Communication Server 1000E

Installation and Commissioning

Avaya Communication Server 1000
Release 7.6

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List of Procedures

New in this release

Features

The following sections describe new features or hardware for Avaya CS 1000 Release 7.6.

Revision History

March 2013

Standard 06.01. This document is up-issued to support Communication Server 1000 Release 7.6.

April 2012

Standard 05.08. This document is up-issued to include information about the surge-suppression cable for certain trunk cards.

March 2012

Standard 05.07. This document is up-issued to include cabling diagrams for Gateway Controller cards, MGC cards and CP MG cards.

November 2011

Standard 05.06. This document is up-issued to include updates to Compact Flash supported media sizes and to remove legacy content that is no longer applicable to or supported by Communication Server 1000 systems.

August 2011

Standard 05.05. This document is up-issued to support Communication Server 1000 Release 7.5. Some of the procedures in the Configuring the Avaya Communication Server 1000E Call Server section were converted to tables.

May 2011

Standard 05.04. This document is up-issued to include an update to the readiness checklist.

May 2011

Standard 05.03. This document is up-issued to include an update to the Configuring the Gateway Controller procedure.

March 2011

Standard 05.02. This document is published to support Communication Server 1000 Release 7.5.

November 2010

Standard 05.01. This document is published to support Communication Server 1000 Release 7.5.

June 2010

Standard 04.02. This document is up-issued to update the CS 1000E task flow graphic and to include CP PM version 2 content.

June 2010

Standard 04.01. This document is issued to support Communication Server 1000 Release 7.0.

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.

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Navigation

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The easiest and most effective way to get technical support for Avaya products is from the Avaya Technical Support Web site at www.avaya.com/support.

System information

This document is a global document. Contact your system supplier or your Avaya 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 an Avaya Communication Server 1000E system.

<table>
<tr><td>⚠️</td><td>

WARNING

Before an Avaya 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 *Avaya Converging the Data Network with VoIP* (NN43001-260).

</td></tr>
</table>

Note on legacy products and releases

This publication contains information about systems, components, and features that are compatible with Communication Server 1000 Release 7.6 software. For more information on legacy products and releases, click the **Documentation** link under **Support** on the Avaya home page:

www.avaya.com

Applicable systems

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

Intended audience

This document is intended for individuals who install and configure new Communication Server 1000E systems.

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 hardware is referred to generically as Media Gateway:

- Media Gateway Chassis (NTDK91) and Expander chassis (NTDK92)

- Media Gateway Cabinet (NTAK11)

- MG 1000E Chassis (NTDU14) and Expander chassis (NTDU15)

- MG 1010 Chassis (NTC310)

- IPE module (NT8D37) with MG XPEC card (NTDW20)

The following cards are referred to generically as Gateway Controller:

- Media Gateway Controller (MGC) card (NTDW60 or NTDW98)

- Common Processor Media Gateway (CP MG) card (NTDW56 or NTDW59)

- Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card (NTDW20)

In this document the following hardware platforms are referred to generically as Server.

- Call Processor Pentium IV (CP PIV)

- Common Processor Pentium Mobile (CP PM)

- Common Processor Media Gateway (CP MG)

- Common Processor Dual Core (CP DC)

- Commercial off-the-shelf (COTS) servers

  — IBM x306m server (COTS1)

  — HP DL320 G4 server (COTS1)

  — IBM x3350 server (COTS2)

  — Dell R300 server (COTS2)

In this document, the generic term COTS refers to all COTS servers. The term COTS1 or COTS2 refers to the specific servers in the preceding list.

The following table shows CS 1000 supported roles for common hardware platforms.

Table 1
Hardware platform supported roles

Hardware platforms	VxWorks Server	Linux Server	Co-res CS and SS	Gateway Controller
CP PIV	yes	no	no	no
CP PM	yes	no	yes	no
CP DC	no	yes	yes	no
CP MG	no	yes (see note)	yes (see note)	yes (see note)
MGC	no	no	no	yes
MG XPEC	no	no	no	yes
COTS1	no	yes	no	no
COTS2	no	yes	yes	no

> *Note:* The CP MG card functions as the Co-resident Call Server and Signaling Server, and the Gateway Controller while occupying Slot 0 in a Media Gateway.

Related information

This section lists information sources that relate to this document.

Publications

The following publications are referenced in this document:

- *Avaya Converging the Data Network with VoIP* (NN43001-260)

- *Avaya ISDN Primary Rate Interface: Installation and Configuration* (NN43001-301)

- *Avaya Circuit Card: Description and Installation* (NN43001-311)

- *Avaya Communication Server 1000E: Planning and Engineering* (NN43041-220)

- *Avaya IP Peer Networking Installation and Commissioning* (NN43001-313)

- *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125)

- *Avaya ISDN Basic Rate Interface: Installation and Configuration* (NN43001-318)

- *Avaya Features and Services* (NN43001-106)

- *Avaya Software Input/Output: Administration* (NN43001-611)

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

- *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125)

- *Avaya Telephones and Consoles: Description, Installation, and Operation* (NN43001-567)

- *Avaya IP Phones: Description, Installation, and Operation* (NN43001-368)

- *Avaya Software Input/Output: Maintenance* (NN43001-711)

- *Avaya Communication Server 1000E: Maintenance* (NN43041-700)

- *Avaya ISDN Primary Rate Interface: Maintenance* (NN43001-717)

- *Avaya ISDN Basic Rate Interface: Maintenance* (NN43001-718)

- *Avaya Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509)

- *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)

- *Avaya Communication Server 1000M and Meridian 1 Large System Upgrade NTPs* (NN43021-458 to NN43021-474)

Other documentation

The following documentation is referenced in this document:

- Nordex BIX documentation

- Krone documentation

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Safety instructions

Contents

This section contains information on the following topics:

Introduction

Safety issues associated with the installation of an Avaya Communication Server 1000E (Avaya 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 47.

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 47).

• Get help with heavy components or components that are to be placed in the upper section of a rack.

Handling circuit cards

CAUTION WITH ESDS DEVICES

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

Follow these precautions when handling circuit cards:

1   Unpack or handle cards away from electric motors, transformers, or similar machinery.

2   Handle cards by the edges only. Do not touch the contacts or components.

3   Set cards on a protective antistatic bag. If an antistatic bag is not available, hold the card or set it in a card slot unseated.

4   Store cards in protective packing.

5   Do not stack cards on top of each other unless they are packaged.

6   Wear a properly connected antistatic wrist strap when you work on the equipment.

Installing telephones

Follow these safety instructions when installing telephone equipment:

- Never install telephone wiring during a lightning storm.

- Never install a telephone jack in wet locations unless the jack is designed for wet locations.

- Never touch an uninsulated telephone wire or terminal unless the telephone line is disconnected at the network interface.

- Use caution when installing or modifying telephone lines.

Using telephones

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

- Follow all warnings and instructions marked on the product.

- Before you clean a telephone, remove the plug from the wall outlet. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleaners.

- Do not use the telephone near water (for example, near a tub or sink).

- Do not place the telephone on a piece of furniture that is unstable. The telephone can fall, causing serious damage to the telephone.

- Slots in the Media Gateway and the telephone are for ventilation. These slots protect the equipment from overheating. Never block or cover these slots.

- Never block the openings on a telephone by placing it on a surface like a bed, sofa, or rug. Never place a telephone near or over a radiator or heat register. Do not place it in a built-in installation, unless there is correct ventilation.

- Only operate a telephone from the type of power source indicated on the marking label. If you are not sure of the type of power supply, check with your distributor.

- Some equipment has a three-wire grounding plug. This type of plug has a third grounding pin. As a safety feature, the plug only fits into an isolated ground outlet. If you cannot insert the plug completely into the outlet, contact your electrician to replace the outlet.

- Some equipment has a polarized line plug. This type of plug has one blade wider than the other. As a safety feature, this plug fits into the power outlet one way. If you cannot insert the plug completely into the outlet, try reversing the plug. If the plug still does not fit, contact your electrician to replace the outlet.

- Do not place objects on the power cord. Do not locate the product where persons can walk on the plug.

- Do not overload wall outlets and extension cords, as fire or electrical shock can result.

- Never push objects of any kind into the telephone through the slots. The objects can come in contact with dangerous voltage points. Also, parts can short out, causing the risk of fire or electrical shock.

- Never spill liquid of any kind on the product.

- To reduce the risk of electrical shock, do not disassemble a telephone product.

- Remove the telephone plug from the wall outlet and refer servicing to qualified personnel if:

  — the power supply cord or plug is damaged or worn

  — liquid has spilled into the telephone

  — the telephone has been exposed to rain or water

  — the telephone has been dropped or damaged

  — the product shows a distinct change in performance

  — the telephone does not function correctly under normal operating conditions

- Avoid using a telephone (except a type without a cord) during an electrical storm. There is a remote risk of electric shock from lightning.

- Do not use the telephone to report a gas leak in the area of the leak.

Installation summary

Contents

This section contains information on the following topics:

Introduction

WARNING

Before an Avaya Communication Server 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 37.

See "System components" on to review the profiles of the key system components. For information on the models of telephones compatible with the Avaya Communication Server 1000E system, see "Installing and configuring IP Phones" on .

