



DEFINITY®

Enterprise Communications Server (ECS)

Release 6

Multiple Level Precedence and Preemption (MLPP)

Installation, Feature Description, and Administration

555-230-194
Comcode 108594847
Issue 3
July 1999

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- Low Voltage (73/23/EEC)
- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

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Acknowledgment

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About This Document

This document provides installation procedures, descriptions, and administration procedures for the DEFINITY® Enterprise Communications Server (ECS) Multiple Level Precedence and Preemption (MLPP) features. The MLPP features provide users the ability to interface and operate in a Defense System Network (DSN). The MLPP features include:

- Announcements for Precedence Calling
- Dual Homing
- End Office Access Line Hunting
- Line Load Control
- Precedence Calling
- Precedence Call Waiting
- Precedence Routing
- Preemption
- Worldwide Numbering and Dialing Plan (WNDP).

Audience

This document is intended for trained technicians and system administrators that install, administer, and maintain DEFINITY ECS products. These users should be familiar with DEFINITY ECS products, especially features such as Automatic Route Selection (ARS) and Recorded Announcements.

Reasons for Reissue

- To clarify technical support escalation procedures.
- To update software installation procedures.
- To correct miscellaneous errors.

Organization

This document is organized into the following chapters:

- “Introduction” contains a brief overview of the MLPP features.
- “Hardware Requirements” contains a listing of the hardware required by the MLPP features.
- “Installing MLPP Software” contains the procedures for installing the MLPP software.
- “Feature Descriptions and Administration” contains descriptive and administrative information for each of the MLPP features.
- “Appendix A — Call Progress Tones” describes the different call progress tones used by the MLPP features.
- “Appendix B — Ringing Patterns” describes the different ringing patterns used by the MLPP features.
- “Appendix C — Glossary” contains glossary terms and acronym expansions.

Conventions

The following conventions are used in this document:

- All screens shown in this document are approximations of how the actual screens appear. Depending on the system options, the screens may vary.
- Administration command paths and options you enter in the data fields are shown as follows:

change system-parameters features

Some administration command paths have additional actions available (such as **change**, **list**, **add**, and **display**). In this document, only the suggested action is shown in the administration sections.

- Field names within the administration screens are shown as follows:

Queue Length

- Feature access codes (FACs) vary between systems. In these procedures, FACs are represented by a blank line, such as _____. You should display your system’s FACs and fill in the missing codes as needed. Display the FACs with the **display feature-access-codes** command.

Technical Support Escalation

To receive support on your system, call 1-800-242-2121. Outside the continental United States, contact your local Lucent Technologies authorized representative. Any problems with the installation, administration, and use of the MLPP features must be escalated to Tier 3 support. Escalation to Tier 4 can occur only after the problem has been first worked by Tier 3.

Related Documents

The end-user operation of the MLPP features is described in *DEFINITY ECS Release 6 Multiple Level Precedence and Preemption (MLPP) Operation* (555-230-799). Each end-user of the MLPP features should have a copy of this operation document or, at the minimum, a photocopy of the quick-reference card explaining how to use the MLPP features. To get this quick-reference card to your users:

1. Make a photocopy of the card.
2. Fill in the blank FACs.
3. Make photocopies of the modified card.
4. Distribute the photocopies to your end-users.

For information about other DEFINITY ECS features and products, refer to the following documents:

- 555-025-600 — *DEFINITY® BCS Products Security Handbook*
- 555-230-112 — *DEFINITY® ECS Release 6 Installation and Test for Multi-Carrier Cabinets*
- 555-230-120 — *DEFINITY® ECS Upgrades and Additions for R6vs/si*
- 555-230-121 — *DEFINITY® ECS Upgrades and Additions for R6r*
- 555-230-125 — *DEFINITY® ECS Release 6 Installation for Adjuncts and Peripherals*
- 555-230-126 — *DEFINITY® ECS Maintenance for R6r*
- 555-230-127 — *DEFINITY® ECS Maintenance for R6vs/si*
- 555-230-128 — *DEFINITY® ECS Release 6 Installation and Test for Compact Modular Cabinets*
- 555-230-129 — *DEFINITY® ECS Maintenance for R6csi*
- 555-230-211 — *DEFINITY® ECS Release 6 System Description Pocket Reference*
- 555-230-303 — *DEFINITY® Release 6 Implementation Blank Forms*

- 555-230-522 — *DEFINITY® Release 6 Administration and Feature Description*
- 555-230-755 — *GuideBuilder™ Software for DEFINITY® ECS Telephones*
- 555-230-894 — *DEFINITY® ECS Installation and Test for Single-Carrier Cabinets*
- 555-233-102 — *DEFINITY® Release 6 Installation and Maintenance for Survivable Remote EPN*
- 555-233-401 — *DEFINITY® ECS Release 6, Issue 3.0 (03.0.223.5) Change Description*
- 555-233-902 — *DEFINITY® System's Little Instruction Box* (contains three separate documents that cover basic administration, advanced administration, and diagnostics)

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If the reader comment form is missing, FAX your comments to +1-303-538-1741, and mention this document's name and number, *DEFINITY ECS R6 Multiple Level Precedence and Preemption Installation, Feature Descriptions, and Administration* (555-230-194).

Introduction

The MLPP features allow users to request priority processing of their calls during critical situations. This section provides a high-level look at these features.

Precedence Calling

Precedence Calling is the centerpiece of the MLPP features. Precedence Calling allows users, on a call-by-call basis, to select a level of priority for each call based on their need and importance. The call receives higher-priority routing, whether the call is local or going around the world. Users may access five levels of precedence when placing calls:

- Flash Override (the highest precedence level)
- Flash
- Immediate
- Priority
- Routine (the default, and lowest precedence level)

Each station user is administered with a maximum precedence level (the more important the user, the higher the precedence level). Users cannot originate calls at precedence levels higher than their maximum administered level.

Precedence Routing

When precedence calls are destined for other switches in a network, the Precedence Routing feature is used to route the calls. The Precedence Routing feature routes calls based on three main criteria:

- Routing based on the destination number
- Routing based on the precedence level
- Routing based on the time of day.

These routing criteria are administrable and can be changed as required. Two related features are Dual Homing and End Office Access Line Hunting.

Precedence Call Waiting

After a precedence call is routed, the called party may already be busy on another call. Precedence Call Waiting allows the caller to “camp on” to the called party’s line and wait for them to answer the call. The caller hears a special ringback tone and the called party hears a call waiting tone. As soon as the called party hangs up on their current call, the call rings on the called party’s station with priority three-burst ringing.

Preemption

Preemption works with Precedence Routing to further extend the call routing capabilities of the MLPP features. Preemption, when allowed through administration, can actually tear down an existing, lower-priority call, in order to complete a more important precedence call.

When this occurs, the callers on the existing call hear a tone indicating that the call is about to be preempted; they have three seconds to end the call before the call is automatically disconnected. After the call is disconnected, the preempted facility (usually a trunk) is then used for the preempting call.

Announcements for Precedence Calling

In certain situations, precedence calls are blocked because of unavailable resources or improper use. When this occurs, recorded announcements are used to identify what went wrong. The announcements used for MLPP include:

- Blocked precedence call
- Unauthorized precedence level attempted
- Service interruption prevented call completion
- Busy, not equipped for Preemption or Precedence Call Waiting.

Line Load Control

Line Load Control is a feature that restricts a predefined set of station users from originating calls during a crisis or emergency. Through administration, users are assigned to a Line Load Control level based on their relative importance.

For example, if a situation occurs that threatens national defense, station users in the defense department will not be restricted from originating calls, but stations in the accounting department will be restricted. When the crisis is over, the system can be returned to normal operation through an administration change.

Hardware Requirements

The following circuit packs are required to support the MLPP features. If you are installing a new system, these circuit packs are delivered with a new system. If you are updating an existing system, you must replace any outdated circuit packs.

Type	Number	Requirements
Analog Tie Trunk	TN760E or newer (four ports per circuit pack)	Required only for trunks that carry MLPP traffic; older version circuit packs may be used for non-MLPP traffic.
DS1 Trunk	TN464F Vintage 18 or newer (24 T1 channels or 32 E1 channels)	Required only for trunks that carry MLPP traffic; older version circuit packs may be used for non-MLPP traffic.
Tone Clock	TN2182 (eight ports per circuit pack)	All tone clocks in the switch must be TN2182.
Processor	TN790 TN798 TN786B	Required as backup for R6csi/vs/si systems because the software memory cards are not kept on site; if the system is duplicated, you may need two backup processors. Contact your Lucent Technologies Government Solutions representative for more information (1-800-492-6769).

For recorded announcements, the TN750 circuit pack is the recommended method for recording announcements, but you can use existing analog announcement equipment with the new MLPP features. If you are using the integrated announcements circuit pack, you must use either a TN750, TN750B, or TN750C. If you have more than one integrated announcement circuit pack, only one of those can be a TN750 or TN750B; any additional circuit packs must be the TN750C.

The *vs*, *csi*, and *si* systems support a maximum of five integrated announcement circuit packs. The *r* system supports a maximum of ten integrated announcement circuit packs.

Each TN750 has 16 ports with a maximum total record time of 256 seconds. Each TN750B and TN750C has 16 ports with a maximum total record time of 512 seconds.

Installing MLPP Software

This section contains the procedures used to install the MLPP software.

Introduction

The MLPP Release 6 software is a special release that was developed for the DEFINITY Release 6.3, 1.0 GA load (Issue 3.0; 03.0.223.5). Therefore, it is not “update” compatible with any other DEFINITY software loads. To install the MLPP software, you must use one of the following procedures:

- If you have a new DEFINITY system that is being installed and translated for the first time, see “Installing MLPP Software on a New System” on Page 10.
- If you have an older System 85 or DEFINITY G2 system that you want to upgrade and save your existing translations, see “Upgrading a System 85 or DEFINITY G2” on Page 12.
- If you have an existing DEFINITY G3 system that can be first updated to the Release 6.3, 1.0 GA load, see “Installing MLPP on a Release 6.3, 1.0 System” on Page 13.

For installation and upgrade support, contact your Tier 3 support personnel. You may also contact the Rapid Response team at:

http://info.dr.lucent.com/rapid_response/

Installing MLPP Software on a New System

If you are adding MLPP to a brand new system that has never been translated, the following procedure allows you to go directly to the MLPP software load without applying the intermediate Release 6.3, 1.0 GA load.



CAUTION:

When you first get your system from the factory, DO NOT do any translations before doing this update procedure. If you are planning to build translations ahead of time on a flash card or a tape, you MUST build those translations on a Release 6.3, 1.0 GA load (Issue 3.0; 03.0.223.5). Remember to set the Offer Category to "A" before building the translations. Only the "init" login can set the Offer Category.

Updating a New G3csi/si System

1. With the system powered up, insert the MLPP software memory card into a processor circuit pack card slot.
2. Enter the command **reset system 4** to load the MLPP software.
3. After the software has loaded, remove the MLPP software memory card. Return the MLPP software memory card to the Rapid Response team within five business days.
4. Insert a blank translation card, or the translation card you have built in advance. Any translations on the card are automatically loaded.
5. Repeat Steps 1 through 4 for duplicated systems or backup processor cards.
6. If you started with a blank translation card, you may now translate the switch. Remember to set the Offer Category to "A" before you do any other translations. Only the "init" login can set the Offer Category.
7. Save any new translations.

Updating a New G3r System

If you do not have any translations built on a separate tape, do the following:

1. With the system powered up, insert the MLPP software tape(s) into the tape drive(s).
2. Enter the command **reset system 4 tape** to load the MLPP software.
3. After the software is loaded, enter the command **restore disk full** (simplex) or **restore disk both full** (duplicated) to bring the disk and memory up to the new load.
4. You may now translate the switch. Remember to set the Offer Category to "A" before you do any other translations. Only the "init" login can set the Offer Category.
5. Save any new translations.

If you do have translations built on a separate tape (the translations must be built on Release 6.3, 1.0 GA, Issue 3.0; 03.0.223.5), do the following:

1. With the system powered up, insert the translated tape(s) into the tape drive(s).
2. Enter the command **restore disk full** (simplex) or **restore disk both full** (duplicated) to bring the disk and memory up to the new load.
3. Remove the translated tape(s) and insert the MLPP software tape(s) into the tape drive(s).
4. Enter the command **reset system 4 tape** to load the MLPP software. The translations previously loaded will be retained.
5. Enter the command **save translations tape** (simplex) or **save translations both tape** (duplicated).

Upgrading a System 85 or DEFINITY G2

When upgrading a System 85 or DEFINITY G2 system to MLPP Release 6, you must plan the upgrade in advance, doing the following:

- Contact the DEFINITY ECS Mapping Process group at +1-303-538-6339 to schedule an upgrade of the customer translations. The scheduler at this group will instruct you on what you need to provide for the upgrade, and how long the upgrade will take.
- Contact the Rapid Response Team to help coordinate the upgrade. See http://info.dr.lucent.com/rapid_response/ for contact information.

After the customer's translations have been mapped to the new MLPP software, you will receive a tape (for R6r systems) or flash card (for R6csi/vs/si systems). Use the following instructions for loading the new software.

Loading an R6csi/vs/si Flash Card

1. With the system powered up, insert the MLPP software memory card into a processor circuit pack card slot.
2. Enter the command **reset system 4** to load the MLPP software.
3. After the software has loaded, remove the MLPP software memory card. Return the MLPP software memory card to the Rapid Response team within five business days.
4. Insert the updated translation card you received from the Mapping Process group. The translations on the card are automatically loaded.
5. Repeat Steps 1 through 4 for duplicated systems.
6. The system is ready for operation.

Loading an R6r Tape

1. Insert the updated tape(s) into the tape drive(s).
2. At your administration terminal, enter the command **restore disk full** (simplex) or **restore disk both full** (duplicated) to copy the generic and translations from tape to disk.
3. Power down, then power up the system.
4. Remove the translated tape(s) and move the black write protect slide to **RECORD**.
5. Reinsert the write enabled tape(s) into the tape drive(s)
6. The system is ready for operation.

Installing MLPP on a Release 6.3, 1.0 System

There are two steps required to update your system with the MLPP software:

1. Update your system to the Release 6.3 1.0 GA load (G3V6i.03.0.223.5 or G3V6r.03.0.223.5)
2. Add the MLPP software.



CAUTION:

Once you have updated your system with the MLPP software, do NOT update your switch to any newer DEFINITY releases. Contact your Lucent Technologies Government Solutions representative at 1-800-492-6769 before doing any future updates.

Updating to the Release 6.3 1.0 GA Load

If your system has not been updated to the Release 6.3, 1.0 GA load, use the procedures given in the following documents to bring your system up to that load:

- EDI for release G3V6i.03.0.223.5 (R6csi/vs/si systems)
- EDI for release G3V6r.03.0.223.5 (R6r systems)
- 555-233-401 — *DEFINITY® ECS Release 6, Issue 3.0 (03.0.223.5) Change Description*
- 555-230-120 — *DEFINITY® ECS Upgrades and Additions for R6vs/si*
- 555-230-121 — *DEFINITY® ECS Upgrades and Additions for R6r*

Updates are requested by escalating a trouble ticket to the Lucent Technologies support line (1-800-242-2121) or to your regional Center of Excellence (COE). Ask for the following update, depending on your current system:

- QPPCN 1036B (for R6r systems with Release 6, Issue 2.0 or 2.1)
- QPPCN 1037B (for R6r systems with Release 5, Issue 1.0-5.0, or Release 6, Issue 1.0)
- QPPCN 1038B (for R6csi/vs/si systems with Release 5, Issue 1.0-5.0, or Release 6, pre-Issue 3.0).



NOTE:

If you are not able to request these QPPCNs, or get a Release 6.3 1.0 GA load on tape or software memory card from your Field Service Administration Center (FSAC) or COE, contact the Rapid Response Team at http://info.dr.lucent.com/rapid_response/.

Adding the MLPP Software

This section contains the procedures used to add the MLPP software, and is divided into three areas:

- General update notes
- R6csi/vs/si update procedures
- R6r update procedures.

Read all of the general information and then continue with the procedures that apply to your current system.

General Update Notes

This section contains general information about the MLPP updates. Before beginning the update, review the following for customer impact during and after the update:

- In load 03.0.223.5 (Issue 3.0) the init password has been changed for new installs and updates. Please contact the Technical Service Center (TSC) Data Base Administration group at 1-800-422-6560 for the new init password.
- Multimedia Call Handling (MMCH) — Multimedia-to-voice station calls are not preserved on an update. In order to properly release multimedia conversion resources and restore them to service after the update, the following steps must be executed prior to updating an R6 switch that has the MMCH customer option turned on. These steps apply only to switches that have the High/Critical (Duplicated) Reliability option.
 1. Locate all Multimedia Interface (MMI) circuit packs (TN787) using the **list configuration all** command.
 2. Busy-out all MMI circuit packs using the **busyout board** command.

This will prevent any further multimedia-to-voice connections and drop any active connections. Failure to busy-out the circuit packs before doing the update may result in unusable MMI and Voice Conditioner (TN788) ports.
- Basic System features:
 - The **upgrade software** command only preserves calls in which two or more parties are connected and talking. Held calls, dialing calls, calls in queue, calls connected to announcements, speech synthesis, or tones are not preserved. The only supported operation on a preserved call is to drop it. Other feature activation attempts are ignored.

- For a call-preserving update, the length of time during which calls cannot be originated is very short (less than five seconds for most cases). In the worst case, there can be up to one minute of service outage. The length of the service outage is dependent on the number of calls active when the switch processing element (SPE) interchange occurs.
- Attendant features are lost. Some features will have to be reactivated following the update, including: night service, trunk/hunt group control and manual and clock-manual override status on time of day routing.
- Administered connections are dropped. They are automatically reestablished after the interchange.
- SPE based Leave Word Calling messages are not preserved. All SPE based Leave Word Calling messages will be lost.
- After the update, lamps may be inconsistent for up to an hour (until background maintenance completes one cycle).
- Use the **change system-parameters features** command to disable Terminal Translation Initialization (TTI) changes during the update. Note that TTI must be restored after the update.
- Find all maintenance objects (MOs) that are demand busied out. Enter the **display errors print** command and select Error Type 18 on the query menu. All demand busied out MOs are lost during all forms of update and must be reentered afterward.
- Schedule maintenance to prevent any conflicts during the update. Note that it must be rescheduled after the update has been successfully completed.
- Reports that are currently printing or queued to print will be lost (**list report-scheduler** command). The technician may delay the update until the reports finish printing. The **status sp-link** command can be used to determine if reports are printing. The link state will be up if the system printer is active.
- If a user dials a trunk access code and then dials less than the minimum number of digits needed to make it a valid number dialed, the trunk is not disconnected from the time-division multiplexing (TDM) bus. This will result in noise on some talk paths. A workaround for this is to set the `min` field of the ARS routing forms to not more than any number of digits that can be terminated. For example, if a CO will terminate 538-7777, do not set ARS `min` field to 8 or more for digit 5.

