NTEX25BA NTEX28AA (0 13)(0 29)(0 45)(0 61)\$		

Provisioning Link Interface Units

Table NIUINV must be datafilled to provision Link Interface Unit.

Table LIUINV is datafilled with all new peripherals residing in an LIU. This can include EIUs, APUs, VPUs, and other peripherals not necessary for ADAS. The load name specified for each of the peripherals need to be the latest load as datafilled in table PMLOADS.

The following example shows sample datafill for table LIUINV.

MAP display example for table LIUINV

LIU	NAME	LOCATION	LOAD	PROCINFO	CARDINFO
EIU	0	LIM 0 1 12	ETC36nn	NTEX22BB	
			NT9X84AA NT9X85AA	NO 000075F00000	
VP	U	0	LIM 0 1 14	VPC36nn	NTEX22BB
			NTMX97AA NTMX99AA		
APU	1	LIM 0 1 10	ULC36nn	NTEX22BB	
			NT9X14DB SOSNIX		

Note: The MAC address associated with the EIU is a specific address for that particular EIU. If a non-unique address is used, communication may be disrupted on the LAN. This address should be provided by Nortel (Northern Telecom).

Automated DA Service (continued)

ADAS has the following requirements for the APU, VPU, and EIU nodes:

- APU
 - Datafill a minimum of 3 APUs: 1 central, 1 central peer (backup), and 1 local (handles up to 30 calls). For more than 30 calls add 1 local for each additional 30 calls. Table SNIXAPPL defines the APU type (CENTRAL_TYPE, CENTRAL_PEER, and LOCAL).
- VPU
 - Datafill 1 VPU for each 20 calls.
- EIU
 - Datafill 1 EIU to interface with the OAM workstation.

These devices must be datafilled in table LIUINV before any other tables can be datafilled.

For the VPU, required datafill is as follows:

- LIUNO range: 0-179
- PROCPEC=NTEX22NN
- APPLPEC=NTMX97AA
- PBPEC=NTMX99AA

Table control limitations are as follows:

- Add
 - The host link interface module (LIM) must be pre-defined in table LIMINV.
 - The host LIM shelf must be predefined in table SUSHELF.
 - The software loads must be predefined in table PMLOADS.
 - The network interface unit (NIU) for the shelf must be predefined in table NIUINV.
- Delete
 - The VPU, APU, or EIU must be in an offline state.
 - The VPU must not be referenced by tables VPUSERV and RLOGTAB. The APU must not be referenced by tables IPHOST, SNIXINFO, and

Automated DA Service (continued)

RLOGTAB. The EIU must not be referenced by tables IPROUTER, IPHOST, IPTHRON, IPNETWRK, and RLOGTAB.

- Change
 - Only fields LOAD, APPLPEC, and PBPEC can be modified.
 - The LOAD field can be changed at any time. Changing the LOAD field while a VPU/APU/EIU is in service causes the VPU/APU/EIU to go in-service trouble (IsTb).
 - The VPU/APU/EIU must be offline to change field APPLPEC or PBPEC.

Trunk Provisioning

Tables CLLI, TRKGRP, TRKSGRP, and TRKMEM are used to provision trunks. These tables should be provisioned in the following order.

- CLLI
- TRKGRP
- TRKSGRP
- TRKMEM

Table TOPSTOPT is used with the above tables to specify different options for TOPS trunks.

Table CLLI The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
TBELLAIC	100	50	TRAFFIC_TRUNK
TBELLBIC	225	32	TRAFFIC_TRUNK
TBELL407	256	3	TOPS_407_TRUNK_GROUP

Table TRKGRP The following example shows sample datafill for table TRKGRP.

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MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLAIC	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 BELL 16 10 10 Y N WINK N N	
TBELLBIC	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 BELL 16 10 10 Y N OFFHK N N	
TBELL407	
TOPS 0 TLD NCRT IC MIDL 407 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 BELL 10 7 7 N Y OFFHK N N	

Table TRKSGRP The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
TBELLAIC 0	2X88AA	
STD IC MF WK N 30 30 MW		MW N N Y M UNEQ
TBELLBIC 0	2X88AA	
STD IC MF WK N 30 30 MW		MW N N Y M UNEQ
TBELL407 0	2X88AA	
STD IC MF WK N 30 30 MW		MW N N Y M UNEQ

Table TRKMEM The following example shows sample datafill for table TRKMEM.

MAP display example for table TRKMEM

CLLI	EXTRKNM	SGRP	MEMVAR
TBELLAIC	1001	0	DTC 1 2 1
TBELLBIC	1002	0	DTC 1 2 2
TBELL407	1003	0	DTC 1 2 3

Table TOPSTOPT Table TOPSTOPT specifies different options for TOPS trunks. Field ACD specifies the ACD processing (TOPSACD,

Automated DA Service (continued)

QMSCAM) to be used on a per trunk basis. The ACD is assumed to be TOPSACD for trunks not datafilled in this table.

Table TOPSTOPT specifies different options for TOPS trunks. Field ACD specifies the ACD processing (TOPSACD, QMSCAM) to be used on a per trunk basis. The ACD is assumed to be TOPSACD for trunks not datafilled in this table.

In DMSTOP03, feature AN1027, ADAS CM MMI Enhancements, adds field ADASANS to table TOPSTOPT for control of answer supervision.

In some networks, DA calls are not billed in the DMS200 TOPS office. Instead the calls are billed in the originating office. In this configuration, the originating switch cuts a billing record when it receives answer supervision from the DMS200 TOPS switch. There is a concern that subscribers who abandon a DA call while at ADAS can be incorrectly billed if answer supervision is returned on initial connection to ADAS. This feature allows delay of answer supervision until the DA call arrives at the Operator Position for certain incoming trunk groups (INTERTOLL or TOPS ONI).

This ensures that the subscriber has received ADAS treatment and arrived at the Operator Position before the billing record is cut in the originating office. Whether or not answer supervision is immediate or delayed can now be specified via table control on a per trunk group basis. Refer to the Datafill procedures and Limitations and restrictions sections for additional information.

Tables CLLI and TRKGRP must be datafilled before table TOPSTOPT.

Note: No trunks should have ADAS service enabled until ADAS has been tested and verified.

The format for table TOPSTOPT is as follows, continuing with the example trunks used above.

The following example shows sample datafill for table TOPSTOPT.

Automated DA Service (continued)

MAP display example for table TOPSTOPT

GRPKEY	ACDDATA	DISPCLG	ADASERV	ADASANS
TBELLAIC	TOPSACD	N	N	NA
TBELLBIC	TOPSACD	N	N	NA
TBELL407	TOPSACD	N	N	IMMEDIATE
TOPSOG2	TOPSACD	N	Y	DELAYED

These trunks may also be provisioned as QMS trunks. Refer to NTXP41AA, TOPS Host QMS, for further details.

General ADAS datafill

The following tables must be datafilled or have default parameter values changed to get the full benefit of ADAS. The parameter values may be changed at any point in time.

- Table TOPSVNIN
- Table OFCENG
- Table OFCOPT
- Table TOPSPARM

Table TOPSVNIN contains protocol and data link information for external application such as Automated Alternate Billing Service (AABS) or ADAS. The table must be datafilled with the name of each application, and the names of the protocol and data link used by that application. The DMS can then index this table by application name and retrieve data link and protocol information.

This existing table defines some of the TOPS applications. The application range was extended to include ADAS.

The following example shows sample datafill for table TOPSVNIN.

MAP display example for table TOPSVNIN

INDEX	XAPPLN	PROTOCOL	DATALINK	LINKDATA
1	AABS	TABS	MPC TRUNK	AABSVL
2	ADAS	TABS	MTS	CHANNEL

Automated DA Service (continued)

In the previous example, ADAS uses a voice channel. The example shows the only allowable datafill for the ADAS entry:

- XAPPLN=ADAS
- PROTOCOL=TABS
- DATALINK=MTS (Message transport system)
- VLTYPE=CHANNEL

Field VLTYPE (a subfield of VLDATA) has TRUNK as a datafillable value. This value is not valid at present. When the voice link type is CHANNEL, the DMS connects the calling party to a channel directly from the DMS Network to the VPP.

An application (ADAS or AABS) can only appear once.

Table OFCENG is an optional and restricted table. Field OMXFR is datafilled with a value equal to the timing of the OM collection. The transfer may be set to 15 or 30 minutes.

Note: A cold restart is needed to change the value of this parameter.

For further information, refer to “Operational Measurements” in this module.

Table OFCOPT is an optional table. Field OMHISTORYON is a boolean that determines if the history option is turned on or turned off. If this value is Y, then the 5 minute time interval is in effect and OMXFR is ignored. (See OMs).

Note: A warm restart is needed to change the value of this parameter.

For further information, refer to “Operational Measurements” in this module.

Table TOPSPARM is an optional table. The default value for each affected parameter is given in parentheses after the parameter name.

- ADAS_ENABLE (N)
This new parameter enables/disables ADAS at any time. The default value is N, disabling ADAS. Then, all DA calls are routed directly to the operator, bypassing ADAS.
- ADAS_INWARDS_ENABLE (N)
This new parameter allows/disallows ADAS service for 131 inwards calls. The default is N, disallowing ADAS service for 131 Inwards calls. When

Automated DA Service (continued)

set to Y, 131 Inwards calls are routed to ADAS prior to receiving operator assistance.

- ADAS_CASSETTE_ICON (N)

This new parameter enables/disables display of the cassette icon. It is recommended that the exception case be indicated to the operator. If the majority of DA calls in an office are automated, then this parameter should be set to N (disable). If ADAS is in effect for only certain trunk groups, and the majority of calls are not automated then this parameter should be set to Y (enable).

This icon on the operator's display indicates arrival of an ADAS (automated) call at the position. If an operator normally receives non-ADAS calls and an ADAS call arrives at position, then the cassette icon would be displayed on the operator's screen indicating this is an ADAS call.

Note: If you are using IBM DA, a text string will appear instead of an icon.

- ADAS_OPR_PROFILE_ICON (N)

This new parameter enables/disables display of the operator profile icon. It is recommended that the exception case be indicated to the operator. If the majority of DA calls in an office are automated, then this parameter should be set to Y (display icon). If ADAS is in effect for only certain trunk groups, and the majority of calls are not automated then this parameter should be set to N (disable).

This icon on the operator's display indicates arrival of a non-ADAS (manual) call at the position. If an operator normally receives ADAS calls and a non-ADAS call arrives at the position then the operator profile icon would be displayed indicating a non-ADAS DA call.

Note: If you are using IBM DA, a text string will appear instead of an icon.

- ADAS_WITH_PARS_ENABLE (N)

This new parameter allows calls handled by ADAS to be optionally routed to the Personal Audio Response System (PARS) when the call is presented to an operator. When the parm is set to Y, the subscriber is played an

Automated DA Service (continued)

introductory greeting by PARS. When the parm is set to N, the introductory greeting is not played to the subscriber.

- **ADAS_RINGING_DURING_PLAYBACK (N)**

This parameter connects the subscriber to ringing (when set to Y) or silence (N) while ADAS plays the recording to the operator. Prior to this parameter, the subscriber's phone was silent during ADAS playback to the operator. Ringing can prevent a subscriber from believing the call has been disconnected and abandoning the call. This parameter, provided by feature AN1027, ADAS CM MMI Enhancements, in DMSTOP03, is effective on an office-wide basis.

After ADAS is verified, service can be enabled by setting parameter ADAS_ENABLE to Y and slowly turning up trunks in table TOPSTOPT.

Initial ADAS software installation

The CM must have a BCS36 (or higher) load. None of the peripherals or the OAM Position can be loaded until the CM has the BCS35 (or higher) load.

Software is loaded from the Peripheral Load Tape. Field DEV in table PMLOADS is modified to indicate the device where the peripheral load exists.

Also, if load names previously datafilled in table PMLOADS did not match load names brought in off of tape, the new names and location are added and previous load names are deleted. Also, load names in the peripheral inventory tables are updated.

The following example shows sample datafill for table PMLOADS.

MAP display example for table PMLOADS

LOADNAME	DEV
LPC36nn	S01DLIU
NRS36nn	S01DLIU
VPC36nn	S01DLIU
ULC36nn	S01DLIU
ETC36nn	S01DLIU
ADSAUDDA	S01DLIU

Bringing up ADAS peripherals

All peripherals necessary for ADAS are mentioned in this section. If the office already has an LPP, the units will be upgraded without affecting current traffic.

Automated DA Service (continued)

This section gives instructions on datafilling the tables associated with ADAS. Most of the ADAS tables are built with default data. The Operating Company can change the data on site if required. However, the initial datafill is designed to work with slight modifications.

Note: The datafill examples given for each table are ONLY examples and will be similar, but not the same as the datafill for any switch. Also, the tables must be datafilled in the order given.

The following paragraphs describe the tables associated with ADAS:

Table VPSRVDEF This table holds the default configurations or options for the various VPU services.

The following example shows sample datafill for table VPSRVDEF.

MAP display example for table VPSRVDEF

KEY	OPTIONS
ADAS	(AUDIO ADSAUDDA)\$

Following is a description of the fields.

- **SERVICE:** Identifies VPU service. Enter ADAS.
- **OPTIONS:** Service configuration options. Currently, there is only one supported option, the name of the audio load information file. This file must be pre-defined in table PMLOADS.

Table control limitations are as follows:

- **Add:** The VPU audio load information file must be pre-defined in table PMLOADS.
- **Delete:** No tuples in table VPUSERV can be using the default configuration for the service being deleted.
- **Change:** All default configuration information being referenced by tuples in table VPUSERV must be specified.
- **Table VPUSERV** (VPU service information)

This table specifies the service provided by each VPU and identifies the audio load information file.

Automated DA Service (continued)

The following example shows sample datafill for table VPUSERV.

MAP display example for table VPUSERV

VPUN0	SERVICE	OPTIONS
0	ADAS	\$
4	ADAS	(AUDIO TPAUD)\$

Following is a description of the fields.

- VPUN0: VPU number. Range: 0-179.
- SERVICE: Identifies VPU service. Enter ADAS.
- OPTIONS: Service configuration options. Currently, there is only one supported option, the name of the audio load information file. This file must be pre-defined in table PMLOADS. This field does not need to be datafilled if a default value has been datafilled in table VPSRVDEF.

Table RMCONFIG The following example shows sample datafill for table RMCONFIG.

MAP display example for table RMCONFIG

INDEX	NODE	SESSIONS
0	CM	16
1	EIU 0	8

Table TOPSTOPT New field ADASERV indicates if a TOPS trunk receives ADAS service. Y indicates ADAS service on the TOPS trunk and N indicates no ADAS service.

All trunks intended to have ADAS service are datafilled in this table. The trunk CLLI, the ACD type (ACD or QMS), indication of the displaying of the calling number, and the status of ADAS service to this trunk (Y or N) will be datafilled. Initially, ADAS service should be N.

The following example shows sample datafill for table TOPSTOPT.

Automated DA Service (continued)

MAP display example for table TOPSTOPT

GRPKEY	ACDDATA	DISPCLG	ADASERV	ADASANS
TBELLAIC	TOPSACD	Y	N	IMMEDIATE

Table ENSITES Datafill table ENSITES with the site name (CLLI) of the node on the LAN.

The following example shows sample datafill for table ENSITES.

MAP display example for table ENSITES

ENSITE
XYZ123

Table ENTYPES Datafill table ENTYPES with the type of workstation being used as the OAM Position.

The following example shows sample datafill for table ENTYPES.

MAP display example for table ENTYPES

ENTYPE
HPWS

Table EXNDINV This table contains information about nodes external to the DMS, including the OAM workstation. Information includes Ethernet addressing and messaging characteristics.

The following example shows sample datafill for table EXNDINV.

Automated DA Service (continued)**MAP display example for table EXNDINV**

EXNDKEY	ENNAME	ENLOCN	ENTYPE	ENADDR
ENFNAME	ENSITE	ENPROCSR	ENINFO	ENPROTCL
EN0LKALM	EN1LKALM	ENALMSPT		
EXND 1	XYZ123	(	ENIP 12 345 6 789)	\$
NONE	OURSITE	2 K 7	HPWS 'OAM_WORKSTATION'	
		ALL	TCP ICMP	UDP \$
MN	NA		N	

Next, the LIM and NIU software is loaded.

LAN/Workstation Configuration

The LAN should be in place physically and the workstation connected to it. The EIU, CM, APUs, and workstation should have IP addresses allocated for them. The workstation should be powered up with the base HP operating system installed.

Several ADAS peripherals require IP (Internet Protocol) addresses:

- Two (2) IP addresses for every EIU. One address is on the SuperNode side and the other is on a different subnet than the SuperNode.
- Two (2) IP addresses for every APU on the same subnet.
- One (1) IP address for the OAM Position (UNIX Workstation) where this IP address is on the LAN side.
- One (1) IP address for the CM

IP addresses are obtained from the Network Information Center (NIC) prior to installation by the Operating Company.

Note 1: All maintenance on the EIU or LAN should be done from a MAP position and not from a TELNET session on a workstation. If the EIU goes out of service, TELNET sessions are terminated.

Note 2: All datafill given below is for example purposes only. Datafill specific to the switch must be datafilled.

The following tables must be datafilled to allow communication between the DMS and the LAN and between the workstation and the DMS:

Table IPNETWRK Table IPNETWRK defines subnet addressing. Field ADDRAREA is unique to each DMS host. A nonunique number in this field

Automated DA Service (continued)

can disrupt communication on other LANs. Be sure to get this number from a LAN specialist.

The following example shows sample datafill for table IPNETWRK.

MAP display example for table IPNETWRK

KEYREF	ADDRAREA	OPTION PARMAREA
0 A 47 16 7841 11	(	EIU 0)\$ (SCRNFLAG Y)\$

Table IPROUTER Add all new EIUs to be used as routers. The SuperNode host ID, Ethernet IP address, indication of the use of the Ethernet ARP Control Type, and indication of the use of the Ethernet Proxy ARP Control Type will be datafilled. Be sure to get the IP address from a LAN specialist.

The following example shows sample datafill for table IPROUTER.

MAP display example for table IPROUTER

RKEY	ROUTER	SNHOSTID	ETHIPADR	ETHARP	ETHPARP
0	EIU	0	3 47 245 0 3	YES	YES

Table IPHOST This table assigns IP addresses and other TCP/IP configuration parameters to SuperNode hosts. This table must be datafilled for APUs and EIU defined in table LIUINV.

Note: IP addresses for the APUs and the EIU must be unique and follow an addressing scheme.

The following example shows sample datafill for table IPHOST.

Automated DA Service (continued)**MAP display example for table IPHOST**

INDEX	NODENAME							NODEINFO		
0	CM	0						32	1	1
1	APU	1	9		10			1	0	0
2	APU	2	6		12			1	0	0
3	EIU	0	3	47	245	0	3	32	0	0

Table IPTHRON Datafill table IPTHRON with traffic throttling values to prevent bottlenecks in IP communication.

The following example shows sample datafill for table IPTHRON.

MAP display example for table IPTHRON

LMSNODE	TXCAPCT	RXCAPCT	OPTION		
EIU	0	32000	32000		\$

Table ENSITES Datafill table ENSITES with the node name of any workstation connected to the ADAS LAN and allowed to TELNET into the switch. It is highly recommended that only the ADAS OAM position be datafilled.

The following example shows sample datafill for table ENSITES.

MAP display example for table ENSITES

ENSITE
BRTPH165

To find the node name of a workstation, at the workstation type:>**hostname**

Table ENTYPES Datafill table ENTYPES with the type of workstation allowed to TELNET into the switch. This value is referenced by table EXNDINV.

The following example shows sample datafill for table ENTYPES.

Automated DA Service (continued)

MAP display example for table ENTYPES

ENTYPE

HPWS

Table EXNDINV This table interacts with the Screening Option in table IPNETWRK. Only nodes datafilled in EXNDINV are allowed to TELNET into the switch.

The following example shows sample datafill for table EXNDINV.

MAP display example for table EXNDINV

EXNDKEY	ENNAME	ENLOCN	ENTYPE	ENADDR
ENFNAME	ENSITE	ENPROCSR	ENINFO	ENPROTCL
EN0LKALM	EN1LKALM	ENALMSPT		
EXND 1	XYZ123	(ENIP 12 345 6 789)\$		
NONE	OURSITE	2 K 7	HPWS 'OAM_WORKSTATION'	
		ALL	TCP ICMP UDP \$	
MN	NA		N	

Note: The IP address should be that of the ADAS OAM position. The site and location are specific to each workstation.

Next, the EIU and OAM position (workstation) software is loaded.

APU configuration

Several tables need to be datafilled on the DMS prior to bringing up the APUs. These tables include information about the File System referenced by the APUs, which is known as the APU application load.

Keep the following datafill rules in mind when datafilling or doing maintenance on the APUs.

- The AAC36nn load file must be present on the disk specified in table SNIXVOLS for the tuple to be accepted.
- In table SNIXAPPL, VPP central (and peer) must be datafilled before the LPP central (and peer). Also, the LPP central (and peer) MUST be datafilled before the local APUs. In addition, the tuples in table SNIXAPPL must be physically ordered so that the VPP centrals are first, followed by LPP centrals, and then local APUs. These ordering

Automated DA Service (continued)

requirements arise from the ADAS application rather than table SNIXAPPL. Other applications using table SNIXAPPL may have different requirements.

Note: The APUs containing the VPP centrals are also the LPP centrals if only one LPP (and peer) is being used for ADAS.

The following tables should only be datafilled with APUs that will be used for ADAS service. Also, tables are listed in the required datafill order.

Table ESRVATTR (read-only) This table defines components that are required for an enhanced service. This table is read-only. Nortel (Northern Telecom) enters datafill in it.

The following example shows sample datafill for table ESRVATTR.

MAP display example for table ESRVATTR

SRVCMP	OBJDESC	SRVDATA
ADAS VPU	ADAS.VPU:0	\$
ADAS CPE	ADAS.CPE:0	ADSSRVDA

In the example above, the service data file is ADSSRVDA.

Table ESRVCAP (read-only) This table defines the upper limit on the number of ADAS calls an office can process. The default is zero and is set to correspond with the capacity of the hardware. This table is read-only and datafilled by Nortel (Northern Telecom).

The following example shows sample datafill for table ESRVCAP.

MAP display example for table ESRVCAP

SERV	CAPACITY	TIMEOUT	OBJDESC
ADAS	200	5	ADAS

Table SNIXINFO This table defines the application processors running SuperNode UNIX (SNIX).

The following example shows sample datafill for table SNIXINFO.

Automated DA Service (continued)

MAP display example for table SNIXINFO

INDEX	NODEDATA	
0	APU	0
1	APU	1
2	APU	2

Following is a description of the fields.

- INDEX: Key to table. Range: 0-127.
- NODETYPE: SNIX node type. Valid values are APU (application processor unit), AP (application processor), and FP (file processor). If APU, datafill subfield NODENO. If AP or FP, datafill subfields NODENO and RSTNUM. Currently, only APU is supported, so enter APU. Datafill a minimum of 3 APUs per LPP. See table SNIXAPPL, fields APU_TYPE and CENTRAL_TYPE for further details.
 - NODENO: Node number. Range: 0-1023.
 - RSTNUM: Maximum number of AP or FP SNIX restarts in time period. Range: 1-10.

Table SNIXVOLS Information in this table pertains to the application file for ADAS. Its number, name, disk access list, and access mode are contained here. The file must physically be present.

The following example shows sample datafill for table SNIXVOLS.

MAP display example for table SNIXVOLS

FSNUM	FSNAME	ACCMINFO	FSLIST
0	ADASLD1 (AAC35nn D010ADAS)(AAC36nn D000ADAS) \$ R0		

Following is a description of the fields.

- FSNUM: File system number with special meaning to SNIX. Range: 0-15.
- FSNAME: File system name definition of up to 14 characters used by table SNIXAPPL.

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- **FSLIST:** File system list of up to 2 SNIX files. Each file is composed of subfields **FILENAME** and **VOLUME**. These are treated by the system as identical files where the second file is backup; therefore, it is recommended to datafill 2 files.
 - **FILENAME:** File name
 - **VOLUME:** Location of **FILENAME**
- **ACCINFO:** Access mode information composed of subfields **ACCMODE**, **NODETYPE**, and **NODENO**.
 - **ACCMODE:** Access mode is RO (read-only) or RW (read/write). Only RO is supported by ADAS.
 - **NODETYPE:** Read/write file system node owner type. Node type is defined in table **SNIXINFO**, field **NODETYPE**.
 - **NODENO:** Read/write file system node owner number. Node number is defined in table **SNIXINFO**, field **NODENO** and associated with the defined node type in table **SNIXINFO**.

Table SNIXAPPL This table contains information about the type of application running on the datafilled node.

Note: VPP centrals must be datafilled before LPP centrals, and central APUs must be datafilled before local APUs.

The following example shows sample datafill for table **SNIXAPPL**.

Automated DA Service (continued)

MAP display example for table SNIXAPPL

INDEX	NODETYPE	NODENO	INITFSNM	FSNMLIST	APPLDATA
0	APU	2	(ADASLD1) \$	ADAS CENTRAL	VPP 4
1	APU	4	(ADASLD1) \$	ADAS CENTRAL	VPP 2
4	APU	17	(ADASLD1) \$	ADAS CENTRAL	LPP 19
5	APU	19	(ADASLD1) \$	ADAS CENTRAL	LPP 17
10	APU	0	(ADASLD1) \$	ADAS LOCAL	30
11	APU	1	(ADASLD1) \$	ADAS LOCAL	30
12	APU	3	(ADASLD1) \$	ADAS LOCAL	30
20	APU	16	(ADASLD1) \$	ADAS LOCAL	30
21	APU	18	(ADASLD1) \$	ADAS LOCAL	30
22	APU	20	(ADASLD1) \$	ADAS LOCAL	30

In the example, APU 2 is the VPP central APU. Its peer is APU 4. APU 17 is an LPP central APU, with APU 19 as its peer. All central APUs, whether VPP or LPP centrals, must be datafilled before any local APUs. This allows the table to transfer during an ONP.

Indices must be left available in order to move the central functionality to a different APU in case of hardware difficulties. Therefore, a gap must be left between the VPP Central APUs and the LPP Central APUs, as well as a gap between the LPP Central APUs and any locals.

Following is a description of the fields.

- INDEX: Key to table. Range: 0-127.
- NODETYPE: SNIX node type. Type is defined in table SNIXINFO, field NODETYPE.
- NODENO: SNIX node number. Number is defined in table SNIXINFO, field NODENO, and associated with the defined node type in field NODETYPE.

Automated DA Service (continued)

- FSNMLIST: SNIX file system name list. Up to 4 names defined in table SNIXVOLS, field FSNAME, and used on this node. ADAS only uses one at this time.
- INITFSNM: SNIX file system initialization name. Name is defined in table SNIXVOLS, field FSNAME, and used on this node for script initialization.
- APPLTYPE: SNIX application type. Enter ADAS.
- APPLDATA: SNIX application data, composed of the following subfields:
 - APU_TYPE: The logical type of APU (application processor unit). Valid values are LOCAL and CENTRAL. If type is CENTRAL, datafill subfields CENTRAL_TYPE and CENTRAL_PEER. If type is LOCAL, datafill subfield CPE_CAPACITY.

Datafill 2 CENTRALs (a central and its peer for backup) and 1 LOCAL for each LPP frame and for the first 30 calls. Then, datafill 1 additional LOCAL for each 30 calls.

Also, datafill VPP centrals before LPP centrals and centrals before locals.
 - CENTRAL_TYPE: Central APU node type. Valid values are VPP (voice processing platform) and LPP (link peripheral processor). For the first LPP frame enter VPP (for the central and its peer). Then for each additional LPP frame enter LPP (for the central and its peer).
 - CENTRAL_PEER: Node number of the APU that acts as the peer for the central APU. Range: 0-1024. If no peer, enter 1024.
 - CPE_CAPACITY: Local APU amount of traffic the CPE (call processing engine) can support. The only valid value is 30.

Finally, the APU and VPU software, and Audio load files are loaded.

Provision logs on a printer

To view logs from the peripherals on a printer, tables RLOGTAB and RLOGDEV must be datafilled with the peripheral name and device to which to send the logs.

The following examples show sample datafill for tables RLOGDEV and RLOGTAB.

Automated DA Service (continued)

MAP display example for table RLOGDEV

DEV	ALT	CLASSES	FORMAT	PRIORITY	GUAR
PRT1	PRT2	ALL	STD	Y	N

MAP display example for table RLOGTAB

NODENAME	NODENUM	DEV1	DEV2	DEV3
LIM0U0	576	PRT1	PRT2	NIL
LIM0U1	577	PRT1	PRT2	NIL
EIU0	588	PRT1	PRT2	NIL
APU0	592	PRT1	PRT2	NIL
NIU0U0	580	PRT1	PRT2	NIL
NIU0U1	581	PRT1	PRT2	NIL
VPU0	601	PRT1	PRT2	NIL

Note: For the peripherals to show up in this table, they must be changed from OFFL to MANB at least once. As the remaining installation procedures are followed and peripherals are busied and RTSed, change the devices for each peripheral to a printer as datafilled in table RLOGDEV.

This completes "Initial ADAS software installation." Continue to "Verification."

Installing an ADAS upgrade - non-service affecting

An upgrade of a working system is slightly different from installation of a new ADAS system. ADAS can be upgraded without a service interruption if all peripherals are loaded individually. Also, some steps are different from an initial installation and can be bypassed.

To install an upgrade to a working system, first provision two Inter-MS links on the DMS-Bus on two (2) different port cards, if they do not already exist. This prevents the errors caused by the INM (integrated node maintenance) software not supporting LPP isolation. This error occurs when an LMS gets isolated from a DMS-Bus due to a DS-30 port failure. See "Provisioning links" for complete instructions.

The tables in NTI's ADAS package are built with default data. The Operating Company can change the data on site if required. However, the initial datafill is designed to work with DMS with slight modifications that have been

Automated DA Service (continued)

incorporated into the installation procedures. The data tables in NTI's ADAS offering are included here.

If any peripherals are to be deleted from any tables or any PEC changes are to be made, that particular peripheral must be offline.

Datafill procedure for an ADAS upgrade - non-service affecting
Datafill the tables in the following order.

1. Add new load names for table PMLOADS.
2. Add new load names for table LIMINV.
3. Datafill table SUSHELF (as necessary).
4. Add new load names for table NIUINV.
5. Add new load names for table LIUINV.
6. Add new values for VPSRVDEF (as necessary).

Note: The VPUs must be BSYed and RTSed for the change to take effect. To prevent service disruption, busy only one VPU at a time. Bring each VPU back in-service before proceeding to the next VPU.

7. Add new values for table IPROUTER (as necessary).
8. Add new values for table IPHOST (as necessary).

Note: All peripherals whose IP addresses are changed in this table must be Offline before the change can be made.

9. Add new values for table ENSITES (as necessary).
10. Add new values for table ENTYPES (as necessary).
11. Add new values for table EXNDINV (as necessary).
12. Datafill table SNIXINFO.
13. Datafill table SNIXVOLS.

Note: The file added to this table must be physically present before it will be accepted into the table.

14. The LIM, EIU, and NIU software are loaded.

Automated DA Service (continued)

15. For each APU the following steps are performed:
 - a. Busy the APU
 - b. Datafill the APU
 - c. Load software and RTS
16. The OAM position, and VPU software; and audio load files are loaded.

This completes "Installing an ADAS software upgrade - non-service affecting." Continue to "Verification."

Installing an ADAS upgrade - service affecting

An upgrade of a working system is slightly different from installation of a new ADAS system. ADAS can be upgraded without a service interruption if all peripherals are loaded individually. See "Installing an ADAS software upgrade - non-service affecting." However, ADAS can be upgraded faster if all peripherals are loaded simultaneously, but, service is interrupted.

Installing an ADAS upgrade to a working system

Perform the following procedure to install an upgrade (service affecting) to a working system.

1. Isolate the ADAS system from the network by changing the field ADAS_ENABLE to N in table TOPSPARM. This will allow all calls in progress to gracefully complete.
2. Provision two Inter-MS links on the DMS-Bus on two (2) different port cards if they do not already exist. This prevents the errors caused by the INM (integrated node maintenance) software not supporting LPP isolation. This error occurs when an LMS gets isolated from a DMS-Bus due to a DS-30 port failure. See "Provisioning links" for complete instructions.

Tables in NTI's ADAS package are built with default data. Operating Company personnel can change the data on site if required. However, the initial datafill is designed to work with DMS with slight modifications that have been incorporated into the installation procedures. The data tables in NTI's ADAS offering are included here.

If any peripherals are to be deleted from any tables or any PEC changes are to be made, that particular peripheral must be offline.

Automated DA Service (continued)

Datafill procedure for an ADAS upgrade - service affecting

Perform the following procedure to datafill tables.

1. Add new load names for table PMLOADS.
2. Add new load names for table LIMINV.
3. Datafill table SUSHELF (as necessary).
4. Add new load names for table NIUINV.
5. Add new load names for table LIUINV.
6. Add new values for VPSRVDEF (as necessary).

Note: The VPUs must be BSYed and RTSed for the change to take effect. (This is service affecting.)

7. Add new values for table IPROUTER (as necessary).
8. Add new values for table IPHOST (as necessary).

Note: All peripherals whose IP addresses are changed in this table must be Offline before the change can be made.

9. Add new values for table ENSITES (as necessary).
10. Add new values for table ENTYPES (as necessary).
11. Add new values for table EXNDINV (as necessary).
12. Datafill table SNIXINFO.
13. Datafill table SNIXVOLS.

Note: The file added to this table must be physically present before it will be accepted into the table.

14. The LIM, EIU, and NIU software are loaded.
15. For each APU the following steps are performed:
 - a. Busy the APU
 - b. Datafill the APU
 - c. Load software and RTS
16. The OAM position, and VPU software; and audio load files are loaded.

This completes "Installing an ADAS software upgrade - service affecting."
Continue with "Verification" that follows.

Automated DA Service (continued)

Verification

After the tables have been datafilled, it is necessary to verify that messaging exists between the OAM Position and the DMS. Use the following steps to verify addressing datafill. After installation:

Verifying messaging between OAM Position and DMS:

1. Verify that all required router EIUs were datafilled in table IPROUTER (one tuple per EIU).
2. Verify that the CM was datafilled as a host in table IPHOST.
3. Verify that the CM is datafilled as a host in */etc/hosts* on the OAM Position.
4. Verify that all host, routers, and external nodes are in-service.
5. Verify that the OAM Position is datafilled in table EXNDINV.
6. Verify that IP messages can be sent from the OAM Position to the CM and the OAN Position can receive IP messages from the CM. Follow these steps:

- a. From the workstation, type:

```
>ping <CM_IP_address>
```

- b. After several pings are sent back and forth, stop the pinging by holding the Ctrl key down and typing : C.

The CM IP address can be found in table IPNETWRK.

After ADAS has been verified, parameter ADAS_ENABLE in table TOPSPARM should be set to Y, and the trunks in table TOPSTOPT should be slowly turned up.

Optional configurations

The branding and QMS options can be used with the ADAS package.

For further information, refer to the following package descriptions:

- NTXE71AA - TOPS DA/Toll Branding
- NTXP41AA - TOPS Host QMS
- NTXP42AA - TOPS Remote QMS
- NTXR48AA - QMS: Call and Agent Manager
- NTXR50AA - QMS External MIS

Automated DA Service (continued)

For branding, table BRANDOPT, field OPERSYS can be datafilled with the new value ADAS.

The following example shows sample datafill for table BRANDOPT.

MAP display example for table BRANDOPT

ICTRKGRP	OPERSYS	NBECL00K
TOPS0G2	ADAS	Y

For basic use of QMS, datafill tables QAPLNDEF and QMSCQDEF as described in NTXR48AA.

The following office parameters in table OFCENG must be set:

- QMSFM_NUM_QUEUES
This parameter specifies the number of queues used by QMS. This value may be as high as 255.
- QMSFM_NUM_SERVICES
This parameter specifies the number of services the operators can access.
- QMSFM_NUM_STUDY_REG
This parameter specifies the number of study registers the operators can use. If the operator is using a study register, he/she will not be taking live calls.

QMS offers a number of statistics that may be of value in analyzing the performance of ADAS, and the performance of operator interaction with ADAS. To access these statistics, print them out on the QFADS.

Add/delete an APU

Initial configuration and startup or adding an APU

Use the following procedure to initially configure and start up or add an APU:

1. Datafill the APU in table LIUINV.
2. Datafill the APUs in tables SNIXINFO and SNIXAPPL, and the APU's IP addresses in table IPHOST.
3. RTS the APU.

Automated DA Service (continued)

Deleting an APU

Use the following procedure to delete an APU:

1. Offline the APU from the MAP.
2. Delete the APU's data from tables IPHOST, SNIXINFO, and SNIXAPPL.
3. Delete the APU's data from table LIUINV.

Drop call

If the calling party has gone on-hook and the VPP has not responded within the time specified in parameter ONHOOK_RECOVERY_TIMER (in table VSNOPT), it is assumed that the VPP has had an internal failure. In this case, the VPP will be dropped from the call, and the call will be dropped.

Operational Measurements

Most OM information is collected at regular time intervals (5, 15 or 30 minutes) as defined in the DMS OM system. The 15- and 30-minute time interval is controlled in table OFCENG by parameter OMXFR. The 5-minute time interval is enabled when the OMHISTORYON parameter in table OFCOPT is set to Y to enable the history feature. When the OMHISTORYON is set to Y, parameter OMXFR in table OFCENG is ignored and a 5-minute OM transfer period is in effect. Currently, for either of the office parameters to be effective, a restart has to be issued. A warm restart is required for a change in the OMHISTORYON parameter to take effect, while a cold restart is required for a change in the OMXFR parameter to take effect.

Table OMACCESS stores a username, password, and a list of up to 32 OM groups that can be transferred within the system. This table is changed so that if no groups are present in the table, then all of the groups are allowed to be transferred.

Queuing for an operator

ADAS calls that are requesting an operator may use the standard TOPS queuing implementation or optionally use the Queue Management System (QMS).

With standard TOPS queuing there are four queues for assignment: GEN (the general, nontransfer queue), XFR1 (the first transfer queue), XFR2 (the second transfer queue) and DA (the Directory Assistance queue). A TOPS call is associated with a particular queue by the call origination type via table TOPS. Any call that cannot be immediately handled by an operator waits in the queue that it is assigned to.

For TOPS offices operating with the QMS software package the number of assignable call queues available is 255. With QMS calls that have been to an

Automated DA Service (continued)

automated service (e.g., ADAS) may be associated with a separate operator queue via table CT4QAUTO. Please refer to feature package NTXP42AA (TOPS Remote QMS), feature AF2875, QMS: Call Queue Assignment, for additional details about QMS.

Queue deflection and overflow

ADAS calls receive priority in receiving a queue and are therefore not deflected from a queue. However, with an ADAS call it is possible that the call cannot be added to the queue. If there are not any queuing resources available, the call cannot be placed into queue but is sent to the queue overflow treatment. Overflow should not happen in a properly provisioned office.

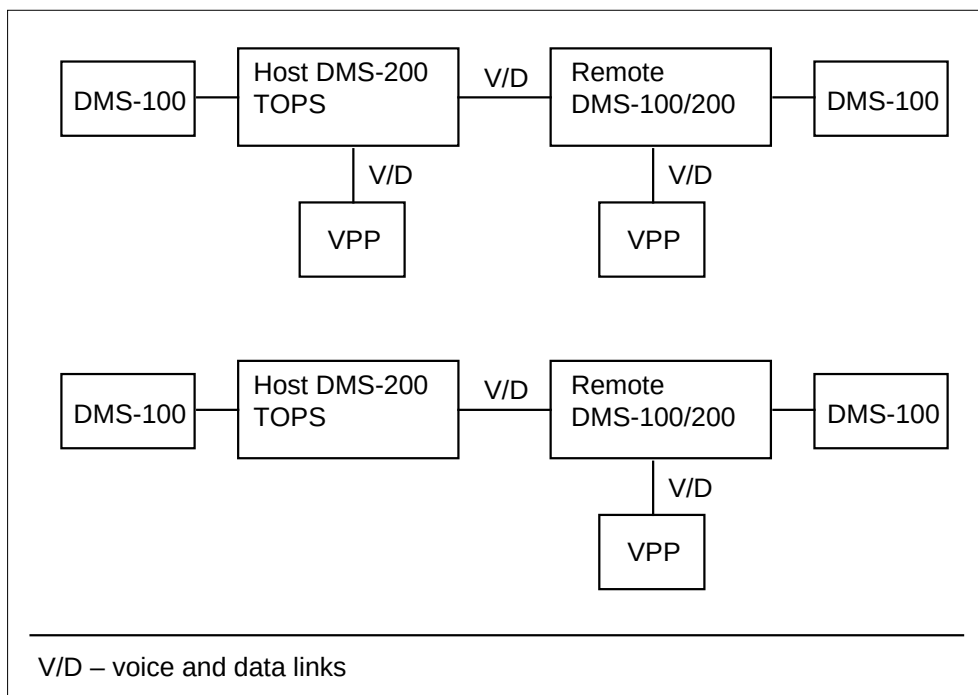
When overflow occurs the calling party receives treatment and the VPP is informed that the call has ended and the call is taken down.

ADAS in an OC environment

The Operator Centralization (OC) environment saves operating expenses by reducing the number of operators an Operating Company needs to employ. In an OC environment, there are two kinds of DMS-200 switches: host switches, where the operators are located, and remote switches, which obtain operator services by messaging the host switch over the OC links. The following diagram shows two implementations of the VPP application in an Operator Centralization (OC) environment.

Automated DA Service (continued)

Operator centralization configurations



Each remote DMS requires its own communication facilities to a VPP processor. Refer to NTX039AA, Host OC Data Link Handling, and NTX134, Remote OC Data Link for more information on the OC environment.

Note 1: No VPPs are needed on a host switch with no incoming TOPS trunks.

Note 2: Operator positions that provide directory assistance (DA) or intercept services must have unique position numbers in table TOPSPOS. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Multiple file servers to minimize APU loading times

When an APU is RTSed, the ADAS application code is loaded into the APU from a file on the CM disk system. This file can reside on either an SLM or IOC disk. File access is through a fileserver process running on the CM.

Fileservers are defined in table SNIXVOLS. Assignment of a fileserver to an APU is made in table SNIXAPPL. When multiple APUs are accessing a load file through a single fileserver, loading (and thus time to RTS) can be slow.

Automated DA Service (continued)

To keep APU RTS times acceptable, multiple file servers can be defined for a loadfile. By linking system APUs to available file servers, APU loading can be spread across these file servers. The following table shows recommended distribution.

Using multiple file servers to minimize APU loading times

# of APUs	# File servers defined per device:			
	SLM0	SLM1	DDU0	DDU1
-----	----	----	----	----
4	3	3	1	1
5	3	3	2	2
6	4	4	2	2
7	5	5	2	2
8	5	5	3	3
9	6	6	3	3
10	6	6	4	4
11	7	7	4	4
12	7	7	5	5
13	8	8	5	5
14	9	9	5	5
15	9	9	6	6
16	10	10	6	6
17	10	10	7	7
18	11	11	7	7
19	12	12	7	7
20	12	12	8	8
21	13	13	8	8
22	14	14	8	8
23	15	15	8	8
24	16	16	8	8

Note 1: Because the throughput of SLMs is greater than that of DDUs, this table favors the allocation of APUs to SLMs rather than to DDUs.

Note 2: For convenience, SLM1 and DDU1 appear to be unused. In practice, they are used as alternates to their mates, SLM0 and DDU0 respectively.

Note 3: Using multiple HSDF simplex servers to access SLMs can affect the LDMATE DIRECT operation.

Automated DA Service (continued)

Taking the first row as an example, with 4 APU's, define three file servers on SLM0. These three file servers are each backed up with a redundant file server defined on SLM1. Now, define 1 file server on DDU0, which is backed up with a redundant file server defined on DDU1.

The following example shows sample datafill for table SNIXVOLS.

MAP display example for table SNIXVOLS

FSNUM FSLIST	FSNAME	ACCMINFO
0	ADASLD0 (AAC36nn S01DADAS)	(AAC36nn S0000ADAS) \$ R0
1	ADASLD1 (AAC36nn S010ADAS)	(AAC36nn S0000ADAS) \$ R0
2	ADASLD2 (AAC36nn S010ADAS)	(AAC36nn S0000ADAS) \$ R0
3	ADASLD3 (AAC36nn D010ADAS)	(AAC36nn D0000ADAS) \$ R0

The following example shows sample datafill for table SNIXAPPL.

Automated DA Service (continued)**MAP display example for table SNIXAPPL**

INDEX	NODETYPE	NODENO		
FSNMLIST			INITFSNM	
APPLDATA				
0	APU	0		
(ADASLD0)\$			(ADASLD0)\$	ADAS
CENTRAL VPP		3		
1	APU	1		
(ADASLD1)\$			(ADASLD1)\$	ADAS
CENTRAL VPP		4		
2	APU	2		
(ADASLD2)\$			(ADASLD2)\$	ADAS
LOCAL 40				
3	APU	3		
(ADASLD3)\$			(ADASLD3)\$	ADAS
LOCAL 40				

BCS36 ONP: Increasing # APU channels from 30 to 40

With BCS36, APU capacity has been upgraded to 40 channels. After performing an ONP from BCS35 to BCS36, each APU will still be datafilled for a capacity of 30 channels. To increase the capacity to 40 channels without interrupting ADAS service, use the following procedure.

Increasing channel capacity to 40 without interrupting ADAS service:

1. Pick a local APU to update.
2. Bsy the APU.
3. In table SNIXAPPL, change the capacity from 30 to 40.
4. RTS the APU.

Repeat this procedure for each local APU, being sure to operate on only one APU at a time.

AF6544 - ADAS per line blocking

Release TOPS07 allows restriction of ADAS for callers who do not wish to interact with an automated DA system. If a DN has ADAS blocked, the caller is routed directly to a live operator for DA service. ADAS restriction is

Automated DA Service (continued)

indicated in tables DNSCRN, TOPSDB, and TDBDAOPT. If a subscriber is not datafilled in these tables, then by default the subscriber is given ADAS service.

Table DNSCRN lists the DN and a pointer into table TOPSDB, shown in the following example:

MAP display example for table DNSCRN

DN	ATTROPTS
6193201234	TOPSDB 5
6193205554	TOPSDB 21

Table TOPSDB is indexed by the pointer in table DNSCRN and contains an index into table TDBDAOPT, shown in the following example:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV	OAFUNBLK
0	0	0	0	0	0
5	0	17	0	0	0
21	3	56	0	0	0

Table TDBDAOPT is indexed by the pointer in table TOPSDB. It includes field ADASERV which indicates if the DN subscriber wants ADAS service blocked. If the field is set to Y, the call is routed to ADAS. If the field is set to N, the call is routed to an operator. The following is sample datafill for table TDBDAOPT.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
0	ALL ALL Y
17	BLOCK N
18	BLOCK Y
56	INTER SENTPD N
123	ALL ALTBIL Y

Automated DA Service (continued)

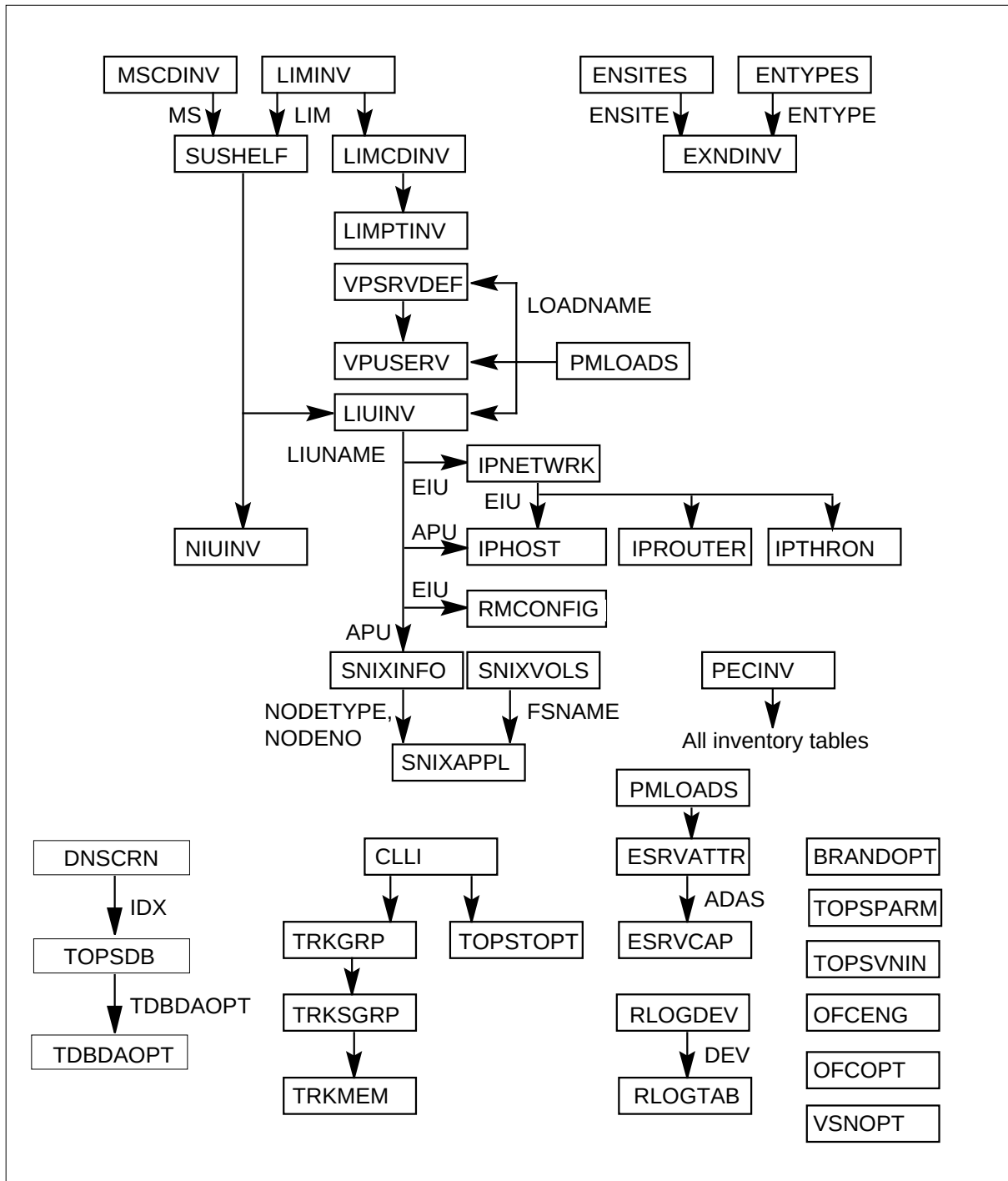
Tuple 0 in the above example is the default tuple for DNs which do not have an entry in table DNSCRN. Therefore, subscribers are sent to the ADAS system.

Translations table flow

The following flowchart shows the Automated DA Service translation process.

Automated DA Service (continued)

Table flow for Automated DA Service



Automated DA Service (continued)

Limitations and restrictions

The following limitations and restrictions apply to Automated DA Service:

Only calls arriving over TOPS trunks are eligible for ADAS handling. Direct line-to-TOPS calls in a DMS-100/200 cannot be connected directly to a VPP.

Because ADAS and DA branding use the same Operator and Cassette icons, ambiguous states at the operator display may occur during certain call progression instances. These icons are controlled by parameters in table TOPSPARM.

Directory Assistance calls with unsatisfactory billing are not routed to ADAS but presented to the operator in the billing screen to obtain the required information. This is done to prevent calls from arriving in the billing screen while at the same time playing locality/listing information to the operator.

AN1027 - Answer supervision

The ability to delay answer supervision until an ADAS call arrives at an Operator Position is provided to satisfy one customer's network configuration where billing is not performed by the DMS200 TOPS switch. Delaying answer supervision is known to solve the remote billing dilemma for this customer's network, but is generally not advised. It is recommended that answer supervision be provided immediately upon subscriber connection to ADAS. Delaying answer supervision is not recommended without first studying its impact on the particular network in question. Delay answer supervision is controlled by table TOPSTOPT, field ADASANS.

One known problem with delaying answer supervision occurs when a trunk group is at 100% occupancy and the originator of one of those calls goes on-hook while at ADAS before answer supervision has been returned. In this case it is possible for the outgoing trunk to be idled and seized by a new origination in the originating office before the TOPS office has idled the corresponding incoming trunk from the previous call. When this occurs, the two offices are in disagreement over the state of the trunk and the newly originated call may be sent to treatment or never connected to a terminating agent.

Interactions

The following paragraphs describe the interactions between Automated DA Service and other functionalities.

Automated DA Service (continued)

AABS

When a subscriber requests toll DA service (e.g., 0-411), the call may be processed initially by AABS or AABS handoff, which also use the VSN cross-processor.

Following AABS processing of the call, the VSN cross-processor will be re-entered to perform ADAS processing. ADAS processing for such calls is independent of any earlier AABS processing.

Service Analysis

ADAS calls are represented by an *ADS* at the Service Analysis level of the MAP.

MCCS/ACCS and ACTS

When a subscriber requests toll DA service (e.g., 0-411), the call may be processed initially by other portions of TOPS that provide MCCS/ACCS and ACTS. At entry to ADAS, billing will already be satisfied.

For billable DA calls, billing information may be secured, prior to handling by ADAS, via:

- Automatic Coin Toll Service (ACTS) for 1+ DA coin calls
- Mechanized Calling Card Service (MCCS) or Automated Alternate Billing Service (AABS) for 0+ DA calls

ADAS and Personnel Audio Response System (PARS)

PARS automatically plays an introductory greeting in the operator's own voice when the subscriber's voice path is connected to the operator. Playing an introductory greeting, following ADAS collection of listing and name information, would encourage conversation between the subscriber and operator and possibly confuse the subscriber. With ADAS we are attempting to minimize or eliminate this conversation. Therefore, calls serviced by ADAS are optionally routed to PARS via the new TOPS parameter `ADAS_WITH_PARS_ENABLE`. When the parm is set to Y the subscriber is played an introductory greeting by PARS. When the parm is set to N the introductory greeting is not played to the subscriber.

Branding

Branding may optionally be applied to ADAS calls prior to being connected to the ADAS system. This optionality is achieved via table BRANDOPT, which indicates which trunk groups should receive branding prior to the initial contact with ADAS. To brand ADAS calls on a particular trunk group the OPERSYS field should include ADAS.

Automated DA Service (continued)

If Branding and ADAS are both enabled for DA calls, use of the *operator profile* and *cassette tape* icons are disabled. The *operator profile* and *cassette tape* icons are controlled by ADAS MMI and parameters ADAS_OPR_PROFILE_ICON and ADAS_CASSETTE_ICON in table TOPSPARM. Therefore, careful consideration must be taken when selecting icons for ADAS, since ambiguous states could exist with branding icons.

Note: If you are using IBM DA, text strings will appear instead of the icons.

AN1027 - Answer supervision

Feature AN1027, ADAS CM MMI Enhancements, does not impact ADAS+. ADAS+ is described in functionality OSDA0004. Feature AN1027 adds field ADASANS to table TOPSTOPT and parameter ADAS_RINGING_DURING_PLAYBACK to table TOPSPARM.

AF6544 - ADAS per line blocking

Per Line Blocking is fully compatible with Originating Line Number Screening (OLNS). OLNS, which was introduced in TOP06, moves most DN oriented datafill off the DMS switch to an external database. Since table DNSCRN is still active in an OLNS site, Per Line Blocking is fully functional for ADAS Plus and ADAS Base.

With this feature, Per Line Blocking is extended to both ADAS Plus and ADAS Base. The same table datafill in TDBDAOPT is shared by both ADAS Plus and ADAS Base. This is considered appropriate since subscriber access is blocked to automated DA services in general. There is no need for separate tuple fields for each service.

The TOP07 "Branding via SPID" functionality (ENV0017) also uses table DNSCRN for call branding on a DN basis. "Branding via SPID" has the potential to add substantial datafill to DNSCRN. Since Per Line Blocking is not expected to add large amounts of datafill to DNSCRN, competition for table space should not be a problem.

Activation/deactivation by the end user

Automated DA Service requires no activation or deactivation by the end user.

Billing

Calls handled by ADAS have the same type of billing records generated as corresponding calls at a TOPS position. Existing module code 055 (table 284) indicates how a subscriber provides information for the DA service. The

Automated DA Service (continued)

following table provides information for the Means of Information Input field for module code 055.

Means of Information Input field in Module Code 055

Value	Meaning
1	Verbal to operator (non-ADAS). Recorded for non-ADAS calls or DA calls when the VPP does not record or recognize the locality and listing name information.
2	DTMF. Recorded when the VPP records or recognizes either the locality or listing name information spoken by the subscriber.
3	Verbal to voice recognition system (ADAS).
9	Unknown, all auto-intercept calls (calls not handled by an operator). Used for auto-intercept calls because the intercepted number is provided through signaling, so it is not known if the input was DTMF or dial pulse.

The remaining fields in Module Code 055 are not affected by this feature. Following is an example AMA record.

Call code 055

```

HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:194C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE
TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:613C
ORIG NUMBER:2391234C  CONNECT TIME:0427380C
ELAPSED TIME:000000260C  OPERATOR IDS:1010200003101C
ACC OPERATOR WORK TIME:00250C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1CMODULE
CODE:055C  SERVICE ID:001C
MEANS OF INFORMATION INPUT:3C  MEANS OF LSDB ACCESS:1C
LSDBS BOC ID:13333C  LSDB ACCESSES:FF  LISTING
RESPONSE:2C
LISTING STATUS:111111100C  REQUEST COUNTER:001C
Module code:000C

```

The TOPS BC AMA Phase is based on the value of the EBAF_PHASE tuple in table TOPS AMA Options (TOPAMAOP). To record Module Code 055 in

Automated DA Service (continued)

AMA, it is recommended, but not required, that the EBAF_PHASE tuple should be set to 2.

Station Message Detail Recording

Automated DA Service does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Automated DA Service. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by Automated DA Service

Table name	Parameter name	Explanation and action
OFCENG	OMXFR	OM information is collected at regular time intervals (5, 15 or 30 minutes) as defined in the DMS OM system. The 15- and 30-minute time interval is controlled by parameter OMXFR. A cold restart is required for a change in the OMXFR parameter to take effect.
OFCOPT	OMHISTORYON	The 5-minute time interval is enabled when the OMHISTORYON parameter is set to Y to enable the history feature. When the OMHISTORYON is set to Y parameter, OMXFR in table OFCENG is ignored and a 5-minute OM transfer period is in effect. A warm restart is required for a change in the OMHISTORYON parameter to take effect.

Datafill sequence

The following table lists the tables that require datafill to implement Automated DA Service. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Automated DA Service (Sheet 1 of 3)

Table	Purpose of table
MSCDINV	Provision links
PECINV	Provision PECs
LIMINV	Define LPP hardware
LIMCDINV	Define LIM circuit packs
LIMPTINV	Define port connections on LIMs
SUSHELF	Describe LIU shelves in LIM

Automated DA Service (continued)

Datafill tables required for Automated DA Service (Sheet 2 of 3)

Table	Purpose of table
NIUINV	NIU inventory
LIUINV	Define LIU hardware configuration
CLLI	Common Language Location Identifier. Uniquely identifies the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit.
TRKGRP	Trunk Group. Contains information about trunk groups.
TRKGRP	Trunk Subgroup. Contains information about each subgroup associated with a trunk group defined in table TRKGRP.
TRKMEM	Trunk Member. Lists the data for each trunk specified in the trunk group and subgroup tables.
TOPSTOPT	Indicate ADAS on TOPS trunk basis
TOPSVNIN	Identify application, voice and data links
TOPSPARM	Various ADAS parameters
VROPT	Parameter that affects ADAS
PMLOADS	Define software loads
VPSRVDEF	Define default VPU services
VPUSERV	Define VPU services
RMCONFIG	Specify number of TELNET sessions
ENSITES	Define external node sites
ENTYPES	Define external node types
EXNDINV	Assign external node IP addresses
IPNETWRK	Define Internet network information
IPROUTER	Store Internet info
IPHOST	Assign IP addresses to Supernode hosts
IPTHRON	Avoid congestion on DS30 links
ESRVATTR	Define services (read only)

Automated DA Service (continued)**Datafill tables required for Automated DA Service (Sheet 3 of 3)**

Table	Purpose of table
ESRVCAP	Define services (read only)
SNIXINFO	Define SNIX hardware
SNIXVOLS	Define SNIX software
SNIXAPPL	Define SNIX application
RLOGDEV	List log classes for remote nodes
RLOGTAB	Assign devices to receive logs
BRANDOPT	Enable branding of ADAS call
TDBDAOPT	TOPS data base directory assistance options for DN screening of ADAS service
TOPSDB	TOPS data base for DN screening restriction of ADAS
DNSCRN	Directory number screening
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.

Datafilling table MSCDINV

The following table shows the datafill specific to Automated DA Service for table MSCDINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table MSCDINV

Field	Subfield or refinement	Entry	Explanation and action
			Provision two inter-MS links on the DMS-Bus on two different port cards for stability during NIU software installation.

Datafill example for table MSCDINV

The following example shows sample datafill for table MSCDINV.

Automated DA Service (continued)

MAP display example for table MSCDINV

MSNUM	SHELFNUM	CARDNUM	CARD TYPE	PROT OCOL	FRONT PEC	BACK PEC	HEAD BACK PEC
MID BACK PEC	TERM BACK PEC	EXTENT	NUMLINKS				
0	0	01	DS30		NT9X17AA	NT9X23BA	

Datafilling table PECINV

The following table shows the datafill specific to Automated DA Service for table PECINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table PECINV

Field	Subfield or refinement	Entry	Explanation and action
			Add the datafill shown in the following example.
			Note: NT9X14DB, NTEX22BA, and NTEX22BB may already exist. If so, add LISHW to field SSYSBASE.

Datafill example for table PECINV

The following example shows sample datafill for table PECINV.

MAP display example for table PECINV

PEC	SSYSBASE
NT9X14DB	(LISHW 01 \$) \$
NTEX22BA	(LISHW 01 \$) \$
NTEX25AA	(LISHW 01 \$) \$
NTEX25BA	(LISHW 01 \$) \$
NTEX28AA	(LISHW 01 \$) \$
NTEX84AA	(LISHW 01 \$) \$
NTEX85AA	(LISHW 01 \$) \$
NTMX99AA	(LISHW 01 \$) \$
NTMX97AA	(LISHW 01 \$) \$

Automated DA Service (continued)**Datafilling table LIMINV**

The following table shows the datafill specific to Automated DA Service for table LIMINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table LIMINV

Field	Subfield or refinement	Entry	Explanation and action
			Add new LIMs. For the load name, use the new peripheral load name.

Datafill example for table LIMINV

The following example shows sample datafill for table LIMINV.

MAP display example for table LIMINV

LIM	FLOOR	ROW	POSITION	CABTYPE	CABNUM	LOAD	CABPEC
SHLF0PEC							
0	2	B	41	LIM	0	LPC35nn	NT9X70BA
NT9X71AB							

Datafilling table LIMCDINV

The following table shows the datafill specific to Automated DA Service for table LIMCDINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table LIMCDINV

Field	Subfield or refinement	Entry	Explanation and action
			Add circuit pack information for the new LIMs.

Datafill example for table LIMCDINV

The following example shows sample datafill for table LIMCDINV.

Automated DA Service (continued)

MAP display example for table LIMCDINV

LIM	SHELF	SLOT	CARDTYPE	CARDINFO
0	0	7	PBUS	NT9X49CA
0	0	8	TFI	NT9X73BA NT9X79BA
0	0	9	DS30	NT9X17AA NT9X23BA
0	0	10	DS30	NT9X17AA NT9X23BA
0	0	15	MAPPER	T9X15AA
0	0	16	MEMORY	T9X14BB
0	0	17	MSP	NT9X13DB NT9X26AA
0	0	18	CLOCK	T9X53AA
0	0	19	TBUSACC	T9X52AA
0	0	20	TBUSACC	T9X52AA
0	0	21	CLOCK	T9X53AA
0	0	22	MSP	NT9X13DB NT9X26AA
0	0	23	MEMORY	T9X14BB
0	0	24	MAPPER	T9X15AA
0	0	29	DS30	NT9X17AA NT9X23BA
0	0	30	DS30	NT9X17AA NT9X23BA
0	0	31	TFI	NT9X73BA NT9X79BA
0	0	32	PBUS	NT9X49CA

Datafilling table LIMPTINV

The following table shows the datafill specific to Automated DA Service for table LIMPTINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table LIMPTINV

Field	Subfield or refinement	Entry	Explanation and action
			Add port information for the new LIMs.

Datafill example for table LIMPTINV

The following example shows sample datafill for table LIMPTINV.

Automated DA Service (continued)**MAP display example for table LIMPTINV**

LIM	SLOT	PORT	SHELF	PROTOCOL	LINKDEST	LINKINFO	
0	9	0	0	DMSY	MS 1	20	0
0	9	1	0	DMSY	MS 0	20	0
0	9	2	0	DMSY	LIM 0	30	2
0	10	0	0	DMSY	MS 0	21	1
0	10	1	0	DMSY	MS 1	21	1
0	10	2	0	DMSY	LIM 0	29	2
0	29	0	0	DMSY	MS 0	20	2
0	29	1	0	DMSY	MS 1	20	2
0	29	2	0	DMSY	LIM 0	10	2
0	30	0	0	DMSY	MS 1	21	3
0	30	1	0	DMSY	MS 0	21	3
0	30	2	0	DMSY	LIM 0	9	2

Datafilling table SUSHELF

The following table shows the datafill specific to Automated DA Service for table SUSHELF. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table SUSHELF

Field	Subfield or refinement	Entry	Explanation and action
			Describe the LIU shelves in the new LIMs.

Datafill example for table SUSHELF

The following example shows sample datafill for table SUSHELF.

Automated DA Service (continued)

MAP display example for table SUSHELF

```

SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS
SHELFPEC
CARDINFO

```

```

LIM 0 12 0 1      2  B      41      LIM      0      0
NT9X72BA
( 7 NT9X74DA NT9X79AA)$      (32 NT9X74DA NT9X79AA)$
LIM 0 12 0 2      2  B      41      LIM      0      20
NT9X72BA
( 7 NT9X74DA NT9X79AA)$      (32 NT9X74DA NT9X79AA)$
LIM 0 12 0 3      2  B      41      LIM      0      40
NT9X72BA
( 7 NT9X74DA NT9X79BA)$      (32 NT9X74DA NT9X79BA)$

```

Datafilling table NIUINV

The following table shows the datafill specific to Automated DA Service for table NIUINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table NIUINV

Field	Subfield or refinement	Entry	Explanation and action
			Add new NIUs.

Datafill example for table NIUINV

The following example shows sample datafill for table NIUINV.

MAP display example for table NIUINV

```

NUMBER      LOCATION      LOAD      U0INFO
              U1INFO
-----
      0      LIM  0 1      NRS35nn NTEX22BB NTEX25AA NTEX28AA
NTEX22BB NTEX25BA NTEX28AA ( 0 9)( 0 26)( 0 41)( 0 57)$
      1      LIM  0 2      NRS35nn NTEX22BB NTEX25AA NTEX28AA
NTEX22BB NTEX25BA NTEX28AA ( 1 9)( 1 26)( 1 41)( 1 57)$
      2      LIM  0 3      NRS35nn NTEX22BB NTEX25AA NTEX28AA
NTEX22BB NTEX25BA NTEX28AA ( 0 13)( 0 29)( 0 45)( 0 61)$

```

Automated DA Service (continued)**Datafilling table LIUINV**

The following table shows the datafill specific to Automated DA Service for table LIUINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table LIUINV

Field	Subfield or refinement	Entry	Explanation and action
LIUTYPE			Datafill each device: APU, VPU, and EIU: • APU For each LPP frame, datafill a minimum of 3 APUs: 2 CENTRALS and 1 LOCAL for the first 30 calls. Datafill 1 additional APU (LOCAL) for each additional 30 calls. Table SNIXAPPL defines the APU type (CENTRAL and LOCAL). • VPU Datafill 1 VPU for each 20 calls. • EIU Datafill 1 EIU interface to OAM workstation.
MAC_ADDRESS			For EIU, the MAC_ADDRESS is unique to each EIU and must be obtained from Northern Telecom

Datafill example for table LIUINV

The following example shows sample datafill for table LIUINV.

MAP display example for table LIUINV

LIU	NAME	LOCATION	LOAD	PROCINFO	CARDINFO
EIU	0	LIM 0 1 12	ETC35nn	NTEX22BB	
			NT9X84AA NT9X85AA	NO 000075F00000	
VPU	0	LIM 0 1 14	VPC35nn	NTEX22BB	
			NTMX97AA NTMX99AA		
APU	1	LIM 0 1 10	ULC35nn	NTEX22BB	
			NT9X14DB S0SNIX		

Automated DA Service (continued)

Datafilling table CLLI

The following table shows the datafill specific to Automated DA Service for table CLLI. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table CLLI

Field	Subfield or refinement	Entry	Explanation and action
			Add new trunks for ADAS.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
TBELLAIC	100	50	TRAFFIC_TRUNK
TBELLBIC	225	32	TRAFFIC_TRUNK
TBELL407	256	3	TOPS_407_TRUNK_GROUP

Datafilling table TRKGRP

The following table shows the datafill specific to Automated DA Service for table TRKGRP. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
			Add new trunks for ADAS.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

Automated DA Service (continued)**MAP display example for table TRKGRP**

GRPKEY	GRPINFO
TBELLAIC	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 BELL 16 10 10 Y N WINK N N	
TBELLBIC	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 BELL 16 10 10 Y N OFFHK N N	
TBELL407	
TOPS 0 TLD NCRT IC MIDL 407 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 BELL 10 7 7 N Y OFFHK N N	

Datafilling table TRKSGRP

The following table shows the datafill specific to Automated DA Service for table TRKSGRP. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
			Add new trunks for ADAS.

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
TBELLAIC 0	2X88AA	
STD IC	MF WK N 30 30 MW	MW N N Y M UNEQ
TBELLBIC 0	2X88AA	
STD IC	MF WK N 30 30 MW	MW N N Y M UNEQ
TBELLBIC 0	2X88AA	
STD IC	MF WK N 30 30 MW	MW N N Y M UNEQ

Automated DA Service (continued)

Datafilling table TRKMEM

The following table shows the datafill specific to Automated DA Service for table TRKMEM. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TRKMEM

Field	Subfield or refinement	Entry	Explanation and action
			Add new trunks for ADAS.

Datafill example for table TRKMEM

The following example shows sample datafill for table TRKMEM.

MAP display example for table TRKMEM

CLLI	EXTRKNM	SGRP	MEMVAR
TBELLAIC	1001	0	DTC 1 2 1
TBELLBIC	1002	0	DTC 1 2 2
TBELL407	1003	0	DTC 1 2 3
TOPSOG2	1004	0	DTC 1 2 4

Automated DA Service (continued)**Datafilling table TOPSTOPT**

The following table shows the datafill specific to Automated DA Service for table TOPSTOPT. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TOPSTOPT

Field	Subfield or refinement	Entry	Explanation and action
ADASERV		Y or N	This new field indicates availability of ADAS service by trunk group. Entry value: Y if service is available, or N if service is not available.
ADASANS		NA, DELAYED, or IMMEDIATE	This field controls when answer supervision is returned to the originating trunk. Set to NA (not applicable) when field ADASERV is set to anything other than ADAS. When set to IMMEDIATE, answer supervision is provided when the incoming trunk is initially connected to ADAS. When set to DELAYED, answer supervision is not provided until the call arrives at the operator position. DELAYED can only be used for INTERTOLL or TOPS ONI trunks. Default: IMMEDIATE if ADASERV=ADAS, otherwise it is NA.

Datafill example for table TOPSTOPT

The following example shows sample datafill for table TOPSTOPT.

MAP display example for table TOPSTOPT

GRPKEY	ACDDATA	DISPCLG	ADASERV	ADASANS
TBELLAIC	TOPSACD	N	N	NA
TBELLBIC	TOPSACD	N	N	NA
TBELL407	TOPSACD	N	N	IMMEDIATE
TOPSOG2	TOPSACD	N	Y	DELAYED

Automated DA Service (continued)

Datafilling table TOPSVNIN

The following table shows the datafill specific to Automated DA Service for table TOPSVNIN. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TOPSVNIN

Field	Subfield or refinement	Entry	Explanation and action
INDEX			Index into table.
XAPPLN		ADAS	Application. Enter ADAS.
PROTOCOL		TABS	Enter TABS.
DATALINK		MTS	Enter MTS (the only allowable value).
LINKDATA	VLTYPE	CHANNEL	Enter CHANNEL (the only allowable value).

Datafill example for table TOPSVNIN

The following example shows sample datafill for table TOPSVNIN.

MAP display example for table TOPSVNIN

INDEX	XAPPLN	PROTOCOL	DATALINK	LINKDATA
1	AABS	TABS	MPC	TRUNK
2	ADAS	TABS	MTS	CHANNEL

Error messages for table TOPSVNIN

The following error messages apply to table TOPSVNIN.

Error messages for table TOPSVNIN (Sheet 1 of 2)

Error message	Explanation and action
THE PROTOCOL IS NOT VALID FOR THIS OFFICE.	Invalid office protocol or datalink entry produces a corresponding message.
THE DATALINK IS NOT VALID FOR THIS OFFICE.	Invalid office protocol or datalink entry produces a corresponding message.
This application already datafilled. Please delete old tuple first.	An application can appear only once in table TOPSVNIN. An attempt to re-specify an application results in this error message.

Automated DA Service (continued)**Error messages for table TOPSVNIN (Sheet 2 of 2)**

Error message	Explanation and action
DELETE operation is not allowed for the AABS application.	Deletion is disallowed of any AABS or ADAS application tuple from table TOPSVNIN.
DELETE operation is not allowed for the ADAS application.	Deletion is disallowed of any AABS or ADAS application tuple from table TOPSVNIN.

Datafilling table TOPSPARM

The following table shows the datafill specific to Automated DA Service for table TOPSPARM. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TOPSPARM (Sheet 1 of 2)

Parameter	Entry	Explanation and action
ADAS_WITH_PARS_ENABLE	Y or N	Allows ADAS calls to route to Personal Audio Response System (PARS) when presented to operator. Entry values: Y (subscriber hears introductory PARS greeting), and N (subscriber does not hear introductory PARS greeting).
ADAS_CASSETTE_ICON	Y or N	Entry values: Y (icon appears when ADAS call is presented to operator), and N (icon does not appear). Recommended entry value: N (to display icon for operators that normally handle non-ADAS calls). If you are using IBM DA, a text string will appear instead of an icon.
ADAS_OPR_PROFILE_ICON	Y or N	Entry values: (icon appears when non-ADAS call is presented to operator), and N (icon does not appear.) Recommended entry value: N (to display this icon for operators that normally handle ADAS calls). If you are using IBM DA, a text string will appear instead of an icon.
ADAS_ENABLE	Y or N	Entry values: Y (enables ADAS), and N (ADAS not enabled, calls handled manually).

Automated DA Service (continued)

Datafilling table TOPSPARM (Sheet 2 of 2)

Parameter	Entry	Explanation and action
ADAS_INWARDS_ENABLE	Y or N	Entry values: Y (provides ADAS service for 131 inward calls), and N (ADAS not provided). Default: N.
ADAS_RINGING_DURING_PLAYBACK	Y or N	Entry values: Y (ringing), and N (silence) to subscriber during ADAS playback to operator.

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

MAP display example for table TOPSPARM

PARM	PARMVAL
ADAS_WITH_PARS_ENABLE	N
ADAS_CASSETTE_ICON	N
ADAS_OPR_PROFILE_ICON	Y
ADAS_ENABLE	Y
ADAS_INWARDS_ENABLE	Y
ADAS_RINGING_DURING_PLAYBACK	Y

Datafilling table VROPT

The following table shows the datafill specific to Automated DA Service for table VROPT. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table VROPT

Parameter	Entry	Explanation and action
DA_AUTO_POS_RLS	N	It is recommended to set this parameter to N to prevent potential operator confusion.

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

MAP display example for table VROPT

PARM	VALUE
DA_AUTO_POS_RLS	N

Automated DA Service (continued)**Datafilling table PMLOADS**

The following table shows the datafill specific to Automated DA Service for table PMLOADS. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table PMLOADS

Field	Subfield or refinement	Entry	Explanation and action
Add the datafill shown in the following example.			

Datafill example for table PMLOADS

The following example shows sample datafill for table PMLOADS.

MAP display example for table PMLOADS

LOADNAME	DEV
LPC35nn	S01DLIU
NRS35nn	S01DLIU
VPC35nn	S01DLIU
ULC35nn	S01DLIU
ETC35nn	S01DLIU
ADSAUDDA	S01DLIU

Datafilling table VPSRVDEF

The following table shows the datafill specific to Automated DA Service for table VPSRVDEF. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table VPSRVDEF

Field	Subfield or refinement	Entry	Explanation and action
KEY		ADAS	Key to table that identifies the VPU service. Enter ADAS.
OPTIONS		Default configuration	Define default configuration for a VPU service. Currently, there is only one supported option, the name of the file containing the audio load information. The location of this file is in table PMLOADS.

Automated DA Service (continued)

Datafill example for table VPSRVDEF

The following example shows sample datafill for table VPSRVDEF.

MAP display example for table VPSRVDEF

KEY	OPTIONS
ADAS	(AUDIO ADSAUDDA)\$

Datafilling table VPUSERV

The following table shows the datafill specific to Automated DA Service for table VPUSERV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table VPUSERV

Field	Subfield or refinement	Entry	Explanation and action
VPUNO		0-179	Table key, the VPU number.
SERVICE		ADAS	Identify the service provided by the VPU. Enter ADAS.
OPTIONS		See subfield	Service options. Currently, there is only one supported option, the name of the file containing the audio load information. The location of this file is in table PMLOADS. The audio option is only required if no default has been specified for the service in table VPSRVDEF.

Datafill example for table VPUSERV

The following example shows sample datafill for table VPUSERV.

MAP display example for table VPUSERV

VPUNO	SERVICE	OPTIONS
0	ADAS	\$
4	ADAS	(AUDIO TMPAUD)\$

Automated DA Service (continued)**Datafilling table RMCONFIG**

The following table shows the datafill specific to Automated DA Service for table RMCONFIG. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table RMCONFIG

Field	Subfield or refinement	Entry	Explanation and action
			This table RMCONFIG specifies the number of desired TELNET sessions (remote maps) on the CM, and which EIUs will connect these remote maps. Note: If no tuples are datafilled in RMCONFIG, then the default of 8 sessions on the CM and each host EIU is allowed. To use an EIU for TELNET, it must be first loaded with the ETC (EIU with TELNET) load, and datafilled in the IPHOST table with at least as many TCP connections as the number of sessions in table RMCONFIG.

Datafill example for table RMCONFIG

The following example shows sample datafill for table RMCONFIG.

MAP display example for table RMCONFIG

INDEX	NODE	SESSIONS
0	CM	16
1	EIU 0	8

Datafilling table ENSITES

The following table shows the datafill specific to Automated DA Service for table ENSITES. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table ENSITES

Field	Subfield or refinement	Entry	Explanation and action
ENSITE			Datafill site name (CLLI) of node on the LAN.

Automated DA Service (continued)

Datafill example for table ENSITES

The following example shows sample datafill for table ENSITES.

MAP display example for table ENSITES

ENSITE

BNRRTP

Datafilling table ENTYPES

The following table shows the datafill specific to Automated DA Service for table ENTYPES. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table ENTYPES

Field	Subfield or refinement	Entry	Explanation and action
ENTYPE		ADAS_OAMP OS	Datafill the type of workstation being used as the OA&M position node on the LAN. In TOPS03, ADAS_OAMPOS must be added to provide the OA&M capability of feature AN1028, ADAS Service Monitor. For more information, refer to 297-2211-311, ADAS OAM Position User Guide.

Datafill example for table ENTYPES

The following example shows sample datafill for table ENTYPES.

MAP display example for table ENTYPES

ENTYPE

ADAS_OAMPOS

Automated DA Service (continued)**Datafilling table EXNDINV**

The following table shows the datafill specific to Automated DA Service for table EXNDINV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table EXNDINV

Field	Subfield or refinement	Entry	Explanation and action
ENSITE		From table ENSITES	This table provides information about nodes external the DMS including the OAM position. Enter name defined in table ENSITES.
ENTYPE		From table ENTYPES.	Enter type defined in table ENTYPES. In TOPS03, the tuples for OA&M positions must be changed in the ENTYPES field to ADAS_OAMPOS to provide the capability of feature AN1028, ADAS Service Monitor. For more information, refer to 297-2211-311, ADAS OAM Position User Guide.

Datafill example for table EXNDINV

The following example shows sample datafill for table EXNDINV.

MAP display example for table EXNDINV

EXNDKEY	ENNAME	ENADDR
ENFNAME	ENSITE	ENLOCN
ENINFO	ENTYPE	ENPROCSR
EN0LKALM	EN1LKALM	ENPROTCL
	ENALMSPT	
EXND 1	BRTPH561	(ENIP 47 192 4 117)\$
NONE	BNRRTP 2 K 7	ADAS_OAMPOS
'ADAS_LOADS_SERVER'	ALL	TCP ICMP UDP \$
MN	NA	N

Automated DA Service (continued)

Datafilling table IPNETWRK

The following table shows the datafill specific to Automated DA Service for table IPNETWRK. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table IPNETWRK

Field	Subfield or refinement	Entry	Explanation and action
KEYREF		0	No change. Enter 0, the only allowable value.
CMIPADDR		Full 4-part IP address	A new field. Enter the full 4-part IP address of the CM.
SUBNET		Number of bits	No change. Enter the number of bits in the subnet mask.
OPTION			No change. An entry for EIU 0 must be datafilled for connection to the network.
PARMAREA		SCRNFLAG Y\$	No change. Enter SCRNFALG Y\$.

Datafill example for table IPNETWRK

The following example shows sample datafill for table IPNETWRK.

MAP display example for table IPNETWRK

KEYREF	CMIPADDR	SUBNET	OPTION PARMAREA
0	47 245 9 1	16	(EIU 0)\$ (SCRNFALG Y)\$

Automated DA Service (continued)**Datafilling table IPROUTER**

The following table shows the datafill specific to Automated DA Service for table IPROUTER. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table IPROUTER

Field	Subfield or refinement	Entry	Explanation and action
RKEY			No change. Add tuples for new EIUs.
ROUTER			No change.
SNIPADR		Full SuperNode side of EIU 4-part IP address	Changed. Enter the full SuperNode side of EIU 4-part IP address. This is the same value as in table IPHOST, field SNADDR, for the EIU.
ETHIPADR			No change. Enter LAN side of EIU 4-part IP address. This is the same value as in table IPHOST, field LANADDR, for the EIU.
ETHARP			No change.
ETHPARP			No change.

Datafill example for table IPROUTER

The following example shows sample datafill for table IPROUTER.

MAP display example for table IPROUTER

RKEY	ROUTER	SNSNIPADR	ETHIPADR	ETHARP	ETHPARP
0	EIU	47 245 9 2	47 245 0 21	YES	YES

Automated DA Service (continued)

Datafilling table IPHOST

The following table shows the datafill specific to Automated DA Service for table IPHOST. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table IPHOST (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
INDEX			No change.
NODENAME		APU	Value APUX changed to APU. Enter APU for each APU, CM for connection to the command module, and EIU for connection to the OAM workstation.
NODEINFO	When NODENAME=CM, datafill the following fields:		
	CMINDEX	0-1	No change.
	TCPCONN	0-50	No change.
	FTPCLCON	0-50	No change.
	FTPSVCON	0-50	No change.
NODEINFO	When NODENAME=EIU, datafill the following fields:		
	EIUIINDEX	0-750	No change.
	SNADDR	4-part IP address	New. Enter the 4-part IP address of the SuperNode side. This is the same value as in table IPRouter, field SNIPADR, for the EIU.
	LANADDR	4-part IP address	No change. Enter the 4-part IP address of the LAN side. This is the same value as in table IPRouter, field ETHIPADR, for the EIU.
	TCPCONN	0-50	No change.
	FTPCLCON	0-50	No change.
	FTPSVCON	0-50	No change.
NODEINFO	When NODENAME=APU, datafill the following fields:		
	APUIINDEX	0-750	No change.
	SOSADDR	4-part IP address	New. Enter the 4-part IP address of the SuperNode side.

Automated DA Service (continued)**Datafilling table IPHOST (Sheet 2 of 2)**

Field	Subfield or refinement	Entry	Explanation and action
NODEINFO	UNIXADDR	4-part IP address	New. Enter the 4-part IP address of the UNIX side.
	When NODENAME=APU, datafill the following fields: (continued)		
	TCPCONN	0-50	No change.
	FTPCLCON	0-50	No change.
	FTPSVCON	0-50	No change.

Datafill example for table IPHOST

The following example shows sample datafill for table IPHOST.

MAP display example for table IPHOST

INDEX	NODENAME										NODEINFO		
0	CM	0									32	4	4
1	APU	7	47	245	9	31	47	245	9	32	1	0	0
2	APU	8	47	245	9	35	47	245	9	36	1	0	0
3	EIU	0	47	245	9	2	47	245	0	21	17	2	2

Automated DA Service (continued)

Datafilling table IPTHRON

The following table shows the datafill specific to Automated DA Service for table IPTHRON. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table IPTHRON

Field	Subfield or refinement	Entry	Explanation and action
		New EIU	Add new EIU to prevent bottlenecks in IP communications. In TOPS03, in order for the ADAS service monitor to function properly, all EIU tuples (including those not associated with OA&M positions) must be changed to: EIU x 10 40 CM 25\$. This is determined by feature AN1028, ADAS Service Monitor. For more information, refer to 297-2211-311, ADAS OAM Position User Guide.

Datafill example for table IPTHRON

The following example shows sample datafill for table IPTHRON.

MAP display example for table IPTHRON

LMSNODE	TXCAPCT	RXCAPCT	OPTION
EIU	0	10	40 CM 25\$

Automated DA Service (continued)**Datafilling table ESRVATTR**

The following table shows the datafill related to Automated DA Service for table ESRVATTR. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table ESRVATTR

Field	Subfield or refinement	Entry	Explanation and action
		Read-only	This table defines the name of the service data file. This table is read-only. Nortel (Northern Telecom) enters datafill in this table.
SRVCMP		ADAS CPE or VPU	The name of the service and the name of the component appears in this field. The only defined service name is ADAS and the only defined component names are CPE and VPU.
OBJDESC		alphanumeric (up to 16 characters)	This field defines the object descriptor. It is not is not available for changes.
SRVDATA		alphanumeric (up to 16 characters)	This field identifies the service data file of the component. The file must first be datafilled in table PMLOADS. This field is only populated for an ADAS CPE tuple.

Datafill example for table ESRVATTR

The following example shows sample datafill for table ESRVATTR.

MAP display example for table ESRVATTR

SRVCMP	OBJDESC	SRVDATA
ADAS VPU	ADAS.VPU:0	\$
ADAS CPE	ADAS.CPE:0	ADSSRVDA

Automated DA Service (continued)

Datafilling table ESRVCAP

The following table shows the datafill specific to Automated DA Service for table ESRVCAP. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table ESRVCAP

Field	Subfield or refinement	Entry	Explanation and action
		Read only	This table defines where the service data file is located. This table is read only and is datafilled by Northern Telecom.
SERV		ADAS	Table key. The only defined value is ADAS.
CAPACITY		Total number of service circuits	Indicates the total number of service circuits configured for this service.
TIMEOUT		Minutes	The number of minutes a given service circuit can remain allocated before being automatically cleaned up.
OBJDESC		Object description	Defines the object descriptor for this service.

Datafill example for table ESRVCAP

The following example shows sample datafill for table ESRVCAP.

MAP display example for table ESRVCAP

SERV	CAPACITY	TIMEOUT	OBJDESC
ADAS	200	10	ADAS

Automated DA Service (continued)**Datafilling table SNIXINFO**

The following table shows the datafill specific to Automated DA Service for table SNIXINFO. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table SNIXINFO

Field	Subfield or refinement	Entry	Explanation and action
INDEX		See subfield	Key to table.
NODEDATA	NODETYPE	APU, AP, and FP	SNIX node type. Entry values: APU, AP, FP (ADAS only supports APU). Datafill a minimum of 3 APUs per LPP. See table SNIXAPPL, fields APU_TYPE and CENTRAL_TYPE for further details.
	NODENO	0-1023	SNIX node number.

Datafill sequence conditions

The following explains the conditions surrounding the datafill sequence for table SNIXINFO.

- Table SNIXINFO must be datafilled after corresponding inventory table LIUINV to datafill nodetype APU, or table APINV to datafill nodetypes AP or FP.
- Table SNIXINFO must be datafilled before tables SNIXVOLS and SNIXAPPL.
- Default values of the fields will be assumed for the node.
- HSDF file system feature may not be used by the node.

Adding a tuple to table SNIXINFO The following procedure explains how to add a tuple to table SNIXINFO.

At the MAP

1. BSY the node if it is not already manually busy (ManB) or offline (Offl). Hereafter, in the DS section, this should be understood when the step states that the node should be BSYed.

Note: BSYing the node stops any applications running on the node. It is assumed that the node is datafilled in the inventory table to run the

Automated DA Service (continued)

SNIX load (see table LIUINV for APU). It is also assumed that the same node is not already datafilled in this table.

2. Add the tuple.
3. HSDF and applications can be configured on this node through tables SNIXVOLS and SNIXAPPL.
4. RTS the node (LOADPDM first, if the SNIX load has not been loaded yet).

To DELETE a tuple from table SNIXINFO: At the MAP

1. Remove all references to the node being deleted, from the tables SNIXVOLS and SNIXAPPL (see below for steps to remove a reference from these tables).
2. BSY the node.
3. Delete the tuple.

To CHANGE a tuple in table SNIXINFO (if the other fields for the same node are changed): At the MAP

1. BSY the node.
2. Change the tuple.
3. RTS the node.

Activation:

- This table can be datafilled only when the affected node is ManB or Offl. The changes become effective when the node is brought into service after the datafill.

Datafill example for table SNIXINFO

The following example shows sample datafill for table SNIXINFO.

MAP display example for table SNIXINFO

INDEX	NODEDATA	
0	APU	0
1	APU	1
2	APU	2

Automated DA Service (continued)**Error messages for table SNIXINFO**

The following error messages apply to table SNIXINFO.

Error messages for table SNIXINFO

Error message	Explanation and action
Error: Node is datafilled already at index #.	Reason: Duplicate nodes are not allowed in table SNIXINFO. Action: Correct tuple entry.
Error: Node must be in ManB or OffL state first.	Reason: Per message. Action: Per message.
Error: Node must be deleted from <table name> first.	Reason: Node is referenced in table <table name>. Action: Per message.
Error: Tuple must be deleted and re-added to change node.	Reason: Changes of node type or node number are not allowed. Action: Per message.
Error: Table update to Peripherals has failed.	Reason: Dynamic tuple distribution to one or more of the registered peripherals has failed. Action: Save DDM logs and swerrs to identify which node(s) were not updated. Contact next level of maintenance.
<Node type> node must be datafilled in <table name>.	Reason: Per message. Action: Per message.

Datafilling table SNIXVOLS

The following table shows the datafill specific to Automated DA Service for table SNIXVOLS. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table SNIXVOLS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
FSNUM		0-15	File system number with special meaning to SNIX.
FSNAME		Up to 14 characters	File system name definition of up to 14 characters used by table SNIXAPPL.

Automated DA Service (continued)

Datafilling table SNIXVOLS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
FSLIST	FILENAME	Up to two file locations	File system list of up to two file locations. Each location contains subfields FILENAME and VOLUME. These are treated by the system as identical files where the second file is backup. Therefore, it is recommended to datafill 2 files.
	VOLUME	Location	Location of FILENAME
ACCMINFO	ACCMODE	RO and RW	Access mode. Entry values: RO (read only), and RW (read/write). Only RO is supported by ADAS.

Datafill sequence:

- Table SNIXVOLS for SNIX node access to HSDF file systems on CM disks. SNIX applications use CM disks to store the application load.
- A SNIX node must first be datafilled both in table SNIXINFO and the corresponding inventory table. Table SNIXVOLS must be datafilled after table SNIXINFO and the inventory table. SNIX node type APU uses inventory table LIUINV.
- Before adding a tuple to table SNIXVOLS, the file(s) FILENAME must be copied to the CM disk in the volume(s) VOLUME. Files located on devices other than a SLM or IOC disk cannot be datafilled in this table.
- Table SNIXVOLS must be datafilled before table SNIXAPPL, if table SNIXAPPL refers to File systems present in this table. Table SNIXAPPL must be datafilled for each APU used for ADAS.
- Once a change is made to a tuple in table SNIXVOLS, the change is processed by HSDF internals. If internal software has not processed the change, another tuple change is not allowed. In most cases, this should be instantaneous. An important exception is when the change requires resyncing of R/W files when a duplex field system is employed. However, a change is allowed during resyncing if the change file is the active or consistent file.

To ADD a tuple to table SNIXVOLS:

At the MAP

- 1 The owner node must be previously datafilled in table SNIXINFO.
- 2 Add the tuple. File name(s) specified in the tuple must have been previously copied to the CM disk. Shadowing is chosen optionally on each File system.

Automated DA Service (continued)

If shadowing is desired, two file locations must be specified in field FSLIST. The two files must be identical *ddimages* with consistent internal states.

- 3 The File system can now be added to table SNIXAPPL.

To DELETE a tuple from table SNIXVOLS:

At the MAP

- 1 Remove all references to the File system name in table SNIXAPPL (See table SNIXAPPL).
- 2 The file system must not be in use by any APU. It is not possible to delete a tuple while the file system is still in use. This protects against leaving the file system in an inconsistent state and could not be added to SNIXVOLS as a read-only file system later.
- 3 Delete the tuple.
- 4 RTS the nodes that were BSYed in step Section 1, "Remove all references to the File system name in table SNIXAPPL (See table SNIXAPPL)." on page -101, if needed.

To CHANGE a tuple in table SNIXVOLS

Note the following when changing a tuple in table SNIXVOLS:

- 1 File(s) of a read-only file system can be changed dynamically as long as the new file(s) is identical to the old file. However, if the new file is not identical, a software upgrade is assumed. APUs using the file system restart automatically.
- 2 File(s) of a read/write file system can be changed dynamically as long as the good file is not removed. If both files in a duplex File system are good, the change may not remove both files.

Datafill example for table SNIXVOLS

The following example shows sample datafill for table SNIXVOLS.

MAP display example for table SNIXVOLS

FSNUM	FSNAME	FSLIST
0	ADASLD1 (AAC35nn D010ADAS)	(AAC35nn D000ADAS) \$ R0

Automated DA Service (continued)

Error messages for table SNIXVOLS

The following error messages apply to table SNIXVOLS.

Error messages for table SNIXVOLS (Sheet 1 of 9)

Error message	Explanation and action
ERROR: File system name not provided	Action: A file system name is required.
ERROR: File name not provided	Action: A file name must be specified.
ERROR: Volume name not provided	Action: Specify a volume name.
ERROR: File system <file system name> exists at index #	Reason: Duplicate FSNAME is not allowed in table SNIXVOLS. Action: Correct tuple entry.
Table SNIXINFO is empty	Reason: Additional information to following message. Action: See following message.
Node <node type> # must be datafilled in SNIXINFO first	Reason: Per message. Action: Add node specified in message to table SNIXINFO.
INTERNAL ERROR: Unknown File system <file system name>	Action: Save generated swerr and contact next level of maintenance.
File system must be deleted from SNIXAPPL tuple # first	Reason: Per message. Action: Per message.
ERROR: Tuple must be deleted and re-added to change File system name	Reason: Per message. Action: Per message.
ERROR: Tuple must be deleted and re-added to change access mode	Reason: Per message. Action: Per message.
ERROR: Tuple must be deleted and re-added to change owner	Reason: Per message. Action: Per message.
Warning: Node <node type> # is not in ManB or OffL state	Reason: Current users of this File system may require RTSing. Action: Per message.

Automated DA Service (continued)**Error messages for table SNIXVOLS (Sheet 2 of 9)**

Error message	Explanation and action
Warning: Files are on the same volume	Reason: Possible single point of failure for this File system. Action: Distributing files on different devices is strongly recommended. Refer to the FN section for more details.
ERROR: File <file name> # used already at index #	Reason: Files datafilled in table SNIXVOLS are not allowed to be used in a tuple for read/write File system. Action: Correct tuple entry.
Warning: File <file name> # used already at index #	Reason: File in this read-only File system also is used in another tuple in table SNIXVOLS. Action: Correct tuple entry, if needed.
Warning: DDM dynamic update to the nodes failed	Reason: Dynamic tuple distribution to registered peripheral(s) failed. Action: Save DDM logs and swerrs to identify which node(s) were not updated. Contact next level of maintenance.
ERROR: Invalid volume specified in tuple	Reason: Volume specified was not found on legal devices. Action: Correct volume name in this tuple.
ERROR: Unable to access volume <volume name>	Reason: SOS file sys error indicates failure to access specified volume. Explanation of failure also generated. Action: Investigate failure reason, contact next level maintenance if unable to correct.
ERROR: Unable to find specified file:<filename> on Volume:<volumename>	Reason: File name specified is not in the specified volume. Action: Check filename and volume name for correctness. Enter correct filename or volume name in tuple.
INTERNAL ERROR: Failure to communicate with HSDF Process	Reason: Per message. Action: See other messages that follow this message.

Automated DA Service (continued)

Error messages for table SNIXVOLS (Sheet 3 of 9)

Error message	Explanation and action
Set up to start Process failed	Reason: Table Control unable to invoke HSDF server process. Action: Collect swerrs and contact next level of maintenance.
Unable to start Process	Reason: Table Control cannot initiate HSDF server process. Action: Collect swerrs and contact next level of maintenance.
ERROR: File <file name> <volume name> is on an unsupported device	Reason: Device associated with volume name is not supported. Action: Correct volume name in tuple.
Volume <volume name> is unknown	Reason: System cannot identify volume name specified. Note: The 4-character prefix to a volume name identifies a SLM/IOC device name. Action: Correct volume name in tuple.
Warning: Files are on different types of disks	Reason: IOC and SLM devices have significantly different access times. It is strongly advised to have files from a duplex file system on the same type of device. Action: Place one of the files on another device of the same type if possible.
INTERNAL ERROR: Unable to compare files	Reason: Table Control cannot verify duplex file system files are identical. Files for duplex file system <i>must</i> be identical. Action: Verify file names. If cannot correct problem, contact next level of maintenance.
ERROR: Cannot access file size	Reason: Table Control determined inconsistent file size, possible illegal/corrupt file specified in tuple. Only DD image files are allowed. Action: Replace specified file with new/correct HSDF ddimage file. If cannot correct, contact next level of maintenance.

Automated DA Service (continued)**Error messages for table SNIXVOLS (Sheet 4 of 9)**

Error message	Explanation and action
ERROR: File sizes differ	Reason: Table Control determined the files have different sizes: files for duplex file system <i>must</i> be identical. Action: Verify file names. If cannot correct problem, contact next level of maintenance.
ERROR: File modification times differ	Reason: Table Control determined the two files have different modification times (created at different times). Files for duplex file system <i>must</i> be identical. Action: Verify file names. If unable to correct problem, contact next level of maintenance.
HSDF Server busy. Please try later	Reason: HSDF Server has not processed previous tuple entry, Table Control will not allow changes to tuple until HSDF Server processes all previous additions/modifications to this tuple. Note: HSDF server should process previous changes quickly. If problem persists, contact next level of maintenance. Action: Try again later.
ERROR: Failed to access file data	Reason: Attempt to change a file name in this tuple. The new file added cannot be validated by Table Control. Action: Correct modified file name.
ERROR: The only remaining file is not accessible	Reason: Attempt to change duplex file system to simplex when the file specified for the simplex file system is not accessible by Table Control. This applies to read-write or read-only file systems. Action: Be sure the file used by the now simplex file system is accessible and valid. If cannot correct the problem, contact next level of maintenance.

Automated DA Service (continued)

Error messages for table SNIXVOLS (Sheet 5 of 9)

Error message	Explanation and action
ERROR: Cannot remove file whose alternate file is inaccessible	Reason: Attempt to change a duplex file system to a simplex when the file specified for the simplex file system has been identified previously as corrupt/inconsistent by the HSDF server. The remaining file in a simplex file system must be valid. Action: Check HSDF logs for HSDF101, HSDF201 log reports. If HSDF201 logs identify HSDF server is in a FAULT1 state, remove and/or replace bad file identified in HSDF101 log. If unable to correct this problem, contact next level of maintenance.
File System `UNIX Modification Time' is changing. DD-image version update detected	Reason: Table Control detects an upgrade of the software load associated with this ddimage. Applications being upgraded with this ddimage will go through a restart. The restart is restricted to peripheral using this ddimage. Action: None.
File System Size is changing. DD-image version update detected	Reason: Table Control detects an upgrade of the software load associated with this ddimage. Applications being upgraded with this ddimage will go through a restart. The restart is restricted to peripheral using this ddimage. Action: None.
INTERNAL ERROR: Memory allocation failure	Action: Contact next level of maintenance.
INTERNAL ERROR: Cannot allocate <storage type> store	Action: Contact next level of maintenance.
INTERNAL ERROR: Cannot get MTA of HSDF Server Process	Action: Contact next level of maintenance.
INTERNAL ERROR: Cannot send MTS message to HSDF Server Process	Action: Contact next level of maintenance.
INTERNAL ERROR: Set up to kill HSDF Server Process failed	Action: Contact next level of maintenance.
INTERNAL ERROR: Cannot kill HSDF Server Process	Action: Contact next level of maintenance.

Automated DA Service (continued)**Error messages for table SNIXVOLS (Sheet 6 of 9)**

Error message	Explanation and action
ERROR: Simplex Read Write file cannot be replaced	Reason: Per message. Action: If replacement is required, delete and read a new tuple.
ERROR: Original Read Write file is in an inconsistent state. File <file name> <volume name> is in state <file state>	Reason: Original Read-Write file system is a duplex file system. An attempt is made to replace the file whose alternate file is in <i>fault</i> status. Action: Contact next level of maintenance. Replacement of a file in a duplex Read-Write file system is allowed only if the alternate to the removed file is in a good state.
Warning: Change will initiate syncing	Reason: A simplex R/W filesystem has been upgraded to a duplex filesystem. Syncing is required for file system integrity. Action: None.
ERROR: File <file name> <volume name> is in state <read_fault,write_fault,in_sync>	Reason: Table Control detects the file is not in a state to be replaced successfully. Action: See other messages that follow for added detail.
Warning: Files are using the same IOC controller	Reason: Duplex filesystem has been defined in SNIXVOLS, both files are using the same IOC disk controller. The IOC controller can be a single point of failure for the duplex file system. Action: Have the second file specified in the tuple placed on an IOC disk using a different IOC controller.
Warning: Files reside on the same SLM drive	Reason: Duplex file system has been defined in SNIXVOLS, both files are using the same SLM disk. The SLM disk can be a single point of failure for the duplex file system. Action: Have the second file specified in the tuple placed on another SLM disk.
ERROR: Original Read Write file cannot be removed by a tuple update	Reason: Changing an entire R/W file system is not allowed. Action: To change a R/W file system (simplex or duplex) the existing SNIXVOLS tuple must be deleted and then re-added using the new file(s).

Automated DA Service (continued)

Error messages for table SNIXVOLS (Sheet 7 of 9)

Error message	Explanation and action
Unable to access specified volume. ERROR: Tuple cannot be added or updated on the inactive side	Reason: When drop-sync has taken place, SNIXVOLS tuples cannot be added or updated on the inactive side. Action: Use active side, or wait until switch is resynced.
ERROR: To change tuple, it must be deleted and re-added.	Reason: per message Action: per message
ERROR: HSDF Process is not running	Reason: The HSDF server process associated with this tuple in SNIXVOLS is no longer active. Action: Obtain HSDF logs and check for swerr reports. Contact next level of support.
Error allocating buffer to read superblock	Reason: Table Control unable to allocate required system memory to perform desired task. Action: Obtain swerr reports and contact next level of support.
Error getting SOS file size and record length	Reason: Table Control unable to open specified file in this SNIXVOLS tuple. Action: Obtain swerr reports and contact next level of support.
File record size is not 1024 bytes	Reason: HSDF ddimage files must have a record length of 1024 bytes. File specified does not have a record length of 1024 bytes. Action: Obtain swerr reports and contact next level of support.
Open failure	Reason: Table Control unable to open specified file in this SNIXVOLS tuple. Action: Obtain swerr reports and contact next level of support.
Error reading superblock	Reason: Table Control unsuccessful in accessing special file information from file specified in this SNIXVOLS tuple. Action: Obtain swerr reports and contact next level of support.

Automated DA Service (continued)**Error messages for table SNIXVOLS (Sheet 8 of 9)**

Error message	Explanation and action
SOS and UNIX file size mismatch	Reason: Table Control detects that the UNIX file size is greater than the SOS file size for the file specified in this SNIXVOLS tuple. The file cannot be used. Action: Obtain swerr reports and contact next level of support.
Close failure. Not a valid UNIX file system	Reason: File specified in this SNIXVOLS tuple does not contain a UNIX file system. It is not a legal ddimage. Action: Obtain swerr reports and contact next level of support.
Contact next level of support	Reason: Something beyond typical data entry mistakes have occurred. Action: Per Message
Warning: File is still in use by <peripheral node name> <node number>. If tuple is deleted, file will be marked inconsistent and cannot be used as a Read Only (R0) file. Warning: FSCK must be run from <nodename><node #> on this File System	Reason: This R/W file system is inconsistent. Action: Contact next level of support. File system must be repaired using special UNIX program FSCK.
ERROR: Failed to access File integrity data	Reason: Table Control unable to access file specific information to determine the condition of the file. Action: Contact next level of support.
Warning: Failed to access File integrity data. File may be in an inconsistent state	Reason: As above. Action: Contact next level of support.

Automated DA Service (continued)

Error messages for table SNIXVOLS (Sheet 9 of 9)

Error message	Explanation and action
Warning: This Read Write (RW) file has been detected to be in an inconsistent state. FSCK must be run from its owner APU prior to its use	Reason: File requires repair, which can only be done from its owner node using special program FSCK. Action: Contact next level of support.
ERROR: This Read Only (RO) file has been detected	Reason: File requires repair, repair cannot be performed on a Read-Only file system. Action: Contact next level of support. Special UNIX program FSCK must be run after file has been entered as a RW file system.

Datafilling table SNIXAPPL

The following table shows the datafill specific to Automated DA Service for table SNIXAPPL. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table SNIXAPPL (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
INDEX		0-127	Key to table.
NODETYPE		Node type	SNIX node type. Defined in table SNIXINFO, field NODETYPE.
NODENO		Node number	SNIX node number. Defined in table SNIXINFO, field NODENO. Associated with the defined node type in field NODETYPE.
FSNMLIST		Up to 4 names	SNIX file system name list. List of up to 4 names defined in table SNIXVOLS, field FSNAME, used by this SNIX node.
INITFSNM		System name	SNIX initialization file system name. Defined in table SNIXVOLS, field FSNAME, used by this SNIX node for script initialization.
APPLTYPE		ADAS	SNIX application type. Enter ADAS.

Automated DA Service (continued)**Datafilling table SNIXAPPL (Sheet 2 of 2)**

Field	Subfield or refinement	Entry	Explanation and action
APPLDATA	APU_TYPE	CENTRAL and LOCAL	Logical type of the APU. Entry values: CENTRAL (also datafill subfields CENTRAL_TYPE and CENTRAL_PEER), and LOCAL (also datafill subfield CPE CAPACITY). Datafill 2 CENTRALS (a central and its peer for backup) and a LOCAL for each LPP for first 30 calls, and an additional LOCAL for each additional 30 calls.
	CENTRAL_TYPE	VPP and LPP	Central APU node type. Entry values: VPP (voice processing platform), and LPP (link peripheral processor). Datafill VPP (for central and peer) for first LPP frame and LPP (for central and peer) for each additional LPP frame. Datafill VPP centrals before LPP centrals, and central APUs before local APUs.
APPLDATA (continued)	CENTRAL_PEER	0-1024	Node number of APU that is the peer for the central APU. If there is no peer, enter 1024.
	CPE CAPACITY	30	Local APU amount of traffic the CPE (call processing engine) can support. The only valid value is 30 (an APU can handle up to 30 calls).

Datafill sequence:

- Table SNIXAPPL must be datafilled after tables SNIXINFO and SNIXVOLS and the appropriate inventory table(s). SNIX node type APU uses inventory table LIUINV.

To ADD a tuple in table SNIXAPPL:

At the MAP

- 1** BSY the node.
The node must be previously datafilled in table SNIXINFO.
- 2** Add the tuple.
File names used in the tuple must be previously datafilled in table SNIXVOLS.
- 3** RTS the node, if needed.

Automated DA Service (continued)

To DELETE a tuple in table SNIXAPPL:

At the MAP

- 1 BSY the node.
- 2 Delete the tuple.
If the node is the owner of a read/write file system, it is recommended that other nodes using this file system be BSYed first.
- 3 RTS the node, if needed.

To CHANGE a tuple in table SNIXAPPL:

At the MAP

- 1 BSY the node, as needed.
- 2 Change the tuple.
If the node is the owner of a read/write file system, it is recommended that other nodes using this file system be BSYed first.
- 3 RTS the node, if needed.

Activation:

All changes are effective when the affected node has finished RTSing.

Datafill example for table SNIXAPPL

The following example shows sample datafill for table SNIXAPPL.

Automated DA Service (continued)**MAP display example for table SNIXAPPL**

INDEX	NODETYPE	NODENO	INITFSNM	FSNMLIST	APPLDATA
0	APU	2	(ADASLD1) \$	ADAS	CENTRAL VPP 4
1	APU	4	(ADASLD1) \$	ADAS	CENTRAL VPP 2
4	APU	17	(ADASLD1) \$	ADAS	CENTRAL LPP 19
5	APU	19	(ADASLD1) \$	ADAS	CENTRAL LPP 17
10	APU	0	(ADASLD1) \$	ADAS	LOCAL 30
11	APU	1	(ADASLD1) \$	ADAS	LOCAL 30
12	APU	3	(ADASLD1) \$	ADAS	LOCAL 30
20	APU	16	(ADASLD1) \$	ADAS	LOCAL 30
21	APU	18	(ADASLD1) \$	ADAS	LOCAL 30
22	APU	20	(ADASLD1) \$	ADAS	LOCAL 30

Error messages for table SNIXAPPL

The following error messages apply to table SNIXAPPL.

Error messages for table SNIXAPPL (Sheet 1 of 2)

Error message	Explanation and action
Internal error: Contact software support personnel	Action: Per message.
Error: Node <node name> <node #> must be datafilled in SNIXINFO first	Reason: Tuple not allowed unless the node specified in the tuple is also datafilled in table SNIXINFO. Action: Enter node in table SNIXINFO, and current tuple in table SNIXAPPL.

Automated DA Service (continued)

Error messages for table SNIXAPPL (Sheet 2 of 2)

Error message	Explanation and action
Error: Same tuple exists already at index #	Reason: A tuple with same node and application exists already at specified index in this table. Only one tuple is allowed for the same node type, number and application. Action: Check node and application, and reenter correct tuple.
Error: Node <node name> <node #> must be in ManB or OffL state first	Reason: Node must be in specified state for attempted tuple operation. Action: Per message.
Error: File system FSNAME must also be present in field FSNMLIST	Reason: File system entered in INITFSNM allowed only if also present in FSNMLIST. Action: Check file system name in INITFSNM. Be sure it is also included in FSNMLIST. Enter correct tuple.
Application rejected the tuple operation	Reason: Specified tuple failed to meet application requirements. Action: See subsequent message from application for more details.
Table update to Peripherals has failed	Reason: Dynamic tuple distribution to registered peripheral(s) failed. Action: Save DDM logs and swerrs to identify which node(s) were not updated. Contact next level of maintenance.

Datafilling table RLOGDEV

The following table shows the datafill specific to Automated DA Service for table RLOGDEV. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table RLOGDEV

Field	Subfield or refinement	Entry	Explanation and action
			Datafill the devices to receive logs from remote SOS based nodes.

Automated DA Service (continued)**Datafill example for table RLOGDEV**

The following example shows sample datafill for table RLOGDEV.

MAP display example for table RLOGDEV

DEV	ALT	CLASSES	FORMAT	PRIORITY	GUAR
PRT1	PRT2	ALL	STD	Y	N

Datafilling table RLOGTAB

The following table shows the datafill specific to Automated DA Service for table RLOGTAB. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table RLOGTAB

Field	Subfield or refinement	Entry	Explanation and action
			Datafill the up to 3 output devices to receive logs from remote SOS based nodes.

Datafill example for table RLOGTAB

The following example shows sample datafill for table RLOGTAB.

MAP display example for table RLOGTAB

NODENAME	NODENUM	DEV1	DEV2	DEV3
LIM0U0	576	PRT1	PRT2	NIL
LIM0U1	577	PRT1	PRT2	NIL
EIU0	588	PRT1	PRT2	NIL
APU0	592	PRT1	PRT2	NIL
NIU0U0	580	PRT1	PRT2	NIL
NIU0U1	581	PRT1	PRT2	NIL
VPU0	601	PRT1	PRT2	NIL

Automated DA Service (continued)

Datafilling table BRANDOPT

The following table shows the datafill specific to Automated DA Service for table BRANDOPT. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table BRANDOPT

Field	Subfield or refinement	Entry	Explanation and action
OPERSYS			New value ADAS can be datafilled to brand ADAS calls.

Datafill example for table BRANDOPT

The following example shows sample datafill for table BRANDOPT.

MAP display example for table BRANDOPT

ICTRKGRP	OPRSYS	NBECL00K
TOPSIN1	OPERATOR, MCCS, ADAS	Y

Datafilling table TDBDAOPT

The following table shows the datafill specific to Automated DA Service for table TDBDAOPT. Only those fields that apply directly to Automated DA Service are shown. Refer to the data schema section of this manual for a description of the other fields.

Datafilling table TDBDAOPT

Field	Subfield or refinement	Entry	Explanation and action
ADASERV		N or Y	ADAS service. This field indicates if an incoming DN may receive ADAS service. Enter Y to allow or N to disallow service. The default is Y. If N is entered, DA calls are automatically routed to a live operator. This field became available in TOPS07 for ADAS base service. Prior to TOPS07, this field was named ADASPLUS and was only available with functionality DA Automation I/F, OSDA0006. That is, field ADASPLUS was only applicable to ADAS plus service.

Automated DA Service (continued)**Datafill example for table TDBDAOPT**

The following example shows sample datafill for table TDBDAOPT.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV		
0	ALL	ALL	Y
17	BLOCK		N
18	BLOCK		Y
56	INTER	SENTPD	N
123	ALL	ALTBIL	Y

Tuple 0 is the default tuple for DNs without an entry in table DNSCRN. Therefore, subscribers are sent to the ADAS system if they have not specified otherwise.

Datafilling table TOPSDB

The following table shows the datafill specific to Automated DA Service for table TOPSDB. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table TOPSDB

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Enter tuples for DNs of subscribers that want ADAS blocking, indicated in table TDBDAOPT, field ADASERV.

Datafill example for table TOPSDB

The following example shows sample datafill for table TOPSDB.

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV	OAFUNBLK
0	0	0	0	0	0
5	0	17	0	0	0
21	3	56	0	0	0

Automated DA Service (continued)

Datafilling table DNSCRN

The following table shows the datafill specific to Automated DA Service for table DNSCRN. Only those fields that apply directly to Automated DA Service are shown.

Datafilling table DNSCRN

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Enter tuples for DNs of subscribers that want ADAS blocking, indicated in table TDBDAOPT, field ADASERV. DNs not datafilled receive ADAS due to default tuple 0 in table TDBDAOPT.

Datafill example for table DNSCRN

The following example shows sample datafill for table DNSCRN.

MAP display example for table DNSCRN

DN	ATTROPTS
6193201234	TOPSDB 5
6193205554	TOPSDB 21

Datafilling table TOPSPOS

The following table shows the datafill specific to Automated DA Service for table TOPSPOS. Only those fields that apply directly to Automated DA

Automated DA Service (end)

Service are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSS

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

MAP display example for table TOPSPOS

```

POSNO      VCCKT      VCPDGRP      CARDCODE
DATAPATH
POSAREA

-----
100         TM8 0 24    NPDGRP      2X72AA
DMODEM SP ASCII TM8 0 25 NPDGRP BELL108
OPR 1 TOPSACD TASERV $ GEN XFR1 $

```

Translation verification tools

Automated DA Service does not use translation verification tools.

SERVORD

Automated DA Service does not use SERVORD.

Automated DACC with Alternate Billing

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: OSDA0002

Release applicability

BCS34 and up

Prerequisites

To operate, Automated DACC with Alternate Billing has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Directory Assistance, OSDA0001
- Operator Services Basic, OSB00001
- Enhanced Workstation Services, EWSS0001

Description

This functionality is provided by the following features.

Feature number	Feature name
AF1777	Automatic DA Call Completion
NC0316	DA Call Completion Restrictions
BR30521	DACC Calls with Auto Collect
BR32608	ADACC Office-wide Restrictions
AF2086	Automatic DACC with Alternate Billing
BR14147	Specifying DA billing options by restricted billing class

Automatic Directory Assistance Call Completion (ADACC) allows TOPS to complete Directory Assistance (DA) calls to the referral number without operator involvement. This is accomplished by prompting the caller via an Audio Response System (ARS) to respond with an indication of the desire to complete the call.

Automated DACC with Alternate Billing (continued)

If the Operating Company offers ADACC, the DA call scenario would be as follows.

1. The subscriber dials a DA call.
2. The call is routed to the operator, and the operator initiates the DA data base search and releases the call to the Directory Assistance System (DAS) for quoting of the requested number.

At this point, the operator is no longer connected to the call.

3. The DMS and the DAS exchange messages to determine whether the subscriber qualifies for ADACC service.

If the subscriber qualifies for ADACC, the DAS offers to complete the call to the requested number. The subscriber can choose to let DAS complete the call or not.

AF1777: Automatic DA call completion

Feature AF1777 provides the ADACC service, which allows DA calls to complete to the requested number without operator involvement. Refer to Software Operation for complete details on ADACC service.

When a subscriber originates a DA call and the DA call is released to the DAS system for quoting of the requested number, the subscriber will receive an offer to complete the call to the requested number. The subscriber will have to respond either by pressing a key on the telephone keypad or verbally. The subscriber will be instructed on how to respond to the offer of ADACC.

NC0316 - DA call completion restrictions

Effective BCS33, this feature provides DA call completion restrictions and TA to DA service change modifications

BR30521 - DACC calls with auto collect

In BCS34, Module Code 52 is no longer produced on Directory Assistance Call Completion Auto Collect calls. Instead, Module Code 51 is produced and Table 282 (byte 6), OSS Call Completion Service Conditions, is expanded. The expansion indicates if the requested party pays for local, toll, or both local and toll calls.

BR32608 - ADACC Office-wide restrictions

DACC calls can be turned off or restricted to toll calls only, or local calls only. This is implemented by the new office parameter DACC_LOCAL_TOLL_ACTIVATION in table VROPT.

Automated DACC with Alternate Billing (continued)

AF2086 - Automatic DA Call Completion with Alternate Billing

This feature enhances the billing capability of ADACC by allowing the caller to also select the method of billing for call completion. The intent is to improve the acceptance rate for the call completion service, and thus, increase the revenue generated for the Operating Company.

BR14147 - Restricted Billing Changes for ADACC Alternate Billing

This BCS29 PRSDOC allows separate assignment of billing restrictions for TA and DA calls. Also, billing options can be assigned based on restricted billing class or restricted DN rather than per call type/restrict station class for all restricted DNs.

BR30521 - DACC Calls with Auto Collect

In BCS34, Module Code 52 is no longer produced on Directory Assistance Call Completion Auto Collect calls. Instead, Module Code 51 is produced and table 282 (byte 6), OSS Call Completion Service Conditions, is expanded.

Operation

AF1777: Automatic DA call completion

Overview of ADACC

Directory Assistance Call Completion (DACC) service allows a subscriber to connect to the requested party without having to originate a new call. Presently, this is done with assistance from an operator.

Feature package NTXE36AA allows the Operating Company to provide DACC service without having to involve the operator. This service is called Automatic Directory Assistance Call Completion (ADACC). If the Operating Company has ADACC, the subscriber dials a DA call, the call is routed to the operator, and the operator initiates the DA data base search and releases the call to the Directory Assistance System (DAS) for quoting of the requested number. At this point, the operator is no longer connected to the call. The DMS and the DAS exchange messages to determine whether the subscriber qualifies for ADACC service. If the subscriber qualifies for ADACC, the DAS offers to complete the call to the requested number. The subscriber can choose to let DAS complete the call or not.

Call processing with ADACC

Following is an example of a 411 call that qualifies for ADACC. The considerations for offering ADACC are mentioned here and detailed in later sections. Offering ADACC is based on a joint decision between the DMS and the DAS.

1. A subscriber dials a 411 call.
2. The subscriber is attached to an operator.

Automated DACC with Alternate Billing (continued)

A valid method of payment must be established for billable DA calls. A call dialed as 1+ or No Prefix (for example, 411) indicates billing to the originating station (STA CLG). A call dialed as 0+ indicates that the subscriber wishes to establish an alternate method of payment, such as collect or calling card. Services such as Automatic Coin Toll Service (ACTS), Mechanized Calling Card Service (MCCS), or Automated Calling Card Service (AABS) can be used to establish the method of payment for the DA portion of the call prior to connecting to the operator. If the call is dialed 0+ and the aforementioned services are not provided, the operator will have to specify the alternate billing method.

3. The operator obtains the information from the subscriber and initiates a DA data base query.
4. The DA data base returns the listings that matched the search criteria.
5. If the "Bill & Report" or "Verbal" messages do not appear in the Message/Status Area of the TOPS MP CRT, the call can be released for auto quote of the requested number by the DAS.

With the ADACC feature, the DAS informs the DMS that auto quote is available for the call, and when the operator keys AUDIO to release the call to audio, the DAS also informs the DMS that it can offer ADACC for the call.

6. The DMS determines whether ADACC can be offered to the subscriber by performing the following checks:
 - a. Are there any datafill restrictions associated with the trunk group on which the call arrived?
 - b. Are there any datafill restrictions associated with the call type and service type of the call?
 - c. If the call were to be completed, would it be an InterLATA call, and does the Operating Company provide services for the carrier serving the terminating LATA of the call?
 - d. Is the method of billing restricted for completion to the requested number?
 - e. Has the requested number been successfully translated?

The preceding checks are detailed in later sections of this document.

7. If all of the above checks pass, the DMS informs the DAS that ADACC can be offered to the subscriber.
8. The DAS quotes the requested number to the subscriber and also offers the subscriber the option to connect to the requested number.

Automated DACC with Alternate Billing (continued)

The subscriber is given instructions on how to respond to the ADACC offer. For example, the subscriber is directed to press a digit on the Dual Tone Multi-Frequency (DTMF) keypad or to respond verbally with a "Yes" or a "No" if voice recognition technology is provided.

9. If the subscriber indicates that ADACC is desired, the DAS informs the DMS that ADACC has been accepted and that the parties should be connected (Refer to "Routing to an operator after ADCC is offered" for details on what happens for abnormal conditions when ADACC is offered). At this point, the DMS generates an Automatic Message Accounting (AMA) record for the DA portion of the call. The requested number (called number) is outpulsed. Another AMA record is created for the call completion portion of the call. Refer to paragraph: *ADACC Restrictions Based on Method of Billing* for billing considerations associated with ADACC. (See notes.)

Note 1: Calls from a coin stations served by ACTS will not outpulse until the proper coin deposit has been made.

Note 2: If a connection to the requested number is not made, a "No Answer" AMA record is generated.

Routing to an operator after ADACC is offered

If re-connection to the operator is allowed (determined by parameter MAXIMUM_DA_RECALLS in Table VROPT), the subscriber will reconnect to an operator if one of the following situations occurs.

- The DAS offers ADACC, but the subscriber does not respond within a specified amount of time.

The time-out value is specified in parameter POST_ANN_TIMEOUT in Table VROPT. Refer to DATA ASSIGNMENT for details on Table VROPT.

- The DAS offers ADACC, the subscriber indicates that ADACC is not desired, but does not go on-hook.

If reconnects are not allowed, the call is terminated.

DMS checks to determine whether ADACC can be offered

The following pages provide more details about the checks performed by the DMS in determining whether ADACC can be offered from a DMS perspective after the DAS informs the DMS that ADACC can be offered from the DAS side.

Automated DACC with Alternate Billing (continued)

The checks the DMS performs are as follows:

- Are there any datafill restrictions associated with the trunks group on which the call arrived?
- Are there any datafill restrictions associated with the call type and service class of the call?
- If the call were to be completed, would it be an InterLATA call and does the Operating Company provide services for the carrier serving the terminating LATA?
- Is the method of billing restricted for completion to the requested number?
- Was the requested number successfully translated?

ADACC restrictions based on trunk group

Providing ADACC can be denied based on the trunk group on which the call arrived. Table DA Trunk Options (DATRKOPT) specifies the characteristics for billing and call handling that are applicable on an entire trunk group basis. This includes such things as whether billing is required for any call on that trunk group, whether the requested number is required for billing, and the type of call completion that a call arriving over that trunk group is eligible for.

To allow ADACC on a trunk group basis, field DACC in Table DATRKOPT should be datafilled with either AUTO or ALL. Refer to DATA ASSIGNMENT for complete details on Table DATRKOPT.

The following restrictions apply to field DACC:

- If a trunk group is from a LAMA end office, DACC should be datafilled with NONE.
- If the end office does not support DTMF signaling, DACC should be datafilled with NONE.

ADACC is not allowed for calls originated on Intertoll (IT) trunks or Access Tandem to Carrier (ATC) trunks.

Note 1: The billing number is required for AMA if ADACC is offered. Field CLGNRQD in Table DATRKOPT should be set to "Y."

Note 2: Field DACC used to be called OHDACC, and the possible entries for this field were "Y" and "N." This feature package renames this field to DACC and changes the possible entries to OH (Operator Handled), AUTO (Automatic), NONE, or ALL (meaning both OH and AUTO). Refer to DATA ASSIGNMENT for details.

Automated DACC with Alternate Billing (continued)

ADACC Restriction Based on Call Type/Service Class

Providing ADACC can be denied based on the call type and service class of a call. A DA call does not necessarily qualify for ADACC if ADACC is allowed on the trunk group on which the call arrived.

When a call arrives and it is determined that ADACC is provided for the trunk group, Table DA Billing (DABILL) is checked. Table DABILL specifies on a call type and service class basis the type of call completion available for the call. To allow ADACC, field DACC of Table DABILL is checked. For the call to qualify for ADACC, this field must be datafilled with either AUTO or ALL. Refer to DATA ASSIGNMENT for details on Table DABILL.

Note: The DACC field in Table DABILL is added by this feature package.

The following interactions and restrictions are associated with datafilling field DACC:

- If field CCSURCHG is set to "Y," DACC cannot be datafilled with NONE.
- If field DACC is datafilled with AUTO or ALL, field CLGNRQD must be set to "Y."
- Field DACC can only be set to NONE for INTC call types because the calling number is not retained for intercept calls even if received from the end office.

A call is not eligible for a particular type of call completion unless it appears in both Table DATRKOPT for the trunk group and Table DABILL for the call type and service class. For example, if trunk group TOPSICMF is set to ALL in Table DATRKOPT and the tuple for 411 HOTEL calls is set to OH in Table DABILL, 411 hotel calls over TOPSICMF are only eligible for OH call completion since this is the call completion type common to both Tables DATRKOPT and DABILL.

The DACC field would have to be set to AUTO in both Tables DATRKOPT and DABILL (or to ALL in one or the other, or both) before a 411 hotel call over TOPSICMF could be eligible for ADACC. Datafill must be compatible. If DACC is set to AUTO in one table and OH in the other, the call would not be eligible for any type of call completion.

ADACC restriction based on interLATA screening

ADACC cannot be provided if a call terminates to a LATA serviced by another carrier unless the Operating Company provides services for that carrier. The Operating Company must have the TOPS InterLATA Carrier Service (TICS) feature package to provide call completion on behalf of a carrier. Without TICS, the Operating Company cannot provide call completion for InterLATA

Automated DACC with Alternate Billing (continued)

calls and the only way such calls could be completed is by transferring them to the carrier's operator.

A number of data tables are checked to determine whether connection to the requested number would result in an InterLATA call. The first table checked is Table TOPS Equal Access Trunk (TOPEATRK). Field LATANM in Table TOPEATRK identifies the LATA of the trunk group on which the call arrived. If the LATANM field is datafilled with NILLATA, the call is assumed to be IntraLATA. If field LATANM is not set to NILLATA, the LATA name in field LATANM along with the requested number are used to index Table LATA Translation (LATAXLA). Field LATA in Table LATAXLA specifies whether the call is an InterLATA or an IntraLATA call based on the LATA name and the requested number. If there is no entry in Table LATAXLA, the call is assumed to be IntraLATA.

Once the call has been identified to be an InterLATA call, a carrier must be identified to handle the call. Table TOPEATRK is checked to determine whether Table Directory Number Primary InterLATA Carrier (DNPIC) needs to be searched to obtain a carrier number. If field DNLOOK in Table TOPEATRK is set to "N," the carrier identified in field CARRIER of Table TOPEATRK for the trunk group is used for the call. If field DNLOOK is set to "Y," Table DNPIC is searched to obtain a carrier. Table DNPIC is indexed by the calling number, and it specifies the subscriber's InterLATA carrier choice.

Once a carrier is identified for an InterLATA call, the next step is to determine whether the Operating Company provides operator services for that carrier. This is the check that determines whether the call still qualifies for ADACC.

Note: When a carrier is not specified, the operator will have to manually input a carrier for the call so that this final check can be performed.

To determine whether the Operating Company provides services for the carrier, Table TOPS Equal Access Carrier (TOPEACAR) is consulted. Field OPSERV specifies whether the carrier is one that is served (OPSERV=SERV) or not served (OPSERV=NOSERV) by the Operating Company.

Note 1: The Operating Company must have the TOPS Equal Access (NTX187AA) and the TICS (NTX714AA) feature packages.

Note 2: The Operating Company can designate itself as a carrier through the TOPS_Operating Company_CARRIER_NUMBER parameter. If the carrier for a call is the Operating Company, ADACC is not offered.

Automated DACC with Alternate Billing (continued)

ADACC restrictions based on method of billing

ADACC cannot be provided if there are any billing restrictions associated with completing the call.

The following are billing restrictions that would prevent ADACC from being offered.

- ADACC requires that the requested number be recorded on AMA; therefore, field CLGNRQD in Table DATRKOPT and field CLGREQ in Table DABILL must be set to "Y." These two fields specify whether the requested number is recorded on the AMA record.
- The incoming trunk group has a billing restriction associated with it (Field STATCLAS in Table TRKGRP is datafilled with RESTBIL). The DMS determines what that specific billing restriction is by doing a lookup in Table Special Number Directory Identification (SPLDNID). Table SPLDNID identifies the originating station and assigns a restricted billing class to the call. The restricted billing class assigned in Table SPLDNID is used to index Table Restricted Billing (RESTBIL). Table RESTBIL identifies the valid billing types for the call.
- Another way in which billing restriction could be indicated is by the Automatic Number Information (ANI) digit, which would result in a search through Tables SPLDNID and RESTBIL.
- The call has a domestic billing restriction associated with it. Table Domestic Billing (DOMBILL) is used to define billing restrictions for calls to certain domestic regions. Table DOMBILL specifies restrictions for calling card, third number, station collect, person collect, and station rate billing. The requested number is used to determine whether there are any domestic billing restrictions associated with the call.
- If rating cannot be done for carrier calls from public telephones (coin or hotel), ADACC cannot be offered. This is indicated in field PUBRATE in Table TOPEACAR.

The DA portion of a call may or may not be billable. Generally, when a DA call is billable, the same billing method established for the DA portion of the call is used for the call completion portion of the call. However, when a DA call is not billable, a method of payment is not established. So, if call completion is offered for such a call, the method of payment will be defined as Station Paid. ADACC is not offered if the originating station is restricted, and Station Paid calls cannot be made from that telephone.

Another Billing restriction is applied if the billing for the DA portion of the call is to a third number. The third party may elect to pay for the charges for the DA portion, but not for the call completion portion of the call. Since call

Automated DACC with Alternate Billing (continued)

completion is automated, the third party is not contacted to verify acceptance of charges for the call completion portion. The DACC_BILL_TO_THIRD parameter is added to Table Voice Response Options (VROPT) to handle such situations. This parameter allows the Operating Company to specify on an office basis whether to offer ADACC on bill-to-third party completion calls.

Currently, the only allowable class charges for ADACC calls are Station Paid or Station Special Calling. The one exception to this rule is for Auto Collect calls, where the requested party (called party) pays for the call completion portion of the call.

ADACC restriction based on successful translation of the requested number

The final check performed by the DMS is on the successful translation of the requested number. If the number is successfully translated, that is, a valid route is obtained to outpulse the call, ADACC is offered. If a call is routed to a treatment, ADACC is not offered.

Surcharge for ADACC

If properly tarified, the Operating Company can include a surcharge on the ADACC service. The surcharge is specified based on call type and service class. Field CCSURCHG (Call Completion Surcharge) in Table DABILL specifies whether a surcharge is applied to the call for call completion. If CCSURCHG is set to "Y," Table DA Call Completion Surcharge (DACCSUR) is checked to determine the amount of the surcharge for the call based on the type of call completion provided. Refer to DATA ASSIGNMENT for details on these tables.

Note: The AUTO tuple in Table DACCSUR can be accessed without the ADACC feature present. If the operator keys DIAL RATE for a operator-handled call completion, the surcharge from the AUTO tuple is used.

If a call is from a coin telephone capable of ACTS handling, the request-for-deposit prior to connection to the requested number will include the amount of the surcharge. This amount will be rounded to the nearest five cent multiple based on the rounding criteria specified in Table ROUND.

Rating calls completed by ADACC

Normally, a call assisted by an operator will cost more than a call dialed directly by the subscriber. Calls completed using the ADACC service do not involve an operator and this is reflected in the rating of these calls.

Automated DACC with Alternate Billing (continued)

Feature package NTXE36AA creates Table DA Call Completion Local Rate Step (DACCLRS) to calculate charges for local calls completed using the ADACC service.

Table DACCLRS specifies a schedule and a rate step for DA call completion to local numbers. Table DACCLRS, like the current Local Rate Step Calculator table (Table LCLRS), is indexed using a tariff name and a local schedule type. The local schedule type can be either Standard (STD) or Special (SPL). The STD schedule type is used unless a SPL schedule type is indicated in Table SPLDNID.

There are four different classification of schedules: Service, Domestic, Overseas, and Local. The schedule specified in Table DACCLRS must be LOCAL. Refer to DATA ASSIGNMENT for further details on Table DACCLRS.

For automatic DACC calls, the rate step is obtained from table DACCLRS. For manual or semi-automatic DACC calls where the operator keys Dial Rate, the step rate is also taken from table DACCLRS. However, if Dial Rate is not keyed for manual or semi-automatic DACC calls, the step rate is taken from table LCLRS.

Mass Table Control (MASSTC)

Table DACCLRS uses the MASS Table Control (MASSTC) facility of TOPS rating. MASSTC allows the Operating Company to change their rating data without affecting call processing or real time. This is possible by maintaining two copies of each of the rating tables. One copy is considered to be inactive and the other to be active.

MASSTC allows the Operating Company to modify its rating data as follows:

- Duplicate the contents of the active table into the inactive table.
- Make the necessary changes to the inactive table.
- Test the changes made in the inactive table using the TOPS Rating Test Program (see *TOPS Rating Test Program* that follows for further details).
- Do a switch on the inactive and active tables so that the inactive becomes the active, and the active becomes inactive.

As with all TOPS rating tables, Table DACCLRS has a companion table: DACCLRSI. This allows two sets of rating tables to be maintained: the active version (Table DACCLRS) and the inactive version (Table DACCLRSI). For further details on MASSTC, refer to the data schema in this manual.

Automated DACC with Alternate Billing (continued)

TOPS rating test program

The TOPS Rating Test Program is a feature designed to assist the Operating Company with the verification of the rating system datafill.

The TOPS Rating Test Program allows the Operating Company to do the following from the Maintenance and Administration Position (MAP):

- Simulate a call
- Specify whether the inactive or the active tables should be used to rate the call
- Request a rate step and/or a charge calculation for that call
- Display the results at the MAP.

The TOPS Rating Test Program is invoked at the MAP by issuing the RATE command. Once the RATE command is issued, the Rate Directory is attached, which gives the user access to a number of subcommands that provide the functions previously described.

Feature package NTXE36AB makes changes to the DCC subcommand and adds the DCS subcommand. Only these two commands will be discussed in this document. For complete details on all of the subcommands available and their function, refer to the data schema in this manual.

- DCC

The DA Call Completion (DCC) subcommand is used to set the call completion type for the simulated call. This indicates the rate (direct-dialed[DD] or operator-assisted[OA]) and the type of surcharge to be applied to the call from Table DACCSUR.

Whether or not a surcharge is actually applied is determined by the DCS subcommand. The DCC subcommand takes one of the following three parameters:

- OH (Operator-Handled)
- AUTO (Automatic), or
- NONE.

OH and AUTO indicate that the OH or the AUTO tuple in Table DACCSUR, in addition to the station class of the originator should be used to determine the surcharge.

Automated DACC with Alternate Billing (continued)

In addition, with the ADACC feature, if AUTO or OH are specified, Table DACCLRS calculates the charges for DA call completion to local numbers.

- **DCS**

The DA Call Completion Surcharge (DCS) subcommand is used to specify whether a surcharge should be included when calculating the charges for the simulated call. The surcharge is obtained from Table DACCSUR and the DCC subcommand indicates which entry in this table should be used. The DCS subcommand takes one of the following parameters: Y (Yes) or N (No). Parameter Y indicates that a surcharge should be applied. Parameter N indicates that a surcharge should not be applied.

Datafill example

The following datafill examples are provided to illustrate translations to determine if ADACC can be offered. The datafill in this section is set up for illustration purposes only and should not be used as a basis for datafilling the office.

The datafill examples are set up to translate the following scenario: 0+555 call originating at a coin telephone. The office supports ACTS, MCCC, and EBAF.

The subscriber dials 0+555+1212. The subscriber is prompted by MCCC to enter a calling card number or 0 for an operator. The subscriber enters 0 and attaches an operator. The subscriber indicates that the call will be billed to a third number. The operator attaches to the third number and verifies billing. Once billing is verified, the operator initiates the data base search. DAS returns the data base information. The operator selects the correct listing from the information returned by DAS and releases the call. The remaining interactions are between the DMS and DAS. The operator is no longer involved at this point.

The DAS indicates to the DMS that it can offer ADACC from the DAS side. The DMS must now determine whether ADACC can be offered to the call from the DMS side. The DMS checks Table DATRKOPT (see the following figure) to determine whether ADACC is available on the trunk group on which the call arrived. According to the datafill in Table DATRKOPT, ADACC is offered on that trunk group. Note that if ADACC is offered (DACC=AUTO), fields BILLRQD, CLGNRQD, and REQNRQD must be set to Y (Yes).

Automated DACC with Alternate Billing (continued)**MAP display example for table DATRKOPT**

GRPKEY	MULTREQ	DACC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TOPSICMF	0	AUTO	Y	Y	Y	PRIMARY

Now that the DMS has determined that ADACC is offered on the trunk group on which the call arrived, it must determine whether ADACC is offered based on the call type/service class of the call. The DMS checks Table DABILL (see the following figure) to determine whether ADACC is provided on the call type/service class of the call. According to the datafill in Table DABILL, ADACC is offered on the call type/service class (DACC=AUTO). Note that for ADACC, fields REQNUM and CLGRQD must be set to Y.

MAP display example for table DABILL

DABKEY	REQNUM	CLGRQD	SERVNAME	ENHAMA	CCSURCHG	DACC
555 COIN 5	Y	Y	LOCALDA	Y	Y	AUTO

Now that the DMS has determined that ADACC is offered on the trunk group and on the call type/service class, it must determine whether completing the call would result in an InterLATA call, and if it does result in an InterLATA call, does the Operating Company provide services for the carrier serving the terminating LATA.

The DMS checks Table TOPEATRK for the LATA name (field LATANM) associated with the trunks group on which the call arrived, shown in the following example. Using the LATA name obtained from Table TOPEATRK and the requested number, Table LATAXLA is indexed. Table LATAXLA, shown in the following example, indicates that a call completing to LATA1 with digits 212220 will result in an IntraLATA call. If the call had been an InterLATA call, a carrier would have to have been identified first by checking field DNLOOK in Table TOPEATRK to determine whether the subscriber has a primary carrier. If field DNLOOK was set to Y, the carrier would have been obtained from Table DNPIC. If field DNLOOK was set to N, the carrier datafilled in Table TOPEATRK for the trunk group would have been used. To determine whether the Operating Company provides services for a given carrier, the OPSERV field of Table TOPEACAR is checked. To provide call completion for InterLATA calls, the OPSERV field for the given carrier must indicate SERV.

Automated DACC with Alternate Billing (continued)

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
TOPSICMF	CONFORM	777	LATA1	TEAD	TEAR	TEAI
919	N	N	\$			

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
LATA1 212220	INTRA	INTER	STD

Now that the call has been determined to be an IntraLATA call, the DMS must check to see whether there are any billing restrictions associated with the originating station and method of billing. For this example, there are no billing restrictions associated with the originating station; however, Table VROPT must be checked to determine whether the bill-to-third method of payment is allowed for ADACC. The DACC_BILL_TO_THIRD parameter in Table VROPT is checked (see the following figure). The parameter in the following figure indicates that bill-to-third is a valid method of payment for this example.

MAP display example for table VROPT

PARM	VALUE
DACC_BILL_TO_THIRD	Y

Assuming that a route is obtained for connection to the requested number, the DMS sends a message to the DAS indicating that ADACC can be offered. the DAS offers ADACC, the subscriber accepts, and the DAS messages the DMS to connect the call.

NC0316: DA call completion restrictions

This optional feature allows the Operating Company to restrict Directory Assistance (DA) call completion (CC) based on a new datafillable field in table RESTBIL. The new field (called CCPDTYPS) is used to determine the valid types of sent paid DA call completion. For example, setting CCPDTYPS to

Automated DACC with Alternate Billing (continued)

LOCAL allows DACC to be charged sent paid to a local number but not a toll number.

Typically, private businesses signal a single called number from a private branch exchange (PBX) to an end office (EO) so that calls from different extensions within the business are billed to one number. Businesses are concerned that employees will use DA call completion to circumvent PBX or EO restrictions and complete toll calls at the expense of the business. Since the calls are billed to the same number, the callers remain anonymous.

On the other hand, a business may feel it is worth the typically inexpensive DA call completion surcharge to have operators search and complete local calls instead of having their employees do so.

Therefore, this feature can be used by the Operating Company to restrict DA call completion when toll charges will be in effect but allow local calls to complete. Note that this is implemented so that local, toll, both or neither may be restricted.

The new field in Table RESTBIL is not present in table DARSTBIL since Table DARSTBIL applies only to the DA portion of a call. Table DARSTBIL does not apply to call completion since DACC calls are converted to TA calls when completed.

For more information concerning operator handled DA call completion (OHDACC), refer to feature AF0741 (F6953), TOPS MP DA/INT Call Processing in package NTXA62AA, TOPS DA Audio Response Call Handling.

TA to DA service change modifications

This base change allows an operator to change the service of a call from Toll and Assistance (TA) to Directory Assistance (DA) as long as the call on the other loop, if any, is not a DA or intercept service call. The fact that only one DA/INT call per position is allowed is a limitation imposed by the various Directory Assistance System (DAS) vendors.

Actually, there is no chance that the inactive loop has a DA/INT service call since DA/INT calls are not allowed to be put on hold. The fact that only one DA/INT call per position is allowed is a limitation imposed by the various DAS vendors.

In the past when an operator keyed for a TA to DA service change, TOPS disallowed the action if a call, regardless of the service type, existed on the inactive loop.

Automated DACC with Alternate Billing (continued)

This feature is required in the remote for the service change to be available.

Datafill

For the purposes of this feature, it is necessary that the service class be restricted in order to index table RESTBIL. There are two methods of specifying restricted numbers:

- Table SLTANIID: Uses a special line traffic (SLT) automatic number identification (ANI) code. This requires optional feature NC0149, Two Digit ANI - TOPS Office which is used in packages NTXN81AA (Two Digit ANI ID - End Office LAMA), NTXQ79AA (Two Digit ANI ID - End Office non-LAMA) and NTP56AA (Two Digit ANI ID - CAMA).
- Table SPLDNID: Uses a COMBINED, RESTBIL, or DNLOOKUP TOPS trunk.

Although either of these methods may be used for restricted numbers, having the EO signal with an SLT ANI code requires a single entry in table SLTANIID. On the other hand, using table SPLDNID requires datafill for each DN with DACC restrictions. Obviously, less datafill implies ease of maintainability for feature use.

Example datafill is shown below for the two methods listed above.

A new restricted billing class number may be required to implement this feature. If so, in addition to the tables discussed below, tables DABILL, DARSTBIL and ADACCOPT which use the restricted billing class number as part of the key will also require datafill as appropriate.

- Table SLTANIID: Uses an SLT code. This requires optional feature NC0149, Two Digit ANI - TOPS Office.

The EO signals ANI ID digits (i.e. 22) that indicates SPECIAL in Field CLGSERV in Table OSSCAT (i.e. OSS/EAOSS signaling) Table SLTANIID is searched using the ANI ID digits where an entry is found. This implies that the service class is restricted and the restricted billing

Automated DACC with Alternate Billing (continued)

class number is obtained. Table RESTBIL is indexed using the restricted billing class number.

MAP display example for table OSSCAT

ANI	FORMAT	CLGSERV	REST	ROUTE
22	ANI	SPECIAL	NONE	N

MAP display example for table SLTANIID

SLTANI	RBILCLAS	ONEPLUS	SLTAMA
22	0	Y	N

MAP display example for table RESTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES	CCPDYTYP
0	0	REST_PD		
(	COL)	(CC)	(3RD)	(SPLCLG) (SPLCLD)\$ LOCAL \$

Prior to BCS33, Table RESTBIL allowed sent paid calls to be restricted by not including PD as a valid billing type in Field BILTYPES. With this BCS33 feature, this method still blocks normal sent paid TA calls (i.e. a 0-call from the PBX).

New field CCPDTYPS in Table RESTBIL allows restriction of sent paid DACC to toll and/or local numbers. The range is LOCAL, TOLL, ALL or NONE. The default is set to ALL if PD was included in field BILTYPES; otherwise the default is set to NONE. Field CCPDTYPS can only be changed from ALL or NONE if this feature package is purchased.

In the previous datafill example, the Operating Company has chosen to restrict all sent paid TA calls by not datafilling PD in BILTYPES. Sent paid DACC toll calls are also restricted since TOLL is not datafilled in CCPDTYPS.

- Table SPLDNID: Uses a COMBINED trunk.

The EO signals an ANI ID digit(s) that indicates SPECIAL in Field CLGSERV in table BELLCAT (depending on the signaling, OSSCAT may be used). SPECIAL indicates that the service class is set by using the calling number as an index into Table SPLDNID. Table SPLDNID is

Automated DACC with Alternate Billing (continued)

indexed and the service class is found to be restricted (RSTRCTD). The restricted billing class number is obtained and indexes into Table RESTBIL.

MAP display example for table BELLCAT

ID	FORMAT	CLGSERV	ANIRROUTE
7	ANI	SPECIAL	N

MAP display example for table SPLDNID

SPLDN	SPLSEL
6132390003	RSTRCTD 0

MAP display example for table RESTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES	CCPDYTYP
0	0	REST_PD		
(COL)	(CC)	(3RD)	(SPLCLG)	(SPLCLD)\$
				LOCAL \$

BR30521 - DACC calls with auto collect

In BCS34, Module Code 52 is no longer produced on Directory Assistance Call Completion Auto Collect calls. Instead, Module Code 51 is produced and Table 282 (byte 6), OSS Call Completion Service Conditions, is expanded. The expansion indicates if the requested party pays for local, toll, or both local and toll calls.

Expanded Table 282 is also used for Automatic intercept call completion AMA records. Byte 6 can only be set for both local and toll calls.

In order for correct billing, phase 2 EBAF must be used.

Following is an example AMA record.

Automated DACC with Alternate Billing (continued)

AMA Record with OSS Call Completion Conditions

```

HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:192C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:613C
ORIG NUMBER:2391234C  CONNECT TIME:0427380C
ELAPSED TIME:000000236C  OPERATOR IDS:1010200009999C
ACC OPERATOR WORK TIME:00250C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1C
MODULE CODE:051C  OVERSEAS IND:1C  TERM NPA:00212C
TERM NUMBER:2208978C  COMPLETION IND:001C
RATE IND:1C  OSS CALL COMPLETION CONDITIONS:1111740C
MODULE CODE:000C

```

BR32608 - ADACC Office-wide restrictions

When DACC is first offered to end users, they may not be aware of incurring toll charges for call completion since the call may have been initiated as a local information call. Also, an Operating Company may not want to offer DACC for local calls, since that would tie up TOPS trunks for a local call. Currently, send paid DACC can be restricted to local and/or toll numbers based on restricted billing class number in table RESTBIL, field CCPDTYPS. For more information on these restrictions, refer to NC0316 (ADACC Toll Restrictions) in this package description (NTXE36). For more information on operator handled (OH) and automatic DACC, refer to features AF0741 (TOPSMPVR Foldback: Call Processing) in NTXA62AA (Automatic DA Call Completion) and AF1777 (Automatic DA Call Completion) in NTXE36AA (this package), respectively.

Effective BCS35, DACC can be restricted on an office wide basis with new office parameter DACC_LOCAL_TOLL_ACTIVATION in table VROPT.

Valid values are:

- TOLL - indicates that only calls that will be toll calls will be eligible for completion.
- LOCAL - indicates that only calls that will be local calls will be eligible for completion.
- ALL - indicates that all calls will be eligible for completion. This is the default value.
- NONE - indicates that no calls will be allowed to complete. Note that setting the parameter to this value turns off DACC for the entire office.

Automated DACC with Alternate Billing (continued)

The office parameter can be changed from ALL only when feature package NTXE36AB (Automatic DA Call Completion) is present.

This feature applies to both operator handled and automatic DA call completion.

The restrictions imposed by this feature significantly interact with those imposed by feature NC0316 (NTXE36AB). In order for a DA call to be eligible for call completion, the call must pass the restrictions imposed by BOTH features. The possibilities for DNs that have restricted billing numbers are summarized in the following table. This table is applicable when call billing is sent paid. When billing is auto collect, the value of CCPDTYPS is irrelevant. The call is eligible for completion according to the value of parameter DACC_LOCAL_TOLL_ACTIVATION and whether the call is local or toll.

Restriction of Call Completion for DNs with restricted billing numbers (table RESTBIL)

Field CCPDTYPS	Call type	DACC_LOCAL_TOLL_ACTIVATION			
		LOCAL	TOLL	ALL	NONE
LOCAL	local	Yes	No	Yes	No
LOCAL	toll	No	No	No	No
TOLL	local	No	No	No	No
TOLL	toll	No	Yes	Yes	No
ALL	local	Yes	No	Yes	No
ALL	toll	No	Yes	Yes	No
NONE	local	No	No	No	No
NONE	toll	No	No	No	No
Note: Yes - call completion is allowed No - call completion is not allowed.					

AF2086 - Automatic DACC with Alternate Billing

DMS-DAS Messaging (background)

Directory Assistance service is provided by a TOPS Multipurpose (MP) Operator Position through an exchange of information between the DMS switch and a Directory Assistance System (DAS). Likewise, the decision to offer ADACC is based upon a joint decision between the DMS switch and DAS.

Automated DACC with Alternate Billing (continued)

When the TOPS MP operator selects a DA listing and keys to release the call to an Audio Response Unit (ARU), the DAS sends an ARU REQUEST message to inform the DMS switch to select an ARU trunk to play an audio announcement to the caller. The DAS can also indicate in the ARU REQUEST message that the DMS switch should determine if ADACC can be offered to the caller.

The DMS switch performs a number of checks to determine if call completion can be offered. Refer to package Automatic DA Call Completion, NTXE36AA, for more details on the screening process performed by the DMS switch to determine if Automatic DA Call Completion can be offered.

If the DMS switch determines that call completion CANNOT be offered, an ARU CONNECT message is sent to DAS, indicating an ARU trunk for the DAS to use to play an audio announcement that does not offer call completion to the caller. If the DMS switch determines that call completion can be offered, a CALL COMPLETION ARU CONNECT message is sent to DAS, indicating an ARU trunk for the DAS to use to play an audio announcement that offers call completion to the caller.

Upon receiving the CALL COMPLETION ARU CONNECT message, the DAS plays an audio announcement that offers ADACC to the subscriber. The DAS detects the caller's response either by detecting the keying of Dual Tone Multifrequency (DTMF) keypad digits or by interpreting a voice response using voice recognition technology.

If the caller accepts the call completion offer, DAS then sends a COMPLETE CALL message to the DMS switch. The DMS switch then proceeds with the call completion service to connect to the DA referral number. The DMS switch produces a DA Automatic Message Accounting (AMA) billing record, changes the service type from DA to Toll and Assist (TA), outpulses the requested number, and is responsible for any billing.

ADACC Billing (background)

The billing capability currently provided for ADACC is limited. A billing method for ADACC is selected by DMS switch based upon whether or not the preceding DA call was billable (by TOPS).

Two tables specify whether a DA call is billed by the TOPS office: DA Trunk Options (DATRKOPT) and DA Billing (DABILL). Table DATRKOPT indicates a variety of DA options on a trunk group basis. If any DA calls arriving over the trunk group are billable, field BILLRQD is set to Y. This does NOT necessarily mean that all DA calls arriving over the trunk group are billable. Table DABILL indicates for particular call types and service classes that DA calls are actually billable. For the service classes of COIN and

Automated DACC with Alternate Billing (continued)

RESTRICT, a Restricted Billing Class is also specified to allow marking DA calls that originate from restricted stations as billable. Field SERVNAME is set to TOLLFREE for a call type/service class/restricted billing class that is not billable, or to any valid service name if billable.

Note: Tables DATRKOPT and DABILL specify if ADACC can be offered. Field DACC in table DATRKOPT indicates the types of call completion available on a trunk group basis, and field DACC in table DABILL indicates the types of call completion available on a call type/service class combination basis. In order for a DA call to be eligible for Automatic DA Call Completion, a value of AUTO or ALL must be included for field DACC in both table DATRKOPT and table DABILL.

Examples of the datafill for tables DATRKOPT and DABILL are presented below. Refer to package NTXE36AA for further details.

MAP display example for table DATRKOPT

GRPKEY	MULTREQ	DACC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TOPCOMAMF	0	AUTO	Y	Y	Y	PRIMARY
TOPCOMBMF	0	ALL	Y	Y	Y	PRIMARY
TOPSDA411	1	OH	Y	Y	N	PRIMARY
TOPSDAINT	1	NONE	Y	N	N	PRIMARY

MAP display example for table DABILL

DABKEY	REQNUM	CLGRQD	SERVNAME	ENHAMA	CCSURCHG	DACC
411 COIN 100	N	N	TOLLFREE	Y	N	AUTO
411 HOTEL	Y	Y	LOCALDA	N	N	OH
555 RESTRICT 5	N	N	TOLLFREE	N	N	NONE

Whenever possible, an attempt is made to use the same billing method for call completion as was used for the DA portion of the call. For example, when the DA call has been billed to a Calling Card, the Calling Card number will automatically be used to bill for the call completion service.

If the DA call was not billable (such as TOLLFREE), an attempt is made to use Sent Paid (i.e., billed to the calling station) as the billing method. However,

Automated DACC with Alternate Billing (continued)

billing restrictions that were not applied to the toll free DA call are now applied for call completion, and Sent Paid may be a restricted method of billing for the particular originating station (such as restricted telephone). In this case, call completion service cannot be offered.

Auto Collect is another method of billing. In this case, the DA database indicates that the referral number can be billed for the call completion service. The DAS indicates this to the DMS switch as part of the ARU REQUEST message, so that the DMS switch can use this information as part of its screening process to determine if ADACC can be offered to the subscriber. The DAS is responsible for indicating this to the subscriber as part of the announcement that offers Automatic DA Call Completion.

Refer to package NTXE36AA for more details on billing criteria used when performing call completion service.

Changes for Alternate Billing

This feature allows the caller to select the method of billing for the call completion portion of the call, regardless of the billing method for the DA portion of the call. The subscriber is prompted to select one billing option for call completion from among a range of choices:

- Continue Billing
- Sent Paid
- Alternate Billing
- Auto Collect

Auto Collect Billing Option

The Auto Collect indication for a particular requested number is stored in the DA database. As mentioned previously, the DAS currently indicates this information to the DMS switch as part of the ARU REQUEST message. If the DAS indicates Auto Collect billing to the DMS switch and there are no other restrictions that prevent the offering of ADACC, then the DMS switch automatically uses Auto Collect as the billing method for call completion.

With this feature, the caller is normally offered a selection of the billing methods for call completion. However, with Auto Collect, the subscriber is not billed for call completion charges, so there is no point in offering any billing option other than Auto Collect to the caller when DAS indicates call completion can be billed as Auto Collect.

The current implementation of Auto Collect does not distinguish whether the DA referral number is local or toll. This feature expands the range of values so that the DAS can indicate if Auto Collect is provided for local numbers only,

Automated DACC with Alternate Billing (continued)

or for toll numbers only. The previous value for Auto Collect continues to represent Auto Collect for both local and toll numbers.

With the new indications of Auto Collect Local and Auto Collect Toll, the DMS switch must now screen the DA referral number to determine if it is local or toll. The DMS switch will not select Auto Collect as a billing option if the DAS indicates Auto Collect Local and the referral number is toll or vice versa. In this case, the DMS switch will determine which of the other billing options are valid and offer these options to the subscriber.

Restricted Billing Checks

DMS-TOPS provides methods of applying selective billing to certain types of calls. For example, certain stations can be marked as restricted in table Special Directory Number Identification (SPLDNID) and assigned a Restricted Billing Class. For DA calls, table DA Restricted Billing (DARSTBIL) indicates the valid billing methods for restricted stations based upon the Restricted Billing Class assigned in SPLDNID.

Billing restrictions can also be applied to specific regions of the North American dialing plan. Table Domestic Region Names (REGNUM) associates third numbers or calling card numbers to a "region name." Domestic region names are entered in table Domestic Billing Restrictions (DOMBILL), which specifies the various billing restrictions that apply.

Refer to the data schema section of this manual, for more information concerning domestic billing restriction tables.

Since the call completion portion of the DA call is actually completed as toll service, the types of billing restrictions that apply are specified in table Restricted Billing (RESTBIL). However, they do not apply to the billing option of Auto Collect because the caller is not being billed for the call. They also do not apply for Alternate Billing, because the subscriber could be requesting a billing method of either calling card OR collect OR bill to third. For Alternate Billing the call is routed to either an operator or to an Automated Operator Service (refer to Billing Option Processing below) to determine the type of billing desired, and the billing restrictions are applied at that time.

Billing Option Processing

Selection of the Sent Paid option causes the call to be treated as if the caller had dialed 1+ requested number. Calls from station lines automatically output the requested number. Calls from hotel stations may reconnect to an Operator Position to enter a hotel room number if it has not already been necessary to enter the room number as part of a billable DA call. Calls from coin stations that are provided with Automatic Coin Toll Service (ACTS) are

Automated DACC with Alternate Billing (continued)

prompted with ACTS announcements to deposit the proper amount of coins before performing the call completion.

Selection of the Alternate Billing option causes the call to be treated as if the caller had dialed 0+ requested number. Calls arriving over TOPS trunks may be marked as receiving some type of Automated Operator Service for specifying billing. The subscriber is prompted via automated announcement to enter an appropriate response for the particular automated service being provided.

Note: TOPS currently provides two types of optional Automated Operator Services for Alternate Billing for 0+ traffic: Automated Alternate Billing Service (AABS) and Mechanized Calling Card Service (MCCS). An Automated Calling Card Service (ACCS) also exists but provides the same capabilities as MCCS except by accessing a Line Information Database (LIDB) via a Signaling System #7 (SS7) network. Refer to the feature document for each service to obtain more information on the capability of each.

If no Automated Operator Service is provided to the incoming trunk, the selection of Alternate Billing causes the call to route to an operator to determine billing.

Selection of the Continue Billing option causes the call to be treated either as if the caller had dialed 1+ requested number, regardless of the method of billing for the DA portion of the call (Sent Paid or Alternate Billing). Calls that have billed the DA portion of the call to a calling card have the call completion service billed to the same calling card, without having to enter the calling card number again. Calls from coin stations that are provided with Automatic Coin Toll Service (ACTS) are prompted with ACTS announcements to deposit the proper amount of coins for the call completion charges before outputting the requested number.

The following diagram shows the call processing actions performed for each of the billing options that can be selected.

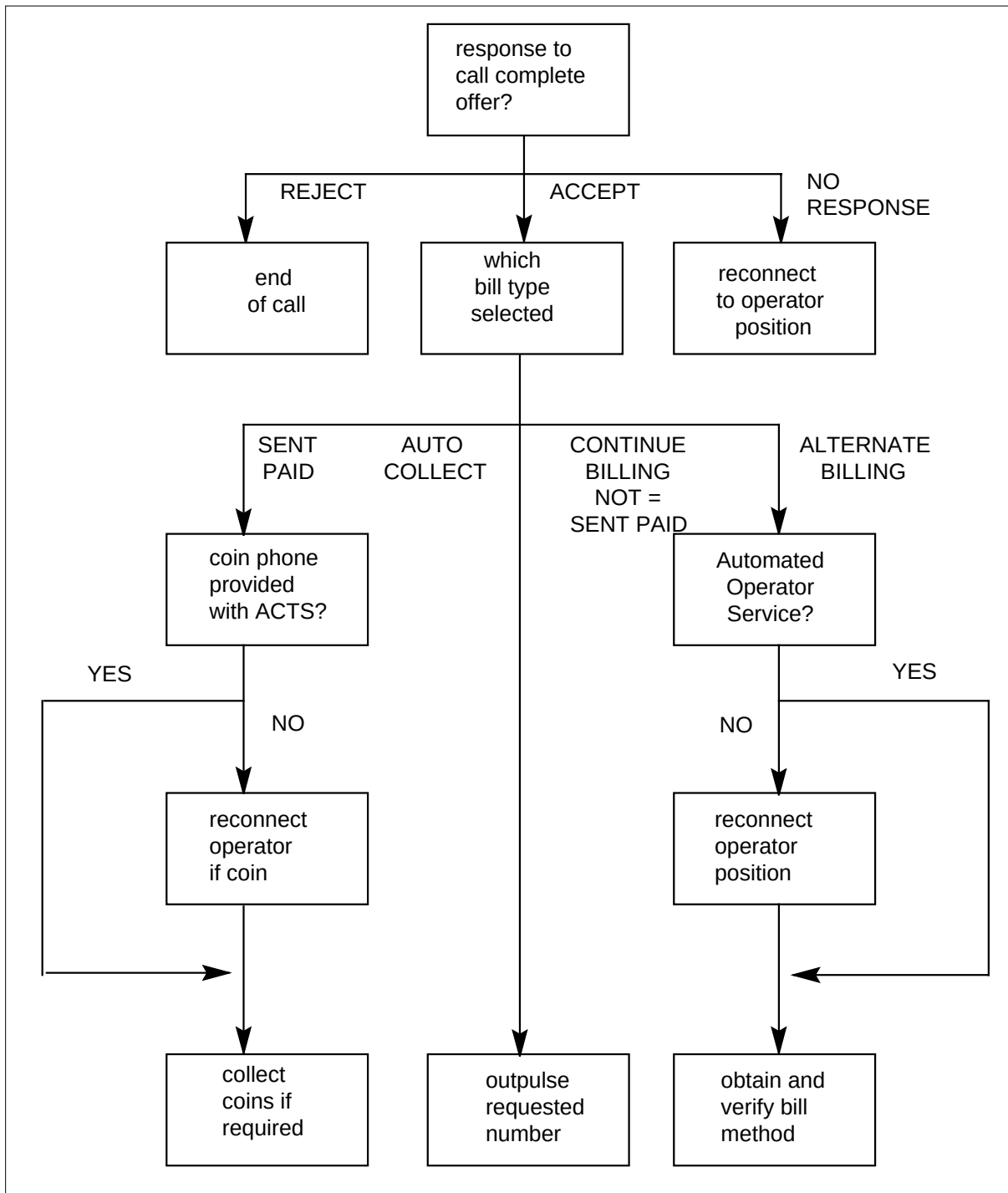
ADACC Alternate Billing Not Supported by DAS

When the DMS switch receives the COMPLETE CALL message from the DAS, it may, in place of a billing option selection, contain a value (0) defined in the protocol that indicates that the Alternate Billing for ADACC feature is not supported. In this case, the DMS switch checks the valid billing options that were sent to the DAS in the CALL COMPLETION ARU CONNECT message. In those cases where only a SINGLE billing option was valid, the DMS switch will then proceed with the call completion service as if the

Automated DACC with Alternate Billing (continued)

subscriber had selected the indicated billing option. If multiple billing options are valid, then a new DAS LOG is produced and the call is taken down.

In those cases where it is known that the DAS does not support Alternate Billing for ADACC, the OTC has datafill control over whether or not to enable this mode of operation via the BILTYPES field in table ADACCOPT. If the OTC enters a single billing option for BILTYPES, then call completion service using that billing type will be provided to the subscriber. If a billing option of NONE is entered in table ADACCOPT, then the standard method of billing used prior to this optional feature is used.

Automated DACC with Alternate Billing (continued)**Call Processing Actions for Each Billing Option**

Automated DACC with Alternate Billing (continued)

Note: There are two situations that modify the use of the billing options entered in ADACCOPT. First, the DAS database can indicate Auto Collect billing, which preempts any options entered in ADACCOPT. Second, if a DA call is billed as SENTPD, and both CONTBIL and SENTPD are entered in ADACCOPT, CONTBIL is the only valid billing option that is sent to the DAS.

As an example, assume that the datafill for table ADACCOPT is entered as illustrated below:

MAP display example for table ADACCOPT

ACCKEY	BILTYPER	CCREQUE	DISPLAY
411 STATION	SENTPD	ALTBIL	GEN S
411 COIN 100	ALTBIL	DA	C 411_CC

With this datafill, if the DAS did not support the Alternate Billing option for ADACC, for a 411 STATION call a DAS Log would be produced and the call would be taken down because multiple billing options (SENTPD and ALTBIL in field BILTYPER) would be valid billing options. On the other hand, since ALTBIL is the only valid billing option available for a 411 COIN call, it would be provided call completion service and would be billed by any appropriate Alternate Billing method.

ADACC alternate billing (call example)

The following are some example call scenarios that illustrate the sequence of events for particular call situations. All of the examples below assume that field BILTYPER in table ADACCOPT is set to ALL (Sent Paid, Alternate Billing, and Continue Billing) for call type 411 and the appropriate DA service class.

DA call from coin line with no restrictions (call example)

A subscriber dials 1+411 from a nonrestricted coin line. The DA call is provided ACTS service, so the subscriber is prompted via an ACTS announcement to deposit the proper coins for the DA call. The call is then presented to DA operator who performs the database search requested by the subscriber, selects the listing to be quoted, and releases the call to an audio announcement. The valid billing options presented to the subscriber are Continue Billing and Alternate Billing. Sent Paid is not offered since Continue Billing is the same as Sent Paid.

Automated DACC with Alternate Billing (continued)

If the subscriber selects the Continue Billing option, an AMA record for the DA call is produced, and an ACTS announcement prompts the subscriber to deposit the proper amount for the call completion service, including any surcharges. The subscriber deposits the coins and the requested number is automatically outpulsed. Standard coin recall periods apply once the caller has been connected to the requested number. When the subscriber goes on-hook, coins are collected and an AMA record is produced for the TA portion of the call. If the call is not answered, coins are returned when the subscriber goes on-hook.

DA call from prison line with restricted billing (call example)

A subscriber dials 1+411 from a prison line. Sent Paid is allowed in table DARSTBIL for the Restricted Billing Class of this phone, so the call is connected to a DA Operator Position. The operator performs the database search requested by the subscriber, selects the listing to be quoted, and releases the call to an audio announcement. Automatic call completion is available, but the prison line is restricted to Collect Only billing in table RESTBIL for the TA call completion portion of this call. The only billing option presented to the subscriber is Alternate Billing.

If the subscriber selects this option, the call is either sent to any indicated Automated Operator Service or is routed to an Operator Position. Once the billing method has been verified, the requested number is outpulsed.

MCCS DA call from station line with no restrictions (call example)

A subscriber dials 0+411 and is provided with an announcement to enter a calling card number. When the calling card number has been entered and validated, the call is connected to a DA Operator Position. The DA operator performs the database search requested by the subscriber, selects the listing to be quoted, and releases the call to an audio announcement. The valid billing options presented to the subscriber are Continue Billing, Sent Paid, and Alternate Billing. If the subscriber selects the Continue Billing option, an AMA record for the DA call is produced and the requested number is outpulsed.

Note: The subscriber is not required to enter the calling card number again. When the call is completed, an AMA record for the TA call is produced and is also billed to the calling card number.

NOAMA DA call from hotel line provided with MCCS (call example)

A subscriber dials 411 from a hotel line and is connected to a DA Operator Position. The DA call is not billable, so the operator performs the database search requested by the subscriber, selects the listing to be quoted, and releases the call to an audio announcement. The valid billing options presented to the subscriber are Sent Paid and Alternate Billing.

Automated DACC with Alternate Billing (continued)

If the subscriber selects the Alternate Billing option, a no charge AMA record for the DA call is produced and an MCCS announcement prompts the subscriber to enter a calling card number or enter 0 to route to an operator for billing. The subscriber enters a calling card number (which is checked for validity), and the requested number is outpulsed.

Note: A hotel room number must have been entered to avoid going to an Operator Position). When the subscriber goes on-hook after having been connected, an AMA record for the TA portion of the call is produced.

NOAMA DA Call for an Auto Collect Requested Number (call example)

A subscriber dials 411 from a station line and is connected to a DA Operator Position. The DA call is not billable, so the operator performs the database search requested by the subscriber, selects the listing to be quoted, and releases the call to an audio announcement. The requested number selected is marked as having auto collect billing (i.e., billed to the requested number) for call completion. The subscriber selects the call completion offer, a no charge AMA record for the DA call is produced, and the requested number is outpulsed. When the subscriber goes on-hook after having been connected, an AMA record for the TA portion of the call is produced and is marked for Auto Collect billing.

BR14147 - Restricted Billing Changes for ADACC Alternate Billing

This feature makes two changes which affect an Operating Company using Directory Assistance. First, it allows the Operating Company to assign separate billing restrictions for Toll and Assist (TA) service and Directory Assistance (DA) service for every assigned Restricted Billing Class. Second, it allows the assignment of DA billing options in table DABILL and Automatic DA Call Completion (ADACC) options in table ADACCOPT for every assigned Restricted Billing Class.

Seperate TA and DA billing restrictions

Background: As one of the uses for table SPLDNID, an Operating Company can assign a Restricted Billing Class to certain directory numbers (e.g., prisons, customer-owned coin telephones, hospitals, etc.) which restricts the billing methods which may be used by that directory number. The Restricted Billing Class number assigned in SPLDNID is used to index table Restricted Billing (RESTBIL), which defines the types of billing methods (collect, calling card, bill to third, etc.) that are allowed. A single billing method or any combination of valid billing methods available can be specified.

The following is an example of table SPLDNID which shows the two methods of assignment of a Restricted Billing Class.

Automated DACC with Alternate Billing (continued)**MAP display example for table SPLDNID**

SPLDN	SPLSEL					
9197330800	RSTRCTD	31				
9194906011	COIN	STD	ACTS	Y	75	

An Operating Company enters the directory number in table SPLDNID, and then a variable number of data fields. The first data field entered for all entries is a "selector" field that determines the number and type of the remaining data fields to be entered.

The RSTRCTD selector identifies the directory number as being restricted to certain billing methods. The only other data field to be entered is a Restricted Billing Class number in the range of 0 to 99.

The COIN selector identifies the directory number as being a public coin telephone. The Operating Company then enters data fields that specify if the Local Coin Type is Standard (STD) or Special (SPL), if the coin phone is Automatic Coin Toll Service (ACTS) compatible, and if this is a restricted coin telephone. If the Operating Company enters a "Y" to the RESCOIN prompt, then a Restricted Billing Class number needs to be entered to specify the billing restrictions that are applied to this coin directory number.

The following is an example of table RESTBIL which shows how billing methods are assigned to a Restricted Billing Class.

MAP display example for table RESTBIL

BILCLASS	SCRNDISP	BILTYPES
31	31PRISON	(COL) (CC) (3RD)
75	75HOTEL	(SPLCLG) (SPLCLD)

Field SCRNDISP field allows the Operating Company to specify a special screen display to be presented to the TOPS operator on call arrival. This display can be up to 8 characters in length, and appears in place of the class of service field on the operator screen.

Field BILTYPES is used to specify the allowable billing types for the Restricted Billing Class. The allowable billing types which can be entered are PD (sent paid), COL (collect), CC (calling card), 3RD (third number billing),

Automated DACC with Alternate Billing (continued)

SPLCLG (calling special billing), and SPLCLD (called special billing). Up to six billing types can be entered for a Restricted Billing Class.

Currently when a Restricted Billing Class is assigned to a directory number in table SPLDNID, the methods of billing that are entered in table RESTBIL for that Restricted Billing Class apply to both TA and DA calls from that directory number. The tariffs for particular areas determine the types of billing which are allowed for the various types of restricted phones within that area.

The tariff rules (i.e., the billing methods that are allowed) for DA traffic are not the same as for TA. Thus there might be multiple DA tariff areas with a single TA tariff area, which means that multiple Restricted Billing Classes for DA would correspond to a single Restricted Billing Class for TA.

This feature establishes the means to allow for the independent assignment of billing restrictions for TA and DA service based upon the Restricted Billing Class assigned.

New table DARSTBIL: Note: The design approach implemented below provides the needed capability in the most expedient manner for the timeframe in which it must be provided to satisfy the requirements for DA service. When future services are added which have a similar need to provide unique billing restrictions, the limits of the expandability of this approach will need to be addressed.

A new table Directory Assistance Restricted Billing (DARSTBIL) is created which provides the same function for Directory Assistance (DA) calls as the Restricted Billing (RESTBIL) table provides for Toll and Assist (TA) calls. It is indexed by a Restricted Billing Class number, and specifies the allowed methods of billing for DA calls for each Restricted Billing Class entered.

An example of an entry in table DARSTBIL is presented below.

MAP display example for table DARSTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31DAPRSN	(COL) (CC) (3RD)
75	94	94DAHOTL	(SPLCLG) (SPLCLD)

As with table RESTBIL, the SCRNDISP field allows the Operating Company to specify a special screen display to be presented to the TOPS operator on call arrival. Field BILTYPES is used to specify the allowable billing types for the specified Restricted Billing Class. An explanation of the use for field

Automated DACC with Alternate Billing (continued)

AMARBC is contained in the section entitled 'Field AMARBC in Tables RESTBIL and DARSTBIL' below.

The Restricted Billing Class number assigned to a particular directory number in table Special Directory Number Identification (SPLDNID) is used as the index into BOTH table RESTBIL and DARSTBIL. This imposes a restriction that two directory numbers which have the same billing restrictions for TA, but DIFFERENT billing restrictions for DA service (or vice versa), must be assigned DIFFERENT Restricted Billing Class numbers in table SPLDNID.

Note: To eliminate this restriction would require the ability to assign TWO Restricted Billing Class numbers to each directory number, one for TA and one for DA service. Unfortunately the structure of table SPLDNID currently limits the amount of data that can be stored per entry (i.e., directory number) and is not easily modified.

The following example illustrates the datafill for tables SPLDNID, RESTBIL, and DARSTBIL necessary to provide the assignment of an independent combination of TA and DA billing restrictions.

Imagine that two directory numbers have the following TA and DA billing restriction requirements:

Example TA and DA billing restrictions

Directory Number	TA Restrictions	DA Restrictions
9197330800	Collect Only	Calling Card Only
9194906011	Collect Only	Calling Card and Third Number

As each directory number can only be assigned ONE Restricted Billing Class in table SPLDNID, and that number is used as the index into BOTH table RESTBIL and table DARSTBIL, the only way to assign the separate TA and DA billing restrictions is to assign a UNIQUE Restricted Billing Class number in table SPLDNID for each separate combination of TA and DA billing restrictions, as illustrated below:

Automated DACC with Alternate Billing (continued)

MAP display example for table SPLDNID

SPLDN	SPLSEL	
9197330800	RSTRCTD	31
9194906011	RSTRCTD	75

MAP display example for table RESTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31PRISON	(COL)
75	94	94PRISON	(COL)

MAP display example for table DARSTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31DAPRSN	(CC)
75	94	94DAPRSN	(CC) (3RD)

Note: This design requires the assignment of more Restricted Billing Classes to accommodate independent TA and DA billing combinations. Currently the assignment of only 100 Restricted Billing Class numbers is supported. As new services are added whose billing requirements differ from that of TA and DA service, this design approach would require the assignment of even more Restricted Billing Classes, and increases the potential of exceeding 100 Restricted Billing Class numbers.

Field AMARBC in tables RESTBIL and DARSTBIL: As the example above illustrates, the design for this feature requires the assignment of more Restricted Billing Classes in order to provide independent billing restrictions for TA and DA. At the present time, this Restricted Billing Class number is recorded in the Automated Message Accounting (AMA) billing record. Bellcore defines a list of suggested values to indicate either the type of restricted phone or the allowable billing methods (or both). The approach implemented with this feature no longer allows this strict one-for-one assignment of Restricted Billing Class numbers to such a Bellcore-defined value.

To allow for the recording of the Bellcore-suggested values of the Restricted Billing Class in the AMA billing record, the AMA Restricted Billing Class

Automated DACC with Alternate Billing (continued)

(AMARBC) field is provided in both the new DARSTBIL table and as a new field in the existing RESTBIL table. The AMARBC field in table RESTBIL specifies the value to record as the Restricted Billing Class on AMA for TA calls, and the AMARBC field in table DARSTBIL specifies the value to record for DA calls.

Since the data layout in tables RESTBIL or DARSTBIL is identical, the following is an example of the format of a new entry in either.

MAP display example for table RESTBIL / DARSTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31PRISON	(COL) (CC) (3RD)
75	94	94PRISON	(SPLCLG) (SPLCLD)

Table Restricted AMA (RESTAMA) is used to define what is recorded for the calling Service Class (non-coin, coin, hotel) field on the AMA billing records. With the introduction of this feature the AMARBC field (either from table RESTBIL or DARSTBIL) is used as the index into RESTAMA rather than the actual Restricted Billing Class from SPLDNID.

With the introduction of this feature the AMARBC field is also used by the Automated Alternate Billing Service (AABS) feature in messaging to the Voice Service Node (VSN). The AMARBC value rather than the actual Restricted Billing Class is sent to the VSN to indicate which type of announcement should be played to the subscriber.

DA billing options by restricted billing class

Background: Table DABILL is used to indicate billing requirements for specific call types and service classes based upon the prevailing tariffs. DABILL is indexed using a two-part key composed of the Call Origination Type (COTYPE) and the Service Class (SRVCLS) of the call.

