Nortel Communication Server 1000
Nortel Communication Server 1000 Release 4.5

Communication Server 1000E

Installation and Configuration

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Revision history

September 2007

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Standard 2.00. This document is issued for Communication Server 1000 Release 4.5.

September 2004

Standard 1.00. This document is issued for Communication Server 1000 Release 4.5.

Contents

List of Procedures

About this document

This document is a global document. Contact your system supplier or your Nortel representative to verify that the hardware and software described are supported in your area.

Subject

This document provides the information necessary to install and configure a Nortel Networks Communication Server 1000E system.

WARNING

Before a CS 1000E system can be installed, a network assessment **must** be performed and the network must be VoIP-ready.

If the minimum VoIP network requirements are not met, the system will not operate properly.

For information on the minimum VoIP network requirements and converging a data network with VoIP, refer to *Converging the Data Network with VoIP* (553-3001-160).

Note on legacy products and releases

This NTP contains information about systems, components, and features that are compatible with Nortel Communication Server 1000 Release 4.5

software. For more information on legacy products and releases, click the **Technical Documentation** link under **Support & Training** on the Nortel home page:

www.nortel.com

Applicable systems

This document applies to the Communication Server 1000E (CS 1000E) system.

> ***Note:*** When upgrading software, memory upgrades may be required on the Signaling Server, the Call Server, or both.

Conventions

In this document, the CS 1000E system is referred to generically as "system."

Related information

This section lists information sources that relate to this document.

NTPs

The following NTPs are referenced in this document:

- *Converging the Data Network with VoIP* (553-3001-160)
- *ISDN Primary Rate Interface: Installation and Configuration* (553-3001-201)
- *Circuit Card: Description and Installation* (553-3001-211)
- *IP Peer Networking: Installation and Configuration* (553-3001-213)
- *Signaling Server: Installation and Configuration* (553-3001-212)
- *IP Peer Networking: Installation and Configuration* (553-3001-213)
- *ISDN Basic Rate Interface: Installation and Configuration* (553-3001-218)
- *Features and Services* (553-3001-306)

- *Software Input/Output: Administration* (553-3001-311)
- *Element Manager: System Administration* (553-3001-332)
- *IP Line: Description, Installation, and Operation* (553-3001-365)
- *Telephones and Consoles: Description, Installation, and Operation* (553-3001-367)
- *IP Phones: Description, Installation, and Operation* (553-3001-368)
- *Software Input/Output: Maintenance* (553-3001-511)
- *ISDN Primary Rate Interface: Maintenance* (553-3001-517)
- *ISDN Basic Rate Interface: Maintenance* (553-3001-518)
- *Communication Server 1000S: Overview* (553-3031-010)
- *Communication Server 1000S: Planning and Engineering* (553-3031-120)
- *Communication Server 1000S: Upgrade Procedures* (553-3031-258)
- *Communication Server 1000S: Maintenance* (553-3031-500)

Other documentation

The following documentation is referenced in this document:

- Nordex BIX documentation
- Krone documentation

Online

To access Nortel documentation online, click the **Technical Documentation** link under **Support & Training** on the Nortel home page:

www.nortel.com

CD-ROM

To obtain Nortel documentation on CD-ROM, contact your Nortel customer representative.

Safety instructions

Contents

This section contains information on the following topics:

Introduction

Safety issues associated with the installation of a CS 1000E are identified in this section. To avoid personal injury and equipment damage, review the safety instructions before handling the equipment.

WARNING

Failure to follow the safety instructions in this chapter could result in personal injury.

CAUTION — Damage to Equipment

Failure to follow the safety instructions in this chapter could result in damage to equipment.

Lifting system equipment

Care should be exercised when lifting system components. If necessary, get assistance to lift a component or install a component in a rack. The weight of the system component can be found in the component profiles in "System components" on page 41.

Before lifting or installing a component:

- Ensure that the planned location and the route to that location are free of obstacles and debris.
- Determine the weight of the components (see component profiles in "System components" on page 41).
- Get help with heavy components or components that are to be placed in the upper section of a rack.

Handling circuit cards

CAUTION WITH ESDS DEVICES

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or their components.

Follow these precautions when handling circuit cards:

1. Unpack or handle cards away from electric motors, transformers, or similar machinery.
2. Handle cards by the edges only. Do not touch the contacts or components.
3. Set cards on a protective antistatic bag. If an antistatic bag is not available, hold the card or set it in a card slot unseated.
4. Store cards in protective packing.
5. Do not stack cards on top of each other unless they are packaged.
6. Wear a properly connected antistatic wrist strap when you work on the equipment.

Installing telephones

Follow these safety instructions when installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install a telephone jack in wet locations unless the jack is designed for wet locations.
- Never touch an uninsulated telephone wire or terminal unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Using telephones

These safety precautions are intended to reduce the risk of fire, electric shock, and personal injury. Always follow these basic safety precautions when using telephone equipment:

- Follow all warnings and instructions marked on the product.
- Before you clean a telephone, remove the plug from the wall outlet. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleaners.
- Do not use the telephone near water (for example, near a tub or sink).
- Do not place the telephone on a piece of furniture that is unstable. The telephone can fall, causing serious damage to the telephone.
- Slots in the Media Gateway and the telephone are for ventilation. These slots protect the equipment from overheating. Never block or cover these slots.
- Never block the openings on a telephone by placing it on a surface like a bed, sofa, or rug. Never place a telephone near or over a radiator or heat register. Do not place it in a built-in installation, unless there is correct ventilation.
- Only operate a telephone from the type of power source indicated on the marking label. If you are not sure of the type of power supply, check with your distributor.

- Some equipment has a three-wire grounding plug. This type of plug has a third grounding pin. As a safety feature, the plug only fits into an isolated ground outlet. If you cannot insert the plug completely into the outlet, contact your electrician to replace the outlet.
- Some equipment has a polarized line plug. This type of plug has one blade wider than the other. As a safety feature, this plug fits into the power outlet one way. If you cannot insert the plug completely into the outlet, try reversing the plug. If the plug still does not fit, contact your electrician to replace the outlet.
- Do not place objects on the power cord. Do not locate the product where persons can walk on the plug.
- Do not overload wall outlets and extension cords, as fire or electrical shock can result.
- Never push objects of any kind into the telephone through the slots. The objects can come in contact with dangerous voltage points. Also, parts can short out, causing the risk of fire or electrical shock.
- Never spill liquid of any kind on the product.
- To reduce the risk of electrical shock, do not disassemble a telephone product.
- Remove the telephone plug from the wall outlet and refer servicing to qualified personnel if:
  - — the power supply cord or plug is damaged or worn
  - — liquid has spilled into the telephone
  - — the telephone has been exposed to rain or water
  - — the telephone has been dropped or damaged
  - — the product shows a distinct change in performance
  - — the telephone does not function correctly under normal operating conditions
- Avoid using a telephone (except a type without a cord) during an electrical storm. There is a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the area of the leak.

Installation summary

Contents

This section contains information on the following topics:

Introduction

WARNING

Before a CS 1000E system can be installed, a network assessment **must** be performed and the network must be VoIP-ready.

If the minimum VoIP network requirements are not met, the system will not operate properly.

For information on the minimum VoIP network requirements and converging a data network with VoIP, refer to *Converging the Data Network with VoIP* (553-3001-160).

Before undertaking the installation, review the chapter entitled “Safety instructions” on page 33.

See "System components" on page 41 to review the profiles of the key system components. For information on the models of telephones compatible with the CS 1000E system, see "Telephones" on page 71.

Installation tasks

Table 1 lists the tasks involved with the installation of a CS 1000E system.

Table 1
List of required installation tasks (Part 1 of 2)

Task	Go to page
Rack-mounting the components	73
Installing system grounds	91
Connecting CS 1000E system components	103
Installing software on the CS 1000E	119
Installing and configuring the Signaling Server software	169
Installing software on an MG 1000E Small System Controller	235
Installing software on an MG 1000T Small System Controller	241
Configuring a terminal and SDI ports	267
Connecting a Terminal Server	253
Configuring a Small System Controller	225
Configuring the MG 1000E ports	213
Verifying the network	277
Installing and configuring a Voice Gateway Media Card	319
Installing the Main Distribution Frame	353
Configuring an IP telephony node	365

Table 1
List of required installation tasks (Part 2 of 2)

Task	Go to page
Installing Line cards and cross-connecting telephones	383
Installing and configuring IP Phones	395
Installing and cross-connecting a trunk card	289
Installing and cross-connecting a Power Fail Transfer Unit	441
Installing and cross-connecting an external alarm from a PFTU	455
Configuring MG 1000T survivability and alternate primary controller	461
Basic system telephony configuration	477
Configuring IP Peer Networking and managing the Gatekeeper database	485

System components

Contents

This section contains information on the following topics:

Introduction

The CS 1000E system consists of the following components:

- Call Server
- Signaling Server

- Media Card
- Media Gateway
- Media Gateway Expander
- BayStack 470 Switch
- MRV Terminal Server
- System cables

  Note: You must order the power cord specified for your region

The system uses the following customer-supplied components:

- BayStack 460 Layer 2 switch
- 19-inch rack
- Uninterruptible Power Supply (UPS)

CS 1000E Call Server

CAUTION — Damage to Equipment

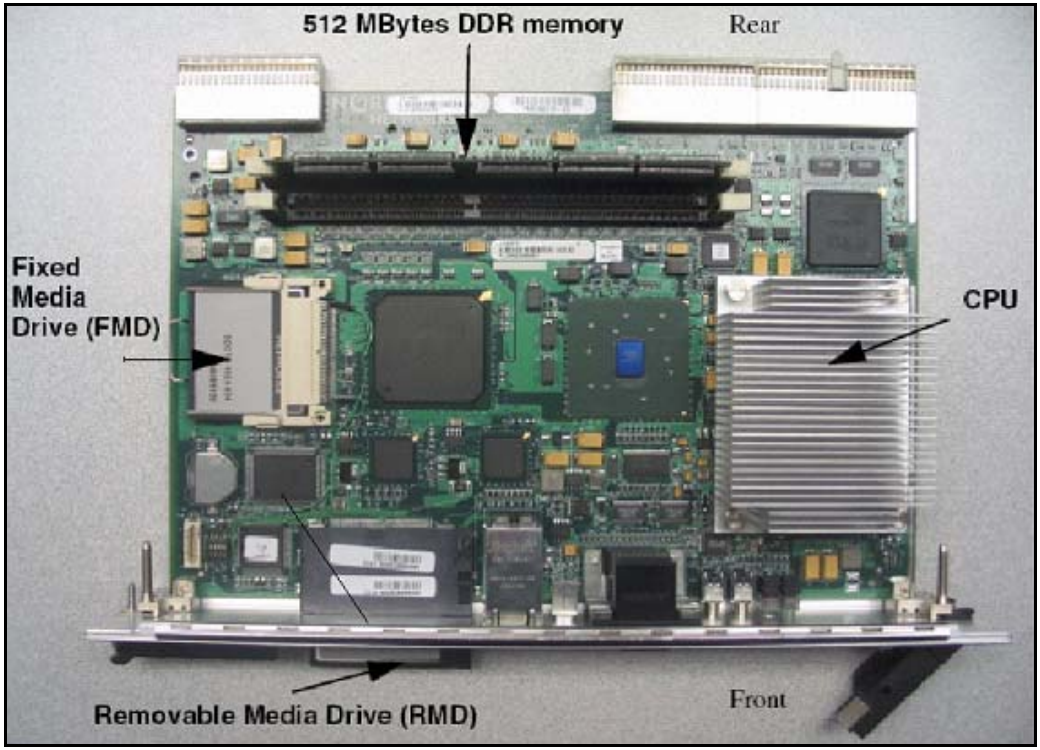
The CS 1000E Call Server chassis is constructed of light-weight aluminum. It can be damaged if the unit is lifted from the shipping box by its top plate.

The CS 1000E uses a Call Processor Pentium IV (CP PIV) processor for CS 1000 Release 4.5. It features the following enhancements:

- a PCI-based design
- an Intel Pentium IV processor
- two Compact Flash (CF) sockets (one on-board and one hot-swappable on the faceplate)
- 512 MBytes of DRAM memory

The Call Server is shown in Figure 1 on page 43 and in Figure 2 on page 44.

Figure 1
CS 1000E Core Call Server (top view)



The on-board CF is referred to as the Fixed Media Disk (FMD), and the faceplate CF is referred to as the Removable Media Disk (RMD).

CP PIV has the following new hardware:

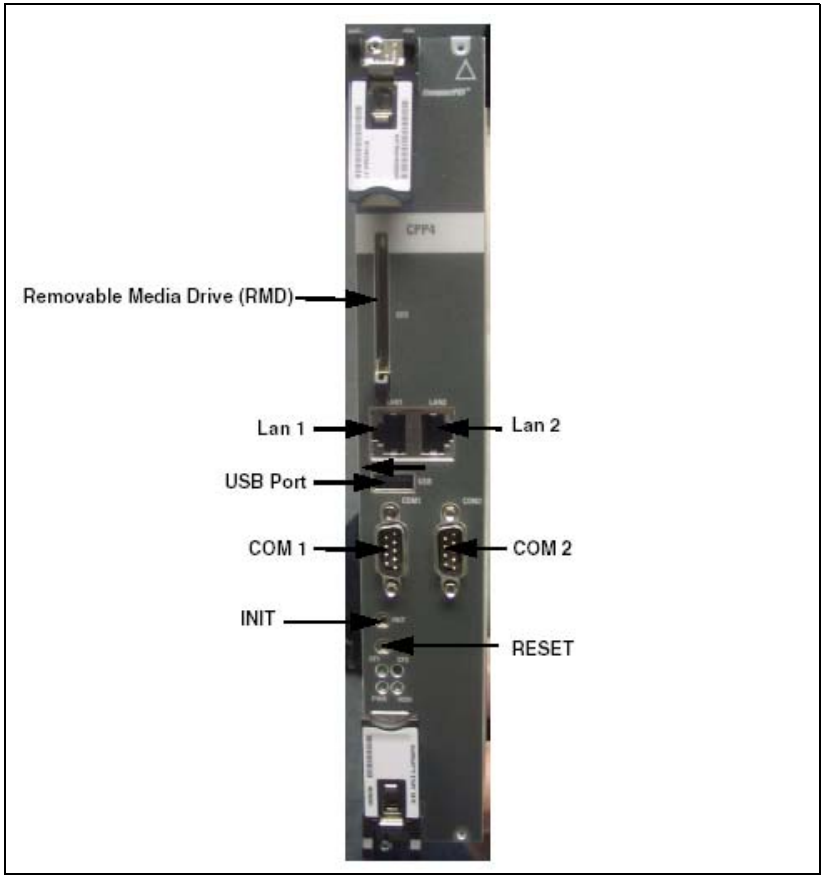
- A CP PIV processor board. See Figure 1 and Figure 2 on page 44.
- A blank panel.

  Note: The front panel USB port on the CP PIV card is intended for future applications.

The Call Server uses IP protocols to control all IP Phones, media services, and interfaces to other gateways and applications.

The CS 1000E Call Server has a second processor running in "warm standby" mode. This processor (Core Call Server 1) resides in a duplicate chassis that can be located anywhere.

Figure 2
CS 1000E Core Call Server (front view)



Backup and restore enhancements

The backup rules group of commands was introduced in CS 1000 Release 4.0 with the single rule type Secondary Call Server (SCS). Backup and restore

enhancements apply to both CP PII and CP PIV system configurations, unless otherwise noted.

Note: This feature does not actually perform an EDD, which must be initiated through an appropriate command in LD 43.

New backup rules

Three new backup rule types are introduced with CP PIV:

- FTP — an external FTP server is accessed for storing or retrieving backup data.
- FMD — fixed media device for storing backup data in a special directory on the /u partition. A CP PII system stores the data on a local hard drive, while a CP PIV system uses an on-board Compact Flash card.
- RMD — removable media device for storing backup data. The RMD rule type is available only on a CP PIV system.

  Note: New backup rules are not available for Geographic Redundancy Database Replication Control (GRDRC).

For more detailed information about backup and restore commands, see *Communication Server 1000M and Meridian 1: Large System Maintenance* (553-3021-500).

Signaling Server

The Signaling Server, as shown in Figure 3 and describ ed in Table 2, provides signaling interfaces to the network using software components that run on a real-time operating system. You can install Signaling Servers in a load-sharing redundant configuration for higher scalability and reliability.

The Signaling Server is equipped with several software components:

- IP Phone Terminal Proxy Server (TPS)
- H.323 Signaling Gateway (virtual trunk)
- H.323 Gatekeeper
- SIP

- Network Routing Service
- Element Manager web server

Figure 3
Signaling Server

Table 2
Signaling Server profile (Part 1 of 2)

Property	Description
Order Code	• NTDU27
Height	• 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	• Power status indicator (green LED) is located on the unit's faceplate. • Power cord connector is located on the left-hand corner on the back of the unit. • Power On/Off switch is on the faceplate. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (100-240 VAC); DC input is not supported.
Cooling	• Forced air cooling with front-to-back air flow. • The fan runs whenever the unit is on.
Card slots	• None

Table 2
Signaling Server profile (Part 2 of 2)

Property	Description
Connectors (front)	• The DB-9 serial port, the CD-ROM and floppy drives are located on the unit's faceplate. • The DB-9 serial port can support a login session for Command Line Interface (CLI) management. • See Figure 4 on page 48.
Connectors (rear)	• The TLAN network interface (P2) connects the unit to a TLAN network interface on a Layer 2 Switch. • The ELAN network interface (P1) connects the unit to an ELAN network interface on a Layer 2 Switch. • The DB-9 serial port can support a login session for Command Line Interface (CLI) management. • There are three ports not used for any CS 1000E system function. Do not plug any device into these ports. • See Figure 5 on page 49.

CAUTION — Service Interruption

Do not connect maintenance terminals or modems to the faceplate and I/O panel DB-9 male serial maintenance port at the same time.

For detailed information about the Signaling Server, refer to *Signaling Server: Installation and Configuration* (553-3001-212).

Figure 4
Connectors on the front of the Signaling Server

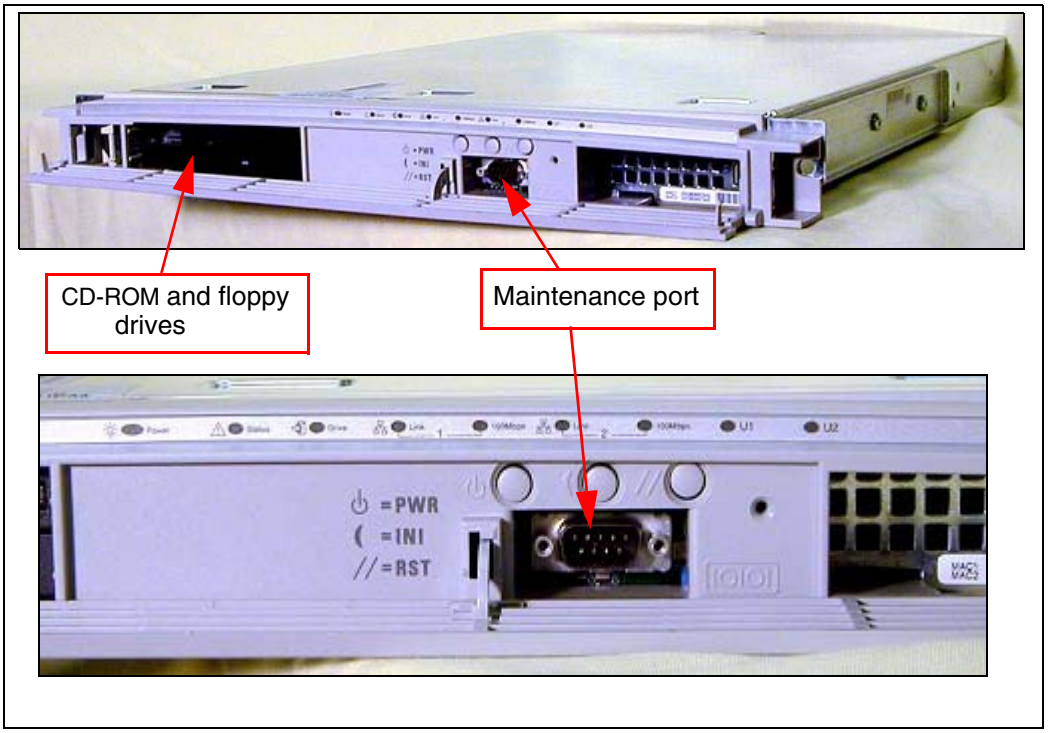
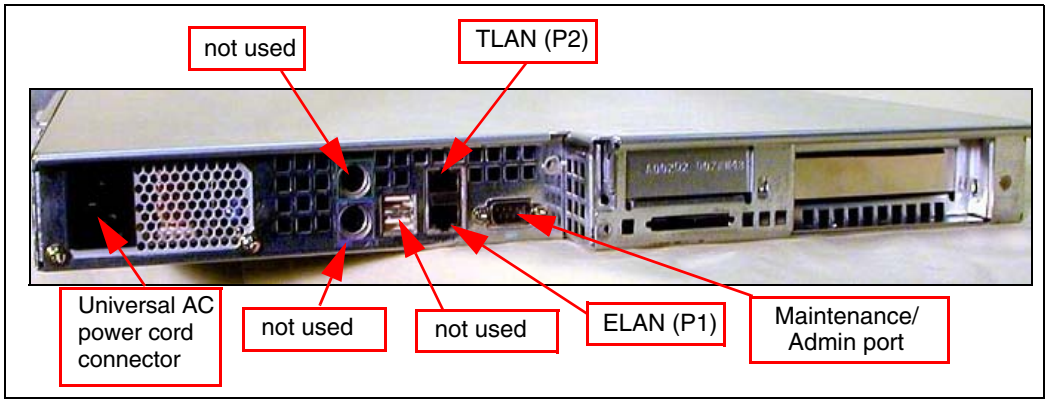


Figure 5
Connectors at the back of the Signaling Server



Media Card

The Media Card, described in Table 3 and shown in Figure 6, connects an IP and circuit-switched device using Digital Signal Processors (DSPs) for either line or trunk applications. The DSPs, enabled by a Voice Gateway application, performs media transcoding between IP voice packets and circuit-switched devices.

The Media Card also provides echo cancellation and compression/ decompression of voice streams.

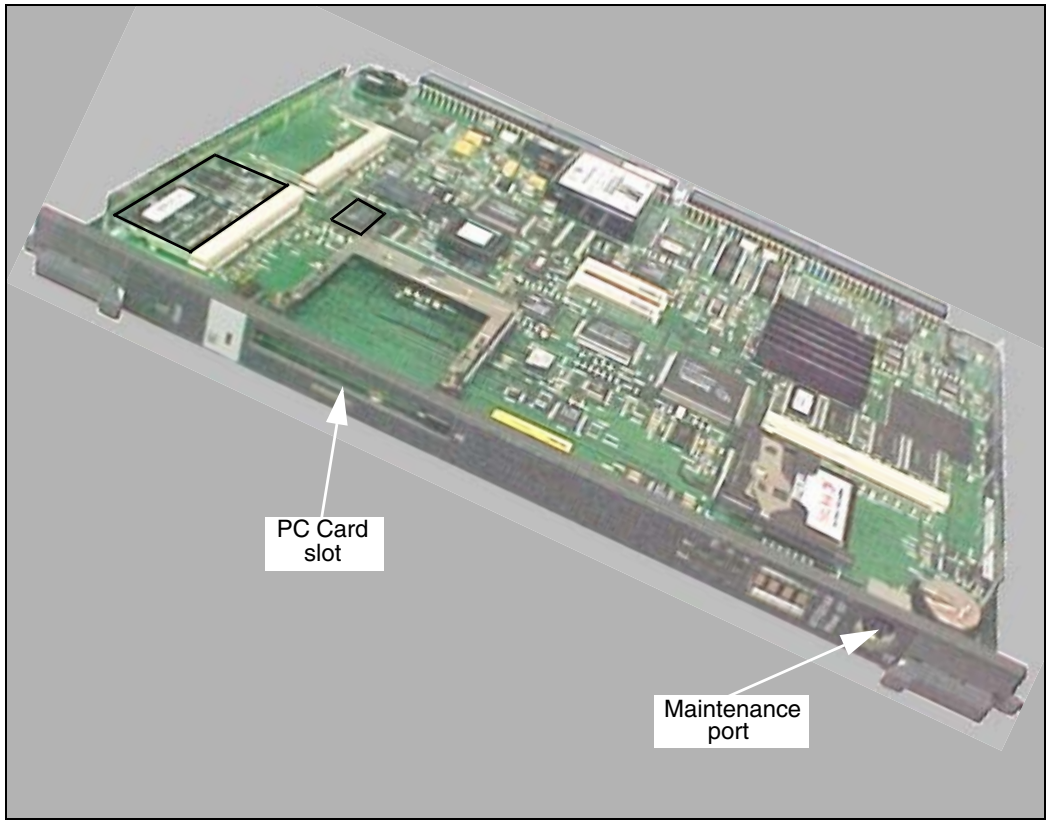
Table 3
Media Card profile (Part 1 of 2)

Property	Description
Product Code	• NTDU41DA Media Card 32 Port IP Line 3.1/Voice Gateway • NTDU41DB Media Card 8 Port IP Line 3.1/Voice Gateway
Power	• Powered through a Media Gateway or a Media Gateway Expander.

Table 3
Media Card profile (Part 2 of 2)

Property	Description
Cooling	• Provided by the Media Gateway or Media Gateway Expander.
Connectors (front)	• The PC Card slot can be used to deliver software or for additional storage. • The maintenance port provides access to the card for OA&M purposes.
Connectors (back)	• The Shielded 50-pin to Serial/ELAN/TLAN adapter provides connections to the card through the connector labelled Card 1, Card 2, Card 3, or Card 4 that corresponds to the card location. • See Figure 34 on page 113.

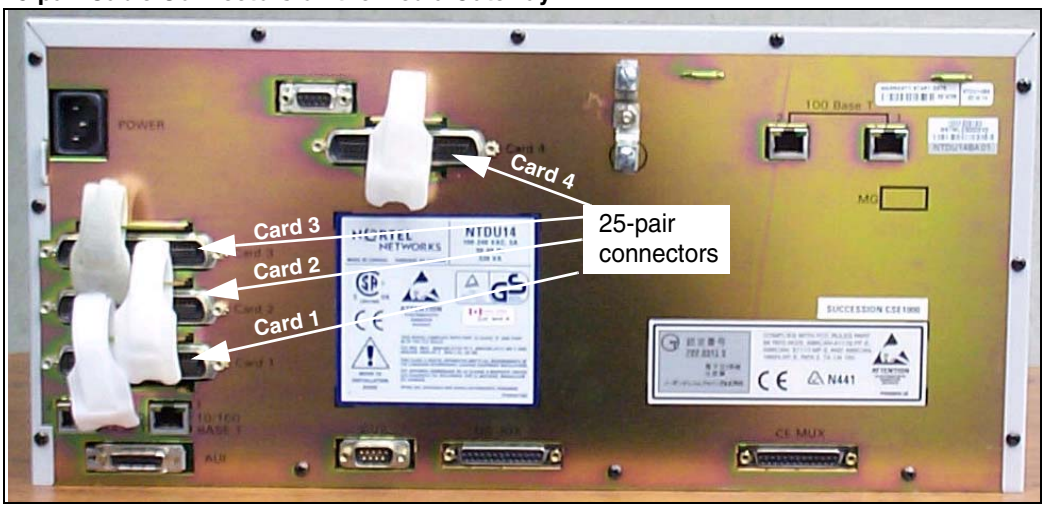
Figure 6
Media Card



Media Gateway

The media gateway is shown in Figure 7 on page 52 and described Table 4 on page 52.

Figure 7
5-pair Cable Connectors on the Media Gateway



CAUTION — Damage to Equipment

Do not block equipment ventilation openings.

Table 4
Media Gateway profile (Part 1 of 3)

Property	Description
Product Code	• NTDU14
Height	• less than 5 U (1 U = 1 3/4 inch or 4.4 cm)

Table 4
Media Gateway profile (Part 2 of 3)

Property	Description
Power	• Power status indicator (Nortel logo) is located on the unit faceplate. • Power cord connector is located on the right rear when viewed from the front. • Power On/Off switch is located behind the faceplate. See Figure 8 on page 56. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (100-240 VAC); DC is not supported.
Cooling	• Forced air cooling with side-to-side air flow. • The fans are temperature controlled. The fans run at a reduced speed at room temperature. • Ensure that equipment ventilation openings are not blocked.
Card slots	• Four usable universal card slots: 1 to 4. • Slot 0 is dedicated to the NTDK20FA or later SSC. • Slots 1 to 4 support: — Digital Line cards (maximum four) — Analog Line cards (maximum four) — Analog Trunk cards (maximum four) — Digital Trunk cards (maximum four) ***Note:*** Each MG 1000T with digital trunks must have a clock controller. — Media Cards (maximum four) — Application cards (maximum four)

Table 4
Media Gateway profile (Part 3 of 3)

Property	Description
Connectors (rear)	• The 25-pair cable connectors at the back panel (see Figure 7 on page 52) provide access to the cross-connect terminal (Main Distribution Frame). • The AUX port connects a Power Failure Transfer Unit (PFTU) to the Media Gateway. • The MG 1000T link ports connect the MG 1000T Expansion to the MG 1000T Core. Port 1 and Port 2 correspond with bulkhead connectors 1 and 2, shown in Figure 8 on page 56. • The ELAN network interface connects the MG 1000T Core SSC to the ELAN subnet. Port 2 is not used. • The Attachment Unit Interface (AUI) is used with earlier version SSC which require a Media Access Unit (MAU). • The SDI connector in the Media Gateway provides an interface for a three-port SDI cable. The three-port cable is used in an MG 1000T to break out into TTY0, TTY1, and TTY2. For MG 1000E this cable is not used unless a maintenance access using TTY0 is desired. • The DS-30X and CE-MUX cables connect the Media Gateway to the Media Gateway Expander.
DIP switches	• DIP switches are available to set the ringing voltages, ringing frequencies, and message waiting voltages. See Figure 8 on page 56.

Figure 7
Connectors at the back of the Media Gateway

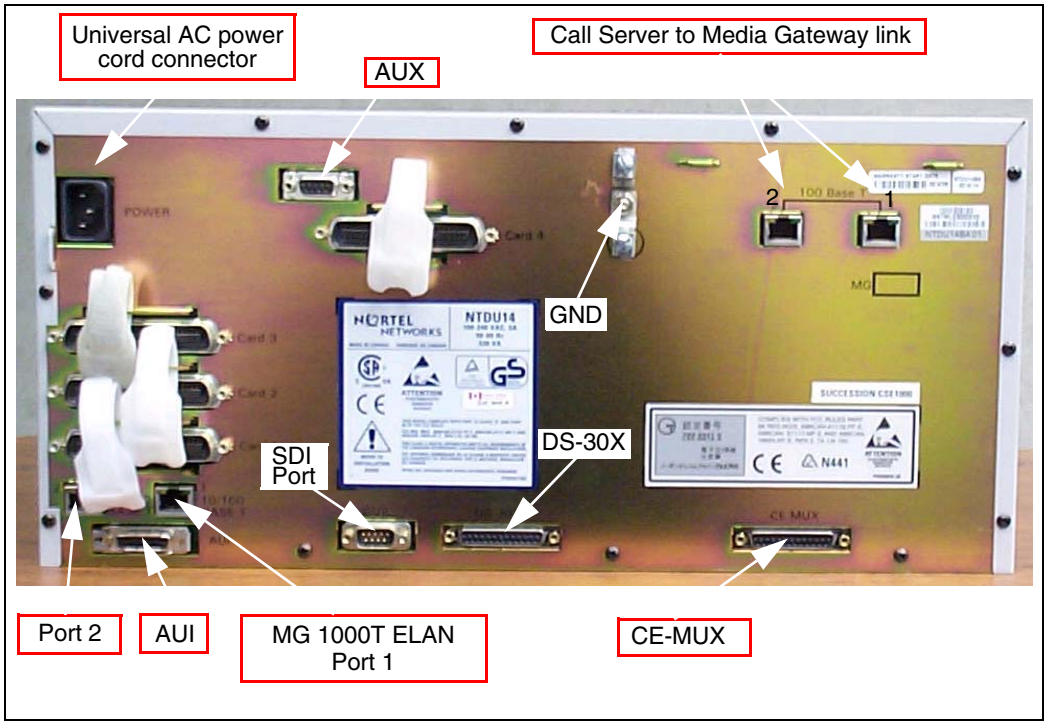
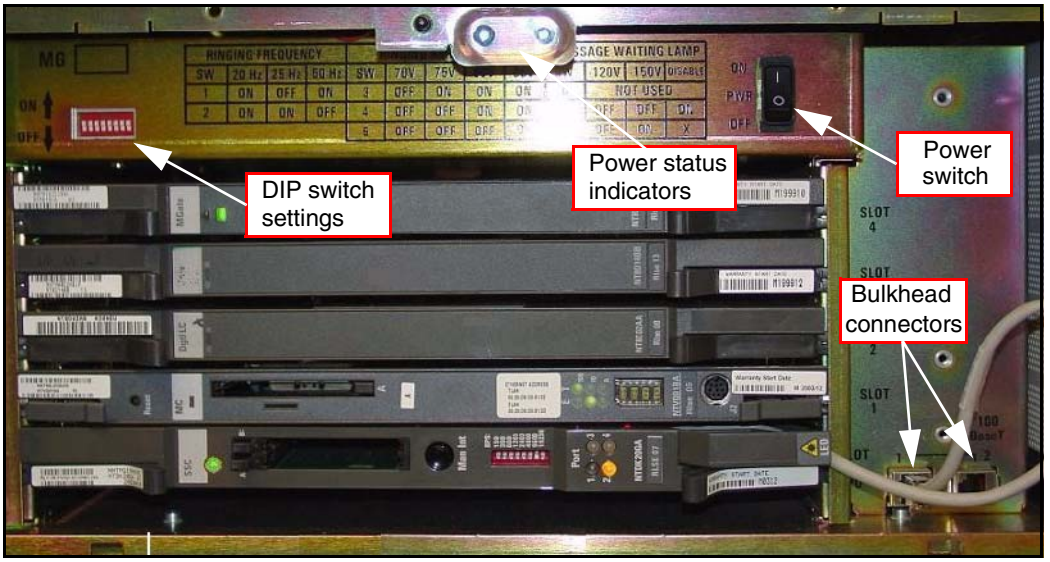


Figure 8
Front of the Media Gateway



Media Gateway Expander

Figure 9 on page 57 shows the Media Gateway Expander and Table 5 on page 57 describes the expander.

Figure 9
Media Gateway Expander

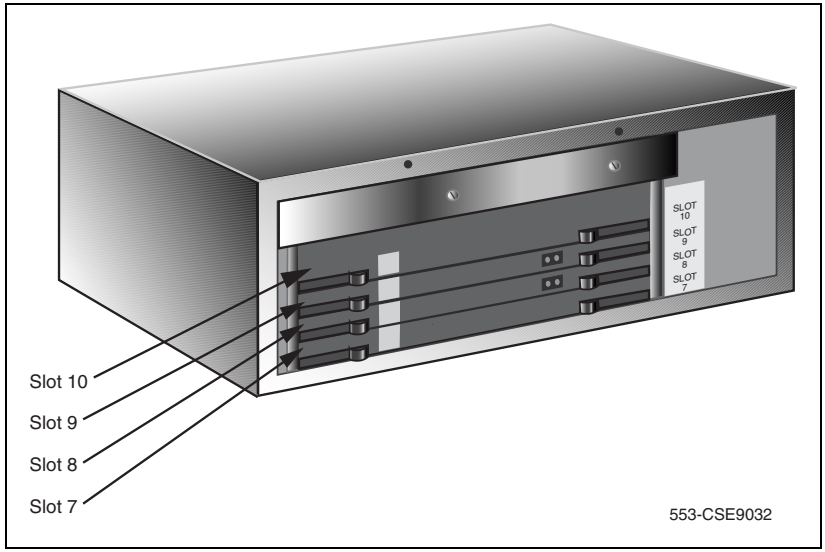


Table 5
Media Gateway Expander profile (Part 1 of 3)

Property	Description
Order Code	• NTDU15
Height	• less than 5 U (1 U = 1 3/4 inch or 4.4 cm)

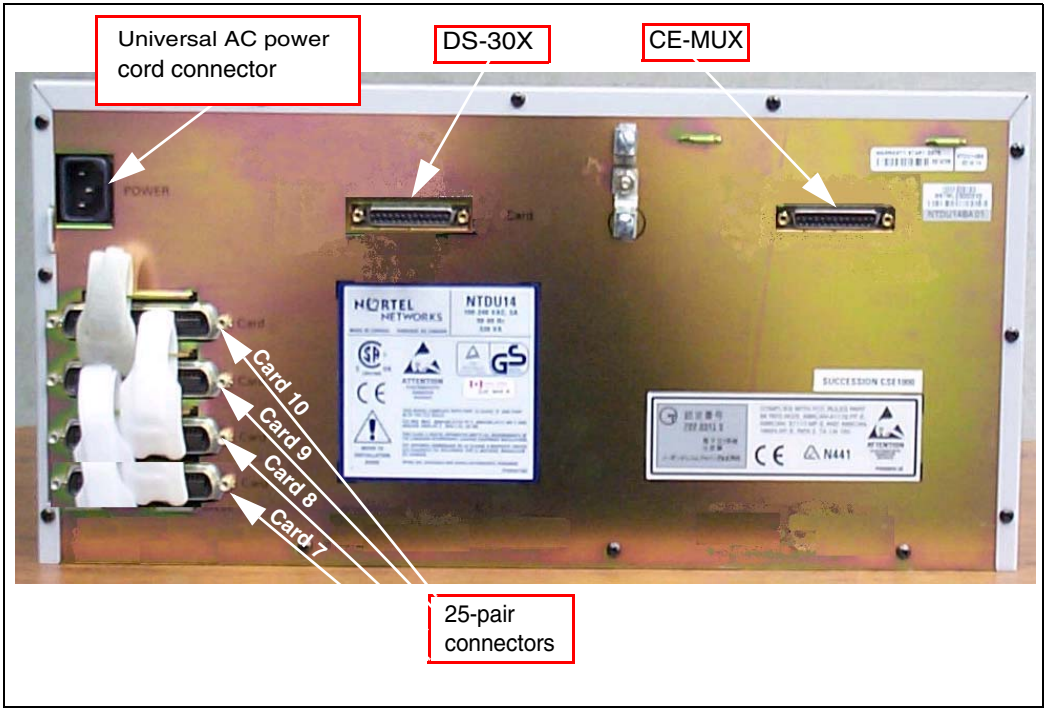
Table 5
Media Gateway Expander profile (Part 2 of 3)

Property	Description
Power	• Power status indicator (Nortel logo) is located on the unit's faceplate. • Power cord connector is located on the right rear when viewed from the front. • Power On/Off switch is located behind the faceplate. See Figure 8 on page 56. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (100-240 VAC); DC is not supported.
Cooling	• Forced air cooling with side-to-side air flow. • The fans are temperature controlled. The fans run at a reduced speed at room temperature. • Ensure that equipment ventilation openings are not blocked.

Table 5
Media Gateway Expander profile (Part 3 of 3)

Property	Description
Card slots	• Four usable universal card slots: 7 to 10. See Figure 9 on page 57. • Logical slots 5 and 6 are not supported. • Slots 7 to 10 support: — Analog Trunk cards (maximum four) — Analog Line cards (maximum four) — Digital Line cards (maximum four) — Media Cards (maximum four) — Application cards (maximum four)
Connectors (rear)	• The 25-pair cable connectors at the back of the unit (see Figure 10 on page 60) provide access to the cross-connect terminal (Main Distribution Frame). A Shielded 50-pin to Serial/ELAN/TLAN adapter can also be used. • The AUX port connects a Power Failure Transfer Unit (PFTU). • The DS-30X and CE-MUX cables connect the Media Gateway to the Media Gateway Expander.

Figure 10
Connectors at the back of the Media Gateway Expander



19-inch Rack Mount Kit

A 19-inch Rack Mount Kit (NTTK09AA) is available for mounting a Media Gateway and Media Gateway Expander in a 19-inch rack. It is described in Table 6 on page 60

Table 6
NTTK09AA installation

Order Code	Description	Qty
P0904844	Left Rack Mount Bracket	1
P0904845	Right Rack Mount Bracket	1

Table 6
NTTK09AA installation

Order Code	Description	Qty
P0906672	Left Shelf Mounting Bracket U/O	1
P097F813	Screw, .216- 24 X .500 STL 289A	8
P0719943	Sems, Ext Tooth Washer Pan Head, CR Type1A, 0.164- 32 X	4
P0906671	Right Shelf Mounting Bracket U/O	1
P0719587	Sems, Ext Tooth Washer Pan Head, CR Type 1A, 0.138- 3	4

BayStack 470 Switch

The BayStack 470 Switch, described in Table 7 on page 61, provides policy-enabled networking features to optimize consistent performance and behavior of network traffic. The Differentiated Services (DiffServ) network architecture offers varied levels of service for different types of data traffic. DiffServ lets you designate a specific level of performance on a per-packet basis.

Table 7
BayStack 470 Switch profile (Part 1 of 2)

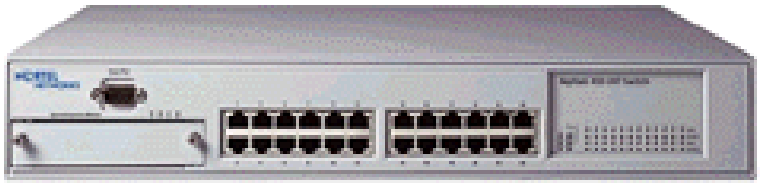
Property	Description
Height	• 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	• Power status LED indicator on the left side of the unit's faceplate. • Power cord connector is located at the left rear of the unit. • Power supplies are factory installed and not customer replaceable. • Unit does not support DC input.

Table 7
BayStack 470 Switch profile (Part 2 of 2)

Property	Description
Cooling	• Forced air cooling with side-to-side air flow. • The three fans run whenever the unit is on.
Card slots	• None
Connectors (front)	• Unit is DCE for serial port connection to PC; requires null modem for Terminal Server connection. • Console port default settings: 9600 baud with 8 data bits, 1 stop bit, and no parity as the communications format, with flow control set to enabled. • 10BaseT/100BaseTX RJ-45 (8-pin modular) port connectors.

For additional information, refer to *Using the BayStack 470 Switch*.

Figure 11
Ethernet switch



A third-party data network switch can be used with the system. For more information, refer to *Converging the Data Network with VoIP* (553-3001-160).

BayStack 460 Layer 2 switch

The BayStack 460 Layer 2 switch, shown in Figure 12 on page 63, adds power in addition to data communications over standard Category 5 LAN drops for powering the IP Phones. The LAN power system eliminates the need to connect each telephone to an AC power outlet saving in desktop wiring and also allowing centralized UPSs for power backups. Using a Power over LAN unit eliminates the need to use separate power transformers for each IP Phone.

Figure 12
Power over LAN unit

MRV Terminal Server

The Terminal Server, described in Table 8 on page 65, provides the dedicated rlogin service used to establish serial connection between a CS 1000E and various serial devices. The IP-based Terminal Server provides standard serial ports for applications that use a serial port interface. These applications include billing systems that analyze Call Detail Recording (CDR) records, Site Event Buffers (SEB) that track fault conditions, and various legacy applications such as Property Management System (PMS) interface and intercept Computer applications. In addition, serial ports are used to connect maintenance terminals and modems for support staff.

Note: PTY ports are software ports and will not work until the system has completed its INI or SYSLOAD . These ports cannot be used by a SEB to track INI/SYSLOAD faults as they will not be able to see these issues. If you wish to capture these messages using an SEB, it is recommended that it be connected to a TTY port such as Port 0, which displays SYS/INI messages.

The Terminal Server is configured to automatically log in to the active Core Call Server upon start-up. It always connects to the Active CPU IP address.

The CS 1000E can configure up to 16 serial ports for applications within the configuration Data Block. Ports can be configured by using:

- login userid of "PTY*nn*" – TTY ports are specified where *nn* is the PTY port number configured for a particular TTY within LD 17. If a "PTY*nn*" userid is specified and that port is busy because of another login, an error message will be produced (on the maintenance consoles, in the report log, or as SNMP alarms).
- no userid or the OTM userid – the highest available PTY port number is selected

The Terminal Server has the following attributes:

- support “rlogin” protocol on local access mode
- support transparent, or binary mode, on “rlogin” connection
- support port speed up to 115kbps
- support auto rlogin connection and auto-retry after being disconnected
- support BOOTP
- support DHCP

- rack mounted to a 19-inch rack
- provide configurable username for each port

Table 8
MRV IR-8020M Terminal Server profile

Property	Description
Product Code	NTVW00AB
Height	• 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	• Power cord connector is located on the left-hand corner on the unit's backplane. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (120 V AV @ 1.58 amps).
Cooling	• Forced air cooling with side-to-side air flow. • The fans run at a single speed. • Ensure that equipment ventilation openings are not blocked.
Card slots	• None
Connectors	• Twenty console ports for modular RJ-45 connectors • One RJ-45 (10BaseT) network interface

19-inch rack

All CS 1000E system components are mounted in a customer-supplied 19-inch rack. Ground the rack and equipment to the NTDU6201 Ground Bar.

System cables

Table 9 on page 67 lists the cables required with the CS 1000E system.

The base marketing package NTHU53AA provides an NTRC17 crossover cable to connect the LAN2 ports of the two core Call Servers. It also contains two MRV Terminal Server cables (NTDU6302) to connect from COM port 1 of both core Call Servers to the MRV Terminal Server.

Note: Order the proper power cord for your region.

Table 9
CS 1000E cables (Part 1 of 3)

Component Descriptions	Cable Kits	Cables & Accessories	Quantity
Communication Server 1000E Call Server NTDU62			
Qty of 2 MRV Terminal Server cables for connecting COM port 1 of the Call Server to the Terminal Server		NTDU6302	2
HS cross-over cable used to connect the two call processors for redundancy.		NTRC17BA	1
Media Gateway/Media Gateway Expander			
Media Gateway cable kit	NTDU25BA		
PC Maintenance Cable for accessing media card from the faceplate		NTAG81CA	1
Three-Port SDI cable for connecting MG 1000T to administration and maintenance ports. Can be used for MG 1000Es during initial configuration.		NTBK48AA	1
AUX cable for Power Failure Transfer if required		NTAK1104	1
25 pin M-F adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0601396	1
25 pin F-F adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0601397	1
Wrist strap		A0783105	1
25 pin F-F Null modem adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0378652	
25 pin M-F Null modem adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0381016	
RJ45 ethernet cable, used to connect dual and single port 100BT daughter cards from the SSC to the Media Gateway bulk head		NTDU0606	
Expansion cable kit	NTDK89AA		

Table 9
CS 1000E cables (Part 2 of 3)

Component Descriptions	Cable Kits	Cables & Accessories	Quantity
Expansion cable to connect the Media Gateway DS-30 and CE-MUX to the Media Gateway Expander.		NTDK95AA	2
Disposable wrist strap		A0783105	1
100BaseT Cross Over Cable, for connecting MG 1000Ts point to point		NTTK34AA	1
100BaseT Connection			
Signaling Servers, Layer two switch (BS 470), Carrier Cards, ELAN on Gateways		CAT5 Cables	
MRV Terminal Server			
RJ45 to 9-pin female RS232, 25 feet long, for connecting terminal equipment to the MRV Terminal Server		NTVW01iX	
Terminal server cable kit for interfacing with various terminal ports (that is, Signaling Server, Baystack or Gateway using BK48 cable)	NTDU6303		
MRV Terminal Server cable for connecting various Terminal Equipment to the Terminal Server		NTDU6302	1
9-pin male to 9-pin female Null Modem adapter for use where connecting to DCE connections		N0007485	1
25 to 9-pin male adapter to interface with NTBK48AA cable if desired		N0007488	1
Power cords			
North American power Cord		NTTK14AB	
UK power cord		NTTK18AB	
Euro power cord		NTTK16AB	

Table 9
CS 1000E cables (Part 3 of 3)

Component Descriptions	Cable Kits	Cables & Accessories	Quantity
ANZ power cord		NTTK15AA	
Swiss power cord		NTTK17AB	
Denmark power cord		NTTK22AB	

Miscellaneous system components

Table 10 contains a list of miscellaneous items that can be used with the CS 1000E system installation.

Table 10
Miscellaneous components

Order Code	Description	Purpose
QUA6A	Power Failure Transfer Unit	To transfer trunk lines during a power failure
NTBK80BA	Ground bar	Ground Bar Option 11C for same room AC Cabinets (1 per system and 2 or more cabinets)
NTDU6201	Ground bar	Ground Bar/LRE - Large
NT6D5304	Ground bar	Ground Bar/LRE - Small
NTAK92BA	External Protection Device	Protects up to four off-premises analog (500/2500-type) telephones
NT1R20BA	Extended Line card Off-Premises	Connects up to eight off-premises analog (500/2500-type) telephones

Uninterruptible Power Supply

Use an Uninterruptible Power Supply (UPS) to provide a backup power supply for:

- CS 1000E (Core Call Server 0 and Core Call Server 1)
- Media Gateway
- Media Gateway Expander
- Signaling Server
- MRV Terminal Server
- BayStack 470-24T
- BayStack 470-48T
- BayStack 460 with Power over LAN

A UPS provides a continuous AC power supply. Refer to *Communication Server 1000E: Planning and Engineering* (553-3041-120) for calculating power consumption requirements.

Install the UPS unit according to the manufacturer's instructions.

Telephones

For information on the various telephones supported on the CS 1000E system, refer to *Telephones and Consoles: Description, Installation, and Operation* (553-3001-367) and *IP Phones: Description, Installation, and Operation* (553-3001-368).

Rack-mounting the components

Contents

This section contains information on the following topics:

Introduction

All CS 1000E system components are installed in a customer-supplied, 19-inch rack. Also refer to the equipment layout plan and card slot assignment plan for additional information.

Component air circulation is either from front to back or from side to side. Therefore, components can be mounted immediately above or below an installed component. The rack's u pattern provides adequate clearance between components. For example, a Media Gateway Expander could be installed in the next 5u pattern of mounting holes below an already installed

Media Gateway. The Media Gateway Expander would be approximately 1/4 in from the Media Gateway.

> ***Note:*** In the 5u pattern, a "u" is equal to 1.75 in. and includes three holes spaced at 5/8 in. + 5/8 in. + 1/2 in.

Other data communications equipment can be installed in a rack with CS 1000E system components.

> **IMPORTANT!**
>
> Ensure that the unit's power cord is appropriate for the area's electrical service. Do not modify or use the supplied AC power cord if it is not the correct type.

This chapter contains the following procedures:

- Procedure 1: "Rack-mounting a CS 1000E Call Server" on page 77
- Procedure 2: "Removing the cover" on page 78
- Procedure 3: "Rack-mounting a Media Gateway or Media Gateway Expander" on page 80
- Procedure 4: "Preparing a Signaling Server for rack-mounting" on page 83
- Procedure 5: "Rack-mounting a Signaling Server" on page 86

Lifting system components

Exercise care when lifting system components. If necessary, get assistance to lift a component or install components in a rack. Table 11 on page 75 lists the CS 1000E system components provided by Nortel and the weight of each

component. Consult the manufacturer's documentation for the weight of other components installed during the CS 1000E system installation.

Table 11
Weight of CS 1000E system components

Component	Lbs	Kg
CS 1000E Call Server	29	13.2
Signaling Server	23	10.5
Media Gateway without cards		
— with 4 cards	26	12
	30	13.5
Media Gateway Expander		
— without cards	26	12
— with 4 cards	30	13.5
BayStack 470 Switch	14.7	6.7
BayStack 460 Power over Ethernet Switch	12.76	5.8
MRV Terminal Server	11	5

Guidelines for component placement in a rack

When installing equipment, the Layer two switches should be in a central location to allow for easy access of all LAN cabling. The Media Gateways and Media Gateway Expanders must be mounted together vertically, and they must be powered from the same power rail. Typical vertical power bars in equipment racks are rated at 15/20 amps @ 120 volts. Ensure that the equipment load does not exceed the power bar rating. Refer to *Communication Server 1000E: Planning and Engineering* (553-3041-120) for information on power consumption. Do not place redundant equipment on the same electrical circuit.

There are no thermal concerns about equipment placement.

Note 1: Leave wall space for the cross-connect terminal.

Note 2: Position the rack so that you have access to both the front and rear.

Rack-mounting a CS 1000E Call Server

Items required

The following items are required to mount a CS 1000E Call Server in a 19-inch rack:

- equipment layout plan
- 4 – #10-32 machine screws. Use the screw type recommended by the manufacturer of the equipment racks.

CAUTION — Damage to Equipment

The CS 1000E Call Server chassis is constructed of light-weight aluminum. It can be damaged if the unit is lifted from the shipping box by its top plate.

Procedure 1
Rack-mounting a CS 1000E Call Server

1 Slide the CS 1000E Call Server into the rack until the ear brackets rest against the rack support. See Figure 13.

Figure 13
CS 1000E Call Server with installed ear brackets

2 Fasten the CS 1000E Call Server to the rack supports with #10-32 machine screws (two screws on each side).

End of Procedure

Rack-mounting a Media Gateway or Media Gateway Expander

References to the Media Gateway in this section also apply to the Media Gateway Expander. The Media Gateway Expander can be mounted either above or below the Media Gateway.

The following items are required to mount each Media Gateway or Media Gateway Expander in a 19-inch rack:

- equipment layout plan
- 8 – #10-32 machine screws
- 19-Inch Rack Mount Kit (NTTK09)

The 19 Inch Rack Mount Kit (NTTK09) contains the following accessories:

- 1 – left guide bracket
- 1 – right guide bracket
- 1 – left ear bracket
- 1 – right ear bracket
- 4 – #8-32 machine screws

Follow Procedure 2 on page 78 to remove the cover on a Media Gateway or a Media Gateway Expander.

Procedure 2
Removing the cover

1 If the cover lock latches are in their locked position:

a. Use a flat screwdriver to slide the icon away from the latch. Refer to Figure 14 on page 79.

b. Slide both spring-loaded latches simultaneously down toward the bottom of the Media Gateway, and pull forward. Then lift the cover upward to remove it from the Media Gateway. Refer to Figure 15 on page 79.

Note: The bottom of the front cover is supported by, but not secured to, the Media Gateway. Do not drop it.

Figure 14
Unlock the latches

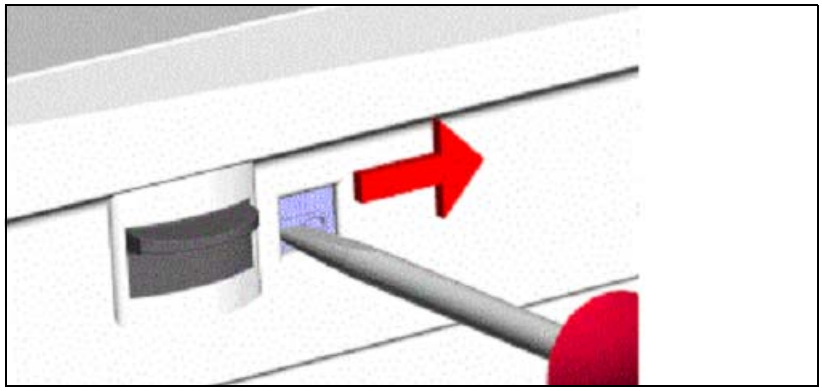
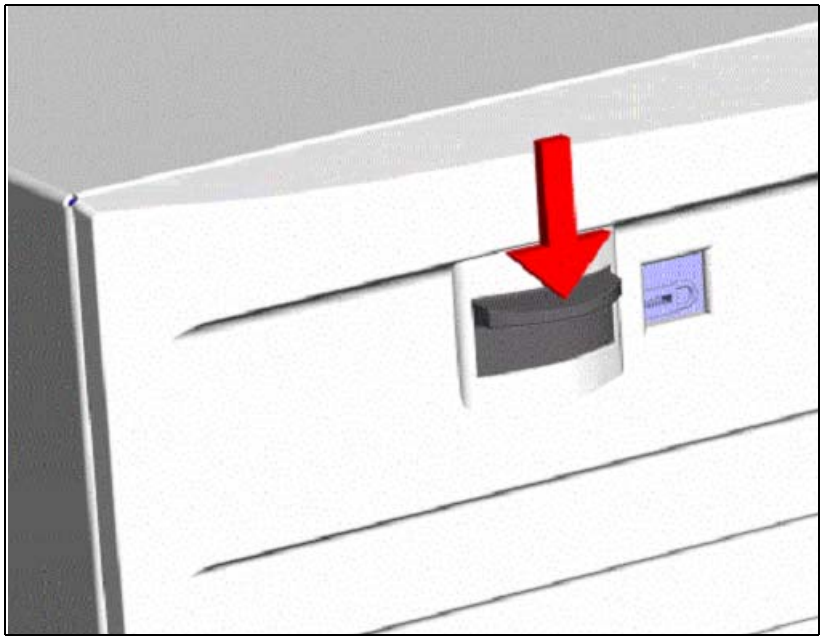


Figure 15
Unlock the cover



End of Procedure

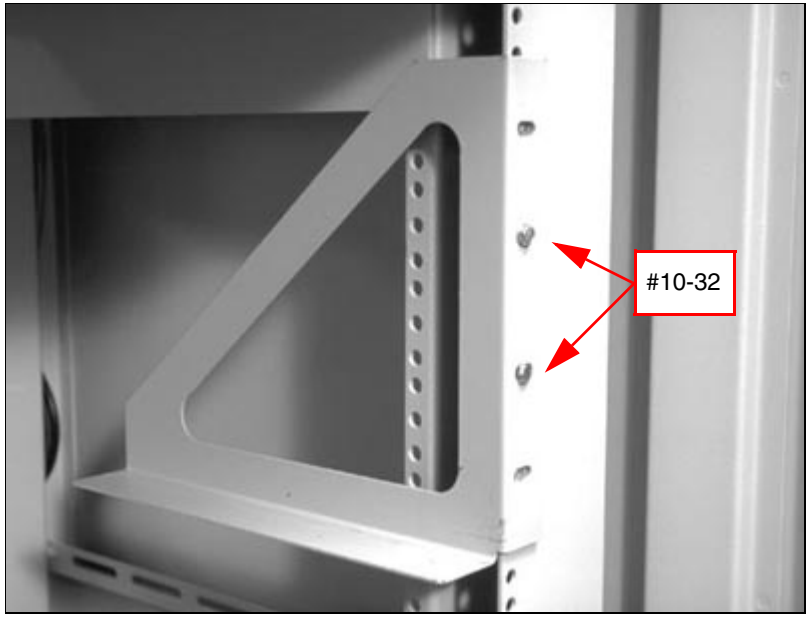
Procedure 3
Rack-mounting a Media Gateway or Media Gateway Expander

1 Fasten the right guide bracket to the right rack support.

a. Insert two #10-32 machine screws into the two middle slots in the guide bracket and into the respective holes in the right rack support. See Figure 16.

b. Fasten the screws.

Figure 16
Guide bracket installed in a rack



2 Fasten the left guide bracket to the left rack support.

a. Insert two #10-32 machine screws into the two middle slots in the bracket and into the respective holes in the left rack support.

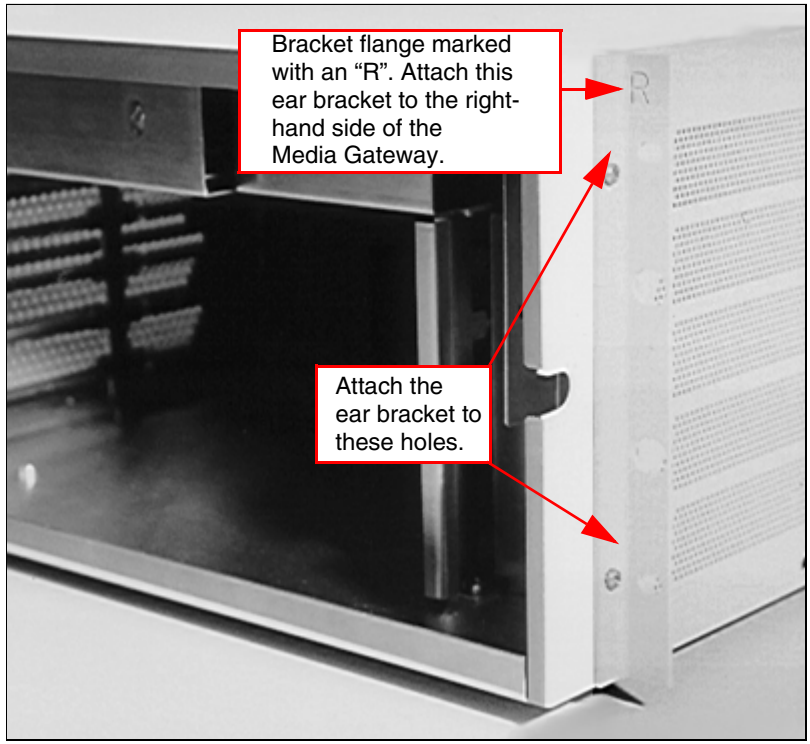
b. Fasten the screws.

3 Attach the right ear bracket (marked with an “R”) to the holes on the right side of the Media Gateway.

a. Use two #8-32 machine screws. Position the ear bracket so that the four holes on the bracket flange are nearer to the rear of the Media Gateway.

Note: To determine the front of the bracket, locate the “R” on the bracket. The “R” must be at the top of the bracket and face the front of the Media Gateway (see Figure 17).

Figure 17
Right ear bracket on a Media Gateway



4 Attach the left ear bracket (marked with an “L”) to the holes on the left side of the Media Gateway (near the front).

a. Use two #8-32 machine screws. Position the ear bracket so the four holes on the bracket flange are closer to the rear of the Media Gateway.

Note: To determine the front of the bracket, locate the “L” on the bracket. The “L” must be at the top of the bracket and face the front of the Media Gateway.

WARNING

A Media Gateway or a Media Gateway Expander each weighs approximately 30 lb. (13.5 kg) with circuit cards installed and 26 lb. (12 kg) without circuit cards installed. If necessary, get assistance when lifting the equipment.

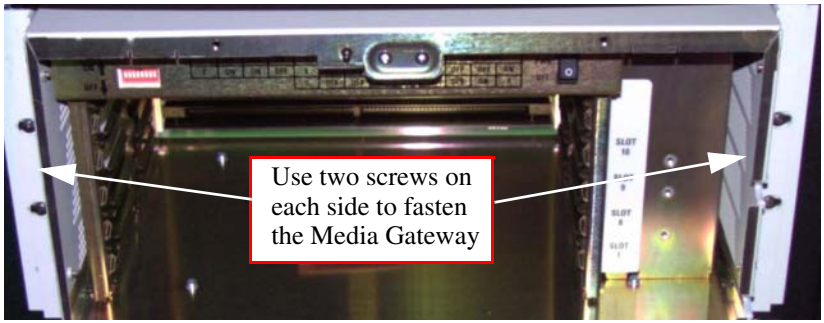
5 Place the Media Gateway on the guide brackets.

a. Carefully slide the Media Gateway into the rack until the ear brackets come to rest against the rack support.

Note: Make sure that the rear of the Media Gateway is on the guide brackets. See Figure 18 on page 82.

6 Use the four remaining #10-32 machine screws to fasten the Media Gateway to the rack supports (two screws on each side).

Figure 18
Media Gateway installed in a rack



End of Procedure

Rack-mounting a Signaling Server

This procedure describes how to install the Signaling Server hardware into the 19-inch rack. Refer to *Signaling Server: Installation and Configuration* (553-3001-212) for additional information.

Note: Save the packaging container and packing materials in the event you need to package the server for reshipment.

Procedure 4
Preparing a Signaling Server for rack-mounting

1 Ensure that the following parts are included with the Signaling Server:

a. 2 – chassis support brackets (A)

b. 2 – rack-mounting brackets (B)

c. 6 – rack-mount bracket screws (10-25 x 1/4” panhead Phillips)

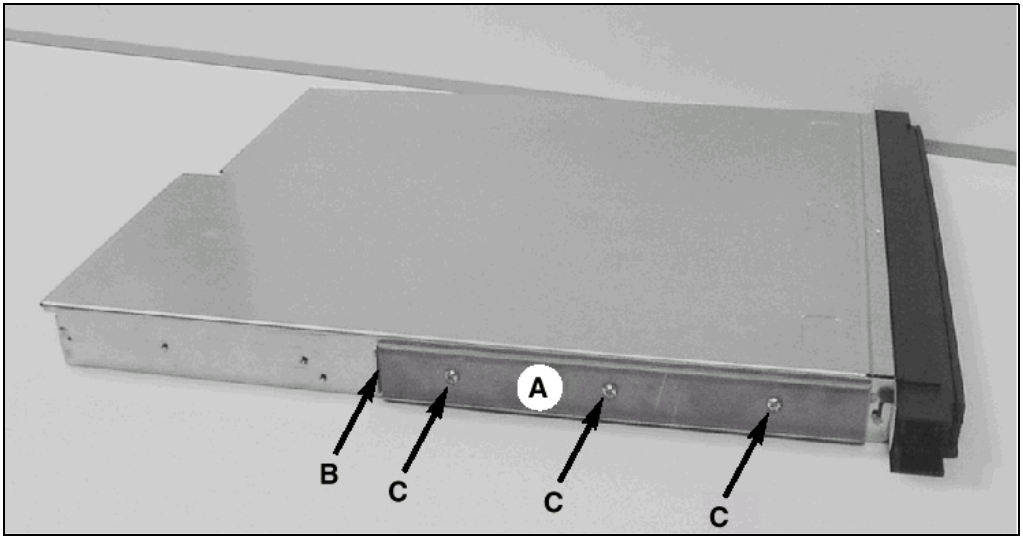
Refer to Figure 19.

Figure 19
Signaling Server mounting accessories

Note: The Front Mount Bracket assembly is not intended for use as a slide rail system. The Signaling Server must be firmly attached to the rack.

2 Align the end of the rail with the flange (B) toward the rear of the Signaling Server. See Figure 20 on page 84.

Figure 20
Chassis support bracket



3 Align the screw holes in the rack-mount rail to the mating holes in the side of the Signaling Server chassis. Use three screws (C) on each side.

Note: Hand-tighten the screws to prevent cross-threading, then use a Phillips screwdriver to secure them.

4 Attach the bezel door to the faceplate of the Signaling Server, as shown in Figure 21 on page 85 and Figure 22 on page 85.

Figure 21
Left hinge mount

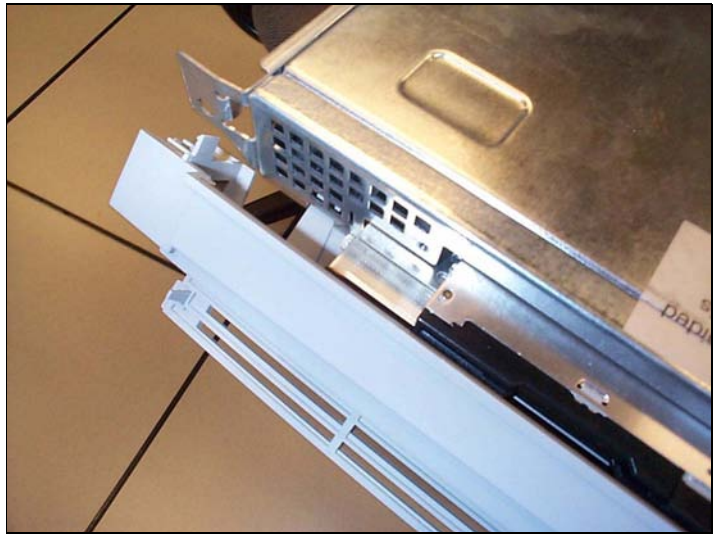
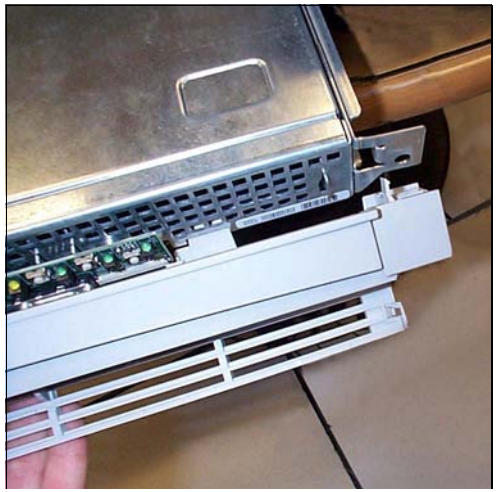
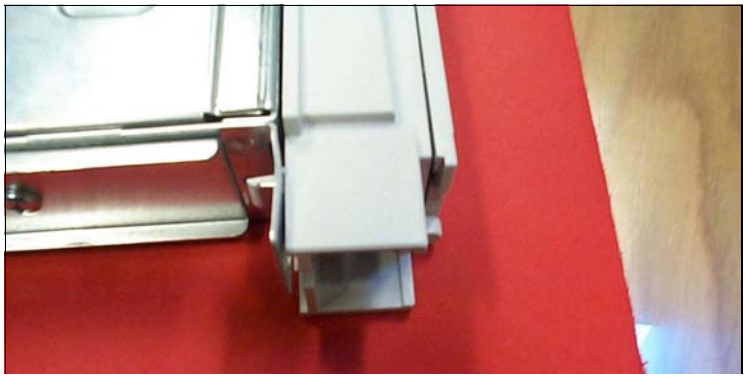


Figure 22
Right hinge mount



When the door is attached to the Signaling Server and rack-mount apparatus, it should appear as shown in Figure 23.

Figure 23
Snapped-in bezel door



End of Procedure

Procedure 5
Rack-mounting a Signaling Server

This procedure describes how to install the server in a rack.

Read the following warnings carefully before you begin installing the Signaling Server in the rack.