Upgrade and New Install Wizards

The Upgrade and New Install Wizards, components of the Health Check Tool, are introduced in Communication Server Release 7.6 to provide guidance through the major steps of the upgrade and new installation processes. The Health Check tool is a PC based GUI application available for download from the Avaya Support portal.

The upgrade wizard does not change the installation programs of the various system elements. It simply guides the user through each process by identifying the required tasks and recommending best practices, such as capturing critical pre-upgrade information.

The actual installation/upgrade tasks are performed manually under the direction of the appropriate Wizard.

The Wizard provides the user with an estimated completion time for each task and references to proper documentation and/or a best practices checklists.

For more information on the Upgrade and New Install Wizards, *Avaya Upgrades Guide* (NN43001-408).

Communication Server 1000 task flow

This section provides a high-level task flow for the installation or upgrade of a Communication Server 1000E High Availability system. The task flow indicates the recommended sequence of events to follow when configuring a system and provides the publication number that contains the detailed procedures required for the task.

For more information refer to the following publications, which are referenced in Figure 1 on :

- *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)

- *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310)

- *Avaya Communication Server 1000E Software Upgrade Procedures* (NN43041-458)

Figure 1
Communication Server 1000E task flow
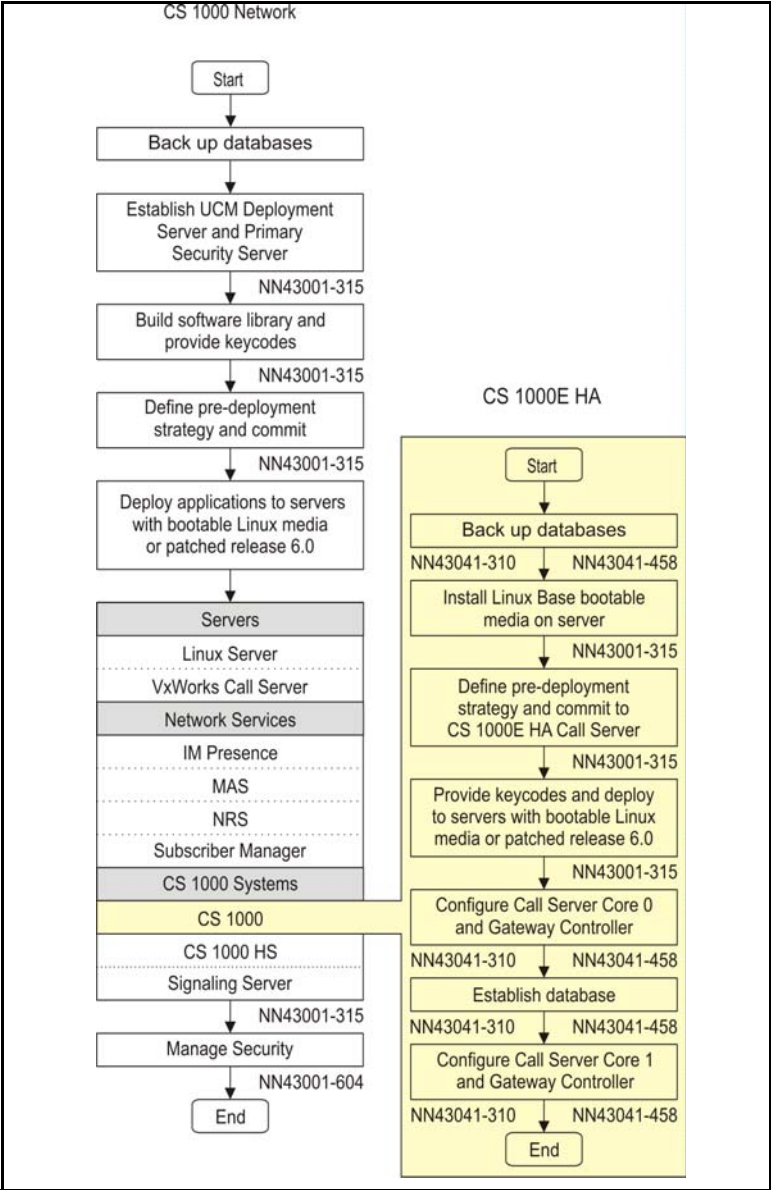
Installation tasks

Table 2 lists the tasks involved with the installation of a Avaya Communication Server 1000E system.

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

Task	Go to page
Rack-mounting the components	131
Installing system grounds	147
Installing and connecting Avaya CS 1000E hardware	157
Installing software on the Avaya Communication Server 1000E	183
Installing Signaling Server software	239
Configuring a terminal and SDI ports	307
Connecting an MRV LX8020S-102AC-R Terminal Server	293
Logging in to Element Manager	248
Installing and configuring a Voice Gateway Media Card	345
Installing the Main Distribution Frame	379
Configuring an IP telephony node	259
Installing Line cards and cross-connecting telephones	433
Installing and configuring IP Phones	389
Installing and cross-connecting a trunk card	315
Installing and cross-connecting a Power Fail Transfer Unit	445

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

Task	Go to page
Installing and cross-connecting an external alarm from a PFTU	465
Basic system telephony configuration	459
Configuring IP Peer Networking and managing the Gatekeeper database	471

System components

Contents

This section contains information on the following topics:

Introduction

The Avaya Communication Server 1000E system supports various configurations which can run on VxWorks or Linux Operating Systems. For information about supported hardware platform roles, see Table 1: "Hardware platform supported roles" on .

Supported configurations

Communication Server 1000 Release 7.6 supports the following system
configurations:

- Avaya CS 1000E Standard Availability (non redundant)

- CS 1000E High Availability (redundant)

- CS 1000E Cabinet option

- CS 1000E Co-resident Call Server and Signaling Server (Co-res CS and
  SS)

- CS 1000E TDM

- CS 1000E High Scalability

CS 1000E Standard Availability (non redundant)

The Avaya Communication Server 1000E Standard Availability system
consists of the following components:

- Call Server

- Signaling Server

- Voice Gateway Media Card (optional)

- Gateway Controller with DSP resources

- Media Gateway

- Media Gateway Expander (optional)

- Layer 2 Ethernet switch

- MRV Terminal Server (optional)

- System cables

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

The system uses the following customer-supplied components:

- Layer 2 Ethernet switch

- 19-inch rack

- Shielded straight thru Ethernet cables

- Uninterruptible Power Supply (UPS)

CS 1000E High Availability (redundant)

The Avaya Communication Server 1000E High Availability system consists of the following components:

- Dual CP PIV or CP PM Call Servers

- Dual Signaling Servers

- Voice Gateway Media cards (optional)

- Gateway Controller with DSP resources

- Media Gateway

- Media Gateway Expander (optional)

- Layer 2 Ethernet switch

- MRV Terminal Server (optional)

- System cables

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

The system uses the following customer-supplied components:

- Layer 2 Ethernet switch

- 19-inch rack

- Shielded straight thru Ethernet cables

- Uninterruptible Power Supply (UPS)

CS 1000E Cabinet option

The Avaya Communication Server 1000E Cabinet system consists of the following components:

- Single or Dual Call Servers

- Single or Dual Signaling Servers

- Voice Gateway Media cards (optional)

- Gateway Controller with DSP resources

- Media Gateway

- Media Gateway Expander (optional)

- Layer 2 Ethernet switch

- MRV Terminal Server (optional)

- System cables

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

The system uses the following customer-supplied components:

- Layer 2 Ethernet switch

- 19-inch rack

- Shielded straight thru Ethernet cables

- Uninterruptible Power Supply (UPS)

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

CS 1000E Co-resident Call Server and Signaling Server

For information about the Co-resident Call Server and Signaling Server configuration, see "Co-resident Call Server and Signaling Server" on page 95.

CS 1000E TDM

For information about the CS 1000E TDM configuration, see "TDM only configuration" on page 58.

CS 1000E High Scalability

For information about the CS 1000E High Scalability system, see *Avaya Communication Server 1000E Planning and Engineering - High Scalability Solutions* (NN43041-221) and *Avaya Communication Server 1000E High Scalability Installation and Commissioning* (NN43041-312).

Avaya Communication Server 1000E Servers

Communication Server 1000E systems can be deployed on various hardware platforms and in various configurations. Communication Server 1000 Release 7.6 supports the following Servers:

- Call Processor Pentium IV (CP PIV)

- Common Processor Pentium Mobile (CP PM)

- Common Processor Media Gateway (CP MG)

- Common Processor Dual Core (CP DC)

- Commercial off-the-shelf (COTS) servers

    — IBM x306m server (COTS1)

    — HP DL320 G4 server (COTS1)

    — IBM x3350 server (COTS2)

    — Dell R300 server (COTS2)

The CP PIV and CP PM server platforms support VxWorks-based Standard Availability, High Availability, and Cabinet configurations.

The CP PM, CP DC, and COTS server platforms support the stand-alone Linux-based Signaling Server configuration.

The CP PM, CP MG, CP DC, and COTS2 server platforms support the Linux-based Co-resident Call Server and Signaling Server (Co-res CS and SS) configuration.

The Media Gateway Controller (MGC) card, and CP MG card Gateway Controller platforms support the CS 1000E TDM configuration.

For more information about each type of Server hardware, see *Avaya Circuit Card: Description and Installation* (NN43001-311).