The following is an example of datafill for table DABILL:

MAP display example for table DABILL

DABKEY	REQNUM	CLGRQD	SERVNAME	ENHAMA	CCSURCHG	DACC
555 RESTRICT	N	N	TOLLFREE	Y	N	AUTO
411 HOTEL	Y	Y	LOCALDA	N	N	OH

Automated DACC with Alternate Billing (continued)

Table DABILL specifies on a call type and service class basis whether or not a particular call is billable, indicated by field SERVNAME. If field SERVNAME is set to TOLLFREE the call is not billable; if set to a valid service name, the call is billable.

Field CLGREQ in table DABILL specifies for a particular call type and service class if the calling number is required for billing. Field REQNUM specifies if the "requested" number for a particular call type and service class is required for billing purposes (the "requested" number refers to the number returned in the DA database query).

If an entry is not found in table DABILL, then it is assumed that REQNUM and CLGRQD values are "N" and SERVNAME is TOLLFREE.

Field DACC specifies the type of DA Call Completion (Automatic, Operator Handled, both, or none) which is allowed for a particular call type and service class. Field ENHAMA indicates whether or not to produce "enhanced" AMA records which indicate that DA call completion has been performed. Field CCSURCHG indicates whether or not to add a surcharge to the charges for a call when DA call completion has been performed.

Table ADACCOPT is indexed on a call type/service class basis like table DABILL. The Operating Company specifies for a call type/service class combination which billing options can be offered to the subscriber for Automatic DA Call Completion.

Field BILTYPES allows the Operating Company to specify the billing options to be offered to the caller. Values of CONTBIL (continue billing), SENTPD (sent paid), ALTBIL (alternate billing), ALL (all three billing options), or NONE can be specified.

Field CCREQUE allows the Operating Company to specify the queue in which a call completion re-connect is placed to be presented to an operator. Field DISPLAY allows the Operating Company to specify the display for the call type presented to the operator on a call completion re-connect.

The following is an example of datafill for table ADACCOPT:

Automated DACC with Alternate Billing (continued)

MAP display example for table ADACCOPT

ACCKEY		BILTPES	CCREQUE	DISPLAY
411	COIN	ALTBILL	GEN	S
555	STATION	CONTBIL ALTBIL	GEN	S
555	RESTRICT	SENTPD	XFR1	C 555RST

Both of these tables are indexed using the Service Class of the call, of which RESTRICT indicates the service class for restricted phones. The limitation of this approach is that, without being able to specify a Restricted Billing Class, the options entered in tables DABILL and ADACCOPT with a Service Class of RESTRICT apply to ALL restricted phones. In addition, calls from restricted coin telephones use the options assigned for a Service Class of COIN instead of RESTRICT. This feature adds the capability to specify options in tables DABILL and ADACCOPT for individual Restricted Billing Classes for restricted and restricted coin directory numbers.

Change to key for tables DABILL and ADACCOPT: In order to be able to specify options by Restricted Billing Class in tables DABILL and ADACCOPT, this feature changes the key used to access these tables. The data fields in each are unchanged.

Currently the two-part key used to access each table consists of a Call Origination Type (COTYPE) and Service Class (SRVCLS). This feature adds a third part of a Restricted Billing Class to the key to these tables. This Restricted Billing Class number is only specified, however, when the SRVCLS portion of the key for a tuple is either RESTRICT or COIN.

This creates one problem, however, since not all coin telephones are restricted, and yet a Restricted Billing Class is now required when the Service Class is COIN. To allow the Operating Company to specify the appropriate billing options for coin telephones which are not restricted, this feature allows the assignment of a Restricted Billing Class of 100 when the Service Class entered is COIN. The options entered for a Restricted Billing Class of 100 are interpreted as applying to all non-restricted coin telephones.

An example of the new format for tables DABILL and ADACCOPT is presented below.

Automated DACC with Alternate Billing (continued)

MAP display example for table DABILL

DABKEY	REQNUM	CLGRQD	SERVNAME	ENHAMA	CCSURCHG	DACC	
411 STATION		Y	Y	LOCALDA	N	N	OH
411 COIN 98		Y	N	TOLLFREE	N	N	AUTO
411 COIN 100		Y	Y	LOCALDA	N	N	ALL
555 HOTEL		Y	Y	LOCALDA	N	N	OH
555 RESTRICT 74		N	N	TOLLFREE	Y	N	NONE

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 COIN 98	ALTBILL	GEN	S
411 COIN 100	ALTBILL	GEN	S
555 STATION	CONTBIL ALTBIL	GEN	S
555 RESTRICT 74	SENTPD	XFR1	C 555RST

This feature causes the options specified in these tables to be applied to DA calls from restricted telephones for the indicated Restricted Billing Class.

Interactions

This part describes the interactions between the NTXE36AA feature package, other features, and subscribers.

AF1777: Automatic DA call completion

Feature interactions

ADACC is offered as part of DA service. This feature package will not work without the DA software (NTXA91AA).

Subscriber/system interactions

With ADACC, the subscriber will receive an automated announcement to offer and assist in completing a call originally dialed as a DA call. In the past, the subscriber had to reconnect to an operator to complete the call to the requested number. With ADACC, the subscriber will be prompted to either press a digit on the DTMF keypad or to respond "Yes" or "No," if voice recognition is supported, to indicate whether ADACC is desired or not.

NC0316: DA call completion restrictions

This feature requires the presence of the TOPS DA feature package. If the DA feature package is not present, then this feature is not available.

Automated DACC with Alternate Billing (continued)

If an SLT code is used, then optional feature NC0149, Two Digit ANI - TOPS Office (one of the packages NTXN81AA, NTXQ79AA, or NTP56AA) is required.

BR32608 - ADACC Office-wide restrictions

This feature imposes restrictions on DACC in addition to those imposed by feature NC0316 (in this package). These restrictions are described in the operation section under the BR32608 feature.

AF2086: Automatic DACC with Alternate Billing

This feature is an enhancement to the TOPS DA feature Automatic DA Call Completion, and as such requires the presence of that feature package. In turn, Automatic DA Call Completion is an enhancement to the TOPS DA feature package, and requires the presence of the DA package. If either of these features is not present, then this feature is not available.

This feature interacts with Automated Alternate Billing Service (AABS), Mechanized Calling Card Service (MCCS), Automated Calling Card Service (ACCS), Automated Coin Toll Service (ACTS), and TOPS Expanded Bellcore AMA Format (EBAF).

In an Operator Centralization (OC) environment, the operator performing the DA functions is located in the Host office, but the outpulsing of the requested number for ADACC is performed by the Remote office. Per normal practice, the Host office must be upgraded with this feature package before upgrading of the Remote offices.

BR14147: Restricted Billing Changes for ADACC Alternate Billing

In order to provide the necessary capability for the TOPS DA package, this feature adds the new field AMARBC to table RESTBIL, which is part of base TOPS packaging and thus affects all existing TOPS offices.

This feature impacts the manner of accessing the data in table RESTAMA. It is now indexed using the AMARBC field value (from RESTBIL for TA calls, from DARSTBIL for DA calls) rather than the actual Restricted Billing Class number from table SPLDNID.

This feature impacts the Restricted Billing Class number recorded in the AMA billing records for calls from restricted directory numbers. The value of the AMARBC field (from RESTBIL for TA calls, from DARSTBIL for DA calls) is now recorded rather than the actual Restricted Billing Class number.

This feature modifies the interaction of the AABS feature to the Voice Service Node (VSN). The Restricted Billing Class number in the message sent by

Automated DACC with Alternate Billing (continued)

AABS to the VSN is no longer the actual Restricted Billing Class number, but is instead the value of the AMARBC field (from RESTBIL for TA calls, from DARSTBIL for TA calls).

Limitations and restrictions

AF1777: Automatic DA Call Completion

For proper billing of DA call completion, TOPS Extended Bellcore AMA Format (EBAF) must be supported.

NC0316: DA call completion restrictions

Only one DA/INT service call may be present at a position. The fact that only one DA/INT call per position is allowed is a limitation imposed by the various DAS vendors.

The fact that a DA call will not be presented to a position with a TA call on hold is an existing limitation in TOPS. This feature does not attempt to change the current methodology of presenting calls to a position.

AF2086: Automatic DACC with Alternate Billing

The feature is designed to use external ARUs to perform the quoting of the requested number and the offer of Automatic DA Call Completion and the Alternate Billing options available.

This feature requires TOPS Expanded Bellcore AMA Format (EBAF). Either Phase 1 or Phase 2 EBAF must be used since Phase 0 (which is the current Bellcore AMA format) cannot record the Directory Assistance information for proper billing of DA calls. The use of Phase 2 EBAF is highly recommended.

NT AMA does not contain fields to support the recording of DA call completion information for proper billing of Automatic DA Call Completion (ADACC) service.

BR14147: Restricted Billing Changes for ADACC Alternate Billing

The current limitation to assign only 100 Restricted Billing Class numbers is unchanged.

Activation/deactivation by the end user

Automated DACC with Alternate Billing requires no activation or deactivation by the end user.

Billing

Refer to "ADACC Restrictions Based on Method of Billing" in this document for billing considerations associated with ADACC

Automated DACC with Alternate Billing (continued)

Station Message Detail Recording

Automated DACC with Alternate Billing does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Automated DACC with Alternate Billing. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Datafill sequence

The following table lists the tables that require datafill to implement Automated DACC with Alternate Billing. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Automated DACC with Alternate Billing

Table	Purpose of table
DATRKOPT	Directory Assistance Trunk Options. This table is used to specify the various DA options on a trunk group basis for TOPS, IT, and ATC trunk groups.
DABILL	Directory Assistance Billing. This table is used to specify a service name to indicate if a call is billable, and whether a calling number and requested number are required.
DACCSUR	Directory Assistance Call Completion Surcharge.
DACCLRS	Directory Assistance Call Completion Local Rate Step.
DARSTBIL	DA Restricted Billing. Defines billing restrictions for DA calls.
OSSCAT	Restrict billing class to index table SLTANIID
SLTANIID	Restrict billing class to index table RESTBIL.
RESTBIL	Restricted Billing. Defines billing restrictions for toll and assist calls.
ADACCOPT	Automatic DA Call Completion Options. Specifies billing methods for automatic DA call completion.
TOPEATRK	Defines carrier for interLATA calls for call completion restrictions.
LATAXLA	Use for call completion restrictions. Used for intraLATA calls.
VROPT	Voice Response Options. This table contains parameters required by external voice response units.

Automated DACC with Alternate Billing (continued)

Datafilling table DATRKOPT

The following table shows the datafill specific to Automated DACC with Alternate Billing for table DATRKOPT. Only those fields that apply directly to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DATRKOPT

Field	Subfield or refinement	Entry	Explanation and action
DACC		AUTO	Set to AUTO for ADACC.
BILLRQD		Y	Set to Y for ADACC.
CLGNRQD		Y	Set to Y for ADACC.
REQNRQD		Y	Set to Y for ADACC.

Datafill example for table DATRKOPT

The following example shows sample datafill for table DATRKOPT.

MAP display example for table DATRKOPT

GRPKEY	MULTREQ	DACC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TOPSICMF	0	AUTO	Y	Y	Y	PRIMARY

Datafilling table DABILL

The following table shows the datafill specific to Automated DACC with Alternate Billing for table DABILL. Only those fields that apply directly to

Automated DACC with Alternate Billing (continued)

Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DABILL

Field	Subfield or refinement	Entry	Explanation and action
SRVCLS		COIN or RESTRICT	For the service classes of COIN and RESTRICT, field SRVCLS, a Restricted Billing Class must be specified to allow marking DA calls that originate from restricted stations as billable.
RBILNUM		0-100	Restricted billing number defined in table SPLDNID. This field is valid only if subfield SRVCLS is COIN or RESTRICT.
REQNUM		Y	Set to Y for ADACC.
CLGRQD		Y	Set to Y for ADACC.
SERVNAME		alphanumeric	Field SERVNAME is set to TOLLFREE for a call type/service class/restricted billing class that is not billable. Or, set field SERVNAME to valid service name for a billable call.
DACC		AUTO, ALL	Field DACC indicates the types of call completion available on a trunk group basis. Set field DACC to AUTO or ALL for calls to be eligible for Automatic DA Call Completion.

Datafill example for table DABILL

The following example shows sample datafill for table DABILL.

MAP display example for table DABILL

DABKEY	REQNUM	CLGRQD	SERVNAME	ENHAMA	CCSURCHG	DACC
555 COIN 5	Y	Y	LOCALDA	Y	Y	AUTO

Datafilling table DACCSUR

The following table shows the datafill specific to Automated DACC with Alternate Billing for table DACCSUR. Only those fields that apply directly to

Automated DACC with Alternate Billing (continued)

Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DACCSUR

Field	Subfield or refinement	Entry	Explanation and action
CCTYPE		AUTO or OH	Call completion type for automatic or operator-handled calls.
UNSPEC		0-255	Unspecified. Enter surcharge for calls with an unknown originating class of service.
STA		0-255	Station. Enter surcharge for station calls.
HOTEL		0-255	Hotel. Enter surcharge for hotel calls.
COIN		0-255	Coin. Enter surcharge for coin calls.
REST		0-255	Restricted. Enter surcharge for restricted calls.

Datafill example for table DACCSUR

The following example shows sample datafill for table DACCSUR.

MAP display example for table DACCSUR

CCTYPE	UNSPEC	STA	HOTEL	COIN	REST

AUTO	0	0	25	25	0

Datafilling table DACCLRS

The following table shows the datafill specific to Automated DACC with Alternate Billing for table DACCLRS. Only those fields that apply directly to

Automated DACC with Alternate Billing (continued)

Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DACCLRS

Field	Subfield or refinement	Entry	Explanation and action
TARIFF		See subfields	Tariff name. Composed of subfields TARIFF and SCHTYPE.
	TARIFF	alphanumeric	Tariff name.
	SCHTYPE	STD or SPL	Schedule type.
SCHNAME		alphanumeric	Schedule name defined in table SCHED.
RATESTEP		0-999	Rate step for calculating charges.

Datafill example for table DACCLRS

The following example shows sample datafill for table DACCLRS.

MAP display example for table DACCLRS

TARIFF	SCHNAME	RATESTEP

TARIFF1 STD	LOCALDA	350

Datafilling table DARSTBIL

The following table shows the datafill specific to Automated DACC with Alternate Billing for table DARSTBIL. Only those fields that apply directly to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DARSTBIL (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
BILCLAS		0-100	Billing class. Number is defined in table SPLDNID.
AMARBC		0-100	AMA restricted billing class number on AMA for DA calls.

Automated DACC with Alternate Billing (continued)

Datafilling table DARSTBIL (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SCRNDISP		alphanumeric	Screen display in class of service field for a particular billing class.
BILTYPES		3RD, CC, COL, PD, SPLCLD, or SPLCLG.	Billing types.

Datafill example for table DARSTBIL

The following example shows sample datafill for table DARSTBIL.

MAP display example for table DARSTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31DAPRSN	(CC)
75	94	94DAPRSN	(CC) (3RD)

Datafilling table OSSCAT

The following table shows the datafill specific to Automated DACC with Alternate Billing for table OSSCAT. Only those fields that apply directly to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OSSCAT

Field	Subfield or refinement	Entry	Explanation and action
ANI		00-99	For DA call completion restrictions, the service class must be restricted to index table RESTBIL. Enter the ANI value signalled from the EO
CLGSERV		SPECIAL	Enter SPECIAL to search table SLTANIID using the ANI ID digits.

Datafill example for table OSSCAT

The following example shows sample datafill for table RESTBIL.

Automated DACC with Alternate Billing (continued)**MAP display example for table OSSCAT**

ANI	FORMAT	CLGSERV	REST	ROUTE
22	ANI	SPECIAL	NONE	N

Datafilling table SLTANIID

The following table shows the datafill specific to Automated DACC with Alternate Billing for table SLTANIID. Only those fields that apply directly to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SLTANIID

Field	Subfield or refinement	Entry	Explanation and action
SLTANI		0-99	Enter an ANI value for DA call completion restrictions. Access to this table is obtained from table OSSCAT. If an entry is found, this implies that the service class is restricted and the restricted billing class number is obtained from field RBILCLAS.
RBILCLAS		0-99	Enter value to index into table RESTBIL.

Datafill example for table SLTANIID

The following example shows sample datafill for table SLTANIID.

MAP display example for table SLTANIID

SLTANI	RBILCLAS	ONEPLUS	SLTAMA
22	0	Y	N

Datafilling table RESTBIL

The following table shows the datafill specific to Automated DACC with Alternate Billing for table RESTBIL. Only those fields that apply directly to

Automated DACC with Alternate Billing (continued)

Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table RESTBIL

Field	Subfield or refinement	Entry	Explanation and action
AMARBC		0-100	AMA restricted billing class number on AMA for DA calls.
BILTYPES			Prior to BCS33, Table RESTBIL allowed sent paid calls to be restricted by not including PD as a valid billing type in Field BILTYPES. With this BCS33 feature, this method still blocks normal sent paid TA calls (i.e. a 0- call from the PBX).
CCPDYTYP		ALL, LOCAL, NONE, TOLL	New field CCPDYTPS in Table RESTBIL allows restriction of sent paid DACC to toll and/or local numbers. The range is LOCAL, TOLL, ALL or NONE. The default is set to ALL if PD was included in field BILTYPES; otherwise the default is set to NONE. Field CCPDYTPS can only be changed from ALL or NONE if this feature package is purchased.

Datafill example for table RESTBIL

The following example shows sample datafill for table RESTBIL.

MAP display example for table RESTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31PRISON	(COL)
75	94	94PRISON	(COL)

Datafilling table ADACCOPT

The following table shows the datafill specific to Automated DACC with Alternate Billing for table ADACCOPT. Only those fields that apply directly

Automated DACC with Alternate Billing (continued)

to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ADACCOPT

Field	Subfield or refinement	Entry	Explanation and action
RBILNUM		0-100	Restricted billing number defined in table SPLDNID. This field is valid only if subfield SRVCLS is COIN or RESTRICT.

Datafill example for table ADACCOPT

The following example shows sample datafill for table ADACCOPT.

MAP display example for table ADACCOPT

ACCKEY		BILTPES	CCREQUE	DISPLAY
411 COIN	98	ALTBILL	GEN	S
411 COIN	100	ALTBILL	GEN	S
555 STATION		CONTBIL ALTBIL	GEN	S
555 RESTRICT	74	SENTPD	XFR1	C 555RST

Datafilling table TOPEATRK

The following table shows the datafill specific to Automated DACC with Alternate Billing for table TOPEATRK. Only those fields that apply directly to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPEATRK

Field	Subfield or refinement	Entry	Explanation and action
LATANM		alphanumeric	This value is used along with the requested number to index table LATAOLA
DNLOOK		Y or N	For an interLATA call, this field is checked for a primary carrier. If set to Y, the carrier is obtained from table DNPIC. If set to N, the carrier in field CARRIER of table TOPEATRK is used.

Datafill example for table TOPEATRK

The following example shows sample datafill for table .TOPEATRK

Automated DACC with Alternate Billing (continued)

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			

TOPSICMF	CONFORM	777	LATA1	TEAD	TEAR	TEAI
919	N	N	\$			

Datafilling table LATAXLA

The following table shows the datafill specific to Automated DACC with Alternate Billing for table LATAXLA. Only those fields that apply directly to Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LATAXLA

Field	Subfield or refinement	Entry	Explanation and action
LATACODE		alphanumeric	This table is indexed using the LATA name from Table TOPEATRK and the requested number.

Datafill example for table LATAXLA

The following example shows sample datafill for table LATAXLA.

MAP display example for table LATAXLA

	LATACODE	LATA	STATE	EATYPE

LATA1	212220	INTRA	INTER	STD

The above example indicates that a call completing to LATA1 with digits 212220 will result in an Intra-LATA call.

Checking table VROPT

The following table shows the datafill specific to Automated DACC with Alternate Billing for table LATAXLA. Only those fields that apply directly to

Automated DACC with Alternate Billing (end)

Automated DACC with Alternate Billing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table VROPT

Parameter	Explanation and action
DACC_BILL_TO_THIRD	This new parameter indicates whether the bill-to-third method of payment is allowed for ADACC. Enter Y or N.
DACC_LOCAL_TOLL_ACTIVATION	This new parameter allows restriction of DACC on an office-wide basis. Valid values are: - TOLL - indicates that only calls that will be toll calls will be eligible for completion. - LOCAL - indicates that only calls that will be local calls will be eligible for completion. - ALL - indicates that all calls will be eligible for completion. This is the default value. - NONE - indicates that no calls will be allowed to complete. Setting the parameter to this value turns off DACC for the entire office.

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

MAP display example for table VROPT

PARM	VALUE
DACC_BILL_TO_THIRD	Y
DACC_LOCAL_TOLL_ACTIVATION	ALL

Translation verification tools

Automated DACC with Alternate Billing does not use translation verification tools.

SERVORD

Automated DACC with Alternate Billing does not use SERVORD.

Automated Intercept Call Completion

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: OSDA0003

Release applicability

BCS34

Prerequisites

To operate, Automated Intercept Call Completion requires Operator Services Basic, OSB00001.

Description

This functionality is provided by the following features:

Feature number	Feature name
NC0146	
BK00949	No AMA Produced on First Leg of AINTCC Billable
50039957	DA positions in an OC network

Automated Intercept Call Completion (AINTCC) is a service that automatically connects a subscriber who dials an intercepted number to the referral number, which is the called party's new number, without originating a new call. This may occur with or without an announcement of the new number.

AINTCC can be utilized by a business moving to a new locality requiring a different phone number. Obviously, for competitive reasons, it is important for the business to have its customers connected without the inconvenience of noting a new number and originating a second call. By charging for the service, this feature provides a source of revenue for the Operating Company (OC) offering AINTCC.

AINTCC allows call completion without necessarily playing an announcement of the new referral number. Thus, an office that provides AINTCC, saves on Audio Response Unit (ARU) facilities.

Automated Intercept Call Completion (continued)

Operation

The following paragraphs tell about Automated Intercept Call Completion operation.

Background

This section is divided under the following headings:

- Intercept service
- Intercept call types.

Intercept Service

Intercept calls are calls that are intercepted at the end office because the called number is no longer valid. These calls are then routed to a Traffic Operator Position System (TOPS) office over dedicated intercept or non-dedicated TOPS trunks. The calls are classified by table TOPS as requiring intercept or directory assistance service.

Intercept service is provided by TOPS using TOPS call processing facilities. Typically, the subscriber is quoted the referral number by an Audio Response System using synthesized speech. In the past, the subscriber had to note the quoted number and originate a new call in order to complete to the referral number. With AINTCC, the subscriber will be automatically connected to the referral number.

Intercept Call Types

The following types of intercept calls can be automatically completed with the presence of the optional AINTCC software package:

- Automatic Intercept Calls - For automatic intercept calls, the called number is transmitted to the DMS where the call is automatically processed and completed without the assistance of an operator.
- Intercept ONI and ANIF Calls - For intercept calls the called number is transmitted from the end office in the Automatic Number Identification (ANI) spill. Therefore, for Operator Number Identification (ONI) or ANI Failure (ANIF) the called number is not provided. The call is connected to an operator and the called number obtained from the subscriber. The operator enters the called number and releases the call to the Directory Assistance System (DAS). The DMS and the DAS via a message exchange complete the call without further operator assistance.
- Intercept Special - When an intercept special call arrives at a position, it may contain multiple listings (split referral). A split referral call is an automatic intercept call that is converted to special intercept because the DAS search results in multiple listings. For these calls, the operator would select the appropriate listing and, if possible, release the call to the DAS.

Automated Intercept Call Completion (continued)

The DMS and the DAS via a message exchange complete the call without further operator assistance.

The purpose of this optional feature is to provide the OC with the ability to offer Automated Intercept Call Completion on an incoming trunk group basis.

In order to provide AINTCC, the following topics must be considered:

- Signaling
 - In order to generate the correct AMA record in the originating End Office (EO), the only off-hook sent to the originating EO will be true answer by the referral party when the call is automatically completed.
 - ANI spill that contains the ID digits for intercept calls must be requested with a wink.
- Billing - There will be three Automatic Message Accounting (AMA) records associated with an AINTCC call. One billable AMA record will be generated in the originating EO. Two AMA records will be generated in the TOPS office; however, only one will be billable. This feature only assumes responsibility for AMA billing in the TOPS office. The originating EO may not generate AMA depending on whether or not it spills ANI.
- DMS/DAS protocol - To handle intercept call completion, the DMS/DAS protocol is modified.
- Optionality - To provide optionality from the DMS perspective, a new field is added to table DATRKOPT. This field determines if AINTCC is available on a particular trunk group.

Each of these topics is discussed in detail in the remainder of this document.

AINTCC Signaling

This section discusses the following:

- Typical AINTCC stages
- Off-hook considerations
- Intercept trunking
- Dedicated intercept trunks
- Combined trunks
- Wink ANI request

Automated Intercept Call Completion (continued)

Typical AINTCC stages

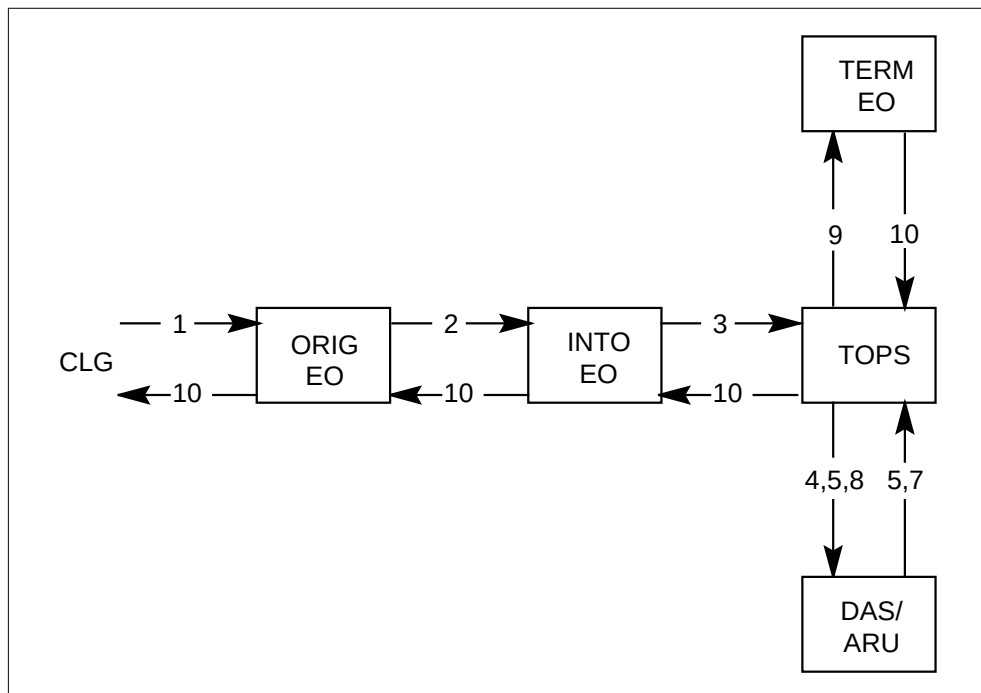
Typically, an intercept call will originate in an EO (originating EO) and be routed to a second EO (intercepting EO), which routes it to a TOPS office. The call will go through the following stages (refer to the following figure):

1. The calling party goes off-hook.
2. The originating EO routes the call to the intercepting EO.
3. The intercepting EO determines that the called number is an intercept number and routes the call to TOPS. Several methods of signaling can be used in this stage and will be discussed below.
4. TOPS determines that the call is an automatic intercept call and without operator assistance, informs the DAS of the new call.
5. DAS determines that the call is available for automated call completion and informs TOPS to select an appropriate ARU for the intercept announcement.
6. TOPS also determines that the call is available for automated call completion and informs the DAS of the ARU selected. The ARU quotes the referral number and informs the caller to stay on the line to be automatically connected.
7. The DAS informs the DMS to complete the call to the requested number.
8. The DMS informs the DAS that DMS/DAS messaging for the call is completed.
9. TOPS output pulses the call to the terminating EO, which applies ringing to the referral number.
10. The referral party goes off-hook and the off-hook is propagated back to the calling party.

If no announcement is necessary, the DAS will inform the DMS to complete the call without using an ARU in step 5. Steps 6 and 7 are not present for this case.

Automated Intercept Call Completion (continued)

Typical Automated Call Completion Stages



Off-hook considerations

In order to generate the correct AMA record in the originating EO, the only off-hook that should be sent to the originating EO is the off-hook generated by the referral party. Provisions are made by this feature to ensure that the following conditions do not cause an off-hook to be sent from the TOPS office prior to the referral party going off-hook:

- TOPS requests ANI:

TOPS must request ANI with a wink instead of an off-hook. This involves datafill changes in both the TOPS office and the intercepting EO. The required datafill changes are discussed in the "Wink ANI request" section of this document.

Note: Requesting ANI with wink does not have any adverse effects on other call types over a combined trunk.

- The call goes to position:

An automatic intercept call with multiple listings is converted to a special intercept call and presented to an operator. Typically, an off-hook is generated when a call arrives at a position. If TOPS determines that the intercept call has potential to be automatically completed, an off-hook will not be generated when the call arrives at the position.

Automated Intercept Call Completion (continued)

Since TOPS will not send an off-hook when at position for AINTCC calls, operator hold will not be applied. Therefore, if the calling party goes on-hook, the operator should release the call.

- The call is connected to an ARU:

Typically, when an intercept call is connected to an ARU, an off-hook is generated by the ARU and propagated to the originating EO by TOPS. For AINTCC, TOPS will not propagate the ARU off-hook to the originating EO.

Intercept Trunking

An Intercept call can arrive at a TOPS office over two types of trunk groups:

- Dedicated Intercept trunk groups
- Non-dedicated trunk groups.

Dedicated Intercept trunks

A dedicated Intercept trunk group is datafilled in table Trunk Group (TRKGRP) by specifying INTCPT in the STATCLAS field. An INTCPT type trunk group is a dedicated trunk group that only carries intercept traffic. All traffic on dedicated intercept trunks have a Call Origination (CO) type of INTC.

Combined trunks

A combined trunk group is a non-dedicated trunk group that can carry a combination of traffic. For combined trunk groups, the ANI spill contains an identification digit used to determine the CO type of the call. For intercept calls, the CO type is INTC.

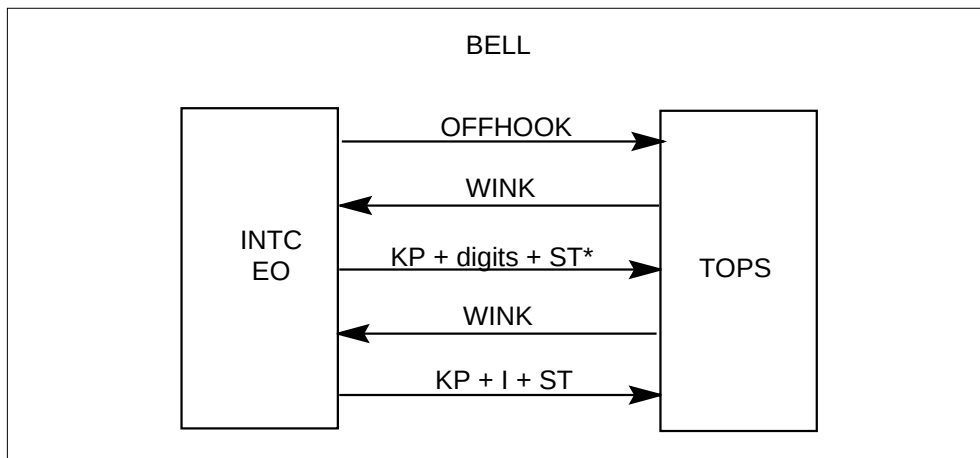
An Office Identification Code (OIC) type trunk group carries a combination of DA type traffic that includes intercept. A two digit identification code is passed in as the called digits. OIC codes can be datafilled in table TOPSOIC with a CO type of INTC.

Wink ANI request

As mentioned, AINTCC requires that the incoming TOPS trunk group that carries AINTCC traffic request ANI with a wink. The following 4 figures show the signaling that results for BELL, OSS, EAOSS, and AIS, respectively.

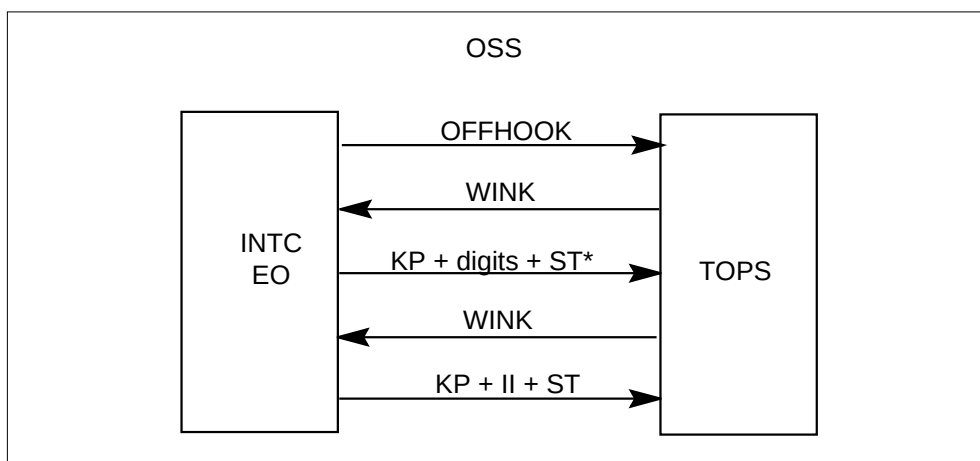
Automated Intercept Call Completion (continued)

BELL signaling for AINTCC



Note: ST* is a coded start pulse signal and I is the ID digit (typically 9) for INTC datafilled in table BELLCAT.

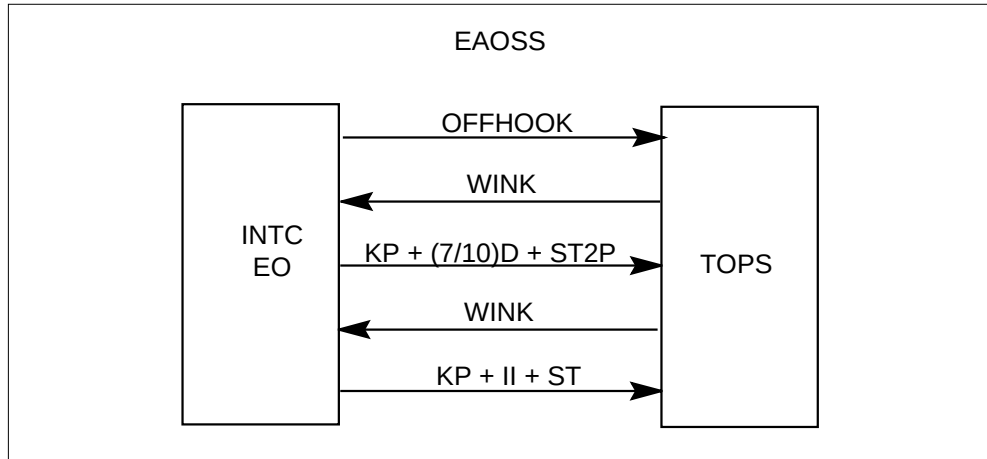
OSS signaling for AINTCC



Note: ST* is a coded start pulse signal and II are the ID digits for INTC datafilled in table OSSCAT. 30 = Blank Number Intercept, 31 = Special Intercept, and 32 = Regular Intercept.

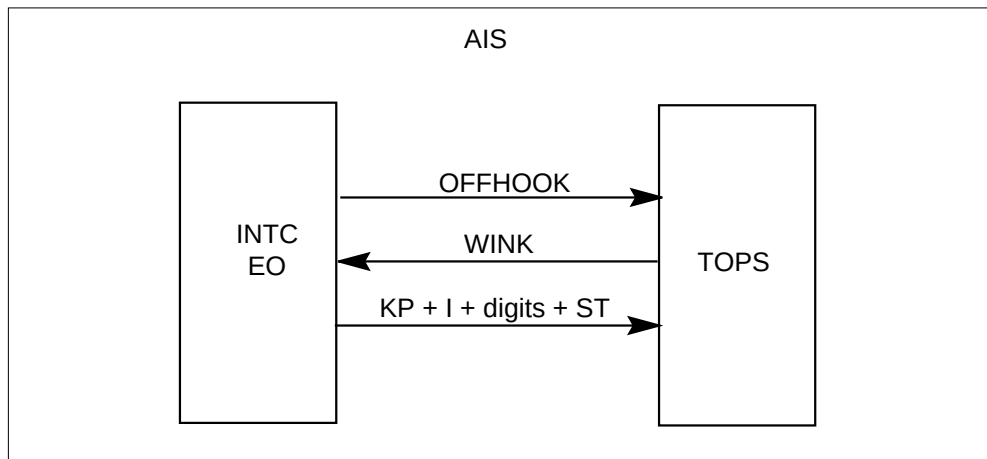
Automated Intercept Call Completion (continued)

EAOSS signaling for AINTCC



Note: II are the ID digits for INTC datafilled in table OSSCAT. 30 = Blank Number Intercept, 31 = Special Intercept, and 32 = Regular Intercept.

AIS signaling for AINTCC



Note: I is the ID digit (typically 9) for INTC datafilled in table AISCAT.

The various methods of trunking from the intercepting EO to the TOPS office are indicated below (field GRPTYP in table TRKGRP). It is assumed that the

Automated Intercept Call Completion (continued)

intercepting EO is a DMS-100. Other vendors may require changes in order to propagate true answer to the originating EO.

- AI to TOPS (AIS). When AIS signaling is used, field IPULSTYP in table TRKSGRP should be set to NP.

This feature adds a new field, called PROPAGAT, to table TRKGRP.AI. PROPAGAT indicates if the trunk group should supervise to propagate off-hook to the originating EO. This parameter is also used to prevent ringing when set to Y since only true answer will be received. The default for PROPAGAT will be N to indicate that supervision should not be setup to propagate the off-hook and ringing should be applied. For AINTCC, PROPAGAT should be set to Y.

Note: This method uses a dedicated intercept trunk.

- IT to TOPS (AIS). This method uses a dedicated intercept trunk.
- OP to TOPS (BELL). The EO must have field ANITYPE set to WK for OP trunks using wink ANI request.
- OP to TOPS (OSS).
- OP to TOPS (EAOSS). This feature adds new field to table TRKGRP.TOPS (CLGID=EAOSS) called ANIREQ to indicate how ANI is requested. The default will be OFFHK. For AINTCC, ANIREQ should be set to WINK. This type of signaling may not currently be supported in the EO.

BK00949 - No AMA Produced on First Leg of AINTCC Billable

This PRSDOC allows originator billing AMA records to be produced for calls receiving intercept treatment. This is for calls terminating to a station with the Automatic Intercept Call Completion (AINTCC) option assigned. If the originating leg of the call is billable, an AMA record will be produced regardless of whether the terminating leg was completed/answered or not.

With the AINTCC feature, it is necessary to allow recording of billable calls receiving intercept treatment that may ultimately be completed. Typically, calls terminating to an intercepted phone are extended to a TOPS office to query the Audio Response Unit (ARU) database for announcements and possible call completion to another directory number. It is not always known at the originating end office whether a call will receive call completion treatment or not. Therefore, recording of such calls must be assigned on a trunk group basis as to whether intercept treatment was received, rather than call completion, necessarily.

Automated Intercept Call Completion (continued)

Table AMATKOPT allows AMA options to be assigned on a trunk group basis. This table now includes an INTRCPTBILL option to allow recording of calls receiving intercept treatment over the assigned trunk group.

Following is an example of the AMA record produced for a call connecting to an intercepted number in the same end office:

MAP display example of AMA record

```
HEX ID: AA  STRUCTURE CODE:00001C  CALL CODE:006C
SENDER TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:11114C  TIMING IND:00000C
DATE:10729C  TIMING IND:00000C  STUDY IND:0000000C
CLD PTY OFF-HK:0C  SERVICE OBSERVED:0C  OPER ACTION:0C
SERVICE FEATURE:000C  ORIG NPA:613C  ORIG NUMBER:6211901C
OVERSEAS IND:1C  TERM NPA:00613C  TERM NUMBER:6601096C
CONNECT TIME:1511214C  ELAPSED TIME:000000060C
```

Inter-LATA screening restrictions

In order to provide call completion to an Inter-LATA referral number, federal regulations require that the OC must provide operator services on a contractual basis for the Inter-LATA Carrier (IC) carrying the call. The carrier can be specified on an incoming trunk group basis (field CARRIER in table TOPEATRK if field DNLOOK=N) or based on the original called number's Directory Number Primary Inter-LATA Carrier (table DNPIC used if field DNLOOK=Y in table TOPEATRK).

Note: The called number's carrier is used since it is more likely to be datafilled in the TOPS office servicing the call. It would seem more appropriate to choose the carrier using the referral number. However, the TOPS office servicing the call is not likely to have access to the referral number's carrier. In either case, the referral number's carrier is probably the same as the called number's carrier since both numbers belong to the same party.

It makes more sense to use the DNPIC as opposed to the incoming trunk group carrier. The incoming trunk is really associated with the intercept portion of the call and not the portion from the called number to the referral number. Although using the DNPIC is recommended, both methods are permitted.

In either case, the TOPS Inter-LATA Carrier Service (TICS) feature provides these operator services to an IC.

If only the TOPS EA package is provided, automatic call completion cannot be provided by the OC on behalf of the carrier. Refer to the documents

Automated Intercept Call Completion (continued)

NTX187AA (TOPS Equal Access) and NTX714AA (TOPS Inter-LATA Carrier Service) for further information concerning either the TOPS Equal Access or TICS feature packages.

It is important to inform subscribers who purchase the intercept call completion service that they may accumulate long distance charges without any indication at the beginning of the call that the call is long distance.

Determining Call Completion

Intercept service is provided through an exchange of information between the DMS and the DAS. Likewise, the availability of AINTCC is based upon a joint decision between DMS and DAS.

The DAS indicates to DMS that call completion is available for a call and requests that DMS select an ARU to quote the referral number, or that DMS complete the call without the use of an ARU. DMS makes a determination as to whether there are any restrictions that prohibit Call Completion for the call. If call completion is available, the DMS is responsible for outpulsing to the referral number and any billing for the call completion.

If there are no restrictions for AINTCC from the DMS, and an ARU is required, DMS selects an ARU designed to inform the caller to stay on the line. The DMS completes to the referral number and communicates this selection to DAS. If DMS determines that restrictions prohibit call completion, it selects an ARU that is designed to quote only the referral number, as it does for normal intercept calls.

DMS requirements and optionality

Table DA Trunk Options (DATRKOPT) specifies traffic characteristics for billing and call handling which are applicable on a trunk group basis. This includes such information as billing requirements for ANY calls on the trunk group, and whether or not the calling number or referral number are required for billing.

This feature adds a new field to table DATRKOPT for intercept call completion called INTCC. Field INTCC determines call completion is availability from the DMS point of view. This field is also used to determine if ARU answer for automatic intercept calls is propagated to the originating EO. As expected, a value of Y indicates that call completion is available on the trunk group and an ARU answer is NOT propagated back. A value of N indicates that call completion is not available and an ARU answer is propagated back. If an entry does not exist for the incoming trunk group type, call completion will not be available. The default value is N.

Automated Intercept Call Completion (continued)

This scheme of determining call completion availability allows this feature to be optional on a trunk group basis.

Note: INTCC cannot be set to Y without the presence of the optional AINTCC software package.

Impact on TOPS resources

Network connections

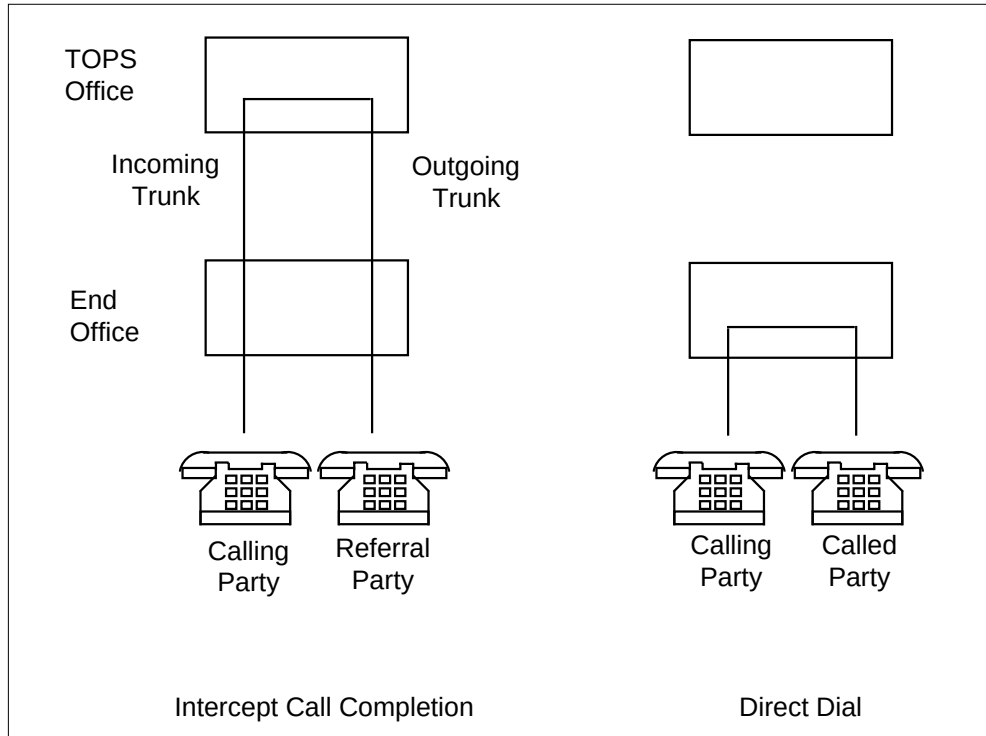
It is important to recognize the impact on TOPS resources that occurs with the usage of AINTCC. For an intercept call that is not automatically completed, the caller typically dials the new number directly. The new call origination may or may not be completed using TOPS facilities. However, with AINTCC, the call completion is ALWAYS completed using TOPS facilities.

The diagrams in the following figure illustrate the network connections for the TOPS office in both situations. The diagram on the left shows TOPS facilities (an incoming and outgoing trunk) being required in order for the calling and referral parties to talk during intercept call completion. This increases the holding times on the TOPS trunks resulting in the need for more trunks. An increase in TOPS trunks implies an increase in TOPS Recording Units (RUs). The diagram on the right shows no TOPS facilities being required when the subscriber has dialed the referral number directly.

The diagrams illustrate both the calling and called parties residing in the same end office. If the calling and called parties reside in different end offices, a connection through the TOPS office may or may not be required to complete the call.

Automated Intercept Call Completion (continued)

AINTCC impact on TOPS resources



ARU resources

AINTCC also has an impact on ARU resources. Since intercept calls can now be completed without the use of ARUs (e.g., no announcement), an office utilizing this option can expect facilities savings because of the reduced number of ARU resources required for intercept calls.

TOPS RUs

In order to complete a call, a second RU is obtained and connected to the call and the original RU is released when the first AMA record is generated. In the past, intercept calls were never completed and hence did not require an additional RU. With intercept call completion, calls subject to completion will require an RU for the duration of the connection. For automatic intercept calls, this will be a CAMA TOPS RU. For calls that go to an operator, this will be a TOPS RU.

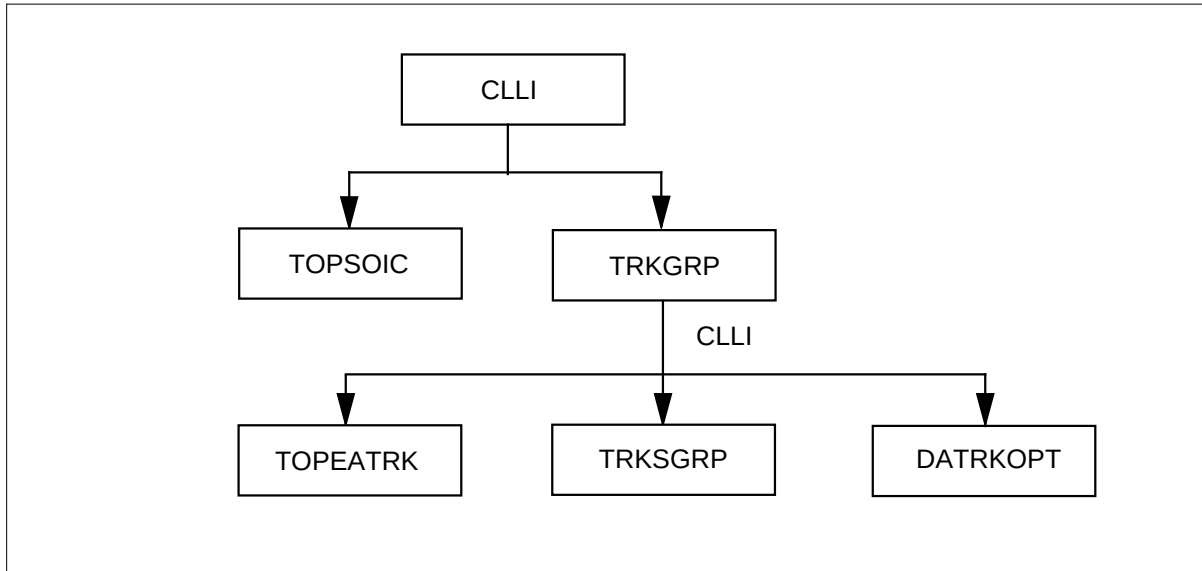
The values affected are office parameters: TOPS_NUM_RU and TOPS_NUM_CAMA_RU in table OFCENG.

Translations table flow

Translations table flow is provided for Automated Intercept Call Completion in the following figure.

Automated Intercept Call Completion (continued)

Table flow for Automated Intercept Call Completion



Limitations and restrictions

The following limitations and restrictions apply to Automated Intercept Call Completion:

- This feature only supports the use of external ARUs for the IBM-DAS protocol.
- End offices that expect an off-hook to stop ringing when the ARU returns answer will not be able to use intercept call completion unless the EO software is modified.
- This feature requires the feature AF1726 (NTXE20AA), TOPS Expanded Bellcore AMA Format (EBAF) Phase 2, in order to provide the proper recording of DA information for accurate billing of INT calls. Refer to package document NTXE20AA for further details regarding the use and implementation of EBAF.
- Northern Telecom AMA (NT AMA) format uses a small set of base records with extensions to record data. NT AMA does not contain fields to support recording of INT information for Call Completion. Therefore, NT AMA will not be supported by this feature.

Interactions

The following paragraphs describe the interactions between Automated Intercept Call Completion and other functionalities.

Automated Intercept Call Completion (continued)

This feature is an enhancement to the TOPS DA feature package, and as such requires the presence of the DA package. If the DA feature package is not present, then this feature is not available.

In order to provide Automatic Intercept Call Completion for Inter-LATA numbers, this feature interacts with TOPS Equal Access (TOPS EA), LATA Equal Access System (LEAS), and TOPS Inter-LATA Carrier Service (TICS).

This feature interacts with TOPS Expanded Bellcore AMA Format (EBAF), and Operator Centralization (OC).

Feature NC0146 determines from the TOPS office when the answer message is returned to the originating end office. This determination affects how the off-hook field of the AMA record is datafilled.

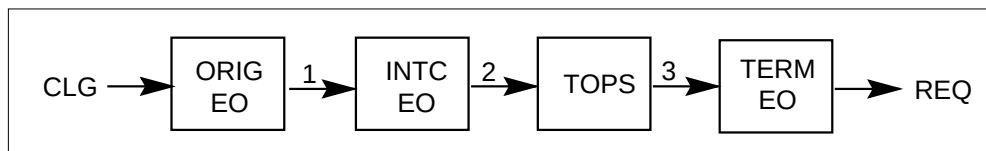
Activation/deactivation by the end user

Automated Intercept Call Completion requires no activation or deactivation by the end user.

Billing

The following figure shows the three AMA records associated with an intercept call that is automatically completed to the referral number. However, only two of the three are billable.

AMA records associated with AINTCC



The above figure is a simplified example. The number of EOs that can be involved in such a call depends on the network configuration.

For the call sent from the originating EO to the intercepting EO, a billable AMA record is generated in the originating EO. For the call from the intercepting EO to the TOPS office, a non-billable AMA record is generated in the TOPS office for the intercept portion of the call when the referral number is outpulsed. For the call from the TOPS office to the terminating EO, a billable AMA record is generated in the TOPS office for the call completion portion of the call when either the calling or the referral party goes on-hook. This will be billed auto-collect to the referral party.

Automated Intercept Call Completion (continued)

The AMA records are generated as follows:

- An AMA record billable to the calling subscriber will be generated in the originating EO when the call is successfully completed and one of the two parties goes on-hook.

Note: This feature does not assume responsibility for generating AMA in the originating EO.

- Two AMA records will be generated in the TOPS office. In order for these records to be generated correctly, the office must record AMA using Expanded Bellcore AMA Format (EBAF), Phase 2. This is accomplished by setting EBAF_PHASE to PHASE2 in table TOPAMAOP.

— A non-billable AMA record will be generated for the intercept portion of the call. This AMA record has a Structure Code of 751, a new Call Code of 215, and a new service Module Code of 066.

Note 1: This record is only produced if 215 is added to field TOPS in table BCCODES and the office is setup as EBAF Phase2.

Note 2: This record will be produced for all intercept calls with the release of this feature regardless of whether or not AINTCC is available.

— An AMA record billable to the referral number as auto collect will be generated for the call completion portion of the call. This AMA record has a Structure Code of 752, a Call Code of 192 and a Module code of 051 for call completion. OSS Call Completion Service Conditions (Table 282) is associated with Module Code 051. This AMA record contains the value 8 added by this feature in byte five of Table 282 to indicate that the call was subsequent to intercept service.

For the call sent from the originating EO to the intercepting EO, a billable AMA record is generated in the originating EO.

For the call sent from the intercepting EO to the TOPS office, a non-billable AMA record is generated in the TOPS office for the intercept portion of the call when the referral number is outpulsed.

For the call sent from the TOPS office to the terminating EO, a billable AMA record is generated in the TOPS office for the call completion portion of the call when either the calling or the referral party goes on-hook. This will be billed auto-collect to the referral party.

Automated Intercept Call Completion (continued)

Station Message Detail Recording

Automated Intercept Call Completion does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Automated Intercept Call Completion. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by Automated Intercept Call Completion

Table name	Parameter name	Explanation and action
OFCENG	TOPS_NUM_RU	For calls that go to an operator. To complete a call, a second RU is required. Previously, intercept calls were never completed, so a second RU was not required. Range is from 100 to number of TOPS trk grp members.
	TOPS_NUM_CAMA_RU	For automatic intercept calls. To complete a call, a second RU is required. Previously, intercept calls were never completed, so a second RU was not required. Range is from 100 to number of TOPS trk grp members.

Datafill sequence

The following table lists the tables that require datafill to implement Automated Intercept Call Completion. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Automated Intercept Call Completion (Sheet 1 of 2)

Table	Purpose of table
CLLI	Common Language Location Identifier. This table uniquely identifies the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit.
TRKGRP.AI	Automatic Intercept System Trunk Group (Type AI). Trunk group type AI is available in local and toll switching units for use as an automatic intercept system (AIS) interface.

Automated Intercept Call Completion (continued)

Datafill tables required for Automated Intercept Call Completion (Sheet 2 of 2)

Table	Purpose of table
TRKGRP.IT	Intertoll Trunk Group (Type IT). Two-way, incoming or outgoing trunk group type intertoll (IT) in a DMS toll or end office interfaces with a toll or end office to carry toll connecting traffic including toll access, toll completing, and toll tandem.
TRKGRP.OP	OG/2W from Local/Toll to TOPS/TSPS Trunk Group (Type OP). This table specifies the configuration for trunk group type OP.
TRKGRP.TOPS	Trunk Group Type TOPS. This table is required in a toll office with a TOPS DMS-200 switching unit or in a combined local/toll office with a TOPS DMS-100/200 switching unit.
DATRKOPT	Directory Assistance Trunk Options. This table specifies the various DA options on a trunk group basis for TOPS, IT, and ATC trunk groups.
TRKSGRP	Trunk Subgroup. This table contains information about each subgroup associated with a trunk group defined in Table TRKGRP.
BCCODES	Bellcore Codes. Used in Bellcore switching offices for Automatic Message Accounting (AMA). Capability is provided to generate AMA records solely because of studies.
DNPIC	Directory Number Primary Inter-LATA Carrier. This table maps a directory number (DN) to a primary inter-LATA carrier (PIC).
TOPEATRK	Equal Access Carrier Information for Trunk Group Type TOPS. This table contains information that is used for routing inter-LATA calls when the DMS-200 includes TOPS Equal Access software.
TOPSOIC	TOPS Office Identification Code. This table specifies valid office identification codes received from an end office over a TOPS trunk group.
TOPAMAOP	TOPS Automated Message Accounting Options. This table specifies TOPS Automated Message Accounting (AMA) related options.
AMATKOPT	AMA Trunk Group Option. Allow the application of Automatic Message Accounting (AMA) Bellcore format-specific options on a trunk group basis. The options can be applied to the entire trunk group or to specific members of the trunk group.
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.

Datafilling table CLLI

The following table shows the datafill specific to Automated Intercept Call Completion for table CLLI. Only those fields that apply directly to Automated

Automated Intercept Call Completion (continued)

Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLLI

Field	Subfield or refinement	Entry	Explanation and action
CLLI		alphanumeric	Enter CLLIs for tables TRKGRP, TOPEATR, DATRKOPT AND TOPSOIC.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
TOPCOMMAMF	24	0	TRUNK_LOOP_BACK
TOPSINTCC	2	4	NEW_MODEM_3X02CA_CLLI
ROTLSC	22	0	ROTLSC_ID
ROTLSD	23	0	ROTLSD_ID

Datafilling tables TRKGRP.AI and TRKGRP.TOPS

The following tables show the datafill specific to Automated Intercept Call Completion for tables TRKGRP.AI and TRKGRP.TOPS. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

For trunking from an intercepting EO on an AI trunk to the TOPS office, the TRKGRP.AI table is datafilled as follows:

Datafilling table TRKGRP.AI

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP		AI	Enter AI for trunk group type.
PROPAGAT		Y	This is a new field. Set to Y for AINTCC. Indicates if trunk group should supervise to propagate off-hook to the originating EO. Also, prevents ringing when set to Y since only true answers will be received. The default is N, indicating the off-hook and ringing should be applied.

Automated Intercept Call Completion (continued)

For trunking from an intercepting EO on an AI trunk to the TOPS office, the TRKGRP.TOPS table is datafilled as follows:

Datafilling table TRKGRP.TOPS

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP		TOPS	Enter TOPS for trunk group type.
STATCLAS		INTCPT, COMBINED	Enter INTCPT for a dedicated intercept trunk group. Otherwise, if combined trunk group, enter COMBINED.
CLGID		AIS	Enter AIS for the type of signaling.

Datafill example for tables TRKGRP.AI and TRKGRP.TOPS

The following example shows sample datafill for tables TRKGRP.AI and TRKGRP.TOPS.

In the following example, asterisks indicate key fields discussed above.

Automated Intercept Call Completion (continued)

MAP display example for AI to TOPS - AIS signaling

TRKGRP.AI	TRKGRP.TOPS
EO datafill	TOPS datafill
-----	-----
GRPKEY: AINTCCOG	GRPKEY: AINTCCIC
* GRPTYP: AI	* GRPTYP: TOPS
TRAFSNO: 0	TRAFSNO: 31
PADGRP: ELO	PADGRP: NPDGP
NCCLS: NCRT	NCCLS: NCRT
TRAFCLS: NIL	DIR: IC
* PROPAGAT: Y	SELSEQ: MIDL
	SNPA: 919
	PRTNM: MFNL
	LCANAME: SUPR
	SCRNCL: NSCR
	OHNXXSCR: N
	TRAFCLS: NIL
	* STATCLAS: INTCPT
	TIMEOUT: N
	NPANXXRQ: N
	DISPLAY: 0
	NBECCODE: 0000
	* CLGID: AIS
	NOBILLCD: 10
	ANISEIZ: 2
	ANIPDIAL: 2
	TRTMTSUP: N

Datafilling table TRKGRP.IT and TRKGRP.TOPS

The following tables show the datafill specific to Automated Intercept Call Completion for tables TRKGRP.IT and TRKGRP.TOPS. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

For trunking from an intercepting EO on an IT trunk to the TOPS office, the TRKGRP.IT table is datafilled as follows:

Datafilling table TRKGRP.IT

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP		IT	Enter IT.

Automated Intercept Call Completion (continued)

For trunking from an intercepting EO on an IT trunk to the TOPS office, the TRKGRP.TOPS table is datafilled as follows:

Datafilling table TRKGRP.TOPS

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP		TOPS	Enter TOPS for trunk group type.
STATCLAS		INTCPT, COMBINED	Enter INTCPT for a dedicated intercept trunk group. Otherwise, if combined trunk group, enter COMBINED.
CLGID		alphanumeric	Enter AIS for the type of signaling.

Datafill example for tables TRKGRP.IT and TRKGRP.TOPS

The following example shows sample datafill for tables TRKGRP.IT and TRKGRP.TOPS.

In the following example, asterisks indicate key fields discussed above.

Automated Intercept Call Completion (continued)

MAP display example for IT to TOPS - AIS signaling

TRKGRP.IT		TRKGRP.TOPS	
EO datafill		TOPS datafill	
-----		-----	
GRPKEY:	AINTCOG	GRPKEY:	AINTCIC
* GRPTYP:	IT	* GRPTYP:	TOPS
TRAFSNO:	0	TRAFSNO:	31
PADGRP:	TLA	PADGRP:	NPDGP
NCCLS:	NCRT	NCCLS:	NCRT
DIR:	OG	DIR:	IC
RECTGN:	N	SELSEQ:	MIDL
TRAFCLS:	NIL	SNPA:	919
SELSEQ:	MIDL	PRTNM:	MFNL
CONNGNPA:	519	LCANAME:	SUPR
PRTNM:	NPRT	SCRNCL:	NSCR
SCRNCL:	NSCR	OHNXXSCR:	N
SNPA:	519	TRAFCLS:	NIL
TERMTC:	000	* STATCLAS:	INTCPT
TOLLCOMP:	Y	TIMEOUT:	N
		NPANXXRQ:	N
		DISPLAY:	0
		NBECCODE:	0000
		* CLGID:	AIS
		NOBILLCD:	10
		ANISEIZ:	2
		ANIPDIAL:	2
		TRTMTSUP:	N

Datafilling table TRKGRP.OP and TRKGRP.TOPS

The following tables show the datafill specific to Automated Intercept Call Completion for table TRKGRP.OP and TRKGRP.TOPS. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Automated Intercept Call Completion (continued)

For trunking from an intercepting EO on an OP trunk to the TOPS office, the TRKGRP.OP table is datafilled as follows:

Datafilling table TRKGRP.OP

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP		OP	Enter OP.
TRAFCLS		INTERCEPT	Enter INTERCEPT.
ANITYPE		WK	Enter WK.
EA		N or Y	Enter N for BELL signaling. Enter Y for OSS or EAOSS signaling.
EAOSS		N or Y	Appears only if field EA is Y. Enter N for OSS signaling. Enter Y for EAOSS signaling.
RTEVIAAT		Y	Appears only if field EAOSS is Y. Enter Y.

Datafilling table TRKGRP.TOPS

Field	Subfield or refinement	Entry	Explanation and action
GRPTYP		TOPS	Enter TOPS.
STATCLAS		INTCPT	Enter INTCPT for a dedicated intercept trunk group. Otherwise, if combined trunk group, enter COMBINED.
CLGID		BELL, OSS, EAOSS	Enter BELL, OSS or EAOSS for the type of signaling.
ANIREQ		OFFHK, WINK	This is a new field and when field CLGID=EAOSS, field ANIREQ determines how ANI should be requested. ANI can either be requested with an off-hook (OFFHK) or a wink (WINK). For AINTCC, field ANIREQ should be set to WINK.

Datafill example for tables TRKGRP.OP and TRKGRP.TOPS

The following examples show sample datafill for tables TRKGRP.OP and TRKGRP.TOPS.

In the following examples, asterisks indicate key fields discussed above.

Automated Intercept Call Completion (continued)

MAP display example for OP to TOPS - Bell signaling

TRKGRP.OP	TRKGRP.TOPS
EO datafill	TOPS datafill
-----	-----
GRPKEY: AINTCCOG	GRPKEY: AINTCCIC
* GRPTYP: OP	* GRPTYP: TOPS
TRAFSNO: 0	TRAFSNO: 31
PADGRP: TLD	PADGRP: NPDGP
NCCLS: NCRT	NCCLS: NCRT
* TRAFCLS: INTERCEPT	DIR: IC
SELSEQ: MIDL	SELSEQ: MIDL
STNCLS: COMB	SNPA: 919
TRAFTYP: MIX	PRTNM: MFNL
* ANITYPE: WK	LCANAME: SUPR
HOLDTYPE: NOHOLD	SCRNCL: NSCR
BILLSPILL: N	OHNXXSCR: N
DIR: OG	TRAFCLS: NIL
EA: N	* STATCLAS: INTCPT
	TIMEOUT: N
	NPANXXRQ: N
	DISPLAY: 0
	NBECCODE: 0000
	* CLGID: BELL
	NOBILLCD: 10
	ANISEIZ: 2
	ANIPDIAL: 2
	TRTMTSUP: N
	STNOWAIT: N
	* ANIREQ: WINK

Automated Intercept Call Completion (continued)**MAP display example for OP to TOPS - OSS signaling**

TRKGRP.OP

EO datafill

```
-----
GRPKEY:  AINTCCOG
* GRPTYP:  OP
TRAFSNO:  0
PADGRP:  TLD
NCCLS:  NCRT
* TRAFCLS:  INTERCEPT
SELSEQ:  MIDL
STNCLS:  COMB
TRAFTYP:  MIX
* ANITYPE:  WK
HOLDTYPE:  NOHOLD
BILLSPILL: N
DIR:  OG
* EA:  Y
* EAOSS:  N
```

TRKGRP.TOPS

TOPS datafill

```
-----
GRPKEY:  AINTCCIC
* GRPTYP:  TOPS
TRAFSNO:  31
PADGRP:  NPDGP
NCCLS:  NCRT
DIR:  IC
SELSEQ:  MIDL
SNPA:  919
PRTNM:  MFNL
LCANAME:  SUPR
SCRNCL:  NSCR
OHNXXSCR: N
TRAFCLS:  NIL
* STATCLAS:  INTCPT
TIMEOUT:  N
NPANXXRQ: N
DISPLAY:  0
NBECODE: 0000
* CLGID:  OSS
NOBILLCD: 10
ANISEIZ:  2
ANIPDIAL: 2
TRTMTSUP: N
* ANIREQ:  WINK
```

Automated Intercept Call Completion (continued)

MAP display example for OP to TOPS - EAOSS signaling

TRKGRP.OP	TRKGRP.TOPS
E0 datafill	TOPS datafill
-----	-----
GRPKEY: AINTCCOG	GRPKEY: AINTCCIC
* GRPTYP: OP	* GRPTYP: TOPS
TRAFSNO: 0	TRAFSNO: 31
PADGRP: TLD	PADGRP: NPDGP
NCCLS: NCRT	NCCLS: NCRT
* TRAFCLS: INTERCEPT	DIR: IC
SELSEQ: MIDL	SELSEQ: MIDL
STNCLS: COMB	SNPA: 919
TRAFTYP: MIX	PRTNM: MFNL
* ANITYPE: WK	LCANAME: SUPR
HOLDTYPE: NOHOLD	SCRNCL: NSCR
BILLSPILL: N	OHNXXSCR: N
DIR: OG	TRAFCLS: NIL
* EA: Y	* STATCLAS: COMBINED
* EAOSS: Y	TIMEOUT: N
RTEVIAAT: Y	NPANXXRQ: N
	DISPLAY: 0
	NBECCODE: 0000
	* CLGID: EAOSS
	NOBILLCD: 10
	ANISEIZ: 2
	ANIPDIAL: 2
	TRTMTSUP: N
	* ANIREQ: WINK

Datafilling table DATRKOPT

The following table shows the datafill specific to Automated Intercept Call Completion for table DATRKOPT. Only those fields that apply directly to

Automated Intercept Call Completion (continued)

Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DATRKOPT

Field	Subfield or refinement	Entry	Explanation and action
INTCC		Y or N	New field for intercept call completion. Enter Y to indicate call completion is available on the trunk group and ARU answer is not propagated back. Enter N if call completion is not available and ARU is propagated back. If there is no entry, call completion is not available. The default value is N. This field can only be set to Y if the AINTCC package is present.

Datafill example for table DATRKOPT

The following example shows sample datafill for table DATRKOPT.

MAP display example for table DATRKOPT

GRPKEY	MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TOPCOMAMF	1	ALL	Y	Y	Y	Y	PRIMARY
TOPSINTCC	1	NONE	Y	Y	N	Y	PRIMARY

Datafilling table TRKSGRP

The following table shows the datafill specific to Automated Intercept Call Completion for table TRKSGRP. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

For trunking from an intercepting EO on an AT or IT trunk to the TOPS office, the TRKSGRP table is datafilled as follows:

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
SIGDATA		STD	Enter STD.
IPULSTYP		alphanumeric	Enter NP of AIS signaling.

Automated Intercept Call Completion (continued)

Datafilling table BCCODES

The following table shows the datafill specific to Automated Intercept Call Completion for table BCCODES. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table BCCODES

Field	Subfield or refinement	Entry	Explanation and action
CALLTYPE		TOPS	Enter TOPS.
CODES		215	Enter 215 to generate a non-billable AMA record for the intercept portion of the call.

Datafill example for table BCCODES

The following example shows sample datafill for table BCCODES.

MAP display example for table BCCODES

CALLTYPE	CODES
-----	-----
TOPS	215

Datafilling table DNPIC

The following table shows the datafill specific to Automated Intercept Call Completion for table DNPIC. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNPIC

Field	Subfield or refinement	Entry	Explanation and action
DNPIC			Carrier is specified by this table if field DNLOOK=Y in table TOPEATRK.

Datafill example for table DNPIC

The following example shows sample datafill for table DNPIC.

Automated Intercept Call Completion (continued)**MAP display example for table DNPIC**

DNKEY				DNPIC	CHOICE

212	220	11	11	CARR2	N

Datafilling table TOPEATRK

The following table shows the datafill specific to Automated Intercept Call Completion for table TOPEATRK. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPEATRK

Field	Subfield or refinement	Entry	Explanation and action
CARRIER			Carrier is used if field DNLOOK=N. If field DNLOOK=Y, then table DNPIC is used for the carrier.

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPI		BYPASS		

TOPCOMMAMF	CONFORM	888	L123	STRA	STER	SOVS
619	N	Y		\$		

Datafilling table TOPSOIC

The following table shows the datafill specific to Automated Intercept Call Completion for table TOPSOIC. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSOIC

Field	Subfield or refinement	Entry	Explanation and action
CO		INTC	Enter INTC for intercept calls.

Automated Intercept Call Completion (continued)

Datafill example for table TOPSOIC

The following example shows sample datafill for table TOPSOIC.

MAP display example for table TOPSOIC

CLLI	OIC	CO

TOPCOMMAMF	27	INTC

Datafilling table TOPAMAOP

The following table shows the datafill specific to Automated Intercept Call Completion for table TOPAMAOP. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPAMAOP

Field	Subfield or refinement	Entry	Explanation and action
AMAOPT		EBAF_PHASE	Enter EBAF_PHASE to generate correct AMA.
OPTINFO		PHASE2	Enter PHASE2.

Datafill example for table TOPAMAOP

The following example shows sample datafill for table TOPAMAOP.

MAP display example for table TOPAMAOP

AMAOPT	OPTINFO

EBAF_PHASE	PHASE2

Datafilling table AMATKOPT

The following table shows the datafill specific to Automated Intercept Call Completion for table AMATKOPT. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table AMATKOPT

Field	Subfield or refinement	Entry	Explanation and action
OPTIONS		INTRCPTBILL	Enter INTRCPTBILL.

Automated Intercept Call Completion (continued)

Datafill example for table AMATKOPT

The following example shows sample datafill for table AMATKOPT.

MAP display example for table AMATKOPT

CLLI	OPTIONS
-----	-----
TOPCOMMANMF	INTRCPTBILL

Datafilling table TOPSPOS

The following table shows the datafill specific to Automated Intercept Call Completion for table TOPSPOS. Only those fields that apply directly to Automated Intercept Call Completion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSs

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

MAP display example for table TOPSPOS

POSNO	VCCKT	VCPDGRP	CARDCODE
DATAPATH			
POSAREA			

100	TM8 0 24	NPDGRP	2X72AA
DMODEM	SP ASCII	TM8 0 25	NPDGRP BELL108
OPR 1	TOPSACD	TASERV \$	GEN XFR1 \$

Automated Intercept Call Completion (end)

Translation verification tools

Automated Intercept Call Completion does not use translation verification tools.

SERVORD

Automated Intercept Call Completion does not use SERVORD.

Cellular/IEC/LEC ADACC

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: OSDA0005

Release applicability

TOPS07 and up

Cellular/IEC/LEC ADACC was introduced in DMSTOP03.

Prerequisites

To operate, Cellular/IEC/LEC ADACC requires the following functional groups:

- Operator Services Basic, OSB00001
- Directory Assistance, OSDA0001

Description

This functionality is provided by the following features:

Feature number	Feature name
AN0262	Cellular/IEC/LEC ADACC Screening Enhancements
AN0410	TOPS Standard DA Protocol Enhancements
AN0841	TOPS IBM DA Protocol Enhancements
AF6711	Branding for TOPS via SPID
50039957	DA positions in an OC network

AN0262 - Cellular/IEC/LEC ADACC Screening Enhancements

Feature AN0262 provides the following:

- Cellular carriers can use Automatic Directory Assistance Call Completion (ADACC).
- Both non-Bell exchange carriers (NBECs) and inter-exchange carriers (IECs) have further flexibility in restricting ADACC routing and billing options.

Cellular/IEC/LEC ADACC (continued)

AN0410 and AN0841 - TOPS Standard and IBM DA Protocol Enhancements

Features AN0410 and AN0841 are applicable to standard directory assistance (DA) protocol, also known as CCI DA protocol, and IBM protocol. These features:

- change handling of reconnects after DA announcements
- provide additional information to the directory assistance system (DAS) for announcement customizations
- allow automatic directory assistance call completion (ADACC) calls without announcements
- allow billing of only the surcharge portion of a DA call completion call (DACC) to the called party (auto-collect surcharge only). All other charges are billed to the calling party.
- allow operator billing of ADACC calls.

Note, this document applies to standard and IBM protocol unless otherwise noted. In this document, the differences between standard and IBM protocol are:

- In section "Announcement customization", first and second language information is sent to the DAS only for IBM protocol. This information is derived from tables DATRKOPT and VROPT.
- In table VROPT, parameter DA_STANDARD_PROTOCOL_VERSION applies only to standard protocol. And, parameter DA_IBM_PROTOCOL_VERSION applies only to IBM protocol.

At release of this functionality in TOPS03, the IBM protocol is not supported. Therefore, parameter DA_IBM_PROTOCOL can only be set 1, which disables this new IBM DA protocol capability.

Operation

Carrier connectivity to TOPS (AN0262)

This feature allows interexchange/cellular carriers to connect to TOPS using standard Feature Group D (FGD) signalling. Also, this feature allows the ID for an Interexchange Carrier, cellular carrier, or an independent telephone company, associated with the calling number or incoming trunk to be recorded on the AMA records for directory assistance (DA) and DA call completion (DACC) calls using that trunk.

Background: Carriers and NBECs

Prior to this feature, a telephone company could provide operator services for its own subscribers. Also, on a contractual basis, services could be provided

Cellular/IEC/LEC ADACC (continued)

for the customers of IECs and NBECs. However, there was no method of restricting services for NBECs. Prior to this feature, services for IECs can be restricted via datafill in certain tables, such as OCCINFO.

Background: FGD signalling

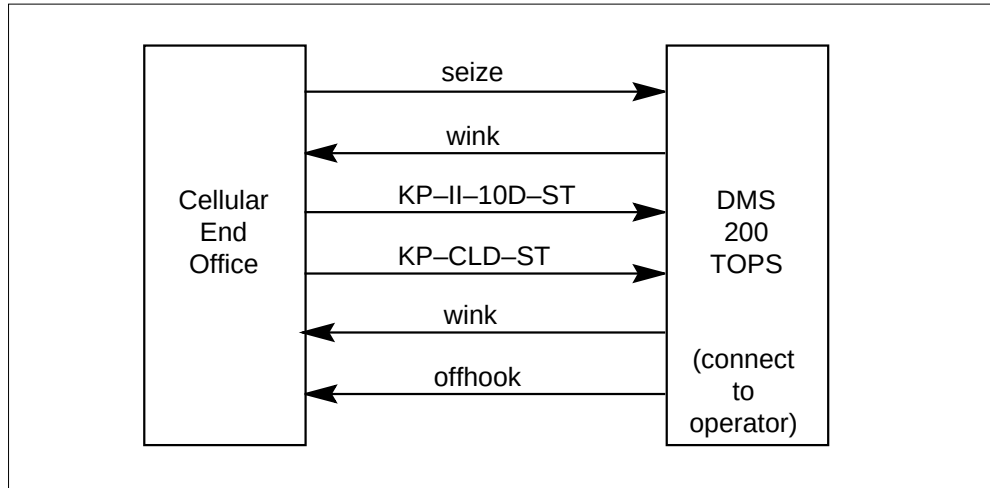
Prior to this feature, cellular carriers and IECs could signal to TOPS using standard FGD signalling on trunks datafilled with a calling ID of COMFGD. Packages NTXA26AA (EAFGD) and NTXE35AA (Alternate Carrier Selection) allowed calls using such signalling to connect to TOPS. For domestic calls, FGD signalling on a TOPS COMFGD trunk takes place in two stages: the Automatic Number Identification (ANI) stage is sent, followed immediately by the called number stage. (Note that Bellcore refers to this type of signalling as one stage, because there is no wink between the calling and called numbers.) Important features of COMFGD signalling are:

- Start Translation (ST) digits are not primed. STP, ST2P, and ST3P are not used. Instead, the station class is identified based on the ANI information digits, as specified in table OSSCAT.
- Key Pulse (KP) digits are not primed.
- ANI consists of two information digits (II) followed by 10 calling digits for ANI success calls. The resulting pattern is KP-II-NPA-NXX-XXXX-ST.
- For domestic calls, the digit 0 is included in the called number as a prefix to indicate that a call is 0+ dialed.
- There is no wink response between the ANI stage and the called digit stage.
- FGD digit signalling ends with a wink. For calls that are answered and calls that go to an operator, the sending office receives an offhook after the wink.

Based on these factors, a call from a cellular office to TOPS DA would be signalled as shown in the following figure.

Cellular/IEC/LEC ADACC (continued)

Example of incoming FGD signalling on a TOPS COMFGD trunk



Because the original intent of the COMFGD calling ID was to allow calls to be forwarded from an IEC to TOPS, all calls on COMFGD trunks are treated as IEC calls. When a call is treated as an IEC call, call completion services use equal access translations. Additionally, the AMA records for these calls contain modules which are used for carrier calls.

Cellular calls

To a TOPS switch, there are two different types of cellular subscribers. One is a local subscriber, where the numbering plan area (NPA) and central office code (NXX) of the calling party are datafilled in the TOPS switch. The other type is called a roamer, where the calling party's NPA-NXX combination is not datafilled in the TOPS switch. For example, a subscriber whose cellular phone is based in Maryland could have the DN 301-390-XXXX. When this subscriber uses their cellular phone in Maryland, the subscriber is local. However, when the same subscriber uses their cellular phone in Pennsylvania, where the NPA is 215, the subscriber is a roamer. Roamers must be considered as to whether or not NXX verification should be performed on calls over a certain trunk group.

When sending ANI to a TOPS office, the cellular office is expected to send the true ANI of the cellular subscriber. Because translations is based on the NPA of the incoming trunk group, not the ANI digits, the call is successfully translated regardless of the ANI digits.

For trunks datafilled as COMFGD in table TRKGRP, there is option NXXVER which specifies whether or not the NXX of the calling number is verified in table TOPSBC. NXX verification is used mainly for ANI fail or ONI calls. This field is expected to be set to N for trunks dedicated to cellular or IEC

Cellular/IEC/LEC ADACC (continued)

ADACC traffic. When a cellular office passes the true ANI of the cellular subscriber, the NXX is unlikely to be datafilled for a roaming subscriber, and will result in failure of the verification. If NXX verification fails, the call will arrive at an operator as an ANI failure. When the operator keys in the back number, the call will again fail NXX verification, and the back number can not be entered successfully. Therefore, TOPSBC verification is bypassed by setting NXXVER to N, allowing handling of roaming subscribers. Note that this restriction is not enforced in table control, but should be followed if a COMFGD trunk is to handle traffic from multiple NPAs.

Cellular ADACC call scenario

A cellular subscriber dials 411 to reach directory assistance. The call is connected to a cellular end office, which uses FGD signalling to connect to a TOPS office using trunk TCOMFGDIC1. Trunk TCOMFGDIC1 is datafilled in the TOPS office in table TRKGRP as shown below.

MAP display example for table TRKGRP

GRPKEY

GRPINFO

TCOMFGDIC1

```

TOPS 0 TLD NCRT IC MIDL 629 PTOP NLCA NSCR Y SP
COMBINED N Y 0 0000 CELL_MOBILE IEC COMFGD 0 10 10
Y N Y N N N

```

Through translations, the call arrives at a DA operator. The operator enters the name and city of the party the cellular subscriber wishes to reach. The DA query is launched, and the subscriber is connected to an Audio Response Unit (ARU). At the end of the ARU message, the subscriber is given the opportunity to be connected to the number specified by the ARU message. If the subscriber chooses to be connected, the call is outpulsed to the called party, and an AMA record is generated for the DA portion of the call. Finally, when both the calling and called parties have gone onhook, the call is finished and an AMA record for the call completion portion of the call is generated.

Enhanced carrier ADACC screening and billing options (AN0262)

This feature offers ADACC on a company ID and Automatic Number Identification identification digit (ANI ID) basis. For this feature, a company ID is a carrier number defined in table TOPEACAR, or an NBEC code defined in table TRKGRP or NBECODE. For each company ID/ANI ID combination, the telephone company is able to indicate whether or not ADACC is offered based on the local access and transport area (LATA) of the

Cellular/IEC/LEC ADACC (continued)

call, and to specify which billing options are allowed for the call. Additional functionality allows a telephone company to provide ADACC service for certain carriers, while continuing to serve or not serve toll and assist calls, based on existing datafill in table TOPEACAR. Finally, changes are made to restrict ADACC on a DN basis.

Background

The Enhanced Carrier ADACC options provided by this feature can be viewed as a refinement of the TOPS InterLATA Carrier Service (TICS) software, as well as the ADACC software. TICS allows a telephone company to provide operator services for InterLATA calls for certain IECs. For an InterLATA call, the Primary InterLATA Carrier (PIC) is obtained from datafill in table DNPIC or table TOPEATRК, or from signalling. Once a PIC is associated with the call, TOPS determines if operator services are provided for that carrier by accessing table TOPEACAR. If the field OPSERV is datafilled as SERV for that carrier, operator services are provided. If the field is datafilled as NOSERV, operator services are not provided.

For calls arriving from an IEC, DA service has always been provided, regardless of the datafill in table TOPEACAR. The interaction between TICS and DA need only be considered in the case of ADACC. The DMS can decline to offer ADACC based on the following criteria:

- datafill restrictions based upon a trunk group basis (table DATRKOPT)
- datafill restrictions based on a call type/service class basis (tables DABILL and ADACCOPT)
- the method of billing is restricted for completion to the requested DN
- completion of an InterLATA call using a carrier which the telephone company does not serve
- unsuccessful translation of the requested DN
- completion restrictions for the LATA status of the call on a per carrier basis (table OCCINFO)

A call arriving from an IEC is offered ADACC if the carrier is served, assuming all other criteria are passed. If the carrier is not served, call completion is not offered. For a call arriving from a local end office, the requested DN is translated. If translations determine that the call will be interLATA, a PIC is associated with the call. If the associated carrier is served, ADACC is offered for the call if all other criteria are met. If the carrier is not served, ADACC is not offered for the call.

For calls arriving from an NBEC, DA service is always offered, and DACC is offered based on datafill in tables DATRKOPT, DABILL, and ADACCOPT.

Cellular/IEC/LEC ADACC (continued)

(If the call requires interLATA completion, the call may also be restricted based on datafill for the calling party's PIC in tables TOPEACAR and OCCINFO.) Prior to this feature, no method of blocking ADACC on an NBEC basis existed.

Table changes

With this feature, additional criteria are added to the checks made when TOPS decides whether or not to offer ADACC. The decision to offer ADACC no longer depends on the value of the OPSERV field in table TOPEACAR. Now, datafill specifies ADACC restrictions, and ADACC screening evaluates the DMS datafill.

Table COANISCR : A new table, COANISCR, is created to allow screening on a company ID/ANI ID basis. The key to table COANISCR is a three part key, consisting of a label that indicates whether the company is an NBEC or an IEC, the company ID, and two ANI ID digits. The data field is an index into table TOPSDB, the TOPS Database.

MAP display example for table COANISCR

KEY			TDBIDX
NBEC	0234	00	4
IEC	0111	00	7

This table is to be used for screening on a company ID/ANI ID basis. It is only accessed for calls arriving on TOPS trunks with CLGID field = COMFGD, OSSANI, EAOSS, or EAOSSIC. For example, this table could be used to block ADACC for calls signalled from carrier 0111 with ANI ID 00, or from NBEC 0234 with an ANI ID of 00.

Table TOPEACAR : Table TOPEACAR is an existing table that indicates whether or not service is provided for an IEC. When this feature is in use, the existing field OPSERV applies only to toll and assist (TA) and Operator Handled DACC calls. The new field TDBIDX is an index into table TOPSDB, used for ADACC screening on a carrier basis. Following is sample datafill.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEACAR**

CARDIG NATERM TDBIDX	CARNAME INTERM	ALTDISP OPERV	OPLSCLD	CAMABILL	ALTCARR
0111 UNREST 7	C111 UNREST	C111 SERV	NOQUERY Y	NOQUERY Y	0111 Y Y Y Y
0222 UNREST 4	C122 UNREST	C122 SERV	NOQUERY Y	NOQUERY Y	0122 Y Y Y Y
0888 UNREST 1	C888 UNREST	C888 NOSERV	Y	Y	0888

This field is used to screen on a carrier basis for calls that require interLATA completion that arrived at the TOPS switch with a CLGID field other than COMFGD, OSSANI, EAOSS, or EAOSSIC, and to completely block ADACC on a per carrier basis. For example, a call arrives at TOPS DA on a BELL trunk. Based on translations, the call completion portion of the call requires interLATA completion. This field points to a tuple in TDBDAOPT through TOPSDB. The tuple in TDBDAOPT indicates whether or not ADACC is offered for the call, and what billing options are valid. For example, calls that complete over carrier 0111 can be datafilled so that only SENTPD is a valid billing option.

A nil value, 32767, may be datafilled in TDBIDX to completely block ADACC for any calls on a carrier. If TDBIDX = 32767, ADACC will not be offered for that carrier, regardless of any other datafill. Value 32767 is datafilled in the TDBIDX field of all NOSERV carriers on the upgrade to this release. Please note that 32767 does not point to a tuple in table TOPSDB, but is a nil value.

Table DNSCRN: Existing table DNSCRN maps a directory number to a list of screening attributes, one of which can be an index into table TOPSDB. If the DN is not datafilled in table DNSCRN, or if the DN's tuple in DNSCRN does not have an attribute of TOPSDB, then the default value 0, which allows ADACC for all LATA statuses and all billing options, is used. Please note that no changes are made to table DNSCRN. The following example is included for reference.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table DNSCRN**

DN	ATTROPTS
6193201111	TOPSDB 2 \$
6193202222	TOPSDB 1 \$
6193203333	TOPSDB 3 \$
6193205555	TOPSDB 5 \$

This table can now be used to restrict ADACC and ADACC billing methods on a DN basis.

Table TOPSDB: Table TOPSDB is expanded with this feature to provide a database of ADACC options. A TOPSDB tuple consists of a key, an index into table TDBCLASS, and an index into the new database table, TDBDAOPT. Tuple 0 is the default tuple in table TOPSDB. It consists of a key of 0 and indices of 0 into tables TDBCLASS and TDBDAOPT.

Note that the key field in table TOPSDB is renamed from DNSCRIDX to TDBKEY. This change is to indicate that there are other ways to access TOPSSDB in addition to table DNSCRN. Following is sample datafill.

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
0	0	0
1	0	1
2	0	2
3	0	3
4	0	4
5	5	5

Table TDBDAOPT: Table TDBDAOPT is the new TOPS Database table that defines options for ADACC.

Cellular/IEC/LEC ADACC (continued)

A tuple in this table consists of up to three fields:

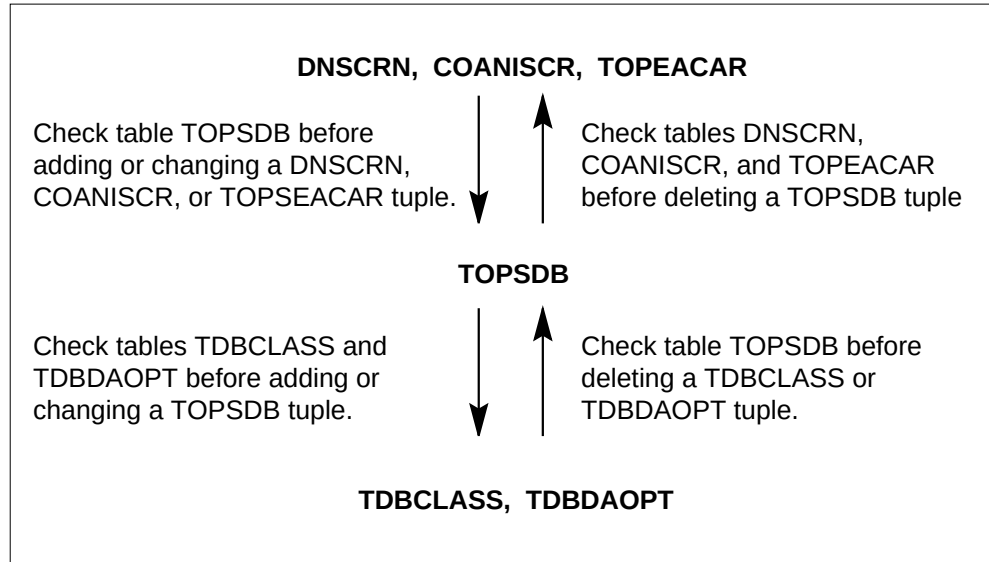
- TDBDAIDX - The key field, as indexed from table TOPSDB.
- ADACCSRV - Indicates which LATA statuses can be offered ADACC. Possible values are ALL, BLOCK, INTRA, or INTER.
- BILLOPT - Contains a set of the billing options that are allowed for the call. Possible billing options are ALTBIL, CONTBIL, OPERBIL, or SENTPD.

Note that if field ADACCSRV is datafilled as BLOCK, ADACC is not offered under any circumstances, unless the call has been marked autocollect. Therefore, the BILLOPT field for that tuple is not visible. Tuple 0 is the default tuple for table TDBDAOPT. It indicates that ADACC is offered for all LATA statuses, and all billing options are allowed.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV	BILLOPT
0	ALL	ALL
1	BLOCK	
3	ALL	CONTBIL OPERBIL \$
4	INTRA	SENTPD \$
5	ALL	OPERBIL SENTPD \$
6	INTER	ALL
7	INTER	ALTbil CONTBIL \$

Table controls: The interdependency of the above tables requires table control restrictions in addition to the existing restrictions between tables DNSCRN, TOPSDB, and TDBCLASS. A tuple must exist in table TOPSDB before it can be referenced by tables DNSCRN, COANISCR, or TOPEACAR. Conversely, tables DNSCRN, COANISCR, and TOPEACAR must be checked for references to a tuple in table TOPSDB before that tuple can be deleted. Similarly, a tuple must exist in table TDBDAOPT before it can be referenced by table TOPSDB, and TOPSDB must be checked for references to a TDBDAOPT tuple before the tuple can be deleted. The following figure illustrates the relationships between the tables.

Cellular/IEC/LEC ADACC (continued)**Table control restrictions****Screening**

The ADACC restrictions offered by this feature are performed based on the datafill in the above tables. In the context of this feature, an incoming company is the company associated with the incoming trunk group of a call arriving at TOPS on a TOPS trunk with a CLGID field of OSSANI, EAOSS, EAOSSIC, or COMFGD. An outgoing carrier is the carrier over which an interLATA call is to be completed, based on datafill in tables DNPIC and TOPEATR, or based on signalling. Note that for calls where the incoming company is an IEC, the outgoing carrier is normally the same carrier.

ADACC screening is performed on the basis of the incoming company and incoming ANI ID digits, the outgoing carrier, and the calling DN. First, the LATA status of the call is determined, and TOPS accesses the new screening datafill.

If the call is a carrier call, then field TDBIDX of the carrier's tuple in table TOPEACAR is checked. If TDBIDX = 32767, ADACC is not offered and no further screening is performed.

Incoming company/ANI ID screening: For calls arriving at TOPS on a trunk that signals two digit ANI IDs (those with a CLGID of OSSANI, EAOSS, EAOSSIC, or COMFGD), we screen on the basis of the incoming company ID and incoming ANI ID digits.

Cellular/IEC/LEC ADACC (continued)

First we determine the incoming company ID and company type for the call, based on datafill in table TRKGRP.

- If the CONNTYPE field in table TRKGRP is not set to NONE, we check the contents of the CARTYPE field.
 - If CARTYPE = IEC, the incoming company ID is the carrier number datafilled for the incoming trunk in table TOPEATRK, and the company type is IEC.
 - If CARTYPE = NBEC, and if the calling number is datafilled in table NBECCODE, the incoming company ID is the NBEC from that table. Otherwise, the incoming company ID is taken from the NBECID field in table TRKGRP. The company type is NBEC.
- If CONNTYPE = NONE, we check the trunk type, as datafilled in the CLGID field of table TRKGRP.
 - If CLGID = COMFGD: The incoming company ID is the carrier number datafilled for the incoming trunk in table TOPEATRK, and the company type is IEC.
 - If CLGID = OSSANI, EAOSS, or EAOSSIC: If the calling number is datafilled in table NBECCODE, the incoming company ID is the NBEC from that table. Otherwise, the incoming company ID is taken from the NBECID field in table TRKGRP. The company type is NBEC.

Once the company type and company ID have been found, we access table COANISCR with the company type, company ID, and ANI ID signalled with the call.

If the appropriate tuple does not exist in table COANISCR, screening continues. If the tuple does exist, the value in the data field of COANISCR is used to reference TOPSDB, which in turn references TDBDAOPT. If the TDBDAOPT tuple indicates that the LATA status of the call is served for ADACC, the set of allowable billing options from the TDBDAOPT tuple is recorded. If the LATA status of the call is not served for ADACC, screening stops and ADACC is not offered.

Outgoing carrier screening: Next, calls that require interLATA completion are screened again. First, the calling party's PIC is determined from datafill in tables TOPEATRK and DNPIC, or from signalling.

Cellular/IEC/LEC ADACC (continued)

If the call originated on a trunk with a calling ID of OSSANI, EAOSS, EAOSSIC, or COMFGD, we access table COANISCR with company type IEC, the PIC ID, and the ANI ID digits signalled with the call.

Note: In most cases, if the incoming company is a carrier, the incoming and outgoing carriers are the same, and access the same tuple in table COANISCR. If for some reason the carrier changes during the course of the call (for example, if the calling number is datafilled in table DNPIC) AMA modules 53 and 54 pertain to the outgoing carrier, while module 150 contains information from the incoming carrier.

If the tuple does not exist in the table, screening continues. If the tuple does exist, the index given in COANISCR is used to reference TOPSDB, which in turn references TDBDAOPT.

If the call originated on a trunk type other than those above, an index into TOPSDB is retrieved from the PIC's entry in table TOPEACAR. The TOPSDB tuple points to a tuple in TDBDAOPT.

If the appropriate TDBDAOPT tuple indicates that interLATA calls are not served for ADACC, screening stops and ADACC is not offered. Otherwise, the set of allowable billing options in TDBDAOPT are recorded in addition to those recorded in the previous step.

Calling DN screening: Finally, the calling DN is checked for ADACC restrictions. If the calling DN is not datafilled in table DNSCRN with an attribute for TOPSDB, the default tuples in TOPSDB and TDBDAOPT are referenced, which allow ADACC for all LATA statuses and all billing options. If the number is in DNSCRN, TOPSDB and TDBDAOPT are referenced. Again, if the TDBDAOPT tuple indicates that ADACC is allowed for the call's LATA status, the set of allowable billing options are recorded in addition to those recorded in the previous steps. If ADACC is not allowed by the datafill in TDBDAOPT, the call is connected to an ARU that does not offer call completion.

Screening complete: Once the above screening has been completed successfully (and ADACC is to be offered for the call), TOPS determines which billing options are allowed for the call. If the DAS indicated that the call is to be billed auto-collect, the billing options in table TDBDAOPT are irrelevant, and the call is billed auto-collect. Otherwise, the set of billing options for the appropriate tuple in ADACCOPT is intersected with the sets of billing options returned by the screening through table TDBDAOPT. If there are no billing options in the intersection, ADACC is not offered for the call. If there is an intersection of billing options, they are sent to the DAS so that the

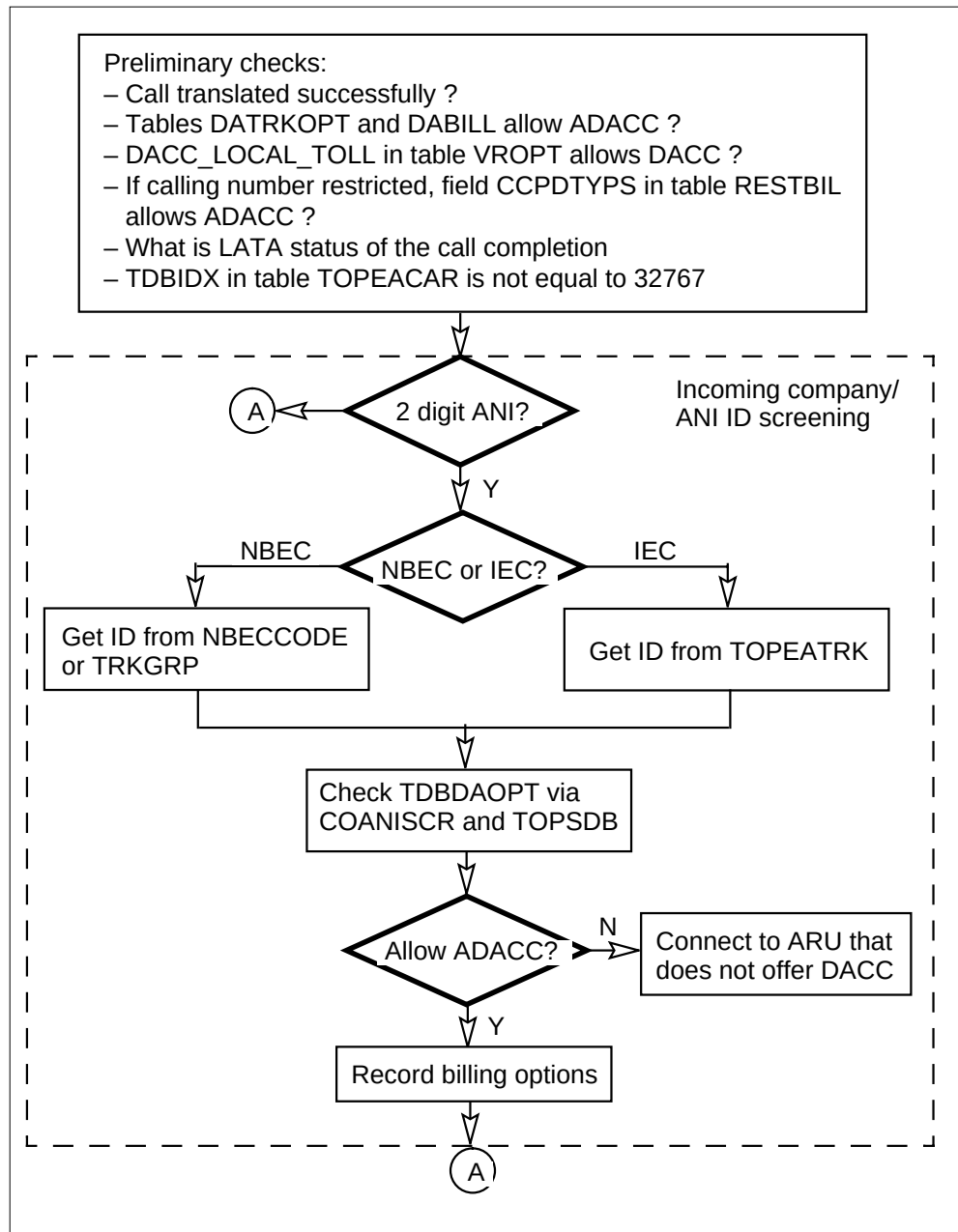
Cellular/IEC/LEC ADACC (continued)

DAS can collect the necessary billing information before completing the call. Screening is complete, and ADACC is allowed.

The following diagram explains the flow of the new ADACC screening. This diagram only includes the new ADACC screening. Before entering the flow of this diagram, TOPS has checked the following:

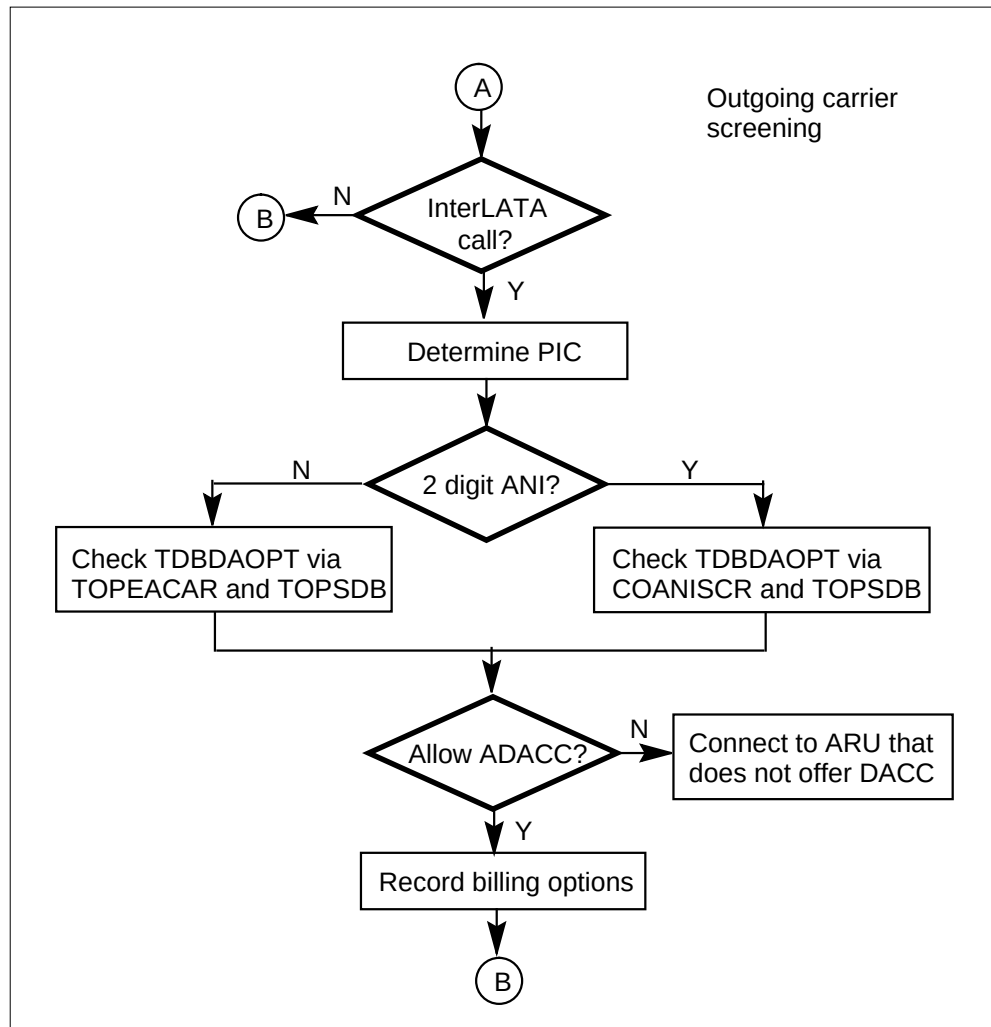
- Tables DATRKOPT and DABILL allow ADACC for this call.
- The call has translated successfully.
- The value of DACC_LOCAL_TOLL_ACTIVATION in table VROPT has been checked and allows DACC for this call.
- If the calling number is restricted, the field CCPDTYPS in table RESTBIL has been checked and allows ADACC for this call.

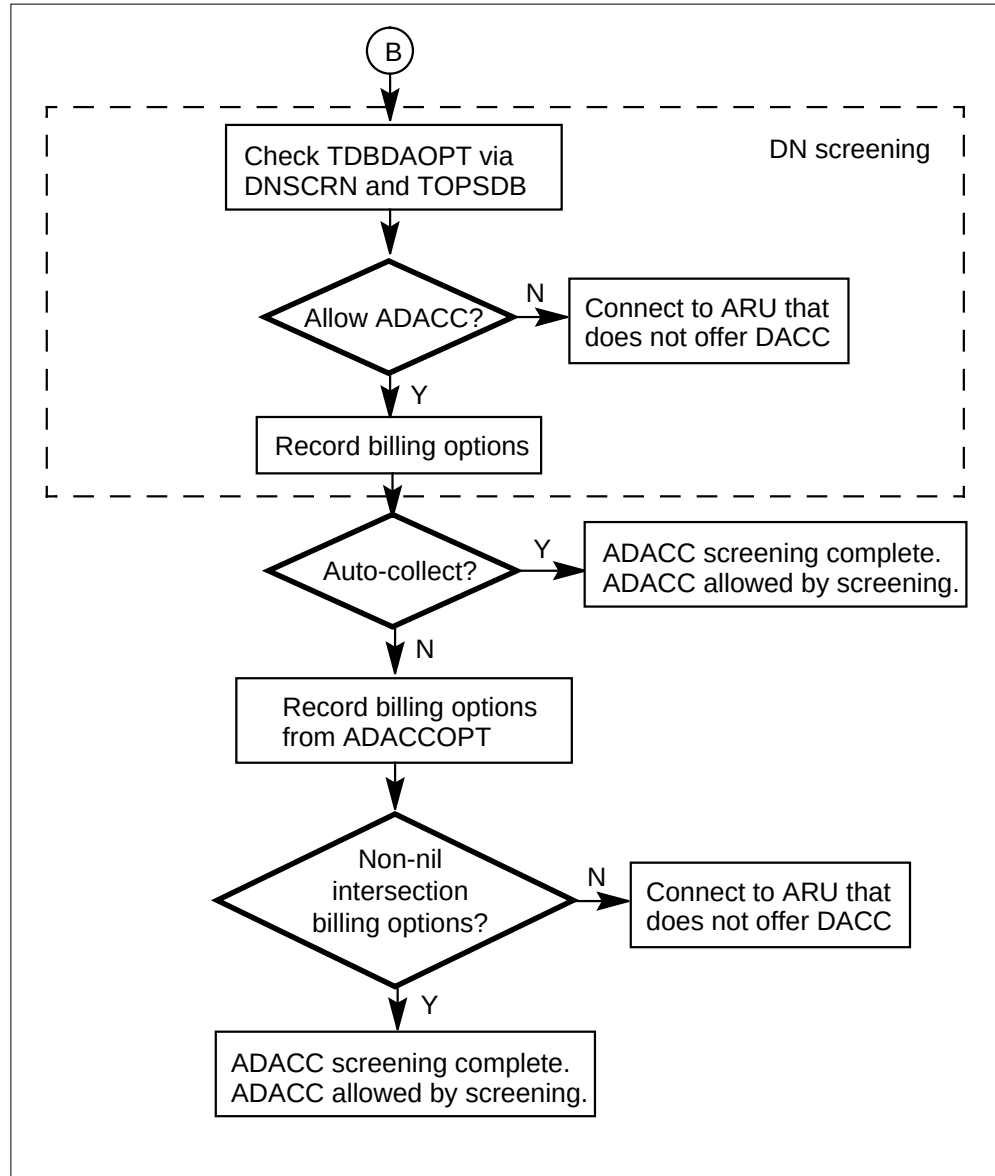
Additionally, if the call is a carrier call and the TDBIDX field of the carrier's TOPEACAR tuple is 32767, ADACC is not offered and no further screening is performed.

Cellular/IEC/LEC ADACC (continued)**ADACC screening flow diagram**

Cellular/IEC/LEC ADACC (continued)

ADACC screening flow diagram (continued)



Cellular/IEC/LEC ADACC (continued)**ADACC screening flow diagram (continued)****Examples (AN0262)**

Below are examples of the new ADACC screening. Examples using the COMFGD trunk type begin at example 4.

Note: All datafill below is for example purposes only. For example, in table ADACCOPT, 411 station would normally be datafilled to use all billing types.

Cellular/IEC/LEC ADACC (continued)**Example 1 - Local subscriber, intralata call, ADACC allowed**

This example demonstrates the datafill for a subscriber who wishes to restrict the billing options for ADACC from their DN.

A subscriber at DN 619-320-1111 dials 411 to reach TOPS DA. The call arrives at the TOPS switch on trunk TBELLIC1, datafilled in table TRKGRP as follows:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N	

Through translations, the call is routed to a TOPS position as a DA call. The operator queries the subscriber for the DA information desired. Based on the information given, the operator launches a query of the DAS Database. The requested DN is 201-220-1111. The DAS sends TOPS a message requesting that the call be connected to an announcement. This message also indicates that the DAS can offer ADACC to the call. Now, TOPS must determine if it can offer ADACC to that call. First, TOPS checks the datafill in table DATRKOPT:

MAP display example for table DATRKOPT

GRPKEY	MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TBELLIC1							
5	ALL	Y	Y	Y	N	PRIMARY	

Since the DACC field is all, ADACC may be offered. Next, table DABILL is checked:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table DABILL**

DABKEY	REQNUM	CLGREQ	SERVNAME	ENHAMA	CCSURCHG	DACC
411 STATION	N	Y	TOLLFREE	Y	Y	ALL

Again, DACC = ALL, so ADACC may be offered. Next, the requested DN is translated. The serving NPA, class of service screening name, and local call area (LCA) screening name are taken from table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N

At this point, the call has been successfully translated. Next, the class of service screening name and LCA screening name are taken from table TOPSBC, indexed by the incoming trunk group and the calling NXX:

MAP display example for table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALBC	CHGCLSS
TBELLIC1	320	L32X	NSCR	619320	TOPS

The pretranslator name and class of service screening name are retrieved from table OPRTRANS:

MAP display example for table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	619	NSCR	OPER	NLCA

Cellular/IEC/LEC ADACC (continued)

Given the above datafill, the call is translated using pretranslator OPER, NPA 619, and called number 201-220-1111. Pretranslations first access table STPRTCT, tuple OPER:

MAP display example for table STDPRTCT

EXTPRTNM	STDPRT	AMAPRT
OPER	(1)	(0)

Then, subtable STDPRT is accessed, using the called digits as a key to the table:

MAP display example for subtable STDPRTCT.STDPRT

FROMDIGS	TODIGS	PRETRTE
201	212	N OA 0 NA

Further translations are needed, so table HNPACONT is accessed, using NPA 619:

MAP display example for table HNPACONT

STS	NORTREFS	NOAMBIGC	RTREF	HNPACODE	ATTRIB	RTEMAP
619	807	8	(35)	(1)	(0)	(0)

Then, the called digits are used to key into subtable HNPACODE:

MAP display example for subtable HNPACONT.HNPACODE

FROMDIGS	TODIGS	CDRRTMT
201	201	FRTD 801

This points to subtable RTREF, tuple 801, which indicates that the call should route to trunk TITOGA1.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table HNPACONT.RTEREF**

RTE	RTELIST
801	(N D TITOGA1 0 N N)\$

Once translations have determined a route, screening begins. No class of service screening name is datafilled in table TRKGRP, TOPSBC, or OPRTRANS, so no class of service screening is performed. Next, LCA screening is performed, using the incoming trunk's NPA, 619, and the LCA screening name from table TOPSBC, to access table LCASCRCN:

MAP display example for table LCASCRCN

NPALOCNM	LCASCR	PFXSELEC	PFXFOR10
619 L32X	(5)	OPTL	N

The called digits are not datafilled in subtable LCASCR, so the call is a toll call. Next, the LATA status of the call is determined. The LATA name is taken from table TOPEATRK, using the incoming trunk group:

MAP display example for table TOPEATRK

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFTLPIC	INTRASSC BYPASS	INTERSSC
TBELLIC1 SOVS	CONFORM 619	0111 Y	L123 Y	STRA \$	STER

Table LATAXLA is referenced to determine the LATA and state status of the call. Because the LATA name/called NPA combination is not datafilled in table LATAXLA, the call is intraLATA and intrastate. Because the call is arriving at TOPS from a local end office, and it is an intraLATA call, it is not a carrier call. Therefore, no equal access translations are needed.

Next we check that this office allows ADACC for toll calls: the DACC_LOCAL_TOLL_ACTIVATION parameter in table VROPT is set to ALL. Additionally, there are no restrictions against the calling number in the CCPDTYPS field of RESTBIL, so both local and toll calls may be offered ADACC.

Cellular/IEC/LEC ADACC (continued)

Finally, the call's LATA designation is known, so TOPS determines if the call can be offered ADACC based on the new restrictions. Because the call arrived on a trunk that signals one digit ANI IDs, and it is not a carrier call, the only ADACC screening performed is on a DN basis. The calling DN is looked up in table DNSCRN:

MAP display example for table DNSCRN

DN	ATTROPTS
6193201111	(TOPSDB 2)\$

This entry has an attribute of TOPSDB 2, so we access the TOPS database, table TOPSDB:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
2	0	2

The TOPSDB tuple point to table TDBAOPT, tuple 2:

MAP display example for table TDBAOPT

TDBAIDX	ADACCSRV
2 ALL	ALTBIL

For this tuple, ADACC is allowed for all LATA designations. The billing options are noted for later use. Finally, TOPS checks ADACC billing restrictions. The DAS did not indicate that the call could be billed auto-collect, so we check restrictions in table ADACCOPT:

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 STATION	ALTBIL SENTPD \$	GEN	S

Cellular/IEC/LEC ADACC (continued)

We compare the billing options in ADACCOPT to the billing options that were collected from TDBDAOPT. ALTBIL is the only billing option datafilled in the appropriate tuples of table TDBDAOPT and table ADACCOPT. There are no billing restrictions on the calling number, so ADACC CAN be offered with ALTBIL billing. When the AMA record for this call is generated, we check the value of the CONNTYPE field in table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TOPS	
0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP COMBINED	
N Y 0 NONE BELL 16 10 10 Y N OFFHK N N	

Since CONNTYPE = NONE, AMA module 150 is not recorded for this call.

Example 2 - Local subscriber, intraLATA call, ADACC blocked

This example demonstrates the datafill for a subscriber who wants ADACC to be blocked from their DN.

A subscriber at DN 619-320-2222 dials 411 to reach TOPS DA. The call arrives at the TOPS switch on trunk TBELLIC1. Querying the subscriber and the DAS, the operator chooses a listing for DN 201-220-1111. Because the call arrived on the same trunk as example 1, all translations and screening datafill are identical to example 1. If ADACC is to be offered, the call is an intraLATA toll call and will be completed over trunk TITOGA1.

ADACC screening is done for the calling DN, 619-320-2222. First, the calling DN is looked up in table DNSCRN.

MAP display example for table DNSCRN

DN	ATTROPTS
6193202222	(TOPSDB 1)\$

The entry in table DNSCRN has an attribute of TOPSDB 1. So, the TOPS database is accessed.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPSDB**

TDBKEY	TDBCLIDX	TDBDAOPT
1	0	1

The TOPSDB tuple points to table TDBDAOPT, tuple 1.

MAP display example for table TDBDAOPT

TBDIDAIX	ADACCSRV
1	BLOCK

For this tuple, NO ADACC is allowed. ADACC is blocked, and screening is complete. The call will be connected to an ARU that does not offer ADACC. When the AMA record for this call is generated, we check the value of the CONNTYPE field in table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	TOPS 0 TLD NCRT IC MIDL 619 PTOPT NLCA NSCR Y SP COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N

Since CONNTYPE = NONE, AMA module 150 is not recorded for this call.

Example 3 - Local subscriber, intraLATA call, billing mismatch

This example demonstrates a datafill mismatch between ADACCOPT and TDBDAOPT restrictions.

A subscriber at DN 619-320-3333 dials 411 to reach TOPS DA. The call arrives at the TOPS switch on trunk TBELLIC1. Querying the subscriber and the DAS, the operator chooses a listing for DN 201-220-1111. Because the call arrived on the same trunk as example 1, all translations and screening datafill are identical to example 1. If ADACC is to be offered, the call is an intraLATA toll call and will be completed over trunk TITOGA1. ADACC

Cellular/IEC/LEC ADACC (continued)

screening is done for the calling DN, 619-320-3333. First, the calling number is looked up in table DNSCRN.

MAP display example for table DNSCRN

DN	ATTROPTS
6193203333	(TOPSDB 3)\$

The entry in table DNSCRN has an attribute of TOPSDB 3. So, the TOPS database is accessed.

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
3	0	3

The TOPSDB tuple points to table TDBDAOPT, tuple 3.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
3	ALL CONTBIL OPERBIL \$

For this tuple, ADACC is allowed, and the allowable billing options are recorded for later reference. The DAS did not indicate that the call is to be billed auto-collect, so we check the allowable billing options in table ADACCOPT:

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 STATION	ALTBIL SENTPD \$	GEN	S

The billing options allowed by ADACC screening are CONTBIL and OPERBIL. The billing options allowed by table ADACCOPT are ALTBIL and SENTPD. There is no intersection in the billing sets, so ADACC is not

Cellular/IEC/LEC ADACC (continued)

allowed for this call. When the AMA record for this call is generated, we check the value of the CONNTYPE field in table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N	

Since CONNTYPE = NONE, AMA module 150 will not be recorded for this call.

Example 4 - Roaming cellular subscriber, true ANI

This example demonstrates the datafill for a cellular carrier.

A roaming cellular subscriber dials 411 to reach DA. The cellular end office signals the true ANI of the subscriber, 629-991-4444, to the TOPS office, with an ANI ID of 00. The call arrives at the TOPS office on trunk TCELLIC1, datafilled in table TRKGRP as below:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP L32X NSCR Y SP	
COMBINED N N 0 0000 CELL_MOBILE IEC COMFGD 0 10 10 Y	
N Y N N N	

Through translations, the call is routed to a TOPS position as a DA call. The operator queries the subscriber, and launches a query of the DAS database accordingly. The requested DN is 201-220-1111. The DAS sends the DMS a message requesting a call completion ARU. Now, TOPS determines if it will offer ADACC to the call. First, TOPS checks table DATRKOPT:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table DATRKOPT**

GRPKEY	MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TBELLIC1	5	ALL	Y	Y	Y	N	PRIMARY

Since DACC = ALL, ADACC may be offered. Next, table DABILL is checked:

MAP display example for table DABILL

DABKEY	REQNUM	CLGREQ	SERVNAME	ENHAMA	CCSURCHG	DACC
411 STATION	N	Y	TOLLFREE	Y	Y	ALL

Since DACC = ALL, ADACC may be offered. Now, the requested DN is translated. The serving NPA, class of service screening name, and LCA screening name are taken from table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO										
TBELLIC1	TOPS	0	TLD	NCRT	IC	MIDL	619	PTOP	L32X	NSCR	Y SP
	COMBINED	N	Y	0	0000	CELL_MOBILE	IEC	COMFGD	0	10	10 Y
	N	Y	N	N	N						

The trunk group and NXX combination is not datafilled in table TOPSBC, so no screening information is taken from TOPSBC. Next, the pretranslator name and class of service screening name are taken from table OPRTRANS:

MAP display example for table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	619	NSCR	OPER	NLCA

Cellular/IEC/LEC ADACC (continued)

Given the above datafill, the call is translated using pretranslator OPER, NPA 619, and called number 201-220-1111. The translations for this call are the same as example 1, so the call translates successfully, and routes to trunk TITOGA1 if ADACC is offered.

As in example 1, no class of service screening is necessary. LCA screening is performed, using the NPA from the incoming trunk group and the LCA name from table TRKGRP. Since the NPA and LCA name are the same as in example 1, the same LCA screening is performed. The call is determined to be a toll call.

Next, the LATA designation of the call is determined. Again, the LATA name is taken from table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TBELLIC1 SOVS	CONFORM 619	0234 N	L123 Y	NSCR \$	STER

Table LATAXLA is referenced to determine the LATA and state designations of the call. Because the LATA name and called NPA are not datafilled in table LATAXLA, the call is intraLATA and intraSTATE. However, because the call arrived to TOPS on a COMFGD trunk, Equal Access screening is needed. First, the calling party's PIC is determined, based on table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TBELLIC1 SOVS	CONFORM 619	0234 N	L123 Y	NSCR \$	STER

The default carrier for this trunk is 0234. DNLOOK = N, so TOPS does not check table DNPIC. Next, TOPS checks that carrier 0234 can complete this call. First, the carrier name is obtained from table TOPEACAR:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEACAR**

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	TDBIDX
NATERM	INTERM					
OPSERV						
0234	C234	C234	Y	Y	0234	
UNREST	UNREST					
SERV	NOQUERY	Y NOQUERY	Y NOQUERY	Y Y		3

The carrier name from table TOPEACAR is used to index table OCCINFO:

MAP display example for table OCCINFO

CARRNAME	CARRNUM	ACCESS	ORIGCARR	INTER	INTNTL	INTRA	ANI	FANI	ONISCRN	AD1	OVERLAP	INTERS	INTRAS	TERMREC	OCCSEPNO	OPSIG	PICIND	NOA950	INCCPN	DTMFIND	OPSERV	CACBLOCK	CTDOA	CMCMON	SCRNWATS	CRMCRA	ATPINCL	INTRAOPR
C234	0234	TRANS	N	Y	Y	Y	Y	Y																				
N	N	Y	Y	Y	Y	LONG	0																					
FGRPC	N	N	N	N	N	N	N																					
N	N	N	N	N	N	N																						

Field INTRA = Y, so this carrier can complete intraLATA calls. Next, Equal Access class of service screening is performed, using the intrastate class of service screening name from table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC
OVSSCL	SCRNIDX	DNLOOK	DFLTPIC	BYPASS	
TBELLIC1	CONFORM	0234	L123	NSCR	STER
SOVS	619	Y	Y	\$	

Since INTRASSC is nil, no class of service screening is necessary. The call will route to TITOGA1. The call is successfully translated, so ADACC screening continues.

Next we check that this office allows ADACC for toll calls: the DACC_LOCAL_TOLL_ACTIVATION parameter in table VROPT is set to

Cellular/IEC/LEC ADACC (continued)

ALL. Additionally, there are no restrictions against the calling number in the CCPDTYPS field of RESTBIL, so both local and toll calls may be offered ADACC. Finally, we perform the new ADACC screening to determine if ADACC can be offered for the call.

Because the call arrived at TOPS on a COMFGD trunk, it is considered a carrier call. We check that the TDGBIDX for the carrier is not 32767.

MAP display example for table TOPEACAR

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	
NATERM	INTERM					TDBIDX
OPSERV						
0234	C234	C234	Y	Y	0234	
UNREST	UNREST					
SERV	NOQUERY	Y NOQUERY	Y NOQUERY	Y Y Y Y		3

The call arrived to TOPS on a COMFGD trunk, so company ID/ANI ID screening is performed for the incoming entity. Because the CONNTYPE field in table TRKGRP is not NONE, we check the value of CARTYPE in TRKGRP to see if incoming company screening should be based on a carrier number or an NBEC code:

MAP display example for table TRKGRP

GRPKEY		GRPINFO
TBELLIC1		
TOPS 0	TLD NCRT IC MIDL 619	PTOP L32x NSCR Y SP
COMBINED	N Y 0 0000	CELL_MOBILE IEC COMFGD 0 10 10 Y
	N Y N N N	

Since CARTYPE = IEC, we get the carrier number from table TOPEATRK:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEATRK**

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TBELLIC1 SOVS	CONFORM 619	0234 Y	L123 Y	STRA \$	STER

We use the company ID and ANI ID digits signalled from the cellular end office to access table COANISCR. We reference the table with company type IEC:

MAP display example for table COANISCR

KEY	TDBIDX
IEC 0234 00	4

This tuple refers to TOPSDB, tuple 4:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
4	0	4

Tuple 4 in TOPSDB refers to table TDBDAOPT, tuple 4:

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
4	INTRA SENTPD \$

For this tuple, ADACC is allowed for intraLATA calls. We note the billing options for later use. Since the call is not an interLATA call, no screening is necessary on an outgoing carrier/ANI ID basis. Next, we check to see if there are any restrictions based on the calling DN. Since the calling DN is the true ANI of the cellular subscriber, it is not likely to be datafilled in table

Cellular/IEC/LEC ADACC (continued)

DNSCRN. The default tuples in tables TOPSDB and TDBDAOPT are referenced:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
0	0	0

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
0	ALL \$

Finally, we compare the billing options in table ADACCOPT to the billing restrictions recorded in the above screening:

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 STATION	ALTBIL SENTPD \$	GEN	S

SENTPD is the only billing option found in both of the previous billing sets and table ADACCOPT. There are no billing restrictions against the calling number, so ADACC is offered, with possible billing option SENTPD. When it is time to generate the AMA record for this call, we check the value of the CONNTYPE field in table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOPT L32x NSCR Y SP	
COMBINED N Y 0 0000 CELL_MOBILE IEC COMFGD 0 10 10 Y	
N Y N N N	

Cellular/IEC/LEC ADACC (continued)

Since CONNTYPE = CELL_MOBILE, module 150 will be generated for this call, with connection type = 04. Since CARTYPE = IEC, the connection identification will be populated as 0234, the carrier number datafilled for this trunk in table TOPEATTRK.

Example 5 - Local subscriber, InterLATA call

This example demonstrates the datafill for calls from a local subscriber that require interLATA call completion.

A subscriber at DN 619-320-6000 dials 411 to reach TOPS DA. The call arrives at the TOPS switch on trunk TBELLIC1. Querying the subscriber and the DAS, the operator chooses a listing for DN 212-220-1111. Because the incoming trunk group is the same as example 1, most of the translations through table STDPRT are the same as example 1. The translations diverge beginning with table HNPACONT, indexed using the NPA from table TRKGRP:

MAP display example for table HNPACONT

STS	NORTREFS	NOAMBIGC	RTREF	HNPACODE	ATTRIB	RTEMAP
619	807	8	(35)	(1)	(0)	(0)

The called digits are used to key into subtable HNPACODE:

MAP display example for subtable HNPACONT.HNPACODE

FROMDIGS	TODIGS	CDRRTMT
212	212	FRTD 803

This points to subtable RTEREF, tuple 803, which indicates that the call should route to trunk TATCC111OG1:

MAP display example for table HNPACONT.RTEREF

RTE	RTELIST
803	(S D TATCC111OG1)\$

Cellular/IEC/LEC ADACC (continued)

Next, class of service screening and LCA screening begin. No class of service screening is necessary, as no class of service screening is datafilled in tables TRKGRP, TOPSBC, or OPRTRANS. The LCA name is taken from table TOPSBC to access table LCASCRCN:

MAP display example for table LCASCRCN

NPALOCNM	LCASCR	PFXSELEC	PFXFOR10
619 L32X	(5)	OPTL	N

The called digits are not datafilled in subtable LCASCR, so the call must be toll. Next, TOPS determines the LATA status of the call. The LATA name is taken from table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC
OVSSCL	SCRNIDX	DNLOOK	DFLTPIC	BYPASS	
TBELLIC1	CONFORM	0111	L123	STRA	STER
SOVS	619	N	Y	\$	

Table LATAXLA is referenced to determine the LATA and state status of the call, indexed using the LATA name and called NPA:

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
L123 212	INTER	INTER	STD

Based on datafill in table LATAXLA, the call is interLATA and interstate. Therefore, Equal Access screening is needed. First, the calling party's PIC is determined, based on table TOPEATRK:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEATRK**

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TBELLIC1 SOVS	CONFORM 619	0111 N	L123 Y	STRA \$	STER

The default carrier for this trunk is 0111. DNLOOK = N, so TOPS does not check table DNPIC. Next, TOPS checks that carrier 0111 can complete this call. First, the carrier name is obtained from table TOPEACAR:

MAP display example for table TOPEACAR

CARDIG NATERM OPSERV	CARNAME INTERM	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	TDBIDX
0111 UNREST SERV	C111 UNREST NOQUERY	C111 Y NOQUERY	Y NOQUERY	Y Y Y Y Y	0111	3

The carrier name from table TOPEACAR is used to index table OCCINFO:

MAP display example for table OCCINFO

CARRNAME	CARRNUM	ACCESS	ORIGCARR	INTER	INTNTL	INTRA	ANI
FANI	ONISCRN	AD1	OVERLAP	INTERS	INTRAS	TERMREC	OCCSEPNO
OPSIG	PICIND	NOA950	INCCPN	DTMFIND	OPSERV	CACBLOCK	
CTDOA	CMCMON	SCRNWATS	CRMCRA	ATPINCL	INTRAOPR		
C111	0111	TRANS	N	Y	Y	N	Y
N	N	Y	Y	Y	LONG	0	
FGRPC	N	N	N	N	N	N	
N	N	N	N	N	N		

Field INTER = Y, so this carrier can complete interLATA calls. Next, Equal Access class of service screening is performed, using the interstate class of service screening name from table TOPEATRK:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEATRK**

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TBELLIC1 SOVS	CONFORM 619	0111 Y	L123 Y	STRA \$	STER

Table CLSVSCRC is indexed using the serving NPA, 619, class of service screening name STER, and OA:

MAP display example for table CLSVSCRC

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
619 STER OA	2	N	NONE (1)

Subtable CLSVSCR is accessed using the carrier digits and the called digits:

MAP display example for subtable CLSVSCRC.CLSVSCR

FROMDIGS	TODIGS	TMTOFRT
01112	01112	T OFRT 501

This points to table OFRT, tuple 501, which indicates that the call should route to trunk TATCC111OG1:

MAP display example for table OFRT

RTE	RTELIST
501	(S D TATCC111OG1)\$

The call is successfully translated, so ADACC screening continues. DACC_LOCAL_TOLL_ACTIVATION in VROPT is ALL. Additionally, there are no restrictions against the calling number in the CCPDTYPS field of RESTBIL, so both local and toll calls may be offered ADACC. Finally, the new ADACC screening is performed. The call arrived at the TOPS office on a

Cellular/IEC/LEC ADACC (continued)

trunk with calling ID BELL, so no screening is done based on the incoming company ID. To screen on the outgoing carrier, we access table TOPEACAR:

MAP display example for table TOPEACAR

CARDIG NATERM OPSERV	CARNAME INTERM	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	TDBIDX
0111	C111	C111	Y	Y	0111	
UNREST SERV	UNREST NOQUERY	Y NOQUERY	Y NOQUERY	Y Y Y Y		3

Field TDBIDX does not equal 32767, so ADACC may be offered. TOPEACAR field TDBIDX points to table TOPSDB, tuple 6:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
6	0	6

The TOPS database points to tuple 6 in the new ADACC screening table:

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
6	INTER ALL \$

This table indicates that ADACC may be offered for interLATA calls, and all billing options are valid. The calling number is not datafilled in table DNSCRN, so the default tuples in tables TOPSDB and TDBDAOPT are referenced, which allow ADACC for all LATA statuses and all billing options.

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
0	0	0

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TDBDAOPT**

TDBDAIDX	ADACCSRV	
0	ALL	ALL \$

Finally, we compare the billing options in table ADACCOPT to the billing restrictions recorded in the above screening:

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 STATION	ALTBIL SENTPD \$	GEN	S

ALTBIL and SENTPD are valid billing options for all of the above billing sets. There are no billing restrictions datafilled against the calling number. So, ADACC is offered with possible billing options ALTBIL and SENTPD. When the AMA record for this call is generated, we check the value of the CONNTYPE field in table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TBELLIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N	

Since CONNTYPE = NONE, AMA module 150 will NOT be recorded for this call.

Example 6 - Incoming carrier call, interLATA call

This example demonstrates datafill for calls arriving from an interLATA carrier.

A subscriber at DN 629-991-7777 dials 619-555-1212 to reach directory assistance for NPA 619. The call from 629 to 619 is an interLATA call, and is carried by an IEC to the TOPS switch. The IEC signals the true ANI of the

Cellular/IEC/LEC ADACC (continued)

subscriber, with ANI ID digits 00 to the TOPS switch. The call arrives at the TOPS office on trunk TIECIC1, datafilled in table TRKGRP as below:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TIECIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA L32X Y SP	
COMBINED N Y 0 0000 TYPE_D IEC COMFGD 0 10 10 Y N Y N	
N N	

Through translations, the call is routed to a TOPS position as a DA call. The operator queries the subscriber, and launches a query of the DAS database accordingly. The requested DN is 212-220-1111. The DAS sends the DMS a message requesting a call completion ARU. Now, TOPS determines if it will offer ADACC to the call. First, TOPS checks table DATRKOPT:

MAP display example for table DATRKOPT

GRPKEY	MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TIECIC1							
5	AUTO	Y	Y	Y	N	PRIMARY	

Since DACC=AUTO, ADACC may be offered. Next, table DABILL is checked:

MAP display example for table DABILL

DABKEY	REQNUM	CLGREQ	SERVNAME	ENHAMA	CCSURCHG	DACC
FOR555 STATION	N	Y	TOLLFREE	Y	Y	ALL

Since DACC=ALL, ADACC may be offered. Now, the requested DN is translated. The serving NPA, class of service screening name, and LCA screening name are taken from table TRKGRP.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TRKGRP**

GRPKEY	GRPINFO
TIECIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP L32X NSCR Y SP	
COMBINED N Y 0 0000 TYPE_D IEC COMFGD 0 10 10 Y N Y N	
N N	

The trunk group and NXX combination is not datafilled in table TOPSBC, so no screening information is taken from TOPSBC. Next, the pretranslator name and class of service screening name are taken from table OPRTRANS:

MAP display example for table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	619	NSCR	OPER	NLCA

Given the above datafill, the call is translated using pretranslator OPER, NPA 619, and called number 212-220-1111. Pretranslations first access table STPRTCT, tuple OPER:

MAP display example for table STDPRTCT

EXTPRTNM	STDPRT	AMAPRT
OPER	(1)	(0)

Then, subtable STDPRT is accessed, using the called digits as a key to the table:

MAP display example for subtable STDPRTCT.STDPRT

FROMDIGS	TODIGS	PRETRTE
201	212	N OA 0 NA

Cellular/IEC/LEC ADACC (continued)

Further translations are needed, so table HNPACONT is accessed, using NPA 619, taken from table TRKGRP:

MAP display example for table HNPACONT

STS	NORTREFS	NOAMBIGC	RTEREF	HNPACODE	ATTRIB	RTEMAP
619	807	8	(35)	(1)	(0)	(0)

The called digits are used to key into subtable HNPACODE:

MAP display example for subtable HNPACONT.HNPACODE

FROMDIGS	TODIGS	CDRRTMT
212	212	FRTD 803

This points to subtable RTEFEF, tuple 803, which indicates that the call should route to trunk TATCC111OG1:

MAP display example for table HNPACONT.RTEREF

RTE	RTELIST
803	(S D TATCC111OG1)\$

Next, class of service screening and LCA screening begin. No class of service screening is necessary, as no class of service screening is datafilled in tables TRKGRP or OPRTRANS. The LCA name is taken from table TRKGRP to access table LCASCRCN:

MAP display example for table LCASCRCN

NPALOCNM	LCASCR	PFXSELEC	PFXFOR10
619 L32X	(5)	OPTL	N

Cellular/IEC/LEC ADACC (continued)

The called digits are not datafilled in subtable LCASCR, so the call must be toll. Next, TOPS determines the LATA status of the call. The LATA name is taken from table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TIECIC1 SOVS	CONFORM 619	0111 N	L123 Y	NSCR \$	STER

Table LATAXLA is referenced to determine the LATA and state status of the call, indexed using the LATA name and called NPA:

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
L123 212	INTER	INTER	STD

Based on datafill in table LATAXLA, the call is interLATA and interstate. Therefore, Equal Access screening is needed. First, the calling party's PIC is determined, based on table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TIECIC1 SOVS	CONFORM 619	0111 N	L123 Y	NSCR \$	STER

The default carrier for this trunk is 0111. DNLOOK = N, so TOPS does not check table DNPIC. Next, TOPS checks that carrier 0111 can complete this call. First, the carrier name is obtained from table TOPEACAR:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEACAR**

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	TDBIDX
NATERM	INTERM					
OPSERV						
0111	C111	C111	Y	Y	0111	
UNREST	UNREST					
SERV	NOQUERY	Y NOQUERY	Y NOQUERY	Y Y Y Y		3

The carrier name from table TOPEACAR is used to index table OCCINFO:

MAP display example for table OCCINFO

CARRNAME	CARRNUM	ACCESS	ORIGCARR	INTER	INTNTL	INTRA	ANI
FANI	ONISCRN	AD1	OVERLAP	INTERS	INTRAS	TERMREC	OCCSEPNO
OPSIG	PICIND	NOA950	INCCPN	DTMFIND	OPSERV	CACBLOCK	
CTDOA	CMCMON	SCRNWATS	CRMCRA	ATPINCL	INTRAOPR		
C111	0111	TRANS	N	Y	Y	N	Y
N	N	Y	Y	Y	LONG	0	
FGRPC	N	N	N	N	N	N	
N	N	N	N	N	N		

Field INTER = Y, so this carrier can complete interLATA calls. Next, Equal Access class of service screening is performed, using the interstate class of service screening name from table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC
OVSSCL	SCRNIDX	DNLOOK	DFLTPIC	BYPASS	
TIECIC1	CONFORM	0111	L123	NSCR	STER
SOVS	619	N	Y	\$	

Table CLSVSCRC is indexed using the serving NPA, 619, class of service screening name STER, and OA:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table CLSVSCRC**

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
619 STER OA	2	N	NONE (1)

Subtable CLSVSCR is accessed using the carrier digits and the called digits:

MAP display example for subtable CLSVSCRC.CLSVSCR

FROMDIGS	TODIGS	TMTOFRT
01112	01112	T OFRT 501

This points to table OFRT, tuple 501, which indicates that the call should route to trunk TATCC111OG1:

MAP display example for table OFRT

RTE	RTELIST
501	(S D TATCC111OG1)\$

The call is successfully translated, so ADACC screening continues. Next we check that this office allows ADACC for toll calls: the DACC_LOCAL_TOLL_ACTIVATION parameter in table VROPT is set to ALL. Additionally, there are no restrictions against the calling number in the CCPDTYPS field of RESTBIL, so both local and toll calls may be offered ADACC.

Finally, the new ADACC screening is performed. Because the call arrived at TOPS on a COMFGD trunk, it is considered a carrier call. We check that the TDBIDX for the carrier is not 32767.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEACAR**

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	
NATERM	INTERM					TDBIDX
OPSERV						
0111	C111	C111	Y	Y	0111	
UNREST	UNREST					
SERV	NOQUERY	Y NOQUERY	Y NOQUERY	Y Y Y Y		3

The call arrived at the TOPS office on a trunk with calling ID COMFGD, so screening is first performed on the incoming company ID/ANI ID basis. Because CARTYPE = IEC in table TRKGRP, we index table COANISCR with company type IEC, the carrier number from TOPEATRK, and the ANI ID signalled with the call:

MAP display example for table COANISCR

KEY	TDBIDX
IEC 0111 00	7

This tuple refers to TOPSDB, tuple 7:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
7	0	7

Tuple 7 in TOPSDB refers to table TDBDAOPT, tuple 7:

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
7	INTER SENTPD CONTBIL \$

For this tuple, ADACC is allowed for interLATA calls. We note the billing options for later use. This call is an interLATA call, so the outgoing

Cellular/IEC/LEC ADACC (continued)

carrier/ANI ID screening is performed. The outgoing carrier is the same as the incoming carrier, so ADACC is allowed for interLATA calls, and the billing options shown above are recorded. Since the calling DN is the true ANI of a call arriving from an IEC, it is not datafilled in table DNSCRN. The default tuples in tables TOPSDB and TDBDAOPT are referenced:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
0	0	0

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV	
0	ALL	ALL \$

Finally, we compare the billing options in table ADACCOPT to the billing restrictions recorded in the above screening:

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
FOR555 STATION	ALTBIL SENTPD	\$ XFR2	S

SENTPD is the only billing option found in the previous billing sets and table ADACCOPT. There are no billing restrictions against the calling number, so ADACC is offered, with possible billing option SENTPD.

When it is time to generate the AMA record for this call, we check the value of the CONNTYPE field in table TRKGRP:

Cellular/IEC/LEC ADACC (continued)**Map Display Example For Table Trkgrp**

GRPKEY

GRPINFO

TIECIC1

TOPS 0 TLD NCRT IC MIDL 619 PTOP L32X NSCR Y SP
 COMBINED N Y 0 0000 **TYPE_D IEC** COMFGD 0 10 10 Y N Y N
 N N

Since CONNTYPE = TYPE_D, module 150 will be generated for this call, with connection type = 03. Since CARTYPE = IEC, the connection identification will be populated as 0111, the carrier number from table TOPEATTRK.

Example 7 - Incoming NBEC call, intraLATA call

This example demonstrates the datafill for a calls arriving from an NBEC.

An NBEC subscriber dials 411 to reach DA. The NBECs end office signals the calling number of the subscriber, 629-991-8888, to the TOPS office, with an ANI ID of 00. The call arrives at the TOPS office on trunk TNBECIC1, datafilled in table TRKGRP as below:

MAP display Example for table TRKGRP

GRPKEY

GRPINFO

TNBECIC1

TOPS 0 TLD NCRT IC MIDL 619 PTOP L32X NSCR Y SP
 COMBINED N N 0 4057 LOCAL_TRANS NBEC EA0SS 50 10 10 Y
 OFFHK 90 99 90 94 N N N

Through translations, the call is routed to a TOPS position as a DA call. The operator queries the subscriber, and launches a query of the DAS database accordingly. The requested DN is 201-220-1111. The DAS sends the DMS a message requesting a call completion ARU. Now, TOPS determines if it will offer ADACC to the call. First, TOPS checks table DATRKOPT:

Cellular/IEC/LEC ADACC (continued)**Map Display Example For Table Datrkopt**

GRPKEY	MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TNBECIC1	5	ALL	Y	Y	Y	N	PRIMARY

Since DACC = ALL, ADACC may be offered. Next, table DABILL is checked:

MAP display example for table DABILL

DABKEY	REQNUM	CLGREQ	SERVNAME	ENHAMA	CCSURCHG	DACC
411 STATION	N	Y	TOLLFREE	Y	Y	ALL

Since DACC = ALL, ADACC may be offered. Now, the requested DN is translated. The serving NPA, class of service screening name, and LCA screening name are taken from table TRKGRP.

MAP display example for table TRKGRP

GRPKEY	GRPINFO											
TNBECIC1	TOPS	0	TLD	NCRT	IC	MIDL	619	PTOP	L32X	NSCR	Y	SP
	COMBINED	N	N	0	4057	LOCAL_TRANS	NBEC	EAOSS	50	10	10	Y
	OFFHK	90	99	90	94	N	N	N				

The trunk group and NXX combination is not datafilled in table TOPSBC, so no screening information is taken from TOPSBC. Next, the pretranslator name and class of service screening name are taken from table OPRTRANS:

MAP display example for table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	619	NSCR	OPER	NLCA

Cellular/IEC/LEC ADACC (continued)

Given the above datafill, the call is translated using pretranslator OPER, NPA 619, and called number 201-220-1111. The translations for this call are the same as example 1, so the call translates successfully, and will route to trunk TITOGA1 if ADACC is offered.

As in example 1, no class of service screening is necessary. LCA screening is performed, using the NPA from the incoming trunk group and the LCA name from table TRKGRP. Since the NPA and LCA name are the same as in example 1, the same LCA screening is performed. The call is determined to be a toll call.

Next, the LATA designation of the call is determined. Again, the LATA name is taken from table TOPEATRK:

MAP display example for table TOPEATRK

TRUNKGRP OVSSCL	ENDOFFCE SCRNIDX	CARRIER DNLOOK	LATANM DFLTPIC	INTRASSC BYPASS	INTERSSC
TNBECIC1 SOVS	CONFORM 619	0234 N	L123 Y	NSCR \$	STER

Table LATAXLA is referenced to determine the LATA and state designations of the call. Because the LATA name and called NPA are not datafilled in table LATAXLA, the call is intraLATA and intraSTATE.

Because the call is arriving to TOPS from a local end office, and it is an intraLATA call, it is not a carrier call. Therefore, no Equal Access translations are needed.

Next we check that this office allows ADACC for toll calls: the DACC_LOCAL_TOLL_ACTIVATION parameter in table VROPT is set to ALL. Additionally, there are no restrictions against the calling number in the CCPDTYPS field of RESTBIL, so both local and toll calls may be offered ADACC. Finally, we perform the new ADACC screening to determine if ADACC can be offered for the call.

The call arrived to TOPS on a EAOSS trunk, so company ID/ANI ID screening is performed for the incoming entity. Because the CONNTYPE field in table TRKGRP is not NONE, we check the value of CARTYPE in TRKGRP to see if incoming company screening should be based on a carrier number or an NBEC code:

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TRKGRP**

GRPKEY	GRPINFO
TNBECIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP L32X NSCR Y SP	
COMBINED N N 0 4057 LOCAL_TRANS NBEC EA0SS 50 10 10 Y	
OFFHK 90 99 90 94 N N N	

Since CARTYPE = NBEC, we check table NBECCODE for the calling number. The calling number is not datafilled in table NBECCODE, so the company ID is the NBECID from table TRKGRP, 4057. We use the company ID and ANI ID digits signalled from the cellular end office to access table COANISCR. We reference the table with company type NBEC:

MAP display example for table COANISCR

KEY	TDBIDX
NBEC 4057 00	8

This tuple refers to TOPSDB, tuple 8:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
8	0	8

Tuple 8 in TOPSDB refers to table TDBDAOPT, tuple 8:

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
7	INTER SENTPD ALTBIL \$

For this tuple, ADACC is allowed for intraLATA calls. We note the billing options for later use. Since the call is not an interLATA call, no screening is

Cellular/IEC/LEC ADACC (continued)

necessary on an outgoing carrier/ANI ID basis. Next, we check to see if there are any restrictions based on the calling DN. The calling DN is not datafilled in table DNSCRN. The default tuples in tables TOPSDB and TDBDAOPT are referenced:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
0	0	0

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV
0	ALL \$

Finally, we compare the billing options in table ADACCOPT to the billing restrictions recorded in the above screening:

MAP display example for table ADACCOPT

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 STATION	ALTBIL SENTPD \$	GEN	S

SENTPD and ALTBIL are the only billing option found in both of the previous billing sets and table ADACCOPT. There are no billing restrictions against the calling number, so ADACC is offered, with possible billing options SENTPD and ALTBIL. When it is time to generate the AMA record for this call, we check the value of the CONNTYPE field in table TRKGRP:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TNBECIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP L32X NSCR Y SP	
COMBINED N N 0 4057 LOCAL_TRANS NBEC EA0SS 50 10 10 Y	
OFFHK 90 99 90 94 N N N	

Cellular/IEC/LEC ADACC (continued)

Since CONNTYPE = LOCAL_TRANS, module 150 will be generated for this call, with connection type = 05. Since CARTYPE = NBEC, the connection identification will be populated as 4057, the NBEC code datafilled for this trunk in table TRKGRP.

AN0410 and AN0841 - TOPS Standard and IBM DA Protocol Enhancements**Background: Ghost reconnects**

TOPS offices are experiencing ghost reconnects with enough frequency to affect operator average work time (AWT). A reconnect is a subscriber reconnecting to an operator after connecting to an announcement (in this case, a DA announcement). A ghost reconnect is a call with no subscriber connecting to an operator. It can occur during a DA call when a subscriber hangs up briefly after hearing the announcement and dials a new number. If the subscriber has three-way calling, this could be interpreted as a flash and the end office would initiate a new call for the subscriber. However, TOPS still has the old call, and that old call would recall to the operator after a period of time. Similarly, when a subscriber has two lines, a ghost reconnect can occur.

Background: Customized announcements

Customers of the telephone company that act as aggregators; such as hospitals, hotels, or cellular carriers; want the telephone company to provide customized announcements for DA and DACC. Then, the DAS requires the following:

- The aggregator id.
- A dial-pulse (DP) phone indicator.
- The trunk group id.
- Is a call to the listing number a local, intralata toll, or interlata call? And if an interlata call, which interexchange carrier (IEC) would carry the call?

Background: ADACC calls with no announcements

Some customers wish to use the DA service as a call completion service and not spend time listening to an announcement or choosing options.

Background: Auto collect surcharge only

DACC allows a subscriber who obtains a directory number from a DA call to have the telephone company complete the call, either through an operator or an automated system. There is a surcharge for this service. There is the ability to specify in the DA listing database that the called party will pay for the call. This is called auto-collect, and this includes the surcharge as well as the normal charges. This is typically used by a business to encourage calls. There are some businesses which are not willing to pay the toll charges, but are willing to pay the DACC surcharge to encourage calls.

Cellular/IEC/LEC ADACC (continued)

Background: Operator billing on ADACC calls

Some subscribers require billing of ADACC calls by an operator. Currently, only alternate billing of ADACC calls via an automated system is allowed. While automated systems do allow for exceptional cases to go to an operator for billing, it costs time and effort for those subscribers requiring billing through an operator.

Reconnect capability

This feature changes reconnects after DA announcements. Formerly, reconnects were controlled by timer POST_ANN_TIMEOUT in table VROPT. If the subscriber stayed offhook long enough after call completion, the subscriber was reconnected to a live operator.

Now, the subscriber is prompted and must respond to reconnect to a live operator. Also, timer POST_ANN_TIMEOUT is now used at announcement completion to wait for a message from the DAS. If the message is not received, the call is taken down, new OM DATIMRLS is pegged, and log DAS103 is generated. This is an error condition, and should not happen in normal situations.

This feature does not change reconnect restrictions due to error conditions such as announcement failure. Parameter MAXIMUM_DA_RECALLS, in table VROPT, still limits the number of reconnects requested by a DA call. Table XANNINFO still limits the reconnect ability of a particular announcement.

This feature does not change another use of parameter POST_ANN_TIMEOUT. If a subscriber is not allowed to reconnect after DA completion, TOPS waits for POST_ANN_TIMEOUT to expire before taking down the call.

Dial pulse phone reconnect limitation

Subscribers must use touch tone phones to respond to the DAS. Therefore, dial pulse (DP) phone subscribers are not prompted by the DAS. Instead, if the subscriber remains offhook after DA completion for the POST_ANN_TIMEOUT period, the subscriber is reconnected to an operator.

A phone is considered DP if the call meets all of the following:

- The incoming trunk is a TOPS trunk and the calling id selector in table TRKGRP is BELL, MODBELL, OSS, EAOSS, or EAOSSIC.
- For BELL, MODBELL and OSS signalling, the called keypad signal encoding (KP) digit is KP2. Or, for EAOSS and EAOSSIC signalling the calling KP digit is KP or KP1.

Cellular/IEC/LEC ADACC (continued)

Therefore, if the above signalling is not used and this feature is activated, DP phone subscribers could not reconnect to an operator. However, this problem would be avoided if the DAS used voice recognition instead of touch tone signalling.

Compatibility and upgrading

TOPS, DAS, and the audio units must be upgraded to use this feature. If DAS is upgraded first, it is recommended that DAS provide a parameter to turn on this functionality. Since DAS may connect to multiple switches, it is further recommended that this parameter be applicable on a per-switch basis.

If TOPS is upgraded before the audio units and associated DAS, it is recommended that parameter DA_INTERACTIVE_RECONNECT in table VROPT be set to N until all the audio units and DAS are upgraded.

Announcement customizations

Information sent to the DAS for generating custom announcements is as follows:

- The originating trunk group id from field ADNUM in table CLLI identifies which trunk group the call arrived on at the TOPS switch.
- DP phone indicator as determined in previous section: "Dial pulse phone reconnect limitation".
- Call completion call type field. This field tells if the completed call would be a local, intralata toll, or interlata call.
- Outgoing carrier id.
- First and second languages for IBM protocol only

Languages to be used in announcements are determined by datafill in tables DATRKOPT and VROPT. Table VROPT determines the primary and secondary languages for the DMS. Current choices are English and French. Table DATRKOPT determines if a particular trunk group uses the primary language, secondary language, or both. If the trunk group uses both, which language comes first is also specified in table DATRKOPT. This functionality existed prior to this feature, and is unchanged by this feature. The FIRST LANGUAGE and SECOND LANGUAGE fields in the CALL INITIATION message are populated based on datafill in table DATRKOPT.

- The originating company id or interexchange carrier (IEC) id.

Cellular/IEC/LEC ADACC (continued)

The company ids are represented as Non-Bell Exchange Company (NBEC) codes. The company or carrier id is determined as follows:

- If the incoming trunk is an IEC trunk, the carrier id from table TOPEATRK (for TOPS trunks) or TRKGRP (for ATC trunks) is used.
- If the incoming trunk is not an IEC trunk and there is an entry in table NBECCODE for the calling number, then the NBEC code in that table entry is used.
- If the incoming trunk is not an IEC trunk and there is no entry in table NBECCODE for the calling number, then the NBEC code from that trunk group's entry in table TRKGRP is used.

Determination of treating the incoming trunk as an IEC trunk or not is described in feature AN0262, Cellular/IEC/LEC ADACC Screening Enhancements, in section Incoming company/ANI ID screening.

No announcement ADACC

This feature provides DMS support for protocol enhancements to allow the DAS to request call completion without first going to announcement. Prior to this feature, billing for an ADACC call was determined in several stages:

- The DMS would present a list of allowable billing methods to the DAS.
- The DAS would present a list of allowable billing methods to the subscriber.
- The subscriber would indicate to the DAS which billing method was desired.
- The DAS would present that choice to the DMS.
- The DMS would verify that that choice was valid.

There is an exception to the above billing determination, and that is auto collect. Auto collect billing is used when information in the DAS for the requested number indicates the requested number should be billed for the call completion call.

Cellular/IEC/LEC ADACC (continued)

With the advent of no announcement ADACC, there is no opportunity for the subscriber to choose the billing method. Therefore, determination of billing method is by the DMS, (with the exception of auto collect) as follows:

- If listing data from the DAS indicates the requested number should be billed for the call completion call, auto collect billing is used.
- Otherwise, the list of allowable billing methods from DMS datafill (including the datafill implemented by feature AN0262), is obtained and the one chosen is:
 - Continue billing, if allowed.
 - Sent paid, if allowed, but continue billing is not allowed.
 - Alternate billing, if allowed, but neither continue billing nor sent paid billing are allowed.
 - Operator billing, if allowed, but no other methods of billing are allowed.

Auto collect surcharge only

This feature enables billing the call completion surcharge to the called party while billing the remainder to the calling party. This is controlled by an auto collect surcharge only attribute in the listing database on the DAS. There is only one AMA record associated with this billing event. The downstream processor is responsible for splitting out the two charges. This means that in a coin call or call requiring real time rating, the surcharge portion does not appear in the charge amount required or quoted, since the calling party is not responsible for it.

Operator billing for ADACC calls

This feature enables TOPS to present an additional ADACC billing option to the DAS and to accept that new ADACC billing option from the DAS for a call completion call. That new option is to go to an operator for billing. Field BILTYPES in table ADACCOPT is expanded to include this new billing option.

Note that operator billing is not like the other billing types, it brings the subscriber to an operator where any billing method is allowed, subject only to operator practice. The call is still considered an ADACC call because the service change (from DA service to call completion service) is without operator intervention.

When such a call goes to an operator for billing, it is as a toll and assist call. And, the display is datafilled in table ADACCOPT. This is existing functionality, unchanged by this feature. The only change by this feature is how the call is routed to the operator for billing.

Cellular/IEC/LEC ADACC (continued)

Activation (AN0262, AN0410, AN0841 and AF6711)

This functionality is optional, controlled by Software Optionality Control (SOC) in options OSDA0005 (Cell/IXC/LEC ADACC) and OSDA0006 (DA Automation I/F). To activate this functionality, one of these options (OSDA0005 or OSDA0006) must be turned from IDLE to ON in SOC. Then, the functionality of AN0262 is provided.

AF6711 - Branding for TOPS via SPID (TOPS07)

In TOPS07, feature AF6711 in functionality Branding via SPID, ENSV0017 made the following changes that affect this functionality (DA Automation I/F).

The DA protocol version functionality provided by the following VROPT parameters is moved out of the table:

- DA_STANDARD_PROTOCOL_VERSION
- DA_IBM_PROTOCOL_VERSION

The DA protocol version for either protocol is placed in new field VERSION in table SERVICES. An example of table SERVICES is provided in the datafill procedure section.

The VROPT parameters are used during dump and restore to set the VERSION field in table SERVICES.

Prior to this feature, the following SOC's interacted with the VROPT version parameters:

- OSDA0005, Cell/IXC/LEC ADACC
- OSDA0006, DA Automation I/F (ADAS+)

Since the VROPT version parameters are being removed as stated above, the interaction between the maximum version allowed in VROPT and these SOC options is no longer applicable. Therefore, the interactions have been removed. However, the SOC's must still be turned ON to achieve their associated functionality. For example, OSDA0006 must be SOC'd on for ADAS+ to function properly on link sets with VERSION set to 3 or greater.

The DA_INTERACTIVE_RECONNECT parameter in table VROPT use to require one or both of the SOC's listed above to be ON before it could be set to Y. As a result of this feature, this interaction will be removed. DA interactive reconnect is really dependent on the protocol VERSION and not the SOC

Cellular/IEC/LEC ADACC (continued)

options. From hence forward, DA interactive reconnect functionality requires the following:

- DA_INTERACTIVE_RECONNECT must be set to Y (no longer dependent on SOC options)
- the protocol version in table SERVICES must be greater than 1

The following sections are modified to take these changes into account.

AN0262 - Cellular/IEC/LEC ADACC Screening Enhancements

Feature AN0262, when activated, provides the following:

- AMA module 150 is generated for DA and DACC calls on trunks with CONNTYPE set to a value other than NONE.
- The decision of whether or not to offer ADACC is based on the new ADACC screening rules.
- Field VERSION in table SERVICES can be set to version 2, which activates the functionality of features AN0410 and AN0841, respectively.

AN0841 - TOPS IBM DA Protocol Enhancements

Once one of the options is turned ON, this functionality is activated by datafill in table VROPT. This protocol has two states, not supported and supported:

- Not supported: At release of this functionality in TOPS03, the IBM protocol is not supported. Therefore, field VERSION in table SERVICES can only be set 1, which disables this new IBM DA protocol capability. Then, the IBM protocol operates as it did prior to this feature (AN0841). Therefore, the functionality of AN0262 is available. But, none of the functionality of this feature (AN0841) is available:
 - New reconnects using parameter DA_INTERACTIVE_RECONNECT is not available.
 - Announcement customization (branding) is not available.
 - ADACC calls without announcements is not available.
 - Billing only the surcharge portion of a DACC call to the called party is not available.
 - Operator billing option on ADACC calls is not available.
- Supported: When IBM protocol is supported, activation of protocol enhancements is controlled by field VERSION in table SERVICES. This field must be set to 2 or greater. Otherwise, value 1 selects the protocol prior to this functionality. Activation of the new reconnect is controlled by parameters DA_INTERACTIVE_RECONNECT (set to Y) and field VERSION (set to 2 or greater).

Cellular/IEC/LEC ADACC (continued)

AN0410 - TOPS Standard DA Protocol Enhancements

Once one of the options is turned ON, this functionality is activated by datafill in table VROPT. Activation of protocol enhancements is controlled by field VERSION in table SERVICES. This field must be set to 2 or greater.

Otherwise, value 1 selects the protocol prior to this functionality. Activation of the new reconnect is controlled by parameter

DA_INTERACTIVE_RECONNECT (set to Y) and field VERSION (set to 2 or greater).

Deactivation (AN0262, AN0410, and AN0841)

To turn both SOC options OSDA0005 and OSDA0006 from ON to IDLE, DA_INTERACTIVE_RECONNECT must be set to N, and field VERSION (table SERVICES) must be set to 1. If OSDA0006 is IDLE and the craftsperson attempts to change OSDA0005 to IDLE without correcting the above parameter and field, the following error message is given:

```
SERVICES: VERSION must be set to 1
VROPT: DA _INTERACTIVE_RECONNECT must be set
to N before setting this option to IDLE.
```

To turn option OSDA0006 to IDLE, with OSDA0005 ON, field VERSION must be set to 2. If the craftsperson attempts to change OSDA0006 to IDLE without changing the protocol version, the following error message is given:

```
SERVICES:VERSION must be lowered before setting this option to
IDLE.
```

Additional error messages may be given when turning OSDA0006 to IDLE. Please see functionality DA Automation I/F for more information.

To turn OSDA0005 to IDLE with OSDA0006 ON, no datafill changes are necessary.

Translations table flow

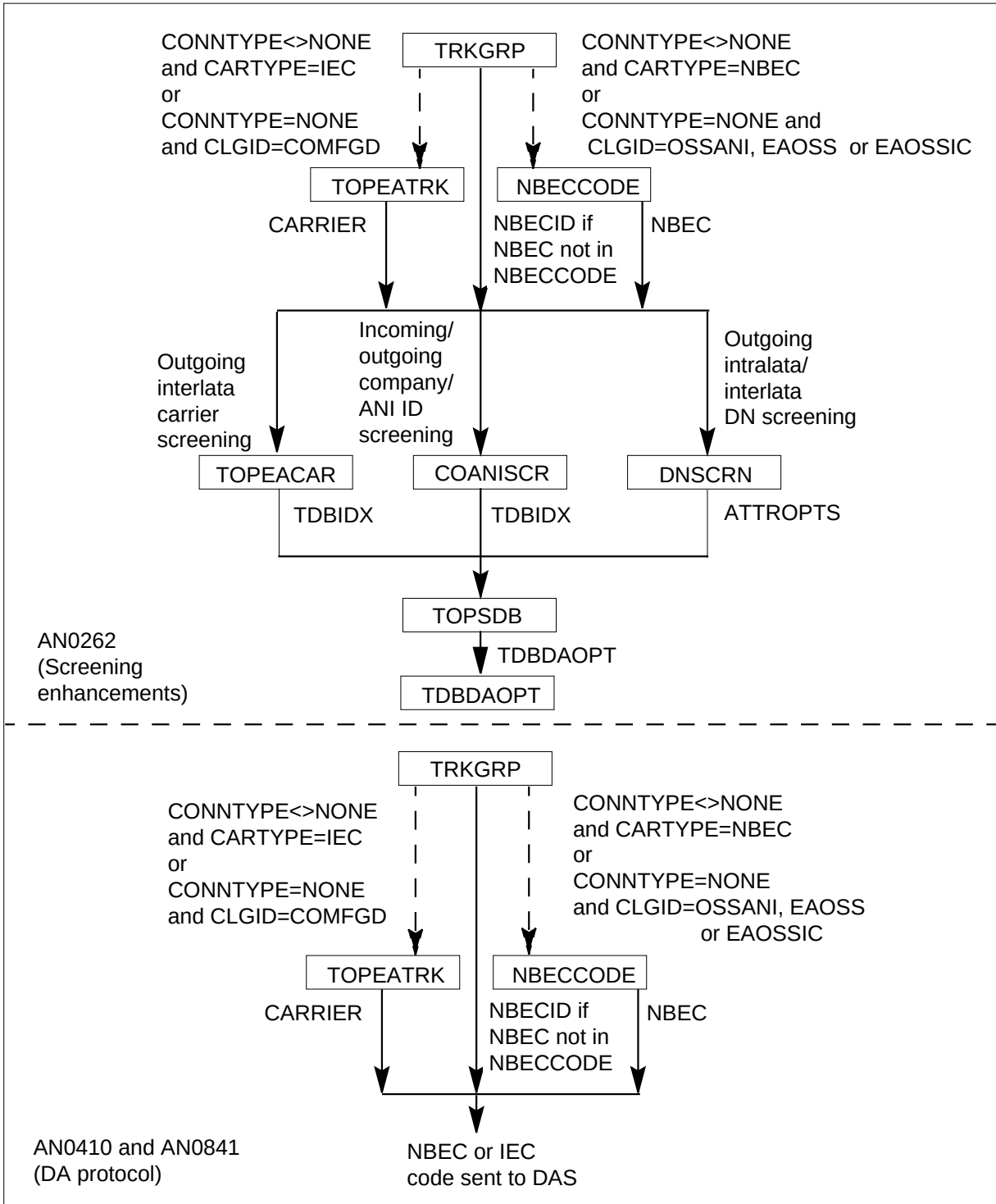
The Cellular/IXC/LEC ADACC translations tables are described in the following list:

- Table TRKGRP - Provides IEC id for ATC trunks, or if NBEC trunk and no id in table NBECCODE then provides NBEC id
- Table TOPEATRK - Provides IEC id for TOPS trunks
- Table NBECCODE - Provides NBEC id

Cellular/IEC/LEC ADACC (continued)

- Table TOPEACAR - Provides TOPSDB index for incoming screening
- Table COANISCR - Provides TOPSDB index for outgoing interlata screening
- Table DNSCRN - Provides TOPS DB index for outgoing intralata DN screening
- Table TOPSDB - Provides index into table TDBDAOPT.
- Table TDBDAOPT - Defines options for ADACC.

The Cellular/IXC/LEC ADACC translation process is shown in the flowchart that follows.

Cellular/IEC/LEC ADACC (continued)**Table flow for Cellular/IXC/LEC ADACC**

Cellular/IEC/LEC ADACC (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for Cellular/IXC/LEC ADACC

Datafill table	Example data
TRKGRP	TBELLIC1 TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N
TOPEATRK	TBELLIC1 CONFORM 0111 L123 STRA STER SOVS 619 Y Y \$
NBECCODE	619620 1234
TOPEACAR	0111 C111 C111 Y Y 0111 UNREST UNREST SERV NOQUERY Y NOQUERY Y NOQUERY Y Y Y Y 7
COANISCR	IEC 0111 00 7
DNSCRN	6193201111 TOPSDB 7
TOPSDB	7 0 7
TDBDAOPT	7 INTER ALTBIL CONTBIL \$

Limitations and restrictions

The following limitations and restrictions apply to Cellular/IXC/LEC ADACC:

AN0262 - Cellular/IEC/LEC ADACC Screening Enhancements

Roamers present a problem in restricting calls. If the true ANI of the cellular subscriber is passed to the TOPS office, it is not possible to datafill table SPLDNID or DNSCRN with all restricted cellular numbers.

The Enhanced ADACC Options of this feature apply only to DA calls that arrive on trunks signalling two digit ANI IDs, ADACC calls that require interLATA completion, or ADACC calls with restrictions on the calling DN datafilled in table DNSCRN. If none of these situations apply, the default values in table TDBDAOPT indicate to offer ADACC.

The company ID/ANI ID screening is implemented only for calls arriving on trunk types that signal two ANI ID digits : those with calling ID OSSANI, EAOSS, EAOSSIC, or COMFGD.

Note that the ADACC screening provided by this feature applies only to AUTOMATIC DACC. If the call returns to an operator position after release to an ARU, all decisions as to whether or not to offer operator services to the call are based on the contents of the OPSERV field in table TOPEACAR. The

Cellular/IEC/LEC ADACC (continued)

new ADACC screening datafill is not consulted once the decision to offer ADACC has been made. Field OPSERV determines operator services as follows:

- For calls arriving on carriers that are datafilled as OPSERV = SERV in table TOPEACAR, if the call returns to an operator position for any reason, the carrier number will be displayed on the screen, and the operator will be able to process the call. It is suggested that cellular carriers be datafilled as SERV.
- For calls arriving on carriers that are datafilled as OPSERV = NOSERV in table TOPEACAR, if the call returns to an operator position for any reason, XFR IC and the carrier number are displayed on the screen. And, the operator transfers the call to the carrier by keying POS RLS. Based on datafill in field OPLSCLD of table TOPEACAR, the requested DN may be outpulsed to the carrier. Note that the AMA record for this call does not contain AMA module 150, because the record is marked as a transfer to carrier, not a call completion record.

Carriers that are datafilled as NOSERV in table TOPEACAR should access table TDBDAOPT tuples that allow only SENTPD billing. Billing options OPERBIL, CONTBIL, and ALTBIL are not supported for NOSERV carriers.

No changes are made to intercept or TA calls. Intercept and TA calls are completed as before, based on the existing datafill.

Note that carrier numbers may be either three or four digits, depending on the state of Bellcore's FGD Carrier Identification Code (CIC) Expansion. Please see feature document AN0834 for more information on the FGD CIC Expansion.

AN0410 and AN0841 - TOPS Standard and IBM DA Protocol Enhancements

These features apply to standard (CCI) and IBM DA protocol.

If the new reconnect capability is turned on, the subscriber is using a DP phone, TOPS is unaware that the subscriber is using a DP phone, and the DAS cannot dialog with subscribers using DP phones, then the subscriber is unable to reconnect to an operator after connection to the DAS for a DA announcement.

For IBM protocol, the new reconnect capability does not apply when the DA system uses DMS internal announcements.

Cellular/IEC/LEC ADACC (continued)

Interactions

The following paragraphs describe the interactions between Cellular/IXC/LEC ADACC and other functionalities.

TOPS Interlata carrier service (TICS)

This feature changes the way that the TICS feature is used. When this feature is active, the TICS definition of SERV and NOSERV applies only to TA calls and operator handled DACC calls. Operator services for ADACC calls are provided based on the screening given in this feature.

ADACC with alternate billing

This feature also changes the use of the BILTYPE field in table ADACCOPT. Prior to this feature, or if this feature is not active, specifying NONE in this field indicates that the subscriber is not offered a selection of billing options for call completion, and that the billing approach used prior to feature AF2086 (ADACC with Alternate Billing) is to be used. When this feature is active, an entry of NONE in the BILTYPE field of ADACCOPT indicates that no billing types are valid, except auto-collect. It is suggested that all instances of NONE in table ADACCOPT be changed to either CONTBIL or SENTPD before activating this feature.

Branding

For this feature, it is possible to specify on a trunk group basis whether ADACC screening should use carrier numbers or NBEC codes. However, branding is based on the calling ID if the call is a carrier call. So, all calls arriving to TOPS on trunks with CLGID = COMFGD are branded using the appropriate carrier number to access table BRANDANN, and all other incoming calls are branded using the appropriate NBEC code. For this reason, all trunks with CLGID field = COMFGD and CONNTYPE not equal to NONE should be datafilled with CARTYPE = IEC. All other TOPS trunks with CONNTYPE not equal to NONE should be datafilled with CARTYPE = NBEC.

Protocol enhancement

The standard or IBM protocol DAS connected to the DMS must be upgraded for this feature to operate.

Activation/deactivation by the end user

Cellular/IXC/LEC ADACC requires no activation or deactivation by the end user.

Cellular/IEC/LEC ADACC (continued)**Billing****AN0262 - Cellular/IEC/LEC ADACC Screening Enhancements**

On DA calls, a corporation or carrier ID (corresponding to the incoming trunk) is included in new module 150. This is for use by the telephone company to differentiate among aggregators that use TOPS. This new module is used in listing services records and in call completion records that are marked 'subsequent to DA'. This new module is only in Enhanced Bellcore AMA Format (EBAF) phase 2. Following are the basic AMA changes.

- New module, 150 - Connection Type and Identification, is created to record company information: the company associated with the calling number or incoming trunk for a DA call. This module is generated in addition to the existing modules for DA and DACC calls.
- New table 168 in module 150.
- Existing table 83 is also recorded in new module 150.

If module 150 is desired for the incoming trunk group, it is appended to any record with either of the following:

- Structure code 752 and call code 194 (originating, listing services).
- Structure code 752 and call code 192 (originating, call completion), if it is marked 'subsequent to DA'.

Following are a description of the module 150 fields, a sample AMA record, and descriptions of the module 150 tables.

Module code 150

Information	Table number	Number of characters
Module Code	88	4
Connection Type and Identification	168	8
Trunk Group Number	83	6

Cellular/IEC/LEC ADACC (continued)

Example AMA record

MODULE CODE:	150	CONN TYPE AND ID
CONNECTION TYPE AND ID:		
CONNECTION TYPE:	04	CELLULAR MOBILE
IDENTIFICATION CODE:	01234C	
TRUNK GROUP NUMBER:		
TRUNK GRP SIGNALING TYPE IND:	1	NON-SS7 DIRECT
TRUNK GROUP NUMBER:	0325C	

Table 88

Table 88 records the module name. This field identifies a module of data fields. Value 150 is always recorded in this field.

88 - Module code

Bytes	Meaning
1-3	150 - Connection Type and Identification
4	Sign (hex C)

Table 168

Following byte definitions of table 168.

168 Connection type and identification

Bytes	Meaning
1-2	Connection Type / Identification Type: • 01 = Type A • 02 = Type B • 03 = Type D • 04 = Cellular Mobile • 05 = Local Transport
3-7	Incoming company's identification Code
8	Sign (hex C)

Bytes 1-2: To indicate how to populate AMA table 168, new fields are added to the TOPS trunk group refinement in table TRKGRP. A new field CONNTYPE, indicates what value is to be recorded in the connection type

Cellular/IEC/LEC ADACC (continued)

field of table 168. Possible values of the field are TYPE_A, TYPE_B, TYPE_D, CELL_MOBILE, LOCAL_TRANS, or NONE. If CONNTYPE = NONE, module code 150 will not be recorded for calls on this trunk. If CONNTYPE is filled with TYPE_A, TYPE_B, TYPE_D, CELL_MOBILE, or LOCAL_TRANS, module 150 will be recorded for all calls that have had DA service or call completion service subsequent to DA service.

Byte 3: Because company IDs are currently only 4 digits, byte 3 is zero-filled.

Bytes 4-7: Another new field in the TOPS trunk group refinement, CARTYPE, indicates how to fill table 168. If CARTYPE = IEC for the incoming trunk group, bytes 4-7 are populated with the carrier number from table TOPEATTRK. If CARTYPE = NBEC, bytes 4-7 are populated with the NBEC code from table NBECODE, if the calling number has an entry there; otherwise it is retrieved from the NBECID field of table TRKGRP.

Note: If the calling number is datafilled in table NBECODE, the NBEC ID from table NBECODE is always used instead of the NBEC from table TRKGRP. Additionally, table NBECODE is accessed for all calls using the above AMA module or the ADACC screening for this feature, regardless of whether the incoming trunk is datafilled in table BRANDOPT.

Note that field CARTYPE is only visible if CONNTYPE is datafilled with a value other than NONE. Field CARTYPE is also used for the new ADACC screening.

Below is an example of a trunk from a cellular carrier:

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TCOMFGDIC1	TOPS 0 TLD NCRT IC MIDL 629 PTOPT NLCA NSCR Y SP COMBINED N Y 0 0000 CELL_MOBILE IEC COMFGD 0 10 10 Y N Y N N N

AMA module 150 for DA and DACC calls on this trunk indicates that the call is from a cellular carrier, and contains the carrier number datafilled in table TOPEATTRK for trunk TCOMFGDIC1. This module also contains the ADNUM for trunk TCOMFGDIC1 as datafilled in table CLLI.

Cellular/IEC/LEC ADACC (continued)

Below is an example of a trunk from an NBEC.

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TNBECIC1	
TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP COMBINED N Y 0 4057 LOCAL_TRANS NBEC EAOSS 50 10 10 Y OFFHK 90 99 90 94 N N N	

AMA module 150 for DA and DACC calls on this trunk indicates that the call is from a local transport carrier, and contains the NBEC code from table NBECODE if the calling number is datafilled there; or otherwise the NBEC code from table TRKGRP. This module also contains the ADNUM for trunk TNBECIC1 as datafilled in table CLLI.

Please note that AMA module 150 is intended for use by calls on trunks dedicated to a single incoming company. It is not recommended for calls on trunks that may signal the carrier information, such as 3-stage EAOSS calls. For EAOSS 3-stage calls where CARTYPE=IEC, AMA module 150 is populated with the data from table TOPEATRK, as stated above.

Table 83

For module 150, table 83 records the incoming trunk group number as datafilled in field ADNUM of table CLLI. Table 83 is an existing table and is included in this module to meet Bellcore specifications.

83 - Trunk group number

Bytes	Meaning
1	Type of trunk group number: • 1 = non-SS7 direct trunk group number (TGN) • 2 = non-SS7 common (TGN) • 3 = SS7 direct TGN • 4 = SS7 access tandem TGN • 5 = SS7 end office TGN
2-5	Trunk group number
6	Sign (hex C)

Cellular/IEC/LEC ADACC (continued)**AN0410 and AN0841 - TOPS Standard and IBM DA Protocol Enhancements**

These feature allow charging the requested party in a DACC call for the DACC surcharge only. For example, a business that wants to encourage calls, but not incur toll charges, would have their listing marked "auto collect surcharge only". Then the potential business customer could use DACC without incurring the DACC surcharge, since it would be paid by the business.

A new value is added for an existing subfield of field OSS Completion Service Conditions in module code 051, Call Completion Services. This is required for auto-collect surcharge only functionality. This change to module code 051, Call Completion Services, is for all call and structure codes that use module code 051.

The use of field OSS Call Completion Service Condition is unchanged. It records whether an operator was involved in the call, the type of call completion, and the party billed for the call completion. However, the range of byte 6 is expanded to include the value 7, which indicates that the requested party pays only the DACC surcharge.

The following example AMA record is generated on an ADACC call to a listing number with the 'auto collect surcharge only' attribute set in the listing database.

Module code 051 example

MODULE CODE:	051C	Call completion serv
OVERSEAS IND:	0C	NPA dialled
TERM NPA:	00201C	
TERM NUMBER:	2209876C	
COMPLETION IND:	001C	Answered
RATE IND:		
OSS CALL COMPLETION CONDITIONS:		
ASSISTANCE TYPE	3	Automated
SATELLITE AVOIDANCE	1	Not requested
NPA POINT	1	Yes
DIALABLE POINT	1	Yes
SUBSEQUENT TREATMENT	7	DA request
ENTERPRISE CALLING	7	Auto collect surcharge
RESERVED	0C	

Station Message Detail Recording

Cellular/IXC/LEC ADACC does not affect Station Message Detail Recording.

Cellular/IEC/LEC ADACC (continued)

Datafilling office parameters

Cellular/IXC/LEC ADACC does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Cellular/IXC/LEC ADACC. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Cellular/IXC/LEC ADACC

Table	Purpose of table
TRKGRP	Trunk group. Contains trunk information
TDBDAOPT	TOPS data base directory assistance options. Defines options for ADACC.
TOPSDB	TOPS data base. Provides a database of ADACC options
COANISCR	Company ANI screening. Screening on a company ID/ANI ID basis
TOPEACAR	TOPS equal access carrier. Indicates if service is provided for an IEC.
DNSCRN	Directory number screening. Defines screening per DN.
NBECCODE	Non-Bell exchange company codes. List NBEC codes
ADACCOPT	Automatic directory assistance call completion options. Defines billing methods for ADACC.
SERVICES	Services defines TOPS services
VROPT	Voice Response Option. Activate feature
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.

Datafilling table TRKGRP

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table TRKGRP. Only those fields that apply directly to Cellular/IXC/LEC

Cellular/IEC/LEC ADACC (continued)

ADACC are shown. Refer to the *Data Schema* section of this manual for a description of the other fields.