DANGER OF ELECTRIC SHOCK

DISCONNECT AC POWER

The Signaling Server must be completely disconnected from any AC power source before performing this procedure. Pressing the Power button DOES NOT turn off power to this Signaling Server. Some circuitry in the unit can continue to operate even though the front panel Power button is off.

Failure to disconnect the Signaling Server from its AC power source can result in personal injury or equipment damage.

DANGER OF ELECTRIC SHOCK

GROUNDING THE RACK INSTALLATION

To avoid the potential for an electrical shock hazard, include a third wire safety grounding conductor with the rack installation.

If Signaling Server power cords are plugged into AC outlets that are part of the rack, then provide proper grounding for the rack itself.

If Signaling Server power cords are plugged into wall AC outlets, the safety grounding conductor in each power cord provides proper grounding for the Signaling Server only. Provide additional, proper grounding for the rack and other devices installed in it.

WARNING

MAIN AC POWER DISCONNECT

A main AC power disconnect must be installed. The main AC power disconnect must:

- disconnect power to the entire rack unit
- be readily accessible
- be labeled as controlling power to the entire unit, not just to the Signaling Server(s)

1 Attach the rack-mount brackets (“B” as shown in Figure 19 on page 83) to the equipment rack. Install the left and right side at an equal height. Use standard length screws from the accessories pouch, and screw them into the top and bottom drill holes of the bracket (see Figure 24 on page 88).

Figure 24
Installed rack-mount bracket

2 When both brackets are fixed in place:

a. Align the rack-mount brackets on the Signaling Server with the slide rail system on the rack posts.

b. Slide the Signaling Server in place. Refer to Figure 25 on page 89.

Figure 25
Rack-mounting the Signaling Server

3 Tighten the screws through the faceplate of the Signaling Server to the rack-mount bracket.

Note: Do not apply excessive torque while tightening the bolts. The bezel door is plastic and does not require or withstand overtightening.

End of Procedure

Rack-mounting a Terminal Server

Follow the manufacturer's instructions to rack-mount this equipment.

Rack-mounting a BayStack 470 Switch

Follow the manufacturer's instructions to rack-mount this equipment.

Rack-mounting a BayStack 460 Power over Ethernet unit

Follow the manufacturer's instructions to rack-mount this equipment.

Installing system grounds

Contents

This section contains information on the following topics:

Introduction

This chapter contains the following procedures:

- Procedure 6: "Installing an NTBK80 Ground Bar" on page 93
- Procedure 7: "Installing an NTDU6201 Ground Bar" on page 94
- Procedure 8: "Grounding Media Gateways powered by the same electrical panel" on page 96.
- Procedure 9: "Grounding Media Gateways powered by multiple electrical panels" on page 98

- Procedure 10: "Grounding a Media Gateway Expander" on page 98
- Procedure 11: "Grounding equipment in the UK" on page 101

Refer to your grounding plan for additional information.

WARNING

Correct grounding is very important. Failure to complete the grounding procedures could result in a system that is unsafe for the personnel using the equipment.

CAUTION — Service Interruption

If your system is not grounded correctly, it cannot be protected from lightning or power surges, and it could be subject to service interruptions. You must use insulated ground wire for system grounding.

CAUTION — Service Interruption

To prevent ground loops, power all equipment from the same dedicated electrical panel.

WARNING

Installing a ground bar

Install the NTBK80 Ground Bar for up to six Media Gateways with their Expander. Install the NTDU6201 Ground Bar for up to 35 ground connections. Reference to ground bar in this NTP refers to either the NTBK80 or the NTDU6201 Ground Bar.

Follow Procedure 6 to install a ground bar.

Procedure 6
Installing an NTBK80 Ground Bar

1 Place the ground bar near the equipment.

Note: The ground bar is a bridging point for ground wires from up to six components.

2 Connect the ground bar to the ground bus in the AC electrical panel using #6 AWG wire. See Table 12 on page 93 for region-specific grounding requirements.

WARNING

A qualified technician or electrician must make the connection in the AC electrical panel.

3 Place a tag marked DO NOT DISCONNECT on the ground wire at the electrical panel.

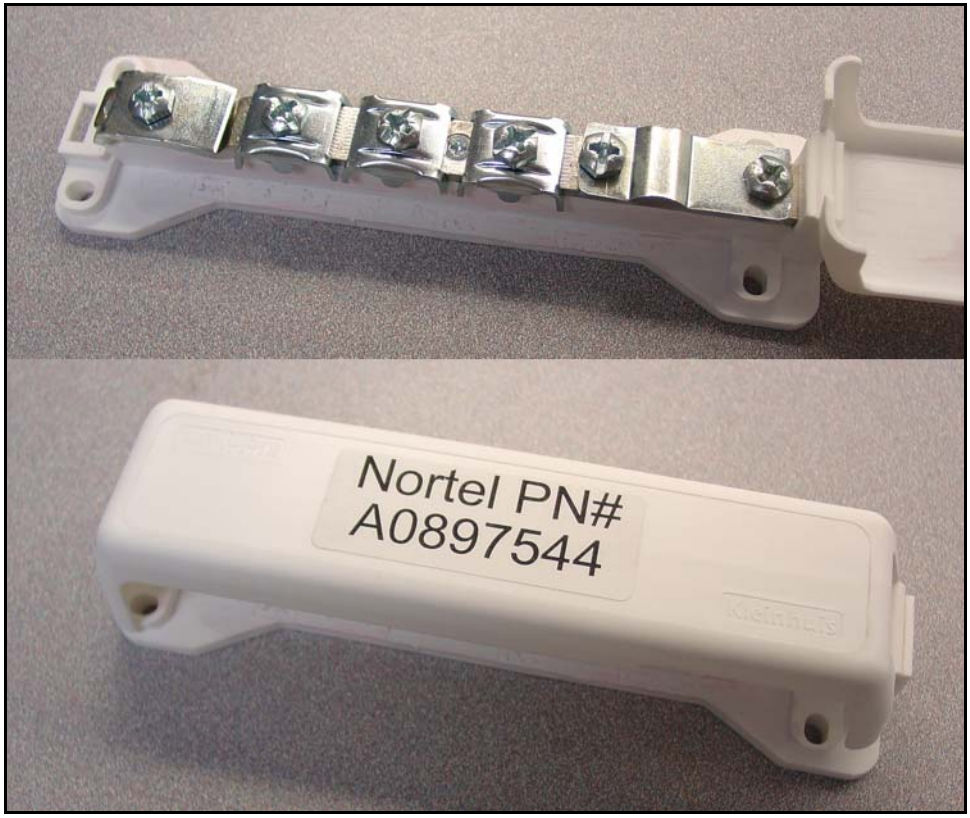
4 Test the ground

Refer to Figure 26 on page 94 for the NTBK80 Ground Bar

Table 12
Region-specific grounding wire requirements

Region	Grounding wire requirements
Germany	#8 AWG (8.36 mm^2) green/yellow wire
Other regions in Europe	not smaller than #6 AWG (13.3 mm^2) at any point
UK	two green/yellow wires no thinner than two 10 mm^2

Figure 26
NTBK80 Ground Bar



End of Procedure

Follow Procedure 7 to install an NTDU6201 Ground Bar.

Procedure 7
Installing an NTDU6201 Ground Bar

1 Place the NTDU6201 Ground Bar near the equipment.

Note: The ground bar is a bridging point for ground wires from up to 48 components.

2 Connect the NTDU6201 Ground Bar to the ground bus in the AC electrical panel, or to TGB for an ANSI/EIA/TIA 607 installation using #6 AWG wire. See Table 12 on page 93 for region-specific grounding requirements.

WARNING

A qualified technician or electrician must make the connection in the AC electrical panel.

3 Place a tag marked DO NOT DISCONNECT on the ground wire at the electrical panel.

4 Test the ground.

End of Procedure

Grounding a CS 1000E Call Server

The CS 1000E Call Servers are not connected to a ground bar. They are properly grounded when:

- the CS 1000E power cord is plugged into the rack's AC outlet. The rack's AC outlet must be grounded to its dedicated electrical panel. This is the preferred method.
- the CS 1000E power cord is plugged into a wall AC outlet. The CS 1000E is grounded outside of the rack using the safety grounding conductor in the power cord. This method ensures proper grounding only of the CS 1000E itself. It does not provide grounding protection for other rack-mounted pieces of equipment. Therefore, ensure that other devices in the rack are properly grounded as required.

Grounding a Signaling Server

The Signaling Server is not connected to a ground bar. It is properly grounded when:

- the Signaling Server power cord is plugged into the rack's AC outlet. The rack's AC outlet must be grounded to its dedicated electrical panel. This is the preferred method.

- the Signaling Server power cord is plugged into a wall AC outlet. The Signaling Server is grounded outside of the rack using the safety grounding conductor in the power cord. This method ensures proper grounding only of the Signaling Server itself. It does not provide grounding protection for other rack-mounted pieces of equipment. Therefore, ensure that other devices in the rack are properly grounded as required.

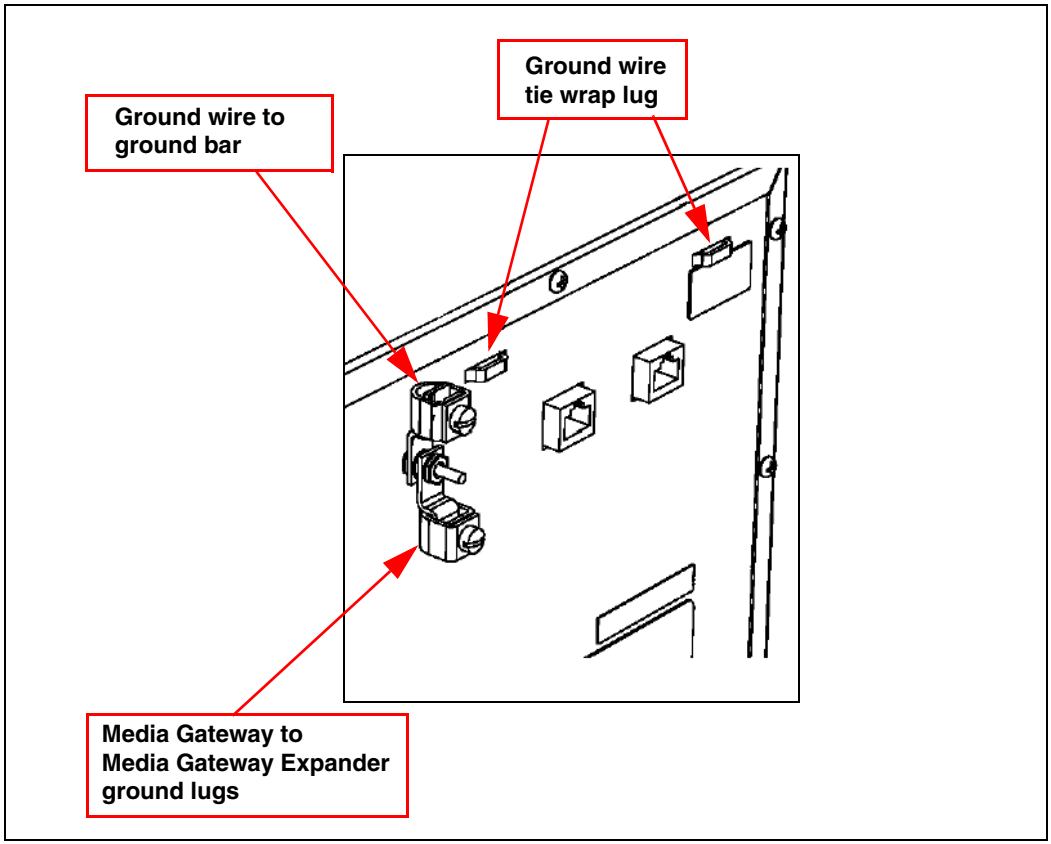
Grounding a Media Gateway powered by the same electrical panel

Follow Procedure 8 to ground one or more Media Gateway powered by the same electrical panel.

Procedure 8
Grounding Media Gateways powered by the same electrical panel

1. Disconnect the AC power cord from the power outlet.
2. Install a #6 AWG ground wire from the ground lug, as shown in Figure 27 on page 97, at the back of the Media Gateway to the ground bar.
3. Place a DO NOT DISCONNECT tag on the ground wire.

Figure 27
Media Gateway and Media Gateway Expander ground lug location



4 Test the ground.

End of Procedure

Grounding a Media Gateway powered by multiple electrical panels

Follow Procedure 9 on page 98 to ground multiple Media Gateway that are powered by multiple electrical panels.

Procedure 9
Grounding Media Gateways powered by multiple electrical panels

1. Disconnect the AC power cord from the power outlet.
2. Identify the electrical panel powering each component.
3. Install a ground bar for each electrical panel identified above.

   Note: Each component must be grounded to the electrical panel that provides the power to that component.
4. Install a #6 AWG ground wire from the ground lug on the rear of the Media Gateway to the ground bar identified for that component's power source.
5. Place a DO NOT DISCONNECT tag on the ground wire.
6. Test the ground.

End of Procedure

Grounding a Media Gateway Expander

The Media Gateway Expander and the Media Gateway are considered as the same ground.

IMPORTANT!

Ground the Media Gateway Expander to the Media Gateway.

IMPORTANT!

Power each Media Gateway and Media Gateway Expander pair from the same electrical panel.

Follow Procedure 10 to ground a Media Gateway Expander.

Procedure 10
Grounding a Media Gateway Expander

1. Disconnect the AC power cord from the power outlet.

2 Install a #6 AWG ground wire from the ground lug on the rear of the Media Gateway Expander to the Media Gateway. See Figure 27 on page 97.

3 Place a DO NOT DISCONNECT tag on the ground wire.

4 Test the ground.

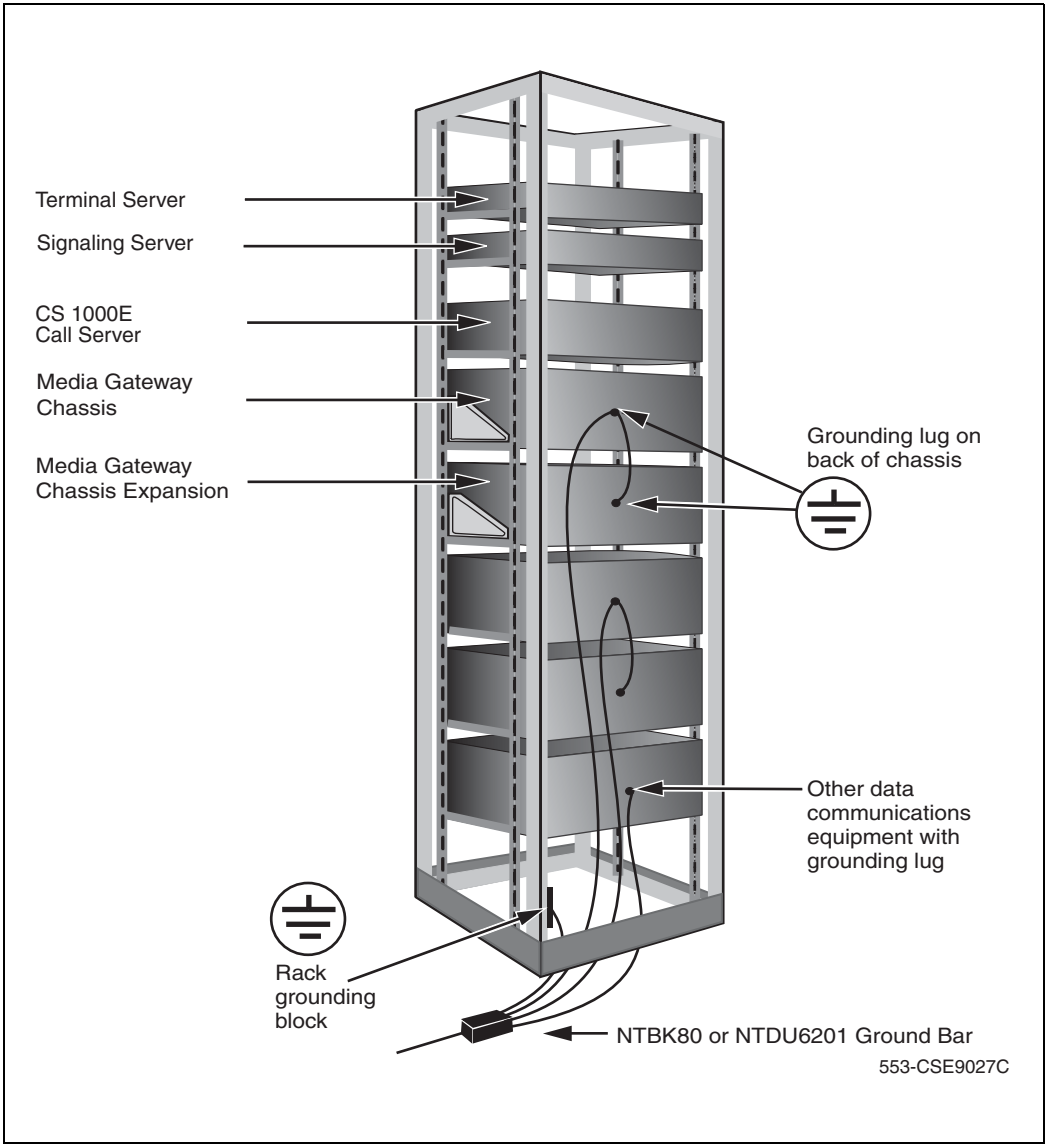
End of Procedure

Grounding other rack-mounted components

To ground multiple pieces of equipment in a rack, use a separate ground connection from each piece of equipment to the ground bar. If a piece of data communications equipment in a rack does not have a grounding lug then ground the rack to the ground bar.

When the rack is grounded to the ground bar, the equipment is grounded using the Single Point Grounding method, as shown in Figure 28 on page 100.

Figure 28
Grounding multiple pieces of equipment in a rack



Grounding equipment in the UK

Follow Procedure 11 to ground equipment in the UK.

Procedure 11
Grounding equipment in the UK

1 Connect a protective and functional ground wire from the grounding strip on the Krone Test Jack Frame to the ground at the building entry point. Use a green/yellow wire no thinner than 10 mm^2.

Consider each Media Gateway and Media Gateway Expander pair as one ground.

2 Jumper the Media Gateway Expander ground to the Media Gateway ground. See Figure 27 on page 97.

3 In each Media Gateway:

a. Connect a ground wire from the ground lug in the equipment to the ground connection at the Test Jack Frame. Use a green/yellow wire no thinner than 10 mm^2.

b. Place a DO NOT DISCONNECT tag on the grounding wire.

c. Measure the resistance of the ground between the Krone Test Jack Frame and the Media Gateway frame ground. The resistance must not be more than 0.25 Ohm.

End of Procedure

Connecting CS 1000E system components

Contents

This section contains information on the following topics:

Introduction

Several system connections are required to make the CS 1000E operational. The CS 1000E must be connected to the MG 1000E through the ELAN subnet. The Media Gateway are directly connected to the Media Gateway Expander. The system's components, such as the Signaling Server and the Media Cards installed in the Media Gateway, require both ELAN subnet and TLAN subnet connections.

This chapter contains the following procedures:

- Procedure 12: "Connecting co-located Call Servers" on page 105
- Procedure 13: "Connecting Campus Redundant Call Servers" on page 106
- Procedure 14: "Connecting the CS 1000E Core Call Servers to an MG 1000E" on page 107
- Procedure 16: "Connecting a Signaling Server to the ELAN" on page 111
- Procedure 17: "Connecting a Signaling Server to the TLAN subnet" on page 112
- Procedure 18: "Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter on to a Media Card" on page 113
- Procedure 19: "Connecting a Media Card to the ELAN subnet" on page 114
- Procedure 20: "Connecting a Media Card to the TLAN subnet" on page 115
- Procedure 21: "Connecting a Media Gateway to a Media Gateway Expansion" on page 116.

Connecting Call Server 0 to Call Server 1

The CS 1000E redundant architecture allows for the separation of Call Server 0 and Call Server 1. The two processors are connected by either a direct 100BaseT crossover cable or a carefully engineered Layer 2/VLAN infrastructure.

Campus Redundancy provides the ability to separate the CS 1000E Call Servers in a campus environment for “campus mirroring”. This feature enables two Call Servers, one active and one redundant, to be connected through an Ethernet network interface. Campus Redundancy can operate using any vendor’s Layer 2 switching products, in addition to the BayStack 470. The distance depends upon network parameter limitations specified in *Communication Server 1000: System Redundancy* (553-3001-307).

To separate the redundant Call Servers, the ELAN subnet and the subnet of the High Speed Pipe (HSP) can be extended between the two processors with an Ethernet switch, using Layer 2 protocol.

If the two Call Servers are collocated, they can be connected using a standard CAT5e or CAT6 crossover cable, limited to 100 meters in length.

For detailed information on Campus Redundancy, refer to *Communication Server 1000: System Redundancy* (553-3001-307).

The Layer 2 switch allows the ELAN subnet and the subnet of the High Speed Pipe (HSP) to be extended between the two processors. The BayStack 470-24T provides full duplex wire-speed 100BaseT with no significant packet loss (less than 0.001%) and delays of less than 100 usec.

The method used to connect Call Server 0 to Call Server 1 depends on the proximity of the units. If the units are co-located, follow Procedure 12 to connect the Call Servers. If the units are configured for Campus Redundancy, follow Procedure 13 to connect the Call Servers.

Connecting co-located Call Servers

Follow Procedure 12 to connect co-located Call Servers.

Procedure 12
Connecting co-located Call Servers

1. Plug one end of the CAT5E RJ-45 crossover cable (NTRC17) into the LAN 2 connector on the front of Call Server 0.
2. Plug the other end of the CAT5E RJ-45 NTRC17 crossover cable into the LAN 2 connector on the front of Call Server 1.

End of Procedure

Connecting Campus Redundant Call Servers

The MultiLink Trunking (MLT) feature of the BayStack 470-24T enables the two uplink fiber ports to be grouped but is not solely necessary for the two uplink fiber ports to be linked. Grouping the uplink fiber ports increases aggregate throughput up to 2 Gbps between sides with active redundant links.

The port-based VLANs used in the BayStack 470-24T switches operate in accordance with the IEEE 802.1Q tagging rules. VLAN ports are grouped into broadcast domains by assigning them to the same VLAN. Frames received in one VLAN can be forwarded only within that VLAN. For more information, see *Communication Server 1000: System Redundancy* (553-3001-307).

Procedure 13
Connecting Campus Redundant Call Servers

1. Connect the CAT5E RJ-45 LAN 2 port of Call Server 0 to a 100BaseT ELAN network interface on the local Baystack 470-24T switch.
2. Connect the CAT5E RJ-45 LAN 2 port of Call Server 1 to a 100BaseT port on the remote Baystack 470-24T switch.
3. Link the two Baystack 470-24T switches with two high-speed single-mode fiber uplinks (1 Gbps per link), using the built-in GBIC ports for dedicated uplink connectivity.
4. Assign three VLANs to the BayStack 470-24T ports.
    - VLAN 1 – Default
        - — All 104 ports belong to the four BayStack 470-24T ports.
    - VLAN 2 – HSP
        - — Two ports connect CP PIV packs HSP ports in Call Server 0 and Call Server 1.
        - — Four high-speed fiber uplinks (GBIC ports)
    - VLAN 3 – ELAN
        - — Includes 2 ELAN network interfaces on the Call Servers, for example, for ELAN connections for Signaling Servers, MG 1000Es, Call Pilot, Symposium, OTM, Element Manager.
        - — Four high-speed fiber uplinks (GBIC ports)

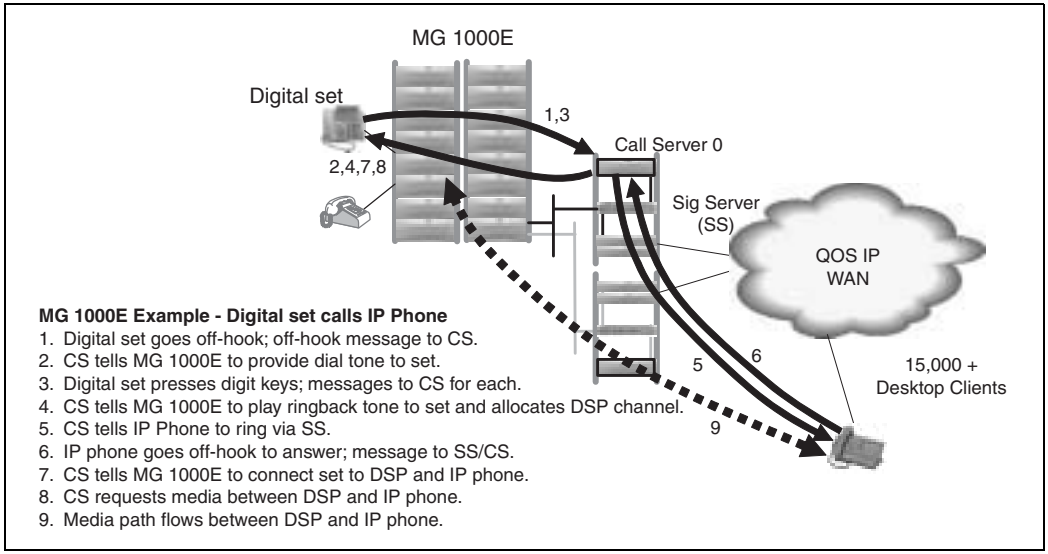
End of Procedure

Connecting the CS 1000E Core Call Servers to an MG 1000E

An MG 1000E performs functions under the direct control of the CS 1000E Core Call Server. The MG 1000E detects stimulus events from its interface

cards and passes these events to the CS 1000E Core Call Server, where the high-level call processing decisions are made. See Figure 29 on page 107 for an example MG 1000E operation.

Figure 29
MG 1000E operation



Follow Procedure 14 to connect the CS 1000E Core Call Servers to an MG 1000E.

Procedure 14
Connecting the CS 1000E Core Call Servers to an MG 1000E

1 Connect the CAT5 RJ-45 ELAN 1 port on Call Server 0 to the BayStack 470.

2 Connect the CAT5 RJ-45 ELAN 1 port on Call Server 1 to the BayStack 470-24T.

3 Connect port 1 of the MG 1000E 100BaseT daughterboard #2 to the bulkhead connector #1, as shown in Figure 30 on page 108. Connect the 100BaseT Port 1 at the back of the Media Gateway to the BayStack 470. Refer to Figure 31 on page 108 for the location of the 100BaseT port.

Note 1: Physical ports 1 and 2 on the 100BaseT daughterboard #2 are logical ports 2 and 4.

Note 2: Up to 30 MG 1000E can be connected to the ELAN subnet controlled by the CS 1000E Core Call Servers.

Figure 30
Bulkhead connector for IP daughterboard

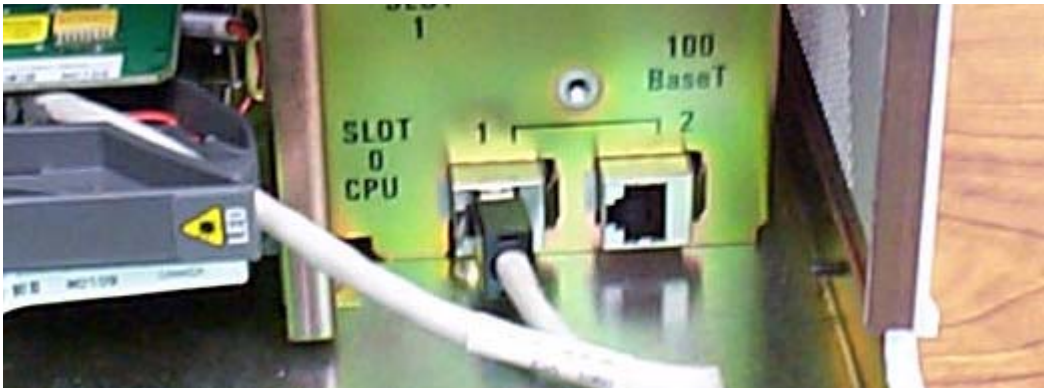
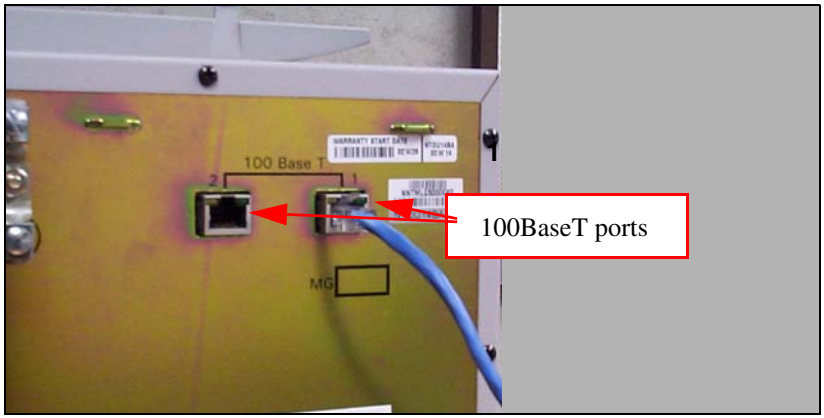


Figure 31
Media Gateway connectors



4 Repeat step 3 for each MG 1000E in the system.

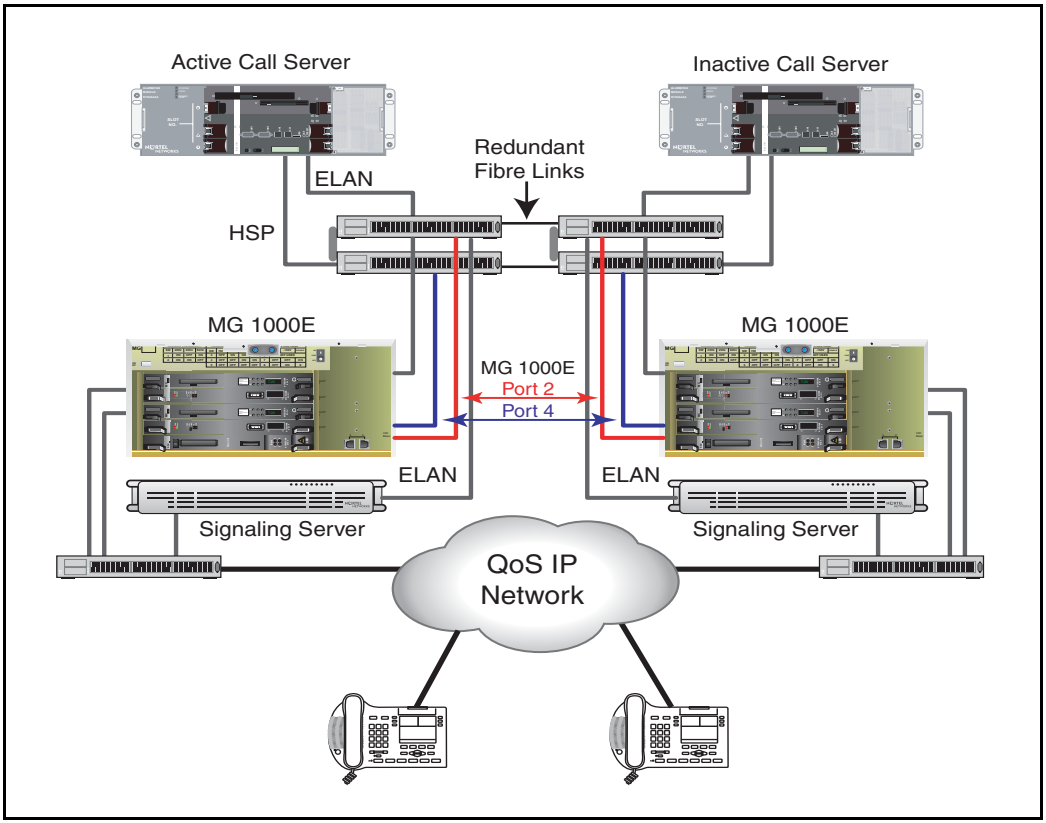
Note: The MG1000E can be connected directly to the CS1000E ELAN subnet, or it can be connected to the ELAN subnet through a Layer 3 switch.

End of Procedure

Dual Homed connection

An MG 1000E can optionally be connected to a second BayStack 470 to provide a 'Dual Homed' connection to the network so that the Media Gateway remains operational in the event of a failure of the first BayStack 470 used for the ELAN subnet connection. Logical port 4 of the Dual Port IP daughterboard (NTDK83) provides a connection to the second BayStack 470 providing an alternate connection to the network in the event of a failure of the primary BayStack 470 used for the logical port 2 connection. Refer to Figure 32 for a sample configuration.

Figure 32
Robust Data Network Topology



After completing Procedure 14 on page 107, follow Procedure 15 on page 111 to connect an MG 1000E in the Dual Homed configuration.

Procedure 15
Connecting an MG 1000E in the Dual Homed configuration

1 Connect logical port 2 of the MG 1000E 100BaseT daughterboard #2 to the bulkhead connector #2. Connect the 100BaseT Port 2 at the back of the Media Gateway to a second BayStack 470.

For CS 1000E systems, it is recommended that there be no single point of failure for the data network. For information on engineering the data network, refer to *Converging the Data Network with VoIP* (553-3001-160).

End of Procedure

Connecting a Signaling Server to the ELAN subnet

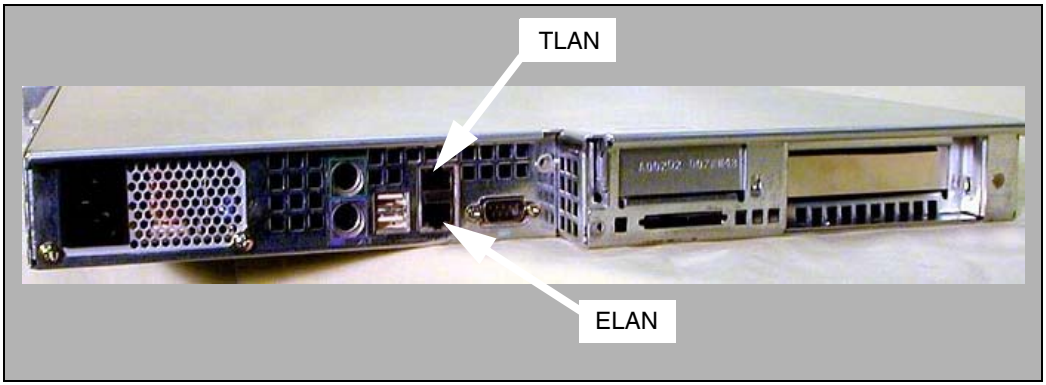
Follow Procedure 16 to connect a Signaling Server to the ELAN subnet.

Procedure 16
Connecting a Signaling Server to the ELAN

1 Connect one end of a standard CAT5 cable to the ELAN network interface (bottom) at the back of the Signaling Server, as shown in Figure 33 on page 112.

2 Connect the other end of the standard CAT5 cable to an RJ-45 ELAN subnet port on the ELAN Layer 2 switch (BayStack 470-24T).

Figure 33
Signaling Server ELAN subnet and TLAN subnet connectors



End of Procedure

Connecting a Signaling Server to the TLAN subnet

Follow Procedure 17 to connect a Signaling Server to the TLAN.

Procedure 17
Connecting a Signaling Server to the TLAN subnet

1. Connect a standard CAT5 cable to the TLAN network interface (top) RJ-45 jack at the back of the Signaling Server, as shown in Figure 33 on page 112.
2. Connect the other end of the standard CAT5 cable to an RJ-45 TLAN network interface on the data network switch (BayStack 470-24T).

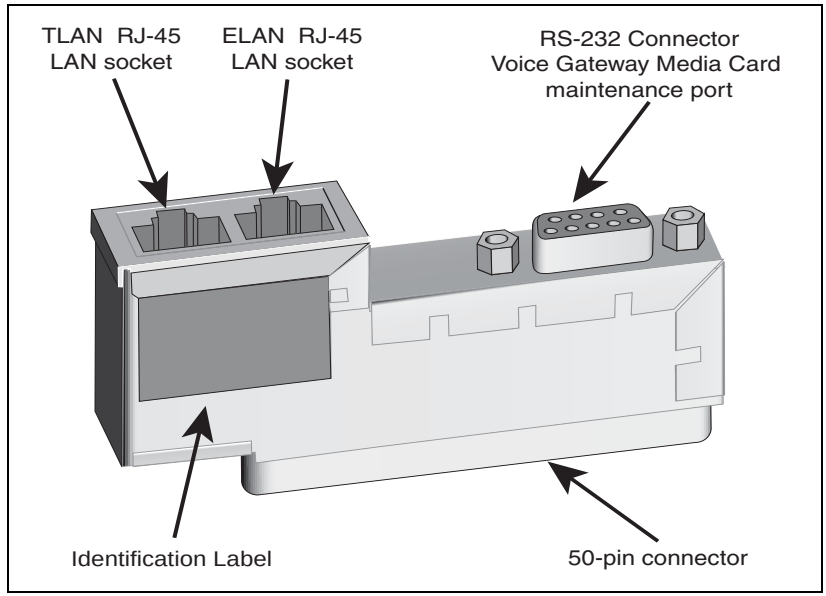
End of Procedure

Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter onto a Media Card

The Shielded 50-pin to Serial/ELAN/TLAN adapter shown in Figure 34 provides access to the TLAN and ELAN Ethernet Ports. The adapter breaks out the signals from the I/O connector to the following:

- ELAN (management) network interface
- TLAN (telephony) network interface
- one RS-232 (local console) port

Figure 34
Shielded 50-pin to Serial/ELAN/TLAN adapter



Procedure 18
Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter on to a Media Card

1 Open the Media Card package NTDU41CA.

2 Remove the Shielded 50-pin to Serial/ELAN/TLAN adapter.

3 Save the other items from the package for use in “Installing a CompactFlash” on page 330.

4 Insert the adapter, shown in Figure 34, into the connector Card 1, Card 2, Card 3, or Card 4 that corresponds to the location of the Media Card.

For example, in Figure 35 on page 115, the Media Card is installed in card slot 1. Therefore, the adaptor is installed in connector Card 1.

End of Procedure

Connecting a Media Card to the ELAN subnet

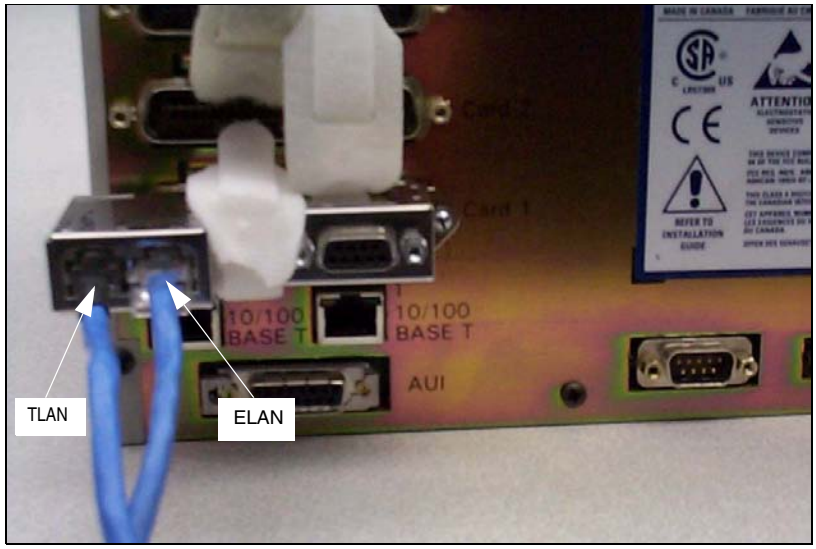
Follow Procedure 19 to connect a Media Card to the ELAN.

Procedure 19
Connecting a Media Card to the ELAN subnet

1 Connect a standard CAT5 patch cable to the ELAN network interface on the Adaptor (Figure 35 on page 115).

2 Connect the other end of the standard CAT5 patch cable to an RJ-45 ELAN network interface on the BayStack 470 switch

Figure 35
Shielded 50-pin to Serial/ELAN/TLAN adapter on the Media Gateway



End of Procedure

Connecting a Media Card to the TLAN subnet

Follow Procedure 20 to connect a Media Card to the TLAN subnet.

Procedure 20
Connecting a Media Card to the TLAN subnet

1. Connect a standard CAT5 patch cable to the TLAN network interface on the adaptor (see Figure 35 on page 115).
2. Connect the other end of the standard CAT5 patch cable to an RJ-45 TLAN network interface on the BayStack 470 switch.

End of Procedure

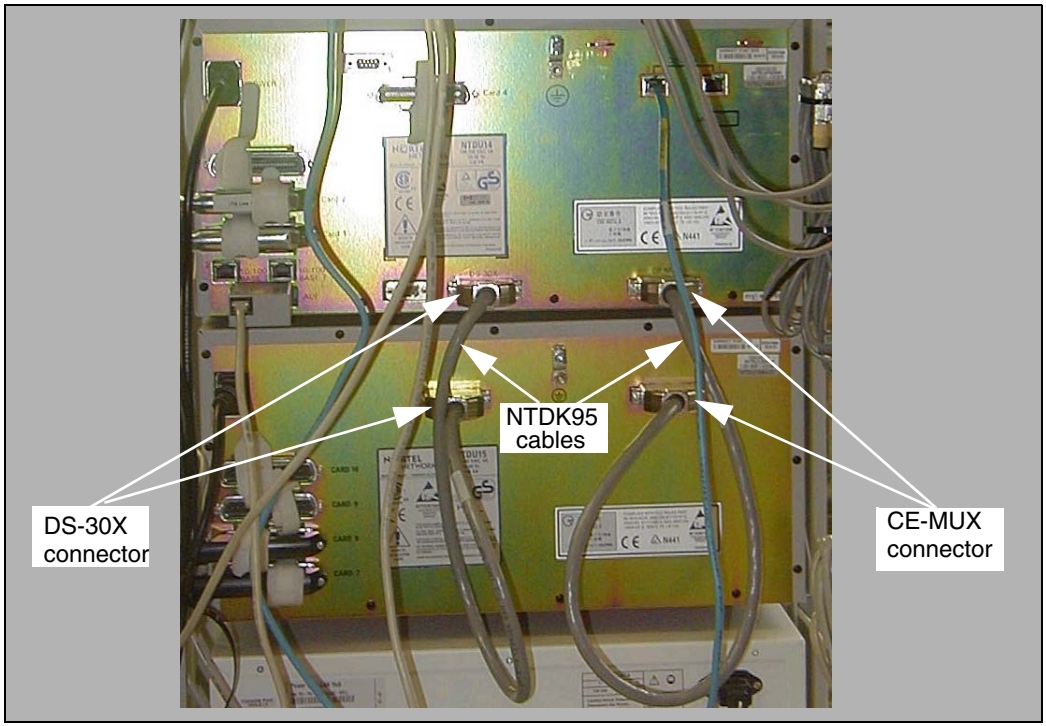
Connecting a Media Gateway to a Media Gateway Expansion

Procedure 21 describes how to connect a Media Gateway Expander to the Media Gateway. The Media Gateway Expander Cable Kit (NTDK89) contains two NTDK95 cables used to connect the Media Gateway Expander to the Media Gateway. One cable provides DS-30X connectivity while the second cable provides CE-MUX connectivity to slot 10 only.

Procedure 21
Connecting a Media Gateway to a Media Gateway Expansion

1. Connect one NTDK95 cable from the CE-MUX connector at the back of the Media Gateway to the CE-MUX connector at the back of the Media Gateway Expander.
2. Tighten the screws on the connectors.
3. Connect the other NTDK95 cable from the DS-30X connector at the back of the Media Gateway to the DS-30X connector at the back of the Media Gateway Expander.
4. Tighten the screws on the connectors. Figure 36 on page 117 shows the Media Gateway and Media Gateway Expander connected with the two NTDK95 cables.

Figure 36
Media Gateway and Media Gateway Expander connections



End of Procedure

Installing software on the CS 1000E

Contents

This section contains information on the following topics:

Introduction

The Software Install Kit required to install CP PIV includes one CF card for system software and one for backup. The system CF card contains the following:

- CS 1000E Release 4.5 software
- keycode files
- CS 1000E Release 4.5 Dependency List (PEPs) for Large and Small systems
- default database (if initiated during the installation)

A third CF card is blank and can be used for database backup storage.

IMPORTANT!

Systems and components delivered to customer sites may include preinstalled software. However, the pre-installed software versions are typically older and are included only for manufacturing and order management purposes. **Do not attempt to operate the system with the pre-installed software.** You must download the latest software from the Nortel Software Download web site and install the software as part of the installation process.

Installing the software

This section provides the steps involved in installing CS 1000 Release 4.5 for the CP PIV.

Procedure 22
Installing the software on the Call Server

1. Check that a terminal is connected to COM1 on the Call Server.
2. Insert the RMD into the CF card slot.
3. Press the manual RESET button on the CP PIV card faceplate in the Call Server. EPE blocking message is possible.
4. Enter <CR> at the Install Tool Menu.

5 The system attempts to validate and format the FMD partitions. The following format occurs only if the on-board 1 GByte FMD is blank.

```
>Obtaining and checking system configuration ...

>Validate hard disk partitions

        Validate number of hard drive partitions
and size ...

        Number of partitions  0:

        Disk check failed: three partitions
expected

INST0010 Unable to validate Hard disk partition
"/u"

        errNo : 0xd0001


        Please press <CR> when ready ...


INST0010 Unable to validate Hard disk partition
"/p"


        Please press <CR> when ready ...


INST0010 Unable to validate Hard disk partition
"/e"


        Please press <CR> when ready ...
```

```
The Fix Media Device on Core 0 is blank.

       Install  cannot  continue  unless the FMD
is partitioned.

        Note: INSTALL WILL REBOOT AFTER THIS
PROCEDURE AND

              FIX MEDIA WILL BE EMPTY AFTER YOU
PARTITION IT.

              INSTALL REMOVABLE MEDIA MUST BE IN
THE DRIVE AT THIS TIME.

        Please enter:

<CR> -> <a> - Partition the Fix Media Device.

        Enter choice>

>Repartitioning Fix Media Device ...

fdiskPartCreate(0x12d5ff0c, 1, 4, 0x10)

Size in sectors = 0x8000

Low boundary = 0

High boundary = 0x1e8bdf

fdiskPartCreate(0x12d5ff0c, 2, 11, 0x130)

Size in sectors = 0x98000

Low boundary = 0x7fc1

High boundary = 0x1e8bdf

fdiskPartCreate(0x12d5ff0c, 3, 11, 0x130)

Size in sectors = 0x98000

Low boundary = 0x9ffc1

High boundary = 0x1e8bdf

fdiskPartCreate(0x12d5ff0c, 4, 11, 0x130)

Size in sectors = 0x98000
```

```
Low boundary = 0x137fc1

High boundary = 0x1e8bdf

>Fix Media Device repartition completed

>Formatting FMD ...

Mounting msdos fs /boot on /dev/hda1...

fdiskDevCreate(/dev/hda1)

/dev/hda1: partTablePtr = 0x12d5ff0c

Found partition 1, nodePtr = 0x12d30a4c

Partition 1 = type MSDOS FAT16 <= 32MB, cbioPtr =
0x131eb2e8

Initializing new slave device 0x131eb2e8

Retrieved old volume params with %95 confidence:

Volume Parameters: FAT type: FAT16, sectors per
cluster 32

  2 FAT copies, 0 clusters, 245 sectors per FAT

  Sectors reserved 1, hidden 63, FAT sectors 490

  Root dir entries 512, sysId (null)  , serial
number 3b691afd

  Label:"NO NAME    " ...

Disk with 32705 sectors of 512 bytes will be
formatted with:

Volume Parameters: FAT type: FAT16, sectors per
cluster 2

  2 FAT copies, 16240 clusters, 64 sectors per
FAT

  Sectors reserved 1, hidden 63, FAT sectors 128

  Root dir entries 512, sysId VXDOS16 , serial
number 3b691afd
```

```
Label:"           " ...

Mounting msdos fs /p on /dev/hda2...

fdiskDevCreate(/dev/hda2)

/dev/hda2: partTablePtr = 0x12d5ff0c

Found partition 2, nodePtr = 0x12d30a4c

Partition 2 = type Win95 FAT32, cbioPtr =
0x12d26ee8

Initializing new slave device 0x12d26ee8

Retrieved old volume params with %80 confidence:

Volume Parameters: FAT type: FAT16, sectors per
cluster 195

  -61 FAT copies, 0 clusters, 50115 sectors per
FAT

  Sectors reserved -15421, hidden -1010580541,
FAT sectors -3057015

  Root dir entries -15421, sysId (null)  , serial
number cfcfc3c3

  Label:"           " ...

Disk with 622592 sectors of 512 bytes will be
formatted with:

Volume Parameters: FAT type: FAT32, sectors per
cluster 8

  2 FAT copies, 77660 clusters, 608 sectors per
FAT

  Sectors reserved 32, hidden 63, FAT sectors
1216

  Root dir entries 0, sysId VX5DOS32, serial
number cfcfc3c3

  Label:"           " ... 0x12d22e7c
```

```
Mounting msdos fs /d on /dev/hda3...

fdiskDevCreate(/dev/hda3)

/dev/hda3: partTablePtr = 0x12d5ff0c

Found partition 3, nodePtr = 0x12d30a4c

Partition 3 = type Win95 FAT32, cbioPtr =
0x12d22e7c

Initializing new slave device 0x12d22e7c

Retrieved old volume params with %80 confidence:

Volume Parameters: FAT type: FAT16, sectors per
cluster 195

  -61 FAT copies, 0 clusters, 50115 sectors per
FAT

  Sectors reserved -15421, hidden -1010580541,
FAT sectors -3057015

  Root dir entries -15421, sysId (null)  , serial
number cffbc3c3

  Label:"           " ...

;CPP4 reboot automatically

Mounting /cf2
Found /cf2/nvram.sys
Mounting /boot
Found /boot/nvram.sys

                     Selecting nvram file from 2
sources

Read boot parameters from:
F: Faceplate compact flash
H: Hard Drive

 0 [H]

Reading boot parameters from /boot/nvram.sys

Press any key to stop auto-boot...
```

6 The system then enters the `Main Menu` for keycode authorization.

```
                M A I N    M E N U

The Software Installation Tool will install or
upgrade Communication Server 1000 Software,
Database and the CP-BOOTROM. You will be prompted
throughout the installation and given the
opportunity to quit at any time.

Please enter:

<CR> -> <u> - To Install menu

        <t> - To Tools menu.

        <q> - Quit.

        Enter Choice> <u>
```

The system searches for available keycode files in the keycode directory on the RMD. If no keycode file is found, the system displays the following menu:

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================
====================

No keycode files are available on the removable
media.

Please replace the RMD containing the keycode
file(s).

Please enter:

          <CR> -> <a> - RMD is now in the drive.

          <q> - Quit.

          Enter choice>
```

At this point, either replace the RMD or quit the installation. If you select option '<q> - Quit', the system requires confirmation.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================
====================

You selected to quit. Please confirm.

Please enter:

        <CR> -> <y> - Yes, quit.

        <n> - No, DON'T quit.

        Enter choice>
```

If '<y> - Yes, quit' is selected, the system prints "INST0127 Keycode file is corrupted. Check Keycode file." and returns to the installation main menu.

After accessing the RMD containing the valid keycode, press <CR>. The system displays the keycode file available as in the following example:

```
 The following keycode files are available on the
removable media:

Name                    Size   Date         Time

-----------------------------------------------

<1> - kcxxxx.1114   Mar-29-2005  15:46

<2> - kc35f.kcd        1114   Mar-01-2005  15:33

<3> - kcbuffy450c.kcd  1114   Mar-31-2005  10:18

<q> - Quit

Enter choice> 3
```

Note: A maximum of 20 keycode files can be stored under the "keycode" directory on the RMD. The keycode files must have the same extension (.kcd).

7 Select the keycode to be used on the system.The system validates the selected keycode and displays the software release and machine type authorized.

```
Validating keycode ...

Copying "/cf2/keycode/KCport60430m.kcd" to "/u/
keycode" -

Copy OK: 1114 bytes copied

The provided keycode authorizes the install of
xxxx software (all subissues) for machine type
xxxx (CPP4 processor on xxxx).
```

Note: The software release displayed depends on the keycode file content.

8 The system requests keycode validation.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================

Please confirm that this keycode matches the
System S/W on the RMD.

Please enter:

         <CR> -> <y> - Yes, the keycode matches.
Go on to Install Menu.

         <n> - No, the keycode does not match.
Try another keycode.

Enter choice>
```

9 If the keycode matches, enter '<CR>' to continue the installation. The system displays the Install Menu.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool
================================================

I N S T A L L    M E N U

       The Software Installation Tool will install
or installation Succession Enterprise System
Software, Database and the CP-BOOTROM. You will be
prompted throughout the installation and given the
opportunity to quit at any time.

        Please enter:

<CR> -> <a> - To install Software, CP-BOOTROM.

        <b> - To install Software, Database,
CP-BOOTROM.

        <c> - To install Database only.

        <d> - To install CP-BOOTROM only.

        <t> - To go to the Tools menu.

        <k> - To install Keycode only.

               For Feature Expansion, use OVL143.

        <p> - To install 3900 set Languages.

        <q> - Quit.

        Enter Choice> <b>
```

10 Select option "<b> To install Software, Database, CP-BOOTROM.".

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================Please insert the Removable Media Device into the
drive on Core 1.

Please enter:

         <CR> -> <a> - RMD is now in drive.
Continue with s/w checking.

         <q> - Quit.

Enter choice> <CR>
```

11 If the RMD containing the software is already in the drive, select option '<a> - RMD is now in drive. Continue with s/w checking.' (or simply press <CR>) to continue. If the RMD is not yet in the drive, insert it and then press <CR>.

12 The system displays the release of the software found on RMD under the 'swload' directory and requests confirmation to continue the installation.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================

The RMD contains System S/W version xxxx.

Please enter:

        <CR> -> <y> - Yes, this is the correct
version. Continue.

        <n> - No, this is not the correct version.
Try another RMD or a different keycode.

Enter choice> <CR>
```

Note: If the RMD contains the correct software release, select option '<y> - Yes, this is the correct version. Continue.' (or simply press <CR>) to continue. If the software release is not correct and you want to replace the RMD, insert the correct RMD in the drive and then press <CR>. If you

want to replace the keycode, select option '<n> - No, this is not the correct version'.

13 Choose '<y> - Yes, Do the Dependency Lists installation' for the Dependency Lists installation.

```
 Do you want to install Dependency Lists?

        Please enter:

<CR> -> <y> - Yes, Do the Dependency Lists
installation

       <n> - No, Continue without Dependency Lists
installation

        Enter choice> y

        Are you sure?

        Please enter:

<CR> -> <n> - No, Go to the Dependency List menu

        <y> - Yes, Go to the next menu

        Enter choice> y

>Processing the install control file ...

>Installing release xxxx
```

```
 Enable Automatic Centralized Software Upgrade
(CSU) Feature ? (Default - YES)

Please enter:

<CR> -> <y> - Yes

        <n> - No

Enter choice> <y>
```

```
 Set Automatic Centralized Software Upgrade Mode
to:

Please enter:

<CR> -> <1> - Sequential

        <2> - Simultaneous

Enter choice> <1>
```

14 The system displays an Installation Status Summary report. Enter <CR> to confirm and continue installation.

```
 Please enter:

<CR> -> <y> - Yes, start installation.

       <n> - No, stop installation. Return to the
Main Menu.

You selected to install Software release: 0450C on
the new system.

This will  create  all  necessary  directories and
pre-allocate files on the hard disk.

You  may continue  with software  install or quit
now and leave your software unchanged.

Please enter:

        <CR> -> <a> - Continue with new system
install.

        <q> - Quit.

        Enter choice>
```

15 The PSDL files menu appears. Enter the appropriate choice for the location of the site.

```
************************************************P
SDL INSTALLATION MENU

The PSDL contains the loadware for all downloadable
cards in the system and loadware for M3900 series
sets.

************************************************
Select ONE of the SEVEN PSDL files:

1. Global 10 Languages
2. Western Europe 10 Languages
3. Eastern Europe 10 Languages
4. North America 6 Languages
5. Spare Group A
6. Spare Group B
7. Packaged Languages
[Q]uit, <CR> - default

By default option 1 will be selected.
Enter your choice ->x

>Copying new PSDL ...
```

16 Successful installation confirmation appears. Enter <CR> to continue.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

==============================================

Software release xxxx was installed successfully
on Core 1.

All files were copied from RMD to FMD.


Please press <CR> when ready ...
```

17 Select option '<b> - Install DEFAULT database' from the database installation main menu.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================

You will now perform the database installation.

Please enter:

        <CR> -> <a> - Install CUSTOMER database.

(The Removable Media Device containing the
customer database must be in the drive.

        <b> - Install the DEFAULT database.

(The System S/W media must be in drive.)

        <c> - Transfer the previous system
database.(The floppy disk containing the customer
database must be in the floppy drive of the MMDU
pack)

        <e> - Check the database that exists on the
Fixed Media Device.

        <q> - Quit.

Enter choice> b
```

The system verifies which customer databases are available on the RMD under directory 'backup' and displays them.

```
You selected to transfer the default database from
the System S/W RMD onto the FMD, from release: 430O
to release: 2507Q.

This will erase the database on the hard disk. If
you quit now, the database will be left unchanged.

Please insert the System S/W RMD into the drive if
you are transferring the database.

Please enter:

<a> - Continue with default database install.

<q> - Quit.


        Enter choice> <a>
```

18 Continue with database installation.

```
Communication Server 1000 Software/Database/
BOOTROM RMD Install Tool

================================================

You selected to install Software release: 0450C on
the new system.

This will  create  all  necessary  directories and
pre-allocate files on the hard disk.

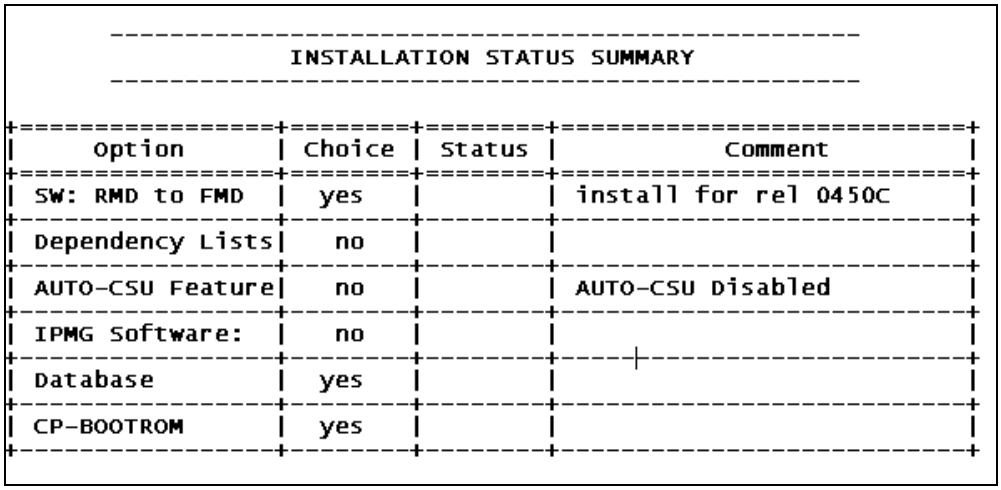
You  may continue  with software  install or quit
now and leave your software unchanged.

Please enter:

<CR> -> <a> - Continue with new system install.

        <q> - Quit.
```

The installation summary screen appears.



INSTALLATION STATUS SUMMARY

Option	Choice	Status	Comment
SW: RMD to FMD	yes		install for rel 0450C
Dependency Lists	no		
AUTO-CSU Feature	no		AUTO-CSU Disabled
IPMG Software:	no		
Database	yes		
CP-BOOTROM	yes		

Verify successful installation and enter <CR> when ready.

19 Upon returning to the main Install Menu, enter **q** to quit.

```
                I N S T A L L    M E N U

      The Software Installation Tool will install
or installation Succession Enterprise System
Software, Database and the CP-BOOTROM. You will be
prompted throughout the installation and given the
opportunity to quit at any time.

        Please enter:

<a> - To install Software, CP-BOOTROM.

<b> - To install Software, Database, CP-BOOTROM.

<c> - To install Database only.

<d> - To install CP-BOOTROM only.

<t> - To go to the Tools menu.

<k> - To install Keycode only.

For Feature Expansion, use OVL143.

<p> - To install 3900 set Languages.

<CR> -> <q> - Quit.

        Enter Choice> <q>
```

20 The system then prompts you to confirm and reboot. Enter <CR> to quit. Enter <CR> again to reboot.

```
You selected to quit. Please confirm.

    Please enter:

<CR> -> <y> - Yes, quit.

        <n> - No, DON'T quit.

Enter choice> <CR>

You selected to quit the Install Tool.

You may reboot the system or return to the Main
Menu.

------------------------------

DO NOT REBOOT USING RESET BUTTON!!!

------------------------------

Please enter:

<CR> -> <a> - Reboot the system.

        <m> - Return to the Main menu.

        Enter Choice> <CR>

>Removing temporary file "/u/disk3521.sys"

>Removing temporary file "/u/disk3621.sys"

>Rebooting system ...
```

At this point the system reloads and initializes.

End of Procedure

Verify the installation database

Procedure 23
Verifying the installation database

1 Print ISSP (system software issue and patches).

LD 22	Load program
REQ	ISSP
********	Exit program

2 Print the system configuration record in LD 22 and compare the output with the preinstallation configuration record.

LD 22	Load program
REQ	PRT
TYPE	CFN
********	Exit program

3 Print the SLT in LD 22. This output provides used and unused LICENSES. Compare with preinstallation SLT output.

LD 22	Load program
REQ	SLT
********	Exit program

4 Print the customer data block in LD 21.

LD 21	Load program
REQ	PRT
TYPE	CDB
CUST	xx
****	Exit program

Reconfigure I/O ports and call registers

Procedure 24
Reconfiguring I/O ports and call registers

1 Evaluate the number of call registers and 500 telephone buffers that are configured for the system (suggested minimum values are 4500 and 1000 respectively). If changes are required, reconfigure the values in LD 17:

LD 17	Load program
500B 1000	Use 1000 as a minimum value
NCR 20000	Use 20000 as a minimum value
****	Exit program

2 Print the Configuration Record to confirm the changes made in Step 1:

LD 22	Load program
REQ PRT	Set the print option
TYPE CFN	Print the configuration
****	Exit program

End of Procedure

Procedure 25
Switching call processing to the Call Server

1 Plug the Call Server port labeled Lan 1 into the ELAN subnet.

2 Initialize (using the init button) the CP PIV card in the Core.

3 Wait for “DONE” and then “INI” messages to display before you continue.

End of Procedure

Test the Call Server

Procedure 26
Testing the Call Server

1 Verify that the Call Server is active.

LD 135	Load program
STAT CPU	Get the status of the CPUs

2 Check dial-tone.

3 Verify that the Call Server is active, redundant, and single.

4 Make internal, external, and network calls.

5 Check attendant console activity.

6 Check IP Peer networking for incoming and outgoing calls.

7 Check applications (CallPilot, Symposium, and so on).

End of Procedure

Install the software on the second Call Server

Procedure 27
Installing the software on the second Call Server

1 Attach the LAN 1 and LAN 2 cables to the CP PIV faceplate connectors between the Call Servers.

2 Complete procedures 22 through 27 for the second Call Server.

3 Each Call Server can be named: Call Server 1 and Call Server 0.

Note: Do not install LAN 1 and LAN 2 cables at this time.

End of Procedure

Verifying Call Server 0 is active

Use the following commands to verify that Call Server 0 is active.

LD 135	Load program
STAT CPU	Get the status of the CPUs
CFN	

Make the system redundant

At this point, Core/Net 0 is ready to be synchronized with Core/Net 1.

Procedure 28
Making the system redundant

1 Check to see if the LAN 1 and LAN 2 cables are attached. If not, attach the LAN 1 and LAN 2 cables to the CP PIV faceplate connectors on Call Server 0 and Call Server 1.

2 Once the synchronization of memories and drives is complete, STAT the CPU and verify that the CPUs are in a true redundant state.

LD 135	
STAT CPU	Get status of CPU and memory
****	Exit the program

```
.stat cpu


cp 0 16 PASS -- STDBY


TRUE REDUNDANT

DISK STATE = REDUNDANT

HEALTH  = 20

VERSION = Mar  3 2005, 16:26:40

 Side = 0, DRAM SIZE = 512 MBytes


cp 1 16 PASS -- ENBL


TRUE REDUNDANT

DISK STATE = REDUNDANT

HEALTH = 20

VERSION = Mar  3 2005, 16:26:40

 Side = 1, DRAM SIZE = 512 MBytes
```

3 Tier 1 and Tier 2 health of both Call Servers must be identical in order to successfully switch service from Call Server 1 to Call Server 0.

LD 135

STAT HEALTH	Get status of CPU and memory
********	Exit the program

```
.stat health
Local (Side 0, Active, Redundant):
Components without TIER 1 Health contribution:
================================================
     disp 0 15 1:In Service
     sio2 0 15 1:In Service
         cp 0 16:In Service
           ipb 0:In Service
TIER 1 Health Count Breakdown:
====================================
     sio8 0 16 1: 0002
     sio8 0 16 2: 0002
       sutl 0 15: 0002
       strn 0 15: 0002
     xsmp 0 15 1: 0002

      eth 0 16 0: 0002
Local TIER 1 Health Total: 20
```

```
TIER 2 Health Count Breakdown:

=====================================

ELAN 16 IP : 47.11.138.150 Health = 2

ELAN 17 IP : 47.11.138.153 Health = 2


Local AML over ELAN Total Health:4

Local Total IPL Health = 6


IPL connection history:3 3 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3


Local TIER 2 Health Total:10


Remote (Side 1, Inactive, Redundant):

Components without TIER 1 Health contribution:

     disp 1 15 1:In Service

     sio2 1 15 1:In Service

         cp 1 16:In Service

           ipb 1:In Service

TIER 1 Health Count Breakdown:

     sio8 1 16 1: 0002
     sio8 1 16 2: 0002
      sutl 1 15: 0002
      strn 1 15: 0002
      xsmp 1 15 1: 0002
       eth 1 16 0: 0002

Remote TIER 1 Health Total: 20
```

```
TIER 2 Health Count Breakdown:

=======================================

ELAN 16 IP : 47.11.138.150 Health = 2

ELAN 17 IP : 47.11.138.153 Health = 2


Remote AML over ELAN Total Health:4

Remote Total IPL health = 6


Remote TIER 2 Health Total:10
```

4 Get status of links to the Media Gateways (STAT IPL).

LD 135

STAT IPL	Get status of MG 1000E (IPMG)
	`Media Gateway 1: LINK UP`
	`Media Gateway 2: LINK UP`
	`Media Gateway 3: LINK UP`
	`Media Gateway 4: LINK UP`
****	Exit the program

The system now operates in full redundant mode with Call Server 1 active.

End of Procedure

Complete the CP PIV installation

LD 137 modifications

The `CMDU/MMDU` commands are not applicable to CP PIV. Instead, the following commands are introduced in LD 137:

- `STAT FMD`
  display text: **`Status of both Fixed Media Devices (FMD)`**
  command parameter: none

- STAT FMD
  display text: **Status of the specified Fixed Media Device**
  command parameter: core # with values of 0 or 1
- STAT RMD
  display text: **Status of both Removable Media Devices (RMD)**
  command parameter: none
- STAT RMD
  display text: **Status of the specified Removable Media Device**
  command parameter: “core #” with values of 0 or 1

At this point, it is possible to customize the HSP IP addresses on the HSP ports. To do this, change the HSP addresses on the active side, and the addresses are automatically invoked on the inactive side.

For more information, see *Communication Server 1000: System Redundancy* (553-3001-307).

Testing the Call Servers

Procedure 29
Testing Call Server 0

At this point in the installation, Call Server 0 is tested from active Call Server 1. Upon successful completion of these tests, call processing is switched and the same tests are performed on Call Server 1 from active Call Server 0. As a final step, call processing is then switched again to Call Server 1.

From active Call Server 1, perform the following tests on Call Server 0:

1 Perform a redundancy sanity test:

LD 135

STAT CPU	Get status of CPU and memory
TEST CPU	Test the CPU

2 Check the LCD states

a. Perform a visual check of the LCDs.

b. Test and LCDs:

LD 135

TEST LEDs	Test LEDs

DSPL ALL

c. Check that the LCD display matches the software check.

3 Test the System Utility card

LD 135	Load program
STAT SUTL	Get the status of the System Utility card
TEST SUTL	Test the System Utility card

4 Test system redundancy and media devices:

LD 137	Load program
TEST RDUN	Test redundancy
DATA RDUN	Test database integrity
STAT FMD	Status of one or both Fixed Media Devices (FMD)
STAT RMD	Status of one or both Removable Media Devices (RMD)

5 Clear the display and minor alarms on both Call Servers:

LD 135	Load program
CDSP	Clear the displays on the cores
CMAJ	Clear major alarms
CMIN ALL	Clear minor alarms

6 Check dial tone.

7 Check applications (CallPilot, Symposium, and so on)

End of Procedure

Switch call processing

Procedure 30
Switching call processing

LD 135	Load program
SCPU	Switch call processing from Call Server 1 to Call Server 0

Call Server 0 is now the active call processor.

End of Procedure

Procedure 31
Testing Call Server 1

From active Call Server 0, perform these tests on Call Server 1:

1 Perform a redundancy sanity test:

LD 135	Load program
STAT CPU	Get status of CPU and memory
TEST CPU	Test the CPU

2 Check the LCD states.

a. Perform a visual check of the LCDs.

b. Test LCDs:

LD 135	Load program
TEST LCDs	Test LCDs
DSPL ALL	

c. Check that the LCD display matches the software check.