- When a large number of stations (3000 for R6r) are domain controlled and the Adjunct Switch Application Interface (ASAI) link drops, the switch will reset. While this is a large number of stations, it is only half of the documented limit.
- Automatic Call Distribution (ACD) Update Information:
 - ACD queues are lost after an update. There is no mechanism in R6r to drain the queues. Call Management System (CMS) or Basic Call Management System (BCMS) can be used to monitor queue lengths. If it is important to empty all queues before the update, the technician must coordinate with the customer to redirect traffic away from ACD splits before the update. Changing vectors to temporarily route calls to a disconnect announcement is one way to accomplish this.
 - All ACD agents are logged out after an update and must log in to receive calls.
 - Status lamps associated with ACD will be incorrect after the update. The lamp inconsistencies are corrected by background maintenance within one hour.
 - The CMS link is dropped and restarted. This causes CMS data to be lost after the update. The amount of CMS data lost can be minimized if the update is done just after the last CMS measurement interval.
 - All measurement data is lost after a software update (including BCMS). If needed, the reports may be printed prior to the update.
 - CMS could abort processing of a call if a measured trunk that was a part of the conference dropped off the call before the end of the call. Customers experiencing these symptoms and who are running R3V4 CMS should update to r3v4ao.e.
- Property Management System (PMS) features:
 - Execute **list wakeup print**. This shows what wakeup calls are scheduled. Since these calls are lost after an update, the technician may want to reschedule the update for a different time if there are a large number. Alternately, the report may be printed and the scheduled calls reentered after the update.
 - Execute **list do-not-disturb print**. This shows which stations have Do Not Disturb activated. This status is lost during an update and must be reentered after an update is completed.
- AUDIX® — Previously, a call from a station with client room class of service (COS) would never show redirection information, just the name and extension (or room) of a call originated by a station with client room COS. Stations used for user display redirection information must have this field set to **y**.

- **BRI Sets** — Some basic rate interface (BRI) sets do not hear Vector Directory Number (VDN)/Vector announcements. The impact of this is that a 75xx BRI user dials a local VDN/Vector (that is, not over a trunk) that plays an announcement and therefore will probably not enter the appropriate digits because the last digit of the VDN will be erroneously transmitted to the digit collection process. This will typically result in silence on the phone until the timeout occurs and the original announcement is replayed and then the user may enter the digits. Users of 85xx BRI voice terminals are NOT affected by this problem.
- **Administration Without Hardware (AWOH) for Data Module** — If customers change the administration of a data module to AWOH, then some data modules administered after that data module, upon System Restart or an update will also be translated as AWOH. For X.25 data modules, this renders them useless. Field support has stated that AWOH for data modules is very rare.
- **Before running the `upgrade software` command, use the following commands to verify the overall health of the system:**
 - **`status spe`** — Shows the overall state of the system. Any alarms shown should be checked before proceeding to determine if they could preclude the update. Also, the state of health of the active SPE should be functional. The state of health of the standby SPE must also be functional.
 - **`status logins`** — Shows what logins are active in the system. During the update process the only active login should be the technician performing the update.
 - **`display alarms`** — Shows active alarms in the system. Look for alarms against SPE components that may preclude a successful update.
 - **`display errors`** — Shows active errors in the system. Look for alarms against SPE components that may preclude a successful update.
 - **`status health`** — Shows the amount of load currently on the system. It is recommended that an update not be started if the call processing occupancy is greater than 50 percent. Note that there is nothing to prevent an update under a heavy load, but if calls are dropped, the impact to the customer will be greater.

- Translation Corruption — A sanity check may be performed on translations prior to the update by performing the following steps:
 1. Execute the **list station** and **list trunk group** commands. Note that on larger systems (> 500 stations), this translation corruption check may not be feasible due to the time required to list all stations.
 2. If the response “Error encountered, can't complete request” appears, execute the following steps (if no error is received, proceed with the update):
 - a. Execute **list configuration software** to determine the date/time of translations on the disk/card or disk/tape.
 - b. Insert the backup card or tape. Execute **list configuration software** to determine the date/time of translations on the backup card or tape.
 - c. If the primary and backup date/time are less than a day apart, read in the backup card/tape using **reset system 3** and load translations from the backup. This will result in a service interruption (up to five minutes depending on system size).



NOTE:

The **reset system 3** command must run to completion with the translation card or tape cartridge in place. If either the card or tape are removed before the “Login” prompt is displayed on the administration terminal, the system may contain partial translations.

- d. Repeat Step 1. If the response “Error encountered, can't complete request” appears again, do not continue with the update and escalate through the Technical Escalation process. If no error is received, proceed with the update.

R6csi/vs/si Update Procedures

Update Notes

Due to the nature of the flash memory in an R6csi/vs/si system, the following operational differences should be kept in mind during updates:

- No Software Shadowing — Unlike the 286-based system in which the software can be shadowed from the active SPE to the standby SPE, the flash memory on both SPEs must be updated individually. However, the shadowing of translation data is preserved. The **upgrade software** command updates both SPEs, but does it one at a time.
- Processor Replacement — The TN790 processor circuit pack replacement procedure is provided because a software memory card usually needs to be used to ensure that the processor is running the appropriate software. Because software shadowing is not available, the standby TN790 processor circuit pack must contain the correct software version or be updated to the correct software version as described in the circuit pack replacement procedure.
- Translation/Software Separate — Unlike the tape in a 286-based system, the software and translation in an R6csi/vs/si-based system reside in separate flash memory cards. Therefore, during a software update, the software memory cards and the translation memory cards have to be swapped in different stages of the update. It is very important for the user to ensure that memory cards are swapped correctly and in a timely fashion. Failure to do so will require the **upgrade software** command to be re-executed.
- No Translation Backup — Due to the high cost of flash memory cards, the customer may not have a backup translation memory card. After a software update, it is very important to make sure that the new software is running normally, before saving translation to the only translation memory card. Otherwise, the translation memory card cannot be used to bring up translations in the system if the new software is backed out with the old software.
- Power Recycling — Do not recycle power to an R3si-based duplicated system to invoke a software update.
- Failed Updates — The standby SPE must be in the standby mode before the **upgrade software** command can be executed in a duplicated system. However, if an **upgrade software** command is accepted by the system and fails, the standby SPE does not have to be in the standby mode for any subsequent **upgrade software** command to work.

- **Software Memory Card** — Unlike the 286-based system where the software currently running in the system is available on customer premises, R6csi/vs/si-based software memory cards are not available on customer premises. It is critical that the software memory card containing the software currently running on the switch is available before doing the software update process. If a system experiences problems running the new software, the software memory card containing the old software can be used in the backout process. make sure that no software backout is needed before saving translation with the new software, because the new translation is not backward compatible to old software.
- **SAT Output** — A software update is always done on the standby SPE. The output on the standby SPE being updated is displayed on the SAT. If any action is done to disrupt the update (such as removing the software memory card), the standby display will remain in effect until a 20 minute timer expires. In the mean time, the SAT displays only messages from the standby SPE.

R6csi/vs/si Standard Reliability (Simplex) Update Procedures


NOTE:

No administration changes should be entered during the following software update procedure. There can be substantial time gaps between steps and, since the system cannot prevent administration changes, it is up to the system technician to make sure that none are attempted during the entire software update process. This includes making sure that no one (including the customer) is making administration changes through connections other than the local management terminal.

Step	Action	Time (Mins)	Purpose
1	Disable TTI using the change system-parameters feature command.	2	This prevents background activity from interfering with the update process. Note that it must be restored after the update.
2	Disable scheduled maintenance using the change system-parameters maintenance command. (If scheduled maintenance has begun, set the value of the <code>Stop Time</code> field to one minute later than the current time. If scheduled maintenance has not yet begun, change the value of the <code>Start Time</code> field to a time after the update will be finished.)	2	This prevents background activity from interfering with the update process. Please take note of the original scheduled maintenance times because the values must be restored after the update.
3	Insert the software memory card for the current system software and issue the list config soft command.	1	This verifies that a software memory card containing the current system software is on hand.
4	Note if patches are applied to the system. If the old software load must be restored, the patches will have to be downloaded again.		
5	Reinsert the translation memory card and issue the save translation command.	10	This saves translations to the translation memory card for back-out. This step insures that the translation memory card has the latest changes.
6	If there is a TN750 or TN750B announcement circuit pack, issue the save announcements command. This step is necessary only if list config soft lists an Announce file. If there are one or more TN750C announcement circuit packs, see ^a	40	This saves volatile announcements for restoring or back-out.

Step	Action	Time (Mins)	Purpose
7	Replace the translation memory card with the new software memory card and issue the list config soft command.	1	This verifies that the new memory card has the expected new load.
END OF NONSERVICE-AFFECTING STEPS			
8	Issue the upgrade software command.	10	This step reboots the new load and will cause a service outage. The following shows the output seen during the update command processing:

```

INITIATING SOFTWARE UPGRADE
MEM-CARD CHECKSUM PASSED
ERASING/REPROGRAMMING MTP AND MODEM FLASH PASSED
ERASING PROCESSOR FLASH PASSED
REPROGRAMMING PROCESSOR FLASH PASSED
UPGRADE COMPLETE

REPLACE SOFTWARE MEM-CARD WITH TRANSLATION MEM-CARD
    
```

The following errors may occur during the update process:

- If the MEM-CARD CHECKSUM test fails, another software memory card must be obtained because the software on the memory card is bad.
- The ERASING/REPROGRAMMING MTP AND MODEM FLASH process should complete almost instantaneously. If this step fails, the system administration terminal (SAT) will not be functional and the remainder of the update will not be visible. Recover by resetting the processor circuit pack. If this step fails again, replace the processor. The system should automatically perform another update due to the presence of the software memory card.
- The REPROGRAMMING PROCESSOR FLASH process is reported by the following display in which status information is overwritten on the same line:

```

REPROGRAMMING SPE 01 MEGABYTES DONE REPROGRAMMING SPE 02 MEGABYTES DONE
REPROGRAMMING SPE 03 MEGABYTES DONE REPROGRAMMING SPE 04 MEGABYTES DONE
REPROGRAMMING SPE 05 MEGABYTES DONE REPROGRAMMING SPE 06 MEGABYTES DONE
REPROGRAMMING SPE 07 MEGABYTES DONE REPROGRAMMING SPE 08 MEGABYTES DONE
REPROGRAMMING SPE 09 MEGABYTES DONE REPROGRAMMING SPE 10 MEGABYTES DONE
REPROGRAMMING SPE 11 MEGABYTES DONE REPROGRAMMING SPE 12 MEGABYTES DONE
REPROGRAMMING SPE 13 MEGABYTES DONE REPROGRAMMING SPE 14 MEGABYTES DONE
REPROGRAMMING SPE 15 MEGABYTES DONE REPROGRAMMING SPE 16 MEGABYTES DONE
    
```

If this step fails, the system enters SPE-down mode. Recycle system power to recover.

Step	Action	Time (Mins)	Purpose
9	When you see the message REPLACE SOFTWARE MEM-CARD WITH TRANSLATION MEM-CARD, remove the software memory card and insert the translations memory card.	<2	<i>Perform this operation within 2 minutes, otherwise the system will boot without translations. The system responds as follows:</i>

```

INVOKING EMERGENCY TRANSFER
INTERNAL REGISTER TEST PASSED
LOCAL BUS TEST PASSED
ROM CHECKSUM TEST PASSED
CONTROL STATUS TEST PASSED
DCACHE TEST PASSED
ICACHE TEST PASSED
WRITE BUFFER TEST PASSED
BTO TEST PASSED
MEM CONFIG TEST PASSED
MEMORY FUNCTIONAL TEST PASSED
MEMORY MODULE A STUCK BIT TEST PASSED
MEMORY MODULE A PARITY TEST PASSED
MEMORY MODULE A BURST TEST PASSED
MEMORY MODULE B STUCK BIT TEST PASSED
MEMORY MODULE B PARITY TEST PASSED
MEMORY MODULE B BURST TEST PASSED
MEMORY MODULE C STUCK BIT TEST PASSED
MEMORY MODULE C PARITY TEST PASSED
MEMORY MODULE C BURST TEST PASSED
VIRTUAL MEMORY TEST PASSED
EXCEPTION TEST PASSED
TIMER TEST PASSED
MTP TEST PASSED
SANITY TIMER TEST PASSED
ADDRESS MATCHER TEST PASSED
FLASH TEXT CHECKSUM TEST PASSED
DECOMPRESSING IDATA in_cnt = 455532, out_cnt = 1802240
RAM DATA CHECKSUM TEST PASSED
RESET 4 (REBOOT) PERFORMED
    
```

If the system is not running properly or the translations seem to be incorrect, follow the technical escalation procedure. If the new load must be backed out (that is, returned to the previous software load), the reserved software memory card can be used to go back to the old release using the **upgrade software** command. You may also see the following messages:

- If the display shows `MEMORY MODULE C Tests`, this means that tests are being performed on a TN790 containing a third memory single inline memory module (SIMM).
- If the `FLASH TEXT CHECKSUM` step fails, check the software memory card and follow the technical escalation process. The software memory card may require replacement before the update can be completed.

END OF SERVICE-AFFECTING STEPS

Step	Action	Time (Mins)	Purpose
10	Log in as craft.	2	The following message is displayed on the copyright screen if translation corruption is detected:

WARNING: translation corruption detected; call Lucent Technologies distributor immediately

LOCATION MAIN LOCATION NUMBER

USA/Canada TSC 800-422-6560 prompt 4

Lucent RSC Hungary 361-345-4334

Lucent Caribbean & Latin America Hqtrs 1-303-804-3778

Lucent Business Communications Europe 441-252-774-889

Lucent Asia/Pacific Regional Support Center 65-872-8686

11	Enter the list config soft command.	1	This verifies that the new software load is running in memory.
12	Enter the change system-parameters maintenance command.	2	Change the scheduled maintenance <i>Start Time</i> and <i>Stop Time</i> fields back to their previous values before the software update.
13	If TTI was disabled before the update, use the change system-parameters feature command to enable TTI.	2	This enables the TTI feature.
14	If MMI circuit packs (TN787) were busied-out before the update, restore them to service using the release busyout command.	2	This releases the busy out condition for the MMI circuit packs.
15	Use the set time command.	1	This sets the system clock to the correct time and date.
16	Enter the save translation command to save the updated translations.	10	If this step returns an error concerning corrupt translations, investigate to determine if the system is operating normally and escalate to the appropriate organization (see the information above). DO NOT override and save translations until you are ABSOLUTELY sure the system is operating properly. Failure to do this may result in loss of translations and require retranslation of the entire switch. ^b

Step	Action	Time (Mins)	Purpose
17	Perform a sanity check on the system by executing the following commands in the order provided: status system all list station display alarms list trunk-group list hunt-group	5	Check for any unusual status on the system; ensure that the translation is read in properly, and that no alarm is raised on the system.
18	Return the MLPP software memory card to the Rapid Response team within five business days.		The flash card is property of Lucent Technologies.
19	Put new software labels on the face plate of the TN790 circuit pack.	1	This indicates that the system software has been updated.
20	Inform the appropriate organization of the completed update.	5	Inform the Initialization and Administration System (INADS) group at 1-800-248-1234 prompt 6, 2 (USA/ Canada only) or the appropriate Center of Excellence (COE) for non-North America sites (see the numbers shown in Step 10).

a. The TN750C circuit pack contains flash memory which provides internal backup of announcements on the circuit pack. Thus, the TN750C circuit pack DOES NOT need the save and restore processes required for the TN750 and TN750B. However, you can use the save and restore processes to copy announcements from a TN750 or TN750B to a TN750C circuit pack. The TN750C circuit pack can be used to replace a TN750 or TN750B in G3V3 and earlier systems. The difference in operation is that the TN750C automatically restores and reports the availability of announcements from its own internal flash memory in five minutes, rather than the approximately 40 minutes it took the TN750 or TN750B circuit pack from the mass-storage system. Although, internal backup is provided by the TN750C circuit pack, customers may also wish to save the announcement contents of each circuit pack to mass storage. Backups of the announcements on the TN750C circuit pack can be maintained by saving the announcement contents of each circuit pack to separate tapes or translation memory cards. Label each tape or translation memory card to match the circuit pack saved to it.

For example, insert the flash translation card into the system. Execute the **save announcements [‘from’ cabinet(1-X), carrier (A-E), slot (0-20)]** command. This will save the announcements from the designated TN750C to the inserted media. The “from” location is required if multiple announcement circuit packs exist in the system. Note that only one TN750/TN750B circuit pack can exist but multiple TN750C circuit packs can exist in the system. Remove the flash translation card/tape from the system and label with TN750C location.

b. If the system is not running properly or the translations seem to be incorrect, follow the technical escalation procedure. If the new load must be backed out (that is, returned to the previous software load), the backup software memory card can be used to go back to the old release using the **upgrade software** command. If after consultation with the TSC, the Services’ engineer overrides the translation corruption error by entering **enable save-translation**, the customer is no worse off than they would have been before the translation corruption check was added. It is ONLY one extra safety net for the customer. The new check takes effect upon any update or **reset system 3** and higher.

R6csi/vs/si High/Critical Reliability (Duplicated) Update Procedures



NOTE:

No administration changes should be entered during the following software update procedure. There can be substantial time gaps between steps and, since the system cannot prevent administration changes, it is up to the system technician to make sure that none are attempted during the entire software update process. This includes making sure that no one (including the customer) is making administration changes through connections other than the local management terminal.

Step	Action	Time (Mins)	Purpose
1	Disable TTI using the change system-parameters feature command.	2	This prevents background activity from interfering with the update process. Note that it must be restored after the update.
2	Disable scheduled maintenance using the change system-parameters maintenance command. (If scheduled maintenance has begun, set the value of the <code>Stop Time</code> field to one minute later than the current time. If scheduled maintenance has not yet begun, change the value of the <code>Start Time</code> field to a time after the update will be finished.)	2	This prevents background activity from interfering with the update process. Please take note of the original scheduled maintenance times because the values must be restored after the update.
3	Insert the software memory card for the current system software and issue the list config soft command.	1	This verifies that a software memory card containing the current system software is on hand.
4	Note if patches are applied to the system. If the old software load must be restored, the patches will have to be downloaded again.		
5	Reinsert the translation memory card and issue the save translation command.	20	This saves translations to the translation memory card for back-out. This step insures that the translation memory card has the latest changes.
6	If there is a TN750 or TN750B announcement circuit pack, issue the save announcements command. This step is necessary only if list config soft lists an Announce file. If there are one or more TN750C announcement circuit packs, see ^a	40	This saves volatile announcements for restoring or back-out.

