
Nortel Communication Server 1000

Nortel Communication Server 1000 Release 6.0

Communication Server 1000E

Installation and Commissioning

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New in this release

Features

CS 1000 Release 6.0 introduces the CP PM Co-resident Call and Signaling Server (CP PM Co-res CS and SS), which can run the Call Server software, the Signaling Server software, and System Management software on the same hardware platform operating under the RedHat Linux Operating System. For CS 1000 Release 6.0, the only supported hardware platform for the CP PM Co-res CS and SS Server is the Call Processor-Pentium Mobile (CP PM) platform.

The Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card provides a cost effective solution to migrate from a Meridian 1 or CS 1000M to a CS 1000E system while allowing you to re-use most of your existing peripheral equipment. The MG XPEC is essentially equivalent to two Media Gateway Controller (MGC) cards, and the two halves of the MG XPEC card control separate Media Gateway loops. For more information about MG XPEC, see “Media Gateway Extended Peripheral Equipment Controller (MG XPEC)” on [page 107](#).

Revision History

March 2010

Standard 03.07. This document is up-issued to correct references to *Signaling Server IP Line Application Fundamentals* (NN43001-125).

February 2010

Standard 03.06. This document is up-issued for Communication Server 1000 Release 6.0.

October 2009

Standard 03.05. This document is up-issued to support the Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card.

September 2009

Standard 03.04. This document is up-issued to support the Media Gateway 1010.

June 2009

Standard 03.03. This document is up-issued for Communication Server 1000 Release 6.0.

May 2009

Standard 03.02. This document is up-issued for Communication Server 1000 Release 6.0.

May 2009

Standard 03.01. This document is up-issued for Communication Server 1000 Release 6.0.

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.

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 6.0, click one of the links below.

Latest Software	Takes you directly to the Nortel page for CS 1000 Release 6.0 software.
Latest Documentation	Takes you directly to the Nortel page for CS 1000 Release 6.0 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 *Converging the Data Network with VoIP* (NN43001-260).

Note on legacy products and releases

This NTP contains information about systems, components, and features that are compatible with Nortel Communication Server 1000 Release 6.0 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.”

The following Media Gateways are referred to generically as “Media Gateway”:

- Chassis (NTDK91) and Chassis Expander (NTDK92)
- Chassis (NTDU14) and Expansion Chassis (NTDU15)
- Cabinet (NTAK11)
- IPE module (NT8D37) with MG XPEC card (NTDW20)
- Media Gateway 1010 (MG 1010) (NTC310)

Related information

This section lists information sources that relate to this document.

NTPs

The following NTPs are referenced in this document:

- *Converging the Data Network with VoIP* (NN43001-260)
- *ISDN Primary Rate Interface: Installation and Configuration* (NN43001-301)
- *Circuit Card: Description and Installation* (NN43001-311)

- *Communication Server 1000E: Planning and Engineering* (NN43041-220)
- *IP Peer Networking: Installation and Commissioning* (NN43001-313)
- *Signaling Server IP Line Application Fundamentals* (NN43001-125)
- *ISDN Basic Rate Interface: Installation and Configuration* (NN43001-318)
- *Features and Services* (NN43001-106)
- *Software Input/Output: Administration* (NN43001-611)
- *Element Manager: System Administration* (NN43001-632)
- *Telephones and Consoles: Description, Installation, and Operation* (NN43001-567)
- *IP Phones: Description, Installation, and Operation* (NN43001-368)
- *Software Input/Output: Maintenance* (NN43001-711)
- *Communication Server 1000E: Maintenance* (NN43041-700)
- *ISDN Primary Rate Interface: Maintenance* (NN43001-717)
- *ISDN Basic Rate Interface: Maintenance* (NN43001-718)
- *CP PM Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509)
- *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)
- *Communication Server 1000M and Meridian 1 Large System Upgrade NTPs* (NN43021-458 – NN43021-475)

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:

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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 43](#).

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 43](#)).
- 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	39
Installation tasks	40

Introduction



WARNING

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

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

For information on the minimum VoIP network requirements and converging a data network with VoIP, refer to *Converging the Data Network with VoIP* (NN43001-260).

Before undertaking the installation, review the chapter entitled “Safety instructions” on [page 35](#).

See “System components” on [page 43](#) 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 403](#).

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	135
Installing system grounds	151
Installing and connecting CS 1000E hardware	161
Installing software on the CS 1000E	179
Installing Signaling Server software	237
Configuring a terminal and SDI ports	321
Connecting an IR-8020M-101 Terminal Server	293
Connecting an MRV LX8020S-102AC-R Terminal Server	307
Logging in to Element Manager	269
Installing and configuring a Voice Gateway Media Card	359
Installing the Main Distribution Frame	393
Configuring an IP telephony node	239
Installing Line cards and cross-connecting telephones	449
Installing and configuring Nortel IP Phones	403
Installing and cross-connecting a trunk card	329

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

Task	Go to page
Installing and cross-connecting a Power Fail Transfer Unit	461
Installing and cross-connecting an external alarm from a PFTU	481
Basic system telephony configuration	475
Configuring IP Peer Networking and managing the Gatekeeper database	487

System components

Contents

This section contains information on the following topics:

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CS 1000E Common Processor Pentium Mobile Call Server	46
Signaling Server	54
Readiness checklist	56
Media Gateway Controller	58
MC32S Media Card	60
Media Gateway	62
Media Gateway Expander	68
Media Gateway 1010 (MG 1010)	71
BayStack 470 Switch	87
BayStack 460 Layer 2 switch	88
MRV Terminal Server	89
19-inch rack	90
System cables	90
Miscellaneous system components	94
Uninterruptible Power Supply	94

Introduction

Supported configurations

The following CS 1000E system configurations for CS 1000 Release 6.0 are supported:

- CS 1000E Standard Availability (non redundant)
- CS 1000E High Availability (redundant)
- 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 multiple platform 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 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 6.0: NTDW61BA and NTDW66AAE5. The NTDW61BA is used in the Media Gateway 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.

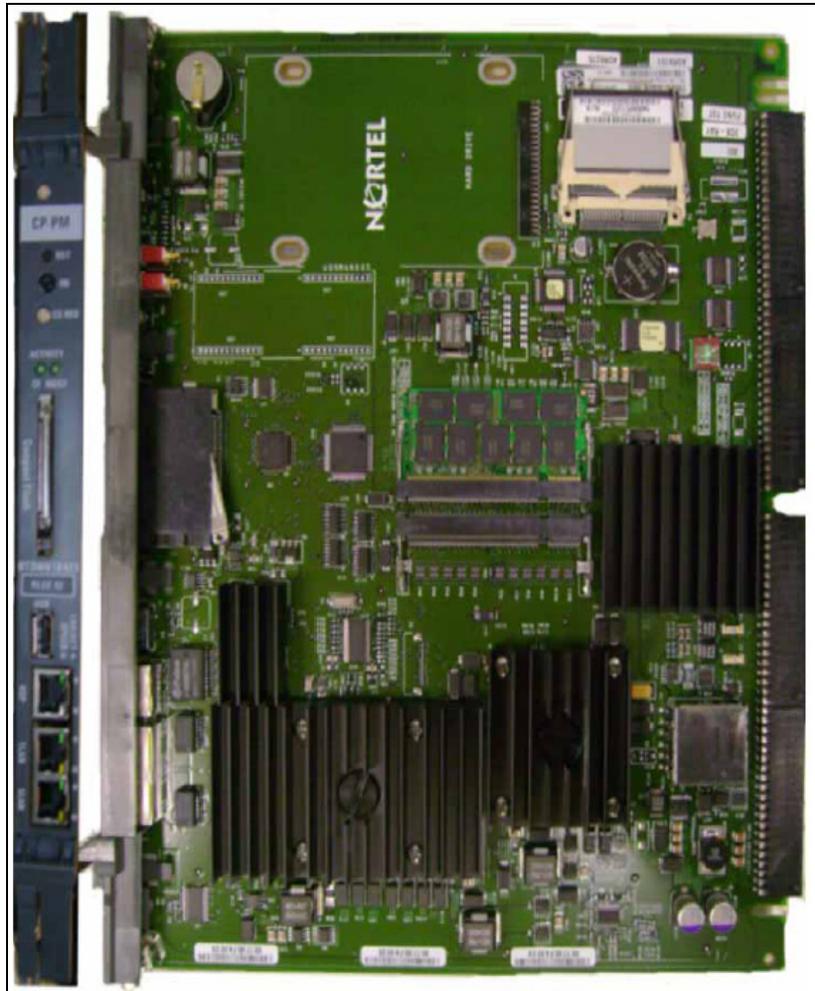
Customers may deploy an existing or new Cabinet or Chassis as a Media Gateway. The CP PM may be deployed as a single call processor (Standard Availability CS 1000E) or in a redundant processor configuration (High Availability CS 1000E).

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

A Media Gateway performs functions under the control of the CS 1000E Core CP PM Call Server. Traditionally, in the CS 1000E, this core Call Server was

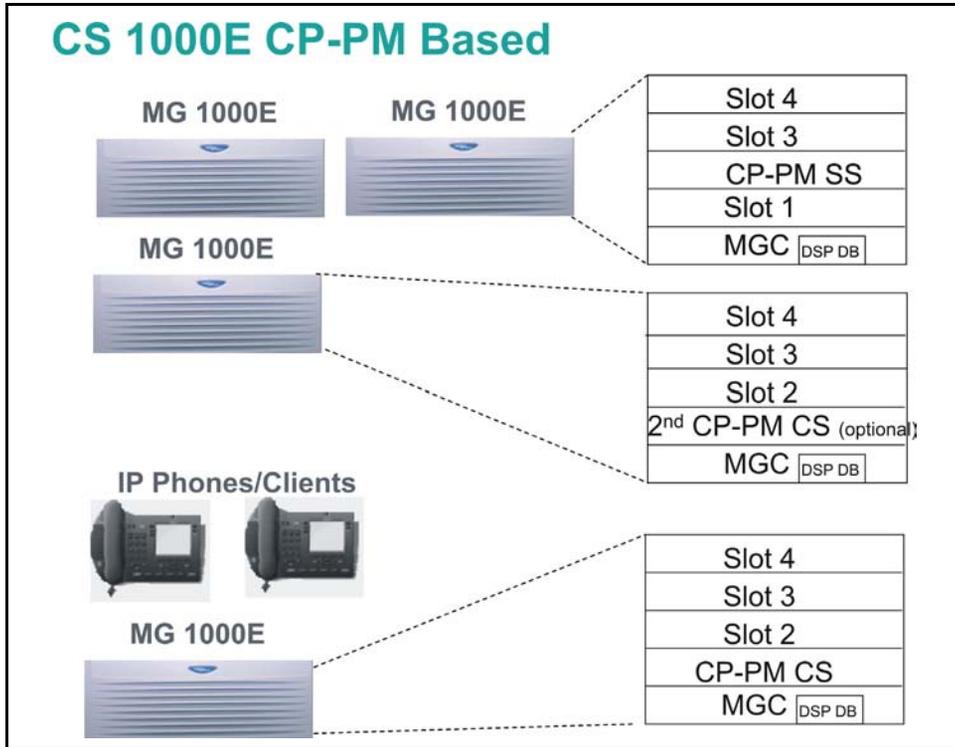
in its own Call Server chassis. The CP PM call server processor sits in one of the slots in the MG1000E chassis.

The CP PM Call Server processor connects to the 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 Media Gateway:

- The CP PM call server processor must not be installed in slot 0 of any Media Gateway. This slot is reserved for the Media Gateway shelf controller card (the 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 Media Gateway cabinets to allow for increased survivability.

Figure 3 on [page 50](#) 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 53](#).

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 (no name restrictions) but the same extension '.kcd'. 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 CP PM is installed as Branch Office)
- 410 HIGH_AVAIL High Availability (Required only if installing system as High Availability)

Signaling Server

CS 1000 Release 6.0 supports the following Signaling Servers:

- Nortel CP PM Signaling Server
- IBM X306m Signaling Server

- HP DL320-G4 Signaling Server
- IBM x3350 Signaling Server
- Dell R300 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 (Media Gateway 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 235](#).

Readiness checklist

Before installing a CP PM or COTS server in a Communication Server 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 2
Readiness checklist (Part 1 of 2)

Have you:	
Read all safety instructions as appropriate for your Communication Server 1000 system?	
Received all equipment and peripherals?	
<p>For COTS servers:</p> <ul style="list-style-type: none"> • installation accessories for rack-mounting the server • AC-power cord • a DTE-DTE null modem cable (supplied) • NTE90672 - Linux Signaling Server software DVD for COTS servers <p>For a Communication Server 1000E Nortel CP PM (NTDW61BAE5 model)</p> <ul style="list-style-type: none"> • NTM427CBE6 - CP PM Signaling Server Linux Upgrade kit, which includes: <ul style="list-style-type: none"> — NTDW6102E5 - CP PM Signaling Server Hard Drive kit (Linux OS preloaded) — NTM42703 - 2 GB Compact Flash (CF) with Linux software, 2 GB blank CF — NTDW6109E6 - 1 GB DDR SO-DIMM memory upgrade • NTAK19ECE6 - CP PM Signaling Server 2 port SDI Cable assembly kit • a DTE-DTE null modem cable (supplied) <p>Note: Save the packaging container and packing materials in case you must ship the product.</p>	
Made sure the area meets all environmental requirements?	
Checked for all power requirements?	
Made sure the CP PM or COTS hardware meets all required specifications (2GB ram, 40GB hard drive, CP PM BIOS version 18 or higher)?	
Checked for correct grounding facilities?	

Table 2
Readiness checklist (Part 2 of 2)

Have you:	
<p>Obtained the following:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> — 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) 	
<p>Prepared the network data as suggested in <i>Converging the Data Network with VoIP</i> (NN43001-260) or <i>Communication Server 1000E: Planning and Engineering</i> (NN43041-220), as appropriate for your Communication Server 1000 system?</p>	
<p>Read all safety instructions in <i>Communication Server 1000E: Planning and Engineering</i> (NN43041-220), as appropriate for your Communication Server 1000 system?</p>	

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 Media Gateway 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)

The SSC card is no longer supported as a gateway controller and must be replaced with an MGC card.

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.

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

TDM only configuration

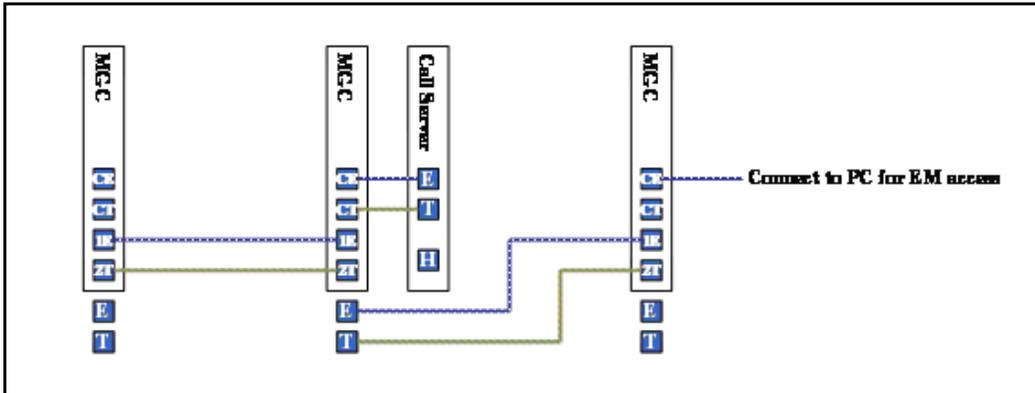
You can configure the MGC card as TDM only, eliminating the need for external network switches. This allows the system to function as a stand alone TDM system with a maximum of three Media Gateway shelves.

The `mgcsetup` command is modified in the MGC advanced parameters menu allowing you to configure the MGC as a TDM only system that does not require any external network gear. For more information about `mgcsetup`, see Procedure 26: "Configuring the MGC card (`mgcsetup`)" on [page 166](#).

Figure 5 on [page 60](#) shows MGC card TDM only cable connections. This allows for a maximum of three Media Gateways to be connected using only the MGC network ports. The CE, 1E and E ports form one VLAN with all ports enabled at all times. The CT, 2T and T ports form another VLAN with all ports enabled at all times. Dual homing is not supported in this configuration.

By default the MGC layer 2 switch works as in previous releases and supports dual homing.

Figure 5
MGC TDM only connections



Adding ELAN routes

You can add routes to the ELAN on the MGC card. The route information is read from an XML configuration file retrieved from the Call Server during registration. IP addresses in the list of routes are then added to the ELAN. The XML is file created on the Call Server by Element Manager.

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

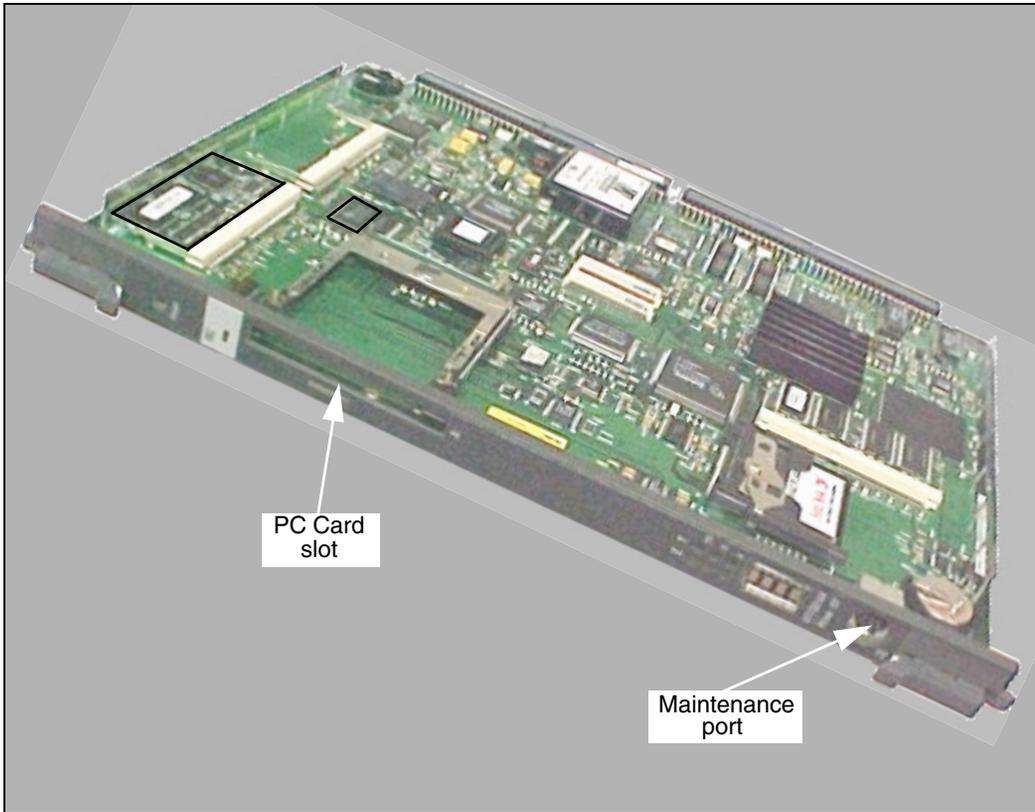
The Media Card, described in Table 3 and shown in Figure 6, connects an IP and circuit-switched device using Digital Signal Processors (DSPs) for either line or trunk applications. The DSPs, enabled by a Voice Gateway application, performs media transcoding between IP voice packets and circuit-switched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

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

Table 3
Media Card profile

Property	Description
Product Code	<ul style="list-style-type: none"> NTDU41DA Media Card 32 Port IP Line 3.1/Voice Gateway NTDU41DB Media Card 8 Port IP Line 3.1/Voice Gateway
Power	<ul style="list-style-type: none"> Powered through a Media Gateway or a Media Gateway Expander.
Cooling	<ul style="list-style-type: none"> Provided by the Media Gateway or Media Gateway Expander.
Connectors (front)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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. <p>Note: The software installation is performed from the back port only. The initial boot messages are available from the back port only.</p> <ul style="list-style-type: none"> See Figure 54 on page 175.

Figure 6
Media Card



Media Gateway

The NTDU14 Media Gateway is shown in Figure 7 on [page 63](#) and Figure 8 on [page 64](#).

Figure 7
Front of the Media Gateway

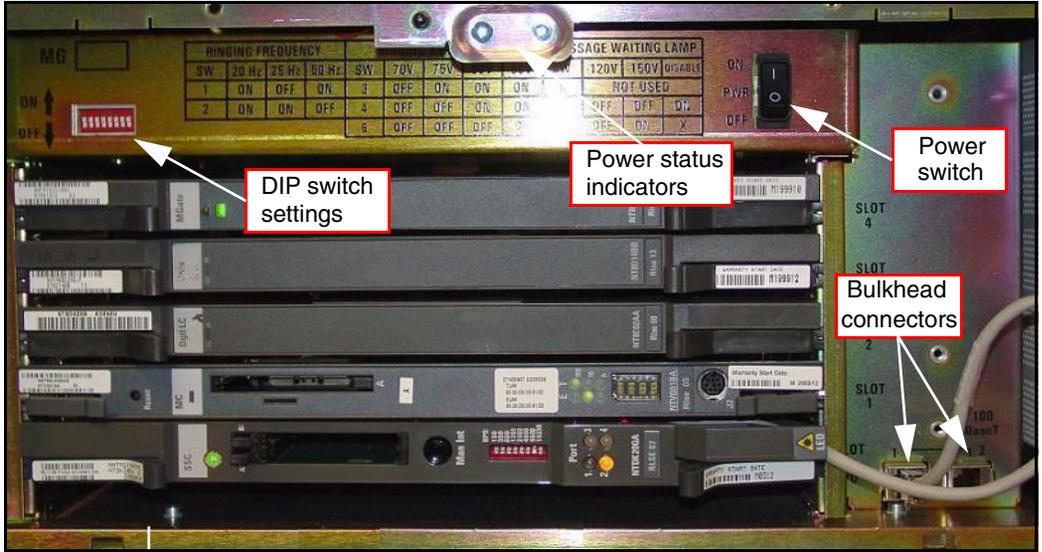


Figure 8
Connectors at the back of the Media Gateway

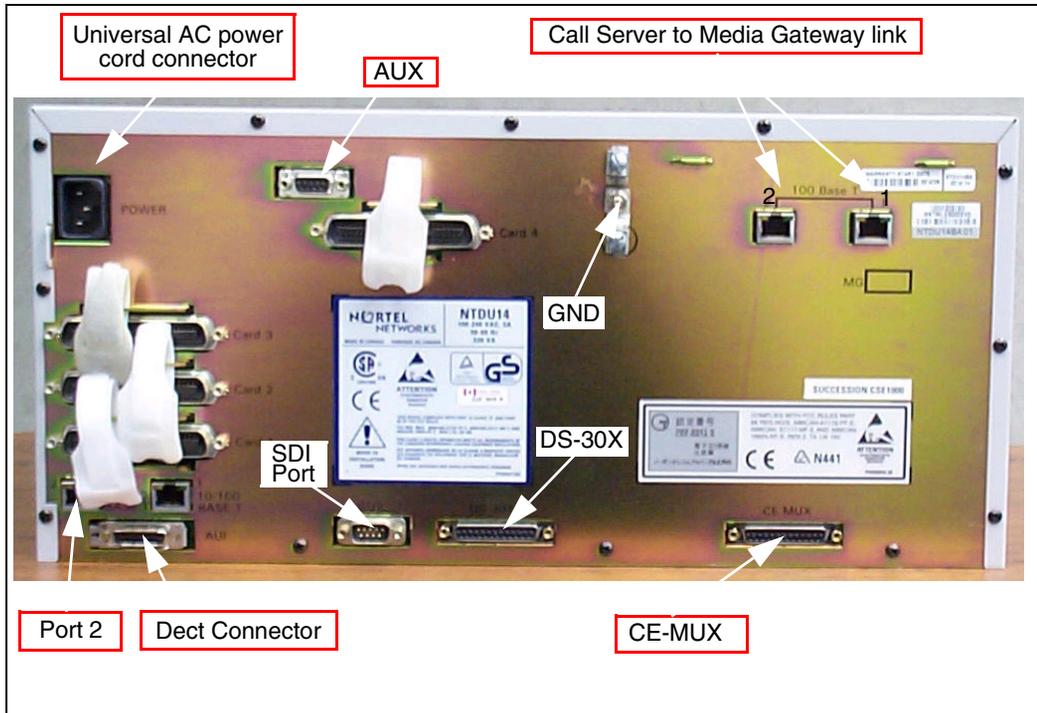
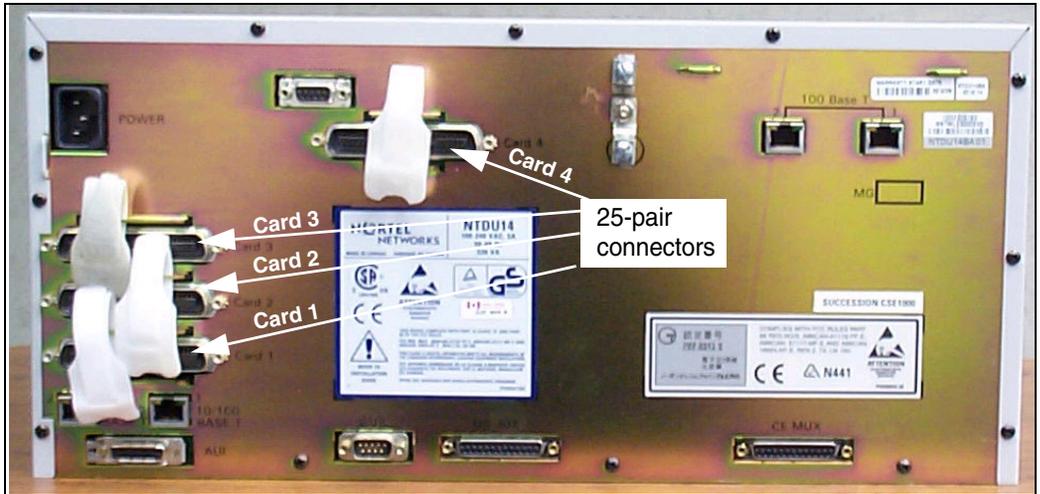


Figure 9
25-pair Cable Connectors on the Media Gateway





CAUTION — Damage to Equipment

Do not block equipment ventilation openings.

Table 4
Media Gateway profile (Part 1 of 3)

Property	Description
Product Code	<ul style="list-style-type: none"> • NTDU14
Height	<ul style="list-style-type: none"> • less than 5 U (1 U = 1 3/4 inch or 4.4 cm)

Table 4
Media Gateway profile (Part 2 of 3)

Property	Description
Power	<ul style="list-style-type: none"> • 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 7 on page 63. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (100-240 VAC); DC is not supported.
Cooling	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Four usable universal card slots: 1 to 4. • Slot 0 is reserved for the MGC. • Slots 1 to 4 support: <ul style="list-style-type: none"> — 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 4
Media Gateway profile (Part 3 of 3)

Property	Description
Connectors (rear)	<ul style="list-style-type: none"> • The 25-pair cable connectors at the back panel (see Figure 8 on page 64) provide access to the cross-connect terminal (Main Distribution Frame). • The AUX port (see Figure 8 on page 64) connects a Power Failure Transfer Unit (PFTU) to the Media Gateway. • The Attachment Unit Interface (AUI) (see Figure 8 on page 64) is used with earlier version SSC which require a Media Access Unit (MAU). • The SDI connector (see Figure 8 on page 64) 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 8 on page 64) connect the Media Gateway to the Media Gateway Expander.
DIP switches	<ul style="list-style-type: none"> • DIP switches are available to set the ringing voltages, ringing frequencies, and message waiting voltages. See Figure 7 on page 63.

Media Gateway Expander

Figure 10 on [page 68](#) shows the Media Gateway Expander and Table 5 on [page 68](#) describes the expander.

Figure 10
Media Gateway Expander

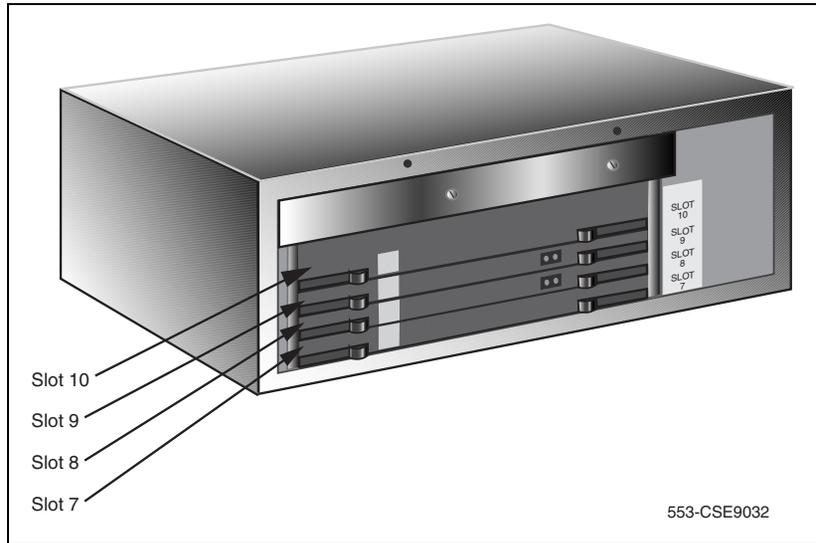


Table 5
Media Gateway Expander profile (Part 1 of 3)

Property	Description
Order Code	<ul style="list-style-type: none">NTDU15
Height	<ul style="list-style-type: none">less than 5 U (1 U = 1 3/4 inch or 4.4 cm)

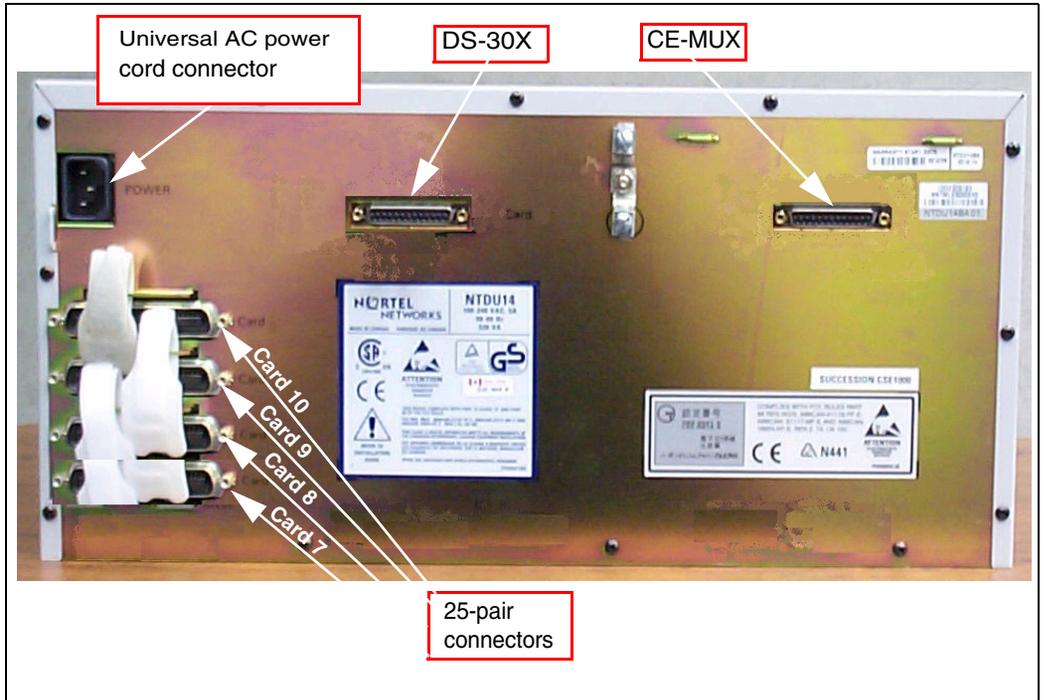
Table 5
Media Gateway Expander profile (Part 2 of 3)

Property	Description
Power	<ul style="list-style-type: none">• 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 7 on page 63.• Power supplies are factory installed and not customer replaceable.• Unit is AC powered (100-240 VAC); DC is not supported.
Cooling	<ul style="list-style-type: none">• Forced air cooling with side-to-side air flow.• The fans are temperature controlled. The fans run at a reduced speed at room temperature.• Ensure that equipment ventilation openings are not blocked.

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

Property	Description
Card slots	<ul style="list-style-type: none"> • Four usable universal card slots: 7 to 10. See Figure 10 on page 68. • Logical slots 5 and 6 are not supported. • Slots 7 to 10 support: <ul style="list-style-type: none"> — 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)	<ul style="list-style-type: none"> • The 25-pair cable connectors at the back of the unit (see Figure 11 on page 71) 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. <p>Note: These cables are uni-directional cables with a ferrite bead at one end that needs to be terminated on the expansion cabinet end.</p>

Figure 11
Connectors at the back of the Media Gateway Expander



Media Gateway 1010 (MG 1010)

The Media Gateway 1010 (MG 1010) is a rack mount Media Gateway chassis that provides a larger amount of card slots than a MG 1000E with Media Gateway Expander. The CS 1000E Call Server can connect to and control a maximum of 50 MG 1010s. Each MG 1010 provides a dedicated MGC slot, two dedicated CP card slots, and ten slots for IPE cards.

The MG 1010 is a single chassis that can provide more processing power and card capacity than a MG 1000E with Media Gateway Expander.

All cards installed to the left of the EMC partition (see Figure 14 on [page 75](#)), in slots 21, 22, 23, and 0 must have metal faceplates to provide enhanced

EMC performance. Versions of the CP PM and MDC with metal faceplates are as follows:

- CP PM NTDW99
- MGC NTDW98

Note: All available MGUs (slot 21) have metal faceplates.

Physical description

The following sections describe the front and rear components of the MG 1010 (NTC310).

Front components

Figure 12 on [page 73](#) shows the Media Gateway 1010 without the front cover. Note the following features:

- Ten IPE card slots
- Two CP card slots
- One MGC card slot
- One Media Gateway Utility (MGU) card provides LED status, ringing, message waiting voltage, dual homing Ethernet cable ports, and serial cable ports
- One metal divider in chassis to separate MGU, CP, and MGC from the IPE cards.

Figure 12
MG 1010 front components

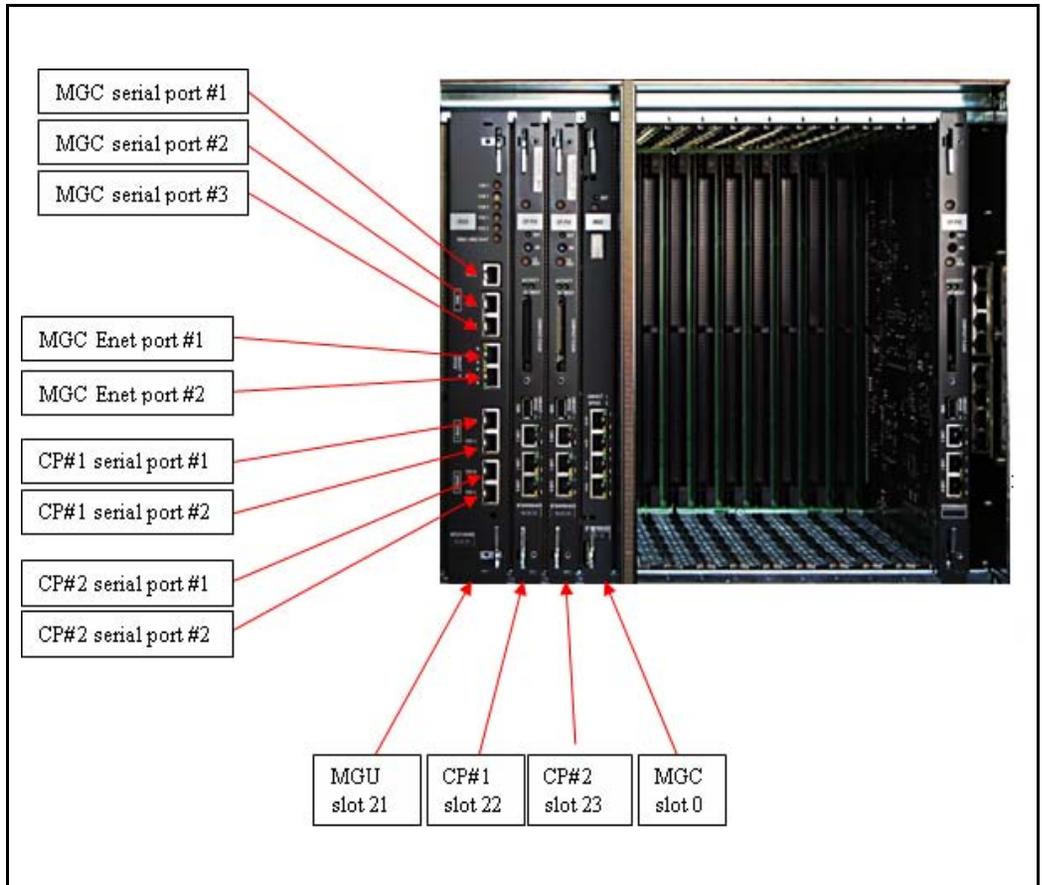


Figure 13 on [page 74](#) shows the MG 1010 with the front cover. Note the following:

- Window to view LED status of all cards
- Decorative cover provides additional EMC shielding
- Two locking latches in top corners of front cover

Figure 13
MG 1010 front cover



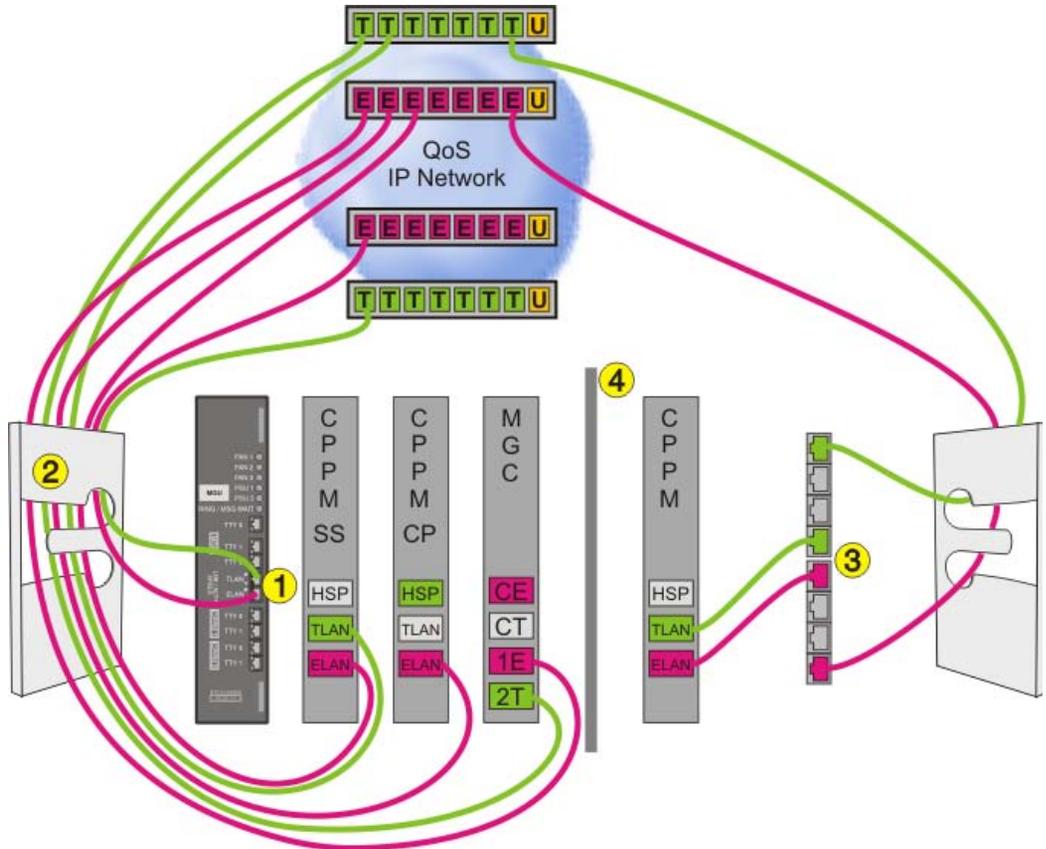
CP PM cabling

When CP PM cards are installed in slots 1-10, the Ethernet connections must be made using a short section of CAT5 shielded twisted pair (customer supplied) cable routed from the CP PM faceplate to the Ethernet coupler attached to the inside right hand wall of the chassis. A second length of CAT5 shielded twisted pair (customer supplied) cable is then routed from the Ethernet coupler through the breakout aperture to the Layer 2 switch. See Figure 14 on [page 75](#).

MGC backplane ports

The two MGC backplane Ethernet ports are connected to the MG 1010 faceplate ELAN and TLAN ports. See Figure 14 on [page 75](#).

Figure 14
Recommended dual homed cabling configuration



1. Dual-homed MGC blackplane TLAN and ELAN ports available on MGU.
2. Cable aperture in side of chassis.
3. Ethernet coupler. Use STP cables.
4. Partition for EMC/EMI.

Serial port connectivity

NTDW99 CP cards in MG 1010 slots 22 and 23 use the MGU faceplate ports, shielded CAT5 Ethernet cables (customer supplied) and the NTC325AAE6

serial cable kit.

NTDW99 and NTDW61 CP cards in a MG 1000E, or MG 1010 slots 1-10 use the NTAK19EC 2-port SDI cable.

The NTC325AAE6 serial cable kit includes the N0211606 RJ45 to DB25 (male) adapter which is intended to connect the MG1010 to a DCE device such as a modem, and two RJ45 to DB9 (female) N0211605 adapters which have an integrated null modem and are intended to connect the MG1010 to DTE devices such as a terminal or PC serial port. A standard UTP Ethernet cable of sufficient length must be supplied by the customer to connect the MGU to the appropriate adapter. Pin definitions and connection details are provided for the DB25 adapter in Table 6 and for the DB9 adapter in Figure 15 on [page 77](#). The pinout for a standard DB9 RS-232 connector and for the MGU faceplate serial ports is listed in Table 6 for reference.

Note: The NTC325BAE6 serial cable kit contains two additional N0211605 RJ45 to DB9 adapters. This kit can be ordered separately and is also included with CPs purchased specifically for installation in the MG 1010.

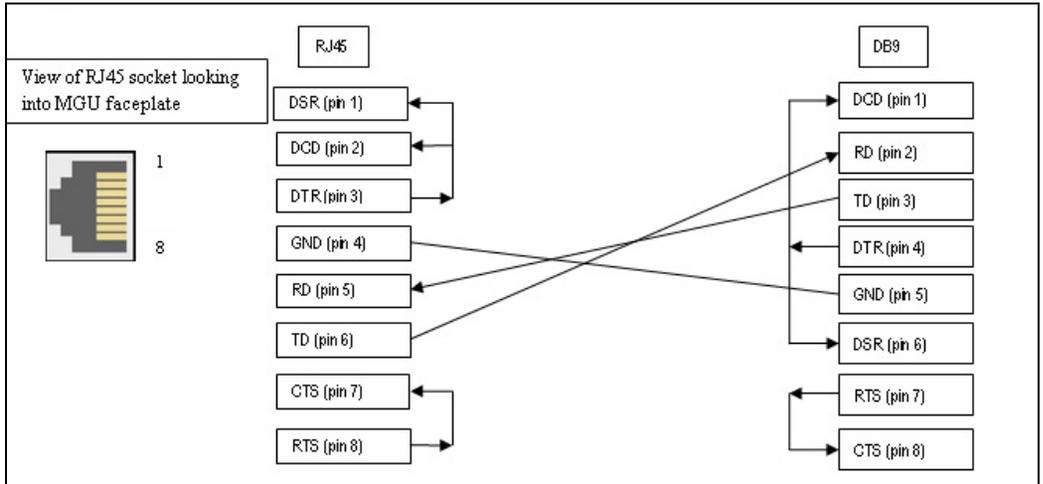
Table 6
Pin definitions and connection details

RJ45 Pin #	MGC SDI 1	MGC SDI 2 & 3	CP 1 & 2 SDI 1 & 2	N0211606 DB25 modem (DCE)	Standard DB9 serial port pin definition	Description (signal direction is from DTE's perspective)
	Signal	Signal	Signal	DB25 Pin #	DB9 Pin #	
1	nc	nc	DSR	6	6	Data Set Ready (in)
2	DCD	nc	DCD	8	1	Data Carrier Detect (in)
3	12V	nc	DTR	20	4	Data Terminal Ready (out)

Table 6
Pin definitions and connection details

4	GND	GND	GND	7	5	Ground
5	RD	RD	RD	3	2	Received Data (in)
6	TD	TD	TD	2	3	Trasmitted Data (out)
7	nc	nc	CTS	5	8	Clear To Send (in)
8	12V	nc	RTS	4	7	Request To Send (out)

Figure 15
N0211605 DB9 Null Modem adapter (supplied in NTC325AAE6 cable kit)



MGU DIP switch settings

See Table 7, Table 8 on [page 78](#), and Table 9 on [page 78](#) to set the MGU DIP switch settings to set any one frequency, any one voltage level, and to enable the ring generator.

Table 7
Frequency

FREQUENCY	SWITCH S1	
	S1_3	S1_4
20Hz	ON	OFF
25Hz	OFF	ON
50Hz	OFF	OFF

Table 8
Voltage

VOLTAGE	SWITCH S1		
	S1_5	S1_6	S1_7
70V	OFF	OFF	OFF
75V	ON	OFF	OFF
80V	OFF	ON	OFF
86V	OFF	OFF	ON

Table 9
Ringer enable

RINGER ENABLE	SWITCH S1
	S1_8
Ringer enable	ON
Ringer disable	OFF

Set the -150 switch to be -120 and -150 based on Table 10, Table 11 on [page 79](#), and Table 12 on [page 79](#).

Table 10
S2 UV_Protect

S2 UV_PROTECT	
-120	OFF
-150	ON

Table 11
S4 OV_Protect

S4 OV_PROTECT	
-120	ON
-150	OFF

Table 12
S3 Volt_Sel

S3 VOLT_SEL	
-120	OFF
-150	ON

International power supply DIP switch settings

See the following tables for international power supply DIP switch settings:

- Table 13 for Asic Pacific/CALA power supply DIP switch settings
- Table 14 on [page 80](#) for European power supply DIP switch settings

- Table 15 on [page 81](#) for North American power supply DIP switch settings

Table 13
Asic Pacific/CALA power supply DIP switch settings

Ring Frequency(Hz)			Ringing Amplitude(Vrms)				Message waiting Lamp(VDC)				
Switch Setting	20	25	50	Switch Setting	70	75	80	86	Switch Setting	-120	-150
S1_3	off										
S1_4	on								S2		on
S1_8	on			S1_5	on				S3		on
				S1_6	off				S4		off
				S1_7	off						

Table 14
European power supply DIP switch settings

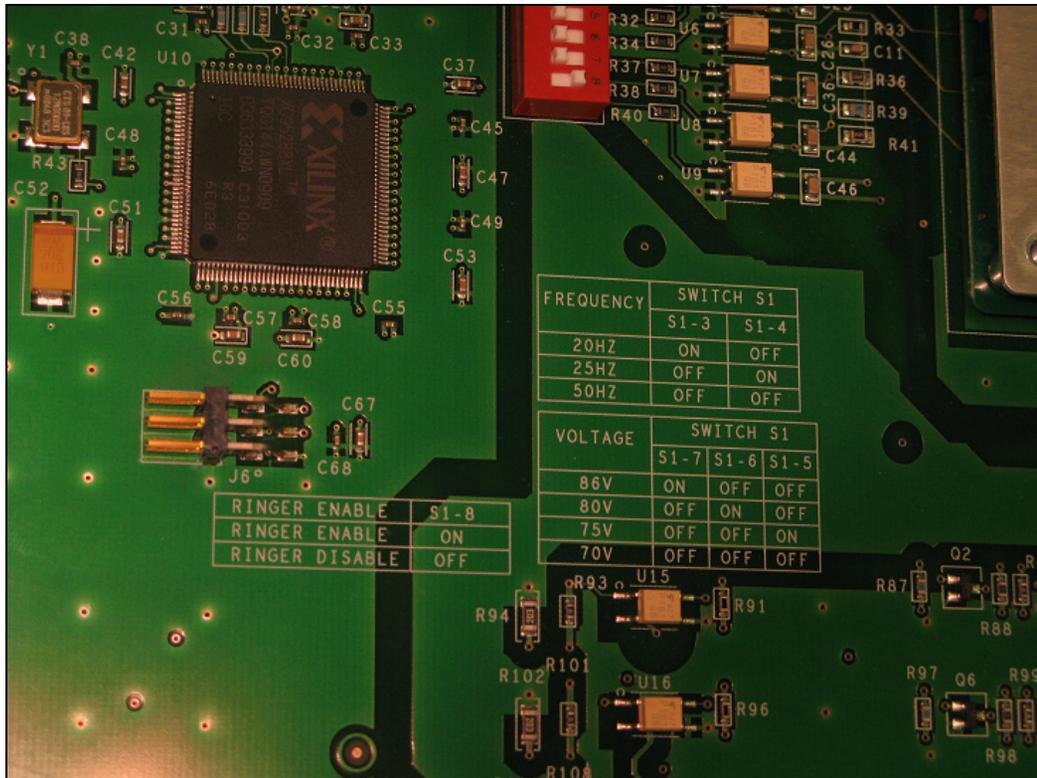
Ring Frequency(Hz)			Ringing Amplitude(Vrms)				Message waiting Lamp(VDC)				
Switch Setting	20	25	50	Switch Setting	70	75	80	86	Switch Setting	-120	-150
S1_3	off										
S1_4	on								S2	off	
S1_8	on			S1_5	on				S3	off	
				S1_6	off				S4	on	
				S1_7	off						

Table 15
North American power supply DIP switch settings

Ring Frequency(Hz)		Ringing Amplitude(Vrms)				Message waiting Lamp(VDC)	
Switch Setting	20 25 50	Switch Setting	70 75 80 86	Switch Setting	-120	-150	
S1_3	on						
S1_4	off			S2	off		
S1_8	on	S1_5	off	S3	off		
		S1_6	off	S4	on		
		S1_7	on				

Figure 16 on [page 82](#) shows the dip switch settings on the board of the MGU.