3 Test the System Utility card:

LD 135	Load program
STAT SUTL	Get the status of the System Utility card
TEST SUTL	Test the System Utility card

4 Test system redundancy and media devices:

LD 137	Load program
TEST RDUN	Test redundancy
DATA RDUN	Test database integrity
STAT FMD	Status of one or both Fixed Media Devices (FMD)
STAT RMD	Status of one or both Removable Media Devices (RMD)
********	Exit the program

5 Clear the display and minor alarms on both Call Servers:

LD 135	Load program
CDSP	Clear the displays on the Call Servers
CMAJ	Clear major alarms
CMIN ALL	Clear minor alarms

6 Check dial tone.

7 Check applications (CallPilot, Symposium, etc.)

End of Procedure

Switch call processing

Procedure 32
Switching call processing

LD 135	Load program
SCPU	Switch call processing from Call Server 0 to Call Server 1

Call Server 1 is now the active call processor.

End of Procedure

Perform a customer backup data dump (installation release)

Procedure 33
Performing a data dump to backup the customer database:

1 Log in to the system.

2 Insert a CF card into the active Call Server RMD slot to back up the database.

3 Load the Equipment Data Dump Program (LD 43). At the prompt, enter:

LD 43	Load program.
.	EDD

4 When “EDD000” appears on the terminal, enter:

EDD	Begin the data dump.

CAUTION — Service Interruption

Loss of Data

If the data dump is not successful, do not continue; contact your technical support organization. A data dump problem must be corrected before proceeding.

5 When “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” appear on the terminal, enter:

****	Exit program

The installation is now complete.

End of Procedure

Connecting MG 1000T system components

Contents

This section contains information on the following topics:

Introduction

Several system connections are required to make the MG 1000T operational. The MG 1000T must be connected to the CS 1000E through the TLAN subnet. The MG 1000T Core is directly connected with a CAT5 cross-over cable to each of the MG 1000T Expansions. The Media Gateway is directly connected to the Media Gateway Expander. The system's components, such

as the Signaling Server and the Media Cards installed in the Media Gateway, require both ELAN subnet and TLAN subnet connections.

An MG 1000T provides CS 1000E system access to:

- PSTN
- Nortel Integrated DECT (DECT)
- Nortel WLAN IP Telephony

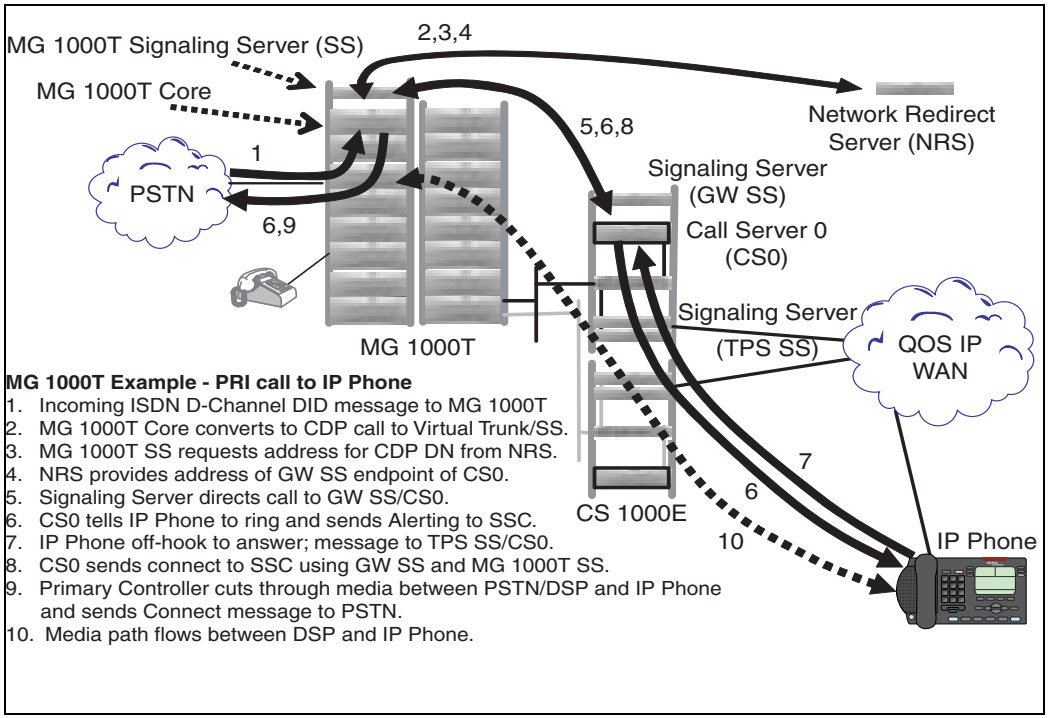
The MG 1000T have sufficient intelligence to handle digit manipulation and call routing functions without using the resources of the Core Call Server. The SSC in the MG 1000T Core functions as the Primary Controller for the MG 1000T. This MG 1000T Core with its MG 1000T Expander provides 8 slots for IPE cards. The additional four Survivable MG 1000T Expansions with their Media Gateway Expanders provide an additional 32 IPE slots. They are linked to the MG 1000T Core. This maximum configuration allows up to 20 E1 interfaces or 40 IPE card slots.

The MG 1000T Expander cannot support PRI/D-Channel type cards. The MG 1000T Expander are typically used for Media Cards or IPE cards that do not require Clock Controller support. Voice and signaling connections between an MG 1000T and a CS 1000E use MCDN and IP Peer Networking through their associated Signaling Server. The network used to transport these connections can be engineered so that the gateways can be located anywhere in a QoS-managed IP network following the engineering guidelines for IP Peer Networking. For additional information, refer to *IP Peer Networking: Installation and Configuration* (553-3001-213).

A Signaling Server provides the software used to provide IP Peer Networking features between the MG 1000T and the network. The number of Signaling Servers required will depend upon the capacity and level of redundancy required. For additional information, refer to *Signaling Server: Installation and Configuration* (553-3001-212).

Figure 37 on page 155 is an example of an IP Phone call through an MG 1000T to the PSTN.

Figure 37
MG 1000T Media Gateway operation



This chapter contains the following procedures:

- Procedure 34: "Connecting the MG 1000T Core to an MG 1000T Expansion" on page 158.
- Procedure 35: "Connecting an MG 1000T Core to the ELAN subnet" on page 161.
- Procedure 36: "Connecting a Signaling Server to the ELAN subnet" on page 162.
- Procedure 37: "Connecting a Signaling Server to the TLAN subnet" on page 163.
- Procedure 38: "Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter on to a Media Card" on page 164.

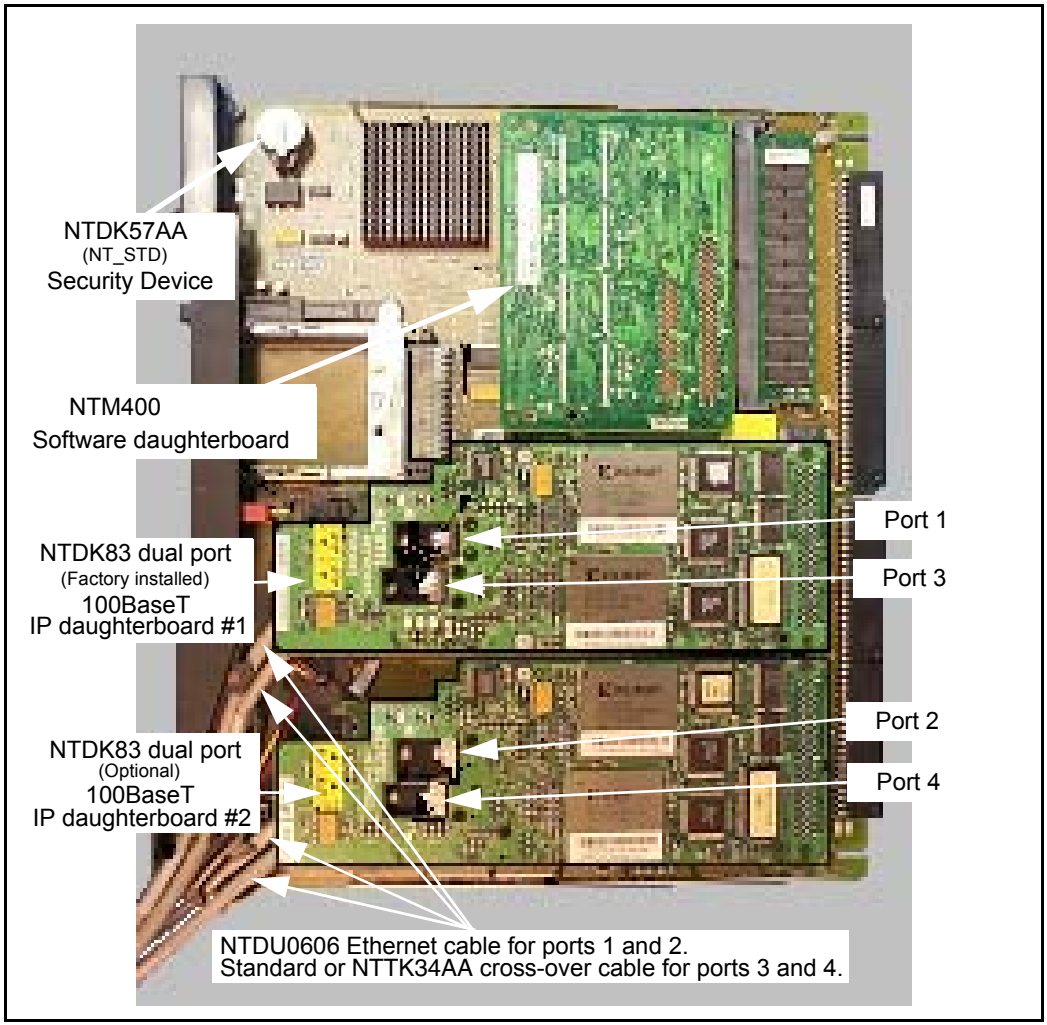
- Procedure 39: "Connecting a Media Card to the ELAN" on page 165.
- Procedure 40: "Connecting a Media Card to the TLAN subnet" on page 166.
- Procedure 41: "Connecting a Media Gateway to a Media Gateway Expansion" on page 166.

Connecting an MG 1000T Core to a Survivable MG 1000T Expansion

Follow Procedure 34 on page 158 to connect the MG 1000T Core to the Survivable MG 1000T Expansion. The MG 1000T Core can be connected to a maximum of four MG 1000T Expansions.

Figure 38 on page 157 shows the location of the two NTDK83 Dual Port Daughterboards with port assignments. The MG 1000T uses daughterboard # 2.

Figure 38
CS 1000T SSC



Procedure 34
Connecting the MG 1000T Core to an MG 1000T Expansion

1 Choose one of the following:

   a. For point-to-point 100BaseT connectivity, go to step 2.

   b. For 100BaseT connectivity over a distributed Campus Data Network, go to step 9 on page 159.

2 For the MG 1000T Core connect port 1 of the SSC 100BaseT daughterboard #1 to the bulkhead connector #1 shown in Figure 39 on page 159.

   Note 1: If the SSC cable is connected to bulkhead Port 1, then use Port 1 on the back of the Media Gateway. If the SSC cable is connected to bulkhead Port 2, then use Port 2 on the back of the Media Gateway.

   Note 2: Port 1 on the MG 1000T Core must go to MG 1000T Expansion 1, Port 2 to MG 1000T Expansion 2, and so on.

3 Connect the 100BaseT RJ-45 connector 1 on the back of the Media Gateway to the identical connector on the first Survivable MG 1000T Expansion, shown in Figure 40 on page 160.

   Use the supplied NTTK34AA two-meter UTP CAT5 RJ-45 cross-over cable to connect the MG 1000T Core and the Survivable MG 1000T Expansion.

4 Connect port 1 of the MG 1000T Expansion 100BaseT daughterboard #2 to the bulkhead connector #1, as shown in Figure 39 on page 159.

5 For MG 1000T Expansion 2, connect port 2 of the MG 1000T Core 100BaseT daughterboard #1 to the bulkhead connector #2, shown in Figure 39 on page 159

6 Connect the 100BaseT RJ-45 connector 2 on the back of the Media Gateway to the 100BaseT RJ-45 connector 1 on the second MG 1000T Expansion, shown in Figure 40 on page 160.

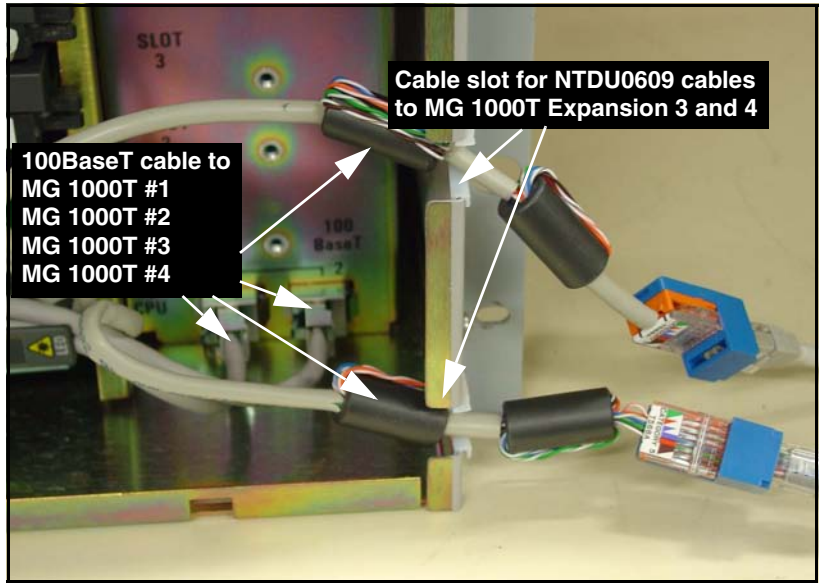
7 Connect port 1 of the MG 1000T Expansion 100BaseT daughterboard #2 to the bulkhead connector #1, as shown in Figure 39 on page 159

8 MG 1000T Expansion 3 and 4 network cables (NTDU0609) must be routed from the 100 BaseT daughterboard through the cable slot on the side of the MG 1000T Core with one ferrite on the inside of the Media Gateway and the second ferrite external to the Media Gateway as shown in Figure 39 on page 159. Connect to MG 1000T Expansion 3 and 4 using the 100BaseT RJ-45 connector 1 on the back of each Media Gateway.

Note 3: The NTDU0609 crossover cables are connected directly to the MG 1000T Core 100BaseT Daughterboards for MG 1000T Expansion 3 and 4.

Note 4: The required NTDU0609 crossover cables are contained in the NTDU19BA Cable Kit.

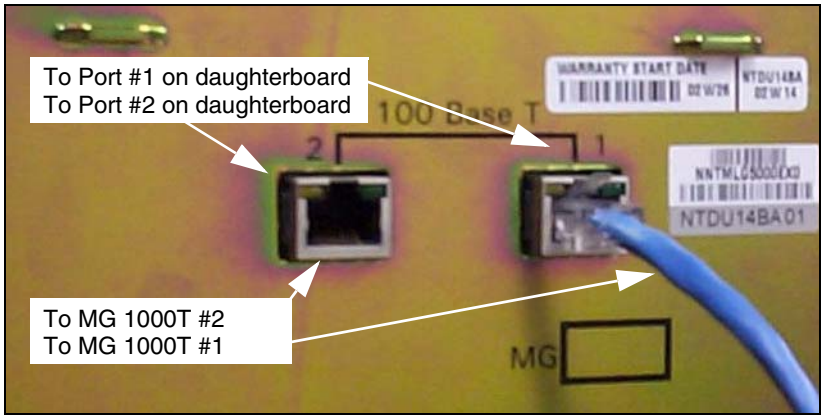
Figure 39
MG 1000T SLAN subnet cables



9 Connect the MG 1000T Core ports, shown in Figure 40 on page 160 to the data network switch using a CAT5 patch cable.

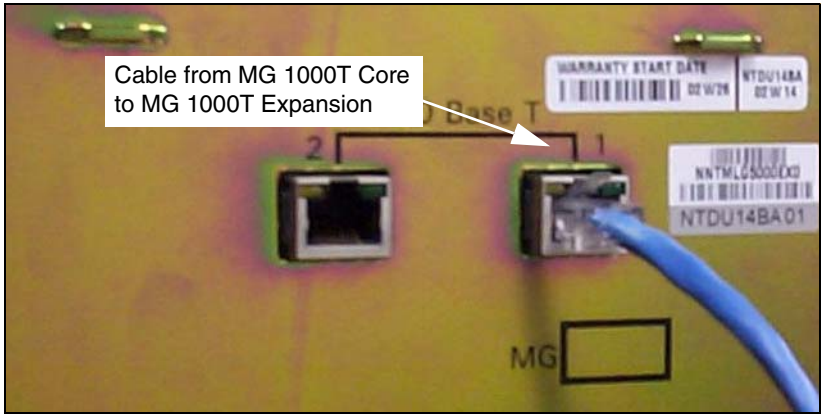
Note: A customer supplied standard CAT5 cable is required.

Figure 40
MG 1000T Core connectors



10 Connect RJ-45 #1 on the MG 1000T Expansion, shown in Figure 40 to the data network switch.

Figure 41
MG 1000T 100BaseT cable connection



End of Procedure

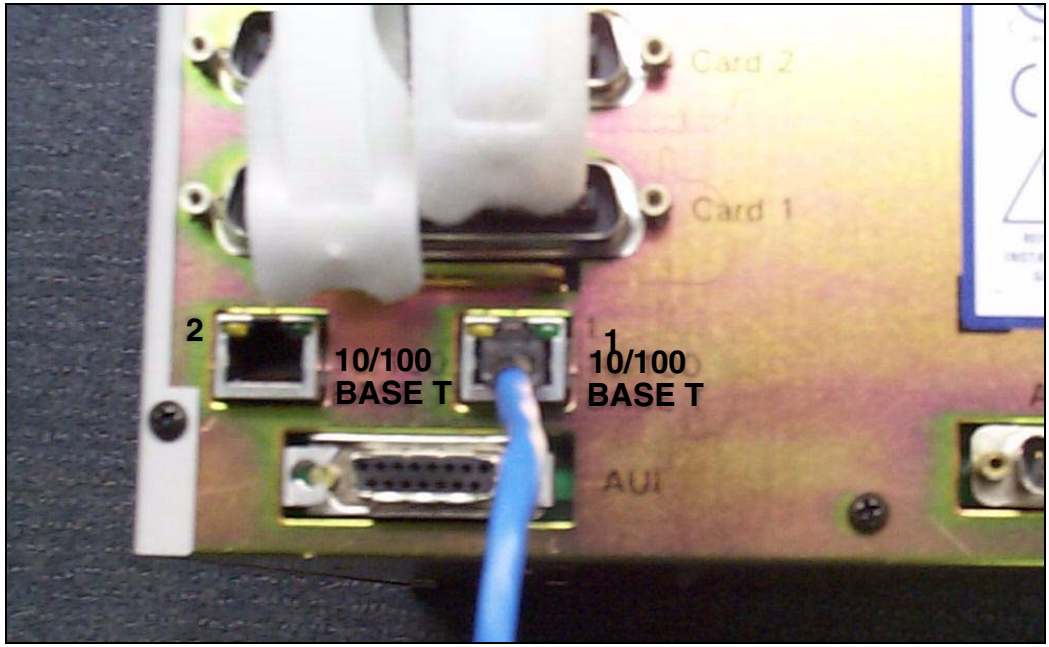
Connecting an MG 1000T Core to the ELAN subnet

Follow Procedure 35 to connect an MG 1000T Core to the ELAN subnet.

Procedure 35
Connecting an MG 1000T Core to the ELAN subnet

1. Connect one end of a standard CAT5 cable to the 10/100BaseT ELAN network interface on the back of the MG 1000T Core as shown in Figure 42.
2. Connect the other end of the standard CAT5 cable to an RJ-45 ELAN network interface on the ELAN Layer 2 switch (BayStack 470-24T).

Figure 42
10/100 BaseT connectors



End of Procedure

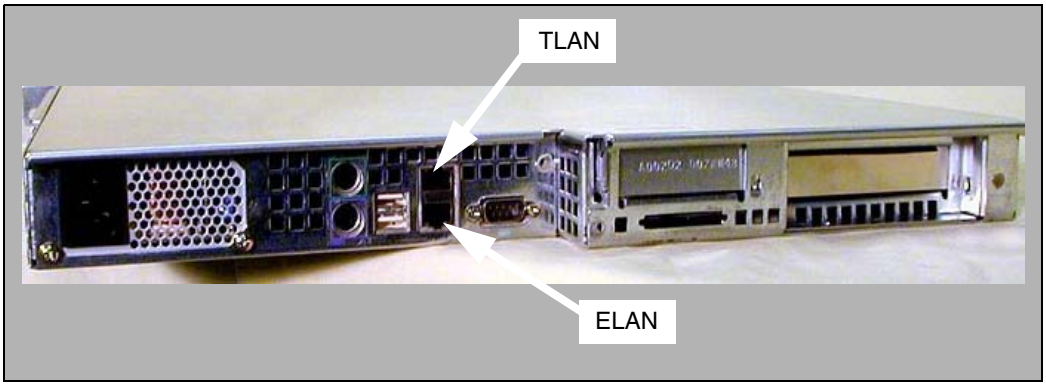
Connecting a Signaling Server to the ELAN subnet

Follow Procedure 36 to connect a Signaling Server to the ELAN subnet.

Procedure 36
Connecting a Signaling Server to the ELAN subnet

1. Connect one end of a standard CAT5 cable to the ELAN network interface (bottom) on the back of the Signaling Server as shown in Figure 43.
2. Connect the other end of the standard CAT5 cable to an RJ-45 ELAN network interface on the ELAN Layer 2 switch (BayStack 470-24T).

Figure 43
Signaling Server ELAN and TLAN network interfaces



End of Procedure

Connecting a Signaling Server to the TLAN subnet

Follow Procedure 37 to connect a Signaling Server to the TLAN subnet.

Procedure 37
Connecting a Signaling Server to the TLAN subnet

1. Connect a standard CAT5 cable to the TLAN network interface connector (top) RJ-45 jack on the back of the Signaling Server, see Figure 43 on page 162.
2. Connect the other end of the standard CAT5 cable to an RJ-45 TLAN network interface on the data network switch (BayStack 470-24T).

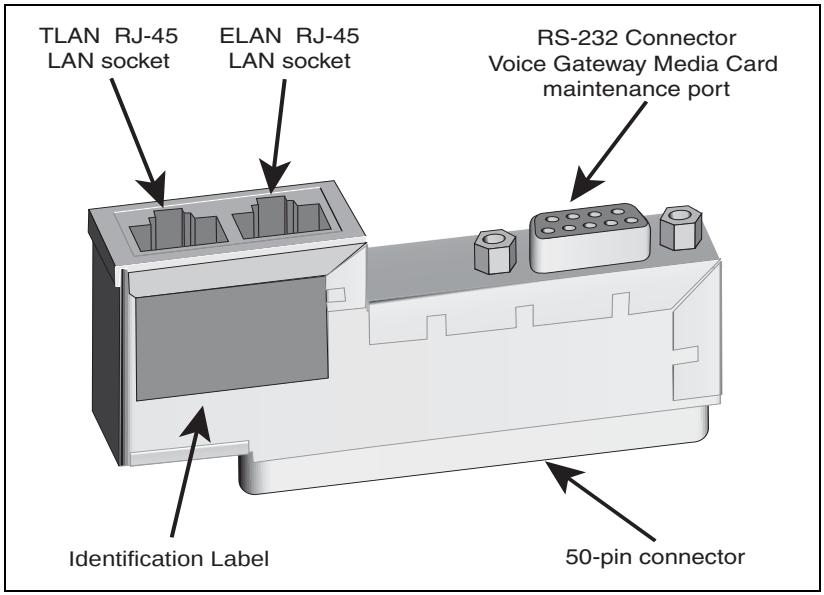
End of Procedure

Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter onto a Media Card

The Shielded 50-pin to Serial/ELAN/TLAN adapter, shown in Figure 44 on page 164, provides access to the TLAN and ELAN Ethernet Ports. The adapter breaks out the signals from the I/O connector to the following:

- ELAN (management) network interface
- TLAN (telephony) network interface
- one RS-232 (local console) port

Figure 44
Diagram of the Shielded 50-pin to Serial/ELAN/TLAN adapter



Procedure 38
Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter on to a Media Card

1 Open the Media Card package NTDU41CA.

2 Remove the Shielded 50-pin to Serial/ELAN/TLAN adapter.

3 Save the other items from the package for use in “Installing a CompactFlash” on page 330.

4 Insert the adapter, shown in Figure 44, into the connector Card 1, Card 2, Card 3, or Card 4 that corresponds to the location of the Media Card.

For example, Figure 45 on page 165, the Media Card is installed in card slot 1. Therefore, the Adaptor is installed in connector Card 1.

End of Procedure

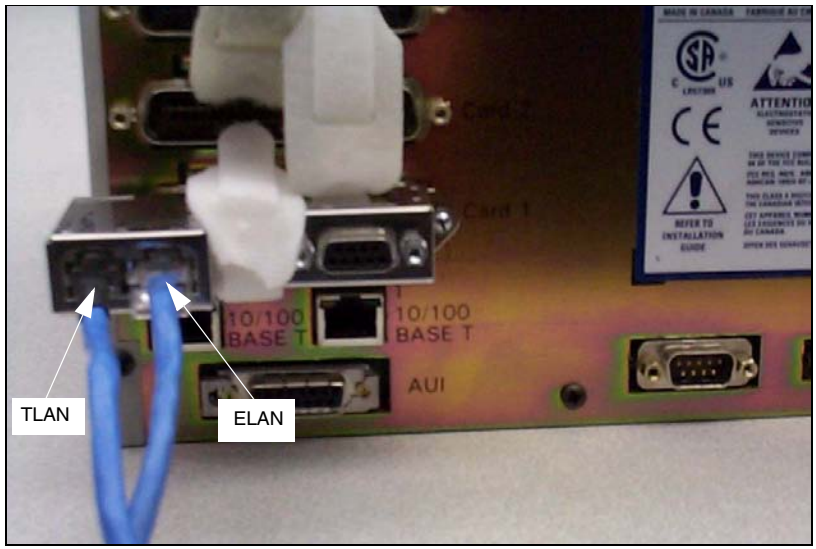
Connecting a Media Card to the ELAN

Follow Procedure 39 to connect a Media Card to the ELAN.

Procedure 39
Connecting a Media Card to the ELAN

1. Connect a standard CAT5 patch cable to the ELAN network interface on the adaptor, see Figure 45.
2. Connect the other end of the standard CAT5 patch cable to an RJ-45 ELAN network interface on the BayStack 470 switch.

Figure 45
Shielded 50-pin to Serial/ELAN/TLAN adapter on the Media Gateway



End of Procedure

Connecting a Media Card to the TLAN subnet

Follow Procedure 40 to connect a Media Card to the TLAN subnet.

Procedure 40
Connecting a Media Card to the TLAN subnet

1. Connect a standard CAT5 patch cable to the TLAN network interface on the Adaptor (see Figure 45 on page 165).
2. Connect the other end of the standard CAT5 patch cable to an RJ-45 TLAN network interface on the BayStack 470 switch.

End of Procedure

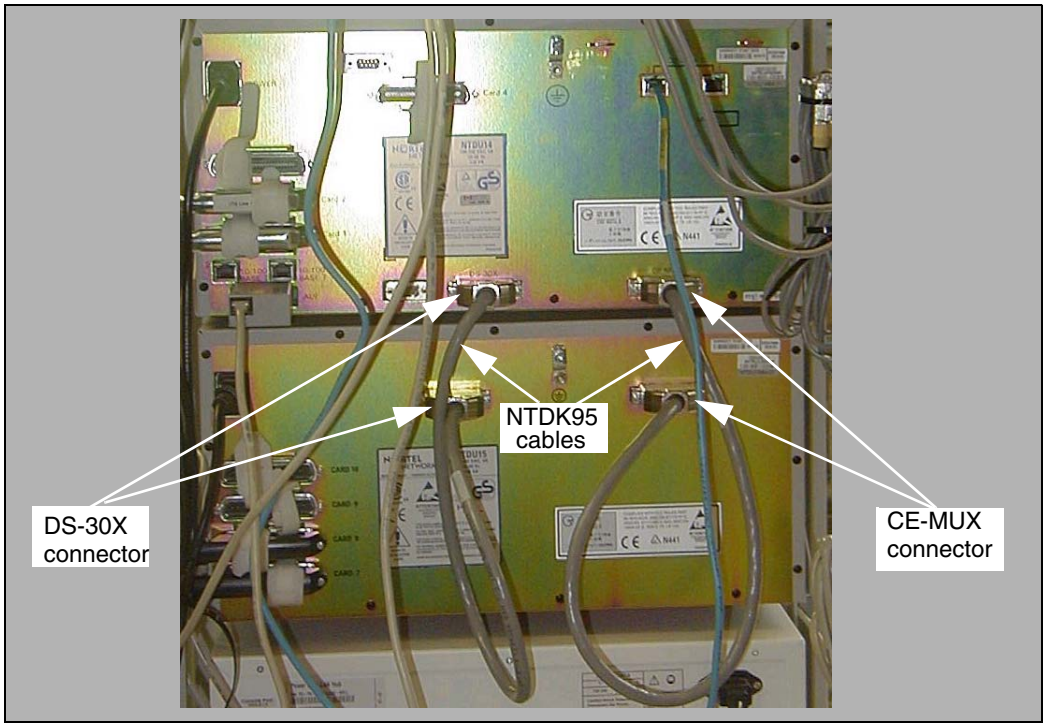
Connecting a Media Gateway to a Media Gateway Expansion

Procedure 41 describes how to connect a Media Gateway Expander to the Media Gateway. The Media Gateway Expander Cable Kit (NTDK89) contains two NTDK95 cables used to connect the Media Gateway Expander to the Media Gateway. One cable provides DS-30X connectivity while the second cable provides CE-MUX connectivity to slot 10 only.

Procedure 41
Connecting a Media Gateway to a Media Gateway Expansion

1. Connect one NTDK95 cable from the CE-MUX connector on the back of the Media Gateway to the CE-MUX connector on the back of the Media Gateway Expander.
2. Tighten the screws on the connectors.
3. Connect the other NTDK95 cable from the DS-30X connector on the back of the Media Gateway to the DS-30X connector on the back of the Media Gateway Expander.
4. Tighten the screws on the connectors. Figure 46 on page 167 shows the Media Gateway and Media Gateway Expander connected with the two NTDK95 cables.

Figure 46
Media Gateway and Media Gateway Expander connections



End of Procedure

Installing and configuring the Signaling Server software

Contents

This section contains information on the following topics:

Introduction

This chapter describes the Signaling Server Install Tool and explains how to install Signaling Server software and perform basic configuration.

Signaling Server Software Install Tool

The Signaling Server Software Install Tool runs from the Signaling Server Software CD-ROM. Use this tool to install Signaling Server software.

Note: The Signaling Server is out-of-service during software installation or upgrade.

To perform a software installation or upgrade, reboot the Signaling Server with the Software CD-ROM in its drive. No floppy disk is required, since the Software CD-ROM is bootable.

The Install Tool installs all Signaling Server software, including the operating system, applications, and web files. The Install Tool also copies software files for the Voice Gateway Media Cards and IP Phones, which are used to upgrade these components. For a new installation, the Install Tool prompts for IP Telephony parameters to perform basic system configuration.

After installing the Signaling Server software and configuring basic information about the Signaling Server, the Signaling Server components can be configured using the web-based Element Manager interface. Refer to *Element Manager: System Administration* (553-3001-332).

Signaling Server Software CD-ROM

If you do not have the latest version of the CD-ROM:

- Order or download the CD-ROM image from the Nortel Electronic Software Download site. See Procedure 42 for instructions on downloading the image.
- Create the Install Tool CD-ROM from the image. See Procedure 43 on page 171.

A single ".iso" file is provided to create the Software CD-ROM. This file is a ready-to-burn ISO9660 CD image that creates a bootable CD that complies to the El Torito specification. You must use CD writer software that can create a CD from this image. As the CD image is preconfigured, your software automatically creates a bootable CS 1000 Release 4.5 CD-ROM. See your software help pages to create a CD from an ISO file. Also review the associated README file that is associated with the Nortel Signaling Server Software download.

Procedure 42
Downloading the Signaling Server CD image

1. Connect to the Nortel website at www.nortel.com.
2. Navigate to the **Software Downloads** page.

a. Click **Software Downloads** in the **Support & Training** menu. The **Technical Support** page appears.

b. Click **Product Families**. The **Products Families** list appears.

c. Click **Succession**. The **By Product Family** page opens.

d. Under the **Succession Enterprise > Signaling Server and IP Peer Networking** headings, click **Software.**

3 Download the Signaling Server CD image.

a. Click on the link for the appropriate **Signaling Server CD image**.

The CD-ROM image includes the Signaling Server software as well as IP Phone firmware and Voice Gateway Media Card loadware.

b. If not logged in to a My Nortel account, click on **Log In** to sign in.

Note: If you are not registered to access this web site, refer to the CS 1000 product bulletin for directions on how to register.

c. The **Software: Software Details Information** page appears. Click the link next to **File Download**.

d. In the **Save As** window, choose the desired path to save the file to the local disk on your PC and click **Save**.

End of Procedure

Procedure 43
Creating a Signaling Server Software CD-ROM

1 Use the software option to “burn” or “create” a CD from the CD image. Do not drag-and-drop, as this can result in a file copy and a CD-ROM that does not work. Do not write the ISO file to the CD-ROM.

Note: Select the disk-at-once write option.

2 Close the session.

3 Label the CD appropriately, for example, Signaling Server, sse-x.xx.xx.

End of Procedure

The Software CD-ROM must be readable in a standard CD-ROM drive. After you create a CD from the CD image, the CD contains several directories and

files. If you cannot create a CD, refer to the CD writer's software documentation.

Once the CD is created, you can use it to install new software or to upgrade software on an existing Signaling Server.

Installing the software

Before proceeding, you must complete Procedure 16 on page 111 and Procedure 17 on page 112.

Procedure 44
Installing the Signaling Server software

After you complete step 1 below, this procedure takes approximately 20 minutes.

1 From your Planning and Engineering group, obtain the following network and IP Telephony data for this Signaling Server:

- node ID for the IP Telephony node
- node IP address for the IP Telephony node
- hostname for the Signaling Server
- ELAN network interface IP address, Subnet mask, and Gateway
- TLAN network interface IP address, Subnet mask, and Gateway
- ELAN network interface IP address of the Call Server
- Primary and Alternate NRS IP addresses for this networked system (refer to *IP Peer Networking: Installation and Configuration* (553-3001-213))
- NRS role, if applicable (refer to *IP Peer Networking: Installation and Configuration* (553-3001-213))

2 Insert the Software CD-ROM into the Signaling Server CD drive, and press the **RST** button on the front panel to cold-reboot the Signaling Server.

Note: The Software CD-ROM should be bootable. If not, create a boot floppy using the files in the `/mkboot` directory on the Signaling Server Software CD-ROM.

3 If this is a re-installation on an existing system, observe the boot sequence. Enter **c** at the boot menu shown in Figure 47.

Note: Entering **c** in the "ISP1100 System Boot" banner screen speeds up this process, as the keyboard input is buffered.

Figure 47
Upgrade boot sequence

```
       ISP1100 System Boot
Copyright 2002-2004 Nortel Networks, Inc.

CPU: PC PENTIUM
Version: x
BSP version: 1.2/0
Creation date: Apr 22 2004, 15:44:38
ataDrv 1.0: ATAPI Drive Found
Controller 1 drive 0
Controller 1 drive 1
ATAPI Controller 1 #drives found = 1
Read boot parameters from:
[C]DROM
[H]ard Disk
5 [H]
```

Note: If you do not select **c** within the ten-second time-out, the Signaling Server boots to the existing software on the hard disk.

4 Enter **b** at the menu shown in Figure 48 on page 174.

Figure 48
Copy IP configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
========================================================================

Please insert an empty diskette in the floppy drive
to backup the IP configuration.

        Please enter:
<CR> -> <a> - Diskette is now in the floppy drive.
             Continue.
        <b> - Continue without copying IP configuration
        <q> - Quit.

        Enter Choice>
```

5 When the Install Tool banner appears (Figure 49 on page 175), press <CR> to perform system checks and begin software installation.

Figure 49
Install Tool banner screen

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
========================================================================

          #####
        #########   ########
       ########``  `##############
      ########       ``     `##############
     #######`          ######```####
     #######       ######``      `###           NORTEL NETWORKS
    #######     #####``             ####
    ####### #####`                  #### Communication Server 1000 Software
    `#########`                    ####`
     #######`                    #####      Copyright 2002 - 2004
     `#######                  #####'
     ##########              `###`
    ##``##########             #
   ##    `########################
   `#      `########################
     ############################``
      `````````  ````####````


Please press <CR> when ready ... <CR>
```

***Note:*** If the system has less than 512 MBytes of RAM, the following error message appears:

```
WARNING: Your system has less than 512 MB RAM.
In order to run Rls 4 software you must
upgrade RAM to 512 MB and repeat install.
Otherwise serious service problems are likely

   Please enter:
<CR> -> <q> - Quit.
        <a> - Accept the possible risks and
continue install.
```

Press <CR> to quit. Upgrade to 512 MBytes of RAM and restart the Signaling Server Install Tool again.
```

The system verifies the file systems.

- When the software runs for the first time on a new system, the hard disk will not be partitioned, so the test normally fails. Upon failure, the menu in Figure 50 appears.

Figure 50
First boot of a new system

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
========================================================================

The filesystems verification failed! (This is normal for a new
system.)

The hard disk must be (re)partitioned and (re)initialized. This will
erase all data on the hard disk. The system will then reboot and
the Install Tool will restart.

        Please enter:
<CR> -> <a> - Partition and initialize the hard disk, then reboot.

        Enter Choice> a
```

a. Enter **a** to start the new installation.

The system displays the messages:

```
Partitioning hard disk ...
Hard disk partitioning succeeded.

Creating filesystems ...
Filesystems creation succeeded.

Rebooting system ...
```

b. The Install Tool banner screen (Figure 49 on page 175) reappears. Press <CR> to verify the filesystems.

The disk check reports:

```
Filesystems verification succeeded.
```

c. Confirm or enter the date and time (Figure 51).

Figure 51
Date and time

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================

You should ensure the system date and time are correct prior to
installation, since all files copied or created during install will
be time-stamped.

You can press <CR> to accept the current values.

Current date is: WEDNESDAY 16-02-2005
Enter new date (dd mm yyyy): 18 02 2005
Date is set to: FRIDAY 18-02-2005
Current time is: 09:47:18
Enter new time (hh mm ss): 08 38 30
Time is set to: 08:38:30
Current date and time is:
FRIDAY 18-02-2005, 08:38:30
```

- When reinstalling the software on an existing system, the system verifies the file systems. The disk check reports:

  ```
  Filesystems verification succeeded.
  ```

  The system summary appears (Figure 52 on page 178). Enter **a** to continue the installation.

  Note: For a new installation, the data fields in the system summary are blank.

Figure 52
System Summary

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

           ----------------------------------------
                       SYSTEM INFORMATION
           ----------------------------------------

+=============================================================+
|  Hostname: SS_Node276_Ldr          S/W Ver: x.xx.xx         |
|                                                             |
|      Role: Leader                  Set TPS: Disabled        |
|   Node ID:                        Vtrk TPS: Disabled        |
|   Node IP:                      NRS Config: Alternate SIP   |
|  H.323 ID: SS_Node276_Ldr            CS IP:                 |
|                                                             |
|   ELAN IP: 192.168.10.20           TLAN IP: 192.168.20.20   |
|   ELAN SM: 255.255.255.0           TLAN SM: 255.255.255.0   |
|   ELAN GW: 192.168.10.1            TLAN GW: 192.168.20.1    |
|  ELAN MAC: 00:02:b3:c5:51:c6      TLAN MAC: 00:02:b3:c5:51:c7  |
+=============================================================+

        Please enter:
<CR> -> <a> - Continue with Install Tool.
        <q> - Quit.

        Enter Choice>
```

6 Test the disk.

- If the hard drive has never been tested or is corrupt, enter **a** at the menu shown in Figure 53 on page 179.

Figure 53
Hard disk test

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

The Install Tool cannot determine when the hard disk was last tested.

The hard disk must be tested before installation can continue.
This test will take approximately 14 minutes.


        Please enter:
<CR> -> <a> - Test the hard disk.

        Enter Choice> a
```

- If the hard disk has not recently been tested, enter **a** at the menu shown in Figure 54.

Figure 54
Not recently tested

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

The Install Tool has detected that the hard disk has not been tested
recently.

It is recommended to test the hard disk now. This test will take
approximately 14 minutes.

        Please enter:
<CR> -> <a> - Test the hard disk.
        <b> - Skip the hard disk test.

        Enter Choice> a
```

- If the hard disk has been checked in the last 24 hours, enter **a** at the menu shown in Figure 55 on page 180.

Figure 55
Tested within 24 hours

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
========================================================================

The Install Tool has detected that the hard disk has been tested
recently.

It is recommended to skip the hard disk test. If you select to test
the hard disk anyway, it will take approximately 14 minutes.

        Please enter:
<CR> -> <a> - Skip the hard disk test.
        <b> - Test the hard disk.

        Enter Choice> a
```

The following messages display on the screen:

```
Testing hard disk ...
Testing partition /u (4194241 blocks) ...
xxx% complete

Testing partition /p (4194241 blocks) ...
xxx% complete

Hard disk testing succeeded.
```

Where xxx = 0 to 100.

Note: If the physical check did not pass, contact your technical support group.

Figure 56
Install Tool Main Menu

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

                        M A I N    M E N U

The Install Tool will install Signaling Server software and related
files. You will be prompted throughout the installation.

        Please enter:
<CR> -> <a> - To perform a complete installation/upgrade (Signaling
             Server s/w, IP Phone f/w, Voice Gateway Media
             Card l/w, basic Signaling Server configuration).
        <b> - To install/upgrade Signaling Server software only.
        <c> - To copy IP Phone firmware only.
        <d> - To copy Voice Gateway Media Card loadware only.
        <e> - To perform basic Signaling Server configuration only.
        <t> - To go to the Tools Menu.
        <q> - Quit.

        Enter Choice>
```

7 At the Main Menu (Figure 56), enter **a** to install Signaling Server software. Option **a** performs options **b**, **c**, **d**, and **e**.

The following sample lines display on the screen:

```
Copying "/cd0/sse37012.p3/disk.sys" to "/u/disk.sys".
Processing the install control file ...
"/cd0/sse37012.p3/install.dat" parsed.
```

The screen shown in Figure 57 on page 182 shows actions that can be performed.

Figure 57
Installation Status

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

        ------------------------------------------------
                    INSTALLATION STATUS SUMMARY
        ------------------------------------------------

+==================+========+========+================================+
|     Option       | Choice | Status |           Comment              |
+==================+========+========+================================+
| software         |  yes   |        | new install x.xx.xx            |
+------------------+--------+--------+--------------------------------+
| firmware         |  yes   |        | copy ALL                       |
+------------------+--------+--------+--------------------------------+
| loadware         |  yes   |        | copy ALL                       |
+------------------+--------+--------+--------------------------------+
| configuration    |  yes   |        |                                |
+------------------+--------+--------+--------------------------------+

        Please enter:
<CR> -> <y> - Yes, start complete installation.
        <n> - No, cancel complete installation and return to the Main
              Menu.

        Enter Choice>
```

8 Enter **y** to start the installation. The screens shown in Figures 58 to 62, which start on page 185, appear.

Figure 58
Installation output

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

You have selected to install version x.xx.xx on the system. As
this is a new install, all necessary directories and files will
be created on the hard disk.

Starting new install of version x.xx.xx.

Initializing protected partition ...
"/p" initialized.

Creating directory ... (many directories are created here) ...
Copying ... (many files are copied here) ...

Boot ROM "/p/load/bootrom.bin" installed.
```

Figure 59
Success

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

Software version x.xx.xx was installed successfully.

All files were copied to the hard disk.
```

Figure 60
IP Phone firmware

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

The installation source contains multiple Internet Telephone firmware
files.

Copying /cd0/0603Bxx.bin" to "/u/fw/0603Bxx.bin".
Copying "/cd0/0602Bxx.bin" to "/u/fw/0602Bxx.bin".
Copying "/cd0/0604Dxx.bin" to "/u/fw/0604Dxx.bin".
```

Figure 61
Voice Gateway Media Card loadware

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

The installation source contains multiple Voice Gateway Media Card
loadware files.

Copying "/cd0/IPL4xxxx.p2" to "/u/fw/IPL4xxxx.p2".
Copying "/cd0/IPL4xxxx.sa" to "/u/fw/IPL4xxxx.sa".
```

The system echoes the ELAN network interface MAC address.

```
For future reference, the ELAN MAC address is:
"00:02:b3:c5:5l:c6".
```

This address is found on the face of the Signaling Server, on the right-hand side when the bezel door is open.

Note: The ELAN network interface MAC address must be configured in the Element Manager node configuration web page.

9 Configure the Signaling Server as Leader or Follower. See Figure 62.

- If there is not already a Leader Signaling Server in the IP Telephony node, or if the Signaling Server is to be a stand-alone Signaling Server, enter **a** at the prompt to configure this Signaling Server as Leader.
- If there is already a Leader Signaling Server in the IP Telephony node, enter **b** at the prompt to set this Signaling Server as Follower. Then go to step 13 on page 189.

For more information about Leader and Follower Signaling Servers, see *IP Line: Description, Installation, and Operation* (553-3001-365).

Figure 62
Leader/Follower Signaling Server configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================

Note: This step will over-write all existing configuration parameters
      on this Signaling Server.

Please select the role of this Signaling Server.

If this Signaling Server will be a Leader then its data networking
and IP Telephony parameters must be entered now. (This will pre-
configure the IP Telephony node files.)

If this Signaling Server will be a Follower then its data networking
and IP Telephony parameters must be configured through Element
Manager later.

        Please enter:
<CR> -> <a> - Set this Signaling Server as a Leader.
        <b> - Set this Signaling Server as a Follower.
        <q> - Quit.

        Enter Choice>
```

10 Configure the application configuration for this Signaling Server. See Figure 63.

- If the Set TPS, Virtual Trunk TPS, and optional Network Routing Service (NRS) applications are to be enabled on this Signaling Server, enter **a** at the prompt to configure this Signaling Server as a co-resident Signaling Server.
- If only the NRS is to be enabled on this Signaling Server:
  - — If this Signaling Server is to be associated with a Call Server, enter **a** at the prompt to configure this Signaling Server as a co-resident Signaling Server. After you finished installing the Signaling Server software, you can disable the Set TPS and Virtual Trunk TPS in Element Manager (refer to *Element Manager: System Administration* (553-3001-332)).
  - — If this Signaling Server is not to be associated with a Call Server, enter **b** at the prompt to set this Signaling Server as a stand-alone Signaling Server.

Figure 63
Application configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

Please select the application configuration for this Signaling Server.

        Please enter:
<CR> -> <a> - Co-resident (LTPS + VTRK + NRS).
        <b> - Stand-alone (NRS only - no Call Server).
        <q> - Quit.

        Enter Choice>
```

11 Select the Network Routing Service (NRS) to be provided by this Signaling Server. See Figure 64 for a co-resident Signaling Server or Figure 65 on page 188 for a stand-alone Signaling Server.

- Enter **a** if this Signaling Server will provide an H.323 Gatekeeper and a SIP Redirect/Proxy Server.
- Enter **b** if this Signaling Server will provide only an H.323 Gatekeeper.
- Enter **c** if this Signaling Server will provide only a SIP Redirect/Proxy Server.
- Enter **d** if this Signaling Server is a Leader Signaling Server and will not provide an NRS. Go to step 13 on page 189.

Refer to *IP Peer Networking: Installation and Configuration* (553-3001-213) for more information on the NRS.

Figure 64
Network Routing Service (NRS) — co-resident Signaling Server

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=====================================================================

Please select the Network Routing Service (NRS) configuration for this
Signaling Server.

        Please enter:
<CR> -> <a> - H.323 Gatekeeper and SIP Redirect/Proxy Server.
        <b> - H.323 Gatekeeper only.
        <c> - SIP Redirect/Proxy Server only.
        <d> - None.

        Enter Choice>
```

Figure 65
Network Routing Service (NRS) — stand-alone Signaling Server

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

Please select the Network Routing Service (NRS) configuration for this
Signaling Server.

        Please enter:
<CR> -> <a> - H.323 Gatekeeper and SIP Redirect/Proxy Server.
        <b> - H.323 Gatekeeper only.
        <c> - SIP Redirect/Proxy Server only.

        Enter Choice>
```

12 Select the type of NRS to be provided by this Signaling Server. See Figure 66 for a co-resident Signaling Server. See Figure 67 on page 189 for a stand-alone Signaling Server.

- If this Signaling Server is to be the Primary NRS, enter **a**.
- If this Signaling Server is to be the Alternate NRS, enter **b**.
- If this Signaling Server is not a stand-alone Signaling Server and is to be the Failsafe NRS, enter **c**.

Refer to *IP Peer Networking: Installation and Configuration* (553-3001-213) for more information on the NRS.

Figure 66
NRS type — co-resident Signaling Server

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

Please select the type of Network Routing Service (NRS) for this
Signaling Server.

        Please enter:
<CR> -> <a> - Primary.
        <b> - Alternate.
        <c> - Failsafe.

        Enter Choice>
```

Figure 67
NRS type — stand-alone Signaling Server

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

Please select the type of Network Routing Service (NRS) for this
Signaling Server.

        Please enter:
<CR> -> <a> - Primary.
        <b> - Alternate.

        Enter Choice>
```

13 Enter the data networking and IP telephony parameters for the Signaling Server, as prompted.

- If this is a Leader Signaling Server, enter the parameters for the Node, ELAN network interface, TLAN network interface, and Call Server as required. See Figure 68 on page 190. For the Call Server:
  - — If installing the Signaling Server at an office that is not a branch office, enter the ELAN network interface IP address of the Call Server.
  - — If installing the Signaling Server at a branch office, enter the ELAN network interface IP address of the MG 1000B Core.
- If this is a Follower Signaling Server, enter the Hostname of the Leader Signaling Server. See Figure 69 on page 190. Then go to step 15 on page 192.
- If this is a stand-alone Signaling Server and not associated with a Call Server (that is, **b** was selected in step 10 on page 186), enter the TLAN subnet parameters as required. The Call Server IP address is automatically set to 0.0.0.0. See Figure 70 on page 191. Then go to step 14 on page 191.

The IP information applies to a temporary IP Telephony node.

Note: IP addresses shown in Figure 68, Figure 69 on page 190, and Figure 70 on page 191 are examples.

Figure 68
Leader Signaling Server configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

Please enter the data networking and IP Telephony parameters for
this Leader Signaling Server.

Node ID         : 276

Hostname        : SS_Node276_Ldr

ELAN IP         : 192.168.10.20
ELAN subnet mask: 255.255.255.0
ELAN gateway IP : 192.168.10.1

TLAN IP         : 192.168.20.20
TLAN subnet mask: 255.255.255.0
TLAN gateway IP : 192.168.20.1

Node IP         : 192.168.10.20

Call Server IP  : 192.168.10.10
```

Figure 69
Follower Signaling Server configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

This Follower Signaling Server will obtain its data network and IP
telephony configuration from the Leader Signaling Server at boot.

To identify this Signaling Server, please enter a Hostname.

Hostname : SS_Node276_Ldr
```

Figure 70
Stand-alone Signaling Server configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

Please define the data networking parameters for this Standalone
Signaling Server. Note that the ELAN parameters are necessary for
management access (e.g. SNMP).

Hostname         : SS_SA

ELAN IP          : 192.168.10.20
ELAN subnet mask: 255.255.255.0
ELAN gateway IP : 192.168.10.1

TLAN IP          : 192.168.20.20
TLAN subnet mask: 255.255.255.0
TLAN gateway IP : 192.168.20.1
```

14 Enter the Primary NRS IP address or the Alternate NRS IP address, depending on the option entered in step 11 on page 187 or step 12 on page 188.

- If **b** was entered in step 12, enter the address of the Primary NRS. See Figure 71 on page 192.
- f **a** was entered in step 12, you can enter the address of the Alternate NRS if you know it, but it is not required. See Figure 72 on page 192.
- If **c** was entered in step 12:
  - — Enter the address of the Primary NRS. See Figure 71.
  - — Enter the address of the Alternate NRS. See Figure 72.
- If **d** was entered in step 11:
  - — Enter the address of the Primary NRS (optional). See Figure 71.
  - — If you did enter the address of the Primary NRS, enter the address of the Alternate NRS (also optional). See Figure 72.

The Gatekeeper configuration can be updated later using Element Manager.

Figure 71
Primary NRS IP address

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

Please enter the Primary NRS IP Address:

Primary NRS IP   :
```

Figure 72
Alternate NRS IP address

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
=============================================================================

Please enter the Alternate NRS IP Address:

Alternate NRS IP :
```

15 Enter **y** to confirm the parameters. See Figure 73 on page 193.

The example in Figure 73 is for a Leader Signaling Server configured with an Alternate H.323 and SIP NRS. The confirmation screens for a Follower and stand-alone Signaling Server are similar, showing the same list of parameters, specifically:

- The screen for the Follower Signaling Server displays only the value for the Hostname parameter; all other values are blank.
- The screen for the stand-alone Signaling Server displays values for the Hostname, ELAN network interface, TLAN network interface, and NRS parameters. The Node ID field is set to 0. The Call Server IP field is set to 0.0.0.0.

Figure 73
IP Telephony parameter configuration

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

You have entered the following parameters for this Leader
Signaling Server:

Node ID          : 276
Hostname         : SS_Node276_Ldr
ELAN IP          : 192.168.20.100
ELAN subnet mask: 255.255.255.0
ELAN gateway IP : 192.168.10.1
TLAN IP          : 192.168.20.20
TLAN subnet mask: 255.255.255.0
TLAN gateway IP : 192.168.20.1
Node IP          : 192.168.20.100
Call Server IP   : 192.168.10.10
NRS configuration: Alternate GK + SIP
Primary NRS IP    : 192.168.20.10
Alternate NRS IP : 192.168.20.24

         Please enter:
<CR> -> <y> - Yes, these parameters are correct.
         <n> - No, these parameters are not correct.

         Enter Choice>
```

The system echoes the ELAN network interface MAC address.

```
For future reference, the ELAN MAC address is:
"00:02:b3:c5:5l:c6".
```

This address is on the face of the Signaling Server, on the right side when the bezel door is open.

Note: The ELAN network interface MAC address must be configured in the Element Manager node configuration web page.

16 To complete the installation, the Installation Status Summary screen appears as shown in Figure 74 on page 194.

Figure 74
Installation Status Summary

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

        ------------------------------------------------
                    INSTALLATION STATUS SUMMARY
        ------------------------------------------------

+=================+========+========+==============================+
|     Option      | Choice | Status |           Comment            |
+=================+========+========+==============================+
| software        |  yes   |   ok   | new install/upgrade x.xx.xx  |
+-----------------+--------+--------+------------------------------+
| firmware        |  yes   |   ok   | copy i2002 version 1.xx      |
| firmware        |  yes   |   ok   | copy i2004 version 1.xx      |
| firmware        |  yes   |   ok   | copy PhaseII IP Firmware     |
|                 |        |        | version x.xx                 |
+-----------------+--------+--------+------------------------------+
| loadware        |  yes   |   ok   | copy IP Line x.xx.xx for P2  |
| loadware        |  yes   |   ok   | copy IP Line x.xx.xx for SA  |
+-----------------+--------+--------+------------------------------+
| configuration   |  yes   |   ok   | set as Leader/Follower       |
+-----------------+--------+--------+------------------------------+

Please press <CR> when ready ...
```

17 Press <CR> to exit to the Main Menu (see Figure 56 on page 181). Enter **q** at the Main Menu to quit the installation process. Figure 75 on page 195 appears. Enter **q** again.

Figure 75
Quit

```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================
You have selected to quit the Install Tool.

Before quitting and rebooting the system, remove all disks (floppy,
CDROM) from the drives.

        Please enter:
<CR> -> <m> - Return to previous menu.
        <q> - Quit and reboot the system.

        Enter Choice> q
```

18 Remove the CD-ROM from the drive and reboot the system.

Note: After software installation and reboot, a Follower Signaling Server sends out BOOTP requests and waits for a response. Since the Follower Signaling Server is not yet configured in an IP Telephony node, there is no BOOTP response. For more information see *Signaling Server: Installation and Configuration* (553-3001-212).

End of Procedure

Use Element Manager to install the Follower Signaling Server in the IP Telephony node.

Logging in to the Signaling Server

Use Procedure 45 on page 196 to log in to the vxWorks™ shell to access the Signaling Server from a maintenance terminal.

Procedure 45
Logging in to the Signaling Server

Before you begin, make sure the DTE–DTE null modem cable (supplied with the Signaling Server) runs between the serial port on the back of the Signaling Server and the maintenance terminal.

1 Make sure the Signaling Server is powered up and connected to the maintenance terminal.

The Signaling Server must boot successfully before the user can log in.

2 Press <CR> to invoke the login prompt.

3 Enter the login credentials.

Note: If the Signaling Server has connected to the Call Server (the startup messages indicate if the PBX link is up), use the PWD1 login to access the Signaling Server.

a. Enter the default Signaling Server Command Line Interface (CLI) login **`admin`**.

b. Enter the Signaling Server Command Line Interface (CLI) password.

- If this Signaling Server has just been installed and you are logging in for the first time, enter the default password **`cseadmin`**.

  The system immediately prompts you to change the default password.

- If this is not the first login to the Signaling Server, enter the appropriate password.

  If you have forgotten the password, reset it from the Tools Menu (see *Signaling Server: Installation and Configuration* (553-3001-212).

End of Procedure

To log out of the Signaling Server, enter **`exit`** at the command line.

Verifying a successful configuration

To ensure that the Signaling Server Ethernet connections (for the ELAN and TLAN subnets) are configured correctly, perform a ping test to one or more of the other devices connected to the network, particularly the Call Server.

Procedure 46
Verifying the Signaling Server Ethernet connection

1. Log in to the Signaling Server, using Procedure 45 on page 196.
2. Ping the IP address of the Signaling Server. Enter the command:

   `ping x.x.x.x`

   Where **`x.x.x.x`** is the Signaling Server ELAN network interface IP address.
3. Ping the IP address of the Call Server. Enter the command:

   `ping x.x.x.x,3`

   Where **`x.x.x.x`** is the Call Server ELAN network interface IP address.
4. If desired, repeat step 3 for other devices connected to the network.

End of Procedure

Testing the Leader Signaling Server

Configure two IP Phones to register to the Signaling Server on its temporary node. These IP Phones must be provisioned on the Call Server.

Configuring the CS 1000E Call Server

Contents

This section contains information on the following topics:

Introduction

The CS 1000E system requires the configuration of an IP telephony node. The configuration data is stored in the BOOTP.TAB and CONFIG.INI files on the CS 1000E. Copies of both files are maintained on each node component (Signaling Server and Media Card).

The preconfigured IP telephony configuration files from the leader Signaling Server must be imported. These files are saved on the CS 1000E as:

- c:/u/db/node/node*x*.cfg where *x* is the node number
- c:/u/db/node/node*x*.btp where *x* is the node number

IMPORTANT!

Do not attempt to alter the configuration files either manually or with OTM's ITG or IP Phone management. Use Element Manager only.

The node database files are backed up along with the customer database using the LD 43 EDD command.

This chapter contains the following procedures:

Enabling the Login Name option

Follow Procedure 47 to enable the Login Name option.

Procedure 47
Enabling the Login Name option

1 Log in to the CS 1000E.

a. Enter the command:

```
LOGI
```

b. Enter PASS? **<xxxx>**

Where:

<xxxx> = password for the system

System response:

```
WARNING: THE PROGRAMS AND DATA STORED ON THIS SYSTEM
ARE LICENSED TO OR ARE THE PROPERTY OF Nortel AND
ARE LAWFULLY AVAILABLE ONLY TO AUTHORIZED USERS FOR
APPROVED PURPOSES. UNAUTHORIZED ACCESS TO ANY
PROGRAM OR DATA ON SYSTEM IS NOT PERMITTED. THIS
SYSTEM MAY BE MONITORED AT ANY TIME FOR OPERATIONAL
REASONS. THEREFORE, IF YOU ARE NOT AN AUTHORIZED
USER, DO NOT ATTEMPT TO LOGIN.

TTY #00 LOGGED IN ADMIN2 16:17 22/10/2002
```

2 Enter the command:

```
LD 17
```

System response:

```
CFN000
MEM AVAIL: (U/P): 1015918 USED U P: 138773 24956
TOT:1179647
DISK RECS AVAIL: 486
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

3 Enter the command:

```
CHG
```

4 Enter the command:

```
TYPE PWD
```

5 Enter the command:

```
PWD2 <xxxx>
```

Where:

<xxxx> = your current level 2 password

6 Enter the command:

```
LNAME_OPTION YES
```

System response:

```
DEFAULT LOGIN NAMES SAVED

MEM AVAIL: (U/P): 1015893 USED U P: 138773 24981
TOT: 1179647
DISK RECS AVAIL: 486
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

7 Enter the command:

```
REQ ****
```

End of Procedure

Configuring login IDs and passwords

For increased security:

- Change the default login username and password.
  The default login is username **admin1** and password **0000**, as used throughout this guide.
- Configure the Limited Access Password (LAPW) IDs and passwords.

Follow Procedure 48 to configure login IDs and passwords.

Procedure 48
Configuring login IDs and passwords

1 Enter the command:

```
LD 17
```

```
CFN000
MEM AVAIL: (U/P): 1015918 USED U P: 138773 24956
TOT:1179647
DISK RECS AVAIL: 486
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

2 Enter the command:

```
REQ CHG
```

3 Enter the command:

```
TYPE PWD
```

4 Enter the command:

```
PWD2 <xxxx>
```

Where:

<xxxx> = your current level 2 password

5 Enter the command:

```
LNAME_OPTION
```

6 Enter the command:

```
NPW1 <xxxx>
```

```
OR
```

<cr> for no change

Where

<xxxx> = new PWD1 password

7 Enter the command:

```
LOGIN_NAME <xxxx>
```

OR

<cr> for no change

Where:

<xxxx> **=** new PWD1 login name

8 Enter the command:

NPW2 ***<xxxx>***

OR

<cr> for no change

Where:

<xxxx> **=** new PWD2 password

9 Enter the command:

LOGIN_NAME ***<xxxx>***

OR

<cr> for no change

Where:

<xxxx> = new PWD2 login name

10 Enter the command:

LAPW ***<nn>***

Where:

<nn> = new or changed LAPW password number (0-99)

11 Enter the command:

PWTP ***ovly***

12 Enter the command:

PWnn ***<xxxx>***

Where:

<xxxx> = LAPW nn password

13 Enter the command:

LOGIN_NAME ***<xxxx>***

Where:

<xxxxx> = LAPW nn login name

14 Enter the command:

```
OVLA <xx>
```

Where:

<xx> = ***all*** or the list of overlays allowed

15 Enter the command:

```
CUST <xx>
```

Where:

<xx> = ***all*** or the list of customers allowed

16 Enter the command:

```
MAT YES
```

17 Enter the command:

```
MAT_READ_ONLY NO
```

System response:

```
MEM AVAIL: (U/P): 1015893 USED U P: 138773 24981
TOT: 1179647
DISK RECS AVAIL: 486
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

18 Enter the command:

```
REQ ****
```

End of Procedure

Enabling the multi-user option

Follow Procedure 49 to enable the multi-user option.

Procedure 49
Enabling the multi-user option

1 Enter the command:

```
LD 17
```

System response:

```
CFN000
MEM AVAIL: (U/P): 1015918 USED U P: 138773 24956
TOT: 1179647
DISK RECS AVAIL: 486
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

2 Enter the command:

```
REQ chg
```

3 Enter the command:

```
TYPE ovly

....
```

4 Enter the command:

```
MULTI_USER on
```

System response:

```
MEM AVAIL: (U/P): 1015893 USED U P: 138773 24981
TOT: 1179647
DISK RECS AVAIL: 486
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

5 Enter the command:

```
REQ ****
```

End of Procedure

Configuring pseudo-terminals (PTYs)

CS 1000E provides two ports (COM1 and COM2) on the CPU. A Terminal Server is used to provide additional serial ports for specific applications, such as ACD, BGD, CTY, MCT, PMS, and TRF. Each configured Terminal Server serial port automatically starts an rlogin session with a user ID to a dedicated pseudo (PTY) port in the CS 1000E system. Nortel recommends configuring at least two PTYs for general use (rlogin sessions with no user ID). In practice, a maximum of 14 PTYs can be used, leaving 2 TTYs for COM1 and COM2 on the CPU card. Login to PTY is case sensitive.

Every PTY configured is given a user ID "PTYx", where x is the port number assigned to the PORT prompt. If no input is entered for the PORT prompt, the default value is the same as the TTY number. Nortel recommends using the default value for easy management. When an rlogin session is initiated with a user ID, the Call Server searches for a free PTY with a matching user ID. The search starts with the highest configured PTY number and progresses in descending order of the PTY number. If no free PTY with a matching user ID is found, the connection is refused. In this case, TTY012 message is printed on the administration terminal. When an rlogin session is initiated with no user ID specified, the Call Server searches for a free PTY. The search starts from the lowest configured PTY number and progresses in ascending order of the PTY number. The first available PTY is used to open the rlogin session. In order to minimize the probability of having a PTY configured for a specific application being used for general rlogin sessions, PTYs of specific applications are configured to start with the highest TTY number, such as 15, and progress in descending order. PTYs for general use are configured to start with the lowest number and progress in ascending order.

Follow Procedure 50 to configure pseudo-terminals.

Procedure 50
Configuring pseudo-terminals (PTYs)

Nortel recommends that at least two PTYs be configured. A maximum of four PTYs can be allocated on a CS 1000E system.

1 Enter the command:

```
LD 17
```

System response:

```
CFN000
MEM AVAIL:(U/P):1019254 USED U P:138012 22381
TOT:1179647
DISK RECS AVAIL: 491
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
```

2 Enter the command:

REQ **CHG**

3 Enter the command:

TYPE **CFN**

4 Enter the command:

ADAN **NEW TTY** ***<x>***

Where:

<x> = an available TTY number (0-15)

5 Enter the command:

TTY_TYPE **PTY**

6 Enter the command:

PORT ***<y>***

Where:

<y> = an available PTY port (0-7)

7 Enter the command:

DES ***<z>***

Where:

<z> = designator (for example, ““***"ether 1"***)

8 Enter the command:

FLOW **NO**

9 Enter the command:

USER **MTC BUG SCH**

10 Enter the command:

```
TTYLOG NO
```

11 Enter the command:

```
BANR YES
```

System response:

```
MEM AVAIL: (U/P):1019130 USED U P: 138064 22453
TOT: 3555327
DISK RECS AVAIL: 491
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
ADAN DATA SAVED
```

12 Enter the command:

```
ADAN ****
```

End of Procedure

Checking PTY status

Follow Procedure 51 to check the PTY status.

Procedure 51
Checking PTY status

Pseudo-terminals show enabled only if you are using them.

1 Enter the command:

```
LD 37
```

2 Enter the command:

```
STAT
```

System response:

```
TTY 0: ENBL DES: ...
TTY 1: ENBL DES: ...
TTY 2: ENBL DES: ...
TTY 3: ENBL DES: ...
TTY 12: DSBL DES: ether 1
```

```
TTY 13: DSBL DES: ether 2
TTY 14: DSBL DES: ether 3
```

3 Enter the command:

```
****
```

4 Perform an EDD to save your changes.

End of Procedure

Configuring Virtual Tone and Conference Circuits

Virtual Tone and Conference Circuits must be defined for use by each MG 1000E. Use LD 17 to add Virtual Tone and Conference circuits (VXCT). Each VXCT consists of two loops. The VXCT must start with an even loop number. The Virtual Tone and Conference Circuits in the same MG 1000E must occupy contiguous double loops. For easy management, Nortel recommends to start the VXCT loops from a loop number high enough (for example, 60) to leave enough superloop number for all MG 1000E superloops. If an MG 1000E has two Virtual Tone and Conference Circuits and the starting loop is 60, VXCTs 60 and 62 must be configured.

LD 17 – Add Virtual Tone and Conference loops.

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	CEQU	Common Equipment
...	...	
VXCT	x...x	Add a Virtual Tone and Conference Circuit. Where: x...x = 0, 2, 6, ... 158 It is recommended that Virtual Tone and Conference loops start as a multiple of 4 and be configured as even loops thereafter, i.e. 60, 62, 64, 66. Virtual Tone and Conference loops in the same MG 1000E must occupy adjacent double loops.

Configuring the MG 1000E Bandwidth Management Zones

Follow Procedure 52 for configuring bandwidth management zones.

Procedure 52
Configuring MG 1000E Bandwidth Management Zone

1. Enter LD 117 and press <cr>.
2. Enter NEW ZONE 0, to create a new zone with default parameters.

   Note: LD 117 also includes DIS and ENL commands to disable or enable a zone. When you create a zone, its default state is enabled. See LD 117 – Bandwidth management zone commands on page 212.
3. Print zone and bandwidth information using PRT INTRAZONE or PRT INTERZONE.
4. Exit from LD 117 by entering the command: ****

LD 117 – Bandwidth management zone commands

Command	Description
NEW ZONE xxx p1 p2 p3 p4 p5	Create a new zone, where: xxx = zone number = (0) - 255. p1 = Intrazone available bandwidth = 0 - (10 000) - 100 000 (Kbps) p2 = Intrazone preferred strategy = (BQ for Best Quality) or BB for Best Bandwidth p3 = Interzone available bandwidth = 0 - (10 000) - 100 000 (Kbps) p4 = Interzone preferred strategy = BQ for Best Quality or BB for Best Bandwidth p5 = Zone resource type = (shared) or private
NEW ZONE xxx	Create a new zone with default values for the parameters: p1 = 10 000 (Kbps) p2 = BQ p3 = 10 000 (Kbps) p4 = BQ p5 = shared
CHG ZONE xxx p1 p2 p3 p4 p5	Change parameters of a zone. All parameters, including those that are unchanged, must be re-entered.
OUT ZONE xxx	Remove a zone.
DIS ZONE xxx	Disable a zone. When a zone is disabled, no new calls are established inside, from, or toward this zone.
ENL ZONE xxx	Enable a zone.
PRT ZONE xxx	Print zone and bandwidth information.