Step	Action	Time (Mins)	Purpose
7	Replace the translation memory card in the standby SPE with the new software memory card and issue the list config soft long command.	1	This verifies that the new memory card has the expected new load. Though this may raise alarms, continue with the update.
8	Enter the status system 1 command.	1	This verifies that the standby SPE is in standby mode.
9	Enter the refresh spe-standby command.	1	This puts the standby SPE into standby mode.
10	Enter the status system 1 command again.	1	This checks again to verify that the standby SPE is in the standby mode. If it is, continue with Step 13. If not, continue with Step 11.
11	Enter the busyout spe-standby command followed by the release spe-standby command.	2	This should put the standby SPE into the standby mode.
12	Enter the status system 1 command again.	1	This checks again to verify that the standby SPE is in the standby mode.
END OF NONSERVICE-AFFECTING STEPS			
13	Enter the upgrade software command.	15	This step reboots the new load and will cause a service outage. The following shows the output seen during this phase of the update:

Step	Action	Time (Mins)	Purpose
------	--------	-------------	---------

```

INITIATING SOFTWARE UPGRADE
MEM-CARD CHECKSUM PASSED
ERASING/REPROGRAMMING MTP AND MODEM FLASH PASSED
ERASING PROCESSOR FLASH PASSED
REPROGRAMMING PROCESSOR FLASH PASSED

REPLACE SOFTWARE MEM-CARD ON B WITH TRANSLATION MEM-CARD
    
```

The following errors may occur during the update process:

- If the MEM-CARD CHECKSUM test fails, another software memory card must be obtained because the software on the memory card is bad.
- The ERASING/REPROGRAMMING MTP AND MODEM FLASH process should complete almost instantaneously. If this step fails, the SAT will not be functional and the remainder of the update will not be visible. Recover by resetting the processor circuit pack. If this step fails again, replace the processor. The system should automatically perform another update due to the presence of the software memory card.
- The REPROGRAMMING PROCESSOR FLASH process is reported by the following display in which status information is overwritten on the same line:

```

REPROGRAMMING SPE 01 MEGABYTES DONE REPROGRAMMING SPE 02 MEGABYTES DONE
REPROGRAMMING SPE 03 MEGABYTES DONE REPROGRAMMING SPE 04 MEGABYTES DONE
REPROGRAMMING SPE 05 MEGABYTES DONE REPROGRAMMING SPE 06 MEGABYTES DONE
REPROGRAMMING SPE 07 MEGABYTES DONE REPROGRAMMING SPE 08 MEGABYTES DONE
REPROGRAMMING SPE 09 MEGABYTES DONE REPROGRAMMING SPE 10 MEGABYTES DONE
REPROGRAMMING SPE 11 MEGABYTES DONE REPROGRAMMING SPE 12 MEGABYTES DONE
REPROGRAMMING SPE 13 MEGABYTES DONE REPROGRAMMING SPE 14 MEGABYTES DONE
REPROGRAMMING SPE 15 MEGABYTES DONE REPROGRAMMING SPE 16 MEGABYTES DONE
    
```

If this step fails, the system will take the standby SPE into SPE-down mode. The display of the failed update will remain until the active SPE resets the screen again. Retry the update.

Step	Action	Time (Mins)	Purpose
14	When you see the message REPLACE SOFTWARE MEM-CARD ON B WITH TRANSLATION MEM- CARD, replace the software memory card on the standby SPE with the translation memory card.	<2	<i>Perform this operation within 2 minutes, otherwise the update will stop.</i> The standby SPE will boot up with the translations and inform the active SPE that it is ready to take over as the active SPE. The system responds as follows:

UPGRADE COMPLETE

 REPLACE TRANSLATION MEM-CARD ON A WITH SOFTWARE MEM-CARD

15	When you see the message REPLACE TRANSLATION MEM- CARD ON A WITH SOFTWARE MEM-CARD, replace the translation card on the active SPE with the soft- ware memory card.	<2	<i>Perform this operation within 2 minutes, otherwise the update will stop.</i> The presence of the software memory card in the active SPE causes the system to perform a level-2 SPE interchange. All calls will be dropped. While the new active SPE is booting up, the new standby SPE undergoes similar software update. The system responds as follows:
----	--	----	---

INITIATING SOFTWARE UPGRADE
 MEM-CARD CHECKSUM PASSED
 ERASING/REPROGRAMMING MTP AND MODEM FLASH PASSED
 ERASING PROCESSOR FLASH PASSED
 REPROGRAMMING PROCESSOR FLASH PASSED

 REPLACE SOFTWARE MEM-CARD ON A WITH TRANSLATION MEM-CARD

16	When you see the message REPLACE SOFTWARE MEM-CARD ON A WITH TRANSLATION MEM- CARD, replace the software card on the new standby SPE with the trans- lation memory card.	<2	<i>Perform this operation within 2 minutes, otherwise the standby SPE will boot up without translation. It will recover the translations when the active SPE enables memory shadowing and put the standby SPE into standby mode about 10 minutes after the SPE interchange.</i> Upon inserting the translation memory card, the craft login prompt displays and the standby SPE boots up.
----	---	----	---

END OF SERVICE-AFFECTING STEPS

Step	Action	Time (Mins)	Purpose
17	Log in as craft.	2	The following message is displayed on the copyright screen if translation corruption is detected:

WARNING: translation corruption detected; call Lucent Technologies distributor immediately

LOCATION MAIN LOCATION NUMBER

USA/Canada TSC 800-422-6560 prompt 4

Lucent RSC Hungary 361-345-4334

Lucent Caribbean & Latin America Hqtrs 1-303-804-3778

Lucent Business Communications Europe 441-252-774-889

Lucent Asia/Pacific Regional Support Center 65-872-8686

18	Enter the list config soft long command.	1	This verifies that the new software load is running on both SPEs.
19	Enter the change system-parameters maintenance command.	2	Change the scheduled maintenance <i>Start Time</i> and <i>Stop Time</i> fields back to their previous values before the software update.
20	If TTI was disabled before the update, use the change system-parameters feature command to enable TTI.	2	This enables the TTI feature.
21	If MMI circuit packs (TN787) were busied-out before the update, restore them to service using the release busyout command.	2	This releases the busy out condition for the MMI circuit packs.
22	Use the set time command.	1	This sets the system clock to the correct time and date.
23	Enter the save translation command to save the updated translations.	10	If this step returns an error concerning corrupt translations, investigate to determine if the system is operating normally and escalate to the appropriate organization (see the information above). DO NOT override and save translations until you are ABSOLUTELY sure the system is operating properly. Failure to do this may result in loss of translations and require retranslation of the entire switch. ^b

Step	Action	Time (Mins)	Purpose
24	Perform a sanity check on the system by executing the following commands in the order provided: status system all list station display alarms list trunk-group list hunt-group	5	Check for any unusual status on the system; ensure that the translation is read in properly, and that no alarm is raised on the system.
25	Return the MLPP software memory card to the Rapid Response team within five business days.		The flash card is property of Lucent Technologies.
26	Put the new software labels on the face plate of the TN790 circuit pack.	1	This indicates that the system software has been updated.
27	Inform the appropriate organization of the completed update.	5	Inform INADS administration 1-800-248-1234 prompt 6, 2 (USA/ Canada only) or the appropriate COE for non-North America sites (see the numbers shown in Step 17).

a. The TN750C circuit pack contains flash memory which provides internal backup of announcements on the circuit pack. Thus, the TN750C circuit pack DOES NOT need the save and restore processes required for the TN750 and TN750B. However, you can use the save and restore processes to copy announcements from a TN750 or TN750B to a TN750C circuit pack. The TN750C circuit pack can be used to replace a TN750 or TN750B in G3V3 and earlier systems. The difference in operation is that the TN750C automatically restores and reports the availability of announcements from its own internal flash memory in five minutes, rather than the approximately 40 minutes it took the TN750 or TN750B circuit pack from the mass-storage system. Although, internal backup is provided by the TN750C circuit pack, customers may also wish to save the announcement contents of each circuit pack to mass storage. Backups of the announcements on the TN750C circuit pack can be maintained by saving the announcement contents of each circuit pack to separate tapes or translation memory cards. Label each tape or translation memory card to match the circuit pack saved to it.

For example, insert the flash translation card into the system. Execute the **save announcements [‘from’ cabinet(1-X), carrier (A-E), slot (0-20)]** command. This will save the announcements from the designated TN750C to the inserted media. The “from” location is required if multiple announcement circuit packs exist in the system. Note that only one TN750/TN750B circuit pack can exist but multiple TN750C circuit packs can exist in the system. Remove the flash translation card/tape from the system and label with TN750C location.

b. If the system is not running properly or the translations seem to be incorrect, follow the technical escalation procedure. If the new load must be backed out (that is, returned to the previous software load), the backup software memory card can be used to go back to the old release using the **upgrade software** command. If after consultation with the TSC, the Services’ engineer overrides the translation corruption error by entering **enable save-translation**, the customer is no worse off than they would have been before the translation corruption check was added. It is ONLY one extra safety net for the customer. The new check takes effect upon any update or **reset system 3** and higher.

R6csi/vs/si Update Procedures on Standby SPE Only



NOTE:

No administration changes should be entered during the following software update procedure. There can be substantial time gaps between steps and, since the system cannot prevent administration changes, it is up to the system technician to make sure that none are attempted during the entire software update process. This includes making sure that no one (including the customer) is making administration changes through connections other than the local management terminal.

This procedure is used for updating only one SPE in a duplicated system. This can be done if there is software corruption (bad checksum), or when reconciling situations such as the SPEs running different software versions. The procedure is written as if the standby SPE is in carrier B.



CAUTION:

This procedure is NOT used for replacing the standby processor.

If you are not sure that the software memory card contains the correct software, plug it into the active SPE and execute list configuration software. If the software matches and the UPDATE FILE Identifier displays `none`, continue with this procedure; otherwise, escalate the problem.



NOTE:

Be sure to replace the translation memory card in the active SPE.

Step	Action	Time (Mins)	Purpose
1	Enter the status system 1 command.	1	This verifies that the correct SPE is in standby mode. If the SPE to be updated is the standby SPE, go to Step 3; otherwise, continue with Step 2.
2	Enter the reset system interchange command.	1	This forces the SPE that requires the update to be in standby mode.
3	Enter the status system 1 command again.	1	This verifies that the standby SPE is in standby mode. If the standby SPE is in standby mode, go to Step 8; otherwise, go to Step 4.
4	Enter the refresh spe-standby command.	1	This puts the standby SPE into standby mode.

Step	Action	Time (Mins)	Purpose
5	Enter the status system 1 command again.	1	This checks again to verify that the standby SPE is in the standby mode. If it is, continue with Step 8. If not, continue with Step 6.
6	Enter the busyout spe-standby command followed by the release spe-standby command.	2	This should put the standby SPE into the standby mode.
7	Enter the status system 1 command again.	1	This checks again to verify that the standby SPE is in the standby mode. If the correct SPE is still not in standby mode, escalate the problem.
8	Enter the upgrade software command.	15	This step reboots the new load and will cause a service outage. The following shows the output seen during this phase of the update:

```

INITIATING SOFTWARE UPGRADE
MEM-CARD CHECKSUM PASSED
ERASING/REPROGRAMMING MTP AND MODEM FLASH PASSED
ERASING PROCESSOR FLASH PASSED
REPROGRAMMING PROCESSOR FLASH PASSED

REPLACE SOFTWARE MEM-CARD ON B WITH TRANSLATION MEM-CARD
    
```

9	When you see the message REPLACE SOFTWARE MEM-CARD ON B WITH TRANSLATION MEM-CARD, ignore the prompt. Hard-select the active SPE by throwing the SPE-Select switches.	1	This terminates the update without performing the SPE-Interchange.
10	Press Enter to get a login prompt from the active SPE and log in.	1	Log in to the active SPE.
11	Enter the list config soft long command.	1	This verifies that the new software load is running on the updated SPE.
12	Throw the SPE-Select switches back to the Auto position.	1	This allows the system to return to its normal duplicated mode.

R6csi/vs/si Procedure for Replacing the Standby SPE TN790 Processor

This procedure is used when the standby TN790 processor circuit pack is being replaced and the software is being loaded from the software memory card into the TN790 circuit pack. This procedure is also used when the SPE to be updated contains no software or partially erased software. The messages in this example assume carrier A is the active SPE.



NOTE:

No administration changes should be entered during the following software update procedure. There can be substantial time gaps between steps and, since the system cannot prevent administration changes, it is up to the system technician to make sure that none are attempted during the entire software update process. This includes making sure that no one (including the customer) is making administration changes through connections other than the local management terminal.

Step	Action	Time (Mins)	Purpose
1	Hard-select the current active SPE by throwing the SPE-Select switches.	1	This holds the standby SPE offline.
2	Insert the software memory card into the active SPE and issue the list config soft command. If the software matches and the UPDATE FILE Identifier displays <code>none</code> , continue with this procedure; otherwise, escalate the problem. <i>Be sure to replace the translation memory card in the active SPE.</i>	2	The memory card software version must match the software version in the active SPE. If an UPDATE FILE exists, it must be replaced in the standby SPE after the software is loaded.
3	Insert the software memory card into the standby SPE.	1	The standby processor needs to be replaced or has missing software.
4	Unseat the standby processor circuit pack and plug in the replacement processor. If the problem is missing software, plug in the same processor. The system displays progress of the software update. <i>WARNING: DO NOT remove power to the standby SPE carrier.</i>	7	This forces an update on the standby SPE.

Step	Action	Time (Mins)	Purpose
5	When you see the message REPLACE SOFTWARE MEM-CARD ON B WITH TRANSLATION MEM- CARD, replace the software memory card in the standby SPE with the translation memory card.	<2	<i>Perform this operation within 2 minutes, otherwise the standby SPE will boot up with no translation.</i>
6	When you see the message REPLACE TRANSLATION MEM- CARD ON A WITH SOFTWARE MEM-CARD, ignore the message. Wait 3 minutes for the standby SPE to initialize before proceeding to the next step.	3	Do not attempt to load the software from the software memory card into the active SPE.
7	Press Enter to get a login prompt from the active SPE. Log in as craft.	1	Log in to the active SPE.
8	Enter the list config soft long command. Try this command several times if not successful. Use Step 9 if this command will not display the software versions; otherwise, skip to Step 10.	3	This verifies that the same version of software is running on both SPEs.

Step	Action	Time (Mins)	Purpose
9	Enter the busyout spe-standby command followed by the release spe-standby command. Wait 5 minutes for the standby SPE to initialize and execute the status system 1st-cabinet command. The standby processor failed to initialize of the standby SPE mode is down. If the standby SPE mode is maint/init or maint/entering, repeat this step two more times. Enter list config soft long to see if the commands worked. <i>If this step did not succeed, escalate the problem.</i>	>3	This forces the standby SPE into a mode where you can issue the software version command. The same version of software must be running on both SPEs.
10	Enter the status system 1 command. If SPE alarm counts are displayed, run component tests to resolve these alarms. The allowed tests include: test spe-standby test duplication-interface test shadow-link	>1	This attempts to resolve SPE alarms before throwing the SPE-Select switches to Auto.
11	Throw the SPE-Select switches back to the neutral position. After 10 minutes, enter status system 1 to verify that the standby SPE is in standby mode and there are no SPE alarm counts. If these conditions cannot be verified within 30 minutes, escalate the problem.	>10	This allows the system to return to its normal duplicated mode. Note: If the active SPE has more severe SPE alarms than the standby SPE, an SPE-interchange will occur.

R6r Update Procedures

Update procedures can be done for R6r standard reliability systems (simplex) and high/critical reliability systems (duplicated).

R6r Standard Reliability (Simplex) Update Procedures



NOTE:

No administration changes should be entered during the following software update procedure. There can be substantial time gaps between steps and, since the system cannot prevent administration changes, it is up to the system technician to make sure that none are attempted during the entire software update process. This includes making sure that no one (including the customer) is making administration changes through connections other than the local management terminal.

Step	Action	Time (Mins)	Purpose
1	Disable TTI using the change system-parameters feature command.	2	This prevents background activity from interfering with the update process. Note that it must be restored after the update.
2	Disable scheduled maintenance using the change system-parameters maintenance command. (If scheduled maintenance has begun, set the value of the <code>Stop Time</code> field to one minute later than the current time. If scheduled maintenance has not yet begun, change the value of the <code>Start Time</code> field to a time after the update will be finished.)	2	This prevents background activity from interfering with the update process. Please take note of the original scheduled maintenance times because the values must be restored after the update.
3	If there is a TN750 or TN750B announcement circuit pack, issue the save announcements command. This step is necessary only if list config soft lists an Announce file. If there are one or more TN750C announcement circuit packs, see ^a	40	This saves volatile announcements for restoring or back-out.
4	Enter the save translation command.	2	This saves translations for back-out.
5	Enter the backup disk command.	20-50	This creates a backup tape of the current load. Do not press carriage return once the command has begun to avoid clearing and losing the results of the command.

Step	Action	Time (Mins)	Purpose
6	Remove the backup tapes.		
7	Clean the tape drives.	5	Ensure that the tape heads are clean.
8	Insert the new software load tapes.	2	Wait for the tapes to retension.
9	Enter the list config soft command.	5	This verifies that the new tape has the expected new load.
10	Enter the restore disk install command.	12	This copies the new tape files to the disk.
END OF NONSERVICE-AFFECTING STEPS			
11	Issue the upgrade software XDr.07585.1.1.02 command.	15	This step saves translations and reboots the new load. This will cause a service outage.
END OF SERVICE-AFFECTING STEPS			
12	Log in as craft.	2	The following message is displayed on the copyright screen if translation corruption is detected:

WARNING: translation corruption detected; call Lucent Technologies distributor immediately

LOCATION MAIN LOCATION NUMBER

USA/Canada TSC 800-422-6560 prompt 4

Lucent RSC Hungary 361-345-4334

Lucent Caribbean & Latin America Hqtrs 1-303-804-3778

Lucent Business Communications Europe 441-252-774-889

Lucent Asia/Pacific Regional Support Center 65-872-8686

13	Enter the change system-parameters maintenance command.	2	Change the scheduled maintenance <i>Start Time</i> and <i>Stop Time</i> fields back to their previous values before the software update.
14	If TTI was disabled before the update, use the change system-parameters feature command to enable TTI.	2	This enables the TTI feature.
15	If MMI circuit packs (TN787) were busied-out before the update, restore them to service using the release busyout command.	2	This releases the busy out condition for the MMI circuit packs.

Step	Action	Time (Mins)	Purpose
16	Use the set time command.	1	This sets the system clock to the correct time and date.
17	Enter the save translation command to save the updated translations.	10	If this step returns an error concerning corrupt translations, investigate to determine if the system is operating normally and escalate to the appropriate organization (see the information above). DO NOT override and save translations until you are ABSOLUTELY sure the system is operating properly. Failure to do this may result in loss of translations and require retranslation of the entire switch. ^b
18	Enter the backup disk command.	20-50	This creates backup copies of changed files. Although the next scheduled maintenance run will do this, it must be done now to ensure a complete and successful software update. Do not press carriage return once the command has begun to avoid clearing and losing the results of the command.
19	Enter the test stored-data command.	10	This verifies that all disk/tape files are consistent. Although the next scheduled maintenance run will do this, it must be done now to ensure a complete and successful software update.
20	Enter the set vector e command.	1	This sets the core dump vector to take a core dump on any system restart.
21	Enter the list config soft command.	1	This verifies that the new software load is running in memory.
22	Inform the appropriate organization of the update completion.	5	Inform INADS administration 1-800-248-1234 prompt 6, 2 (USA/Canada only) or the appropriate COE for non-North America sites (see the information in Step 12).

