Nortel Communication Server 1000

Nortel Networks Communication Server 1000 Release 5.5

Communication Server 1000E

Installation and Commissioning

Document Number: NN43041-310
Document Release: Standard 02.15
Date: February 2010

Contents

New in this release

Features

There are no new features in this NTP for CS 1000 Release 5.5.

Other

Revision History

February 2010

Standard 02.15. This document is up-issued to support Communication Server 1000 Release 5.5.

June 2009

Standard 02.14. This document is up-issued to update technical content in the section Configuring the CS 1000 E Call Server.

March 2009

Standard 02.13. This document is up-issued to update technical content in the section Installing the software of chapter Installing software on the CS 1000E.

January 2009

Standard 02.12. This document is up-isued to add a note in the chapter Installing System Grounds.

December 2008

Standard 02.11. This document is up-isued to add technical content in Installing Software in CS 1000E chapter.

November 2008

Standard 02.10. This document is up-issued to add technical content in System Components chapter

October 2008

Standard 02.09. This document is up-issued to add technical content in ‘System Components’ chapter.

September 2008

Standard 02.08. This document is up-issued for Communication Server 1000 Release 5.5.

August 2008

Standard 02.07. This document is up-issued for Communication Server 1000 Release 5.5.

July 2008

Standard 02.06. This document is up-issued for Communication Server 1000 Release 5.5 to accommodate CR Q01870881-01.

June 2008

Standard 02.05. This document is up-issued for Communication Server 1000 Release 5.5. Content for Bandwidth Management has been moved to *Converging the Data Network with VoIP* (NN43001-260).

June 2008

Standard 02.04. This document is up-issued for Communication Server 1000 Release 5.5 to address a CR.

June 2008

Standard 02.03. This document is up-issued for Communication Server 1000 Release 5.5.

February 2008

Standard 02.02. This document is up-issued for Communication Server 1000 Release 5.5.

December 2007

Standard 02.01. This document is up-issued for Communication Server 1000 Release 5.5.

June 2007

Standard 01.04. This document is up-issued with corrections from CR Q001650800 and Q001662089-01.

June 2007

Standard 01.03. This document is up-issued with corrections from CR Q001646756.

May 2007

Standard 01.02. This document is up-issued with corrections from CR Q001646756.

May 2007

Standard 01.01. This document is up-issued for Communication Server 1000 Release 5.0. This document contains information previously contained in the following legacy document, now retired: *Communication Server 1000E: Installation and Configuration* (553-3041-210).

July 2006

Standard 3.00. This document is up-issued with corrections from CR Q001324850.

August 2005

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.

List of Procedures

How to get help

This section explains how to get help for Nortel products and services.

Getting help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support Web site:

www.nortel.com/support

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products. More specifically, the site enables you to:

- download software, documentation, and product bulletins
- search the Technical Support Web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

Getting help over the telephone from a Nortel Solutions Center

If you don't find the information you require on the Nortel Technical Support Web site, and have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).

Outside North America, go to the following Web site to obtain the phone number for your region:

www.nortel.com/callus

Getting help from a specialist by using an Express Routing Code

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to:

www.nortel.com/erc

Getting help through a Nortel distributor or reseller

If you purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller.

Finding the latest updates on the Nortel web site

The content of this documentation was current at the time the product was released. To check for updates to the latest documentation and software for CS 1000 Release 5.5, click one of the links below.

Latest Software	Takes you directly to the Nortel page for CS 1000 Release 5.5 software.
Latest Documentation	Takes you directly to the Nortel page for CS 1000 Release 5.5 documentation.

System information

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 *Data Networking for Voice over IP* (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 5.5 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 installing 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:

- *Data Networking for Voice over IP* (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)
- *Communication Server 1000 Element Manager: System Administration* (553-3001-332)
- *IP Line: Description, Installation, and Operation* (553-3001-365)
- *Telephones and Consoles: Description* (553-3001-367)

- *Internet Terminals: Description* (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 1000M and Meridian 1: Large System Upgrade Procedures* (553-3021-258)

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 *Data Networking for Voice over IP* (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 “Installing and configuring Nortel IP Phones” on page 395.

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	77
Installing system grounds	87
Installing and connecting CS 1000E hardware	97
Installing software on the CS 1000E	119
Installing the Signaling Server software	181
Configuring a terminal and SDI ports	285
Connecting an IR-8020M-101 Terminal Server	257
Connecting an MRV LX8020S-102AC-R Terminal Server	271
Logging in to Element Manager	237
Installing and configuring a Voice Gateway Media Card	339
Installing the Main Distribution Frame	371
Configuring an IP telephony node	323
Installing Line cards and cross-connecting telephones	383
Installing and configuring Nortel IP Phones	395
Installing and cross-connecting a trunk card	293
Installing and cross-connecting a Power Fail Transfer Unit	441
Installing and cross-connecting an external alarm from a PFTU	455

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

Task	Go to page
Basic system telephony configuration	461
Configuring IP Peer Networking and managing the Gatekeeper database	467

System components

Contents

This section contains information on the following topics:

Introduction

Supported configurations

The following CS 1000E system configurations for CS 1000 Release 5.5 are supported:

- CS 1000E Standard Availability (non redundant)
- CS 1000E High Availability (redundant)
- CS 1000E CP PIV processor option
- CS 1000E Cabinet option

CS 1000E Standard Availability (non redundant)

The CS 1000E Standard Availability system consists of the following components:

- CP PM or CP PIV Call Server
- Signaling Server
- MC32S Media Card
- Media Gateway Controller
- DSP Daughterboard
- 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 High Availability (redundant)

The CS 1000E High Availability system consists of the following components:

- Dual CP PM or CP PIV Call Servers
- Dual CP PM Signaling Servers
- MC32S Media Card
- Media Gateway Controller
- DSP Daughterboard

- 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 CP PIV processor option

The CS 1000E CP PIV system consists of the following components:

- Call Server
- Signaling Server
- MC32S Media Card
- Media Gateway Controller
- DSP Daughterboard
- Media Gateway
- Media Gateway Expander
- BayStack 470 Switch
- MRV Terminal Server
- System cables

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

CS 1000E Cabinet option

The CS 1000E Cabinet system consists of the following components:

- Single or Dual CP PM Call Servers

- Single or Dual CP PM Signaling Servers
- MC32S Media Card
- Media Gateway Controller (DSP Daughterboards)
- 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)

Note: For all configurations, a COTS Signaling Server may be an option.

CS 1000E Common Processor Pentium Mobile Call Server

The Common Processor Pentium Mobile (CP PM) is a high performance server that can act as either a Call Server or a Signaling Server in a CS 1000E system.

There are two CP PM types available for CS 1000 Release 5.5: NTDW61BA and NTDW66AAE5. The NTDW61BA is used in the MG 1000E as either a Call Server or a Signaling Server, while the NTDW66AAE5 is used strictly as a Signaling Server in the CS 1000M SG or CS 1000M MG.

The CP PM Call Server delivers capacity improvements by providing flexible scaling of the CS 1000E from 0 to 22,500 sets. Release 5.0 also introduced a modification to the CS 1000E architecture that allows for single and

redundant processors, an option for the processor type, and customer choice in form factor for the Media Gateway.

Customers may deploy an existing or new Cabinet or Chassis as a MG 1000E. The CP PM may be deployed as a single call processor (Standard Availability CS 1000E) or in a redundant processor configuration (High Availability CS 1000E).

For more information about the CP PM Call Server, refer to *Circuit Card: Description and Installation* (NN43001-311).

Figure 1
CS 1000E CP PM Call Server

Figure 2
CS 1000E CP PM Call Server (side view)

Choosing the cabinet and slot location for the CP PM card

An MG 1000E performs functions under the control of the CS 1000E Core CP PM Call Server. Traditionally, in CS 1000 Release 4.5, this core CP PM Call Server was a CP PII or CP PIV processor in its own Call Server chassis.

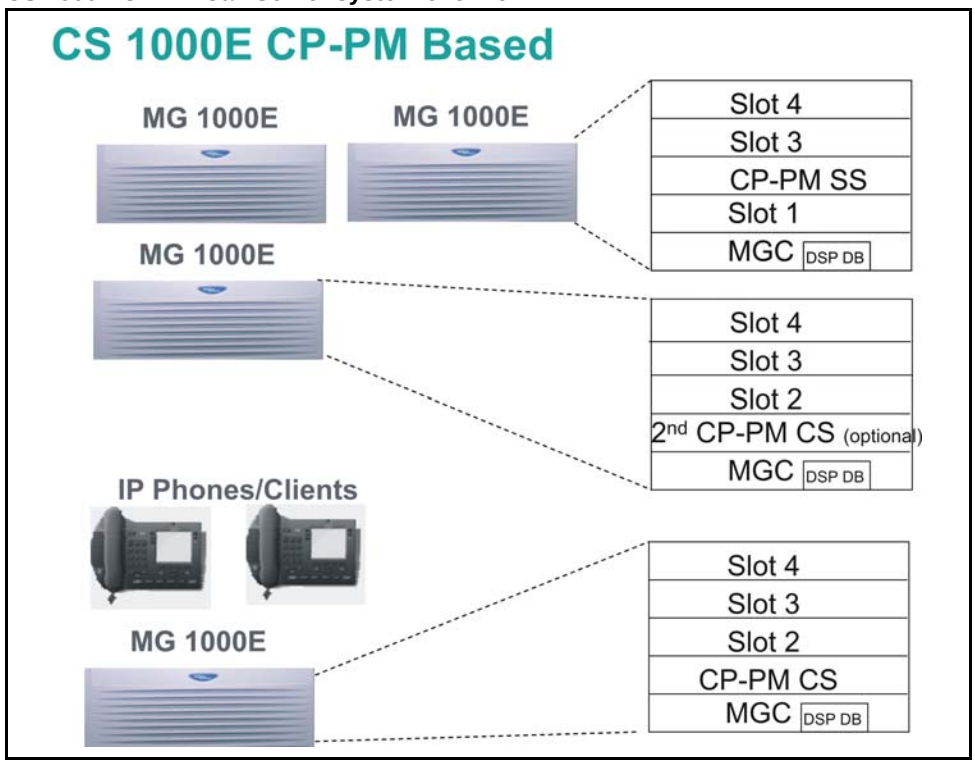
For CS 1000 Release 5.5, the CP PM call server processor sits in one of the slots in the MG1000E chassis.

The CP PM Call Server processor connects to the MG 1000E Media Gateway Controllers via Ethernet and therefore does not require backplane connectivity (other than power and slot ID). The following rules apply to the preferential placement of the CP PM call server in the MG 1000E:

- The CP PM call server processor must not be installed in slot 0 of any MG 1000E. This slot is reserved for an MGC.
- To allow for ease of cabling, the CP PM call server processor can be installed in slot 1 next to the MGC. The CP PM signaling server can be placed in slot 2.
- If utilizing the Campus Redundancy call server redundancy option, place the two CP PM call servers in separate MG 1000E cabinets to allow for increased survivability.

Figure 3 on page 49 shows a CS 1000E CP PM Call Server system overview.

Figure 3
CS 1000E CP PM Call Server system overview



CP-PM Faceplate Components

The following section details the CP PM faceplate. Refer to Figure 4 on page 52.

Status LED

- Red: Hardware /BIOS
- Flashing Red: Bootrom and OS (before Sysload Phase1)
- Yellow: During Sysload Phase1
- Flashing Yellow: During Sysload Phase2
- Green: Normal Operation

- Flashing Green: SL1 Loading (on Active Core only)
- Off No Power

Call Server Redundancy LED

- Green: Redundant Mode, Active
- Flashing Green: Split Mode, Active
- Yellow: Redundant Mode, Standby
- Flashing Yellow: Split Mode, Standby
- Red: Single Mode
- Off Not implemented

Ethernet Interface LEDs

ELAN RJ45 left:

- Green: Link Up
- Blink Green: Link Up & Activity
- Off: No Link

ELAN RJ45 right:

- Off: 10 Mbps
- Yellow: 100 Mbps

HSP RJ45 left

- Green: Link Up
- Blink Green: Link Up & Activity
- Off: No Link

HSP RJ45 right

- Off: 10 Mbps
- Yellow: 100 Mbps
- Green: 1000 Mbps

Compact Flash/ Hard Disk LEDs

- CF - Flashing Green shows activity on RMD
- HD/CF – Flashing Green shows activity on FMD (or HD for CP PM Signaling Server)

Faceplate Push Buttons

- RST: Cold Start / SysLoad
- INI: Warm Start / INI

Figure 4
CS 1000E CP PM Call Server

CP PM CS Serial Data Interface (SDI)

The CP PM Call Server features two standard RS232 DTE serial ports, port 0 and port 1. These ports are accessible through a cable that attaches to the chassis or cabinet MDF port.

The TTY Settings are:

- Baud Rate: 9600
- Data bit: 8
- Stop bit: 1
- Parity: None
- Flow Control: None

CP PM Call Server Switch Settings

The CP PM Call Server switch S5 must be set to position 1 to indicate that a CF card is used for the FMD.

The CP-PM Signaling Server switch S5 must be set to position 2 to indicate that a hard disk is used for the FMD.

CP PM Call Server Keycode

Keycode files reside in /keycode directory and have different names but must have the same extension ‘.kcd’. The maximum keycode file name length including the extension is 25 characters. The following feature packages are required:

- 368 CPP_CNI CP Pentium Backplane for Intel Machine
- 402 SOFT_SWITCH
- 403 IPMG
- 390 SBO Branch Office (Required only if CPPM is installed as Branch Office)
- 410 HIGH_AVAIL High Availability (Required only if installing system as High Availability)

Signaling Server

CS 1000 Release 5.5 supports the following Signaling Servers:

- Nortel CP PM Signaling Server

- IBM X306m Signaling Server
- HP DL320-G4 Signaling Server
- ISP1100 Signaling Server

CP PM Signaling Server

The CP PM Signaling Server is in the form of a circuit card and comes in two distinct models, NTDW61 and NTDW66. The NTDW61 model is designed for use in a CS 1000E system and the NTDW66 model is designed for use in a CS 1000M system.

IMPORTANT!

Switch S5 must be set to position 2 to support the internal hard drive used on the CP PM Signaling Server circuit cards only.

Installation in a CS 1000E system

The NTDW61 model of the CP PM Signaling Server circuit card can be inserted into any slot of an IPMG (MG 1000E or MG 1000B) or 11C cabinet in a CS 1000E system, except slot 0. Slot 0 is reserved for an MGC. Keying will prevent the NTDW61 circuit card from being inserted into this slot.

CAUTION — Equipment Damage

Do not insert the NTDW61 model of the CP PM Signaling Server circuit card into any slot of an IPE cube. Doing so may cause electrical shorts on adjacent circuit cards.

For detailed Signaling Server information, see “Installing a Signaling Server” on page 167.

Media Gateway Controller

The Media Gateway Controller (MGC) Card is designed to replace the gateway functionality of the SSC. It does not function as a Call Server,

requiring a separate Pentium based Call Server to handle call processing requests. The MGC Card replaces the SSC in the CPU card position of an Option 11C cabinet or an MG 1000E chassis, both for upgrades and new installations. The MGC Card Supports legacy backplane interfaces (DS30x, CEMUX). Key features include:

- Increased Processing Power (10x over SSC)
- Increased memory capacity (128Meg vs SSC 32Meg)
- Standard Compact Flash used for permanent storage
- 2 PMC/PTMC Expansion Daughter board sites available
- Embedded L2 Switch supports enhanced dual homing
- Enables co-resident applications (Voice Gateway and Media Gateway Controller)

For more information about installing an SSC card in a 1000E media gateway on an existing system, refer to 553-3041-210_4.00 *Communication Server 1000E Installation and Configuration* for release 4.5.

Note: At least one DSP Daughterboard is required per Media Gateway Controller.

DSP Daughterboards

Two DSP Daughterboards are available for the MGC Card, the NTDW62AA 32-port DSP daughterboard and the NTDW64AA 96-port DSP daughterboard. These daughterboards provide DSP resources for connecting IP and TDM devices, eliminating the need for installing Voice Gateway Media Cards on the CS 1000E Media Gateways. However, Voice Gateway Media Cards are still supported in CS 1000E.

MC32S Media Card

The MC32S is a 32-channel Voice Gateway Media Card that provides 32 Digital Signal Processor (DSP) ports to facilitate connectivity between IP and TDM devices.

This media card replaces the existing 32-port Voice Gateway Media Card and enables Secure Real Time Protocol (SRTP) to encrypt the IP media path to and from all DSP channels on the MC32S. The MC32S also provides improved echo performance over the existing media card.

Media Card

The Media Card, described in Table 2 and shown in Figure 7, 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.

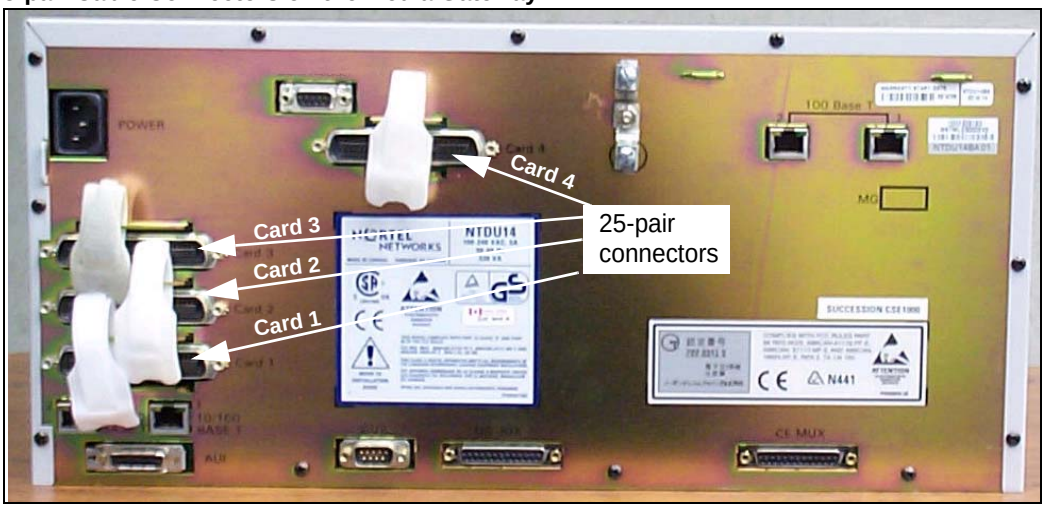
Table 2
Media Card profile (Part 1 of 2)

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.
Cooling	• Provided by the Media Gateway or Media Gateway Expander.

Table 2
Media Card profile (Part 2 of 2)

Property	Description
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 115. • The software installation can be done only from the back port. • The initial boot messages are available on the back port only.

Figure 5
5-pair Cable Connectors on the Media Gateway



CAUTION — Damage to Equipment

Do not block equipment ventilation openings.

Table 3
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 3
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 63. • 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 reserved for the MGC. • Slots 1 to 4 support: — CP PM Call Server card (maximum four) — CP PM Signaling Server card (maximum four) — Digital Line cards (maximum four) — Analog Line cards (maximum four) — Analog Trunk cards (maximum four) — Digital Trunk cards (maximum four) — Media Cards (maximum four) — Application cards (maximum four)

Table 3
Media Gateway profile (Part 3 of 3)

Property	Description
Connectors (rear)	• The 25-pair cable connectors at the back panel (see Figure 6 on page 61) provide access to the cross-connect terminal (Main Distribution Frame). • The AUX port (see Figure 6 on page 61) connects a Power Failure Transfer Unit (PFTU) to the Media Gateway. • The Attachment Unit Interface (AUI) (see Figure 6 on page 61) is used with earlier version SSC which require a Media Access Unit (MAU). • The SDI connector (see Figure 6 on page 61) in the Media Gateway provides an interface for a three-port SDI cable. For MG 1000E this cable is not used unless maintenance access using TTY0 is desired. • The DS-30X and CE-MUX cables (see Figure 6 on page 61) 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 63.

Figure 6
Connectors at the back of the Media Gateway

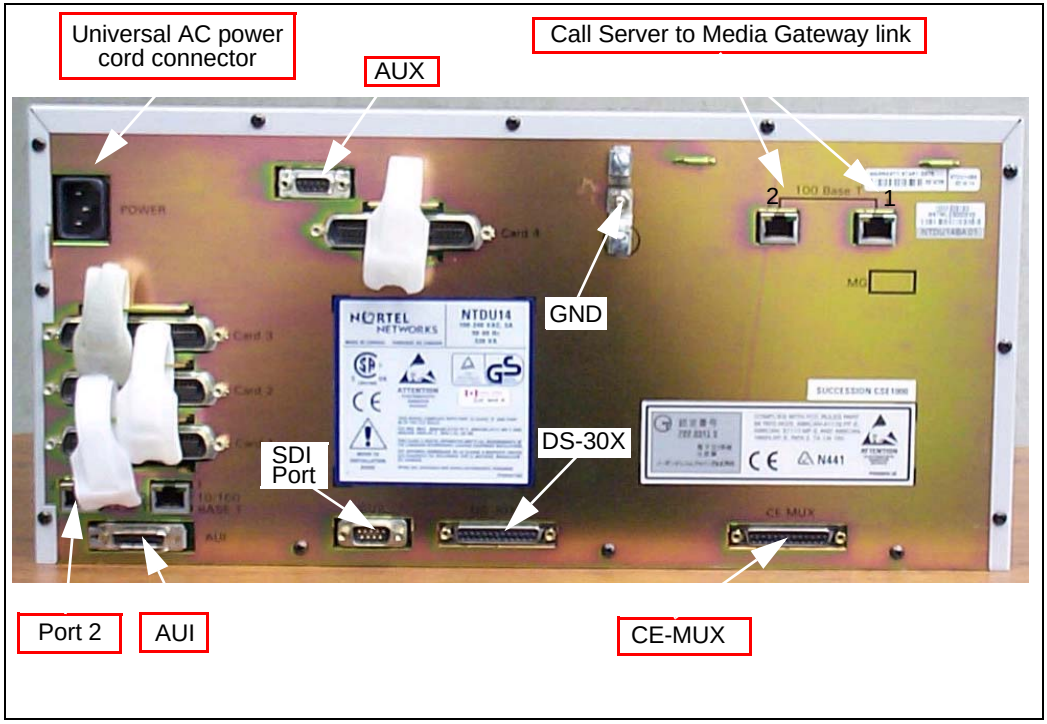
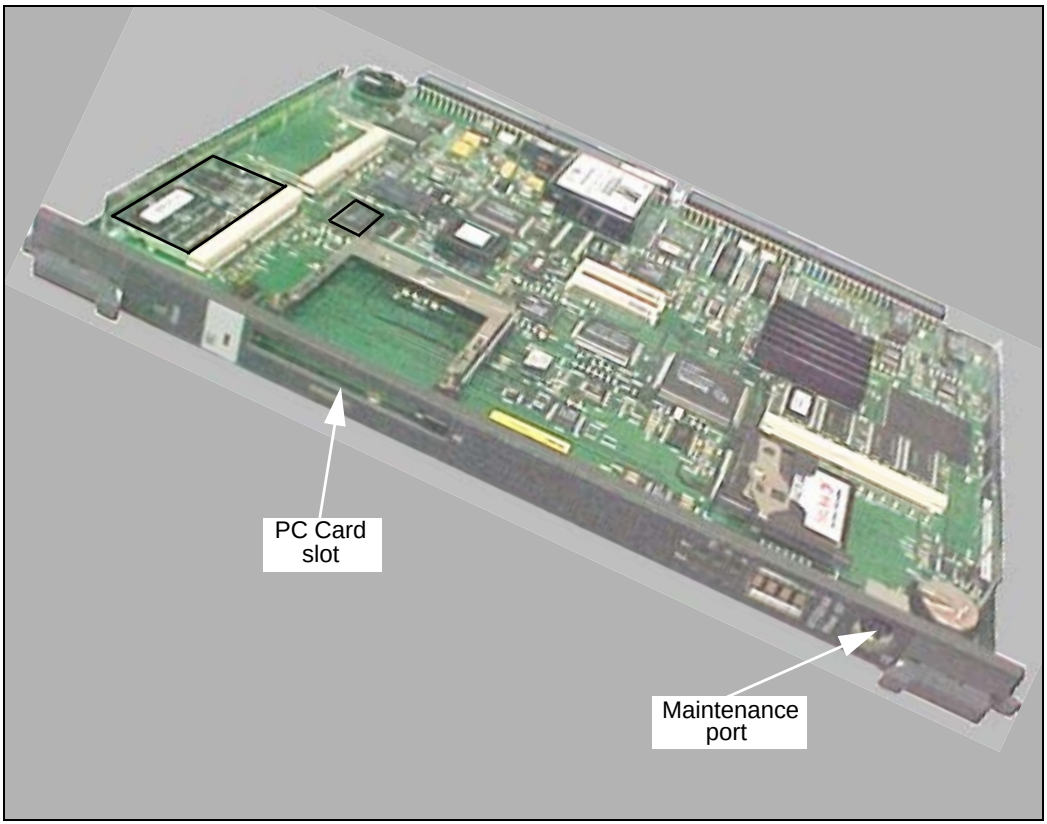


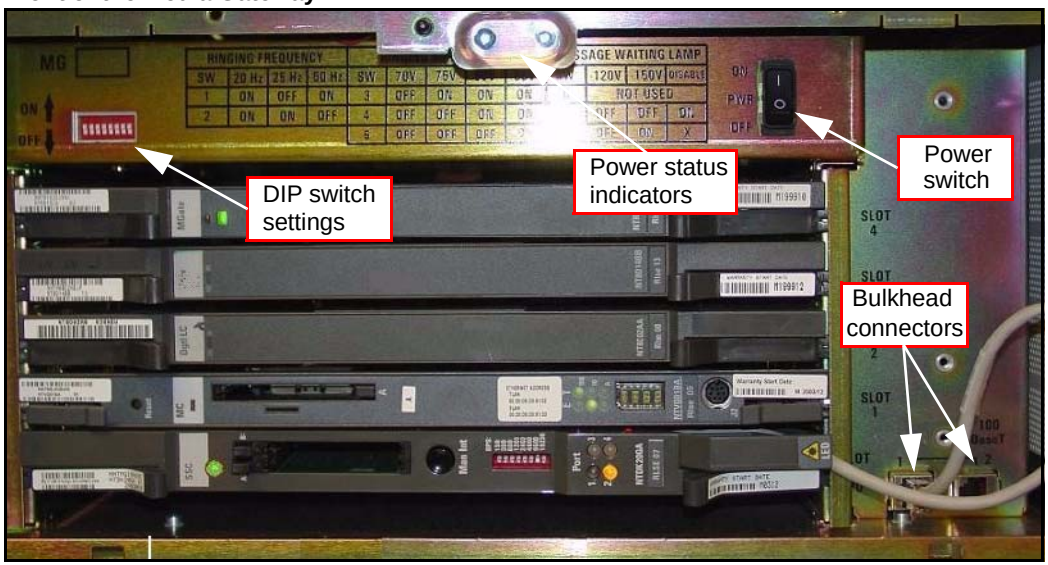
Figure 7
Media Card



Media Gateway

The media gateway is shown in Figure 5 on page 58.

Figure 8
Front of the Media Gateway



Media Gateway Expander

Figure 9 on page 64 shows the Media Gateway Expander and Table 4 on page 64 describes the expander.

Figure 9
Media Gateway Expander

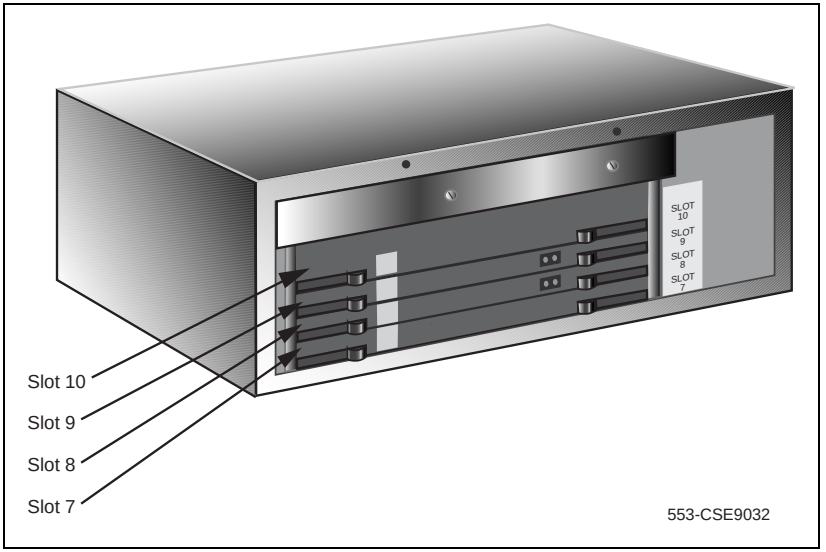


Table 4
Media Gateway Expander profile (Part 1 of 3)

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

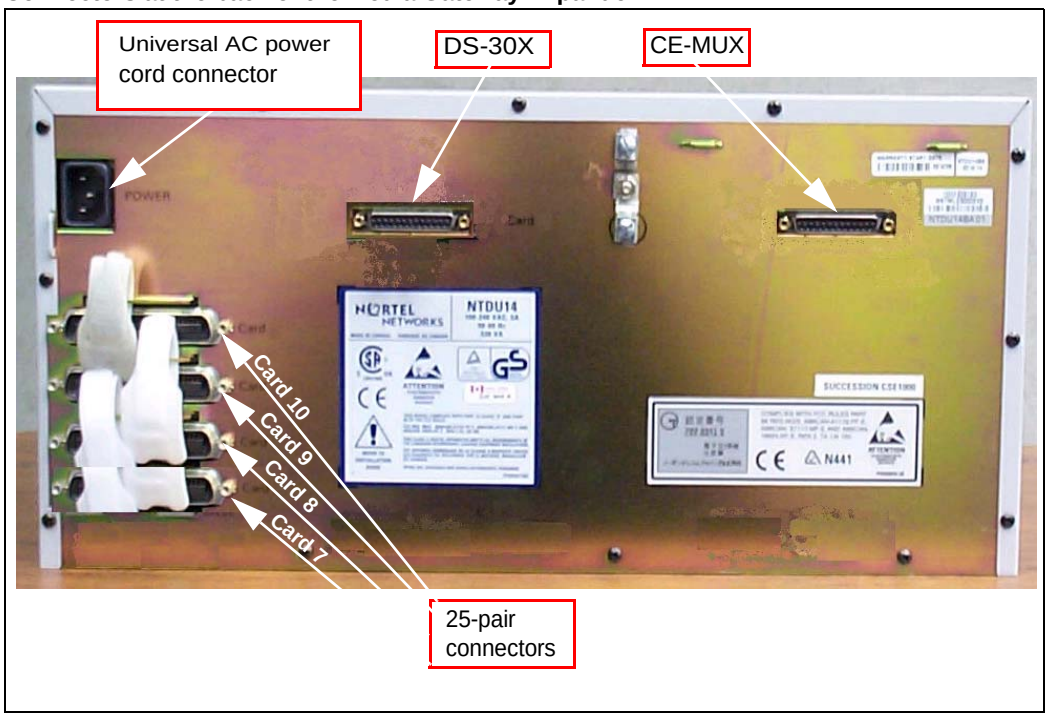
Table 4
Media Gateway Expander profile (Part 2 of 3)

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 63. • 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 4
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 64. • Logical slots 5 and 6 are not supported. • Slots 7 to 10 support: — CP PM Call Server card (maximum four) — CP PM Signaling Server card (maximum four) — 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 67) 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. ***Note:*** These cables are uni-directional cables with a ferrite bead at one end that needs to be terminated on the expansion cabinet end.

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 5 on page 67

Table 5
NTTK09AA installation

Order Code	Description	Qty
P0904844	Left Rack Mount Bracket	1
P0904845	Right Rack Mount Bracket	1
P0906672	Left Shelf Mounting Bracket U/O	1

Table 5
NTTK09AA installation

Order Code	Description	Qty
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 6 on page 68, 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 6
BayStack 470 Switch profile (Part 1 of 2)

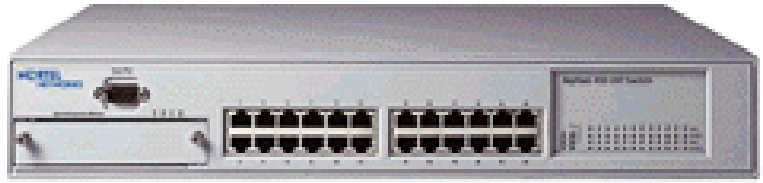
Property	Description
Height	• 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	• Power status LED indicator on the left side of the unit's faceplate. • Power cord connector is located at the left rear of the unit. • Power supplies are factory installed and not customer replaceable. • Unit does not support DC input.

Table 6
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 *Data Networking for Voice over IP* (553-3001-160).

BayStack 460 Layer 2 switch

The BayStack 460 Layer 2 switch, shown in Figure 12 on page 70, 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 7 on page 71, 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.

The Terminal Server is configured to automatically log in to the active Core CP PM 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 7
MRV IR-8020M Terminal Server profile (Part 1 of 2)

Property	Description
Product Code	NTVW00AB
Height	• 1 U (1 U = 1 3/4 inch or 4.4 cm)

Table 7
MRV IR-8020M Terminal Server profile (Part 2 of 2)

Property	Description
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 8 on page 73 lists the cables required with the CS 1000E system.

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

Note: Order the proper power cord for your region.

Table 8
CS 1000E cables (Part 1 of 2)

Component Descriptions	Cable Kits	Cables & Accessories	Quantity
Qty of 2 MRV Terminal Server cables for connecting COM port 1 of the CP PM 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
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	
Expansion cable kit	NTDK89AA		
Expansion cable to connect the Media Gateway DS-30 and CE-MUX to the Media Gateway Expander.		NTDK95BB	2
Disposable wrist strap		A0783105	1
100BaseT Connection			

Table 8
CS 1000E cables (Part 2 of 2)

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

Miscellaneous system components

Table 9 contains a list of miscellaneous items that can be used with the CS 1000E system installation.

Table 9
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 CP PM Call Server 0 and Core CP PM 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.

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: "Removing the cover" on page 80
- Procedure 2: "Rack-mounting a Media Gateway or Media Gateway Expander" on page 82

Lifting system components

Exercise care when lifting system components. If necessary, get assistance to lift a component or install components in a rack. Table 10 on page 78 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 10
Weight of CS 1000E system components (Part 1 of 2)

Component	Lbs	Kg
ISP1100 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

Table 10
Weight of CS 1000E system components (Part 2 of 2)

Component	Lbs	Kg
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 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 1 on page 80 to remove the cover on a Media Gateway or a Media Gateway Expander.

Procedure 1
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 13 on page 81.

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 14 on page 81.

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

Figure 13
Unlock the latches

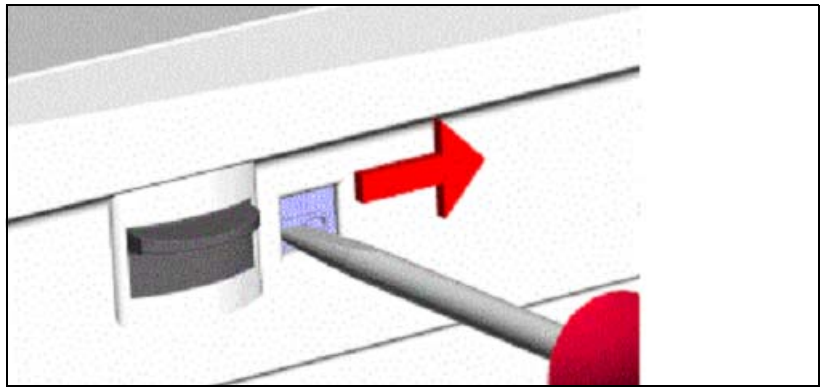
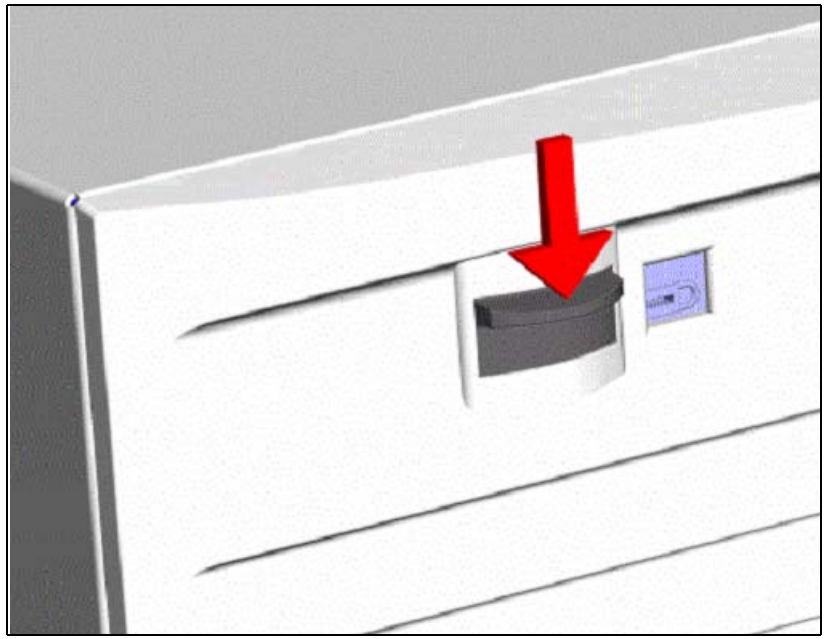


Figure 14
Unlock the cover



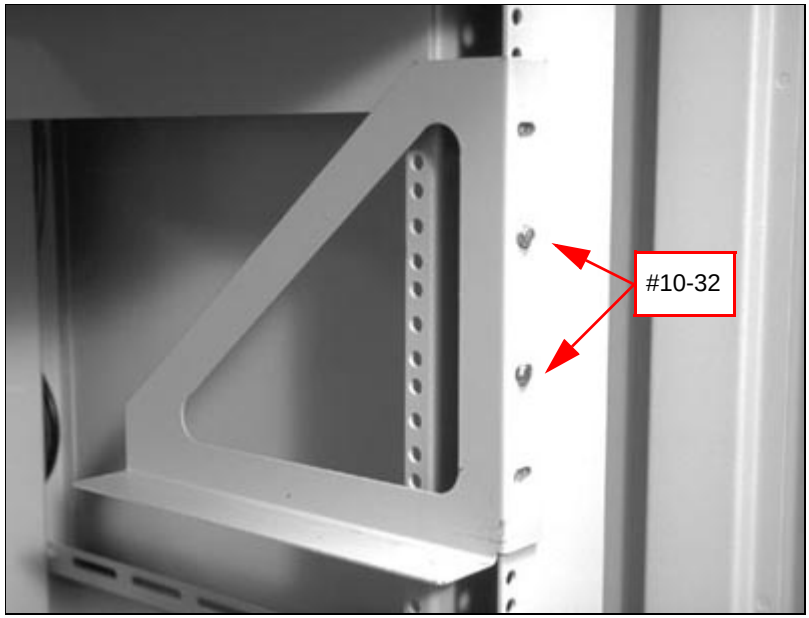
Procedure 2
Rack-mounting a Media Gateway or Media Gateway Expander

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 15.

b. Fasten the screws.

Figure 15
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.

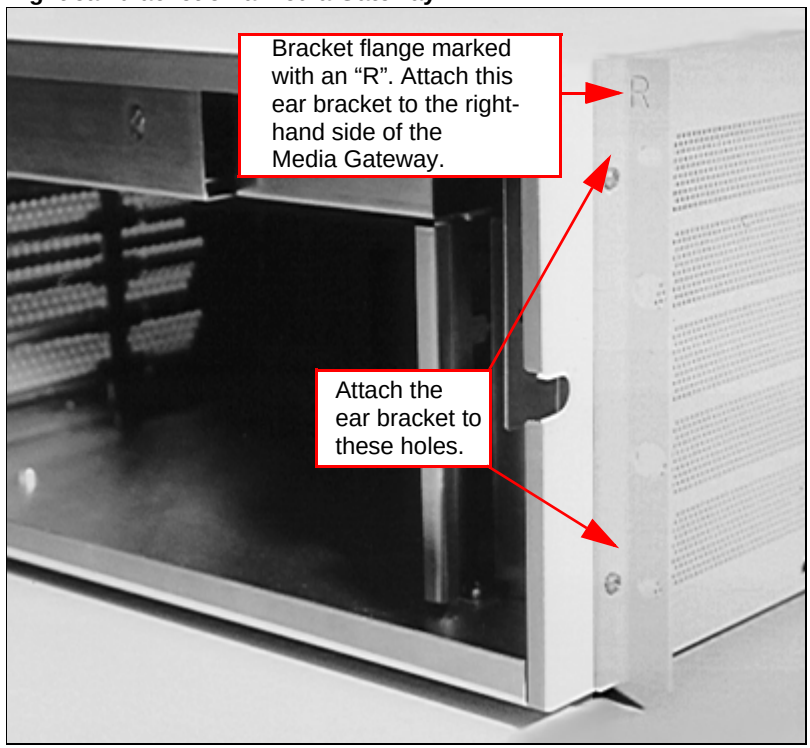
b. Fasten the screws.

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 16).

Figure 16
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.

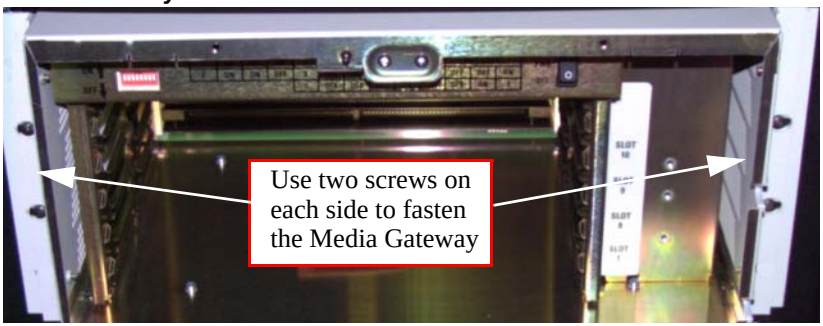
5 Place the Media Gateway on the guide brackets.

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 17 on page 84.

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

Figure 17
Media Gateway installed in a rack



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 3: "Installing an NTBK80 Ground Bar" on page 89
- Procedure 4: "Installing an NTDU6201 Ground Bar" on page 90
- Procedure 5: "Grounding Media Gateways powered by the same electrical panel" on page 91.
- Procedure 6: "Grounding Media Gateways powered by multiple electrical panels" on page 93
- Procedure 7: "Grounding a Media Gateway Expander" on page 93
- Procedure 8: "Grounding equipment in the UK" on page 96

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

For rack configurations, equipment must be powered from the same electrical panel.

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 3 to install a ground bar.

Procedure 3
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 11 on page 89 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 18 on page 90 for the NTBK80 Ground Bar

Table 11
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 18
NTBK80 Ground Bar

Follow Procedure 4 to install an NTDU6201 Ground Bar.

Procedure 4
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 35 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 11 on page 89 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.

Grounding a Signaling Server

For information on grounding a Signaling Server, see *Signaling Server: Installation and Configuration* (553-3001-212).

Grounding a Media Gateway powered by the same electrical panel

Follow Procedure 5 to ground one or more Media Gateway powered by the same electrical panel.

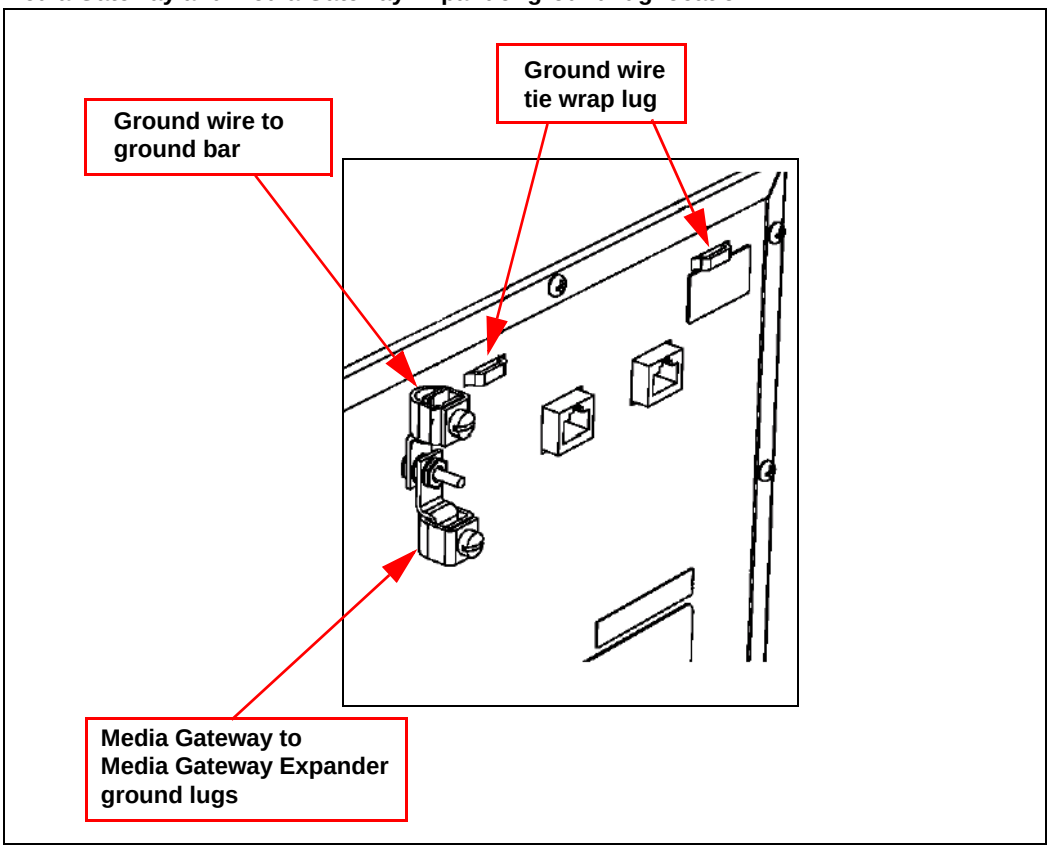
Procedure 5
Grounding Media Gateways powered by the same electrical panel

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 19 on page 92, at the back of the Media Gateway to the ground bar.

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

Figure 19
Media Gateway and Media Gateway Expander ground lug location



4 Test the ground.

Grounding a Media Gateway powered by multiple electrical panels

Follow Procedure 6 on page 93 to ground multiple Media Gateway that are powered by multiple electrical panels.

Procedure 6
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.

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 7 to ground a Media Gateway Expander.

Procedure 7
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 19 on page 92.

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

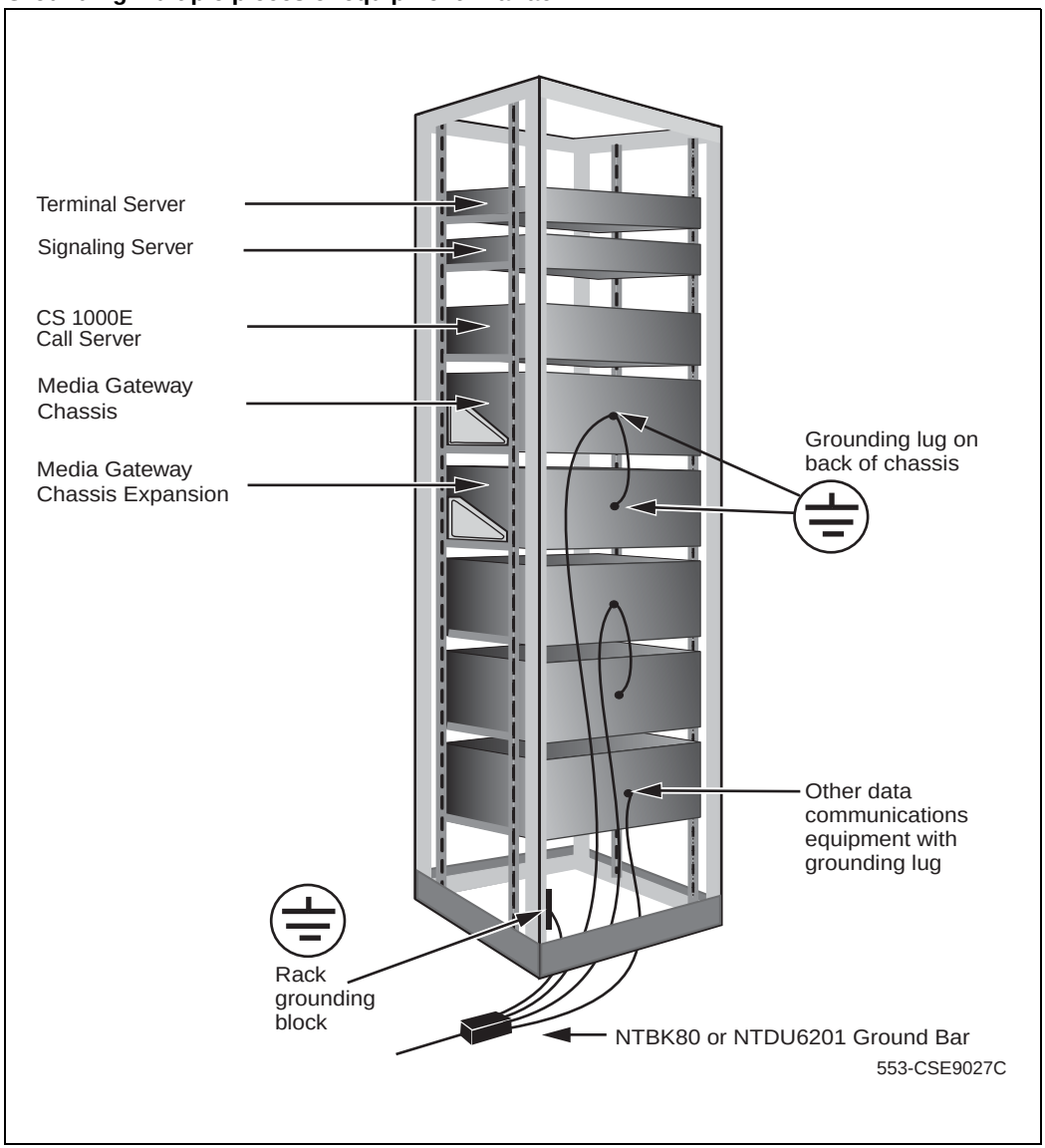
4 Test the ground.

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 20 on page 95.

Figure 20
Grounding multiple pieces of equipment in a rack



Grounding equipment in the UK

Follow Procedure 8 to ground equipment in the UK.

Procedure 8
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 19 on page 92.

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.

Installing and connecting CS 1000E hardware

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 Gateways are directly connected to the Media Gateway Expander. The system's components, such as the COTS or CP PM Signaling Servers and the Media Cards installed in the Media Gateway, require both ELAN subnet and TLAN subnet connections.