Figure 16
MGU dip switch settings



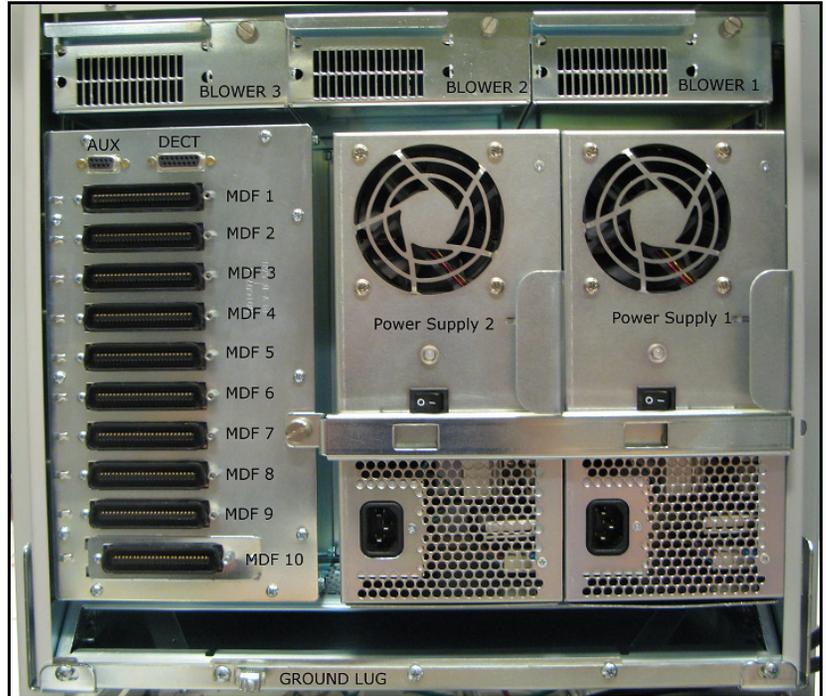
Rear components

Figure 17 on [page 83](#) shows the rear components of the MG 1010. Note the following:

- Hot swappable redundant power supplies
- Hot swappable fans in a redundant N + 1 configuration for chassis cooling
- One DECT connector

- One AUX connector
- Ten MDF connectors

Figure 17
MG 1010 rear view



IMPORTANT!

If your MG1010 includes a cover over the Power Supply 2 connector, remove the cover by loosening the two Phillips screws and sliding the cover upwards. Once the cover is removed, tighten the two Phillips screws again.

MG1010 Rack Mount Kit

A 19-inch Rack Mount Kit (NTTK09AA) is available for mounting a Media Gateway 1010 chassis in a 19-inch rack. For more information, see “Rack-mounting the components” on [page 135](#).

Maintenance

NTC315 air filter

Because the MG1010 is a forced air system, an air filter is mounted below the card cage. The filter is sealed to the bottom of the card guide where it provides an additional EMI attenuation barrier. See Figure 18 on [page 85](#).

Figure 18
MG 1010 air filter bottom mount



You must perform a regular monthly inspection of the airfilter to avoid and airflow issues which may cause overheating. Follow the steps in Procedure 1 on [page 86](#) to replace the air filter.

Procedure 1 Replacing the NTC315 air filter

- 1 Insert a portion of the NTC315 air filter into the filter slot at the rear of the chassis. See Figure 18 on [page 85](#).
- 2 With the levers parallel to the side of the filter on both sides, insert the filter straight into the chassis until the tips of the levers are approximately even with the edge of the chassis, See Figure 18 on [page 85](#).
- 3 Rotate the levers inward until they can be positioned behind and against the edge of the lower bend of the opening.

Note: Do not rotate the levers inward until they are in this position.

Media Gateway 1000 Standard 19-inch Rack Mount Kit

A 19-inch Rack Mount Kit (NTTK09AA) is available for mounting a Media Gateway 1000 and Media Gateway Expander in a 19-inch rack. It is described in Table 16 on [page 86](#). For details on rack mounting a Media Gateway 1000 and Media Gateway Expander, see “Rack-mounting the components” on [page 135](#).

Table 16
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
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

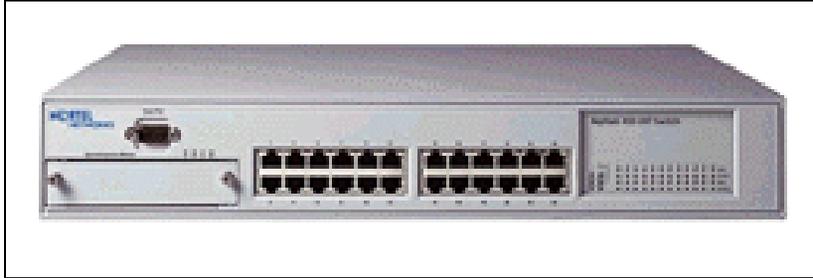
The BayStack 470 Switch, described in Table 17 on [page 87](#), provides policy-enabled networking features to optimize consistent performance and behavior of network traffic. The Differentiated Services (DiffServ) network architecture offers varied levels of service for different types of data traffic. DiffServ lets you designate a specific level of performance on a per-packet basis.

Table 17
BayStack 470 Switch profile

Property	Description
Height	<ul style="list-style-type: none"> 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	<ul style="list-style-type: none"> 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.
Cooling	<ul style="list-style-type: none"> Forced air cooling with side-to-side air flow. The three fans run whenever the unit is on.
Card slots	<ul style="list-style-type: none"> None
Connectors (front)	<ul style="list-style-type: none"> 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 19
Ethernet switch



A third-party data network switch can be used with the system. For more information, refer to *Converging the Data Network with VoIP* (NN43001-260).

BayStack 460 Layer 2 switch

The BayStack 460 Layer 2 switch, shown in Figure 20 on [page 88](#), 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 20
Power over LAN unit



MRV Terminal Server

The Terminal Server, described in Table 18 on page 90, 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 18
MRV IR-8020M Terminal Server profile

Property	Description
Product Code	NTVW00AB
Height	<ul style="list-style-type: none"> • 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • None
Connectors	<ul style="list-style-type: none"> • 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 19 on [page 92](#) 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 19
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
<i>Media Gateway/Media Gateway Expander</i>			
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 19
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	
<i>MRV Terminal Server</i>			
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
<i>Power cords</i>			
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 20 contains a list of miscellaneous items that can be used with the CS 1000E system installation.

Table 20
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* (NN43041-220) for calculating power consumption requirements.

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

CP PM Co-resident Call Server and Signaling Server

Contents

Overview	97
Supported configurations	98
CP PM Co-res CS and SS upgrade paths	100
Hardware	101
Software applications	102
High Availability (HA) support	104
IP Telephony Node Manager	104

Overview

A CS 1000 system consists of two major functional components: a Call Server and a Signaling Server. These two components have historically run on separate Intel Pentium processor-based hardware platforms operating under the VxWorks Operating System.

CS 1000 Release 6.0 introduces the CP PM Co-resident Call and Signaling Server (CP PM Co-res CS and SS), which can run the Call Server software, the Signaling Server software, and System Management software on the same hardware platform operating under the RedHat Linux Operating System. For CS 1000 Release 6.0, the only supported hardware platform for the CP PM Co-res CS and SS Server is the Call Processor-Pentium Mobile (CP PM) platform.

The key objective of co-residency is to provide a cost-effective solution for CS 1000 system installations that do not require high user capacity or the need for a redundant Call Server.

Supported configurations

You can deploy the CP PM Co-res CS and SS Server in the following configurations::

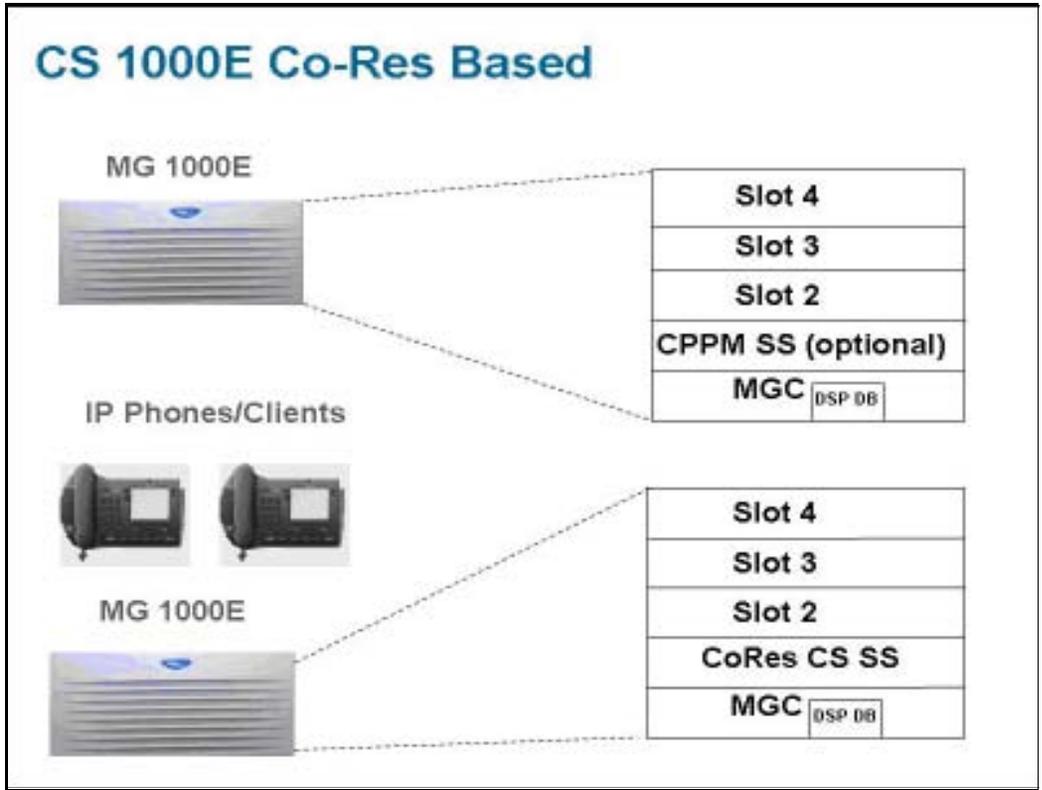
- CS 1000E
- MG 1000B Branch office
- MG 1000E Survivable Media Gateway
- CS 1000E TDM

Note: For details on CS 1000E capacity limitations, see *Communication Server 1000E: Planning and Engineering* (NN43041-220).

CP PM Cores CS and SS based CS 1000E system

Figure 21 on [page 99](#) provides an example of a CS 1000E system with CP PM Co-res CS and SS. The MG 1000E is shown, however you can use an MG 1010 which provides slots for one MGC, two CP PM cards, and ten IPE cards in one chassis. An alternate MG1010 configuration consists of one MGC, two CP PM cards, eight IPE cards and two additional CP PM cards in IPE slots, all in one chassis.

Figure 21
CS1000E CP PM Co-res and SS System



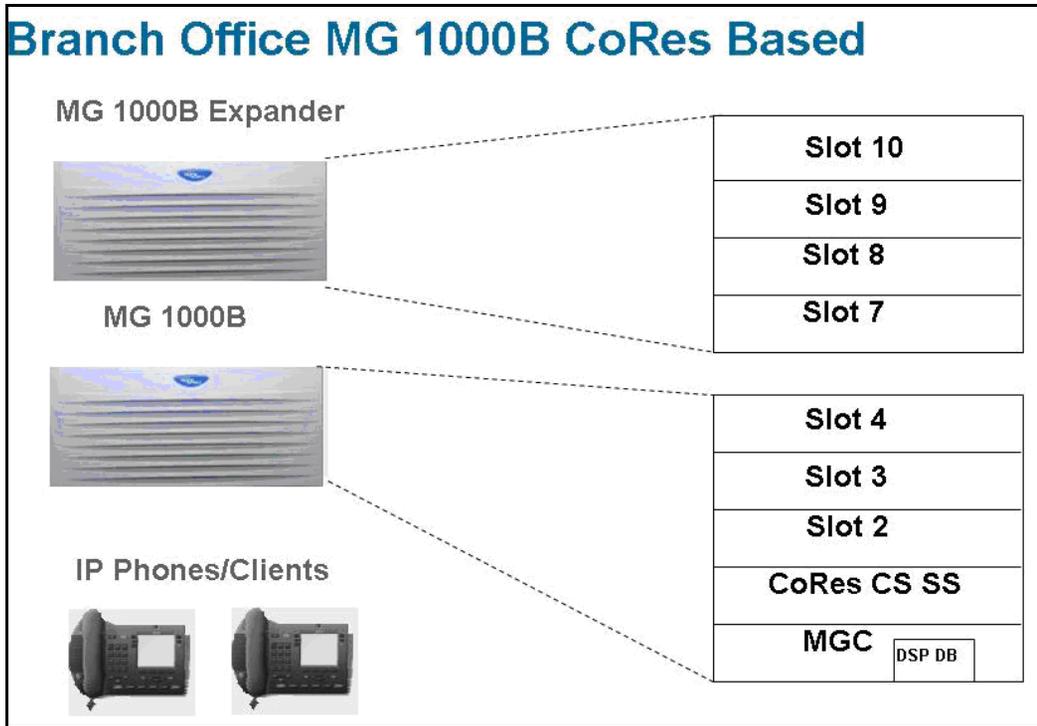
Optional second Signaling Server

For information on adding an optional second Signaling Server to a CP PM Co-res CS and SS, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

CP PM Co-res and SS based MG 1000B

Figure 22 on [page 100](#) provides an example of the CS 1000 Release 6.0 CP PM Co-res CS and SS based Branch Office (MG 1000B) system.

Figure 22
MG 1000B CP PM Co-res CS and SS system



CP PM Co-res CS and SS upgrade paths

CP PM Co-res CS and SS supports the following upgrade paths:

- CS 1000 Release 5.5 or earlier CS 1000E Call Server Standard Availability (SA) to CS 1000 Release 6.0 CP PM Co-res CS and SS

Note: If you upgrade from a non-CP PM based CS 1000E Call Server, you must upgrade both the software and the hardware.

- Release 5.5 or earlier CS1000E CS (HA) to CS 1000 Release 6.0 CP PM Co-res CS and SS

- CS 1000 Release 5.5 or earlier CS 1000E Signaling Server to CS 1000 Release 6.0 CP PM Co-res CS and SS.

Note: If you upgrade from a non-CP PM based CS 1000E Signaling Server, you must upgrade both the software and the hardware.

- CS 1000 Release 5.5 or earlier Option 11C Call Server to CS 1000 Release 6.0 CP PM Co-res CS and SS
- CS 1000 Release 5.5 or earlier Option 11C Call Server to CS 1000 Release 6.0 CS 1000E TDM
- CS 1000 Release 4.5 or earlier CS 1000M Call Server (cabinet/chassis) to CS 1000 Release 6.0 CP PM Co-res CS and SS
- CS 1000 Release 4.5 or earlier CS 1000S Call Server to CS 1000 Release 6.0 CP PM Co-res CS and SS

Note: Minimum Release for Small System migration to CP PM Co-res CS and SS is Release 23.10.

Hardware

The CP PM Co-res CS and SS server runs on the same CP PM generic Pentium-based server platform introduced in CS 1000 Release 5.0. When populated with the required 2 GB memory and 40 GB disk drive, the CP PM becomes the hardware platform for the CP PM Co-res CS and SS.

CP PM Media Storage

Fixed Media Device (FMD)

The CP PM card on a new CP PM Co-res CS and SS is shipped with a 40 GB internal hard disk FMD. For the CP PM Co-res CS and SS application to recognize that the FMD is a hard disk device (rather than a CF card), you must set switch S5 on the CP PM card to position 2.

For VxWorks-based CP PM cards that run the Call Server application, switch S5 is in position 1 to indicate a CF card is used for the FMD. This CF card FMD is accessible only when the CP PM card is removed from the system.

Removable Media Device (RMD)

The CP PM Co-res CS and SS supports two RMDs:

- CF card for installing Linux Base and CP PM Co-res CS and SS applications
- USB memory stick device, used to install CP PM Co-res CS and SS applications (cannot be used to install Linux Base)

For Linux Base and application software installation, the minimum size supported for the RMD is 1 GB. For more information on supported media for CP PM Co-res CS and SS application installation, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Software applications

SIP Line Gateway and SIP Dect are not supported on CP PM Co-res CS and SS Server and require a separate Signaling Server.

Support is available for the following software applications on the CP PM Co-res CS and SS Server:

- Linux Call Server
- Line Telephony Proxy Server
- Unicode Name Directory
- SSG including H.323 Gateway and Session Initiated Protocol (SIP) Gateway
- Failsafe SIP Proxy Service, Gatekeeper
- Personal Directory

- Network Routing Service (NRS)
 - NRS can be configured as a primary NRS, but can only be configured as a secondary NRS when the primary is also running on a CP PM Co-res CS and SS.
 - There is no support for CP PM Co-res CS and SS running a secondary or back-up NRS to a higher capacity primary NRS due to the small disk size and low call rates on the CP PM Co-res CS and SS system.
- Element Manager
- Nortel Unified Communications Management Common Services (UCM) Primary security server is supported in a very limited deployment. For detailed UCM Primary security server procedures, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

IMPORTANT!

The Enterprise Common Manager (ECM) framework is now referred to as Nortel Unified Communications Management Common Services (UCM Common Services).

When referring to applications deployed from within UCM Common Services, the term Unified Communications Management (UCM) is used.

These applications are bundled into predetermined CP PM Co-res CS and SS options that you can install by using the Deployment Manager Web-based Graphical User Interface (GUI) as follows:

- Call Server and Signaling Server (basic stand-alone CP PM Co-res CS and SS)
- Call Server and Signaling Server with NRS (CP PM Co-res CS and SS main with Branch Office support)

Note: Support is available for SIP Line Gateway for SIP phones on a separate CP PM or COTS server.

High Availability (HA) support

In CS 1000 Release 6.0, the CP PM Co-res CS and SS does not support an HA configuration (dual core with either Active or Inactive role). For systems that require HA configuration, the VxWorks-based Call Server software must be deployed.

For more information see *CP PM Co-resident Call Server and Signaling Server Fundamentals (NN43001-509)*.

IP Telephony Node Manager

This management interface includes the configuration and enabling of Signaling Server application services such as UNISlim, LTPS, SIP Gateway, H.323 Gateway, and SIP Line.

For more information about IP Telephony Node Manager, see *Linux Platform Base and Applications Installation and Commissioning (NN43001-315)*.

Secure File Transfer Protocol

Secure Shell (SSH) Secure File Transfer Protocol (SFTP) is installed and enabled on CS 1000 Release 6.0 systems by default. This secure protocol replaces regular File Transfer Protocol (FTP) and other insecure data transfer protocols for several CS 1000 applications.

SFTP is a network protocol that provides confidentiality and integrity to data (such as files or commands) transmitted between an SFTP client and a server. In addition, SFTP allows a client and a server to authenticate each other. In CS 1000 Release 6.0, a password is used by an SFTP server to authenticate an SFTP client.

Note: To install an MGC or IPMG device initialized with CS 1000 Release 6.0 firmware into a CS 1000 system running an earlier software release (for example, CS 1000 Release 5.0), you must manually enable an FTP client to successfully communicate with the prior release CS 1000 Call Server. This is due to the fact that SFTP is not supported in prior software releases.

Installing an MGC or IPMG device with an earlier software release into a CS 1000 Release 6.0 system requires no additional configuration. A CS 1000 Release 6.0 Call Server supports both SFTP and FTP by default. However, if FTP has been disabled on the CS 1000 Release 6.0 Call Server, FTP must be re-enabled on the CS 1000 Release 6.0 Call Server.

For detailed information on FTP and SFTP, see *Security Management* (NN43001-604).

Joining and leaving the UCM security domain

The UCM Primary Security Server acts as the RADIUS server from which Communication Server 1000 devices obtain authentication and access control parameters for CLI access. The RADIUS related parameters are sent from the UCM Primary Security Server to Communication Server 1000 devices using SSH protocol.

When a device joins the UCM security domain, a mutually-trusted SSH channel is created.

Before the UCM primary server RSA public key is added to the authorized key file, the fingerprint of the public key must be confirmed manually. This verification prevents third-party intercepts.

Once a mutually trusted SSH tunnel has been established for the first time, the UCM Primary Security Server can send SSH remote commands to the device using RSA public key-based authentication.

For detailed information, see *Security Management* (NN43001-604).

Media Gateway Extended Peripheral Equipment Controller (MG XPEC)

Contents

This section provides information on the following topics:

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Introduction

You can convert Communication Server 1000M and Meridian 1 large system NT8D37 IPE modules into Communication Server 1000E Media Gateways with a Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card. The MG XPEC card provides a solution to migrate IPE modules from a Meridian 1 TDM system, or a CS 1000M system to a CS 1000E system. The MG XPE C card converts one IPE module into two Media Gateway shelves (type MGX) for use in a CS 1000E system.

Functional description

System architecture

The MG XPEC is a double wide, dual card assembly based on the MGC hardware. It is used to control line cards in an NT8D37 IPE module. The MG XPEC features a motherboard and daughterboard architecture. The two halves of the MG XPEC card act independently to control separate Media Gateway shelves, providing the same hardware functionality of an MGC.

There are no removable DSP daughterboards on the MG XPEC, however each board of the dual card assembly is populated with 192 DSP resources which are recognized by the software as MGC DSP daughterboards. Therefore, from a software perspective, each board of the dual card assembly features two high density MGC DSP daughterboards.

The MG XPEC can be thought of as two separate MGC cards bolted together. The left board (motherboard) controls the left half of the of the IPE module and the right board (daughterboard) controls the right half of the IPE module.

Loadware

The MGC and MG XPEC run the same MGC loadware. A run time check identifies which hardware platform the MGC loadware is running on, controlling the flow of software appropriate for each platform. For more information about upgrading loadware, see “Loadware upgrade” on [page 232](#).

If one half of the dual card assembly is not configured, the other configured half functions normally.

The Call Server recognizes the MG XPEC as two separate Media Gateway loops, each with an IPMG loop type of MGX. The MG XPEC communicates with the Call Server through the ELAN instead of the DS30Y TDM loops used by the previous XPEC card.

Note: The IPMG package must be enabled for the Call Server to accept IP Media Gateway connections.

Table 21 on [page 109](#) provides a list of loadware files used by both the MGC and MG XPEC.

Table 21
Loadware files used by both MG XPEC and MGC

Loadware Name	Description	Notes
MGCCXX##	The CSP load which contains the Nortel code to control the MGX during normal operation.	Same file as MGC with a run time check to determine if MGC or MG XPEC platform.
MGCBXX##	This is the boot code.	Same file as MGC with a run time check to determine if MGC or MG XPEC platform.
MGCGXX##	The gold image installed at manufacturing.	Same file as MGC with a run time check to determine if MGC or MG XPEC platform.
MGCAXX##	This is the application file for special functionality.	Same file as MGC with a run time check to determine if MGC or MG XPEC platform.
MGCFXX##	The FPGA load.	Same file as MGC. The internal FPGA files are different for the MGC and MG XPEC. The install routine programs the correct file into the FPGA based on platform.
MGCMXX##	Mindspeed load for the Chagall.	Same file as MGC no modifications.
DSP1XX##	Mindspeed load for high density DB.	Same file as MGC no modifications.
DSP2XX##	Mindspeed load for low density DB.	Same file as MGC no modifications.

Each half of the MG XPEC functions identically to the MGC, except where stated below:

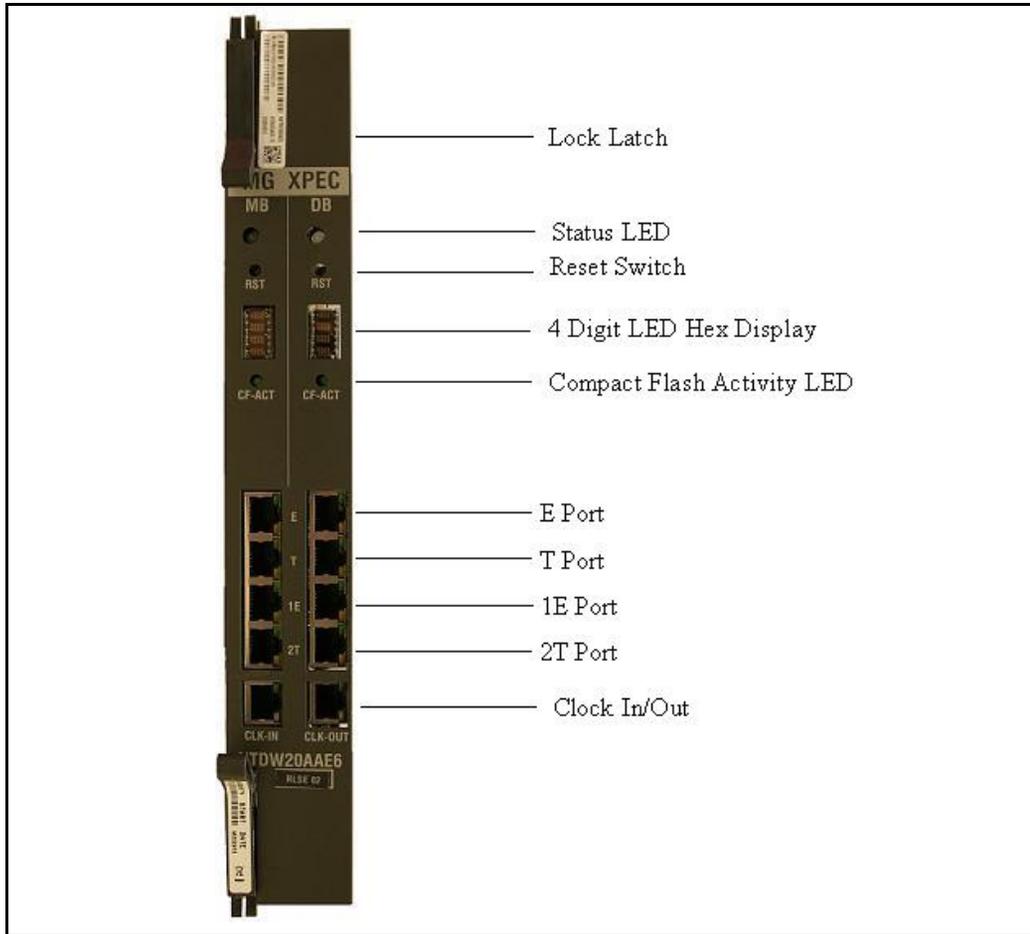
- Each board of the dual card assembly controls eight slots of the IPE module, for a total of 16 slots. The MGC controls 10 slots. The motherboard controls the 8 IPE slots to the left of the MG XPEC and the daughterboard controls the 8 IPE slots to the right of the MG XPEC. Card slots are numbered from 0 to 7 for the motherboard and 0 to 7 for the daughterboard. MGC card slots are numbered from 1 to 10.
- CEMUX cards such as Digital Trunks are not supported in IPE modules with MG XPEC cards. You can use CEMUX cards in a Media Gateway cabinet or chassis with a MGC card. The following IPE cards supported by the NT8D01 XPEC card are not supported by the NTDW20 MG XPEC card.
 - NT6D70 BRI SILC Voice/Circuit/Packet Data Lines
 - NT6D71 BRI UILC Voice/Circuit/Packet Data Lines
 - NT6D72 BRSC Basic Rait Concentrator
 - NT7D16 Data Access Line Card
- The Card LAN bus is shared between the motherboard and daughterboard.
- The third TTY on the MG XPEC motherboard is dedicated for support of the master XSM card (NT8D22AEE5). The third TTY is not available on the MG XPEC daughterboard. An XSM cable (NTDW26BAE6) is required to monitor XSM status.
- The MG XPEC motherboard also provides a relay contact to replace the Power Fail Transfer Unit (PFTU) contact in the XSM module located in the base of the column.
- The MG XPEC motherboard and daughterboard each provide 192 DSP ports. The software detects the 192 DSP ports as two 96 port MGC DSB daughterboards. Logical cards slots 8 to13 are dedicated for the DSP resources.
 - card slots 8, 9, and 10 are dedicated for 96 port DSP daughterboard 2
 - card slots 11, 12 and 13 are dedicated for 96 port DSP daughterboard 1

- The MG XPEC registers to the Call Server as an IPMG type of MGX.

Network Connection and Dual Homing

Each half of the MG XPEC card has four physical network connections, for a total of eight physical network faceplate connections. There are no physical network back plane connections. Figure 23 on [page 112](#) provides a view of the MG XPEC faceplate.

Figure 23
MG XPEC faceplate

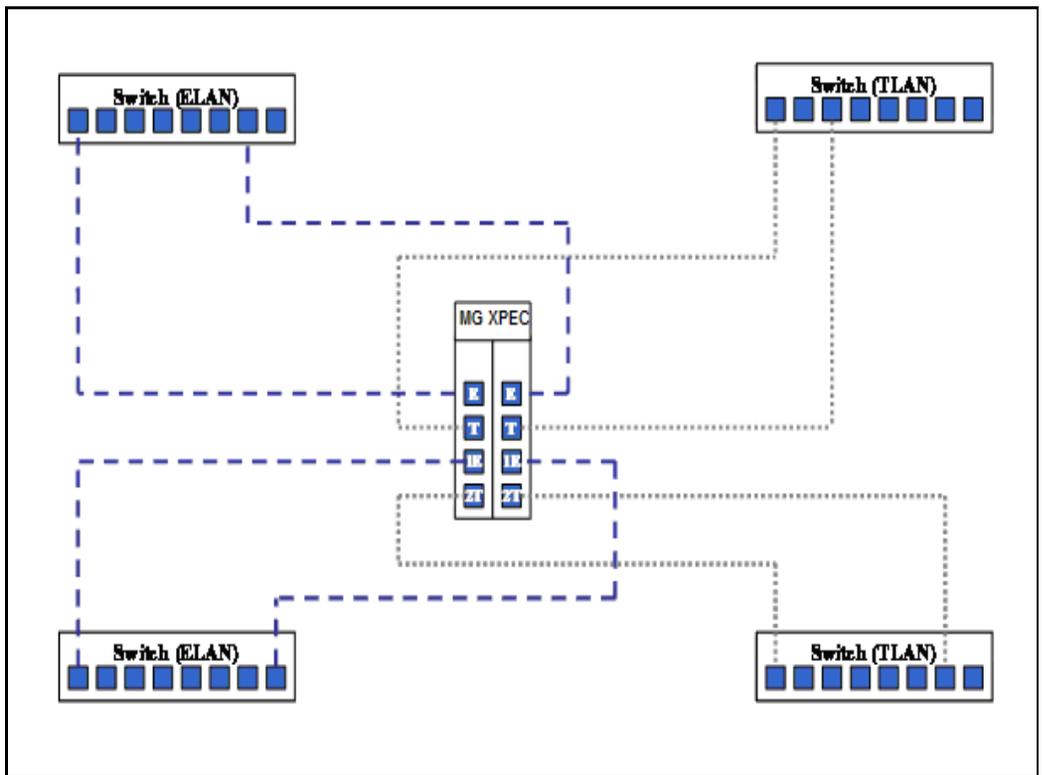


Each half of the MG XPEC must have its own network connections as well as its own set of IP addresses. To connect an MG XPEC for Dual Homing each half requires two ELAN and two TLAN physical connections as well as one ELAN IP address and three TLAN IP addresses. This is a total of four ELAN physical connections, four TLAN physical connections, two ELAN IP address and six TLAN IP addresses for each MG XPEC card. See Figure 24 on [page 113](#).

The dual homing feature on the MG XPEC works identically to the MGC except all four network connections are on the faceplate. Dual homing works independently for each half of the MG XPEC. Network traffic is independent for each half of the dual card assembly. For example, Network traffic sent and received on the motherboard is not seen by daughterboard.

If you do not require Dual Homing, then you only require one physical ELAN connection and one physical TLAN connection for each half of the dual card assembly.

Figure 24
Connecting MG XPEC to the network



Adding ELAN routes

You can add routes to the ELAN on the MG XPEC card. The route information is read from an XML configuration file retrieved from the Call Server during registration. IP addresses in the list of routes are then added to the ELAN. The XML is file created on the Call Server by Element Manager.

Since the two halves of the MG XPEC control separate Media Gateway loops, you must configure separate routes on each half of the dual card assembly.

Installation and commissioning

The following tools are needed to modify the NT8D37 IPE module:

- 5mm 1/4" socket and ratchet
- large straight slot screwdriver
- electric screwdriver with PH1 Phillips bit and small straight slot bit
- side cutting pliers

The following hardware is needed to install an MG XPEC card:

- NTDW20AAE6 MG XPEC hardware pack
- NTDW25AAE6 cable kit, which includes:
 - i. 2 new I/O Panels (Note: both are identical with labelling for installation on the left hand side on one face and the right hand side of the other face)
 - ii. 2 NTDW26ABE6 TTY cables
 - iii. 8 Cat-5e shield straight through ethernet cables (sufficient to route all ethernet ports for dual-homing configuration)
 - iv. 12 RJ45 couplers
 - v. 1 Card Slot label
- NTDW26BAE6 XSM (eXtended System Monitor) cable (only required if MG XPEC is connected to an NT8D22AEE5 master XSM)

Note: You require only one XSM cable for each migrated Meridian 1 or CS 1000M large system. Connect one MG XPEC motherboard to the master XSM with the NTDW26BAE6 XSM cable to enable monitoring of the XSM status. See “Extended System Monitoring and Power Fail Transfer” on [page 122](#).

Installing the MG XPEC

Installing the MG XPEC involves the following procedures:

- 1 Installing the new I/O panels (see Procedure 2 on [page 116](#))
- 2 Cabling the MG XPEC motherboard (see Procedure 3 on [page 117](#))
- 3 Cabling the MG XPEC daughterboard (Procedure 4 on [page 119](#))
- 4 Installing the MG XPEC pack (see Procedure 5 on [page 120](#))
- 5 Installing the new card slot label (see Procedure 6 on [page 120](#))
- 6 Installing the Ethernet cables (see Procedure 7 on [page 121](#))
- 7 (Optional) Installing the XSM cable (see Procedure 8 on [page 125](#))
- 8 (Optional) Installing the Clock Reference cables (see Procedure 9 on [page 129](#))
- 9 Preparing the IPE module for configuration (see Procedure 10 on [page 130](#))
- 10 Configuring the MG XPEC card (see Procedure 11 on [page 130](#))

Procedure 2**Installing the new I/O panels**

- 1 Disconnect power to the IPE module.
 - If the module is powered by AC, turn off the AC breakers on the front of the module.
 - If the module is powered by DC, disconnect DC power from the pedestal.

**DANGER OF ELECTRIC SHOCK**

You must disconnect power to the IPE module before installing equipment.

Use caution when disconnecting AC or DC power. Electric shock can occur.

- 2 Remove the middle access panel from the rear of the module.
- 3 Remove the DS30Y cables from rear backplane connectors, SL0-SL3, of the controller slot and remove all DS30Y cables from the IPE module.
- 4 Unscrew the upper hex nut and lower screw from each MDF connector (retain the hardware for reuse with the new panel).
- 5 Remove each MDF connector from the I/O panel and mark with letter corresponding to the I/O panel slot from which it was removed (A - H) to aid reinstallation in the new panel.
- 6 Remove and retain the 8 screws that fasten the I/O panel to the chassis.
- 7 Remove the I/O panel.
- 8 Install the new I/O panel (side labelled Right facing outwards) using the 8 screws.
- 9 Reinstall the MDF connectors to the appropriate slots in the new I/O panel.
- 10 Remove metal punch-outs from the four ethernet and two TTY openings in the new I/O panel.
- 11 Insert the RJ45 couplers into these openings.

- 12 Repeat these steps to install the left side of the I/O panel (side labelled Left facing outwards).

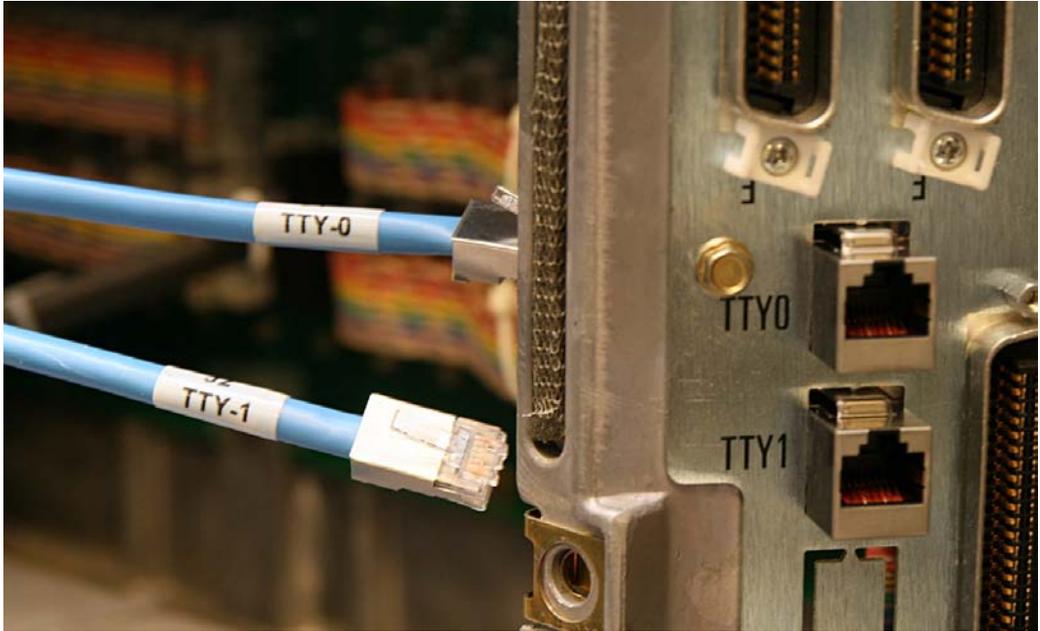
————— **End of Procedure** —————

Procedure 3

Cabling the MG XPEC motherboard

- 1 Align the P1 connector of one of the NTDW26ABE6 TTY Cables with backplane connector SL1 (Note the orientation of the arrow labelled "UP" on the P1 connector).
- 2 Insert P1 into the backplane connector of SL1.
- 3 Align J1 (labelled TTY-0) and J2 (labelled TTY-1) connectors of the NTDW26ABE6 cable with the respective RJ45 couplers on the right hand side I/O Panel (see Figure 25 on [page 118](#)) and insert cables.

Figure 25
TTY cables

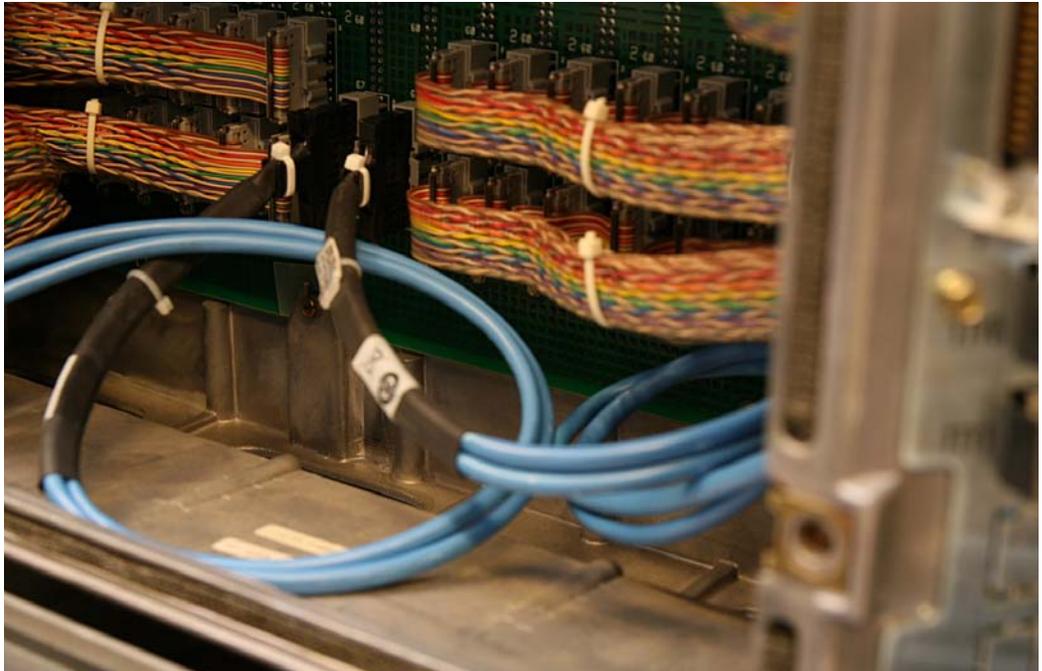


End of Procedure

Procedure 4
Cabling the MG XPEC daughterboard

- 1 Repeat as for motherboard TTY connector but use the second NTDW26ABE6 TTY cable to connect the backplane connector SL3 to the left hand side I/O Panel (see Figure 26 on [page 119](#)).

Figure 26
Daughterboard connection



End of Procedure

Procedure 5
Installing the MG XPEC pack

- 1 Remove the XPEC card from the controller slot.
- 2 Insert the MG XPEC card into the controller slot.

————— **End of Procedure** —————

Procedure 6
Installing the new card slot label

- 1 Remove the backing from the new Card Slot label to expose the adhesive.
- 2 Apply the new Card Slot label to the right hand side of the lower card guide/rail, covering up existing markings for slots 8 through 15.
- 3 Align slot 0 of the new label with slot 8 of the existing marking (see Figure 27 on [page 120](#)).

Figure 27
Slot card label



————— **End of Procedure** —————

Procedure 7
Installing the Ethernet cables

- 1 Remove the right hand side access cover from the front of the shelf.
- 2 Remove the left hand side access cover from the rear of the shelf.
- 3 Connect one of the supplied Cat-5e ethernet cables to the RJ45 coupler (labelled "E") on the right hand side of the I/O Panel (see Figure 28 on [page 122](#)).
- 4 Route this cable through the left side access to the front of the shelf.
- 5 Connect this cable to the MG XPEC MB side faceplate port (also labelled "E").
- 6 Repeat for MG XPEC MB "T".
- 7 Repeat the above connections for the MG XPEC DB "E" and "T" ports using the left hand side I/O panel.

Note: If this is a dual-homing configuration, repeat the above connections for the "1E" and "2T" ports of both MG XPEC MB and DB. Route the MB connections to the right hand side rear I/O Panel and the DB connections the left hand side rear I/O Panel.

Figure 28
Ethernet connections (rear)



End of Procedure

Extended System Monitoring and Power Fail Transfer

The CS 1000E Call Server can monitor the eXtended System Monitor (XSM) status of the large system columns. The MG XPEC card can activate a Power Fail Transfer (PFT) if a link to the Call Server is lost, or if the MG XPEC card reboots.

You need the following equipment to enable XSM status monitoring:

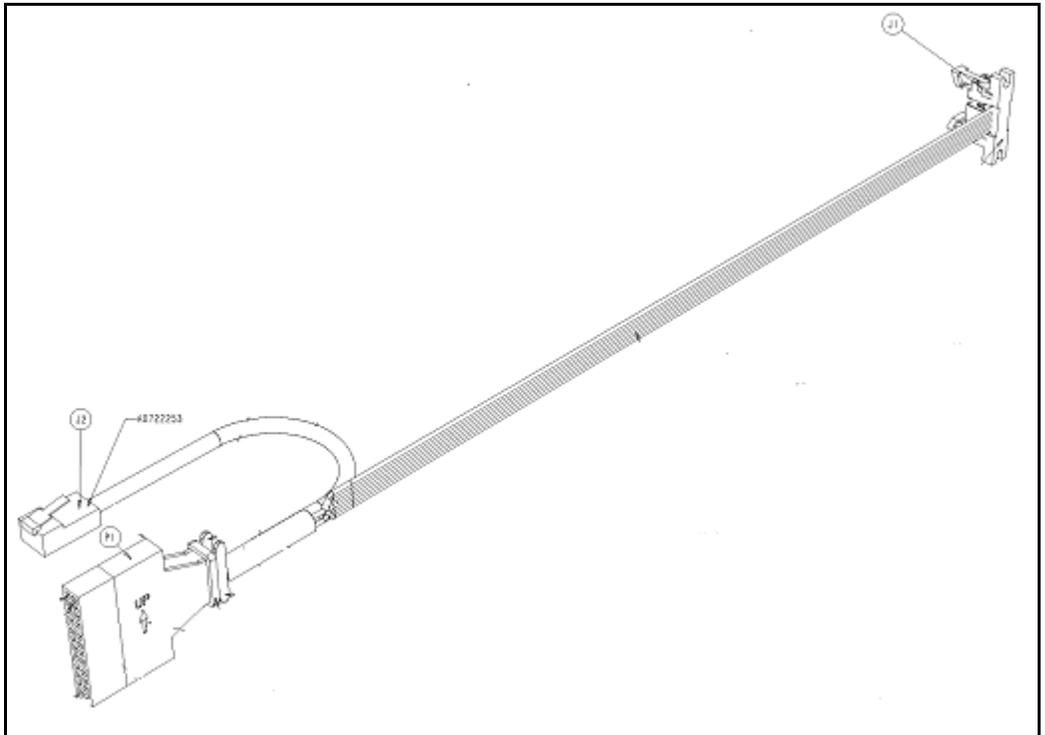
- MG XPEC card in an IPE module
- Master XSM for MG XPEC (NT8D22AEE5)
- XSM cable (NTDW26BAE6)
- NT8D46AG cable in a Meridian 1 or CS 1000M core/net shelf

The following equipment is optional, but required to enable PFT features:

- PFT unit connected to the MDF field
- Customer provided and modified Cat-5 cable for PFT

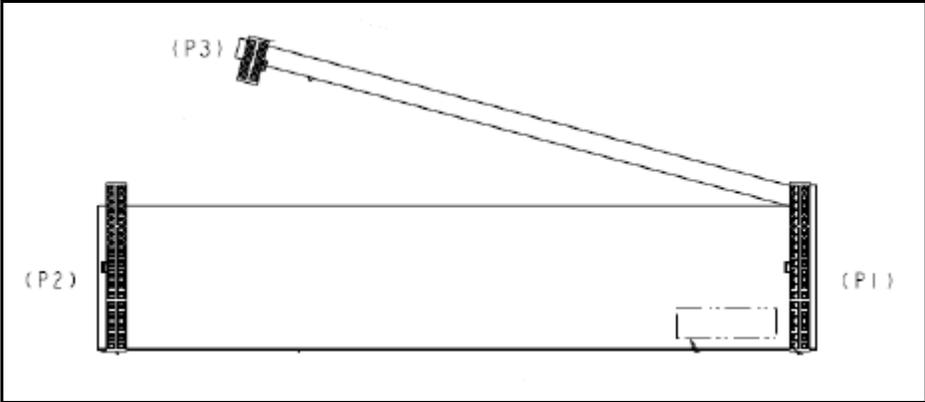
The NTDW26BAE6 XSM cable is shown in Figure 29 on [page 123](#).

Figure 29
NTDW22BAE6 XSM cable



The NT8D46AG cable is shown in Figure 30 on [page 124](#).

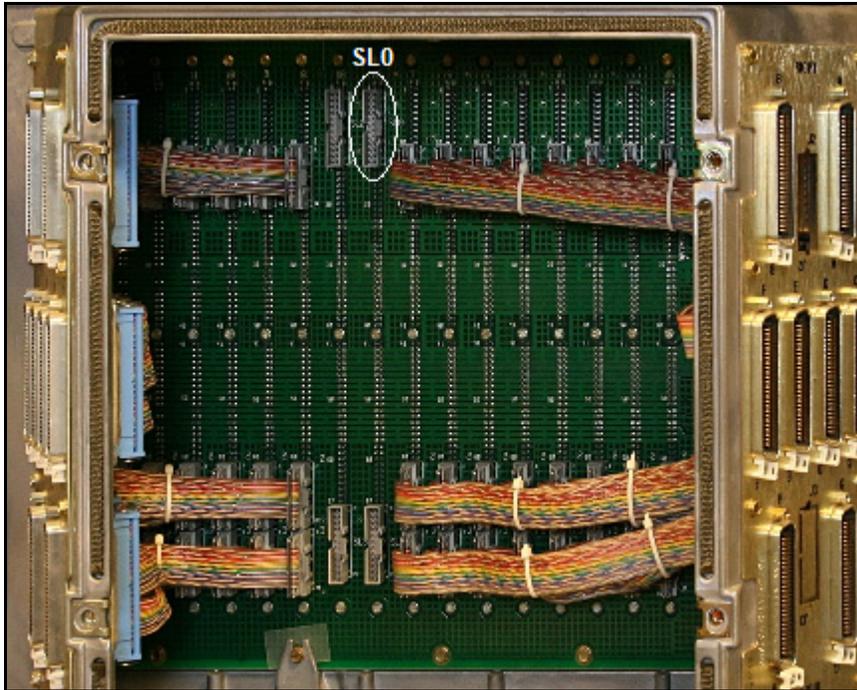
Figure 30
NT8D46AG cable



Procedure 8
Installing the XSM cable

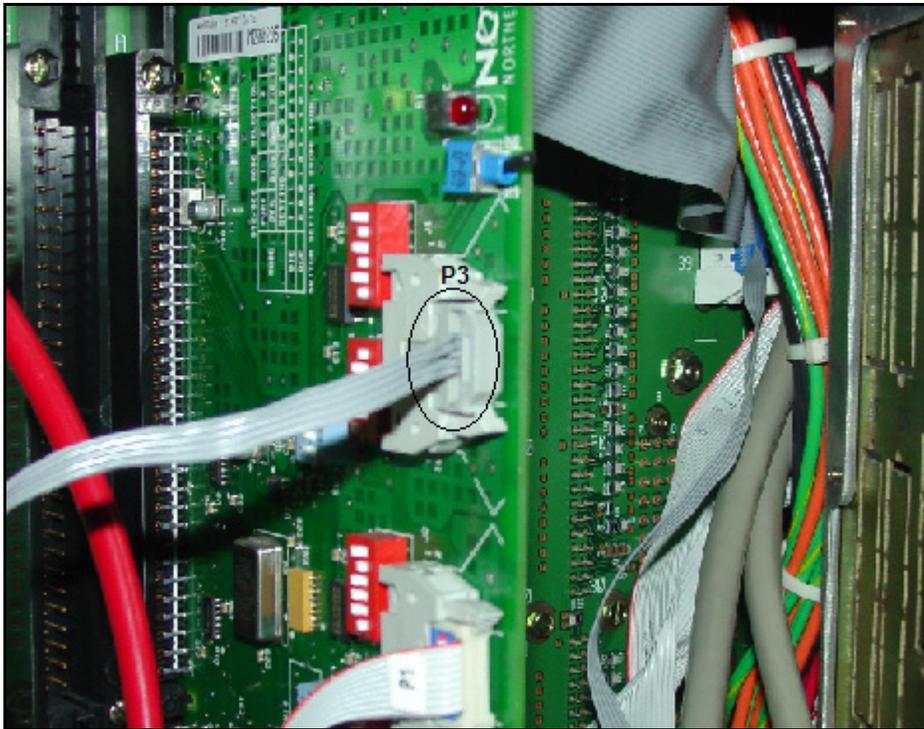
- 1 Connect the P1 connection of the NTDW26BAE6 XSM cable to the SL0 connector on the backplane of the NT8D37 IPE module (see Figure 31 on [page 125](#)).

