AVAYA communication

DEFINITY®
Enterprise Communications Server

Release 6
Administration and Feature Description
Private Networking Module

555-230-528
Comcode 108215799
Issue 4
May 1998

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- Answered by the called station
- Answered by the attendant
- Routed to a recorded announcement that can be administered by the CPE user

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- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

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Acknowledgment
This document was prepared by Product Documentation Development, Lucent Technologies, Denver, CO.

Private Networking

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This section contains the following DEFINITY ECS Private Networking features and related forms.

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ATM-PNC

Port network connectivity (PNC) enables you to connect the processor port network (PPN) to each of the expansion port networks (EPNs). The ATM-PNC feature uses an ansynchronous transfer mode (ATM) switch to perform the function of the center-stage switch between the PPN and EPNs.

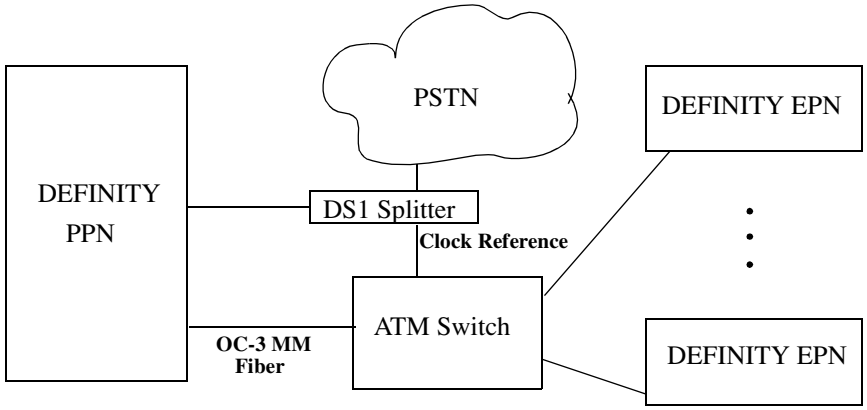


Figure 12-1. ATM-PNC Hardware Configuration

How to Administer ATM-PNC

The initial administration of an ATM-PNC system is performed by service technicians at installation. See *Installation for Adjuncts and Peripherals* for details. For a description of maintenance procedures including troubleshooting for ATM-PNC, see *Maintenance for R6r*, 555-230-126, Issue 3.

Centralized Attendant Service

Required forms

Form	Field	Page
System-Parameters Customer-Options	Async. Transfer Mode (ATM) PNC?	5-289
Synchronization Plan	Synchronization Source Synchronization Reference Stratum	
Duplication-Related System Parameters	Enable Operation of PNC Duplication	5-106
Fiber Link Administration		
ATM-PNC	All	
Circuit Packs		
Cabinet		

Centralized Attendant Service (CAS) allows attendants in a private network of switching systems to be concentrated at a central or main location.

How to administer CAS

Required forms

Form	Field	Page
Attendant Console	■ Feature Button Assignments — cas-backup -trunk-name	5-35
Console-Parameters	■ CAS ■ RLT Trunk Group Number ■ CAS Back-Up Ext ■ Timed Reminder on Hold ■ Return Call Timeout (sec)	5-86
Station (multi-appearance)	■ Feature Button Assignments — cas-backup — flash — trunk name — night serv	6-28
Trunk Group (RLT)	■ All	7-254
Feature Access Code (FAC)	■ CAS Remote Hold Access Code	5-113

Detailed description

Each branch in a CAS has its own LDN or other type of access from the public network. Incoming trunk calls to the branch, as well as attendant-seeking voice terminal calls, route to the centralized attendants over release link trunks (RLT).

The CAS attendants are at the main location. The main location can be a DEFINITY ECS, a DEFINITY System Generic 1 or 3, a DEFINITY System Generic 2.1, a System 85, a DIMENSION PBX, or a System 75 (V3).

The CAS main switch operates independently of the CAS branch switches. Operation for CAS main-switch traffic is identical to operation of a stand-alone switch.

Each branch in a CAS network connects to the main by way of RLTs. These trunks provide paths for:

- Sending incoming attendant-seeking trunk calls at the branch to the main for processing and extending them back to the branch (both parts of a call use the same trunk)
- Returning timed-out waiting and held calls from the branch to the main
- Routing calls from the branch to the main

Two queues are associated with CAS calls: one at the main and one at the branch. If idle RLTs are available from the branch to the main, RLTs are seized and CAS calls are queued at the main along with other attendant-seeking calls. If all RLTs are in use, CAS calls to the attendant are queued at the branch in a RLT queue. The length of the queue can vary from 1 to 100, as set during administration of the RLT group.

Backup service provides for all CAS calls can be sent to a backup extension in the branch if all RLTs are maintenance-busy or out of service, or if the attendant presses a Backup button that is not lighted.

- To activate the feature and provide notification that backup service is in effect, assign the backup extension to a Backup button and associated status lamp.
- The status lamp remains lighted as long as backup service is in effect.
- To deactivate the feature, the attendant presses the Backup button while the status lamp is lighted. Calls are not sent to the backup extension unless all RLTs are maintenance-busy or out of service.

The attendant can put a CAS call from a branch on Remote Hold. The branch holds the call and drops the RLT. After a time-out (same as the timed reminder for an attendant-held call), the branch automatically attempts to route the call back to the attendant. The returning call can queue for the RLT.

Attendants should use Remote Hold when they have to put a call on hold to keep RLTs from being tied up unnecessarily.

Branch-generated call-identification tones

The branch in a CAS network generates call-identification tones and transmits them to the CAS attendant by way of the RLT. These tones indicate the type of call coming from the branch or the status of a call extended to or held at the branch. The attendant hears these tones in the console handset before being connected to the caller. The tones may vary by country.

- Incoming trunk call: 480 Hz (100 ms), 440 Hz (100 ms), 480 Hz (100 ms) in sequence; heard immediately after attendant lifts handset
- Call from branch terminal to attendant or transferred by branch terminal to attendant: 440 Hz (100 ms), silence (100 ms), 440 Hz (100 ms) in sequence; heard immediately after attendant lifts handset
- Call extended to idle station or recall on does not answer ringback tone (300 ms) followed by connection to normal ringing cycle
- Call extended to busy terminal — automatically waiting or recall on attendant call waiting: 440 Hz (100 ms)
- Call extended to busy terminal — waiting denied or not provided: busy tone
- Remote hold or remote hold recall: a series of four to six cycles of 440 Hz (50 ms), silence (50 ms)
- Recall on does not answer: burst of ringback (300 ms), then connection to normal ringback at any point in its cycle
- Recall from a call on remote hold: a series of four to six cycles of 440 Hz (50 ms), silence (50 ms)
- Recall from a call waiting at a single-line terminal: burst of 440 Hz (100ms)

The centralized attendant at the main has access, through RLTs, to all outgoing trunk facilities at the branches in a CAS network. The attendant can extend an incoming LDN call to an outgoing trunk at a branch by dialing the access code and allowing the caller to dial the rest of the number or by dialing the complete outgoing number.

Calls extended to busy single-line voice terminals at the branch wait automatically. If there is a call in queue, the user hears a busy signal. When station hunting and send all calls is administered, the call routes along the administered path. Not answering any waiting extended call within an administered interval causes the branch switch to return the call to the attendant. Call Waiting does not apply to multiappearance terminals; if no appearances are available, busy tone is sent to the attendant, who tells the caller that the line is busy.

Calls from voice terminals at the branch to an attendant also route over RLTs seized by the branch switch. A branch caller reaches the attendant by dialing the attendant-group access code. The access code is administrable; the default is 0. The conversation between the branch caller and the attendant ties up the seized RLT, but calls of this type are usually short.

Considerations

- CAS reduces the number of attendants required at a branch. For example, a chain of department stores can have a centralized attendant location at the main store to handle calls for the branch stores.
- In a CAS network, DEFINITY switches can function as branches or as the main. A branch can connect to only one main.
- A branch can have an attendant. Access to the branch attendant must be by way of an individual attendant extension. Incoming trunk calls in a CAS network can bypass branch attendants but can be routed back to them by the centralized attendant.
- Branch calls terminate on the CAS main switch based on the incoming RLT trunk-group day-destination or night-service destination. An attendant console is not always answering or extending incoming CAS calls. If someone other than an attendant answers a CAS call, that person can extend the call back to the branch by pressing the FLASH button on a multiappearance voice terminal or flashing the switchhook on a single-line voice terminal. The branch reaction to Flash Signals and the branch application of tones is the same whether an attendant or someone other than an attendant answers or extends the call.
- If an extended call returns to the main attendant unanswered, the called party at the branch does not drop but continues to be alerted until the caller releases. This allows the attendant to talk to the caller, then extend the call again, if the caller wishes, without redialing the number.
- If an extended CAS call recall times out and goes to coverage but no one answers, then the branch leaves the extended-to party ringing and drops coverage.
- When an analog-station call goes to coverage, the station drops from the call. This is the exception to the branch leaving the extended-to party ringing. If the main attendant extends a call to an analog station and that call goes to coverage and later returns to the main attendant, the call is treated as an incoming LDN call and the attendant must re-extend the call, if requested by the user.
- On an incoming CAS call to the main attendant, the Name field from the trunk-group form for that RLT displays to the attendant. Therefore, you should administer the field to provide meaningful branch identification information.

- Music-on-Hold feature at branch applies to two stages of LDN calls: during call extension and Remote Hold.

Interactions

- Abbreviated Dialing

  The main attendant can use an Abbreviated Dialing button to extend CAS calls after obtaining branch dial tone.

- Attendant Auto-Manual Splitting

  The SPLIT lamp and button do not function on CAS main calls extended via the RLT trunk. Attendant conference does not function on CAS calls.

- Attendant Control of Trunk-Group Access

  If a branch attendant has control of an outgoing RLT trunk group, new attendant-seeking calls route to the branch attendant.

- Attendant Override of Diversion

  Use Attendant Override of Diversion with CAS.

- Attendant Serial Calling

  Attendant Serial Calling does not work for CAS calls.

- Automatic Alternate Routing and Automatic Route Selection

  CAS calls can be routed using AAR and ARS.

- Busy-Indicator Buttons

  Busy indicators can identify incoming calls over an RLT. You can also use Busy indicators to dial after the attendant starts to extend a call.

- Call Coverage

  Redirect calls to a centralized attendant by Call Coverage. Do not redirect calls to a CAS backup extension for backup service via Send All Calls to the backup extension's coverage path.

- Call Detail Recording

  If the CAS main RLT trunk has the CDR option selected, CDR records generate for incoming CAS calls.

- Call Forwarding

  Do not forward calls to a CAS extension.

- Call Park

  If a CAS attendant parks a call and the call returns to the attendant after the Call Park expiration interval, the attendant hears incoming trunk-call notification.

- DCS Operation

If an RLT trunk group is administered as a DCS trunk, the following interaction applies: On an incoming CAS call to the attendant, the DCS message displays instead of the name of the incoming RLT trunk group. Upon answering the call, the attendant hears call-identification tones, indicating that the call is a CAS call. Use a TRUNK-NAME button to obtain the name of the RLT trunk group.

- DXS and DTGS Buttons

  DXS and DTGS buttons at the main attendant console can be used with CAS. However, with DXS buttons, it takes a few seconds before the attendant hears ringback tone.

- Emergency Access to the Attendant

  CAS Branch Emergency Access calls generated by a Feature Access Code route Off-Hook Alert to the branch attendant group. If there is no attendant in the branch, the call routes to the branch's administered Emergency Access Redirection Extension. When the branch switch is in CAS Backup Service, the calls route to the backup station and the call is treated as a normal call.

- Hunt Groups

  If an incoming CAS call directs to a hunt group, the call does not redirect to the hunt group's coverage path. Depending on the circumstances, the attendant can get a busy tone or ringing.

- Last Number Dialed

  An attendant cannot extend calls using Last Number Dialed.

- Leave Word Calling

  If a message is left for a branch user and the attendant at the CAS switch tries to retrieve the message by using LWC message retrieval, permission is denied.

- Night Service — Night Console Service

  When the CAS main enters night service, CAS calls terminate at the CAS main night-service destination. When the branch enters Night Service, CAS calls route to the branch night console, the LDN night station, or the TAAS.

- Night Service — Trunk Answer from Any Station

  In a multiswitch DCS environment with CAS, the result of transferring incoming trunk calls via Night Service Extension or Trunk Answer from Any Station varies depending on the home switch of the transferred-to station, the home switch of the connected trunk, and the type of night-service function chosen (Night Service Extension, Trunk Answer From Any Station, or both).

- Nonattendant Console Handling of CAS Calls

  The CAS branch calls terminate at the CAS main based on the incoming RLT trunk-group day destination or night-service destination. You can also answer a CAS call by the Trunk Answer Any Station feature.

  Normally, a nonattendant extends a CAS call by pressing the Flash button. However, if the nonattendant does not have a Flash button, extend the call as follows:

  — Multiappearance voice-terminal users press the Conference or Transfer button and then dial the desired extension. To complete the call, the user drops the call. To drop the extended-to party, the user presses the Conference or Transfer button again.

  — Single-line voice-terminal users flash the switchhook and then dial the extension. To complete the call, the user drops the call. To drop the extended-to party, the user flashes the switchhook again.

- Non-Attendant Console Holds Call

  A multifunction nonattendant can hold a CAS call by pressing the hold button.

- Nonattendant Console Releases Call

  A nonattendant can drop the RLT by going on-hook, using the DISCONNECT or DROP button, or selecting another call appearance.

- Nonattendant — Display Trunk Name

  If the nonattendant with a display presses the TRUNK-NAME button while active on a trunk call, the switch displays `Name` from the trunk-group form.

- Timed Reminder

  The timer value for recalling held calls at the attendant console that can be set on the console form.

  If an attendant at the CAS main transfers a call from a branch to an extension at the main, the timed reminder does not apply and the call does not return to the attendant if unanswered. If a branch call is unanswered, the branch timed reminder times out and the call routes to a new RLT trunk and back to a CAS main attendant.

- Trunk-Name Button

  Use the trunk-name button when an outgoing call is made over a trunk administered to have no outgoing display.

Distributed Communications System

Distributed Communications System (DCS) allows you to configure 2 or more switches as if they were a single, large DEFINITY ECS. DCS provides attendant and voice-terminal features between these switch locations. DCS simplifies dialing procedures and allows transparent use of some of the DEFINITY ECS features. (Feature transparency means that features are available to all users on DCS regardless of the switch location.)

Configuring a DCS network is a complex process that involves 4 major steps:

- Planning your DCS network
- Connecting the physical equipment in the network
- Administering the physical layer (hardware connections)
- Administering the link layer to create a DCS

How to administer DCS

To administer your DCS, complete the following steps:

1. Connect the switches using the necessary circuit packs, data modules, and boards, and trunks.

   For more information about what hardware you need for your physical DCS network and how to connect the network, see *DEFINITY Enterprise Communications Server Release 6 Terminals and Adjuncts Reference.*

2. Administer any packet gateway (pgate) boards, processor data modules (PDM), X.25 data modules, processor interface data modules, and trunks you have in the DCS network.

   NOTE:
   Trunk group member numbers and trunk group numbers must match on both ends of each connection.

For information about administering this equipment, see the following sections in this book.

Form	Page
DS1 Circuit Pack	7-79
Trunk Groups	7-115
Data Modules	6-226
X.25 (R5r and later configurations only)	6-249
Processor Interface (R5si and later configurations only)	6-246
Netcon (R5si and later configurations only)	6-245
Processor (if both R5si and R5r in the DCS)	6-243
Packet Gateway Board (R5r and later configurations only)	5-246

3. Plan and implement a Dial Plan and Uniform Dial Plan for each switch in the DCS network.

   For more information about administering the dial plans, see "Dial Plan" on page 4-311 and "Uniform Dial Plan" on page 12-103.

   Plan your network so you can easily expand and administer the dial plan table. All nodes within the DCS network must be assigned compatible but different dial plans. It is recommended that:

   - All feature access codes be identical
   - Design routing patterns consistently at each node to make outward dialing transparent

   Use the Uniform Dial Plan (UDP) to assign extensions. The UDP design has to be coordinated among the switches in the DCS network to obtain a common 4- or 5-digit dial plan. For example, if you have three switches (nodes) in your DCS network, plan to use unique groups of extensions for each switch (such as, 4xxxx on one switch, 5xxxx on the second switch, and 6xxxx on the third switch).

   NOTE:
   Be sure to record the value in `Local PBX ID` for each switch. You need to use this ID to identify the node number on the Route Pattern form.

   The Local PBX ID is the value assigned to the nearest switch (node). For example, if switch A is connected to B, the Local PBX ID at A identifies the node number for B. Similarly, you can find the node number for A, by looking for the Local PBX ID on B (be sure to look at the connection to A, if it has more than one connection).

4. Complete a route pattern for each ultimate destination in the network.

   For example, if you have four switches in your DCS — switches A, B, C, and D — you need route patterns for each of the following connections:

A to B	A to C	A to D	B to C
B to D	C to D	B to A	C to A
D to A	C to B	D to B	D to C

5. Administer the following forms to configure the links in the DCS:

   NOTE:
   Complete the Administered Connections form if you use a PDM and you set the Destination (or Destination Number for R5r and later configurations) to external on the Interface Links form.

Required forms

Form	Field	Page
Interface Links	■ Enable ■ X.25 Connection (R5r and later configurations) ■ Destination Number (R5r and later configurations) ■ Establish Connection (R5r and later configurations) ■ Connected Data Module (R5r and later configurations) ■ Est Conn (R5siand later configurations) ■ PI Ext (R5si and later configurations) ■ Prot (R5si and later configurations) ■ Destination (R5si and later configurations) ■ DCE/DTE (R5si and later configurations)	5-179

Required forms

Form	Field	Page
Administered Connection	■ Connection Number ■ Originator ■ Destination ■ Name ■ Retry Interval ■ Auto Restoration?	5-17
Processor Channel Assignment	■ All Proc Chan fields that you want to be assigned DCS	5-248 (R5r and later configurations) 5-252 (R5si and later configurations)

6. Complete the Processor Channel Assignment form on each switch to establish dialogs from the switch to other nodes on the network.

   This step involves extensive planning as you must map each link, channel, and remote port throughout the network.

7. Administer the Hop Channels.

   For more information, see "Hop Channel Assignments Form" on page 12-116.

8. If you are using ISDN, administer the gateway functions.

   For more information, see "ISDN TSC Gateway Channel Assignments" on page 7-98.

Detailed description of DCS

DCS network configurations can be:

- Traditional DCS network — A DCS network configured with 2 or more switches using BX.25 signaling for transporting DCS feature transparency information.
- D-channel DCS network (private network only) — A DCS network that includes DEFINITY ECS using the ISDN-PRI D-channel DCS transparency information (D-channel signaling). ISDN-PRI facilities with this type of network use only private-line facilities.
- D-channel DCS network (public network access/egress) — A DCS network that includes DEFINITY ECS using D-channel signaling. At least one of these ISDN-PRI facilities uses a public network ISDN-PRI.

- Integrated DCS network (private network only) — A DCS network that contains a variety of switches using BX.25 or D-channel signaling methods. At least one DEFINITY ECS serves as an ISDN-PRI DCS Gateway node. This node can interwork DCS transparency information between a BX.25 connection and one of the ISDN-PRI user-to-user signaling methods over the D-channel.

  An ISDN-PRI DCS Gateway node provides backward compatibility to existing traditional DCS networks.

- Integrated DCS network (public network access) — The same as D-channel DCS Network (Private Network Only), but the D-channel of at least one ISDN- PRI facility uses a public network ISDN-PRI.

Once you have connected and set up your DCS network, you can provide the following features across the network:

- DCS Alphanumeric Display for Terminals
- DCS Attendant Control of Trunk Group Access
- DCS Attendant Direct Trunk Group Selection
- DCS Attendant Display
- DCS Automatic Callback
- DCS Automatic Circuit Assurance
- DCS Busy Verification of Terminals and Trunks
- DCS Call Coverage
- DCS Call Forwarding
- DCS Call Waiting
- DCS Distinctive Ringing
- DCS Leave Word Calling
- DCS Multiappearance Conference/ Transfer
- DCS Over ISDN-PRI D-channel
- DCS Trunk Group Busy/Warning Indication
- DCS with Rerouting
- Enhanced DCS

DCS/AUDIX gateway

DEFINITY ECS can serve as an interface between PBXs that support the D-channel signaling feature and those that do not support this feature. The switch providing this interface is known as the ISDN-DCS Gateway node and provides backward compatibility to existing traditional DCS networks.