- a. The TN750C circuit pack contains flash memory which provides internal backup of announcements on the circuit pack. Thus, the TN750C circuit pack DOES NOT need the save and restore processes required for the TN750 and TN750B. However, you can use the save and restore processes to copy announcements from a TN750 or TN750B to a TN750C circuit pack. The TN750C circuit pack can be used to replace a TN750 or TN750B in G3V3 and earlier systems. The difference in operation is that the TN750C automatically restores and reports the availability of announcements from its own internal flash memory in five minutes, rather than the approximately 40 minutes it took the TN750 or TN750B circuit pack from the mass-storage system. Although, internal backup is provided by the TN750C circuit pack, customers may also wish to save the announcement contents of each circuit pack to mass storage. Backups of the announcements on the TN750C circuit pack can be maintained by saving the announcement contents of each circuit pack to separate tapes or translation memory cards. Label each tape or translation memory card to match the circuit pack saved to it.

For example, insert the flash translation card into the system. Execute the **save announcements** [**'from' cabinet(1-X). carrier (A-E), slot (0-20)**] command. This will save the announcements from the designated TN750C to the inserted media. The "from" location is required if multiple announcement circuit packs exist in the system. Note that only one TN750/TN750B circuit pack can exist but multiple TN750C circuit packs can exist in the system. Remove the flash translation card/tape from the system and label with TN750C location.

- b. If the system is not running properly or the translations seem to be incorrect, follow the technical escalation procedure. If the new load must be backed out (that is, returned to the previous software load), the backup software memory card can be used to go back to the old release using the **upgrade software** command. If after consultation with the TSC, the Services' engineer overrides the translation corruption error by entering **enable save-translation**, the customer is no worse off than they would have been before the translation corruption check was added. It is ONLY one extra safety net for the customer. The new check takes effect upon any update or **reset system 3** and higher.

R6r High/Critical Reliability (Duplicated) Update Procedures



NOTE:

No administration changes should be entered during the following software update procedure. There can be substantial time gaps between steps and, since the system cannot prevent administration changes, it is up to the system technician to make sure that none are attempted during the entire software update process. This includes making sure that no one (including the customer) is making administration changes through connections other than the local management terminal.

Step	Action	Time (Mins)	Purpose
1	Disable TTI using the change system-parameters feature command.	2	This prevents background activity from interfering with the update process. Note that it must be restored after the update.
2	Disable scheduled maintenance using the change system-parameters maintenance command. (If scheduled maintenance has begun, set the value of the <code>Stop Time</code> field to one minute later than the current time. If scheduled maintenance has not yet begun, change the value of the <code>Start Time</code> field to a time after the update will be finished.)	2	This prevents background activity from interfering with the update process. Please take note of the original scheduled maintenance times because the values must be restored after the update.
3	If there is a TN750 or TN750B announcement circuit pack, issue the save announcements command. This step is necessary only if list config soft lists an Announce file. If there are one or more TN750C announcement circuit packs, see ^a	40	This saves volatile announcements for restoring or back-out.
4	Enter the save translation command.	2	This saves translations for back-out.
5	Enter the backup disk command.	20-50	This creates a backup tape of the current load. Do not press carriage return once the command has begun to avoid clearing and losing the results of the command.
6	Remove the backup tapes.		
7	Clean the tape drives.	5	Ensure that the tape heads are clean.

Step	Action	Time (Mins)	Purpose
8	Insert the new software load tapes.	2	Wait for the tapes to retention.
9	Enter the list config soft long command.	5	This verifies that the new tape has the expected new load.
10	Enter the restore disk install both command.	12	This copies the new tape files to both disks.
END OF NONSERVICE-AFFECTING STEPS			
11	Issue the upgrade software XDr.07585.1.1.02 command.	15	This step saves translations and reboots the new load. This will cause a service outage.
END OF SERVICE-AFFECTING STEP			
12	Log in as craft.	2	The following message is displayed on the copyright screen if translation corruption is detected:

```

WARNING: translation corruption detected; call Lucent Technologies distributor
immediately

LOCATION    MAIN LOCATION NUMBER

USA/Canada TSC  800-422-6560 prompt 4

Lucent RSC Hungary  361-345-4334

Lucent Caribbean & Latin America Hqtrs 1-303-804-3778

Lucent Business Communications Europe  441-252-774-889

Lucent Asia/Pacific Regional Support Center  65-872-8686
    
```

13	Enter the status spe command.	5	This reports the SPE's state of health. Use it to determine when the active SPE's state of health is fully functional. Do NOT wait for the standby; it will not become functional until matching software is running.
14	Enter the reset spe-standby 4 command.	10	This gets the new load running on the standby SPE.
15	Enter the set vector f spe-maint command.	1	This sets the core dump vector to take a core dump on any system restart.
16	Enter the change system-parameters maintenance command.	2	Change the scheduled maintenance Start Time and Stop Time fields back to their previous values before the software update.

Step	Action	Time (Mins)	Purpose
17	If TTI was disabled before the update, use the change system-parameters feature command to enable TTI.	2	This enables the TTI feature.
18	If MMI circuit packs (TN787) were busied-out before the update, restore them to service using the release busyout command.	2	This releases the busy out condition for the MMI circuit packs.
19	Use the set time command.	1	This sets the system clock to the correct time and date.
20	Enter the save translation both command to save the updated translations.	10	If this step returns an error concerning corrupt translations, investigate to determine if the system is operating normally and escalate to the appropriate organization (see the information above). DO NOT override and save translations until you are ABSOLUTELY sure the system is operating properly. Failure to do this may result in loss of translations and require retranslation of the entire switch. ^b
21	Enter the backup disk command.	20-50	This creates backup copies of changed files. Although the next scheduled maintenance run will do this, it must be done now to ensure a complete and successful software update. Do not press carriage return once the command has begun to avoid clearing and losing the results of the command.
22	Enter the test stored-data command.	10	This verifies that all disk/tape files are consistent. Although the next scheduled maintenance run will do this, it must be done now to ensure a complete and successful software update.
23	Enter the list config soft command.	1	This verifies that the new software load is running in memory.
24	Inform the appropriate organization of the update completion.	5	Inform INADS administration 1-800-248-1234 prompt 6, 2 (USA/Canada only) or the appropriate COE for non-North America sites (see the information in Step 12).

- a. The TN750C circuit pack contains flash memory which provides internal backup of announcements on the circuit pack. Thus, the TN750C circuit pack DOES NOT need the save and restore processes required for the TN750 and TN750B. However, you can use the save and restore processes to copy announcements from a TN750 or TN750B to a TN750C circuit pack. The TN750C circuit pack can be used to replace a TN750 or TN750B in G3V3 and earlier systems. The difference in operation is that the TN750C automatically restores and reports the availability of announcements from its own internal flash memory in five minutes, rather than the approximately 40 minutes it took the TN750 or TN750B circuit pack from the mass-storage system. Although, internal backup is provided by the TN750C circuit pack, customers may also wish to save the announcement contents of each circuit pack to mass storage. Backups of the announcements on the TN750C circuit pack can be maintained by saving the announcement contents of each circuit pack to separate tapes or translation memory cards. Label each tape or translation memory card to match the circuit pack saved to it.

For example, insert the flash translation card into the system. Execute the **save announcements** [**'from' cabinet(1-X). carrier (A-E), slot (0-20)**] command. This will save the announcements from the designated TN750C to the inserted media. The "from" location is required if multiple announcement circuit packs exist in the system. Note that only one TN750/TN750B circuit pack can exist but multiple TN750C circuit packs can exist in the system. Remove the flash translation card/tape from the system and label with TN750C location.

- b. If the system is not running properly or the translations seem to be incorrect, follow the technical escalation procedure. If the new load must be backed out (that is, returned to the previous software load), the backup software memory card can be used to go back to the old release using the **upgrade software** command. If after consultation with the TSC, the Services' engineer overrides the translation corruption error by entering **enable save-translation**, the customer is no worse off than they would have been before the translation corruption check was added. It is ONLY one extra safety net for the customer. The new check takes effect upon any update or **reset system 3** and higher.

Feature Descriptions and Administration

This section contains information about the following MLPP features:

- Announcements for Precedence Calling
- Dual Homing
- End Office Access Line Hunting
- Line Load Control
- Precedence Calling
- Precedence Call Waiting
- Precedence Routing
- Preemption
- Worldwide Numbering and Dialing Plan (WNDP).

The following information is provided for each feature:

- Detailed Description — A detailed description of the feature and its attributes, including examples where you can use the feature.
- Considerations — Software and hardware constraints.
- Interactions — Conflicts with other features.
- Administration — How to administer each feature.



NOTE:

The new administration forms for MLPP can be accessed using a system administration terminal (SAT), the DEFINITY Site Administration (DSA) terminal emulator, the Terranova[®] Terminal Emulator, the ProVision terminal emulator, or the DEFINITY Network Administration (DNA) terminal emulator.

Announcements for Precedence Calling

The Announcements for Precedence Calling feature introduces four new announcement types to notify users when Precedence Calling has been denied or services are not available:

- Blocked precedence call
- Unauthorized precedence level attempted
- Service interruption prevented call completion
- Busy, not equipped for Preemption or Precedence Call Waiting.

Detailed Description

The MLPP feature requires special announcements to notify users when Precedence Calling (for calls higher than Routine precedence) has been denied or services are not available. These announcements include the following:

- Blocked precedence call
This announcement is heard when the system attempts to preempt an existing call with a call that has a precedence level higher than Routine precedence that is also equal to or lower than the current call's precedence level. If an announcement extension is not assigned, the caller hears reorder tone (fast busy).
- Unauthorized precedence level attempted
This announcement is heard when a caller attempts to place a precedence call using a precedence level that is higher than authorized by their Class of Restriction (COR). If an announcement extension is not assigned, the caller hears intercept tone (siren tone).
- Service interruption prevented call completion
This announcement is heard when a service interruption prevents a precedence call from being completed. If an announcement extension is not assigned, the caller hears reorder tone (fast busy).
- Busy, not equipped for Preemption or Precedence Call Waiting
This announcement is heard when a precedence call is placed to a busy line and the line does not have Precedence Call Waiting or is not preemptable. If an announcement extension is not assigned, the caller hears reorder tone (fast busy).

 **NOTE:**
If a caller is using Routine precedence and the call cannot be completed for any of the above reasons, the caller hears busy tone.

Considerations

For recorded announcements, the TN750 circuit pack is the recommended method for recording announcements, but you can use existing analog announcement equipment with the new MLPP features. If you are using the integrated announcements circuit pack, you must use either a TN750, TN750B, or TN750C. If you have multiple integrated announcement circuit packs, only one of those can be a TN750 or TN750B; any additional circuit packs must be the TN750C.

Interactions

There are no interactions associated with this feature.

Administration

This feature uses the standard Recorded Announcements feature. For additional information about administering Recorded Announcements, see *DEFINITY Release 6 Administration and Feature Description (555-230-522)*.

change announcements

- Use the following form to assign four extension numbers for the four different MLPP recorded announcements. You can have up to 16 different recordings per Integrated Announcements circuit pack. The maximum recording time per circuit pack is 256 seconds (TN750) or 512 seconds (TN750B or TN750C). The extensions used for recorded announcements must already be administered in the dialing plan but cannot be used for any other purpose (such as stations or directory numbers). The data shown in the form below is an example of how this can be done.

change announcements										Page 1 of 8	
Ext.	Type	COR	ANNOUNCEMENTS/AUDIO SOURCES			Q	QLen	Pro?	Rate	Port	
			TN	Name							
1: 6801	integrated	1	1	Call blocked	n	N/A	n	16	01A14		
2: 6802	integrated	1	1	Unauthorized level	n	N/A	n	16	01A14		
3: 6803	integrated	1	1	Service interrupt	n	N/A	n	16	01A14		
4: 6804	integrated	1	1	Busy, not equipped	n	N/A	n	16	01A14		
5:		1	1		n						
6:		1	1		n						
7:		1	1		n						
8:		1	1		n						
9:		1	1		n						
10:		1	1		n						
11:		1	1		n						
12:		1	1		n						
13:		1	1		n						
14:		1	1		n						
15:		1	1		n						
16:		1	1		n						

The TN750 uses a fixed 32 Kbps compression rate to provide 256 seconds of recording time. The TN750B and TN750C have three administrable compression rates. The recording quality is better with the higher compression rates, but you have less recording time as shown below:

- At 64 Kbps, 128 seconds
- At 32 Kbps, 256 seconds (default)
- At 16 Kbps, 512 seconds.

change system-parameters features

- After you add the announcement extensions, you must designate which extensions are used for each of the announcement types. This administration is unique to the Announcements for Precedence Calling feature. The following example matches what is shown on the **change announcements** form (see Page 47).

```
change system-parameters features                               Page  X of  X
                    FEATURE-RELATED SYSTEM PARAMETERS

MULTIPLE LEVEL PRECEDENCE PREEMPTION PARAMETERS
ANNOUNCEMENTS
                    Blocked Precedence Level: 6801
                    Unauthorized Precedence Level: 6802
                    Service Interruption: 6803
                    Busy, Not Equipped: 6804

PRECEDENCE CALLING-DIALED DIGIT ASSIGNMENT
                    Flash Override: 0
                    Flash: 1
                    Immediate: 2
                    Priority: 3
                    Routine: 4

Attendant Diversion Timing (sec): 12
Remote Attendant Route String:
Worldwide Numbering Dial Plan Active? y
Default Route Digit: 0
Precedence Call Timeout (sec): 10
Line Load Control Restriction Level: 0
```

Recording Announcements

Once you have designated which extensions will be used for recorded announcements, use the following procedures to record and test the announcements. You must record the announcements from the attendant console or from a station that has console permissions.

To record each of the announcements, do the following:

1. Go off-hook and dial the Announcement FAC ____.
2. Dial the extension number of the announcement you want to record.
If an announcement session is already in progress, or if a save or restore command is in progress, you will hear reorder tone. Try again later.
3. Press **1** and record after the tone.
If the announcement already exists and is marked "protected" in the announcements form, you will hear intercept tone.
4. Hang up when finished recording the message.



NOTE:

The system records the sound of the receiver returning to the station. Hang up gently, press **Drop**, or press the switchhook with your finger.

5. After waiting 15 seconds, dial the extension number of the announcement you just recorded.
6. Listen to the recording. If you need to record the message again, repeat this procedure. If the message is satisfactory, hang up and repeat this procedure to record the other announcements.

The following is suggested wording for each of the announcements.

- Blocked precedence call
"Equal or higher precedence calls have prevented completion of your call. Please hang up and try again."
- Unauthorized precedence level attempted
"The precedence level requested is not authorized for your line. Please use an authorized precedence level or ask your operator for assistance."

- Service interruption prevented call completion
“A service interruption has prevented the completion of your call. Please wait 30 seconds and try again. In case of emergency, call your operator.”
- Busy, not equipped for Preemption or Precedence Call Waiting
“The number you have dialed is busy and not equipped for Preemption or Precedence Call Waiting.”

To delete a recorded announcement, do the following:

1. Go off-hook at a station and dial the Announcement FAC ____.
2. Dial the extension number of the announcement you want to delete.
3. Press **3**.
The announcement is deleted.
4. Hang up.
5. Use the **change announcements** command to delete the announcement extension.

save announcements

- If your system uses the TN750 or TN750B circuit packs, you must manually save the announcements recorded on those circuit packs. If you do not save the announcements, all announcements recorded since the last save will be lost if the system loses power or if the TN750 or TN750B circuit packs are removed from the system.

If your system uses only the TN750C circuit pack, saving the announcements is not required. The TN750C has on-board memory for all announcements.

Dual Homing

Dual Homing allows a user to dial a telephone number and have the call route to its destination over alternate facilities if the initial route is unavailable. This operation is transparent to the user and no special dialing is required.

Detailed Description

Dual Homing uses the Precedence Routing feature to provide alternate routing to nodes on a DSN. If a call destined for a dual-homed subscriber or an end office fails to complete over the first trunk access line, the call is rerouted over a different trunk access line. This process may continue for any number of alternate routes. If the call fails to complete by the time it gets to the last trunk access line in the route, the call is routed to busy tone or to the "Blocked precedence call" recorded announcement (see "Announcements for Precedence Calling" on Page 46).

For example, a user dials a DSN number, such as 345-8854. Using Precedence Routing, you administer all calls beginning with the digits "345" to route over trunk group 20 first, followed by trunk group 21, and then trunk group 22. If all trunks in trunk group 20 are busy, the system checks for idle trunks in trunk group 21 next, and then in trunk group 22. If all trunks in all three trunk groups are busy, the call routes to fast busy tone or a recorded announcement.

Considerations

There are no considerations associated with this feature.

Interactions

There are no interactions associated with this feature.

Administration

The administration of Dual Homing is done when you administer the Precedence Routing feature (see Page 73).

End Office Access Line Hunting

The End Office Access Line Hunting feature automatically hunts for an idle trunk over End Office access lines based on the precedence level of the call. The search will occur over a preemptable trunk group or a nonpreemptable trunk group.

Detailed Description

For calls higher than Routine precedence, the system hunts for an idle trunk in a preemptable trunk group. If an idle trunk is found, the system provides precedence ringing. The following steps detail the hunting algorithm:

1. If an idle trunk is found, the system provides precedence ringing.
2. If an idle trunk is not found, the system reexamines a preemptable trunk group on a preemptive search, and will preempt an active call of the lowest precedence level available.
3. The system hunts for an idle trunk in a nonpreemptable trunk group. If an idle trunk is found, the system provides precedence ringing.
4. If the system is unable to find a trunk, the call is routed to the "Block precedence call" recorded announcement (see "Announcements for Precedence Calling" on Page 46).

For Routine precedence calls, the system hunts for an idle trunk in a nonpreemptable trunk group and attempts to connect the call. If no trunks are available, the caller hears busy tone.

For more information about preemptable and nonpreemptable trunks, see "Preemption" on Page 96.

Considerations

There are no considerations associated with this feature.

Interactions

There are no interactions associated with this feature.

Administration

The administration of End Office Access Line Hunting is done when you administer the Precedence Routing feature (see Page 73).

Line Load Control

The Line Load Control (LLC) feature invokes origination restriction for a group of stations to control DSN access from the DEFINITY ECS. This is done by systematically reducing the number of stations that can originate calls during high-traffic periods. This situation is sometimes called a “lockdown.” When the lockdown situation passes, the LLC restriction levels can be reduced or removed completely.

Detailed Description

The LLC feature is controlled by the system administrator. There are four levels at which this feature may be controlled. These system levels determine which stations, based on their COR, will be restricted from originating calls.



NOTE:

This feature does not restrict incoming calls or calls originating from an attendant console or a night station.

The system levels are as follows:

- 0 - Feature not active (no restrictions) (default)
- 2 - Restrict stations with a COR assigned to LLC levels 2, 3, and 4
- 3 - Restrict stations with a COR assigned to LLC levels 3 and 4
- 4 - Restrict stations with a COR assigned to LLC level 4.