This chapter contains the following procedures:

- Procedure 9: "Connecting co-located Call Servers" on page 99

- Procedure 10: "Connecting Campus Redundant Call Servers" on page 100
- Procedure 11: "Installing a DSP Daughterboard" on page 101
- Procedure 12: "Installing the MGC card" on page 102
- Procedure 14: "Installing the Call Server card" on page 106
- Procedure 15: "Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter" on page 115
- Procedure 16: "Connecting a Media Card to the ELAN subnet" on page 116
- Procedure 17: "Connecting a Media Card to the TLAN subnet" on page 117
- Procedure 18: "Connecting a Media Gateway to a Media Gateway Expansion" on page 117.

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 CP PM or two CP PIV 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* (NN43001-507).

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* (NN43001-507).

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 9 to connect the Call Servers. If the units are configured for Campus Redundancy, follow Procedure 10 to connect the Call Servers.

Connecting co-located Call Servers

Follow Procedure 9 to connect co-located Call Servers.

Procedure 9
Connecting co-located Call Servers

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

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* (NN43001-507).

Procedure 10
Connecting Campus Redundant Call Servers

1. Connect the CAT5E RJ-45 HSP port of Call Server 0 to a 100BaseT ELAN network interface on the local Baystack 470-24T switch.
2. Connect the CAT5E RJ-45 HSP 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 PM 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 ISP1100 Signaling Servers, MG 1000Es, Call Pilot, Symposium, OTM, Element Manager.
     - Four high-speed fiber uplinks (GBIC ports)

Installing the cards

Installing a DSP Daughterboard

The following procedure describes how to install a DSP Daughterboard on an MGC card:

Procedure 11
Installing a DSP Daughterboard

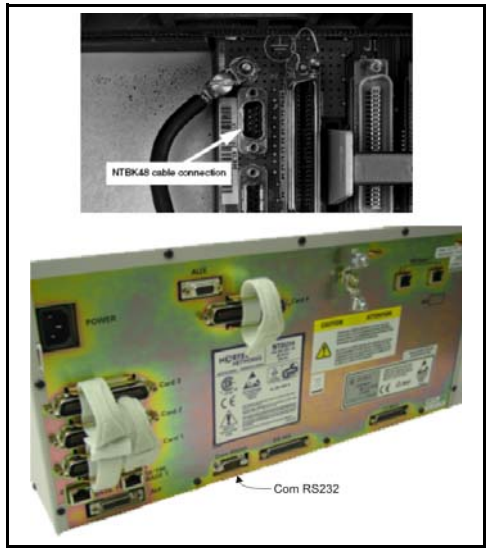
1. Place the MGC on a safe ESD surface.
2. Place the DSP DB in either DB position 1 (for DSP DB-96) or DB position 2 (for DSP DB-32), or both, depending on how the Daughterboards will be configured from a TN perspective.
3. Ensure the DSP DB is securely attached to the MGC (using the four supplied screws and standoffs).

   Note: Call Server dongles do not need to be retained for IPMGs.

Installing the MGC card

The existing 3-port SDI cable (NTBK48) is reused. It connects to SDI port on the cabinet and the Com RS232 port on the chassis. Figure 21 on page 101 illustrates the two connectors.

Figure 21
NTBK48 connectors



Procedure 12
Installing the MGC card

IMPORTANT!

For the CP PM Call Server you must use the dongle provided with the software kit.

To install the MGC card, perform the following steps:

1. Insert the MGC into Slot 0 of the Chassis.
2. Connect the 3-port SDI cable (NTBK48AA) to the SDI0 port on the Chassis.
3. Power on the IPMG.
   - MGC display will read `BOOT`.
   - Power on self-test will begin. MGC display will read `POST`.
   - If self-test completes successfully, MGC display changes to `PASS`. otherwise, an error code `Exxx` is displayed.
   - The MGC begins loading application software. Display changes to `LOAD`.

Configuring the MGC card (mgcsetup)

To configure the MGC in Element Manager, initial configuration of the MGC must be completed through the command line first using `mgcsetup` (see Procedure 13 on page 103).

There are 3 ways to enter `mgcsetup`:

- If no IP information exists on the MGC, it boots directly into the setup menu
- If IP information does exist, the prompt `Press any key to stop auto-boot and enter mgcsetup...` appears
- `mgcsetup` may be entered as a shell command

Note: The MGC is shipped with "gold" software in onboard flash memory. This is upgraded automatically if centralized software upgrade is enabled on the Call Server. It can be upgraded manually through LD 143.

Procedure 13
Configuring the MGC card (mgcsetup)

Note: All entered parameter values for this procedure are examples only.

1 Enter network IP information at the MGC setup menu. See Figure 22.

Figure 22
MGC network IP information

```
Please define the data networking parameters for this MG 1000E now.
Hostname              :  MGC_N313  (optional)
ELAN IP               : 0.0.0.0 192.168.3.33
ELAN subnet mask      : 0.0.0.0 255.255.255.0
ELAN gateway IP       :  192.168.3.1

TLAN IP               : 0.0.0.0 192.168.19.33
TLAN subnet mask      : 0.0.0.0 255.255.255.0
TLAN gateway IP       :  192.168.19.1

Primary CS Hostname   :  CS1000E_N313 (optional)
Primary CS IP         :  192.168.3.32
Leading Secondary CS Hostname :  <enter>
Leading Secondary CS IP       : 0.0.0.0
Secondary CS Hostname :  <enter>
Secondary CS IP       : 0.0.0.0
```

2 Enter port and security parameters. See Figure 23 on page 105.

ELAN security = “ISec,” based on IPSec standard. Must be configured on every component expected to communicate across the ELAN, or not configured at all. There are 4 options:

- None - no security used
- Opti - optimal: XMsg + PbxLink ports.
- Func - functional: all ELAN communication between node components is secured, but external communication (eg: Call Pilot, maintenance PC) is not.
- Full - all communication uses ISec. Exceptions are SSL & SSH (already encrypted), NTP (has its own authentication method) and AML (legacy support requires unsecured link).

Figure 23
MGC port and security parameters

```
Change MGC advanced parameters? (y/[n]) : y

TLAN is set to auto negotiate, change? (y/[n]) : y
Note: Turning off auto negotiate on the TLAN
    : will default it to 100Mbps full duplex.
Set TLAN to auto negotiate? ([y]/n) : y

ELAN is set to auto negotiate, change? (y/[n]) : y

Note: Turning off auto negotiate on the ELAN
    : will default it to 100Mbps full duplex.
Set ELAN to auto negotiate? ([y]/n) : y

ELAN security Disabled, change? (y/[n]) : y
Enable ELAN security ? (y/[n]) : y
Enter security level OPTI, FUNC or FULL : opti

Note: Spaces ~ * ` @ [ ] and # are not supported in passwords.

Please input PSK(16-32 chars): (input is not echoed)
Strength of PSK: Weak
Please reenter PSK(16-32 chars): (input is not echoed)

You have entered the following parameters for this MG 1000E:

Hostname              : MGC_N313
ELAN IP               : 192.168.3.33
ELAN subnet mask      : 255.255.255.0
ELAN gateway IP       : 192.168.3.1
TLAN IP               : 192.168.19.33
TLAN subnet mask      : 255.255.255.0
TLAN gateway IP       : 192.168.19.1
Primary CS Hostname   : CS1000E_N313
Primary CS IP         : 192.168.3.32
Alternate CS 1 Hostname :
Alternate CS 1 IP       : 0.0.0.0
Alternate CS 2 Hostname :
Alternate CS 2 IP       : 0.0.0.0
TLAN set to auto negotiate.
ELAN set to auto negotiate.
ELAN security Enabled, level is Optimized Security

Is this correct? (y/n/[a]bort) : y
```

3 IP changes require a reboot. Enter “y” at the prompt (see Figure 24).

Figure 24
MGC reboot

```
The above changes require reboot to take effect.

Do you want to continue? (y/n/[a]bort) : y
reboot(-1) has been called...
```

After reboot, the MGC connects to the CS and downloads the remaining configuration information.

If centralized software upgrade has been enabled, the MGC will register and upgrade its software by downloading it from the Call Server.

After the software has been upgraded, another reboot will be triggered.

After reboot, the MGC registers to the Call Server and the LED displays the superloop and shelf (eg: 4 0) of the IPMG. If registration fails, it shows “UNRG.”

Installing the Call Server (CP PM, CP PIV) card

The following procedure describes how to install the Call Server card in a Chassis.

Note: Ensure that the DIP switch is set correctly. The DIP switch determines whether the Call Server boots from a hard drive or compact flash. For the Call Server, the S5 dip switch should be set to position 0.

Procedure 14
Installing the Call Server card

1 Ensure that the security dongle (the one that comes as part of the software kit) is inserted on the call processor.

2 Slide the call processor into Slot 1 (or higher) of the Chassis.

3 Lock the card into the faceplate latches.

4 Attach the SDI cable. The 50-pin Amphenol connects the back of the chassis, to the port that corresponds to the slot that you placed the CP PM call server in.

Figure 25
2-port SDI cable (NTAK19EC) cable

Cabling the cards

The following sections describe the process required to cable the MGC and CP PM cards.

Cabling the MGC

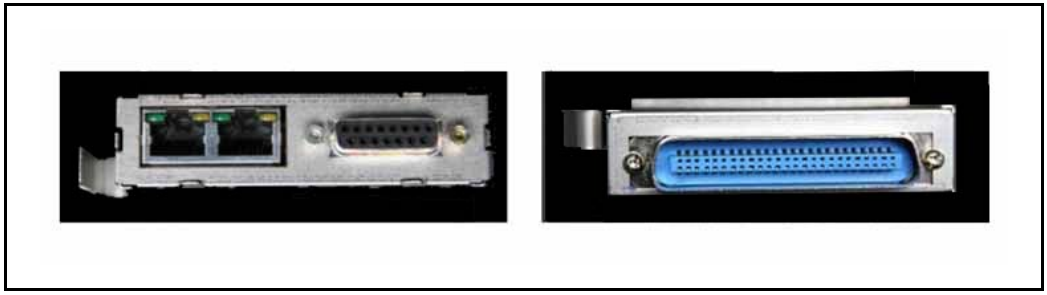
An MGC features six Ethernet interfaces set to auto negotiate by default, four on the faceplate and two on the backplane. Figure 26 on page 108 shows the Ethernet connectors on the front of the MGC. The CE and CT ports are available for supported cabling to the CP PM card or as maintenance ports to

the ELAN and TLAN. The two ports on the backplane connector are accessible using the 100BT breakout adapter (See Figure 27 on page 109) when installed in the cabinet or available through 10/100BaseT Ethernet connectors on the back of the MG. The 1E (ELAN) and 2T (TLAN) Ethernet ports must be attached to a Layer 2 switch.

MGC Ethernet Capabilities

Figure 26
MGC faceplate

Figure 27
MGC 100BT breakout adapter



Nortel recommends using direct connections from the faceplate jacks of MGC to the Layer 2 switch. Figure 28 on page 109 illustrates a MG or chassis with a MG connected directly to Layer 2 switch. Figure 29 on page 110 illustrates a cabinet with MGC connected directly to the Layer 2 switch.

Figure 28
MGC MG cable

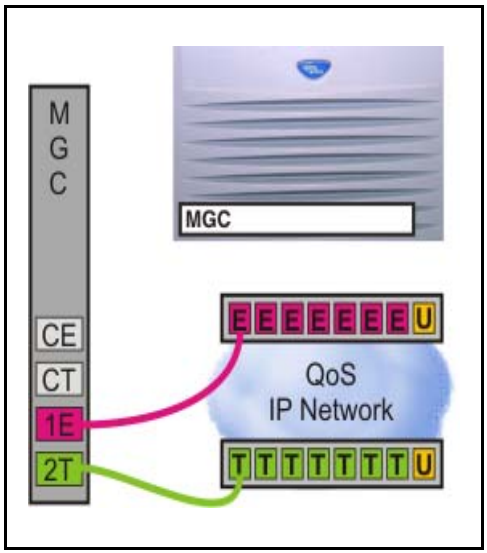
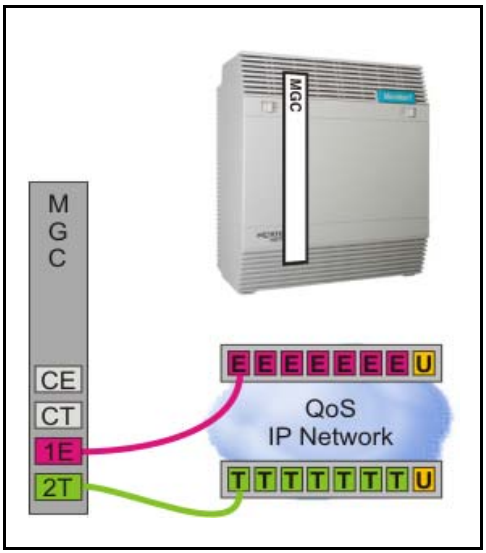


Figure 29
MGC Cabinet cable



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.

The NTBK48AA 3-port SDI cable connects to the SDI port on the Cabinet. Figure 25 on page 107 shows front of MGC with the "bulkhead" connectors (1E and 2T) that connect to numbers 1 and 2 bulkhead.

Cabling the CP PM card

In a typical configuration, the SDI port of the CP PM card is routed through the backplane of the shelf to the 50-pin Amphinol connector on the back of the shelf. A SDI cable (NTK19) is shipped with the CP PM card that adapts the 50-pin Amphinol connector to 25-pin DB connectors. Port 0 is used for maintenance access, and Port 1 is for an external modem connection.

Nortel recommends using direct connections from the faceplate jacks of the CP PM cards to the Layer 2 ethernet switches. Figure 30 on page 111 illustrates an MG or chassis with CP PM call processor connected directly to a Layer 2 switch. Figure 31 on page 112 illustrates a MG or chassis with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 30
CPPM CP MG Cable

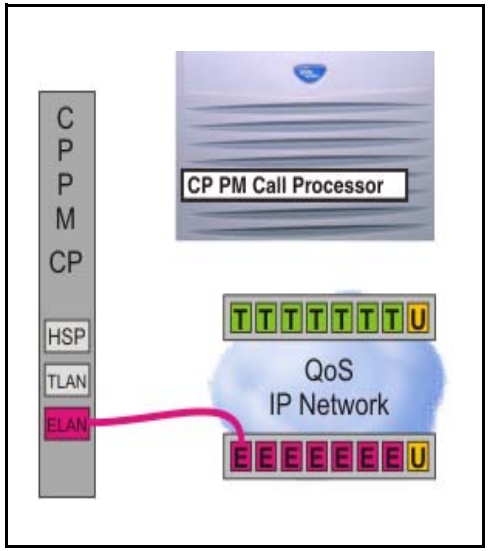


Figure 31
CPPM SS MG cable

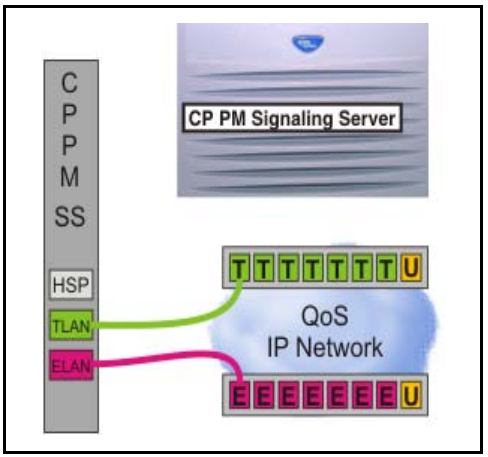


Figure 32 on page 112 illustrates a cabinet with the CP PM call processor connected directly to the Layer 2 switch.

Figure 32
CPPM CP Cabinet cable

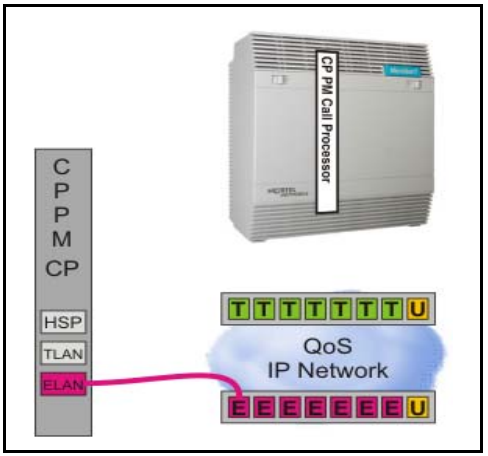
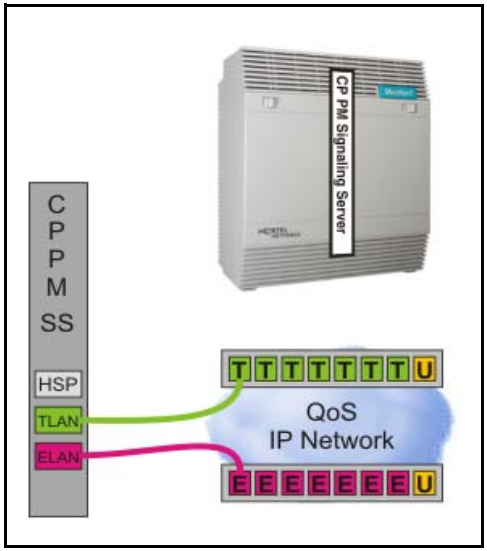


Figure on page 113 illustrates a cabinet with a CP PM Signaling Server connected directly to a Layer 2 switch.

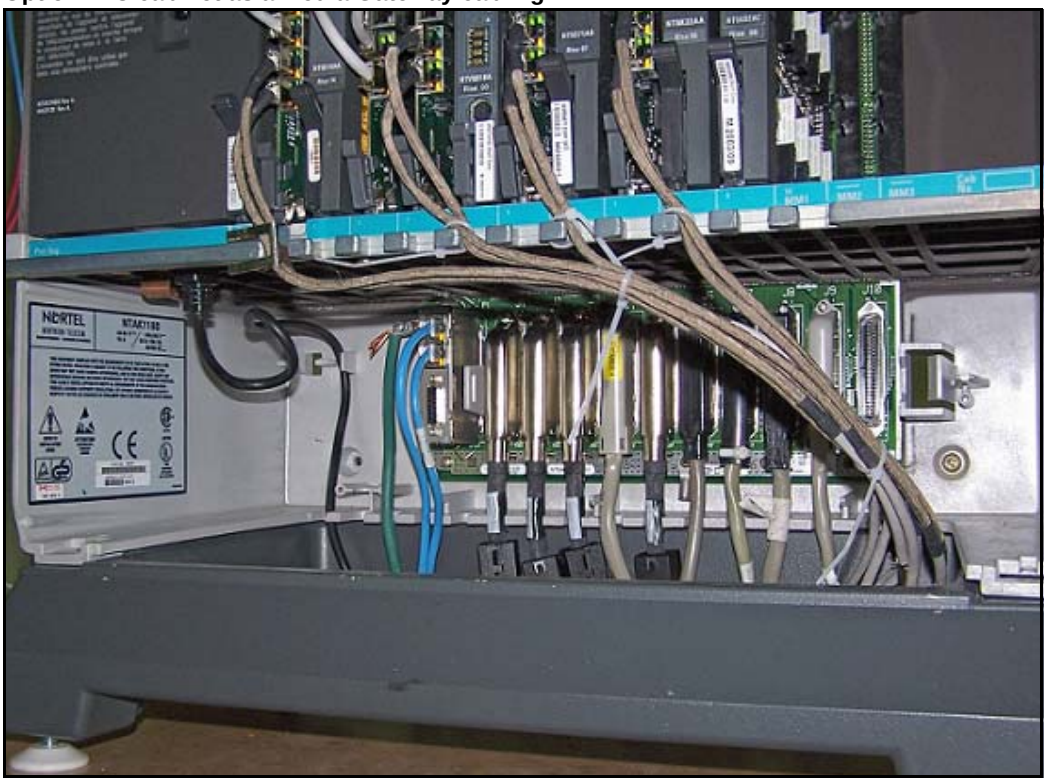
CPPM SS Cabinet cable



Cabling the Option 11C cabinet

When using the Option 11C cabinet as a Media Gateway cabinet, Nortel recommends you use NTDK8305 CAT5 sheilded cables for the ELAN and TLAN cabling. Route the cables towards the right side of the cabinet as shown in Figure 33 on page 114.

Figure 33
Option 11C cabinet as a Media Gateway cabling

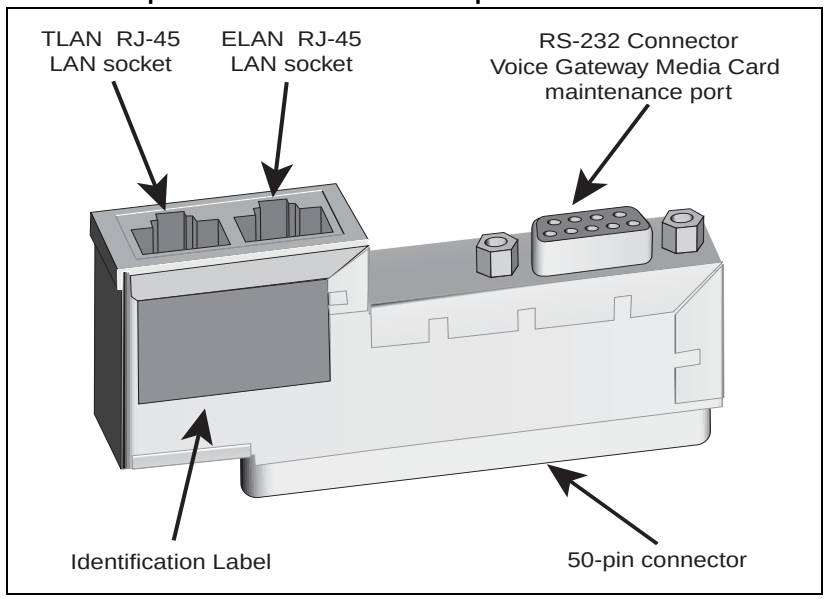


Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter onto a Media Card

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 15
Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter

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 350.

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 116, the Media Card is installed in card slot 1. Therefore, the adaptor is installed in connector Card 1.

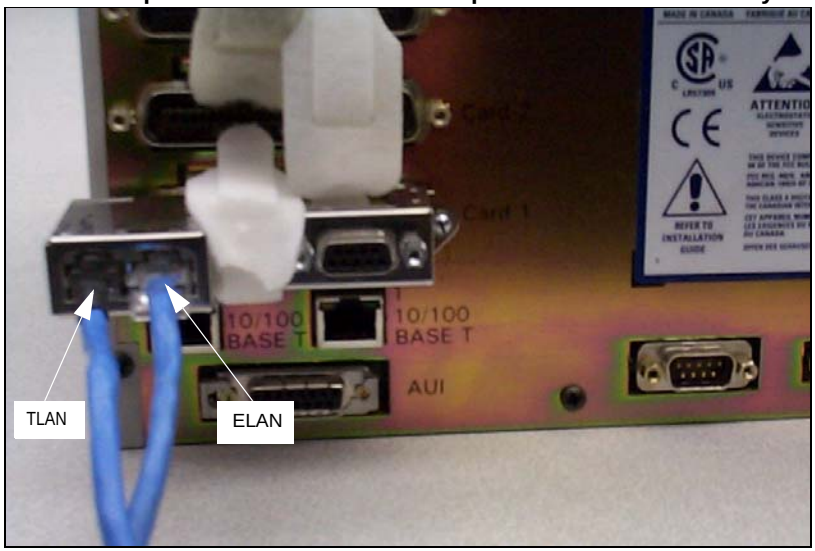
Connecting a Media Card to the ELAN subnet

Follow Procedure 16 to connect a Media Card to the ELAN.

Procedure 16
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 116).
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



Connecting a Media Card to the TLAN subnet

Follow Procedure 17 to connect a Media Card to the TLAN subnet.

Procedure 17
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 116).
2. Connect the other end of the standard CAT5 patch cable to an RJ-45 TLAN network interface on the BayStack 470 switch.

Connecting a Media Gateway to a Media Gateway Expansion

Procedure 18 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 18
Connecting a Media Gateway to a Media Gateway Expansion

1. Connect the non-labeled side of NTDK95 cable to the CE-MUX connector at the back of the Media Gateway and labeled side of NTDK95(labeled as Expansion Cabinet DS-30/CE-MUX Conn) 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(non-labeled side) to the DS-30X connector at the back of the Media Gateway and labeled side of NTDK95(labeled as Expansion Cabinet DS-30/CE-MUX Conn) to the DS-30X connector at the back of the Media Gateway Expander.

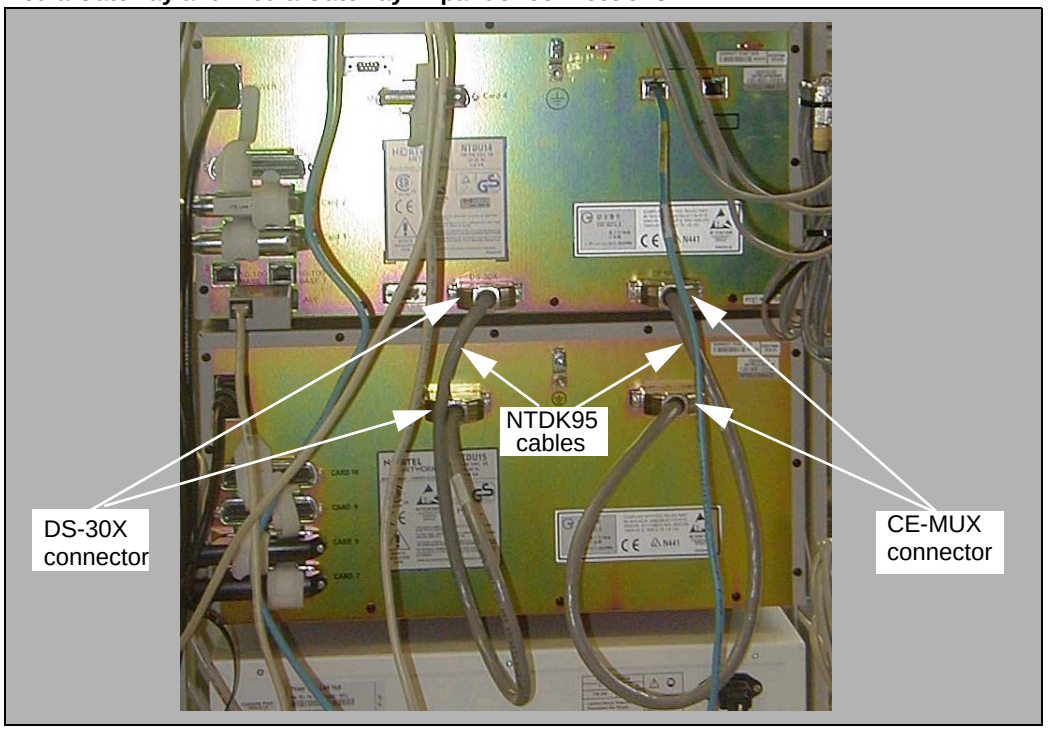
4 Tighten the screws on the connectors. Figure 36 on page 118 shows the Media Gateway and Media Gateway Expander connected with the two NTDK95 cables.

Note: The NTDK95 cable is a uni-directional cable with a ferrite bead at one end that needs to be terminated on the expansion cabinet end. The NTDK95 cable direction can be identified by the label on the cable. This label must be installed at the expansion cabinet end.

WARNING

If you incorrectly connect the NTDK95 cable the site can experience a degradation in quality, such as noise issues in the expander.

Figure 36
Media Gateway and Media Gateway Expander connections



Installing software on the CS 1000E

Contents

This section contains information on the following topics:

Introduction

Software Install Kit

The Software Install Kit required to install CP PM and CP PIV contains 3 Removable Media Devices (RMD) CF cards:

1 The 128MB RMD is used to backup the call server database

2 The 512MB RMD contains the following:

- **a** CS 1000E Release 5.5 software
- **b** keycode files
- **c** CS 1000E Release 5.5 Dependency List (PEPs) for Large and Small systems
- **d** default database (if initiated during the installation)

3 The 1GB FMD is the hard drive for the CP PM Call Server

Note: The 1GB FMD is only used on the call server.

IMPORTANT!

Systems and components delivered to customer sites may include pre-installed 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.

Creating a Call Processor Software CF Card

This section provides the steps involved in creating a Call Processor Software CF Card.

Procedure 19
Creating a Call Processor Software CF Card

1 Navigate the folder on local PC to download the CP PM Call Processor Load zip file.

2 Unzip the Call Processor Software Load zip to get the following six directories:

- \backup
- \install
- \keycode
- \licenses
- \swload
- \utilities

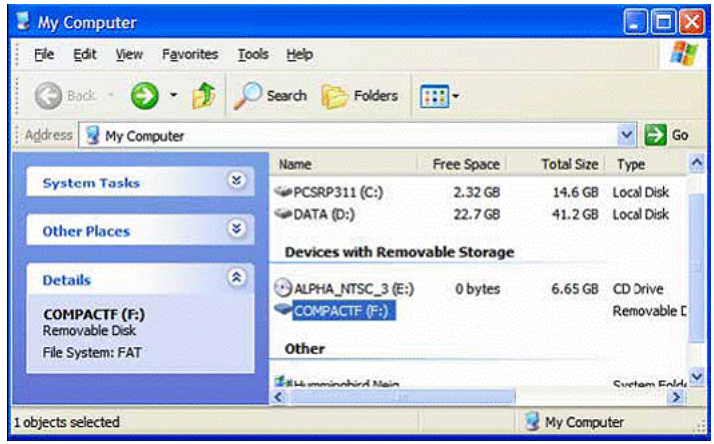
3 Insert the CF card into a PCMCIA adapter and place it into the PC.

IMPORTANT!

The CF card must be 512Mb (CPC# A0548249).

4 Click on **My Computer** icon to verify the drive letter assigned to the CF drive.

The following screen appears.



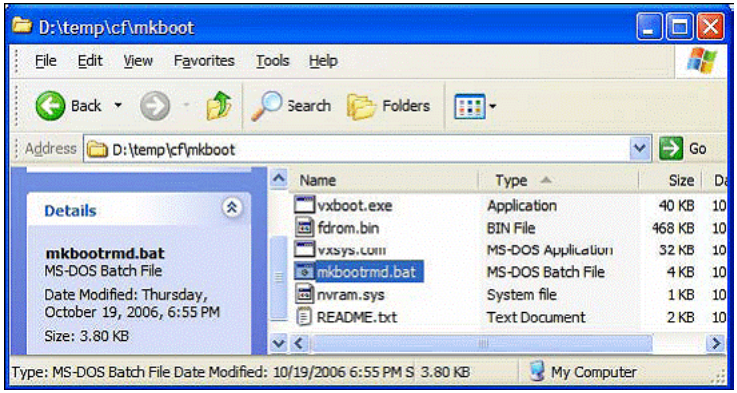
In this example, drive F is assigned to the CF drive.

5 Navigate to the **Temp** folder on your local PC or the folder to download the Call Processor Software Load zip file.

6 Open the Utilities directory and locate the *mkbootrmd.bat* file.

The batch file is used to format the CF card.

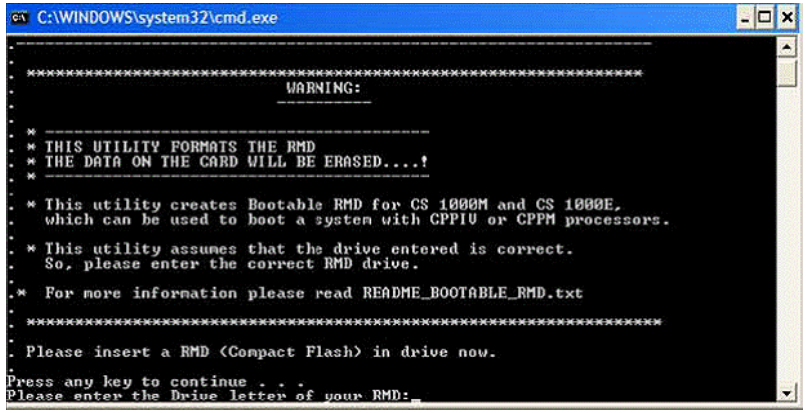
The following screen appears.



7 Double-click *mkbootrmd.bat* file to start the application (this batch file is used to format the CF card).

Press any key to continue, when the prompt appears.

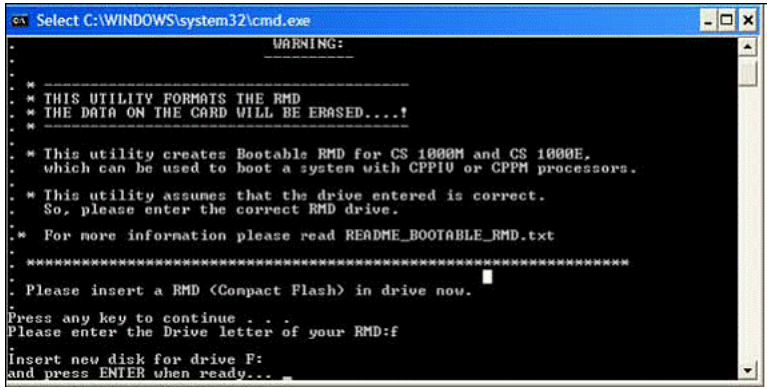
Enter the CF drive letter, as shown in the screen.



IMPORTANT!

The *mkbootrmd.bat* file does not verify the drive assignment. It is possible to format other drives on the PC or Laptop.

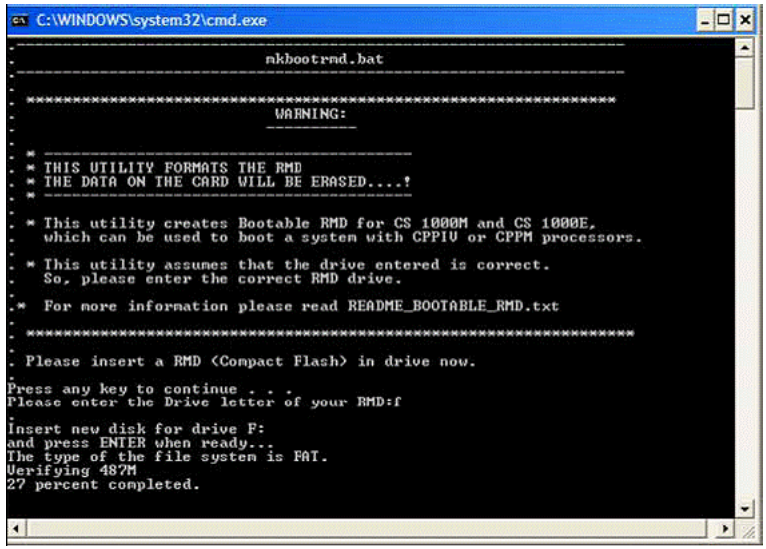
8 Enter the drive letter assigned to the CF drive on your PC. Insert a new CF card in the CF drive. Press **Enter** as shown on the screen.



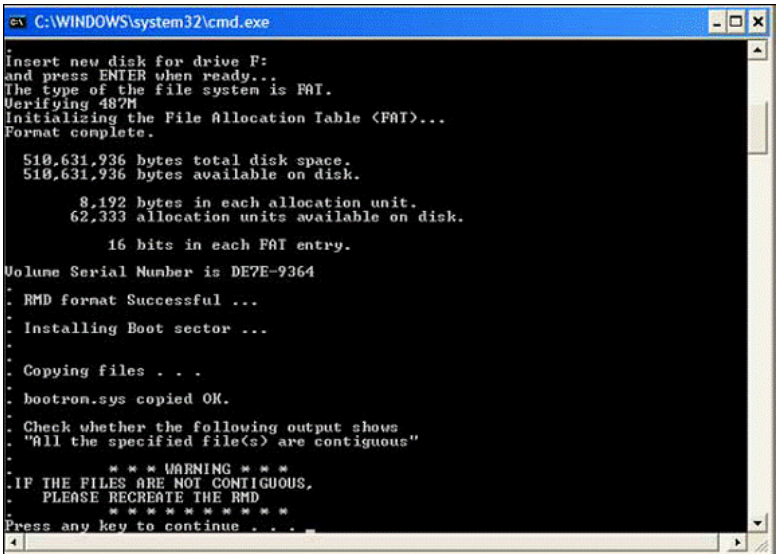
Note: Although a CF card is already in the CF drive, you are requested to insert a new CF card in the drive. Ignore this request and proceed to the next step.

9 Press Enter to start formatting the CF card.

The CF card formatting process screen appears.



When the formatting process is complete, the End of CF card formatting process screen appears.



The following messages appears:

`RMD format successful...(after the Volume Serial Number string)`

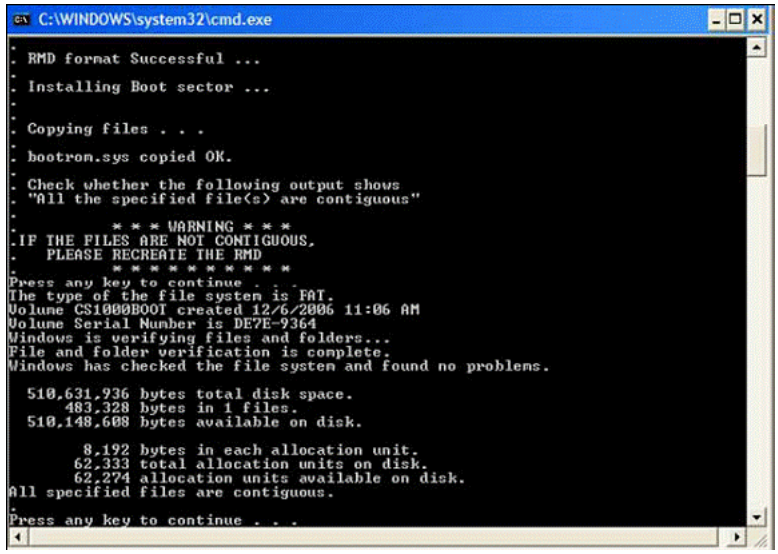
`bootrom.sys copied OK.`

The following warning messages appears:

`Check whether the following output shows "All the specified file(s) are contiguous”.`

10 Press any key to continue.

The Verify CF card formatting process screen appears.



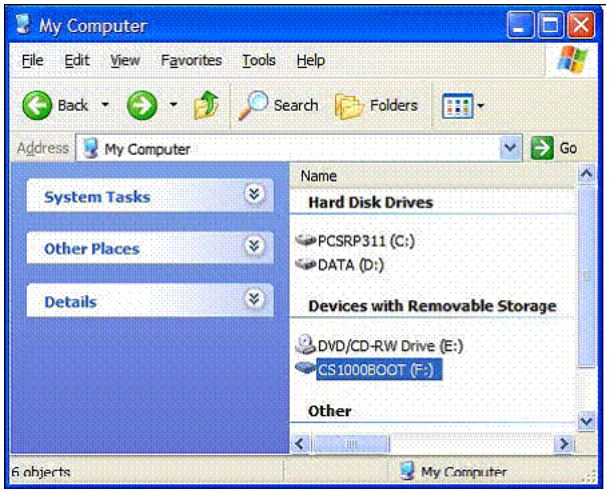
See the following message at the end of the screen:
"All the specified files<s> are contiguous".

Note: This message indicates that the CF card formatting process is successful and the CF card is now ready to load the Call Processor Software and system components.

11 Press any key to close the batch file and associated MS-DOS window.

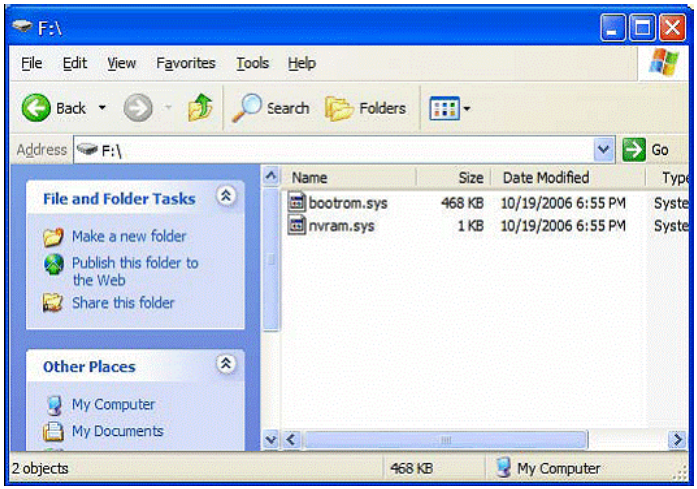
12 Click **My Computer** to verify the CF drive is renamed to CS1000BOOT.

The example is shown on the screen.



13 Double-click the CF drive to verify that it contains the *bootrom.sys* and *nvram.sys* files.

The example is shown on the screen.



14 Navigate the Temp folder on local PC or the folder to download the Call Processor Software Load zip file).

15 Copy the folders to the CF card.

Note: This can take upto 12 minutes depending on the speed of the computer. The files are copied from the hard drive on the local PC to the CF card in the CF drive.

When all subfolders and files are copied successfully to the CF card, it is used to install and upgrade Call Processor software on a Call Processor.

16 Remove the CF card from the CF drive and label it appropriately.

An example for a label is, Call Processor, CS-x.xx.xx, where x.xx.xx represents the Call Processor software version.

Installing the software

This section provides the steps involved in installing CS 1000 Release 5.5.

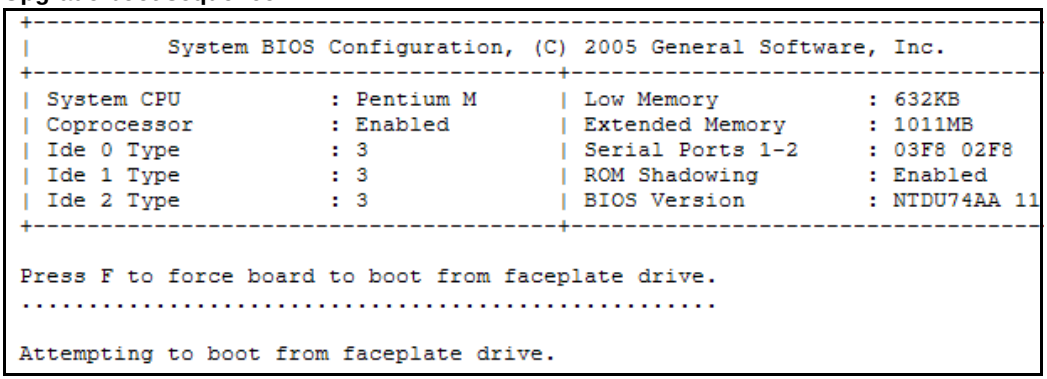
Procedure 20
Installing the software on the Call Server

1 Connect the terminal to port 0 with the NTAK19EC cable.

2 Insert the CF card into the Call Server faceplate.

3 Reboot the card by pressing the RST button on the faceplate of the Call Server or power up the chassis if this has not been done yet. When prompted (see Figure 37), enter **F** to “force board to boot from faceplate drive” (prompt may appear twice if booting a CP PM card that has had software previously installed).

Figure 37
Upgrade boot sequence



The VxWorks banner screen appears (see Figure 38 on page 131). Press enter to continue.

Figure 38
VxWorks banner

4 Enter **y** for both software warnings to proceed with the installation.

Note: PE/EPE is not applicable for this installation (though the prompts will still appear), as it only applies to Large Systems.

5 The following information appears:

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

>Validate hard disk partitions

Validate number of hard drive partitions and size...
```

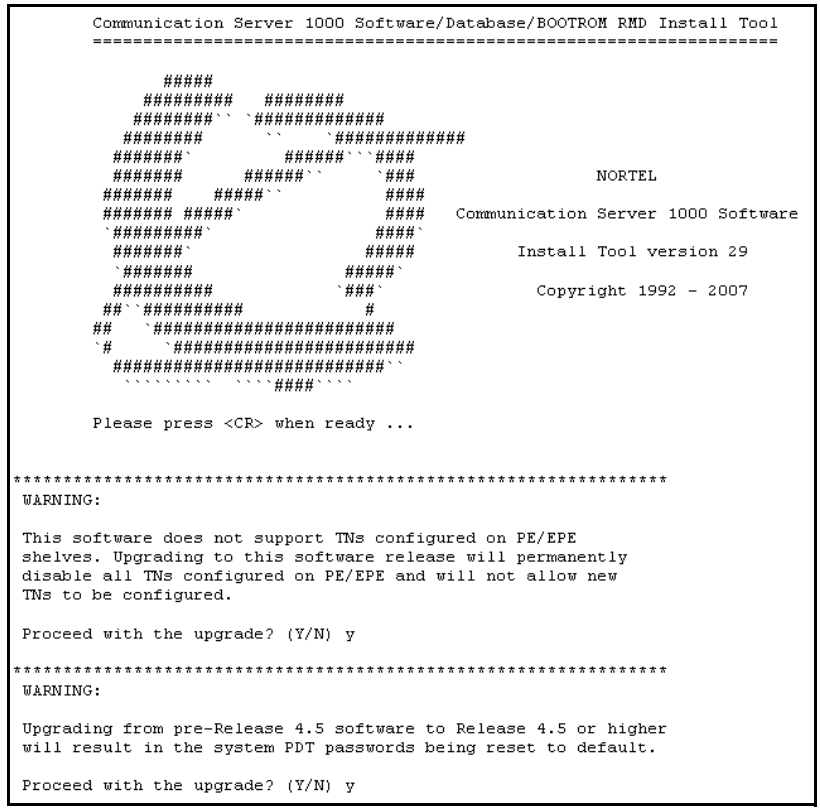
```
The size of partition /p is 0 Mb:

Disk check failed: the disk is not correctly partitioned

INST0010 Unable to validate Hard disk partition "/u"

        errNo : 0xd0003

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>
```

Select <a> to partition the fixed media device.

The partitions are formatted and the system reboots. You must press F to force board to boot from the faceplate drive and continue with the installation.

The VxWorks banner screen appears (see Figure 39 on page 133). Press enter to continue.

Figure 39
VxWorks banner



A disk check occurs at this point in the installation.

6 The Software Installation Tool Main Menu appears (see Figure 40 on page 134).

Note: If the keycode files reside on a separate CF card, remove the software CF card and insert the CF card containing the keycode files. The keycode normally resides in the keycode folder of the OS CF card.

Figure 40
Software Installation Tool Main Menu

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

                                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>
```

7 Enter **<CR>** or **u** to access the Install Menu. The following screen appears (see Figure 41).

Figure 41
Keycode files

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

                 Name                         Size       Date         Time
               --------------------         ------    -----------   -------
 <CR> -> <1> - KEYCODE.KCD                   1114     Aug-08-2007   14:45
         <q> - Quit

         Enter choice>


>Validating keycode ...
>Copying "/cf2/keycode/KEYCODE.KCD" to "/u/keycode" -

>The provided keycode authorizes the install
>of X210500 software (all subissues)
>for machine type 4021 (CPPM processor on CS 1000E).
```

8 The keycode file appears in the list. Select the appropriate keycode file for this system and install the keycode.

Note: If the CF card was exchanged, insert the CF card containing CS 1000 Release 5.5.

9 Enter **<CR>** or **y** to confirm that the keycode matches the system software on the RMD (see Figure 42 on page 135).

Figure 42
Keycode confirmation

```
        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>
>Obtaining database file names ...
```

10 The Install Menu appears (see Figure 43 on page 136). Enter **b** to install the software, database, and CP-BOOTROM. This allows you to either install the default database or choose to install a customer database that may have been preconfigured.

Figure 43
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 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> -> <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
```

The following screen appears (see Figure 44 on page 137):

11 Enter **<CR>** or **y** to confirm that the call processor is set to side 0 or select <n> if you need to change the side to side 1.

Figure 44
Side information

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

        This CS 1000 Call Processor is set to side 0

        Please confirm that the side information is correct.


        Please enter:
<CR> -> <y> - Yes, the side information is correct.
        <n> - No, the side information is incorrect. Go on to Side Setting Me

        Enter choice>
```

12 The location information screen appears (see Figure 45), indicating that the call processor is located in loop 0 and shelf 0 of the IPMG. Enter **<CR>** or **y** to confirm their location. If you need to change loop or shelf information, select <n> and follow the prompts.

Figure 45
Call processor location

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

        This CS 1000 Call Processor is currently located in the IPMG
        configured as:

        loop   0
        shelf  0

        Please confirm that the IPMG loop and shelf information is correct.

        Note: If the IPMG has not been configured yet, the IPMG loop and
              shelf information can be left as the current value. To update
              the loop and the shelf information later, use OVL117.


        Please enter:
<CR> -> <y> - Yes, the IPMG loop and shelf information is correct.
        <n> - No, the IPMG loop and shelf information is incorrect.
               Go on to Loop/Shelf Setting Menu.

        Enter choice>
```

13 If not already present in the CF drive, insert the CF card containing CS 1000 Release 5.5 (see Figure 46).

Figure 46
Insert RMD

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

        Please insert the Removable Media Device into the drive on Core 0.


        Please enter:
<CR> -> <a> - RMD is now in drive. Continue with s/w checking.
        <q> - Quit.

        Enter choice>
```

14 Enter **<CR>** or **y** to confirm that you have the correct software version (see Figure 47 on page 138).

Figure 47
Confirm software version

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

        The RMD contains System S/W version X2105XX_X.


        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>
```

15 Enter **<CR>** or **y** to install dependency lists and continue with the upgrade (see Figure 48 on page 138).

Figure 48
Install Dependency Lists

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

        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>
```

16 Enter **<CR>** or **y** (the default) to enable the Automatic Centralized Software Upgrade (CSU) feature (see Figure 49 on page 139).

Figure 49
Centralized Software Upgrade

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


        Enable Automatic Centralized Software Upgrade (CSU) Feature ? (Defaul

        Please enter:
<CR> -> <y> - Yes
        <n> - No

        Enter choice>
```

17 Set the CSU feature to Sequential by entering either **<CR>** or **y** (see Figure 50).

Figure 50
Automatic Centralized Software Upgrade Mode

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

        Set Automatic Centralized Software Upgrade Mode to:

        Please enter:
<CR> -> <1> - Sequential
        <2> - Simultaneous

        Enter choice>
>Processing the install control file ...
```

The Installation Status Summary screen appears (see Figure 51 on page 140).

Figure 51
Installation Status Summary

```
>Installing release 0500w

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

        +=================+========+========+============================+
        |     Option      | Choice | Status |           Comment          |
        +=================+========+========+============================+
        | SW: RMD to FMD  |  yes   |        | install for rel 5.50xx     |
        +-----------------+--------+--------+-----------------     -----+
        | Dependency Lists|  yes   |        |                            |
        +-----------------+--------+--------+-----------------     -----+
        | AUTO-CSU Feature|  SIM   |        | SIM-CSU Enabled            |
        +-----------------+--------+--------+----------------------------+
        | IPMG Software:  |  yes   |        | install for rel 5.500xx    |
        +-----------------+--------+--------+-----------------     -----+
        | Database        |  yes   |        |                            |
        +-----------------+--------+--------+----------------------------+
        | CP-BOOTROM      |  yes   |        |                            |
        +-----------------+--------+--------+----------------------------+

        Please enter:
<CR> -> <y> - Yes, start installation.
        <n> - No, stop installation. Return to the Main Menu.