Figure 31
NT8D37 IPE module SL0 connector



- 2 Connect the J2 connection of the NTDW26BAE6 XSM cable to a RJ45 coupler in the I/O panel on the IPE module.
- 3 Route the NTDW26BAE6 XSM cable from the IPE module to the core/net shelf which contains a NT8D46AG cable.
- 4 Disconnect the P3 connection on the NT8D46AG cable from the SDI card in the core/net shelf (see Figure 32 on [page 126](#)).

Figure 32
NT8D46AG cable P3 connector in core/net shelf



- 5 Connect the P3 connector on the NT8D46AG cable into the J1 connector on the NTDW26BAE6 XSM cable.
- 6 Ensure the master XSM is NT8D22AEE5 to support the MG XPEC card. Configure switches on master XSM to the following to identify connection to a MG XPEC card:
 - SW1-1 switch to OFF
 - SW2-2 switch to ON

Also ensure the XSM switches are configured for master XSM.

Note: Running an older master XSM firmware (NT8D22AC/AD), or failure to set the XSM switches properly causes the column top alarm LED to light, and disables the IPE ring generator.

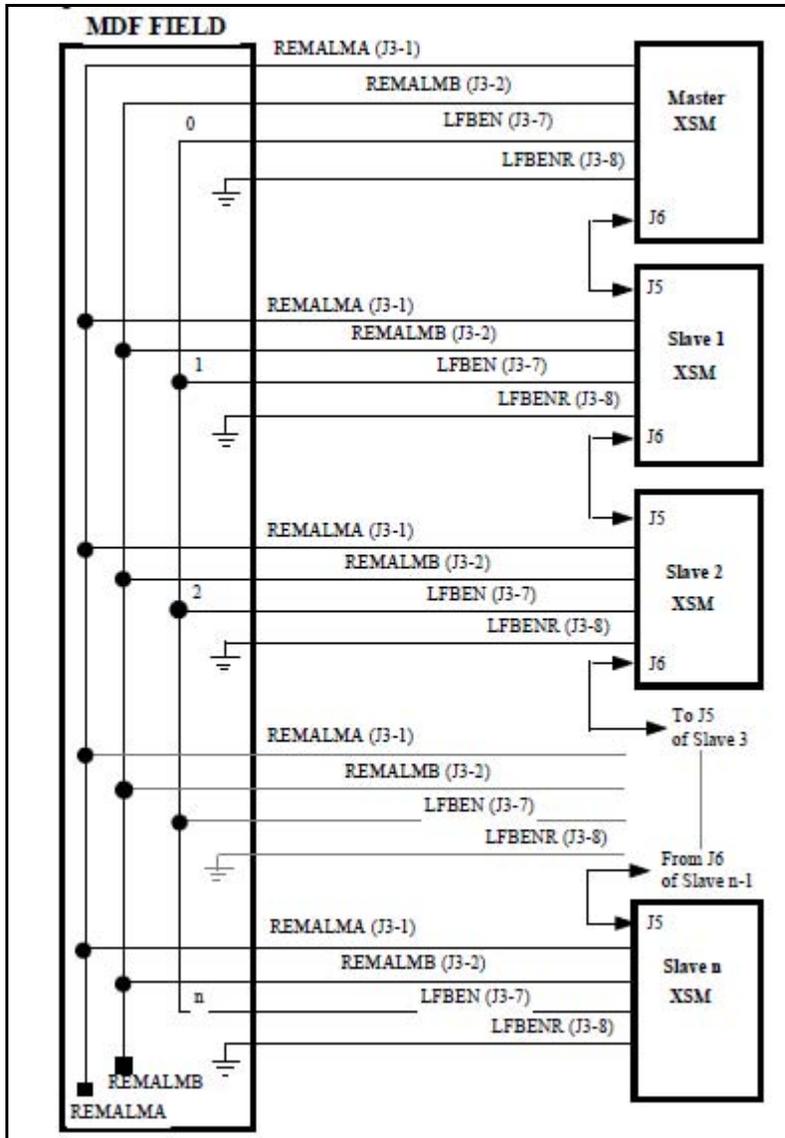
- 7 To enable PFT, connect two signals from the XSM cable J2 connector to PFT signals LFBEN and LFBENR at the MDF field. A PFT wiring schematic is shown in Figure 33 on [page 128](#).

You must modify the Cat-5 cable to relay the following signals.

- J2.1 = LFBEN
- J2.2 = LFBENR

You only need to modify the Cat-5 cable at the end connecting to the MDF field. Connect the RJ45 connector on the Cat-5 cable to the J2 connector on the IPE module I/O panel. Connect the modified end of the Cat-5 cable to the MDF field connections for your PFT unit.

Figure 33
MDF field PFT wiring to XSM



PFT activates if the relay connection between LFBEN and LFBENR closes. The PFT automatically activates if the MG XPEC link to the Call Server is lost, or if the MG XPEC motherboard reboots.

End of Procedure

Clock reference

In configurations with DECT spanning of multiple IPE modules (or with Call Pilot MGATE cards), Clock Reference cables synchronize the backplane TDM clocks of multiple MG XPECs.

You do not require clock synchronization of multiple IPE modules in normal situations with DLC, ALC, or other ordinary peripherals.

Procedure 9**Installing the Clock Reference cables**

- 1 Connect a customer provided Cat-5 or Cat-5e straight through cable to the faceplate CLK-OUT port of the MG XPEC selected as clock master (selected at random).

Note: Do not connect a cable to the CLK-IN port on the MG XPEC card you selected as clock master.

- 2 Route this cable to the next MG XPEC in the clock chain.
- 3 Connect to the CLK-IN port of this MG XPEC.
- 4 Repeat this series of connections for all MG XPECs in the clock chain.

Note: A maximum of 4 MG XPECs may be chained. Nortel recommends you to use Ethernet cables shorter than 5 meters for clock referencing.

End of Procedure

Final assembly and configuration

After performing the MG XPEC card installation procedures, perform the following procedures to configure the MG XPEC card.

Procedure 10
Preparing IPE module for configuration

After all equipment is installed:

- 1 Replace all covers removed during installation.
- 2 Connect all IPE MDF cables to I/O panel.
- 3 Connect all LAN cables to I/O panel.
- 4 Re-label MDF connections to match new loop and card assignments.
- 5 Route both TTY0 cables to a local workstation to perform initial configuration.
- 6 Re-connect AC or DC power to the IPE module.

End of Procedure

Procedure 11
Configuring the MG XPEC card

Note: You must perform the configuration procedure twice for an MG XPEC card. You must individually configure the MG XPEC motherboard and daughterboard with mgcsetup to fully configure an MG XPEC card.

- 1 Connect one of the two TTY0 serial cables to a local workstation.
- 2 Configure the local workstation terminal to 9660 baud 8-N-1 and VT-100 emulation.
- 3 Turn on power to IPE module. The first time the MG XPEC card boots, it automatically enters the mgcsetup menu.
- 4 Enter the ELAN IP, gateway, subnet mask, and Call Server IP address with mgcsetup. You configure the MG XPEC card the same way as configuring a MGC card, see “Configuring the MGC card (mgcsetup)” on [page 166](#).
- 5 Repeat steps 1 to 4. Use the other TTY0 serial cable to configure the other half of the MG XPEC card

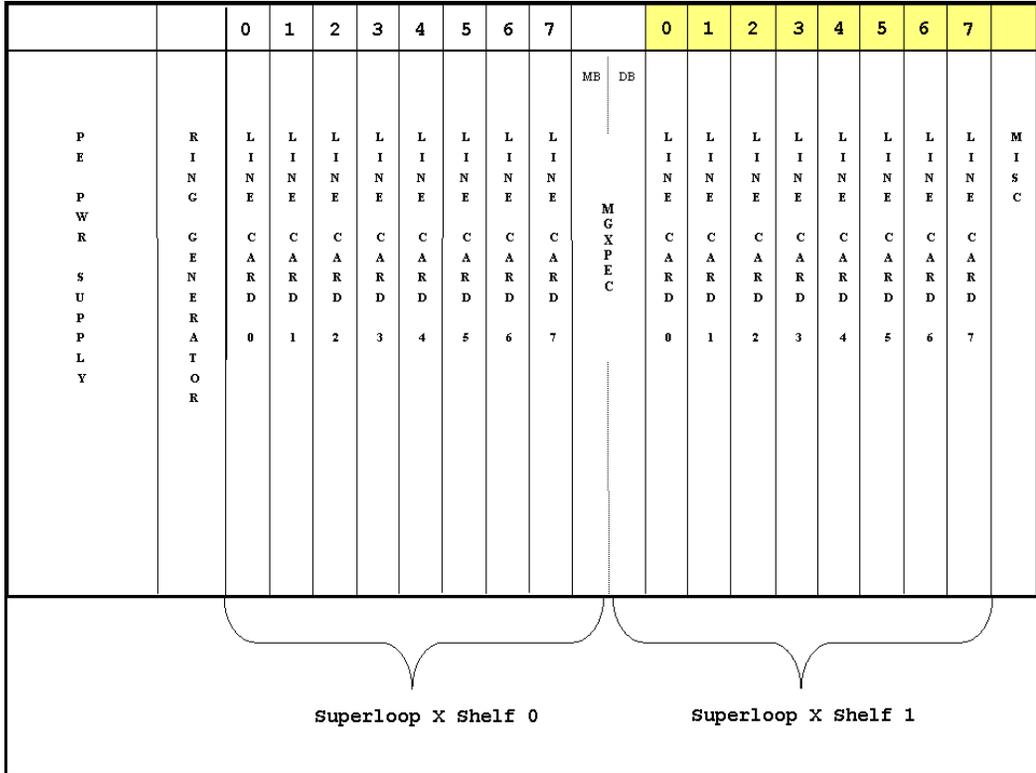
End of Procedure

Figure 34 on [page 131](#) and Figure 35 on [page 132](#) show an IPE shelf with XPEC and MG XPEC installed.

Figure 34
IPE Shelf with XPEC Installed

		0	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15	16			
P E P W R S U P P L Y	R I N G G E N E R A T O R	L I N E	X P E C	L I N E	M I S C																	
		C A R D		C A R D																		
		D	D	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	D	D
		0	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15				

Figure 35
IPE Shelf with MG XPEC Installed



Maintenance

For MG XPEC Overlay configuration information, see *Communication Server 1000E: Maintenance* (NN43041-700).

Element Manager

Media Gateway display type

Element Manager displays a Media Gateway type of MGX for an MG XPEC. See Figure 36 on [page 133](#).

For details on configuring an MGX type Media Gateway in Element Manager, see “Configuring the Media Gateway” on [page 279](#).

Figure 36
MGX type in Element Manager

The screenshot shows the Element Manager web interface for a Nortel CS 1000 system. The main content area is titled "Media Gateways" and contains a table of configured gateways. The table has the following columns: IPMG, IP Address, Zone, and Type. There are seven rows of data, each with a radio button in the first column. The IPMG values are 004.00, 008.00, 012.00, 036.00, 040.00, 064.00, and 100.01. The IP addresses are 47.11.65.100, 47.11.67.164, 47.11.65.107, 47.11.112.23, 47.11.112.24, 47.11.65.105, and 10.10.10.10. All gateways are in Zone 000 and are of Type MGC.

	IPMG	IP Address	Zone	Type
<input type="radio"/>	004.00	47.11.65.100	000	MGC
<input type="radio"/>	008.00	47.11.67.164	000	MGC
<input type="radio"/>	012.00	47.11.65.107	000	MGC
<input type="radio"/>	036.00	47.11.112.23	000	MGC
<input type="radio"/>	040.00	47.11.112.24	000	MGC
<input type="radio"/>	064.00	47.11.65.105	000	MGC
<input type="radio"/>	100.01	10.10.10.10	000	MGC

Rack-mounting the components

Contents

This section contains information on the following topics:

- [Introduction](#) 135
- [Lifting system components](#) 136
- [Guidelines for component placement in a rack.](#) 137
- [Rack-mounting a Media Gateway 1000, Media Gateway 1010, or Media Gateway Expander.](#) 138
- [Rack-mounting a Terminal Server](#) 150
- [Rack-mounting a BayStack 470 Switch](#) 150
- [Rack-mounting a BayStack 460 Power over Ethernet unit.](#) 150

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 1000.

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 12: "Removing the cover of a Media Gateway or Media Gateway Expander" on [page 138](#)
- Procedure 13: "Rack-mounting a Media Gateway 1000 or Media Gateway Expander" on [page 140](#)
- Procedure 14: "Removing the cover of a Media Gateway 1010" on [page 143](#)
- Procedure 15: "Rack-mounting a Media Gateway 1010" on [page 144](#)

Lifting system components

Exercise care when lifting system components. If necessary, get assistance to lift a component or install components in a rack. Table 22 on page 137 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 22
Weight of CS 1000E system components

Component	Lbs	Kg
Media Gateway 1000 or Media Gateway 1010 without cards	26	12
— with 4 cards	30	13.5
Media Gateway Expander		
— without cards	26	12
— with 4 cards	30	13.5
BayStack 470 Switch	14.7	6.7
BayStack 460 Power over Ethernet Switch	12.76	5.8
MRV Terminal Server	11	5

Guidelines for component placement in a rack

When installing equipment, the Layer two switches should be in a central location to allow for easy access of all LAN cabling. The Media Gateway 1000s, Media Gateway 1010s, 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* (NN43041-220) 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 1000, Media Gateway 1010, or Media Gateway Expander

The Media Gateway Expander can be mounted either above or below the Media Gateway 1000.

The following items are required to mount each Media Gateway 1000, Media Gateway 1010, 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 12 on [page 138](#) to remove the cover on a Media Gateway 1000 or a Media Gateway Expander.

Procedure 12 **Removing the cover of a Media Gateway or Media Gateway Expander**

- 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 37 on [page 139](#).
 - b. Slide both spring-loaded latches simultaneously down toward the bottom of the Media Gateway 1000, and pull forward. Then lift the cover upward to remove it from the Media Gateway 1000. Refer to Figure 38 on [page 139](#).

Note: The bottom of the front cover is supported by, but not secured to, the Media Gateway 1000. Do not drop it.

Figure 37
Unlock the latches

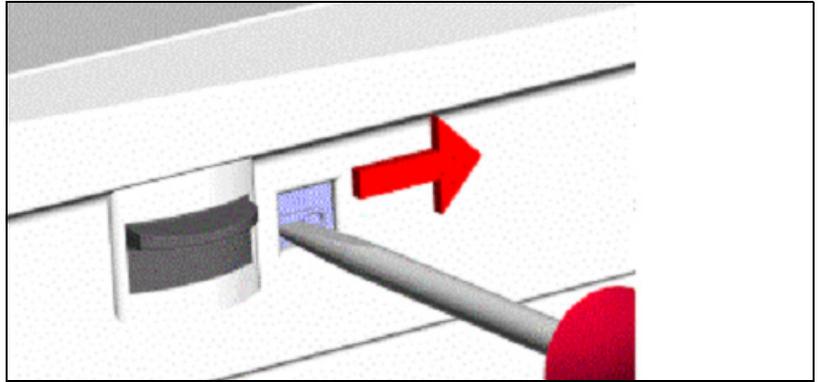
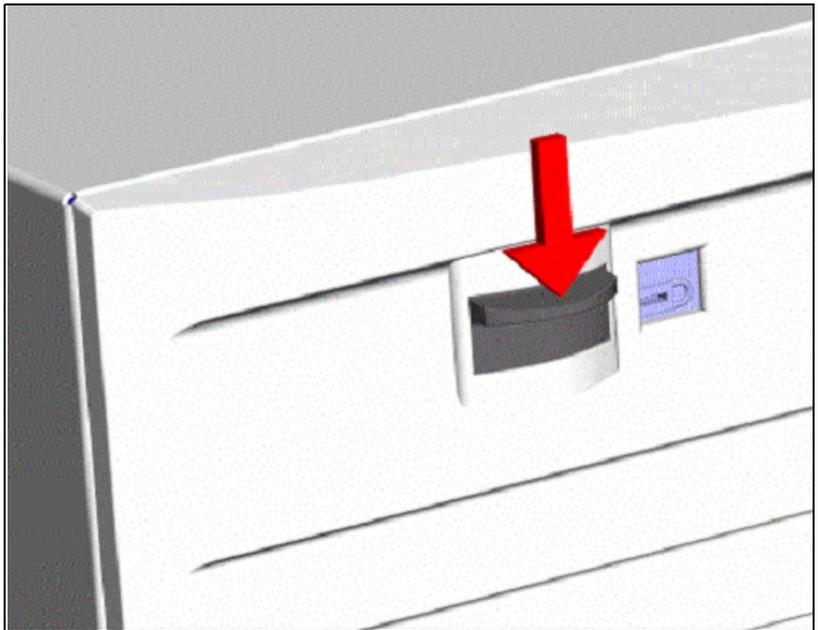


Figure 38
Unlock the cover



End of Procedure

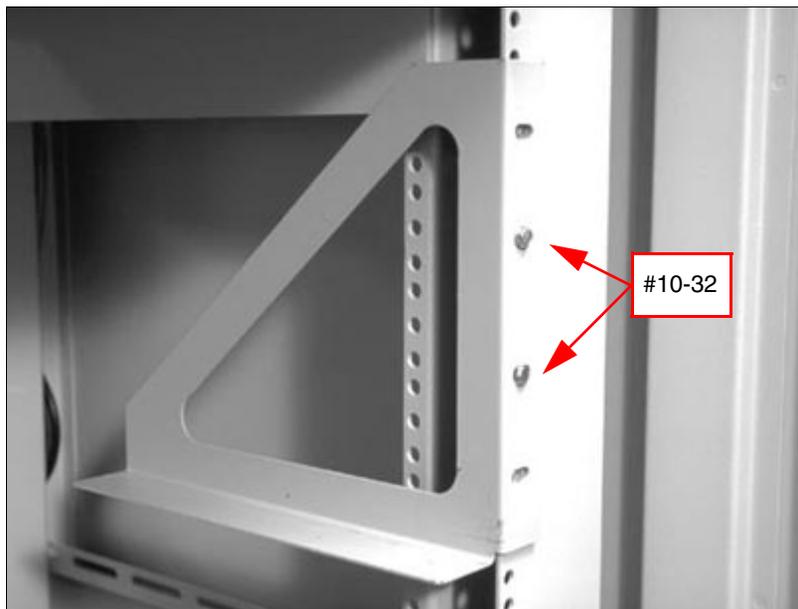
Procedure 13

Rack-mounting a Media Gateway 1000 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 39.
 - b. Fasten the screws.

Figure 39

Guide bracket installed in a rack

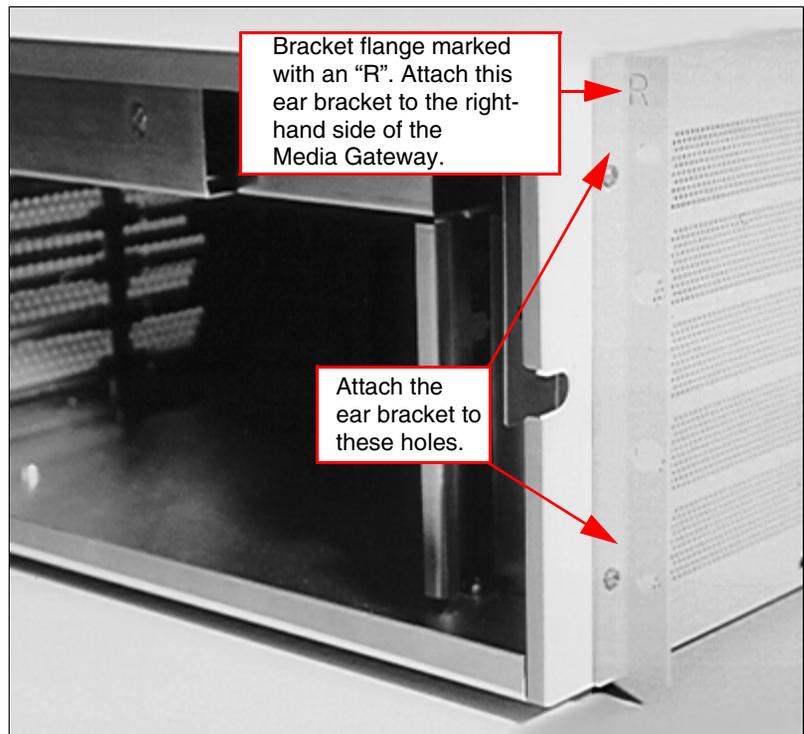


- 2 Fasten the left guide bracket to the left rack support.
 - a. Insert two #10-32 machine screws into the two middle slots in the bracket and into the respective holes in the left rack support.
 - b. Fasten the screws.

- 3 Attach the right ear bracket (marked with an “R”) to the holes on the right side of the Media Gateway 1000.
 - 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 1000.

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 1000 (see Figure 40).

Figure 40
Right ear bracket on a Media Gateway 1000



- 4 Attach the left ear bracket (marked with an “L”) to the holes on the left side of the Media Gateway 1000 (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 1000.

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 1000.



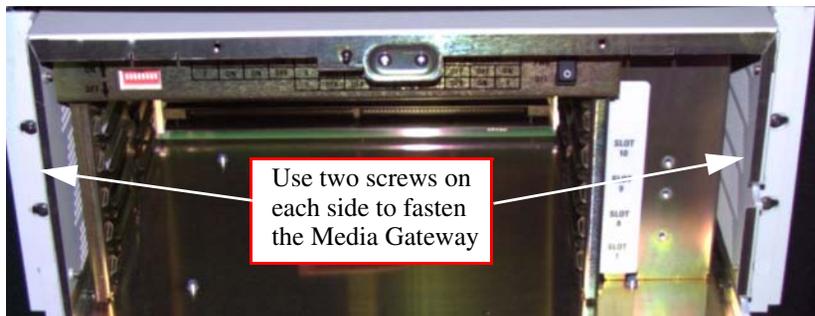
WARNING

A Media Gateway 1000, Media Gateway 1010, 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 1000 on the guide brackets.
 - a. Carefully slide the Media Gateway 1000 into the rack until the ear brackets come to rest against the rack support.

Note: Make sure that the rear of the Media Gateway 1000 is on the guide brackets. See Figure 41 on [page 142](#).
- 6 Use the four remaining #10-32 machine screws to fasten the Media Gateway 1000 to the rack supports (two screws on each side).

Figure 41
Media Gateway 1000 installed in a rack



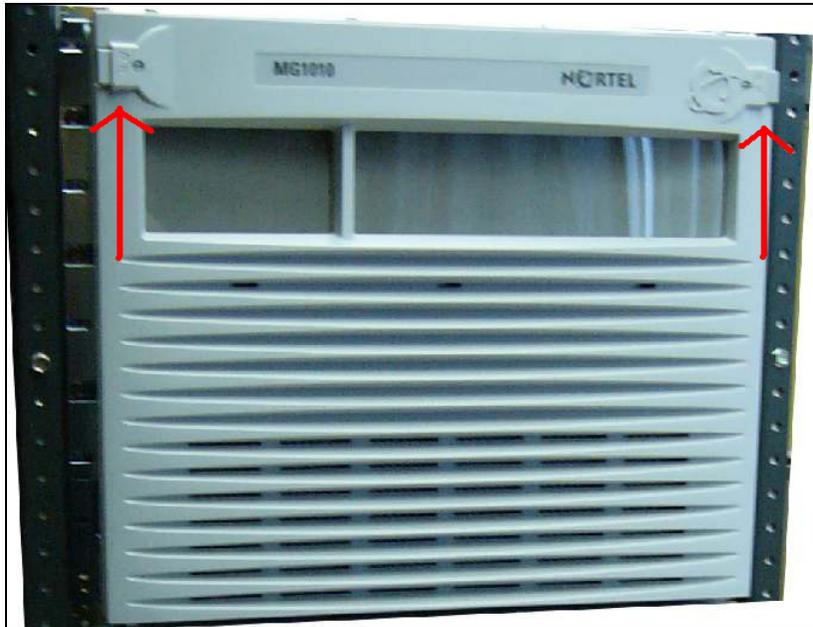
End of Procedure

Procedure 14**Removing the cover of a Media Gateway 1010**

- 1 If the cover lock latches are in their locked position:
 - a. Use a flat screwdriver to unlock the latches. Refer to Figure 42 on [page 143](#).
 - b. Push both spring-loaded latches simultaneously to open (or close) the MG1010 door. Then lift the cover upward to remove it. Refer to Figure 43 on [page 144](#).

Figure 42**Unlock the MG1010 latches**

Figure 43
Unlock the cover

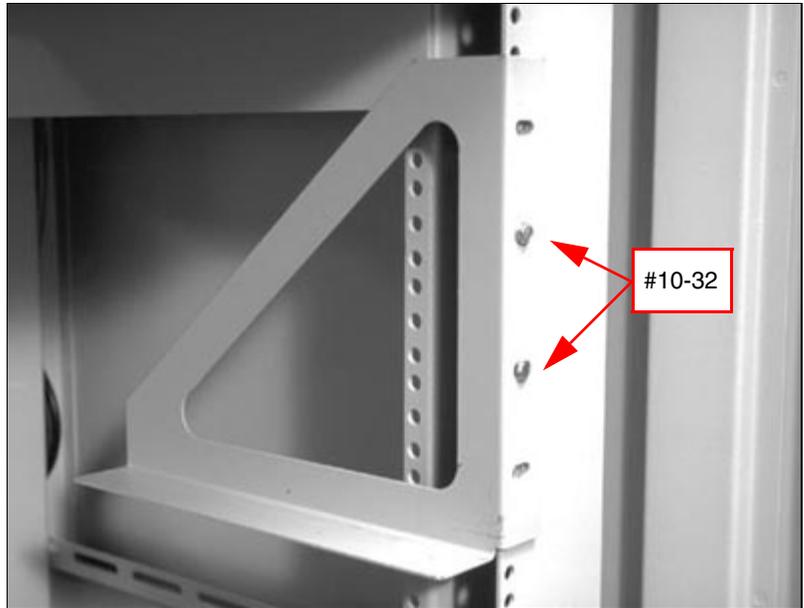


End of Procedure

Procedure 15
Rack-mounting a Media Gateway 1010

- 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 39.
 - b. Fasten the screws.

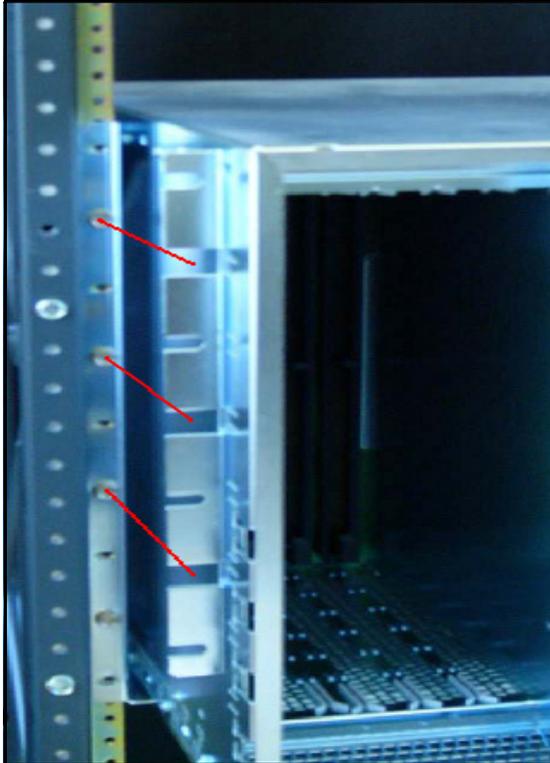
Figure 44
Guide bracket installed in a rack



- 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 Slide the MG1010 chassis into place. See Figure 45

Figure 45
Media Gateway 1010 chassis



- 4 Install the remaining 10 screws, 5 on each side. See Figure 46 on [page 147](#).

Figure 46
Media Gateway 1010 chassis screws



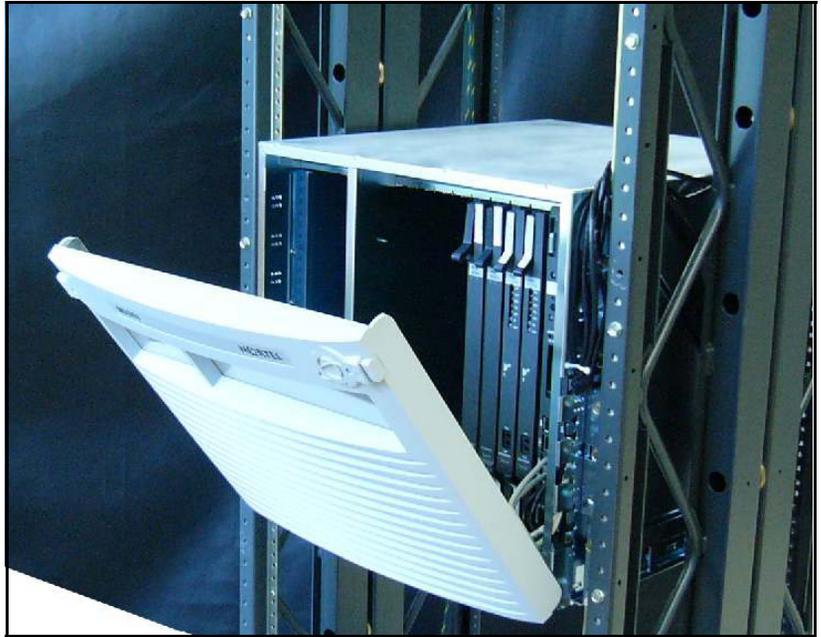
- 5 The tabs on the bottom of the MG1010 door fit into the slots at the bottom of the chassis. See Figure 47 on [page 148](#).

With the door tabs positioned into the MG1010 chassis slots, pivot the MG1010 door closed. See Figure 48 on [page 149](#).

Figure 47
Media Gateway 1010 chassis door tabs



Figure 48
Closing the Media Gateway 1010 chassis door



————— **End of Procedure** —————

Rack-mounting a Terminal Server

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

Rack-mounting a BayStack 470 Switch

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

Rack-mounting a BayStack 460 Power over Ethernet unit

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

Installing system grounds

Contents

This section contains information on the following topics:

Introduction	151
Installing a ground bar	152
Grounding a Signaling Server	155
Grounding a Media Gateway powered by the same electrical panel . .	155
Grounding a Media Gateway powered by multiple electrical panels . .	156
Grounding a Media Gateway Expander	157
Grounding other rack-mounted components	158
Grounding equipment in the UK	160

Introduction

This chapter contains the following procedures:

- Procedure 16: "Installing an NTBK80 Ground Bar" on [page 153](#)
- Procedure 17: "Installing an NTDU6201 Ground Bar" on [page 154](#)
- Procedure 18: "Grounding Media Gateways powered by the same electrical panel" on [page 155](#).
- Procedure 19: "Grounding Media Gateways powered by multiple electrical panels" on [page 157](#)
- Procedure 20: "Grounding a Media Gateway Expander" on [page 157](#)
- Procedure 21: "Grounding equipment in the UK" on [page 160](#)

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 16 to install a ground bar.

Procedure 16
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 23 on [page 153](#) 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 49 on [page 154](#) for the NTBK80 Ground Bar

Table 23
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 49
NTBK80 Ground Bar



End of Procedure

Follow Procedure 17 to install an NTDU6201 Ground Bar.

Procedure 17
Installing an NTDU6201 Ground Bar

- 1 Place the NTDU6201 Ground Bar near the equipment.

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

- 2 Connect the NTDU6201 Ground Bar to the ground bus in the AC electrical panel, or to TGB for an ANSI/EIA/TIA 607 installation using #6 AWG wire. See Table 23 on [page 153](#) for region-specific grounding requirements.

**WARNING**

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

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

End of Procedure

Grounding a Signaling Server

For information on grounding a Signaling Server, see *Signaling Server: Installation and Commissioning* (NN43001-312).

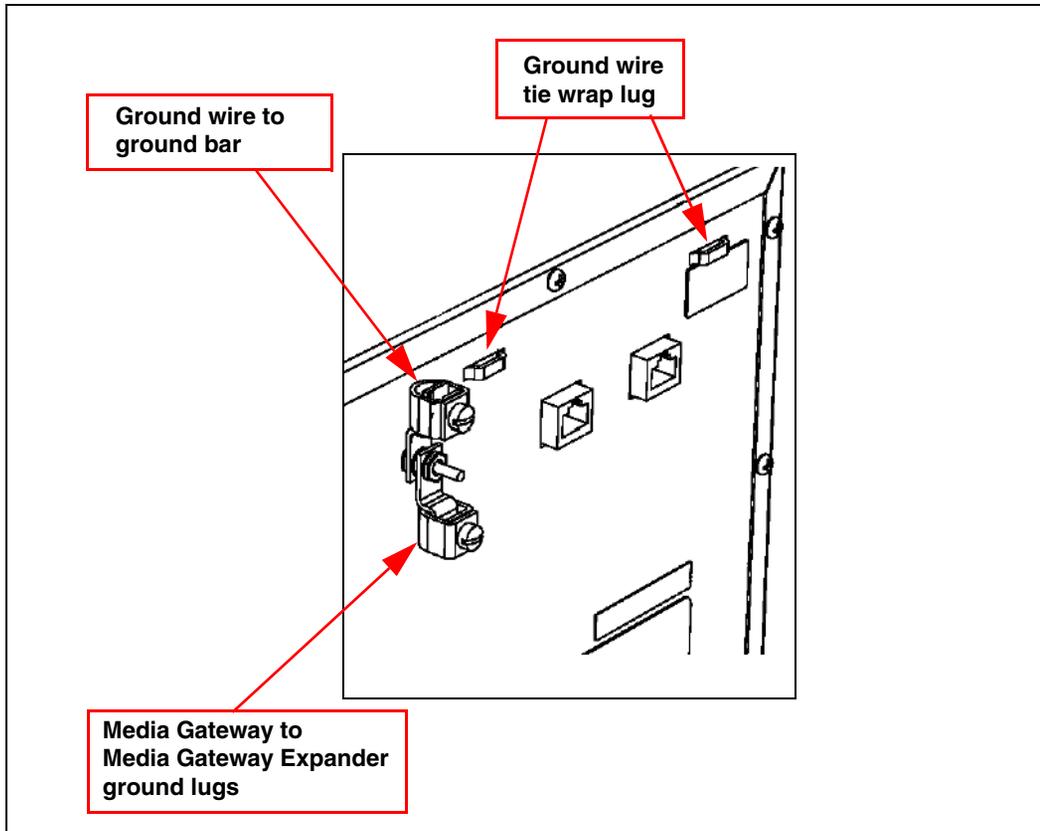
Grounding a Media Gateway powered by the same electrical panel

Follow Procedure 18 to ground one or more Media Gateway powered by the same electrical panel.

Procedure 18**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 50 on [page 156](#), at the back of the Media Gateway to the ground bar.
- 3 Place a DO NOT DISCONNECT tag on the ground wire.

Figure 50
Media Gateway and Media Gateway Expander ground lug location



4 Test the ground.

————— End of Procedure —————

Grounding a Media Gateway powered by multiple electrical panels

Follow Procedure 19 on [page 157](#) to ground multiple Media Gateway that are powered by multiple electrical panels.

Procedure 19**Grounding Media Gateways powered by multiple electrical panels**

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

Note: Each component must be grounded to the electrical panel that provides the power to that component.

- 4 Install a #6 AWG ground wire from the ground lug on the rear of the Media Gateway to the ground bar identified for that component's power source.
- 5 Place a DO NOT DISCONNECT tag on the ground wire.
- 6 Test the ground.

End of Procedure

Grounding a Media Gateway Expander

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

IMPORTANT!

Ground the Media Gateway Expander to the Media Gateway.

IMPORTANT!

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

Follow Procedure 20 to ground a Media Gateway Expander.

Procedure 20**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 50 on [page 156](#).
- 3 Place a DO NOT DISCONNECT tag on the ground wire.
- 4 Test the ground.

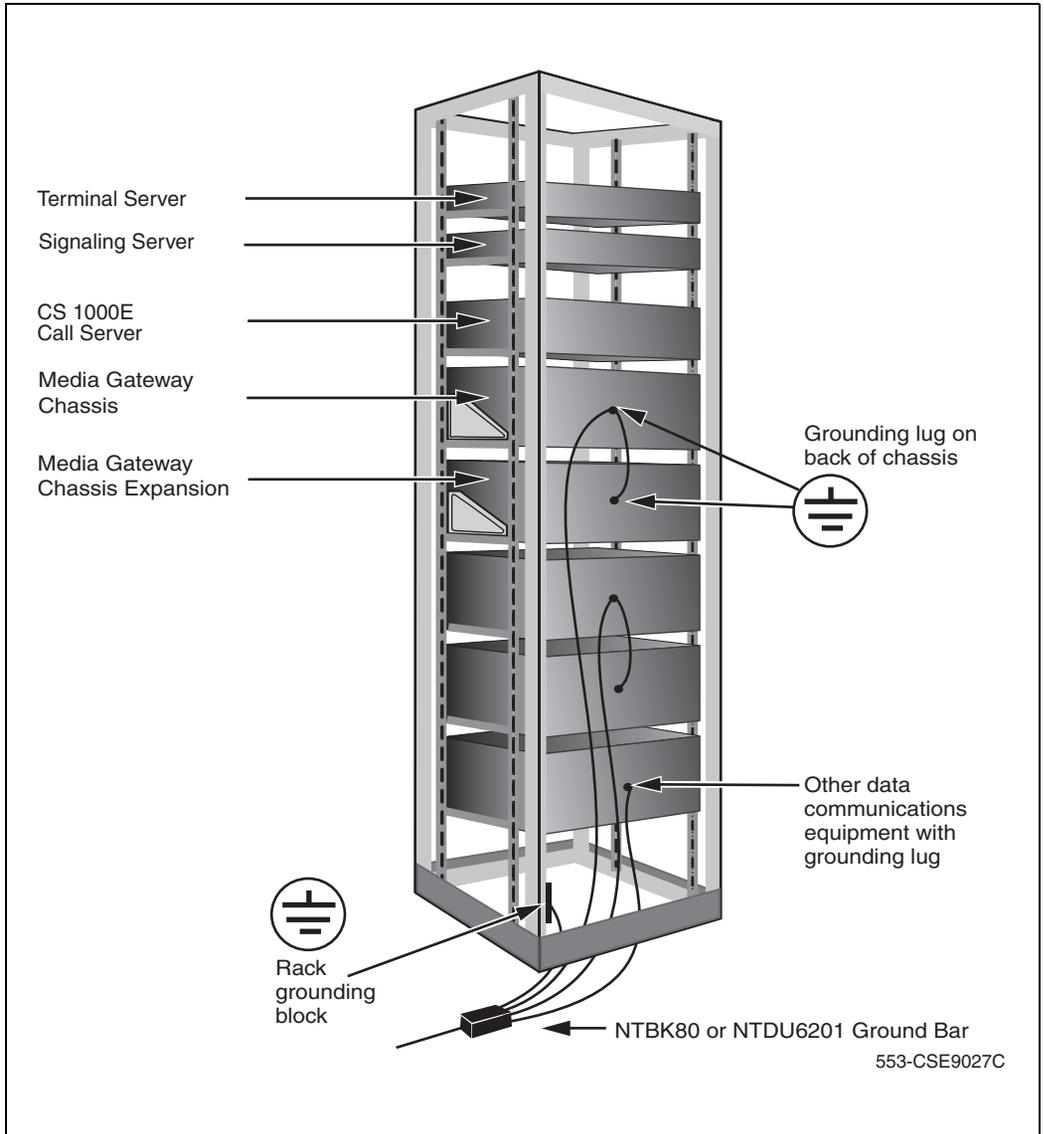
End of Procedure

Grounding other rack-mounted components

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

When the rack is grounded to the ground bar, the equipment is grounded using the Single Point Grounding method, as shown in Figure 51 on [page 159](#).

Figure 51
Grounding multiple pieces of equipment in a rack



Grounding equipment in the UK

Follow Procedure 21 to ground equipment in the UK.

Procedure 21

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 mm².

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 50 on [page 156](#).
- 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 mm².
 - b. Place a DO NOT DISCONNECT tag on the grounding wire.
 - c. Measure the resistance of the ground between the Krone Test Jack Frame and the Media Gateway frame ground. The resistance must not be more than 0.25 Ohm.

End of Procedure

Installing and connecting CS 1000E hardware

Contents

This section contains information on the following topics:

Introduction	161
Connecting Call Server 0 to Call Server 1	162
Installing the cards	164
Cabling the cards	171
Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter onto a Media Card	174
Connecting a Media Card to the ELAN subnet	176
Connecting a Media Card to the TLAN subnet	177
Connecting a Media Gateway to a Media Gateway Expansion	177

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 Voice Gateway Media Cards installed in the Media Gateway, require both ELAN subnet and TLAN subnet connections.

This chapter contains the following procedures:

- Procedure 22: "Connecting co-located Call Servers" on [page 163](#)

- Procedure 23: "Connecting Campus Redundant Call Servers" on [page 164](#)
- Procedure 24: "Installing a DSP Daughterboard" on [page 165](#)
- Procedure 25: "Installing the MGC card" on [page 165](#)
- Procedure 27: "Installing the Call Server card" on [page 169](#)
- Procedure 28: "Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter" on [page 175](#)
- Procedure 29: "Connecting a Media Card to the ELAN subnet" on [page 176](#)
- Procedure 30: "Connecting a Media Card to the TLAN subnet" on [page 177](#)
- Procedure 31: "Connecting a Media Gateway to a Media Gateway Expansion" on [page 177](#).

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 22 to connect the Call Servers. If the units are configured for Campus Redundancy, follow Procedure 23 to connect the Call Servers.

Connecting co-located Call Servers

Follow Procedure 22 to connect co-located Call Servers.

Procedure 22

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.

End of Procedure

Connecting Campus Redundant Call Servers

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

The port-based VLANs used in the BayStack 470-24T switches operate in accordance with the IEEE 802.1Q tagging rules. VLAN ports are grouped into broadcast domains by assigning them to the same VLAN. Frames received in one VLAN can be forwarded only within that VLAN. For more information, see *Communication Server 1000: System Redundancy* (NN43001-507).

Procedure 23

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 MG 1000Es, Call Pilot, Symposium, OTM, Element Manager.
 - Four high-speed fiber uplinks (GBIC ports)

End of Procedure

Installing the cards

Installing a DSP Daughterboard

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

Procedure 24
Installing a DSP Daughterboard

- 1 Place the MGC on a safe ESD surface.
- 2 Place the DSP DB in either DB position 1 for NTDW64 96-port daughterboard (DB 96) or DB position 2 for an NTDW62 32-port daughterboard (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.

End of Procedure

Installing the MGC card**Procedure 25**
Installing the MGC card

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.

Note: The 3-port SDI cable (NTBK48AA) is not required for an MGC installation in an MG 1010 chassis. The MG 1010 MGU card provides the serial connection. Use an RJ45 to 9 pin RS232 serial port cable when cabling a MG 1010. For more information, see “CP PM cabling” on [page 74](#).

- 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`.

End of Procedure

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 26 on [page 166](#)).

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 26 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.

Note: Bolded information only appears if loadware on the MGC card is older than the MGCBAD loadware. You must configure the TLAN with Element Manager on current MGC 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:

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).

```

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)
```

```
Set MGC to TDM only? (y/[n]) : n
```

Note: Turning on TDM only will not allow
: the MGC to be connected to a network.