Datafilling table TRKGRP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
GRPINFO	CONNTYPE	TYPE_A, TYPE_B, TYPE_D, CELL_MOBILE, LOCAL_TRANS, or NONE	Connection type. This new subfield is used in new AMA module 150, table 168, bytes 1-2. If CONNTYPE=NONE, module 150 is not recorded for calls on this trunk group. These entries are defined in Bellcore standards. The AMA values recorded are as follows: • 01 = TYPE_A • 02 = TYPE_B • 03 = TYPE_D • 04 = Cellular mobile • 05 = Local transport
CARTYPE		NBEC or IEC	Carrier type. This new field is used to determine the carrier code for new AMA module 150, table 168, bytes 4-7. If CARTYPE=IEC, the carrier code is from table TOPEATRK. If CARTYPE=NBEC, the NBEC code from table NBECODE is used if the calling number has an entry. Otherwise, field NBECID of table TRKGRP is used. Field CARTYPE is visible only if subfield CONNTYPE does not equal NONE. Field CARTYPE also determines ADACC screening. If CARTYPE=NBEC, the trunk is treated as an NBEC. Or, if CARTYPE=IEC, the trunk is treated as an IEC.

Cellular/IEC/LEC ADACC (continued)**Datafilling table TRKGRP (Sheet 2 of 2)**

Field	Subfield or refinement	Entry	Explanation and action
CLGID		COMFGD	Calling identification. The TOPS trunk type COMFGD is now used to allow cellular and interexchange carriers to connect to TOPS for ADACC.
NXXVER		N	NXX verification. Within the COMFGD refinement of the TOPS trunk type, there is a field NXXVER which specifies whether or not the calling NPA and NXX is to be verified in TOPSBC. Since it is possible that carrier DA traffic will originate from any NXX from any NPA, TOPSBC verification should be bypassed by setting NXXVER to N. This is not enforced by table control, but is required if the trunk is to handle traffic from multiple NPAs.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

MAP display example for table TRKGRP

GRPKEY	GRPINFO
TCOMFGDIC1	
TOPS 0 TLD NCRT IC MIDL 629 PTOP NLCA NSCR Y SP	
COMBINED N Y 0 0000 CELL_MOBILE IEC COMFGD 0 10 10	
Y N Y N N N	

Datafilling table TDBDAOPT

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table TDBDAOPT. Only those fields that apply directly to

Cellular/IEC/LEC ADACC (continued)

Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table TDBDAOPT

Field	Subfield or refinement	Entry	Explanation and action
TDBDAIDX		0-1000	TOPS data base directory assistance index. This is the table key and is indexed from table TOPSDB. Default tuple 0 is shown in the following datafill example and cannot be changed or deleted.
ADACCSRV		ALL, INTRA, INTER, or BLOCK	Automatic directory assistance call completion service. This is the LATA status for which ADACC can be offered. If ADACCSRV= BLOCK, field BILLOPT is not visible.
BILLOPT		Set of CONTBIL, SENTPD, ALTBIL, OPERBIL; or ALL, or NONE.	Billing options. Set of valid billing options for the call completion portion of an ADACC call.

Datafill example for table TDBDAOPT

The following example shows sample datafill for table TDBDAOPT.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV	BILLOPT
0	ALL	ALL
1	BLOCK	
3	ALL	CONTBIL OPERBIL \$
4	INTRA	SENTPD \$
5	ALL	OPERBIL SENTPD \$
6	INTER	ALL
7	INTER	ALTbil CONTBIL \$

Cellular/IEC/LEC ADACC (continued)

Error messages for table TDBDAOPT

The following error messages apply to table TDBDAOPT.

Error messages for table TDBDAOPT

Error message	Explanation and action
Tuple 39 is not datafilled in table TDBDAOPT.	Table TDBDAOPT is referenced by table TOPSDB and must be datafilled prior to table TOPSDB. If the craftsperson attempts to add or change a table TOPSDB tuple with TDBCLIDX or TDBDAOPT prior to adding the tuple to table TDBCLASS or TDBDAOPT, the add or change is not allowed, and an error message is given.
Tuple referred to by another table - use TABREF to get potential table list.	If the craftsperson attempts to delete a table TDBDAOPT tuple which is referenced by a tuple in table TOPSDB, the deletion is not allowed, and an error message is given.
Tuple 0 cannot be deleted or changed.	If the craftsperson attempts to change or delete default tuple 0, the change or deletion is not allowed, and an error message is given:

Datafilling table TOPSDB

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table TOPSDB. Only those fields that apply directly to Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table TOPSDB

Field	Subfield or refinement	Entry	Explanation and action
TDBKEY		0-32,766	TOPS data base key. This field was previously named DNSCRIDX. This field is indexed by table TOPEACAR, DNSCRN, or COANISCR. Default tuple 0 is shown in the following datafill example and cannot be changed or deleted.
TDBDAOPT		0-1000	TOPS data base directory assistance options. This field is an index into table TDBDAOPT for ADACC screening.

Cellular/IEC/LEC ADACC (continued)**Datafill example for table TOPSDB**

The following example shows sample datafill for table TOPSDB.

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT
0	0	0
1	0	1
2	0	2
3	0	3
4	0	4
5	5	5

Error messages for table TOPSDB

The following error messages apply to table TOPSDB.

Error messages for table TOPSDB

Error message	Explanation and action
Tuple 39 is not datafilled in table TDBDAOPT.	Tables TDBCLASS and TDBDAOPT must be datafilled prior to datafilling table TOPSDB. If the craftsperson attempts to add or change a table TOPSDB tuple with given TDBCLIDX or TDBDAOPT prior to adding the tuple to table TDBCLASS or TDBDAOPT, the add or change is not allowed, and an error message is given.
Tuple 29 is referenced by table DNSCRN, TOPEACAR, or COANISCR.	Table TOPSDB must be datafilled prior to datafilling tables DNSCRN, TOPEACAR, or COANISCR with an index into TOPSDB. If the craftsperson attempts to delete a table TOPSDB tuple which is referenced by a tuple in tables DNSCRN, TOPEACAR, or COANISCR, the deletion is not allowed, and an error message is given.
Tuple 0 cannot be deleted or changed.	If the craftsperson attempts to change or delete default tuple 0, the change or deletion is not allowed, and an error message is given.

Cellular/IEC/LEC ADACC (continued)**Datafilling table COANISCR**

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table COANISCR. Only those fields that apply directly to Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table CAOANISCR

Field	Subfield or refinement	Entry	Explanation and action
KEY	COTYPE	NBEC or IEC	Company type. This field specifies if a non-Bell exchange carrier (NBEC) or interexchange carrier (IEC) is referenced.
	COID	0000-9999	Company identifier.
	ANIDIG	00-99	ANI digits. ANI ID digits signalled with a call
TDBIDX		0-32,766	Table TOPSDB index. Index into table TOPSDB.

Datafill example for table COANISCR

The following example shows sample datafill for table COANISCR.

MAP display example for table COANISCR

KEY	TDBIDX
NBEC 0234 00	4
IEC 0111 00	7

Cellular/IEC/LEC ADACC (continued)**Error messages for table COANISCR**

The following error messages apply to table COANISCR.

Error messages for table COANISCR

Error message	Explanation and action
Tuple 39 is not datafiled in table TOPSDB.	Table TOPSDB must be datafiled prior to datafilling table COANISCR with an index into the database. If the craftsperson attempts to add or change a table COANISCR tuple with a given TDBIDX prior to adding the tuple to table TOPSDB, the add or change is not allowed and an error message is given.

Datafilling table TOPEACAR

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table TOPEACAR. Only those fields that apply directly to Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table TOPEACAR

Field	Subfield or refinement	Entry	Explanation and action
TDBIDX		0-32,767	Table TOPSDB index. Index into table TOPSDB for ADACC screening on a carrier basis. This new field is an index into the table for values 0-32766. Value 32767 is a nil value used to block all ADACC for a carrier. Value 32767 does not point to a TOPSDB tuple. This field is used to screen on a carrier basis for calls that require interLATA completion that arrived at the TOPS switch with a table TRKGRP CLGID field other than COMFGD, OSSANI, EAOSS, or EAOSSIC. Field TDBIDX points to a tuple in TDBDAOPT through TOPSDB. The tuple in TDBDAOPT indicates whether or not ADACC is offered for the call, and what billing options are valid.

Datafill example for table TOPEACAR

The following example shows sample datafill for table TOPEACAR.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table TOPEACAR**

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR
NATERM	INTERM	OPERV			
TDBIDX					
0111	C111	C111	Y	Y	0111
UNREST	UNREST	SERV NOQUERY	Y NOQUERY	Y NOQUERY	Y Y Y Y
7					
0222	C122	C122	Y	Y	0122
UNREST	UNREST	SERV NOQUERY	Y NOQUERY	Y NOQUERY	Y Y Y Y
4					
0888	C888	C888	Y	Y	0888
UNREST	UNREST	NOSERV			
32767					

Error messages for table TOPEACAR

The following error messages apply to table TOPEACAR.

Error messages for table TOPEACAR

Error message	Explanation and action
Tuple 39 is not datafiled in table TOPSDB.	Table TOPSDB must be datafiled prior to datafilling table TOPEACAR with an index into the database. If the craftsperson attempts to add or change a table TOPEACAR tuple with a given TDBIDX prior to adding the tuple to table TOPSDB, the add or change is not allowed and an error message is given.
Datafilling 32767 in TDBIDX will disable ADACC for all calls on this carrier if the cellular ADACC screening feature is active.	If the craftsperson attempts to add or change a tuple with TDBIDX=32767, this warning message is given.

Datafilling table DNSCRN

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table DNSCRN. Only those fields that apply directly to Cellular/IXC/LEC

Cellular/IEC/LEC ADACC (continued)

ADACC are shown. Refer to the *Data Schema* section of this manual for a description of the other fields.

Datafilling table DNSCRN

Field	Subfield or refinement	Entry	Explanation and action
ATTROPTS		TOPSDB	Attribute options. Screening attributes with an index into table TOPSDB. If the DN is not datafilled in table DNSCRN, or if the DN's tuple in DNSCRN does not have an attribute of TOPSDB, then the default value 0, which allows ADACC for all LATA statuses and all billing options, is used. Note, this table is not changed.

Datafill example for table DNSCRN

The following example shows sample datafill for table DNSCRN.

MAP display example for table DNSCRN

DN	ATTROPTS
6193201111	TOPSDB 2 \$
6193202222	TOPSDB 1 \$
6193203333	TOPSDB 3 \$
6193205555	TOPSDB 5 \$

Datafilling table NBECCODE

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table NBECCODE. Only those fields that apply directly to

Cellular/IEC/LEC ADACC (continued)

Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table NBECCODE

Field	Subfield or refinement	Entry	Explanation and action
			This table is now accessed in cases other than branding. Prior to this feature, this table was accessed only if a trunk group was datafilled in table BRANDOPT and its entry in that table had field NBECLOOK set to Y. With this feature, table NBECCODE is also accessed during DA calls for trunks that need to pass NBEC codes to the DAS for announcement customizations and for ADACC screening.

Datafill example for table NBECCODE

The following example shows sample datafill for table NBECCODE.

MAP display example for table NBECCODE

CLGDIGS	NBEC
619620	1234

Datafilling table ADACCOPT

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table ADACCOPT. Only those fields that apply directly to

Cellular/IEC/LEC ADACC (continued)

Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table ADACCOPT

Field	Subfield or refinement	Entry	Explanation and action
BILTYPES		CONTBIL, SENTPD, ALTBIL, OPERBIL, or NONE.	Billing types. Use of this field is changed. Prior to this feature, or if this feature is not active, specifying NONE indicates that the subscriber is not offered a selection of billing options for call completion, and that the billing approach used prior to Feature AF2086 (ADACC with Alternate Billing) is to be used. When this feature is active, value NONE indicates that no billing types are valid, except auto-collect. It is suggested that all instances of NONE be changed to either CONTBIL or SENTPD before activating this feature. Note that NONE is still a valid entry but its use has changed. Field BILTYPES determines which billing types are allowed in an ADACC call for this call origination type and service class. This field is expanded to include new billing type OPERBIL (operator billing) which means the subscriber is connected to a toll operator for billing the ADACC call. Note: The information in field BILTYPES is passed to the NT Directory Assistance system, and is used for building the appropriate ADACC announcements for automated playback to the caller. In TOPS03, value OPERBIL was added to this field. Value OPERBIL is not recognized by the ADACC announcement software as a valid billing option, and building of the announcement fails if this value is received by the announcement subsystem. Therefore, for TOPS03 and up, values ALL and OPERBIL should not be used. Instead, only values CONTBIL, SENTPD, and ALTBIL should be used. If ALL is datafill prior to the TOPS03 upgrade, change to the values CONTBIL, SENTPD, and ALTBIL (excluding OPERBIL).

Datafill example for table ADACCOPT

The following example shows sample datafill for table ADACCOPT.

Cellular/IEC/LEC ADACC (continued)**MAP display example for table ADACCOPT**

ACCKEY	BILTPES	CCREQUE	DISPLAY
411 STATION	ALTBIL SENTPD \$	GEN	S
0H STATION	SENTPD OPERBIL \$	GEN	\$

Datafilling table SERVICES

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table SERVICES. Only those fields that apply directly to Cellular/IXC/LEC ADACC are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SERVICES

Field	Subfield or refinement	Entry	Explanation and action
VERSION		1 to 1000	Version. This is a new field that allows specification of the protocol version on a link set basis. This allows the upgrading of the respective DAS to new versions of the protocol independently of the switch software upgrade.

Datafill example for table SERVICES

The following example shows sample datafill for table SERVICES.

MAP display example for table SERVICES

INDEX	PROTOCOL	LSDBID	SWITCHID	VERSION
TOPSVR1 0	CCI N	1234	14	4
TOPSVR2 0	IBM	4321	14	1

Cellular/IEC/LEC ADACC (continued)**Error messages for table SERVICES**

The following error messages apply to table SERVICES.

Error messages for table SERVICES

Error message	Explanation and action
The maximum VERSION supported for CCI is 4.	This error message appears when the user attempts to enter a VERSION greater than 4 using the CCI protocol.
The maximum VERSION supported for IBM is 1.	This error message appears when the user attempts to enter a VERSION greater than 1 using the IBM protocol.
VERSION must be 3 or greater for ADASPLUS to take effect.	This warning message appears when the user enters a protocol version less than 3 for the CCI protocol with ADASPLUS set to Y. This message is informing the user that ADAS+ will not function on the link set unless the VERSION is 3 or greater even if the ADASPLUS is set to Y. Note that the ADASPLUS_ENABLE parameter in TOPSPARM must also be set to Y and SOC option OSDA0006 must be ON for ADAS+ to work.

Datafilling table VROPT

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table VROPT. Only those fields that apply directly to Cellular/IXC/LEC ADACC are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table VROPT

Parameter	Explanation and action
DA_INTERACTIVE_RECONNECT	This parameter controls the method of reconnecting to an operator during a DA call. This is applicable to the standard and IBM protocols. Valid values are: - N - Method prior to this feature - Y - Method in this feature. This parameter can only be set to Y if either SOC option OSDA0005 or OSDA0006 is ON.

Cellular/IEC/LEC ADACC (continued)

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

MAP display example for table VROPT

PARM	PARMVAL
DA_INTERACTIVE_RECONNECT	Y

Error messages for table VROPT

The following error messages apply to table VROPT.

Error messages for table VROPT

Error message	Explanation and action
DA protocol enhancements feature not activated.	A possible message when entering a value for parameter DA_INTERACTIVE_RECONNECT
SOC option OSDA0005 or OSDA0006 must be ON before setting this paramter to Y.	This message is displayed if both SOC options OSDA0005 and OSDA0006 are IDLE and the craftsperson attempts to set DA_INTERACTIVE_RECONNECT to Y.

Datafilling table TOPSPOS

The following table shows the datafill specific to Cellular/IXC/LEC ADACC for table TOPSPOS. Only those fields that apply directly to Cellular/IXC/LEC

Cellular/IEC/LEC ADACC (end)

ADACC are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSS

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

MAP display example for table TOPSPOS

```

POSNO      VCCKT      VCPDGRP      CARDCODE
  DATAPATH
    POSAREA
-----
100         TM8 0 24      NPDGRP      2X72AA
  DMODEM SP ASCII TM8 0 25 NPDGRP BELL108
    OPR 1 TOPSACD TASERV $ GEN XFR1 $

```

Translation verification tools

Cellular/IXC/LEC ADACC does not use translation verification tools.

SERVORD

Cellular/IXC/LEC ADACC does not use SERVORD.

DA Automation I/F

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: OSDA0006

Release applicability

TOPS07 and up

DA Automation I/F was introduced in TOPS03.

Prerequisites

To operate, DA Automation I/F requires the following functional groups:

- Operator Services Basic, OSB00001
- Enhanced W/S Software, EWSS0001
- Operator Services Directory Assistance, OSDA0001

Description

This functionality is provided by the following features:

Feature number	Feature name
AN0880	ADAS PLUS
AF6544	ADAS Per Line Blocking (TOPS07)
AF6711	Branding via SPID
50039957	DA positions in an OC network
59006865	EOL Notification & EOL of TOPS ACD (TOPS12)

This functionality obtains information from the subscriber and routes the call to a directory announcement or connects an operator whom is provided the information.

Operation

The contents of this section are the following:

- Activation
- Call eligibility

DA Automation I/F (continued)

- Initial subscriber connection to ADAS+
- Requesting an operator
- Deflection and overflow
- Call presentation to an operator
- Communication errors
- Call flow
- Example QMS for ADAS+
- ADAS+ ARU assignment tables
- ADAS+ trunk assignment and per line blocking

ADAS+ is an automated system for directory assistance (DA) calls on selected trunk groups and refinement by the directory number (DN). The system obtains information (language, locality, and name) from the subscriber for the DA database search. Then, the call is sent to either a DA System (DAS) Audio Response Unit (ARU) for a listing announcement or to a queue for connection to an operator. Or, in case of an ARU failure, the call is re-routed to an operator. Therefore, ADAS+ provides automation to save operator work time.

ADAS+ only handles the subscriber's initial request for DA information. All subsequent requests for DA information, where the subscriber makes multiple requests for DA information or the subscriber remains on the line after listening to the announcement, are handled by the operator.

Activation**Feature AF6711 - Branding for TOPS via SPID**

In TOPS07, feature AF6711 in functionality Branding via SPID, ENSV0017 made the following changes that affect this functionality (DA Automation I/F).

The DA protocol version functionality provided by the following VROPT parameters is moved out of the table:

- DA_STANDARD_PROTOCOL_VERSION
- DA_IBM_PROTOCOL_VERSION

The DA protocol version for either protocol is placed in new field VERSION in table SERVICES. The VROPT parameters are used during dump and restore to set the VERSION field in table SERVICES. For further information, refer to table SERVICES in the datafill procedure section.

DA Automation I/F (continued)

Prior to this feature (AF6711), the following SOC's interacted with the VROPT version parameters:

- OSDA0005, Cell/IXC/LEC ADACC
- OSDA0006, DA Automation I/F (ADAS+)

Since the VROPT version parameters are being removed as stated above, the interaction between the maximum version allowed in VROPT and these SOC options is no longer applicable. Therefore, the interactions have been removed. However, the SOC's must still be turned ON to achieve their associated functionality. For example, OSDA0006 must be SOC'd on for ADAS+ to function properly on link sets with VERSION set to 3 or greater. A second example is that the AO SPID field will contain the nil value when the VERSION is set to 4 but this feature (SOC option ENSV0017) is not SOC'd on.

The DA_INTERACTIVE_RECONNECT parameter in table VROPT use to require one or both of the SOC's listed above to be ON before it could be set to Y. As a result of this feature, this interaction will be removed. DA interactive reconnect is really dependent on the protocol VERSION and not the SOC options. From hence forward, DA interactive reconnect functionality requires the following:

- DA_INTERACTIVE_RECONNECT must be set to Y (no longer dependent on SOC options)
- the protocol version in table SERVICES must be greater than 1

Prior to this feature, the ADASPLUS_ENABLE parameter in table TOPSPARM required that the DA_STANDARD_PROTOCOL_VERSION in table VROPT be set to 3 or greater. As mentioned above, the DA_STANDARD_PROTOCOL_VERSION parameter has been removed by this feature. Therefore, the cross check between ADASPLUS_ENABLE and DA_STANDARD_PROTOCOL_VERSION is no longer possible. In order for ADAS+ to function properly, the following conditions must be met:

- ADASPLUS_ENABLE in table TOPSPARM must be set to Y
- in table SERVICES:
 - the protocol must be set to CCI
 - ADASPLUS must be set to Y
 - VERSION must be greater than or equal to 3
- SOC option OSDA0006 must be ON

DA Automation I/F (continued)

Feature AN0880 - ADAS PLUS

This feature is optional via SOC option OSDA0006, OSDA DA Automation I/F. The DA Protocol changes implemented by this feature are included in Standard DA Protocol Version 3. Calls are routed to the ADAS+ system by trunk group and refined per Directory Number if the feature enable parameter is set to Y.

To activate ADAS+, SOC option OSDA0006 must be turned from the IDLE state to the ON state. Next, in table SERVICES the following values must be set:

- the protocol must be set to CCI
- ADASPLUS must be set to Y
- VERSION must be greater than or equal to 3

After these two steps are complete, the feature enable parameter, table TOPSPARM: ADASPLUS_ENABLE, can be set to Y. ADAS+ Service is only offered when ADASPLUS_ENABLE is Y.

ADAS+ service can be assigned to trunk groups via table TOPSTOPT. Subscribers who do not want to be routed to the ADAS+ system but are on a trunk group which would do so can be refined away from the ADASPLUS service. Datafilling ADASPLUS to N in table TDBDAOPT will send the call directly to a live operator. Table TDBDAOPT is only checked if the corresponding trunk group of the subscriber is serviced by ADAS+.

Tables TOPSTOPT and TDBDAOPT can be datafilled regardless of the SOC status of the feature. Calls will be routed to the ADAS+ system if all of the ADAS+ eligibility checks pass.

To turn SOC option OSDA0006 to IDLE, TOPSPARM: ADASPLUS_ENABLE must be set to N. Next, if SOC option OSDA0005 is ON, field VERSION in table SERVICES must be set to 2. (Protocol version 2 is included in the functionality of OSDA0005.) If option OSDA0005 is IDLE, field SERVICES must be set to 1, and VROPT: DA_INTERACTIVE_RECONNECT must be set to N. Once the protocol version has been lowered to the appropriate value, and the appropriate parameters have been reset, the SOC utility may be used to turn option OSDA0006 to IDLE.

If the above parameters need to be changed before the option can be set to IDLE, an error message is given. Below is an example of the error message given when all of the above parameters need to be changed. If some of the

DA Automation I/F (continued)

parameters already contain the appropriate values, the error message for those parameters will not be printed.

TOPSPARM: ADASPLUS_ENABLE must be set to NSERVICES: VERSION must be lowered
VROPT: DA_INTERACTIVE_RECONNECT must be set to N
before setting this option to IDLE.

Call eligibility

DA calls arriving over TOPS, IT, ATC, or ISUP trunks are checked to determine if they may be routed to the ADAS+ system. The checks are as follows:

- The call must require DA service.
- New parameter ADASPLUS_ENABLE in table TOPSPARM must be set to Y.
- Changed field ADASERV in table TOPSTOPT must be set to ADASPLUS for the call's trunk.
- New field ADASPLUS in table TDBDAOPT must be set to Y for the calling DN.
- Billing requirements must be satisfied for the call. Calls for which billing is not satisfied are either presented to an operator or an automated system for billing. Failed billing calls sent to an automated system can still be routed to ADAS+.

Initial subscriber connection to ADAS+

For an eligible call, the DMS attempts to set up a voice channel (ARU) between the subscriber and ADAS+ to obtain information. There are two chances to set up an ARU. First, the alternate poolid group of ARUs is searched. If none are available, the primary poolid group of ARUs is searched. If this is not successful, the call is routed to an operator as a regular DA call. For both types of searches, successful and unsuccessful, OM group TOPSARU is pegged and log DAS103 is produced. The poolid is datafilled in table ARURTE.

If the subscriber hangs up at any point in the call, prior to attachment to an operator, the DMS detects the hang up and frees all related resources.

Requesting an operator

When an operator is requested for an ADAS+ call, the DMS checks for an available operator to serve the call. If an operator is not available, the call is queued. Calls may use the TOPS Automated Call Distributor (ACD) system or the Queue Management System (QMS). The queueing system is determined in table TOPSTOPT by the call's trunk group.

DA Automation I/F (continued)

With TOPS ACD, there are four queues: GEN (general), XFR1 (first transfer), XFR2 (second transfer), and DA (Directory Assistance queue). A TOPS call is associated with a queue by the call origination type in table TOPS.

With QMS, there are 255 call queues to choose from along with various criteria options to refine the call to a specific call queue. This feature provides allows the ADAS+ system to send the DMS call criteria for refinement to a specific call queue.

If the subscriber goes onhook while the call is in queue for an operator, the call is removed from its operator queue, the ARU is released, and the call is terminated by the DMS. If the subscriber hangs up during playback, the call is released from position and all resources released if VROPT parameter DA_AUTO_POS_RLS is set to Y. Otherwise, the call remains at the position since operator hold is in effect.

Deflection and overflow

ADAS+ calls should not be deflected from queueing; however, they may overflow. If no queueing resources are available, the call overflows to treatment and the DMS clears the ARU. Overflow should not occur in an office properly provisioned as follows:

- For TOPSACD, deflection is controlled by the DMS. Therefore, the DMS must enforce the no deflection rule for ADAS+ calls.
- For QMS calls:
 - If a successful ADAS+ call, i.e. the ADAS+ ARU is still attached to the call for operator playback, will not deflect from queue. This is controlled by the DMS.
 - If an unsuccessful ADAS+ call or a non-ADAS+ call may deflect from queue based on QMS datafill in table QMSCQDEF.

Call presentation to an operator

A subscriber can be connected to an operator for the following reasons:

- After a successful database search, ADAS+ elects to playback information to the operator who will complete the call.
- The subscriber chooses not to use the system, indicated by a hook-flash, pressing 0, or remaining silent after an ADAS+ question.
- No non-ADAS+ ARU resources are available. Then, the listing information is provided to the operator.
- The subscriber remains on the line after listening to the ARU announcement of the listing number.

DA Automation I/F (continued)

When an available operator is found, an ADAS+ ARU (audio response system) is connected to the operator. Then, a reverse wink can be sent on the ADAS+ ARU to notify ADAS+ of the connection. This reverse wink is controlled by new parameter ADASPLUS_ARU_WINK in table TOPSPARM. This parameter reduces protocol time. For further details on this parameter, refer to the datafill procedure section.

When a call arrives with playback, a unique tone is provided to indicate an ADAS+ call with playback. During playback to the operator, the DMS provides standard ringing or silence to the subscriber who is split from the operator depending on table TOPSPARM parameter ADAS_RINGING_DURING_PLAYBACK. For further details on this parameter, refer to the datafill procedure section.

Also at call arrival, a cassette or operator profile icon can be displayed to the operator. The cassette icon indicates a successful ADAS+ (automated) DA call. The operator profile icon indicates a DA call which did not receive ADAS+ services so is now a non-ADAS+ (manual) DA call. These icons are currently supported for TOPS-MP and OPP-Compliant positions. Display of these icons is controlled by parameters in table TOPSPARM. The parameters are ADAS_CASSETTE_ICON and ADAS_OPERATOR_PROFILE_ICON, which are set to Y/N to enable/disable display. If you are using IBM DA, however, text strings will appear instead of the icons. These icons are presented in the ADAS functionality. Please refer to that section for additional information on using these parameters.

After ADAS+ playback to the operator, the subscriber is joined automatically by the DMS or manually by the operator. Then, a unique caller joined tone is provided to the operator. This tone is datafilled in table TOPSPARM: parameter ADASPLUS_CALLER_JOINED_TONE. It can be set to NONE, REGDACA, LOWHIGH, and HIGHLOW. For this call connection, the cassette icon is displayed.

Communication errors

If the DMS does not receive a response from the ADAS+ system within a datafillable amount of time, it drops the ADAS+ ARU (if established) and connect a DA operator. Table VROPT contains three time values to cover error opportunities. Note the only error opportunity which cannot be covered by the DMS is a failure during the ADAS+ and customer dialog phase. The ADAS+ system should have a sanity timer to handle this situation.

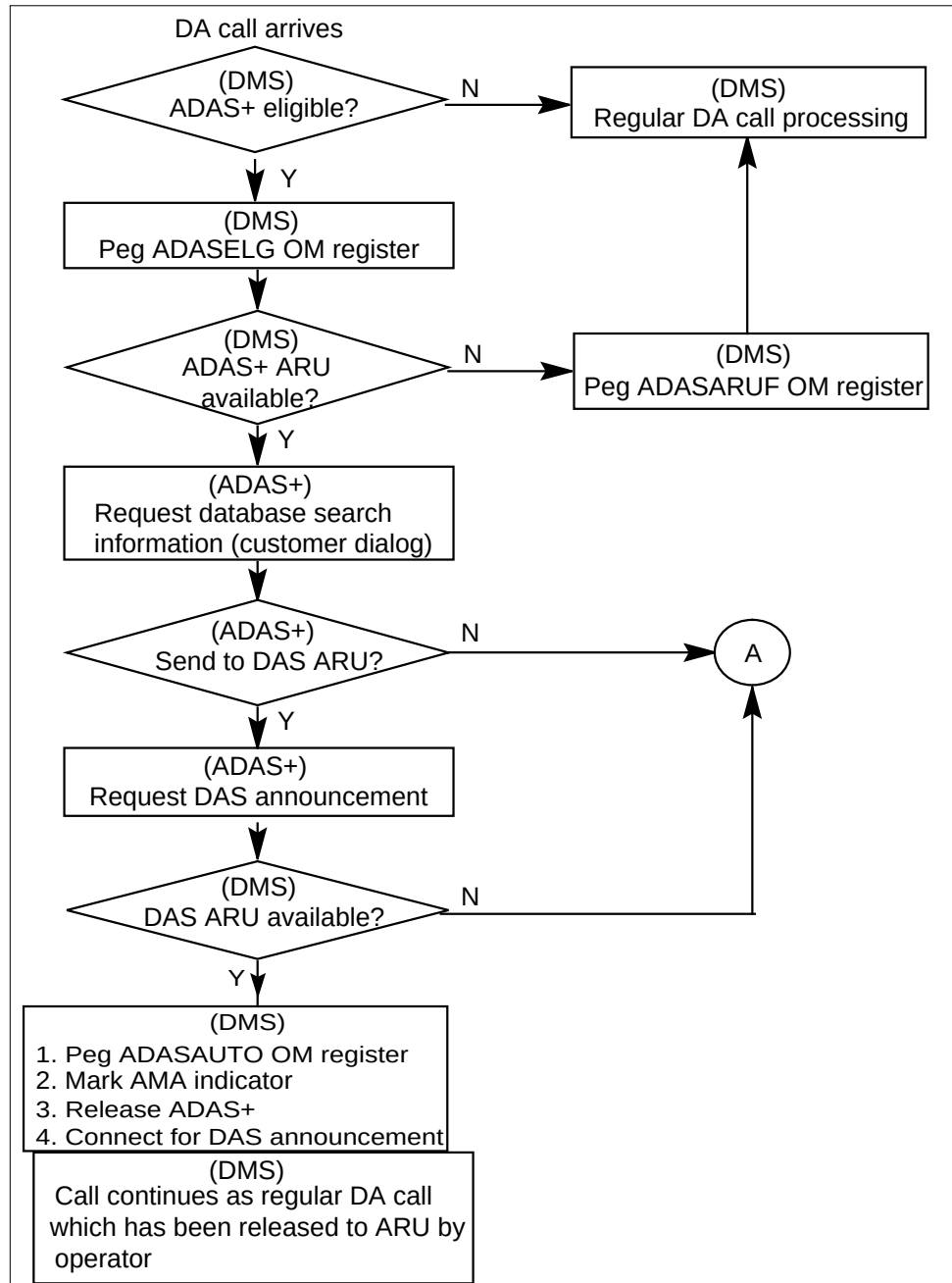
- CALL_ARRIVAL_TIMEOUT
- BEGIN_ANN_TIMEOUT
- POST_ANN_TIMEOUT

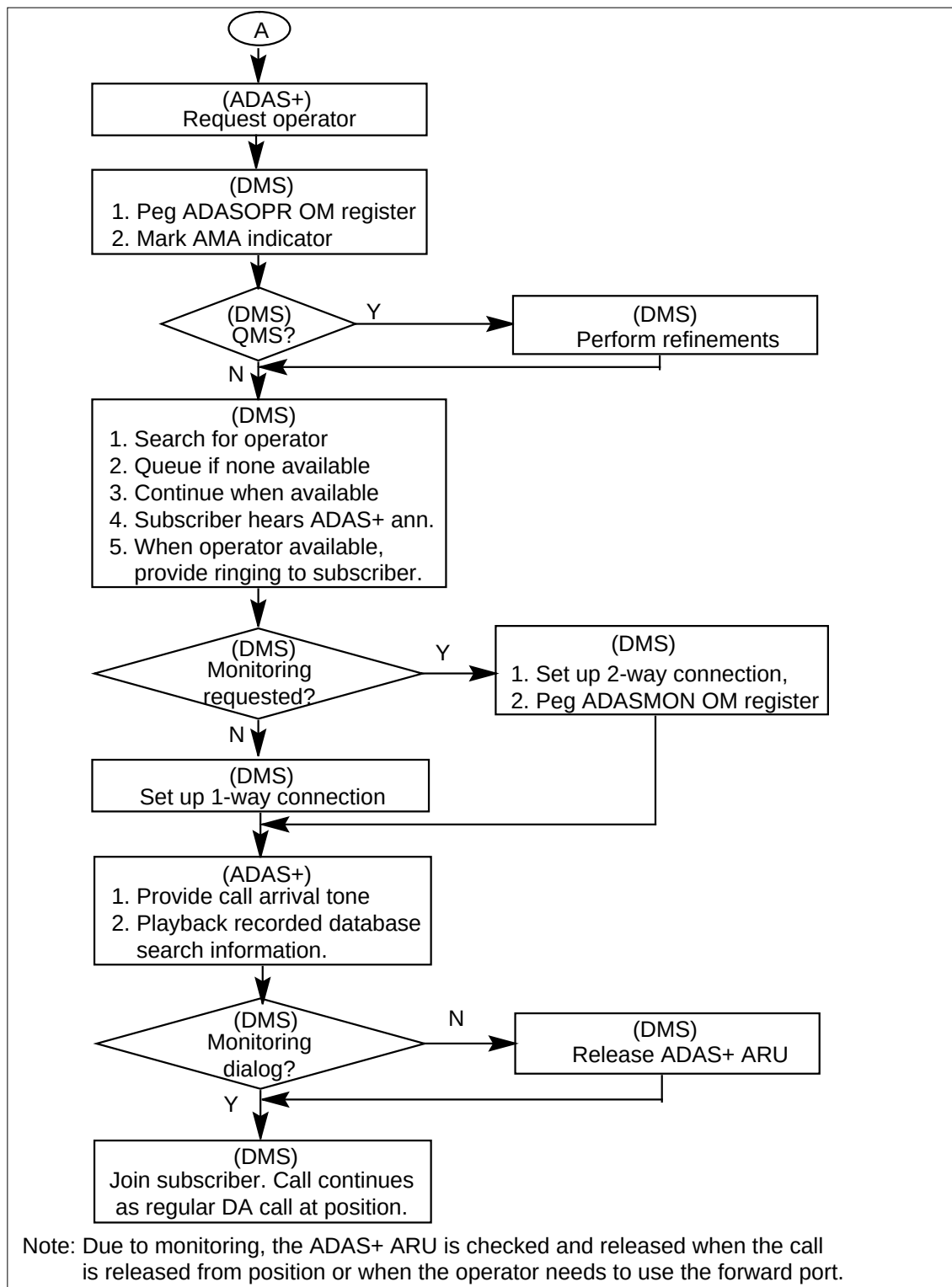
DA Automation I/F (continued)

These table VROPT parameters are described in the datafill procedure section.

Call flow

Following is a call flow diagram.

ADAS+ call flow

DA Automation I/F (continued)**ADAS+ call flow (continued)**

DA Automation I/F (continued)

Example QMS for ADAS+

Note: The following example provides general guidelines. However, it is strongly recommended that the “Host QMS” and “Remote QMS” functionalities should be referenced.

The Queue Management System (QMS) is an enhanced Automatic Call Distributor (ACD). QMS can direct the call to the best qualified operator for the call. For example, an incoming 411 call from a French area could be routed to a French speaking operator. QMS uses screening (refinement) tables to route calls.

The following shows an example of the QMS refinement tables for ADAS+. They consist of refining based on the automated service, ADAS/ADAS+, the language of the calling party and the locality of the desired called numbers party. Note the order of the refinements is user defined and needs to be engineered correctly when datafilling these tables to achieve the desired results.

This example illustrates a DA call returning from ADAS+, where the subscriber provided the following information: English and Raleigh.

Table TQMSOPT

Table TQMSOPT indicates which ordering table to use, TQORDERA or TQORDERB.

MAP display example for table TQMSOPT

PARMNAM	PARMVAL
QMS_ACTIVE_CQA_ORDER_TABLE	TQORDERA

Tables TQORDERA and TQORDERB

Table TQORDERA (or TQORDERB) determines ordering of the refinement tables. For ADAS+ calls, pre-operator refinements are done before sending the call to ADAS+. The resulting CT4QNAMS is sent to ADAS+ to provide more information about the call.

When the call returns from ADAS+ and requests an operator position, post-auto refinements are performed. The new information used for this instance of refinement is provided by ADAS+. It entails language, locality, and use of the automated system, ADAS+.

DA Automation I/F (continued)**MAP display example for table TQORDERA**

CT4QTABL	PREOPR	POSTAUTO	RECALL
CT4QCLAS	1	0	0
CT4QREST	2	0	0
CT4QPFXT	3	0	0
CT4QCAR	0	0	0
CT4QCLD	0	3	0
CT4QORIG	4	0	0
CT4QTIME	0	0	0
CT4QLANG	0	2	0
CT4QAUTO	0	1	0

In the above example for table TQORDERA, pre-operator refinement is by class of the calling party (station, coin, restricted...), restricted billing index, prefix digits (1 or 0), and origination based on the trunk group or calling number. Post-auto refinement is by use of an automated system (ADAS), calling party language, and requested number locality.

Table CT4QNAMS

Table CT4QNAMS defines the CT4Qs used by the other tables.

MAP display example for table CT4QNAMS

CT4QNUM	CT4QNAME	NOAMA	CT4QDISP	AUTOORDB
510	411	N	N	N
511	411_ADAS	N	N	N
512	411_ADAS_ENG	N	N	N
513	411_ADAS_ENG_RAL	N	N	N

Table QMSTOPS

Table QMSTOPS assigns an initial call queue to each call origination type.

MAP display example for table QMSTOPS

C0	CT4Q
411	411
555	411

DA Automation I/F (continued)**Table CT4QAUTO**

Table CT4QAUTO refines on the prior automated service for the call. Note, ADAS is used for ADAS and ADAS+ service.

MAP display example for table CT4QAUTO

OLDCT4Q	AUTOCRIT	NEWCT4Q
411	ADAS	411_ADAS

Table CT4QLANG

Table CT4QLANG refines on the calling party language. The languages are defined in table TOPSLANG.

MAP display example for table CT4QLANG

OLDCT4Q	LANGCRIT	NEWCT4Q
411_ADAS	ENG	411_ADAS_ENG

MAP display example for table TOPSLANG

LANGDIGT	LANGNAME	AUTOLANG
17	ENG	Y 1

Table CT4QCLD

Table CT4QCLD refines on the called party area (requested number area). The area is defined in table TQCLDNAM.

MAP display example for table CT4QCLD

OLDCT4Q	CLDCRIT	NEWCT4Q
411_ADAS_ENG	RALEIGH	411_ADAS_ENG_RAL

MAP display example for table TQCLDNAM

CLDCODE	CLDCRIT
13	RALEIGH

DA Automation I/F (continued)

For this example, the final CT4Q for queueing the call is 411_ADAS_ENG_RAL. A call queue for this CT4Q is found in table TQMSFCQA.

ADAS+ ARU assignment tables

The following tables are for reference information only.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
ADASARU1	110	3	ADASPLUS_ARU1
ADASARU2	111	2	ADASPLUS_ARU2

MAP display example for table ARURTE

POOLID	OFRTIDX
26	826
53	827

Note: In the above example for table ARURTE, the range for field POOLID has been expanded to 100 under this feature.

MAP display example for table OFRT

RTE	RTELIST
826	(S D ADASARU1)\$
827	(S D ADASARU2)\$

MAP display example for table TRKGRP

GRPKEY	GRPINFO
ADASARU1	TOPSARU 10 NPDGP NCRT

DA Automation I/F (continued)**MAP display example for table TRKSGRP**

SGRPKEY	CARDCODE	SGRPVAR
ADASARU1 0	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU1 1	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU1 2	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU2 0	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
ADASARU1 0	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU1 1	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU1 2	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU2 0	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
ADASARU2 1	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10

MAP display example for table TRKMEM

CLLI	EXTRKNM	SGRP	MEMVAR
ADASARU1	100	0	DTC 2 1
ADASARU1	101	1	DTC 2 2
ADASARU1	102	2	DTC 2 3
ADASARU2	200	0	DTC 3 1
ADASARU2	201	1	DTC 3 2

MAP display example for table ARUMEMBR

ARUMEM	DASTRKID
ADASARU1 100	50
ADASARU1 101	51
ADASARU1 102	52
ADASARU2 200	100
ADASARU2 201	101

DA Automation I/F (continued)

MAP display example for table SERVICES

INDEX	SERVDATA
1	TASERV
2	DASERV CCI STUB 1234 0 0 0
3	INTCSERV CCI STUB 1234 0 0

MAP display example for table XANNINFO

ANN	OPRCONN
5	Y
25	N

ADAS+ trunk assignment and per line blocking

Trunk assignment is datafilled in table TOPSTOPT. The ADASERV field makes the ADAS selection. Value ADASPLUS indicates to use the ADAS+ system. The following is sample datafill:

MAP display example for table TOPSTOPT

GRPKEY	ACDDATA	DISPCLG	ADASERV
TBELL919	TOPSACD	Y	NONE
TBELL910	TOPSACD	Y	ADASPLUS
TBELL407	QMSCAM CORECAM Y	Y	ADASPLUS
TBELL619	QMSCAM CORECAM Y	Y	ADAS

ADAS+ can be restricted from callers who do not wish to interact with an automated DA system. If a DN has ADAS+ blocked, the caller is routed directly to a live operator for DA service. ADAS restriction is indicated in tables DNSCRN, TOPSDB, and TDBDAOPT. If a subscriber is not datafilled in these tables, then by default the subscriber is given ADAS+ service.

Table DNSCRN lists the DN and a pointer into table TOPSDB, shown in the following example:

DA Automation I/F (continued)**MAP display example for table DNSCRN**

DN	ATTROPTS
6193201234	TOPSDB 5
6193205554	TOPSDB 21

Table TOPSDB is indexed by the pointer in table DNSCRN and contains an index into table TDBDAOPT, shown in the following example:

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV	OAFUNBLK
0	0	0	0	0	0
5	0	17	0	0	0
21	3	56	0	0	0

Table TDBDAOPT is indexed by the pointer in table TOPSDB. It includes field ADASERV which indicates if the DN subscriber will go to the ADAS+ service. If the field is set to Y, the call is routed to ADAS+. If the field is set to N, the call is routed to an operator. The following is sample datafill for table TDBDAOPT.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV		
0	ALL	ALL	Y
17	BLOCK		N
18	BLOCK		Y
56	INTER	SENTPD	N
123	ALL	ALTBIL	Y

Note that table TDBDAOPT is not referenced unless the corresponding trunk group in table TOPSTOPT can be serviced by ADAS+.

Tuple 0 is the default tuple for DNs which do not have an entry in table DNSCRN. Therefore, subscribers are sent to the ADAS+ system.

DA Automation I/F (continued)

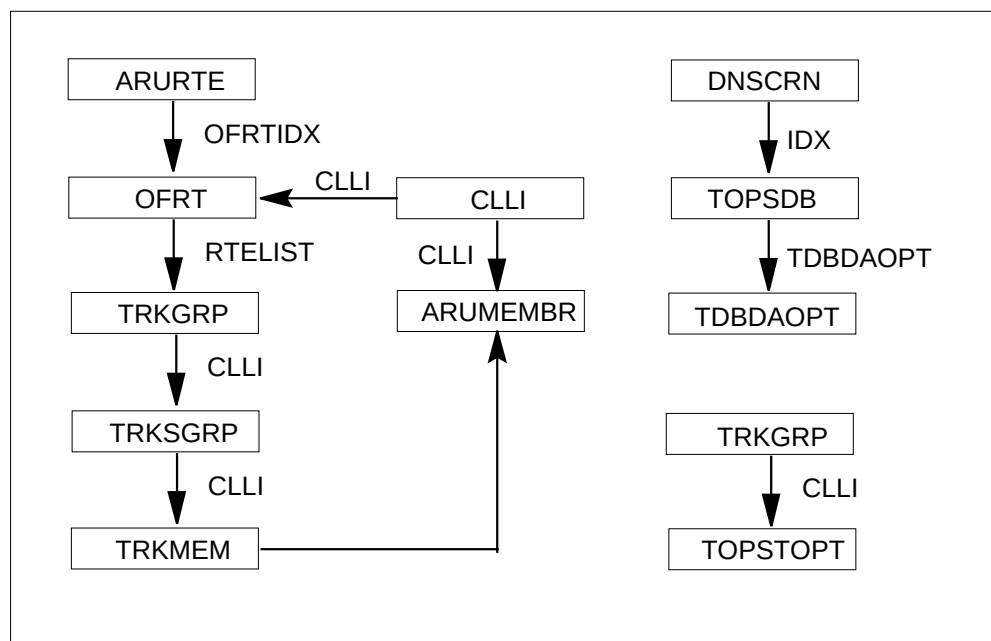
Translations table flow

The DA Automation I/F translations tables are described in the following list:

- Table TRKGRP - Incoming ADAS+ call trunk group
- Table TOPSTOPT - Indicates incoming trunk calls can use ADAS+
- Table ARURTE - Poolid index into table OFRT for ARU.
- Table CLLI - Define trunk names
- Table OFRT - Select outgoing ARU trunk
- Table ARUMEMBR - Associates TOPS ARU with DAS ID
- Table TRKGRP - ARU trunk group
- Table TRKSGRP - ARU trunk subgroup
- Table TRKMEM - ARU trunk member
- Table DNSCRN - DN index into table TOPSDB
- Table TOPSDB - Index into table TDBDAOPT
- Table TDBDAOPT - Indicates incoming DN can use ADAS+

The DA Automation I/F translation process is shown in the flowchart that follows.

Table flow for DA Automation I/F



DA Automation I/F (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for DA Automation I/F

Datafill table	Example data
TRKGRP	TBELLIC1 TOPS 0 TLD NCRT IC MIDL 619 PTOP NLCA NSCR Y SP COMBINED N Y 0 0000 NONE BELL 16 10 10 Y N OFFHK N N
TOPSTOPT	TBELLIC1 QMSCAM COREECAM N N ADASPLUS
CLLI	ADASARU1 110 3 ADASPLUS_ARU1
ARURTE	26 826
OFRT	826 S D ADASARU1 \$
ARUMEMBR	ADASARU1 100 50
TRKGRP	ADASARU1 TOPSARU 10 NPDGP NCRT
TRKSGRP	ADASARU1 0 DS1SIG STD OG NP WK 7 0 NO NO N N N 10
TRKMEM	ADASARU1 100 0 DTC 2 1
DNSCRN	6193201234 TOPSDB 7
TOPSDB	7 0 9
TDBDAOPT	9 INTER ALTBIL CONTBIL Y \$
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.

Limitations and restrictions

The following limitations and restrictions apply to DA Automation I/F:

This feature requires the standard DA protocol of version 3 or higher.

ADAS and ADAS+ both use the table TOPSPARM parameters listed in the following interactions section. The two systems do not have the flexibility to differ with regard to these parameters.

Interactions

The following paragraphs describe the interactions between DA Automation I/F and other functionalities.

ADAS and ADAS+ can run simultaneously.

DA Automation I/F (continued)

ADAS+ utilizes the following ADAS tables:

- Table TOPSPARM parameters:
 - ADAS_CASSETTE_ICON
 - ADAS_INWARDS_ENABLE
 - ADAS_OPR_PROFILE_ICON
 - ADAS_WITH_PARS_ENABLE
 - ADAS_RINGING_DURING_PLAYBACK
- Table BRANDOPT: Field OPERSYS can be set to ADAS to brand ADAS calls.
- Table OFCENG, parameter TOPS_BRAND_OFFICE.
- Tables LANGTOQ and VSNOPT which define queues. However, these tables are not used for ADAS+ calls which have been served by AABS.

AF6544 - ADAS per line blocking

Per Line Blocking is fully compatible with Originating Line Number Screening (OLNS). OLNS, which was introduced in TOP06, moves most DN oriented datafill off the DMS switch to an external database. Since table DNSCRN is still active in an OLNS site, Per Line Blocking is fully functional for ADAS Plus and ADAS Base.

With this feature, Per Line Blocking is extended to both ADAS Plus and ADAS Base. The same table datafill in TDBDAOPT is shared by both ADAS Plus and ADAS Base. This is considered appropriate since subscriber access is blocked to automated DA services in general. There is no need for separate tuple fields for each service.

The TOP07 "Branding via SPID" functionality (ENV0017) also uses table DNSCRN for call branding on a DN basis. "Branding via SPID" has the potential to add substantial datafill to DNSCRN. Since Per Line Blocking is not expected to add large amounts of datafill to DNSCRN, competition for table space should not be a problem.

Activation/deactivation by the end user

DA Automation I/F requires no activation or deactivation by the end user.

Billing

ADAS+ provides the same information as ADAS in the AMA record. If ADAS+ served the call, the AMA record indicates this in the Means Of

DA Automation I/F (continued)

Information field of module code 55. This field is set to 3, Verbal to voice recognition system, for these calls. Following are the value definitions.

284 - Means of information input

Bytes	Meaning
1	1 = verbal to operator. This value is recorded for all DA (non-ADAS/ADAS+) and Intercept calls handled by the operator (non-automated). 2 = DTMF 3 = verbal to voice recognition system. This value is recorded for all DA calls that ADAS/ADAS+ (automated) obtains the database search parameters from the caller. 9 = unknown. This value is recorded for all Auto Intercept calls (calls not handled by the operator). Because the intercepted number is provided through the signaling, it is not known whether the means of input was DTMF or Dial Pulse.
2	Sign (hex C)

The TOPS BC AMA Phase is based on the value of the EBAF_PHASE tuple in table TOPS AMA Options (TOPAMAOP). To record Module Code 055 in AMA the EBAF_PHASE tuple must be set to 2.

Following is an example AMA record

AMA record with Module Code 055 (Phase 2)

```

HEX ID: AA    STRUCTURE CODE:40752C  CALL CODE:194C
SENSOR TYPE:036C  SENSOR ID:0000000C REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:613C
ORIG NUMBER:2391234C  CONNECT TIME:0427380C
ELAPSED TIME:000000260C  OPERATOR IDS:1010200003101C
ACC OPERATOR WORK TIME:00250C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1C
MODULE CODE:055C  SERVICE ID:001C
MEANS OF INFORMATION INPUT:3C  MEANS OF LSDB ACCESS:1C
LSDBS BOC ID:13333C  LSDB ACCESSES:FF
LISTING RESPONSE:2C  LISTING STATUS:111111100C
REQUEST COUNTER:001C  MODULE CODE:000C

```

DA Automation I/F (continued)

Station Message Detail Recording

DA Automation I/F does not affect Station Message Detail Recording.

Datafilling office parameters

DA Automation I/F does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement DA Automation I/F. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for DA Automation I/F

Table	Purpose of table
TOPSTOPT	TOPS Trunk Option. Indicates if calls on trunk may use ADAS+
TDBDAOPT	TOPS Database Directory Assistance Options. Indicates if calling DN may use ADAS+
TOPSDB	TOPS data base for DN screening restriction of ADAS+
DNSCRN	Directory number screening for ADAS+
ARURTE	Audio Response Unit Route. Sets AUR poolid size.
ARUMEMBR	Audio Response Unit Member. Sets maximum number of trunk groups associated with poolids.
VROPT	Voice Response Options. ADAS+ controls
SERVICES	Services defines TOPS services
TOPSPARM	TOPS Parameters. ADAS+ controls

DA Automation I/F (continued)**Datafilling table TOPSTOPT**

The following table shows the datafill specific to DA Automation I/F for table TOPSTOPT. Only those fields that apply directly to DA Automation I/F are shown. Refer to the data schema section of this manual for a description of the other fields.

Datafilling table TOPSTOPT

Field	Subfield or refinement	Entry	Explanation and action
ADASERV		NONE, ADAS, or ADASPLUS	ADAS Service. ADAS service allowed for calls on trunk. Value NONE is the default and indicates no ADAS.

Datafill example for table TOPSTOPT

The following example shows sample datafill for table TOPSTOPT.

MAP display example for table TOPSTOPT

GRPKEY	ACDDATA	DISPCLG	ADASERV	ADASANS
TBELLQMSIC1	QMSCAM	CORECAM N	N	ADASPLUS NA

DA Automation I/F (continued)

Datafilling table TDBDAOPT

The following table shows the datafill specific to DA Automation I/F for table TDBDAOPT. Only those fields that apply directly to DA Automation I/F are shown. Refer to the data schema section of this manual for a description of the other fields.

Datafilling table TDBDAOPT

Field	Subfield or refinement	Entry	Explanation and action
ADASERV		N or Y	ADAS service. This field indicates if an incoming DN may receive ADAS plus service. Enter Y to allow or N to disallow service. The default is Y. If N is entered, DA calls are automatically routed to a live operator. Note, in TOPS07, this field name was changed from ADASPLUS to ADASERV. This change indicates that this field applies to both ADAS plus and ADAS base services. ADAS base service is described in functionality Automated DA Service, OSDA0004.

Datafill example for table TDBDAOPT

The following example shows sample datafill for table TDBDAOPT.

MAP display example for table TDBDAOPT

TDBDAIDX	ADACCSRV		
0	ALL	ALL	Y
1	BLOCK		Y
35	INTRA	SENTPD	N

Tuple 0 is the default tuple for DNs which do not have an entry. Therefore, subscribers are sent to the ADAS+ system.

DA Automation I/F (continued)**Datafilling table TOPSDB**

The following table shows the datafill specific to DA Automation I/F for table TOPSDB. Only those fields that apply directly to DA Automation I/F are shown.

Datafilling table TOPSDB

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Enter tuples for DNs of subscribers that are restricted from ADAS+ service, indicated in table TDBDAOPT, field ADASERV.

Datafill example for table TOPSDB

The following example shows sample datafill for table TOPSDB.

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV	OAFUNBLK
0	0	0	0	0	0
5	0	17	0	0	0
21	3	56	0	0	0

Datafilling table DNSCRN

The following table shows the datafill specific to DA Automation I/F for table DNSCRN. Only those fields that apply directly to DA Automation I/F are shown.

Datafilling table DNSCRN

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Enter tuples for DNs of subscribers that want or require ADAS blocking, indicated in table TDBDAOPT, field ADASERV. DNs not datafilled receive ADAS+ due to default tuple 0 in table TDBDAOPT.

Datafill example for table DNSCRN

The following example shows sample datafill for table DNSCRN.

DA Automation I/F (continued)

MAP display example for table DNSCRN

DN	ATTROPTS
6193201234	TOPSDB 5
6193205554	TOPSDB 21

Datafilling table ARURTE

The following table shows the datafill specific to DA Automation I/F for table ARURTE. Only those fields that apply directly to DA Automation I/F are shown. Refer to the data schema section of this manual for a description of the other fields.

Datafilling table ARURTE

Field	Subfield or refinement	Entry	Explanation and action
POOLID		0-100	Pool ID. The range of this field is increased.

Datafill example for table ARURTE

The following example shows sample datafill for table ARURTE.

MAP display example for table ARURTE

POOLID	OFRTIDX
0	821
1	821

DA Automation I/F (continued)**Datafilling table ARUMEMBR**

The following table shows the datafill specific to DA Automation I/F for table ARUMEMBR. Only those fields that apply directly to DA Automation I/F are shown. Refer to the data schema section of this manual for a description of the other fields.

Datafilling table ARUMEMBR

Field	Subfield or refinement	Entry	Explanation and action
ARUMEM	CLLI	1-101	Audio Response Unit Member. The range has increased. This is due to the increase in range of field POOLID in table ARURTE which corresponds to this subfield, CLLI.

Datafill example for table ARUMEMBR

The following example shows sample datafill for table ARUMEMBR.

MAP display example for table ARUMEMBR

ARUMEM	DASTRKID	
ADASARU1	100	50

Datafilling table VROPT

The following table shows the datafill specific to DA Automation I/F for table VROPT. Only those fields that apply directly to DA Automation I/F are shown.

DA Automation I/F (continued)

Refer to the data schema section of this manual for a description of the other fields.

Datafilling table VROPT

Parameter	Explanation and action
CALL_ARRIVAL_TIMEOUT	Range is 0-60 (seconds). Parameter AUTO_INT_TIMEOUT is renamed to CALL_ARRIVAL_TIMEOUT since it can be used for more call types. For this feature, this parameter is be used for ADAS+ calls. It is the time period the DMS waits for a response from ADAS+ after notifying it of an ADAS+ eligible call. If the sanity timer expires, the DMS ends communication with ADAS+ and sends the call to an operator.
BEGIN_ANN_TIMEOUT	Range is 0-60 (seconds). This parameter has a new use. This parameter is the time period the DMS waits for ADAS+ to answer the ADAS+ ARU which it has seized.
POST_ANN_TIMEOUT	Range is 0-60 (seconds). This parameter has a new use. This parameter is the time period the DMS waits after ADAS+ hangs up before sending the call to an operator position. This timer is cleared if the caller hangs up or if ADAS+ indicates to the DMS how the call should be routed. If the call is already at an operator position, this timer is not set.

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

MAP display example for table VROPT

PARM	VALUE
CALL_ARRIVAL_TIMEOUT	5
BEGIN_ANN_TIMEOUT	5
POST_ANN_TIMEOUT	5

DA Automation I/F (continued)**Datafilling table SERVICES**

The following table shows the datafill specific to DA Automation I/F for table SERVICES. Only those fields that apply directly to DA Automation I/F are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SERVICES

Field	Subfield or refinement	Entry	Explanation and action
VERSION		1 to 1000	Version. This is a new field that allows specification of the protocol version on a link set basis. This allows the upgrading of the respective DAS to new versions of the protocol independently of the switch software upgrade.

Datafill example for table SERVICES

The following example shows sample datafill for table SERVICES.

MAP display example for table SERVICES

INDEX	PROTOCOL	LSDBID	SWITCHID	VERSION
TOPSVR1 0	CCI N	1234	14	4
TOPSVR2 0	IBM	4321	14	1

Error messages for table SERVICES

The following error messages apply to table SERVICES.

Error messages for table SERVICES (Sheet 1 of 2)

Error message	Explanation and action
The maximum VERSION supported for CCI is 4.	This error message appears when the user attempts to enter a VERSION greater than 4 using the CCI protocol.

DA Automation I/F (continued)

Error messages for table SERVICES (Sheet 2 of 2)

Error message	Explanation and action
The maximum VERSION supported for IBM is 1.	This error message appears when the user attempts to enter a VERSION greater than 1 using the IBM protocol.
VERSION must be 3 or greater for ADASPLUS to take effect.	This warning message appears when the user enters a protocol version less than 3 for the CCI protocol with ADASPLUS set to Y. This message is informing the user that ADAS+ will not function on the link set unless the VERSION is 3 or greater even if the ADASPLUS is set to Y. Note that the ADASPLUS_ENABLE parameter in TOPSPARM must also be set to Y and SOC option OSDA0006 must be ON for ADAS+ to work.

Dump and restore

Dump and restore is handled automatically via software. However, please note the following specifics regarding dump and restore of the new field in table SERVICES.

If the DA_STANDARD_PROTOCOL_VERSION parameter is datafilled in table VROPT prior to TOP07, its value will be restored in the VERSION field of table SERVICES when the protocol is set to CCI. If the DA_STANDARD_PROTOCOL_VERSION parameter is not datafilled, link sets using CCI as the protocol in table SERVICES will be restored to version 1 in the VERSION field.

If the DA_IBM_PROTOCOL_VERSION parameter is datafilled in table VROPT prior to TOP07, its value will be restored in the VERSION field of table SERVICES when the protocol is set to IBM. If the DA_IBM_PROTOCOL_VERSION parameter is not datafilled, link sets using IBM as the protocol in table SERVICES will be restored to version 1 in the VERSION field.

Datafilling table TOPSPARM

The following table shows the datafill specific to DA Automation I/F for table TOPSPARM. Only those fields that apply directly to DA Automation I/F are

DA Automation I/F (continued)

shown. Refer to the data schema section of this manual for a description of the other fields.

Datafilling table TOPSPARM

Parameter	Explanation and action
ADASPLUS_CALLER_JOINED_TONE	Values are NONE, REGDACA, LOWHIGH, and HIGHLOW. This tone is played to the operator when the calling party is joined to the operator. This occurs after ADAS+ playback to the operator or when the operator split/joins or RLS CLD during playback.
ADASPLUS_ENABLE	This parameter enables (Y)/disables (N) routing of eligible calls to ADAS+. In order for ADAS+ to function properly, the following conditions must be met: • ADASPLUS_ENABLE must be set to Y • in table SERVICES: — the protocol must be set to CCI — ADASPLUS must be set to Y — VERSION must be greater than or equal to 3 • SOC option OSDA0006 must be ON Value Y can only be set if SOC option OSDA0006 has been set to ON. It can be set to N at anytime. Option OSDA0006 can only be set to IDLE if ADASPLUS_ENABLE is set to N. The correct setting is described in the Operation section under "Activation" . The default is N.
ADASPLUS_ARU_WINK	This parameter disables/enables and determines the duration of the reverse wink (on-hook or off-hook) sent on the ADASPLUS ARU when it is connected to the operator. If set to N, no wink is sent. If set to Y, plus a value in the range 1-20 (10ms), a wink of the value duration is sent. For example, a value of 5 sends a wink of 50 milliseconds.

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

DA Automation I/F (continued)

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
ADASPLUS_CALLER_JOINED_TONE	LOWHIGH
ADASPLUS_ENABLE	Y
ADAS_CASSETTE_ICON	Y
ADAS_INWARDS_ENABLE	Y
ADAS_OPR_PROFILE_ICON	N
ADAS_WITH_PARS_ENABLE	Y
RINGING_PLAYBACK	Y
ADASPLUS_ARU_WINK	Y 5

Error messages for table TOPSPARM

The following error messages apply to table TOPSPARM.

Error messages for table TOPSPARM

Error message	Explanation and action
SOC option OSDA0006 must be ON.	This message is displayed if parameter ADASPLUS_ENABLE can not be set to Y.

Datafilling table TOPSPOS

The following table shows the datafill specific to DA Automation I/F for table TOPSPOS. Only those fields that apply directly to DA Automation I/F are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSs

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

DA Automation I/F (end)

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

MAP display example for table TOPSPOS

POSNO	VCCKT	VCPDGRP	CARDCODE
DATAPATH			
POSAREA			
100	TM8 0 24	NPDGRP	2X72AA
DMODEM SP ASCII TM8 0 25 NPDGRP BELL108			
OPR 1 TOPSACD TASERV \$ GEN XFR1 \$			

Translation verification tools

DA Automation I/F does not use translation verification tools.

SERVORD

DA Automation I/F does not use SERVORD.

DACC Enhancements I

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: not applicable

Release applicability

TOPS14 and up

TOPS14 introduced DACC Enhancements I.

Requirements

To operate, DACC Enhancements I requires the functionalities that follow:

- Operator Services Basic, OSB00001
- Automated DACC with Alternate Billing, OSDA0002
- Cellular/IEC/LEC ADACC, OSDA0005

Description

This feature provides the following enhancements for Automated Directory Assistance Call Completion (ADACC):

- screening for local calls in table TDBDAOPT
- override of carrier for long distance DA call completion

This functionality is provided by the following feature:

Feature number	Feature name
59021116	DACC Enhancements I

Operation

This section provides details of the feature.

Local call screening

Table TDBDAOPT was introduced by functionality Cellular/IEC.LEC ADACC, OSDA0005. This table contains field ADACCSRV, which indicates

DACC Enhancements I (continued)

the call types that are eligible for ADACC. Before this feature, the values were as follows:

- INTER - for long distance ADACC by a carrier
- INTRA - for both local and toll
- ALL - for both INTRA and INTER
- NONE - block ADACC

This feature replaces the INTRA value with the following values:

- INTRALCL - for local ADACC only
- INTRATOLL - for non-local INTRA toll ADACC calls

Carrier override on long distance ADACC

The carrier associated with an interlata ADACC call can be overridden. This ability is enabled by table TOPSPARM new parameter DACC_CIC_OVERRIDE. Then, a replacement carrier can be specified as one of the following ways:

- on an office wide basis in table TOPSPARM new parameter DACC_OVERRIDE_CIC
- on a service provider basis in table SPIDDB new field DACICOVR

For override on a service provider basis, the SPID of the CLEC and ILEC is determined from among the following:

- ISUP signalling using the LSPI parameter
- operator or service node
- Originating Line Number Screening (OLNS) data base
- table DNSCRN, which provides a SPID on a DN basis
- table TOPSTOPT, which provides a SPID on a trunk group basis when the trunk is a dedicated to a provider
- table TOPSPARM parameter DEFAULT_SPID, which indicates the office-wide default

Complete details on SPID handling can be found in the TOPS Unbundling User's Guide, 297-8402-903.

This feature only requires a SPID to be associated with the calling subscriber in order to provide the carrier override based on a service provider.

DACC Enhancements I (continued)

The carrier override functionality introduced by this feature does not supersede any ADACC screening currently done for ADACC. When an ADACC call is determined to be an interLATA call, the carrier associated with the call will be replaced with the carrier specified by this carrier override feature, and the new carrier will be used to go through the ADACC screening process, which consists of checks of ADACCOPT, TDBDAOPT, and so forth.

If an ILEC/CLEC call has no associated SPID, there are two possible outcomes:

- If doing an office wide CIC override, the SPID is not needed.
- If not doing an office wide CIC override, then this feature does not apply

SOC

Only a portion of this feature is under software optionality control (SOC). SOC only controls the change to table TDBDAOPT, field ADACCSRV, where value INTRA is replaced with INTRALCL and INTRATOLL.

Call flow examples

Incoming call from a CLEC/ILEC subscriber

The initial conditions are as follows:

- Incoming Subscriber: 619 320 6000
- Service Provider: XYZ1
- Requested/terminating DN: 212 220 1000
- Table TOPSPARM: DACC_CIC_OVERRIDE_ENABLE = Y and DACC_OVERRIDE_CIC = Y 1234
- DA Call Orig type = 411 STATION

The call flow follows:

- The subscriber dials 411.
- The call is routed to the TOPS office on an MF trunk.

MAP example for table TRKGRP

GRPKEY	GRPINFO

TOSSIC1	TOPS 0 TLD NCRT IC MIDL 619 619 PTOPT NLCA NSCR Y SP COMBINED N Y 0 0000 NONE OSS TOPSBC 16 10 10 Y OFFHK N N \$

DACC Enhancements I (continued)

- An OLNS query is launched on 619 320 6000.
- An OLNS response returns the following:
 - originating account owner SPID = XYZ1
 - DACC Indicator indicates that DACC is ALLOWED
 - PIC 0111
- A DA query is made and a requested number is obtained.
- Table DATRKOPT indicates that AUTO DACC is allowed for the incoming trunk group.

MAP example for table DATRKOPT

GRPKEY	MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
TOSSIC1	5	ALL	Y	Y	Y	N	PRIMARY

- Table DABILL indicates that AUTO DACC is allowed for the call type/station type combination.

MAP example for table DABILL

DABKEY	REQNUM	CLGREQ	SERVNAME	ENHAMA	CCSURCHG	DACC
411 STATION	N	Y	LOCALDA	Y	Y	ALL

- The number is not in table SERVSCRN; therefore, the call is not a toll-free service call. ADACC is blocked for toll-free service numbers.
- Translate the requested number. An entry for the number is not found in table LCASCRN, so the call is toll call. Check to see if it is a carrier call.
- The LATA name to index table LATAXLA to determine if the call is a carrier call is obtained from table TOPEATRK. Index table LATAXLA with the LATANAME (L123) and a subset of the called digits (212). The call is both interLATA and interstate.

DACC Enhancements I (continued)**MAP example for table TOPEATRK**

TRUNKGRP DFLTPIC	ENDOFFCE	CARRIER BYPASS	SCRNFLDS	XLASCHEM	DNLOOK
TOSSIC1	CONFORM	0111	LATA L123 N STRA STER	SOVS 619	Y

MAP example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
L123 212	INTER	INTER	STD

- Since this call is a long distance DA call completion call and ADACC cannot be offered, DACC_CIC_OVERRIDE_ENABLE is checked to see if it is activated.
- In this scenario, DACC_CIC_OVERRIDE_ENABLE is turned on and the DACC_OVERRIDE_CIC parameter indicates an office-wide override, and the carrier specified to carry ADACC traffic is 1234. Carrier 1234 is assigned regardless of what may be associated with that call at this point. Next, ADACC screening is performed using the new carrier (1234).

If DACC_OVERRIDE_CIC was turned off, table SPIDDB would have been indexed with SPID XYZ1 to check field DACICOVR.

MAP example for table TOPSPARM

PARMNAM	PARMVAL
DACC_CIC_OVERRIDE_ENABLE	Y
DACC_OVERRIDE_CIC	Y 1234

- Carrier 1234 must be datafilled in TOPEACAR
- In TOPEACAR, carrier 1234 can be marked as SERV or NOSERV. If NOSERV, then OSDA0005 must be SOCed ON. (OSDA0005 allows ADACC to be offered to NOSERV carriers)

DACC Enhancements I (continued)

MAP example for table TOPEACAR

CARDIG	CARNAME		ALTDISP	OPLSCLD	CAMABILL	ALTCARR		NATERM	
INTERM								OPSERV	
TDBIDX	CICSCHM								
1234	1234		1234	Y	Y	1234		UNREST	
UNREST		SERV	NOQUERY	Y	NOQUERY	Y	NOQUERY	Y Y Y Y	100 NONE
0	N								

- Ensure this carrier is not the Operating Telephone Company carrier. DACC is blocked for Operating Telephone Company carriers (parameter TOPS_OTC_CARRIER_NUMBER in OFCVAR)
- Check table OCCINFO to ensure that carrier 1234 can handle the call. Carrier 1234 can handle interLATA/interstate calls.

DACC Enhancements I (continued)

MAP example for table OCCINFO

```

CARRNAME CARRNUM  ACCESS ORIGCARR INTER INTNTL INTRA ANI FANI ONISCRN AD1
OVERLAP INTERS INTRAS TERMREC OCCSEPNO OPSIG PICIND NOA950 INCCPN DTMFIND
OPSERV CACBLOCK CTD0A CMCMON SCRNWATS CRMCRA ATPINCL INTRAOPR INCASA
INTRCOIN ARBLKPVT

```

```

-----
      1234      1234  TRANS      Y      Y      Y      N      Y      N      N      Y
      Y          Y      Y  LONG      0  FGRPC      N      N      N      N      N
      N          N      N      N      N      N      N      N      N      N
          N          Y

```

— Check tables TOPEATRK and CLSVSCRC to ensure there is a route to the carrier.

MAP example for table TOPEATRK

```

TRUNKGRP ENDOFFCE CARRIER      SCRNFlds      XLASCHEM DNLOOK
DFLTPIC      BYPASS

```

```

-----
TOSSIC1  CONFORM      0111      LATA L123  N STRA STER SOVS 619      Y

```

MAP example for table CLSVSCRC

```

      NPASCTYP      NORSLTS      TMTOFRT      CLSVSCR
-----
619 STER OA          2      N NONE      (  1)

```

MAP example for table CLSVSCRC: SUB

```

      FROMDIGS      TODIGS      SUB_TMTOFRT
-----
      12340          12349      T OFRT  803

```

- Perform alternate billing checks.
- Check table ADACCOPT.

DACC Enhancements I (continued)

- If there is an entry in the table, but the BILTYPES field is empty, then block ADACC.
- If there is an entry in the table, but the BILTYPES field is set to NONE, then perform standard ADACC billing which essentially only allows ADACC for station paid, station third, station calling card. and auto collect.

Station third can be blocked by table VROPT parameter
DACC_BILL_TO_THIRD.

- If there is an entry in the table and the BILTYPES field is set to some billing types, check all specified billing types and remove the ones that can't be used by the call. Save the set that can be used. For example, if the billing set contains {CONTBIL,SENTPD,ALTBIL,OPERBIL}, but the calling subscriber is not allowed to make sent paid calls, the SENTPD would be removed from the set and the allowable billing type set would then be {CONTBIL,ALTBIL,OPERBIL}. Continue checks

DACC Enhancements I (continued)

in TDBDAOPT if the OSDA0005 feature (Cellular/IEC/LEC ADACC) is SOCed ON.

- If there is no entry in table ADACCOPT, but OSDA0102 is SOCed ON, check table TDBDAOPT; otherwise, block ADACC.
- For this scenario, there is datafill in table ADACCOPT:

MAP example for table ADACCOPT

ACCKEY				BILTYPES	DISPLAY
411	STATION	CONTBIL	SENTPD	ALTBIL \$	S

- Check table TDBDAOPT. (the rest of this functionality is part of the OSDA0005 feature).
 - Perform incoming carrier screening.
 - For ISUP trunks

If CONNTYPE = NONE, use NBEC; otherwise use the datafill in field CARTYPE of table ISUPTRK (choices are NBEC and IEC)
 - For MF trunks

If CONNTYPE = NONE, then look at the trunk group type: for COMFGD, use IEC; for all other trunk group types use NBEC.

If CONNTYPE is not set to NONE, use the datafill in field CARTYPE of table TRKGRP (choices are NBEC and IEC)
 - Based on whether marked NBEC or IEC, get the appropriate company code:

If it is an IEC, get the carrier number from table TOPEATRK.

If it is an NBEC, check table NBECODE for the company digits. If there is no entry in table NBECODE, get it from the trunk group datafill, field NBECODE.
 - Now that a company type (NBEC or IEC) and digits are known, index table COANISCR to obtain the TOPSDB index, which has the index into table TDBDAOPT.
 - Using the TDBDAOPT index from TOPSDB, index table TDBDAOPT and check if ADACC is allowed for the call type (INTRA or INTER) and the billing types are allowed. If the call

DACC Enhancements I (continued)

is allowed, the billing types datafilled in this table are intersected with the billing types that resulted from the ADACCOPT checks above.

- For this example: CONNTYPE = NONE, COMFGD is not applicable, so use NBEC. Based on the datafill below, the NBEC code of the originator is 1222, using that and the ANI ID digits 00, index table COANISCR, which points to tuple 1 in table TOPSDB. Table TOPSDB points to tuple 2 in table TDBDAOPT, which allows ADACC for both INTER and INTRA, and the billing types that the originator allows are {CONTBIL, SENTPD, ALTBIL}. So combine this set with the

DACC Enhancements I (continued)

set obtained from table ADACCOPT above {CONTBIL, SENTPD, ALTBIL} and the resulting set remains the same.

MAP example for table NBECCODE

CLGDIGS	NBEC
619320	1222

MAP example for table COANISCR

KEY	TDBIDX
NBEC 1222 00	1

MAP example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV	OAFUNBLK
1	1	2	0	0	0

MAP example for table TDBDAOPT

TDBDAIDX	ADACCSRV
2 ALL CONTBIL SENTPD ALTBIL \$ Y	

- If the incoming carrier screening passed (based on the incoming carrier/NBEC, ADACC is allowed), then continue with checks and see if ADACC is allowed based on the outgoing carrier.
- Perform outgoing carrier screening
 - The following checks only apply if the call is INTERLATA.

DACC Enhancements I (continued)

- If the incoming carrier was an IEC and the outgoing carrier is the same as the incoming carrier, and tables COANISCRN and TDBDAOPT have been checked in the incoming carrier screening step, then skip this step because the incoming and outgoing carriers are the same
- If the outgoing carrier is not the same as the incoming carrier or if incoming carrier checks based on IEC were not performed, then do the follow check. Use the IEC, carrier digits, and ANI ID to index table COANISCR to obtain an index into table TOPSDB. Table TOPSDB has the TDBDAOPT index necessary to index table TDBDAOPT to perform outgoing carrier screening. The billing set that results from this step is combined with the billing set result from the incoming carrier screening.
- If the incoming trunk group signalled single ANI ID digits, then the index into table TOPSDB if obtained from table TOPEACAR instead of table COANISCRN.
- In this example, the call is an INTERLATA call and checks were not performed on any originating carrier based on the IEC. So, perform outgoing carrier checks. Index table COANISCR with the IEC, carrier digits, and ANI ID. Table COANISCR points to tuple 3 in table TOPSDB. Table TOPSDB point to tuple 4 in table TDBDAOPT. Table TDBDAOPT indicates that for carrier 1234 only INTERLATA ADACC is allowed and can only be alternately billed. The billing set from this entry is combined with the resulting billing set from the incoming carrier screening step: {CONTBIL,

DACC Enhancements I (continued)

SENTPD, ALTBIL} & {ALTBIL} = {ALTBIL}, thus ALTBIL in the only valid billing option for this call.

MAP example for table COANISCR

KEY		TDBIDX
IBEC	1234 00	3

MAP example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV	OAFUNBLK
3	1	4	0	0	0

MAP example for table TDBDAOPT

TDBDAIDX	ADACCSRV		
4	INTER	ALTBIL	\$ Y

- Both incoming and outgoing carrier screening have been performed, the call is still eligible for ADACC, and the billing types have been refined based on both the incoming and outgoing carriers. Perform ADACC screening based on the DN.
- The index into table TOPSDB is obtained from table DNSCRN. Index table TOPSDB to obtain the index into table TDBDAOPT. Go through the checks one more time.
- If the final billing set is empty, then block ADACC; otherwise, send the allowing billing types to the DAS system for an offer of call completion.
- Since this example used OLNS, there is datafill for the DN in table DNSCRN.

DACC Enhancements I (continued)

Incoming call from an IXC subscriber

This feature does not apply to calls incoming from an interLATA exchange carrier (IXC). These calls will continue to work as done today. IXCs on the incoming side are defined by COMFGD type trunks or trunks marked with a CONNTYPE = IEC.

Translations table flow

This feature does not have a translations table flow.

Limitations and restrictions

The limitations and restrictions that follow apply to DACC Enhancements I.

- This feature does not apply to calls incoming from an interLATA exchange carrier (IXC). Incoming IXC calls are identified by incoming trunk group types marked as:
 - COMFGD
 - CONNTYPE of IEC (both ISUP and non-ISUP)
- This feature does not apply to Operator Handled DACC (OHDACC).
- This feature does not apply to IntraLATA Presubscription (ILP) DACC calls.

ILP calls are intraLATA toll calls that are handled by a carrier selected by the calling subscriber. Currently, the only way to obtain the ILP carrier is by an OLNS data base. The ILP feature applies to 0- originated calls and, optionally, to DACC calls if parameter OLNS_ILP_DACC in table TOPSPARM is turned on.

When a DACC calls is intraLATA toll, and the OLNS_ILP_DACC parameter is turned on, and an ILP carrier has been obtained by an OLNS query, then the call is handed off to the ILP carrier. The carrier override functionality provided by this feature does not apply to ILP DACC calls.

Interactions

The paragraphs that follow describe how DACC Enhancements I interacts with other functionalities.

This feature requires feature Cellular/IEC/LEC ADACC Screening Enhancements, OSDA0005, to be SOCed ON for the TDBDAOPT functionality.

DACC Enhancements I (continued)

In addition, the OSDA0102 feature is not needed for interLATA ADACC as long as the carrier handling the call is marked as a SERVED carrier in table TOPEACAR. If the carrier is marked as a NOSERV carrier, then OSDA0005 must be SOCed on in order to offer ADACC to NOSERV carriers.

Activation and deactivation by the user

DACC Enhancements I does not require activation or deactivation by the user.

Billing

There are no changes to any of the billing records; however, the overridden carrier (the one originally associated with the call) is not reflected in the AMA record.

Station Message Detail Recording

DACC Enhancements I does not require Station Message Detail Recording.

Office parameters used by DACC Enhancements I

DACC Enhancements I does not generate office parameters.

Datafill sequence

The table that follows lists the tables that require datafill to put DACC Enhancements I into operation.

Datafill requirements for DACC Enhancements I

Table	Purpose of table
TOPSPARM	TOPS parameters contains office wide parameters for the TOPS office
TDBDAOPT	TOPS data base ADACC options contains restrictions for ADACC calls
SPIDDB	Service provider identification data base contains SPID information for service providers

DACC Enhancements I (continued)**Datafill related to DACC Enhancements I for table TOPSPARM**

The table that follows provides the datafill related to DACC Enhancements I for table TOPSPARM. This table includes only those parameters that apply directly to DACC Enhancements I.

Datafill related to table TOPSPARM

Parameter	Explanation
DACC_CIC_OVERRIDE_ENABLE	This new parameter enables an override of the carrier associated with an interLATA ADACC call. Then, a replacement carrier is selected in one of the following ways: • office wide basis in TOPSPARM parameter DACC_OVERRIDE_CIC • service provider basis in table SPIDDB, field DACICOVR The values are Y (enable) and N (disable). If the carrier override functionality is not required, then this parameter should be set to N.
DACC_OVERRIDE_CIC	This new parameter overrides the carrier associated with an interLATA ADACC call. This parameter is valid only if TOPSPARM parameter DACC_CIC_OVERRIDE_ENABLE = Y. Then, DACC_OVERRIDE_CIC is checked, which has the following values: • Y - Enable override on an office wide basis. Refinement CARRNO appears, which is a 4-digit carrier number. The carrier must be datafilled in table TOPEACAR. If DACC_OVERRIDE_CIC and table SPIDDB, field DACICOVR are both set to Y, then DACC_OVERRIDE_CIC has precedence. • N -Disable override. This value is required for override on a service provider basis in table SPIDDB, field DACICOVR.

DACC Enhancements I (continued)

Datafill example for table TOPSPARM

The figure that follows shows sample datafill for table TOPSPARM.

MAP example for table TOPSPARM

PARMNAM	PARMVAL
-----	-----
DACC_CIC_OVERRIDE_ENABLE	Y 1234
DACC_OVERRIDE_CIC	Y

Datafill related to DACC Enhancements I for table TDBDAOPT

The table that follows provides the datafill related to DACC Enhancements I for table TDBDAOPT. This table includes only those fields that apply directly to DACC Enhancements I.

Datafill related to table TDBDAOPT

Field	Subfield	Entry	Explanation and action
ADACCSRV		INTER, INTRATOLL, INTRALCL, ALL, or NONE	ADACC service. The values of this field are changed. Before this feature, the values were INTER, INTRA, ALL, and NONE. This feature changes INTRA and ALL to the following: - INTRALCL - local ADACC only - INTRATOLL - non-local INTRA toll ADACC - ALL - INTER, INTRATOLL, and INTRALCL
BILLOPT		Set of CONTBIL, SENTPD, ALTBIL, OPERBIL; or ALL, or NONE.	Billing options. Before this feature, this field was a subfield of ADACCSRV. Now, BILLOPT is a full field.
ADASERV		N or Y	ADAS service. Before this feature, this field was a subfield of ADACCSRV. Now, ADASERV is a full field.

During a one night process (ONP), value INTRA on the dump side is restored as both INTRATOLL and INTRALCL, which provide equivalent functionality

DACC Enhancements I (continued)

to the dump side. Therefore, for example, to block local ADACC, INTRALCL would be removed.

Datafill example for table TDBDAOPT

The figure that follows shows sample datafill for table TDBDAOPT.

MAP example for table TDBDAOPT

TDBDAIDX	ADACCSRV	BILLOPT	ADASERV
10	INTRATOLL INTRALCL\$	SENTP\$	Y

Datafill related to DACC Enhancements I for table SPIDDB

The table that follows provides the datafill related to DACC Enhancements I for table SPIDDB. This table includes only those fields that apply directly to DACC Enhancements I.

Datafill related to table SPIDDB

Field	Subfield	Entry	Explanation and action
DACICOVR		Y or N	DACC interlata carrier override. This new field is applicable only if all of the following conditions are met: - The call is an interlata ADACC call. - Table TOPSPARM parameter DACC_CIC_OVERRIDE_ENABLE = Y - Table TOPSPARM parameter DACC_OVERRIDE_CIC = N Then, the carrier associated with the call is replaced with the carrier specified in the CARRNO subfield that follows. The values for the DACICOVR field are Y (enable) and N (disable). For Y, datafill subfield CARRNO.
	CARRNO	0000 to 9999	Carrier number. This field appears when field DACICOVR = Y. Enter a carrier to replace the associated interlata ADACC carrier.

DACC Enhancements I (end)

Datafill example for table SPIDDB

The figure that follows shows sample datafill for table SPIDDB.

MAP example for table SPIDDB

SPID	SCRNDISP			OPERSYS		TAANN
	DAANN			ACTSANN		XLA
	SPIDCRIT	SCRNIDX		BILAGRMT	DACICOVR	

OLNS Y	OLNSDSP			ALL		Y OLNSBRAND
Y OLNSBRAND			Y ACTSTOPS 25	ACTSTOPS 26		Y OLNSSPID
	N	100	NONE	Y 1234		

Translation verification tools

DACC Enhancements I does not use translation verification tools.

SERVORD

DACC Enhancements I does not use the Service Order System (SERVORD).

IBM Switch DAS/C Protocol

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: not applicable

Release applicability

BCS32 and up

Prerequisites

To operate, IBM Switch DAS/C Protocol has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001
- Operator Services Directory Assistance, OSDA0001

Description

This functionality is provided by the following features:

Feature number	Feature name
AF1266	IBM DA Protocol and Simulator
50039957	DA positions in an OC network

The IBM Switch DAS/C Protocol in conjunction with the TOPSMPVR FOLDBACK features provides for TOPS to service Directory Assistance (DA) and Intercept (INT) call types while utilizing an International Business Machine-Directory Assistance System (IBM-DAS) vendor.

Operation

IBM Switch DAS/C Protocol provides the functional description and interface message specifications used to communicate between DMS TOPS and the IBM-DAS. This interface provides the capability of automated voice response for directory assistance and intercept calls in an effort to reduce Average Work Time (AWT). This is accomplished by releasing the operator from the call and using an external Audio Response Unit (ARU) to announce the listing number to the subscriber.

This interface also supports messaging required for Automatic DA Call Completion (ADACC) when used in conjunction with the ADACC feature

IBM Switch DAS/C Protocol (continued)

package NTXE36AA. ADACC is offered to the subscriber via the IBM-DAS vendor's ARUs so there is no increase in operator AWT for that DA call.

In addition, this feature makes use of the Intercept (INTSERV) Service type to enable DA and INT calls to be serviced by unique vendors.

Prior to this feature, DA and Intercept capabilities existed as a single service, DA service, to a single DAS vendor. A new service is required to provide a means of segregating DA call types from Intercept Call Types, and to provide for the servicing of each call type by an independent vendor from a single DMS switch.

With the application of this feature an Intercept service is made available so that TOPS call processing can support both Directory Assistance and Intercept utilizing separate vendors. One DAS vendor can support DA service the second DAS vendor can support Intercept service or as before a single DAS vendor can be utilized to support both DA and Intercept services. The implementation of Intercept Service is provided for via table SERVICES. Table SERVICES is an existing table which specifies which vendor can handle the specified service. With the expansion of the services type to separate Intercept calls from DA calls the messaging for Intercept and DA calls can be directed to unique vendors.

DA and Intercept Queuing

The IBM DA feature does not provide any new functionality with respect to the TOPS queueing of DA and Intercept calls. However, this feature does add new dimensionality in that dual vendors can be supported on the same DMS switch. As described previously DA and Intercept services can be provided by a single vendor or DA and Intercept services can be provided by separate unique vendors.

DA and Intercept service can be provided by any of the TOPS queues: GEN, XFR1, XFR2 or DA. This optionality is provided by the service field in table TOPS. Table TOPS assigns the queue and service based upon the Call Origination (CO) types handled by TOPS call processing.

When the DA and Intercept traffic are both handled by the same vendor then the DA and Intercept CO types in table TOPS can be assigned to the queue(s) which provide operator positions having DAS capabilities.

The following example shows sample datafill for table TOPS. In this example DA and Intercept CO types are sent to operator positions servicing the DA queue. The DA call types receive DA service and Intercept calls are provided with Intercept service by the same DAS vendor.

IBM Switch DAS/C Protocol (continued)**MAP display example for table TOPS**

CO	DISPLAY	NOAMA	POSTYP	SERVTYPE
411	S	N	DA	DASERV
555	S	N	DA	DASERV
HOM555	S	N	DA	DASERV
FOR555	S	N	DA	DASERV
INTC	S	N	DA	INTCSERV

When the DA and Intercept traffic are handled by separate vendors the DA and Intercept call types must be assigned to separate queues. Operator positions for one queue must have DAS capabilities to one vendor and the operator positions from a different queue must have DAS capabilities to the second vendor.

The following example shows sample datafill for table TOPS. In this example table TOPS is datafilled so that Intercept calls receive Intercept service from the XFR1 operator(s). The DA CO types are datafilled to receive DA service from the DA operator(s). The operators in the DA queue would be linked to one DAS vendor and the operators in the XFR1 queue would be linked to the second DAS vendor.

MAP display example for table TOPS

CO	DISPLAY	NOAMA	POSTYP	SERVTYPE
411	S	N	DA	DASERV
555	S	N	DA	DASERV
HOM555	S	N	DA	DASERV
FOR555	S	N	DA	DASERV
INTC	S	N	XFR1	INTCSERV

IBM-DAS Protocol

This feature provides the means for TOPS call processing to interface to the IBM-DAS. It provides the construction of the outgoing IBM messages and the interpretation of incoming IBM messages utilizing and/or updating applicable TOPS call data. Refer to the figure, "DMS, IBM-DAS, TOPS-MP and ARU Configuration" illustrating the configuration between the DMS, IBM-DAS and TOPS-MP position.

IBM Switch DAS/C Protocol (continued)

External ARUs

This feature supports external ARUs when utilizing the IBM protocol. Refer to the following figure depicting external ARUs.

Internal ARUs

The IBM protocol also supports internal ARUs when used in conjunction with feature AJ1130 (NTXN51AA) TOPS-MP: Internal Voice Response Capability. Refer to the following figure depicting internal ARUs.

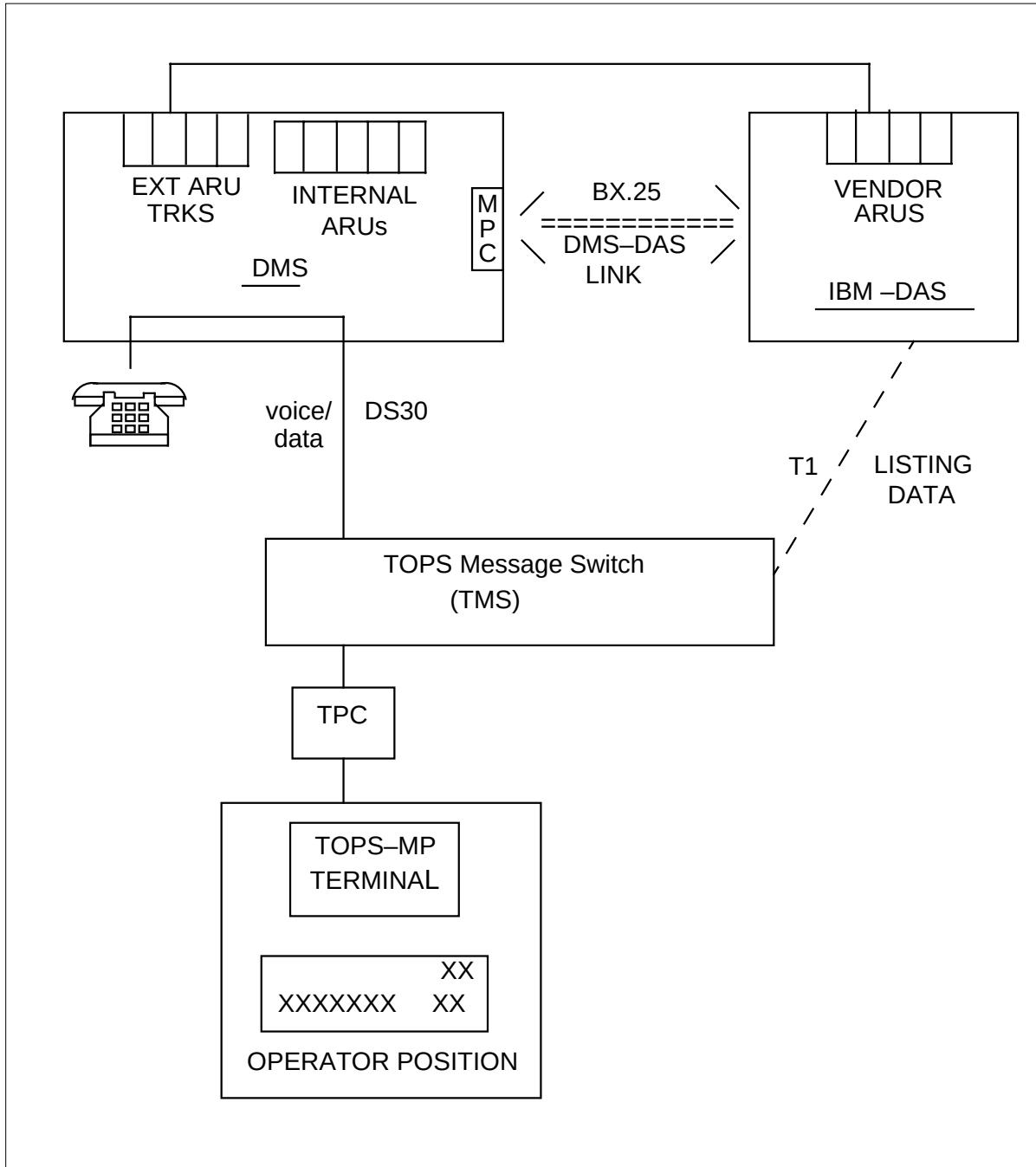
TADS/SADS and Intercept Service

An operator's datafill profile may be changed via a TADS/SADS TTY command by the Traffic Office (TO) manager in charge of that operator. The "X" command has the capability to modify the service sets of the operator profile. Intercept service has now been added to the "X" command. The format of the "X" command that changes the operator profile is:

XnnnnIx<,y...>; a<,b...>

This command enables operator #nnnn to receive transfer type "x", "y", etc. (where "x" and "y" are digits from 0 to 3 corresponding to the transfer queues), and provide service type "a" (and "b", if specified), where "a" and "b" are one of the following:

- "T" for TA service,
- "D" for DA service, and
- "C" for INT service.

IBM Switch DAS/C Protocol (continued)**DMS, IBM-DAS, TOPS-MP and ARU Configuration****DA Service Calls**

These are calls for which the called number is requested based on information known about the called party. DA calls are usually originated by the subscriber

IBM Switch DAS/C Protocol (continued)

as 411, 555-1212, or NPA-555-1212 calls. Operator inwards DA requests are typically originated as 131 calls. DA calls arrive at the TOPS office over dedicated DA or non-dedicated trunks. Calls are classified by table TOPS as requiring DA service based upon call origination type. The following call descriptions relate to DA calls.

Regular DA Calls

For these calls the operator accesses the DAS DA database to obtain the requested number using information acquired from the subscriber as the search key. The operator then verbally quotes the search results to the subscriber or releases the call to an ARU for automatic quotation of the results.

DA ONI or ANIF Calls

DA Operator Number Identification calls originate on trunks designated as ONI and do not automatically provide the calling number. DA Automatic Number Identified Failure (ANIF) calls originate on trunks which provide Automatic Number Identification (ANI) capability but have failed to obtain the calling number. If the call is billable, the operator must request the calling number from the subscriber and enter it at the TOPS position for DA ONI and DA ANIF calls.

Automatic DA Call Completion (ADACC)

ADACC provides TOPS with the capability to complete DA calls to the requested number without operator involvement. For these calls the operator accesses the DAS database and selects the appropriate listing for the subscriber's request. The operator then releases the call to an ARU for automatic quotation of the desired number. The ARU also prompts the caller to respond with an indication of the desire to complete the call. If the subscriber accepts the offer of call completion, an Automatic Message Accounting (AMA) record is produced for the DA call, and then the DMS attempts to connect the subscriber to the requested number.

The advantage of ADACC is that no operator involvement is required while the DMS and DAS handle the offering of DA call completion. This means that there is no increase in operator Average Work Time (AWT) for that DA call, and the operator is free to handle another incoming call.

For a complete description of Automatic DA Call Completion and alternate billing utilized with Call Completion refer to features AF1777 and AF2086.

Intercept Service Calls

These are calls which are intercepted at the end office because the called number is no longer valid. These calls are then routed to TOPS over dedicated intercept or non-dedicated trunks. The calls are classified by table TOPS as

IBM Switch DAS/C Protocol (continued)

requiring an Intercept operator. The following call descriptions relate to Intercept calls.

Automatic Intercept Calls

These are Intercept calls in which the called number is transmitted to the DMS. Therefore, these calls are automatically processed without the assistance of an operator. TOPS call processing passes the called number to the DAS to be used as the search key for the intercept listing. Upon finding the intercept entry, the call is connected to an ARU for automatic intercept announcement.

Intercept ONI and ANIF Calls

For intercept calls the called number is transmitted from the end office in the ANI spill. Therefore for ONI or ANIF there is no ANI spill so the called number is not provided. In either case the called number is not known so the call must be connected to an operator so that the subscriber may be prompted for the called number. When the called number is entered, it is sent on to the DAS. Upon finding the intercept entry by the DAS, the call is connected to an ARU for automatic intercept announcement.

Operator Quoted INT Calls

For instances when an ARU is not available the intercept calls must be operator quoted. The operator accesses the DAS Intercept database, using the called number as the search key, to obtain the new called number. The new number is then verbally quoted to the subscriber and the call is released.

Intercept Cut-Through Calls

These calls begin as Automatic Intercept calls, but are converted to intercept cut-through calls when the subscriber remains offhook following the automatic intercept announcement and is connected to an operator. The time period the subscriber must remain offhook following the announcement to be connected to an operator is determined by the Timeout Count field in the Delayed Transfer message. The number of times that a call is permitted to recall to an operator is determined by the DAS. Once connected to the operator the intercept listings which resulted from the original search are displayed at the TOPS position.

Intercept Recalls

These calls are similar to cut-through calls except that the caller, prior to the automatic announcement, was connected to an operator.

Intercept Special

These recalls occur for reasons such as unsuccessful DAS searches or DAS results which are not quotable by voice response.

IBM Switch DAS/C Protocol (continued)

DA and Intercept Trunking

A DA or Intercept call can arrive at a TOPS MP position over two types of trunk groups: Non-dedicated DA Trunk Groups and Dedicated DA Trunk Groups.

Dedicated DA and Intercept trunk groups consists of two types as specified by the STATCLAS field in table Trunk Group (TRKGRP). The two types are DA or INTCPT. A DA type trunk group is a dedicated trunk group that only carries local 411 calls for the served NPA. An INTCPT type trunk group is a dedicated trunk group that only carries Intercept traffic.

An Office Identification Code (OIC) type trunk group carries a combination of DA call types such as 411, 555-1212, Intercept ... etc. A two digit Office Identification Code is passed in as the called digits from a Tandem Office to the TOPS office.

DA traffic can also arrive on Non-dedicated DA Trunk Groups. An example would be an Inter Toll (IT) or a TOPS trunk group. The Call Origination (CO) type (e.g. 411, 555, 131, etc.) is determined from the called digits received from the originating office. For a complete description of trunking for DA and Intercept calls refer to features AF0478: TOPS_MP FOLDBACK: Trunking and AF0741: TOPSMPVR FOLDBACK: Call Processing.

DA and Intercept Call Processing

The processing of DA and Intercept calls consists of obtaining the resources necessary to accomplish DA and Intercept calls and communicating with the DAS database events during call progression. DA and Intercept call progression can be categorized into the following stages: Initiating a DA or Intercept Call, Presenting the call to an Operator, Handling the Call while at the Operator, Releasing the Call from the Position and Initiating Voice Response, Recalls, and Call Completion.

Initiating a DA or Intercept Call

This segment of processing is responsible for determining the call type and service type, connecting an operator, if necessary, and initiating the call with the DAS.

Determining the Call Type and Service Type During TOPS translations each call is assigned a Call Origination (CO) type. Via table TOPS the Call Origination types are assigned a particular queue for processing by a TOPS operator. Generally CO types that require DA service such as 411, 555, 555HOM, 555FOR or 131 or Intercept service, CO type of INTC, are assigned to the GEN, XFR1, XFR2, or DA queues via table TOPS

IBM Switch DAS/C Protocol (continued)

In addition, this feature provides the option of assigning DA or Intercept service to the above CO types via table TOPS. For example, CO types that require DA service 411, 555, 555HOM, 555FOR or 131 should be assigned a service type of DASERV in table TOPS. Calls that require Intercept service, CO type of INTC, should be assigned a service type of INTCserv in table TOPS.

Informing the DAS of an Intercept Call A Call Arrival message is sent to the DAS which specifies an Intercept call is in progress. The Call Id, the Called Number and Call Type are sent in the message. The Call Id assures that the DAS and DMS are processing the same call during messaging. One Call Id is assigned and used for the duration of the call. The Called Number is used by the DAS as the search key for the intercept listing. The Call Type indicates to the DAS that this is an Auto-Intercept call

Once the DAS has obtained the intercept listing for the called number, it responds with a Referral message to the DMS. The Referral message contains a Destination ID and a List Status. The Destination Id specifies which pool of ARUs are to be used for the automatic announcement. The List status provides additional information associated with the listing.

In general an Intercept call does not require an operator except in the following cases. The typical case is for an ONI Intercept call or an ANIF Intercept call so that the operator can request the number dialed. An additional case is if a Call Id cannot be obtained or the message cannot be sent because of a DMS/DAS datalink outage the Call Arrival message cannot be sent. The call is then treated as an Operator Handled (OH) Intercept call and processing proceeds by allocating an operator.

If the DAS does not respond to the auto-intercept Call Arrival message by returning a Referral message within the time period specified by the VROPT table parameter BEGIN_AUTO_INT_TIMEOUT, processing proceeds to allocate an operator. The call is presented as an "INT" call which must be operator handled.

If the DAS search results in a split referral or the search cannot find an entry for the called number, a Referral message is sent to the DMS with the Destination Id specifying that an operator is needed. Processing then proceeds to allocate an operator and the call is presented as an "INT SPL" call. A Position Busy In message is then sent to inform the DAS of the call presentation. This message contains the Call Id, Call Type, Position Id, the Called Number and the Called NPA. The Call Type indicates to the DAS that this is an Intercept call and the Position Id identifies the position handling the call.

IBM Switch DAS/C Protocol (continued)

Informing the DAS of a DA Call A Position Busy In message is sent to the DAS to inform it of a DA call presentation. This message contains a Call Id, Call Type, Position Id, the Calling Number and the Called NPA. The Call Id ensures that the DMS and DAS are messaging the same call for its duration. The Call Type informs the DAS that this is a Directory Assistance call. The Position Id informs the DAS as to which position the call is being presented to. The calling number, if known, is included as part of the message. The Called NPA if available is also included as part of the message.

If a call identifier cannot be obtained or the message cannot be sent to the DAS due to a datalink failure, the call is still presented to the position with Bill & Report displayed. The call can still be serviced because the TOPS-MP to DAS interface provides the capability of performing database searches regardless of DMS/DAS communications. However, because of the DMS/DAS communications failure, the call must be completely operator handled in regards to assuring that the DMS is supplied with all necessary information.

Allocating an Operator For DA or Intercept calls requiring an operator a TOPS-MP position must be available to provide the DA or Intercept service. For DA calls, an operator is required to enter billing information, if required, and to enter search information such as the name and locality of the called party and to receive DA listings information from the DAS.

Intercept calls require an operator to receive intercept listings and for Intercept ONI or ANIF calls to enter the called number. If an operator which can provide the appropriate service is not available, the call is placed into the Calls Waiting (CW) queue.

Queueing the Call A DA or Intercept call is queued by placing it into the GEN, XFR1, XFR2, or DA Call Waiting (CW) queue. Ringing is then applied to the subscriber while the call remains in queue (Note: ringing is not applied to recalls).

For an operator position to provide DA service for a DA call the appropriate queue and DASERV must be datafilled in table TOPSPOS. For an operator position to service a call requiring Intercept service the appropriate queue and INTC SERV must be datafilled in table TOPSPOS. Similarly the operator's service set must be set to DASERV to handle DA Service and to INTC SERV to handle Intercept Service, in table OPRDAT, and the appropriate DAS vendor must be linked as well.

If there is already an excess of calls in the GEN/DA/XFR1/XFR2 CW queue and the call isn't a recall, the call is not queued but is deflected to treatment. DA calls are deflected to treatment EMR5. Intercept calls are deflected to treatment EMR6. If there are no queueing resources available, the call cannot

IBM Switch DAS/C Protocol (continued)

be placed into queue but is sent to the queue overflow treatment. Additional information on DA Queueing can be obtained from the TOPS_MP Foldback: DA Queueing feature AF0476 documentation. If the call requires no additional service after treatment, processing proceeds to terminate the call.

Allocating a Three Port Conference Circuit When an appropriate operator becomes available, a three port conference circuit is obtained from a pool of available conference circuits. If no three port conference circuits are available the position is released and the call is queued to try again later. If the position fails to obtain a three port conference circuit after two attempts, the call is abandoned and processing proceeds to terminate the call.

Connecting the Subscriber and the Operator Once the three port conference circuit is obtained a voice path between the subscriber and the operator is established by connecting each via the network to the conference circuit. If either network connection is blocked, the position and the three port are released and the call is queued to try again later. If the connections are not successfully made after two attempts, the call receives network blocked treatment and processing proceeds to terminate the call.

Presenting the Call to an Operator

Once the position and the subscriber are connected to the three port conference circuit and a message identifying the position is sent to the DAS, the call is presented to the operator.

DA Call Presentation A DA call is presented to the TOPS-MP position by displaying the DA/INT search screen or billing screen. The DA billing screen allows the operator to alter the billing method and if necessary to enter the calling number. For nonchargeable DA calls NOAMA is also displayed.

The DA call type is indicated to the operator in the call information area of the position display. For local 411 DA calls the call arrives at the TOPS-MP position with a single call arrival tone. The 411 is displayed in the call information area of the DA billing screen. The class charge for the direct dialed 411 calls, for example 411 or one plus 411, is set to station paid on call arrival. The operator can enter or modify the class charge for the call as needed from the DA billing screen.

For 555-1212 DA calls the call arrives at the TOPS-MP operator position with a single call arrival tone. An indication that the call is a 555 Local call is displayed in the call information area of the DA billing screen for home Numbering Plan Area (NPA) 555-1212 call. An indication that the call is a 555 Foreign call is displayed in the call information area of the DA billing screen for foreign NPA 555-1212 call.

IBM Switch DAS/C Protocol (continued)

The 131 DA calls are calls from a toll operator requesting directory information. The 131 DA calls arrive at the TOPS-MP position with a single call arrival tone. The 131 is displayed in the call information area of the DA billing screen for the 131 DA call. Table TOPS allows the telco to designate the indicators displayed for identifying call types.

INT Call Presentation An Intercept call arrives at the TOPS-MP position with a double call arrival tone and the DA/INT search screen display. The Intercept call type is indicated to the operator in the call information area of the display. It is displayed as INTC.

In addition, the following call characteristics may be appended to the call type:

- ONI—Intercept call which originated on an ONI trunk group
- ANIF—Intercept call where ANI failed
- SPL—Auto Intercept calls which connect to an operator for special reasons such as an unsuccessful DAS search or a non-quotable listing
- CUT—Auto Intercept recall where the subscriber remained online past the post-announcement timeout period
- RCL—Intercept recall where the subscriber remained online past the post-announcement timeout period

OH and VQ Indications Bill & Report is displayed on the TOPS-MP screen indicating the DMS/DAS data link(s) are not functional. In this state the operator must quote requested information verbally and must enter all billing information using the billing screen.

Verbal Report is displayed on the TOPS-MP screen indicating that the Voice Response is not functional. In this state the operator must quote requested information verbally, but billing information may still be transferred from the DAS.

Handling the Call while at the Operator

The following operator functions can be performed while the call is at the operator position: billing the call, billing multiple searches, transferring the call to another position, requesting Toll and Assist (TA) service and requesting DA service.

Billing the Call This section is intended to provide a brief overview of billing and rating for DA and Intercept calls. DA and Intercept calls can be billed using all the class charges available in TOPS Toll and Assist. This feature does not incorporate any changes to DA or Intercept Automatic Message Accounting (AMA). Billing of a DA call can be provided for via

IBM Switch DAS/C Protocol (continued)

Mechanized Call Card Service (MCCS), Automatic Coin Toll Service (ACTS), Automated Alternate Billing Service (AABS), or by operator control.

The billing of DA and Intercept calls is determined by datafill in tables TOPS, DA Trunk Options (DATRKOPT) and DA Billing (DABILL). Table TOPS is indexed by the Call Origination type and specifies on a call type basis whether the call is billable or not. Table DATRKOPT, which is indexed by the incoming trunk group's Common Language Location Identifier (CLLI), contains a field for Billing Required (BILLRQD). This is a Yes-No field that indicates whether a revenue, field set to 'Y', or a non-revenue record, field set to 'N', is produced for all DA and Intercept calls originating over that trunk group. Table DABILL is indexed by call origination type and DA class of service. The Service Name (SERVNAME) field indicates the class of billing. If this field is set to 'TOLLFREE', then a non-revenue record is produced. If the field is set to any other name then a revenue record is produced.

It is recommended that EBAF Phase I or Phase II be used with this feature. In so doing the Yes-No field Enhanced DA AMA (ENHAMA) in table DABILL should be set to N.

DA billing with Mechanized Call Card Service (MCCS), Automatic Coin Toll Service (ACTS), and Automated Alternate Billing Service (AABS) is explained as follows.

- **Billing a DA Call via MCCS**

For a 0+ DA call, the call can be optionally routed to MCCS prior to connecting to the TOPS-MP operator. To be MCCS serviceable the trunk group on which the call arrives must be entered in table MCCSOST. The MCCS subsystem collects and validates a calling card number entered by the calling subscriber. Upon successful calling card number checks, the calling subscriber is acknowledged and the DA search screen is displayed to a TOPS-MP position to continue with DA service. If the calling card number check fails the subscriber is prompted to re-enter the number. If the calling card number fails repeatedly, the calling subscriber is informed, then disconnected

- Following the prompt to enter the calling card number the calling subscriber can reach the operator by the following methods:
 - timeout in five seconds when subscriber does not enter a number
 - the subscriber dial 0 for an operator
 - the subscriber flashes the switch-hook.

In this case the call is displayed at the TOPS-MP position with the DA billing screen. The operator should enter billing information before continuing with DA service.

IBM Switch DAS/C Protocol (continued)

The calling card number is saved for the duration of the call so that the calling subscriber can bill a sequence of DA calls to the same calling card number with only a single entry of the number.

- Billing a DA Call via ACTS

For DA coin calls dialed as 411, 1+411, etc. the call can be optionally forwarded to use the ACTS subsystem to count the coins being deposited. The ACTS option is achieved by entering the trunk group in table TOPSACTS as receiving ACTS service (i.e. set to SERV).

When a DA coin call is sent to ACTS the appropriate DRAM announcement is played to the calling subscriber and a Coin Detection Circuit (CDC) is connected to the calling subscriber to count the coins being deposited. Once the appropriate coins have been deposited a "Thank You" acknowledgement is played. Then the call is forwarded to a TOPS-MP position with the DA search screen to continue with DA service. The coins are collected when the subscriber hangs up after receiving DA service.

In case of a timeout or customer flash, the call is forwarded to the TOPS-MP position and the DA billing screen is displayed. The CDC remains connected to count the coins automatically and "ACTS" is displayed to indicate that billing could have been completed by ACTS but did not. The AMT DUE field of the billing screen indicates to the operator the charges due to continue with DA service. The CDC counts the coins as the customer is depositing coins. When the required amount is entered, the operator then accesses the DA search screen to continue with DA service.

- Billing a DA Call via AABS

For a 0+ DA call, the call can be optionally routed to AABS prior to connecting to the TOPS-MP operator. To be AABS serviceable the trunk group on which the call arrives must be entered in table AABSOST. The AABS subsystem in the DMS routes the call to a Voice Service Node (VSN) so that the VSN may prompt the subscriber for the billing method. Upon successful determination of the billing method, and if necessary the

IBM Switch DAS/C Protocol (continued)

billing number from the subscriber, the DA search screen is displayed to a TOPS-MP position to continue with DA service.

- Following the prompt to enter a billing method the calling subscriber can reach the operator by the following methods:
 - VSN timeout when subscriber does not enter digits during billing selection
 - the subscriber dial 0 for an operator
 - the subscriber flashes the switch-hook.

In this case the call is displayed at the TOPS-MP position with the DA billing screen. The operator should enter billing information before continuing with DA service.

Billing Multiple Requests If the subscriber requires listing information for more than one number, the operator must key for DA service between each request. Each DA service request causes the DAS to send a New Request message to the DMS. This message contains the previously searched number and indicates that billing should be performed. TOPS responds by verifying the billing information and if complete uses the data to create an Automatic Message Accounting (AMA) record. If the previously searched number is not included in the message from the DAS, but is required for billing, or other billing information is missing the operator may key or correct the necessary billing data.

The Multiple DA Request (MULTREQ) field in table DATRKOPT specifies on a trunk group basis how many multiple DA requests are allowed for a DA call. When this field is set to 0, a DA call is not eligible for the multiple DA request. This is indicated on the TOPS-MP screen on DA call arrival.

Transferring the Call When the operator keys to transfer the call to another operator, e.g. due to a language problem, the DAS must be informed to release the call from the original position then reconnect it to a new position. Upon DMS release of the original position a Subscriber Disconnect message is sent to inform the DAS of the position release. Once a new position that can provide DA or Intercept service and is of the required transfer type is obtained, a Position Busy In message is sent to inform the DAS of the new position's identity.

It should be noted that the operator being transferred to should provide the same service as the operator transferring the call. The operator being transferred to should also be linked to the appropriate DAS vendor. One limitation in the multi-vendor environment is that the transfer operator can only be linked to one of the DAS vendors. So the transfer operator may receive

IBM Switch DAS/C Protocol (continued)

transferred calls for either DA or Intercept service but have access to only one DAS vendor's database.

Requesting Toll Assist Service and Operator Handled Call Completion

Once the operator has completed any necessary DAS searches and has entered all required call information, the call can then be completed by one of the following methods.

- **Manual call completion:** The number is voice quoted to the subscriber; the forward number (i.e. requested number) is then entered manually at the TOPS-MP; then the operator keys, SERVICES + Digits + START to select TA service at the TOPS-MP to complete the call where the digits entered are the numeric identifier defined for the TA service key function on the services list. Note: to successfully key for TA service the operator's profile must contain TASERV in the operator's service set. The requested number is not sent over by the DAS. The requested number must be entered by the operator prior to selecting TA service so that it gets into the AMA record generated by selecting TA service. Since the DAS does not provide TA service a Subscriber Disconnect message is sent to the DAS releasing it from the call. The call remains at the TOPS-MP position and the Toll and Assist screen is displayed for the operator to provide TA service.
- **Semi-automatic call completion:** The requested number is voice quoted to the subscriber; the operator keys, SERVICES + Digits + START to select TA service at the TOPS-MP to complete the call. For semi-automatic the requested number is received from the DAS without the operator having to key them in. The call remains at the TOPS-MP position and the Toll and Assist screen is displayed for the operator to provide TA service.

When the requested number is not provided the CO type field is set to 0-. When the requested is provided the CO type is set to 0+. When the called digits and any other information which is relevant to the TA portion of the call are present, the operator floats the call from the TOPS-MP position using the POS RLS key and the call out-pulses.

Requesting Directory Assistance Service

For TA calls the subscriber may decide to request DA service, e.g. for a 0- call. To convert the call to DA service the operator keys SERVICES + Digits + START to change the call from TA service to DA Service. The digits entered are the numeric identifier defined for the DA service key function on the services list. Once a position is obtained a Position Busy In message is sent to inform the DAS of the call and its position. This message contains the Call Id, Call Type, and Position Id. It is sent to initiate DAS communication with the position, so that the operator may provide directory assistance service to the call.

IBM Switch DAS/C Protocol (continued)

If there is a forward party connected to the TA call, changing of service is prevented. No action is taken if the call is already being serviced as DA. Intercept calls which are classified as requiring TA service may not be changed to DA or Intercept service.

Releasing the Call from Position and Initiating Voice Response

Once the operator has completed any necessary DAS searches and has entered all required call information, the call can be released from the position. The call may be released to Voice Response or voice quoted and released for termination.

Releasing the Call from Position For DA calls the operator releases the call by providing a verbal quote to the caller followed by a Pos Release keying action or by releasing the call to Voice Response by pressing the Audio key

If the Pos Release key is depressed the DAS sends a CALL RELEASE REQUEST message to the DMS containing the searched number and the call is terminated at the DAS. The DMS verifies the billing information and processing proceeds to terminate the call.

If Voice Response is requested by the operator, the DAS sends an IMMEDIATE TRANSFER message to the DMS. The DMS obtains the searched number from this message and processing proceeds by allocating an ARU.

Operator servicing of INT ONI/ANIF calls usually consists of entering the called number then releasing the call to Voice Response. The DAS sends an AMA Update Request message to the DMS to release the position from the call. The DAS then performs the intercept listing search, and when an appropriate listing is found, sends a Transfer Cancel followed by a Transfer message. Processing then proceeds in the DMS to allocate an ARU.

Exceptions: On a Call Release Request, if billing information is incomplete, the DA Billing Screen is displayed at the position so the missing billing information may be keyed by the operator.

Initiating Voice Response Unit Upon reception of the Immediate Transfer, for a DA call, or Referral message, for an Intercept call, TOPS verifies the billing information then allocates an ARU for the call. Once the ARU is obtained, a network connection between the subscriber and the ARU is established. An ARU Select message is sent to the DAS to inform it of the connection. If the call was connected to a position, the three port conference circuit and the TOPS position are released.

IBM Switch DAS/C Protocol (continued)

If an ARU cannot be obtained Verbal Quote is imposed. If billing information is missing a Detected Exception message is sent to the DAS. If an ARU cannot be obtained TOPS sends a Transfer Aborted message to the DAS. Otherwise, an ARU Select message is returned to the DAS as previously described.

For DA or Intercept calls if the connections cannot be accomplished Verbal Quote is indicated at the position and a Transfer Aborted message is sent to the DAS informing it of the failure.

For an Auto Intercept call a position must first be obtained before Verbal Quote can be indicated so a Transfer Aborted message is sent to inform the DAS of the connection failure. The DAS responds with a Transfer message to indicate a position is required and the DMS responds with a Position Busy In message to the DAS indicating the position that has been selected.

The following VRU features are explained below:

- Playing the Announcement

This feature provides for external announcements (DAS supplied) to the subscriber. The external announcement is initiated by the DAS upon its reception of the ARU Select message.

The selection of an ARU is determined by datafill in table ARUIBMRT. The route index from table ARUIBMRT points to a route list in table OFRT that consists of external ARU Trunk CLLIs. Refer to the Data Schema section of this document for example datafill for the ARUs.

- External ARU Operation:

External ARUs require the use of trunks in the DMS as illustrated by the previous figure in order to carry speech from the DAS to the DMS calling trunks. The control of the external announcement connection is achieved via standard E&M signalling over the trunk facility

The selection of an ARU Trunk at the DMS begins when the DMS receives an Immediate Transfer, Transfer or Referral message from the DAS. The DAS requests an ARU from fifteen possible groups of ARUs as determined by the Destination Id. The Destination Id indexes into a new table ARUIBMRT to obtain a route index. The route index accesses table Office Route (OFRT) to obtain the route list. The route list contains a Common Language Location Identifier (CLLI) of an external ARU trunk. The ARU trunk CLLI is mapped to a DAS Trunk Id (DASTRKID) via table ARU Member (ARUMEMBR). The DASTRKID represents the ARU trunk to the DAS and is sent to the DAS in the Position Id field in the ARU Select

IBM Switch DAS/C Protocol (continued)

message. There is parallel data in the DAS requiring this number for connecting the announcement.

- **Internal ARU Operation**

Internal ARUs are implemented using the Digital Recorded Announcement Machine (DRAM) facility. For a complete description of the Internal Voice Response Capability refer to feature AJ1130 (NTXN51AA) TOPS-MP: Internal Voice Response Capability.

As with external ARU operation, for internal ARUs the Destination ID sent from the DAS indexes into table ARUIBMRT to obtain the route index for the specified ARU. An ARU Select message is sent to the DAS to inform the DAS that the DMS is prepared to select an announcement. However, since this is an internal ARU it is not necessary to provide a trunk id to the DAS so the Position ID field in the ARU Select message is nil. The DAS responds with a Speak message which identifies the announcement to be played via the Announcement Type field. The DMS plays the announcement and sends a Speak Complete message to the DAS when the announcement has completed.

Recalls

A recall occurs upon return of a DA call to an operator following an auto-quote announcement. Timing is performed by the DMS at the end of the announcement for subscriber disconnect via the Timeout Count field in the Delayed Transfer message from the DAS. If a timeout occurs, the call is connected to another position and a Position Busy In message is sent to the DAS. The DAS then retrieves and displays the screen details previously displayed for this call. From then on call processing is the same as for new call arrival. For INT Cut-Through calls the recall mechanism is the same. The number of times a call can recall to an operator is determined by the DAS. If the DA or Intercept call is not permitted to recall by the DAS a Pos Release message is sent to the DMS in lieu of the Delayed Transfer message

DA/Intercept Call Completion

This section provides a detailed description of the Login/Logout processes that are possible with the IBM-DAS.

Login/Logout Via the CC Links When Login/Logout is performed at a TOPS Basic Position (BP) supporting IBM-DA, the Login/Logout to the IBM-DAS is performed by the CC. At login by an operator the DMS-CC verifies the operator number keyed and sends a Position Status message which contains the Complex-Unit number associated with that opr ID to the DAS. The Complex/Unit Id is a two part identifier used by IBM when multiple DMS switches are messaging to one IBM-DAS. The Complex# identifies the DMS and the Unit# identifies an operator team.

IBM Switch DAS/C Protocol (continued)

The Complex/Unit Id is obtained from a new table named OPRCMPLX. Table OPRCMPLX is indexed by an operator number. The DAS does not respond with any reply message to the DMS-CC. The DMS-CC completes its logon processing and sends a message to the TPC indicating completed logon.

Similarly, when the operator logs out by unseating the headset the CC sends a Position Status message to the IBM-DAS indicating the position is no longer occupied. The DAS does not respond with any reply message to the DMS-CC.

Note: The following limitation to login for the two-vendor environment applies. An operator can only log into a single DAS vendor. Therefore if an operator is datafilled to provide both DA and Intercept Service via table TOPSPOS login to the DAS vendor can proceed only if both services are provided by the same vendor. A datafill restriction is incorporated into table TOPSPOS to allow both DA and Intercept services to be entered into the service set only when they are provided by the same vendor as datafilled in table SERVICES.

Login/Logout Via the TPC Links When Login/Logout is performed at a TOPS-MP position supporting IBM-DA, the Login/Logout to the IBM-DAS is performed by the TPC.

At login by an operator the DMS-CC verifies the operator number keyed and sends the Complex-Unit number associated with that opr ID to the TPC. The TPC then sends a sign-on message to the DAS containing the Position ID, Operator Id and Complex/Unit Id of the position and operator logging in. The Complex/Unit Id is a two part identifier used by IBM when multiple DMS switches are messaging to one IBM-DAS. The Complex# identifies the DMS and the Unit# identifies an operator team. The Complex/Unit Id is obtained from a new table named OPRCMPLX. Table OPRCMPLX is indexed by an operator number.

The DAS responds by logging on the indicated TOPS position using the Position Id and Complex/Unit Id provided via a series of messages with the TPC. The DAS does not respond with any reply message to the DMS-CC.

After the TPC has successfully signed-on to the DAS the TPC messages a logon success or failure to the DMS-CC. The DMS-CC completes its logon processing and returns a message to the TPC indicating completed logon.

Similarly, when the operator logs out by unseating the headset the TPC sends a sign-off message to the IBM-DAS indicating the position is no longer

IBM Switch DAS/C Protocol (continued)

occupied. The DAS responds by logging off the indicated TOPS position; again no messaging occurs between the DMS-CC and IBM-DAS.

Note: The following limitation to login for the two-vendor environment applies. An operator can only log into a single DAS vendor. Therefore if an operator is datafilled to provide both DA and Intercept Service via table TOPSPOS login to the DAS vendor can proceed only if both services are provided by the same vendor. A datafill restriction is incorporated into table TOPSPOS to allow both DA and Intercept services to be entered into the service set only when they are provided by the same vendor as datafilled in table SERVICES.

OC considerations

When using DA in an OC environment, the following should be understood.

- ARU numbering scheme - the host and remote offices should be considered as completely independent offices.
- Table OPRCMPLX - This is a host only table. Although this table may appear in the remote load, the table is not used in the remote.

Limitations and restrictions

The following limitations and restrictions apply to IBM Switch DAS/C Protocol:

- There is a restriction for Table ARUIBMRT. The index in Table OFRT must be datafilled with a route list prior to the index being assigned in Table ARUIBMRT. If an attempt is made to assign an OFRT index that is not datafilled, the following error message is produced: 'TABLE OFRT IS NOT DATAFILLED FOR THE INDEX'.
- In general the operator cannot request Intercept Service for calls already requiring DA Service or TA Service. Neither can the operator request DA Service or TA Service for calls already requiring Intercept Service.
- The IBM DAS Application Protocol is an 'off the shelf' product.
- The following limitations apply in utilizing the IBM DAS Application Protocol.

— Extended Bellcore AMA Format (EBAF) Listing Details

The IBM Protocol does provide a List Status field in its protocol however this field provides only partial listing details required by EBAF. Therefore, the protocol is updated to incorporate all listing

IBM Switch DAS/C Protocol (continued)

status fields for EBAF that any DA/Intercept calls handled by the IBM vendor cannot fully populate.

— The following Listing Status details are provided:

- Published/Non-Published,
- Found/Not Found
- Existing Listing/New Listing.

— Audit Messages - System Id Request/System Id Response

The System Id Request and System Id Response messages audit the datalink when the datalink is silent for a prolonged period of time. The System Id Response message sent by the DMS contains only the Transaction Code field. All other data in this message must be supplied from DAS datafill. This is also known as the Non Auto-Config Option.

— DAS Supplied Timeouts

The timeout period supplied in the 'Delayed Transfer' message is ignored. DMS provides an office parameter to specify the post-announcement reconnect time limit in table VROPT parameter POST_ANN_TIMEOUT. Search timeouts for Auto-INT and OH-INT pre-release are determined by the time limit in table VROPT parameter BEGIN_AUTO_INT_TIMEOUT.

— Transferring a DA/INT Call

When transferring a DA or Intercept call, e.g. for language reasons, the IBM-DAS does not retain the listing/search information from the original operator to the transferred operator.

— Use of Table XANNINFO

Table XANNINFO does not apply to DA/Intercept calls utilizing the IBM-DAS protocol. Since the IBM-DAS does not send the DMS the announcement number for external ARU's this table is not applicable for external announcements utilized with the IBM-DAS.

Interactions

IBM Switch DAS/C Protocol uses the TOPS utility feature, TOPSMPVR FOLDBACK: ARU & DATALINK (AF0739), for sending and receiving messages from the DAS using MPC datalinks and for selecting and routing to external ARU's.

Activation/deactivation by the end user

IBM Switch DAS/C Protocol requires no activation or deactivation by the end user.

IBM Switch DAS/C Protocol (continued)**Station Message Detail Recording**

IBM Switch DAS/C Protocol does not affect Station Message Detail Recording.

Datafilling office parameters

IBM Switch DAS/C Protocol does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement IBM Switch DAS/C Protocol. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for IBM Switch DAS/C Protocol (Sheet 1 of 2)

Table	Purpose of table
ARUIBMRT	Audio Response Unit IBM Route. This table represents a group of announcements based on the language identified by the Destination Id.
OPRCMPLX	Operator Complex/Unit ID. This table is indexed by the Operator Number to obtain the complex/unit ID that is sent to the DAS in a Pos Status message for operator login.
SERVICES	Services. This table identifies the protocol, data link type, and data base listing identifier for toll and assistance, directory assistance and intercept services.
TOPSPOS	TOPS Position. This table defines TOPS positions to the switch. This table specifies the services that a position can provide.
OPRDAT	TOPS Operator Data. This table lists all the operator numbers that have been assigned. Only operators with a number listed in this table are allowed to log in to a TOPS position.
MPCFASTA	MPC Fast Applications. This table assigns MPC circuits to an application.
CLLI	Common Language Location Identifier. This table uniquely identifies the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit.
TRKGRP	Trunk Group. This table contains information about trunk groups.
OFRT	Office Route. This table is used for routing in all DMS systems except the DMS-300 system.
TRKGRP	Trunk Subgroup. This table contains information about each subgroup associated with a trunk group defined in Table TRKGRP.

IBM Switch DAS/C Protocol (continued)

Datafill tables required for IBM Switch DAS/C Protocol (Sheet 2 of 2)

Table	Purpose of table
TRKMEM	Trunk Member. This table lists the data for each trunk specified in the trunk group and subgroup tables.
ARUMEMBER	Audio Response Member. This table associates the trunk members with a DAS trunk ID. This ID tells the DAS which trunk has been seized by the DMS.
MPC	Multi-Protocol Controller. This table contains the values necessary to implement the multi-protocol controller (MPC) in the DMS.
MPCLINK	Multi-Protocol Controller Link. This table specifies link and protocol information for cards datafilled in table MPC.
OPRCMPLX	Operator Complex/Unit ID. This table

Datafilling table ARUIBMRT

Table ARUIBMRT is indexed by the Destination ID that is sent by the DAS in an Immediate Transfer, Transfer or Referral message. It represents a group of announcements based on the language identified by the Destination Id. The office route obtained from this table serves as an index into table OFRT.

Datafill example for table ARUIBMRT

The following example shows sample datafill for table ARUIBMRT.

MAP display example for table ARUIBMRT

DESTID	OFRTIDX
1	200
2	201
.	
.	
.	
.	
14	200
15	201

Datafilling table OPRCMPLX

Table OPRCMPLX is indexed by the Operator Number to obtain the complex/unit ID that is sent to the DAS in a Pos Status message for operator login. The complex/unit ID is used by the IBM system for the purpose of maintaining statistics over group(s) of operators from various DMS switches.

IBM Switch DAS/C Protocol (continued)

The complex/unit id has no internal significance to the DMS switch, but must be datafilled to satisfy the IBM vendor's requirements.

Datafilling table SERVICES

Four tables are impacted as a result of allowing Intercept Services to be datafilled. They are tables SERVICES, TOPSPOS, OPRDAT and MPCFASTA. Tables OPRDAT and TOPSPOS must incorporate Intercept Service into the operator and position service sets respectively. Table MPCFASTA provides two applications, TOPSVR1 and TOPSVR2, so that unique links can be specified for different vendors where one vendor supports DA service and a second vendor supports Intercept service. Note that the service/vendor assigned to use datalink MPC1 in table SERVICES uses the links assigned to application TOPSVR1 in table MPCFASTA. Similarly, the services/vendor assigned to use datalink MPC2 in table SERVICES uses the links assigned to application TOPSVR2 in table MPCFASTA. If both DASERV and INTCSERV are provided by the same vendor then the datalink field, in table SERVICES, should specify the same datalink type.

Table SERVICES identifies the protocol and the datalink for DA Service and Intercept Service. TA Service is also a valid service but there is no associated datafill for TA Service. The valid protocols with this feature are CCI and IBM. The valid datalink types are MPC1 and MPC2. Dual datalinks are needed to support two vendors.

Datafill examples for table SERVICES

The following diagram shows example datafill for table SERVICES when two vendors are specified:

MAP display example for table SERVICES

INDEX	SERVDATA		
TASERV			
DASERV	CCI	MPC1	2138
INTCSERV	IBM	MPC2	3333

The following diagram shows example datafill for table SERVICES when one vendor is specified:

IBM Switch DAS/C Protocol (continued)

MAP display example for table SERVICES

INDEX	SERVDATA		
TASERV			
DASERV	IBM	MPC1	2138
INTCSERV	IBM	MPC2	3333

Datafilling table TOPSPOS

Table TOPSPOS defines TOPS positions to the switch. This table specifies the services that a position can provide. For the IBM Switch DAS/C Protocol feature, Table TOPSPOS must also incorporate Intercept Service into the operator and position service sets.

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table TOPSPOS. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOS

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.
SVCSET		INTCSERV, TASERV, DASERV or ALL	Due to the new intercept service, new value IINTCSERV can be datafilled.

Datafill example for table TOPSPOS

The following example shows sample datafill for table .

IBM Switch DAS/C Protocol (continued)**MAP display example for table TOPSPOS**

POSNO	POS	TEAM	SVCSET	XFRSET	CNTRLR	PROTOCOL
300	OPR	1	INTCSERV	XFR1	TPC	BELL202
301	OPR	1	INTCSERV	XFR1	TPC	BELL202
312	OPR	1	INTCSERV	XFR1	TPC	BELL202

Datafilling table OPRDAT

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table OPRDAT. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OPRDAT

Field	Subfield or refinement	Entry	Explanation and action
SVCSET		INTCSERV, TASERV, DASERV, NONE, ALL	Due to the new intercept service, new value IINTCSERV can be datafilled.

Datafill example for table OPRDAT

The following example shows sample datafill for table OPRDAT.

MAP display example for table OPRDAT

OPRNUM	CTTEAM	CTSET	XFRTEAM	XFRSET	SVCSET
300	0	ALL	0	XFR1	INTCSERV
301	0	ALL	0	XFR1	INTCSERV
312	0	ALL	0	XFR1	INTCSERV

The following diagrams show the datafill order and example datafill for routing to external ARU's:

Datafilling table MPCFASTA

Table MPCFASTA assigns MPC circuits to an application. The table also provides the audit frequency for each circuit.

IBM Switch DAS/C Protocol (continued)

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table MPCFASTA. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPCFASTA

Field	Subfield or refinement	Entry	Explanation and action
RECOVERY		REGULAR	The RECOVERY field is the stronger error recovery introduced in Feature AF1516: "MPCFAST Enhancements". It is recommended that this field be set to "REGULAR" for TOPSVR1 and TOPSVR2.
MLCLIST	MPCNO LINKNO CHNL	0-255 2-3 1-255	MLCLIST describes the MPC circuit. The first number represents the MPCNO. The second number represents the LINKNO. The third number is the circuit or conversation on the link. The effect of this table is the following: any message begin sent or received over this MPC circuit is processed by the application assigned to it. Note that the previous TOPSVR application is now replaced by two applications TOPSVR1 and TOPSVR2. When DA and Intercept Services are utilizing the same vendor only one application need be datafilled in table MPCFASTA. When DA and Intercept Services utilize separate vendors both TOPSVR1 and TOPSVR2 applications must be datafilled where the MLCLIST is unique for each application. Note that the service/vendor assigned to datalink MPC1 in table SERVICES uses the links datafilled against the TOPSVR1 application in table MPCFASTA. Similarly, the service/vendor assigned to datalink MPC2 in table SERVICES uses the links datafilled against the TOPSVR2 application in table MPCFASTA.

Datafill example for table MPCFASTA

The following example shows sample datafill for table MPCFASTA when both TOPSVR1 and TOPSVR2 applications are datafilled to support two vendors.

IBM Switch DAS/C Protocol (continued)**MAP display example for table MPCFASTA**

INDEX	AUDITFRQ	UNITS	RECOVERY	MLCLIST
TOPSVR1	1	MINUTES	REGULAR	1 2 1
TOPSVR2	1	MINUTES	REGULAR	1 3 1

Datafilling table CLLI

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table CLLI. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLLI

Field	Subfield or refinement	Entry	Explanation and action
			Add new ARUs.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
DAARU1	669	4	TOPS_ARU
DAARU2	670	3	TOPS_ARU

Datafilling table TRKGRP

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table TRKGRP. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
			Add new ARUs.

IBM Switch DAS/C Protocol (continued)

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

MAP display example for table TRKGRP

GRPKEY	GRPINFO
DAARU1	TOPSARU 31 NPDGP NCRT
DAARU2	TOPSARU 10 NPDGP NCRT

Datafilling table OFRT

Table OFRT is an office route table. It is used for routing in all DMS systems except the DMS-300 system.

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table OFRT. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OFRT

Field	Subfield or refinement	Entry	Explanation and action
Add new ARUs.			

Datafill example for table OFRT

The following example shows sample datafill for table OFRT.

MAP display example for table OFRT

RTE	RTELIST
200	(S D DAARU1)\$
201	(S D DAARU2)\$

Datafilling table TRKSGRP

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table TRKSGRP. Only those fields that apply directly to IBM Switch

IBM Switch DAS/C Protocol (continued)

DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
			Add new ARUs.

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
DAARU1 0	DS1SIG	STD OG NP IM 7 0 NO NO N N N 400
DAARU2 0	DS1SIG	STD OG NP IM 7 0 NO NO N N N 400

Datafilling table TRKMEM

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table TRKMEM. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKMEM

Field	Subfield or refinement	Entry	Explanation and action
			Add new ARUs.

Datafill example for table TRKMEM

The following example shows sample datafill for table TRKMEM.

MAP display example for table TRKMEM

CLLI	EXTRKNM	SGRP	MEMVAR
DAARU1 0		0	DTC 2 1
DAARU1 1		1	DTC 2 2
DAARU2 0		0	DTC 3 1
DAARU2 1		1	DTC 3 2

IBM Switch DAS/C Protocol (continued)

Datafilling table ARUMEMBR

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table ARUMEMBR. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ARUMEMBR

Field	Subfield or refinement	Entry	Explanation and action
Add new ARUs.			

Datafill example for table ARUMEMBR

The following example shows sample datafill for table ARUMEMBR.

MAP display example for table ARUMEMBR

ARUMEM	DASTRKID
DAARU1 0	50
DAARU1 1	51
DAARU1 2	52
DAARU1 3	53
DAARU2 0	100
DAARU2 1	101
DAARU2 2	102
DAARU2 3	103

Note: The DASTRKID correlates to DAS datafill

Datafilling table MPC

Table MPC contains the values necessary to implement the multi-protocol controller (MPC) in the DMS.

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table MPC. Only those fields that apply directly to IBM Switch DAS/C

IBM Switch DAS/C Protocol (continued)

Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPC

Field	Subfield or refinement	Entry	Explanation and action
Add IBM DAS link.			

Datafill example for table MPC

The following example shows sample datafill for table MPC. The example shows 2 MPCs, 1 and 2. MPC 1 is on IOC 3, card1. Its IOCCCT is 4 (4 x card# (slot on IOC)). The remaining fields contain the equipment number, the protocol and the PM load file. MPC 2 is on IOC 2, card 2, its IOCCCT is 8. The remaining fields contain the equipment number, the protocol and the PM load file.

MAP display example for table MPC

MPCNO	MPCIOC	IOCCCT	EQ	PROTOCOL	DLDFILE
1	3	4	1X89AA	X25LINK	MPCXI03B
1	3	4	1X89AA	X25LINK	MPCXI03B

Note: The final field, DLDFILE, is BCS sensitive, and depends on the current XPM load release.

Datafilling table MPCLINK

Table MPCLINK specifies link and protocol information for cards datafilled in table MPC. Table MPCLINK is datafilled after table MPC, and can be datafilled with any valid multi-protocol controller (MPC), link definition, and protocol combination, followed by a group of protocol-specific fields.

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table MPCLINK. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPCLINK

Field	Subfield or refinement	Entry	Explanation and action
Add IBM DAS link.			

IBM Switch DAS/C Protocol (continued)

Datafill example for table MPCLINK

The following diagram provides example datafill. The INDEX field is an integer. MPCNO is the same MPCNO in table MPC. The MPC has 4 links (0 - 3). Only links 2 and 3 can be used as datalinks. Therefore the field LINKNO must contain either 2 or 3 for the TOPSVR1 and TOPSVR2 applications. Note that the TOPSVR1 and TOPSVR2 applications do not support link sets. MPC 1 is the first link to the DAS. The remaining fields should be set as in the example. MPC 2 is a second link to the DAS.

MAP display example for table MPCLINK

LINKKEY	PRTCLDAT
1	2
X25ORIG	55 55 (T1 2) (N2 2) (Numpvcs 2)\$

Datafilling table OPRCMLPX

The following table shows the datafill specific to IBM Switch DAS/C Protocol for table OPRCMLPX. Only those fields that apply directly to IBM Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OPRCMLPX

Field	Subfield or refinement	Entry	Explanation and action
Add operators for IBM DAS.			

Datafill example for table OPRCMLPX

The following example shows sample datafill for table OPRCMLPX.

MAP display example for table OPRCMLPX

OPRNUM	CPLXNUM	UNITNUM
300	2	5
301	2	6
312	3	5

Translation verification tools

IBM Switch DAS/C Protocol does not use translation verification tools.

IBM Switch DAS/C Protocol (end)

SERVORD

IBM Switch DAS/C Protocol does not use SERVORD.

Miscellaneous DA Enhancements

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: not applicable

Release applicability

TOPS09 and up

Miscellaneous DA Enhancements was introduced in TOPS09.

Prerequisites

To operate, Miscellaneous DA Enhancements has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001

Description

This functionality provides the following:

- Enhancement of directory assistance (DA) protocol for future expansion.
- Improvement of Automatic Directory Assistance Service Plus (ADAS+) Audio Response Unit (ARU) failure handling.
- ADAS+ Automated Reswitching to automatically switch the call from one operator bureau to another, based on the recognized locality.

This functionality consists of the following feature:

Feature number	Feature name
AF7132	Directory Assistance Robustness

Operation

This section provides details of this feature.

DA protocol

The DA protocol has the following changes:

- addition of the account owner services provider identifier (AO SPID) for back end branding of DA calls
- an increase of the directory number range to 24 digits.

Miscellaneous DA Enhancements (continued)

- addition of the DAS protocol version
- addition of the calling party language

ADAS+ ARU failure handling**History**

ADAS+ was released in TOPS03 by functionality DA Automation I/F, OSD0006.

ADAS+ determines when a call is not serviced by its office and tells the subscriber of the correct NPA and number. Then, ADAS+ can automatically route the call to the correct office. The directory assistance system (DAS) determines if this transfer is necessary and whether to bill for the transfer (if a transfer).

DAS 103 logs are used to report blocking when the DAS is unable to acquire an ADAS+ ARU on an ADAS+ port.

Coupled with this log is the ADASARUF OM register in OM group TOPSDA, which counts the number of times an ADAS+ port is not available when needed for an ADAS+ call. This register may be incremented up to two times per call: once for a failure on the primary ARU pool and once for a failure on the secondary attempt. Thus, this count may not be a reliable source for determining the number of times calls were blocked from ADAS+ service.

New functionality

Log DAS 107 (instead of DAS 103) is used to report these port blockages. This change allows these logs to be suppressed without affecting reporting of problems for non-ADAS+ ARUs.

To remedy the ADASARUF OM register problem described above, this register is now pegged only once per call to indicate that the call was blocked from ADAS+ service.

ADAS+ automated reswitching

Automated reswitching occurs when ADAS+ recognizes the call is a candidate for reswitching due to the locality of the subscriber. This message to the switch indicates whether the switch should bill for the transfer to the alternate provider. Then, the DAS notifies the switch that reswitching is required. The switch responds by outpulses the call to the alternate provider.

After an AMA record has been generated for the DA portion of the call, the class charge is changed to auto collect for the reswitch attempt, regardless of the previous billing type selected. Thus, the termination portion of an automated reswitch call is always billed auto collect.

Miscellaneous DA Enhancements (continued)

Translations table flow

The Miscellaneous DA Enhancements does not have table flow

Limitations and restrictions

Due to the wholesale changes in the Standard DA protocol, version 5 of the protocol is incompatible with previous protocol versions.

Interactions

The directory assistance service (DAS) requires an upgrade to version 5 of the Standard DA protocol. This upgrade should occur before an increment of the corresponding switch notion of the version (by field version in table SERVICES).

Activation/deactivation by the end user

Miscellaneous DA Enhancements requires no activation or deactivation by the end user.

Billing

As mentioned above, the termination portion of an automated reswitch call is always billed auto collect.

The call record appends AMA module code 338. This module records the AO and BSP SPIDs if they are associated with the call. The Party Identifier now includes the Requested Number.

The following table provides information for module code 338.

Module code 338 (Sheet 1 of 2)

Field	Values
Party Identifier	001 - Originating party DN data
	002 - Terminating party DN data
	003 - Billing party DN data
	006 - Requested party DN data
	999 - Unknown
Service Provider Type	001 - Account owner
	002 - Billing Service Provider

Miscellaneous DA Enhancements (continued)

Module code 338 (Sheet 2 of 2)

Field	Values
	999 - Unknown
Service Provider ID	Four character SPID

The following example record is for an operator services call with assignment of a requested AO SPID of 1234 to 6295201234. The changed part of the record is in bold type.

Example call record

```
*HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:192C
SENSOR TYPE:036C  SENSOR ID:0123456C  REC OFFICE TYPE:036C
REC OFFICE ID:0123456C  DATE:61122C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:629C
ORIG NUMBER:5201234C  CONNECTTIME:1327120C
ELAPSED TIME:000000000C  OPERATOR IDS:0009999009999C
ACC OPERATOR WORK TIME:00000C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1C
MODULE CODE:316C  LOCAL INDICATOR:1C  MODULE CODE:311C
ORIG CALL TYPE:002C  MODULE CODE:051C  OVERSEAS IND:0C
TERM NPA:00201C  TERM NUMBER:2201234C
COMPLETION IND:008C  RATE IND:1C
OSS CALL COMPLETION CONDITIONS:3111110C  MODULE CODE:338C
PARTY IDENTIFIER:006C  SERVICE PROVIDER TYPE:001C
SERVICE PROVIDER ID:F1F2F3F4  MODULE CODE:000C
```

Note, the above example illustrates the new Party Identifier type. It may not be a valid AMA record.

Station Message Detail Recording

Miscellaneous DA Enhancements does not affect Station Message Detail Recording.

Datafilling office parameters

Miscellaneous DA Enhancements does not affect office parameters.

Miscellaneous DA Enhancements (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Miscellaneous DA Enhancements. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Miscellaneous DA Enhancements

Table	Purpose of table
SERVICES	Services identifies characteristics of operator services.

Datafilling table SERVICES

The following table shows the datafill specific to Miscellaneous DA Enhancements for table SERVICES. Only those fields that apply directly to Miscellaneous DA Enhancements are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SERVICES

Field	Subfield or refinement	Entry	Explanation and action
VERSION		5	This table is not changed. The DAS requires an upgrade to version 5 of the Standard DA protocol before incrementation of the corresponding switch notion of the version.

Datafill example for table SERVICES

The following example shows sample datafill for table SERVICES.

MAP display example for table SERVICES

INDEX	PROTOCOL	LSDBID	SWITCHID	VERSION
TOPSVR1 0	CCI N	2138	0	5
TOPSVR2 0	CCI N	2138	14	5
TOPSVR2 1	CCI N	2138	14	5
TOPSVR2 2	CCI N	2138	14	5
STUB 0	CCI N	1234	15	5

Translation verification tools

Miscellaneous DA Enhancements does not use translation verification tools.

Miscellaneous DA Enhancements (end)

SERVORD

Miscellaneous DA Enhancements does not use SERVORD.

Multiple DA System I

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: not applicable

Release applicability

NA006 and up

Multiple DA System I was introduced in NA006.

Prerequisites

To operate, Multiple DA System I has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001
- Host Queue Management System, ADVQ0003

Description

Multiple DA System I is provided by the following feature:

Features in functionality

Feature number	Feature name
AN1844	Multi-DA Database Access
50039957	DA positions in an OC network

This functionality enables the DMS TOPS switch to connect to up to 8 Directory Assistance Systems (DAS) using the Standard DA protocol and, or, the IBM DAS protocol. The Standard DA protocol is also known as the Computer Consoles Inc. (CCI) DA protocol. This functionality requires the use of the TOPS Queue Management System (QMS), ADVQ0003, functionality.

Multiple DA System I (continued)

Operation

Background

Prior to this functionality, TOPS services could connect to a maximum of two database systems. These database systems provided directory assistance (DA) service or intercept (INTC) service, in the following configurations:

- connection to a single vendor's database which supplies DA service
- connection to a single vendor's database which supplies both DA and intercept services
- connection to two different vendor's databases - one vendor with DA service and the other vendor with intercept service
- connection to a single vendor using two databases with one database providing DA service and the other database providing intercept service

Although TOPS services supported connections to two databases, connections were not supported for two different DA vendors, both providing DA service.

This lack of support for more than one DA service meant that there was no graceful method for transitioning from one vendor's DAS to another vendor's DAS. The only fully supported option of switching DASs was to shutdown the first DAS and bring up the second one in its place. This outage of DA service, of course, was unacceptable. Therefore, an interim solution was developed that required temporary use of the Intercept service capability to support the second DAS connection during the conversion or upgrade activity. There were, however, several limitations to this option including the requirement that Intercept service must be available in order to use this option and that Intercept service did not fully support DA service.

With the rapid changes in the operator services market, a need was identified to have permanent access to at least two (four ideally) DASs, for example, one DAS that is owned and one or more alternate DASs (for example, National DA) to supplement the primary DAS.

For additional information, refer to the following functionalities:

- TOPS DA Call Processing, OSDA0001
- Standard Switch DAS/C Protocol, OSDA0001
- IBM Switch DAS/C Protocol, OSDA0001

Changes

This functionality extends the database access for TOPS services from one DA database to numerous DA databases. Since it is recommended to have at least

Multiple DA System I (continued)

two datalinks defined per database, a maximum of 8 DA databases can be defined. There are 16 available datalinks per application for DA and INTC.

This functionality also eases the transition of switching DA database vendors for users of QMS. The dual-DAS method of practice (MOP) is no longer needed for QMS users.

To utilize various databases, DA and INTC services are now assigned to a specific database by an instance (defined below) which contains a certain link set.

Instance: An instance is a subset of an application. For example, TOPSVR1 is an application which may be assigned to the DA or INTC service. TOPSVR1 0, TOPSVR1 1, TOPSVR1 2, ...' are instances of the TOPSVR1 application. The instances may be defined to different links and therefore to different databases, but they are all still DA or INTC applications. The TOPSVR1 and TOPSVR2 applications cannot both be assigned to the same service. For example, TOPSVR1 and TOPSVR2 cannot both be assigned to the DA service. Service and instance are associated in tables TQMSSERV (for QMS) and VROPT (for TOPSACD).

Thus, based on the service of the call, a certain DA/INTC database is used for that service. If a service change is performed, a different database may be used for the second service. If the position can handle both databases, the second service can be performed by the same operator; otherwise the call must be transferred to an operator who can handle the second service with the different database.

Call IDs are assigned per database supplier. Both IBM and Standard (CCI) databases assign Call IDs in the range 0 to 3070. This allows for a greater number of calls to be processed simultaneously since this functionality could potentially raise the DA traffic flow.

No changes are made to either the Standard nor the IBM DA protocols. And, no changes are made to the Open Position Protocol (OPP) either.

Multiple DA System I (continued)

The following two hardware figures show a dual-DAS configuration in standalone and OC environments. These figures show the following links:

- Low speed links are used to pass call processing messages between the DMS switch and DAS, and are MPC links which use either the standard DA protocol or the IBM DA protocol.
- High speed links are used to pass search information between the operator position and the DAS, and run from either the TPC or the MPX position to the DAS and are labeled "Position links" in the diagrams.
- ARU links are required for each database and are shown in the diagrams between each DAS and the DMS switch.

Optionality and activation

This functionality is included as part of Software Optionality Control (SOC) option OSDA0001 - Operator Services Directory Assistance Functional Group. This SOC option is not an activatable option. Thus, this functionality is not optional. It is activated in all TOP06 and greater loads.

Datafill

Refer to the datafill procedure section for details of datafill requirements. Following is a summary:

- Add low speed links for call processing information between the DMS switch and each DAS in tables MPC, MPCLINK, MPCFASTA, and MPCLSET.

No datafill is required for the high speed and ARU links. This is because these links are between the gateway and the DAS.

- Add services to the QMS tables. Table TQMSSERV should serve as a means to slowly turn up traffic to other databases.
- Specify instance in tables MPCLSET, TQMSSERV, and VROPT.
- Alarms are moved from table SERVICES to table VROPT.
- Switch IDs are moved from table VROPT to table SERVICES.
- Table SERVICES is restructured.

Hardware

The following additional hardware is required for each new DA database:

- MPC/EMPC cards and links (low speeds)
- ARU links
- high speed links

Multiple DA System I (continued)

Operational measurements (OMs)

The following OM groups are changed to index on a DA database instance: DAMISC, TOPSARU, TOPSCCAB, TOPSDA, TOPSDACC, DALINK, TOPSAICC.

LOGS

The DAS, TCCI, TIBM, and EXT log groups are updated to include the DA database instance in addition to the application.

Translations table flow

The Multiple DA System I translations tables are described in the following list:

- Table MPC identifies MPC card hardware
- Table MPCLINK defines link and protocol information for cards datafilled in table MPC
- Table MPCFASTA identifies applications that use the MPC fast utility
- Table MPCLSET groups links from MPCFASTA into linksets for selective link transfers.
- Table SERVICES define characteristics of database instances
- Table TQMSSERV defines QMS services
- Table VROPT contains parameters for external voice response units

The Multiple DA System I translation process is shown in the flowchart that follows.

The following table lists the datafill content used in the flowchart.

Datafill example for Multiple DA System I (Sheet 1 of 2)

Datafill table	Example data
MPC	5 2 12 1X89AA MPCX33AB
MPCLINK	5 2 Y X25ORIG 35 35 (L2WINDOW 7)(CLKSRCE EXTERNAL) (T25 100)
MPCFASTA	TOPSVR1 ACTIVE 0 SECONDS REGULAR (5 2 1) (5 3 1) (4 2 1) (4 3 1)(3 2 1)(3 3 1)
MPCLSET	TOPSVR1 0 (5 2 1)(5 3 1)
SERVICES	TOPSVR1 0 DASERV CCI Y 1234 5 N

Multiple DA System I (continued)

Datafill example for Multiple DA System I (Sheet 2 of 2)

Datafill table	Example data				
VROPT	TOPSACD_DASERV_INSTANCE		TOPSVR1 0		
TQMSSERV	5	DA_411	DASERV TOPSVR1 0	DA_411	BASE Y

Limitations and restrictions

The following limitations and restrictions apply to Multiple DA System I:

- Only the existing two applications (TOPSVR1 and TOPSVR2) and a simulator instance (STUB) are supported for DA and INTC service. Each application is limited to a total of 16 different links sets in table MPCFASTA. STUB is used primarily in a lab environment, but is sometimes used in configurations that do not have DMS-DAS links. When STUB is used in a lab environment, no datafill is required in MPCFASTA nor MPCLSET.
- Only QMS is supported. TOPSACD is not able to utilize numerous databases through this functionality. TOPSACD must still implement the dual-DAS MOP to transition from one database to another.
- Only TOPS-IWS positions can process calls with more than one database. Since the TPC can only support one high speed database link, TOPS-MPs need to transfer to another MP on a different TPC to provide a service on another database.
- Since TOPS-MP can only support one database, only the first database found in the service profile is logged into.
- Table VROPT options such as post announcement time-out are defined on an office-wide basis and not on a database basis. Thus, these options are the same for all vendor's databases.
- IBM has access to 15 different ARU poolids. CCI has access to 100 different ARU poolids.

Interactions

The following paragraphs describe the interactions between Multiple DA System I and other functionalities.

Third-party vendors must support the Multi-DAS functionality in order for this functionality to be deployed.

Activation/deactivation by the end user

Multiple DA System I requires no activation or deactivation by the end user.

Multiple DA System I (continued)

Billing

Internal and external rating systems are dependent upon the performed service. Since database selection is by service, there are no changes to these billing systems. Different charges may be applied by the performed service which indicates the accessed database.

For database calls, the Listing Service DataBase Identification (LSDBID) number is pulled from table SERVICES and passed in module code 055. Therefore, table SERVICES is changed to define a LSDBID for each database instance.

Station Message Detail Recording

Multiple DA System I does not affect Station Message Detail Recording.

Datafilling office parameters

Multiple DA System I does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Multiple DA System I. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Multiple DA System I (Sheet 1 of 2)

Table	Purpose of table
MPC	Multiprotocol Controller contains values necessary to implement the MPC in the DMS switch. This table identifies the MPC card hardware to the DMS Central Control (CC) and requires one entry or tuple for each MPC.
MPCLINK	MPC Link supports the application of BX.25 layered protocol in the MPC. Protocol support ensures that links and conversations are established and maintained using BX.25 protocol.
MPCFASTA	MPC Fast Applications identifies applications that use the MPC fast utility, a fast input/output (I/O) interface through the MPC.
MPCLSET	MPC Link Set groups links from MPCFASTA into linksets for selective link transfers.
SERVICES	TOPS Services identifies the protocol, and ID for the database and switch for each instance.
VROPT	Voice Response Options contains parameters required by external voice response units.

Multiple DA System I (continued)

Datafill tables required for Multiple DA System I (Sheet 2 of 2)

Table	Purpose of table
TQMSSERV	TOPS Queue Management System Service defines QMS services.
ARU links	Audio response unit links.
QMS tables	Queue Management System tables.
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.

Datafilling table MPC

Table MPC defines MPC card hardware.

The following table shows the datafill specific to Multiple DA System I for table MPC. Only those fields that apply directly to Multiple DA System I are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPC

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Datafill low speed MPC links for call processing information between the DMS switch and each DAS. For further information, refer to the following functionalities: • TOPS DA Call Processing, OSDA0001 • Standard Switch DAS/C Protocol, OSDA0001 • IBM Switch DAS/C Protocol, OSDA0001

Datafill example for table MPC

The following example shows sample datafill for table MPC.

Note: Table MPC must be datafilled before Table MPCLINK, which provides protocol support and link information for every MPC configured in Table MPC. There can be up to 255 tuples filled for Table MPC, one per MPC card.

Multiple DA System I (continued)

Datafilling table MPCLINK

Table MPCLINK defines link and protocol information for cards datafilled in table MPC.

Table MPC must be datafilled prior to table MPCLINK.

The following table shows the datafill specific to Multiple DA System I for table MPCLINK. Only those fields that apply directly to Multiple DA System I are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPCLINK

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Datafill low speed MPC links for call processing information between the DMS switch and each DAS. For further information, refer to the following functionalities: • TOPS DA Call Processing, OSDA0001 • Standard Switch DAS/C Protocol, OSDA0001 • IBM Switch DAS/C Protocol, OSDA0001

Datafill example for table MPCLINK

The following example shows sample datafill for table MPCLINK.

Datafilling table MPCFASTA

Table MPCFASTA identifies applications that use the MPC fast utility, a fast I/O interface through the MPC. Each application has a tuple in MPCFASTA. Each tuple in MPCFASTA contains the alphanumeric application name (INDEX), time between audits (AUDITFRQ), either minutes or seconds (UNITS) applying to the AUDITFRQ entry, and an MLCLIST that shows up to 16 MLCs per application. An MLC consists of one MPC, one Link on the MPC, and one channel of the link. Refer to the data schema section of this document for more information on Table MPCFASTA.

Tables MPC and MPCLINK must be datafilled before table MPCFASTA for MLCs to be valid.

Table MPCFASTA must be datafilled prior to table MPCLSET. Table MPCFASTA defines the entire link set per application (up to 16 different links may be defined per application). Table MPCLSET may then be datafilled with

Multiple DA System I (continued)

various instances of the applications to segregate the application link sets to different databases.

The following table shows the datafill specific to Multiple DA System I for table MPCFASTA. Only those fields that apply directly to Multiple DA System I are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPCFASTA

Field	Subfield or refinement	Entry	Explanation and action
INDEX	K	TOPSVR1 or TOPSVR2	Define each of the links specified in tables MPC and MPCLINK. Application index field. MPC Applications TOPSVR1 and TOPSVR2 can now be datafilled. Each application can be used for DA or INTC service, but not both. For example, TOPSVR1 and TOPSVR2 can not both be used for DA service.
MLCLIST		consists of subfields M, L, and C	Multiprotocol controller link channel list. Up to 16 links per application can be datafilled.

Datafill example for table MPCFASTA

The following example shows sample datafill for table MPCFASTA.

In the above example, TOPSVR1 and TOPSVR2 could be used for DA and INTC service, respectively.

Datafilling table MPCLSET

Table MPCLSET groups links from table MPCFASTA into linksets for selective link transfers.

Links are only used if a service is assigned to the instance associated with the links by table TQMSSERV and, or, table VROPT.

Tables MPC, MPCLINK, and MPCFASTA must be datafilled prior to table MPCLSET. Table MPCFASTA defines the entire link set per application (up to 16 different links may be defined per application). Table MPCLSET may then be datafilled with various instances of the applications to segregate the application link sets to different instances (databases).

Multiple DA System I (continued)

The following table shows the datafill specific to Multiple DA System I for table MPCLSET. Only those fields that apply directly to Multiple DA System I are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPCLSET

Field	Subfield or refinement	Entry	Explanation and action
LSETKEY		see subfields	Link set key. This is the key field and consists of subfields APPLNID and SETNUM.
	APPLNID	TOPSVR1 or TOPSVR2	Linkset application ID. MPC applications TOPSVR1 and TOPSVR2 can now be datafilled. This allows these applications to be subdivided into as many as 16 link sets per application. The service provided by the application is given in table TQMSSERV (for QMS) or VROPT (for TOPSACD).
	SETNUM	0 to 15	Set number. This field is the instance (database). Therefore, an application can support up to 16 databases with the same service (DA or INTC).

Datafill example for table MPCLSET

The following example shows sample datafill for table MPCLSET.

Once the entire link set is defined for the application in table MPCFASTA, it must now be segregated over various instances in table MPCLSET as shown above. This allows for one set of links (for example, (5 2 1) (5 3 1)) to go to one database while another set of links (for example, (4 2 1) (4 3 1)) go to another database. Note for application TOPSVR2 that only the 0th instance is datafilled. Even if the entire link set in table MPCFASTA is used for one database, the 0th instance still needs to be defined in table MPCLSET. (This saves realtime.)

Dump and restore

Dump and restore populates table MPCLSET with the entire link set defined in table MPCFASTA as instance 0 of the application. For example, if the 'dump' side of the switch has table MPCFASTA with 'TOPSVR1 (5 3 1) (6 3 1)' and 'TOPSVR2 (4 3 1) (4 2 1)' then table MPCLSET is populated with 'TOPSVR1 0 (5 3 1) (6 3 1)' and 'TOPSVR2 0 (4 3 1) (4 2 1)'. This is the process only if table MPCLSET does not already have the DA applications defined.

Multiple DA System I (continued)

This dump and restore process is required by call processing when searching for the correct datalink to use.

Datafilling table SERVICES

Table SERVICES is changed to provide database information by instance instead of by application as follows:

- The key index is changed from an integer to a database instance.
- One new field is added for Switch ID, which was moved from table VROPT.
- Field BASESERV is deleted since tables TQMSSERV (for QMS) and VROPT (for ACD) provide this information.
- One new subfield is added for CCI databases for ADASPLUS service.
- Alarms are moved to table VROPT.
- The datalink field is no longer needed since MPC1 and MPC2 correspond to TOPSVR1 and TOPSVR2, respectively. Since the instances are now the index to the table, it is no longer needed to specify the datalink.

Table MPCLSET must be datafilled with the application instance before it can be added to table SERVICES.

Following is a complete description of table SERVICES:

Datafilling table SERVICES (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
INDEX		see subfields	Index. This is the key into the table. This field consists of subfields APPLICATION and SETNO.
	APPLICATION	TOPSVR1, TOPSVR2, or STUB	Application. Applications TOPSVR1 and TOPSVR2 must be previously defined in table MPCLSET. Application STUB is for lab use only, where database simulators are in use. STUB instances are used as the database instance when DASIM is being used. There can be up to 16 STUB instances. STUBs do not require datafill in table MPCLSET.
	SETNO	0 to 15	Link set number. This entry must be previously defined in table MPCLSET.
PROTOCOL		see subfield	Protocol. This field consists of subfield PROT_SEL and a refinement.

Multiple DA System I (continued)

Datafilling table SERVICES (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	PROT_SEL	CCI, IBM, LOCKHEED, NILPROTOCOL	Base service protocol. Enter the protocol for the base service (DASERV or INTCSRV). If the entry is CCI, datafill subfield ADASPLUS.
	ADASPLUS	Y or N	Automated Directory Assistance System Plus. Datafill this field if PROTOCOL = CCI. Enter Y if the database can provide ADASPLUS service and receive ADASPLUS traffic. Enter N if ADASPLUS is not offered on the database and ADASPLUS eligible calls for that database are treated as regular DA calls. For INTC services, this field has no effect on INTC calls. For further information on ADASPLUS, refer to functionality DA Automation I/F, OSDA0006.
LSDBID		0000 to 9999	Listing services data base identifier. An LSDBID is assigned per database instance. This ID is sent in the AMA records and processed by the downstream AMA processors.
SWITCHID		0 to 99 (CCI) or 0 to 15 (IBM)	Switch identification. A switch ID is assigned per database instance. This ID number is sent to the database to identify the switch. Unique switch IDs are required since some databases may service multiple switches. Currently, IBM only supports the range 0 to 15.

Datafill example for table SERVICES

The following example shows sample datafill for table SERVICES.

Dump and restore

Dump and restore populates table SERVICES based on information in table SERVICES on the dump side of the switch. For example, if the dump side showed table SERVICES as `DASERV...MPC1 and INTCSERV...MPC2,' then the new table SERVICES is populated with `TOPSVR1 0 and TOPSVR2 0'.

Table TOPSPARM is checked for the ADASPLUS_ENABLE parameter. If this parameter is set to Y, then all CCI DASERV instances default to Y for the ADASPLUS subfield. If ADASPLUS_ENABLE is set to N, then all CCI instances default to N. All IBM instances default to ADASPLUS of N.

Multiple DA System I (continued)

Table VROPT is checked for the SWITCH_ID and INTC_SWITCH_ID parameters and then table SERVICES is populated accordingly. All dump side SERVICES DASERV instances are populated with the SWITCH_ID value and all dump side SERVICES INTCserv instances are populated with the INTC_SWITCH_ID value.

Datafilling table VROPT

This table is changed as follows:

- Two new parameters are added to specify the database instances for TOPSACD DA and INTC services.
- Six new parameters are added to specify application alarms for DA and INTC. These alarms are moved from table SERVICES to continue support of alarms for each service.

Although there is only one parameter per alarm for the application, the alarms are activated per database instance. Thus, an alarm may be triggered due to one database or numerous databases. The logs should indicate which database instance(s) are causing the alarms.

- Two switch ID parameters are deleted and moved to table SERVICES.

Table SERVICES must be datafilled before table VROPT parameters TOPSACD_DASERV_INSTANCE and TOPSACD_INTCserv_INSTANCE.

Multiple DA System I (continued)

Following are the new and deleted parameters:

Datafilling table VROPT (Sheet 1 of 3)

Field PARM	Field VALUE	Explanation and action
TOPSACD_DASERV_INSTANCE	TOPSVR1 0 to TOPSVR1 15, TOPSVR2 0 to TOPSVR2 15, STUB 0 to STUB 15	This parameter defines which application and instance (database) to use for TOPS automatic call distribution (ACD) directory assistance (DA) service calls. The allowable values are composed of an application (TOPSVR1 or TOPSVR2) and an instance (0 to 15). An instance is a subset of the application. The default is either TOPSVR1 0 or TOPSVR2 0 depending on the application defined as DASERV in table SERVICES on the 'dump' side of the switch during an upgrade. In order to change the instance, the instance must first be defined in table SERVICES. Only instances of the DA application may be assigned to this parameter. Parameters TOPSACD_DASERV_INSTANCE and TOPSACD_INTCserv_INSTANCE cannot both be set to the same application (TOPSVR1 or TOPSVR2). For example, TOPSACD_DASERV_INSTANCE = TOPSVR1 x and TOPSACD_INTCserv_INSTANCE = TOPSVR1 y (where x and y are instances) is not allowed. STUB is used primarily in a lab environment where database simulators are in use, but is sometimes used in configurations that do not have DMS-DAS links. This parameter associates a service with an application for ACD. For QMS, this association is made in table TQMSSERV.
TOPSACD_INTCserv_INSTANCE	TOPSVR1 0 to TOPSVR1 15, TOPSVR2 0 to TOPSVR2 15, STUB 0 to STUB 15	This parameter defines which application and instance (database) to use for TOPS automatic call distribution (ACD) intercept service calls. The allowable values are composed of an application (TOPSVR1 or TOPSVR2) and an instance (0 to 15). An instance is a subset of the application. The default is either TOPSVR1 0 or TOPSVR2 0 depending on the application defined as INTCserv in table SERVICES on the 'dump' side of the switch during an upgrade. In order to change the instance, the database instance must first be defined in table SERVICES. Only instances of the INTC application may be assigned to this parameter.

Multiple DA System I (continued)

Datafilling table VROPT (Sheet 2 of 3)

Field PARM	Field VALUE	Explanation and action
		Parameters TOPSACD_DASERV_INSTANCE and TOPSACD_INTCSEV_INSTANCE cannot both be set to the same application (TOPSVR1 or TOPSVR2). For example, TOPSACD_DASERV_INSTANCE = TOPSVR1 x and TOPSACD_INTCSEV_INSTANCE = TOPSVR1 y (where x and y are instances) is not allowed. STUB is used primarily in a lab environment where database simulators are in use, but is sometimes used in configurations that do not have DMS-DAS links. This parameter associates a service with an application for ACD. For QMS, this association is made in table TQMSSERV.
TOPSVR1_CRITICAL_ALARMS	0 to 16	This alarm parameter specifies the number of low speed links in service for a CRITICAL alarm in application TOPSVR1. This alarm was moved from table SERVICES. The default is set from table SERVICES on the dump side of the switch.
TOPSVR1_MAJOR_ALARMS	0 to 16	This alarm parameter specifies the number of low speed links in service for a MAJOR alarm in application TOPSVR1. This alarm was moved from table SERVICES. The default is set from table SERVICES on the dump side of the switch.
TOPSVR1_MINOR_ALARMS	0 to 16	This alarm parameter specifies the number of low speed links in service for a MINOR alarm in application TOPSVR1. This alarm was moved from table SERVICES. The default is set from table SERVICES on the 'dump' side of the switch.
TOPSVR2_CRITICAL_ALARMS	0 to 16	This alarm parameter specifies the number of low speed links in service for a MINOR alarm in application TOPSVR2. This alarm was moved from table SERVICES. The default is set from table SERVICES on the dump side of the switch.
TOPSVR2_MAJOR_ALARMS	0 to 16	This alarm parameter specifies the number of low speed links in service for a MINOR alarm in application TOPSVR2. This alarm was moved from table SERVICES. The default is set from table SERVICES on the dump side of the switch.

Multiple DA System I (continued)

Datafilling table VROPT (Sheet 3 of 3)

Field PARM	Field VALUE	Explanation and action
TOPSVR2_MINOR_ALARMS	0 to 16	This alarm parameter specifies the number of low speed links in service for a MINOR alarm in application TOPSVR2. This alarm was moved from table SERVICES. The default is set from table SERVICES on the dump side of the switch.
SWITCH_ID	0 to 99	This parameter is deleted since this information is moved to table SERVICES for providing the switch ID by database instance.
INTC_SWITCH_ID	0 to 99	This parameter is deleted since this information is moved to table SERVICES for providing the switch ID by database instance.

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

The new alarm parameters are shown above. These parameters specify the number of low speed links in service for a MINOR, MAJOR, and CRITICAL alarm. The example shows a minor alarm to occur when only 2 low speed links to the TOPSVR1 application are in working condition. When only 1 low speed link remains, a major alarm is activated and when no links remain a critical alarm is activated.

Dump and restore

The dump and restore process for VROPT deletes the SWITCH_ID and INTC_SWITCH_ID parameters if they exist in VROPT.

The dump and restore process to populate the two new instance parameters and the alarm parameters is done during table SERVICES' dump and restore.

Datafilling table TQMSSERV

Table TQMSSERV defines QMS services. Field BASESERV is changed for DA and INTC services to specify the database instance for each QMS DA and INTC service. The default is either TOPSVR1 0 or TOPSVR2 0 depending on which application (MPC1 or MPC2) is defined as DASERV or INTCserv in table SERVICES on the dump side of the switch during an upgrade.

Table TQMSSERV should be used to slowly turn up traffic to other databases.

In order to change a database instance, it must first be defined in table SERVICES. The service (DA or INTC) is verified in table SERVICES. Only

Multiple DA System I (continued)

instances of the DA application may be assigned to DA services and only instances of the INTC application may be assigned to INTC services.

Checks are performed to ensure that applications TOPSVR1 and TOPSVR2 are not both DASERV or INTCserv at the same time. For example, TOPSVR1 and TOPSVR2 cannot both be set to DASERV.

The following table shows the datafill specific to Multiple DA System I for table TQMSSERV. Only those fields that apply directly to Multiple DA System I are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TQMSSERV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
BASESERV		see subfield	Basic service name. This is the key field and consists of subfield BASESERV_SEL.
	BASESERV_SEL	TASERV, DASERV, or INTCserv	Basic service name selector. The available services are defined as follows: - TASERV — toll and assistance service. New services that do not require DA or INTC call control functionality should be datafilled as TASERV (for example, a "Time of Day" service). No further refinements require datafill. - DASERV — directory assistance service. New services that do require DA call control should be datafilled as DASERV. An example is Customer Name and Address (CNA). This service requires the use of a subset of the DA call control protocol, so it should be datafilled as DASERV. Datafill refinements APPLICATION and SETNO. - INTCserv — intercept service. Datafill refinements APPLICATION and SETNO.

Multiple DA System I (continued)

Datafilling table TQMSSERV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	APPLICATION	TOPSVR1, TOPSVR2, or STUB	Application. Datafill this field if field BASESERV = DASERV or INTCserv. The application must be previously defined in table SERVICES. Applications TOPSVR1 and TOPSVR2 cannot both provide the same service. For example, TOPSVR1 and TOPSVR2 cannot both be set to DASERV in field BASESERV_SEL. STUB is used primarily in a lab environment where database simulators are in use, but is sometimes used in configurations that do not have DMS-DAS links. Table TQMSSERV associates a service with an application for QMS. For ACD, this association is made in table VROPT.
	SETNO	0 to 15	Link set number. Datafill this field if field BASESERV_SEL = DASERV or INTCserv. Enter the link set number for the application. The link set number must be previously defined in table SERVICES. This field is the application instance (database). Therefore, up to 16 databases can be connected per application.

Datafill example for table TQMSSERV

The following example shows sample datafill for table TQMSSERV.

Dump and restore

Dump and restore populates refinement SETNO with 0 for the corresponding application defined in table SERVICES. For example, if table SERVICES on the `dump` side has TOPSVR1 defined with DA service and TOPSVR2 defined with INTC service, then all QMS DA services are populated with TOPSVR1 0 and all QMS INTC services are populated with TOPSVR2 0.

If both DA and INTC are on the same MPC link, the same database instance (as defined in SERVICES) should be used for both DA and INTC tuples.

If the `dump` side of the switch does not have one of these services defined in table SERVICES, then the subfield(s) is populated with instance 0 of the application not defined. If both of these services are not defined, then table TQMSSERV should not have DA and INTC services defined. If it does

Multiple DA System I (continued)

however, TOPSVR1 0 is populated in all DASERV services and TOPSVR2 0 in all INTCSESV services as a default. *These default values should be checked against QMS datafill very carefully—in some cases these default values are not correct.*

Datafilling ARU links

Datafill ARU links for each DAS. For further information, refer to the following functionalities:

- TOPS DA Call Processing, OSDA0001
- Standard Switch DAS/C Protocol, OSDA0001
- IBM Switch DAS/C Protocol, OSDA0001

Datafilling QMS tables

In order for these new services to be used in QMS, numerous QMS tables need to be updated. Call queues and operator profiles must be altered to accept these new calls. Depending on whether new call queues are assigned or existing ones are reassigned, different tables are affected. Although adding new call queues is easier, it requires more tables and call queues. Remember to ensure that operators are available to service the call queues assigned the new services before actually routing calls into them! A list of tables which may need to be updated according to QMS standards are: (in no particular order) QAPLNDEF, QMSCQDEF, CT4QNAMS, CT4Q'XXXX', TQMSFCQA, TQCQINFO, TQMSSERV, TQSVPROF, TOPSPOS, TQCQPROF, TQOPROF. (Note, CT4Q'XXXX' represents all of the QMS refinement tables.)

If a TOPS-MP position is datafilled in table TOPSPOS with a service profile number (field SERVPROF) that is defined in table TQSVPROF with more than one database, only the first database found in the profile is notified of login for the service.

Operator transfers are performed by OGT keys. Thus, all services available on the switch must be datafilled in the OGT tables in order for the operators to transfer calls. The QMS OGT keys are defined in table TQOGTKEY. QMS service transfers may be performed using the CT4Q of the service.

Refer to functionality "Host Queue Management System", ADVQ0003, for more information.

Datafilling table TOPSPOS

The following table shows the datafill specific to Multiple DA System I for table TOPSPOS. Only those fields that apply directly to Multiple DA System

Multiple DA System I (end)

I are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSS

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

Translation verification tools

Multiple DA System I does not use translation verification tools.

SERVORD

Multiple DA System I does not use SERVORD.

Standard Switch DAS/C Protocol

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: not applicable

Release applicability

BCS27 and up

Prerequisites

To operate, Standard Switch DAS/C Protocol has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001
- Operator Services Directory Assistance, OSDA0001

Description

This functionality is provided by the following features:

Feature number	Feature name
AF0738	TOPS MP Computer Console Messaging
50039957	DA positions in an OC network

This functionality provides the following:

- Supports the messaging protocol between DMS TOPS voice response application and the Computer Consoles, Inc. (CCI) Directory Assistance System/Computerized (DAS/C) data base.
- Simulates the exchange of call control and billing messages between the DMS TOPS and a DAS/C data base. This simulator allows testing to occur prior to testing the vendor data base and is used by Northern Telecom's Installation department for verification of office datafill.

Operation

This feature supports the messaging protocol between the DMS TOPS and the CCI DAS/C data base. In addition, this feature provides a system to simulate the exchange of call control and billing messages between TOPS DA and the CCI data base. The simulator returns the correct DAS/C response to call types originated on the DMS TOPS position and supports all possible call scenarios, allowing installation testing to occur before data base testing.

Standard Switch DAS/C Protocol (continued)

There is no change to telephone operations from the subscriber's point of view.

Limitations and restrictions

Standard Switch DAS/C Protocol has no limitations or restrictions.

Interactions

The following paragraphs describe the interactions between Standard Switch DAS/C Protocol and other functionalities.

This feature functions in conjunction with existing TOPS features.

This feature interacts with the features in packages NTXA62AA and NTX892AA.