End of Procedure

The type of any Bandwidth Management Zone for MG 1000E with conference resources configured must be shared.

Distortion in Music is expected when G.729AB codec is used. Hence the Interzone and the Intrazone policies for an MG 1000E Bandwidth Management Zone should have Best Quality to give preference to G711 codec to minimize of occurrence of music distortion.

IMPORTANT!

Currently, the CS 1000E only supports Recorded Announcement Broadcast and Music Broadcast.

Ensure that the bandwidth provisioned is adequate to provide the acceptable blocking level of the resources in the MG 1000E. Refer to the *Communication Server 1000E: Planning and Engineering* (553-3041-120) for details.

Configuring the MG 1000E ports

IP addresses must be configured on the Call Server for each MG 1000E in the system. Use LD 97 to configure the MG 1000E ports.

LD 97 – Configuring the MG 1000E ports (Part 1 of 2)

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	SUPL	Superloop
SUPL	0, 4, 8, -252	Superloop number
SLOT	<cr>	Select default
SUPT	IPMG	MG 1000E
IPRO	xx.xx.xx.xx	IP address of the first MG 1000E Uplink IP address; <cr> to skip to IPR1 when configuring new superloop.

LD 97 – Configuring the MG 1000E ports (Part 2 of 2)

Prompt	Response	Comment
ZONE0	0-255	First MG 1000E zone number
VXTC0	l x	First MG 1000E Virtual conference circuit starting loop number. Two consecutive VXCTs are assigned. The VXCTs must be previously configured in LD 17. Where: l = 0-252 x = 0 means 1 TDS loop only. x = 1 means 1 TDS loop and 1 conference loop. x = 2 means 2 TDS loops and 2 conference loops. x = 3 means 2 TDS loops and 3 conference loops. x = 4 means 2 TDS loops and 4 conference loops. Precede with X to remove.
IPR1	xx.xx.xx.xx	IP address of second MG 1000E cabinet uplink IP address; <cr> to skip to IPR2 when configuring new superloop.
ZONE1	0-255	Second MG 1000E zone number
VXCT1	l x	Second MG 1000E Virtual conference circuit starting loop number. Two consecutive VXCTs are assigned. The VXCTs must be previously configured in LD 17. Where: l = 0-252 x = 0 means 1 TDS loop only. x = 1 means 1 TDS loop and 1 conference loop. x = 2 means 2 TDS loops and 2 conference loops. x = 3 means 2 TDS loops and 3 conference loops. x = 4 means 2 TDS loops and 4 conference loops. Precede with X to remove.

Configuring Digitone Receivers

Digitone Receivers must be configured in each MG 1000E if any analog terminals or trunks are equipped. The loop of the Digitone Receivers is the

superloop of the MG 1000E. The first MG 1000E in the superloop is on shelf 0, and the second MG 1000E's on shelf 1. Sixteen units of DTMF tone detection (DTR) are integrated within the controller (SSC) circuitry, or eight Digitone Receiver units can be configured on each of card 14 and card 15. These Digitone Receiver units are built in on the SSC card in the MG 1000E. No additional hardware is required. If Digitone Receivers units are configured in any other card slots, a receiver hardware pack must be equipped in the slot. If no hardware is equipped, the unequipped receiver units may be allocated during call processing, resulting in call failure.

Any additional tone signaling resources must be added and configured as IPE cards.

Configure Digitone Receivers in LD 13.

LD 13 – Configure the Digitone Receivers

Prompt	Response	Comment
REQ	NEW CHG	Add or change the existing data.
TYPE	a...a	Type of data block (a...a = DTR, MFC, MFE, MFK5, MFK6, or MFR)
TN	l s c u	Terminal Number l = loop for CS 1000E system. MG 1000E requiring Digitone Receivers. s = 0 or 1 c = 14 or 15 to access the integrated MG 1000E tone circuits u = 0-7 DTMF detectors (DTR) 0-3 MFR, MFC, MFE, MFK5, MFK6 units on card 15

Configuring Tone Detectors

Tone Detectors, when required, are configured in a manner similar to that for Digitone Receivers. The SSC card in the MG 1000E provides four units of Multifrequency Senders and Receivers. These units are configured on card 15

of the MG 1000E. In addition Multifrequency Transmit Level codes (MFTL0 and MFTL1) must be configured in LD 97.

LD 97 - Configure Tone Detectors

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	SYSP	System Parameters for Peripheral equipment)
...		
MFLT0	(0)-15	Multifrequency transmit level code for Identifier 0 for MG 1000E
MFLT1	(0)-15	Multifrequency transmit level code for Identifier 1 for MG 1000E

Logging in to Element Manager

To log in to Element Manager, follow the steps in Procedure 53 on page 216. Element Manager supports Microsoft ™ Internet Explorer 6.0.2600 for Windows operating systems.

Before following this procedure, see *Signaling Server: Installation and Configuration* (553-3001-212) for information about setting up a browser for optimal performance of Element Manager.

> ***Note:*** This procedure requires Service Pack 1 and Java Runtime environment.

Procedure 53
Launching Element Manager

1 Open the web browser.

2 Enter the **Signaling Server Node IP address** in the Address Bar of the browser window, and press **Enter** on the keyboard.

Note: The ELAN network interface IP address may be required, instead of the Node IP address, to access the Element Manager login web page in secure environments.

3 Element Manager opens with the **Login** web page (see Figure 76).

Note: If a security certificate has been correctly installed, and the usage rule set to "UserChoice", the user will have the option of logging in using Secure mode. If the usage rule is set to "Always", the user will be redirected to the https site, and a warning message will appear.

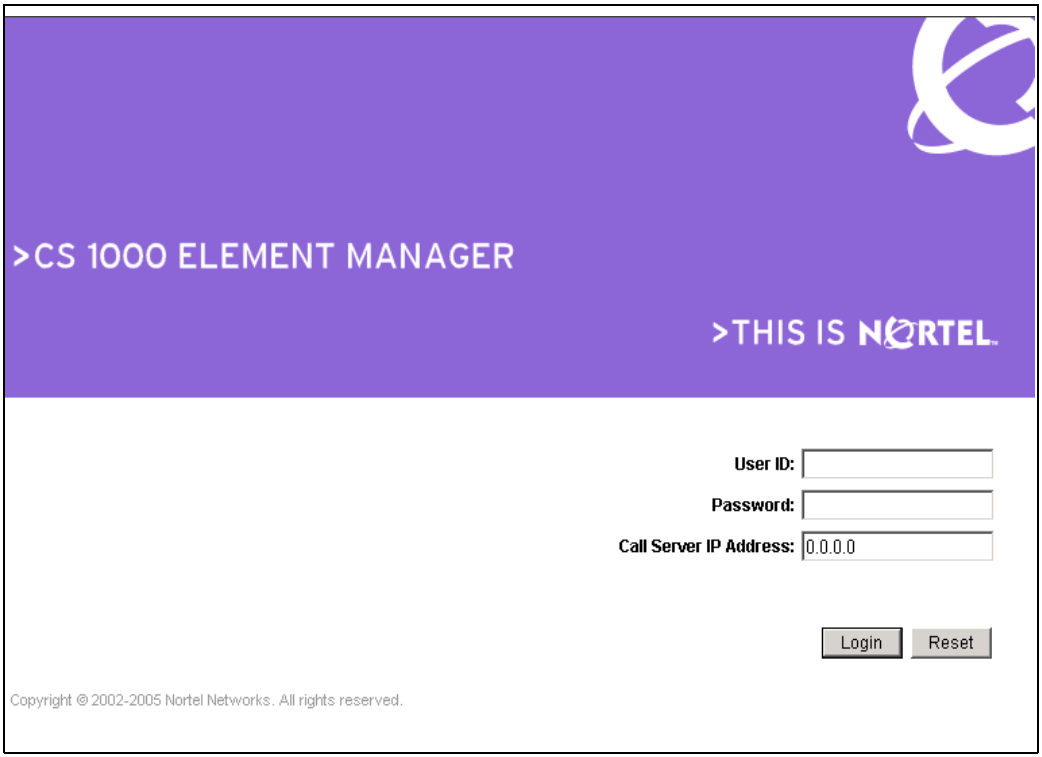
a. Enter a valid **User ID** and **Password** combination.

Note: A valid **User ID** and **Password** combination is one which is defined on the Call Server.

The IP Address of the Call Server appears in the **Call Server IP Address** field.

b. Click **Login**.

Figure 76
The Element Manager login



End of Procedure

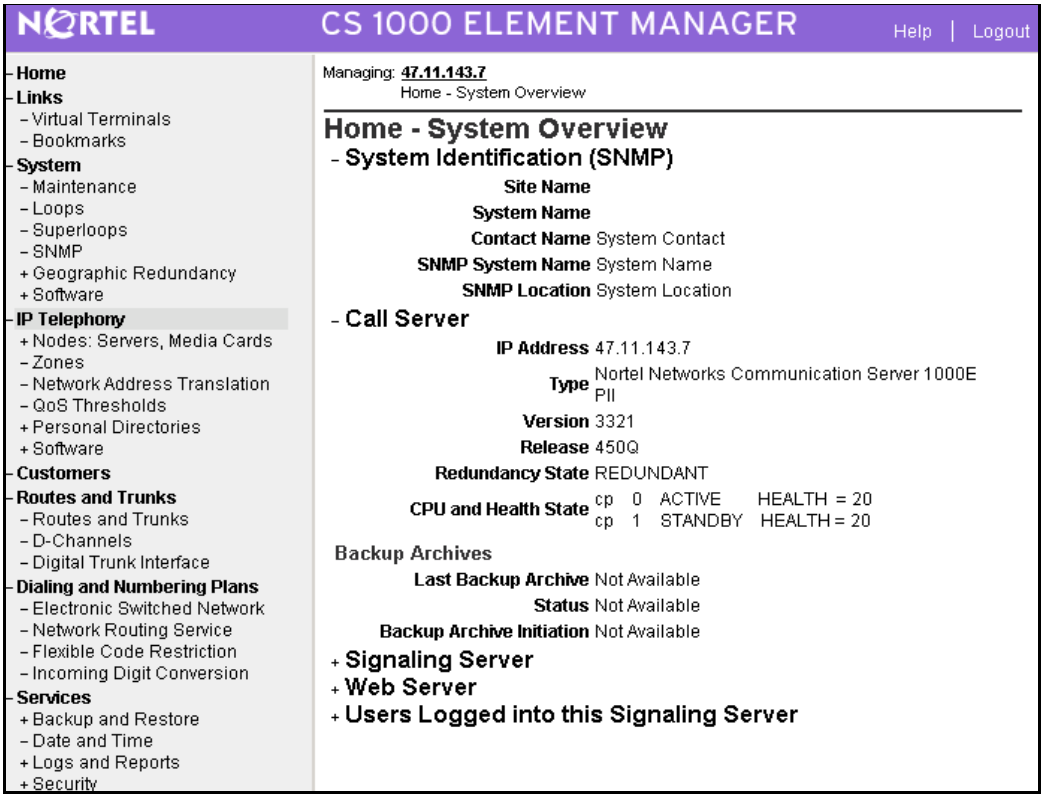
Importing preconfigured IP telephony files

Follow Procedure 54 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 54
Importing an existing node

Figure 77 displays the **Element Manager System Information** home page.

Figure 77
Element Manager – System Information



1 Select **Configuration > IP Telephony** from the navigator.

The **Node Summary** web page appears. No nodes are defined.

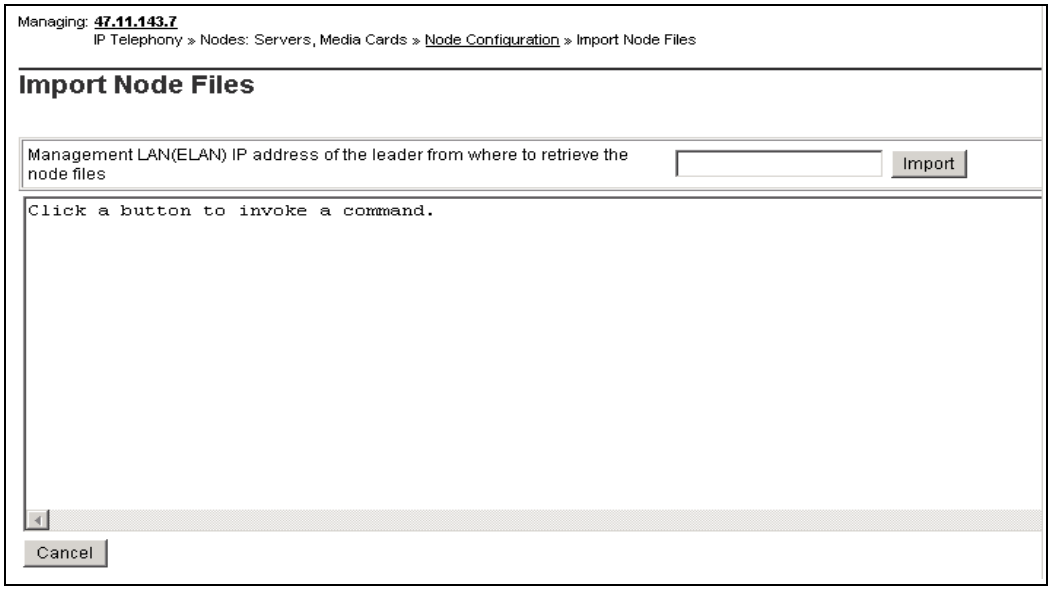
2 Import the Node files from the leader Signaling Server.

a. Click **Import Node Files** on the **Node Summary** web page.

The **Import Node Files** screen in Figure 78 on page 220 appears.

b. Enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 78
Import Node Files – Retrieve and upgrade configuration files



3 Click **Import**.

A success message appears.

4 Click **OK** to go to the next procedure.

End of Procedure

Reviewing and submitting IP telephony node configuration files

To review and submit IP telephony node configuration files, please refer to *IP Line: Description, Installation, and Operation* (553-3001-365).

Adding a Follower Signaling Server to an IP telephony node

To add a follower signaling server to an IP telephony node, follow the procedure as given in *Signaling Server: Installation and Configuration* (553-3001-212).

Performing a datadump

Follow Procedure 55 to perform a datadump using Element Manager. This procedure is an alternative to using the CLI to perform a datadump. The datadump backs up new IP Telephony node files on the CS 1000E at the same time that it backs up the customer database.

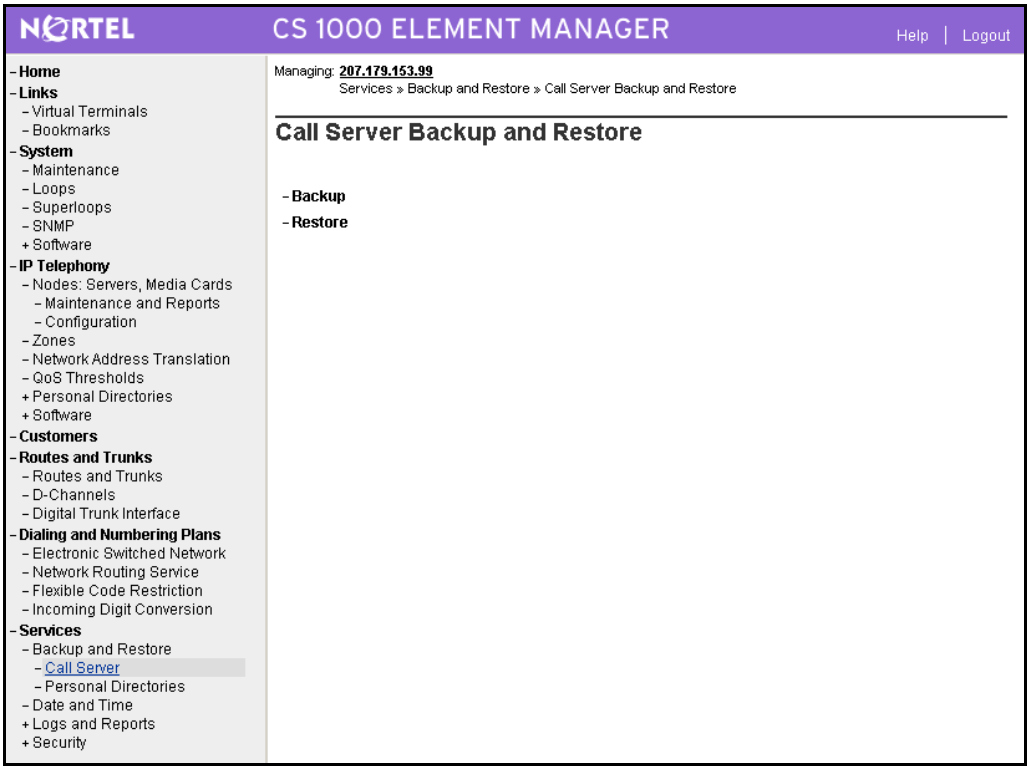
Procedure 55
Performing a datadump using Element Manager

From Element Manager (see Figure 76 on page 218 for details on logging in), do the following:

1 Choose **Services > Backup and Restore > Call Server** from the navigator.

The **Call Server Backup and Restore** web page opens (see Figure 79 on page 222).

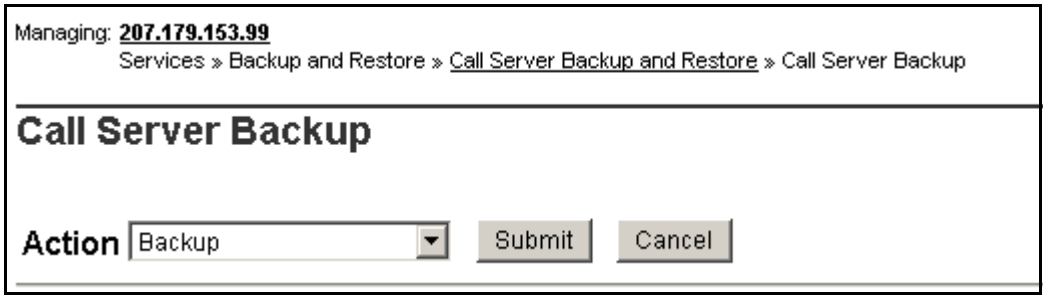
Figure 79
Call Server Backup and Restore web page



2 Select **Backup**.

The **Call Server Backup** web page appears (see Figure 80 on page 223).

Figure 80
CS 1000E Backup



3 Select **Backup** from the **Action** drop-down list box.

4 Click **Submit**.

The message displays indicating “Backup in progress. Please wait...”

5 Click **OK** in the **EDD complete** dialog box.

The Backup function then displays information in a tabular form, indicating the actions that were performed.

End of Procedure

Configuring a Small System Controller

Contents

This section contains information on the following topics:

Introduction

An NTDK20 Small System Controller (SSC) must be installed in each Media Gateway. Security devices and Daughterboards can be installed on the SSC prior to its placement in a Media Gateway. See Table 13 for details on the SSC, including available accessories.

Table 13
Small System Controller profile (Part 1 of 2)

Property	Description
Order Code	• NTDK20HA
Power	• Powered through a Media Gateway
Cooling	• Provided by the Media Gateway
Card slots	• None

Table 13
Small System Controller profile (Part 2 of 2)

Property	Description
Connectors	• Port 1 – 100BaseT • Port 2 – 100BaseT (optional) • Port 3 – 100BaseT • Port 4 – 100BaseT (optional)
Required components	• Remote Security Device (NTDK57DA) • Software daughterboard (NTM400)
Accessories	• Flash daughterboard (NTTK25BA) • 100BaseT daughterboard (single port) (NTDK99AA) • 100BaseT daughterboard (dual port) (NTDK83AA)

Configuring an SSC can involve:

1 Procedure 56: "Installing an SSC NTM400 Software daughterboard and NTDK57 (NT_REM) remote security device" on page 227.

2 Procedure 57: "Adding a 100BaseT daughterboard (dual port) to an SSC" on page 227

3 Procedure 58: "Adding a 100BaseT daughterboard (single port) to an SSC" on page 231.

Adding a software daughterboard and remote security device

A software daughterboard (NTM400) and a remote security device (NTDK57) (NT_REM) must be installed on the SSC. Follow Procedure 56 to install these required components.

Procedure 56
Installing an SSC NTM400 Software daughterboard and NTDK57 (NT_REM) remote security device

CAUTION WITH ESDS DEVICES

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components.

1 Unpack the NTDK20 SSC, and set it aside on a clean surface.

2 Install the NTM400 Software daughterboard in the appropriate connector, as shown in Figure 84 on page 233.

3 Press firmly on the standoffs to ensure that the NTM400 Software daughterboard is secured to the SSC.

4 Insert the NTDK57 (NT_REM) Security Device with NT_REM facing out. See Figure 84 on page 233.

5 Repeat procedure for each SSC.

End of Procedure

Adding a 100BaseT daughterboard (dual port)

Follow Procedure 57 to add a 100BaseT daughterboard (dual port) to an SSC.

Procedure 57
Adding a 100BaseT daughterboard (dual port) to an SSC

CAUTION WITH ESDS DEVICES

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components.

1 Unpack the 100BaseT daughterboard (dual port) and the NTDU0606 cable.

2 Using the two NTDU0606 CAT5 Ethernet cables provided:

a. Attach the appropriate port number label “2” or “4” to the respective cable.

b. Install these cables firmly into the RJ-45 ports on the 100BaseT daughterboard (dual port) #2. Completely insert each cable. See Figure 82 on page 230 and Figure 83 on page 231.

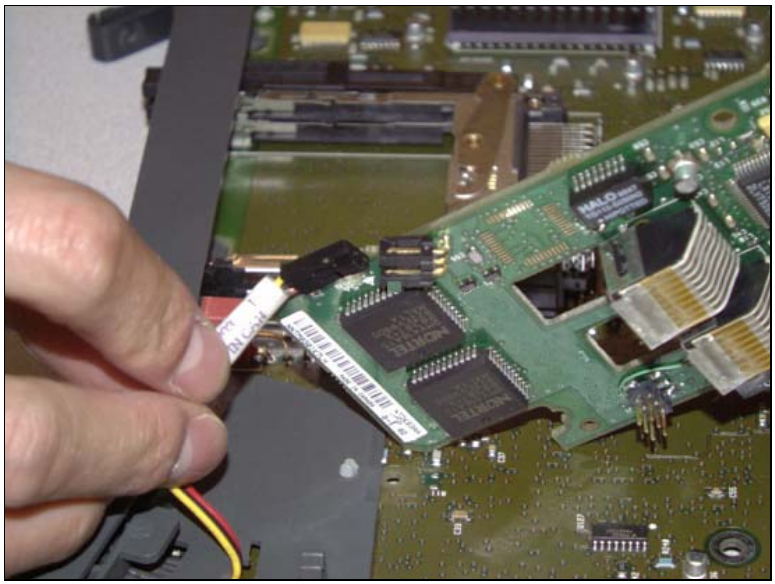
CAUTION — Service Interruption

The RJ-45 connectors located on the top of the 100BaseT daughterboard (dual port) are for Media Gateways 1 and 3.

The RJ-45 connectors located on the bottom of the 100BaseT daughterboard (dual port) are for Media Gateways 2 and 4.

3 Insert the red black yellow LED cable on the SSC into the LED connector on the 100BaseT daughterboard (dual port). See Figure 81 on page 228. This connection provides the link status display on the front cover.

Figure 81
100Baset daughterboard (dual port) LED cable connector



4 Install the 100BaseT daughterboard (dual port) in slot 2 of the SSC:

   a. Locate the alignment pin on the SSC.

   b. Insert the alignment pin into the appropriate hole on the daughterboard.

   c. Secure the 100BaseT daughterboard (dual port) using metal screw-downs on the SSC.

   d. Route the NTDU0606 Ethernet cable(s) through the plastic guides on the SSC.

   Figure 82 on page 230 shows an SSC with two 100BaseT Daughterboards (dual port).

5 Install the SSC in a Media Gateway.

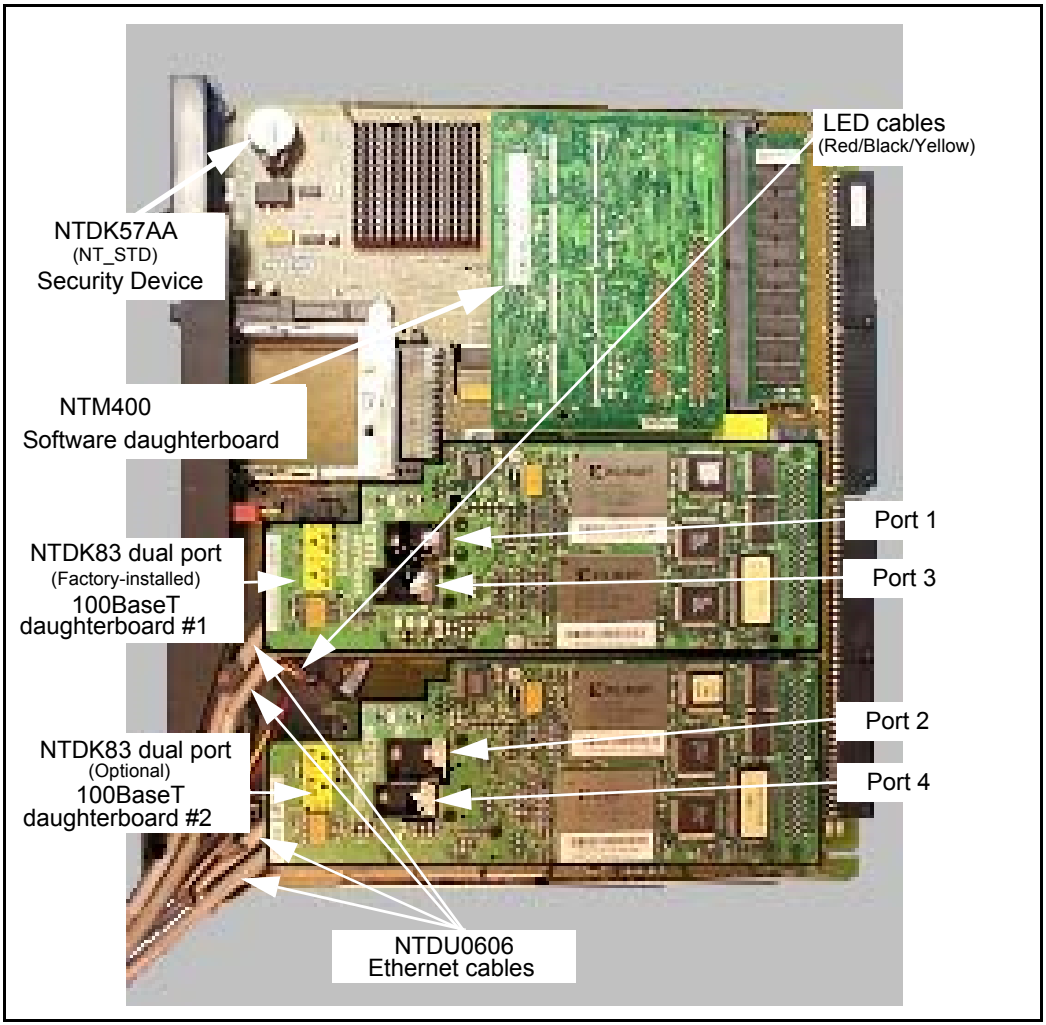
6 Connect each labeled Ethernet cable to the corresponding port number bulkhead connectors.

CAUTION — Service Interruption

7 Reinstall the front cover.

End of Procedure

Figure 82
SSC with two 100BaseT Daughterboards (dual port)



Adding a 100BaseT daughterboard (single port)

Follow Procedure 58 to add a 100BaseT daughterboard (single port) to a SSC for MG 1000T 1 to 4.

Note: The NTDK99 is only used in an MG 1000T.

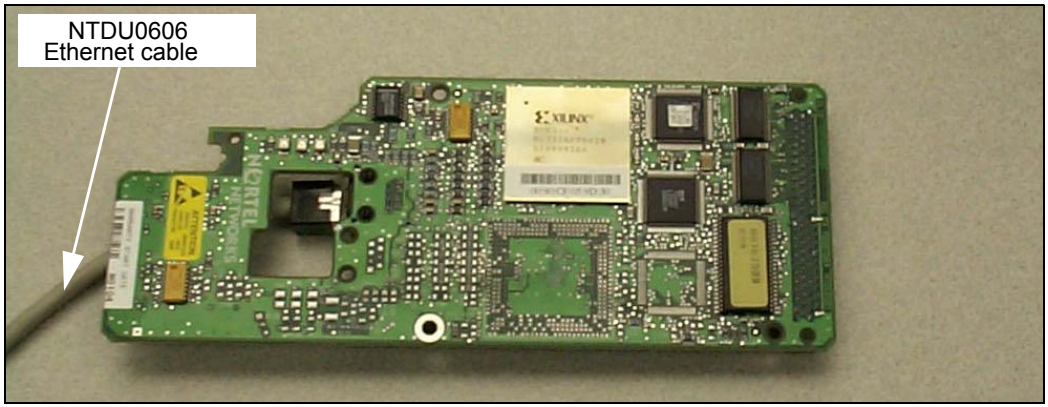
Procedure 58
Adding a 100BaseT daughterboard (single port) to an SSC

CAUTION WITH ESDS DEVICES

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components.

1 Unpack the 100BaseT daughterboard (single port) (NTDK99) and the NTDU0606 cable (see Figure 83).

Figure 83
100BaseT daughterboard (single port) (NTDK99)



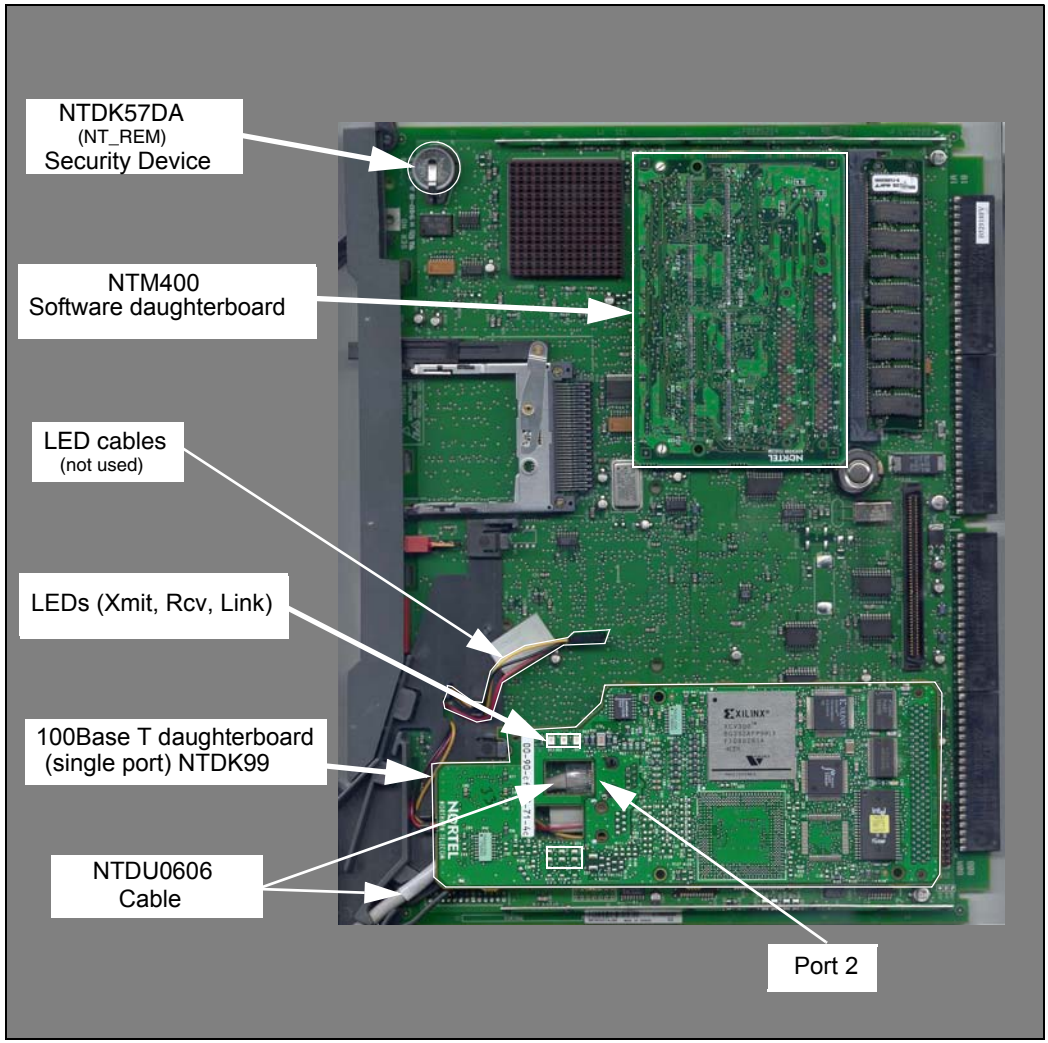
2 Using one of the NTDU0606 CAT5 Ethernet cables:

a. Attach port number label “1” to the cable.

b. Install the cable firmly into the RJ-45 port on the 100BaseT daughterboard (single port). Make sure that the cable end is inserted completely. See Figure 84 on page 233.

Note: Do not connect the LED cable to the 100BaseT daughterboard (single port).

Figure 84
SSC components including a 100BaseT daughterboard (single port)



3 Install the 100BaseT daughterboard (single port) in slot 2 of the SSC:

   a. Locate the alignment pin on the SSC.

   b. Insert the alignment pin into the appropriate hole on the 100BaseT daughterboard (single port).

   c. Secure the 100BaseT daughterboard (single port) using metal screw-downs on the SSC.

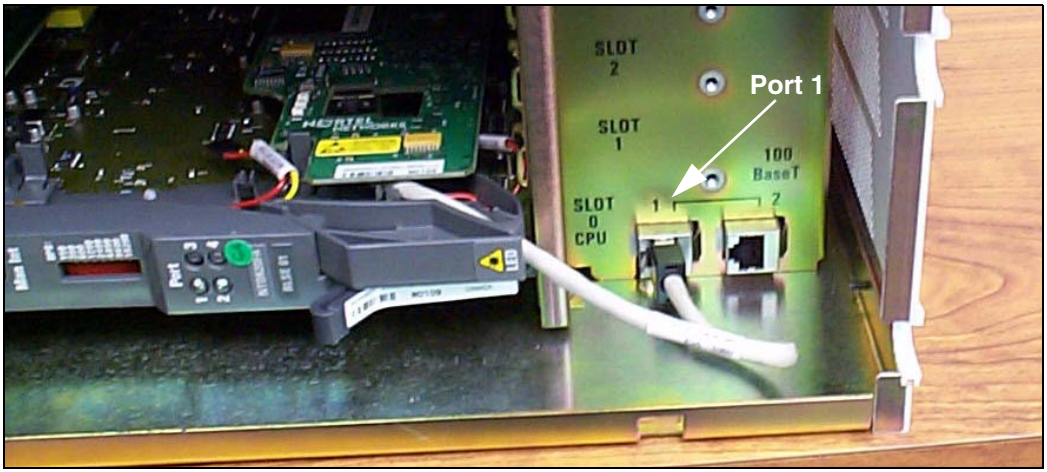
   d. Route the NTDU0606 Ethernet cable through the plastic guides on the SSC.

4 Install the SSC in the Media Gateway.

5 Connect the NTDU0606 Ethernet cable to port 1 of the Media Gateway bulkhead connector shown in Figure 85 on page 234.

6 Repeat Step 1 to Step 5 for each Media Gateway.

Figure 85
Bulkhead connector on a Media Gateway



End of Procedure

Installing software on an MG 1000E Small System Controller

Contents

This section contains information on the following topics:

Introduction

This chapter describes the software installation on the Small System Controller (SSC) in an MG 1000E using the software delivery card.

PC card interface

The SSC card has a PC card interface through a socket located on its faceplate. The PC card socket can accommodate a Software Delivery card used for software upgrading and for backup data storage. This chapter contains Procedure 59: "Installing software on an MG 1000E SSC" on page 236.

CAUTION — Service Interruption

The Nortel Networks Communication Server 1000E Release 4.5 software must be installed prior to installing the SSC software in the Media Gateways.

Media Gateways can be installed in any order.

Installing software on an MG 1000E SSC

The MG 1000E is shipped with a pre-programmed software daughterboard that must be mounted on the SSC.

IMPORTANT!

Before proceeding, ensure that the required hardware is correctly installed and that all connections are secure.

Procedure 59
Installing software on an MG 1000E SSC

1. Confirm that the outlet is providing the correct voltage. Refer to the label at the back of the equipment.
2. Connect the power cord from the power connectors at the back of the MG 1000E to an AC power source.
3. Ensure that the system terminal (TTY) is connected to the cable marked “port 0” on the NTBK48 3-port cable of the Media Gateway.
4. Turn the Media Gateway power switch to “ON”.

   System response:

   Current system time and date :

   2/14/2096 6:19:00

   Enter new time (hh:mm:ss) : 14:41:00

   Enter new date (mm/dd/yy) : 06/03/04

   14:41:0 -- 6/3/2004 is the new system time and date.

   Is this correct? (y/n/[a]bort) : y

   q]uit, [h]elp or [?], <cr> - redisplay

5 Enter **y**.

System response:

SOFTWARE INSTALLATION PROGRAM

****

Verify

Media Gateway/IP Expansion Security ID: 40000322

Call Server/Main Security ID: 19999999

****

Media Gateway/Expansion Cabinet Software Installation Main Menu :

1. Media Gateway/Expansion Cabinet Installation - From Software Delivery Card

2. Utilities

3. Media Gateway/Expansion Cabinet Installation - From Software DaughterBoard

[q]uit, [h]elp or [?], <cr> - redisplay

6 Select **Media Gateway/Expansion Cabinet Installation from Software DaughterBoard** from the menu.

Enter: **3**

System response:

```
Do you wish to do IP configuration? (y/n/[a]bort):
```

7 Configure the IP.

Enter: **y**

System response:

```
IP Configuration Menu:
2. Using Manual Configuration
3. Keep Existing Configuration
4. Print Existing Configuration

[q]uit, [p]revious, [m]ain menu, [h]elp or [?],
<cr> - redisplay

Enter Selection: _
```

8 Configure the IP address for the CS 1000E to Media Gateway link network manually.

Enter: **2**

System response:

```
Enter Media Gateway New IP Parameters:

Media Gateway IP        : x.x.x.x

Call Server IP          : x.x.x.x

Media Gateway NetMask   : x.x.x.x

Media Gateway Router    : x.x.x.x

Is this correct? (y/n/[a]bort): _
```

Note: If the Media Gateway IP and the Call Server IP are on different subnets, then the Media Gateway Router IP is prompted.

9 Confirm the IP configuration.

If correct, enter: **y**

System response:

```
Select M3900 Language Set:
1. Global 10 languages
2. Western Europe 10 languages
3. Eastern Europe 10 languages
4. North America 6 languages
5. Spare Group A
6. Spare Group B

[q]uit, [p]revious, [m]ain menu, [h]elp or [?],
<cr> - redisplay

Enter Selection: _
```

10 Select the M3900 Language Set (same as on CS 1000E).

Enter: **1**

System response:

```
Copying new PSDL ...

Copying new PSDL ...

Copying loadware files ...
```

```
Copying language files ...

Copying FIJI files ...

Detected change in system type (Pkg 298/299)

Detected change in machine type from 0 to 33

Deleting files in directory "/u/db/hi/"

Installed BOOTROM "/p/load/main_bt"ommunication
Server 1000 Software Rls 4.5 will be installed.

*** WARNING *** A system restart will be invoked
as part of the software installation process

Are you sure you wish to perform the installation?
(y/n/[a]bort): _
```

11 Perform the installation.

a. Enter: **y**

System response (if software installation successful):

```
Installation completed successfully.
```

b. The system then reboots.

```
Rebooting...
```

Once the installation program completes, messages appear on the terminal screen. When the message "INIXXX" appears, the system is operational.

End of Procedure

Installing software on an MG 1000T Small System Controller

Contents

This section contains information on the following topics:

Introduction

The Nortel Communication Server 1000 4.5 software is installed on the Small System Controller (SSC) using the Software Installation Program. The Software Installation Program provides a menu-driven method of installing, modifying, or upgrading:

- software
- feature set (packages)
- License parameters

This chapter contains the following procedures:

- Procedure 60 "Installing software on an SSC" on page 245.
- Procedure 61 "Setting system time and date" on page 250.

Software Installation Program

The Software Installation Program main menu provides access to the following functionality:

- installing software in a new system
- upgrading and modifying software in an existing system
- using utilities to work with archived databases, review data, back up data, undo an installation in progress, and clear unwanted data

In addition, the Software Installation Program has the following options:

- Clear Upgrade Information
  If the installation terminates after you enter the keycodes, but before the installation is complete, you can abort the installation with the "Clear Upgrade Information" option.
- Confirm Upgrade Information
  This option enables you to review selected installation options. You can use the "Confirm Upgrade Information" after the system validates the keycodes and before the installation is complete.
- Set system time and date
  The system time and date is usually set before installation. This makes sure that all flash drive files have the correct creation date.

IMPORTANT!

The Software Installation Program must run from TTY 0 (port 0 on card 0).

On a new system with a pre-installed software daughterboard, the Software Installation Program runs automatically.

Feature set and licenses

The Software Installation Program enables administrators to install and enable the CS 1000E system. A feature set, such as Basic Services, Advanced Services, and Premium Services, has an associated list of software packages and licenses. The Software Delivery Card can include several preconfigured

feature sets. The Software Installation Program also enables administrators to add individual packages from the feature set and change ISM system parameters.

Additions and changes are keycode controlled. Therefore, the packages and licenses must match those corresponding to the site's keycodes.

> ***Note:*** The Software Installation Program does not check the prerequisites and interactions of added packages.

AUX ID

Enter the AUX ID using the Software Installation Program. For new CS 1000E sites, the AUX ID is the system security ID.

Customer database

The Software Installation Program enables an administrator to install a customer database from one of the following sources:

- Preconfigured database — The Software Delivery card can include several preconfigured databases and their associated feature sets. In addition, a minimal database is provided containing basic system configuration information with no customer data.
- Archived database — The Software Installation Program enables the archiving of various databases which can be used later at CS 1000E sites. It also enables multiple databases to be configured off-site and then installed ready-to-use at customer sites.
- Off-site programming of databases is subject to all security keycode restrictions. The off-site system must either use the Security Device that is installed in the CS 1000E system at the customer site, or must have its own keycodes for the feature set used.
- Remote restored database — A database can be restored remotely using the LD 143 CCBR remote restore command.
- Backed up database — This option enables the copy on the backup flash drive to be installed. It is provided to recover a customer database if the customer database on the primary flash drive becomes corrupted.

Keycodes

A security keycode system protects the installation of software, feature set, and license parameters. The keycodes required for a new installation or system upgrade are on the Keycode Data Sheet that is supplied with the software and security device.

A different keycode is assigned to each site for a particular combination of items such as software release, feature set, and LICENSES. The installation does not continue unless correct keycodes are entered.

Note: If an invalid keycode is entered, the software and databases on the present system are not affected.

Note: Contact your support group if the Keycode Data Sheet is missing.

Keycode rejection

The Software Installation Program validates the keycodes. If the keycodes are valid then the installation continues. If the system rejects the keycodes, then ensure that the:

- correct keycodes have been entered
- software is the correct version for the site
- feature set data has been entered correctly
- License parameter data has been entered correctly

If the correct data has been entered and the keycodes are rejected, then stop the installation and call the support group.

IMPORTANT!

The system limits the validation of keycodes to three consecutive attempts. If the third consecutive attempt is unsuccessful, then the Software Installation Program returns to the main menu. Any data entered during this session is lost.

Installing software on an SSC

IMPORTANT!

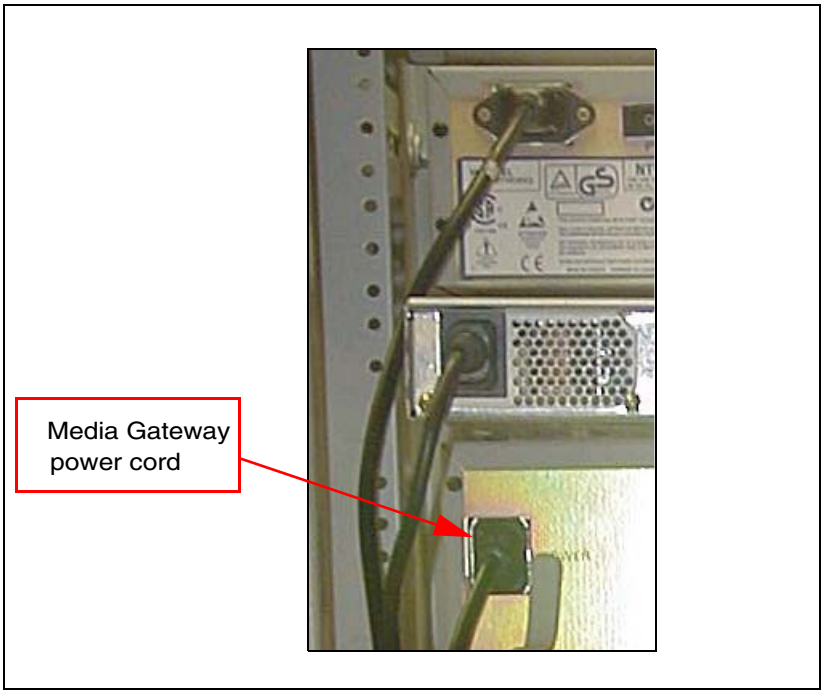
Before proceeding, ensure that the required hardware is correctly installed and that all connections are secure.

Follow Procedure 60 to power up a new system installation in preparation for loading the software.

Procedure 60
Installing software on an SSC

1. Test the power outlet.
   Make sure that the correct voltage is present before you plug the power cord into the outlet. The source must match the label at the back of the equipment.
2. Connect the power cord from the power connectors at the back of the Media Gateway to an AC power source. See Figure 86 on page 246.

Figure 86
Power connectors



3 Ensure that the system terminal (TTY) is connected to the cable marked "port 0" on the NTBK48 3-port cable of the Media Gateway.

4 Turn the Media Gateway power switch to “ON”.

System response:

```
SOFTWARE INSTALLATION PROGRAM
**********************************
Verify
Security ID: xxxxxxxx
**********************************

Technology Software Installation Main Menu:
1. Media Gateway/IP Expansion Cabinet
2. Call Server/Main Cabinet
[q]uit, [h]elp or [?], <cr> - redisplay

Enter Selection:
      Release:
      Created: Weekday Month Day hh:mm:ss EDT Year
```

5 Select Media Gateway / Expansion Cabinet Software Installation From Software Delivery Card from the menu.

a. Enter: **1**

System response:

```
Media Gateway/Expansion Cabinet Software
Installation Main Menu:
1. Media Gateway/Expansion Cabinet Installation -
From Software Delivery Card
2. Utilities

[q]uit, [p]revious, [m]ain menu, [h]elp or [?],
<cr> - redisplay

Enter Selection: _
```

6 Select Media Gateway / Expansion Cabinet Installation from Software Delivery Card from the menu.

a. Enter: **1**

System response:

```
Do you wish to do IP configuration? (y/n/[a]bort):
```

7 To manually configure the IP, go to Step 9

8 Configure the IP for the CS 1000E to Media Gateway link network automatically using the BootP.

a. Enter: **1**

System response:

```
Media Gateway New IP Parameters:
Media Gateway IP        : x.x.x.x
Call Server IP          : x.x.x.x
Media Gateway NetMask   : x.x.x.x
Media Gateway Router    : x.x.x.x

Is this correct? (y/n/[a]bort): _
```

b. If IP parameters are correct, enter: **y**

c. Go to Step 12.

9 Configure the IP for the CS 1000E to Media Gateway link network manually.

a. Enter: **2**

System response:

```
Enter Media Gateway New IP Parameters:
Media Gateway IP        : x.x.x.x
Call Server IP          : x.x.x.x
Media Gateway NetMask   : x.x.x.x
```

Layer-2 configuration

System response:

```
L2 Configuration...
Media Gateway Router: 0.0.0.0
```

10 Enter the Media Gateway Router IP for a layer-3 configuration.

a. Enter router parameter

System response:

```
Media Gateway New IP Parameters:
Media Gateway IP        : x.x.x.x
```

```
Call Server IP          : x.x.x.x

Media Gateway NetMask   : x.x.x.x

Media Gateway Router    : x.x.x.x

Is this correct? (y/n/[a]bort): _
```

11 Confirm the IP configuration.

a. If correct, enter: **y**

System response:

```
Select M3900 Language Set:
1. Global 10 languages
2. Western Europe 10 languages
3. Eastern Europe 10 languages
4. North America 6 languages
5. Spare Group A
6. Spare Group B

[q]uit, [p]revious, [m]ain menu, [h]elp or [?],
<cr> - redisplay

Enter Selection: _
```

12 Select the M3900 Language Set (same as on CS 1000E).

a. Enter: **1**

System response:

Copying new PSDL ...

Copying new PSDL ...

Copying loadware files ...

Copying language files ...

Copying FIJI files ...

Detected change in system type (Pkg 298/299)

Detected change in machine type from 0 to 33

Deleting files in directory "/u/db/hi/"

Installed BOOTROM "/p/load/main_bt"

```
Communication Server 1000 Software Rls 4.5 will be
installed.
```

```
*** WARNING *** A system restart will be invoked
as part of the software installation process

Are you sure you wish to perform the installation?
(y/n/[a]bort): _
```

13 Perform the installation.

a. Enter: **y**

System response (if software installation successful):

```
Installation completed successfully.
```

b. The system then reboots.

```
Rebooting...
```

Once the installation program completes, messages appear on the terminal screen. When the message "INIXXX" appears, the system is operational.

End of Procedure

Setting the system time and date

Follow Procedure 61 to set the system time and date. You can also use Element Manager or OTM.

Procedure 61
Setting system time and date

1 Log in to the CS 1000E.

a. Enter the command:

LOGI

System response:

```
PASS?
```

b. Enter the default password:

0000

2 Access LD 2. Enter the command:

LD 2

3 Set the time and date. Enter the command:

STAD <day> <month> <year> <hour> <minute> <second>

Where:

<day> = the day of the month (**1-31**).

<month> = the month number (**1-12**).

<year> = the year, in four-digit or two-digit form (see Note on page 251).

<hour> = the hour of the day (**0-23**).

<minute> = the minutes (**0-59**).

<second> = the seconds (**0-59**).

Sample entry:

STAD 2 9 2002 16 47 0

4 Print the current time and date. Enter the command:

TTAD

Sample system response:

```
MON 02 09 2002 14 47 05
```

Note: Except for the year, the other entries in the time-of-day output are two-digit numbers. The year can be any year from 1901 to 2099 inclusive. It can be input as a full four-digit field or as a two-digit short form. The two-digit short form is assumed to be in the range 1976 to 2075 and the appropriate addition is made when calculating the day of week and leap years.

5 Exit from LD 2. Enter the command:

****

End of Procedure

Connecting a Terminal Server

Contents

This section contains information on the following topics:

Introduction

Many third-party applications require serial port interfaces to provide a connection to a PBX. As well, support staff traditionally use serial ports to connect maintenance terminals and modems to a system for maintenance. As the CS 1000E Call Server provides only two local serial ports for these purposes, an IP-based Terminal Server is required to provide the necessary standard serial ports for applications.

As the Terminal Server is configured to automatically log in to the active Call Server upon start-up, only one Terminal Server is required for the system. It can be located anywhere on the LAN. One connection from each Call Server COM1 port is connected to the Terminal Server.

Up to 16 TTY ports can be configured with the CS 1000E Call Server. The Terminal Server can be used as a central point to manage several devices through their serial ports.

The CS 1000E system currently supports the MRV IR-8020M-101 commercial Terminal Server only.

The MRV IR-8020M-101 Terminal Server is used with the CS 1000E system to provide serial connections for accessing the CS 1000E COM ports. The user can access each COM port from a local PC through telnet sessions or from a remote PC by dialing the on-board modem.

The Terminal Server provides IP connections to each Pseudo TTY (PTY) ports 0-15 for monitoring CDR and traffic reports.

The MRV IR-8020M-101 Terminal Server is supported by the CS 1000E system. The IR-8020M-101 – In-Reach Standalone has 20 Console Ports and a V.90 internal modem. A 19-inch rack-mount kit is provided with the unit.

On the MRV IR-8020M-101 Terminal Server, port 20 is the default management port. It will be used for primary configuration of the IP address, mask address and gateway address. Port 20 is reserved for configuring the Terminal Server in a CS 1000E system. Port 1 to 19 can be configured for Serial Data Interface for the CSE1000E system components.

IMPORTANT!

Before connecting the Terminal Server to another component of the CS 1000E system, read and understand the documentation provided by the Terminal Server's manufacturer.

This chapter contains the following procedures:

- Procedure 62: "Connecting a Terminal Server to the system" on page 256
- Procedure 63: "Configure IP address for the Terminal Server" on page 257
- Procedure 64: "Run telnet from PC" on page 258

- Procedure 65: "Accessing a CS 1000E from a PC through telnet Terminal Server" on page 259
- Procedure 66: "Configuring a transparent rlogin port" on page 260
- Procedure 68: "Accessing an MRV Console Port through the on-board modem" on page 264

Configuring a Terminal Server

Follow Procedure 62 to connect a Terminal Server with a CS 1000E system. Table 14 lists the MRV cables required to install the IR-8020M-101 Terminal Server in a CS 1000E system.

Table 14
Required MRV serial cables and connectors

Order Code	Description
NTDU6302	Connects MRV Terminal Server to any standard DTE port or DCE port when a Null modem is used
NTDU6303	Used for telnet, rlogin connections
P/N-151-3028	Male RJ-45 to Male RJ-45 with connectors, 10 feet
P/N-350-0308	Female RJ-45 to Female DB9

Customer-made cables with the following pin out (as NTDU6302) can also be used. See Table 15.

Table 15
Customer made cable pin out

Pins on DB9 Female		Pins on RJ45 Male (MRV Terminal Server)	
1 6	DCD DSR	2	DTR
2	RXD	3	TxD

Table 15
Customer made cable pin out

Pins on DB9 Female		Pins on RJ45 Male (MRV Terminal Server)	
3	TXD	6	RxD
4	DTR	7	DSR/DCD
5	S GND	4 5	TxD GND RxD GND
7	RTS	1	CTS
8	CTS	8	RTS
9	N/C		

Procedure 62
Connecting a Terminal Server to the system

1 Connect the MRV P/N-151-3028 serial cable from the Terminal Server console port 20 to the PC COM port.

WARNING

Port 20 is the default console port. Do not change the configuration for port 20.

2 Plug MRV PC Card (in MRV package) into Terminal Server faceplate socket, and power on the Terminal Server.

3 Start the MRV HyperTerminal application. In Windows:

Start > Programs > Accessories > Communication > HyperTerminal.exe

4 Configure HyperTerminal to communicate with the Terminal Server's management port:

a. Set baud rate to 9600.

b. Set data bits to 8.

c. Set parity to none.

d. Set stop bit to 1.

e. Set flow control to “None”.

f. Set Terminal Emulation to VT100.

g. Press <CR> until you receive a log-in prompt.

5 Log in to the Terminal Server. Enter:

```
ACCESS
```

6 Enter the user name. Enter:

```
ADMIN
```

7 Set privileged mode. Enter:

```
SET PRIV
```

8 Enter the password. Enter:

```
SYSTEM
```

End of Procedure

Configuring the Terminal Server IP address

Procedure 63
Configure IP address for the Terminal Server

Note: The IP address can be configured or changed only from local management port 20.

1 Configure the Terminal Server’s IP address. At the In-Reach_Priv prompt. Enter:

define server ip address [ip address]

2 Configure the Terminal Server’s IP subnet mask. Enter:

define server ip subnet mask [ip address]

3 Configure the Terminal Server’s IP primary gateway address. Enter:

define server ip primary gateway address [ip address]

4 Check Terminal Server configuration. Enter:

list server ip

Example commands:

define server ip address 172.16.3.50

define server ip subnet mask 255.255.255.0

define server ip primary gateway address 172.16.3.1

End of Procedure

Telnet Terminal Server virtual management port

Connect the Terminal Server ethernet port to the ELAN using a CAT5 ethernet cable. The virtual management port 0 is accessible from an online PC using a telnet session. The Terminal Server can now be configured from the on-line PC.

Procedure 64
Run telnet from PC

1 Use **Start > Run**
Input telnet command: telnet ip-address port#

Where:
ip-address: Terminal Server IP address
Port#: The target port number on Terminal Server=2000+(xx x 100)

For Terminal Server virtual management port xx=0

Example: telnet 172.16.3.50 2000

2 Press <CR> until the MRV login prompt appears.

3 Input login password and username to log in to the virtual management port. The default password is "access".

End of Procedure

Telnet CS 1000E COM port from a PC

Connect port xx (xx = 1 - 19) of the Terminal Server to COM1 port of the CS 1000E Call Server.

Follow Procedure 65 to establish access to a Call Server from a PC through telnet Terminal Server. Use the same port number for each procedure step.

Procedure 65
Accessing a CS 1000E from a PC through telnet Terminal Server

1. Disable IP TCP Keepalive Timer so that the telnet session is always on and LAN traffic is reduced. Enter:

   ```
   DEFINE PORT xx IP TCP KEEPALIVE TIMER 0
   ```

   Where: xx = 1-19

   Note: Do not change the configuration for the default console (port 20).

2. Specify the character to be transferred for <CR> in telnet. Enter:

   ```
   define port xx TELNET NEWLINE FILTERING CR
   ```

3. Define the port baud rate to equal the baud rate of the CS 1000E COM port. Enter:

   ```
   define port xx speed [BAUDRATE]
   ```

   Where: `xx` = Port number from 1-19 and BAUDRATE = the baud rate of the connected Call Server COM port.

4. Logout. Enter:

   ```
   logout port xx
   ```

5. Check the configuration. Enter:

   ```
   list port xx alternate chara
   ```

   ```
   list port xx telnet chara
   ```

6. Run telnet on the PC.

   a. In Windows:

   Start > Run

b. Enter the Input telnet command. Enter the command:

```
TELNET xxx.xx.x.xx xxxx
```

Where:

xxx.xx.x.xx = Terminal Server IP Address

xxxx = telnet port (for port 1 to 19)

Note: The value of the target telnet port, xxxx, is determined using the following formula:

TELNET PORT = 2 000 + (port number × 100)

For example, if the telnet port is 7, then:

TELNET PORT = 2 000 + (port number x 100)
= 2 000 + (700)
= = 2700

If the Terminal Server IP Address is 172.16.3.50 and the telnet port is 7, then TELNET command line is:

TELNET 172.16.3.50 2700

Example:

telnet 172.16.3.50 2000 (telnet to virtual management port)

telnet 172.16.3.50 2700 (telnet port 7)

End of Procedure

Configuring a transparent rlogin port

The CS 1000E system uses Pseudo TTY (PTY) ports as TTY ports. All serial applications, such as CDR and Traffic, can be implemented through PTY ports. PTY ports are configured in LD 17. An external device, such as a printer, can access a Call Server PTY port through the Terminal Server by using a remote login (rlogin) session. Using HyperTerminal, follow Procedure 66 to configure a transparent rlogin port.

Procedure 66
Configuring a transparent rlogin port

1 Enable keepalive timer 1 for the port. Enter the command:

```
DEFINE PORT XX IP TCP KEEPALIVE TIMER 1
```

Where:

xx = port number

2 Enable a dedicated service using rlogin. Enter the command:

```
DEFINE PORT XX RLOGIN DEDICATED SERVICE xx.xx.xx.xx
```

Where:

xx = port number

xx.xx.xx.xx = port IP address

3 Enable the port to be accessible only by local command and from a serial connection only. Enter the command:

```
DEFINE PORT xx ACCESS LOCAL
```

Where:

xx = port number

4 Enable the In-Reach Element Manager to complete a ZMODEM transfer using the rlogin feature. Enter the command:

```
DEFINE PORT xx RLOGIN TRANSPARENT MODE ENABLED
```

Where:

xx = port number

Note 1: When the rlogin transparent mode is enabled, characters are passed raw (without interpretation) and transparently within an rlogin session. This allows the ZMODEM transfer to complete. See Table 16 for ZMODEM requirements.

Table 16
ZMODEM requirements

Feature	Setting
Typeahead	1024
TCP window size	1024
telnet CSI ES	Enabled
telnet NEW LINE FILTER	LF or Standard

5 Enable autoconnect for the port. Enter the command:

```
DEFINE PORT xx AUTOCONNECT ENABLED
```

Where:

xx = port number

6 Enable autodedicate for the port. Enter the command:

```
DEFINE PORT xx AUTODEDICATED ENABLED
```

Where:

xx = port number

7 Define a user name for the port. Enter the command:

```
DEFINE PORT xx USERNAME "ptyxx"
```

Where:

xx = port number

ptyxx = User Name is the pty port set during Call Server configuration for rlogin connection. The pty port is set using LD 17. For example, in LD 17, configure TTY 2 as pty. The port # username on Terminal Server becomes "pty2", not "PTY2" or "pty02".

Note 1: Ignore the following MRV information message during using DEFINE command. "In-Reach -729- Parameter cannot be modified by a set command". This is informational only that you must use DEFINE and not the more general SET command. It is not an error.

Note 2: The quotation marks ("") are also required around "PTYxx"

8 Log out of the port. Enter the command:

```
LOGOUT PORT xx
```

Where:

xx = port number

9 Check port configuration. Enter the command:

```
LIST PORT xx
```

```
LIST PORT xx ALTERNATE CHARA
```

Where:

`xx` = port number

End of Procedure

Configuring a transparent rlogin port with sample data

Sample data has been incorporated into Procedure 67. This configuration shows that a device connected to MRV Port 2 will rlogin 47.11.166.76 through pty 10.

Procedure 67
Configuring a transparent rlogin port

1 Enable keepalive timer 1 for the port. Enter the command:

```
DEFINE PORT 2 IP TCP KEEPALIVE TIMER 1
```

2 Enable a dedicated service using rlogin. Enter the command:

```
DEFINE PORT 2 RLOGIN DEDICATED SERVICE 47.11.166.76
```

3 Enable the port to be accessible only by local command and from a serial connection only. Enter the command:

```
DEFINE PORT 2 ACCESS LOCAL
```

4 Enable the In-Reach Element Manager to complete a ZMODEM transfer using the rlogin feature. Enter the command:

```
DEFINE PORT 2 RLOGIN TRANSPARENT MODE ENABLED
```

5 Enable autoconnect for the port. Enter the command:

```
DEFINE PORT 2 AUTOCONNECT ENABLED
```

6 Enable autodedicate for the port. Enter the command:

```
DEFINE PORT 2 AUTODEDICATED ENABLED
```

7 Define a user name for the port. Enter the command:

```
DEFINE PORT 2 USERNAME "pty7"
```

Note: When typing the letters "pty", they must be lower case letters. The number must equal the pty number configured on the system.

8 Log out of the port. Enter the command:

```
LOGOUT PORT 2
```

End of Procedure

Accessing an MRV Console Port through the on-board modem

The MRV IR-8020M Terminal Server is equipped with a V.90/K56flex 56 Kbps on-board modem. The modem port is 23. Follow Procedure 68 to access an MRV Console Port through the on-board modem.

Procedure 68
Accessing an MRV Console Port through the on-board modem

1 Connect an analog telephone line to the MRV telephone line port.

2 Set up the remote PC connection.

3 Dial in to the MRV onboard modem from the PC.

4 From the PC, run HyperTerminal. Enter the command:

```
ATD [phone number]
```

Screen response:

```
CONNECT 9600/ARQ/V34/LAPM/V42BIS

Login
```

5 Log in to the In-Reach Element Manager using the default password, (see steps 4,5,6,and 7 in Procedure 62 on page 256).

End of Procedure

Once logged in to the on-board modem, it is possible to telnet to ports 1-20. It is also possible to rlogin to different IPs.

CS 1000E COM port types

Table 17 lists various components of the CS 1000E system and their COM port types.

Table 17
System components and COM port type

System component	COM port type
Baystack 460	9-pin DCE (male)
Baystack 470	9-pin DCE (male)
NTDU27 Signaling Server	9-pin DTE (male) ***Note:*** Signaling Server comes with a six-foot female-to-female null modem cable.
NT4N64AA CPPII	9-pin DTE (male)
A0852632 Media Card L-adapter	9-pin DCE (female)
A0870611 MIRAN L-adapter	9-pin DCE (female)
P0609204 Media Card L-adapter	9-pin DTE (male)
P0609205 MIRAN L-adapter	9-pin DTE (male)
NTDU14 Gateway	9-pin DTE (male) (modified to isolate pins 6, 7, and 8) Use PORT 0 of NTBK48AA 3-port SDI cable.

Configuring a terminal and SDI ports

Contents

This section contains information on the following topics:

Introduction

In the CS 1000E system, each stand-alone module (Call Server, MG 1000E, MG 1000T, Signaling Server, and Baystack switch) has a Serial Data Interface (SDI) port to be used for software installation and maintenance access. The SDI port can be accessed by running a Telnet session through the Terminal Server locally or remotely. See “Configuring a Terminal Server” on page 255 for Terminal Server Setup. The SDI port can also be accessed by a local terminal through the SDI connection.

Setting the TTY terminal port

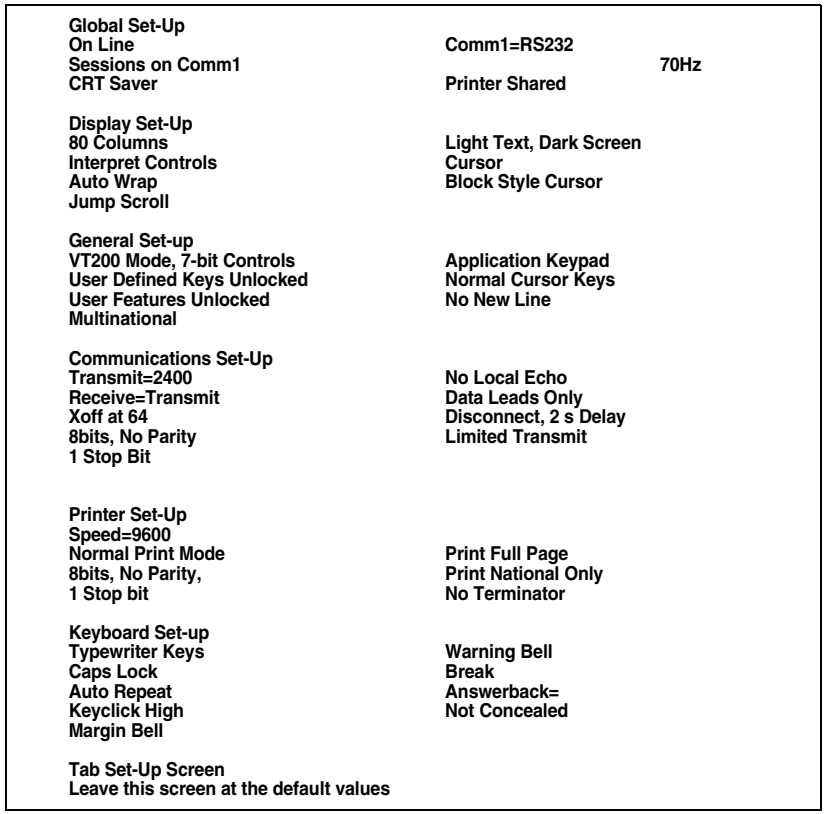
A TTY terminal can be any standard PC running terminal software, (for example, HyperTerminal). The TTY terminal port must be configured as:

- Bits per second - Baud rate must be the same as the speed of SDI port.
- Data bits - 8
- Parity- None
- Stop bit – 1
- Flow control – None
- Terminal Emulation- VT100

Traditional terminal SDI connection

Figure 87 shows the setup values for a traditional terminal setup.

Figure 87
VT220 setup values



CS 1000E Core Call Server SDI connection

Each CS 1000E Core Call Server has two SDI ports on the Call Server CPU card, COM1 and COM2. Both COM1 and COM2 are standard RS232 DTE ports (9-pin male). COM1 is used for maintenance access, and COM2 is for an external modem connection. Both SDI ports, COM1 and COM2, are set to:

- Baud rate - 9600
- Data bit - 8
- Stop bit - 1

- Parity - none
- Flow control - none

MG 1000E SDI connection

SDI connection to the MG 1000E is made at the back. See Figure 88 on page 272 for location of the 9-pin DTE (male) connector. It is modified to isolate pins 6, 7, and 8. Use PORT0 of NTBK48AA 3-port SDI cable for terminal connection.

Note: Connection must be made initially to each MG 1000E to set the IP address.

MG 1000T SDI connection

A terminal, modem, or other device (such as CDR devices and additional TTYs) can be connected to the SDI ports. Follow Procedure 69 on page 272 to connect devices to Media Gateways.

Refer to Table 18 for SDI port numbering for MG 1000T Core and MG 1000T Expansions.

Table 18
SDI port numbering for Media Gateways

Media Gateway	Normal mode	Survival mode
MG 1000T Core	0, 1, 2	N/A
MG 1000T Expansion 1	3, 4, 5	0, 1, 2
MG 1000T Expansion 2	6, 7, 8	0, 1, 2
MG 1000T Expansion 3	9, 10, 11	0, 1, 2
MG 1000T Expansion 4	12, 13, 14	0, 1, 2

Controlling the baud rate

You can use a switch setting on the SSC's faceplate to control the baud rate for port 0. Use LD 17 to configure port 1 and port 2. Make sure the baud rate and device option settings are set correctly.

- Use Port 0 for software installation and upgrades. Port 0 is the only system terminal (SDI) port that you can use for software installation and upgrades.
- You can use all three ports on the SSC to connect terminals or modems.
- Use an NTBK48 3-port SDI cable with the SSC.

Table 19 shows the SDI port numbering.