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...
```

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."

End of Procedure

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.

For CS 1000 Release 6.0, CP PM cards must have a minimum of 2 GBytes of memory and a 40 GB disk drive. If you need to upgrade either the memory or hard drive on a CP PM card, see *Circuit Card: Description and Installation* (NN43001-311).

Procedure 27 **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 Insert the CP PM card:
 - Slide the call processor into Slot 1 (or higher) of the Chassis.
 - Slide the CP PM call processor into Slot 22 or 23 of the MG 1010 chassis.
- 3 Lock the card into the faceplate latches.

4 Connect the serial cable:

- On a Media Gateway, 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.
- On an MG 1010, attach the RJ45 to 9 pin RS232 serial cable to tty0 or tty1 port on the MGU card. tty0 is for slot 22, tty1 is for slot 23.
- NTDW99 and NTDW61 CP PM cards in slots 1-10 use the NTAK19EC 2-port SDI cable.
- Connect the other end of the serial cable to the serial port on the maintenance terminal.

Figure 52
2-port SDI cable (NTAK19EC) cable



End of Procedure

Cabling the cards

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

Cabling the MGC

The 3-port SDI cable (NTBK48AA) is connected to the SDI (RS-232) port on the Chassis. Figure 53 on [page 173](#) shows front of MGC. The CE and CT ports are reserved for the CP PM card only. The CE connects to the ELAN

port of the Call Server. The 1E and 2T ports must be attached to the layer 2 switch.

For MG1010 you must connect to the MGU card for serial port connections.

MGC Ethernet Capabilities

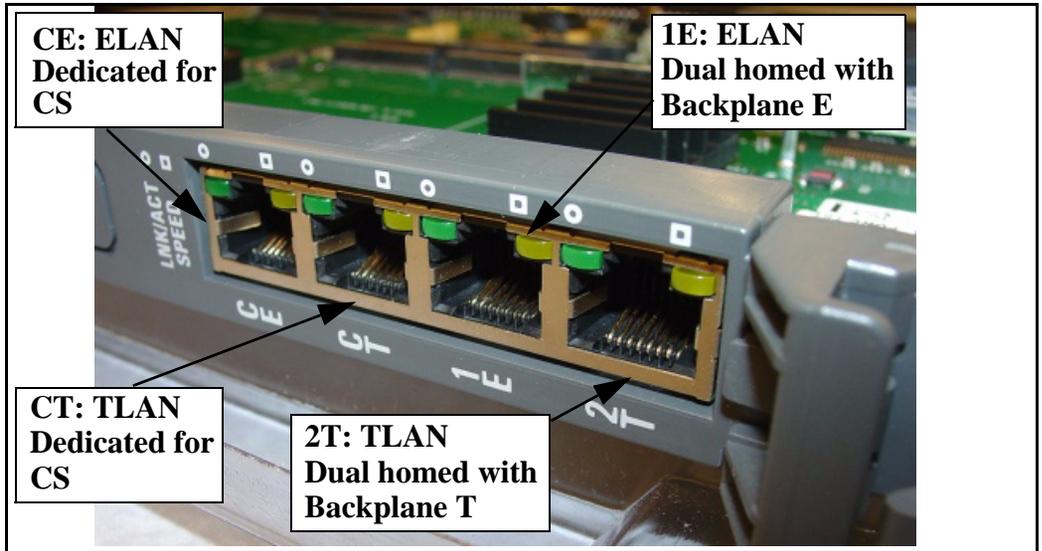
An MGC features six Ethernet interfaces set to auto-negotiate by default: four on the faceplate (see Figure 53 on [page 173](#)), and two on the back. For details, see Appendix A: “Supported cabling options” on [page 491](#).

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 Media Gateway 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 53 on [page 173](#) shows front of MGC with the "bulkhead" connectors (1E and 2T) that connect to numbers 1 and 2 bulkhead. The CE and CT connect to the ELAN port. The 100 Base T ports 1 and 2 connect to the bulkhead, while ports 1 and 2 in the lower left connect to the backplane.

Figure 53
MGC faceplate



Note: The MG1000E can be connected directly to the CS1000E ELAN subnet, or it can be connected to the ELAN subnet through a Layer 2 switch.

Cabling the Call Server

In a typical configuration, the com (SDI) port of the Call Server is routed through the backplane of the shelf to the 50-pin Amphinol connector on the back of the shelf. A special cable is shipped with the Call Server that adapts the 50-pin Amphinol to a 25-pin DB connector (NTAK19EC). Port 0 is used for maintenance access, and Port 1 is for an external modem connection.

In an MG 1010, the MGU provides a the serial connections to the CP PM card in slot 22 and slot 23. Connect an RJ42 to 9 pin RS232 serial cable to MGU port tty0 or tty1. tty0 is for slot 22, tty1 is for slot 23.

Connect the ELAN of the CP PM Call Server, or LAN 1 of the CP PIV Call Server, to the CE port of the MGC card or to the VLAN of the external layer 2 switch that is dedicated to ELAN traffic for the system.

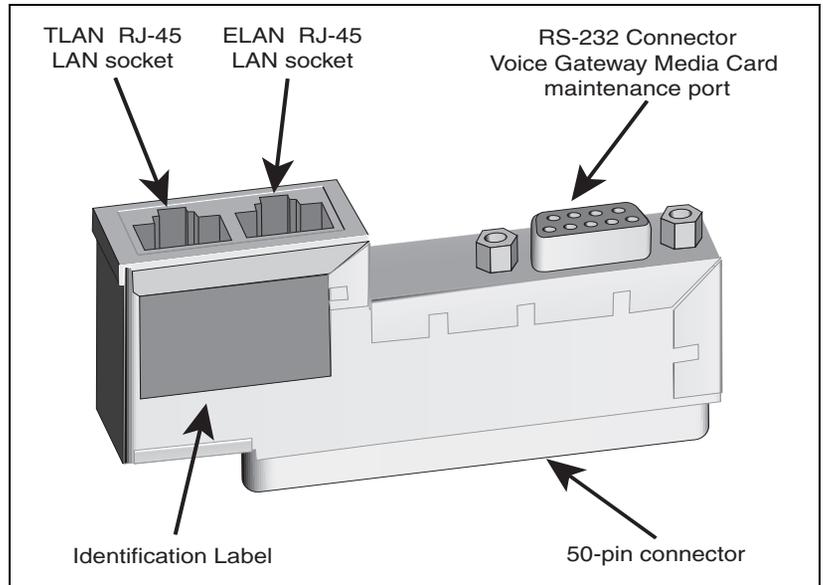
Appendix A: “Supported cabling options” on [page 491](#) illustrates the different ways to connect the CP PM Call Server, MGC, and CP PM Signaling Server cards.

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 54 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 54
Shielded 50-pin to Serial/ELAN/TLAN adapter



Procedure 28
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 Compact Flash (CF) card" on [page 372](#).
- 4 Insert the adapter, shown in Figure 54, 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 55 on [page 176](#), the Media Card is installed in card slot 1. Therefore, the adaptor is installed in connector Card 1.

End of Procedure

Connecting a Media Card to the ELAN subnet

Follow Procedure 29 to connect a Media Card to the ELAN.

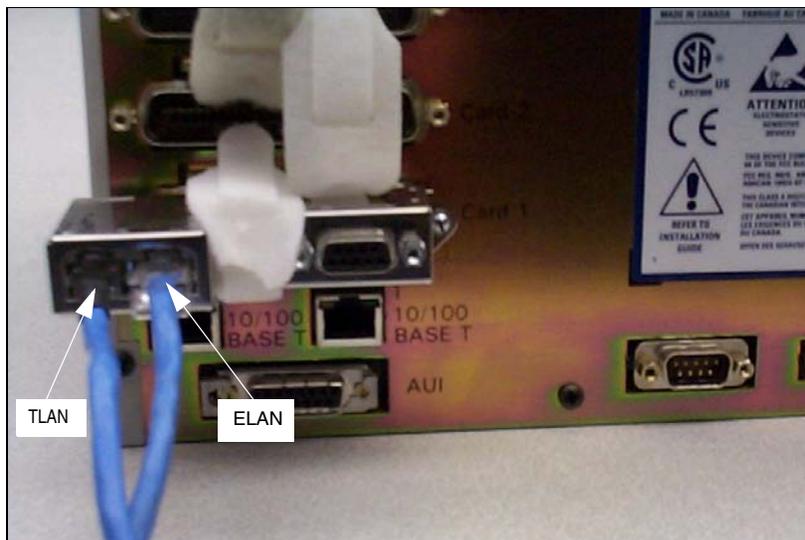
Procedure 29

Connecting a Media Card to the ELAN subnet

- 1 Connect a standard CAT5 patch cable to the ELAN network interface on the Adaptor (Figure 55 on [page 176](#)).
- 2 Connect the other end of the standard CAT5 patch cable to an RJ-45 ELAN network interface on the Layer 2 switch.

Figure 55

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



End of Procedure

Connecting a Media Card to the TLAN subnet

Follow Procedure 30 to connect a Media Card to the TLAN subnet.

Procedure 30

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 55 on [page 176](#)).
- 2 Connect the other end of the standard CAT5 patch cable to an RJ-45 TLAN network interface on the BayStack 470 switch.

End of Procedure

Connecting a Media Gateway to a Media Gateway Expansion

Procedure 31 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 31

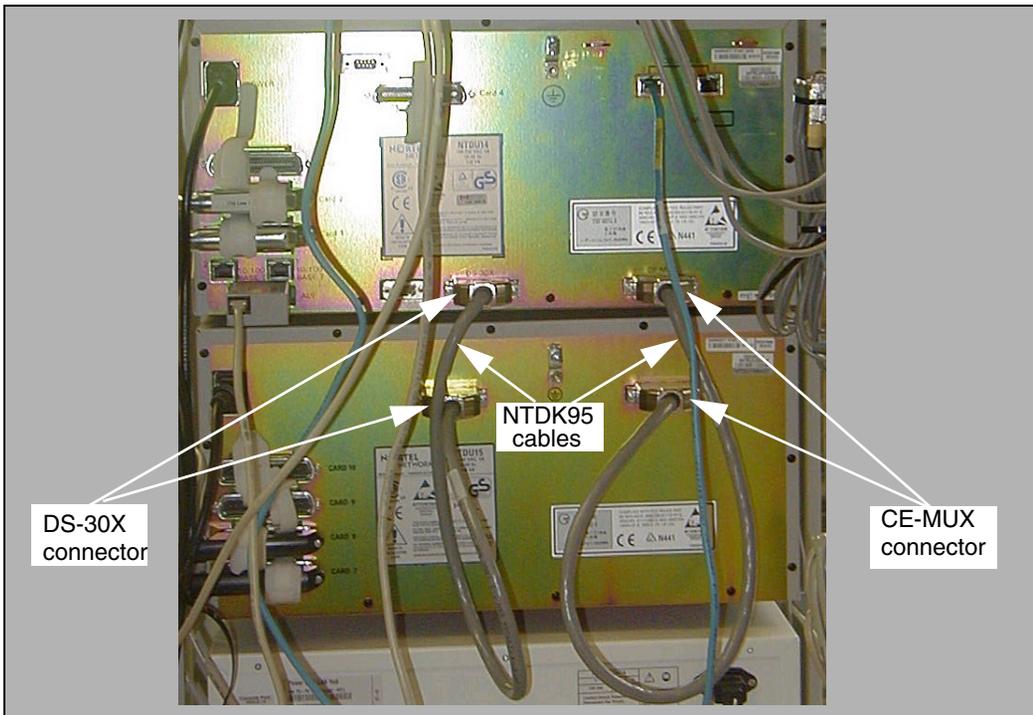
Connecting a Media Gateway to a Media Gateway Expansion

- 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 56 on [page 178](#) 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.

Figure 56
Media Gateway and Media Gateway Expander connections



————— End of Procedure —————

Installing software on the CS 1000E

Contents

This section contains information on the following topics:

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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 6.0 software
 - b keycode files
 - c CS 1000E Release 6.0 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 preinstalled software. However, the pre-installed software versions are typically older and are included only for manufacturing and order management purposes. **Do not attempt to operate the system with the pre-installed software.** You must download the latest software from the Nortel Software Download web site and install the software as part of the installation process.

Creating a Call Processor software CF card

This section provides the steps involved in creating a Call Processor software CF card.

Procedure 32

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.

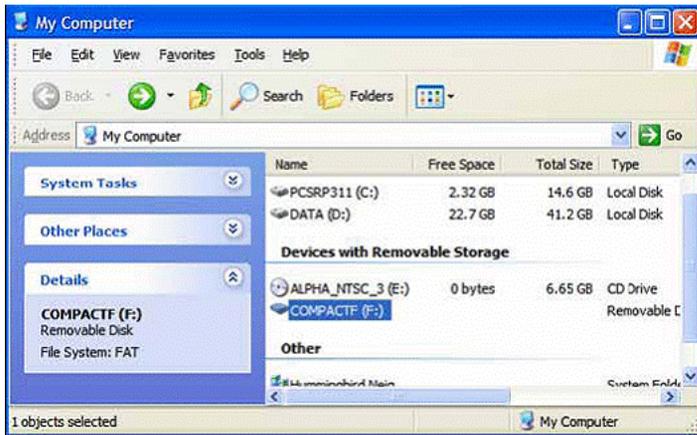


IMPORTANT!

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.



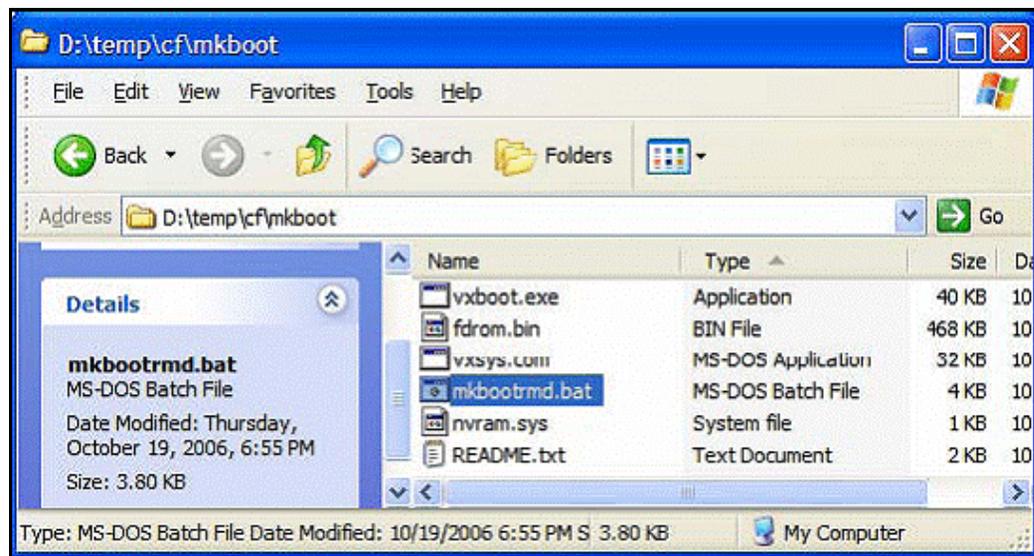
In this example, drive F is assigned to the CF drive.

- 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 *mkbootmd.bat* file.

The batch file is used to format the CF card.

The following screen appears.

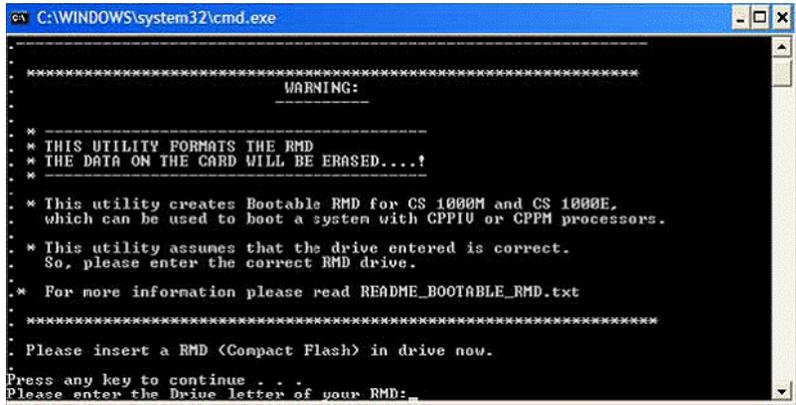
Figure 57
mkbootrmd.bat



- 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.

```

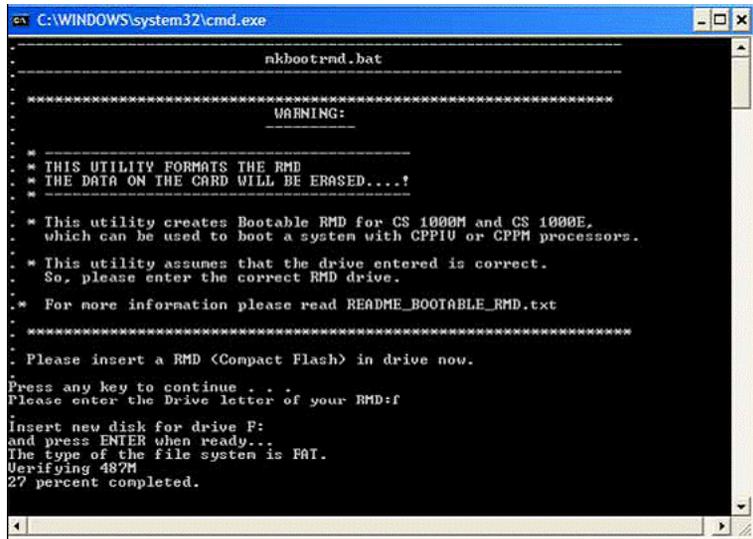
C:\WINDOWS\system32\cmd.exe
WARNING:
-----
* THIS UTILITY FORMATS THE RMD
* THE DATA ON THE CARD WILL BE ERASED...!
*
* This utility creates Bootable RMD for CS 1000M and CS 1000E,
* which can be used to boot a system with CPPIU or CPPM processors.
*
* This utility assumes that the drive entered is correct.
* So, please enter the correct RMD drive.
*
* For more information please read README_BOOTABLE_RMD.txt
*
*****
Please insert a RMD (Compact Flash) in drive now.
Press any key to continue . . .
Please enter the Drive letter of your RMD:f
Insert new disk for drive F:
and press ENTER when ready...

```

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.

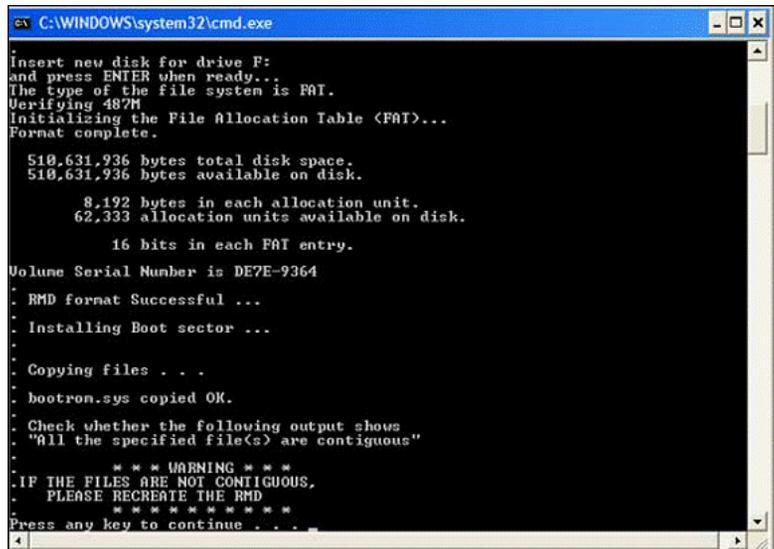
- 9 Press Enter to start formatting the CF card.

The CF card formatting process screen appears.



```
C:\WINDOWS\system32\cmd.exe
nkbootrmd.bat
-----
WARNING:
-----
* THIS UTILITY FORMATS THE RMD
* THE DATA ON THE CARD WILL BE ERASED...?
-----
* This utility creates Bootable RMD for CS 1000M and CS 1000E,
  which can be used to boot a system with CPPIU or CPPM processors.
* This utility assumes that the drive entered is correct.
  So, please enter the correct RMD drive.
* For more information please read README_BOOTABLE_RMD.txt
-----
Please insert a RMD (Compact Flash) in drive now.
Press any key to continue . . .
Please enter the Drive letter of your RMD:f
Insert new disk for drive F:
and press ENTER when ready..
The type of the file system is FAT.
Verifying 487M
27 percent completed.
```

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



```
ex C:\WINDOWS\system32\cmd.exe
Insert new disk for drive F:
and press ENTER when ready...
The type of the file system is FAT.
Verifying 487M
Initializing the File Allocation Table <FAT>...
Format complete.

510,631,936 bytes total disk space.
510,631,936 bytes available on disk.

      8,192 bytes in each allocation unit.
      62,333 allocation units available on disk.

      16 bits in each FAT entry.

Volume Serial Number is DE7E-9364
.
. RMD format Successful ...
.
. Installing Boot sector ...
.
.
. Copying files . . .
. bootrom.sys copied OK.
.
. Check whether the following output shows
. "All the specified file(s) are contiguous"
.
. * * * WARNING * * *
. IF THE FILES ARE NOT CONTIGUOUS,
. PLEASE RECREATE THE RMD
. * * * * *
. Press any key to continue . . .
```

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.

```
C:\WINDOWS\system32\cmd.exe
. RMD format Successful ...
. Installing Boot sector ...
. Copying files . . .
. bootrom.sys copied OK.
. Check whether the following output shows
. "All the specified file(s) are contiguous"
.
. *** WARNING ***
. IF THE FILES ARE NOT CONTIGUOUS,
. PLEASE RECREATE THE RMD
. *****
. Press any key to continue . . .
. The type of the file system is FAT.
. Volume CS1000E001 created 12/6/2006 11:06 AM
. Volume Serial Number is DE7E-2364
. Windows is verifying files and folders...
. File and folder verification is complete.
. Windows has checked the file system and found no problems.
.
. 510,631,936 bytes total disk space.
. 483,328 bytes in 1 files.
. 510,148,608 bytes available on disk.
.
. 8,192 bytes in each allocation unit.
. 62,333 total allocation units on disk.
. 62,274 allocation units available on disk.
. All specified files are contiguous.
. Press any key to continue . . .
```

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.

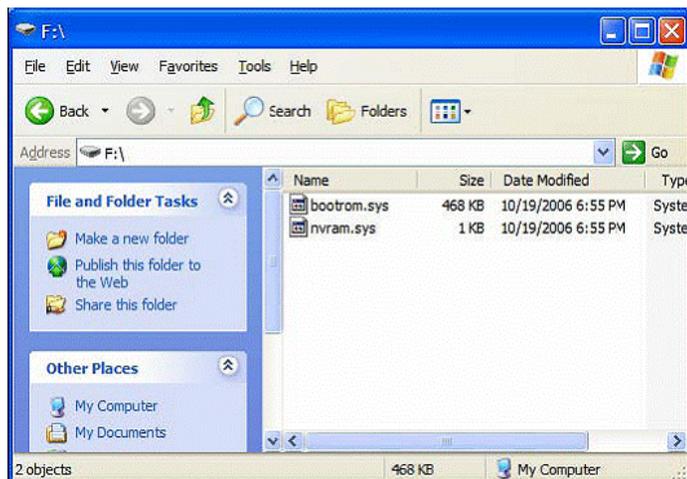
- 12 Click **My Computer** to verify the CF drive is renamed to CS1000BOOT.

The example is shown on the screen.



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

End of Procedure

Upgrading the CP PM BIOS

The Communication Server 1000 Release 6.0 Linux Platform Base installer requires CP PM BIOS version 18. If the installer detects a lower version on the CP PM card it automatically loads software for you to upgrade the CP PM BIOS. Perform the steps in Procedure 33 to upgrade the CP PM BIOS to version 18.

For information about manually upgrading the CP PM BIOS with VxWorks software, see *Communications Server 1000E Maintenance* (NN43041-700).

Procedure 33

Upgrading the CP PM BIOS with the Linux Base installer

- 1 Connect to serial port 1 on the CP PM.
- 2 Insert the Linux Base installation CF card into the faceplate CF slot.
- 3 Power on the system.
- 4 Once the initial boot and memory check completes, Figure 58 appears. Press the **F** key to boot from the Linux Base installation faceplate CF card.

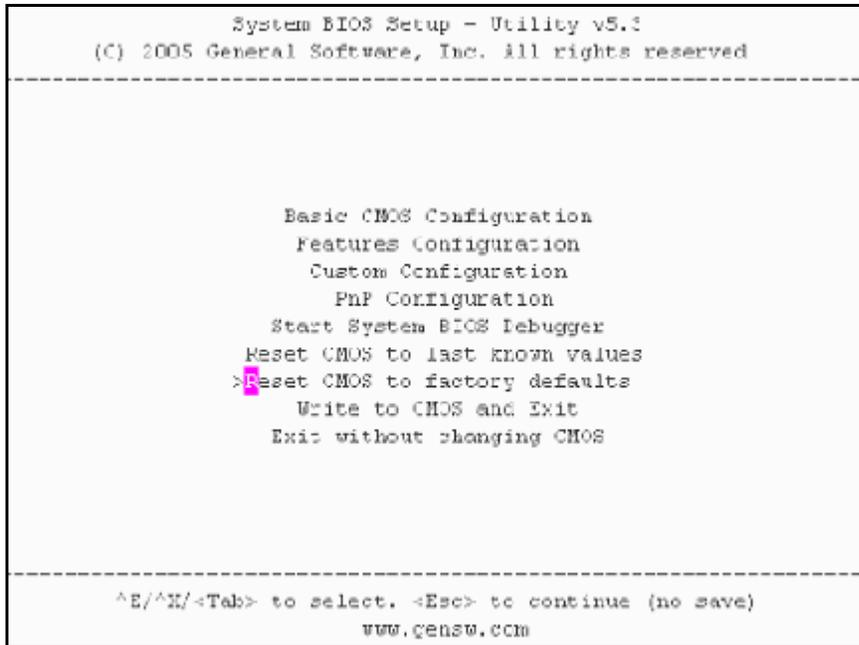
Figure 59
CP PM BIOS automatic upgrade

```
#####  
#  
# CP-PM BIOS version is less than 18. BIOS upgrade is required. #  
#  
# To complete the upgrade, BIOS settings must be changed to defaults. #  
# Please refer to the documentation for more information. #  
#  
#####  
  
Do you want to upgrade BIOS ROM up to the version 18? (yes/no): yes  
  
BIOS ROM upgrade. Please wait...  
  
BIOS ROM upgrade is finished.  
  
Machine will be rebooted right now... Press Enter key to continue
```

- 7 Verify that the BIOS upgrade is finished. Press **Enter** to reboot.
- 8 During the reboot memory check, press **Ctrl c** to access the CP PM BIOS setup menu.

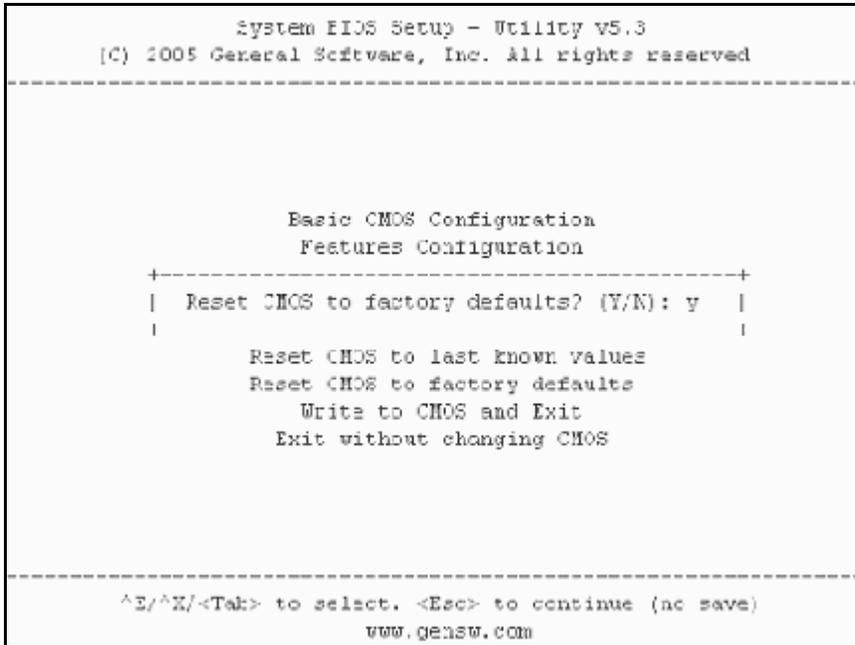
Note: If you miss the timing to press **Ctrl c** you must reboot the system and try again. The Linux Platform Base installation software will display a warning if you do not reset the CP PM BIOS to factory defaults.
- 9 Figure 60 appears. Select **Reset CMOS to factory defaults** from the menu.

Figure 60
CP PM BIOS setup



10 Figure 61 appears. Press **y** to reset CMOS to factory defaults.

Figure 61
CP PM BIOS reset



- 11 The system reboots. After initial boot Figure 58 appears and the new BIOS version is displayed. Verify BIOS version is 18. You can now press the **F** key to boot from the faceplate CF card and proceed with the Linux Platform Base software installation.

End of Procedure

Installing the software

This section provides the steps involved in installing CS 1000 Release 6.0.

Procedure 34 **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 62), 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 62
Upgrade boot sequence

```
Press F to force board to boot from faceplate drive.  
.....  
Attempting to boot from faceplate drive.
```

The VxWorks banner screen appears (see Figure 63 on [page 196](#)). Press enter to continue.

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 Software Installation Tool Main Menu appears (see Figure 65 on [page 199](#)).

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 65
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 66).

Figure 66
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 1: A maximum of 20 keycode files can be stored under the “keycode” directory on the RMD. The keycode files must have the same extension “.kcd”.

Note 2: If the CF card was exchanged, insert the CF card containing CS 1000 Release 6.0.

- 9 Enter <CR> or **y** to confirm that the keycode matches the system software on the RMD (see Figure 67 on [page 201](#)).

Figure 67
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 68 on [page 201](#)). 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 68
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 69 on [page 202](#)):

- 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 69
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 70), indicating that the call processor is located in loop 0 and shelf 0 of the Media Gateway. Enter **<CR>** or **y** to confirm their location. If you need to change loop or shelf information, select **<n>** and follow the prompts.

Figure 70
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 6.0 (see Figure 71).

Figure 71
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 72 on [page 203](#)).

Figure 72
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 73 on [page 204](#)).

Note: If Dependency Lists are not installed on media, the following prompts do not appear. Proceed to step 16 on [page 204](#).

Figure 73
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 74 on [page 204](#)).

Figure 74
Centralized Software Upgrade

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

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

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

Enter choice>
```

- 17 Set the CSU feature to Sequential by entering either <CR> or y (see Figure 75).

Note: if Sequential is selected <1>, the Media Gateway installations are performed across the LAN in a sequential manner. One Media Gateway is installed at a time. No other Media Gateway installations are initiated until the current Media Gateway completes its installation.

If Simultaneous is selected <2>, the Media Gateway installations are performed simultaneously across the LAN. Up to eight Media Gateways are installed at the same time. If there are more than eight Media Gateways, the installation of the next Media Gateway begins after the installation of one Media Gateway is complete. The following warning is presented to the installer:

WARNING:
Call Processing is not guaranteed to operate on the call server during simultaneous upgrades.
Do you wish to proceed? (y/n)

Figure 75
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 ...
```

- 18 The PSDL Installation Menu appears (see Figure 76). Select the appropriate location based on your geographical location.

Figure 76
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 ...
```

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

The Installation Status Summary screen appears (see [Figure 77 on page 207](#)). Verify the parameters and enter **<CR>** when ready.

Figure 77
Installation Status Summary

```

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

+-----+-----+-----+-----+
| Option | Choice | Status | Comment |
+-----+-----+-----+-----+
| SW: RMD to FMD | yes | | install for rel 0600x |
+-----+-----+-----+-----+
| Dependency Lists | yes | | |
+-----+-----+-----+-----+
| AUTO-CSU Feature | SEQ | | SEQ-CSU Enabled |
+-----+-----+-----+-----+
| IPMG Software: | yes | | install for rel 0600x |
+-----+-----+-----+-----+
| Database | no | | |
+-----+-----+-----+-----+
| CP-BOOTROM | yes | | |
+-----+-----+-----+-----+

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

Enter choice>
>Checking system configuration

```

19 Enter **<CR>** or **y** to begin the installation (see Figure 78).

Figure 78
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>

```

20 The installation process begins.

A message appears indicating that the installation on Core 0 was successful (see Figure 79).

Figure 79
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 ...
```

21 Enter <CR> to continue. The following screen appears (see Figure 80).

Figure 80
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.
```

22 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 .

You will be prompted to verify that this is the database you wish to install (see Figure 81).

Figure 81
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 ...

```

- 23 The Installation Status Summary screen appears, indicating that the installation was a success (see Figure 82). Enter **<CR>** to continue.

Figure 82
Installation Status Summary

```

>Installing release 06xxx

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

+-----+-----+-----+-----+
| option | Choice | Status | Comment |
+-----+-----+-----+-----+
| Sw: RMD to FMD | yes | ok | from 600x to 600x |
+-----+-----+-----+-----+
| Dependency Lists | yes | | |
+-----+-----+-----+-----+
| AUTO-CSU Feature | SEQ | | SEQ-CSU Enabled |
+-----+-----+-----+-----+
| IPMG Software: | yes | ok | from 600x to 600x |
+-----+-----+-----+-----+
| Database | yes | | |
+-----+-----+-----+-----+
| CP-BOOTROM | yes | ok | |
+-----+-----+-----+-----+

```

- 24 The Install Menu appears (see Figure 83 on [page 210](#)). Enter **q** to quit the Install Tool.

Figure 83
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
```

25 Enter <CR> or y to confirm your selection (see Figure 84).

Figure 84
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>
```

- 26 Enter <CR> or y to reboot the system (see Figure 85). Once the system has completed its reboot, remove the CF from the faceplate.

Figure 85
System reboot

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

You selected to quit the Install Tool.
You may reboot the system or return to the Main Menu.
-----
DO NOT REBOOT USING RESET BUTTON!!!
-----

Please enter:
<CR> -> <a> - Reboot the system.
        <m> - Return to the Main Menu.

Enter choice>

>Rebooting system ...
```

————— **End of Procedure** —————

Reconfigure I/O ports and call registers

Procedure 35

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 2000 as a minimum value

NCR 20000 Use 35000 as a minimum value.

Press enter until you are returned to the REQ prompt.

**** Exit program

Note: For these changes to take effect the customer must save the data (LD 43, EDD and then INI the active core).

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

LD 22 Load program

REQ PRT Set the print option

TYPE CFN Print the configuration

**** Exit program

End of Procedure

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 36 Testing the Call Server

1 Verify that the Call Server is active.

LD 135 Load program

STAT CPU Get the status of the CPUs

2 Check dial-tone.

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

4 Make internal, external, and network calls.

5 Check attendant console activity.

6 Check IP Peer networking for incoming and outgoing calls.

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

End of Procedure

Install the software on the second Call Server

Procedure 37 Installing the software on the second Call Server

Complete the steps in Procedure 34 on [page 194](#) 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

End of Procedure

Configuring primary and secondary call server IP addresses

Procedure 38

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 entry, 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. INI is required for the activation of subnet Mask.

End of Procedure

Verifying Call Server 0 is active

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

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

Making the system redundant

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

Procedure 39
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 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
    sut1 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 (Media Gateway)

Media Gateway 1: LINK UP

Media Gateway 2: LINK UP

Media Gateway 3: LINK UP

Media Gateway 4: LINK UP

Exit the program



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

End of Procedure

Complete the installation

Testing the Call Servers

Procedure 40

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

End of Procedure

Switch call processing

Procedure 41 Switching call processing

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



Call Server 0 is now the active call processor.

End of Procedure

Procedure 42 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

End of Procedure

Switch call processing

Procedure 43

Switching call processing

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



Call Server 1 is now the active call processor.

End of Procedure

Perform a customer backup data dump (installation release)

Procedure 44

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



The installation is now complete.

End of Procedure

Configuring the Media Gateway 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 Media Gateway 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 a Media Gateway using Element Manager see Procedure 59 on [page 279](#).

- 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 24).

Table 24
MGC superloop configuration

Loop	Shelf	IPMG #
000	0	1
000	1	2

Table 24
MGC superloop configuration

Loop	Shelf	IPMG #
004	0	3
004	1	4
008	0	5
...
096	0	49
096	1	50

Procedure 45
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 the `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:

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).

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)

Set MGC to TDM only? (y/[n]) : n

Note: Turning on TDM only will not allow
: the MGC to be connected to a network.

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.

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 (for example: 4 0) of the Media Gateway. If registration fails, it shows “UNRG.”

End of Procedure

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: MGCBA20
```

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

Note: Not all of the loads are upgraded during each software install. The system upgrades loads which are out of date. DBL1 and DBL2 loads are only used if you have the appropriate daughter boards installed on the MGC.

```
-> 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.  
Upgrade of DBL2 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.

End of Procedure

Installing a Signaling Server

Contents

This section contains information on the following topics:

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ISP1100 migration	236
Installing Signaling Server hardware	237
Installing Signaling Server software	237

Taskflows

Linux Platform Base and Applications Installation and Commissioning (NN43001-315) provides installation and upgrade information for the Linux base and applications. You must follow the proper sequence of events to correctly install or upgrade the Linux base and applications. Use the task flow information in this chapter to determine the proper steps for the installation or upgrade of the Linux base and applications.

Supported hardware

CS 1000 Release 6.0 supports the following Signaling Servers:

- Nortel CP PM Signaling Server
- IBM X306m Signaling Server
- HP DL320-G4 Signaling Server
- IBM x3350 Signaling Server
- Dell R300 Signaling Server

IP subnet configuration

If the Signaling Server and Call Server reside in different IP subnets, you must manually add a route from Base Manager in order for Element Manager to communicate and interact with the Call Server. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315) for details.

ISP1100 migration

CS 1000 Release 6.0 does not support ISP1100 Signaling Servers. To migrate an ISP1100 Signaling Server to a CS 1000 Release 6.0 platform, see *Signaling Server IP Line Application Fundamentals* (NN43001-125).

Installing Signaling Server hardware

For hardware installation instructions, refer to *Circuit Card: Description and Installation* (NN43001-311) and *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Installing Signaling Server software

For detailed instructions on performing the software installation, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315) and *Signaling Server IP Line Application Fundamentals* (NN43001-125).

Configuring an IP telephony node

Contents

This section contains information on the following topics:

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Adding a Follower Signaling Server to an IP telephony node	254
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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 *Signaling Server IP Line Application Fundamentals* (NN43001-125).

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* (NN43001-611) 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/nodex.cfg` where *x* is the node number
- `c:/u/db/node/nodex.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 46: "Turning off browser caching in Internet Explorer" on [page 241](#)
- Procedure 47: "Launching Element Manager" on [page 244](#)
- Procedure 48: "Importing an existing node" on [page 248](#)
- Procedure 49: "Reviewing and submitting IP telephony node configuration" on [page 250](#)
- Procedure 50: "Adding a Follower Signaling Server to the IP telephony node in Element Manager" on [page 254](#)
- Procedure 51: "Performing a datadump using Element Manager" on [page 255](#)

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 51 on [page 255](#).

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* (NN43001-106) and *Software Input/Output: Administration* (NN43001-611).

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 46 to prevent caching of web pages by Internet Explorer.

Procedure 46

Turning off browser caching in Internet Explorer

- 1 Launch Internet Explorer.
- 2 Click **Tools > Internet Options**. The **Internet Options** window opens (see Figure 86 on [page 242](#)).

Figure 86
Internet Explorer – Internet Options



- 3 On the **General** tab, under the **Temporary Internet files** section, click **Settings**. The **Settings** window opens (see Figure 87 on [page 243](#)).

Figure 87
Temporary Internet files – Settings window



- 4 Click **Every visit to the page**. This checks for new versions of stored pages on every visit to the web page.
- 5 Click **OK** in the Settings window.
- 6 Click **OK** in the Internet Options window.

End of Procedure

Logging in to Element Manager

Element Manager (EM) for CS 1000 Release 6.0 is a component of the Nortel Unified Communications Management Common Services (UCM Common Services). The UCM Common Services provides security and navigation infrastructure services for the web-based management applications: Element Manager (EM), NRS Manager and Subscriber Manager. Refer to *Unified*

Communications Management Common Services Fundamentals (NN43001-116) for detailed information on UCM Common Services.

To log in to Element Manager, follow the steps in Procedure 47 on [page 244](#). Element Manager supports Microsoft™ Internet Explorer 6.0.2600 for Windows operating systems.

Before following this procedure, see *Signaling Server IP Line Application Fundamentals* (NN43001-125) 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 47
Launching Element Manager

- 1 Open the web browser.
- 2 In the browser's address field, enter the Fully Qualified Domain Name (FQDN) or IP address of a UCM Common Services server that is a member of the Security Domain that the EM server is a member of.

Note: The FQDN of the ECM server can be bookmarked in the Internet Explorer Favorites list.

- 3 The Security Alert Web page opens, as shown in (see Figure 88).

Figure 88
Security Alert Web page



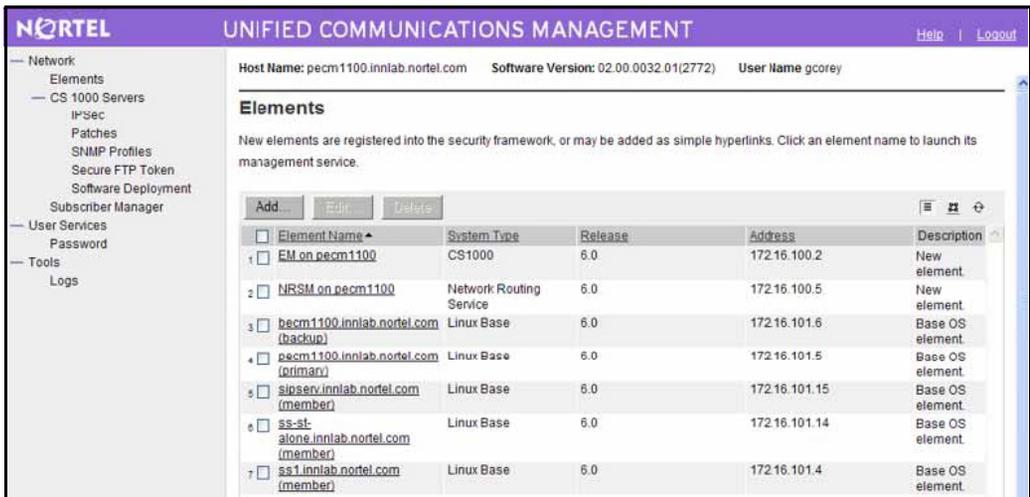
- 4 Click the Yes button. The UCM log in Web page opens, as shown in Figure 89.

Figure 89
UCM log in



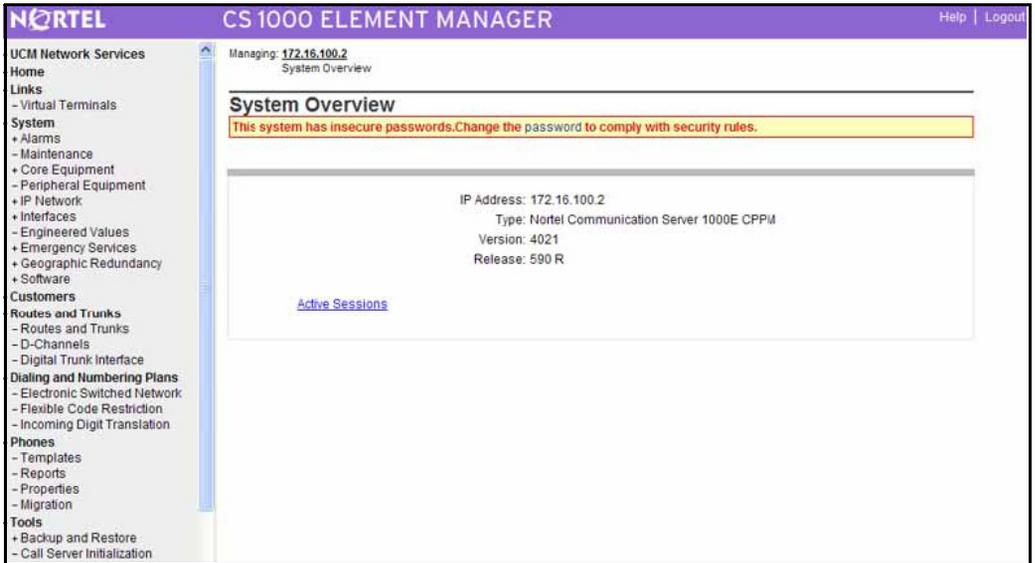
- 5 Enter User Name and Password in the text boxes. Click the Log in button. The UCM Elements Web page opens, as shown in Figure 90 on page 246.

Figure 90
UCM elements web page



- Click the link to the Element Manager in the Element Name column. The Element Manager System Overview Web page opens, as shown in Figure 91 on [page 247](#).

Figure 91
Element Manager System Overview Web page



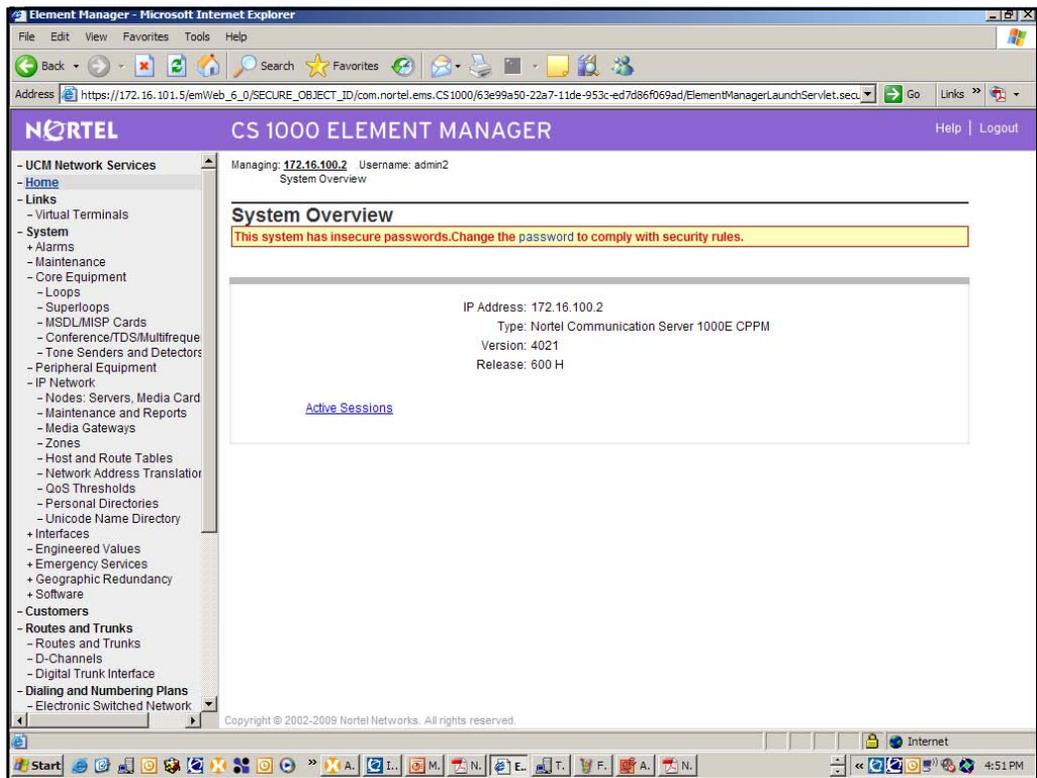
Importing preconfigured IP telephony files

Follow Procedure 48 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 48 Importing an existing node

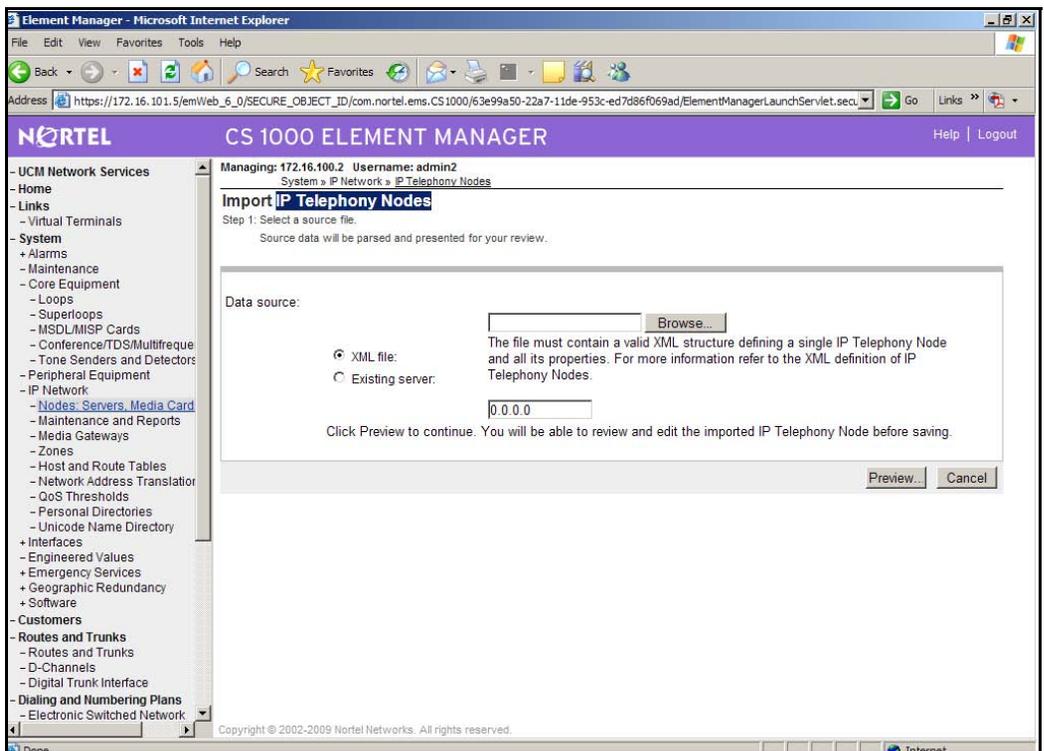
Figure 92 displays the **Element Manager System Information** home page.

Figure 92
Element Manager – System Information



- 1 Select **Nodes: Servers, Media Cards** from the navigator.
The **IP Telephony Nodes** web page appears. No nodes are defined.
- 2 Import the Node files from the leader Signaling Server.
 - a. Click the **Import** button on the **IP Telephony Nodes** web page.
The **Import IP Telephony Nodes** screen in Figure 93 on [page 249](#) appears.
 - b. Select the Existing Server radio button and enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 93
Import IP Telephony Nodes – Retrieve and upgrade configuration files



- 3 Click **Preview**.

4 Click Import.

A success message appears.

5 Click OK to go to the next procedure.

End of Procedure

Reviewing and submitting IP telephony node configuration files

Follow Procedure 49 to review and submit IP telephony node configuration files.

Procedure 49

Reviewing and submitting IP telephony node configuration

- 1 From the Node Summary web page (see Figure 126 on [page 362](#)), click **Edit** to view the node parameters.

The **Edit** web page appears as shown in Figure 127 on [page 363](#).

Note 1: Clicking **Transfer / Status** displays the **Transfer / Status** web page (see Figure 97 on [page 253](#)). 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 *Signaling Server IP Line Application Fundamentals* (NN43001-125).

- 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 94 on [page 251](#)).

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 94 on [page 251](#)).
- The Status column displays “Transfer” as the node configuration is transferred to the elements (see Figure 95 on [page 251](#)).
- The Status column displays “Complete” if the transfer is successful for an element (see Figure 96 on [page 252](#)).
- The Status column displays “Fail” if the transfer is unsuccessful.

Figure 94
Transfer Progress – Starting

Managing: [192.167.102.3](#)
System » IP Network » [Node Configuration](#) » IP Telephony: Node ID 9 » [Transfer / Status](#) » Transfer Progress

Transfer Progress

 Transfer in Progress Please Wait

Card	Status	bootp	config
192.167.102.4	Starting	<input type="checkbox"/>	<input type="checkbox"/>
192.167.102.18	Starting	<input type="checkbox"/>	<input type="checkbox"/>

Figure 95
Transfer Progress – Transferring

Managing: [192.167.102.3](#)
System » IP Network » [Node Configuration](#) » IP Telephony: Node ID 9 » [Transfer / Status](#) » Transfer Progress

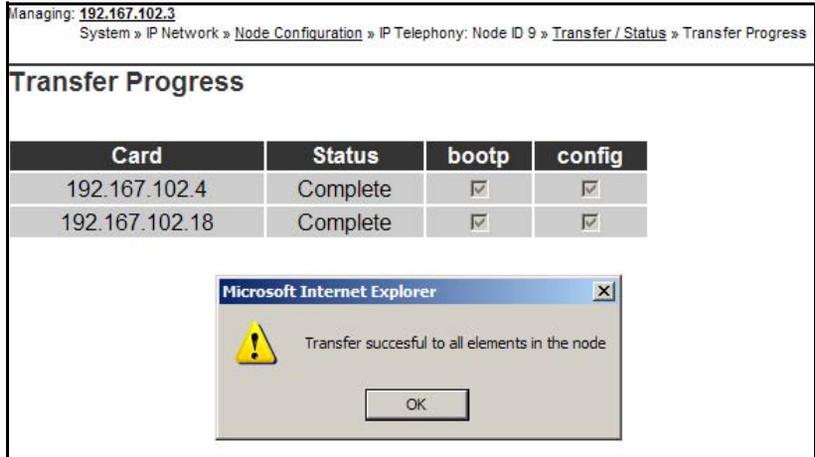
Transfer Progress

 Transfer in Progress Please Wait

Card	Status	bootp	config
192.167.102.4	Transferring	<input checked="" type="checkbox"/>	<input type="checkbox"/>
192.167.102.18	Transferring	<input checked="" type="checkbox"/>	<input type="checkbox"/>

When the file transfer is complete, the Transfer Progress web page displays a status of complete (see Figure 96 on [page 252](#)).

Figure 96
Transfer Progress – Complete



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

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

Note: The Transfer / Status web page (see Figure 97) 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 97 shows some elements as unreachable; you can transfer to these elements again.

Figure 97
Transfer / Status web page

Hostname	ELAN IP	TN	Type	Role	Transfer Status (BOOTP)	Transfer Status (CONFIG)
<input type="checkbox"/> CS1000E_PIV	192.167.102.4		Signaling Server - ISP1100	Leader	Finished	Finished
<input type="checkbox"/> mc32s_piv	192.167.102.18	4 0 1 0	MC32S Card	Follower	Finished	Finished

The previous status of the node displays, and the failure reason is displayed for elements in nodes that failed to get configuration files (BOOTP.TAB and CONFIG.INI) from the CS 1000E.

The **Transfer / Status** web page has five buttons:

- **Selected All.** Selects all the elements in the node (that is, it adds a check mark in each element's check box).
 - **Unselect All.** Unselects all the elements in the node (that is, it removes the check marks for all the selected elements).
 - **Transfer to Selected Elements.** Re-transfers node configuration files only to selected elements, regardless of a "Transfer Failed" state.
 - **Transfer to Failed Elements.** Transfers only node configuration files to elements in a "Transfer Failed" state. The Transfer to Failed Elements button is displayed only when at least one element on the Node failed to transfer either a BOOTP.TAB or CONFIG.INI in the previous operation.
 - **Cancel.** Closes the **Transfer / Status** pages without performing any action, and displays the Node Summary web page.
- 6** If the Signaling Server configuration was changed on the Edit web page, reboot the Signaling Server.

End of Procedure

Adding a Follower Signaling Server to an IP telephony node

Follow Procedure 50 to add a Follower Signaling Server to the IP telephony node in Element Manager.

Procedure 50 **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.
- 2 Click **Add** beside the Signaling Server row.
- 3 Enter the Follower Signaling Server data to an IP telephony node. Include the ELAN MAC address (used to answer BootP requests).
- 4 Click **Save and Transfer** to save the changes and the Leader Signaling Server then obtains a copy of the node files.
- 5 Click **OK** to save the node configuration to the CS 1000E and transfer the configuration to all elements.

When the file transfer is complete, the **Transfer/ Status** web page appears.

The Leader Signaling Server responds to the Follower Signaling Server's BootP request.

The Follower Signaling Server initializes its network interfaces.

The Follower Signaling Server attempts to FTP the BOOTP.TAB file from the node master (Leader Signaling Server).

Note: Since the Follower cannot obtain the system login and password, the FTP fails (for first-time Follower Signaling Server installation only). It does not have the current CONFIG.INI file that contains the CS 1000E IP address. Subsequent FTPs succeed.

- 6 Transfer the node files again, so that the Follower Signaling Server obtains a copy of CONFIG.INI.
- 7 Reboot the Follower Signaling Server so that all its applications can start based on the new CONFIG.INI file.

The Signaling Server uses BootP to obtain its network data, and it then FTPs the BOOTP.TAB file from the node master (Leader Signaling Server).

End of Procedure

Performing a datadump

Follow Procedure 51 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 51

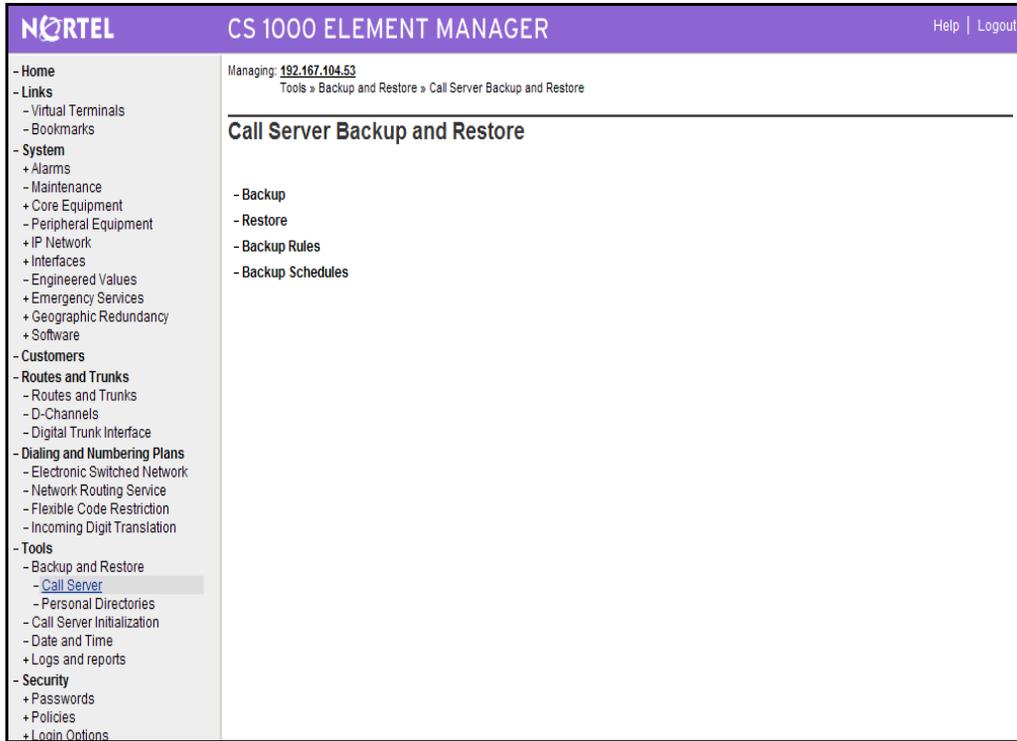
Performing a datadump using Element Manager

From Element Manager (see Figure 89 on [page 246](#) 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 98 on [page 256](#)).

Figure 98
Call Server Backup and Restore web page



2 Select Backup.

The **Call Server Backup** web page appears (see Figure 99 on [page 257](#)).

Figure 99
CS 1000E Backup

Managing: [192.167.104.53](#)
Tools » Backup and Restore » [Call Server Backup and Restore](#) » Call Server Backup

Call Server Backup

Action

- Backup
- Backup Clear(EDD CLR)
- Backup According to Rule(BKR X)

- 3 Select **Backup** from the **Action** drop-down list box.
- 4 Click **Submit**.
The message displays indicating “Backup in progress. Please wait...”
- 5 Click **OK** in the **EDD complete** dialog box.
The Backup function then displays information in a tabular form, indicating the actions that were performed.

————— **End of Procedure** —————

Configuring the CS 1000E Call Server

Contents

This section contains information on the following topics:

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

- Procedure 52: "Configuring login IDs and passwords" on [page 261](#)
- Procedure 53: "Enabling the multi-user option" on [page 264](#)
- Procedure 54: "Configuring pseudo-terminals (PTYs)" on [page 265](#)
- Procedure 55: "Checking PTY status" on [page 267](#)
- Procedure 56: "Launching Element Manager" on [page 270](#)
- Procedure 57: "Importing an existing node" on [page 273](#)
- Procedure 58: "Performing a datadump using Element Manager" on [page 275](#)

Configuring login IDs and passwords

Note: Any username and password created on the Call Server will no longer be accessible after joining the UCM security domain. To avoid confusion, consider using the same username and password for both. For UCM password conventions and restrictions, see *Unified Communications Management Common Services Fundamentals* (NN43001-116).

You must be logged in as a user with admin2 level privileges 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 52 to configure login IDs and passwords.

Procedure 52 **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

End of Procedure

Enabling the multi-user option

Follow Procedure 53 to enable the multi-user option.

Procedure 53 Enabling the multi-user option

- 1 Enter the command:

```
LD 17
```

```
System response:
```

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

- 2 Enter the command:

```
REQ chg
```

- 3 Enter the command:

```
TYPE ovly
```

```
....
```

- 4 Enter the command:

```
MULTI_USER on
```

```
System response:
```

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

- 5 Enter the command:

```
REQ ****
```

End of Procedure

Configuring pseudo-terminals (PTYs)

CS 1000E provides two ports (COM1 and COM2) on the CPU. A Terminal Server is used to provide additional serial ports for specific applications, such as 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 54 to configure pseudo-terminals.

Procedure 54 **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: 355327
DISK RECS AVAIL: 491
TMDI D-CHANNELS AVAIL: 0 USED: 0 TOT: 0
DCH AVAIL: 80 USED: 0 TOT: 80
AML AVAIL: 15 USED: 1 TOT: 16
ADAN DATA SAVED
```

12 Enter the command:

```
ADAN ****
```

End of Procedure

Checking PTY status

Follow Procedure 55 to check the PTY status.