It maintains a mapping between processor channels and Administered NCA-TSCs. When a DCS D-channel message arrives on an Administered NCA-TSC acting as a gateway, it is converted to a traditional DCS message and sent out through the processor channel that has been administered to map to this Administered NCA-TSC. Likewise, when a traditional DCS message arrives at the gateway node on a processor channel acting as a gateway, it is converted to a DCS D-channel message and sent out through the Administered NCA-TSC that has been associated with this processor channel on the ISDN Gateway Channel form.

In summary, a gateway is required whenever a transition is being made from BX.25 signaling to D-channel signaling. When the transition takes place at a switch that sits between that part of the network that supports D-channel DCS and that part that does not, that switch is an ISDN-DCS Gateway. A DCS network consisting entirely of switches that support D-channel DCS never requires an ISDN-DCS Gateway because none of the switches require "translation" to/from BX.25.

Example DCS configurations

The following two examples provide details for setting up two basic DCS networks. The first is a two-node network and the second is a three-node network.

2-Node private network with AUDIX

Figure 12-2 shows a 2-node DCS/AUDIX D-channel network. In this configuration, DCS feature transparency is achieved exclusively through the exchange of user-to-user information on the D-channel using one of the three methods discussed earlier — MA-UUI, CA-TSCs or NCA-TSCs. Although NCA-TSCs are nothing more than virtual connections on the D-channel, they are shown as independent entities in the diagram for the purposes of clarity. Administered TSC 2/1 (that is, the first Administered NCA-TSC of signaling group 2) of Switch A is connected to TSC 4/1 of Switch B. This virtual connection is used in the exchange of user-to-user information for DCS features not associated with any current B-channel connection.

Notice that for AUDIX, a BX.25 data link is no longer required between the host switch and the remote switch(es). AUDIX messages between the AUDIX and the remote switch will use the AUDIX Gateway functionality of the host switch and will be transported to the remote switch via an NCA-TSC. Specifically, AUDIX messages destined for Switch B will arrive at Switch A on Link 1, Channel 2 (processor channel 57), be converted to ISDN-PRI Q.931 format and sent out via Administered NCA-TSC 2/2.

This is accomplished by administering processor channel 57 as a gateway and mapping it on the gateway form to Administered NCA-TSC 2 of signaling group 2 that is also administered as a gateway.

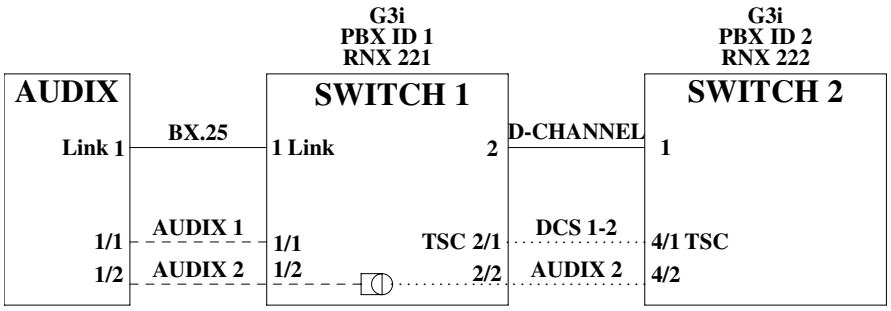


Figure 12-2. 2-Node private network

The following tables show you how you would complete each of the necessary forms.

AUDIX administration

- AUDIX Translations for,

Switch Number	AUDIX Port	Switch Port[1]	Logical Channel	Data Link
1	1	59	1	1
2	2	57	2	1

1. Switch Port refers to the processor channel that is used for AUDIX in the PBX.

Administration for switch 1

- Dial Plan form

Start Dig.	Len	Usage
4	4	ext
5	4	ext

- Uniform Dial Plan form

Ext Code	Type	Location Code
5xxx	UDPcode	222

- AAR Digit Conversion form

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
221	7	7	3	-	ext	n

- AAR Analysis Table

Dialed String	Min	Max	Rte Pat	Call Type	Node Num
222	7	7	2	aar	2

- Signaling Group form (signaling group 2)

TSC	Local	Enabled	Establish	Dest.	Far-end	Appl.
Index	Ext.			Ext.	PBX-ID	
1	4900	y	permanent	5900	2	dcs
2	4901	y	permanent	5901	-	gateway

- Trunk Group form

Group #	Grp Type	Used for DCS?	DCS Sig. Method	PBX ID
2	isdn-pri	y	d-chan	2

- Routing Pattern form

Routing Pattern #	Trunk Group #	FRL	Del	TSC	CA-TSC Request
2	2	0	3	y	at-setup

- Gateway Channel form

Signaling Group	TSC Index	Processor Channel	Application
2	2	57	audix

- Processor Channel form

Proc Channel	Application	Inter. Link	Channel	Remote Proc. Channel	PBX ID
57	gateway	1	2	2	-
59	audix	1	1	1	1

Administration for switch 2

- Dial Plan form

Start Dig.	Len	Usage
4	4	ext
5	4	ext

- Uniform Dial Plan form

Ext Code	Type	Location Code
4xxx	UDPcode	221

- AAR Digit Conversion form

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
222	7	7	3	-	ext	n

- AAR Analysis Table

Dialed String	Min	Max	Rte Pat	Call Type	Node Num
221	7	7	1	aar	1

- Signaling Group form (signaling group 4)

TSC Index	Local Ext.	Enabled	Establish	Dest.	Far-end Ext.	Appl PBX-ID
1	5900	y	permanent	4900	1	dcs
2	5901	y	permanent	4901	-	audix

- Trunk Group form

Group #	Grp Type	Used for DCS?	DCS Sig. Method	PBX ID
1	isdn-pri	y	d-chan	1

- Routing Pattern form

Routing Pattern #	Trunk Group #	FRL	Del	TSC	CA-TSC Request
1	1	0	3	y	at-setup

3-Node public/private network with AUDIX

The D-channel signaling feature expands the domain of DCS networks by supporting configurations that include public network ISDN facilities utilizing network services including Software Defined Network (SDN). By eliminating the need for dedicated private line facilities, this feature allows geographically dispersed DCS networks to be cost effective. Figure 12-3 shows a 3-node network.

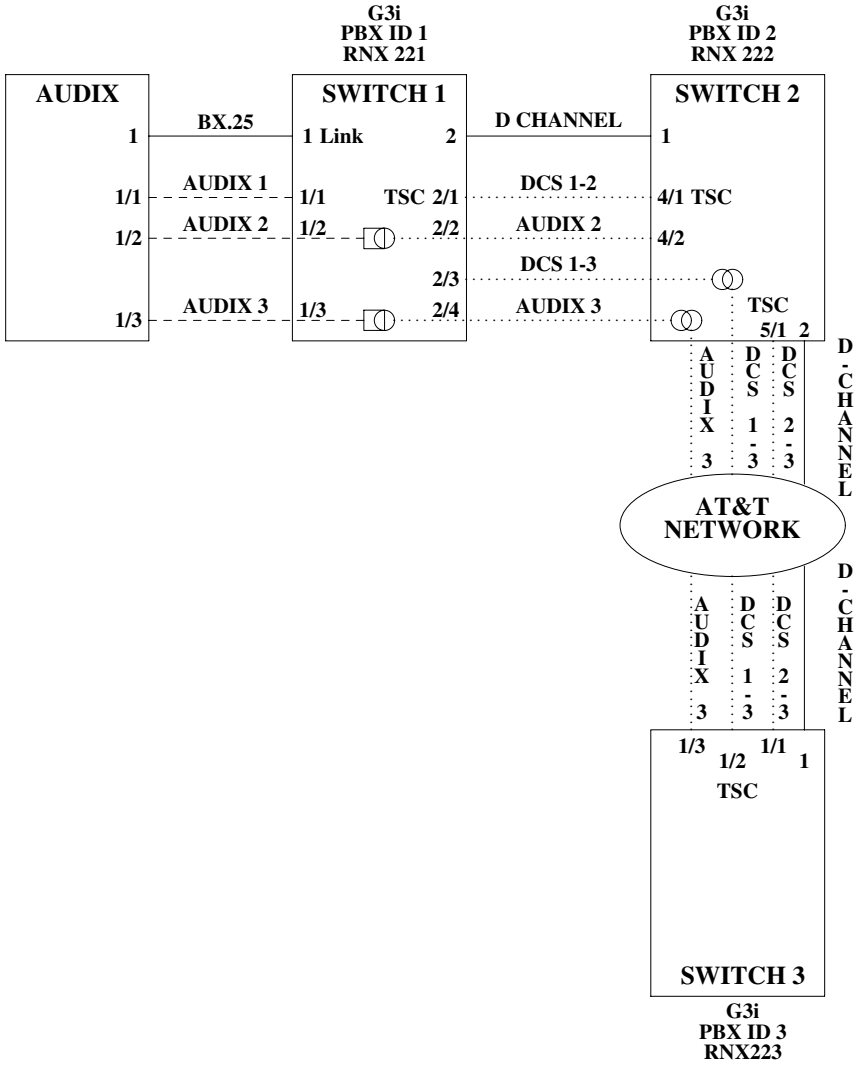


Figure 12-3. 3-Node public/private network

The following tables show you how you would complete each of the necessary forms.

AUDIX administration

- AUDIX Translations form

Switch Number	AUDIX Port	Switch Port[1]	Logical Channel	Data Link
1	1	59	1	1
2	2	57	2	1
3	3	58	3	1

1. Switch Port refers to the processor channel that is used for AUDIX in the PBX.

Administration for switch 1

- Dial Plan form

Start Dig.	Len	Usage
4	4	ext
5	4	ext
6	4	ext

- Uniform Dial Plan form

Ext Code	Type	Location Code
5xxx	UDPcode	222
6xxx	UDPcode	223

- AAR Digit Conversion form

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
221	7	7	3	-	ext	n

- AAR Analysis Table

Dialed String	Min	Max	Rte Pat	Call Type	Node Num
222	7	7	2	aar	2
223	7	7	3	aar	3

- Signaling Group form (signaling group 2)

TSC Index	Local Ext.	Enabled	Establish	Dest. Ext.	Far-end PBX-ID	Appl
1	4900	y	permanent	5900	2	dcs
2	4901	y	permanent	5901	-	gateway
3	4902	y	permanent	6902	3	dcs
4	4903	y	permanent	6903	-	gateway

- Trunk Group form

Group #	Grp Type	Used for DCS?	DCS Sig. Method	PBX ID
2	isdn-pri	y	d-chan	2
3	isdn-pri	y	d-chan	3

- Routing Pattern form

Routing Pattern #	Trunk Group #	FRL	Del	TSC	CA-TSC Request
2	2	0	3	y	at-setup
3	3	0	3	y	at-setup

- Gateway Channel form

Signaling Group	TSC Index	Processor Channel	Application
2	2	60	audix
2	4	61	audix

- Processor Channel form

Proc Channel	Application	Inter. Link	Channel	Remote Proc. Channel	PBX ID
59	audix	1	1	1	1
57	gateway	1	2	2	-
58	gateway	1	3	3	-

Administration for switch 2

- Dial Plan form

Start Dig.	Len	Usage
4	4	ext
5	4	ext
6	4	ext

- Uniform Dial Plan form

Ext Code	Type	Location Code
4xxx	UDPcode	221
6xxx	UDPcode	223

- AAR Digit Conversion form

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
222	7	7	3	-	ext	n

- AAR Analysis Table

Dialed String	Min	Max	Rte Pat	Call Type	Node Num
221	7	7	1	aar	1
223	7	7	3	aar	3

- Signaling Group form

  Signaling group 4

TSC	Local	Enabled	Establish	Dest.	Far-end	Appl.
Index	Ext.			Ext.	PBX-ID	
1	5900	y	permanent	4900	1	dcs
2	5901	y	permanent	4901	-	audix

  Signaling group 5

TSC	Local	Enabled	Establish	Dest.	Far-end	Appl.
Index	Ext.			Ext.	PBX-ID	
1	5905	y	permanent	6905	3	dcs

- Trunk Group form

Group #	Grp Type	Used for DCS?	DCS Sig. Method	PBX ID	NCA-TSC Sig. Group[1]
1	isdn-pri	y	d-chan	1	-
3	isdn-pri	y	d-chan		5

1. This field is only used for tandeming.

- Routing Pattern form

Routing Pattern #	Trunk Group #	FRL	Del	TSC	CA-TSC Request
1	1	0	3	y	at-setup
3	3	0	3	y	at-setup

Administration for switch 3

- Dial Plan form

Start Dig.	Len	Usage
4	4	ext
5	4	ext
6	4	ext

- Uniform Dial Plan form

Ext Code	Type	Location Code
4xxx	UDPcode	221
5xxx	UDPcode	222

- AAR Digit Conversion form

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
223	7	7	3	-	ext	n

- AAR Analysis Table

Dialed String	Min	Max	Rte Pat	Call Type	Node Num
221	7	7	1	aar	1
222	7	7	2	aar	2

- Signaling Group form (signaling group 4)

TSC Index	Local Ext.	Enabled	Establish	Dest. Ext.	Far-end PBX-ID	Appl.
1	6905	y	permanent	5905	2	dcs
2	6902	y	permanent	4902	1	dcs
3	6903	y	permanent	4903	-	audix

- Trunk Group form

Group #	Grp Type	Used for DCS?	DCS Sig. Method	PBX ID
1	isdn-pri	y	d-chan	

- Routing Pattern form

Routing Pattern #	Trunk Group #	FRL	Del	TSC	CA-TSC Request
1	1	0	3[1]	y	at-setup

1. Should be blank if SDN network routing requires 7 digits.

Interactions

See the specific DCS features for interactions with each DCS feature.

DCS Alphanumeric Display for Terminals

DCS Alphanumeric Display for Terminals allows calls to or from alphanumeric-display terminals to have transparency for call-related data.

The transparency allows calling-name display, called-name display, and miscellaneous identifiers to be transferred from a terminal on one node to a terminal on another node.

The following DCS configurations provide transparency of alphanumeric displays.

- Networks of 2 or more DEFINITY ECS
- Networks of 2 or more DEFINITY switches: (Generic 1 or Generic 3i) with a System 75 Version 3 or later, Generic 2, System 85 Release 2 Version 2 or later, or a Generic 2.1 as an intermediate node
- A DEFINITY system Generic 1 connected to a System 85 Release 2 Version 2 or later, or a Generic 2 or later.

How to administer DCS Alphanumeric Display for Terminals

Required forms

Form	Field	Page
Trunk Group - Tie (DCS TG)	Outgoing Display	7-264

DCS Attendant Control of Trunk Group Access

DCS Attendant Control of Trunk Group Access allows an attendant at any node in the DCS to control an outgoing trunk group at an adjacent node in the cluster.

To use this feature, you must have a DCS Trunk Group between the local and remote switches, and the trunks in that trunk group cannot insert digits on incoming calls. If you need digit insertion on these trunks, it should be added on the outgoing trunk based on the dialed string.

NOTE:
DCS Attendant Control of Trunk Group Access is not available if you are using D-channel DCS.

How to administer DCS Attendant Control of Trunk Group Access

Required forms

Form	Field	Page
Attendant Console	■ Feature Button Assignments	5-35
	— act-tr-grp	
	— deact-tr-g	
	— remote-tgs	

DCS Attendant Direct Trunk Group Selection

DCS Attendant Direct Trunk Group Selection allows attendants at one node to have direct access to an idle outgoing trunk at a different node in the DCS. This feature functions the same as regular Direct Trunk Group Selection, except attendants can access trunk groups at remote nodes.

NOTE:
DCS Attendant Direct Trunk Group Selection is not available if you are using D-channel DCS.

To use this feature, you must have a DCS Trunk Group between the local and remote switches, and the trunks in that trunk group cannot insert digits on incoming calls. If you need digit insertion on these trunks, it should be added on the outgoing trunk based on the dialed digits.

You can assign a Trunk Hundreds Select button to access a trunk group at the local node or a trunk group at a remote node. A Trunk Group Select button assigned to access a remote node is referred to as a remote Trunk Hundreds Select button. Pressing a remote Trunk Group Select button is the same as dialing the tie trunk group access code for the remote node and the trunk access code of the selected trunk.

Each attendant console has 12 Trunk Hundreds Select buttons for Attendant Direct Trunk Group selection. Each button allows the attendant to directly access an outgoing trunk group by pressing the button assigned to that trunk group. Each button's Busy lamp lights when all trunks in its associated trunk group are busy. On a basic console, 6 of these buttons have 2 additional lamps for Attendant Control of Trunk Group Access. On an enhanced console, all 12 buttons have the additional lamps. The two additional lamps are:

- Warn (warning) lamp

  Lights when a preset number of trunks are busy in the associated trunk group.

- Cont (control) lamp

  Lights when the attendant activates Attendant Control of Trunk Group Access for the associated trunk group.

Users can activate attendant control of a remote trunk group in the DCS network by pressing the Cont button followed by the desired Remote Trunk Hundreds Select button. The initiating node sends a message to the remote node where the trunk group to be controlled resides to indicate that control of that trunk group was initiated.

When the remote node receives the activation message from the initiating node, it has 4 seconds to reply back to the initiating node whether control of

the remote trunk group can be activated. If control of the remote trunk group can be activated, a confirmation message is sent to the initiating node and the Cont lamp lights at the remote node. An error message is sent to the attendant at the initiating node if the trunk access code is invalid or if the trunk group is already controlled. An error message is also sent if the remote node is a System 85 or Enhanced DIMENSION PBX and the attendant does not have a Trunk Hundreds Select button with Cont lamp for that trunk group.

When a trunk group is controlled in a DCS environment, calls to the trunk group by anyone other than an attendant route to the local attendant at the node where the trunk group resides. If that node does not have an attendant, the call routes to a CAS main attendant or an attendant for Inter-PBX Attendant Calls. However, if CAS or Inter-PBX Attendant Calls is not provided, the party attempting to call on the controlled trunk receives intercept tone.

How to administer DCS Attendant Direct Trunk Group Selection

Required forms

Form	Field	Page
Attendant Console	■ Direct Trunk Group Select Button Assignments — remote-tgs	5-35

DCS Attendant Display

The DCS Attendant Display provides transparency for displaying call-related information.

Calls to and from DEFINITY ECS in a DCS environment have calling-party ID and called-party ID transparency when:

- The other party is at another Generic 1, Generic 3, or System 75, and the intermediate node is a Generic 1, Generic 2, Generic 3, System 75 Version 3 or later, or a System 85 Release 2 Version 2 or later.
- The other party is at a System 85 Release 2 Version 2 or later, or a DEFINITY system Generic 2 or later.
- The call is not routed through an intermediate System 85 Release 2 Version 1 or Enhanced DIMENSION PBX node. (These calls display only the extension of the calling party or called party.)

How to administer DCS Attendant Display

Required forms

Form	Field	Page
Attendant Console	■ Display Module Button Assignments	5-35
	■ Display Language	

You administer DCS Attendant Display the same as you do Attendant Display. See "Attendant Display" on page 4-74 for more information.

DCS Automatic Callback

DCS Automatic Callback allows a user at one node to make an automatic callback call to a user at another node in the DCS.

A DCS Automatic Callback call can be initiated from a terminal at one node to a terminal at another node in the same way as if at a local node under the following conditions.

- If the called party is at a System 85, Generic 2, or Enhanced DIMENSION PBX node, the callback call can only be activated if the called node is returning busy tone or special audible ringback.
- If the called party is at a Generic 3, Generic 1 or System 75 node, the callback call can be activated if the called node is returning busy tone, Call Waiting ringback tone, or ringback tone.
- The calling party must disconnect within 6 seconds after hearing the confirmation tone for Automatic Callback activation.

Automatic Callback uses the following rules when the callback call is made to a user at another node:

- When the calling party answers the callback call, and no tie trunk to the called-party's node is available, Automatic Callback is reactivated toward the called party. The calling party hears confirmation tone instead of ringback when this occurs.
- If the calling party is on a System 85, Generic 2, or Enhanced DIMENSION PBX node and is unable to receive the callback call (for example, a busy single-line voice terminal without Call Waiting), Automatic Callback is reactivated by the calling party's node. If the calling party is on a Generic 3, Generic 1, or System 75 node and is unable to receive the callback call, the callback call is canceled.
- If the called party is unable to receive the callback call because they are busy again (for example, the called party goes on hook and then off hook immediately to place another call), the calling party hears busy tone again and can choose to reactivate Auto Callback, if desired.

How to administer DCS Automatic Callback

Required forms

Form	Field	Page
Feature-Related System Parameters	■ Automatic Callback — No Answer Timeout Interval	5-123
Feature Access Code (FAC)	■ Automatic Callback Activation ■ Automatic Callback Deactivation	5-113
Station (multiappearance)	■ Button/Feature Button Assignments — auto-cback	6-14
Class of Service	■ Automatic Callback (0–15)	5-81

You administer DCS Automatic Callback the same as you do Automatic Callback. See "Automatic Callback" on page 4-100 for more information.