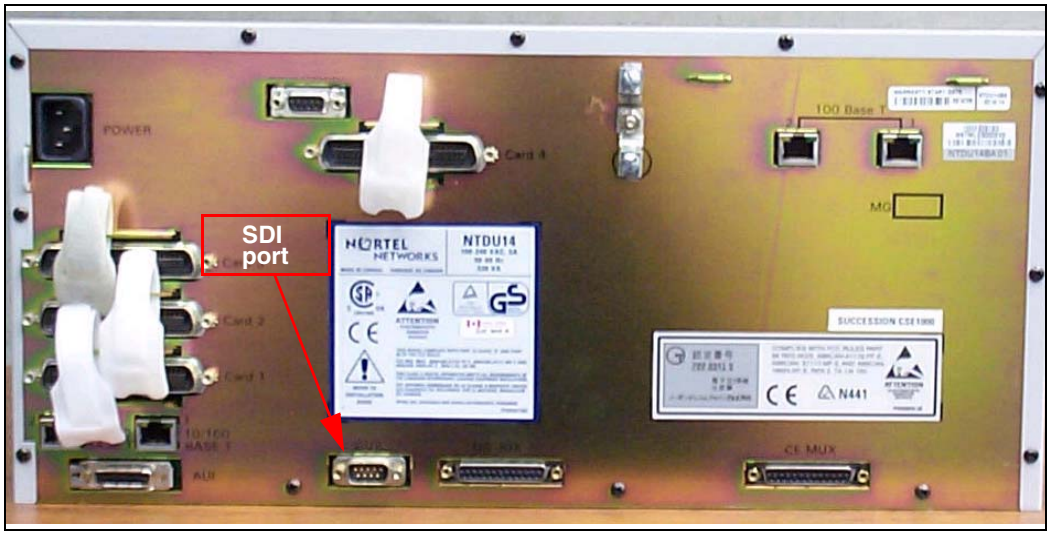
Table 19
SDI port numbering

Port	Use	Baud rate	Data bits	Stop bits	Parity
0	MTC/SCH/BUG	Set by a DIP switch	8	1	None
1	MTC/SCH/BUG	1200	8	1	None
2	MTC/SCH/BUG	1200	8	1	None

Procedure 69
Connecting SDI ports on the Media Gateways

1 Connect the NTBK48 3-port SDI cable to the 9-pin SDI port (RS-232) at the rear of the Media Gateways (see Figure 88).

Figure 88
SDI port access to the Media Gateway SSC card



2 Connect the system terminal to the cable marked “port 0” on the NTBK48 3-port cable. You require a Modem Eliminator adapter to connect the system to a TTY terminal. This adapter is included in the CS 1000E and the Media Gateway cable kits.

3 If the system is accessed remotely, connect the system modem to the cable marked “port 1” on the NTBK48 cable.

4 When instructed, connect the modem to an outside line.

5 When instructed, test the modem for correct operation when the system is operating.

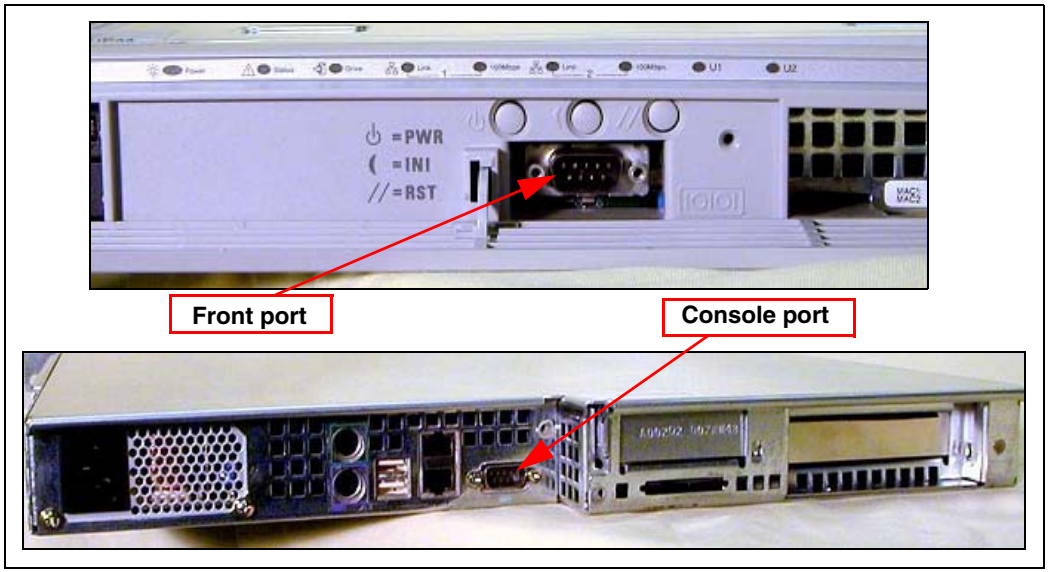
Note: You can use the remaining ports for other equipment, such as CDR devices or TTYs.

End of Procedure

Signaling Server SDI connection

The Signaling Server has two maintenance ports: the Front port and the Console port (see Figure 89). The Console port must be used to install the Signaling Server software to perform the basic configuration.

Figure 89
Signaling Server maintenance port locations



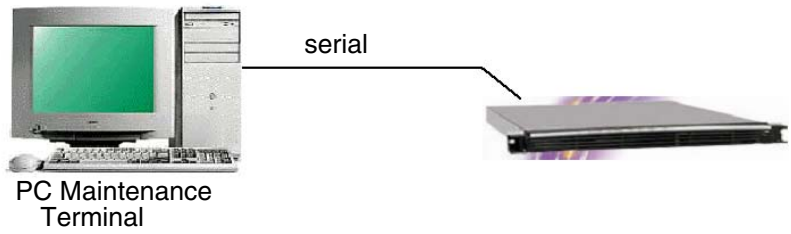
Procedure 70
Connecting the maintenance PC to a Signaling Server

1 Connect a DTE–DTE null modem serial cable (supplied with the Signaling Server) from the Console port to a PC workstation.

Note: The Signaling Server is shipped with the Admin/Serial port set to 19200 bit/s.

During the initial installation, the unit requires the PC Maintenance terminal settings as provided in Step 2 on page 274.

Figure 90
Maintenance to Signaling Server connection



2 The COM port on the PC Maintenance terminal should be set as follows:

- Terminal type: VT100
- Speed: 19200
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

After the installation, the Signaling Server maintenance port speed can be changed. See *Signaling Server: Installation and Configuration* (553-3001-212).

End of Procedure

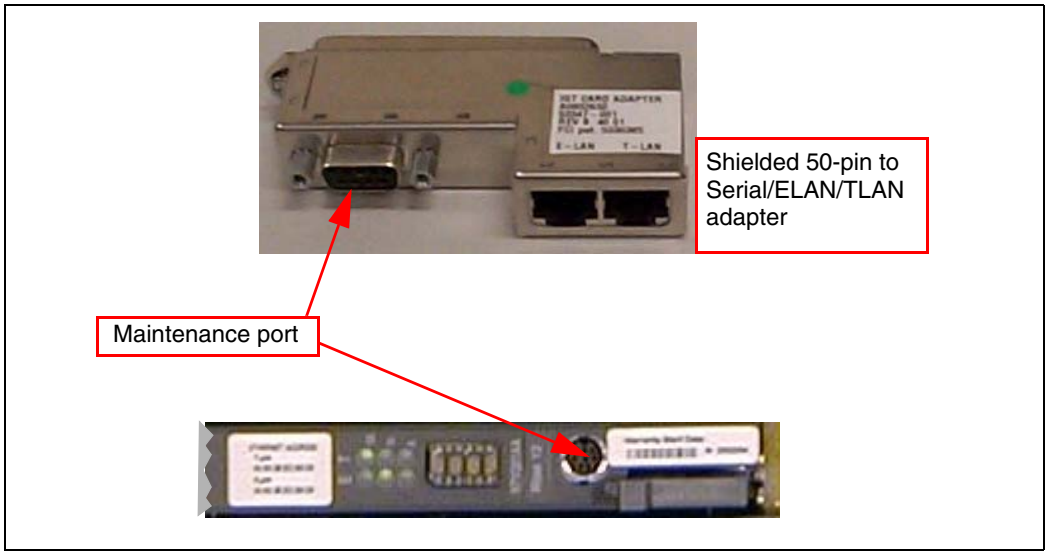
BayStack 470 SDI connection

The SDI port on the Bay Stack 470 can be used for basic configuration and maintenance. The SDI port is located on the faceplate. It is a DCE port with a default speed of 9600 bps.

Media Card SDI connection

The SDI ports on a Media Card can be used for basic configuration or maintenance. Figure 91 shows the maintenance port location on the Media Card and the Shielded 50-pin to Serial/ELAN/TLAN adapter.

Figure 91
Maintenance port location on the Media Card and the Shielded 50-pin to Serial/ELAN/TLAN adapter



The Media Card faceplate provides a female 8-pin mini-DIN serial maintenance port connection. The maintenance port on the Shielded 50-pin to Serial/ELAN/TLAN adapter provides an alternative to the faceplate maintenance port. Both are DTE ports with a speed of 9600 bit/s.

CAUTION — Service Interruption

Do not connect maintenance terminals or modems to the faceplate and I/O panel DB-9 male serial maintenance port at the same time.

Verifying the network

Contents

This section contains information on the following topics:

Introduction

The CS 1000E to Media Gateway links and ELAN interfaces are verified using LD 97, LD 117, LD 135, and LD 137. For details on LD 97, LD 117, LD 135, and LD 137, see the *Software Input/Output: Maintenance* (553-3001-511).

This chapter contains the following procedures:

- Procedure 71: "Checking the status of the ELAN network interfaces" on page 278
- Procedure 72: "Checking the status of MG 1000T Core to MG 1000T Expansion (1 - 4) 100BaseT links" on page 283
- Procedure 73: "Checking the status of the MG 1000T trunks" on page 287

Checking the status of the ELAN network interfaces

Follow Procedure 71 to check the status of the ELAN network interfaces.

Note: IP addresses used are for example only.

Procedure 71
Checking the status of the ELAN network interfaces

1 Observe the ELAN Ethernet LEDs (Layer 2 network link) on all Media Gateway SSC cards. See Figure 94 on page 284.

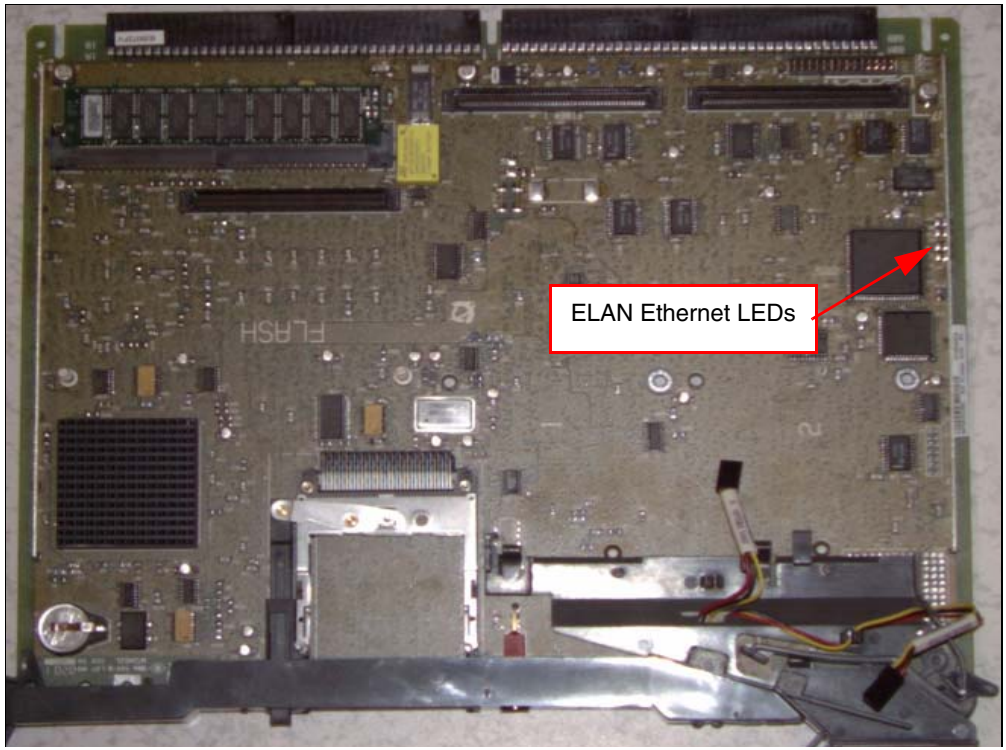
a. If the ELAN LED is green, the Link is established.

b. If the Link LED is not lit, check all cable connections to ensure that they are connected correctly, and not damaged.

The ELAN red and yellow LEDs flash when there is network activity.

Note: Cards in slot 1 can make viewing difficult.

Figure 92
SSC card ELAN LED location



2 Access LD 137. Enter the command:

LD 137

3 Display the status of the Call Server ELAN network interface. Enter the command:

STAT ELNK

System response:

```
.stat elnk

ELNK   ENABLED

Auto Negotiation: Enabled

Auto Negotiation Completed: YES
```

```
Actual Line Speed: 100 Mbps
Actual Duplex Mode: Full Duplex
Ethernet (gei unit number 0):
Host: PRIMARY_ENET
Internet address: 47.11.226.10
Broadcast address: 47.11.226.31
Ethernet address: 00:c0:8b:07:a5:9e
Netmask: 0xff000000 ; Subnetmask: 0xfffffe0
15 packets received; 20 packets sent
0 input errors; 0 output errors
0 collisions
```

4 Exit from LD 137. Enter the command:

```
****
```

5 Access LD 117. Enter the command:

```
LD 117
```

6 Verify active host table. Enter the command:

```
STAT HOST
```

System response:

```
*** Active Internet Host Table ***
ID  Hostname          IP Address
--  localhost         127.0.0.1
1   LOCAL_PPP_IF      137.135.192.4
2   REMOTE_PPP_IF     100.1.1.1
3   ACTIVECPU         47.11.223.68
4   INACTIVECPU       47.11.223.69
5   DEV_SIDE0_HSP     192.2.3.10
7   DEV_SIDE1_HSP     192.2.3.11
```

7 Verify active routing table. Enter the command:

```
STAT ROUTE
```

System response:

```
*** Active Internet Routing Table ***
1       207.179.154.0       207.179.153.97      0 [qu0]
--      207.179.153.96      207.179.153.99      0 [qu0]
--      127.0.0.1           127.0.0.1           -- [lo0]
--      200.30.200.13       200.30.200.13       3 [ipDB2]
--      200.30.200.23       200.30.200.13       3 [ipDB2]
--      207.179.153.103     207.179.153.103     1 [ipDB0]
--      207.179.153.104     207.179.153.103     1 [ipDB0]
```

8 Ping IP addresses on the ELAN network.

a. Enter the command:

PING 192.11.0.1

System response:

```
PING 192.11.0.1 SUCCESSFUL
```

b. Enter the command:

PING 192.11.0.101

System response:

```
PING 192.11.0.101 SUCCESSFUL
```

c. Enter the command:

PING 192.11.0.102

System response:

```
PING 192.11.0.102 SUCCESSFUL
```

d. Enter the command:

PING 192.11.0.103

System response:

```
PING 192.11.0.103 SUCCESSFUL
```

e. Enter the command:

PING 192.11.0.104

System response:

```
PING 192.11.0.104 SUCCESSFUL
```

9 Exit from LD 117. Enter the command:

```
****
```

End of Procedure

Checking the status of the HSP ports

Use LD 137 STAT HSP command to check the status of the HSP. The following is a sample output of the STAT HSP command.

LD 137

.stat hsp

HSP LINK CARRIER: OK

Auto Negotiation: Enabled

Auto Negotiation Completed: YES

Actual Line Speed: 1000 Mbps

Actual Duplex Mode: Full Duplex

LCS HSP STATE is UP

Ethernet (gei unit number 1):

Internet address: 127.2.0.2

Broadcast address: 127.255.255.255

Ethernet address: 00:c0:8b:07:a5:9f

Netmask: 0xff000000; Subnetmask: 0xff000000

39698 packets received; 80156 packets sent

0 input errors; 0 output errors

0 collisions

Checking the status of the MG 1000T 100BaseT links

Follow Procedure 72 to check the status of the MG 1000T Core to MG 1000T Expansion (1- 4) 100BaseT links.

Procedure 72
Checking the status of MG 1000T Core to MG 1000T Expansion (1 - 4) 100BaseT links

1 Observe the link LEDs (Layer2 network link) on all Media Gateway 100BaseT Daughterboards. See Figure 93 and Figure 94 on page 284.

Note: Cards in slot 1 can make viewing difficult.

Figure 93
SSC 100BaseT daughterboard link LED location

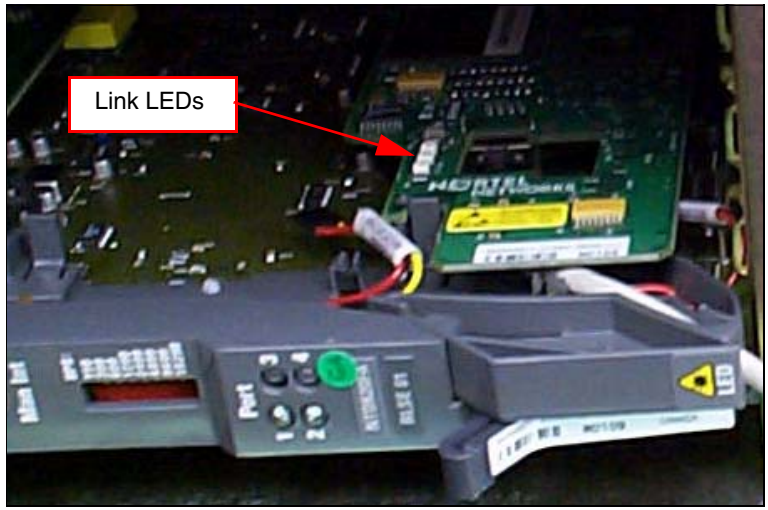
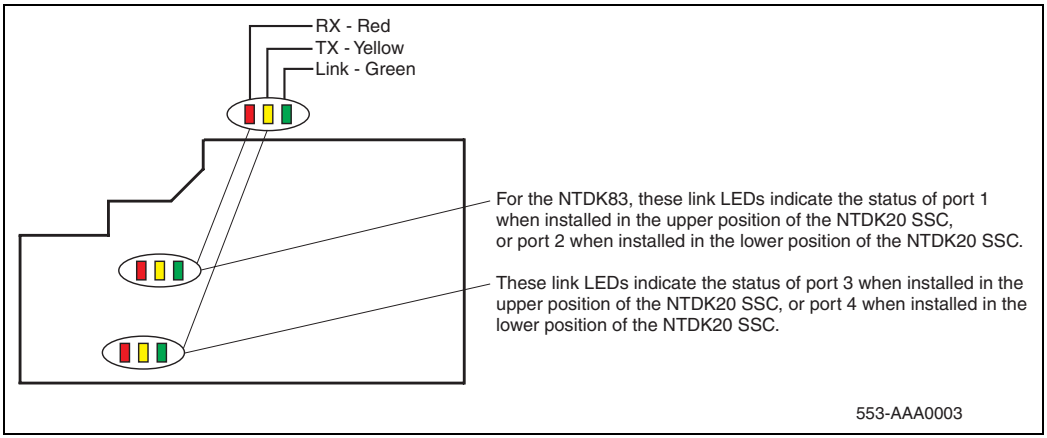


Figure 94
SSC 100BaseT daughterboard (dual port) LEDs



a. If the Link LED is green, the Link is established.

b. If the Link LED is not lit, check the daughterboard installation. Check all cable connections to ensure that they are connected correctly. Make sure that the cables are not damaged.

The receive and transmit LEDs should be flashing (evidence of network activity).

2 Observe Port LEDs on the Media Gateway SSC faceplates (see Figure 95 on page 285). These LEDs show OSI Layer 7 Call Processing application indications.

a. If the Port LEDs are red, the link is disabled and voice is disabled.

b. If the Port LEDs are yellow/amber, the link is established and voice is disabled.

c. If the Port LEDs are green, the link and voice is established.

Figure 95
Media Gateways SSC faceplate Port LEDs

3 Observe bootup system messages on system terminals.

```
SRPT017 OMM: IP link is UP between cab 0 and cab 1
SRPT017 OMM: IP link is UP between cab 0 and cab 2
SRPT017 OMM: IP link is UP between cab 0 and cab 3
SRPT017 OMM: IP link is UP between cab 0 and cab 4
```

4 Log in to the CS 1000E.

a. Enter the command:

LOGI

System response:

```
PASS?
```

b. Enter the default password

0000

5 Access LD 135. Enter the command:

LD 135

6 Display status of 100BaseT links. Enter the command:

STAT IPL

System response:

```
Media Gateway 1 : LINK UP
Media Gateway 2 : LINK UP
Media Gateway 3 : LINK UP
Media Gateway 4 : LINK UP
```

7 Exit from LD 135. Enter the command:

```
****
```

8 Access LD 117. Enter the command:

```
LD 117
```

9 Ping IP addresses on the 100BaseT links.

a. Enter the command:

```
PING 192.168.0.11
```

System response:

```
PING 192.168.0.11 SUCCESSFUL
```

b. Enter the command:

```
PING 192.168.0.21
```

System response:

```
PING 192.168.0.21 SUCCESSFUL
```

c. Enter the command:

```
PING 192.168.0.31
```

System response:

```
PING 192.168.0.31 SUCCESSFUL
```

d. Enter the command:

```
PING 192.168.0.41
```

System response:

```
PING 192.168.0.41 SUCCESSFUL
```

Note: Replace the sample IP addresses with the IP addresses from your Planning and Engineering group.

10 Exit from LD 117. Enter the command:

```
****
```

End of Procedure

Checking MG 1000T trunking functionality

To check trunking on the MG 1000T follow Procedure 73 on page 287.

Procedure 73
Checking the status of the MG 1000T trunks

1. Install an i2050 on MG 1000T core. Refer to *IP Line: Description, Installation, and Operation* (553-3001-365) for additional information.
2. Establish a call from the i2050 to a telephone on CS 1000E using CDP number.
3. Establish a call from i2050 to the PSTN.
4. Establish a call from the i2050 to a telephone on the CS 1000E through the PSTN using <local AC code> <NXX>, for example 9-967-5555.

End of Procedure

Establish CS 1000E DID calls from MG 1000T

To check CS 1000E DID calls from MG 1000T follow procedure

To terminate incoming DID calls the number of digits picked up at the terminating node for call termination, from the Called Number of the message is based on the length of LDN value. LDN0 is considered for this by default. Therefore to ensure that all the five digits of the DN are considered for call termination LDN0 should have a five digit number.

Procedure 74
Check CS 1000E DID calls from MG 1000T

1. Establish a Listed Directory Number in LD 15.
2. Ensure that all the digits of the DN are considered for call termination, LDN0 should be a number whose length is equal to the maximum length DN on the Node.

   For example, if DNs are five digits, then LDN0 could be configured as 55555.
3. Establish a DID call.

End of Procedure

Installing and cross-connecting a trunk card

Contents

This section contains information on the following topics:

Introduction

The work order outlines the placement of circuit cards in the Media Gateway and Media Gateway Expander. Analog trunks can be installed in both Media Gateway and Media Gateway Expander. However, digital trunk cards can only be installed in slots 1 to 4 of the MG 1000T. See *Circuit Card: Description and Installation* (553-3001-211) for card placement into card slots.

IMPORTANT!

Digital Trunk cards can be installed only in slots 1 to 4 of the Media Gateway.

Figure 96 shows the circuit card slots in a Media Gateway. To view the circuit card slots available in a Media Gateway Expander, see Figure 97 on page 291.

Figure 96
Circuit card assignments in the Media Gateway

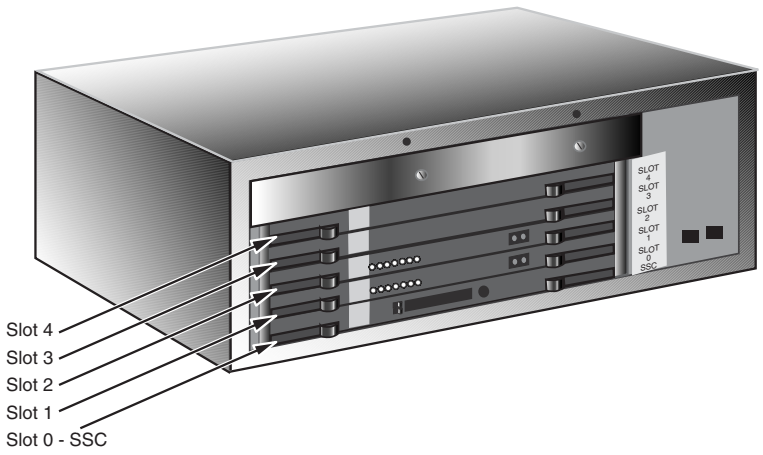
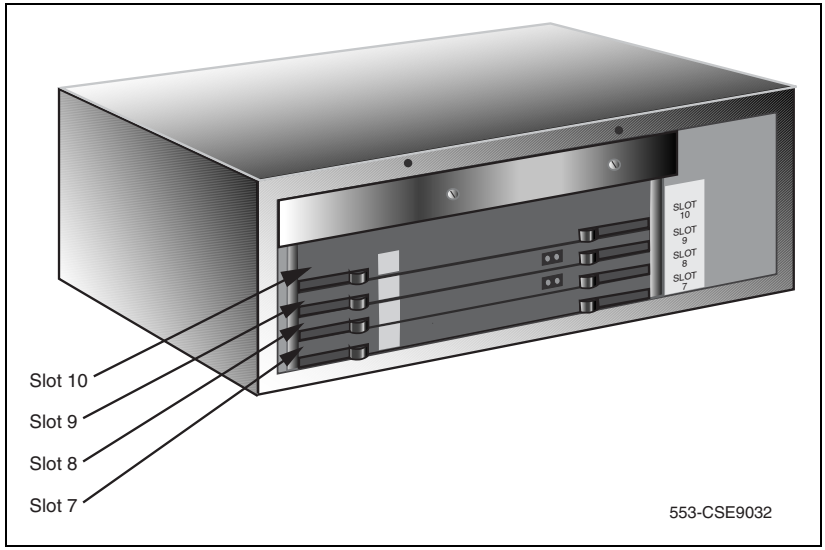


Figure 97
Circuit card assignments in the Media Gateway Expander



WARNING

Use caution when installing or modifying telephone lines. Avoid installing telephone wiring during a lightning storm. Do not install telephone jacks in wet locations unless the jacks are designed for wet locations. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Before you proceed, install the cable from the slot that contains the Line card associated with the telephone being connected. Refer to "Installing the Main Distribution Frame" on page 353, if you require additional cable installation.

DANGER OF ELECTRIC SHOCK

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Do not install telephone jacks in wet locations unless the jacks are designed for wet locations. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

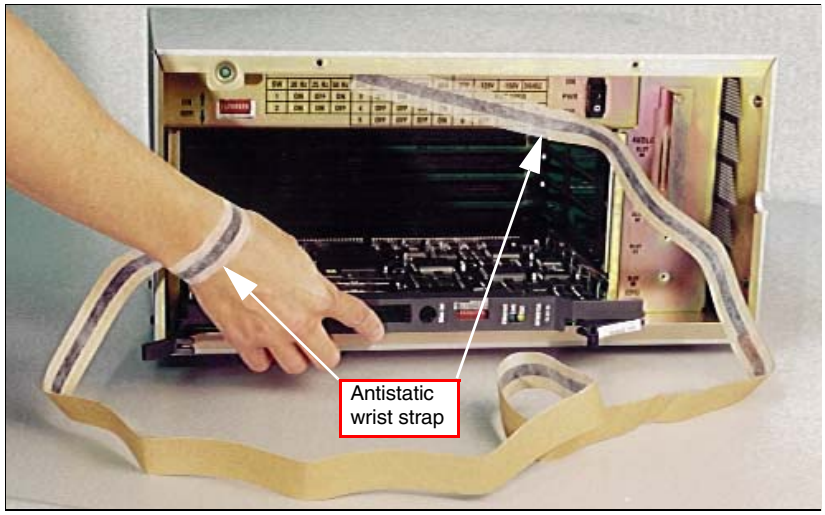
Refer to the *Circuit Card: Description and Installation* (553-3001-211) for full descriptions of country-specific circuit cards and their installation procedures.

CAUTION WITH ESDS DEVICES

Always handle circuit cards with caution to avoid damage caused by static electricity. Always store circuit cards that are not in use in an antistatic bag or the original packaging

Wear an antistatic wrist strap, such as the one shown in Figure 98 on page 293, when handling circuit cards. Static electricity can damage circuit card components.

Figure 98
Antistatic wrist strap



Circuit card options

A circuit card that has a switch symbol on its faceplate is equipped with option switches, strapping plugs, or both. Ensure that the option switches or strapping plugs are set correctly. Circuit cards can also have daughterboards or other add-on devices installed on them.

Digital trunk cards

Digital trunk cards can be installed only in slots 1 to 4 in a Media Gateway. The following Digital trunk cards can be installed:

- NTAK09 1.5 Mbit DTI/PRI
- NTAK10 2.0 Mbit DTI
- NTAK79 2.0 Mbit PRI
- NTBK22 MISP
- NTBK50 2.0 Mbit BRI

- NTRB21 TMDI 1.5 Mbit DTI/PRI
- NT6D70 SILC
- NT6D71 UILC

For additional information about installing Digital trunk cards, refer to the following documents:

- *ISDN Primary Rate Interface: Installation and Configuration* (553-3001-201)
- *ISDN Basic Rate Interface: Installation and Configuration* (553-3001-218)
- *ISDN Primary Rate Interface: Maintenance* (553-3001-517)
- *ISDN Basic Rate Interface: Maintenance* (553-3001-518)

Connecting a trunk

Follow Procedure 75 to connect a trunk.

Procedure 75
Connecting a trunk

1 From the assignment record, determine the location of the trunk connection and its associated Terminal Number (TN) at the cross-connect terminal.

2 With cross-connect wire, connect the trunk to the TN.

Make sure that the wiring is not reversed and that it is on the correct terminals.

- Table 20 on page 295 to Table 22 on page 298 list the connections for trunks.
- For European trunk connections, see Table 23 on page 300 to Table 31 on page 309.
- For UK trunk connections, see Table 32 on page 311 to Table 38 on page 318.

Note: See "Installing and cross-connecting a Power Fail Transfer Unit" on page 441 for connecting trunks with the PFTU.

End of Procedure

Universal Trunk card connections

The Universal Trunk card (NT8D14) provides eight Analog trunks that can function in the modes identified in Table 20. Refer to Table 21 on page 296 for the connections to the Universal trunk at the cross-connect terminal.

Table 20
NT8D14 Universal Trunk card – modes and option settings

Modes	Location	Jumper strap
Central (CO)	J1, J2	OFF
2-way TIE trunk (loop Dial Repeat)	J1, J2	OFF
2-way TIE trunk (Outgoing Incoming Dial)	J1, J2	OFF
Recorded Announcement (RAN)	J1, J2	OFF
Paging trunk	J1, J2	OFF
Japan CO/DID operation	J1, J2	OFF
DID operation Loop length>2000 ohms	J1, J2	ON
DID operation Loop length <2000 ohms	J1, J2	OFF
Note 1: OFF indicates that no strap is present. ***Note 2:*** J1 and J2 locations apply to all eight trunks.		

Table 21
NT8D14 Universal Trunk connections (Part 1 of 2)

Cable from equipment		Unit	RAN mode	Paging mode	All other modes
Pair	**Color**		**Designations**		
1T 1R	W-BL BL-W	0	T0 R0	T0 R0	T0 R0
2T 2R	W-O O-W		CP MB	A PG	
3T 3R	W-G G-W	1	T1 R1	T1 R1	T1 R1
4T 4R	W-BR BR-W		CP MB	A PG	
5T 5R	W-S S-W	2	T2 R2	T2 R2	T2 R2
6T 6R	R-BL BL-R		CP MB	A PG	
7T 7R	R-O O-R	3	T3 R3	T3 R3	T3 R3
8T 8R	R-G G-R		CP MB	A PG	
9T 9R	R-BR BR-R	4	T4 R4	T4 R4	T4 R4
10T 10R	R-S S-R		CP MB	A PG	
11T 11R	BK-BL BL-BK	5	T5 R5	T5 R5	T5 R5
12T 12R	BK-O O-BK		CP MB	A PG	

Table 21
NT8D14 Universal Trunk connections (Part 2 of 2)

Cable from equipment		Unit	RAN mode	Paging mode	All other modes
Pair	**Color**		**Designations**		
13T 13R	BK-G G-BK	6	T6 R6	T6 R6	T6 R6
14T 14R	BK-BR BR-BK		CP MB	A PG	
15T 15R	BK-S S-BK	7	T7 R7	T7 R7	T7 R7
16T 16R	Y-BL BL-Y		CP MB	A PG	
Note: Remaining pairs are spare.					

E&M Trunk card connections

Table 22 lists the connections required by the E&M Trunk card (NT8D15).

Table 22
NT8D15 E&M Trunk card (Part 1 of 2)

Cables Card 1 through Card 10 from equipment		Unit	2W Paging mode	2W Type 1 mode	4W Type 1 mode	4W Type 2 mode
Pair	**Color**		**Designations**			
1T 1R	W-BL BL-W	0	T0 R0	T0 R0	TA TB	TA TB
2T 2R	W-O O-W				RA RB	RA RB
3T 3R	W-G G-W			E M	E M	EA EB
4T 4R	W-BR BR-W		A PG		ESC ESCG	MA MB
5T 5R	W-S S-W	1	T1 R1	T1 R1	TA TB	TA TB
6T 6R	R-BL BL-R				RA RB	RA RB
7T 7R	R-O O-R			E M	E M	EA EB
8T 8R	R-G G-R		A PG		ESC ESCG	MA MB

Table 22
NT8D15 E&M Trunk card (Part 2 of 2)

Cables Card 1 through Card 10 from equipment		Unit	2W Paging mode	2W Type 1 mode	4W Type 1 mode	4W Type 2 mode
Pair	**Color**		**Designations**			
9T 9R	R-BR BR-R	2	T2 R2	T2 R2	TA TB	TA TB
10T 10R	R-S S-R				RA RB	RA RB
11T 11R	BK-BL BL-BK			E M	E M	EA EB
12T 12R	BK-O O-BK		A PG		ESC ESCG	MA MB
13T 13R	BK-G G-BK	3	T3 R3	T3 R3	TA TB	TA TB
14T 14R	BK-BR BR-BK				RA RB	RA RB
15T 15R	BK-S S-BK			E M	E M	EA EB
16T 16R	Y-BL BL-Y		A PG		ESC ESCG	MA MB

Note: A and B are the transmit and receive pairs, where:
TA = Transmit Tip, and RA = Receive Tip
TB = Transmit Ring, and RB = Receive Ring

Trunk connections (Europe)

Trunk connections for Europe are provided in the following tables:

- Table 23: “E&M TIE trunk card (2-Wire)” on page 300
- Table 24: “E&M 2-wire Type 2” on page 301
- Table 25: “E&M TIE Trunk card (4-Wire)” on page 302
- Table 26: “E&M TIE Trunk card” on page 304
- Table 27: “E&M 2280 Hz TIE Trunk connections” on page 305
- Table 28: “E&M 2-wire Recorded Announcement Trunk connections” on page 306
- Table 29: “E&M 2-wire Music Trunk connections” on page 307
- Table 30: “Central Office & Direct Dial Inward Trunk connections” on page 307
- Table 31: “Central Office Trunk connections” on page 309

Table 23
E&M TIE trunk card (2-Wire) (Part 1 of 2)

Cables Card 1 through Card 10 from equipment				Column 1 Paging	Column 2 Paging	Column 3 Type 5 (BPO)
Pair	**Color**	**Unit**	**Pins**	**Lead Designations**		
1T 1R	W-O O-W	0	27 2	T0 R0	T0 R0	T0 R0
2T 2R	W-BR BR-W		29 4	A PG	SIGB SIGA	E M
3T 3R	R-BL BL-R	1	31 6	T1 R1	T1 R1	T1 R1
4T 4R	R-G G-R		33 8	A PG	SIGB SIGA	E M

Table 23
E&M TIE trunk card (2-Wire) (Part 2 of 2)

Cables Card 1 through Card 10 from equipment				Column 1 Paging	Column 2 Paging	Column 3 Type 5 (BPO)
5T 5R	R-S S-R	2	35 10	T2 R2	T2 R2	T2 R2
6T 6R	BK-O O-BK		37 12	A PG	SIGB SIGA	E M
7T 7R	BK-BR BR-BK	3	39 14	T3 R3	T3 R3	T3 R3
8T 8R	Y-BL BL-Y		41 16	A PG	SIGB SIGA	E M

Table 24
E&M 2-wire Type 2 (Part 1 of 2)

Lead designations	Pins	Pair color	Unit number
T0 R0	27 2	W-O O-W	0
E1 E2	28 3	W-G G-W	
M1 M2	29 4	W-G G-W	
T1 R1	31 6	R-BL BL-R	1
E1 E2	32 7	R-O O-R	
M1 M2	33 8	R-G G-R	

Table 24
E&M 2-wire Type 2 (Part 2 of 2)

T2 R2	35 10	R-S S-R	2
E1 E2	36 11	BK-BL BL-BK	
M1 M2	37 12	BK-O O-BK	
T3 R3	39 14	BK-BR BR-BK	3
E1 E2	40 15	BK-S S-BK	
M1 M2	41 16	Y-BL BL-Y	

Table 25
E&M TIE Trunk card (4-Wire) (Part 1 of 2)

Cables Card 1 through Card 10 from equipment				**Column 1 Type 1 & 5**	**Column 2 Type 1 & 5**
Pair	**Color**	**Unit #**	**Pins**	**Lead Designations**	
1T 1R	W-BL BL-W	0	26 1	RA RB	TA TB
2T 2R	W-O O-W		27 2	TA TB	RA RB
3T 3R	W-G G-W		28 3	E M	E M

Table 25
E&M TIE Trunk card (4-Wire) (Part 2 of 2)

Cables Card 1 through Card 10 from equipment				Column 1 Type 1 & 5	Column 2 Type 1 & 5
4T 4R	W-S S-W	1	30 5	RA RB	TA TB
5T 5R	R-BL BL-R		31 6	TA TB	RA RB
6T 6R	R-O O-R		32 7	E M	E M
7T 7R	R-BR BR-R	2	34 9	RA RB	TA TB
8T 8R	R-S S-R		35 10	TA TB	RA RB
9T 9R	BK-BL BL-BK		36 11	E M	E M
10T 10R	BK-G G-BK	3	38 13	RA RB	TA TB
11T 11R	BK-BR- BR-BK		39 14	TA TB	RA RB
12T 12R	BK-S S-BK		40 15	E M	E M

Note: The cable pair designated TA, TB is the transmit pair. The pair designated RA, RB is the receive pair.

Table 26
E&M TIE Trunk card (Part 1 of 2)

Cables Card 1 through Card 10 from equipment				Column 1 Type 2	Column 2 Type 2
Pair	**Color**	**Unit #**	**Pins**	**Lead Designations**	
1T 1R	W-BL BL-W	0	26 1	RA RB	RA RB
2T 2R	W-O O-W		27 2	TA TB	TA TB
3T 3R	W-G G-W		28 3	E1 E2	E M
4T 4R	W-BR BR-W		29 4	M1 M2	SIG0A SIG0B
5T 5R	W-S S-W	1	30 5	RA RB	RA RB
6T 6R	R-BL BL-R		31 6	TA TB	TA TB
7T 7R	R-O O-R		32 7	E1 E2	E M
8T 8R	R-G G-R		33 8	M1 M2	SIG1A SIG1B
9T 9R	R-BR BR-R	2	34 9	RA RB	RA RB
10T 10R	R-S S-R		35 10	TA TB	TA TB
11T 11R	BK-BL BL-BK		36 11	E1 E2	E M
12T 12R	BK-O O-BK		37 12	M1 M2	SIG2A SIG2B

Table 26
E&M TIE Trunk card (Part 2 of 2)

Cables Card 1 through Card 10 from equipment				Column 1 Type 2	Column 2 Type 2
13T 13R	BK-G G-BK	 3	38 13	RA RB	RA RB
14T 14R	BK-BR BR-BK		39 14	TA TB	TA TB
15T 15R	BK-S S-BK		40 15	E1 E2	E M
16T 16R	Y-BL BL-Y		41 16	M1 M2	SIG3A SIG3B
Note: The cable pair designated TA, TB is the transmit pair. The pair designated RA, RB is the receive pair.					

Table 27
E&M 2280 Hz TIE Trunk connections (Part 1 of 2)

Lead designations	Pins	Pair color	Unit number
TA TB	26 1	W-BL BL-W	0
RA RB	27 2	W-O O-W	
TA TB	30 5	W-S S-W	1
RA RB	31 6	R-BL BL-R	

Table 27
E&M 2280 Hz TIE Trunk connections (Part 2 of 2)

TA TB	34 9	R-BR BR-R	2
RA RB	35 10	R-S S-R	
TA TB	38 13	BK-G G-BK	3
RA RB	39 14	BK-BR BR-BK	

Table 28
E&M 2-wire Recorded Announcement Trunk connections

Lead designations	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	0
SIG B SIG A	29 4	W-BR BR-W	
T1 R1	30 5	W-S S-W	1
SIG B SIG A	33 8	R-G G-R	
T2 R2	34 9	R-BR BR-R	2
SIG B SIG A	37 12	BK-O O-BK	
T3 R3	38 13	BK-G G-BK	3
SIG B SIG A	41 16	Y-BL BL-Y	

Table 29
E&M 2-wire Music Trunk connections

Lead designations	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	0
T1 R1	30 5	W-S S-W	1
T2 R2	34 9	R-BR BR-R	2
T3 R3	38 13	BK-G G-BK	3

Table 30
Central Office & Direct Dial Inward Trunk connections (Part 1 of 2)

Cable from equipment		Unit	Pins	Column 1	Column 2	Column 3
Pair	Color			Lead designations		
1T 1R	W-BL BL-W	0	26 1	T0 R0	T0 R0	A0 B0
2T 2R	W-O O-W		27 2		PPM0 —	C0 Spare
3T 3R	W-G G-W	1	28 3	T1 R1	T1 R1	A1 B1
4T 4R	W-BR BR-W		29 4		PPM1 —	C1 Spare
5T 5R	W-S S-W	2	30 5	T2 R2	T2 R2	A2 B2
6T 6R	R-BL BL-R		31 6		PPM2 —	C2 Spare

Table 30
Central Office & Direct Dial Inward Trunk connections (Part 2 of 2)

Cable from equipment		Unit	Pins	Column 1	Column 2	Column 3
Pair	**Color**			**Lead designations**		
7T 7R	R-O O-R	3	32 7	T3 R3	T3 R3	A3 B3
8T 8R	R-G G-R		33 8		PPM3 —	C3 Spare
9T 9R	R-BR BR-R	4	34 9	T4 R4	T4 R4	A4 B4
10T 10R	R-S S-R		35 10		PPM4 —	C4 Spare
11T 11R	BK-BL BL-BK	5	36 11	T5 R5	T5 R5	A5 B5
12T 12R	BK-O O-BK		37 12		PPM5 —	C5 Spare
13T 13R	BK-G G-BK	6	38 13	T6 R6	T6 R6	A6 B6
14T 14R	BK-BR BR-BK		39 14		PPM6 —	C6 Spare
15T 15R	BK-S S-BK	7	40 15	T7 R7	T7 R7	A7 B7
16T 16R	Y-BL BL-Y		41 16		PPM7 —	C7 Spare

Table 31
Central Office Trunk connections (Part 1 of 2)

Cable from equipment		Unit	Pins	Lead designations
Pair	**Color**			
1T 1R	W-BL BL-W	0	26 1	T0 R0
2T 2R	W-O O-W		27 2	
3T 3R	W-G G-W		28 3	
4T 4R	W-BR BR-W		29 4	
5T 5R	W-S S-W	1	30 5	T1 R1
6T 6R	R-BL BL-R		31 6	
7T 7R	R-O O-R		32 7	
8T 8R	R-G G-R		33 8	
9T 9R	R-BR BR-R	2	34 9	T2 R2
10T 10R	R-S S-R		35 10	
11T 11R	BK-BL BL-BK		36 11	
12T 12R	BK-O O-BK		37 12	

Table 31
Central Office Trunk connections (Part 2 of 2)

Cable from equipment		Unit	Pins	Lead designations
Pair	**Color**			
13T 13R	BK-G G-BK	3	38 13	T3 R3
14T 14R	BK-BR BR-BK		39 14	
15T 15R	BK-S S-BK		40 15	
16T 16R	Y-BL BL-Y		41 16	

Trunk connections (UK)

Trunk connections for the UK are provided in the following tables:

- Table 32: “NT5K17 Direct Inward Dial card terminations” on page 311
- Table 33: “NT5K18 Exchange line trunk card cross-connect terminations” on page 312
- Table 34: “NT5K19 2W paging mode terminations” on page 314
- Table 35: “NT5K19 2W Type 1 mode terminations” on page 314
- Table 36: “NT5K19 4W Type 1 mode terminations” on page 316
- Table 37: “NT5K19 AC15 mode pair terminations” on page 317
- Table 38: “NT5K19 Recorded Announcement mode pair terminations” on page 318

Table 32
NT5K17 Direct Inward Dial card terminations (Part 1 of 2)

Pair	Pins	Pair color	Unit
T0 R0	26 1	W-BL BL-W	0
	27 2	W-O O-W	
T1 R1	28 3	W-G G-W	1
	29 4	W-BR BR-W	
T2 R2	30 5	W-S S-W	2
	31 6	R-BL BL-R	
T3 R3	32 7	R-O O-R	3
	33 8	R-G G-R	
T4 R4	34 9	R-BR BR-R	4
	35 10	R-S S-R	
T5 R5	36 11	BK-BL BL-BK	5
	37 12	BK-O O-BK	
T6 R6	38 13	BK-G G-BK	6

Table 32
NT5K17 Direct Inward Dial card terminations (Part 2 of 2)

Pair	Pins	Pair color	Unit
	39 14	BK-BR BR-BK	
T7 R7	40 15	BK-S S-BK	7
	41 16	Y-BL BL-Y	

Note: The connections on the NT5K18 Exchange Line Trunk card are polarity-sensitive. Make sure the ground side of the trunk is connected to the A leg of the NT5K18 circuit. Make sure the -50 Volt side of the trunk is connected to the B leg of the NT5K18 circuit.

Table 33
NT5K18 Exchange line trunk card cross-connect terminations (Part 1 of 2)

Pair	Pins	Pair color	Unit
T0 R0	26 1	W-BL BL-W	0
	27 2	W-O O-W	
T1 R1	28 3	W-G G-W	1
	29 4	W-BR BR-W	
T2 R2	30 5	W-S S-W	2
	31 6	R-BL BL-R	

Table 33
NT5K18 Exchange line trunk card cross-connect terminations
(Part 2 of 2)

Pair	Pins	Pair color	Unit
T3 R3	32 7	R-O O-R	3
	33 8	R-G G-R	
T4 R4	34 9	R-BR BR-R	4
	35 10	R-S S-R	
T5 R5	36 11	BK-BL BL-BK	5
	37 12	BK-O O-BK	
T6 R6	38 13	BK-G G-BK	6
	39 14	BK-BR BR-BK	
T7 R7	40 15	BK-S S-BK	7
	41 16	Y-BL BL-Y	

Note: The speech pairs on the NT5K19 card are polarity-insensitive. The E&M signaling pairs, however, are polarity-sensitive. Make sure the ground side of the trunk is connected to the A leg of the NT5K19 circuit. Make sure the -50 Volt side of the trunk is connected to the B leg.

Table 34
NT5K19 2W paging mode terminations

Pair	Pins	Pair color	Unit
T0 R0	27 2	W-O O-W	0
A PG	29 4	W-BR BR-W	
T1 R1	31 6	R-BL BL-R	1
A PG	33 8	R-G G-R	
T2 R2	35 10	R-S S-R	2
A PG	37 12	BK-O O-BK	
T3 R3	39 14	BK-BR BR-BK	3
A PG	41 16	Y-BL BL-Y	

Table 35
NT5K19 2W Type 1 mode terminations (Part 1 of 2)

Pair	Pins	Pair color	Unit
T0 R0	27 2	W-O O-W	0
E M	28 3	W-G G-W	

Table 35
NT5K19 2W Type 1 mode terminations (Part 2 of 2)

Pair	Pins	Pair color	Unit
T1 R1	31 6	R-BL BL-R	1
E M	32 &	R-O O-R	
T2 R2	35 10	R-S S-R	2
E M	36 11	BK-BL BL-BK	
T3 R3	39 14	BK-BR BR-BK	3
E M	40 15	BK-S S-BK	

Table 36
NT5K19 4W Type 1 mode terminations

Pair	Pins	Pair color	Unit
TA TB	26 1	W-BL BL-W	
RA RB	27 2	W-O O-W	0
E M	28 3	W-G G-W	
RA RB	30 5	W-S S-W	
TA RB	31 6	R-BL BL-R	1
E M	32 7	R-O O-R	
TA TB	34 9	R-BR BR-R	
RA RB	35 10	R-S S-R	2
E M	36 11	BK-BL BL-BK	
TA TB	38 13	BK-G G-BK	
RA TB	39 14	BK-BR BR-BK	3
E M	40 15	BK-S S-BK	

Table 37
NT5K19 AC15 mode pair terminations

Pair	Pins	Pair color	Unit
TA TB	26 1	W-BL BL-W	0
RA RB	27 2	W-O O-W	
TA TB	30 5	W-S S-W	1
RA RB	31 6	R-BL BL-R	
TA TB	34 9	R-BR BR-R	2
RA RB	35 10	R-S S-R	
TA TB	38 13	BK-G G-BK	3
RA TB	39 14	BK-BR BR-BK	

Table 38
NT5K19 Recorded Announcement mode pair terminations

Pair	Pins	Pair color	Unit
T0 R0	26 1	W-BL BL-W	0
SIG B SIG A	29 4	W-BR BR-W	
T1 R1	30 5	W-S S-W	1
SIG B SIG A	33 8	R-G G-R	
T2 R2	34 9	R-BR BR-R	2
SIG B SIG A	37 12	BK-O O-BK	
T3 R3	38 13	BK-G G-BK	3
SIG B SIG A	41 16	Y-BL BL-Y	

Verifying trunk functionality

You can now use the trunks. To test the trunks, make trunk calls.

Installing and configuring a Voice Gateway Media Card

Contents

This section contains information on the following topics:

Introduction

The Voice Gateway Media Card provides access to the voice gateway and functions as a Follower to the Signaling Server, which is the node Leader and which, by default, acts as a Master for the node. In the absence of the Signaling Server a Voice Gateway Media Card may be an active Leader, a backup Leader, or a Follower. Each customer in a system has only one Leader.

A Voice Gateway Media Card runs the IP Line 3.1 software. It provides voice gateway channels (DSPs) to transcode voice data between IP and TDM (analog/digital). The card's node properties, as well as the voice gateway channels, must be configured. The cards are installed in a Media Gateway or a Media Gateway Expander.

The Voice Gateway Media Card is represented by a Media Card 32-Port IP Line 3.1/Voice Gateway.

For details, see *IP Line: Description, Installation, and Operation* (553-3001-365).

This chapter contains the following procedures:

- Procedure 76: "Adding a Voice Gateway Media Card to an IP telephony node" on page 321
- Procedure 77: "Adding voice gateway channels using Element Manager" on page 325
- Procedure 78: "Configuring voice gateway channels using LD 14" on page 328
- Procedure 79: "Installing the CompactFlash" on page 332
- Procedure 80: "Installing a Voice Gateway Media Card in a card slot" on page 338
- Procedure 81: "Displaying the Voice Gateway Media Card status" on page 340
- Procedure 82: "Displaying the Voice Gateway status for all voice gateway channels" on page 341

- Procedure 83: "Displaying the status of Voice Gateway Media Card units" on page 344
- Procedure 84: "Displaying the status of one unit on a Voice Gateway Media Card" on page 347
- Procedure 85: "Disabling a Voice Gateway Media Card using Element Manager" on page 347
- Procedure 86: "Disabling a Voice Gateway Media Card unit using Element Manager" on page 348
- Procedure 87: "Enabling a Voice Gateway Media Card using Element Manager" on page 349
- Procedure 88: "Enabling a Voice Gateway Media Card unit using Element Manager" on page 350

Configuring a card

A Voice Gateway Media Card requires configuration of:

- the IP telephony properties defined with Element Manager (the Voice Gateway Media Cards are assigned to an IP telephony node). See “Configuring an IP telephony node” on page 365.
- the voice gateway channels defined on the CS 1000E. See “Configuring voice gateway channels using Element Manager” on page 325.

Adding a card to an IP telephony node

The Voice Gateway Media Card is added to an IP telephony node using Element Manager only. See *Element Manager: System Administration* (553-3001-332) for details.

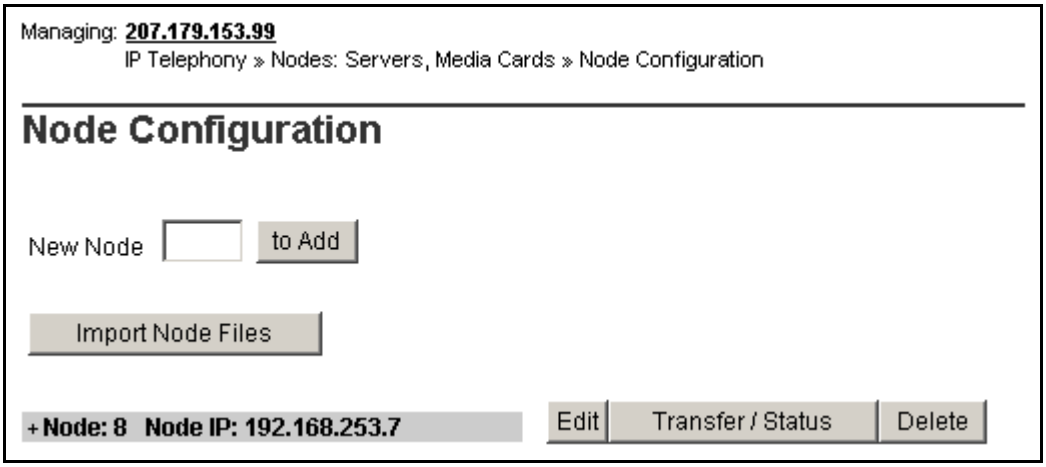
Procedure 76
Adding a Voice Gateway Media Card to an IP telephony node

1 Log in to Element Manager.

2 Select **IP Telephony > Nodes: Servers, Media Cards > Configuration** from the navigator.

The **Node Configuration** web page opens, as shown in Figure 99.

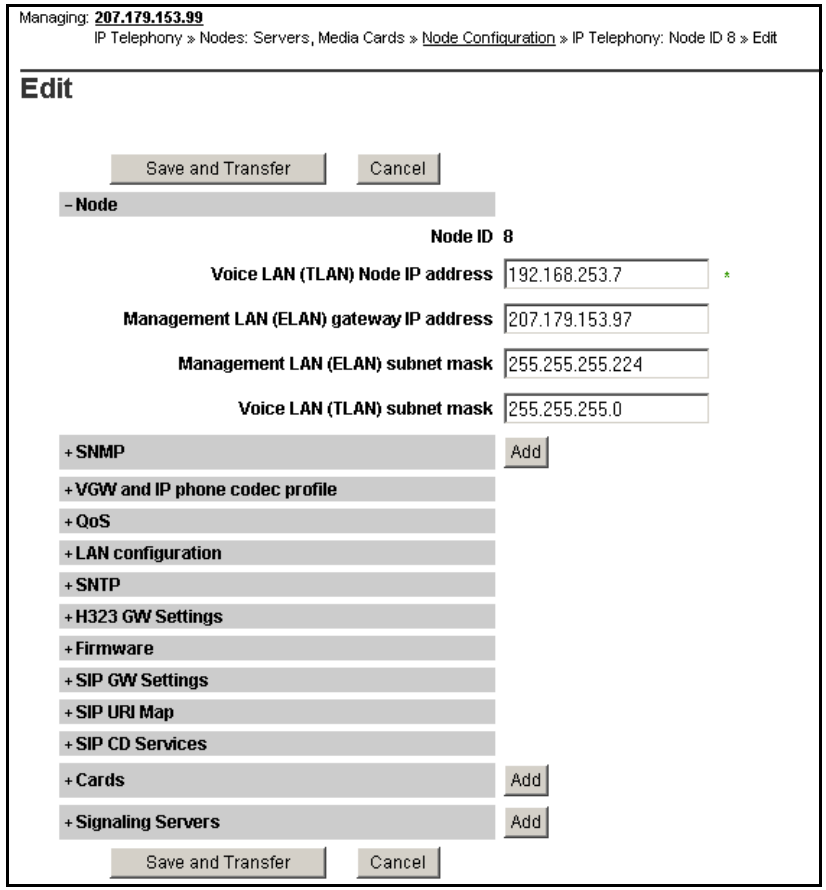
Figure 99
Node Configuration web page



3 Click **Edit** next to the Node to which the Voice Gateway Media Card is to be added.

The **Edit** web page opens, as shown in Figure 100 on page 323.

Figure 100
Edit web page



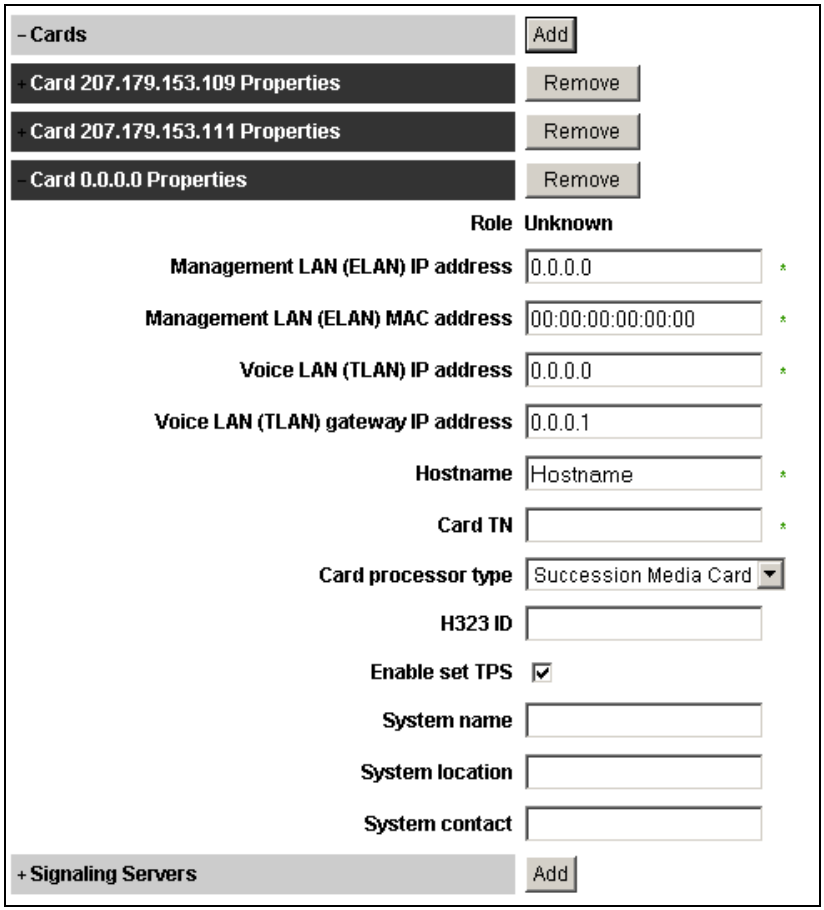
4 Click **Add** next to the **Cards** tab.

The Cards tab expands (see Figure 101 on page 324).

5 Enter your data for this Voice Gateway Media Card. The ELAN MAC address is on a faceplate sticker. The TN is the Voice Gateway Media Card logical card slot (See Table 41 on page 338).

Note: For more detail on Voice Gateway Media Card properties, see *IP Line: Description, Installation, and Operation* (553-3001-365).

Figure 101
Cards



6 Save the node.

a. Click **Save and Transfer** at the bottom of the **Edit** web page

b. Click **OK** to save this node.

End of Procedure

Configuring a card as a node Leader

A Voice Gateway Media Card remains at the default "Follower" setting in a CS 1000E system. A Signaling Server is the IP telephony node Leader.

In an IP telephony node without a Signaling Server, one of the Voice Gateway Media Cards must be configured as a Leader. If this is your configuration, see the *IP Line: Description, Installation, and Operation* (553-3001-365) for a detailed configuration procedure.

Normally, Voice Gateway Media Cards default as Followers. If you need to configure a Voice Gateway Media Card as a Follower, see the *IP Line: Description, Installation, and Operation* (553-3001-365) for a detailed configuration procedure.

Configuring voice gateway channels using Element Manager

The voice gateway channels are also called "DSP channels" or the card's "physical TNs". Follow Procedure 77 to configure the voice gateway channels using Element Manager.

> ***Note:*** The voice gateway channels can also be configured using LD 14. To configure the voice gateway channels using LD 14, follow Procedure 78 on page 328.

Procedure 77
Adding voice gateway channels using Element Manager

1 Select **IP Telephony > Nodes: Servers, Media Cards > Configuration** from the navigator.

The **Node Configuration** web page opens, as shown in Figure 99 on page 322.

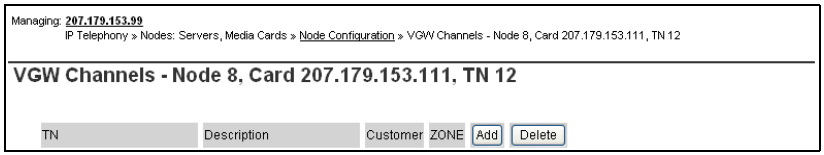
2 Click the **+** next to the desired node to expand it.

3 Click **VGW Channels** next to the desired card.

If no VGW channels are configured yet, an alert box is displays. Click **OK** to close the alert box.

The **VGW channels** configuration for this card opens, as shown in Figure 102.

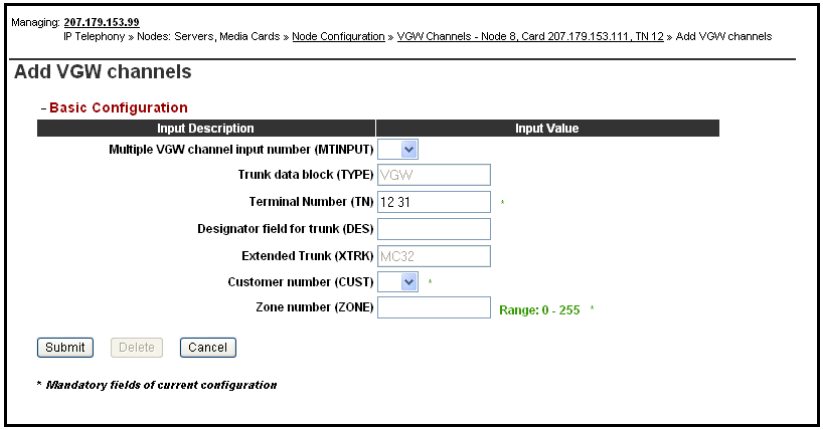
Figure 102
VGW Channel web page



4 Click **Add**.

The **Add VGW channels** web page opens, as shown in Figure 103.

Figure 103
Add VGW channels



5 Enter the appropriate parameters to configure the VGW channels.

The TN is the logical TN of the first Voice Gateway Media Card unit. See Table 41 on page 338 for the logical slot numbers.

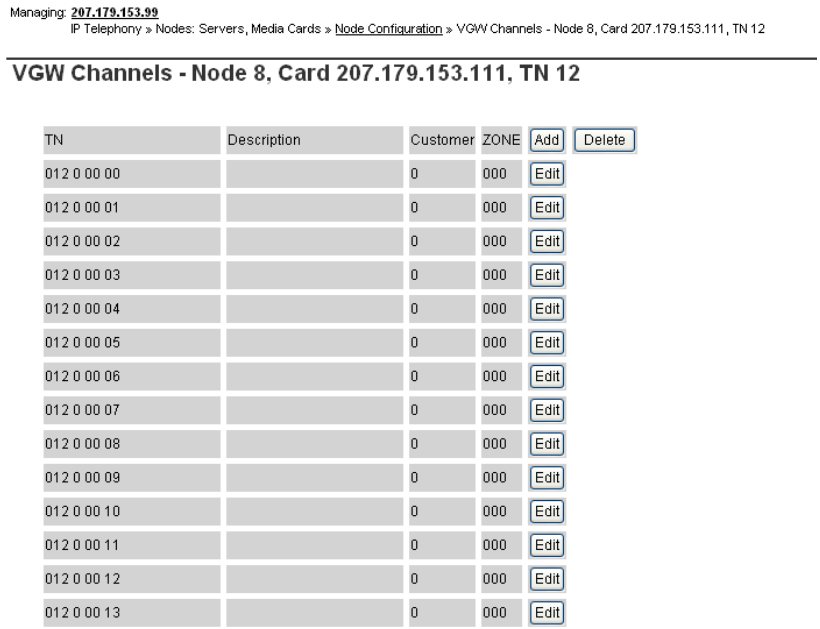
Note: The Media Card has 8 or 32 channels. The ITG-P card has 24 channels.

6 Click **Submit**.

The VGW channels for this card are displayed. See Figure 104 on page 327.

Note: If you receive an error that a pad category table does not exist for this customer, go back to your DTI configuration step, (see "Basic system telephony configuration" on page 479) and create a default DTI Data Block (DDB), and then perform this procedure again.

Figure 104
VGW channels list


Managing: 207.179.153.99
IP Telephony » Nodes: Servers, Media Cards » Node Configuration » VGW Channels - Node 8, Card 207.179.153.111, TN 12

VGW Channels - Node 8, Card 207.179.153.111, TN 12

TN	Description	Customer	ZONE	Add	Delete
012 0 00 00		0	000	Edit	
012 0 00 01		0	000	Edit	
012 0 00 02		0	000	Edit	
012 0 00 03		0	000	Edit	
012 0 00 04		0	000	Edit	
012 0 00 05		0	000	Edit	
012 0 00 06		0	000	Edit	
012 0 00 07		0	000	Edit	
012 0 00 08		0	000	Edit	
012 0 00 09		0	000	Edit	
012 0 00 10		0	000	Edit	
012 0 00 11		0	000	Edit	
012 0 00 12		0	000	Edit	
012 0 00 13		0	000	Edit	

End of Procedure

Configuring voice gateway channels using LD 14

The voice gateway channels are also called "DSP channels" or the card's "physical TNs." Follow Procedure 78 on page 328 to configure the voice gateway channels using LD 14.

Note: The voice gateway channels can also be configured using Element Manager. To configure the voice gateway channels using Element Manager, follow Procedure 77 on page 325.

Procedure 78
Configuring voice gateway channels using LD 14

1. Log in to the CS 1000E.
   a. Enter the command:

      LOGI

      System response:

      PASS?

   b. Enter the default password:

      0000

2. Access LD 14. Enter the command:

   LD 14

3. Enter responses shown in Table 39.

Table 39
LD 14 – Configure physical TNs (Part 1 of 2)

Prompt	Response	Description
REQ	NEW 24	Create 24 voice Media Gateway channels on an ITG-P Line card. Not supported on MG 1000E.
	NEW 32	Create 32 voice Media Gateway channels on a Media Card.
TYPE	VGW	Voice Gateway.
TN	l s c u	TN of the first Voice Gateway Media Card unit. See Table 40 on page 337 for TN assignments.
DES	aa.....a	Description for gateway channels. Identify the channels using the card's TLAN IP address or MAC address.
XTRK	MC32	Media Card 32-port

Table 39
LD 14 – Configure physical TNs (Part 2 of 2)

Prompt	Response	Description
MAXU	32 24	32 is the maximum number of voice Media Gateway channels on the Media Card. For MG 1000T when XTRK = ITG2 24 is the maximum number of voice Media Gateway channels on the ITG-P Line card.
IPTN	YES	ITG Physical TN.
ZONE	0-255	MG 1000T Zone number to which the Voice Gateway Media Card Physical TNs belong. Verify that the zone exists in LD 117. The ZONE prompt is not available when configuring VGW in an MG 1000E. The VGWs are assigned the same zone as the MG 1000E. ***Note:*** If the Zone of an MG 1000E is changed, all VGW in the MG 1000E must be removed and reconfigured to assume the new Zone of the MG 1000E.
CUST	xx	The customer to which the IPTN resources are assigned. ***Note:*** This means that for multi-customer CS 1000E systems, each customer must have a dedicated IP Telephony node for IP Phones.

4 Exit from LD 14. Enter the command:

****

End of Procedure

Saving configuration changes

Perform a datadump to save configuration changes. Complete the steps in Procedure 97: "Performing a datadump using Element Manager" on page 380.

Installing a CompactFlash

The Voice Gateway Media Card requires a CompactFlash card to operate. The CompactFlash card contains the IP Line 3.1 software.

CAUTION WITH ESDS DEVICES

Wear an antistatic device to avoid damage to the Voice Gateway Media Card.

The Voice Gateway Media Card package includes the following:

- Media Card
- CompactFlash card and Retaining Pin (nylon pillar)
- Shielded 50-pin to Serial/ELAN/TLAN adapter

The CompactFlash card must be installed on the Voice Gateway Media Card prior to installing the Voice Gateway Media Card in the system. Figure 105 on page 331 shows the CompactFlash card location on the Voice Gateway Media Card.