Procedure 55 **Checking PTY status**

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

1 Enter the command:

```
LD 37
```

2 Enter the command:

```
STAT
```

System response:

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

```

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

```

3 Enter the command:

```
****
```

4 Perform an EDD to save your changes.

End of Procedure

Configuring Virtual Tone and Conference Circuits

Virtual Tone and Conference Circuits must be defined for use by each MG 1000E. Use LD 17 to add MGTDS and MG Conference loops. For CS 1000 Release 6.0, the configuration of TDS loops and conference loops are separated. The loop number for TDS and conference can be any number from 0-255.

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)
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* (NN43041-220) for details.

Logging in to Element Manager

Element Manager (EM) for CS 1000 Release 6.0 is a component of the Nortel Unified Communications Management Common Services (UCM Common Services). The UCM Common Services provides security and navigation infrastructure services for the web-based management applications: Element Manager (EM), NRS Manager and Subscriber Manager. Refer to *Unified Communications Management Common Services Fundamentals* (NN43001-116) for detailed information on UCM Common Services.

To log in to Element Manager, follow the steps in Procedure 56 on [page 270](#). Element Manager supports Microsoft™ Internet Explorer 6.0.2600 for Windows operating systems.

Before following this procedure, see *Signaling Server IP Line Application Fundamentals* (NN43001-125) 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 56
Launching Element Manager

- 1 Open the web browser.
- 2 In the browser's address field, enter the Fully Qualified Domain Name (FQDN) or IP address of a UCM Common Services server that is a member of the Security Domain that the EM server is a member of.

Note: The FQDN of the ECM server can be bookmarked in the Internet Explorer Favorites list.

- 3 The Security Alert Web page opens, as shown in (see Figure 100).

Figure 100
Security Alert Web page



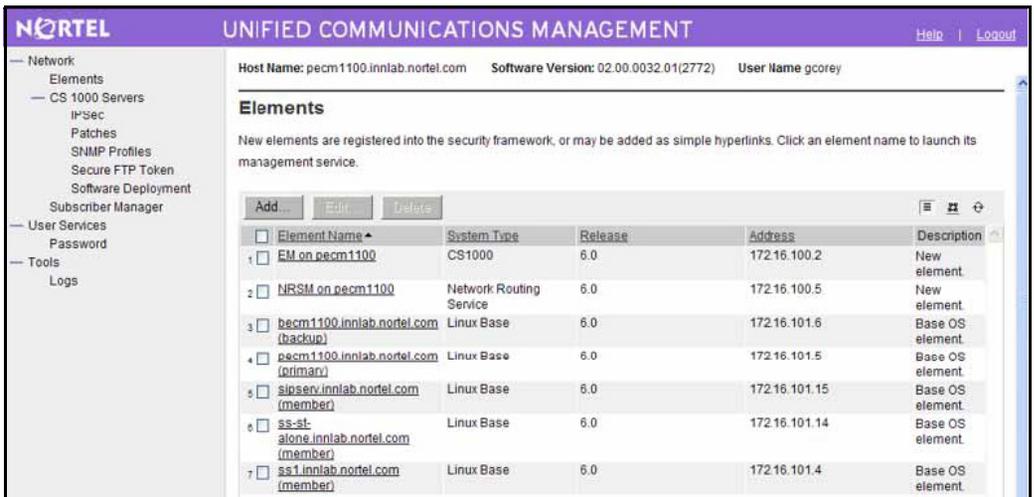
- 4 Click the Yes button. The UCM log in Web page opens, as shown in Figure 101.

Figure 101
UCM log in



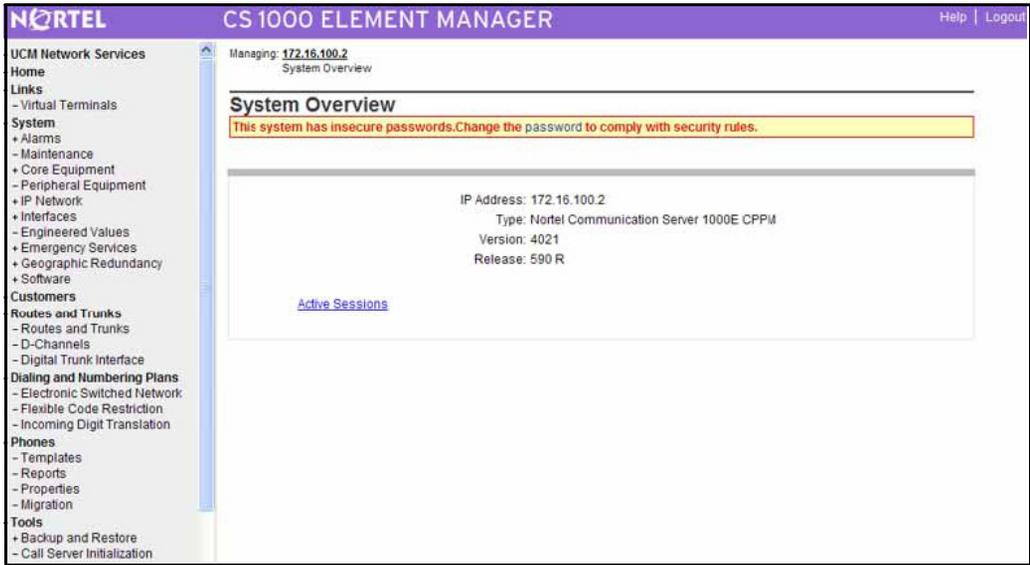
- 5 Enter User Name and Password in the text boxes. Click the Log in button. The UCM Elements Web page opens, as shown in Figure 102 on page 271.

Figure 102
UCM elements web page



- 6 Click the link to the Element Manager in the Element Name column. The Element Manager System Overview Web page opens, as shown in Figure 103 on page 272.

Figure 103
Element Manager System Overview Web page



End of Procedure

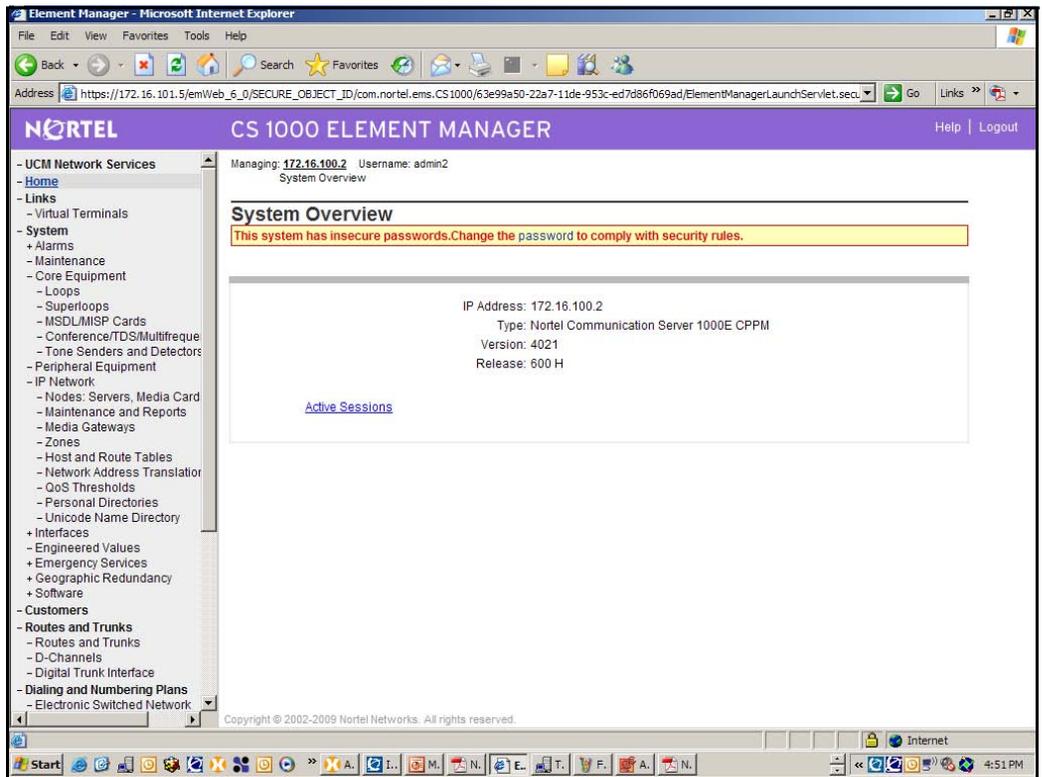
Importing preconfigured IP telephony files

Follow Procedure 57 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 57 Importing an existing node

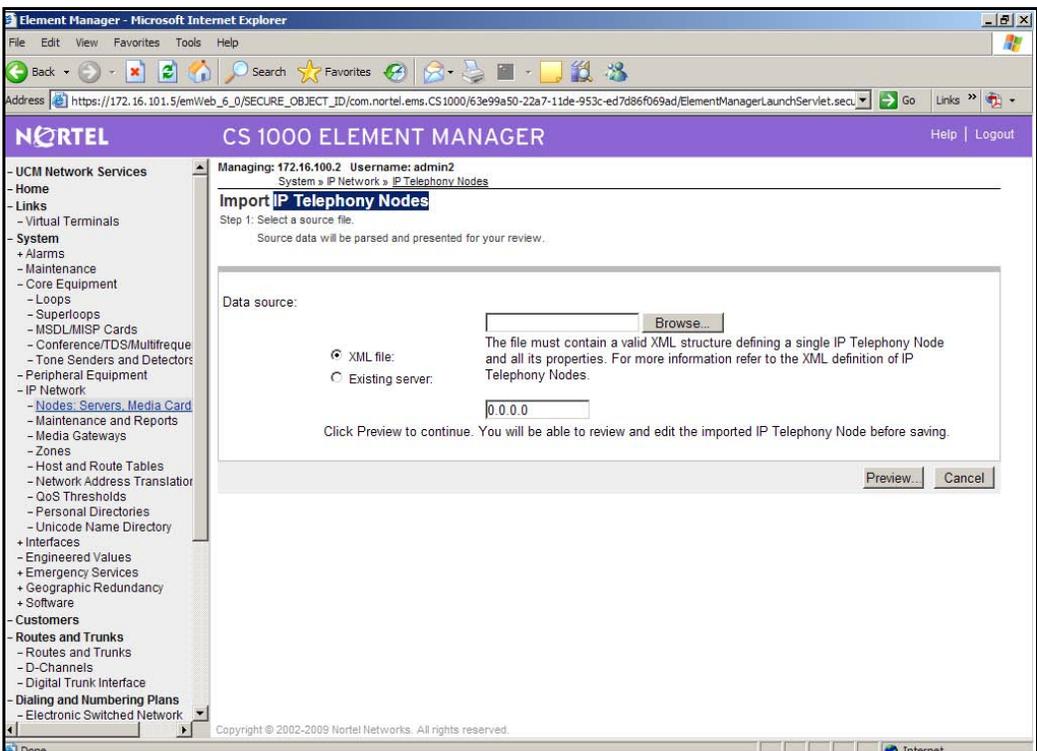
Figure 104 displays the **Element Manager System Information** home page.

Figure 104
Element Manager – System Information



- 1 Select **Nodes: Servers, Media Cards** from the navigator.
The **IP Telephony Nodes** web page appears. No nodes are defined.
- 2 Import the Node files from the leader Signaling Server.
 - a. Click the **Import** button on the **IP Telephony Nodes** web page.
The **Import IP Telephony Nodes** screen in Figure 105 on [page 274](#) appears.
 - b. Select the Existing Server radio button and enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 105
Import IP Telephony Nodes – Retrieve and upgrade configuration files



- 3 Click **Preview**.

4 Click Import.

A success message appears.

5 Click OK to go to the next procedure.

End of Procedure

Reviewing and submitting IP telephony node configuration files

To review and submit IP telephony node configuration files, please refer to *Signaling Server IP Line Application Fundamentals* (NN43001-125).

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 Commissioning* (NN43001-312).

Performing a datadump

Follow Procedure 58 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.

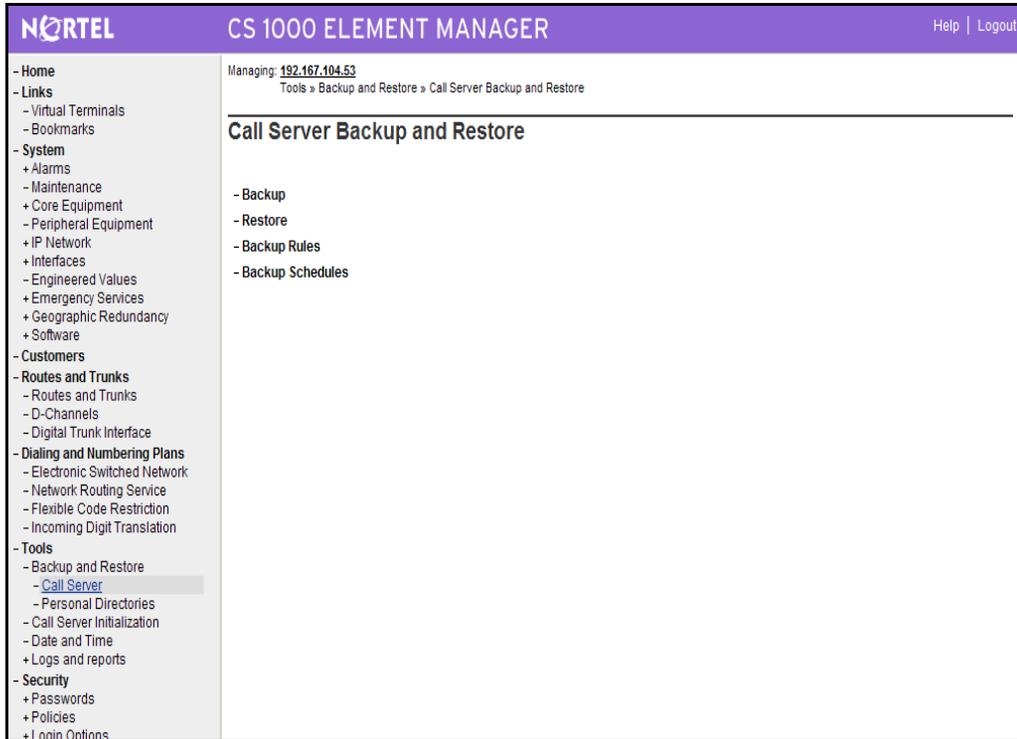
Procedure 58 **Performing a datadump using Element Manager**

From Element Manager (see Figure 101 on [page 271](#) 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 106 on [page 276](#)).

Figure 106
Call Server Backup and Restore web page



2 Select Backup.

The **Call Server Backup** web page appears (see Figure 107 on [page 277](#)).

Figure 107
CS 1000E Backup

Managing: 192.167.104.53
Tools » Backup and Restore » [Call Server Backup and Restore](#) » Call Server Backup

Call Server Backup

Action Backup

- Backup
- Backup Clear(EDD CLR)
- Backup According to Rule(BKR X)

- 3 Select **Backup** from the **Action** drop-down list box.
- 4 Click **Submit**.
The message displays indicating “Backup in progress. Please wait...”
- 5 Click **OK** in the **EDD complete** dialog box.
The Backup function then displays information in a tabular form, indicating the actions that were performed.

————— **End of Procedure** —————

Access Restrictions

You can use access restrictions to prevent port-based attacks on system components by configuring port blocking rules. These rules are installed during initial CS 1000 software installation and require no specialized installation procedure. The rules are preconfigured with factory default settings.

A port blocking state indicating file indicates whether the feature is currently active or not. The rules are automatically propagated from the Call Server to dependent VGMC platforms.

You can configure the port blocking rules using LD 117 or Element Manager, but there are a few mandatory rules that cannot be modified or deactivated. The mandatory rules are considered system essential and remain in an activated state regardless of whether the port access is configured with default or customized settings.

The port access rules can only be activated on servers with VxWorks platforms (MGC, MC32S, CP PIV and CP PM). CP PM Co-res CS and SS uses a Linux-based platform with a shell application called VxWorks (VXELL) Call Server. As a result, you cannot enable the port access restrictions rules directly for this type of server, but you can administer the port access for other VxWorks components. The access restrictions feature is not supported on the SSC, CP PII, ITG-P, ITG-SA, MIXX, and ISP1100 platforms.

The Call Server component of this feature is directly related to the Call Server software release. If an upgrade is performed and the software is later backed out or downgraded, reinstalling a previous release will overwrite the access restrictions default and state files.

Configuring the Media Gateway

Contents

This section contains information on the following topics:

Configuring the Media Gateway in Element Manager	279
Configuring conference TDS	286
Configuring DSP Daughterboard Voice gateway channels	291

Configuring the Media Gateway in Element Manager

Procedure 59 on [page 279](#) describes how to configure the Media Gateway in Element Manager.

Procedure 59

Configuring the Media Gateway (Element Manager)

- 1 In Element Manager, select **IP Network > Media Gateways**. Select the appropriate Superloop Number and Shelf. See Figure 108 on [page 280](#).
- 2 Click **Add**.

Figure 108
Add IPMG

Managing: 192.167.102.3
System » IP Network » Media Gateways » Add IPMG

Add IPMG

Choose a Superloop Number: and Shelf:

Input Description	Input Value
ELAN IP address:	192.167.104.52 *
Zone number:	0 Range: 0 - 255
IPMG Type:	MGC
ELAN Passthrough Port:	CE
Faceplate ELAN Port:	1E
Backplane ELAN Connection:	1ELAN
TLAN Passthrough Port:	CT
Faceplate TLAN Port:	2T
Backplane TLAN Connection:	2TLAN

- 3 Enter the IP address, zone number, and the Media Gateway type. The remaining fields are automatically filled in.

“MGC” is the default type. If adding an MG XPEC Media Gateway (type MGX), select “MGX”. See Figure 109 on [page 281](#).

Figure 109
Select IPMG type in Element Manager

The screenshot shows the 'Add IPMG' configuration page in the Nortel Element Manager. The page title is 'Add IPMG' and the user is logged in as 'admin'. The main configuration area contains the following fields and a table:

Choose a Superloop Number: and Shelf:

Input Description	Input Value
ELAN IP address:	<input type="text"/>
Bandwidth zone number:	<input type="text"/> Range: 0 - 255
IPMG type:	<input type="text" value="MOC"/>
ELAN passthrough port:	<input type="text" value="MOC"/>
Faceplate ELAN port:	<input type="text" value="1E"/>
Backplane ELAN connection:	<input type="text" value="1ELAN"/>
TLAN passthrough port:	<input type="text" value="CT"/>
Faceplate TLAN port:	<input type="text" value="2T"/>
Backplane TLAN connection:	<input type="text" value="2TLAN"/>

4 Click **Save**.

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

5 Enter the Gateway IP addresses and Voice LAN IP addresses. If the Media Gateway has DSP daughterboards connected, select the type and enter the IP addresses. See Figure 110 on [page 282](#).

If configuring an MGX type Media Gateway, see Figure 111 on [page 283](#).

Note: Media Gateway type MGX only allows for the configuration of the DB96 daughter board.

Figure 110
Media Gateway MGC type configuration

The screenshot displays the 'Element Manager - Microsoft Internet Explorer' window. The address bar shows the URL: `https://172.16.101.5/emWeb_6_0/SECURE_OBJECT_ID/com.nortel.ems.CS1000/63e99a50-22a7-11de-953c-ed7d86f069ad/ElementManagerLaunchServlet.sec...`

The main content area is titled 'CS 1000 ELEMENT MANAGER' and shows the user is managing `172.16.100.2` with the username `admin2`. The navigation path is: `System » IP Network » Media Gateways » IPMG 4.0 Property Configuration » IPMG 4.0 Media Gateway Controller (MGC) Configuration`.

The configuration page is titled 'IPMG 4.0 Media Gateway Controller (MGC) Configuration' and contains the following settings:

- Media Gateway Controller**
 - Hostname:
 - Embedded LAN (ELAN) IP address:
 - Embedded LAN (ELAN) gateway IP address:
 - Embedded LAN (ELAN) subnet mask:
 - Telephony LAN (TLAN) IP address:
 - Telephony LAN (TLAN) gateway IP address:
 - Telephony LAN (TLAN) subnet mask:
- DSP Daughterboard 1**
 - Type of the DSP daughterboard:
 - Telephony LAN (TLAN) IP address:
 - Telephony LAN (TLAN) gateway IP address:

The left-hand navigation menu includes categories such as 'UCM Network Services', 'Home', 'Links', 'System', 'Interfaces', and 'Customers', with 'Media Gateways' selected under the 'System' category.

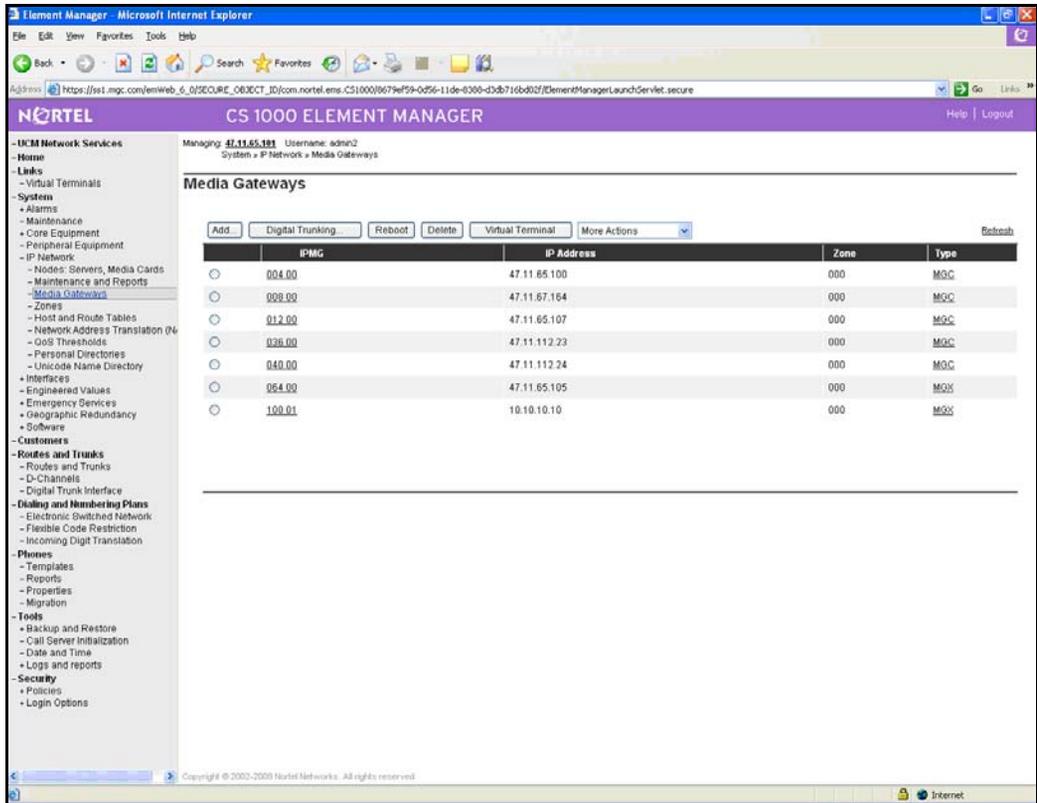
Figure 111
Media Gateway MGX type configuration

The screenshot displays the 'IPMG 64 0 Media Gateway XPEC (MGX) Configuration' page in the Element Manager. The configuration is organized into several sections:

- Media Gateway XPEC:**
 - Hostname: MGX
 - Embedded LAN (ELAN) IP address: 47.11.65.105
 - Embedded LAN (ELAN) gateway IP address: 47.11.65.1
 - Embedded LAN (ELAN) subnet mask: 255.255.254.0
 - Telephony LAN (TLAN) IP address: 0.0.0.0
 - Telephony LAN (TLAN) gateway IP address: 0.0.0.0
 - Telephony LAN (TLAN) subnet mask: 255.255.254.0
- DSP Daughterboard 1:**
 - Type of the DSP daughterboard: NODB
 - Telephony LAN (TLAN) IP address: 0.0.0.0
 - Telephony LAN (TLAN) gateway IP address: 0.0.0.0
 - Telephony LAN (TLAN) subnet mask: 255.255.254.0
 - Hostname: DE1
- DSP Daughterboard 2:**
 - Type of the DSP daughterboard: NODB
 - Telephony LAN (TLAN) IP address: 0.0.0.0
 - Telephony LAN (TLAN) gateway IP address: 0.0.0.0
 - Telephony LAN (TLAN) subnet mask: 255.255.254.0
 - Hostname: DE2
- VGW and IP phone codec profile:** (Collapsed)
- OoS:** (Collapsed)
- Call Server LAN:** (Collapsed)
- Embedded LAN (ELAN) configuration:**
 - Geographic redundancy:

- 6 Once configuration of the Media Gateway is complete, the Media Gateways screen appears (Figure 112 on [page 284](#)), listing the superloop and shelf numbers, IP address, zone, and type of the recently configured Media Gateway. Click the radio-button next to the superloop. From the drop-down list select **Add VGW channels**.

Figure 112
Media Gateways



- 7 The Add VGW channels screen appears (Figure 113 on page 285). Select the number of required channels, the Terminal Number (the superloop and shelf numbers of the Media Gateway, the card number, and the unit). Provide a name and the daughterboard and customer type.
- 8 Click **Save**.

Figure 113
Add VGW channels

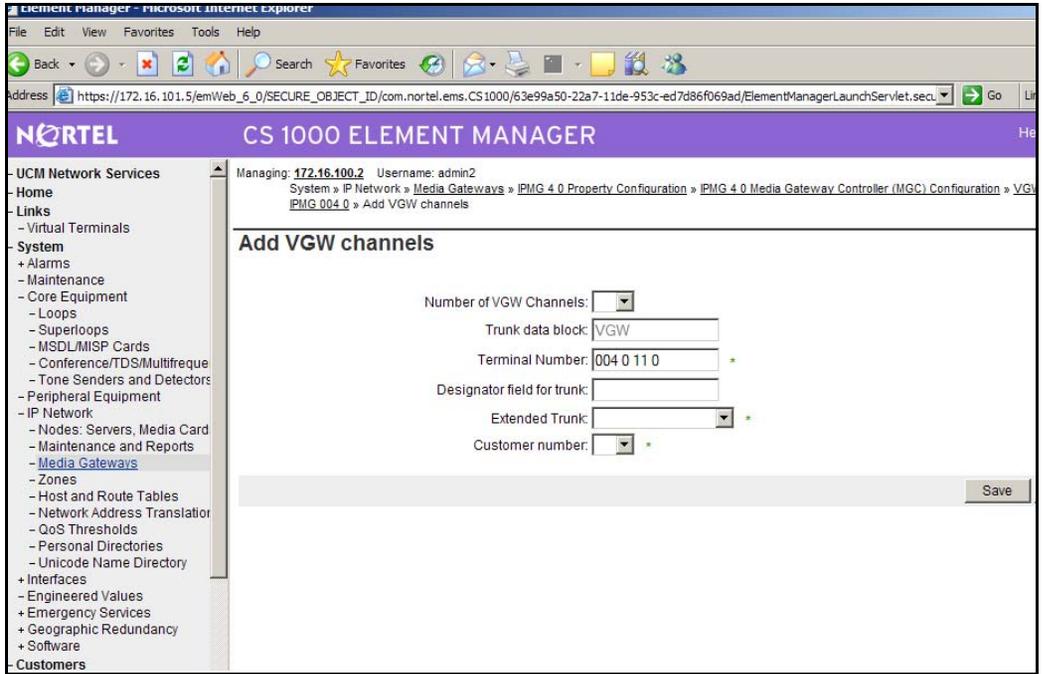


Figure 114 on page 286 appears. The Media Gateway has been added to the list.

Figure 114
VGW Channels - IPMG

	Terminal No	Description	Customer	Zone
<input type="radio"/>	004 0 11 00	MGC_VGW	0	000
<input type="radio"/>	004 0 11 01	MGC_VGW	0	000
<input type="radio"/>	004 0 11 02	MGC_VGW	0	000
<input type="radio"/>	004 0 11 03	MGC_VGW	0	000
<input type="radio"/>	004 0 11 04	MGC_VGW	0	000
<input type="radio"/>	004 0 11 05	MGC_VGW	0	000
<input type="radio"/>	004 0 11 06	MGC_VGW	0	000
<input type="radio"/>	004 0 11 07	MGC_VGW	0	000
<input type="radio"/>	004 0 11 08	MGC_VGW	0	000
<input type="radio"/>	004 0 11 09	MGC_VGW	0	000
<input type="radio"/>	004 0 11 10	MGC_VGW	0	000

————— End of Procedure —————

Configuring conference TDS

Procedure 60 on [page 287](#) describes how to configure conference TDS for a Media Gateway using the CLI. To configure conference TDS for the Media Gateway using Element Manager see Procedure 61 on [page 288](#).

Procedure 60
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
```

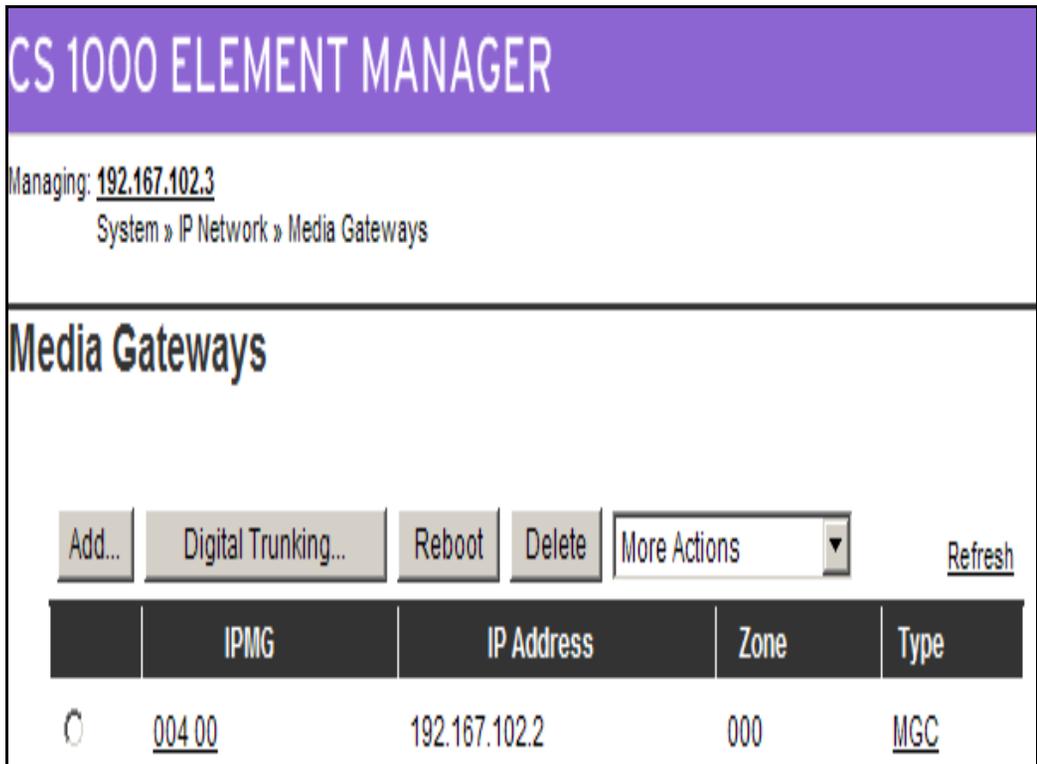
End of Procedure

Procedure 61 describes how to configure conference TDS for a Media Gateway using Element Manager.

Procedure 61
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 115). Click the **Digital Trunking** button.

Figure 115
Media Gateway configuration



The loop configuration page appears.

- From the drop down menu (see Figure 116 on [page 289](#)), select **TDS** from the first drop down box to add a TDS loop.

Figure 116
Loop configuration

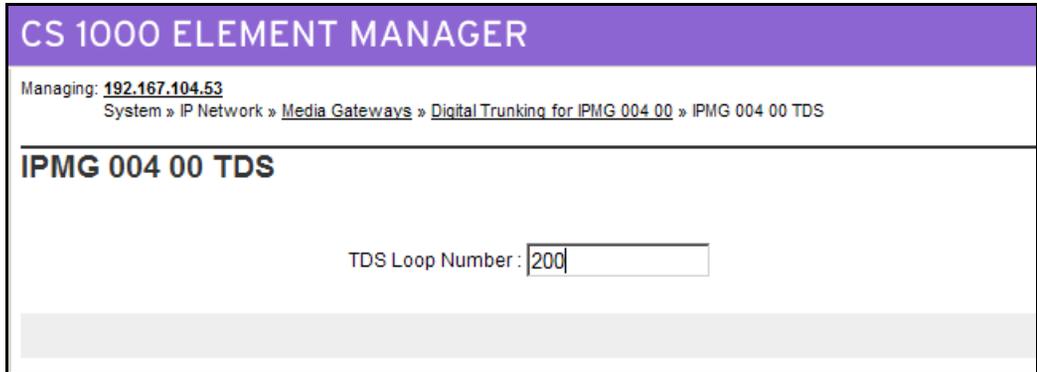
The screenshot shows the CS 1000 Element Manager interface. The header is purple with the text "CS 1000 ELEMENT MANAGER". Below the header, it says "Managing: 192.167.102.3" and "System » IP Network » Media Gateways » Digital Trunking for IPMG 004 00". The main title is "Digital Trunking for IPMG 004 00". Below the title, there is a table with a dropdown menu open. The dropdown menu is currently showing "Add" and "DLOP". The table has three columns: "Add", "Type", and "IPMG Ca". The table contains two rows of data.

Add	Type	IPMG Ca
Maintenance	MGTDS	004 0
DLOP	MGTDS	004 0

The TDS loop configuration page appears (see Figure 117).

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

Figure 117
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 118
Confirmation



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

The updated loop configuration page appears (see Figure 119). The new Conference loop is displayed.

Figure 119
Loop configuration (updated)

CS 1000 ELEMENT MANAGER

Managing: 192.167.102.3
 System » IP Network » [Media Gateways](#) » Digital Trunking for IPMG 004 00

Digital Trunking for IPMG 004 00

	Number	Type	IPMG Card
<input type="radio"/>	060	MGTDS	004 0
<input type="radio"/>	061	MGTDS	004 0

————— End of Procedure —————

Configuring DSP Daughterboard Voice gateway channels

Procedure 62 describes how to configure DSP Daughterboard Voice gateway channels using the CLI. To configure DSP Daughterboard Voice gateway channels using Element Manager see Steps 5 and 6 of Procedure 59 on [page 279](#).

MG XPEC considerations

For DB32, if the TN is on an MG XPEC an SCH2303 error message is printed. DB32 cannot be configured on this type of IPMG.

For DB96, if the TN is on an MG XPEC and the card is not between 8 and 13, an SCH2304 error message is printed. DB96 can only be configured on card slots 8,9,10,11,12,13.

Procedure 62
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
...
```

End of Procedure

Connecting an IR-8020M-101 Terminal Server

Contents

This section contains information on the following topics:

Introduction	293
Configuring a Terminal Server	295
Telnet Terminal Server virtual management port	298
Telnet CS 1000E COM port from a PC	299
Configuring a transparent rlogin port	300
Accessing an MRV Console Port through the on-board modem	304
CS 1000E COM port types	305

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 307](#).

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 63: "Connecting a Terminal Server to the system" on [page 296](#)
- Procedure 64: "Configure IP address for the Terminal Server" on [page 297](#)
- Procedure 65: "Run telnet from PC" on [page 298](#)
- Procedure 66: "Accessing a CS 1000E from a PC through telnet Terminal Server" on [page 299](#)
- Procedure 67: "Configuring a transparent rlogin port" on [page 301](#)
- Procedure 69: "Accessing an MRV Console Port through the on-board modem" on [page 304](#)

Configuring a Terminal Server

Follow Procedure 63 to connect a Terminal Server with a CS 1000E system. Table 25 lists the MRV cables required to install the IR-8020M-101 Terminal Server in a CS 1000E system.

Table 25
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 26.

Table 26
Customer made cable pin out

Pins on DB9 Female		Pins on RJ45 Male (MRV Terminal Server)	
1	DCD	2	DTR
6	DSR		
2	RXD	3	TxD
3	TXD	6	RxD
4	DTR	7	DSR/DCD
5	S GND	4	TxD GND
		5	RxD GND
7	RTS	1	CTS
8	CTS	8	RTS
9	N/C		

Procedure 63
Connecting a Terminal Server to the system

- 1 Connect the MRV P/N-151-3028 serial cable from the Terminal Server console port 20 to the PC COM port.



WARNING

Port 20 is the default console port. Do not change the configuration for port 20.

- 2 Plug MRV PC Card (in MRV package) into Terminal Server faceplate socket, and power on the Terminal Server.
- 3 Start the MRV HyperTerminal application. In Windows:
`Start > Programs > Accessories > Communication > HyperTerminal.exe`

- 4 Configure HyperTerminal to communicate with the Terminal Server's management port:
 - a. Set baud rate to 9600.
 - b. Set data bits to 8.
 - c. Set parity to none.
 - d. Set stop bit to 1.
 - e. Set flow control to "None".
 - f. Set Terminal Emulation to VT100.
 - g. Press <CR> until you receive a log-in prompt.
- 5 Log in to the Terminal Server. Enter:
ACCESS
- 6 Enter the user name. Enter:
ADMIN
- 7 Set privileged mode. Enter:
SET PRIV
- 8 Enter the password. Enter:
SYSTEM

End of Procedure

Configuring the Terminal Server IP address

Procedure 64

Configure IP address for the Terminal Server

Note: The IP address can be configured or changed only from local management port 20.

- 1 Configure the Terminal Server's IP address. At the In-Reach_Priv prompt. Enter:

```
define server ip address [ip address]
```
- 2 Configure the Terminal Server's IP subnet mask. Enter:

```
define server ip subnet mask [ip address]
```

- 3 Configure the Terminal Server's IP primary gateway address. Enter:
`define server ip primary gateway address [ip address]`
- 4 Check Terminal Server configuration. Enter:
`list server ip`

Example commands:

```
define server ip address 172.16.3.50
define server ip subnet mask 255.255.255.0
define server ip primary gateway address 172.16.3.1
```

End of Procedure

Telnet Terminal Server virtual management port

Connect the Terminal Server ethernet port to the ELAN using a CAT5 ethernet cable. The virtual management port 0 is accessible from an online PC using a telnet session. The Terminal Server can now be configured from the on-line PC.

Procedure 65 **Run telnet from PC**

- 1 Use **Start > Run**
Input telnet command: telnet ip-address port#

Where:
ip-address: Terminal Server IP address
Port#: The target port number on Terminal Server=2000+(xx x 100)

For Terminal Server virtual management port xx=0
Example: telnet 172.16.3.50 2000
- 2 Press <CR> until the MRV login prompt appears.
- 3 Input login password and username to log in to the virtual management port. The default password is "access".

End of Procedure

Telnet CS 1000E COM port from a PC

Connect port xx (xx = 1 - 19) of the Terminal Server to COM1 port of the CS 1000E Call Server.

Follow Procedure 66 to establish access to a Call Server from a PC through telnet Terminal Server. Use the same port number for each procedure step.

Procedure 66

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:

$$\text{TELNET PORT} = 2\,000 + (\text{port number} \times 100)$$

For example, if the telnet port is 7, then:

$$\begin{aligned}\text{TELNET PORT} &= 2\,000 + (\text{port number} \times 100) \\ &= 2\,000 + (700) \\ &= 2700\end{aligned}$$

If the Terminal Server IP Address is 172.16.3.50 and the telnet port is 7, then TELNET command line is:

```
TELNET 172.16.3.50 2700
```

Example:

```
telnet 172.16.3.50 2000 (telnet to virtual management port)
```

```
telnet 172.16.3.50 2700 (telnet port 7)
```

End of Procedure

Configuring a transparent rlogin port

The CS 1000E system uses Pseudo TTY (PTY) ports as TTY ports. All serial applications, such as CDR and Traffic, can be implemented through PTY ports. PTY ports are configured in LD 17. An external device, such as a printer, can access a Call Server PTY port through the Terminal Server by using a remote login (rlogin) session. Using HyperTerminal, follow Procedure 67 to configure a transparent rlogin port.

Procedure 67
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 27 for ZMODEM requirements.

Table 27
ZMODEM requirements

Feature	Setting
Typeahead	1024
TCP window size	1024

Table 27
ZMODEM requirements

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 autodicate for the port. Enter the command:

```
DEFINE PORT xx AUTODEDICATED ENABLED
```

Where:

xx = port number

- 7** Define a user name for the port. Enter the command:

```
DEFINE PORT xx USERNAME "ptyxx"
```

Where:

xx = port number

ptyxx = User Name is the pty port set during Call Server configuration for rlogin connection. The pty port is set using LD 17. For example, in LD 17, configure TTY 2 as pty. The port # username on Terminal Server becomes "pty2", not "PTY2" or "pty02".

Note 1: Ignore the following MRV information message during using DEFINE command. "In-Reach -729- Parameter cannot be modified by a set command". This is informational only that you must use DEFINE and not the more general SET command. It is not an error.

Note 2: The quotation marks (""") are also required around "PTYxx"

- 8** Log out of the port. Enter the command:

```
LOGOUT PORT xx
```

Where:

xx = port number

- 9 Check port configuration. Enter the command:

```
LIST PORT xx
```

```
LIST PORT xx ALTERNATE CHARA
```

Where:

```
xx = port number
```

End of Procedure

Configuring a transparent rlogin port with sample data

Sample data has been incorporated into Procedure 68. This configuration shows that a device connected to MRV Port 2 will rlogin 47.11.166.76 through pty 10.

Procedure 68

Configuring a transparent rlogin port

- 1 Enable keepalive timer 1 for the port. Enter the command:

```
DEFINE PORT 2 IP TCP KEEPALIVE TIMER 1
```

- 2 Enable a dedicated service using rlogin. Enter the command:

```
DEFINE PORT 2 RLOGIN DEDICATED SERVICE 47.11.166.76
```

- 3 Enable the port to be accessible only by local command and from a serial connection only. Enter the command:

```
DEFINE PORT 2 ACCESS LOCAL
```

- 4 Enable the In-Reach Element Manager to complete a ZMODEM transfer using the rlogin feature. Enter the command:

```
DEFINE PORT 2 RLOGIN TRANSPARENT MODE ENABLED
```

- 5 Enable autoconnect for the port. Enter the command:

```
DEFINE PORT 2 AUTOCONNECT ENABLED
```

- 6 Enable autodedicate for the port. Enter the command:

```
DEFINE PORT 2 AUTODEDICATED ENABLED
```

- 7 Define a user name for the port. Enter the command:

```
DEFINE PORT 2 USERNAME "pty7"
```

Note: When typing the letters "pty", they must be lower case letters. The number must equal the pty number configured on the system.

- 8 Log out of the port. Enter the command:

```
LOGOUT PORT 2
```

End of Procedure

Accessing an MRV Console Port through the on-board modem

The MRV IR-8020M Terminal Server is equipped with a V.90/K56flex 56 Kbps on-board modem. The modem port is 23. Follow Procedure 69 to access an MRV Console Port through the on-board modem.

Procedure 69

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 63 on [page 296](#)).

End of Procedure

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

CS 1000E COM port types

Table 28 lists various components of the CS 1000E system and their COM port types.

Table 28
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) <i>Note:</i> 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)
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

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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 293](#).

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:

- Procedure 70: "Connecting a Terminal Server to the system" on [page 311](#)
- Procedure 71: "Configure IP address for the Terminal Server" on [page 312](#)
- Procedure 72: "Running telnet from PC" on [page 313](#)
- Procedure 73: "Accessing a CS 1000E from a PC through telnet Terminal Server" on [page 314](#)
- Procedure 74: "Configuring an rlogin port for various applications" on [page 315](#)
- Procedure 75: "Accessing an MRV Console Port through the on-board modem" on [page 318](#)

Configuring a Terminal Server

Follow Procedure 70 to connect a Terminal Server with a CS 1000E system. Table 29 lists the MRV cables required to install the LX8020S-102AC-R Terminal Server in a CS 1000E system.

Table 29
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 30.

Table 30
Customer made cable pin out (same as NTDU6302)

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

Table 30
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 70

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

————— End of Procedure —————

Configuring the Terminal Server IP address

Procedure 71

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 interfacel 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
```

————— End of Procedure —————

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 72

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 74 on [page 315](#))

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.

End of Procedure

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

Procedure 73

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 72 on [page 313](#) or Procedure 70 on [page 311](#).

- 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:

$$\text{TELNET PORT} = 2\ 000 + (\text{port number } xx \times 100)$$

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

$$\begin{aligned}\text{TELNET PORT} &= 2\ 000 + (1 \times 100) \\ &= 2\ 000 + (100) \\ &= 2100\end{aligned}$$

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)
```

End of Procedure

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 74 to configure a transparent rlogin port.

Procedure 74 **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 were 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 ;inseconds
```

```
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 73 on [page 314](#) and Procedure 74 on [page 315](#) 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.

End of Procedure

Accessing an MRV Console Port through the on-board modem

Procedure 75

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 74 on [page 315](#).
- 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 70 on [page 311](#)).

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.

————— **End of Procedure** —————

CS 1000E COM port types

Table 31 lists various components of the CS 1000E system and their COM port types.

Table 31
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 31
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

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CS 1000E CP PM Call Server COM Port connections	323
MG 1000E SDI connection	324
BayStack 470 SDI connection	326
BayStack 470 SDI connection	326
Media Card SDI connection	326

Introduction

In the CS 1000E system, each component (CP PM Call Server, Media Gateway, 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 295](#) 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 120 shows the setup values for a traditional terminal setup.