DCS Automatic Circuit Assurance

DCS Automatic Circuit Assurance (ACA) allows a voice-terminal user or attendant at a node to activate and deactivate ACA referral calls for the entire DCS network. This transparency allows the referral calls to originate at a node other than the node that detects the problem.

If referral calls are generated at a node for one or more remote nodes, the remote nodes are notified when ACA referral is activated or deactivated. If referral calls are generated at a remote node for a DEFINITY ECS node, the DEFINITY ECS node is notified when ACA referral is activated or deactivated at the remote node. The lamp associated with the ACA button lights when ACA referral is activated and goes dark when ACA referral is deactivated. The ACA button serves no other purpose when a remote node generates the DEFINITY ECS referral calls.

How to administer DCS ACA

Required forms

Form	Field	Page
Feature-Related System Parameters	■ ACA Referral Calls	5-123
Attendant Console	■ Feature Button Assignments — aca halt	5-35
Station (multiappearance)	■ Button/Feature Button Assignments — aca halt	6-14
Trunk Group (Tie)	■ ACA Assignment ■ Long Holding Time ■ Short Holding Time ■ Short Holding Threshold	7-264

DCS Busy Verification of Terminals and Trunks

DCS Busy Verification of Terminals and Trunks allows attendants and multiappearance voice-terminal users to make test calls to voice terminals and trunk groups that are located at other nodes in the DCS.

To use this feature, you must have a DCS Trunk Group between the local and remote switches, and the trunks in that trunk group cannot insert digits on incoming calls. If you need digit insertion on these trunks, it should be added on the outgoing trunk based on the dialed digits.

Attendants and voice-terminal users can busy-verify voice terminals at a remote location by pressing Verify and dialing the UDP extension. Verification continues as if the voice terminal is on the same node.

Multiappearance voice terminal users can busy-verify an adjunct at a remote location by pressing Verify and dialing the TAC of the tie trunk group to the remote node. Then they must press Verify a second time and dial the desired TAC and the trunk group member number to be verified. Verification of the trunk then continues as if the trunk is on the same node.

How to administer DCS Busy Verification of Terminals and Trunks

Required forms

Form	Field	Page
Attendant Console	Feature Button Assignments — verify	5-35
Station (multi-appearance)	Button/Feature Button Assignments — verify	6-14

You administer DCS Busy Verification of Terminals and Trunks the same as you do Busy Verification of Terminals and Trunks. See "Busy Verification of Terminals and Trunks" on page 4-130 for more information.

DCS Call Coverage

DCS Call Coverage provides DCS messaging required for calls to be covered on remote systems when there is a DCS signaling link (BX.25 or ISDN-PRI) for the trunk groups. Calls to an extension on one system are covered by extensions on remote systems that are administered as coverage points.

How to administer DCS Call Coverage

Required forms

Form	Field	Page
All forms required for DCS	All	12-11
All forms required for Call Coverage	All	4-146

To administer DCS Call Coverage, you must have DCS software and UDP or PNA software. DCS Call Coverage must be enabled on all systems having principals or coverage points and on all intervening systems.

Detailed description of DCS Call Coverage

DCS Call Coverage is similar to Call Coverage, with the following exceptions:

- Coverage Answer Groups across nodes are not supported.
- Under some conditions, a call follows the coverage point's coverage path. (See "Operation Under Error Conditions" on page 12-40 for more information.)
- Under some conditions, Consult does not work properly. (See "Operation Under Error Conditions" on page 12-40 for more information.)
- Displays differ in some cases. (See "How to administer DCS Alphanumeric Display for Terminals" on page 12-27 for more details.)
- DCS Call Coverage does not support Coverage Call Back from a remote node.
- DCS Call Coverage supports Consult.

NOTE:
In releases prior to DEFINITY ECS and G3V4, DCS Call Coverage was limited to coverage of a single point and that point had to be an AUDIX, AUDIX DEFINITY, or INTUITY.

DCS Call Coverage applications

Without DCS Call Coverage, the following coverage cannot be achieved:

- You spend time in multiple locations and want calls to Station B to be covered first by Station A and then by AUDIX, DEFINITY AUDIX, or INTUITY.
- You move from location A to location B and want calls to Station A to be covered first at Station B, then at AUDIX.
- You are normally located at Station B, but want calls to first be answered by an administrative assistant at Station A, and then by the AUDIX at location B.

See Figure 12-4 for an example of a DCS Call Coverage configuration.

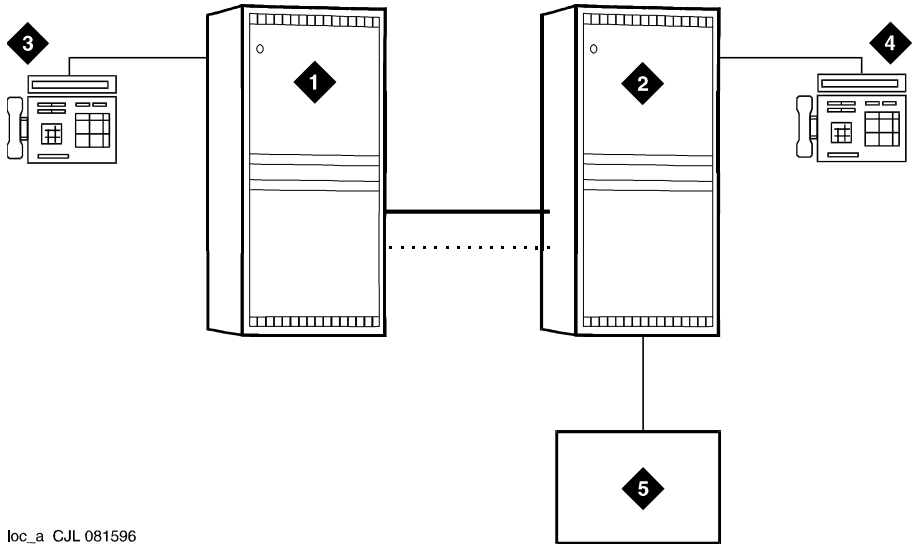


Figure Notes

1. Location A - DEFINITY ECS
2. Location B - DEFINITY ECS
3. Station A
4. Station B
5. AUDIX, DEFINITY AUDIX or INTUITY

Figure 12-4. Configuration for DCS Call Coverage

DCS Call Coverage Operation

DCS Call Coverage allows calls to cover to points other than AUDIX on a remote system. Through DCS messaging, it provides transparency for Call Coverage. Figure 12-5 shows an example of DCS Call Coverage.

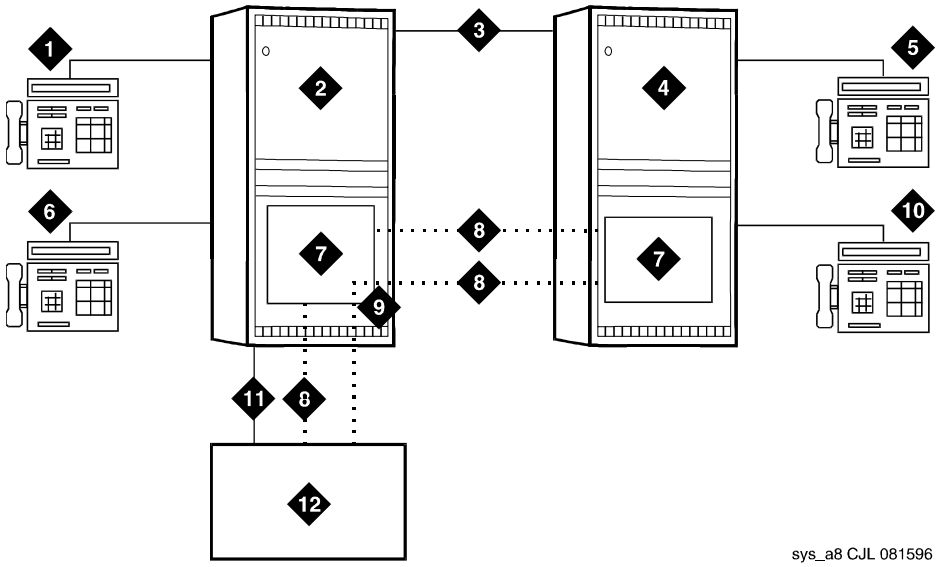


Figure Notes

1. Station A
2. System A - DEFINITY ECS
3. DCS Tie Trunk Groups
4. System B - DEFINITY ECS
5. Station C
6. Station B
7. PGATE or PI Board
8. X.25 or ISDN PRI DCS Signaling Link
9. Hop or ISDN TSC Gateway
10. Station D
11. AUDIX Voice Lines
12. AUDIX - x34000

Figure 12-5. DCS Call Coverage

In Figure 12-5, calls to Station A can be covered first by Station B, then by Station C or D, and finally by the AUDIX on system A. Alternatively, calls could be covered by Station C, then Station B, then Station D, and so on.

If the called party answers after the call goes to coverage and the coverage point has answered, then the called party, calling party, and coverage point are all conferenced together.

If the called party answers and the coverage point has not answered, the call to the coverage point drops and the called party connects to the calling party.

Operation under Normal Conditions

In a normal DCS Call Coverage configuration where the DCS link is up, the DCS trunk group is available, and DCS Call Coverage is active on the local and remote systems, DCS Call Coverage works as follows:

1. A call comes into the principal.
2. The principal does not answer within the administered number of rings or has Send All Calls active.
3. The call is redirected to the first coverage point, which is on the remote system. Also, at this time the DCS distinctive ringing message is sent to the coverage point along with 2 messages conveying the caller's name and the principal's name.
4. The coverage point rings with internal ringing (if the caller is on a DCS node) or with external ringing.
5. The covering station answers and receives the calling party's name and principal's name on the display.

Other DCS Call Coverage situations can occur which deviate from the normal operation, including:

- A call to the principal redirects to the remote coverage point, which is unavailable. The coverage point is considered unavailable when:
  - The coverage point is not a valid extension, QDN, or VDN.
  - The coverage point is busy with no hunting, forwarded, or has send all calls activated, or activates send all calls after ringing.
  - The coverage point has no staffed agents or an invalid vector.

  When the coverage point is unavailable, the local system determines the availability status from a time-out or from a message from the remote system. When the local system discovers that the coverage point is unavailable, it tries the next coverage point. If the last coverage point is unavailable, the previous coverage point rings until it is answered or until the caller hangs up. If only one coverage point exists in the path and it is unavailable, the principal's station rings until it is answered or until the caller hangs up.
- A call to the principal is forwarded and the forwarded-to extension is not available. In this case, the first coverage point in the principal's path is tried. Note that the coverage does not follow the forwarded-to extension's coverage path.
- A call to the principal redirects to the remote coverage point, which answers. Subsequently, the principal goes off hook. In this case, the local system bridges the principal onto the call between the calling

party and coverage point creating a conference among the three. The principal receives the call on the same call appearance as the original call.

- A call to the principal redirects to the remote coverage point. While the remote coverage point is ringing, the principal answers the call. In this case the call is not cut through to the coverage point. Instead, ringing and ringback is removed from the coverage point and the call is cut through to the principal.

Operation Under Error Conditions

Table 12-2 describes the DCS Call Coverage under error conditions.

Table 12-2. Error Conditions

Error Condition	Action
DCS link not up. or DCS trunk is not available. or DCS Call Coverage feature is not activated on the remote system.	The call is routed to the remote coverage point. If the call is answered, it is treated as Call Coverage Off Premises (also called Remote Call Coverage). If the call is redirected at the remote coverage point before the DCS SRI expires, the remote point's path is followed. If the call is not answered within the DCS SRI time-out period, the next coverage point is tried with DCS Call Coverage from the local system.
All trunks to the remote system, DCS or otherwise, are busy	The next coverage point is tried with DCS Call Coverage from the local system.

In addition, when the DCS link is down, call consult operates differently. If Station A calls Station B but the call covers to Station C, then Station C consults back to Station B and Station B receives the consult call on the next call appearance.

DCS Call Forwarding

DCS Call Forwarding allows all calls to an extension to be forwarded to a selected extension in the DCS network or to an external (off-premises) number.

If the Call Forwarding and DCS Call Forwarding are both active, and if a call is forwarded between extensions on the same node, the Call Forwarding coverage path is used. If the nodes are different, the DCS Call Forwarding coverage path is used.

Voice-terminal users in the DCS can activate/deactivate this feature with a dial access code or with a Call Forwarding button.

NOTE:
Calls can be forwarded to a Vector Directory Number (VDN) anywhere in the DCS network. An attendant cannot activate/deactivate Call Forwarding for a VDN.

How to administer DCS Call Forwarding

Required forms

Form	Field	Page
Feature Access Code (FAC)	■ Call Forwarding Activation ■ Call Forwarding Deactivation	5-113
Station	■ Redirect Notification ■ Button/Feature Button Assignments — call-fwd	6-28
Class of Service	■ Call Fwd-All Calls (0-15)	5-81

You administer DCS Call Forwarding the same as you do Call Forwarding. See "Call Forwarding" on page 4-224 for more information.

DCS Call Waiting

DCS Call Waiting allows calls from one node to busy single-line voice terminals at another node to wait until the called party is available to accept the call. With DCS Call Waiting, a single-line voice terminal user, by knowing a call is waiting, can quickly process calls from locations within the DCS. DCS Call Waiting functions the same as normal Call Waiting.

DCS Call Waiting includes the following features:

- Attendant Call Waiting
- Call Waiting — Termination
- Priority Calling

DCS priority calling from the attendant station is *not* available.

How to administer DCS Call Waiting

None

DCS Distinctive Ringing

DCS Distinctive Ringing activates the called-terminal alerting or ringing device to indicate the type of incoming call to the user before they answer it. Distinctive Alerting functions in a DCS environment the same as it does within a single system.

By default, internal calls are identified by a 1-burst ringing pattern, external calls by a 2-burst ringing pattern, and priority calls by a 3-burst ringing pattern. However, you can administer these patterns.

How to administer DCS Distinctive Ringing

None.

DCS Leave Word Calling

DCS Leave Word Calling (LWC) enables users to leave preprogrammed “call me” messages at other terminals within the DCS network. Messages can be left by calling, called, or covering users.

LWC transparency in a DCS configuration allows messages from a DEFINITY switch to another node, depending on the storage capability of the remote node.

How to administer DCS LWC

Required forms

Form	Field	Page
Feature-Related System Parameters	■ Max. Number Of Messages Per Station ■ Stations With System-Wide Message Retrieval Permission	5-123
Feature Access Code (FAC)	■ LWC Message Retrieval Lock ■ LWC Message Retrieval Unlock ■ LWC Send A Message ■ LWC Cancel A Message	5-113
Station	■ LWC Reception ■ LWC Activation ■ Button/Feature/Button Assignments — lwc-store — lwc-cancel — aut-msg-wt (Ext:__) — msg-retr — delete-msg — lwc-lock — next — call-disp — cov-msg-rt	6-28

Continued on next page

Required forms — *Continued*

Form	Field	Page
Attendant Console	Feature Button Assignments — cov-msg-rt — delete-msg — next — lwc-cancel — call-disp — lwc-store — aut-msg-wt (Ext:__)	5-35

You administer DCS LWC the same as you do LWC. See "Leave Word Calling" on page 4-405 for more information.

DCS Multiappearance Conference/ Transfer

DCS Multiappearance Conference/Transfer provides transparency for transferring calls and conferencing calls within a DCS network. A user in the DCS can initiate conference calls among or transfer calls originated from extensions in the DCS network to another extension within the DCS by dialing the UDP extension. (For transferred calls, the destination need not be within the DCS.)

In a DCS, if a party in a conference hangs up or completes a transfer leaving only outgoing trunks on the call, the system attempts to preserve the connection if any of the remaining parties on the call is a DCS tie trunk.

The display transparency is not preserved after a conference of transfer across the DCS network.

How to administer DCS Multiappearance Conference/Transfer

None.

DCS Over ISDN-PRI D-channel

DCS Over ISDN-PRI D-channel (DCS+) enhances DCS by allowing access to the public network for DCS connectivity between DCS switch nodes. With this feature, DCS features are no longer restricted to private facilities.

The ISDN-PRI B-channel is used for voice communications, and the ISDN-PRI D-channel transports DCS control information. The only difference between DCS networks that do not utilize the DCS Over ISDN-PRI and those that do is in the method of signaling. The DCS Over ISDN-PRI D-channel uses Message-Associated User-to-User Information (MA-UUI) and Temporary Signaling Connections (TSC) to transport certain DCS control information. MA-UUI allows additional user-specific information to be transported along with certain ISDN call-control messages.

NOTE:
Use this feature only over DS1/E1 or T1 circuit packs that are administered to Country Protocol Option 1 (even in a private network environment) independent of what country the system is in.

How to administer DCS Over ISDN-PRI D-channel

Required forms

Form	Field	Page
Signaling Group	■ Max number of NCA TSC ■ Max number of CA TSC ■ Trunk Group for NCA TSC ■ Administered NCA TSC Assignment fields ■ Service/Feature ■ Inactivity Time-out (min)	7-106
ISDN TSC Gateway Channel Assignments	■ All	7-98
Trunk Group (ISDN-PRI)	■ Used for DCS Node Number DCS Signaling ■ NCA TSC Signaling Group	7-221

Continued on next page

Required forms — *Continued*

Form	Field	Page
Route Pattern	■ TSC ■ CA TSC Request	8-67
Processor Channel Assignment	■ Application	5-248 or 5-252
Feature-Related System Parameters	■ Record TSCs for CDR	5-123

NOTE:
There are several differences in administration between switches. For example, PRI is translated a little differently in G3r when traditional DCS and this feature are used in combination. On systems with AUDIX in a DCS environment, an additional column has been added to the Signaling Group form so you can specify which AUDIX and switch to use. When traditional DCS and DCS over ISDN are used in combination, translations are also different.

Detailed description

A TSC provides a temporary signaling path through ISDN switches for exchanging supplementary service information on ISDN-PRI D-channels. There is no B-channel related to the connection; no data or voice transmissions take place.

There are two types of temporary signaling connections:

- Call Associated (CA-TSC)
- Non-Call Associated (NCA-TSC)

A CA-TSC refers to a service for exchanging USER INFORMATION messages associated with an ISDN B-channel connection by the call reference value of the call control data packets. On DEFINITY ECS, this type of TSC is used only for DCS features on ISDN-PRI Signaling Groups administered with Supplementary Service Protocol a.

An NCA-TSC is a connection not related with any ISDN B-channel connections. DECINITY ECS supports two types of NCA-TSC that conform to two different protocol standards:

- The AT&T type of NCA-TSC is used for the DCS Over ISDN-PRI D-channel and DCS AUDIX applications. Only ISDN-PRI Signaling Groups administered with Supplementary Service Protocol a support AT&T NCA-TSCs.
- The QSIG type of NCA-TSC is used for certain QSIG features such as Call Completion (Automatic Call Back). This type of NCA-TSC is referred to in the QSIG protocol standards as a Call-Independent Signaling Connection (CISC). Only ISDN-PRI Signaling Groups administered with Supplementary Service Protocol b support QSIG NCA-TSCs.

For further information, see "QSIG NCA-TSC" on page 12-80.

AT&T NCA-TSC

An AT&T NCA-TSC is an administered virtual connection established for exchanging USER INFORMATION messages on the ISDN D-channel. Once an AT&T NCA-TSC has been administered and enabled, it is active for an extended period of time. There are two types of administered NCA-TSCs depending on their setup mechanism:

- Permanent (can be established by Near-end or Far-end)
- As-needed

Once enabled, a permanent NCA-TSC remains established while the system is running. If the permanent NCA-TSC drops for any reason, the system attempts to reestablish the connection. An as-needed administered NCA-TSC is established based on user request and the availability of TSC facilities. The connection drops after an administered period of inactivity.

The system can transport DCS or DCS AUDIX messages over an ISDN-PRI D-channel and over BX.25 data links when functioning as a gateway between a switch equipped with DCS Over ISDN-PRI D-channel and a switch equipped with traditional DCS using BX.25 data links. In this situation, the messages travel from the gateway through the NCA-TSCs or CA-TSCs to TSC-capable switches and from the gateway to switches that support only traditional DCS via a BX.25 logical channel.

At least one switch must be configured as an ISDN DCS Gateway node in a DCS network that consists of switches that support DCS Over ISDN-PRI D-channel and PBXs that do not support the feature. Switches directly connected to AUDIX serve as Gateway nodes.