NOTE:

System level 1 is not a valid value.

When LLC is activated at a given level, the feature restricts all stations with a COR at that LLC level and below from originating any calls. For example, activating the LLC feature at system level 3 restricts stations with a COR at LLC levels 3 and 4. Activating the feature at system level 2 restricts stations with a COR at LLC levels 2, 3, and 4. If a restricted station is already active on a call when the restriction is activated, the call is not interrupted or disconnected; the station becomes restricted only after hanging up from the active call. Stations with a COR assigned to LLC level 1 cannot be restricted from originating calls by the LLC feature. When the need for LLC has passed, the administrator can then change the LLC to a less-restrictive level or deactivate it completely.

Using the information from this table, the following example shows how the LLC feature can be used:

Station	COR	COR LLC Level
5300	11	1
5350	12	2
2540	13	3
3300	14	4
2635	14	4

1. The system LLC is at Level 0 (no restrictions) and station 2635 is active on a call.
2. The system administrator changes the system LLC to Level 3.
Stations 2635, 2540 and 3300 cannot originate calls because their assigned COR LLC level is equal to or less than the system LLC level.
The active call on station 2635 is not disturbed, but as soon as station 2635 hangs up, that station cannot originate calls.
Stations 5300 and 5350 can originate calls because their assigned COR LLC level is higher than the system LLC level.
3. Call traffic is still too high, so the system administrator changes the system LLC to Level 2.
Station 5350, in addition to stations 2635, 2540, and 3300, cannot originate new calls. Station 5300 can still originate new calls.
4. Call traffic subsides. The system administrator changes the system LLC to Level 0 (no restrictions).
All stations in this example can now originate calls.

Considerations

When a system reload occurs, the LLC system-level settings revert to the default factory setting, which is LLC level 0 (no restrictions). This ensures that normal telecommunications service will be restored after a system reload.

The LLC COR settings, however, are saved in translations; the settings do not revert to the factory defaults if the settings have been saved in translations.

Interactions

■ General Feature Interactions

Since the LLC feature restricts stations from originating calls, features that require dial tone or a new call appearance for activation are not available when the user's station is restricted by LLC. Some of those features include:

- Call Forwarding
- Call Pickup
- Conference
- Transfer

Feature activation using buttons where dial tone is not required is still allowed (such as Send All Calls, Whisper Page, Inspect, or Integrated Directory).

■ Bridged Call Appearance

The LLC feature restricts only the principal station. A station that is restricted by the LLC feature and has a bridged appearance of an extension whose station is not restricted, cannot bridge on to an active call or originate a call using that bridged extension.

Conversely, if a station is restricted by the LLC feature and a non-restricted station is active on a bridged appearance for both stations, the user of the restricted station can bridge on to the call.

■ Call Park

A user on a call becomes restricted by the LLC feature. The user can park the call, but cannot retrieve the call until the LLC restriction is removed. Another user that is not currently restricted by the LLC feature can retrieve the call.

■ Call Waiting

A user restricted by the LLC feature must hang up to answer a Call Waiting call. The LLC feature does not restrict incoming calls.

■ Hold

Stations restricted by the LLC feature that are on an active call can place a call on hold, and later retrieve the call on hold.

■ Precedence Call Waiting

A user whose station is restricted by the LLC feature must hang up to answer a Precedence Call Waiting call.

Administration

Line Load Control is assigned on a system-wide basis and on a COR basis.

change system-parameters features

- Use the following form to set the Line Load Control level for the system. The options are as follows:
 - **0** - Feature not active (no restrictions) (default)
 - **2** - Restrict stations with a COR assigned to LLC level 2, 3, or 4
 - **3** - Restrict stations with a COR assigned to LLC level 3 or 4
 - **4** - Restrict stations with a COR assigned to LLC level 4.

```
change system-parameters features                               Page  X of  X
                    FEATURE-RELATED SYSTEM PARAMETERS

MULTIPLE LEVEL PRECEDENCE PREEMPTION PARAMETERS
ANNOUNCEMENTS                Blocked Precedence Level: 6801
                               Unauthorized Precedence Level: 6802
                               Service Interruption: 6803
                               Busy, Not Equipped: 6804
PRECEDENCE CALLING-DIALED DIGIT ASSIGNMENT
                               Flash Override: 0
                               Flash: 1
                               Immediate: 2
                               Priority: 3
                               Routine: 4

Attendant Diversion Timing (sec): 12
Remote Attendant Route String:
Worldwide Numbering Dial Plan Active? y
Default Route Digit: 0
Precedence Call Timeout (sec): 10
Line Load Control Restriction Level: 3
```

change cor X (where X is 0-95)

- Use the following form to set the Line Load Control level for each COR. The options are as follows:
 - 1 - LLC Level 1 (cannot be restricted by LLC) (default)
 - 2 - LLC Level 2
 - 3 - LLC Level 3
 - 4 - LLC Level 4.

```

change cor 1                                     Page 1 of 3
                                     CLASS OF RESTRICTION

COR Number: 1
COR Description:

FRL: 0                                           APLT? y
Can Be Service Observed? n                       Calling Party Restriction: none
Can Be A Service Observer? n                     Called Party Restriction: none
Partitioned Group Number: 1                       Forced Entry of Account Codes? n
Priority Queuing? n                               Direct Agent Calling? n
Restriction Override: none                       Facility Access Trunk Test? n
Restricted Call List? n                          Can Change Coverage? n

Access to MCT? y                                 Fully Restricted Service? n
Category For MFC ANI: 7
Send ANI for MFE? n
MF ANI Prefix:
Hear System Music on Hold? y                     PASTE (Display PBX Data on Phone)? n
Can Be Picked Up By Directed Call Pickup? n
Line Load Control: 4                         Can Use Directed Call Pickup? n
Maximum Precedence Level: fo                     Preemptable? y
    
```

Precedence Calling

The Precedence Calling feature allows users to place calls using five different precedence (priority) levels.

Detailed Description

Calls made within the DSN often require priority processing. The Precedence Calling feature allows users to select a level of priority for each call based on their need and importance.

The precedence levels are as follows (from highest priority to lowest):

- Flash Override
- Flash
- Immediate
- Priority
- Routine (the default precedence level).

For example, General Davis, a commanding officer, has a maximum precedence level of Flash assigned to her station. Without intervention, everyday calls are treated at the Routine (or no precedence) level. One day, a crisis occurs at a military installation and she must make an emergency call to her subordinates over the DSN. General Davis can use Precedence Calling to raise the level of her call to Priority, Immediate, or Flash. When she places this call, the call is given priority handling by the DEFINITY ECS and is sent over the DSN access line.

The format for Precedence Calling dialed digits is as follows:

Access Digits		Address Digits		
FAC	Precedence Digit	Area Code	Office Code	Extension Number
A	P	[NXX]	NXX	XXXX

Where:

A is the Precedence Calling FAC

P is any digit 0-4 (digits 5-9 can be used, but are not recommended)

X is any digit 0-9

N is any digit 2-9

[] denotes optional digits

- Access Digits — The Access Digits are comprised of the Precedence Calling FAC followed by a Precedence Digit. The single-digit code used for the Precedence Digit is administered as shown on Page 65. The default precedence level digits are:
 - 0 - Flash Override
 - 1 - Flash
 - 2 - Immediate
 - 3 - Priority
 - 4 - Routine
- Address Digits — The Address Digits are the seven-digit or ten-digit DSN number.

Precedence calls above the Routine level use special precedence ringback tones for the calling party and special ringing pattern for the called party. Precedence Calling tones are generated by the TN2182 Tone Clock circuit pack.

- The ringback tone is a 1.65 second burst of mixed 440 Hz and 480 Hz tone followed by 0.35 seconds of silence. This tone repeats until the call is answered, the caller hangs up, or until the Precedence Call Timeout occurs (see Page 65 for more information).
- The ringing pattern for precedence calls is the same pattern used with Priority Calling, which is a 3-burst ring.

Precedence Calling Diversion Scenarios

When a precedence call to a station goes unanswered, the switch attempts to connect the caller to a backup answering position using the following scenario:

1. The call is diverted to the attendant console.
2. If the console is in Night Service or there is no console administered on the switch, the call is diverted to a night station.
3. If there is no console or night station administered on the switch, the call can be diverted to a user-defined endpoint (the Remote Attendant Route String).

The Attendant Diversion Timing controls how long this type of call rings before the call is then routed to the Remote Attendant Route String (any valid telephone number on the network; it is usually a backup answering position for the remote attendant console). The Remote Attendant Route String does not raise the precedence level of the call.

4. If the Remote Attendant Route String is not defined and there is no attendant console or night station, the call will ring until answered or abandoned.

This call diversion scenario has variations for DSN calls, non-DSN calls, and local calls.

- DSN Calls — If an outgoing precedence call over a DSN trunk is not answered after an administrable period of time (the Precedence Call Timeout on the remote switch), the call routes to the attendant console or night station on the remote switch, or optionally, to a user-defined endpoint (the Remote Attendant Route String).
- Non-DSN Calls — If an outgoing precedence call over a non-DSN trunk is not answered after an administrable period of time (the Attendant Diversion Timing on the local switch), the call routes to a local attendant console, to a night station, or optionally, to a user-defined endpoint (the Remote Attendant Route String).
- If a local, intraswitch precedence call is not answered after an administrable period of time (the Precedence Call Timeout), the call routes to a local attendant console, to a night station, or optionally, to a user-defined endpoint.



NOTE:

For a precedence call that diverts to a night station or a Remote Attendant Route String, these destination numbers must be administered in the Precedence Routing digit-conversion tables (see Page 78).

When calls are redirected, a Call Purpose indicator is displayed on the attendant console and display telephone sets to indicate the precedence level of the call. The following indicators are provided:

- FO - Flash Override
- FL - Flash
- IM - Immediate
- PR - Priority



NOTE:
Routine precedence calls do not have a call purpose indicator.

When callers attempt to use a precedence level higher than authorized, the caller will hear the “Unauthorized precedence level attempted” recording or intercept tone if an announcement is not assigned. The following table shows how precedence calls are processed depending on the precedence level of the caller and the caller’s administered maximum precedence level:

Caller’s Maximum Precedence Level	Precedence Level of Call	Call Treatment
Flash Override	Flash Override	Call completes normally
Flash Override	Flash	Call completes normally
Flash Override	Immediate	Call completes normally
Flash Override	Priority	Call completes normally
Flash Override	Routine	Call completes normally
Flash	Flash Override	Recorded announcement or intercept tone
Flash	Flash	Call completes normally
Flash	Immediate	Call completes normally
Flash	Priority	Call completes normally
Flash	Routine	Call completes normally
Immediate	Flash Override	Recorded announcement or intercept tone
Immediate	Flash	Recorded announcement or intercept tone
Immediate	Immediate	Call completes normally
Immediate	Priority	Call completes normally
Immediate	Routine	Call completes normally
Priority	Flash Override	Recorded announcement or intercept tone
Priority	Flash	Recorded announcement or intercept tone
Priority	Immediate	Recorded announcement or intercept tone
Priority	Priority	Call completes normally
Priority	Routine	Call completes normally

Caller's Maximum Precedence Level	Precedence Level of Call	Call Treatment
Routine	Flash Override	Recorded announcement or intercept tone
Routine	Flash	Recorded announcement or intercept tone
Routine	Immediate	Recorded announcement or intercept tone
Routine	Priority	Recorded announcement or intercept tone
Routine	Routine	Call completes normally

Considerations

The TN2182 Tone Clock circuit pack is required for this feature.

Interactions

- Call Coverage

Calls above Routine precedence will not follow administered coverage paths. The calls will ring until the Timeout for Precedence Calls expires, and the call will then go to a console or night station.

- Call Detail Recording (CDR)

No separate CDR field will be supplied for the precedence level of a call. This would create an incompatibility between current call accounting software and the new call record format. Using the current call record format, the precedence level of a call may be determined by examining the call record for the Precedence Calling FAC. If the call is a precedence call, the first digit of the address dialed indicates the precedence level of the call. If WNDP is active, only the FAC needs to be examined as the precedence is implied from the FAC. The precedence level for a station-to-station call is not recorded by CDR.

CDR can be administered to record either the dialed digits or the outpulsed digits. In the case of Precedence Routing, the outpulsed digits may appear dramatically different than the dialed digits, and the precedence level digit may or may not be recorded. Keep this in mind when viewing CDR records.

- Conference

A call's precedence level will be set to the highest active precedence level when two calls are merged during a conference.

- Preemption

When a precedence call attempts to preempt an existing call, call progress tones or the "blocked precedence call" announcement indicates why the call did not complete. The following table shows how precedence calls are processed depending on the precedence level of the call and the precedence level of the preempted trunk:

Precedence Level of Call	Precedence Level of the DSN Trunk Call Being Preempted	Call Treatment
Flash Override	Flash Override	Recorded announcement or busy tone
Flash	Flash Override	Recorded announcement or busy tone
Immediate	Flash Override	Recorded announcement or busy tone
Priority	Flash Override	Recorded announcement or busy tone
Routine	Flash Override	Busy tone
Flash Override	Flash	Call completes normally
Flash	Flash	Recorded announcement or busy tone
Immediate	Flash	Recorded announcement or busy tone
Priority	Flash	Recorded announcement or busy tone
Routine	Flash	Busy tone
Flash Override	Immediate	Call completes normally
Flash	Immediate	Call completes normally
Immediate	Immediate	Recorded announcement or busy tone
Priority	Immediate	Recorded announcement or busy tone
Routine	Immediate	Busy tone
Flash Override	Priority	Call completes normally
Flash	Priority	Call completes normally
Immediate	Priority	Call completes normally
Priority	Priority	Recorded announcement or busy tone
Routine	Priority	Busy tone
Flash Override	Routine	Call completes normally
Flash	Routine	Call completes normally
Immediate	Routine	Call completes normally
Priority	Routine	Call completes normally
Routine	Routine	Busy tone

- **Send All Calls**

Calls above Routine precedence will not follow administered coverage paths. The calls will ring until the Timeout for Precedence Calls expires, and the call will then go to a console or night station.
- **Transfer**

A call's precedence level will be set to the highest active precedence level when two calls are merged during a transfer.
- **Worldwide Numbering and Dialing Plan (WNDP)**

When WNDP is enabled, users must dial a FAC for the precedence level they wish to use. Users cannot use the Precedence Calling FAC. In addition, the route code function and implied precedence level are provided.

When WNDP is disabled, users must dial the Precedence Calling FAC, followed by a digit (the default is 0-4, but is administrable as 0-9) to indicate the precedence level. The WNDP FACs can be administered, but cannot be used.

Administration

change feature-access-codes

- Use the following form to add the Precedence Calling FAC. Administer this FAC only when using Precedence Calling, not WNDP.

```
change feature-access-codes                               Page  X of  X
                FEATURE ACCESS CODE (FAC)
                MLPP Features

Precedence Calling Access Code: 199

WNDP PRECEDENCE ACCESS CODES:
  Flash Override Access Code: 100
  Flash Access Code: 101
  Immediate Access Code: 102
  Priority Access Code: 103
  Routine Access Code: 104
```

change system-parameters features

- Use this form to assign the Precedence Calling system parameters. The fields you can administer include:



CAUTION:

It is highly recommended that you do not change the default Precedence Calling dialed digits unless you are coordinating this change with other companion networks in your system. If the Precedence Calling digits do not match across networks, the calls will not be processed properly. Each of the Precedence Calling digits must be different; you cannot use the same digit for two different precedence levels.

- Flash Override - **0-9** or blank (default is **0**)
- Flash - **0-9** or blank (default is **1**)
- Immediate - **0-9** or blank (default is **2**)
- Priority - **0-9** or blank (default is **3**)
- Routine - **0-9** or blank (default is **4**)
- Attendant Diversion Timing - **10-99** seconds or blank (default is blank)
- Remote Attendant Route String - **1** to **24** numeric digits or blank (default is blank). When administering this string, use address digits only; not FACs.
- Precedence Call Timeout - **10** to **60** seconds (default is **30**)

```

change system-parameters features                                     Page   X of   X
                        FEATURE-RELATED SYSTEM PARAMETERS

MULTIPLE LEVEL PRECEDENCE PREEMPTION PARAMETERS
ANNOUNCEMENTS                Blocked Precedence Level: 6801
                               Unauthorized Precedence Level: 6802
                               Service Interruption: 6803
                               Busy, Not Equipped: 6804
PRECEDENCE CALLING-DIALED DIGIT ASSIGNMENT
                               Flash Override: 0
                               Flash: 1
                               Immediate: 2
                               Priority: 3
                               Routine: 4

                               Attendant Diversion Timing (sec): 30
                               Remote Attendant Route String: 83345
Worldwide Numbering Dial Plan Active? n

                               Precedence Call Timeout (sec): 30
                               Line Load Control Restriction Level: 3
    
```

change cor X (where X is 0-95)

- Use the COR form to assign a Maximum Precedence Level for extensions and trunks. The possible values are as follows:
 - **fo** - Flash Override
 - **fl** - Flash
 - **im** - Immediate
 - **pr** - Priority
 - **ro** - Routine (default).

```
change cor 1                                     Page 1 of 3
                                     CLASS OF RESTRICTION
COR Number: 1
COR Description:
FRL: 0                                           APLT? y
Can Be Service Observed? n                     Calling Party Restriction: none
Can Be A Service Observer? n                   Called Party Restriction: none
Partitioned Group Number: 1                   Forced Entry of Account Codes? n
Priority Queuing? n                             Direct Agent Calling? n
Restriction Override: none                     Facility Access Trunk Test? n
Restricted Call List? n                       Can Change Coverage? n
Access to MCT? y                               Fully Restricted Service? n
Category For MFC ANI: 7
Send ANI for MFE? n
MF ANI Prefix:                                Automatic Charge Display? n
Hear System Music on Hold? y                   PASTE (Display PBX Data on Phone)? n
Can Be Picked Up By Directed Call Pickup? n
Line Load Control: 4                           Can Use Directed Call Pickup? n
Maximum Precedence Level: fo                 Preemptable? y
```

add trunk-group X (where **X** is the trunk group number)

- Use the trunk group form to identify a trunk group as a DSN termination endpoint (the default is **n**). This field can be enabled for tie trunks only. If you enter **y** in this field, the **Precedence Mode Incoming** and **Precedence Mode Outgoing** fields display. These fields define whether the switch receives and sends the precedence level as digits (rotary pulses) or as DTMF signals (touch-tone).

```
add trunk-group 10                                     Page 2 of X
TRUNK FEATURES
  ACA Assignment? n                                     Measured: none
                                                    Internal Alert? n   Maintenance Tests? y
                                                    Data Restriction? n
                                                    Glare Handling: none
  Used for DCS? n
  Suppress # Outpulsing? n
  Seize When Maintenance Busy: neither-end

Incoming Tone (DTMF) ANI: no                           Per Call CPN Blocking Code:
  Connected to CO? n                                   Per Call CPN Unblocking Code:

  DSN Termination? y
Precedence Mode Incoming? dtmf(a-d)
Precedence Mode Outgoing? digit
```

change console-parameters

- Use the console-parameters form to assign attendant queue priorities for precedence calls and non-precedence calls. This determines how calls are queued to the attendant console. The following example shows the defaults for the system. You may want to change some of the defaults depending on the desired priority for processing calls.

```
change console-parameters                               Page 2 of 3
                                           CONSOLE PARAMETERS

QUEUE PRIORITIES

Emergency Access: 1                                MLPP Precedence Call
Assistance Call: 6                                Flash Override: 2
CO Call: 6                                         Flash: 3
DID to Attendant: 6                               Immediate: 4
Tie Call: 6                                       Priority: 5
Redirected DID Call: 6
Redirected Call: 6
Return Call: 6
Serial Call: 6
Individual Attendant Access: 6
Interpositional: 6
Miscellaneous Call: 6

Call-Type Ordering Within Priority Levels? n
```

**CAUTION:**

By default, emergency access calls receive higher priority processing than MLPP Precedence Calls. You can change the order of priority, but be careful when designating emergency calls to equal or lower priority. Call types with equal priority enter the queue on a first-in, first-out basis.