        Enter choice>
>Checking system configuration
```

18 Enter **<CR>** or **y** to begin the installation (see Figure 52).

Figure 52
Install Tool

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

        You selected to install Software release: 05XXX 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>
```

19 The installation process begins.

20 After the software has installed, the PSDL Installation Menu appears (see Figure 53). Select the appropriate location based on your geographical location.

Figure 53
The PSDL Installation Menu

```
************************************************************
 PSDL 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 ->1

>Copying new PSDL ...
```

21 Enter **<CR>** to continue. PSDL, Loadware and Language files are installed.

A message appears indicating that the installation on Core 0 was successful (see Figure 54).

Figure 54
Core 0 software installation complete

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

Software release 05XXX was installed successfully on Core 0.

All files were copied from RMD to FMD.


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

22 Enter <CR> to continue. The following screen appears (see Figure 55).

Figure 55
Database installation

```
        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 DEFAULT database and DEFAULT accounts.
                The System S/W media must be in drive.)
        <d> - Transfer Small System database.
               The RMD containing the database must be in the drive
        <e> - Check the database that exists on the Fix Media Device.
        <q> - Quit.
```

23 Select the database you wish to install. If you are installing a previously programmed customer database, select option <a>. If you are installing the default database and accounts prior to programming, then selection option <b>.

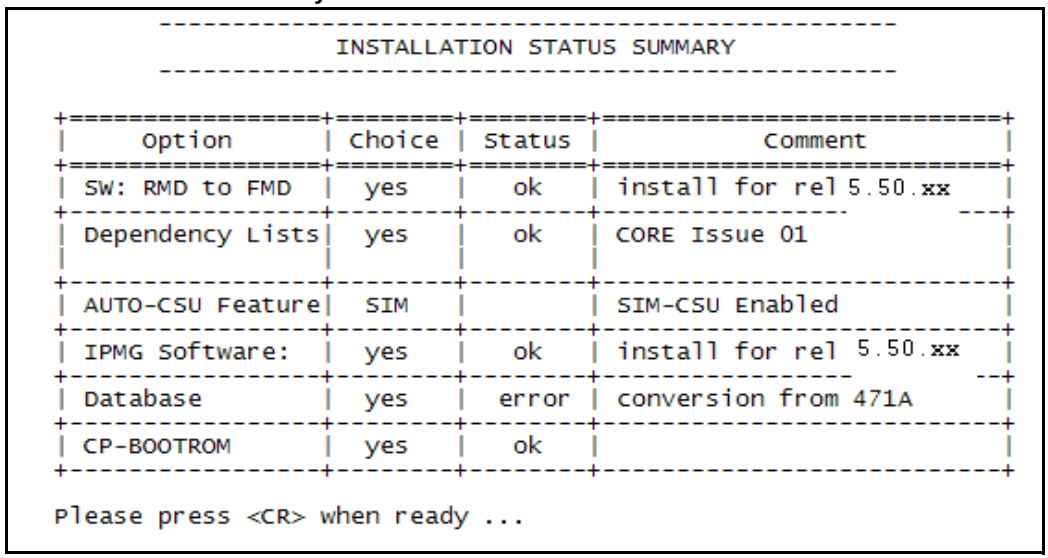
You will be prompted to verify that this is the database you wish to install (see Figure 56).

Figure 56
Default database installation

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

        You selected to transfer the default database from the System S/W
        RMD onto the FMD, from release: 471A to release: 471A.
        This will erase the database on the FMD. 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:
<CR> -> <a> - Continue with default database install.
        <q> - Quit.

        Enter choice>
>Starting database install ...
```

24 The Installation Status Summary screen appears, indicating that the installation was a success (see Figure 57). Enter **<CR>** to continue.

Figure 57
Installation Status Summary



INSTALLATION STATUS SUMMARY

Option	Choice	Status	Comment
SW: RMD to FMD	yes	ok	install for rel 5.50.xx
Dependency Lists	yes	ok	CORE Issue 01
AUTO-CSU Feature	SIM		SIM-CSU Enabled
IPMG Software:	yes	ok	install for rel 5.50.xx
Database	yes	error	conversion from 471A
CP-BOOTROM	yes	ok	

Please press <CR> when ready ...

25 The Install Menu appears (see Figure 58 on page 144). Enter **q** to quit the Install Tool.

Figure 58
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 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> -> <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> q
```

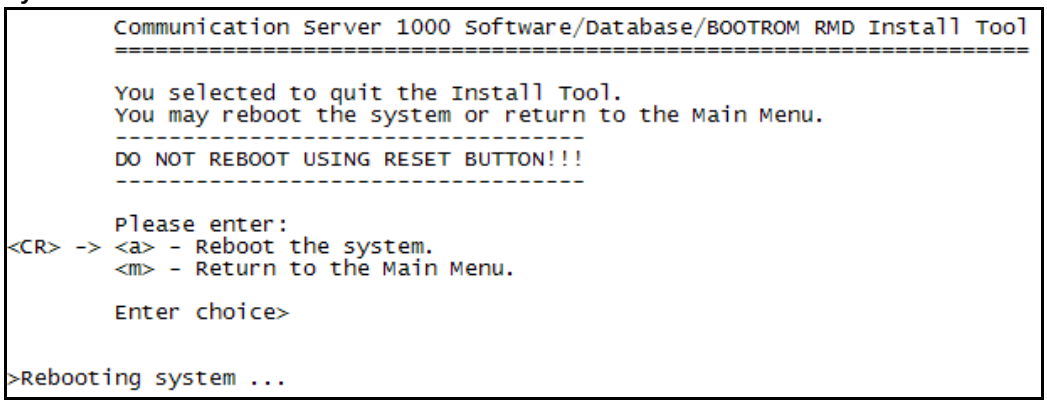
26 Enter **<CR>** or **y** to confirm your selection (see Figure 59).

Figure 59
Quit Install Tool

```
        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>
```

27 Enter **<CR>** or **y** to reboot the system (see Figure 60). Once the system has completed its reboot, remove the CF from the faceplate.

Figure 60
System reboot



Reconfigure I/O ports and call registers

Procedure 21
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
REQ CHG	Change
TYPE PARM	
500B 1000	Use 1000 as a minimum value
NCR 20000	Use 20000 as a minimum value.
	Press enter until you are returned to the REQ prompt.
********	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

Testing the Call Server

Note: Before performing the testing procedures below, the database must be programmed, the system must be configured, and the installation must be completed.

Procedure 22
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).

Install the software on the second Call Server

Procedure 23
Installing the software on the second Call Server

Complete the steps in Procedure 20 on page 129 for the second Call Server. Please note the following:

- the second Call Server must be side 1 and must be assigned a different Loop
- it is recommended that the second Call Server be in a second chassis

Configuring primary and secondary call server IP addresses

Procedure 24
Configuring primary and secondary call server IP addresses

Given: Primary IP address: 47.1.1.10; Secondary IP address: 47.1.1.11; Subnet mask: 255.255.255.0; Default Gateway IP: 47.1.1.1

1 Load Overlay 117

2 Create host entries. Enter one of the following commands:

NEW HOST PRIMARY_IP 47.1.1.10

NEW HOST GATEWAY_IP 47.1.1.1 (if connected to customer LAN)

NEW HOST GATEWAY_IP 47.1.1.1 (if connected to customer LAN)

3 Assign host to primary and/or secondary IP address(es). Enter one of the following commands:

CHG ELNK ACTIVE PRIMARY_IP

CHG ELNK INACTIVE SECONDARY_IP (for Dual CPU only)

Verify your IP address for Ethernet by entering the PRT ENLK command.

Note: To reuse the active host entry and/or associated IP address, the existing entry must be removed. Prior to removing the existing enty, you must first create a temporary host entry and make it active. Out the original host entry, then proceed to Step 2.

4 Set up Ethernet subnet mask. Enter the command:

CHG MASK 255.255.255.0

Verify subnet mask setting by entering the command:

PRT MASK

5 Set up routing entry. Enter the command:

NEW ROUTE 0.0.0.0 47.1.1.1 (if connected to customer LAN)

Where: 0.0.0.0 = destination network IP and 47.1.1.1 = default gateway IP

Note: When more than one gateway exists, replace 0.0.0.0 with the destination network address for each entry of the routing table.

6 Verify default routing by entering the command:

PRT ROUTE

Note 1: For a single CPU machine, the secondary IP is not used.

Note 2: The secondary IP is accessible only when a system is in split mode.

Note 3: The subnet mask must be the same value used for the system Ethernet network.

Note 4: The system private Ethernet (ELAN subnet) is used for system access and control. Use an internet gateway to isolate the system private Ethernet from the Customer Enterprise Network.

Note 5: Routing information is required if an internet gateway or router connects a system private network (ELAN subnet) to the Customer Enterprise Network. New routes use network IPV4 classification to determine whether the route is network or host based.

Note 6: INI is required for the activation of subnet Mask.

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	

Making the system redundant

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

Procedure 25
Making the system redundant

1. Check to see if the HSP cable is attached. If not, attach the HSP cable (this is a crossover cable) to the CP PM faceplate connectors on both CP PM cards.
2. Make the system redundant in LD 135 by typing the command JOIN.

   LD 135

JOIN	Restores redundancy to a system put in single mode by the SPLIT command
********	Exit the program

3 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
```

4 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
```

5 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

IMPORTANT!

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

Complete the installation

Testing the Call Servers

Procedure 26
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 LED	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

Note: SUTL commands only apply to Pentium II and Pentium IV based CS 1000E systems.

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

Switch call processing

Procedure 27
Switching call processing

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

IMPORTANT!

Call Server 0 is now the active call processor.

Procedure 28
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 CP PM Call Servers
CMAJ	Clear major alarms
CMIN ALL	Clear minor alarms

Switch call processing

Procedure 29
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.

Perform a customer backup data dump (installation release)

Procedure 30
Performing a data dump to backup the customer database:

1 Log in to the system.

2 Insert the 128 MByte 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

IMPORTANT!

The installation is now complete.

Configuring the IPMG zone and IP address

Note: Before you can configure zones, you must create a customer in LD 15.

The next step in the process involves configuring the IPMG zone and IP address in Overlay 97 on the Call Server.

Note: This procedure may be performed through Element Manager following the installation of the Signaling Server. To configure an IPMG using Element Manager see Procedure 47 on page 246.

1 Log into Overlay 97 to configure the MGC that will register to the call server:

```
>LD 97

SCSYS000

MEM AVAIL: (U/P): 103979814    USED U P: 230475 59531
TOT: 104269820
```

```
REQ  prt
TYPE supl
SUPL

SUPL  SUPT SLOT XPEC0   XPEC1   IPMG   ZONE0/1  IPR0/1
```

REQ chg
TYPE supl
SUPL 0
SLOT
SUPT ipmg
IPR0 <**IP address for shelf 0**>
IPR1 <**IP address for shelf 1**>
IPMG_TYP0 mgc
ZONE0 1
**** ALL VWG CHANNELS MUST BE OUTED AND RECONFIGURED AFTER IPMG ZONE CHANGE
DES0
-CE

Configuring initial IP configuration data on MGC

Note: Coordinate all Nars/Bars and NRS changes to ensure that your cutover plan is designed for minimum downtime.

The MGC must be given a superloop and shelf reference on the Call Server (see Table 12)**.**

Table 12
MGC superloop configuration

Loop	Shelf	IPMG #
000	0	1
000	1	2
004	0	3
004	1	4

Table 12
MGC superloop configuration

Loop	Shelf	IPMG #
008	0	5
...	...	...
096	0	49
096	1	50

Procedure 31
Configuring the MGC on the Call Server

Note: Initial configuration of the MGC is command line ONLY.

The MGC is shipped with “gold” software in onboard flash memory. If centralized software upgrade is enabled on the Call Server, the MGC is upgraded automatically (or it can be upgraded manually through LD 143).

There are two ways to enter mgcsetup:

- If no IP information exists on the MGC, it will boot directly into the setup menu.
- If IP information does exist, use <CTRL>L<CTRL>D<CTRL>B, (provide LDB username and password to access LDB). Then invoke mgcsetup command.

The MGC Shells can be accessed using the following commands:

- `<CTRL> OAM,` (provide OAM username and password to access OAM shell)
- `<CTRL> LDB,` (provide LDB username and password to access LDB)

1 Enter network IP information at the MGC setup menu.

Note: Bolded information only appears if loadware on the MGC card is older than the MGCBAD loadware.

```
Please define the data networking parameters for this
MG 1000E now.
```

```
Hostname:                       MGC_N313      (optional)
ELAN IP:                        0.0.0.0       192.168.3.33
ELAN subnet mask:               0.0.0.0       255.255.255.0
ELAN gateway IP:                192.168.3.1
TLAN IP:                         0.0.0.0      192.168.19.33
TLAN subnet mask:                0.0.0.0      255.255.255.0
TLAN gateway IP :               192.168.19.1
Primary CS Hostname:            CS1000E_N313  (optional)
Primary CS IP:                  192.168.3.32
Leading Secondary CS Hostname:<enter>
Leading Secondary CS IP:        0.0.0.0
Secondary CS Hostname:          <enter>
Secondary CS IP:                 0.0.0.0
```

2 Enter port and security parameters, if required:

```
Change MGC advanced parameters? (y/[n]) : y
TLAN is set to auto negotiate, change? (y/[n]) : y

Note: Turning off auto negotiate on the TLAN
    : will default it to 100Mbps full duplex.

Set TLAN to auto negotiate? ([y]/n) : y
ELAN is set to auto negotiate, change? (y/[n]) : y

Note: Turning off auto negotiate on the ELAN
    : will default it to 100Mbps full duplex.

Set ELAN to auto negotiate? ([y]/n) : y
ELAN security Disabled, change? (y/[n]) : y
Enable ELAN security ? (y/[n]) : y
Enter security level OPTI, FUNC or FULL : opti
```

IMPORTANT!

Nortel recommends that ELAN security be disabled during system installation.

```
Note: Spaces ~ * ` @ [ ] and # are not supported in
passwords.

Please input PSK(16-32 chars): (input is not echoed)
Strength of PSK: Weak
Please reenter PSK(16-32 chars): (input is not echoed)
```

3 Review the network information and enter “y” to confirm.

```
You have entered the following parameters for this MG
1000E:

Hostname             : MGC_N313
ELAN IP              : 192.168.3.33
ELAN subnet mask     : 255.255.255.0
ELAN gateway IP      : 192.168.3.1
TLAN IP              : 192.168.19.33
TLAN subnet mask     : 255.255.255.0
TLAN gateway IP      : 192.168.19.1
```

```
Primary CS Hostname  : CS1000E_N313
Primary CS IP        : 192.168.3.32
Alternate CS 1 Hostname :
Alternate CS 1 IP       : 0.0.0.0
Alternate CS 2 Hostname :
Alternate CS 2 IP       : 0.0.0.0
TLAN set to auto negotiate.
ELAN set to auto negotiate.
ELAN security Enabled, level is Optimized Security

Is this correct? (y/n/[a]bort) : y
```

4 IP changes require a reboot. Enter “y” at the prompt.

```
Do you want to continue? (y/n/[a]bort) : y
reboot(-1) has been called...
```

Following the reboot, the MGC connects to the CS and downloads the remaining configuration information.

If centralized software upgrade has been enabled, the MGC will upgrade its loadware by downloading it from the CS.

Once the MGC has registered, the LED display will show the superloop and shelf (for example: 4 0) of the IPMG. Otherwise, it will show “UNRG.”

Rebooting the MGC

The MGC reboots and registers with the Call Server.

```
Found device : INTEL 82365SL

Engcode:NTDW60BA REL 08
ELAN mac address is:00:13:65:ff:ee:ed
TLAN mac address is:00:13:65:ff:ee:ec
RESET reason: Hard Reset.
Daughter board 1:NTDW62AA R02    00:13:65:ff:f8:fd.
Daughter board 2:NOT INS

                              VxWorks System Boot

Copyright 1984-2005  Wind River Systems, Inc.
CPU: Chagall
Version: VxWorks5.5.1
Bootcode version: MGCBAA20

auto-booting...

Loading MSP from CF...1375736
Booting ARM0 (MSP) at 0x00000100 ...
Loading CSP from CF...6643712 + 5849088
Booting ARM1 (CSP) at 0x80010000 ...

Found device : INTEL 82365SL

Loading symbol table from /p/mainos.sym ...done
```

Loadware upgrade

If the MGC loadware is out of date (compared to the loadware on the Call Server), an upgrade of the loadware occurs based on the Centralized Upgrade setting defined during the software install and the values set in overlay 143. The default values are set so that the upgrade starts automatically once registration is achieved with the Call Server.

There are six pieces of loadware that are updated on the MGC. These updates are downloaded from the Call Server.

```
-> Received an upgrade request. Preparing MGC for upgrade.
Auto commit option has been enabled.
Upgrade of CSP loadware initiated.
OMM: IP link is UP between Primary Call Server and MGC 1

Upgrade of MSP loadware initiated.
Upgrade of APP loadware initiated.
Upgrade of FPGA loadware initiated.
Upgrade of DBL1 initiated.

-> 0x86f8bc30 (tMGCInst):

Upgrading FPGA Loadware...

logTask: 1 log messages lost.
0x86f8bc30 (tMGCInst): Programming FPGA ...
0x86f8bc30 (tMGCInst): FPGA Upgrade completed.
0x86f8bc30 (tMGCInst): Upgrading Application Loadware ...
0x86f8bc30 (tMGCInst): Gold CSP image upgraded
0x86f8bc30 (tMGCInst): mgcBootLineFix:fixing the bootline
0x86f8bc30 (tMGCInst): Upgrade Application Loadware
completed
0x86f8bc30 (tMGCInst): Rebooting MGC to take the upgrade
in effect.
```

IMPORTANT!

At this point the IPMGs synchronize with the Call Server.

Installing a Signaling Server

Contents

This section contains information on the following topics:

Introduction

This chapter contains general instructions to install a Nortel CP PM server and detailed instructions to install a legacy Nortel ISP1100 server. This chapter contains no instructions to install an IBM X306m or HP DL320-G4 COTS 1U server. Please see the *IBM xSeries 306m Types 8848 and 8491 User Guide* or the *HP ProLiant DL320 Generation 4 Server User Guide* shipped with the COTS servers for detailed installation instructions. Of particular note, the IBM X306m and HP DL320-G4 servers require four-post

rack mounting, as opposed to two-post rack mounting for the Nortel ISP1100 server.

IMPORTANT!

Instructions to install an IBM X306m or HP DL320-G4 COTS 1U server are not included in this chapter. Detailed installation instructions can be found in the IBM xSeries 306m Types 8848 and 8491 User Guide or the HP ProLiant DL320 Generation 4 Server User Guide shipped with the server.

Readiness checklist

Before installing a Signaling Server in a CS 1000 system, complete the following checklist.

WARNING

Do not modify or use a supplied AC-power cord if it is not the exact type required in the region where the Signaling Server is installed and used. Be sure to replace the cord with the correct type.

Table 13
Readiness checklist (Part 1 of 2)

Have you:	
Read all safety instructions in *Communication Server 1000E: Installation and Commissioning* (NN43041-310) or *Communication Server 1000M and Meridian 1 Large System Installation and Configuration* (NN43021-310), as appropriate for your CS 1000 system?	
Received all equipment and peripherals? **For a Nortel ISP1100 (NTDU27AA), IBM X306m (NTDU99AAE5), and HP DL320-G4 (NTDU97AA) Signaling Servers:** • installation accessories for rack-mounting the server • AC-power cord • a DTE-DTE null modem cable (supplied) **For a CS 1000E Nortel CP PM Signaling Server (NTDW61BAE5):** • NTDW6102E5 - CP PM Signaling Server Hard Drive kit • N0118766 - CP PM Signaling Server Hard Drive Installation instructions • NTAK19ECE6 - CP PM Signaling Server 2 port SDI Cable assembly kit • NTDU0606E6 - CP PM Signaling Server 25cm RJ45 Ethernet Cable kit • a DTE-DTE null modem cable (supplied) • for a CS 1000M Nortel CP PM Signaling Server (NTDW66AAE5 model) • NTDW6102E5 - CP PM Signaling Server Hard Drive kit • N0118766 - CP PM Signaling Server Hard Drive Installation instructions • NTAK19ECE6 - CP PM Signaling Server 2 port SDI Cable assembly kit • NTDW69AAE5 - CP PM Signaling Server Large System Cabling kit • N0106745 - CP PM Signaling Large System Cabling • a DTE-DTE null modem cable (supplied) ***Note:*** Save the packaging container and packing materials in case you must ship the product.	

Table 13
Readiness checklist (Part 2 of 2)

Have you:	
Made sure the area meets all environmental requirements?	
Checked for all power requirements?	
Checked for correct grounding facilities?	
Obtained the following: • screwdrivers • an ECOS 1023 POW-R-MATE or similar type of multimeter • appropriate cable terminating tools • a computer (maintenance terminal) to connect directly to the Signaling Server, with: — teletype terminal (ANSI-W emulation, serial port, 9600 bps) — a web browser for Element Manager (configure cache settings to check for new web pages — every time the browser is invoked, and to empty the cache when the browser is closed)	
Prepared the network data as suggested in *Converging the Data Network with VoIP* (NN43001-260), *Communication Server 1000E: Planning and Engineering* (NN43041-220) or *Communication Server 1000M and Meridian 1 Large System Planning and Engineering* (NN43021-220), as appropriate for your CS 1000 system?	
Read all safety instructions in *Communication Server 1000E: Installation and Commissioning* (NN43041-310) or *Communication Server 1000M and Meridian 1 Large System Installation and Configuration* (NN43021-310), as appropriate for your CS 1000 system?	

Installing the CP PM Signaling Server hardware

The Nortel CP PM server is a circuit card, and thus is not mounted in a rack. This section contains instructions for installing a Nortel CP PM Signaling Server in a CS 1000E and a CS 1000M system.

This section contains general instructions for installing the CP PM Signaling Server circuit cards in CS 1000E and CS 1000M systems. For more detailed installation instructions, refer to *Circuit Card: Description and Installation* (NN43001-311) and *Signaling Server: Installation and Commissioning* (NN43001-312).

IMPORTANT!

There are several switches on CP PM circuit cards. All switch settings must be factory defaults except for the switch labelled “S5”. Switch S5 must be set to position 2 to support the internal hard drive used on the CP PM Signaling Server circuit cards only.

Installation in a CS 1000E system

The NTDW61BAE5 model of the Nortel CP PM server is designed for use in a CS 1000E system. The first task that must be performed is to install the hard drive shipped with the server. For instructions, see "Install the hard drive on a Nortel CP PM Signaling Server" in *Signaling Server: Installation and Commissioning* (NN43001-312).

You can insert the NTDW61BAE5 model of the Nortel CP PM server into any slot of a CS 1000E Media Gateway (MG 1000E or MG 1000B) or a Media Gateway Controller (MGC) card. Keying prevents the NTDW61BAE5 model from being inserted into this slot.

CAUTION — Equipment Damage

Do not insert the NTDW61BAE5 model of the Nortel CP PM server into any slot of a CS 1000M Universal Equipment Module (UEM). Doing so can cause electrical shorts on adjacent circuit cards.

Connections

Connection checklist

WARNING

Do not modify or use a supplied AC power cord if it is not the correct type required for the host region.

IMPORTANT!

Nortel CP PM servers are powered through the backplane of the Media Gateway, Universal Equipment Module or 11C cabinet into which they are installed and thus require no power cord.

Before connecting a Signaling Server, ensure that you have the following materials on-hand.

Table 14
Connections checklist

Have you:	
Obtained a serial cable (DTE-DTE null modem cable) to connect the server to a maintenance terminal?	
Obtained the NTAK19EC cable (if you are connecting a Nortel CP PM server)? This cable adapts the 50-pin MDF connector on the back of the shelf of the Media Gateway, Universal Equipment Module, or 11C cabinet to a 25-pin DB connector.	
Obtained the CAT5 cables (or better) to connect the server to the ELAN and TLAN subnets?	

Connecting a Nortel CP PM Signaling Server

This section contains instructions for connecting the NTDW61BAE5 CP PM Signaling Server to the ELAN and TLAN subnets of a CS 1000E system. It

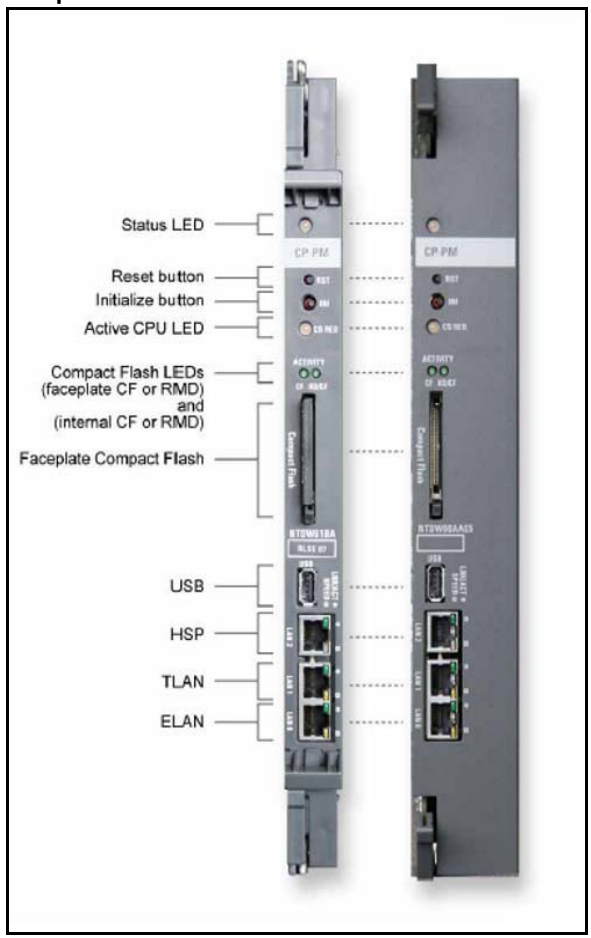
also contains instructions for connecting a maintenance terminal to the Nortel CP PM Signaling Server.

The NTDW61BAE5 model of the Nortel CP PM Signaling Server was designed for use in a CS 1000E system. As such, it is inserted into a slot of the Media Gateway (MG 1000E or MG 1000B). The Media Gateway also hosts the Media Gateway Controller (MGC) that has Ethernet ports for connecting to the ELAN and TLAN subnets of your CS 1000 system.

However, it is common in a CS 1000E system for the Call Server to be connected to the MGC through the ELAN Ethernet port. If the Call Server is not connected to the MGC through this port, the NTDW61BAE5 model of the CP PM Signaling Server uses them to connect to the ELAN and TLAN subnets of the CS 1000E system. If the Call Server is using the ELAN Ethernet port, the Nortel CP PM Signaling Server is connected directly to the ELAN and TLAN Ethernet switches from the faceplate ELAN and TLAN Ethernet ports.

Figure 61 shows the faceplates of the two models of the Nortel CP PM Signaling Server with labeling for all components (NTDW61BAE5 on the left and NTDW66AAE5 on the right).

Figure 61
Faceplates of the Nortel CP PM server



Procedure 32
Connecting a Nortel CP PM Signaling Server

Note: When you connect a null modem cable to the NTAK19EC cable, you cannot communicate with the Signaling Server. A null modem is not required.

Note: Refer to Figure 61 when performing the following procedure.

1 Establish a maintenance terminal connection at the back of the shelf of the IPMG. The com (SDI) port of the CP PM circuit card Signaling Server is routed through the backplane of the shelf to the 50 pin MDF connector on the back of the shelf. A special cable is shipped with the CP PM signaling server that adapts the 50 pin MDF connector to a 25 pin DB connector (NTAK19EC). A DTE-DTE null modem serial cable is required to adapt the SDI port to a typical PC serial port.

a. Connect the NTAK19EC cable (shipped with the CP PM Signaling Server) to the 50 pin MDF connector on the back of the desired shelf of the IPMG.

b. Connect a DTE-DTE null modem serial cable to the 25 pin DB connector at the end of the NTAK19EC cable.

c. Connect the other end of the DTE-DTE null modem serial cable to the serial port on the maintenance terminal.

2 Insert the Signaling Server circuit card into an appropriate slot on the shelf of the IPMG. The CP PM Signaling Server is hot-pluggable so it may be inserted without powering off the system. The maintenance terminal now has access to the CP PM Signaling Server through the 50-pin MDF connector associated with the card slot that the CP PM Signaling Server is inserted into on the IPMG.

3 Connect the Signaling Server to the TLAN subnet. Insert the RJ-45 CAT5 (or better) cable into the TLAN port (TLAN network interface) on the front of the Signaling Server. The TLAN port is the middle one of the three network interfaces.

4 Connect the Signaling Server to the ELAN subnet. Insert the RJ-45 CAT5 (or better) cable into the ELAN port (ELAN network interface) on the front of the Signaling Server.

5 Set the COM port on the maintenance terminal as follows:

- Terminal type: VT100
- Speed: 9 600
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

Note: The CP PM Signaling Server is shipped with the Admin Serial port set to 9600 Bit/s. Other available speeds are 19 200, 38 400, and 115 200 Bits. You can change the port speed using the maintenance terminal. To verify or change the baud rate on a Nortel CP PM Signaling Server, see *Signaling Server: Installation and Commissioning* (NN43001-312).

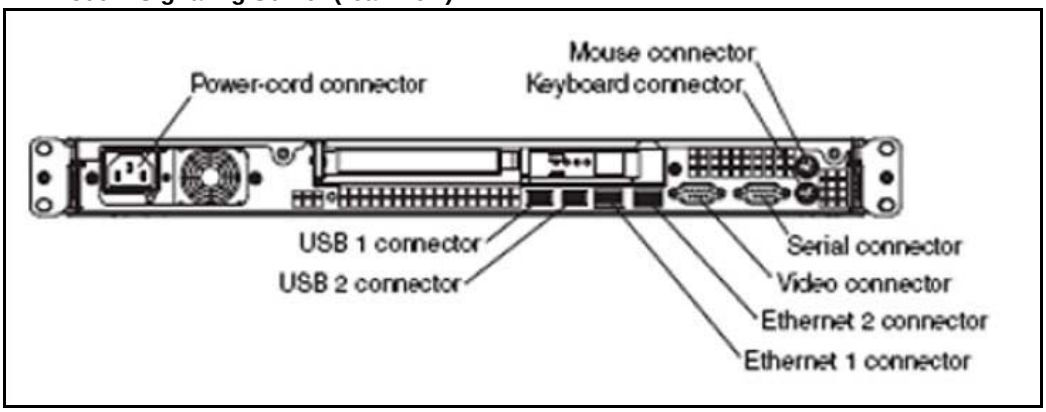
6 Configure the Signaling Server maintenance terminal. Refer to *Signaling Server: Installation and Commissioning* (NN43001-312).

Connecting an IBM X306m Signaling Server

In geographic regions that are susceptible to electrical storms, Nortel recommends that you plug the IBM X306m Signaling Server into an AC surge suppressor.

Figure 62 shows the rear view of the IBM X306m Signaling Server.

Figure 62
IBM X306m Signaling Server (rear view)



Note: Refer to Figure 62 when performing the following procedure.

Procedure 33
Connecting an IBM X306m Signaling Server

1. Connect the Signaling Server to the TLAN subnet. Insert the RJ-45 CAT5 (or better) cable into Port 1 (TLAN network interface) on the back of the Signaling Server. Port 1 is the right-most of the two network interfaces.
2. Connect the Signaling Server to the ELAN subnet. Insert the RJ-45 CAT5 (or better) cable into PEthernet 2 connector (ELAN network interface) on the back of the Signaling Server. Port 2 is the left-most of the two network interfaces.
3. Connect a DTE–DTE null modem serial cable from the serial port on the back of the Signaling Server to the serial port on a maintenance terminal.
4. Connect the Signaling Server power cord.
   a. Check that the power cord is the type required in the region where the Signaling Server is used. Do not modify or use the supplied AC power cord if it is not the correct type.
   b. Attach the female end of the power cord to the mating AC power receptacle on the left side of the Signaling Server's back panel. Plug the male end of the AC power cord into the AC power source (wall outlet).

5 Set the baud rate for the serial port on the Signaling Server to 9 600 b/ps. See *Signaling Server: Installation and Commissioning* (NN43001-312).

Note: The IBM X306m Signaling Server ships with the serial port set to 9600 b/ps.

6 Configure the connected maintenance terminal. See *Signaling Server: Installation and Commissioning* (NN43001-312).

7 Press the Power switch.

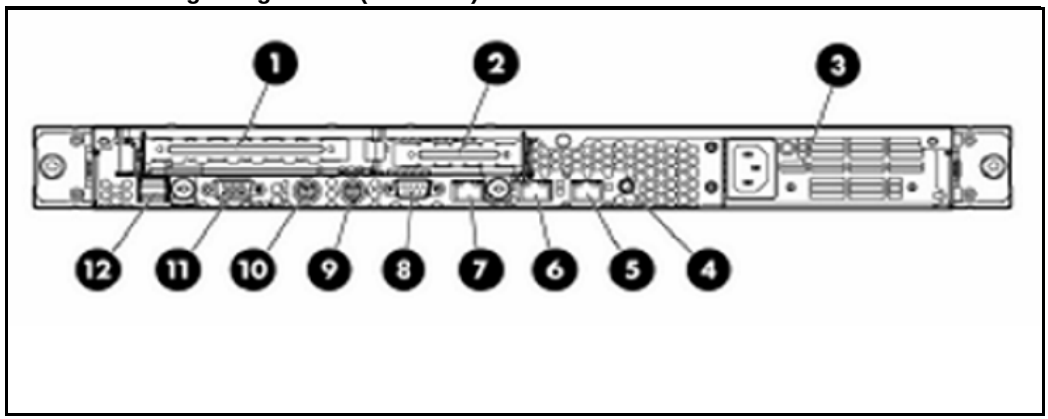
Note: Refer to the Signaling Server Product Guide on the CD-ROM shipped with the IBM X306m Signaling Server for additional operating information.

Connecting an HP DL320-G4 Signaling Server

In geographic regions that are susceptible to electrical storms, Nortel recommends that you plug the HP DL320-G4 Signaling Server into an AC surge suppressor.

Figure 63 shows the rear view of the HP DL320-G4 Signaling Server.

Figure 63
HP DL320-G4 Signaling Server (rear view)



Procedure 34
Connecting an HP DL320-G4 Signaling Server

1. Connect the Signaling Server to the TLAN subnet. Insert the RJ-45 CAT5 (or better) cable labeled with the number 5 into the port (TLAN network interface) on the back of the Signaling Server.
2. Connect the Signaling Server to the ELAN subnet. Insert the RJ-45 CAT5 (or better) cable labeled with the number 6 into the port (ELAN network interface) on the back of the Signaling Server.
3. Connect a DTE–DTE null modem serial cable from the Serial Port on the back of the Signaling Server to a maintenance terminal.
4. Connect the Signaling Server power cord.
   a. Check that the power cord is the type required in the region where the Signaling Server is used. Do not modify or use the supplied AC power cord if it is not the correct type.
   b. Attach the female end of the power cord to the mating AC power receptacle on the right-hand side of the Signaling Server's back panel. Plug the male end of the AC power cord into the AC power source (wall outlet).
5. Configure the COM1 serial port as the communication port for the connected maintenance terminal. Set the COM 1 baud rate for the serial port on the Signaling Server to 9 600 b/ps. See *Signaling Server: Installation and Commissioning* (NN43001-312).
6. Configure the connected maintenance terminal. See *Signaling Server: Installation and Commissioning* (NN43001-312).
7. Press the Power switch.

Maintenance terminal configuration parameters

To configure Signaling Server maintenance terminal configuration parameters, see the Maintenance chapter of *Signaling Server: Installation and Commissioning* (NN43001-312).

Installing the Signaling Server software

IMPORTANT!

The Signaling Server is out-of-service during software upgrade.

Introduction

This section provides installation procedures for CS 1000 Release 5.5 Signaling Server software on an IBM X306m or HP DL320-G4 Signaling Server.

IMPORTANT!

CP PM, IBM X306m and HP DL320-G4 Signaling Servers do not support any Signaling Server software prior to CS 1000 Release 5.0.

IMPORTANT!

CS 1000 Release 5.5 Signaling Server software does not need to be installed on the CP PM Signaling Server. It is delivered with the Signaling Server software, operating system, applications and web files pre-loaded onto the hard drive. Only basic system configuration parameters need to be entered on the first boot of the CP PM Signaling Server.

Before you begin

Before installing the software, you must do the following:

- Connect and power up the Signaling Server. See “Connections” on page 173.
- For CP PM Signaling Servers, ensure that Switch S5 is set to position 2 (to support the internal hard disk drive)
- For IBM X306m and HP DL320-G4 Signaling Servers, you must obtain the CS 1000 Release 5.5 Signaling Server Software Install CD.

Installing the software

To install software and enter basic system configuration parameters on an IBM X306m or HP DL320-G4 Signaling Server, complete Procedure 35.

Procedure 35
Installing Signaling Server software

Upon completion of Step 1, this procedure takes approximately 45 minutes to complete.

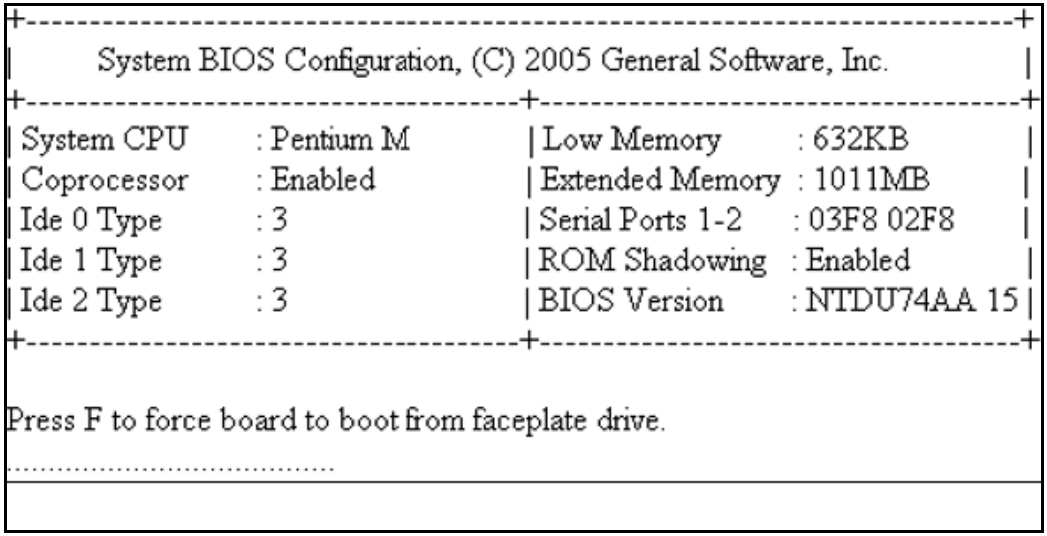
1 From your Planning and Engineering group, obtain the following network and IP Telephony data for this Signaling Server:

- 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 Commissioning* (NN43001-313)
- NRS role, if applicable. Refer to *IP Peer Networking: Installation and Commissioning* (NN43001-313)

2 Boot the Signaling Server from the Removable Media Device (RMD):

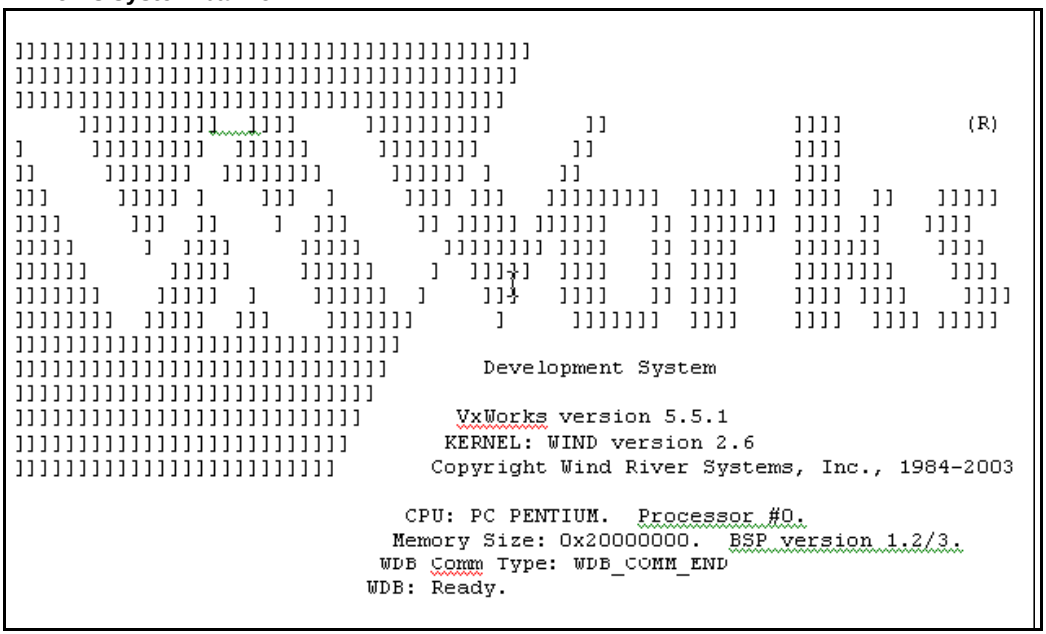
- For IBM X306m, HP DL320-G4, or Nortel ISP1100 Signaling Servers, insert the CS 1000 Release 5.5 Signaling Server Software CD into the CD drive and press the RST button on the front panel of the Signaling Server to trigger a cold boot. This forces the Signaling Server to boot from the CD.
- For a Nortel CP PM Signaling Server, insert the CS 1000 Release 5.5 Signaling Server Software CF card into the faceplate CF drive and press the RST button on the faceplate of the Signaling Server to trigger a cold boot. The CP PM System BIOS Configuration screen appears (see Figure 64) with an instruction to press F to force the Signaling Server to boot from the CF card.

Figure 64
Nortel CP PM system BIOS configuration



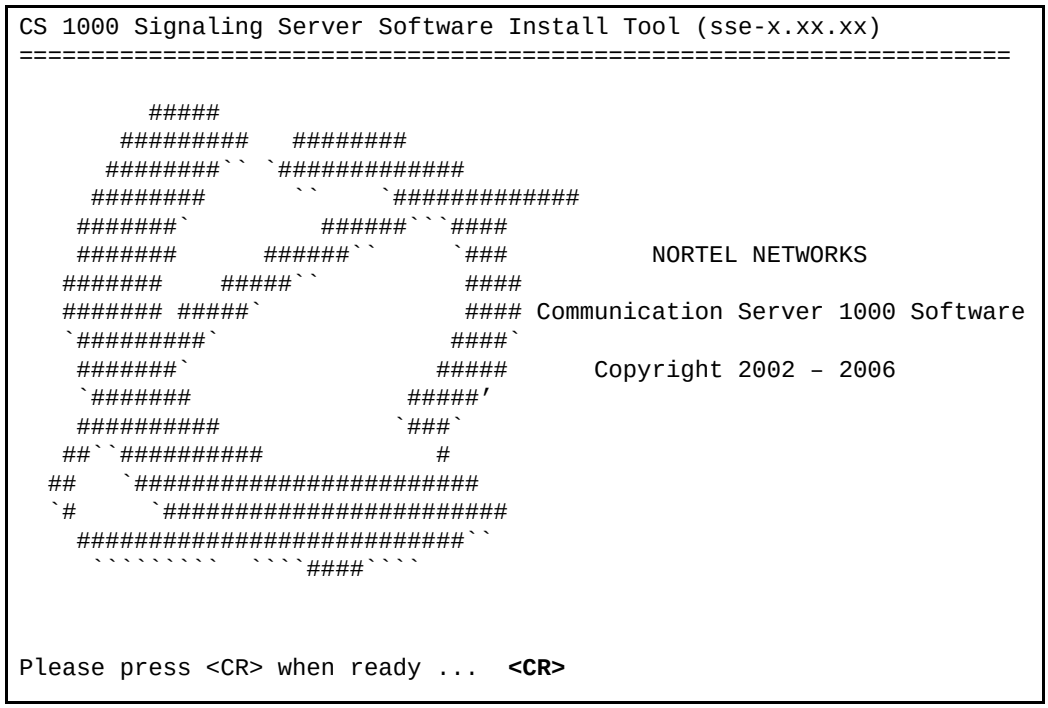
- The VxWorksTM banner screen appears (see Figure 65) followed by system messages indicating that the Signaling Server Software Installation Tool is being loaded from either the Signaling Server Software CD or CF Card.

Figure 65
VxWorks system banner



When the Install Tool banner appears (Figure 66), press <CR> to perform system checks and begin software installation.

Figure 66
Install Tool banner screen



3 Press <CR> to perform system checks. If the system has less than 1 Gbyte of RAM, the following error message appears:

```
WARNING: Your system has less than 1 GB RAM.
In order to run Rls 5.5 software you must
upgrade RAM to 1 GB 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 1 Gbyte of RAM (see *Signaling Server: Installation and Commissioning* (NN43001-312)) and restart the Signaling Server Install Tool again.

The system verifies the file systems.

- If the hard drive of the Signaling Server is not partitioned, the file systems verification process fails. Upon failure, the menu in Figure 67 appears.

Figure 67
File systems verification failure

```
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 partition and initialize the hard disk, and to reboot the Signaling Server.

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 66 on page 185) reappears. Go back to beginning of Step 2.. If the hard drive of the Signaling Server is partitioned, the following system messages appear.

```
Filesystems verification succeeded.
```

c. Confirm or enter the date and time (Figure 68 on page 187).

Figure 68
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: FRIDAY 01-04-2006
Enter new date (dd mm yyyy): 04 04 2006
Date is set to: MONDAY 04-04-2006
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:
MONDAY 04-04-2005, 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 69 on page 188). Enter **a** to continue the installation.

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

Figure 69
System Summary

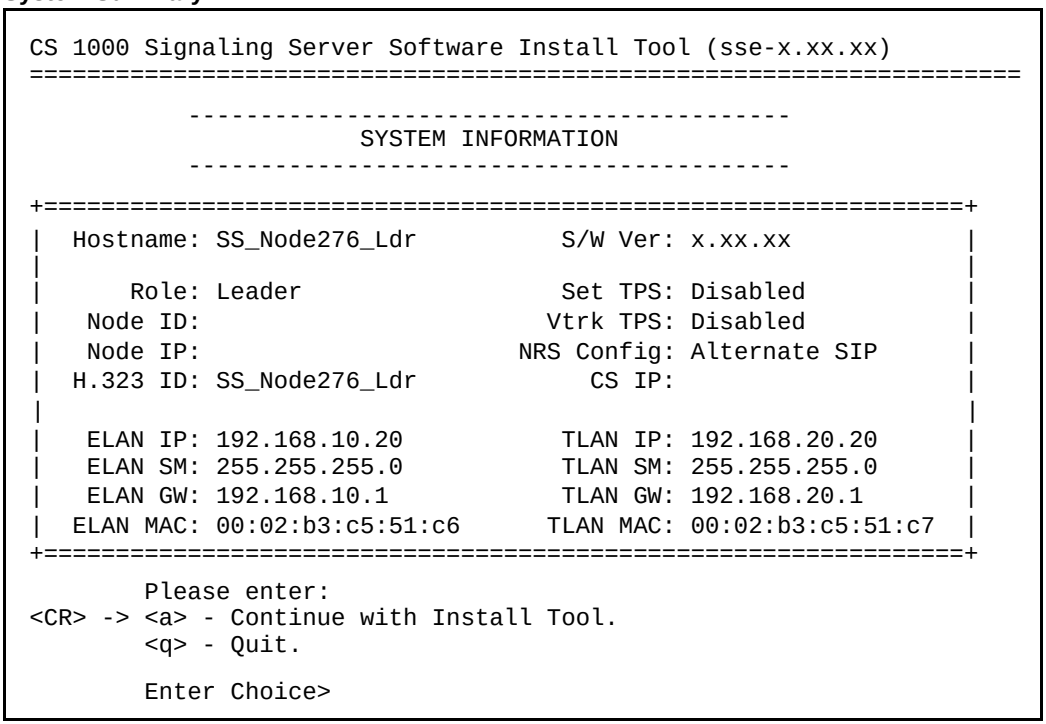


Figure 70
Install Tool Main Menu

```
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>
```

4 At the Main Menu (Figure 70), 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 Dependency Lists installation screen appears (Figure 71).

Figure 71
Dependency lists installation

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


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>
```

5 Press <CR> or enter y to install the dependency lists. The Installation Status Summary screen appears (Figure 72 on page 190):

Figure 72
Installation Status

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

+=================+========+========+=========================================+
|     Option      | Choice | Status |                 Comment                 |
+=================+========+========+=========================================+
| Software        |  yes   |        | new install x.xx.xx                     |
+-----------------+--------+--------+-----------------------------------------+
| Dependency Lists|  yes   |        | copy ALL                                |
+-----------------+--------+--------+-----------------------------------------+
| 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>
```

6 Enter **y** to start the installation. The screens shown in Figures 73 to 79, which start on page 191, appear.

Figure 73
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 74
Software installation 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 75
IP Phone firmware

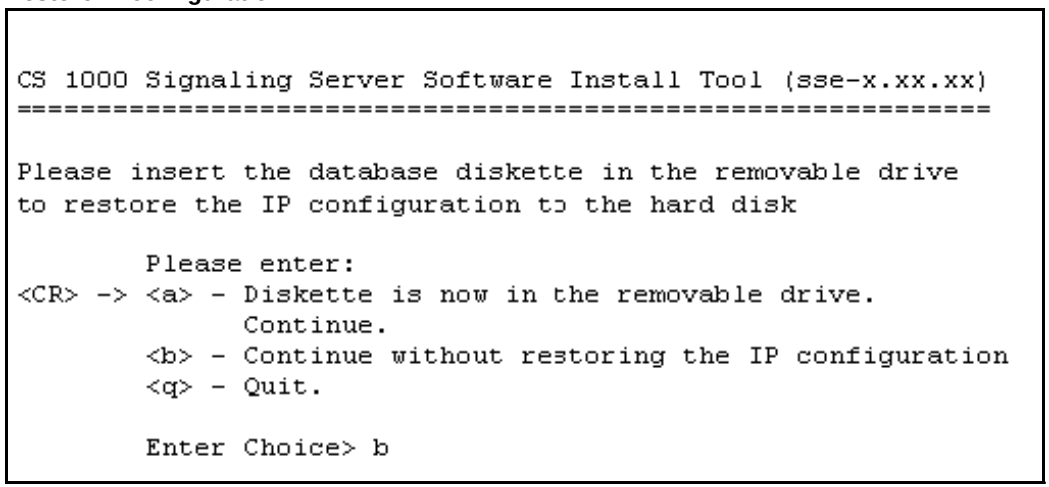
```
CS 1000 Signaling Server Software Install Tool (sse-x.xx.xx)
================================================================================

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 76
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".
```

7 After the Signaling Server software and system components are installed, the Restore IP configuration screen appears (Figure 77 on page 193).