DCS with Rerouting

Distributed Communications System (DCS) with Rerouting allows a call's connection between two DEFINITY systems to be replaced by a new connection. All of the trunks used in the original path must be DCS and the new path utilizes only DCS trunks. DCS with Rerouting provides the following capabilities:

- Attempts to obtain a better (generally less expensive) connection.
- May replace the current path of a call with a route that is better in terms of Automatic Alternate Routing/Automatic Route Selection (AAR/ARS) routing preferences administered on a DEFINITY ECS.
- Frees up resources being used unnecessarily.

How to administer DCS with Rerouting

Required forms

Form	Field	Page
Trunk Group		
ISDN-PRI	All	7-221

Detailed description

DCS with Rerouting primarily provides you with the ability to attempt to be more effective with the usage of Trunk groups administered for Supplementary Services Protocol Option E (SSE) during the existence of an active call. This means using a more preferred route (in terms of UDP/AAR/ARS routing preferences administered on the PBX) between the PBXs involved.

Your users invoke DCS with Rerouting by Call Transfer, Transfer out of Audix, and dial 0 out of Audix. DCS with Rerouting must be enabled on a switch-wide basis and the trunk groups involved must be administered as SSE.

Considerations

- DCS with Rerouting could fail.
- Depending upon administration of routing patterns, the new route could be worse than the original.

Interactions

- When interworking with non-ISDN trunks or non-Supplementary Service Option E ISDN trunks, DEFINITY acts as a gateway in the following sense:
  - When a call is tandeming through a DEFINITY system from a non-ISDN trunk to an SSE trunk or from a non-Option E to an SSE trunk, the system acts as an incoming gateway.
  - When a call is tandeming through a DEFINITY system from an SSE trunk to a non-ISDN trunk or from an SSE trunk to a non-Option E trunk, the system acts as an outgoing gateway.

    As an example, when calls come in from the public network to the DCS network and then are transferred to another extension within the private network, DEFINITY functions as an incoming gateway and rerouting occurs.
- If a conference call is transferred, rerouting will not occur.
- Trunks or endpoints measured by the Call Management System (CMS) will not have rerouting take place.
- Trunks or endpoints that are involved with vectoring or announcements will not have rerouting take place.

DCS Trunk Group Busy/Warning Indication

DCS Trunk Group Busy/Warning Indication provides attendants with a visual indication that the number of busy trunks in a remote group reached an administered level. A visual indication is also provided when all trunks in a trunk group are busy.

NOTE:
DCS Trunk Group Busy/Warning Indication is not available if you are using DCS over ISDN-PRI.

To use this feature, you must have a DCS Trunk Group between the local and remote switches, and the trunks in that trunk group cannot insert digits on incoming calls. If you need digit insertion on these trunks, it should be added on the outgoing trunk based on the dialed digits.

You can administer DCS Trunk Group Busy/Warning Indication only for remote trunk groups that are directly connected to the local switch. Trunk group access codes for these trunk groups must be 3 digits or less.

If an attendant has a Trunk Hundreds Select button assigned to a remote trunk group, the button's Busy lamp lights when all trunks in the trunk group are busy. If an attendant has a 3-lamp Trunk Hundreds Select button assigned to a remote trunk group, the button's Warn lamp lights when the number of busy trunks in the trunk group reaches the Busy Warning Threshold.

To ensure that the busy, warning, and control status of all Trunk Hundreds Select buttons in the DCS remain consistent with the status of the corresponding trunk groups, some nodes in the DCS broadcast the status of a different local trunk group, every 50 seconds, to all directly connected nodes. (A pair of DCS nodes are directly-connected if the voice tie trunks between them are not connected through another switch). For example, a node with 30 trunk groups would take 1,500 (50 x 30) seconds to broadcast the status of all 30 trunk groups. This is called a lamp audit. When a node receives a lamp audit message, its TGB/TGW lamps update accordingly.

How to administer DCS Trunk Group Busy/Warning Indication

Required forms

Form	Field	Page
Attendant Console	■ Direct Trunk Group Select Button Assignments — (1–6) for 301A Basic or — (1–12) for the 302A Enhanced Attendant Console	5-35
Trunk Groups (All)	■ Busy Threshold	7-115

Emergency (911) Calls

The Enhanced 911 (E911) systems installed in many jurisdictions in the U.S. are equipped so that by dialing a service code (911 in the U.S.) a victim of a fire, accident, crime, or medical emergency may quickly access a public safety agency that will dispatch the appropriate response. The public E911 system maintains a database that stores location and background information to aid public safety agencies in responding quickly with the appropriate assistance. Information about the calling party can be triggered by the transmission of a Caller's Emergency Service Identification (CESID) number over Centralized Automatic Message Accounting (CAMA) trunks when the call originates from behind a PBX. 911 calls from a station on a PBX not equipped with CAMA trunks (or an adjunct computer system associated with CAMA trunks) will not provide the E911 system with the information required to identify the location of the person placing the call. Instead, the E911 system will only be able to identify the location of the trunk termination at the PBX.

This feature allows transmission of identifying information in the form of the CESID over CAMA trunks as to the extension number of a DID station associated with the calling party. The calling party may be at or near a station on a remote port network, or may be at a remote location served by an off-premises station.

How to administer Emergency (911) Calls

Required forms

Form	Field	Page
ARS Digit Analysis Table	■ All	8-55
CAMA Numbering Format	■ All	5-61
Class of Restriction	■ Calling Party Restriction	5-72
Feature Access Code	■ ARS Access Code1 ■ ARS Access Code2	5-113
Route Pattern	■ All	8-67
Trunk Group (CAMA)	■ All	7-161

Interactions

None.

Enhanced DCS

Enhanced DCS (EDCS) adds features to the existing DCS capabilities.EDCS is used primarily in Italy. EDCS adds the following features:

- Exchanging information to provide class of restriction (COR) checking between switches in the EDCS network
- Providing call-progress information for the attendant
- Allowing attendant intrusion between a main and a satellite
- Allowing a main PBX to provide DID/CO intercept treatment rather than the satellite PBX.

NOTE:
EDCS is not compatible with DCS Over/Under ISDN-PRI. If used with ISDN-PRI, configure the switch as a DCS node. Also, DCS-ISDN display enhancements are not currently available in EDCS.

How to administer Enhanced DCS

Required forms

Form	Field	Page
Feature-Related System Parameters	■ Enhanced DCS Enabled? ■ Apply Intercept Locally? ■ Enforce PNT-to-PNT Restrictions?	5-123

DCS feature considerations

- The DS1 Circuit Pack form must be completed if DS1 tie trunks are used for DCS signaling.
- The Synchronization Plan form must be completed if DS1 tie trunks are used for DCS signaling. You assign a secondary circuit pack that the system can use if the primary circuit pack fails.
- If you call an attendant on another switch in the DCS network, your display shows the attendant's name, but does not show the attendant's extension, instead you see a zero where the extension should be.

DCS Alphanumeric Display considerations

- Calls to and from a DEFINITY ECS in a DCS network have Calling/Called Name Display transparency under the following conditions:
  - The other party is at another DEFINITY ECS or a DEFINITY Generic 3 and the tandem node is a System 75 Version 3 or later, DEFINITY Generic 1, DEFINITY Generic 3, System 85 Release 2 Version 2 or later, or a DEFINITY Generic 2.1.
  - The call is not routed through a tandem System 85 Release 2 Version 1 or Enhanced DIMENSION PBX node. (Such calls display only the extension number of the calling or called party.)
- On outgoing DCS calls, display of the called name may be delayed for a few seconds until the required information arrives from the distant node. The called name display only works between DEFINITY ECS, DEFINITY Generic 1 and Generic 3 Systems, and System 75s.
- Within the same DEFINITY ECS, DEFINITY Generic 1 or Generic 3 nodes in a DCS, complete transparency of Calling and Called Name Display exists.

DCS Attendant Control of Trunk Group Access considerations

- This feature is not available for trunk groups with 4-digit trunk access codes or for trunk members 100 through 999.
- There must be direct DCS tie trunk connections between the initiating node and the remote node where the trunk group to be controlled originates. Otherwise, control of remote trunk groups is denied.
- If the remote node (where the trunk group to be controlled resides) is a System 75, Generic 1, or Generic 3, it is not necessary for that node to have an attendant console with corresponding three-lamp Trunk Hundreds Select button. However, if the remote node is a System 85, Generic 2.1, or Enhanced DIMENSION PBX, control of the trunk group is not allowed unless an attendant at that node has a corresponding three-lamp Trunk Group Select button.

- The attendant must use the Remote Trunk Hundreds Select button to directly access the controlled remote trunk group. If an attendant controls a remote trunk group, and that attendant dials the trunk access codes of the DCS tie trunk and the controlled remote trunk group, the call is routed to the attendant at the node where the trunk group resides.
- If Attendant Control of Trunk Group Access is activated, and no attendant is assigned, or the attendant is later removed, calls to a controlled trunk group route to the attendant queue.

DCS Attendant Direct Trunk Group Selection considerations

- This feature is not available for trunk groups with 4-digit trunk access codes or for trunk members 100 through 999.
- There must be a direct DCS tie trunk connection between the initializing node and the remote node where the trunk group to be accessed originates. Otherwise, access to the remote trunk group is denied.

DCS Attendant Display considerations

- CORs for a DEFINITY switch may not correspond to those used by an Enhanced DIMENSION PBX, System 85, or DEFINITY system Generic 2.1. Therefore, if the DCS network contains nodes other than Generic 1 or Generic 3, the display CORs may be misinterpreted. If it is important that certain CORs between various systems correspond with each other, those CORs should be administered accordingly.
- On outgoing calls, the display of called party information may be delayed a few seconds until the required information arrives from the remote node. The called party information is displayed only if both nodes are Generic 1 or System 75.
- DCS tie trunks between nodes must be administered with the Outgoing Display enabled. This enables the called party's name to be displayed at the calling attendant's display.

DCS Automatic Callback considerations

- An Automatic Callback request is canceled automatically if the called party does not become available within 40 minutes, or if the calling party does not hang up within six seconds after activating Automatic Callback.
- DCS Automatic Callback does not work on the last trunk between nodes. Thus, if *n* trunks are provided, there can be up to *n - 1* Automatic Callback calls.

DCS Busy Verification of Terminals and Trunks considerations

- This feature is not available for trunk groups with 4-digit trunk access codes or for trunk members 100 through 999.

DCS Call Coverage considerations

- The following software is required for DCS Call Coverage.
  - — DCS software
  - — UDP or PNA software
  - — DCS Call Coverage must be enabled on all systems having principals or coverage points and on all intervening systems.

DCS Call Forwarding considerations

- With DCS Call Forwarding, voice terminal users can have their calls follow them to any location within the DCS network or outside the DCS network.
- Calls to an attendant cannot be forwarded. However, an attendant can activate or deactivate the feature for other extension numbers within the DCS.

DCS Distinctive Ringing considerations

- When DCS transparency is lost for any reason, terminal-to-terminal calls made between nodes produce external ringing instead of the usual internal ringing. Loss of transparency may occur when the data link between nodes is down or when data transmission delay exceeds the trunk signaling time.

DCS LWC considerations

- LWC cannot be successfully activated toward any system that is not capable of storing the messages, either internally or in an associated adjunct.
- Messages from one node, through an intermediate node, to a remote node do not require storage capability at the intermediate node.
- LWC transparency is supported for all DCS configurations except for cases when either the activating node or the remote node is either an ENHANCED DIMENSION PBX or a System 85 R2V1.
- Retrieval of LWC messages is permitted only from a terminal at the node where the messages are stored.
- DCS LWC cannot be activated from an attendant console.

DCS Multiappearance Conference/Transfer considerations

- DCS Multi-Appearance Conference/Transfer is useful when it is necessary to talk to more than one party at one time within a DCS. Multiappearance voice terminals must have an idle appearance in order to transfer a call.

DCS Over ISDN-PRI D-channel considerations

- Users should not notice any difference between DCS features over ISDN-PRI and traditional DCS features.
- The gateway node serves as the terminating node to the D-channel DCS network as well as the terminating node to the traditional DCS network.

  A PBX serving as an ISDN DCS Gateway node introduces some interesting situations when administering processor channels in an associated traditional DCS PBX. In a traditional DCS network, (BX.25 processor channel links) `Remote Port` in the "Processor Channel Assignments" form refers to the processor channel of the destination PBX. In an Integrated DCS network, `Remote Proc Chan` in the "Processor Channel Assignments" form refers to the processor channel of the Gateway PBX (if the destination PBX is an ISDN DCS PBX), *not* the destination PBX.

  On the contrary, `Machine-ID` in the "Processor Channel Assignments" form refers to the destination PBX, either an ISDN DCS PBX or a traditional DCS PBX. The Gateway PBX number must not be used in this field if the destination PBX is an ISDN DCS PBX.

DCS Trunk Group Busy/Warning Indication considerations

- This feature is not available for trunk groups with 4-digit trunk access codes or for trunk members 100 through 999.
- Trunk Group Busy and Trunk Group Warning Indication is particularly useful with the Attendant Control of Trunk Group Access feature. The indicators alert the attendant when control of access to local and remote trunk groups is necessary.
- Except for remote S75 R1V3, S85/G2 and S75 R1V2 switches, this feature is only transparent if the remote switch is directly connected by voice tie trunks. For S75 R1V3 and S85/G2 remote switches, Trunk Group Busy and Trunk Group Warning Indication is provided regardless of whether the voice tie trunks are directly-connected or in tandem through an intermediate node; For S75 R1V2 remote switches, no Trunk Group Busy and Trunk Group Warning Indication transparency is provided.

Enhanced DCS considerations

- If the DCS link fails, the administrator can choose to allow calls to continue without class of restriction checking or to block all DCS calls to inward-restricted stations.
- Enhanced DCS is not available with DCS over an ISDN-PRI D-channel. When EDCS is used, all nodes in the DCS network must use EDCS.
- The DCS Transfer display enhancements and DCS Conference display enhancements do not apply when EDCS is enabled.

DCS Interactions

DCS Alphanumeric Display interactions

The following features allow transparency with respect to Calling or Called Name Display and miscellaneous ID.

- Automatic Callback

  Complete display transparency.

- Call Coverage

  At the calling terminal, the miscellaneous id “cover” is not displayed.

- Call Forwarding

  When a system user calls a party on a different node in the DCS and the call is forwarded, the miscellaneous ID “forward” is not displayed. At the covering (forwarded-to) user’s terminal, only the calling party’s name is shown; the called party’s name is not displayed.

- Call Park

  When a DCS call between a local system user and a user on another node is parked by the remote user, the miscellaneous ID “park” is not displayed at the local terminal.

- Call Pickup

  When a DCS call from a system user to another node is answered by way of Call Pickup, the miscellaneous ID “cover” is not displayed at the caller’s terminal.

- Call Waiting

  When a DCS call from a system user to another node is waiting at the called terminal, the miscellaneous ID “wait” is not displayed at the caller’s terminal.

- CAS

  When a user dials the extension for CAS, a RLT is seized or the caller is queued for an RLT. The caller’s terminal displays the trunk group identifier, such as OPERATOR.

- Conference

  When two DCS and/or ISDN-PRI calls (or any possible combination of each) are conferenced and revert to a two-party call, the trunk group of the remaining call is displayed.

- DDC/UCD

  Complete display transparency.

- Internal Terminal-to-Terminal Calling

  Complete display transparency.

- ISDN-PRI

  If both DCS and ISDN-PRI features are provided with a system, the ISDN-PRI display information displays in DCS format.

DCS Attendant Control of Trunk Group Access interactions

- DCS Attendant Display

  When a user attempts to access a controlled trunk group and is routed to the local attendant, the display shows the reason the call was redirected. If the call is routed via CAS or the Inter-PBX Attendant Calls feature, the display does not show the reason the call was redirected.

- UDP

  DCS tie trunks should not be attendant controlled. This would result in all UDP calls on the controlled tie trunk being routed to the controlling attendant instead of to the desired destination.

DCS Attendant Display interactions

- When both ISDN and DCS display information, or only DCS display information, is received, the switch displays the DCS display information in the DCS format. If ISDN display information is received, and no DCS display information is received, then the ISDN display information displays in the ISDN formats.

DCS Automatic Callback interactions

- Attendant Control of Trunk Group Access and DCS Attendant Control of Trunk Group Access

  Automatic Callback cannot be activated if the call uses a controlled trunk group.

- Call Forwarding and DCS Call Forwarding

  Automatic Callback calls cannot be activated on a voice terminal at a DEFINITY switch or System 75 node that has Call Forwarding activated.

- Vector Directory Number

  Automatic callback calls do not apply for VDNs.

DCS Automatic Circuit Assurance interactions

- None.

DCS Busy Verification interactions

- If the Trunk Identification by Attendant feature is used during busy verification of a trunk (Trunk ID button is pressed), the trunk access code and trunk group member number of the DCS tie trunk being used is displayed.

- DCS Busy Verification of Terminals and Trunks transparency is lost if the routing pattern is administered to not delete the RNX and the AAR prefix is inserted on the terminating switch trunk group. The voice terminal display at the terminating switch displays only **a=station name**. `Extension` is left blank.

DCS Call Coverage interactions

DCS Call Coverage has the same interactions as Call Coverage plus the following additional interactions.

- Call Coverage Off Premises

  If the coverage point is a non-UDP number in the remote call coverage table, Call Coverage Off Premises is applied to the call rather than DCS Call Coverage, even if a DCS link exists to the remote system.

- Coverage Answer Groups

  DCS Call Coverage to Coverage Answer Groups on remote systems are not supported by DCS Call Coverage. Coverage answer groups cannot be administered on a system other than the principal's system.

- Coverage Call Back

  DCS Call Coverage does not support Coverage Call Back from a remote node. This is because the coverage point's system has no way of knowing whether the caller can respond to Leave Word Calling. For example, the coverage point's system does not know whether the calling party is a trunk or a station.

- Displays

  The displays on the DCS Call Coverage point's terminal may be different than those associated with the Call Coverage feature in the following situations:

  — When the call from the calling party to the principal or the redirected call to the coverage point travel over ISDN-PRI trunk groups.

  — When the calling party is on a System 85 or Generic 2.

  — When the DCS name message is not received by the remote (coverage point's) system.

- Go to Cover

  Go to Cover is not supported over DCS and therefore is not supported with DCS Call Coverage.

- Leave Word Calling Back to Principal

  With DCS Call Coverage, a covering user on a different node cannot press their LWC button to leave a message for the principal to call the covering user.

- Queuing

  DCS Call Coverage interacts with queuing in the following way. If a call is queued to a coverage point, such as a queue to a hunt group or an ACD split, and the queue is not full, the call remains in the queue without subsequent redirection until answered or until the caller hangs up.

DCS Call Forwarding interactions

- If the forwarding extension and the designated extension are at different nodes, and the designated extension's coverage criteria are met on a forwarded call, the call is redirected to a point in the designated extension's coverage path.
- If the forwarding extension and the designated extension are at different nodes, LWC and Coverage Callback cannot be activated at the designated extension for a forwarded call.
- There is a 30-second interval during which calls forwarded from the DEFINITY switch to another DCS node is denied. This prevents forwarded incoming trunk calls from being forwarded ad infinitum between two extensions.

DCS Call Waiting interactions

- DCS Call Waiting is denied when the following features are activated at the single-line voice terminal:
  - — Automatic Callback (to or from the voice terminal)
  - — Data Privacy
  - — Data Restriction
- On incoming trunk calls to the attendant extended over DCS trunks, Attendant Call Waiting interacts with the EDCS feature.

DCS Distinctive Ringing interactions

- Distinctive Ringing

  Distinctive Ringing treats a call from another switch in a DCS arrangement as external; DCS Distinctive Ringing treats such calls as internal. If both features are administered, DCS Distinctive Ringing takes precedence. If EDCS is activated, DID treatment may be different. See "Enhanced DCS" on page 12-55.

- Tie Trunk Access

  On DEFINITY ECS, tie trunk groups can be administered as either internal or external tie trunk groups. Calls from internal tie trunk groups are treated as terminal-originated calls and receive one-burst ringing. Calls from external tie trunk groups are treated as externally originated calls and receive two-burst ringing.

- The following distinctive ringing features cannot be provided between nodes in a DCS:
  - — Intercom — Automatic
  - — Intercom — Dial
  - — Manual Signaling

DCS LWC interactions

- DCS Multi-appearance Conference/Transfer

  Activation of LWC is denied after a DCS call has been conferenced or transferred.

- DCS Call Forwarding

  If the forwarding extension and the designated extension are at different nodes, LWC cannot be activated at the designated extension for a forwarded call.