Figure 120
VT220 setup values

Global Set-Up	Comm1=RS232	70Hz
On Line		
Sessions on Comm1	Printer Shared	
CRT Saver		
Display Set-Up	Light Text, Dark Screen	
80 Columns	Cursor	
Interpret Controls	Block Style Cursor	
Auto Wrap		
Jump Scroll		
General Set-up	Application Keypad	
VT200 Mode, 7-bit Controls	Normal Cursor Keys	
User Defined Keys Unlocked	No New Line	
User Features Unlocked		
Multinational		
Communications Set-Up	No Local Echo	
Transmit=2400	Data Leads Only	
Receive=Transmit	Disconnect, 2 s Delay	
Xoff at 64	Limited Transmit	
8bits, No Parity		
1 Stop Bit		
Printer Set-Up	Print Full Page	
Speed=9600	Print National Only	
Normal Print Mode	No Terminator	
8bits, No Parity,		
1 Stop bit		
Keyboard Set-up	Warning Bell	
Typewriter Keys	Break	
Caps Lock	Answerback=	
Auto Repeat	Not Concealed	
Keyclick High		
Margin Bell		
Tab Set-Up Screen		
Leave this screen at the default 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 be 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 121 on [page 325](#) 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.

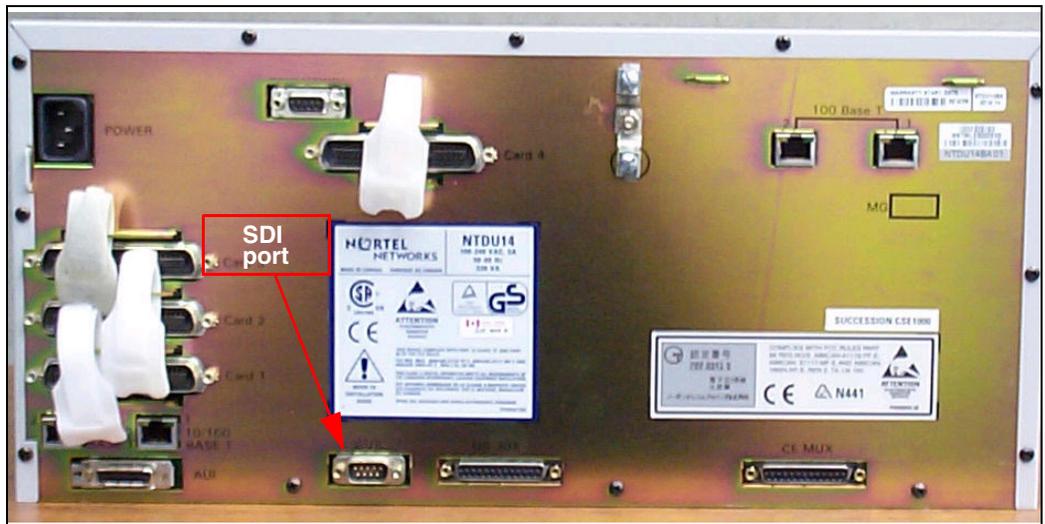
SDI2 is not available during the MGC bootup, it cannot be used to access the installation menus.

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 76 **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 121).

Figure 121
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.

End of Procedure

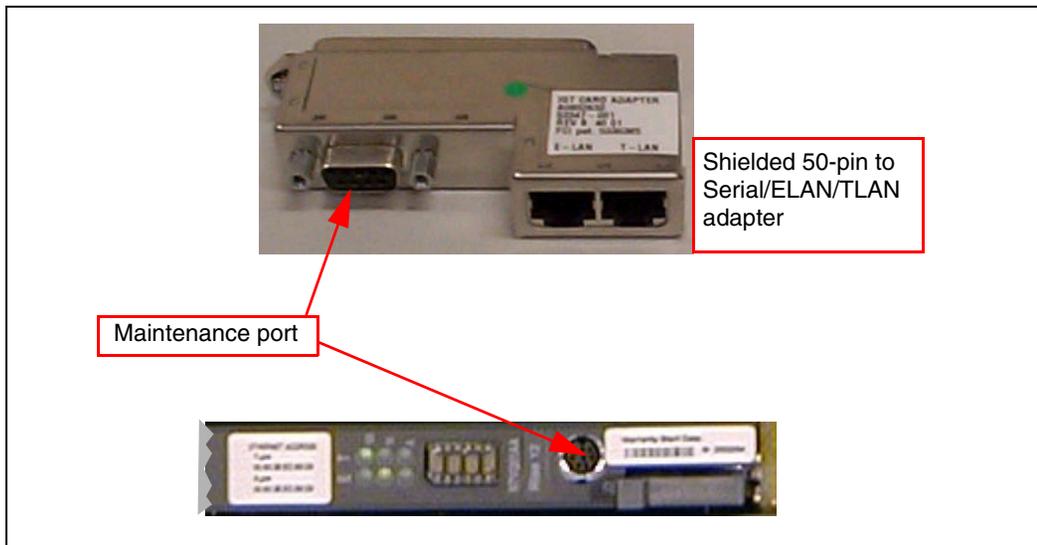
BayStack 470 SDI connection

The SDI port on the Bay Stack 470 can be used for basic configuration and maintenance. The SDI port is located on the faceplate. It is a DCE port with a default speed of 9600 bps.

Media Card SDI connection

The SDI ports on a Media Card can be used for basic configuration or maintenance. Figure 122 shows the maintenance port location on the Media Card and the Shielded 50-pin to Serial/ELAN/TLAN adapter.

Figure 122
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

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Verifying trunk functionality	358

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* (NN43001-311) for card placement into card slots.

IMPORTANT!

Digital Trunk cards can be installed only in slots 1 to 4 of the Media Gateway.

Figure 123 shows the circuit card slots in a Media Gateway. To view the circuit card slots available in a Media Gateway Expander, see Figure 124 on [page 331](#).

Figure 123
Circuit card assignments in the Media Gateway

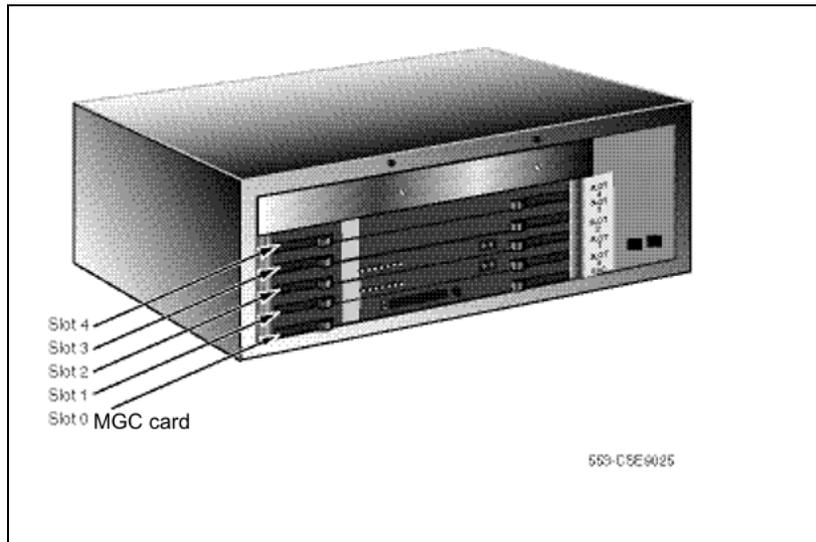
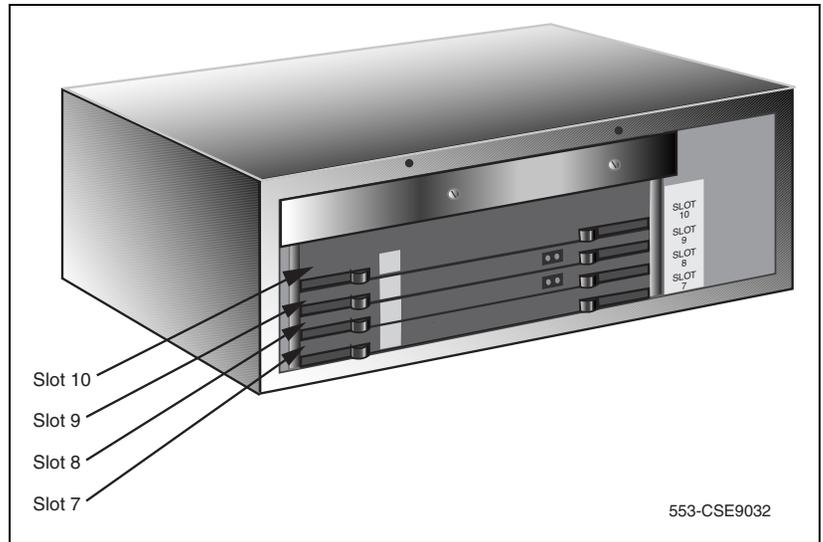


Figure 124
Circuit card assignments in the Media Gateway Expander



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 393](#), 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* (NN43001-311) for full descriptions of country-specific circuit cards and their installation procedures.

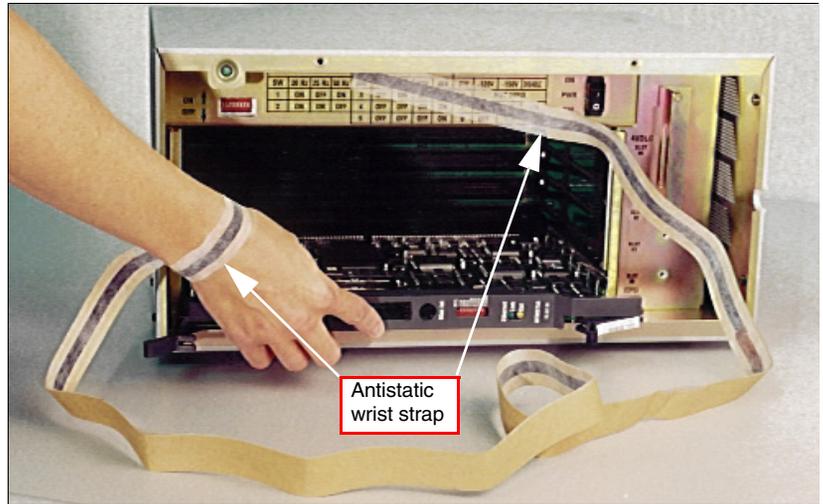


CAUTION WITH ESDS DEVICES

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 125 on [page 333](#), when handling circuit cards. Static electricity can damage circuit card components.

Figure 125
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* (NN43001-301)
- *ISDN Basic Rate Interface: Installation and Configuration* (NN43001-318)
- *ISDN Primary Rate Interface: Maintenance* (NN43001-717)
- *ISDN Basic Rate Interface: Maintenance* (NN43001-718)

Connecting a trunk

Follow Procedure 77 to connect a trunk.

Procedure 77 **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 32 on [page 335](#) to Table 34 on [page 338](#) list the connections for trunks.
- For European trunk connections, see Table 35 on [page 340](#) to Table 43 on [page 349](#).
- For UK trunk connections, see Table 44 on [page 351](#) to Table 50 on [page 358](#).

Note: See “Installing and cross-connecting a Power Fail Transfer Unit” on [page 461](#) for connecting trunks with the PFTU.

End of Procedure

Universal Trunk card connections

The Universal Trunk card (NT8D14) provides eight Analog trunks that can function in the modes identified in Table 32. Refer to Table 33 on [page 336](#) for the connections to the Universal trunk at the cross-connect terminal.

Table 32
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 33
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 33
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 34 lists the connections required by the E&M Trunk card (NT8D15).

Table 34
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 34
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 35: “E&M TIE trunk card (2-Wire)” on [page 340](#)
- Table 36: “E&M 2-wire Type 2” on [page 341](#)
- Table 37: “E&M TIE Trunk card (4-Wire)” on [page 342](#)
- Table 38: “E&M TIE Trunk card” on [page 344](#)
- Table 39: “E&M 2280 Hz TIE Trunk connections” on [page 345](#)
- Table 40: “E&M 2-wire Recorded Announcement Trunk connections” on [page 346](#)
- Table 41: “E&M 2-wire Music Trunk connections” on [page 347](#)
- Table 42: “Central Office & Direct Dial Inward Trunk connections” on [page 347](#)
- Table 43: “Central Office Trunk connections” on [page 349](#)

Table 35
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 35
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 36
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 36
E&M 2-wire Type 2 (Part 2 of 2)

T2	35	R-S	2
R2	10	S-R	
E1	36	BK-BL	
E2	11	BL-BK	
M1	37	BK-O	
M2	12	O-BK	
T3	39	BK-BR	3
R3	14	BR-BK	
E1	40	BK-S	
E2	15	S-BK	
M1	41	Y-BL	
M2	16	BL-Y	

Table 37
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 37
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	W-S	1	30	RA	TA
4R	S-W		5	RB	TB
5T	R-BL		31	TA	RA
5R	BL-R	2	6	TB	RB
6T	R-O		32	E	E
6R	O-R		7	M	M
7T	R-BR	3	34	RA	TA
7R	BR-R		9	RB	TB
8T	R-S		35	TA	RA
8R	S-R	3	10	TB	RB
9T	BK-BL		36	E	E
9R	BL-BK		11	M	M
10T	BK-G	3	38	RA	TA
10R	G-BK		13	RB	TB
11T	BK-BR-		39	TA	RA
11R	BR-BK	3	14	TB	RB
12T	BK-S		40	E	E
12R	S-BK		15	M	M

Note: The cable pair designated TA, TB is the transmit pair. The pair designated RA, RB is the receive pair.

Table 38
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 38
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		38 13	RA RB	RA RB
		3			
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
<p>Note: The cable pair designated TA, TB is the transmit pair. The pair designated RA, RB is the receive pair.</p>					

Table 39
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 39
E&M 2280 Hz TIE Trunk connections (Part 2 of 2)

TA	34	R-BR	2
TB	9	BR-R	
RA	35	R-S	3
RB	10	S-R	
TA	38	BK-G	3
TB	13	G-BK	
RA	39	BK-BR	3
RB	14	BR-BK	

Table 40
E&M 2-wire Recorded Announcement Trunk connections

Lead designations	Pins	Pair color	Unit number
T0	26	W-BL	0
R0	1	BL-W	
SIG B	29	W-BR	1
SIG A	4	BR-W	
T1	30	W-S	1
R1	5	S-W	
SIG B	33	R-G	2
SIG A	8	G-R	
T2	34	R-BR	2
R2	9	BR-R	
SIG B	37	BK-O	3
SIG A	12	O-BK	
T3	38	BK-G	3
R3	13	G-BK	
SIG B	41	Y-BL	3
SIG A	16	BL-Y	

Table 41
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 42
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 42
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 43
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 43
Central Office Trunk connections (Part 2 of 2)

Cable from equipment		Unit	Pins	Lead designations	
Pair	Color				
13T	BK-G	3	38	T3	
13R	G-BK		13	R3	
14T	BK-BR		39	14	
14R	BR-BK				
15T	BK-S		40	15	
15R	S-BK				
16T	Y-BL		41	16	
16R	BL-Y				

Trunk connections (UK)

Trunk connections for the UK are provided in the following tables:

- Table 44: “NT5K17 Direct Inward Dial card terminations” on [page 351](#)
- Table 45: “NT5K18 Exchange line trunk card cross-connect terminations” on [page 352](#)
- Table 46: “NT5K19 2W paging mode terminations” on [page 354](#)
- Table 47: “NT5K19 2W Type 1 mode terminations” on [page 354](#)
- Table 48: “NT5K19 4W Type 1 mode terminations” on [page 356](#)
- Table 49: “NT5K19 AC15 mode pair terminations” on [page 357](#)
- Table 50: “NT5K19 Recorded Announcement mode pair terminations” on [page 358](#)

Table 44
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 44
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 45
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 45
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 46
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 47
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 47
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 48
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 49
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 50
NT5K19 Recorded Announcement mode pair terminations

Pair	Pins	Pair color	Unit
T0 R0	26 1	W-BL BL-W	0
SIG B SIG A	29 4	W-BR BR-W	
T1 R1	30 5	W-S S-W	1
SIG B SIG A	33 8	R-G G-R	
T2 R2	34 9	R-BR BR-R	2
SIG B SIG A	37 12	BK-O O-BK	
T3 R3	38 13	BK-G G-BK	3
SIG B SIG A	41 16	Y-BL BL-Y	

Verifying trunk functionality

You can now use the trunks. To test the trunks, make trunk calls.

Installing and configuring a Voice Gateway Media Card

Contents

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Introduction

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.

CS 1000 Release 6.0 no longer provides TPS functions on the Media Cards. They do not participate in the Election process to become a Master if the Leader fails.

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.

ITG-P hardware configured as a Voice Gateway Media Card is not supported in CS 1000 Release 6.0.

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

For more details, see *Signaling Server IP Line Application Fundamentals* (NN43001-125).

This chapter contains the following procedures:

- Procedure 78: "Adding a Voice Gateway Media Card to an IP telephony node" on [page 362](#)
- Procedure 79: "Adding voice gateway channels using Element Manager" on [page 367](#)
- Procedure 80: "Configuring voice gateway channels using LD 14" on [page 370](#)
- Procedure 81: "Installing the CF card" on [page 373](#)
- Procedure 82: "Installing a Voice Gateway Media Card in a card slot" on [page 379](#)
- Procedure 84: "Displaying the Voice Gateway Media Card status" on [page 382](#)
- Procedure 85: "Displaying the Voice Gateway status for all voice gateway channels" on [page 383](#)
- Procedure 86: "Displaying the status of Voice Gateway Media Card units" on [page 384](#)
- Procedure 87: "Displaying the status of one unit on a Voice Gateway Media Card" on [page 387](#)
- Procedure 88: "Disabling a Voice Gateway Media Card using Element Manager" on [page 387](#)
- Procedure 89: "Disabling a Voice Gateway Media Card unit using Element Manager" on [page 388](#)
- Procedure 90: "Enabling a Voice Gateway Media Card using Element Manager" on [page 389](#)
- Procedure 91: "Enabling a Voice Gateway Media Card unit using Element Manager" on [page 390](#)

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 239](#).
- the voice gateway channels defined on the CS 1000E. See “Configuring voice gateway channels using Element Manager” on [page 367](#).

Adding a card to an IP telephony node

The Voice Gateway Media Card is added to an IP telephony node using Element Manager only. See *Element Manager: System Administration* (NN43001-632) for details.

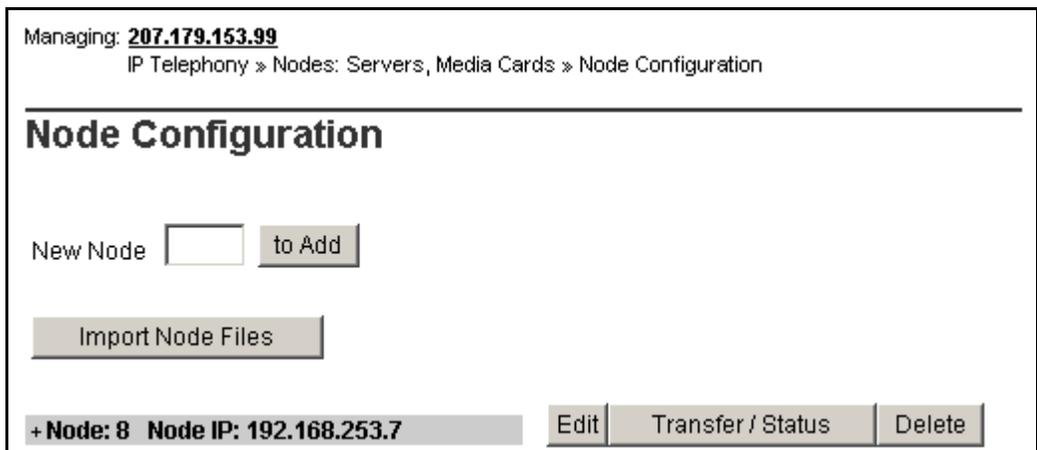
Procedure 78

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 126.

Figure 126
Node Configuration web page



- 3 Click **Node**, then click **Select**.
- 4 Choose **Media Card** then click **Add**. See Figure 127 on [page 363](#).

Figure 127
Add Media Card

The screenshot displays the Nortel CS 1000 Element Manager interface. The top navigation bar includes the Nortel logo, the title 'CS 1000 ELEMENT MANAGER', and links for 'Help' and 'Logout'. The main content area is titled 'Node Details (ID: 1457 - LTPS, Gateway { SIPGw, H323Gw })'. It features two columns for IP configuration: 'Telephony LAN (TLAN)' and 'Embedded LAN (ELAN)'. Below these are 'IP Telephony Node Properties' and 'Applications (click to edit configuration)'. The 'Associated Signaling Servers & Cards' section contains a table with columns for Hostname, Type, Deployed Applications, ELAN IP, TLAN IP, and Role. A 'Media Card' dropdown menu is visible above the table.

Hostname	Type	Deployed Applications	ELAN IP	TLAN IP	Role
tb1-prim	Signaling Server	LTPS, Gateway, PD	47.11.45.7	47.11.45.22	Leade

The Cards tab expands (see Figure 128 on [page 364](#)).

- 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 *Signaling Server IP Line Application Fundamentals* (NN43001-125).

Figure 128
New media card details

Embedded LAN (ELAN) IP address	<input type="text" value="0.0.0.0"/>	*
Embedded LAN (ELAN) MAC address	<input type="text" value="00:00:00:00:00:00"/>	*
Telephony LAN (TLAN) IP address	<input type="text" value="0.0.0.0"/>	*
Voice LAN (TLAN) gateway IP address	<input type="text" value="0.0.0.1"/>	
Hostname	<input type="text" value="Hostname"/>	*
Card TN	<input type="text"/>	*
Card processor type	<input type="text" value="Voice Gateway Media Card"/>	
H323 ID	<input type="text" value="CS1000E_PM1"/>	
Enable Line TPS	<input checked="" type="checkbox"/>	
<small>If Telephony LAN(TLAN) IP address and Telephony LAN(TLAN) gateway IP address are not in the same subnet as Telephony LAN(TLAN) Node IP address when Line TPS is enabled, then the TPS application will not run.</small>		
Primary Call Server IP address	<input type="text" value="192.167.104.53"/>	*
Alternate Call Server1 IP address	<input type="text" value="0.0.0.0"/>	*

- 6 Click **Save** the node.
- 7 Verify card has been added. See Figure 129 on [page 365](#).

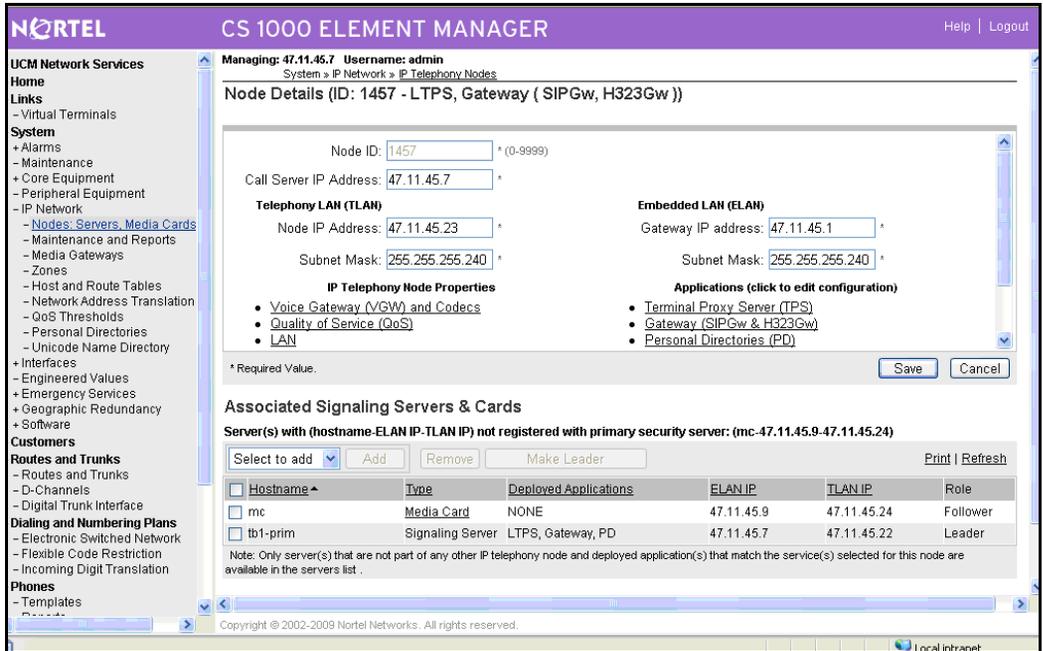
Note 1: In order to perform a successful "Sync and Save" (receive the updated IP Telephony node configuration files), the Media Card must be joined to the security domain using the `joinSecDomain` command from the MC32 or MC32S command line:

```
joinSecDomain <IP Address of Primary UCM Security Server>
```

See *Security Management* (NN43001-604).

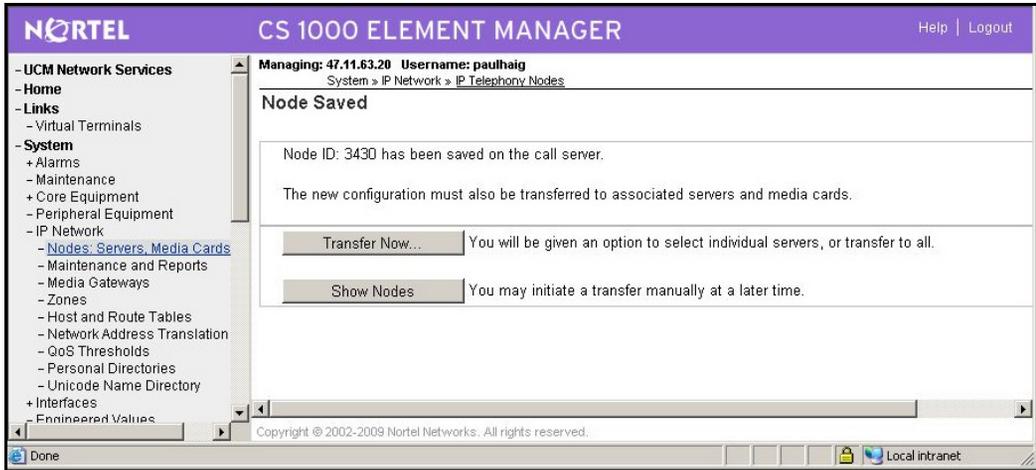
Note 2: You may also need to upgrade the Media Card's loadware before joining the security domain. See *Signaling Server IP Line Application Fundamentals* (NN43001-125).

Figure 129
Media Card added



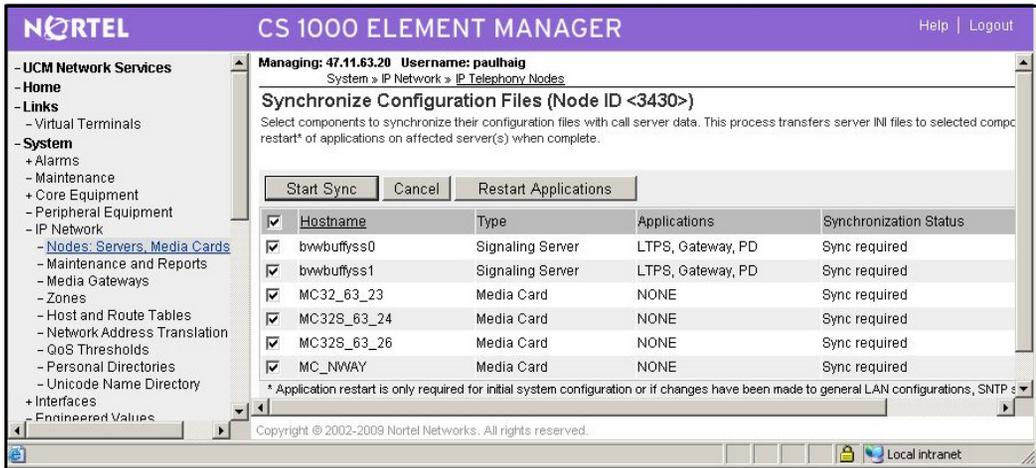
8 Click **Save**. The **Node Saved** screen appears. See Figure 130 on page 366.

Figure 130
Node saved



9 Click **Transfer Now**. The Synchronize Configuration Files screen appears. See Figure 131.

Figure 131
Synchronize Configuration Files



- 10 Select all of the elements and click **Start Sync**.

End of 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 79 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 80 on [page 370](#).

Procedure 79

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 126 on [page 362](#).

- 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 132.

Figure 132

VGW Channel web page

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

4 Click **Add**.

The **Add VGW channels** web page opens, as shown in Figure 133.

Figure 133
Add VGW channels

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 > Add VGW channels

Add VGW channels

Number of VGW Channels:

Trunk data block:

Terminal Number: *

Designator field for trunk:

Extended Trunk:

Customer number: *

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 134 on [page 369](#).

Figure 134
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	

End of Procedure

Configuring voice gateway channels using LD 14

The voice gateway channels are also called “DSP channels” or the card’s “physical TNs.” Follow Procedure 80 on [page 370](#) 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 79 on [page 367](#).

Procedure 80
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 51.

Table 51
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 52 on page 379 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 and the Media Card S 32-port (MC32S)

Table 51
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	<p>Zone number to which the Voice Gateway Media Card Physical TNs belong.</p> <p>Verify that the zone exists in LD 117.</p> <p>The ZONE prompt is not available when configuring VGW in an MG 1000E. The VGWs are assigned the same zone as the MG 1000E.</p> <p>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.</p>
CUST	xx	<p>The customer to which the IPTN resources are assigned.</p> <p>Note: This means that for multi-customer CS 1000E systems, each customer must have a dedicated IP Telephony node for IP Phones.</p>

4 Exit from LD 14. Enter the command:

————— **End of Procedure** —————

Saving configuration changes

Perform a datadump to save configuration changes. Complete the steps in Procedure 51: "Performing a datadump using Element Manager" on [page 255](#).

Installing a Compact Flash (CF) card

The Voice Gateway Media Card requires a Compact Flash (CF) card to operate. The CF card contains the IP Line 6.0 software.



CAUTION WITH ESDS DEVICES

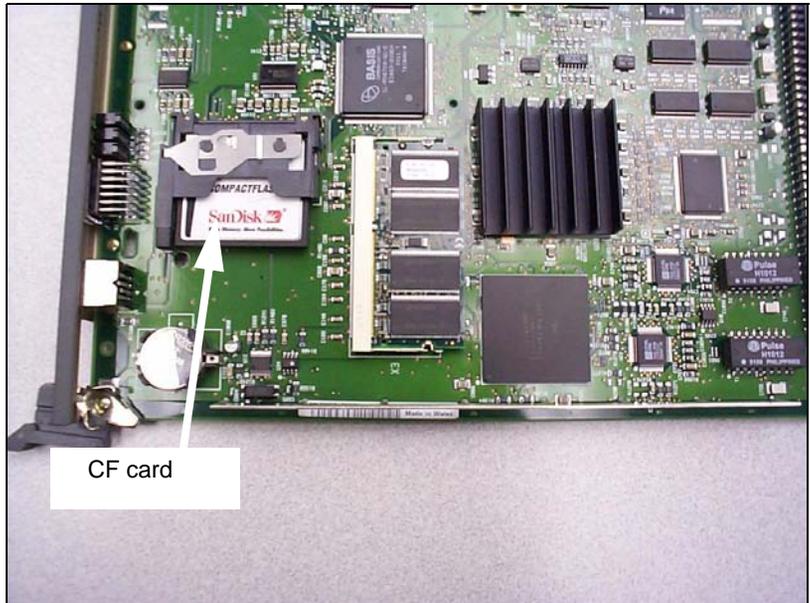
Wear an antistatic device to avoid damage to the Voice Gateway Media Card.

The Voice Gateway Media Card package includes the following:

- Media Card
- CF card and Retaining Pin (nylon pillar)
- Shielded 50-pin to Serial/ELAN/TLAN adapter

The CF card must be installed on the Voice Gateway Media Card prior to installing the Voice Gateway Media Card in the system. Figure 135 on [page 373](#) shows the CF card location on the Voice Gateway Media Card.

Figure 135
CF card location

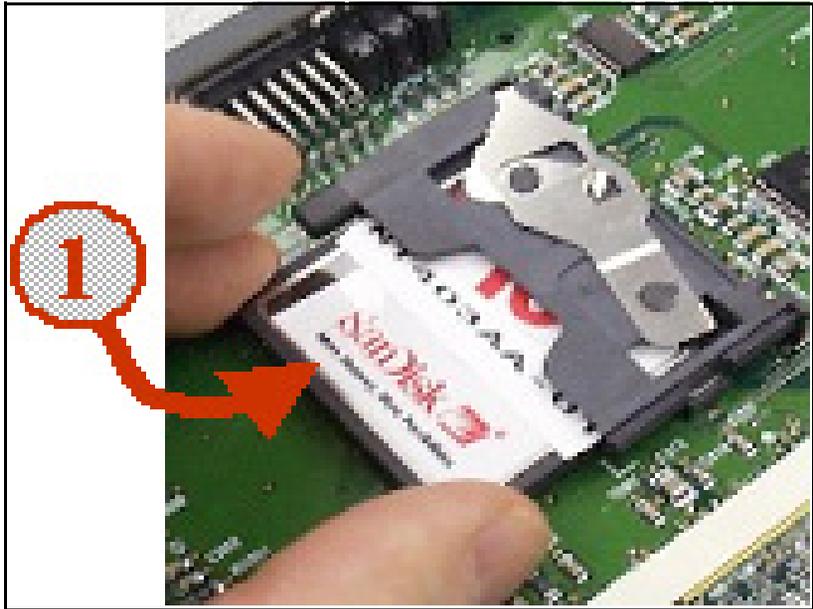


Procedure 81
Installing the CF card

- 1 Remove the Media Card and CF card from the packaging.
- 2 Locate the CF card socket in the lower left-hand corner of the Voice Gateway Media Card (see Figure 136 on [page 374](#)).

- 3 Position the CF card with the label facing up, the metal clip pulled up, and contact pins toward the socket as shown in Figure 136.

Figure 136
Position the CF card in socket

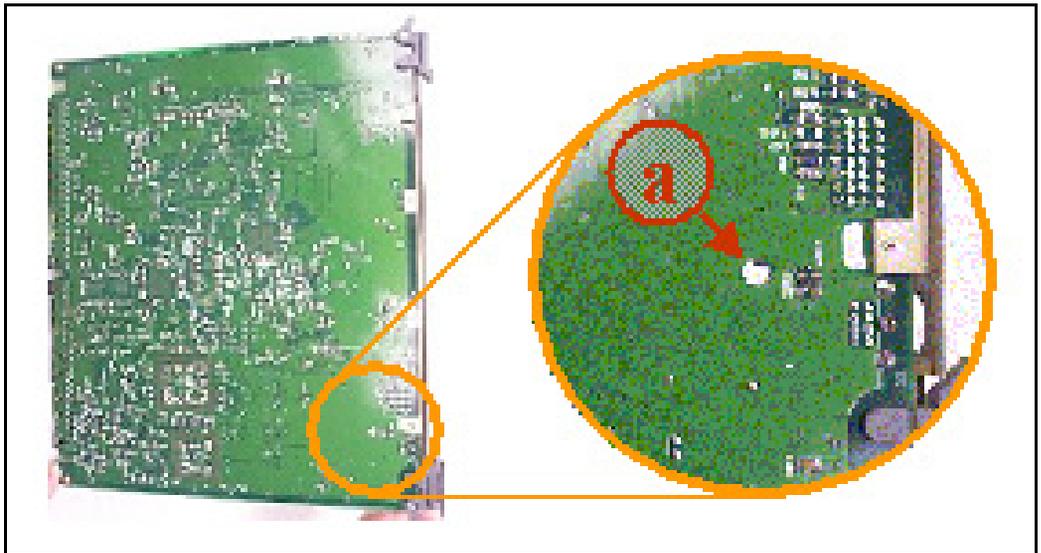


- 4 Insert the CF card in the socket.
Press firmly until it is fully seated and the Eject button extends. Ensure force is applied equally at both ends of the CF card when pushing it in.

- 5 Gently insert the CF card, so that it is fully in contact with the connectors on the drive.
- 6 Push the metal clip down so that the CF card is locked in.
- 7 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 137) is located approximately 1 inch (2.5 cm) above the lower lock latch and 1 inch (2.5 cm) from the card's faceplate.

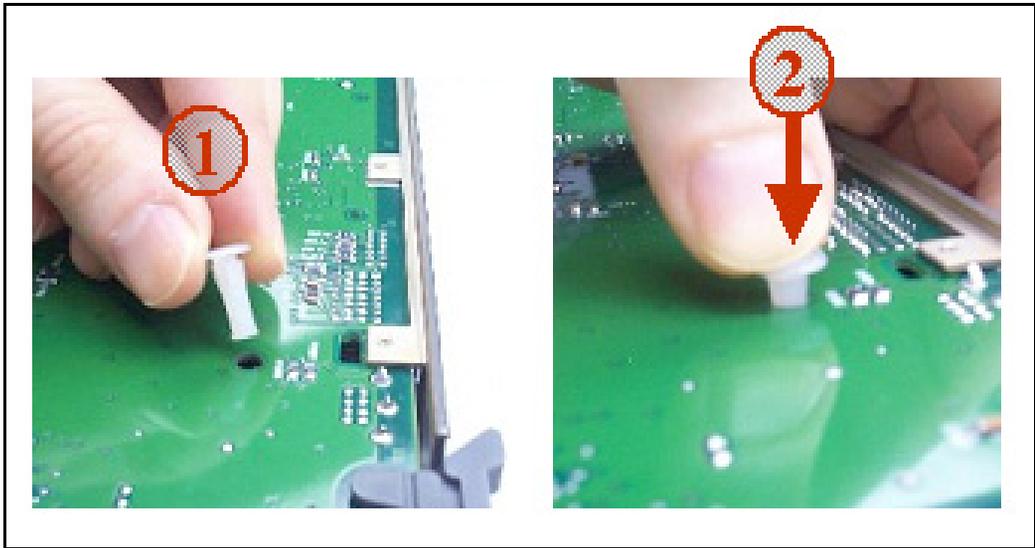
Figure 137
Retaining pin hole



- 8 Insert the Retaining Pin in this hole (labeled 1 in Figure 138).

Press the Retaining Pin into the hole until the pin clicks as it locks into position (labeled 2 in Figure 138). The underside of the head of the Retaining Pin should be flat against the card.

Figure 138
Inserting the retaining pin



- 9 Turn the card over to view the front of the card. Ensure the Retaining Pin is in place.

End of Procedure

Installing a card in a Media Gateway

A Voice Gateway Media Card can be installed in a Media Gateway or a Media Gateway Expander slot. See Figure 139 on [page 377](#) and Figure 140 on [page 378](#) 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 139 shows the circuit card assignments in the Media Gateway.

Figure 139
Media Gateway card slot location

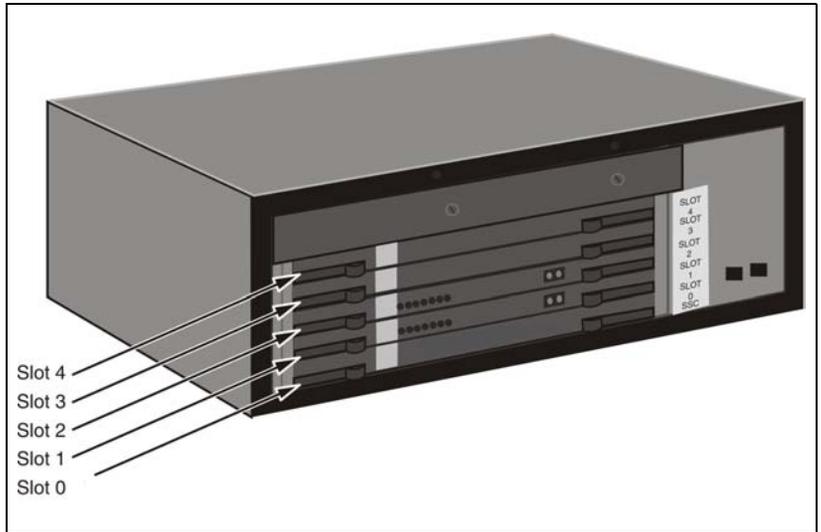


Figure 140 on [page 378](#) shows the circuit card assignments in the Media Gateway Expander.

Figure 140
Media Gateway Expander card slot location

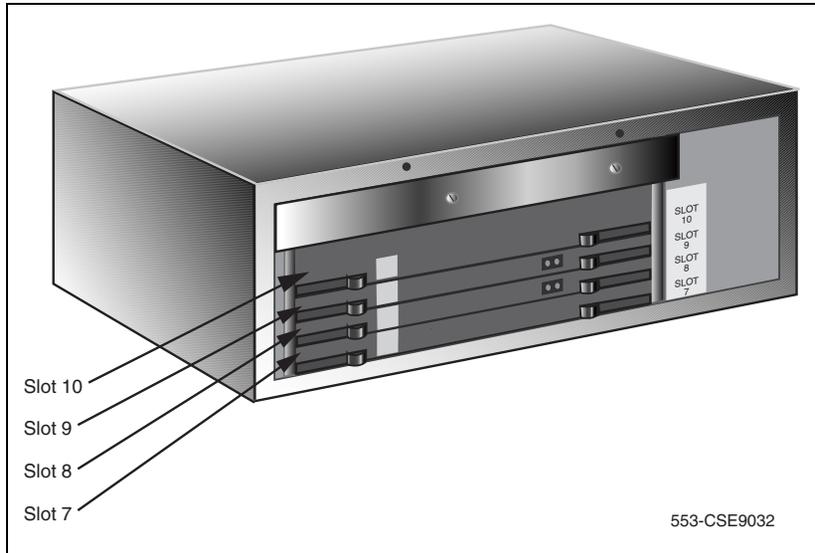


Table 52 on [page 379](#) shows the TN assignments for the MG 1000E. Communication Server 1000 Release 6.0 supports up to 30 MG 1000E.

Table 52
TN assignments for MG 1000E

Slots TN	MG 1000E				MG 1000E Expander			
	1 I s c	2 I s c	3 I s c	4 I s c	7 I s c	8 I s c	9 I s c	10 I 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 82
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 161](#).

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. The Voice Gateway Media Card has two serial data interface ports on the master MSP. The default tty settings for both ports are:

- Baud rate: 9600
- Data bit length: 8.
- Stop bit: 1.
- Parity: none.
- Flow control: none.

The installation menu can be accessed through either port.

- 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.
- 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. If the card is an MC32, it will display "ITG2" when it has finished booting. If the card is an MC32S, it will display "MC32S". See *Signaling Server IP Line Application Fundamentals* (NN43001-125) for details.
- 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 *Signaling Server IP Line Application Fundamentals* (NN43001-125) for detailed maintenance procedures.
- 4 Once the card initializes you need to upgrade the loadware to CS 1000 Release 6.0. See "Loadware upgrade" on [page 232](#).
- 5 Login with SEC_ADMIN priv (admin2)
- 6 Join the UCM security domain (`joinSecDomain`). For details, see *Security Management* (NN43001-604).

- 7 Save and transfer is ONLY NOW successful from Element Manager.

Note: MC32S cards (NTDW65AAE5) prior to Pack Release 6.0 may require a manual operation for them to find the RIs 6 system node leader to retrieve their IP address. Older MC32S cards are not compatible with the Linux OS bootp server and the bootp request will fail. The MC32S card uses this to request their IP address automatically. This problem has been resolved on new MC32S cards with Release 6.0 and higher.

For system upgrades where the MC32S card is already installed in an established system network, the IP address may have already been retrieved from a previous bootp attempt and saved to the card's Flash ROM. In this case, no manual action is required.

End of Procedure

Manually assigning the MC32S card an IP address

If the MC32S card is a new install or the system's IP addresses are changing, you must manually connect to the MC32S card and run the `setleader` command to assign the card an IP address. See Procedure 83: "Manually assigning the MC32S card an IP address" on [page 381](#).

Procedure 83

Manually assigning the MC32S card an IP address

- 1 Connect the PC to the MC32S card via com port or telnet. The TTY Settings are:
 - Baud Rate: 9600
 - Data bit: 8
 - Stop bit: 1
 - Parity: None
 - Flow Control: None
- 2 Power on the MC32S card.

If software was not previously installed, the card boots into the card default "gold image". Proceed to step 7.

If software was previously installed, complete step 3 to step 6.

- 3 Access the pdt login prompt via either serial port or over telnet.

- 4 Enter Control-p Control-d Control-t.
- 5 Enter the pdt username and password.
- 6 At the `pdt>` prompt... enter the `setleader` command followed by three arguments:

`setLeader [elan ip] [gateway] [subnetmask]`
- 7 Interrupt the bootp process by typing `+++`
- 8 At the "gold image" prompt `->`, type the `setleader` command.
- 9 Enter the information for the Elan IP address, subnet mask & gateway.
- 10 Answer yes to configure the card as a leader.
- 11 Answer no, to change the MC32S advanced parameters.
- 12 Answer yes, to reboot the card.

End of Procedure

Verifying a card

Verifying a card involves:

- Procedure 84: "Displaying the Voice Gateway Media Card status" on [page 382](#)
- Procedure 85: "Displaying the Voice Gateway status for all voice gateway channels" on [page 383](#)
- Procedure 86: "Displaying the status of Voice Gateway Media Card units" on [page 384](#)
- Procedure 87: "Displaying the status of one unit on a Voice Gateway Media Card" on [page 387](#)

Procedure 84 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.

2 Expand 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,

3 Click **Status** for the desired Voice Gateway Media Card.
The output from this command is displayed in the window pane (result box).

The output can be one of the following:

```
xx.xxx.xxx.xxx : Disabled
```

```
xx.xxx.xxx.xxx : Enabled
```

```
xx.xxx.xxx.xxx : Unequipped
```

Where xx.xxx.xxx.xxx is the ELAN IP address of the Voice Gateway Media Card and the meaning of the status is:

- **Disabled** – The card is configured but out-of-service.
- **Enabled** – The card is configured and operational.
- **Unequipped** – The card is not configured in the Call Server.

End of Procedure

Procedure 85

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.

2 Expand 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.

3 Click the **GEN CMD** button associate with the Voice Gateway Media Card.

The **General Commands** web page opens.

4 From the **Group** drop-down list, select **Vgw**.

5 From the **Command** drop-down list, select **vgwShowAll**.

6 Click **RUN**.

The output of the `vgwShowAll` command is displayed in the text area at the bottom of the window.

- 7 To view the VGW Channel configuration, from the **Command** drop-down list, select **Print VGW Channels** and click the **RUN** button.

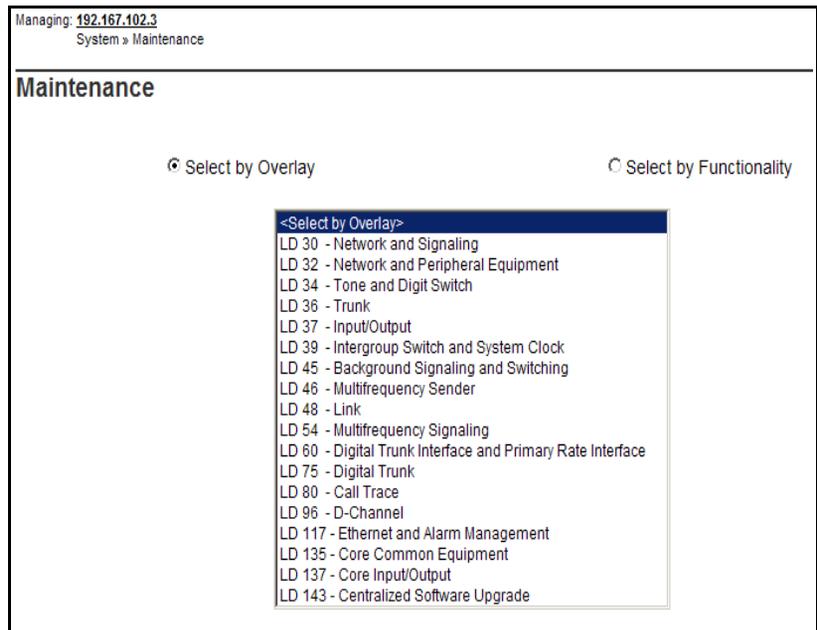
End of Procedure

Procedure 86 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 141. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 141.

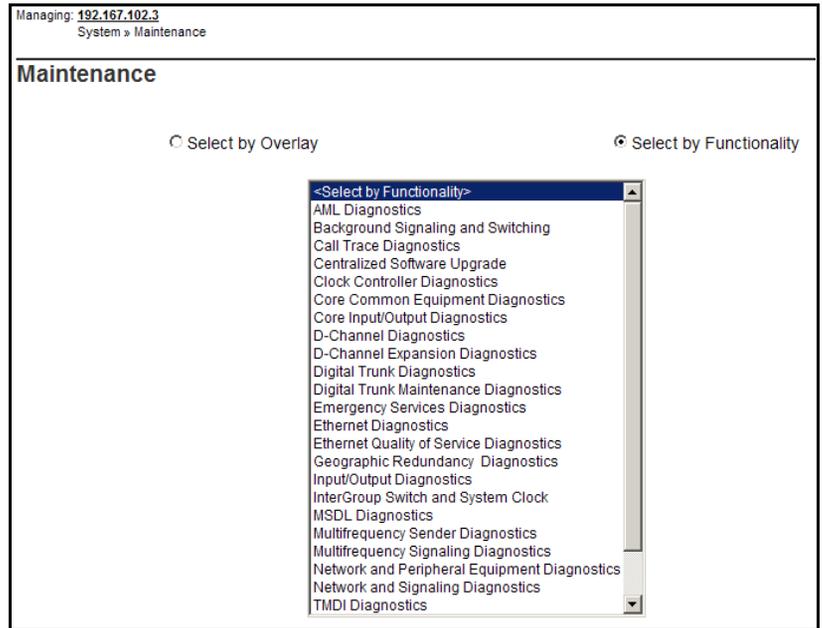
Figure 141
Maintenance (by Overlay) web page



- 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 142 on [page 385](#).

Figure 142
Maintenance (by functionality) web page



- 3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 142.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 143 on [page 386](#).

Figure 143
Network & Peripheral Diagnostics web page

Managing: 192.167.102.3
System » Maintenance » Network & Peripheral Diagnostics

Network & Peripheral Diagnostics

Diagnostic Commands	Command Parameters	Act
- --- Loop Commands ---	<input type="text"/>	Sub
- --- Shelf Commands ---	<input type="text"/>	Sub
- --- Card Commands ---	<input type="text"/>	Sub
- --- Unit Commands ---	<input type="text"/>	Sub
- --- M39XX Unit Commands ---	<input type="text"/>	Sub
- --- DSL Commands ---	<input type="text"/>	Sub
- --- Application Commands ---	<input type="text"/>	Sub

Instruction: Select command, add value and click on [Submit]

- 4 Choose the **STAT — Get card status** command from the **Card Commands** drop-down list.
 - 5 Enter the card number in the corresponding **Command Parameter** text box.
 - 6 Click **Submit** to the right of the text box.
- The output from this command is shown in the text box in the lower half of the web page.