Figure 77
Restore IP configuration



8 Do one of the following:

- If you are migrating a Leader Signaling Server (see "Signaling Server migration" in *Signaling Server: Installation and Commissioning* (NN43001-312),insert the Removable Media Device (RMD) into the appropriate drive, and press <CR> or enter a to restore the IP configuration data. After the restore is complete, the following system message appears:

  ```
  Done copying IP configuration to disk
  ```

  The IP Telephony parameter confirmation screen appears (Figure 78 on page 194). Go to step 12 on page 217.

Figure 78
IP telephony parameter confirmation

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

You have entered the following parameters for this Leader SS :
(Press <a>-<l> to correct, <y> to proceed, <n> to reconfigure all.)

        Please enter:
<CR> -> <y> - Yes, these parameters are correct.
        <n> - Re-enter all of the parameters

        <a> - Node ID           : 9
        <b> - Hostname          : CS1000E_PIV
        <c> - ELAN IP           : 192.167.102.4
        <d> - ELAN subnet mask  : 255.255.255.0
        <e> - ELAN gateway IP   : 192.167.102.1
        <f> - TLAN IP           : 192.167.103.2
        <g> - TLAN subnet mask  : 255.255.255.0
        <h> - TLAN gateway IP   : 192.167.103.1
        <i> - Node IP           : 192.167.103.3
        <j> - Call Server IP    : 192.167.102.3
              NRS configuration : Primary GK + SIP
        <k> - Primary NRS IP    : 192.167.103.2
        <l> - Alternate NRS IP  :

        Enter Choice>
```

9 If you are installing a new Signaling Server, or you are migrating a Follower or Standalone Signaling Server (see "Signaling Server migration" in *Signaling Server: Installation and Commissioning* (NN43001-312)), select b to bypass the restoration of IP configuration data. The Signaling Server role selection screen appears (Figure 79 on page 195).

Figure 79
Signaling Server role selection

```
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 Signaling Server as Leader or Follower. See Figure 79 on page 195.

- 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. The Follower Signaling Server configuration screen appears (Figure 80 on page 196). Go to step 10 on page 214.

Figure 80
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
```

- 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. The Application configuration screen appears (Figure 81 on page 196).

Figure 81
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 Configure the application configuration for this Signaling Server. See Figure 81 on page 196.

- If the IP Phone 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 have 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* (NN43001-332)).
  - 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.

Depending on the application configuration selected, either the NRS - Coresident Signaling Server screen or the NRS - Standalone Signaling Server screen appears.

Figure 82
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 83
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 Network Routing Service (NRS) to be provided by this Signaling Server. See Figure 82 on page 197 for a co-resident Signaling Server or Figure 83 on page 198 for a stand-alone Signaling Server.

- Enter **d** if this Signaling Server is configured as a Coresident Leader and is not providing an NRS. Go to step 13.
- Press <CR> or enter **a** if this Signaling Server is to provide an H.323 Gatekeeper and a SIP Redirect/Proxy Server.
- Enter **b** if this Signaling Server is to provide only an H.323 Gatekeeper.
- Enter **c** if this Signaling Server is to provide only a SIP Redirect/Proxy Server.Refer to *Network Routing Service Installation and Commissioning* (NN43001-564) for more information on the NRS.

Depending on the application configuration selected, either the NRS type: Coresident Signaling Server screen or the NRS type: Standalone Signaling Server screen appears.

Figure 84
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 85
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 Select the type of NRS to be provided by this Signaling Server. See Figure 84 for a co-resident 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 Fail-safe NRS, enter **c**.

Refer to *Network Routing Service Installation and Commissioning* (NN43001-564) for more information on the NRS.

Depending on whether the Signaling Server is configured as Leader or Standalone, either the Leader Signaling Server configuration screen (Figure 86) or the Standalone Signaling Server configuration screen (Figure 87) appears.

Figure 86
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 87
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 data networking and IP telephony parameters for the Signaling Server, as prompted. The IP information applies to a temporary IP Telephony node, to ensure that the existing node is not affected. The entry of data networking and IP telephony parameters also preconfigures the IP Telephony node files. After the Signaling Server software installation, the node files are imported into Element Manager for further configuration (see "Importing IP Telephony nodes" in *Signaling Server: Installation and Commissioning* (NN43001-312)).

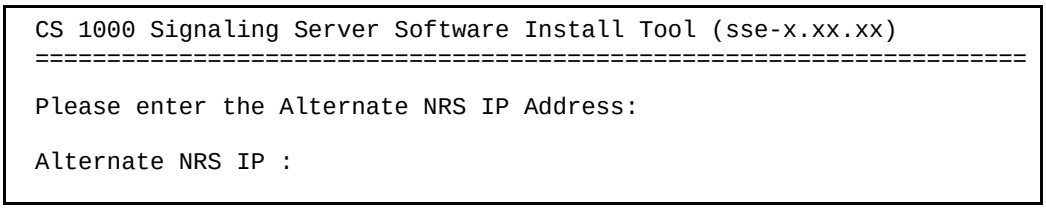
- If this is a Leader Signaling Server, enter the parameters for the Node, ELAN network interface, TLAN network interface, and Call Server as required.
  - — If installing the Signaling Server at an office that is not a branch office, enter the ELAN network interface IP address of the Call Server.
  - — 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. Then go to step 16 on page 203.
- If this is a stand-alone Signaling Server and not associated with a Call Server (that is, **b** was selected in step 11 on page 197), enter the TLAN subnet parameters as required. The Call Server IP address is automatically set to 0.0.0.0.

  Depending on whether the Signaling Server is configured as Primary, Alternate, or Standalone, either the Primary NRS IP address screen, the Alternate NRS IP address screen, or both (in succession) appear. Both screens appear in succession for a Standalone Signaling Server.

Figure 88
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 89
Alternate NRS IP address



15 Enter the Primary NRS IP address or the Alternate NRS IP address, depending on the option entered in step 12 on page 198 or step 13 on page 199.

- If **a** was entered in step 13, you can enter the address of the Alternate NRS if you know it, but it is not required. See.
- If **b** was entered in step 13, enter the address of the Primary NRS..
- If **c** was entered in step 13:
  - — Enter the address of the Primary NRS..
  - — Enter the address of the Alternate NRS.
- If **d** was entered in step 12:
  - — Enter the address of the Primary NRS (optional).
  - — If you did enter the address of the Primary NRS, enter the address of the Alternate NRS (also optional).

The Gatekeeper configuration can be updated later using Element Manager.

The IP Telephony parameter confirmation screen appears (Figure 90).

Figure 90
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>
```

16 Enter <CR> or **y** to confirm the parameters.

The example in Figure 90 on page 203 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 configuration screen for the Follower Signaling Server displays only the value for the Hostname parameter; all other values are blank.
- The configuration 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.

After you confirm the IP configuration, the following system messages appear:

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

Wrote config file "/u/config/bootp.tab".

Wrote config file "/boot/nvram.sys".

Wrote config file "/u/config/config.ini".

Wrote config file "/u/config/nrsconf.xml".
```

Note: You must configure the ELAN network interface MAC address for the newly installed Signaling Server in the Element Manager node configuration web page.

17 To complete the installation, the Installation Status Summary screen appears as shown in Figure 91 on page 204.

Figure 91
Installation Status Summary

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

+=================+========+========+=======================================+
|      Option     | Choice | Status |                Comment                |
+=================+========+========+=======================================+
| software        |  yes   |   ok   | new install x.xx.xx                   |
+-----------------+--------+--------+---------------------------------------+
| Dependency Lists|  yes   | ignore | copy NONE                             |
+-----------------+--------+--------+---------------------------------------+
| firmware        |  yes   |   ok   | copy Ixxxx version x.xx               |
| firmware        |  yes   |   ok   | copy Ixxxx version x.xx               |
| firmware        |  yes   |   ok   | copy PhaseX IP Firmware version x.xx  |
| firmware        |  yes   |   ok   | copy Ixxxx IP Firmware version x.xx   |
| firmware        |  yes   |   ok   | copy Ixxxx IP Firmware version x.xx   |
| firmware        |  yes   |   ok   | copy Ixxxx IP Firmware version x.xx   |
| firmware        |  yes   |   ok   | copy Ixxxx 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           |
| loadware        |  yes   |   ok   | copy IP Line x.xx.xx for MC32S        |
+-----------------+--------+--------+---------------------------------------+
| configuration   |  yes   |   ok   | set as Leader                         |
+-----------------+--------+--------+---------------------------------------+

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

18 Press <CR> to exit to the Main Menu (see Figure 92 on page 205). Enter q at the Main Menu to quit the installation process. Figure 93 on page 205 appears. Enter q again.

Figure 92
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>
```

Figure 93
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
```

19 Remove the Signaling Server Software CD or the Signaling Server Software CF Card (as appropriate) from the RMD drive of the Signaling Server and enter q to close/terminate the Installation Tool and reboot the system. The following system messages appear:

```
Removing temporary file "/u/disk.sys".

Rebooting system ....
```

First boot of a new Nortel CP PM Signaling Server

Nortel CP PM Signaling Servers have CS 1000 Release 5.5 software, applications, operating system, and web files preloaded on the hard drive when they are shipped. On the first boot of a Nortel CP PM Signaling Server, the Signaling Server Software Installation Tool prompts you to enter basic system configuration parameters.

Before you begin

Before booting the new Nortel CP PM Signaling Server for the first time and entering basic system configuration parameters, you must perform the following tasks:

- Install and connect the Signaling Server (refer to “Installing the CP PM Signaling Server hardware” on page 171).
- Obtain the network and IP Telephony data for the Signaling Server from your Planning and Engineering group:
  - 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 Commissioning* (NN43001-313)

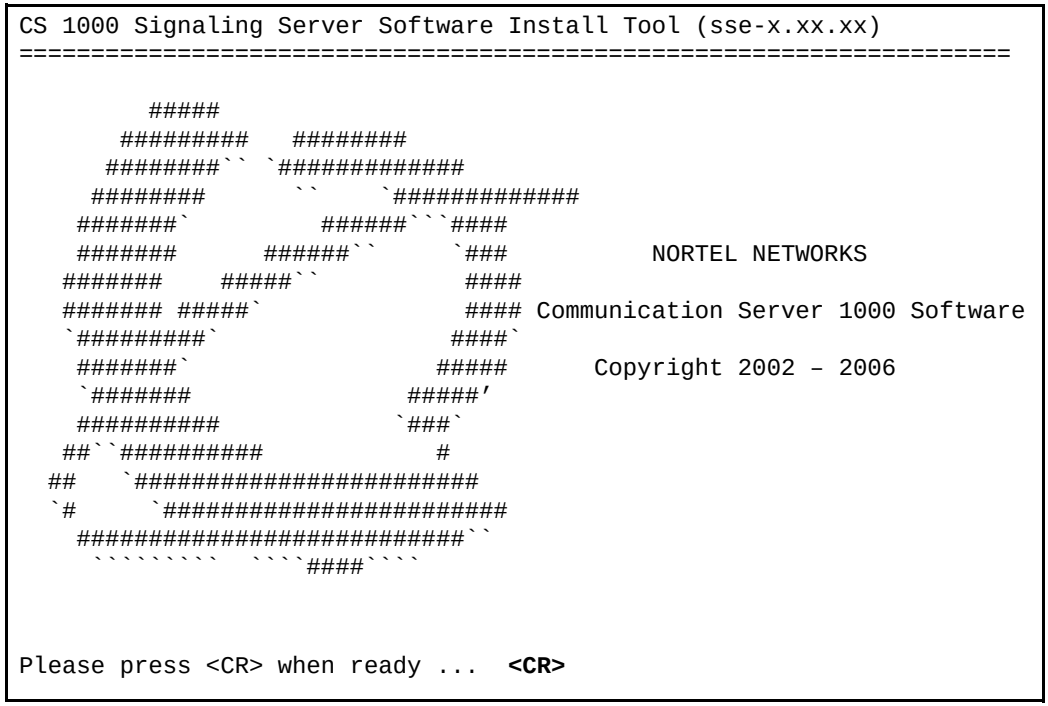
– NRS role, if applicable. Refer to *IP Peer Networking: Installation and Commissioning* (NN43001-313)

Entering basic system parameters

Procedure 36
Entering basic system configuration parameters

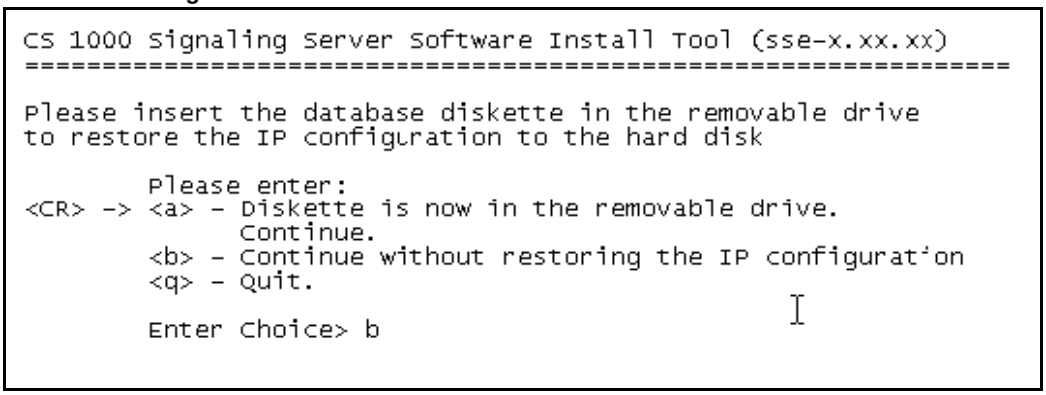
1 Press the RST button on the faceplate of the CP PM Signaling Server. This cold-reboots the Signaling Server and triggers the Install Tool on the hard drive (see Figure 94)

Figure 94
Install Tool banner screen



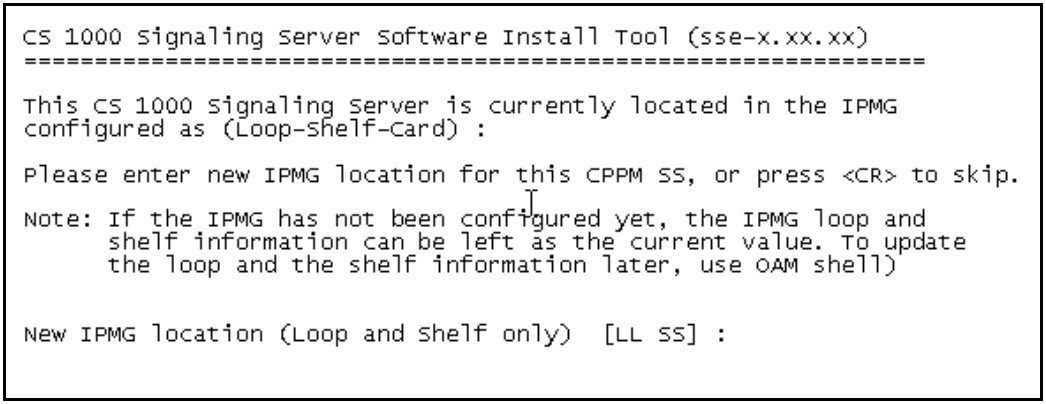
2 Press <CR> to continue with the configuration. The Restore IP configuration screen appears (Figure 95).

Figure 95
Restore IP configuration



3 Enter b at the prompt to bypass the restore of IP configuration data. The CP PM board location screen appears (Figure 96).

Figure 96
CP PM board location



4 Enter the location (loop and shelf) of the IPMG board.

Note: If the IPMG has not been configured yet, the loop and shelf information can be left at the current value. The IPMG board location can be updated using OAM shell commands after the Signaling Server is configured.

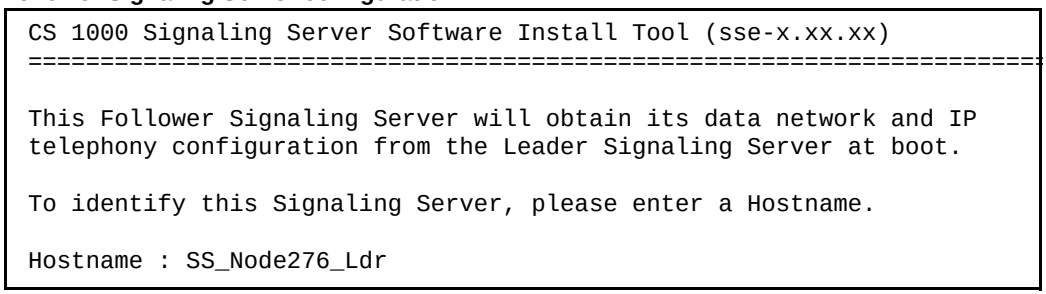
5 The Leader/Follower configuration screen appears (Figure 97).

Figure 97
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>
```

6 Configure the Signaling Server as a Leader or Follower. If there is already a Leader Signaling Server in the IP Telephony node, enter b at the prompt to configure this Signaling Server as Follower. The Follower Signaling Server configuration screen appears (Figure 98). Go to step 15 on page 202.

Figure 98
Follower Signaling Server configuration



7 If there is not a Leader Signaling Server in the IP Telephony node already, or if the Signaling Server is to be a stand-alone Signaling Server, press <CR> or enter a at the prompt to configure this Signaling Server as Leader.

8 Configure the application configuration for this Signaling Server. See Figure 99.

- If you are planning on enabling the IP Phone TPS, Virtual Trunk TPS, and optional Network Routing Service (NRS) applications on this Signaling Server, enter **a** at the prompt to configure this Signaling Server as a co-resident Signaling Server.
- If you are planning on enabling only the NRS 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 IP Phone TPS and Virtual Trunk TPS in Element Manager (refer to *Element Manager: System Administration* (NN43001-332)).
  - 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 Standalone Signaling Server - NRS.

Figure 99
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>
```

Depending on the application configuration selected, either the NRS type: co-resident Signaling Server screen (Figure 100 on page 212) or the NRS type: standalone Signaling Server screen (Figure 101 on page 212) appears.

Figure 100
Standalone Signaling Server - NRS

```
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>
```

Figure 101
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>
```

9 Select the type of NRS to be provided by this Signaling Server. See Figure 101 for a co-resident Signaling Server. See Figure 100 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 Fail-safe NRS, enter **c**.

Refer to *IP Peer Networking: Installation and Commissioning* (NN43001-313) for more information on the NRS.

Depending on whether the Signaling Server is configured as Leader, Follower or Stand-alone, the Leader Signaling Server configuration screen (Figure 102), the Follower Signaling Server configuration screen (Figure 103) or the Stand-alone Signaling Server configuration screen (Figure 104) appears.

Figure 102
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 103
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
```

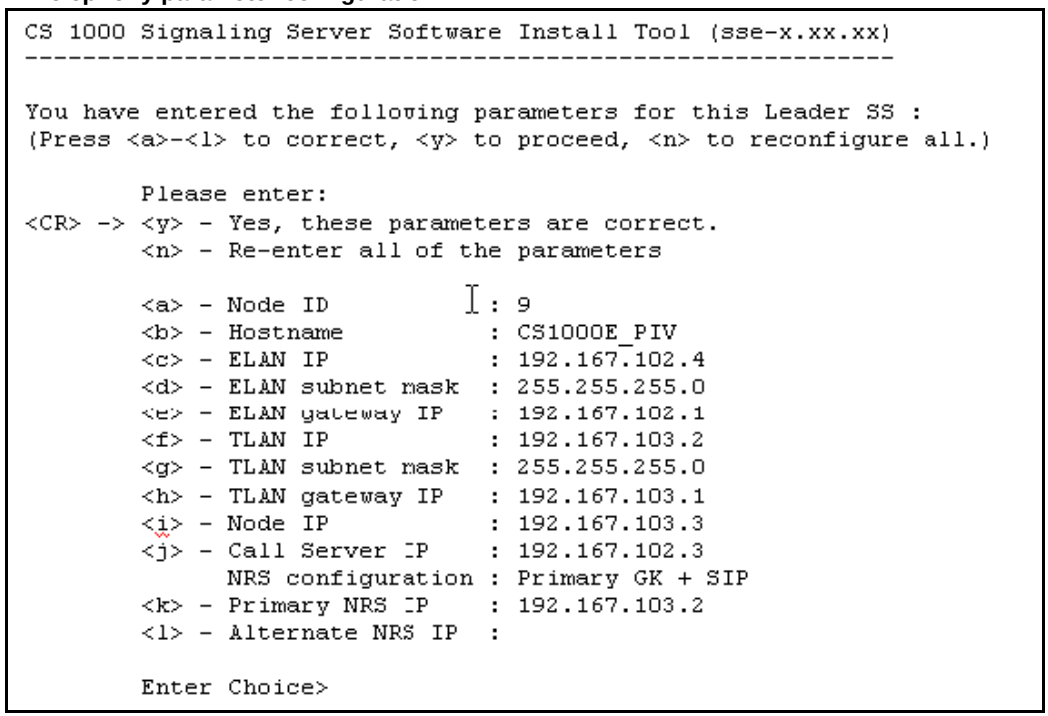
Figure 104
Stand-alone Signaling Server configuration

```
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
```

10 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 86 on page 200. 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. The IP telephony parameter configuration screen appears (Figure 105 on page 215).

Figure 105
IP Telephony parameter configuration



- Proceed to step 16 on page 203.
- If this is a stand-alone Signaling Server and not associated with a Call Server (that is, **b** was selected in step 11 on page 197), enter the TLAN subnet parameters as required. The Call Server IP address is automatically set to 0.0.0.0.

The IP information applies to a temporary IP Telephony node. This ensures that the existing node is not impacted. This also preconfigures the IP Telephony node files. In *Signaling Server: Installation and Commissioning* (NN43001-312), the node files are imported to Element Manager for further configuration.

Depending on whether the Signaling Server is configured as Primary, Alternate or Stand-alone, the Primary NRS IP address screen (Figure 106), the Alternate NRS IP address screen (Figure 107), or both in succession (for a Stand-alone Signaling Server) appear.

Figure 106
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 107
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 :
```

11 Enter the Primary NRS IP address or the Alternate NRS IP address, depending on the option entered in step 12 on page 198 or step 13 on page 199.

- If **a** was entered in step 13, you can enter the address of the Alternate NRS if you know it, but it is not required. See Figure 89 on page 202.
- If **b** was entered in step 13, enter the address of the Primary NRS. See Figure 88 on page 201.
- If **c** was entered in step 13:
  - — Enter the address of the Primary NRS. See Figure 88.
  - — Enter the address of the Alternate NRS. See Figure 89.
- If **d** was entered in step 12:
  - — Enter the address of the Primary NRS (optional).
  - — If you did enter the address of the Primary NRS, enter the address of the Alternate NRS (also optional).

The Gatekeeper configuration can be updated later using Element Manager. The IP telephony parameter configuration screen appears (Figure 108).

Figure 108
IP Telephony parameter configuration

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

You have entered the following parameters for this Leader SS :
(Press <a>-<l> to correct, <y> to proceed, <n> to reconfigure all.)

        Please enter:
<CR> -> <y> - Yes, these parameters are correct.
        <n> - Re-enter all of the parameters

        <a> - Node ID           : 9
        <b> - Hostname          : CS1000E_PIV
        <c> - ELAN IP           : 192.167.102.4
        <d> - ELAN subnet mask  : 255.255.255.0
        <e> - ELAN gateway IP   : 192.167.102.1
        <f> - TLAN IP           : 192.167.103.2
        <g> - TLAN subnet mask  : 255.255.255.0
        <h> - TLAN gateway IP   : 192.167.103.1
        <i> - Node IP           : 192.167.103.3
        <j> - Call Server IP    : 192.167.102.3
              NRS configuration : Primary GK + SIP
        <k> - Primary NRS IP    : 192.167.103.2
        <l> - Alternate NRS IP  :

        Enter Choice>
```

12 Press <CR> or enter y to confirm all parameters entered, n to re-enter all parameters, or a letter **a** through **l** to change the value of the corresponding system parameter. The configuration screens for a Follower and Standalone Signaling Server - NRS 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.

The following message is displayed:

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

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

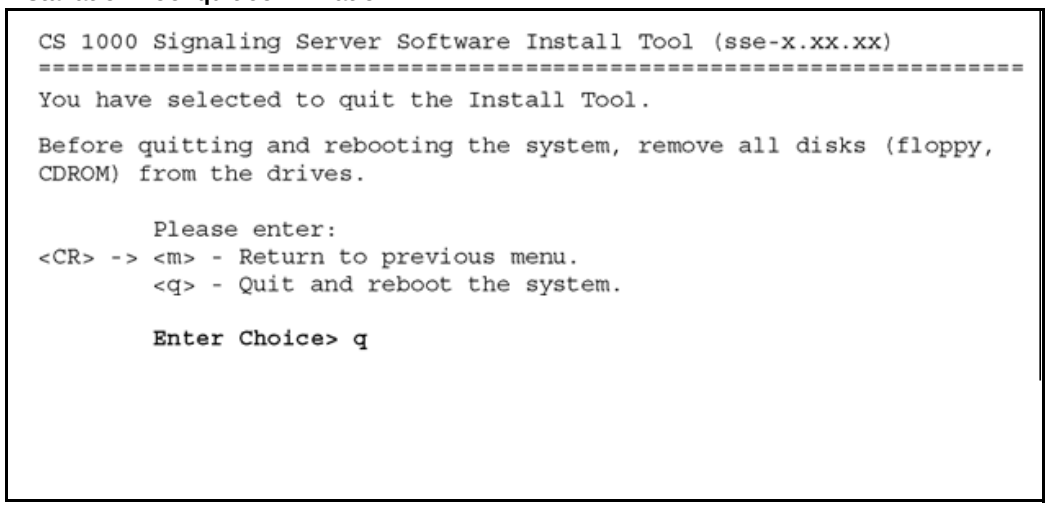
The Install Tool Main Menu screen appears (Figure 109):

Figure 109
Install tool

```
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, Internet Telephone f/w, Voice Gateway Media
             Card l/w, basic Signaling Server configuration).
        <b> - To install/upgrade Signaling Server software only.
        <c> - To copy Internet Telephone firmware only.
        <d> - To copy Voice Gateway Media Card loadware only.
        <e> - To perform basic Signaling Server configuration only.
        <f> - To selectively change initial system parameters.
        <g> - To change board location information (CPPM only).
        <t> - To go to the Tools Menu.
        <q> - Quit.

        Enter Choice> q
```

13 Enter **q** to quit the Install Tool. Confirm to reboot the system. The Installation Tool quit confirmation screen appears (Figure 110).

Figure 110
Installation Tool quit confirmation



14 Enter **q** to close/terminate the Installation Tool and reboot the Signaling Server.

Adding a follower Signaling Server

After configuration 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. Do not wait for this response. Complete Procedure 37, “Adding a Follower Signaling Server to an IP Telephony node,” on page 220 .

Procedure 37
Adding a Follower Signaling Server to an IP Telephony node

Note: The first time the Follower Signaling Server is installed, it cannot obtain the system login and password, and does not have the current CONFIG.INI file with the Call Server IP address, therefore the FTP fails. In subsequent Follower installations, FTP succeeds.

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 can be required, instead of the Node IP address, to access the Element Manager login Web page in secure environments.

3 The Element Manager **Login** Web page opens.

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

— A valid User Id and Password combination is one that is defined on the Call Server.

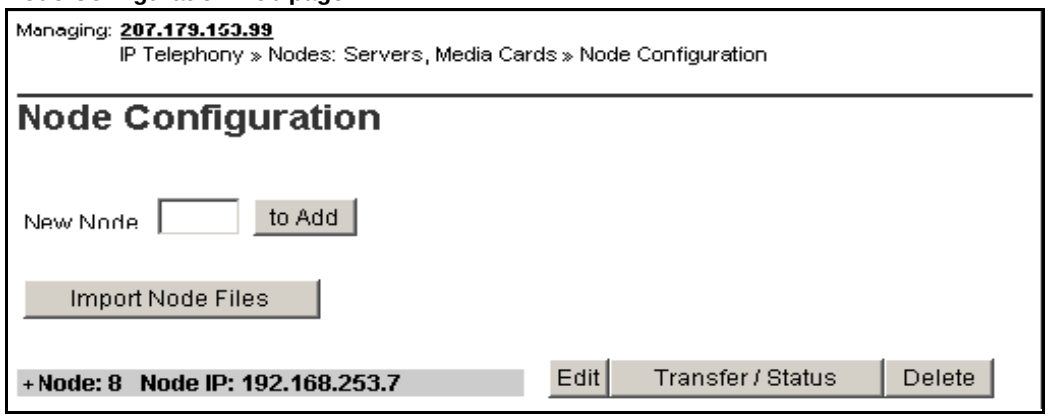
The IP Address of the Call Server appears in the Call Server IP Address field.

b. Click **Login**.

The System Overview Web page appears.

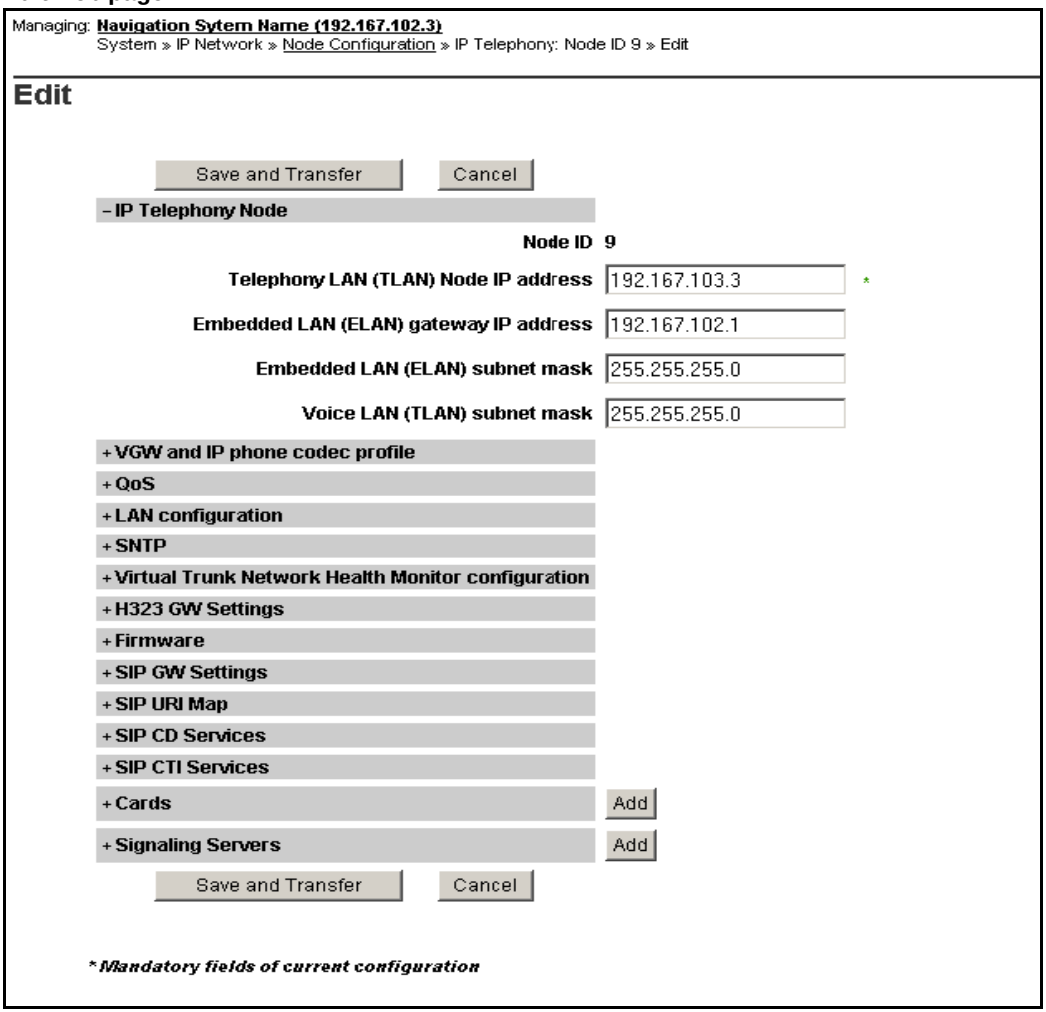
4 Select **IP Network** > **Nodes: Servers**, **Media Cards** from the navigator. The Node Configuration web page opens, as shown in Figure 111.

Figure 111
Node Configuration web page



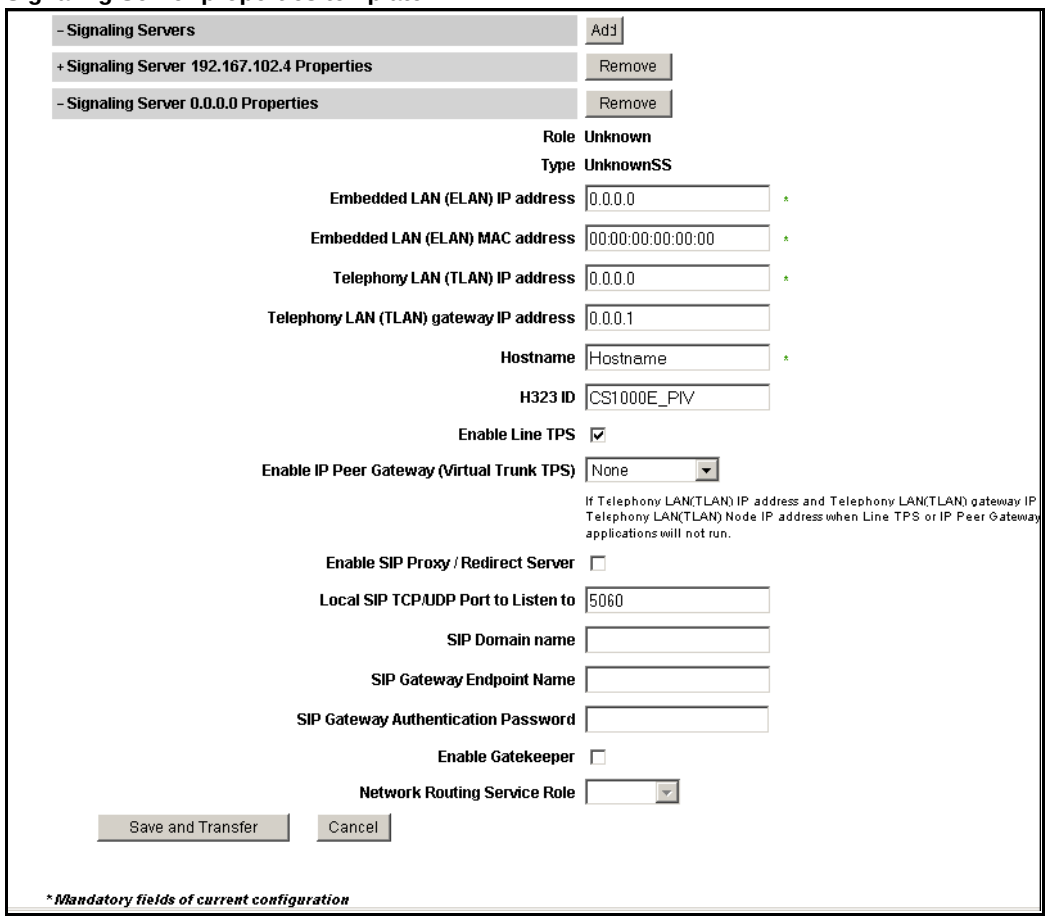
5 Click Edit next to the node to which the Follower Signaling Server is to be added. The Edit web page opens, as shown in Figure 112.

Figure 112
Edit web page



6 Click Add next to Signaling Servers.The section expands to show a list of Signaling Servers and a blank template for entering Signaling Server xxx.xxx.xxx.xxx properties, as shown in Figure 113.

Figure 113
Signaling Server properties template



7 Enter the information corresponding to the Follower Signaling Server. The Role field will automatically revert to Follower once the Follower Signaling Server has been added.

8 Click Save and Transfer to transfer the updated IP Telephony node information to the other elements of the node. Refer to Transferring IP Telephony files, and *IP Line: Description, Installation, and Operation* (NN43001-500) for detailed instructions on transferring IP Telephony node information.

Unpacking Help files for Virtual Terminal Emulator

Help files for the Virtual Terminal Emulator (VTE) component of Element Manager are copied to the Signaling Server as compressed files during installation of the Signaling Server software.

Unpacking the Help files is optional. However, they can be unpacked at any time after the Signaling Server software is installed. To unpack the files, refer to *Signaling Server: Installation and Commissioning* (NN43001-312).

IMPORTANT!

Unpacking the Help files takes approximately 20 to 30 minutes. Nortel recommends that you unpack the files during a service outage.

Refer to *Communication Server 1000 Element Manager: System Administration* (553-3001-332) for more information on Element Manager and the Virtual Terminal Emulator.

Logging in to the Signaling Server

Use Procedure 38 on page 225 to log in to the vxWorks™ shell to access the Signaling Server from a maintenance terminal.

Procedure 38
Logging in to the Signaling Server

Before you begin, make sure the DTE–DTE 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. Refer to *Signaling Server: Installation and Commissioning* (NN43001-312).

   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 by doing one of the following:.

   - 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.
   - If the Signaling Server is not connected to the Call 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 **`admin1`** or **`admin2.`**

       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 Commissioning* (NN43001-312)).

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 39
Verifying the Signaling Server Ethernet connection

1. Log in to the Signaling Server, using Procedure 38 on page 225.
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.

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. Refer to *Communication Server 1000E: Installation and Configuration* (553-3041-210), *Communication Server 1000M and Meridian 1: Large System Installation and Configuration* (553-3021-210), or *Communication Server 1000M and Meridian 1: Small System Installation and Configuration* (553-3011-210) for the procedure appropriate to the system. After provisioning, the telephones can call each other.

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:

Configuring login IDs and passwords

Note: You must be logged in as a user with admin2 level priveleges in order to change the default username and password.

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 40 to configure login IDs and passwords.

Procedure 40
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:

```
PSWD_COMP
<enter to accept default or set to required setting>

FPC
<enter to accept default or set to required setting>

LOUT
<enter to accept default or set to required setting>

FLTH
<enter to accept default or set to required setting>

LOCK
<enter to accept default or set to required setting>

FLTA
<enter to accept default or set to required setting>
```

AUDT
<enter to accept default or set to required setting>

LLID
<enter to accept default or set to required setting>

4 Enter the command:

ACCOUNT_REQ **new**

5 Enter the command:

PWD_TYPE **pwd2** (pwd1, pwd2, lapw are options)

6 Enter the command:

USER_NAME **kattest** (username)

7 Enter the command:

PASSWORD (**userpassword**)

8 Enter the command:

CONFIRM (**confirm password**)

9 Enter the command:

ACCT **yes** (**yes** for pdt access, default for no pdt access

10 Enter the command:

PDT **pdt2** (pdt1 or pdt2)

11 Enter the command:

ACCOUNT_REQ **new**

12 Enter the command:

PWD_TYPE **lapw**

13 Enter the command:

PWTP **ovly**

14 Enter the command:

USER_NAME **kattest** (username)

15 Enter the command:

PASSWORD (**userpassword**)

16 Enter the command:

```
CONFIRM (confirm password)
```

17 Enter the command:

```
OVLA 10 11
```

18 Enter the command:

```
OVLA all
```

19 Enter the command:

```
OVLA
```

20 Enter the command:

```
Cust 0
```

21 Enter the command:

```
TEN
```

22 Enter the command:

```
CUST
```

23 Enter the command:

```
HOST
```

24 Enter the command:

```
MAT
```

25 Enter the command:

```
OPT
```

26 Enter the command:

```
PDT
PWD ACCOUNT SETTINGS SAVED
```

Enabling the multi-user option

Follow Procedure 41 to enable the multi-user option.

Procedure 41
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 ****
```

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 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 42 to configure pseudo-terminals.

Procedure 42
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:

CTYP **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 ********

Checking PTY status

Follow Procedure 43 to check the PTY status.

Procedure 43
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.

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 MGTDS and MG Conference loops. The Virtual Tone and Conference Circuits in the same SSC based MG 1000E must occupy contiguous double loops. For easy management, Nortel recommends to start the MGTDS and MG Conference loops from a loop number high enough (for example, 60) to leave enough superloop number for all MG 1000E superloops.

The Virtual Tone and Conference Circuits in the same MGC based MG1000E do not have to occupy contiguous double loops. The configuration of TDS loops and conference loops are separated, and the loop number for TDS and conference can be any number from 0-255. For example, on a CS1000E with 30 MG 1000Es, 2688 TDM sets, 15360 IP sets, and 3072 virtual trunks, assume that all the conference loops are defined on MGC based MG 1000Es and the conference ratio is 2.8%. By removing TDS/Conference pairs, eight super loops are saved. Assuming that a single 30 port TDS loop is sufficient per MG 1000E, the number of MG 1000Es can be increased to 40, and the TDM sets can be increased to 3840.

LD 17 – Add Virtual Tone and Conference loops.

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	CEQU	Common Equipment
...	...	
MGTDS	X	(x=superloop number)

LD 17 – Add Virtual Tone and Conference loops.

Prompt	Response	Comment
IPMG	a b	(a=loop of MG, b=shelf of MG)
MGCONF	X	(x=superloop number)
IPMG	a b	(a=loop of MG, b=shelf of MG)

Bandwidth Management Zones

For more information about configuring Bandwidth Management zones, see *Converging the Data Network with VoIP* (NN43001-260).

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.

Logging in to Element Manager

To log in to Element Manager, follow the steps in Procedure 44 on page 238. 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 44
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 114).

   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.

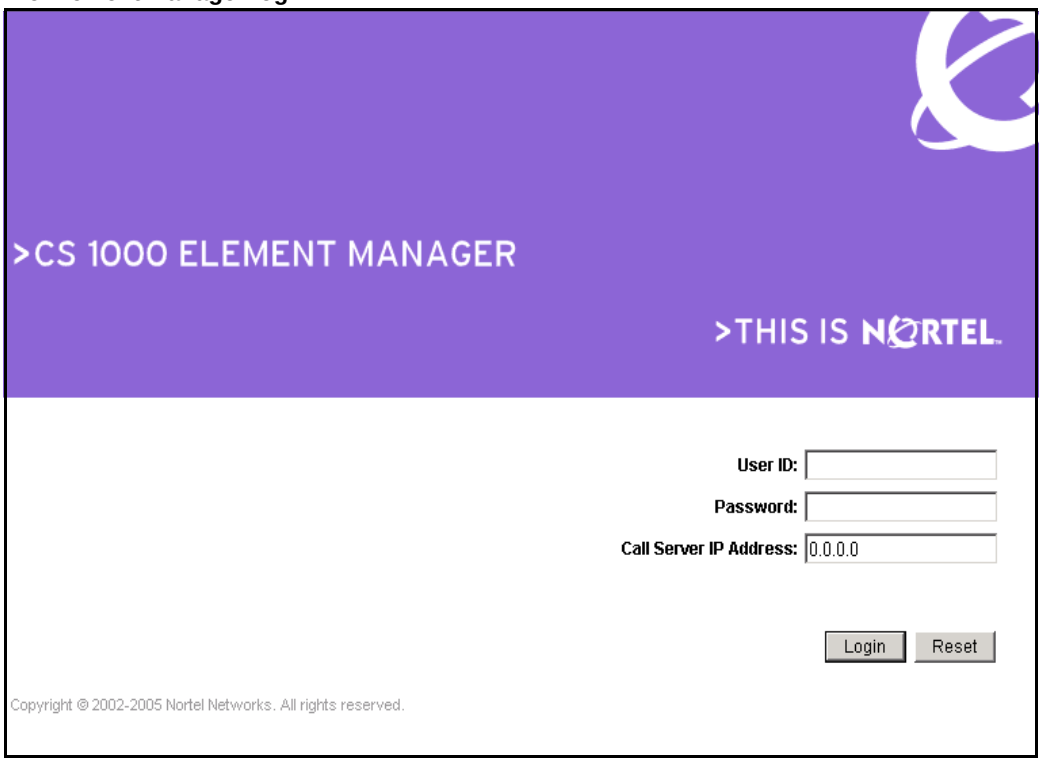
   a. Enter a valid **User ID** and **Password** combination.

   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 114
The Element Manager login



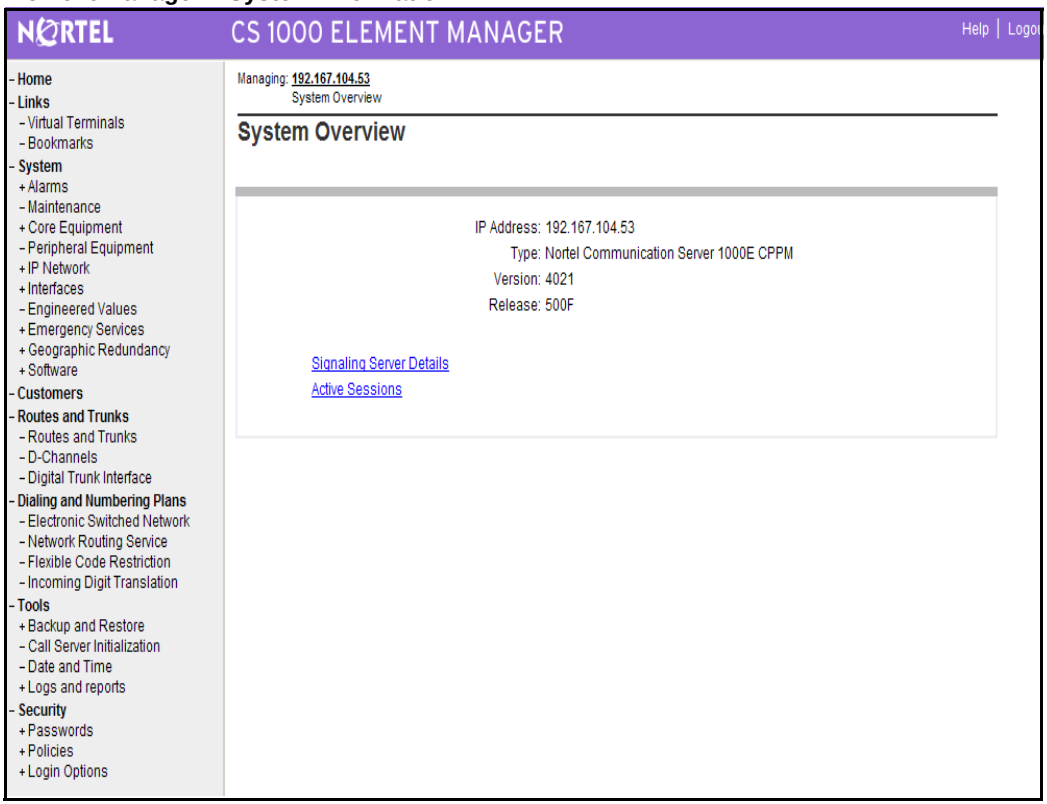
Importing preconfigured IP telephony files

Follow Procedure 45 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 45
Importing an existing node

Figure 115 displays the **Element Manager System Information** home page.

Figure 115
Element Manager – System Information



1 Select **System > IP Network > Nodes: Servers, Media Cards** from the navigator.

The **Node Configuration** 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 Configuration** web page.

The **Import Node Files** screen in Figure 116 on page 241 appears.

b. Enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 116
Import Node Files – Retrieve and upgrade configuration files

3 Click **Import**.

A success message appears.

4 Click **OK** to go to the next 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 46 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.

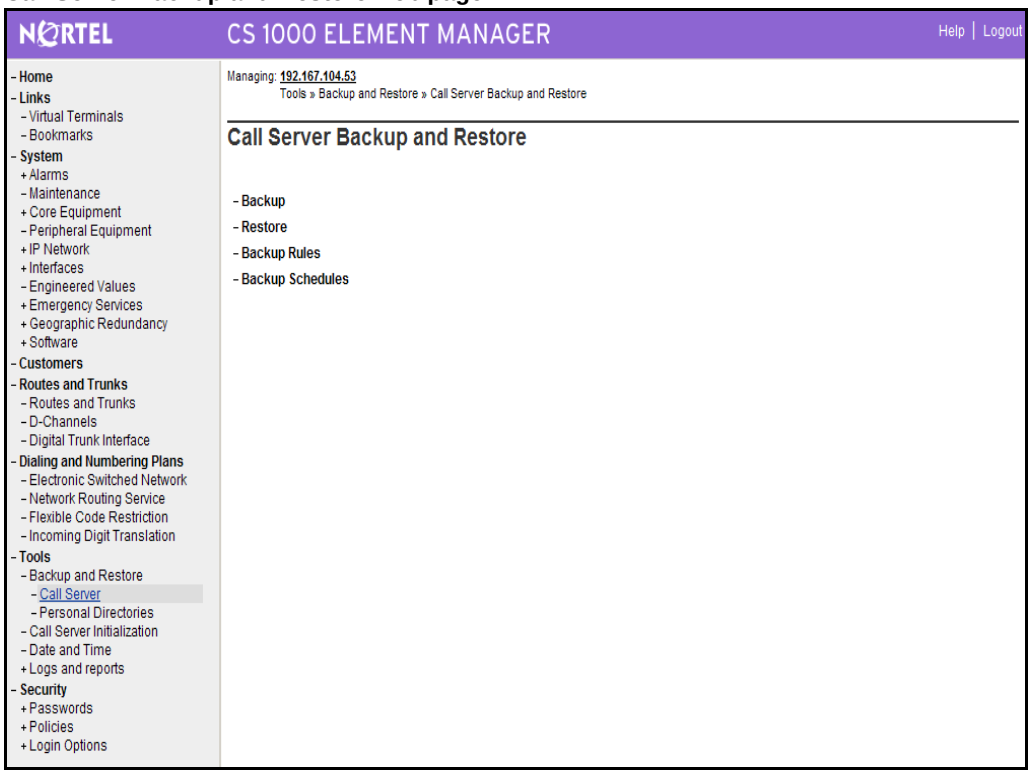
Procedure 46
Performing a datadump using Element Manager

From Element Manager (see Figure 114 on page 239 for details on logging in), do the following:

1 Choose **Tools> Backup and Restore > Call Server** from the navigator.

The **Call Server Backup and Restore** web page opens (see Figure 117 on page 243).