Choosing the slot location for a Server card

A Media Gateway performs functions under the control of the CS 1000E Server. In traditional CP PIV based CS 1000E systems, the Server is in a

separate Call Server chassis. The CP PM, CP MG, and CP DC server cards occupy one of the slots in a Media Gateway cabinet or chassis.

Note: COTS servers install in standard 19 inch racks.

Server cards connect to a Gateway Controller by Ethernet and therefore do not require backplane connectivity (other than power and slot ID). The following rules apply to the preferential placement of Server cards in the Media Gateway:

- The Server cards cannot be placed in slot 0 of any Media Gateway. Slot 0 is reserved for the Gateway Controller.

  Note: The CP MG card functions as the Server and the Gateway Controller while occupying Slot 0 in a Media Gateway.

- A Server card can be placed in slot 1 and higher of a Media Gateway, with the exception of slot 4 in an NTDK91 Media Gateway Chassis. The NTDK91 Media Gateway Chassis slot 4 is dedicated to the 48 port DLC only.The MG 1010 provides slot 22 and 23 as dedicated Server card slots.

- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM cards in separate Media Gateways to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

Figure 2 on shows an example of a CS 1000E CP PM based system in a Media Gateway Chassis.

Figure 2
CS 1000E CP PM based system overview
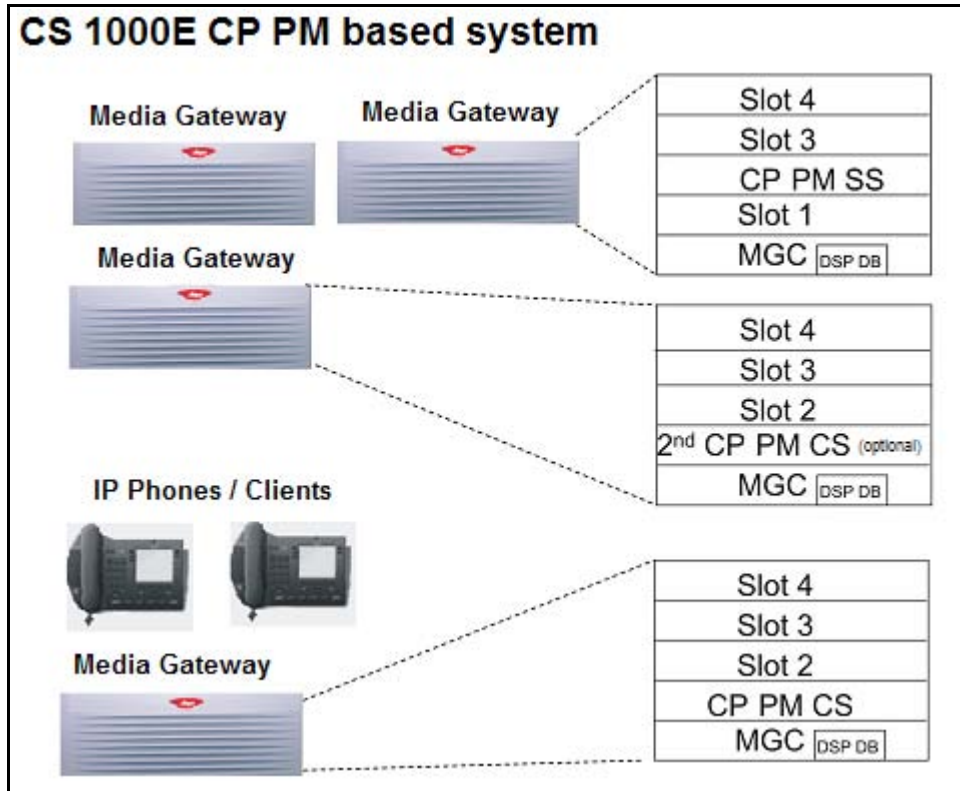
CP PM and CP DC Serial Data Interface (SDI)

The CP PM and CP DC servers feature two standard RS232 DTE serial ports, port 0 and port 1. These ports are accessible through a NTAK19 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 card dip switch settings

The CP PM card used in a VxWorks-based Server configuration must have switch S5 in position 1 to indicate that a Compact Flash (CF) card is used for the Fixed Media Drive (FMD).

The CP PM card used in a Linux-based Server configuration must have switch S5 in position 2 to indicate that a hard disk is used for the FMD.

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)

Readiness checklist

Before installing a 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 3
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?
 	
For COTS servers:
 	
• installation accessories for rack-mounting the server
 	
• AC-power cord
 	
• a DTE-DTE null modem cable (supplied)
 	
• Linux Signaling Server software DVD for COTS servers
 	
For Server cards:
 	
• (CP PM only) NTM427CBE6 - CP PM Signaling Server Linux Upgrade kit, which includes:
 	
   — 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 - 2 port SDI Cable assembly kit (required for CP PM and CP DC)
 	
• NTC325AAE6 - Serial port adapter kit (required for MG 1010 and CP MG)
 	
• a DTE-DTE null modem cable (supplied)
 	
Note: Save the packaging container and packing materials in case you must ship the product.	

Made sure the area meets all environmental requirements?	
Checked for all power requirements?	
Made sure the CP PM hardware meets all required specifications (see Appendix B for required media and memory configuration, CP PM Version 1 [NTDW61AAE5/BAE5; NTDW66AAE5/ABE5; NTDW99AAE5/ABE5] BIOS version 18 or higher)?	
Checked for correct grounding facilities?	

Table 3
Readiness checklist (Part 2 of 2)

Have you:	
Obtained the following: • screwdrivers • an ECOS 1023 POW-R-MATE or similar type of multimeter • appropriate cable terminating tools • a computer (maintenance terminal) to connect directly to the Signaling Server, with: — teletype terminal (ANSI-W emulation, serial port, 9600 bps) — a Web browser for Element Manager (configure cache settings to check for new Web pages — every time the browser is invoked, and to empty the cache when the browser is closed)	
Prepared the network data as suggested in *Avaya Converging the Data Network with VoIP* (NN43001-260) or *Avaya Communication Server 1000E Planning and Engineering* (NN43041-220), as appropriate for your Communication Server 1000 system?	
Read all safety instructions in *Avaya Communication Server 1000E Planning and Engineering* (NN43041-220), as appropriate for your Communication Server 1000 system?	

CS 1000E Gateway Controllers

Each Media Gateway in a CS 1000E system requires a Gateway Controller. The Gateway Controller provides controller functions and provides DSP resources for the Media Gateway. Communication Server 1000 Release 7.6 supports the following Gateway Controllers

• Media Gateway Controller (MGC) card

• Common Processor Media Gateway (CP MG) card

• Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card

Gateway Controllers do not function as a Server, with the exception of the CP MG card. The CP MG card provides Server and Gateway Controller functions while occupying Slot 0 in a Media Gateway. All CS 1000E systems require a Server to handle call processing requests.

For more information about Gateway Controller hardware, see *Avaya Circuit Card: Description and Installation* (NN43001-311).

The Small System Controller (SSC) card is no longer supported and must be replaced with a supported Gateway Controller.

MGC card DSP daughterboards

Three optional Digital Signal Processor (DSP) daughterboards (DSP DB) are available for the MGC Card.

- NTDW62 32-port DSP DB (DB-32)
- NTDW64 96-port DSP DB (DB-96)
- NTDW78 128-port DSP DB (DB-128)

The MGC card provides two expansion sites for DSP daughterboards. At least one DSP daughterboard is required on each MGC card. The DSP daughterboards provide DSP resources for connecting IP and TDM devices, eliminating the need for installing Voice Gateway Media Cards in the CS 1000E Media Gateways. However, Voice Gateway Media Cards are still supported in CS 1000E.

TDM only configuration

You can configure the MGC card or CP MG 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 Gateway Controller as a TDM only system that does not require any external network gear. For more information about mgcsetup, see Procedure 27: "Configuring the Gateway Controller (mgcsetup)" on .

Figure 3 on page 59 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 3
MGC TDM only connections
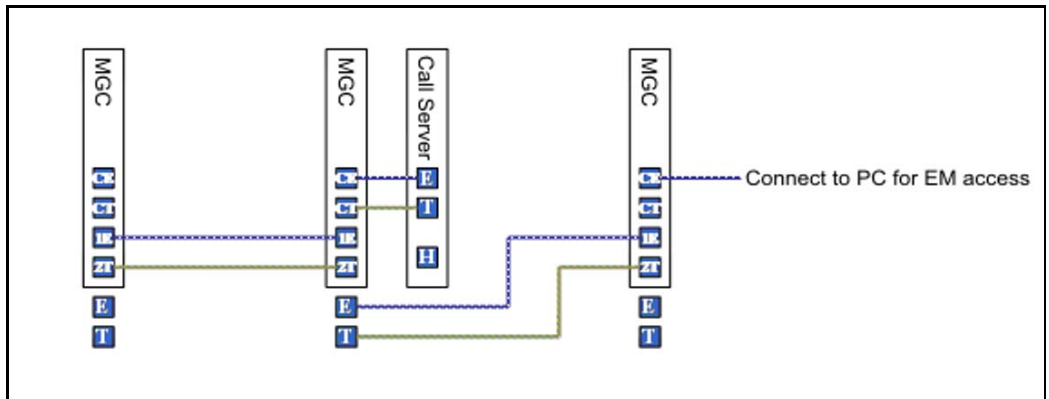
Adding ELAN routes

You can add routes to the ELAN on the Gateway Controller. 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 file is created on the Call Server by Element Manager.