The protocol portion of AF0738 interfaces with the data link utility feature F6531 in NTXA62AA for call processing functions. Table SERVICES implemented by NTXA62AA must be datafilled to correspond with the intended use of the simulator. This table indicates the protocol and data link type for TOPS DA call processing. The appropriate datafill for AF0738 is the CCI protocol and data link type MPC. Table MPCFASTA allows TOPS Voice Response (TOPSVR) to have a set of MPC data links.

The simulator portion of this feature interfaces with F7244, the multi-protocol utility feature in NTX892AA, when sending messages over the MPC data link. Tables MPC, X25LINK, and MPCFASTA must be datafilled when using the MPC link to the simulator. Refer to the Data Schema section of this document for a description of these tables.

For the simulator, the protocol and link must also be specified. Use the simulator CI command VENDOR to set the CCI vendor and the simulator CI command SETLINK (STUB, MPC) to specify whether outgoing messages will be sent directly to TOPS call processing without going through the datalink or whether outgoing messages will be transmitted over the MPC datalink and looped back into the DMS.

Activation/deactivation by the end user

Standard Switch DAS/C Protocol requires no activation or deactivation by the end user.

Billing

Standard Switch DAS/C Protocol does not affect billing.

Standard Switch DAS/C Protocol (continued)

Station Message Detail Recording

Standard Switch DAS/C Protocol does not affect Station Message Detail Recording.

Datafilling office parameters

Standard Switch DAS/C Protocol does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Standard Switch DAS/C Protocol. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Standard Switch DAS/C Protocol

Table	Purpose of table
SERVICES	Identifies the protocol, data link type, and data base listing identifier for toll and assistance, directory assistance and intercept services.
MPC	Contains values necessary to implement the MPC in the DMS. Identifies the MPC card hardware to the DMS Central Control (CC) and requires one entry or tuple for each MPC.
MPCLINK	Supports the application of BX.25 layered protocol in the MPC. Protocol support ensures that links and conversations are established and maintained using BX.25 protocol.
MPCFASTA	Identifies applications that use the MPC fast utility, a fast I/O interface through the MPC.
VROPT	Voice Response Options. Contains parameters required by external voice response units.
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.

Datafilling table SERVICES

Table SERVICES indicates the protocol and the data link type for Directory Assistance (DA). Toll and Assistance (TA) Is a valid service, however TA does not require datafill. Refer to the data schema section of this document for more information on Table SERVICES.

Datafilling table MPC

Table MPC contains values necessary to implement the MPC in the DMS. This table identifies the MPC card hardware to the DMS Central Control (CC) and requires one entry or tuple for each MPC. Each entry contains an index

Standard Switch DAS/C Protocol (continued)

number for the MPC, the number of the IOC shelf on which the card resides, the card position on this shelf, card Product Equipment Code (PEC), protocol identifier, and identification for any MPC download file used. Refer to the data schema section of this document for more information on Table MPC.

Note: Table MPC must be datafilled before Table X25LINK, which provides protocol support and link information for every MPC configured in Table MPC. There can be up to 255 tuples filled for Table MPC, one per MPC card.

Datafilling table MPCLINK

Table MPCLINK supports the application of BX.25 layered protocol in the MPC. Protocol support ensures that links and conversations are established and maintained using BX.25 protocol. Refer to the data schema section of this document for more information on Table MPCLINK.

Note: Table MPC must be datafilled prior to Table MPCLINK. There can be up to 256 tuples filled in Table MPCLINK.

Datafilling table MPCFASTA

Table MPCFASTA identifies applications that use the MPC fast utility, a fast I/O interface through the MPC. Each application has a tuple in MPCFASTA. Each tuple in MPCFASTA contains the alphanumeric application name (INDEX), the time between audits performed (AUDITFRQ), either minutes or seconds (UNITS) applying to the AUDITFRQ entry, and an MLCLIST that shows up to 16 MLCs per application. An MLC consists of one MPC, one Link on the MPC, and one channel of the link. Refer to the data schema section of this document for more information on Table MPCFASTA.

Note: Tables MPC and X25LINK must be datafilled before Table MPCFASTA for MLCs to be valid.

Datafilling table VROPT

The following table shows the datafill specific to Standard Switch DAS/C Protocol for table VROPT. Only those fields that apply directly to Standard Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table VROPT (Sheet 1 of 2)

Parameter	Explanation and action
SWITCH_ID	This parameter identifies the switch to the DAS.
BCS_ID	This parameter identifies the BCS release to the DAS.

Standard Switch DAS/C Protocol (continued)**Datafilling table VROPT (Sheet 2 of 2)**

Parameter	Explanation and action
PRIMARY_LANGUAGE	This parameter specifies the primary language used for voice response intercept announcements.
SECONDARY_LANGUAGE	This parameter specifies the secondary language used for voice response intercept announcements.
LOGINOUT_TIMEOUT	This parameter defines the login/logout timeout period.
AUTO_INT_TIMEOUT	This parameter defines the auto intercept timeout period.
FLOAT_INT_TIMEOUT	This parameter defines the float intercept call timeout period.
BEGIN_ANN_TIMEOUT	This parameter defines the begin-announcement time period.
POST_ANN_TIMEOUT	This parameter specifies the post-announcement time period.
MAXIMUM_DA_RECALLS	This parameter defines the maximum number of post-announcement DA recalls allowed.
MAXIMUM_INT_RECALLS	This parameter specifies the maximum number of post-announcement INT recalls allowed.

Datafilling table TOPSPOS

The following table shows the datafill specific to Standard Switch DAS/C Protocol for table TOPSPOS. Only those fields that apply directly to Standard Switch DAS/C Protocol are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSs

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Standard Switch DAS/C Protocol (end)

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

MAP display example for table TOPSPOS

POSNO	VCCKT	VCPDGRP	CARDCODE
DATAPATH			
POSAREA			
100	TM8 0 24	NPDGRP	2X72AA
DMODEM SP ASCII TM8 0 25 NPDGRP BELL108			
OPR 1 TOPSACD TASERV \$ GEN XFR1 \$			

Translation verification tools

Standard Switch DAS/C Protocol does not use translation verification tools.

SERVORD

Standard Switch DAS/C Protocol does not use SERVORD.

TOPS DA Call Processing

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: not applicable

Release applicability

BCS35 and up

Prerequisites

To operate, TOPS DA Call Processing has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001

Description

This functionality is provided by the following features:

Feature number	Feature name
AF0739	TOPS MP Internal/External ARU Message Routing
AF0740	TOPS MP Force Management Datafill and OMS
AF0741	TOPS MP DA/INT Call Processing
AF0742	TOPS MP ARU Call Processing
BR14147	Specifying DA Billing Options by Restricted Bill Class
BR19254	TOPS DTMF Activated PARS
AF0739	TOPS MP Internal/External ARU Message Routing
50039957	DA positions in an OC network

AF0739—TOPS MP Internal/External ARU Message Routing

AF0739 is divided into two parts, selecting and routing to an ARU, and implementing datalink messaging between the DMS and DAS/C.

AF0740—TOPS MP Force Management Datafill and OMS

AF0740 provides the following TOPS enhancements:

- The extension of table OPRDAT to store the service profile of each operator and the extension of table TOPSPOS to indicate the service

TOPS DA Call Processing (continued)

capability set of each Operator, Assistance Position, and In-Charge Position.

- Modified Traffic Office Administration System (TADS) and System Administration System (SADS) TTY commands to allow designation of the services (TA and/or DA) that an operator handles.
- Expanded OMs to provide pegs for activities relating to calls receiving DA service and the use of ARUs during such calls.

AF0741—TOPS MP DA/INT Call Processing

Enhances TOPS call processing for DA by providing:

- A mechanism to rate a DA call, based on call type and class of service.
- A means of securing billing information using MCCS when a chargeable DA call is dialed as a 0+ call.
- A means of securing billing information using Automatic Coin Toll Service (ACTS) when a chargeable DA coin call is dialed as a 1+ call.
- An Operator-Handled (OH) DA call completion.
- A method of determining and forwarding OH intercept calls to a TOPS MP with DA capabilities.

AF0742—TOPS MP ARU Call Processing

Provides a means of integrating TOPS call processing with a Directory Assistance System/Computerized (DAS/C). Provides TOPS the capability of using a DAS/C for servicing DA and Intercept calls.

Changes due to BCS28 development

BCS28 feature development affects the present and future functionality of this feature package. Following are the changes that have occurred as result of NTX030CC feature development:

Intercept service

In a future BCS, Intercept calls can be assigned a separate service and can be processed by a separate database.

- TOPS call queueing

The calling queue and service type are no longer associated.

- Force Management Capabilities

With the change in the queueing structure, commands that are input at the SADS/TADS TTYs are affected.

- TOPS Assignable Grade of Service

TOPS DA Call Processing (continued)

The Operating Company can assign a grade of service based on the calling queue.

- Preparation work for the TMS

Datafill has been modified in preparation for the TMS so that the transition to the TMS configuration.

- MCCS detection of 11 and 12

MCCS has been changed so that it recognizes 11 and 12 DTMF digit sequences.

- TOPS Expanded Bellcore AMA Format

This is a new format that uses a limited set of call codes and structure codes for recording the necessary information associated with a call.

These changes are discussed primarily in terms of how they affect the functionality of this feature. The main change is through datafill.

BR14147—Specifying DA Billing Options by Restricted Bill Class

This PRSDOC modifies the Directory Assistance software package as follows:

- Operating company personnel can assign separate billing restrictions for Toll and Assist (TA) service and Directory Assistance (DA) service for every assigned Restricted Billing Class. This ability is implemented by new table DARSTBIL. This table provides the same function for DA calls as table RESTBIL provides for TA calls.
- New field AMARBC is added to table RESTBIL. This field allows the recording of the Bellcore suggested values of the Restricted Billing Class (RBC) in the AMA billing record. Therefore, this field specifies the value to record as the RBC on AMA for TA calls. This field is also present in table DARSTBIL and it specifies the RBC to record on AMA for DA calls.

BR19254—TOPS DTMF Activated PARS

This feature provides the implementation of the Traffic Operator Position System (TOPS) DTMF activated Personal Audio Response System (PARS). This tone activated PARS feature allows a custom, prerecorded announcement to be played to a subscriber when requesting directory assistance from a TOPS DA position. This feature is office specific; that is, it is enabled on a per office basis. The announcement is given in the operator's own voice.

UV100138—Trap occurs when adding to table ARUMEMBR

This feature conserves store and eliminates the need to delete and then read all members from table ARUMEMBR for a given CLLI if the size of that CLLI has to be increased.

TOPS DA Call Processing (continued)

Prior to this feature, if a CLLI size was increased and a new member was being added to table ARUMEMBR for that CLLI that exceeded the initial size of the group, a trap would occur.

UN200306—Table DABILL enhancements for ATC interworking

This PRSDOC allows incoming ATC (Access to Tandem Carrier) trunks carrying 555 calls to be released to an ARU (Audio Response Unit) without the presence of a calling number, and generate an AMA (Automatic Message Accounting) record suitable to bill the carrier for this service. Prior to this PRSDOC, the only way to release these calls to an ARU without a calling number present, was to datafill the DMS so that the call was marked as toll free. Thus producing an AMA record that indicated No AMA which would be ignored by downstream processing.

Datafill of table DABILL has increased flexibility. The field CLGREQ (calling number required) can now be set to N (no), regardless of the value which is set in the SERVNAME (service name) field. Prior to this activity the SERVNAME had to be TOLLFREE to allow CLGREQ to be set to N.

The Data Schema changes described above apply to any entry in table DABILL, however the call processing changes required for this activity only apply to ATC trunks.

It is important to note that with the ability to datafill table DABILL with CLGREQ = N for billable service names, processing for trunk types other than ATC trunks will be affected. For calls (555, HOM555, FOR555 UNSPEC CLGREQ=N) arriving from other trunk types, the operator will have to class charge the call. Once the class charge has been entered, when the operator attempts to release the call to an ARU, table DABILL will be accessed based on the new service class, not UNSPEC. This does not change existing functionality for call arrival on these other trunks, however the operator must be aware that once a class charge has been entered further information may still be required.

50039957

In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers in table TOPSPOS. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

TOPS DA Call Processing (continued)

Operation

This part describes the operations of the feature package in the DMS, including hardware and software activity, interface operations, automatic DMS actions, and actions requiring manual interaction.

Routing DA calls to the TOPS MP switch

Throughout this section, refer to the following datafill examples that are associated with routing the calls from the End Office to TOPS MP office.

MAP display example for table TRKGRP

GRPKEY	GRPTYP	PRTNM	STATCLAS
COMSRVTRK	TOPS	MFNL	COMBINED
DAONLYTRK	TOPS	NPRT	DA
INTCONLYTRK	TOPS	NPRT	INTCPT
DAOICTRK1	TOPS	NPRT	OIC
DAOICTRK2	TOPS	NPRT	OIC

MAP display example for table TRKSGRP

SGRPKEY	PULSTYP	STARTSG
COMSRVTRK	MF	WK
DAONLYTRK	NP	WK
INTCONLYTRK	NP	WK
DAOICTRK1	NP	WK
DAOICTRK2	NP	WK

MAP display example for table STDPRTCT

EXTPRTNM	STDPRT
MFNL	(1)

TOPS DA Call Processing (continued)**MAP display example for subtable MFNL**

FROMDIGS	TODIGS	PRETRTE
411	411	T NL 0 TOPS 411 3 3 NONE
555	555	T NL 0 TOPS 555 7 10 NONE

MAP display example for table TOPSOIC

OICKEY	CO	CLGID	CLGRQD	CHGRQD
DAONLYTRK 00	411	ONI	N	N
DAOICTRK1 11	411	ANI	Y	Y
.				
.				
DAOICTRK1 22	555	ANI	Y	Y
DAOICTRK2 11	411	ONI	N	N
.				
.				
DAOICTRK2 22	555	ONI	N	N

Following are Call Origination (CO) types for a DA call:

- Local 411
- 555 DA
- 555 HNPA
- 555 FNPA
- 131 DA

At a TOPS MP office, all calls arrive over trunks that are part of a trunk group.

Following are the types of trunk groups that can carry DA traffic:

- Nondedicated—These trunk groups can carry other types of traffic besides DA.
- Dedicated—These trunk groups carry only TOPS DA calls.

TOPS DA Call Processing (continued)

Nondedicated trunks

The following types of trunk groups can carry nondedicated DA traffic:

- Intertoll (IT)
- Access Tandem Carrier (ATC)
- TOPS

For nondedicated trunks, a DA call is recognized as such by the called digits from the origination office.

Following are the two ways the called can be mapped to a specific CO type (and therefore properly routed to the TOPS MP switch).

- The called digits (3 to 10 digits) are mapped to a CO type using a pretranslator defined in table STDPRTCT. Note that table TRKGRP has a PRTNM of MFNL. Referring to table STDPRTCT, the subtable MFNL specifies the TOPS route and CO type using the T selector.
- If there is no pretranslator in table TRKGRP (NPRT), table HNPACONT subtables HNPACODE and RTEREF are used to associate TOPS route and CO type, again using the T selector.

Note: This is the preferred way to route calls over nondedicated trunks.

Routing TOPS MP calls using table HNPACONT

```
>TABLE HNPACONT
>POS 919
>SUB HNPACODE
411 411 SCD3 100
555 555 HRTE 101
>TABLE HNPACONT
>POS 919
>SUB RTEREF
100 T TOPS 411
101 T TOPS HOM555
```

In both cases, the called digits are replaced with the CO type once the TOPS route is defined with the T selector.

TOPS DA Call Processing (continued)

Dedicated trunks

There are three types of dedicated trunk groups:

- DA

These trunks have a CO type that is automatically set to 411 for the serving NPA. This is done by setting the STATCLAS field of table TRKGRP to DA. Also, in table TRKSGRP, the pulsing type is set to NP (No Pulse), since no digits are expected. Calls that arrive over these trunks are treated as station traffic.

- INTCPT (Intercept)

These trunks carry only intercept traffic for the served NPA. This is done by setting the STATCLAS field of table TRKGRP to INTCPT. In table TRKSGRP, the pulsing type is set to NP. Note that in this case it is the *intercept* number that is expected as part of the ANI spill. Calls that arrive over these trunks are also treated as station traffic.

- OIC (Office Origination Code)

These trunks can carry a combination of the five DA call types. The key question here is, how are the CO types to be differentiated when they arrive at the TOPS MP office? This is done through the OIC code. The OIC identifies an intermediate tandem office, between the End Office and the TOPS MP DA switch. Once the call arrives at the Tandem Office, the call is assigned an OIC number that identifies the CO type for the call. The tandem office receives the dialed digits from the end office and sends the OIC on to the TOPS MP office.

The mapping of the OIC number to the CO type is done through table TRKGRP and TOPSOIC. In table TRKGRP, the STATCLAS field has the value OIC. Table TOPSOIC associates the OIC numbers with the CO types.

Routing DA calls to TOPS MP positions (BCS28)

Up to BCS28, one could talk of DA and Toll service in terms of call queues. DA service was actually a call queue and as such it was separate from Toll service. This was true even if the call was never actually queued. Calls assigned to the GEN, XFR1, or XFR2 queue in table TOPS would be Toll service; calls in the DA queue would be Da service.

Call queueing changes

With BCS28, the queueing has changed. Through a new field in table TOPS, SERVICE, a call is now stamped by a service type (DASERV, TASERV, and in the future, INTCserv), based on the Call Origination type. Service type and queue type are now separate concepts. A call's queue does not determine its service type.

TOPS DA Call Processing (continued)

This separation gives the Operating Company greater control over calls arriving at operator positions. Previously, an office that only served DA calls could only use the DA queue. Now, a DA office can use all four queues, with table TOPS defining which calls go into which queues according to their CO type.

If an office provides both Toll and DA service, the Operating Company should allow only one service on each queue. This allows separate Force Management statistics for each service type, since These statistics are based on queue and not on service type. This configuration is also necessary for the Assignable Grade of Service feature, which is explained in NTX030CC.

The one case where the DA calling queue and DA service are still connected is when a Toll call is transferred to a DA operator; when the operator uses the XFR DA key to transfer the call to a Da operator, the service type is still automatically set to DA so that the DA service screen is presented at the DA position.

Additional table changes

The NTX030CC features affect several tables that are used with this feature package.

Following are the new features and the tables that are affected:

- Assignable Grade of Service

A new table, TOPSQAGE, has been added. Refer to NTX030CC for more information.

- TOPS Messaging Switch

To prepare for the TMS, tables TOPSPOS and TOPSDEV have been modified. Refer to the Data Schema part of this document for more information.

- Call Queueing

Table TOPS has been modified. There is a section on this table in the Data Schema section of this document.

- Extended AMA Bellcore Format

Table TRKGRP and BCCODES have been modified. Refer to NTX030CC for more information.

- Intercept service

Table SERVICES and TOPSPOS have been modified. Refer to the Data Schema part for more information.

TOPS DA Call Processing (continued)

Routing for TOPSARU trunks

ARUs are needed when an automatic voice quote is requested.

Following is an overview of how the DMS and DAS process the selection of an ARU and the connection to the correct voice circuit.

1. The operator requests automatic voice response, which is sent to the DAS.
2. When the DAS selects an ARU, it selects the ARU pool among which the correct announcement for the call can be made. *This ARU pool id is sent to the DMS in the ARU REQUEST message.*
3. Through datafill, the DMS takes the pool and associates it with a route list.
4. The DMS must tell the DAS which circuit it has selected so the DAS can seize the other end and begin playing the announcement.
5. At the end of the announcement, the subscriber can remain off-hook and be connected (or reconnected) to an operator.

The routing for these ARU voice circuits is controlled through the following tables:

- CLLI
- OFRT
- ARURTE
- TRKGRP
- TRKSGRP
- TRKMEM
- ARUMEMBR

The following MAP displays show how the ARUs are connected to the TOPS MP switch through peripherals such as DTCs.

Table CLLI

Table CLLI identifies the CLLI name for the voice trunk group and the number of trunks in the trunk group. These voice trunks are also referred to as voice circuits. In the example there are two CLLIs with a total of seven voice circuits.

TOPS DA Call Processing (continued)**MAP display example for table CLLI**

CLLI	TRKGRPSIZ	ADMININF
DAARU1	4	ARU_VOICE_LINKS
DAARU2	3	ARU_VOICE_LINKS

Table OFRT

Table Office Route associates an office route with the trunk group.

MAP display example for table OFRT

RTE	RTELIST
200	(S D DAARU1)z
201	(S D DAARU2)z

Table ARURTE

Table ARURTE associates a pool id with the Office route that is in table OFRT. Remember, the pool id was in the ARU REQUEST message.

MAP display example for table ARURTE

POOLID	OFRTIDX
0	200
1	200
2	201
3	200
4	201

Now that the route can be selected, datafill now determines the characteristics of the voice circuit.

Table TRKGRP

Table TRKGRP contains the attributes for all trunks in the trunk group. For these CLLIs, the trunk group type must be TOPSARU.

TOPS DA Call Processing (continued)

MAP display example for table TRKGRP

GRPKEY	GRPINFO
DAARU1	TOPSARU 31 NPDGP NCRT
DAARU2	TOPSARU 10 NPDGP NCRT

Table TRKSGRP

Table TRKSGRP contains the signalling attributes for each trunk in the trunk group.

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
DAARU1 0	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
DAARU1 1	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
DAARU1 2	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
DAARU2 3	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
DAARU2 4	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
DAARU2 5	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10
DAARU2 6	DS1SIG	STD OG NP WK 7 0 NO NO N N N 10

For TOPSARU trunks, the trunks must:

- be outgoing (OG)
- have a No Pulse (NP) outpulse type
- have a Wink (WK) start signal.

Table TRKMEM

Table TRKMEM identifies the physical location of each trunk. The example shows the trunks located on DTC 2 and DTC 3.

TOPS DA Call Processing (continued)**MAP display example for table TRKMEM**

CLLI	EXTRKNM	SGRP	MEMVAR
DAARU1	0	0	DTC 2 1
DAARU1	1	1	DTC 2 2
DAARU1	2	2	DTC 2 3
DAARU2	3	3	DTC 2 4
DAARU2	0	0	DTC 3 1
DAARU2	1	1	DTC 3 2
DAARU2	2	2	DTC 3 3

Table ARUMEMBR

Table ARUMEMBR associates the trunk members with a DAS trunk ID. This ID is used to tell the DAS which trunk has been seized by the DMS. This ID is sent as part of the ARU CONNECT message. Note that there is parallel datafill of the IDs in the DAS.

MAP display example for table ARUMEMBR

ARUMEMBR	DASTRKID
DAARU1 0	50
DAARU1 1	51
DAARU1 2	52
DAARU1 3	53
DAARU2 0	100
DAARU2 1	101
DAARU2 2	102

Table XANNINFO

This table allows the option of allowing the subscriber to connect (or reconnect) to an operator at the end of a call. The use of this table depends on table VROPT. Fields MAXIMUM_DA_RECALLS and MAXIMUM_INT_RECALLS determine whether recalls are allowed.

TOPS DA Call Processing (continued)

MAP display example for table XANNINFO

ANN	OPRCONN
0	Y
1	Y
25	N
60	Y
102	N

Following are the values these fields can have and their relationship to table XANNINFO:

- Set to 0 (NO)—Table XANNINFO is not checked.
- Set to a number that the subscriber has not exceeded—Table XANNINFO is checked. The DMS looks for the announcement number (sent from the DAS) and determines whether the call can connect to an operator following an announcement.
- Set to a number that the subscriber has exceeded—Table XANNINFO is not checked.

Setting up the Datalink Configuration

There are two datalinks that connect the DMS to the DAS. It is over these links that the DMS and DAS exchange messages for the processing of a DA related call.

Following are the tables used for setting up these datalinks:

- SERVICES
- MPC
- X25LINK
- MPCFASTA

Table SERVICES

This table defines the protocol and datalink type for each service. Presently, the only service is DA, and for DA the protocol is CCI and the datalink type is the MPC.

TOPS DA Call Processing (continued)**MAP display example for table SERVICES**

INDEX	SERVDATA
TASERV	
DASERV	CCI MPC

Table MPC

Table MPC defines the MPC hardware to the DMS. There is only one entry (=tuple) for each MPC card in the office. For the example, there are two MPC cards. Note that they are on separate IOC shelves. In the example, MPC 1 is on IOC 3, slot 1, and MPC 2 is on IOC 2, slot 2. MPC 1 contains the first link to the DAS; MPC 2 contains the second link.

MAP display example for table MPC

MPCNO	MPCIOC	IOCCCT	EQ	PROTOCOL	DLDFILE
1	3	4	1X89AA	X25LINK	MPCGD52B
2	2	8	1X89AA	X25LINK	MPCGD52B

Table MPC X25LINK

This table contains the protocol parameters for the MPC. The MPC card can connect to four links; however, the DMS can only use links 2 and 3, as reflected in the filed LINKNO. The MPCNO value comes from the MPCNO value in table MPC.

MAP display example for table MPC X25LINK

INDEX	MPCNO	LINKNO	LINKNABL	CONVNABL	NUMPVCS	NUMPVCS	SVCDNAE	SVCTYPE	PKTDATA	PARMS
1	1	3	55	55	3	0	z	NONE	256	(N2 25)z
2	2	2	55	55	3	0	z	NONE	256	(N2 25)z
	3	200								
	4	201								

Table MPCFASTA

This table assigns the MPC logical links to an application so that the MPC sends messages to their appropriate destination. The logical link consists of the MPC, the data link, and the conversation number.

TOPS DA Call Processing (continued)

MAP display example for table MPCFASTA

INDEX	AUDITFRQ	UNITS	MLCLIST
TOPSVR	30	SECONDS	(1 3 1) (1 3 2) (1 3 3) (2 2 1) (2 2 2) (2 2 3)z

This table also contains the audit interval for each logical link; if the link is idle for more than the interval, the MPC checks the datalink for sanity.

DA Call Types

The call messages previously described are used to process the various types of DA calls. Following are the three basic types of calls that require DA services:

Directory Assistance (DA) Calls

DA calls are defined as calls in which the subscriber dials 411, 555, or 555-1212 to obtain information from a DA operator about a called number. A DA call is actually presented to an operator from either the digits dialed, the operator keying SERVICES + DA + START, or a call originating over dedicated DA trunks.

Once the call is presented to the operator, he or she obtains the needed information by asking the subscriber relevant questions and, if necessary, querying the database.

Following are the types of DA calls:

- Regular DA call
The operator requests information from the subscriber and queries the database. The operator then verbally quotes the number or releases the call to an ARU for the automatic Voice Response (VR).
- DA ONI and DA ANIF
Both of these types of calls require the operator to obtain the calling number and then release the call.

TOPS DA Call Processing (continued)

The difference between the two is as follows:

- DAONI calls originate on trunks designated as ONI and therefore do not automatically provide the calling number to the switching office.
- DA ANI fail calls originate on trunks that do provide the calling number, but they have failed to do so.
- Multiple DA Requests

In this scenario, the subscriber makes several requests for DA information during a single session. The operator verbally quotes each request except the last, which may be handled by releasing the call to an ARU. Note that between each request, the operator invokes billing by keying for additional DA services (SERVICES + DA + START). When the operator does this, the DAS conveys to the DMS billing information.

Intercept calls

Intercept calls are calls in which the subscriber dials a called number (usually thinking it is valid), but it is routed to the TOPS MP switch and intercepted at the far end office.

Following are the reasons the dialed number may be intercepted:

- The number has recently been changed or disconnected.
- The number is unassigned or vacant.
- There is temporary trouble with an essential number.
- The number is associated with a split referral.

Following are the types of Intercept calls:

- Automatic (usually called Auto-Intercept)

This type of call makes up the majority of Intercept calls, in which the DMS passes the called number to the DAS. The DAS finds the called number and is connected to an ARU with the proper announcement is connected to the particular subscriber.

- ONIF and ANIF calls

Since only the called number is sent from the End Office, ONI in this context means that for the ONI trunk the called is not known; ANIF means that the called number was known but was not sent. These calls arrive at an operator position with a double call arrival tone and the call type set to

TOPS DA Call Processing (continued)

Intercept. The operator keys in the seven digits of the called number and then presses the INT key to send the call to an ARU.

- Operator quoted

If the Voice Response is not working, the call must be routed to a position so that an operator can access the Intercept database (using the called number as the search key), verbally quote the new called number, and then release the call.

Recalls

A recall is defined as a call that was originally processed as a DA or intercept call, but, usually through the subscriber staying off-hook, the call connects (or reconnects) to a position.

Following are the types of recalls:

- DA Recall

If the subscriber stays off-hook after having received an ARU announcement as part of a normal DA call, the subscriber is reconnected to an MP position. Note that certain parameters in table VROPT control whether the recall is allowed, how long the subscriber must stay off-hook, and the number of recalls that are allowed.

- Intercept Cut-through

If the subscriber stays off-hook after receiving an Intercept announcement, the call routes to a position. Note that these calls are subject to the same types of parameters as DA recalls.

- Intercept Recall

In this scenario, the call was previously connected to an operator before the auto announcement.

- Intercept Special

In this scenario, the DAS search was unsuccessful or the DAS results were not quotable by Voice Response.

Description of call message flows

This section shows how the DMS, DAS, and (when relevant) operator interact so that DA calls are successfully processed.

Note: *TOPS MP Operator Guide* contains the call scripts for DA calls and their variations.

TOPS DA Call Processing (continued)

Many of these paragraphs begin with a number in parentheses. These refer to key blocks in the flowchart (usually a decision diamond or a case statement), and they should be referred to while reading the paragraph.

Connect a DA type call to the DMS

Note: Refer to figure "How a Call is Routed to an Operator" while reading these steps.

The following steps are performed when a DA type call arrives at a TOPS MP switch.

- Determining whether a call is DA, AUTO INT, or INT

A call requiring DA services can be either DA or Intercept. The Call Origination (CO) type determines whether the call is Intercept (INTC CO) or DA.
- Informing the DAS of an Auto-Intercept Call

If the voice response is working and the called number is obtained, the call is treated as an Auto Intercept call. The CALL BEGIN MESSAGE is sent, which includes the call id, the called number (to be used by the DAS as a search key), and the language selected (so the DAS knows which language to play). The DAS locates the number and sends an ARU REQUEST. The DMS processes this request and allocates an ARU.

(1)If the Voice response is not working (due to ARU failure or DAS link failure), or the called number is not obtained, the call becomes a manual Intercept call.

If the information in the CALL BEGIN is not complete or is not sent (due to datalink failure), the call becomes a manual intercept call.

If the BEGIN_AUTO_INT_TIMEOUT has expired (meaning the DAS did not respond to the CALL BEGIN with the ARU request message in the allotted time), the call becomes a manual intercept.

(4)If the DAS has a split referral or the search cannot find the called number, it sends a POS CONNECT. The DMS allocates an operator and the call is presented as an INT SPL.
- Allocating an operator

The DMS, through datafill, allocates an operator who is capable of handling DA calls.

(5)If an operator is not available, the call is placed in the Calls Waiting (CW) queue for DA/INT calls and ringing is applied (note that recalls do not receive ringing.)

TOPS DA Call Processing (continued)

(6) If the queue is already full, DA calls receive treatment EMR5; Intercept calls receive treatment EMR6.

(7) If even queueing resources are not available, the call receives overflow treatment.

- Allocating a three-port conference circuit

When the operator is available, the DMS allocates a three-port conference circuit from the available pool. Refer to *Advanced Maintenance Guide* for more information on this pool and how it is monitored and controlled.

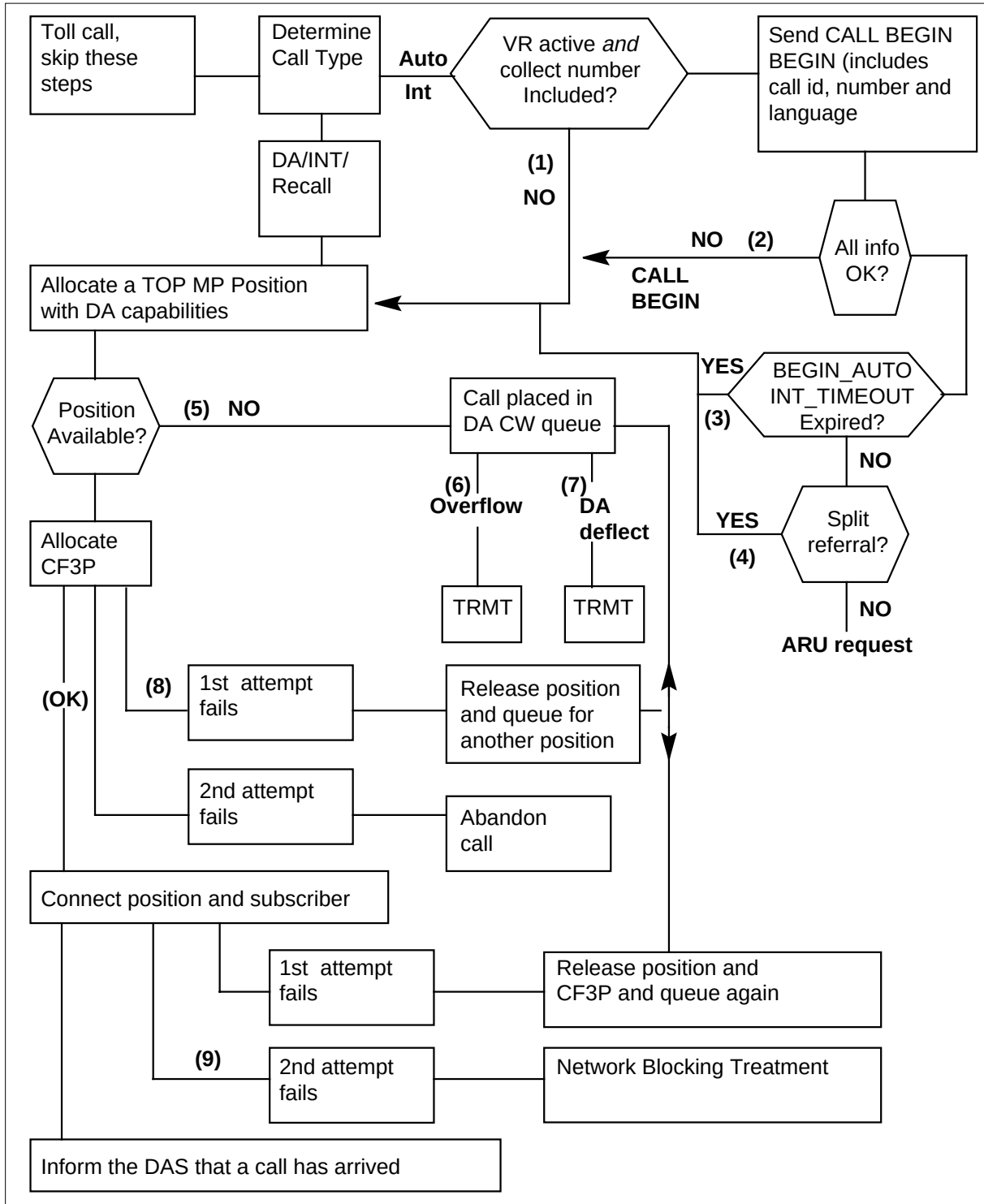
(8) If there are no three-port circuits available, the position is released and the call is queued again. If the second attempt fails, the call is abandoned.

- Connect the Subscriber and the Operator

A path is established through the network between the operator and subscriber

(9) If either network connection is blocked, the position and the conference circuit are released and the call is queued again. If this second attempt fails, the call receives a network blocking treatment.

The call is now ready to be presented to an operator position.

TOPS DA Call Processing (continued)**How a call is routed to an operator**

TOPS DA Call Processing (continued)

Presenting the Call to the Operator

The following steps are performed when presenting a DA type call to the operator.

Note: Refer to figure "How a Call is Presented on the Screen" while reading these steps.

- Ensuring the DAS knows a DA type call has arrived

When a call is to be presented at the position, the DAS must be informed. If the call has not been identified to the DAS, the DMS sends a CALL BEGIN. For DA calls, the calling and called numbers are included if they are known. On intercept calls, the called number is included (if it is known by the DMS). This number is used as the intercept listings search key.

If the call was INT SPL, the call has already been identified. The DMS sends a POS CONNECT, which includes the call and terminal ids as well as the reason why the operator is being invoked.

- Presenting the operator with a DA/INT call

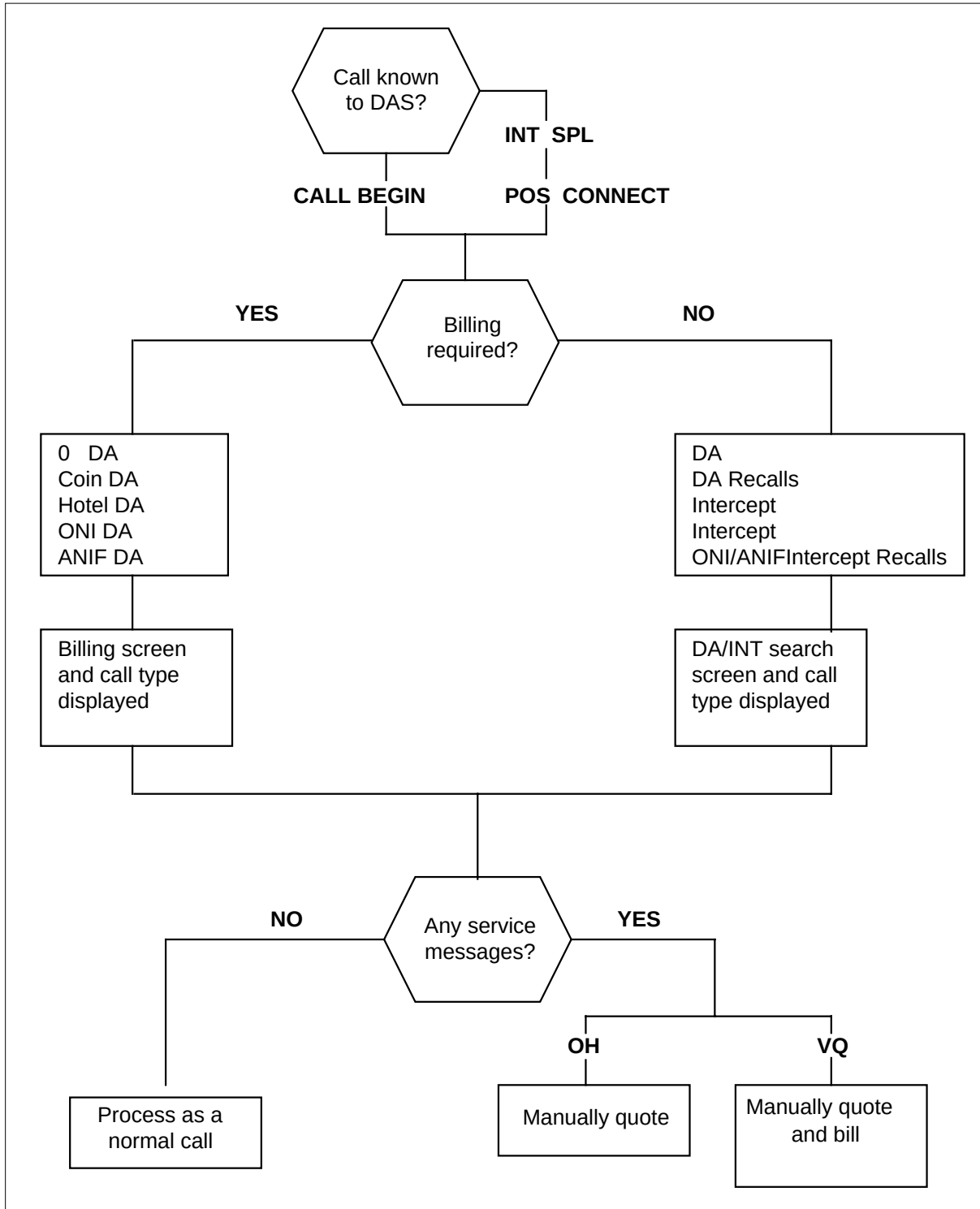
For DA and Intercept calls, the DA search screen is presented. From this screen, the operator can access the DAS listings.

For certain call types, the billing screen is initially displayed, allowing the operator to alter the billing method or enter the calling number

The call type that is displayed on the screen is controlled in table TOPS. The possible labels include Coin, Hotel, Recall, and the types of Intercept calls.

(2) If the voice response is not functional, *VQ* appears on the screen, meaning the operator must quote the number verbally.

(3) If the data link is not functional, *OH* appears on the screen, meaning the operator must both verbally quote the information and enter billing information using the billing screen.

TOPS DA Call Processing (continued)**How a call is presented on the screen**

TOPS DA Call Processing (continued)

Releasing the Call to an ARU

For auto quote, the operator presses the <Audio> or <Alt Audio> softkey. The DAS sends an ARu REQUEST which contains the searched number.

If the billing information is incomplete, the billing screen is displayed. Note that for Auto-Intercept calls, a POS CONNECT is sent to the DAS, indicating that a position is being connected. The operator then handles the call.

If the DMS cannot allocate an ARU, the call must be verbally quoted.

Once the DMS has obtained an ARU, it sets up the connection between the subscriber and the ARU through the network. If the call was connected to a position, the DMS releases the position and the three-port conference circuit.

If the network connection cannot be made the DMS releases the ARU and then tries to allocate another ARU and make the network connection. If the attempt fails again, the call must be verbally quoted. For DA/INT calls, the DMS sends a CALL STATUS to tell the DAS it cannot connect the ARU. For Auto-Intercept, a POS CONNECT tells the DAS it cannot connect the ARU and has obtained a new position.

Note: For verbal quote an ARU is not used (or may be unavailable). The operator gives the announcement and presses POS RLS. The DAS sends a POS RELEASE to the DMS which contains searched number.

Releasing Intercept ONI and ANIF Calls

ONI and ANIF calls require the operator to enter the called number and then release the position.

When the operator presses POS RLS, the DAS sends a CALL FLOAt message that contains the called number the operator entered. The DMS releases the position and sends a POS DISCONNECT to inform the DAS. After the position is released, the DAS searches its intercept listing.

If the DAS finds a split listing, it sends a POS REQUEST so that a position can be connected. The DMS connects a position and sends a POS CONNECT. The call arrives at the position as an INT-SPL.

Similarly, if the FLOAT_INT_TIMEOUT parameter of table VROPT expires (meaning the DAS has not found a listing), the DMS connects a position as an INT-SPL and sends a POS CONNECT.

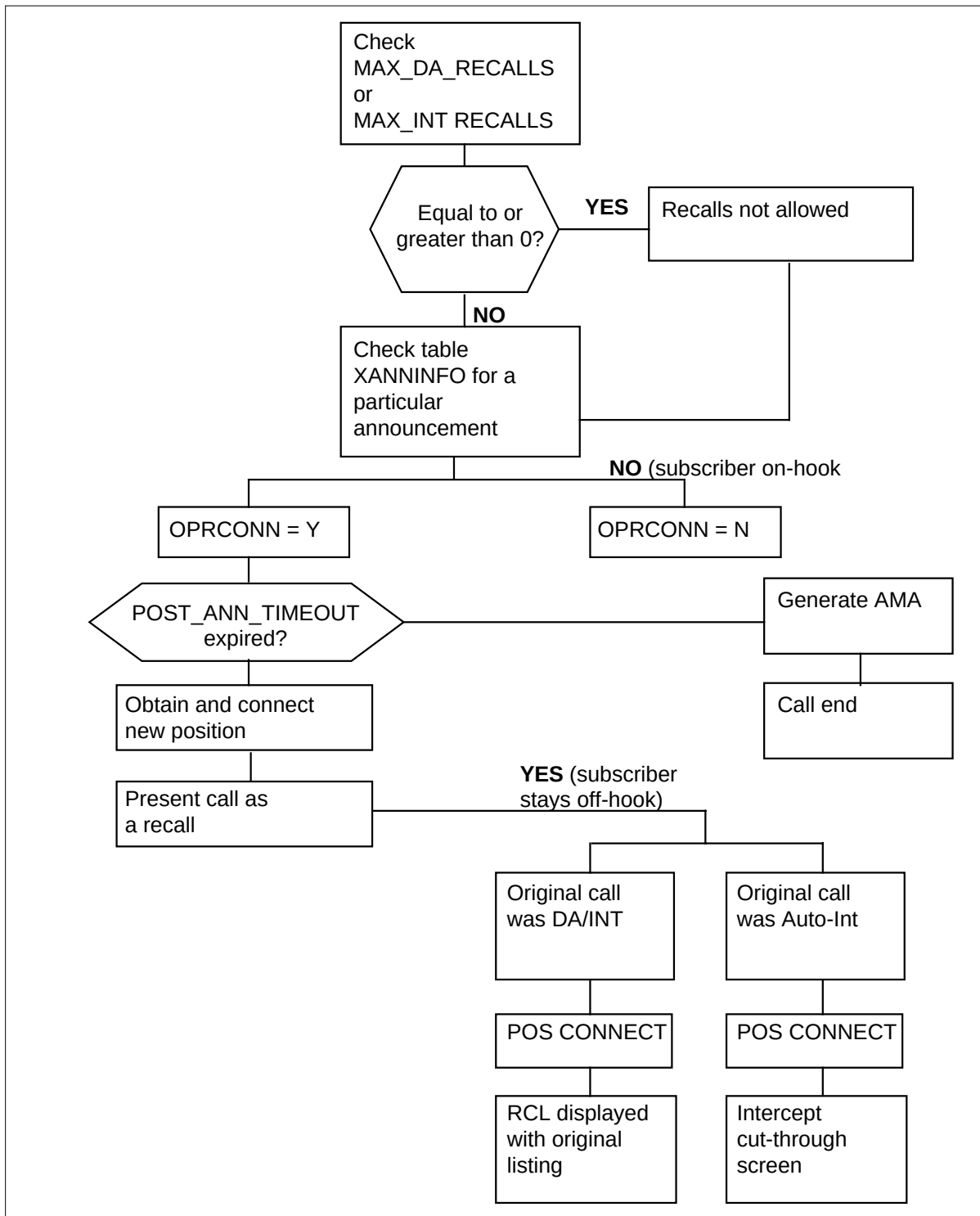
TOPS DA Call Processing (continued)

Handling recalls

The following steps are performed for a recall DA type call.

Note: Refer to figure "Recalls" while reading these steps.

- Once the subscriber has received an announcement for either a DA or Auto-Intercept call, he or she may want to connect or reconnect to an operator.
- The option to recall is controlled by two tables. First, table VROPT is checked for either the MAXIMUM_DA_RECALLS or MAXIMUM_INT_RECALLS parameter. If the parameter equals 0 or has been exceeded, a recall is not allowed. If the parameter is not 0 and has still not been exceeded, table XANNINFO is checked to see if a recall is allowed for that particular announcement. If the OPRCONN field is set to Y, the DMS sends an ARU CONNECT message to tell the DAS whether recalls are allowed.
- Next, the POST_ANN_TIMEOUT parameter of table VROPT is checked. If the time has expired, and the subscriber is still off-hook, the DMS pots the call in the recall queue (so it cannot be deflected), and then presents the call as a Recall. If the call is a DA/INT call, the DMS sends a POS CONNECT so that the original listing is displayed. If the call was an Auto-Intercept, the call is presented as an Intercept Cut-through; the call has not been routed to an operator before. The DMS sends a POS CONNECT message that tells the DAS to present all the information known about the call.

TOPS DA Call Processing (continued)**Recalls**

TOPS DA Call Processing (continued)

BR19254—TOPS DTMF Activated PARS

This feature provides the implementation of the DTMF activated Personal Audio Response System (PARS).

PARS functionality

DTMF activated PARS provides a custom announcement to a subscriber upon call presentation of a Directory Assistance (DA) call to a TOPS position. The announcement is given in the voice of the operator occupying the TOPS position. The normal call arrival tone is replaced by a DTMF D tone which is received by a PARS *box* connected to the TOPS position. This tone triggers the PARS *box* to play the prerecorded announcement. The playing of the announcement allows the operator a period of time to rest between calls, thus reducing the operators fatigue.

For example, when a Directory Assistance (DA) call arrives at a TOPS position, PARS might play the announcement "What city, please?" to the subscriber. This frees the DA operator from repeating the same phrase for each call.

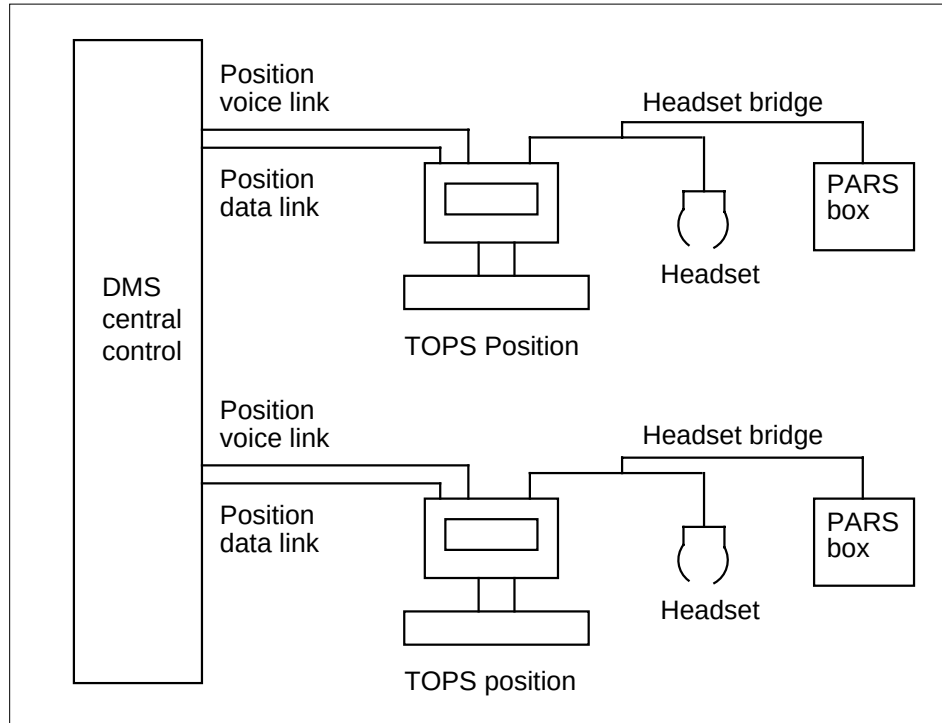
This feature is only offered for calls requiring DA service and can only be activated on a per office basis. Package NTXJ37AA is a much expanded TOPS PARS feature that does not use tones to activate PARS announcements, but derives them from call attributes sent from TOPS to PARS via a defined PARS protocol. Refer to this document for more details.

PARS connectivity to a TOPS position

A PARS *box* is connected to each TOPS position by interfacing between the operators headset and the position. The PARS *box* and Headset Bridge are vendor specific pieces of equipment. A typical functional view of the connectivity of PARS to a TOPS position is shown in the following figure.

TOPS DA Call Processing (continued)

Connectivity of DMS, PARS and TOPS positions



Call presentation tones and PARS service

Without this PARS feature present in the TOPS office load, when an Operator Number Identification (ONI) call (1+DD, non-coin, non-hotel) or Intercept call (if TOPS is providing the DA/Intercept service) is presented at a TOPS position, a two-beep call presentation tone is played to the subscriber and operator, signifying that the calling number must be collected. For all other types of calls, a one-beep call presentation tone is played only to the operator, informing the operator of call presentation.

With this PARS feature present and office parameter

TOPS_DA_PARS_ENABLE set to Y, when a call other than an ONI or an Intercept call arrives at a TOPS DA position, the call presentation tone to the operator is replaced by the DTMF D tone. This tone is received by the PARS box and triggers the playing of the PARS announcement to the subscriber and the operator.

The length of the DTMF D tone is variable and is set through the office parameter TOPS_PARS_TONE_LENGTH. Its default value is 10 (100 milliseconds) and can be set to any value between 0 (no tone) and 255 (2550 ms). The units of tone length are in 10 ms increments: a value of 1 equals 10 ms, a value of 25 equals 250 ms, and a value of 255 equals 2550 ms.

TOPS DA Call Processing (continued)

Transfers from Toll and Assist (TA) TOPS positions to DA TOPS positions will hear this DTMF D tone call arrival tone. Transfers from DA to TA or assistance positions that are not service adjusted to TA service prior to the transfer will also hear the DTMF call arrival tone. Recalls are not processed with this PARS feature because in most cases the directory assistance information has already been identified and is displayed at the operator position when the call is recalled. In this case, the normal call arrival tone will be heard.

DTMF D tone specifications

The characteristics of the DTMF D tone sent on call presentation of a directory assistance call to a TOPS DA position are as follows:

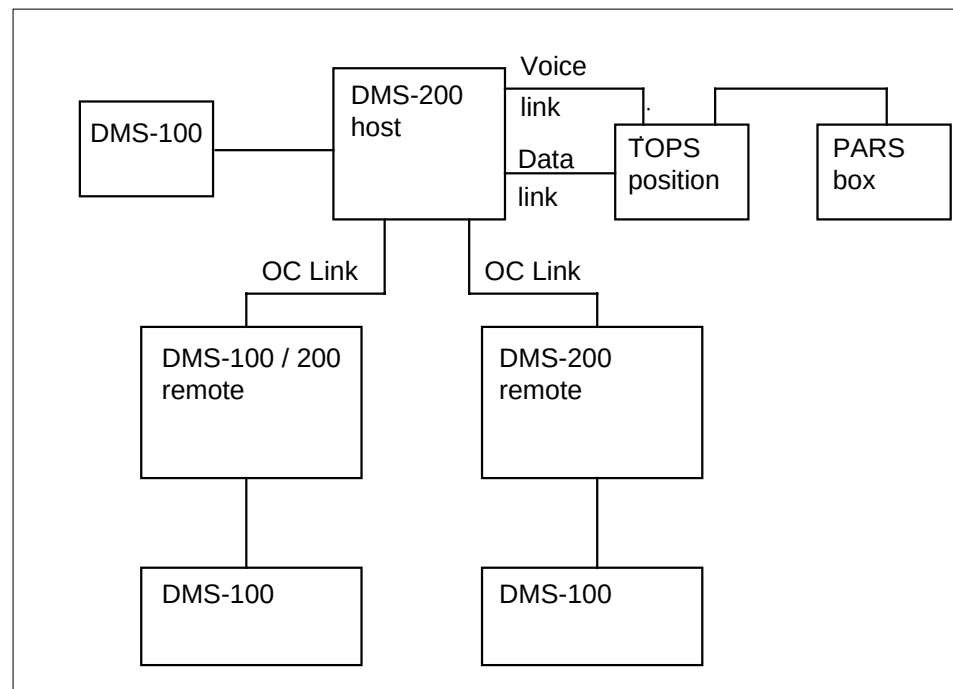
- The frequency of the LOW tone is 941 Hz
- The frequency of the HIGH tone is 1633 Hz

PARS in a TOPS operator centralization environment

The TOPS Operator Centralization (OC) environment saves operating expenses by reducing the number of operators an operating company needs to employ. In an OC environment, there are two types of switches: Host switches, where the operator positions are located, and Remote switches, which obtain operator services by messaging the Host switch over the OC links. For more details on Operator Centralization, see NTX039AA, "Host OC Datalink Handling," NTX 134BA, "Remote OC Datalink Handling," and NTX A60AA, "Night Closedown." The following figure shows a possible implementation of the PARS application in an OC environment.

TOPS DA Call Processing (continued)

PARS in TOPS operator centralization



When a DA PARS call originates from a Remote switch, the PARS specific call presentation tone is created in the Remote switch and passed through the Host switch to the TOPS position that the Host switch routes the call to. Therefore, if one of the Remote switches has this PARS feature and one does not, some DA calls would utilize the prerecorded announcements, and some would not. This would be very annoying to the operators. Thus, for consistent Operator Centralization DA call handling, the Host switch and all its Remote switches must contain this PARS software.

Note: The exception to this would be the case where the Host switch never operates in Stand-alone mode (i.e. has no originating trunk groups).

Signaling and supervision

Signalling and supervision of TOPS DA Call Processing involve the following.

Dedicated intercept type trunk groups

Dedicated Intercept (INTCPT) type trunk groups are dedicated TOPS trunks that only carry intercept CO type traffic for the served NPA. To mark the trunk groups to a intercept type, the field Station Class (STATCLS) in table TRKGRP is set to INTCPT. The trunk subgroup is set to NO PULSING, if called digits are not expected. Otherwise, the called start pulse signalling must

TOPS DA Call Processing (continued)

be in the KP+ST3P format (0- station call), and TRKSGRP signaling data must be set to MF WK.

Note: Calls arriving on Intercept trunks are treated as station traffic.

When a dedicated trunk group carries only ONI traffic, field CLGID in table TRKGRP must be set to ONI. The Intercept call type is set to Regular Intercept (INTC) for ONI and ANIF intercept calls.

Field CLGID in table TRKGRP is modified to provide a type of ANI signalling, called Automatic Intercept Service (AIS) which is for dedicated Intercept trunks. The CLGID field can be set to AIS only when the field is set to INTCPT. The called number is identified as an ANI spill with ANI ID in the AIS format. Table AIS Category (AISCAT) maps the ANI ID digit received to one of the intercept call types, and specifies the expected number of digits to be found in the ANI spill.

Intercept calls over combined type trunk groups

The combined type trunk group can carry both Toll and DA traffic. Intercept calls, routed over combined TOPS trunks that provide ANI spill, may be recognized by an Operating Company definable MF ANI digit for the type of ANI signalling being used. When field CLGID in table TRKGRP is set to BELL, the value of the ID digit corresponding to an intercept call is specified through table BELLCAT. For CLGID set to OSS, table OSSCAT is used. The CLGSRV field of the tables BELLCAT and OSSCAT is expanded to include new intercept call types.

The CLGSRV field can be set to the following values for the Intercept CO type:

- INTC (Regular Intercept)
- BLDNINTC (Blank Number Intercept)
- TRBLINTC (Trouble or Special Intercept)

Translations table flow

Table flow is not provided.

Limitations and restrictions

The following limitations and restrictions apply to TOPS DA Call Processing:

- DMS-250 (DMS-100 family private toll switch)
- MOPS (Mobile Operator Position System)
- OCC (Overseas Operator Center)

TOPS DA Call Processing (continued)

The current limitation to be able to assign only 100 Restricted Billing Class numbers is unchanged.

BR19254—TOPS DTMF Activated PARS

The following limitations and restrictions apply to BR19254—TOPS DTMF Activated PARS:

- This feature supports only General TOPS positions. A TOPS position is General if field POS in table TOPSPOS is equal to value OPR. Therefore, this feature can function with MP, SP, and BP TOPS positions.
- Because the PARS box connects to the TOPS position headset, the operator should not change loops during a PARS announcement. Changing loops during an announcement may cause the subscriber on one loop to hear all or part of the announcement meant for the other loop.
- The time spent playing the PARS announcement is included in operator Average Work Time (AWT).
- Certain end offices signal coin calls to an operator with tones when these calls are presented at a TOPS position. If these offices have this PARS feature, the end office tones may not be heard because of the PARS announcement.
- If office parm TOPS_PARS_TONE_LENGTH is set to zero (0), the DTMF tone has a length of 0 ms and is heard by the operator, subscriber, or PARS box. Thus, no announcement is triggered from the PARS box..
- If the value of office parm TOPS_PARS_TONE_LENGTH is set too short, the announcement is not triggered from the PARS box. Likewise, if the value is set too long, the announcement is triggered from the PARS box before the tone has stopped, and the tone and the announcement could be played simultaneously, thus overlapping.
- The frequencies of the DTMF tone are higher than the frequency of the normal call arrival tone, and although the amplitude (volume) of the tones are the same, the DTMF tone may seem louder to the operator than the normal call arrival tone.
- Transfers from Toll and Assist (TA) TOPS positions to DA TOPS positions will hear this DTMF D tone call arrival tone. Transfers from DA to TA or Assistance positions that are not service adjusted to TA service prior to the transfer also hear the DTMF call arrival tone.
- Two peripherals not supported by the DTMF tone activated PARS feature are TM8s and DCMs. This restriction is due to their inability to generate DTMF tones. Since neither peripheral can generate DTMF tones, vendor-specific PARS boxes used by Telcos to trigger the PARS announcement would not operate correctly. These boxes require a true

TOPS DA Call Processing (continued)

DTMF D tone to trigger their announcements, and without the correct tone, no announcement is played.

UN200306—Table DABILL enhancements for ATC interworking

With the ability to datafill table DABILL with CLGREQ = N for billable service names, processing for trunk types other than ATC trunks will be affected. For calls (555, HOM555, FOR555 UNSPEC CLGREQ=N) arriving from other trunk types, the operator must class charge the call. Once the class charge has been entered, when the operator attempts to release the call to an ARU, table DABILL will be accessed based on the new service class, not UNSPEC. This does not change existing functionality for call arrival on these other trunks, however the operator must be aware that once a class charge has been entered further information may still be required.

Interactions

The following paragraphs describe the interactions between TOPS DA Call Processing and other functionalities.

This feature package interacts with NTX171CA—Mechanized Calling Card Service Call Processing (MCCS), NTX208AA—Automatic Coin Toll Service (ACTS), and NTX645AA—TOPS Service Billing. To use MCCS for DA calls, the MCCS feature package must be present. To use ACTS for DA calls, ACTS feature package must be present. To rate a DA call, TOPS service billing must be present. This feature has no impact on the working of any existing features. This feature is available only if the DA feature package is available.

BR14147—Specifying DA Billing Options by Restricted Bill Class

The following paragraphs describe the interactions of BR14147—Specifying DA Billing Options by Restricted Bill Class:

- In order to provide the necessary capability for the TOPS DA package, this feature adds new field AMARBC to table RESTBIL, which is part of base TOPS packaging and thus affects all existing TOPS offices.
- This feature impacts the manner of accessing the data in table RESTAMA. It is now indexed using the AMARBC field value (from RESTBIL for TA calls, from DARSTBIL for DA calls) rather than the actual Restricted Billing Class number from table SPLDNID.
- This feature impacts the Restricted Billing Class number recorded in the AMA billing records for calls from restricted directory numbers. The value of the AMARBC field (from RESTBIL for TA calls, from DARSTBIL for

TOPS DA Call Processing (continued)

DA calls) is now recorded rather than the actual Restricted Billing Class number.

- This feature modifies the interaction of the AABS feature to the Voice Service Node (VSN). The Restricted Billing Class number in the message sent by AABS to the VSN is no longer the actual Restricted Billing Class number, but is instead the value of the AMARBC field (from RESTBIL for TA calls, from DARSTBIL for DA calls).

Interactions with force management packages

In terms of operator service profiles and the ways they are manipulated, the addition of service profiles and combined service sets in the FADS commands is only visible if the DA package is present.

The new SRVSET fields in tables TOPSPOS and OPRDAT are visible in all DMS operation environments. In all but TOPS DA environments they should be filled as TASERV.

Interactions with other administration packages

The new OM groups TOPSDA, TOPSARU, DAMISC, and DALINK are present only if the DA package is present.

Interactions with subscriber/system

When the DA package is present, the subscriber will be able to access the services of the DAS.

BR19254—TOPS DTMF Activated PARS

This feature, BR19254, is optional via an ON/OFF office parameter. It is offered with the TOPS DA package NTXA62AA, and requires Basic TOPS package NTX030CC.

When this interim PARS tone activated feature is replaced with the TOPS PARS feature NC0003 (package NTXJ37AA), feature NC0003 will take precedence over this feature BR19254 on a per position basis. Thus, a TOPS office can gradually upgrade from this tone activated PARS feature to the PARS protocol PARS feature on a per position basis.

Activation/deactivation by the end user

TOPS DA Call Processing requires no activation or deactivation by the end user.

TOPS DA Call Processing (continued)

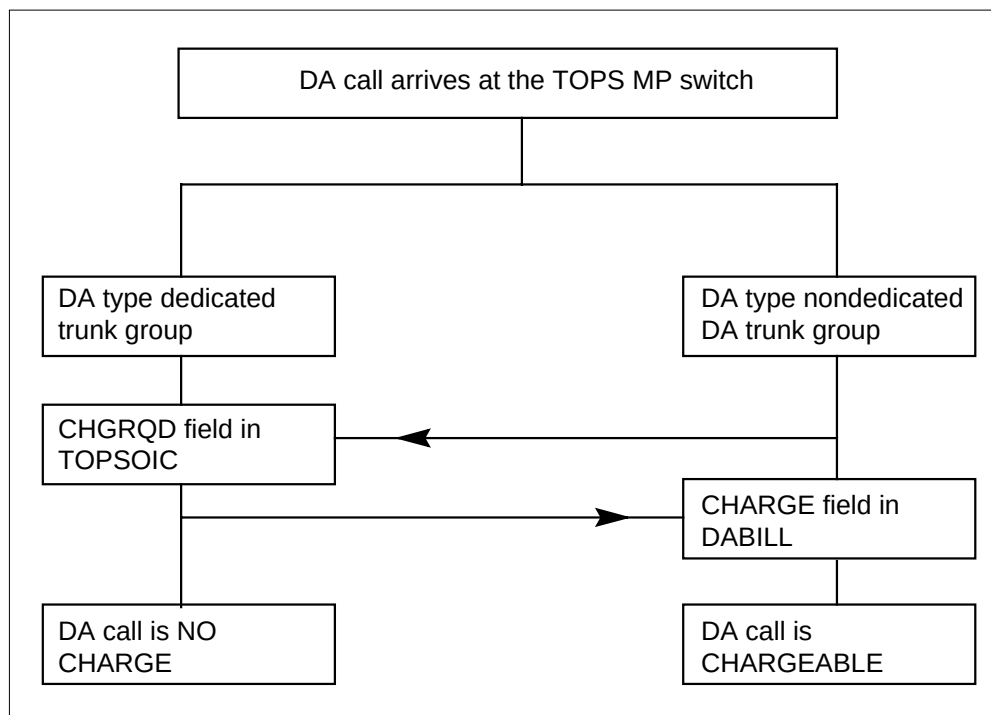
Billing

The billing of a DA call for TOPS MP involves essentially four steps:

1. determining whether the call is to be billed at the end office or at the TOPS MP office
2. if the call is to be billed at the TOPS MP office, determining whether the specific call type is to be chargeable.
3. if the call is to be chargeable, determining whether the calling or called number is required
4. if a call is chargeable, accessing the rate step tables to determine the actual charge.

With this feature package, this four-step process involves a series of tables that have been modified. While reading these paragraphs, refer to the following figure.

DA billing process before this feature



DA billing before this feature

Previously, the first decision was controlled by whether the DA call arrived on a dedicated or nondedicated trunk group; nondedicated trunks were always billed by the TOPS MP office, while dedicated trunk groups were controlled by the Charge Required (CHGRQD) field of table TOPSOIC.

TOPS DA Call Processing (continued)

The second decision was controlled by the table DABILL; once the call was determined to be billed at the TOPS MP office, the field CHARGE determined whether the specific type of call was chargeable or not.

Decision three was controlled by table TOPSOIC and DABILL. For dedicated trunks, field CLGRQD in table TOPSOIC determined whether or not the calling number was required. For nondedicated trunks, the calling number was always required.

Since for some calls the called or requested number is required for billing, the field REQNUM in table DABILL determined whether or not the requested number is required for specific types of DA calls, based on call type and service class.

The rating system provides four classes of rating:

- Domestic
- Overseas
- Local
- Service

The service rating system is affected by this feature. In essence, the rating system consists of setting a calling NPA or NPA-NXXX with a tariff name, setting a called number with a service name, and then associating the tariff and service names with a rate step and schedule.

Billing-related tables affected by this feature

Refer to the datafilling section of this document for background information on the specification of Directory Assistance billing options by restricted billing class. This capability affects tables SPLDNID, RESTBIL and DARSTBIL.

The following MAP displays give examples of the tables that are affected by this feature.

MAP display example for table DATRKOPT

GRPKEY	MULTREQ	OHDACC	BILLRQD	CLGRQD	REQRQD	LANGUAGE
COMSVTRK	1	Y	Y	Y	Y	PRIMARY
DAONLYTRK	0	N	N	Y	N	SECONDARY
INTONLYTRK	0	N	N	N	Y	SECONDARY
DAOICTRK1	3	Y	Y	Y	Y	PRIMARY
DAOICTRK1	0	N	N	N	N	PRIMARY

TOPS DA Call Processing (continued)**MAP display example for table TOPSOIC**

OICKEY		C0
DAOICTRK1	11	411
DAOICTRK1	22	555
DAOICTRK2	11	555
DAOICTRK2	22	411

MAP display example for table SERVNAME

VALUE	SERVNAME
1	TOLLFREE
2	LOCALDA
3	FOREIGNDA

MAP display example for table DABILL

BILLKEY		REQNUM	CLGREQ	SERVNAME
411	STATION	N	Y	LOCALDA
411	COIN	N	Y	TOLLFREE
411	HOTEL	N	N	TOLLFREE
555	STATION	Y	Y	FOREIGNDA
555	HOTEL	Y	Y	FOREIGNDA
555	COIN	Y	Y	FOREIGNDA
INTC	STATION	Y	N	LOCALDA

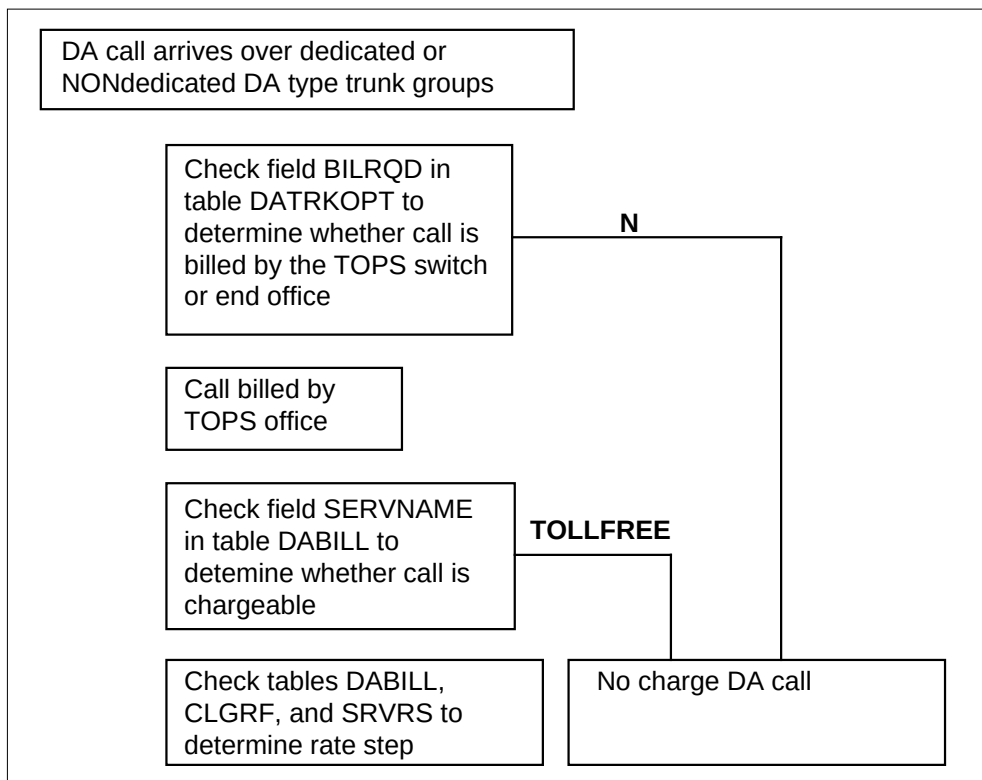
MAP display example for table SRVRS

SRVKEY	SCHNAME	RATESTEP	
TARIFF1	LOCALDA	SERVICE	1
TARIFF1	FOREIGNDA	SERVICE	2

The following figure illustrates directory assistance billing process with TOPS MP.

TOPS DA Call Processing (continued)

DA billing process with this Feature



With this feature package, a new table, DATRKOPT, is introduced. This table specifies DA options on a trunk group basis for nondedicated trunk groups.

Following are the fields and the attributes they control on a trunk group basis:

- **MULTREQ**—how many multiple DA requests are allowed.

When this field is 0, a DA call over this trunk group cannot have multiple requests. When a call on this trunk group arrives at the position, the screen indicates this condition.

- **OHDACC**—whether Operator Handled (OH) DA Call Completion is allowed

When this field is 0, a DA call over this trunk group cannot have be completed by the operator. When a call on this trunk group arrives at the position, the screen indicates this condition. as well.

- **BILLRQD**—whether the DA call is billed by the TOPS MP office or the end office

Field BILLRQD replaces field CHGRQD in table TLPSOIC, and field CLGRQD is moved from table TOPSOIC to DATRKOPT.

TOPS DA Call Processing (continued)

- CLGRQD—whether the calling number is required for DA calls that are billed by the TOPS MP office.
- REQRQD—whether the requested number is required for DA call that are billed by the TOPS MP office.
- LANGUAGE—enable the TOPS MP office to play a recorded announcement for Auto-intercept calls in a language other than the default language.

With this feature package, step 2 is determined by field SERVNAME in table DABILL. *Field CHARGE in table DABILL has been deleted.* For no-charge DA calls, the SERVNAME field is set to TOLLFREE. This entry is the default value for all tuples that are not entered in table DABILL. Use this value to set up the rate step, as explained in the following paragraphs.

Note: Field NOAMA in table TOPS supercedes the use of SERVNAME in table DABILL. For example, if field NOAMA in table TOPS is set to Y, all 411 calls will be no charge regardless of what is entered in table DABILL.

The third decision is now made by the field CLGRQD in table DABILL. This field is usually set to Y (Yes), since most DA calls require the calling number. For Intercept type calls, which require the requested number, field REQNUM is set to Y in table DABILL. For billable Inwards calls, the Carrier Access Code (CAC) is used; neither the calling nor the requested number is required.

The fourth decision uses tables SERVNAME, SRVRS, and DABILL.

The service rating system associates a service name based on called number for a Toll call. The called number is replaced by CO type when a DA call is routed to TOPS using a T selector. Therefore, to use the service rating system to rate a chargeable DA call, a service name must be specified based on CO type. This is added to table DABILL to rate a DA call based on a CO type and on a calling service class.

Table SRVRS is used with DA as with Toll, with one exception. Table SRVRS is indexed using a 2-part key: Traffic and Service Name. For a DA call, the tariff is obtained using table CLGTRE, the same as for a Toll call. However, for a DA call, the service name is obtained using field SERVNAME in table DABILL to rate a DA call. The DA call is then determined to be either a charge or no charge call. For no charge DA calls, the SERVNAME field is set to TOLLFREE. The TOLLFREE symbol is the default entry for SERVNAME for tuples that are not entered in table DABILL.

TOPS DA Call Processing (continued)

Operator Handled (OH) DA Call Completion (DACC)

Once the operator has queried the database and has received the requested number, the subscriber may ask the operator to complete the call. This is referred to as operator Handled DA Call Completion (OHDACC).

To perform OHDACC, the operator keys SERVICES + digit + START, where the digit is the number in the Services menu list. Billing Screen). The billing and requested number information for the DA call is transferred to the Toll screen.

Field OHDACC in table DATRKOPT controls whether or not, on a trunk group basis, the incoming DA call can have DAOHDACC. Field Request Number Required (REQRQD) in table DABILL controls whether or not the requested number is required for OHDACC. If this field is set to N, access to the Toll screen is allowed with or without the requested number.

Once the operator has accessed the Toll screen, the type of call (Manual or Semi-Automatic DA Call Completion) depends on whether the requested number was transferred to the Toll screen. If the number was not transferred, the call is Manual; the call type field is 0-. If the number was transferred, the Co type field is 0+. In either case, the operator processed the call and outpulses the called digits by pressing POS RLS.

If the billing information for the DA portion of the call is not complete, the DA billing screen appears and access to the Toll screen is denied until the billing screen is correctly filled.

When field REQRQD in table DABILL is set to N, the access to TA service for call completion is allowed with or without the requested number. The requested number is the number obtained from the DA listing search or memory quote. OHDACC is further classified as manual DACC or Semi-Automatic DACC. This classification is based upon how the requested number is received. For manual DACC, the operator enters the requested number using the CLD key. For Semi-Automatic DACC, the requested number is received from the DA database system.

When an operator is providing DACC on a chargeable DA coin call, the coins deposited for the DA portion of the call are collected before the Toll screen is presented at the position for call completion.

If an operator is trained to handle DA calls only, a Toll call can be transferred to an operator capable of performing Toll functions by using the XFR key function. Note that it is necessary to first change the service type of the call to TA using the services menu, in order that an operator with Toll capabilities is selected from the transfer 1 or transfer 2 operator queues.

TOPS DA Call Processing (continued)

Billing Via MCCA for a DA Call

As explained in NTX171, MCCA is used to automate 0+ or 01+ calls that are billed to a calling card number. For Toll service, the operator is usually *not* required.

Following are the scenarios in which the operator is invoked:

- The subscriber does not enter the calling card number until a timeout occurs
- The subscriber dials 0.
- The subscriber flashes the switch-hook.

With DA, MCCA becomes a system whereby the subscriber dials a 0+ DA call (such as 0+ 411) and is prompted to enter the calling card number. After entering the number (assuming it is valid), the subscriber is connected to an operator (with the DA screen).

As with Toll service, the subscriber can access the operator before entering the calling card number. In this case, the DA billing screen appears, and the operator must enter the calling card number before accessing the database.

Note that the calling card number is retained for the duration of the call, and the operator can bill a sequence of DA calls to this number. Note that the limit to how many times the subscriber can bill a DA call is not restricted by the parameter MCCA_SEQ_CALL_LIM. Also, if the operator provides DACC, the subscriber cannot return to the operator for another DA request or OHDACC.

Billing Via ACTS for a DA Call

As explained in NTX208, ACTS is used to automate station paid coin calls. A DRAM informs the subscriber on what actions to take, and a Coin Detection Circuit (CDC) counts the coins being deposited.

For Toll service, the call is connected to the operator before the coins are deposited for same types of reasons as for MCCA:

- The subscriber does not enter the calling card number until a timeout occurs
- The subscriber flashes the switch-hook.

With DA, ACTS becomes a system whereby for DA coin calls, ACTS counts the coins and then forwards the call to a DA operator. The operator then provides DA service, and the coins are collected when the subscriber goes on-hook.

TOPS DA Call Processing (continued)

As with Toll, the subscriber can connect to an operator before depositing the coins. In this case, the DA billing screen is displayed. The CDC remains connected to count the coins and "ACTS" is displayed to inform the operator that ACTS did not receive the coins.

Note that the CDC is required for the following scenarios:

- The operator is processing a Toll call and the subscriber asks for DA service.

If the operator can handle both Toll and DA calls, the DA billing screen is displayed and with the charge required display. The CDC counts the coins as they are deposited. When the correct amount is deposited, the operator can access the Toll screen.

- A DA call arrives from a post-pay telephone.

In this scenario, the DA billing screen is displayed to inform the operator that billing is incomplete. The operator accesses the DA search screen, performs the DA search, and then re-access the Da billing screen to collect the coins. When the correct amount has been deposited, the operator can then verbally quote the number or release the call to Auto-quote.

- The operator is providing OHDACC.

When the Toll service key is invoked to provide OHDACC, a coin collect signal is sent to collect charges for the DA portion of the call. The Toll screen displays the rate and charges information and the operator informs the calling subscriber the amount to be deposited. When the required amount is deposited, the operator presses POS RLS to float the call. Any further contacts can be handled by ACTS.

Station Message Detail Recording

TOPS DA Call Processing does not affect Station Message Detail Recording.

TOPS DA Call Processing (continued)

Datafilling office parameters

The following table shows the office parameters used by TOPS DA Call Processing. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by TOPS DA Call Processing

Table name	Parameter name	Explanation and action
OFCOPT	TOPS_DA_PARS_ENABLE	This parameter identifies each TOPS office that receives a Personal Audio Response System (PARS) tone on all DA calls. With this parameter set to 'Y', when a call other than an ONI or an Intercept call arrives at a TOPS DA position, the call presentation tone to the operator is replaced by the DTMF 'D' tone. This tone is received by the PARS "box" and triggers the playing of the PARS announcement to the subscriber and the operator.
OFCVAR	TOPS_PARS_TONE_LENGTH	This parameter allows each TOPS office to customize the length of the dual tone multi-frequency (DTMF) D tone used to activate the PARS announcement sent from that office's vendor-specific PARS box. Its default value is 10 (100 milliseconds) and can be set to any value between 0 (no tone) and 255 (2550 ms). The units of the tone length are in 10 ms increments; that is, a value of 1 equals 10 ms, a value of 25 equals 250 ms, and a value of 255 equals 2550 ms.

TOPS DA Call Processing (continued)

Datafill sequence

The following table lists the tables that require datafill to implement TOPS DA Call Processing. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for TOPS DA Call Processing (Sheet 1 of 2)

Table	Purpose of table
TRKGRP.TOPS	Trunk Group Type TOPS. This table is required in a toll office with a TOPS DMS-200 switching unit or in a combined local/toll office with a TOPS DMS-100/200 switching unit.
TRKGRP,TOPSARU	TOPS Audio Response Unit Trunk Group. This table adds a new trunk group type to accommodate external audio response units (ARUs).
ARURTE	Audio Response Route. This table associates a pool id with the office route that is in table OFRT. The pool id is in the ARU REQUEST message.
ARUMEMBER	Audio Response Member. This table associates the trunk members with a DAS trunk ID. This ID is used to tell the DAS which trunk has been seized by the DMS.
XANNINFO	External Announcement Information. This table is based on an announcement number. After an announcement over an external ARU has ended, this table is checked to see if the call can be connected or reconnected to an operator.
DATRKOPT	Directory Assistance Trunk Options. This table is used to specify the various DA options on a trunk group basis for TOPS, IT, and ATC trunk groups.
DABILL	Directory Assistance Billing. This table is used to specify a service name to indicate if a call is billable, and whether a calling number and requested number are required.
SERVICES	Services. This table identifies the protocol, data link type, and data base listing identifier for toll and assistance, directory assistance and intercept services.
VROPT	Voice Response Options. This table contains parameters required by external voice response units.
TOPSPOS	TOPS Position. This table defines TOPS positions to the switch. This table is used to specify the services that a position can provide.
TOPSOIC	TOPS Office Identification Code. This table specifies valid office identification codes received from an end office over a TOPS trunk group.
OPRDAT	TOPS Operator Data. This table lists all the operator numbers that have been assigned. Only operators with a number listed in this table are allowed to log in to a TOPS position.

TOPS DA Call Processing (continued)**Datafill tables required for TOPS DA Call Processing (Sheet 2 of 2)**

Table	Purpose of table
DARSTBIL	Directory Assistance Restricted Billing. This table is used to specify the Restricted Billing Class (RBC) to be recorded on AMA for Toll and Assist (TA) and Directory Assistance (DA) calls.
RESTBIL	TOPS Restricted Billing. This table is used to specify the Restricted Billing Class (RBC) to be recorded on AMA for Toll and Assist (TA) and Directory Assistance (DA) calls.
SPLDNID	TOPS Special Directory Number ID. This table is used to specify the Restricted Billing Class (RBC) to be recorded on AMA for Toll and Assist (TA) and Directory Assistance (DA) calls.
BELLCAT	Table BELLCAT allows the Operating Company to define the FORMAT, CLGSERV and ANIRoute fields upon receipt of a specified ANI ID digit over a TOPS trunk with BELL signaling:
OSSCAT	Table OSSCAT allows the Operating Company to define the FORMAT, CLGSERV, REST and ROUTE fields upon receipt of specified pair of ANI ID digits over a TOPS trunk with Operator Services Signaling.
AISCAT	Table AISCAT is created to map the ANI ID digit received to one of the intercept call types. This table also specifies the expected number of digits to be found in the ANI spill.

Datafilling table TRKGRP.TOP

The following table shows the datafill specific to TOPS DA Call Processing for table TRKGRP.TOP. Only those fields that apply directly to TOPS DA

TOPS DA Call Processing (continued)

Call Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP.TOPs

Field	Subfield or refinement	Entry	Explanation and action
SVCSET		DASERV	The value DASERV can only be specified in field SVCSET if the DA package is present in the switch and if the controller type of the position being filled is of type TPC. You cannot datafill INTCSERV in the SVCSET field. If you attempt to do so, the message INTC CAPABILITY IS NOT PROVIDED appears.
XFRSET		DA	The value DA can only be specified in field XFRSET if the DA package is present in the switch and if the controller type of the position being filled is of type TPC. Entries in the XFRSET field must be compatible with those entered in the SVCSET field. Entry of a tuple is denied, and the message 'XFRSET not compatible with SVCSET' is output if this restriction is violated.

TOPS is necessary for incoming traffic which requires:

- TOPS operator intervention or
- Recording on the CAMA tape
- Both TOPS operator intervention and recording on the CAMA tape.

If the trunk group type TOPS is two way, the outgoing traffic is Toll Completing.

Starting with BCS15 there is a need to originate Directory Assistance (DA) calls on TOPS trunks and route them to AOSS type positions. The Operating Company has the choice of routing via a pretranslator (Table STDPRCT), provided on a per trunk group basis, or by mapping the called NPA against a route for the SNPA of the trunk group in table HNPACONT. The pretranslator name (appears in table TRKGRP under field PRTNM) and the subtable name should be the same.

TOPS DA Call Processing (continued)

Only the TOPS trunks which carry digits outputted from the originating office to the TOPS office are capable of originating an AOSS call such as, COMBINED, HOTEL, COIN, NOCOIN, CAMATRIB, and DNLOOKUP.

Intercept calls, routed over TOPS trunks which provide ANI spill, may be recognized by the MF ANI ID digit. The value of the ID digit corresponding to an intercept call is defined through Table BELLCAT, which also provides the route to AOSS for trunks handling intercept calls.

Example datafill:

- A TOPS trunk group OTWAON0342C1 - has the following characteristics:
 - Incoming
 - Most Idle Select Sequence
 - In serving NPA 613
 - No Local Area Screening
 - The trunk group has a standard pretranslator SPRT.
 - Screening Class is OTWA.
 - NXX Screening is required on operator handled calls.
 - Traffic Class is RC.
 - Trunk group carries traffic from a mix on noncoin, coin and hotel station types.
 - The 0- traffic is indicated by seizure of trunk and timing out with no digits received.
 - Display of the NPANXX of originator to the operator is required.
 - Instructional display to the operator is required.
 - Memory is to be allocated for 20 billing codes.
 - The trunk group is ANI with Bell Signalling Format.
 - The ANI seizure timing is 10 sec and the ANI partial dial timing is 10 sec.
 - Treatment supervision is on hook.
- TOPS trunk group OTWAON7281C2 has characteristics similar to TOPS trunk group OTWAON0342C1 except:
 - The trunk group is to have a standard pretranslator PRT1.
 - The trunk group carries traffic from hotel station types only.

TOPS DA Call Processing (continued)

- trunk group is ONI (ANI seizure, ANI partial dial and treatment supervision fields do not apply).
- for coin zip tone the DMS should return answer supervision if call is to wait in queue, and send tone repeat signal to end office when operator answer.
- TOPS trunk group OTWAON8394C0 has characteristics similar to TOPS trunk group OTWAON0342C1 except:
 - Trunk group is to have a standard pretranslator PRT2.
 - Trunk group carries ANI and ONI traffic using AMR5A signalling format.
 - AMR5 of hook supervision control applies when called party/operator answers.
- TOPS trunk group TOPAOSMF can handle COMBINED station types and route calls to AOSS positions

Datafilling table TRKGRP.TOPSARU

Table TRKGRP.TOPSARU adds a new trunk group type to accommodate external ARUs.

Datafill example for table TRKGRP.TOPSARU

The following examples show sample datafill for table TRKGRP and for TOPS Audio Response Unit.

MAP display example for table TRKGRP.TOPSARU

CLLI	GRPTYP	TRAFSNO	PADGRP	NCCLS
DAARU1	TOPSARU	31	NPDGP	NCRT
DAARU2	TOPSARU	10	NPDGP	NCRT

TOPS DA Call Processing (continued)

Error messages for table TRKGRP.TOPSARU

The following error messages apply to table TRKGRP.TOPSARU.

Error messages for table TRKGRP.TOPSARU

Error message	Explanation and action
MEMBER IS NOT IN TABLE TRKGRP	There is a relationship between Table TRKGRP and Table ARUMEMBR. TRKGRP data for TOPSARU trunks must be datafilled prior to Table ARUMEMBR. Table CLLI must be datafilled prior to Table TRKGRP for TOPSARU trunks. If an attempt is made to datafill Table ARUMEMBR first, the following error message is produced:
MEMBERS EXIST IN ARUMEMBR	Conversely, a group cannot be removed from Table TRKGRP without all of its members being deleted from Table ARUMEMBR first. If an attempt is made to delete a group with members remaining in Table ARUMEMBR, the following error message is produced:
Note: Changes are not allowed in Table TRKGRP.TOPSARU if there is data in Table ARUMEMBR for that CLLI.	

Datafilling table ARURTE

Table ARURTE assists in the seizure of circuits and the routing of announcements by the DMS and DAS. Table ARURTE is indexed by a pool ID that is sent from the DAS in an ARU Request message. The data associated with the pool ID is an index that points to a route list that is obtained through table OFRT.

This allows flexibility in assigning the ARU (internal, external) because the CLLI representing the external ARU or the CLLI representing the internal ARU can be datafilled into the route list.

Table ARURTE is a static table, with a size range of 0 (min.) to 16 (max.) tuples. Table ARURTE requires 16 words of data store per tuple.

Datafill example for table ARURTE

The following example shows sample datafill for table ARURTE.

TOPS DA Call Processing (continued)

MAP display example for table ARURTE

COMMAND	POOL	OFRTDX
INP	0	207
	1	207
	2	208
	3	208
	4	207
QUI		

Datafilling table ARUMEMBR

Table ARUMEMBR is used to associate a TOPSARU trunk member with a DAS trunk ID. This trunk ID is used to tell the DAS which circuit has been seized by the DMS.

There is a relationship between Table TRKGRP and Table ARUMEMBR. Members cannot be datafilled in Table ARUMEMBR without being datafilled in TRKGRP first. If an attempt is made to datafill Table ARUMEMBR first, the following error message is produced: 'MEMBER IS NOT IN TABLE TRKGRP'. Conversely, a group cannot be removed from Table TRKGRP without all of its members being deleted from Table ARUMEMBR first. If an attempt is made to delete a group with members remaining in Table ARUMEMBR, the following error message is produced: 'MEMBERS EXIST IN ARUMEMBR'. Changes are not allowed in Table TRKGRP if there is data in Table ARUMEMBR for that CLLI.

Table ARUMEMBR holds up to 16 different CLLIs. CLLIs other than TOPSARU CLLIs are not allowed to be entered in Table ARUMEMBR.

Table ARUMEMBR has a size range of 0 (min.) to 32K tuples, and the table allocates its data store dynamically. It allocates enough data store for all the CLLI members as prescribed in Table CLLI (1 word per member as datafilled in Table CLLI). If there is datafill in Table ARUMEMBR for a CLLI and the CLLI size is changed in Table CLLI, then all the members for the CLLI in Table ARUMEMBR must be deleted and re-added so the correct amount of data store can be allocated. The equation for doing this is: $48 + (\text{total number of members in each CLLI group})$.

In BCS33, feature UV100138 eliminated the need to delete all members for a given CLLI and then re-add the members in order to increase data store allocation.

TOPS DA Call Processing (continued)

Refer to the following information when datafilling table ARUMEMBR:

- There is a relationship between Tables TRKGRP and ARUMEMBR. In Table TRKGRP, a TOPSARU trunk must have a direction of outgoing and the outpulsing type must be No Pulse. If an attempt is made to enter data other than this, one of the following error messages is produced: 'SUBGROUP AND GROUP DIRECTIONS DO NOT MATCH' or 'TOPSARU TRUNKS MUST BE NO PULSE'.
- In Table ARUMEMBR, members cannot be datafilled without being datafilled in Table TRKGRP first. Conversely, a group cannot be removed from Table TRKGRP without all its members deleted from Table ARUMEMBR first.
- Changes are not allowed in Table TRKGRP if there is data in Table ARUMEMBR for that CLLI.
- Table ARUMEMBR can only hold up to 16 different CLLI's. CLLI's other than TOPSARU CLLI's are not allowed to be entered.
- Table ARUMEMBR allocates data store dynamically, and allocates enough data store for all the CLLI members as prescribed in Table CLLI. If there is datafill in Table ARUMEMBR for a CLLI and the CLLI size is changed in Table CLLI, all members for the CLLI in Table ARUMEMBR must be deleted and re-added so the correct amount of data store can be allocated.
- Member number in Table ARUMEMBR must be in the range of 0 to CLLI size 1.
- The same DASTRKID cannot be datafilled against two different CLLI members in Table ARUMEMBR.
- When all members of a CLLI group are deleted in Table ARUMEMBR, the following warning is produced: 'WARNING: DELETION OF THE LAST MEMBER IN A CLLI GROUP COULD EFFECT TOPS DA EXTERNAL ARU'S'. However, the deletion of the last member is not blocked.

Datafill example for table ARUMEMBR

The following example shows sample datafill for table ARUMEMBR.

TOPS DA Call Processing (continued)

MAP display example for table ARUMEMBR

COMMAND	POOL	OFRTDX
INP	0	207
	1	207
	2	208
	3	208
	4	207
QUI		

Datafilling table XANNINFO

Table XANNINFO is based on an announcement number. After the announcement has ended, this table is checked to see if the call can be connected or reconnected to an operator.

Table XANNINFO has a size range of 0 (min.) to 255 (max.) tuples. This is a static table and requires 32 words of data store per tuple.

Datafill example for table XANNINFO

The following example shows sample datafill for table XANNINFO.

MAP display example for table XANNINFO

COMMAND	ANN	OPRCONN
INP	0	Y
	1	Y
	25	N
	60	Y
	102	N
QUI		

Datafilling table DATRKOPT

Table DATRKOPT specifies the various DA options on a trunk group basis for the TOPS, IT, and ATC trunk groups. Table DATRKOPT is indexed by the incoming trunk group's Common Language Location Identifier (CLLI) and introduces six new fields: MULTREQ, DACC, CLGRQD, REQRQD, BILLRQD, and LANGUAGE.

The following table shows the datafill specific to TOPS DA Call Processing for table DATRKOPT. Only those fields that apply directly to TOPS DA Call

TOPS DA Call Processing (continued)

Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DATRKOPT

Field	Subfield or refinement	Entry	Explanation and action
MULTREQ		0-127	Multiple requests
DACC		AUTO, OH, ALL or NONE	DA call completion
CLGNRQD		Y or N	Calling number required
REQNRQD		Y or N	Requested number required. There is no default value for field REQNRQD. REQNRQD=N: An AMA record is always generated and includes the following cases: The DA database search is successful and ARUs are available. The DA database search is successful but ARUs are unavailable. The DA database search is unsuccessful. REQNRQD=Y: If the number is not found, the operator can cancel the call by depressing 'CA CALL' and 'POS RLS'. Then, no AMA record is generated. Or, if the number is found but ARUs are unavailable, the operator gives the number verbally and must enter the number if an AMA record is to be generated. Under normal circumstances, when the number is found and ARUs are available, an AMA record is automatically generated.
BILLRQD		Y or N	Billing required. Field BILLRQD=Y: The field REQNRQD is ignored and field REQNUM in table DABILL is used. Field BILLRQD=N: The field REQNRQD is used and field REQNUM in table DABILL is ignored.
LANGUAGE		PRIMARY, SECONDARY, PRIMSEC, SECPRIM	Language

TOPS DA Call Processing (continued)

Datafill example for table DATRKOPT

The following example shows sample datafill for table DATRKOPT.

MAP display example for table DATRKOPT

CLLI	MULTREQ	OHDACC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE
COMSRVTRK	1	Y	Y	Y	Y	PRIMARY
DAONLYTRK	0	N	N	Y	N	SECONDARY
INTCONLYTRK	0	N	N	N	Y	SECONDARY
DAOICTRK1	3	Y	Y	Y	Y	PRIMARY
DAOICTRK2	0	N	N	N	N	PRIMARY

Datafilling table DABILL

Table DABILL in conjunction with Table DATRKOPT specifies call types that are billable based on the prevailing tariffs. Calls arriving on trunk groups specified as BILLRQD (Billing Required) in Table DATRKOPT are further classified as billed or toll-free by the SERVNAME (Service Name) field in Table DABILL.

Table DABILL also specifies:

- The calling number that is required for billing information
- The requested number that is required for billing information
- The DA indication that is made in the AMA record
- The surcharge that should be applied for the completion of the call.

The minimum size is 0 tuples, with the maximum size 295 tuples. Table DABILL requires one word per tuple for a total of 295 words.

The following table shows the datafill specific to TOPS DA Call Processing for table DABILL. Only those fields that apply directly to TOPS DA Call

TOPS DA Call Processing (continued)

Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DABILL

Field	Subfield or refinement	Entry	Explanation and action
SERVNAME		alphanumeric	Service name
CLGREQ		Y or N	Datafill of Table DABILL has increased flexibility. The field CLGREQ (calling number required) can now be set to N (no), regardless of the value which is set in the SERVNAME (service name) field. Prior to this activity the SERVNAME had to be TOLLFREE to allow CLGREQ to be set to N.

Datafill example for table DABILL

The following example shows sample datafill for table DABILL.

MAP display example for table DABILL

COTYPE	SRVCLS	REQNUM	CLGREQ	SERVNAME	ENHAMA	CCSURCHG
411	COIN	Y	Y	LOCALDA	Y	Y
411	HOTEL	Y	Y	LOCALDA	Y	Y
555	COIN	N	N	TOLLFREE	Y	Y
555	STATION	N	N	TOLLFREE	Y	Y

Datafilling table SERVICES

Table SERVICES is used to indicate the protocol and the data link type for Directory Assistance (DA) service. Toll and Assist (TA) service is also used to indicate the protocol and data link type, but there is no associated datafill for TA service.

Table SERVICES is used to indicate the protocol and the data link type for Directory Assistance (DA). Toll and Assist (TA) is a valid service, however, TA service does not require datafill.

The following table shows the datafill specific to TOPS DA Call Processing for table SERVICES. Only those fields that apply directly to TOPS DA Call

TOPS DA Call Processing (continued)

Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SERVICES

Field	Subfield or refinement	Entry	Explanation and action
SERVICE		TASERV, DASERV or INTCSERV	Service
PROTOCOL		CCI, IBM or LOCKHEED	Protocol for DASERV and INTCSERV only.
DATALINK		MPC1, MPC2 or STUB	Datalink for DASERV and INTCSERV only.

Refer to the following information when datafilling table SERVICES:

- There are restrictions on the PROTOCOL and DATALINK fields. The only valid entries for PROTOCOL are entries whose software is in office. The same applies for the DALINK field.
- Changing or deleting from Table SERVICES can affect the processing of TOPS DA calls. If you attempt to so, the message THIS UPDATE MAY AFFECT TOPS DA/INTC SERVICE appears. However, the change or deletion is not blocked.
- You cannot datafill INTCSERV in the SERVICE field. If you attempt to do so, the message INTC CAPABILITY IS NOT PROVIDED appears.

Datafill example for table SERVICES

The following example shows sample datafill for table SERVICES.

MAP display example for table SERVICES

COMMAND	INDEX	SERVDATA
INP	1	TASERV
	2	DASERV CCI MPC 0000
QUI		

Datafilling table VROPT

The following table shows the datafill specific to TOPS DA Call Processing for table VROPT. Only those fields that apply directly to TOPS DA Call

TOPS DA Call Processing (continued)

Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table VROPT

Parameter	Explanation and action
SWITCH_ID	This parameter identifies the switch to the DAS.
BCS_ID	This parameter identifies the BCS release to the DAS.
PRIMARY_LANGUAGE	This parameter specifies the primary language used for voice response intercept announcements.
SECONDARY_LANGUAGE	This parameter specifies the secondary language used for voice response intercept announcements.
LOGINOUT_TIMEOUT	This parameter defines the login/logout timeout period.
AUTO_INT_TIMEOUT	This parameter defines the auto intercept timeout period.
FLOAT_INT_TIMEOUT	This parameter defines the float intercept call timeout period.
BEGIN_ANN_TIMEOUT	This parameter defines the begin-announcement time period.
POST_ANN_TIMEOUT	This parameter specifies the post-announcement time period.
MAXIMUM_DA_RECALLS	This parameter defines the maximum number of post-announcement DA recalls allowed.
MAXIMUM_INT_RECALLS	This parameter specifies the maximum number of post-announcement INT recalls allowed.

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

TOPS DA Call Processing (continued)

MAP display example for table VROPT

PARM	VALUE
SWITCH_ID	15
BCS_ID	25
PRIMARY_LANGUAGE	ENGLISH
SECONDARY_LANGUAGE	ENGLISH
LOGINOUT_TIMEOUT	5
AUTO_INT_TIMEOUT	5
FLOAT_INT_TIMEOUT	10
BEGIN_ANN_TIMEOUT	5
POST_ANN_TIMEOUT	2
MAXIMUM_DA_RECALLS	2
MAXIMUM_INT_RECALLS	2

Datafilling table TOPSPOS

This table is used to list the TOPS positions that require two trunk circuits (one for data, one for voice) and to identify the trunk circuit locations. The traffic office to which the position belongs is also listed.

For analog trunk circuits, assignments are made to the same trunk card. Assignments should be consecutive, with voice being the lower numbered circuit (voice=n, data=n+1). A TM8 being used exclusively for TOPS positions can be fully utilized by assigning voice=even and data=odd. For digital trunk circuits on DTCs, assignments should be consecutive with voice being the lower numbered circuit (voice=n, data=n+1). For best usage of circuits, voice=odd, data=even. For digital trunk circuits on DCMs, voice and data circuits must be assigned four circuits apart (when voice=n, data = n+4). For most efficient usage of circuits, voice assignments should be in the range of 1-4, 9-12, 17-20, while data assignments should be in the range 5-8, 13-16, 21-24.

Activation of Call Transfer Keys

Table OFCENG parameter TOPS_TRANSFER_TYPES is used to specify the set of transfer keys which are assigned on an operator position.

TOPS DA Call Processing (continued)

The operator position is associated with one, two or all three of the following queues:

- Call Transfer Queue 1. The TOPS program will look for a TOPS position in this queue when Transfer Key 1 is operated by a TOPS operator handling a call to transfer the call.
- Call Transfer Queue 2. Same as Call Transfer Queue 1 except that it corresponds to Transfer Key 2.
- DA Queue This feature may be used for transfer to TOPS MP positions able to handle Directory Assistance calls.

Note: The DA option can be used only if a position is a TOPS MP position and the DA software is present.

The following table shows the datafill specific to TOPS DA Call Processing for table TOPSPOS. Only those fields that apply directly to TOPS DA Call Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOS

Field	Subfield or refinement	Entry	Explanation and action
POSNO		0 to 9999	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This requirement applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off of the same host.
VCKT		See subfields	This field consists of the subfield PMTYPE and refinements.
	PMTYPE	TMS	Subfield PMTYPE is extended to include the TMS. When TMS is entered in the subfield PMTYPE, the refinements TMSNO, TMSCKTNO and TMSCKTTS must be datafilled.
	TMSNO	0-255	TMS number
	TMSCKTNO	0-5	TMS circuit number
	TMSCKTTS	1-31	TMS circuit time slot

TOPS DA Call Processing (continued)

Old and new TOPSPOS tuples

The following figure shows the table TOPSPOS before and after BCS28.

Old and new TOPSPOS tuples

Old field	Old value	New field	New value
POSNO	100	POSNO	100
VCKKT		VCKKT	
PMTYPE	DTC	PMTYPE	DTC
DTCNO	47	DTCNO	47
DTCKTNO	0	DTCKTNO	0
DTCKTTS	23	DTCKTTS	23
VCPDGRP	NPDGP	VCPDGRP	NPDGP
DTCKT		CARDCODE	DS1SIG
PMTYPE	DTC	POSAREA	
DTCNO	47	POS	OPR
DTCKTNO	0	TEAM	2
DTCKTTS	24	SVCSET	TASERV
DTPDGRP	NPDGP	XFRSET	GEN XFER2
POSAREA		DTCKT	
POS	OPR	PMTYPE	DTC
TEAM	2	DTCNO	47
SVCSET	TASERV	DTCKTNO	0
XFRSET	GEN XFER2	DTCKTTS	24
PROTOCOL	BELL202	PROTOCOL	BELL202

Note: A reformatting algorithm for TOPSPOS must be used when upgrading from pre-BCS28 to BCS28 or later because fields DTCKT and DTPSGRP are moved. You must use this algorithm or the TOPSPOS data will be destroyed.

TOPS DA Call Processing (continued)

Table TOPSPOS has a minimum size of 0 tuples and maximum size of 1023 tuples. The size of table TOPSPOS is specified in field TRKGRSIZ of table CLLI for the two fixed CLLI codes, TOPSPOS and TOPSPOS DATA. The value in field TRKGRSIZ in table CLLI, for each of the two fixed CLLI codes, must be identical. To increase the size of the table, all members of the table TOPSPOS are deleted, the value in field TRKGRSIZ, in table CLLI, for both fixed CLLIs is increased, a cold or reload restart is done and the members of the table TOPSPOS are re-added.

Adding, Deleting, and Modifying Positions

Each TOPS position requires a tuple in Table TOPSPOS. To add an In-charge, Assistance, or regular operator Position, add a tuple to the table as shown in the following example. If the tuple is entered using the no-prompt version of the ADD command, the SVCSET and XFRSET fields must be terminated with a "\$". If the tuple is entered on a field-by-field basis, the SVCSET and XFRSET fields can be terminated by either a "\$" or a carriage return.

Do not use the CHANGE command to modify information about a position. Delete the tuple and read the changed tuples.

Adding an IC, assistant or operator position to table TOPSPOS

```

100 DCM  2 4 9 NPDGP DCM  2 4 13 NPDGP +
DS1SIG IC  1 TASERV  $          $ NT4X71 BELL108 $
101 DCM  2 4 11 NPDGP DCM  2 4 15 NPDGP +
DS1SIG ASST 1 TASERV  $          $ NT4X71 BELL108 $
112 DCM  2 4 2 NPDGP DCM  2 4 6 NPDGP +
DS1SIG OPR  1 TASERV  $ GEN XFR1 XFR2$ TPC BELL202 $
200 TM8  5 10 NPDGP TM8  5 11 NPDGP +
2X72AA IC  2 TASERV  $          TPC BELL202 $
201 TM8  5 14 NPDGP TM8  5 15 NPDGP +
2X72AA ASST 2 TASERV  $          TPC BELL202 $
212 TM8  5 6 NPDGP TM8  5 7 NPDGP +
2X72AA OPR  2 TASERV  $ GEN XFR1 XFR2$ NT4X71 BELL108 $
412 LTC  1 7 2 NPDGP LTC  1 7 6 NPDGP +
DS1SIG OPR  1 TASERV  $ GEN XFR1 XFR2$ NT4X71 BELL108 $

```

Datafilling table TOPSOIC

Table TOPSOIC specifies Office Identification Codes (OIC) that are received from an end office over a TOPS trunk group. This table specifies the call origination type based on the OIC key that is used to index Table TOPSOIC. The OIC key is made up of the Common Language Location Identifier (CLLI) and the OIC.

TOPS DA Call Processing (continued)

The maximum size of table TOPSOIC is 8000 words per tuple.

Datafill example for table TOPSOIC

The following example shows sample datafill for table TOPSOIC.

MAP display example for table TOPSOIC

COMMAND	CLLI	OIC	CO
INP	TOPCOMAMF	27	HOM555
	TOPCOMAMF	14	411
QUI			

Datafilling table OPRDAT

Table OPRDAT lists all the operator numbers that have been assigned. Only operators with a number listed in this table are allowed to log in to a TOPS position. The table editor should be used only to add or delete operator numbers from table OPRDAT. When doing an ADD, the initial datafill should be entered, after which the fields may be altered indirectly via FADS commands.

Refer to the following information when datafilling table OPRDAT:

- You cannot datafill INTCserv in the SVCSET field. If you attempt to do so, the message INTC CAPABILITY IS NOT PROVIDED appears.
- You cannot datafill INTCserv in the SRVTYP field. If you attempt to do so, the message INTC CAPABILITY IS NOT PROVIDED appears.
- This table should be datafilled so that service types are not mixed on any queues.
- All call types other than 411, 555, HOM555, or FOR555 should have their SERVTYPE field set to TASERV.
- Memory is allocated by the value in field PARMVAL in the Engineered Office Parameter Table OFCENG, with field PARMNAME equal to TOPS_MAX_OPERATOR_NUM.
- The size of Table OPRDAT is determined by office parameter TOPS_MAX_OPERATOR_NUM. Adding the SVCSET field will increase the memory allocation by (1 word X TOPS_MAX_OPERATOR_NUM) of protected store.
- To increase the size of table OPRDAT delete all tuples in table OPRDAT, increase the value in field PARMVAL in table OFCENG with field

TOPS DA Call Processing (continued)

PARMNAME equal to TOPS_MAX_OPERATOR_NUM add the tuples to table OPRDAT.

- The field SVCSET has been expanded to include the new value INTCSERV.

Datafill example for table OPRDAT

The following example shows sample datafill for table OPRDAT.

MAP display example for table OPRDAT

OPRNUM	CTTEAM	CTSET	XFRTEAM	XFRSET	SVCSET
1	0	ALL	0	GEN	TASERV
2	0	ALL	0	GEN	TASERV
3	0	ALL	0	GEN	TASERV
1000	0	ALL	0	GEN	TASERV

Datafilling tables DARSTBIL, RESTBIL and SPLDNID

Tables DARSTBIL, RESTBIL and SPLDNID are used to specify the Restricted Billing Class (RBC) to be recorded on AMA for Toll and Assist (TA) and Directory Assistance (DA) calls. Table DARSTBIL provides the same function for DA calls as table RESTBIL provides for TA calls.

When a Restricted Billing Class is assigned to a directory number in table SPLDNID, the methods of billing that are entered in table RESTBIL for that Restricted Billing Class apply to both TA and DA calls from that directory number. The tariffs for particular areas determine the types of billing which are allowed for the various types of restricted phones within that area.

The tariff rules (i.e., the billing methods that are allowed) for DA traffic are not the same as for TA. Thus there might be multiple DA tariff areas with a single TA tariff area, which means that multiple Restricted Billing Classes for DA would correspond to a single Restricted Billing Class for TA.

These three tables allow for independent assignment of billing restrictions for TA and DA service based upon the Restricted Billing Class assigned. This is performed in table DARSTBIL.

The Restricted Billing Class number assigned to a particular directory number in table SPLDNID is used as the index into both table RESTBIL and DARSTBIL. This imposes a restriction that two directory numbers which have the same billing restrictions for TA, but different billing restrictions for

TOPS DA Call Processing (continued)

DA service (or vice versa), must be assigned different Restricted Billing Class numbers in table SPLDNID.

The following tables shows the datafill specific to TOPS DA Call Processing for tables DARSTBIL, RESTBIL and SPLDNID. Only those fields that apply directly to TOPS DA Call Processing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DARSTBIL

Field	Subfield or refinement	Entry	Explanation and action
BILCLASS			Provides a restricted billing class number index into each table to specify the allowed methods of billing for DA calls.
AMARBC			Specifies the value to record as the Restricted Billing Class on AMA for DA calls. Note 1: This field is used as the index into table RESTAMA rather than the actual Restricted Billing Class from table SPLDNID. Note 2: This field is used by the Automated Alternate Billing Service (AABS) feature in messaging to the Voice Service Node (VSN). The AMARBC value rather than the actual Restricted Billing Class is sent to the VSN to indicate which type of announcement should be played to the subscriber
SCRNDISP			Specifies the screen display to be presented to the TOPS operator on call arrival.
BILTYPES			Specifies the allowable billing types for the specified Restricted Billing Class.

TOPS DA Call Processing (continued)**Datafilling table RESTBIL**

Field	Subfield or refinement	Entry	Explanation and action
BILCLASS			Restricted Billing Class number index into each table to specify the allowed methods of billing for TA calls.
AMARBC			Specifies the value to record as the Restricted Billing Class on AMA for TA calls. Note 1: This field is used as the index into table RESTAMA rather than the actual Restricted Billing Class from table SPLDNID. Note 2: This field is used by the Automated Alternate Billing Service (AABS) feature in messaging to the Voice Service Node (VSN). The AMARBC value rather than the actual Restricted Billing Class is sent to the VSN to indicate which type of announcement should be played to the subscriber
SCRNDISP			Specifies the screen display to be presented to the TOPS operator on call arrival.
BILTYPES			Specifies the allowable billing types for the specified Restricted Billing Class.

Datafill examples for tables DARSTBIL, RESTBIL and SPLDNID

The following examples show sample datafill for tables DARSTBIL, RESTBIL and SPLDNID. The examples show MAP displays providing the assignment of an independent combination of TA and DA billing restrictions.

MAP display example for table SPLDNID

SPLDN	SEL	RBILCLAS
9197330800	RSTRCTD	31
9194906011	RSTRCTD	75

TOPS DA Call Processing (continued)

MAP display example for table RESTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31PRISON	(COL)
75	94	94PRISON	(COL)

MAP display example for table DARSTBIL

BILCLASS	AMARBC	SCRNDISP	BILTYPES
31	74	31DAPRSN	(CC)
75	94	94DAPRSN	(CC) (3RD)

The directory numbers used in this example have the following TA and DA billing restriction requirements:

TA and DA Billing Restriction Requirements

Directory Number	TA Restrictions	DA Restrictions
9197330800	Collect Only	Calling Card Only
9194906011	Collect Only	Calling Card and Third Number

As each directory number can only be assigned one Restricted Billing Class in table SPLDNID, and that number is used as the index into both table RESTBIL and table DARSTBIL, the only way to assign separate TA and DA billing restrictions is to assign a unique Restricted Billing Class number in table SPLDNID for each separate combination of TA and DA billing restrictions.

This design requires the assignment of more Restricted Billing Classes to accommodate independent TA and DA billing combinations. Assignment of 100 Restricted Billing Class numbers is supported. Table DARSTBIL has no datafill order enforced. Tables RESTBIL and SPLDNID retain their original sequence.

Datafilling table BELLCAT

Table BELLCAT allows the operating company to define the ANI ID digits mapping for trunk group type TOPS with standard BELL signaling.

TOPS DA Call Processing (continued)**Datafill example for table BELLCAT**

The following example shows sample datafill for table BELLCAT.

MAP display example for table BELLCAT

ID	FORMAT	CLGSERV	SEL	ANIRROUTE TABID	KEY
4	ANIID	INTC	T	AOSS	INTC
7	ONI	HOTEL	T	OFRT	74

Datafilling table OSSCAT

Table OSSCAT allows the Operating Company to define the ANI ID digits mapping for trunk group type TOPS with Operator Services Signaling.

Datafill example for table OSSCAT

The following example shows sample datafill for table OSSCAT.

MAP display example for table OSSCAT

ID	FORMAT	CLGSERV	REST	SEL	ANIRROUTE TABID	KEY
4	ANIID	INTC	NONE	T	AOSS	INTC
7	ONI	HOTEL	NONE	T	OFRT	74

Datafilling table AISCAT

Table AISCAT is created to map the ANI ID digit received to one of the intercept call types. This table also specifies the expected number of digits to be found in the ANI spill. Table AISCAT is a fixed table with approximately 5 words per tuple.

Datafill example for table AISCAT

The following example shows sample datafill for table AISCAT.

MAP display example for table AISCAT

ID	FORMAT	CLGSERV
0	ANI	BLDNINTC
1	ANI	TRBLINTC
3	AN	INTC

TOPS DA Call Processing (end)

Translation verification tools

TOPS DA Call Processing does not use translation verification tools.

SERVORD

TOPS DA Call Processing does not use SERVORD.

TOPS MP Support of Internal DRAM

Ordering codes

Functional group ordering code: OSDA0001

Functionality ordering code: Not applicable

Release applicability

BCS31 and up

TOPS MP Support of Internal DRAM was introduced in BCS31.

Prerequisites

To operate, TOPS MP Support of Internal DRAM has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001

Description

This functionality is provided by the following features:

Feature number	Feature name
AJ1130	TOPS MP Internal Voice Response Capability
50039957	DA positions in an OC network

This functionality permits TOPS MP to use DRAM for Directory Assistance (DA) and Intercept (INT) announcements for the Voice Response (TOPSVR) subsystem. Both unilingual English and bilingual English/French announcements are supported.

This functionality supports all DAS vendor protocols that currently are in use by TOPS MP for external voice response.

Operation

This functionality provides all necessary announcements. However, these announcements can be altered.

TOPS MP Support of Internal DRAM (continued)

Following are the DRAM tables (and utility) to be datafilled:

- CLLI - Add new TOPSVR CLLI
- DRAMS - Define DRAM hardware
- ANNS - Define CLLI announcement type
- ANNMENS - Define CLLI announcement members
- CI increment DRAMREC - Define phrase locations
- DRMUSERS - Associate CLLI member with phrase

Additional datafill is required for the following tables:

- IANNINFO - Maps announcement number to index of table DRMUSERS.
- VROPT - Parameters which control reconnects and language
- DATRKOPT - Selects language for trunk
- ARURTE - Maps DAS pool ID to OFRT index
- ARUIBMRT - Maps DAS destination ID to OFRT index
- OFRT - Points to announcement CLLI for internal ARUs

Datafill details for the above tables are provided in the datafill procedure section. Following is additional information for some of these tables.

DRAM equipment defined in table DRAMS

TOPSVR may employ either internal or external Audio Recording Units (ARU) which playback the Directory Assistance and Intercept database search results to subscribers. Internal ARU are known as DRAM and reside on the Maintenance Trunk Module (MTM). Each DRAM may have up to 30 speech channels, where the number of channels serviced by the controller is switch selectable to 30, 24, 16 or 8. The DRAM controller can simultaneously provide announcements to these channels. One fully loaded DRAM occupies an entire MTM shelf, and there are 4 MTM shelves in an MTM frame.

DRAM consists of a controller card and 1 to 8 speech cards. Each speech card provides 31 seconds of recorded data; thus, a fully loaded DRAM provides 248 seconds or approximately 4 minutes of speech. These speech cards may be either Programmable Read-Only Memory (PROM), Random Access Memory (RAM) or Electrically Erasable PROM (EEPROM). The Voice Response subsystem employs PROM cards. The PROM provides non-volatile storage for pre-recorded announcements. Once burned into the PROM cards, the speech content of the DRAM cannot be altered.

TOPS MP Support of Internal DRAM (continued)

For TOPS Voice Response, the DRAM units consist of a controller card and 4 double density PROM speech cards. The card codes for TOPSVR DRAM are as follows:

- 1X75BA - DRAM controller card
- 1X76AF - PROM speech card for English announcements part 1
- 1X76AG - PROM speech card for English announcements part 2
- 1X76BF - PROM speech card for French announcements part 1
- 1X76BG - PROM speech card for French announcements part 2

Reconnect announcements

These announcements are played to the subscriber prior to (re)connecting to an operator, when the (re)connection is allowed. Datafill is not required to use these announcements.

Reconnect announcements

Language	Announcement
English	Recall : If you need assistance, please stay on the line. An operator will return. Cut-Through : If you need assistance, please stay on the line. An operator will answer.
French	Recall and Cut-Through : Si vous desirez de l'aide, ne quittez pas. Un telephoniste vous repondra.

DA and intercept announcements for table DRMUSERS

English directory assistance announcements

These are the English announcements played to the subscriber that provide directory information retrieved from the DAS server. These phrase names are datafilled in table DRMUSERS.

English directory assistance announcements (Sheet 1 of 2)

Phrase name	Message
OSVRDA01	The number is (7D).
OSVRDA02	The number is 1- (7D).
OSVRDA03	The number is (3D-7D).
OSVRDA04	The number is 1- (3D-7D).

TOPS MP Support of Internal DRAM (continued)

English directory assistance announcements (Sheet 2 of 2)

Phrase name	Message
OSVRDA05	The toll-free number is 1-800- (7D).
OSVRDA06	At the customer's request, the number is non-published. It is not listed in our records.

French directory assistance announcements

These are the French announcements played to the subscriber that provide directory information retrieved from the DAS server. These phrase names are datafilled in table DRMUSERS.

French directory assistance announcements

Phrase name	Message
OSVRDA01	Le numero est (7D).
OSVRDA02	Le numero est 1- (7D).
OSVRDA03	Le numero est (3D-7D).
OSVRDA04	Le numero est 1- (3D-7D).
OSVRDA05	Vous pouvez obtenir le numero sans frais. Le numero est 1-800- (7D).
OSVRDA06	A la demande de l'abonne, le numero est confidentiel. Il ne figure pas dans nos listes.

TOPS MP Support of Internal DRAM (continued)

English intercept announcements

These are the English announcements played to the subscriber that provide intercept information retrieved from the DAS server. These phrase names are datafilled in table DRMUSERS.

English intercept announcements (Sheet 1 of 3)

Phrase name	Message
OSVRINT01	Automatic Intercept : You have reached (DN). At the customer's request, service has been temporarily disconnected. Operator-Handled Intercept : At the customer's request, the service at (DN) has been temporarily disconnected.
OSVRINT02	Automatic Intercept : You have reached (DN). There is no service at this number. Operator-Handled Intercept : There is no service at (DN).
OSVRINT03	Automatic Intercept : You have reached (DN). Service has been disconnected. Operator-Handled Intercept : The service at (DN) has been disconnected.
OSVRINT04	Automatic Intercept : You have reached (DN). It has been changed to a non-published number and is not listed in our records. Operator-Handled Intercept : The number (DN) has been changed to a non-published number. It is not listed in our records.
OSVRINT05	Automatic Intercept : You have reached (DN). The customer is moving. The new service is not yet connected. Operator-Handled Intercept : The customer at (DN) is moving. The new service is not yet connected.
OSVRINT06	Automatic Intercept : You have reached (DN). Service has been temporarily disconnected. Operator-Handled Intercept : The service at (DN) has been temporarily disconnected.
OSVRINT07	Automatic Intercept : You have reached (DN). That line is equipped for outgoing service only. Operator-Handled Intercept : The line at (DN) is equipped for outgoing service only.

TOPS MP Support of Internal DRAM (continued)**English intercept announcements (Sheet 2 of 3)**

Phrase name	Message
OSVRINT08	Automatic Intercept : You have reached (DN). Due to fire, service has been disconnected. Operator-Handled Intercept : Due to fire, the service at (DN) has been disconnected.
OSVRINT09	Automatic Intercept : You have reached (DN). The line is temporarily out of order. Operator-Handled Intercept : The line at (DN) is temporarily out of order.
OSVRINT10	Automatic Intercept : You have reached (DN). The service is not yet connected. Operator-Handled Intercept : The service at (DN) is not yet connected.
OSVRINT11	Automatic Intercept : You have reached (DN). The customer has moved. Service has been disconnected. Operator-Handled Intercept : The customer at (DN) has moved. Service has been disconnected.
OSVRINT12	Automatic Intercept : You have reached (DN). The line is being checked for trouble. Please try your call again later. Operator-Handled Intercept : The line at (DN) should be in service. Please try your call again.
OSVRINT13	Automatic Intercept : You have reached (DN). The number has been changed to (DN). {OR} You have reached (DN). The number has been changed. You can now call toll-free 1-800 (DN). Operator-Handled Intercept : The number (DN) has been changed to (DN). {OR} The number (DN) has been changed. You can now call toll-free 1-800 (DN).
OSVRINT14	Automatic Intercept : You have reached (DN). The number has been changed to (DN). It is no longer a free call. Operator-Handled Intercept : The number (DN) has been changed to (DN). It is no longer a free call.

TOPS MP Support of Internal DRAM (continued)**English intercept announcements (Sheet 3 of 3)**

Phrase name	Message
OSVRINT15	Automatic Intercept : You have reached (DN). Service has been disconnected. The customer can be reached at (DN). {OR} You have reached (DN). Service has been disconnected. You can now call toll-free 1-800 (DN). Operator-Handled Intercept : The service at (DN) has been disconnected. The customer can be reached at (DN). {OR} The service at (DN) has been disconnected. You can now call toll-free 1-800 (DN).
OSVRINT16	Automatic Intercept : You have reached (DN). Due to fire, service has been disconnected. The customer can be reached at (DN). Operator-Handled Intercept : Due to fire, the service at (DN) has been disconnected. The customer can be reached at (DN).
OSVRINT17	Automatic Intercept : You have reached (DN). The line is temporarily out of order. Calls are being taken at (DN). Operator-Handled Intercept : The line at (DN) is temporarily out of order. Calls are being taken at (DN).
OSVRINT18	Automatic Intercept : You have reached (DN). At the customer's request, service has been temporarily disconnected. The customer can be reached at (DN). Operator-Handled Intercept : At the customer's request, the service at (DN) has been temporarily disconnected. The customer can be reached at (DN).
OSVRINT19	Automatic Intercept : You have reached (DN). Calls are being temporarily taken at (DN). Operator-Handled Intercept : Calls for (DN) are being temporarily taken at (DN).
OSVRINT20	Automatic Intercept : You have reached (DN). The number has been changed to (DN). It is no longer a free call. You may call collect. Operator-Handled Intercept : The number (DN) has been changed to (DN). It is no longer a free call. You may call collect.

TOPS MP Support of Internal DRAM (continued)

French intercept announcements

These are the French announcements played to the subscriber that provide intercept information retrieved from the DAS server. These phrase names are datafilled in table DRMUSERS.

French intercept announcements (Sheet 1 of 3)

Phrase name	Message
OSVRINT01	Automatic Intercept : Vous avez obtenu le (DN). A la demande de l'abonne, le service est suspendu a ce numero. Operator-Handled Intercept : A la demande de l'abonne, le service au (DN) est suspendu.
OSVRINT02	Automatic Intercept : Vous avez obtenu le (DN). Il n'y a pas d'abonne a ce numero. Operator-Handled Intercept : Il n'y a pas d'abonne au (DN).
OSVRINT03	Automatic Intercept : Vous avez obtenu le (DN). Il n'y a plus d'abonne a ce numero. Operator-Handled Intercept : Il n'y a plus d'abonne au (DN).
OSVRINT04	Automatic Intercept : Vous avez obtenu le (DN). Ce numero a ete remplace par un numero confidentiel. Il ne figure pas dans nos listes. Operator-Handled Intercept : Le numero (DN) a ete remplace par un numero confidentiel. Il ne figure pas dans nos listes.
OSVRINT05	Automatic Intercept : Vous avez obtenu le (DN). L'abonne a change d'adresse. Mais, la ligne n'est pas encore en service. Operator-Handled Intercept : L'abonne du (DN) a change d'adresse. Mais, la ligne n'est pas encore en service.
OSVRINT06	Automatic Intercept : Vous avez obtenu le (DN). Le service est suspendu a ce numero. Operator-Handled Intercept : Le service au (DN) est suspendu.
OSVRINT07	Automatic Intercept : Vous avez obtenu le (DN). A ce numero, on ne peut recevoir d'appels. Operator-Handled Intercept : On ne peut recevoir d'appels au (DN).

TOPS MP Support of Internal DRAM (continued)**French intercept announcements (Sheet 2 of 3)**

Phrase name	Message
OSVRINT08	Automatic Intercept : Vous avez obtenu le (DN). En raison d'un incendie, ce numero n'est plus en service. Operator-Handled Intercept : En raison d'un incendie, le (DN) n'est plus en service.
OSVRINT09	Automatic Intercept : Vous avez obtenu le (DN). La ligne est en derangement. Operator-Handled Intercept : La ligne (DN) est en derangement.
OSVRINT10	Automatic Intercept : Vous avez obtenu le (DN). La ligne n'est pas encore en service. Operator-Handled Intercept : La ligne (DN) n'est pas encore en service.
OSVRINT11	Automatic Intercept : Vous avez obtenu le (DN). L'abonne a change d'adresse. Il n'y a plus d'abonne a ce numero. Operator-Handled Intercept : L'abonne a change d'adresse. Il n'y a plus d'abonne au (DN).
OSVRINT12	Automatic Intercept : Vous avez obtenu le (DN). Nous procedons a des essais sur la ligne. Veuillez rappeler plus tard. Operator-Handled Intercept : La ligne (DN) est en service. Veuillez refaire votre appel.
OSVRINT13	Automatic Intercept : Vous avez obtenu le (DN). Ce numero a ete remplace par le (DN). {OR} Vous avez obtenu le (DN). Ce numero a ete remplace. Vous pouvez maintenant appeler sans frais le 1-800 (DN). Operator-Handled Intercept : Le numero (DN) a ete remplace par le (DN). {OR} Le numero (DN) a ete remplace. Vous pouvez maintenant appeler sans frais le 1-800 (DN).
OSVRINT14	Automatic Intercept : Vous avez obtenu le (DN). Ce numero a ete remplace par le (DN). Les appels n'y sont plus gratuits. Operator-Handled Intercept : Le numero (DN) a ete remplace par le (DN). Les appels n'y sont plus gratuits.

TOPS MP Support of Internal DRAM (continued)**French intercept announcements (Sheet 3 of 3)**

Phrase name	Message
OSVRINT15	Automatic Intercept : Vous avez obtenu le (DN). Il n'y a plus d'abonne a ce numero. Vous devez maintenant appeler le (DN). {OR} Vous avez obtenu le (DN). Il n'y a plus d'abonne a ce numero. Vous pouvez maintenant appeler sans frais le 1-800 (DN). Operator-Handled Intercept : Il n'y a plus d'abonne au (DN). Vous devez maintenant appeler le (DN). {OR} Il n'y a plus d'abonne au (DN). Vous pouvez maintenant appeler sans frais le 1-800 (DN).
OSVRINT16	Automatic Intercept : Vous avez obtenu le (DN). En raison d'un incendie, ce numero n'est plus en service. Mais, vous pouvez joindre l'abonne au (DN). Operator-Handled Intercept : En raison d'un incendie, le (DN) n'est plus en service. Mais, vous pouvez joindre l'abonne au (DN).
OSVRINT17	Automatic Intercept : Vous avez obtenu le (DN). La ligne est en derangement. Mais, vous pouvez joindre l'abonne au (DN). Operator-Handled Intercept : La ligne (DN) est en derangement. Mais, vous pouvez joindre l'abonne au (DN).
OSVRINT18	Automatic Intercept : Vous avez obtenu le (DN). A la demande de l'abonne, le service est suspendu a ce numero. Mais, vous pouvez joindre l'abonne au (DN). Operator-Handled Intercept : A la demande de l'abonne, le service au (DN) est suspendu. Mais, vous pouvez joindre l'abonne au (DN).
OSVRINT19	Automatic Intercept : Vous avez obtenu le (DN). Vous devez temporairement appeler le (DN). Operator-Handled Intercept : A la demande de l'abonne, le service au (DN) est suspendu. Mais, vous pouvez joindre l'abonne au (DN).
OSVRINT20	Automatic Intercept : Vous avez obtenu le (DN). Ce numero a ete remplace par le (DN). Les appels n'y sont plus gratuits. Mais, vous pouvez appeler a frais vires. Operator-Handled Intercept : Le numero (DN) a ete remplace par le (DN). Les appels n'y sont plus gratuits. Mais, vous pouvez appeler a frais vires.

TOPS MP Support of Internal DRAM (continued)**Segment announcements used in DRAMREC utility and table DRAMS****English segment announcements**

These English speech segments are recorded on the DRAM cards in the specified locations. The segment name and hardware location are used in the CI increment DRAMREC utility and table DRAMS.

English segment announcements (Sheet 1 of 6)

Segment name	Card	Pos	Message
AVRE01	2	04	...are being temporarily taken at...
AVRE02	0	04	...has been changed to...
AVRE03	0	05	...has been changed to a non-published number. It is not listed in our records.
AVRE04	0	06	...has been changed. You can now call toll-free: one, eight-hundred,...
AVRE05	0	07	...has been disconnected.
AVRE06	0	08	...has been disconnected. The customer can be reached at...
AVRE07	0	09	...has been disconnected. You can now call toll-free: one, eight-hundred,...
AVRE08	1	04	...has been temporarily disconnected.
AVRE09	1	05	...has been temporarily disconnected. The customer can be reached at...
AVRE10	0	10	...has moved. Service has been disconnected.
AVRE11	2	05	...is equipped for outgoing service only.
AVRE12	1	06	...is being checked for trouble. Please try your call again later.
AVRE13	1	07	...is moving. The new service is not yet connected.
AVRE14	2	06	...is not yet connected.
AVRE15	1	08	...is temporarily out of order.
AVRE16	1	09	...is temporarily out of order. Calls are being taken at...

TOPS MP Support of Internal DRAM (continued)**English segment announcements (Sheet 2 of 6)**

Segment name	Card	Pos	Message
AVRE17	0	11	At the customer's request, service has been temporarily disconnected.
AVRE18	0	12	At the customer's request, service has been temporarily disconnected. The customer can be reached at...
AVRE19	0	13	At the customer's request, the number is non-published. It is not listed in our records.
AVRE20	0	14	At the customer's request, the service at...
AVRE21	2	07	Calls are being temporarily taken at...
AVRE22	2	08	Calls for...
AVRE23	0	15	Due to fire, service has been disconnected.
AVRE24	0	16	Due to fire, service has been disconnected. The customer can be reached at...
AVRE25	0	17	Due to fire, the service at...
AVRE26	0	18	I repeat.
AVRE27	0	19	I repeat. The number is: ...
AVRE28	0	20	I repeat. The number is: one,.
AVRE29	0	21	I repeat. The toll-free number is: one, eight-hundred,...
AVRE30	2	09	I'm sorry.
AVRE31	1	10	If your need assistance, please stay on the line. An operator will answer.
AVRE32	1	11	If your need assistance, please stay on the line. An operator will return.
AVRE33	2	10	It has been changed to a non-published number and is not listed in our records.
AVRE34	1	12	It is no longer a free call.
AVRE35	1	13	It is no longer a free call. You may call collect.

TOPS MP Support of Internal DRAM (continued)**English segment announcements (Sheet 3 of 6)**

Segment name	Card	Pos	Message
AVRE36	0	22	Service has been disconnected.
AVRE37	0	23	Service has been disconnected. The customer can be reached at...
AVRE38	0	24	Service has been disconnected. You can now call toll-free: one, eight-hundred,...
AVRE39	2	11	Service has been temporarily disconnected.
AVRE40	2	12	That line is equipped for outgoing service only.
AVRE41	1	14	The customer at...
AVRE42	0	25	The customer has moved. Service has been disconnected.
AVRE43	1	15	The customer is moving. The new service is not yet connected.
AVRE44	2	13	The line at...
AVRE45	1	16	The line is being checked for trouble. Please try your call again later.
AVRE46	1	17	The line is temporarily out of order.
AVRE47	1	18	The line is temporarily out of order. Calls are being taken at...
AVRE48	2	14	The number...
AVRE49	2	15	The number has been changed to...
AVRE50	0	26	The number has been changed. You can now call toll-free: one, eight-hundred,...
AVRE51	0	27	The number is:...
AVRE52	0	28	The number is: one,...
AVRE53	2	16	The service at...
AVRE54	2	17	The service is not yet connected.
AVRE55	0	29	The toll-free number is: one, eight-hundred,...

TOPS MP Support of Internal DRAM (continued)**English segment announcements (Sheet 4 of 6)**

Segment name	Card	Pos	Message
AVRE56	2	18	There is no service at
AVRE57	2	19	There is no service at this number.
AVRE58	2	20	You have reached...
AVRE59	0	30	one
AVRE60	0	31	eight-hundred.
AVRE61	0	32	one, eight-hundred.
AVRE62	1	19	...should be in service. Please try your call again.
EHIRI0	3	04	high rising digit zero
EHIRI1	3	05	high rising digit one
EHIRI2	3	06	high rising digit two
EHIRI3	3	07	high rising digit three
EHIRI4	3	08	high rising digit four
EHIRI5	3	09	high rising digit five
EHIRI6	3	10	high rising digit six
EHIRI7	3	11	high rising digit seven
EHIRI8	3	12	high rising digit eight
EHIRI9	3	13	high rising digit nine
ELORI0	3	14	low rising digit zero
ELORI1	3	15	low rising digit one
ELORI2	3	16	low rising digit two
ELORI3	3	17	low rising digit three
ELORI4	3	18	low rising digit four
ELORI5	3	19	low rising digit five
ELORI6	3	20	low rising digit six

TOPS MP Support of Internal DRAM (continued)**English segment announcements (Sheet 5 of 6)**

Segment name	Card	Pos	Message
ELORI7	3	21	low rising digit seven
ELORI8	3	22	low rising digit eight
ELORI9	3	23	low rising digit nine
EWAVE0	3	24	falling/rising digit zero
EWAVE1	3	25	falling/rising digit one
EWAVE2	3	26	falling/rising digit two
EWAVE3	3	27	falling/rising digit three
EWAVE4	3	28	falling/rising digit four
EWAVE5	3	29	falling/rising digit five
EWAVE6	3	30	falling/rising digit six
EWAVE7	3	31	falling/rising digit seven
EWAVE8	3	32	falling/rising digit eight
EWAVE9	3	33	falling/rising digit nine
EFALL0	3	34	falling digit zero
EFALL1	3	35	falling digit one
EFALL2	3	36	falling digit two
EFALL3	3	37	falling digit three
EFALL4	3	38	falling digit four
EFALL5	3	39	falling digit five
EFALL6	3	40	falling digit six
EFALL7	3	41	falling digit seven
EFALL8	3	42	falling digit eight
EFALL9	3	43	falling digit nine
EFLTA0	3	44	flat A digit zero

TOPS MP Support of Internal DRAM (continued)

English segment announcements (Sheet 6 of 6)

Segment name	Card	Pos	Message
EFLTA1	3	45	flat A digit one
EFLTA2	3	46	flat A digit two
EFLTA3	3	47	flat A digit three
EFLTA4	3	48	flat A digit four
EFLTA5	3	49	flat A digit five
EFLTA6	3	50	flat A digit six
EFLTA7	3	51	flat A digit seven
EFLTA8	3	52	flat A digit eight
EFLTA9	3	53	flat A digit nine
EFLTB0	3	54	flat B digit zero
EFLTB1	3	55	flat B digit one
EFLTB2	3	56	flat B digit two
EFLTB3	3	57	flat B digit three
EFLTB4	3	58	flat B digit four
EFLTB5	3	59	flat B digit five
EFLTB6	3	60	flat B digit six
EFLTB7	3	61	flat B digit seven
EFLTB8	3	62	flat B digit eight
EFLTB9	3	63	flat B digit nine

TOPS MP Support of Internal DRAM (continued)

French segment announcements

These French speech segments are recorded on the DRAM cards in the specified locations. The segment name and hardware location are used in the CI increment DRAMREC utility and table DRAMS.

French segment announcements (Sheet 1 of 6)

Segment name	Card	Pos	Message
AVRF01	6	04	...a ete remplace par le...
AVRF02	5	04	...a ete remplace par un numero confidentiel. Il ne figure pas dans nos listes.
AVRF03	4	04	...a ete remplace. Vous pouvez maintenant appeler sans frais le: un, huit-cent,...
AVRF04	5	05	...a change d'adresse. Mais la ligne n'est pas encore en service.
AVRF05	6	05	...au lieu du...
AVRF06	4	05	...est en derangement.
AVRF07	4	06	...est en derangement. Mais, vous pouvez joindre l'abonne au...
AVRF08	4	07	...est suspendu.
AVRF09	4	08	...est suspendu. Mais vous pouvez joindre l'abonne au...
AVRF10	6	06	...n'est pas en service.
AVRF11	6	07	...n'est pas encore en service.
AVRF12	4	09	...n'est plus en service.
AVRF13	4	10	...n'est plus en service. Mais, vous pouvez joindre l'abonne au..
AVRF14	4	11	Vous devez maintenant appeler le
AVRF15	4	12	Vous pouvez maintenant appeler sans frais le: un, huit-cent,...
AVRF16	6	08	Ce numero a ete remplace par le...
AVRF17	5	06	Ce numero a ete remplace par un numero confidentiel. Il ne figure pas dans nos listes.

TOPS MP Support of Internal DRAM (continued)**French segment announcements (Sheet 2 of 6)**

Segment name	Card	Pos	Message
AVRF18	4	13	Ce numero a ete remplace. Vous pouvez maintenant appeler sans
AVRF19	6	09	Ce numero n'est pas en service.
AVRF20	4	14	Ce numero n'est plus en service.
AVRF21	4	15	Il n'y a plus d'abonne a ce numero. Vous devez maintenant appeler le...
AVRF22	4	16	Il n'y a plus d'abonne a ce numero. Vous pouvez maintenant appeler sans frais le: un, huit-cent,...
AVRF23	4	17	En raison d'un incendie, ce numero n'est plus en service.
AVRF24	4	18	En raison d'un incendie, ce numero n'est plus en service. Mais, vous pouvez joindre l'abonne au...
AVRF25	4	19	En raison d'un incendie, le...
AVRF26	4	20	Je rep`te.
AVRF27	4	21	Je rep`te. Le numero est:...
AVRF28	4	22	Je rep`te. Le numero est: un,...
AVRF29	4	23	Je rep`te. Le numero est: un, huit-cent,...
AVRF30	6	10	Je regrette.
AVRF31	5	07	L'abonne a change d'adresse. Il n'y a plus d'abonne au...
AVRF32	4	24	L'abonne a change d'adresse. Il n'y a plus d'abonne a ce numero.
AVRF33	5	08	L'abonne a change d'adresse. Mais, la ligne n'est pas encore en service.
AVRF34	6	11	L'abonne du...
AVRF35	6	12	La ligne...
AVRF36	4	25	La ligne est en derangement.

TOPS MP Support of Internal DRAM (continued)**French segment announcements (Sheet 3 of 6)**

Segment name	Card	Pos	Message
AVRF37	4	26	La ligne est en derangement. Mais, vous pouvez joindre l'abonne au...
AVRF38	6	13	La ligne n'est pas encore en service.
AVRF39	5	09	Le numero...
AVRF40	4	27	Le numero est:...
AVRF41	4	28	Le numero est: un,...
AVRF42	6	14	Le service au...
AVRF43	6	15	Le service est suspendu a ce numero.
AVRF44	5	10	Les appels n'y sont plus gratuits.
AVRF45	5	11	Les appels n'y sont plus gratuits. Mais, vous pouvez appeler a frais vires.
AVRF46	6	16	Nous procedons a des essais sur la ligne...
AVRF47	5	12	Nous procedons a des essais sur la ligne. Veuillez rappeler plus tard.
AVRF48	6	17	On ne peut recevoir d'appels au...
AVRF49	6	18	Si vous desirez de l'aide, ne quittez pas. Un telephoniste vous repondra.
AVRF50	5	13	Veuillez rappeler plus tard.
AVRF51	6	19	Vous avez obtenu le...
AVRF52	6	20	Vous devez temporairement appeler le...
AVRF53	4	29	Vous pouvez obtenir le numero sans frais. Le numero est: un, huit-cent...
AVRF54	5	14	A la demande de l'abonne, le numero est confidentiel. Il ne figure pas dans nos listes.
AVRF55	5	15	A la demande de l'abonne, le service au...
AVRF56	5	16	A la demande de l'abonne, le service est suspendu a ce numero.

TOPS MP Support of Internal DRAM (continued)**French segment announcements (Sheet 4 of 6)**

Segment name	Card	Pos	Message
AVRF57	6	21	A ce numero, on ne peut recevoir d'appels.
AVRF58	4	30	...est en service. Veuillez refaire votre appel.
AVRF59	5	17	Il n'y a plus d'abonne au...
AVRF60	7	54	Il n'y a pas d'abonne a ce numero.
AVRF61	5	18	Il n'y a pas d'abonne au...
AVRF62	4	31	Il n'y a plus d'abonne a ce numero.
AVRF63	4	32	Mais vous pouvez joindre l'abonne au...
AVRF64	4	49	huit-cent
FHIRI0	7	04	high rising digit zero
FHIRI1	7	05	high rising digit one
FHIRI2	7	06	high rising digit two
FHIRI3	7	07	high rising digit three
FHIRI4	7	08	high rising digit four
FHIRI5	7	09	high rising digit five
FHIRI6	7	10	high rising digit six
FHIRI7	7	11	high rising digit seven
FHIRI8	7	12	high rising digit eight
FHIRI9	7	13	high rising digit nine
FLORI0	7	14	low rising digit zero
FLORI1	7	15	low rising digit one
FLORI2	7	16	low rising digit two
FLORI3	7	17	low rising digit three
FLORI4	7	18	low rising digit four
FLORI5	7	19	low rising digit five

TOPS MP Support of Internal DRAM (continued)**French segment announcements (Sheet 5 of 6)**

Segment name	Card	Pos	Message
FLORI6	7	20	low rising digit six
FLORI7	7	21	low rising digit seven
FLORI8	7	22	low rising digit eight
FLORI9	7	23	low rising digit nine
FWAVE0	7	24	falling/rising digit zero
FWAVE1	7	25	falling/rising digit one
FWAVE2	7	26	falling/rising digit two
FWAVE3	7	27	falling/rising digit three
FWAVE4	7	28	falling/rising digit four
FWAVE5	7	29	falling/rising digit five
FWAVE6	7	30	falling/rising digit six
FWAVE7	7	31	falling/rising digit seven
FWAVE8	7	32	falling/rising digit eight
FWAVE9	7	33	falling/rising digit nine
FFALL0	7	34	falling digit zero
FFALL1	7	35	falling digit one
FFALL2	7	36	falling digit two
FFALL3	7	37	falling digit three
FFALL4	7	38	falling digit four
FFALL5	7	39	falling digit five
FFALL6	7	40	falling digit six
FFALL7	7	41	falling digit seven
FFALL8	7	42	falling digit eight
FFALL9	7	43	falling digit nine

TOPS MP Support of Internal DRAM (continued)

French segment announcements (Sheet 6 of 6)

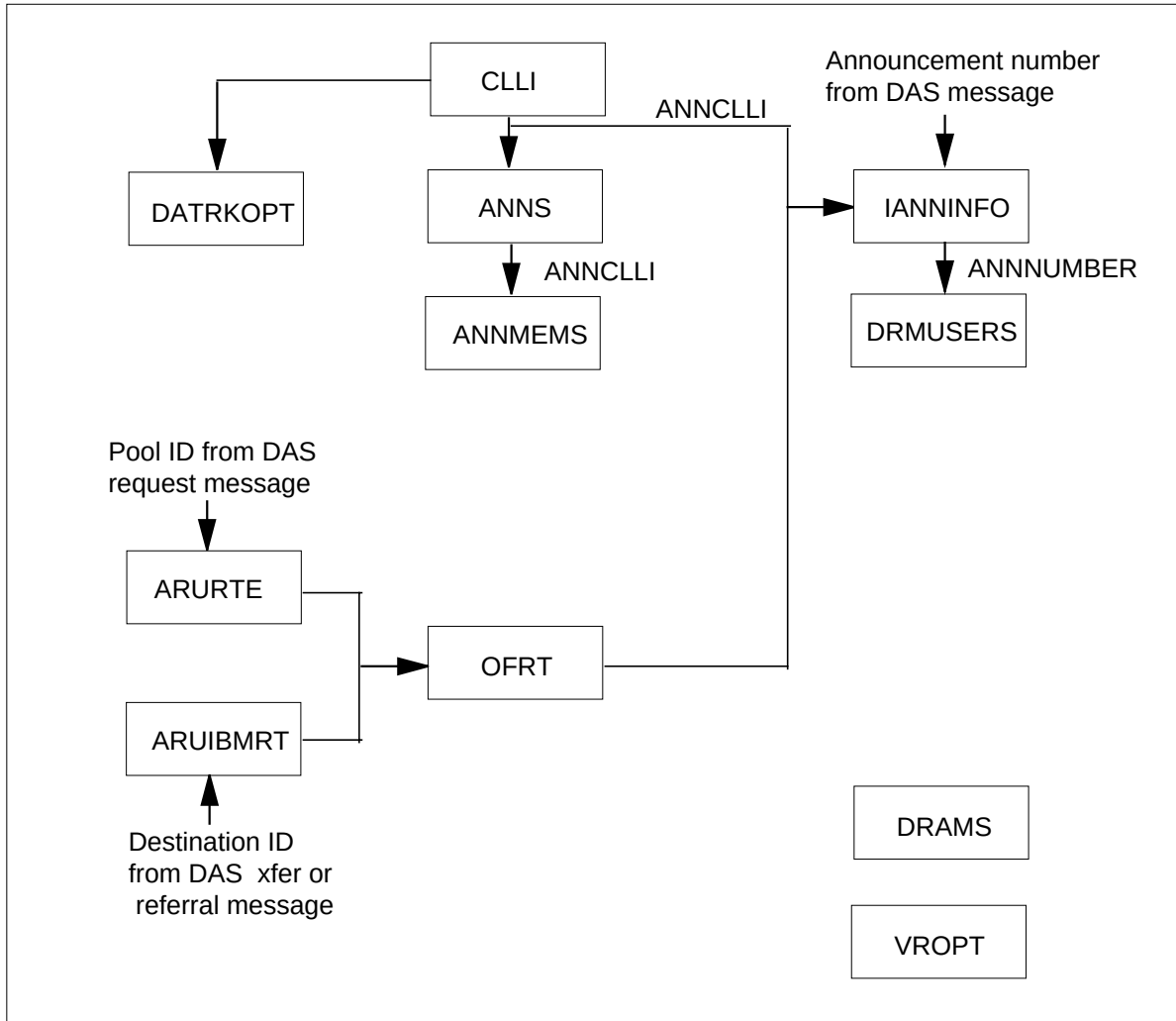
Segment name	Card	Pos	Message
FFLTB0	7	44	flat B digit zero
FFLTB1	7	45	flat B digit one
FFLTB2	7	46	flat B digit two
FFLTB3	7	47	flat B digit three
FFLTB4	7	48	flat B digit four
FFLTB5	7	49	flat B digit five
FFLTB6	7	50	flat B digit six
FFLTB7	7	51	flat B digit seven
FFLTB8	7	52	flat B digit eight
FFLTB9	7	53	flat B digit nine

Translations table flow

The TOPS MP Support of Internal DRAM translations tables are described in the following list:

- Table CLLI names announcements and trunks
- Table ANNS defines announcement CLLIs
- Table ANNMEMS defines announcement hardware locations
- Table DRMUSERS maps announcement CLLI to announcement phrases
- Table IANNINFO maps DAS number to DRMUSERS index
- Table ARURTE maps DAS pool ID to OFRT index
- Table ARUIBMRT maps DAS destination ID to OFRT index
- Table OFRT points to announcement CLLI
- Table DATRKOPT selects the trunk language
- Table VROPT specifies the language

The TOPS MP Support of Internal DRAM translation process is shown in the flowchart that follows.

TOPS MP Support of Internal DRAM (continued)**Table flow for TOPS MP Support of Internal DRAM**

The following table lists the datafill content used in the flowchart.

Datafill example for TOPS MP Support of Internal DRAM (Sheet 1 of 2)

Datafill table	Example data
CLI	TOPSANN 203 24 TOPS ANNOUNCEMENTS
ANNS	TOPSANN TOPSVR 25 1 0 1
ANNMEMS	TOPSANN 0 DRAM DRA (0 MTM 5 1)\$
IANNINFO	25 7 2 N

TOPS MP Support of Internal DRAM (continued)

Datafill example for TOPS MP Support of Internal DRAM (Sheet 2 of 2)

Datafill table	Example data
DRMUSERS	TOPSANN 25 OSVRDA01\$
ARURTE	2 200
ARUIBMRT	5 200
OFRT	200 S D TOPSANN

Limitations and restrictions

The following limitations and restrictions apply to TOPS MP Support of Internal DRAM:

The TOPSVR DRAM system has been engineered for maximum quality of announcements. For this reason, it is not recommended that the Operating Company change the content of announcements, neither by appending nor prefixing phrases.

Since table IANNINFO is independant of call type. Auto-INT and INT announcements always have the same number of cycles. In addition, if Auto-INT can Cut-through, then the corresponding INT announcement can Recall, unless the maximum recall limit for an Intercept call has been reached.

This functionality can not support functionality Automatic DACC with Alternate Billing (SOC OSDA0002) since there are no DRAM cards as yet developed for ADACC announcements. ADACC currently only works with external announcements. If the listing service specifies DMS DRAM as the quoting mechanism, through table ARURTE or ARUIBMRT, the subscriber is connected to the DMS DRAM for the listing quotation and is not given the option to automatically complete the call. The subscriber in this case must wait to recall the operator for call completion, subject to reconnect limits inherent in the TOPS MP system for the call type served.

Interactions

The following paragraphs describe the interactions between TOPS MP Support of Internal DRAM and other functionalities.

Since the DRAM is fully loaded for Voice Response, there are no extra cards available on any DRAM device used for TOPSVR. Thus only the TOPSVR application can employ these DRAM. Features such as Mechanized Calling Card Service (MCCS) and Automatic Coin Toll Service (ACTS) must use different DRAM devices.

TOPS MP Support of Internal DRAM (continued)

Activation/deactivation by the end user

TOPS MP Support of Internal DRAM requires no activation or deactivation by the end user.

Billing

TOPS MP Support of Internal DRAM does not affect billing.

Station Message Detail Recording

TOPS MP Support of Internal DRAM does not affect Station Message Detail Recording.

Datafilling office parameters

TOPS MP Support of Internal DRAM does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement TOPS MP Support of Internal DRAM. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for TOPS MP Support of Internal DRAM (Sheet 1 of 2)

Table	Purpose of table
CLLI	Common Language Location Identifier contains announcement names
DRAMS	Digital Recorded Announcement Machine defines DRAM hardware location
ANNS	Announcements defines announcement CLLIs
ANNMEMS	Announcement Members defines hardware location
DRAMREC	CI increment DRAM Recording is used to record announcements
DRMUSERS	DRAM Users maps announcement CLLI to announcement phrases
IANNINFO	Internal Announcement Information maps DAS number to DRMUSERS index
OFRT	Office route maps indices from ARURTE and ARUIBMRT to announcement
ARURTE	Audio Response Unit Route maps DAS pool ID to OFRT index
ARUIBMRT	Audio Response Unit IBM Route maps DAS destination ID to OFRT index
DATRKOPT	Directory Assistance Trunk Options selects the trunk language
Note: DRMUSERS is not a table but a CI increment utility	

TOPS MP Support of Internal DRAM (continued)

Datafill tables required for TOPS MP Support of Internal DRAM (Sheet 2 of 2)

Table	Purpose of table
VROPT	Voice Response Option specifies the language
TOPSPOS	TOPS Position. This table specifies functions and characteristics of TOPS positions and devices.
Note: DRMUSERS is not a table but a CI increment utility	

Datafilling table CLLI

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table CLLI. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLLI

Field	Subfield or refinement	Entry	Explanation and action
CLLI		TOPSANN	Common Language Location Identifier. Enter announcement TOPSANN.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

CLLI	ADNUM	TRKGRSIZ	ADMININF
TOPSANN	200	24	TOPS ANNOUNCEMENT

Datafilling table DRAMS

Table DRAMS contains information on the physical configuration of the DRAM hardware.

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table DRAMS. Only those fields that apply directly to TOPS MP

TOPS MP Support of Internal DRAM (continued)

Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DRAMS

Field	Subfield or refinement	Entry	Explanation and action
			Table is not changed. Datafill for the English or French segment announcements' locations given in the Operation section.

Datafill example for table DRAMS

The following example shows sample datafill for table DRAMS.

MAP display example for table DRAMS

DRAM	CARD	TMTYPE	TMNO	TMCKT	CARDCODE	CARDINFO
0	0	MTM	5	0	1X75BA	CTRL DRAM0
0	1	MTM	5	2	1X76AF	PROM (0)(1)\$
0	2	MTM	5	4	1X76AG	PROM (2)(3)\$
0	3	MTM	5	6	1X76BF	PROM (4)(5)\$
0	4	MTM	5	8	1X76BG	PROM (6)(7)\$

The example shows a single DRAM defined on MTM 5 consisting of a controller card and four double density PROM cards. The Common Language Location Identifier (CLLI) for this DRAM is DRAM0.

Note: The CARDINFO field for each CARDCODE of the 1X76aa DRAM PROM cards indicates the virtual card numbers found in the DRAMREC assignments listed in the English/French segment announcements of the Operation section. It is imperative that the CARDINFO matches the assignments so that the DRAM controller card can find and play the proper sequence of speech segments.

Datafilling table ANNS

Table ANNS contains information on the announcements residing in DRAM. For TOPSVR only one announcement is defined.

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table ANNS. Only those fields that apply directly to TOPS MP

TOPS MP Support of Internal DRAM (continued)

Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ANNS

Field	Subfield or refinement	Entry	Explanation and action
ANNTYP		TOPSVR	Announcement type. Datafill new value TOPSVR. This value is used to access the OSVR phrases in table DRMUSERS.

Datafill example for table ANNS

The following example shows sample datafill for table ANNS.

MAP display example for table ANNS

ANNCLLI	ANTYPE	TRAFSNO	MAXCONN	CYTIME	MAXCYC
TOPSANN	TOPSVR	25	1	0	1

The example shows a single announcement CLLI and an announcement type of TOPSVR. This CLLI is used in the remaining DRAM tables. The cycle time is datafilled as zero, however, the actual cycle time is determined by the DRAMREC Utility. The maximum announcement cycles to provide the subscriber will be set to 1. This allows TOPS-MP to control cycling independently of DRAM. The number of cycles is set in table IANNINFO.

Note: The CLLI found in this table, once datafilled, should then be referenced by tables ARURTE and ARUIBMRT in order to provide the DRAM voice response. Refer to functionality IBM Switch DAS/C Protocol, OSDA0001, for more information. This functionality, in conjunction with TOPS MP Support of Internal DRAM, supports internal ARUs.

Datafilling table ANNMEMS

Table ANNMEMS contains information on members for each announcement Common Language Location Identifier (CLLI) defined in table ANNS.

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table ANNMEMS. Only those fields that apply directly to TOPS

TOPS MP Support of Internal DRAM (continued)

MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ANNMEMS

Field	Subfield or refinement	Entry	Explanation and action
TRACKLIST			Table is not changed. Each available channel on the DRAM should be assigned a corresponding member number. TOPSVR requires only track zero be assigned each member.

Datafill example for table ANNMEMS

The following example shows sample datafill for table ANNMEMS.

MAP display example for table ANNMEMS

ANNCLLI	ANNMEMBER	HDWTYPE	CARD	TRACKLIST
TOPSANN	0	DRAM	DRA	(0 MTM 5 1)\$
TOPSANN	1	DRAM	DRA	(0 MTM 5 2)\$
TOPSANN	2	DRAM	DRA	(0 MTM 5 3)\$
...				
TOPSANN	29	DRAM	DRA	(0 MTM 5 30)\$

The example shows 30 members of the TOPS announcement group. All 30 members are digital and use track zero on MTM 5. This datafill permits 30 subscribers to receive announcements from the 30 possible speech channels on DRAM0 simultaneously. To achieve full availability of announcements to all subscribers, it is necessary to datafill members to access all TOPSVR DRAM devices declared in table DRAMS.

Using CI increment DRAMREC utility

Each TOPSVR announcement is comprised of a list of segments. These segments occupy specific positions on the DRAM cards. And, these segments are identified to the DMS software and DRAM firmware by the DRAMREC Utility. The DRAMREC Utility and is accessible through the DMS MAP as a CI command.

The DRAMREC ASSIGN command defines DRAM locations for segment names. Each TOPSVR announcement segment must be assigned a position in DRAM firmware. Following are example commands.

TOPS MP Support of Internal DRAM (continued)

MAP display example for DRAMREC assignments

```
>ASSIGN 0 AVRE01 7 2 04
>ASSIGN 0 ELORI9 1 3 23
```

The first entry defines segment AVRE01 to be of approximate length seven seconds and located on DRAM 0, card 2, position 04.

The second entry defines low rising English digit nine segment to be of approximate length one second and located on DRAM 0, card 3, position 23.

The segment announcements and locations are given in the Operation section.

Datafilling table DRMUSERS

Table DRMUSERS contains the announcement CLLI, number and corresponding announcement identifier for use by the DRAM system to construct and playback an TOPSVR announcement. For TOPSVR, this is where the actual announcement is specified by the Operating Company. A single announcement identifier is assigned to the announcement CLLI and number. Announcement selection is determined by a table IANNINFO index into table DRMUSERS. Language is controlled by tables VROPT and DATRKOPT.

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table DRMUSERS. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DRMUSERS

Field	Subfield or refinement	Entry	Explanation and action
PHRASELIST			All previous references to TOPSDAnn and AOSSDAnn, where nn is 01-99, are changed to OSVRDAnn. Similarly, TOPSINTnn and AOSSINTnn are changed to OSVRnn.

Datafill example for table DRMUSERS

The following example shows sample datafill for table DRMUSERS.

TOPS MP Support of Internal DRAM (continued)

MAP display example for table DRMUSERS

ANNCLLI	ANNNUMBER	PHRASELIST
TOPSANN	1	(OSVRINT01)\$
TOPSANN	2	(OSVRINT02)\$
TOPSANN	21	(OSVRDA01)\$
TOPSANN	22	(OSVRDA02)\$

The example shows four different TOPSVR announcements. The first two define Intercept announcements. The third and fourth entries define DA announcements. The exact content of these announcements is listed in the Operation section for English and French.

Datafilling table IANNINFO

New table IANNINFO maps the DAS specified announcement number to the announcement ID used to index table DRMUSERS, the number of times the announcement is repeated to the subscriber by the DRAM, and whether the call is connected to an operator following the post announcement period.

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table IANNINFO. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IANNINFO (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
ANN		0 to 254	Announcement number. Enter a number between 0 and 254. This value is returned from the Directory Assistance System (DAS) database to indicate which type of information is being provided in the database response.
DRAMIDX		1 to 63	DRAMUSERS Index Announcement ID. Enter a number used to find the phrase list (field PHRASELIST in table DRMUSERS) to use in reciting the information to the querying subscriber. This must be datafilled after field ANN and before field CYCLES. An entry outside of this range is invalid.

TOPS MP Support of Internal DRAM (continued)

Datafilling table IANNINFO (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CYCLES		1 to 7	Number of spoken announcements. Enter a number that represents the number of times to repeat the announcement. A cycle is an entire announcement spoken once. For bilingual announcements, a cycle includes the full announcement spoken the preferred language followed by the equivalent alternate language announcement. If a number of cycles are required (independent of bilingualism), the first cycle is spoken, followed by the phrase "I repeat" if the next cycle begins in English or "Je repete" if in French. Since table IANNINFO is independent of call type, Auto-INT and INT announcements always have the same number of cycles.
OPRCON		Y or N	Operator connection. Enter Y (yes) if the connection to an operator is permitted following the post announcement period for this call type. Otherwise, enter N (no). The total number of times a call may be connected to an operator is restricted by table VROPT parameters MAXIMUM_DA_RECALLS and MAXIMUM_INT_RECALLS. If Auto-INT can Cut-Through, then the corresponding INT announcement can Recall.

Datafill example for table IANNINFO

The following example shows sample datafill for table IANNINFO.

MAP display example for table IANNINFO

ANN	DRAMIDX	CYCLES	OPRCONN
0	1	1	Y

Datafilling table OFRT

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table OFRT. Only those fields that apply directly to TOPS MP

TOPS MP Support of Internal DRAM (continued)

Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OFRT

Field	Subfield or refinement	Entry	Explanation and action
			Table is not changed. Datafill to reference the TOPSANN announcement CLLI in table OFRT.

Datafill example for table OFRT

The following example shows sample datafill for table OFRT.

MAP display example for table OFRT

RTE	RTELIST
200	(S D TOPSANN)\$

Datafilling table ARURTE

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table ARURTE. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ARURTE

Field	Subfield or refinement	Entry	Explanation and action
			Table is not changed. Datafill to reference the TOPSANN announcement CLLI in table OFRT.

Datafill example for table ARURTE

The following example shows sample datafill for table ARURTE.

MAP display example for table ARURTE

POOLID	OFRTIDX
2	200

TOPS MP Support of Internal DRAM (continued)**Datafilling table ARUIBMRT**

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table ARUIBMRT. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ARUIBMRT

Field	Subfield or refinement	Entry	Explanation and action
			Table is not changed. Datafill to reference the TOPSANN announcement CLLI in table OFRT.

Datafill example for table ARUIBMRT

The following example shows sample datafill for table ARUIBMRT.

MAP display example for table ARUIBMRT

DESTID	OFRTIDX
5	200

Datafilling table DATRKOPT

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table DATRKOPT. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DATRKOPT

Field	Subfield or refinement	Entry	Explanation and action
LANGUAGE		PRIMARY, SECONDARY, PRIMSEC, SECPRIM	Language. This field controls language for the trunk. Note, table is not changed. TOPS offices designated as unilingual also employ these settings; however, they have little meaning since the primary and secondary languages are identical. Unilingual offices requesting bilingual announcements are provided with only the primary language.

TOPS MP Support of Internal DRAM (continued)

Datafill example for table DATRKOPT

The following example shows sample datafill for table DATRKOPT.

MAP display example for table DATRKOPT

GRPKEY							
MULTREQ	DACC	INTCC	BILLRQD	CLGNRQD	REQNRQD	LANGUAGE	

DAONLYTRK							
0	OH	N	N	Y	N	SECONDARY	

Datafilling table VROPT

The following parameters control language and reconnects.

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table VROPT. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table VROPT

Parameter	Explanation and action
PRIMARY_LANGUAGE	This tuple, when set to ENGLISH, indicates a TOPS office with a primary language of English. The default for this tuple is ENGLISH. This parameter is not changed.
SECONDARY_LANGUAGE	This tuple, when set to FRENCH, indicates a bilingual TOPS office with a secondary language of French. When the value of this tuple is equal to the value of the primary language tuple it indicates a unilingual office. Unilingual offices, by default, play primary language announcements. Bilingual offices, by default, speak first the primary language followed by the secondary language announcement. The default for this tuple is FRENCH. This parameter is not changed.
MAXIMUM_DA_RECALLS	The range is 0-15 which limits the number of post announcement DA recalls. Setting the tuple to zero prevents all DA recalls. Further reconnect restrictions are set by table IANNINFO.
MAXIMUM_INT_RECALLS	The range is 0-15 which limits the number of post announcement INT recalls. Setting the tuple to zero prevents all INT recalls. Further reconnect restrictions are set by table IANNINFO.

Datafill example for table VROPT

The following example shows sample datafill for table VROPT.

TOPS MP Support of Internal DRAM (continued)

MAP display example for table VROPT

PARM	VALUE
-----	-----
PRIMARY_LANGUAGE	ENGLISH
SECONDARY_LANGUAGE	FRENCH
MAXIMUM_DA_RECALLS	2
MAXIMUM_INT_RECALLS	2

Datafilling table TOPSPOS

The following table shows the datafill specific to TOPS MP Support of Internal DRAM for table TOPSPOS. Only those fields that apply directly to TOPS MP Support of Internal DRAM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPOSs

Field	Subfield or refinement	Entry	Explanation and action
POSNO		numeric (0 to 9999)	Position number. In a TOPS OC network, operator positions that provide directory assistance (DA) or intercept services must have unique position numbers. This applies across the network and to all software releases. Position numbers must be different between the host and its remotes, and between remotes off the same host.

Datafill example for table TOPSPOS

The following example shows sample datafill for table VLMEM.

MAP display example for table TOPSPOS

POSNO	VCCKT	VCPDGRP	CARDCODE
DATAPATH			
POSAREA			

100	TM8 0 24	NPDGRP	2X72AA
DMODEM SP ASCII	TM8 0 25	NPDGRP	BELL108
OPR 1 TOPSACD	TASERV \$	GEN	XFR1 \$

TOPS MP Support of Internal DRAM (end)

Translation verification tools

TOPS MP Support of Internal DRAM does not use translation verification tools.

SERVORD

TOPS MP Support of Internal DRAM does not use SERVORD.

3 Datafilling Operator Services Equal Access

This chapter contains the operator services equal access functionalities.

Base TOPS Equal Access

Ordering codes

Functional group ordering code: OSEA0001

Functionality ordering code: not applicable

Release applicability

BCS36 and up

Prerequisites

To operate, Base TOPS Equal Access has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001
- EQA Toll, EQA00002

Description

This functionality is provided by the following features:

(Sheet 1 of 2)

Feature number	Feature name
BR0619	TOPS - Operator Flexible Routing
BR0620	TOPS - ANI Forwarding on 0- Calls
BR0621	TOPS - ANI Signaling Compatibility
BR0635	Trunk Signaling Protocol/Format Conversion
AF0968	Carrier Code on AMA for Terminating TOPS Calls
AF1100	TOPS FGB Call Code 134
none	TOPS EA Guidelines (BCS27)
UQ000270	Unable to route Zenith to carriers
CM12003	Zenith calls are not routed properly
ER900039	International call handling
BR30517	Optional EA translations for Zenith

Base TOPS Equal Access (continued)

(Sheet 2 of 2)

Feature number	Feature name
BK04338	Call Code 252 AMA Record for 1+, 0+, and 0- Inter-LATA (BCS36)
BK14194	Preparation for TOPS FGD CIC Expansion (BCS36)

Although there is a dependency between the TOPS EA and the Access Tandem Switch software packages, each package supports different features. For this reason, this document describes only the features that are supported by the TOPS EA package.

The standard TOPS capabilities are enhanced by the Equal Access (EA) features, brief descriptions of which follow:

BR0619 - TOPS - Operator Flexible Routing

This feature allows the DMS to perform the following:

- determine whether a call on an incoming TOPS trunk requires operator assistance, then determine to which operator (intra-LATA or inter-LATA) the call should be sent
- distinguish between intra-LATA and inter-LATA calls based on screening of the digits dialed or the signaling digits
- route intra-LATA calls to the Operating Company and inter-LATA calls to the appropriate carrier

BR0620 - TOPS - ANI Forwarding on 0- Calls

This feature facilitates 0- call handling by providing the following information and operator capabilities:

- allows the operator to transfer 0- calls to the appropriate carrier operator service
- provides the Carrier Access Code (CAC) for a call
- allows the operator to validate the CAC to be used for a call
- provides an Operator Position CRT message, NEA, indicating that a call is from a non-Equal Access End Office
- provides an Operator Position CRT message, RES, indicating that a calling party is prohibited from making inter-LATA calls

Base TOPS Equal Access (continued)

- provides an Operator Position CRT message, IC, indicating that a call is inter-LATA
- provides an Operator Position CRT message, XFR IC, indicating that a call should be transferred to a carrier operator service

BR0621 - TOPS - ANI Signaling Compatibility and BR0635 - Trunk Signaling Protocol/Format Conversion

These two features allow the DMS to accept the following types of signaling:

- Traditional Operator Services Signaling (OSS) from Equal Access End Offices (EAEOs) and non-Equal Access End Offices (non-EAEOs). This signaling format has a 2-stage outpulsing scheme. During the first stage, the called number is outpulsed. During the second stage, the ANI spill, which includes a single ANI ID digit, the calling number, and a start signal, is outpulsed.
- Interim OSS from EAEOs. This signaling format also has a 2-stage outpulsing scheme. During the first stage, the called number is outpulsed. During the second stage, the ANI spill, which includes a double ANI ID digit, the calling number, and a coded start signal, is outpulsed.
- Equal Access Signaling from EAEOs. This signaling format has a 3-stage outpulsing sequence. During the first stage, the carrier access code and the call-type information are outpulsed. During the second stage, the ANI spill, which includes a double ANI ID digit, the calling number, and a start signal, is outpulsed. During the third stage, the called number is outpulsed.

AF0968 - Carrier Code on AMA for Terminating TOPS Calls

This feature allows the Operating Company to identify carriers on AMA tape in order to properly bill them for services provided.

AF1100 - TOPS FGB Call Code 134

This feature allows Operating Companies to optionally generate Bellcore (BC) Automatic Message Accounting (AMA) records with call code 134, structure code 625, for non-operator-handled Feature Group B (FGB) calls. It also allows TOPS calls routed from a pre-translator using a T or an S selector to be processed by TOPS EA without the index into Table OFRT obtained by the pre-translator being changed by TOPS EA.

TOPS EA Guidelines (BCS27)

Datafill guidelines are provided for BCS27.

Base TOPS Equal Access (continued)

UQ000270 - Unable to route Zenith to carriers.

This PRS allows TOPS Equal Access translations to route Zenith numbers in BCS31. This functionality is removed in BCS32 by PRS CM12003 (described after this PRS).

A Zenith (aka Enterprise) number is an 800 number entered by the TOPS operator at a TOPS position. Associated with this Zenith number is a datafillable routing number, which conforms to the North American dialing plan (e.g. 2122201111). This routing number is used by the translation system.

CM12003 - Zenith calls are not routed properly.

This PRS removes the functionality of PRS UQ000270 in BCS32. Zenith numbers no longer use TOPS Equal translations. Instead, translations now use the same translations as used before BCS31: non-Equal Access translations.

ER900039 - International call handling

In BCS26, international calls are now handled the same as national calls for LATA screening, using field LATANM in Table TOPEATTRK.

BR30517 - Optional EA translations for Zenith

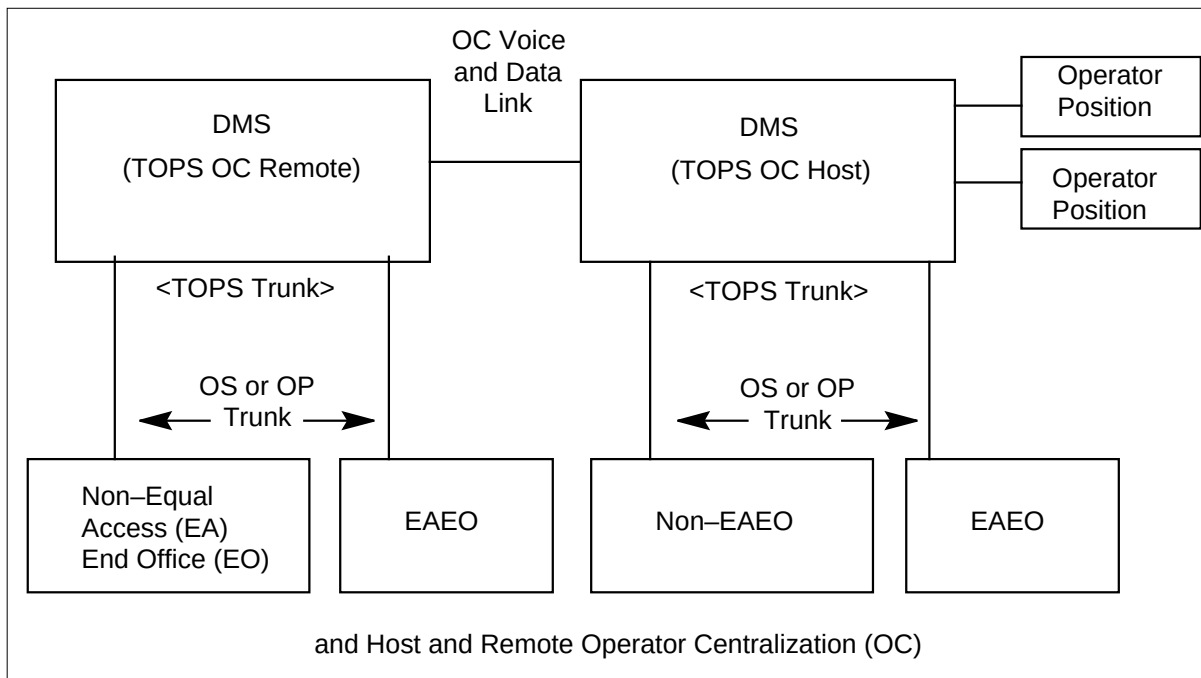
In BCS34, new parameter ZENITH_EA_ROUTING in table TOPSPARM allows optional TOPS EA translation on Zenith routing numbers. Also, EA screening and routing for Zenith calls are provided.

BK04338 - Call Code 252 AMA Record for 1+, 0+, and 0- Inter-LATA (BCS36)**BK14194 - Preparation for TOPS FGD CIC Expansion (BCS36)**

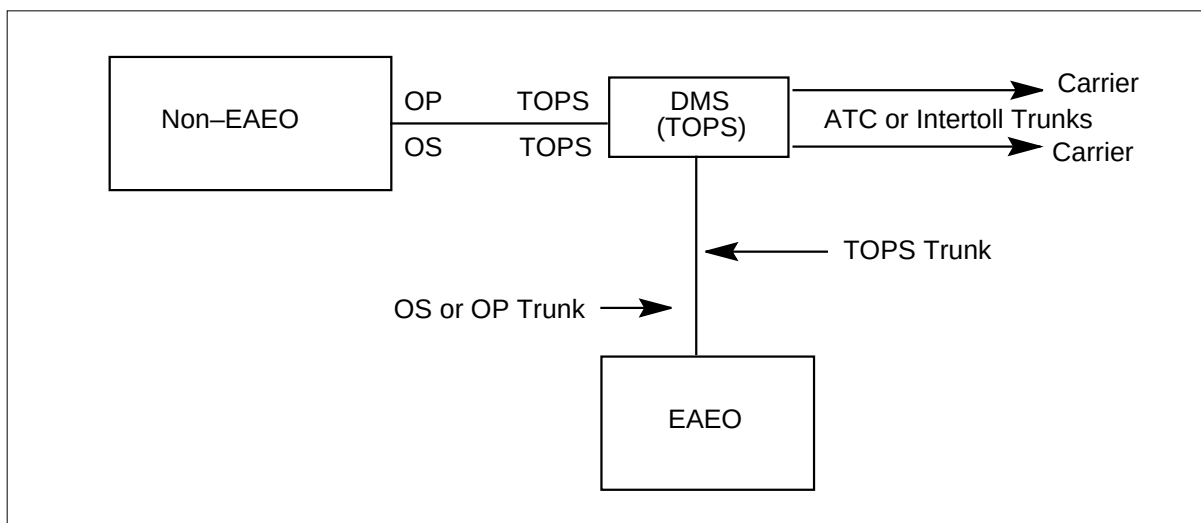
Following are TOPS EA trunking diagrams.

Base TOPS Equal Access (continued)

DMS 200 or DMS 100/200 with TOPS, Local and Toll Services



DMS 200 or DMS 100/200 with TOPS and Local and Toll Services



Note: See "BR0621 - TOPS - ANI Signaling Compatibility" in this document for a description of the signaling and trunk group types used in the DMS-200/TOPS configurations.

Base TOPS Equal Access (continued)

Operation**BR0619 - TOPS - Operator Flexible Routing**

BR0619 allows the Access Tandem (AT) to determine whether an incoming call should be routed to an Inter-LATA Carrier (IC) or to an Operating Company.

DMS-200 Pre-Call Routing Decision Making

The AT considers the following information before it determines the appropriate routing for an incoming call:

- if the call is intra-LATA or inter-LATA
- if the call uses a dedicated or a combined trunk group
- the type of signaling used by the trunk on which the call is carried
- if the trunk on which the call is carried uses Dial or Multifrequency (MF) pulsing.

Call Designation: The designation of a call is either intra-LATA or inter-LATA. The AT determines the designation of a call in different ways, depending on the type of signaling used by the trunk group carrying the call.

If the trunk group uses a Feature Group C (FGC) Signaling type, the AT determines call designation in the following manner:

- If the call is on an incoming trunk group that uses Traditional OSS with dial or multifrequency pulsing, the LATAXLA Table determines the designation of the call.
- If the call is on an incoming trunk group that uses Interim OSS, the start signal on the calling number determines the designation of the call.

Note 1: Calls incoming as inter-LATA (ST mark on ANI spill using OSS signaling) do not automatically bypass local area screening by virtue of being inter-LATA. If local area screening is specified out of table TRKGRP or table TOPSBC, then local area screening is performed regardless of how the call is marked. An inter-LATA mark on a call merely indicates that it will route out of class of service screening.

Note 2: See “BR0621 - TOPS - ANI Signaling Compatibility” in this document for more information on both of these methods.

If the trunk group uses the Feature Group D (FGD) Signaling type, the AT does not determine call designation. In this case, the AT determines only call destination.