DCS Multiappearance Conference/Transfer interactions

- Voice Terminal Display

  No display transparency is provided for DCS Multi-Appearance Conference/Transfer.

- EDCS

  On calls to or from Public Network Trunks, calling/called party restrictions are checked when EDCS is active.

DCS Over ISDN-PRI D-channel interactions

- ASAI

  For incoming calls on DCS over ISDN-PRI, ASAI applications receive the ISDN-PRI Calling Party Information, not the DCS Calling Party Information.

- Attendant DXS with Busy Lamp Field

  An attempt by the attendant to directly select an extension that has been previously administered as belonging to a administered NCA-TSC results in intercept tone being received.

- CDR

  CDR records both the status and the utilization of TSCs. Both CA-TSCs and NCA-TSCs can be recorded. For more information, consult the CDR description in this manual or the CDR manual.

- D-channel Backup

  In the event of a D-channel switchover (primary to secondary or secondary back to primary) in a private network, administered NCA-TSCs that were active are assumed to have remained active. Any

unacknowledged user-user service requests are assumed to be rejected, and administered NCA-TSCs which were in the process of being established at the time of the switchover are dropped when the switchover occurs. Those administered NCA-TSCs that were dropped are reattempted again.

If a D-channel switchover occurs on a D-channel going to the public network then all TSCs are dropped. A maintenance-provided "heartbeat" message periodically is sent over each permanent administered NCA-TSC to ensure that such a situation is detected and recovered from.

- Distributed Communications System AUDIX (DCS AUDIX)

  The DCS over ISDN-PRI D-channel feature can be used to support DCS AUDIX. (The connection between G3si and AUDIX should be BX.25.)

- GRS

  GRS selects TSC compatible facilities when routing NCA-TSCs. In other words, a NCA-TSC request can only select a routing preference that supports TSCs.

  In a tandem node, GRS first selects facilities that support TSCs if the call falls into any one of the following two conditions:

  — It requests a CA-TSC explicitly

  — It contains a DCS information element in the SETUP message

  Once a trunk group with available members is selected, the call proceeds even if all the TSCs belonging to the associated signaling group are active. In other words, the completion of a call is given priority over DCS transparency.

- ISDN-PRI

  This feature uses ISDN-PRI call control protocol and messages.

- SDN

  The DCS over ISDN-PRI D-channel feature allows the system to access public networks such as SDN. SDN supports all DCS features except for the following:

  — DCS Attendant Control of Trunk Group Access

  — DCS Attendant Direct Trunk Group Selection

  — DCS Busy Verification of Terminals and Trunks

- Voice Terminals

  An attempt to dial an extension that has been previously administered as belonging to an administered NCA-TSC results in intercept tone being received.

DCS Trunk Group Busy/Warning Indication interactions

- Loudspeaker Paging Access

  If Trunk Hundreds Select buttons are assigned for Loudspeaker Paging Access zones, Trunk Group Busy Indicators provide a visual indication of the busy or idle status of the zones at the remote location as well as at the local node.

Enhanced DCS interactions

- Class of Restriction

  When a call goes to coverage, it is the called party's (not the covering party's) restrictions that are used.

Extended Trunk Access

Use Extended Trunk Access (ETA) in conjunction with Uniform Dial Plan (UDP) to allow DEFINITY ECS to send any unrecognized number (such as an extension not administered locally) to another switch for analysis and routing. Such unrecognized numbers can be Facility Access Codes, Trunk Access Codes, or extensions that are not in the UDP table. Non-UDP numbers are administered on either the First Digit Table (on the Dial Plan Record form) or the Second Digit Table. They also are not administered on the ETA Call Screening Table. ETA helps you make full use of automatic routing and UDP.

How to administer ETA

Required forms

Form	Field	Page
Dial Plan Record (First Digit and Second Digit Tables)	■ ETA Routing Pattern ■ ETA Node Number	5-99
ETA Call Screening Table	■ Call Screening Entry	12-113

⚠ CAUTION:

Switches can be chained together using ETA. However, you must ensure that switches do not route in a circular ETA call setup. Switch A can route to switch B, and switch B can route to switch C. But, if switch A routes to switch B and switch B routes to switch A, you create a circular ETA call setup.

Detailed description

Historically, ETA has been used by satellite switches to access stations, trunks, and features at the main switch. ETA frees you from having to enumerate the entire dial plan for the main or satellite complex. Calls that would get intercept treatment without ETA are routed to a remote switch to be reprocessed. The following processing takes place when ETA is administered:

- ETA call is identified because it fails all other routing possibilities.
- The dialed string is not in the ETA Call Screening Table.
- An available route pattern is selected based on the Dial Plan form ETA Routing Pattern or ETA Node Number entries.
- The dialed string is sent to the remote switch.

Examples of ETA administration

CASE #1

- ETA Route Pattern — Not administered
- ETA Node Number — Not administered

In this case, ETA is not active. It is not used to route undefined dialed strings.

CASE #2

- ETA Route Pattern — Administered
- ETA Node Number — Not administered

In this case, the ETA Route Pattern routes undefined dialed strings. However, since an ETA Node Number is not specified, non-call-related DCS messages are not routed.

CASE #3

- ETA Route Pattern — Not administered
- ETA Node Number — Administered

In this case, the ETA Node Number provides the route pattern. Non-call-related DCS messages also can route since a node number is supplied.

CASE #4

- ETA Route Pattern — Administered
- ETA Node Number — Administered

In this case, the ETA Route Pattern routes undefined dialed strings while the ETA Node Number routes DCS messages. Nodes themselves do not have to be administered for ETA. ETA should not be used over tandem-tie trunks.

Interactions

- Abbreviated Dialing

  Abbreviated Dialing calls are routed via ETA.

- Attendant

  Attendants calls are routed via ETA.

- Data-Call Setup

  Analog and digital endpoints can access ETA. The digit string goes to the remote switch like any other digit string is sent. The remote switch handles the data-call setup from that point forward.

- Facility Restriction Levels

  It is possible to restrict trunks that are being used in conjunction with ETA by assigning FRLs.

- Last Number Dialed

  If a number is routed via ETA to a remote switch and you want to reaccess that number, then reaccess uses ETA.

- Modem Pooling

  Modems in Modem Pools are treated like all other trunks.

- Remote Access

  Remote-access trunks are able to access the ETA feature just as any other trunk or station does.

Extension Number Portability

Extension Number Portability (ENP) gives you the ability to assign any extension to any switch in an ENP subnetwork. Stations can be moved across switches while retaining the original extension number, as long as the switches are part of the ENP subnetwork. EPN is used in conjunction with Automatic Alternate Routing (AAR) and Uniform Dial Plan (UDP).

How to administer ENP

Required forms

Form	Field	Page
AAR and ARS Digit Conversion Table	■ All	8-63
Extension Number Portability Numbering Plan	■ All	12-115
Node Number Routing	■ All	12-119
Uniform Dialing Plan	■ Ext Code	12-121

- AAR Digit Conversion form — Assign all 3-digit ENP codes as home, and if using a 5-digit UDP, associate the ENP codes with the leading, or 10 thousands, digit (that is, the fifth digit of the extension). For example, for extension number 73446, “7” is the 10 thousands digit.
- ENP Numbering Plan form — Associate the leading one or two digits of extensions in the ENP subnetwork with a 3-digit ENP code, used to construct a 7-digit AAR-like ENP number.
- Node Number Routing form — Associate a route pattern with each node in the ENP subnetwork.
- Uniform Dialing Plan form — Enter the number of digits in the plan (4 or 5) and the Extension Codes for non-home extensions in the ENP subnetwork as ENPNode (node number routed).

Detailed description

The ENP Numbering Plan allows you to set 4- or 5-digit extensions in the ENP subnetwork to a 7-digit AAR-like number that is sent to other nodes in the network. Only the first 1 or 2 leading digits of the extension are significant.

ENP Codes are distinguished from AAR location codes because ENP Codes are home on every node within the ENP subnetwork, and ENP Codes are administered in the ENP Numbering Plan table as well as in the AAR Analysis table. Since ENP Codes are home on every node, they cannot be used as AAR location codes.

UDP extensions are converted to ENP numbers if node number routing is specified for the extensions in88

the UDP table.

NOTE:
One ENP code is required for a 4-digit ENP subnetwork. A 5-digit UDP requires one ENP code for each leading digit of extensions used within the ENP subnetwork.

DCS message signaling links are not required to support ENP. As a result, many multiple switch configurations are possible with ENP. Typically the ENP network will be a subnetwork of a UDP or Electronic Tandem Network (ETN).

Interactions

- Distributed Communications System

  If you use DCS, the ENP node numbers must correspond to DCS node numbers.

Inter-PBX Attendant Service

Inter-PBX Attendant Service (IAS) allows attendants for multiple branches to be concentrated at a main location. Incoming trunk calls to the branch, as well as attendant-seeking voice-terminal calls, route over tie trunks to the main location.

How to administer Inter-PBX Attendant Service

Required forms

Form	Field	Page
Tie Trunk Group (Main)	■ Incoming Destination	7-264
Console Parameters (Branch)	■ IAS (Branch) ■ IAS Tie Trunk Group No. ■ IAS Att. Access Code	5-86
Tie trunk group (Branch)	■ All	7-264

Detailed description

Inter-PBX Attendant Service calls are incoming tie-trunk calls from a branch location to the main-location attendant group. If no attendant in the group is immediately available, the calls are queued. When an attendant becomes available, the call routes to that attendant. Extended calls are treated as incoming calls to the main location.

DEFINITY ECS can be a branch or main location. Users at each branch can access other branch locations through the main location. A branch can have local attendants. You access these local attendants using Individual Attendant Access.

Interactions

- Attendant Control of Trunk-Group Access

  If a call at a branch attempts to access a controlled trunk group, the call routes to a branch attendant, if there is one. If there is no branch attendant, the call routes to the attendant group at the main location.

- Attendant Display and DCS Attendant Display

  In a DCS environment, an incoming call from a branch displays at the attendant console at the main location as a local call.

  In a non-DCS environment, an incoming call displays at the attendant console at the main location as an incoming tie-trunk call.

- Attendant Recall

  If an attendant at the main location holds a call, the calling parties at the branch cannot recall the attendant.

- Call Coverage

  A call redirected to a coverage path with the attendant group as a coverage point skips that coverage point. It goes to the next coverage point at the branch, if administered, or continues to ring at the previous coverage point. If the attendant group 0 is the only coverage point, it continues to ring at the principal's extension.

- Centralized Attendant Service

  CAS and Inter-PBX attendant calling cannot be used at the same time.

- Dial Access to Attendant

  Administer Dial Access to Attendant via the dial platform to the same digit on both the IAS main switch and the IAS branch switch. On the branch switch, administer the PBX attendant access code (Console Parameters form) to match the main PBX attendant-group dial access code.

- Electronic Tandem Network

  Inter-PBX Attendant Calls can be used within an ETN. The attendant group for the network can be located at the main switch and serve other tandem switches connected by tie trunks.

- Night Service

  Inter-PBX Attendant Calls deactivates when a branch goes into night service, and reactivates when the branch comes out of night service.

Node Number Routing

Use Node Number Routing (NNR) to specify the route pattern associated with each node in a private network. NNR is a required capability for Extension Number Portability (ENP) and is used in conjunction with Automatic Route Selection (ARS), AAR and ARS Partitioning, Private Networking, and Uniform Dial Plan (UDP). UDP extensions can be routed to a specified node using its associated pattern. NNR allows a UDP route pattern based on node numbers or on location codes. On the AAR and ARS Digit Analysis Tables, you also can specify a Node Number instead of a Route Pattern.

How to administer NNR

Required forms

Form	Field	Page
Node Number Routing	■ All	12-119

Interactions

None.

Private Network Access

Use Private Network Access to allow calls to other switching systems in a private network. These calls do not use the public network. They are routed over customer-dedicated facilities.

How to administer Private Network Access

Required forms

Form	Field	Page
Trunk Groups	■ All	
Access		7-150
APLT		7-156
ISDN-BRI		7-199
ISDN-PRI		7-221
Tandem		7-259
Class of Restriction	■ Advanced Private Line Termination	5-72
Feature Access Code (FAC)	■ Automatic Alternate Routing Access Code	5-113
AAR and ARS Digit Analysis Table	■ All	8-54
AAR and ARS Digit Conversion Table	■ All	8-63
Node Number Routing	■ All	12-119
Station	■ COR	6-28

- Trunk Group Forms — Set `Group Type` to **access**, **aplt**, **tandem**, **tie**, or **isdn** and `Service Type` to **access**, **tie**, or **tandem**. Complete COR digit treatment and common type fields for tie trunk groups associated with a private network.

Detailed description

Private networks can include:

- Common-control switching arrangement (CCSA)
- Distributed Communications Systems (DCS) and Enhanced DCS (EDCS)
- Electronic tandem network (ETN)
- Enhanced private-switched communications service (EPSCS)
- Tandem-tie-trunk network (TTTN)

- Italian Traslatore Giunzione Uscente/Entrante/Interno (TGU/TGE/TGI) trunks

Unless prohibited by the COR, all incoming private network trunks, except CCSA, can access outgoing trunks without attendant or terminal-user assistance. All incoming CCSA calls must route to an attendant or a terminal user.

When off-network calling is part of the CCSA and EPSCS, long-distance calls route as far as possible over these networks before terminating on the public network. Thus, charges for toll calls are reduced. The COR you administer to individual system users determines whether access to this capability is allowed or denied.

In Italy, TGU/TGE/TGI trunks provide private network access between 2 switching systems. They also provide some feature transparency for COR (Inward Restriction), DID (when reaching busy stations), and Intrusion.

Interactions

- Attendant Call Waiting

  Call Waiting is provided via Italian TGU/TGE (main and satellite) trunks. Call Waiting also is provided in Italy and all other countries through DCS.

- Attendant Intrusion

  Attendant Intrusion is provided on satellite switches via TGU/TGE trunks. Attendant Intrusion also is provided through DCS.

QSIG

QSIG provides compliance to the International Organization for Standardization (ISO) Integrated Services Digital Network private-networking specifications. QSIG is defined by ISO as the worldwide standard for private networks.

QSIG is the generic name for a family of signaling protocols. The Q-reference point or interface is the logical point where signaling is passed between two peer entities in a private network. QSIG signaling provides feature transparency in a single-vendor or multi-vendor environment.

QSIG provides call-related supplementary services. These are services that provide features in addition to voice or data connectivity and number transport and display. Examples of supplementary services include Name Identification, Call Forwarding (Diversion), and Call Transfer.

DEFINITY ECS provides three levels of QSIG functionality:

- Basic Call Setup — Supports basic call setup and number transport
- Basic Supplementary Services — Supports Name Identification Services, Call Forwarding (Diversion), and Call Transfer
- Supplementary Services with Rerouting — Supports Call Forwarding (Diversion) with Reroute (using Path Replacement) and Call Transfer with Reroute (using Path Replacement)

How to administer QSIG

DEFINITY ECS supports QSIG over both ISDN-PRI trunks (using the DS1 circuit pack) and ISDN-BRI trunks (using the ISDN-BRI trunk circuit pack).

Required forms for Basic Call Setup

Form	Field	Page
DS1 Circuit Pack (for ISDN-PRI only)	■ Connect ■ Interface ■ Peer Protocol ■ Signaling Mode	7-79
ISDN-BRI Circuit Pack	■ All	5-186
ISDN-BRI Trunk Group	■ Group Type	7-199
ISDN-PRI Trunk Group	■ Group Type	7-221
System Parameters Customer-Options	■ ISDN ■ Basic Call Setup	5-277

- DS1 Circuit Pack form — Set `Connect` to **pbx**, `Interface` to **peer-master** or **peer-slave**, `Peer Protocol` to **q-sig**, and `Signaling Mode` to **isdn-pri** or **isdn-ext**, as required.

Required forms for Basic Supplementary Services

Form	Field	Page
System Parameters Customer-Options	■ ISDN ■ Basic Supplementary Services	5-277
ISDN-BRI Trunk Group	■ Group Type ■ Supplementary Service Protocol	7-199
ISDN-PRI Trunk Group	■ Group Type ■ Supplementary Service Protocol	7-221

Supplementary Services

Required forms for Supplementary Services with Rerouting

Form	Field	Page
System Parameters Customer-Options	■ ISDN ■ Basic Supplementary Services ■ Supplementary Services with Rerouting	5-277
ISDN-BRI Trunk Group	■ Group Type ■ Supplementary Service Protocol	7-199
ISDN-PRI Trunk Group	■ Group Type ■ Supplementary Service Protocol	7-221
ISDN Numbering - Private	■ All	7-93

- DEFINITY ECS provides QSIG in addition to some national public network protocols and the European Telecommunications Standards Institute (ETSI) protocols for supplementary services. *The protocols are mutually exclusive*. On the Trunk Group form, set the `Group Type` to **isdn** and one of the following `Supplementary Service`

`Protocols`. For a more complete list of options, see Supplementary Service Protocol on page 7-208 for ISDN-BRI trunks and page 7-233 for ISDN-PRI trunks.

b ISO/ETSI QSIG Private Network

d European Computer Manufacturer's Association (ECMA) QSIG private network (supports only Name Identification and Additional Network Feature Transit Counter (ANF-TC))

Additional Network Features

DEFINITY ECS also includes QSIG Additional Network Feature (ANF) capability. ANFs are used for networking; they operate behind the scene. You are not always aware that DEFINITY ECS is using them. They provide services in addition to the basic call. DEFINITY ECS includes the following ANFs: Transit Counter (ANF-TC) and Path Replacement (ANF-PR). Path Replacement is a mechanism used for routing.

Detailed description

QSIG signaling protocols are based on ITU-T (formerly CCITT) Q.931 access protocols across the Q-reference point. QSIG standards are also supported by the ISDN Private Networking Specification (IPNS) Forum. DEFINITY ECS QSIG complies with a number of international regulations. For example, QSIG:

- Complies with ISO standard 11572 for layer 3 to support private-network connectivity.
- Meets requirements for the ISO Private Network Generic Functional Procedures (ISO standard 11582) for call-related supplementary services.
- Supports call-related supplementary service transport, Abstract Syntax Notation 1 (ASN.1)/Basic Encoding Rules (BER), and Remote Operation Service Element (ROSE) services/protocols.
- Provides the Name and Number Identification supplementary service as defined by ISO Standards 13864, 13868, and 11572.
- Provides Call Forwarding (Diversion) as defined by ISO Standards 13872 and 13873.
- Provides Call Transfer as defined by ISO Standards 13865 and 13869.

A Temporary Signaling Connection (TSC) provides a temporary signaling path through ISDN switches for exchanging supplementary service information on ISDN-PRI D-channels. There is no B-channel related to the connection; no data or voice transmissions take place.

There are two types of temporary signaling connections:

- Call Associated (CA-TSC)

- Non-Call Associated (NCA-TSC)

A CA-TSC refers to a service for exchanging USER INFORMATION messages associated with an ISDN B-channel connection by the call reference value of the call control data packets. On DEFINITY ECS, this type of TSC is used only for DCS features on ISDN-PRI Signaling Groups administered with Supplementary Service Protocol a.

An NCA-TSC is a connection not related with any ISDN B-channel connections. DECINITY ECS supports two types of NCA-TSC that conform to two different protocol standards:

- The AT&T type of NCA-TSC is used for the DCS over ISDN-PRI D-channel and DCS AUDIX applications. Only ISDN-PRI Signaling Groups administered with Supplementary Service Protocol a support AT&T NCA-TSCs. For further information, see "AT&T NCA-TSC" on page 12-49.
- The QSIG type of NCA-TSC is used for certain QSIG features such as Call Completion (Automatic Call Back). This type of NCA-TSC is referred to in the QSIG protocol standards as a Call-Independent Signaling Connection (CISC). Only ISDN-PRI Signaling Groups administered with Supplementary Service Protocol b support QSIG NCA-TSCs.

QSIG NCA-TSC

Used to exchange Facility Information Elements in call control messages, FACILITY messages, or a combination of both. NCA-TSC is not administered ahead of time, but is invoked dynamically by the QSIG feature that needs it. Some QSIG features remove the NCA-TSC when it is no longer needed; others leave the NCA-TSC active for a longer period of time.

DEFINITY ECS does not provide gateway functionality between a QSIG NCA-TSC and an AT&T NCA-TSC. For example, although a call can be routed from a DCS network into a QSIG network, it is not possible for the caller in this case to invoke an automatic callback.

Called Name

Enables the calling party to see the name of the called party while the call is ringing at the called party's terminal. Called Name is similar to the display provided for local on-switch calls, as well as for the DCS calls, with the following exceptions:

- Names longer than 15 characters are truncated; only the first 15 characters display.
- The number never displays.