Figure 105
CompactFlash card location

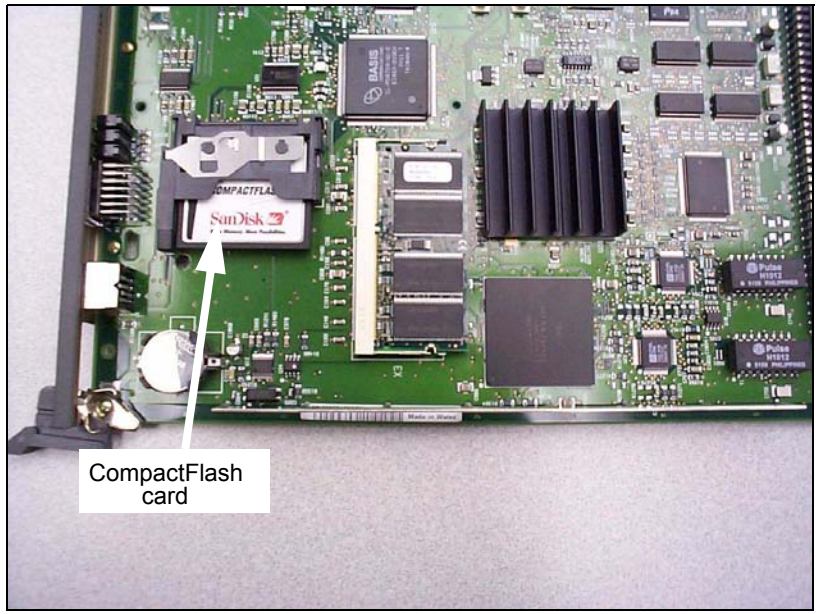


Figure 106 shows the CompactFlash card and Retaining Pin.

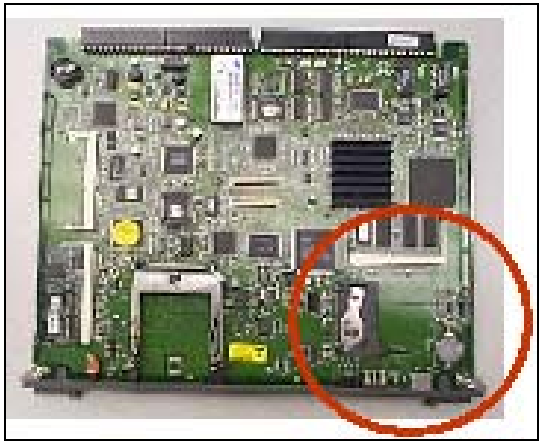
Figure 106
CompactFlash card and Retaining Pin

Procedure 79
Installing the CompactFlash

1 Remove the Media Card, CompactFlash card, and Retaining Pin from the packaging.

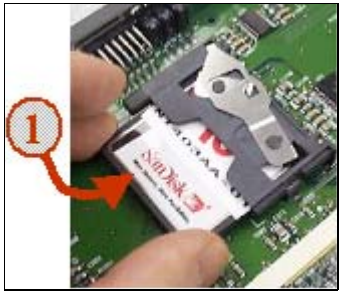
2 Locate the CompactFlash socket in the lower left-hand corner of the Voice Gateway Media Card (see Figure 107).

Figure 107
CompactFlash socket on Voice Gateway Media Card



3 Position the CompactFlash card with the label facing up and contact pins toward the socket, as shown in Figure 108.

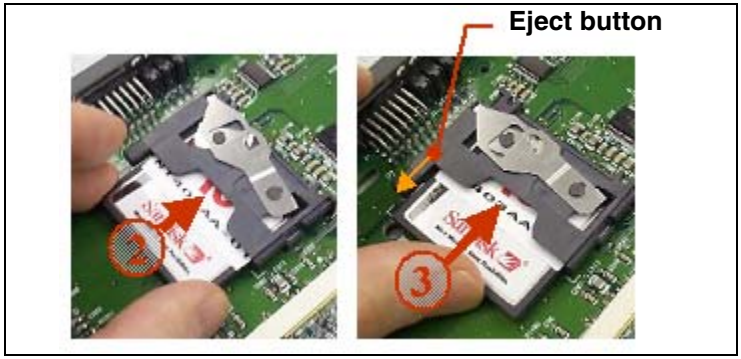
Figure 108
Position the CompactFlash in socket



4 Insert the CompactFlash card in the socket.

Press firmly until it is fully seated and the Eject button extends (see Figure 109).

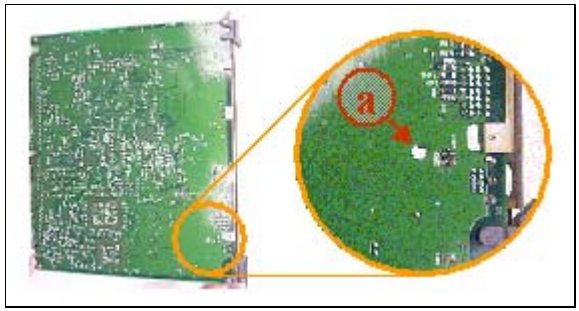
Figure 109
Insert CompactFlash to extend Eject button



5 Turn the Voice Gateway Media Card over to view the back of the card.

Identify the hole for the Retaining Pin. The hole (labeled ***a*** in Figure 110) is located approximately 1 inch (2.5 cm) above the lower lock latch and 1 inch (2.5 cm) from the card's faceplate.

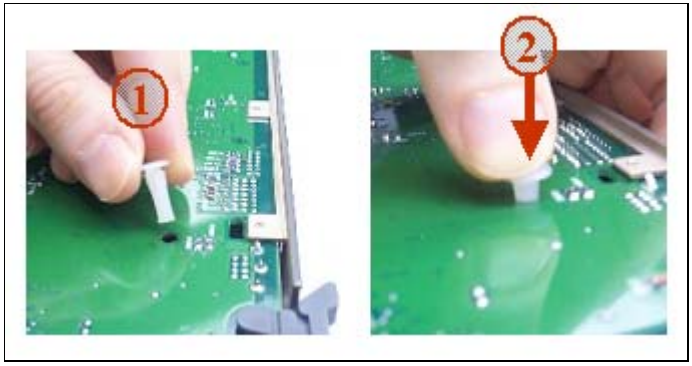
Figure 110
Retaining Pin hole



6 Insert the Retaining Pin in this hole (labeled **1** in Figure 111).

Press the Retaining Pin into the hole until the pin clicks as it locks into position (labeled **2** in Figure 111). The underside of the head of the Retaining Pin should be flat against the card.

Figure 111
Inserting the Retaining Pin



7 Turn the card over to view the front of the card. Ensure the Retaining Pin is in place, as shown Figure 112 on page 334.

Figure 112
Retaining Pin fully inserted

End of Procedure

Installing a card in a Media Gateway

A Voice Gateway Media Card can be installed in a Media Gateway or a Media Gateway Expander slot. See Figure 113 on page 335 and Figure 114 on page 336 to make sure that you insert the Voice Gateway Media Card in the correct slot.

> ***Note:*** See your installation worksheet, provided by your Planning and Engineering group for the correct slot for the Voice Gateway Media Cards.

Figure 113 shows the circuit card assignments in the Media Gateway.

Figure 113
Media Gateway card slot location

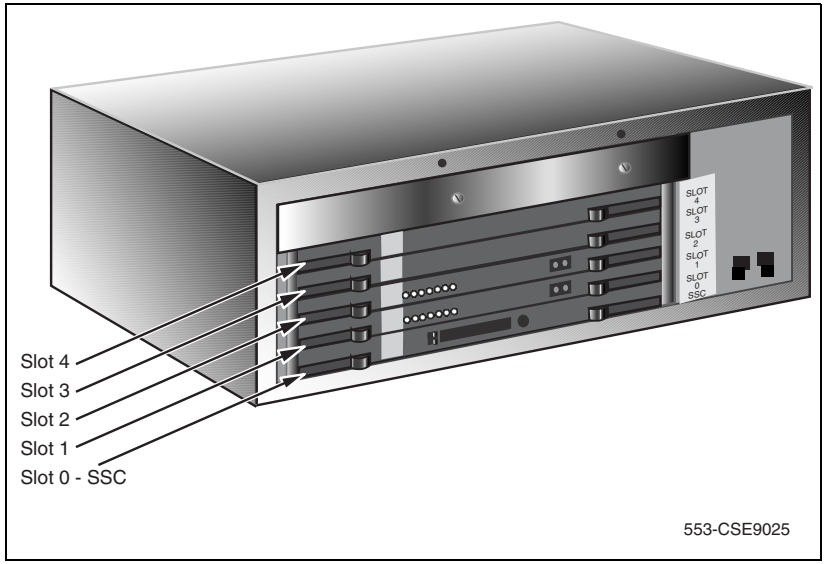


Figure 114 on page 336 shows the circuit card assignments in the Media Gateway Expander.

Figure 114
Media Gateway Expander card slot location

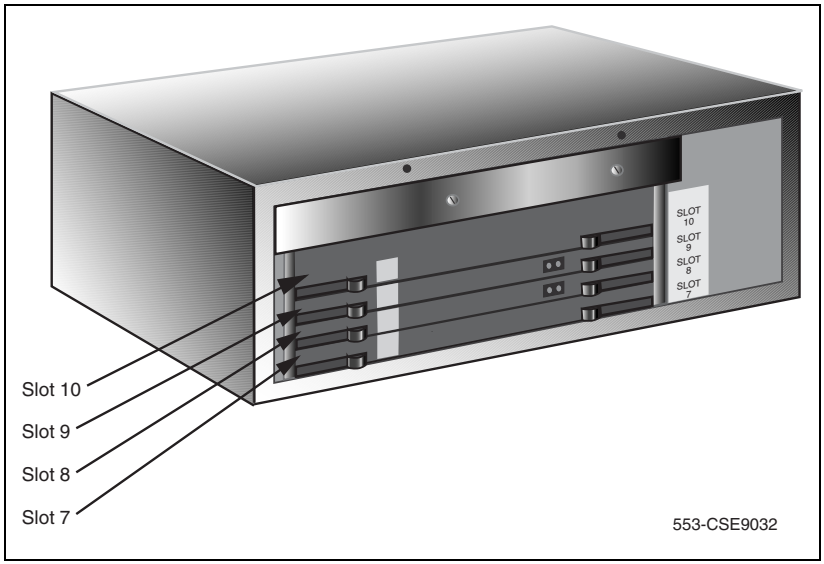


Table 40 on page 337 shows the TN assignments for the MG 1000E. Communication Server 1000 Release 4.5 supports up to 30 MG 1000E.

Table 40
TN assignments for MG 1000E

	MG 1000E				MG 1000E Expander			
Slots	**1**	**2**	**3**	**4**	**7**	**8**	**9**	**10**
TN	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**
MG 1000E								
1	000 0 01	000 0 02	000 0 03	000 0 04	000 0 07	000 0 08	000 0 09	000 0 10
2	000 1 01	000 1 02	000 1 03	000 1 04	000 1 07	000 1 08	000 1 09	000 1 10
3	004 0 01	004 0 02	004 0 03	004 0 04	004 0 07	004 0 08	004 0 09	004 0 10
4	004 1 01	004 1 02	004 1 03	004 1 04	004 1 07	004 1 08	004 1 09	004 1 10
5	008 0 01	008 0 02	008 0 03	008 0 04	008 0 07	008 0 08	008 0 09	008 0 10
6	008 1 01	008 1 02	008 1 03	008 1 04	008 1 07	008 1 08	008 1 09	008 1 10
7	012 0 01	012 0 02	012 0 03	012 0 04	012 0 07	012 0 08	012 0 09	012 0 10
8	012 1 01	012 1 02	012 1 03	012 1 04	012 1 07	012 1 08	012 1 09	012 1 10
9	016 0 01	016 0 02	016 0 03	016 0 04	016 0 07	016 0 08	016 0 09	016 0 10
10	016 1 01	016 1 02	016 1 03	016 1 04	016 1 07	016 1 08	016 1 09	016 1 10
11	020 0 01	020 0 02	020 0 03	020 0 04	020 0 07	020 0 08	020 0 09	020 0 10
12	020 1 01	020 1 02	020 1 03	020 1 04	020 1 07	020 1 08	020 1 09	020 1 10
13	024 0 01	024 0 02	024 0 03	024 0 04	024 0 07	024 0 08	024 0 09	024 0 10
14	024 1 01	024 1 02	024 1 03	024 1 04	024 1 07	024 1 08	024 1 09	024 1 10
...								
...								
127	252 0 01	252 0 02	252 0 03	252 0 04	252 0 07	252 0 08	252 0 09	252 0 10
128	252 1 01	252 1 02	252 1 03	252 1 04	252 1 07	252 1 08	252 1 09	252 1 10

Note: The bottom most card slot in the Media Gateway is reserved for the SSC card.

Table 41 shows the slot assignments for the MG 1000T Media Gateway and Media Gateway Expansion

Table 41
MG 1000T Media Gateway/Expansion card slot assignments

	Media Gateway/Media Gateway Expansion									
	Media Gateway 0		**Media Gateway 1**		**Media Gateway 2**		**Media Gateway 3**		**Media Gateway 4**	
	Physical card slot	Logical card slot	Physical card slot	Logical card slot	Physical card slot	Logical card slot	Physical card slot	Logical card slot	Physical card slot	Logical card slot
Media Gateway	1	1	1	11	1	21	1	31	1	41
	2	2	2	12	2	22	2	32	2	42
	3	3	3	13	3	23	3	33	3	43
	4	4	4	14	4	24	4	34	4	44
	5	*	5	*	5	*	5	*	5	*
	6	*	6	*	6	*	6	*	6	*
Media Gateway Expansion	7	7	7	17	7	27	7	37	7	47
	8	8	8	18	8	28	8	38	8	48
	9	9	9	19	9	29	9	39	9	49
	10	10	10	20	10	30	10	40	10	50

Note: The bottom most card slot in the Media Gateway is reserved for the SSC card.

Procedure 80
Installing a Voice Gateway Media Card in a card slot

The ELAN subnet and TLAN subnet should already be connected on the back of the Media Gateway. If not, refer back to “Connecting CS 1000E system components” on page 103.

Optionally, you can connect a maintenance terminal to the maintenance port on the Voice Gateway Media Card, to see the Voice Gateway Media Card's boot messages or to perform maintenance on it. See "Connecting CS 1000E system components" on page 103 for more detail.

1 Install the Voice Gateway Media Card into the card slot.

   a. Pull the top and bottom locking devices away from the card faceplate.

   b. Insert the Voice Gateway Media Card into the card guides and gently push it until it makes contact with the backplane connector.

   c. Hook the locking devices.

   Note: The Voice Gateway Media Card boots automatically. If the Voice Gateway Media Card is a Follower, then it retrieves the node configuration files from the IP telephony node Leader. If it is a Leader, then you must configure it. See *IP Line: Description, Installation, and Operation* (553-3001-365) for a detailed configuration procedure.

2 Observe the Voice Gateway Media Card faceplate display.

   The red LED remains lit until the card is configured and enabled, at which point it turns off. When the card has finished booting, the display is either "Fxxx" or "Lxxx" (where xxx is the number of telephones registered to the card), indicating that the card is a Follower or Leader.

3 If required, you can now perform maintenance on the card using Element Manager, or through the card's maintenance port if you connected a maintenance terminal to it. See *IP Line: Description, Installation, and Operation* (553-3001-365) for detailed maintenance procedures.

End of Procedure

Verifying a card

Verifying a card involves:

- Procedure 81: "Displaying the Voice Gateway Media Card status" on page 340
- Procedure 82: "Displaying the Voice Gateway status for all voice gateway channels" on page 341
- Procedure 83: "Displaying the status of Voice Gateway Media Card units" on page 344

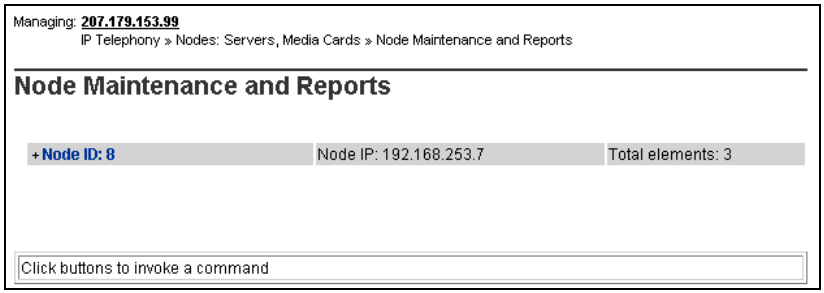
- Procedure 84: "Displaying the status of one unit on a Voice Gateway Media Card" on page 347

Procedure 81
Displaying the Voice Gateway Media Card status

1 In Element Manager, select **IP Telephony > Nodes: Servers, Media Cards > Maintenance and Reports** from the navigator.

The **Node Maintenance and Reports** web page opens, as shown in Figure 115.

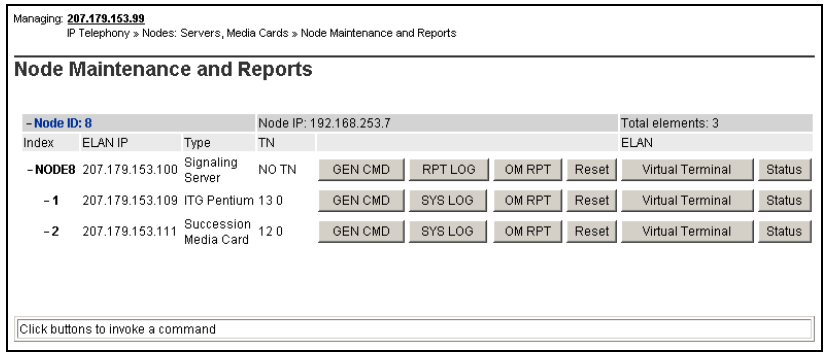
Figure 115
Node Maintenance and Reports web page



2 Open the desired node by clicking on the **+** next to the **Node ID**.

This displays the Signaling Servers and Voice Gateway Media Cards belonging to the node, as shown in Figure 116 on page 341.

Figure 116
Node Maintenance and Reports – expanded node



3 Click **Status** for the desired Voice Gateway Media Card.

The output from this command is displayed in the window pane (result box).

The output can be one of the following:

```
xx.xxx.xxx.xxx : Disabled

xx.xxx.xxx.xxx : Enabled

xx.xxx.xxx.xxx : Unequipped
```

Where xx.xxx.xxx.xxx is the ELAN IP address of the Voice Gateway Media Card and the meaning of the status is:

- **Disabled** – The card is configured but out-of-service.
- **Enabled** – The card is configured and operational.
- **Unequipped** – The card is not configured in the Call Server.

End of Procedure

Procedure 82
Displaying the Voice Gateway status for all voice gateway channels

1 In Element Manager, select **IP Telephony > Nodes: Servers, Media Cards > Maintenance and Reports** from the navigator.

The **Node Maintenance and Reports** web page opens, as shown in Figure 115 on page 340.

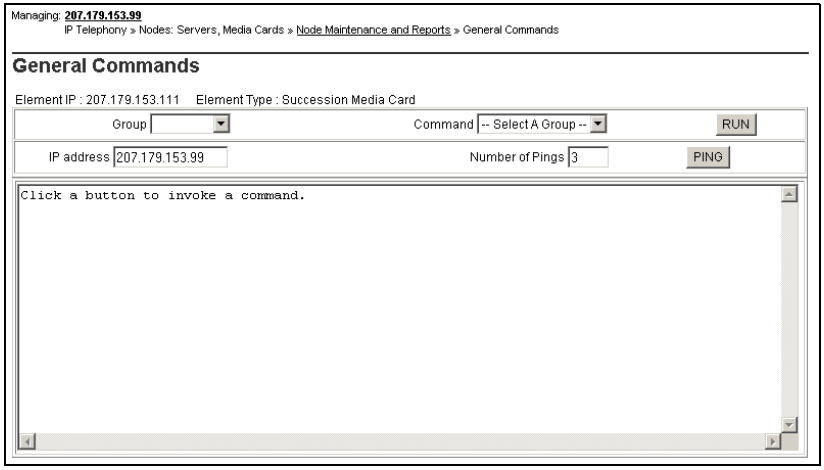
2 Open the desired node by clicking on the **+** next to the **Node ID**.

This displays the Signaling Servers and Voice Gateway Media Cards belonging to the node, as shown in Figure 116 on page 341.

3 Click **GEN CMD** for the desired Voice Gateway Media Card.

The **General Commands** web page opens, as shown in Figure 117.

Figure 117
General Commands



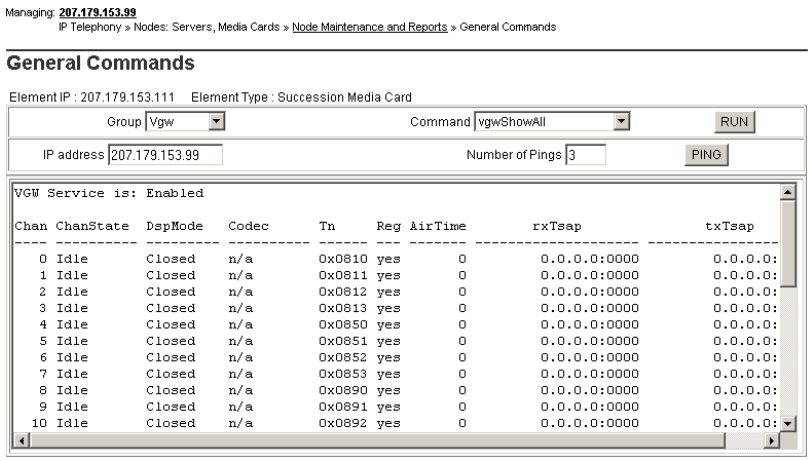
4 From the **Group** drop-down list, select **Vgw**.

5 From the **Command** drop-down list, select **vgwShowAll**.

6 Click **RUN**.

Figure 118 on page 343 shows the **General Commands** web page with the output from the **vgwShowAll** command. The output shows information about all the voice gateway channels.

Figure 118
vgwShowAll result



The following information is provided for each VGW channel:

- Chan – Channel number
- ChanState – State of channel (Idle/Busy/Disabled/Unequipped)
- DspMode – Mode DSP is in (Voice/Closed)
- Codec – Codec frame-size used for the call
- Tn – Channel's physical TN in packed format
- Reg – Status of channel's gateway registration
- Air Time – Duration of audio stream connection in seconds. Zero when the audio stream is closed.
- txTsap – IP address and port the Voice Gateway Media Card is using to send RTP packets.

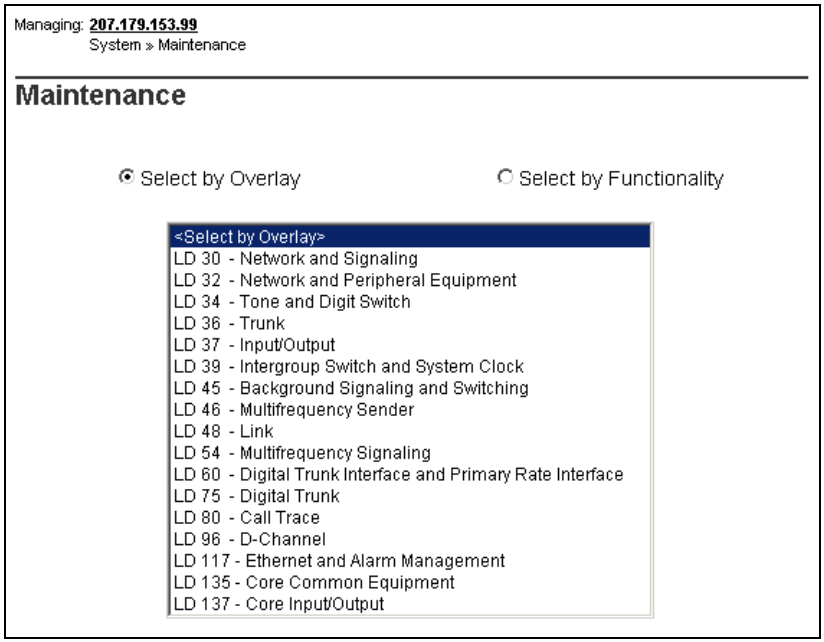
End of Procedure

Procedure 83
Displaying the status of Voice Gateway Media Card units

1 Select **System > Maintenance** from the navigator.

The **Maintenance** web page opens as shown in Figure 119. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 119.

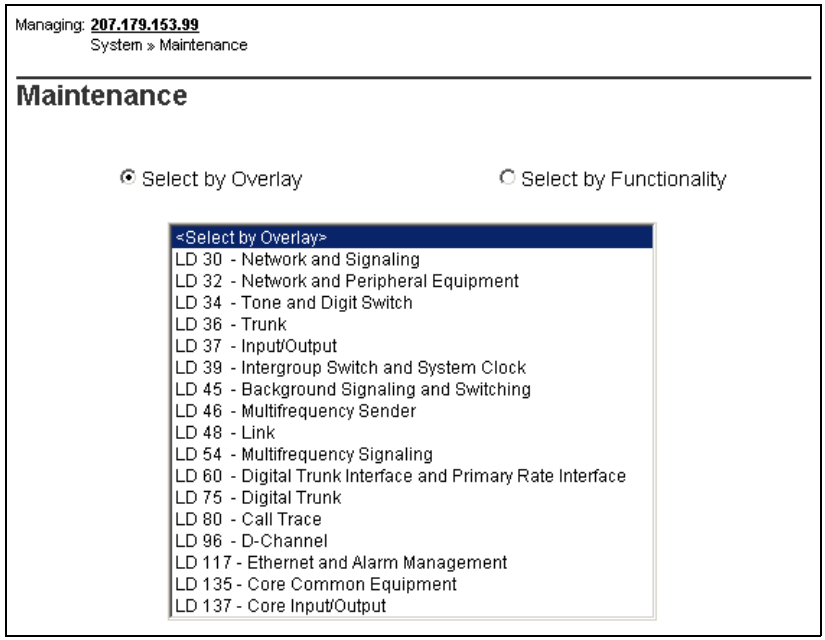
Figure 119
Maintenance (by Overlay) web page



2 Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 120 on page 345.

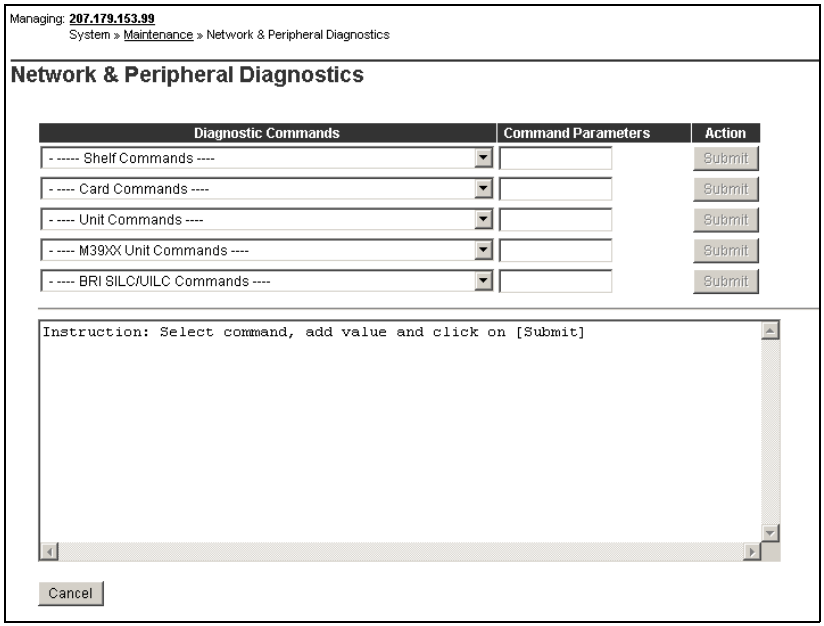
Figure 120
Maintenance (by functionality) web page



3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 120.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 121 on page 346.

Figure 121
Network & Peripheral Diagnostics web page



4 Choose the **STAT — Get card status** command from the **Card Commands** drop-down list.

5 Enter the card number in the corresponding **Command Parameter** text box.

6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Procedure 84
Displaying the status of one unit on a Voice Gateway Media Card

1 Select **System > Maintenance** from the navigator.

The **Maintenance** web page opens as shown in Figure 119 on page 344. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 119.

2 Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 120 on page 345.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 120 on page 345.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 121 on page 346.

4 Choose the **STAT — Get unit status** command from the **Unit Commands** drop-down list.

5 Enter the card number and unit number in the corresponding **Command Parameter** text box.

6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Disabling a card

Follow Procedure 85 to disable a Voice Gateway Media Card using Element Manager.

Procedure 85
Disabling a Voice Gateway Media Card using Element Manager

1 Select **System > Maintenance** from the navigator.

The **Maintenance** web page opens as shown in Figure 119 on page 344. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 119.

2 Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 120 on page 345.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 120 on page 345.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 121 on page 346.

4 Select the **DISC – Disable card** command from the **Card Commands** drop-down list.

5 Enter the card number in the corresponding **Command Parameter** text box.

6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Note: For graceful disabling of the voice gateway channels refer to "Graceful Disable" in *IP Line: Description, Installation, and Operation* (553-3001-365).

Disabling a card unit

Follow Procedure 86 to disable a Voice Gateway Media Card unit in Element Manager.

Procedure 86
Disabling a Voice Gateway Media Card unit using Element Manager

1 Select **System > Maintenance** from the navigator.

The **Maintenance** web page opens as shown in Figure 119 on page 344. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 119.

2 Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 120 on page 345.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 120 on page 345.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 121 on page 346.

4 Select the **DISU – Disable unit** command from the **Unit Commands** drop-down list.

5 Enter the card number and unit number in the corresponding **Command Parameter** text box.

6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Enabling a card

Follow Procedure 87 to enable a Voice Gateway Media Card using Element Manager.

Procedure 87
Enabling a Voice Gateway Media Card using Element Manager

1 Select **System > Maintenance** from the navigator.

The **Maintenance** web page opens as shown in Figure 119 on page 344. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 119.

2 Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 120 on page 345.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 120 on page 345.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 121 on page 346.

4 Select the **ENLC – Enable and reset card** command from the **Card Commands** drop-down list.

5 Enter the card number in the corresponding **Command Parameter** text box.

6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Enabling a card unit

Follow Procedure 88 to enable a Voice Gateway Media Card unit using Element Manager.

Procedure 88
Enabling a Voice Gateway Media Card unit using Element Manager

1 Select **System > Maintenance** from the navigator.

The **Maintenance** web page opens as shown in Figure 119 on page 344. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 119.

2 Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 120 on page 345.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 120 on page 345.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 121 on page 346.

4 Select the **ENLU – Enable unit** command from the **Unit Commands** drop-down list.

5 Enter the card number and unit number in the corresponding **Command Parameter** text box.

6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Verifying functionality

You can now use the Voice Gateway Media Card to transcode voice data between IP and TDM. To test the voice gateway channels (DSPs), perform a variety of analog or digital calls to IP Phones and vice-versa.

Note: You require analog or digital telephones or trunks to perform this test.

Upgrading loadware

Refer to *Communication Server 1000E: Upgrade Procedures* (553-3041-258) to check for the latest Voice Gateway Media Card loadware version and how to upgrade to the latest Voice Gateway Media Card loadware.

Installing the Main Distribution Frame

Contents

This section contains information on the following topics:

Introduction

This chapter describes how to install and connect a CS 1000E system using the BIX, or Krone Test Jack Frame (UK) cross-connect terminals.

This chapter contains the following procedures:

1. Procedure 89: “Installing a BIX cross-connect terminal” on page 354.
2. Procedure 90: “Installing the Krone Test Jack Frame (UK)” on page 358.
3. Procedure 91: “Connecting the cables to the Media Gateways” on page 360.

Note: The use of the BIX system is not mandatory; however, it is the recommended option.

Terminal block requirements

The cross-connect terminal requires enough connecting blocks to terminate up to four 25 pair cables for each Media Gateway and each Media Gateway Expander. When Ethernet connections are used instead of traditional cabling, the Media Card Input/Output adapter is used:

- For the 1.5 Mbit DTI/PRI circuit card NTRB21, use the NTBK04 cable.
- For the 2.0 Mbit DTI circuit card NTAK10, 2.0 Mbit PRI circuit card NTAK79, and 2.0 Mbit PRI circuit card NTBK50, use the NTBK05 cable.
- Each IPE card slot equipped with a Line or Trunk card requires a 25-pair cable from the host Media Gateway or Media Gateway Expander.
- Four conductors for the AUX cable from the Media Gateway.
- One 25-pair cable from each Power Fail Transfer Unit (PFTU) QUA6.
- Wiring from telephones and trunks

DANGER

Do not install telephone wiring during a lightning storm. Never touch uninsulated telephone wiring, unless the line is disconnected at the network interface.

Installing a BIX cross-connect terminal

Procedure 89 describes how to install a BIX cross-connect terminal. For detailed information, refer to the Nordex BIX documentation.

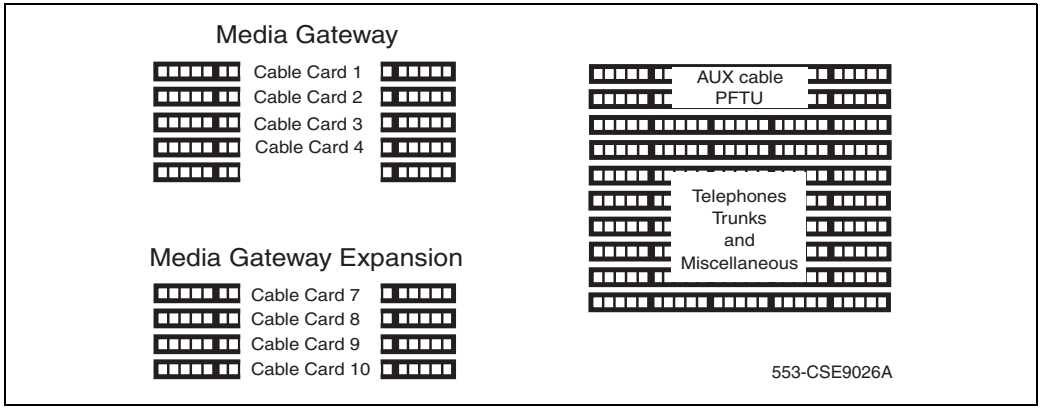
Procedure 89
Installing a BIX cross-connect terminal

1. Refer to the equipment layout plan to determine where to place the cross-connect terminal.
2. Lay out the terminal blocks as shown in Figure 122 on page 355.

3 Attach labels on the cross-connect terminal to indicate the terminal blocks assigned to the following:

- 25-pair cables from the system
- AUX wiring
- PFTUs
- Telephones and consoles
- Trunks
- Miscellaneous equipment

Figure 122
Typical BIX cross-connect terminal layout



End of Procedure

Installing a Krone Test Jack Frame for the UK

The Krone Test Jack Frame provides terminating strips that hold ten pairs of cable. Generally, only eight of ten pairs are used. As a result, one 25-pair cable requires three terminating strips (8 pairs/strip x 3 strips = 24 pairs).

Figure 123 on page 357 shows how one 25-pair cable is divided among three terminating strips on the Krone Test Jack Frame.

Figure 123
25-pair cable on three Krone strips

Pair	Pin Number	Wire Colour	Krone Strip
1T	26	W-BL	
1R	1	BL-W	
2T	27	W-O	
2R	2	O-W	
3T	28	W-G	
3R	3	G-W	
4T	29	W-BR	1
4R	4	BR-W	
5T	30	W-S	
5R	5	S-W	
6T	31	R-BL	
6R	6	BL-R	
7T	32	R-O	
7R	7	O-R	
8T	33	R-G	
8R	8	G-R	
9T	34	R-BR	
9R	9	BR-R	
10T	35	R-S	
10R	10	S-R	
11T	36	BK-BL	
11R	11	BL-BK	
12T	37	BK-O	2
12R	12	O-BK	
13T	38	BK-G	
13R	13	G-BK	
14T	39	BK-BR	
14R	14	BR-BK	
15T	40	BK-S	
15R	15	S-BK	
16T	41	Y-BL	
16R	16	BL-Y	
17T	42	Y-O	
17R	17	O-Y	
18T	43	Y-G	
18R	18	G-Y	
19T	44	Y-BR	
19R	19	BR-Y	
20T	45	Y-S	
20R	20	S-Y	
21T	46	V-BL	3
21R	21	BL-V	
22T	47	V-O	
22R	22	O-V	
23T	48	V-G	
23R	23	G-V	
24T	49	V-BR	
24R	24	BR-V	
25T	50	V-S	
25R	25	S-V	

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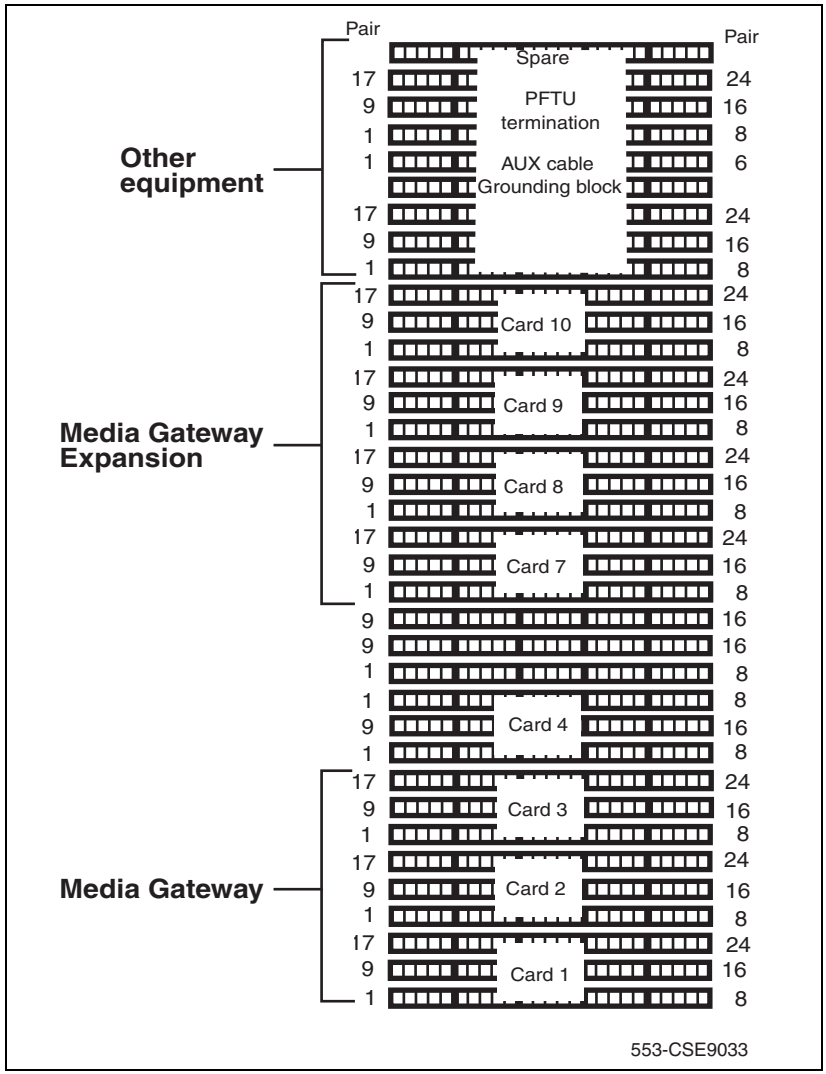
Procedure 90 describes how to install the Krone Test Jack Frame for the UK. For detailed information, refer to the Krone documentation.

Procedure 90
Installing the Krone Test Jack Frame (UK)

1. Refer to the equipment layout plan to determine where to place the cross-connect terminal.
2. Lay out the terminal blocks as shown in Figure 124 on page 359.
3. Attach labels on the cross-connect terminal to indicate the terminal blocks assigned to the following:
   - Analog Line cards
   - DC15/AC15/RAN/PAG cards
   - Data Access cards
   - AUX wiring
   - Power Fail Transfer Units
   - Digital Line cards
   - Telephones
   - Exchange Line Trunk cards
   - Direct Dialing Inward trunk cards
   - Miscellaneous equipment

Figure 124
Typical Krone cross-connect terminal layout (UK)



End of Procedure

Connecting the cables to the Media Gateways

DANGER

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Each Media Gateway and each Media Gateway Expander requires up to four 25-pair cables. The CS 1000E requires an additional terminal block at the cross-connect terminal to terminate the 9-pin conductor auxiliary cable for the QUA6 Power Fail Transfer Unit (PFTU).

WARNING

Do not use the NE-A25B cable with the NTRB21, NTAK10, NTBK50, or NTAK79 circuit cards.

Procedure 91
Connecting the cables to the Media Gateways

1. Loosen the velcro straps at each connector you plan to use.
2. Connect a 25-pair cable to each of the connectors that contains a line or trunk card. Refer to the card slot assignment plan.
3. Tag both ends of each cable with the equipment and connector numbers. See Figure 125 on page 361 and Figure 126 on page 361.

Figure 125
Cable connectors at the back of the Media Gateway

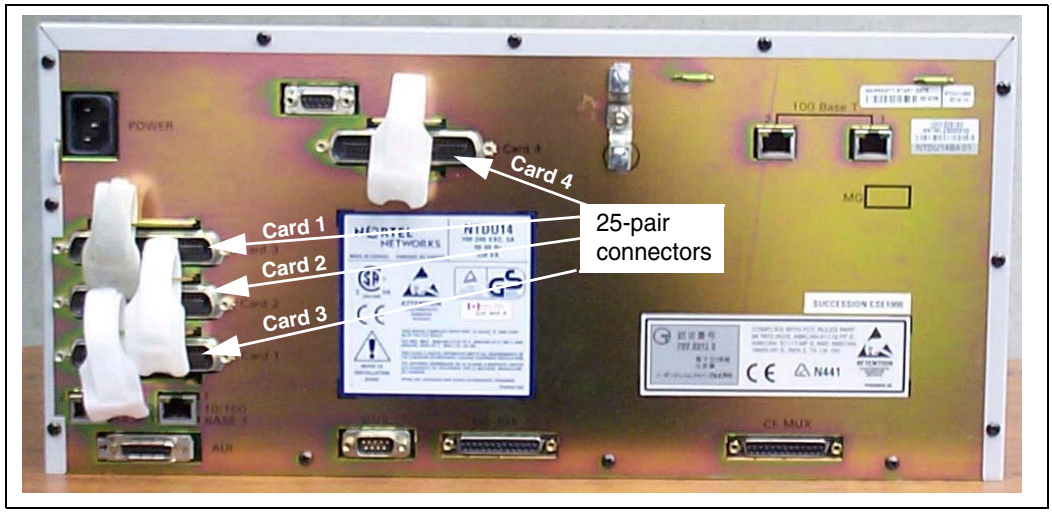
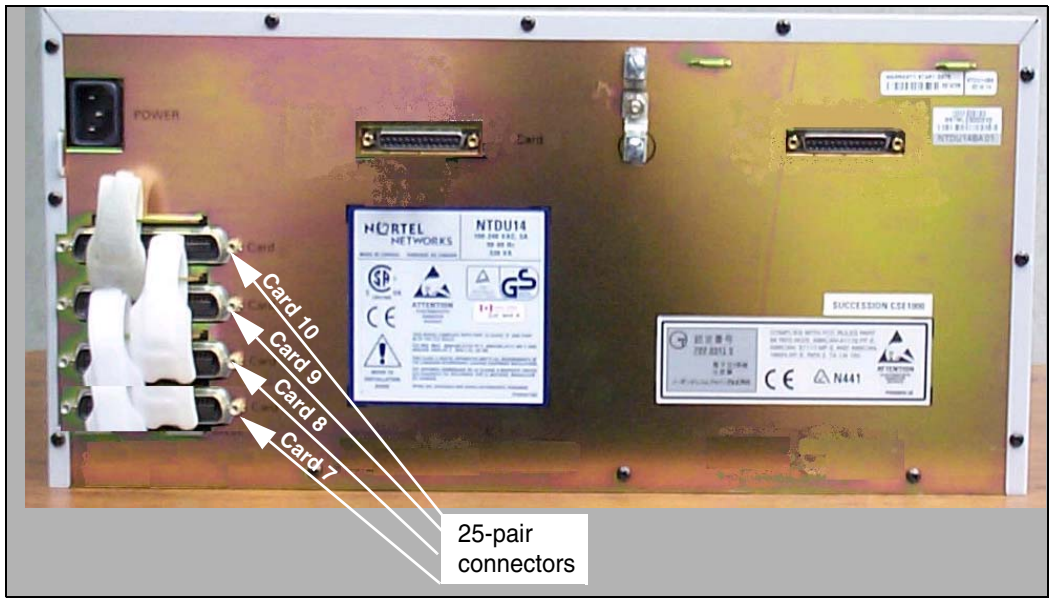


Figure 126
Cable connectors at the back of the Media Gateway Expander



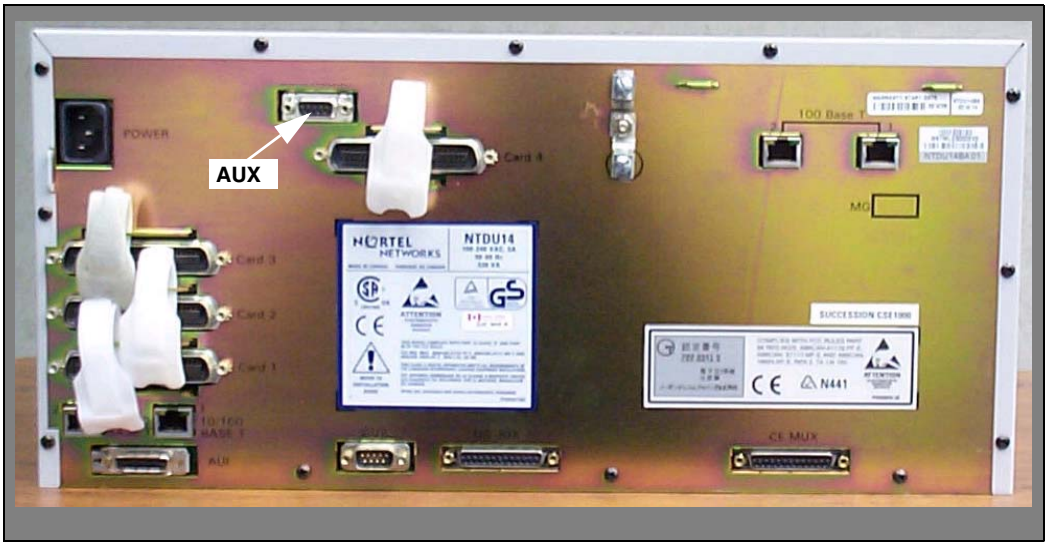
4 Tighten the velcro straps when you have connected each cable to the system.

5 Terminate all the 25-pair cables installed at the cross-connect terminal.

6 Label all the cables at the cross-connect terminal blocks according to the card slot assignment plan.

7 Connect the AUX cable in the upper 9-pin connector located on the top left-hand side of the Media Gateway. See Figure 127 on page 362.

Figure 127
AUX cable connector



8 When auxiliary power is required from the QUA6 PFTU, terminate the AUX cable at the PFTU cross-connect terminal, according to Table 42.

Table 42
AUX cable termination information

Color	Wire number	Designation	Connection
W-BL	1	BRTN	to QUA6-J1 1R
BL-W	2	BRTN	to QUA6-J1 2R
O-W	3	-48V AUX (250mA)	to QUA6-J1 25T, 25R
W-O	4	PFTS	to QUA6-J1 2T
G-W	5	Not used	Not used
W-G	6	Not used	Not used

End of Procedure

Configuring an IP telephony node

Contents

This section contains information on the following topics:

Introduction

An IP Telephony node is defined as a collection of Signaling Servers and Voice Gateway Media Cards. Each network node has a unique Node ID, which is an integer value. A node has only one Leader Signaling Server. All other Signaling Servers and Voice Gateway Media Cards are defined as Followers. An IP Telephony node must be configured to make a CS 1000 system operational. For more information about IP Telephony nodes and their configuration, refer to IP Line: Description, Installation, and Operation (553-3001-365).

The IP Telephony node database files are backed up, along with the customer database, by using the EDD command in LD 43. Refer to Software Input/ Output: Maintenance (553-3001-511) for details about this command.

The preconfigured IP telephony configuration files from the leader Signaling Server must be imported. These files are saved on the CS 1000E as:

- c:/u/db/node/node*x*.cfg where *x* is the node number
- c:/u/db/node/node*x*.btp where *x* is the node number

IMPORTANT!

Do not attempt to alter the configuration files either manually or with OTM's ITG or IP Phone management. Use Element Manager only.

This chapter contains the following procedures:

- Procedure 92: "Turning off browser caching in Internet Explorer" on page 367
- Procedure 93: "Logging in to Element Manager" on page 370
- Procedure 94: "Importing an existing node" on page 372
- Procedure 95: "Reviewing and submitting IP telephony node configuration" on page 374
- Procedure 96: "Adding a Follower Signaling Server to the IP telephony node in Element Manager" on page 379
- Procedure 97: "Performing a datadump using Element Manager" on page 380

Before you begin

Perform a datadump

Use Element Manager to perform a datadump before making any changes to the IP telephony node. A datadump backs up both the IP telephony node configuration files and the customer database files. The datadump procedure using Element Manager is outlined in Procedure 97 on page 380.

Enable the multi-user option

Enable the multi-user option to access Command Line Interface (CLI) overlays and Element Manager at the same time. For more information about

Limited Access to Overlays, see *Features and Services* (553-3001-306) and *Software Input/Output: Administration* (553-3001-311).

Configuring MS Internet Explorer

Element Manager is available to configure IP telephony parameters on the system. It is accessed by pointing MS Internet Explorer (version 6.0.2600 or higher) to the ELAN subnet, TLAN subnet, or node IP address of the Signaling Server.

Note: Element Manager requires Microsoft Internet Explorer 6.0.2600 or higher. The Netscape browser is not supported.

IMPORTANT!

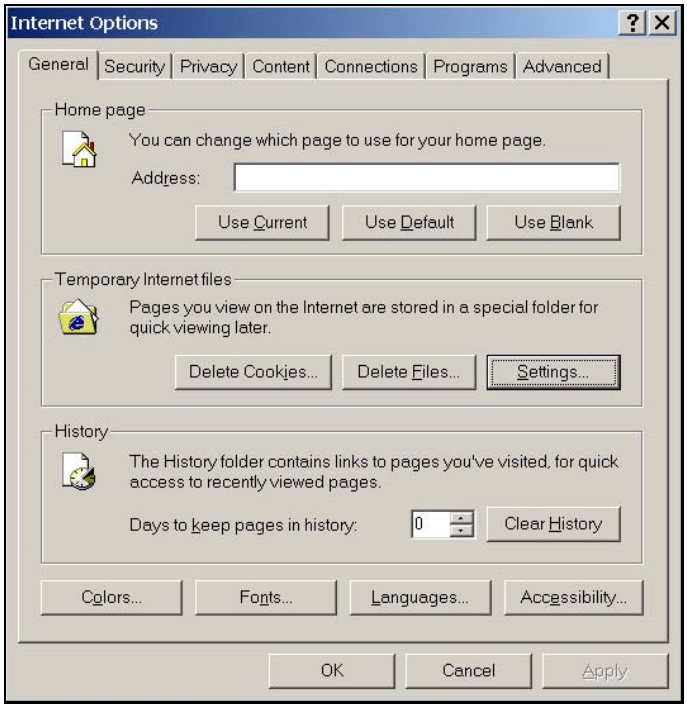
Internet Explorer caching must be turned off. If Internet Explorer caching is on, the user cannot see the changes in real-time.

Follow Procedure 92 to prevent caching of web pages by Internet Explorer.

Procedure 92
Turning off browser caching in Internet Explorer

1. Launch Internet Explorer.
2. Click **Tools > Internet Options**. The **Internet Options** window opens (see Figure 128 on page 368).

Figure 128
Internet Explorer – Internet Options



3 On the **General** tab, under the **Temporary Internet files** section, click **Settings**. The **Settings** window opens (see Figure 129 on page 369).

Figure 129
Temporary Internet files – Settings window

4 Click **Every visit to the page**. This checks for new versions of stored pages on every visit to the web page.

5 Click **OK** in the Settings window.

6 Click **OK** in the Internet Options window.

End of Procedure

Logging in to Element Manager

Follow Procedure 93 to log in to Element Manager.

Procedure 93
Logging in to Element Manager

1 Open the web browser.

2 Enter the **Signaling Server Node IP address** in the Address Bar of the browser window, and press **Enter** on the keyboard.

Note: This address can be the ELAN IP, TLAN IP, or Node IP, depending on the network in use. The ELAN IP address may be required, instead of the Node IP address, to access to the Element Manager login web page in secure environments.

3 Element Manager opens and the **Login** web page appears (see Figure 130 on page 371).

a. Enter the **User ID** and **Password** of the CS 1000E.

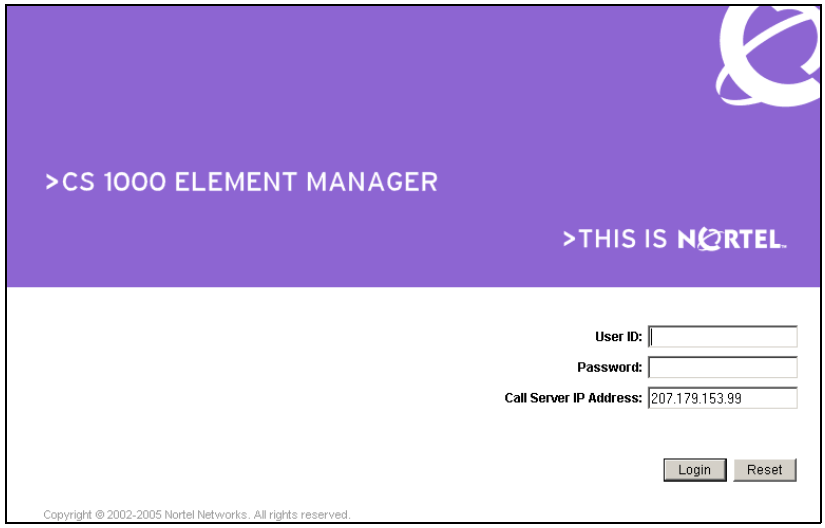
— User ID = `admin1` or any LAPW

— Password = `0000`

b. Enter the ELAN IP address of the CS 1000E in the **CS IP Address** field.

c. Click **Login**.

Figure 130
Element Manager login



End of Procedure

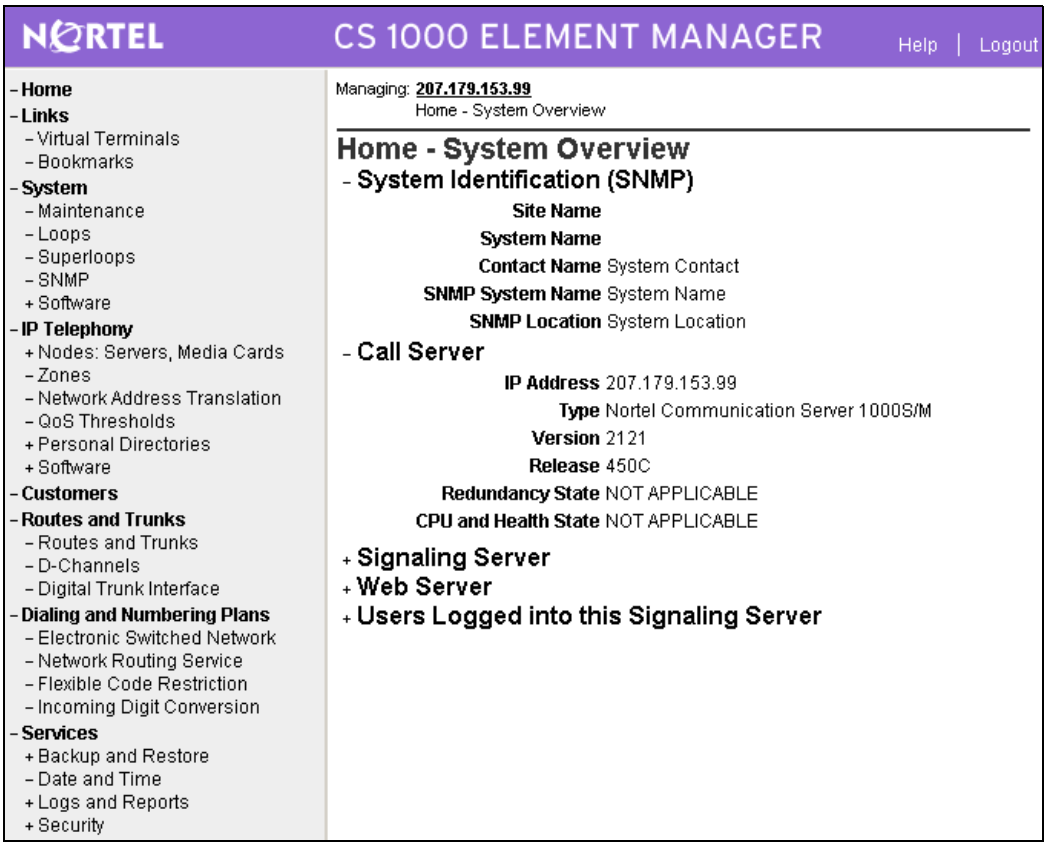
Importing preconfigured IP telephony files

Follow Procedure 94 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 94
Importing an existing node

Figure 131 displays the **Element Manager System Information** home page.

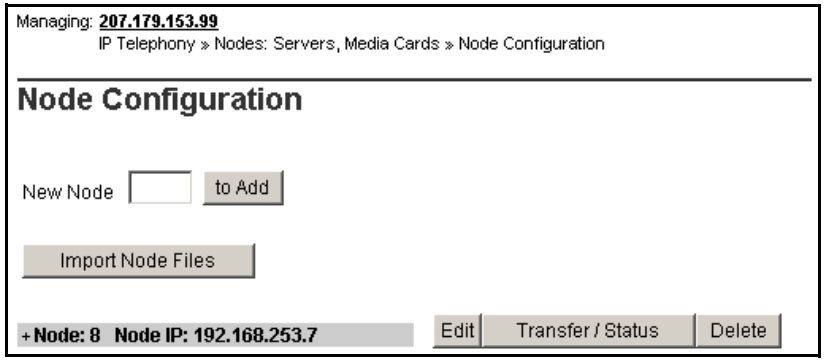
Figure 131
Element Manager – System Overview web page



1 Select **IP Telephony > Node: Servers, Media Cards > Configuration** from the navigator.

The **Node Configuration** web page opens, as shown in Figure 132. If this is the first node to be added, the "**No nodes are configured**" message is displayed.

Figure 132
Node Configuration web page



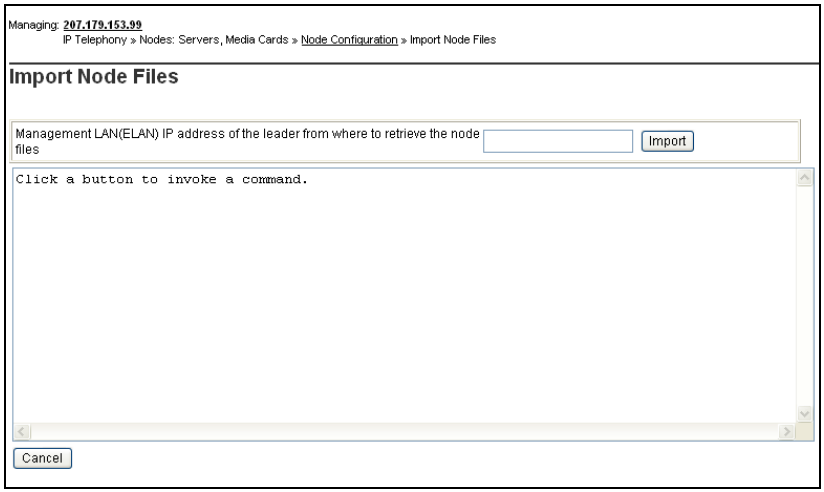
2 Import the Node files from the leader Signaling Server.

a. Click **Import Node Files**.

The **Import Node Files** screen as shown in Figure 133 on page 374 appears.

b. Enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 133
Import Node Files web page



3 Click **Import**.

Click **OK** in the dialog when the operation is complete. The Node Summary web page is re-displayed showing the new node.

End of Procedure

Reviewing and submitting IP telephony node configuration files

Follow Procedure 95 to review and submit IP telephony node configuration files.

Procedure 95
Reviewing and submitting IP telephony node configuration

1 From the Node Summary web page (see Figure 99 on page 322), click **Edit** to view the node parameters.

The **Edit** web page appears as shown in Figure 100 on page 323.

Note 1: Clicking **Transfer / Status** displays the **Transfer / Status** web page (see Figure 137 on page 378). This sends the node configuration files to all IP Telephony components in the node.

- If any element within the node fails to transfer either BOOTP or CONFIG files, **Transfer / Status** is highlighted in red.
- **Transfer / Status** is highlighted in yellow if the transfer status of the node elements is unavailable.

Note 2: **Delete** is used to delete the corresponding node. The node is not automatically deleted. A message displays and asks if you are sure you want to delete the node.

2 Review the node parameters by opening each tab.

Note: For detailed information on each of the node parameters, refer to *IP Line: Description, Installation, and Operation* (553-3001-365).

3 Click **Save and Transfer**.

4 Click **OK** to save the node configuration to the CS 1000E and transfer the configuration to all elements.

After a few seconds, the **Transfer Progress** web page opens and displays each of the elements in the node (see Figure 134 on page 376).

The Voice Gateway Media Cards retrieve the CONFIG.INI and BOOTP.TAB files from the CS 1000E. A check mark is added to each field as the card receives its CONFIG.INI and BOOTP.TAB files.

The status column provides the progress of the transfer:

- The Status column displays “Starting” as the transfer begins (see Figure 134 on page 376).
- The Status column displays “Transfer” as the node configuration is transferred to the elements (see Figure 135 on page 376).
- The Status column displays “Complete” if the transfer is successful for an element (see Figure 136 on page 377).
- The Status column displays “Fail” if the transfer is unsuccessful.

Figure 134
Transfer Progress – Starting

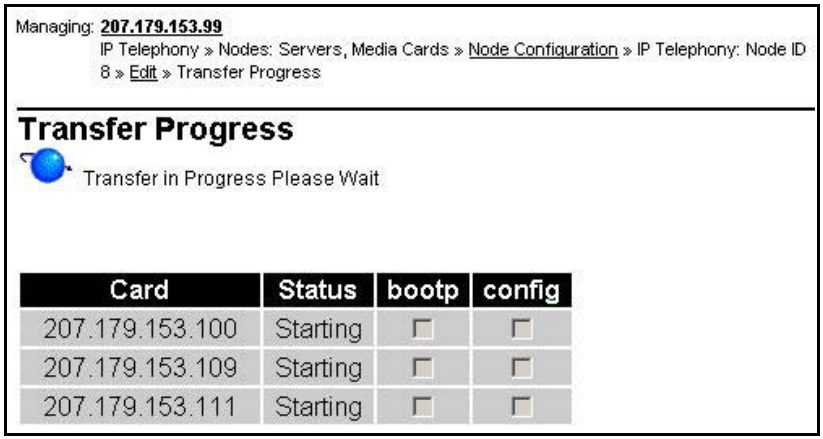
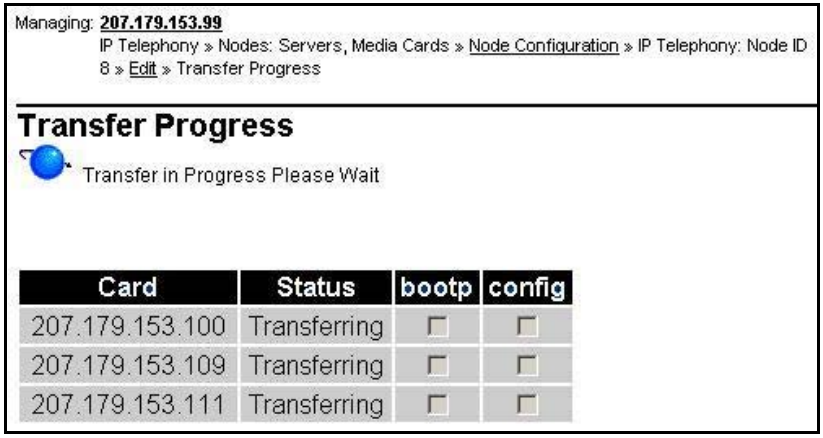
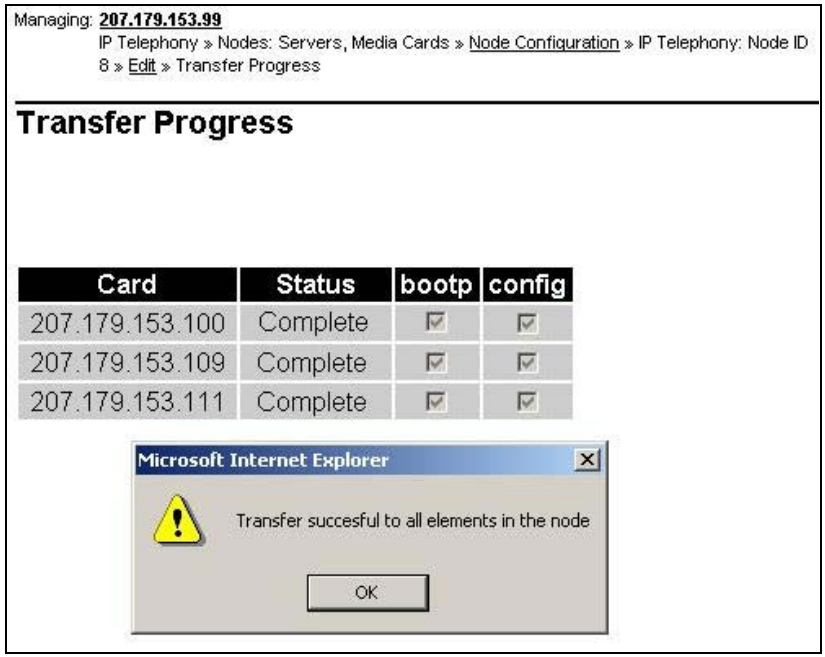


Figure 135
Transfer Progress – Transferring



When the file transfer is complete, the Transfer Progress web page displays a status of complete (see Figure 136 on page 377).

Figure 136
Transfer Progress – Complete

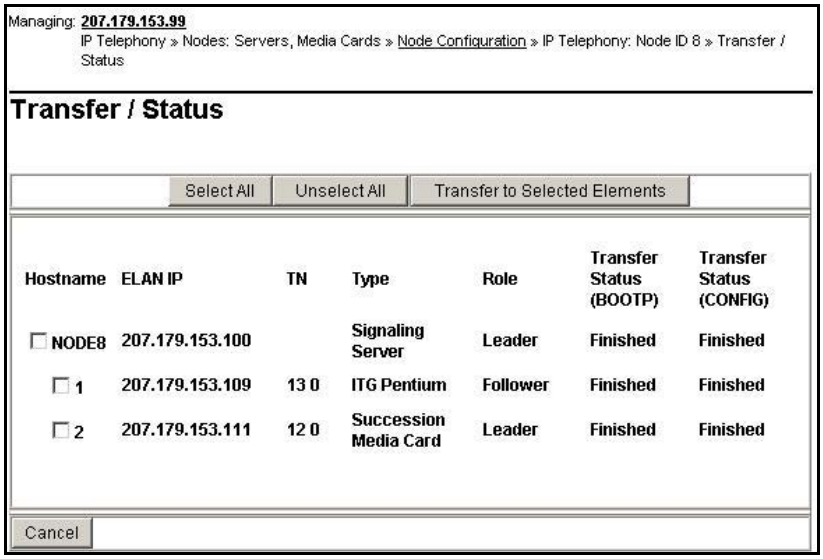


5 Click **OK** in the dialog box.

The **Transfer / Status** web page displays.

Note: The Transfer / Status web page (see Figure 137) can also be displayed from the **Node Summary** web page by clicking **Transfer / Status**. This web page indicates if the transfer was successful or not. For example, Figure 137 shows some elements as unreachable; you can transfer to these elements again.

Figure 137
Transfer / Status web page



The previous status of the node displays, and the failure reason is displayed for elements in nodes that failed to get configuration files (BOOTP.TAB and CONFIG.INI) from the CS 1000E.

The **Transfer / Status** web page has five buttons:

- **Selected All**. Selects all the elements in the node (that is, it adds a check mark in each element's check box).
- **Unselect All**. Unselects all the elements in the node (that is, it removes the check marks for all the selected elements).
- **Transfer to Selected Elements**. Re-transfers node configuration files only to selected elements, regardless of a "Transfer Failed" state.
- **Transfer to Failed Elements**. Transfers only node configuration files to elements in a "Transfer Failed" state. The Transfer to Failed Elements button is displayed only when at least one element on the Node failed to transfer either a BOOTP.TAB or CONFIG.INI in the previous operation.

- **Cancel**. Closes the **Transfer / Status** pages without performing any action, and displays the Node Summary web page.

6 If the Signaling Server configuration was changed on the Edit web page, reboot the Signaling Server.

End of Procedure

Adding a Follower Signaling Server to an IP telephony node

Follow Procedure 96 to add a Follower Signaling Server to the IP telephony node in Element Manager.

Procedure 96
Adding a Follower Signaling Server to the IP telephony node in Element Manager

Note: After software installation and reboot, the Follower Signaling Server sends out BootP requests and waits for a response. Because the Follower Signaling Server has not booted successfully before, it waits for a non-existing BootP response. Do not wait for this response; proceed to the next steps.

In Element Manager:

1 Click **Edit** on the **Node Configuration** web page (see Figure 132 on page 373).

2 Click **Add** beside the Signaling Server row.

3 Enter the Follower Signaling Server data to an IP telephony node. Include the ELAN MAC address (used to answer BootP requests).

4 Click **Save and Transfer** to save the changes and the Leader Signaling Server then obtains a copy of the node files.

5 Click **OK** to save the node configuration to the CS 1000E and transfer the configuration to all elements.

When the file transfer is complete, the **Transfer/ Status** web page appears.

The Leader Signaling Server responds to the Follower Signaling Server's BootP request.

The Follower Signaling Server initializes its network interfaces.

The Follower Signaling Server attempts to FTP the BOOTP.TAB file from the node master (Leader Signaling Server).

Note: Since the Follower cannot obtain the system login and password, the FTP fails (for first-time Follower Signaling Server installation only). It does not have the current CONFIG.INI file that contains the CS 1000E IP address. Subsequent FTPs succeed.