Base TOPS Equal Access (continued)

Call Destination: After the AT determines whether a call is intra-LATA or inter-LATA, it can then determine where the call should be routed. There are two possible routes: to an Inter-LATA Carrier (IC) or to an Operating Company. Typically, inter-LATA calls are routed to an IC, and intra-LATA calls are routed to an Operating Company.

Once it has established that a call is inter-LATA, the AT then determines the route the call takes to the carrier. To do this, the AT searches for more information about the call, such as call type and class of service.

The AT finds this information in different ways, depending on the characteristics of the incoming trunk on which the call is carried. These characteristics include group type (dedicated or combined), pulse type (MF or Dial), and signaling type (Traditional OSS, Interim OSS, or Equal Access Signaling). See section "Inter-LATA Call Routing Using FGC Signaling" and section "Inter-LATA Call Routing Using FGD Signaling" for more information.

Inter-LATA Call Routing Using FGC Signaling

The AT uses the carrier information in the TOPEATTRK Table to determine the routing for inter-LATA calls.

Successful inter-LATA call routing involves the selection of the appropriate outgoing trunk group for each call destined for an IC. The AT performs inter-LATA call routing in two phases: class of service screening routing and conditional routing.

Note: "Data Assignment" includes example datafill that shows the setup of certain data tables used for intra-LATA and inter-LATA call routing. The table entries shown in Data Assignment are different from the table entries shown in Feature Assignment. Do not try to associate the example datafill in these parts.

Class of Service Screening Routing - Phase 1: Class of service screening routing uses the Carrier Access Code (CAC) and certain digits of the called number to determine the route to the carrier.

During phase 1 of inter-LATA call routing, the CAC is added to the beginning of the called number. Then screening is performed on the CAC only, or on the CAC plus the NPA code.

Class of Service Screening Control (CLSVSCRC) Tables define the criteria used for phase 1 of inter-LATA call routing. There is a CLSVSCRC Table for each TOPS trunk group.

Base TOPS Equal Access (continued)

Each CLSVSCRC Table provides the name of the Class of Service Screening (CLSVSCRC.CLSVSCR) Subtable that defines the carrier access codes and NPA or NXX codes. The subtable also pairs the carrier access codes and NPA or NXX codes with office routes.

A 3-part key indexes each CLSVSCRC Table. This key comprises a subtable name, a numeric index (NPA code), and a call type.

- Subtable name

The subtable name comes from the INTRASSC field (for intrastate domestic calls), from the INTERSSC field (for interstate domestic calls) or from the OVSSCL field (for international calls). These fields are in the TOPEATRK Table.

Note: For domestic calls, the entry in the STATE field of the LATAXLA Table determines which class-of-service screening subtable (INTRASSC or INTERSSC) is used.

- Numeric index

The numeric index comes from the SCRINDEX field, which is also in the TOPEATRK Table. Trunk groups of the same type that use the same form of signaling should be assigned to the same CLSVSCRC.CLSVSCR Subtable. This means that the trunk groups should have the same entries for the SCRINDEX and the OVSSCL fields, for the SCRINDEX and the INTERSSC fields, or for the SCRINDEX and the INTRASSC fields.

- Call type

The call types are No Prefix (NP), Direct Dialed (DD), and Operator Assisted (OA).

Note: Although there are three call types, only a DD or OA call type can be in the key that indexes a CLSVSCRC Table.

The AT uses either of the following methods to determine the call type for traffic on dedicated or on combined trunk groups:

- examines the TYPCALL field in the STDPRTCT.STDPRT Subtable
- examines the start signal.

The TYPCALL field can be set to NP, DD, OA, or NL (nil). NL is not a call-type mnemonic. Rather, it forces the AT to examine the start signal of a call to determine call type.

Base TOPS Equal Access (continued)

If an incoming trunk group is dedicated or combined and the TYPICAL field is set to NL, the AT determines call type by doing the following:

- examines the start signal on the called number if the trunk uses Traditional or Interim OSS with MF pulsing
- examines the start signal on the ANI spill for the calling number if the trunk uses Traditional OSS with Dial pulsing.

Note: After it has determined the call type from the start signal, the AT puts the appropriate call-type mnemonic in the key.

The following table shows the start signals for traffic on dedicated and combined trunk groups.

Start Signals

Trunk Group Type	Start Signal	Description
DEDICATED		
	ST	1+ DD traffic (coin and non-coin)
	STP	0+ or 0- OA traffic (coin and non-coin)
COMBINED		
	ST	1+ DD traffic (coin)
	STP	0+ or 0- OA traffic (coin)
	ST2P	1+ DD traffic (non-coin)
	ST3P	0+ or 0- OA traffic (non-coin)

Conditional Routing - Phase 2: Phase 2 of inter-LATA call routing allows the AT to send a call to a primary or a secondary office route, if a specified condition is met. This procedure is called conditional routing and is set up in the OFRT Table. The OFRT Table pairs the TOPS EA classes of service with office routes and defines the trunk groups to the carriers.

The AT uses the class of service of a call as the basis for routing the call to a primary or secondary route. The AT does this by comparing the class of service of an incoming call with each class of service defined in the OFRT Table. If the class of service of the call matches a class of service defined in an OFRT Table tuple, the call is sent to the primary office route. This route directs the call to an outgoing trunk group. If the class of service of the call does not match the class of service in the tuple, the call takes the secondary

Base TOPS Equal Access (continued)

route. This route takes the call to the next tuple. The comparison is performed again and continues until a match is found or until the call is routed to all the tuples.

There are nine classes of TOPS EA service (TOPEACLS):

- EACoin - Equal Access Coin
- EAHOTEL - Equal Access Hotel
- EARBILL - Equal Access Restricted Billing Lines
- EACAMA - Equal Access 1+ ANI-success calls that do not require operator assistance
- EACAMAFL - Equal Access CAMA ANI fail (1+ CAMA-type non-OA calls that are ANI fail)
- EACAMONI - Equal Access CAMA ONI (1+ CAMA-type non-OA calls that are ONI)
- EAOTHOPR - Equal Access Other Operator (all other types of OA ANI success calls)
- EAOPANIF - Equal Access Operator ANI fail (all other types of OA calls that have ANI failure)
- EAOPONI - Equal Access Other Operator ONI (all other types of OA calls that are ONI).

Example 1 - Routing Based on Class of Service

For this example, two carriers are providing operator services. One carrier does not have traffic separated by digits dialed or by class of service. The other does not have traffic separated by digits dialed, but by the following classes of service: EACoin, EARBILL, EACAMA, EACAMAFL, EAOTHOPR.

Class of Service Screening Routing: For class of service screening, a CLSVSCRC Table must be created for each trunk group that needs a certain type of screening.

In this example, because neither carrier has its traffic separated by digits dialed, the setup of the CLSVSCRC Table is uncomplicated.

Following is a tuple in an example CLSVSCRC Table. While examining this tuple, remember the information previously given and assume that there is also an example TOPEATRk Table tuple with a DOM1 entry in the INTRASSC field and a 212 value in the SCRNIIX field. The calls being routed in this example are intrastate.

Base TOPS Equal Access (continued)**Map display example for table CLSVSCRC**

NPASCTYP	NORSLTS	TMTOFRT	POSN
212 DOM1 OA	2	N	NONE

The first three fields in this tuple are the serving translation scheme (NPA); the screening class, which is the class of service screening subtable name; and the type of call. These fields are known collectively as NPASCTYP, the 3-part key that indexes the CLSVSCRC Table.

The value (212) for the NPA comes from the SCRNDIX field in the TOPEATRK Table, and the subtable name (DOM1) comes from the INTRASSC field which is also in TOPEATRK. The call-type mnemonic (OA) is either determined by signaling information or taken from the TYPCALL field in the STDPRTCT.STDPRT Subtable.

The value 2 in the Number of Results (NORSLTS) field means that the class of service screening subtable (DOM1) defines the routing for the call. An N selector means that more than one route is required for class of service screening, and a NONE entry for POSN means this field is not required.

During class of service screening, the carrier access code, in addition to the digits dialed after a prefix, determines the route to the carrier. DOM1, the CLSVSCRC.CLSVSCR Subtable, pairs the carrier access codes with office routes. These codes serve only as an index into the OFRT Table.

Now, assume that there are two calls to be screened. Carrier access code 546 leads the called digits of the first call, and 634 leads the called digits of the second.

Examine the following tuple to see how the example CLSVSCRC.CLSVSCR Subtable (DOM1) is set up.

CLSVSCRC.CLSVSCR tuple example

FROMDIGS	TODIGS	TMTOFRT
546	546	T 100
634	634	T 200

Base TOPS Equal Access (continued)

Based on the information in these tuples, all calls for carrier 546 take route 100 in the OFRT Table. All calls for carrier 634 take route 200 in the OFRT Table. If this table were indexed by carrier digits other than those defined in DOM1, call routing is based on the routing for standard translations as defined in the HNPACONT.HNPACODE Subtable. In this case, routing is based on the called number digits, not on the carrier digits.

Conditional Routing: As stated previously, one carrier has its traffic separated by certain classes of service. Assume that it is carrier 546 that has the separation.

For this type of traffic separation, the tuples of the example OFRT Table contains the following information. The first five tuples in this table equate a particular class of service with an office route. The last five tuples define the actual trunk groups to the carrier.

Note: The OFRT Table in the following example was built using a conditional (CND) selector and T and S route types. See the following paragraphs for descriptions of the field contents.

OFRT table example

RTE	RTELIST
100	(CND TOPEACLS EAC0IN SK 1) (T OFRT 101) (T OFRT 110)
101	(CND TOPEACLS EARBILL SK 1) (T OFRT 102) (T OFRT 111)
102	(CND TOPEACLS EACAMAFL SK 1) (T OFRT 103) (T OFRT 112)
103	(CND TOPEACLS EAOTHOPR SK 1) (T OFRT 104) (T OFRT 112)
104	(CND TOPEACLS EACAMA SK 1) (T OFRT 112) (T OFRT 113)
110	(S D CARR1CLLI1)
111	(S D CARR1CLLI2)
112	(S D CARR1CLLI3)
113	(S D CARR1CLLI4)
200	(S D CARR2CLLI1)

Note: The last tuple in this table specifies the outgoing trunk group for the traffic of carrier 634. The traffic of this carrier was not separated by digits dialed or by class of service.

Examine the first and the sixth tuples in this example datafill before interpreting the routing.

100 (CND TOPEACLS EAC0IN SK 1) (T OFRT 101) (T OFRT 110)

Base TOPS Equal Access (continued)

In the first tuple, the value 100 is the route reference number assigned to the route list, and CND is a conditional route selector. This route element selector permits a condition to be specified before routing is allowed. If the condition is met, the instructions of this route element are executed (call goes to office route 110). Otherwise, the instructions are skipped, and the TOPS software searches for instructions in the next route element (call goes to office route 101).

TOPEACLS is the condition selector, and EACOIN is the TOPS condition route that specifies the class of service of the call.

Route type SK allows a call to skip to another route element within the same route list. The value 1 (skip number) indicates the number of elements to skip within the same route list when a specified condition is met.

The last six fields specify the call routing. The first field contains T, the route type.

The T selector routes a call to OFRT, the table named in the next field. The value 101 represents the route reference index number, the route to which the call is transferred in the OFRT Table if the specified condition is not met.

The data in the last three of the six fields are the same as the data in the preceding three fields, except the route reference index number is 110. The value 110 is the route to which the call is transferred in the OFRT Table if the specified condition is met.

110 (S D CARR1CLLI1)

In the sixth tuple, the value of the first field is the route reference number assigned to the route list. The route type specified is S, the selector used when standard digit manipulation is required. The character D represents the connection type. This field is not required by the system logic, but is needed to satisfy table control. The last field contains the trunk group name (Common Language Location Identifier).

The following paragraphs describe the conditional routing for the datafill in the example OFRT Table. The tuple described precedes each paragraph.

100 (CND TOPEACLS EACOIN SK 1) (T OFRT 101) (T OFRT 110)

Base TOPS Equal Access (continued)

If the call is a coin call, the next route is skipped and the call goes to office route 110. Office route 110 sends the call to an outgoing trunk group called CARR1CLLI1. If the call is not a coin call, it is routed to office route 101.

101 (CND TOPEACLS EARBILL SK 1) (T OFRT 102) (T OFRT 111)

As the call is sent to office route 101, the TOPS software rechecks the class of service of the call. If the call is restricted, it is routed to office route 111; that, in turn, sends the call to an outgoing trunk group called CARR1CLLI2. If the call is not restricted, it is sent to office route 102.

102 (CND TOPEACLS EACAMAFL SK 1) (T OFRT 103) (T OFRT 112)

As the call is being routed, its class of service is reexamined. If it is a 1+ CAMA, ANI fail, or non-OA call, it is sent to CARR1CLLI3 by way of office route 112. If the call does not meet any of these conditions, it is sent to office route 103.

103 (CND TOPEACLS EAOTHOPR SK 1) (T OFRT 104) (T OFRT 112)

As it is being routed to office route 103, the call is checked to determine whether it can be categorized as an EAOTHOPR-type call. If so, the call is routed to CARR1CLLI3 through office route 112. If not, the call is routed to office route 104.

104 (CND TOPEACLS EACAMA SK 1) (T OFRT 112) (T OFRT 113)

Finally, the call is checked to see whether it can be categorized as a flat-rate, ANI-success-type call. If so, the call routes to CARR1CLLI4 by way of office route 113; otherwise, the call routes to CARR1CLLI3.

Example 2 - Routing Based on Digits Dialed

For this example, the AT services only one carrier that provides operator services. This carrier does not have its traffic separated by class of service, but by digits dialed. The TOPS software checks only the NPA of a calling number to perform this type of traffic separation.

Class of Service Screening Routing: The following tuple is for the CLSVSCRC Table. Assume that there is also an example TOPEATRK tuple with a 212 value in the SCRNDIX field and a DOM1 entry in the INTERSSC field. Interstate calls are routed in this example.

Base TOPS Equal Access (continued)**Interstate call routing example**

NPASCTYP	NORSLTS	TMTOFRT	POSN
212 DOM1 OA	2	N	NONE

The first three fields in this tuple represent the serving translation scheme (NPA); the screening class, which is the class of service screening subtable name; and the type of call. These fields are known collectively as NPASCTYP, the 3-part key that indexes CLSVSCRC.

The value (212) for the NPA comes from the SCRNDIX field in the TOPEATRK Table, and the subtable name (DOM1) comes from the INTERSSC field, which is also in TOPEATRK. The call-type mnemonic (OA) is either determined by signaling information or taken from the TYPCALL field in the STDPRTCT.STDPRT Subtable.

The value 2 in the Number of Results (NORSLTS) field means that the CLSVSCRC.CLSVSCR Subtable (DOM1) defines the routing for the call. An N selector means that more than one route is required for class of service screening, and a NONE entry for POSN means that this field is not required.

The following tuples are for the example CLSVSCRC.CLSVSCR Subtable (DOM1). Compare the from- and to-digit values here with those in the example above. The extra digits are required for traffic separation by digits dialed.

CLSVSCRC.CLSVSCR Subtable (DOM1) example

FROMDIGS	TODIGS	TMTOFRT
546000	546000	T 101
546001	546799	T 102
546800	546800	T 103
546801	546899	T 102
546900	546900	T 103
546901	546999	T 102

In DOM1, the identification digits for the carrier (546) are the first three characters in the FROMDIGS and TODIGS columns. The three zeros added to the carrier identification digits in the first tuple are required to ensure that 0-calls are routed properly. The third and fifth tuples are required to handle routing of the two service access codes, and the remaining tuples define the

Base TOPS Equal Access (continued)

routes for all other Numbering Plan Areas from 001 to 799, 801 to 899, and 901 to 999.

This subtable is only for domestic, Operator-Assisted calls. Additional subtables can be created to handle Direct-Dialed and international calls.

Conditional Routing: Because traffic separation for carrier 546 is by digits dialed (NPA), not by class of service, the example OFRT Table is datafilled as follows:

OFRT Table traffic separation by NPA

RTE	RTELIST
101	(S D CARR1CLLI1)
102	(S D CARR1CLLI2)
103	(S D CARR1CLLI3)

Only three tuples are required in the OFRT Table. The value in the first field of these tuples is the route reference number assigned to the route list. The route specified is S, the selector used when standard digit manipulation is required.

The character D represents the connection type. This field is not required by the system logic, but is needed to satisfy table control. The last field contains the trunk group name (Common Language Location Identifier).

0- and 00- Inter-LATA Call Routing Using FGC Signaling

The dialing sequence required to contact a carrier or an Operating Company operator depends on the following:

- the signaling type of the outgoing trunk from the End Office (EO)
- the End Office type.

Traditional OSS, Non-EAEO: If the calls of a subscriber are routed from a non-EAEO on an outgoing trunk that uses Traditional OSS, the subscriber must dial 0- to reach an Operating Company operator or dial 00- to reach an IC operator.

Note: See “BR0621 - TOPS - ANI Signaling Compatibility” in this document for a description of Traditional OSS.

0- Dialing: This dialing sequence allows the subscriber to have direct access to an Operating Company operator. If the subscriber dials 0- but wants an IC

Base TOPS Equal Access (continued)

operator, the Operating Company operator transfers the call to the operator at the default IC for the outgoing trunk. The name of the default IC (DFLTPIC=Y) is defined in the CARRIER field of the TOPEATRK Table.

Note: The Operating Company has the option of routing all 0- calls to the IC operator at the default IC by setting the BYPASS field to ZEROM and the DFLTPIC field to Y. Both of these fields are in the TOPEATRK Table. See "BR0620 - TOPS - ANI Forwarding on 0- Calls" in this document for information on 0-call transfer to an IC operator.

When a subscriber dials 0- and the ENDOFFICE field in the TOPEATRK Table is set to NCONFORM, the message, NEA, is displayed on the Operator Position CRT. This message informs the operator that the call is from a non-EAEO.

The following table shows the information outputted from a non-EAEO to an AT when a subscriber dials 0-.

Non-EAEO Outputting to AT for 0- Call

Outputting	Description
KP+STP plus ANI or KP+ST3P plus ANI	Trunk is outgoing dedicated or outgoing combined and uses Traditional OSS and MF pulsing
Only ANI is outputted (trunk is seized and AT interprets as KP+ST3P on trunk using Traditional OSS with MF pulsing)	Trunk is outgoing dedicated or outgoing combined and uses Traditional OSS and dial pulsing

Note: The 0 dialed by the subscriber is stripped from the signaling information outputted to the AT. For this reason, no digits have to be translated, and no tuple has to be defined in the STDPRTCT.STDPRT Subtable. The call goes directly to the Operator Position.

The called digits for a 0- inter-LATA call can be outputted to the carrier only if the OPLSCLD field in the TOPEACAR Table is set to Y.

00- Dialing: This dialing sequence allows the subscriber to have direct access to the IC operator for the default carrier (DFLTPIC=Y). An End Office must be modified before it accepts 00- calls. All 00- calls are marked as Inter-LATA calls.

Base TOPS Equal Access (continued)

The following table shows the information outputted from a non-EAEO to an AT when the subscriber dials 00-.

Non-EAEO Outputting to AT for 00-Call

Outputting	Description
KP+0+STP plus ANI or KP+0+ST3P plus ANI	Trunk is outgoing dedicated or outgoing combined and uses Traditional OSS and MF pulsing
0 plus ANI	Trunk is outgoing dedicated or outgoing combined and uses Traditional OSS and dial pulsing

When a subscriber dials 00-, a 0 is stripped from the signaling information outputted to the AT. The remaining 0 must be translated by the AT; thus a tuple must be defined in the STDPRTCT.STDPRT Subtable.

The tuple in the STDPRTCT.STDPRT can be set up using either a T or an N selector. If a T selector is used, all TOPS Equal Access processing is bypassed and the access code of the carrier is not in the AMA record generated for the call. If an N selector is used, TOPS Equal Access processing is invoked and the access code of the carrier is in the AMA record generated for the call.

The following example shows how the STDPRTCT.STDPRT tuple should be set up using a T selector.

STDPRTCT.STDPRT tuple set up using a T selector

FROMDIGS	TODIGS	PRETRTE
0	0	T 0A 1 0FRT 3 1 1 NONE

The first and second fields in this tuple define the digits that are translated at the Access Tandem. The last eight fields in this tuple are known collectively as PRETRTE. These fields define the selector type, the type of call, the number of prefix digits, the table name, the route reference number, the minimum number of digits received, the maximum number of digits received, and the position.

Base TOPS Equal Access (continued)

The character T represents the type of selector that should be used in this tuple. The T selector routes calls to the OFRT Table and causes the AT to bypass all TOPS Equal Access processing.

The call type in this tuple is Operator Assisted (OA). The number of prefix digits is one, meaning that the AT must strip one digit (a zero) from the called digits, then outpulse the remaining information (KP+STP or KP+ST3P) to the carrier.

OFRT is the name of the table to which 00- calls are routed, and the value 3 is the route reference number assigned to the route list for this table.

The minimum and maximum number of digits that the AT must collect before it can outpulse information to the carrier is one, as indicated in the eighth and ninth fields of this tuple. The NONE entry in the last field of this tuple signifies that the position field is not required for the processing of 00- calls.

The AT examines the STDPRTCT.STDPRT Table; then the OFRT Table, to determine the routing for the call. The following example shows how an OFRT Table can be set up to handle 00- calls.

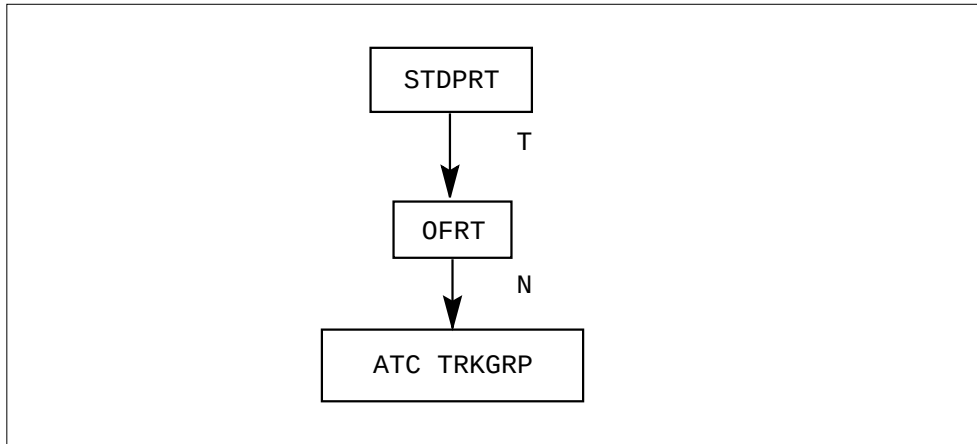
OFRT Table set up to handle 00- calls

RTE	RTELIST
3	(S D CARR1CLLI7)

The first field of this tuple defines the route reference number assigned to the route list for the OFRT Table. The second field contains S, the route selector used when standard digit manipulation is required.

The character D represents the connection type. The last field contains the name of the outgoing trunk, CARR1CLLI7, that carries the called number from the AT to the carrier.

The following figure summarizes the call progression for 00- calls when a T selector is used in the STDPRTCT.STDPRT Subtable.

Base TOPS Equal Access (continued)**00 - Call Routing Using T Selector**

The following example shows how the STDPRTCT.STDPRT tuple should be set up using an N selector.

STDPRTCT.STDPRT tuple set up using an N selector

FROMDIGS	TODIGS	PRETRTE			
0	0	N	OA	1	NA

The first and second fields in this tuple define the digits that are translated at the AT. The last four fields in this tuple are known collectively as PRETRTE. These fields define the selector type, the type of call, the number of prefix digits, and the translation system. For TOPS EA, a 00- call incoming to a TOPS trunk group is not routed to Tables HNPACONT.HNPACODE, LCASCRN.LCASCR, CLSVSCRC.CLSVSCR, or LATAXLA tables, as specified in TRKGRP (TOPS), TOPEATTRK, and Table TOPSBC. Instead, a 00- call is routed in the following manner.

The N selector invokes TOPS Equal Access processing.

The call type in this tuple is Operator Assisted (OA). The number of prefix digits is one, meaning that the AT must strip one digit (a zero) from the called digits.

TOPS EA software recognizes a single 0 incoming on the TOPS trunk group as Inter-LATA. The call is routed directly to Table TOPEATTRK. Table TOPEATTRK, field INTERSSC, identifies the class of service screening subtable (CLSVSCRC.CLSVSCR) where the Inter-LATA screening is performed. In Subtable CLSVSCRC.CLSVSCR for OA calls, there must be a

Base TOPS Equal Access (continued)

tuple which includes the carrier access code plus 000 in the FROMDIGS TODIGS range to specify the route (Table OFRT) for a 00- call.

The last field in this tuple defines the translation system used for the call, which in this case is national (domestic).

0- Dialing: This dialing sequence allows the subscriber to have direct access to an Operating Company operator. If the subscriber dials 0- but wants an IC operator, the OC operator transfers the call to an IC operator at the subscriber-designated IC.

The Operating Company has the option of routing all 0- calls to the IC operator for the default IC by setting the BYPASS field to ZEROM and the DFLTPIC field to Y. Both of these fields are in the TOPEATRK Table.

Note: See “BR0620 - TOPS - ANI Forwarding on 0- Calls” in this document for information on 0- call transfer to an IC operator.

The called digits for a 0- inter-LATA call can be outpulsed to the carrier only if the OPLSCLD field in the TOPEACAR Table is set to Y.

10XXX+0 Dialing: This dialing sequence allows a subscriber to have direct access to the carrier of his choice.

The 10XXX prefix can be part of the dialing string for calls on trunks using Interim OSS or EA Signaling. The XXX portion of the prefix represents the access code of a specific carrier. If a subscriber does not include the 10XXX prefix in the dialing string for an inter-LATA call, the call is routed to the Operating Company operator.

Stripping the 0, in both the 0- and the 10XXX+0 dialing strings, from the signaling information outpulsed to the AT means that no digits have to be translated and no tuple has to be defined in the STDPRTCT.STDPRT Subtable. A 0- call goes directly to the Operator Position, and a 10XXX+0 call goes directly to an operator at the subscriber-designated IC.

950 Inter-LATA Call Routing Using FGB Signaling

To place a call using the FGB dialing sequence, a subscriber receives dial tone and dials 950-WXXX. When the second dial tone is received, the subscriber dials a carrier-defined authorization code and the called number (7 or 10 digits).

The AT analyzes only the digits dialed by the subscriber when the first dial tone is received. The AT uses the carrier access code in the FGB dialing sequence to set up the network connection to the carrier. This connection is

Base TOPS Equal Access (continued)

defined in tables TOPEATRK, LATAXLA, CLSVSCRC, CLSVSCR, OFRT, and TRKGRP (ATC). The following paragraphs describe how these tables can be set up for FGB call routing.

Assume that a subscriber dialed 950-1999. Assume also that the call was carried on an incoming TOPS trunk group (TOPCOMAMF) that services 919 traffic in Local Access and Transport Area 1 (LATA1). Based on this information, the TOPS Equal Access Trunk Group Extension (TOPEATRK) Table and the LATA Translation (LATAXLA) Table sets up as follows:

TOPEATRK Table setup

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
TOPCOMAMF	NCONFORM	111	LATA1	N	TEAD	TEAD TEAI
919	N				(HOTEL)	(ZEROM)

LATAXLA Table setup

LATACODE	LATA	STATE	EATYPE
LATA1	919950	INTER	INTRA STD

After the DMS-200 verifies the information in the preceding tuples, it examines the routing set up for the call in the Class of Service Screening Control (CLSVSCRC) Table and the CLSVSCRC (CLSVSCRC.CLSVSCR) Subtable.

CLSVSCRC Table tuple

NPASCTYP	NORSLTS	TMTOFRT	POSN
919 TEAD DD	2	N	NONE

The first three fields in the CLSVSCRC tuple are the serving translation scheme (NPA); the screening class, which is the class of service screening subtable name; and the type of call. These fields are known collectively as NPASCTYP, the 3-part key that indexes the CLSVSCRC Table.

The value (919) for the NPA comes from the SCRNDIX field in the TOPEATRK Table, and the subtable name (TEAD) comes from the

Base TOPS Equal Access (continued)

INTERSSC field, which is also in TOPEATTRK. The call-type mnemonic (DD) is either determined by signaling information or taken from the TYPCALL field in the STDPRTCT.STDPRT Subtable.

Beginning with BCS26, the index into table CLSVSCRC for all 950 calls is obtained from the INTERSSC field in table TOPEATTRK for the incoming trunk group.

The value 2 in the Number of Results (NORSLTS) field means that the class of service screening subtable (TEAD) defines the routing for the call. An N selector means that more than one route is required for class of service screening, and a NONE entry for POSN means that this field is not required.

During class of service screening, the carrier access code determines the route to the carrier. TEAD, the CLSVSCRC.CLSVSCR Subtable, pairs the carrier access code with an office route. For FGB calls, the carrier access code comes from the last three digits of the called number. See the following example tuple.

CLSVSCRC Subtable tuple

POS 919 FROMDIGS	TEAD DD TODIGS	TMTOFRT
999	999	T 999

Based on the information in the preceding tuple, all FGB calls for carrier 999 take route 999 in the Office Route (OFRT) Table. The corresponding OFRT tuple sets up as shown in the following example tuple. Based on the entries in this tuple, the call goes out to the carrier on trunk group OGEACAR999.

OFRT Table tuple

RTE	RTELIST
999	(S D OGEACAR999)

Because all outgoing trunk groups carrying inter-LATA traffic from the AT are Access Tandem to Carrier (ATC), trunk group OGEACAR999 is defined in the TRKGRP (ATC) Table.

Base TOPS Equal Access (continued)

OGEACAR999 is defined as a 2-way trunk group, in order to handle 2-way terminating FGB traffic. The SIGTYPE field in the tuple for OGEACAR999 should be set to FGB, indicating that the trunk group carries only FGB traffic and that FGB access records are generated. See the following example.

2-way terminating FGB traffic example for table TRKGRP

GRPKEY	GRPINFO
OGEACAR999	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 919 ABC Y FGB COMB	

The AT outputs KP+7D+start signal for FGB calls that originate on a TOPS trunk group and that connect to an ATC trunk group. The information outputted is based on the call prefix (0+, 1+) and on the type of station (coin, hotel, non-coin) from which the calls originated.

Note: The start signal (ST, STP, ST2P, ST3P) outputted to the carrier depends on the entry in the STNCLS field of the TRKGRP (ATC) Table. See “BR0621 - TOPS - ANI Signaling Compatibility” in this document for more information.

Inter-LATA Call Routing Using FGD Signaling

Domestic FGD Signaling (Call Routing to IC)

To route calls on an incoming trunk group that uses domestic FGD Signaling, the AT analyzes only the signaling information received from the EAEO during the first stage of outputting. The signaling information received during the second and third stages of outputting are simply passed through to the carrier.

To set up the connection to an FGD carrier, tables such as the following must be datafilled: TRKGRP, TRKSGRP, STDPRTCT.STDPRT, and OFRT.

A tuple must be added to the Trunk Group (TRKGRP) Table for the Access Tandem to Carrier (ATC) trunk group type. This tuple must define the ATC trunk as outgoing (or two way) and as using an FGD Signaling type. See the following example.

Base TOPS Equal Access (continued)

ATC trunk defined as outgoing and as an FGD signaling type for table TRKGRP (ATC)

GRPKEY	GRPINFO
OGEACAR5	
ATC 0 TLA NCRT OG NIL MIDL NPRT NSCR 613 ABC Y EAPLAN COMB	

The Feature Group D Signaling type used by the trunk group is Equal Access Signaling, as indicated in the next to the last field (EAPLAN) in the preceding tuple. Unlike the FGC Signaling types, Equal Access Signaling requires 3-stage outpulsing. During the first stage, the EO outpulses the carrier and call-type information to the AT. TOPS uses this information as an index into the Standard Pretranslator (STDPRTCT.STDPRT) Subtable to select an outgoing trunk. During the second and third stages, the EO outpulses the Automatic Number Identification (ANI) information and the called number. This information is whistled through the AT without being analyzed.

In association with the tuple defined in the TRKGRP Table, a tuple defining the characteristics of the signaling for the ATC trunk group must be added to the Trunk Subgroup (TRKSGRP) Table. If a tuple already exists, a NIL change must be made to that tuple. This type of change is performed at the Maintenance and Administration Position (MAP) by positioning on the tuple, then stepping through the fields of that tuple without changing the field contents. A Y (yes) should be entered after all fields are displayed. Performing a NIL change on this tuple causes the FGD software to be invoked when the ATC trunk is selected for the outgoing calls. See the following example of the TRKSGRP Table.

Tuple defining ATC trunk group signaling for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
OGEACAR5 0	DS1SIG	
STD OG MF	WK 7 0	MW MW N N N 70

The tuple in the Standard Pretranslator (STDPRTCT.STDPRT) Subtable that defines the translations for the calls on the ATC trunk group can be set up as follows:

Base TOPS Equal Access (continued)**Tuple set up defining translations for calls on the ATC trunk group for subtable STDPRTCT.STDPRT**

FROMDIGS	TODIGS	PRETRTE
011188 T NP 6	011188 OFRT 310 6 6	NONE

The first and second fields in this tuple define the carrier and call-type information used by TOPS to select an outgoing trunk. The first three digits represent the Domestic or International Call Type Identification Digits (0ZZ, 1NX, 1N'X). The last three digits represent the carrier access code (XXX).

The last eight fields in this tuple are known collectively as PRETRTE. These fields define the selector type, the type of call, the number of prefix digits, the table name, the route reference number, the minimum number of digits received, the maximum number of digits received, and the position field requirement.

The character T represents the type of selector that should be used in this tuple. The T selector routes calls to the OFRT Table, a description of which follows later. This selector also causes the AT to bypass all TOPS Equal Access processing. The characters NP (No Prefix) represent the call type that must be used in this tuple. The NP call type causes the AT to bypass all TOPS processing.

The value 6 represents the number of prefix digits, and OFRT is the name of the table to which the calls are routed. The value 310 is the route reference number assigned to the route list for the OFRT Table.

The minimum and maximum number of digits that the AT must collect before it can select an outgoing trunk is six, as indicated in the eighth and ninth fields of this tuple. The NONE entry in the last field of this tuple signifies that the position field is not required for call processing.

In the preceding STDPRTCT.STDPRT tuple, the Office Route (OFRT) Table was specified as the table to which the calls on the ATC trunk group is routed. Following is an example of the OFRT Table tuple that is set up for call routing to a FGD inter-LATA carrier.

Base TOPS Equal Access (continued)

Call routing to a FGD inter-LATA carrier for table OFRT

RTE	RTELIST
310	(S D OGEACAR5)

Based on the datafill in the preceding example tuple, the calls on the ATC trunk group go to the FGD carrier on the OGEACAR5 trunk group.

International FGD Signaling (Call Routing to INC)

Through the use of the EAANIID Table, FGC or FGD Signaling can be converted to international FGD Signaling. Domestic and international FGC Signaling and domestic FGD Signaling are used on trunks incoming to or outgoing from the tandem. International FGD Signaling is used on outgoing trunks from the tandem. The first 15 digits are deleted and KP+1NX digits are prefixed onto the office route. TOPS EA software places the carrier code in the first stage and then outpulses the ANI and called number to the carrier.

For call routing to an international carrier, the OFRT Table is set up as shown in the following example.

Call routing to an international carrier for table OFRT

RTE	RTELIST
310	(N D OGEACAR5 15 D188 N)

Point of Presence Screening

The TOPEATRK Table is indexed by an incoming TOPS trunk group. The information in this table includes an SNPA and a Class of Service Screening Name, which indexes the CLSVSCRC Table.

The TOPEACAR Table contains all the Inter-LATA carriers with a point of presence at the switch. The CLSVSCRC Table is indexed by the following:

- SNPA from TOPEATRK
- the Class of Service Screening Name from TOPEATRK
- the call type (Operator Assisted or Direct Dialed).

Base TOPS Equal Access (continued)

At the index, there is a subtable that contains an entry for each carrier datafilled in the TOPEACAR Table, and a corresponding office route index. The OFRT Table can then invoke conditional routing depending upon the datafill at that index.

For all the different indexes for the CLSVSCRC that are derived from the data in the TOPEATRK table, each carrier datafilled in the TOPEACAR Table should have a corresponding index in the CLSVSCRC Subtable.

Trunks TOPAAAIC1, TOPSBBBIC1, TOPCCCIC1, and TOPEAIC1 originate from an End Office with SNPA 716. Three carriers, AAA, BBB, and CCC, each have a point of presence in the End Office as well as in the TOPS switch. Trunk TOPSAAAIC2 originates from another End Office with SNPA 301. Because only carrier AAA has a point of presence in that End Office, the other carriers are sent to treatment when access is attempted by this End Office.

The following examples show sample datafill for tables TOPEATRK, TOPEACAR, CLSVSCRC, and CLSVSCRC.CLSVSCR.

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC			BYPASS	
TOPAAAIC1	CONFORM	288	LATA1	TEAD	TEAD	TEAI
	716	N			Y	\$
TOPBBBIC1	CONFORM	222	LATA1	TEAD	TEAD	TEAI
	716	N	Y			\$
TOPCCCIC1	CONFORM	777	LATA1	TEAD	TEAD	TEAI
	716	N	Y			\$
TOPEAIC1	CONFORM	288	LATA1	TEAD	TEAD	TEAI
	716	Y	Y			\$
TOPAAAIC2	NCONFORM	288	LATA2	TEAR	TEAR	TEAC
	301	Y	Y			\$

Base TOPS Equal Access (continued)**MAP display example for table TOPEACAR**

CARDIG	CARNAME	OPLSCLD	CAMABILL	OPSERV
222	BBB	N	Y	
		SERV	NOQUERY N	NOQUERY N Y Y
288	AAA	Y	N	
		NOSERV		
777	CCC	N	Y	
		SERV	NOQUERY N	NOQUERY N Y Y

MAP display example for table CLSVSCRC

NPASCTYP	NORSLTS	TMTOFRT	POSN
301 TEAR OA	2	N	NONE
301 TEAR DD	2	N	NONE
301 TEAC OA	2	N	NONE
301 TEAC DD	2	N	NONE
716 TEAD OA	2	N	NONE
716 TEAD DD	2	N	NONE
716 TEAI OA	2	N	NONE
716 TEAI DD	2	N	NONE

MAP display example for table CLSVSCRC.CLSVSCR (for 301 TEAR OA)

FROMDIGS	TODIGS	TMTOFRT
222		222 D NOCAR
288301000	288301722	T 200
288301723	288301999	T 201
777		777 D NOCAR

MAP display example for table CLSVSCRC.CLSVSCR (for 301 TEAR DD)

FROMDIGS	TODIGS	TMTOFRT
222	222	D NOCAR
288	288	T 202
777	777	D NOCAR

Base TOPS Equal Access (continued)**MAP display example for table CLSVSCRC.CLSVSCR (for 301 TEAC OA)**

FROMDIGS	TODIGS	TMTOFRT
222	222	D NOCAR
288301000	288301722	T 203
288301723	288301999	T 204
777	777	D NOCAR

MAP display example for table CLSVSCRC.CLSVSCR (for 301 TEAC DD)

FROMDIGS	TODIGS	TMTOFRT
222	222	D NOCAR
288	288	T 205
777	777	D NOCAR

MAP display example for table CLSVSCRC.CLSVSCR (for 716 TEAC OA)

FROMDIGS	TODIGS	TMTOFRT
222	222	T 100
288716000	288716722	T 200
288716723	288716999	T 201
777	777	T 300

MAP display example for table CLSVSCRC.CLSVSCR (for 716 TEAD DD)

FROMDIGS	TODIGS	TMTOFRT
222	222	T 100
288	288	T 202
777	777	T 300

Base TOPS Equal Access (continued)

MAP display example for table CLSVSCRC.CLSVSCR (for 716 TEA1 OA)

FROMDIGS	TODIGS	TMTOFRT
222	222	T 101
288716000	288716722	T 203
288716723	288716999	T 204
777	777	T 301

MAP display example for table CLSVSCRC.CLSVSCR (for 716 TEA1 DD)

FROMDIGS	TODIGS	TMTOFRT
222	222	T 101
288	288	T 205
777	777	T 301

Exchange Access Operator Services Signaling

F2959, in feature package NTX891AA, allows a DMS-100/200 or a DMS-200 switch to provide an indication to the IC of operator involvement. The IC receives a specific ANI ID pair (for example, 34) to indicate that operator services were provided.

If this indication is requested by the carrier, field OSIND is set to Y and the ANI ID digits indicate that the Operating Company is providing operator services for the IC.

If this indication is not requested by the carrier, field OSIND is set to NO and the ANI ID digits are passed, unaltered, directly to the IC.

The feature can be used by those operating companies handling their own Intra-LATA, corridor, and IC traffic.

For those calls requiring special treatment such as coin control, ringback, and hold, EAOSS is used between an EAEO and an Access Tandem (AT) and between an EAEO and an Inter-LATA Carrier.

EAOSS is used between an EAEO and an AT to combine operator services traffic and other types of traffic on a combined trunk group.

BR0620 - TOPS - ANI Forwarding on 0- Calls

BR0620 provides various CRT information and call handling procedures that allow an operator to process 0- inter-LATA calls more efficiently.

Base TOPS Equal Access (continued)

The implementation of the ANI Forwarding on 0- Calls feature provides the operator with the following procedures and information used for transferring inter-LATA 0- calls to a carrier.

Note: The TOPS Inter-LATA Carrier Service (TICS) feature allows the TOPS operator to handle 0-, 0+, and 1+ calls as well as transfer these calls to a carrier for completion. Refer to NTX714AA for more information.

The steps in call processing are as follows:

- Call origination

The TOPS software displays a symbol (NEA) signifying that a call originated from a non-EAEO. When a call from a non-EAEO arrives at an Operator Position, NEA is displayed on the Operator Position CRT.

- Inter-LATA call restriction

The NEA symbol is displayed only if the ENDOFFICE field in the TOPEATRК Table is set to NCONFORM. The TOPS software displays a symbol (RES) signifying whether a calling party is restricted from making an inter-LATA call.

When a call from an originating party whose inter-LATA calling rights have been restricted arrives at a Operator Position, RES is displayed on the Operator Position CRT.

The RES symbol is displayed only in the following situations:

- the ANI spill of a call on an incoming trunk using Interim OSS contains ANI ID digits 08, 68, or 78
- the AT cannot determine from the datafill the correct routing for a call from the 100 side to the 200 side of the DMS-100/200. This situation occurs when a call is routed to the 200 side of the switch on a line connected directly to the Operator Position, also on the 200 side. Calls should be routed to the 200 side of the DMS on loop-around trunks.

- Call designation

Because both the RES and NEA symbols are displayed at the same coordinates, the RES symbol overrides the NEA symbol. However, this should not be a problem, because inter-LATA calls from a non-EAEO cannot be prohibited. The TOPS software displays a symbol (IC) signifying that a call is inter-LATA.

Base TOPS Equal Access (continued)

The IC symbol is displayed only when a subscriber dials 0- and the AT determines from the digits of the called number entered by the operator that the call is inter-LATA.

- Call transfer to inter-LATA carrier operator

The IC symbol is displayed on the Operator Position CRT. This procedure allows calls to be transferred to an Inter-LATA Carrier operator.

For this procedure, the D key on the Operator Position keyboard assumes the XFR IC function (Equal Access), and the P key assumes the KP IC function (Equal Access).

— Non-EAEO

When the operator receives a 0- call from a non-EAEO, the call is routed to the default carrier (DFLTPIC=Y) specified in the CARRIER field of the TOPEATRK Table.

The Operator Position CRT displays XFR IC, the carrier access code, and the carrier name.

If the DFLTPIC field is set to N, meaning that there is no default carrier, XFR IC is displayed after the operator enters the access code for a carrier for which operator services are not provided.

— EAEO

When a 0- call arrives at the Operator Position from an EAEO, the operator presses the KP IC key, enters the access code for the carrier provided by the subscriber, then enters the start signal.

XFR IC is displayed along with the carrier access code and carrier name. If the CAC is invalid, it flashes.

Prior to a 0- call being transferred to a carrier, Table OCCINFO is checked to verify that the carrier can handle the call. If the carrier cannot handle the call, the carrier name and number are displayed on the Operator Position CRT. The call must instead be transferred to a carrier capable of handling the call.

BR0621 - TOPS - ANI Signaling Compatibility

BR0621 allows the Access Tandem (AT) to accept three signaling types:

- Traditional OSS (Feature Group C)
- Interim OSS (Feature Group C)
- Equal Access (Feature Group D).

The AT accepts the FGC Signaling types and analyzes all information received from the EO during the first and the second stages of outpulsing. The AT also accepts the FGD Signaling type; however, it only analyzes the information

Base TOPS Equal Access (continued)

received during the first stage of outpulsing. This section describes how the AT interprets FGC Signaling. See "Inter-LATA Call Routing Using FGD Signaling" for a description of how the AT interprets FGD Signaling.

All incoming trunk groups to a DMS-200 with the NTX187AA software are TOPS. All outgoing trunks from a DMS-200 with the NTX187AA software are Intertoll (for intra-LATA traffic) or Access Tandem to Carrier (for inter-LATA or international traffic).

The CLGID and STATCLAS fields in the TOPS Trunk Group (TRKGRP) Table specify the signaling for the incoming trunk groups. The SIGTYPE field in the TRKGRP (ATC) Table specifies the signaling for the outgoing trunk groups. The STNCLS field, which is also in the TRKGRP (ATC) Table, specifies the type of signaling accepted by the carrier switch.

The two entries for the STNCLS field are COMB and NONCOMB. If this field is set to COMB, the carrier accepts four types of start pulses for a call: ST (1+, coin), STP (0+/0-, coin), ST2P (1+, non-coin), and ST3P (0+/0-, non-coin). If this field is set to NONCOMB, the carrier accepts only two start pulses for a call: ST (1+, coin and non-coin) and STP (0+/0-, coin and non-coin).

Incoming trunks can use Interim Operator Services Signaling (OSS) with MF pulsing or Traditional OSS with Dial or MF pulsing. Outgoing trunks can also use these types of signaling; however, the pulsing on outgoing trunks is always MF, even if the pulsing on the connecting incoming trunk is Dial pulsing.

Note: Incoming and outgoing trunk groups can also use FGD Signaling. See "Inter-LATA Call Routing Using FGD Signaling" for more information.

The signaling on the incoming and on the outgoing trunks can be the same or different. Through the use of the TRKGRP (ATC) and the EAANIID Tables, the AT can convert the signaling for a call from one FGC Signaling type to another or from a FGC Signaling type to the FGD Signaling type.

An incoming trunk can use either one signaling type or the following combinations of signaling types:

- Equal Access and Traditional OSS
- Equal Access and Interim OSS.

If Traditional OSS and Equal Access Signaling, or Interim OSS and Equal Access Signaling, are used on the same trunk group, the trunk group should be defined in the EAEO as an Operator (OP) trunk group and in the AT as a TOPS trunk group.

Base TOPS Equal Access (continued)

The group types for the incoming trunks are dedicated and combined. Dedicated trunks carry traffic with one station class, for example, 1+, 0+, and 0- coin calls. Combined trunks carry traffic with different station classes, for example, 1+, 0+, and 0- coin and non-coin calls. The same type of signaling can be used on both dedicated and combined trunks; the only difference is the manner in which the AT interprets the signaling information.

Examining the STATCLAS field in the TOPS TRKGRP Table is one way the AT determines the class of service of traffic for an incoming trunk group. The following paragraphs describe the class of service portion of inter-LATA call routing.

Traditional OSS

Traditional Operator Services Signaling (OSS) can be sent from a EAEO or a non-EAEO. Typically, it is sent from a non-EAEO.

Calls on trunks using this type of signaling are routed based on TOPS translations.

Note: See “BR0619 - TOPS - Operator Flexible Routing” in this document for a description of 00- dialing.

Call Designation

Before the AT can route a call to a carrier or to an Operating Company, it must determine the designation, intra-LATA or inter-LATA, of the call.

If a call is on an incoming trunk group that uses Traditional OSS with Dial or MF pulsing, the AT performs LATAXLA screening to determine call designation. LATAXLA screening is possible through the use the LATAXLA Table.

Note: Local calling area screening overrides LATAXLA screening when Traditional or Interim OSS is used on incoming TOPS trunks. This condition exists for local calls that originate within the same LATA, but are destined to points in a different LATA. In this case, the DMS treats each NXX as if it were a separate LATA.

The LATAXLA Table screens certain digits of a called number to determine whether the call is intra-LATA or inter-LATA. This table provides the name of each originating LATA and its associated NPA or NPANXX code. It also defines each NPA or NPANXX code as representing a location inside (intra) or outside (inter) its corresponding LATA. See the following example tuples.

Base TOPS Equal Access (continued)

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
LATA1 212200	INTRA	INTER	STD
LATA2 312	INTER	INTER	STD

The entries in the LATA and the STATE fields of the LATAXLA Table determine the type of screening performed for a particular domestic call. The entry in the STATE field also determines the name of the subtable used for class of service screening. For example: if the LATA field is set to INTER and the STATE field is set to INTER, intra-LATA/interstate screening is performed for the call. The name of the Class of Service Screening Subtable comes from the INTERSSC field in the TOPEATRK Table. If the STATE field was set to INTRA, the subtable name comes from the INTRASSC field in the TOPEATRK Table.

Call Type

The AT uses either the TYPCALL field in the STDPRTCT.STDPRT Subtable or the signaling information to determine call type for traffic on dedicated or combined trunk groups.

Note: See “BR0619 - TOPS - Operator Flexible Routing” in this document for more information.

Call Class of Service

The AT uses various methods to determine the class of service of incoming traffic, depending on the group and signaling type of the trunk group.

The STATCLAS field in the TOPS TRKGRP Table identifies the station class of a trunk group. The AT uses either the STATCLAS field only or the STATCLAS field and signaling information to determine the class of service of the traffic on incoming trunk groups.

Class of Service - STATCLAS only: If an incoming trunk group is dedicated, the STATCLAS field contains entries such as HOTEL, COIN, and NONCOIN. These entries define the class of service of the call and the type of station from which the call originates.

Class of Service - STATCLAS and Signaling Information: If an incoming trunk group is combined, the STATCLAS field contains RESTBIL or COMBINED. For traffic on an incoming combined trunk group, the AT must look at the ANI spill to determine the class of service of the calls.

Base TOPS Equal Access (continued)

For incoming trunk groups using Traditional OSS with MF pulsing, the AT examines the ANI ID digit of the calling number and the start signal of the called number to determine class of service. For incoming trunk groups using Traditional OSS with Dial pulsing, the AT examines the ANI ID digit and the start signal of the calling number to determine class of service.

The following table shows the Automatic Number Identification (ANI) ID digits used for Traditional OSS. The range for the ANI ID digit values is 0 to 9. The meanings for digits 0 to 7 are predefined; the meanings for digits 8 and 9 are Operating Company defined.

ANI ID Digits for Traditional OSS

ANI ID Digit	Description
0,3	Identified line, no special treatment
1,4	ONI (multi-party)
2,5	ANI failure
6	Hotel/motel (without room identification)
7	Restricted: Coinless, hospital, inmate
8	Operating Company defined
9	Operating Company defined

Class of Service - Verbal or Auditory Response: The AT determines the class of service of ONI traffic differently, depending on the signaling type of the trunk group.

Typically, if an incoming trunk group has combined traffic and uses Traditional OSS (with MF) or Interim OSS, the End Office outputpulses the called number plus ANI spill for the ANI traffic and the called number plus KP+1+ST or KP+01+ST/STP for the ONI traffic. In these cases, the AT examines the STATCLAS field and the signaling information to determine the class of service of the traffic.

However, if an incoming trunk carries only ONI traffic and uses Traditional OSS with DP, the AT must rely on a tone from the End Office or a verbal response from the hotel operator to determine the class of service of the traffic.

Calls on an incoming trunk group that carries only ONI traffic are always assumed to be non-coin until a verbal or auditory response (ZIP tone) indicates otherwise.

Base TOPS Equal Access (continued)

If a call originates from a hotel station, the hotel operator identifies the call to the operator. If a call originates from a coin station, the End Office generates a Coin Identification Tone, ZIP tone, to identify the call to the operator. The ZIP tone is sent when an answer is received.

For an intra-LATA coin call, the End Office sends the called number to the AT, and the AT sends a request to the EAEO for the tone. The tone is then sent directly to the operator. For an inter-LATA coin call, the End Office sends the called number to the AT, and the AT passes the called number to the IC operator. The IC operator then sends a request for the tone to the AT which propagates the request through to the End Office. When it receives the request, the End Office sends the tone directly to the IC operator.

The CLGID field in the TOPS TRKGRP Table must be set to ONI to indicate a dedicated ONI trunk group, and the TONEREPT field, which is also in TOPS TRKGRP, should be set accordingly when ZIP tones are required. The AT output pulses KP+1+ST to the carrier if an incoming trunk carries only ONI traffic and the ANI field in the TRKGRP (ATC) Table is set to Y (yes).

Call Signaling

The following two tables show the format of the ANI spill for incoming combined and dedicated TOPS trunks using Traditional OSS and MF pulsing.

Traditional OSS Over MF Combined Trunks (Sheet 1 of 2)

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
<i>Coin</i>		
(1)+3/7/10 D	KP+3/7/10 D+ST	KP+I+0/7 D+ST
0+3/7/10 D	KP+3/7/10 D+STP	KP+I+0/7 D+ST
0	KP+STP	KP+I+0/7 D+ST
00	KP+0+STP	KP+I+0/7 D+ST
<i>Non-Coin</i>		
(1)+3/7/10 D	KP+3/7/10 D+ST2P	KP+I+0/7 D+ST
0+3/7/10 D	KP+3/7/10 D+ST3P	KP+I+0/7 D+ST

Base TOPS Equal Access (continued)**Traditional OSS Over MF Combined Trunks (Sheet 2 of 2)**

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
0	KP+ST3P	KP+I+0/7 D+ST
00	KP+0+ST3P	KP+I+0/7 D+ST

Traditional OSS Over MF Dedicated Trunks, Coin and NON-Coin

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
(1)+3/7/10 D	KP+3/7/10 D+ST	KP+I+0/7 D+ST
0+3/7/10 D	KP+3/7/10 D+STP	KP+I+0/7 D+ST
0	KP+STP	KP+I+0/7 D+ST
00	KP+0+STP	KP+I+0/7 D+ST

The following two tables show the format of the ANI spill for incoming combined and dedicated TOPS trunks using Traditional OSS and Dial pulsing.

Traditional OSS Over DP Combined Trunks (Sheet 1 of 2)

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
<i>Coin</i>		
(1)+3/7/10 D	3/7/10 D	KP+I+0/7 D+ST
0+3/7/10 D	Seizure - no digits	KP+I+0/7 D+STP
0	0 D (no digits)	KP+I+0/7 D+STP
00	0	KP+I+0/7 D+STP
<i>Non-Coin</i>		
(1)+3/7/10 D	3/7/10 D	KP+I+0/7 D+ST2P
0+3/7/10 D	Seizure - no digits	KP+I+0/7 D+ST3P

Base TOPS Equal Access (continued)

Traditional OSS Over DP Combined Trunks (Sheet 2 of 2)

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
0	0 D (no digits)	KP+I+0/7 D+ST3P
00	0	KP+I+0/7 D+ST3P

Traditional OSS Over DP Dedicated Trunks

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
<i>Coin and Non-Coin</i>		
(1)+3/7/10 D	3/7/10 D	KP+I+0/7 D+ST
0+3/7/10 D	Seizure - no digits	KP+I+0/7 D+STP
0	0 D (no digits)	KP+I+0/7 D+STP
00	0	KP+I+0/7 D+STP

Interim OSS

Interim OSS is typically sent from EAEs. Calls on trunks using this type of signaling are routed based on TOPS translations or signaling information.

Call Designation

The AT must determine whether a call is intra-LATA or inter-LATA before it can route the call to its appropriate destination.

If a call is on an incoming trunk group that uses Interim OSS, the AT examines the start signal on the calling number to determine call designation.

An ST signal signifies an inter-LATA call designation, which means the call routes to an IC. An STP signal signifies an intra-LATA call designation, which means the call routes to an Operating Company. These start signals are set in the End Office when LATAXLA screening is performed.

Note: Calls with corrupted start signals are routed as if Traditional OSS had been used.

Base TOPS Equal Access (continued)

Call Type

The AT uses either signaling information or the TYPCALL field in the STDPRTCT.STDPRT Subtable to determine call type for traffic on dedicated or combined trunk groups.

Call Class of Service

The AT uses various methods to determine the class of service of incoming traffic, depending on the group type of the trunk group.

The STATCLAS field in the TOPS TRKGRP Table identifies the station class of a trunk group. The AT uses either the STATCLAS field only or the STATCLAS field and signaling information to determine the class of service of the incoming traffic.

If an incoming trunk group is dedicated, the STATCLAS field contains entries such as HOTEL, COIN, and NONCOIN. These entries define the class of service of the call and the type of station from which the call originates.

If an incoming trunk group is combined, the STATCLAS field contains RESTBIL or COMBINED. For traffic on an incoming combined trunk group, the AT must look at the ANI spill to determine the class of service of the calls.

For incoming trunk groups using Interim OSS, the AT examines the ANI ID digits of the calling number and the start signal of the called number to determine class of service.

The following table shows the ANI IDs which are used for Interim OSS. The range for the ANI ID digit values is 00 to 99.

ANI ID Digits for Interim OSS (Sheet 1 of 2)

ANI ID Digit	Description
00	Identified line, no special treatment
01	ONI (multi-party)
02	ANI failure
06	Hotel/motel (without room identification)
07	Coinless, hospital, inmate, and so on
08	Inter-LATA restricted, regular line

Base TOPS Equal Access (continued)**ANI ID Digits for Interim OSS (Sheet 2 of 2)**

ANI ID Digit	Description
68	Inter-LATA restricted, hotel line
78	Inter-LATA restricted, coinless, hospital, inmate, and so on

Call Signaling

The following tables show the format of the ANI spill for incoming combined and dedicated TOPS trunk groups using Interim OSS. The format of this information is similar to that of Traditional OSS.

Interim OSS Over Combined Trunks (Operating Company/Intra-LATA)

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
<i>Coin</i>		
(1)+3/7/10 D	KP+3/7/10 D+ST	KP+II+0/7 D+STP
0+3/7/10 D	KP+3/7/10 D+STP	KP+II+0/7 D+STP
0	KP+STP	KP+II+0/7 D+STP
<i>Non-Coin</i>		
(1)+3/7/10 D	KP+3/7/10 D+ST2P	KP+II+0/7 D+STP
0+3/7/10 D	KP+3/7/10 D+ST3P	KP+II+0/7 D+STP
0	KP+ST3P	KP+II+0/7 D+STP

Interim OSS Over Dedicated Trunks (Operating Company/Intra-LATA) (Sheet 1 of 2)

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
<i>Coin and Non-Coin</i>		
(1)+3/7/10 D	KP+3/7/10 D+ST	KP+II+0/7 D+STP

Base TOPS Equal Access (continued)**Interim OSS Over Dedicated Trunks (Operating Company/Intra-LATA) (Sheet 2 of 2)**

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
0+3/7/10 D	KP+3/7/10 D+STP	KP+II+0/7 D+STP
0	KP+STP	KP+II+0/7 D+STP

Interim OSS Over Combined Trunks (IC/Inter-LATA)

Number Dialed And Call Type	Called Number	Automatic Number Identification Spill
<i>Coin</i>		
(10XXX) (1)+3/7/10 D	KP+3/7/10 D+ST	KP+II+0/7 D+ST
(10XXX) (0)+3/7/10 D	KP+3/7/10 D+STP	KP+II+0/7 D+ST
10XXX + 0	KP+ST3P	KP+II+0/7 D+ST
<i>Non-Coin</i>		
(10XXX) (1)+3/7/10 D	KP+3/7/10 D+ST2P	KP+II+0/7 D+ST
(10XXX) (0)+3/7/10 D	KP+3/7/10 D+ST3P	KP+II+0/7 D+ST
10XXX + 0	KP+ST3P	KP+II+0/7 D+ST

The following table shows the format for ANI spill for traffic on trunks using OSS. The format of this information is similar to that of Traditional OSS.

Interim OSS Over Dedicated Trunks (IC/Inter-LATA)) (Sheet 1 of 2)

NUMBER DIALED AND CALL TYPE	CALLED NUMBER	AUTOMATIC NUMBER IDENTIFICATION SPILL
<i>Coin and Non-Coin</i>		
(10XXX) (1)+3/7/10 D	KP+3/7/10 D+ST	KP+II+0/7 D+ST

Base TOPS Equal Access (continued)

Interim OSS Over Dedicated Trunks (IC/Inter-LATA)) (Sheet 2 of 2)

NUMBER DIALED AND CALL TYPE	CALLED NUMBER	AUTOMATIC NUMBER IDENTIFICATION SPILL
(10XXX) (0)+3/7/10 D	KP+3/7/10 D+STP	KP+II+0/7 D+STP
10XXX + 0	KP+STP	KP+II+0/7 D+ST

BR0635 - Trunk Signaling Protocol/Format Conversion

BR0635 allows the TOPS software to handle inter-LATA calls coming into the Access Tandem (AT) on TOPS trunks using Interim Operator Services Signaling (OSS).

Inter-LATA Calls

The inter-LATA designation of a call is determined in several ways:

- Modifying the ANI spills of calls on incoming TOPS trunks that use Interim OSS. The start signal on the ANI spill of calls from an EAEO carries an inter-LATA mark.

Note: Setting the start signal with an inter-LATA mark is an optional procedure that is performed in the EAEO.

- Using translations to determine whether a call is inter-LATA if the called digits are available and Traditional or Interim OSS is used.

Note: See “BR0621 - TOPS - ANI Signaling Compatibility” in this document for a description of this procedure.

- Allowing the Operating Company co-located operator to forward Operator-Assisted calls. The operator enters the called number for 0- calls.

Note: See “BR0620 - TOPS - ANI Forwarding on 0- Calls” in this document for a description of this procedure.

BR0635 allows intra-LATA calls to be handled in the normal manner; that is, intra-LATA calls are routed to an Operator Position, during which time the AT is participating actively in all phases of call processing. However, during inter-LATA call routing, the AT is transparent and does not participate in the communication required during call processing.

ANI Spill

The ANI spill provides the information necessary for billing and determines whether operator assistance is required for call completion.

Base TOPS Equal Access (continued)

During TOPS call processing, the ANI spill is saved in the TOPS Recording Unit for reference during call setup and for billing when a call is completed.

In addition to the ANI spill, the recording unit stores other information about a call. Information such as how the call is handled (by an Inter-LATA Carrier or an Operating Company), who is the default carrier of the calling party, and from what type of End Office (Equal Access or non-Equal Access) the TOPS trunk originates.

The ANI spill for calls on incoming TOPS trunk groups that use Traditional OSS includes a key pulse (KP), a single ANI ID digit, the calling number, and a start signal (ST).

The ANI spill for calls on incoming TOPS trunk groups that use Interim OSS includes a key pulse (KP), a set of double ANI digits, the calling number, and a start pulse (ST).

Note: See "Data Assignment" for information on the BELLCAT and OSSCAT Tables that define the format of the ANI spill for calls on trunks using Traditional or Interim OSS.

Table TRKGRP, type TOPS, contains data field ANIREQ that provides Operating Companies the ability to request the ANI spill from the End Office using a wink or by returning an offhook. Subfield ANIREQ only applies to trunks using BELL, MODBELL, or OSS signaling. By using the wink option, a true answer is propagated to the End Office for non-operator calls over TOPS trunks. If the wink option is not used, the End Office does not receive an answer from the terminating office.

The ANI spill for calls on dedicated CAMA trunks that use CAMA Signaling includes a key pulse and a single ANI ID digit. Dedicated CAMA trunks carry ONI, ANI success, and ANI fail calls. These are interpreted as 1+ Direct-Dialed traffic.

If an incoming TOPS trunk carrying only CAMA traffic uses CAMA Signaling and the STATCLAS field in the TRKGRP (TOPS) Table is set to CAMA, the AT expects the ANI spills for the calls to be in the following formats and accepts these formats as valid.

The following spills do not include an ST signal:

- KP+1 - ONI calls
- KP+2 - ANI fail calls

Base TOPS Equal Access (continued)

The system interprets, then identifies, the preceding spills at the Operator Position as CAMA calls, and a CAMA call code is generated in each AMA record.

ANI Regeneration

The ANI spill of calls on incoming TOPS trunks using Traditional or Interim OSS is processed differently by the AT, depending on how the ANI field in the TRKGRP (ATC) Table is set (Y or N).

If the ANI field is set to N (No), the spill is analyzed, but not regenerated to the carrier. If the field is set to Y (yes), the spill is analyzed then regenerated to the carrier.

Note: The ANI spill for FGB calls is not normally required by the carrier.

If the AT does not receive the ANI spill for a call and the ANI field is set to Y, the AT still outputpulses information to the carrier in one of the forms shown in the following table.

AT Outputpulsing Carrier (ANI=Y, No ANI Received)

Outputpulsing	Description
KP+1+ST	Incoming trunk carries only ONI traffic and the outgoing trunk carries different types of traffic
KP+2+ST	Call on incoming trunk has ANI office failure

ANI regeneration causes a significant increase in the time between the end of dialing by the subscriber and the completion of the call without a tone or the reception of the appropriate tone or recorded announcement by the AT. This time interval is called post dial delay.

Note: Using an N selector in the route list (for example, OFRT) prevents the AT from outputpulsing the called digits for an FGB call. This measure can be used to reduce post dial delay.

Post Dial Delay

Post dial delay is inherent in the system when trunks going to and coming from the AT use MF pulsing. It is not a defect of the system, simply a characteristic.

Base TOPS Equal Access (continued)

ANI regeneration contributes to post dial delay; however, this condition exists even if ANI regeneration is not performed. Five other conditions also contribute to post dial delay.

- Conditional routing of traffic on a combined trunk group is required. The ANI spill specifies the status (for example, ANI fail) and class of service (for example, HOTEL) of the call.
- The traffic on an incoming trunk group is routed to an outgoing trunk group that uses different signaling.
- An incoming TOPS Dial Pulse (DP) trunk is connected to an outgoing Multifrequency (MF) pulse trunk.
- An incoming TOPS trunk is connected to an outgoing trunk that sends incompatible ANI information digits back to the End Office.
- An operator is required. Before an operator is attached at the AT, the ANI spill must be received and displayed at the Operator Position to prevent a time-out at the End Office.

ANI Modification

Any inter-LATA call sent to an operator at the AT can be either turned back by the operator or forwarded to the IC operator as a 0- call.

The process of determining whether a call is inter-LATA requires the presence of the called number. If the call has ANI failure, the operator requests the calling number, then enters the number into the system, allowing the call to be forwarded to the IC operator as an ANI success call. The operator can also identify the class of service of the call, for example, coin or hotel.

Once a coin call has been routed to a carrier, the AT must propagate the coin signal back to the End Office. Coin signals must pass directly through the AT from the carrier to the End Office without deterioration. This is achieved by defining the same coin signaling for the incoming and outgoing trunks.

AF0968 - Carrier Code On AMA for Terminating TOPS Calls

AF0968 allows the Carrier Access Code (CAC) associated with an Inter-LATA Carrier to be recorded on an AMA record for all inward service type calls (for example, verification requests and directory assistance) sent to TOPS from an IC. This allows the Operating Company to charge the IC for services provided.

Inward service type calls are sent by distant operators to TOPS for various types of services. The specific type of service required is determined by the operator code sent by the distant operator. For example, the operator code for Directory Assistance is 131.

Base TOPS Equal Access (continued)

This feature allows the Operating Company to record on AMA tape the CAC associated with an IC or other Operating Company for which services have been provided so they can be billed properly. The following inward service type calls (datafilled in the Call Origination field of the TOPS Table) are supported:

- 121 - Inward call from another operator for assistance and calls to ring-down tributaries
- 131 - Inward call from distant operator for directory assistance
- 141 - None
- 151 - None
- 161 - None
- 171 - None
- 181 - Inward call from distant operator for a toll station
- 191 - None
- 1151 - None
- 1152 - Inward call from distant operator for mobile service
- 1153 - Inward call from distant operator for marine service
- 1154 - None
- 1157 - None
- 1158 - Operator-dialed multi-digit call back call to a noncoin telephone when time and charges and special billing are requested
- 1159 - Operator-dialed multi-digit call back call to a hotel when special billing is requested
- 1160 - Manual inward validation
- 1161 - Reserved for future use
- 1162 - Reserved for future use

Inward service type calls usually arrive at an Operator Position on Intertoll (IT) trunks. With AF0968, these calls can also arrive on Access Tandem to Carrier (ATC) trunks. For both IT and ATC trunks, the CAC associated with the IC is in the AMA record.

This feature allows the TOPS operator to input the CAC associated with an IC for inward service type calls arriving on IT trunks. The CAC is obtained verbally by the operator and keyed in at the Operator Position. If the call

Base TOPS Equal Access (continued)

arrives on an ATC trunk, the operator does not need to key in the CAC because it is extracted from the TRKGRP (ATC) Table.

The CAC is displayed on the Operator Position CRT for calls arriving on ATC trunks to indicate to the operator that the CAC does not need to be obtained from the distant operator. If the CAC does not appear on the CRT, the operator must obtain it verbally from the distant operator. Since the CAC does not need to be manually obtained for inward service calls arriving on ATC trunks, average work time of the operator is minimized.

If the NOAMA field in Table TOPS is set to the default value for inward call types, NOAMA is displayed and the operator keys POS RLS to release the call. The same record is generated for the inward call.

An inward service type call arriving at TOPS could come from within the Operating Company or from another Operating Company instead of an IC. When an inward service type call comes in from another Operating Company, a non-carrier CAC can be associated with the Operating Company and can be used to bill the Operating Company for any services provided.

The following tables must be datafilled to create a non-carrier CAC: OCCINFO, TOPEACAR, and PICNAME.

Screen Displays

The datafill in the TOPS Table determines the screen display when an inward service call arrives at an Operator Position.

The TOPS Table is a fixed size table and is initialized to default values at loadbuild. The Operating Company can change existing entries, but cannot add any. If the Operating Company changes any of the entries in this table, they must use the C selector.

TOPS MP has various screen implementation depending on the position type and call context. For inward service call, the Toll and Assist (TA) Screen is displayed on call arrival for all inward call originations except 131. For call origination 131 (used for Directory Assistance), the DA Billing Screen is displayed if the call arrives on any other trunk other than ATC. If the call arrives on an ATC trunk, the DA Search Screen is displayed.

The DA Billing Screen is displayed on call arrival for 131 calls that do not arrive over ATC trunks to indicate to the operator that the CAC must be obtained verbally and keyed in. For calls over ATC trunks, the CAC is retrieved from the TRKGRP (ATC) Table and does not need to be keyed in.

Base TOPS Equal Access (continued)

AF1100 - TOPS FGB Call Code 134

AF1100 allows Operating Companies to optionally generate Bellcore (BC) Automatic Message Accounting (AMA) records (call code 134, structure code 625) for non-operator-handled Feature Group B (FGB) calls. It also allows TOPS calls routed from a pre-translator using a T or an S selector to be processed by TOPS EA without the index into Table OFRT obtained by the pre-translator being changed by TOPS EA.

Feature Group B is a signaling system used during the transition from non-EA to EA. Calls to an inter-LATA carrier/international carrier (IC/INC) use the dialing sequence 950-WXXX, where W is either 0 or 1, and XXX is a number specifying an IC/INC. Calls from the End Office (EO) can go directly to an IC/INC, or they can be routed from the EO through an Access Tandem (AT), then to an IC/INC. Calls sent to an AT with TOPS on an originating TOPS trunk are routed by TOPS.

Presently, TOPS FGB calls are routed using TOPS EA Translations (XLA) or from a pre-translator using a T or an S selector (throughout this feature description, references to T selectors apply to S selectors as well). Calls routed using TOPS EA XLA produce an AMA record with call code 251, structure code 734; calls routed using a T selector produce an AMA record with call code 006, structure code 700.

Feature Group B Call Code 134

The primary purpose of AF1100 is to allow non-operator-handled TOPS FGB calls that normally produce AMA records with call code 251, structure code 734, to optionally produce AMA records with call code 134, structure code 625 (Long Duration Calls, that is, calls up over two midnights, produce structure code 627).

Office parameter TOPS_FGB_CC134 is added to the Office Variable (OFCVAR) Table. This parameter determines whether non-operator-handled TOPS FGB calls that normally produce AMA records with call code 251, structure code 734, now produce AMA records with call code 134, structure code 625. All non-operator-handled TOPS FGB calls receiving TOPS EA processing are affected by this parameter.

Equal Access Processing with T Selector Routing

AF1100 allows TOPS calls routed from a pre-translator using a T selector to receive TOPS EA processing without TOPS EA changing the index into Table OFRT given by the pre-translator. TOPS calls routed with a T selector currently bypass TOPS EA processing. This bypassing causes TOPS EA class of service to not be set; thus, the calls cannot receive conditional routing (which allows an AT to send a call to a primary or a secondary office route

Base TOPS Equal Access (continued)

whether a specified condition is met), and office traffic cannot be split (that is, different classes of calls sent over different routes).

LATA screening is also bypassed, so the LATA status may not be correct; this affects the AMA records produced. T selector routing currently produces AMA records with call code 006, structure code 700, for all TOPS calls.

AF1100 also adds office parameter TOPS_EA_PROCESS_T_SEL to the OFCVAR Table. This parameter determines whether TOPS calls routed using a T selector should receive TOPS EA processing without TOPS EA changing the index into Table OFRT obtained by the pre-translator. This additional processing determines whether the call is a carrier call. If it is a carrier call, the carrier number is obtained; EA class of service is set, which allows the TOPS calls to be conditionally routed; and the carrier number is used for AMA.

For non-operator-handled TOPS FGB calls routed with a T selector, this parameter also allows (in conjunction with parameter TOPS_FGB_CC134) the production of AMA records with call code 134, structure code 625.

Activation and verification

Six office parameters are required to activate the NTX187AA and NTX188AA software and certain functions of the software:

- TEST_CALL_II_SPILL - OFCVAR Table
- TOPS_FGB_CC134 - OFCVAR Table
- TOPS_EA_PROCESS_T_SEL - OFCVAR Table
- TOPS_EQUAL_ACCESS_OFFICE - OFCOPT Table
- TOPS_EA_INTERLATA_NONOPR_AMA - OFCENG Table
- TRUNK_NETWORK_NUMBER_NEEDED - OFCENG Table.

Activating the NTX187AA software package

Four steps are required to activate the NTX187AA software package:

1. Assign the trunk groups.
2. Datafill the tables.
3. Ensure that the office parameters are set; for example, the TOPS_EQUAL_ACCESS_OFFICE parameter that activates the NTX187AA software package.
4. Ensure that the FORMAT field of the Call Record Stream Format (CRSFMT) Table is set to BCFMT.

Base TOPS Equal Access (continued)

Datafill example

This section describes how certain data tables should be set up for intra-LATA and inter-LATA call routing.

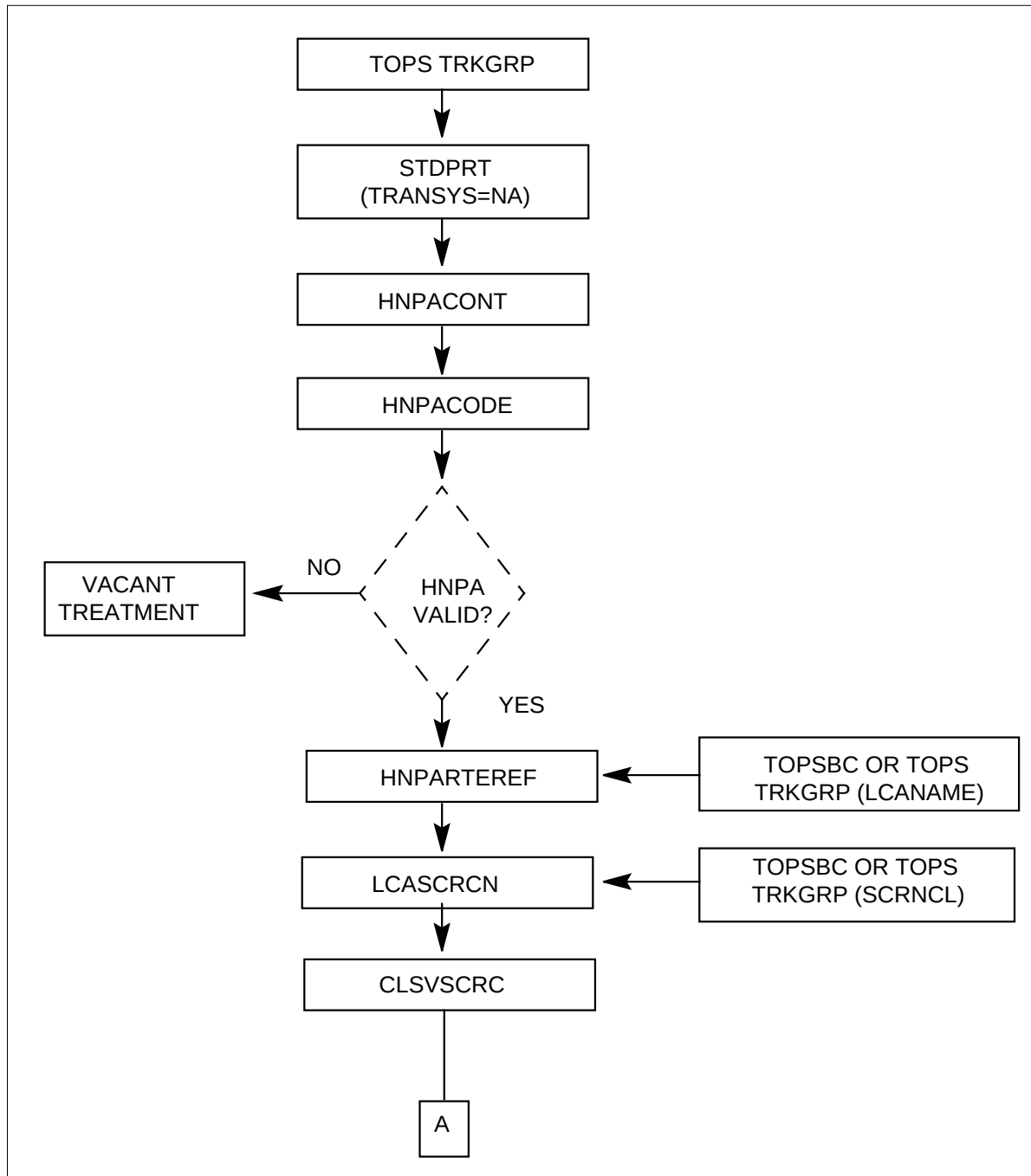
Note: These datafill examples do not apply to all situations and should be used only to understand the flow of call progression and the relationship between some of the tables used for TOPS translations.

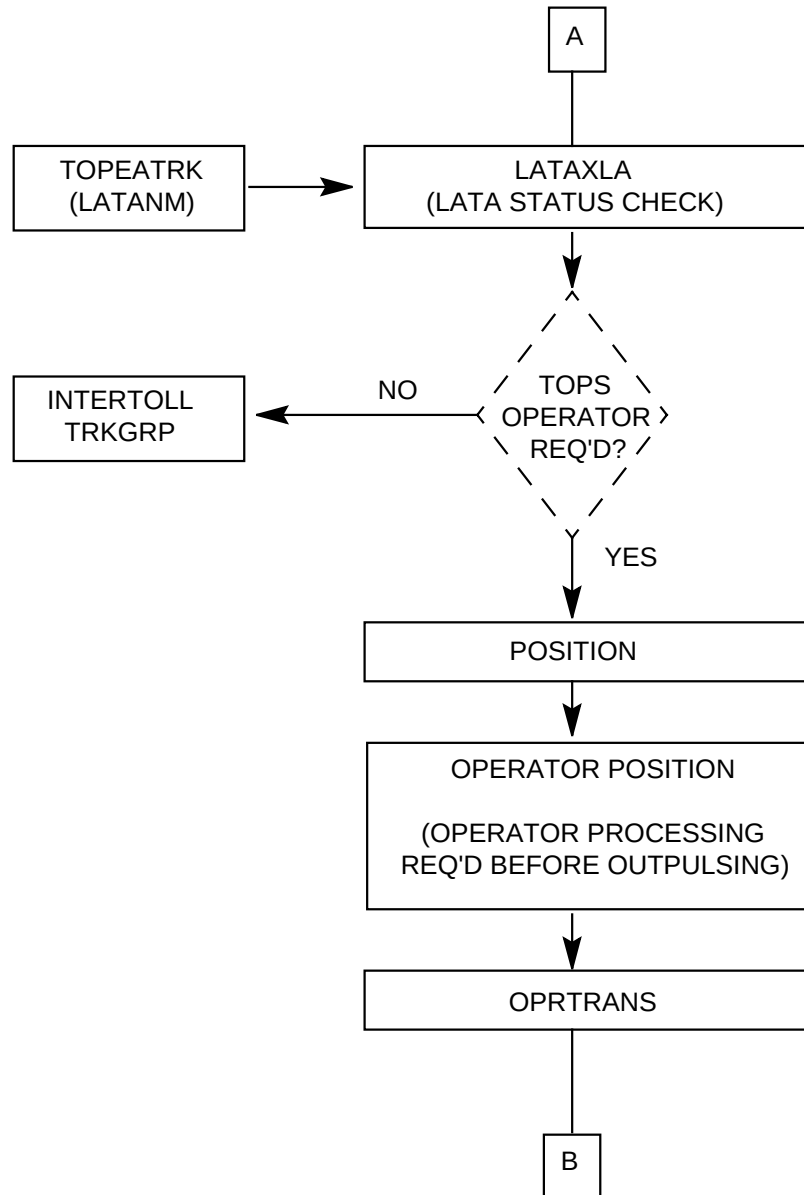
Call Progression

The flowcharts in this section show the order in which certain data tables are accessed during TOPS translations.

Base TOPS Equal Access (continued)

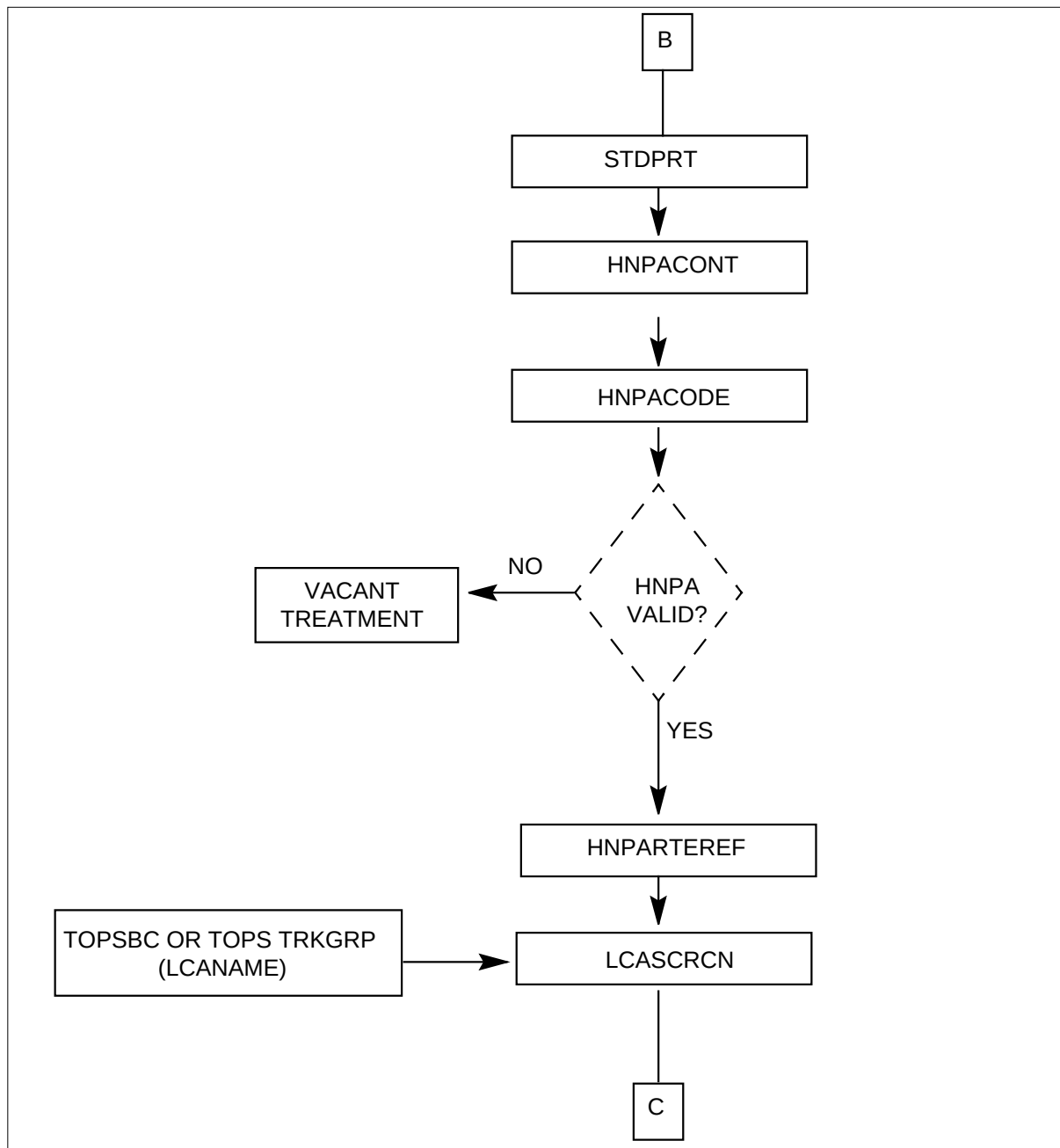
Intra-LATA Call Routing (Traditional OSS) (Part 1 of 4)



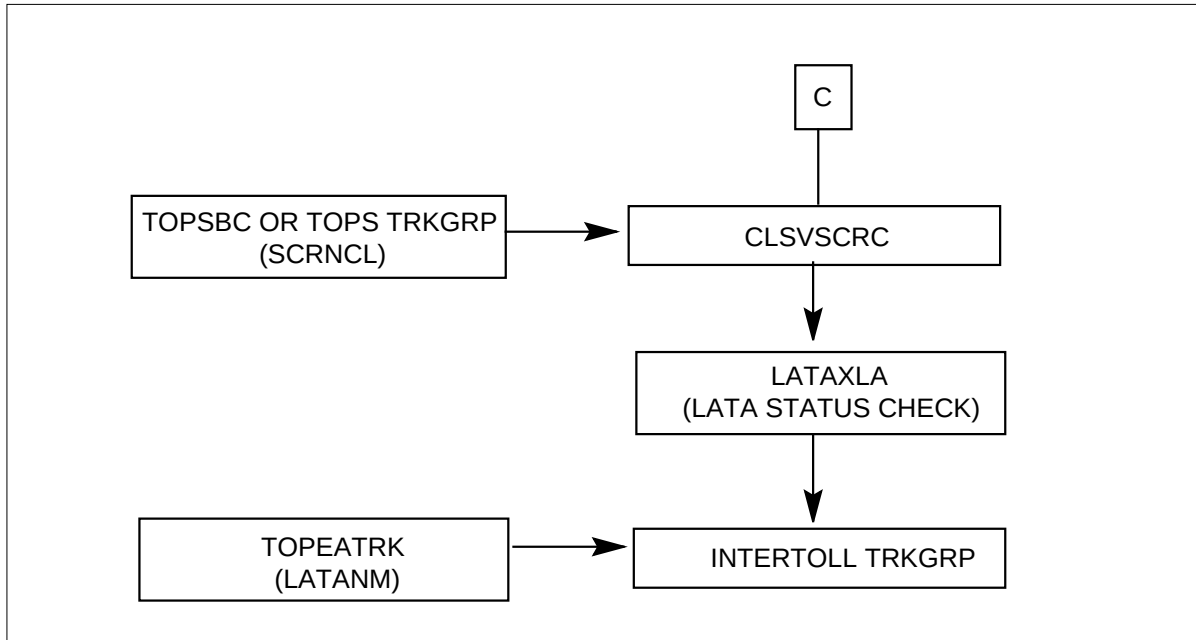
Base TOPS Equal Access (continued)**Intra-LATA Call Routing (Traditional OSS) (Part 2 of 4)**

Base TOPS Equal Access (continued)

Intra-LATA Call Routing (Traditional OSS) (Part 3 of 4)



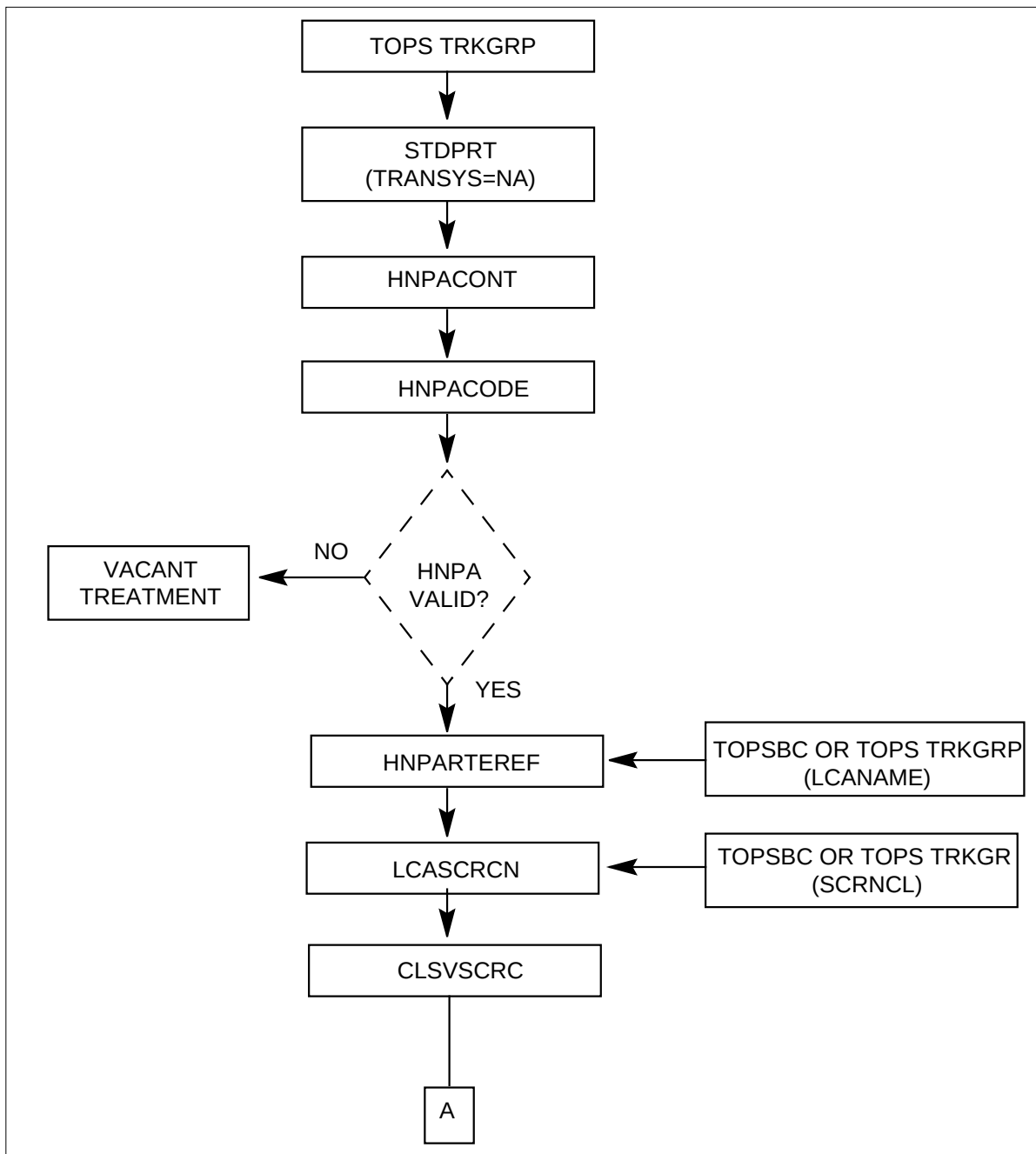
Base TOPS Equal Access (continued)

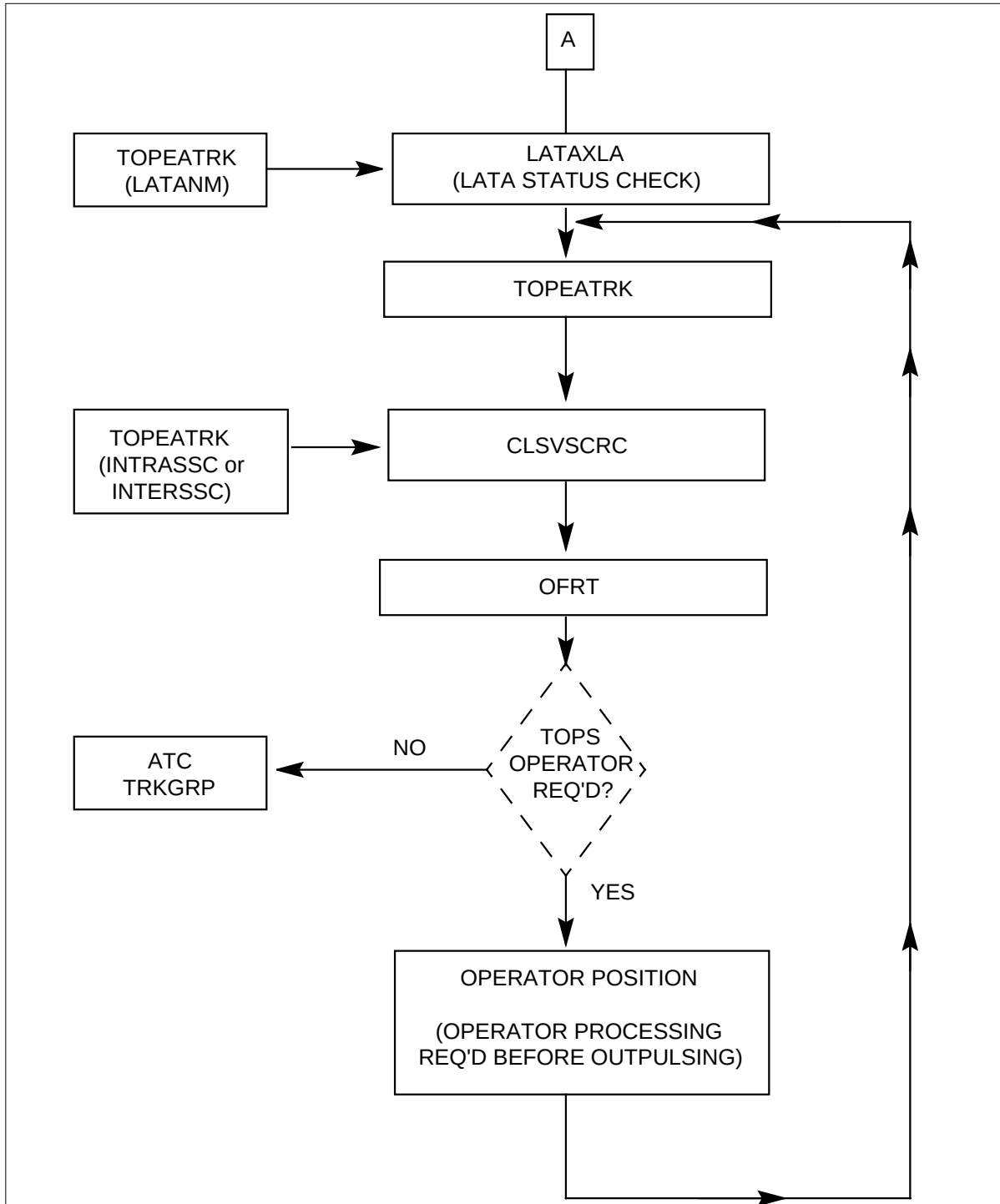
Intra-LATA Call Routing (Traditional OSS) (Part 4 of 4)

Note: If Interim OSS is used instead of Traditional OSS, no LATA status check is made. Instead, the DMS examines the start signal on the calling number to determine the designation of the call.

Base TOPS Equal Access (continued)

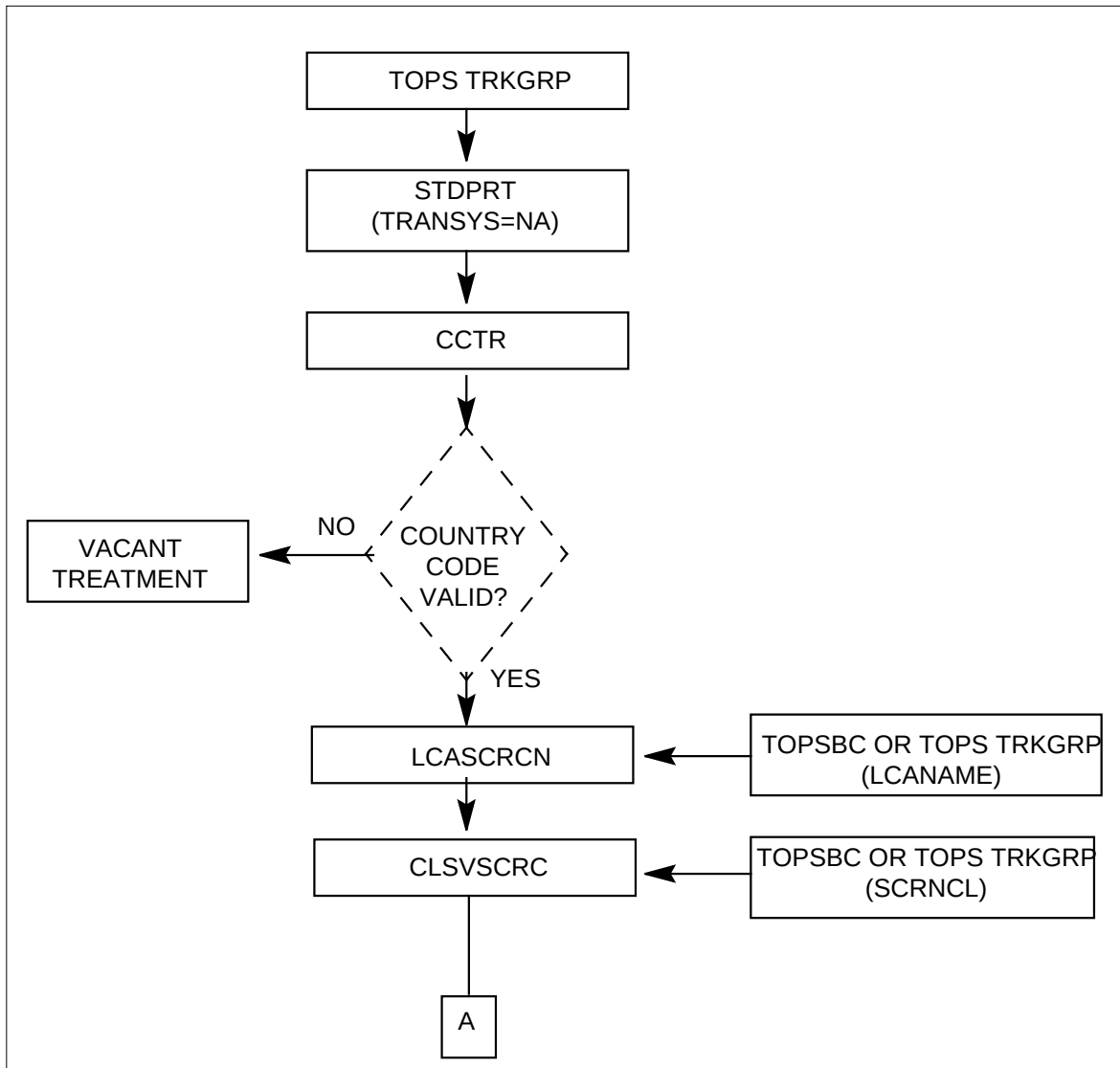
Inter-LATA Call Routing (Traditional OSS) (Part 1 of 2)

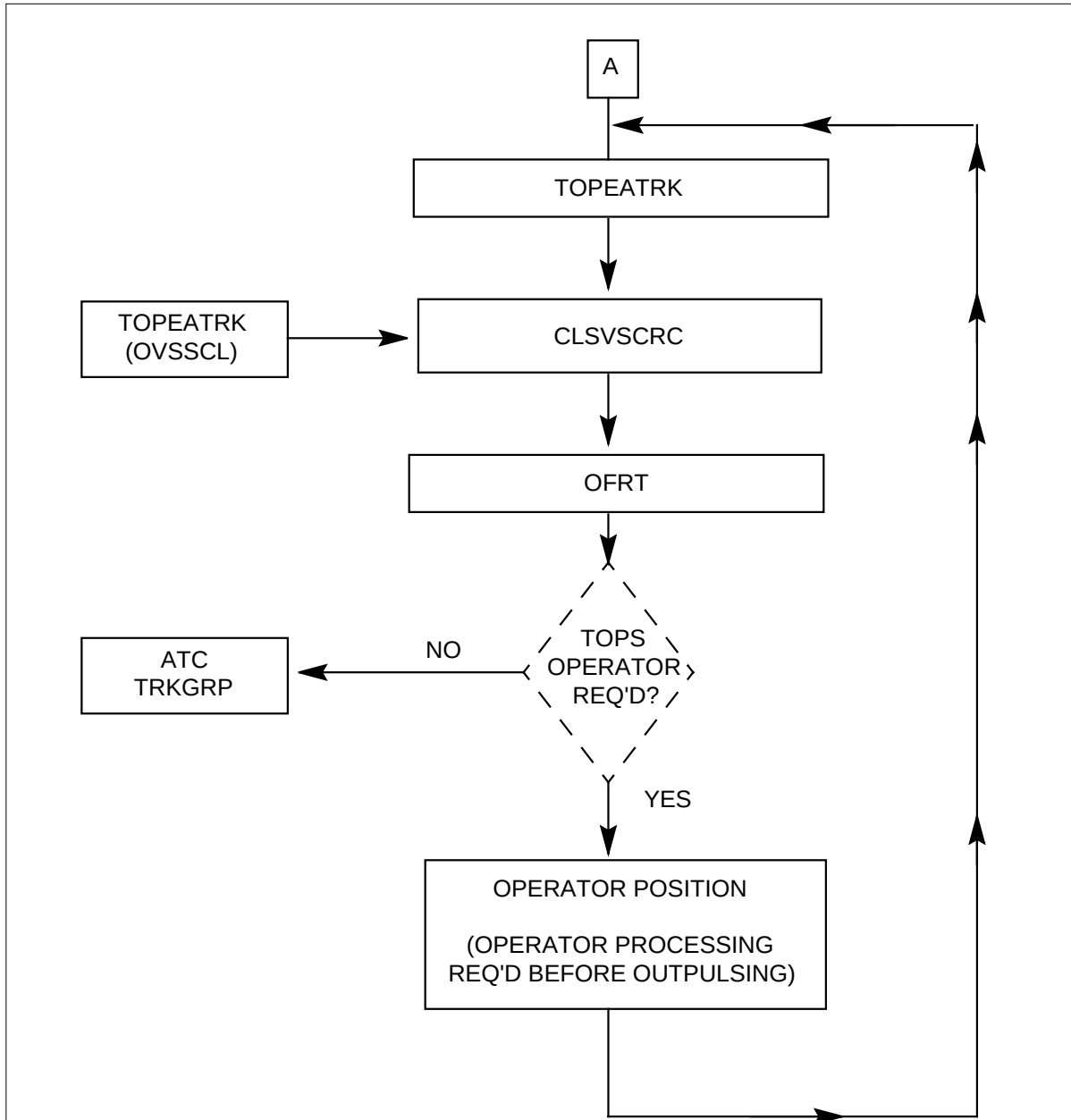


Base TOPS Equal Access (continued)**Inter-LATA Call Routing (Traditional OSS) (Part 2 of 2)**

Base TOPS Equal Access (continued)

Note: If Interim OSS is used instead of Traditional OSS, no LATA status check is made. Instead, the DMS examines the start signal of the calling number to determine the designation of the call. The Operating Company has the option of routing inter-LATA, ONI and ANI-fail calls to the Operator Position or to the IC. The PICNAME and the TOPEACAR Tables are used only for 0- calls when the operator enters a CAC to validate the carrier digits.

International Call Routing (Traditional OSS) (Part 1 of 2)

Base TOPS Equal Access (continued)**International Call Routing (Traditional OSS) (Part 2 of 2)**

Note: International calls are routed to the Operator Position only if they are ONI or ANI failure.

Base TOPS Equal Access (continued)

Data tables

This section shows example entries for the following tables, listed in datafill order.

- HNPACONT
- STDPRTCT
- SCRNCCLAS
- TRKGRP (TOPS)
- PICNAME
- TRKSGRP
- TRKGRP (ATC)
- OFRT
- CLSVSCRC
- POSITION
- HNPACODE
- STDPRT
- CLSVSCR
- TOPSBC
- TOPEACAR
- TOPEATRK
- LATANAME
- LATAXLA
- TOPSCOIN

MAP display example for table HNPACONT

NPA	MAXRTE	NOAMBIGC	RTREF	HNPACODE	ATTRIB
919	512	1	(20)	(1)	(38)

MAP display example for table STDPRTCT

EXTPRTNM	STDPRT
TOP1	(1)
TOP2	(1)

Base TOPS Equal Access (continued)**MAP display example for table SCRNCCLAS**

VALUE	SYMBOL
23	DOM1

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO
TOPCOMAMF	
TOPS 0 NPDGP NCRT IC MIDL 919 TOP1 NLCA NSCR Y SP	
COMBINED N N	
0 BELL 10 2 2 N Y WINK	
TOPCOMBMF	
TOPS 0 NPDGP NCRT IC MIDL 919 TOP2 NLCA NSCR Y SP	
COMBINED N N	
0 BELL 3 5 2 N Y OFFHK	

MAP display example for table PICNAME

VALUE	SYMBOL
1	CARR1
2	CARR2

MAP display example for table TRKSGRP

SGRPVAR	SGRPKEY	CARDCODE	SGRPVAR
STD	TOPCOMAMF 0	DS1SIG	
		IC MF WK N 5 5 EI NO N N N M UNEQ	
STD	TOPCOMBMF 0	DS1SIG	
		IC MF WK N 5 5 EI NO N N N M UNEQ	
STD	OGEACAR3 0	DS1SIG	
		OG MF WK 7 0 NO EI N N N 70 UNEQ	
STD	OGEACAR4 0	DS1SIG	
		OG MF WK 7 0 NO EI N N N 70 UNEQ	

Base TOPS Equal Access (continued)

MAP display example for table TRKGRP(ATC)

GRPKEY	GRPINFO

OGEACAR3	
ATC 0 TLA NCRT OG SP MIDL NPRT NSCR 919 ABC Y BELLI N COMB N \$	
OGEACAR4	
ATC 0 TLA NCRT OG SP MIDL NPRT NSCR 919 XYZ Y BELLI N COMB N \$	
OTWAON11MG0 0	
ATC 21 TLD NCTC OG IT MIDL NPRT NSCR 613 XYZ Y FGB INTERTOLL Y \$	

MAP display example for table OFRT

RTE	RTELIST

101	(S D OGEACAR3)\$
102	(S D OGEACAR3)\$
301	(S D OGEACAR4)\$
302 (CND TOPEACLS EAC0IN SK 1) (T OFRT 312)	(T OFRT 402)\$
312 (CND TOPEACLS EAHOTEL SK 1) (T OFRT 322)	(T OFRT 412)\$
322 (CND TOPEACLS EARBILL SK 1) (T OFRT 332)	(T OFRT 422)\$
332 (CND TOPEACLS EACAMA SK 1) (T OFRT 442)	(T OFRT 432)\$
402	(S D OGEACAR4)\$
432	(S D OGEACAR4)\$
442	(S D OGEACAR4)\$

MAP display example for table CLSVSCRC

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR

919 DOM1 DD	2 N	NONE	(1)
919 DOM1 OA	2 N	NONE	(1)

MAP display example for table POSITION

POS	PRTE

TOPS	S TOPSP0S

Base TOPS Equal Access (continued)**MAP display example for table HNPACODE**

SUB	FROMDIGS	TODIGS	CDRRTMT
212	212		FRTE 10
263	263		HRTE 13
312	312		FRTE 12

MAP display example for table STDPRT

POS TOP1

FROMDIGS	TODIGS	PRETRTE
2	9	
		N NL 0 NA

POS TOP2

FROMDIGS	TODIGS	PRETRTE
0	0	
2	9	
		N NL 0 NA

T OA 1 OFRT 301 1 1 NONE

MAP display example for table CLSVSCR

POS 919 DOM1 DD

FROMDIGS	TODIGS	TMTOFRT
222	222	T 302
333000	333000	T 101
333001	333999	T 102

POS 919 DOM1 OA

FROMDIGS	TODIGS	TMTOFRT
222	222	T 302
333000	333000	T 101
333001	333999	T 102

Base TOPS Equal Access (continued)**MAP display example for table TOPSBC**

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALBC	CHGCLSS
TOPCOMBMF					
	544	NLCA	NSCR	919544	TOPS
TOPCOMAMF					
	549	NLCA	NSCR	919549	TOPS

MAP display example for table TOPECAR

CARDIG	CARNAME	OPLSCLD	CAMABILL	OPSERV
222	CARR1	Y	Y	NOSERV
333	CARR2	N	Y	NOSERV

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
TOPCOMBMF NCONFORM 222 LATA1 DOM1 DOM1 NSCR						
919	N	N	(HOTEL)	(ZEROM)		
TOPCOMAMF NCONFORM 333 LATA1 DOM1 DOM1 NSCR						
919	N	N	(HOTEL)	(ZEROM)		

MAP display example for table LATANAME

LATANAME
LATA1

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
LATA1 212	INTER	INTER	STD
LATA1 312	INTER	INTER	STD

Base TOPS Equal Access (continued)

MAP display example for table TOPSCoin

GRPKEY	CNSDELAY	PADSTAT0	PADSTAT1	COINTYPE
TOPCOMAMF	75	ENABLED	DISABLED	CDF

Call Types

The following section lists various calls that can be made.

See the flowcharts in the “Call Progression” section of this document which show the routing for intra-LATA and inter-LATA calls.

Base TOPS Equal Access (continued)

Call types

Dialed Digits: 0 + 212 + 9999999
Called # Outpulsing: KP + 2129999999 + ST3P
ANI Outpulsing: KP + 0 + 5491155 + ST
Basic Call Flow: TRKGRP (TOPCOMAMF), STDPRTCT.STDPRT (0+, OA, NCN), 919 HNPACODE (212 VALID?), LATA1 (INTER), TOPEATR (LATA1, 919DOM1, 333), CLSVSCRC (919, DOM1, OA), CLSVSCRC.CLSVSCR (333212), OFRT (102, OGEACAR3)

Dialed Digits: 0 + 2631122
Called # Outpulsing: KP + 2631122 + STP
ANI Outpulsing: KP + 0 + 5499221 + ST
Basic Call Flow: TRKGRP (TOPCOMAMF), STDPRTCT.STDPRT (0+, OA, CN), 919 HNPACODE (263 VALID?), LATA1 (INTRA), TOPEATR (LATA1), TOPSPOS

Dialed Digits: 0 + 212 + 9999999
Called # Outpulsing: KP + 2129999999 + ST3P
ANI Outpulsing: KP + 0 + 5491155 + ST
Basic Call Flow: TRKGRP (TOPCOMAMF), STDPRTCT.STDPRT (0+, OA, NCN), 919 HNPACODE (212 VALID?), LATA1 (INTER), TOPEATR (LATA1, 919DOM1, 333), CLSVSCRC (919, DOM1, OA), CLSVSCRC.CLSVSCR (333212), OFRT (102, OGEACAR3)

Dialed Digits: 1 + 212 + 3321244
Called # Outpulsing: KP + 2123321244 + ST
ANI Outpulsing: KP + 0 + 5449223 + ST
Basic Call Flow: TRKGRP (TOPCOMBMF), STDPRTCT.STDPRT (1+, DD, CN), 919 HNPACODE (212 VALID?), LATA1 (INTER), TOPEATR (LATA1, 919DOM1, 222), CLSVSCRC (919, DOM1, DD), CLSVSCRC.CLSVSCR (222), OFRT (302, CND sel. to OFRT 402, OGEACAR4)

Dialed Digits: 0—
Called # Outpulsing: KP + ST3P
ANI Outpulsing: KP + 1 + ST
Basic Call Flow: TRKGRP (TOPCOMAMF), TOPEATR (BYPASS=ZEROM, 919DOM1, 333), CLSVSCRC (919, DOM1, OA), CLSVSCRC.CLSVSCR (333000), OFRT (101, OGEACAR3)

Base TOPS Equal Access (continued)

Call types (continued)

Dialed Digits: 00–
 Called # Outpulsing: KP + 0 + ST3P
 ANI Outpulsing: KP + 0 + 5441274 + ST
 Basic Call Flow: TRKGRP (TOPCOMBMF), STDPRTCT.STDPRT (TOP2, 0, T, OFRT 301), OFRT (301, OGEACAR4)

Dialed Digits: 1 + 312 + 5678901
 Called # Outpulsing: KP + 3125678901 + ST2P
 ANI Outpulsing: KP + 0 + 5449736 + ST
 Basic Call Flow: TRKGRP (TOPCOMBMF), STDPRTCT.STDPRT (TOP2, 1+, DD, NCN), 919 HNPACODE (312 VALID?), LATA XLA (INTER), TOPEATRK (LATA1, 919DOM1, 222), CLSVSCRC (919, DOM1, DD), CLSVSCRC.CLSVSCR (222), OFRT (302, CND sel. to office routes 312, 322, 332, 432, OGEACAR4)

Dialed Digits: 1 + 212 + 9522314
 Called # Outpulsing: KP + 2129522314 + ST2P
 ANI Outpulsing: KP + 1 + ST
 Basic Call Flow: TRKGRP (TOPCOMBMF), STDPRTCT.STDPRT (TOP2, 1+, DD, NCN, ONI), 919 HNPACODE (212 VALID?), LATA XLA (INTER), TOPEATRK (LATA1, 919DOM1, 222), CLSVSCRC (919, DOM1, DD), CLSVSCRC.CLSVSCR (222), OFRT (302, CND sel. to office routes 312, 322, 332, 442, OGEACAR4)

TOPS Equal Access Guidelines (BCS27)

This guideline contains the following:

- Applicability
- Documentation
- Background Information
- 00- Calls
- Feature Group B on TOPS Trunks
- Combining FGC and FGD Signaling
- Table TRKGRP
- Table TRKSGRP
- Table TOPEATRK
- Tables LATANAME and LATA XLA
- Tables SCRNCLAS, CLSVSCRC and SUB CLSVSCR

Base TOPS Equal Access (continued)

- Table OFRT
- Tables BELLCAT, OSSCAT and EAANIID
- Table CCTR
- Table STDPRTCT and SUB STDPRT
- Table TOPEACAR
- Table OCCINFO

Applicable Call Types

0- and 00-, 0+ and 1+, Intra-LATA and Inter-LATA

Background Information

Basic design intent of the TOPS EA software is to take any call that is determined to be inter-LATA and pass it off to a carrier. Calls such as ONI or ANIFAIL may be temporarily routed to TOPS operators so that the calling number may be added to the call information, but these calls eventually route to a carrier and do not bill in the TOPS office, unless TOPS Inter-LATA Carrier Service (TICS) is being provided for the carrier. Refer to NTX714AA - TICS General Feature Description.

Incoming TOPS trunk groups must be dedicated to individual carriers for 0+ and 1+ traffic. If the TOPS switch is providing LATA Equal Access System (LEAS) for a nonconforming End Office, calls incoming on the same TOPS trunk group can be routed to different carriers based on the Primary Inter-LATA Carrier (PIC) datafilled in the TOPS switch. Refer to NTX710AA - LEAS General Feature Description.

00- Calls

00- dialing can be used in an End Office to allow direct connection to an inter-LATA carrier's operator, rather than going first to the operating company's TOPS, then being transferred to the carrier's operator. There are two ways to translate a 00- call coming in on a TOPS trunk:

Method 1

TABLE STDPRTCT										
SUB STDPRT										
0	0	T	OA	1	OFRT	100	1	1	NONE	

TABLE OFRT									
100	N	D	ATCTRUNK	0	N	N	\$		

Base TOPS Equal Access (continued)

In TOPS EA software, a 0 incoming on a TOPS trunk is marked INTERLATA. If a T selector is used, TOPS EA processing is bypassed from that point on. The call routes to the appropriate carrier, but the AMA record (Call Code 110) does not contain the carrier access code (CAC).

Method 2

```
TABLE STDPRTCT
SUB STDPRT
0 0 N OA 1 NA

TABLE TOPEATRK
TOPSTRUNK NCONFORM 333 LATA1 RAST ERST OVRS 919 N Y $

TABLE CLSVSCRC
919 ERST OA 2 N NONE

SUB CLSVSCR
POS 919 ERST OA
333000 333000 T 100

TABLE OFRT
100 N D ATCTRUNK 0 N N $
```

In TOPS EA, a single 0 incoming on a TOPS trunk is marked INTERLATA. The N selector in STDPRT invokes TOPS EA processing, but the called number screening in tables HNPACONT.HNPACODE, LATAOLA, LCASCRCN.LCASCRC, and CLSVSCRCN.CLSVSCR is bypassed since there are no called digits, and the call has already been marked as INTERLATA. The call progresses directly to TOPEATRK to pick up the INTERSSC class of service screening table name for inter-LATA/interstate calls.

In Table CLSVSCRCN.CLSVSCR for OA calltype, the tuple containing the CAC plus 000 in the FROMDIGS and TODIGS fields specifies the office route for 00- calls. The CAC is specified in Table TOPEATRK, but may be overridden by the operator at the subscriber's request.

Feature Group B on TOPS Trunks

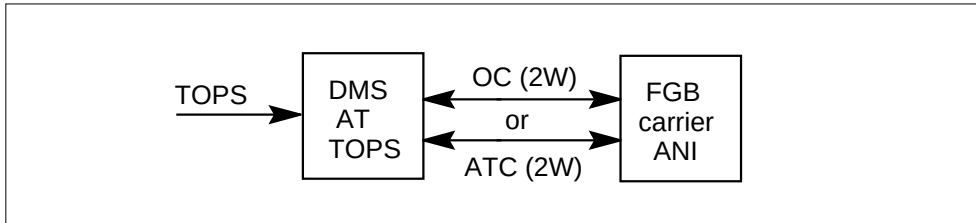
When an FGB call incoming on a TOPS trunk group is outpulsed in FGD format on an ATC trunk, it is outpulsed based on the type of call and whether combined signaling is specified on the ATC trunk group (STNCLS = COMB).

If SIGTYPE on ATC trunk group is set to FGB and STNCLS = INTERTOLL, then only the ST start pulse is used.

Base TOPS Equal Access (continued)

On an FGB call, the called number usually has no meaning once the call routes out of the Access Tandem. Called digits can be deleted on the office route using an N selector to reduce post-dial delay. If called digits are deleted, field ANI = N, and SIGTYPE = FGB, then KP+ST is outputted to FGB carrier.

AT with TOPS with CAMA (billing at TOPS office)



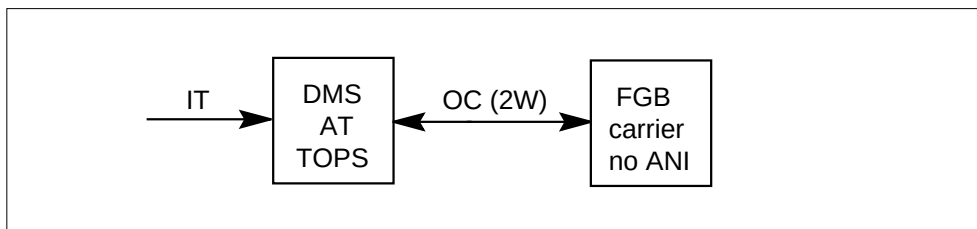
An incoming or 2W TOPS trunk group should be used to bring traffic into an AT with TOPS when billing is to take place in the TOPS office. TOPS FGB accesses Table CLSVSCRC.CLSVSCR via Table TOPEATRK based on a hard-coding of 950 digits dialed and NOT LATA status. This is for FGB ONLY. TOPS EA normally checks LATA status. The table flow begins with the incoming TOPS trunk group pointing to Table STDPRTCT.STDPRT. 950-1XXX should be entered with the N selector and the NL calltype (start marks are read with the NL setting to produce DD calltype) in Table STDPRTCT.STDPRT. Since this is a 950 call, LATA status is NOT checked and the call proceeds to Table TOPEATRK. Table TOPEATRK Field INTERSSC points to Table CLSVSCRC.CLSVSCR. The index into Table CLSVSCRC.CLSVSCR is with the DD calltype if proper start marks are received from the End Office. Table CLSVSCRC.CLSVSCR MUST have an entry for the XXX digits of the 950-1XXX dialed digits pointing to Table OFRT. Table OFRT should point to a 2W OC trunk group to the FGB carrier. The OC trunk group must have field FGBTRAF set to Y, field FGBANI may be set to either Y or N depending on whether the carrier wants ANI, and field CARRNM datafilled with a valid Carrier Name from Table OCCNAME. Table OCCINFO may be datafilled with field ACCESS set to either INTERIM (if carrier only handles FGB traffic) or TRANS (if carrier handles both FGB and 10XXX with FGD signaling). DO NOT confuse this ACCESS field with the carrier name from Table OCCNAME.

Beginning in BCS27, the AMA record produced by TOPS FGB calls originating on TOPS trunks is controlled by office parameter TOOPS_FGB_CC134 in Table OFCVAR. If set to Y, call code 134 is produced for 950 calls. If set to N, call code 251 is recorded. Since the terminating traffic (incoming into the TOPS office from the FGB carrier) is incoming on the OC trunk group, a 135 terminating record is produced - same as the End Office or Access Tandem.

Base TOPS Equal Access (continued)

It is possible in the above scenario to route this call to a two-way ATC trunk group with the FGB option. The FGB SIGTYPE on the ATC trunk creates the 135 terminating FGB record. The trunk group must be dedicated FGB traffic due to the FGB SIGTYPE creating a 135 terminating record for all calls coming in on the ATC trunk from the carrier. DO NOT use SIGTYPE set to EAPLAN on the ATC trunk unless the carrier is FGD signaling. In a TOPS office, this field determines the actual signaling to take place TO the carrier. EAPLAN signals FGD. TOPS software is capable of converting FGC to FGD and may signal incorrectly if SIGTYPE on the ATC trunk is datafilled incorrectly. Also, on the terminating side of the ATC trunk, an incorrect callcode may be produced. (119 vs. 135)

AT with TOPS with CAMA (billing at end office)



An incoming or 2W IT trunk group should be used to bring FGB traffic into an AT with TOPS when billing occurs at the End Office. Table STDPRTCT.STDPRT should be datafilled with a T selector and calltype NP for 950-1XXX. This routes the call to an office route (Table OFRT) which should be datafilled with a two-way OC trunk group to the carrier. The OC trunk group must have field FGBTR AFC set to Y, field FGBANI MUST be set to N, and field CARRNM must be set to a valid Carrier Name from Table OCCNAME. Table OCCINFO must be datafilled with field ACCESS set to either INTERIM or TRANS as previously described. This is the SAME translations flow as described in PART 2 for an Access Tandem when billing occurs at the End Office.

Note 1: ENFIABC must be turned on in Table AMAOPTS in all offices where FGB billing is to take place.

Note 2: Only originating FGB calls which receive an off-hook from the carrier are recorded unless Table BCCODES contains callcode 134 for TOLL and UNANSW_TOLL is turned ON in Table AMAOPTS for an EAEO or AT without TOPS. On the FGB terminating side, the same procedure applies, except Table BCCODES must contain 135 for the tuple TOLL. For an AT with TOPS the same procedure applies, EXCEPT 251 for originating unanswered calls must be added to the TOPS tuple in BCCODES and UNANSW_TOPS turned ON in Table AMAOPTS.

Base TOPS Equal Access (continued)

Note 3: Do not confuse the ACCESS field in Table OCCINFO with the above examples. INTERIM and TRANS identifies the carriers as handling FGD signaling. The purpose of the CARRNM on the OC trunk group is to properly identify the carrier on the terminating 135 access record. An index into Table OCCINFO is made at that point to retrieve the carrier number for the 135 record.

Note 4: An IT trunk group does NOT carry ANI.

Note 5: Beginning in BCS27 TOPS supports call code 134.

Note 6: In a TOPS office, never use the FGB selector in Table STDPRTCT.STDPRT. Use the N NL and route from a class of service screening subtable and calltype set upon start marks.

Note 7: It is NOT recommended to use the T selector and a DD calltype in a TOPS office. This produces an incorrect 006 callcode (intra-LATA). It is still NOT recommended to T select out of the standard pretranslator even with an NP calltype (in cases where the End Office is doing the originating billing) because TOPS CAN NOT enable coin pads for an NP call. In this case, it is the responsibility of the END OFFICE to enable coin pads.

Note 8: Per design intent, if an FGB carrier requests ANI to be sent, and routing is via an AT (with or without TOPS), billing should take place at the AT and NOT the End Office. In this case, in the End Office T select 950-1XXX to an OC trunk WITHOUT the FGB option and receive on an SC or TOPS (depending on the tandem) and follow the examples above. Even if an End Office has LAMA, billing does NOT occur on a line to an OC trunk group (remember to send ANI as the AT needs ANI for billing).

Note 9: Software package 209 is for FGB AMA in an End Office. Software package 211 is for FGB AMA in an Access Tandem.

Note 10: The carrier number for the originating FGB billing callcode 134 in the AT without TOPS or End Office is taken from the XXX digits in the 950-1XXX tuple in the STDPRT subtable with an FGB selector.

Note 11: If billing has taken place in an End Office, then by design intent, this traffic should not arrive in an AT with TOPS on a TOPS trunk group.

Note 12: Prior to BCS26, 950 calls incoming on TOPS trunk groups were routed via field INTRASSC in Table TOPEATTRK. In BCS26, 950 calls are routed via field INTERSSC in Table TOPEATTRK.

Combining FGC and FGD Signaling

TOPS EA software can handle incoming FGC and FGD on the same TOPS trunk group. Set the trunk group data to match the type of FGC signaling incoming; the 0ZZXXX digits of the FGD traffic are screened in the standard pretranslator and routed to the carrier. The next stage is transparent to the TOPS Access Tandem.

Base TOPS Equal Access (continued)

For example:

- Set CLGID = BELL to handle FGC with single ID digit and 1st stage FGD or
- CLGID = OSS to handle FCG with double ID digit and 1st stage FGD

Table TRKGRP 2156T

Checks for ATC trunk groups:

1. At least one ATC trunk group connecting to each FGC or FGD carrier. May optionally be used for FGB (see above).
2. Ensure valid carrier name in OCCNAME and OCCINFO.
3. Verify NPA correct.
4. Consult with operating company whether or not ANI is to be sent to each carrier.
5. Ensure SIGTYPE = BELLI for traditional FGC outpulsing and BELLII for OSS.
6. Check STNCLS = COMB if DMS is to outpulse ST, STP, ST2P, and ST3P to identify class of traffic; or STNCLS = NONCOMB if DMS outpulses ST or STP to identify call types on dedicated coin and noncoin trunk groups to the carrier.

Checks for TOPS trunk groups:

- See *Basic TOPS Data Guidelines* in the “DA Guidelines” section.

Table TRKSGRP 2151

Check for the following:

1. Ensure all ATC type trunks have MF WK specified if signaling FGD.
2. All types of coin control (Field CCONT) on individual incoming TOPS TRKSGRPs must have a corresponding ATC TRKSGRP with the same coin control. (i.e., if incoming TOPS trunk group A ultimately processes an inter-LATA coin call to outgoing ATC trunk group B via CLSVSCRC, then CCONT on A must match CCONT on B in Table TRKSGRP.

Table TOPEATRK 2156TE

Check for the following:

1. Ensure datafill (using REP commands on initial datafill) of customer submitted modifications to TOPEATRK default values. Tuples in

Base TOPS Equal Access (continued)

TOPEATRK are entered or deleted automatically when a TOPS trunk group is entered into or deleted from Table TRKGRP.

2. Ensure that a valid LATA name (LATANM) from Table LATANAME and LATAOLA is datafilled in initial offices and extensions that are adding TOPS.

Note: When adding TOPSEA to an in-service TOPS switch, set LATANM to NILLATA. This allows TOPS EA datafill to be added but not accessed until the valid LATANM is entered in TOPEATRK.

3. Ensure valid class of service screening names appear in fields INTRASSC and INTERSSC for domestic inter-LATA traffic.
4. Ensure valid class of service screening names appear in field OVSSCL for routing international traffic to carriers.
5. Reference the Trunking Questionnaire (if available) for the following:

ENDOFFICE: CONFORM or NCONFORMCARRIER: valid
carrier code from PICNAME and TOPEACARSCRNIDX: valid
NPA for the trunk groupBYPASS: HOTEL and/or ZEROM or \$

6. Set DFLTPIC = N when ENDOFFC = CONFORM. The operator asks the subscriber to name a carrier on 0- calls.

Set DFLTPIC = Y when ENDOFFC = NCONFORM. The default carrier for 0- calls is taken from field CARRIER.

Tables LATANAME, LATAOLA 2358, 2359

Check for the following:

1. Ensure correct datafill of NPAs and their LATA status.
2. ALL NXXs within the DMS serving NPA must be datafilled with the NPA prefixed. DMS uses the serving NPA to index table on 7 digit calls.

For example:

LATA1 918 INTER INTER 919223 INTER INTRA
919224 INTER INTRA

3. Even though OSS signaling sends the LATA information (INTRA or INTER) in the ST signal on the ANI, Table LATAOLA must still be accessed to determine the STATE designation (INTRA or INTER).

Base TOPS Equal Access (continued)**Tables SCRNCCLAS, CLSVSCRC, SUB CLSVSCR 2468, 2463, 2464**

Check for the following:

1. Ensure correct datafill of all four character class of service screening names used in Table TOPEATRK.
2. Ensure correct datafill for routing both DD and OA inter-LATA call types to ICs. For example:

Example of routing datafill for DD and OA inter-LATA call types

```

919  DOM1  DD  2  N  NONE
919  DOM1  OA  2  N  NONE
|      |      |      |
|      |      |      | --- NORSLTS (points call to subtable)
|      |      |      | ---Call type:determined from STDPRT and Start Signals
|      |      |      |
|      |      |      | --- Table TOPEATRK: Field INTRASSC or INTERSSC
---- Table TOPEATRK: Field SCRNDIX

```

Datafilling the NORSLTS (number of results) field as 2 allows inter-LATA calls to be screened and routed based on carrier access code and optionally on digits dialed. Do not attempt to datafill NORSLTS field as 0 and route calls only based on call type and NPA in TOPS Equal Access.

3. Subtable CLSVSCR: Ensure datafill is correct based on Operating Company screening requirements. Reference CARRIER field in Table TOPEATRK: routing to carriers must be implemented in class of service screening subtables with carrier access codes.

The following are examples of routing schemes:

- Inter-LATA calls route to carrier; traffic separated based on digits dialed. Datafill carrier access code plus minimum number of digits required for screening:

288704 288704 T 500

CAC + up to 7 digits can be datafilled in FROMDIGS and TODIGS fields.

- Inter-LATA calls route to carrier; traffic not separated by digits dialed:

288 288 T 501

Only CAC is required in subtable FROMDIGS and TODIGS fields.

Base TOPS Equal Access (continued)

- Inter-LATA calls route to carrier; traffic separated by digits dialed and by ANI status and/or calling service feature in Table OFRT:

288704 288704 T 502

Office route 502 uses conditional routing type TOPEACLS (see OFRT).

- Inter-LATA ONI or ANIFAIL calls route to TOPS to add calling number then forward call with complete information to IC:

288 288 T 510

- 0- calls route to carrier (Field BYPASS = ZEROM in Table TOPEATTRK), or 00- route to carrier (see STDPRTCT):

288000 288000 T 500

Table OFRT 2431

Check for the following:

1. Ensure datafill of correct office routes to carriers using only ATC trunk group type. Reference Section E (subtable CLSVSR).

Note: ONI/ANIFAIL calls that route to TOPS to input calling number, once released from TOPS, are routed as ANI success calls.

2. OFRT selector N should be used for Feature Group C and Feature Group D signaling on the ATC trunk group. Selector S should not be used for routing to ATC trunk.

Base TOPS Equal Access (continued)**Example routing schemes**

```

500 N D ATCTRGRP1 0 N N $
501 N D ATCTRGRP2 0 N N $
502 CND TOPEACLS EAC0IN SK 1 +
    T OFRT 504 +
    T OFRT 505 $
504 CND TOPEACLS EARBILL SK 1 +
    T OFRT 506 +
    T OFRT 507 $
505 N D ATCTRGRP3 0 N N $
506 N D ATCTRGRP4 0 N N $
507 N D ATCTRGRP5 0 N N $
510 CND TOPEACLS EACAMAFL SK 1 +
    T OFRT 511 +
    T OFRT 512 $
512 S D TOPSPOS $
511 CND TOPEACLS EACAMONI SK 1 +
    T OFRT 513 +
    T OFRT 512 $
513 N D ATCTRGRP6 0 N N $

```

Tables BELLCAT, OSSCAT, EAANIID 2830, 2833, 2881

Check for the following:

1. Table BELLCAT analyzes ANI ID digits incoming on TOPS trunk groups with traditional signaling (CLGID = BELL). Associates an ID digit with a legal ANI format used for billing, screening and routing purposes. Ensure digits 0 to 2 and 6 to 9 are datafilled.
2. Table OSSCAT analyzes the double ANI ID digits incoming on TOPS trunk groups with CLGID = OSS, EAOSS, or EAOSSIC. Associates ID digits with expected ANI format used for billing, screening, and routing. Ensure 00 to 09 datafilled along with any other applicable ANI digit combinations.
3. BELLCAT and OSSCAT are filled with default data at load build. They can be modified by the operating company with the CHA command at the MAP or REP command during DMOPRO.
4. Table EAANIID must be present in TOPS offices that use either traditional signaling (BELLI) or operator services signaling (BELLII) on outgoing ATC trunk groups.
5. Ensure datafill of all applicable ANI ID information (i.e., ANISUCC, ONI, HANIFL, etc.) in Table EAANIID.

Base TOPS Equal Access (continued)

6. Ensure all ANI digits that appear in tables OSSCAT and BELLCAT are mapped in EAANIID. If an ANI digit does not have corresponding digits in OSS, datafill DC against it (and vice versa).
7. Table EAANIID does not get filled with default values at load build. The Operating Company must provide datafill.
8. Table EAANIID is not structured to handle ANI ID digits 3, 4, or 5. These service observed digits are not passed to a carrier. The DMS receives a 3 and passes a 0, receives a 4 and passes a 1, and receives a 5 and passes a 2.

Table CCTR 2380

Check for the following:

1. Table CCTR is required in TOPSEA switches to identify a call as international.
2. If the operating company does not wish to administer country code data or screen country codes for the carriers, they may datafill tuples for 0-9 in field CCNAME to satisfy the check for country code.
3. Once the dialed code has been validated in CCTR, Table TOPEATRK, field OVSSCL is referenced for the appropriate route to the international carrier via Table CLSVSCRC, Subtable CLSVSCR.
4. In TOPS Equal Access offices, non-EA handling is given to calls incoming on TOPS trunks if LATANM = NILLATA in TOPEATRK. This allows a phased cutover of TOPS Equal Access service in a working TOPS office.

Base TOPS Equal Access (continued)

Table STDPRTCT, SUB STDPRT 2465, 2467

Check for the following:

1. For 00- calls incoming on TOPS trunks, a T selector or N selector can be used in Table STDPRTCT, subtable STDPRT. See paragraph on 00- Calls in this data guideline.
 - T selector: Bypasses TOPSEA processing. AMA Call Code 006.
 - N selector: Uses TOPSEA processing. Call routes via CLSVSCRC table for INTERSTATE OA calls. AMA Call Code 110.

Table TOPEACAR 2892

Check for the following:

1. Table TOPEACAR stores carrier information for TOPS EA. Table OCCINFO is used for carrier information in EAEOs and ATs without TOPS.
2. Unless TICS (NTX714AA) software is present, OPSERV must be set to NOSERV.
3. In TOPS EA without TICS or LEAS, CAMABILL = Y generates call code 006, structure code 4700 subscriber billing records. CAMABILL = N produces call code 251, structure code 734 access charge records.

Table OCCINFO 2355

Check for the following:

1. The following fields in OCCINFO are used to obtain AMA record data in TOPS EA: CARRNAME, CARRNUM, and TERMREC.
2. All other carrier information comes from the ATC trunk group and Table TOPEACAR.

UQ000270 - Unable to route Zenith to carriers

TOPS Equal Access translations is now performed on the Zenith routing number in BCS31 only.

PRS UQ000270 allows routing of Zenith numbers. A Zenith number is an 800 number entered by the TOPS operator at a TOPS position. Associated with this Zenith number is a datafillable routing number, which conforms to the North American dialing plan (e.g. 2122201111). This routing number is used by the translation system. This associated routing number must be datafilled in the applicable tables. For more information on Zenith numbers, refer to section "BR30517 - Optional EA translations for Zenith" that is applicable in BCS34.

Base TOPS Equal Access (continued)

PRS UQ000270 functionality is removed in BCS32 by PRS CM12003 as follows.

CM12003 - Zenith calls are not routed properly

TOPS Equal Access translations are now longer performed on the Zenith routing number in BCS32.

ER900039 - International call handling

This emergency recovery bulletin is effective with BCS26.

Prior to this bulletin:

Domestic calls (national translations system) on a TOPS trunk group use LATA screening (based on called digits) to determine if the Operating Company completes the call (INTRALATA) or a carrier completes the call (INTERLATA). In Table TOPEATRK, if field LATANM = NILLATA, then domestic calls are considered INTRALATA, so the Operating Company completes the call.

International calls were always considered INTERLATA, without consideration for field LATANM in Table TOPEATRK.

With this bulletin:

Domestic calls are still handled the same. However, international calls now use field LATANM in Table TOPEATRK. If LATANM = NILLATA, the call is handled by the Operating Company. This makes domestic and international call handling the same.

Note: An operator may still transfer calls to a carrier.

When a DMS-200 TOPS office first uses TOPS EA, the LATANM field may be used to turn on TOPS EA on a trunk group basis for testing or for a more gradual transition to EA handling.

BR30517 - Optional EA translations for Zenith

In BCS34, new parameter ZENITH_EA_ROUTING in table TOPSPARM allows optional TOPS EA translation to be performed on Zenith routing numbers. Also, EA screening and routing for Zenith calls are provided.

A Zenith number is an 800 number entered by the operator with the following format: 800 + <5 digits>.

Base TOPS Equal Access (continued)

Associated with this Zenith number in table ZENITH is a 10-digit routing number used for screening and routing purposes.

Prior to this feature, if a Zenith call crossed a LATA boundary, the operator was not informed that the call was inter-LATA and was not allowed to transfer the call. The call defaulted to intra-LATA and was routed with standard translations.

This feature provides the following.

- Optionality of this feature on an office-by-office basis since not all Operating Companies want this capability. This is provided by parameter ZENITH_EA_ROUTING in table TOPSPARM. This parameter turns the feature on or off in an office.
- Use of LATA translations and proper indication to the operator when a Zenith call is inter-LATA.
- The ability for an operator to transfer the call to a carrier and change the carrier when requested to do so.
- Proper signaling and outpulsing are provided when a call is passed to the carrier.

Most inter-LATA Zenith calls are outpulsed to a carrier as 0- calls. Sending of the 8-digit Zenith number or the 7- or 10-digit routing number each has drawbacks. One doesn't conform to the North American dialing plan and the other hides the fact that the call was originally an 800 (Zenith) number. Sending the call to the carrier as a 0- call does make it necessary for the caller to repeat the Zenith number upon connection to the IC operator.

An exception to the rule of outpulsing a Zenith call as a 0- call occurs when feature TOPS Inter-LATA Carrier Services (TICS) is present and the Operating Company is set up to provide operator services for the carrier. On a TICS call, the routing number is outpulsed to the carrier so that the call can be completed, since no further operator involvement is necessary.

Field OPLSCLD in table TOPEACAR has no affect on inter-LATA Zenith calls sent to a carrier. No outpulsing of the called number will take place on any ZENITH calls, regardless of the setting of this field. All calls arrive at the Inter-LATA Carrier operator as 0- calls (except as stated above).

The following examples are provided to show the flow of a ZENITH call through standard and Equal Access translations, along with operator involvement in the calls.

Base TOPS Equal Access (continued)

Zenith datafill for call examples

Table CLGSET

CLGKEY	SNPA	LCANAME	NNXAREA
ZENITH619	619	NLCA	Y (320) \$
ZENITH407	407	NLCA	Y (522) \$

Table ZENITH

ZENKEY		FWDDN
10000	ZENITH619	6193511000
20000	ZENITH619	3012221000
30000	ZENITH407	6193511000
40000	ZENITH407	3012221000

Table TRKGRP

GRPKEY GRPINFO

TBELL2WA1	TOPS	0	TLD	NCRT	2W	MIDL	619	PTOP
	NLCA	NSCR	Y	SP	COMBINED	N	Y	0
	0000	BELL	16	10	10	Y	N	OFFHK N N
TBELL2WB1	TOPS	0	TLD	NCRT	2W	MIDL	407	PTOP
	NLCA	NSCR	Y	SP	COMBINED	N	Y	0
	0000	BELL	16	10	10	Y	N	OFFHK N N
TATCC8880G1	ATC	0	TLD	NCRT	2W	IT	MIDL	NPRT NSCR
	619	C888	Y	BELLI	COMB	N	\$	
TACTC1110G1	ATC	0	TLD	NCRT	2W	IT	MIDL	NPRT NSCR
	407	C888	Y	BELLI	COMB	N	\$	
TITOGA1	IT	0	TLD	NCRT	OG	IT	MIDL	619 NPRT NSCR
	619	000	N	N	\$			
TITOGB1	IT	0	TLD	NCRT	OG	IT	MIDL	407 NPRT NSCR
	407	000	N	N	\$			

Zenith datafill for call examples (continued)

Base TOPS Equal Access (continued)

Table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALBC	CHGCLSS
TBELL2WB1	522	NLCA	NSCR	407522	TOPS
TBELL2WA1	320	NLCA	NSCR	619320	TOPS

Table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
TBELL2WA1	CONFORM	888	L123	STRA	STER	SOVS 619 N N \$
TBELL2WB1	CONFORM	111	L123	STRA	STER	SOVS 407 N N \$

Table TOPEACAR

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR
NATERM	INTERM	OPSERV			
111	C111	C111	Y Y	111	UNREST UNREST SERV NOQUERY
			Y Y		
Y	NOQUERY	Y	NOQUERY	Y Y	
888	C888	C888	Y Y	888	UNREST UNREST NOSERV N Y

Table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	619	NSCR	OPER	NLCA

Base TOPS Equal Access (continued)

Zenith datafill for call examples (continued)

Table STDPRTCT

EXTPRTNM	STDPRT	AMAPRT

OPER (	1)	(0)

sub STDPRT

FROMDIGS	TODIGS	PRETRTE

301	301	N OA 0 NA
619	619	N OA 0 NA

Table HNPACONT

NPA	MAXRTE	NOAMBIGC	RTREF	HNPACODE	ATTRIB	RTEMAP

407	256	8 (37)	(1)	(0)	(0)	

sub HNPACODE

FROMDIGS	TODIGS	CDRRTMT

301	301	FRTD 125
619	619	FRTD 125

sub RTREF

RTE RTELIST

125 (N D TITGB1	0 N N) \$

619	256	8 (37)	(1)	(0)	(0)

sub HNPACODE

FROMDIGS	TODIGS	CDRRTMT

301	301	FRTD 125
619	619	FRTD 125

sub RTREF

RTE RTELIST

125 (N D TITOGA1	0 N N) \$

Base TOPS Equal Access (continued)**Zenith datafill for call examples (continued)**

Table LATAxLA

LATACODE	LATA	STATE	EATYPE
L123	301	INTER	INTER STD

Table CLSVSCRC

NPASCTYPE	NORESULTS	TMTOFRT	CLSVSCR
407 STER	OA	2 N	NONE (1)
619 STER	OA	2 N	NONE (1)
sub CLSVSCR			
	FROMDIGS	TODIGS	TMTOFRT
	111	111 T	OFRT 505
	888	888 T	OFRT 504

Table OFRT

RTE RTELIST

504	(N D TATCC8880G1 0 N N \$)
505	(N D TATCC1110G1 0 N N \$)

Example 1 - Intra-LATA call (feature off) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is N
- ZENITH routing number is intra-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1
- ZENITH_TEN_DIGIT_DIALING in table TOPSPARM is Y

Base TOPS Equal Access (continued)

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80010000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 10000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. In this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH (6193511000). Since the NPA of the routing number matches the SNPA in table OPRTRANS for the OPERATOR tuple, a check of ZENITH_TEN_DIGIT_DIALLING is necessary to determine if translation will be done on all ten digits or only 7 digits. The setting of Y means that the number used for further translation is 6193511000.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING in table TOPSPARM is now made. Since it is set to N, this call defaults to intra-LATA and uses only standard translations for routing. This begins in table STDPRTCT using the pretranslator from field PRTNM in table OPRTRANS, tuple OPERATOR. In subtable STDPRT, an N selector associated with digits 619 causes the call to proceed to national translation table HNPACONT. The index into HNPACONT comes from the SNPA field of table OPRTRANS, tuple OPERATOR; thus, 619 is the index used. Subtables HNPACODE and RTEREF provide further translation. The digits 619 in the HNPACODE subtable result in FRTD 125, which is found in the RTEREF subtable. Here, a route to TITOGA1 is obtained, a trunk is selected, and outpulsing begins. Some indication of Auto Collect appears on the operator screen, and at this point the call is then floated.

3. Equal Access processing

Since parameter ZENITH_EA_ROUTING is N, no Equal Access processing occurs.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used). For more information on TOPS AMA, refer to NTXE20 (EBAF).

Base TOPS Equal Access (continued)

Example 2 - Intra-LATA call (feature on) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is intra-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1
- ZENITH_TEN_DIGIT_DIALLING in table TOPSPARM is Y

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80010000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 10000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH (6193511000). Since the NPA of the routing number matches the SNPA in table OPRTRANS for the OPERATOR tuple, a check of ZENITH_TEN_DIGIT_DIALLING is necessary to determine if translation will be done on all ten digits or only 7 digits. The setting of Y means that the number used for further translation is 6193511000.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call still begins in table STDPRTCT using the pretranslator from the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (immediate routing occurs regardless of the setting of ZENITH_EA_ROUTING). When using a T or S selector, the call defaults to intra-LATA, with screen displays and operator handling being the same as those in example #1 above.

The call may also bypass Equal Access processing if class of service screening is used. Screening classes can be set up in tables TRKGRP, TOPSBC, and OPRTRANS. The call must pass any necessary screening

Base TOPS Equal Access (continued)

that these tables specify in table CLSVSCRC before any further translation takes place.

Note: For ZENITH calls, no local calling area screening is performed since the call is Auto Collect.

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, the NPA used to index into this table comes from the SNPA in table TRKGRP (SNPA for TBELL2WA1 is 619).

Note: When parm ZENITH_EA_ROUTING is set to N, the SNPA used comes from table OPRTRANS (see example #1).

In this example they are both 619, so this call routes through standard translations exactly as the call in example #1. A search for the digits 619 in subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGA1.

3. Equal Access processing

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WA1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAXLA, which yields a LATA status for this call of intra-LATA. This being the case, the original route found in table HNPACONT is the route used. An outgoing trunk from trunk group TITOGA1 is seized and outpulsing begins. An indication of Auto Collect appears on the operator's screen, and the call is then floated.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used. For more information on TOPS AMA, refer to NTXE20 (EBAF)

Example 3 - Intra-LATA call (feature on, cross NPA boundary)

Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is intra-LATA
- Calling number is 4075221234

Base TOPS Equal Access (continued)

- Incoming trunk group is TBELL2WB1
- ZENITH_TEN_DIGIT_DIALLING in table TOPSPARM is Y

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80030000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 30000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH (6193511000). Since the NPA of the routing number matches the SNPA in table OPRTRANS for the OPERATOR tuple, a check of ZENITH_TEN_DIGIT_DIALLING is necessary to determine if translation will be done on all ten digits or only 7 digits. The setting of Y means that the number used for further translation is 6193511000.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call begins in table STDPRTCT using the pretranslator name in the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (see example #2 for further discussion of this; also how NPA screening overrides any further translation).

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, because of the setting of tuple ZENITH_EA_ROUTING (see example #2 above), the NPA used to index in this table comes from the SNPA in table TRKGRP for TBELL2WB1. Routing is through the 407 tuple in table HNPACONT as opposed to the 619 tuple used in examples #1 and #2. A search of subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGB1. The same routing number thus provides different final destinations dependent upon the setting of ZENITH_EA_ROUTING. With the parameter set to N, example call #2 and example call #3 would result in routing to TITOGA1. If it is set to Y, the same calls would result in routing to two different trunk groups, TITOGA1 (example #2) and TITOGB1 (example #3). This is important to remember when setting up translations for intra-LATA ZENITH calls. If the feature is off, the SNPA comes from table OPRTRANS; if the feature is on, it comes from table TRKGRP.

Base TOPS Equal Access (continued)

3. Equal Access processing

The first check performed is for the LATA status. The LATANM from table TOPEATTRK (for tuple TBELL2WB1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAXLA, which yields a LATA status for this call of intra-LATA. This being the case, the original route found in table HNPACONT is the route used. An outgoing trunk from trunk group TITOG1 is seized and outpulsing begins. An indication of Auto Collect appears on the operator screen, and the call can then be floated.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used. For more information on TOPS AMA, refer to NTXE20 (EBAF).

Example 4 - Inter-LATA call (feature off) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is N
- ZENITH routing number is inter-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80020000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 20000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH, 3012221000. Since the NPA of the routing number does not match the SNPA in OPRTRANS, all ten digits are used for translation, and no check of ZENITH_TEN_DIGIT_DIALING is necessary.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING in table TOPSPARM is now made. Since it is set to N, this call defaults to intra-LATA and uses only

Base TOPS Equal Access (continued)

standard translations for routing. This begins in table STDPRTCT using the pretranslator from field PRTNM in table OPRTRANS, tuple OPERATOR. In subtable STDPRT, an N selector associated with digits 301 causes the call to proceed to national translation table HNPACONT. The index into HNPACONT comes from the SNPA field of table OPRTRANS, tuple OPERATOR; thus, 619 is the index used. Subtables HNPACODE and RTEREF provide further translation. The digits 301 in the HNPACODE subtable result in FRTD 125, which is found in the RTEREF subtable. Here a route to TITOGA1 is obtained, a trunk is selected, and outpulsing begins. An indication of Auto Collect appears on the operator screen, and the call can then be floated.

3. Equal Access processing

Since parameter ZENITH_EA_ROUTING is N no Equal Access processing occurs.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used. For more information on TOPS AMA, refer to NTXE20 (EBAF).

Example 5 - Inter-LATA call (feature on) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is inter-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80020000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 20000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH, 3012221000. Since the NPA of the routing number does not match the SNPA in OPRTRANS, the

Base TOPS Equal Access (continued)

call is translated using the full ten digits, and no check of ZENITH_TEN_DIGIT_DIALING is necessary.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call begins in table STDPRTCT using the pretranslator name in the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (see example #2 for further discussion of this; also how NPA screening overrides any further translation).

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, the NPA used to index into this table comes from the SNPA in table TRKGRP. Thus, the 619 tuple is used. A search for the digits 301 in subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGA1.

3. Equal Access processing

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WA1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAOLA, which yields a LATA status for this call of inter-LATA. This being the case, translation continues with table CLSVSCRC. Index into this table is a 3-part index consisting of the following:

- A screen class from field INTERSSC in table TOPEATRK.
- An NPA from table TOPEATRK, field SCRNDIX.
- The call type from table STDPRTCT, field TYPCALL.

The carrier number is then affixed in front of the routing number (in this case, 88830122210000 is the new number), and then subtable CLSVSCR is searched. The result is a route, via table OFRT, to the carrier trunk group TATCC888OG1. This route overrides that found above with standard translations (TITOGA1).

An indication that the call is inter-LATA is sent to the operator's screen. Once the operator floats the call it is connected to the carrier and outpulsed as a 0- call. When the call arrives at the Inter-LATA Carrier operator, the caller must repeat the ZENITH number to the new operator.

4. AMA record generation

After the call is terminated by one party going onhook an AMA record is generated with a call code of 190 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used). A Module Code 053 is appended to this record, showing the carrier ID, carrier

Base TOPS Equal Access (continued)

connect time, and elapsed carrier time. For more information on TOPS AMA records, refer to NTXE20 (EBAF)

Example 6 - Inter-LATA TICS call (feature on) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is inter-LATA
- Calling number is 4075221234
- Incoming trunk group is TBELL2WB1
- Operating Company provides operator services for the carrier (TICS)

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80040000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 40000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH, 3012221000. Since the NPA of the routing number does not match the SNPA in OPRTRANS, the call is translated using the full ten digits, and no check of ZENITH_TEN_DIGIT_DIALING is necessary.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call begins in table STDPRTCT using the pre-translator name in the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (see example #2 for further discussion of this; also how NPA screening overrides any further translation).

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, the NPA used to index into this table comes from the SNPA in table TRKGRP. Thus, the 407 tuple is used. A search for the digits 301 in subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGB1.

3. Equal Access processing

Base TOPS Equal Access (continued)

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WB1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAXLA, which yields a LATA status for this call of inter-LATA. This being the case, translation continues with table CLSVSCRC. Index into this table is a 3-part index consisting of the following:

- A screen class from field INTERSSC in table TOPEATRK.
- An NPA from table TOPEATRK, field SCRNDIX.
- The call type from table STDPRTCT, field TYPCALL.

The carrier number is then affixed in front of the routing number (in this case, 11130122210000 is the new number), and then subtable CLSVSCR is searched. The result is a route, via table OFRT, to the carrier trunk group TATCC111OG1. This route overrides that found above with standard translations (TITOGB1).

An indication that the call is inter-LATA is sent to the operator's screen, along with an Auto Collect indicator. In this case, the entire ten digit routing number is outputted to the carrier and no further operator involvement is necessary as the call is completed to the destination.

4. AMA Record Generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used). A Module Code 053 is also appended, showing the carrier ID, carrier connect time, and elapsed carrier time. For more information on TOPS AMA records, refer to NTXE20 (EBAF).

Fields showing the time the call was connected to the carrier and the amount of time spent on the call by the Operating Company operator are provided.

BK04338 - Call code 251 AMA record for 1+, 0+, and 0- inter-LATA

This PRSDOC implements call type code 251 in structure code 625 for carrier calls (1+, 0+, 0-) that originate directly from an End Office (EO), tandem through the TOPS office and arrive at the Interexchange Carrier (IC) on Access to Tandem Carrier (ATC) trunks. Call type code 251 is optional and replaces call type code 110 when activated to prevent double billing by the downstream.

In order for 1+, 0+, or 0- calls to complete to the called number, the EO routes calls to an IC either directly to the IC or tandem through TOPS. Tandeming through TOPS involves leaving the EO and coming into the TOPS office on TOPS trunks and then leaving the TOPS office with no operator handling and arriving at the IC on ATC of Intertoll (IT) trunks. For instance, calls tandem

Base TOPS Equal Access (continued)

through the TOPS office because the EO does not have a direct connection to the IC.

When 1+, 0+ or 0- calls tandem through TOPS, duplicate AMA records are produced. An originating access record with structure code 625, call type code 110, is made at the EO, and a transfer or tandem record with structure code 625, call type code 110, is made at the TOPS office. This produces a double billing situation at the EO.

Therefore, call type code 251 is defined for use in the TOPS office for Equal Access AMA records that produce structure code 625 in Phase 2 EBAF only. This new call type code notifies the billing center that it has a companion record that was created at the EO.

The 625/251 record has an accurate carrier connect time because TOPS knows when the carrier acknowledgment wink is received for FGD signaling, the terminating trunk is seized for FGC signaling, or the time when the incoming trunk is seized if the incoming trunk is signaled with EAFGD signaling or COMFGD signaling.

This new call type code is only visible when tuple EBAF_PHASE in table TOPAMAOP is PHASE2, the TOPS Equal Access package (NTX187) is present, is only applicable to calls that tandem through TOPS to ATC or IT trunks, and either one of the following is true:

- The new parameter RECORD_INTERLATA_CALL_CODE_251 in table TOPAMAOP is Y. This parameter causes call type code 251 to be produced for the entire TOPS office. Following is example datafill.

Table TOPAMAOP

AMAOPT	OPTINFO
RECORD_INTERLATA_CALL_CODE_251	Y

- The incoming trunk is datafilled in table AMATKOPT. This allows call type code 251 to be produced only on an incoming trunk group basis. Any call coming into the TOPS office on a trunk datafilled in table

Base TOPS Equal Access (continued)

AMATKOPT with field OPTIONS set to new value TOPS_EA251CC produces call type code 251. Following is example datafill.

Table AMATKOPT

CLLI	OPTIONS
OPDP1	TOPS_EA251CC

The call codes associated with structure code 00625 in Phase 2 are as follows:

Structure code 00625

Call code	Call type
110	FGD originating
134	FGB originating
251	Inter-LATA,1+,0+,0-, call transfer

The following figure is an example of an AMA record generated for call code 251C with structure code 00625 (Phase 2):

Call code 251C

```

HEX ID:AA  STRUCTURE CODE:00625C  CALL CODE:251C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  ANSWER:0C  SERVICE OBSERVED:0C
OPER ACTION:0C  SERVICE FEATURE:000C  ORIG NPA:613C
ORIG NUMBER:2391234C  OVERSEAS IND:1C  TERM NPA:00212C
TERM NUMBER:2208978C  ANSWER TIME:0427380C
ELAPSED TIME:000001250C  IC/INC PREFIX:02882C  CC DATE:80217C
CC TIME:0427400C  ELAPSED CC:000001273C  IC/INC EVENT
STATUS:010C  TRUNK GROUP NUMBER:00423C  ROUTING INDICATOR:1C
DIALING INDICATOR:0C  ANI INDICATOR:1C

```

Interactions:

- Call type code 251 is only produced with structure code 625 in Phase 2 EBAF when tuple RECORD_INTERLATA_CALL_CODE_251 in table

Base TOPS Equal Access (continued)

TOPAMAOP is set to Y or a trunk is datafilled in table AMATKOPT with the EA251CC option.

- This PRSDOC requires Basic TOPS(NTX030CC), Bellcore AMA (NTX188AA), TOPS Expanded Bellcore AMA Format (NTXE20AA), and TOPS Equal Access (NTX187AA).

Restrictions and limitations:

The AMA changes introduced by this feature are only available in Phase 2 EBAF.

BK14194 - Preparation for TOPS FGD CIC expansion (BCS36)

In BCS37/CSP02 a Feature Group D (FGD) Carrier Identification Code (CIC) Expansion feature increases CICs from 3 to 4 digits in size. This is due to a Bellcore regulatory requirement. In preparation, fields in tables and office parameters are expanded. This BCS37 feature is patched back into BCS36/CSP01.

Following are the changed tables and parameters.

Table TOPEACAR: Fields CARDIGS and ALTCARRT are expanded from 3 to 4 digits. Field CARDIGS is the tuple key. Any additions to this table must supply 4 digits for both of these expanded fields. The valid range of these two expanded fields is 0000-0999. Following is example datafill.

MAP display example for table TOPEACAR

CARDIGS	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	NATERM
INTERM	OPSERV					
0234	SPRINT	SPRINT	Y	Y	0234	UNREST
UNREST	NOSERV	N N				
0789	MCI	MCI	Y	Y	0789	UNREST
UNREST	NOSERV	N N				

Table TOPEATRK Field CARRIER is expanded from a 3 to 4 digit field. When the CARRIER field of an existing tuple is changed, a 4-digit value is required. The valid range of these two fields is 0000-0999. Following is example datafill.

Base TOPS Equal Access (continued)**MAP display example for table TOPEATRK**

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSCC	OVSSCL
SCRNIDX	DNLOOK	DFLTPICT	BYPASS			
GENTRK1	CONFORM	0789	L123	STRA	STER	SOVS
919	Y	Y	\$			
GENTRK2	CONFORM	0234	L321	STRA	STER	SOVS
803	Y	Y	\$			

Table BRANDANN The key of this table has been expanded from a 1-part to a 2-part key. Previously, all tuples with values less than 1000 were assumed to be carrier codes, and all tuples 1000 or greater were assumed to be NBEC codes. The one exception was the value 0000, which was always assumed to be an NBEC code.

With the expansion of valid carrier digits into the 4-digit range, it can no longer be assumed that all 4-digit values are NBEC codes and all 3-digit values are carrier codes. Therefore, the new key now contains 2 fields. The first field is the original 4-digit field and the second field is a text string equal to CARR or NBEC. Following is example datafill.

MAP display example for table BRANDANN

CARNBEC	TAANN	TACLLI	DAANN	DACLLI
0000 NBEC	Y	TOPSBRND1	N	
0789 CARR	Y	TOPSBRND2	Y	TOPSBRND2
1234 NBEC	Y	TOPSBRND3	Y	TOPSBRND3

Tables EAACTSAN and EAMCCSAN Key field EACARNUM has been expanded from 3 to 4 digits in tables EAACTSAN and EAMCCSAN. The valid range of these fields is 0000-0999. Following are datafill examples.

MAP display example for table EAACTSAN

EACARNUM	CORRCTDP	OVERDEP
0234	ACTSTOPS 1	ACTSTOPS 1
0789	ACTSTOPS 2	ACTSTOPS 2

Base TOPS Equal Access (continued)**MAP display example for table EAMCCSAN**

EACARNUM	INITINDX
0234	MCCSTOPS 1
0789	MCCSTOPS 2

Office parameter TOPS_OTC_CARRIER_NUMBER (Table OFCVAR) This office parameter has been expanded from 3 to 4 digits. It has a default value of 'NNNN'. This office parameter resides in table OFCVAR, and if its value is to be changed, a 4-digit value is enforced. Following is example datafill.

MAP display example for table OFCVAR

PARMNAME	PARMVAL
TOPS_OTC_CARRIER_NUMBER	0789

Parameter FOUR_DIGIT_CIC_STATUS (Table TOPSPARM) This new parameter in table TOPSPARM has the following values:

- THREEDIG - Only 3 digit CICs are valid
- PERMISSIVE - Both 3 and 4 digit CICs in the ranges 0XXX, 5XXX, and 6XXX are valid.
- FOURDIG - Only 4 digit CICs are valid

The default value is THREEDIG. This parameter determines the office CIC dialing stage. Following is example datafill.

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
FOUR_DIGIT_CIC_STATUS	THREEDIG

Although the above tables and office parameters have been expanded to contain CICs of 4 digits, this PRSDOC does not provide any functionality enhancements where 4-digit CICs are supported in any types of signaling or operator position screen displays.

When an operator enters carrier codes (for any reason), only three digit codes should be entered, as no 4-digit CICs have yet been assigned.

Base TOPS Equal Access (continued)

Translations table flow

Table flow is not provided.

Limitations and restrictions

The following limitations and restrictions apply to Base TOPS Equal Access:

BR0619 - TOPS - Operator Flexible Routing

Three types of lines can be connected directly to TOPS: coin lines, hotel lines, and flat-rate (1FR) lines. If these lines are connected to the Operator Position in this manner, the local Equal Access software is not invoked.

Thus, for an inter-LATA call to be routed properly in an EAEO, the call must arrive at TOPS on a loop-around trunk group. See "BR0620 - TOPS - ANI Forwarding on 0- Calls" for more information.

If the point of presence for an IC is in the TOPS-equipped toll office and not in the End Office, all calls from that End Office should be blocked to that carrier. This is achieved by datafilling a unique Class of Service Screening Name in the TOPEATRK Table for all TOPS trunks incoming from that End Office. Then, in the CLSVSCRC.CLSVSCR Table, calls to that carrier are sent to a treatment.

AF1100 - TOPS FGB Call Code 134

If non-operator-handled TOPS FGB calls routed with a T selector should produce AMA records with call code 134, structure code 625, office parameters TOPS_FGB_CC134 and TOPS_EA_PROCESS_T_SEL must BOTH be set to Y.

International calls routed using a T selector may not be properly determined as inter-LATA when TOPS_EA_PROCESS_T_SEL is set to Y.

If a 950 call arrives on a TOPS trunk group that is marked for LATA Equal Access System (LEAS), pre-translator datafill determines whether the call is an FGB 950 call (using a T selector) or an FGD 950 call (using an EA selector). The FGB 950 calls are never considered LEAS calls and are handled in the same way as other TOPS FGB 950 calls; therefore, these 950 calls are affected by this feature. In TOPS, only LEAS trunk groups can carry FGD 950, so these calls are considered LEAS calls; they are not affected by this feature.

When calls routed using a T selector receive EA processing because TOPS_EA_PROCESS_T_SEL is set to Y, the datafill in TOPEACAR, OCCINFO, and CLSVSCRC has no effect on the processing of the calls.

Base TOPS Equal Access (continued)

BR30517 - Optional EA translations for Zenith

In BCS34, the field OPLSCLD in table TOPEACAR has no effect on ZENITH calls. No outpulsing of the called number takes place on any ZENITH calls, regardless of the setting of this field. All calls arrive at the Inter-LATA Carrier operator as 0- calls. An exception is made for TICS calls, where the routing number is outpulsed to the carrier so that the call can be completed, since no further operator involvement is necessary.

Interactions

The following paragraphs describe the interactions between Base TOPS Equal Access and other functionalities.

BR0619 - TOPS - Operator Flexible Routing

For BR0619 to function properly, the TOPS software must also include the following features, both of which are in the NTX187AA package:

- BR0621: See “BR0621 - TOPS - ANI Signaling Compatibility” in this document.
- BR0635: See “BR0635 - Trunk Signaling Protocol/Format Conversion” in this document.

BR0620 - TOPS - ANI Forwarding on 0- Calls

For BR0620 to function properly, the TOPS software must also include the following features:

- BR0619: See “BR0619 - TOPS - Operator Flexible Routing” in this document.
- BR0621: See “BR0621 - TOPS - ANI Signaling Compatibility” in this document.
- F2634
- BR0635: See “BR0635 - Trunk Signaling Protocol/Format Conversion” in this document.

BR0635 - Trunk Signaling Protocol/Format Conversion

For BR0635 to function properly, the TOPS software must also include the following features, all of which are in the NTX187AA package:

- BR0619: See “BR0619 - TOPS - Operator Flexible Routing” in this document.
- BR0620: See “BR0620 - TOPS - ANI Forwarding on 0- Calls” in this document.
- BR0621: See “BR0621 - TOPS - ANI Signaling Compatibility” in this document.

Base TOPS Equal Access (continued)

Activation/deactivation by the end user

Base TOPS Equal Access requires no activation or deactivation by the end user.

Billing

The Bellcore (BC) Automatic Message Accounting (AMA) format is provided by BR0634, which is in the TOPS BCR EA AMA Format functionality, OSB00001. BR0634 is required for proper functioning of BR0620, ANI Forwarding on 0- Calls.

The following structure and calls codes are used to generate AMA records in the BC format for answered (completed) TOPS calls.

- Structure Codes - 00700 through 00734 (access records)
- Structure Codes - 04700 through 04734 (billing records)
- Call Codes - 006, 009, 010, 014, 015, 016, 017, 018, 019, 022, 023, 024, 027, 028, 035, 043, 044, 054, 055, 057, 058, 074, 107, 108, 250, 251

Note: There is no structure code 00726.

AMA records are generated for calls using FGB, FGC, and FGD signaling. The structure code of these records is 047XX (04700-04734). Refer to the following table.

IC/INC Call Event Status Field

EXAMPLE	ANI	SPILL	OFF-HOOK	TIMEOUT	EVENT
1		Y	N	N	00
2		Y	N	Y	12
3		Y	Y	—	05
4		N	N	—	00
5		N	Y	—	10

For FGB or FGC signaling, this field is datafilled with a predefined value based on specific conditions for each event.

The following figures show examples of the call event status for different conditions.

Base TOPS Equal Access (continued)

Example AMA record for call event 00

```
HEX ID: AA  STRUCT CODE:00734C  CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C  REC OFC ID: 00000000C  DATE:60102C
TIMING IND:000000C  STUDY IND: 0200030C ANSWER:0C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:00000C  TERM NO: 00000000C CONN TIME:00000000C
ELAPSED TIME: 0000000000C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 0000000060C IC/INC PREFIX:02880C  CC DATE: 00000C
CC TIME:0000000000C  ELAPSED CC: 0000000000C IC/INC EVENT:000C
TRK GRP:00158C  ROUTING: 1C DIALING:1C ANI:0C
```

Example AMA record for call event 12

```
HEX ID: AA  STRUCT CODE:00734C  CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C  REC OFC ID: 00000000C  DATE:60102C
TIMING IND:000000C  STUDY IND: 0200030C ANSWER:1C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:00000C  TERM NO: 00000000C CONN TIME:00000000C
ELAPSED TIME: 0000000000C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 0000000060C IC/INC PREFIX:02880C  CC DATE: 60102C
CC TIME:2323217C  ELAPSED CC: 000001346C IC/INC EVENT:012C
TRK GRP:00158C  ROUTING: 1C DIALING:1C ANI:0C
```

Example AMA record for call event 05

```
HEX ID: AA  STRUCT CODE:00734C  CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C  REC OFC ID: 00000000C  DATE:60102C
TIMING IND:000000C  STUDY IND: 0200030C ANSWER:1C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:00000C  TERM NO: 00000000C CONN TIME:2143015C
ELAPSED TIME: 000000109C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 0000000060C IC/INC PREFIX:02880C  CC DATE: 60102C
CC TIME:2323217C  ELAPSED CC: 000000109C IC/INC EVENT:005C
TRK GRP:00158C  ROUTING: 1C DIALING:1C ANI:0C
```

Base TOPS Equal Access (continued)

Example AMA record for call event 00

```

HEX ID: AA STRUCT CODE:00734C CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:0000000C REC OFC TYPE:036C  REC OFC ID: 0000000C DATE:00000C
TIMING IND:00000C  STUDY IND: 0200030C ANSWER:0C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:00000C  TERM NO: 0000000C CONN TIME:0000000C
ELAPSED TIME: 000000000C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 000000060C IC/INC PREFIX:02880C  CC DATE: 00000C
CC TIME:000000000C  ELAPSED CC: 000000000C IC/INC EVENT:000C
TRK GRP:00263C  ROUTING: 1C DIALING:1C ANI:0C

```

Example AMA record for call event 10

```

HEX ID: AA STRUCT CODE:00734C CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:0000000C REC OFC TYPE:036C  REC OFC ID: 0000000C DATE:00000C
TIMING IND:00000C  STUDY IND: 0200030C ANSWER:1C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:00000C  TERM NO: 0000000C CONN TIME:2143015C
ELAPSED TIME: 000000109C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 000000060C IC/INC PREFIX:02880C  CC DATE: 60102C
CC TIME:2323217C  ELAPSED CC: 000000109C IC/INC EVENT:010C TRK GRP:00158C
ROUTING: 1C DIALING:1C ANI:0C

```

CAMA billing is activated for a particular carrier if the CAMABILL field in the TOPEACAR Table is set to Y. The format of the records generated is similar to the format provided by the 007XX structure code.

Note: If the CAMABILL field is set to Y, the ANI field of Table TRKGRP (ATC) must be set to N.

The following table shows the fields added to the 007XX structure code to create the 047XX structure code.

Structure code 047XX (Sheet 1 of 2)

Interlata carrier / international carrier (IC/INC) event information	Number of characters
IC/INC prefix	6
Event date	6
Event time	8
Elapsed time	10

Base TOPS Equal Access (continued)**Structure code 047XX (Sheet 2 of 2)**

Interlata carrier / international carrier (IC/INC) event information	Number of characters
IC/INC call event status	4
Trunk group number	6
IC/INC routing indicator	2
IC/INC dialing indicator	2
IC/INC ANI indicator	2

The following figure shows an example of a CAMA billing record.

Example AMA record for 0- 1FR Station-Paid CAMA InterLATA Call

```

HEX ID: AA STRUCT CODE:04700C CALL CODE:006C SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C REC OFC ID: 00000000C DATE:60102C
TIMING IND:000000C STUDY IND: 00000000C ANSWER:0C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C ORIG NO: 2391111C
OVERSEAS IND:0C TERM NPA:00212C TERM NO: 2201111C CONN TIME:2323240C
ELAPSED TIME: 000000095C OPERATOR_NUMBER:0003101C
OPERATOR WORK TIME: 000000130C IC/INC PREFIX:02221C CC DATE: 60102C
CC TIME:2323217C ELAPSED CC: 000000109C IC/INC EVENT:005C
TRK GRP:00158C ROUTING: 1C DIALING:1C ANI:1C

```

The following tables describe the fields added to the 007XX structure code to create the 047XX structure code.

IC/INCprefix field (Sheet 1 of 2)

Characters	Description
1	Padding (zero)
2-4	IC/INC identification
Note: This field records the IC digits in BCD characters 2-4, and records the call type, for example, direct dialed, operator requested or unknown.	

Base TOPS Equal Access (continued)

IC/INCprefix field (Sheet 2 of 2)

Characters	Description
5	Allowable values • 0 = operator requested • 1 = direct dialed • 2 = cannot determine if IC/INC operator involved
6	Sign (hex)
Note: This field records the IC digits in BCD characters 2-4, and records the call type, for example, direct dialed, operator requested or unknown.	

Event date field

Characters	Description
1	Last digit of year
2-3	Month
4-5	Day
6	Sign (hex)
Note: This field records the IC connect date that the Operating Company receives an answer from the called party.	

Event time field

Characters	Description
1-2	Hours
3-4	Minutes
5-6	Seconds
7	Tenths of seconds
8	Sign (hex)
Note: This field records the IC connect time. This is the time when the called party answers.	

Base TOPS Equal Access (continued)

Elapsed time field

Characters	Description
1	0 (padding)
2-6	Minutes
7-8	Seconds
9	Tenths of seconds
10	Sign (hex)
Note 1: On attempts, zeros are recorded for minutes, for seconds, and for tenths of seconds.	
Note 2: This field records the elapsed time of the call from carrier connect time to call disconnect. It is the carrier elapsed time.	

Base TOPS Equal Access (continued)

IC/INC call event status field

Characters	Description
1	Padding (0)
2-3	Allowable values • 00 = Reserved • 01 = First wink from IC/INC (originating LATA); AMA register seized (terminating LATA) • 02 = Abandon or time-out before dialing is complete (originating LATA). See note 1. • 03 = Second start dial wink from IC/INC (originating LATA) • 04 = Time-out waiting for acknowledgment wink (originating LATA) • 05 = Operator services or CAMA signaling off-hook from IC/INC after receipt of called number (originating LATA) • 06 = Call terminated due to network management feature (terminating LATA). See note 1. • 07 = Acknowledgment wink received • 08 = Invalid called number (terminating LATA). See note 1. • 09 = All failures (except invalid called number) in which the call cannot be set up to the terminating office (for example: all trunks busy or time-out waiting for wink from the terminating end office) (terminating LATA). See note 1. • 10 = Answer (originating or terminating LATA) • 11 = Time-out waiting for second start dial wink for calls using INC signaling (originating LATA) • 12 = Operator services of CAMA signaling time-out waiting for off-hook (originating LATA) • 13 = Off-hook rather than second start dial wink for calls using INC signaling. See note 1.
4	Sign (hex C)
Note 1: TOPS EA does not support these cases Note 2: This field records a 00 in fields 2-3 only if the TICS software is present and when Intertoll Signaling, not FGD Signaling is used. The other entries are valid for outgoing FGD.	

Base TOPS Equal Access (continued)

Trunk group number field

Characters	Description
1	Padding (0)
2-5	Trunk group number
6	Sign (hex)
Note: This field records the terminating IC trunk group number.	

IC/INC routing indicator field

Characters	Description
1	Values • 0 = Direct • 1 = Tandem (note: only 1 is used)
2	Sign (hex)
Note: This field records the value 1, because TOPS is only in tandem offices.	

IC/INC dialing indicator field

Characters	Description
1	Values • 1 = Primary or default IC, 10XXA not dialed • 2 = 10XXX dialed • 3 = 950-1XXX
2	Sign (hex)
Note: This field records how the IC digits are received.	

Base TOPS Equal Access (continued)

IC/INC ANI indicator field

Characters	Description
1	Values 0 = No ANI provided 1 = ANI provided
2	Sign (hex)
Note: This field specifies whether ANI is provided.	

Carrier calls that are sent to a carrier over an IT trunk provide carrier information in the AMA record. The date and time the IT trunk is seized is recorded in the CC Date and CC Time fields, respectively. The elapsed time from the time of carrier connect until the time the calling or called party goes on-hook is recorded in the Elapsed CC field. The values that are recorded for the IC/INC call event status are shown in a prior table. The following figure illustrates the AMA record generated for a CAMA call over an IT trunk if no answer is returned by the carrier.

Example AMA record for CAMA Carrier Call on IT Trunk Group

```

HEX ID: AA  STRUCTURE CODE:14700C  CALL CODE:006C  SENSOR TYPE: 036C
SENSOR ID:00000000C  REC OFFICE TYPE:036C  REC OFFICE ID: 00000000C
DATE:81220C  TIMING IND:00000C  STUDY IND: 0200000C  ANSWER:1C
SERVICE OBSERVED:0C  OPER ACTION: 0C  SERVICE FEATURE:000C  ORIG NPA:613C
ORIG NUMBER: 2391111C  OVERSEAS IND:0C  TERM NPA:00212C
TERM NUMBER: 2209999C  CONNECT TIME:0942256C  ELAPSED TIME: 000000000C
OPERATOR NUMBER:0003101C  OPERATOR WORK TIME: 000000000C
IC/INC PREFIX:02221C  CC DATE: 81220C  CC TIME:0942279C
ELAPSED CC:000000161C  IC/INC EVENT STATUS: 012C
TRUNK GROUP NUMBER:00089C  ROUTING INDICATOR: 1C  DIALING INDICATOR:1C
ANI INDICATOR: 0C  TNN:0000027C
  
```

AF0968 - Carrier Code on AMA for Terminating TOPS Calls

The call code associated with inward service type calls is 108. The corresponding structure code is 00733. The DMS uses the CARRIER PREFIX field to identify the carrier within structure code 00733.

Base TOPS Equal Access (continued)

The CARRIER PREFIX field is a 6-character field. The following table provides a breakdown of the characters of the CARRIER PREFIX field.

Carrier prefix field

Characters	Description
1	Padding (zero)
2	Type of service 0 = Internal line of business 1 = External line of business
3-5	Line of business number - If 0 in position 2, this is line of business number - If 1 in position 2, this is carrier identification
6	Sign (hex C)

Following is an example of such an AMA record.

Example AMA record for CAC 202

```

HEX ID: AA STRUCT CODE:10733C CALL CODE:108C SENSOR TYPE:036C
SENSOR ID: 0000000C REC OFC TYPE:036C REC OFC ID:0000000C
CIRCUIT DATE: 60101C CIRCUIT TIME:1031090C SERC OBSERVED:0C
INWARD SERVICE TYPE: 001C OPERATOR WORK TIME:000000030C
CARRIER PREFIX: 02220C OPERATOR NUMBER: 1010112C CIRCUIT ID:000

```

AF1100 - TOPS FGB Call Code 134

Presently, AMA records produced for non-operator-handled TOPS Feature Group B (FGB) calls receiving TOPS EA processing use call code 251, structure code 734; TOPS FGB calls routed using a T selector use call code 006, structure code 700.

If AMA records with call code 134, structure code 625, are produced for non-operator-handled TOPS FGB calls in place of AMA records with call code 251, structure code 734, the Operator Number and Operator Work Time fields will NOT be in the records. Operator handled TOPS FGB calls are not affected by this feature.