**NOTE:**

Routine precedence calls are treated as normal calls and will use the same queue priorities as nonemergency and non-MLPP calls.

Precedence Call Waiting

The Precedence Call Waiting feature allows incoming precedence calls to “camp on” to a busy line. If Precedence Call Waiting is not enabled, the call is redirected to busy tone or to a recorded announcement.

Detailed Description

When incoming calls have the correct precedence level and Precedence Call Waiting is assigned, an incoming call “camps on” to the busy line, the called party hears the Precedence Call Waiting tone to indicate that a call of equal or lower precedence is waiting, and the calling party hears Precedence Calling ringback. The called party can then end the current call to answer the new call, place the current call on hold to answer the new call (analog single-line sets only), or not answer the new call. Calls not answered within an administrable timeout are redirected to an attendant, a night station, or to another station by way of the Call Forwarding feature.

The following table describes the different scenarios that can occur with Precedence Call Waiting:

If the assigned Call Waiting is...	...and the calling party uses...	...and the active call is using...	...the Call Waiting treatment applied is...
Standard	Routine precedence	Any precedence level	Standard Call Waiting
Standard	Any precedence level above Routine	Any precedence level	None; a recorded announcement is heard
Precedence	Routine precedence	Any precedence level	Standard Call Waiting
Precedence	Any precedence level above Routine	Any level of precedence and Preemption is disabled	Precedence Call Waiting

For example, station 2100 has Precedence Call Waiting enabled. If that station is active on a Flash level call and a Priority level call comes in, Precedence Call Waiting is applied to the call. The user can place the existing call on hold, drop the existing call, or let the new call redirect to an attendant.

In another example, station 4200 has Precedence Call Waiting enabled. If that station is active on a precedence call of any level and a Routine precedence call comes in, Standard Call Waiting is applied to the call.

Precedence Call Waiting tones are generated by the TN2182 Tone Clock circuit pack. The generated tone is three 100ms bursts, at 404Hz, separated by two 50ms periods of silence. This tone repeats every 10 seconds until the call is

answered or the timeout occurs. The timeout is administrable from 10 to 60 seconds, with a default of 30 seconds.

When calls are redirected to an attendant console user that is active on a call, the Call Waiting lamp lights and the call is placed in the attendant queue based on the priority levels administered with the Precedence Calling feature. When the call is answered, a Call Purpose indicator displays to indicate the precedence level of the call. The following indicators are provided:

- FO - Flash Override
- FL - Flash
- IM - Immediate
- PR - Priority



NOTE:

Routine precedence calls do not have a call purpose indicator.

Considerations

The TN2182 Tone Clock circuit pack is required for this feature.

Interactions

- Attendant Console

Precedence Call Waiting calls from attendant consoles or stations with console permissions are not allowed. Calls from an attendant console cannot camp on to a call with Precedence Call Waiting. The attendant console user hears a recorded announcement.
- Automatic Callback

If the Automatic Callback feature is activated and Precedence Call Waiting is attempted, the caller hears a recorded announcement.
- Call Forwarding

An extension can have Precedence Call Waiting and Call Forwarding active at the same time. If the user is active on a call and another call comes in, the called party will hear Precedence Call Waiting tone and the call is forwarded after the timeout. Any other calls that arrive during the timeout period go immediately to the forwarded station.
- Call Pickup

If a member of a pickup group active on a call receives Precedence Call Waiting, other members of the pickup group cannot pick up the call.

- Call Waiting

For a Routine Precedence Call, a user on an active call will hear the standard Call Waiting tone.

Precedence Call Waiting is denied if the called party already has one call currently waiting in queue (either Standard Call Waiting or Precedence Call Waiting).

- Data Privacy

Precedence Call Waiting cannot be applied to a line with Data Privacy.

- Data Restriction

Precedence Call Waiting cannot be applied to a line with Data Restriction.

- Line Load Control

A user whose station is restricted by the LLC feature must hang up to answer a Precedence Call Waiting call.

- Tenant Service Partitioning

This feature operates as described except that timeout redirection will not occur; the call will continue to ring at the called extension.

Administration

change station XXXX (where **XXXX** is an extension number)

- Use the following form to enable or disable Precedence Call Waiting for each station. The default assignment for each station is **y** (enabled). Please note that this example is for a digital station; forms for other stations have the Precedence Call Waiting field but are arranged differently.

```

change station 6001                                     Page 2 of 4
                                     STATION
FEATURE OPTIONS
    LWC Reception: msa-spe           Auto Select Any Idle Appearance? n
    LWC Activation? y                Coverage Msg Retrieval? y
    CDR Privacy? n                  Auto Answer: none
    Redirect Notification? y         Data Restriction? n
    Per Button Ring Control? n       Idle Appearance Preference? n
    Bridged Call Alerting? n
    Active Station Ringing: single    Precedence Call Waiting? y
                                     Restrict Last Appearance? y

    H.320 Conversion? n

                                     Per Station CPN - Send Calling Number?

                                     Display Client Redirection? n
                                     Select Last Used Appearance? n
    
```

change system-parameters features

- Use the following form to set the Precedence Call Timeout. The valid values are **10** to **60** seconds, with a default of **30** seconds.

```

change system-parameters features                       Page X of X
                                     FEATURE-RELATED SYSTEM PARAMETERS
MULTIPLE LEVEL PRECEDENCE PREEMPTION PARAMETERS
ANNOUNCEMENTS
    Blocked Precedence Level: 6801
    Unauthorized Precedence Level: 6802
    Service Interruption: 6803
    Busy, Not Equipped: 6804
PRECEDENCE CALLING-DIALED DIGIT ASSIGNMENT
    Flash Override: 0
    Flash: 1
    Immediate: 2
    Priority: 3
    Routine: 4

    Attendant Diversion Timing (sec): 30
    Remote Attendant Route String: 83345
    Worldwide Numbering Dial Plan Active? n

    Precedence Call Timeout (sec): 30
    Line Load Control Restriction Level: 3
    
```

Precedence Routing

Precedence Routing routes Precedence Calls to a trunk group based on the dialed digits. Calls of lower precedence may be preempted if all facilities are busy (see "Preemption" on Page 96).

Detailed Description

Precedence Routing routes precedence calls based on several criteria:

- Calls may be routed using a particular trunk group based on the destination (dialed) number. A route is selected based on the digits specified on the Precedence Digit Analysis administration form. The precedence digit is included as part of the analyzed digits to allow routing based on different precedence levels.
- Calls may be routed based on a precedence level digit dialed as part of the telephone number. The digits are administerable and include the following levels (from highest priority to lowest):
 - Flash Override
 - Flash
 - Immediate
 - Priority
 - Routine
- Calls may be routed based on the time of day. The system provides eight different time-of-day routing plans. Each plan allows up to six time-of-day route changes. Time-of-day routing is an optional feature that must be purchased by the customer.

Precedence Routing also allows modification of digits based on the trunk group selected within a routing pattern. This allows the outpulsed digits to be changed (if necessary) for different trunk groups.

 **NOTE:** Precedence Routing is similar to the Automatic Route Selection (ARS) feature, both in functionality and in administration. A working knowledge of ARS will help to understand and administer Precedence Routing.

A call scenario for Precedence Routing is as follows:

1. A user dials the Precedence Calling FAC followed by a precedence level digit (0-4).

The system checks the COR for this caller to determine if they are allowed to place a call of this precedence level. If the user is not allowed to use the precedence level requested, intercept tone or an announcement is heard. If the call is allowed, continue with Step 2.

2. The user dials the DSN telephone number.

The telephone number (also known as the address digits) is checked against the precedence routing translations to determine which route is best suited for the call. If a trunk is available, the call is routed to its destination.

If no trunks are available, the system checks to see if there is a call of lower precedence that can be preempted. If a lower-precedence call is found, that call is preempted (dropped) and the new call is routed to its destination over the preempted access line. See "Preemption" on Page 96.

If an idle trunk or preemptable trunk are not found, the caller hears a recorded announcement or reorder tone.



NOTE:

Calls with Routine precedence cannot preempt any other calls. If a call with Routine precedence fails to find an idle trunk, the caller receives fast busy tone.

Considerations

The routing administered with Precedence Routing uses the same capacity tables as the ARS feature (patterns, analysis tables, and so on). You can view the real-time capacity usage with the **change precedence-routing analysis** command. The `Percent Full` field displays how much of the available capacity is being used for routing information.

Interactions

- General

Precedence Routing allows calls with precedence higher than Routine to terminate to trunks, stations, attendant consoles, and recorded announcements. Precedence Routing calls cannot terminate at Vector Directory Numbers (VDNs), Terminating Extension Groups (TEGs), or hunt groups.

- Call Detail Recording (CDR)

No separate CDR field will be supplied for the precedence level of a call. This would create an incompatibility between current call accounting software and the new call record format. Using the current call record format, the precedence level of a call may be determined by examining the call record for the Precedence Calling FAC. If the call is a precedence call, the first digit of the address dialed indicates the precedence level of the call. If WNDP is active, only the FAC needs to be examined as the precedence is implied from the FAC. The precedence level for a station-to-station call is not recorded by CDR.

CDR can be administered to record either the dialed digits or the outpulsed digits. In the case of Precedence Routing, the outpulsed digits may appear dramatically different than the dialed digits, and the precedence level digit may or may not be recorded. Keep this in mind when viewing CDR records.

- Shortcut Dialing

When using the Shortcut Dialing feature over DSN trunks, the incoming Shortcut Dialing digit analysis is administered using the Precedence Routing analysis tables instead of the ARS analysis tables. See Page 76 for more information.

- Traveling Class Marks

Precedence Routing will pass all Traveling Class Mark (TCM) information over DSN and non-DSN trunks.

Administration

This section contains procedures for administering Precedence Routing when the local and remote DSN nodes are both DEFINITY ECS switches. Also included is information about administering local DS1 trunks when connecting to a DSN node that is using a Nortel* or a Siemens† switch.

change precedence-routing analysis X (where X is the digit being analyzed)

- Use the following form to assign Precedence Routing digit analysis. Digit analysis determines which routes are used for outgoing calls based on the digits dialed.

```

change precedence-routing analysis 0                               Page 1 of 1
PRECEDENCE ROUTING DIGIT ANALYSIS TABLE
Partitioned Group Number: 1      Percent Full: 15

```

Dialed String	Total Rte Mn Mx Pat	Preempt Method	Dialed String	Total Rte Mn Mx Pat	Preempt Method
002383	9 9 36	group			group
002388	9 9 86	group			group
003032383	12 12 36	group			group
003032388	12 12 86	route			group
003033383	12 12 34	group			group
003033388	12 12 84	group			group
003034383	12 12 32	group			group
003034388	12 12 82	group			group
003035383	12 12 30	group			group
003035388	12 12 80	route			group
003383	9 9 34	group			group
003388	9 9 84	group			group
004383	9 9 32	group			group
004388	9 9 82	route			group
005383	9 9 30	group			group

The Dialed String field requires the following format for routing DSN numbers:

- For precedence dialing (non-WNDP dialing), enter the precedence digit (typically 0-4) and the address digits.
- For WNDP dialing, enter the precedence digit (typically 0-4), the route code, and the address digits.
- An x in the digit string matches on any single digit.

* Trademark of Northern Telecom Limited.

† Registered trademark of SIEMENS AKTIENGESELLSCHAFT.

The `Preempt Method` field has two possible values: `group` and `route`.

- **Group (default)** — This preempt method checks the first trunk group in the pattern to see if it is idle, then checks the same trunk group to see if it is preemptable. If no trunk is available, it checks the next trunk group to see if it is idle, then checks the same trunk group to see if it is preemptable. This pattern continues until a trunk is found. If no trunk is found, the user hears a recorded announcement or fast busy.
- **Route** — This preempt method checks each trunk group in the pattern to see if any of them are idle. If no trunk is available, it then checks each trunk group in the pattern to see if it is preemptable. If no preemptable trunk is found, the user hears a recorded announcement or fast busy.

change route-pattern XX (where **XX** is a route pattern from the digit analysis form)

- Use the following form to assign routing patterns for the digit analysis tables. These routing patterns are used for outgoing calls. For DSN trunks that have the `Precedence Mode Outgoing` field set for DTMF, you must delete one digit or the precedence level digit will be sent twice.

```
change route-pattern 36                                     Page 1 of 1
                                     Pattern Number: 36

  Grp.  FRL NPA Pfx Hop Toll No. Del Inserted          IXC
  No.      Mrk Lmt List Digits  Digits
1: 15    0
2: 12    1
3: 7     0
4: 22    0
5:
6:

      BCC VALUE  TSC CA-TSC      ITC  BCIE Service/Feature          Numbering LAR
      0 1 2 3 4 W      Request
1: y y y y y n n      rest
2: y y y y y n n      rest
3: y y y y y n n      rest
4: y y y y y n n      rest
5: y y y y y n n      rest
6: y y y y y n n      rest
```

change precedence-routing digit-conversion

- Use the following form to assign the Precedence Routing digit conversion. Digit conversion takes digits dialed on incoming calls and converts the digits to local telephone numbers, usually extension numbers.

```

change precedence-routing digit-conversion 0          Page 1 of 2
PRECEDENCE ROUTING DIGIT CONVERSION TABLE
Percent Full: 11

Matching Pattern      Min   Max   Del   Replacement String  Net  Conv
x2386                 8     8     4
x3032386             11    11    7
x3033386             11    11    7
x3034386             11    11    7
x3035386             11    11    7
x3386                 8     8     4
x4386                 8     8     4
x5386                 8     8     4
x6                    5     5     1
xx2386               9     9     5
xx3032386            12    12    8
xx3033386            12    12    8
xx3034386            12    12    8
xx3035386            12    12    8

```

The `Matching Pattern` field requires the following format for routing DSN numbers:

- For precedence dialing (non-WNDP dialing), enter the precedence digit (typically 0-4) and the address digits
- For WNDP dialing, enter the precedence digit (typically 0-4), the route code, and the address digits.
- An `x` in the digit string matches on any single digit.

Sample Telephone Service Request

A Telephone Service Request (TSR) is often used to convey switch configurations for DSN installations. The following table contains sample items found on TSRs.

TSR Item Number	Description	Typical Settings
101/102	TSR Number	Variable
107/108	CCSD	Variable
110	Duplex Mode	Full duplex
111	Bit Rate	1.544 Mbps
115/116	Signaling Mode	2-way MF DTMF No signaling
126	Switch/Equipment Type	Lucent G3i/r
128/129	Line Interface/Framing Mode	ESF or D4
130	Site Point of Contact	Local contact person
212	Maximum Calling Area Indicator	01=Global 02A=CONUS plus Pacific Area 02B=CONUS plus European Area 02C=CONUS plus Caribbean Area 03=CONUS only 05=Global with preset conferencing 06A=CONUS plus Pacific Area with preset conferencing 06B=CONUS plus European Area with preset conferencing 06A=CONUS plus Caribbean Area with preset conferencing 07=CONUS with preset conferencing
213	Maximum Calling Area Precedence	0=Flash Override 1=Flash 2=Immediate 3=Priority 4=Routine 9=In Only
223	Outpulse Digits	Variable
225	Incoming Precedence	Yes or No
404	DSN Service Configuration	1=Access line signaling 2=DSN Prefix/NNX 3=Thousands Level(s) (1st digit of each level) 4=Outpulsed Digits (3, 4, 5, or 7 digits to PBX) 5=In Hunt (yes or no) 6=Operator Assistance Number 7=Access Code for DSN trunks 8=T-1 assignments

Interfacing to Nortel Switches

The DEFINITY ECS requires special administration when communicating to a Nortel SL100 or newer switch. Examples are shown for the DS1 circuit packs, the tie trunk groups, outgoing call routing, and incoming call routing. Nortel switches are usually set up with Precedence Dialing, but examples for WNDP Dialing are also shown.

Nortel Trunk Administration

Trunks on the Nortel switch must be administered using the following general guidelines:

- Outgoing dial type — touch-tone
- Incoming dial type — touch-tone
- Outgoing/Incoming precedence mode signaling — DTMF (touch-tone)
- Preempt for reuse
- Switch type — AVAPBX (Autovon Automatic PBX)
- Verify that the route digit is deleted for Precedence Dialing, but do not delete the route digit for WNDP dialing.