6 Transfer the node files again, so that the Follower Signaling Server obtains a copy of CONFIG.INI.

7 Reboot the Follower Signaling Server so that all its applications can start based on the new CONFIG.INI file.

The Signaling Server uses BootP to obtain its network data, and it then FTPs the BOOTP.TAB file from the node master (Leader Signaling Server).

End of Procedure

Performing a datadump

Follow Procedure 97 to perform a datadump using Element Manager. This procedure is an alternative to using CLI to perform a datadump. The datadump backs up new IP Telephony node files on the CS 1000E at the same time that it backs up the customer database.

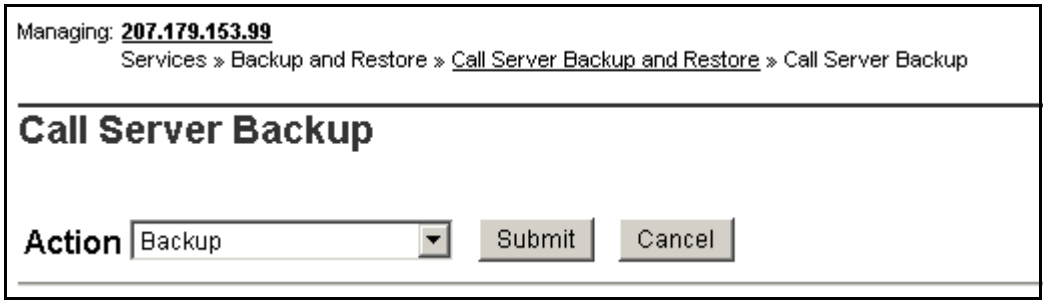
Procedure 97
Performing a datadump using Element Manager

From within Element Manager (see Figure 93 on page 370 for details on logging in), do the following:

1 Choose **Services > Backup and Restore > Call Server** from the navigator.

2 The **Call Server Backup and Restore** web page opens, as shown in Figure 80 on page 223.

Figure 138
CS 1000E Backup



3 Select **Backup**.

The **Call Server Backup** web page appears (see Figure 138 on page 381).

4 Select **Backup** from the **Action** drop-down list box.

5 Click **Submit**.

The message displays indicating “Backup in progress. Please wait...”

6 Click **OK** in the EDD complete dialog box.

The Backup function displays information in a tabular form indicating the actions that were performed.

End of Procedure

Installing Line cards and cross-connecting telephones

Contents

This section contains information on the following topics:

Introduction

This chapter contains instructions for connecting telephone Line cards located in the Media Gateway and Media Gateway Expander to the MDF cross-connect terminal.

This chapter contains the following procedures:

- Procedure 98: "Cross-connecting telephones" on page 386
- Procedure 99: "Connecting a telephone without a PFTU" on page 389
- Procedure 100: "Connecting an off-premise telephone" on page 390
- Procedure 101: "Connecting an attendant console" on page 391

Before you proceed, install the cable from the slot that contains the Line card associated with the telephone being connected. Refer to "Installing the Main Distribution Frame" on page 353, if you require additional cable installation.

DANGER OF ELECTRIC SHOCK

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Do not install telephone jacks in wet locations unless the jacks are designed for wet locations. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Refer to the *Circuit Card: Description and Installation* (553-3001-211) for full descriptions of country-specific IPE cards and their installation procedures

Figure 139 and Figure 140 on page 385 show the circuit card assignments for the Media Gateway and Media Gateway Expander. Refer to these figures to make sure that you have all circuit cards inserted in the correct slots.

Figure 139
Circuit card assignments in a Media Gateway

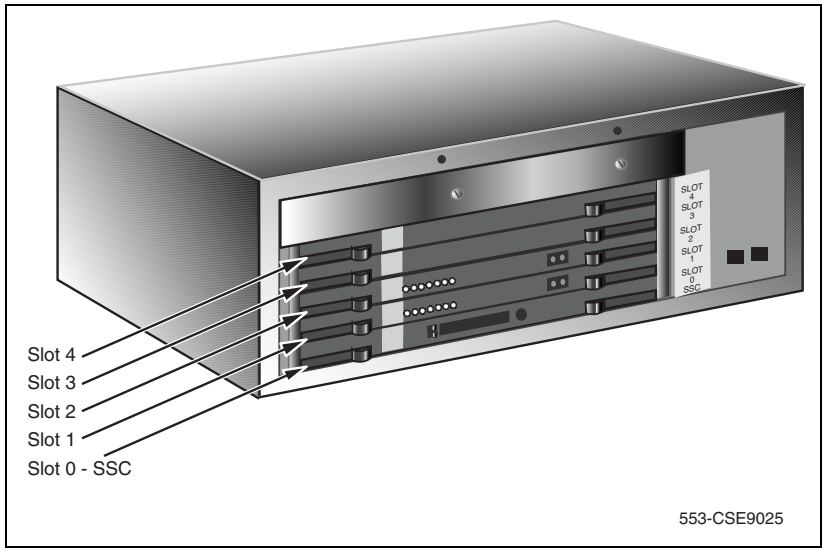
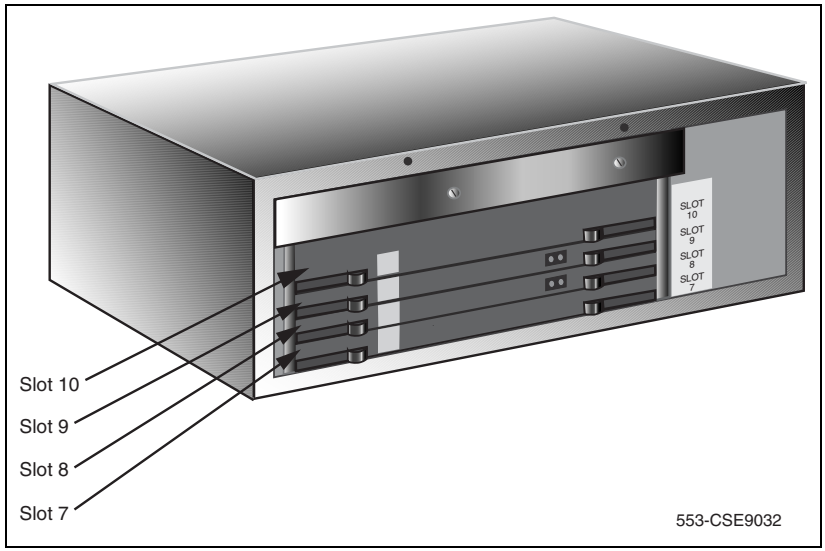


Figure 140
Circuit card assignments in a Media Gateway Expander



Circuit cards features

If a circuit card has a switch symbol on its faceplate, it is equipped with option switches, strapping plugs, or both. Make sure that the circuit cards with option switches or strapping plugs are set correctly. Some circuit cards can have daughterboards and other add-on devices installed on them.

Card placement in a Media Gateway or a Media Gateway Expansion

The work order developed by the planning and engineering department outlines the placement of peripheral cards in the Media Gateway and Media Gateway Expander slots. See *Circuit Card: Description and Installation* (553-3001-211) for card placement into card slots. The 48-port Digital Line Card is not supported.

Cross-connecting telephones

Connect the telephones according to Figure 141 on page 387 and Figure 142 on page 388.

Procedure 98
Cross-connecting telephones

1. Locate the telephone terminations at the cross-connect terminal.
2. Connect the Z-type cross-connect wire to the leads of the telephone.
3. Locate line circuit card (TN) terminations at the cross-connect terminal.
4. Connect the other end of the cross-connect wire to the assigned TN terminal block.

Figure 141
NE-500/2500-type telephone cross connections

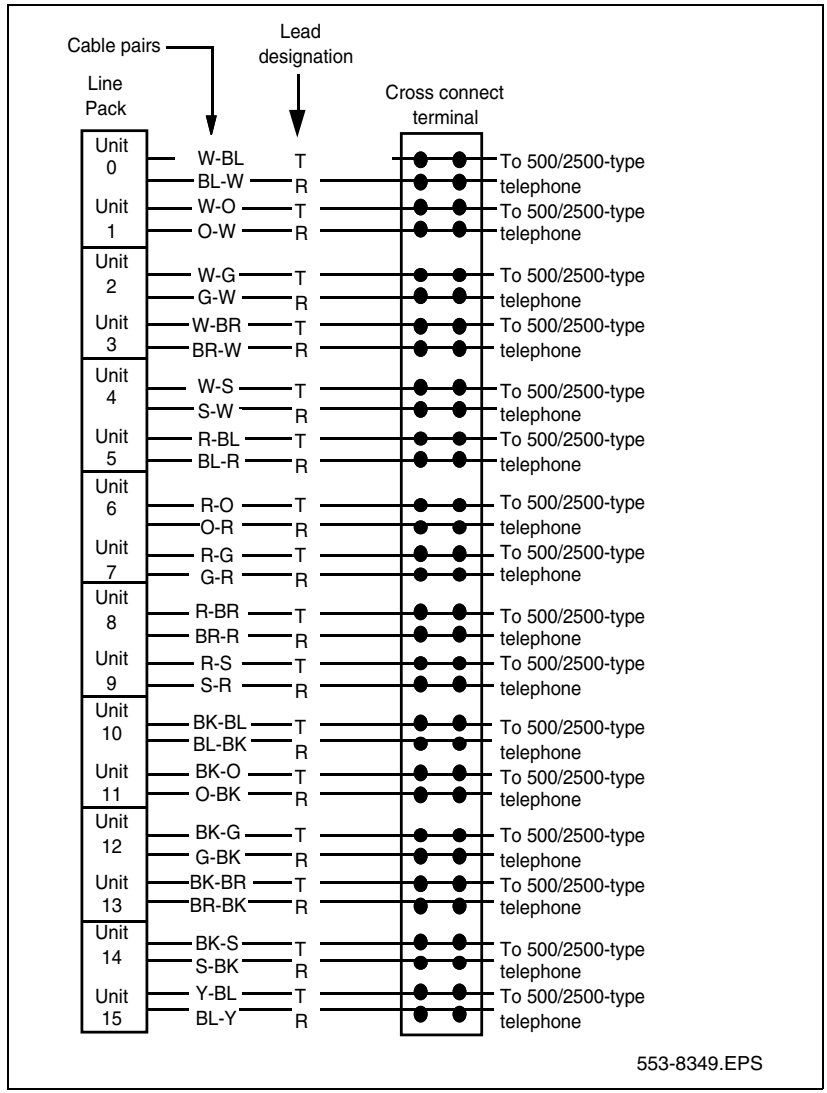
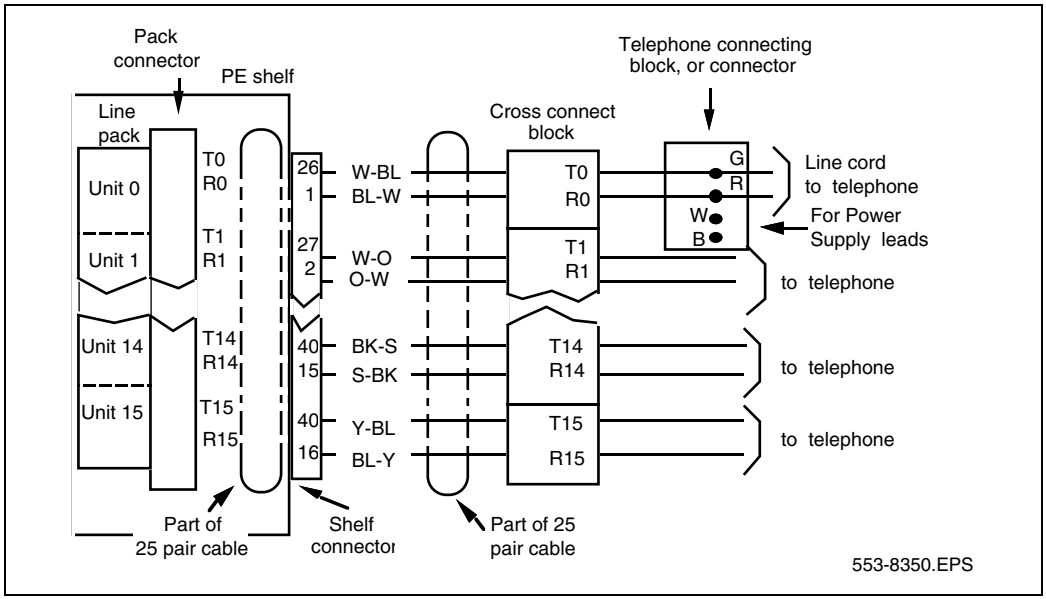


Figure 142
Digital telephone cross connections



End of Procedure

Connecting a telephone without a PFTU

See “Installing and cross-connecting a Power Fail Transfer Unit” on page 441 for connecting telephones with the PFTU.

Procedure 99
Connecting a telephone without a PFTU

1 Locate the telephone terminations on the cross-connect terminal.

2 Connect one end of the cross-connect wire to the leads of the telephone.

3 Locate the Line card terminations on the cross-connect terminal.

4 Connect the other end of the cross-connect wire to the assigned TN terminal block.

5 Activate the telephone.

End of Procedure

Connecting an off-premise telephone

Connect off-premise analog (500/2500-type) telephones through an NT1R20 Off-premise Line card or NTAK92AA Off-Premise Protection Module. Each NTAK92AA module can connect up to four analog (500/2500-type) telephones and can interface with the NT8D09 Message Waiting Line card.

DANGER OF ELECTRIC SHOCK

The message-waiting Line card produces -150 volts, which is considered hazardous on off-premise telephones. Make sure that the -150 volts are disabled on off-premise telephones.

The voltage is disabled when the telephone's Class of Service (CLS) is Message Waiting Lamp Denied (LPD) and Message Waiting Denied (MWD) in LD 10.

Refer to the *Software Input/Output: Administration* (553-3001-311) for information about LD 10.

Do not assign a Class of Service of LPA or MWA to an off-premise telephone.

Procedure 100
Connecting an off-premise telephone

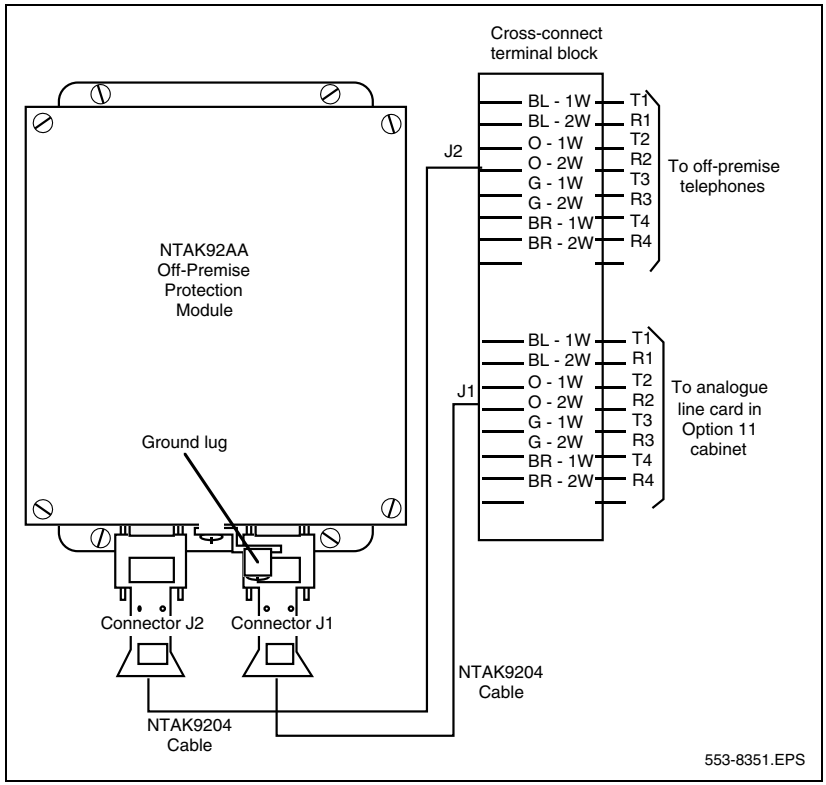
1. Install the NTAK92BA Off-Premise Protection Module on the wall using four #10 1/2-in (minimum) screws.
2. Connect a #6 AWG from the grounding lug at the bottom of the NTAK92AA Off-Premise Protection Module to the system ground. Refer to Figure 143 on page 391.

DANGER OF ELECTRIC SHOCK

If connecting to a message-waiting Line card, unseat the card from its assigned slot before continuing with the next step.

3. Connect two NTAK9204 cables (one from connector J1 and one from connector J2) from the protection module to the cross-connect terminal.
4. Terminate the cables as shown in Figure 141 on page 387.
5. Cross-connect the J1 cable to the Tip and Ring connections coming from the Line card.
6. Cross-connect the J2 cable to the off-premise telephone.
7. Install the regulatory label provided with the Off-Premise Protection Module on the inside right-hand wall of the Media Gateway.
8. Install the Line card in its assigned position.
9. Activate the telephone.

Figure 143
NTAK92BA Off-Premise Protection Module connections



End of Procedure

Connecting an attendant console

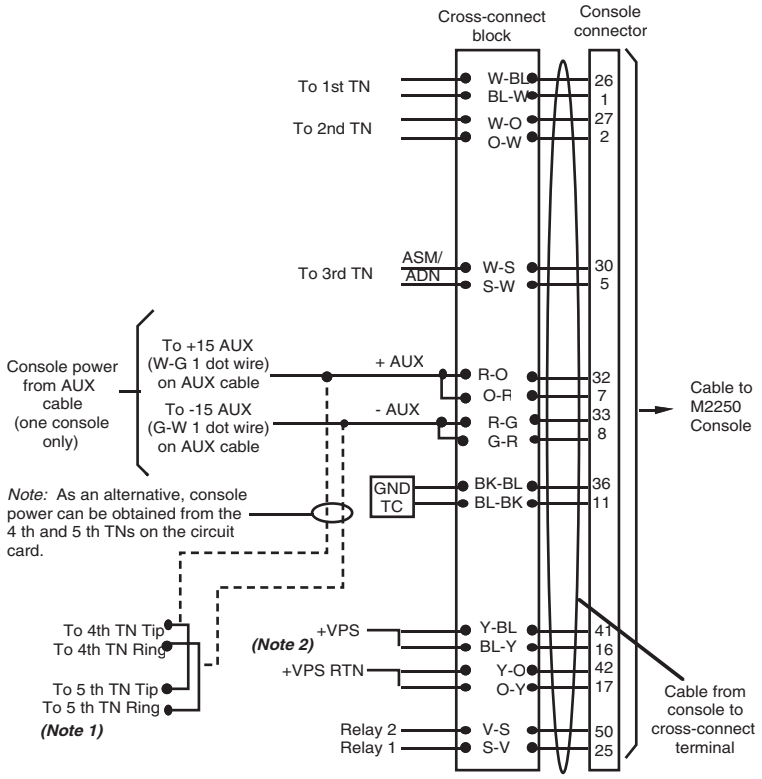
Procedure 101
Connecting an attendant console

1 Locate the attendant console terminations at the cross-connect terminal.

2 Locate the Line card terminations at the cross-connect terminal.

3 With cross-connect wire, connect the Line card and other connections to the console, as shown in Figure 144 on page 392.

Figure 144
Attendant console connections



Note 1: The M2250 is powered using the line circuits and if required from the AUX cable. In addition to the primary TN, secondary TN and ASMTN, two TNs are for power from the AUX cable are cabled to the M2250 through the + AUX and - AUX leads. Maximum loop length is 3000 ft (915 m) of 24 AWG (5.0 Metric Wire Gauge).

Note 2: When additional options are used (BLF), an additional 16V DC power supply is required. The 16V DC source is cabled through +VPS and +VPS RTN leads. The maximum distance from the console to the power source is 120 ft (36 m) of 24 AWG (5.0 Metric Wire Gauge) wire.

553-8352.EPS

Table 43
Color combinations of cable pairs

Color	W-Bl Bl-W	W-O O-W	W-G G-W	W-BR BR-W	W-S S-W	R-BL BL-R	R-O O-R	R-G G-R
Unit	0	1	2	3	4	5	6	7
Color	R-BR BR-R	R-S S-R	BK-BL BL-BK	BK-O O-BK	BK-G G-BK	BK-BR BR-BK	BK-S S-BK	Y-B B-Y
Unit	8	9	10	11	12	12	14	15

End of Procedure

Installing and configuring IP Phones

Contents

This section contains information on the following topics:

Introduction

The following IP Phones can be installed on a CS 1000E system:

- Nortel IP Phone 2001
- Nortel IP Phone 2002
- Nortel IP Phone 2004
- Nortel IP Softphone 2050
- Nortel IP Phone 2007
- IP Audio Conference Phone 2033
- WLAN Handsets 2210/2211/2212
- MVC 2050

The system must be configured before the IP phones can be installed. The configuration includes:

- The IP Phone TN blocks must be defined on the Call Server (See "Configuring VoIP bandwidth management zones" on page 408 or "Using Set-Based Installation" on page 433).
- The IP Phones are assigned to an IP telephony node, and use the IP telephony node properties defined using Element Manager (see "Configuring an IP telephony node" on page 365).
- The IP Phones require local boot parameter configuration (see "Configuring the IP Phone boot parameters" on page 424).

Package components for the IP Phones

Table 44 lists the IP Phone 2001 package components and product codes.

Table 44
IP Phone 2001 components list (Part 1 of 2)

IP Phone 2001 package contents include: • IP Phone 2001 • Handset • Handset cord • Footstand • 7 ft. Cat5 Ethernet cable • Getting Started card	
IP Phone 2001(Ethergray) with Icon keycaps	NTDU90AA16/A0533387
IP Phone 2001 (Ethergray) with English text label keycaps	NTDU90BA16/A0533388
IP Phone 2001 (Charcoal) with Icon keycaps	NTDU90AA70/A0053389
IP Phone 2001 (Charcoal) with English text label keycaps	NTDU90BA70/A0533390
Replacement parts	
7 ft. Cat5 Ethernet Cable	A0648375
Handset, Ethergray	A0788874
Handset, Charcoal	A0758634
Handset cord, Ethergray; for IP Phone 2004 and IP Phone 2001	A088682
Handset cord, Charcoal; for IP Phone 2004 and IP Phone 2001	N0000764
IP Phone 2001/2002/2004 Power Adapters	
Power transformer (117/120 VAC 50/60 Hz) (North America)	A0619627
Power transformer 3 prong AC to AC, direct plug-in, 8W, 240 VAC, 50Hz to 16 VAC at 500 mA (Ireland and UK)	A0656598

Table 44
IP Phone 2001 components list (Part 2 of 2)

Power transformer AC to AC, direct plug-in, 8W, 230 VAC, 50/ 60 Hz, to 16 VAC at 500 mA (Europe)	A0619635
Power transformer 2 prong wall plug direct plug-in AC to AC, 8W, 240 VAC, 50 Hz, to 16 VAC at 500 mA (Australia and New Zealand)	A0647042
Power transformer AC to AC, direct plug-in, 8W, 100 VAC, 50 Hz, to 16 VAC at 500 mA	A0828858

Table 45 lists the IP Phone 2002 package components and product codes.

Table 45
IP Phone 2002 components list (Part 1 of 2)

IP Phone 2002 package contents include: • IP Phone 2002 • Handset • Handset cord • Footstand • 7ft Cat5 Ethernet cable • Getting Started card	
IP Phone 2002 (Ethergray) with Icon keycaps	NTDU91AA16/A0533404
IP Phone 2002 (Ethergray) with English text label keycaps	NTDU91BA16/A0533405
IP Phone 2002 (Charcoal) with Icon keycaps	NTDU91AA70/A0533406
IP Phone 2002 (Charcoal) with English text label keycaps	NTDU91BA70/A0533407
Replacement parts	
7 ft. Cat5 Ethernet cable	A0648375
Handset, Ethergray	A0788874
Handset, Charcoal	A0758634

Table 45
IP Phone 2002 components list (Part 2 of 2)

Handset cord, Ethergray	A0897725
Handset cord, Charcoal	N0000763
Footstand, Charcoal (used for Ethergray and Charcoal models)	A0891619
IP Phone 2001/2002/2004 Power Adaptors	
Power transformer (117/120 VAC 50/60 Hz) (North America)	A0619627
Power transformer 3 prong AC to AC, direct plug-in, 8W, 240 VAC, 50Hz to 16 VAC at 500 mA (Ireland and UK)	A0656598
Power transformer AC to AC, direct plug-in, 8W, 230 VAC, 50/60 Hz, to 16 VAC at 500 mA (Europe)	A0619635
Power transformer 2 prong wall plug direct plug-in AC to AC, 8W, 240 VAC, 50 Hz, to 16 VAC at 500 mA (Australia and New Zealand)	A0647042
Power transformer AC to AC, direct plug-in, 8W, 100 VAC, 50 Hz, to 16 VAC at 500 mA	A0828858

Table 46 lists the IP Phone 2004 package components and product codes.

Table 46
IP Phone 2004 component list (Part 1 of 2)

IP Phone 2004package contents includes • IP Phone 2004 • Handset • Handset cord • Footstand • 7 ft. Ethernet cable • Getting Started card	
IP Phone 2004 (Ethergray) with Icon keycaps	NTDU92AA16/ A0533408

Table 46
IP Phone 2004 component list (Part 2 of 2)

IP Phone 2004 (Ethergray) with English text label keycaps	NTDU92BA16/ A0533409
IP Phone 2004 (Charcoal) with Icon keycaps	NTDU92AA70/ A0533410
IP Phone 2004 (Charcoal) with English text label keycaps	NTDU92BA70/ A0533411
IP Phone 2004 wall mount kit (Charcoal), used with Ethergray and Charcoal models	NTMN15BA70/ A0503076
Replacement parts	
7 ft. Ethernet Cat5 cable	A0648375
Handset (Ethergray)	A0788874
Handset (Charcoal)	A0758634
Handset cord (Ethergray)	A0788682
Handset cord (Charcoal)	N0000764
Footstand (Charcoal), used for Ethergray and Charcoal models	A0538587
IP Phone 2004 Power Adaptors	
Power transformer (117/120 VAC 50/60 Hz) (North America)	A0619627
Power transformer 3 prong AC to AC, direct plug-in, 8W, 240 VAC, 50Hz to 16 VAC at 500 mA (Ireland and UK)	A0656598
Power transformer AC to AC, direct plug-in, 8W, 230 VAC, 50/60 Hz, to 16 VAC at 500 mA (Europe)	A0619635
Power transformer 2 prong wall plug direct plug-in AC to AC, 8W, 240 VAC, 50 Hz, to 16 VAC at 500 mA (Australia and New Zealand)	A0647042
Power transformer AC to AC, direct plug-in, 8W, 100 VAC, 50 Hz, to 16 VAC at 500 mA	A0828858

Table 47 lists the IP Phone 2007 package components and product codes.

Table 47
IP Phone 2007 component list (Part 1 of 2)

IP Phone 2007 package contents includes • IP Phone 2007(charcoal with metallic bezel) • Handset • Handset cord • Footstand • 7 ft. (2.3 m) CAT5 Ethernet cable • Getting Started card	NTDU96AB70
Replacement parts	
7 ft. CAT5 Ethernet cable	A0648375
Handset (charcoal)	A0758634
Handset cord (charcoal)	N0000764
Footstand (charcoal)	A0538587
IP Phone 2007 power adapter	
Global power adapter	N0014020
IP Phone 2007 power cords	
Cord 9.9 ft. NA Power, NEMA, 125Vac 13[a] NA, M.East, Taiwan, Indonesia, Philippines, Korea, Thailand, Vietnam, Japan	NTTK14AB
Cord 8 ft., ANA Power AS-3, 240Vac 10A Australia, New Zealand, PRC	NTTK15AA
Option 11C Standard European Power Cord 250Vac Other EMEA, Kenya	NTTK16AB
Option 11C Swiss Power Cord, 9.9 ft. 125Vac Switzerland	NTTK17AB

Table 47
IP Phone 2007 component list (Part 2 of 2)

Option 11C UK Power Cord 240Vac Hong Kong, Ireland, UK, Singapore, Malaysia, India, Bangladesh, Pakistan, Brunei, Sri Lanka	NTTK18AB
Option 11C Denmark Power Cord Kit, 9.9 ft. 125Vac Denmark	NTTK22AB

Table 48 lists the IP Phone ACP 2033 package components and product codes.

Table 48
IP Audio Conference Phone 2033 components list

IP Audio Conference Phone 2033 package contents include: • IP Audio Conference Phone 2033 (charcoal) • 7 ft. CAT5 Ethernet cable • Power Interface Module (PIM) with 25 ft. console cable • IP Audio Conference Phone 2033 Quick Reference Card • Universal power supply	NTEX11AA70
IP Audio Conference Phone 2033 package contents include: • IP Audio Conference Phone 2033 (charcoal) • 7 ft. CAT5 Ethernet cable • Power Interface Module (PIM) with 25 ft. console cable • IP Audio Conference Phone 2033 Quick Reference Card • 2 Extension microphones (charcoal) • Universal power supply	NTEX11BA70
Additional Extension microphones with 7 ft. cable	NTEX11DA70
Power accessory kit (PIM, Universal power supply, cabling)	NTEX11CA
IP Phone IP Audio Conference Phone 2033 Power cords	

NA NEMA 5-15P, 125V 13A (10ft.)	NTTK14AB
Euro CEE (7) VII, 250V, 10A (2.5m)	NTTK16AB
ANZ AS3112, 250V 10A (2.5m)	NTTK15AA
Swiss SEV 1011, 250V 10A (8ft.)	NTTK17AB
UK/Ireland BS1363, 240V 10A (8ft.)	NTTK18AB
Denmark AFSNIT, 250V 10A (2.5m)	NTTK22AB
Argentina IRAM 2073, 250V 10A (8ft.)	A0814961

Table 49 lists the Package components for the WLAN Handsets.

Table 49
WLAN Handset component list (Part 1 of 4)

WLAN Handset 2210 kit North America	NTTQ40AA/A0548444
WLAN Handset 2210 kit Global (power supply not included)	NTTQ40BA/A0548450
North American kit includes:	
WLAN 2210 Handset	NTTQ4010/A0548445
WLAN Handset 2210 Battery Pack	NTTQ4050/A0548446
WLAN Handset 2210 Desktop Charger	NTTQ4060/A0548447
WLAN 2210/2211 Charger & Nortel Application Gateway 2246-64 Power Supply for North America	NTTQ4101/A0548449
Global kit is the same as the North American kit without the power supply	

Table 49
WLAN Handset component list (Part 2 of 4)

WLAN Handset 2211 kit North America)	NTTQ50AA/A0548451
WLAN Handset 2211 kit Global (power supply not included	NTTQ50BA/A0548455
North American kit includes:	
WLAN 2211 Handset	NTTQ5010/A0548452
WLAN Handset 2211 Battery Pack	NTTQ5050/A0548453
WLAN Handset 2211 Desktop Charger	NTTQ5060/A0548454
WLAN 2210/2211 Charger & WLAN Application Gateway 2246-64 Power Supply for North America	NTTQ4101/A0548449
Global kit is the same as the North American kit without the power supply	
WLAN Handset 2211 Gang Charger	NTTQ5070/A0548039
WLAN Handset 2210 Clothing Clip	NTTQ4080/A0548940
WLAN Handset 2211 Clothing Clip	NTTQ5101/A0548941
WLAN Handset Headset with noise cancellation	NTTQ5501/A0548946
WLAN Handset Headset, over ear	A0548947
WLAN Handset Headset quick disconnect cord	NTTQ5521/A0548948
WLAN Handset 2210/2211 User Guide CD ROM	NTLH21AB/A0548993
WLAN Handset 2211 carrying case, black	NTTQ/5111/A0548942
WLAN Handset 2211 carrying case, (key cover) black	NTTQ5131/A0548944
WLAN Handset 2211 carrying case, yellow	NTTQ5121/A0548943
WLAN Handset 2211 carrying case, (key cover) yellow	NTTQ5141/A0548945
Nortel WLAN IP Telephony Manager 2245, a minimum of one Telephony Manager is required per system order	NTTQ60AA/A048950

Table 49
WLAN Handset component list (Part 3 of 4)

WLAN Application Gateway 2246	
64 users	NTTQ65AB/N0023211
128 users	NTTQ65BA/A0548971
256 users	NTTQ65CA/A0548972
512 users	NTTQ65DA/A0548973
1,024 users	NTTQ65EA/A0548974
10,000+ users	NTTQ65FA/A0548975
The following items must be ordered with the applicable power supply: WLAN Handset 2210 Desktop Charger WLAN Handset 2211 Desktop Charger WLAN Handset 2211 Gang Charger WLAN IP Telephony Manager 2245 WLAN Application Gateway 2246 - 64 users WLAN Application Gateway 2246 - 128 users WLAN Application Gateway 2246 - 256 users WLAN Application Gateway 2246 - 512 users WLAN Application Gateway 2246 - 1024 users WLAN Application Gateway 2246 - 10,000 users	

Table 49
WLAN Handset component list (Part 4 of 4)

Power supplies —	
WLAN Handset 2211 Gang Charger:	
• North America	NTTQ4301/A0548951
• Europe	NTTQ4311/A0548952
• UK-HK	NTTQ4321/A0548953
• Switzerland	NTTQ4331/A0548954
• Australia-New Zealand	NTTQ4341/A0548955
• Mexico	NTTQ4351
WLAN Handset 2210/2211 Charger & WLAN Application Gateway 2246-64:	
• North America	NTTQ4101/A0548499
• Europe	NTTQ4111/A0548956
• UK-HK	NTTQ4121/A0548958
• Switzerland	NTTQ4131/A0548959
• Australia-New Zealand	NTTQ4141/A0548960
• Mexico	NTTQ4151
WLAN IP Telephony Manager 2245 & WLAN Application Gateway 2246 (128+ users):	
• North America	NTTQ4201/A0548961
• Europe	NTTQ4211/A0548962
• UK-HK	NTTQ4221/A0548964
• Switzerland	NTTQ4231/A0548966
• Australia-New Zealand	NTTQ4241/A0548967
• Mexico	NTTQ4251

Connectivity and power requirements

Each IP Phone requires:

- a dedicated 10BaseT or 100BaseT or 10/100BaseT Ethernet interface
- a small desktop hub or switch if sharing an existing desktop Ethernet connection with a PC.
- a local power supply appropriate for the voltage in the area or a Power over LAN unit. (The IP Phone 2002 comes with a built-in 3-port switch and is ready for LAN powering.)

Installation and configuration procedures

This chapter contains the following procedures:

- Procedure 114: "Displaying registered IP Phones in Element Manager" on page 439

Configuring VoIP bandwidth management zones

Follow Procedure 102 to configure the VoIP bandwidth management zones. For more details on bandwidth management zones, see *IP Line: Description, Installation, and Operation* (553-3001-365).

VoIP bandwidth management zones can be configured with Element Manager or using the CLI. For more information about Element Manager, see *Element Manager: System Administration* (553-3001-332).

Procedure 102
Configuring VoIP bandwidth management zones using the CLI

1 Log in to the Call Server.

   a. Enter the command:

   LOGI

   System response:

   PASS?

   b. Enter the default password:

   0000

2 Access LD 117. Enter the command:

   LD 117

3 Create a new zone with default parameters. Enter the command:

   NEW ZONE 0

   Note: LD 117 also includes DIS and ENL commands to disable or enable a zone. When you create a zone, its default state is enabled. See Table 50 on page 409 for the LD 117 zone commands.

4 Print zone and bandwidth information. Enter the command:

   PRT ZONE.

5 Exit from LD 117. Enter the command:

****

Table 50
Bandwidth management zones configuration commands in LD 117

Command	Description
NEW ZONE xxx p1 p2 p3 p4 p5	Create a new zone, where: xxx = zone number = (0) - 255. p1 = Intrazone available bandwidth = 0 - (10000) - 100000 (Kbps) p2 = Intrazone preferred strategy = (BQ for Best Quality) or BB for Best Bandwidth p3 = Interzone available bandwidth = 0 - (10000) - 100000 (Kbps) p4 = Interzone preferred strategy = BQ for Best Quality or BB for Best Bandwidth p5 = Zone resource type = (shared) or private
NEW ZONE xxx	Create a new zone with default values for the parameters: p1 = 10000 (Kbps) p2 = BQ p3 = 10000 (Kbps) p4 = BQ p5 = shared
CHG ZONE xxx p1 p2 p3 p4 p5	Change parameters of a zone. All parameters must be re-entered, even those that are unchanged.
OUT ZONE xxx	Remove a zone.
DIS ZONE xxx	Disable a zone. When a zone is disabled, no new calls are established inside, from, or toward this zone.
ENL ZONE xxx	Enable a zone.
PRT ZONE xxx	Print zone and bandwidth information.

End of Procedure

Configuring virtual superloops

Follow Procedure 103 to configure the virtual superloops. For more details on virtual superloops, see *IP Line: Description, Installation, and Operation* (553-3001-365).

Procedure 103
Configuring virtual superloops

1 Access LD 97. Enter the command:

```
LD 97
```

2 Enter responses shown in Table 51.

Table 51
LD 97 – Configure a Virtual Superloop.

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	SUPL	Superloop
SUPL	Vxxx	V stands for a virtual superloop and xxx is the number of the virtual superloop. xxx = 0-252 in multiples of four for MG 1000E xxx = 96-112 in multiples of four for MG 1000T (See Table 52)

Table 52
MG 1000T virtual superloop/virtual card mapping

SUPL	Card	
96	61-64	81-84
100	65-68	85-88
104	69-72	89-92
108	73-76	93-96
112	77-80	97-99

3 Exit from LD 97. Enter the command:

```
****
```

End of Procedure

Configuring an IP Phone using LD 11

Follow Procedure 104 to configure an IP Phone. The configuration can be completed using either OTM or CLI.

Procedure 104
Configuring the IP Phones

1 Access LD 11. Enter the command:

```
LD 11
```

2 Enter the appropriate responses shown in Table 53.

Table 53
LD 11 – Configure an IP Phone. (Part 1 of 4)

Prompt	Response	Description
REQ:	NEW CHG	Add new or change existing data
TYPE:	i2001 i2002 i2004 i2050	For IP Phone 2001, IP Phone 2002, IP Phone 2004, or IP Softphone 2050. CS 1000E accepts this response if it is equipped with packages 88 and 170.
TN		Terminal Number
	l s c u	Format for CS 1000E, where: l = 0, 4, 8, - 252: superloop number in multiples of 4 s = 0-1: MG 1000E on superloop c = 1-4, 7-10 u = 0-31, (see Table 64 on page 485)
	c u	Format for MG 1000T, where: c = 0-4, 7-10, 11-14, 17-24, 27-34, 37- 44, 47-50 u = 0-31
DES	d...d	Office Data Administration System Station Designator
CUST	xx	Customer number as defined in LD 15
ZONE	0-255	Zone number to which this IP Phone belongs
CLS	ADD	Class of Service ADD - Automatic Digit Display, (default for IP Phone) For a complete list of responses, refer to *Software Input/ Output: Administration* (553-3001-311).

Table 53
LD 11 – Configure an IP Phone. (Part 2 of 4)

Prompt	Response	Description
KEY	xx aaa yyyy (cccc ***or*** D) zz..z	Telephone function key assignments The following key assignments determine calling options and features available to a telephone. Note that KEY is prompted until just a carriage return <CR> is entered. xx = key number aaa = key name or function yyyy = additional information required for the key zz..z = additional information required for the key aaa. The cccc or D entry deals specifically with the Calling Line identification feature. Where: cccc = CLID table entry of (0)-N, where N = the value entered at the SIZE prompt in LD 15 minus 1. D = the character “D”. When the character “D” is entered, the system searches the DN keys from key 0 and up, to find a DN key with CLID table entry. The CLID associated with the found DN key will then be used. ***Note:*** The position of the (cccc or D) field varies depending on the key name or function. You may enter a CLID table entry if aaa = ACD, HOT d, HOT L, MCN, MCR, PVN, PVR, SCN or SCR. Type xx NUL to remove a key function or feature. Some data ports require specific key assignments. Refer to the *Meridian Data Services* NTPs for information regarding these requirements.

Table 53
LD 11 – Configure an IP Phone. (Part 3 of 4)

Prompt	Response	Description
		Key number limits that can be assigned are as follows: 0-7 for Meridian Communications Adapter (MCA) 0-5 for M2006 0-7 for M2008 0-59 for M2616, varies with number of add-on modules 0-79 for I2002, varies with value of KEM 0-79 for I2004, varies with value of KEM ***Note:*** The first IP Phone KEM is assigned keys 32-55, and the second IP Phone KEM is assigned keys 56-79. Type xx = NUL to remove a key function or feature for i2002 and i2004. If either the Meridian Programmable Data Adapter (MPDA) or the Display Module is equipped, then key 7 on sets M2008, M2216, and M2616 sets and key 5 on set M2006 will become Program keys which cannot be used as function keys. Any printout of the TN block will not show key 7 because it is a local function key. On the M2616, if CLS = HFA, key 15 on the voice TN defaults to the Handsfree key. No other feature assignment is accepted. Primary and secondary data DNs must be unique. A station SCR, SCN, MCR, or MCN DN must be removed as a member from all Group Hunt lists before the DN can be modified.

Table 53
LD 11 – Configure an IP Phone. (Part 4 of 4)

Prompt	Response	Description
		On the M3903, keys 4-15 are blocked. No feature assignment is accepted for keys 2-15. On the M3903, M3904, and M3905, keys 29-31 are reserved. No feature assignment is accepted for keys 29-31 other than NUL. On M3904, no feature assignment is accepted for keys 12-15. On M3905, the technician can assign NUL or a server application on key 5. On key 6, the craftsperson can assign NUL or a local application. On M3905, the technician can assign NUL or the program key on key 7. On M3905, the technician can assign AAG, AMG, ASP,DWC, EMR, MSB, or NRD on keys 8-11. Other features are blocked. For IP Phones: xx = Keys 0-5 (and 6-11 using Shift key). These are self-labeled physical keys that can be programmed with any feature. ***Note 1:*** The IP Phone 2002 does not have a Shift key. Only keys 0-3 can be programmed. ***Note 2:*** Keys 16-26 are reserved for dedicated IP Phone soft keys. Table 54 on page 416 lists the dedicated IP Phone key name values (aaa). Other key name values can be found in *Software Input/Output: Administration* (553-3001-311).

3 Configure the dedicated soft keys, as shown in Table 54.

Table 54
IP Phone dedicated soft key assignment (Part 1 of 2)

IP Phone key number	Response(s) Allowed
Key 16	MWK, NUL MWK – Message Waiting key
Key 17	TRN, NUL TRN – Call Transfer key
Key 18	A03 or A06, NUL AO3 – 3-party conference key AO6 – 6-party conference key
Key 19	CFW, NUL CFW – Call Forward key
Key 20	RGA, NUL RGA – Ring Again key
Key 21	PRK, NUL PRK – Call Park key
Key 22	RNP, NUL RNP – Ringing Number pickup key
Key 23	SCU – Speed Call User SSU – System Speed Call User SCC – Speed Call Controller SSC – System Speed Call Controller NUL
Key 24	PRS, NUL PRS – Privacy Release key

Table 54
IP Phone dedicated soft key assignment (Part 2 of 2)

IP Phone key number	Response(s) Allowed
Key 25	CHG, NUL CHG – Charge Account key
Key 26	CPN, NUL CPN – Calling Party Number key

4 Repeat Steps 2 and 3 for each IP Phone.

End of Procedure

Setting administrator and temporary IP Telephone Installer passwords

IP Phone Installer Passwords is an optional feature that provides protection against unauthorized modification of the TN on the IP Phones. For detailed information about the IP Phone Installer Passwords, see *IP Line: Description, Installation, and Operation* (553-3001-365).

The IP Phone Installer Passwords are configured on either a Signaling Server or a Media Card in a node. The passwords then apply to all components in the node.

Procedure 105
Setting passwords for the administrator and temporary IP Telephone Installer

Note: This procedure can also be performed from the CLI of a Signaling Server or Media Card.

1 Log in to Element Manager.

2 Select **IP Telephony > Nodes: Servers, Media Cards > Maintenance and Reports** from the navigator.

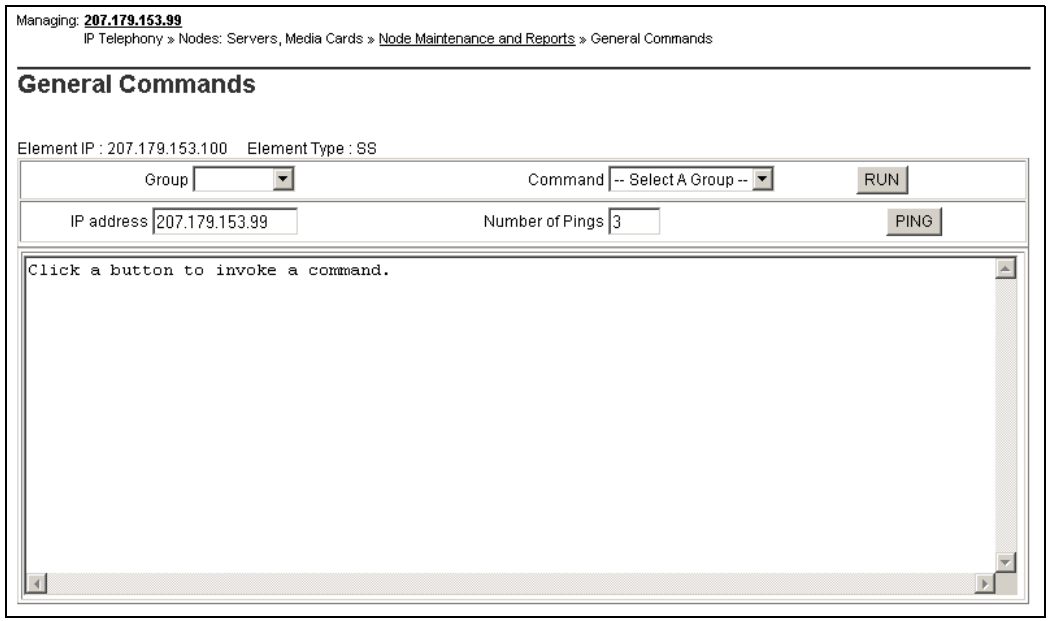
The **Node Maintenance and Reports** web page opens, as shown in Figure 115 on page 340.

3 Click the desired node to expand it.

4 Click **GEN CMD** for the chosen Signaling Server or Media Card.

The **General Commands** web page opens, as shown in Figure 145.

Figure 145
General Commands



5 Select **NodePwd** from the **Group** drop-down list.

6 Select **nodePwdShow** from the **Command** drop-down list.

7 Click **RUN**.

The current node password information displays in the text area at the bottom of the web page.

8 Enter the administrator IP Phone Installer Password in the **Node Password** box (see Figure 146).

9 Select **nodePwdSet** from the drop-down list.

10 Click **SET**.

The administrator password is set and enabled.

Figure 146
Node Password

Note: The entered password appears as asterisks. The valid characters are 0-9 * #. The password can be null or 6 to 14 digits in length.

WARNING

If the administrator password is null (zero length), then the Node ID, TN, and Password screens are not displayed on the IP Phones during their registration process. This provides security as it prevents any entry of passwords or TNs on the IP Phones. However, it is impossible to install new IP Phones (unless a temporary password is set).

11 Select **NodePwd** from the **Group** drop-down list.

12 Select **nodePwdShow** from the **Command** drop-down list.

13 Click **RUN**.

The updated administrator IP Phone Installer Password is displayed in the text area at the bottom of the web page.

14 Enter the temporary IP Phone Installer Password (see Figure 147):

a. Enter the password in the **Node Password** text box.

b. Select **NodePwd** from the **Group** drop-down list.

c. Select **nodeTempPwdSet** from the **Command** drop-down list.

The area then displays the **Uses** and **Timeout** text boxes.

d. Enter a value for the number of uses or a value for timeout (in hours) or both.

15 Click **SET**.

The temporary password is set.

Figure 147
Node Temp Password

Note 1: The entered password appears as asterisks. The valid characters are 0-9 * #. The password can be 6 to 14 digits in length.

Note 2: The temporary password automatically deletes itself after it has been used the defined number of times or when the duration expires, whichever comes first.

16 Select **NodePwd** from the **Group** drop-down list.

17 Select the **nodePwdShow** command from the **Command** drop-down list.

18 Click **RUN**.

The updated temporary IP Phone Installer Password is displayed.

End of Procedure

Installing IP Phone hardware components

Follow Procedure 106 to install IP Phone hardware components.

Procedure 106
Installing IP Phone hardware components

For details on installing hardware components, see *IP Phones: Description, Installation, and Operation* (553-3001-368).

1 Refer to Figure 148 on page 421, when installing the following:

a. Footstand

b. 3-Port Switch only on the IP Phone 2004, required if a single Ethernet connection is shared with a PC

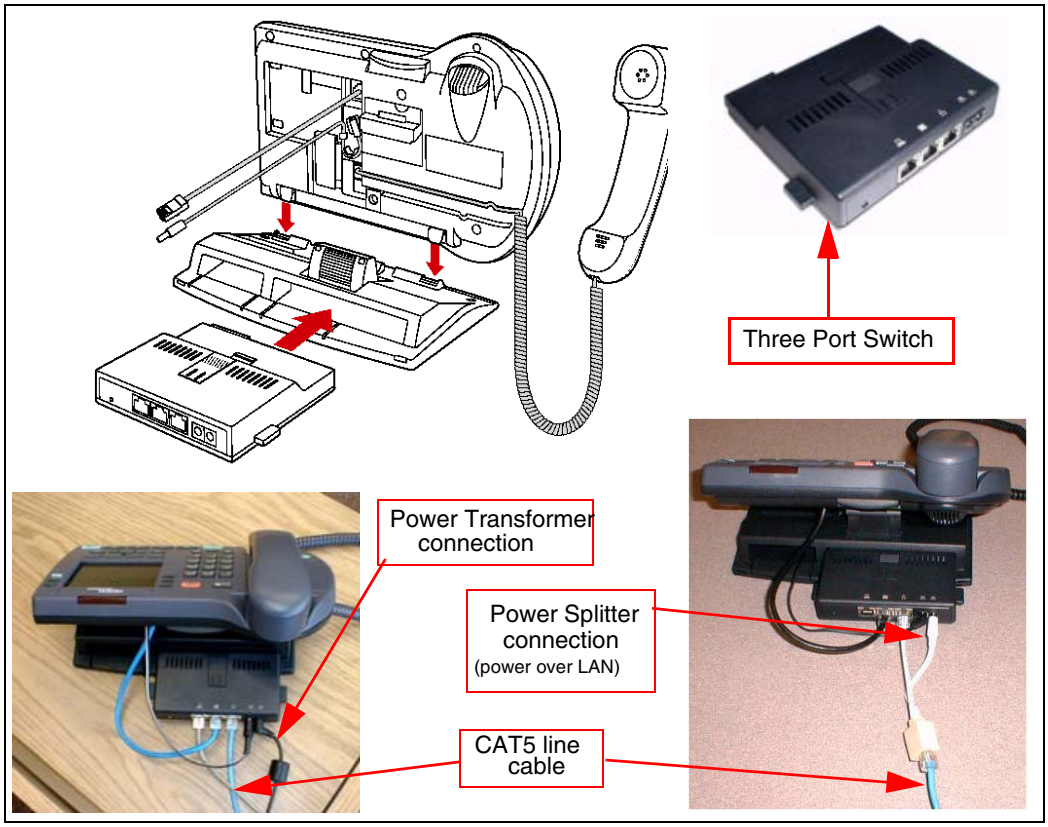
c. Ethernet cable from the set to the 3-Port Switch

d. Power Transformer or Power Splitter for Power over LAN unit

e. Handset

f. Handset cord

Figure 148
IP Phone 2004 components



2 Connect one end of the CAT5 line cable to the Ethernet jack at the back of the telephone. See Figure 148 on page 421.

3 Connect the other end into the IP voice network (Ethernet), using an RJ-45 connector. See Figure 149 on page 423.

WARNING

Do not plug the IP Phone into an ISDN connection. Severe damage can result. Consult the system administrator to ensure that the telephone is being plugged in to a 10/100BaseT Ethernet jack.

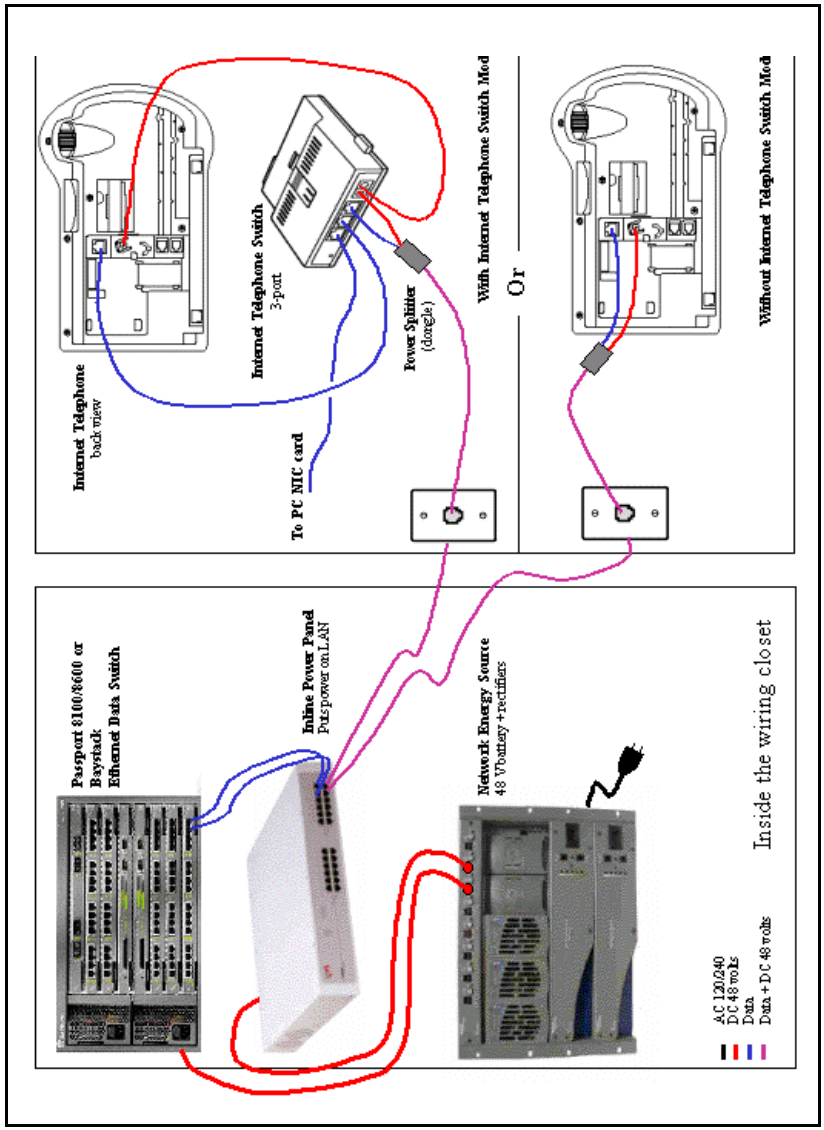
4 Power the IP Phone with one of the following methods:

a. Using a 16V AC power adaptor, plug the AC power transformer into the nearest power outlet. Check the IP Phone User Guide for country-specific parameters.

b. Using a Power over LAN unit, connect the Power over LAN unit as shown in Figure 149 on page 423.

5 Secure the telephone footstand to the base of the telephone. Use the angle adjustment grip on the top rear of the telephone to adjust the position.

Figure 149
IP Phone connections



End of Procedure

Configuring the IP Phone boot parameters

The IP Phone boot parameters are configured during telephone installation. The following configuration modes are available:

- Manual configuration
  - All of the IP Phone's boot parameters are statically configured at the IP Phone.
  - See Procedure 107: "Entering IP Telephone boot parameters using manual configuration" on page 425.
- Partial Dynamic Host Configuration Protocol (DHCP) mode
  - Works with standard DHCP server. The DHCP server automatically provides the IP Phone with an IP address; the remainder of the IP Phone's boot parameters are statically configured at the IP Phone.
  - See Procedure 108: "Entering IP Phone boot parameters using full DHCP parameters" on page 428.
- Full DHCP mode
  - Requires special configuration of the DHCP server to recognize the IP Phone. The DHCP server provides all boot parameters to the IP Phone, including IP address and server address.
  - See Procedure 109: "Entering IP Phone boot parameters using partial DHCP parameters" on page 430.

For configuration of the DHCP server, see *Converging the Data Network with VoIP* (553-3001-160).

Entering IP Phone boot parameters using manual configuration

Follow Procedure 107 to enter IP Telephone boot parameters using manual configuration.

Procedure 107
Entering IP Telephone boot parameters using manual configuration

1. Power the IP Phone.

   Within four seconds, the Nortel logo appears.

2. When the Nortel logo appears on the display, you have one second to press the four feature keys at the bottom of the display in sequence, from left to right.

   Note: If the Nortel logo times out, repeat step 1 and step 2.

3. For the following prompts:

   a. Press the **BKSpace** (backspace) or **Clear** keys to change an entry.

   b. Enter new values using the telephone's keypad.

   c. Press the **OK** key to accept your selection.

   The IP Phone prompts:

   ```
   DHCP? (0-No, 1-Yes): 0
   ```

4. Enter **0** for manual boot parameter configuration.

   The IP Phone prompts:

   ```
   SET IP: x.x.x.x
   ```

5. Enter the IP Phone IP address.

   The IP Phone prompts:

   ```
   NETMSK: x.x.x.x
   ```

6. Enter the subnet mask.

   The IP Phone prompts:

   ```
   DEF GW: x.x.x.x
   ```

7 Enter the default gateway.

The IP Phone prompts:

```
S1 IP: x.x.x.x
```

8 Enter the Server 1 IP (node IP).

The IP Phone prompts:

```
S1 PORT: 4100
```

9 Enter the Server 1 port.

The IP Phone prompts:

```
S1 ACTION: 1
```

10 Enter the Server 1 action.

The IP Phone prompts:

```
S1 RETRY COUNT: 10
```

11 Enter the Server 1 retry count.

The IP Phone prompts:

```
S2 ...
```

12 Enter same information as for Server 1.

The IP Phone prompts:

```
VLAN?(0-No,1-Ma,2-Au)0
```

13 Choose one of the following:

a. Enter **0** to configure no VLAN.

The IP Phone displays:

```
Locating server...
```

After several seconds, the IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```

Go to step 14 on page 427.

b. Enter **1** to configure manual VLAN.

The IP Phone prompts:

```
VLAN: x
```

Go to step 14 on page 427.

c. Press the **OK** key.

The IP Phone prompts:

```
Invalid TN: x.x

Reason: Unequipped.

Go offhook to do SBI
```

14 Enter the VLAN ID.

The IP Phone displays:

```
Locating server...
```

If you did not configure an IP Phone Installer Password, after several seconds, the IP Phone prompts:

```
Node: x
TN: x.x
```

15 Enter the node number and the IP Phone's (virtual) TN, then go to Step 18.

If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: x
```

16 Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times out, or if you do not successfully enter the password in three attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

```
TN: x.x
```

17 Enter the IP Phone's (virtual) TN.

The IP Phone displays the logo, the date and time, and the DN keys.

18 Check for dial tone and the correct DN above the display.

End of Procedure

Entering IP Phone boot parameters using full DHCP parameters

Follow Procedure 108 to enter IP Phone boot parameters using full DHCP parameters.

Procedure 108
Entering IP Phone boot parameters using full DHCP parameters

1 Power the IP Phone.

Within four seconds, the Nortel logo appears.

2 When the Nortel logo appears on the display, you have one second to press the four feature keys at the bottom of the display in sequence, from left to right.

Note: If the Nortel logo times out, repeat step 1 and step 2.

3 For the following prompts:

a. Press the **BKSpace** (backspace) or **Clear** keys to change an entry.

b. Enter new values using the telephone's keypad.

c. Press the **OK** key to accept your selection.

The IP Phone prompts:

```
DHCP? (0-No, 1-Yes): 0
```

4 Enter **1** to use DHCP.

The IP Phone prompts:

```
DHCP:0-Full, 1-Partial:0
```

5 Enter the 0 to use Full DHCP.

The IP Phone prompts:

```
VLAN?(0-No,1-Ma,2-Au)0
```

6 Choose one of the following:

a. Enter **0** to configure no VLAN.

The IP Phone displays:

```
Locating server...
```

After several seconds, the IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```

Go to step 7 on page 429.

b. Enter **1** to configure manual VLAN.

The IP Phone prompts:

```
VLAN: x
```

Go to step 7.

c. Enter **2** to configure automatic VLAN.

The IP Phone prompts:

```
VLAN: x
```

Go to step 7

7 Enter the VLAN ID.

The IP Phone displays:

```
Locating server...
```

If you did not configure an IP Phone Installer Password, after several seconds, the IP Phone prompts:

```
Node: x
TN: x.x
```

8 Enter the node number and the IP Phone's (virtual) TN, and then go to step 11 on page 430.

If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: 0
```

9 Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times out, or if you do not successfully enter the password in three attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

```
TN: x.x
```

10 Enter the IP Phone's (virtual) TN.

The IP Phone displays the logo, the date and time, and the DN keys.

11 Check for dial tone and the correct DN above the display.

End of Procedure

Entering IP Phone boot parameters using partial DHCP parameters

Follow Procedure 109 to enter IP Telephone boot parameters using partial DHCP parameters.

Procedure 109
Entering IP Phone boot parameters using partial DHCP parameters

1 Power up the IP Phone.

Within four seconds, the Nortel logo appears.

2 When the Nortel logo appears on the display, you have one second to press the four feature keys at the bottom of the display in sequence, from left to right.

Note: If the Nortel logo times out, repeat step 1 and step 2.

3 For the following prompts:

a. Press the **BKSpace** (backspace) or **Clear** keys to change an entry.

b. Enter new values using the telephone's keypad.

c. Press the **OK** key to accept your selection.

The IP Phone prompts:

```
DHCP? (0-No, 1-Yes): 0
```

4 Enter **1** to use DHCP.

The IP Phone prompts:

```
DHCP:0-Full, 1-Partial:0
```

5 Enter the **1** to use Partial DHCP.

The IP Phone prompts:

```
S1 IP: x.x.x.x
```

6 Enter the Server 1 IP (node IP).

The IP Phone prompts:

```
S1 PORT: 4100
```

7 Enter the Server 1 port.

The IP Phone prompts:

```
S1 ACTION: 1
```

8 Enter the Server 1 action.

The IP Phone prompts:

```
S1 RETRY COUNT: 10
```

9 Enter the Server 1 retry count.

The IP Phone prompts:

```
S2 ...
```

10 Enter same information as for Server 1.

The IP Phone prompts:

```
VLAN?(0-No,1-Ma,2-Au)0
```

11 Choose one of the following:

a. Enter **0** to configure no VLAN.

The IP Phone displays:

```
Locating server...
```

After several seconds, the IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```

Go to step 12.

b. Enter **1** to configure manual VLAN.

The IP Phone prompts:

```
VLAN: x
```

Go to step 12 on page 432.

c. Enter **2** to configure automatic VLAN.

The IP Phone prompts:

```
VLAN: x
```

Go to step 12.

12 Enter the VLAN ID.

The IP Phone displays:

```
Locating server...
```

If you did not configure an IP Phone Installer Password, after several seconds, the IP Phone prompts:

```
Node: x
TN: x.x
```

13 Enter the node number and the IP Phone's (virtual) TN then go to step 16.

If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: 0
```

14 Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times out, or if you do not successfully enter the password in three attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

```
TN: x.x
```

15 Enter the IP Phone's (virtual) TN.

The IP Phone displays the logo, the date and time, and the DN keys.

16 Check for dial tone and the correct DN above the display.

End of Procedure

Using Set-Based Installation

Set-Based Installation enables the delegation of telephone installation to trusted users. To have a trusted user perform this function, configure a temporary IP Phone Installer Password for the system. See "Setting administrator and temporary IP Telephone Installer passwords" on page 417.

Note: This feature can be an alternative to LD 11 or OTM to configure IP Phones on the Call Server.

Follow Procedure 110 to use Set-Based Installation.

Procedure 110
Using Set-Based Installation

This procedure is the same as Procedure 107 on page 425, Procedure 108 on page 428, and Procedure 109 on page 430, except when the system response, displayed on the IP Phone, is as follows:

If you did not configure an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
TN: x.x
```

1. Enter the node number and the IP Phone's (virtual) TN, then go to Step 4.

   If you configured an IP Phone Installer Password, the IP Phone prompts:

   ```
   Node: x
   PassWord: 0
   ```

2. Enter the node number and the temporary or administrator IP Phone Installer Password.

   Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

   Note 2: If this screen times-out, or if you do not successfully enter the password in 3 attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

   The IP Phone prompts:

   ```
   TN: x.x
   ```

3. Enter the IP Phone's (virtual) TN.

4. Press the **OK** key.

   The IP Phone responds Unequipped...

5. Lift the handset. The system accepts the TN.

6. Listen for the continuous dial tone.

   The system response, displayed on the IP Phone, is as follows:

   Model ? (20)

7. Press the **#** key to select the default model, or enter the model number and press **#**.

8. Listen for a special tone.

   The system response, displayed on the IP Phone, is as follows:

   OK, ZONE? (0)

9. Press the **#** key to select the default zone, or enter the zone number and press **#**.

   The system response, displayed on the IP Phone, is as follows:

OK, EXTENSION? 2244

10 Press the **#** key to select the default DN, or enter a DN and press **#**.

11 Listen for a relocation tone.

The system response, displayed on the IP Phone, is as follows:

```
OK
```

12 Replace the handset.

The set displays the logo, the date and time, and the DN keys The set based installation is complete.

End of Procedure

Installing the IP Softphone 2050

This chapter contains the following procedures:

- Procedure 111: "Configuring the IP Softphone 2050" on page 436
- Procedure 112: "Installing the USB Headset Kit" on page 437
- Procedure 113: "Installing the IP Softphone 2050 on your PC" on page 437
- “Running the IP Softphone 2050 for the first time” on page 438

Procedure 111
Configuring the IP Softphone 2050

1 Access LD 11. Enter the command:

```
LD 11
```

2 Enter appropriate responses shown in Table 55.

Table 55
LD 11 – Configure the IP Softphone 2050

Prompt	Response	Description
REQ:	NEW CHG	Add new data Change existing data
TYPE:	I2050	Type of data block
TN	c u	Terminal number
DES	x...x	ODAS telephone designator
CUST	xx	Customer number, as defined in LD 15
...		
ZONE	0-255	Zone number
FDN	x...x	Flexible CFNA DN
...		
CLS	aaa	Class of service HFA - Digital Telephone Handsfree Allowed is default for IP Softphone 2050 to enable the USB interface

End of Procedure

Installing and configuring on the PC

Installing the USB Headset Kit

Installing the USB Headset Kit application after the IP Softphone 2050 software application enables the IP Softphone 2050 application to show it as an audio device option during the installation. If the USB Headset Kit is

installed, you can still choose it as the audio device from the Configuration Utility.

Procedure 112
Installing the USB Headset Kit

1. Connect the coiled lower cord to the headset cord with the Quick Disconnect connector. Ensure the Quick Disconnect is securely fastened.
2. Connect the headset cord to the RJ9 jack on the adaptor.
3. Connect the USB cable to the headset adaptor and to one of the USB jacks at the back of your PC or USB hub.

End of Procedure

The first time the headset adapter is plugged in, there is a delay while Windows ® configures the device and locates appropriate driver software. During the installation you can be prompted to supply the original Windows CD-ROM so that Windows can locate the required drivers.

Installing the IP Softphone 2050 application

Procedure 113
Installing the IP Softphone 2050 on your PC

1. Insert the CD-ROM disk into the CD-ROM drive of your PC.

   Note: Installation should proceed automatically. If it does not, then continue with step 1. Otherwise go directly to step 5.
2. On the PC desktop, double-click the **My Computer** icon.
3. Double-click the **CD** icon.
4. Double-click the **Setup** icon.
5. Follow the prompts that appear on the screen.
6. Run the IP Softphone 2050 Configuration Utility to assign a server address, select sound devices, and select a server type.

End of Procedure

Running the IP Softphone 2050 for the first time

Installation places the IP Softphone 2050 in the Windows Start menu at **Start > Programs > Nortel > IP Softphone 2050**. The Configuration Utility is placed in the Windows Control Panel.

The IP Softphone 2050 application is started by one of the following:

- Select **Start > Programs > Nortel > IP Softphone 2050**.
- Click the desktop shortcut (if one was created during the installation).
- Automatic start-up sequence.

  Note: If you want the IP Softphone 2050 to start automatically when the PC boots, place a shortcut to the application in the Start-up folder.

When an IP Softphone 2050 starts for the first time and connects to the network, it executes a start-up sequence. The elements of the start-up sequence are as follows:

- Get the IP parameters.
- Find a gateway server, and authenticate the user.

As the IP Softphone 2050 registers with the system, the following occurs:

- If a non-null node password is enabled, it prompts for a node number and password. Enter the node number and password using the keyboard or numeric keypad. After the password is verified, enter the TN of the IP Softphone 2050. See *IP Line: Description, Installation, and Operation* (553-3001-365) for more on the password feature.
- If the null node password is configured and enabled, these screens are skipped and no option is provided to change the password.
- If the node password is disabled or not configured, it prompts for a node number and TN. Enter the node number and TN using the keyboard or numeric keypad.

The IP Softphone 2050 configuration is complete.

Verifying IP Phone functionality

You can now use the IP Phones. To test the telephones, make IP Phone-to-IP Phone calls.

Displaying registered IP Phones

Follow Procedure 114 to display the IP Phones registered on a Signaling Server or Voice Gateway Media Card.

Procedure 114
Displaying registered IP Phones in Element Manager

1. Log in to Element Manager.
2. Select **System Status > IP Telephony** from the navigator.
3. Click the desired node to expand it.
4. Click **GEN CMD** for the desired Signaling Server or Media Card.
   a. Select **isetShow** from the drop-down list box.
   b. If prompted, select the range of sets to display.
   c. Click **RUN**.