Base TOPS Equal Access (continued)

If TOPS non-FGB calls routed using a T selector receive TOPS EA processing because of office parameter TOPS_EA_PROCESS_T_SEL, appropriate EA AMA records will be produced.

The AMA record with call code 134, structure code 625, (shown in the following figure) is an existing combination. No fields are added to or changed in this record. It is produced for non-operator-handled TOPS Feature Group B calls when office parameter TOPS_FGB_CC134 is set to Y and the calls receive EA processing.

Example AMA record with Call Code 134, Structure Code 625

```
HEX ID: AA  STRUCT CODE:00625C  CALL CODE:134C  SENSOR TYPE: 036C
SENSOR ID:0000000C  REC OFC TYPE:036C  REC OFC ID: 0000000C  DA:80203C
TIMING IND:00000C  STUDY IND: 0200030C  ANSWER:0C  SERV OBSERVED:0C
OPER ACTION: 0C  SERV FEAT:000C  ORIG NPA:613C  ORIG NO: 2391234C
OVERSEAS IND:1C  TERM NPA:00000C  TERM NO: 0000000C  TIME:1403594C
ELAPSED TIME:000000084C  IC/INC PREFIX:02221C  CC DATE:80128C
CC TIME:1403590C  ELAPSED CC: 000000093C  IC/INC EVENT:005C
TRK GRP: 00412C  ROUTING:1C  DIALING:3C  ANI:1C
```

An AMA record with call code 134, structure code 627, is produced for long duration calls.

Station Message Detail Recording

Base TOPS Equal Access does not affect Station Message Detail Recording.

Base TOPS Equal Access (continued)**Datafilling office parameters**

The following table shows the office parameters used by Base TOPS Equal Access. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by Base TOPS Equal Access (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCVAR	TEST_CALL_II_SPILL	This parameter is required to activate this feature.
OFCVAR	TOPS_FGB_CC134 and TOPS_EA_PROCESS_T_SEL	For non-operator-handled TOPS FGB calls routed using a T selector, AF1100 provides two office parameters, TOPS_FGB_CC134 and TOPS_EA_PROCESS_T_SEL, which interact in four possible combinations (either parameter can be set to Y or N) to produce AMA records with different call and structure codes. <i>TOPS_FGB_CC134=N</i> <i>TOPS_EA_PROCESS_T_SEL=N</i> AMA record with call code 251, structure code 734, is generated for non-operator-handled TOPS FGB 950 calls without T/S selector. AMA record with call code 006, structure code 700, is generated for non-operator-handled TOPS FGB 950 calls with T/S selector. <i>TOPS_FGB_CC134=Y</i> <i>TOPS_EA_PROCESS_T_SEL=N</i> AMA record with call code 134, structure code 625, is generated for non-operator-handled TOPS FGB 950 calls without T/S selector. AMA record with call code 006, structure code 700, is generated for non-operator-handled TOPS FGB calls with T/S selector.

Base TOPS Equal Access (continued)

Office parameters used by Base TOPS Equal Access (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
		<i>TOPS_EA_PROCESS_T_SEL</i> The TOPS_EA_PROCESS_T_SEL office parameter determines whether TOPS calls routed from the pre-translator with a T selector receive TOPS EA processing without EA changing the index into Table OFRT obtained by the pre-translator. EA processing as defined for this feature determines whether a call routed from the pretranslator with a T or an S selector is a carrier call. If it is a carrier call, the carrier number is determined, EA class-of-service screening is set to allow conditional routing, and the carrier number is used in the AMA record generated. The value range for the parameter, which can be updated at any time, is Y/N. • Default value=N • Activation=Immediate.
OFCOPT	TOPS_EQUAL_ACCESS_OFFICE	This parameter is required to activate the feature.
OFCENG	TOPS_EA_INTERLATA_NONOPR_AMA	This parameter is required to activate the feature.
OFCENG	TRUNK_NETWORK_NUMBER_NEEDED	This parameter is required to activate the feature.

Base TOPS Equal Access (continued)**Datafill sequence**

The following table lists the tables that require datafill to implement Base TOPS Equal Access. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Base TOPS Equal Access (Sheet 1 of 2)

Table	Purpose of table
HNPACONT	Home Numbering Plan Area Control Table
STDPRTCT	Standard Pretranslator Control Table
SCRNCLAS	Screening Class Table
TRKGRP (TOPS)	Trunk Group (TOPS) Table.
PICNAME	Primary Inter-LATA Carrier Name Table.
TRKSGRP	Trunk Subgroup Table
TRKGRP (ATC)	Trunk Group (Access Tandem to Carrier) Table
OFRT	Office Route Table
CLSVSCRC	Class of Service Screening Control Table
POSITION	Position Table
HNPACODE	Home Numbering Plan Area Control Subtable (HNPACONT.HNPACODE)
STDPRT	Standard Pretranslator Subtable (STDPRTCT.STDPRT)
CLSVSCR	Class of Service Screening Control Subtable (CLSVSCRC.CLSVSCR)
TOPSBC	TOPS Billing Code
TOPEACAR	TOPS Equal Access Carrier Table.
TOPEATRK	TOPS Equal Access Trunk Group Extension Table.
LATANAME	Local Access and Transport Area Name Table
LATAOLA	Local Access and Transport Area Translation Table
TOPSCOIN	TOPS Coin
CCTR	Country Code Table
HNPARTEREF	Home Numbering Plan Area Control Subtable (HNPACONT.RTEREF)

Base TOPS Equal Access (continued)

Datafill tables required for Base TOPS Equal Access (Sheet 2 of 2)

Table	Purpose of table
OCCINFO	Other Common Carrier Information Table
BELLCAT	Bell Category Table.
EAANIID	Equal Access Automatic Number Identification Information Digit Table.
OSSCAT	Operator Services Signaling Category Table.
TRKGRP (IT)	Trunk Group (Intertoll) Table
TRKGRP (OP)	Trunk Group (Operator) Table
TOPS	Traffic Operator Position System Table
TOPAMAOP	TOPS AMA Options
AMATKOPT	AMA Trunk Options.

Datafilling table HNPACONT

Datafill example for table HNPACONT

The following example shows sample datafill for table HNPACONT.

MAP display example for table HNPACONT

NPA	MAXRTE	NOAMBIGC	RTREF	HNPACODE	ATTRIB
919	512	1	(20)	(1)	(38)

Datafilling table STDPRTCT

Datafill example for table STDPRTCT

The following example shows sample datafill for table STDPRTCT.

MAP display example for table STDPRTCT

EXTPRTNM	STDPRT
TOP1	(1)
TOP2	(1)

Base TOPS Equal Access (continued)**Datafilling table SCRNCCLAS****Datafill example for table SCRNCCLAS**

The following example shows sample datafill for table SCRNCCLAS.

MAP display example for table SCRNCCLAS

VALUE	SYMBOL
23	DOM1

Datafilling table TRKGRP (TOPS)

The following table shows the datafill specific to Base TOPS Equal Access for table TRKGRP.TOP. Only those fields that apply directly to Base TOPS Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP (TOPS)

Field	Subfield or refinement	Entry	Explanation and action
	ANIREQ	BELL, MODBELL, or OSS	Subfield ANIREQ indicates the method for requesting the ANI spill for trunks that use BELL, MODBELL, or OSS signaling. This field can be datafilled with one of two values: WINK or OFFHK. Value WINK indicates that a wink is returned to the End Office to request the ANI spill. Value OFFHK returns an off-hook to the End Office. The use of a wink to request ANI spill allows the true answer to be returned from the terminating office.
SELECTOR		C	If changes are made to the standard displays, the SELECTOR field must be set to C. If the SELECTOR field is set to S, it indicates that the standard (default) display is shown on the Operator Position CRT when inward service type calls arrive at the Operator Position.

Datafill example for table TRKGRP (TOPS)

The following example shows sample datafill for table TRKGRP (TOPS).

Base TOPS Equal Access (continued)

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO
TOPCOMAMF	
TOPS 0 NPDGP NCRT IC MIDL 919 TOP1 NLCA NSCR Y SP	
COMBINED N N	
0 BELL 10 2 2 N Y WINK	
TOPCOMBMF	
TOPS 0 NPDGP NCRT IC MIDL 919 TOP2 NLCA NSCR Y SP	
COMBINED N N	
0 BELL 3 5 2 N Y OFFHK	

Datafilling table PICNAME

Datafill example for table PICNAME

The following example shows sample datafill for table PICNAME.

MAP display example for table PICNAME

VALUE	SYMBOL
1	CARR1
2	CARR2

Datafilling table TRKSGRP

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

SGRPKEY	CARDCODE	SGRPVAR
TOPCOMAMF 0 DS1SIG		
STD IC	MF WK	N 5 5 EI NO N N N M
TOPCOMBMF 0 DS1SIG		
STD IC	MF WK	N 5 5 EI NO N N N M
OGEACAR3 0 DS1SIG		
STD OG	MF WK	7 0 NO EI N N N 70
OGEACAR4 0 DS1SIG		
STD OG	MF WK	7 0 NO EI N N N 70

Base TOPS Equal Access (continued)**Datafilling table TRKGRP (ATC)****Datafill example for table TRKGRP (ATC)**

The following example shows sample datafill for table TRKGRP (ATC).

MAP display example for table TRKGRP (ATC)

GRPKEY	GRPINFO
OGEACAR3	
ATC 0 TLA NCRT OG SP MIDL NPRT NSCR 919 ABC Y BELLI COMB N	
OGEACAR4	
ATC 0 TLA NCRT OG SP MIDL NPRT NSCR 919 XYZ Y BELLI COMB N	
OTWA0N11MG00	
ATC 21 TLD NCTC OG IT MIDL NPRT NSCR 613 XYZ CARR1 Y FGB	
INTERTOLL Y	

Datafilling table OFRT**Datafill example for table OFRT**

The following example shows sample datafill for table OFRT.

MAP display example for table OFRT

RTE	RTELIST
101	(S D OGEACAR3)
102	(S D OGEACAR3)
301	(S D OGEACAR4)
302 (CND TOPEACLS EACOIN SK 1) (T OFRT 312)	(T OFRT 402)
312 (CND TOPEACLS EAHOTEL SK 1) (T OFRT 322)	(T OFRT 412)
322 (CND TOPEACLS EARBILL SK 1) (T OFRT 332)	(T OFRT 422)
332 (CND TOPEACLS EACAMA SK 1) (T OFRT 442)	(T OFRT 432)
402	(S D OGEACAR4)
432	(S D OGEACAR4)
442	(S D OGEACAR4)

Datafilling table CLSVSCRC**Datafill example for table CLSVSCRC**

The following example shows sample datafill for table CLSVSCRC.

Base TOPS Equal Access (continued)

MAP display example for table CLSVSCRC

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
919 DOM1 DD	2 N	NONE	(1)
919 DOM1 OA	2 N	NONE	(1)

Datafilling table POSITION

Datafill example for table POSITION

The following example shows sample datafill for table POSITION.

MAP display example for table POSITION

POS	PRTE
TOPS	S TOPSP0S

Datafilling table HNPACODE

Datafill example for table HNPACODE

The following example shows sample datafill for table HNPACODE.

MAP display example for table HNPACODE

SUB FROMDIGS	TODIGS	CDRRTMT
212	212	FRTE 10
263	263	HRTE 13
312	312	FRTE 12

Datafilling table STDPRT

Datafill example for table STDPRT

The following example shows sample datafill for table STDPRT.

Base TOPS Equal Access (continued)

MAP display example for table STDPRT

```

POS TOP1
  FROMDIGS      TODIGS
                                PRETRTE
    2              9
                                N NL 0 NA
POS TOP2
  FROMDIGS      TODIGS
                                PRETRTE
    0              0
    T OA 1 0FRT   301 1 1 NONE
    2              9
                                N NL 0 NA

```

Datafilling table CLSVSCR

Datafill example for table CLSVSCR

The following example shows sample datafill for table CLSVSCR.

MAP display example for table CLSVSCR

```

POS 919 DOM1 DD
  FROMDIGS      TODIGS      TMTOFRT
    222          222          T 302
    333000       333000       T 101
    333001       333999       T 102

POS 919 DOM1 OA
  FROMDIGS      TODIGS      TMTOFRT
    222          222          T 302
    333000       333000       T 101
    333001       333999       T 102

```

Datafilling table TOPSBC

Datafill example for table TOPSBC

The following example shows sample datafill for table TOPSBC.

Base TOPS Equal Access (continued)

MAP display example for table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALBC	CHGCLSS
TOPCOMBMF	544	NLCA	NSCR	919544	TOPS
TOPCOMAMF	549	NLCA	NSCR	919549	TOPS

Datafilling table TOPECAR

Datafill example for table TOPECAR

The following example shows sample datafill for table TOPECAR.

MAP display example for table TOPECAR

CARDIG	CARNAME	OPLSCLD	CAMABILL	OPSERV
222	CARR1	Y	Y	NOSERV
333	CARR2	N	Y	NOSERV

Datafilling table TOPEATRK

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK.

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
TOPCOMBMF	NCONFORM	222	LATA1	DOM1	DOM1	NSCR
919	N	N	(HOTEL)	(ZEROM)		
TOPCOMAMF	NCONFORM	333	LATA1	DOM1	DOM1	NSCR
919	N	N	(HOTEL)	(ZEROM)		

Datafilling table LATANAME

Datafill example for table LATANAME

The following example shows sample datafill for table LATANAME.

Base TOPS Equal Access (continued)**MAP display example for table LATANAME**

LATANAME

LATA1

Datafilling table LATAXLA**Datafill example for table LATAXLA**

The following example shows sample datafill for table LATAXLA.

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
LATA1 212	INTER	INTER	STD
LATA1 312	INTER	INTER	STD

Datafilling table TOPSCOIN**Datafill example for table TOPSCOIN**

The following example shows sample datafill for table TOPSCOIN.

MAP display example for table TOPSCOIN

GRPKEY	CNSDELAY	PADSTAT0	PADSTAT1	COINTYPE
TOPCOMAMF	75	ENABLED	DISABLED	CDF

Datafilling table TOPSPARM

The following table shows the datafill specific to Base TOPS Equal Access for table TOPSPARM. Only those fields that apply directly to Base TOPS Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPARM

Parameter	Explanation and action
ZENITH_EA_ROUTING	A new parameter, ZENITH_EA_ROUTING, has been added to table TOPSPARM. If it is set to Y, the following Zenith routing numbers are to be translated, using Equal Access software for determining the LATA status of the call and for appropriate routing. If set to N, the default value, the calls are translated as they had been prior to this feature, using standard translations.

Base TOPS Equal Access (continued)

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
ZENITH_EA_ROUTING	Y

Datafilling table TOPAMAOP

The following table shows the datafill specific to Base TOPS Equal Access for table TOPAMAOP. Only those fields that apply directly to Base TOPS Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPAMAOP

Parameter	Explanation and action
RECORD_INTERLATA_CALL_CODE_251	A new parameter, RECORD_INTERLATA_CALL_CODE_251, is added to table TOPAMAOP. This parameter records call type code 251 with structure code 625. When this parameter is set to Y, all calls that tandem through TOPS to an ATC or IT trunk to an IC produces this call type code. This tuple is only visible when the TOPS Equal Access package (NTX187AA) is present.

Datafill example for table TOPAMAOP

The following example shows sample datafill for table TOPAMAOP.

MAP display example for table TOPAMAOP

AMAOPT	OPTINFO
RECORD_INTERLATA_CALL_CODE_251	Y

Datafilling table AMATKOPT

The following table shows the datafill specific to Base TOPS Equal Access for table AMATKOP. Only those fields that apply directly to Base TOPS Equal

Base TOPS Equal Access (end)

Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table AMATKOPT

Parameter	Explanation and action
TOPS_EA251CC	New option TOPS_EA251CC can be datafilled in table AMATKOPT. This new value allows call type 251 to be produced on an incoming trunk group basis for calls that tandem through TOPS and are datafilled in table AMATKOPT with field OPTIONS=TOPS_EA251CC. This option is only visible when the TOPS Equal Access package (NTX187AA) is present.

Datafill example for table AMATKOPT

The following example shows sample datafill for table AMATKOPT.

MAP display example for table AMATKOPT

CLLI	OPTIONS
OPDP1	TOPS_EA251CC

Translation verification tools

Base TOPS Equal Access does not use translation verification tools.

SERVORD

Base TOPS Equal Access does not use SERVORD.

Equal Access Carrier Code Expansion

Ordering codes

Functional group ordering code: OSEA0001

Functionality ordering code: not applicable

Release applicability

DMSTOP03 and up

Equal Access Carrier Code Expansion was introduced in DMSTOP03.

Prerequisites

To operate, Equal Access Carrier Code Expansion requires the following functional groups:

- Operator Services Basic, OSB00001
- TOPS Equal Access, OSEA0001

Description

This functionality is provided by the following features:

Feature number	Feature name
AN0883	TOPS Equal Access: FGD CIC Expansion -Signalling
AN0834	TOPS Equal Access: FGD CIC Expansion

This functionality provides the following:

- Allows TOPS processing of carrier identification codes (CICs) of 4-digits in place of current 3-digit CICs. For FGD, the dialable format 10XXX becomes 101XXXX, where the Xs are the CIC digits, and the complete format is the carrier access code (CAC). Therefore, all tables with datafilled carrier codes require expanding and all protocols currently signalling carrier codes of 3-digits are expanded to signal carrier codes of 4-digits.
- New logs are output when the CIC size received by TOPS does not correspond to datafill.
- A phased transition is provided from the current 3-digit FGD CIC signalling to 4-digit FGD CIC signalling. This is in accordance with the phased procedure in Bellcore Technical Reference TR-NWT-001050. In

Equal Access Carrier Code Expansion (continued)

subsequent text of this document, symbols YYY replace XXX to indicate the original 970 3-digit assignable codes.

Operation

Transitioning from 3-digit FGD CICs to 4-digit FGD CICs

Following are the 4 steps outlined by Bellcore that define the eventual transition from 3-digit FGD CICs to 4-digit FGD CICs:

1. Conventional 3-digit CIC/5-digit CAC usage
2. Permissive 10YYY/1010YYY usage (970 code limit)
3. Permissive/expanded partitioned usage (2970 code limit)
4. Post-permissive 4-digit CIC/7-digit CAC usage (10,000 code limit)

The term permissive applies only to the 970 (maximum) assignments for which YYY and 0YYY FGD CICs are paired. Both 10YYY and 1010YYY CACs become equally acceptable for these assignments. This option (of both 5-digit and 7-digit CACs being equal) may be introduced as a change from Step 1 to Step 2, or it may be deferred until the 970 basic set of CICs is extended as in Step 3. Step 3 is the point where 5XXX and 6XXX codes are assigned. These additional codes are implied by the addition of the term expanded in Step 3. Step 4 will be required just before depletion of the 2970 assignable codes. Thereafter, the 4-digit CIC/7-digit CAC is the only acceptable format.

Therefore, the conversion sequence may be implemented as 1-2-3-4, 1-2-4, or 1-3-4. At the point all End Offices (EO) have converted, national uniformity is complete.

Signalling

For TOPS to determine whether to send or receive 3 or 4-digit CICs on a trunk group, existing office parm EA_TAB_CICSIZE4_OBSOLETE (table OFCENG) must first be checked, and if set to N, table CICSIZE4 must be checked for the specific trunk.

In order for a trunk to have 4-digit CICs signalled on it, the trunk must be datafilled in table CICSIZE4. The exception comes when the entire network is upgraded to utilize 4-digit CICs. Then, all trunks signal 4-digit CICs and EA_TAB_CICSIZE4_OBSOLETE is set to Y. Prior to this feature, TOPS was not capable of receiving, sending, and/or processing both 3-digit and 4-digit CICs on the same trunk group.

Equal Access Carrier Code Expansion (continued)

Multifrequency

MF signalling is enhanced so that during the permissive and permissive/expanded phases, CICs of both 3-digits and 4-digits are processed. The following figure shows valid 3 and 4-digit MF formats for both domestic and international FGD signalling.

MF signalling formats

Signalling	3-digit format	4-digit format
Domestic	KP-0ZZ-XXX-ST(P)	KP-0ZZ-XXXX-ST(P)
International	KP-1NX-XXX-CCC-ST(P)	KP-1NX-XXXX-CCC-ST(P)

TOPS is now capable of receiving these formats from EAEOs and signalling them to International Carriers (INC). In both cases, EA_TAB_CICSIZE4_OBSOLETE and CICSIZE4 are checked for each incoming and outgoing trunk group to determine the expected format.

Signalling System 7

SS7 signalling is enhanced to send 4-digit CICs on ATC trunk groups with a pulse type of Signalling System 7 (SS7). This is for signalling types of EAOSS (incoming FGD) or EAPLAN (outgoing FGD). Note that TOPS does not receive incoming FGD SS7 signalled calls. Intertoll SS7 and ATC SS7 trunks come to the access tandem but not to TOPS. Therefore, TOPS is only responsible for outgoing FGD SS7 signalling on ATC trunks.

During the permissive and permissive/expanded phases, TOPS is now capable of sending both 3 and 4-digit CICs to the INC on FGD calls. For each outgoing trunk group, EA_TAB_CICSIZE4_OBSOLETE and CICSIZE4 are checked for the expected format.

Datafill LOGS

TOPS utilizes the following logs to indicate a mismatch in CIC datafill.

DFIL145: Output when a 4-digit CIC is received on an MF trunk group that is not datafilled in CICSIZE4. Call will complete successfully.

DFIL146: Output when a 3-digit CIC is received on an MF trunk group datafilled in CICSIZE4. TOPS must prepend a zero (0) to the CIC and complete the call.

DFIL147: Output when TOPS sends a 3-digit CIC to a carrier and TOPS has to strip off a leading digit other than a zero (0). This applies to both MF and SS7 trunks, and TOPS will complete the call.

Equal Access Carrier Code Expansion (continued)

RATE command enhancement

The RATE utility allows calculation of rate steps and/or charges for imaginary calls. Subcommand CAR is now enhanced to expect a 4-digit carrier code.

QCALL command enhancement

The QCALL utility allows calculation of charges for imaginary calls. This utility is described in TOPS Host QMS (NTXP41AA). Subcommand CAR is now enhanced to expect a 4-digit carrier code.

TOPS FGD CIC expansion feature activation

As described in section "Transitioning from 3-digit FGD CICs to 4-digit FGD CICs", activation of FGD CIC expansion across the network is to be performed in a number of steps.

Transitioning to the permissive dialling phase

To move into the permissive or permissive/expanded phase follow the steps below. These steps enable the operating company to cut over from 3 carrier digits to 4 carrier digits on a per trunk group basis. The first three steps can be done in any order but must be completed before steps 4-6. These last steps (4-6) should be done simultaneously.

Note: These steps represent the moment when 4 digit CICs are expected on the trunk group. This requires coordination with End Office (EO) datafill for this trunk to signal 4 digit CICs outgoing from the EO. The time required for the craftsperson(s) to perform steps 4-6, represents the "down time" for the trunk group being upgraded to translate 4 carrier digits.

1. For all 6-digit and 9-digit entries in the pretranslator table (STDPRTCT.STDPRT) of the forms 0ZZ-XXX (domestic tuple) and 1NX-XXX-CCC (international tuple) respectively, duplicate 7-digit and 10-digit tuples must be entered in a parallel/duplicate pretranslator table (STDPRTCT.STDPRT) in the forms 0ZZ-0XXX and 1NX-0XXX-CCC. For example, if 088222 is present in this table, a parallel subtable should be created with tuple 0880222. Note that these international tuples are often entered without the country code (CCC), yet they still reflect min and max digits of 9. For more information and an example of this parallel datafill, see subtable STDPRTCT.STDPRT in the datafill section.
2. For each entry in table CLSVSCRC.CLSVSCR of the form XXXxxx, where the XXX represent carrier digits and xxx represent additional routing digits, a duplicate class of service screening subtable must be created and a parallel entry must be added in the form 0XXXxxx. For example, if the present tuple 222619 exists (where 222 represent carrier digits), a parallel subtable should be created with tuple 0222619. For more information and an example of this parallel datafill, see subtable CLSVSCRC.CLSVSCR in the datafill section.

Equal Access Carrier Code Expansion (continued)

3. Set the TOPS parameter FOUR_DIGIT_CIC_STATUS to a value of PERMISSIVE.
4. Update the incoming trunk group to use the new pretranslator created in Step 1. Do this in table TRKGRP by changing the value of field PRTNM for the incoming trunk group to be converted. Set this field to the new STDPRTCT created in step 1.
5. Update the incoming trunk group to utilize the new screening class routes created in Step 2. Do this in table TOPEATRK by changing the values of the three screening class fields (INTRASSC, INTERSSC, and OVSSCL). Set these fields to point to the new CLSVSCRC route subtables created in step 2. All three screening class fields must be updated to their respective 4 carrier digit equivalents (created in step 2.). For sample TOPEATRK datafill, refer to the datafill section.
6. Datafill the trunk group that is to signal 4-digit CICs in table CICSIZE4. Also datafill in CICSIZE4 any outgoing trunks that are to carry 4-digit CICs.

Transitioning out of the permissive phase (4-digit only)

When the permissive dialling period ends, all offices will send 4-digit CICs only. Following are the steps required to move TOPS into the 4-digit only dialling period:

1. Remove those pretranslator tables (STDPRTCT.STDPRT) that route on 3-digit carrier codes. These are the parallel 3-digit pretranslator tables that were duplicated in step 1 of "Transitioning to the Permissive Dialling Phase". One by one these 3-digit pretranslator tables were duplicated to 4-digit pretranslator tables and referenced in table TRKGRP. Now that 3-digit translations are no longer used, these pretranslator tables should be removed.
2. Remove those class of service screening tables (CLSVSCRC.CLSVSCR) that route on 3-digit carrier codes. These are the parallel 3-digit equal access screening subtables that were duplicated in step 2 of "Transitioning to the Permissive Dialling Phase". One by one these 3-digit screening tables were duplicated to 4-digit screening subtables and referenced in table TOPEATRK. Now that 3-digit routings are no longer referenced in TOPEATRK, they should be removed.
3. Set TOPS parameter FOUR_DIGIT_CIC_STATUS to a value of FOURDIG.
4. Set office parameter EA_TAB_CICSIZE4_OBSOLETE to a value of Y.

Equal Access Carrier Code Expansion (continued)

Translations table flow

The Equal Access Carrier Code Expansion feature does not have an applicable table flow since tables are related by CIC expansion rather than routing of a call.

Limitations and restrictions

The following limitations and restrictions apply to Equal Access Carrier Code Expansion:

In an Operator Centralization (OC) environment where the Remote is at TOPS02.1 or greater and the TPCs of the Host are less than TOPS02.1, the operator positions can not display 4-digit CICs.

In an OC environment where the Remote is at TOPS02.1 or greater, and the Host is less than TOPS02.1, the Remote is forced to strip off the leading CIC digit when building the Personal Audio Response (PARS) Call Begin Message sent to the Host switch. Therefore, the PARS announcement played by the PARS node is incorrect.

Therefore, in an OC environment, this feature only works when all the hosts and remotes are upgraded to TOPS02.1 or higher. This prevents the situation where some operators are eligible to mark for 4 digit CICs while others are not.

Interactions

The following paragraphs describe the interactions between Equal Access Carrier Code Expansion and other functionalities.

This feature relies on equivalent features in all other parts of the switching network (eg. EO, SSPs, SCPs, OSSs, ICs, INCs, non-TOPS AT, ...). Proper functionality of the PARS and VSN protocols is dependant upon corresponding protocol enhancements to the external vendor equipment.

Offices with TPCs (both integrated and stand-alone) must be upgraded with a load compatible with this feature prior to the activation of this feature.

Offices with OPP positions must be upgraded with a load compatible with this feature prior to the activation of this feature.

Activation/deactivation by the end user

Equal Access Carrier Code Expansion requires no activation or deactivation by the end user.

Equal Access Carrier Code Expansion (continued)

Billing

No new Structure Code, Module Code, Call Code or field has been created for these features. The existing table 57 - IC/INC Prefix (with module code 053 or 054) was expanded under 950 Carrier Code Expansion (feature NC0293 in functionality OSEA FGB Carrier Code Expansion), which used the spare first character for the expansion. The new IEC/INC IDENTIFICATION are characters 1-4. CIC in characters 1-4 is a Feature Group B (FGB) or Feature Group D (FGD) identity, or is unknown. After this feature (AN0834 - TOPS EQUAL ACCESS: FGD CIC EXPANSION) this table is able to record 4 digit CICs for FGD. Module code 53 and 54 only appear for EBAF phase 2.

Table 85 - Dialing Indicator, this field indicates whether the caller is presubscribed to the interexchange carrier used for the call. The field indicates whether the end user dialed a Carrier Access Code (CAC) to select a particular IC/INC for the call. The dialing pattern for the CAC is currently 10xxx for FGD. Even though the dialing pattern for FGD will change from 10xxx to 10xxx/101xxxx (during permissive period) and 101xxxx after complete conversion, this table will stay unchanged.

Station Message Detail Recording

Equal Access Carrier Code Expansion does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Equal Access Carrier Code Expansion. For more information about office parameters, refer to *Office Parameters Reference Manual*, 297-1001-455.

Office parameters used by Equal Access Carrier Code Expansion

Table name	Parameter name	Explanation and action
OFCVAR	TOPS_OTC_CARRIER_NUMBER	The value of this parameter is changed from 3 to 4 digits. The default is NNNN.

Equal Access Carrier Code Expansion (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Equal Access Carrier Code Expansion. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Equal Access Carrier Code Expansion

Table	Purpose of table
BRANDANN	Branding announcement. Add second part to table key.
TOPEACAR	TOPS equal access carrier. Expand fields CARDIGS and ALTCARR from 3 to 4 digits.
TOPEATRK	TOPS trunk equal access carrier information. Expand field CARRIER from 3 to 4 digits.
EAACTSAN	Equal access automated coin toll service announcement. Expand field EACARNUM from 3 to 4 digits.
EAMCCSAN	Equal access mechanized calling card service announcement. Expand field EACARNUM from 3 to 4 digits.
STDPRTCT. STDPRT	Standard pretranslator control subtable. Expand fields FROMDIG and TODIGS from 3 to 4 digits.
CLSVSCRC. CLSVSCR	Class of service screening subtable. Expand fields FROMDIG and TODIGS from 3 to 4 digits.
TOPSPARM	TOPS parameters

Datafilling table BRANDANN

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table BRANDANN. Only those fields that apply directly to Equal Access Carrier Code Expansion are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table BRANDANN

Field	Subfield or refinement	Entry	Explanation and action
CARNBEC	ANN_TYPE	CARR or NBEC	Carrier non-Bell exchange carrier code. A new part of the key indicating the type of carrier code in the first part of the key.

Datafill example for table BRANDANN

The following example shows sample datafill for table BRANDANN.

Equal Access Carrier Code Expansion (continued)

MAP display example for table BRANDANN

CARNBEC	TAANN	TACLLI	DAANN	DACLLI
0000 NBEC	Y	TOPSBRND1	N	
0789 CARR	Y	TOPSBRND2	Y	TOPSBRND2

Datafilling table TOPEACAR

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table TOPEACAR. Only those fields that apply directly to Equal Access Carrier Code Expansion are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table TOPEACAR

Field	Subfield or refinement	Entry	Explanation and action
CARDIGS		0000-9999	Carrier digits. This key field is changed from a 3-digit to a 4-digit code.
ALTCARR		0000-9999	Alternate carrier. This field is changed from a 3-digit to a 4-digit code.

Datafill example for table TOPEACAR

The following example shows sample datafill for table TOPEACAR.

MAP display example for table TOPEACAR

CARDIGS	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR
NATERM	INTERM	OPOSERV			
0234	CARRIER_1	CARR_1	Y	Y	6789
UNREST	UNREST	NOSERV N N			

Datafilling table TOPEATRK

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table TOPEATRK. Only those fields that apply directly to Equal

Equal Access Carrier Code Expansion (continued)

Access Carrier Code Expansion are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table TOPEATRK

Field	Subfield or refinement	Entry	Explanation and action
CARRIER		0000-9999	Carrier digits. This field is changed from a 3-digit to a 4-digit code. Note, when a TOPS trunk group is added to table TRKGRP, a tuple is added to table TOPEATRK. The CARRIER field contains a default value of NNNN which is the nil carrier value.

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK.

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC
OVSSCL	SCRNIDX	DNLOOK	DFLT PIC	BYPASS	
GENTRK1	CONFORM	0789	L123	STRA	STER
SOVS	919	Y	Y	\$	

Datafilling table EAACTSAN

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table EAACTSAN. Only those fields that apply directly to Equal Access Carrier Code Expansion are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table EAACTSAN

Field	Subfield or refinement	Entry	Explanation and action
EACARNUM		0000-9999	Equal access carrier number. This field is changed from a 3-digit to a 4-digit code.

Datafill example for table EAACTSAN

The following example shows sample datafill for table EAACTSAN.

Equal Access Carrier Code Expansion (continued)

MAP display example for table EAACTSAN

EACARNUM	CORRCTDP	OVERDEP
6234	ACTSTOPS 1	ACTSTOPS 1

Datafilling table EAMCCSAN

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table EAMCCSAN. Only those fields that apply directly to Equal Access Carrier Code Expansion are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table EAMCCSAN

Field	Subfield or refinement	Entry	Explanation and action
EACARNUM		0000-9999	Equal access carrier number. This field is changed from a 3-digit to a 4-digit code.

Datafill example for table EAMCCSAN

The following example shows sample datafill for table EAMCCSAN.

MAP display example for table EAMCCSAN

EACARNUM	INITINDX
0234	MCCSTOPS 1

Datafilling table STDPRTCT.STDPRT

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table STDPRTCT.STDPRT. Only those fields that apply directly to Equal Access Carrier Code Expansion are shown. *Refer to the Data Schema section of this manual* for a description of the other fields.

Datafilling table STDPRTCT.STDPRT

Field	Subfield or refinement	Entry	Explanation and action
FROMDIGS and TODIGS		numeric	From and to digits. Copy tuples with 3-digit CICs to tuples with 4-digit CICs by prepending a 0.

Equal Access Carrier Code Expansion (continued)

Datafill example for table STDPRTCT.STDPRT

The following example shows sample datafill for table STDPRTCT.STDPRT.

MAP display example for table STDPRTCT.STDPRT

FROMDIGS	TODIGS	PRETRTE							
088222	088222	T	NL	6	OFRT	804	6	6	NONE
0880222	0880222	T	NL	7	OFRT	804	7	7	NONE

Datafilling table CLSVSCRC.CLSVSCR

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table CLSVSCRC.CLSVSCR. Only those fields that apply directly to Equal Access Carrier Code Expansion are shown. Refer to the *Data Schema section of this manual* for a description of the other fields.

Datafilling table CLSVSCRC.CLSVSCR

Field	Subfield or refinement	Entry	Explanation and action
FROMDIGS and TODIGS		numeric	From and to digits. Copy tuples with 3-digit CICs to tuples with 4-digit CICs by prepending a 0.

Datafill example for table CLSVSCRC.CLSVSCR

The following example shows sample datafill for table CLSVSCRC.CLSVSCR.

MAP display example for table CLSVSCRC.CLSVSCR

FROMDIGS	TODIGS	TMTOFRT			
222	222	T	OFRT	804	
0222	0222	T	OFRT	804	

Datafilling table TOPSPARM

The following table shows the datafill specific to Equal Access Carrier Code Expansion for table TOPSPARM. Only those fields that apply directly to Equal

Equal Access Carrier Code Expansion (end)

Access Carrier Code Expansion are shown. Refer to the Data Schema section of this manual for a description of the other fields.

Datafilling table TOPSPARM

Parameter	Explanation and action
FOUR_DIGIT_CIC_STATUS	This new parameter determines the office dialling stage. Allowable values are: • THREEDIG - Only 3-digit CICs are valid. • PERMISSIVE - Both 3 and 4-digit CICs in the ranges 0XXX, 5XXX, and 6XXX are valid. • FOURDIG - Only 4-digit CICs are valid.

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
FOUR_DIGIT_CIC_STATUS	THREEDIG

Translation verification tools

Equal Access Carrier Code Expansion does not use translation verification tools.

SERVORD

Equal Access Carrier Code Expansion does not use SERVORD.

FGB Carrier Code Expansion

Ordering codes

Functional group ordering code: OSEA0001

Functionality ordering code: not applicable

Release applicability

BCS36 and up

Prerequisites

To operate, FGB Carrier Code Expansion has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001

Description

This functionality is provided by the following features:

Feature number	Feature name
NC0293	950 Carrier Code Expansion

This feature implements 950 carrier identification code (CIC) expansion for DMS Traffic Operator Position System (TOPS) Access Tandem (AT) switches.

In the past, a subscriber accessed a 950 carrier by dialing the 950-WXXX carrier access code (CAC) where W is 0 or 1 and XXX is the CIC. Now the subscriber dials the new CAC of 950-XXXX where XXXX is the CIC and the W digit is no longer present.

Operation

Prior to feature

Previously, there were two methods for routing FGB 950 calls through a TOPS access tandem (AT).

- Using the standard pretranslator.

This involves routing out of the standard pretranslator control table (STDPRCT). As mentioned above, both three and four digit CICs are recognized. The examples below indicate how routing can be accomplished

FGB Carrier Code Expansion (continued)

for both three (CIC = 234) and four (CIC = 5234) digit CICs using STDPRTCT.

Note: Without this feature, the EA class of service is only set for T and S selectors if the office parameter, TOPS_EA_PROCESS_T_SEL is set to Y.

If this feature is turned on (refer to the following sections), the EA class of service is set for all 950 calls regardless of the selector used.

MAP display example for subtable STDPRTCT.STDPRT - Routing 950 using STDPRTCT

FROMDIGS	TODIGS	PRETRTE				
9500234	9500234					
	T DD 0	OFRT	200	7	7	NONE
9505234	9505234					
	T DD 0	OFRT	202	7	7	NONE
9506789	9506789					
	EA DD 7 T NO	CNM Y	OFRT	202	7 7	N

- Using class of service screening.

This involves routing via class of service screening using TOPEATRK and CLSVSCRC. In the past, TOPS appended the CIC digits to the front of the called digits to search the class of service screening subtable CLSVSCR. For 950, it was only necessary to datafill the three digit CIC. However, 950 and other carrier access methods which use CLSVSCRC may need to route to different carriers using the same CIC digits. With the release of this feature, special TOPS class of service screening (i.e. using TOPEATRK) is not necessary for four digit 950 CICs as it is for three digit CICs. Standard translations should be used. Using standard class of service screening (i.e. using table TRKGRP or TOPSBC to obtain the screening

FGB Carrier Code Expansion (continued)

class), it is necessary to datafill 950 as 950XXXX in the CLSVSCR subtable as indicated below.

Note: Bellcore Technical Reference TR-TSY-000698, issue 1, June 1989 - Feature Group B FSD 20-24-0300 specifies that the association between FGD and FGB (950) code assignments is to be discontinued.

MAP display example for subtable CLSVSCRC Routing 950 using CLSVSCRC

FROMDIGS	TODIGS	TMTOFRT
-----	-----	-----
9500234	9500234 T OFRT	200
9505234	9505234 T OFRT	202

The following parameters are only in effect when this feature is turned off. This feature has no effect on these parameters. They are not in effect when the feature is turned on. These parameters affect which AMA record is produced for nonoperator-handled TOPS 950 calls that are routed using a T or S selector

- TOPS_EA_PROCESS_T_SEL

When set to "Y", TOPS calls routed from the pretranslator with a T or S selector receive TOPS EA processing without EA changing the office route obtained by the pretranslator. More specifically, TOPS EA determines the EA class-of-service which may be used for conditional routing. In addition, the carrier number is recorded on the AMA record generated.

- TOPS_FGB_CC134

This parameter determines whether non-operator handled TOPS 950 calls that would have produced AMA records with call code 251, structure code 734, will produce AMA records with call code 134, structure code 625. 950 calls that would have produced AMA records with call code 251, structure code 734, are either routed through CLSVSCRC or through pretranslations with TOPS_EA_PROCESS_T_SEL set to "Y" using EBAF phase 0.

Table FGBCIC enables feature

The TOPS AT uses the full seven digit 950 number in table CLSVSCRC. In order to provide a smooth transition from screening three digit CICs to screening the seven digit 950 number, this feature checks table FGBCIC for the presence of the four digit CIC.

If the CIC has been datafilled in FGBCIC, this feature is turned on. If the CIC is not datafilled in table FGBCIC, this feature is turned off and 950 processing

FGB Carrier Code Expansion (continued)

of three digit CICs will be in effect as prior to this feature. For example, the TOPS AT will continue to append the three digit CIC when screening in table CLSVSCRC.

Separation of 950 carrier processing

In order to separate 950 access and other methods of carrier access, 950 calls no longer index tables that use carrier digits in one form or another. With the release of this feature, these tables are only used by EA processing other than 950.

Typically 950 call processing does not need to use such tables (i.e. TOPEACAR, OCCINFO, etc.). However, in the case that a 950 call is conditionally routed out of OFRT to a position (i.e. ANIF or ONI), TOPS call processing uses table TOPEACAR to determine the carrier information that is displayed at the position. This was a side effect of carrier processing. The next section discusses what happens to 950 calls presented to an operator.

Operator handling

Typically, 950 calls are connected to the carrier without being processed at a TOPS position. However, ANIF and ONI calls may be conditionally routed out of OFRT to position. These calls are treated as CAMA calls and should be processed as such by the operator (i.e. enter the back number).

Another possibility is 0- calls that arrive at a position where the operator enters 950-XXXX as a forward number and attempts to outpulse. In the past, these calls were blocked if the carrier was not defined in table TOPEACAR. Datafill in TOPEACAR is no longer a requirement. If the 950 number translates using standard translations, it is outpulsed.

Note: ANI spill is not supported when outpulsing from a position.

All other types of operator handled 950 calls are not defined or supported. For example, using conditional routing to send a 1+ 950 call to position does not make sense. Unexpected results may occur in such situations.

OM group for 950 calls

This feature adds new OM group TOPS950 to peg the number of calls to each carrier defined in table FGBCIC.

For information regarding table FGBCIC, refer to feature NC0202, Carrier Access Code Expansion (FGB) in package NTX209AA - FGB AMA End Office (ATT Format) or NTX211AB -FGB AMA Tandem (ATT Format) in Equal Access.

FGB Carrier Code Expansion (continued)

This group contains one register called FWDTOCAR for each 950 carrier. Prior to this feature, OM group TOPSEA, register FWDTOIC may have been pegged for 950 calls depending on datafill. It was pegged for all 950 calls that routed through CLSVSCRC or that routed through STDPRTCT if office parameter TOPS_EA_PROCESS_T_SEL was set to "Y". The new OM group TOPS950 is pegged regardless of how 950 calls are routed. The TOPSEA register is no longer pegged for 950 calls.

Note: The OM is pegged when the call is successfully translated. For 0-950 calls, the OM is pegged when the operator releases the call from position.

Example datafill - Routing 950 out of table STDPRTCT

This example assumes that this feature is turned on.

In the following examples, the TOPS AT would recognize the seven digit 950 number in table STDPRTCT and route directly out office route 202 (950FOUR) producing an AMA record with call code 134 and structure code 625.

MAP display example for table STDPRTCT for routing 950 out of table STDPRTCT

FROMDIGS	TODIGS	PRETRTE
-----	-----	-----
9505234	9505234	
	T DD 0	OFRT 202 7 7 NONE

MAP display example for table OFRT for routing 950 out of table STDPRTCT

RTE	RTELIST
-----	-----
202 (S D	950FOUR)\$

MAP display example for table FGBIC for routing 950 out of table STDPRTCT

CARRNAME	FGBNUM
-----	-----
DPL	5234

FGB Carrier Code Expansion (continued)

MAP display example for table TRKGRP for routing 950 out of table STDPRTCT

GRPKEY	GRPINFO

950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

MAP display example for table TRKGRP for routing 950 out of table STDPRTCT

GRPKEY	GRPINFO

TOPCOMAMF	
TOPS 31 NPDGP NCRT IC MIDL 919 MFNL SUPR T950 N NIL	
COMBINED N N 0 0000 BELL 10 2 2 N N OFFHK N N	

MAP display example for table STDPRTCT MFNL: STDPRT for routing 950 out of table STDPRTCT

FROMDIGS	TODIGS	PRETRTE

9505234	9505234	
	T DD 0	OFRT 100 7 7 NONE

MAP display example for table FGBCIC for routing 950 out of table STDPRTCT

CARRNAME	FGBNUM

DPL	5234

MAP display example for table OFRT for routing 950 out of table STDPRTCT

RTE	RTELIST

100(CND TOPEACLS EACAMAFL SK 1)(T OFRT 101)	(S D TOPSPOS) \$
101(CND TOPEACLS EACAMONI SK 1)(T OFRT 202)	(S D TOPSPOS) \$
202(S D 950FOUR)	\$

FGB Carrier Code Expansion (continued)

MAP display example for table TRKGRP for routing 950 out of table STDPRTCT

GRPKEY	GRPINFO

950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

Example datafill - Routing 950 out of table CLSVSCRC

This example assumes that this feature is turned on.

Even though standard class of service screening (e.g., obtaining the screening class out of table TRKGRP or TOPSBC) is recommended, it is not required. In the following example, the screening class is obtained from table TRKGRP. 0- calls that arrive at the position where the operator keys a 950 number will translate using this scheme.

Note: The EA translations will override standard translations. In this example, had subtable CLSVSCR 613 TEAD DD contained datafill for 9505234, the route specified there would have been used.

MAP display example for table TRKGRP for obtaining the screening class from table TRKGRP

GRPKEY	GRPINFO

TOPCOMAMF	
TOPS 31 NPDGP NCRT IC MIDL 919 MFNL SUPR T950 N NIL	
COMBINED N N 0 0000 BELL 10 2 2 N N OFFHK N N	

MAP display example for table STDPRTCT MFNL: STDPRT for obtaining the screening class from table TRKGRP

FROMDIGS	TODIGS	PRETRTE

9	9	
		N NL 0 NA

FGB Carrier Code Expansion (continued)

MAP display example for table HNPACONT 919: HNPACODE for obtaining the screening class from table TRKGRP

FROMDIGS	TODIGS	CDRRTMT
950	950	1
	LRTE	

MAP display example for table FGBCIC for obtaining the screening class from table TRKGRP

CARRNAME	FGBNUM
DPL	5234

MAP display example for table CLSVSCRC for obtaining the screening class from table TRKGRP

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
919 T950 DD	2	N	NONE (1)

MAP display example for table CLSVSCRC 919 T950 DD: CLSVSCR for obtaining the screening class from table TRKGRP

FROMDIGS	TODIGS	TMTOFRT
9505234	9505234 T	OFRT 202

MAP display example for table OFRT for obtaining the screening class from table TRKGRP

RTE	RTELIST
202	(S D 950FOUR)\$

FGB Carrier Code Expansion (continued)

MAP display example for table TRKGRP for obtaining the screening class from table TRKGRP

GRPKEY	GRPINFO
950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

Example datafill - Conditional routing 950

This example assumes that this feature is turned on.

In the following example, assume that ANI failure occurred. In this example the TOPS AT would recognize the seven digit 950 number in table STDPRTCT and use office route 100. Since this feature is turned on for the incoming trunk group, the EA class of service is set. For ANI failure, this particular call would route to a position where the operator would request the ANI from the subscriber.

MAP display example for table TRKGRP for conditional routing 950

GRPKEY	GRPINFO
TOPCOMAMF	
TOPS 31 NPDGP NCRT IC MIDL 919 MFNL SUPR T950 N NIL	
COMBINED N N 0 0000 BELL 10 2 2 N N OFFHK N N	

MAP display example for table STDPRTCT MFNL: STDPRT for conditional routing 950

FROMDIGS	TODIGS	PRETRTE
9505234	9505234	
T DD 0	OFRT 100	7 7 NONE

MAP display example for table FGBCIC for conditional routing 950

CARRNAME	FGBNUM
DPL	5234

FGB Carrier Code Expansion (continued)**MAP display example for table OFRT for conditional routing 950**

RTE	RTELIST

100(CND TOPEACLS EACAMAFI SK 1)(T OFRT 101) (S D TOPSPOS) \$	
101(CND TOPEACLS EACAMONI SK 1)(T OFRT 202) (S D TOPSPOS) \$	
202(S D 950FOUR) \$	

MAP display example for table TRKGRP for conditional routing 950

GRPKEY	GRPINFO

950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

Example datafill - Routing 950 using LEAS

This example assumes that this feature is turned on.

In this example, the 950 call is marked as a LEAS call and produces an AMA record with structure code 625, call code 110.

MAP display example for table TRKGRP for routing 950 using LEAS

GRPKEY	GRPINFO

TOPCOMAMF	
TOPS 31 NPDGP NCRT IC MIDL 919 MFNL SUPR T950 N NIL	
COMBINED N N 0 0000 BELL 10 2 2 N N OFFHK N N	

MAP display example for table STDPRTCT MFNL: STDPRT for routing 950 using LEAS

FROMDIGS	TODIGS	PRETRTE

9505234	9505234	
EA DD 7 T NO	C5234 Y	OFRT 202 7 7 N

FGB Carrier Code Expansion (continued)**MAP display example for table TOPEATRK for routing 950 using LEAS**

OVSSCL	TRUNKGRP SCRNIDX	ENDOFFCE DNLOOK	CARRIER DFLTPIC	LATANM	INTRASSC BYPASS	INTERSSC
SOVS	TBELLIC1 919	NCONFORM Y	111 Y	L123	STRA \$	STER

MAP display example for table TRKLATA for routing 950 using LEAS

TOP	ORIGKEY	ORIGLATA	LEASTRNK
TOPCOMAMF	919520	L123	Y T DACD

MAP display example for table OCCINFO for routing 950 using LEAS

CARRNAME	CARRNUM	ACCESS	ORIGCARR	INTER	INTNTL	INTRA	ANI	FANI
ONISCRN	AD1	OVERLAP	INTERS	INTRAS	TERMREC	OCCSEPNO	OPSIG	
PICIND	NOA950	INCCPN	DTMFIND	OPSERV	CACBLOCK	CTDOA	CMCMON	
SCRNWATS	CRMCRA	ATPINCL	INTRAOPR					
C5234	5324	TRANS	N	Y	Y	N	Y	N
N Y	Y	Y	Y	LONG	0	FGRPC		
N N	N	N	N	N	N	N		
N N	N	N						

MAP display example for table FGBCIC for routing 950 using LEAS

CARRNAME	FGBNUM
DPL	5234

MAP display example for table OFRT for routing 950 using LEAS

RTE	RTELIST
202	(S D 950FOUR)\$

FGB Carrier Code Expansion (continued)

MAP display example for table TRKGRP for routing 950 using LEAS

GRPKEY	GRPINFO

950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

Example datafill - Routing 0- 950 calls

This example assumes that this feature is turned on.

In the following example a 0- call arrives at position where the operator keys the 950 number as a forward number, class charges and releases. The screening class is obtained from table TRKGRP.

MAP display example for table TRKGRP for routing 0- 950 calls

GRPKEY	GRPINFO

TOPCOMAMF	
TOPS 31 NPDGP NCRT IC MIDL 919 MFNL SUPR T950 N NIL	
COMBINED N N 0 0000 BELL 10 2 2 N N OFFHK N N	

MAP display example for table STDPRTCT MFNL: STDPRT for routing 0- 950 calls

FROMDIGS	TODIGS	PRETRTE

9	9	
		N NL 0 NA

MAP display example for table HNPACONT 919: HNPACODE for routing 0- 950 calls

FROMDIGS	TODIGS	CDRRTMT

950	950	
	LRTE	1

FGB Carrier Code Expansion (continued)

MAP display example for table FGBCIC for routing 0- 950 calls

CARRNAME	FGBNUM
DPL	5234

MAP display example for table CLSVSCRC for routing 0- 950 calls

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
919 T950 0A	2	N	NONE (1)

MAP display example for table CLSVSCRC 919 T950 DD: CLSVSCR for routing 0- 950 calls

FROMDIGS	TODIGS	TMTOFRT
9505234	9505234 T	OFRT 202

MAP display example for table OFRT for routing 0- 950 calls

RTE	RTELIST
202	(S D 950FOUR)\$

MAP display example for table TRKGRP for routing 0- 950 calls

GRPKEY	GRPINFO
950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

Note: If the operator keys NO AMA, TOPS obtains the route using table OPRTRANS as in the example below (this example assumes the datafill from the previous example).

FGB Carrier Code Expansion (continued)

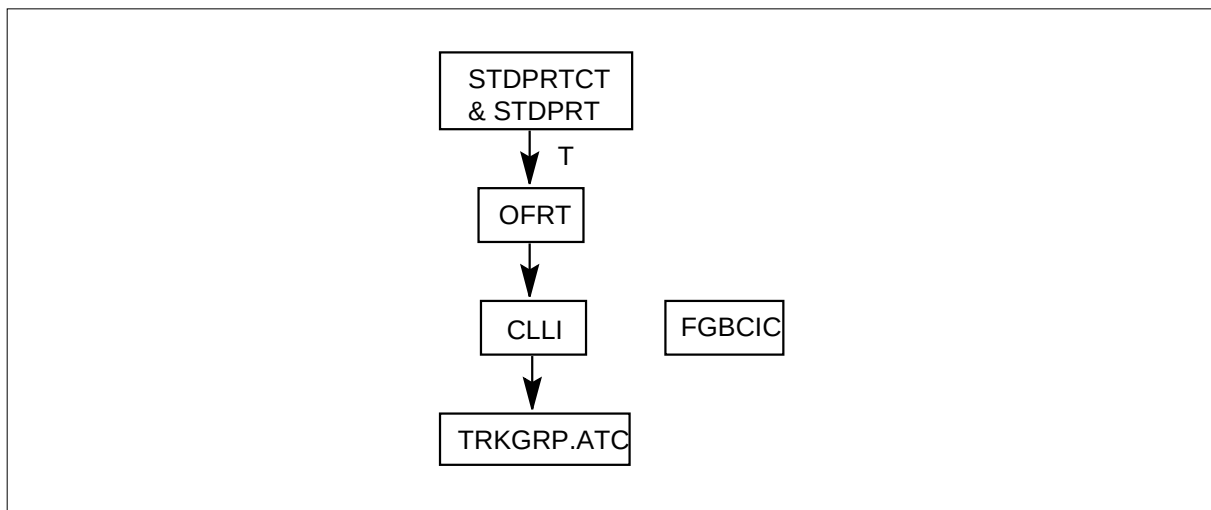
MAP display example of TOPS obtaining a route using table OPRTRANS if operator keys NO AMA

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	919	T950	OPER	NLCA

Translations table flow

The FGB Carrier Code Expansion translation process is shown in the flowcharts that follows.

Table flow for FGB Carrier Code Expansion Routing 950 out of table STDPRTCT



FGB Carrier Code Expansion (continued)

Table flow for FGB Carrier Code Expansion Routing 950 out of table CLSVSCR

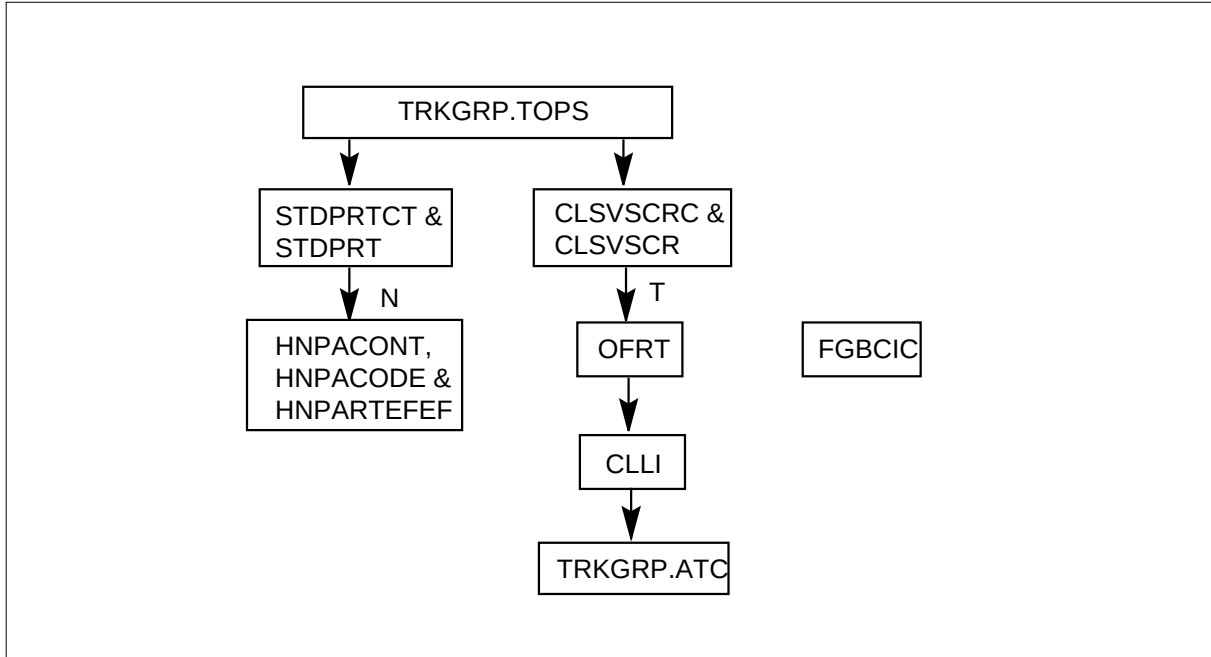
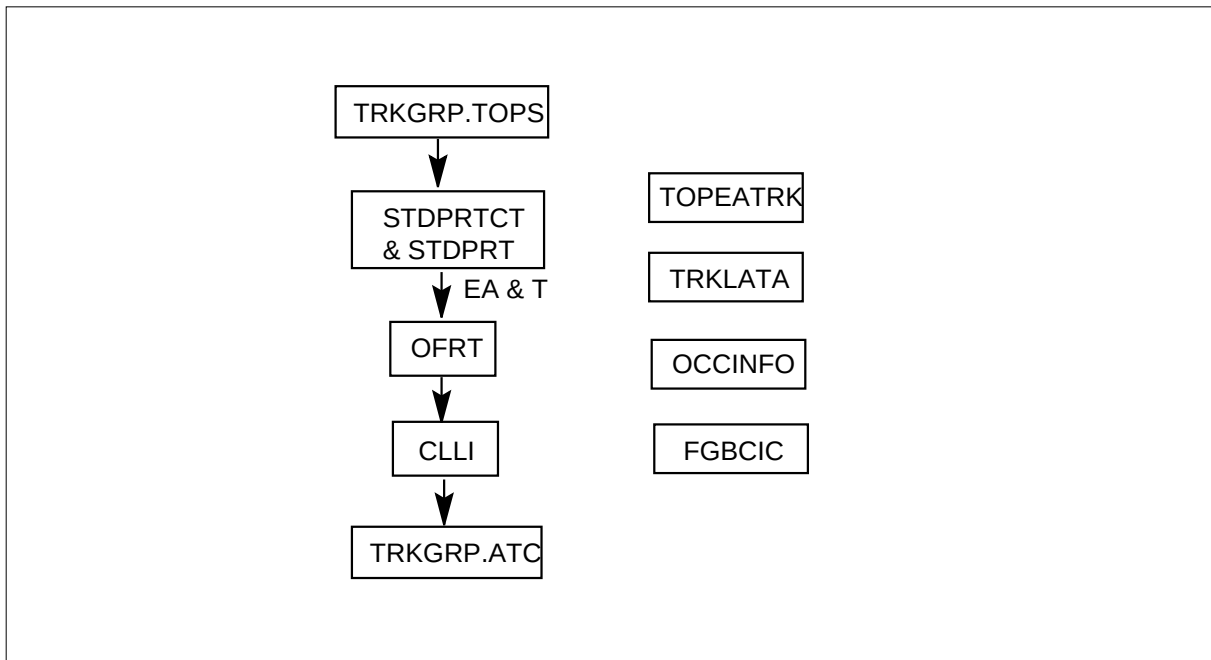
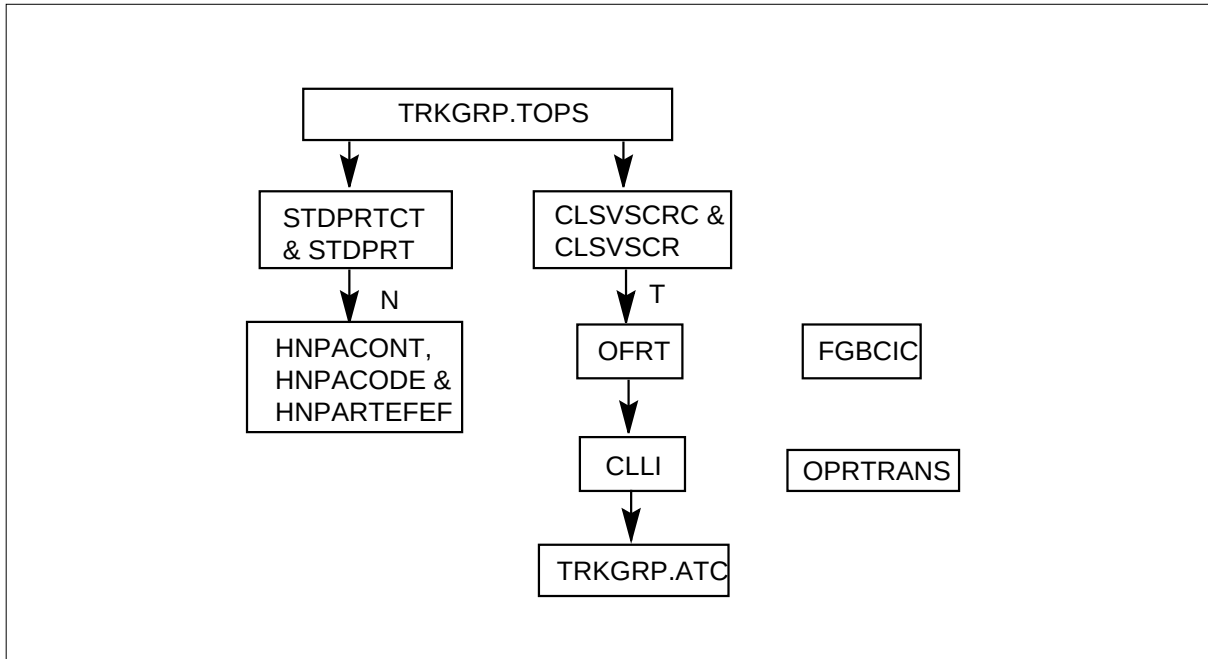


Table flow for FGB Carrier Code Expansion Routing 950 using LEAS



FGB Carrier Code Expansion (continued)

Table flow for FGB Carrier Code Expansion Routing 0-950 calls



Limitations and restrictions

The following limitations and restrictions apply to FGB Carrier Code Expansion:

- Prior to this feature, 950 calls were subject to TICS processing if conditionally routed out of OFRT to position. However, this was a side effect of carrier processing. With the release of this feature, these calls are not subject to TICS processing nor are checks of the carriers call completion capabilities as defined in table OCCINFO performed. This includes LATA, state and international checks. 950 calls are considered to be interstate, interLATA calls.
- Features that do not support translations for carrier calls are not supported by this feature. For example, attempting to outpulse a 950 four digit CIC call using OGT keys or attempting to outpulse from an assistance position.

Interactions

FGB Carrier Code Expansion has no functionality interactions.

Activation/deactivation by the end user

FGB Carrier Code Expansion requires no activation or deactivation by the end user.

FGB Carrier Code Expansion (continued)

Billing

Without the functionality of this feature, various AMA records may have been produced for 950 calls depending on office datafill. When this feature is in effect (i.e. the four digit is datafilled in table FGBCIC), all nonoperator handled 950 calls will produce an AMA record with structure code 625, call code 134 (long duration calls produce a structure code of 627).

Calls that use an EA selector and are subject to LEAS processing produce structure code 625, call code 110.

Operator handled 950 calls (0- or CAMA) produce an AMA record with structure code 752, call code 190 with module code 051, 053, or 054 appended.

Table 57 (IC/INC Carrier Prefix) is recorded in the records mentioned here. In the past, byte 1 always record 0 as padding and bytes 2 thru 4 recorded the CIC. Here, bytes 1 thru 4 record the CIC. Table 57 (IC/INC Carrier Prefix) has been modified for the following records:

- Structure code 625, call codes 134 and 110
- Structure code 627, call codes 134 and 110
- Structure code 752, call code 190, module code 053 or 054.

Module code 053 indicates Interexchange Carrier (IC)/International Carrier (INC) Call Delivery. This module should be included if the call is successfully delivered to the IC/INC. A call is considered successful if a forward connection is attempted.

In order for the correct AMA records to be produced by this feature, TOPS EBAF (phase 2) is required. Phase 2 is set for the entire office in table TOPAMAOP by setting option EBAF_PHASE to PHASE2. For more information regarding TOPS EBAF, refer to package NTXE20 (feature AF1726) - TOPS Expanded Bellcore AMA Format.

The following figure is an example of an AMA record generated for call code 053.

FGB Carrier Code Expansion (continued)

Call code 053

```
HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:190C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:613C
ORIG NUMBER:2391234C  CONNECT TIME:0427380C
ELAPSED TIME:000000000C  OPERATOR IDS:1010200009999C
ACC OPERATOR WORK TIME:00250C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1C
MODULE CODE:053C  IC/INC PREFIX:43212C
CC DATE:80217C  CC TIME:0427376C
CARRIER ELAPSED TIME:000002384C
IC/INC CALL EVENT STATUS:005C  TRUNK GROUP NUMBER:10189C
SOURCE OF IC/INC CODE:1C  IC/INC AGREEMENT TABLE:2C
METHOD OF SIGNALING:010C
MODULE CODE:000C
```

The following figure is an example of an AMA record generated for call code 054.

Call code 054

```
HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:190C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:613C
ORIG NUMBER:2391234C  CONNECT TIME:0427380C
ELAPSED TIME:000000000C  OPERATOR IDS:1010200009999C
ACC OPERATOR WORK TIME:00250C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1C
MODULE CODE:054C  IC/INC PREFIX:52342C
SOURCE OF IC/INC CODE:1C  IC/INC CHECKS:29999C
MODULE CODE:000C
```

Station Message Detail Recording

FGB Carrier Code Expansion does not affect Station Message Detail Recording.

Datafilling office parameters

FGB Carrier Code Expansion does not affect office parameters.

FGB Carrier Code Expansion (continued)

Datafill sequence

The following table lists the tables that require datafill to implement FGB Carrier Code Expansion. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for FGB Carrier Code Expansion

Table	Purpose of table
OCCINFO	Equal Access Other Common Carrier Information Table. Carrier information
HNPACONT	List of HNPA Code Subtables Table. Select HNPACODE
STDPRTCT	List of Standard Pretranslation Tables Table. Select STDPRT
TRKGRP.ATC	Access Tandem to Carrier Trunk Group (Type ATC) Table. Outpulse 950 call
TRKGRP.TOPS	TOPS Trunk Group (Type TOPS) Table. Receive 950 call
CLSVSCRC	Class of Service Screening Control Table. Select CLSVSCR
OFRT	Office Route Table. Select trunk
HNPACONT. HNPACODE	HNPA Code Subtable. Screen
STDPRTCT. STDPRT	Standard Pretranslator Subtable. Select route
CLSVSCRC. CLSVSCR	Class of Service Screening subtable. Select route
OPRTRANS	TOPS Operator Translations Table. Translations information for digits dialed by operator
TOPEATRK	Equal Access Carrier Information for Trunk Group Type TOPS Table. EA carrier routing information
TRKLATA	Trunk Local Access and Transport Area Table. Determine LATA
FGBCIC	Feature Group B (FGB) Carrier Identification Code Table. Specify FGB called number

Datafilling table OCCINFO

The following table shows the datafill specific to FGB Carrier Code Expansion for table OCCINFO. Only those fields that apply directly to FGB Carrier Code

FGB Carrier Code Expansion (continued)

Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OCCINFO

Field	Subfield or refinement	Entry	Explanation and action
Use this table for LEAS			

Datafill example for table OCCINFO

The following example shows sample datafill for table OCCINFO.

MAP display example for table OCCINFO

```

CARRNAME CARRNUM ACCESS ORIGCARR INTER INTNTL INTRA ANI FANI
ONISCRN AD1 OVERLAP INTERS INTRAS TERMREC OCCSEPNO OPSIG
PICIND NOA950 INCCPN DTMFIND OPSERV CACBLOCK CTDOA CMCMON
SCRNWATS CRMCRA ATPINCL INTRAOPR

```

```

-----
C5234      5324      TRANS      N      Y      Y      N      Y      N
N  Y      Y      Y      Y      LONG      0      FGRPC
N  N      N      N      N      N      N      N
N  N      N      N

```

Datafilling table TRKGRP.ATC

The following table shows the datafill specific to FGB Carrier Code Expansion for table TRKGRP.ATC. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP.ATC

Field	Subfield or refinement	Entry	Explanation and action
SIGTYPE		FGB	Enter FGB.

Datafill example for table TRKGRP.ATC

The following example shows sample datafill for table TRKGRP.ATC.

FGB Carrier Code Expansion (continued)

MAP display example for table TRKGRP.ATC

GRPKEY	GRPINFO

950FOUR	
ATC 0 TLA NCRT 2W NIL MIDL NPRT NSCR 613 CNM Y FGB COMB N \$	

Datafilling table TRKGRP.TOPS

The following table shows the datafill specific to FGB Carrier Code Expansion for table TRKGRP.TOPS. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP.TOPS

Field	Subfield or refinement	Entry	Explanation and action
PRTNM		alphanumeric	Standard pretranslator subtable name. MFNL is used in this example.
SCRNCL		alphanumeric	Class of service screening table name. T950 is used in this example.

Datafill example for table TRKGRP.TOPS

The following example shows sample datafill for table TRKGRP.TOPS.

MAP display example for table TRKGRP.TOPS

GRPKEY	GRPINFO

TOPCOMAMF	
TOPS 31 NPDGP NCRT IC MIDL 919 MFNL SUPR T950 N NIL	
COMBINED N N 0 0000 BELL 10 2 2 N N OFFHK N N	

Datafilling table OFRT

The following table shows the datafill specific to FGB Carrier Code Expansion for table OFRT. Only those fields that apply directly to FGB Carrier Code

FGB Carrier Code Expansion (continued)

Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OFRT

Field	Subfield or refinement	Entry	Explanation and action
Use this table for all 950 calls.			

Datafill example for table OFRT

The following examples show sample datafill for table OFRT.

MAP display example for table OFRT

RTE	RTLIST		
202	(	S	D 950FOUR)\$

MAP display example for table OFRT for conditional routing

RTE	RTLIST		
100 (CND TOPEACLS EACAMAFL SK 1)(T OFRT 101) (S D TOPSPOS) \$			
101 (CND TOPEACLS EACAMONI SK 1)(T OFRT 202) (S D TOPSPOS) \$			
202 (S D 950FOUR) \$			

Datafilling table HNPACONT.HNPACODE

The following table shows the datafill specific to FGB Carrier Code Expansion for table HNPACONT.HNPACODE. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table HNPACONT.HNPACODE

Field	Subfield or refinement	Entry	Explanation and action
CD		LRTE	Enter LRTE for local route.

Datafill example for table HNPACONT.HNPACODE

The following example shows sample datafill for table HNPACONT.HNPACODE.

FGB Carrier Code Expansion (continued)**MAP display example for table HNPACONT919.HNPACODE**

FROMDIGS	TODIGS	CDRRTMT
-----	-----	-----
950	950	
	LRTE	1

Datafilling table STDPRTCT.STDPRT

The following table shows the datafill specific to FGB Carrier Code Expansion for table STDPRTCT.STDPRT. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table STDPRTCT.STDPRT

Field	Subfield or refinement	Entry	Explanation and action
PRERTSEL		N, T, EA	Enter • N - route out of table STDPRTCT or CLSVSCRC, or route 0- • T - conditional routing • EA - routing using LEAS

Datafill example for table STDPRTCT.STDPRT

The following examples show sample datafill for table STDPRTCT.STDPRT.

MAP display example for table STDPRTCT.STDPRT (STDPRTCT MFNL: STDPRT)

FROMDIGS	TODIGS	PRETRTE
-----	-----	-----
9	9	
		N NL 0 NA
-----	-----	-----
9505234	9505234	
	T DD 0	OFRT 100 7 7 NONE
-----	-----	-----
9505234	9505234	
	EA DD 7 T NO	C5234 Y OFRT 202 7 7 N

FGB Carrier Code Expansion (continued)

MAP display example for table STDPRTCT.STDPRT (STDPRTCT DPL: STDPRT)

FROMDIGS	TODIGS	PRETRTE
9505234	9505234	
T DD 0	OFRT 202 7 7	NONE

Datafilling table CLSVSCRC.CLSVSCR

The following table shows the datafill specific to FGB Carrier Code Expansion for table CLSVSCRC.CLSVSCR. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLSVSCRC.CLSVSCR

Field	Subfield or refinement	Entry	Explanation and action
			Use this table for routing out of CLSVSCRC and routing 0- 950 calls.

Datafill example for table CLSVSCRC.CLSVSCR

The following examples show sample datafill for table CLSVSCRC.CLSVSCR.

MAP display example for table CLSVSCRC.CLSVSCR

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
919 T950 DD	2 N	NONE (	1)

MAP display example for table CLSVSCRC.CLSVSCR (919 T950 DD: CLSVSCR)

FROMDIGS	TODIGS	TMTOFRT
9505234	9505234 T OFRT	202

Datafilling table OPRTRANS

The following table shows the datafill specific to FGB Carrier Code Expansion for table OPRTRANS. Only those fields that apply directly to FGB Carrier

FGB Carrier Code Expansion (continued)

Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OPRTRANS

Field	Subfield or refinement	Entry	Explanation and action
			Use this table for routing 0- 950 calls. If the operator keys NO AMA, TOPS obtains the route using this table.

Datafill example for table OPRTRANS

The following example shows sample datafill for table OPRTRANS.

MAP display example for table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME

OPERATOR	919	T950	OPER	NLCA

Datafilling table TOPEATRK

The following table shows the datafill specific to FGB Carrier Code Expansion for table TOPEATRK. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPEATRK

Field	Subfield or refinement	Entry	Explanation and action
ENDOFFICE		NCONFORM	Enter NCONFORM so Y can be entered in table TRKLATA, field LEASTRNK. Note: table TOPEATRK is used for LEAS.

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK.

FGB Carrier Code Expansion (continued)

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC
OVSSCL	SCRNIDX	DNLOOK	DFLTPICT	BYPASS	
-----	-----	-----	-----	-----	-----
TBELLIC1	NCONFORM	111	L123	STRA	STER
SOVS	919	Y	Y	\$	

Datafilling table TRKLATA

The following table shows the datafill specific to FGB Carrier Code Expansion for table TRKLATA. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKLATA

Field	Subfield or refinement	Entry	Explanation and action
Use this table for LEAS			

Datafill example for table TRKLATA

The following example shows sample datafill for table TRKLATA.

MAP display example for table TRKLATA

TOP				
	ORIGKEY	ORIGLATA	LEASTRNK	
-----	-----	-----	-----	-----
TOPCOMAMF	919520	L123	Y T DACD	

Datafilling table FGBCIC

The following table shows the datafill specific to FGB Carrier Code Expansion for table FGBCIC. Only those fields that apply directly to FGB Carrier Code Expansion are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FGBCIC

Field	Subfield or refinement	Entry	Explanation and action
Use this table for all 950 calls.			

FGB Carrier Code Expansion (end)

Datafill example for table FGBCIC

The following example shows sample datafill for table FGBCIC.

MAP display example for table FGBCIC

CARRNAME	FGBNUM

DPL	5234

Translation verification tools

FGB Carrier Code Expansion does not use translation verification tools.

SERVORD

FGB Carrier Code Expansion does not use SERVORD.

GR317/GR394 ISUP to/from TOPS

Ordering codes

Functional group ordering code: OSEA0001

Functionality ordering code: OSEA0005

Release applicability

TOPS14 and up

GR317/GR394 ISUP to/from TOPS was introduced in NA005.

Prerequisites

To operate, GR317/GR394 ISUP to/from TOPS has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00001

Description

This functionality is provided by the following features:

Features in this functionality

Feature number	Feature name
AN1515	ISUP to TOPS Enhancements
AN1569	ISUP Release Link Trunking (RLT) Changes for AMA in the CCM Layer (no xla)
AN1570	ISUP Changes for TOPS in TL (no xla)
AN0175	Caller ID Blocking via Operator
59006865	EOL Notification & EOL of TOPS ACD (TOPS12)
59012548	Operator Services Network Capability (TOPS13)
S50130667	Table AMASRVID overrides CC194 RLT (TOPS14)

This functionality provides the following:

- Routing of calls using pre-OSS7 ISUP signalling (per standards GR317 and GR394) to TOPS for operator services.
- Screening of ISUP calls
- Equal access support

GR317/GR394 ISUP to/from TOPS (continued)

- Billing restrictions
- Directory number look up
- Automated systems support
- ISUP outpulsing
- ISUP-MF interworking
- Release link trunking (RLT) on an incoming trunk basis for sent paid Automated Directory Assistance Call Completion (ADACC) calls.
- Caller ID blocking by the operator
- Caller identification and blocking for MF to ISUP and ISUP to ISUP calls.
- ISUP remote tones and announcements

Operation

The contents of this section are as follows:

- Background
- Optionality
- Routing ISUP calls to TOPS
 - T selector
 - Prefixed digits and translations
 - Routing examples
 - Call attributes
 - ISUP routing considerations
- Screening ISUP calls
 - Local call area screening
 - Class of service screening
- Equal access
 - AMA module code 150 for cellular carrier calls
 - Carrier identification
- Billing restrictions
- Directory Number Look Up
- Automated systems

Note: Note that since coin signalling is not supported by the ISUP protocols GR317 and GR394, ISUP calls from coin phones CANNOT

GR317/GR394 ISUP to/from TOPS (continued)

go to these automated system unless the End Office leaves the key pad enabled for the entire call.

- Outpulsing ISUP calls from TOPS
- TOPS/ISUP and data calls
- Release link trunking
- Caller ID blocking by operator
 - Rating
 - Rating test program
- ISUP - MF Interworking
 - ISUP to MF
 - MF to ISUP
- ISUP to TOPS connection failure

TOPS13 activity Operator Services Network Capability (OSNC)

The TOPS13 activity OSNC modifies various capabilities for the TOPS/ISUP functionality. OSNC changes the method that TOPS/ISUP uses to determine if a call is a carrier call. TOPS software checks the signalled parameters and trunk datafill to determine whether a call is a carrier call. Additional details about determination of a carrier call are located later in the section “Carrier Identification.”

Details about how OSNC modifies the way that TOPS/ISUP handles data calls are in the section “TOPS/ISUP and data calls.”

The OSNC activity also modifies TOPS/ISUP functionality and the carrier selection parameter. Refer to the section “Carrier Selection Parameter” in this description of GR317/GR394 ISUP to/from TOPS.

Additional TOPS13 development

In TOPS13 developments also changed TOPS/ISUP to no longer prefix digits to called numbers. For additional details, refer to the section “Prefixed digits and translations.”

Background

Integrated Services Digital Network User Part (ISUP) signalling has been deployed in the network for non-operator services calls for a number of years. The ISUP signalling provides reduced post dial delay and additional information for advanced services. However, ISUP signalling cannot support

GR317/GR394 ISUP to/from TOPS (continued)

traditional operator services calls. In particular, mandated operator services such as operator hold and coin signalling are not defined for ISUP.

A version of ISUP which supports operator services is Operator Services Signalling System 7 (OSS7). However, it may be a number of years before OSS7 is widely deployed in the network. In addition, a number of new services have been proposed which could interwork very well with the operator network. However, these services require ISUP access and (in some cases) release link trunking capability. In order to meet the market demand for these services, an interim solution to connect TOPS switches to the ISUP network is required prior to the wide scale deployment of OSS7.

Optionality

This functionality is optional according to Software Optionality Control (SOC) with code OSEA0005. This functionality is delivered in the IDLE (inactive) state and can be turned ON (active) with the SOC utility. When turned ON, all functionality described in this section is available (that is, TA, all call originations, EA, AABS, M/ACCS, RLT and Calling Identification and Blocking).

When in the IDLE state, datafill is allowed and retained but not used. ISUP calls arriving when this functionality is IDLE are processed with the limited capability given in functionality "TOPS Call Features (Call Processing)", OSB00001) (that is, DA, Inwards, PARS, Branding, ADAS and ADAS+). Refer to PRSDOC BK04281 (TOPS - ISUP Re-engineering Phase I) in "TOPS Call Features (Call Processing)".

The SOC utility can also manage software options based on customer usage. This functionality supports state control only. SOC Usage control is not supported by this functionality.

Please refer to the *Software Optionality Control User's Manual*, 297-8991-901, for instructions on using the SOC utility.

Routing ISUP calls to TOPS

Incoming ISUP calls can be routed to TOPS with existing translations in various way which include the T, S, and N selectors with the following restrictions apply for ISUP trunks:

- IT trunk calls (except INC) can only use the T selector
- ATC trunks support the T, N, and S selectors

T selector

The T selector (used in tables STDPRTCT, HNPACONT, CLSVSCRC, and OFRT) can set an index (call origination) into table TOPS. Historically, the T

GR317/GR394 ISUP to/from TOPS (continued)

selector has been used for service type calls (except DA) and the called number could be deleted once in the TOPS environment. However, this selector is now used for non-TOPS trunks which support various signalling protocols and must be reconsidered. Thus for ISUP trunks, the called number is only deleted if the call origination indicates that it is no longer required. If the call origination is assigned as either DASERV or INTC SERV in table TOPS or by the QMS tables, then the called number is removed in the TOPS environment. Typically the call originations assigned with these services are: 411, 555, HOM555, FOR555, and INTC.

Prefixed digits and translations

Before the TOPS13 release, the TOPS office prefixed the digits back on to the called number before translating as follows:

- 0 was prefixed if the NOA indicated a subscriber number operator requested or national number operator requested
- 00 was prefixed if the NOA indicated no number operator requested
- 01 was prefixed if the NOA indicated international number operator requested

Thus, the End Office could strip off the prefix digits. Translations were datafilled to strip the prefixed digits and to use a T-selector to route the call to table TOPS.

TOPS13 developments change TOPS/ISUP so that digits are no longer prefixed. Calls identified as operator calls through the called NOA or the OLI are routed directly to TOPS without going through translations. Calls that appear to be direct-dialled calls based on the called NOA and OLI, such as 411 or Country Direct calls, still go through translations. It is necessary to datafill these calls to route through table TOPS.

Call attributes

Once a call is routed to TOPS, call attributes must be set to process the call. For incoming ISUP calls, call attributes are set based on signalling information, datafill, and call processing logic. The following lists the call attributes required for TOPS call processing. Refer to the Call Attributes Setting table that follows later for further information on each attribute.

ANI Status - ANI Status is determined by signalling information. For MF signalling, it is the ANI ID number which determines ANI Status. For ISUP signalling, it is the Originating Line Identifier (OLI) parameter of the IAM which determines ANI Status. The information passed in this field is used to index table OSSCAT. Thus, if 0 is passed in the OLI and table OSSCAT indicates 0 translates to 'ANI', then ANI Status is set to Success. If 2 is passed

GR317/GR394 ISUP to/from TOPS (continued)

and OSSCAT indicates 2 is ANIF, then ANI Status is set to Failure. If the OLI parameter is not received (as is the case for calls from DMS 100 switches using GR317 today), but a Calling Line Identifier (CLI) is received, then ANI Status is defaulted to Success. If neither the OLI nor the CLI are received in the IAM, then ANI Status is set to ONI.

Call Origination - If the T selector has been used to route to TOPS, then the call origination datafilled is used after the appropriate checks are performed, described in section "GR317 protocol routing."

Call Source - A new table for ISUP trunks, ISUPTRK, is defined with a call source parameter per trunk group. The incoming trunk group is used to determine whether the call source, field CALLSRC, is Originating or Terminating. This value determines the structure code generated in AMA records for the call: 751 for ORIG, 752 for TERM. It is important to note that this call source impact on AMA is effective for both IT and ATC trunk group types. Following is sample datafill:

Note: Refer to ISUP routing considerations for the types of originations supported on ATC trunks.

MAP display example for table ISUPTRK

CLLI	CONNTYPE	LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT	CLIRST	DNLKUP
ISUPTRK1	NONE	NLCA	20	ORIG	N	Y	N	Y
ISUPTRK2	NONE	LCA1	63	TERM	Y	N	Y	N

MAP display example for table TRKSGRP

GRPKEY	CARDCODE	SGRPVAR
ISUPTRK1 0	DS1SIG	C7UP IC N N UNEQ ACTIVEA Q764 THRH ISUP \$ NIL
ISUPTRK2 0	DS1SIG	C7UP IC N N UNEQ ACTIVEA Q764 THRH ISUP \$ NIL

Call Type - If the T selector has been used, the call type is determined from the datafill. If the T selector call type is set to NL, then the call type (OA or DD) is determined from signalling.

Call Service Features - If the OLI is received, then it is used to check table OSSCAT for the calling service feature. For example, if 0 is received for the OLI and table OSSCAT indicates that 0 is a STATION call, then station is set for the calling service feature. If the OLI is not received, but a CLI is received,

GR317/GR394 ISUP to/from TOPS (continued)

then the calling service feature defaults to station. If neither the OLI nor the CLI are received, then the calling service feature is set to Unspecified. Note that DNLKUP can also be utilized when OLI = 0 or is not present. This is discussed further in the Directory Number Look Up section of this document.

Called Number - The called number is a mandatory parameter of the IAM, so is always received from the Called Party Number Parameter.

Called Number Type - For both GR317 and GR394 calls, the NOA specifies the called number type. This can be set to national, local, or foreign based on the information received in the NOA of the IAM. Note that local call area screening can change the information received to local. This is described in the Screening ISUP Calls section of this document.

Calling Number - As indicated earlier, ISUP can send both a calling and charge number in the IAM. The Charge Number (CN) can be compared to ANI of MF signalling, so is used as the calling number throughout TOPS call processing. This number is used for position displays, table lookups (such as DNSCRN), and billing. If the CN is not received in the IAM, then the Calling Party Number (CPN), also known as the Calling Line Identifier (CLI), is used instead. CPN and CLI are used interchangeably.

Note: An example of an IAM with different calling and charge numbers is a call from a Private Branch Exchange (PBX). The calling number is the directory number of the physical phone where the call is being made from. The charge number is the number which is to be billed for the call.

The following table illustrates how call attributes are set:

Call attribute settings (Sheet 1 of 2)

Call attribute	Examples	What sets call attribute
ANI Status	Success, Failure, ONI	OLI in IAM (Note, this functionality can support whatever table OSSCAT can support. A call with an OLI unknown to table OSSCAT is treated as an ANI_FAIL call.) If no OLI, but CLI - default to Success If no OLI and no CLI - default to ONI
Call Origination	OH, OA, DD, 411	T selector with TOPS index or implicit S selector checks for carrier calls
Call Source	Orig or Term	Table ISUPTRK based on trunk group, field CALLSRC
Call Type	DD or OA	T selector call type field for GR317 calls or sent in NOA for GR394calls.

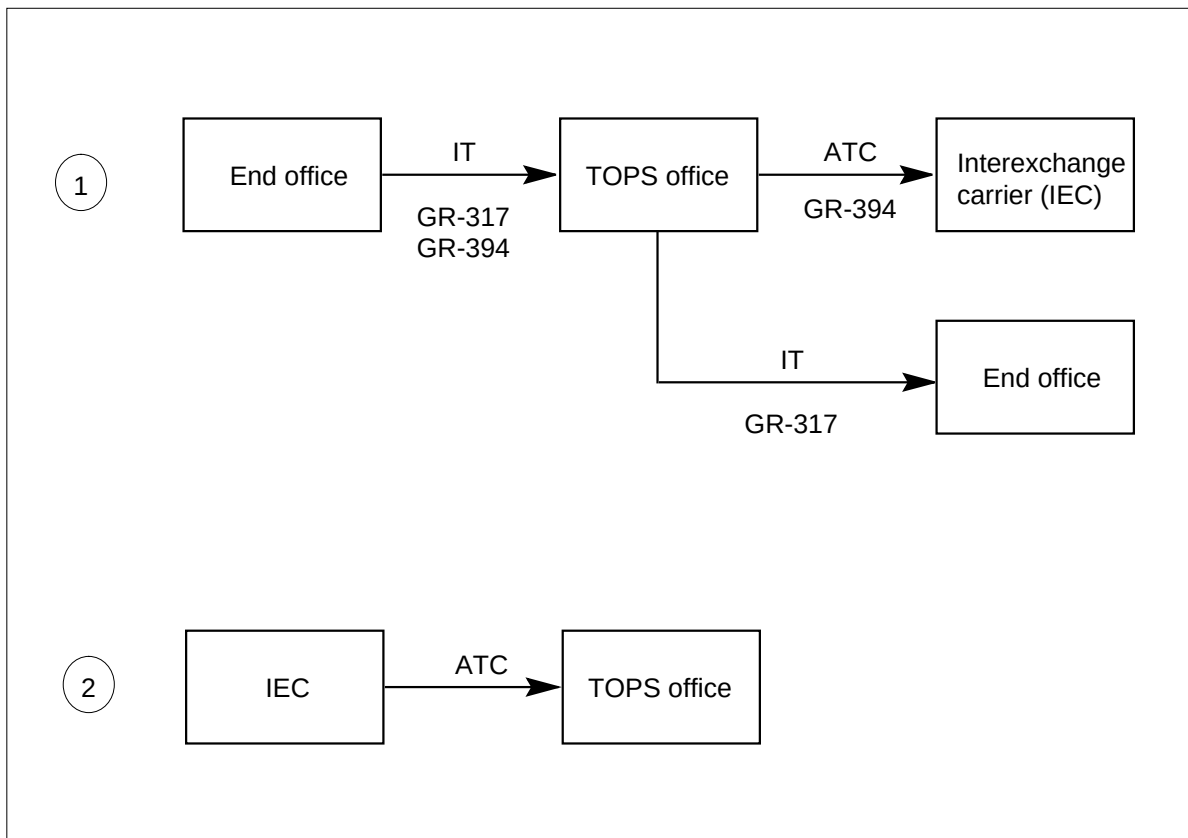
GR317/GR394 ISUP to/from TOPS (continued)**Call attribute settings (Sheet 2 of 2)**

Call attribute	Examples	What sets call attribute
Call Service Features	Station, Hotel, Coin, Restricted	OLI in IAM (Note, this functionality can support whatever table OSSCAT can support. A call with an OLI unknown to table OSSCAT will be treated as an Unspecified call.) If no OLI, but CLI - default to Station If no OLI and no CLI - default to Unspecified DNLKUP Results
Called Number	digit stream	Called Party Number Address in IAM
Called Number Type	National, Local, Foreign	NOA in IAM and LC screening
Calling Number	digit stream	CN in IAM If no CN, but CLI- use CLI

ISUP routing considerations

This feature is not intended to expand the role of ATC trunks in the general network scheme; that is, an incoming ISUP ATC trunk terminating to an ISUP ATC trunk is an unsupported configuration according to ATC trunk use rules.

The following configurations are supported for ATC trunks:

GR317/GR394 ISUP to/from TOPS (continued)**ATC trunk configurations**

In configuration 2 above, only terminating type traffic is supported. This includes inwards type traffic, DA, and intercept calls types. Call completion for incoming calls on ATC trunks is not supported. Calls cannot be forwarded out into the network.

Screening ISUP calls

This functionality supports local call area screening and class of service screening at the trunk and NXX levels.

Local call area screening

Local call area screening determines whether or not a call is a local call. It can set the called number type, as indicated earlier.

Field LCANAME in new table ISUPTRK to provides trunk level local call area screening:

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table ISUPTRK**

CLLI	CONNTYPE	LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT	SNTPDIRST	DNLKUP
ISUPTRK1	NONE	NLCA	20	ORIG	N	Y	N	Y
ISUPTRK2	NONE	LCA1	63	TERM	Y	N	Y	N

Table ISUPTRK also has a Number of Billing Codes (NOBILLCD) field which defines the number of trunk group entries in table TOPSBC. Once the trunk group is defined in ISUPTRK with NOBILLCD greater than zero, the trunk can be datafilled in table TOPSBC. Table TOPSBC provides NXX-level local call area screening: (Field ACTUALBC is not utilized for ISUP calls because ISUP always provides a 10 digit DN. Field CHGCLSS is also not utilized because only the Bellcore AMA format is supported.)

MAP display example for table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALB	CHGCLSS
ISUPTRK1	322	LCA1	NSCR	619322	TOPS
ISUPTRK2	522	NLCA	NSCR	619522	TOPS

If an LCANAME is datafilled in both ISUPTRK and TOPSBC, both LCANAMES are checked to determine if the call is local. If either LCANAME marks the call as local, it's local. However, datafilling an LCANAME in both tables should be avoided if possible.

Class of service screening

Class of service screening determines a route for the call based upon the dialled digits.

Table TRKGRP provides trunk level screening for Class of Service screening for ISUP calls. The ISUP calls are supported on IT and ATC trunk group types. Both of these trunk groups previously supported class of service screening on a trunk group level by table TRKGRP for non-ISUP calls. This functionality utilizes the class of service screening name of table TRKGRP for ISUP calls:

Note: Refer to ISUP routing considerations for the types of originations supported on ATC trunks.

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table TRKGRP**

GRPKEY	GRPINFO

ISUPTRK1	
IT 0 ELO NCRT 2W NIL MIDL 407 PEA	NSCR 619 000 N N \$
ISUPTRK2	
ATC 0 ELO NCRT 2W NIL MIDL EAP1	SCR3 619 C222 Y EAPLAN
Y 0 COMB N \$	

Table TOPSBC provides NXX level class of service screening:

MAP display example for table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALB	CHGCLSS

ISUPTRK1	322	LCA1	SCR1	619322	TOPS
ISUPTRK2	522	NLCA	NSCR	619522	TOPS

If a SCRNCL is datafilled in both TRKGRP and TOPSBC, both SCRNCLs are checked to determine a route. For example, if a call is incoming from ISUPTRK1 with a DN of 619-322-XXXX, screening class name SCR1 is used to generate a route. If a call is incoming from ISUPTRK2 with a DN of 619-522-XXXX, screening class name SCR3 is used to generate a route. However, datafilling an SCRNCL in both tables should be avoided.

Note 1: This functionality supports table TOPEATRK for ISUP trunks and thus Equal Access class of service screening is also supported.

Note 2: In either of these examples, if a valid screening class name were provided in both TRKGRP and TOPSBC, the route determined via TOPSBC would override the route determined via TRKGRP.

Equal access

Support is provided for AMA module code 150 and identification of carrier calls for ISUP trunks.

AMA module code 150 for cellular carrier calls

New field, CONNTYPE, of table ISUPTRK, specifies the connection type: TYPE_A, TYPE_B, TYPE_D, CELL_MOBILE, LOCAL_TRANS, NONE. If the CONNTYPE is set to anything other than NONE, selector field, CARTYPE must be defined as either IEC or NBEC. If CARTYPE is set to

GR317/GR394 ISUP to/from TOPS (continued)

NBEC for an IT trunk group, another selector field, NBEC, must be defined. Previously there was no way to define an NBEC for IT trunks and thus an NBEC value of 0000 was used for IT trunks. Since 0000 indicates an IT trunk group to certain systems, it is supported and can be datafilled in table ISUPTRK for IT trunk groups:

MAP display example for table ISUPTRK

CLLI	CONNTYPE		LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT
	SNTPDRST	DNLKUP					
ISUPTRK1	TYPE_B	NBEC 2222	NLCA	20	ORIG	N	Y
	N	Y					
ISUPTRK2	CELL_MOBILE	IEC	LCA1	63	TERM	Y	N
	Y	N					

Field CONNTYPE determines if module code 150 is included in the AMA record for the call. If CONNTYPE is not set to NONE, module 150 is included in the AMA record, and the CARTYPE selector field determines the identification field of module 150. If CARTYPE is set to IEC, the carrier code is used. If CARTYPE is set to NBEC, the NBEC code is sent.

Please refer to functionality Cellular/IEC/LEC ADACC (OSDA0005) for more information on Cellular Carrier Screening and AMA Module Code 150. This functionality created module code 150 and contains more information on how the carrier or NBEC code is determined. These rules also determine what is sent to the DAS for carrier branding. The rules in OSDA0005 and OSEA0005 are identical except for the addition of the IT trunk group requirements given above.

Carrier identification

The TOPS13 activity modified the manner in which TOPS/ISUP determines whether a call is a carrier call. LATA screening is no longer performed for TOPS/ISUP calls, unless the operator enters or changes the called number.

There are two ways to check to see if an incoming call is a carrier call. Any call that has a Transit Network Services in its incoming Initial Address Message (IAM) is a carrier call. The IAM is the first message sent in the call setup phase. It travels in the forward direction to initiate seizure of an outgoing circuit. The IAM also transmits dialed digits and other call routing and handling information.

GR317/GR394 ISUP to/from TOPS (continued)

A call can be a carrier call without the TNS in the IAM. A call is a carrier call if the CARTYPE field of table ISUPTRK is set to IEC for the incoming trunk. Otherwise, the call is a non-carrier call

The TOPS13 activity OSNC also changes how TOPS/ISUP handles calls with a Carrier Identification Code (CIC) that TOPS does not serve. TOPS/ISUP passes the carrier call to DMS ISUP processing if one of the following is true:

- if the CIC is marked as NOSERV in table TOPEACAR
- if the CIC is not datafilled in TOPEACAR

The OSNC activity also modifies TOPS/ISUP functionality to pass control of 0- bypass carrier calls to DMS ISUP processing. If the call is a 0- call (the called NOA is NO NUMBER PRESENT, OPERATOR REQUESTED), and the BYPASS field in the TOPEATRK tuple contains ZEROM, the call is not served by TOPS.

When control of the call returns to DMS ISUP processing, these calls are treated as tandem calls and TOPS no longer has control of them. In this case, TOPS no longer has control of generation of the outgoing Initial Address Message (IAM) parameter, processing of subsequent messages, billing and translations. When upgrading to TOPS13, consider the consequences of return of control of these calls to DMS ISUP processing:

- TOPS does not generate subsequent messages for the call, including the ACM, Answer Message (ANM), and Call Progress message or the outgoing IAM. These messages are built according to the DMS ISUP functionality.
- TOPS does not generate any billing modules for the call. Billing occurs according to DMS ISUP functionality.
- TOPS does not perform additional carrier screening for calls in which either the signalled CIC or the CIC retrieved from TOPEATRK is datafilled as NOSERV. There is no Originating Line Number Screening (OLNS) or DNPIC checks for these calls.

Furthermore, calls that were signalled with a Transit Network Services (TNS) parameter have the appropriate 0XX-XXXX digits prepended to the called number before translations. Zero minus calls are translated using the called number 00.

- Standard DMS translations, not TOPS translations, are used for these calls. Primarily, translations for equal access carrier calls are not provided

GR317/GR394 ISUP to/from TOPS (continued)

through table CLSVSCRC. These calls translate through STDPRTCT and HNPACONT, like any other standard DMS equal access carrier calls.

If an office has previous used TOPS/ISUP processing for calls that are returned to DMS ISUP, then operating company personnel must examine standard translations datafill for that office. Examination of the datafill needs to occur before One Night Process for TOPS13 in order to ensure that necessary translations datafill exists.

An incoming ISUP call is marked and processed as a carrier call if a Carrier Identification Code (CIC) is received in the IAM (signalled) or if the incoming trunk group has a carrier type of Inter-Exchange Carrier (IEC) in datafill. The CIC for the call is determined from signalling information and datafill, and then may be overridden by the operator or an automated system.

Both GR317 and GR394 support signalling of the Carrier Identification Code Parameter (CIP) which can contain either a 3 or 4 digit code. Both are supported. If the CIP contains a CIC, the call is a carrier call and the signalled CIC is used.

In table ISUPTRK, if the incoming trunk group is defined with the CARTYPE (selector field of CONNTYPE) as IEC, then all calls on that trunk group are carrier calls. If one of these calls arrives without a signalled CIC, then the CIC is determined from tables TOPEATRK and DNPIC. Standard rules apply using the CN (or the CLI if no CN is available) in table DNPIC. Following is sample datafill:

MAP display example for table ISUPTRK

CLLI	CONNTYPE		LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT
	SNTPDRST	DNLKUP					
ISUPTRK1	CELL_MOBIL	IEC	NLCA	20	ORIG	N	Y
	N	Y					
ISUPTRK2	NONE		NLCA	10	TERM	Y	N
	Y	N					

Once a trunk is defined in table ISUPTRK, it is automatically added to table TOPEATRK (similar to TOPS trunks). All of the information in table TOPEATRK can be used for ISUP carrier calls. Following is sample datafill:

GR317/GR394 ISUP to/from TOPS (continued)

MAP display example for table TOPEATRK

TRUNKGRP SCRNIDX	ENDOFFICE DNLOOK	CARRIER DFLTPIC	LATANM BYPASS	INTRASSC	INTERSSC	OVSSCL
ISUPTRK1 619	CONFORM Y	0111 Y	L123 \$	STRA	STER	SOVS

Note: For ISUP calls, the CIC datafilled in table TOPEATRK is used instead of the CIC datafilled in table TRKGRP for ISUP ATC trunk groups.

Carrier selection parameter

OSNC modifies TOPS/ISUP calls in that TOPS will send a CS with a value of `PRESUBSCRIBED_AND_NOT_INPUT` for calls in which TOPS determined the CIC based on datafill. Datafill through table DNPIC, table TRKGRP or an OLNS query could be a possible basis for TOPS to determine the CIC.

TOPS will send the value `NOT_PRESUBSCRIBED_AND_INPUT` for calls in which TOPS determined the CIC by the operator or service node entering it. If none of these situations apply, then TOPS will populate the CS with the appropriate value as previously determined and supported by the feature ISUP to TOPS Enhancements (AN1515).

Billing restrictions

Regardless of whether or not a call is restricted, sent paid billing can be restricted for ISUP calls arriving at TOPS. If this occurs, it may be unacceptable to bill the call sent paid. (Remember from the Call Attributes section that if a CN is not received, the CLI is used as the calling number and ANI is set to Success.) If it is unacceptable, datafill can provide this restriction on a trunk group basis.

This restriction is especially useful for calls from a public phone (coin phone). If the OLI parameter is not received, the call is marked station (if a CLI is received). Usually, if the OLI parameter is not received, the charge number parameter is not received either. This restriction ensures that public phones are not allowed sent paid billing and thus are essentially free calls. To apply this restriction to public phones but not to private lines, traffic must be segregated.

Field `SNTPDRST` in table ISUPTRK indicates sent paid restrictions. If `SNTPDRST` is set to N, then sent paid billing is not restricted for calls incoming over the given ISUP trunk. If `SNTPDRST` is set to Y then calls arriving on that trunk group are restricted from being billed sent paid. Following is sample datafill:

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table ISUPTRK**

CLLI DNLKUP	CONNTYPE	LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT	SNTPDST	RST
ISUPTRK1	NONE	NLCA	20	ORIG	N	Y	N	Y
ISUPTRK2	NONE	LCA1	63	TERM	Y	N	Y	N

Directory Number Look Up

Directory Number Look Up is supported for ISUP calls incoming to the TOPS environment. If field DNLKUP in table ISUPTRK is set to Y and the OLI is 0 or no OLI was received, then tables SPLDNID and DNSCRN (and their associated tables) are searched. If the CN (or CLI) is not found, no restrictions are enforced.

Note: If the OLI indicates restricted, hotel, special, or coin then the restriction tables are also checked. If the CN (or CLI) is not found, no restrictions are enforced. The DNLKUP field has no affect on these calls.

Automated systems

This functionality supports ISUP traffic serviced by the Automated Alternate Billing System (AABS) and by the Automated/Mechanized Calling Card System (ACCS/MCCS). Service AABS automates 0+ traffic. It can automatically complete collect calls, calling card calls, and third party billed calls. Service ACCS/MCCS can automatically verify and complete calling card calls. (AABS utilizes ACCS for calling card calls.)

Note: Since coin signalling is not supported by the ISUP protocols GR317 and GR394, ISUP calls from coin phones CANNOT go to these automated system unless the End Office leaves the key pad enabled for the entire call.

Tables AABSOST and MCCSOST now support IT and ATC trunk group types. Note that only ISUP IT and ISUP ATC trunk groups are functionally supported. Although table restrictions cannot be enforced, non-ISUP IT and non-ISUP ATC traffic is not be routed to AABS or ACCS/MCCS.

Note: Refer to ISUP routing considerations for the types of originations supported on ATC trunks.

Table AABSOST defines the trunk groups allowed for AABS service:

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table AABSOST**

GRPKEY	PUBLIC	PRIVATE
ISUPTRK1	SERV TONEANN	SERRV TONEANN
ISUPTRK2	SERV TONEANN	SERRV TONEANN

Table MCCSOST defines the trunk groups allowed for A/MCCS service:

MAP display example for table MCCSOST

GRPKEY	PUBLIC	PRIVATE
ISUPTRK1	SERV TONEANN	SERRV TONEANN
ISUPTRK2	SERV TONEANN	SERRV TONEANN

Note 1: Refer to ISUP routing considerations for the types of originations supported on ATC trunks.ISUP

Note 2: Since coin signalling is not supported by the ISUP protocols GR317 and GR394, ISUP calls from coin phones CANNOT go to these automated system unless the End Office leaves the key pad enabled for the entire call.

Standard rules for both automated systems still apply. Thus, if an incoming ISUP call does not have either a calling number nor a charge number, it cannot receive AABS or ACCS services.

Outpulsing ISUP calls from TOPS

The following table lists the parameters in an Initial Address Message (IAM) that are outpulsed to the call's destination:

TOPS supported fields in outgoing IAM (Sheet 1 of 2)

Parameter	Mandatory/ Optional	GR317	GR394	TOPS317	TOPS394
Access Transport	Optional	X			
Called Party Number	Mandatory	X	X	X	X
Note: Columns GR317 and GR394 are the standard specifications. Columns TOPS317 and TOPS394 indicate the capabilities of this functionality in meeting the standard specifications.					

GR317/GR394 ISUP to/from TOPS (continued)**TOPS supported fields in outgoing IAM (Sheet 2 of 2)**

Parameter	Mandatory/ Optional	GR317	GR394	TOPS317	TOPS394
Calling Party Number	Optional	X	X	X	X
Calling Party Category	Mandatory	X	X	X	X
Carrier Identification Code	Optional	X	X		X
Carrier Selection	Optional		X		X
Charge number	Optional	X	X		X
Forward Call Indicator	Mandatory	X	X	X	X
Generic Address	Optional	X			
Generic Name	Optional	X			
Hop Counter	Optional	X	X		
Jurisdiction Information	Optional	X			
Message Type	Mandatory	X	X	X	X
Nature of Connection Indicators	Mandatory	X	X	X	X
Original Called Number	Optional	X			
Originating Line Information	Optional	X	X		X
Redirecting Number	Optional	X			
Service Code	Optional		X		
Transit Network Selection	Optional		X		X for INC
User Service Information	Mandatory	X	X	X	X
Note: Columns GR317 and GR394 are the standard specifications. Columns TOPS317 and TOPS394 indicate the capabilities of this functionality in meeting the standard specifications.					

ISUP calls tandeming (not routing to an operator or automated system) through the TOPS office are not affected.

TOPS/ISUP functionality and data calls

The TOPS13 activity OSNC modifies how TOPS/ISUP responds to data calls. Instead of attempting to process a data call, TOPS/ISUP sends a REL message.

GR317/GR394 ISUP to/from TOPS (continued)

The value at which the Information Transfer Capability (ITC) is set is a general indicator of whether a call is a data call. If the User Services Information (USI) parameter of the incoming IAM has an ITC set to a value other than SPEECH or 3.1 KHZ AUDIO, then the call is usually a data call.

Because TOPS cannot service data calls, TOPS/ISUP releases the connection. It releases the connection by sending an ISUP release (REL) message with a cause value of INVALID MESSAGE UNSPECIFIED on the incoming connection.

The functionality TOPS/ISUP also processes a data call in this manner for an intercept call. An intercept call originates at an intercepting end office that receives a call for a line that is out of service and for which operator services are available.

A call is identified as an intercept call by translations or the Originating Line Information (OLI).

For an intercept call, if the USI parameter of the IAM has an ITC field set to a value other than SPEECH or 3.1 KHZ AUDIO, then the call is usually a data call. Because TOPS does not service data calls, TOPS releases the connection by sending a REL message with a cause value of BEARER CAPABILITY NOT IMPLEMENTED on the incoming connection.

Release link trunking

Release link trunking (RLT) is used when a call completes back to the originating office; that is, the calling and called parties belong to the same office. That office must be a DMS-250 switch. Then, that office performs call completion by connecting the parties and dropping the trunks to the TOPS office. This frees circuits and ports for additional traffic.

Following is the criteria for providing RLT service:

- The incoming trunk group supports RLT. This implies that the originating office can handle RLT messaging. This capability is datafilled in new table ISUPTRK, field RLT. This field is set to Y (RLT is supported) or N (RLT is not supported).
- The call is from a private (station) phone.
- Billing is sent paid.
- No forward party is already connected.
- ADACC is providing the call completion service.
- No functions requiring recall (except Notify, Time & Charges) have been setup.

GR317/GR394 ISUP to/from TOPS (continued)

An AMA record is generated by the TOPS office when RLT is initiated. This is indicated in Table 283, Service Indication with a Service Feature Code of Release Link Trunking. Then, the End Office may also generate an AMA record for its portion of the call.

Caller ID blocking by operator

A subscriber can call an operator and request blocking of the calling party's number to the called party. This capability can be applied to any call which routes to an operator, regardless of the origination type. However, the operating company may advertise this capability according to their own needs, such as applying it to only OH (0 minus) calls. A new key function and display area are provided.

Calling number delivery uses Common Channel Signalling 7 (CCS7) ISUP which provides the protocol for transmitting the calling party's number.

Rating

An additional surcharge can be applied for this service, defined by new tables DNBKSUR and DNBKSURI. This rating is performed by the TOPS real-time rating system. Like all other charges, this surcharge is only billed to completed calls. This means that billing is not applied to recalls, overtime, etcetera. It is applied independently of the outgoing trunk types (ISUP versus MF).

New tables DNBKSUR and DNBKSURI are part of the mass table control where the tables are duplicates with one table active and the other inactive. This allows changing datafill without affecting the active rating system. Selection of the active table is made with the Mass Table Control (MASSTC) command. In the on-line rating procedure, the active table is accessed following the SUR table and before taxes are calculated.

For more information on the MASSTC command, refer to the data schema section of this document, table CHARGEI.

Rating test program

The TOPS rating test program, RATE, is used to verify the TOPS rating system datafill. The program uses subcommands to set call data for rating. New subcommand BKG is added to indicate if a caller ID blocking surcharge is added to the charges. The subcommand has values Y (add) and N (do not add). Value N does not access table DNBKSUR. Value Y indicates to use subcommand DOL (TOPS call type: domestic, local, overseas, service, blank, etcetera.) along with the originating station class to apply the surcharge.

There are four function subcommands in RATE. The first is SHOW, which displays the value in each of the subcommands, plus the new BKG data subcommand. The next three function subcommands are used to calculate the

GR317/GR394 ISUP to/from TOPS (continued)

rate step (CR), calculate the charge (CALC_CHG) and calculate both the rate step and the charge (CB). If BKG is set to YES, then the surcharge in the table is added to the charges calculated correspondingly.

For more information on the RATE CI command, refer to the data schema section of this document, table SCHNUM.

ISUP - MF Interworking

Full interworking is supported between ISUP and MF signalling. Full interworking means the support of an incoming ISUP call can complete to an MF trunk and an incoming MF call can complete to an ISUP trunk.

ISUP to MF

For interworking from incoming ISUP to outgoing MF, the incoming ISUP information is transformed into valid ANI information for the MF trunk. The ANI is derived from the ISUP Charge Number address information if this parameter is available. If not, the CLI address information is used instead.

MF to ISUP

For interworking from incoming MF to outgoing ISUP, the incoming ANI can optionally be converted into CLI for ISUP. For GR317/394, CLI should not be supplied. The CLI is sent if enabled by all of the following (that is, if disabled by any one, CLI is not sent):

- New office wide parameter FORWARD_ANI_AS_CLI in table TOPSPARM is set to Y to forward CLI.
- For the incoming MF trunk, table TOPSTOPT, new field ANI2CLI is set to Y to forward CLI.
- For the outgoing ISUP trunk, table ISUPTRK, field ANI2CLI is set to Y to forward CLI. Following is sample datafill:

MAP display example for table ISUPTRK

CLLI	CONNTYPE	LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT	SNTPDRST	DNLKUP
ISUPTRK1	NONE	NLCA	20	ORIG	N	Y	N	Y
ISUPTRK2	NONE	LCA1	63	TERM	Y	N	Y	N

If CLI forwarding passes all of the above tests, the CLI is sent but may be marked as blocked in the IAM if any one of the following occurs:

- The incoming IAM indicates the call should be blocked.
- The operator performs caller id blocking.

GR317/GR394 ISUP to/from TOPS (continued)

- For the incoming MF trunk, if table TOPSTOPT, new field ANI2CLI is set to Y to forward CLI but selector BLKCLI is set to Y, the call is restricted in the IAM. Following is sample datafill:

MAP display example for table TOPSTOPT

GRPKEY	ACDDATA	DISPCLG	ADASERV	ADASANS	ANI2CLI
ISUPTRK1	TOPSACD	Y	NONE	NA	N
ISUPTRK2	QMSCAM N	Y	ADAS	IMMEDIATE	Y Y
ISUPTRK3	TOPSACD	Y	NONE	NA	Y N

- For DNs, if table TDBCLASS, field BLKCLI is set to Y, the call is restricted in the IAM. If a DN is not listed in table TDBCLASS, the default for BLKCLI is N, which does not restrict CLI. Table TDBCLASS is accessed by the table sequence DNSCRN to TOPSDB to TDBCLASS. Following is sample datafill:

MAP display example for table DNSCRN

DN	ATTROPTS
6192222222	(TOPSDB 1)
6193333333	(TOPSDB 2)

MAP display example for table TOPSDB

TDBKEY	TDBCLIDX	TDBDAOPT	TDBNORM	TDBSERV
1	1	0	0	0
2	2	0	0	0

MAP display example for table TDBCLASS

IDX	TDBCLSEL	ARANSEL	EAANI	BLKCLI
1	RSTRCTD 5	Y INSTN	N	Y
2	NOSPLDNID	N	N	N

For the above datafill, a call from 619-222-2222 will be blocked, while a call from 619-333-3333 will not.

GR317/GR394 ISUP to/from TOPS (continued)

ISUP to TOPS connection failure

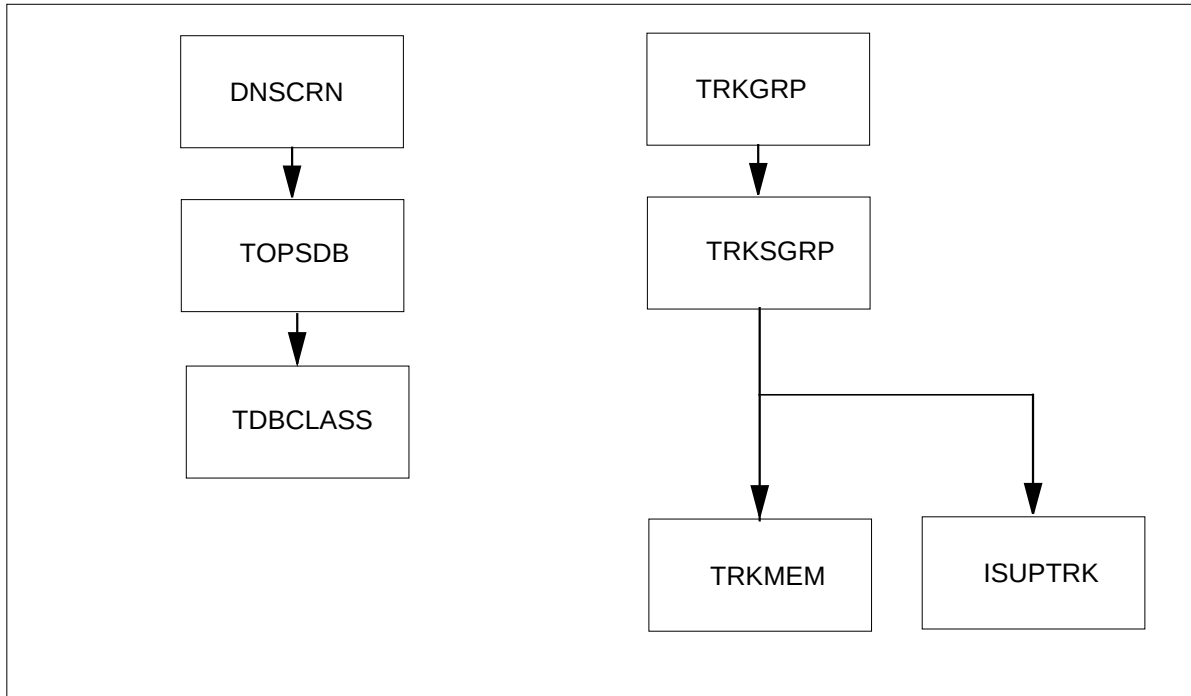
An unsuccessful connection occurs because of a failure during call setup. If an unsuccessful connection occurs, treatment is applied. The responsibility of applying treatment is either at the originating node (non-local) or at the TOPS office (local) depending on the datafill in table TMTMAP. This is a datafill requirement from PRSDOC BK04281 (TOPS - ISUP Re-engineering Phase I) in functionality TOPS Call Processing Features (Call Processing), OSB00001.

Translations table flow

The GR317/GR394 ISUP to/from TOPS translations tables are described in the following list:

- Table DNSCRN indexes table TOPSDB
- Table TOPSDB indexes table TDBCLASS
- Table TDBCLASS contains new field BLKCLI
- Table TRKGRP defines characteristics of trunk groups
- Table TRKSGRP defines trunk subgroups
- Table TRKMEM defines hardware characteristics of trunk members
- Table ISUPTRK defines ISUP trunks

The GR317/GR394 ISUP to/from TOPS translation process is shown in the flowchart that follows.

GR317/GR394 ISUP to/from TOPS (continued)**Table flow for GR317/GR394 ISUP to/from TOPS**

The following table lists the datafill content used in the flowchart.

Datafill example for GR317/GR394 ISUP to/from TOPS

Datafill table	Example data
DNSCRN	6192222222 (TOPSDB 1)
TOPSDB	1 1 0 0 0
TDBCLASS	1 RSTRCTD 5 Y INSTN N Y
TRKGRP	ISUPTRK1 NONE NLCA 20 ORIG N Y N N
TRKSGRP	ISUPTRK1 0 DS1SIG C7UP IC N N UNEQ ACTIVEA Q764 THRH ISUP \$ NIL
TRKMEM	ISUPTRK1 1 0 DTC 0 15 6
ISUPTRK	ISUPTRK1 NONE NLCA 20 ORIG N Y N N

GR317/GR394 ISUP to/from TOPS (continued)

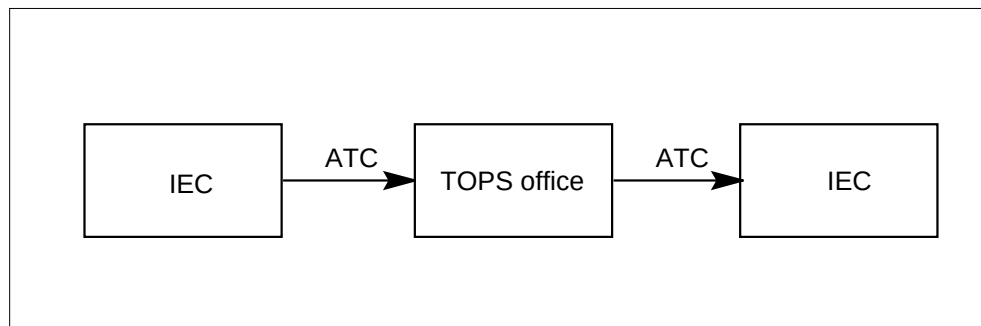
Limitations and restrictions

The following limitations and restrictions apply to GR317/GR394 ISUP to/from TOPS:

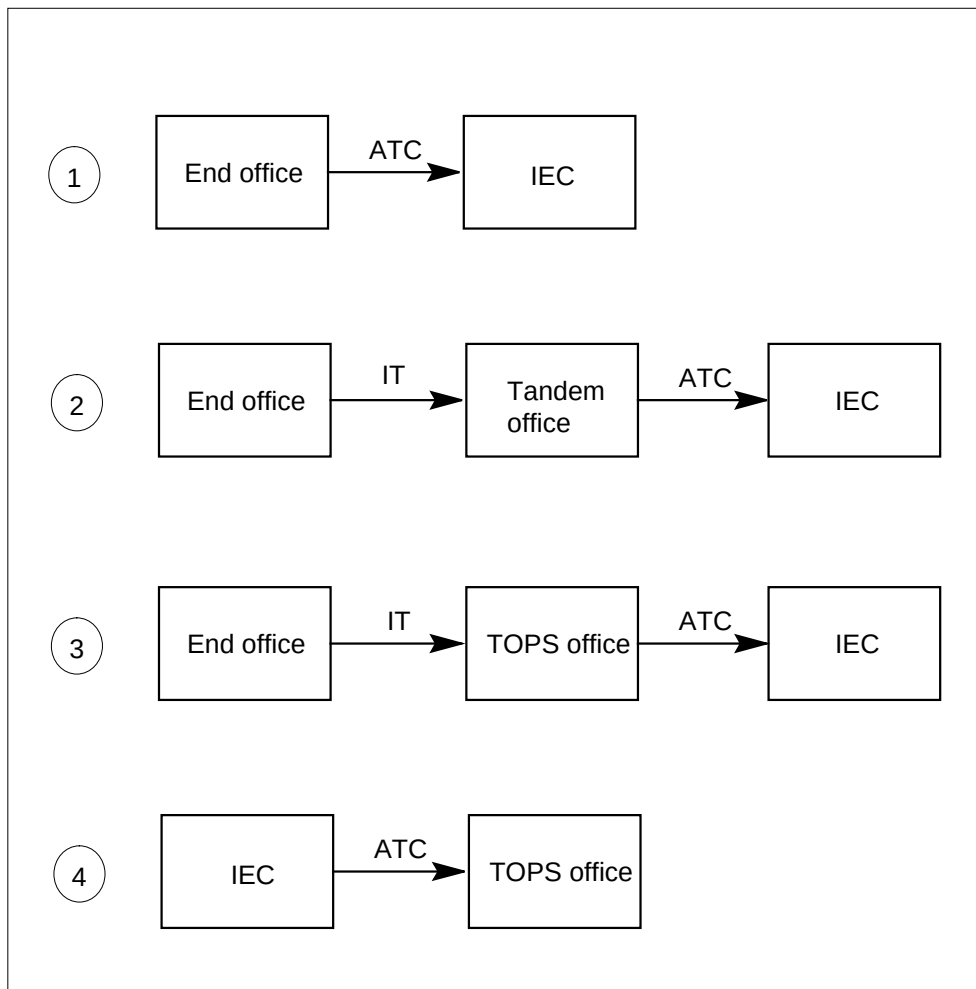
- Open Number signalling is not supported.
- GR317/GR394 ISUP does not support operator hold nor coin signalling and, therefore, calls requiring these capabilities cannot be supported and should not be routed to TOPS on GR317/GR394 ISUP trunks.
- The Coin signalled ACTS functionality cannot be supported since existing ISUP signalling does not support the coin control signalling required. Other ACTS functions such as Notify and Time & Charges are supported.
- ISUP coin traffic may not be routed to AABS or A/MCCS unless the End Office leaves the key pad enabled for the entire call.
- DMS-100 offices do not currently support the Sept. 1994 issues of GR317 or GR394. Thus, TOPS will not receive an OLI parameter nor a charge number parameter unless the call is EA (394) until base ISUP upgrades to the Sept. 1994 issue. Note that other End Offices (non-DMS) may support these parameters already.
- GR317 does not support sending the prefix information in the NOA and thus the End Office cannot strip off the prefix information from the called number for non-EA calls over IT trunk groups.
- Table TRKLATA: LEAS bool does not support ISUP trunks.
- 'Dummy 800' parameters are not supported.
- TOPS RLT requires the DMS-100 Call Completion with Trunk Optimization-End Office functionality provided by features AR0169 and AG2329. If an office supporting TOPS RLT is receiving calls from other exchanges, these exchanges must support the functionality of these two features to perform RLT.
- Account Code Billing (ACB) is restricted if the SNTPDRST restrictions are enforced. This is a repercussion of the SNTPDRST field and the ACB rules.
- For TOPS ISUP calls, an Answer message is returned to the End Office when the calling party is connected to an operator or automated system. End Office translations should be set to either produce a non-billable record or not produce a record (turn off billing).
- If an emergency call arrives at an operator (dialed 0-) from an ISUP trunk (which should be avoided) and the operator completes the call to 911 routing over a terminating MF trunk, the address from the Charge Number parameter is spilled as ANI.

GR317/GR394 ISUP to/from TOPS (continued)

- Intercept call completion is not supported.
- Calls serviced by TOPS do not pass along calling party name information.
- TOPS does not support terminating an equal access call to an ISUP IT trunk.
- If an ONI call incoming over an ISUP trunk is serviced by the TOPS office, the presentation indicator in the outgoing IAM indicates presentation of the calling party's number is allowed, unless the operator has blocked presentation by the blocking key function.
- If a coin call incoming over an ISUP trunk is serviced by the TOPS office, the call is restricted from being billed sent paid by default.
- No TOPS carrier processing occurs on a DD call incoming over an ISUP trunk unless explicitly routed to the TOPS office as depicted in section Routing ISUP Calls to the TOPS Environment.
- This feature is not intended to expand the role of ATC trunks in the general network scheme; that is, an incoming ISUP ATC trunk terminating to an ISUP ATC trunk is an unsupported configuration according to ATC trunk use rules. The unsupported configuration is show is the following figure.

ATC trunk unsupported configuration

The following configurations are supported for ATC trunks:

GR317/GR394 ISUP to/from TOPS (continued)**ATC trunk supported configurations**

In configuration 4, only terminating type traffic is supported. This includes inwards type traffic, DA, and intercept calls types. Call completion for incoming calls on ATC trunks are not supported. Calls cannot be forwarded out into the network.

- Caller ID blocking by operator:
 - This capability only works with the configurations which equip North America (NA) Integrated Services Digital Network User Part

GR317/GR394 ISUP to/from TOPS (continued)

(ISDNUP/ISUP) between TOPS and terminating offices. Conversely, it does not affect the calling number outpulsing by MF trunks.

- This capability works for the TOPS Operator Position 3/4, MP, and MPX but not TOPS BP.
- This capability works only when a valid calling number is available.
- This capability works for the TOPS GENERAL Operator Position, but not TOPS ASSISTANT nor INCHARGE Operator Positions. (Since no calling number is available in these two positions.)
- In an Operator Centralization (OC) environment, this capability only works when all the hosts and remotes are upgraded to TOPS05 or higher. This prevents the situation where some calls handled by an operator in the host are eligible for Caller ID Blocking while others are not. Please refer to functionality "Host Remote Networking by Queue Type" (ADVQ0005) for new BCS installation strategy.

Interactions

The following items describe the interactions between GR317/GR394 ISUP to/from TOPS and other functionalities.

- Prior functionality TOPS-ISUP (OSEA0001) is unaffected and is utilized if this functionality (OSEA0005) is not SOC'd on.
- The AABS support for ISUP traffic is dependent upon feature AN1666 which modifies the VSN to support no operator hold trunks such as ISUP.
- With the OSNC activity, the Address Complete Message (ACM) is sent later in the call flow than in releases before TOPS13. Thus, there will be a possible need to change datafill in previous nodes to allow a longer period before timing out because an ACM was not received

For a DMS end office, this datafill is in table C7UPTMR, in the ACM refinement for Q764. Refer to North American DMS-100 Customer Data Schema, 297-8021-351, for more information on table C7UPTMR

Note that RLT service continues to be a valid value in the Service Identification field in AMA Module 055. There is no change to AMA Module 055. The setting of parameter RECORD_RLT_REL_MODULE_123 does not affect the population of the Service Identification field in AMA Module 055.

Activation/deactivation by the end user

GR317/GR394 ISUP to/from TOPS requires no activation or deactivation by the end user.

GR317/GR394 ISUP to/from TOPS (continued)

Billing

A new indicator for RLT is added to Table 283: Service Identification. The indicator is shown later in this section. Table 283 is used in AMA module code 055. This module code is used to indicate a listing services service.

Structure codes 751 and 752 are supported for ISUP calls based on the call source datafilled per trunk group in new table, ISUPTRK. If the call source is set to ORIG, structure code 751 is generated for all calls on that trunk. If the call source is set to TERM, structure code 752 is generated for all calls on that trunk. It is important to note that this call source impact on AMA is effective for both IT and ATC trunk group types.

Module code 150 is supported for cellular calls on ISUP trunks, based on the carrier connection information provided in new table, ISUPTRK. If the connection type is anything other than NONE, module code 150 is generated for these calls. The carrier code is generated in the AMA record if the carrier information in ISUPTRK is set to IEC; otherwise, it is set to NBEC and the NBEC code is generated. ISUP trunks adhere to the rules defined in functionality Cellular/IEC/LEC ADACC Screening Enhancements (OSDA0005).

This functionality is dependent on EBAF Phase 2. Please ensure table TOPAMAOP has parameter EBAF_PHASE set to 2 when utilizing RLT functionality.

Following is the data for Table 283 that shows the new indicator for value 021:

Data field 283: Service Identification Code (Sheet 1 of 2)

Character(s)	Value	Meaning
1-3	001	Directory assistance
	002	Customer name and address
	003	Address provision
	004	Name and telephone number provision
	005	Zip code provision
	006	Area business listing
	007	Dialing instruction
	008	Rate information

GR317/GR394 ISUP to/from TOPS (continued)**Data field 283: Service Identification Code (Sheet 2 of 2)**

Character(s)	Value	Meaning
	009	Trouble reporting
	010	Area code
	011	Remote ONI (RONI)
	012	Customized announcement
	013	Automated split referral
	014	Operator handled split referral
	015	Intercept
	016	Intercept messaging
	021	Directory assistance and release link trunking
	022-899	Reserved
	900-998	Operating company definable
	999	Unknown
4	C	SIGN character (HEX C)

Following is an example AMA record for an RLT call:

Example AMA record for an RLT call

```

SENSOR TYPE:036C SENSOR ID:00000000C REC OFFICE TYPE:036C
REC OFFICE ID:00000000C DATE:95410C TIMING IND:00000C
STUDY IND:02000000C SERVICE OBSERVED:0C ORIG NPA:613C
ORIG NUMBER:2391234C CONNECT TIME:0427380C
ELAPSED TIME:0000000000C OPERATOR IDS:1010200009999C
ACC OPERATOR WORK TIME:00250C SERVICE FEATURE:000C
STATION SIGNALING IND:2C SCREENING CODE:000C
CALLED NUMBER INPUT:1C CALLING NUMBER SOURCE:1C
MODULE CODE:055C SERVICE ID:021C
MEANS OF INFORMATION INPUT:1C MEANS OF LSDB ACCESS:1C
LSDBS BOC ID:13333C LSDB ACCESS:FF LISTING RESPONSE:2C
LISTING STATUS:111111100C REQUEST COUNTER:001C
MODULE CODE:000C

```

GR317/GR394 ISUP to/from TOPS (continued)

Caller ID blocking by operator

This capability requires EBAF PHASE2. Determination of the TOPS EBAF phase is based upon the value of tuple EBAF_PHASE in table TOPS AMA Options (TOPAMAOP) and data in table EBAF Trunk Phase (EBAFTKPH). Tuple EBAF_PHASE sets the default phase for the entire office. However, table EBAFTKPH allows that phase to be overwritten with a higher phase (determined on an incoming trunk group basis). For more information on the datafill for setting the EBAF Phase, refer to functionality TOPS Expanded BellCORE AMA Format (OSB00001).

If a surcharge has been added to the call for Caller ID Blocking purpose, this amount is reflected on the total amount of charge quoted to the subscriber in the 'Amount of Charge' field of module code 060 'Charges'.

The reserved character (character 9) of module code 310 'Operator Keying Action', is used to record the identification of Caller ID Blocking. If Caller ID Blocking status is set to true, then value 2 is recorded, which means the call is marked Caller ID Blocked. Otherwise, value 1 is recorded, which means Caller ID is not Blocked for this call.

This recording takes place when tuple RECORD_OPERATOR_KEYING_ACTIONS in table TOPAMAOP is set to Y. When a call is marked Caller ID Blocked, then GEN AMA is not allowed, unlike other keying action indicators. For more information on GEN AMA, see functionality TOPS AWT Enhancements (OSB00001).

Following are sample AMA records:

Example AMA record with Module Code 310 (Phase 2)

```
HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:192C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:60102C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C
ORIG NPA:613C  ORIG NUMBER:2391111C  CONNECT TIME:1112305C
ELAPSED TIME:000000103C  OPERATOR IDS:1010100003101C
ACC OPERATOR WORK TIME:00270C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:2C  CALLING NUMBER SOURCE:1C
MODULE CODE:051C  OVERSEAS IND:0C  TERM NPA:00212C
TERM NUMBER:2201111C  COMPLETION IND:001C  RATE IND:1C
OSS CALL COMPLETION CONDITIONS:1111110C
MODULE CODE:310C  KEYING ACTIONS:221111112C
MODULE CODE:311  CORIG CALL TYPE:001C  MODULE CODE:316C
LOCAL INDICATOR:1C  MODULE CODE:000C
```

GR317/GR394 ISUP to/from TOPS (continued)**Example AMA record with Module Code 060 (Phase 2)**

```

HEX ID:AA  STRUCTURE CODE:40752C  CALL CODE:192C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  SERVICE OBSERVED:0C  ORIG NPA:613C
ORIG NUMBER:2391234C  CONNECT TIME:0427380C
ELAPSED TIME:000005230C  OPERATOR IDS:1010200009999C
ACC OPERATOR WORK TIME:00250C  SERVICE FEATURE:000C
STATION SIGNALING IND:2C  SCREENING CODE:000C
CALLED NUMBER INPUT:1C  CALLING NUMBER SOURCE:1C
MODULE CODE:051C  OVERSEAS IND:1C  TERM NPA:00212C
TERM NUMBER:2208978C  COMPLETION IND:001C
RATE IND:1C  OSS CALL COMPLETION CONDITIONS:1111110C
MODULE CODE:060C  CHARGE INDICATOR:2C
AMOUNT OF CHARGE:00150C  WALK OR DEPOSIT AMT:00150C
COIN CREDIT IND:0C  MODULE CODE:000C

```

Station Message Detail Recording

GR317/GR394 ISUP to/from TOPS does not affect Station Message Detail Recording.

Datafilling office parameters

GR317/GR394 ISUP to/from TOPS does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement GR317/GR394 ISUP to/from TOPS. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for GR317/GR394 ISUP to/from TOPS (Sheet 1 of 2)

Table	Purpose of table
TRKGRP	Trunk group defines characteristics of trunks groups.
TRKSGRP	Trunk Subgroup defines characteristics of trunk subgroups.
TRKMEM	Trunk Member defines the hardware for trunks.
ISUPTRK	Integrated Services Digital Network User Part Trunk contains information for ISUP trunks to interact with the TOPS environment
TOPSTOPT	TOPS Trunk Options contains a new field to enable ANI to CLI conversion.
TDBCLASS	TOPS Database Class contains a new field to block the calling number identifier.

GR317/GR394 ISUP to/from TOPS (continued)**Datafill tables required for GR317/GR394 ISUP to/from TOPS (Sheet 2 of 2)**

Table	Purpose of table
TOPSPARM	TOPS Parameters contains a new parameter to enable ANI to CLI conversion.
AABSOST	Automated Alternate Billing Service Originating Station Treatment can now be datafilled with IT and ATC trunk groups.
MCCSOST	Mechanized Calling Card Service Originating Station Treatment can now be datafilled with IT and ATC trunk groups.
TOPEATRK	TOPS Equal Access Trunk can now be datafilled with IT and ATC trunk groups.
TOPSBC	TOPS Billing Codes can now be datafilled with IT and ATC trunk groups.
TOPSACTS	TOPS Automatic Coin Toll Service can now be datafilled with IT and ATC trunk groups.
DNBKSUR	Directory number blocking surcharge. Defines surcharge for blocking calling ID.
DNBKSURI	Directory number blocking surcharge inactive table. Defines surcharge for blocking calling ID.
TMTMAP	Treatment to cause map determines who applies treatment: local or non-local.
TOPAMAOP	TOPS AMA Options contains TOPS office wide AMA parameters

Datafilling table TRKGRP

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TRKGRP. Only those fields that apply directly to GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
	GRPTYP	ATC or IT	This table is not changed. Add ATC or IT trunks as necessary.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table TRKGRP**

GRPKEY	GRPINFO

ISUPTRK1	
IT 0 ELO NCRT 2W NIL MIDL 407 PEA NSCR 619 000 N N \$	
ISUPTRK2	
ATC 0 ELO NCRT 2W NIL MIDL EAP1 SCR3 619 C222 Y EAPLAN	
Y 0 COMB N \$	

Datafilling table TRKSGRP

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TRKSGRP. Only those fields that apply directly to GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Enter tuples for trunks datafilled in table TRKGRP.
SIGDATA		C7UP	Signaling data. Enter C7UP.

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

GRPKEY	CARDCODE	SGRPVAR

ISUPTRK1 0	DS1SIG	C7UP IC N N UNEQ ACTIVEA Q764 THRH ISUP \$ NIL
ISUPTRK2 0	DS1SIG	C7UP IC N N UNEQ ACTIVEA Q764 THRH ISUP \$ NIL
ISUPTRK3 0	DS1SIG	C7UP IC N N UNEQ ACTIVEA Q764 THRH ISUP \$ NIL

Datafilling table TRKMEM

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TRKMEM. Only those fields that apply directly to

GR317/GR394 ISUP to/from TOPS (continued)

GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKSGRP

Field	Subfield or refinement	Entry	Explanation and action
			This table is not changed. Enter tuples for trunks datafilled in table TRKGRP.

Datafill example for table TRKMEM

The following example shows sample datafill for table TRKMEM.

MAP display example for table TRKMEM

CLLI	EXTRKNM	SGRP	MEMVAR
ISUPTRK1	1	0	DTC 0 15 6
ISUPTRK2	2	0	DTC 0 15 7
ISUPTRK3	3	0	DTC 0 15 8

Datafilling table ISUPTRK

Table Integrated Services Digital Network User Part Trunk (ISUPTRK) is a new table created for ISUP trunks which interact with the TOPS environment. It provides screening parameters, equal access information, call source type, an ANI forwarding parameter, an RLT parameter, a CLI Restriction parameter, and a DN lookup indicator. The following table describes the fields:

Datafilling table ISUPTRK (Sheet 1 of 5)

Field	Subfield or refinement	Entry	Explanation and action
GRPKEY		see subfield CLLI	Group key. This field consists of subfield CLLI.
	CLLI	Alphanumeric (up to 16 characters)	Common language location identifier. Enter an ISUP IT or ATC trunk datafilled in table TRKGRP.

GR317/GR394 ISUP to/from TOPS (continued)**Datafilling table ISUPTRK (Sheet 2 of 5)**

Field	Subfield or refinement	Entry	Explanation and action
CONNTYPE		TYPE_A TYPE_B TYPE_D CELL_MOBILE LOCAL_TRANS NONE	Connection type. Indicate how to populate the connection type field in AMA module 150. Entry NONE does not record module 150. Otherwise, the field is recorded according to Bellcore standards. If CONNTYPE is set to a value other than NONE, datafill refinement CARTYPE.
	CARTYPE	IEC or NBEC	Carrier type. Indicate how to populate the company ID field of AMA module 150 if CONNTYPE is not set to NONE. If CARTYPE = IEC, module 150 is populated with the carrier code from table TOPEATRK. If CARTYPE = NBEC, module 150 is populated with the NBEC code from table NBECCODE, if the calling number has an entry. Otherwise, the code is retrieved from the NBECID field of table TRKGRP for ATC trunks or from the NBECID field of ISUPTRK for IT trunks. Field CARTYPE is only visible if CONNTYPE is datafilled with a value other than NONE. Also, this field indicates how the trunk is treated for ADACC screening. If CARTYPE = IEC, the trunk is treated as an IEC. If CARTYPE = NBEC, the trunk is treated as an NBEC. If CARTYPE = NBEC, datafill refinement NBECID.
	NBECID	0000 to 9999	Non-Bell exchange company identifier. Enter the NBEC identifier for ISUP IT trunks if the carrier type is NBEC. This field is only visible if CARTYPE = NBEC.
LCANAME		alphanumeric (4 characters)	Local class of area screening name. Enter the LCA screening class name to reference table LCASCRCN for local call area screening.
NOBILLCD		0 to 999	Number of billing codes. Enter the number of tuples allowed for the trunk CLLI in table TOPSBC.

GR317/GR394 ISUP to/from TOPS (continued)

Datafilling table ISUPTRK (Sheet 3 of 5)

Field	Subfield or refinement	Entry	Explanation and action
CALLSRC		ORIG, TERM, or OPER	Calling source. Enter the call source for the given trunk. Originating end (ORIG), terminating end (TERM), or operator (OPER).
ANI2CLI		N or Y	Automatic number identification. Indicate if a call routing to this outgoing trunk should forward the incoming ANI as CLI in the outgoing IAM for an MF to ISUP call. Entry N does not forward CLI. If set to Y, CLI may be forwarded, depending on tables TOPSTOPT and TOPSPARM. CLI is forwarded if field ANI2CLI is set to Y in tables ISUPTRK and TOPSTOPT, and parameter FORWARD_ANI_AS_CLI is set to Y in table TOPSPARM.

GR317/GR394 ISUP to/from TOPS (continued)**Datafilling table ISUPTRK (Sheet 4 of 5)**

Field	Subfield or refinement	Entry	Explanation and action
	RLTVAR	NONE, RLT_FAR, RLT_REL	Release link trunking variable. This field indicates if this trunk group supports RLT. The values are as follows: - NONE - RLT is not supported. - RLT_REL - This trunk group supports RLT for TOPS05 functionality GR317/GR394 ISUP to/from TOPS, OSEA0005. This functionality only supports ADACC. If call completion fails in the previous office, no alternate, additional support is available. Datafill subfield RLT_VERSION. This trunk group only supports RLT transfer, which uses one trunk for a call. Another name for this value is variant 1. - RLT_FAR - This trunk group supports RLT for TOPS07 functionality TOPS Carrier RLT, OSEA0007. Use this value for TOPS07 and up. This functionality supports more services than RLT_REL. If call completion fails in the previous office, alternate, additional support is available. Datafill subfield RLT_VERSION. RLT transfer and RLT bridging are supported. RLT bridging uses two trunks for a call. Another name for this value is variant 2.

GR317/GR394 ISUP to/from TOPS (continued)**Datafilling table ISUPTRK (Sheet 5 of 5)**

Field	Subfield or refinement	Entry	Explanation and action
	RLT_ VERSION	1 to 15	RLT version. This field keeps the TOPS switch in synchronization with the DMS-250 switch. The values are: 1 - Enter this value for either of the following two cases: - Enter this value if field RLTVAR = RLT_REL. This value causes RLT to operate at a TOPS05 (OSEA0005) level. - Or, enter this value if field RLTVAR = RLT_FAR and the DMS-250 is at software load UCS06 or UCS07. This causes RLT to operate at a TOPS07 (OSEA0007) level. 2 - Enter this value if field RLTVAR = RLT_FAR and the DMS-250 is at software load UCS08 or higher. This causes RLT to operate at a TOPS09 (OSEA0009) level. The default is 1.
SNTPDRST		N or Y	Sent paid restricted. Indicate if calls incoming on this trunk should be restricted from being billed station paid. Enter Y for restriction or N for no restriction.
DNLKUP		N or Y	Directory number lookup. Indicate if the directory number (charge number or calling number if no charge number) should be searched for in tables DNSCRN and SPLDNID for calling station type and billing restrictions. If set to Y and the OLI = 0 or is not present, then the DN lookup is performed. Otherwise, enter N for no search.

Datafill example for table ISUPTRK

The following example shows sample datafill for table ISUPTRK.

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table ISUPTRK**

CLLI	CONNTYPE SNTPDIRST DNLKUP	LCANAME	NOBILLCD	CALLSRC	ANI2CLI	RLT
ISUPTRK1	NONE	NLCA	20	ORIG	N	Y
N	N					
ISUPTRK2	CELL_MOBILE IEC	LCA1	63	TERM	Y	N
Y	N					
ISUPTRK3	TYPE_B NBEC 3333	LCA2	999	ORIG	Y	N
N	Y					

Datafilling table TOPSTOPT

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TOPSTOPT. Only those fields that apply directly to GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSTOPT

Field	Subfield or refinement	Entry	Explanation and action
ANITOCCLI		Y or N	Automatic Number Identification to Calling Line Identification. This new field enables conversion of ANI on an incoming trunk to CLI for an outgoing ISUP trunk. If set to N, ANI is not forwarded as CLI. If set to Y, ANI may be forwarded as CLI, depending on tables ISUPTRK and TOPSPARM. When set to Y, datafill subfield BLKCLI.
	BLKCLI	Y or N	Block Calling Line Identifier. This subfield is present only if field ANITOCCLI = Y. Set BLKCLI = Y to mark all calls incoming on the given trunk as 'presentation restricted'; that is, mark the caller's ID (number) as blocked. Set to N to allow presentation of the CLI. When set to N, table TDBCLASS, field BLKCLI is searched before forwarding the CLI with presentation allowed.

Datafill example for table TOPSTOPT

The following example shows sample datafill for table TOPSTOPT.

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table TOPSTOPT**

GRPKEY	ACDDATA	DISPCLG	ADASERV	ADASANS	ANITOC LI
ISUPTRK1	TOPSACD	Y	NONE	NA	N
ISUPTRK2	QMSCAM N	Y	ADAS	IMMEDIATE	Y Y
ISUPTRK3	TOPSACD	Y	NONE	NA	Y N

Datafilling table TDBCLASS

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TDBCLASS. Only those fields that apply directly to GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TDBCLASS

Field	Subfield or refinement	Entry	Explanation and action
BLKCLI		Y or N	Block Calling Line Identifier. This is a new field that indicates if the calling line identifier (calling number) should be blocked, based on the directory number for MF to ISUP calls. Blocking on a trunk group basis is available in table ISUPTRK. Blocking overrides forwarding of CLI in tables TOPSTOPT, ISUPTRK, and TOPSPARM.

Datafill example for table TDBCLASS

The following example shows sample datafill for table TDBCLASS.

MAP display example for table TDBCLASS

IDX	TDBCLSEL	ARANSEL	EAANI	BLKCLI
1	RSTRCTD 5	Y INSTN	N	Y
2	NOSPLDNID	N	N	N

Datafilling table TOPSPARM

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TOPSPARM. Only those fields that apply directly to

GR317/GR394 ISUP to/from TOPS (continued)

GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPARM

Parameter name	Explanation and action
FORWARD_ANI_AS_CLI	Forward Automatic Number Identification as Calling Line Identification. This new parameter enables conversion of ANI on an incoming trunk to CLI for an outgoing ISUP trunk. If set to N, ANI is not forwarded as CLI. If set to Y, ANI may be forwarded as CLI. Forwarding of CLI also depends on table ISUPTRK, field ANI2CLI, and table TOPSTOPT, field ANITOCCLI. ANI is forwarded as CLI only if all 3 values are set to Y.
AABS_OPTIMIZATION	This parameter determines whether optimization can be used for Automated Alternate Billing System (AABS) calls. This parameter has two states: ON and OFF. When set to OFF and the parties go on-hook, the DMS switch waits for a message from the automated voice system (Voice Service Node - VSN, or Interactive Voice System - IVS) before releasing the port. When this parameter is set to ON, the DMS switch automatically releases the port when the parties go on-hook. This parameter must be set to OFF for AABS calls to the VSN and ON for AABS calls to the IVS. The following paragraph explains these requirements. The VSN is upgraded to support this functionality, but the IVS is not upgraded. Since ISUP calls cannot use AABS optimization, this parameter must be OFF for the VSN and ON for the IVS. This is also true for non-ISUP calls since the VSN does not differentiate between ISUP and non-ISUP calls. When the IVS is upgraded, this parameter will not be necessary.

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
-----	-----
AABS_OPTIMIZATION	OFF
FORWARD_ANI_AS_CLI	N

GR317/GR394 ISUP to/from TOPS (continued)

Datafilling table AABSOST

This table is not changed. However, IT and ATC trunk groups can now be datafilled.

Datafill example for table AABSOST

The following example shows sample datafill for table AABSOST.

MAP display example for table AABSOST

GRPKEY	PUBLIC	PRIVATE

ISUPTRK1	SERV TONEANN	SERRV TONEANN
ISUPTRK2	SERV TONEANN	SERRV TONEANN

Datafilling table MCCSOST

This table is not changed. However, IT and ATC trunk groups can now be datafilled.

Datafill example for table MCCSOST

The following example shows sample datafill for table MCCSOST.

MAP display example for table MCCSOST

GRPKEY	PUBLIC	PRIVATE

ISUPTRK1	SERV TONEANN	SERRV TONEANN
ISUPTRK2	SERV TONEANN	SERRV TONEANN

Datafilling table TOPEATRK

This table is not changed. However, IT and ATC trunk groups can now be datafilled.

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK.

GR317/GR394 ISUP to/from TOPS (continued)**MAP display example for table TOPEATRK**

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			

ISUPTRK1	CONFORM	0111	L123	STRA	STER	SOVS
619	Y	Y	\$			

Datafilling table TOPSBC

This table is not changed. However, IT and ATC trunk groups can now be datafilled.

Datafill example for table TOPSBC

The following example shows sample datafill for table TOPSBC.

MAP display example for table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALB	CHGCLSS

ISUPTRK1	322	LCA1	NSCR	619322	TOPS
ISUPTRK2	522	NLCA	NSCR	619522	TOPS

Datafilling table TOPSACTS

This table is not changed. However, IT and ATC trunk groups can now be datafilled.

Datafill example for table TOPSACTS

The following example shows sample datafill for table TOPSACTS.

MAP display example for table TOPSACTS

CLLI	ACTSSERV	LARGECHG

ISUPTRK1	MAYSERV	2500
ISUPTRK2	MAYSERV	2500

Datafilling table DNBKSUR

Directory Number Blocking Surcharge (DNBKSUR) is a new table which is used to define the applicable surcharge on calls which are Caller ID Blocked

GR317/GR394 ISUP to/from TOPS (continued)

and are rated by the TOPS real-time rating system. The table defines a different surcharge for each service class and is indexed by the call completion type.

Datafilling table DNBKSUR

Field	Subfield or refinement	Entry	Explanation and action
CLDTYPE		UNKOWN, DOM, DOMIC, OVS, VFY, OPR, LOC, VCA, UCA, OGT, ZEN, SRV, REQ	Call completion type. Key to table. The types are defined as follows: • UNKOWN - Unspecified • DOM - Toll (intralata) • DOMIC - Toll (interlata) • OVS - Overseas • VFY - Verify • OPR - Operator • LOC - Local • VCA - Vacant code announcement • UCA - Unauthorized code • OGT - Outgoing trunk • ZEN - Zenith • SRV - Service • REQ - Required
UNSPEC		0 to 1000	Unspecified. The amount of caller ID blocking surcharge applied to calls whose originating class of service is unknown.
STA		0 to 1000	Station. The amount of caller ID blocking surcharge applied to calls whose originating class of service is station.
HOTEL		0 to 1000	Hotel. The amount of caller ID blocking surcharge applied to calls whose originating class of service is hotel.
COIN		0 to 1000	Coin. The amount of caller ID blocking surcharge applied to calls whose originating class of service is coin.
REST		0 to 1000	Restricted. The amount of caller ID blocking surcharge applied to calls whose originating class of service is restricted.

GR317/GR394 ISUP to/from TOPS (continued)**Datafill example for table DNBKSUR**

The following example shows sample datafill for table DNBKSUR.

MAP display example for table DNBKSUR

CLDTYPE	UNSPEC	STA	HOTEL	COIN	REST
LOC	0	0	75	80	75
DOM	0	25	75	50	25
OVS	0	0	0	0	0
SRV	0	25	75	55	75

Datafilling table DNBKSURI

Table DNBKSURI is an inactive duplicate of table DNBKSUR. It is used for Mass Table Control when using the MASSTC command. For more information on the MASSTC command, refer to the data schema section of this document, table CHARGEI.

Datafilling table TMTMAP

If an unsuccessful connection occurs for ISUP to TOPS calls, table TMTMAP determines the responsibility for applying treatment: originating node (non-local) or TOPS office (local).

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TMTMAP. Only those fields that apply directly to GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TMTMAP

Field	Subfield or refinement	Entry	Explanation and action
TMTMPKEY	PROTOCOL	ISUP	Treatment key, protocol. Enter ISUP. Note, this table is not changed.

Datafill example for table TMTMAP

The following example shows sample datafill for table TMTMAP.

GR317/GR394 ISUP to/from TOPS (continued)

MAP display example for table TMTMAP

TMTMPKEY	TMTMPVAR								

ISUP	NOSC	ALLBC	ISUP	NOLOCAL	NOCIRCAV	LOCLNET	N		

Datafilling table TOPAMAOP

The following table shows the datafill specific to GR317/GR394 ISUP to/from TOPS for table TOPAMAOP. Only those fields that apply directly to

GR317/GR394 ISUP to/from TOPS (continued)

GR317/GR394 ISUP to/from TOPS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPAMAOP

Parameter	Explanation and action
RECORD_RLT_REL_MODULE_123	This parameter allows AMA Module 123 to be recorded on the billing record for calls using the RLT REL variant service. Note: The RLT REL variant provides RLT by the ISUP GAP (Generic Address Parameter) and SAP (Service Activation Parameter) parameters to transport call completion information to the previous office. These parameters are appended to the ISUP REL message once it is determined that RLT is capable. This variant is used by datafilling the RLT field to RLT_REL in table ISUPTRK. This enhancement is made since the method of recording the RLT service on AMA, by the Service Identification field in AMA Module 055, may be overwritten by a custom service datafilled from either table TQMSSERV or AMASRVID. Since only one service AMA module is allowed per call, the existing AMA Module 123 is chosen as an optional method to record the RLT REL variant service. RECORD_RLT_REL_MODULE_123 - enables/disables AMA Module 123 from appearing on RLT REL variant calls. When set to Y the AMA Module 123 is appended to the AMA record for RLT REL variant calls. When set to N the AMA Module is not appended to the AMA record. When the parameter is set to Y for RLT REL variant calls the AMA Module 123 fields are set as follows. The billing identifier field, Table 804, is set to all 0s and the application identifier field, Table 802, is set to '001' - TOPS RLT. Therefore, the AMA record indicates that RLT service was provided (application id is 001), but record matching was not provided (billing id is all 0s). This activity does not change how RLT or TOPS custom services are recorded on AMA Module 055 by the Service Indication field, Table 283. This activity does not change how AMA Module 123 is recorded for RLT variant FAR calls.

Datafill example for table TOPAMAOP

The following example shows sample datafill for table TOPAMAOP.

GR317/GR394 ISUP to/from TOPS (end)

MAP display example for table TOPAMAOP

AMAOPT	OPTINFO

RECORD_RLT_REL_MODULE_123	Y

Translation verification tools

GR317/GR394 ISUP to/from TOPS does not use translation verification tools.

SERVORD

GR317/GR394 ISUP to/from TOPS does not use SERVORD.

OLNS IntraLATA Presubscription

Ordering codes

Functional group ordering code: OSEA00001

Functionality ordering code: OSEA00006

Release applicability

NA006 and up

OLNS IntraLATA Presubscription was introduced in NA006.

Prerequisites

To operate, OLNS IntraLATA Presubscription has the following prerequisites:

- BAS Generic, BAS00001
- Operator Services Basic, OSB00001
- Operator Services Equal Access, OSEA00001
- TOPS OLNS Interface, ABS00012

Description

OLNS IntraLATA Presubscription (ILP) is provided by the following feature:

Features in functionality

Feature number	Feature name
AN1842	OLNS IntraLATA Presubscription (ILP)

Originating Line Number Screening (OLNS) IntraLATA Presubscription (ILP) allows a subscriber to pre-select an intra-local access and transport area (LATA) carrier for a 0- or directory assistance call completion (DACC) intraLATA toll and assist (TA) call. This carrier may differ from the preferred interLATA carrier or the local service provider. Then, Originating Line Number Screening (OLNS) can be used to retrieve the ILP carrier information for the originating line from the Line Information Database (LIDB).

ILP is not supported for intercept call completion (INTCC) so the DMS switch leaves control of the call with the local exchange carrier (LEC).

In an end office, ILP capability was available prior to this functionality for 0+ and 1+, but not 0- calls. At the local exchange office, calls determined to be ILP eligible are routed to the preferred intraLATA carrier.

OLNS IntraLATA Presubscription (continued)

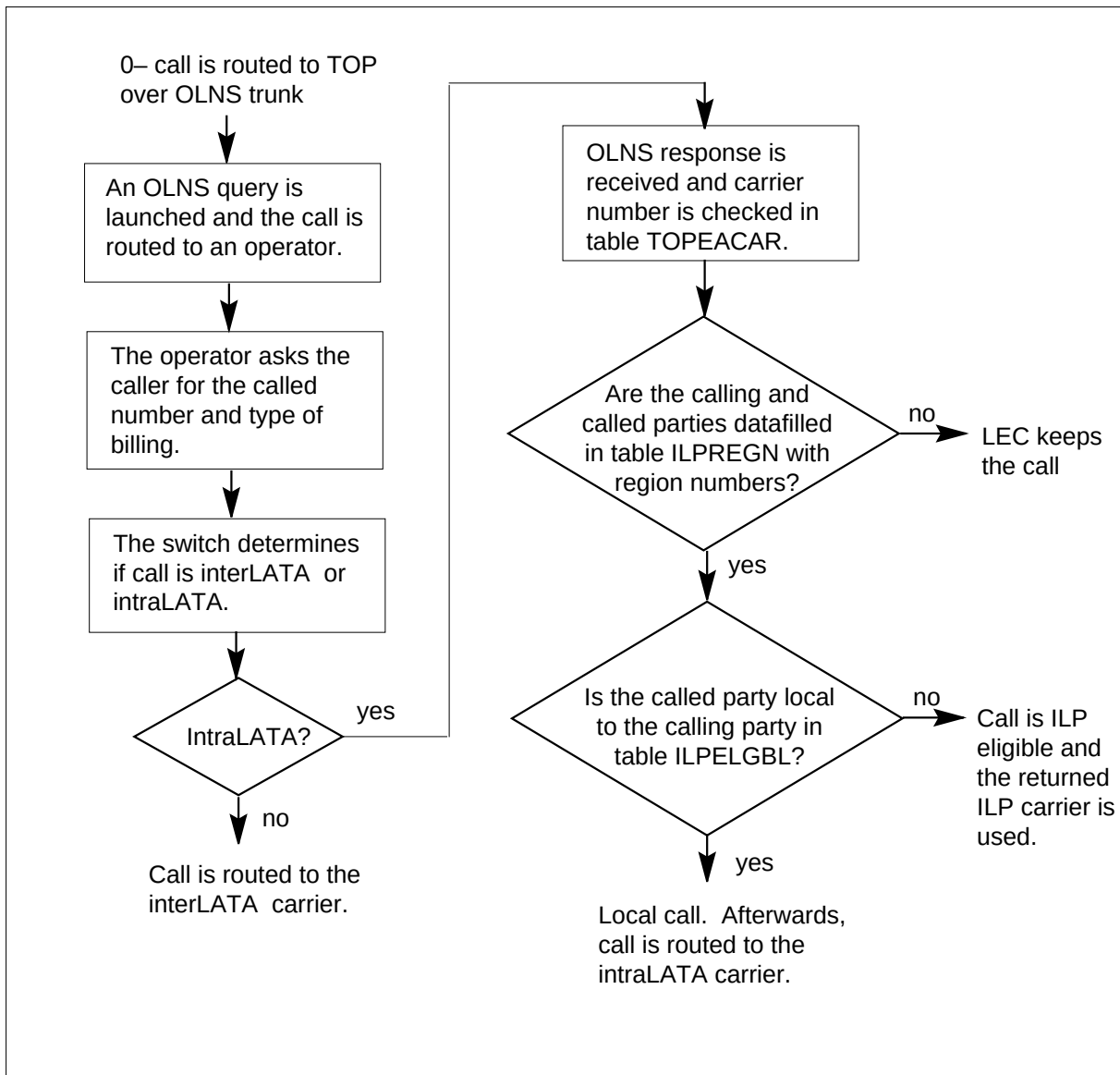
Prior to this functionality, intraLATA calls at TOPS position could not have an associated carrier. All intraLATA calls were assumed to be the property of the LEC.

Operation

0- TA calls

Following is the call flow for 0- TA calls:

Call flow for 0- TA calls



OLNS IntraLATA Presubscription (continued)

With the TOPS OLS functionality active and a call incoming on an OLS trunk, an OLS query is launched prior to call arrival at the operator. With the OLS ILP functionality also active, ILP information is requested from the LIDB and returned in the response message.

When the call arrives at the operator position, the operator asks the calling subscriber for the called number and billing information. On entry of the called number, the switch determines the call destination of interLATA or intraLATA. If interLATA, then the call is not ILP eligible.

If the call is IntraLATA, the OLS ILP response is checked for valid carrier information including the carrier number in table TOPEACAR. If the carrier is invalid, a TOPS 127 Log "Invalid IntraLATA toll carrier digits" is generated so the DMS switch leaves control of the call with the LEC. If the information is invalid or missing, the call is no longer considered eligible for ILP so the DMS switch leaves control of the call with the LEC.

After the OLS ILP parameter checks have passed, new tables ILPREGN (ILP region) and ILPELGBL (ILP eligibility) are used to further determine ILP eligibility.

Table ILPREGN identifies regions for the calling and called party numbers. These regions are used to access table ILPELGBL. If the two regions are local to each other, the call is a local call and retained by the LEC. However, if the calling region does not include the called region, the call is ILP eligible and the returned ILP carrier is used as the carrier for the call.

Note: If the called number's region is the same as the calling number's region, the call is considered a local call and does not have to be explicitly datafilled in table ILPELGBL.

Following is sample datafill for table ILPREGN:

MAP display example for table ILPREGN

NPANXX	REGNUM
3152	1
31533	2
315440	3

The region number from table ILPREGN is used as an index into table ILPELGBL. Following is sample datafill:

OLNS IntraLATA Presubscription (continued)

MAP display example for table ILPELGBL

CLGREGN	LCLREGNS

1	(2)\$
2	(1 3)\$
3	(2)\$

If the calling number has no local regions, it does not have to be datafilled in ILPELGBL. If the called party region is the same as the calling party region, the call is considered local and ILPELGBL is not accessed. It is also assumed a region is local to itself and does not have to be explicitly datafilled in ILPELGBL. Following is an example of an unnecessary tuple since it has no other local regions and need not indicate itself:

MAP display example for table ILPELGBL with unnecessary tuple

CLGREGN	LCLREGNS

4	(4)\$

If the entry in ILPELGBL for the calling number's region includes the called number's region, the call is retained by the LEC. However, if this region does not include the called region, the call is ILP eligible.

As an example, suppose the calling and called numbers are as follows:

Calling Number: 3152210000

Called Number: 3154401111

The DMS switch determines that the call is intraLATA. The calling number is in region 1, and the called number is in region 3. Examination of the ILPELGBL tuple with a key of 1 shows that the called number's region is not in the list of local regions. Therefore, the call is ILP eligible.

Note, field LCLREGNS in table ILPELGBL denotes regions which are local to the CLGREGN region. Therefore, ILP functionality does not apply.

OLNS IntraLATA Presubscription (continued)

Following are possible table datafills:

- If the calling party is not in table ILPREGN for a given call, then ILP functionality does not apply and the LEC keeps the call.
- If the called party is not in table ILPREGN for a given call, then ILP functionality does not apply, and the LEC keeps the call.
- If the calling region is not in table ILPELGBL for a given call, the call is considered ILP eligible and the returned ILP carrier is used to handle the call.
- If the calling region is in table ILPELGBL for a given call and the called party region is in the list of local regions, then the call is considered local and ILP functionality does not apply and the LEC keeps the call.
- If the calling region is in table ILPELGBL for a given call and the called party region is not in the list of local regions, then the call is considered ILP eligible and the returned ILP carrier is used to handle the call.

Call handling based on returned OLS information

The returned OLS information (the ILP carrier indicator parameter and the ILP carrier number parameter) is used to determine call handling by the DMS switch. This is different from OLS where response indicators are input to tables OLSSTARS and OLSNDARS for call handling. However, the OLS verification (OLNSVER) CI increment can be used to examine the OLS ILP

OLNS IntraLATA Presubscription (continued)

response. This tool is described in functionality TOPS OLN Interface, ABS00012. Possible OLS ILP responses and call handling are as follows:

Returned OLS ILP parameters and ILP eligibility (Sheet 1 of 2)

Returned		Effects on ILP eligibility
ILP Carrier Indicator parameter	ILP Carrier Number parameter	
ILP CIC Indicated	Carrier number	Check to see if the carrier returned is valid (that is, datafilled in table TOPEACAR). If the returned carrier is the LEC, the carrier number must be datafilled in TOPEACAR. If it is then the ILP tables ILPREGN and ILPELGBL are accessed to see if the call is ILP eligible. If the call is determined to be ILP eligible, screen displays indicate that this is a carrier call. On release of the call from the operator, the call is routed to the carrier returned. If the carrier is invalid, a TOPS 127 Log "Invalid IntraLATA toll carrier digits" is generated and control of the call should remain with the LEC.
ILP CIC Indicated	No carrier number or missing parameter.	Since no carrier is associated with the call, the LEC retains control of the call and ILP processing stops.
Screened, ILP CIC Not Indicated, ILP CIC denied, Not Indicated - ILP does not exist, Not Indicated - IntraLATA toll calls not allowed, out of range, or missing parameter.	Carrier number	In these cases a carrier should not be returned by the LIDB so the LEC retains control of the call and ILP processing stops.

OLNS IntraLATA Presubscription (continued)**Returned OLNS ILP parameters and ILP eligibility (Sheet 2 of 2)**

Returned		Effects on ILP eligibility
ILP Carrier Indicator parameter	ILP Carrier Number parameter	
Screened, ILP CIC Not Indicated, ILP CIC denied, Not Indicated - ILP does not exist, Not Indicated - IntraLATA toll calls not allowed, out of range, or missing parameter.	No carrier number or missing parameter.	Since no carrier is associated with the call, the LEC retains control of the call.
OLNS error message or no database response (time-out)		Since no carrier is associated with the call, the LEC retains control of the call.

The ILP Carrier Indicator parameter values are described in the following table:

ILP indicator values

ILP Carrier Indicator parameter	Meaning
0: Screened Data	The ILP carrier number is not returned by the OLNS LIDB because the switch launching the LIDB query is not authorized to receive this information.
1: Not Indicated	The ILP carrier number is not returned by the OLNS LIDB. This value is used whenever values 4 and 5 do not apply.
2: Indicated	The ILP carrier number is returned by the OLNS LIDB.
3: Denied	The ILP carrier number is not returned by the OLNS LIDB because the customer is denied by the carrier for reasons such as nonpayment.
4: Not Indicated- ILP does not exist	The ILP carrier number is not returned by the OLNS LIDB because ILP does not exist for the line number.
5: Not indicated- ILP eligible calls not allowed	The ILP carrier number is not returned by the OLNS LIDB because ILP calls are not allowed from this line.

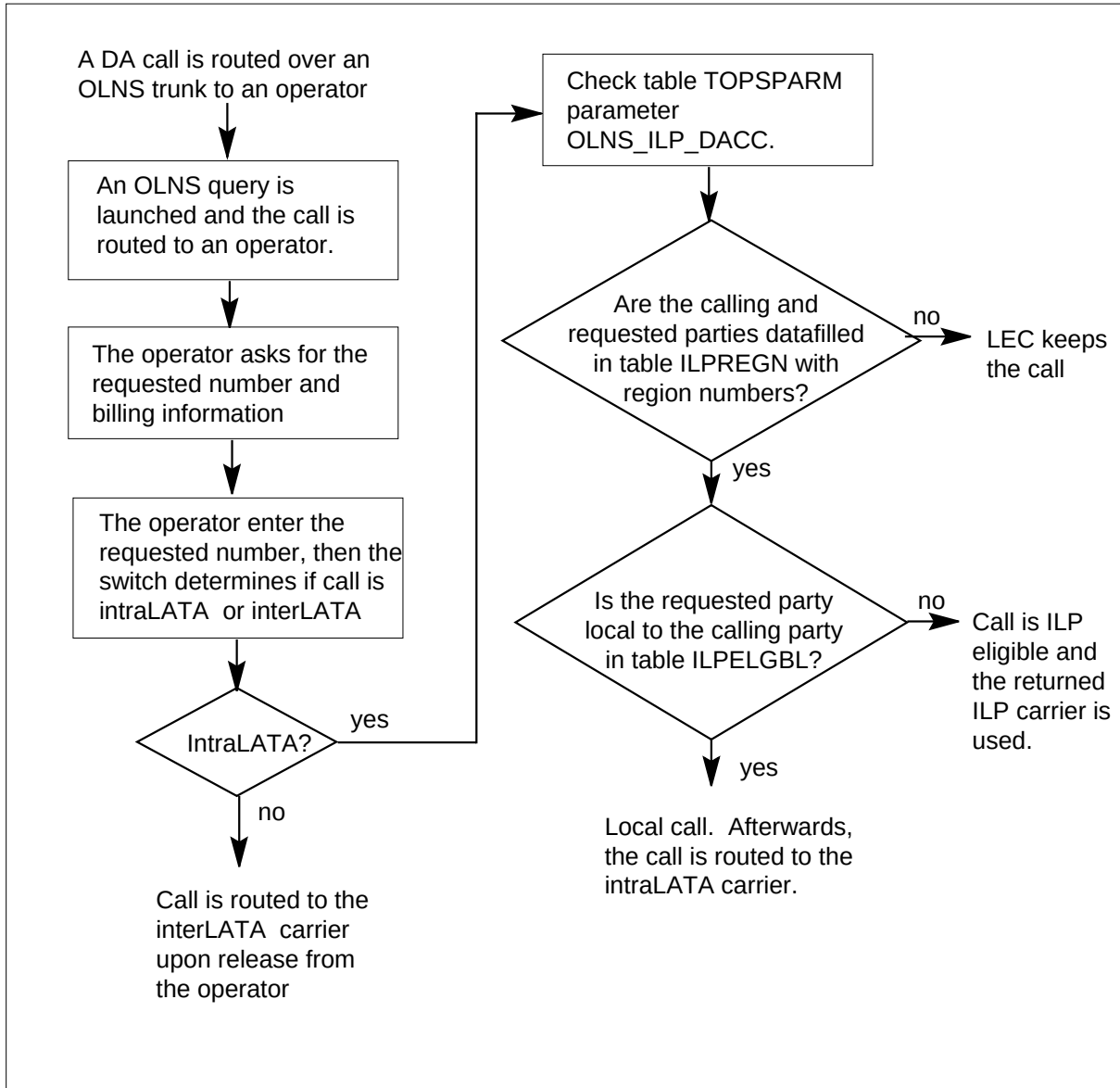
OLNS IntraLATA Presubscription (continued)

When the returned OLSN information is received, the ILP Carrier Indicator parameter is checked first. Only if it returns ILP CIC Indicated is the ILP Carrier Number parameter examined. If the returned carrier number is valid, then tables ILPREGN and ILPELGBL are accessed. However, if the carrier number is not valid, ILP processing stops and the LEC keeps the call.

Also, ILP processing stops and the LEC keeps the call if the returned ILP Carrier Indicator parameter is other than ILP CIC Indicated.

DACC calls

Following is the call flow for DACC calls:

OLNS IntraLATA Presubscription (continued)**Call flow for DACC call**

Call processing is the same as for the previously described 0- calls, except that table TOPSPARM parameter OLNS_ILP_DACC is checked prior to accessing table ILPREGN. If the parameter is set to Y, then ILP processing continues the same as for 0- calls. If the parameter is set to N, then ILP does not support DACC calls and the call should remain with the LEC.

OLNS IntraLATA Presubscription (continued)

Optionality

This functionality is an option, controlled by Software Optionality Control (SOC). Following are the requirements:

- For base OLNS functionality, the TOPS OLNS Interface SOC option (ABS00012) must be activated and the incoming trunk must support OLNS.
- For OLNS ILP functionality, the SOC option OLNS ILP (OSEA0006) must also be activated. The TOPS OLNS Interface SOC option must be activated before the OLNS ILP SOC option is allowed to be activated.

For information on using SOC, please refer to the *Software Optionality Control User's Manual*, 297-8991-901.

LOGS

A TOPS 127 log "Invalid IntraLATA toll carrier digits" is generated when a returned ILP carrier is invalid.

OMs

TOPSEA OM group OMs are pegged.

Translations table flow

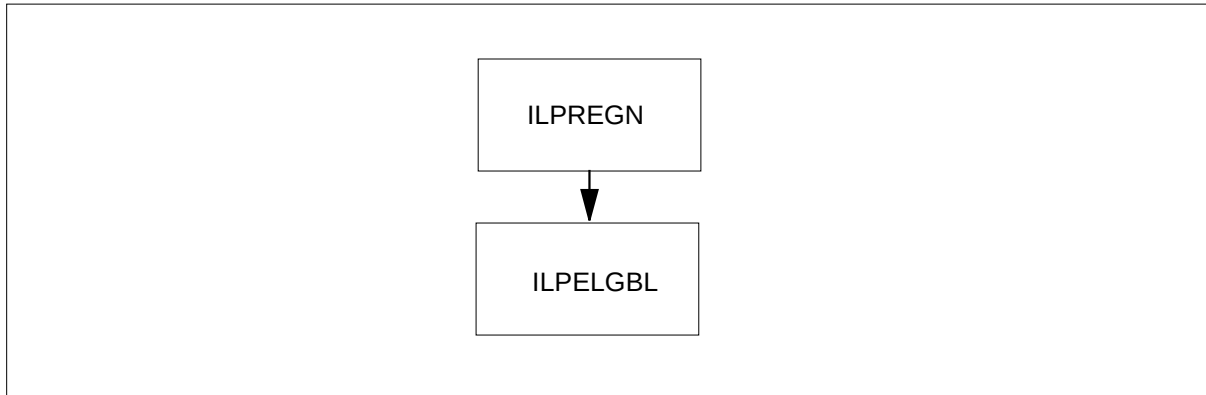
The OLNS IntraLATA Presubscription translations tables are described in the following list:

- Table ILPREGN determines the region number of the calling and called number.
- Table ILPELGBL determines if the called and calling numbers are in same region.

The OLNS IntraLATA Presubscription translation process is shown in the flowchart that follows.

OLNS IntraLATA Presubscription (continued)

Table flow for OLNS IntraLATA Presubscription



The following table lists the datafill content used in the flowchart.

Datafill example for OLNS IntraLATA Presubscription

Datafill table	Example data	
ILPREGN	3152	1
ILPELGBL	1	(2)\$

Limitations and restrictions

The following limitations and restrictions apply to OLNS IntraLATA Presubscription:

- For calls where an OLNS query is launched, OLNS increases the subscriber post-dial delay by the amount of time required for the query to and response from the database.
- OLNS ILP is only supported for the U.S. market.
- OLNS only applies to non-ISUP calls on incoming TOPS trunks and ISUP calls on incoming IT and ATC trunks. The supported signalling types on TOPS trunks are BELLANI, MOD_BELLANI, OSSANI, EAOSS, EAOSSIC, EAFGD, and COMFGD.
- OLNS ILP applies to 0- calls, and DACC calls based on the TOPSPARM parameter OLNS_ILP_DACC.
- It is necessary to upgrade and activate the OLNS LIDB database prior to up-versioning the TOPS DMS software. However, for full functionality, both should be at the same OLNS level.

OLNS IntraLATA Presubscription (continued)

Interactions

The following paragraphs describe the interactions between OLS IntraLATA Presubscription and other functionalities.

This functionality is used in conjunction with functionality TOPS OLS Interface, ABS00012.

Activation/deactivation by the end user

OLNS IntraLATA Presubscription requires no activation or deactivation by the end user.

Billing

OLNS ILP carrier calls use call code 190, structure code 0772 and module code 053 or 054. See functionality TOPS OLS Interface, ABS00012, for more information.

Station Message Detail Recording

OLNS IntraLATA Presubscription does not affect Station Message Detail Recording.

Datafilling office parameters

OLNS IntraLATA Presubscription does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement OLS IntraLATA Presubscription. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for OLS IntraLATA Presubscription

Table	Purpose of table
ILPELGBL	OLNS IntraLATA Presubscription Eligibility determines if the called and calling numbers are in same region.
ILPREGN	OLNS IntraLATA Presubscription Region Number determines the region number of the calling and called number.
TOPSPARM	TOPS parameters contains a new parameter that determines is OLS ILP handles DACC calls

Datafilling table ILPELGBL

OLNS IntraLATA Presubscription Eligibility is a new table that determines if the called number is in the same local region as the calling number. If so, the

OLNS IntraLATA Presubscription (continued)

call is not ILP eligible, but handled by the Local Exchange Carrier (LEC). Table ILPELGBL is accessed by the region number given in table ILPREGN. Then, table ILPELGBL provides a list of region numbers in the calling numbers local region.

There are no datafill sequence requirements.

Following is a description of the table:

Datafilling table ILPELGBL

Field	Subfield or refinement	Entry	Explanation and action
CLGREGN		0 to 1999	Calling party region. This is the key to the table and is indexed from table ILPREGN.
LCLREGNS		up to 220 numbers defined in ILPREGN	Local calling party region. Enter up to 20 region numbers defined in table ILPREGN, field REGNUM, that are local to this calling party region. The regions that are local to the calling party are not ILP eligible, but handled by the LEC.

Datafill example for table ILPELGBL

The following example shows sample datafill for table ILPELGBL.

MAP display example for table ILPELGBL

CLGREGN	LCLREGNS
3	4\$

If the calling number has no local regions, it does not have to be datafilled in ILPELGBL. If the called party region is the same as the calling party region, the call is considered local, so ILPELGBL is not accessed, and the call does not have to be explicitly datafilled in table ILPELGBL. It is also assumed a region is local to itself and does not have to be explicitly datafilled in ILPELGBL. (This is the same condition as when the calling and called party are in the same region.) Following is an example with unnecessary datafill:

OLNS IntraLATA Presubscription (continued)

MAP display example for table ILPELGBL with unnecessary datafill

CLGREGN	LCLREGNS
3	(3 4)\$
4	(4)\$

In tuple 3 above, field LCLREGNS does not require value 3 since this indicates the region is local to itself (which is the same as when the calling and called party are in the same region). Tuple 4 is not necessary since it indicates the region is local to itself and has no local regions.

Datafilling table ILPREGN

OLNS IntraLATA Presubscription Region Number is a new table that determines the region numbers of the calling and called numbers.

There are no datafill sequence requirements.

Following is a description of the table:

Datafilling table ILPREGN

Field	Subfield or refinement	Entry	Explanation and action
NPANXX		up to 18 digits	Numbering plan area and office code. This is the key to the table. Enter the calling or called number. The range on the MAP display indicates up to 18 digits (which are used by the system); however, it is recommended to enter only up to 6 digits.
REGNUM		0 to 1999	Region number. A region defined by this table for determining intraLATA toll calls for ILP eligibility. This is an index into table ILPELGBL.