MC32S Voice Gateway 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.

Voice Gateway Media Card

The Voice Gateway Media Card, described in Table 4 and shown in Figure 4, 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 Voice Gateway Media Card also provides echo cancellation and compression/decompression of voice streams.

Table 4
Voice Gateway Media Card profile (Part 1 of 2)

Property	Description
Product Code	• NTDU41DA Media Card 32 Port IP Line 3.1/Voice Gateway • NTDU41DB Media Card 8 Port IP Line 3.1/Voice Gateway
Power	• Powered through a Media Gateway.
Cooling	• Provided by the Media Gateway.

Table 4
Voice Gateway Media Card profile (Part 2 of 2)

Property	Description
Connectors (front)	• The PC Card slot can be used to deliver software or for additional storage. • The maintenance port provides access to the card for OA&M purposes.
Connectors (back)	• The Shielded 50-pin to Serial/ELAN/TLAN adapter provides connections to the card through the connector labelled Card 1, Card 2, Card 3, or Card 4 that corresponds to the card location. ***Note:*** The software installation is performed from the back port only. The initial boot messages are available from the back port only. • See Figure 61 on page 178.

Figure 4
Voice Gateway Media Card
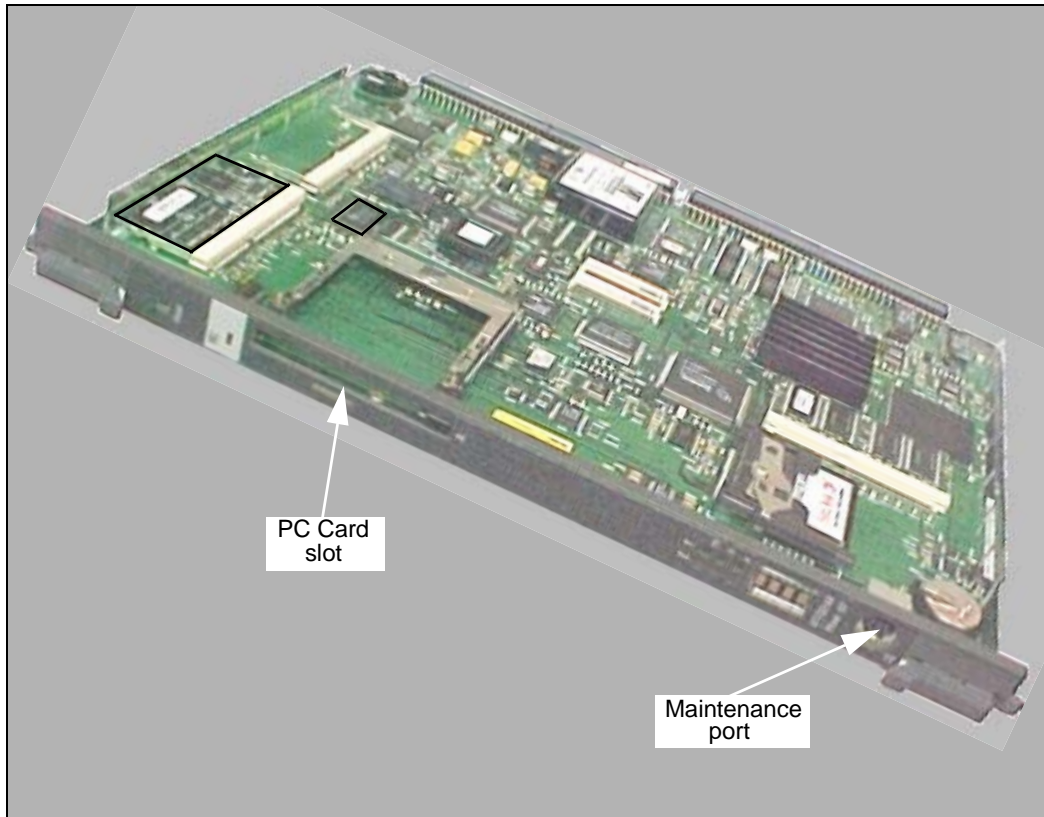
Media Gateway Chassis

The NTDU14 Media Gateway Chassis is shown in Figure 5 on and Figure 6 on .

Figure 5
Front of the Media Gateway
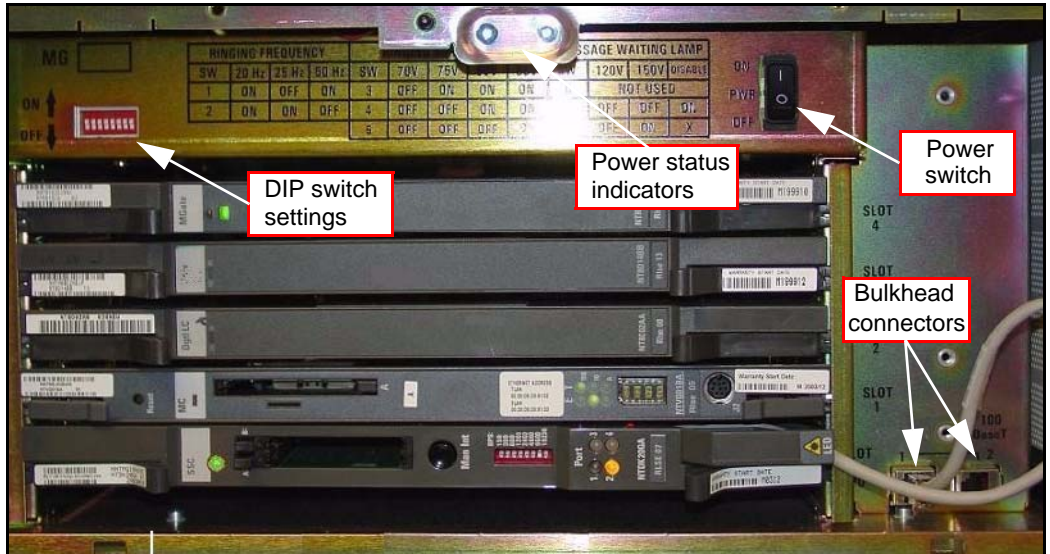
Figure 6
Connectors at the back of the Media Gateway Chassis
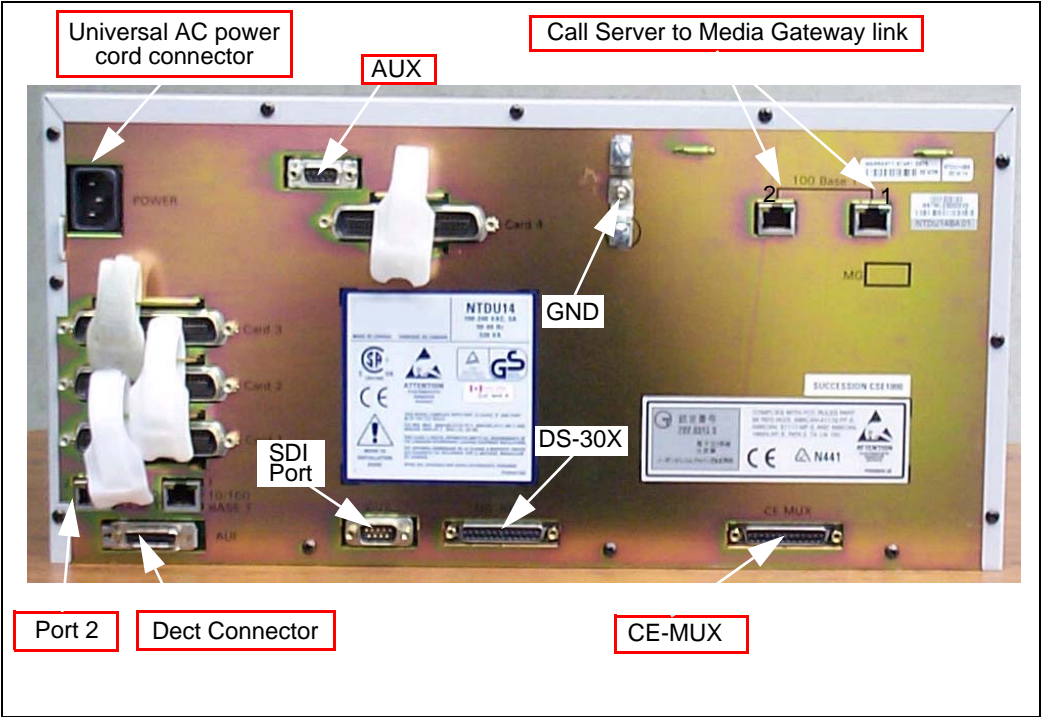
Figure 7
25-pair Cable Connectors on the Media Gateway Chassis
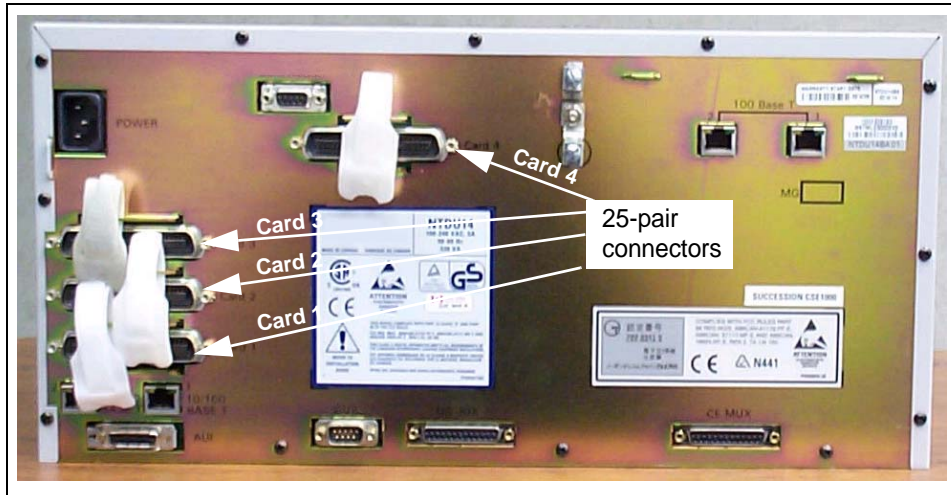
<table>
<tr><td>

CAUTION — Damage to Equipment

Do not block equipment ventilation openings.