DS1 Circuit Packs

change ds1 C_{ss} (where **C** is cabinet number and **ss** is slot number)

- Administer the DS1 circuits with the following options:

Field	Value
Bit Rate	1.544
Line Compensation	1
Signaling Mode	robbed-bit
Line Coding	ami-zcs
Framing Mode	"esf" or "d4"
Interface Companding	mulaw
Idle Code	11111111
Slip Detection	y
Near-end CSU Type	"other" for no CSU or "integrated" for attached CSU

```

change ds1 1c16                               Page 1 of 2
                                         DS1 CIRCUIT PACK

      Location: 01C16                          Name:
      Bit Rate: 1.544                          Line Coding: ami-zcs
Line Compensation: 1                          Framing Mode: esf
      Signaling Mode: robbed-bit

Interface Companding: mulaw
      Idle Code: 11111111

Slip Detection? y                            Near-end CSU Type: other
    
```

Tie Trunk Groups

change trunk-group XX (where **XX** is a trunk group number)

- Administer the trunk group(s) with the following options:

Field	Value
Page 1	
Group Type	tie
Trunk Type (in/out)	"wink/wink" or "delay/delay"
Outgoing Dial Type	tone
Incoming Dial Type	tone
Digit Treatment	insertion
Digits	Enter the Precedence Calling FAC, even when using WNDP dialing
Page 2	
DSN Termination	y
Precedence Mode Incoming ^a	dtmf(a-d)
Precedence Mode Outgoing ^a	dtmf(a-d)
Page 3	
Flash Length (msec)	Start with the default of 540 msec; increase or decrease this value as needed if trunk preemption is not working

a. If optioned for "dtmf(a-d)," the switch sends a DTMF tone (touch-tone) to represent the different precedence levels (a=Flash Override, b=Flash, c=Immediate, d=Priority). If optioned for "digit," the switch sends the precedence level digits (0-4) as rotary pulses.

```

change trunk-group 9                                     Page 1 of 10
                                                    TRUNK GROUP

Group Number: 9                Group Type: tie                CDR Reports: y
Group Name: DSN DS1 TIE TO SD0      COR: 1                TN: 1                TAC: 709
Direction: two-way                Outgoing Display? y    Trunk Signaling Type:
Dial Access? y                    Busy Threshold: 99      Night Service:
Queue Length: 0                    Incoming Destination:
Comm Type: voice                    Auth Code? n
                                      Trunk Flash? n

TRUNK PARAMETERS
Trunk Type (in/out): wink/wink      Incoming Rotary Timeout(sec): 5
Outgoing Dial Type: tone            Incoming Dial Type: tone
Wink Timer(msec): 300                Disconnect Timing(msec): 500
Digit Treatment: insertion          Digits: 199
                                      Sig Bit Inversion: none
Connected to Toll? n                STT Loss: normal      DTT to DCO Loss: normal
Incoming Dial Tone? y

Disconnect Supervision - In? y  Out? n
Answer Supervision Timeout: 0      Receive Answer Supervision? y
    
```

```

change trunk-group 9                                     Page 2 of 10
                                                    TRUNK FEATURES

ACA Assignment? n                Measured: none
                                      Internal Alert? n      Maintenance Tests? y
                                      Data Restriction? n
                                      Glare Handling: none

Used for DCS? n
Suppress # Outpulsing? n
Seize When Maintenance Busy: neither-end

Incoming Tone (DTMF) ANI: no        Per Call CPN Blocking Code:
Connected to CO? n                 Per Call CPN Unblocking Code:

DSN Termination? y
Precedence Mode Incoming? dtmf(a-d)
Precedence Mode Outgoing? dtmf(a-d)
    
```

Outgoing Call Routing (Precedence Dialing)

When users place outgoing calls to Nortel switches using Precedence Dialing, the DEFINITY ECS must analyze the dialed digits and route the call over a particular pattern. For this example, the user dials **19907196666050**, where

- 199**=Precedence Dialing FAC
- 0**=Flash Override precedence level
- 7196666050**=Dialed number

change precedence-routing analysis X (where X is the digit being analyzed)

- The following example shows that the dialed digits will match to **x719** and route to pattern 60.

```
change precedence-routing analysis x719                               Page 1 of 1
PRECEDENCE ROUTING DIGIT ANALYSIS TABLE
Partitioned Group Number: 1      Percent Full: 16

Dialed      Total Rte  Preempt      Dialed      Total Rte  Preempt
String      Mn Mx Pat  Method      String      Mn Mx Pat  Method
x719      11 11 60  group      x719      11 11 60  group
xx310      12 12 64   group      xx310      12 12 64   group
xx606      12 12 63   group      xx606      12 12 63   group
xx718      12 12 62   group      xx718      12 12 62   group
xx718666   12 12 64   group      xx718666   12 12 64   group
xx719      12 12 63   group      xx719      12 12 63   group
```

change route-pattern XX (where XX is a route pattern from the digit analysis form)

- The following shows how route pattern 60 might be administered to use trunk group 30. For DSN trunks that have the `Precedence Mode Outgoing` field set for DTMF, you must delete one digit or the precedence level digit will be sent twice.

```
change route-pattern 60                                           Page 1 of 1
Pattern Number: 60

Grp.  FRL NPA Pfx Hop Toll No. Del Inserted      IXC
No.   Mrk Lmt List Digits Digits
1: 30  0          1
2:
3:
4:
5:
6:

BCC VALUE  TSC CA-TSC  ITC  BCIE Service/Feature      Numbering LAR
0 1 2 3 4 W  Request
1: y y y y y n n          rest          none
2: y y y y y n n          rest          none
3: y y y y y n n          rest          none
4: y y y y y n n          rest          none
5: y y y y y n n          rest          none
6: y y y y y n n          rest          none
```

In this example, the digits outputted to the Nortel switch are **07196666050**, where

0=Flash Override precedence level

7196666050=Dialed number

Incoming Call Routing (Precedence Dialing)

When users place incoming calls from Nortel switches using Precedence Dialing, the DEFINITY ECS must analyze the dialed digits and route the call to the correct destination (usually an extension on the local switch). For this example, the user at the Nortel switch dials **05383111**, where

0=Flash Override precedence level

5383111=Dialed number

change precedence-routing digit-conversion

- The following example shows how the dialed digits match to `x538`, the first four digits are deleted, and the call is routed to extension 3111.

change precedence-routing digit-conversion x5				Page 1 of 2		
PRECEDENCE ROUTING DIGIT CONVERSION TABLE						
Percent Full: 11						
Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
x538	8	8	4		ext	n
x6	8	8	1		pre	n
xx2386	9	9	5		ext	n
xx3032386	12	12	8		ext	n
xx3033386	12	12	8		ext	n

Outgoing Call Routing (W NDP Dialing)

When users place outgoing calls to Nortel switches using W NDP Dialing, the DEFINITY ECS must analyze the dialed digits and route the call over a particular pattern. For this example, the user dials **100718666050**, where

- 100**=W NDP Dialing FAC for Flash Override precedence level
- 718666050**=Dialed number

In this example, the user did not dial a Route Code digit. A default Route Code digit will be sent (see Default Route Digit on Page 104).

change precedence-routing analysis X (where X is the digit being analyzed)

- The following example shows that the dialed digits will match to xx718666 and route to pattern 64.

```
change precedence-routing analysis x718                               Page 1 of 1
PRECEDENCE ROUTING DIGIT ANALYSIS TABLE
Partitioned Group Number: 1      Percent Full: 16
```

Dialed String	Total Rte Mn Mx Pat	Preempt Method	Dialed String	Total Rte Mn Mx Pat	Preempt Method
x719	11 11 60	group			group
xx606	12 12 63	group			group
xx718	12 12 62	group			group
xx718666	12 12 64	group			group

change route-pattern XX (where XX is a route pattern from the digit analysis form)

- The following shows how route pattern 64 might be administered to use trunk group 32. In this example, you must delete one digit and insert a dummy digit in front of the Route Code digit. For a Nortel switch, only a 0 or 1 will be recognized as inserted digits.

```
change route-pattern 64                                           Page 1 of 1
Pattern Number: 64
```

Grp. No.	FRL	NPA	Pfx Mrk	Hop Lmt	Toll List	No. Digits	Del Digits	Inserted Digits	IXC
1: 32	0					1	1		user
2:									user
3:									user
4:									user
5:									user
6:									user

	BCC	VAL	TSC	CA-TSC	ITC	BCIE	Service/Feature	Numbering LAR Format
1:	y	y	y	y	n	n	rest	none
2:	y	y	y	y	n	n	rest	none
3:	y	y	y	y	n	n	rest	none
4:	y	y	y	y	n	n	rest	none
5:	y	y	y	y	n	n	rest	none
6:	y	y	y	y	n	n	rest	none

In this example, the digits outputted to the Nortel switch are

0107186666050, where

0=Flash Override precedence level

1=Dummy digit

0=Route Code digit

7186666050=Dialed number

Incoming Call Routing (W NDP Dialing)

When users place incoming calls from Nortel switches using W NDP Dialing, the DEFINITY ECS must analyze the dialed digits and route the call to the correct destination (usually an extension on the local switch). For this example, the user at the Nortel switch dials **0105386000**, where

0=Flash Override precedence level

1=Dummy digit

0=Route Code digit

5386000=Dialed number

change precedence-routing digit-conversion

- The following example shows how the dialed digits match to `x1x538`, the first six digits are deleted, and the call is routed to extension 6000.

change precedence-routing digit-conversion x				Page 1 of 2			
PRECEDENCE ROUTING DIGIT CONVERSION TABLE							
Percent Full: 11							
Matching Pattern	Min	Max	Del	Replacement String	Net	Conv	
x1x538	10	10	6		ext	n	
x1x666	10	10	3	00718	pre	n	
x2386	8	8	4		ext	n	
x3032386	11	11	7		ext	n	
x3033386	11	11	7		ext	n	
x3034386	11	11	7		ext	n	

Interfacing to Siemens Switches

The DEFINITY ECS requires special administration when communicating to a Siemens KNS switch. Examples are shown for the DS1 circuit packs, the tie trunk groups, outgoing call routing, and incoming call routing.

Siemens Trunk Administration

Trunks on the Siemens switch must be administered using the following general guidelines:

- Outgoing dial type for Precedence Dialing — touch-tone
- Outgoing dial type for WNDP Dialing — rotary pulses
- Incoming dial type for Precedence or WNDP Dialing — rotary pulses
- Outgoing precedence mode signaling for Precedence Dialing — DTMF (touch-tone)
- Incoming precedence mode signaling for Precedence Dialing — rotary pulses
- Outgoing/Incoming precedence mode signaling for WNDP Dialing — rotary pulses
- Preempt for reuse

DS1 Circuit Packs

change ds1 C_{ss} (where **C** is cabinet number and **ss** is slot number)

- Administer the DS1 circuits with the following options:

Field	Value
Bit Rate	1.544
Line Compensation	1
Signaling Mode	robbed-bit
Line Coding	ami-zcs
Framing Mode	d4
Interface Companding	mulaw
Idle Code	11111111
Slip Detection	y
Near-end CSU Type	"other" for no CSU or "integrated" for attached CSU

```

change ds1 1c16                                     Page 1 of 2
                                     DS1 CIRCUIT PACK

      Location: 01C16                               Name:
      Bit Rate: 1.544                               Line Coding: ami-zcs
Line Compensation: 1                               Framing Mode: d4
      Signaling Mode: robbed-bit

Interface Companding: mulaw
      Idle Code: 11111111

Slip Detection? y                                Near-end CSU Type: other
    
```

Tie Trunk Groups

change trunk-group XX (where **XX** is a trunk group number)

- Administer the trunk group(s) with the following options:

Field	Value	
	Precedence Dialing	W NDP Dialing
Page 1		
Group Type	tie	tie
Trunk Type (in/out)	wink/wink	wink/wink
Outgoing Dial Type	rotary ^a	rotary ^a
Incoming Dial Type	tone	rotary ^a
Digit Treatment	insertion	insertion
Digits	Enter the Precedence Calling FAC, even when using W NDP dialing	Enter the Precedence Calling FAC, even when using W NDP dialing
Page 2		
DSN Termination	y	y
Precedence Mode Incoming ^b	dtmf(a-d)	N/A
Precedence Mode Outgoing ^b	N/A	N/A
Page 3		
Flash Length (msec)	Start with the default of 540 msec; increase or decrease this value as needed if trunk preemption is not working	Start with the default of 540 msec; increase or decrease this value as needed if trunk preemption is not working

a. When set to rotary, the Precedence Mode fields on Page 2 do not display and are set automatically to the "digit" option. The "digit" option uses rotary pulses.

b. If optioned for "dtmf(a-d)," the switch sends a DTMF tone (touch-tone) to represent the different precedence levels (a=Flash Override, b=Flash, c=Immediate, d=Priority). If optioned for "digit," the switch sends the precedence level digits (0-4) as rotary pulses.

```
change trunk-group 9                                     Page 1 of 10
                                                    TRUNK GROUP

Group Number: 9                Group Type: tie                CDR Reports: y
Group Name: DSN DS1 TIE TO SD0    COR: 1                TN: 1                TAC: 709
Direction: two-way                Outgoing Display? y    Trunk Signaling Type:
Dial Access? y                    Busy Threshold: 99     Night Service:
Queue Length: 0                    Incoming Destination:
Comm Type: voice                    Auth Code? n
                                      Trunk Flash? n

TRUNK PARAMETERS
Trunk Type (in/out): wink/wink    Incoming Rotary Timeout(sec): 5
Outgoing Dial Type: tone          Incoming Dial Type: tone
Wink Timer(msec): 300              Disconnect Timing(msec): 500
Digit Treatment: insertion        Digits: 199
                                      Sig Bit Inversion: none
Connected to Toll? n                STT Loss: normal      DTT to DCO Loss: normal
Incoming Dial Tone? y

Disconnect Supervision - In? y Out? n
Answer Supervision Timeout: 0        Receive Answer Supervision? y
```

```
change trunk-group 9                                     Page 2 of 10
                                                    TRUNK FEATURES

ACA Assignment? n                Measured: none
                                      Internal Alert? n      Maintenance Tests? y
                                      Data Restriction? n
                                      Glare Handling: none

Used for DCS? n
Suppress # Outpulsing? n
Seize When Maintenance Busy: neither-end

Incoming Tone (DTMF) ANI: no        Per Call CPN Blocking Code:
Connected to CO? n                  Per Call CPN Unblocking Code:

DSN Termination? y
Precedence Mode Incoming? dtmf(a-d)
Precedence Mode Outgoing? digit
```

Outgoing Call Routing (Precedence Dialing)

When users place outgoing calls to Siemens switches using Precedence Dialing, the DEFINITY ECS must analyze the dialed digits and route the call over a particular pattern. For this example, the user dials **1990310666050**, where

- 199**=Precedence Dialing FAC
- 0**=Flash Override precedence level
- 310666050**=Dialed number

change precedence-routing analysis X (where X is the digit being analyzed)

- The following example shows that the dialed digits will match to x310 and route to pattern 64.

```
change precedence-routing analysis x310                               Page 1 of 1
PRECEDENCE ROUTING DIGIT ANALYSIS TABLE
Partitioned Group Number: 1      Percent Full: 16
```

Dialed String	Total Rte Mn Mx Pat	Preempt Method	Dialed String	Total Rte Mn Mx Pat	Preempt Method
x310	11 11 64	group			group
x3383	8 8 35	group			group
x3388	8 8 85	group			group
x4383	8 8 33	group			group
x4388	8 8 83	group			group

change route-pattern XX (where XX is a route pattern from the digit analysis form)

- The following shows how route pattern 64 might be administered to use trunk group 30. For DSN trunks that have the Precedence Mode Outgoing field set for DTMF, you must delete one digit or the precedence level digit will be sent twice.

```
change route-pattern 60                                           Page 1 of 1
Pattern Number: 60
```

Grp. No.	FRL	NPA	Pfx	Hop	Toll	No. Del	Inserted Digits	IXC
1: 30	0						1	user
2:								user
3:								user
4:								user
5:								user
6:								user

	BCC	VALUE	TSC	CA-TSC	ITC	BCIE	Service/Feature	Numbering LAR Format
	0	1	2	3	4	W	Request	
1:	y	y	y	y	y	n	n	rest
2:	y	y	y	y	y	n	n	rest
3:	y	y	y	y	y	n	n	rest
4:	y	y	y	y	y	n	n	rest
5:	y	y	y	y	y	n	n	rest
6:	y	y	y	y	y	n	n	rest

In this example, the digits outputted to the Siemens switch are **03106666050**, where

0=Flash Override precedence level

3106666050=Dialed number

Incoming Call Routing (Precedence Dialing)

When users place incoming calls from Siemens switches using Precedence Dialing, the DEFINITY ECS must analyze the dialed digits and route the call to the correct destination (usually an extension on the local switch). For this example, the user at the Siemens switch dials **05383111**, where

0=Flash Override precedence level

5383111=Dialed number

change precedence-routing digit-conversion

- The following example shows how the dialed digits match to `x538`, the first four digits are deleted (0538), and the call is routed to extension 3111.

```
change precedence-routing digit-conversion x538          Page 1 of 2
PRECEDENCE ROUTING DIGIT CONVERSION TABLE
Percent Full: 11
```

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
x538	8	8	4		ext	n
x6	8	8	1		pre	n
xx2386	9	9	5		ext	n
xx3032386	12	12	8		ext	n
xx3033386	12	12	8		ext	n
xx3034386	12	12	8		ext	n

Outgoing Call Routing (W NDP Dialing)

When users place outgoing calls to Siemens switches using W NDP Dialing, the DEFINITY ECS must analyze the dialed digits and route the call over a particular pattern. For this example, the user dials **1003106666050**, where

- 100**=W NDP Dialing FAC for Flash Override precedence level
- 3106666050**=Dialed number

In this example, the user did not dial a Route Code digit. A default Route Code digit will be sent (see Default Route Digit on Page 104).

change precedence-routing analysis X (where X is the digit being analyzed)

- The following example shows that the dialed digits will match on xx310 and route to pattern 64.

```
change precedence-routing analysis xx310                               Page 1 of 1
PRECEDENCE ROUTING DIGIT ANALYSIS TABLE
Partitioned Group Number: 1      Percent Full: 16

Dialled      Total Rte  Preempt      Dialled      Total Rte  Preempt
String       Mn Mx Pat  Method       String       Mn Mx Pat  Method
xx310      12 12 64 group       xx310      12 12 64 group
xx606        12 12 63   group
xx718        12 12 62   group
xx718666     12 12 64   group
xx719        12 12 63   group
```

change route-pattern XX (where XX is a route pattern from the digit analysis form)

- The following shows how route pattern 64 might be administered to use trunk group 30. For DSN trunks that have the Precedence Mode Outgoing field set for DTMF, you must delete one digit or the precedence level digit will be sent twice.

```
change route-pattern 64                                             Page 1 of 1
Pattern Number: 64

Grp.  FRL NPA Pfx Hop Toll No. Del Inserted      IXC
No.   Mrk Lmt List Digits Digits
1: 30  0                1                user
2:                                     user
3:                                     user
4:                                     user
5:                                     user
6:                                     user

BCC VALUE  TSC CA-TSC  ITC  BCIE Service/Feature      Numbering LAR
0 1 2 3 4 W Request          Format
1: y y y y n n                rest          none
2: y y y y n n                rest          none
3: y y y y n n                rest          none
4: y y y y n n                rest          none
5: y y y y n n                rest          none
6: y y y y n n                rest          none
```

In this example, the digits outputted to the Siemens switch are **003106666050**, where
0=Flash Override precedence level
0=Route Code digit
3106666050=Dialed number

Incoming Call Routing (W NDP Dialing)

When users place incoming calls from Siemens switches using W NDP Dialing, the DEFINITY ECS must analyze the dialed digits and route the call to the correct destination (usually an extension on the local switch). For this example, the user at the Siemens switch dials **005383111**, where
0=Flash Override precedence level
0=Route Code digit
5383111=Dialed number

change precedence-routing digit-conversion

- The following example shows how the dialed digits match on `xx538`, the first five digits are deleted (00538), and the call is routed to extension 3111.

```
change precedence-routing digit-conversion xx5          Page 1 of 2
PRECEDENCE ROUTING DIGIT CONVERSION TABLE
Percent Full: 11
```

Matching Pattern	Min	Max	Del	Replacement String	Net	Conv
xx538	9	9	5		ext	n
xx6	6	6	2		ext	n

Preemption

Preemption allows higher-precedence calls to preempt lower-precedence calls when all DSN facilities are busy. After the preempted call is disconnected, that same facility is reused for the preempting call.