Busy Name

Enables the calling party to see the name of the called party while listening to a busy tone because the called party's terminal was busy. Busy Name is similar to the display provided for local on-switch calls, as well as for DCS calls, with the exceptions noted for Called Name.

QSIG Path Retention

Path Retention is a generic mechanism that can be used by supplementary services during call establishment.

The Originating PBX invokes path retention for one supplementary service or for several simultaneous supplementary services. Invocating a particular supplementary service means retaining the network connection if the Terminating PBX encounters the appropriate conditions. The Originating PBX is informed of the reason for retaining the connection. It then decides (for example, by consulting the calling user) whether to invoke the supplementary service. Under some circumstances in which the network connection is retained, more than one of the supplementary services for which path retention has been invoked may be applicable.

Successive retentions of the network connection by the Terminating PBX following a single path-retention invocation by the Originating PBX are possible. This is a result of different conditions being encountered at the Terminating PBX. When an attempt is made to invoke a supplementary service for which the network connection has been retained, a further condition can be encountered that can cause the network connection to be retained again for the same or a different supplementary service.

Path retention is specified in terms of a Path Retention entity existing within the Coordination Function at the Originating PBX and at the Terminating PBX.

QSIG Call Forwarding (Diversion)

QSIG Call Forwarding (Diversion) is based on the DEFINITY ECS Call Forwarding feature. It extends the feature transparency aspects of Call Forwarding over a QSIG trunk.

- If QSIG Call Forwarding Unconditional is activate, all calls are diverted immediately.
- If QSIG Call Forwarding with busy/don't answer is activate and a station is busy, a call is diverted immediately.
- If QSIG Call Forwarding with busy/don't answer is activate and a station is idle but the call is not answered, a call is diverted after a specified number of rings.

These features are activated either by dialing a feature access code or by pressing a button. See "Call Forwarding" on page 4-224 for detailed descriptions of how to use these features.

ANF-PR applies to all QSIG Call Forwarding features. A forwarded call can be rerouted in a private network to find a more cost-effective or resource-efficient path.

QSIG Call Forwarding (Diversion) provides additional call information to both the caller and the diverted-to station above what is provided if the call is forwarded over a trunk that is not administered for QSIG Supplementary Service Protocol b. The caller sees "forward" on the display when a call is forwarded. The diverted-to user receives information that the call has been forwarded with the redirection symbol "f." Depending upon QSIG Name and Number Identification Services administration, the originator can see the connected party's name or number followed by "forward." The diverted-to user can see the originator's identification (name or number) and the diverting user's (called party) identification (name or number) followed by "f."

When a call has already been forwarded 3 times over a QSIG trunk, it is not forwarded again but instead terminates at the final forwarded-to terminal. Remote activation and deactivation of this feature are not supported.

Because QSIG Call Forwarding (Diversion) is compatible with the ISO QSIG standards, DEFINITY ECS provides feature transparency for Call Forwarding with any switch that follows these standards.

If an incoming QSIG call is forwarded to another extension, the Called Name sent in ALERTING or DISCONNECT is the name of the forwarding extension. If the original Called Name is not available, the Redirecting Name is available, the Redirecting Name is sent instead. This applies to Call Forward All Calls and Call Forward Busy/Don't Answer.

How to administer QSIG Call Forwarding (Diversion)

Required forms

Form	Field	Page
System Parameters Customer-Options	■ QSIG Basic Supplementary Services (for Call Forwarding without rerouting) ■ QSIG Supplementary Services with Rerouting (for Call Forwarding with rerouting) ■ Restrict Call Forward Off Net	5-277
Class of Service	■ Restrict Call Forward Off Net	5-81
ISDN-BRI Trunk Group	■ Group Type ■ Supplementary Service Protocol ■ Disconnect Supervision	7-199
ISDN-PRI Trunk Group	■ Group Type ■ Supplementary Service Protocol ■ Disconnect Supervision	7-221

NOTE:
The QSIG b and d protocols are not allowed with DCS.

QSIG Call Transfer

QSIG Call Transfer is based on the current DEFINITY ECS Transfer and Trunk-to-Trunk Transfer features. QSIG Transfer signaling occurs as long as one of the calls involves a QSIG trunk between the two switches.

Once a call is transferred, the transferring switch is unnecessary. Additional Network Feature-Path Replacement (ANF-PR) is invoked automatically to connect the transferred call more efficiently in the private network. QSIG Call Transfer attempts to connect the two parties more efficiently and drops the unnecessary switches.

When you use this feature, you see no difference between QSIG Call Transfer and the standard DEFINITY ECS Transfer or Trunk-to-Trunk Transfer features. See the basic features: "Transfer" on page 4-597 and "Transfer — Outgoing Trunk to Outgoing Trunk" on page 4-599.

QSIG Call Transfer differs from standard DEFINITY ECS Transfer in that additional call information is available for the connected parties after the transfer completes.

Depending upon QSIG Identification Services administration, the connected parties' displays show each other's name and/or number. If the name and number are not available, the display of a connected party updates with the name of the involved trunk group.

How to administer QSIG Call Transfer

Required forms

Form	Field	Page
System Parameters Customer-Options	■ QSIG Basic Supplementary Services (for Call Transfer without rerouting) ■ QSIG Supplementary Services with Rerouting (for Call Transfer with rerouting)	5-277
Feature-Related System Parameters	■ Trunk-to-Trunk Transfer	5-123
ISDN-BRI trunk group	■ Group Type ■ Supplementary Service Protocol ■ Disconnect Supervision	7-199
ISDN-PRI trunk group	■ Group Type ■ Supplementary Service Protocol ■ Disconnect Supervision	7-221

NOTE:
Unless QSIG Name and Number Identification is also administered, name and number information do not display when a call is transferred. Also, DCS does not allow the QSIG b and d protocols.

QSIG Name and Number Identification

QSIG Name and Number Identification allows a switch to send and receive the calling number, calling name, connected number, and connected name. Additional parameters that control the display of the connected name and number are administered on the Feature-Related System-Parameters form.

You can administer “yes”, “no”, or “restricted.” Restricted means that DEFINITY ECS sends the information but sends it “presentation restricted,” which indicates to the receiving switch that the information should not be displayed. A received restricted name or number is included on the Call Detail Record (CDR). Due to current networking limitations, a received Restricted Calling Party Number displays. However, a received Restricted Connected Party Number or Calling/Connected Name is *not* displayed.

QSIG Name and Number Identification displays up to 15 characters for the calling and connected name and up to 15 digits for the calling and connected number across ISDN interfaces.

Transit switch information

When DEFINITY ECS acts as a transit switch, the QSIG standards require it to pass on all supplementary service information that is not addressed to it. This includes name information. (A “transit” switch is a switch that routes an incoming call administered for Supplementary Services Protocol Bto a trunk also administered for Supplementary Services Protocol B.) However, Basic Call Setup and number information is subject to modification by the transit switch. This means that trunk group administration on a transit switch does not override incoming name information, but may override incoming number information (as long as this does not lower the restriction on the information).

Example. If a non-restricted calling name and number are received by a DEFINITY ECS acting as a transit switch, and if the outgoing trunk is administered for presentation restricted for both name and number, the number is passed on as “restricted” and name is passed on as “unrestricted.”

Tandem switch information

However, in the case of tandemed calls (calls involving two ISDN trunks that are not both administered for Supplementary Service Protocol B), trunk group administration may override both incoming name and number information, as long as doing so does not lower the restriction on the information. For example, a tandemed call that comes in with restricted name information is sent out with restricted name information even if the outgoing trunk is administered for presentation unrestricted. However, non-restricted data is sent restricted if the trunk group administration is set for “presentation restricted.”

ISDN numbering formats

The ability to send calling name, connected number, and calling number, or to restrict their display, is administered on the ISDN Trunk Group form. The ISDN system parameters are administered on the Feature-Related System-Parameters form. Numbering is specified on the ISDN Public-Unknown-Numbering and/or ISDN Private-Numbering forms. The numbering form you use depends on how you administer the ISDN trunk group Numbering Format field.

- On the ISDN trunk group form, if you set `Numbering Format` to one of the public or unknown numbering formats, use the ISDN Public-Unknown-Numbering form.
- On the ISDN trunk group form, if you set `Numbering Format` to one of the private numbering formats, use the ISDN Private-Numbering form.

  However, there is an exception. If the Called Party Number is formatted with the public numbering format, the Calling/Connected Party Number is created in the public format even if “private” is specified on the ISDN trunk group form. This provides the caller or called party a number that can be used to reach the other party. Since the call routes through the public network, the public Calling/Connected Party Number is a more accurate address.

Called/Busy Name Display

A QSIG Called Name or Busy Name displays on the calling party’s display as soon as the ALERTING or DISCONNECT message has been received. The display format matches exactly the format used to display a QSIG Connected Name. If the name received in ALERTING or DISCONNECT is longer than 15 characters, the leftmost 15 characters display.

If a CONNECT message is received while a QSIG Called Name displays, and if the CONNECT contains a Connected Name and/or Number, DEFINITY ECS updates the calling station display with the connected information. If no Connected Name or Number is received, the displays continues to show the Called Name (and Called Number, if applicable).

How to administer QSIG Name and Number Identification

Required forms

Form	Field	Page
System Parameters Customer-Options	■ QSIG Basic Call Setup (for Calling Number) ■ QSIG Basic Supplementary Services (for Calling Name)	5-277
DS1 Circuit Pack	■ All	7-79
Hunt Group	■ Group Name ■ Ext ■ Member Name ■ ISDN Caller Disp	5-158
ISDN Numbering — Public/Unknown	■ All	7-95
ISDN Numbering — Private	■ All	7-93
Station	Name	6-28
Terminating Extension Group	■ Group Name ■ Ext ■ ISDN Caller Disp	5-295

Continued on next page

Required forms — *Continued*

Form	Field	Page
ISDN-BRI trunk group	■ Outgoing Display ■ Send Calling Number ■ Send Connected Number Send Name ■ Supplementary Service Protocol ■ Numbering Format	7-199
ISDN-PRI trunk group	■ Outgoing Display ■ Send Calling Number ■ Send Connected Number Send Name ■ Supplementary Service Protocol ■ Numbering Format	7-221
Feature-Related System Parameters	■ Trunk-to-Trunk Transfer	5-123

NOTE:
The QSIG b and d protocols are not allowed with DCS.

QSIG Path Replacement (ANF–PR)

DEFINITY ECS provides QSIG Additional Network Feature Path Replacement (ANF-PR) as defined in ISO/IEC 13863 and 13874. With this feature, a call's connections between switches in a private network can be replaced with new connections while the call is active.

ANF-PR is invoked when a call is transferred and improvements may be made in the routes. For example, after a call is transferred, the two parties on the transferred call can be connected directly and the unnecessary trunks are dropped off the call. The routing administered at the endpoints allows for a more efficient route connection. See "QSIG Call Transfer" on page 12-84 for more information.

ANF-PR selects the best route based on the preference assigned to routes in the Route Pattern form. Least cost Supplementary Service B (SSB) routes must be first, followed by more expensive routes.

NOTE:
When routes to SSB trunks are included with routes to non-SSB trunks, SSB trunks must appear first on the Route Pattern form. This is because as soon as ANF-PR encounters a non-SSB trunk in the route pattern, it stops looking.

Class of Restriction (COR) and Facility Restriction Levels (FRL) are adhered to in routing calls. ANF-PR is not invoked on data calls because there is a period of time when information can be lost.

How to administer QSIG Path Replacement

Required forms

Form	Field	Page
System Parameters Customer-Options	■ QSIG Basic Supplementary Services ■ Supplementary Services with Rerouting	5-277
ISDN-BRI trunk group	■ Group Type ■ Supplementary Service Protocol	7-199
ISDN-PRI trunk group	■ Group Type ■ Supplementary Service Protocol	7-221

QSIG Supplementary Service - Call Completion

Use this feature to provide QSIG Supplementary Service - Call Completion (SS-CC).

How to administer QSIG Supplementary Service - Call Completion

Required forms

Form	Field	Page
Signaling Group	■ Supplementary Service Protocol ■ Max Number of NCA TSC	7-106
Route Pattern	■ TSC	8-67
Feature-Related System Parameters	■ QSIG TSC Extension ■ Automatic Callback - No Answer Timeout Interval (rings)	5-123
Feature Access Code	■ Automatic Callback Activation and Deactivation	5-113
Station	■ Button/Feature Button Assignments - Auto-cback	6-28
Class of Service	■ Auto Callback	5-81
System-Parameters Customer-Options	■ ISDN-PRI ■ Basic Supplementary Services ■ Basic Call Setup	5-277
Trunk group	■ Supplementary Service Protocol ■ NCA-TSC Trunk Member	7-199 7-221

For voice terminals, administer the following:

- For the Signaling Group form, set `Supplementary Service Protocol` to **b** and `Max Number of NCA TSC` to greater than 0.
- For the Feature-Related System Parameters form, set `QSIG TSC Extension` to the dedicated number for QSIG calls.
- For the Trunk Group form, set `Supplementary Service Protocol` to **b**.
- For the Route Pattern form, set `TSC` to **y** (only if the PBX is a transit node for QSIG CISC).

For digital voice terminals, you also must use the Station form, and administer for Automatic Callback button.

Detailed description

The Supplementary Service - Completion of Calls to Busy Subscribers (SS-CCBS) and Supplementary Service - Completion of Calls on No Reply (SS-CCNR) are the equivalent QSIG features of Automatic Callback On Busy and Automatic Callback on No Answer, respectively.

SS-CCBS and SS-CCNR allow any QSIG network voice user who placed a call to a busy or unanswered voice terminal over the QSIG network to be called back automatically when the called voice terminal becomes available.

An analog voice terminal user activates SS-CCBS or SS-CCNR by pressing the Recall button or flashing the switchhook and then dialing the Automatic Callback (ACB) Activation feature access code. The type of supplementary service being invoked (CCBS versus CCNR) depends on the busy or unanswered condition of the call. DEFINITY ECS identifies which supplementary service to invoke as a consequence of the ACB activation request. An analog user can activate only one ACB call at any given time.

A multiappearance voice terminal user can activate SS-CCBS or SS-CCNR for the number of ACB buttons assigned to the terminal. After placing a call to a voice terminal over the QSIG network that is busy or not answering, the caller can activate SS-CCBS or SS-CCNR by pressing an idle ACB button. DEFINITY ECS identifies which supplementary service to invoke as a consequence of the ACB activation request.

The requested supplementary service remains activated until the Call Completion performs, or until the Service Duration Timer expires (40 minutes).

When SS-CCBS or SS-CCNR activates towards the busy or not answering station on the terminating PBX, the terminating PBX monitors the called voice terminal. A busy voice terminal becomes available when the user hangs up after completing the current call. An unanswered voice terminal becomes available after being used for another call and then hung up. When the called voice terminal becomes available to receive a call, the terminating PBX notifies the originating PBX to initiate a Call Completion call attempt.

After the called voice terminal at the terminating PBX becomes available and the initiation of the Call Completion call, the calling party at the originating PBX receives a priority ringing callback call. If the calling party lifts the handset, ringing starts at the terminating PBX.

An SS-CCBS or SS-CCNR request cancels at both PBXs for any of the following user-related reasons:

- A successful Call Completion call.

- The called party at the terminating PBX does not become available within 40 minutes.
- The calling party does not answer the priority callback call within the administered interval (2 to 9 ringing cycles).
- The calling party decides not to wait and presses the same ACB button a second time (multiappearance voice terminal) or dials the ACB Cancel feature access code (analog voice terminal).
- The calling party is unable to receive the callback call because it is busy during the attempted priority callback call.
- After the calling party receives the priority callback call, but before alerting the called user at the terminating PBX, the called party becomes busy again.

Interactions

- Adjunct Switch Applications Interface (ASAI)

  ASAI cannot invoke/initiate QSIG-CC.

- Attendant Calling Waiting and Call Waiting Termination

  If you activate QSIG SS-CC to a single line voice terminal, the Attendant Call Waiting and Call Waiting Termination features are denied.

- Attendant Console Group

  You cannot activate QSIG SS-CC toward the attendant console group or towards the individual attendant.

- Attendant Control of Trunk Group Access

  You cannot activate QSIG SS-CC if the call uses a controlled trunk group.

- AUDIX

  You cannot activate QSIG SS-CC towards AUDIX. SS-CC to any transferred-to station is not allowed.

- Automatic Call Distribution (ACD)

  You cannot activate QSIG SS-CC towards a voice terminal after dialing the ACD group extension. It is possible to invoke SS-CC towards a station when dialing the individual's extension number. You can activate SS-CC from any ACD agent.

- Bridged Call Appearance

  You cannot activate QSIG SS-CC from a bridged call appearance. When a call originates from a primary extension number, the return call notification rings at all bridged call appearances.

- Call Coverage

  QSIG SS-CC requests are always activated at the principal user and not coverage points. Similar to ACB, QSIG SS-CC Call Completion calls to the called user can redirect to coverage.

- Call Forwarding

  You cannot activate SS-CCBS or SS-CCNR towards a called station that has Call Forwarding enabled.

- Call Pickup

  On recall at the originating side, a group member cannot answer a QSIG SS-CC call for another group member.

- Call Waiting

  Call Waiting is denied when QSIG SS-CC is activated to the single-line voice terminal.

- Conference and Transfer

  You cannot activate QSIG SS-CC towards a transferred-to party.

- Hold

  A single-line voice terminal cannot receive a QSIG SS-CC call while it has a call on hold.

- Hotline Service

  A hotline service cannot request SS-CC.

- Internal Automatic Answer (IAA)

  If the IAA feature is enabled, QSIG SS-CC calls are not answered automatically.

- Manual Originating Line Service

  A manual originating service cannot request QSIG SS-CC.

- Multimedia Endpoints

  You cannot activate QSIG-CC towards multimedia data endpoints.

- Outgoing Trunk Queueing

  Outgoing Trunk Queueing cannot be invoked after the calling party answers the priority call back call and no trunks are available. The SS-CCBS and SS-CCNR request cancels at both PBXs.

- Termination Extension Group (TEG)

  You cannot activate QSIG SS-CC towards a TEG extension, but QSIG-CC requests can be activated towards a single member in the group.

- Uniform Call Distribution and Direct Department Calling

  You cannot activate QSIG SS-CC towards a uniform call distribution group or a direct department calling group extension, but you can activate towards a single member in the group.

- Vector Directory Number (VDN)

  You cannot activate SS-CC towards a VDN extension.

QSIG Supplementary Service - Call Offer

This feature, on request from the calling user (or on that user's behalf), enables a call to be offered to a busy called user and to wait for that person to accept the call, after the necessary resources have become available.

The busy called user is given an indication of the offered call. During the time that the call is offered, the called user may ignore the offered call or may attempt to make the necessary resources available (for instance, by releasing or placing another call on hold). When and if the necessary resources become available, the call completes as a normal incoming call.

There are four ways of invoking QSIG Supplementary Service - Call Offer (SS-CO). A Private Telecommunication Network (PTN) offers one or more of these ways. They are:

- Network invocation (immediate) — the PTN automatically invokes SS-CO whenever the calling user makes a call to a user that is busy, if required by the service profile of the calling user.
- Consultation — the calling user, on being informed that a call has failed because it is busy at the destination and that SS-CO may be possible, is able, within a defined time period (consultation timer), to request invocation of SS-CO.
- Immediate invocation — the calling user is able to request invocation of SS-CO as part of the initial call set-up.
- Network invocation (delayed) — the network, having informed the calling user that a call has failed because it is busy at the destination, invokes SS-CO automatically unless the calling user initiates call clearing within a defined time period (automatic call offer invocation timer).

DEFINITY ECS supports immediate invocation on outgoing QSIG originations if the originator's Class of Service (COS) is so optioned. DEFINITY ECS supports all of the above for incoming QSIG calls.

SS-CO is considered completed when any of the following occurs:

- The offered call starts alerting
- The offered call is answered
- The calling user releases the offered call
- The terminating end PBX rejects the offered call

When a QSIG Call Offer service terminates, the service is considered successful if one of the following occurs:

- The called user is an Analog set, busy, and `Call Waiting Termination` on the Station form is enabled

- The called user is a Multi Call-appearance set, at least one call-appearance is busy for an active call, and at least one call-appearance is available for incoming calls
- If the call cannot be offered to the original called user due to call deflection (for instance, Send All Calls active, Call Coverage due to "busy" condition), but it can be offered/terminated to another user within the same PBX which satisfies either condition (1) or (2)
- If the called number is a group number (for instance, Hunt group (UCD/DDC), Coverage Answer Group, Attendant group, and so forth) and the offered call can be queued or terminated to one of the group member which satisfies either condition (1) or (2)

The effect of QSIG SS-CO on the terminating end is similar to the DCS Call Waiting feature with the exception that for Call Waiting, the calling side (user or PBX) does not have to convey any special message to invoke the feature. The Call Waiting Termination feature is driven based on the terminating user (for instance, single line analog set user with Call Waiting enabled).