</td></tr>
</table>

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

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

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

Property	Description
Power	• Power status indicator (Avaya 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 5 on page 63. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (100-240 VAC); DC is not supported.
Cooling	• Forced air cooling with side-to-side air flow. • The fans are temperature controlled. The fans run at a reduced speed at room temperature. • Ensure that equipment ventilation openings are not blocked.
Card slots	• Four usable universal card slots: 1 to 4. • Slot 0 is reserved for the MGC. • Slots 1 to 4 support: — CP PM Call Server card (maximum four) — CP PM Signaling Server card (maximum four) — Digital Line cards (maximum four) — Analog Line cards (maximum four) — Analog Trunk cards (maximum four) — Digital Trunk cards (maximum four) — Media Cards (maximum four) — Application cards (maximum four)

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

Property	Description
Connectors (rear)	• The 25-pair cable connectors at the back panel (see Figure 6 on page 64) provide access to the cross-connect terminal (Main Distribution Frame). • The AUX port (see Figure 6 on page 64) connects a Power Failure Transfer Unit (PFTU) to the Media Gateway. • The Attachment Unit Interface (AUI) (see Figure 6 on page 64) is used with earlier version SSC which require a Media Access Unit (MAU). • The SDI connector (see Figure 6 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 6 on page 64) connect the Media Gateway to the Media Gateway Expander.
DIP switches	• DIP switches are available to set the ringing voltages, ringing frequencies, and message waiting voltages. See Figure 5 on page 63.

Media Gateway Expander

Figure 8 on page 68 shows the Media Gateway Expander and Table 6 on page 68 describes the expander.

Figure 8
Media Gateway Expander

Slot 10
Slot 9
Slot 8
Slot 7

553-CSE9032
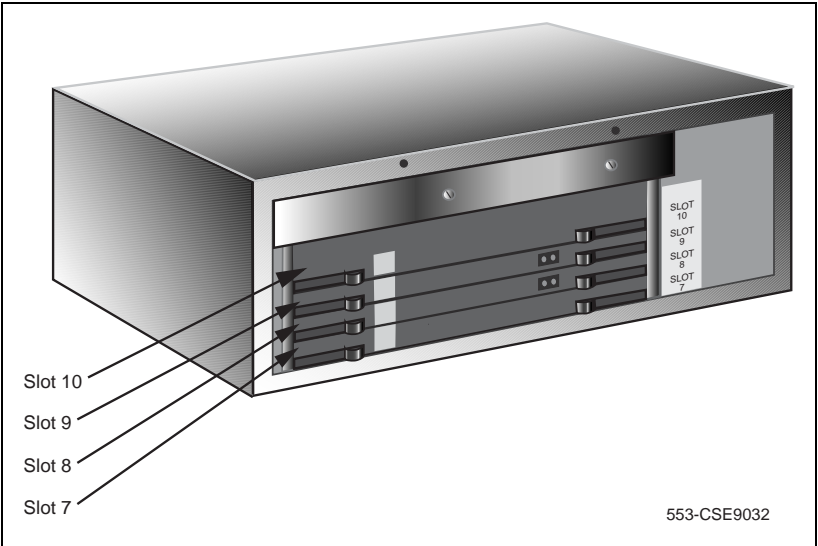
Table 6
Media Gateway Expander profile (Part 1 of 3)

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

Table 6
Media Gateway Expander profile (Part 2 of 3)

Property	Description
Power	• Power status indicator (Avaya 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 5 on page 63. • Power supplies are factory installed and not customer replaceable. • Unit is AC powered (100-240 VAC); DC is not supported.
Cooling	• Forced air cooling with side-to-side air flow. • The fans are temperature controlled. The fans run at a reduced speed at room temperature. • Ensure that equipment ventilation openings are not blocked.

Table 6
Media Gateway Expander profile (Part 3 of 3)

Property	Description
Card slots	• Four usable universal card slots: 7 to 10. See Figure 8 on page 68. • Logical slots 5 and 6 are not supported. • Slots 7 to 10 support: — CP PM Call Server card (maximum four) — CP PM Signaling Server card (maximum four) — Analog Trunk cards (maximum four) — Analog Line cards (maximum four) — Digital Line cards (maximum four) — Media Cards (maximum four) — Application cards (maximum four)
Connectors (rear)	• The 25-pair cable connectors at the back of the unit (see Figure 9 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. *Note:* These cables are uni-directional cables with a ferrite bead at one end that needs to be terminated on the expansion cabinet end.

Figure 9
Connectors at the back of the Media Gateway Expander
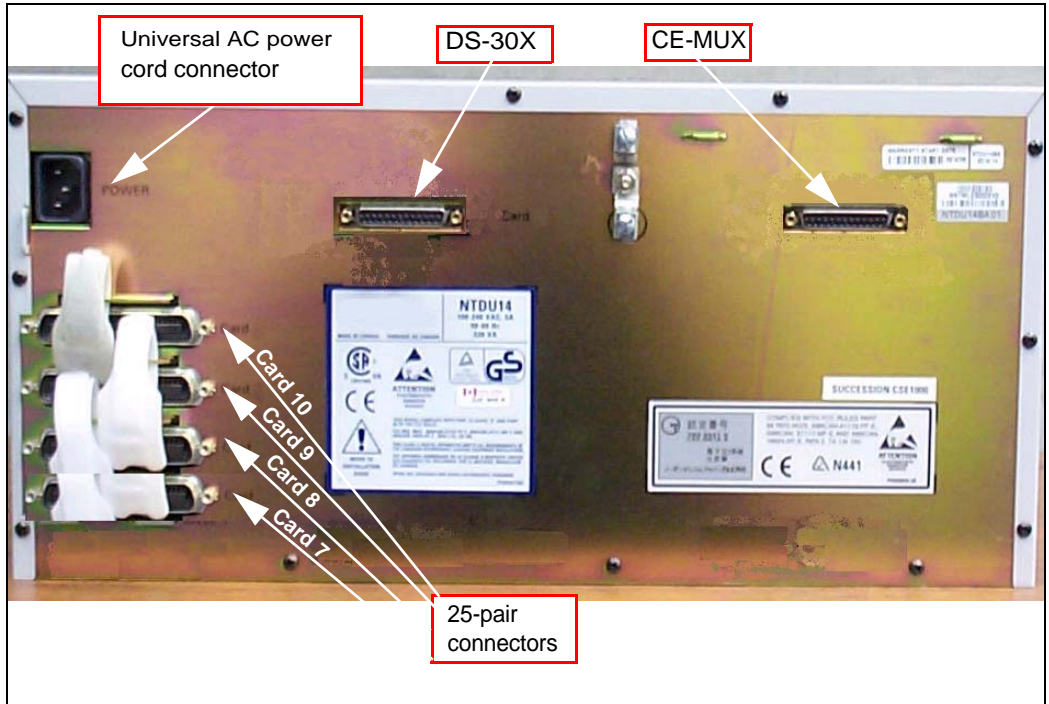
Media Gateway 1010 (MG 1010)

The Media Gateway 1010 (MG 1010) is a rack mount Media Gateway chassis that provides a larger amount of card slots than a Media Gateway Chassis 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 Gateway Controller slot, two dedicated Server 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.

Physical description

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

Front components

Figure 10 on page 73 shows the Media Gateway 1010 without the front cover.
Note the following features:

- Ten IPE card slots

- Two Server card slots

- One Gateway Controller card slot

- One Media Gateway Utility (MGU) card provides LED status, ringing,
  message waiting voltage, dual homing Ethernet cable ports, and serial
  cable ports

- Eight RJ-45 Ethernet ports on front right side for cable management.
  Ports interface with rear I/O panel

- One metal divider in chassis to separate MGU card, Server card, and
  Gateway Controller cards from the IPE cards.

- Ethernet coupler.