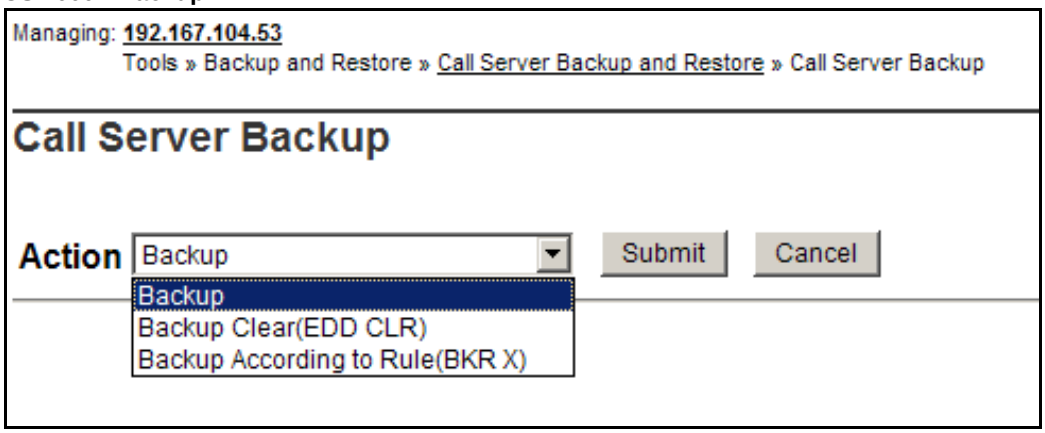
Figure 117
Call Server Backup and Restore web page



2 Select **Backup**.

The **Call Server Backup** web page appears (see Figure 118 on page 244).

Figure 118
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.

Configuring the IPMG

Contents

This section contains information on the following topics:

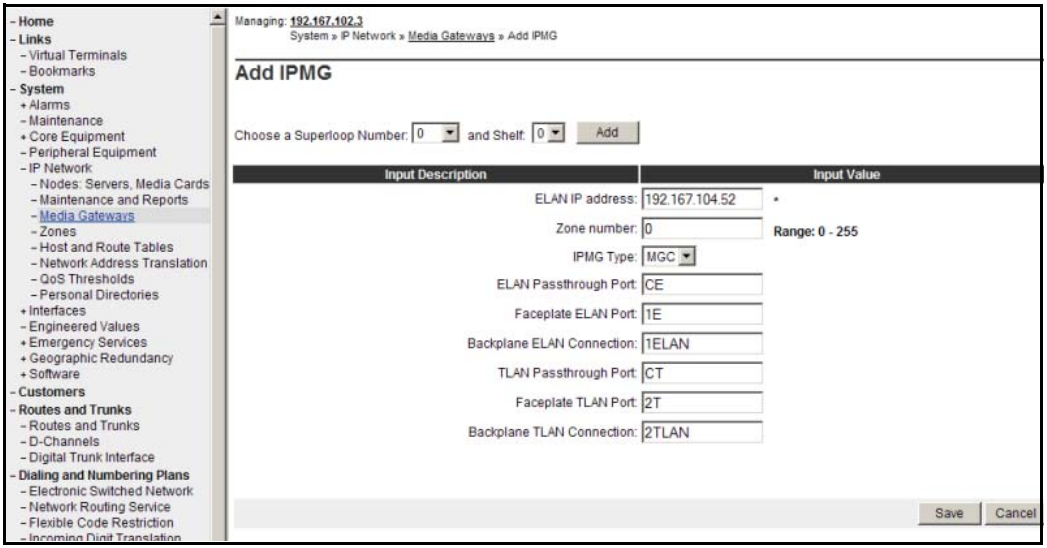
Configuring the IPMG in Element Manager

Procedure 47 on page 246 describes how to configure the IPMG in Element Manager.

Procedure 47
Configuring the IPMG (Element Manager)

1 In Element Manager, select **IP Network** > **Media Gateways**. Select the appropriate Superloop Number and Shelf. Click **Add**.

Figure 119
Add IPMG



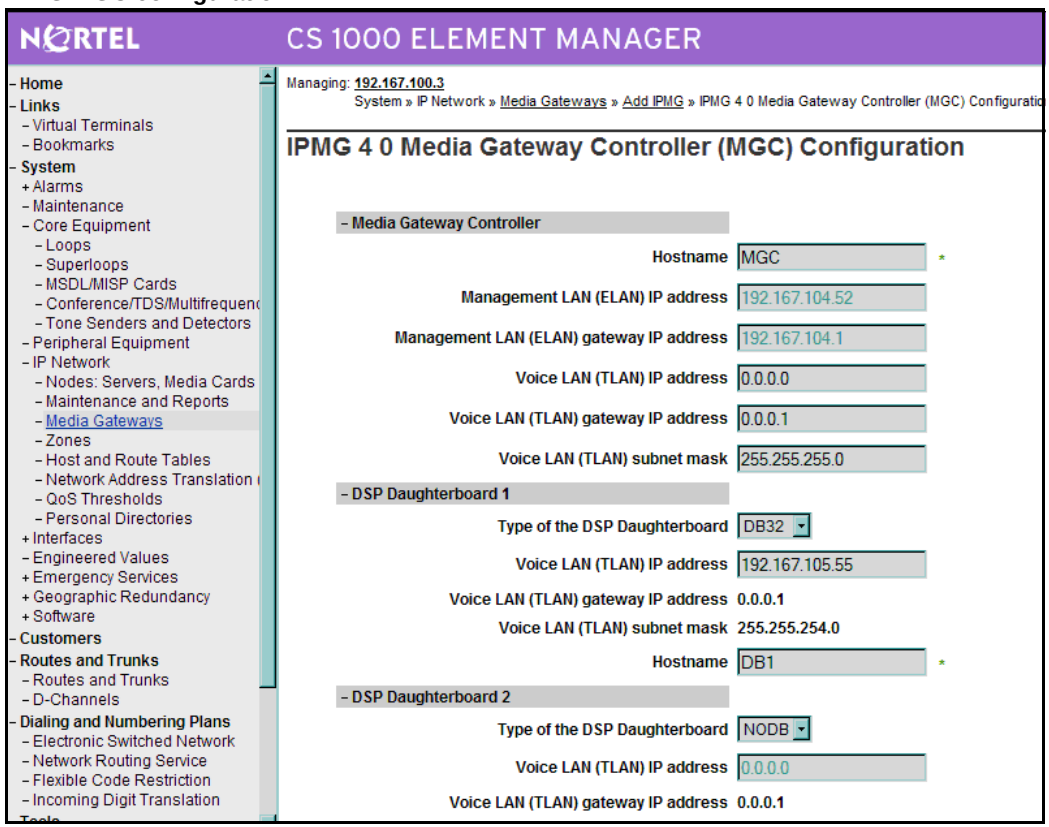
2 The preceding screen appears (see Figure 119). Enter the IP address, zone number, and the Media Gateway type (in this case, a Media Gateway Controller). Selecting “MGC” automatically fills in the remaining fields (“CE”, “E1”, “E”, “CT”, “T2”, and “T”). Click **Save**.

Note: The IP address entered here is the same IP address as the one configured on the MGC in an earlier procedure.

The following screen appears (Figure 120 on page 247):

3 Enter the Gateway IP addresses and Voice LAN IP addresses. If the MGC has DSP daughterboards connected, select the type and enter the IP addresses.

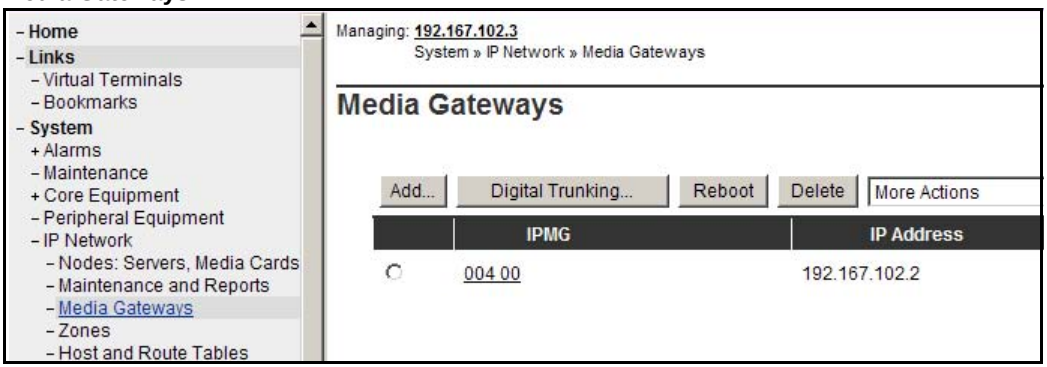
Figure 120
IPMG MGC configuration



4 Once configuration of the MGC is complete, Figure 121 on page 248 appears.

5 The Media Gateways screen lists the superloop and shelf numbers, IP address, zone, and type of the recently configured MGC. Click the radio-button next to the superloop. From the drop-down list select **Add VGW channels**.

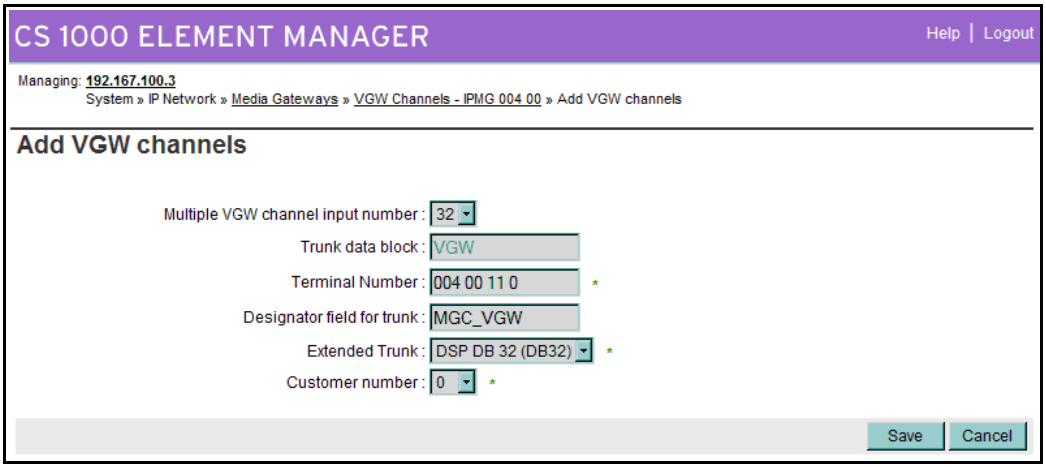
Figure 121
Media Gateways



The following screen appears (see Figure 122):

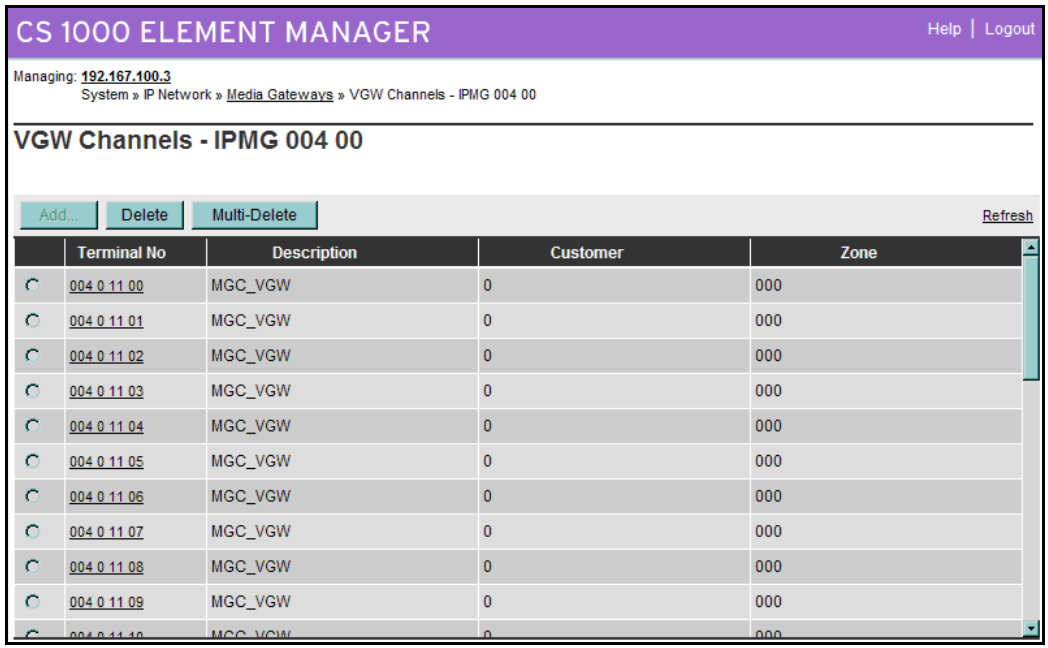
6 In this screen, select the number of required channels, the Terminal Number (the superloop and shelf numbers of the MGC, the card number, and the unit). Provide a name and the daughterboard and customer type. Click **Save**.

Figure 122
Add VGW channels



The following screen appears (Figure 123).The MGC has been added to the list.

Figure 123
VGW Channels - IPMG



Configuring conference TDS

Procedure 48 on page 250 describes how to configure conference TDS for an IPMG using the CLI. To configure conference TDS for IPMG using Element Manager see Procedure 49 on page 251.

Procedure 48
Configure conference TDS (CLI)

1 Enter LD 17.

```
>LD 17
 CFN000
 MEM AVAIL: (U/P): 99278047    USED U P: 4965412 26361
TOT: 104269820
 DISK SPACE NEEDED: 20 KBYTES
DCH                AVAIL:   255    USED:    0    TOT:   255
AML                AVAIL:    16    USED:    0    TOT:    16
 REQ  chg
TYPE cequ
MPED
TERM
REMO
TERD
REMD
TERQ
REMQ
DDCS
DTCS
XCT
MGTDS 126
IPMG x x
MGTDS
MGCONF 127
IPMG 0 0
MGCONF
MFSD
DTDT
DLOP
PRI2
APVL
DTI2
EXT0
EXT1
SYNM
MEM AVAIL: (U/P): 99277361    USED U P: 4966043 26416
TOT: 104269820
DISK SPACE NEEDED: 20 KBYTES
```

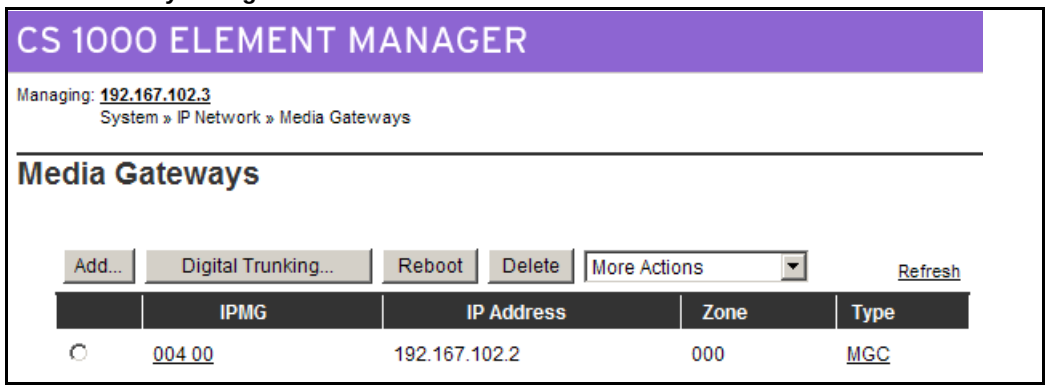
Procedure 49 describes how to configure conference TDS for IPMG using Element Manager.

Procedure 49
Configuring conference TDS (Element Manager)

1 In the Element Manager screen, select **IP Network** > **Media Gateways**. The Media Gateway Configuration page appears.

2 Select the **IPMG superloop** (see Figure 124). Click the **Digital Trunking** button.

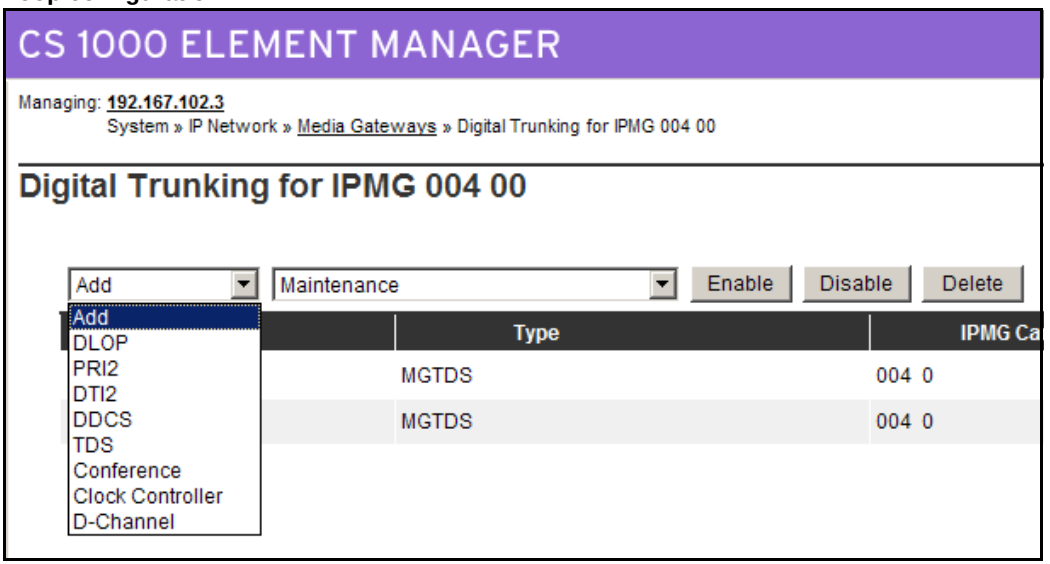
Figure 124
Media Gateway configuration



The loop configuration page appears.

3 From the drop down menu (see Figure 125 on page 252), select **TDS** from the first drop down box to add a TDS loop.

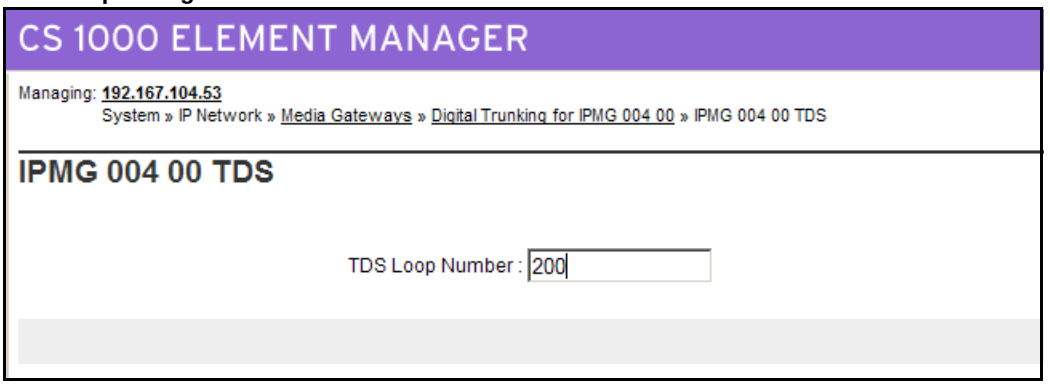
Figure 125
Loop configuration



The TDS loop configuration page appears (see Figure 126).

4 Enter the TDS loop number (0 – 255).

Figure 126
TDS Loop configuration



5 Click **Save**. It does not become available until a loop number has been entered and TAB has been used to move the cursor.

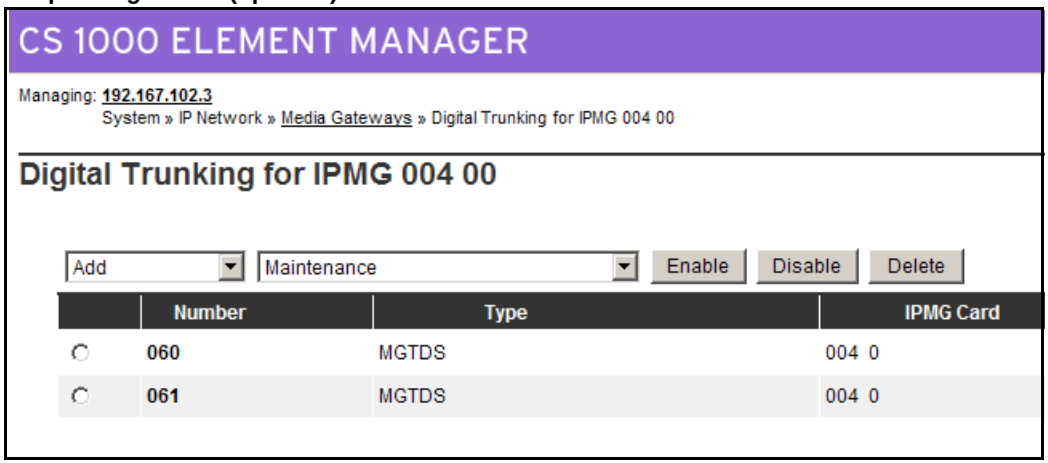
The following message box appears:

Figure 127
Confirmation

6 Click **OK** to complete the configuration.

The updated loop configuration page appears (see Figure 128). The new Conference loop is displayed.

Figure 128
Loop configuration (updated)



Configuring DSP Daughterboard Voice gateway channels

Procedure 50 describes how to configure DSP Daughterboard Voice gateway channels using the CLI. To configure DSP Daughterboard Voice gateway channels using Element Manager see Procedure 49 on page 251.

Procedure 50
Configure DSP Daughterboard Voice gateway channels (CLI)

1 Enter LD 14

```
>LD 14
REQ  new 32
TYPE vgw
TN  4 0 0 0
DES  db32
XTRK db32
CUST 0


NEW TRK    TN  004 0 00 00     RT  0     MB  0

MEM AVAIL: (U/P): 15721651    USED U P: 6241131 26590
TOT: 21989372
DISK SPACE NEEDED: 24 KBYTES
2MB BACKUP DISKETTE(S) NEEDED: 1  (PROJECTED LD43 - BKO)
TNS               AVAIL: 32751   USED:   16   TOT: 32767

...
>LD 20
REQ: prt
TYPE: vgw
TN   <enter>
CDEN <enter>
CUST <enter>
XTRK <enter>
DATE <enter>
PAGE <enter>
DES  DB32
TN   004 0 00 00  VIRTUAL
TYPE VGW
CUST 0
XTRK DB32
```

```
ZONE 004
...
```

Connecting an IR-8020M-101 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.

The CS 1000E system currently supports 2 terminal servers, the IR-8020M-101 (non-ROHS) and the MRV LX8020S-102AC-R (ROHS). This chapter contains information on connecting the IR-8020M-101. For information on connecting the MRV LX8020S-102AC-R, see “Connecting an MRV LX8020S-102AC-R Terminal Server” on page 271.

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 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 51: "Connecting a Terminal Server to the system" on page 260
- Procedure 52: "Configure IP address for the Terminal Server" on page 261

- Procedure 53: "Run telnet from PC" on page 262
- Procedure 54: "Accessing a CS 1000E from a PC through telnet Terminal Server" on page 263
- Procedure 55: "Configuring a transparent rlogin port" on page 264
- Procedure 57: "Accessing an MRV Console Port through the on-board modem" on page 268

Configuring a Terminal Server

Follow Procedure 51 to connect a Terminal Server with a CS 1000E system. Table 15 lists the MRV cables required to install the IR-8020M-101 Terminal Server in a CS 1000E system.

Table 15
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 16.

Table 16
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
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 51
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`

Configuring the Terminal Server IP address

Procedure 52
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

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 53
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".

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 54 to establish access to a Call Server from a PC through telnet Terminal Server. Use the same port number for each procedure step.

Procedure 54
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)

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 55 to configure a transparent rlogin port.

Procedure 55
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 17 for ZMODEM requirements.

Table 17
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

Configuring a transparent rlogin port with sample data

Sample data has been incorporated into Procedure 56. This configuration shows that a device connected to MRV Port 2 will rlogin 47.11.166.76 through pty 10.

Procedure 56
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
```

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 57 to access an MRV Console Port through the on-board modem.

Procedure 57
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 51 on page 260).

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 18 lists various components of the CS 1000E system and their COM port types.

Table 18
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.

Table 18
System components and COM port type

System component	COM port type
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.

Connecting an MRV LX8020S-102AC-R 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.

The CS 1000E system currently supports two Terminal Servers, the MRV LX8020S-102AC-R (ROHS) and the IR-8020M-101 (non-ROHS). This chapter contains information on connecting the LX8020S-102AC-R. For information on connecting the IR-8020M-101, see “Connecting an IR-8020M-101 Terminal Server” on page 257.

Differences between the two Terminal Servers include:

- The IR-8020M-101 Management port is port 20. The LX8020S-102AC-R contains a Diag Port at the front.
- The IR-8020M-101 contains an external PC card slot; the LX8020S-102AC-R does not.
- Commands , command modes and command line interfaces are different
- Default passwords are different for both

The Terminal Servers 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 Servers can be used as a central point to manage several devices through their serial ports.

Both Terminal Servers are 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 Servers provide IP connections to each Pseudo TTY (PTY) ports 0-15 for monitoring CDR and traffic reports.

The LX8020S-102AC-R – LX Series Standalone has 20 Console Ports and a V.90 internal modem. A 19-inch rack-mount kit is provided with the unit.

The DIAG port at the front end of the MRV LX8020S-102AC-R is the default management port. It will be used for primary configuration of the IP address,

mask address and gateway address. The 20 Ports at the rear can be configured for Serial Data Interface for CS 1000E 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 including the Quick Start Guide for MRV server, LX Series Configuration Guide and MRV LX Series Commands Reference Guide.

This chapter contains the following procedures:

Configuring a Terminal Server

Follow Procedure 58 to connect a Terminal Server with a CS 1000E system. Table 19 lists the MRV cables required to install the LX8020S-102AC-R Terminal Server in a CS 1000E system.

Table 19
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 can also be used. See Table 20.

Table 20
Customer made cable pin out (same as NTDU6302)

Pins on DB9 Female		Pins on RJ-45 Male (MRV Terminal Server)	
1 6	DCD DSR	2	DTR
2	RXD	3	TxD
3	TXD	6	RxD
4	DTR	7	DSR/DCD
5	S GND	4 5	TxD GND RxD GND
7	RTS	1	CTS

Table 20
Customer made cable pin out (same as NTDU6302)

Pins on DB9 Female		Pins on RJ-45 Male (MRV Terminal Server)	
8	CTS	8	RTS
9	N/C		

Procedure 58
Connecting a Terminal Server to the system

1 Connect the above mentioned MRV serial cable from the Terminal Server Diag port at the front of the Terminal Server to the PC COM port.

2 Start the MRV HyperTerminal application. In Windows:

Start > Programs > Accessories > Communication > HyperTerminal.exe

3 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.

4 Log in to the Terminal Server. Enter:

Log in: `InReach` <Enter>

Password `access`

5 To log into Superuser mode:

```
InReach: 0 >enable <enter>
```

6 Enter the default password. Enter:

```
System
```

Configuring the Terminal Server IP address

Procedure 59
Configure IP address for the Terminal Server

Note: The IP address can be configured or changed only from the local Management/ DIAG port.

1 Configure the Terminal Server's IP address:

```
InReach:0 >>config interface 1 address <ip address>
```

2 Configure the Terminal Server's IP subnet mask:

```
InReach:0 >>config interface 1 mask <subnet mask>
```

3 Configure the Terminal Server's IP primary gateway address:

```
InReach:0 >>config gateway <gateway ip address>
```

4 Save the configuration and check it:

```
InReach:0 >>save config flash
InReach:0 >>show system chara
InReach:0 >>show interface1 chara
```

Example commands:

```
InReach:0 >>config interface 1 address 47.11.244.101
InReach:0 >>config interface 1 mask 255.255.255.0
InReach:0 >>config gateway 47.11.244.101
```

Telnet Terminal Server virtual management port

Connect the Terminal Server ethernet port to the ELAN subnet 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 60
Running telnet from PC

1 In Windows, input the Telnet command
>**Start > Run**
`telnet IP address port#`

Where:
IP address = Terminal Server IP address
Port# = port no. (calculation of port shown below in Procedure 62 on page 279

Example: `telnet 47.11.244.101 2100` (if it is port 1)

Note: No port is used for the virtual management port.

2 Press <CR> until the MRV login prompt appears.

3 Input login password and username to log in to the virtual management port.

Telnet to CS 1000E COM port from a PC

Connect port xx (xx = 1 - 20) of the Terminal Server to COM1 port of the CS 1000E Call Server.

Follow Procedure 61 to establish access to a Call Server from a PC through telnet Terminal Server. Use the same port number for each procedure step.

Procedure 61
Accessing a CS 1000E from a PC through telnet Terminal Server

1 Connect to the management port or virtual management port as shown in Procedure 60 on page 277 or Procedure 58 on page 275.

2 Define the port baud rate to equal the baud rate of the CS 1000E COM port. Enter:

```
InReach:0 >>config port async <xx> speed <Baudrate>
```

```
InReach:0 >>config port async 1 speed 9600
```

Where: xx = Port number from 1-20 and BAUDRATE = the baudrate of the connected Call Server com port.

3 To avoid autohangup:

```
InReach:0 >>config port async <xx> no autohangup

InReach:0 >>config port async 1 no autohangup
```

4 Turn off authentication.Then save the configuration and check it:

```
InReach:0 >> config port async <xx> no authentication
outbound

InReach:0 >>save config flash

InReach:0 >>show port async <xx> chara

InReach:0 >> config port async 1 no authentication
outbound

InReach:0 >>save config flash

InReach:0 >>show port async 1 chara
```

5 Run telnet on the PC.

a. In Windows:

Start > Run

b. Enter the Input telnet command.

```
TELNET xxx.xx.x.xx xxxx
```

Where:

xxx.xx.x.xx = Terminal Server IP Address

xxxx = telnet port (for port 1 to 20)

Note: The value of the target telnet port, xxxx, is determined using the following formula:

TELNET PORT = 2 000 + (port number xx × 100)

For example, if the telnet port is 1, then:

TELNET PORT = 2 000 + (1 x 100)
= 2 000 + (100)
= = 2100

If the Terminal Server IP Address is 47.11.244.101 and the telnet port is 1, then TELNET command line is:

telnet 47.11.244.101 2100

Example:

telnet 47.11.244.101 (telnet to virtual management port)

Configuring an rlogin port for various applications

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 62 to configure a transparent rlogin port.

Procedure 62
Configuring an rlogin port for various applications

1 Enable TCP keep alive timer.

TCP Keepalive feature allows to change polling intervals, number retries, etc.The TCP keep alive timer is mainly required to check if the link is up.

This procedure explains how to modify the sysctl.conf file, which contains the TCP Keepalive settings.

2 To modify the sysctl.conf file:

a. Connect to the management port or virtual management port

b. At the InReach: 0>> prompt, type shell. The shell window opens.

```
InReach: 0 >>shell

BusyBox v1.1.3 (2006.10.20-12:27+0000) Built-in shell
(ash)
```

c. It will then go to the LX prompt as shown below. Type the below command to start editing.

```
 LX:/config# vi sysctl.conf.
```

d. Once the VI editor starts, start by pressing the letter “i” to enter the insert mode. Using the arrow keys, the cursor can be moved to the place where the settings of the keep alive timer are there so that they can be changed if required.

e. Hit the “Esc” to exit insert mode followed by a “ZZ” to QUIT and WRITE only if changes where made, to exit and not saving changes type: q! After the “Esc”.

i. The following command fixes a problem with zmodem. It limits the size of the tcp window:

```
sysctl -w net.ipv4.tcp_rmem="128 256 512"
```

Note: The above command is typed in the sysctl.conf.

Similarly many other parameters of the keep alive timer can be modified.

Use the command: sysctl -a

Examples are (the 3 numbers are the minimum, average and maximum values):

```
net.ipv4.tcp_keepalive_intvl=75 ; in seconds

net.ipv4.tcp_keepalive_probes = 9

net.ipv4.tcp_keepalive_time   = 180; in Seconds
```

Here the TCP keep alive timer has been changed to 3 min.

f. After saving the changes using vi editor, exit to Inreach prompt and reboot the LX server.

```
InReach:0 >>reboot.
```

3 Enable the RLOGIN daemon on the LX.

```
InReach:0>>configure rlogin enable.
```

4 Configure the rlogin port for various applications.

```
InReach: 0>> config port async xx connect command rlogin
-l user_name host_ip_address
```

```
InReach: 0 >>config port async 1 connect command rlogin -l
pty8 47.11.244.101
```

Here PTY8 is the user name.It is the port no. used while configuring the PTY. It has to be configured in overlay 17 of the switch

5 To bring up a connection from the LX to some device on LAN

InReach: 0>> config port async xx access local

6 To build up the autoconnection to a specified IP client

```
InReach:0>>config port async n connect command telnet
n.n.n.n
```

where n = the port number you are configuring, and n.n.n.n = the IP address of the host

7 Prevent authentication inbound or outbound. These commands disable authentication on the LX port which would prevent the ability to make a connection without intervention.

```
InReach:0>>config port async n no authentication outbound
```

```
InReach:0>>config port async n no authentication inbound
```

8 To avoid autohangup:

```
InReach:0 >>config port async <nn> no autohangup
```

Here are the commands you would perform on an IR to do the same thing;

Note: DEFINE/SET PORT port-list AUTOCONNECT ENABLED

DEFINE/SET PORT port-list AUTOHANGUP DISABLED

9 Enable the transparency mode and save the configuration information.

```
InReach:0>> config port async xx no telnet negotiation
```

```
InReach:0>> config port async xx transparency enable
```

```
InReach:0>> config port async xx flowcontrol cts
```

```
InReach:0 >>save config flash
```

Note 1: It is not advisable to use putty software while trying to do rlogin

Note 2: MRV definition of autoconnect: In Procedure 61 on page 277 and Procedure 62 on page 279 this feature of autoconnect is required.

This command is used to specify whether or not the port will automatically connect to either a dedicated service or a preferred service when the user logs onto a port. Autoconnect is automatically enabled for a port when a dedicated or preferred service is defined for that port. However, it is not disabled when service is disabled.Autoconnect also specifies whether or not the port should attempt to re-connect a session when a connection failure occurs. Re-connection attempts occur at intervals specified by the SERVER KEEPALIVE TIMER command (between 10 and 180 seconds), and a status message displays whenever ports that are not configured with a dedicated service attempt to connect (no messages are given for ports that are configured with a dedicated service). Re-connection attempts continue until a connection is made or the user terminates further attempts by entering the local command mode.

Finally, Autoconnect helps control In-Reach Element Manager activity when the port uses modem control signals (for example, a port connected to a dial-up line). Before you can enable Autoconnect, you must define the port for LOCAL access, enable MODEM CONTROL, and define a dedicated service.

Accessing an MRV Console Port through the on-board modem

Procedure 63
Accessing an MRV Console Port through the on-board modem

1. Connect an analog phone line to the MRV phone line (Telco) port.
2. Set up the rlogin connection using Procedure 62 on page 279.
3. Dial in to the MRV onboard modem from the PC. This can be done after configuring the modem port as Rlogin.
4. From the PC, run HyperTerminal. Enter the command:

   ```
   ATD [phone no.]
   ```

   Screen response:

   ```
   CONNECT 9600/ARQ/V34/LAPM/V42BIS