For internal calls (for instance, intra-PBX calls) within DEFINITY for the Call Waiting feature, if Call Waiting is invoked successfully at the called user, the calling user's display (for display equipped terminal) is updated with call progress message "wait" and a special audible ringback tone is provided. For DCS Call Waiting, the calling user is provided with special audible ringback tone but is not provided with a display update. For QSIG Call Offer, DEFINITY takes advantage of the additional information available from the far end, if QSIG Call Offer invokes successfully, and provides similar information to the calling user as the Call Waiting feature provides for on internal calls, with the exception that the display update will be "offerred" instead of "wait" to reflect invocation of QSIG Call Offer service.

On successful invocation of the QSIG Call Offer service, the called user receives an indication of the terminated offered call. Currently, DEFINITY provides an administrable tone (one, two, or three bursts) to the called busy user when Call Waiting Termination is invoked. When the QSIG Call Offer service is invoked successfully, DEFINITY provides the following:

- To the busy analog set user, the same tone as Call Waiting Termination feature, or
- To the busy Multi call-appearance set (for instance, at least one call-appearance is busy for an active call and at least one call-appearance is available for incoming calls) user, a normal incoming call tone

For incoming QSIG calls, the QSIG Call Offer service may use path retention which is a generic mechanism to retain the signaling connection so that the originating party can decide whether to invoke the supplementary service. The network connection can be retained for more than one of the supplementary services for which path retention has been invoked.

How to administer QSIG SS-CO

Table 12-3. Required forms for Basic Call Setup

Form	Field	Page
Class of Service	■ QSIG Call Offer Originations	5-81
System-Parameters Customer-Options	■ ISDN ■ Basic Call Setup ■ Basic Supplementary Services	5-277
DS1 Circuit Pack form	■ Connect ■ Interface ■ Peer Protocol ■ Signaling Mode	7-79
Station	■ Call Waiting Indication	6-28

Detailed description

— DS1 Circuit Pack form — Set `Connect` to **pbx**, `Interface` to **peer-master** or **peer-slave**, `Peer Protocol` to **q-sig**, and `Signaling Mode` to **isdn-pri** or **isdn-ext**, as required.

— For outgoing call offer call originations:

- System Parameters Customer-Option form — on QSIG OPTIONAL FEATURES (page 4), set `Basic Call Setup` to **y** and `Basic Supplementary Services` to **y**.
- Class of Service form — set `QSIG Call Offer Originations` to **y**.

— For incoming call offer calls to a single line appearance:

- System Parameters Customer-Option form — on QSIG OPTIONAL FEATURES (page 4), set `Basic Supplementary Services` to **y**.
- Station form — set `Call Waiting Indication` to **y**.

— For incoming call offer calls to a multiple line appearance:

- System Parameters Customer-Option form — on QSIG OPTIONAL FEATURES (page 4), set `Basic Supplementary Services` to **y**.

QSIG Transit Counter (ANF–TC)

DEFINITY ECS provides QSIG ANF-TC as defined in ISO/IEC 6B032 and 6B033. It prevents indefinite looping, connections giving poor transmission performance, and inefficient use of network resources.

ANF-TC is invoked automatically for ISDN basic calls and the Route Pattern form indicates the number of switches through which a call may be routed.

How to administer QSIG Transit Counter

Required forms

Form	Field	Page
ISDN-BRI Trunk Group	■ Group Type ■ Hop Dgt ■ Supplementary Service Protocol	7-199
ISDN-PRI Trunk Group	■ Group Type ■ Hop Dgt ■ Supplementary Service Protocol	7-221
Route Pattern	■ Hop Lmt	8-67

- On ISDN trunk group form, set `Group Type` to **isdn**, `Hop Dgt` to **y**, and `Supplementary Service` to **b** for QSIG or **d** for ECMA.
- On Route Pattern form, set `Hop Lmt`.

QSIG Interactions

QSIG Call Forwarding (Diversion) interactions

The interactions that apply to the standard DEFINITY ECS Call Forwarding features also apply to Call Forwarding (Diversion) with QSIG. See "Call Forwarding" on page 4-224 for a description of these interactions. The following are additional interactions.

- Alternate Facilities Restriction Levels

  The AFRL of the original call is the AFRL used for Call Forwarding with Reroute.

- Authorization Codes

  Call Forwarding with Reroute is denied to calls that require an Authorization Code.

- Automatic Alternate Routing and Automatic Route Selection

  Call Forwarding with Reroute uses AAR and ARS to reroute the original call.

- Call Detail Recording

  Call Forwarding with Reroute is denied to calls that require Forced Entry of Account Codes.

- Call Transfer

  When a forwarded call transfers, the forwarding indication displays to the caller until the call is answered. This display includes the trunk group name and word “forward.” When the call is answered, the word “forward” is removed and the name and number of the answering party displays.

- Distributed Communications Systems

  Call Forwarding feature transparency does not exist on calls tandemed between a QSIG (Supplementary Service protocol b) network and a traditional DCS network. However, the basic call continues.

- Facility Restriction Levels and Traveling Class Marks

  The FRL (and TCM) of the original call is the FRL used for Call Forwarding with Reroute.

- Forwarding and Coverage

  If a coverage point is a number that routes over an ISDN (Supplementary Service protocol b) trunk, QSIG diversion information is not passed to the coverage switch.

- QSIG Name and Number Identification

  Availability of name and/or number display at the originating and diverted-to users depends upon how QSIG Name and Number Identification has been administered for the switches involved.

- Terminating Call has Coverage Active

  If a call is forwarded off switch, the terminating switch has call coverage activated, and the criteria are met, the call does not route to the forwarding party’s coverage path. It routes to the terminating station’s coverage path.

QSIG Call Transfer interactions

- Call Forwarding (Diversion)

  When a call is forwarded and transferred or transferred and forwarded, the forwarding indication displays to the caller until the call is answered. This display includes the trunk group name and word “forward.” When the call is answered, the word “forward” is removed and the name and number of the answering party displays.

- Distributed Communications Systems

  The only DCS transparency that exists when a call is transferred in a DCS network and passed over a QSIG administered trunk is calling name.

- QSIG Path Replacement

  ANF-PR is invoked whenever a QSIG transferred call is answered.

- QSIG Name and Number Identification

  Availability of name and/or number display at the connected parties depends upon how QSIG Name and Number Identification has been administered for the switches involved.

QSIG Name and Number Identification interactions

- Distributed Communications Systems (DCS)

  DEFINITY ECS can display DCS called name/number information or ISDN connected name/number information in a DCS (ISDN) network.

  When an incoming ISDN call is routed back out over a non-ISDN trunk group, DEFINITY ECS can send the name of the non-ISDN trunk group as the connected name if the `Send Non-ISDN Trunk Group Name as Connected Name` is enabled on the Feature-Related System-Parameters form.

QSIG Path Replacement interactions

- Basic Call Management System

  If the old connection is monitored by a BCMS entity, ANF-PR is blocked due to BCMS measurements.

- Call Detail Recording

  Codes for recording the new connections of ANF-PR calls are code J for incoming trunk calls and code K for outgoing trunk calls. When a path is replaced, you also may receive records for short-duration calls that are not directly linked to the J and K records.

- Call Management System

  If the old connection is monitored by a CMS entity, ANF-PR is blocked due to CMS measurements.

- Call Vectoring

- A transferred call that terminates at a vector and is answered cannot have its path replaced.

- Data-Call Setup

  A data call is denied ANF-PR.

- Data Privacy

  If Data Privacy is active, ANF-PR is denied.

- Data Restriction

  If Data Restriction is active, ANF-PR is denied.

- Malicious Call Trace

  If MCT is active, ANF-PR is denied.

- Recorded Announcement

  A call that is receiving a recorded announcement cannot have its path replaced.

- Trunk Access Code

  The paths of outgoing calls made using a TAC are not replaced.

- Voice Terminals

  Voice terminal displays that show trunk group name should update with new trunk group information after ANF-PR occurs. Calling and connected party displays are not disturbed when ANF-PR takes place if the original display shows the connected party name, number, or both.

QSIG Transit Counter interactions

- Call Forwarding (Diversion)

  When call forwarding (Diversion) occurs and the ANF-TC feature is enabled, the transit counter is set to zero.

- ISDN Trunk Group Administration

  If all of the conditions are satisfied for both the Tandem Hop Limitation and ANF-TC, ANF-TC takes precedence. In situations where DEFINITY ECS is an Incoming or Outgoing Gateway, either makes use of the hop count/transit count information provided by the other.

- Trunk Access Code

  ANF-TC does not apply to TAC calls.

Uniform Dial Plan

Uniform Dial Plan (UDP) provides a common 4- or 5-digit dial plan (specified in the Dial Plan Record) that can be shared among a group of switches. Interswitch dialing and intraswitch dialing both require 4- or 5-digit dialing. UDP is used with an electronic tandem network (ETN); main, satellite, and tributary switches; and Distributed Communications Systems (DCS). In addition, UDP can provide uniform 4- or 5-digit dialing between 2 or more private-switching systems without ETN, main, satellite, and tributary switches, or DCS.

How to administer UDP

Required forms

Form	Field	Page
Dial Plan Record Second Digit Table	■ Uniform Dial Plan ■ UDP Extension Search Order	5-99 5-264
Uniform Dial Plan	■ All	12-121
AAR and ARS Digit Analysis Table	■ All	8-54
AAR and ARS Digit Conversion Table	■ All	8-63
Node Number Routing	■ Route Pat	12-119
Extension Number Portability Numbering Plan	■ All	12-115
Route Pattern	■ All	8-67

NOTE:
On the Uniform Dialing Plan form, if you change `Ext Code` and `Type` from a 4-digit or 5-digit extension number to **none**, a warning message informs you that all UDP extension codes will be lost. The same warning message displays when you change `Ext Code` and `Type` extension numbers from 4-digits to 5-digits or from 5-digits to 4-digits.

Detailed description

UDP routes calls off the local switch by converting the extension number into a private-network number with 7 digits. This number is formed by prepending a 3-digit code (of the form XXX) to the (last) 4 digits of the extension number. 3 types of conversion are supported: UDPCode, AARCode, and ENPNode.

- For UDPCode and AARCode, XXX is a 3-digit private-network location code, and the result is analyzed and routed via Automatic Alternate Routing (AAR). UDPCode conversion prohibits digit conversion via AAR; AARCode conversion permits it, just as if you dialed the AAR number instead of the extension.
- For ENPCode, XXX is called an Extension Number Portability (ENP) code. It is not used for routing; node-number routing is used instead. The ENP code is chosen based on the first 1 or 2 digits of the dialed string. Because it is not used for routing, the ENPCode can be independent of location.

UDP conversion is specified for individual extensions or groups of extensions sharing the same leading digits, via the UDP form and extension codes. An extension code is the desired leading digits of an extension followed by an “x” (wildcard). For example, “123xx” “12345”is the extension code for all 100 possible extensions beginning with “123” plus two wild cards. “12345” is an extension code specifying one extension.

Each extension code can be assigned to 1 of 6 possible treatments.

- UDPCode — Conversion to AAR with given location code, further conversion suppressed
- AARCode — Conversion to AAR with given location code, further conversion allowed
- ENPCode — Conversion to private network number (via ENP form), route to given node number routing
- TempOOS — Temporarily out of service, give reorder
- Local — Local range of extensions
- blank — Similar to local, however, this extension is not chosen when the system is asked to “add a station”

When a user at a switch that is included in a UDP dials an extension, DEFINITY ECS first checks to see if the extension is assigned to a local station on that switch. If so, the call is routed to the station, and UDP is not invoked. If the extension is not found locally, the system checks to see if the extension matches an assigned extension code. If the extension matches an assigned extension code, the system performs the specified conversion into a private network number and routes the call as specified. If more than one extension code matches, the “best” match (most explicit digits) is used. For example, 1234x is chosen over 123xx if 12345 is dialed. However, 123xx is chosen if

12355 is dialed. If no matching extension code is found, the user receives intercept treatment. Or, if Extended Trunk Access (ETA) is enabled, the call routes via ETA.

Example of how UDP works

To administer, assign each UDP code:

- To a private network location code (RNX) or node number. (The RNX is equivalent to an office code of a central office in a public network. This RNX determines how a UDP call is routed.)
- Assign each UDP code as either local or remote to the switch.

To understand the function of a UDP, review the following example.

A given station is called using the same 5-digit extension regardless of where in the ETN the call originates. Three switches are included in Table 12-4. Each has been assigned a list of RNX and UDP codes. See Table 12-4 and Figure 12-6.

Table 12-4. Switch/RMX/UDP Codes

SWITCH	RNX	UDP CODE
A	224	41
C	223	51
C	223	52
B	222	60
B	222	61

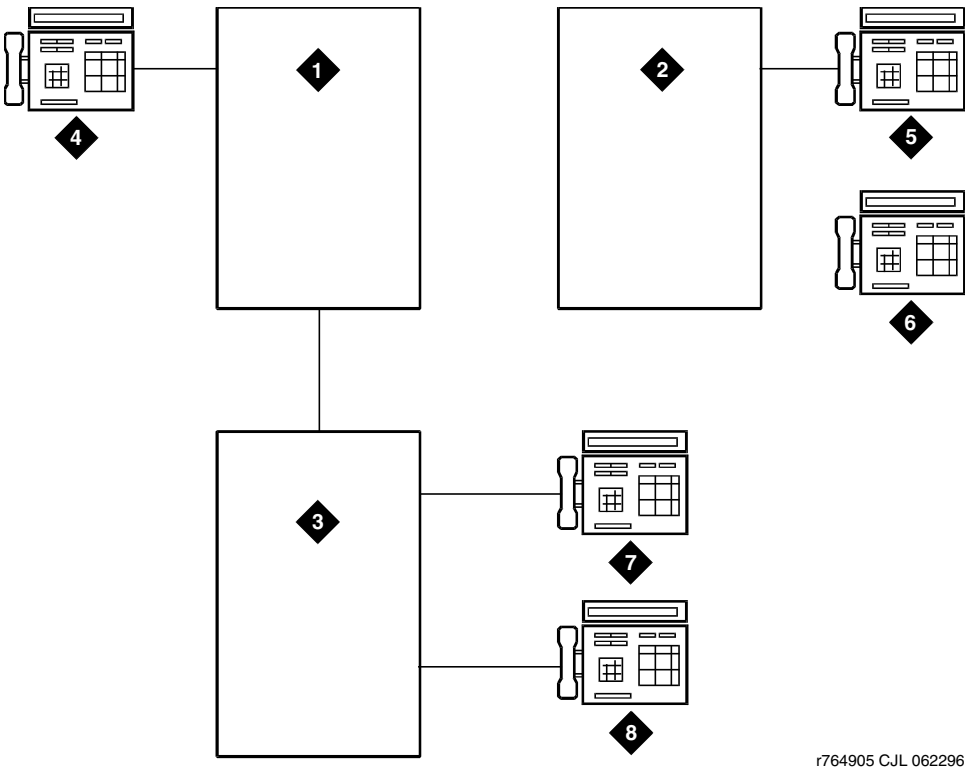


Figure Notes

1. Switch A
   Dial Plan for extensions is 41XXX
   RNX=224
2. Switch B:
   Dial Plan for Extensions is 60XXX and 61XXX
   RNX=222
3. Switch C:
   Dial Plan for extensions is 51XXX and 52XXX
   RNX=223
4. Extension 41000
5. Extension 61234
6. Extension 60123
7. Extension 51234
8. Extension 5200

Figure 12-6. UDP Example

If a user at extension 41000 wants to call extension 61234, there are two choices:

- Dial 61234
- Dial the AAR access code followed by 222-1234

If 61234 is dialed, the system recognizes 61 as a remote UDP, determines the associated RNX (222), and uses AAR to route the call to 222-1234.

If the AAR access code and 222-1234 are dialed, the system finds the route pattern for RNX 222 and routes the call to the switch associated with that RNX.

Whenever UDP is used to route a call to another switch, the correct digit deletion and insertion must be specified within the route pattern so that the receiving switch gets digits in the format it expects. DEFINITY ECS can be configured in several different ways.

- If AAR is available on the receiving switch, Subnet Trunking can be used to insert the AAR feature access code on the originating switch or digit insertion may be used to insert it on the receiving switch. The receiving switch then uses AAR digit conversion to convert 222 with 7 digits to an extension by deleting 3 digits and inserting a 6.
- If AAR is not available on the receiving switch, Subnet Trunking must be used on the originating switch to delete the 222 and insert the digit 6 at the beginning of the extension number so that the receiving switch can continue to route correctly.

If the user at extension 51234 on Switch C dials extension 61234, the call must first go through Switch A before proceeding to Switch B. When 61234 is dialed, the system recognizes 61 as a UDP code, determines the associated RNX (222), and uses AAR to route the call. The AAR feature access code plus 222-1234 are outpulsed to Switch A. Switch A then recognizes the RNX 222 as a remote switch and routes the call to Switch B and extension 61234. This same type of call routing occurs when an extension at Switch B calls an extension at Switch C.

If extension 61234 on Switch B calls extension 61235, the system recognizes 61 as a local UDP code and routes the call directly to extension 61235.

Considerations

- In North American network environments, extensions beginning with 0 may route to an attendant. You are encouraged to use another number as the leading digit when assigning extensions.
- When you call an extension on another switch, there may be a slight delay before call-progress tones are applied. This delay is due to the trunk signaling necessary to complete the call to the remote switch.
- When you select the option to look at the UDP table first, calls that might otherwise terminate at a local extension route over the network. This is easily reversed. When you remove the extensions from the UDP table, the local extension can be dialed again.

- If AAR is active, FRLs and Traveling Class Marks (TCMs) can be sent along with the private network number. UDPCode and AARCode conversions use the FRL assigned to the caller. ENPNode conversion always raises the FRL to the maximum (7).

  If an FRL is insufficient to access the facility, access is denied. There is no prompt for an authorization code even if authorization codes are enabled and administered.

- If AAR is not active, tandem-tie trunks should not be used to transport UDP numbers. The TCM is not recognized at the terminating switch.

  NOTE:
  Never use tandem-tie trunks to transport UDP numbers (the TCM and Hop count will not be recognized as such following the extension received at the receiving switch).

Interactions

- Automatic Alternate Routing

  AAR routes UDP calls. (Included with UDP is the required AAR subset.) If AAR is enabled in addition to UDP, then the 7-digit AAR number provides the same routing as UDP.

- Dial Plan

  — All of the extension numbers on a switch are not necessarily part of UDP. Any that do not belong to UDP are handled by a regular, non-UDP Dial Plan associated with the switch.

  — When administering the Dial Plan form and designating a group of extensions as UDP non-local, you can specify whether you want to search for local extensions first or last. This allows flexibility to change extensions from local to non-local and vice-versa.

- DID Trunk Group

  DID calls to 5-digit UDP extension numbers require that the DID trunk group insert enough digits to make a 5-digit extension number.

- Distributed Communications System

  UDP is required when DCS is provided. The necessary UDP software is provided with the DCS software.

- Extension Number Portability

  If an extension code is administered to use ENP node routing, ENP routes the call to the correct switch. If AAR is enabled in addition to UDP, the 7-digit AAR number provides the same routing as UDP (that is, via ENP).

Private Networking Forms

This section describes the following forms related to private networking:

- ATM PNC
- ATM Measurements
- Extented Trunk Access Call Screening Form
- Extension Number Portability Numbering Plan
- Hop Channel Assignments
- Node Number Routing

.ATM-PNC Form

This form is used to administer the TN2238 circuit pack associated with a port network connectivity (PNC) configuration using an ATM switch. The ATM PNC form is identical for processor port network (PPN) and the expansion port network (EPN).

Administration Commands

Use the following commands to administer the ATM PNC form.