————— **End of Procedure** —————

Procedure 87**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 141 on [page 384](#). This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 141.

- 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 142 on [page 385](#).

- 3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 142 on [page 385](#).

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 143 on [page 386](#).

- 4 Choose the **STAT — Get unit status** command from the **Unit Commands** drop-down list.

- 5 Enter the card number and unit number in the corresponding **Command Parameter** text box.

- 6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Disabling a card

Follow Procedure 88 to disable a Voice Gateway Media Card using Element Manager.

Procedure 88**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 141 on [page 384](#). This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 141.

- 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 142 on [page 385](#).

- 3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 142 on [page 385](#).

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 143 on [page 386](#).

- 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.

End of Procedure

Note: For graceful disabling of the voice gateway channels refer to “Graceful Disable” in *Signaling Server IP Line Application Fundamentals* (NN43001-125).

Disabling a card unit

Follow Procedure 89 to disable a Voice Gateway Media Card unit in Element Manager.

Procedure 89 **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 141 on [page 384](#). This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 141.
- 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 142 on [page 385](#).
- 3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 142 on [page 385](#).

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 143 on [page 386](#).

- 4 Select the **DISU – Disable unit** command from the **Unit Commands** drop-down list.
- 5 Enter the card number and unit number in the corresponding **Command Parameter** text box.
- 6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Enabling a card

Follow Procedure 90 to enable a Voice Gateway Media Card using Element Manager.

Procedure 90

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 141 on [page 384](#). This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 141.

- 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 142 on [page 385](#).

- 3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 142 on [page 385](#).

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 143 on [page 386](#).

- 4 Select the **ENLC – Enable and reset card** command from the **Card Commands** drop-down list.
- 5 Enter the card number in the corresponding **Command Parameter** text box.
- 6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Enabling a card unit

Follow Procedure 91 to enable a Voice Gateway Media Card unit using Element Manager.

Procedure 91 **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 141 on [page 384](#). This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 141.
- 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 142 on [page 385](#).
- 3 Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 142 on [page 385](#).

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 143 on [page 386](#).
- 4 Select the **ENLU – Enable unit** command from the **Unit Commands** drop-down list.
- 5 Enter the card number and unit number in the corresponding **Command Parameter** text box.
- 6 Click **Submit** to the right of the text box.

The output from this command is shown in the text box in the lower half of the web page.

End of Procedure

Verifying functionality

You can now use the Voice Gateway Media Card to transcode voice data between IP and TDM. To test the voice gateway channels (DSPs), perform a variety of analog or digital calls to IP Phones and vice-versa.

Note: You require analog or digital telephones or trunks to perform this test.

Installing the Main Distribution Frame

Contents

This section contains information on the following topics:

Introduction	393
Terminal block requirements	394
Installing a BIX cross-connect terminal	394
Installing a Krone Test Jack Frame for the UK	396
Connecting the cables to the Media Gateways	400

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 92: “Installing a BIX cross-connect terminal” on [page 394](#).
- 2 Procedure 93: “Installing the Krone Test Jack Frame (UK)” on [page 398](#).
- 3 Procedure 94: “Connecting the cables to the Media Gateways” on [page 400](#).

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

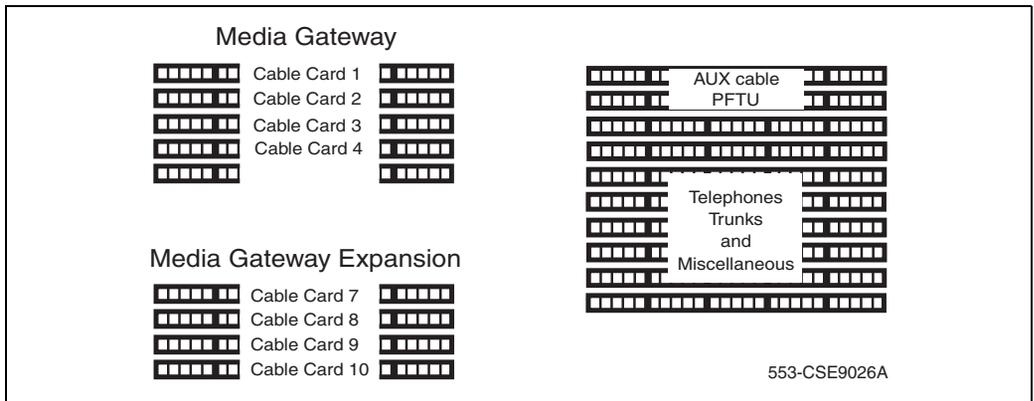
Procedure 92 describes how to install a BIX cross-connect terminal. For detailed information, refer to the Nordex BIX documentation.

Procedure 92 **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 144 on [page 395](#).

- 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 144
Typical BIX cross-connect terminal layout



————— **End of Procedure** —————

Installing a Krone Test Jack Frame for the UK

The Krone Test Jack Frame provides terminating strips that hold ten pairs of cable. Generally, only eight of ten pairs are used. As a result, one 25-pair cable requires three terminating strips (8 pairs/strip x 3 strips = 24 pairs).

Figure 145 on [page 397](#) shows how one 25-pair cable is divided among three terminating strips on the Krone Test Jack Frame.

Figure 145
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	1
3R	3	G-W	
4T	29	W-BR	
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	2
12T	37	BK-O	
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	3
20R	20	S-Y	
21T	46	V-BL	
21R	21	BL-V	
22T	47	V-O	
22R	22	O-V	
23T	48	V-G	
23R	23	G-V	
24T	49	V-BR	
24R	24	BR-V	
25T	50	V-S	
25R	25	S-V	

553-CSE0019

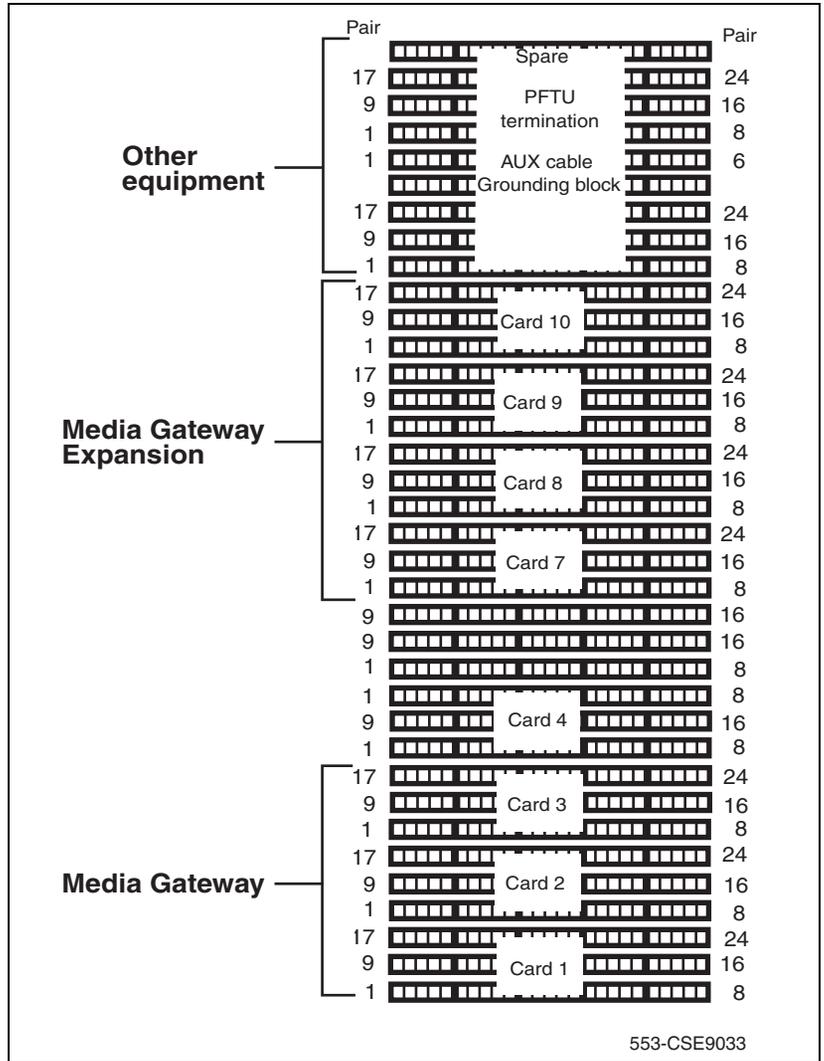
Procedure 93 describes how to install the Krone Test Jack Frame for the UK. For detailed information, refer to the Krone documentation.

Procedure 93

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 146 on [page 399](#).
- 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 146
Typical Krone cross-connect terminal layout (UK)



End of Procedure

Connecting the cables to the Media Gateways



DANGER

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Each Media Gateway and each Media Gateway Expander requires up to four 25-pair cables. The CS 1000E requires an additional terminal block at the cross-connect terminal to terminate the 9-pin conductor auxiliary cable for the QUA6 Power Fail Transfer Unit (PFTU).



WARNING

Do not use the NE-A25B cable with the NTRB21, NTAK10, NTBK50, or NTAK79 circuit cards.

Procedure 94

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 147 on [page 401](#) and Figure 148 on [page 401](#).

Figure 147
Cable connectors at the back of the Media Gateway

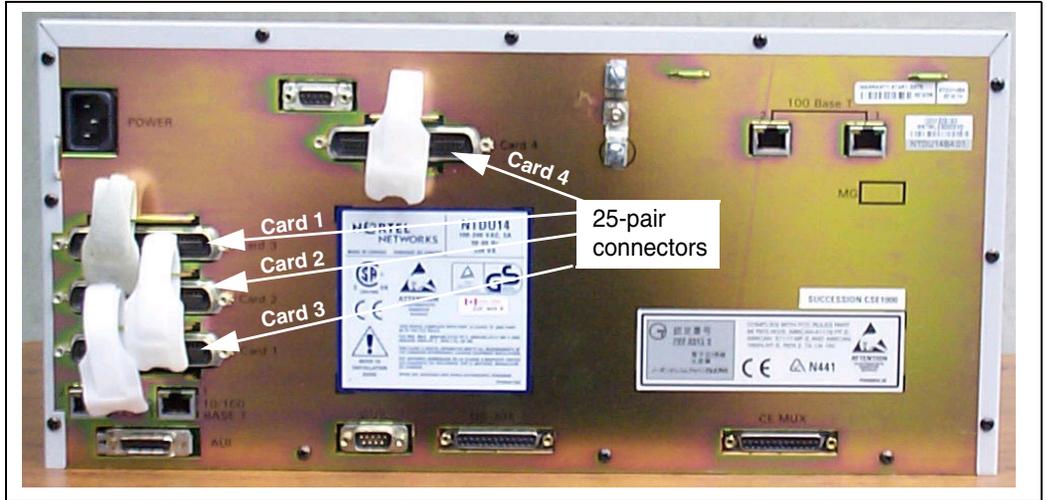
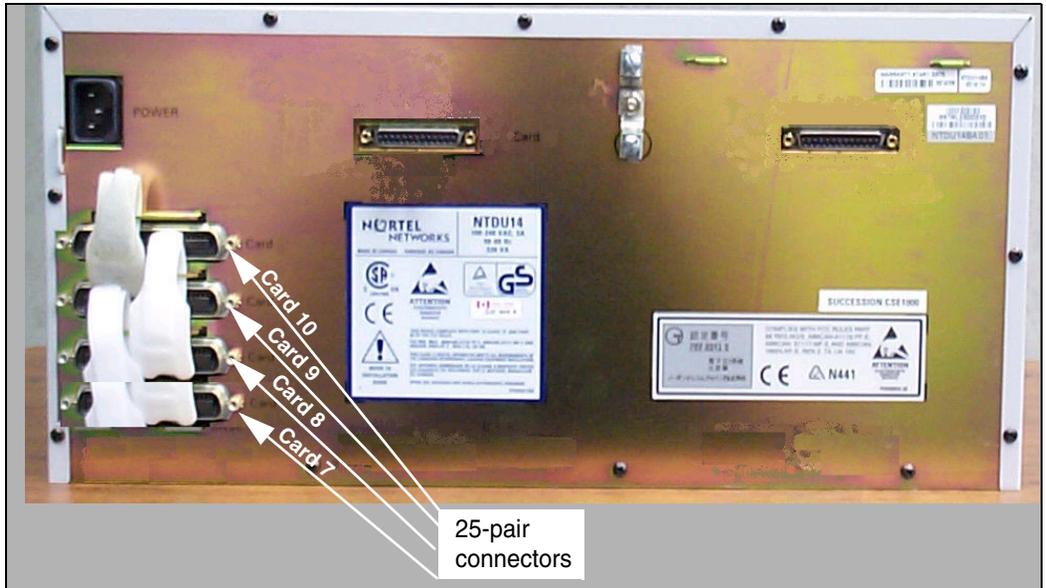
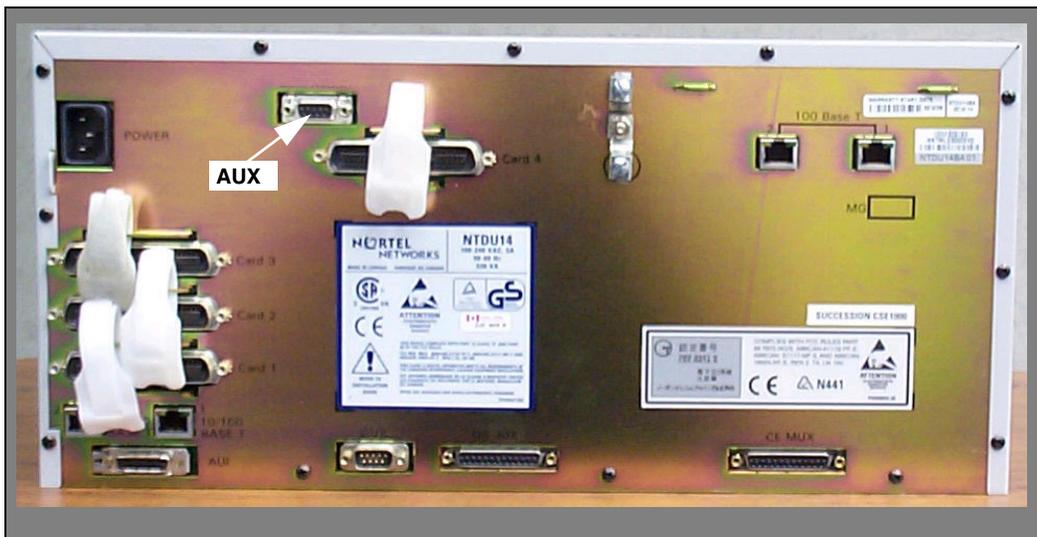


Figure 148
Cable connectors at the back of the Media Gateway Expander



- 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 149 on [page 402](#).

Figure 149
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 64 on [page 464](#).

————— End of Procedure —————

Installing and configuring Nortel IP Phones

Contents

This section contains information on the following topics:

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Setting administrator and temporary IP Telephone Installer passwords	425
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Configuring the Nortel IP Phone boot parameters	432
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Using Set-Based Installation	441
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Introduction

For detailed information on the various telephones supported on the CS 1000E system, refer to *Telephones and Consoles: Description, Installation, and Operation* (NN43001-567) and *IP Phones: Description, Installation, and Operation* (NN43001-368).

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 418](#) or “Using Set-Based Installation” on [page 441](#)).
- 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 239](#)).
- The IP Phones require local boot parameter configuration (see “Configuring the Nortel IP Phone boot parameters” on [page 432](#)).

Package components for the Nortel IP Phones

Table 53 lists the Nortel IP Phone 2001 package components and product codes.

Table 53
Nortel IP Phone 2001 components list (Part 1 of 2)

Nortel IP Phone 2001 package contents include:	
<ul style="list-style-type: none"> • 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 53
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 54 lists the Nortel IP Phone 2002 package components and product codes.

Table 54
Nortel IP Phone 2002 components list (Part 1 of 2)

Nortel IP Phone 2002 package contents include:	
<ul style="list-style-type: none"> • 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 54
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 55 lists the Nortel IP Phone 2004 package components and product codes.

Table 55
IP Phone 2004 component list (Part 1 of 2)

IP Phone 2004 package contents includes	
<ul style="list-style-type: none"> • 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 55
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 56 lists the Nortel IP Phone 2007 package components and product codes.

Table 56
Nortel IP Phone 2007 component list (Part 1 of 2)

Nortel IP Phone 2007 package contents includes <ul style="list-style-type: none"> • 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 56
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 57 lists the Nortel IP Phone ACP 2033 package components and product codes.

Table 57
Nortel IP Audio Conference Phone 2033 components list

IP Audio Conference Phone 2033 package contents include: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 58 lists the Package components for the WLAN Handsets.

Table 58
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 58
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 58
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
<p>The following items must be ordered with the applicable power supply:</p> <p>WLAN Handset 2210 Desktop Charger</p> <p>WLAN Handset 2211 Desktop Charger</p> <p>WLAN Handset 2211 Gang Charger</p> <p>WLAN IP Telephony Manager 2245</p> <p>WLAN Application Gateway 2246 - 64 users</p> <p>WLAN Application Gateway 2246 - 128 users</p> <p>WLAN Application Gateway 2246 - 256 users</p> <p>WLAN Application Gateway 2246 - 512 users</p> <p>WLAN Application Gateway 2246 - 1024 users</p> <p>WLAN Application Gateway 2246 - 10,000 users</p>	

Table 58
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:

- Procedure 95: "Configuring virtual superloops" on [page 418](#)
- Procedure 96: "Configuring the IP Phones" on [page 419](#)
- Procedure 97: "Setting passwords for the administrator and temporary IP Telephone Installer" on [page 425](#)
- Procedure 98: "Installing Nortel IP Phone hardware components" on [page 428](#)
- Procedure 99: "Entering IP Telephone boot parameters using manual configuration" on [page 433](#)
- Procedure 100: "Entering Nortel IP Phone boot parameters using full DHCP parameters" on [page 436](#)
- Procedure 101: "Entering boot parameters using partial DHCP parameters" on [page 438](#)
- Procedure 102: "Using Set-Based Installation" on [page 441](#)
- Procedure 103: "Configuring the IP Softphone 2050" on [page 444](#)
- Procedure 104: "Installing the USB Headset Kit" on [page 445](#)
- Procedure 105: "Installing the IP Softphone 2050 on your PC" on [page 445](#)
- Procedure 106: "Displaying registered IP Phones in Element Manager" on [page 447](#)

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 *Element Manager: System Administration* (NN43001-632).

Configuring virtual superloops

Follow Procedure 95 to configure the virtual superloops. For more details on virtual superloops, see *Signaling Server IP Line Application Fundamentals* (NN43001-125).

Procedure 95 Configuring virtual superloops

- 1 Access LD 97. Enter the command:
LD 97
- 2 Enter responses shown in Table 59.

Table 59
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 Media Gateways

- 3 Exit from LD 97. Enter the command:

End of Procedure

Configuring a Nortel IP Phone using LD 11

Follow Procedure 96 to configure a Nortel IP Phone. The configuration can be completed using either OTM or CLI.

Procedure 96 Configuring the IP Phones

- 1 Access LD 11. Enter the command:

LD 11

- 2 Enter the appropriate responses shown in Table 60.

Table 60
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	l s c u	Terminal Number 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 70 on page 480)

Table 60
LD 11 – Configure a Nortel IP Phone (Part 2 of 5)

Prompt	Response	Description
DES	d...d	Office Data Administration System Station Designator
CUST	xx	Customer number as defined in LD 15
ZONE	0-255	Zone number to which this 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 <i>Software Input/Output: Administration</i> (NN43001-611).
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 60
LD 11 – Configure a Nortel IP Phone (Part 3 of 5)

Prompt	Response	Description
		<p>Note: The position of the (cccc or D) field varies depending on the key name or function.</p> <p>You may enter a CLID table entry if aaa = ACD, HOT d, HOT L, MCN, MCR, PVN, PVR, SCN or SCR.</p> <p>Type xx NUL to remove a key function or feature.</p> <p>Some data ports require specific key assignments. Refer to the <i>Meridian Data Services</i> NTPs for information regarding these requirements.</p> <p>Key number limits that can be assigned are as follows:</p> <ul style="list-style-type: none"> 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 <p>Note: The first Nortel IP Phone KEM is assigned keys 32-55, and the second Nortel IP Phone KEM is assigned keys 56-79.</p> <p>Type xx = NUL to remove a key function or feature for i2002 and i2004.</p> <p>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.</p> <p>Any printout of the TN block will not show key 7 because it is a local function key.</p>

Table 60
LD 11 – Configure a Nortel IP Phone (Part 4 of 5)

Prompt	Response	Description
		<p>On the M2616, if CLS = HFA, key 15 on the voice TN defaults to the Handsfree key. No other feature assignment is accepted.</p> <p>Primary and secondary data DNs must be unique.</p> <p>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.</p>

Table 60
LD 11 – Configure a Nortel IP Phone (Part 5 of 5)

Prompt	Response	Description
		<p>On the M3903, keys 4-15 are blocked. No feature assignment is accepted for keys 2-15.</p> <p>On the M3903, M3904, and M3905, keys 29-31 are reserved. No feature assignment is accepted for keys 29-31 other than NUL.</p> <p>On M3904, no feature assignment is accepted for keys 12-15.</p> <p>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.</p> <p>On M3905, the technician can assign NUL or the program key on key 7.</p> <p>On M3905, the technician can assign AAG, AMG, ASP,DWC, EMR, MSB, or NRD on keys 8-11. Other features are blocked.</p> <p>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.</p> <p>Note 1: The Nortel IP Phone 2002 does not have a Shift key. Only keys 0-3 can be programmed.</p> <p>Note 2: Keys 16-26 are reserved for dedicated Nortel IP Phone soft keys.</p> <p>Table 61 on page 424 lists the dedicated Nortel IP Phone key name values (aaa). Other key name values can be found in <i>Software Input/Output: Administration</i> (NN43001-611).</p>

3 Configure the dedicated soft keys, as shown in Table 61.

Table 61
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 A03 – 3-party conference key A06 – 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 61
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.

End of Procedure

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 *Signaling Server IP Line Application Fundamentals* (NN43001-125).

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 97 **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 2 on [page 383](#).

- 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 150.

Figure 150
General Commands

Managing: [192.167.102.3](#)
System » IP Network » [Node Maintenance and Reports](#) » General Commands

General Commands

Element IP : 192.167.102.18 Element Type : MC32S Card

Group Command

IP address Number of Pings

Click a button to invoke a command.

- 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 151).

Figure 151
Node Password

Group	NodePw	Command	nodeTempPwdSet	Node Password	Uses	1	Timeout	10	RUN
-------	--------	---------	----------------	---------------	------	---	---------	----	-----

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 **NodePw** from the **Group** drop-down list.
- 11 Select **nodePwShow** from the **Command** drop-down list.
- 12 Click **RUN**.

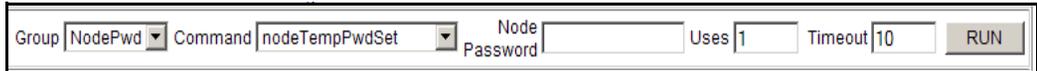
The updated administrator Nortel IP Phone Installer Password is displayed in the text area at the bottom of the web page.

- 13 Enter the temporary Nortel IP Phone Installer Password (see Figure 152):
 - a. Enter the password in the **Node Password** text box.
 - b. Select **NodePw** 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 152
Node Temp Password



Group: NodePwd | Command: nodeTempPwdSet | Node Password: | Uses: 1 | Timeout: 10 | RUN

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.

End of Procedure

Installing Nortel IP Phone hardware components

Follow Procedure 98 to install Nortel IP Phone hardware components.

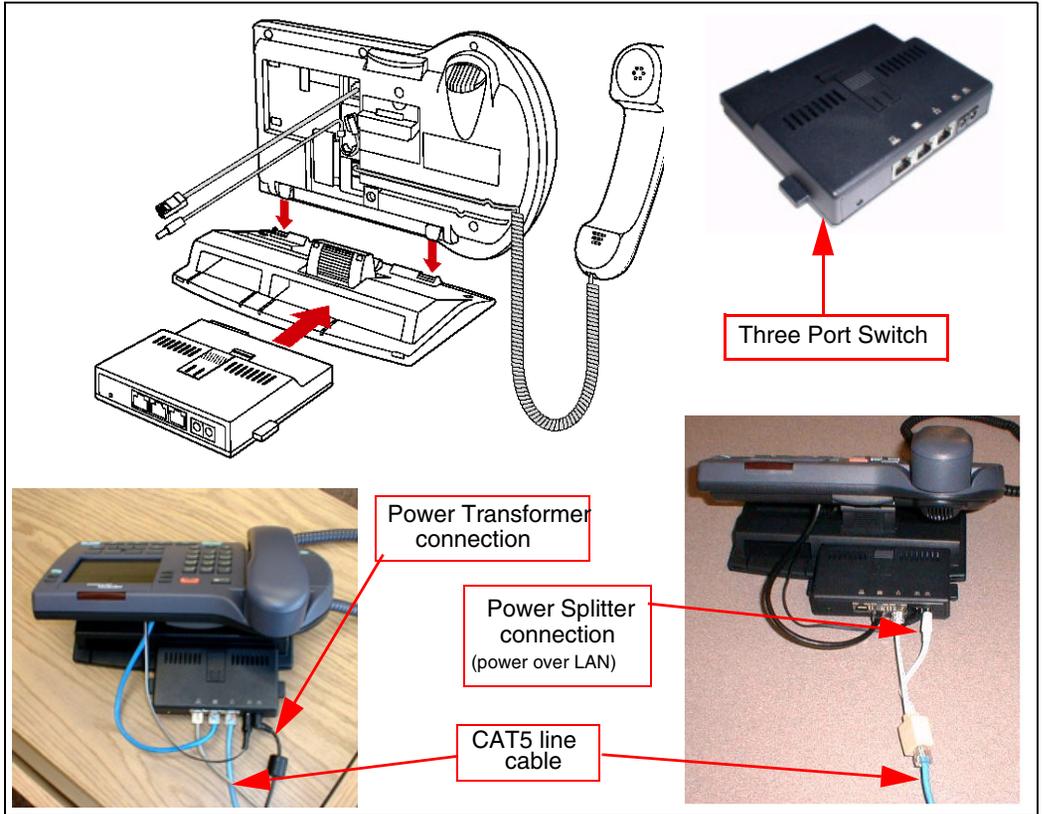
Procedure 98 **Installing Nortel IP Phone hardware components**

For details on installing hardware components, see *IP Phones: Description, Installation, and Operation* (NN43001-368).

- 1 Refer to Figure 153 on [page 429](#), 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 153
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 153 on [page 429](#).
- 3 Connect the other end into the IP voice network (Ethernet), using an RJ-45 connector. See Figure 154 on [page 431](#).

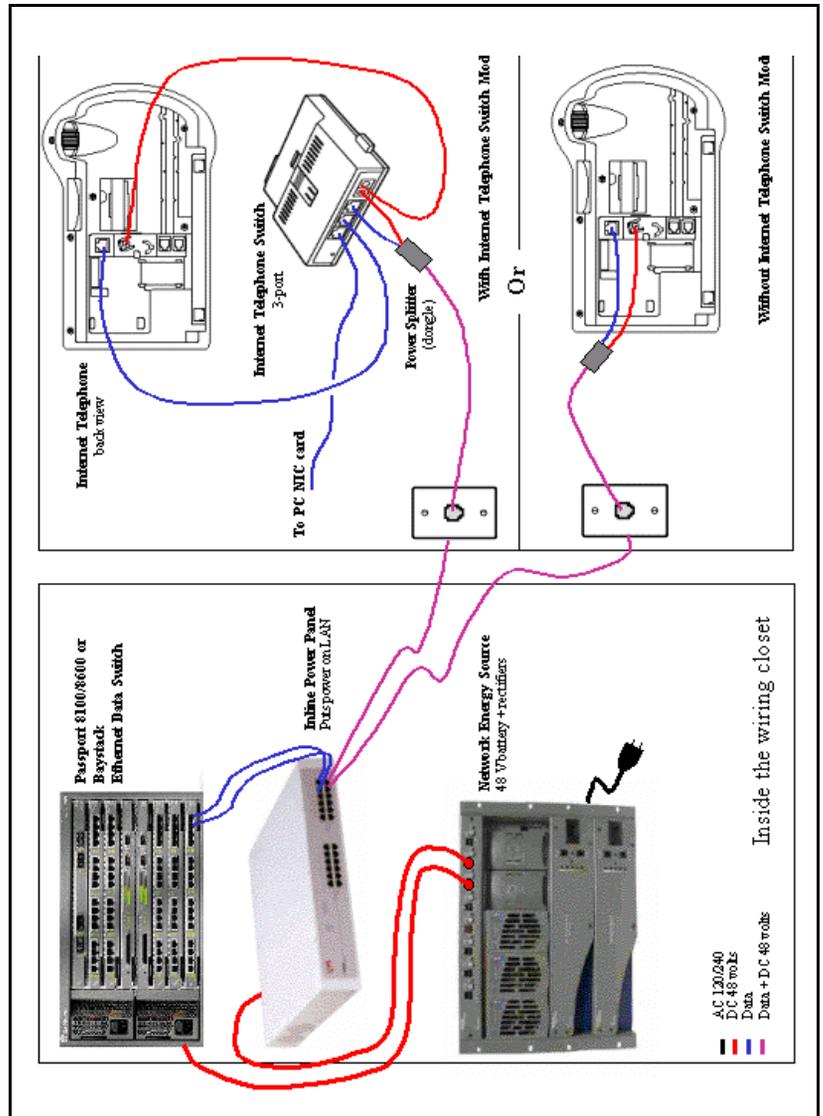


WARNING

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 154 on [page 431](#).
- 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 154
Nortel IP Phone connections



End of Procedure

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 99: "Entering IP Telephone boot parameters using manual configuration" on [page 433](#).
- 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 100: "Entering Nortel IP Phone boot parameters using full DHCP parameters" on [page 436](#).
- 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 101: "Entering boot parameters using partial DHCP parameters" on [page 438](#).

For configuration of the DHCP server, see *Converging the Data Network with VoIP* (NN43001-260).

Entering Nortel IP Phone boot parameters using manual configuration

Follow Procedure 99 to enter IP Telephone boot parameters using manual configuration.

Procedure 99

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 435](#).

- b. Enter **1** to configure manual VLAN.

The Nortel IP Phone prompts:

```
VLAN: x
```

Go to step 14 on [page 435](#).

- 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.

End of Procedure

Entering Nortel IP Phone boot parameters using full DHCP parameters

Follow Procedure 100 to enter IP Phone boot parameters using full DHCP parameters.

Procedure 100

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 437](#).

- 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 438](#).

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.

End of Procedure

Entering boot parameters using partial DHCP parameters

Follow Procedure 101 to enter IP Telephone boot parameters using partial DHCP parameters.

Procedure 101

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 440](#).

- 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.

End of Procedure

Using Set-Based Installation

Set-Based Installation enables the delegation of telephone installation to trusted users. To have a trusted user perform this function, configure a temporary Nortel IP Phone Installer Password for the system. See “Setting administrator and temporary IP Telephone Installer passwords” on [page 425](#).

Note: This feature can be an alternative to LD 11 or TM to configure IP Phones on the Call Server.

Follow Procedure 102 to use Set-Based Installation.

Procedure 102 Using Set-Based Installation

This procedure is the same as Procedure 99 on [page 433](#), Procedure 100 on [page 436](#), and Procedure 101 on [page 438](#), 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:

OK

12 Replace the handset.

The set displays the logo, the date and time, and the DN keys. The set based installation is complete.

End of Procedure

Installing the IP Softphone 2050

This chapter contains the following procedures:

- Procedure 103: "Configuring the IP Softphone 2050" on [page 444](#)
- Procedure 104: "Installing the USB Headset Kit" on [page 445](#)
- Procedure 105: "Installing the IP Softphone 2050 on your PC" on [page 445](#)
- "Running the IP Softphone 2050 for the first time" on [page 446](#)

Procedure 103
Configuring the IP Softphone 2050

- 1 Access LD 11. Enter the command:
 LD 11
- 2 Enter appropriate responses shown in Table 62.

Table 62
LD 11 – Configure the IP Softphone 2050

Prompt	Response	Description
REQ:	NEW CHG	Add new data Change existing data
TYPE:	l2050pc	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

————— End of Procedure —————

Installing and configuring on the PC

Installing the USB Headset Kit

Installing the USB Headset Kit application after the IP Softphone 2050 software application enables the IP Softphone 2050 application to show it as an audio device option during the installation. If the USB Headset Kit is

installed, you can still choose it as the audio device from the Configuration Utility.

Procedure 104
Installing the USB Headset Kit

- 1 Connect the coiled lower cord to the headset cord with the Quick Disconnect connector. Ensure the Quick Disconnect is securely fastened.
- 2 Connect the headset cord to the RJ9 jack on the adaptor.
- 3 Connect the USB cable to the headset adaptor and to one of the USB jacks at the back of your PC or USB hub.

End of Procedure

The first time the headset adapter is plugged in, there is a delay while Windows ® configures the device and locates appropriate driver software. During the installation you can be prompted to supply the original Windows CD-ROM so that Windows can locate the required drivers.

Installing the IP Softphone 2050 application

Procedure 105
Installing the IP Softphone 2050 on your PC

- 1 Insert the CD-ROM disk into the CD-ROM drive of your PC.
Note: Installation should proceed automatically. If it does not, then continue with step 1. Otherwise go directly to step 5.
- 2 On the PC desktop, double-click the **My Computer** icon.
- 3 Double-click the **CD** icon.
- 4 Double-click the **Setup** icon.
- 5 Follow the prompts that appear on the screen.
- 6 Run the IP Softphone 2050 Configuration Utility to assign a server address, select sound devices, and select a server type.

End of Procedure

Running the IP Softphone 2050 for the first time

Installation places the IP Softphone 2050 in the Windows Start menu at **Start > Programs > Nortel > IP Softphone 2050**. The Configuration Utility is placed in the Windows Control Panel.

The IP Softphone 2050 application is started by one of the following:

- Select **Start > Programs > Nortel > IP Softphone 2050**.
- Click the desktop shortcut (if one was created during the installation).
- Automatic start-up sequence.

Note: If you want the IP Softphone 2050 to start automatically when the PC boots, place a shortcut to the application in the Start-up folder.

When an IP Softphone 2050 starts for the first time and connects to the network, it executes a start-up sequence. The elements of the start-up sequence are as follows:

- Get the IP parameters.
- Find a gateway server, and authenticate the user.

As the IP Softphone 2050 registers with the system, the following occurs:

- If a non-null node password is enabled, it prompts for a node number and password. Enter the node number and password using the keyboard or numeric keypad. After the password is verified, enter the TN of the IP Softphone 2050. See *Signaling Server IP Line Application Fundamentals* (NN43001-125) 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 106 to display the IP Phones registered on a Signaling Server or Voice Gateway Media Card.

Procedure 106

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.

End of Procedure

Upgrading firmware

Refer to the *Signaling Server IP Line Application Fundamentals* (NN43001-125), to check for the latest Nortel IP Phone firmware version and how to upgrade to the latest Nortel IP Phone firmware.

Installing Line cards and cross-connecting telephones

Contents

This section contains information on the following topics:

Introduction	449
Card placement in a Media Gateway or a Media Gateway Expansion	452
Cross-connecting telephones	452
Connecting a telephone without a PFTU	454
Connecting an off-premise telephone	455
Connecting an attendant console	457

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 107: "Cross-connecting telephones" on [page 452](#)
- Procedure 108: "Connecting a telephone without a PFTU" on [page 455](#)
- Procedure 109: "Connecting an off-premise telephone" on [page 456](#)
- Procedure 110: "Connecting an attendant console" on [page 457](#)

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 393](#), 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* (NN43001-311) for full descriptions of country-specific IPE cards and their installation procedures

Figure 155 and Figure 156 on [page 451](#) 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 155
Circuit card assignments in a Media Gateway

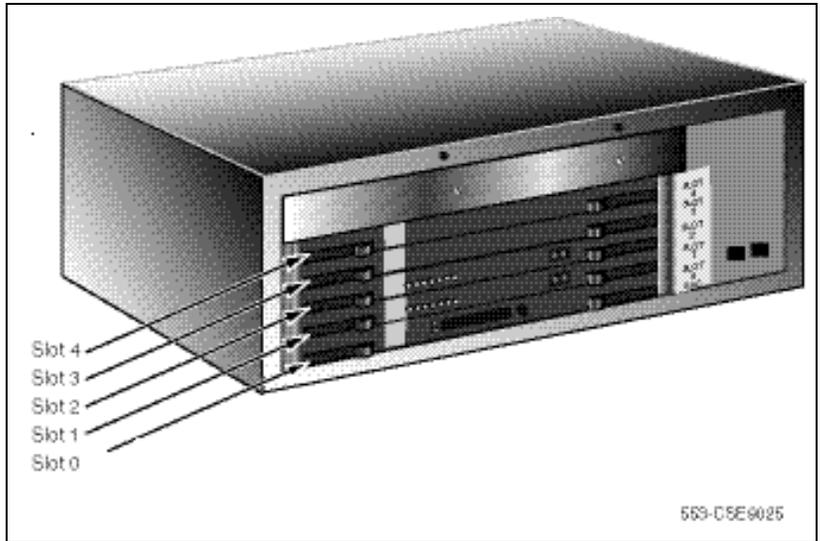
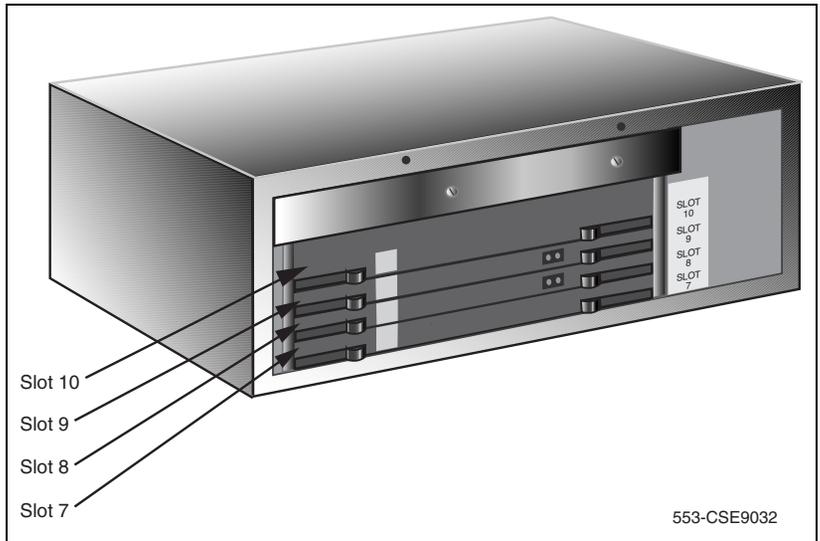


Figure 156
Circuit card assignments in a Media Gateway Expander



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* (NN43001-311) for card placement into card slots. The 48-port Digital Line Card is not supported.

Cross-connecting telephones

Connect the telephones according to Figure 157 on [page 453](#) and Figure 158 on [page 454](#).

Procedure 107 **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 157
NE-500/2500-type telephone cross connections

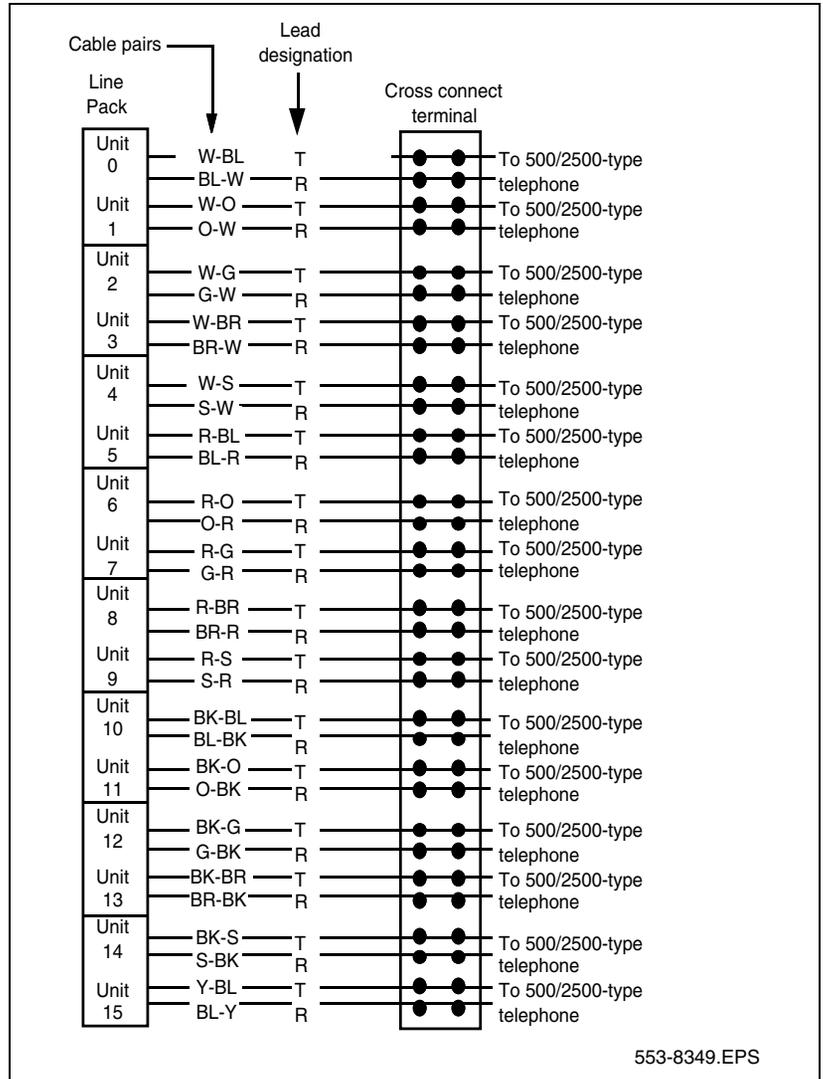
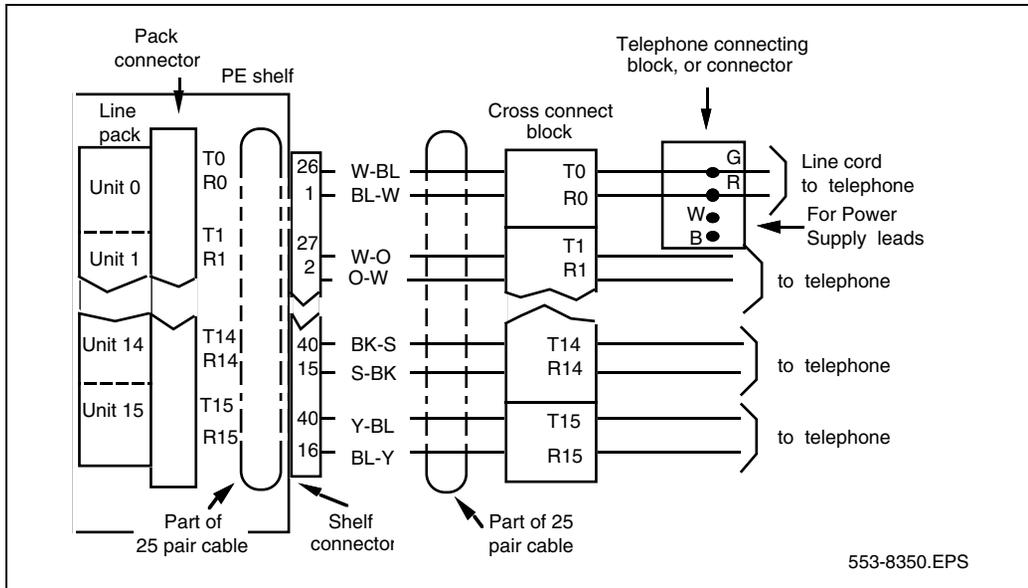


Figure 158
Digital telephone cross connections



End of Procedure

Connecting a telephone without a PFTU

See “Installing and cross-connecting a Power Fail Transfer Unit” on [page 461](#) for connecting telephones with the PFTU.

Procedure 108**Connecting a telephone without a PFTU**

- 1 Locate the telephone terminations on the cross-connect terminal.
- 2 Connect one end of the cross-connect wire to the leads of the telephone.
- 3 Locate the Line card terminations on the cross-connect terminal.
- 4 Connect the other end of the cross-connect wire to the assigned TN terminal block.
- 5 Activate the telephone.

End of Procedure

Connecting an off-premise telephone

Connect off-premise analog (500/2500-type) telephones through an NT1R20 Off-premise Line card or NTAK92AA Off-Premise Protection Module. Each NTAK92AA module can connect up to four analog (500/2500-type) telephones and can interface with the NT8D09 Message Waiting Line card.

**DANGER OF ELECTRIC SHOCK**

The message-waiting Line card produces -150 volts, which is considered hazardous on off-premise telephones. Make sure that the -150 volts are disabled on off-premise telephones.

The voltage is disabled when the telephone's Class of Service (CLS) is Message Waiting Lamp Denied (LPD) and Message Waiting Denied (MWD) in LD 10.

Refer to the *Software Input/Output: Administration* (NN43001-611) for information about LD 10.

Do not assign a Class of Service of LPA or MWA to an off-premise telephone.

Procedure 109

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 159 on [page 457](#).

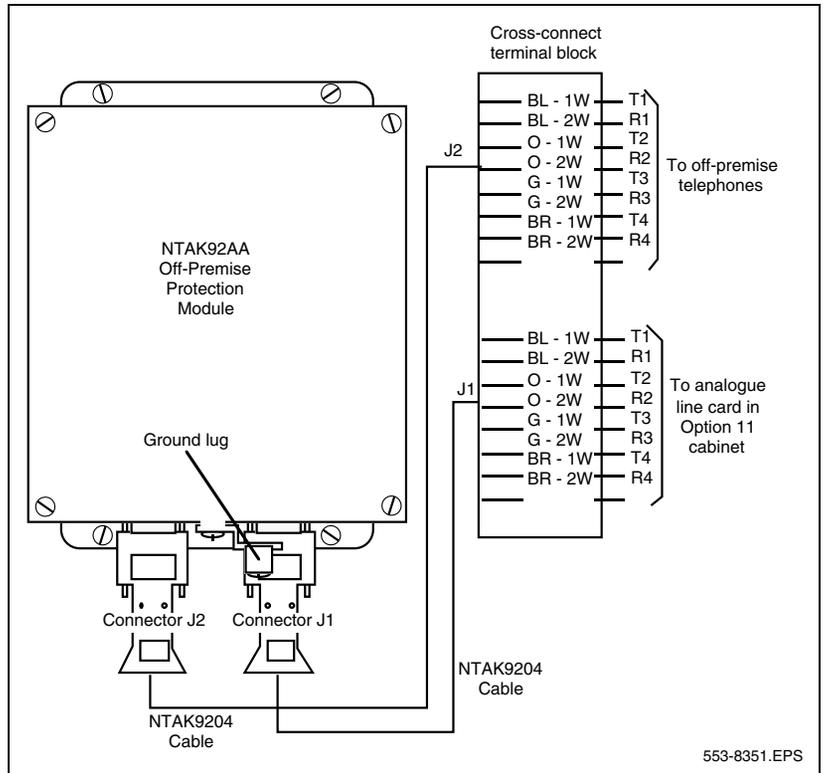


DANGER OF ELECTRIC SHOCK

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 157 on [page 453](#).
- 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 159
NTAK92BA Off-Premise Protection Module connections



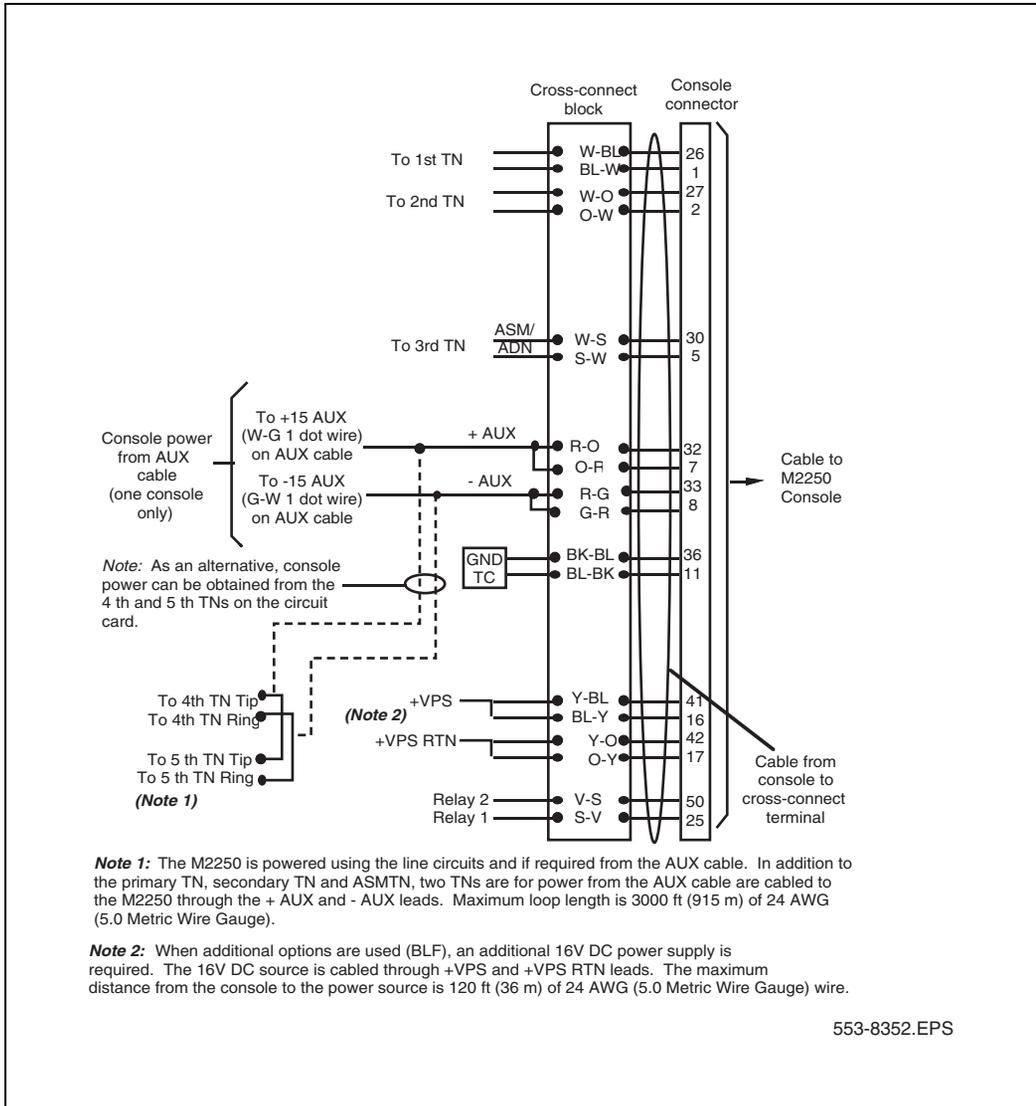
End of Procedure

Connecting an attendant console

Procedure 110 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 160 on [page 458](#).