Figure 10
MG 1010 front components

MGC serial port #1
MGC serial port #2
MGC serial port #3
MGC Enet port #1
MGC Enet port #2
CP#1 serial port #1
CP#1 serial port #2
CP#2 serial port #1
CP#2 serial port #2

MGU slot 21
CP#1 slot 22
CP#2 slot 23
MGC slot 0

Ethernet coupler
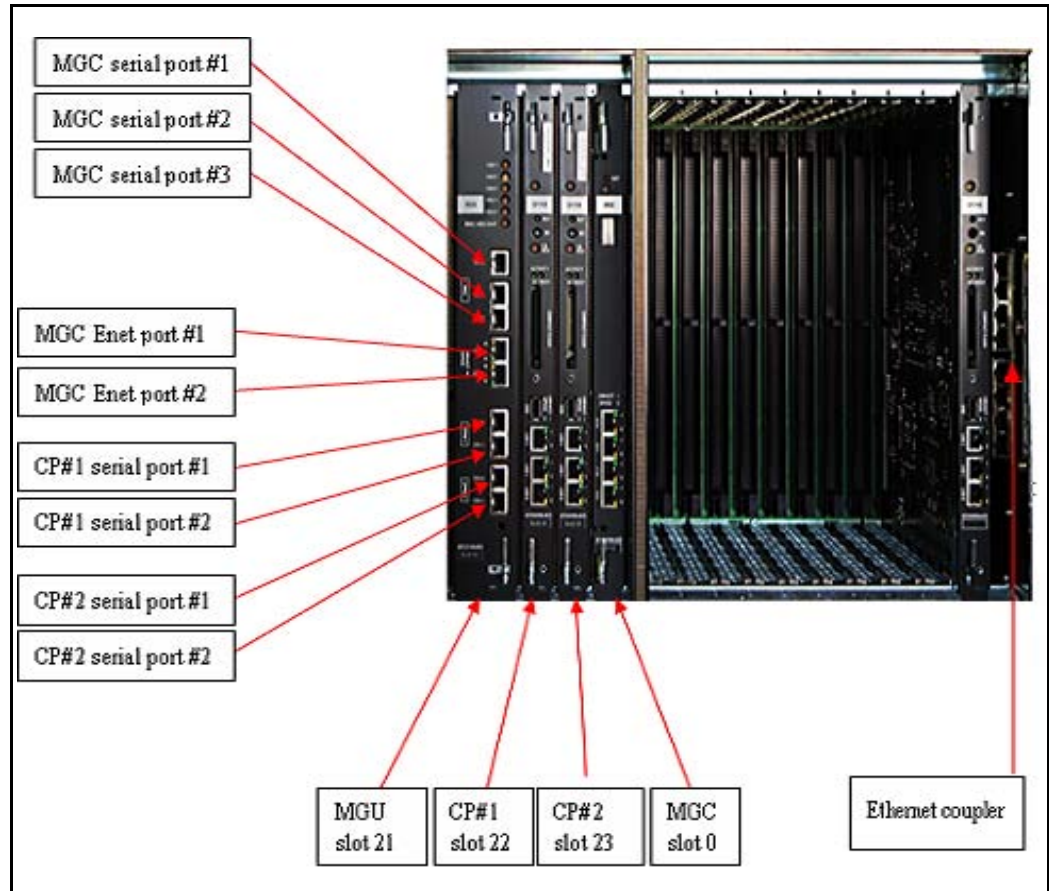
Figure 11 on page 74 shows the MG 1010 with the front cover. Note the following:

- Window to view LED status of all cards, fans, and power supplies

- Decorative cover provides additional EMC shielding

- Two locking latches in top corners of front cover

Figure 11
MG 1010 front cover

Serial port connectivity

NTDW99 CP PM cards and NTDW53 CP DC 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.

NTDW53 CP DC cards, NTDW99 and NTDW61 CP PM cards in a Media
Gateway Chassis, 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 7 and for the DB9 adapter in Figure 12 on . The pinout for a standard DB9 RS-232 connector and for the MGU faceplate serial ports is listed in Table 7 for reference.

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

Figure 12
N0211605 DB9 Null Modem adapter (supplied in NTC325AAE6 cable kit)
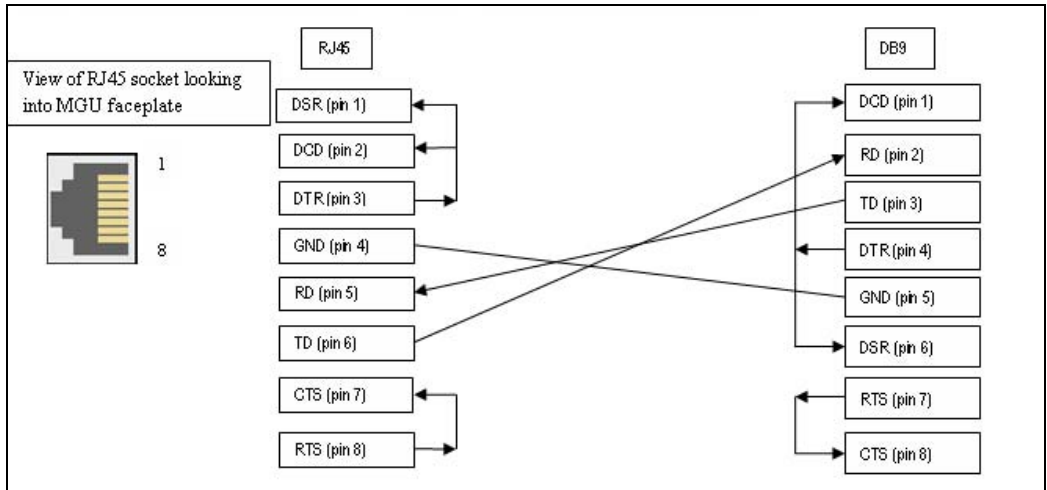
Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 13 on shows the supported configuration for a Dual-homed SA Call Server in an MG 1010 chassis.

Figure 13
Dual-homed SA Call Server in an MG 1010

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.
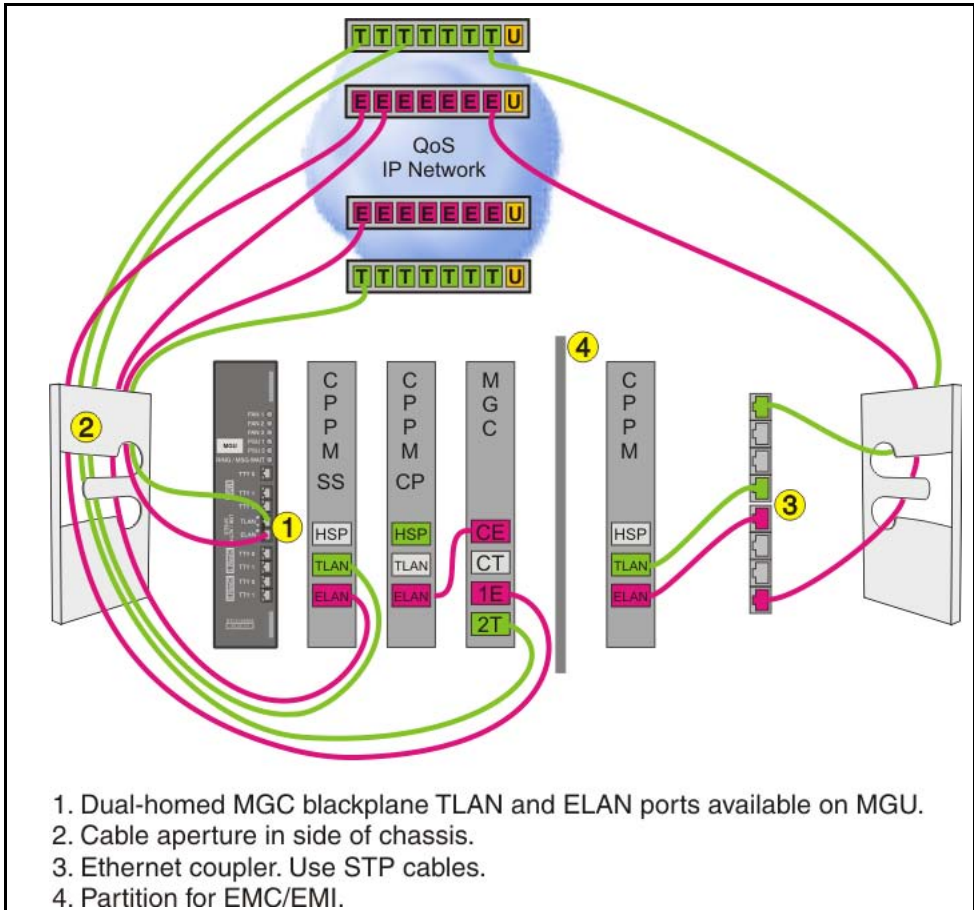
MGU DIP switch settings

See Table 8, Table 9 on page 78, and Table 10 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 8
Frequency

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

Table 9
Voltage

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

Table 10
Ringer enable

	SWITCH S1
RINGER ENABLE	**S1_8**
Ringer enable	ON
Ringer disable	OFF

Set the -150 switch to be -120 and -150 based on Table 11, Table 12 on page 79, and Table 13 on page 79.

Table 11
S2 UV_Protect

S2 UV_PROTECT	
-120	OFF
-150	ON

Table 12
S4 OV_Protect

S4 OV_PROTECT	
-120	ON
-150	OFF

Table 13
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 14 for Asic Pacific/CALA power supply DIP switch settings

- Table 15 on page 80 for European power supply DIP switch settings

• Table 16 on page 81 for North American power supply DIP switch settings

Table 14
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 15
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 16
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 14 on page 82 shows the dip switch settings on the board of the MGU.