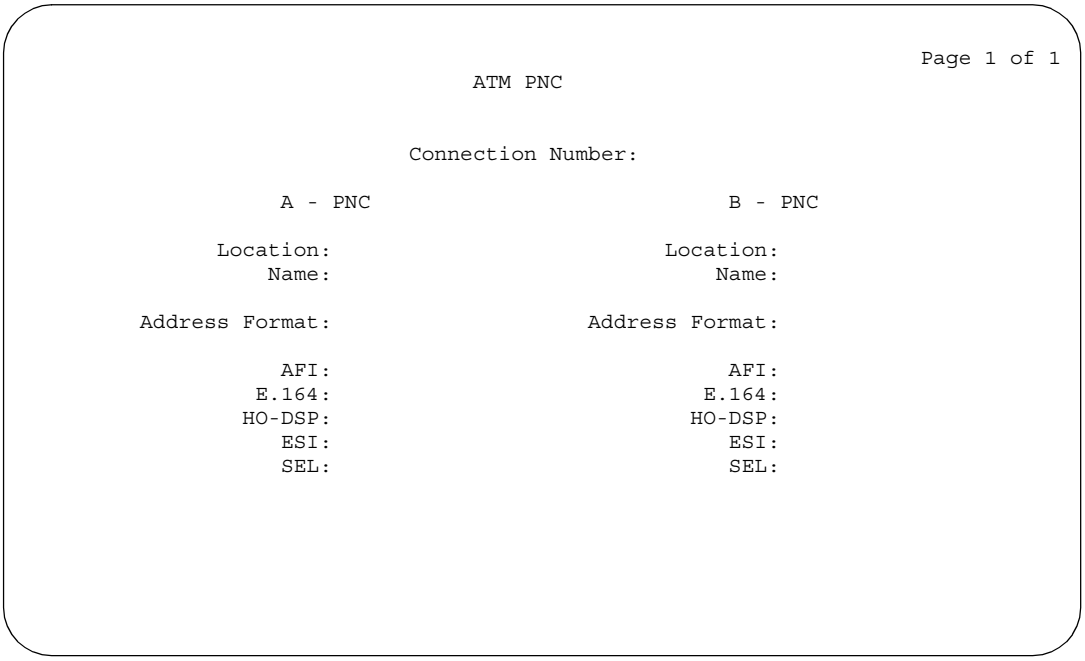
Action	Object	Qualifier
change	atm pnc	*connection-number*
display	atm pnc	*connection-number*
add	atm pnc	*connection-number*
remove	atm pnc	*connection-number*
list	atm pnc	

NOTE:
These commands are available only if the "Asynch. Transfer Mode (ATM) PNC?" field on the Customer Options form is set to "y".

Form Description

```
                                                              Page 1 of 1
                                  ATM PNC

                              Connection Number:

              Location:
              Name:

    Address Format:

              AFI:
              E.164:
              HO-DSP:
              ESI:
              SEL:
```

Screen 12-1. ATM PNC Form — Standard Reliability



Screen 12-2. ATM PNC Form — Critical Reliability

Make assignments as required for the following fields on the form:

- **Connection Number —** 1–44 entered from the command line. Display only.
- **Location** — Enter cabinet(1–x); carrier(A–E); slot(01–03. Default is blank.
- **Name** — Enter 1–15 alphanumeric characters. Default is blank.
- **Address Format** — Enter **E.164 ATM Private**, **DCC ATM**, or **ICD ATM**. Default is E.164 ATM Private.
- **AFI** — Authority and Format Identifier. Valid values are 39, 45, or 47. Default is 45. Display only.
- **E.164** — Field name may also be DCC or ICD, depending on the value of the Address Format field. Enter 1–15 decimal digits. Default is blank.
- **DCC** — Data Country Code. Enter 1–4 decimal digits. Default is blank.
- **ICD** — International Code Designator. Enter 1–4 decimal digits. Default is blank.
- **HO-DSP** — High-Order Domain-Specific Part. Enter 8 hexadecimal digits if Address Format is **E.164**: otherwise enter 20 hexadecimal digits. Default is blank.
- **ESI** — End System Indentifier. Enter 12 hexadecimal digits. Default is blank.
- **SEL —** Selector. Enter 2 hexadecimal digits. Default is blank.

NOTE:
For critical reliability, the A-PNC field values cannot be changed; the B-PNC field values can be changed only if A-PNC is active and B-PNC has been busied-out.

Extended Trunk Access Call Screening Form

This form allows a set of digit strings to be identified that should not be routed via ETA. This form can also block the routing of certain FACs or TACs. For example, if the system administrator were to notice a digit string being mistakenly dialed repeatedly that ended up being routed via ETA to a remote PBX only to have the remote PBX return intercept treatment, then that digit string would be a candidate for the entry into the ETA call screening table. Entry into this table would have the effect of return intercept treatment to the caller without first attempting to route the digits to the remote PBX for interpretation via ETA.

Administration Commands

Use the following commands to administer the Extended Trunk Access Call Screening form.

Action	Object	Qualifier
change	call-screening	
display	call-screening	

Form Instructions

```
                                                              Page 1 of 1
                              ETA CALL SCREENING TABLE
Entry
  No. Call Screening Entry
    0: _______
    1: _______
    2: _______
    3: _______
    4: _______
    5: _______
    6: _______
    7: _______
    8: _______
    9: _______
```

Screen 12-3. ETA Call Screening Table Form (Page 1 of 1)

Make assignments as required for the following fields on the form:

- **Call Screening Entry** — Assign those digit strings (up to 10) that should be blocked for this RNX. Each string can have up to 6 digits and/or special or wildcard characters. Valid entries are the digits **0** through **9**, **x**, **X**, *****, and **#**. The "#" character may only be used as the first character.

Extension Number Portability Numbering Plan Form

Administration Commands

Use the following commands to administer the ENP Numbering Plan form.

Action	Object	Qualifier[1]
change	enp-number-plan	
display	enp-number-plan	['print' or 'schedule']

1. Brackets [ ] indicate the qualifier is optional. Single quotes (' ') indicate the text inside the quote must be entered exactly as shown or an abbreviated form of the word may be entered.

Form Instructions

```
                                                              Page 1 of 1
                          EXTENSION NUMBER PORTABILITY
                                NUMBERING PLAN
   ENP      ENP      ENP      ENP      ENP      ENP      ENP      ENP      ENP      ENP
   Code     Code     Code     Code     Code     Code     Code     Code     Code     Code
0x: ___ 1x: ___ 2x: ___ 3x: ___ 4x: ___ 5x: ___ 6x: ___ 7x: ___ 8x: ___ 9x: ___
00: ___ 10: ___ 20: ___ 30: ___ 40: ___ 50: ___ 60: ___ 70: ___ 80: ___ 90: ___
01: ___ 11: ___ 21: ___ 31: ___ 41: ___ 51: ___ 61: ___ 71: ___ 81: ___ 91: ___
02: ___ 12: ___ 22: ___ 32: ___ 42: ___ 52: ___ 62: ___ 72: ___ 82: ___ 92: ___
03: ___ 13: ___ 23: ___ 33: ___ 43: ___ 53: ___ 63: ___ 73: ___ 83: ___ 93: ___
04: ___ 14: ___ 24: ___ 34: ___ 44: ___ 54: ___ 64: ___ 74: ___ 84: ___ 94: ___
05: ___ 15: ___ 25: ___ 35: ___ 45: ___ 55: ___ 65: ___ 75: ___ 85: ___ 95: ___
06: ___ 16: ___ 26: ___ 36: ___ 46: ___ 56: ___ 66: ___ 76: ___ 86: ___ 96: ___
07: ___ 17: ___ 27: ___ 37: ___ 47: ___ 57: ___ 67: ___ 77: ___ 87: ___ 97: ___
08: ___ 18: ___ 28: ___ 38: ___ 48: ___ 58: ___ 68: ___ 78: ___ 88: ___ 98: ___
09: ___ 19: ___ 29: ___ 39: ___ 49: ___ 59: ___ 69: ___ 79: ___ 89: ___ 99: ___
```

Screen 12-4. Extension Number Portability Numbering Plan Form (Page 1 of 1)

Make assignments as required for the following fields on the form.

- **ENP Code** — Assign a 3-digit code to translate each 4- or 5-digit UDP extension that is node number routed to a 7 digit, AAR-like number used for outpulsing a call within an ENP sub network. This field maps each leading digit of a UDP extension to an ENP Code or blank.

Hop Channel Assignments Form

This form assigns Hop Channels. The maximum number of connections that may be established between channels on the system's interface links varies depending on System configuration.

Administration Commands

Use the following commands to administer the Hop Channel Assignment form.

Action	Object	Qualifier[1]
change	communication-interface	hop-channels
display	communication-interface	hop-channels ['print' or 'schedule']

1. Brackets [ ] indicate the qualifier is optional. Single quotes (' ') indicate the text inside the quote must be entered exactly as shown or an abbreviated form of the word may be entered.

```
                        HOP CHANNEL ASSIGNMENT                  Page 1 of 4
Link/Channel A   Link/Channel B       Link/Channel A   Link/Channel B
 1: __   __          __   __          17: __   __          __   __
 2: __   __          __   __          18: __   __          __   __
 3: __   __          __   __          19: __   __          __   __
 4: __   __          __   __          20: __   __          __   __
 5: __   __          __   __          21: __   __          __   __
 6: __   __          __   __          22: __   __          __   __
 7: __   __          __   __          23: __   __          __   __
 8: __   __          __   __          24: __   __          __   __
 9: __   __          __   __          25: __   __          __   __
10: __   __          __   __          26: __   __          __   __
11: __   __          __   __          27: __   __          __   __
12: __   __          __   __          28: __   __          __   __
13: __   __          __   __          29: __   __          __   __
14: __   __          __   __          30: __   __          __   __
15: __   __          __   __          31: __   __          __   __
16: __   __          __   __          32: __   __          __   __
```

Screen 12-5. Hop Channel Assignment Form (Page 1 of 4)

Form Instructions

Observe the following when assigning hop channels:

- The Link/Chan pair must not be assigned to a local processor channel on the Processor Channel Assignments form.
- The four associated hop channel fields must be either filled in or left blank.

Make assignments as required for the following fields on each page of the form:

Pages 1 through X of the Form

```
                          HOP CHANNEL ASSIGNMENT                    Page 1 of 2
Link/Chan  Link/Chan  Priority          Link/Chan  Link/Chan  Priority
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
 _    __    _    __     _                _    __    _    __     _
```

Screen 12-6. Hop Channel Assignment Form (R5r and later configurations and R5si and later configurations) (Page 1 of 2)

NOTE:
This is a two-page form for R5si and later configurations and a four-page form for R5r and later configurations.

- **Link** — Enter an interface link number in each field.
- **Chan(nel)** — This field is labeled "Channel" for R5r and later configurations and "Chan" for R5si and later configurations. Enter a channel number in each field.
- **Priority** — Displays for R5si and later configurations only. Enter **high** or **low** to indicate whether the hop channel has high or low priority. Priorities should be assigned based on the operational speed of the links and the number of hops in the network channel.

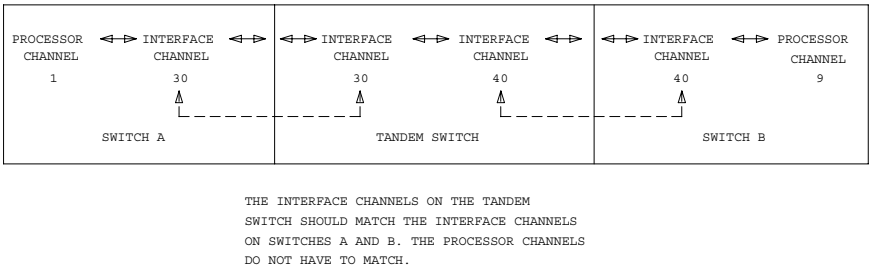


Figure 12-7. Interface Channel Assignments Between Switches

Node Number Routing Form

This form specifies the routing pattern associated with each node in a public or private network. NNR is a required capability for Extension Number Portability (ENP) and is associated with the Uniform Dial Plan (UDP).

Administration Commands

Use the following commands to administer the Node Number Routing form.

Action	Object	Qualifier[1]
change	node-routing	Enter digits between 1-MAX [‘partition’ 1-8]
display	node-routing	Enter digits between 1-MAX [‘partition’ 1-8]
list	node-routing	Enter digits between 1-MAX [‘partition’ 1-8]

1. Brackets [ ] indicate the qualifier is optional. Single quotes (‘ ’) indicate the text inside the quote must be entered exactly as shown or an abbreviated form of the word may be entered. MAX is the maximum number available in your system configuration.

Form Instructions

```
change node-routing 87 partition 2                              Page  1 of  2
                              NODE NUMBER ROUTING
                            Partitioned Group Number: 2
      Route      Route      Route      Route      Route      Route      Route
       Pat        Pat        Pat        Pat        Pat        Pat        Pat
              15: ___    30: ___    45: ___    60: ___    75: ___    90: ___
    1: ___    16: ___    31: ___    46: ___    61: ___    76: ___    91: ___
    2: ___    17: ___    32: ___    47: ___    62: ___    77: ___    92: ___
    3: ___    18: ___    33: ___    48: ___    63: ___    78: ___    93: ___
    4: ___    19: ___    34: ___    49: ___    64: ___    79: ___    94: ___
    5: ___    20: ___    35: ___    50: ___    65: ___    80: ___    95: ___
    6: ___    21: ___    36: ___    51: ___    66: ___    81: ___    96: ___
    7: ___    22: ___    37: ___    52: ___    67: ___    82: ___    97: ___
    8: ___    23: ___    38: ___    53: ___    68: ___    83: ___    98: ___
    9: ___    24: ___    39: ___    54: ___    69: ___    84: ___    99: ___
   10: ___    25: ___    40: ___    55: ___    70: ___    85: ___
   11: ___    26: ___    41: ___    56: ___    71: ___    86: ___
   12: ___    27: ___    42: ___    57: ___    72: ___    87: ___
   13: ___    28: ___    43: ___    58: ___    73: ___    88: ___
   14: ___    29: ___    44: ___    59: ___    74: ___    89: ___
```

Screen 12-7. Node Number Routing Form (Page 1 of 2)

Make assignments as required for the following fields on the form.

- **Partitioned Group Number** — This read-only field displays the partitioned group number associated with the node numbers being administered. The partitioned group number is either specified on the command line or defaults to partitioned group number 1.
- **Node Number** — This display-only field lists the node number to be changed.

  NOTE:
  Two pages display simultaneously for a total of 200 nodes (100 per page). For example, entering **change node-routing 87** displays nodes 1 through 199, and entering **change node-routing 151** displays nodes 100 through 299. However, entering **change node-routing 999** displays nodes 900 through 999 on one page.

- **Route Pat** — Enter the routing pattern associated with the corresponding node number. This field repeats the same number of times as there are node numbers on the page; default is blank

Uniform Dial Plan Form

This form administers the Uniform Dial Plan (UDP).

Administration Commands

Use the following commands to administer the Uniform Dial Plan form.

Action	Object	Qualifier[1]
change	udp	Enter 1-MAX digits between 0-9, ‘x’ or ‘X’
display	udp	Enter 1-MAX digits between 0-9, ‘x’ or ‘X’ [’print’ or ’schedule’]
list	udp	Enter [’ext’ x][’to-ext’ x][’type’ x [[’dest’ x][to-dest’ x]]] [’print’ or ’schedule’]

1. Brackets [ ] indicate the qualifier is optional. Single quotes (‘ ’) indicate the text inside the quote must be entered exactly as shown or an abbreviated form of the word may be entered. MAX is the maximum number available in your system configuration.

Form Instructions

```
                                                          Page 1 of 2
                              UNIFORM DIALING PLAN
                                 Ext Codes: _____
                               Ext Code: _____ Type: _______ ___

dd   Type        dd   Type        dd   Type        dd   Type        dd   Type
0x: _______ ___ 1x: _______ ___ 2x: _______ ___ 3x: _______ ___ 4x: _______ ___
00: _______ ___ 10: _______ ___ 20: _______ ___ 30: _______ ___ 40: _______ ___
01: _______ ___ 11: _______ ___ 21: _______ ___ 31: _______ ___ 41: _______ ___
02: _______ ___ 12: _______ ___ 22: _______ ___ 32: _______ ___ 42: _______ ___
03: _______ ___ 13: _______ ___ 23: _______ ___ 33: _______ ___ 43: _______ ___
04: _______ ___ 14: _______ ___ 24: _______ ___ 34: _______ ___ 44: _______ ___
05: _______ ___ 15: _______ ___ 25: _______ ___ 35: _______ ___ 45: _______ ___
06: _______ ___ 16: _______ ___ 26: _______ ___ 36: _______ ___ 46: _______ ___
07: _______ ___ 17: _______ ___ 27: _______ ___ 37: _______ ___ 47: _______ ___
08: _______ ___ 18: _______ ___ 28: _______ ___ 38: _______ ___ 48: _______ ___
09: _______ ___ 19: _______ ___ 29: _______ ___ 39: _______ ___ 49: _______ ___
```

Screen 12-8. Uniform Dial Plan Form (Page 1 of 2)

```
                                                              Page 2 of 2
                              UNIFORM DIALING PLAN
                                 Ext Codes: _____
                               Ext Code: _____ Type: _______ ___

dd   Type        dd   Type        dd   Type        dd   Type        dd   Type
5x: _______ ___ 6x: _______ ___ 7x: _______ ___ 8x: _______ ___ 9x: _______ ___
50: _______ ___ 60: _______ ___ 70: _______ ___ 80: _______ ___ 90: _______ ___
51: _______ ___ 61: _______ ___ 71: _______ ___ 81: _______ ___ 91: _______ ___
52: _______ ___ 62: _______ ___ 72: _______ ___ 82: _______ ___ 92: _______ ___
53: _______ ___ 63: _______ ___ 73: _______ ___ 83: _______ ___ 93: _______ ___
54: _______ ___ 64: _______ ___ 74: _______ ___ 84: _______ ___ 94: _______ ___
55: _______ ___ 65: _______ ___ 75: _______ ___ 85: _______ ___ 95: _______ ___
56: _______ ___ 66: _______ ___ 76: _______ ___ 86: _______ ___ 96: _______ ___
57: _______ ___ 67: _______ ___ 77: _______ ___ 87: _______ ___ 97: _______ ___
58: _______ ___ 68: _______ ___ 78: _______ ___ 88: _______ ___ 98: _______ ___
59: _______ ___ 69: _______ ___ 79: _______ ___ 89: _______ ___ 99: _______ ___
```

Screen 12-9. Uniform Dial Plan Form (Page 2 of 2)

Make assignments as required for the following fields on each page of the form:

- **Ext Codes** — Displays a string of digits, "x", and "dd." The position of the dd shows which digit positions of the Ext Codes are being administered. For example, **512dd** means that the last two digits of the Ext Codes, for the leading digits 512, are being administered on the form. The string, 5ddxx, shows that the second and third digits of the Ext Codes, for the leading digit 5, are being administered on the form (these entries would all be wildcard entries).
- **Ext Code, Type** (and associated data) — Displays what rules apply if the entries on the form are not administered. For example, shows a form for Ext Codes starting with 512. If these entries are not administered, the entry for Ext Code 51xxx applies to these entries, and if Ext Code 51xxx is not administered, the entry for Ext Code 5xxxx applies to these entries. In a 5-digit UDP, these read-only fields display only if at least 3 digits are specified in the command-line key, although one set (the set on the left) of these fields would still display if 2 digits are specified in the command-line key. If only 1 digit is specified or if 'x' or 'X' is specified in the command-line key, then neither of these sets of fields display, since there is no Ext Code more general than those listed on the form.
- **dd** — Displays the two digits (or x's) representing the extension or group of extensions to be administered. For this field, "xx:" is repeated on both pages, since it is the default for all other entries on both pages. Changing the type associated with this field on one page changes it on both pages.

- **Type** — Specify the type of treatment for the extension (**AARCode**, **ENPNode**, **Local**, **TempOOS**, **UDPCode**, or blank). That is, specify whether the extension should receive intercept treatment, be converted to AAR, or be converted via ENP. The difference between AAR Location Codes and UDP Location Codes is that 7-digit AAR Numbers created from AAR Location Codes may be changed during AAR analysis by AAR digit conversion before being routed. Seven-digit AAR Numbers created from UDP Location Codes are not subject to digit conversion before being routed with AAR digit analysis.

  When an extension code that is displayed on the UDP form is not administrable because it conflicts with the translations in the first and/or second digit tables, then the type field for that extension code displays "NotInDP."

  The entry **TempOOS** indicates an extension is temporarily out-of-service. Calls to these extensions receive reorder.

  A blank entry indicates this Ext code is not administered. If no matching code can be found, then the call receives intercept treatment.

- **Location Code** — Specify the 3-digit location code for Ext Codes administered with a type of AARCode or UDPCode. This field displays if AARCode or UDPCode is entered as the type.

- **Node Number** — Specify the node number for Ext Codes administered with a type of ENPNode. This field pops up if ENPNode is entered as the type.

  NOTE:
  This node number must not be the same as the local node number on the dial plan form.