Datafill example for table ILPREGN

The following example shows sample datafill for table ILPREGN.

OLNS IntraLATA Presubscription (end)**MAP display example for table ILPREGN**

NPANXX	REGNUM
-----	-----
3152	1
31533	2
315440	3
315670	4

Datafilling table TOPSPARM

A new parameters are added, described in the following table:

Datafilling table TOPSPARM

Field PARMNAME	Field PARMVAL	Explanation and action
OLNS_ILP_DA CC	Y or N	Originating line number screening intraLATA presubscription directory assistance call completion. This parameter indicates whether ILP should be offered on intraLATA toll DACC calls. The values are Y (offer ILP) and N (do not offer ILP).

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
-----	-----
OLNS_ILP_DACC	Y

Translation verification tools

OLNS IntraLATA Presubscription does not use translation verification tools.

SERVORD

OLNS IntraLATA Presubscription does not use SERVORD.

Operator Services Network Capability

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: OSEA0102

Release applicability

TOPS13 and up

TOPS13 introduced Operator Services Network Capability.

Requirements

To operate, Operator Services Network Capability requires the functional groups that follow:

- Base Generic, BAS00003
- Operator Services Basic, OSB00101
- Operator Services Equal Access, OSEA0101
- GR317/394 ISUP to/from TOPS, OSEA0102

Description

This functionality is provided by the following features:

Feature number	Feature name
59012548	OSNC Call Originations (TOPS13)
59014265	OSNC Mid-call Flows (TOPS13)
59014261	OSNC Call Terminations (TOPS13)
59014276	OSNC Release Call Flows (TOPS13)

The functionality implemented by the OSNC activity is divided into the following areas described below:

- incoming connections
- outgoing connections
- mid-call functionality
- release of connections
- Automatic Message Accounting (AMA)

Operator Services Network Capability (continued)

- connectivity to other signaling types
- upgrade strategy

Operation

The contents of the Operation section are as follows:

- Background
- Feature Overview
- Full and limited interworking
- Incoming connections
 - general call originations
 - inward calls
 - intercept calls
- Outgoing connections
 - Outgoing initial address message (IAM)
 - Process of Address Complete Message (ACM), Call Progress (CPG), and Answer Message (ANM)
- Mid-call functionality
- Releasing connections
- Upgrade strategy

Background

Efforts to connect Integrated Services Digital Network User Part (ISUP) signaling to TOPS have been a gradual process. PRSDOC BK04281, which was developed as part of the OSB00001 functionality TOPS Call Processing Features (Call Processing), provided basic support of ISUP connections to TOPS. In the TOPS05 release, feature AN1515, ISUP to TOPS Enhancements, provided additional support to allow calls that used ISUP signaling to connect to TOPS environments and to receive operator services call processing.

The signaling that AN1515 provided is referred to as TOPS/ISUP. When this feature was introduced, the signaling described in the Generic Requirement (GR)-1144 was not ready to use in any market. The purpose of AN1515 was to serve an interim solution to connect TOPS switches to the ISUP network before general use of Operator Services Signaling System 7 (OSS7). OSS7 is the version of ISUP that supports operator services.

Operator Services Network Capability (continued)

Feature Overview

The OSNC functionality is the TOPS deployment of GR-1144, Section 6: Common Channel SS7, and it enhances the functionality that AN1515 provided. All functionality available under TOPS/ISUP functionality is also available to calls that require OSNC functionality. Calls that require OSNC can be received on the same trunks as TOPS/ISUP calls.

The functionality provided by the OSNC activity allows use of a greater variety of services over ISUP. The functionality implements the following services for ISUP:

- connection hold
- coin signaling
- network recall
- forwarding of parameters received
- the ability to combine direct-dialed (DD) and operator calls on the same trunk group
- end-to-end signaling

GR317/394 ISUP to/from TOPS

Development for this OSNC activity also introduced changes to the TOPS/ISUP functionality. These changes are documented in the translations description entitled GR317/GR394 ISUP to/from TOPS (OSEA0102).

Full and limited interworking

TOPS provides full interworking for calls that meet certain criteria. The term full interworking means that all information about the incoming connection is forwarded on the outgoing connection. When the call is floated, information about the outgoing connection is also forwarded on the incoming connection. TOPS provides full interworking for calls requiring OSNC functionality that:

- receive TOPS processing
- are completed on an outgoing ISUP trunk for which the datafill in the route list indicates that OSNC capabilities are available for the outgoing route

TOPS also provides limited interworking for calls requiring OSNC functionality that are completed on an outgoing MF trunk that supports BELLI, BELLII, EAPLAN or Intertoll MF signaling.

Note: EAPLAN refers to the DMS version of outgoing EAOSS signaling. Any outgoing MF signaling other than those listed here are not supported.

Operator Services Network Capability (continued)

Limited interworking means that only some information on the incoming connection is forwarded on the outgoing connection.

When limited interworking is provided for a call and the call is floated, there is no information to forward on the incoming connection other than information in the CPG that indicates interworking encountered. There is no information to forward because called party information cannot be received from the outgoing MF trunk. When a connection using the limited interworking described in this is established, TOPS ends connection hold on the incoming connection.

Furthermore, limited interworking is provided for calls requiring OSNC functionality that have both of the following:

- receive TOPS processing
- are completed on an ISUP trunk for which the datafill in the route list does not indicate that OSNC capabilities are available for the outgoing route.

When the call is floated, there is no information forwarded on the incoming connection other than information in the CPG that indicates that interworking was encountered.

Refer to the *OSNC Protocol Specification* for details on the messages and the signals sent over the incoming and outgoing connections for limited interworking. The OSNC functionality does not change the current interworking of incoming MF to outgoing TOPS/ISUP signaling.

Interworking between ISUP coin signaling and MF coin signaling is not supported.

Incoming connections

The OSNC functionality affects three types of call originations:

- general call originations
- inward calls
- intercept calls

General call originations

General call originations include operator handled (0-), operator assisted (0+), directory assistance (DA), and 1+ screened. The called digits and the Originating Line Information (OLI) in the incoming initial address message (IAM) identify general call originations. The identified parameters received in an incoming IAM are stored for later use in the call.

Operator Services Network Capability (continued)

OSNC functionality for general call originations is enabled through the following messages:

- Using the incoming IAM to identify calls requiring OSNC functionality
- Processing other information in the incoming IAM
- Address Complete Message
- Call Progress

Using the incoming IAM to identify calls in the incoming IAM

When a call arrives at a TOPS office, there are two questions to consider:

- Does the call require OSNC functionality?
- Is the call eligible for TOPS call processing?

The following steps describe how these questions are answered:

- 1 Signaling is checked to determine if the call requires OSNC functionality. The feature code indicator (FCI) in the service activation parameter (SAP) indicates if a call requires OSNC functionality. The SAP is part of the incoming IAM.

Calls that contain an SAP with one of these FCIs require OSNC functionality and are marked as intercept calls:

- intercept-blank number
- intercept-trouble
- intercept-regular

For all other calls, the presence of an SAP containing an FCI of HOLD AVAILABLE or HOLD NOT AVAILABLE in the incoming IAM indicates that the call requires OSNC functionality.

If no SAP is present, or the FCI is not set to a value listed above, the call does not require OSNC functionality.

If the call does not require OSNC functionality, it is treated as a TOPS/ISUP call.

If the call does require OSNC functionality, processing continues with the following steps.

- 2 If the call requires OSNC functionality, TOPS software verifies whether the OSNC SOC option, OSEA0102, is active. If the SOC state is IDLE, then the call is downgraded to TOPS/ISUP functionality, and a TOPS613 log is generated. This log indicates that the OSNC SOC is not enabled. If the SOC state is ON, call processing continues with the next step.
- 3 When a call arrives at TOPS on an ISUP trunk, TOPS software checks datafill entered in table ISUPTRK. In order for a call to be eligible for OSNC TOPS call processing, the ISUP trunk that is carrying the call must be datafilled in table ISUPTRK.

If the call is not datafilled in ISUPTRK, then the call is treated as a tandem call. After the call is treated as a tandem call, control of the call returns to DMS ISUP processing. In this case, TOPS no longer has control of the call, including generation of the outgoing IAM, processing of subsequent

Operator Services Network Capability (continued)

messages, billing and translations. Tandem calls use standard DMS translations, not TOPS translations.

Calls arriving in a TOPS office that are not datafilled in table ISUPTRK cannot receive full operator services processing. Therefore, translations datafill for trunks that are not datafilled in table ISUPTRK should not route calls to TOPS through a T-selector. Even though the datafill is not blocked, this scenario is unsupported.

- 4 The following items are used to determine if an operator is necessary for the call:
- the Nature of Address (NOA) from either a modified or basic NOA. The modified NOA consists of an Operator Services Information (OSI) parameter and the called party number (CDN) NOA in the IAM. The basic NOA consists of the CDN NOA in the IAM. TOPS supports the modified and basic NOAs.
 - the Originating Line Information (OLI)
 - translations of the called digits

If the call is a coin, hotel, or special call, then it is considered an operator call. Refer to the *OSNC Protocol Specification* for details about how the CDN NOA and OLI help to determine if an operator is necessary for the call.

If an operator is unnecessary for the call, the call is treated as a tandem call. Control of the call returns to DMS ISUP processing. TOPS no longer has control of the call, including generation of the outgoing IAM, processing of subsequent messages, billing, and translations. Tandem calls use standard DMS translations, not TOPS translations.

If an operator is necessary for the call, call processing continues with the next steps.

- 5 At this point, signaled parameters and trunk datafill are checked to determine if the call is a carrier call. There are two ways to determine if an incoming call is a carrier call:
- Any call that has a Transit Network Services (TNS) parameters in its incoming IAM is a carrier call.
 - If no TNS is received, a call is a carrier call if the CARTYPE field of table ISUPTRK is set to IEC for the incoming trunk.

If the call does not meet either of these criteria, the call is a non-carrier call. It is advisable to set up trunks that are datafilled as IEC in table ISUPTRK to use carriers that are marked as SERV in table TOPEACAR.

At this point, non-carrier calls receive TOPS call processing. If the call is a carrier call, then call processing continues with the next step.

- 6 The Carrier Identification Code (CIC) associated with a carrier call is checked in table TOPEACAR to determine if the call can enter the TOPS environment. There are some carrier calls that TOPS does not service.

If the CIC is marked as NOSERV, then the call receives no further TOPS processing, and the call is treated as a tandem call. Control of the call returns to DMS ISUP processing.

At this point, TOPS no longer has control of the call including generation of the outgoing IAM, processing of subsequent messages, billing and translations. Tandem calls use standard DMS translations, not TOPS translations.

Operator Services Network Capability (continued)

No Originating Line Number Screening (OLNS) query or DNPIC checks are performed for this call. Furthermore, calls that were signaled with a Transit Network Services (TNS) parameter have the appropriate 0ZZ-XXXX digits prepended to the called number before translations, and 0- calls are translated using the called number 00.

If the CIC is not datafilled in table TOPEACAR, then the CIC is considered NOSERV. The call is handled the same way as the call with the CIC marked as NOSERV is handled.

If the CIC is marked as SERV, appropriate tuple from TOPEATRK is examined. If the call is a 0- call, and the BYPASS field in the TOPEATRK tuple contains ZEROM, then TOPS does not service the call. An example of this type of call is one in which the called NOA is NO NUMBER PRESENT, OPERATOR REQUESTED.

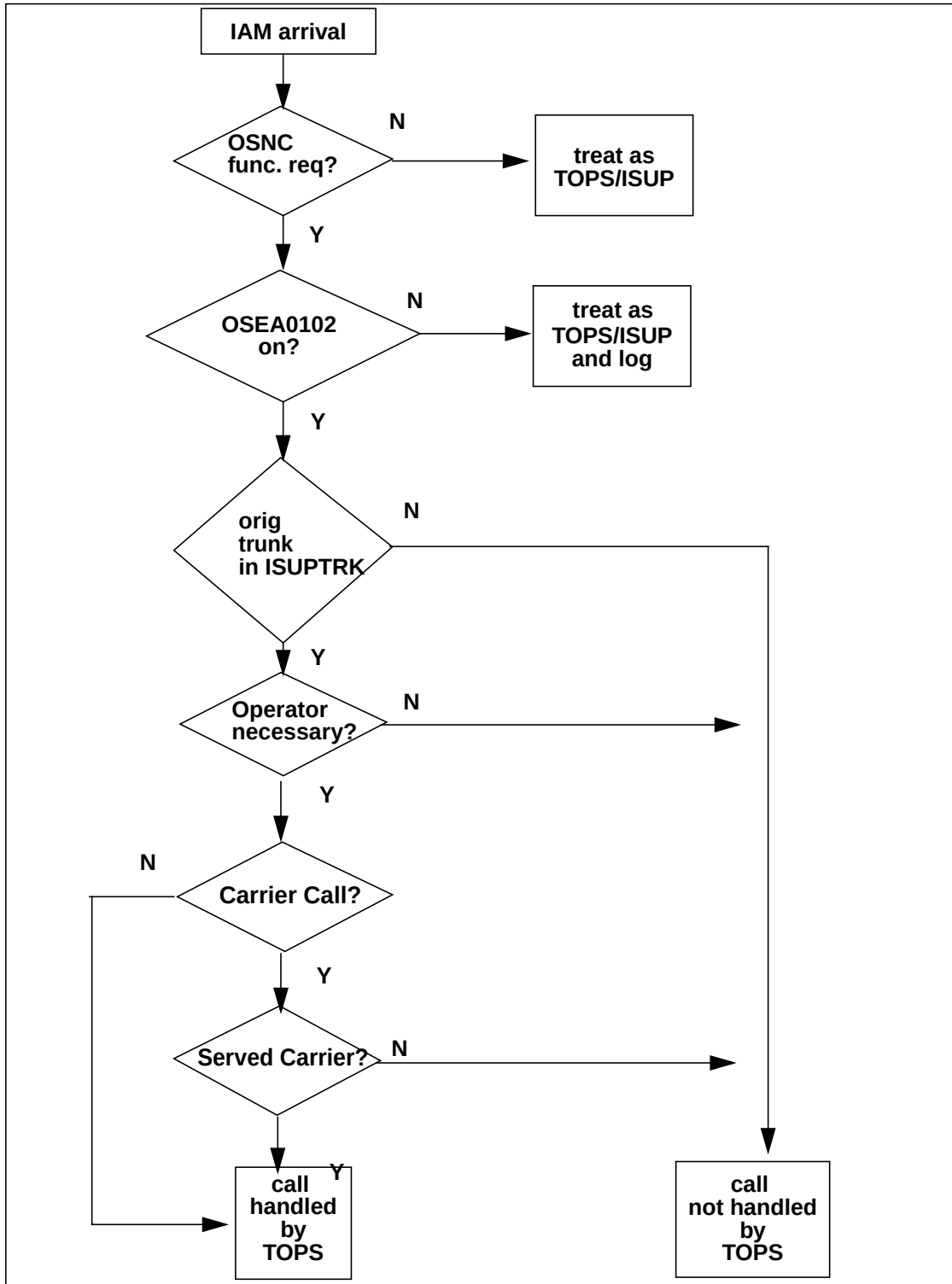
Control of the call returns to DMS ISUP processing described for the call processing for a CIC marked as NOSERV.

A call that contains an OLI that is datafilled in table OSSCAT as CLGSERV=HOTEL is considered a hotel call. If the BYPASS field of table TOPEATRK contains HOTEL, and the call is a hotel carrier call, TOPS does not service the call. Control of the call returns to DMS ISUP processing.

If the CIC is marked with SERV, and the call does not meet the 0- or hotel bypass criteria, then the call receives TOPS call processing.

Note: The OSNC activity modifies TOPS/ISUP functionality to pass control of NOSERV and 0- bypass carrier calls as described above to DMS ISUP processing. Hotel bypass screening does not apply to TOPS/ISUP.

The following flowchart summarizes the rules described above.

Operator Services Network Capability (continued)**Determination of whether a call receives OSNC processing in TOPS**

Operator Services Network Capability (continued)

Consequences of treatment of a call as a tandem call As described in the previous section, there are several scenarios in which a call that initially comes into TOPS is treated as a tandem call. In these scenarios, control of the call returns to DMS ISUP processing. These scenarios include:

- calls on trunks that are not datafilled in table ISUPTRK
- calls that do not require an operator (as determined while processing the incoming IAM)
- carrier calls for which the carrier is datafilled as NOSERV or not datafilled in table TOPEACAR
- 0- carrier calls or hotel carrier calls in which the BYPASS field in TOPEATRK contains ZEROM or HOTEL, respectively.

Based on these criteria, these calls are not considered TOPS calls. Control of these calls returns to DMS ISUP processing. When upgrading to TOPS13, consider the consequences of the fact that these calls are not considered TOPS calls and the return of these calls to DMS ISUP processing

One of the consequences is that TOPS does not generate subsequent messages for the call, including the Address Complete Message (ACM), Answer Message (ANM), Call Progress (CPG) message or the outgoing IAM. These messages are built according to DMS ISUP functionality.

Secondly, TOPS does not generate any billing modules for the call. Any billing is performed according to DMS ISUP functionality.

Furthermore, TOPS does not perform additional carrier screening for calls in which either the signaled Carrier Identification Code (CIC) or the CIC retrieved from TOPEATRK is datafilled as NOSERV. No OLNS query or DNPIC checks are performed for these calls. Calls that were signaled with a TNS parameter have the appropriate 0ZZ-XXXX digits prepended to the called number before translations, and 0- calls are translated using the called number 00.

Finally, another consequence is that standard DMS translations, not TOPS translations, are used for these calls. Primarily, translations for equal access carrier calls are not provided through table CLSVSCRC. These calls translate through STDPRTCT and HNPCONT, like other standard DMS equal access carrier calls. If an office has previously used TOPS/ISUP processing for calls that are returned to DMS ISUP, operating company personnel must examine the standard translations datafill for that office before One Night Process

Operator Services Network Capability (continued)

(ONP) of TOPS13. Examination of the standard translations helps to ensure that necessary translations datafill exists.

Note: With OSNC activity, TOPS/ISUP functionality is modified to pass control of NOSERV and 0- bypass carrier calls (as previously described) to DMS ISUP processing. Thus, consequences described in the previous section are also necessary for consideration of offices using TOPS/ISUP that do not intend to take advantage of the OSNC capabilities.

Translations changes Before the OSNC functionality, the following digits were prefixed to the called number to route an ISUP call to the TOPS environment:

- 0 was added for 0+ domestic calls
- 00 was added for 0- calls
- 01 was added for 0+ international calls

Translations were datafilled to strip the prefixed digits, and it used a T-selector to route the call to table TOPS.

With the OSNC functionality, the 0, 00 and 01 are no longer prefixed to the called number. Calls that are identified as operator calls through the called NOA or the OLI are routed directly to TOPS without going through translations.

However, calls that appear to be direct-dialed calls based on the called NOA and OLI, such as 411 or Country Direct calls, continue to travel through translations. Thus, it is necessary to datafill these types of calls to route through a T-selector through table TOPS.

Processing other information in the incoming IAM After a call is identified as requiring OSNC functionality and has entered the TOPS environment, the following data in the incoming IAM is processed:

- connection hold — It allows TOPS to remain in control of the originating connection after the calling party goes on-hook. The originating office indicates that connection hold is available to TOPS by including a SAP to the outgoing IAM that contains an FCI of HOLD AVAILABLE.
- Information Transfer Capability (ITC) —If the User Services Information (USI) of the incoming IAM has an ITC field set to a value other than SPEECH or 3.1 KHZ AUDIO, then the call is usually a data call. Because TOPS cannot service data calls, TOPS releases the connection by sending an ISUP release (REL) message. When this scenario occurs, the ISUP REL

Operator Services Network Capability (continued)

message has a cause value of INVALID MESSAGE UNSPECIFIED on the incoming connection.

- Jurisdiction Information Parameter (JIP) — TOPS can receive a JIP in the incoming IAM. The calling party's location routing number (LRN) is taken from the JIP for later use. Refer to the *TOPS LNP Users' Guide* for additional information.
- Local Service Provider Identification (LSPI) — The GR-1144 provides minimal requirements related to LSPI.

Calls requiring OSNC functionality can contain the LSPI Account Owner (AO) and LSPI-Switch Owner (SO) parameters in the incoming IAM. If an LSPI-AO is received, then the AO Service Provider Identifier (SPID) is used for TOPS call processing, unless an Operator Service System Advanced Intelligent Network (OSSAIN) service node overrides it

In order to use the AO SPID from the LSPI-AO, it must be datafilled in table SPID or SPIDDB. Other methods to determine a SPID are not recognized because the signaled AO SPID has priority over all other methods to assign the SPID, with the exception of the operator and service node. Refer to the *TOPS Unbundling Users' Guide* for additional information.

- operator languages — The calling party's category (CPC) parameter in the incoming IAM can contain the language of the requested operator. Field ISUPLANG in table TOPSLANG is used to map the incoming CPC to a LANGNAME to be associated with the call. The LANGNAME is used for QMS, Alternate Automated Billing Services (AABS) and other processes.
- operator services information (OSI) — If translations does not set a call origination type, the value in the OSI parameters can be used to set the call

Operator Services Network Capability (continued)

origination for the call. The *OSNC Protocol Specification* provides additional information about the OSI parameter and call origination.

- ignored parameters — There are certain parameters sent with the IAM on an incoming connection that are not decoded or used when establishing the outgoing connection. Those parameters are:
 - User-to-User information (UUI)
 - Access Transport (ATP)
 - Generic Address Parameter (GAP) with a type of address field set to the following:
 - supplemental user-provided calling address — failed network screening
 - supplemental user-provided calling address — not screened
 - supplemental network — provided calling address

Note: As of TOPS13, base ISUP does not support the value SUPPLEMENTAL NETWORK - PROVIDED CALLING ADDRESS. Thus, the value will possibly be forwarded as an unknown parameter.

Address Complete Message (ACM) For calls requiring OSNC functionality, TOPS software sends an ACM when the call is queued for or immediately connected to an operator. This ACM contains an Optional Backwards Call Indicator (OBCI) parameter with user-network interaction bit set to the following: USER-NETWORK INTERACTION OCCURS, CUT THROUGH IN BOTH DIRECTIONS. After receipt of this message, the end office and all intermediate nodes supervise to connect voice in both directions.

If the incoming IAM indicates that connection hold is available for a call, TOPS can request connection hold by including a SAP with the FCI value of HOLD REQUEST in the outgoing ACM. TOPS requests connection hold on all general call originations. Coin control signals will possibly be included in an SAP in the ACM.

The ACM is sent later in the call flow for OSNC functionality than it was in releases before TOPS13. Therefore, there will be a possible need to change the datafill in the previous nodes in the networks to allow a longer period before timing out because an ACM was not received. For a DMS end office, this datafill is in the C7UPTMR, in the ACM refinement for Q764. Refer to *Customer Data Schema* for more information on table C7UPTMR.

Outgoing Call progress (CPG) messages For general call originations using OSNC functionality, TOPS does not send an Answer

Operator Services Network Capability (continued)

message (ANM) on the incoming connection. Instead, a CPG message is sent on the incoming connection when the call is floated by the operator.

The use of a CPG instead of an ANM can affect Country Direct (CDIR) calls. For CDIR, a call coming from an international gateway switch could time out if it does not receive an ANM in the period specified in its timer. If the gateway switch requires an ANM for CDIR calls, the gateway needs to send the CDIR call using TOPS/ISUP signaling, instead of requesting OSNC functionality.

Inward calls

Another type of call origination is an inward call. An inward call is a call from an operator in one traffic office to an operator in a different traffic office.

An inward call is marked with Operator Services Code (OSC) in the Called Party Number (CDN) in the IAM. In general, signaling of an inward call requiring OSNC functionality is identical to that of other TOPS calls that require OSNC functionality.

The differences between an inward call that requires OSNC functionality and other calls that require OSNC functionality are:

- An inward call does not contain a modified NOA in the incoming IAM. The call is marked as an inward call that requires operator handling based on the result of the translations of the called digits.
- Even if there is a calling party present on the call with the requested operator, the calling party information is not included in the incoming IAM. The inward operator does not receive any information about the calling party.
- TOPS does not request connection hold on inward calls. On an inward call, no connection hold information is included in the outgoing ACM.

Intercept calls

Another type of call origination is an intercept call. This section describes the difference between an intercept call and a general TOPS call origination. Unless specifically noted, the signaling is the same. An intercept call is originated at an intercepting end office that receives a call for a line that is out of service and for which operator services are available.

Operator Services Network Capability (continued)

Processing the incoming IAM A call is identified as an intercept call by the FCI in the SAP in the incoming IAM. If the FCI is set to one of the following values, then the call is handled by TOPS as an intercept call:

- intercept-blank number
- intercept-trouble
- intercept-regular

If one of these values is not in the SAP, then the OLI can still mark the call as an intercept call. However, it is possible that the call does not require OSNC functionality unless a HOLD AVAILABLE or HOLD NOT AVAILABLE is included in the IAM.

If the incoming IAM User Services Information (USI) parameter has an ITC field set to a value other than SPEECH or 3.1 KHZ AUDIO for an intercept call, then the call is usually a data call. Because TOPS cannot service data calls, TOPS releases the connection. It releases the connection by sending an REL message with a cause value of BEARER CAPABILITY NOT IMPLEMENTED on the incoming connection.

Sending the outgoing ACM Connection hold is not requested for intercept calls, regardless of whether the end office offers it. No FCIs related to connection hold are included in the outgoing ACM.

Sending the outgoing ANM For intercept call completion, the TOPS office sends an ANM to the intercepting office, instead of a CPG. An ANM is sent so that the originating end office can bill for the intercept call completion.

Outgoing connections

The three types of outgoing connections from TOPS are the:

- terminating connection — a call that a TOPS operator completes.
- transfer connection — a call where the TOPS operator is unable to complete the call and the operator transfers it to another operator system for call completion. The operating system to which the operator transfers the call is usually an Interexchange Carrier (IXC) or International Carrier (INC). The TOPS operator does not stay on the call.
- outgoing inward connection — an outgoing inward connection is a call in which the TOPS operator dials an operator services code (OSC) to request assistance from an operator in another operator service center.

Operator Services Network Capability (continued)

Datafill determines whether the outgoing connection has OSNC capabilities. OSNC capabilities on the outgoing connection include the following:

- optional inclusion of the service activation parameter (SAP) in the outgoing IAM with a connection hold indication.
- acceptance and processing of the ACM with an indication to cut through voice
- acceptance and handling of the ACM with connection hold request
- acceptance and handling of the CPG message instead of ANM messages
- support for end-to-end signaling

T-selector and routing tables

The OSNC functionality introduced a T-selector to point to entries in the OSNCCAP table. Operating company personnel can add the T-selector to a route list in the routing tables to point to entries in OSNCCAP. OFRT and the RTEREF subtable of HNPACONT are examples of routing tables.

When the T-selector is datafilled in a route list to point to an entry in the OSNCCAP table and the entry is set to OFF, OSNC capabilities such as end-to-end signaling and connection hold, are not signaled over any outgoing IT or ATC ISUP trunk that follows the T-selector in the route lists.

When the T-selector is datafilled in a route list to point to an entry in the OSNCCAP table and the entry is set to ON, OSNC capabilities are signaled over all outgoing IT or ATC ISUP trunks that follow the T-selector in the route lists. When the SAP option is not datafilled in this entry in the OSNCCAP table only end-to-end signaling is supported.

When the SAP option is included in this entry in the OSNCCAP table and the CONNHOLD field is set to Y (Yes), an SAP with HOLD AVAILABLE is encoded in the IAM formulated to establish the outgoing connection. However, if the CONNHOLD field is set to N (No), an SAP with HOLD NOT AVAILABLE is encoded in the IAM formulated to establish the outgoing connection.

Addition of a T-selector pointing to a entry in the OSNCCAP table in which the entry is set ON allows for an outgoing connection that has OSNC capabilities. In order for the outgoing connection to have OSNC capabilities, the following conditions are required:

- The selected outgoing trunk must use ISUP signaling. MF and ISUP trunks can exist in a route list that also contains the use of the T-selector created by the OSNC activity. The presence of this selector applies to any trunk that is selected in this route list or others after they encounter this selector.

Operator Services Network Capability (continued)

For example, if the selected trunk is an MF trunk, then the entry in the OSNCCAP is ignored.

- The originating connection must have OSNC capabilities. OSNC capabilities are only offered on the terminating connection if they are used on the originating connection. These capabilities are only offered in this manner in order to remain compliant with the signaling interworking strategy and to provide a structured means to introduce OSNC to a network. This arrangement is evaluated on a call-by-call basis.

Note: A delay call never has OSNC capabilities because there is no originating connection associated with a delay call.

Placement of control of the OSNC capabilities in the route list rather than on the outgoing trunk group provides more flexibility to operating company personnel. The TOPS office is not always aware of what services a call can encounter when it leaves the TOPS switch. Some of these services will possibly require connection hold such as a transfer to a carrier operator. The flexibility allows operating company personnel to combine traffic on an outgoing trunk without the need to dedicate the trunk to connection hold for constant availability.

OSNC parameters are built with the guidelines supplied by GR-1144. Specifically, if the TOPS switch sends a required parameter and no information is available, the default values are sent. Spare bits are populated with zeros.

Note: Although OSNC can support these guidelines for parameters not built, the OSNC activity cannot support these guidelines for parameters that TOPS does not build.

Outgoing ISUP calls that are not receiving OSNC signaling receive TOPS/ISUP processing. OSNC capabilities for outgoing connections are transported through the following messages:

- IAM
- ACM, CPG and ANM

The messages are described in the following selections.

Operator Services Network Capability (continued)

Outgoing IAM

There are a number of issues to address in formulation of the outgoing IAM. Consider the following questions to help formulate the outgoing IAM:

- Should the SAP be included in the IAM?
- If the SAP is included in the IAM, is there a need to offer connection hold?
- Should calling party information be included in the IAM?
- How should the Nature of Connection and Forward Call Indicator parameters be encoded?
- How should the Calling Party Category parameter be encoded?
- How should the Called Party Number parameters Nature of Address field be encoded?
- How are additional parameters supported?

Inclusion of the SAP in the IAM

Inclusion of the Service Activation parameter in the outgoing IAM is possible only on a transfer connection or an outgoing inward connection. For these calls, datafill determines whether the SAP is included. At the point of establishment of a transfer connection, the IAM built for the selected trunk will contain the SAP encoded with either HOLD AVAILABLE or HOLD NOT AVAILABLE if the following three conditions are met:

- a T-selector pointing to an entry in the OSNCCAP table appears in the route list
- the entry in OSNCCAP is ON
- the entry in OSNCCAP includes the SAP option

For a transfer connection, the encoding of the SAP is based on the setting of the CONNHOLD field in the OSNCCAP table.

When establishing an outgoing inward connection, the IAM built for the selected trunk contains the SAP if both of the following conditions are met:

- a T-selector pointing to an entry in the OSNCCAP table appears in the route list
- the entry is OSNCCAP is ON

For an outgoing inward connection, the SAP is encoded as HOLD NOT AVAILABLE, regardless of the values of the SAP and CONNHOLD fields in the OSNCCAP table.

Operator Services Network Capability (continued)

No SAP is included in the outgoing IAM for calls in which the outgoing connection is anything other than a transfer connection or an outgoing inward connection.

It is important to note that in accordance with GR-1277, for an incoming call, TOPS provides OSNC functionality only to calls in which the IAM contains an SAP set to one of the values listed in the section “General Call Originations.”

Thus, the operating company is responsible for ensuring that all of its vendors have the ability to include such an SAP in the outgoing IAM of a call requiring OSNC functionality that is routed to a TOPS office. If a non-DMS office sends a call to TOPS without such an SAP in the incoming IAM, TOPS processes the call as a TOPS/ISUP call. Consequently, no OSNC functionality is provided on that connection.

Connection hold and inclusion of SAP in the IAM

When call processing determines that an SAP will be included in the outgoing IAM, as described in the previous section, the following criteria are used to determine if connection hold is offered:

- Is the outgoing connection a transfer connection?
- Was connection hold established on the incoming connection?
- For the appropriate entry in OSNCCAP, is the CONNHOLD field of the SAP option set to Y (Yes)?

If all of these criteria are met, connection hold is offered on the outgoing connection, and the SAP is encoded as HOLD AVAILABLE.

If any of these criteria are not met, connection hold is not offered on the outgoing connection. If the processing described in “Inclusion of the SAP in the IAM” determined that an SAP needs to be included in the IAM, the SAP is encoded as HOLD NOT AVAILABLE.

Inclusion of calling party information in the IAM

Inclusion of calling party information in the IAM means that the IAM includes some or all of the following parameters:

- calling party number
- originating line information
- charge number

Operator Services Network Capability (continued)

In order for TOPS to determine if the calling party information needs to be in the outgoing connection, responses to the following questions are necessary:

- Does the outgoing route list use a T-selector to point to an entry in OSNCCAP in which the OSNCINFO STATE = YES?
- Is the outgoing connection an inward operator request, transfer to carrier operator, third number verification or normal terminating connection
- Is there a calling party present?
- Does datafill indicate that the next switch needs to receive calling party information?

The following table takes answers to these four questions into account and provides an indication as to whether the calling party information is sent in the outgoing IAM. In some of these instances there is a calling party present, but the forward connection is made as if the operator originated the call. In these cases, the calling party information is not included in the outgoing IAM.

Calling party information included in outgoing IAM (Sheet 1 of 2)

T-selector to OSNCCAP entry with STATE = YES?	Call type?	Calling party present?	Datafill	Calling party information in IAM
no	n/a	n/a	n/a	functions as TOPS/ISUP
yes	inward operator request	n/a	n/a	no
yes	transfer to carrier operator	yes	OCCINFO:INCCPN = Y	yes
yes	transfer to carrier operator	yes	OCCINFO:INCCPN = N	no
yes	transfer to carrier operator	no	n/a	no
yes	third number verification	n/a	n/a	no
yes	normal termination (carrier call)	yes	OCCINFO:INCCPN = Y	yes

Operator Services Network Capability (continued)**Calling party information included in outgoing IAM (Sheet 2 of 2)**

T-selector to OSNCCAP entry with STATE = YES?	Call type?	Calling party present?	Datafill	Calling party information in IAM
yes	normal termination (carrier call)	yes	OCCINFO:INCCPN = N	no
yes	normal termination (non-carrier call)	yes	n/a	yes
yes	normal termination (carrier and non-carrier call)	no	n/a	no

How the Nature of Connection and Forward Call Indicator parameters should be encoded

The next matter to consider when formulating the outgoing IAM is how to encode the Nature of Connection and Forward Call Indicators parameters. When the call involves an originating connection that provides OSNC capabilities and a terminating connection that provides OSNC capabilities, then end-to-end signaling is possibly available.

End-to-end signaling includes passing the originating connection information such as Nature of Connection and Forward Call Indicator to the terminating connection. End-to-end signaling also includes passing terminating connection information such as the Backwards Call Indicator and Optional Backwards Call Indicator to the originating connection. The passing of terminating connection information to the originating connection is performed through the ACM, ANM and CPG message.

The Forward Call Indicator is encoded based on GR-317, with the exception of the ISDN Access Indicator. The ISDN Access Indicator field is set to ORIGINATING ACCESS NON-ISDN, regardless of what was received on the originating connection.

The values received on the originating connection determine how the Nature of Connection is encoded.

Operator Services Network Capability (continued)

How the calling party category parameter should be encoded

For all calls that include calling party information, the outgoing calling party category parameter is encoded with ORDINARY CALLING SUBSCRIBER. For all calls that exclude the calling party information, the calling party category parameter is encoded with NATIONAL OPERATOR.

How the called party number parameter Nature of Address field should be encoded

An outgoing IAM from TOPS always contains a Called Party Number parameter with a basic NOA that created based on the call characteristics. For transfer and outgoing inward connection, the basic NOA indicates a request for operator services. Refer to the OSNC Protocol Specifications for more information about how this parameter is encoded.

TOPS does not send a modified NOA in the Called Party Number.

How additional parameters are supported

Some parameters necessary for basic call control are included in the outgoing IAM if the T-selector pointing to an OSNCCAP table entry is first encountered in the route list and the entry is set to ON. The Operator Services Information parameter is unnecessary for basic call control. Thus, this parameter is not included in the outgoing IAM. Please refer to the OSNC Protocol Specification for details about which parameters are included.

The OSNC activity provides a significant improvement in how parameters are handled. In TOPS/ISUP, only a small set of optional parameters are included in the outgoing IAM. However, with the OSNC activity, on all calls in which the originating and terminating connections provide OSNC capabilities, TOPS forwards any parameters received in the IAM that are necessary for basic call control.

Carrier selection parameter

For OSNC and TOPS/ISUP calls, TOPS will send a CS with a value of PRESUBSCRIBED_AND_NOT_INPUT for calls in which TOPS determined the CIC based on datafill. Datafill through table DNPIC, table TRKGRP or an OLNS query could be a possible basis for TOPS to determine the CIC.

TOPS will send the value NOT_PRESUBSCRIBED_AND_INPUT for calls in which TOPS determined the CIC by the operator or service node entering it. If none of these situations apply, then TOPS will populate the CS with the appropriate value as previously determined and supported by the feature ISUP to TOPS Enhancements (AN1515).

Operator Services Network Capability (continued)

Processing the ACM, CPG and ANM

The encoded value of the Backwards Call Indicator (BCI) parameter determines the behavior in the ACM, CPG, and ANM. The TOPS switch makes the voice connection between the called party, the calling party and the operator (if the operator is still present on the call), if the BCI parameter in the ACM is encoded to USER-NETWORK INTERACTION OCCURS, CUT THROUGH IN BOTH DIRECTIONS. If the BCI is not encoded with this value, then TOPS expects an ANM.

In the ACM, if the BCI is USER-NETWORK INTERACTION OCCURS, CUT THROUGH IN BOTH DIRECTIONS, and the FCI in the SAP is encoded to HOLD REQUEST, then connection hold is available on the outgoing connection. Assignment of these values means that the TOPS switch begins to perform as a tandem in that it forwards messages between the incoming and outgoing connections without looking at the values.

The Backwards Call Indicators in the ACM that are returned from the outgoing connection contain connection information in order to ensure the quality of the end-to-end signaling. This information is updated as it advances through the network to its destination. Information about outgoing connections that TOPS receives in the ACM is updated at TOPS, and the information is returned in a CPG when the operator floats the call. Then the signaling paths of the two connections are cut-through.

The BCI and Optional BCI parameters are stored when an ACM, CPG, or ANM is received. As they are received, the contents of the BCI and the Optional BCI parameters overwrite any previously stored data. The BCI and Optional BCI parameters are forwarded on the incoming connection in a CPG when the call is floated.

Mid-call functionality

The OSNC functionality provides ISUP IT and ISUP ATC trunks the full range of TOPS coin functionality. The OSNC functionality provides the following enhancements or changes:

- It allows ISUP IT and ISUP ATC trunks to be datafilled in table TOPSCOIN.
- It allows coin signals to be sent on ISUP IT and ISUP ATC trunks.
- It also provides a method to receive a flash-hook at the TOPS office.

Coin signaling

When an operator call originates from a coin station, coin signals are sent to the coin station, based on the coin station type. OSNC supports instances in

Operator Services Network Capability (continued)

which the station type is coin. Before the implementation of OSNC functionality, ISUP signaling did not support coin signaling.

Functionality that existed before OSNC is used to determine if the station type is coin. As previously stated, OSNC allows ISUP IT and ISUP ATC trunks to be datafilled in table TOPSCOIN.

When a call requiring OSNC functionality originates from a coin station and is routed to a TOPS environment, TOPS can send coin signals to the originating end office. Coin control signals are included in a SAP in an outgoing Facility (FAC) message. Please refer to the OSNC Protocol Specification for details on what signals are sent.

FAC messages on transfer connections

When an incoming connection is floated to a transfer connection, TOPS can receive FAC messages from the Interexchange Carrier (IXC) operator service switch or the end office. These FAC messages contain coin signals, network recalls, and connection hold requests or replies. When TOPS receives these messages, they are forwarded from one connection to the other. These messages are forwarded without examination, which means that these messages are not processed at the computing module (CM) level.

Incoming FAC messages on non-transfer connections

When the end office receives a flash-hook from the originator on a call in which a connection hold is in effect, the end office sends TOPS a FAC message that contains an SAP with the following FCI: NETWORK SERVICE RECALL. TOPS treats the network recall as a flash-hook. The network recall provides a means for the calling party to request connection to an operator after a call has been set up. The manner in which TOPS treats the network recall as a flash-hook presents an additional way to receive a flash-hook at the TOPS office. The activity does not change the way in which the flash-hook is processed.

Outgoing FAC message on non-transfer connections

Outgoing FAC messages on non-transfer connections are sent for two reasons:

- The outgoing FAC message is sent on an incoming connection to apply coin control signals at the end of a coin call or when the operator indicates coin collect or coin return.
- The outgoing FAC message is sent on the originating connection to apply ringing when the operator indicates ring calling

Operator Services Network Capability (continued)

Terminating connection hold on a transfer connection

If TOPS has offered connection hold on an outgoing transfer connection, and the carrier does not accept connection hold, then TOPS must terminate connection hold on the incoming connection. An example of this scenario is when HOLD REQUEST is not contained in the FCI in the SAP in the incoming ACM.

In order to terminate connection hold on the incoming connection, TOPS encodes an FCI in a SAP to HOLD RELEASE REQUEST. This SAP is attached to the next CPG or FAC message that is sent on the incoming connection. The originating end office is responsible for processing the HOLD RELEASE REQUEST.

End-to-end signaling

For OSNC, three conditions must exist in order for OSNC to support end-to-end signaling. Those three conditions are:

- when the operator floats the call requiring OSNC functionality. The term floating the call is often referred to as immediate cut-through or delayed cut-through. Immediate cut-through refers to the instance in which the operator keys the START key to outpulse to the called party and then immediately keys POS RELEASE. Delay cut-through refers to the instance in which all three parties (the calling party, called party and operator) are active on the call and the operator then keys the POS RELEASE key.
- the outgoing connection is over an ISUP trunk
- the datafill in the route list indicates that OSNC capabilities are available for the outgoing route

TOPS supports end-to-end signaling when both the incoming and outgoing connections support OSNC capabilities. However, end-to-end signaling for a full call requires that all switches involved in the call support end-to-end switching.

When an operator call requiring OSNC functionality arrives to TOPS, a voice and signaling connection is established between the calling party and TOPS operator. If the operator completes the call and if the called party answers, a voice and signaling connection is established between the TOPS operator and the called party. With TOPS, a voice connection exists between the calling party, operator and called party, but two different signaling connections exist. A signaling connection is not cut through between the calling and called party. When the operator floats the call, a signaling connection is cut through between the calling and called party.

Operator Services Network Capability (continued)

The decision to cut through is made when the IAM is built to establish an outgoing connection. If the operator is the originator of the call, a signaling path cannot be cut through. Examples of calls that are not cut through are the following:

- delay calls in the forward direction and in the backward direction that are bridged together and floated
- inward calls
- third number billing verification

If the operator is completing the call on behalf of the calling party, a signaling path is cut through and the call is floated.

End-to-end signaling is supported only when a call:

- arrives at an operator
- is connected to a forward party
- is floated by the operator

End-to-end signaling is not supported for any other scenario.

In a basic call completion, TOPS forwards information about the incoming connection when establishing the outgoing connection. The signaling path between incoming and outgoing connections can be cut through if the operator floats the call. Information on the outgoing connection received in the ACM is updated at TOPS and sent in a CPG when the operator releases the call and the signaling paths are cut through.

Release of connections

With OSNC, TOPS releases incoming and outgoing connections independently. This characteristic allows TOPS to offer services such as time and charges and notify to a subscriber on the remaining connection after the other one has disconnected. When all of the operator services have been provided, TOPS can release the remaining connections.

There are several varieties of releases to consider, as well as a CPG message back to the originating messages. The types of releases are:

- calling party disconnects - connection hold not in effect
- calling party disconnects - connection hold in effect
- connection hold timer expires
- TOPS releases a connection to the end office

Operator Services Network Capability (continued)

- release of transfer connections routed through TOPS
- called party disconnect with suspend
- called party disconnect without suspend
- Call Progress
- Release Link Trunking

When TOPS releases the incoming connection, any necessary coin signaling is sent in a FAC message before the REL message is sent.

The release types are described in the following sections.

Calling party disconnect - connection hold not in effect

In this scenario, a REL message is sent to the TOPS Office when the calling party goes on-hook. The incoming connection is not in a connection hold state. The TOPS office replies with a Release Complete (RLC) message.

If an operator is not present on the call and additional services are necessary, the call recalls to an operator. The operator is informed that the calling party has gone on-hook. If additional services are unnecessary, then the terminating connection is taken down.

If the operator is present on the call, then the operator is informed that the calling party has gone on-hook. If there is a called party, it remains at the position.

Calling party disconnects - Connection hold in effect

The calling party is possibly the first one to disconnect on transfer or non-transfer connections.

Transfer connection

If the calling party goes on-hook when connection hold is in effect on a transfer connection, then the end office sends a Disconnect Request in a FAC message indicating the disconnect. The TOPS switch responds by forwarding the FAC message on the transfer connection.

Non-transfer connection

If the calling party goes on-hook when connection hold is in effect on a non-transfer connection, then the end office sends a Disconnect Request in a FAC message to indicate the disconnect. If an operator is present on the call or is recalled, then the operator is informed that the calling party has gone on-hook and the incoming connection is held. If the calling party goes off-hook before the maintenance call clearing timer expires, the end office

Operator Services Network Capability (continued)

sends a FAC message with a reconnect request. The operator is informed that the calling party has gone off-hook.

If the calling party remains on-hook, the incoming connection is held until the operator releases the call or a REL is received from the EO due to a maintenance call clearing timer. The feature OSNC - ISUP Support for Operator Services (59011294) implemented maintenance call clearing timer of the end office.

Connection hold timer expires

When the connection hold timer of the originating end office expires, the originating end office sends a REL to TOPS. The TOPS office replies with an RLC message.

TOPS releases a connection to the end office

TOPS releases a connection to the end office by sending a REL message. This scenario occurs when the operator keys to release the connection or when a maintenance action takes a connection down. This scenario also occurs on a cut-through call when one of the parties goes on-hook and the call does not need to stay up for any additional operator services such as time and charges or sequence dialing. Sequence dialing is a scenario in which the caller using a credit card completes two or more calls without going on-hook; the caller presses the number sign after completion of the first call and then dials the next phone number.

Called party disconnect with suspend

When a non-ISDN subscriber is the first to disconnect from a call and is the called party, the terminating end office sends a Suspend (SUS) message, which the network initiates, to TOPS.

If the call is floated, the SUS is ignored. TOPS takes the call down when a REL is received from the end office.

If the call is at position, the TOPS office starts a suspend timer upon receipt of the SUS. If a Resume (RES) message is received before the timer expires, the call is resumed and the timer is cancelled. If the suspend timer expires, a REL message is sent on the outgoing connection.

Called party disconnect without suspend

When the called party disconnects without suspension a REL message is sent to the TOPS office. This scenario also occurs when the called party goes on-hook or if the end-office routes the call to treatment. The TOPS office replies with an RLC message.

Operator Services Network Capability (continued)

If an operator is not present on the call and additional services are necessary for the calling party, then the call recalls to an operator. If additional services are unnecessary, then the incoming connection is taken down. If the operator is present on the call and there is an originating party, then the originating party stays at the position.

Call Progress

If the end office or TOPS releases the outgoing connections before the incoming connection is released, then TOPS sends a Call Progress (CPG) message on the incoming connection. This CPG message indicates the status change of the outgoing connection. The Backward Call Indicators (BCI) and Optional Backward Call Indicators (OBCI) parameters in the CPG message are encoded as these parameters were encoded in the Address Complete Message (ACM) sent on the incoming connection.

Release Link Trunking

TOPS Release Link Trunking (RLT) variant one is supported for calls requiring OSNC functionality. Support this RLT variant is part of existing TOPS/ISUP functionality.

TOPS also supports RLT variant two, phases one and two for calls requiring OSNC functionality. However, complete OSNC support of RLT variant two will possibly require additional work on the DMS-250 switch; in particular, RLT Sequence Calling.

Software optionality control

This functionality is controlled by software optionality code (SOC) OSEA0102. This feature requires functionality GR317/GR394 ISUP to/from TOPS, OSEA0102.

The option, OSEA0102, controls the ability to receive calls requiring OSNC functionality that arrive on TOPS/ISUP trunks. When OSEA102 is ON, calls that contain a FCI of “hold available”, “hold not available”, “intercept-blank number”, “intercept-trouble”, or “intercept-regular” in the SAP in the incoming IAM are processed as described in this document. When OSEA0102 is IDLE and if calls to TOPS contain this SAP with these FCI values, the SAP is ignored and the call is processed as if it were signaled as TOPS/ISUP and a TOPS 613 log is generated.

Operator Services Network Capability (continued)

Upgrade strategy

The upgrade strategy requires review of TOPS equipment and equipment associated with TOPS. In order to decide whether an upgrade is necessary for TOPS to process calls that require OSNC functionality, examine:

- the TOPS office expected to process OSNC calls
- all tandems through which those calls must pass on their way to TOPS
- the end offices (EOs) that originate the OSNC calls

With the OSNC functionality, TOPS can include an SAP with FCI of one of the following in the outgoing IAM: HOLD AVAILABLE or HOLD NOT AVAILABLE. If nodes in the path of the outgoing connection ignore unrecognized values, those nodes do not have to be upgraded before the T-selector is datafilled in an outgoing route list. The T-selector points to an entry in the table OSNCCAP. If the nodes in the path of the outgoing connection cannot handle unrecognized values, then upgrade of the nodes is required before this T-selector is datafilled.

The OSNC activity modifies the TOPS/ISUP functionality to return control of certain calls to DMS ISUP processing. Examine translations datafill before the One Night Process (ONP) for TOPS13. Perform examination of the datafill to ensure that it exists for these calls scenarios. Refer to the section “Consequences of treatment of a call as a tandem call” located in this OSNC description.

Logs

The OSNC functionality introduces log TOPS613. This log appears when SOC OSEA0102 is IDLE and if a call to TOPS contains an SAP with the following FCIs:

- hold available
- hold not available
- intercept-blank number
- intercept-trouble
- intercept-regular

If OSEA0102 is IDLE, the SAP is ignored and the call is processed as if it were signaled as TOPS/ISUP, then the log is generated.

Translations table flow

The OSNC functionality changes the following six tables to include the T-selector to point to OSNCCAP. This routing selector allows the operating

Operator Services Network Capability (continued)

company personnel to control inclusion of OSNC capabilities in the initial address message (IAM) sent on the outgoing connection.

- Table HNPACONT:RTEREF associates a route list index with a set of routes that can consist of trunk groups, tones and announcements. The OSNC functionality modifies this table to enable the T-selector to point to entries in the OSNCCAP table.
- Table FNPACONT:RTEREF associates a route list index with a set of routes that can consist of trunk groups, tones and announcements. The OSNC functionality modifies this table to enable the T-selector to point to entries in the OSNCCAP table.
- Table OFRT associates a route list index with a set of routes that can consist of trunk groups, tones and announcements. The OSNC functionality modifies this table to enable the T-selector to point to entries in the OSNCCAP table.
- Table OFR2 is an extension of table OFRT and associates a route list index with a set of routes that can consist of trunk groups, tones and announcements. The OSNC functionality modifies this table to enable the T-selector to point to entries in the OSNCCAP table.
- Table OFR3 is an extension of table OFR2 and associates a route list index with a set of routes that can consist of trunk groups, tones and announcements. The OSNC functionality modifies this table to enable the T-selector to point to entries in the OSNCCAP table.
- Table OFR4 is an extension of table OFR3 and associates a route list index with a set of routes that can consist of trunk groups, tones and announcements. The OSNC functionality modifies this table to enable the T-selector to point to entries in the OSNCCAP table.
- Table OSNCCAP controls whether OSNC capabilities need to be signaled on outgoing Intertoll (IT) or Access to Carrier (ATC) ISUP trunks. Currently, connection hold is the only OSNC capability that can be datafilled in this table.
- IT and Access to Carrier (ATC) trunks requiring OSNC functionality are datafilled in table TRKGRP. For OSNC, no new trunk is defined, and no fields are added to table TRKGRP.
- Trunks requiring OSNC functionality are datafilled in table TRKSGRP using the Q746. OSNC does not add fields to table TRKSGRP.
- Table ISUPTRK is used to identify ISUP trunks that are eligible to receive TOPS call processing. All incoming trunks that will carry traffic requiring

Operator Services Network Capability (continued)

OSNC functionality and TOPS call processing must be datafilled in table ISUPTRK

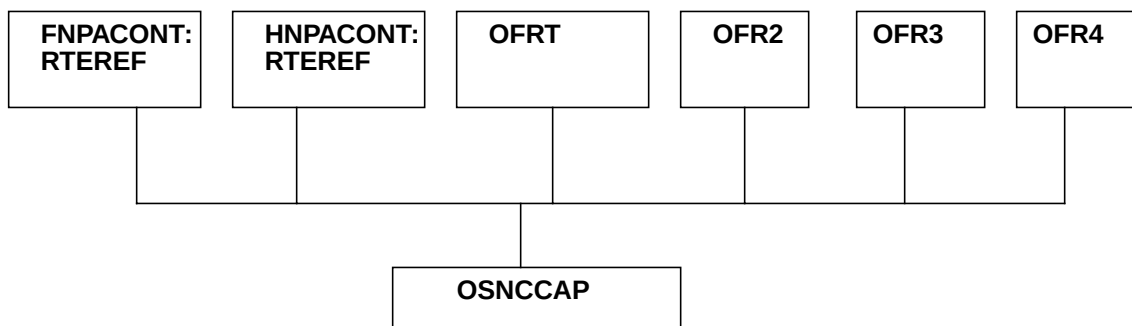
All fields in table ISUPTRK are used in the same manner as TOPS/ISUP. Please refer to the *Translations Guide* for more information on table ISUPTRK and the related functionality.

The table that follows lists the datafill content related to OSNC:

Datafill example for Operator Services Network Capability

Datafill table	Example data
HNPACONT: RTEREF	100 (T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OSNCCAP 10) \$
FNPACONT: RTEREF	100 (T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OSNCCAP 10) \$
OFRT	100 (T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OSNCCAP 10) \$
OFR2	100 (T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OSNCCAP 10) \$
OFR3	100 (T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OSNCCAP 10) \$
OFR4	100 (T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OSNCCAP 10) \$
OSNCCAP	10 ON (SAP Y) \$

Translations flow for OSNC activity



Operator Services Network Capability (continued)

Limitations and restrictions

The limitations and restrictions that follow apply to Operator Services Network Capability.

- The OSNC activity does not change the level of support given to originating trunk group types for access to carrier (ATC). The restrictions documented for the feature ISUP to TOPS Enhancements (AN1515) that relate to ATC trunk group usage apply here
- TOPS is partially compliant with GR-1144. The messages, parameters, and values that TOPS supports are documented in the OSNC Protocol Specification.
- On an intercept call, GR-1144 indicates that the feature code indicator (FCI) is possibly set to the following: billing verification. This FCI can indicate that an operator services system has received the call for billing verification before the call is intercepted and forwarded to another operator services system.

TOPS can receive the billing verification FCI, but TOPS ignores it when processing an incoming IAM. TOPS does not include the billing verification FCI in an outgoing IAM.

- TOPS does not send a modified Nature of Address (NOA) in the outgoing IAM. TOPS always sends the basic NOA.
- A country direct (CDIR) call that travels from an international gateway switch can time out the call if the switch does not receive an answer message (ANM) in the amount of time specified in its timer. If the gateway switch requires an ANM for CDIR calls, then the gateway needs to send the CDIR call by using TOPS/ISUP signaling, instead of the OSNC functionality.
- The OSNC activity supports end-to-end signaling for calls only in cases in which the incoming connection uses OSNC functionality and when the outgoing connection is performed over an ISUP trunk.
- The OSNC activity returns control of some calls to DMS ISUP processing. When DMS ISUP controls a call, it receives no further TOPS processing. The call is treated as a tandem call. TOPS does not control the messages and parameters distributed for the call. Refer to the section “Using the incoming IAM to identify calls requiring OSNC functionality” located in this OSNC documentation for details about which calls are returned to DMS ISUP processing.
- TOPS does not comply with the following GR-1144 requirement: if the incoming IAM contains an SAP with a billing verification FCI, then the automated system does not need to offer call completion. The automated system should only offer an announcement.

Operator Services Network Capability (continued)

TOPS can receive an intercept call that another operator service center places to verify collect or third party billing. The OSNC activity does not change the Automated Intercept Call Completion functionality that exists as of the TOPS13 release.

- For busy line verification calls, a generic address parameter (GAP) in the IAM has the type of address field set to the following: associated forward number. The values in the NOA and address fields in the GAP are encoded with the busy line. TOPS can receive this GAP but does not use it in call processing.
- In order to take full advantage of coin signaling, connection hold must be in effect for the call. Even though coin signaling is allowed when connection hold is not in effect, the coin signaling that is normally performed at the end of the call is not done. The coin signaling is not performed at the end of the call because the incoming connection is no longer available.
- The OSNC activity does not support interworking between Integrated Services Digital Network User Part (ISUP) and MF coin signaling.
- The operating company personnel needs to set up customer datafill in such a way that ensures that calls requiring OSNC functionality that are routed to another operator services switch (OSS) are routed using OSNC capabilities. If this task does not occur, then the full range of OSNC functionality is not available to the next OSS.
- TOPS does not support outgoing signaling of Equal Access Operator Signaling System (EAOSS).
- The Originating Line Information (OLI) is an option to index table OSSCAT. However, the OSNC activity does not support efforts to route out of table OSSCAT table by using a T-selector in the ROUTE field.
- The OSNC activity does not support Equal Access (EA) on an outgoing IT trunk — an original limitation of the feature ISUP to TOPS Enhancements (AN1515).
- If TOPS receives both a charge number (CN) and CGPN that are the same number, then TOPS will send the CN and CGPN. TOPS does not compare the numbers.
- OSNC does not send the Jurisdiction Information Parameter (JIP) if the SOC for LNP is activated. If the SOC is not activated, it is possible to forward the JIP as an unknown parameter.
- OSNC does not send the Jurisdiction Information Parameter (JIP) if the SOC for LNP is activated. If the SOC is not activated, it is possible to forward the JIP as an unknown parameter.

Operator Services Network Capability (continued)

- The GAP value of SUPPLEMENTAL NETWORK — PROVIDED CALLING ADDRESS is not currently supported by base ISUP and may be forwarded an unknown parameter.
- None of the OSNC features changes IN Fallback call origination types. OSNC does not interwork with IN Fallback.
- On OSNC call completion translations, do not use the S-selector table OFRT, OFR2, OFR3, or OFR4 if translations are datafilled to translate the called digits using STDPRTCT that points to a route list in one of these tables. Instead, use the N-selector. However, the S-selector is an option for use if the STDPRTCT points to either HNPACONT or FNPACONT and then points to a route list in RTEREFF or an route list in OFRT, OFR2, OFR3 or OFR4.

Interactions

The paragraphs that follow describe how Operator Services Network Capability interacts with other functionalities.

A call that requires OSNC functionality, arrives on TOPS/ISUP trunks and does not enter the TOPS environment is processed according to DMS ISUP processing. Thus, this type of call is eligible for Advanced Intelligent Network (AIN).

AIN processing is unavailable to calls that require OSNC functionality that arrive on TOPS/ISUP trunks and enter the TOPS environment. A call that requires OSNC functionality that enters the TOPS environment and is later transferred to a NOSERV carrier is not processed according to DMS ISUP processing. Thus, this type of call is ineligible for AIN processing.

Activation and deactivation by the user

Operator Services Network Capability does not require activation or deactivation by the user.

Billing

The TOPS13 OSNC functionality does not create new AMA module codes or structure codes. However, some call scenarios can generate existing modules. For additional information, refer to the following text.

General requirements (GR)-1144 has three requirements related to Automatic Message Accounting. They are:

- elapsed time from carrier connect
- recording of answer when connecting forward to another operator switch
- recording of call event status

Operator Services Network Capability (continued)

These three requirements apply to Bellcore AMA Format (BAF) and TOPS Call Detail Recording (TDR). For more information on TDR, refer to *TOPS Call Detail Recording User's Guide*.

The three requirements are discussed in more detail in the following sections.

Elapsed time from carrier connect

GR-394 states that the appropriate points to take carrier disconnect time is when the originator detects an on-hook status or when the switch sends or receives a REL function. With OSNC, operator hold is possibly in effect from TOPS to the carrier switch. With OSNC, carrier disconnect time can operate differently — TOPS plays a role in the carrier disconnect time.

Operator hold can be in effect from TOPS to the carrier switch. When operator hold is in effect, the connection is not taken down when the originator goes on-hook. Thus carrier connect timing does not stop at this point. Instead, carrier connect timing stops only when the TOPS switch sends a REL message. In this case, the TOPS switch generates the record and collects the carrier elapsed time.

AMA records marked as unanswered

When OSNC is used for the outgoing connection, the ACM can contain a parameter with an indication to cut-through the voice path. The User-Network interaction indicator is set to the following: USER NETWORK INTERACTION CUT-THROUGH IN BOTH DIRECTIONS. This scenario usually means that an operator has been attached as the terminating switch. For calls in this scenario, no ANM is expected. Thus, the record generated in the TOPS switch is marked as unanswered.

For calls in this instance, there are results to consider. There is datafill in tables AMAOPTS and BCCODES that can cause failure of generation of AMA records that are marked as unanswered. These calls are placed into the group of calls that datafill affects due to the use of OSNC on the outgoing connection. With OSNC, there is a possibility for loss of AMA records due to table datafill.

Recording of call event status

AMA records marked as unanswered play a role in instances in which the call event status is recorded. When OSNC is used for the outgoing connection, the ACM contains a parameter with an indication to cut-through the voice path. In this case, the User-Network interaction indicator is set to the following: USER NETWORK INTERACTION CUT-THROUGH IN BOTH DIRECTIONS.

Operator Services Network Capability (continued)

Generally, if the parameter is set to this selection, then an operator has been attached at the terminating switch. For these calls, no ANM is expected. Therefore, the record generated in the TOPS switch is marked as unanswered.

If the call is also a carrier call, then the call event status is recorded. The purpose of the call event is to show progress of the call through the various stages of signaling until an answer message is received from the carrier. Because no ANM is received and no new values are added to the range for the field, the following value is recorded: 05 (operator services or CAMA signaling — off-hook from IXC/INC after receipt of called number (originating LATA record)). This value is comparable to the value recorded when TOPS uses Feature Group C MF signaling to connect to the operator switch of a carrier.

Station Message Detail Recording

Operator Services Network Capability does not require Station Message Detail Recording.

Office parameters used by Operator Services Network Capability

Operator Services Network Capability does not create any new office parameters.

Datafill sequence

The following information lists the tables that require datafill to put Operator Services Network Capability into operation. For OSNC, the tuples in the OSNCCAP table need to be added before the T-selector datafilled in the OFRT tables or RTEFEF subtables can point to the OSNC tuples. If the T-selector needs to point to an entry in the OSNCCAP table, the T-selector must be datafilled in the route list before the outgoing IT/ATC ISUP trunk on which OSNC capabilities are signaled.

Datafill requirements for Operator Services Network Capability (Sheet 1 of 2)

Table	Purpose of table
OSNCCAP	OSNC Capabilities allows sets of OSNC capabilities to be datafilled to which OFRT tables and RTEFEF subtables can point.
OFRT	Office Route Table allows operating company personnel to maintain route lists to which North American digit translations point.
OFR2	Office Route 2 Table allows operating company personnel to maintain route lists to which North American digit translations point.
OFR3	Office Route 3 Table allows operating company personnel to maintain route lists to which North American digit translations point.

Operator Services Network Capability (continued)

Datafill requirements for Operator Services Network Capability (Sheet 2 of 2)

Table	Purpose of table
OFR4	Office Route 4 Table allows operating company personnel to maintain route lists to which North American digit translations point.
HNPACONT: RTEREF	Home NPA Control table's subtable Route Reference allows operating company personnel to maintain route lists to which North American digits translations point.
FNPACONT: RTEREF	Foreign NPA Control table's subtable Route Reference allows operating company to maintain route lists to which North American digit translations point.
TOPSCOIN	TOPS Coin Table allows operating company personnel to override office-wide defaults related to coin signaling on a per-trunk basis.

Datafill related to Operator Services Network Capability for table OSNCCAP

This table allows a set of OSNC capabilities such as connection hold to be datafilled in up to 254 tuples. The T-selector datafilled in tables HNPACONT, FNPACONT, OFRT, OFR2, OFR3, OFR4 points to the 254 tuples. Connection hold is the only OSNC capability that is a possible datafill entry in this table.

The table that follows provides the datafill related to Operator Services Network Capability for table OSNCCAP. This table includes only those fields that apply directly to Operator Services Network Capability. For a description of other fields, refer to the data schema document.

Datafill related to table OSNCCAP (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
OSNCIDX		0 to 254	Operator services network capability. index. This field is the key to the table and is the route list index that is set in other routing tables such as HNPACONT:RTETEF and OFRT using a T-selector.
OSNCINFO		see subfield	OSNC information. This field consists of subfield STATE.

Operator Services Network Capability (continued)

Datafill related to table OSNCCAP (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	STATE	ON, OFF	State. The values are as follows: • OFF - OSNC capabilities are not signaled on outgoing IT/ATC ISUP trunks. No refinements require datafill. • ON - OSNC capabilities are signaled on outgoing IT/ATC ISUP trunks for calls coming to TOPS and service nodes with OSNC capabilities. Datafill refinement OSNCCAP.
	OSNCCAP	SAP	OSNC capability. Enter SAP (service activation parameter) to include a SAP in the IAM to establish an outgoing connection. When SAP is selected, the CONNHOLD field follows.
	CONNHOLD	{N, Y}	Connection hold. When set to N, connection hold is not available on the outgoing connection. When set to Y, connection hold is available on the outgoing connection.

Datafill example for table OSNCCAP

The figure that follows shows sample datafill for table OSNCCAP.

MAP example for table OSNCCAP

OSNCIDX OSNCINFO

```

0  OFF
1  ON  $
2  ON  (SAP Y) $
3  ON  (SAP N) $

```

Operator Services Network Capability (continued)

Datafill related to Operator Services Network Capability for table OFRT

The table that follows provides the datafill related to Operator Services Network Capability for table OFRT. The OFRT table allows operating company personnel to maintain route lists to which North American digit translations point. This table includes only those fields that apply directly to Operator Services Network Capability.

The OSNC activity expands use of the T-selector to point to an entry in the OSNCCAP table. When the T-selector points to an entry in the OSNCCAP table, signaling of OSNC capabilities is controlled on outgoing IT/ATC ISUP trunks for calls with OSNC capabilities routed to TOPS or service nodes. Only fields that apply directly to Operator Services Network Capability are shown. For a description of other fields, refer to the data schema document.

Datafill related to table OFRT (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
RTE		route list index	Route. This field provides the route list index that is set in other routing tables such as HNPACONT:RTEREF using a T-selector.
RTELIST		see subfield	Route list. This field provides a set of routes that are selected in the sequence that they are presented in the list. There are many route selectors that are valid, but the T-selector is the one of interest here. The T-selector allows a route list to point to another routing table such as table OFR2 or table OSNCCAP with an associated index into that table. When the T-selector appears with the OSNCCAP table, the call uses the OSNC capabilities associated with the index for all subsequent routes encountered for the termination. Because table OSNCCAP does not contain a terminating agent, the routing function returns back to the route list and proceeds to the next route. When the next route is selected, the OSNC capabilities are still active for that agent.
	EXTRTEID	see subfield	External route identifier.

Operator Services Network Capability (continued)**Datafill related to table OFRT (Sheet 2 of 2)**

Field	Subfield	Entry	Explanation and action
	TABID	OSNCCAP	OSNCCAP is a new entry in the TABID subfield. The TABID subfield follows the T-selector.
	KEY	0 to 254	In the key, enter the index of the entry in the OSNCCAP table to which the T-selector needs to point.

Datafill example for table OFRT

The figure that follows shows sample datafill for table OFRT.

MAP example for table OFRT

RTE	RTELIST
100	(T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) (T OFRT 10) \$
101	(T OSNCCAP 1) (N D OUTGOINGTRUNK1 0 N N) (T OSNCCAP 2) (T S OUTGOINGTRUNK3) \$

Datafill related to Operator Services Network Capability for table OFR2

The table that follows provides the datafill related to Operator Services Network Capability for table OFR2. The OSNC activity expands use of the T-selector in the OFR2 table to point to an entry in the OSNCCAP table. This use of the T-selector does not cause a call to leave the route list in the OFR2 table as the T-selector does when it points to a route list in the OFRT table. When the T-selector points to an entry in the OSNCCAP table, signaling of OSNC capabilities is controlled on outgoing IT/ATC ISUP trunks for calls with OSNC capabilities routed to TOPS or service nodes. Only fields that

Operator Services Network Capability (continued)

apply directly to Operator Services Network Capability are shown. For a description of other fields, refer to the data schema document.

Datafill related to table OFR2

Field	Subfield	Entry	Explanation and action
RTE		route list index	Route. This field provides the route list index that is set in other routing tables such as HNPACONT:RTEREF using a T-selector.
RTELIST		see subfield	Route list. This field provides a set of routes that are selected in the sequence that they are presented in the list. There are many route selectors that are valid, but the T-selector is the one of interest here. The T-selector allows the route list to point to another routing table such as table OFR2 or table OSNCCAP with an associated index into that table. When the T-selector appears with the OSNCCAP table, the call uses the OSNC capabilities associated with the index for all subsequent route encountered for the termination. because table OSNCCAP does not contain a terminating agent, the routing function returns back to the route list and proceeds to the next route. When the next route is selected, the OSNC capabilities are still active for that agent
	EXTRTEID	see subfield	External route identifier.
	TABID	OSNCCAP	OSNCCAP is a new entry in the TABID subfield. The TABID subfield follows the T-selector.
	KEY	0 to 254	In the key, enter the index of the entry in the OSNCCAP table to which the T-selector needs to point.

Datafill example for table OFR2

The figure that follows shows sample datafill for table OFR2.

Operator Services Network Capability (continued)

MAP example for table OFR2

RTE	RTELIST
100	(T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) T OFRT 10) \$
101	(T OSNCCAP 1) (N D OUTGOINGTRUNK1 0 N N) (T OSNCCAP 2) (T S OUTGOINGTRUNK3) \$

Datafill related to Operator Services Network Capability for table OFR3

The table that follows provides the datafill related to Operator Services Network Capability for table OFR3. The OSNC activity expands use of the T-selector in the OFR3 table to point to an entry in the OSNCCAP table. This use of the T-selector does not cause a call to leave the route list in the OFR2 table as the T-selector does when it points to a route list in the OFRT table. When the T-selector points to an entry in the OSNCCAP table, signaling of OSNC capabilities is controlled on outgoing IT/ATC ISUP trunks for calls with OSNC capabilities routed to TOPS or service node. Only fields that apply directly to Operator Services Network Capability are shown. For a description of other fields, refer to the data schema document.

Datafill related to table OFR3 (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
RTE		route list index	Route. This field provides the route list index that is set in other routing tables such as HNPACONT:RTEREF using a T-selector.
RTELIST		see subfield	Route list. This field provides a set of routes that selected in the sequence that they are presented in the list. There are many route selectors that are valid, but the T-selector is the one of interest here. The T-selector allows the route list to point to another routing table such as table OFR2 or table OSNCCAP with an associated index into that table.
	EXTRTEID	see subfield	External route identifier.

Operator Services Network Capability (continued)

Datafill related to table OFR3 (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	TABID	OSNCCAP	OSNCCAP is a new entry in the TABID subfield. The TABID subfield follows the T-selector.
	KEY	0 to 254	In the key, enter the index of the entry in the OSNCCAP table to which the T-selector needs to point.

Datafill example for table OFR3

The figure that follows shows sample datafill for table OFR3.

MAP example for table OFR3

RTE	RTELIST
100	(T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) T OFRT 10) \$
101	(T OSNCCAP 1) (N D OUTGOINGTRUNK1 0 N N) (T OSNCCAP 2) (T S OUTGOINGTRUNK3) \$

Datafill related to Operator Services Network Capability for table OFR4

The table that follows provides the datafill related to Operator Services Network Capability for table OFR4. Only fields that apply directly to Operator Services Network Capability are shown. For a description of other fields, refer to the data schema document. The OSNC activity expands use of the T-selector in the OFR4 table to point to an entry in the OSNCCAP table. This use of the T-selector does not cause a call to leave the route list in the OFR4 table as the T-selector does when it points to a route list in the OFRT table. When the T-selector points to an entry in the OSNCCAP table, signaling of OSNC capabilities is controlled on outgoing IT/ATC ISUP trunks for calls with OSNC capabilities routed to TOPS or service nodes. Only fields that apply

Operator Services Network Capability (continued)

directly to Operator Services Network Capability are shown. For a description of other fields, refer to the data schema document.

Datafill related to table OFR4

Field	Subfield	Entry	Explanation and action
RTE		route list index	Route. This field provides the route list index that is set in other routing tables such as HNPACONT:RTEREF using a T-selector.
RTELIST		see subfield	Route list. This field provides a set of routes that selected in the sequence that they are presented in the list. There are many route selectors that are valid, but the T-selector is the one of interest here. The T-selector allows the route list to point to another routing table such as table OFR2 or table OSNCCAP with an associated index into that table. When the T-selector appears with the OSNCCAP table, the call uses the OSNC capabilities associated with the index for all subsequent routes encountered for the termination. Because table OSNCCAP does not contain a terminating agent, the routing function returns back to the route list and proceeds to the next route. When the next route is selected, the OSNC capabilities are still active for that agent.
	EXTRTEID	see subfield	External route identifier.
	TABID	OSNCCAP	OSNCCAP is a new entry in the TABID subfield. The TABID subfield follows the T-selector.
	KEY	0 to 254	In the key, enter the index of the entry in the OSNCCAP table to which the T-selector needs to point

Datafill example for OFR4

The figure that follows shows sample datafill for table OFR4.

Operator Services Network Capability (continued)

MAP example for table OFR4

RTE	RTELIST
100	(T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) T OFRT 10) \$
101	(T OSNCCAP 1) (N D OUTGOINGTRUNK1 0 N N) (T OSNCCAP 2) (T S OUTGOINGTRUNK3) \$

Datafill related to Operator Services Network Capability for table HNPACONT:RTEREF

The table that follows provides the datafill related to Operator Services Network Capability for table HNPACONT:RTEREF. The RTEREF subtable in the HNPACONT table allows operating company personnel to maintain route lists to which North American digit translations point. The OSNC activity expands use of the T-selector in the RTEREF subtable to point to an entry in the OSNCCAP table. When the T-selector points to an entry in the OSNCCAP table, signaling of the OSNC capabilities is controlled on outgoing IT/ATC ISUP trunk for calls with OSNC capabilities routed to TOPS or service nodes.

Operator Services Network Capability (continued)

Only fields that apply directly to Operator Services Network. For a description of other fields, refer to the data schema document.

Datafill related to table HNPACONT:RTEREF

Field	Subfield	Entry	Explanation and action
RTELIST		see subfield	Route list. This field provides a set of routes that are selected in the sequence that they are presented in the list. There are many route selectors that are valid, but the T-selector is the one of interest here. The T-selector allows the route list to point to another routing table such as table OFR2 or table OSNCCAP with an associated index into that table. When the T-selector appears with the OSNCCAP table, the call uses the OSNC capabilities associated with the index for all subsequent route encountered for the termination. Because table OSNCCAP does not contain a terminating agent, the routing function returns back to the route list and proceeds to the next route. When the next route is selected, the OSNC capabilities are still active for that agent.
	EXTRTEID	see subfield	External route identifier.
	TABID	OSNCCAP	OSNCCAP is a new entry in the TABID subfield. The TABID subfield follows the T-selector.
	KEY	0 to 254	In the key, enter the index of the entry in the OSNCCAP table to which the T-selector needs to point.

Datafill example for table HNPACONT:RTEREF

The figure that follows shows sample datafill for table HNPACONT:RTEREF.

Operator Services Network Capability (continued)

MAP example for table HNPACONT:RTEREF

RTE	RTELIST
100	(T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) T OFRT 10) \$
101	(T OSNCCAP 1) (N D OUTGOINGTRUNK1 0 N N) (T OSNCCAP 2) (T S OUTGOINGTRUNK3) \$

Datafill related to Operator Services Network Capability for table FNPACONT:RTEREF

The table that follows provides the datafill related to Operator Services Network Capability for table FNPACONT:RTEREF. The RTEREF subtable in the FNPACONT table allows operating company personnel to maintain route lists to which North American digit translations point. The OSNC activity expands use of the T-selector in the RTEREF subtable to point to an entry in the OSNCCAP table. When the T-selector points to an entry in the OSNCCAP table, signaling of the OSNC capabilities is controlled on outgoing IT/ATC ISUP trunk for calls with OSNC capabilities routed to TOPS or service nodes.

Operator Services Network Capability (continued)

Only fields that apply directly to Operator Services Network. For a description of other fields, refer to the data schema document.

Datafill related to table FNPACONT:RTEREF

Field	Subfield	Entry	Explanation and action
RTELIST		see subfield	Route list. This field provides a set of routes that are selected in the sequence that they are presented in the list. There are many route selectors that are valid, but the T-selector is the one of interest here. The T-selector allows the route list to point to another routing table such as table OFR2 or table OSNCCAP with an associated index into that table. When the T-selector appears with the OSNCCAP table, the call uses the OSNC capabilities associated with the index for all subsequent route encountered for the termination. Because table OSNCCAP does not contain a terminating agent, the routing function returns back to the route list and proceeds to the next route. When the next route is selected, the OSNC capabilities are still active for that agent.
	EXTRTEID	see subfield	External route identifier.
	TABID	OSNCCAP	OSNCCAP is a new entry in the TABID subfield. The TABID subfield follows the T-selector.
	KEY	0 to 254	In the key, enter the index of the entry in the OSNCCAP table to which the T-selector needs to point.

Datafill example for table FNPACONT:RTEREF

The figure that follows shows sample datafill for table FNPACONT:RTEREF.

Operator Services Network Capability (continued)

MAP example for table FNPACONT:RTEREF

RTE	RTELIST
100	(T OSNCCAP 0) (N D OUTGOINGTRUNK1 0 N N) (N D OUTGOINGTRUNK2 0 N N) T OFRT 10) \$
101	(T OSNCCAP 1) (N D OUTGOINGTRUNK1 0 N N) (T OSNCCAP 2) (T S OUTGOINGTRUNK3) \$

Datafill related to Operator Services Network Capability for table TOPSCOIN

The table that follows provides the datafill related to Operator Services Network Capability for table TOPSCOIN. TOPSCOIN allows operating company personnel to override office-wide default related to coin signaling on a per-trunk basis. With the OSNC activity, ISUP IT and ISUP ATC trunk can now be added to table TOPSCOIN. The activity does not add or change any fields. For a description of other fields, refer to the data schema document.

Datafill related to table TOPSCOIN (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
GRPKEY		alphanumeric (1 to 16 characters)	Common Language Location Identifier. Enter the alphanumeric string that identifies the trunk group. This alphanumeric string is defined in table CLLI and table TRKGRP.
CNSDELAY		0 to 200	Coin Signal Delay. Enter 0 for OSNC trunks because coin signal delays are not used for ISUP signaling. Coin signal delays are only needed for MF trunks.
PADSTAT0		UNKNOWN, ENABLED, DISABLED	Keypad state for 0- and 0+ calls. Enter the coin phone keypad state for 0- and 0+ dialed calls.
PADSTAT1		UNKNOWN, ENABLED, DISABLED	Keypad state for 1+ dialed calls. Enter the coin phone keypad state for 1+ dialed calls.

Operator Services Network Capability (continued)

Datafill related to table TOPSCOIN (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
COINTYPE		CCFCDF, CCF, CDF	Coin Phone Type. Enter the coin phone type. Enter the CCF if the coin phone is a coin first phone. Enter CDF if the coin phone is a dial-tone first phone. Enter CCFCDF if the coin phone type if unknown. CCFCDF (or unknown) coin phones are generally treated like dial-tone first coin phones.
CCFCNRET		Y, N	Coin First Phone Return. This field indicates whether a coin return needs to be automatically done when the call arrives at the TOPS switch.
PADSTATB		UNKNOWN, ENABLED, DISABLED	Keypad state for FGB calls. Enter the coin phone keypad state for FGB dialed calls.
PADSTAT8		UNKNOWN, ENABLED, DISABLED	Keypad state for 800+ calls. Enter the coin phone keypad state for 800+ dialed calls.
OTTYPE		POST, PRE	Overtime type. Enter the handling method for overtime periods. Enter POST if the overtime period is post paid (meaning the subscriber pays for the overtime period after the period in complete). Enter PRE if the overtime period is pre-paid (meaning the subscribed pays for the overtime period before the beginning of the period).

Datafill example for table TOPSCOIN

The figure that follows shows sample datafill for table TOPSCOIN.

Operator Services Network Capability (end)

MAP example for table TOPSC0IN

GRPKEY	CNSDELAY	PADSTAT0	PADSTAT1	C0INTYPE	CCFCNRET	PADSTATB	
PADSTAT8	OTTYPE						

TATCPMSIC3	70	UNKNOWN	UNKNOWN	CCFCDF	Y	UNKNOWN	
UNKNOWN	POST						

Translation verification tools

Operator Services Network Capability does not use translation verification tools.

SERVORD

Operator Services Network Capability does not use the Service Order System (SERVORD).

OSNC Enhancements

Ordering codes

Functional group ordering code: OSEA0001

Functionality ordering code: OSEA0013

Release applicability

TOPS13 and up (feature is patched back to TOPS13)

TOPS14 introduced OSNC Enhancements.

Requirements

To operate, OSNC Enhancements requires the Operator Services Network Capability, OSEA0013.

Description

This feature provides enhancements to Operator Services Network Capability (OSNC). OSNC was introduced in release TOPS13, OSEA0013. The enhancements are as follows:

- Provide interworking for coin calls arriving at TOPS with OSNC signalling and terminating with subgroup MF signalling on an ATC trunk and group BELL1/BELL2 signaling with either inband or expanded inband coin signaling and using an FGC CIC. For information on coin signaling, refer to functionality TOPS Call Processing Features, OSB00001.
- Support of flash, ringback, and operator hold functionalities for both coin and non-coin calls that use the above interworking scenario.
- This interworking scenario supports TOPS operators and OSSAIN agents. Also supported are NOSERV coin calls to route through TOPS to use the coin signal converter.
- Add a table TOPSPARM new parameter to allow all outgoing ISUP calls to default to OSNC signalling. This parameter is not related to the coin interworking functionality; it is used for outpulsing to ISUP trunks.

This functionality is provided by the following feature:

Feature number	Feature name
59019041	OSNC Enhancements(TOPS14)

OSNC Enhancements (continued)

Operation

Background

In TOPS13, OSNC provided ISUP signalling based on Generic Requirements GR-1144-Core for a TOPS office. Amongst various functions, it provided support for coin calls using OSNC and support for interworking an incoming OSNC call to a terminating MF trunk. However, it did not provide coin functionality for interworking calls.

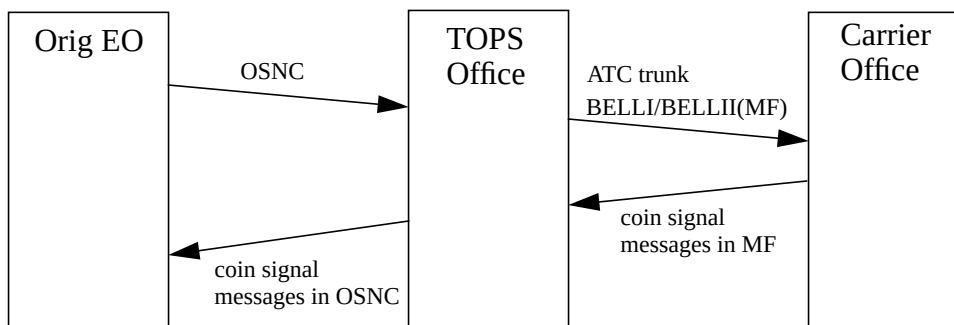
Operating Companies have expressed a concern about this lack of functionality since they could be receiving OSNC coin calls that require assistance from a carrier. Although the Operating Company can upgrade its network to support OSNC, it cannot force the carrier to upgrade to OSNC. Therefore, a significant amount of coin traffic would be incoming OSNC with the need to terminate to a carrier office that uses MF trunks. Thus, a need for this feature.

Operating companies have also raised a concern about having to add the OSNCCAP selector to all route lists that should be using OSNC signalling. Thus a new parameter is added to default all outgoing ISUP signalling to OSNC. This parameter eliminates the need to change all route lists.

Overview and network requirements

This feature supports the following configuration.

Supported configuration (interworking)



The specific requirements are as follows:

- Incoming call uses OSNC signalling. Refer to the TOPS13 functionality OSNC, OSEA0013, for information on setting up incoming OSNC calls.
- Terminating trunk is ATC, which must be a direct connection to the carrier office. Therefore, the terminating trunk cannot have an access tandem with IT trunks between TOPS and carrier office.

OSNC Enhancements (continued)

- Terminating trunk uses BELLI/BELLII signalling
- Terminating trunk uses FGC CIC
- Terminating trunk uses either inband or expanded inband coin signalling

Other scenarios are not supported by this feature.

To support the interworking scenario, MF coin messages incoming from the terminating trunk must be captured with a receiver and converted into OSNC messages to be sent to the originator. In addition, certain OSNC messages incoming on the originating trunk need to be converted into MF messages to be sent to the terminator. Most of this functionality can only be supported if the call has operator hold in effect.

TOPS must look at the coin messages coming from the carrier office in MF signalling format and convert them into ISUP messages to be passed back to the originating end office (EO). Thus, TOPS now needs a method to be able to capture and look at these messages.

This feature supports the use of standard MF Receivers, UTRs (Universal Tone Receivers), and GTRs (Global Tone Receivers) to capture the incoming messages from the terminating trunk. For more information, refer to the datafill procedure section, table RECEIVER.

The following MF coin messages incoming from the terminating trunk are converted into OSNC messages and sent to the originating trunk.

- Coin collect
- Coin return
- Operator attached
- Operator released
- Operator released / Coin collect
- Ringback

The following OSNC messages incoming from the originating trunk are converted into MF messages and sent to the terminating trunk.

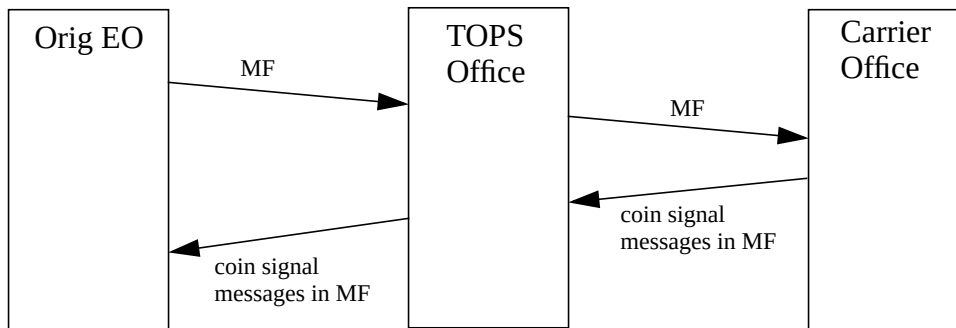
- Flash / Recall
- Calling disconnect
- Calling reconnect

The above supported interworking configuration is for OSNC to MF signalling. However, MF to MF signalling is non-interworking, shown in the

OSNC Enhancements (continued)

following figure. A coin call can arrive at a TOPS position and be transferred to a carrier office. Since the signalling method is the same (MF to MF), the coin signalling messages simply pass through TOPS from the carrier office to the originating EO without inspection. TOPS does not need to know what the coin signalling message contains since there is nothing for TOPS to do.

Non-interworking scenario



Operator hold

Operator hold is also known as connection hold. It allows the operator to remain in control of the call even after the calling party has gone on-hook. When operator hold is in effect, messages can be passed from one office to the next through TOPS. For example, an OSNC 'on-hook' received as a FAC message is forwarded to the carrier as an MF 'on-hook' message.

The following messages are supported only with operator hold:

- Calling disconnect
- Calling reconnect
- Ringback

Without operator hold, the following messages cannot be supported after the calling party hangs up (since the connection would be released when the on-hook was detected):

- Coin collect
- Coin return
- Operator attached/Released

Operator hold can be established on the incoming OSNC connection when the call arrives at TOPS. Reference the TOPS13 functionality description OSNC, OSEA0013, for more information.

OSNC Enhancements (continued)

Operator hold can be setup for an outgoing ATC trunk in table TRKGRP, field OPRHOLD. However, feature group C (FGC) requires operator hold to be in effect and therefore datafill enforces field OPRHOLD be set to Y for BELLI and BELLII (the signalling type for FGC). Since this feature only supports FGC, operator hold should always be available for the outgoing trunk.

This feature maintains the operator hold status of the incoming party when transferring to the carrier based upon the OPRHOLD setting.

Note 1: If the incoming party does not have connection hold in effect, then interworking is limited as described above.

Note 2: There is a parameter in table OFCENG called CONNECTION_HOLD_TIMER_IN_MINS. This parameter is a minutes timer (1-4) which ends connection hold when the timer expires after the calling party has gone on-hook. This timer does not end the call.

This functionality applies to both coin and non-coin calls for the interworking scenario supported by this feature.

MF to OSNC message conversions

This section addresses the messages which need to be converted from MF messages to OSNC messages. These messages are from the carrier and need to be forwarded to the originator. They consist of coin control and ringback. This functionality applies to both coin and non-coin calls for the interworking scenario supported by this feature.

Coin control signalling

This feature supports both Inband Signalling (IB) and Expanded Inband Signalling (EI) for coin controls from the terminating trunk. TOPS analyzes these messages and converts them into OSNC messages to be forwarded back to the originating EO.

The signalling type is determined from table TRKSGRP field CCONT. If CCONT is nil, then field RNGBCK is used.

According to GR 506-CORE: LSSGR: Signalling for Analog Interfaces and the translations guide description for TOPS Call Processing Features (Coin), OSB00001, expanded inband signalling is simply an expanded set of control signals over inband signalling. The basic methods applied to sending these coin control signals is as follows:

- Send on-hook wink (flash)
- Wait the post-wink delay duration
- Send the MF tone which represents the corresponding coin signal

OSNC Enhancements (continued)

Please reference the above LSSGR and functionality for more information.

TOPS checks for these signals and converts them into OSNC messages. OSNC uses Facility (FAC) messages to send coin control signals by adding the Service Activation Parameter (SAP) to the message with the appropriate Feature Control Indicator (FCI). The following table shows the MF coin control signals and the corresponding OSNC FCIs

Inband, Expanded Inband and OSNC Coin Control Signals

MF coin control signals	Inband	Expanded inband	OSNC FCI
2	Coin Collect	Coin Collect	Coin Collect (#82)
13 (KP)	Coin Return	Coin Return	Coin Return (#83)
11 (ST3P)	Ringback/ Re-ring	Ringback/ Re-ring	Ringback Request (#95)
8	not supported	Operator Released	Network Service Released (#81)
#A (0)	not supported	Operator Attached	Network Service Attached (#80)
15	not supported	Operator Released and Coin Collect	Network Service Release (#81) and Coin Collect (#82)

Ringback

Ringback is signalled in the same manner as the coin control signals and has already been included in the above table.

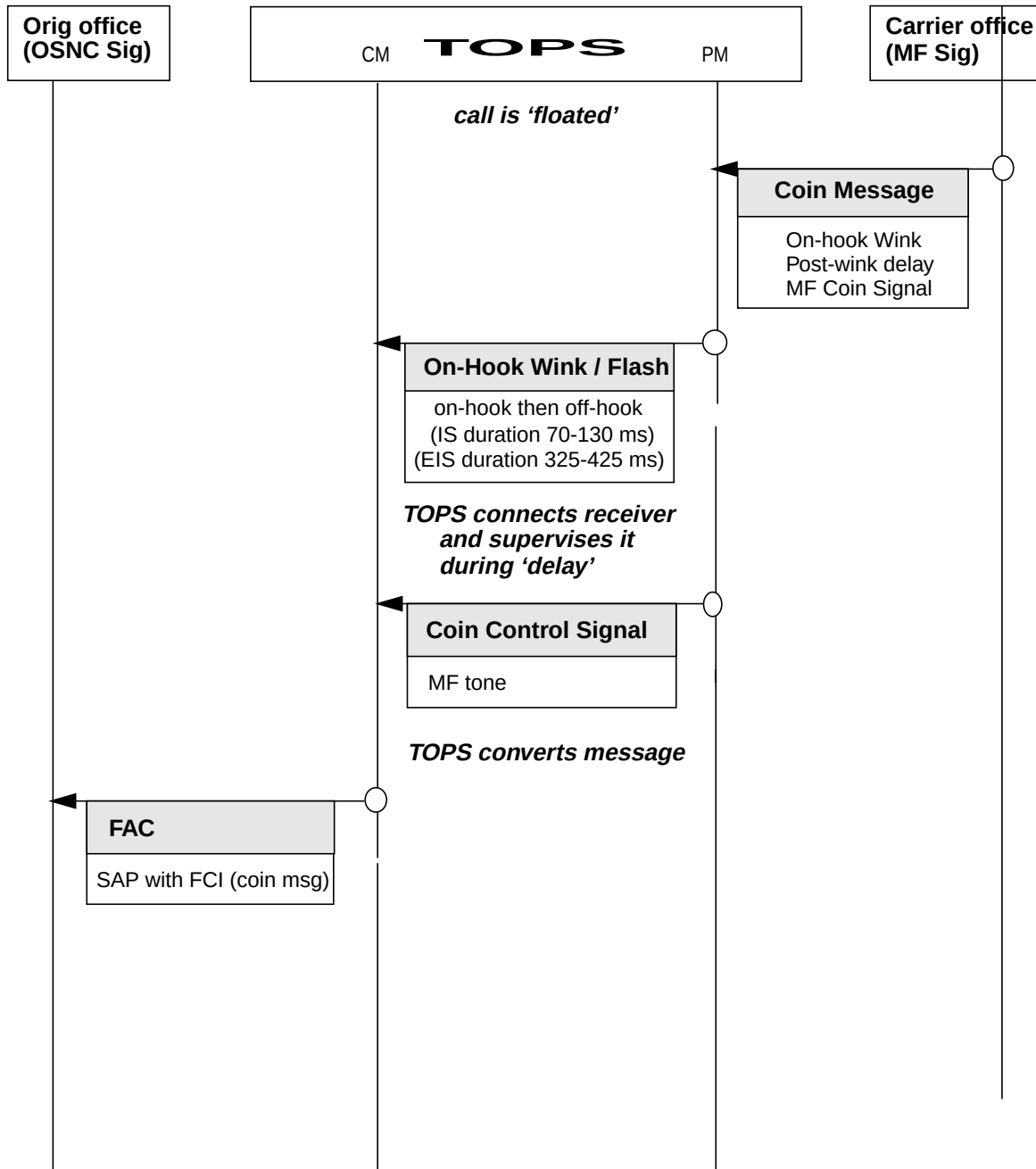
The ringback functionality applies to both coin and non-coin calls for the interworking scenario supported by this feature.

Call flow

The following figure shows a call flow of the messaging involved in this coin interworking scenario. Note that it shows the messaging from the peripheral module (PM) to the computing module (CM) within the TOPS switch for the carrier side only. The actual messaging received from the carrier is contained in one message which instructs the PM to send certain messages to the CM with appropriate delays.

OSNC Enhancements (continued)

Inband/Expanded Inband signalling



OSNC to MF message conversions

This section addresses the messages which need to be converted from OSNC messages to MF messages. These messages are from the originator and need

OSNC Enhancements (continued)

to be forwarded to the carrier. They consist of flash, calling on-hook, and calling off-hook. This functionality applies to both coin and non-coin calls for the interworking scenario supported by this feature.

Flash

A flash message comes from the originating EO when the calling party hook-flashes to recall back to an operator. For an incoming OSNC call, a FAC message is received which contains a SAP with an FCI of Network Service Recall (#84). This flash message needs to be converted from an OSNC message to an MF message to be forwarded to the carrier office.

TOPS will receive the OSNC FAC with Network Service Recall and send out supervision signalling to indicate flash. An analog (MF) flash is an on-hook followed by an off-hook within a predetermined time frame. The flash has a minimum and maximum time when the off-hook must follow the on-hook to be considered a flash. The full range, as specified in GR-506-CORE: LSSGR Signalling for Analog Interfaces, can be from 200 - 1550 milliseconds¹; however, this scenario typically uses a range of 400 - 800 milliseconds. TOPS sends these signals (on-hook then off-hook) using the predetermined times specified in the peripheral based upon the card type.

Calling on-hook

When the calling party goes on-hook, TOPS receives a FAC message with the SAP FCI set to Disconnect Request if operator hold is in effect. TOPS does not release the connection, but forwards an MF on-hook to the carrier.

If operator hold is not in effect, then TOPS receives a REL message and releases the connection. TOPS also forwards an MF on-hook to the carrier.

Calling off-hook (with operator hold)

When the calling party goes back off-hook during a call with operator hold in effect, TOPS receives a FAC message with the SAP FCI set to Reconnect Request. Since operator hold is in effect, TOPS simply forwards an MF off-hook to the carrier.

If operator hold is not in effect, TOPS does not receive this message.

¹ An off-hook received before the minimum timer value is considered a hit and is ignored.

OSNC Enhancements (continued)

The following table illustrates these conversions

OSNC to MF message conversions

Incoming OSNC FCI	Outgoing MF (see note)
Network Service Recall (#84)	On-hook followed by an off-hook within the predetermined timeframe set within the PM by cardtype.
Disconnect Request (#8D)	On-hook
Reconnect Request (#8E)	Off-hook

Note: OSNC uses a done_msg (FCI=#B8) to indicate that the End Office has completed processing the coin function (coin collect or coin return); however, there is no MF signal which this message can be converted into. The MF done_msg received on the incoming trunk (to the carrier position) is sent from the trunk's PM - not signalled from the other office. If timing issues arise, then the carrier office may require a delay be added before processing the done_msg.

Releases

This feature ensures that the call is properly taken down when appropriate. TOPS ensures the following:

- A REL received from the incoming trunk will take down the call at the TOPS office. Since the TOPS office has no way of knowing if the call is at a carrier position, floated in ringing state, or floated in talking state, TOPS cannot provide any additional functionality other than to take the call down. Note: the call would still be active in the carrier office and the carrier office would have to either take it's call down or find a way to re-establish the connection to the calling party. A ringback is not possible since the trunks have been released. The carrier operator will need to release the calling party and then re-outpulse.
- An on-hook from the carrier takes the call down.
- When the OPRHOLD timer (HLDTIMER) expires, the call is taken down similar to receiving a REL from the originator.

This operation is datafillable in table TRKGRP as field HLDTIMER (a subfield of OPRHOLD=Y). When operator hold is in effect, the HLDTIMER is started when the calling party goes on-hook. If the carrier office does not release the call before the timer expires, TOPS releases the call. This timer is 0-60 minutes and should be set high in order to ensure emergency calls can be properly treated. A TOPS 122 log is produced when the call is taken down because the hold timeout timer expires.

OSNC Enhancements (continued)

New coin signal timer

For IB and EI signaling, TOPS is notified that a coin signal is on its way by a flash message. When TOPS receives the flash message, a receiver is connected to capture the coin signal. A new coin signal timer is started for a 7 second period to ensure TOPS is not waiting forever on a coin signal which may have been lost. Thus, the new internal timer is started whenever a flash message is received from the carrier indicating a coin signal is coming.

Note: Since the coin signal indicates activity on the call, the OPRHOLD timer is reset when a coin signal arrives. If the calling party is onhook but still connected when the coin signal completes, the OPRHOLD timer is then re-started.

Tandem NOSERV coin calls

This feature makes changes to allow coin calls incoming with a NOSERV carrier to be routed through TOPS to use the coin signal convertor created by this feature. Alternate carriers are also supported for the calls that tandem through TOPS. Calls that are forwarded to a carrier office by tandeming through TOPS produce AMA records with a 625 Structure Code and either a 110 or 251 Call code depending on datafill.

Note: There is no need to route NOSERV calls to TOPS in a DMS100/200 TOPS combo office and tie up additional resources. Therefore, NOSERV calls originating in a TOPS combo office should be directly routed to the carrier from the 100 side and not looped-around to TOPS. Thus, this call does not use OSNC and interworking is not an issue.

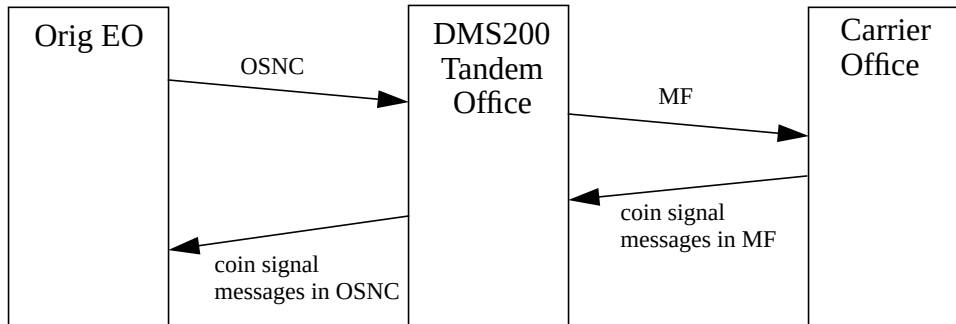
Patch recommendation

It is recommended that this coin interworking feature (OSNC Enhancements) for TOPS operators be patched back to the TOPS13 OSNC release.

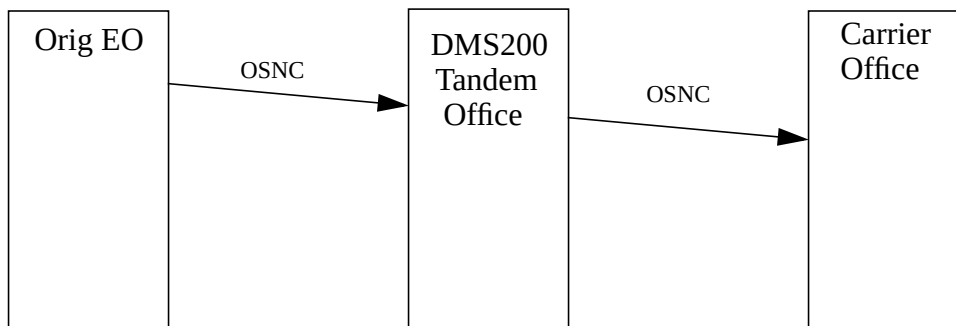
Tandem scenarios

This section highlights the various network configurations that may have a coin interworking issue to consider. It also briefly discusses TOPS interaction and any needed features to support coin interworking for the scenario.

The following figure illustrates calls routing through an Access Tandem to a carrier office. In this scenario, the calls are not presented to TOPS, so this feature does not support this scenario. A tandem feature is required to support coin interworking for this scenario. The tandem feature would also have to include support for forwarding the ANI and flex ANI.

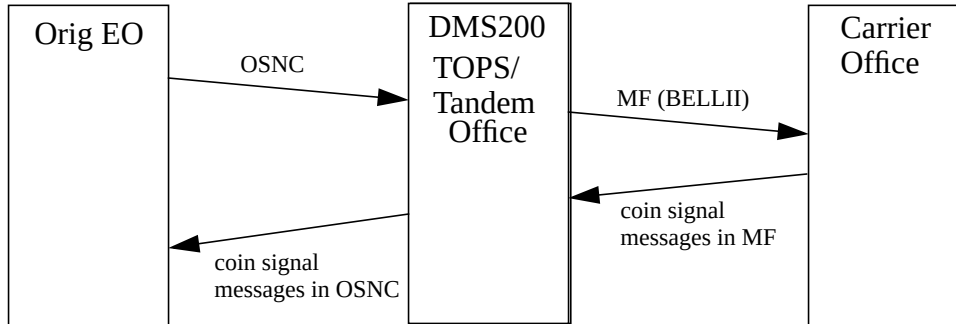
OSNC Enhancements (continued)**EO-Tandem-IXC**

The following figure illustrates a call routing through a tandem to TOPS using OSNC. This scenario does not require coin interworking features for this portion of the call. The scenario is included to note that OSNC software may be required in the tandem but TOPS software is not. Also, flex ANI is passed by the OLI for this scenario. OSNC does not have to be datafilled on the trunk going to TOPS from the tandem since the SAP is passed along through the tandem.

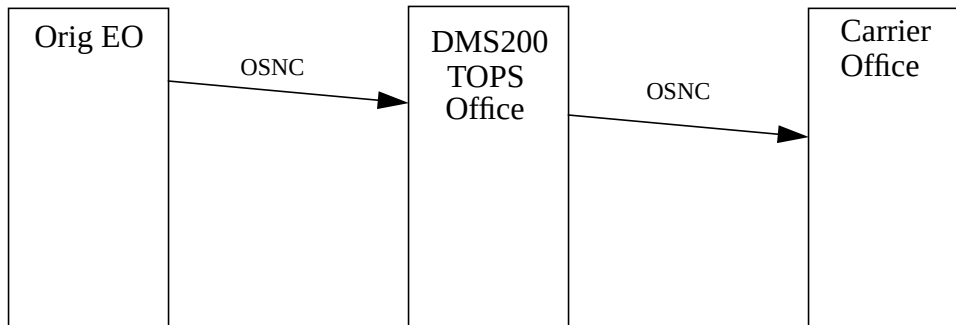
EO-Tandem-TOPS

The following figure shows calls routing from the EO to the TOPS/Tandem switch on IXC dedicated trunks for NOSERV carriers. For this scenario, coin calls are now presented to TOPS with changes made by this feature; non-coin NOSERV traffic is still routed by the tandem - not TOPS. TOPS now routes incoming NOSERV carrier coin calls, instead of letting the tandem route the call. Thus, this feature does apply to this scenario.

OSNC Enhancements (continued)

EO-TOPS/Tandem-IXC

The following figure is provided to discuss traffic incoming to TOPS on shared trunks. All incoming NOSERV coin carrier traffic is now routed/processed by TOPS. Non-coin NOSERV traffic is still routed by the tandem. All incoming SERV carriers are processed by TOPS. All 0- traffic is routed to TOPS and NOSERV traffic is then routed by TOPS. This feature supports coin interworking for this scenario for calls processed by TOPS.

EO-Tandem-TOPS**Hardware**

No new hardware is introduced; however, this feature requires additional provisioning of receivers in table RECEIVER.

Logs

The existing log TOPS 122 has a new value to indicate when an incoming OSNC coin call does not have connection hold available and is being transferred to a carrier with MF signalling. This condition means coin signalling is not fully supported for the call. The new value is NO_OPRHOLD_ON_INCOMING.

OSNC Enhancements (continued)

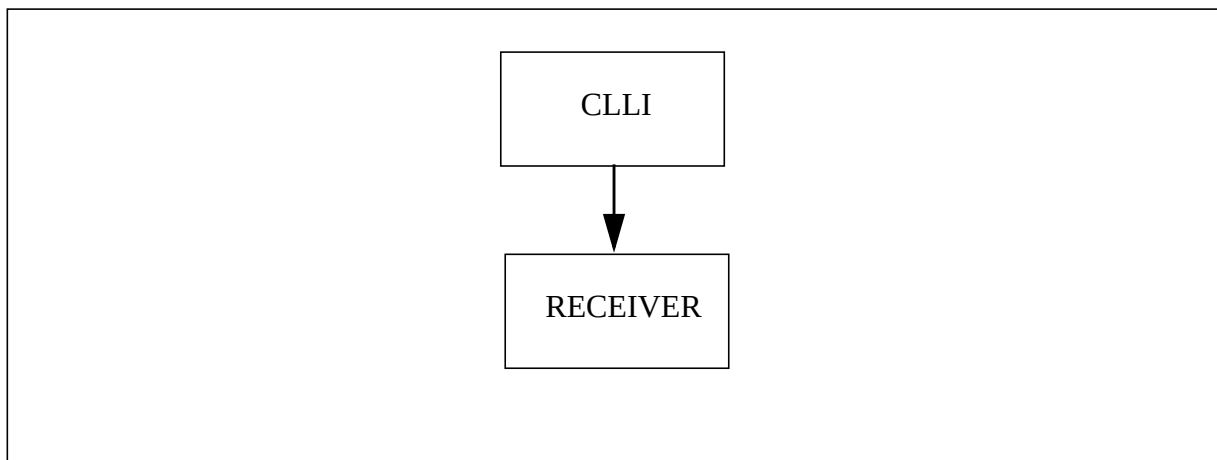
Translations table flow

The list that follows includes the OSNC Enhancements translations tables:

- Table CLLI defines CLLI names.
- Table RECEIVER contains information on various receivers.

The flowchart that follows provides the OSNC Enhancements translations process.

Table flow for OSNC Enhancements



The table that follows lists the datafill content used in the flowchart.

Datafill example for OSNC Enhancements

Datafill table	Example data
CLLI	RCVRMF 51 64 MF_RECEIVERS
RECEIVER	RCVRMF 0 D MTM 11 16 2X48AA

Limitations and restrictions

The limitations and restrictions that follow apply to OSNC Enhancements.

- The outgoing connection must be an ATC trunk with BELLI or BELLII signalling using a FGC CIC and Inband or Expanded Inband coin signalling to be supported by this feature.
- The incoming OSNC call must have connection hold available in order to fully support this feature. If the incoming OSNC connection does not have connection hold, the connection is released when the calling party goes on-hook.

OSNC Enhancements (continued)

- Incoming MF to terminating OSNC interworking for coin signalling is not supported.
- OSNC to MF coin interworking for tandem calls is not supported.
- Connection hold is unsupported for Emergency 911 calls.
- The new coin signal timer causes the OPRHOLD timer to be reset.
- NOSERV traffic in a DMS100/200 TOPS Combo office should be routed to the carrier directly from the 100-side. TOPS cannot support interworking NOSERV carrier calls from loop-around trunks. There is a datafill restriction in table OCCINFO which prevents this functionality.

Interactions

This feature requires functionality Operator Services Network Capability, OSEA0013.

Activation and deactivation by the user

OSNC Enhancements does not require activation or deactivation by the user.

Billing

OSNC Enhancements does not generate new billing records or changes.

Station Message Detail Recording

OSNC Enhancements does not require Station Message Detail Recording.

Office parameters used by OSNC Enhancements

OSNC Enhancements does not generate office parameters.

Datafill sequence

The table that follows lists the tables that require datafill to put OSNC Enhancements into operation. You must enter data into the table in this order.

Datafill requirements for OSNC Enhancements

Table	Purpose of table
RECEIVER	Receiver provides information about receiver circuits
TOPSPARM	TOPS Parameters contains office-wide parameters.

OSNC Enhancements (continued)**Datafill related to OSNC Enhancements for table RECEIVER**

The table that follows provides the datafill related to OSNC Enhancements for table RECEIVER. This table includes only those fields that apply directly to OSNC Enhancements.

Datafill related to table RECEIVER

Field	Subfield	Entry	Explanation and action
CARDCOE	CLLI	RCVRMF, RCVRUTR, RCVRGTR	This table is not changed; however, additional receivers may need to be provisioned.
			CLLI. This feature supports the following receivers: - Standard MF receiver: RCVRMF - Universal tone receiver (UTR): RCVRUTR - Global tone receiver (GTR): RCVRGTR If a new CLLI is added, it must be defined in table CLLI.
CARDCOE		2X48AA, 6X92BB, 6X92BC, 6X92CA, 6X92EA	Card code. This supported codes are as follows: - MF: 2X48AA - UTR: 6X92BB, 6X92BC, 6X92BC - GTR: 6X92EA

Datafill example for table RECEIVER

The figure that follows shows sample datafill for table RECEIVER.

MAP example for table RECEIVER

RCVRKEY	RCVRTYPE	TMTYPE	TMNO	TMCKTN0	CARDCODE	
RCVRMF	0	D	MTM	11	16	2X48AA
RCVRUTR	1	D	MTM	11	17	6X92BB
RCVRGTR	2	D	MTM	11	18	6X92EA

OSNC Enhancements (end)

Datafill related to OSNC Enhancements for table TOPSPARM

The table that follows provides the datafill related to OSNC Enhancements for table TOPSPARM. This table includes only those parameters that apply directly to OSNC Enhancements.

Datafill related to table TOPSPARM

Parameter	Explanation and action
OSNC_OUTGOING_DEFAULT	This parameter allows all outgoing ISUP calls to default to OSNC signalling. This parameter eliminates the need to add the OSNCCAP selector to all route lists that should be using OSNC signalling. The values are as follows: - Y - All outgoing ISUP traffic is routed with OSNC signalling unless overridden by the OSNCCAP selector indicating not to use OSNC signalling for incoming OSNC calls - N - All outgoing ISUP traffic is routed with TOPS/ISUP (functionality GR317/GR394 ISUP to/from TOPS, OSEA0005) signalling unless OSNC signalling is specified in the route list by selector OSNCCAP for incoming OSNC calls.

Datafill example for table TOPSPARM

The figure that follows shows sample datafill for table TOPSPARM.

MAP example for table TOPSPARM

PARAMNAME	PARAMVAL
OSNC_OUTGOING_DEFAULT	Y

Translation verification tools

OSNC Enhancements does not use translation verification tools.

SERVORD

OSNC Enhancements does not use the Service Order System (SERVORD).

TOPS Bellcore LNP Enhancements

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: OSEA0103

Release applicability

TOPS10 and up

TOPS Bellcore LNP Enhancements was introduced in TOPS10.

Prerequisites

To operate, TOPS Bellcore LNP Enhancements has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- TOPS LNP, OSEA0103, and table TOPSFTR parameter NUMBER_PORTABILITY = Y
- Table TOPSFTR parameter BELLCORE_NUMBER_PORTABILITY = Y

Description

Functionality TOPS Local Number Portability (LNP), OSEA0103, is changed to be compliant with the Bellcore Local Number Portability Capability Specification, GR-2936-CORE. This specification was released after the release of TOPS LNP in TOPS07. The changes are the following:

- SOC - Add software optionality control (SOC) code for this new Bellcore compliant addition.
- LNP TCAP - Change the local number portability (LNP) transaction capability application part (TCAP) messaging and the LNP Verification (LNPVER) tool to include additional parameters (CallingPartyID, ChargeNumber, TriggerCriteriaType) in the query message sent to the service control point (SCP) database.
- ISUP - When an incoming integrated services digital network (ISDN) user part (ISUP) trunk sends the jurisdiction information parameter (JIP), use the JIP as the originating LRN.

TOPS Bellcore LNP Enhancements (continued)

- Alter processing of any signaled JIP in TOPS LNP for incoming ISUP trunks.
- AMA - Produce automatic messaging accounting (AMA) module 719 instead of module 720 when this functionality is active. Also, use the JIP for recording the calling LRN.

Note 1: As a result of incomplete specifications for Portability Outside the Rate Center (PORC), PORC is not addressed in this document even though it is included in the GR-2936-CORE Bellcore requirements.

Note 2: Query on Release is not addressed in this document although it is an optional GR-2936-CORE Bellcore requirement.

This functionality is provided by the following feature:

Feature number	Feature name
AF7496	TOPS: Bellcore LNP Enhancements

Operation

This section provides details of the changes.

SOC

This new Bellcore compliant LNP is controlled by new software optionality control (SOC) option OSEA0103, TOPS Bellcore LNP Enhancements. This functionality is an optional part of the Operator Services Equal Access functional group. This SOC is dependent upon functionality TOPS LNP, OSEA0103.

LNP TCAP interface

The GR-2936 Bellcore requirements modify the InfoAnalyze message used for an LNP query to include the following parameters:

- TriggerCriteriaType - This parameter is mandatory. This parameter is the advanced intelligent network (AIN) LNP trigger referenced in functionality TOPS LNP for busy line verification.
- CallingPartyID - This parameter is suggested.
- ChargeNumber - This parameter is suggested.

Addition of these parameters is controlled by new table TOPLNPOP. Refer to the datafill procedure section for details.

TOPS Bellcore LNP Enhancements (continued)

The details of how the ChargeNumber and CallingPartyId parameters are populated are a result of the type of incoming signaling. If the incoming signaling is ISUP, the TOPS office can receive a ChargeNumber, CallingPartyId, or both. When only one is received, existing functionality uses it as the calling number for call processing and billing. When both are received, both are sent if specified in table TOPLNPOP. For MF signaled trunks, the CallingPartyId is always sent. The CallingPartyID and ChargeNumbers are only sent if they are signalled and allowed by table TOPLNPOP. The following table shows this logic.

Population of the CallingPartyID and ChargeNumber parameters

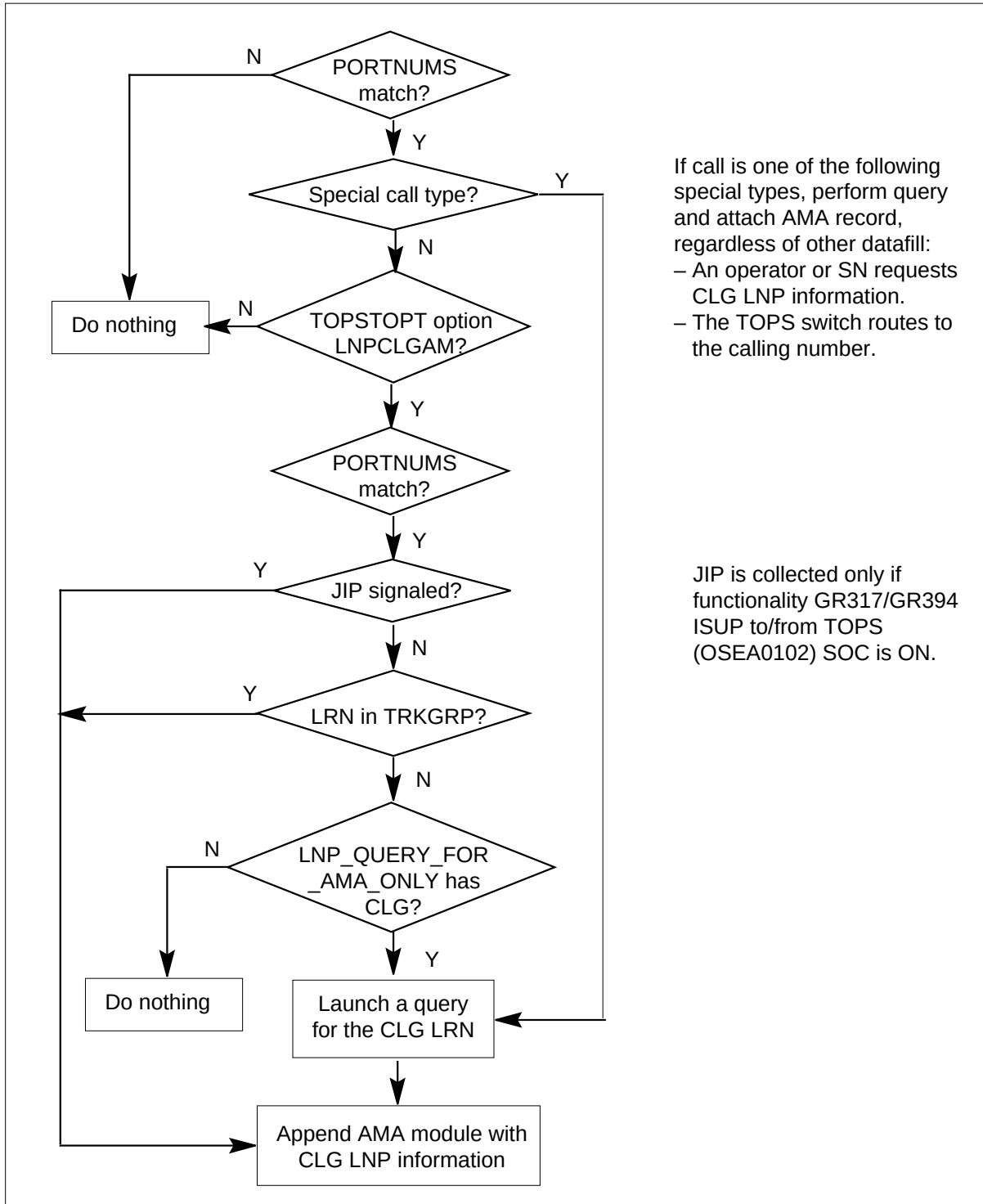
Trunk type	Signaled CallingPartyID	Signaled ChargeNumber	Number sent in the query for CallingPartyID	Number sent in the query for ChargeNumber
ISUP	yes	no	CallingPartyID	none
ISUP	no	yes	none	ChargeNumber
ISUP	yes	yes	CallingPartyID	ChargeNumber
MF	yes	no	CallingPartyID	none

Incoming ISUP trunk

If the JIP is signalled on an incoming ISUP trunk, the JIP is used as the calling LRN regardless of datafill in table TRKGRP. Otherwise, if no JIP is signaled, or if the trunk uses MF signaling, the datafilled LRN is used. The JIP can only be signaled over ISUP trunks. The following diagram illustrates how the LRN for the originating party is determined.

TOPS Bellcore LNP Enhancements (continued)

Determining the originating LRN



TOPS Bellcore LNP Enhancements (continued)

LNPVER tool

The LNP Verification (LNPVER) tool contains the following new commands that are used in the InfoAnalyze message for an LNP query.

LNPVER commands

Command	Description
CALLINGID <send parameter> <directory number> <nature of number> <numbering plan> <presentation> <screening>	This command specifies the originating party. This command consists of the following parameters: Send parameter - This parameter indicates whether the AIN LNP trigger criteria is sent as a query parameter. The trigger is used for busy line verification. The values are Y (send) and N (do not send). For N, the other parameters are not processed. Calling party directory number - Enter a 3, 6 or 10-15 digit number enclosed in single quotes. The default value is '0000000000'. When the LNPREQ command is executed, table PORTNUMS is checked for this number. If the number cannot be found, the query is not launched and an error message is given. Nature of number - the nature of the calling DN. The values are the following: • Inp_unknown - unknown or not applicable • Inp_uniq_sub - LNP unique subscriber number • Inp_uniq_natl - LNP unique national significant number • Inp_uniq_intl - LNP unique international number • nonuniq_sub - non-unique subscriber number • nonuniq_ntl - non-unique national number • nonuniq_intl - non-unique international number • Inp_test_line_tc - test line test code

TOPS Bellcore LNP Enhancements (continued)

LNPVER commands

Command	Description
	Numbering plan - The numbering plan for the calling DN. The values are the following: • lnp_np_isdn - ISDN numbering plan (default value) • lnp_np_private - private numbering plan • lnp_np_unknown - unknown or not applicable Presentation of the calling DN to the operator. The values are the following: • lnp_pres_allow - LNP presentation allowed • lnp_pres_restrict - LNP presentation restricted • lnp_num_unavail - LNP number unavailable Screening of the calling DN. The values are the following: • lnp_user_nscr - LNP user provided, no screening • lnp_user_pass - LNP user provided, passed screening • lnp_user_fail - LNP user provided, failed screening • lnp_network - LNP network provided The following is an example: <pre>>CALLINGID Y '2013229001' lnp_uniq_sub lnp_np_isdn lnp_pres_allow lnp_user_nscr Calling Party ID Directory Number: 2013229001 Nature of Number: Unique Subscriber Number Plan: ISDN Numbering Plan Presentation Indicator: Presentation Allowed Screening Indicator: User provided, not screened Calling Party ID Send: N</pre>

TOPS Bellcore LNP Enhancements (continued)

LNPVER commands

Command	Description
CHARGENUM <send parameter> <directory number> <nature of number> <numbering plan>	This command indicates the charge number of the automatic number identification (ANI) for the calling party. This command consists of the following parameters: Send parameter - This parameter indicates whether the AIN LNP trigger criteria is sent as a query parameter. The trigger is used for busy line verification. The values are Y (send) and N (do not send). For value N, the other parameters under this command are not used. Charge directory number - Enter a 3, 6, or 10 digit number enclosed in single quotes. The default value is '0000000000'. Note, when the LNPREQ command is executed, table PORTNUMS is checked for this number. If the number cannot be found, the query is not launched and an error message is given. Nature of number - the nature of the charge DN. The values are the following: • Inp_ani_clg_sub - ANI of the calling party; subscriber number • Inp_ani_navail - ANI not available or not provided • Inp_ani_clg_natl - ANI of the calling party; national number • Inp_ani_cld_incl_sub - ANI of the called party included; subscriber number • Inp_ani_cld_nincl - ANI of the called party not included • Inp_ani_cld_incl_natl - ANI of the called party; national number Numbering plan - The numbering plan for the given charge DN. The values are the following: • Inp_np_isdn - ISDN numbering plan (default value) • Inp_np_private - private numbering plan • Inp_np_unknown - unknown or not applicable The following is an example: <pre>>CHARGENUM Y '2012209898' Inp_ani_clg_sub Inp_np_private Calling Party ID Directory Number: 2012209898 Nature of Number: ANI Calling Subscriber Numbering Plan: Private Numbering Plan Charge Number Send: Y</pre>

TOPS Bellcore LNP Enhancements (continued)

LNPVER commands

Command	Description
TRIGCRIT <send parameter> <trigger type>	This command indicates the type of trigger. This command consists of the following parameters: Send parameter - This parameter indicates whether the AIN LNP trigger criteria is sent as a query parameter. The trigger is used for busy line verification. The values are Y (send) and N (do not send). For Y, enter a value for the following "Trigger type" parameter. Trigger type - This parameter indicates the trigger type if the Send parameter = Y. The values are the following: • FEAT_ACT (feature activator) • VSC (vertical service code, a parameter sent in an LNP query) • CUSTAC (customized access) • CUSTINT (customized intercom) • NPA (numbering plan area) • NPANXX (NPA-NXX) • NXX (NXX) • NXX4X (NXX-XXXX) • NPAN6X (NPA-NXXXXXX) • CCNPAN6X (country code NPA-NXX-XXXX) • CARAC (carrier access) • PREF (prefixes) • N11 (N11) • AFR (automatic flexible routing) • SHAIOTRK (shared input/output trunk) • TERMATT (termination attempt) • OFFHKIMM (off-hook immediate) • OFFHKDEL (off-hook delay) • SETUPPRI (channel setup PRI) • NPAN (NPA-N) • NPANX (NPA-NX)

TOPS Bellcore LNP Enhancements (continued)

LNPVER commands

Command	Description
	Trigger type (continued) • NPAN3X (NPA-NXXX) • NPAN4X (NPA-NXX-XX) • NPAN5X (NPA-NXX-XXX) • NETBUSY (network busy) • T_NOANS (terminating no answer) • TERMBUSY (terminating busy) • CLDBUSY (originating called party busy) • SPECFEAT (specific feature code) • O_NOANS (originating no answer) • PRINET (private network services) • OSWIHKIM (originating switch hook flash immediate) • OFEATACT (originating feature activator) • OSWIHKSC (originating switch hook flash sc) • TSWIHKIM (terminating switch hook flash immediate) • TFEATACT (terminating feature activator) • TSWIHKSC (terminating switch hook flash sc) • LNP (local number portability) • ONEPLUS (one plus) • SPECCARR (specific carrier) • INTNATL (international) • ZEROPLUS (zero plus) • ZEROMIN (zero minus) The following is an example: <pre>>TRIGCRIT Y lnp_carr_access Trigger Criteria: carrier access Trigger Send: Y</pre>

TOPS Bellcore LNP Enhancements (continued)

Note: The LNPVER tool is not affected by the SOC state of the functionality.

Translations table flow

The TOPS Bellcore LNP Enhancements does not have a table flow.

Limitations and restrictions

The following limitations and restrictions apply to TOPS Bellcore LNP Enhancements:

- The same restrictions and limitations that apply to TOPS LNP, OSEA0103, also apply to this Bellcore LNP enhancements.
- As a result of incomplete specifications for PORC, it is not addressed in this documentation even though it is included in the GR-2936-CORE Bellcore requirements.
- Query on Release is not addressed in this documentation although it is an optional GR-2936-CORE Bellcore requirement
- Even though Bellcore LNP may retrieve information on the JIP on an incoming trunk, the JIP is NOT tandemed.
- The party identifier field is populated with new value 006 for a TOPS call. The TOPS office is the only entity that has the concept of a third party call.

Interactions

The following paragraphs describe the interactions between TOPS Bellcore LNP Enhancements and other functionalities.

Collection of JIP information is only possible when SOC option OSEA0102 (ISUP TO/FROM TOPS-AN1515) is ACTIVE.

This functionality interacts with functionality TOPS LNP, OSEA0103.

Activation/deactivation by the end user

TOPS Bellcore LNP Enhancements requires no activation or deactivation by the end user.

Billing

This section describes billing changes.

TOPS Bellcore LNP Enhancements (continued)

AMA module 719

When this functionality is active, AMA module 719 is generated instead of module 720. Selection of module 719 in place of 720 is controlled by table TOPSLNPOP parameter AMAPARM. Refer to the datafill procedure section for details.

The following table provides information for module code 719.

Module code 719

Information	Field number	Number of characters	Description
Module Code (719)	88	4	Identifies module 719.
Party Identifier	730	4	Identifies the party with which the module is associated (for example, Terminating or Originating party).
Location Routing Number (LRN)	731	4	Identifies the switching entity that provides service to the party. The source of the LRN may be an SCP response, switch datafill, or incoming signaling.
Supporting Information	734	4	Identifies the source of the LRN (for example, SCP or switch datafill) and provides information about query status.

The GR-2936-CORE specification requires population of Module 719 as follows:

- party identifier field = originating party
- LRN = 6-digit JIP filled out with zeros
- LRN source = switch information or signaling
- Query status = no query {Sonia, I don't see this field in the above table}

TOPS Bellcore LNP Enhancements (continued)

The following table provides information for module code 720.

Module code 720

Information	Field number	Number of characters	Description
Module Code (720)	88	4	Identifies module 719.
Party Identifier	730	4	Identifies the associated (for example, Terminating or Originating party).
Location Routing Number (LRN)	731	4	Identifies the switch that provides service to the party. The source of the LRN may be an SCP response, switch datafill, or incoming signaling.
Service Provider Identity	732	10	Identifies the entity on the switch that provides local service. This field is for future use.
Location	733	16	Identifies the location of the party's switch. This field is for future use.
Supporting Information	734	4	Identifies the source of the LRN (for example, SCP or switch datafill) and provides information about query status.

AMA recording of the calling DN

As previously mentioned, when an incoming ISUP trunk sends the JIP, the JIP is used for the calling LRN. This LRN is used in the AMA record. This section provides details on this change.

Many times, the TOPS switch records the LRN of the switch that hosts a calling number without making an LNP query. Datafilll can contain an LRN against a trunk group that originates traffic from a single end office. If the calling number is in a portable NPA-NXX, the TOPS switch retrieves the number from datafill instead of launching a query. An LRN can be signaled on an incoming ISUP trunk group. In this scenario, the TOPS switch retrieves the number from the JIP (or originating LRN) instead of launching a query.

Note: When the LRN is retrieved from datafill or the JIP, the AMA record can only indicate that the number *might* be ported, not that it is ported.

TOPS Bellcore LNP Enhancements (continued)

The following table shows the necessary conditions for recording the calling LRN.

Factors determining LNP query for calling number, trunk originations

TOPS routes to calling number (note 1)	Operator or SN requests LNP info about calling number	JIP sent	Table TOPS-TOPT option LNP-CLGAM	Table PORT-NUMS match	LRN in table TRKGRP	Table TOPSPARM parm LNP_QUERY_FOR_AMA_ONLY includes CLG	Query launched	LNP module appended
n/a	n/a	n/a	n/a	no	n/a	n/a	no	no
yes	n/a	n/a	n/a	yes	n/a	n/a	yes	yes (Note 2)
n/a	yes	n/a	n/a	yes	n/a	n/a	yes	yes (Note 2)
no	no	yes	Y	yes	n/a	n/a	no	yes
no	no	no	Y	yes	yes	n/a	no	yes
no	no	no	Y	yes	no	yes	yes	yes
no	no	yes	Y	yes	no	no	no	yes
no	no	no	Y	yes	no	no	no	no
no	no	n/a	N, or originating trunk not datafilled in TOPS TOPT	n/a	n/a	n/a	no	no
Note 1: For example, the calling party goes on-hook and is released by the operator, and then the operator requests to outpulse back. Note 2: An exception occurs for ISUP originations where both a Charge Number and a Calling Line ID are received. See the Operation section, under "LNP TCAP interface". Note 3: n/a - Not applicable since other factors are sufficient to determine LNP query and appending of module.								

In the above table, the first two columns are for two relatively infrequent conditions: the TOPS office routing to the calling number and an explicit request by the operator or service node for LNP information about the calling

TOPS Bellcore LNP Enhancements (continued)

number. The next five columns indicate the DMS datafill and signaling that affect the LNP behavior. The last two columns specify the resulting TOPS functionality.

The criteria in the above table is the same for calls that route to a carrier as for calls that route to an Operating Company. Also, the TOPS switch does not consider whether services are provided for a carrier when it determines whether to launch an LNP query and whether to record an LNP module for the calling number. Finally, the criteria are the same for an access record as for a billing record.

AMA recording of the Party Identifier

In release TOPS07 of LNP, a third party call has a party identifier value of 003. This meets the requirements set by the ICC.

According to the GR-2936-CORE, the Operator Services System (OSS) only sends an LNP query for third party numbers when a verification call is made to the third party and an interexchange carrier (IC) is not involved in routing the call. The query is made to enable the OSS to appropriately route the call to the third party number. When this LNP query is made for the third number, the Party Identifier should be set to 006 (third party verification).

In TOPS systems when a module 719 is produced for a third party call, the party identifier value is always 006. In the same manner, when module 720 is produced for a third party call, the party identifier value is 003. There are other AMA modules (052 and 051) which specifically indicate whether a call was completed to verify the status of a third party call.

Station Message Detail Recording

TOPS Bellcore LNP Enhancements does not affect Station Message Detail Recording.

Datafilling office parameters

TOPS Bellcore LNP Enhancements does not affect office parameters.

TOPS Bellcore LNP Enhancements (continued)

Datafill sequence

The following table lists the tables that require datafill to implement TOPS Bellcore LNP Enhancements. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for TOPS Bellcore LNP Enhancements

Table	Purpose of table
TOPLNPOP	TOPS Local Number Portability Options contains office parameters for LNP.

Datafilling table TOPLNPOP

TOPS Local Number Portability Options is a new table which contains parameters which control LNP.

No tables require datafill before or after table TOPLNPOP.

TOPS Bellcore LNP Enhancements (continued)

The following table contains a list of the parameters:

Datafilling table TOPLNPOP

Parameter	Explanation and action
AMAPARM	This parameter determines which AMA module is attached when this functionality is active. The values are the following: MOD_719 - attach Module 719. For proper operation of this functionality, enter MOD_719. MOD_720 - attach Module 720. This value is the default.
CLDPARM	This parameter is used for the Called Party ID parameter sent in an LNP query. The values are the following: CHGNUM_OPTION - This field controls sending of the charge number for the calling party in the LNP query. The values are the following: • HOLD_CHG - do not send the charge number (default value) • SEND_CHG - send the charge number CLGPTYID_OPTION - This field controls sending of the Calling Party ID in the LNP query. The values are the following: • HOLD_CLG - do not send the Calling Party ID (default value) • SEND_CLG - send the Calling Party ID TRIGCRIT_OPTION - This field consists of subfield T_STATUS. • T_STATUS - This field controls sending of the Trigger Criteria Type in the LNP query. The values are — HOLD_TRG - hold trigger information (default value) — SEND_TRG - send trigger information. If SEND_TRG is entered, enter datafill in refinement T_VALUE.

TOPS Bellcore LNP Enhancements (continued)

Datafilling table TOPLNPOP

Parameter	Explanation and action
	TRIGCRIT_OPTION (continued) • T_VALUE - This refinement indicates the type of event that caused a trigger to occur. The values are the following: — FEAT_ACT (feature activator) — VSC (vertical service code, a parameter sent in an LNP query) — CUSTAC (customized access) — CUSTINT (customized intercom) — NPA (numbering plan area) — NPANXX (NPA-NXX) — NXX (NXX) — NXX4X (NXX-XXXX) — NPAN6X (NPA-NXXXXXX) — CCNPAN6X (country code NPA-NXX-XXXX) — CARAC (carrier access) — PREF (prefixes) — N11 (N11) — AFR (automatic flexible routing) — SHAIOTRK (shared input/output trunk) — TERMATT (termination attempt) — OFFHKIMM (off-hook immediate) — OFFHKDEL (off-hook delay) — SETUPPRI (channel setup PRI) — NPAN (NPA-N) — NPANX (NPA-NX)

TOPS Bellcore LNP Enhancements (continued)

Datafilling table TOPLNPOP

Parameter	Explanation and action
	TRIGCRIT_OPTION (continued) • T_VALUE (continued) — NPAN3X (NPA-NXXX) — NPAN4X (NPA-NXX-XX) — NPAN5X (NPA-NXX-XXX) — NETBUSY (network busy) — T_NOANS (terminating no answer) — TERMBUSY (terminating busy) — CLDBUSY (originating called party busy) — SPECFEAT (specific feature code) — O_NOANS (originating no answer) — PRINET (private network services) — OSWIHKIM (originating switch hook flash immediate) — OFEATACT (originating feature activator) — OSWIHKSC (originating switch hook flash sc) — TSWIHKIM (terminating switch hook flash immediate) — TFEATACT (terminating feature activator) — TSWIHKSC (terminating switch hook flash sc) — LNP (local number portability) — ONEPLUS (one plus) — SPECCARR (specific carrier) — INTNATL (international) — ZEROPLUS (zero plus) — ZEROMIN (zero minus)
CLGPARM	This parameter is used for the Calling Party ID parameter sent in an LNP query. The values are the same as the CLDPARM parameter.
SPLPARM	This parameter is used for a third number billing validation in an LNP query. The values are the same as the CLDPARM parameter.

Datafill example for table TOPLNPOP

The following example shows sample datafill for table TOPLNPOP.

TOPS Bellcore LNP Enhancements (end)

MAP display example for table TOPLNPOP

PARMNAME	PARMVAL			

CLGPARM	SEND_CHG	SEND_CLG	SEND_TRG	LNP
CLDPARM	SEND_CHG	SEND_CLG	SEND_TRG	LNP
SPLPARM	HOLD_CHG	HOLD_CLG	HOLD_TRG	
AMAPARM	MOD_719			

Translation verification tools

TOPS Bellcore LNP Enhancements does not use translation verification tools.

SERVORD

TOPS Bellcore LNP Enhancements does not use SERVORD.

TOPS Canadian Equal Access

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: not applicable

Release applicability

TOPS10 and up

TOPS Canadian Equal Access was introduced in TOPS10.

Prerequisites

To operate, TOPS Canadian Equal Access has the following prerequisites:

- Base Generic, BAS00003
- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- TOPS InterLATA Carrier, OSEA0101
- Table TOPSFTR parameter CANADIAN_EQUAL_ACCESS = Y

Description

This functionality provides the following for Canada:

- Replacement of release BCS36 patch FPA89 with regular software. This patch corrected an automatic message accounting (AMA) record error. No table datafill is required to implement this change.
- Identification of the Primary InterLATA carrier (PIC) code and name to TOPS operators on 0 minus calls arriving on TOPS trunks. This capability is used in a TOPS equal access (EA) office.

This functionality is provided by the following feature:

Feature number	Feature name
AF7577	TOPS Canadian Equal Access

Operation

Patch FPA89

For 0- (zero minus) calls in Canada, it was discovered that the connect time in the AMA record was set to the same value as the disconnect time. This incorrect connect time was a side effect of TOPS datafill for carrier code and name display to TOPS operators at call presentation. To address the connect

TOPS Canadian Equal Access (continued)

time problem, Feature Patch FPA89 was created to stamp the proper connect times on AMA records. This feature provides a sourced software replacement for FPA89 without requiring any translation or datafill changes.

An example of an AMA record with the proper connect time is shown below with the affected fields in bold.

Example AMA record

```
SWITCH CM AMAB117 JAN12 13:45:53 7000 INFO AMA RECORD DATA
```

```

STRUCTURE CODE = 40752          CALL CODE      = 192
CONNECT DATE   = 80112          CONNECT TIME = 1344510
ELAPSED TIME   = 000001020      ANSWERED      = YES
CALLING DN     = 6193207878
ORIG AGENT     = CKT            TBELLQMSIC2      1
CALLED DN      = 2012201111
TERM AGENT     = CKT            TITOGA1         1

```

Carrier display

In an effort to prepare for a Canadian equal access market, Bell Canada identified a need to identify the carrier code and name to TOPS operators on 0 minus calls.

Upon 0 minus call arrival, the carrier code and name of the calling number is obtained from table DNPIC. If the calling number is not found in DNPIC, the default carrier is used from table TOPSEATRK. And, the ZEROM or HOTEL BYPASS options in table TOPEATRK are used to display the carrier code and name to the operator. Therefore, table TOPEATRK can satisfy the display request.

SOC

Software Optionality Control (SOC) option OSEA0101 controls this functionality. This SOC must be ON and the right to use (RTU) must be Y to stamp the proper connect time in the AMA record. During dump and restore, if the dump side has the patch, the new load SOC is set to ON, automatically. However, the right to use (RTU) is set to N, so it must be set to Y manually for operation.

Translations table flow

The TOPS Canadian Equal Access has no translations table flow.

TOPS Canadian Equal Access (continued)

Limitations and restrictions

The following limitations and restrictions apply to TOPS Canadian Equal Access:

This feature should only be deployed in Canada. It should not be deployed in the United States.

Interactions

TOPS Canadian Equal Access has no functionality interactions.

Activation/deactivation by the end user

TOPS Canadian Equal Access requires no activation or deactivation by the end user.

Billing

This feature does not change the way the connect time is populated, nor does it add any new fields to AMA records.

Station Message Detail Recording

TOPS Canadian Equal Access does not affect Station Message Detail Recording.

Datafilling office parameters

TOPS Canadian Equal Access does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement TOPS Canadian Equal Access. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for TOPS Canadian Equal Access

Table	Purpose of table
TOPEATRK	TOPS Equal Access Trunk contains information for routing inter-LATA calls.

Datafilling table TOPEATRK

The following table shows the datafill specific to TOPS Canadian Equal Access for table TOPEATRK. Only those fields that apply directly to TOPS

TOPS Canadian Equal Access (end)

Canadian Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPEATRK

Field	Subfield or refinement	Entry	Explanation and action
BYPASS		HOTEL and, or ZEROM	Bypass Bell Operating Company (BOC) operator call types. Use the ZEROM or HOTEL BYPASS options to display the carrier code and names to the operator.

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK with the significant values in bold.

MAP display example for table TOPEATRK

TRUNKGRP SCRNIDX	ENDOFFCE DNLOOK	CARRIER DFLTPIC	LATANM	INTRASSC BYPASS	INTERSSC	OVSSCL
TBELLQMSIC3 619	CONFORM Y	0111 Y	L121 (HOTEL)	NSCR (ZEROM)	NSCR	NSCR
				\$		

Translation verification tools

TOPS Canadian Equal Access does not use translation verification tools.

SERVORD

TOPS Canadian Equal Access does not use SERVORD.

TOPS Carrier RLT

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: OSEA0102

Release applicability

TOPS15 and up

TOPS Carrier RLT was introduced in TOPS07.

Prerequisites

To operate, TOPS Carrier RLT has the following prerequisites:

- BAS Generic, BAS0003
- Operator Services Basic, OSB00101, and table TOPSFTR tuple TOPS_ON_OFF_SWITCH = Y
- GR317/GR394 ISUP to/from TOPS, OSEA0102, and table TOPSFTR tuple ISUP_FOR_TOPS = Y
- Table TOPSFTR, tuple RLT_FOR_ISUP = Y

Description

The TOPS Carrier RLT functionality is provided by the following features:

Feature number	Feature name
AN1900	RLT Interworking with TOPS and OSSAIN
59022000	RLT (Variant 2) Enhancements

Please refer to the TOPS Release Link Trunking (RLT) User's Guide, 297-8403-908.

TOPS Carrier RLT-2

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: OSEA0102

Release applicability

TOPS15 and up

TOPS Carrier RLT-2 was introduced in TOPS09.

Prerequisites

To operate, TOPS Carrier RLT-2 has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- GR317/GR394 ISUP to/from TOPS, OSEA0102 (release TOPS05) and table TOPSFTR parameter ISUP_FOR_TOPS = Y
- TOPS Carrier RLT, OSEA0102 (release TOP07) and table TOPSFTR parameter RLT_FOR_ISUP = Y
- Table TOPSFTR, tuple RLT2_FOR_ISUP = Y

Description

The TOPS functionality consists of the following features:

Feature number	Feature name
AF7134	Carrier Release Link Trunking: Phase II
59022000	RLT (variant 2) Enhancements

Please refer to the TOPS Release Link Trunking (RLT) User's Guide, 297-8403-908.

TOPS Exchange Access Operator Services Signaling

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: not applicable

Release applicability

TOPS03 and up

Prerequisites

To operate, TOPS Exchange Access Operator Services Signaling has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- Operator Services Equal Access, OSEA0101
- EQA Toll, EQA00002

Description

This functionality is provided by the following features:

Feature number	Feature name
AF0719	EAOSS
BR22079	EAOSS Cutthru with Operator Hold and EAOSS Conversion to MOSS
NC0340	EAOSS Feature Group D Enhancements
AN0325	TOPS Operator Hold Enhancements
BQ11959	AIN 0.1 Routing to TOPS Extension (BCS36)
AN1337	EAOSS Enhancements (TOPS03)

AF0719 - EAOSS

Exchange Operator Services Signaling (EAOSS) is a modified Feature Group D (FGD) signaling format which allows a DMS-200 TOPS Access Tandem (AT) to receive operator services traffic with other types of traffic over the same trunk group from an EAEO.

TOPS Exchange Access Operator Services Signaling (continued)

This feature is used by those Operating Companies handling their own Intra-LATA, corridor, and IC traffic.

For those calls requiring special treatment such as coin control, ringback, and hold, EAOSS is used between an EAEO and an Access Tandem (AT) and between an EAEO and an IC.

There is a provision for an indication to the IC of operator involvement. The IC will receive a specific ANI Information Digit (for example, 34) to indicate operator involvement.

BR22079 - EAOSS Cutthru with Operator Hold and EAOSS Conversion to MOSS

This feature provides a DMS-200 TOPS office with the capability to provide Operator Hold to the Inter-LATA/International Carrier (IC/INC) used for a Domestic or an International Equal Access Operator Services Signaling (EAOSS) operator handled call. This applies to calls where the TOPS office collects only the first stage of digits, routes the call to the appropriate carrier, and allows the rest of the digit signaling to pass through to the carrier office without being collected by the TOPS office. This is known as cut-through.

This feature also provides a DMS-200 TOPS office with the capability to key off of the routing digits received in the first stage of an EAOSS domestic/national or international call and decide to collect the following signaling stages. TOPS can then signal Modified Operator Services Signaling (MOSS) on the outgoing trunk group to the carrier. Prior to this feature, the only way TOPS could determine whether or not to collect the following stages was by keying off of the Start Translations signal in the first stage.

Note: The outgoing signaling type is determined by the outgoing ATC trunk group datafill. Possible signaling types include BELLI (OSS), BELLII (MOSS), EAPLAN (EAOSS), and FGB. BELLII (MOSS) is used as an example throughout this document for consistency.

BellCORE has specified the routing digit values that will require conversion from incoming EAOSS to outgoing MOSS signaling. For domestic/national calls this conversion will occur if the 0ZZ routing digits sent to TOPS by the Equal Access End Office (EAEO) are within the range 090 to 099. Likewise for international calls, conversion will occur if the 1NX or 1N'X routing digits are 194 or 190, respectively.

TOPS Exchange Access Operator Services Signaling (continued)

NC0340 - EAOSS Feature Group D Enhancements

This feature provides three areas of enhancement to Operator Services Signaling.

- One area of enhancement involves the conversion of incoming EAOSS signaling to a specified outgoing signaling, based on datafillable 0ZZ or 1NX digits.
- Another enhancement that is provided with this feature, is the ability to propagate four winks to the End Office (EO) on international EAOSS calls. Previously, only 3 winks were generated back to the EO for these calls. With this enhancement, the EO now has a more accurate account of carrier connect time.
- This feature also provides the ability to use table SPLDNID to restrict Equal Access Operator Services Signaling (EAOSS) trunk groups, instead of relying solely on the Automatic Number Identification (ANI) ID digits to pass along restrictions.

AN0325 - TOPS Operator Hold Enhancements

This feature allows operator hold to be datafilled for calls outgoing from TOPS on Access to Tandem Carrier (ATC) trunks with EAPLAN signaling. A timeout is also provided for both outgoing feature group C (FGC) and feature group D (FGD) signaled calls, allowing the release of facilities if after a datafillable period of time the carrier has failed to release the call following subscriber on-hook.

BQ11959 - AIN 0.1 Routing to TOPS Extension (BCS36)

This PRSDOC routes Advanced Intelligent Network (AIN) 0.1 operator requested calls to TOPS.

AN1337 - EAOSS Enhancements

This feature enables calls on TOPS trunks with the CLGID field datafilled as EAOSS to access DMS datafill to determine a default carrier.

Operation

Standard notations

The operator services variant of FGD signaling is datafilled in the switch as EAOSS signaling. Outgoing feature group D signaling is datafilled in the switch as EAPLAN signaling.

Incoming feature group C signaling is divided into two types. BELL (one digit ANI ID, and STATCLAS dependent coded STs), and OSS (two digit ANI ID, and four coded STs). Outgoing FGC signaling is datafilled in the switch as BELLI and BELLII respectively.

TOPS Exchange Access Operator Services Signaling (continued)

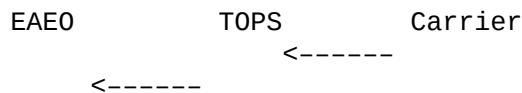
The different naming conventions of these type of signaling are shown in the following table.

Naming conventions

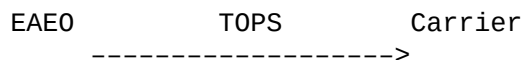
Outgoing Switch Datafill -----	Incoming Switch Datafill -----	Naming Conventions -----
BELLI	BELL	FGC, TRADITIONAL, OSS
BELLII	OSS	FGC, MOSS TRANSITIONAL/INTERIM
EAPLAN (STRAIGHT FGD)	EAOSS (OPR.SERV.FGD)	FGD, EAOSS

For ease of understandability, BELL/BELLI and BELLII/OSS FGC signaling will be referred to as FGC signaling.

In the diagrams throughout this document, a signal (e.g. a wink) that is regenerated at the TOPS/TOPS AT switch is shown with a broken, staggered line with an arrow pointing to each point the signal is seen. The signal is completely detected/filtered and regenerated by the TOPS switch, resulting in a delay.



If the signal (e.g. wink) is mapped directly through TOPS, without TOPS seeing the signal, a complete line is used, with an arrow pointing to the signal's final destination:



If the signal (e.g. wink) is seen by TOPS and mapped directly through, a complete line is used with an arrow pointing to TOPS as well as to the ending location (i.e. EAEO or Carrier):



TOPS Exchange Access Operator Services Signaling (continued)

Following is a list of notations used through the text and diagrams of the document:

- 0ZZ - Routing digits in 1st stage of domestic/national EAOSS
- 10d - 010 digits comprising a DN in the national dialing plan
- 1NX - Routing digits in 1st stage of international EAOSS for direct-dialled (DD) calls
- 1N'X - Routing digits in 1st stage of international EAOSS for operator-assisted (OA) calls
- ANI - Automatic Number Identification, with EAOSS: ii+3/10d
- CC - Country Code
- CCC - Pseudo Country Code, the CC padded to 3 digits
- cld - The called DN
- ii - Two ANI information digits
- KP - Key Pulse, the first signal in an MF digit stream
- NN - National Number, follows the CC in an international DN
- ST - Start Translation, last signal in an MF digit stream
- XXX - Three digit carrier access code
- 0 - Signaled in the cld DN for OA calls
- ACK_WINK - Wink acknowledgement from the IC/INC

AF0719 - EAOSS

Combined Traffic

EAOSS combines Operating Company operator services traffic with non-operator traffic on a single trunk group or on a number of trunk groups as follows:

- Operator services traffic
- Operating Company traffic not requiring operator handling
- IC traffic requiring operator services
- IC traffic not requiring operator exchange access services
- International Carrier (INC) traffic requiring operator exchange access services
- INC traffic not requiring operator exchange access services.
- receive carrier information sent from the end office

TOPS Exchange Access Operator Services Signaling (continued)

- receive indication of call origination from a DTMF or a Rotary Dial station in all cases regardless of the carrier PIC'd.
- allow the optional indication of operator involvement by altering the double ANI digits sent to the IC.
- allow Operating Company OCC processing for non-presubscribed customers.

This signaling also provides the information necessary to process 0+ and 1+ calls arriving on a COMBINED trunk group.

EAOSS for TOPS Trunks

To implement this feature, a new signaling type, EAOSS, is added for TOPS trunks. EAOSS is used between an EAEO and an AT to combine OSS traffic with other types of traffic on a single trunk group. EAOSS provides the DMS-100/200 or DMS-200 with the following capabilities:

- accept various types of operator and non-operator traffic coming from an end office on a combined trunk group
- receive carrier information sent by the end office
- receive an indication of call origination from a DTMF or from a rotary dial station, regardless of the Carrier Access Code (CAC) dialed.

EAOSS for Carrier Access

Also implemented with this feature is a carrier version of EAOSS called EAOSSIC.

EAOSSIC signaling will allow the TOPS-equipped office to receive calls using two- and three-stage outpulsing and to look in Table DNPIC to locate the CAC. With this signaling, the first stage, 0ZZ XXX, is ignored. Calls that do not have a valid CAC will then be routed to a call treatment.

Intra-LATA calls will use two-stage outpulsing and inter-LATA calls will use three-stage outpulsing.

Note: EAOSSIC is a nonstandard signaling type and is to be used only by offices that need to ignore the first stage. All other offices must use EAOSS signaling.

Feature package TOPS Incoming Feature Group D Signaling, OSEA0101, allows the office to receive two-stage signaling on domestic and three-stage signaling on international 1+, direct-dialed, non-operator-assisted carrier calls incoming on TOPS trunks from an EAEO. With this service, the carrier can collect access charges on such calls.

TOPS Exchange Access Operator Services Signaling (continued)

OSS Involvement Indicator - field OSIND in TRKGRP (ATC)

For Feature Group D (FGD) outpulsing, the field OSIND is added to Table TRKGRP for Access To Carrier (ATC) trunks. This field signifies whether the ANI digits sent to the IC indicate that the call involved operator handling.

If this indication is requested by the carrier, field OSIND is set to YES and the ANI ID is set to 34 indicating that the Operating Company is providing operator services for the IC. If this indication is not requested by the IC, field OSIND is set to NO and the ANI ID pair is passed unchanged to the IC.

This parameter does not affect FGC outpulsing which can also be done on these types of calls.

Table OCCINFO Checks

With the introduction of this feature table OCCINFO will be checked. OCCINFO contains indicators of what kind of traffic each interexchange carrier is capable of completing. For TOPS EA, the following table fields will be used: INTER, INTNTL, INTRA, INTERS, INTRAS. The INTER field sees if the particular carrier can handle inter-LATA calls. The INTNTL field sees if the carrier can handle international calls. The INTRA field indicates intra-LATA call handling ability. The INTERS and INTRAS fields indicate interstate and intrastate call handling.

Checks in OCCINFO for TOPS EA are only performed on operator handled calls and MCCA sequence calls. The checks are done regardless of the type of signaling used on the incoming TOPS trunk group, so screening in OCCINFO is not limited to EAOSS. The screening will take place after certain key strokes for calls at an operator position and also after new called digits are collected on an MCCA sequence call. If the checks fail on a sequence call, then the subscriber will receive the standard UNCA announcement from MCCA.

The operator key functions that trigger screening in OCCINFO are KP FWD to enter new called digits, KP BACK to enter calling digits and KP IC to enter carrier digits. Each of these three can result in the determination of a carrier for the call, so screening for that carrier is required in OCCINFO. If the carrier number fails these OCCINFO checks then the carrier number and the carrier name will flash on the operator screen. When a flashing name and number is displayed the operator should inform the customer that the carrier chosen can not handle the call, and another carrier should be chosen.

Translation impact

A translation change will be put in effect with this feature. Translation will function in the following way for domestic calls. If the call is intra-LATA then the call will be translated on the called digits as does normal translations. If the call is inter-LATA then if the start translation signal on the first stage is a

TOPS Exchange Access Operator Services Signaling (continued)

ST the the call is translated based on the first digits and the other digits are whistled through. Example: if a call arrives with the first stage digits of KP 022 123 ST the call will be routed to trunk OGEACAR3 (see tables below). If the first digits were KP 2122201111 ST then the call will be routed without further TOPS intervention using normal translations (as below).

If the call is an inter-LATA call and the start translation signal is not a ST then the next two stages of signaling are received by TOPS as an inter-LATA call and translated as normal TOPS Equal Access translations.

If the call is international then the pretranslator must be datafilled to indicate if the 1N(N')X digits are operator assisted or direct dialed. All international calls to TOPS not falling under the ST case above will set the call type based on the datafill in the standard pretranslator. Example : If an international call arrives with a first stage of KP 188 123 STP where the 1 indicates international. Since this is international the type of call filled in the pretranslator will be used for the call. In this case it is OA (operator assisted). The other stages will then be received the a routed chosen based on normal TOPS equal access translations.

For more information of TOPS equal access translations see the document GFX187AA01 TOPS Equal Access.

Here is an example of what a pretranslator may look like:

Pretranslator example Table STDPRTCT

FROMDIGS	TODIGS	PRETRTE
022123	022123	T NL 6 OFRT 200 6 6 NONE
18123	18123	T OA 6 OFRT 200 6 6 NONE
2	9	N NL 0 NA

Pretranslator example Table OFRT

RTE	RTELIST
200	(S D OGEACAR3)

Privilege and Corridor Calls

Prior to this feature, privilege and corridor calls were not supported by TOPS EA. These call types are now supported by TOPS EA regardless of the type of signaling used on the incoming TOPS trunk group. Both of these call types are inter-LATA calls that the OTC has permission to complete, although

TOPS Exchange Access Operator Services Signaling (continued)

dialing restrictions apply. Calls are marked as PRIVILEGE or CORRIDOR in table LATA_{XL}A.

Calls marked PRIVILEGE should be completed by the OTC unless 10XXX is dialed to access an interexchange carrier. It doesn't matter what the subscriber's PIC is for these calls. With EAOSS signaling, the TOPS office can distinguish between 10XXX-dialed and PIC-dialed calls. PIC-dialed calls and calls dialed 10XXX where XXX is the OTC are completed by the OTC if the call is marked as PRIVILEGE. 10XXX-dialed calls for which the XXX is not the OTC route to the XXX carrier instead of being handled as privilege.

With BELL signaling, there is no indication of whether or not 10XXX was dialed, so the TOPS office assumes that 10XXX was not dialed. This means that any call marked as PRIVILEGE in table LATA_{XL}A that arrives on a TOPS trunk group with BELL signaling is completed by the OTC. Prior to this feature, the PRIVILEGE marking was ignored by TOPS, and the calls completed to an interexchange carrier.

Calls marked CORRIDOR are completed by the OTC only if the OTC has been chosen for the call either by dialing 10XXX where the XXX is the OTC or by having a PIC of the OTC. For the calls not dialed 10XXX, calls marked CORRIDOR are completed by the PIC; the OTC only completes the CORRIDOR call if the subscriber has chosen the OTC as their PIC. As with PRIVILEGE, when BELL signaling is used, TOPS assumes that 10XXX was not dialed.

FGD outpulsing and operator supervision

Currently operator supervision (operator hold, coin control, etc.) is not done for calls outpulsing FGD signaling. FGC outpulsing however does support operator supervision. At present this feature will not change this practice.

ST and KP Signals

EAOSS uses the following modified Start Translations (ST) and Key Pulse (KP) signals to identify the type of traffic and to provide call information:

ST: indicates that a call did not require operator services

ST': indicates that a call requires operator services and should be sent to the DMS-200 operator

“ST”: indicates that the call requires operator services listing services.

KP: Call originated from a rotary dial station and the subscriber did not dial a 10XXX prefix

TOPS Exchange Access Operator Services Signaling (continued)

KP': Call originated from a rotary dial station and the subscriber dialed a 10XXX prefix

KP'': Call originated from a Dual-Tone Multi-frequency (DTMF) station and the subscriber did not dial a 10XXX prefix

KP''': Call originated from a DTMF station and the subscriber dialed a 10XXX prefix

Outpulsing to the Carrier

OSIND Field: This feature modifies the TRKGRP (ATC) Table by adding field OSIND. OSIND is a YES/NO field that provides an indication, if requested by the IC, whether the operating company is providing operator services for that IC.

- YES indicates that the call was handled by an operating company operator.
- A NO value will have no effect on call processing. If NO is selected, the IC will not receive the indication and the call will be processed normally.

Call Handling: The DMS-100/200 determines the call handling capability of each IC listed in the OCCINFO Table by scanning the following table fields:

- INTER for inter-LATA calls
- INTRA for intra-LATA calls
- INTNTL for international calls
- INTERS for interstate calls
- INTRAS for intrastate calls.

If TICS is installed in the DMS-100/200 or DMS-200, the call handling checks are performed when the operator enters the carrier number. If the carrier is not defined for a particular class of call handling, as listed in Table OCCINFO, the carrier name and number will appear in a flashing mode on the Operator Position CRT.

At this point, the operator should inform the subscriber that the selected carrier cannot handle the call and a different carrier is required.

If a call is received that contains an invalid CAC or PIC, it is routed to the DMS for appropriate treatment.

Intersystem signaling

Operating Company Operator System Calls Signaling: This section describes EAOSS signaling between an EAEO and an AT, and between an EAEO and an IC/INC.

TOPS Exchange Access Operator Services Signaling (continued)

The figures below illustrate the signaling sequences used on OSS calls from an EAEO to an AT.

Key Pulse Signals: The KP and KP' signals indicate that the calls originate from rotary dial stations. The KP" signal indicates that the calls originate from DTMF stations

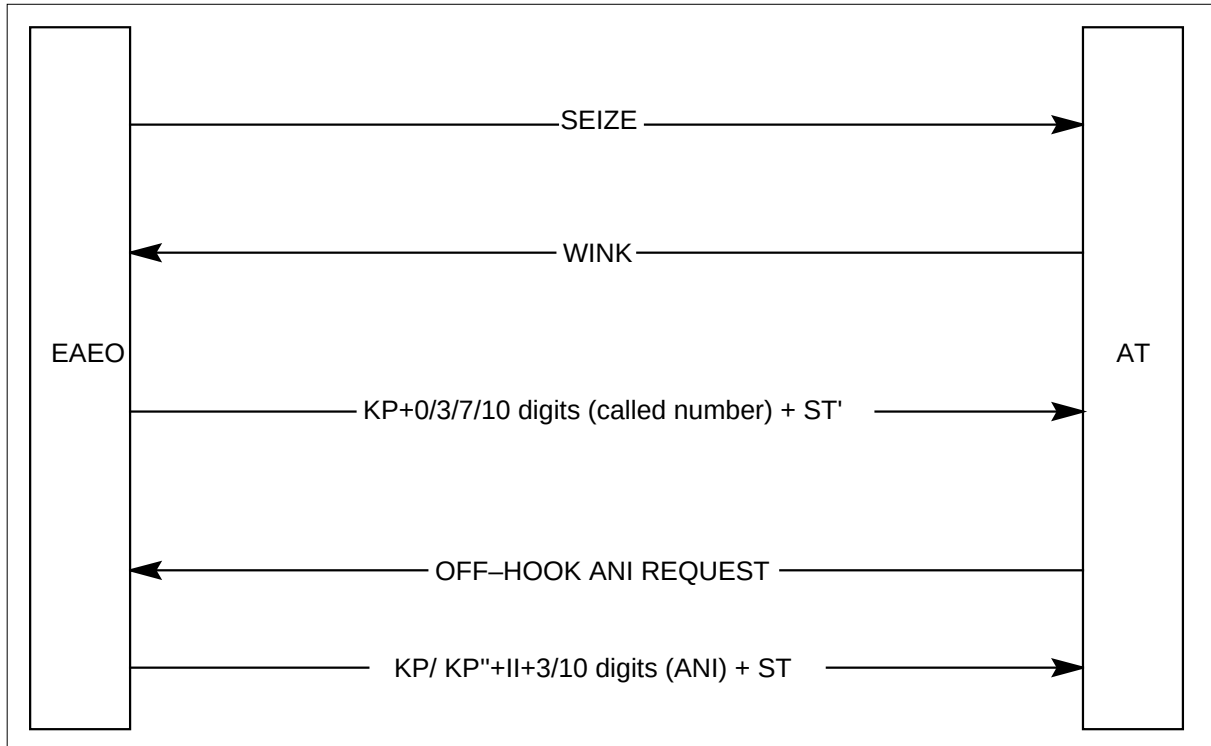
ST Signals: The ST' signal at the end of the digit string indicates a 0- or 0+ call. An ST" signal indicates that 1+ call was dialed.

Note: Although corridor calls may cross the boundary of a LATA, they are completed by the operating company. Corridor calls are treated as intra-LATA calls.

Operator Systems calls include the following:

- 0- calls
- 0+ Intra-LATA calls
- 1+ Listing Service calls
- 0+ Listing Service calls
- Intercept calls

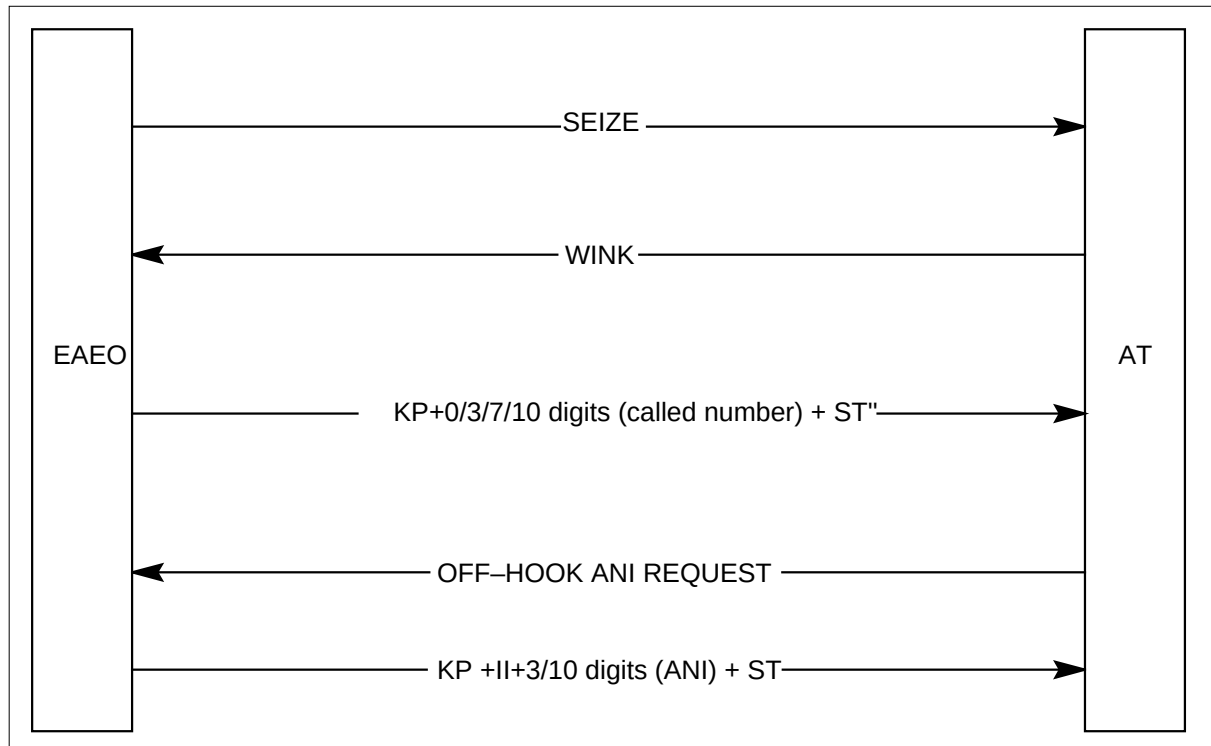
The following figure illustrates the signaling sequence for 0+ Intra-LATA calls or 0- calls, including corridor calls dialed with the 10XXX prefix and calls presubscribed to the operating company.

TOPS Exchange Access Operator Services Signaling (continued)**0+ Intra-LATA or 0- Calls**

The following figure illustrates intra-LATA operator system calls, for example, coin and hotel calls. This example also includes corridor calls dialed with the Operating Company 10XXX prefix, and calls presubscribed to the Operating Company

TOPS Exchange Access Operator Services Signaling (continued)

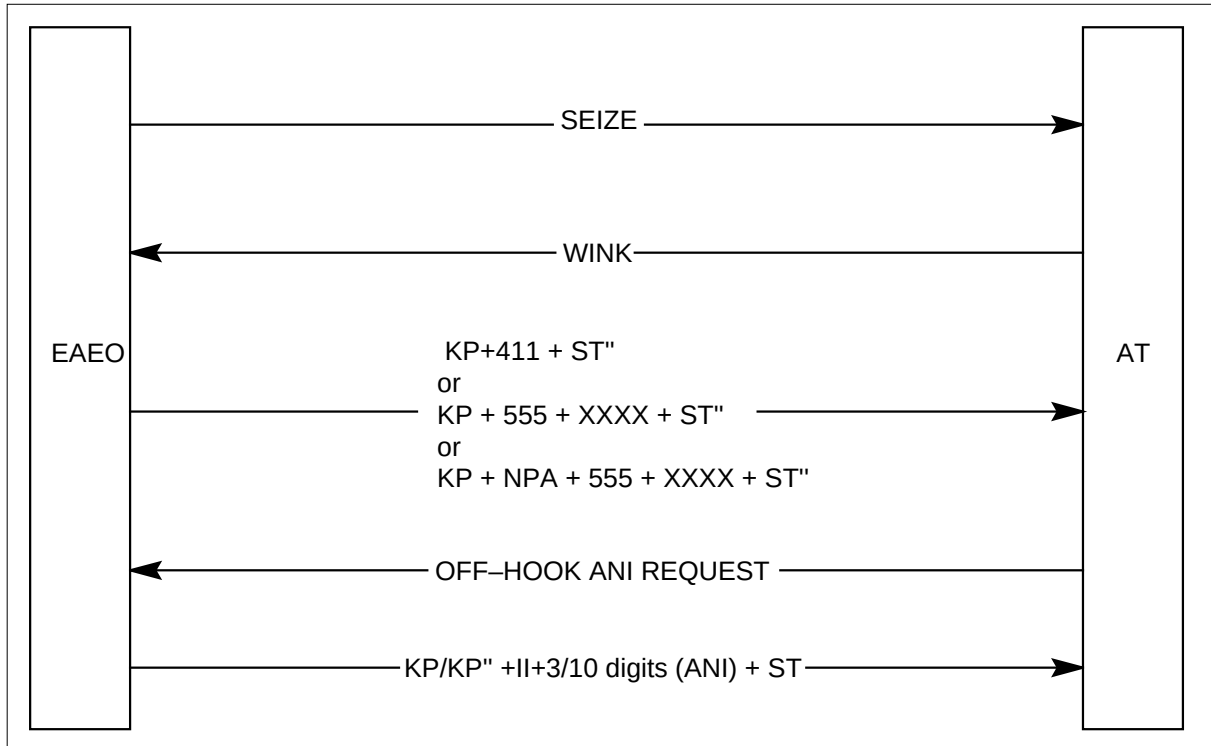
1+ Intra-LATA Operator System Calls



The following figure illustrates 1+ listing services calls. This is the same as 1+ signaling. Also, other signaling types place the called number in the ANI.

TOPS Exchange Access Operator Services Signaling (continued)

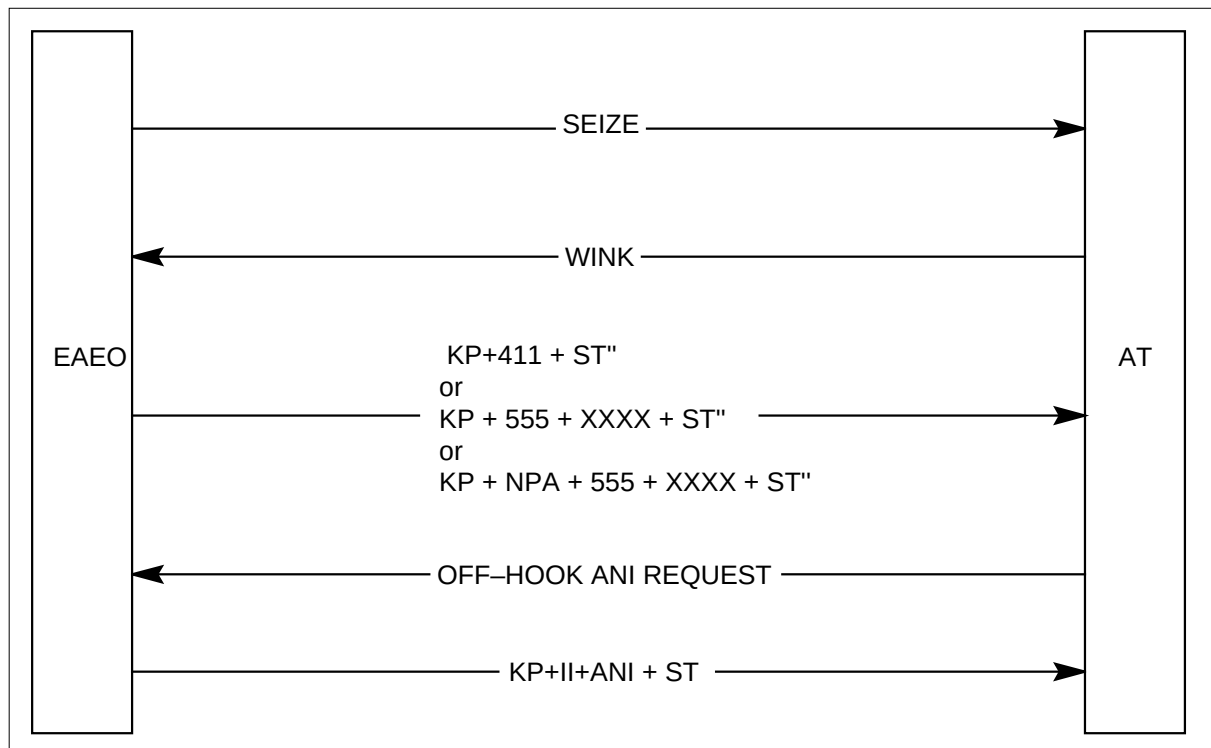
1+ Listing Services Calls



The following figure illustrates 0+ Listing Services Calls. This is the same as 1+ signaling. Also, other signaling types place the called number in the ANI.

TOPS Exchange Access Operator Services Signaling (continued)

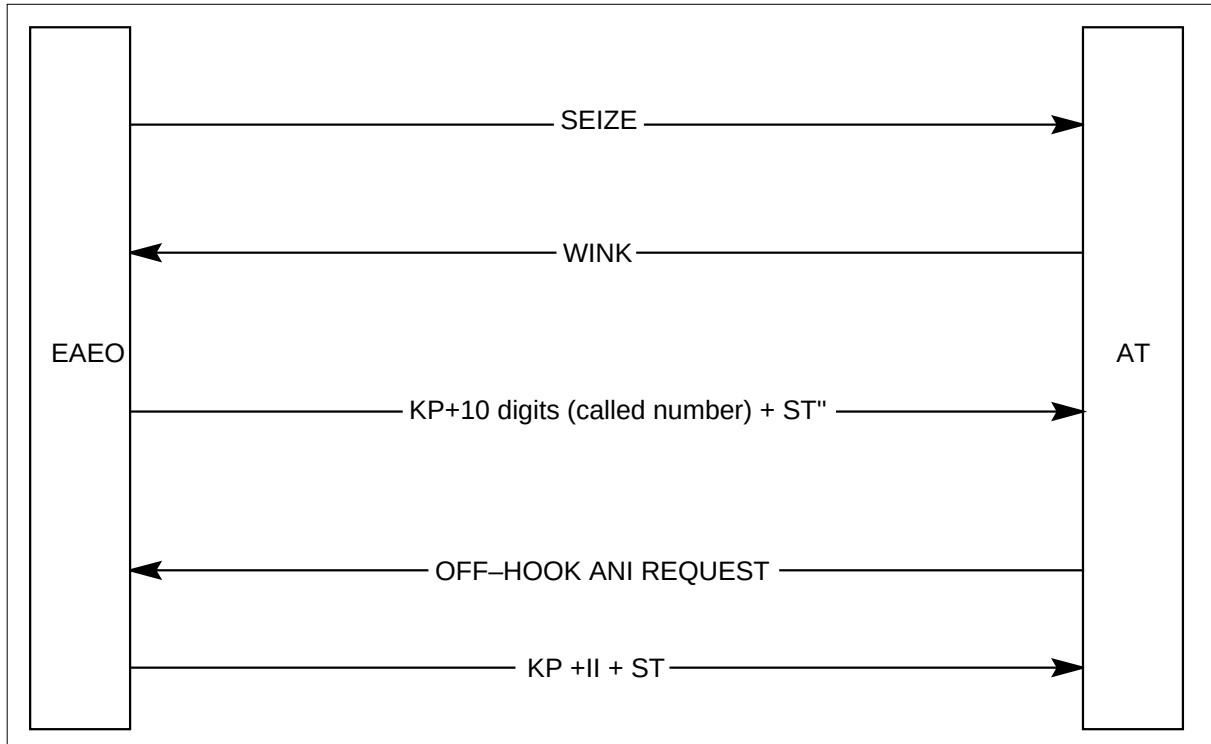
0+ Listing Services Calls



The following figure illustrates Intercept Calls.