Detailed Description

Preemption will preempt (disconnect) calls of lower precedence in order to complete a higher precedence call. Facilities can be administered as nonpreemptable or preemptable. Both parties on the call must be preemptable as defined by their COR; if one party on the call is not preemptable, the call cannot be preempted.

The trunk groups are searched in one of two methods, which are administrable. The first method is called "group" preemption. With group preemption:

1. The system checks the first trunk group in the pattern to see if any trunks are idle.
2. The system then checks the same trunk group to see if any trunks are preemptable.
3. If no trunks are available, the system checks the next trunk group to see if any trunks are idle.
4. The system then checks the same trunk group to see if any trunks are preemptable.
5. This pattern continues until an idle or preemptable trunk is found.

The second method is called "route" preemption. With route preemption:

1. The system checks each trunk group in the pattern to see if any trunks are idle.
2. If no trunks are available, the system then checks each trunk group in the pattern to see if any trunks are preemptable.
3. This pattern continues until an idle or preemptable trunk is found.

If an idle trunk or a preemptable trunk is not found within the Precedence Call Timeout interval (see Page 100), the caller hears a recorded announcement or reorder tone (see "Announcements for Precedence Calling" on Page 46). Calls with Routine precedence cannot preempt any other calls. If a call with Routine precedence fails to find an idle trunk, the caller receives busy tone.

When preemption occurs, all parties will be notified of the impending preemption with a tone (a loud 440 Hz and 620 Hz mixed tone for 3 seconds). If the preemption is being done to obtain a trunk, the preempt-for-reuse signal is sent over the signalling leads to inform the distant end that a preemption is in progress and the circuit (trunk) will be used for the new call.

If the preemption is being done to alert a user of a higher-precedence incoming call, the callers on the active call hear the preemption tone and are then disconnected from the call. Though the call disconnects, the circuit is reserved for the preempting call. After the call disconnects, the called party is alerted to the new call with priority ringing.

Considerations

The TN2182 Tone Clock circuit pack is required for this feature.

The call progress tones used for Preemption are a fixed tone and pattern; they cannot be changed using the **change system-parameters country-options** command.

Interactions

- General

Calls with precedence higher than Routine that terminate at trunks, stations, attendant consoles, and recorded announcements can be preempted. Since Precedence Routing does not allow precedence calls to terminate at Vector Directory Numbers (VDNs), Terminating Extension Groups (TEGs), or hunt groups, other calls to these facilities cannot be preempted.

- Adjunct Switch Applications Interface (ASAI)

ASAI is notified if a call is preempted and disconnected from the current call.

- AUDIX

AUDIX is notified if a call is preempted and disconnected from the current call.

- Call Management System (CMS)

CMS is notified if a call is preempted and disconnected from the current call.

- Conversant®

Conversant systems are notified if a call is preempted and disconnected from the current call.

■ Precedence Calling

When a precedence call attempts to preempt an existing call, call progress tones or the “blocked precedence call” announcement indicates why the call did not complete. The following table shows how precedence calls are processed depending on the precedence level of the call and the precedence level of the preempted trunk:

Precedence Level of Call	Precedence Level of the DSN Trunk Call Being Preempted	Call Treatment
Flash Override	Flash Override	Recorded announcement or busy tone
Flash	Flash Override	Recorded announcement or busy tone
Immediate	Flash Override	Recorded announcement or busy tone
Priority	Flash Override	Recorded announcement or busy tone
Routine	Flash Override	Busy tone
Flash Override	Flash	Call completes normally
Flash	Flash	Recorded announcement or busy tone
Immediate	Flash	Recorded announcement or busy tone
Priority	Flash	Recorded announcement or busy tone
Routine	Flash	Busy tone
Flash Override	Immediate	Call completes normally
Flash	Immediate	Call completes normally
Immediate	Immediate	Recorded announcement or busy tone
Priority	Immediate	Recorded announcement or busy tone
Routine	Immediate	Busy tone
Flash Override	Priority	Call completes normally
Flash	Priority	Call completes normally
Immediate	Priority	Call completes normally
Priority	Priority	Recorded announcement or busy tone
Routine	Priority	Busy tone
Flash Override	Routine	Call completes normally
Flash	Routine	Call completes normally
Immediate	Routine	Call completes normally
Priority	Routine	Call completes normally
Routine	Routine	Busy tone

■ Transient calls

Calls in a transient mode (ringing, on hold) cannot be preempted.

Administration

change cor X (where X is 0-95)

- Use the COR form to define whether extensions or trunks assigned to a COR can be preempted from their current calls (the default is set to **n**). For example, you might assign all top-priority users to a COR and set them as not preemptable. For lower-level personnel, you would put their extensions in a COR that allows their calls to be preempted.

```

change cor 1                                     Page 1 of 3
                                     CLASS OF RESTRICTION
COR Number: 1
COR Description:
FRL: 0                                           APLT? y
Can Be Service Observed? n                       Calling Party Restriction: none
Can Be A Service Observer? n                     Called Party Restriction: none
Partitioned Group Number: 1                     Forced Entry of Account Codes? n
Priority Queuing? n                               Direct Agent Calling? n
Restriction Override: none                       Facility Access Trunk Test? n
Restricted Call List? n                           Can Change Coverage? n
Access to MCT? y                                 Fully Restricted Service? n
Category For MFC ANI: 7
Send ANI for MFE? n
MF ANI Prefix:                                  Automatic Charge Display? n
Hear System Music on Hold? y                     PASTE (Display PBX Data on Phone)? n
Can Be Picked Up By Directed Call Pickup? n
Line Load Control: 4                             Can Use Directed Call Pickup? n
Maximum Precedence Level: fo                     Preemptable? y
    
```

add trunk-group X (where X is the trunk group number)

- Use the trunk group form to identify a trunk group as a DSN termination endpoint (the default is n). For the Preemption feature, enabling a trunk as a DSN termination endpoint indicates that the trunk is able to accept the Preemption signaling over the DSN. This field can be enabled for tie trunks only.

```

change trunk-group 9                                     Page 2 of 10
                TRUNK FEATURES
ACA Assignment? n          Measured: none
                Internal Alert? n      Maintenance Tests? y
                Data Restriction? n
                Glare Handling: none
                Used for DCS? n
Suppress # Outpulsing? n  Seize When Maintenance Busy: neither-end

Incoming Tone (DTMF) ANI: no      Per Call CPN Blocking Code:
Connected to CO? n                Per Call CPN Unblocking Code:

DSN Termination? y
Precedence Mode Incoming? dtmf(a-d)
Precedence Mode Outgoing? digit
    
```

change system-parameters features

- Use the following form to set the Precedence Call Timeout (10 to 60 seconds; default is 30).

```

change system-parameters features                       Page X of X
                FEATURE-RELATED SYSTEM PARAMETERS

MULTIPLE LEVEL PRECEDENCE PREEMPTION PARAMETERS
ANNOUNCEMENTS          Blocked Precedence Level: 6801
                        Unauthorized Precedence Level: 6802
                        Service Interruption: 6803
                        Busy, Not Equipped: 6804
PRECEDENCE CALLING-DIALED DIGIT ASSIGNMENT
                        Flash Override: 0
                        Flash: 1
                        Immediate: 2
                        Priority: 3
                        Routine: 4

Attendant Diversion Timing (sec):
Remote Attendant Route String:
Worldwide Numbering Dial Plan Active? y
Default Route Digit: 0
Precedence Call Timeout (sec): 30
Line Load Control Restriction Level: 3
    
```

Worldwide Numbering and Dialing Plan

The Worldwide Numbering and Dialing Plan (WNDP) feature makes the DEFINITY ECS compatible with the standard numbering system established by the Defense Communications Agency (DCA).

Detailed Description

WNDP is a dialing system used in a DSN. WNDP is similar to Precedence Calling, but the pattern of digits that users dial is different. The format of the dialed digits is as follows:

FAC	Route Code	Address Digits		
		Area Code	Office Code	Extension Number
A	[1X]	[NXX]	NXX	XXXX

Where:

A is a WNDP FAC for the desired precedence level

1 is the Route Code setup digit

X is any digit 0-9

N is any digit 2-9

[] denotes optional digits

- FAC — The FAC is the set of WNDP FACs. Each precedence level uses a distinct FAC.

_____ Flash Override

_____ Flash

_____ Immediate

_____ Priority

_____ Routine

- Route Code — After dialing the FAC, the user has the option of dialing a two-digit Route Code. The Route Code is a special purpose DSN code that permits the user to inform the switch of special routing or termination requirements. For this release, the Route Code is limited to the DSN where it is used to determine whether a call will use data- or voice-grade trunking, or to indicate that the number dialed is either a Federal Telephone System

(FTS) or a Continental U.S. (CONUS) commercial number. It is not necessary to dial the Route Code for voice calls if no special features are required.

- The first digit of the Route Code (1) indicates to the DEFINITY ECS that the next digit gives network instructions for specialized routing. If a Route Code is dialed, the “1” is deleted and the second digit is saved.
 - The second digit of the Route Code (0-9) is called the Route Digit. This route digit becomes part of the dialed number and may be used for route selection using the Precedence Routing translations. Precedence Routing allows digit strings to be modified before outpulsing. This capability is used to modify the route code as needed by the terminating trunk group. If a Route Digit is not dialed, the DEFINITY ECS will insert a default route digit. The default route digit usually routes the calls over the voice network, not the data network.
- Address Digits — The Address Digits are the seven-digit or ten-digit DSN number.

The format of the outpulsed digits is as follows:

Precedence Digit	Route Code	Address Digits		
		Area Code	Office Code	Extension Number
P	[[1]X]	[NXX]	NXX	XXXX

The digit outpulsing is administrable using the Precedence Routing functionality (see Page 73). This allows flexible routing of dialed numbers and the ability to modify the digits outpulsed as needed (for example, outpulsing no Route Digit, only the Route Digit, or “1” and the Route Digit). The digits sent to Precedence Routing will be of the form:

PRXXX...

where:

- P** is the Precedence Digit
- R** is the Route Code (if WNDP is active)
- XXX...** are the Address Digits

If a particular route requires the Route Code of the form 1X, the digit modification translations for the route can be used to insert the “1.” If the route does not require the Route Digit, the digit modification can be translated to delete the Route Digit. The digit modification translations insert a default Route Digit if none is dialed.

Considerations

The Route Control Digit of WNDP is not available as part of the MLPP feature set. This is not the same as the Route Code digit.

Any destination telephone number that starts with a 1 (such as the extension 1500) must be dialed as follows: 1, Route Code digit, destination number. For example, this could be **1x1500**, where **x** is the Route Code digit.

Interactions

- **Precedence Calling**

When WNDP is enabled, users must dial a FAC for the precedence level they wish to use. Users cannot use the Precedence Calling FAC. In addition, the route code function and implied precedence level are provided.

When WNDP is disabled, users must dial the Precedence Calling FAC, followed by a digit (the default is 0-4, but is administrable as 0-9) to indicate the precedence level. The WNDP FACs can be administered, but cannot be used.

Administration

change system-parameters features

- Use the following form to activate or deactivate WNDP. By default, WNDP is deactivated. When WNDP is active, the Default Route Digit field displays. The Default Route digit may be digits 0-9. See the detailed description on Page 101 for more information.

```

change system-parameters features                               Page  X of  X
                FEATURE-RELATED SYSTEM PARAMETERS

MULTIPLE LEVEL PRECEDENCE PREEMPTION PARAMETERS
ANNOUNCEMENTS                Blocked Precedence Level: 6801
                               Unauthorized Precedence Level: 6802
                               Service Interruption: 6803
                               Busy, Not Equipped: 6804

PRECEDENCE CALLING-DIALED DIGIT ASSIGNMENT
                               Flash Override: 0
                               Flash: 1
                               Immediate: 2
                               Priority: 3
                               Routine: 4

Attendant Diversion Timing (sec):
Remote Attendant Route String:
Worldwide Numbering Dial Plan Active? y
                               Default Route Digit: 0
Precedence Call Timeout (sec): 10
Line Load Control Restriction Level: 3
    
```

change feature-access-codes

- Use the following form to add the WNDP Precedence FACs. Administer these FACs only when using WNDP dialing instead of precedence dialing.

```

change feature-access-codes                                   Page  6 of  6
                FEATURE ACCESS CODE (FAC)
                MLPP Features

Precedence Calling Access Code: 199

WNDP PRECEDENCE ACCESS CODES:
Flash Override Access Code: 100
Flash Access Code: 101
Immediate Access Code: 102
Priority Access Code: 103
Routine Access Code: 104
    
```



NOTE:

A Precedence Calling FAC must also be defined even when using WNDP Dialing. The Precedence Calling FAC is used when administering Precedence Routing trunks.

change console-parameters

- Use the console-parameters form to assign attendant queue priorities for precedence calls and non-precedence calls. This determines how calls are queued to the attendant console. The following example shows the defaults for the system. You may want to change some of the defaults depending on the desired priority for processing calls.

```

change console-parameters                               Page 2 of 3
                                CONSOLE PARAMETERS

QUEUE PRIORITIES

Emergency Access: 1                                MLPP Precedence Call
Assistance Call: 6                                Flash Override: 2
CO Call: 6                                         Flash: 3
DID to Attendant: 6                               Immediate: 4
Tie Call: 6                                       Priority: 5
Redirected DID Call: 6
Redirected Call: 6
Return Call: 6
Serial Call: 6
Individual Attendant Access: 6
Interpositional: 6
Miscellaneous Call: 6

Call-Type Ordering Within Priority Levels? n
    
```



CAUTION:

By default, emergency access calls receive higher priority processing than MLPP Precedence Calls. You can change the order of priority, but be careful when designating emergency calls to equal or lower priority. Call types with equal priority enter the queue on a first-in, first-out basis.



NOTE:

Routine precedence calls are treated as normal calls and will use the same queue priorities as nonemergency and non-MLPP calls.

Appendixes

Additional information about the MLPP features are provided in the following appendixes:

- Appendix A — Call Progress Tones
- Appendix B — Ringing Patterns
- Appendix C — Glossary.

Appendix A — Call Progress Tones

Call Progress Tones are sounds that you hear when placing calls. The following table describes the call progress tones.

Tone	Description	Pattern
Busy	The tone heard when the person you are calling is busy.	0.5 sec on, 0.5 sec off; repeated
Call Waiting	The tone heard when you are on a call on a single-line set, someone else calls you, and standard Call Waiting is applied to the call.	0.2 sec on, silence or 0.2 sec on, 0.2 sec off, 0.2 sec on, silence
Call Waiting ringback	The tone heard when you are calling someone that is active on a call, and standard Call Waiting is applied.	0.9 sec on, 0.2 sec off, 2.9 sec off; repeated
Confirmation	The three-burst tone heard after successfully using a FAC.	0.1 sec on, 0.1 sec off; repeated three times followed by silence
Dial	The tone heard when you go off-hook.	Continuous
Intercept	The two-level tone heard when a call or FAC is not accepted; also known as siren tone.	0.25 sec on (440 Hz), 0.25 sec off (620 Hz); repeated
Precedence Call Waiting	The tone heard when you are on a call, someone else calls you, and Precedence Call Waiting is applied to the call.	0.1 sec on, 0.05 sec off, 0.1 sec on, 0.05 sec off, 0.1 sec on; repeated every 10 seconds or until timeout occurs
Precedence Call Waiting ringback <i>and</i> Precedence Calling ringback	The tone heard when you are calling someone that is active on a call, and Precedence Call Waiting is applied, <i>and</i> the special ringing tone heard after placing a precedence call.	1.65 sec on, 0.35 sec off; repeated
Preemption Warning	The tone heard by all parties on a call that is about to be preempted.	Mixed 440 Hz and 620 Hz tone for 3 seconds
Reorder	The fast busy tone heard when calling facilities are not available or are out of order.	0.25 sec on, 0.25 sec off; repeated
Ringback	The normal ringing tone heard after you dial a telephone number not using Precedence Calling.	1 sec on, 3 sec off; repeated

Appendix B — Ringing Patterns

Different ringing patterns are used to represent different features. The following table describes the ringing patterns you will hear on your station.

Ringling	Description	Pattern
Normal	The ringing heard for an incoming call.	Single-burst for internal calls; two-burst for external calls
Precedence	The ringing heard for incoming calls with a special precedence level.	Three-burst
Priority	The ringing heard when the caller uses Priority Calling.	Three-burst

Appendix C — Glossary

- AAR — Automatic Alternate Routing
- ARS — Automatic Route Selection
- CCSA — Common Control Switching Arrangement
- CO — Central Office
- CONUS — Continental US
- COR — Class of Restriction
- COS — Class of Service
- DCA — Defense Communications Agency
- DS1 — Digital Signaling One
- DSN — Defense Switched Network
- DTMF — Dual-tone multifrequency (equivalent to touch-tone)
- Dual Homing — allows a user to dial a telephone number and have the call route to its destination over alternate facilities if the initial route is unavailable. This operation is transparent to the user and no special dialing is required.
- ECS — Enterprise Communications Server
- EO — End Office
- E&M — Ear and Mouth
- FAC — Feature access code
- FTS — Federal Telephone System
- Line — For a DEFINITY system, a line is defined as the port used to connect stations to the switch. On a CO system, lines connect stations to the switch, but lines also connect switches to other switches.
- Line Hunting — automatically hunts for an idle trunk over End Office access lines based on the precedence level of the call.
- Line Load Control (LLC) — invokes origination restriction for a group of stations to help control traffic levels and increase performance on the DEFINITY ECS.
- Local Attendant — The attendant console that is physically located with the local switch. If a local attendant is not administered, attendant-seeking calls may be directed to a remote attendant.
- MLPP — Multiple Level Precedence and Preemption
- Nonpreemptable Group — a trunk group that cannot be preempted by a precedence call.

- North American Numbering Plan (NANP)
- PCOL — Personal Central Office Line
- Precedence Calling — allows users to place calls using five different precedence (priority) levels.
- Precedence Routing — allows the system to route Precedence Calls to a trunk group based on the dialed telephone number or a precedence level digit, or both.
- Preemption — allows higher-precedence calls to preempt lower-precedence calls when all facilities on the DSN are busy.
- PBX — Private Branch Exchange (a DEFINITY ECS is a PBX)
- R6csi — DEFINITY ECS based on the compact modular cabinet (CMC).
- R6r — DEFINITY ECS based on the multi-carrier cabinet.
- R6si — DEFINITY ECS based on the single-carrier cabinet (SCC).
- R6vs — DEFINITY ECS based on the compact single-carrier cabinet (CSCC).
- Reuse — allows trunks that have been preempted to be reused for a new call.
- Remote Attendant — The attendant console that is physically located on a remote switch. Calls from one switch can be administered to redirect to a remote attendant if a local attendant is not administered.
- SAT — System Administration Terminal
- TAC — Trunk access code
- Trunk — For a DEFINITY system, the ports that connect the system to a CO switch or to other switches.
- WNDP — Worldwide Numbering and Dialing Plan

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**DEFINITY® ECS R6 Multiple Level Precedence and Preemption (MLPP)
Installation, Feature Description, and Administration
555-230-194, Issue 3, July 1999, Comcode 108594847**

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