Figure 14
MGU dip switch settings

FREQUENCY	SWITCH S1	
	S1-3	S1-4
20HZ	ON	OFF
25HZ	OFF	ON
50HZ	OFF	OFF

VOLTAGE	SWITCH S1		
	S1-7	S1-6	S1-5
86V	ON	OFF	OFF
80V	OFF	ON	OFF
75V	OFF	OFF	ON
70V	OFF	OFF	OFF

RINGER ENABLE	S1-8
RINGER ENABLE	ON
RINGER DISABLE	OFF
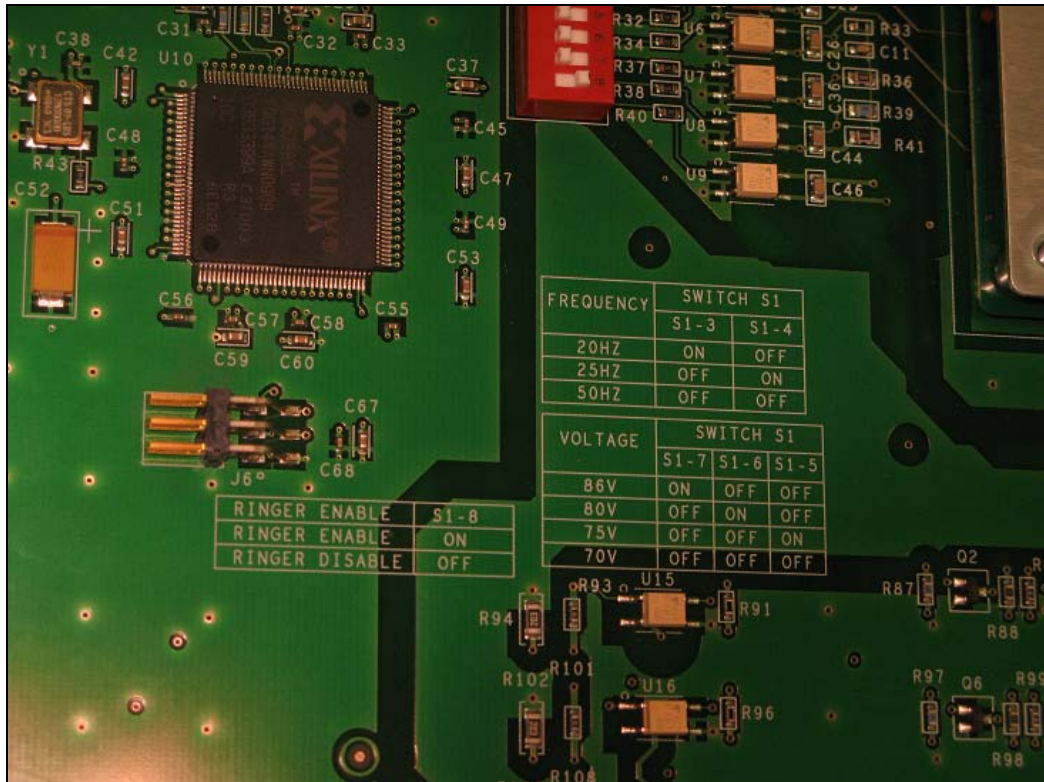
Rear components

Figure 15 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 15
MG 1010 rear view
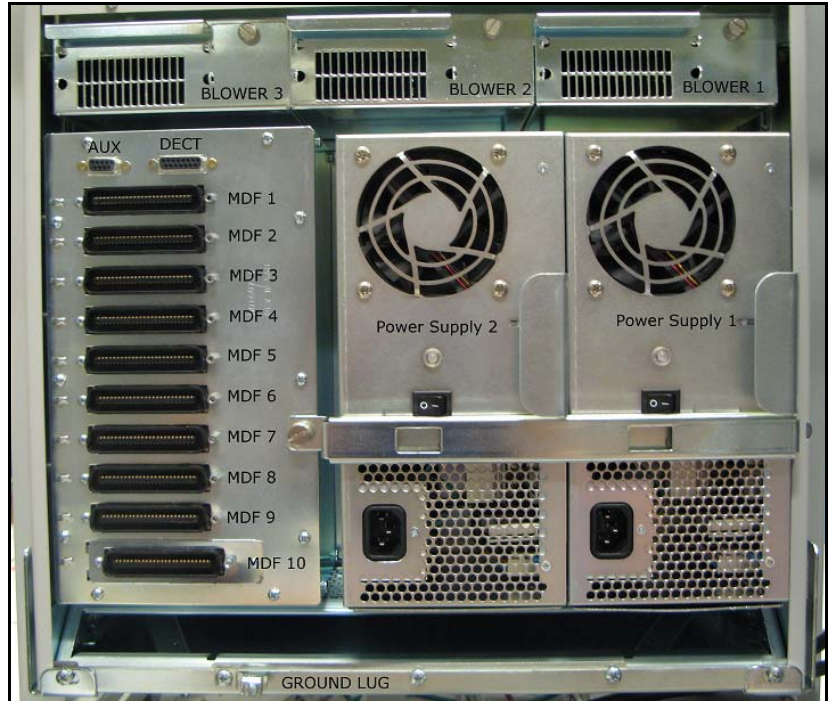
IMPORTANT!

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. See Figure 15 on page 83 and Figure 16 on .

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 .

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 16
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 16 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 16 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 Chassis and Media Gateway Expander in a 19-inch rack. It is described in Table 17 on page 86. For details on rack mounting a Media Gateway Chassis and Media Gateway Expander, see "Rack-mounting the components" on page 131.

Table 17
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

Layer 2 Ethernet switch

The Layer 2 Ethernet switch provides network connectivity for the ELAN and TLAN subnets of a CS 1000E system. The Layer 2 Ethernet switch is customer supplied, and must meet the Voice over IP (VoIP) and Quality of Service (QoS) requirements for your system. Avaya recommends the Ethernet Routing Switch (ERS) portfolio of Layer 2 Ethernet switch products.

MRV Terminal Server

The Terminal Server, described in Table 18 on page 88, provides the dedicated rlogin service used to establish serial connection between a Avaya Communication Server 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 Avaya Communication Server 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 – 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 Terminal Server profile

Property	Description
Product Model	MRV LX8020S-102AC-R
Height	• 1 U (1 U = 1 3/4 inch or 4.4 cm)
Power	• Power cord connectors located on the unit's backplane. • Power supplies are factory installed and not customer replaceable. • Unit is dual AC powered (120 V AV @ 0.5 amps).
Cooling	• Forced air cooling with side-to-side air flow. • The fans run at a single speed. • Ensure that equipment ventilation openings are not blocked.
Card slots	• None
Connectors	• Twenty console ports for modular RJ-45 connectors • One RJ-45 (10BaseT) network interface

19-inch rack

All Avaya Communication Server 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 lists the cables required with the Avaya Communication Server 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
Avaya Communication Server 1000E cables (Part 1 of 2)

Component Descriptions	Cable Kits	Cables & Accessories	Quantity
Qty of 2 MRV Terminal Server cables for connecting COM port 1 of the CP PM Call Server to the Terminal Server		NTDU6302	2
HS cross-over cable used to connect the two call processors for redundancy.		NTRC17BA	1
Media Gateway/Media Gateway Expander			
Media Gateway cable kit	NTDU25BA		
PC Maintenance Cable for accessing media card from the faceplate		NTAG81CA	1
AUX cable for Power Failure Transfer if required		NTAK1104	1
25 pin M-F adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0601396	1
25 pin F-F adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0601397	1
Wrist strap		A0783105	1
25 pin F-F Null modem adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0378652	
25 pin M-F Null modem adapter, can be used with the NTBK48AA cable for interconnecting to TTY ports		A0381016	
Expansion cable kit	NTDK89AA		
Expansion cable to connect the Media Gateway DS-30 and CE-MUX to the Media Gateway Expander.		NTDK95BB	2
Disposable wrist strap		A0783105	1
100BaseT Connection			

Table 19
Avaya Communication Server 1000E cables (Part 2 of 2)

Component Descriptions	Cable Kits	Cables & Accessories	Quantity
Signaling Servers, Layer two switch (BS 470), Carrier Cards, ELAN on Gateways		CAT5 Cables	
MRV Terminal Server			
RJ45 to 9-pin female RS232, 25 feet long, for connecting terminal equipment to the MRV Terminal Server		NTVW01iX	
Terminal server cable kit for interfacing with various terminal ports (that is, Signaling Server, Layer 2 Switch or Gateway using BK48 cable)	NTDU6303		
MRV Terminal Server cable for connecting various Terminal Equipment to the Terminal Server		NTDU6302	1
9-pin male to 9-pin female Null Modem adapter for use where connecting to DCE connections		N0007485	1
25 to 9-pin male adapter to interface with NTBK48AA cable if desired		N0007488	1
Power cords			
North American power Cord		NTTK14AB	
UK power cord		NTTK18AB	
Euro power cord		NTTK16AB	
ANZ power cord		NTTK15AA	
Swiss power cord		NTTK17AB	
Denmark power cord		NTTK22AB	

Miscellaneous system components

Table 20 contains a list of miscellaneous items that can be used with the Avaya Communication Server 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 Meridian 1 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
700502486	Surge-suppression cable	Connects certain trunk cards to the CS 1000 system MDF 50-pin connector to prevent transient voltages. For a list of cards requiring this cable and for installation instructions, see *Avaya Circuit Card: Description and Installation* (NN43001-311).