TOPS Exchange Access Operator Services Signaling (continued)

Intercept Calls



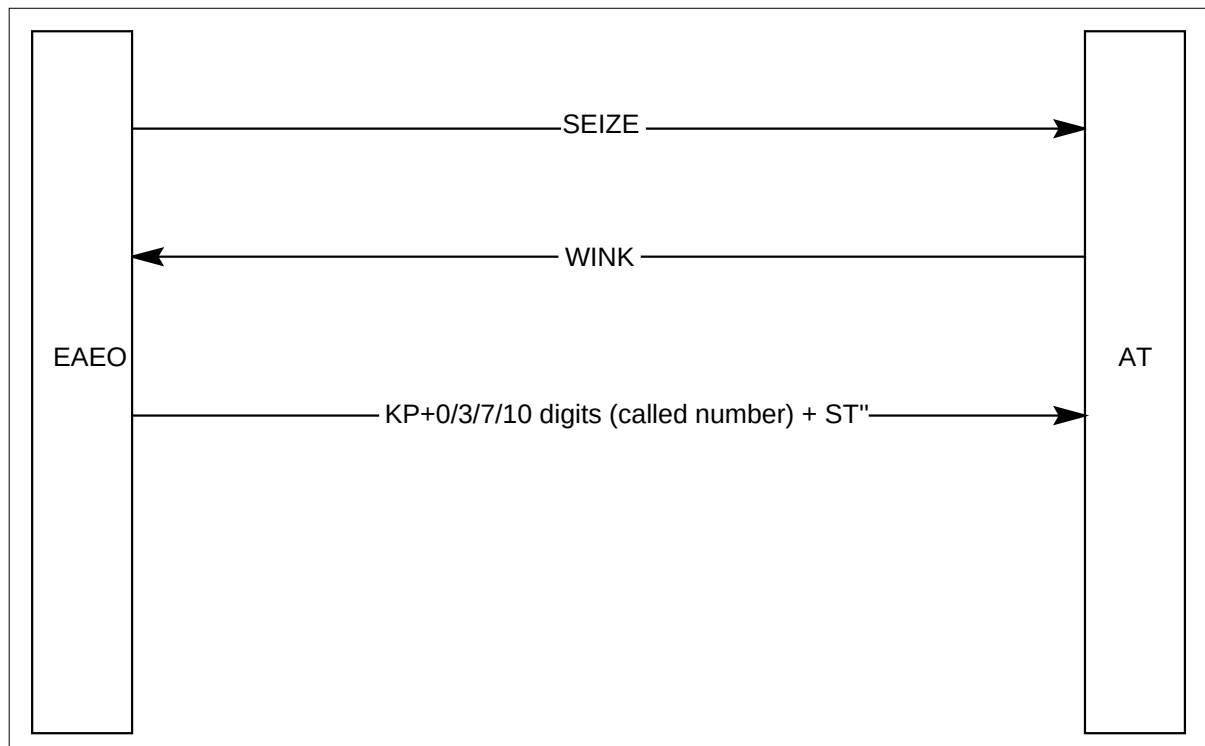
Intercept signaling does not send ANI, but does send a double ANI digit indicating special ANI digits. The following ANI Information digits (II) are used for intercept calls:

- 30 - blank
- 31 - Trouble
- 32 - Intercept

The following figure illustrates non-operator services calls. This includes intra-LATA calls dialed with the operating company 10XXX prefix, or calls presubscribed to the operating company. ANI is not sent, billing is done in the end office

TOPS Exchange Access Operator Services Signaling (continued)

Intra-LATA Non-Operator Calls



Calls to the IC/INC by way of an AT

The following figures illustrate calls routed to an IC/INC by way of an access tandem.

The signaling from a TOPS AT to the IC/INC is implemented by AF0719.

TOPS Exchange Access Operator Services Signaling (continued)

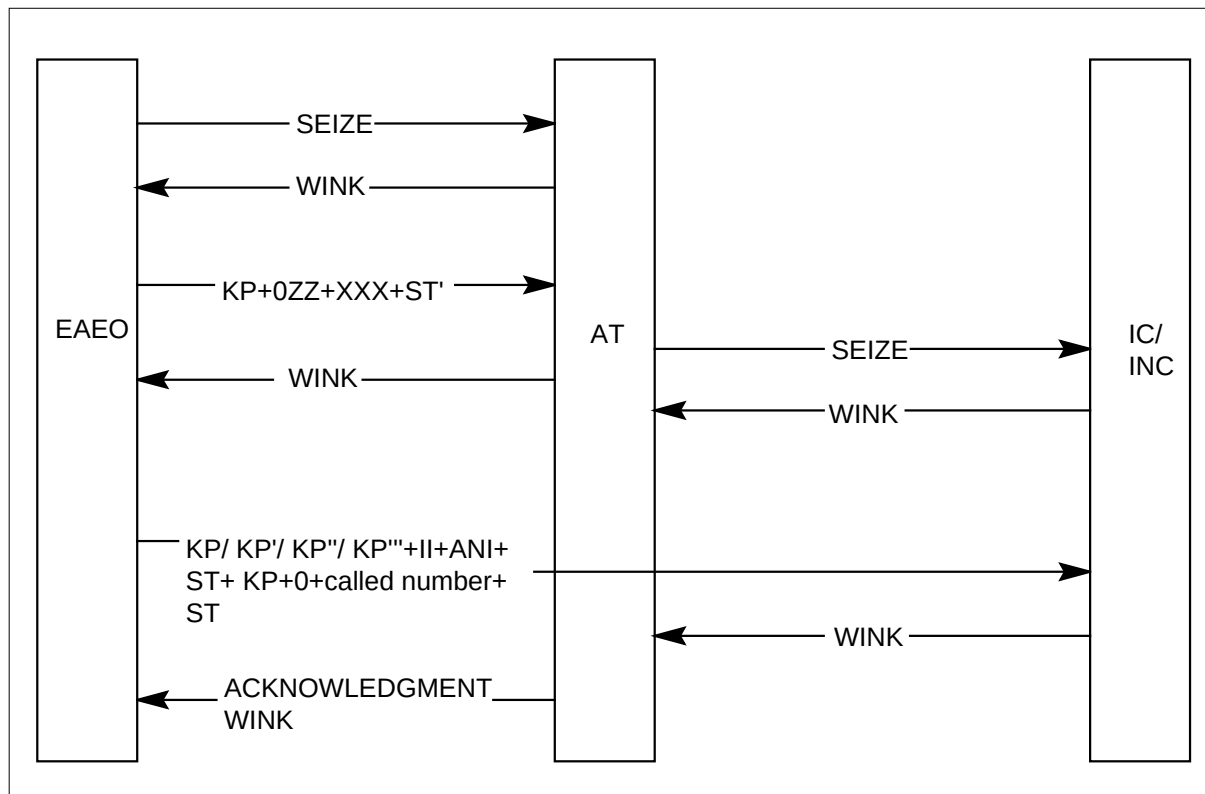
The following definitions apply to this section:

- Carrier information format:
 - $KP + 0ZZ + XXX + ST$ Operating Company does not do carrier identification on the call.
 - $KP + 0ZZ + XXX + ST'$ Operating Company does carrier identification on the call (i.e. not a designated call).
 - 0 informs the system that this is a domestic IC/INC call
 - ZZ provides carrier-specific routing information. This is unused with OSS processing as the call will be routed based on the called number.
 - XXX is the 3-digit Carrier Access Code (CAC) that was dialed or presubscribed. This field is not sent when the CAC is not known (not dialed or picked).
- Calling number format
 - $KP + II + 0/3/10 \text{ digits} + ST$ Origination from a rotary dial station (10XXX was not dialed).
 - $KP' + II + 0/3/10 \text{ digits} + ST$ Origination from a rotary dial station (10XXX was dialed).
 - $KP'' + II + 0/3/10 \text{ digits} + ST$ Origination from a DTMF station (10XXX was not dialed).
 - $KP''' + II + 0/3/10 \text{ digits} + ST$ Origination from a DTMF station (10XXX was dialed).
- Called number format
 - $KP + (0) + 0/7/10 \text{ digits} + ST$

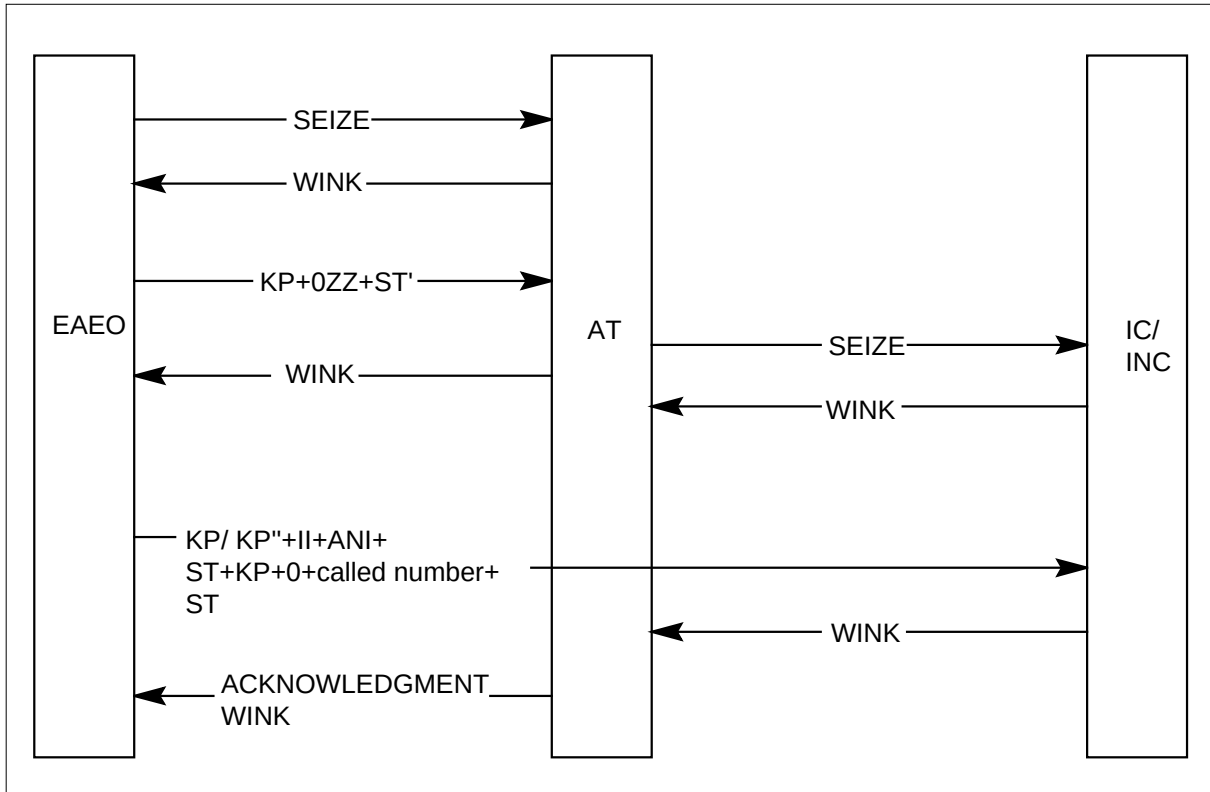
The following figure illustrates 0+ inter-LATA calls.

TOPS Exchange Access Operator Services Signaling (continued)

0+ Inter-LATA Calls - Presubscribed Line



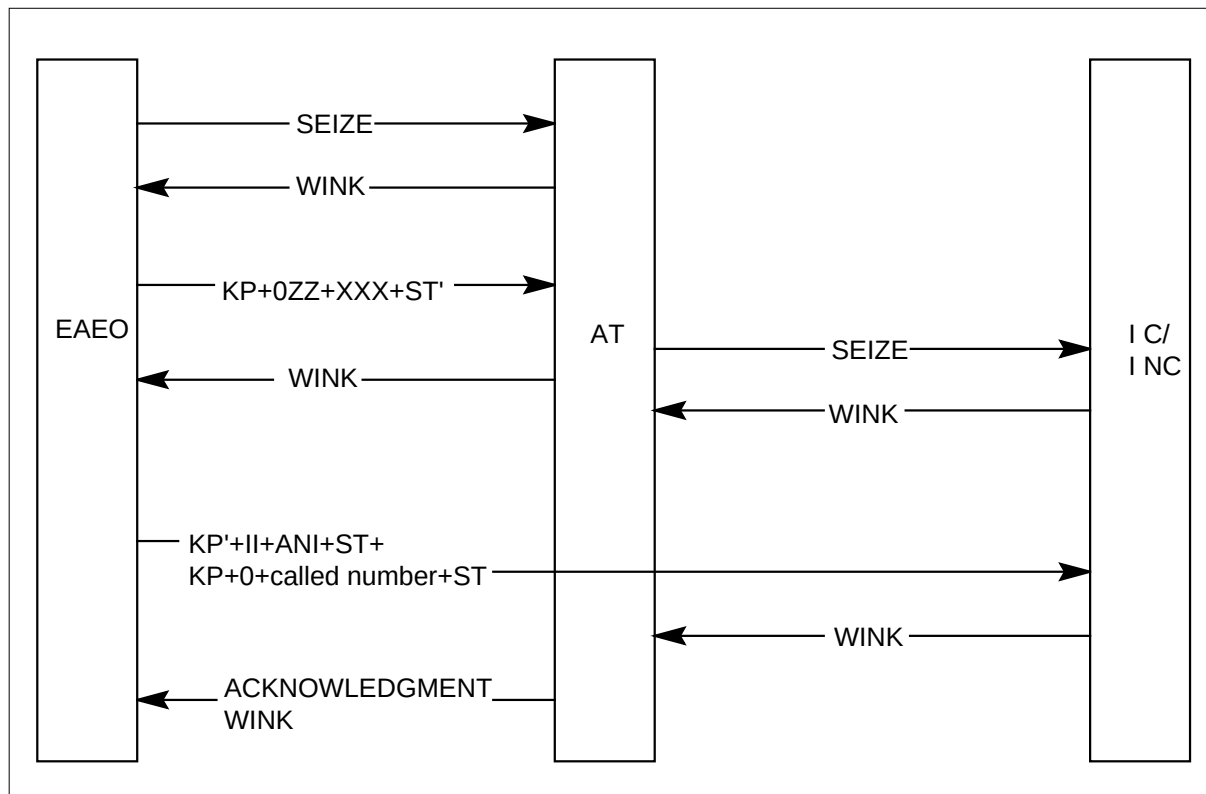
In the following figure, ST' and the absence of XXX indicates a call requiring Operating Company operator exchange access services from a line that is not presubscribed and 10XXX is not dialed.

TOPS Exchange Access Operator Services Signaling (continued)**0+ Inter-LATA Calls - Line is not presubscribed**

In the following figure, ST' indicates that operator services are required, and the KP' on the ANI sequence indicates that 10XXX was dialed by the customer.

TOPS Exchange Access Operator Services Signaling (continued)

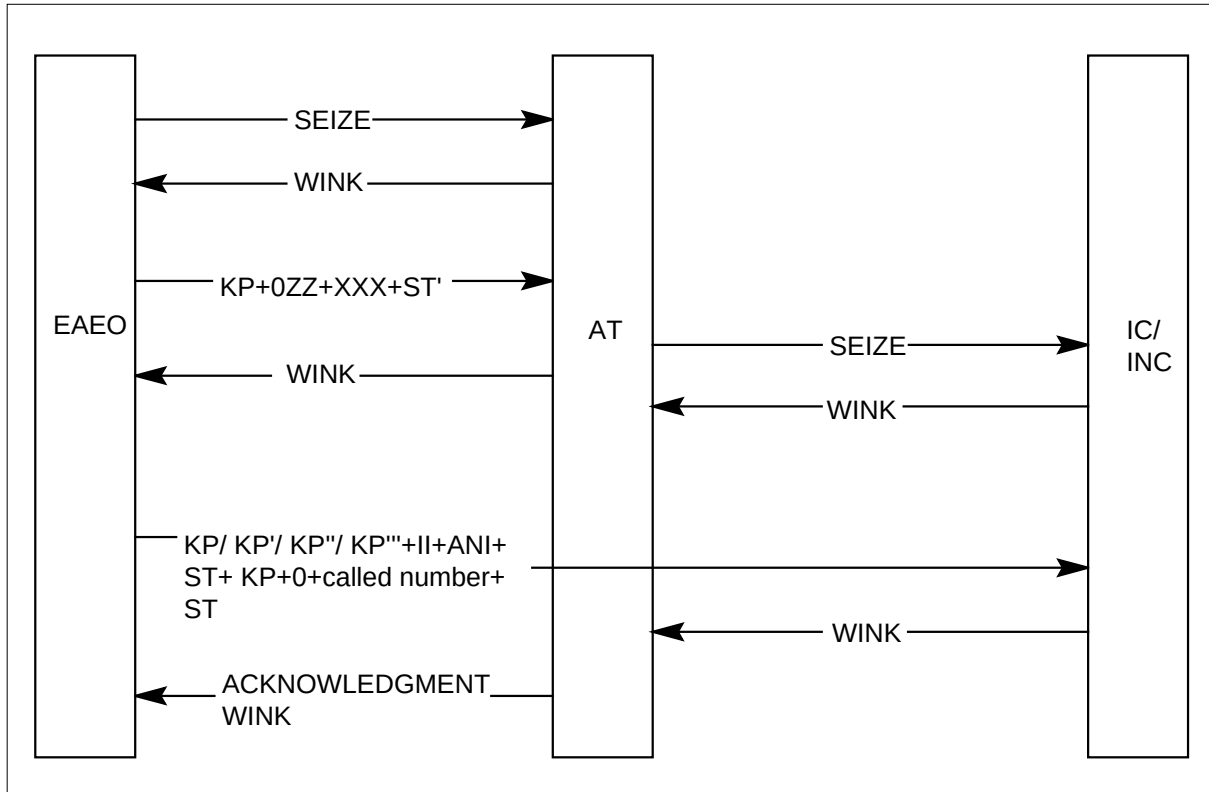
10XXX + 0+ Inter-LATA Operating Company provides operator services for IC



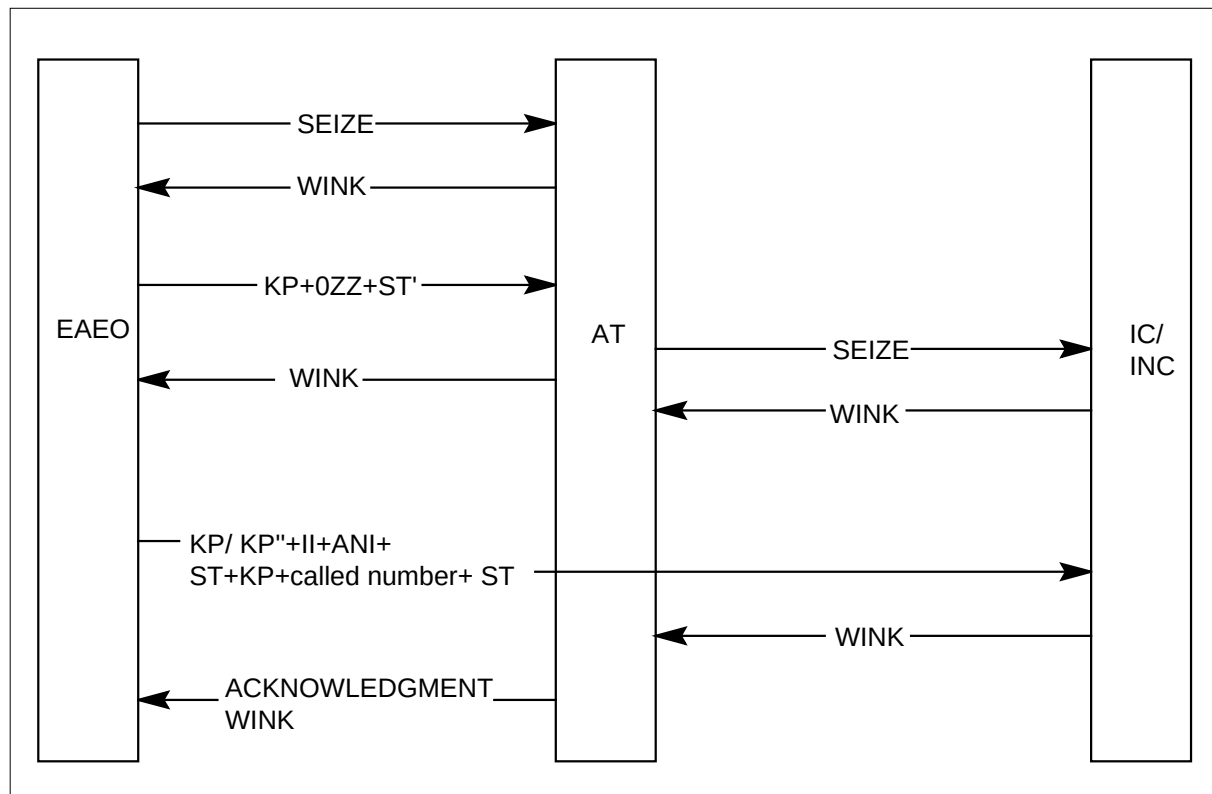
The following figure illustrates 1+ inter-LATA operator system calls such as coin or hotel calls, when the Operating Company provides operator services for the IC. The ST' indicates that the Operating Company operator exchange access services are required. The XXX corresponds to the calling station's PIC. The KP' in the ANI indicates the customer dialed the 10XXX code.

TOPS Exchange Access Operator Services Signaling (continued)

1+ Inter-LATA Operator System Calls



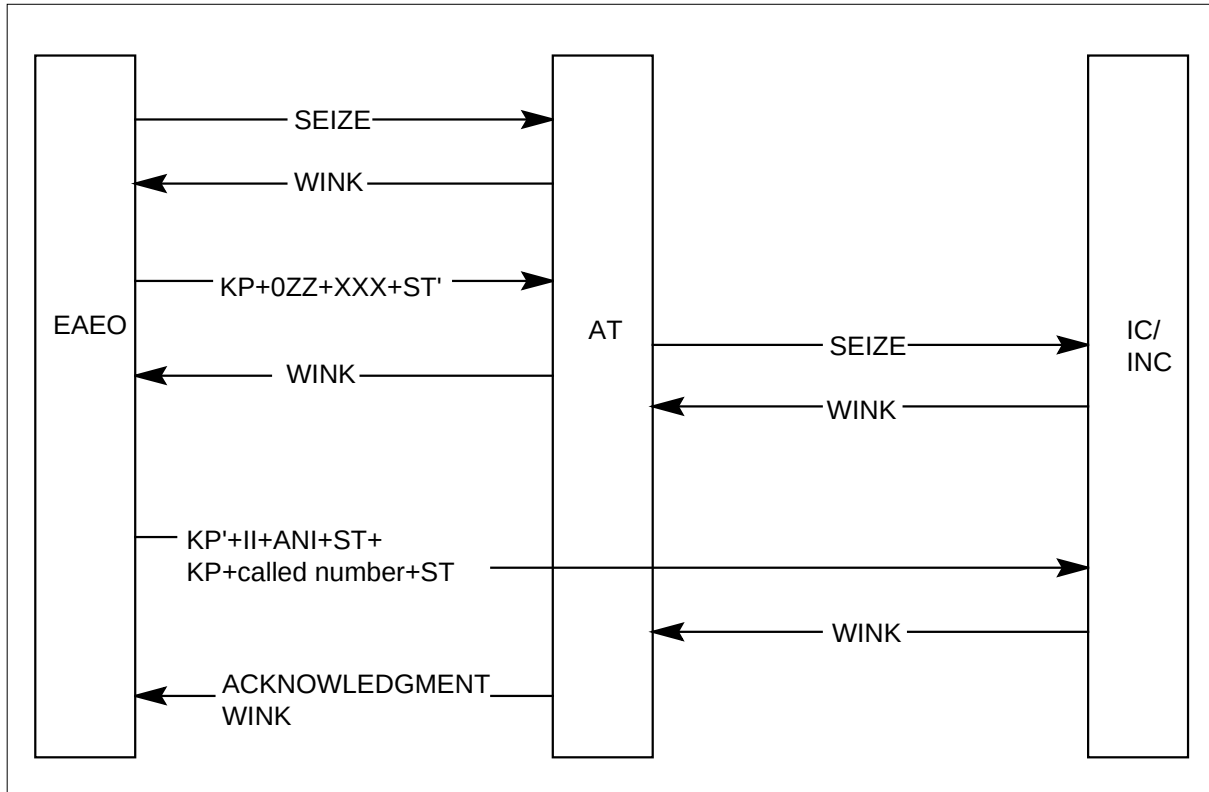
The following figure illustrates 1+ inter-LATA operator system calls such as coin or hotel calls, when the Operating Company provides operator services for the IC. The ST' and absence of XXX indicates that the Operating Company operator exchange access services are required from a line that is not presubscribed and 10XXX not dialed. The KP or KP'' in the ANI indicates the customer did not dial the 10XXX code.

TOPS Exchange Access Operator Services Signaling (continued)**1+ Inter-LATA Operator System Calls - Line is not presubscribed and IC 10XXX not dialed**

The following figure illustrates 10XXX + 1+ inter-LATA operator system calls such as coin or hotel calls, when the operating company provides operator services for the IC. The ST' indicates that operating company operator services are required, and the KP' in the ANI sequence indicates that 10XXX was dialed. The ANI Information Digit pair (II) indicates whether the call is ANI-Failure or ONI

TOPS Exchange Access Operator Services Signaling (continued)

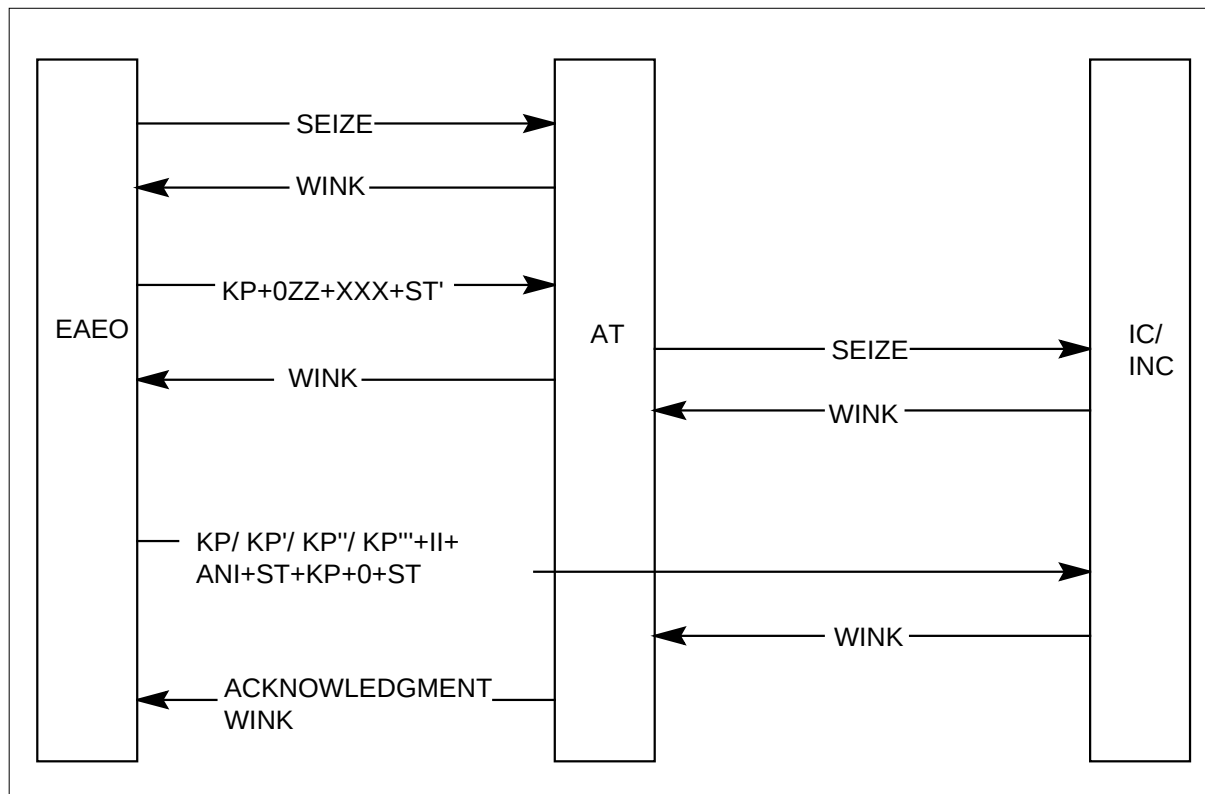
10XXX + 1+ Inter-LATA Operator System Call - CAC dialed



Example of 10XXX + 1+ Inter-LATA Operator System Call - CAC dialed output

KP + 0ZZ + XXX + ST'
 Send wink to EAO
 KP''' + II + 3 digits (NPA) + ST +
 KP + CLD NO + ST

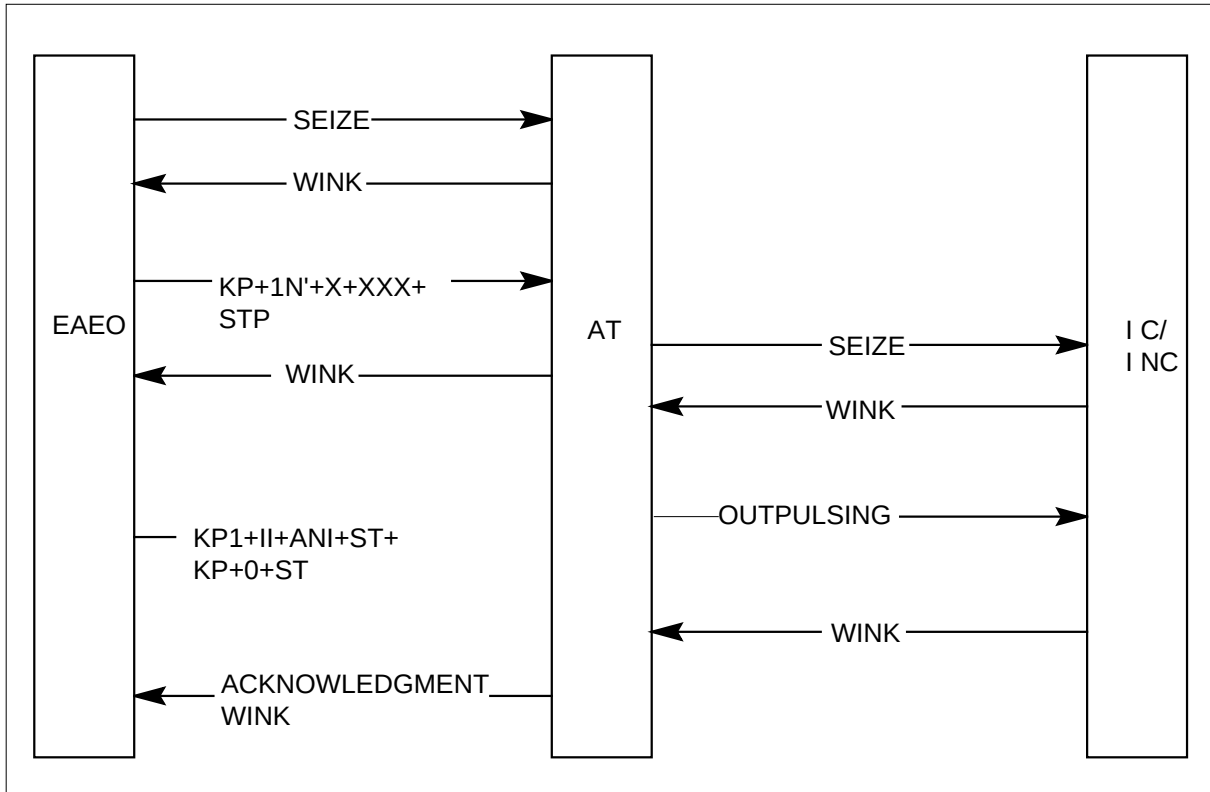
The following figure illustrates 00- calls where the operating company provides operator services for the IC. The ST' indicates that operating company operator services are required. The XXX corresponds to the calling station's PIC.

TOPS Exchange Access Operator Services Signaling (continued)**00- Calls - Operating Company Operator Services**

The following figure illustrates 10XXX + 0 - calls when the operating company provides operator services for the IC/INC. The STP indicates that the operating company operator services are required. The KP1 on the ANI sequence indicates that 10XXX was dialed.

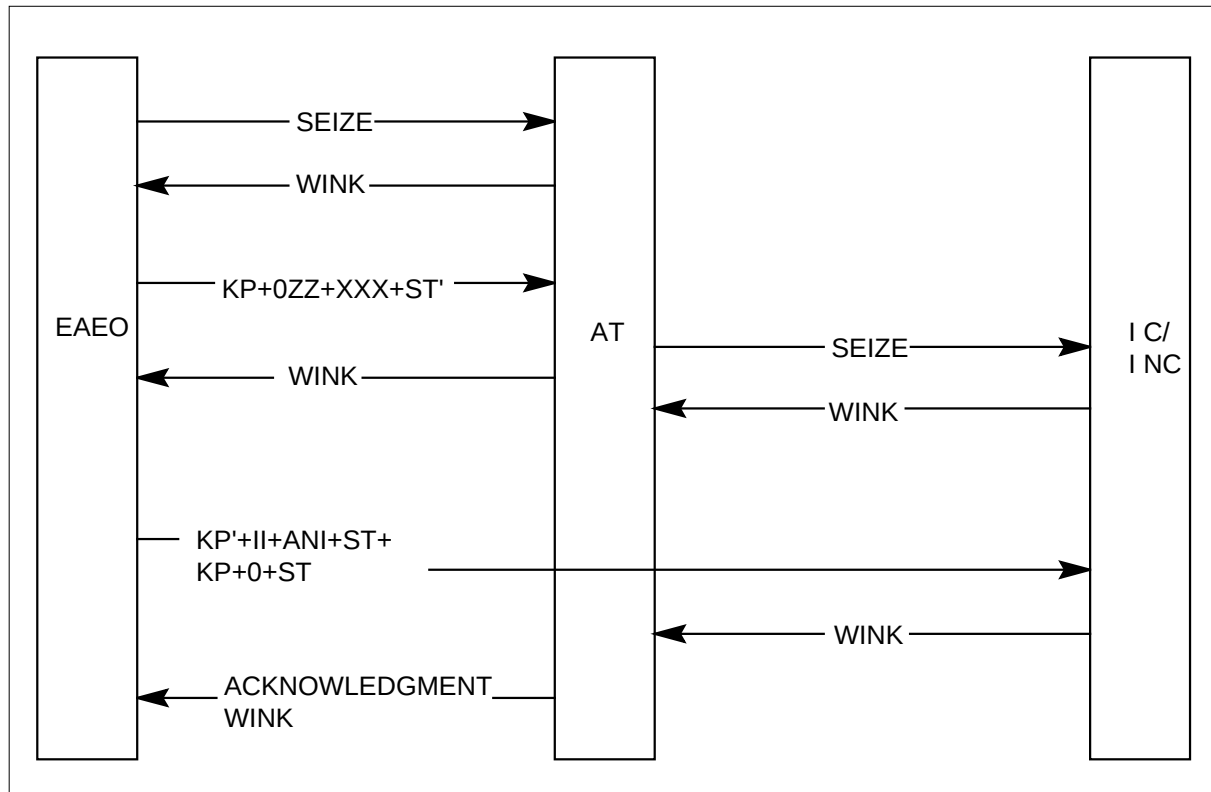
TOPS Exchange Access Operator Services Signaling (continued)

10XXX + 0- Calls - Operating Company Operator Services



TOPS Exchange Access Operator Services Signaling (continued)

10XXX + 0- Calls - Operating Company Operator Services



International Calls

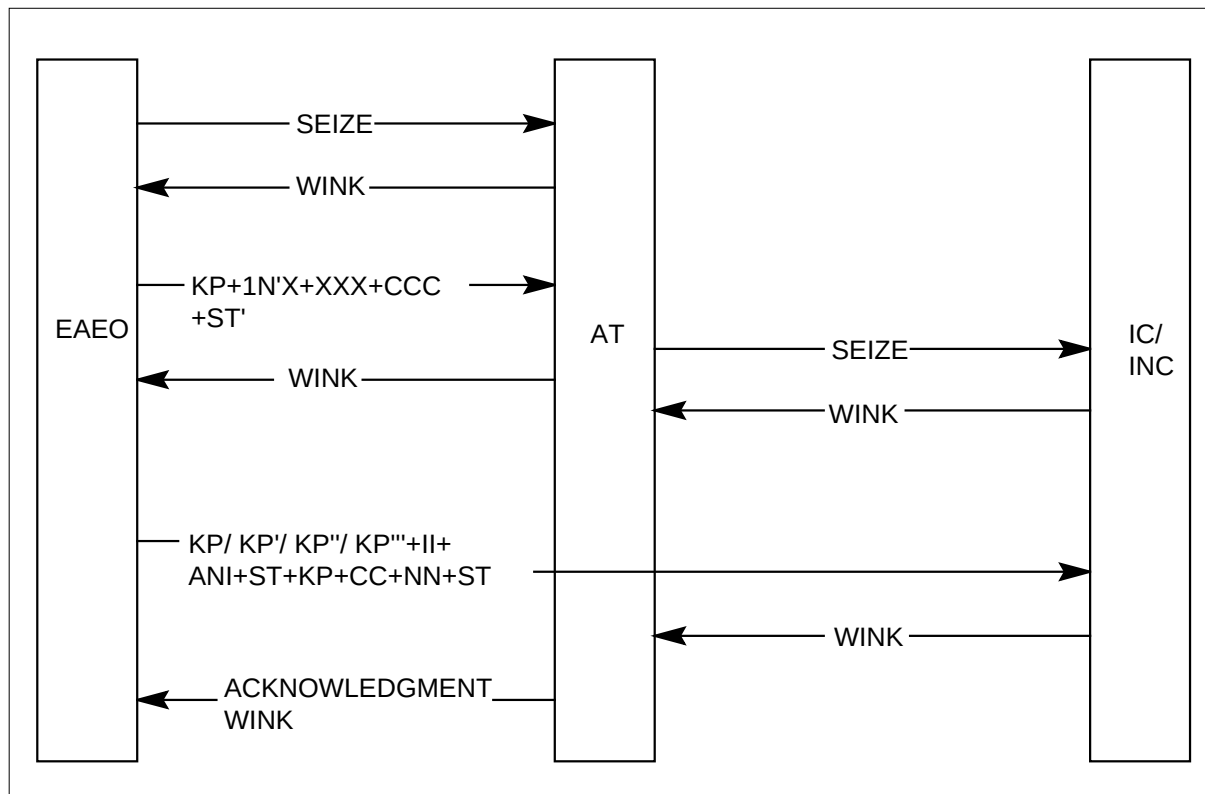
The figures below illustrates the signaling sequences used on international calls.

TOPS Exchange Access Operator Services Signaling (continued)

The following definitions apply to this section:

- Carrier information format:
 - $KP + 1NX + XXX + CCC + ST$ Operating Company does not do carrier identification on the call.
 - $KP + 1N'X + XXX + CCC + ST'$ Operating Company does carrier identification on the call (i.e. not a designated call).
 - 1 indicates an international call
 - N indicates International Direct Distance Dialing (IDDD)
 - N' indicates an international operator assisted call
 - XXX is the 3-digit Carrier Access Code (CAC) that was dialed or presubscribed. This field is not sent when the Inter-LATA Carrier code is not known (not dialed or picked).
 - CCC is the Country Code padded with zeros to three digits
 - NN is the National Number
- Calling number format
 - $KP + II + 0/3/10 \text{ digits} + ST$ Origination from a rotary dial station (10XXX was not dialed).
 - $KP' + II + 0/3/10 \text{ digits} + ST$ Origination from a rotary dial station (10XXX was dialed).
 - $KP'' + II + 0/3/10 \text{ digits} + ST$ Origination from a DTMF station (10XXX was not dialed).
 - $KP''' + II + 0/3/10 \text{ digits} + ST$ Origination from a DTMF station (10XXX was dialed).
- Called number format
 - $KP + CC + NN + ST$

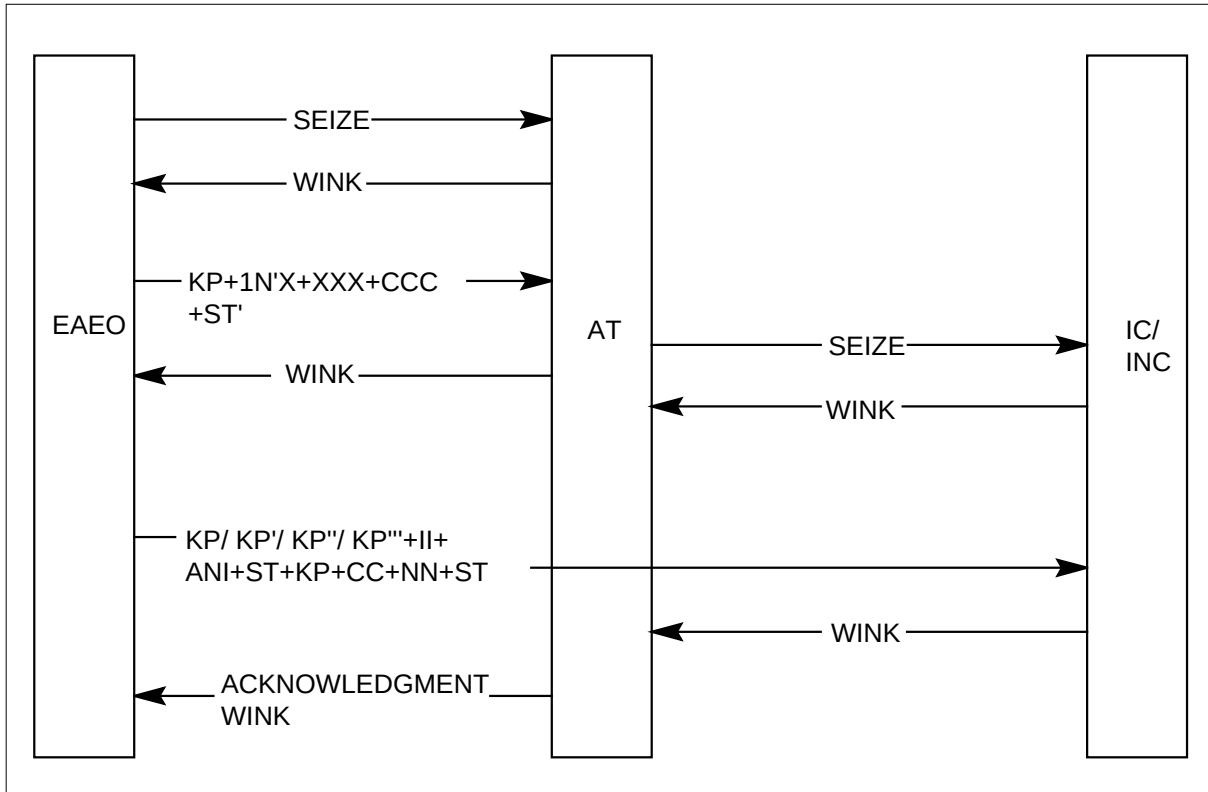
The following figure illustrates 01+ international calls from presubscribed lines, and 011+ inter-LATA operator system calls such as coin and hotel calls. The ST' indicates that Operating Company operator exchange access services are required. N' indicates that the call was dialed with a 01 prefix. XXX corresponds to the calling station's PIC.

TOPS Exchange Access Operator Services Signaling (continued)**01+ International Calls - presubscribed to an international carrier**

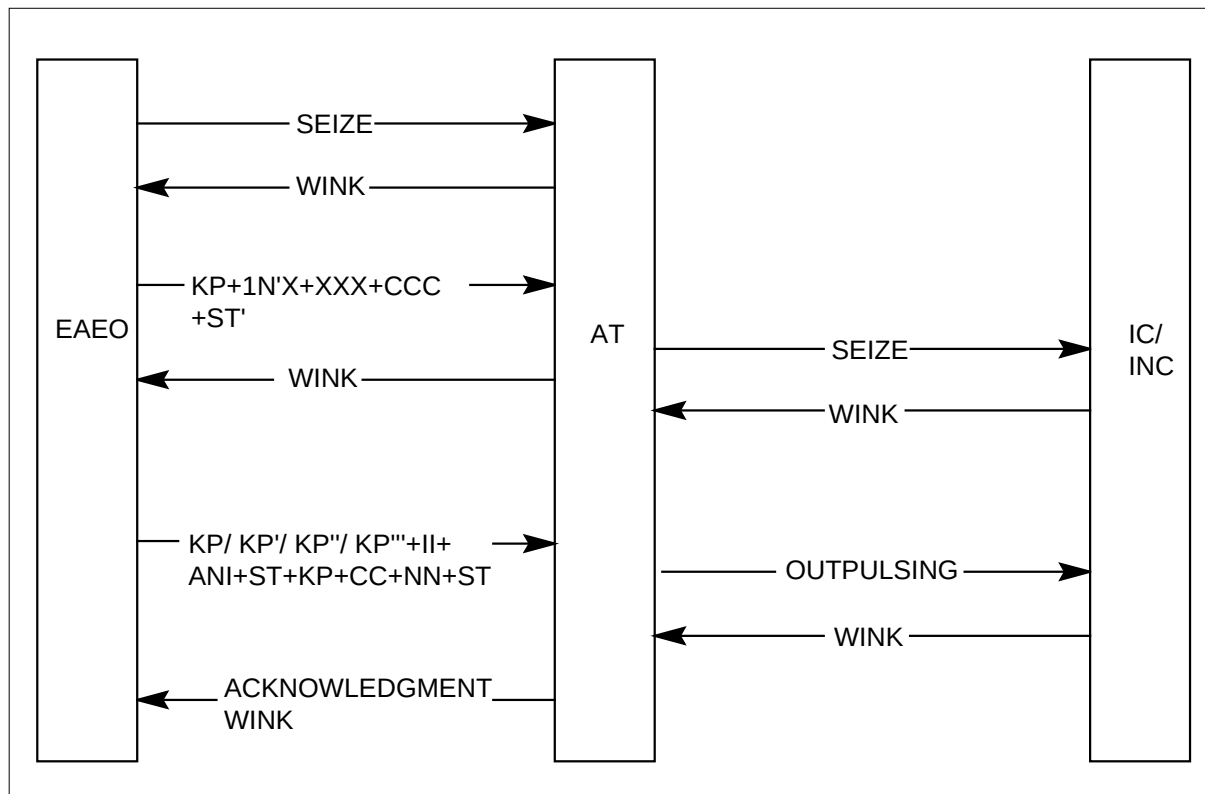
The following figure illustrates 01+ international calls from non-presubscribed lines. ST' and the absence of the XXX code indicates a 01 call from a line that is not presubscribed and 10XXX not dialed.

TOPS Exchange Access Operator Services Signaling (continued)

01+ International Calls - line not presubscribed



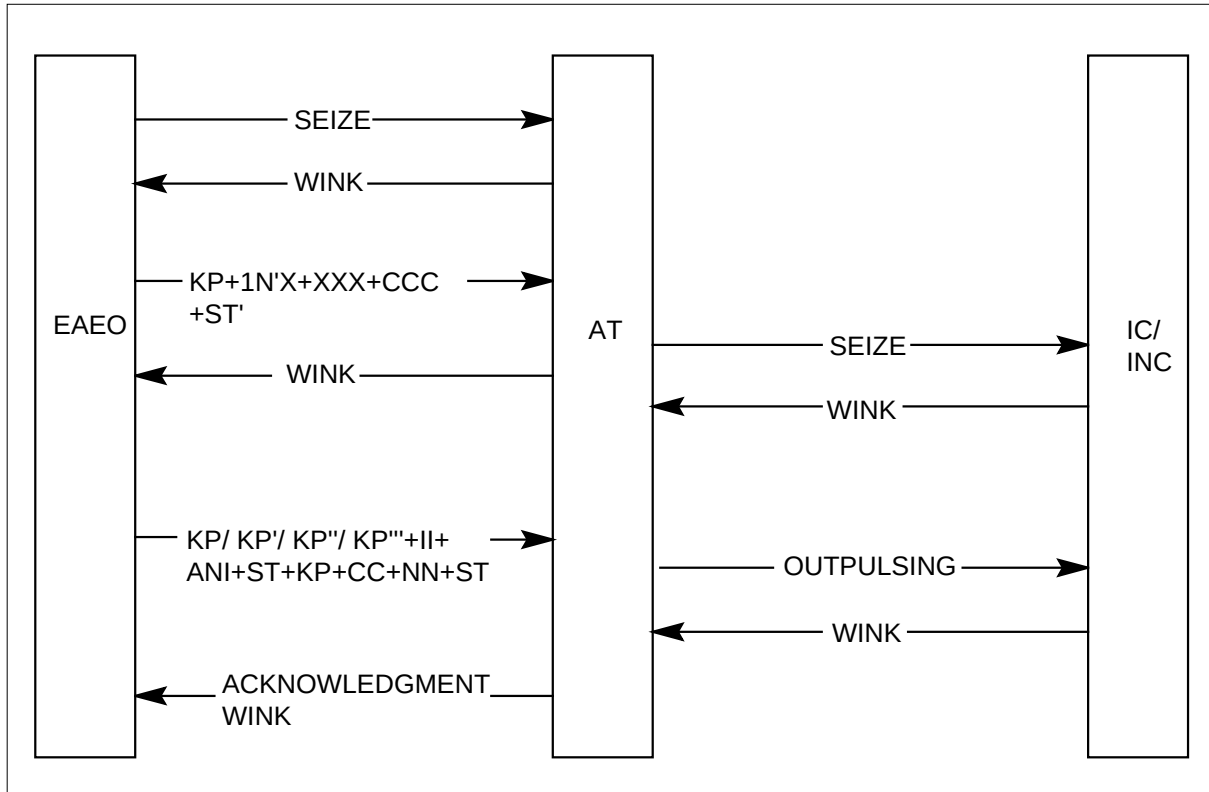
The following figure illustrates 10XXX + 01+ International calls where the operating company provides operator services for the IC/INC. The ST' indicates that operating company operator services are required. N' indicates that the call was dialed with a 01 prefix. The KP' on the ANI sequence indicates that 10XXX was dialed.

TOPS Exchange Access Operator Services Signaling (continued)**10XXX + 01+ International - Operating Company Operator Services**

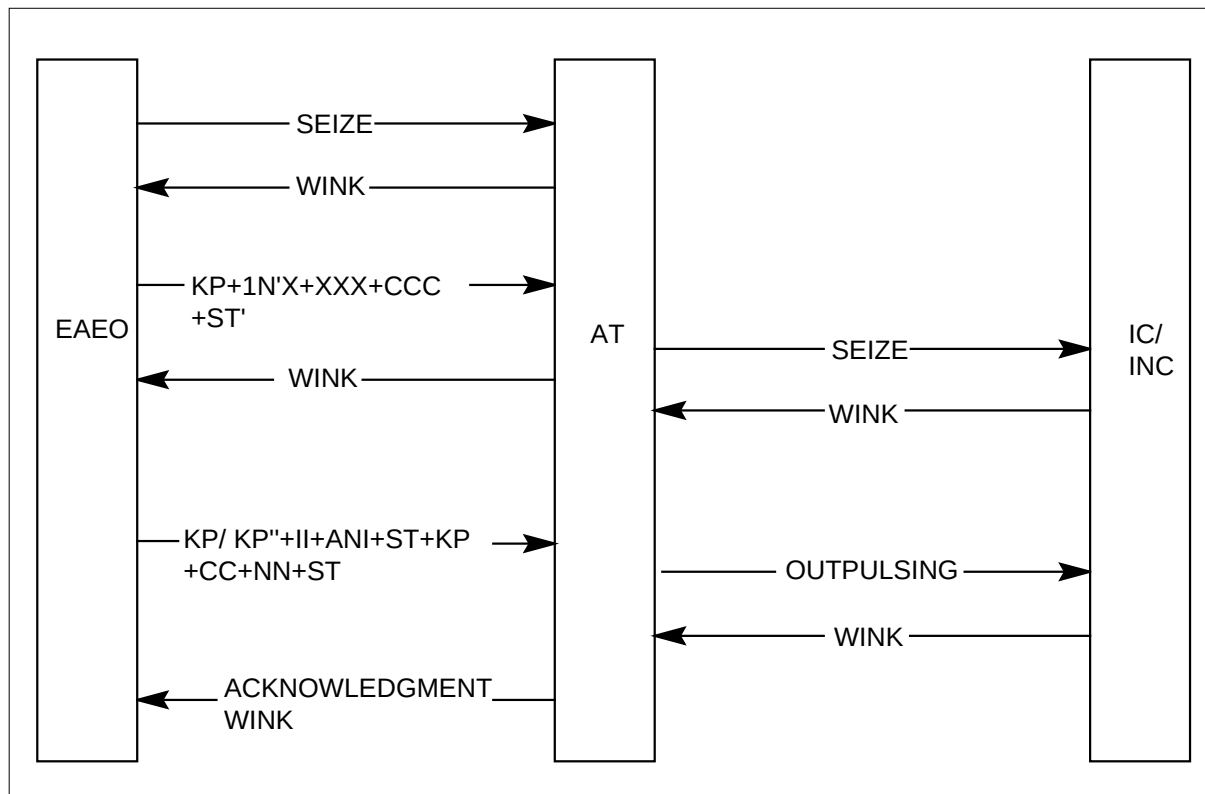
The following figure illustrates 011+ international coin or hotel calls where the operating company provides operator services for a presubscribed line. The ST' indicates that operating company operator services are required. N' indicates that the call was dialed with a 011 prefix. The XXX corresponds to the PIC of the calling station.

TOPS Exchange Access Operator Services Signaling (continued)

011 + International Operator System Calls - line presubscribed



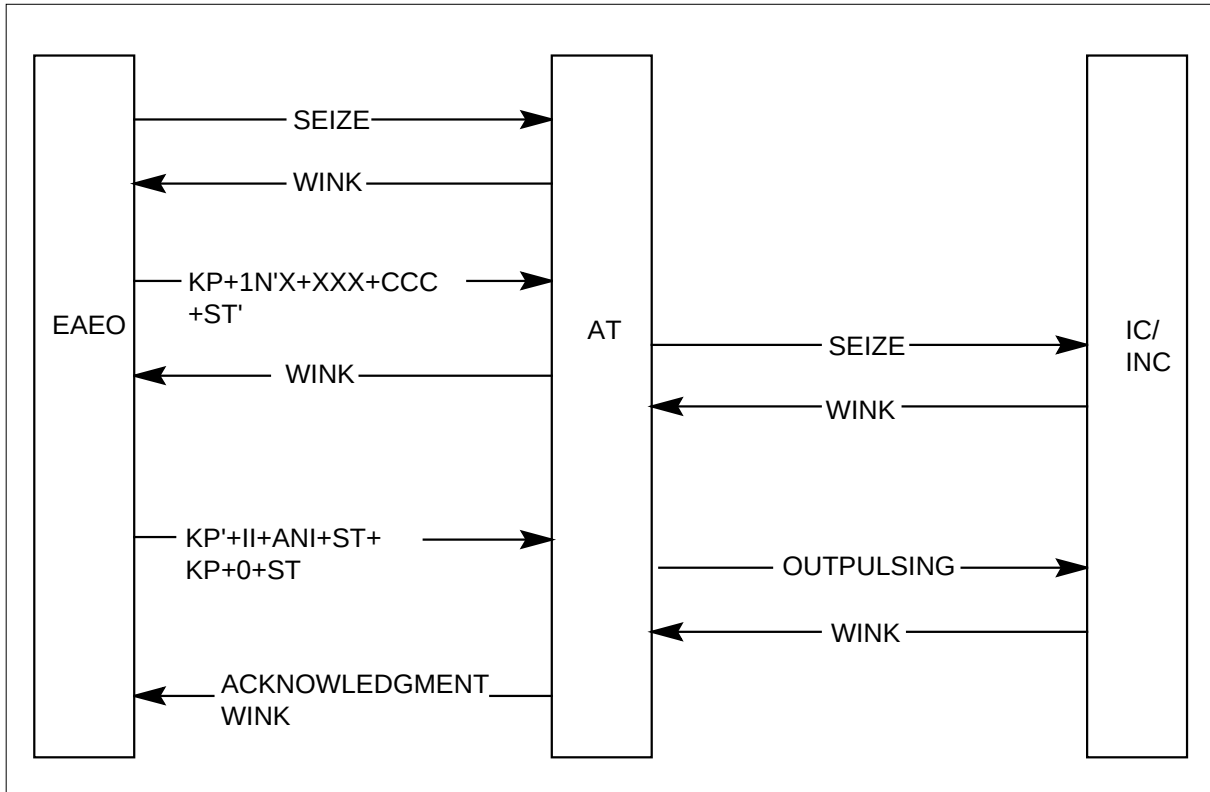
The following figure illustrates 011+ international coin or hotel calls where the operating company provides operator services. The line is not presubscribed and 10XXX was not dialed. The ST' indicates that operating company operator services are required. N' indicates that the call was dialed with a 011 prefix. The XXX corresponds to the PIC of the calling station.

TOPS Exchange Access Operator Services Signaling (continued)**011 + International - Operating Company Operator Services**

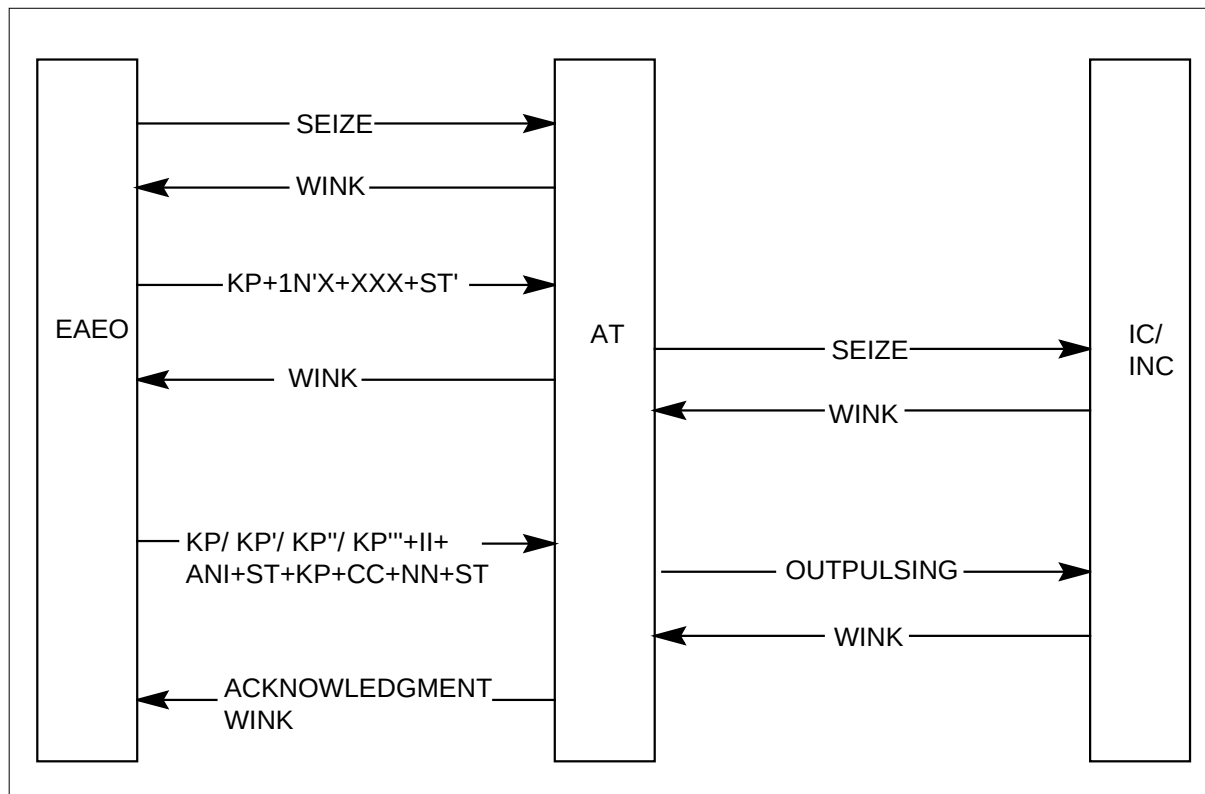
The following figure illustrates 10XXX + 011+ international calls where the operating company provides operator services for the IC/INC. The ST' indicates that operating company operator services are required, and the KP' on the ANI sequence indicates that 10XXX was dialed.

TOPS Exchange Access Operator Services Signaling (continued)

10XXX+ 011 + International - Operating Company Operator Services



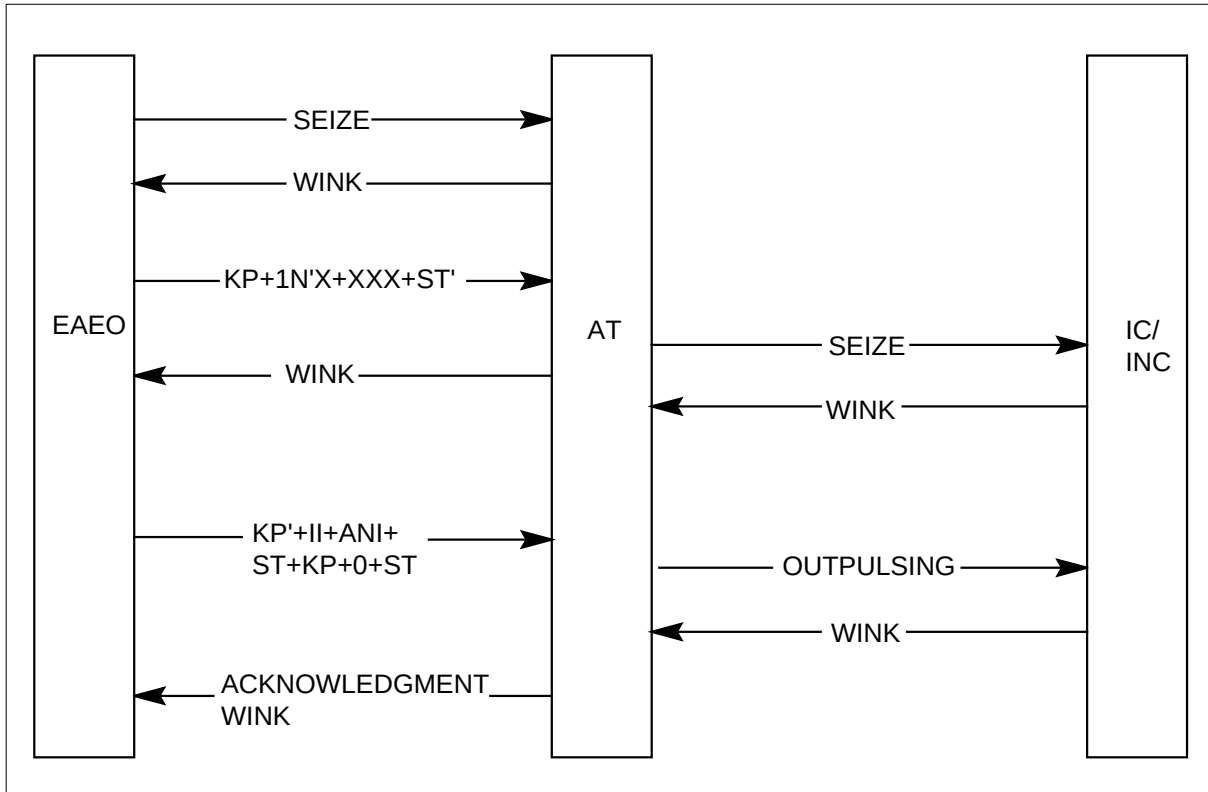
The following figure illustrates 00- calls when the operating company provides operator services for the IC/INC. The ST' indicates that operating company operator services are required.

TOPS Exchange Access Operator Services Signaling (continued)**00- Calls - Operating Company Operator Services**

The following figure illustrates 10XXX + 0- calls when the operating company provides operator services for the IC/INC. The ST' indicates that operating company operator services are required. The KP' on the ANI sequence indicates that 10XXX was dialed.

TOPS Exchange Access Operator Services Signaling (continued)

10XXX+0- Calls - Operating Company Operator Services



BR22079 (EAOSS Cutthru with Operator Hold and EAOSS Conversion to MOSS)

EAOSS provides the ability to convert incoming FGD signaling to Modified Operator Services Signaling (MOSS) outgoing to the Interexchange Carrier (IEC) to support coin control, ringback, and operator hold signals. EAOSS also provides FGD cut through signaling to the IC and propagation of coin signals back to the end office.

Note: Traffic incoming on EAOSS trunks to the AT can be converted to other signaling types, such as traditional operator services (OS) signaling or FGD, as determined by outgoing trunk group datafill. MOSS is used as an example. IEC and carrier are used throughout this bulletin to represent either an inter-LATA carrier (IC) or an international carrier (INC), or a combined IC/INC. MOSS corresponds to BELLII and traditional OSS corresponds to BELLI in ATC trunk group datafill.

Beginning in May 1991, operating companies must give any IEC the ability to offer full operator services to coin stations. Prior to EAOSS, only FGC signaling (traditional or MOSS) could support full operator signaling to coin

TOPS Exchange Access Operator Services Signaling (continued)

phones. EAOSS in BCS31 supports coin signaling on calls that come into the AT on TOPS trunks with EAOSS signaling and go out to ICs with either MOSS or FGD signaling.

Although EAOSS was introduced in BCS26, it has not yet been used by operating companies to any significant extent. In order to meet the operating companies' requirements for carrier coin service availability in May, 1991, a patch is required in the TOPS AT to provide the FGD propagation of coin signals and provide MOSS conversion capability based on 0ZZ or 1N(')X digits in cases where the end office can't modify the ST signal. This patch will be applied to all loads with TOPS EAOSS, OSEA0101, software in BCS31. All DMS-100 EAEOs with EAOSS software at BCS29 or higher will receive a patch that allows them to meet full EAOSS requirements.

EAOSS signaling conveys digit signaling information to the IC/INC. Calls originating from the EAEO may be signaled directly to a carrier or cut-through to the carrier by tandeming the call through an Access Tandem (AT). The Operator Hold portion of this feature deals solely with the case where the calls are cut-through to the carrier by tandeming them through a DMS TOPS AT equipped with TOPS Equal Access (EA).

EAOSS signaling can be used for both domestic/national calls and international calls. The first stages differ depending upon which type of call it is. The first stage of domestic/national calls consists of the KP-0ZZ-XXX-ST(') stage, and the first stage of international calls consists of the KP-1NX/1N'X-XXX-CCC-ST(') stage. In both cases, the KP is the Key Pulse signal (the first signal in the MF digit stream) and the ST(') is the Start Translations signal (the last signal in the MF digit stream). With this feature, TOPS can determine from the first stage routing digits to collect all signaling stages and signal MOSS on the outgoing trunk group to the carrier.

1st Stage Of Signaling on EAOSS Trunks - Domestic Carrier Calls

- *KP + 0ZZ + XXX + ST*
ZZ not within range of 90-99. No telco OSS processing required. FGD cut-through to IEC. Translate with T selector in STDPRT to OFRT. Coin signals are propagated back to end office.
- *KP + 0ZZ + XXX + ST'*
Telco OSS processing required, which consists of collecting all stages of signaling and routing to the carrier with the signaling format specified on the ATC trunk group. TOPS EA processing is performed on the called

TOPS Exchange Access Operator Services Signaling (continued)

number, and the route is obtained from class of service screening. TOPS EA conditional routing may be used in Table OFRT.

- $KP + 0ZZ + XXX + ST$

ZZ digits within range of 90-99. Telco OSS processing required, which consists of collecting all stages of signaling and routing to the carrier with the signaling format specified on the ATC trunk group. TOPS EA processing is performed on the called number, and the route is obtained from class of service screening. TOPS EA conditional routing may be used in Table OFRT.

1st Stage Of Signaling on EAOSS Trunks - International Carrier Calls

- $KP + 1NX + XXX + CCC + ST$ or $KP + 1N'X + XXX + CCC + ST$

NX and N'X not equal to 190 or 194. No telco OSS processing required. FGD cut-through to IEC. Translate with T selector in STDPRT to OFRT. Coin signals are propagated back to end office.

- $KP + 1NX + XXX + CCC + ST'$ or $KP + 1N'X + XXX + CCC + ST'$

Telco OSS processing required, which consists of collecting all stages of signaling and routing to carrier with MOSS. TOPS EA processing is performed on the called number, and the route is obtained from class of service screening. TOPS EA conditional routing may be used in OFRT.

- $KP + 1NX + XXX + CCC + ST$ or $KP + 1N'X + XXX + CCC + ST$

NX or N'X digits equal to 190 or 194. No telco OSS processing required. Telco OSS processing required, which consists of collecting all stages of signaling and routing to carrier with MOSS. TOPS EA processing is performed on the called number, and the route is obtained from class of service screening. TOPS EA conditional routing may be used in OFRT.

With EAOSS, the end office datafill determines whether or not an IEC's calls will be signaled to the AT with a modified ST signal (ST') on the first stage of FGD outputting. The ST' (or 0ZZ digits in 090-099 range, or 1N(')X digits equal to 190 or 194) tells the AT to convert to MOSS outgoing to the IC. Otherwise, ST is sent on the first stage, and the AT cuts through FGD to the carrier and propagates any coin signals back to the EAEO.

For calls incoming on TOPS EAOSS trunk groups, the carrier is defined by the XXX digits in the first signaling stage. The carrier defined in Table TOPEATRK is ignored. Table TOPEATRK obtains the intrastate, interstate, and international class of service screening tables for routing.

TOPS Exchange Access Operator Services Signaling (continued)

EAOSS also alters the way that intra-LATA (operating company) calls are signaled to the AT. For intra-LATA calls requiring operator services, MOSS signaling sends traffic to the AT over the OP trunk group. Listing Services (Directory Assistance) and Intercept calls are signaled with distinctive ST marks so they may be combined on the same trunk group and identified at the AT.

Operator Hold to the Carrier

Prior to this feature, an IC/INC operator did not have control of an EAOSS cut-through call. This meant that if the originating party went on-hook (hung up), the call was taken down. This lack of control kept the carriers from supplying full operator services to these calls.

With this feature, the carrier is given operator hold functionality for these calls. This allows the carrier to provide full operator services (i.e. coin control, ringback, etc.) to all calls requiring operator processing. Since these calls are cut-through calls, the ANI and called digit stages are signaled from the EAEO to the carrier. The carrier is then responsible for determining if the call requires operator services. For calls requiring operator processing, the carrier will obtain Operator Hold functionality by sending an off-hook acknowledgement. For calls that do not require operator services, the carrier will send a wink acknowledgement, ACK_WINK, and the originating party will retain control of the call.

EAOSS to MOSS Conversion

TOPS uses the Start Translations signal in the first stage of a call to determine whether the following stages are to be collected and processed or passed on to the carrier for processing. This feature provides a second way for an EAEO to tell TOPS to collect and process these following stages instead of passing them on to the carrier. This feature gives TOPS the ability to look at the routing digits signaled from the EAEO in the first stage of a call and determine whether or not to collect all stages and signal outgoing MOSS signaling to the carrier.

BellCORE has specified the domestic and international routing digits that will key TOPS to collect the incoming EAOSS signaling and signal outgoing MOSS signaling to the carrier. This EAOSS to MOSS signal conversion will occur for domestic/national calls that are signaled with 0ZZ routing digits in the range of 090 to 099 (i.e. 0ZZ = 093) and for international calls signaled with 1NX/1N'X values of 194 or 190 (i.e. 1NX = 194 or 1N'X = 190).

EAOSS Signaling/Tandeming

If an EAEO does not have a direct trunk group available for signaling a call to a carrier and that carrier has a point of presence at that EAEO, then the call may be tandemed through an AT (i.e. cut-through). If the AT is equipped with

TOPS Exchange Access Operator Services Signaling (continued)

TOPS, then an incoming TOPS trunk group and an outgoing ATC trunk group may be used at the AT to connect the end office to the carrier.

TOPS trunks support either FGC or operator services FGD (EAOSS) signaling. The ATC trunk group supports either FGC or FGD signaling. Existing TOPS functionality provides the ability to convert FGC to FGD or to convert EAOSS to FGC.

Note: When the call is signaled as operator services FGD incoming and FGD outgoing, the ability to cut through the call based upon a single first stage of digits is provided.

EAOSS signaling can be used for both domestic/national calls and international calls. The first stages differ depending upon which type of call it is. The first stage of domestic/national calls consists of the KP-(0)ZZ-XXX-ST(P) stage, and the first stage of international calls consists of the KP-1NX/1N'X-XXX-CCC-ST(P) stage.

Domestic/National EAOSS Tandeming

The TOPS office collects the first stage of signaling from the end office. This first stage contains routing information sufficient to route the call to a trunk group that terminates to the IC. This first stage is in the form KP-0ZZ-XXX-ST, where 0ZZ are routing digits used to determine the outgoing office route, and XXX are the carrier identification digits.

Billing records are not created for these cut-through calls since TOPS does not collect and process all stages of these calls.

Following is a step-by-step description defining the flow of an EAOSS tandemed domestic call:

1. EAEO seizes an incoming trunk to TOPS and after TOPS returns a wink, the EAEO signals the first stage to TOPS.
2. TOPS determines that the call is a cut-through call and seizes a trunk to the carrier. The carrier sends a wink and TOPS receives it and regenerates it back to the EAEO.
3. Upon receiving this wink, the EAEO signals the ANI and called digit stages through TOPS to the carrier. TOPS does not know the type of call since these stages passed through without being collected.
4. After receiving these stages, the carrier returns either an offshoot or a wink acknowledgement. It is the responsibility of the carrier to determine if the call requires operator services (i.e. OA, coin, hotel, etc.). For calls requiring operator services, the carrier must return an offhook acknowledgement, and for calls not needing operator services, a wink

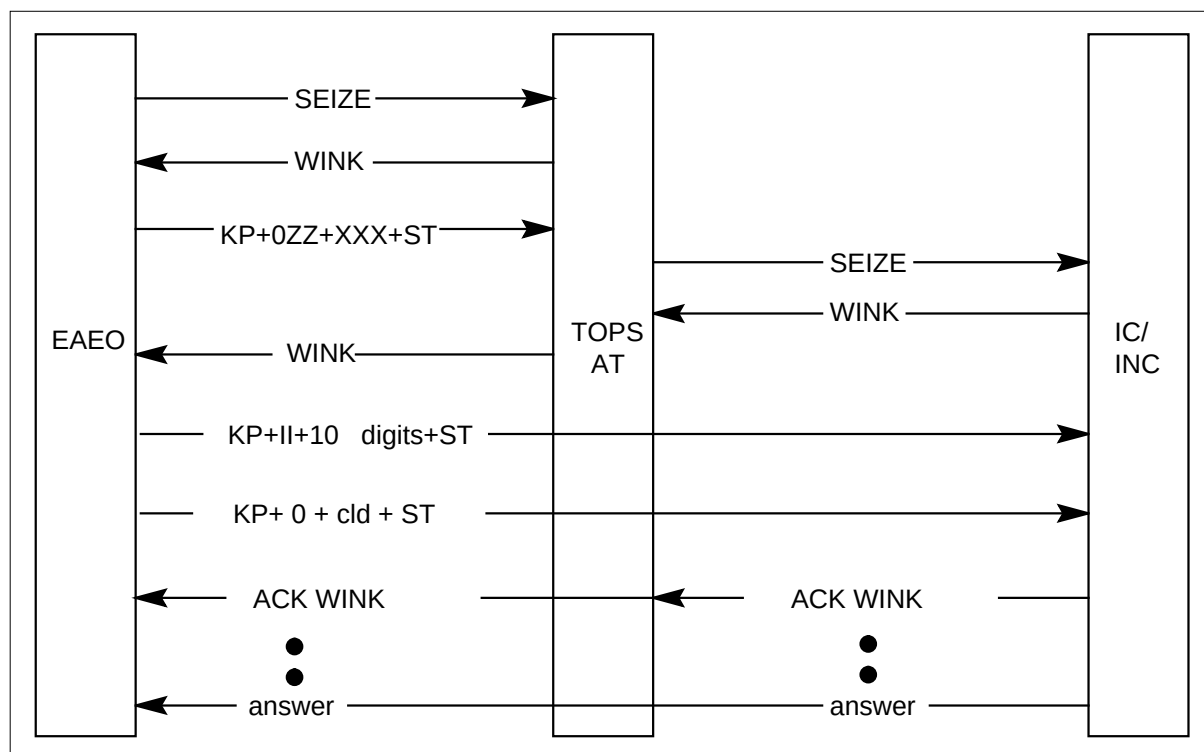
TOPS Exchange Access Operator Services Signaling (continued)

acknowledgement (ACK_WINK). This ACK is signaled to the EAEO without delay.

5. TOPS also sees this acknowledgement and supplies Operator Hold functionality to the carrier for an offhook ack. For an ACK_WINK, TOPS does not alter control of the call.

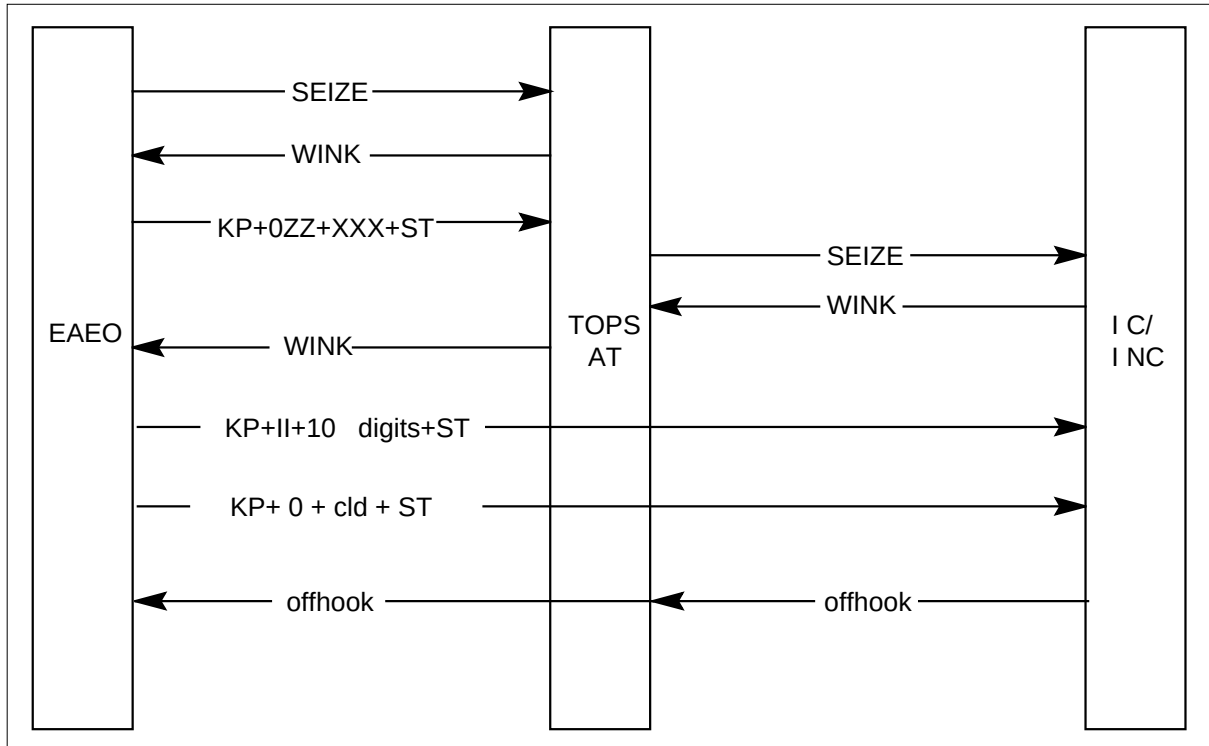
The following diagrams illustrate EAOSS tandeming through a DMS-200 TOPS switch for domestic calls. The first is an example of a call not requiring operator services while the second example call does require operator services.

Non-Operator Handled EAOSS Tandemed Domestic Call



TOPS Exchange Access Operator Services Signaling (continued)

Operator Handled EAOSS Tandemed Domestic Call



Sample Datafill for Domestic/National EAOSS Tandeming

The incoming and outgoing trunk groups must be datafilled for EAOSS signaling (i.e. incoming = EAOSS, outgoing = EAPLAN) in table TRKGRP. The incoming trunk group will specify the Standard Pretranslator to be used. For this example, the EAOS Standard Pretranslator is used. The incoming trunk group must have field TRTMTSUP datafilled to N.

Subtable STDPRT of tuple EAOS in table STDPRTCT will use the 0ZZ-XXX routing digits and carrier code to determine the pretranslator route selector, the type of call, the outgoing office route, and the minimum and maximum digit counts to be received by TOPS. It is necessary to datafill a route selector of type T, a call type of NL or NP, the number of prefix digits to 6, and minimum and maximum digit counts of 6. In this sample datafill, 0ZZ-XXX values in the range 011123 to 050123 will specify one outgoing trunk group to carrier 123 (for this example, carrier 123 is CAR), and 0ZZ-XXX values in the range 051123 to 088123 will specify a second outgoing trunk group to the same carrier.

Note 1: The 0ZZ routing digits cannot be in the range 090-099 because these values will cause TOPS to collect all incoming EAOSS stages.

TOPS Exchange Access Operator Services Signaling (continued)

Note 2: In Subtable STDPRT, field NOPREDIG must be greater than 3; otherwise, the call will fail and cause a swerr or trap.

The office route table, OFRT, then determines the outgoing trunk group and the digits, if any, to prepend to the digits being outpulsed to the carrier. In this table, it is necessary to datafill an N type route selector and set the digits to be prepended to none (i.e. N).

The correct Table datafill order is:

TRKGRP OFRT STDPRT CT; POS EAOSS; SUB STDPRT

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO

ICTOPSEAOSS1	
TOPS0NPDGP NCRT IC MIDL 613 EAOSS NLCA NSCR Y SP COMBINED N Y	
0 0000 EAOSS 50 10 10 N OFFHK N \$	
OGTOPSEAPLAN1	
ATC0TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y EAPLAN COMB N \$	
OGTOPSEAPLAN2	
ATC0TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y EAPLAN COMB N \$	

MAP display example for table OFRT

RTE	RTELIST

200 (N D OGTOPSEAPLAN1 0 N N)\$	
300 (N D OGTOPSEAPLAN2 0 N N)\$	

MAP display example for subtable STDPRT

FROMDIGS	TODIGS	PRETRTE

011123	050123	
	T NL 6 OFRT 200 6 6	NONE
051123	088123	
	T NL 6 OFRT 300 6 6	NONE

International EAOSS Tandeming

As with the domestic EAOSS calls, the TOPS office collects the first stage of signaling and routes the call to a trunk group that terminates to the IC/INC.

TOPS Exchange Access Operator Services Signaling (continued)

The first stage is in the form KP-1NX/1N'X-XXX-CCC-ST, where 1NX/1N'X are routing digits, XXX are the carrier digits, and CCC is the pseudo country code. For international call, the call type is determined by whether the routing digits signaled were 1NX (DD calls) or 1N'X (OA calls).

Billing records are not created for these cut-through calls since TOPS does not collect and process all stages of these calls.

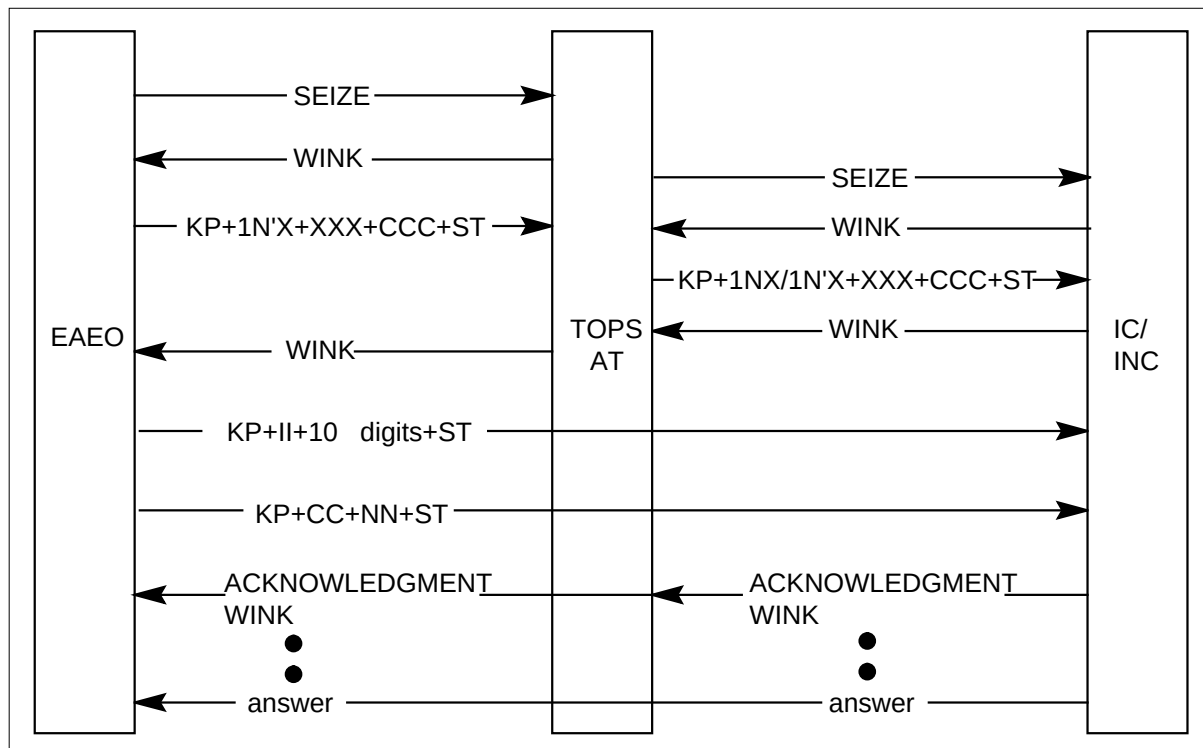
Following is a step-by-step description defining the flow of an EAOSS tandemed international call:

1. EAEO seizes an incoming trunk to TOPS and after TOPS returns a wink, the EAEO signals the first stage to TOPS.
2. TOPS determines that the call is a cut-through call and seizes a trunk to the carrier. The carrier sends a wink and TOPS signals the first stage to the carrier.
3. The carrier then sends a wink and TOPS receives it and regenerates it back to the EAEO.
4. Upon receiving this wink, the EAEO signals the ANI and called digit stages through TOPS to the carrier.
5. After receiving these stages, the carrier returns either an offhook or a wink acknowledgement. It is the responsibility of the carrier to determine if the call requires operator services (i.e. OA, coin, hotel, etc.). For calls requiring operator services, the carrier must return an offhook acknowledgement, and for calls not needing operator services, a wink acknowledgement (ACK_WINK). This ACK is signaled to the EAEO without delay.
6. TOPS also sees this acknowledgement and supplies Operator Hold functionality to the carrier for an offhook ack. For an ACK_WINK, TOPS does not alter control of the call.

The following diagrams illustrate EAOSS tandeming through a DMS-200 TOPS switch for international calls. The first is an example of a call not requiring operator services while the second example call does require operator services.

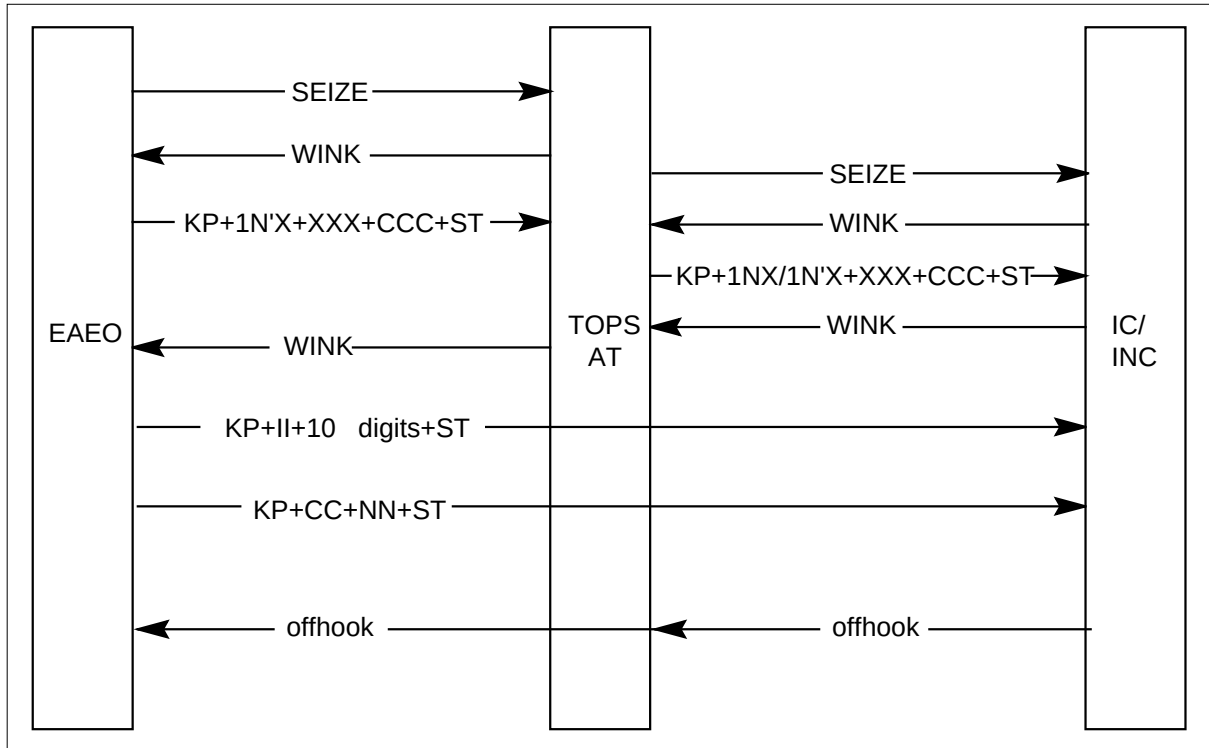
TOPS Exchange Access Operator Services Signaling (continued)

Non-Operator Handled EAOSS Tandemed International Call



TOPS Exchange Access Operator Services Signaling (continued)

Operator Handled EAOSS Tandemed International Call



Sample Datafill for International EAOSS Tandeming

The incoming and outgoing trunk groups must be datafilled as they were for the domestic example. The differences start in the Standard Pretranslator subtable STDPRT. Here, the 1NX/1N'X-XXX routing digits determine the pretranslator route selector, the outgoing office route, and the minimum and maximum digit counts to be received by TOPS. It is necessary to datafill a route selector of type T, a call type of NL or NP, the number of prefix digits to 0, and minimum and maximum digit counts of 9. In this sample datafill, 1N'X-XXX values in the range 120123 to 129123 will specify OA traffic going to carrier 123 (for this example, carrier 123 is CAR) over one outgoing trunk group, and 1NX-XXX values in the range 130123 to 139123 will specify DD traffic going to the same carrier over a second outgoing trunk group.

Note: The 1NX/1N'X routing digits cannot be 190 or 194 because these values will cause TOPS to collect all incoming EAOSS stages.

The office route table, OFRT, then determines the outgoing trunk group and the digits, if any, to prepend to the digits being outputpulsed to the carrier. In this table, it is necessary to datafill an N type route selector and to prepend the digit D (this is the KP Key Pulse signal) to the digits outputpulsed.

TOPS Exchange Access Operator Services Signaling (continued)

The correct Table datafill order is:

TRKGRP0FRTSTDPRTCT; POS EAOS; SUB STDPRT

The following figure shows an output example of TRKGRP Table international EAOSS tandem.

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO

ICTOPSEAOSS1	
TOPS0NPDGP NCRT IC MIDL 613 EAOS NLCA NSCR Y SP COMBINED N Y	
0 0000 EAOSS 50 10 10 N OFFHK N \$	
OGTOPSEAPLAN1	
ATC0TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y EAPLAN COMB N \$	
OGTOPSEAPLAN2	
ATC0TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y EAPLAN COMB N \$	

The following figure shows an output example of Table OFRT.

MAP display example for table OFRT

RTE						RTELIST	

200	(	N	D	OGTOPSEAPLAN1	0	N N)\$	
300	(	N	D	OGTOPSEAPLAN2	0	N N)\$	

The following figure shows an output example of Table STDPRT.

MAP display example for subtable STDPRT

FROMDIGS		TODIGS				PRETRTE	

120123		129123					
	T NL 0	OFRT	200	9	9		NONE
130123		139123					
	T NL 0	OFRT	300	9	9		NONE

Conversion of EAOSS to MOSS Signaling

Equal Access End offices have the ability to signal the first stage of either domestic or international EAOSS calls with BellCORE specified routing digits and have TOPS collect all stages and signal outgoing MOSS signaling to the

TOPS Exchange Access Operator Services Signaling (continued)

carrier. The outgoing signaling type is determined by the outgoing ATC trunk group datafill. Possible signaling types include BELLI (OSS), BELLII (MOSS), EAPLAN (EAOSS), and FGB. BELLII (MOSS) is used as an example throughout this document for consistency.

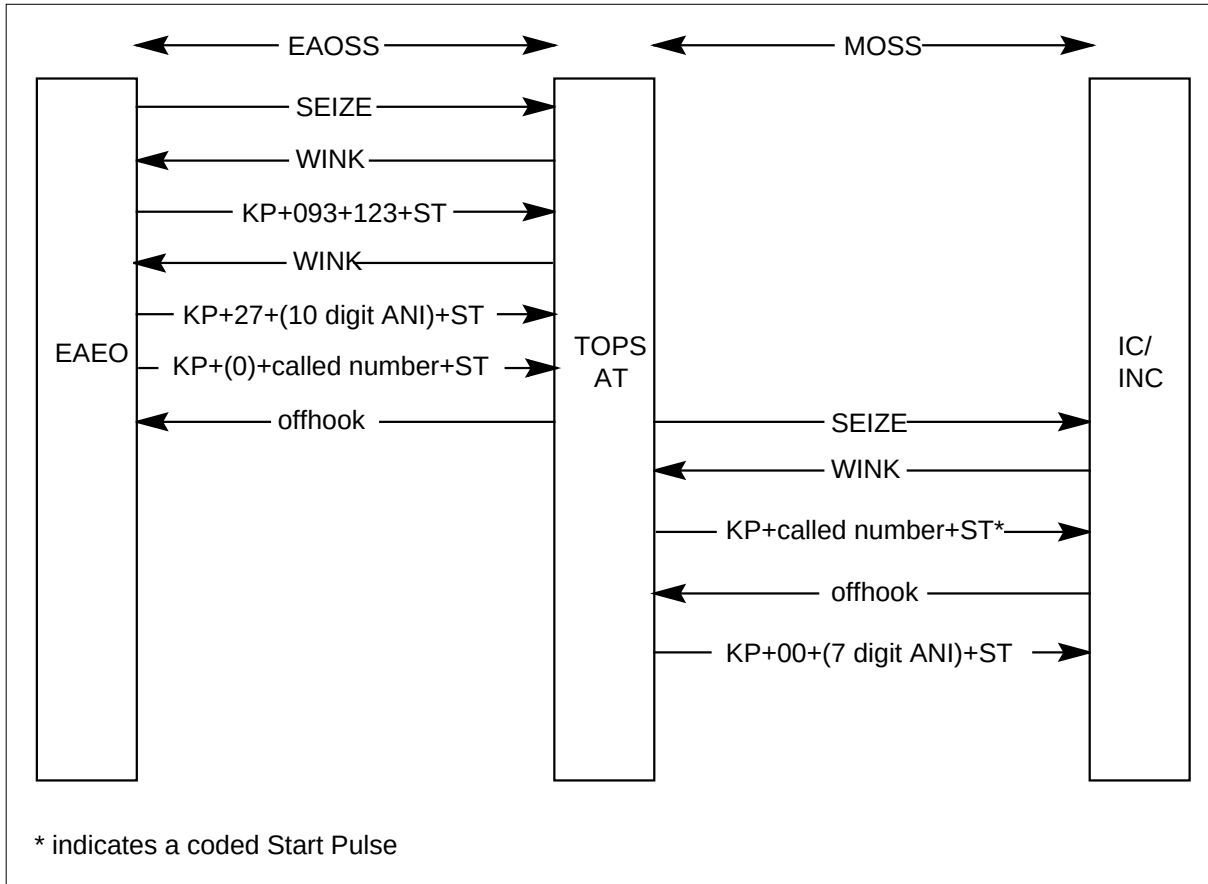
Conversion for Domestic/National calls

When the EAEO signals the first stage of an EAOSS call with 0ZZ routing digit values in the range of 090 to 099, TOPS will convert from EAOSS incoming to MOSS outgoing signaling. In the following example, the EAEO signals the first stage of a call with a 0ZZ-XXX value of 093123 (for this example, carrier 123 is CAR). By the 093 routing digit value, TOPS knows to convert the EAOSS from the EAEO to MOSS to the carrier. In this example the incoming ANI ID digits, 27 (datafilled in Table OSSCAT as a coin call), are collected and converted to 00 (datafilled in Table EAANIID) outgoing to the carrier.

Billing records are created for these converted calls (as opposed to cut-through calls) since TOPS collects and processes all stages of the calls. The Structure Code of the record is 00734 and the Call Type Code is 251.

Note: Structure Code 00734 and Call Type Code 251 are Expanded BellCORE AMA Format (EBAF) Phase 0. For information on EBAF Phases 1 or 2, refer to feature document AF1726, TOPS EBAF.

Carrier Connect Time begins when the outgoing trunk to the carrier is seized. Refer to DMS-100 Family AMA-BellCORE Format for more detail.

TOPS Exchange Access Operator Services Signaling (continued)**EAOSS to MOSS conversion for Domestic calls****Sample Datafill for the Domestic/National Conversion**

The following sample datafill corresponds to the diagram above. The incoming trunk group should be datafilled for EAOSS signaling while the outgoing group would be datafilled for MOSS signaling in table TRKGRP (i.e. incoming = EAOSS, outgoing = BELLII). The incoming trunk group will also specify the Standard Pretranslator to be used. In this example, the EAOS Standard Pretranslator is used. The incoming trunk group must have field TRTMTSUP datafilled to N.

Subtable STDPRT of tuple EAOS in table STDPRTCT will use the 0ZZ-XXX routing digits and carrier code to determine the pretranslator route selector, the type of call, the outgoing office route, and the minimum and maximum digit counts to be received by TOPS. It is necessary to datafill a route selector of type T, a call type of NL, a valid office route, and minimum and maximum digit counts of 6. Since we are converting from EAOSS to MOSS, and therefore collecting the following digit stages, the type of call and the office route are irrelevant. The following digit stages determine whether the call is a DD or

TOPS Exchange Access Operator Services Signaling (continued)

OA call (for example, if 0 is dialled at the beginning of the called digit stream), and the office route is overridden by table CLSVSCRC.

The incoming trunk group and the digit stages collected by TOPS are used in table TOPEATRК to determine the intra or inter screening class. The snpa, the screening class, the fact that the call is DD or OA, and the carrier code are used in table CLSVSCRC to determine the office route. The office route is datafilled just as it was for the domestic EAOSS tandeming example, except that the outgoing trunk is an MOSS datafilled trunk. For this example call, the incoming trunk group used is ICTOPSEAOSS1 and the outgoing trunk is OGTOPSBELLII2 (determined from Table CLSVSCRC for an OA call to carrier 123).

The correct Table datafill order is:

TRKGRP OFRTSTDPRTCT; POS EAOS; SUB STDPRTTOPEATRКCLSVSCRC

The following figure shows an output example of TRKGRP Table domestic and national conversion.

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO

ICTOPSEAOSS1	
TOPS0 NPDGP NCRT IC MIDL 613 EAOS NLCA NSCR Y SP COMBINED N Y	
0 0000 EAOSS 50 10 10 N OFFHK N \$	
OGTOPSBELLII1	
ATC0 TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y BELLII COMB N \$	
OGTOPSBELLII2	
ATC0 TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y BELLII COMB N \$	
OGTOPSBELLII3	
ATC0 TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y BELLII COMB N \$	

The following figure shows an output example of OFRT Table domestic and national conversion.

MAP display example for table OFRT

RTE				RTELIST		
200	(	N	D	OGTOPSBELLII1	0	N N)\$
300	(	N	D	OGTOPSBELLII2	0	N N)\$
400	(	N	D	OGTOPSBELLII3	0	N N)\$

TOPS Exchange Access Operator Services Signaling (continued)

The following figure shows and output example of STDPRT Table domestic and national conversion.

MAP display example for subtable STDPRT

FROMDIGS	TODIGS	PRETRTE
090123	099123	
T NL 0	OFRT 200 6 6	NONE

The following figure shows and output example of TOPEATRK Table domestic and national conversion.

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIERLATANMIN	INTRASSC	INTERSC	COVSS	CLSCRNIDX
DNLOOK	DFLTPIC	BYPASS				
ICTOPSEA	OSS1	NCONFORM	123	LATA1	TEAD	TEAD TEAI 613
N	N		\$			

The following figure shows and output example of CLSVSCRC - OA Table domestic and national conversion.

MAP display example for table CLSVSCRC - OA

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
613	TEAD OA	2 N	NONE (1)

MAP display example for subtable CLSVSCR - OA

FROMDIGS	TODIGS	TMTOFRT
123	123 T	OFRT 300

The following figure shows and output example of CLSVSCRC Table - DD domestic and national conversion.

TOPS Exchange Access Operator Services Signaling (continued)

MAP display example for table CLSVSCRC - DD

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
613 TEAD DD	2 N	NONE (	1)

MAP display example for subtable CLSVSCR - DD

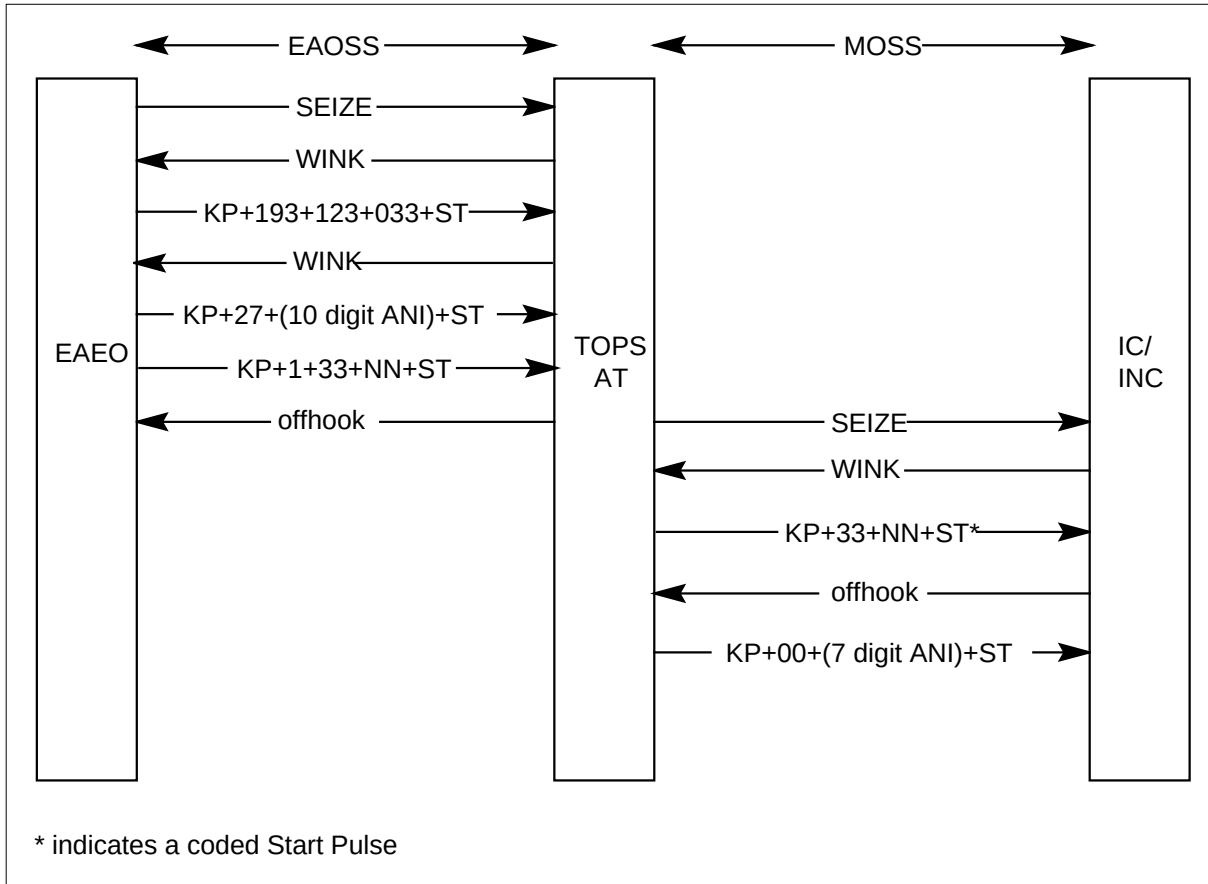
FROMDIGS	TODIGS	TMTOFRT
123	123 T OFRT	400

Conversion for International calls

When the EAEO signals the first stage of an EAOSS call with a 1NX (DD) routing digits value of 194 or a 1N'X (OA) routing digits value of 190, TOPS will convert from EAOSS incoming to MOSS outgoing signaling. In the following example, the EAEO signals the first stage of a call with a 1N'X-XXX-CCC value of 190123033 (for this example, carrier 123 is CAR, and the country code 33 is padded to 033). By the 190 routing digits value, TOPS knows to convert the EAOSS from the EAEO to MOSS to the carrier. In this example the incoming ANI ID digits, 27 (datafilled in Table OSSCAT as a coin call), are collected and converted to 00 outgoing to the carrier.

Billing records are created for these converted calls (opposed to cut-through calls) since TOPS collects and processes all stages of the calls. The Structure Code of the record is 00734 and the Call Type Code is 251. Carrier Connect Time begins when the outgoing trunk to the carrier is seized. Refer to DMS-100 Family AMA-BellCORE Format for more detail.

Note: Structure Code 00734 and Call Type Code 251 are Expanded BellCORE AMA Format (EBAF) Phase 0. For information on EBAF Phases 1 or 2, refer to feature document AF1726, TOPS EBAF.

TOPS Exchange Access Operator Services Signaling (continued)**EAOSS to MOSS conversion for International calls****Sample Datafill for International Conversion**

The following sample datafill corresponds to the diagram above. The incoming and outgoing trunk groups should be datafilled as they were for the domestic conversion example, and the country code must be datafilled in table CCTR. In this example, the EAOS Standard Pretranslator is used. Subtable STDPRT of tuple EAOS in table STDPRTCT will use the 1NX/1N'X routing digits to determine the pretranslator route selector, the type of call, the outgoing office route, and the minimum and maximum digit counts to be received by TOPS. It is necessary to datafill a route selector of type T, a call type of OA or DD, a valid office route, and minimum and maximum digit counts of 9. Since we are converting from EAOSS to MOSS, the office route determined here is irrelevant because it will be overridden by table CLSVSCRC.

The incoming trunk group and the digit stages collected by TOPS are used in table TOPEATRK to determine the overseas screening class. The snpa, the screening class, the fact that the call is DD or OA, and the carrier code are used

TOPS Exchange Access Operator Services Signaling (continued)

in table CLSVSCRC to determine the office route. The office route is datafilled just as it was for the international EAOSS tandeming example, except that the outgoing trunk is MOSS datafilled trunk. For this example call, the incoming trunk group used is ICTOPSEAOSS1 and the outgoing trunk is OGTOPSBELLII3 (determined from Table CLSVSCRC for an OA call to carrier 123).

The correct Table datafill order is:

TRKGRPCCTROFRTSTDPRTCT; POS EAOSS; SUB STDPRTCLSVSCRC

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO

ICTOPSEAOSS1	
TOPS0 NPDGP NCRT IC MIDL 613 EAOSS NLCA NSCR Y SP COMBINED N Y	
0 0000 EAOSS 50 10 10 N OFFHK N \$	
OGTOPSBELLII1	
ATC0 TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y BELLII COMB N \$	
OGTOPSBELLII2	
ATC0 TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y BELLII COMB N \$	
OGTOPSBELLII3	
ATC0 TLA NCRT OG NIL MIDL NPRT NSCR 613 CAR Y BELLII COMB N \$	

MAP display example for table CCTR

CCNAME	GIVENCC	MINDIGSR	MAXDIGSR
TMTORRTE			

33 T	033	10	11
T OFRT 63 Y			

MAP display example for table OFRT

RTE	RTELIST

200 (N D OGTOPSBELLII1 0 N N)\$	
300 (N D OGTOPSBELLII2 0 N N)\$	
400 (N D OGTOPSBELLII3 0 N N)\$	

TOPS Exchange Access Operator Services Signaling (continued)**MAP display example for subtable STDPRT**

FROMDIGS	TODIGS	PRETRTE
190123	190123	
T OA 0	OFRT 200 9 9	NONE
194123	194123	
T DD 0	OFRT 400 9 9	NONE

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIERL	ATANMIN	INTRASSC	INTERSCC	OVSSCL	SCRNIDX
DNLOOK	DFLTPIC	BYPASS					
ICTOPSEA	OSS1	NCONFORM	123	LATA1	TEAD	TEAD	TEAI 613
N	N			\$			

MAP display example for table CLSVSCRC - OA

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
613	TEAI OA	2 N	NONE (1)

MAP display example for subtable CLSVSCR - OA

FROMDIGS	TODIGS	TMTOFRT
123	123 T OFRT	400

MAP display example for table CLSVSCRC - DD

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
613	TEAI DD	2 N	NONE (1)

MAP display example for subtable CLSVSCR - DD

FROMDIGS	TODIGS	TMTOFRT
123	123 T OFRT	300

TOPS Exchange Access Operator Services Signaling (continued)

BR30517 - Optional EA translations for Zenith

In BCS34, new parameter ZENITH_EA_ROUTING in table TOPSPARM allows optional TOPS EA translation to be performed on Zenith routing numbers. Also, EA screening and routing for Zenith calls are provided.

A Zenith number is an 800 number entered by the operator with the following format: 800 + <5 digits>.

Associated with this Zenith number in table ZENITH is a 10-digit routing number used for screening and routing purposes.

Prior to this feature, if a Zenith call crossed a LATA boundary, the operator was not informed that the call was inter-LATA and was not allowed to transfer the call. The call defaulted to intra-LATA and was routed with standard translations.

This feature provides the following.

- Optionality of this feature on an office-by-office basis since not all Operating Companies want this capability. This is provided by parameter ZENITH_EA_ROUTING in table TOPSPARM. This parameter turns the feature on or off in an office.
- Use of LATA translations and proper indication to the operator when a Zenith call is inter-LATA.
- The ability for an operator to transfer the call to a carrier and change the carrier when requested to do so.
- Proper signaling and outpulsing are provided when a call is passed to the carrier.

Most inter-LATA Zenith calls are outpulsed to a carrier as 0- calls. Sending of the 8-digit Zenith number or the 7- or 10-digit routing number each has drawbacks. One doesn't conform to the North American dialing plan and the other hides the fact that the call was originally an 800 (Zenith) number. Sending the call to the carrier as a 0- call does make it necessary for the caller to repeat the Zenith number upon connection to the IC operator.

An exception to the rule of outpulsing a Zenith call as a 0- call occurs when feature TOPS Inter-LATA Carrier Services (TICS) is present and the Operating Company is set up to provide operator services for the carrier.

TOPS Exchange Access Operator Services Signaling (continued)

On a TICS call, the routing number is outpulsed to the carrier so that the call can be completed, since no further operator involvement is necessary.

Field OPLSCLD in table TOPEACAR has no affect on inter-LATA Zenith calls sent to a carrier. No outpulsing of the called number will take place on any ZENITH calls, regardless of the setting of this field. All calls arrive at the Inter-LATA Carrier operator as 0- calls (except as stated above).

The following examples are provided to show the flow of a ZENITH call through standard and Equal Access translations, along with operator involvement in the calls.

TOPS Exchange Access Operator Services Signaling (continued)**Zenith datafill for call examples**

Table CLGSET

CLGKEY	SNPA	LCANAME	NNXAREA
ZENITH619	619	NLCA	Y (320) \$
ZENITH407	407	NLCA	Y (522) \$

Table ZENITH

ZENKEY		FWDDN
10000	ZENITH619	6193511000
20000	ZENITH619	3012221000
30000	ZENITH407	6193511000
40000	ZENITH407	3012221000

Table TRKGRP

GRPKEY	GRPINFO

TBELL2WA1	TOPS 0 TLD NCRT 2W MIDL 619 PTOP
	NLCA NSCR Y SP COMBINED N Y 0
	0000 BELL 16 10 10 Y N OFFHK N N
TBELL2WB1	TOPS 0 TLD NCRT 2W MIDL 407 PTOP
	NLCA NSCR Y SP COMBINED N Y 0
	0000 BELL 16 10 10 Y N OFFHK N N
TATCC8880G1	ATC 0 TLD NCRT 2W IT MIDL NPRT NSCR
	619 C888 Y BELLI COMB N \$
TACTC1110G1	ATC 0 TLD NCRT 2W IT MIDL NPRT NSCR
	407 C888 Y BELLI COMB N \$
TITOGA1	IT 0 TLD NCRT OG IT MIDL 619 NPRT NSCR
	619 000 N N \$
TITOGB1	IT 0 TLD NCRT OG IT MIDL 407 NPRT NSCR
	407 000 N N \$

Zenith datafill for call examples (continued)

TOPS Exchange Access Operator Services Signaling (continued)

Table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALBC	CHGCLSS
TBELL2WB1	522	NLCA	NSCR	407522	TOPS
TBELL2WA1	320	NLCA	NSCR	619320	TOPS

Table TOPEATRK

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
TBELL2WA1	CONFORM	888	L123	STRA	STER	SOVS 619 N N \$
TBELL2WB1	CONFORM	111	L123	STRA	STER	SOVS 407 N N \$

Table TOPEACAR

CARDIG	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR
NATERM	INTERM	OPSERV			
111	C111	C111	Y Y	111	UNREST UNREST SERV NOQUERY
			Y Y		
Y	NOQUERY	Y	NOQUERY	Y Y	
888	C888	C888	Y Y	888	UNREST UNREST NOSERV N Y

Table OPRTRANS

KEY	SNPA	SCRNCL	PRTNM	LCANAME
OPERATOR	619	NSCR	OPER	NLCA

TOPS Exchange Access Operator Services Signaling (continued)**Zenith datafill for call examples (continued)**

Table STDPRTCT

EXTPRTNM	STDPRT	AMAPRT

OPER (	1)	(0)

sub STDPRT

FROMDIGS	TODIGS	PRETRTE

301	301	N OA 0 NA
619	619	N OA 0 NA

Table HNPACONT

NPA	MAXRTE	NOAMBIGC	RTREF	HNPACODE	ATTRIB	RTEMAP

407	256	8 (	37)	(	1)	(0) (0)

sub HNPACODE

FROMDIGS	TODIGS	CDRRTMT

301	301	FRTD 125
619	619	FRTD 125

sub RTREF

RTE RTELIST

125 (N D TITGB1	0 N N) \$

619	256	8 (	37)	(	1)	(0) (0)

sub HNPACODE

FROMDIGS	TODIGS	CDRRTMT

301	301	FRTD 125
619	619	FRTD 125

sub RTREF

RTE RTELIST

125 (N D TITGA1	0 N N) \$

TOPS Exchange Access Operator Services Signaling (continued)**Zenith datafill for call examples (continued)**

Table LATAxLA

LATACODE	LATA	STATE	EATYPE
L123	301	INTER	INTER STD

Table CLSVSCRC

NPASCTYPE	NORESULTS	TMTOFRT	CLSVSCR
407 STER	OA	2 N	NONE (1)
619 STER	OA	2 N	NONE (1)
sub CLSVSCR			
	FROMDIGS	TODIGS	TMTOFRT
	111	111 T	OFRT 505
	888	888 T	OFRT 504

Table OFRT

RTE RTELIST

504	(N D TATCC8880G1 0 N N \$)
505	(N D TATCC1110G1 0 N N \$)

Example 1 - Intra-LATA call (feature off) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is N
- ZENITH routing number is intra-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1
- ZENITH_TEN_DIGIT_DIALLING in table TOPSPARM is Y

TOPS Exchange Access Operator Services Signaling (continued)

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80010000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 10000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. In this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH (6193511000). Since the NPA of the routing number matches the SNPA in table OPRTRANS for the OPERATOR tuple, a check of ZENITH_TEN_DIGIT_DIALING is necessary to determine if translation will be done on all ten digits or only 7 digits. The setting of Y means that the number used for further translation is 6193511000.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING in table TOPSPARM is now made. Since it is set to N, this call defaults to intra-LATA and uses only standard translations for routing. This begins in table STDPRTCT using the pretranslator from field PRTNM in table OPRTRANS, tuple OPERATOR. In subtable STDPRT, an N selector associated with digits 619 causes the call to proceed to national translation table HNPACONT. The index into HNPACONT comes from the SNPA field of table OPRTRANS, tuple OPERATOR; thus, 619 is the index used. Subtables HNPACODE and RTEREF provide further translation. The digits 619 in the HNPACODE subtable result in FRTD 125, which is found in the RTEREF subtable. Here, a route to TITOGA1 is obtained, a trunk is selected, and outpulsing begins. Some indication of Auto Collect appears on the operator screen, and at this point the call is then floated.

3. Equal Access processing

Since parameter ZENITH_EA_ROUTING is N, no Equal Access processing occurs.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used). For more information on TOPS AMA, refer to TOPS EBAF, OSB00101.

TOPS Exchange Access Operator Services Signaling (continued)

Example 2 - Intra-LATA call (feature on) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is intra-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1
- ZENITH_TEN_DIGIT_DIALLING in table TOPSPARM is Y

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80010000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 10000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH (6193511000). Since the NPA of the routing number matches the SNPA in table OPRTRANS for the OPERATOR tuple, a check of ZENITH_TEN_DIGIT_DIALLING is necessary to determine if translation will be done on all ten digits or only 7 digits. The setting of Y means that the number used for further translation is 6193511000.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call still begins in table STDPRTCT using the pretranslator from the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (immediate routing occurs regardless of the setting of ZENITH_EA_ROUTING). When using a T or S selector, the call defaults to intra-LATA, with screen displays and operator handling being the same as those in example #1 above.

The call may also bypass Equal Access processing if class of service screening is used. Screening classes can be set up in tables TRKGRP, TOPSBC, and OPRTRANS. The call must pass any necessary screening

TOPS Exchange Access Operator Services Signaling (continued)

that these tables specify in table CLSVSCRC before any further translation takes place.

Note: For ZENITH calls, no local calling area screening is performed since the call is Auto Collect.

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, the NPA used to index into this table comes from the SNPA in table TRKGRP (SNPA for TBELL2WA1 is 619).

Note: When parm ZENITH_EA_ROUTING is set to N, the SNPA used comes from table OPRTRANS (see example #1).

In this example they are both 619, so this call routes through standard translations exactly as the call in example #1. A search for the digits 619 in subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGA1.

3. Equal Access processing

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WA1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAXLA, which yields a LATA status for this call of intra-LATA. This being the case, the original route found in table HNPACONT is the route used. An outgoing trunk from trunk group TITOGA1 is seized and outpulsing begins. An indication of Auto Collect appears on the operator's screen, and the call is then floated.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used. For more information on TOPS AMA, refer to TOPS EBAF, OSB00101.

Example 3 - Intra-LATA call (feature on, cross NPA boundary)

Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is intra-LATA
- Calling number is 4075221234

TOPS Exchange Access Operator Services Signaling (continued)

- Incoming trunk group is TBELL2WB1
- ZENITH_TEN_DIGIT_DIALLING in table TOPSPARM is Y

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80030000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 30000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH (6193511000). Since the NPA of the routing number matches the SNPA in table OPRTRANS for the OPERATOR tuple, a check of ZENITH_TEN_DIGIT_DIALLING is necessary to determine if translation will be done on all ten digits or only 7 digits. The setting of Y means that the number used for further translation is 6193511000.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call begins in table STDPRTCT using the pretranslator name in the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (see example #2 for further discussion of this; also how NPA screening overrides any further translation).

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, because of the setting of tuple ZENITH_EA_ROUTING (see example #2 above), the NPA used to index in this table comes from the SNPA in table TRKGRP for TBELL2WB1. Routing is through the 407 tuple in table HNPACONT as opposed to the 619 tuple used in examples #1 and #2. A search of subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGB1. The same routing number thus provides different final destinations dependent upon the setting of ZENITH_- EA_ROUTING. With the parameter set to N, example call #2 and example call #3 would result in routing to TITOGA1. If it is set to Y, the same calls would result in routing to two different trunk groups, TITOGA1 (example #2) and TITOGB1 (example #3). This is important to remember when setting up translations for intra-LATA ZENITH calls. If the feature is off, the SNPA comes from table OPRTRANS; if the feature is on, it comes from table TRKGRP.

TOPS Exchange Access Operator Services Signaling (continued)

3. Equal Access processing

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WB1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAXLA, which yields a LATA status for this call of intra-LATA. This being the case, the original route found in table HNPACONT is the route used. An outgoing trunk from trunk group TITGB1 is seized and outpulsing begins. An indication of Auto Collect appears on the operator screen, and the call can then be floated.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used. For more information on TOPS AMA, refer to TOPS EBAF, OSB00101.

Example 4 - Inter-LATA call (feature off) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is N
- ZENITH routing number is inter-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80020000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 20000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH, 3012221000. Since the NPA of the routing number does not match the SNPA in OPRTRANS, all ten digits are used for translation, and no check of ZENITH_TEN_DIGIT_DIALING is necessary.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING in table TOPSPARM is now made. Since it is set to N, this call defaults to intra-LATA and uses only

TOPS Exchange Access Operator Services Signaling (continued)

standard translations for routing. This begins in table STDPRTCT using the pretranslator from field PRTNM in table OPRTRANS, tuple OPERATOR. In subtable STDPRT, an N selector associated with digits 301 causes the call to proceed to national translation table HNPACONT. The index into HNPACONT comes from the SNPA field of table OPRTRANS, tuple OPERATOR; thus, 619 is the index used. Subtables HNPACODE and RTEREF provide further translation. The digits 301 in the HNPACODE subtable result in FRTD 125, which is found in the RTEREF subtable. Here a route to TITOGA1 is obtained, a trunk is selected, and outpulsing begins. An indication of Auto Collect appears on the operator screen, and the call can then be floated.

3. Equal Access processing

Since parameter ZENITH_EA_ROUTING is N no Equal Access processing occurs.

4. AMA record generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used. For more information on TOPS AMA, refer to TOPS EBAF, OSB00101.

Example 5 - Inter-LATA call (feature on) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is inter-LATA
- Calling number is 6193201234
- Incoming trunk group is TBELL2WA1

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80020000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 20000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH, 3012221000. Since the NPA of the routing number does not match the SNPA in OPRTRANS, the

TOPS Exchange Access Operator Services Signaling (continued)

call is translated using the full ten digits, and no check of ZENITH_TEN_DIGIT_DIALING is necessary.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call begins in table STDPRTCT using the pretranslator name in the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (see example #2 for further discussion of this; also how NPA screening overrides any further translation).

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, the NPA used to index into this table comes from the SNPA in table TRKGRP. Thus, the 619 tuple is used. A search for the digits 301 in subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGA1.

3. Equal Access processing

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WA1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAOLA, which yields a LATA status for this call of inter-LATA. This being the case, translation continues with table CLSVSCRC. Index into this table is a 3-part index consisting of the following:

- A screen class from field INTERSSC in table TOPEATRK.
- An NPA from table TOPEATRK, field SCRNDX.
- The call type from table STDPRTCT, field TYPCALL.

The carrier number is then affixed in front of the routing number (in this case, 88830122210000 is the new number), and then subtable CLSVSCR is searched. The result is a route, via table OFRT, to the carrier trunk group TATCC888OG1. This route overrides that found above with standard translations (TITOGA1).

An indication that the call is inter-LATA is sent to the operator's screen. Once the operator floats the call it is connected to the carrier and outpulsed as a 0- call. When the call arrives at the Inter-LATA Carrier operator, the caller must repeat the ZENITH number to the new operator.

4. AMA record generation

After the call is terminated by one party going onhook an AMA record is generated with a call code of 190 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used). A Module Code 053 is appended to this record, showing the carrier ID, carrier

TOPS Exchange Access Operator Services Signaling (continued)

connect time, and elapsed carrier time. For more information on TOPS AMA records, refer to TOPS EBAF, OSB00101

Example 6 - Inter-LATA TICS call (feature on) Call characteristics:

- 0- call origination
- ZENITH_EA_ROUTING in table TOPSPARM is Y
- ZENITH routing number is inter-LATA
- Calling number is 4075221234
- Incoming trunk group is TBELL2WB1
- Operating Company provides operator services for the carrier (TICS)

The call processing steps are:

1. Conversion of 800 number to routing number

A subscriber gives a ZENITH number of 80040000 to the operator, who then inputs the number at the TOPS position. Searching table ZENITH for 40000 results in a routing number and a key for the index into table CLGSET. A determination is made here as to whether the NNX of the calling number is allowed to make this ZENITH call. If the calling party's NNX is not found then an indication is sent to the operator that the caller is attempting to reach an unauthorized ZENITH calling area. For this example, the caller is allowed the call, so translation continues using the routing number obtained from table ZENITH, 3012221000. Since the NPA of the routing number does not match the SNPA in OPRTRANS, the call is translated using the full ten digits, and no check of ZENITH_TEN_DIGIT_DIALING is necessary.

2. Standard translation of routing number

A check of tuple ZENITH_EA_ROUTING shows that it is set to Y. The translation of this call begins in table STDPRTCT using the pre-translator name in the field PRTNM in table OPRTRANS, tuple OPERATOR. If subtable STDPRT has a T or S selector, routing is immediate with no Equal Access processing occurring (see example #2 for further discussion of this; also how NPA screening overrides any further translation).

If the call passes NPA screening and pretranslation does not contain a T or S selector, table HNPACONT is checked for routing. In this case, the NPA used to index into this table comes from the SNPA in table TRKGRP. Thus, the 407 tuple is used. A search for the digits 301 in subtable HNPACODE results in FRTD 125, which provides a route in subtable RTEREF to trunk group TITOGB1.

3. Equal Access processing

TOPS Exchange Access Operator Services Signaling (continued)

The first check performed is for the LATA status. The LATANM from table TOPEATRK (for tuple TBELL2WB1) and the NPA (or NPA NNX) from the routing number combine to form an index into table LATAXLA, which yields a LATA status for this call of inter-LATA. This being the case, translation continues with table CLSVSCRC. Index into this table is a 3-part index consisting of the following:

- A screen class from field INTERSSC in table TOPEATRK.
- An NPA from table TOPEATRK, field SCRNDIX.
- The call type from table STDPRTCT, field TYPCALL.

The carrier number is then affixed in front of the routing number (in this case, 11130122210000 is the new number), and then subtable CLSVSCR is searched. The result is a route, via table OFRT, to the carrier trunk group TATCC111OG1. This route overrides that found above with standard translations (TITOG1).

An indication that the call is inter-LATA is sent to the operator's screen, along with an Auto Collect indicator. In this case, the entire ten digit routing number is outputted to the carrier and no further operator involvement is necessary as the call is completed to the destination.

4. AMA Record Generation

After the call is terminated by one party going on-hook an AMA record is generated with a call code of 192 and a structure code of 40752 (if Expanded Bellcore AMA Format (EBAF) phase 2 is used). A Module Code 053 is also appended, showing the carrier ID, carrier connect time, and elapsed carrier time. For more information on TOPS AMA records, refer to TOPS EBAF, OSB00101.

Fields showing the time the call was connected to the carrier and the amount of time spent on the call by the Operating Company operator are provided.

BK04338 - Call code 251 AMA record for 1+, 0+, and 0- inter-LATA

This PRSDOC implements call type code 251 in structure code 625 for carrier calls (1+, 0+, 0-) that originate directly from an End Office (EO), tandem through the TOPS office and arrive at the Interexchange Carrier (IC) on Access to Tandem Carrier (ATC) trunks. Call type code 251 is optional and replaces call type code 110 when activated to prevent double billing by the downstream.

In order for 1+, 0+, or 0- calls to complete to the called number, the EO routes calls to an IC either directly to the IC or tandem through TOPS. Tandeming through TOPS involves leaving the EO and coming into the TOPS office on TOPS trunks and then leaving the TOPS office with no operator handling and arriving at the IC on ATC of Intertoll (IT) trunks. For instance, calls tandem

TOPS Exchange Access Operator Services Signaling (continued)

through the TOPS office because the EO does not have a direct connection to the IC.

When 1+, 0+ or 0- calls tandem through TOPS, duplicate AMA records are produced. An originating access record with structure code 625, call type code 110, is made at the EO, and a transfer or tandem record with structure code 625, call type code 110, is made at the TOPS office. This produces a double billing situation at the EO.

Therefore, call type code 251 is defined for use in the TOPS office for Equal Access AMA records that produce structure code 625 in Phase 2 EBAF only. This new call type code notifies the billing center that it has a companion record that was created at the EO.

The 625/251 record has an accurate carrier connect time because TOPS knows when the carrier acknowledgment wink is received for FGD signaling, the terminating trunk is seized for FGC signaling, or the time when the incoming trunk is seized if the incoming trunk is signaled with EAFGD signaling or COMFGD signaling.

This new call type code is only visible when tuple EBAF_PHASE in table TOPAMAOP is PHASE2, the Base TOPS Equal Access, OSEA0101, package is present, is only applicable to calls that tandem through TOPS to ATC or IT trunks, and either one of the following is true:

- The new parameter RECORD_INTERLATA_CALL_CODE_251 in table TOPAMAOP is Y. This parameter causes call type code 251 to be produced for the entire TOPS office. Following is example datafill.

Table TOPAMAOP

AMAOPT	OPTINFO
RECORD_INTERLATA_CALL_CODE_251	Y

- The incoming trunk is datafilled in table AMATKOPT. This allows call type code 251 to be produced only on an incoming trunk group basis. Any call coming into the TOPS office on a trunk datafilled in table

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AMATKOPT with field OPTIONS set to new value TOPS_EA251CC produces call type code 251. Following is example datafill.

Table AMATKOPT

CLLI	OPTIONS
OPDP1	TOPS_EA251CC

The call codes associated with structure code 00625 in Phase 2 are as follows:

Structure code 00625

Call code	Call type
110	FGD originating
134	FGB originating
251	Inter-LATA,1+,0+,0-, call transfer

The following figure is an example of an AMA record generated for call code 251C with structure code 00625 (Phase 2):

Call code 251C

```

HEX ID:AA  STRUCTURE CODE:00625C  CALL CODE:251C
SENSOR TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C
REC OFFICE ID:0000000C  DATE:80217C  TIMING IND:00000C
STUDY IND:0200000C  ANSWER:0C  SERVICE OBSERVED:0C
OPER ACTION:0C  SERVICE FEATURE:000C  ORIG NPA:613C
ORIG NUMBER:2391234C  OVERSEAS IND:1C  TERM NPA:00212C
TERM NUMBER:2208978C  ANSWER TIME:0427380C
ELAPSED TIME:000001250C  IC/INC PREFIX:02882C  CC DATE:80217C
CC TIME:0427400C  ELAPSED CC:000001273C  IC/INC EVENT
STATUS:010C  TRUNK GROUP NUMBER:00423C  ROUTING INDICATOR:1C
DIALING INDICATOR:0C  ANI INDICATOR:1C

```

Interactions:

- Call type code 251 is only produced with structure code 625 in Phase 2 EBAF when tuple RECORD_INTERLATA_CALL_CODE_251 in table

TOPS Exchange Access Operator Services Signaling (continued)

TOPAMAOP is set to Y or a trunk is datafilled in table AMATKOPT with the EA251CC option.

- This PRSDOC requires Basic TOPS, OSB00101, TOPS Bellcore AMA OSB00101, TOPS Expanded Bellcore AMA Format, OSB00101, and Base TOPS Equal Access, OSEA0101

Restrictions and limitations:

The AMA changes introduced by this feature are only available in Phase 2 EBAF.

BK14194 - Preparation for TOPS FGD CIC expansion (BCS36)

In BCS37/CSP02 a Feature Group D (FGD) Carrier Identification Code (CIC) Expansion feature increases CICs from 3 to 4 digits in size. This is due to a Bellcore regulatory requirement. In preparation, fields in tables and office parameters are expanded. This BCS37 feature is patched back into BCS36/CSP01.

Following are the changed tables and parameters.

Table TOPEACAR: Fields CARDIGS and ALTCCARRT are expanded from 3 to 4 digits. Field CARDIGS is the tuple key. Any additions to this table must supply 4 digits for both of these expanded fields. The valid range of these two expanded fields is 0000-0999. Following is example datafill.

MAP display example for table TOPEACAR

CARDIGS	CARNAME	ALTDISP	OPLSCLD	CAMABILL	ALTCARR	NATERM
INTERM	OPSERV					
0234	SPRINT	SPRINT	Y	Y	0234	UNREST
UNREST	NOSERV	N N				
0789	MCI	MCI	Y	Y	0789	UNREST
UNREST	NOSERV	N N				

Table TOPEATRK Field CARRIER is expanded from a 3 to 4 digit field. When the CARRIER field of an existing tuple is changed, a 4-digit value is required. The valid range of these two fields is 0000-0999. Following is example datafill.

TOPS Exchange Access Operator Services Signaling (continued)**MAP display example for table TOPEATRK**

TRUNKGRP	ENDOFFCE	CARRIER	LATANM	INTRASSC	INTERSCC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
GENTRK1	CONFORM	0789	L123	STRA	STER	SOVS
919	Y	Y	\$			
GENTRK2	CONFORM	0234	L321	STRA	STER	SOVS
803	Y	Y	\$			

Table BRANDANN The key of this table has been expanded from a 1-part to a 2-part key. Previously, all tuples with values less than 1000 were assumed to be carrier codes, and all tuples 1000 or greater were assumed to be NBEC codes. The one exception was the value 0000, which was always assumed to be an NBEC code.

With the expansion of valid carrier digits into the 4-digit range, it can no longer be assumed that all 4-digit values are NBEC codes and all 3-digit values are carrier codes. Therefore, the new key now contains 2 fields. The first field is the original 4-digit field and the second field is a text string equal to CARR or NBEC. Following is example datafill.

MAP display example for table BRANDANN

CARNBEC	TAANN	TACLLI	DAANN	DACLLI
0000 NBEC	Y	TOPSBRND1	N	
0789 CARR	Y	TOPSBRND2	Y	TOPSBRND2
1234 NBEC	Y	TOPSBRND3	Y	TOPSBRND3

Tables EAACTSAN and EAMCCSAN Key field EACARNUM has been expanded from 3 to 4 digits in tables EAACTSAN and EAMCCSAN. The valid range of these fields is 0000-0999. Following are datafill examples.

MAP display example for table EAACTSAN

EACARNUM	CORRCTDP	OVERDEP
0234	ACTSTOPS 1	ACTSTOPS 1
0789	ACTSTOPS 2	ACTSTOPS 2

TOPS Exchange Access Operator Services Signaling (continued)

MAP display example for table EAMCCSAN

EACARNUM	INITINDX
0234	MCCSTOPS 1
0789	MCCSTOPS 2

Office parameter TOPS_OTC_CARRIER_NUMBER (Table OFCVAR) This office parameter has been expanded from 3 to 4 digits. It has a default value of 'NNNN'. This office parameter resides in table OFCVAR, and if its value is to be changed, a 4-digit value is enforced. Following is example datafill.

MAP display example for table OFCVAR

PARMNAME	PARMVAL
TOPS_OTC_CARRIER_NUMBER	0789

Parameter FOUR_DIGIT_CIC_STATUS (Table TOPSPARM) This new parameter in table TOPSPARM has the following values:

- THREEDIG - Only 3 digit CICs are valid
- PERMISSIVE - Both 3 and 4 digit CICs in the ranges 0XXX, 5XXX, and 6XXX are valid.
- FOURDIG - Only 4 digit CICs are valid

The default value is THREEDIG. This parameter determines the office CIC dialing stage. Following is example datafill.

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
FOUR_DIGIT_CIC_STATUS	THREEDIG

Although the above tables and office parameters have been expanded to contain CICs of 4 digits, this PRSDOC does not provide any functionality enhancements where 4-digit CICs are supported in any types of signaling or operator position screen displays.

When an operator enters carrier codes (for any reason), only three digit codes should be entered, as no 4-digit CICs have yet been assigned.

TOPS Exchange Access Operator Services Signaling (continued)

Translations table flow

Table flow is not provided.

Limitations and restrictions

The following limitations and restrictions apply to Base TOPS Equal Access:

BR0619 - TOPS - Operator Flexible Routing

Three types of lines can be connected directly to TOPS: coin lines, hotel lines, and flat-rate (1FR) lines. If these lines are connected to the Operator Position in this manner, the local Equal Access software is not invoked.

Thus, for an inter-LATA call to be routed properly in an EAEO, the call must arrive at TOPS on a loop-around trunk group. See "BR0620 - TOPS - ANI Forwarding on 0- Calls" for more information.

If the point of presence for an IC is in the TOPS-equipped toll office and not in the End Office, all calls from that End Office should be blocked to that carrier. This is achieved by datafilling a unique Class of Service Screening Name in the TOPEATRК Table for all TOPS trunks incoming from that End Office. Then, in the CLSVSCRC.CLSVSCR Table, calls to that carrier are sent to a treatment.

AF1100 - TOPS FGB Call Code 134

If non-operator-handled TOPS FGB calls routed with a T selector should produce AMA records with call code 134, structure code 625, office parameters TOPS_FGB_CC134 and TOPS_EA_PROCESS_T_SEL must BOTH be set to Y.

International calls routed using a T selector may not be properly determined as inter-LATA when TOPS_EA_PROCESS_T_SEL is set to Y.

If a 950 call arrives on a TOPS trunk group that is marked for LATA Equal Access System (LEAS), pre-translator datafill determines whether the call is an FGB 950 call (using a T selector) or an FGD 950 call (using an EA selector). The FGB 950 calls are never considered LEAS calls and are handled in the same way as other TOPS FGB 950 calls; therefore, these 950 calls are affected by this feature. In TOPS, only LEAS trunk groups can carry FGD 950, so these calls are considered LEAS calls; they are not affected by this feature.

When calls routed using a T selector receive EA processing because TOPS_EA_PROCESS_T_SEL is set to Y, the datafill in TOPEACAR, OCCINFO, and CLSVSCRC has no effect on the processing of the calls.

TOPS Exchange Access Operator Services Signaling (continued)

BR30517 - Optional EA translations for Zenith

In BCS34, the field OPLSCLD in table TOPEACAR has no effect on ZENITH calls. No outpulsing of the called number takes place on any ZENITH calls, regardless of the setting of this field. All calls arrive at the Inter-LATA Carrier operator as 0- calls. An exception is made for TICS calls, where the routing number is outpulsed to the carrier so that the call can be completed, since no further operator involvement is necessary.

Interactions

The following paragraphs describe the interactions between Base TOPS Equal Access and other functionalities.

BR0619 - TOPS - Operator Flexible Routing

For BR0619 to function properly, the TOPS software must also include the following features, both of which are in the Base TOPS Equal Access, OSEA0101, package:

- BR0621: See "BR0621 - TOPS - ANI Signaling Compatibility" in this document.
- BR0635: See "BR0635 - Trunk Signaling Protocol/Format Conversion" in this document.

BR0620 - TOPS - ANI Forwarding on 0- Calls

For BR0620 to function properly, the TOPS software must also include the following features:

- BR0619: See "BR0619 - TOPS - Operator Flexible Routing" in this document.
- BR0621: See "BR0621 - TOPS - ANI Signaling Compatibility" in this document.
- F2634
- BR0635: See "BR0635 - Trunk Signaling Protocol/Format Conversion" in this document.

TOPS Exchange Access Operator Services Signaling (continued)

BR0635 - Trunk Signaling Protocol/Format Conversion

For BR0635 to function properly, the TOPS software must also include the following features, all of which are in the Base TOPS Equal Access, OSEA0101, package:

- BR0619: See "BR0619 - TOPS - Operator Flexible Routing" in this document.
- BR0620: See "BR0620 - TOPS - ANI Forwarding on 0- Calls" in this document.
- BR0621: See "BR0621 - TOPS - ANI Signaling Compatibility" in this document.

Activation/deactivation by the end user

Base TOPS Equal Access requires no activation or deactivation by the end user.

Billing

The Bellcore (BC) Automatic Message Accounting (AMA) format is provided by BR0634, which is in the TOPS BCR EA AMA Format functionality, OSB00001. BR0634 is required for proper functioning of BR0620, ANI Forwarding on 0- Calls.

The following structure and calls codes are used to generate AMA records in the BC format for answered (completed) TOPS calls.

- Structure Codes - 00700 through 00734 (access records)
- Structure Codes - 04700 through 04734 (billing records)
- Call Codes - 006, 009, 010, 014, 015, 016, 017, 018, 019, 022, 023, 024, 027, 028, 035, 043, 044, 054, 055, 057, 058, 074, 107, 108, 250, 251

Note: There is no structure code 00726.

AMA records are generated for calls using FGB, FGC, and FGD signaling. The structure code of these records is 047XX (04700-04734). Refer to the following table.

TOPS Exchange Access Operator Services Signaling (continued)**IC/INC Call Event Status Field**

EXAMPLE	ANI	SPILL	OFF-HOOK	TIMEOUT	EVENT
1		Y	N	N	00
2		Y	N	Y	12
3		Y	Y	–	05
4		N	N	–	00
5		N	Y	–	10

For FGB or FGC signaling, this field is datafilled with a predefined value based on specific conditions for each event.

The following figures show examples of the call event status for different conditions.

Example AMA record for call event 00

```

HEX ID: AA  STRUCT CODE:00734C  CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C  REC OFC ID: 00000000C  DATE:60102C
TIMING IND:000000C  STUDY IND: 0200030C ANSWER:0C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:000000C  TERM NO: 00000000C CONN TIME:00000000C
ELAPSED TIME: 0000000000C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 0000000060C IC/INC PREFIX:02880C  CC DATE: 000000C
CC TIME:0000000000C  ELAPSED CC: 0000000000C IC/INC EVENT:000C
TRK GRP:00158C  ROUTING: 1C DIALING:1C ANI:0C

```

Example AMA record for call event 12

```

HEX ID: AA  STRUCT CODE:00734C  CALL CODE:251C  SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C  REC OFC ID: 00000000C  DATE:60102C
TIMING IND:000000C  STUDY IND: 0200030C ANSWER:1C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:000000C  TERM NO: 00000000C CONN TIME:00000000C
ELAPSED TIME: 0000000000C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 0000000060C IC/INC PREFIX:02880C  CC DATE: 60102C
CC TIME:2323217C  ELAPSED CC: 000001346C IC/INC EVENT:012C
TRK GRP:00158C  ROUTING: 1C DIALING:1C ANI:0C

```

TOPS Exchange Access Operator Services Signaling (continued)

Example AMA record for call event 05

```
HEX ID: AA STRUCT CODE:00734C CALL CODE:251C SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C REC OFC ID: 00000000C DATE:60102C
TIMING IND:000000C STUDY IND: 0200030C ANSWER:1C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:000000C TERM NO: 00000000C CONN TIME:2143015C
ELAPSED TIME: 0000000109C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 000000060C IC/INC PREFIX:02880C CC DATE: 60102C
CC TIME:2323217C ELAPSED CC: 0000000109C IC/INC EVENT:005C
TRK GRP:00158C ROUTING: 1C DIALING:1C ANI:0C
```

Example AMA record for call event 00

```
HEX ID: AA STRUCT CODE:00734C CALL CODE:251C SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C REC OFC ID: 00000000C DATE:000000C
TIMING IND:000000C STUDY IND: 0200030C ANSWER:0C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:000000C TERM NO: 00000000C CONN TIME:00000000C
ELAPSED TIME: 0000000000C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 000000060C IC/INC PREFIX:02880C CC DATE: 000000C
CC TIME:0000000000C ELAPSED CC: 0000000000C IC/INC EVENT:000C
TRK GRP:00263C ROUTING: 1C DIALING:1C ANI:0C
```

Example AMA record for call event 10

```
HEX ID: AA STRUCT CODE:00734C CALL CODE:251C SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C REC OFC ID: 00000000C DATE:000000C
TIMING IND:000000C STUDY IND: 0200030C ANSWER:1C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C ORIG NO: 2390002C
OVERSEAS IND:0C TERM NPA:000000C TERM NO: 00000000C CONN TIME:2143015C
ELAPSED TIME: 0000000109C OPERATOR_NUMBER:1010111C
OPERATOR WORK TIME: 000000060C IC/INC PREFIX:02880C CC DATE: 60102C
CC TIME:2323217C ELAPSED CC: 0000000109C IC/INC EVENT:010C TRK GRP:00158C
ROUTING: 1C DIALING:1C ANI:0C
```

CAMA billing is activated for a particular carrier if the CAMABILL field in the TOPEACAR Table is set to Y. The format of the records generated is similar to the format provided by the 007XX structure code.

Note: If the CAMABILL field is set to Y, the ANI field of Table TRKGRP (ATC) must be set to N.

TOPS Exchange Access Operator Services Signaling (continued)

The following table shows the fields added to the 007XX structure code to create the 047XX structure code.

Structure code 047XX

Interlata carrier / international carrier (IC/INC) event information	Number of characters
IC/INC prefix	6
Event date	6
Event time	8
Elapsed time	10
IC/INC call event status	4
Trunk group number	6
IC/INC routing indicator	2
IC/INC dialing indicator	2
IC/INC ANI indicator	2

The following figure shows an example of a CAMA billing record.

Example AMA record for 0- 1FR Station-Paid CAMA InterLATA Call

```

HEX ID: AA STRUCT CODE:04700C CALL CODE:006C  SENSOR TYPE: 036C
SENSOR ID:00000000C REC OFC TYPE:036C  REC OFC ID: 00000000C DATE:60102C
TIMING IND:000000C  STUDY IND: 00000000C ANSWER:0C SERV OBSERVED:0C
OPER ACTION: 0C SERV FEAT:000C ORIG NPA:613C  ORIG NO: 2391111C
OVERSEAS IND:0C TERM NPA:00212C  TERM NO: 2201111C CONN TIME:2323240C
ELAPSED TIME: 0000000095C OPERATOR_NUMBER:0003101C
OPERATOR WORK TIME: 000000130C IC/INC PREFIX:02221C  CC DATE: 60102C
CC TIME:2323217C  ELAPSED CC: 000000109C IC/INC EVENT:005C
TRK GRP:00158C  ROUTING: 1C DIALING:1C ANI:1C

```

TOPS Exchange Access Operator Services Signaling (continued)

The following tables describe the fields added to the 007XX structure code to create the 047XX structure code.

IC/INCprefix field

Characters	Description
1	Padding (zero)
2-4	IC/INC identification
5	Allowable values • 0 = operator requested • 1 = direct dialed • 2 = cannot determine if IC/INC operator involved
6	Sign (hex)
Note: This field records the IC digits in BCD characters 2-4, and records the call type, for example, direct dialed, operator requested or unknown.	

Event date field

Characters	Description
1	Last digit of year
2-3	Month
4-5	Day
6	Sign (hex)
Note: This field records the IC connect date that the Operating Company receives an answer from the called party.	

Event time field

Characters	Description
1-2	Hours
3-4	Minutes
5-6	Seconds
Note: This field records the IC connect time. This is the time when the called party answers.	

TOPS Exchange Access Operator Services Signaling (continued)

Event time field

Characters	Description
7	Tenths of seconds
8	Sign (hex)
Note: This field records the IC connect time. This is the time when the called party answers.	

Elapsed time field

Characters	Description
1	0 (padding)
2-6	Minutes
7-8	Seconds
9	Tenths of seconds
10	Sign (hex)
Note 1: On attempts, zeros are recorded for minutes, for seconds, and for tenths of seconds.	
Note 2: This field records the elapsed time of the call from carrier connect time to call disconnect. It is the carrier elapsed time.	

TOPS Exchange Access Operator Services Signaling (continued)

IC/INC call event status field

Characters	Description
1	Padding (0)
2-3	Allowable values • 00 = Reserved • 01 = First wink from IC/INC (originating LATA); AMA register seized (terminating LATA) • 02 = Abandon or time-out before dialing is complete (originating LATA). See note 1. • 03 = Second start dial wink from IC/INC (originating LATA) • 04 = Time-out waiting for acknowledgment wink (originating LATA) • 05 = Operator services or CAMA signaling off-hook from IC/INC after receipt of called number (originating LATA) • 06 = Call terminated due to network management feature (terminating LATA). See note 1. • 07 = Acknowledgment wink received • 08 = Invalid called number (terminating LATA). See note 1. • 09 = All failures (except invalid called number) in which the call cannot be set up to the terminating office (for example: all trunks busy or time-out waiting for wink from the terminating end office) (terminating LATA). See note 1. • 10 = Answer (originating or terminating LATA) • 11 = Time-out waiting for second start dial wink for calls using INC signaling (originating LATA) • 12 = Operator services of CAMA signaling time-out waiting for off-hook (originating LATA) • 13 = Off-hook rather than second start dial wink for calls using INC signaling. See note 1.
4	Sign (hex C)
Note 1: TOPS EA does not support these cases Note 2: This field records a 00 in fields 2-3 only if the TICS software is present and when Intertoll Signaling, not FGD Signaling is used. The other entries are valid for outgoing FGD.	

TOPS Exchange Access Operator Services Signaling (continued)

Trunk group number field

Characters	Description
1	Padding (0)
2-5	Trunk group number
6	Sign (hex)
Note: This field records the terminating IC trunk group number.	

IC/INC routing indicator field

Characters	Description
1	Values • 0 = Direct • 1 = Tandem (note: only 1 is used)
2	Sign (hex)
Note: This field records the value 1, because TOPS is only in tandem offices.	

IC/INC dialing indicator field

Characters	Description
1	Values • 1 = Primary or default IC, 10XXA not dialed • 2 = 10XXX dialed • 3 = 950-1XXX
2	Sign (hex)
Note: This field records how the IC digits are received.	

TOPS Exchange Access Operator Services Signaling (continued)

IC/INC ANI indicator field

Characters	Description
1	Values 0 = No ANI provided 1 = ANI provided
2	Sign (hex)
Note: This field specifies whether ANI is provided.	

Carrier calls that are sent to a carrier over an IT trunk provide carrier information in the AMA record. The date and time the IT trunk is seized is recorded in the CC Date and CC Time fields, respectively. The elapsed time from the time of carrier connect until the time the calling or called party goes on-hook is recorded in the Elapsed CC field. The values that are recorded for the IC/INC call event status are shown in a prior table. The following figure illustrates the AMA record generated for a CAMA call over an IT trunk if no answer is returned by the carrier.

Example AMA record for CAMA Carrier Call on IT Trunk Group

```

HEX ID: AA  STRUCTURE CODE:14700C  CALL CODE:006C  SENSOR TYPE: 036C
SENSOR ID:0000000C  REC OFFICE TYPE:036C  REC OFFICE ID: 0000000C
DATE:81220C  TIMING IND:00000C  STUDY IND: 0200000C  ANSWER:1C
SERVICE OBSERVED:0C  OPER ACTION: 0C  SERVICE FEATURE:000C  ORIG NPA:613C
ORIG NUMBER: 2391111C  OVERSEAS IND:0C  TERM NPA:00212C
TERM NUMBER: 2209999C  CONNECT TIME:0942256C  ELAPSED TIME: 000000000C
OPERATOR NUMBER:0003101C  OPERATOR WORK TIME: 000000000C
IC/INC PREFIX:02221C  CC DATE: 81220C  CC TIME:0942279C
ELAPSED CC:000000161C  IC/INC EVENT STATUS: 012C
TRUNK GROUP NUMBER:00089C  ROUTING INDICATOR: 1C  DIALING INDICATOR:1C
ANI INDICATOR: 0C  TNN:0000027C
  
```

AF0968 - Carrier Code on AMA for Terminating TOPS Calls

The call code associated with inward service type calls is 108. The corresponding structure code is 00733. The DMS uses the CARRIER PREFIX field to identify the carrier within structure code 00733.

TOPS Exchange Access Operator Services Signaling (continued)

The CARRIER PREFIX field is a 6-character field. The following table provides a breakdown of the characters of the CARRIER PREFIX field.

Carrier prefix field

Characters	Description
1	Padding (zero)
2	Type of service • 0 = Internal line of business • 1 = External line of business
3-5	Line of business number • If 0 in position 2, this is line of business number • If 1 in position 2, this is carrier identification
6	Sign (hex C)

Following is an example of such an AMA record.

Example AMA record for CAC 202

```
HEX ID: AA STRUCT CODE:10733C CALL CODE:108C SENSOR TYPE:036C
SENSOR ID: 0000000C REC OFC TYPE:036C REC OFC ID:0000000C
CIRCUIT DATE: 60101C CIRCUIT TIME:1031090C SERC OBSERVED:0C
INWARD SERVICE TYPE: 001C OPERATOR WORK TIME:000000030C
CARRIER PREFIX: 02220C OPERATOR NUMBER: 1010112C CIRCUIT ID:000
```

AF1100 - TOPS FGB Call Code 134

Presently, AMA records produced for non-operator-handled TOPS Feature Group B (FGB) calls receiving TOPS EA processing use call code 251, structure code 734; TOPS FGB calls routed using a T selector use call code 006, structure code 700.

If AMA records with call code 134, structure code 625, are produced for non-operator-handled TOPS FGB calls in place of AMA records with call code 251, structure code 734, the Operator Number and Operator Work Time fields will NOT be in the records. Operator handled TOPS FGB calls are not affected by this feature.

TOPS Exchange Access Operator Services Signaling (continued)

If TOPS non-FGB calls routed using a T selector receive TOPS EA processing because of office parameter TOPS_EA_PROCESS_T_SEL, appropriate EA AMA records will be produced.

The AMA record with call code 134, structure code 625, (shown in the following figure) is an existing combination. No fields are added to or changed in this record. It is produced for non-operator-handled TOPS Feature Group B calls when office parameter TOPS_FGB_CC134 is set to Y and the calls receive EA processing.

Example AMA record with Call Code 134, Structure Code 625

```
HEX ID: AA  STRUCT CODE:00625C  CALL CODE:134C  SENSOR TYPE: 036C
SENSOR ID:0000000C  REC OFC TYPE:036C  REC OFC ID: 0000000C  DA:80203C
TIMING IND:00000C  STUDY IND: 0200030C  ANSWER:0C  SERV OBSERVED:0C
OPER ACTION: 0C  SERV FEAT:000C  ORIG NPA:613C  ORIG NO: 2391234C
OVERSEAS IND:1C  TERM NPA:00000C  TERM NO: 0000000C  TIME:1403594C
ELAPSED TIME:000000084C  IC/INC PREFIX:02221C  CC DATE:80128C
CC TIME:1403590C  ELAPSED CC: 000000093C  IC/INC EVENT:005C
TRK GRP: 00412C  ROUTING:1C  DIALING:3C  ANI:1C
```

An AMA record with call code 134, structure code 627, is produced for long duration calls.

Station Message Detail Recording

Base TOPS Equal Access does not affect Station Message Detail Recording.

TOPS Exchange Access Operator Services Signaling (continued)

Datafilling office parameters

The following table shows the office parameters used by Base TOPS Equal Access. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by Base TOPS Equal Access

Table name	Parameter name	Explanation and action
OFCVAR	TEST_CALL_II_SPILL	This parameter is required to activate this feature.
OFCVAR	TOPS_FGB_CC134 and TOPS_EA_PROCESS_T_SEL	For non-operator-handled TOPS FGB calls routed using a T selector, AF1100 provides two office parameters, TOPS_FGB_CC134 and TOPS_EA_PROCESS_T_SEL, which interact in four possible combinations (either parameter can be set to Y or N) to produce AMA records with different call and structure codes. <i>TOPS_FGB_CC134=N</i> <i>TOPS_EA_PROCESS_T_SEL=N</i> AMA record with call code 251, structure code 734, is generated for non-operator-handled TOPS FGB 950 calls without T/S selector. AMA record with call code 006, structure code 700, is generated for non-operator-handled TOPS FGB 950 calls with T/S selector. <i>TOPS_FGB_CC134=Y</i> <i>TOPS_EA_PROCESS_T_SEL=N</i> AMA record with call code 134, structure code 625, is generated for non-operator-handled TOPS FGB 950 calls without T/S selector. AMA record with call code 006, structure code 700, is generated for non-operator-handled TOPS FGB calls with T/S selector.

TOPS Exchange Access Operator Services Signaling (continued)

Office parameters used by Base TOPS Equal Access

Table name	Parameter name	Explanation and action
		<i>TOPS_EA_PROCESS_T_SEL</i> The TOPS_EA_PROCESS_T_SEL office parameter determines whether TOPS calls routed from the pre-translator with a T selector receive TOPS EA processing without EA changing the index into Table OFRT obtained by the pre-translator. EA processing as defined for this feature determines whether a call routed from the pretranslator with a T or an S selector is a carrier call. If it is a carrier call, the carrier number is determined, EA class-of-service screening is set to allow conditional routing, and the carrier number is used in the AMA record generated. The value range for the parameter, which can be updated at any time, is Y/N. • Default value=N • Activation=Immediate.
OFCOPT	TOPS_EQUAL_ACCESS_OFFICE	This parameter is required to activate the feature.
OFCENG	TOPS_EA_INTERLATA_NONOPR_AMA	This parameter is required to activate the feature.
OFCENG	TRUNK_NETWORK_NUMBER_NEEDED	This parameter is required to activate the feature.

TOPS Exchange Access Operator Services Signaling (continued)**Datafill sequence**

The following table lists the tables that require datafill to implement Base TOPS Equal Access. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Base TOPS Equal Access

Table	Purpose of table
HNPACONT	Home Numbering Plan Area Control Table
STDPRTCT	Standard Pretranslator Control Table
SCRNCLAS	Screening Class Table
TRKGRP (TOPS)	Trunk Group (TOPS) Table.
PICNAME	Primary Inter-LATA Carrier Name Table.
TRKSGRP	Trunk Subgroup Table
TRKGRP (ATC)	Trunk Group (Access Tandem to Carrier) Table
OFRT	Office Route Table
CLSVSCRC	Class of Service Screening Control Table
POSITION	Position Table
HNPACODE	Home Numbering Plan Area Control Subtable (HNPACONT.HNPACODE)
STDPRT	Standard Pretranslator Subtable (STDPRTCT.STDPRT)
CLSVSCR	Class of Service Screening Control Subtable (CLSVSCRC.CLSVSCR)
TOPSBC	TOPS Billing Code
TOPEACAR	TOPS Equal Access Carrier Table.
TOPEATRK	TOPS Equal Access Trunk Group Extension Table.
LATANAME	Local Access and Transport Area Name Table
LATAOLA	Local Access and Transport Area Translation Table
TOPSCOIN	TOPS Coin
CCTR	Country Code Table
HNPARTEREF	Home Numbering Plan Area Control Subtable (HNPACONT.RTEREF)

TOPS Exchange Access Operator Services Signaling (continued)

Datafill tables required for Base TOPS Equal Access

Table	Purpose of table
OCCINFO	Other Common Carrier Information Table
BELLCAT	Bell Category Table.
EAANIID	Equal Access Automatic Number Identification Information Digit Table.
OSSCAT	Operator Services Signaling Category Table.
TRKGRP (IT)	Trunk Group (Intertoll) Table
TRKGRP (OP)	Trunk Group (Operator) Table
TOPS	Traffic Operator Position System Table
TOPAMAOP	TOPS AMA Options
AMATKOPT	AMA Trunk Options.

Datafilling table HNPACONT

Datafill example for table HNPACONT

The following example shows sample datafill for table HNPACONT.

MAP display example for table HNPACONT

NPA	MAXRTE	NOAMBIGC	RTREF	HNPACODE	ATTRIB
919	512	1	(20)	(1)	(38)

Datafilling table STDPRTCT

Datafill example for table STDPRTCT

The following example shows sample datafill for table STDPRTCT.

MAP display example for table STDPRTCT

EXTPRTNM	STDPRT
TOP1	(1)
TOP2	(1)

Datafilling table SCRNCLAS

Datafill example for table SCRNCLAS

The following example shows sample datafill for table SCRNCLAS.

TOPS Exchange Access Operator Services Signaling (continued)**MAP display example for table SCRNCCLAS**

VALUE	SYMBOL
23	DOM1

Datafilling table TRKGRP (TOPS)

The following table shows the datafill specific to Base TOPS Equal Access for table TRKGRP.TOP. Only those fields that apply directly to Base TOPS Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP (TOPS)

Field	Subfield or refinement	Entry	Explanation and action
	ANIREQ	BELL, MODBELL, or OSS	Subfield ANIREQ indicates the method for requesting the ANI spill for trunks that use BELL, MODBELL, or OSS signaling. This field can be datafilled with one of two values: WINK or OFFHK. Value WINK indicates that a wink is returned to the End Office to request the ANI spill. Value OFFHK returns an off-hook to the End Office. The use of a wink to request ANI spill allows the true answer to be returned from the terminating office.
SELECTOR		C	If changes are made to the standard displays, the SELECTOR field must be set to C. If the SELECTOR field is set to S, it indicates that the standard (default) display is shown on the Operator Position CRT when inward service type calls arrive at the Operator Position.

Datafill example for table TRKGRP (TOPS)

The following example shows sample datafill for table TRKGRP (TOPS).

TOPS Exchange Access Operator Services Signaling (continued)

MAP display example for table TRKGRP (TOPS)

GRPKEY	GRPINFO												
TOPCOMAMF													
TOPS	0	NPDGP	NCRT	IC	MIDL	919	TOP1	NLCA	NSCR	Y	SP		
COMBINED	N	N											
0	BELL	10	2	2	N	Y	WINK						
TOPCOMBMF													
TOPS	0	NPDGP	NCRT	IC	MIDL	919	TOP2	NLCA	NSCR	Y	SP		
COMBINED	N	N											
0	BELL	3	5	2	N	Y	OFFHK						

Datafilling table PICNAME

Datafill example for table PICNAME

The following example shows sample datafill for table PICNAME.

MAP display example for table PICNAME

VALUE	SYMBOL
1	CARR1
2	CARR2

Datafilling table TRKSGRP

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

SGRPKEY CARDCODE													SGRPVAR	
TOPCOMAMF 0 DS1SIG														
STD	IC	MF	WK	N	5	5	EI	NO	N	N	N	N	M	
TOPCOMBMF 0 DS1SIG														
STD	IC	MF	WK	N	5	5	EI	NO	N	N	N	N	M	
OGEACAR3 0 DS1SIG														
STD	OG	MF	WK	7	0	NO	EI	N	N	N	N	70		
OGEACAR4 0 DS1SIG														
STD	OG	MF	WK	7	0	NO	EI	N	N	N	N	70		

TOPS Exchange Access Operator Services Signaling (continued)

Datafilling table TRKGRP (ATC)

Datafill example for table TRKGRP (ATC)

The following example shows sample datafill for table TRKGRP (ATC).

MAP display example for table TRKGRP (ATC)

GRPKEY	GRPINFO
OGEACAR3	
ATC 0 TLA NCRT OG SP MIDL NPRT NSCR 919 ABC Y BELLI COMB N	
OGEACAR4	
ATC 0 TLA NCRT OG SP MIDL NPRT NSCR 919 XYZ Y BELLI COMB N	
OTWAON11MG00	
ATC 21 TLD NCTC OG IT MIDL NPRT NSCR 613 XYZ CARR1 Y FGB	
INTERTOLL Y	

Datafilling table OFRT

Datafill example for table OFRT

The following example shows sample datafill for table OFRT.

MAP display example for table OFRT

RTE	RTELIST
101	(S D OGEACAR3)
102	(S D OGEACAR3)
301	(S D OGEACAR4)
302 (CND TOPEACLS EAC0IN SK 1) (T OFRT 312)	(T OFRT 402)
312 (CND TOPEACLS EAHOTEL SK 1) (T OFRT 322)	(T OFRT 412)
322 (CND TOPEACLS EARBILL SK 1) (T OFRT 332)	(T OFRT 422)
332 (CND TOPEACLS EACAMA SK 1) (T OFRT 442)	(T OFRT 432)
402	(S D OGEACAR4)
432	(S D OGEACAR4)
442	(S D OGEACAR4)

Datafilling table CLSVSCRC

Datafill example for table CLSVSCRC

The following example shows sample datafill for table CLSVSCRC.

TOPS Exchange Access Operator Services Signaling (continued)

MAP display example for table CLSVSCRC

NPASCTYP	NORSLTS	TMTOFRT	CLSVSCR
919 DOM1 DD	2 N	NONE	(1)
919 DOM1 OA	2 N	NONE	(1)

Datafilling table POSITION

Datafill example for table POSITION

The following example shows sample datafill for table POSITION.

MAP display example for table POSITION

POS	PRTE
TOPS	S TOPSP0S

Datafilling table HNPACODE

Datafill example for table HNPACODE

The following example shows sample datafill for table HNPACODE.

MAP display example for table HNPACODE

SUB FROMDIGS	TODIGS	CDRRTMT
212	212	FRTE 10
263	263	HRTE 13
312	312	FRTE 12

Datafilling table STDPRT

Datafill example for table STDPRT

The following example shows sample datafill for table STDPRT.

TOPS Exchange Access Operator Services Signaling (continued)

MAP display example for table TOPSBC

CLLI	BILLCODE	LCANAME	SCRNCL	ACTUALBC	CHGCLSS
TOPCOMBMF	544	NLCA	NSCR	919544	TOPS
TOPCOMAMF	549	NLCA	NSCR	919549	TOPS

Datafilling table TOPECAR

Datafill example for table TOPECAR

The following example shows sample datafill for table TOPECAR.

MAP display example for table TOPECAR

CARDIG	CARNAME	OPLSCLD	CAMABILL	OPSERV
222	CARR1	Y	Y	NOSERV
333	CARR2	N	Y	NOSERV

Datafilling table TOPEATRK

Datafill example for table TOPEATRK

The following example shows sample datafill for table TOPEATRK.

MAP display example for table TOPEATRK

TRUNKGRP	ENDOFFICE	CARRIER	LATANM	INTRASSC	INTERSSC	OVSSCL
SCRNIDX	DNLOOK	DFLTPIC	BYPASS			
TOPCOMBMF	NCONFORM	222	LATA1	DOM1	DOM1	NSCR
919 N	N	(HOTEL)	(ZEROM)			
TOPCOMAMF	NCONFORM	333	LATA1	DOM1	DOM1	NSCR
919 N	N	(HOTEL)	(ZEROM)			

Datafilling table LATANAME

Datafill example for table LATANAME

The following example shows sample datafill for table LATANAME.

MAP display example for table LATANAME

LATANAME
LATA1

TOPS Exchange Access Operator Services Signaling (continued)

Datafilling table LATAXLA

Datafill example for table LATAXLA

The following example shows sample datafill for table LATAXLA.

MAP display example for table LATAXLA

LATACODE	LATA	STATE	EATYPE
LATA1 212	INTER	INTER	STD
LATA1 312	INTER	INTER	STD

Datafilling table TOPSCoin

Datafill example for table TOPSCoin

The following example shows sample datafill for table TOPSCoin.

MAP display example for table TOPSCoin

GRPKEY	CNSDELAY	PADSTAT0	PADSTAT1	COINTYPE
TOPCOMAMF	75	ENABLED	DISABLED	CDF

Datafilling table TOPSPARM

The following table shows the datafill specific to Base TOPS Equal Access for table TOPSPARM. Only those fields that apply directly to Base TOPS Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPSPARM

Parameter	Explanation and action
ZENITH_EA_ROUTING	A new parameter, ZENITH_EA_ROUTING, has been added to table TOPSPARM. If it is set to Y, the following Zenith routing numbers are to be translated, using Equal Access software for determining the LATA status of the call and for appropriate routing. If set to N, the default value, the calls are translated as they had been prior to this feature, using standard translations.

Datafill example for table TOPSPARM

The following example shows sample datafill for table TOPSPARM.

TOPS Exchange Access Operator Services Signaling (continued)

MAP display example for table TOPSPARM

PARMNAME	PARMVAL
ZENITH_EA_ROUTING	Y

Datafilling table TOPAMAOP

The following table shows the datafill specific to Base TOPS Equal Access for table TOPAMAOP. Only those fields that apply directly to Base TOPS Equal Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOPAMAOP

Parameter	Explanation and action
RECORD_INTERLATA_CALL_CODE_251	A new parameter, RECORD_INTERLATA_CALL_CODE_251, is added to table TOPAMAOP. This parameter records call type code 251 with structure code 625. When this parameter is set to Y, all calls that tandem through TOPS to an ATC or IT trunk to an IC produces this call type code. This tuple is only visible when the Base TOPS Equal Access, OSEA0101, package is present.

Datafill example for table TOPAMAOP

The following example shows sample datafill for table TOPAMAOP.

MAP display example for table TOPAMAOP

AMAOPT	OPTINFO
RECORD_INTERLATA_CALL_CODE_251	Y

Datafilling table AMATKOPT

The following table shows the datafill specific to Base TOPS Equal Access for table AMATKOP. Only those fields that apply directly to Base TOPS Equal

TOPS Exchange Access Operator Services Signaling (end)

Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table AMATKOPT

Parameter	Explanation and action
TOPS_EA251CC	New option TOPS_EA251CC can be datafilled in table AMATKOPT. This new value allows call type 251 to be produced on an incoming trunk group basis for calls that tandem through TOPS and are datafilled in table AMATKOPT with field OPTIONS=TOPS_EA251CC. This option is only visible when the Base TOPS Equal Access, OSEA0101, package is present.

Datafill example for table AMATKOPT

The following example shows sample datafill for table AMATKOPT.

MAP display example for table AMATKOPT

CLLI	OPTIONS
OPDP1	TOPS_EA251CC

Translation verification tools

Base TOPS Equal Access does not use translation verification tools.

SERVORD

Base TOPS Equal Access does not use SERVORD.

TOPS Flex ANI

Ordering codes

Functional group ordering code: OSEA0101

Functionality ordering code: not applicable

Release applicability

TOPS10 and up

TOPS Flex ANI was introduced in TOPS10.

Prerequisites

To operate, TOPS Flex ANI has the following prerequisites:

- BAS Generic, BAS00003
- Operator Services Basic, OSB00101, and table TOPSFTR parameter TOPS_ON_OFF_SWITCH = Y
- Two Digit ANI - TOPS Office, OSB00101
- Table TOPSFTR parameter FLEX_ANI = Y

Description

This functionality allows incoming automatic number identification (ANI) ID digits from the end office to be passed to the carrier over access to carrier (ATC) type trunks. The traffic operator position system (TOPS) office passes the digits without change, except for special cases given in section "Operation", subsection "TOPS Flex ANI special cases". Before this release, the TOPS office could change the digits.

This capability allows local exchange companies (LECs) to comply with a new Federal Communications Commission (FCC) regulation. The regulation is that ANI information digits must be sent to the carrier to identify calls that originate from a pay phone. Carriers are required to compensate pay phone service providers on a call basis in the absence of an existing service agreement. This generally applies when the carrier is not the presubscribed carrier for the pay station. The FCC has mandated ANI ID digits 27 (standard coin), 29 (inmate), and 70 (smartset), but any ANI digits can be passed to the carrier.

This functionality is provided by the following feature:

Feature number	Feature name
AF7628	TOPS FLEX ANI

TOPS Flex ANI (continued)

Operation

Prior functionality

This section describes TOPS ANI processing before this functionality.

TOPS ANI processing applied to the following call types:

- Tandem calls that go to an interLATA carrier. Tandem calls come in on TOPS trunks and pass through the TOPS switch without stopping at an operator.
- 0- calls that transfer from the operator to an interlata carrier

TOPS ANI processing determined the ANI ID digits as follows:

- For an originating line number screening (OLNS) call with incoming ANI ID digits of 00 or 07, checks for restrictions are made. The checks are the Billing Services Indicators and directory assistance call completion (DACC) Indicator returned by OLNS, and the OLNS parameters in table TOPSPARM. If there are restrictions on the call, 07 is sent to the carrier; otherwise, 00 is sent.
- For a non-OLNS call with datafill indicating tables DNSCRN and SPLDNID are to be checked. If the calling number is present, then outgoing ANI ID is determined by datafill.
- For the remaining call types not mentioned above, the ANI status of the call is used to access table EAANIID, which determines the ANI ID digits.

New functionality

As previously mentioned, this functionality passes the ANI ID digits received from the end office to the carrier without change, except for special cases given in the following section. This capability only applies to 0- calls that transfer from the operator to an interLATA carrier.

Flex ANI processing is controlled on a carrier basis by table OCCINFO field FANI. If the field is set to N, previous processing of ANI ID digits applies. Note that the ANI field of table OCCINFO must be set to Y before the FANI field can be set to Y.

This functionality is controlled by software optionality control (SOC) option OSEA0101. If the SOC option is IDLE, previous processing of ANI ID digits applies. If the SOC option is ON, this new functionality applies.

TOPS Flex ANI (continued)

TOPS Flex ANI special cases

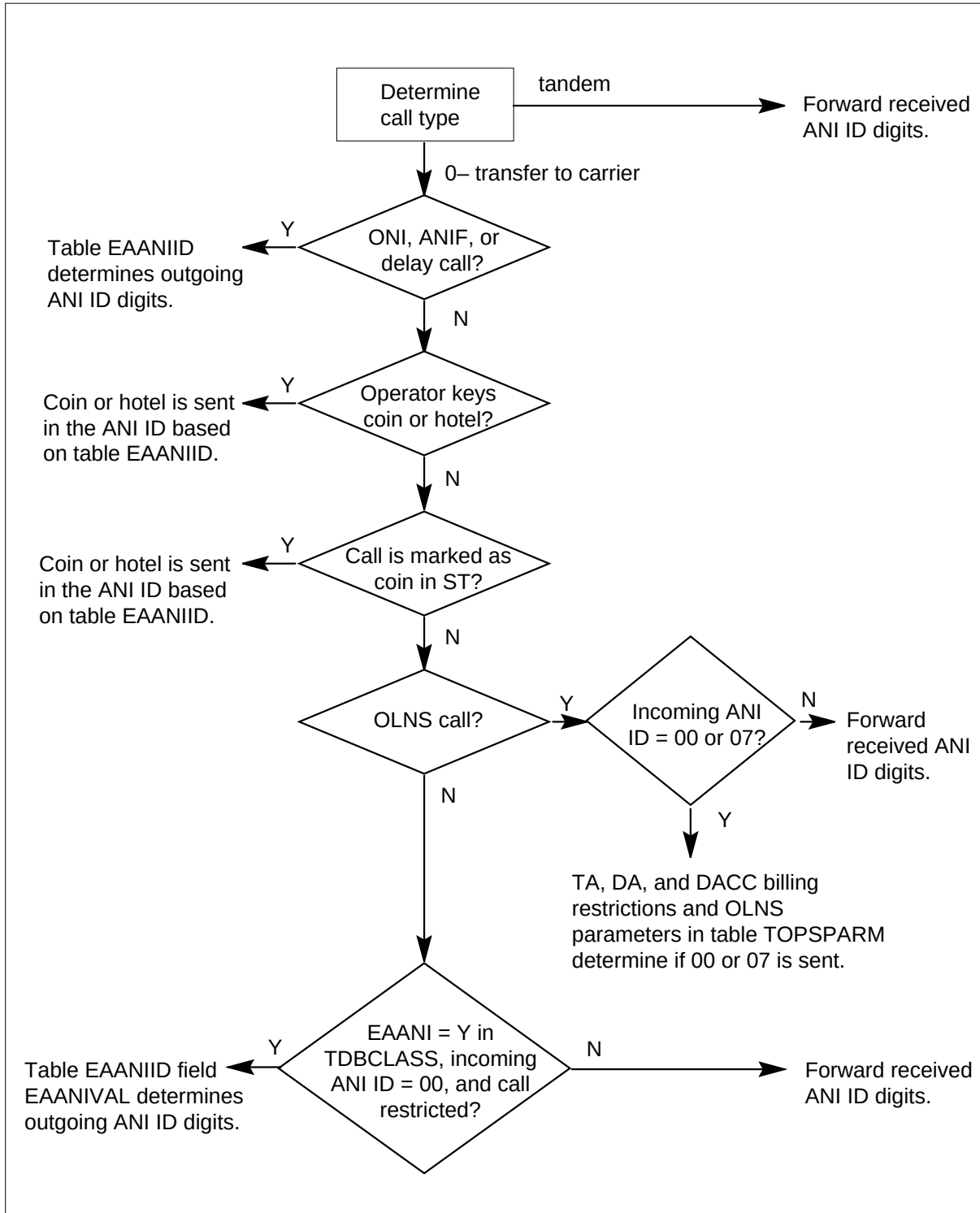
The following are special cases where TOPS Flex ANI processing is overridden. In these cases, the ANI ID digits signalled to the carrier MAY be different than the digits received from the end office.

- If the operator marks the call as HOTEL or COIN, this mark takes precedence over the incoming ANI ID digits. The ANI ID digits for coin or hotel are sent to the carrier.
- If the call is marked as COIN by coded ST marks in the incoming signalling and the incoming ANI ID is 00, these ST marks take precedence over TOPS Flex ANI. The ANI ID digits for coin are sent to the carrier.
- If the call is an OLNS call and the incoming ANI ID digits are 00 or 07, the Billing Services Indicators and DACC Indicator returned by OLNS as well as the OLNS parameters in table TOPSPARM are checked. And if there are restrictions on the call, 07 is sent to the carrier; otherwise, 00 is sent. This functionality is not changed by TOPS Flex ANI.
- If the call is a non-OLNS call and the incoming ANI ID digits are 00 or 07 and datafill indicates tables DNSCRN and SPLDNID are to be checked. And if the calling number is in one of these tables, then the outgoing ANI ID depends on datafill.
- If the call is an ONI, ANI failure (ANIF), or delay call, then the ANI ID digits are determined by table EAANIID.

These special cases are shown in the following flowchart.

TOPS Flex ANI (continued)

Flex ANI special case flowchart



TOPS Flex ANI (continued)

Optionality

This functionality is controlled by Software Optionality Control (SOC) option OSEA0101. The SOC must be ON for operation.

Translations table flow

The TOPS Flex ANI does not have a translations table flow.

Limitations and restrictions

The following limitations and restrictions apply to TOPS Flex ANI:

- The supported incoming signalling types for TOPS MF and ISUP trunks are OSS, EAOSS, EAFGD, COMFGD, and ISUP.
- The supported outgoing signalling types for ATC MF and ISUP trunks are BELLII and EAPLAN.
- TOPS Flex ANI is supported only for North American loads.
- The TOPS Flex ANI feature is applicable only when the incoming signalling uses two digit ANI IDs.
- The TOPS Flex ANI feature is applicable only to outgoing ATC trunks that support two digit ANI IDs.

Interactions

The following paragraphs describe the interactions between TOPS Flex ANI and other functionalities.

For the TOPS Flex ANI feature to send the new ANI ID digits to carriers, the end office must be able to send them to the TOPS office. For DMS-100 end offices, this is accomplished by field FANIDIGS in table LINEATTR and setting field FANI in table OCCINFO to Y. The DMS-100 end office Flex ANI feature is part of order code UDD00001. For non-DMS end offices, check with the switch vendor to determine how to send these digits.

The SOC option code ENSV0006 (Two Digit ANI-TOPS Office) must be active for TOPS Flex ANI to function correctly since two digit ANI IDs are required.

Before setting up the end office to send Flex ANI digits, enter the new digits that are going to be sent in table OSSCAT. Otherwise, these calls are marked as ANI failure.

Activation/deactivation by the end user

TOPS Flex ANI requires no activation or deactivation by the end user.

TOPS Flex ANI (continued)

Billing

TOPS Flex ANI does not affect billing.

Station Message Detail Recording

TOPS Flex ANI does not affect Station Message Detail Recording.

Datafilling office parameters

TOPS Flex ANI does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement TOPS Flex ANI.

Datafill tables required for TOPS Flex ANI

Table	Purpose of table
OCCINFO	Equal Access Other Common Carrier Information defines attributes and screening for carriers.

Datafilling table OCCINFO

The following table shows the datafill specific to TOPS Flex ANI for table OCCINFO. Only those fields that apply directly to TOPS Flex ANI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OCCINFO

Field	Subfield or refinement	Entry	Explanation and action
FANI		Y or N	Flexible Automatic Number Identification. The meaning of this field has changed. This field now indicates whether TOPS and end offices can signal Flex ANI digits to the carrier. Before this release, only end offices could signal Flex ANI to the carrier. The ANI field must be set to Y before the FANI field can be set to Y.

Datafill example for table OCCINFO

The following example shows sample datafill for table OCCINFO.

TOPS Flex ANI (end)**MAP display example for table OCCINFO**

```
CARRNAME CARRNUM ACCESS ORIGCARR INTER INTNTL INTRA ANI FANI ONISCRN
AD1 OVERLAP INTERS INTRAS TERMREC OCCSEPNO OPSIG PICIND NOA950 INCCPN
DTMFIND OPSERV CACBLOCK CTDOA CMCMON SCRNWATS CRMCRA ATPINCL INTRAOPR
INCASA INTRCOIN ARBLKPVT
```

```
-----
      C111      0111      TRANS      Y      Y      Y      N      Y      Y      N
      Y      Y      Y      Y      LONG      0      FGRPC      N      N      N
      N      N      N      N      N      N      N      N      N      N
      N      N      N      Y
```

Translation verification tools

TOPS Flex ANI does not use translation verification tools.

SERVORD

TOPS Flex ANI does not use SERVORD.

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