   Login
   ```

5. Log in to the LX-series Element Manager using the default password, (see steps 4,5,6,and 7 in Procedure 58 on page 275).

Once logged into the onboard modem, it is possible to telnet to ports 1-20.It is also possible to rlogin to different IPs.

IMPORTANT!

For this version of the LX series, always remember that the modem port is 21.And this port can be configured as telnet or rlogin port.

CS 1000E COM port types

Table 21 lists various components of the CS 1000E system and their COM port types.

Table 21
System components and COM port type (Part 1 of 2)

System component	COM port type
Baystack 460	9-pin DCE (male)
Baystack 470	9-pin DCE (male)
NTDU27 Signaling Server	9-pin DTE (male) Signaling Server comes with a six-foot female-to-female null modem cable.
NT4N64AA CP PII	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)

Table 21
System components and COM port type (Part 2 of 2)

System component	COM port type
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 component (CP PM Call Server, MG 1000E, 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 259 for Terminal Server Setup. The SDI port can also be accessed by a local terminal through the SDI connection.

Setting the TTY terminal port

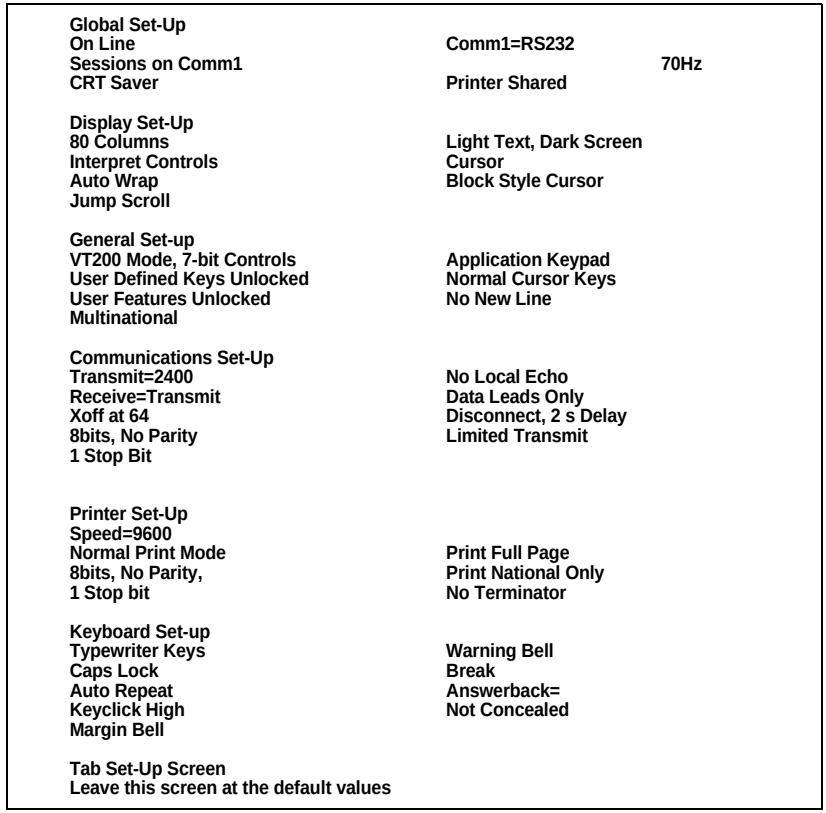
A TTY terminal can be any standard PC running terminal software, (for example, HyperTerminal). The TTY terminal port must be configured as:

- 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 129 shows the setup values for a traditional terminal setup.

Figure 129
VT220 setup values



CS 1000E CP PM Call Server COM Port connections

There are 2 serial ports on the CP PM Call Server, Port 0 and Port 1. They are accessed through a special cable that attaches to the MDF port at the back of the cabinet. Both ports are standard RS232 DTE ports. The supported TTY settings for both ports are:

- Baud rate - 9600
- Data bit - 8
- Stop bit - 1

- Parity - none
- Flow control - none

The baudrate setting can be changed in Overlay 17, however changing this setting is not recommended since it will only used when SL1 is loaded.

Note that only the Port 0 serial port displays the boot sequence from BIOS, Bootrom & OS before the call server application is started. Port 1 will only start displaying output when call server application is started (Sysload Phase1).

MG 1000E SDI connection

SDI connection to the MG 1000E is made at the back. See Figure 130 on page 289 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.

MGC serial ports

Each MGC installed in a CS 1000E provides 3 remote SDIs. The maximum number of TTYs does not change. Therefore, once the maximum TTYs are configured, no additional TTYs are supported.

The MGC has three serial ports: SDI0, SDI1 and SDI2.

The serial ports can be used for local debug purposes or can be configured in the CS 1000E Call Server as system terminals in Overlay 17 (see 4.3.1 MGC TTY Configuration).

During initial configuration either SDI0 or SDI1 must be connected to access the installation menu.

Note: Only SDI0 has full modem support, as SDI1 and SDI2 do not have hardware flow control.

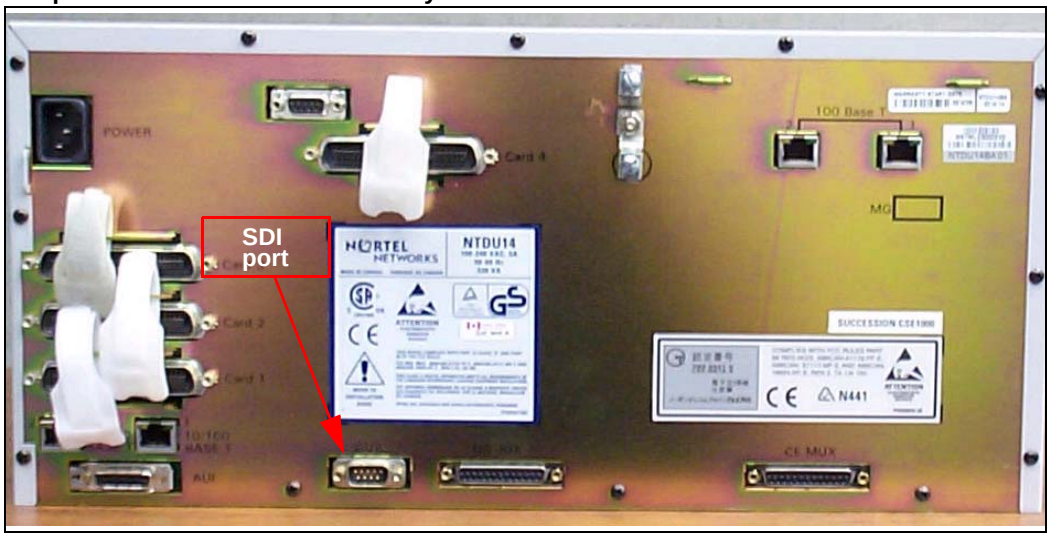
SDI2 is not available during the MGC bootup, it cannot be used to access the installation menus.

All of the SDI ports on the MGC are configured via software. There are no DIP switches on the MGC for configuring the baud rate of SDI0.

Procedure 64
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 130).

Figure 130
SDI port access to the Media Gateway MGC 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.

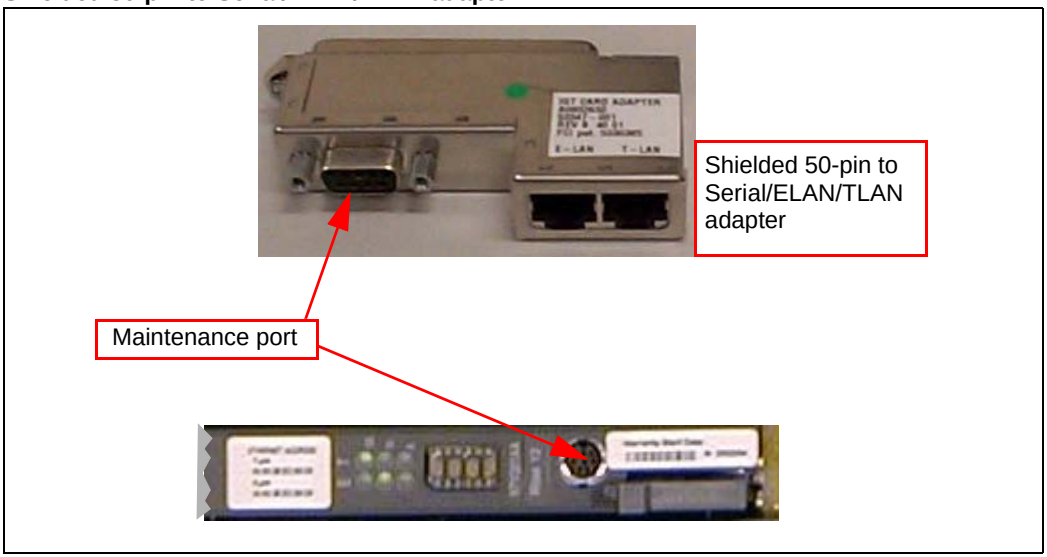
BayStack 470 SDI connection

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 131 shows the maintenance port location on the Media Card and the Shielded 50-pin to Serial/ELAN/TLAN adapter.

Figure 131
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.

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. 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 132 shows the circuit card slots in a Media Gateway. To view the circuit card slots available in a Media Gateway Expander, see Figure 133 on page 295.

Figure 132
Circuit card assignments in the Media Gateway

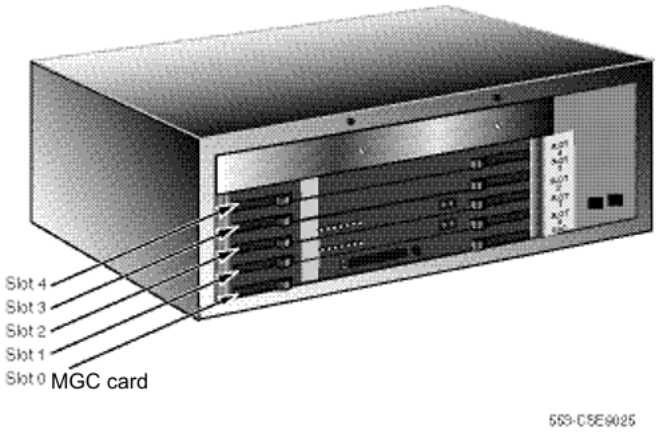
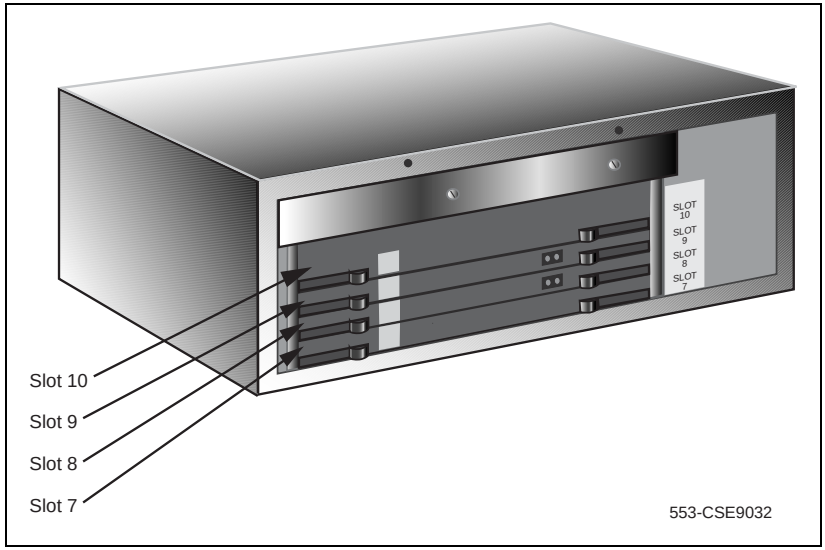


Figure 133
Circuit card assignments in the Media Gateway Expander



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 371, 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.

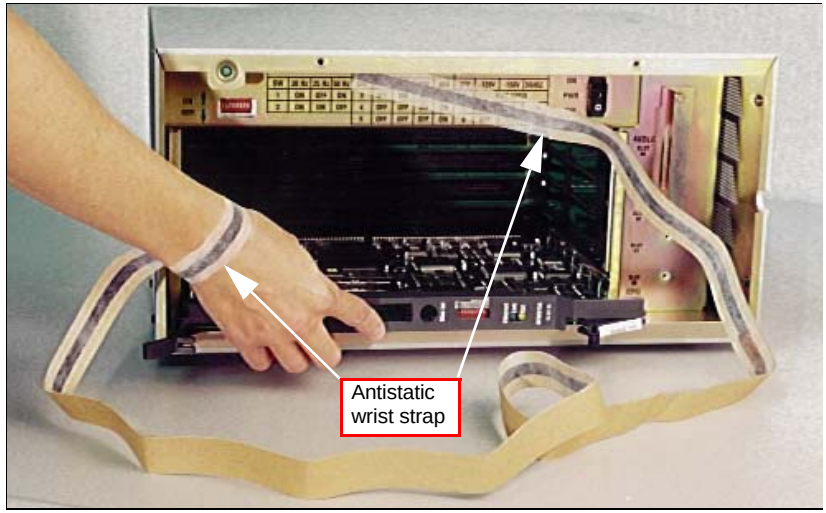
Refer to the *Circuit Card: Description and Installation* (553-3001-211) for full descriptions of country-specific circuit cards and their installation procedures.

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 134 on page 297, when handling circuit cards. Static electricity can damage circuit card components.

Figure 134
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 PRI
- NTRB21 TMDI 1.5 Mbit DTI/PRI

- NT6D70 SILC
- NT6D71 UILC

Note: Now NT6D70 SILC and NT6D71 UILC Digital trunk cards can be installed in slots 7 to 10 in a Media Gateway Expander.

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 65 to connect a trunk.

Procedure 65
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 22 on page 299 to Table 24 on page 302 list the connections for trunks.
   - For European trunk connections, see Table 25 on page 304 to Table 33 on page 313.
   - For UK trunk connections, see Table 34 on page 315 to Table 40 on page 322.

Note: See “Installing and cross-connecting a Power Fail Transfer Unit” on page 441 for connecting trunks with the PFTU.

Universal Trunk card connections

The Universal Trunk card (NT8D14) provides eight Analog trunks that can function in the modes identified in Table 22. Refer to Table 23 on page 300 for the connections to the Universal trunk at the cross-connect terminal.

Table 22
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 23
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 23
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 24 lists the connections required by the E&M Trunk card (NT8D15).

Table 24
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 24
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 25: “E&M TIE trunk card (2-Wire)” on page 304
- Table 26: “E&M 2-wire Type 2” on page 305
- Table 27: “E&M TIE Trunk card (4-Wire)” on page 306
- Table 28: “E&M TIE Trunk card” on page 308
- Table 29: “E&M 2280 Hz TIE Trunk connections” on page 309
- Table 30: “E&M 2-wire Recorded Announcement Trunk connections” on page 310
- Table 31: “E&M 2-wire Music Trunk connections” on page 311
- Table 32: “Central Office & Direct Dial Inward Trunk connections” on page 311
- Table 33: “Central Office Trunk connections” on page 313

Table 25
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 25
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 26
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 26
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 27
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 27
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 28
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 28
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 29
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 29
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 30
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 31
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 32
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 32
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 33
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 33
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 34: “NT5K17 Direct Inward Dial card terminations” on page 315
- Table 35: “NT5K18 Exchange line trunk card cross-connect terminations” on page 316
- Table 36: “NT5K19 2W paging mode terminations” on page 318
- Table 37: “NT5K19 2W Type 1 mode terminations” on page 318
- Table 38: “NT5K19 4W Type 1 mode terminations” on page 320
- Table 39: “NT5K19 AC15 mode pair terminations” on page 321
- Table 40: “NT5K19 Recorded Announcement mode pair terminations” on page 322

Table 34
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 34
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 35
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 35
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 36
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 37
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 37
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 38
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 39
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 40
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.

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: Administration* (553-3001-311) 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 66: "Turning off browser caching in Internet Explorer" on page 325
- Procedure 67: "Logging in to Element Manager" on page 328
- Procedure 68: "Importing an existing node" on page 330
- Procedure 69: "Reviewing and submitting IP telephony node configuration" on page 332
- Procedure 70: "Adding a Follower Signaling Server to the IP telephony node in Element Manager" on page 336
- Procedure 71: "Performing a datadump using Element Manager" on page 338

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 71 on page 338.

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!

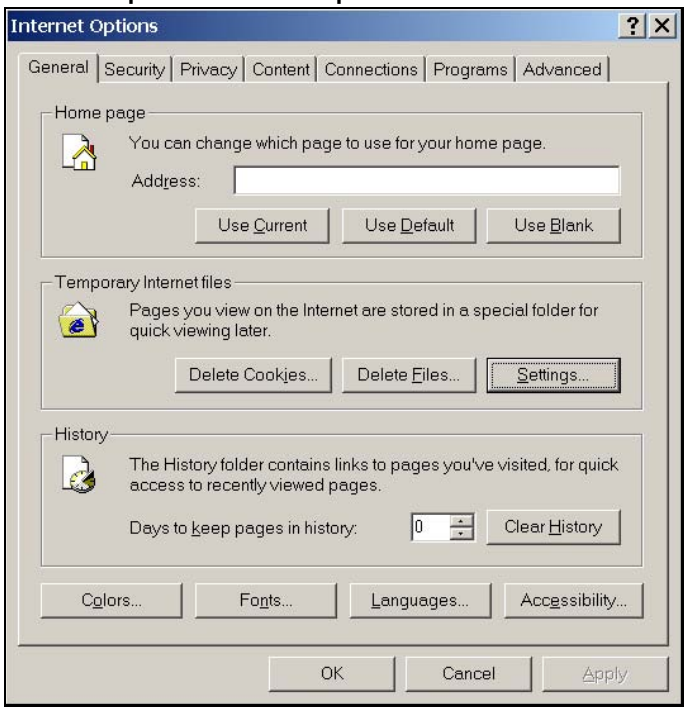
Internet Explorer caching must be turned off. If Internet Explorer caching is on, the user cannot see the changes in real-time.

Follow Procedure 66 to prevent caching of web pages by Internet Explorer.

Procedure 66
Turning off browser caching in Internet Explorer

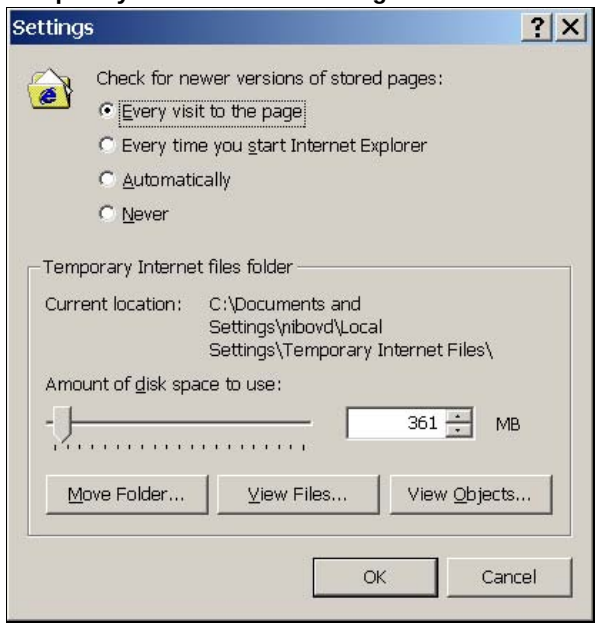
1. Launch Internet Explorer.
2. Click **Tools > Internet Options**. The **Internet Options** window opens (see Figure 135 on page 326).

Figure 135
Internet Explorer – Internet Options



3 On the **General** tab, under the **Temporary Internet files** section, click **Settings**. The **Settings** window opens (see Figure 136 on page 327).

Figure 136
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.

Logging in to Element Manager

Follow Procedure 67 to log in to Element Manager.

Procedure 67
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 137 on page 329).

a. Enter the **User ID** and **Password** of the CS 1000E.

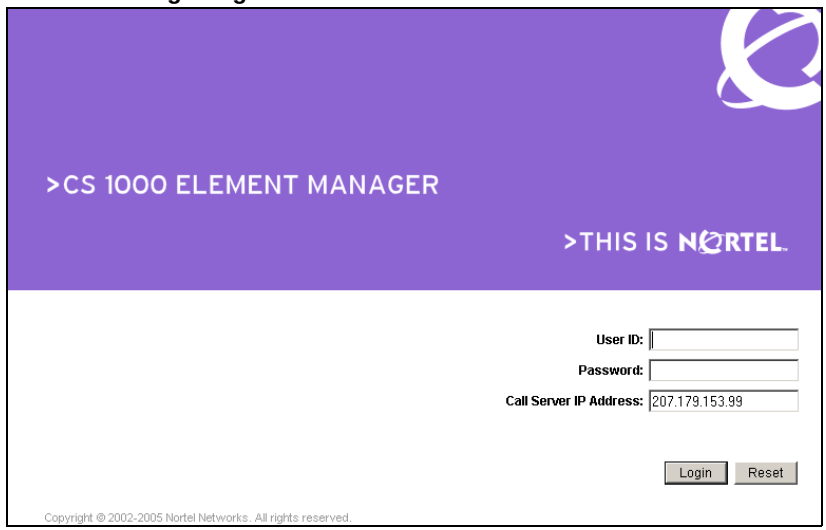
— User ID = admin1 or any LAPW

— Password = `0000`

b. Enter the ELAN IP address of the CS 1000E in the **CS IP Address** field.

c. Click **Login**.

Figure 137
Element Manager login



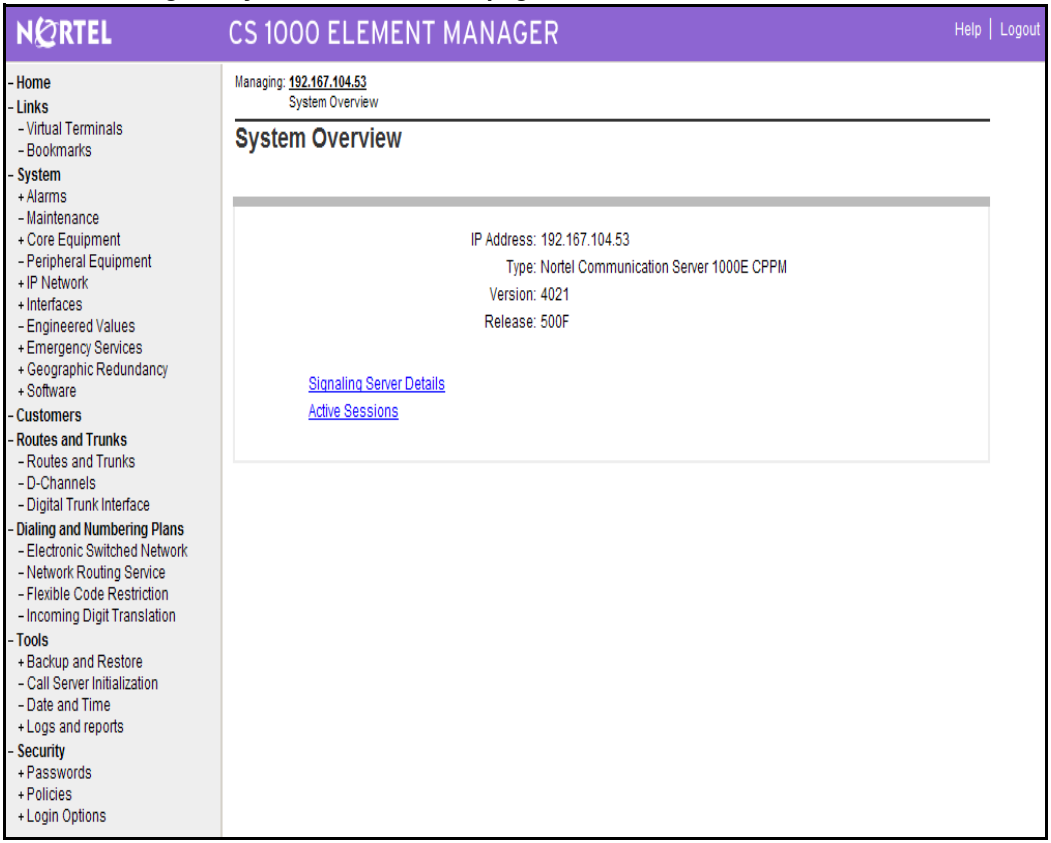
Importing preconfigured IP telephony files

Follow Procedure 68 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 68
Importing an existing node

Figure 138 displays the **Element Manager System Information** home page.

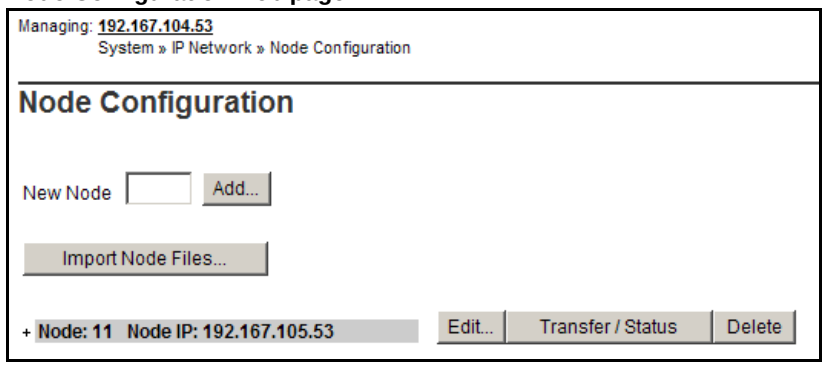
Figure 138
Element Manager – System Overview web page



1 Select **IP Network > Node: Servers, Media Cards** from the navigator.

The **Node Configuration** web page opens, as shown in Figure 139. If this is the first node to be added, the "**No nodes are configured**" message is displayed.

Figure 139
Node Configuration web page



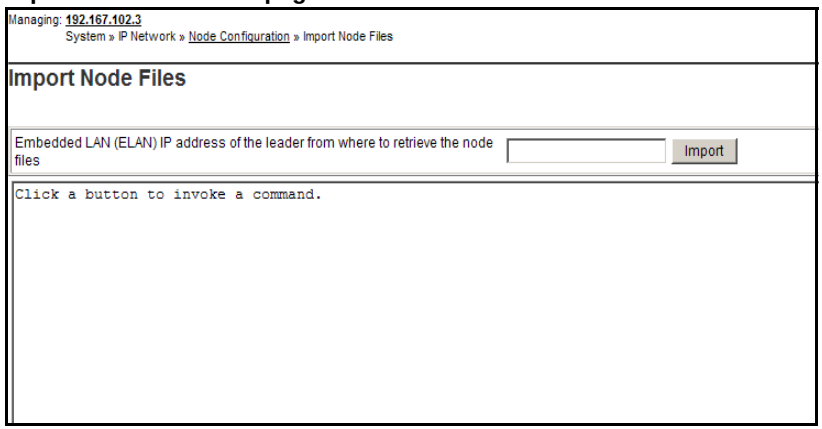
2 Import the Node files from the leader Signaling Server.

a. Click **Import Node Files**.

The **Import Node Files** screen as shown in Figure 140 on page 332 appears.

b. Enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 140
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.

Reviewing and submitting IP telephony node configuration files

Follow Procedure 69 to review and submit IP telephony node configuration files.

Procedure 69
Reviewing and submitting IP telephony node configuration

1 From the Node Summary web page (see Figure 146 on page 342), click **Edit** to view the node parameters.

The **Edit** web page appears as shown in Figure 147 on page 343.

Note 1: Clicking **Transfer / Status** displays the **Transfer / Status** web page (see Figure 144 on page 335). 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 141 on page 334).

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 141 on page 334).
- The Status column displays “Transfer” as the node configuration is transferred to the elements (see Figure 142 on page 334).
- The Status column displays “Complete” if the transfer is successful for an element (see Figure 143 on page 335).
- The Status column displays “Fail” if the transfer is unsuccessful.

Figure 141
Transfer Progress – Starting

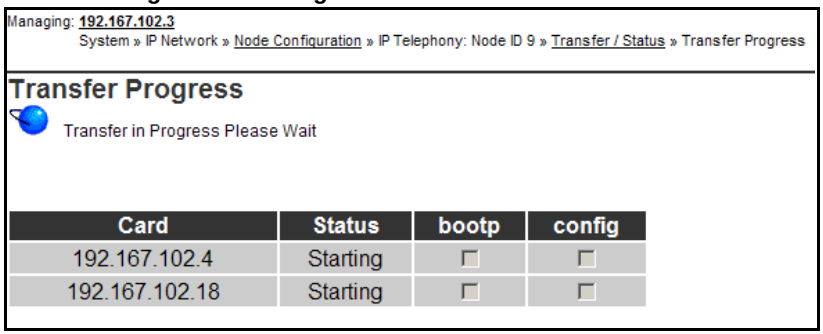
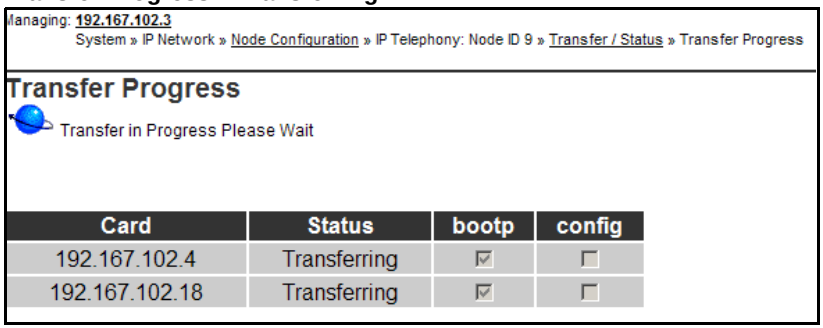
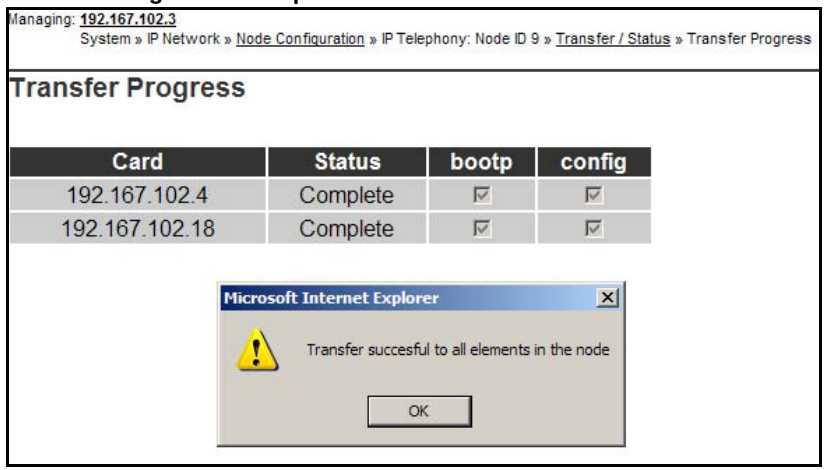


Figure 142
Transfer Progress – Transferring



When the file transfer is complete, the Transfer Progress web page displays a status of complete (see Figure 143 on page 335).

Figure 143
Transfer Progress – Complete

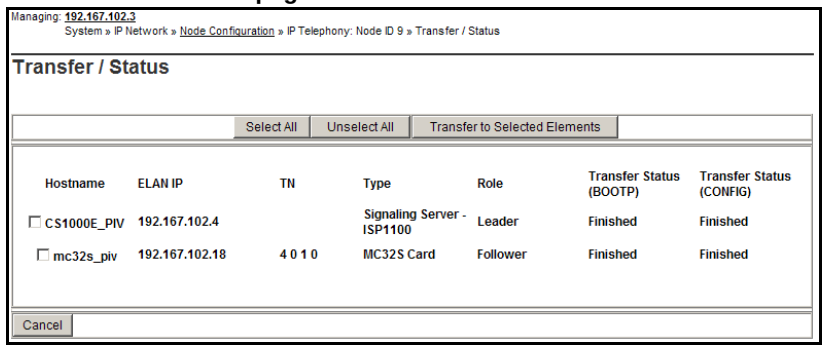


5 Click **OK** in the dialog box.

The **Transfer / Status** web page displays.

Note: The Transfer / Status web page (see Figure 144) 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 144 shows some elements as unreachable; you can transfer to these elements again.

Figure 144
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.

Adding a Follower Signaling Server to an IP telephony node

Follow Procedure 70 to add a Follower Signaling Server to the IP telephony node in Element Manager.

Procedure 70
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 139 on page 331).
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).

Performing a datadump

Follow Procedure 71 to perform a datadump using Element Manager. This procedure is an alternative to using CLI to perform a datadump. The

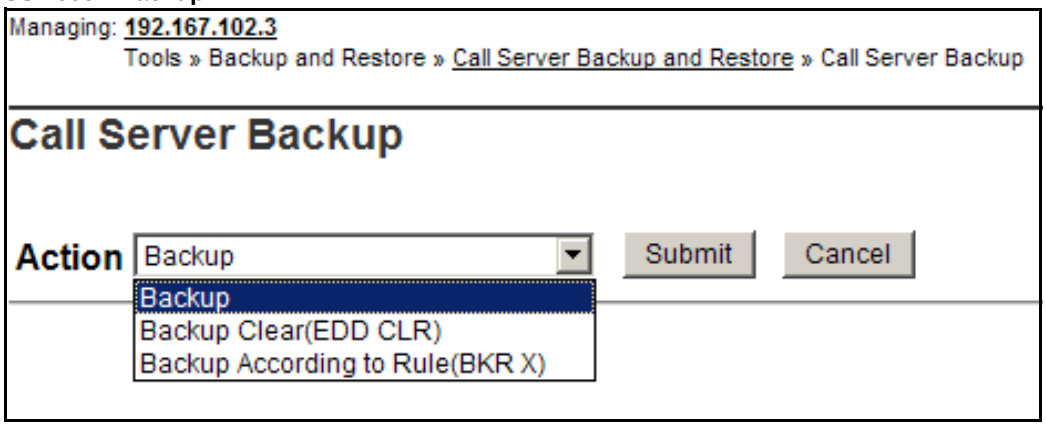
datadump backs up new IP Telephony node files on the CS 1000E at the same time that it backs up the customer database.

Procedure 71
Performing a datadump using Element Manager

From within Element Manager (see Figure 67 on page 328 for details on logging in), do the following:

1. Choose **Tools > Backup and Restore > Call Server** from the navigator.
2. The **Call Server Backup and Restore** web page opens, as shown in Figure 118 on page 244.

Figure 145
CS 1000E Backup



3. Select **Backup**.

   The **Call Server Backup** web page appears (see Figure 145 on page 338).
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.

Installing and configuring a Voice Gateway Media Card

Contents

This section contains information on the following topics:

Introduction

A Voice Gateway Media Cards 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. 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 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.

Voice Gateway Media Card is a term used to encompass the Media Card 32-port card, and the Media Card 32S card. These cards plug into an Intelligent Peripheral Equipment (IPE) shelf in the CS 1000M systems and into a Media Gateway 1000E and Media Gateway 1000E Expander in the CS 1000E system.

The Media Card 32-port and the Media Card 32S card occupy one slot.

The Media Card 32S card provides the following features:

- Secure Real-time Transport Protocol (SRTP)
- two Digital Signal Processors (DSP), based on an ARM processor
- channel density of 32 ports
- cost improvement over existing Media Cards

The Media Card 32-port card provides the following features:

- 32-port card packet processing power is greater than that of the ITG-P 24-port line card
- increases the channel density from 24 to 32 ports (for the 32-port version)
- reduces the slot count from a dual IPE slot to a single IPE slot
- supports up to 128 IP Phones in failover scenarios

For more details, see *IP Line: Description, Installation, and Operation* (553-3001-365).

This chapter contains the following procedures:

- Procedure 72: "Adding a Voice Gateway Media Card to an IP telephony node" on page 342
- Procedure 73: "Adding voice gateway channels using Element Manager" on page 345
- Procedure 74: "Configuring voice gateway channels using LD 14" on page 348
- Procedure 75: "Installing the CompactFlash" on page 352
- Procedure 76: "Installing a Voice Gateway Media Card in a card slot" on page 357
- Procedure 77: "Displaying the Voice Gateway Media Card status" on page 358
- Procedure 78: "Displaying the Voice Gateway status for all voice gateway channels" on page 360
- Procedure 79: "Displaying the status of Voice Gateway Media Card units" on page 363
- Procedure 80: "Displaying the status of one unit on a Voice Gateway Media Card" on page 366
- Procedure 81: "Disabling a Voice Gateway Media Card using Element Manager" on page 366
- Procedure 82: "Disabling a Voice Gateway Media Card unit using Element Manager" on page 367
- Procedure 83: "Enabling a Voice Gateway Media Card using Element Manager" on page 368
- Procedure 84: "Enabling a Voice Gateway Media Card unit using Element Manager" on page 369

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 323.
- the voice gateway channels defined on the CS 1000E. See “Configuring voice gateway channels using Element Manager” on page 345.

Adding a card to an IP telephony node

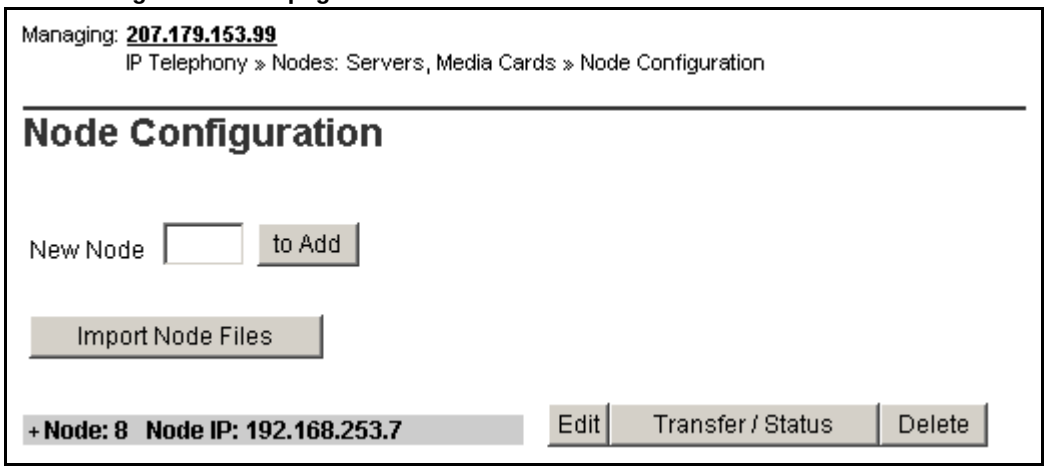
The Voice Gateway Media Card is added to an IP telephony node using Element Manager only. See *Communication Server 1000 Element Manager: System Administration* (553-3001-332) for details.

Procedure 72
Adding a Voice Gateway Media Card to an IP telephony node

1. Log in to Element Manager.
2. Select **IP Network > Nodes: Servers, Media Cards** from the navigator.

   The **Node Configuration** web page opens, as shown in Figure 146.

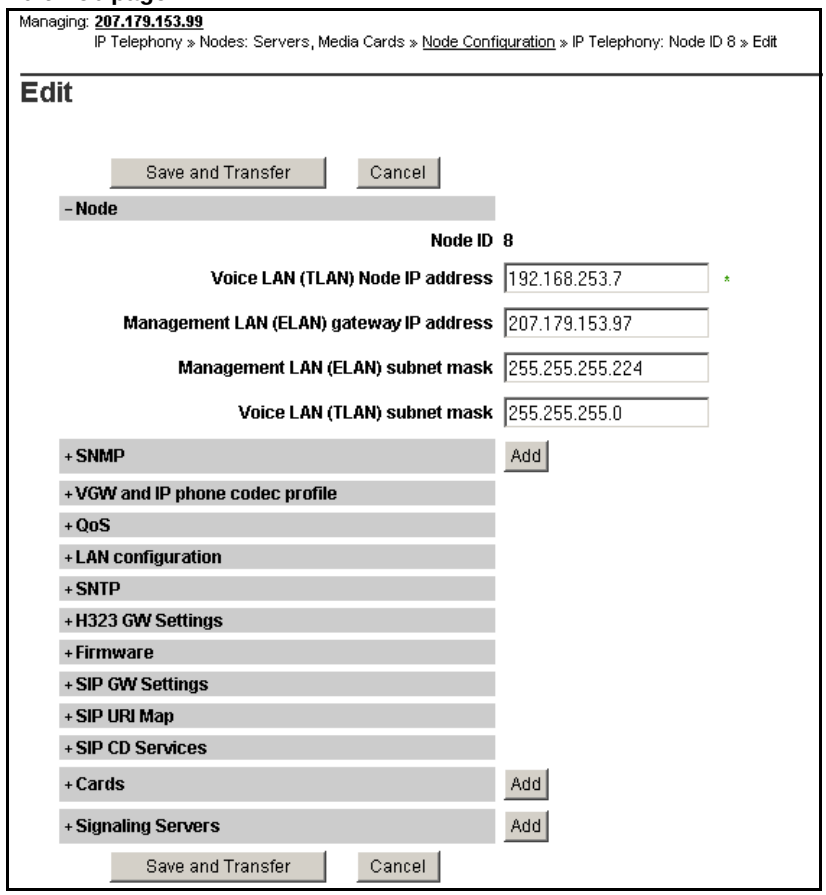
Figure 146
Node Configuration web page



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 147 on page 343.

Figure 147
Edit web page



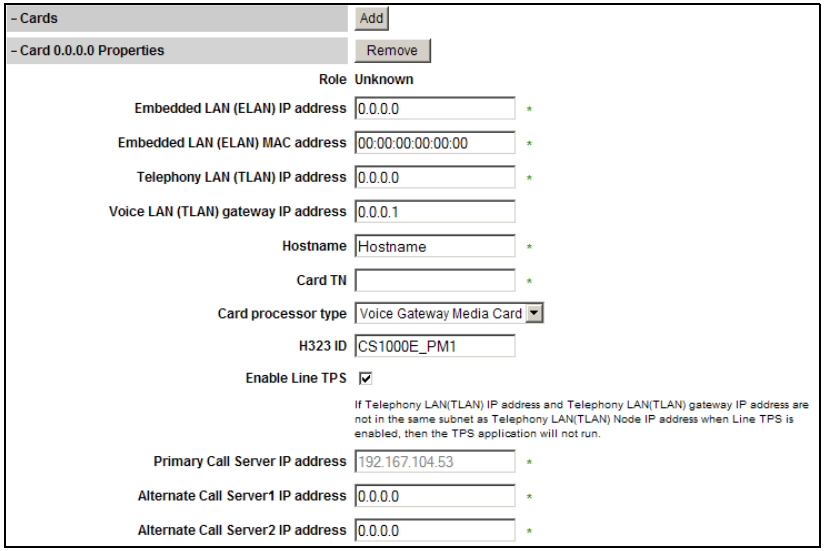
4 Click **Add** next to the **Cards** tab.

The Cards tab expands (see Figure 148 on page 344).

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.

Note: For more detail on Voice Gateway Media Card properties, see *IP Line: Description, Installation, and Operation* (553-3001-365).

Figure 148
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.

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 73 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 74 on page 348.

Procedure 73
Adding voice gateway channels using Element Manager

1 Select **IP Network > Nodes: Servers, Media Cards** from the navigator.

The **Node Configuration** web page opens, as shown in Figure 146 on page 342.

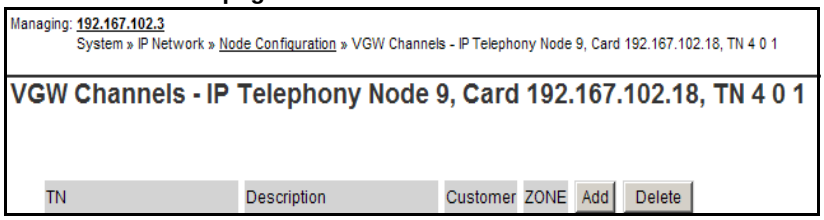
2 Click the **+** next to the desired node to expand it.

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 149.

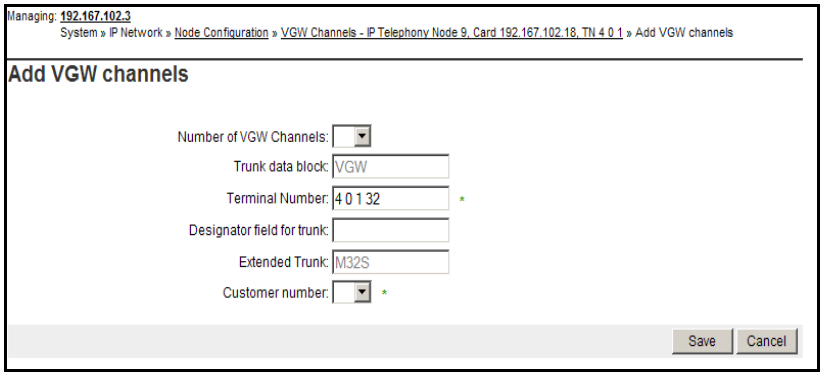
Figure 149
VGW Channel web page



4 Click **Add**.

The **Add VGW channels** web page opens, as shown in Figure 150.

Figure 150
Add VGW channels



5 Enter the appropriate parameters to configure the VGW channels.

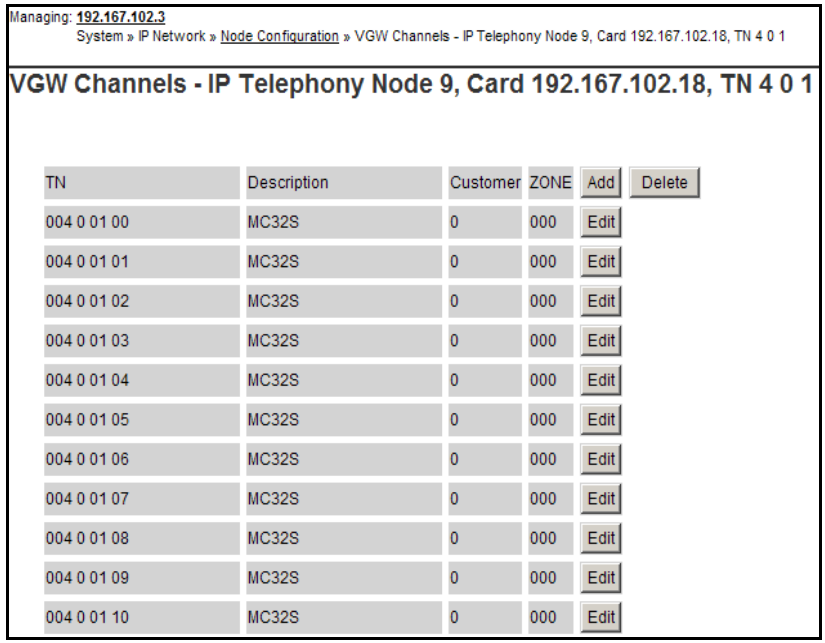
The TN is the logical TN of the first Voice Gateway Media Card unit.

Note: The Media Card has 32 channels.

6 Click **Submit**.

The VGW channels for this card are displayed. See Figure 151 on page 347.

Figure 151
VGW channels list


Managing: 192.167.102.3
System » IP Network » Node Configuration » VGW Channels - IP Telephony Node 9, Card 192.167.102.18, TN 4 0 1

VGW Channels - IP Telephony Node 9, Card 192.167.102.18, TN 4 0 1

TN	Description	Customer	ZONE	Add	Delete
004 0 01 00	MC32S	0	000	Edit	
004 0 01 01	MC32S	0	000	Edit	
004 0 01 02	MC32S	0	000	Edit	
004 0 01 03	MC32S	0	000	Edit	
004 0 01 04	MC32S	0	000	Edit	
004 0 01 05	MC32S	0	000	Edit	
004 0 01 06	MC32S	0	000	Edit	
004 0 01 07	MC32S	0	000	Edit	
004 0 01 08	MC32S	0	000	Edit	
004 0 01 09	MC32S	0	000	Edit	
004 0 01 10	MC32S	0	000	Edit	

Configuring voice gateway channels using LD 14

The voice gateway channels are also called “DSP channels” or the card’s “physical TNs.” Follow Procedure 74 on page 348 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 73 on page 345.

Procedure 74
Configuring voice gateway channels using LD 14

1. Log in to the CS 1000E.
   a. Enter the command:

      `LOGI <username>`

      System response:

      PASS?

   b. Enter the default password:

      `<password>`
2. Access LD 14. Enter the command:

   `LD 14`
3. Enter responses shown in Table 41.

Table 41
LD 14 – Configure physical TNs (Part 1 of 2)

Prompt	Response	Description
REQ	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 42 on page 357 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 41
LD 14 – Configure physical TNs (Part 2 of 2)

Prompt	Response	Description
MAXU	32	32 is the maximum number of voice Media Gateway channels on the Media Card.
ZONE	0-255	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:

****

Saving configuration changes

Perform a datadump to save configuration changes. Complete the steps in Procedure 71: "Performing a datadump using Element Manager" on page 338.

Installing a CompactFlash

The Voice Gateway Media Card requires a CompactFlash card to operate. The CompactFlash card contains the IP Line 5.0 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 152 on page 351 shows the CompactFlash card location on the Voice Gateway Media Card.

Figure 152
CompactFlash card location

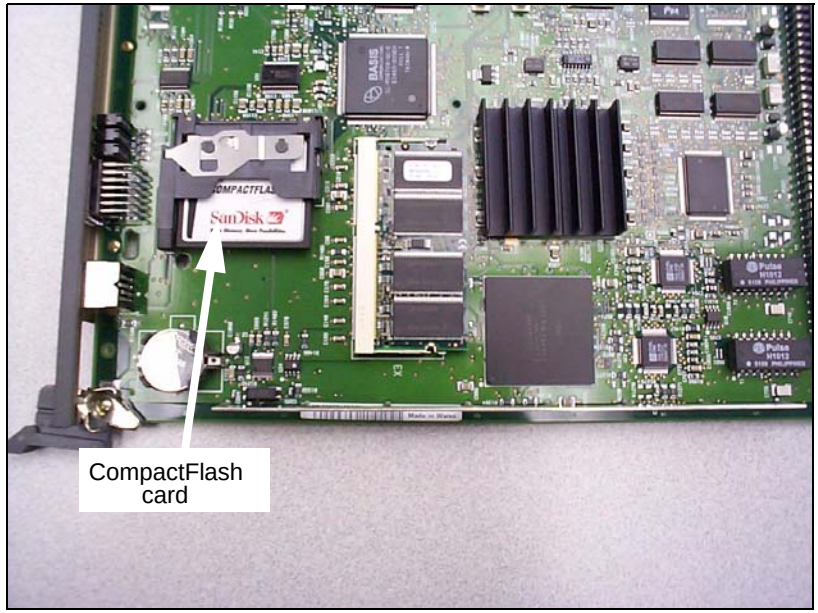


Figure 153 shows the CompactFlash card and Retaining Pin.

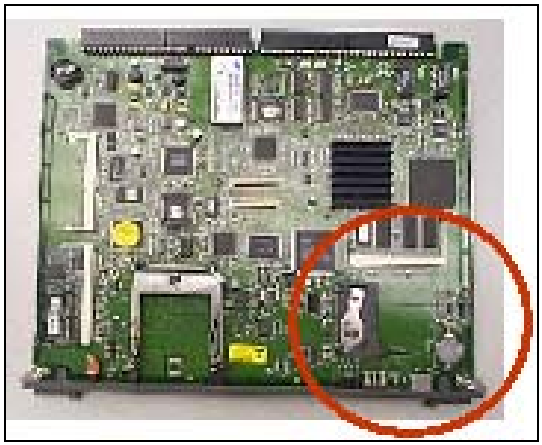
Figure 153
CompactFlash card and Retaining Pin

Procedure 75
Installing the CompactFlash

1 Remove the Media Card, CompactFlash card, and Retaining Pin from the packaging.

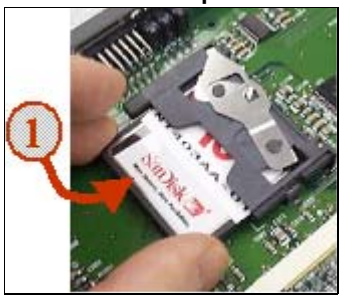
2 Locate the CompactFlash socket in the lower left-hand corner of the Voice Gateway Media Card (see Figure 154).

Figure 154
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 155.

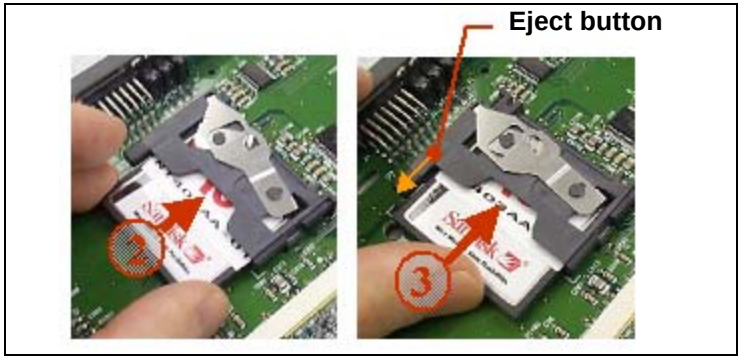
Figure 155
Position the CompactFlash in socket



4 Insert the CompactFlash card in the socket.

Press firmly until it is fully seated and the Eject button extends (see Figure 156).

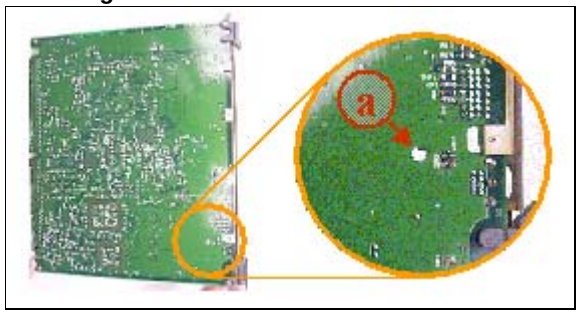
Figure 156
Insert CompactFlash to extend Eject button



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 157) is located approximately 1 inch (2.5 cm) above the lower lock latch and 1 inch (2.5 cm) from the card's faceplate.

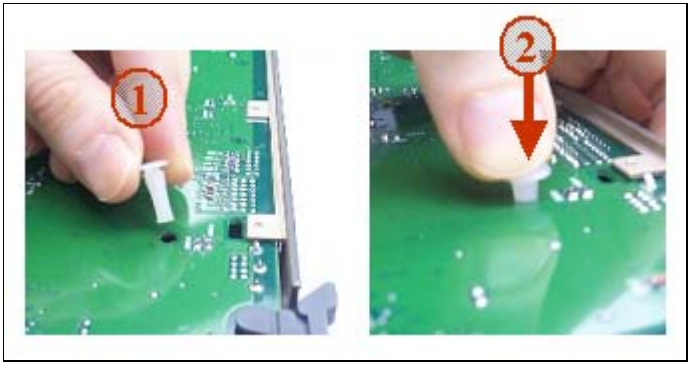
Figure 157
Retaining Pin hole



6 Insert the Retaining Pin in this hole (labeled **1** in Figure 158).

Press the Retaining Pin into the hole until the pin clicks as it locks into position (labeled **2** in Figure 158). The underside of the head of the Retaining Pin should be flat against the card.

Figure 158
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 159 on page 354.

Figure 159
Retaining Pin fully inserted

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 160 on page 355 and Figure 161

on page 356 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 160 shows the circuit card assignments in the Media Gateway.

Figure 160
Media Gateway card slot location

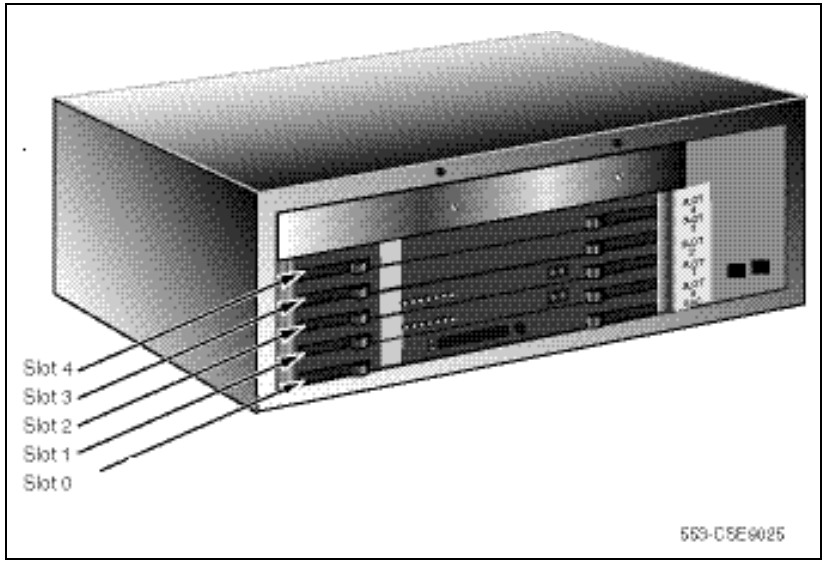


Figure 161 on page 356 shows the circuit card assignments in the Media Gateway Expander.

Figure 161
Media Gateway Expander card slot location

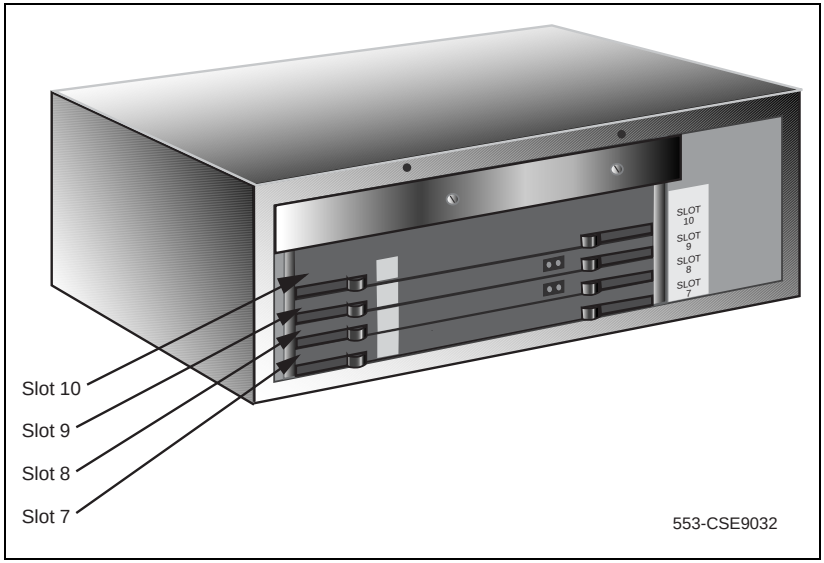


Table 42 on page 357 shows the TN assignments for the MG 1000E. Communication Server 1000 Release 5.5 supports up to 30 MG 1000E.

Table 42
TN assignments for MG 1000E

Slots	MG 1000E				MG 1000E Expander			
	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 MGC card.

Procedure 76
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 “Installing and connecting CS 1000E hardware” on page 97.

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 “Installing and connecting CS 1000E hardware” on page 97 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.

Verifying a card

Verifying a card involves:

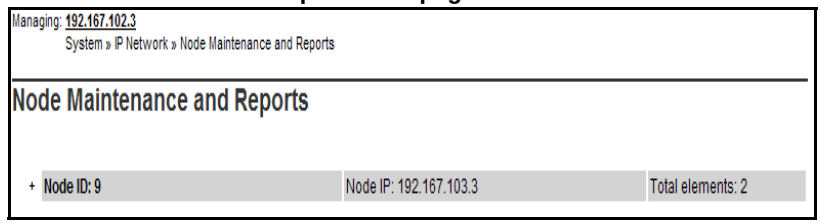
- Procedure 77: "Displaying the Voice Gateway Media Card status" on page 358
- Procedure 78: "Displaying the Voice Gateway status for all voice gateway channels" on page 360
- Procedure 79: "Displaying the status of Voice Gateway Media Card units" on page 363
- Procedure 80: "Displaying the status of one unit on a Voice Gateway Media Card" on page 366

Procedure 77
Displaying the Voice Gateway Media Card status

1 In Element Manager, select **IP Network> Maintenance and Reports** from the navigator.

The **Node Maintenance and Reports** web page opens, as shown in Figure 162.

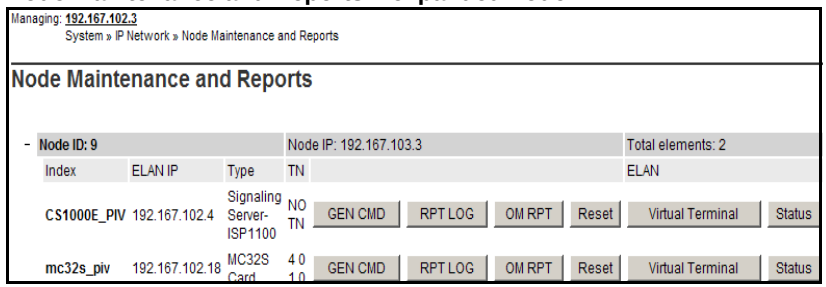
Figure 162
Node Maintenance and Reports web page



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 163 on page 359.

Figure 163
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.

Procedure 78
Displaying the Voice Gateway status for all voice gateway channels

1 In Element Manager, select **IP Network > Maintenance and Reports** from the navigator.

The **Node Maintenance and Reports** web page opens, as shown in Figure 162 on page 359.

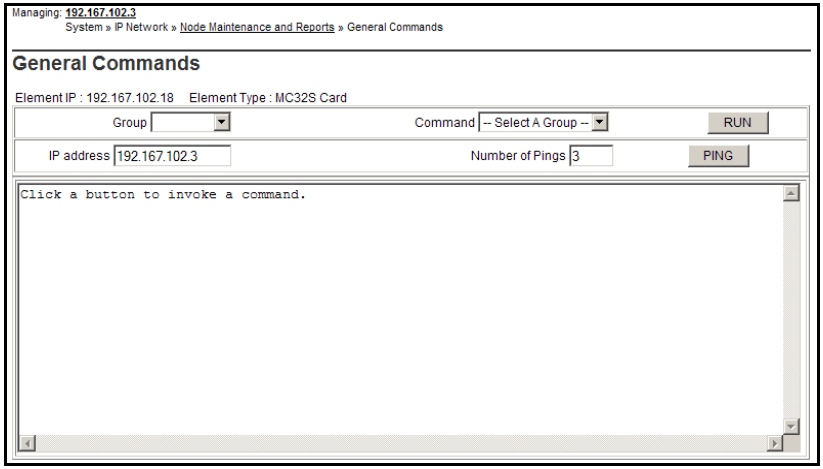
2 Open the desired node by clicking on the **+** next to the **Node ID**.

This displays the Signaling Servers and Voice Gateway Media Cards belonging to the node, as shown in Figure 163 on page 359.

3 Click **GEN CMD** for the desired Voice Gateway Media Card.

The **General Commands** web page opens, as shown in Figure 164.

Figure 164
General Commands



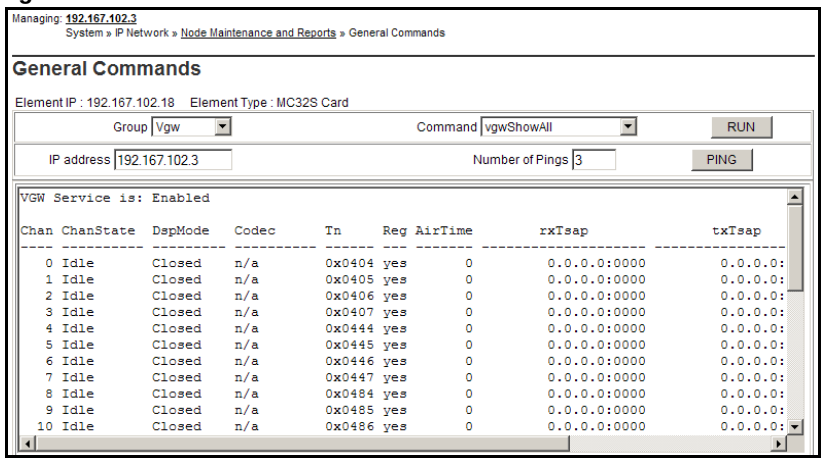
4 From the **Group** drop-down list, select **Voice Gateway**.

5 From the **Command** drop-down list, select **vgwShowAll**.

6 Click **RUN**.

Figure 165 on page 361 shows the **General Commands** web page with the output from the **vgwShowAll** command. The output shows information about all the voice gateway channels.

Figure 165
vgwShowAll result



The following information is provided for each VGW channel:

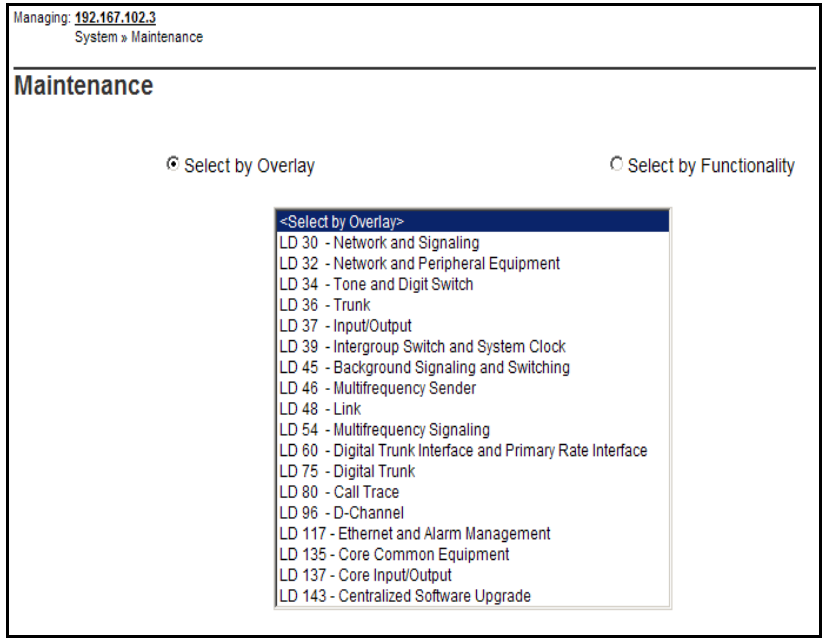
- Chan – Channel number
- ChanState – State of channel (Idle/Busy/Disabled/Unequipped)
- DspMode – Mode DSP is in (Voice/Closed)
- Codec – Codec frame-size used for the call
- Tn – Channel's physical TN in packed format
- Reg – Status of channel's gateway registration
- Air Time – Duration of audio stream 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.

Procedure 79
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 166. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 166.

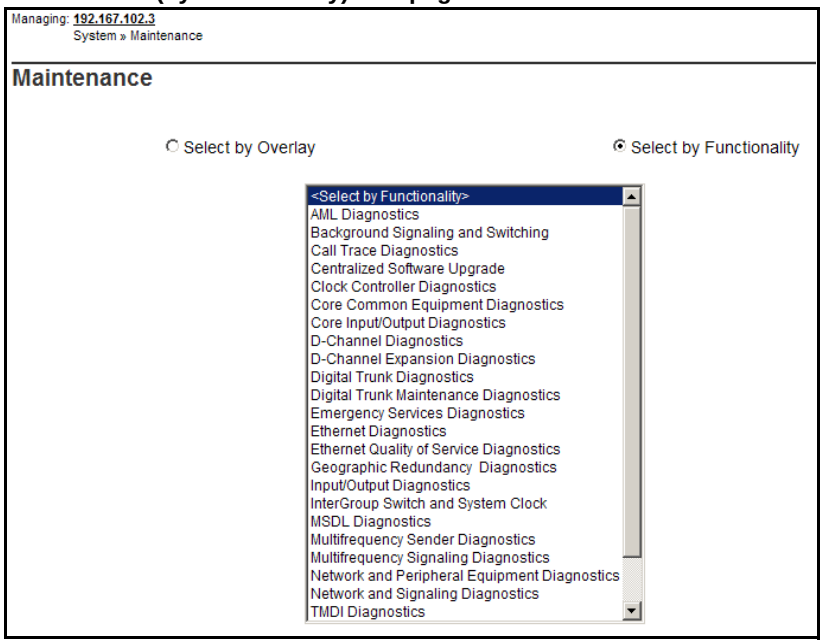
Figure 166
Maintenance (by Overlay) web page



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 167 on page 364.

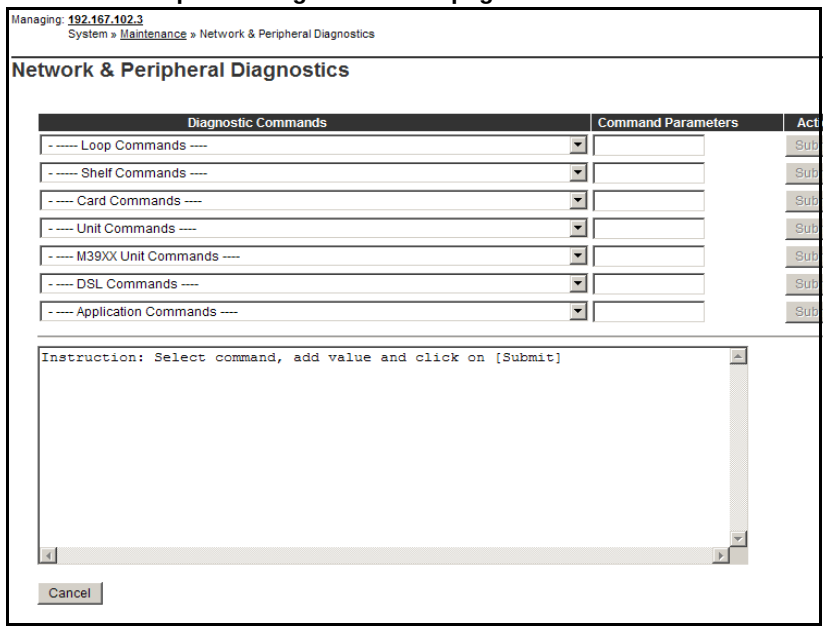
Figure 167
Maintenance (by functionality) web page



3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 167.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 168 on page 365.

Figure 168
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.

Procedure 80
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 166 on page 363. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 166.

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 167 on page 364.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 167 on page 364.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 168 on page 365.

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.

Disabling a card

Follow Procedure 81 to disable a Voice Gateway Media Card using Element Manager.

Procedure 81
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 166 on page 363. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 166.

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 167 on page 364.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 167 on page 364.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 168 on page 365.

4 Select the **DISC – Disable Peripheral 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.

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 82 to disable a Voice Gateway Media Card unit in Element Manager.

Procedure 82
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 166 on page 363. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 166.

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 167 on page 364.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 167 on page 364.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 168 on page 365.

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.

Enabling a card

Follow Procedure 83 to enable a Voice Gateway Media Card using Element Manager.

Procedure 83
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 166 on page 363. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 166.

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 167 on page 364.

3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 167 on page 364.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 168 on page 365.

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.

Enabling a card unit

Follow Procedure 84 to enable a Voice Gateway Media Card unit using Element Manager.

Procedure 84
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 166 on page 363. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 166.

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 167 on page 364.

3. Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 167 on page 364.

   The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 168 on page 365.

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.

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 85: “Installing a BIX cross-connect terminal” on page 372.
2. Procedure 86: “Installing the Krone Test Jack Frame (UK)” on page 376.
3. Procedure 87: “Connecting the cables to the Media Gateways” on page 378.

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 85 describes how to install a BIX cross-connect terminal. For detailed information, refer to the Nordex BIX documentation.

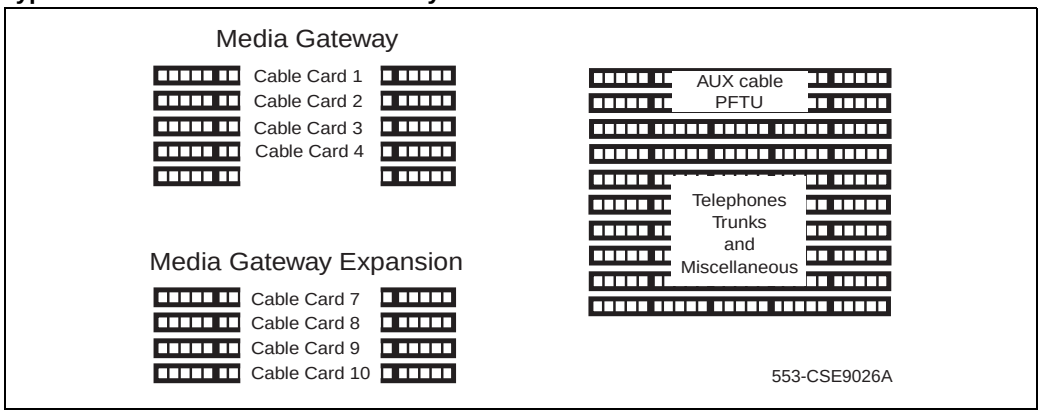
Procedure 85
Installing a BIX cross-connect terminal

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 169 on page 373.

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 169
Typical BIX cross-connect terminal layout



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 170 on page 375 shows how one 25-pair cable is divided among three terminating strips on the Krone Test Jack Frame.

Figure 170
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	
21R	21	BL-V	3
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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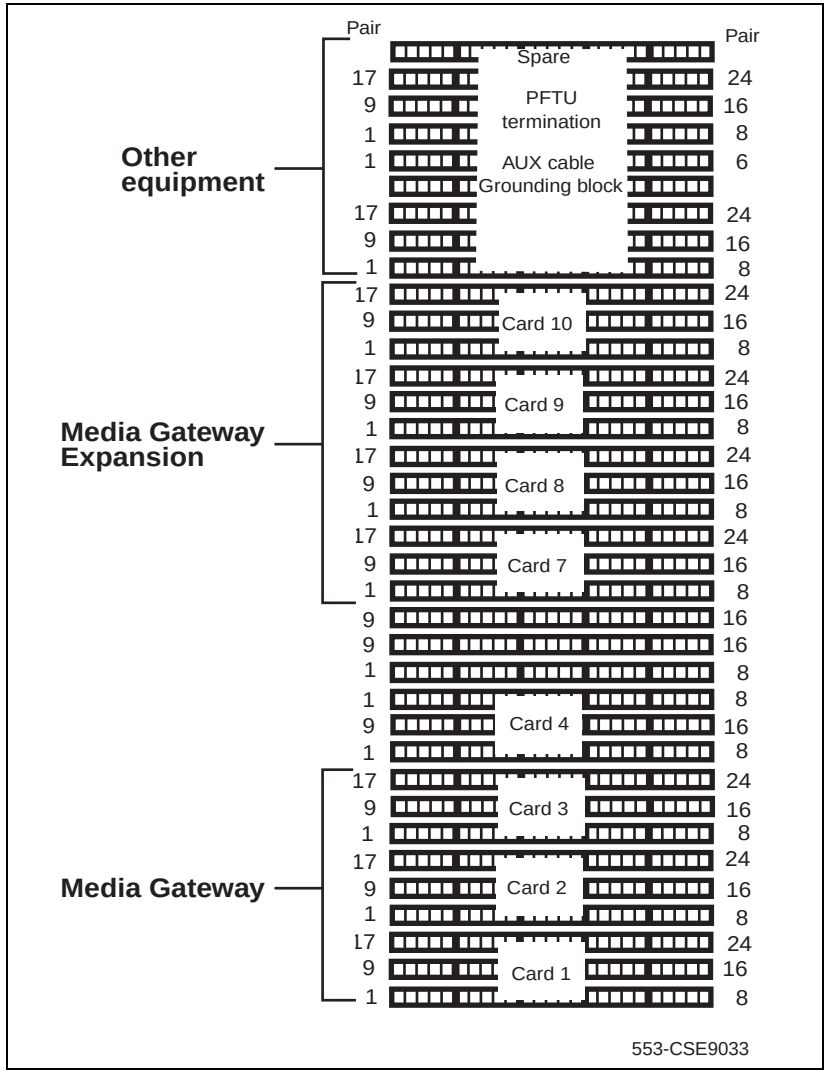
Procedure 86 describes how to install the Krone Test Jack Frame for the UK. For detailed information, refer to the Krone documentation.

Procedure 86
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 171 on page 377.
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 171
Typical Krone cross-connect terminal layout (UK)



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 87
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 172 on page 379 and Figure 173 on page 379.

Figure 172
Cable connectors at the back of the Media Gateway

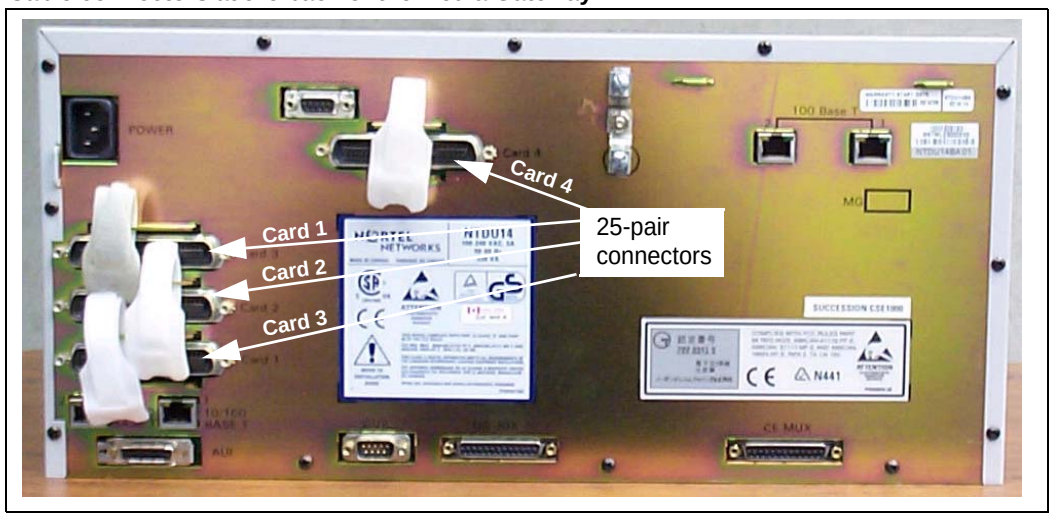
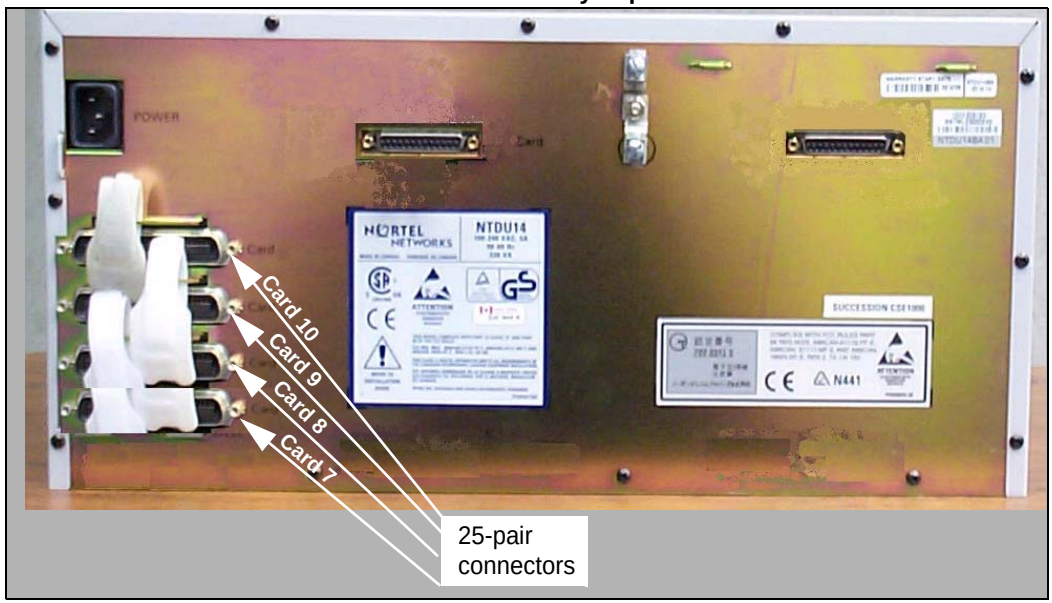


Figure 173
Cable connectors at the back of the Media Gateway Expander



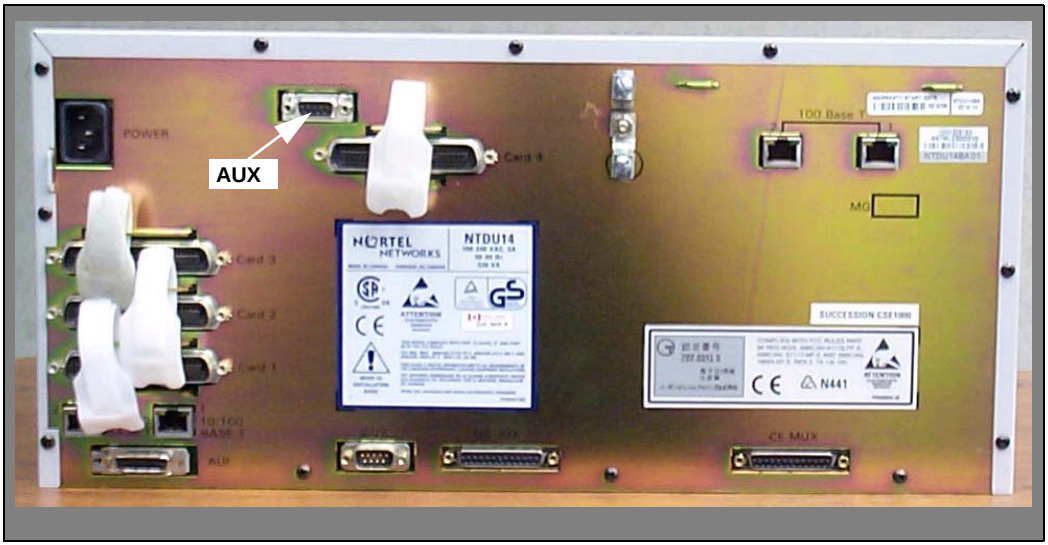
4 Tighten the velcro straps when you have connected each cable to the system.

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 174 on page 380.

Figure 174
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 43.

Table 43
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

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 88: "Cross-connecting telephones" on page 386
- Procedure 89: "Connecting a telephone without a PFTU" on page 388
- Procedure 90: "Connecting an off-premise telephone" on page 389
- Procedure 91: "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 371, 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 175 and Figure 176 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 175
Circuit card assignments in a Media Gateway

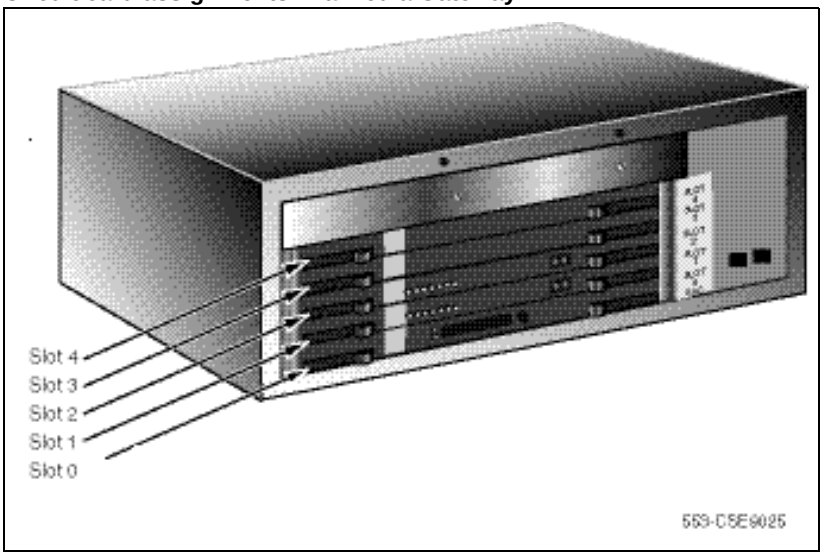
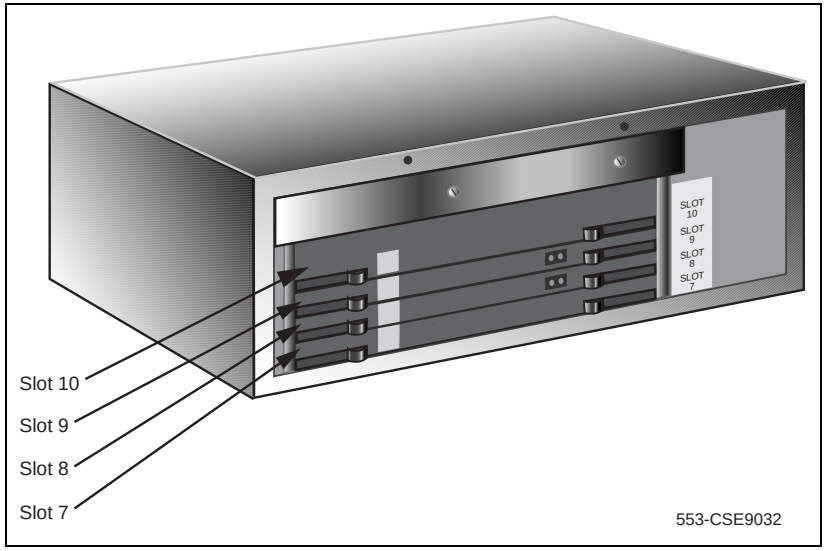


Figure 176
Circuit card assignments in a Media Gateway Expander



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 177 on page 387 and Figure 178 on page 388.

Procedure 88
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 177
NE-500/2500-type telephone cross connections

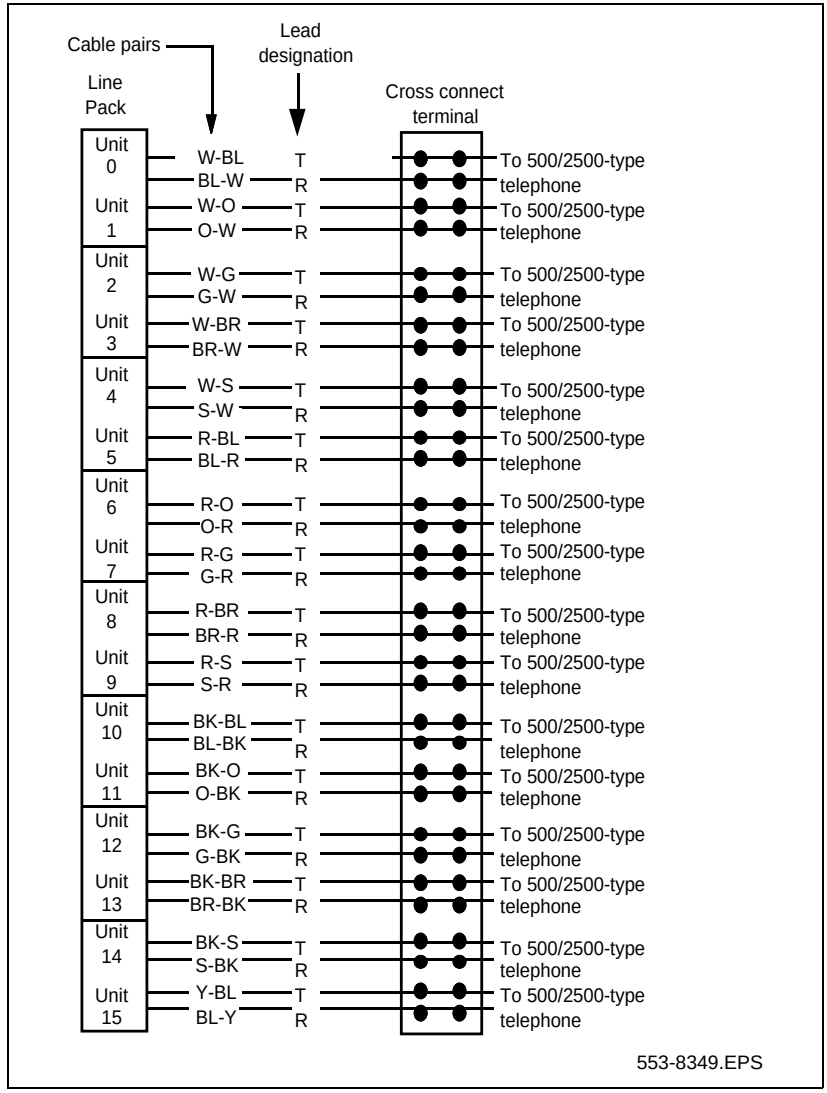
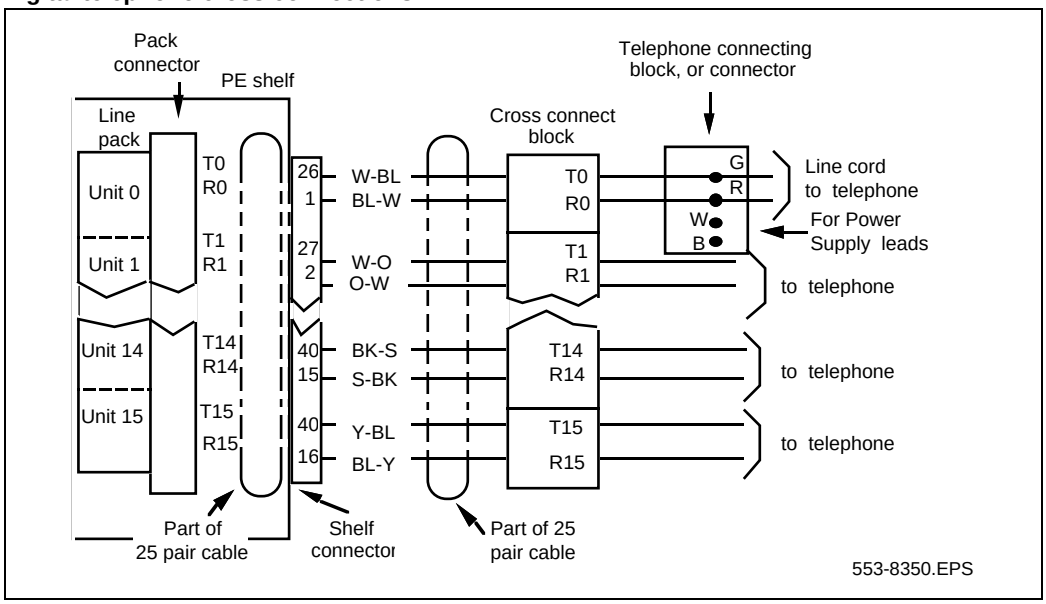


Figure 178
Digital telephone cross connections



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 89
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.

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 90
Connecting an off-premise telephone

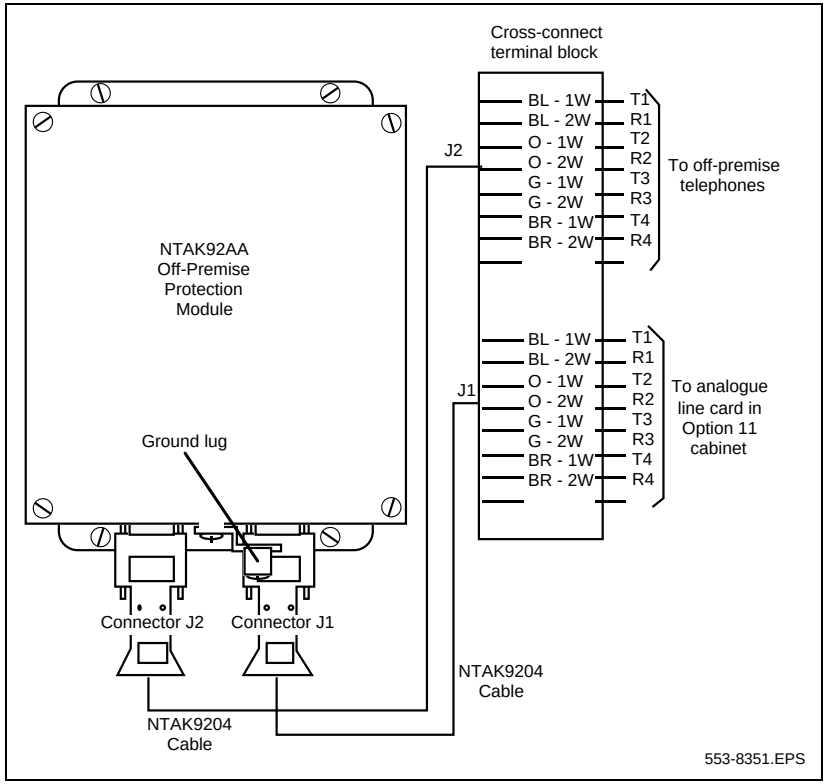
1. Install the NTAK92BA Off-Premise Protection Module on the wall using four #10 1/2-in (minimum) screws.
2. Connect a #6 AWG from the grounding lug at the bottom of the NTAK92AA Off-Premise Protection Module to the system ground. Refer to Figure 179 on page 391.

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 177 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 179
NTAK92BA Off-Premise Protection Module connections



Connecting an attendant console

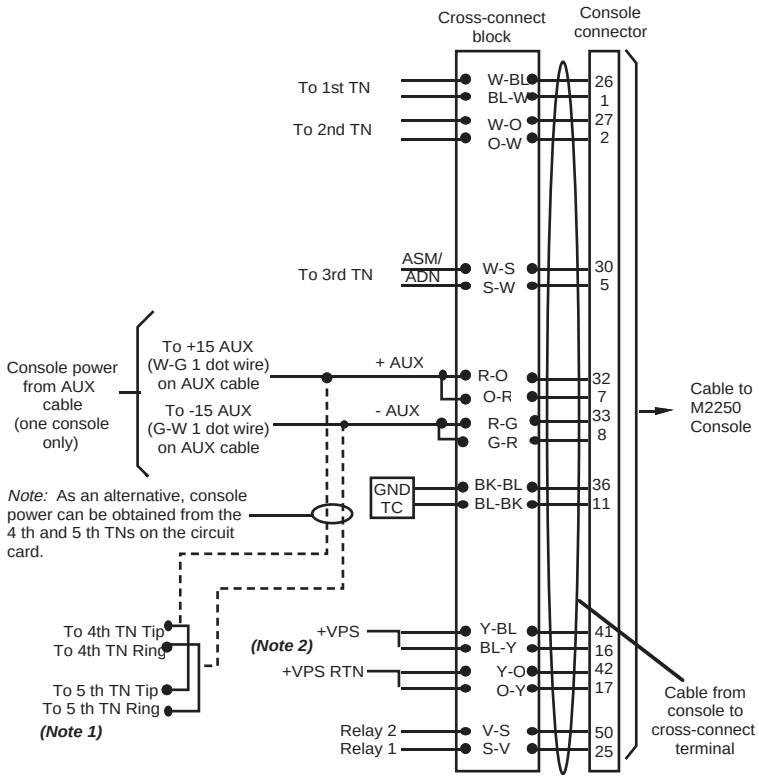
Procedure 91
Connecting an attendant console

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 180 on page 392.

Figure 180
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 44
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

Installing and configuring Nortel IP Phones

Contents

This section contains information on the following topics:

Introduction

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

The following Nortel IP Phones can be installed on a CS 1000E system:

- Nortel IP Phone 2001, Nortel IP Phone 2002, Nortel IP Phone 2004 and Nortel IP Phone 2007
- Nortel IP Softphone 2050
- Nortel IP Audio Conference Phone 2033
- Nortel IP Phone 1120E, Nortel IP Phone 1140E and Nortel IP Phone 1150E
- Nortel IP Phone 1110
- Expansion Module for IP Phone 1100 Series
- WLAN Handsets 2210/2211/2212
- MVC 2050

The system must be configured before the Nortel IP Phones can be installed. The configuration includes:

- The Nortel IP Phone TN blocks must be defined on the Call Server (See “VoIP bandwidth management zones” on page 410 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 323).
- The IP Phones require local boot parameter configuration (see “Configuring the Nortel IP Phone boot parameters” on page 424).

Package components for the Nortel IP Phones

Table 45 lists the Nortel IP Phone 2001 package components and product codes.

Table 45
Nortel IP Phone 2001 components list (Part 1 of 2)

Nortel IP Phone 2001 package contents include: • Nortel IP Phone 2001 • Handset • Handset cord • Footstand • 7 ft. Cat5 Ethernet cable • Getting Started card	
Nortel IP Phone 2001(Ethergray) with Icon keycaps	NTDU90AA16/A0533387
Nortel IP Phone 2001 (Ethergray) with English text label keycaps	NTDU90BA16/A0533388
Nortel IP Phone 2001 (Charcoal) with Icon keycaps	NTDU90AA70/A0053389
Nortel IP Phone 2001 (Charcoal) with English text label keycaps	NTDU90BA70/A0533390
Nortel IP Phone 2001 (Charcoal with Bezel) with Icon keycaps	NTDU90AB70
Nortel IP Phone 2001 (Charcoal with Bezel) with Icon keycaps (RoHS)	NTDU90AC70E6
Nortel IP Phone 2001 (Charcoal with Bezel) with English text label keycaps	NTDU90BB70
Nortel IP Phone 2001 (Charcoal with Bezel) with English text label keycaps (RoHS)	NTDU90BC70E6
Replacement parts	
7 ft. Cat5 Ethernet Cable	A0648375
Handset, Ethergray	A0788874

Table 45
Nortel IP Phone 2001 components list (Part 2 of 2)

Handset, Charcoal	A0758634
Handset cord, Ethergray; for Nortel IP Phone 2004 and Nortel IP Phone 2001	A088682
Handset cord, Charcoal; for Nortel IP Phone 2004 and Nortel IP Phone 2001	N0000764
Nortel 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
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 Nortel IP Phone 2002 package components and product codes.

Table 46
Nortel IP Phone 2002 components list (Part 1 of 2)

Nortel IP Phone 2002 package contents include: • Nortel IP Phone 2002 • Handset • Handset cord • Footstand • 7ft Cat5 Ethernet cable • Getting Started card	
Nortel IP Phone 2002 (Ethergray) with Icon keycaps	NTDU91AA16/A0533404
Nortel IP Phone 2002 (Ethergray) with English text label keycaps	NTDU91BA16/A0533405
Nortel IP Phone 2002 (Charcoal) with Icon keycaps	NTDU91AA70/A0533406
Nortel IP Phone 2002 (Charcoal) with English text label keycaps	NTDU91BA70/A0533407
Nortel IP Phone 2002 (Charcoal with Bezel) with Icon keycaps	NTDU91AB70
Nortel IP Phone 2002 (Charcoal with Bezel) with Icon keycaps (RoHS)	NTDU91AC70E6
Nortel IP Phone 2002 (Charcoal with Bezel) with English text label keycaps	NTDU91BB70
Nortel IP Phone 2002 (Charcoal with Bezel) with English text label keycaps (RoHS)	NTDU91BC70E6
Replacement parts	
7 ft. Cat5 Ethernet cable	A0648375
Handset, Ethergray	A0788874
Handset, Charcoal	A0758634

Table 46
Nortel 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 47 lists the Nortel IP Phone 2004 package components and product codes.

Table 47
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	
Nortel IP Phone 2004 (Ethergray) with Icon keycaps	NTDU92AA16/ A0533408
Nortel IP Phone 2004 (Ethergray) with English text label keycaps	NTDU92BA16/ A0533409
Nortel IP Phone 2004 (Charcoal) with Icon keycaps	NTDU92AA70/ A0533410
Nortel IP Phone 2004 (Charcoal) with English text label keycaps	NTDU92BA70/ A0533411
Nortel IP Phone 2004 (Charcoal with Bezel) with Icon keycaps	NTDU92AB70
Nortel IP Phone 2004 (Charcoal with Bezel) with Icon keycaps (RoHS)	NTDU92AC70E6
Nortel IP Phone 2004 (Charcoal with Bezel) with English text label keycaps	NTDU92BB70
Nortel IP Phone 2004 (Charcoal with Bezel) with English text label keycaps (RoHS)	NTDU92BC70E6
Nortel IP Phone 2004 wall mount kit (Charcoal), used with Ethergray and Charcoal models	NTMN15BA70/ A0503076

Table 47
IP Phone 2004 component list (Part 2 of 2)

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 48 lists the Nortel IP Phone 2007 package components and product codes.

Table 48
Nortel IP Phone 2007 component list (Part 1 of 2)

Nortel IP Phone 2007 package contents includes • Nortel 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
Nortel IP Phone 2007 power adapter	
Global power adapter	N0014020
Nortel 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 48
Nortel 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 49 lists the Nortel IP Phone ACP 2033 package components and product codes.

Table 49
Nortel 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
Nortel 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 50 lists the Package components for the WLAN Handsets.

Table 50
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 50
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 50
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 50
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 Nortel 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 Nortel 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:

VoIP bandwidth management zones

VoIP bandwidth management zones can be configured with Element Manager or using the CLI.

For more information about configuring VoIP bandwidth management zones, see *Converging the Data Network with VoIP* (NN43001-260). For more information about Element Manager, see *Communication Server 1000 Element Manager: System Administration* (553-3001-332).

Configuring virtual superloops

Follow Procedure 92 to configure the virtual superloops. For more details on virtual superloops, see *IP Line: Description, Installation, and Operation* (553-3001-365).

Procedure 92
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

3. Exit from LD 97. Enter the command:

   ****

Configuring a Nortel IP Phone using LD 11

Follow Procedure 93 to configure a Nortel IP Phone. The configuration can be completed using either OTM or CLI.

Procedure 93
Configuring the IP Phones

1 Access LD 11. Enter the command:

```
LD 11
```

2 Enter the appropriate responses shown in Table 52.

Table 52
LD 11 – Configure a Nortel IP Phone (Part 1 of 5)

Prompt	Response	Description
REQ:	NEW CHG	Add new or change existing data
TYPE:	1110 1120E 1140E 1150E 2001 2002 2004 2007 2033 i2050	For Nortel IP Phone 1110, Nortel IP Phone 1120E, Nortel IP Phone 1140E, Nortel IP Phone 1150E, Nortel IP Phone 2001, Nortel IP Phone 2002, Nortel IP Phone 2004, Nortel IP Phone 2007, Nortel IP Audio Conference Phone 2033, ,Nortel IP Softphone 2050.
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 62 on page 466)
DES	d...d	Office Data Administration System Station Designator
CUST	xx	Customer number as defined in LD 15

Table 52
LD 11 – Configure a Nortel IP Phone (Part 2 of 5)

Prompt	Response	Description
ZONE	0-255	Zone number to which this Nortel IP Phone belongs
CLS	ADD	Class of Service ADD - Automatic Digit Display, (default for Nortel IP Phone) For a complete list of responses, refer to *Software Input/ Output: Administration* (553-3001-311).
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.

Table 52
LD 11 – Configure a Nortel IP Phone (Part 3 of 5)

Prompt	Response	Description
		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. 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 Nortel IP Phone KEM is assigned keys 32-55, and the second Nortel 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.

Table 52
LD 11 – Configure a Nortel IP Phone (Part 4 of 5)

Prompt	Response	Description
		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 52
LD 11 – Configure a Nortel IP Phone (Part 5 of 5)

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 Nortel 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 Nortel 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 Nortel IP Phone soft keys. Table 53 on page 416 lists the dedicated Nortel 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 53.

Table 53
Nortel IP Phone dedicated soft key assignment (Part 1 of 2)

Nortel 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 53
Nortel IP Phone dedicated soft key assignment (Part 2 of 2)

Nortel 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 Nortel IP Phone.

Setting administrator and temporary IP Telephone Installer passwords

Nortel 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 Nortel IP Phone Installer Passwords, see *IP Line: Description, Installation, and Operation* (553-3001-365).

The Nortel 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 94
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 **INetwork > Maintenance and Reports** from the navigator.

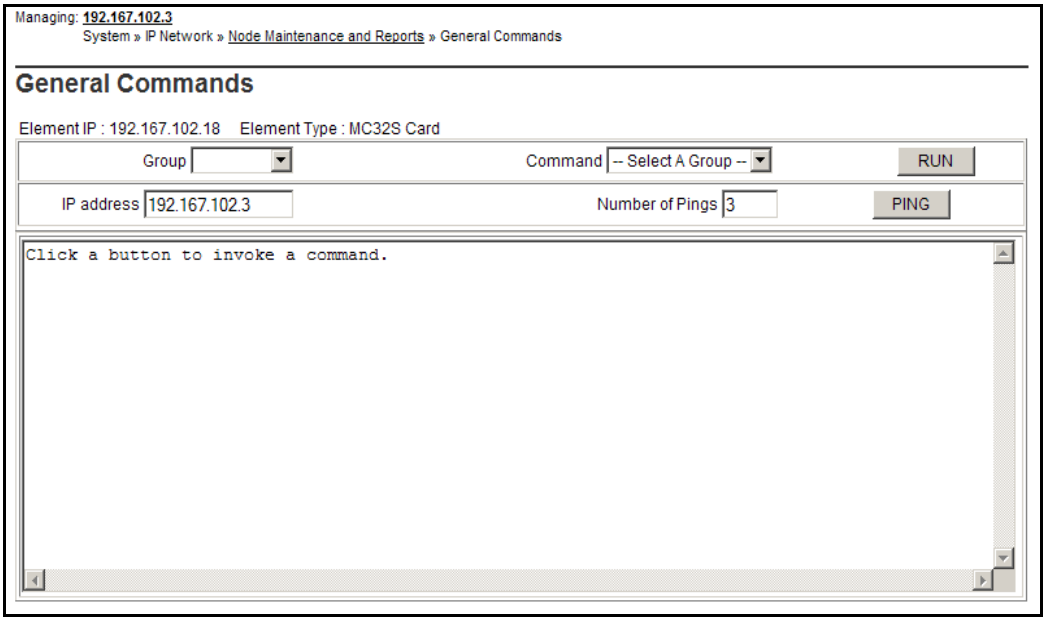
The **Node Maintenance and Reports** web page opens, as shown in Figure 162 on page 359.

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 181.

Figure 181
General Commands



5 Select **NodePwd** from the **Group** drop-down list.

6 Select **nodePwdShow** from the **Command** drop-down list.

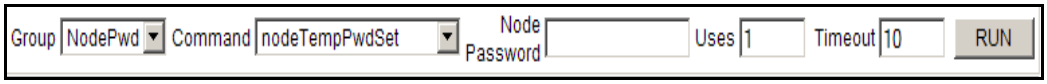
7 Click **RUN**.

The current node password information displays in the text area at the bottom of the web page.

8 Select **nodePwdSet** from the drop-down list.

9 Enter the administrator Nortel IP Phone Installer Password in the **Node Password** box (see Figure 182).

Figure 182
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).

10 Select **NodePwd** from the **Group** drop-down list.

11 Select **nodePwdShow** from the **Command** drop-down list.

12 Click **RUN**.

The updated administrator Nortel IP Phone Installer Password is displayed in the text area at the bottom of the web page.

13 Enter the temporary Nortel IP Phone Installer Password (see Figure 183):

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.

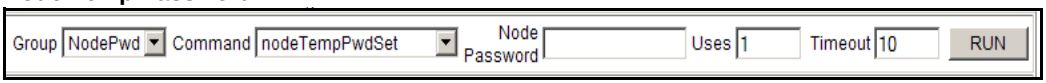
The area then displays the **Uses** and **Timeout** text boxes.

d. Enter a value for the number of uses or a value for timeout (in hours) or both.

14 Click **SET**.

The temporary password is set.

Figure 183
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.

15 Select **NodePwd** from the **Group** drop-down list.

16 Select the **nodePwdShow** command from the **Command** drop-down list.

17 Click **RUN**.

The updated temporary Nortel IP Phone Installer Password is displayed.

Installing Nortel IP Phone hardware components

Follow Procedure 95 to install Nortel IP Phone hardware components.

Procedure 95
Installing Nortel IP Phone hardware components

For details on installing hardware components, see *Internet Terminals: Description* (553-3001-368).

1 Refer to Figure 184 on page 421, when installing the following:

a. Footstand

b. 3-Port Switch only on the Nortel IP Phone 2004, required if a single Ethernet connection is shared with a PC

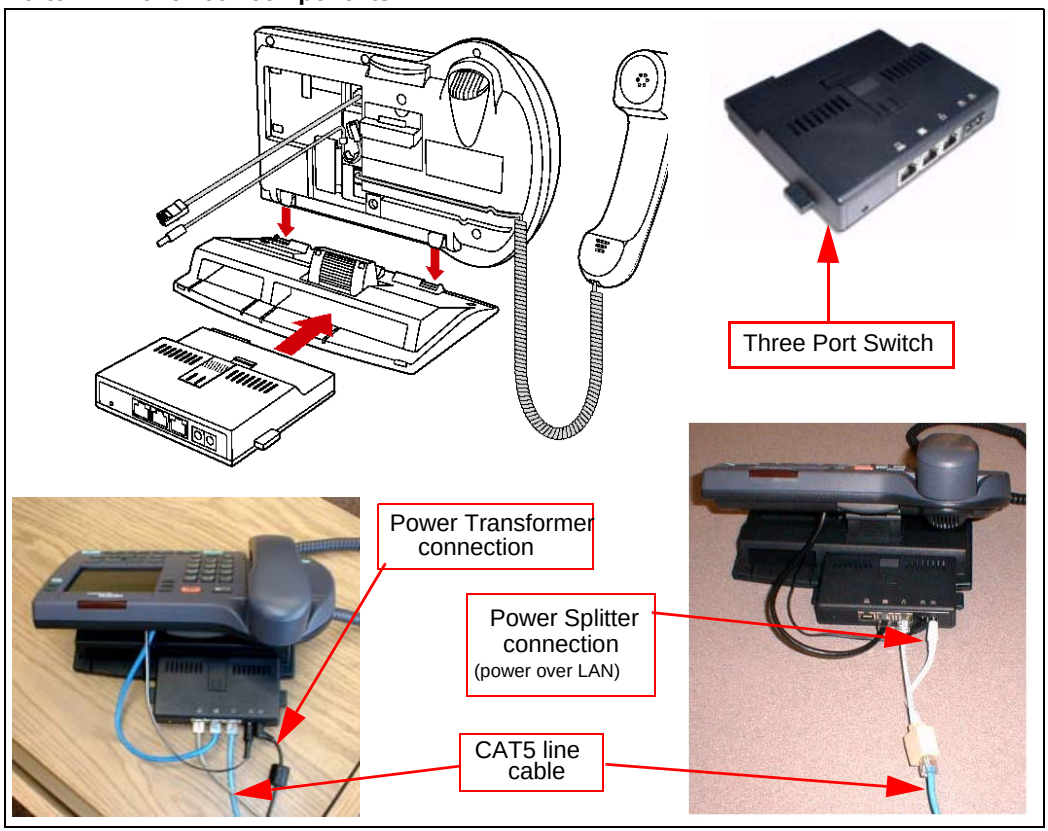
c. Ethernet cable from the set to the 3-Port Switch

d. Power Transformer or Power Splitter for Power over LAN unit

e. Handset

f. Handset cord

Figure 184
Nortel 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 184 on page 421.

3 Connect the other end into the IP voice network (Ethernet), using an RJ-45 connector. See Figure 185 on page 423.

WARNING

Do not plug the Nortel 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.

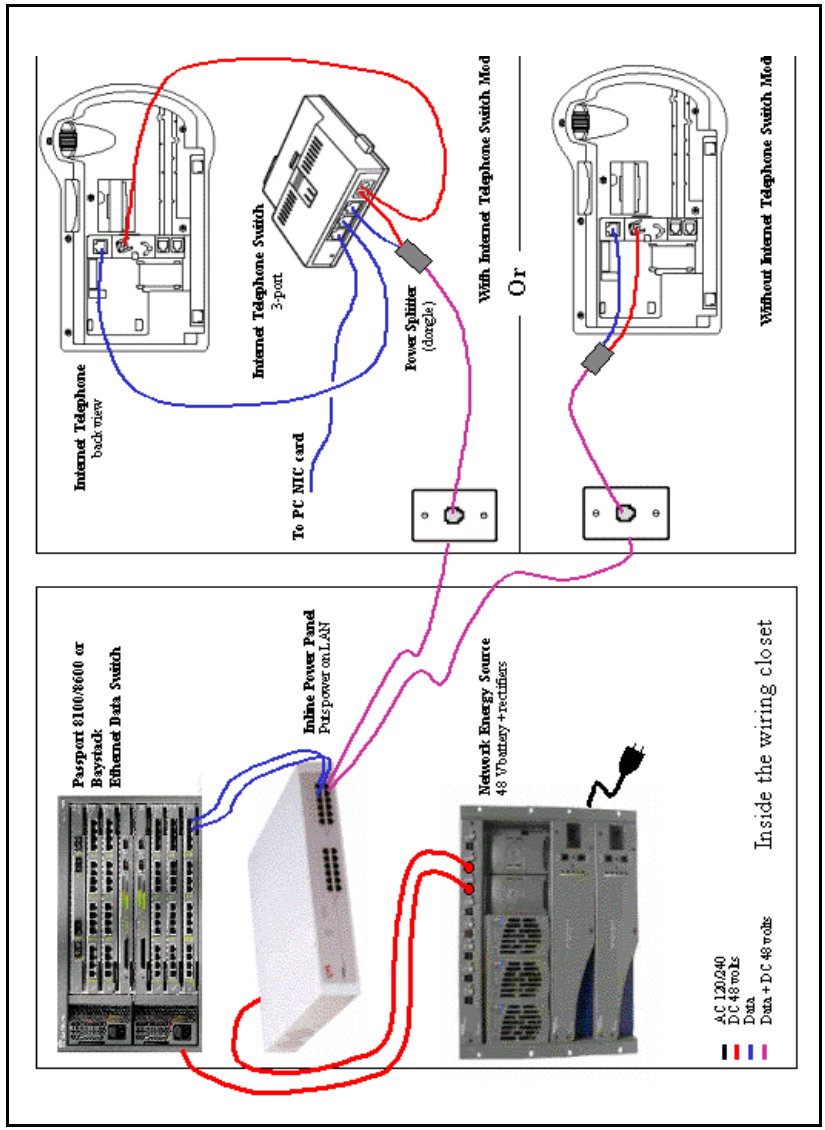
4 Power the Nortel IP Phone with one of the following methods:

a. Using a 16V AC power adaptor, plug the AC power transformer into the nearest power outlet. Check the Nortel 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 185 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 185
Nortel IP Phone connections



Configuring the Nortel IP Phone boot parameters

The Nortel IP Phone boot parameters are configured during telephone installation. The following configuration modes are available:

- Manual configuration
  - All of the Nortel IP Phone's boot parameters are statically configured at the Nortel IP Phone.
  - See Procedure 96: "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 Nortel IP Phone with an IP address; the remainder of the Nortel IP Phone's boot parameters are statically configured at the Nortel IP Phone.
  - See Procedure 97: "Entering Nortel IP Phone boot parameters using full DHCP parameters" on page 428.
- Full DHCP mode
  - Requires special configuration of the DHCP server to recognize the Nortel IP Phone. The DHCP server provides all boot parameters to the Nortel IP Phone, including IP address and server address.
  - See Procedure 98: "Entering boot parameters using partial DHCP parameters" on page 430.

For configuration of the DHCP server, see *Data Networking for Voice over IP* (553-3001-160).

Entering Nortel IP Phone boot parameters using manual configuration

Follow Procedure 96 to enter IP Telephone boot parameters using manual configuration.

Procedure 96
Entering IP Telephone boot parameters using manual configuration

1 Power the Nortel 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 Nortel IP Phone prompts:

```
DHCP? (0-No, 1-Yes): 0
```

4 Enter **0** for manual boot parameter configuration.

The Nortel IP Phone prompts:

```
SET IP: x.x.x.x
```

5 Enter the Nortel IP Phone IP address.

The Nortel IP Phone prompts:

```
NETMSK: x.x.x.x
```

6 Enter the subnet mask.

The Nortel IP Phone prompts:

```
DEF GW: x.x.x.x
```

7 Enter the default gateway.

The Nortel IP Phone prompts:

```
S1 IP: x.x.x.x
```

8 Enter the Server 1 IP (node IP).

The Nortel IP Phone prompts:

```
S1 PORT: 4100
```

9 Enter the Server 1 port.

The Nortel IP Phone prompts:

```
S1 ACTION: 1
```

10 Enter the Server 1 action.

The Nortel IP Phone prompts:

```
S1 RETRY COUNT: 10
```

11 Enter the Server 1 retry count.

The Nortel IP Phone prompts:

```
S2 ...
```

12 Enter same information as for Server 1.

The Nortel 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 Nortel IP Phone displays:

```
Locating server...
```

After several seconds, the Nortel 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 Nortel IP Phone prompts:

```
VLAN: x
```

Go to step 14 on page 427.

c. Press the **OK** key.

The Nortel IP Phone prompts:

```
Invalid TN: x.x
Reason: Unequipped.
Go offhook to do SBI
```

14 Enter the VLAN ID.

The Nortel IP Phone displays:

```
Locating server...
```

If you did not configure an Nortel IP Phone Installer Password, after several seconds, the Nortel IP Phone prompts:

```
Node: x
TN: x.x
```

15 Enter the node number and the Nortel IP Phone's (virtual) TN, then go to Step 18.

If you configured an Nortel IP Phone Installer Password, the Nortel IP Phone prompts:

```
Node: x
PassWord: x
```

16 Enter the node number and the temporary or administrator Nortel 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 Nortel 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 Nortel IP Phone prompts:

```
TN: x.x
```

17 Enter the Nortel IP Phone's (virtual) TN.

The Nortel 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.

Entering Nortel IP Phone boot parameters using full DHCP parameters

Follow Procedure 97 to enter IP Phone boot parameters using full DHCP parameters.

Procedure 97
Entering Nortel IP Phone boot parameters using full DHCP parameters

1 Power the Nortel 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 Nortel IP Phone prompts:

```
DHCP? (0-No, 1-Yes): 0
```

4 Enter **1** to use DHCP.

The Nortel IP Phone prompts:

```
DHCP:0-Full, 1-Partial:0
```

5 Enter the 0 to use Full DHCP.

The Nortel 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 Nortel IP Phone displays:

```
Locating server...
```

After several seconds, the Nortel 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 Nortel IP Phone prompts:

```
VLAN: x
```

Go to step 7.

c. Enter **2** to configure automatic VLAN.

The Nortel IP Phone prompts:

```
VLAN: x
```

Go to step 7

7 Enter the VLAN ID.

The Nortel IP Phone displays:

```
Locating server...
```

If you did not configure an Nortel IP Phone Installer Password, after several seconds, the Nortel IP Phone prompts:

```
Node: x
TN: x.x
```

8 Enter the node number and the Nortel IP Phone's (virtual) TN, and then go to step 11 on page 430.

If you configured an Nortel IP Phone Installer Password, the Nortel IP Phone prompts:

```
Node: x
PassWord: 0
```

9 Enter the node number and the temporary or administrator Nortel 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 Nortel 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 Nortel IP Phone prompts:

```
TN: x.x
```

10 Enter the Nortel IP Phone's (virtual) TN.

The Nortel 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.

Entering boot parameters using partial DHCP parameters

Follow Procedure 98 to enter IP Telephone boot parameters using partial DHCP parameters.

Procedure 98
Entering boot parameters using partial DHCP parameters

1 Power up the Nortel 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 Nortel IP Phone prompts:

`DHCP? (0-No, 1-Yes): 0`

4 Enter **1** to use DHCP.

The Nortel IP Phone prompts:

`DHCP:0-Full, 1-Partial:0`

5 Enter the **1** to use Partial DHCP.

The Nortel IP Phone prompts:

`S1 IP: x.x.x.x`

6 Enter the Server 1 IP (node IP).

The Nortel IP Phone prompts:

`S1 PORT: 4100`

7 Enter the Server 1 port.

The Nortel IP Phone prompts:

`S1 ACTION: 1`

8 Enter the Server 1 action.

The Nortel IP Phone prompts:

`S1 RETRY COUNT: 10`

9 Enter the Server 1 retry count.

The Nortel IP Phone prompts:

`S2 ...`

10 Enter same information as for Server 1.

The Nortel 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 Nortel IP Phone displays:

`Locating server...`

After several seconds, the Nortel IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```

Go to step 12.

b. Enter **1** to configure manual VLAN.

The Nortel IP Phone prompts:

```
VLAN: x
```

Go to step 12 on page 432.

c. Enter **2** to configure automatic VLAN.

The Nortel IP Phone prompts:

```
VLAN: x
```

Go to step 12.

12 Enter the VLAN ID.

The Nortel IP Phone displays:

```
Locating server...
```

If you did not configure an Nortel IP Phone Installer Password, after several seconds, the Nortel IP Phone prompts:

```
Node: x
TN: x.x
```

13 Enter the node number and the Nortel IP Phone's (virtual) TN then go to step 16.

If you configured a Nortel IP Phone Installer Password, the Nortel IP Phone prompts:

```
Node: x
PassWord: 0
```

14 Enter the node number and the temporary or administrator Nortel 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 Nortel 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 Nortel IP Phone prompts:

`TN: x.x`

15 Enter the Nortel IP Phone's (virtual) TN.

The Nortel 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.

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 Nortel 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 TM to configure IP Phones on the Call Server.

Follow Procedure 99 to use Set-Based Installation.

Procedure 99
Using Set-Based Installation

This procedure is the same as Procedure 96 on page 425, Procedure 97 on page 428, and Procedure 98 on page 430, except when the system response, displayed on the Nortel IP Phone, is as follows:

If you did not configure an Nortel IP Phone Installer Password, the Nortel IP Phone prompts:

```
Node: x
TN: x.x
```

1. Enter the node number and the Nortel IP Phone's (virtual) TN, then go to Step 4.

   If you configured a Nortel IP Phone Installer Password, the Nortel IP Phone prompts:

   ```
   Node: x
   PassWord: 0
   ```

2. Enter the node number and the temporary or administrator Nortel 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 Nortel 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 Nortel IP Phone prompts:

   ```
   TN: x.x
   ```

3. Enter the Nortel IP Phone's (virtual) TN.
4. Press the **OK** key.

   The Nortel 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 Nortel 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 Nortel 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 Nortel 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 Nortel IP Phone, is as follows:

0K

12 Replace the handset.

The set displays the logo, the date and time, and the DN keys The set based installation is complete.

Installing the IP Softphone 2050

This chapter contains the following procedures:

- Procedure 100: "Configuring the IP Softphone 2050" on page 436
- Procedure 101: "Installing the USB Headset Kit" on page 437
- Procedure 102: "Installing the IP Softphone 2050 on your PC" on page 437
- “Running the IP Softphone 2050 for the first time” on page 438

Procedure 100
Configuring the IP Softphone 2050

1 Access LD 11. Enter the command:

```
LD 11
```

2 Enter appropriate responses shown in Table 54.

Table 54
LD 11 – Configure the IP Softphone 2050

Prompt	Response	Description
REQ:	NEW CHG	Add new data Change existing data
TYPE:	I2050pc	Type of data block
TN	l s 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

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 101
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.

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 102
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.

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 Nortel IP Phone functionality

You can now use the IP Phones. To test the telephones, make Nortel IP Phone-to-Nortel IP Phone calls.

Displaying registered IP Phones

Follow Procedure 103 to display the IP Phones registered on a Signaling Server or Voice Gateway Media Card.

Procedure 103
Displaying registered IP Phones in Element Manager

1. Log in to Element Manager.
2. Select **System > IP Network > Maintenance and Reports** 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 **Iset** from the Group 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.

Upgrading firmware

Refer to the *IP Line: Description, Installation, and Operation* (553-3001-365), to check for the latest Nortel IP Phone firmware version and how to upgrade to the latest Nortel 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 104: "Installing and connecting a QUA6 PFTU" on page 442

2 Procedure 105: "Connecting an analog (500/2500-type) telephone to a PFTU" on page 450

3 Procedure 106: "Connecting a Trunk to a PFTU" on page 452

Installing and connecting a QUA6 PFTU

Follow Procedure 104 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 104
Installing and connecting a QUA6 PFTU

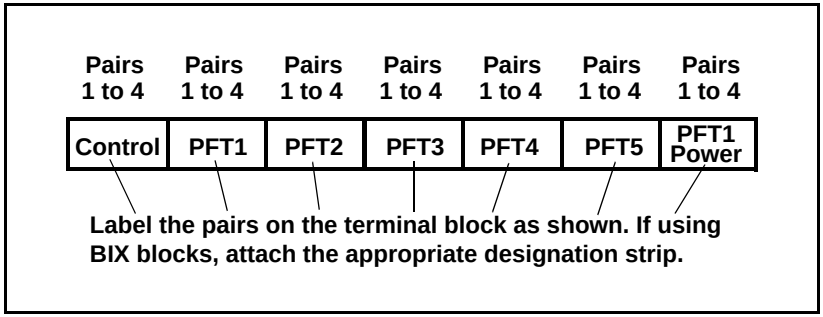
1 Install the PFTU on the wall near the system cross-connect terminal.

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 186 on page 442.

Figure 186
J1 cable labels



4 Connect the PFTU power and control connections to the AUX connector on the Media Gateway. See Figure 187 on page 443 and Figure 188 on page 444, Table 55 on page 444, and Figure 189 on page 446.

Figure 187
AUX cable connectors on media gateway

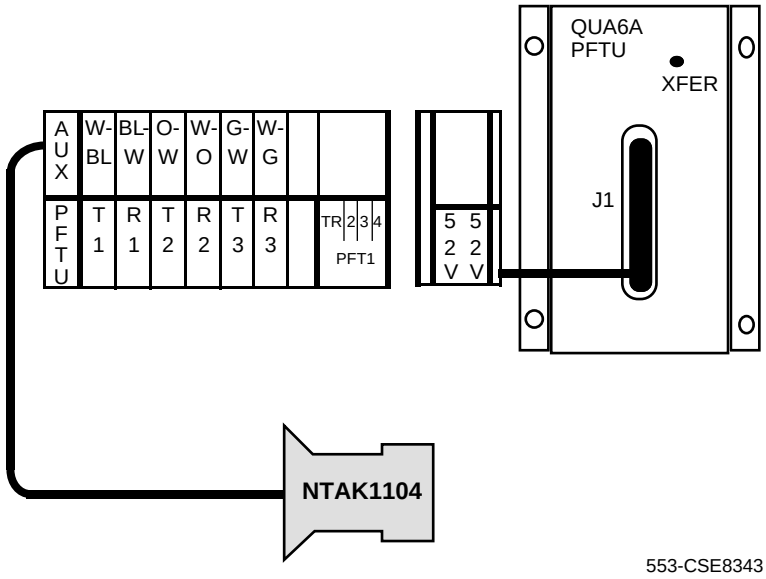


Figure 188
AUX cable connector on Media Gateway

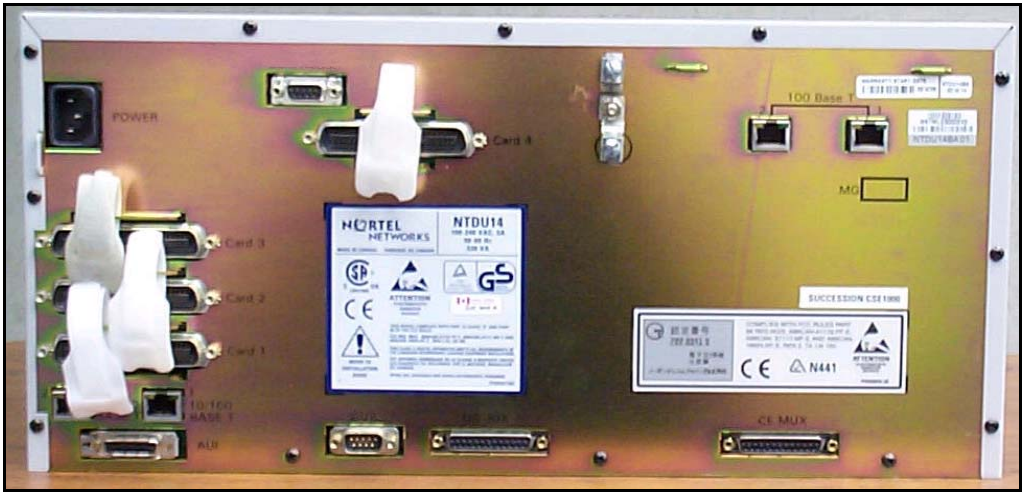


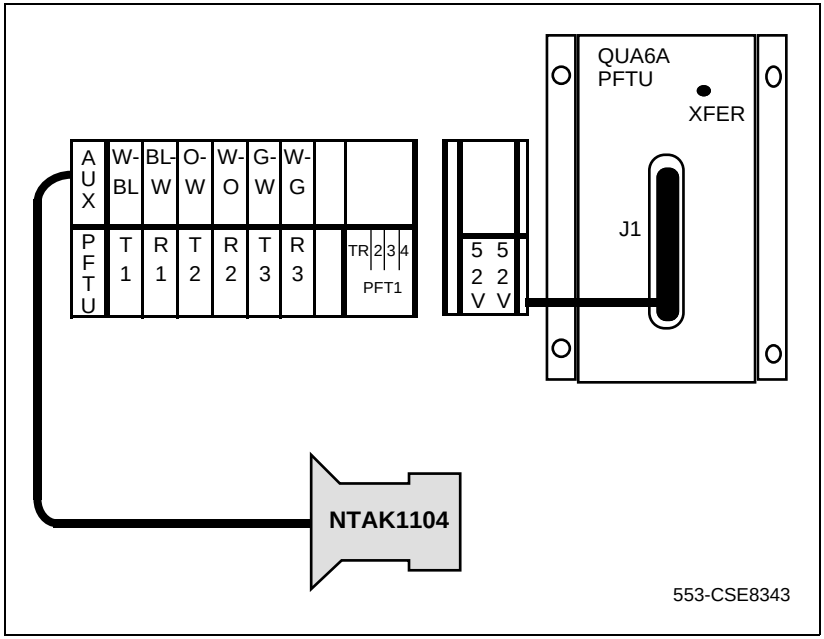
Table 55
Control and power connections on cable J1 (Part 1 of 2)

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 55
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 189
Power fail transfer



Installing and connecting a third-party PFTU

Follow the equipment manufacturer's instructions for installing the PFTU. Use the information in Table 56 to connect a third-party PFTU.

Table 56
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

Table 56
PFTU control lead signals

	Lead State	
NTAK1104 AUX cable lead	**When PFTU is in non-transferred state**	**When PFTU is in transferred state**
-48V AUX	-48V DC (250 mA max.)	-48V DC (250 mA max.)
PFTS	OPEN	GROUND

Note 1: Refer to Figure 188 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

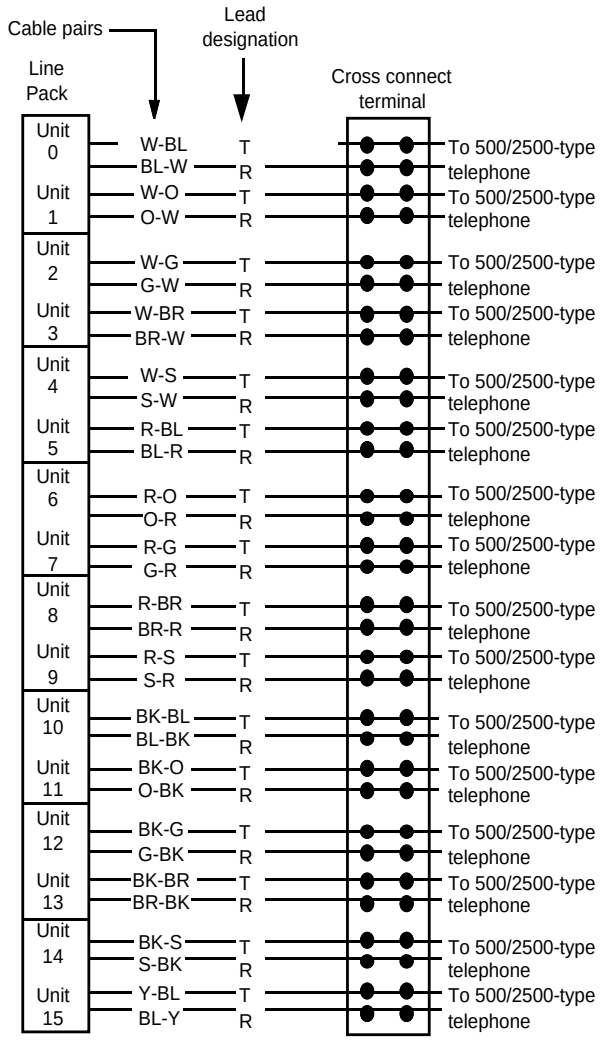
Ensure that the cable from the appropriate Line card slot has been connected to the telephone. Refer to “Installing the Main Distribution Frame” on page 371.

Follow Procedure 105 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 190
Analog Line card cable distribution



Procedure 105
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 57 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 57
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 57
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 57
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

Connecting a trunk to a PFTU

Follow Procedure 106 to connect a Trunk to a PFTU.

Procedure 106
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 58 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 58
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 58
Power Fail Transfer Unit connections (Part 2 of 2)

QUA6 J1 cable				
Function	**Pair**	**Color**	**Connects to:**	**Connects to:**
PFT 4	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
PFT 5	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

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 107: "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 107 to install an alarm using an alarm port assigned in LD 15.

Procedure 107
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 Nortel 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 59).

   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 59
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

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 60.

Table 60
The AC capacities

Maximum	AC capacities
Switching power	50.0 V A
Switching voltage	125.0 V rms
Switching current	0.5 A

Figure 191 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 61 on page 458 provides the connections for all units on the PFTU.

Figure 191
Contacts in PFTU

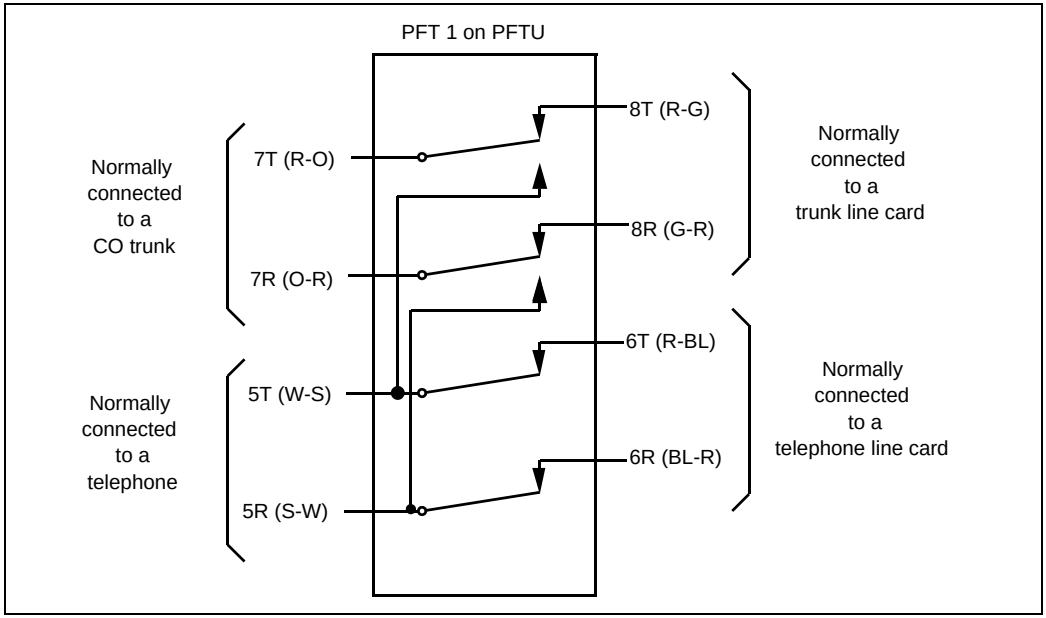


Table 61
PFTU connections (Part 1 of 3)

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 61
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 61
PFTU connections (Part 3 of 3)

Unit	Pair	Color	Normal mode	Failure mode
PFT 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

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 108: "Configuring the basic system" on page 462.

Basic system configuration

Programming the CS 1000E system 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 192 on page 463 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 193 on page 464, and Figure 194 on page 465 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 108
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 192 on page 463, Figure 193 on page 464, and Figure 194 on page 465.

Figure 192
Data-entry-sequence for new systems

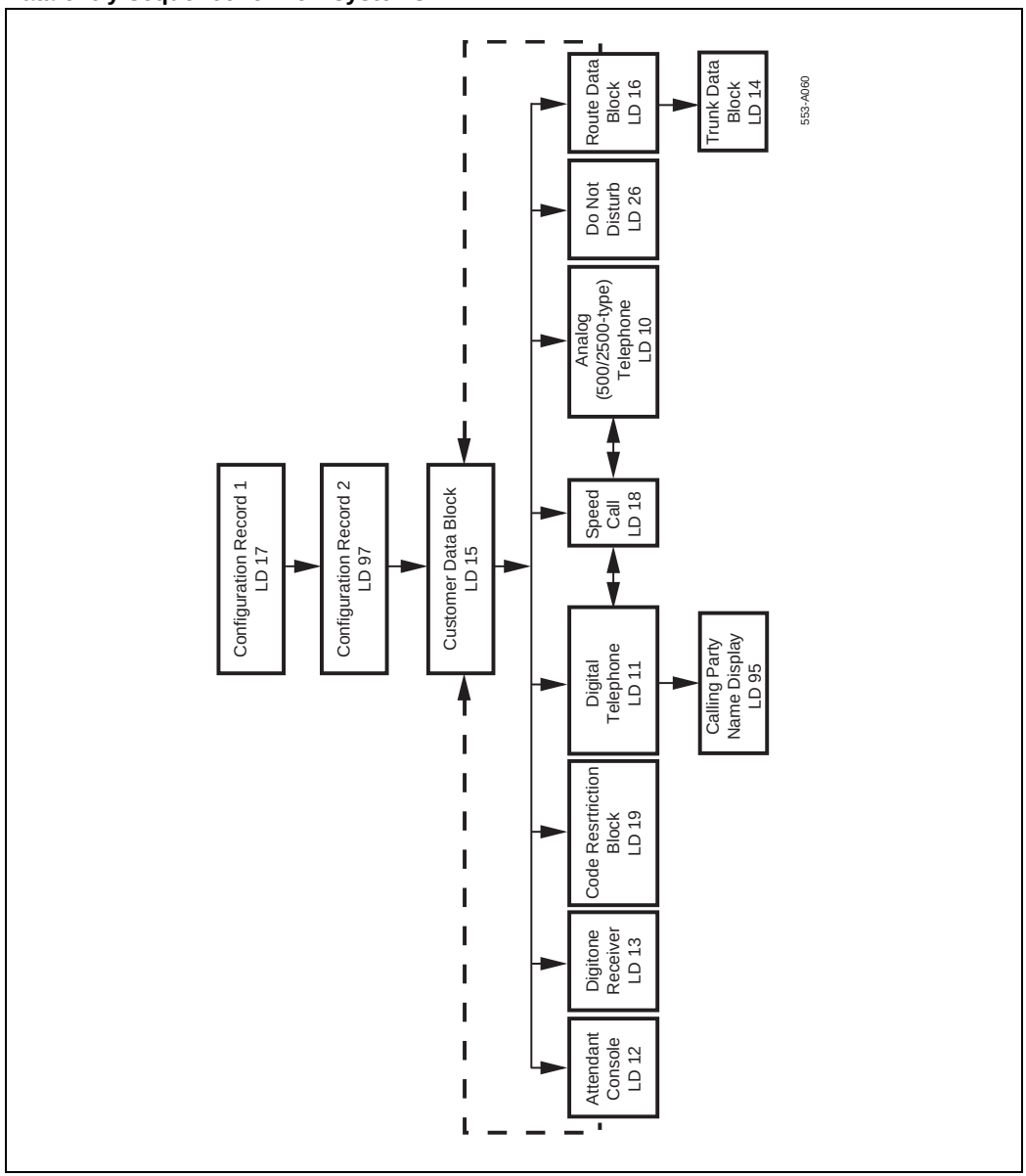


Figure 193
Configuration Record

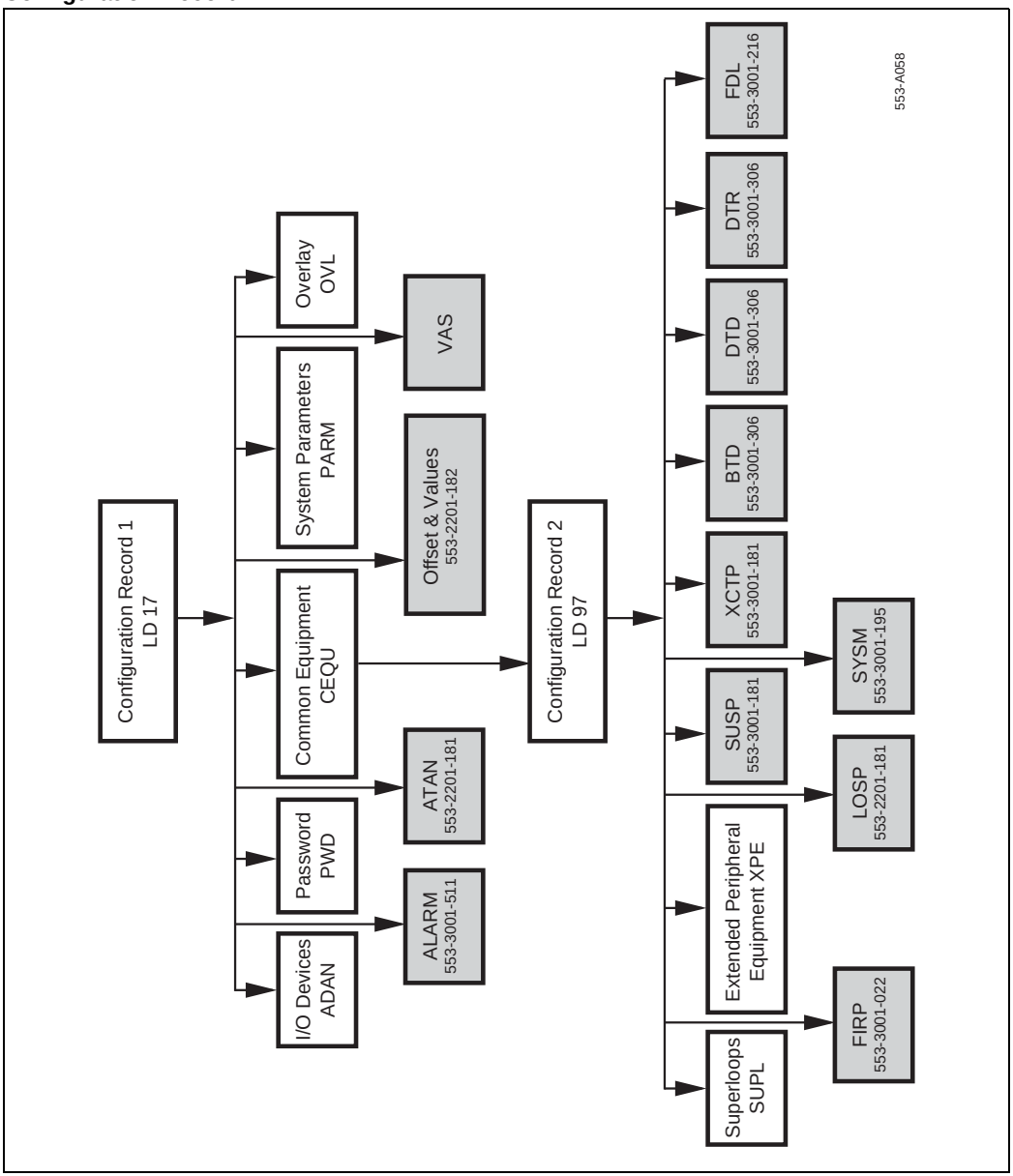
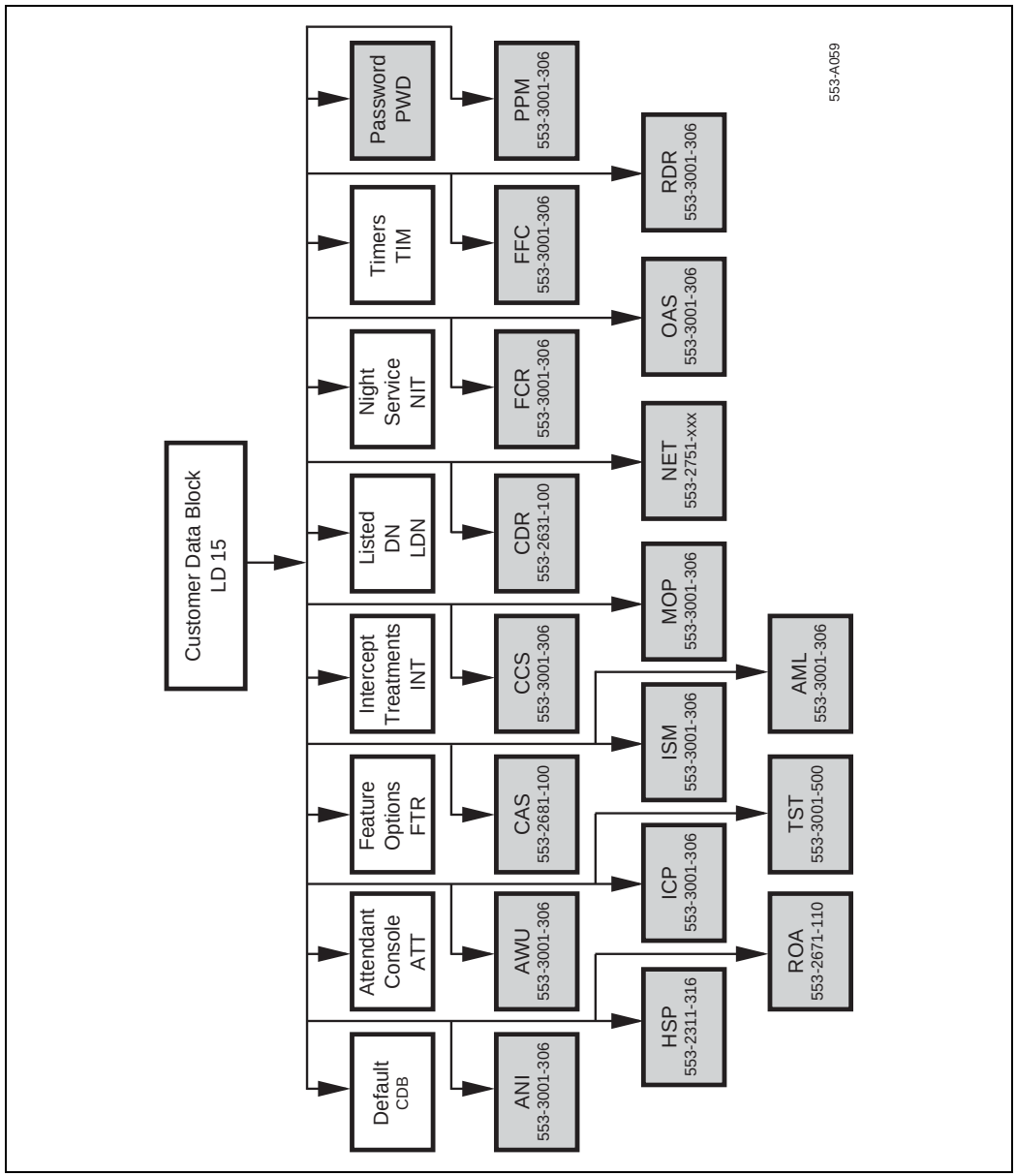


Figure 194
Customer Data Block



TN assignment

Table 62 shows the TN assignments for the MG 1000E.

Table 62
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

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.

Appendix A: Supported cabling options

Although Nortel recommends using direct connections from the faceplate ethernet connectors of the MGC and CP PM cards to a Layer 2 switch, they also support the cabling configurations shown in this appendix.

The MGC can use the features of the Media Gateway (MG) by using two short cables to connect from the card faceplate ethernet connectors to the two front bulkhead ethernet connectors that are internally wired to the 100BaseT ethernet connectors on the rear of the MG. In addition the MGC backplane connector provides both an ELAN and TLAN connection to te 10/100BaseT ethernet connectors on the rear of the MG. Figure 195 on page 473 shows both options.

Note 1: Connecting to the 1E and 2T ethernet connectors cause the 10/100BaseT leds to function on the rear of the MG.

Note 2: If the NTDW67 MGC Reference ROHS cable is used the LED on the back of the MG will not function. Only the faceplate LEDs will function.

Note 3: The CE and CT faceplate ethernet ports can be used as local ethernet maintenance ports.

CS 1000E dual-homing is supported in accordance with the following cabinets and chassis:

Table 63
Supported Cabinets and MG Chassis

Product Number	Product Name	Vintage	Release 5.0	Dual Homing Supported
NTDU14	Media Gateway Chassis	AA	Supported	No
		CA	Supported	Yes
		DA, DAE5	Supported	Yes
NTDU15	Media Gateway Expansion Chassis	AA	Supported	N/A
		DA	Supported	N/A
		DAE5	Supported	N/A
NTDK91	Chassis System Main Chassis	BBE5	Supported	No
NTDK92	Chassis System Chassis Expander	BB	Supported	N/A
NTAK11	Main/Expansion Cabinet	BD	Supported	Yes

Figure 195
MGC cabling in a MG

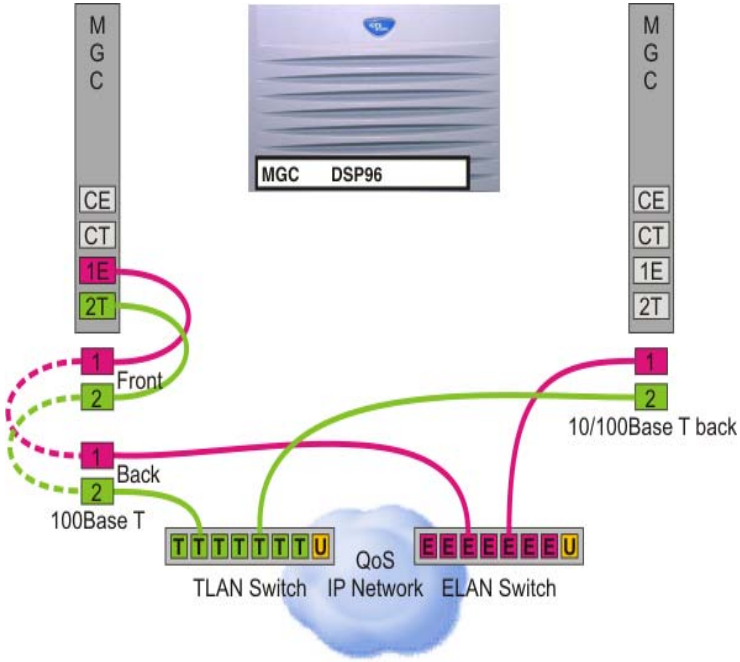


Figure 196 on page 474 demonstrates the MGC cabling in a dual-homed configuration.

Figure 196
MGC Dual-homed in a MG

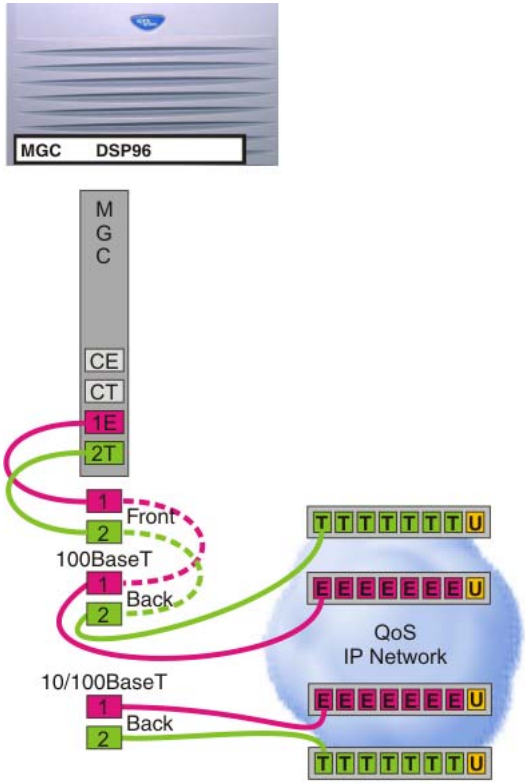
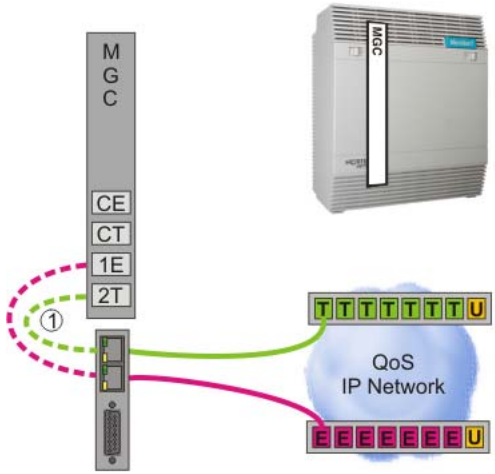


Figure 197 on page 475 shows the MGC cabling from the backplane connector to the MGC 100BT connector Cabinet.

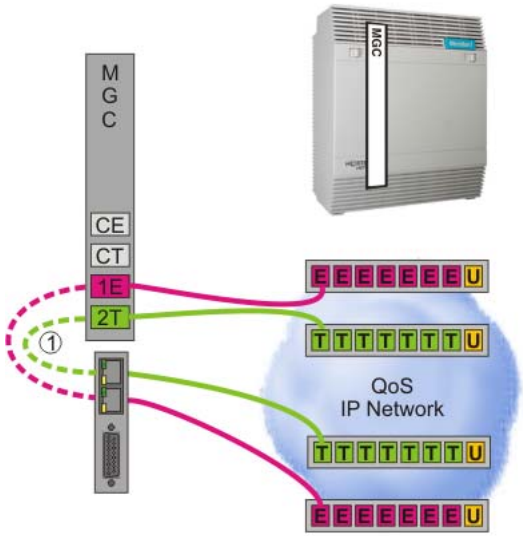
Figure 197
MGC using MGC 100BT in a Cabinet



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 198 on page 476 shows the MGC in a dual-homed configuration in a Cabinet.

Figure 198
MGC Dual-homed in a Cabinet



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 199 on page 477 shows the MGC and CP as a SA Call Server in a MG.

Figure 199
SA Call Server in a MG

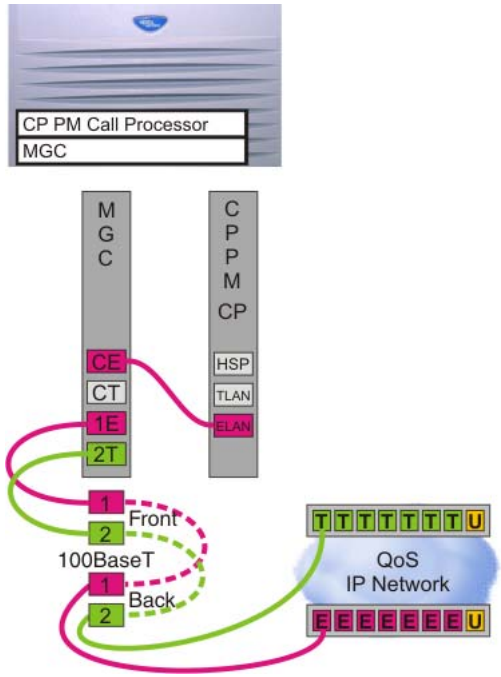
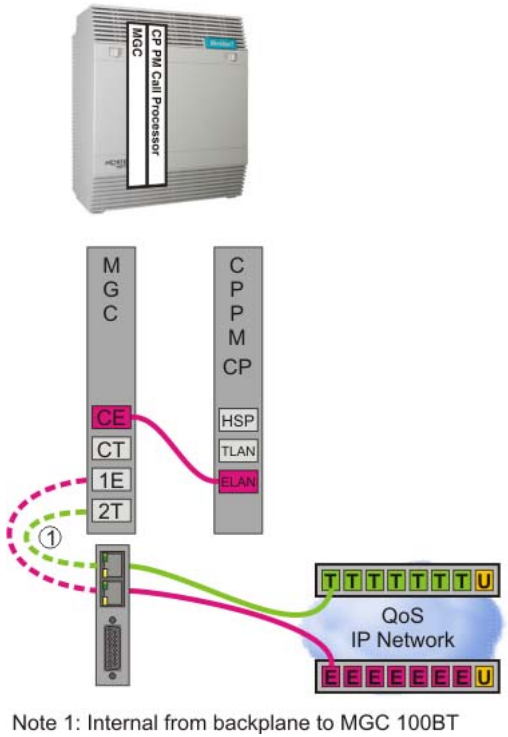


Figure 200 on page 478 shows the MGC and CP as a SA Call Server in a Cabinet.

Figure 200
SA Call Server in a Cabinet



Note 1: Internal from backplane to MGC 100BT

Figure 201 on page 479 shows a SA Call Server with a Signaling Server in a MG.

Figure 201
SA Call Server with SS in a MG

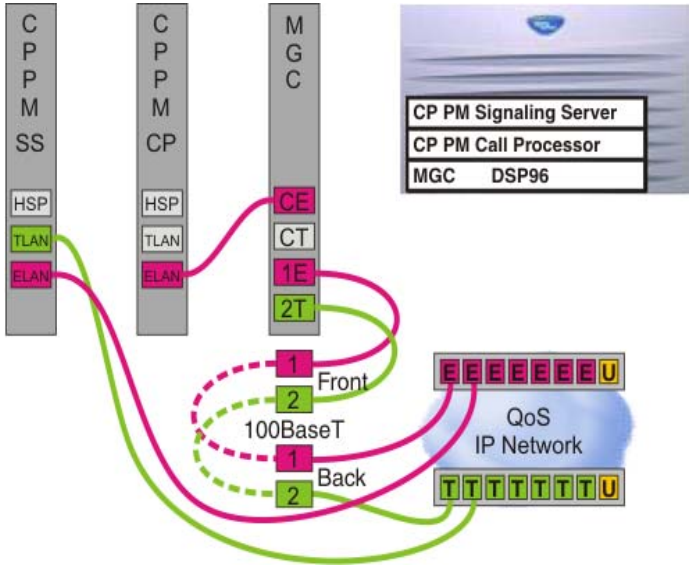
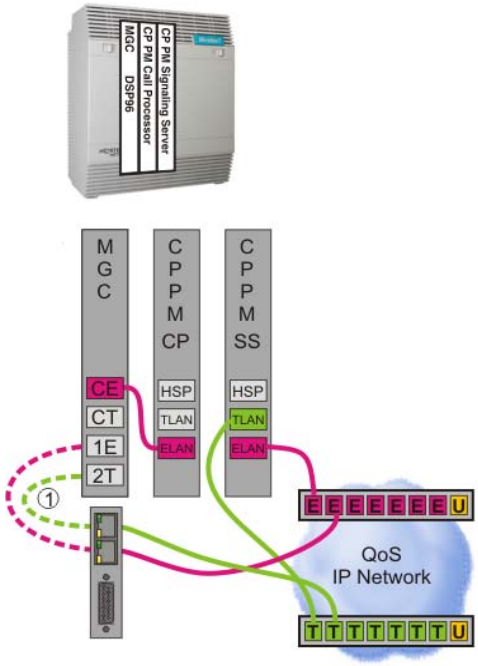


Figure 202 on page 480 shows a SA Call server with a Signaling Server in a Cabinet.

Figure 202
SA Call Server with SS in a Cabinet



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 203 on page 481shows a Dual-homed HA Call Server with the HSP in Media Gateways.

Figure 203
Dual-homed HA Call Server with HSP in MG

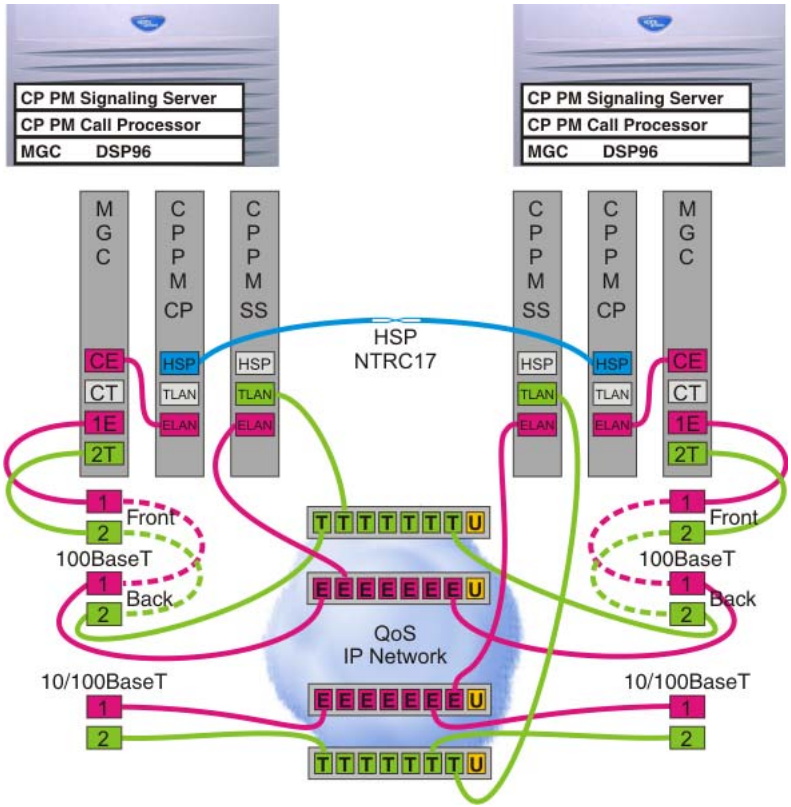
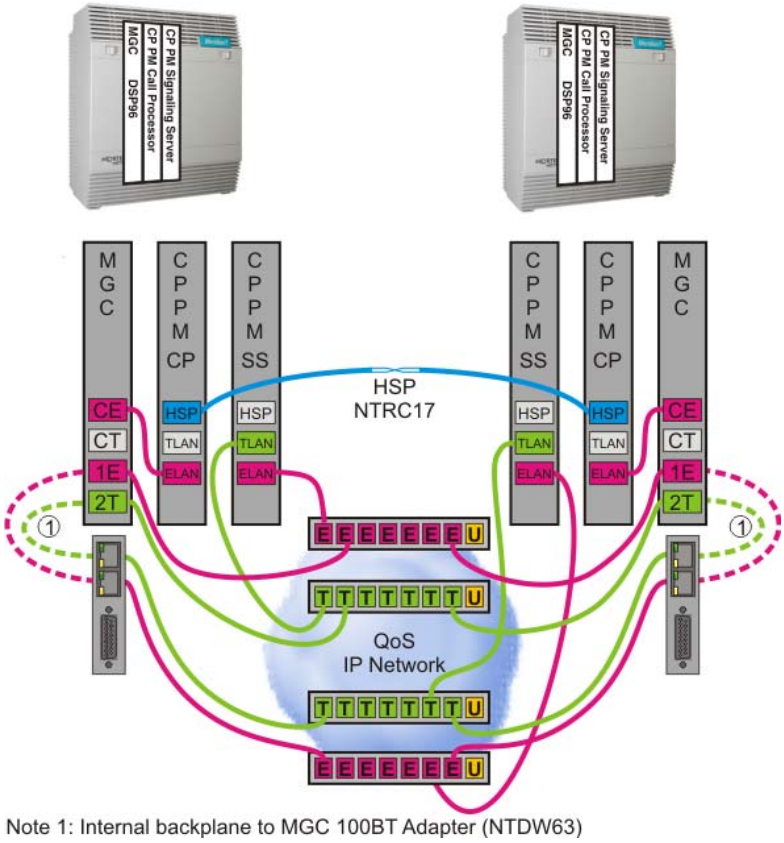


Figure 204 on page 482 shows a Dual-homed HA Call Server with the HSP in Cabinets.

Figure 204
Dual-homed HA Call Server with HSP in Cabinets



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 205 on page 483 shows a Dual-homed HA Call Server with a dual-homed HSP in Media Gateways.

Note: This configuration does not support DSP daughterboards on the MGC.

Figure 205
Dual-homed HA Call Server with a dual-homed HSP

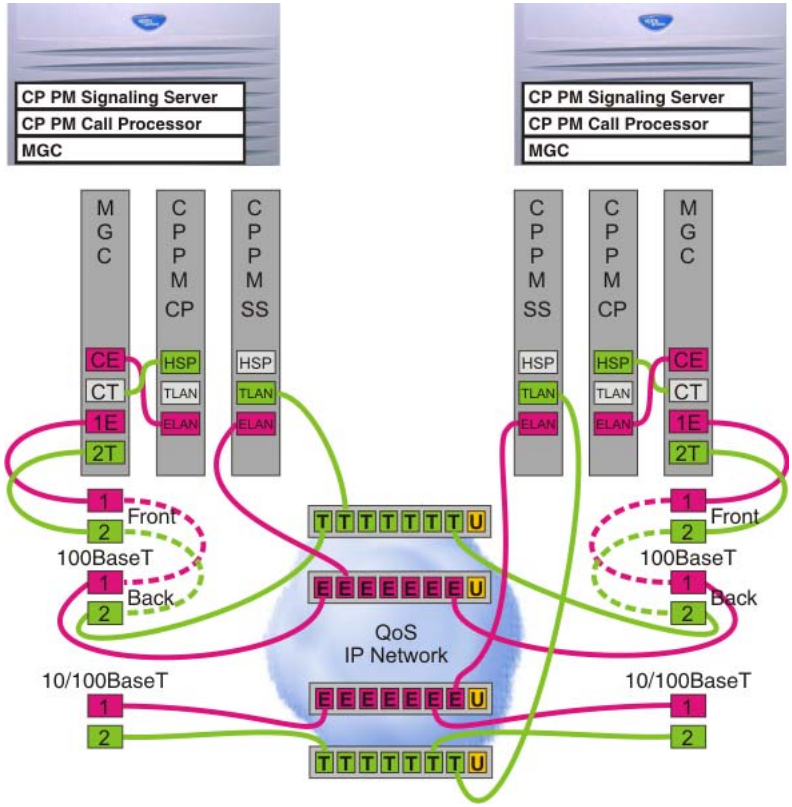
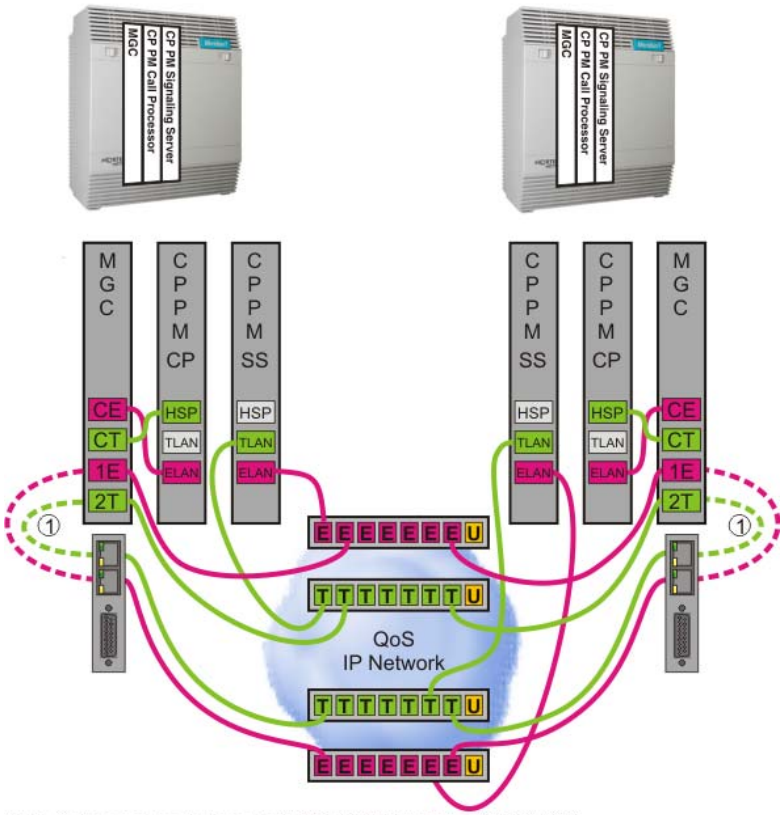


Figure 206 on page 484 shows a Dual-homed HA Call Server with a dual-homed HSP in Cabinets.

Note: This configuration does not support DSP daughterboards on the MGC.

Figure 206
Dual-homed HA Call Server with dual-homed HSP



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Nortel Communication Server 1000

Communication Server 1000E

Installation and Commissioning

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Publication number: NN43041-310
Document release: Standard 02.15
Date: February 2010

NORTEL