Figure 160
Attendant console connections



553-8352.EPS

Table 63
Color combinations of cable pairs

Color	W-BI BI-W	W-O O-W	W-G G-W	W-BR BR-W	W-S S-W	R-BL BL-R	R-O O-R	R-G G-R
Unit	0	1	2	3	4	5	6	7
Color	R-BR BR-R	R-S S-R	BK-BL BL-BK	BK-O O-BK	BK-G G-BK	BK-BR BR-BK	BK-S S-BK	Y-B B-Y
Unit	8	9	10	11	12	12	14	15

————— **End of Procedure** —————

Installing and cross-connecting a Power Fail Transfer Unit

Contents

This section contains information on the following topics:

Introduction	461
Installing and connecting a QUA6 PFTU	462
Installing and connecting a third-party PFTU	466
Connecting an analog (500/2500-type) telephone to a PFTU	468
Connecting a trunk to a PFTU	472

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 111: "Installing and connecting a QUA6 PFTU" on [page 462](#)
- 2 Procedure 112: "Connecting an analog (500/2500-type) telephone to a PFTU" on [page 470](#)
- 3 Procedure 113: "Connecting a Trunk to a PFTU" on [page 472](#)

Installing and connecting a QUA6 PFTU

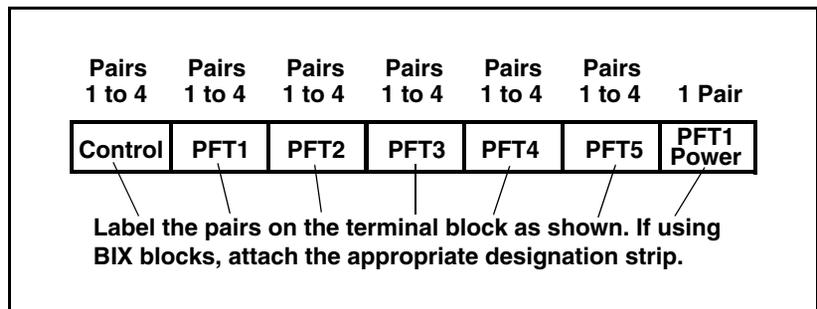
Follow Procedure 111 to install and connect a QUA6 PFTU. Refer to the equipment layout plan for the location of the PFTU.

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 111 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 161 on [page 462](#).

Figure 161
J1 cable labels



- 4 Connect the PFTU power and control connections to the AUX connector on the Media Gateway. See Figure 162 on [page 463](#), Table 65 on [page 465](#), Table 64 on [page 464](#) and Figure 164 on [page 466](#). The Option 11C AUX connector is shown in Figure 163 on [page 464](#).

Figure 162
AUX cable connector on Media Gateway

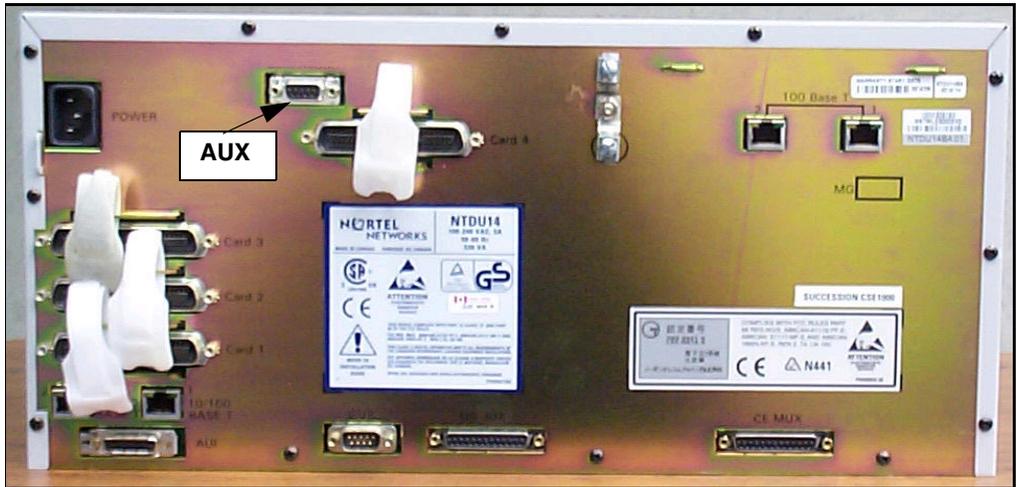


Figure 163
AUX cable connector on Option 11C

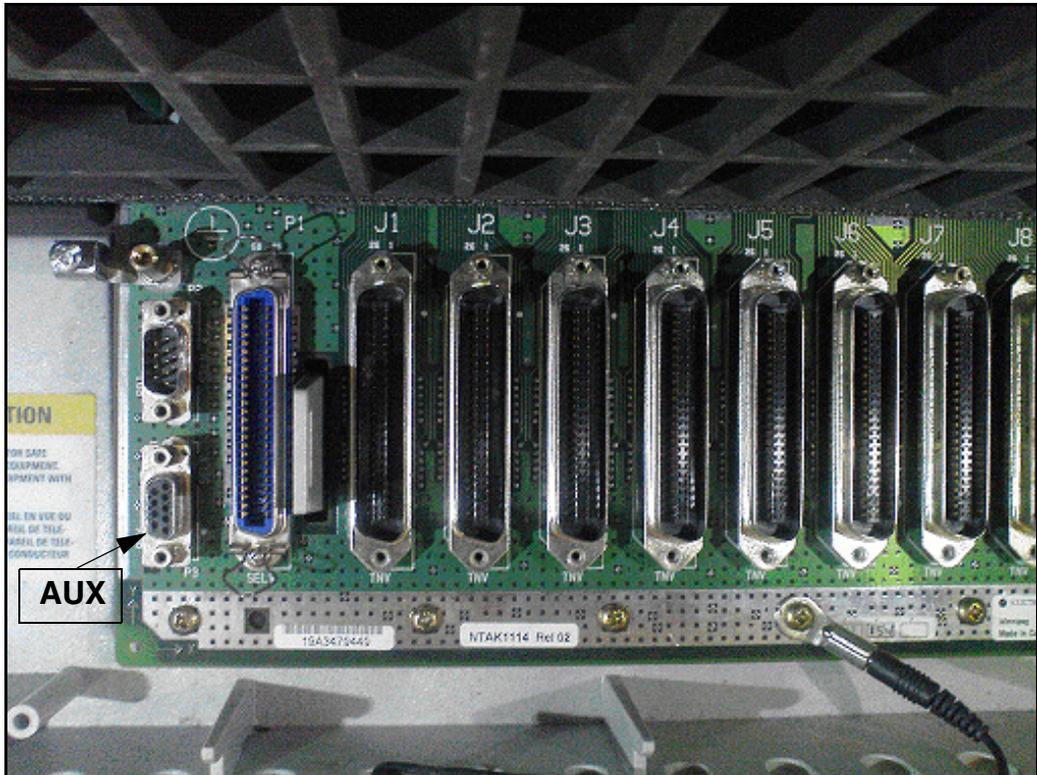


Table 64 (Part 1 of 2)
NTAK1104E6 AUX cable termination information

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

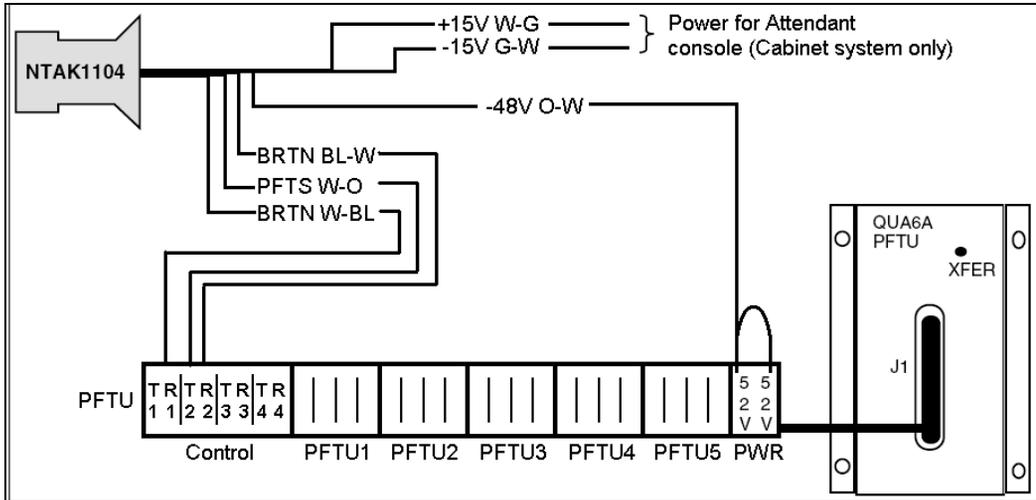
Table 64 (Part 2 of 2)
NTAK1104E6 AUX cable termination information

W-O	4	PFTS	to QUA6-J1 2T
G-W	5	Not used	Not used
W-G	6	Not used	Not used

Table 65
Control and power connections on cable J1

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 connection on AUX cable
	2T	W-O	PFTS	W-O connection on AUX cable. Transfer begins by applying ground to this lead.
	2R	O-W	BRTN	BL-W connection on AUX cable.
	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 connection on AUX cable. Maximum 250 mA draw on O-W lead.

Figure 164
Power fail transfer



End of Procedure

Installing and connecting a third-party PFTU

Follow the equipment manufacturer’s instructions for installing the PFTU. Use the information in Table 66 to connect a third-party PFTU.

Table 66
PFTU control lead signals

NTAK1104 AUX cable lead	Lead State	
	When PFTU is in non-transferred state	When PFTU is in transferred state
BRTN	GROUND	GROUND
BRTN	GROUND	GROUND

Table 66
PFTU control lead signals

NTAK1104 AUX cable lead	Lead State	
	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 162 on [page 463](#) and Table 67 on [page 467](#) for Auxiliary cable connections to the CS 1000E system.

Note 2: If power is removed from the QUA6, a transfer of the PFTU can occur.

Table 67
NTAK1104E6 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

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 393](#).

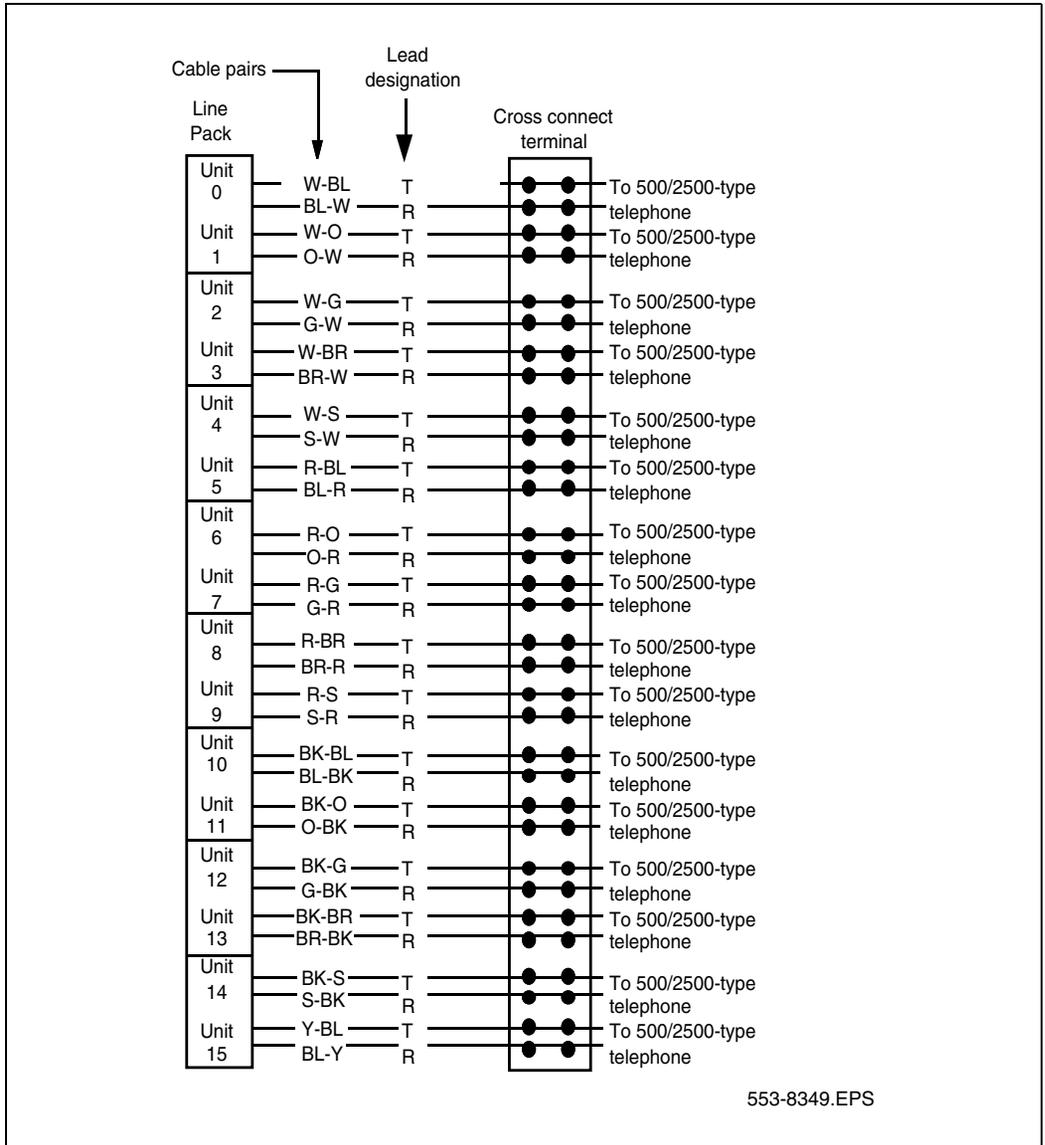
Follow Procedure 112 to connect an analog telephone to a PFTU. Refer to the equipment layout plan to determine where to locate the PFTU.



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 165
Analog Line card cable distribution



Procedure 112**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 68 on [page 470](#).
- 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 68**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 68
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 68
Power Fail Transfer Unit connections (Part 3 of 3)

QUA6 J1 Cable			
Function	Pair	Color	Connects to:
PFT 5	21T 21R	V-BL BL-V	Telephone
	22T 22R	V-O O-V	Telephone Line card
	23T 23R	V-G G-V	Central Office Trunk
	24T 24R	V-BR BR-V	Trunk Line card

————— End of Procedure —————

Connecting a trunk to a PFTU

Follow Procedure 113 to connect a Trunk to a PFTU.

Procedure 113 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 69 on [page 473](#) 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 69
Power Fail Transfer Unit connections (Part 1 of 2)

QUA6 J1 cable				
Function	Pair	Color	Connects to:	Connects to:
P F T 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
P F T 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
P F T 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 69
Power Fail Transfer Unit connections (Part 2 of 2)

QUA6 J1 cable				
Function	Pair	Color	Connects to:	Connects to:
P F T 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
P F T 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

————— **End of Procedure** —————

Basic system telephony configuration

Contents

This section contains information on the following topics:

Introduction	475
Basic system configuration	475
TN assignment	480
TN assignment	480

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 114: "Configuring the basic system" on [page 476](#).

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* (NN43001-611) for information about overlays.

Flow charts

Figure 166 on [page 477](#) 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.

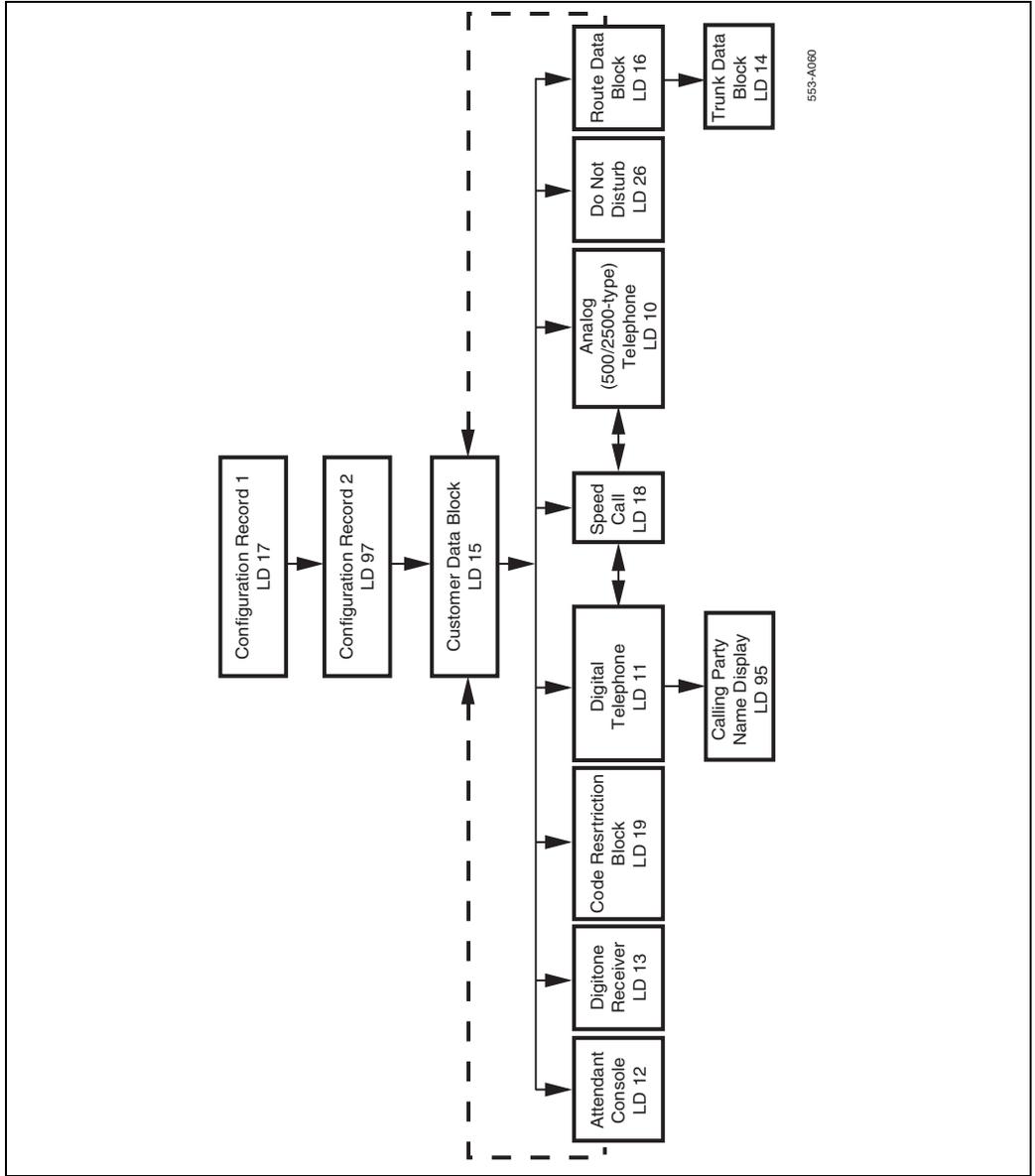
Figure 167 on [page 478](#), and Figure 168 on [page 479](#) show overlay titles and gate openers for each feature group. A gate opener enables users to program a related group of features without stepping through all prompts of an overlay. NTP references are shown in the flowchart shaded boxes for those features and options beyond the scope of this guide.

Procedure 114 **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 166 on [page 477](#), Figure 167 on [page 478](#), and Figure 168 on [page 479](#).

Figure 166
Data-entry-sequence for new systems



553-A090

Figure 167
Configuration Record

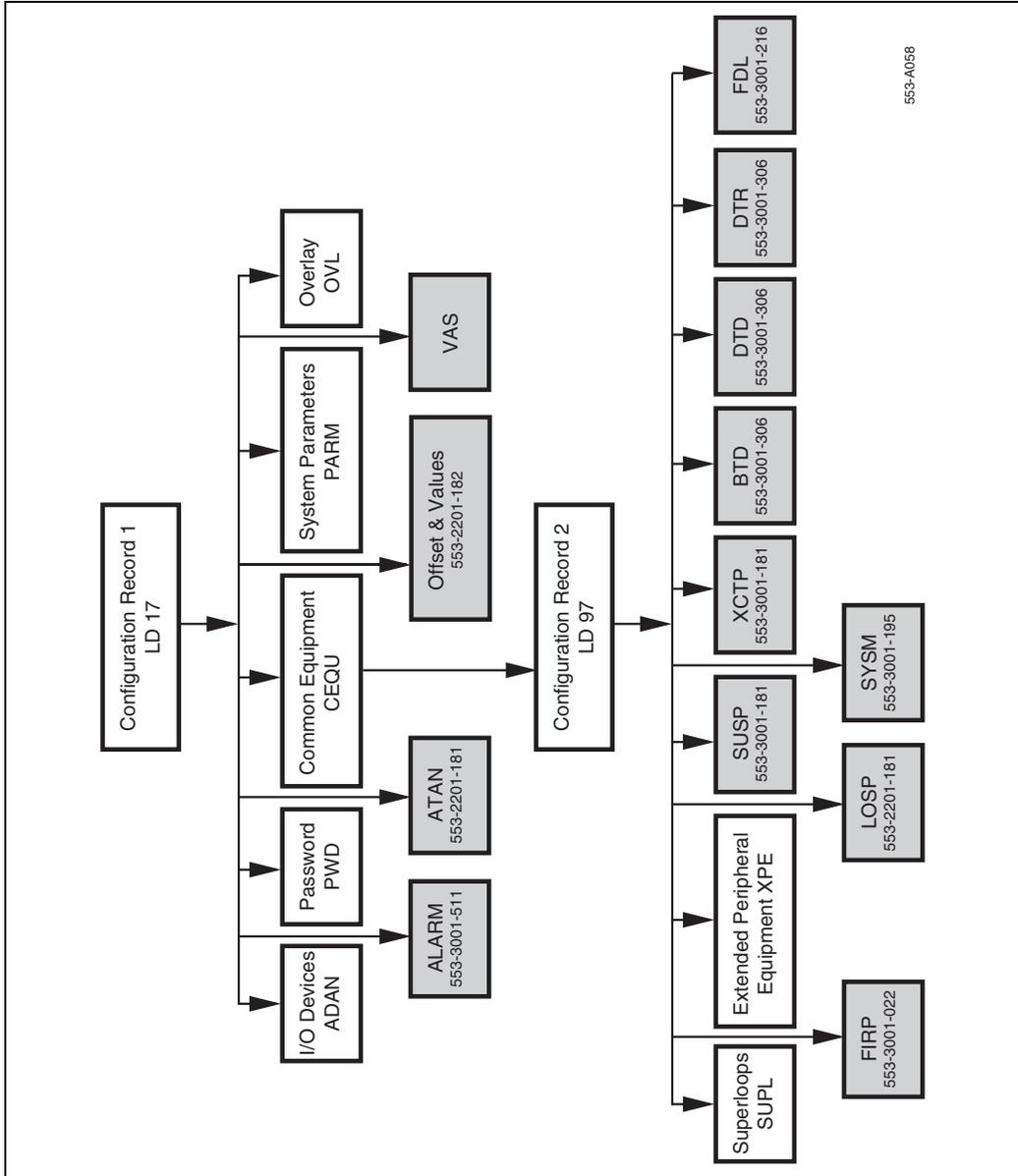
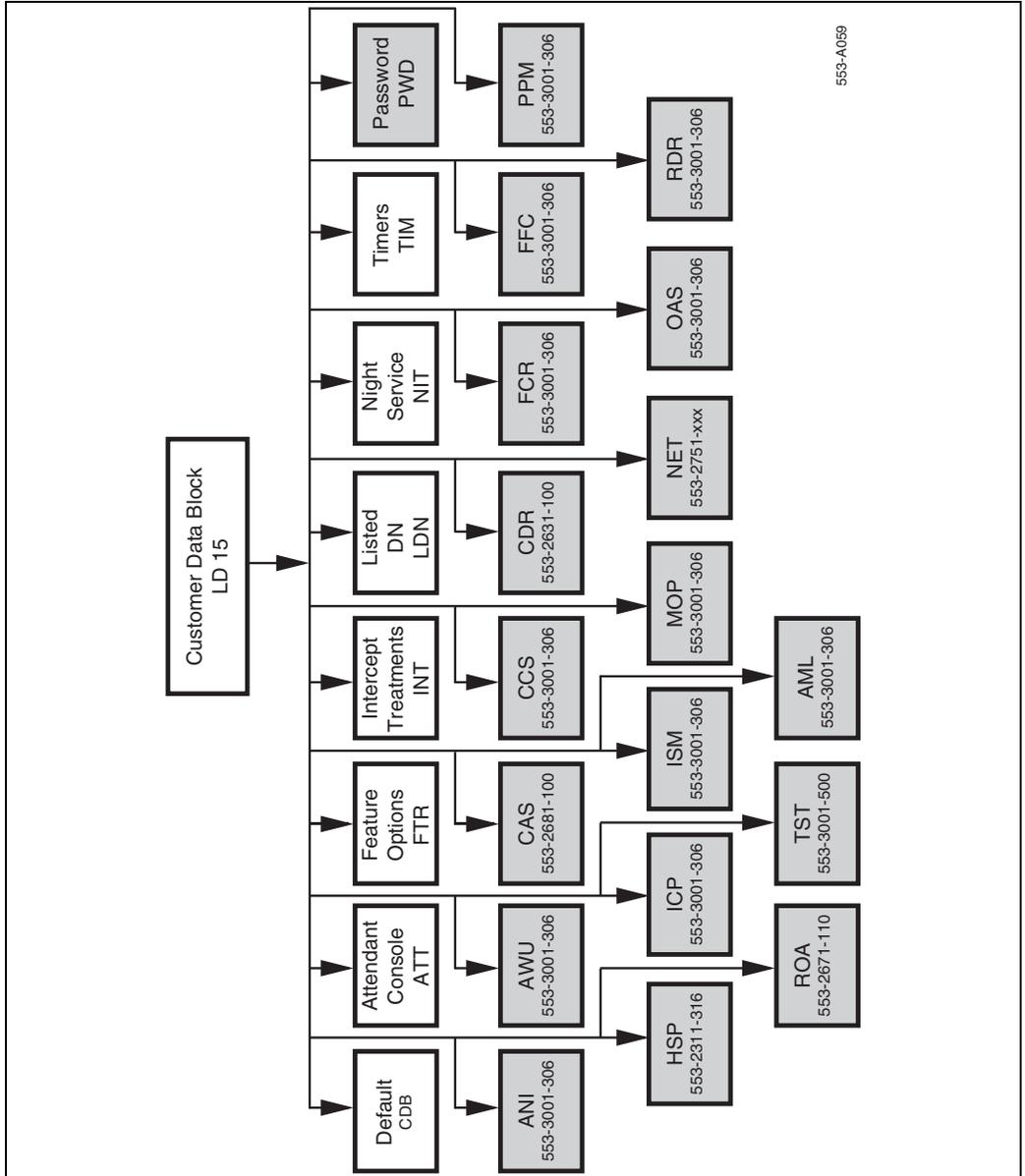


Figure 168
Customer Data Block



TN assignment

Table 70 shows the TN assignments for the MG 1000E.

Table 70
TN assignments for MG 1000E

Slots TN	MG 1000E				MG 1000E Expander			
	1 I s c	2 I s c	3 I s c	4 I s c	7 I s c	8 I s c	9 I s c	10 I 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

Installing and cross-connecting an external alarm from a PFTU

Contents

This section contains information on the following topics:

Introduction	481
Installing an alarm using an alarm port assigned in LD 15	482
Installing an alarm through QUA6 PFTU connections	483

Introduction

This chapter describes the procedures for connecting an external alarm to the CS 1000E system.

This chapter contains the following procedure: Procedure 115: "Installing an alarm using an alarm port assigned in LD 15" on [page 482](#)

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 115 to install an alarm using an alarm port assigned in LD 15.

Procedure 115

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 403](#).
- 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 71).

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 71
LD 15 – Assign an alarm port.

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	CDB	Customer Data Block
CUST	xx	Customer Number as defined in LD 15
...		
ALDN	x...x	Alarm Directory Number

End of Procedure

Installing an alarm through QUA6 PFTU connections

A QUA6 PFTU can be used to connect an external alarm through normally open or normally closed contacts of one of its units. The contacts operate under the same conditions as the PFTU and can support the capacities listed in Table 72.

Table 72
The AC capacities

Maximum	AC capacities
Switching power	50.0 V A
Switching voltage	125.0 V rms
Switching current	0.5 A

Figure 169 on [page 484](#) 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 73 on [page 484](#) provides the connections for all units on the PFTU.

Figure 169
Contacts in PFTU

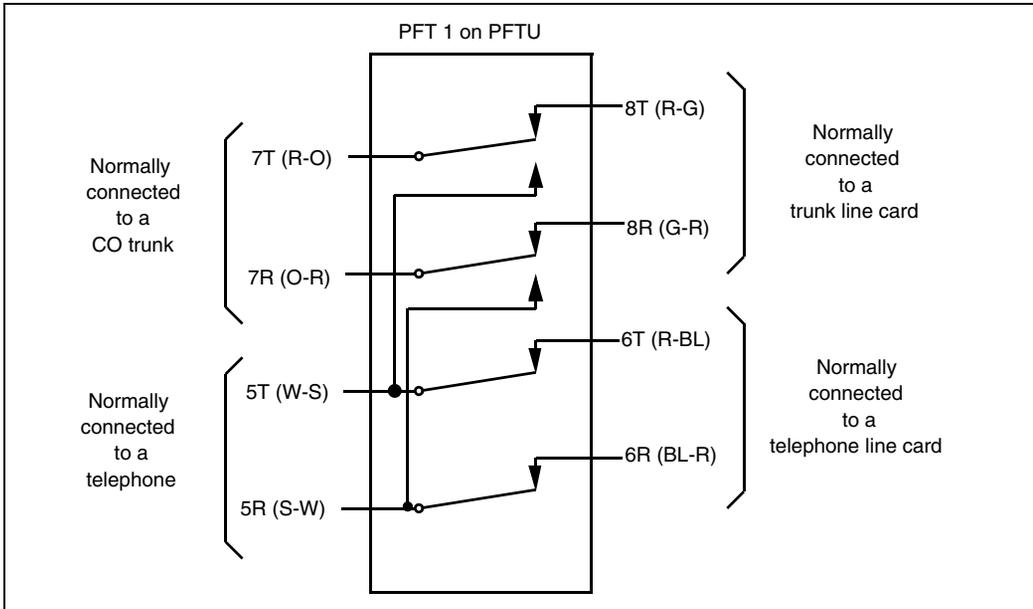


Table 73
PFTU connections (Part 1 of 3)

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 73
PFTU connections (Part 2 of 3)

Unit	Pair	Color	Normal mode	Failure mode
P F T 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
P F T 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
P F T 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 73
PFTU connections (Part 3 of 3)

Unit	Pair	Color	Normal mode	Failure mode
P F T 5	21T 21R	V-BL BL-V	Makes with 22T and 22R	Opens 22T and 22R Makes with 23T and 23R
	22T 22R	V-O O-V	Makes with 21T and 21R	Open
	23T 23R	V-G G-V	Makes with 24T and 24R	Opens 24T and 24R Makes with 21T and 21R
	24T 24R	V-BR BR-V	Makes with 23T and 23R	Open

Configuring IP Peer Networking and managing the Gatekeeper database

Contents

This section contains information on the following topics:

Introduction	487
Implementation summary	487

Introduction

This chapter provides an outline for configuring IP Peer Networking and managing the Gatekeeper database.

Use the *IP Peer Networking: Installation and Commissioning* (NN43001-313) 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



IMPORTANT!

If your cabinet or chassis does not require specific Nortel supplied cables for CP PM cards, you must use shielded twisted pair Ethernet cables for the CP PM faceplate ELAN and TLAN connections.

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 the 10/100BaseT ethernet connectors on the rear of the MG. Figure 170 on [page 493](#) 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 74
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 170
MGC cabling in a MG

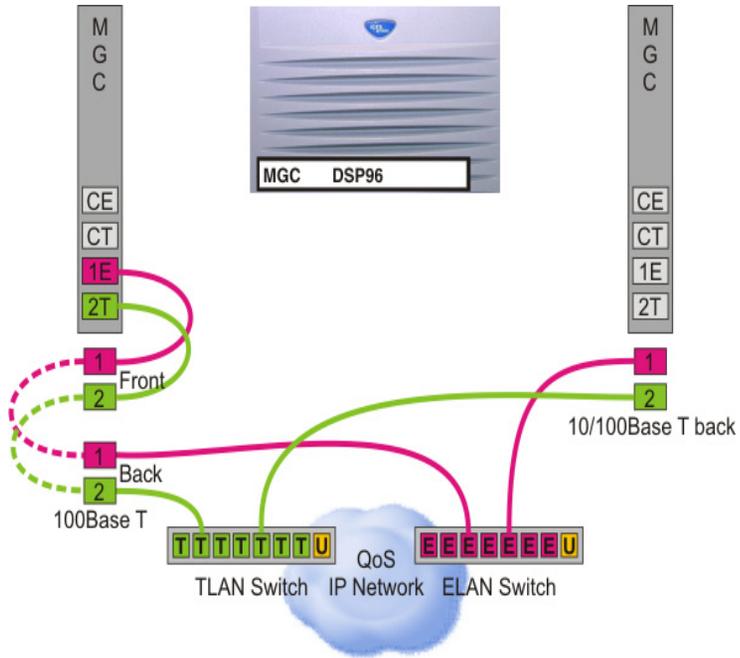


Figure 171 on page 494 demonstrates the MGC cabling in a dual-homed configuration.

Figure 171
MGC Dual-homed in a MG

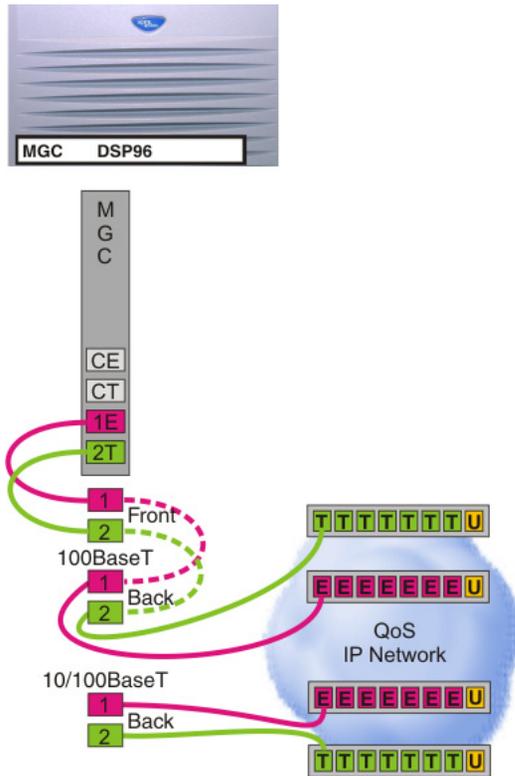
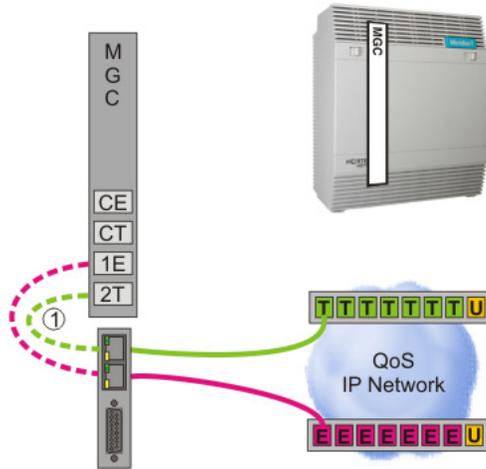


Figure 172 on [page 495](#) shows the MGC cabling from the backplane connector to the MGC 100BT connector Cabinet.

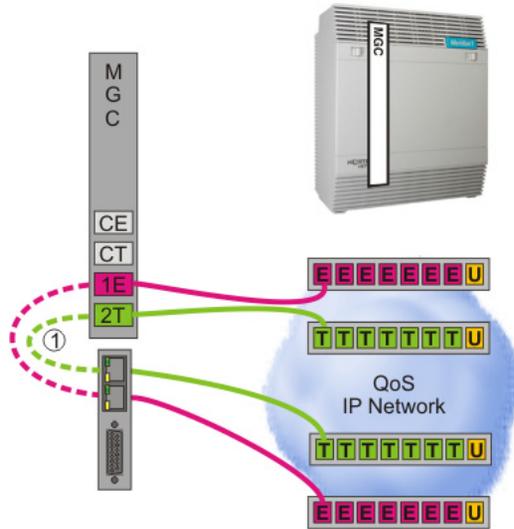
Figure 172
MGC using MGC 100BT in a Cabinet



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 173 on [page 496](#) shows the MGC in a dual-homed configuration in a Cabinet.

Figure 173
MGC Dual-homed in a Cabinet



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 174 on [page 497](#) shows the MGC and CP as a SA Call Server in a MG.

Figure 174
SA Call Server in a MG

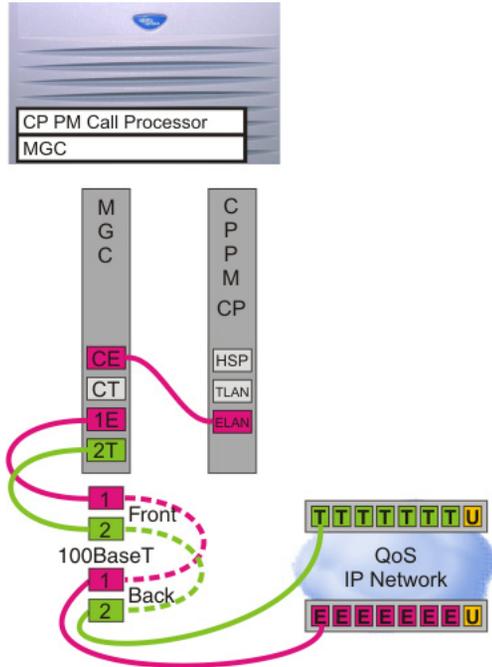
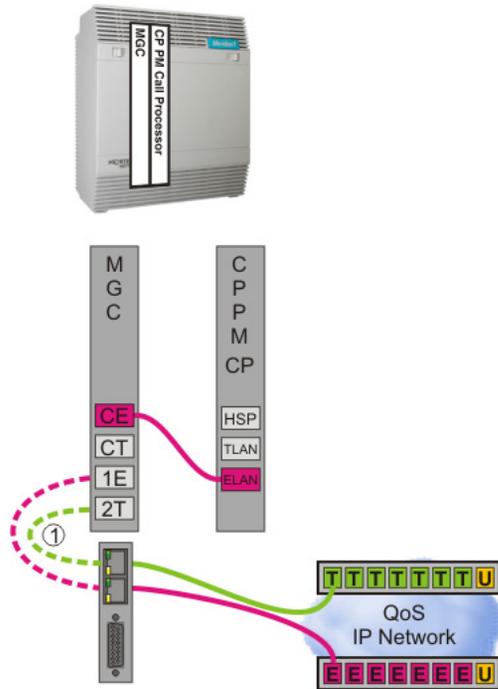


Figure 175 on [page 498](#) shows the MGC and CP as a SA Call Server in a Cabinet.

Figure 175
SA Call Server in a Cabinet



Note 1: Internal from backplane to MGC 100BT

Figure 176 on [page 499](#) shows a SA Call Server with a Signaling Server in a MG.

Figure 176
SA Call Server with SS in a MG

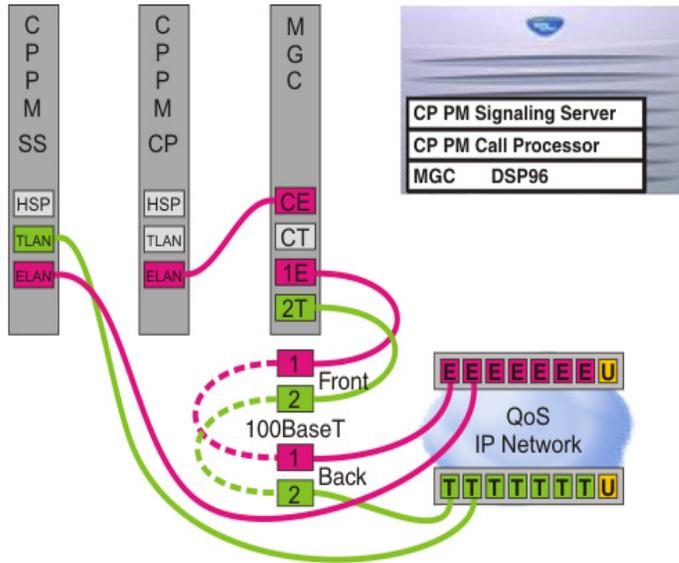
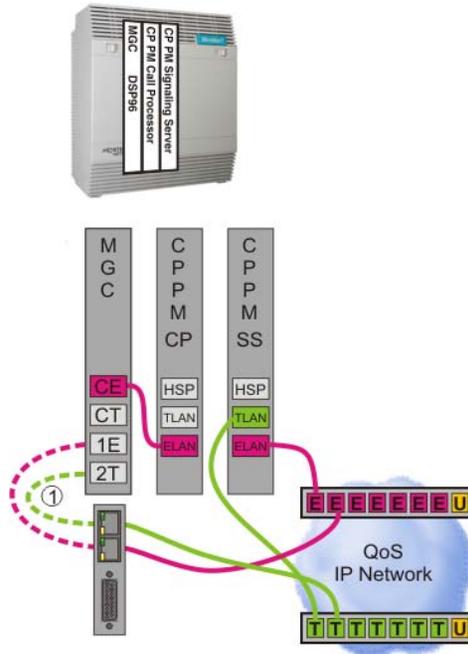


Figure 177 on page 500 shows a SA Call server with a Signaling Server in a Cabinet.

Figure 177
SA Call Server with SS in a Cabinet



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 178 on [page 501](#) shows a Dual-homed HA Call Server with the HSP in Media Gateways.

Figure 178
Dual-homed HA Call Server with HSP in MG

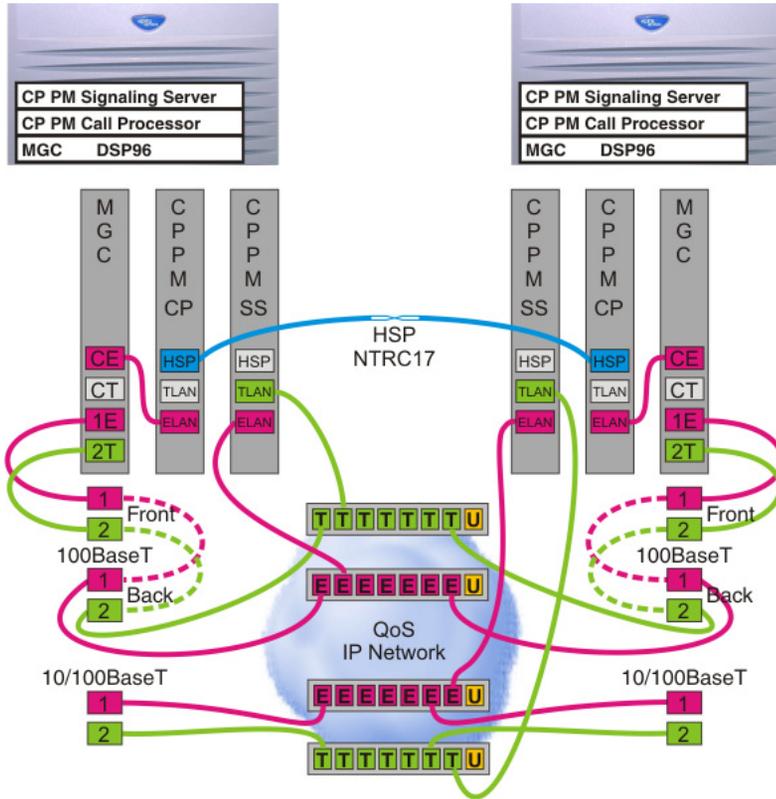
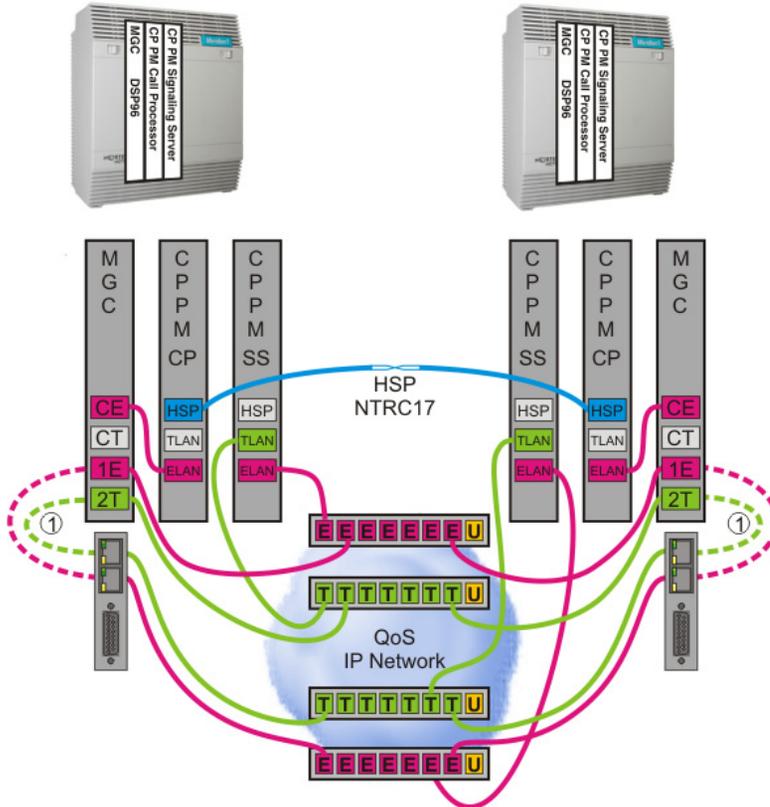


Figure 179 on page 502 shows a Dual-homed HA Call Server with the HSP in Cabinets.

Figure 179
Dual-homed HA Call Server with HSP in Cabinets



Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 180 on [page 503](#) 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 180
Dual-homed HA Call Server with a dual-homed HSP

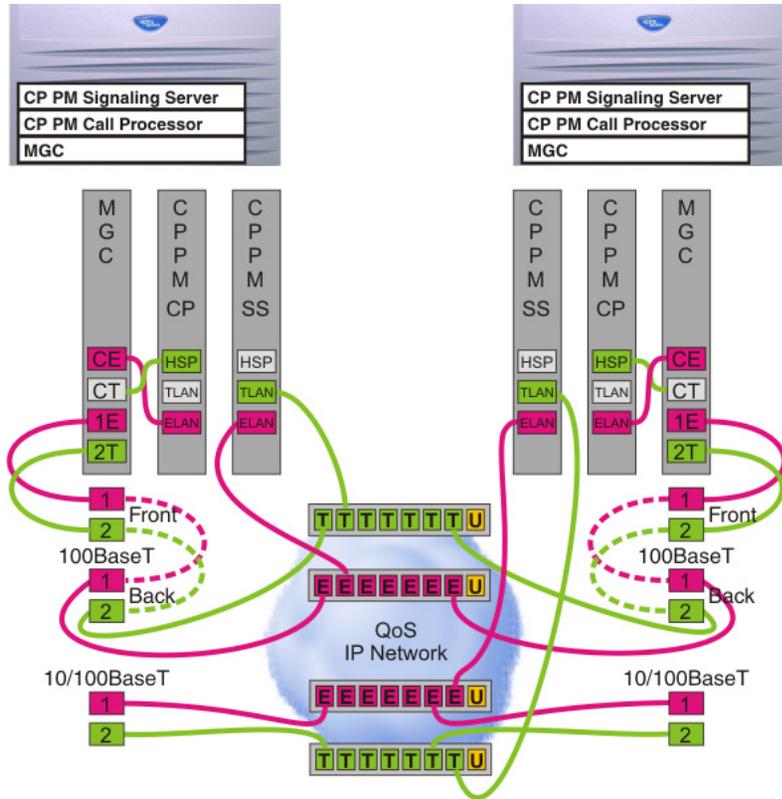
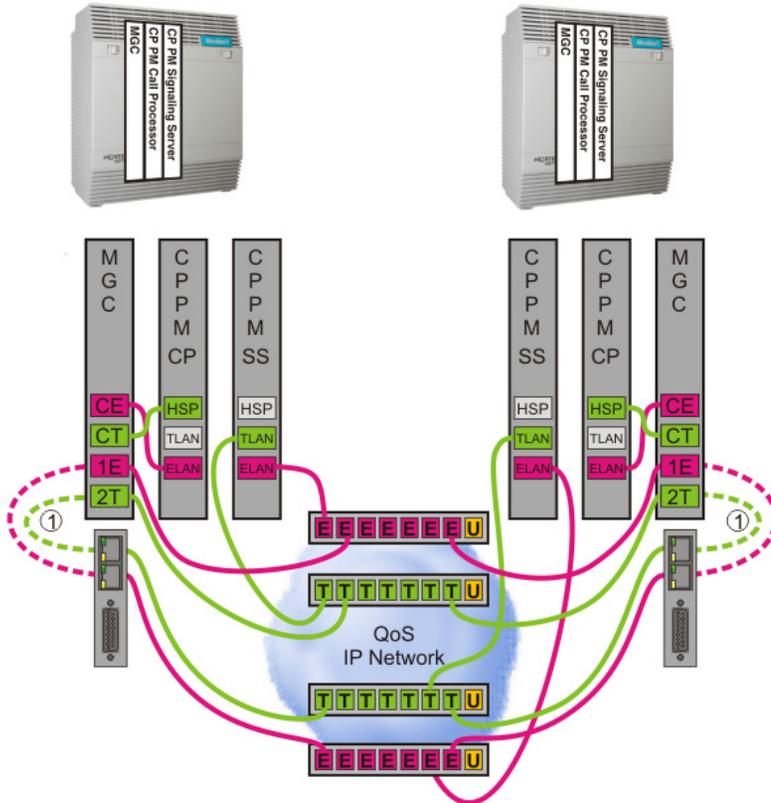


Figure 181 on page 504 shows a Dual-homed HA Call Server with a dual-homed HSP in Cabinets.

Note: This configuration does not support DSP daughterboards on the MGC.

Figure 181
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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