The status of all IP Phones registered on this Signaling Server or Media Card is displayed.

End of Procedure

Upgrading firmware

Refer to the *IP Line: Description, Installation, and Operation* (553-3001-365), to check for the latest IP Phone firmware version and how to upgrade to the latest IP Phone firmware.

Installing and cross-connecting a Power Fail Transfer Unit

Contents

This section contains information on the following topics:

Introduction

Power fail transfer occurs when the main power to the CS 1000E system is cut off. When a power interruption occurs, the Power Fail Transfer Unit (PFTU) connects predetermined analog (500/2500-type) telephones directly to the Central Office trunks. A PFTU is capable of supporting a maximum of five or eight telephones (depending on the PFTU type).

A PFTU can be connected to the AUX connector on a Media Gateway.

IMPORTANT!

A PFTU does not support Digital trunks. Use Analog trunks if power failure backup is required.

The following procedures are provided in this chapter:

1 Procedure 115: "Installing and connecting a QUA6 PFTU" on page 442

2 Procedure 116: "Connecting an analog (500/2500-type) telephone to a PFTU" on page 450

3 Procedure 117: "Connecting a Trunk to a PFTU" on page 452

Installing and connecting a QUA6 PFTU

Follow Procedure 115 to install and connect a QUA6 PFTU. Refer to the equipment layout plan for the location of the PFTU.

Note: The QUA6 PFTU operates with loop-start and ground-start Central Office trunks. With ground start trunks, the associated telephone set must have a ground start button.

Procedure 115
Installing and connecting a QUA6 PFTU

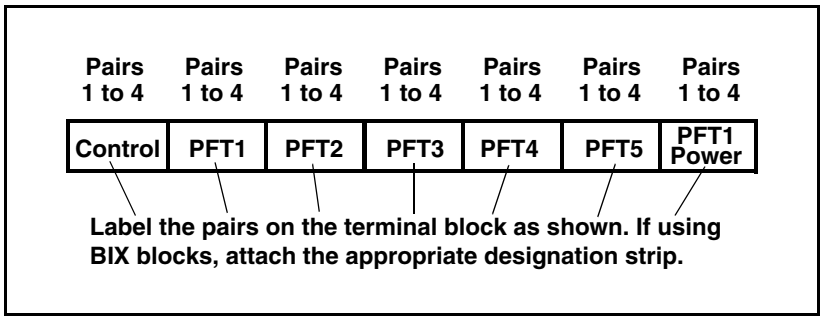
1 Install the PFTU on the wall near the system cross-connect terminal.

Fasten the PFTU in position with four screws.

2 Install an NE-A25B-type 25-pair cable from connector J1 on the faceplate of the PFTU to its assigned location at the cross-connect terminal.

3 Label the pairs of the J1 cable on the cross-connect terminal block as shown in Figure 150 on page 442.

Figure 150
J1 cable labels



4 Connect the PFTU power and control connections to the AUX connector on the Media Gateway. See Figure 151 on page 443 and Figure 152 on page 444, Table 56 on page 444, and Figure 153 on page 446.

Figure 151
AUX cable connectors on media gateway

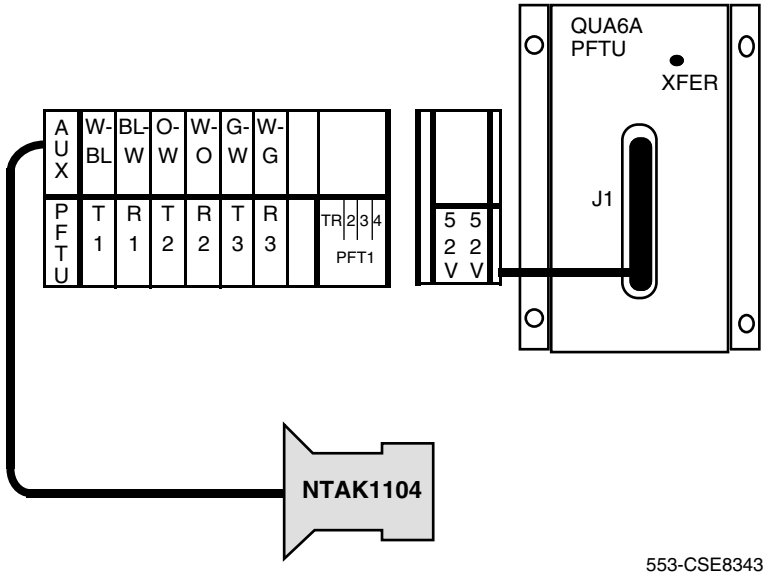


Figure 152
AUX cable connector on Media Gateway

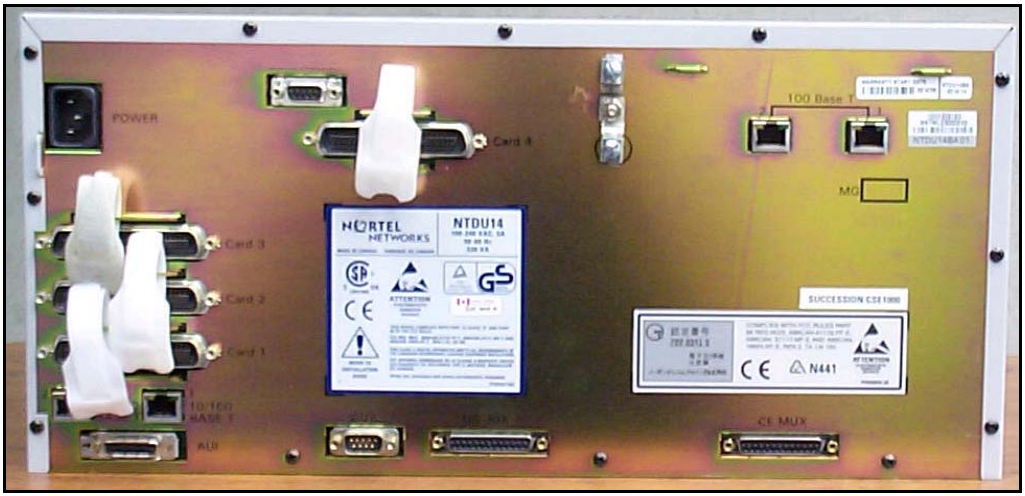


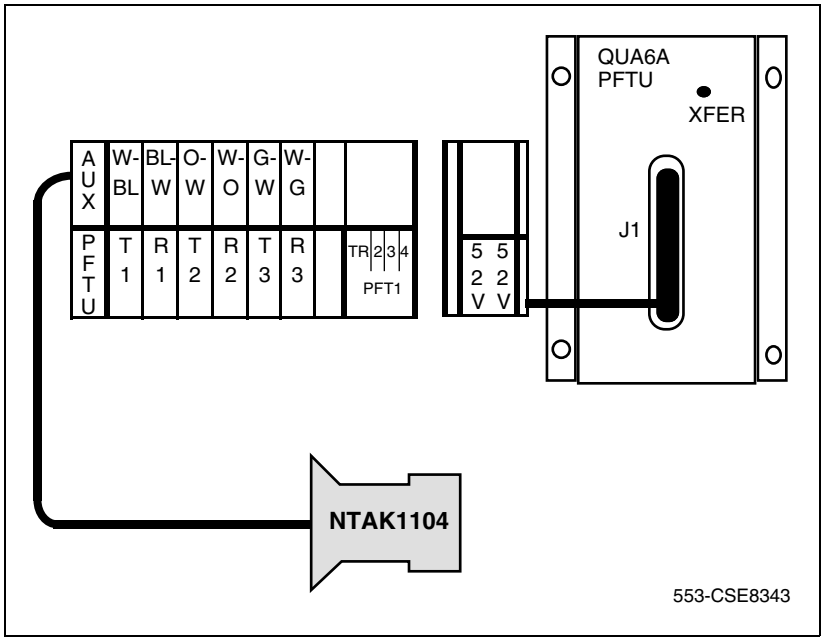
Table 56
Control and power connections on cable J1 (Part 1 of 2)

J1 Cable from QUA6				
Function	**Pair Number**	**Pair Color**	**Connects to**	**Cross-connects to**
Control	1T	W-BL	(ALM)	Not used
	1R	BL-W	BRTN	W-BL 1-dot connection on AUX cable
	2T	W-O	PFTS	W-O 1-dot connection on AUX cable. Transfer begins by applying ground to this lead.
	2R	O-W	BRTN	BL-W 1-dot connection on AUX cable.

Table 56
Control and power connections on cable J1 (Part 2 of 2)

J1 Cable from QUA6				
Function	**Pair Number**	**Pair Color**	**Connects to**	**Cross-connects to**
	3T	W-G	(TC)	Console transfer switch. See console connections. Transfer begins by applying ground to this lead.
	3R	G-W		Not used
	4T	W-BR		Not used
	4R	BR-W		Not used
PFTU power	25T 25R	S-V V-S	-48 V -48 V	O-W 1-dot connection on AUX cable. Maximum 250 mA draw on O-W lead.

Figure 153
Power fail transfer



End of Procedure

Installing and connecting a third-party PFTU

Follow the equipment manufacturer's instructions for installing the PFTU. Use the information in Table 57 to connect a third-party PFTU.

Table 57
PFTU control lead signals

	Lead State	
NTAK1104 AUX cable lead	**When PFTU is in non-transferred state**	**When PFTU is in transferred state**
BRTN	GROUND	GROUND
BRTN	GROUND	GROUND
-48V AUX	-48V DC (250 mA max.)	-48V DC (250 mA max.)
PFTS	OPEN	GROUND

Note 1: Refer to Figure 152 on page 444 to see where the Auxiliary cable connects to the CS 1000E system.

Note 2: If power is removed from the QUA6, a transfer of the PFTU can occur.

Connecting an analog (500/2500-type) telephone to a PFTU

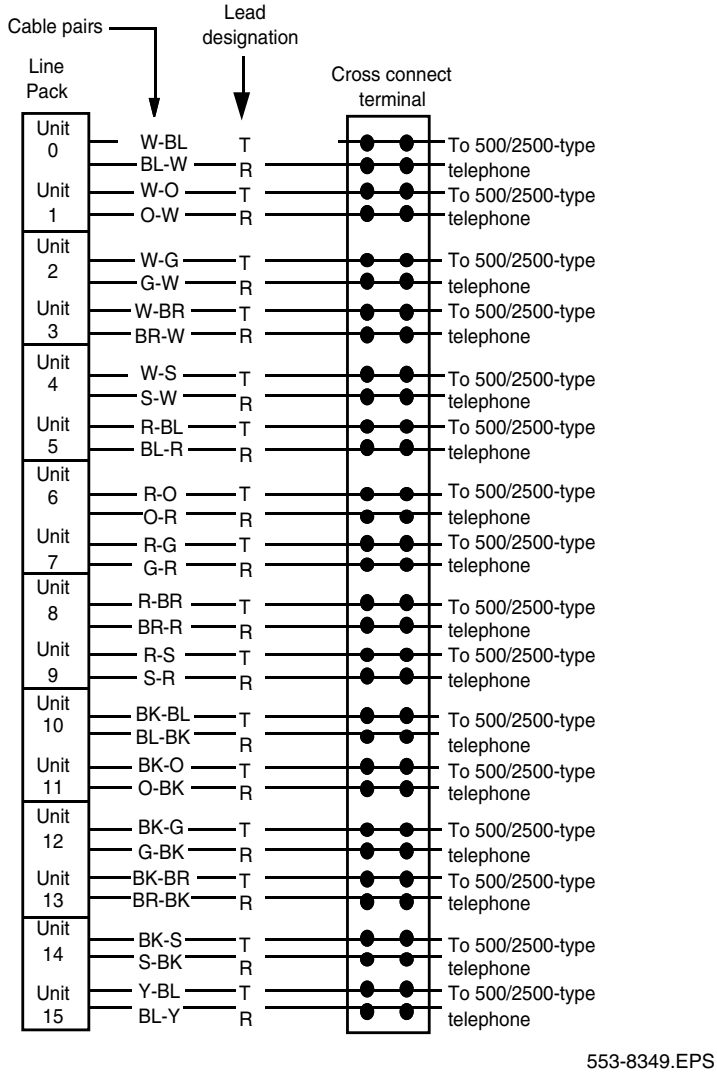
Ensure that the cable from the appropriate Line card slot has been connected to the telephone. Refer to "Installing the Main Distribution Frame" on page 353.

Follow Procedure 116 to connect an analog telephone to a PFTU. Refer to the equipment layout plan to determine where to locate the PFTU.

DANGER

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Do not install telephone jacks in wet locations unless the jacks are designed for wet locations. Never touch un-insulated telephone wiring unless the line is disconnected at the network interface.

Figure 154
Analog Line card cable distribution



Procedure 116
Connecting an analog (500/2500-type) telephone to a PFTU

1. Locate the telephone terminations on the cross-connect terminal.
2. Connect one end of the cross-connect wire to the leads of the telephone.
3. Locate the PFTU connections (unit PFTU 1 through PFTU 5) assigned to this telephone at the cross-connect terminal. See Table 58 on page 450.
4. Connect the other end of the cross-connect wire to the pair assigned to the telephone on the PFTU.
5. Connect a second cross-connect wire to the pair assigned to the Line card on the PFTU.
6. Locate the Line card terminations on the cross-connect terminal.
7. Connect the other end of the cross-connect wire to the assigned TN terminal block.

Table 58
Power Fail Transfer Unit connections (Part 1 of 3)

QUA6 J1 Cable			
Function	**Pair**	**Color**	**Connects to:**
PFT 1	5T 5R	W-S S-W	Telephone
	6T 6R	R-BL BL-R	Telephone Line card
	7T 7R	R-O O-R	Central Office Trunk
	8T 8R	R-G G-R	Trunk Line card

Table 58
Power Fail Transfer Unit connections (Part 2 of 3)

QUA6 J1 Cable			
Function	**Pair**	**Color**	**Connects to:**
PFT 2	9T 9R	R-BR BR-R	Telephone
	10T 10R	R-S S-R	Telephone Line card
	11T 11R	BK-BL BL-BK	Central Office Trunk
	12T 12R	BK-O O-BK	Trunk Line card
PFT 3	13T 13R	BK-G G-BK	Telephone
	14T 14R	BK-BR BR-BK	Telephone Line card
	15T 15R	BK-S S-BK	Central Office Trunk
	16T 16R	Y-BL BL-Y	Trunk Line card
PFT 4	17T 17R	Y-O O-Y	Telephone
	18T 18R	Y-G G-Y	Telephone Line card
	19T 19R	Y-BR BR-Y	Central Office Trunk
	20T 20R	Y-S S-Y	Trunk Line card

Table 58
Power Fail Transfer Unit connections (Part 3 of 3)

QUA6 J1 Cable			
Function	**Pair**	**Color**	**Connects to:**
PFT 5	21T 21R	V-BL BL-V	Telephone
	22T 22R	V-O O-V	Telephone Line card
	23T 23R	V-G G-V	Central Office Trunk
	24T 24R	V-BR BR-V	Trunk Line card

End of Procedure

Connecting a trunk to a PFTU

Follow Procedure 117 to connect a Trunk to a PFTU.

Procedure 117
Connecting a Trunk to a PFTU

1. Locate the PFTU terminal blocks at the cross-connect terminal.
2. Cross-connect the first pair of the assigned PFTU to the telephone.

   See Table 59 on page 453 for PFTU connections.
3. Cross-connect the second pair of the PFTU to the TN assigned to the telephone.
4. Cross-connect the third pair of the PFTU to the Central Office trunk.
5. Cross-connect the third pair of the PFTU to the TN assigned to the trunk.

6 Repeat for each trunk assigned to the PFTU.

Table 59
Power Fail Transfer Unit connections (Part 1 of 2)

QUA6 J1 cable				
Function	**Pair**	**Color**	**Connects to:**	**Connects to:**
PFT 1	5T 5R	W-S S-W	Telephone	—
	6T 6R	R-BL BL-R	Telephone Line card	TN assigned to the telephone
	7T 7R	R-O O-R	Central office trunk	—
	8T 8R	R-G G-R	Trunk Line card	TN assigned to the Trunk
PFT 2	9T 9R	R-BR BR-R	Telephone	—
	10T 10R	R-S S-R	Telephone Line card	TN assigned to the telephone
	11T 11R	BK-BL BL-BK	Central office trunk	—
	12T 12R	BK-O O-BK	Trunk Line card	TN assigned to the Trunk
PFT 3	13T 13R	BK-G G-BK	Telephone	—
	14T 14R	BK-BR BR-BK	Telephone Line card	TN assigned to the telephone
	15T 15R	BK-S S-BK	Central office trunk	—
	16T 16R	Y-BL BL-Y	Trunk Line card	TN assigned to the Trunk

Table 59
Power Fail Transfer Unit connections (Part 2 of 2)

QUA6 J1 cable				
Function	**Pair**	**Color**	**Connects to:**	**Connects to:**
PFT4	17T 17R	Y-O O-Y	Telephone	—
	18T 18R	Y-G G-Y	Telephone Line card	TN assigned to the telephone
	19T 19R	Y-BR BR-Y	Central office trunk	—
	20T 20R	Y-S S-Y	Trunk Line card	TN assigned to the Trunk
PFT5	21T 21R	V-BL BL-V	Telephone	—
	22T 22R	V-O O-V	Telephone Line card	TN assigned to the telephone
	23T 23R	V-G G-V	Central office trunk	—
	24T 24R	V-BR BR-V	Trunk Line card	TN assigned to the Trunk

End of Procedure

Installing and cross-connecting an external alarm from a PFTU

Contents

This section contains information on the following topics:

Introduction

This chapter describes the procedures for connecting an external alarm to the CS 1000E system.

This chapter contains the following procedure: Procedure 118: "Installing an alarm using an alarm port assigned in LD 15" on page 456

The following are the two methods of connecting an external alarm to the CS 1000E system:

- through an alarm port assigned in software
- through contacts in a QUA6 Power Failure Transfer Unit (PFTU)

Installing an alarm using an alarm port assigned in LD 15

The system can be equipped with an alarm port that is assigned in software. Connect an analog line to an analog (500/250-type) telephone or another similar type of ringing or alerting device.

Follow Procedure 118 to install an alarm using an alarm port assigned in LD 15.

Procedure 118
Installing an alarm using an alarm port assigned in LD 15

1. Install an analog (500/2500-type) line as described in “Installing and configuring IP Phones” on page 395.
2. Connect an analog (500/2500-type) telephone, or another similar alerting device used as an alarm, to the line.
3. Use LD 15 to assign an alarm port, (see Table 60).

   Note: If the DN assigned to the alarm is accidentally called, the alarm activates. To avoid false alarms, make sure the DN is not already assigned.

Table 60
LD 15 – Assign an alarm port.

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	CDB	Customer Data Block
CUST	xx	Customer Number as defined in LD 15
...		
ALDN	x...x	Alarm Directory Number

End of Procedure

Installing an alarm through QUA6 PFTU connections

A QUA6 PFTU can be used to connect an external alarm through normally open or normally closed contacts of one of its units. The contacts operate under the same conditions as the PFTU and can support the capacities listed in Table 61.

Table 61
The AC capacities

Maximum	AC capacities
Switching power	50.0 V A
Switching voltage	125.0 V rms
Switching current	0.5 A

Figure 155 on page 458 is an example of the contacts on one unit (PFT1) of the PFTU. The figure also shows the contacts in normal operating mode, not in failure mode. Table 62 on page 458 provides the connections for all units on the PFTU.

Figure 155
Contacts in PFTU

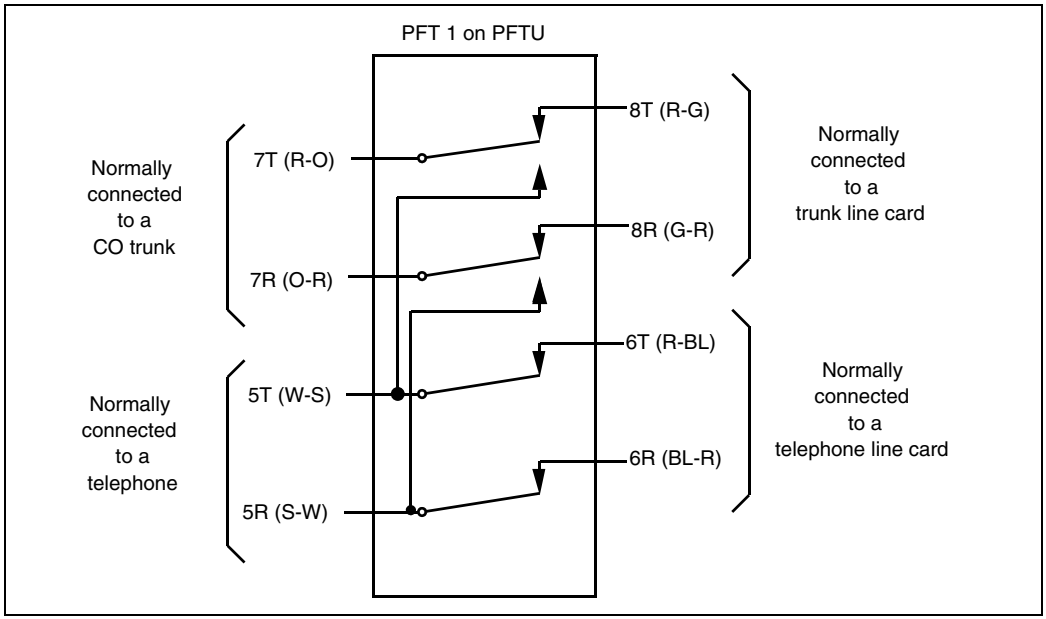


Table 62
PFTU connections (Part 1 of 3)

Unit	Pair	Color	Normal mode	Failure mode
P F T 1	5T 5R	W-S S-W	Makes with 6T and 6R	Opens 6T and 6R Makes with 7T and 7R
	6T 6R	R-BL BL-R	Makes with 5T and 5R	Open
	7T 7R	R-O O-R	Makes with 8T and 8R	Opens 8T and 8R Makes with 5T and 5R
	8T 8R	R-G G-R	Makes with 7T and 7R	Open

Table 62
PFTU connections (Part 2 of 3)

Unit	Pair	Color	Normal mode	Failure mode
PFT 2	9T 9R	R-BR BR-R	Makes with 10T and 10R	Opens 10T and 10R Makes with 11T and 11R
	10T 10R	R-S S-R	Makes with 9T and 9R	Open
	11T 11R	BK-BL BL-BK	Makes with 12T and 12R	Opens 12T and 12R Makes with 9T and 9R
	12T 12R	BK-O O-BK	Makes with 11T and 11R	Open
PFT 3	13T 13R	BK-G G-BK	Makes with 14T and 14R	Opens 14T and 14R Makes with 15T and 15R
	14T 14R	BK-BR BR-BK	Makes with 13T and 13R	Open
	15T 15R	BK-S S-BK	Makes with 16T and 16R	Opens 16T and 16R Makes with 13T and 13R
	16T 16R	Y-BL BL-Y	Makes with 15T and 15R	Open
PFT 4	17T 17R	Y-O O-Y	Makes with 18T and 18R	Opens 18T and 18R Makes with 19T and 19R
	18T 18R	Y-G G-Y	Makes with 17T and 17R	Open
	19T 19R	Y-BR BR-Y	Makes with 20T and 20R	Opens 20T and 20R Makes with 17T and 17R
	20T 20R	Y-S S-Y	Makes with 19T and 19R	Open

Table 62
PFTU connections (Part 3 of 3)

Unit	Pair	Color	Normal mode	Failure mode
P F T 5	21T 21R	V-BL BL-V	Makes with 22T and 22R	Opens 22T and 22R Makes with 23T and 23R
	22T 22R	V-O O-V	Makes with 21T and 21R	Open
	23T 23R	V-G G-V	Makes with 24T and 24R	Opens 24T and 24R Makes with 21T and 21R
	24T 24R	V-BR BR-V	Makes with 23T and 23R	Open

Configuring MG 1000T survivability and alternate primary controller

Contents

This section contains information on the following topics:

Introduction

This chapter provides procedures for configuring an alternate primary controller and survivability on an MG 1000T.

This chapter contains the following procedures:

- Procedure 119: "Configuring a survivable MG 1000T Expansion" on page 472

- Procedure 120: "Configuring the IP telephony node for Alternate primary controller" on page 473
- Procedure 121: "Verifying the operation of a Voice Gateway Media Card in an MG 1000T expansion in Survivable Mode" on page 475
- Procedure 122: "Retrieving CDR files using XModem" on page 476

MG 1000T switch over to Survival Mode

If survivability is configured on an MG 1000T, the following scenarios can trigger a switchover to Survival Mode:

- Automatic Switchover — triggered when the MG 1000T Expansion loses communication with the primary controller and the Switchover Time Out (SWOTO) timer expires. This can occur if there is a catastrophic failure of the primary controller, or the IP link is lost between the MG 1000T Core and the MG 1000T Expansion.
- Manual Switchover — triggered with the Switchover to Survival (SOTS) command in LD 135.

Automatic Switchover to Survival Mode

When an MG 1000T, with survivability configured, loses communication with the primary controller, the MG 1000T automatically switches over to Survival Mode when the SWOTO timer expires.

If the IP link is detected as down again before the expiration of the SWOTO timer, the timer stops, and the MG 1000T remains in Survival operating mode.

The state of communication between the primary controller and the MG 1000T Expansion is monitored by a simple polling mechanism called a Heartbeat.

This example illustrates the tasks performed by an MG 1000T Expansion when communication with the MG 1000T Core is lost.

1 The MG 1000T Expansion attempts to re-establish the connection to the MG 1000T Core. After four re-connection attempts with a pre-defined delay between each attempt, the SWOTO starts.

2 The SWOTO expires after the time defined in LD 117.

3 The MG 1000T Expansion re-starts. As the MG 1000T is going through the re-start procedure, it attempts to register with the MG 1000T Core.

4 If a connection cannot be made to the core processor, the MG 1000T Expansion comes up in Survival Mode.

Manual Switchover to Survival Mode

Manual commands are provided to enable a technician to force a switch over to Survival Mode. These commands are available only on the MG 1000T Core. They can be used only if an IP link is established between the MG 1000T Core and an MG 1000T Expansion. To manually switch over to Survival Mode, use the SOTS command in LD 135.

CAUTION — Service Interruption

A manually invoked switch-over causes a restart of the MG 1000T.

After the SOTS command has been successfully executed, the MG 1000T Expansion remains in Survival Mode until the Switchback From Survival (SBFS) command is issued. The SBFS command is issued in LD 135.

CAUTION — System Failure

If the software is upgraded on the MG 1000T Core, it must also be upgraded on the MG 1000T Expansion for Survivability to function.

In Survival Mode, a valid database must be downloaded to the MG 1000T Expansion in order to function. The database is downloaded or "synchronized" each time a datadump is performed. An exact copy of the database on the MG 1000T Core is downloaded to the MG 1000T with every datadump.

Switchback from Survival Mode

A MG 1000T Expansion can switchback to Normal Mode after communication with the MG 1000T Core is restored. The following scenarios can trigger an MG 1000T in Survival Mode to return to Normal Mode:

- Automatic Switchback (AUTOSB) **—** enables an MG 1000T to automatically switchback from Survival Mode to Normal Mode as soon as the IP link with the primary controller is restored and the SWOTO timer has expired. A restart is initiated on the MG 1000T Expansion. At the end of the system start, the MG 1000T Expansion is ready to operate in Normal Mode.
- Manual Switchback — enables a technician to force the system into Normal Mode by issuing the SBFS command. This command returns the system to Normal Mode after the SOTS command has been used.

Automatic Switchback from Survival Mode

When the Automatic Switchback option is configured, a Survivable MG 1000T Expansion automatically switches from Survival Mode to Normal Mode. It returns to Normal Mode as soon as the IP link with the primary controller is restored and the SWOTO timer expires.

A MG 1000T Expansion requires a valid database to be survivable.

The AUTOSB command is available in LD 117:

CHG AUTOSB <**cab#**> <**Switchback setting**>
Where:
cab# = **1-4**, Media Gateway
Switchback setting = (**YES**) **NO**

When the switchback parameter is set to YES, the MG 1000T Expansion automatically switches from Survival Mode when the SWOTO timer expires. If switchback is set to NO, the MG 1000T remains in Survival Mode until a technician enters the SBFS command.

Switchover Timer

The timer is started on a Survivable MG 1000T as soon as the IP link with the primary controller goes up or down. When the timer expires, the switchover (or switchback) is triggered. The timer is used to avoid instability in the Operating Mode of the MG 1000T Expansion if the IP link with the primary controller is unstable.

The Switchover Timer is also used during the start-up of a Survivable MG 1000T Expansion. The timer enables the MG 1000T Expansion to go into Survival Mode when it cannot connect to the primary controller on system start-up.

When the IP link is restored for an MG 1000T Expansion in Survival Mode with AUTOSB configured, the SWOTO timer is started. If the timer expires, a switchback is initiated to change from Survival Mode to Normal Mode. If the IP link is detected as down again before the expiration of the SWOTO timer, the timer stops, and the MG 1000T remains in Survival operating mode.

Manual Switchback from Survival Mode

After the SOTS command has been successfully executed, the MG 1000T Expansion remains in Survival Mode until the Switchback From Survival (SBFS) command in LD 135 is issued.

LOCK and UNLOCK commands

The LOCK and UNLOCK commands are available from the MG 1000T Core. The LOCK/UNLOCK command can be used in any mode to keep an MG 1000T Expansion in the current mode, regardless of the state of the IP link to the primary controller.

For example, a SOTS command forces the selected MG 1000T Expansion into Survival Mode prior to restarting the MG 1000T Core. A LOCK command can be issued from the MG 1000T Core prior to a restart. This keeps the selected MG 1000T Expansion in Survival Mode until manually returned to Normal Mode. Manually returning to Normal Mode reboots the MG 1000T Expansion.

These commands are applicable to both modes and can be used to keep an MG 1000T in Survival Mode after the Automatic Switchback occurs.

The LOCK/UNLOCK command is issued in LD 135.

LOCK <cab #>
Where:
cab# = specified Survivable Media Gateway

UNLOCK <cab #>
Where:
cab# = specified Survivable Media Gateway

Database synchronization

The DWL (Download) command is available in LD 43:

DWL [<cab#>]
Where:
<cab#> = a specified Survivable Media Gateway

Programming the **<cab#>** parameter is optional. If omitted, the database is downloaded to all connected Survivable Media Gateways.

EDD LCL command (local EDD)

The Invoke Datadump Program (EDD) command introduces the Invoke Datadump Program Local (EDD LCL) command. It performs a local datadump where data is dumped only on the MG 1000T Core. The databases on the Survivable Media Gateways are not updated. This operation is used when the database changes are tested by the technician prior to downloading them to the Survivable Media Gateways.

The sequence of operations for the EDD LCL command is as follows. Prior to an actual dump, the MG 1000T Core performs a security check. If the security check fails, the datadump operation is aborted. If the security check passes, the existing database files on the primary flash drive are renamed with the extension ".bak". The data is then written to the primary flash drive. When the database files in the primary flash drive are updated, data and patches are written to the internal backup flash drive (z:).

Note: LD 43 and LD 143 are not available on an MG 1000T Expansion in Survival Mode.

SWP, RES, RIB, and DAT commands for survivability

To ensure the database synchronization on the MG 1000T Core and the Survivable MG 1000T Expansion(s), the Swap (SWP), Restore (RES) and Restore Backup (RIB) commands are modified to produce the same results on the Survivable MG 1000T Expansion(s), as on the MG 1000T Core.

The optional parameter, **`[<cab#>]`**, enables the technician to select a specific MG 1000T Expansion. If no parameter is provided, the command is first performed on the primary controller. The technician is then prompted with a confirmation request. If <YES>, the command is performed on all Survivable MG 1000T Expansions.

As with the database download operation, preliminary security checks are performed by the primary controller against the Survivable MG 1000T Expansions' security ID and software release. If these security checks fail for any MG 1000T Expansion, synchronization is aborted for that MG 1000T Expansion.

SWP command

The SWP command is used to swap the regular and "*.bak" copies of the database on the primary flash drive. It restores the database to the state prior to the most recent datadump.

Figure 156 on page 469 illustrates the operation of the SWP command. Only one MG 1000T Expansion is shown for illustration purposes.

RES and RIB commands

The RES command restores data from the MG 1000T Core's external PC Card drive to its (c:) drive and all Survivable MG 1000T Expansions' (c:) drives.

The RES command is illustrated in Figure 157 on page 470.

The RIB command restores data from the MG 1000T Core's internal backup flash drive to its (c:) drive and from the Survivable MG 1000T Expansions' internal backup flash drive to the (c:) drive.

The RIB command is illustrated in Figure 158 on page 471.

Only one MG 1000T Expansion is shown for illustration purpose; however, the synchronization is performed sequentially on all Survivable MG 1000T Expansions.

DAT command

Use the DAT command to print the data issue and creation date of the CS 1000E's primary and backup databases, as well as those of the Survivable Media Gateways. The software release of the Survivable Media Gateways must match that of the CS 1000E.

The DAT command is available in LD 43.

Figure 156
SWP command operation

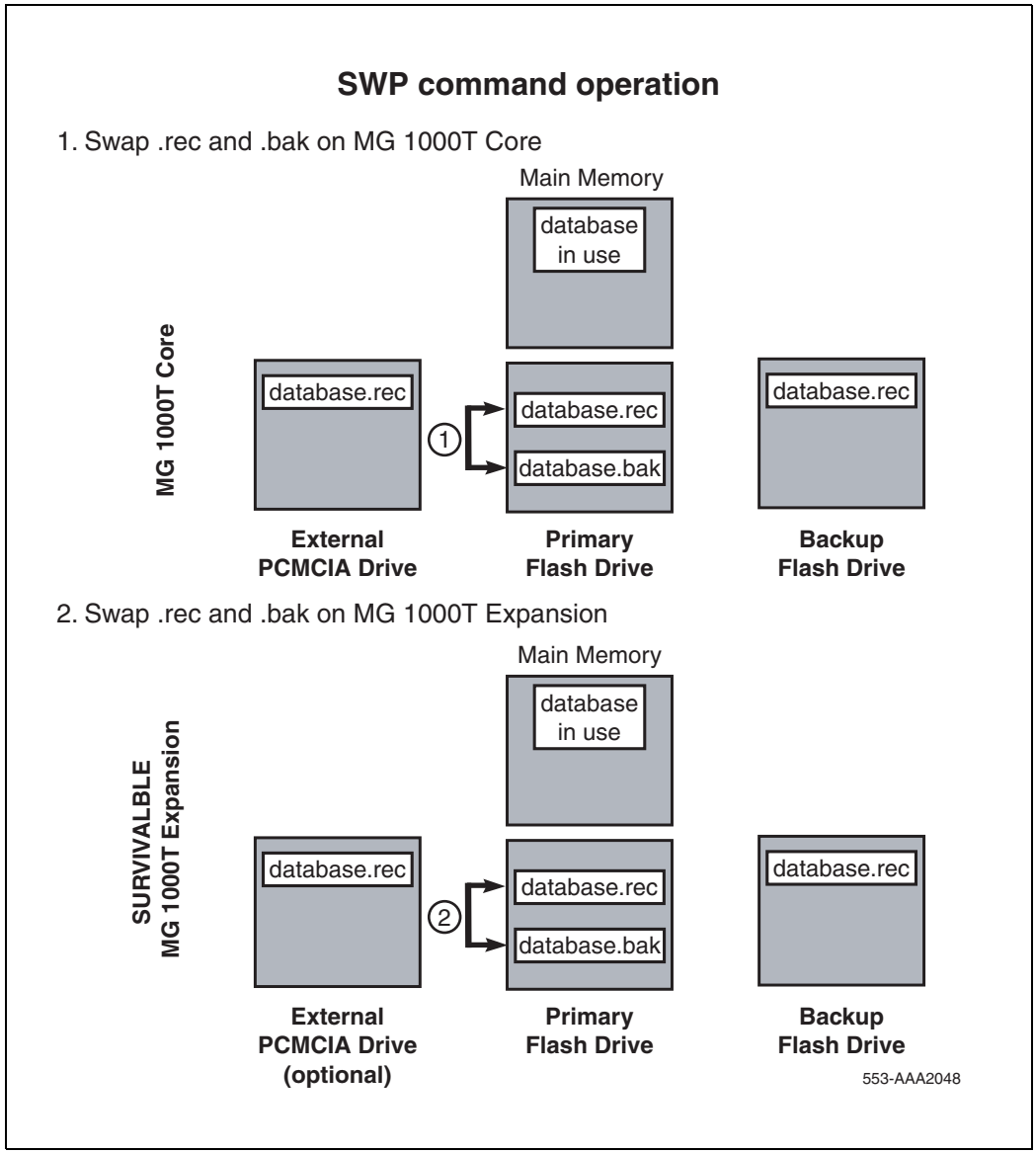


Figure 157
RES command

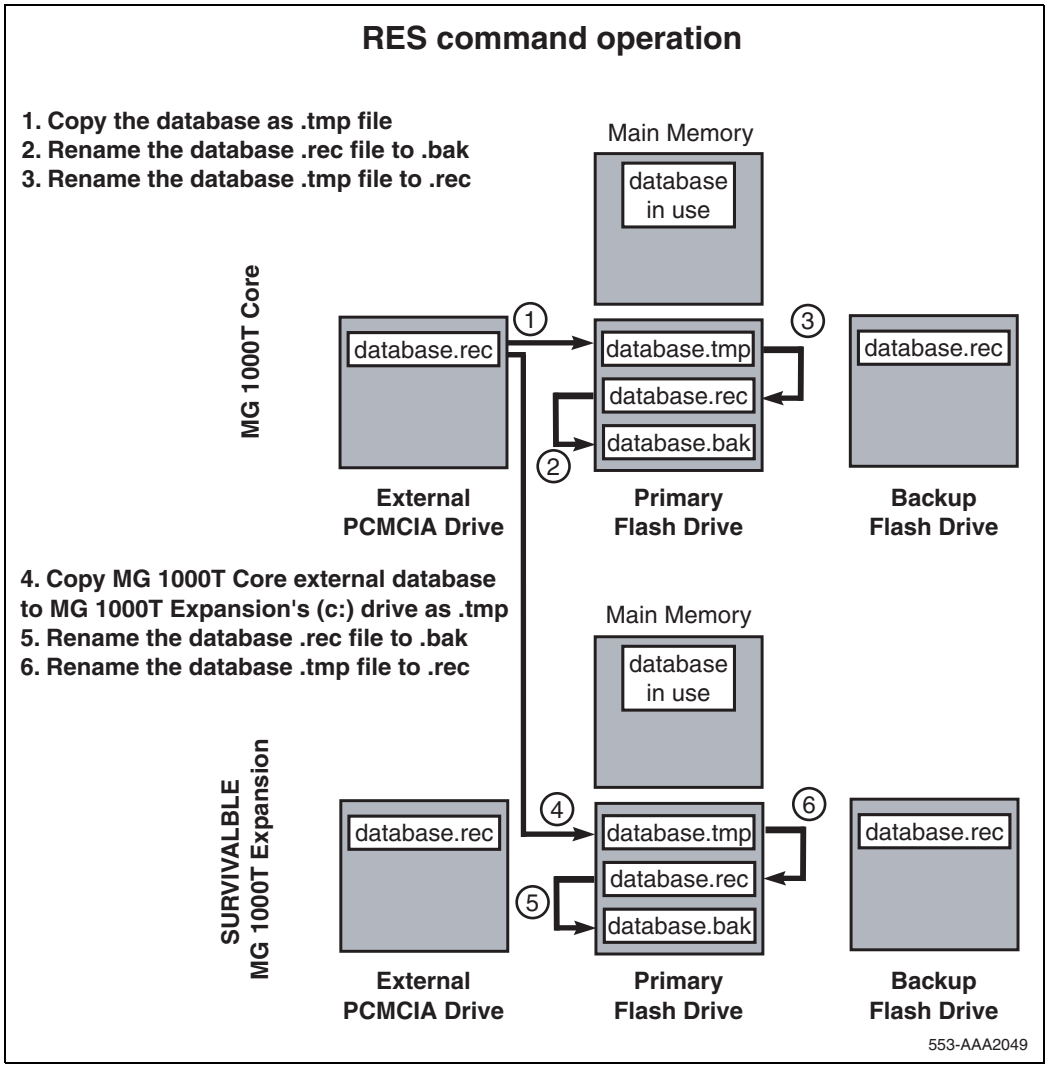
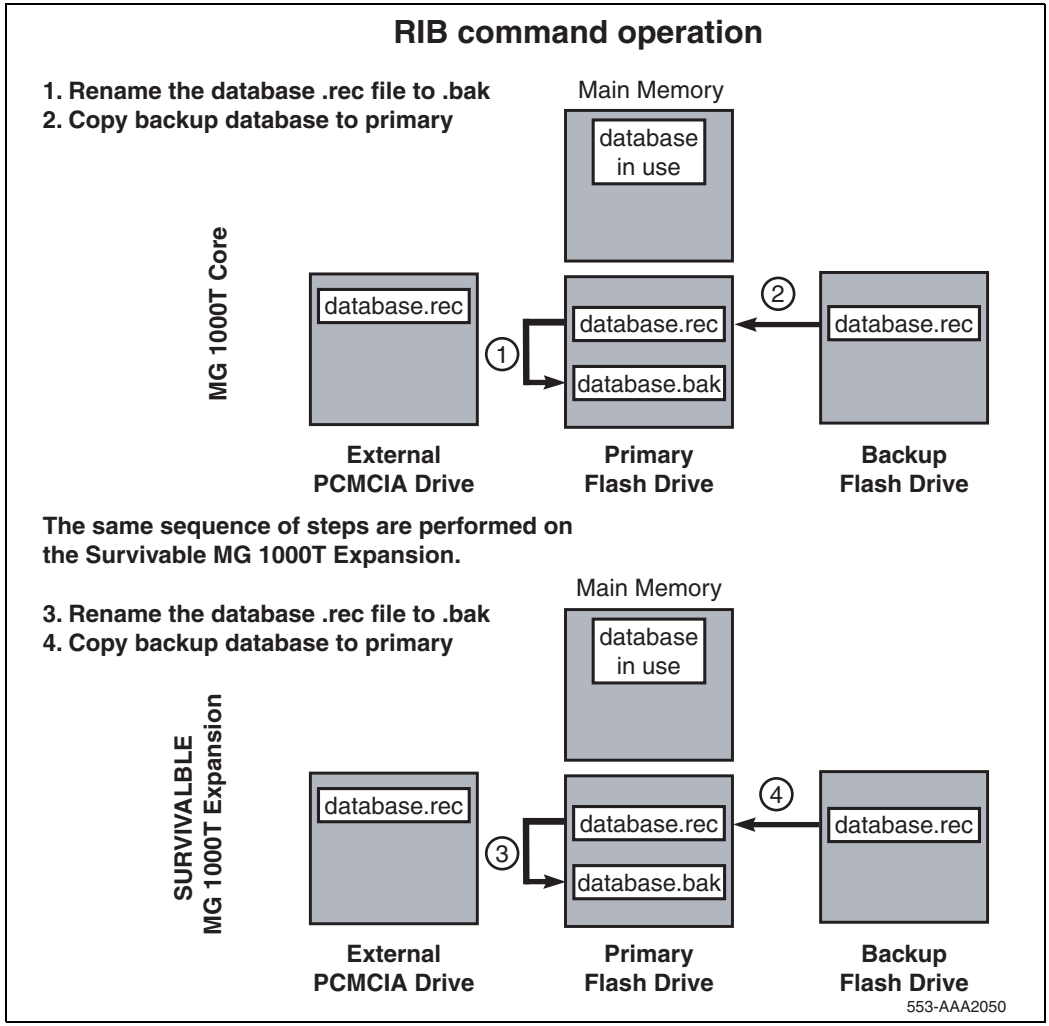


Figure 158
RIB command



Configuring a survivable MG 1000T Expansion

Follow Procedure 119 to configure a survivable MG 1000T Expansion.

Procedure 119
Configuring a survivable MG 1000T Expansion

The default licence parameter for survivability enables one MG 1000T Expansion to be configured as survivable.

1. Ensure the link is up between the MG 1000T Core and the MG 1000T Expansion.
2. Ensure that the Survivability ISM is set on the system for each MG 1000T Expansion that is to be configured as survivable.
3. Configure the Survivability (SURV) capability.

   Each MG 1000T Expansion must be separately configured to be survivable.

   The **SURV** command is configured in LD 117:

   CHG SURV <cab#> <Survival setting>

   - cab# = **1-4**, MG 1000T Expansion
   - Survival setting = (**NO**) **YES**
4. Configure the Automatic Switchback parameter.

   The Automatic Switchback (AUTOSB) option enables a Survivable MG 1000T Expansion to switchback from Survival Mode to Normal Mode automatically as soon as the IP link with the MG 1000T Core is restored and the SWOTO expires.

   The **AUTOSB** command is configured in LD 117:

   CHG AUTOSB <cab#> <Switchback setting>

   - cab# = **1-4**, MG 1000T Expansion
   - Switchback setting = (**YES**) **NO**

5 Configure the SWOTO.

Configure the SWOTO separately for each MG 1000T Expansion.

The **SWOTO** command is configured in LD 117:

CHG SWOTO <cab#> <value>

- cab# = **1-4**, MG 1000T Expansion
- value = **2 - (120) - 600** seconds

For point-to-point connection (MG 1000T Expansions that are not connected over a LAN), Nortel recommends that you set the timer to a low value to minimize service interruption.

End of Procedure

Printing Survivable MG 1000T Expansion parameters

The following Print commands, available in LD 117, print the MG 1000T Expansion parameters and Survivability for all, or specified, Survivable MG 1000T Expansion.

PRT SURV cab
Where:
cab = **1** to **4**, MG 1000T Expansion

PRT CAB cab
Where:
cab = **1** to **4**, MG 1000T Expansion

Configuring Alternate primary controller

Procedure 120
Configuring the IP telephony node for Alternate primary controller

1 Log in to Element Manager, if you are not already logged in.

2 Select **IP Telephony > Nodes: Servers, Media Cards > Configuration** from the navigator.

The **Node Configuration** web page opens, as shown in Figure 99 on page 322.

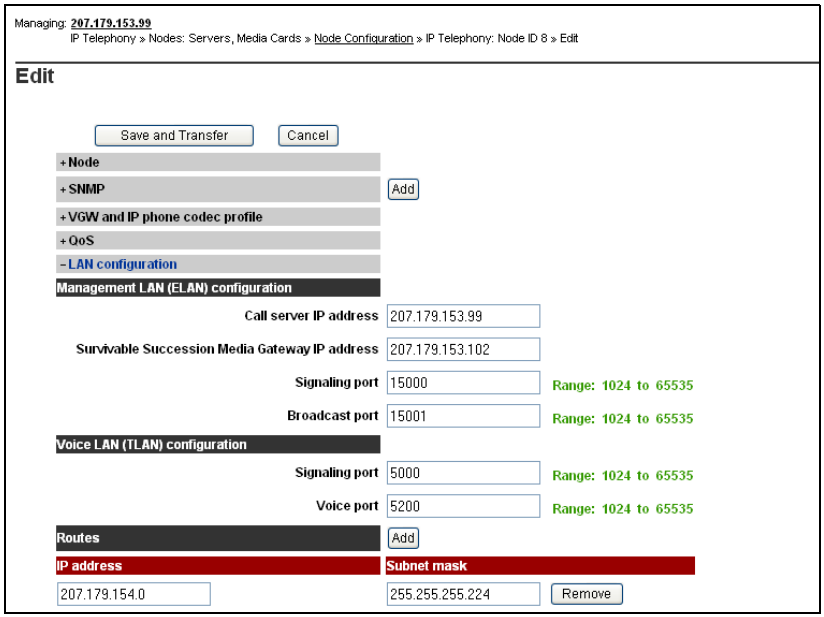
3 Click **Edit** next to the desired node.

The **Edit** web page opens, as shown in Figure 100 on page 323.

4 Click **LAN configuration**.

The **LAN** configuration menu expands (see Figure 159 on page 474).

Figure 159
LAN configuration



5 Enter the **Survivable Media Gateway IP address**.

The IP address is the ELAN IP address of the survivable MG 1000T SSC that this IP telephony node registers to if it loses the connection to the MG 1000T Core.

6 Click **Save and Transfer** at the bottom of the **Edit** web page, then click **OK** to save and transfer the changes.

End of Procedure

Verifying IP telephony node operation in Survival Mode

Follow Procedure 121 to verify the operation of a Voice Gateway Media Card in an MG 1000T Expansion in Survival Mode.

Procedure 121
Verifying the operation of a Voice Gateway Media Card in an MG 1000T expansion in Survivable Mode

1. LD 135 and use the **SOTS** command to force the MG 1000T Expansion into Survival Mode.
2. Check the IP Phones and TTY:
   - Local Mode is visible on the telephone display.
   - If configured, check to see if the dial tone is apparent.
   - Special text is also displayed on the TTY connected to the MG 1000T Expansion as shown below.

     ```
     TTY 00 SCH MTC BUG CTY     14:10
     SURVIVAL MODE
     OVL111 IDLE
     ```
3. Return to Normal Mode using the **SBFS** command in LD 135.

   The MG 1000T Expansion and Voice Gateway Media Card reboots again.

   Note: Due to the reboot of the Voice Gateway Media Card after the MG 1000T Expansion has gone into Survival Mode, there is a slight incremental delay before the IP Phones become operational.

End of Procedure

Retrieving CDR records from a survivable MG 1000T Expansion

The **XCDR** command, file retrieval in LD 143, transfers the CDR file from the survivable MG 1000T Expansion directly to the PC connected to the MG 1000T Core.

Use the following procedure to retrieve the CDR files stored on the survivable MG 1000T Expansion (one file in each MG 1000T Expansion).

Procedure 122
Retrieving CDR files using XModem

1. Connect a PC to the MG 1000T Core either remotely using a modem or directly using an SDI cable and a modem eliminator. Using a terminal-emulation program such as Hyperterminal, establish a TTY session with the MG 1000T through the modem or SDI cable.
2. Log in and access LD 143 on the MG 1000T Core.
3. Enter the following command: **XCDR**

   The system prompts for the MG 1000T Expansion number.
4. Enter the MG 1000T Expansion number on which the <dba.cdr> file is stored.

   The system prints the following.

   ```
   Getting CDR file for EXP_CAB <num>
   Ready to transmit
   ```
5. Select the XModem protocol on the PC to receive the CDR file.

   Use the Hyperterminal transfer function to receive the file using XModem protocol. Rename the file to indicate which MG 1000T Expansion the CDR data is from.

   Note: Use a filename that does not overwrite any DBA-specific files if DBA is used to retrieve CDR/Traffic files from the MG 1000T.
6. Parse the CDR file into the MG 1000T's database on the PC. Refer to the OTM NTPs for how to process CDR records for billing applications.

End of Procedure

Basic system telephony configuration

Contents

This section contains information on the following topics:

Introduction

This chapter shows overlay (LD) sequences required to configure the system with basic telephony features. Your Planning and Engineering group provides the details needed to configure basic telephony.

> ***Note:*** The Command Line Interface (CLI) must be used for some configuration (for example, LD 10 and LD 11) before Element Manager can be used to further configure basic telephony.

This chapter contains Procedure 123: "Configuring the basic system" on page 480.

Basic system configuration

Programming the CS 1000E and MG 1000T systems requires loading different overlay programs and using each one to enter a specific type of information.

See *Software Input/Output: Administration* (553-3001-311) for information about overlays.

Flow charts

Figure 160 on page 481 shows the programming overlay (LD) sequence for a new system. The Data-entry-sequence flowchart does not show all possible administration overlays.

In some cases, you must move back and forth between overlays to complete the programming. For example, you must program the Customer Data Block (CDB) before you program the attendant console. However, there are console-related prompts in the CDB that cannot be programmed until you have programmed an attendant console. Skip the console-related prompts, complete the CDB programming, then return to the CDB after the console is programmed. Finish the CDB console-related prompts. A similar situation exists with the Speed Call lists and the Telephones. You must activate the Speed Call list(s) before you can assign the list(s) to a telephone.

Figure 161 on page 482, and Figure 162 on page 483 show overlay titles and gate openers for each feature group. A gate opener enables users to program a related group of features without stepping through all prompts of an overlay. NTP references are shown in the flowchart shaded boxes for those features and options beyond the scope of this guide.

Procedure 1
Configuring the basic system

Use the overlays to configure basic system features offered by the CS 1000E.

1 Complete the configuration using the overlays in the order shown in Figure 160 on page 481, Figure 161 on page 482, and Figure 162 on page 483.

Figure 1
Data-entry-sequence for new systems

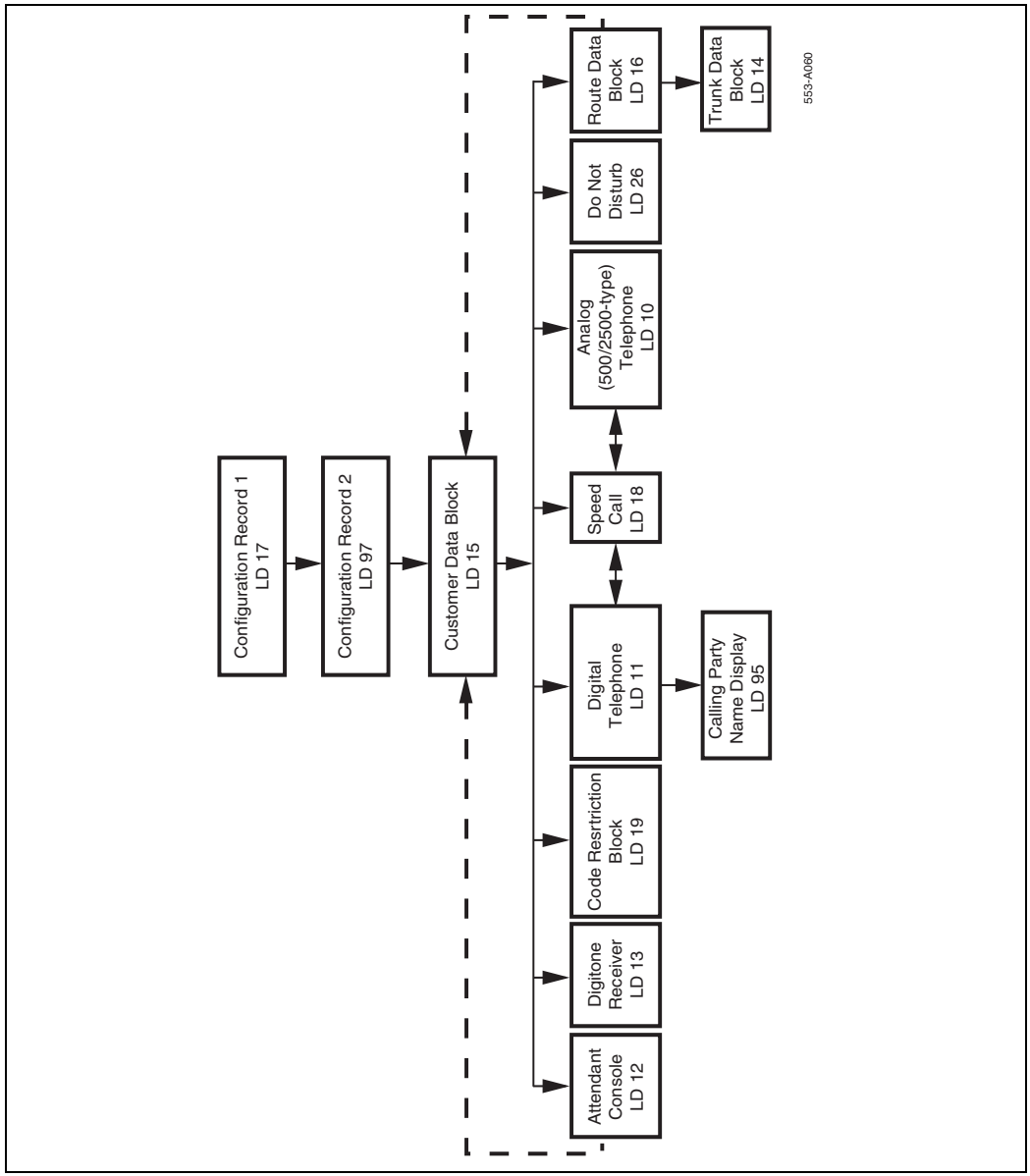


Figure 2
Configuration Record

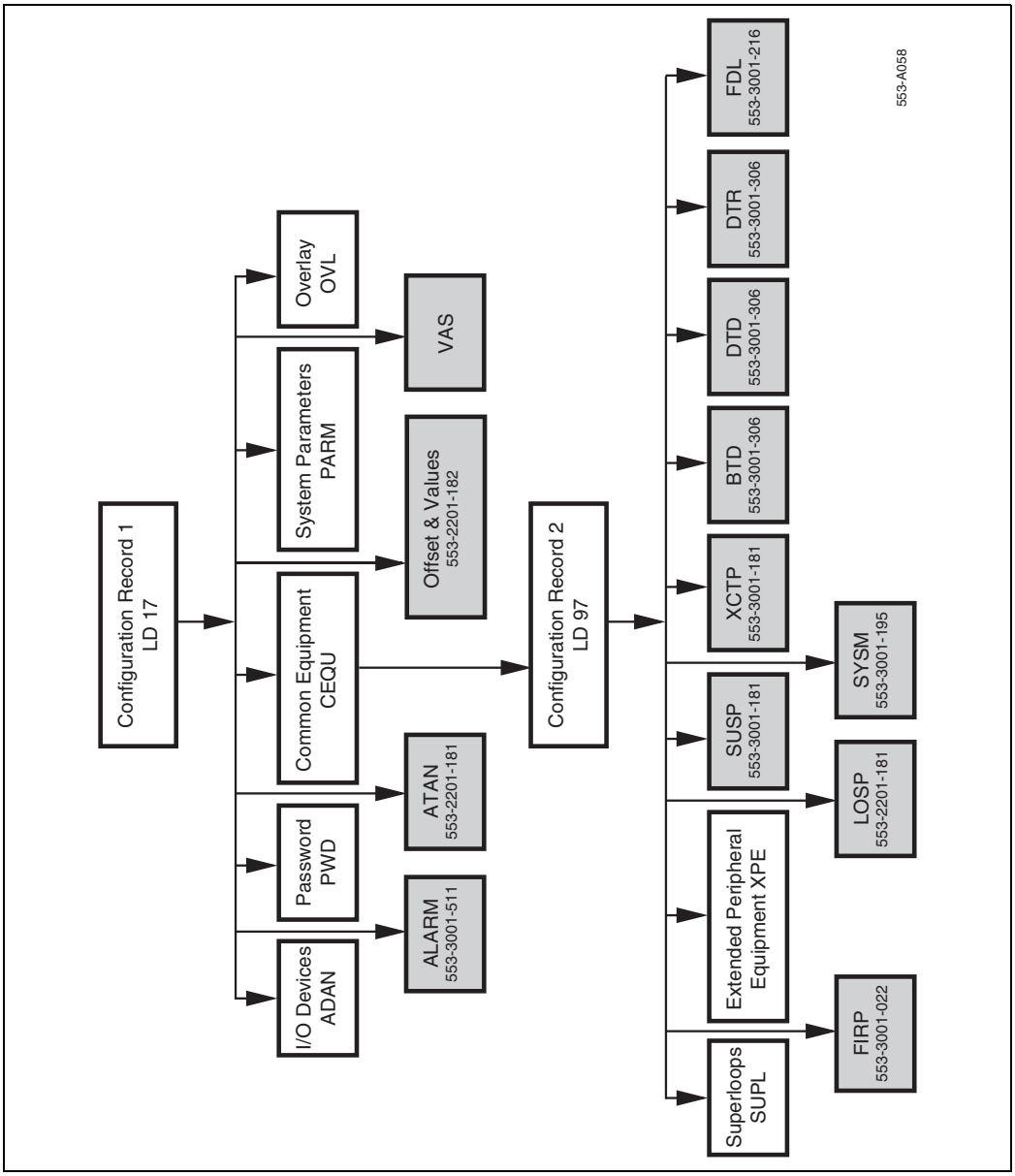
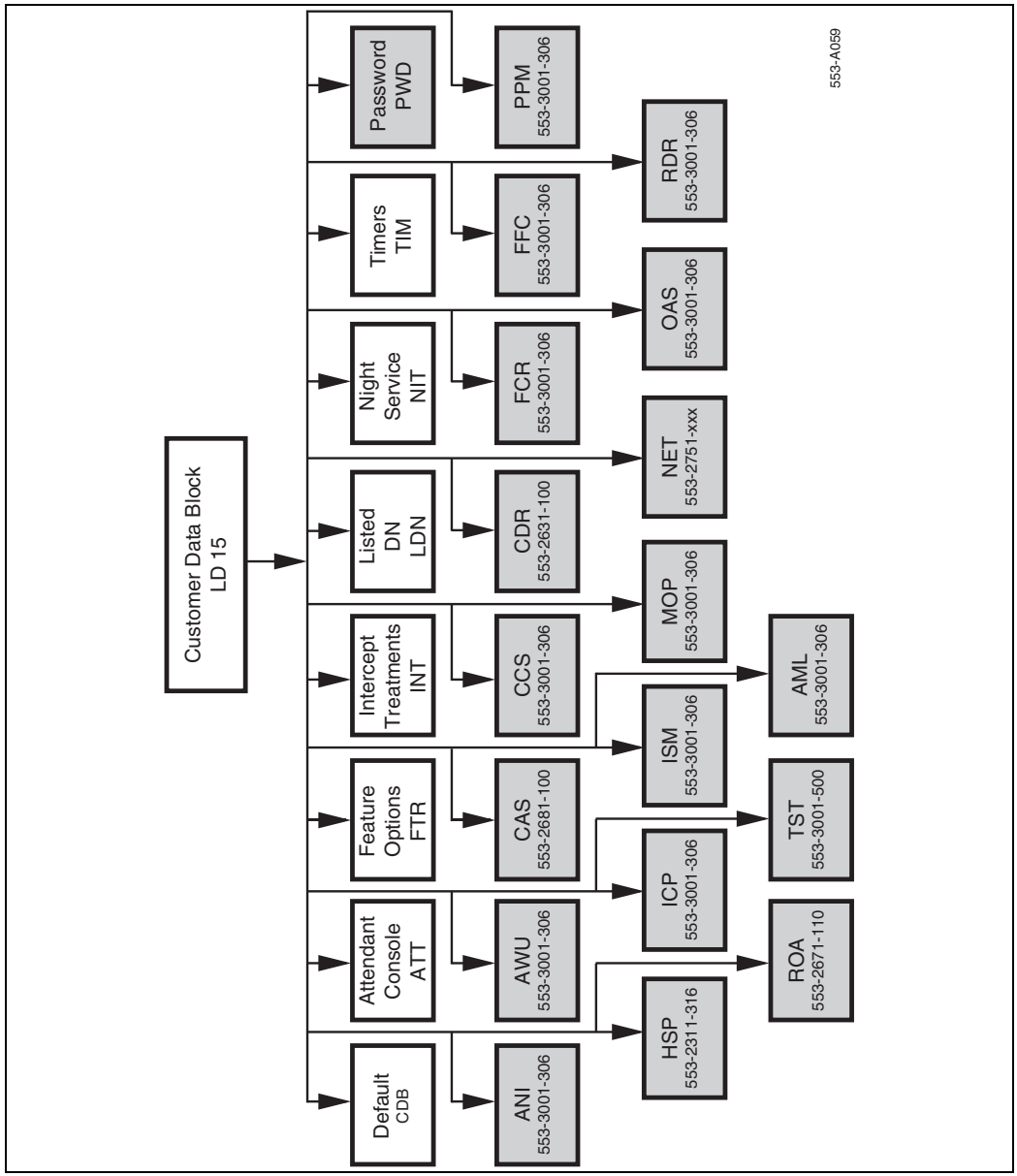


Figure 3
Customer Data Block



MG 1000T card slot assignment

The MG 1000T Core and MG 1000T Expansion contain physical card slots numbered 1 to 10. When configuring the system, the physical card slot numbers must be transposed to "logical" card slot numbers. For example, to configure a card physically located in slot 2 of the first MG 1000T Expansion, use logical slot 12. To configure a card physically located in slot 2 of the second MG 1000T Expansion, use logical slot 22. See Table 63.

Table 1
MG 1000T card slot assignments

	Core		Media Gateway Expansion							
			First		Second		Third		Fourth	
	Physical card slot	Logical card slot	Physical card slot	Logical card slot	Physical card slot	Logical card slot	Physical card slot	Logical card slot	Physical card slot	Logical card slot
Media Gateway	1	1	1	11	1	21	1	31	1	41
	2	2	2	12	2	22	2	32	2	42
	3	3	3	13	3	23	3	33	3	43
	4	4	4	14	4	24	4	34	4	44
	5	*	5	*	5	*	5	*	5	*
	6	*	6	*	6	*	6	*	6	*
Media Gateway Expansion	7	7	7	17	7	27	7	37	7	47
	8	8	8	18	8	28	8	38	8	48
	9	9	9	19	9	29	9	39	9	49
	10	10	10	20	10	30	10	40	10	50

Note: The bottom-most card slot in the Media Gateway is reserved for the SSC card.

TN assignment

Table 64 shows the TN assignments for the MG 1000E.

Table 2
TN assignments for MG 1000E

	MG 1000E				MG 1000E Expander			
Slots	**1**	**2**	**3**	**4**	**7**	**8**	**9**	**10**
TN	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**
MG 1000E								
1	000 0 01	000 0 02	000 0 03	000 0 04	000 0 07	000 0 08	000 0 09	000 0 10
2	000 1 01	000 1 02	000 1 03	000 1 04	000 1 07	000 1 08	000 1 09	000 1 10
3	004 0 01	004 0 02	004 0 03	004 0 04	004 0 07	004 0 08	004 0 09	004 0 10
4	004 1 01	004 1 02	004 1 03	004 1 04	004 1 07	004 1 08	004 1 09	004 1 10
5	008 0 01	008 0 02	008 0 03	008 0 04	008 0 07	008 0 08	008 0 09	008 0 10
6	008 1 01	008 1 02	008 1 03	008 1 04	008 1 07	008 1 08	008 1 09	008 1 10
7	012 0 01	012 0 02	012 0 03	012 0 04	012 0 07	012 0 08	012 0 09	012 0 10
8	012 1 01	012 1 02	012 1 03	012 1 04	012 1 07	012 1 08	012 1 09	012 1 10
9	016 0 01	016 0 02	016 0 03	016 0 04	016 0 07	016 0 08	016 0 09	016 0 10
10	016 1 01	016 1 02	016 1 03	016 1 04	016 1 07	016 1 08	016 1 09	016 1 10
11	020 0 01	020 0 02	020 0 03	020 0 04	020 0 07	020 0 08	020 0 09	020 0 10
12	020 1 01	020 1 02	020 1 03	020 1 04	020 1 07	020 1 08	020 1 09	020 1 10
13	024 0 01	024 0 02	024 0 03	024 0 04	024 0 07	024 0 08	024 0 09	024 0 10
14	024 1 01	024 1 02	024 1 03	024 1 04	024 1 07	024 1 08	024 1 09	024 1 10
...								
...								
127	252 0 01	252 0 02	252 0 03	252 0 04	252 0 07	252 0 08	252 0 09	252 0 10
128	252 1 01	252 1 02	252 1 03	252 1 04	252 1 07	252 1 08	252 1 09	252 1 10

Note: The bottom most card slot in the Media Gateway is reserved for the SSC card.

Configuring IP Peer Networking and managing the Gatekeeper database

Contents

This section contains information on the following topics:

Introduction

This chapter provides an outline for configuring IP Peer Networking and managing the Gatekeeper database.

Use the *IP Peer Networking: Installation and Configuration* (553-3001-213) NTP to configure IP Peer Networking and for instructions about managing the Gatekeeper database.

Implementation summary

Note: This section is intended as a summary of how to implement IP Peer Networking and how to manage the Gatekeeper database. Many of these steps can be performed out of sequence.

You must configure the following data when setting up a CS 1000E IP network:

1. Configure the Virtual Trunk routes using Element Manager or the Command Line Interface (LD 16). Configure the Route Data Blocks and associate the Virtual Trunk routes with the IP network by configuring the following parameters:
   - **a** route information
   - **b** network management information (for example, Access Restrictions)
   - **c** bandwidth zone
   - **d** Signaling Server host name for the route
   - **e** protocol identifier
   - **f** associated Node ID
2. Configure the Virtual Trunks using Element Manager or the Command Line Interface (LD 14).
3. Configure the network routing within the CS 1000E.
   - **a** Use existing tools to configure networking features, such as routing calls based on digits dialed.
   - **b** Configure dialing plan information for calls that must be routed to circuit-switched trunks (for example, PSTN interfaces). You can route these calls using a feature such as Network Alternate Route Selection (NARS). Configure Virtual Trunk routes in NARS the same way as traditional trunks.
4. Configure the Primary, Alternate, and Failsafe Gatekeepers at installation and initial setup.

5 Configure the Gatekeeper database to provide a central database of addresses that are required to route calls across the network, using the Gatekeeper web pages in Element Manager.

a Log in to the Gatekeeper web pages in Element Manager.

b Verify that the Gatekeeper is the Primary Gatekeeper and is active.

c Configure the System Wide Settings.

d Create the CDP domains.

e Add the RAS and non-RAS endpoints.

f Add the endpoint prefixes.

g Add the Numbering Plan entries for each endpoint, including the Cost Factor for each entry.

h Add the default routes.

i Add the Gatekeeper zones (if required).

j Test the Numbering Plans.

k Perform database cutover.

l Perform the following operations, as necessary:

i. Take the Gatekeeper out-of-service.

ii. Perform database cutover.

iii. Perform database rollback.

iv. View traffic reports.

m Log out of the Gatekeeper web pages in Element Manager.

Nortel Communication Server 1000

Communication Server 1000E

Installation and Configuration

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