Uninterruptible Power Supply

Use an Uninterruptible Power Supply (UPS) to provide a backup power supply for the entire CS 1000E system.

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.

Co-resident Call Server and Signaling Server

Contents

This chapter contains the following topics:

Overview

An Avaya Communication Server 1000 system consists of two major functional components, a Call Server and a Signaling Server. These two components have historically been running on separate Intel Pentium processor-based hardware platforms operating under the VxWorks Operating System.

The Co-resident Call Server and Signaling Server (Co-res CS and SS) runs the Call Server software, Signaling Server software, and System Management software on one hardware platform running the Linux Base Operating System. For Communication Server 1000 Release 7.6, the Co-res CS and SS is supported on various hardware platforms, see Table 1: "Hardware platform supported roles" on .

The Co-res CS and SS provides a cost effective solution for Communication Server 1000 system installations that do not require a high user capacity or the need for a redundant Call Server.

This chapter provides a high level overview only. For more information about Co-resident Call Server and Signaling Server, see *Avaya Co-resident Call Server and Signaling Server Fundamentals (*NN43001-509).

Supported configurations

You require a Media Gateway, Gateway Controller, and Server to deploy the Co-resident Call Server and Signaling Server in the following configurations:

- Avaya Communication Server 1000E (Avaya CS 1000E)

- Branch Office Media Gateway (MG 1000B)

- Survivable Media Gateway (SMG)

- Survivable SIP Media Gateway (SSMG)

- Communication Server 1000E TDM (for details on the CS 1000E TDM system, see *Avaya Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509).

You can deploy a Co-res CS and SS as a Main Office, Branch Office, SMG or SSMG.

For information about installing an SMG or SSMG, see *Avaya Communication Server 1000 System Redundancy Fundamentals* (NN43001-507).

For information about CS 1000E capacity limitations, see *Avaya Communication Server 1000E Planning and Engineering* (NN43041-220)

Co-res CS and SS based CS 1000E system

Figure 17 on page 97 provides an example of a CS 1000E system with a Co-res CS and SS in a MG 1000E chassis. You can also use an MG 1010, chassis, cabinet, or a COTS2 server to deploy a Co-res CS and SS.

Figure 17
CS 1000E Co-res and SS System
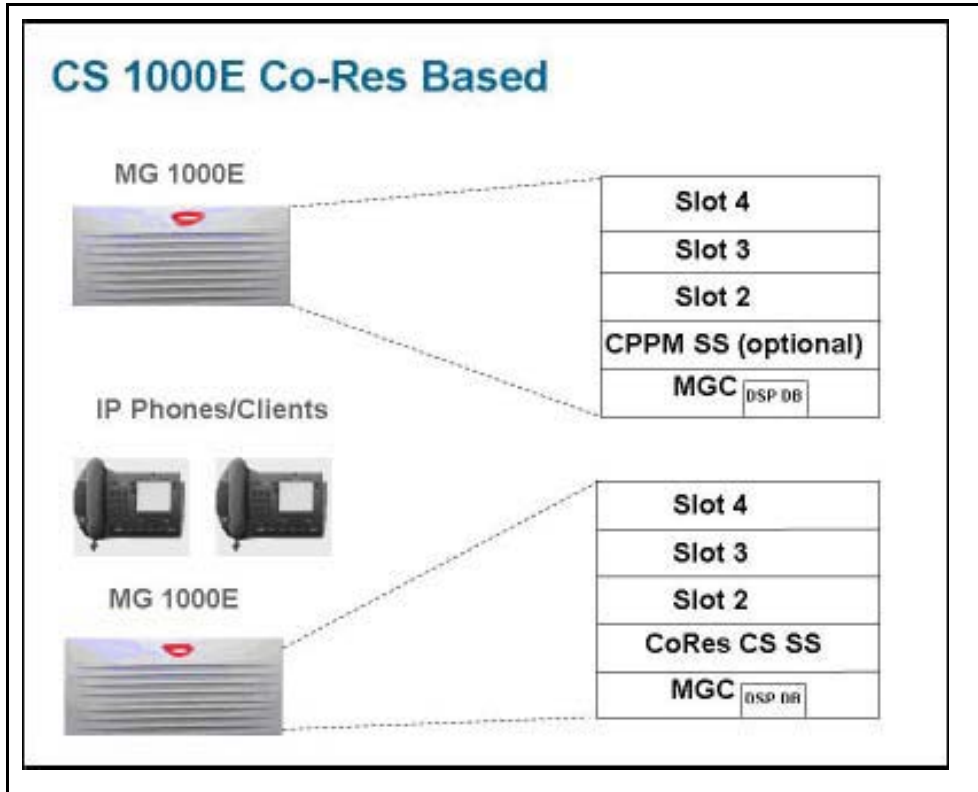
For information on adding an optional second Signaling Server to a Co-res CS and SS, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Co-res CS and SS based Branch Office Media Gateway

Figure 18 on page 98 provides an example of a Co-res CS and SS based Branch Office Media Gateway (MG 1000B) system.

Figure 18: MG 1000E Co-res CS and SS system
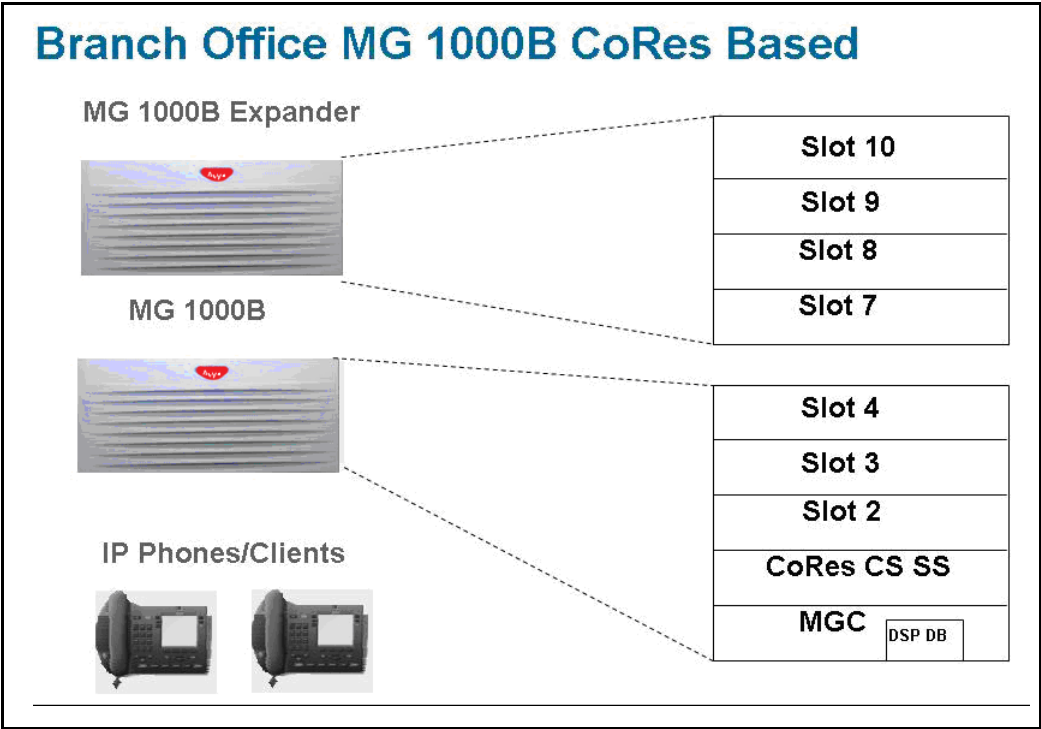
Communication Server 1000E TDM

Communication Server 1000 Release 7.6 supports a TDM only version of the CoRes CS and SS system. The CS 1000E TDM system has the following capacity limitations:

- 800 combined TDM users (Traditional, DECT users, including installed plus add-on)

- 5 Media Gateways

- 16 PRI cards

- 200 ACD Agents

- 0 IP Phones (no UNIStim, no SIP Line, no SIP DECT)

- 0 Virtual Trunks

The CS 1000E TDM system does not support NRS.

High Availability (HA) support

In CS 1000 Release 7.6, the 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, you must deploy a VxWorks-based Communication Server 1000 system.

Hardware

The Communication Server 1000 Release 7.6 Co-resident Call Server and Signaling Server is supported on CP PM cards, CP MG cards, CP DC cards, and COTS2 servers running the Linux Base Operating System.

The Co-res CS and SS can run on the CP PM hardware platform introduced in Communication Server 1000 Release 5.0, however the software changes from VxWorks to Linux, and a CP PM Linux upgrade kit is required.

The CP PM card requires BIOS version 18 or later and memory and media as listed in Appendix B to support the Co-res CS and SS configuration.

Note: CP PM version 2 (NTDW66CAE5/E6; NTDW99CAE5/E6) does not require a BIOS update, or upgrade kit to support the Co-res CS and SS configuration.

NTM427CBE6 CP PM upgrade kit

The NTM427CBE6 CP PM Linux Upgrade kit includes the following items:

- NTDW6102E5 - CP PM Signaling Server Hard Drive kit (Linux OS preloaded)

- NTM42703 - 2 GB Compact Flash (CF) with Linux software

- 2 GB blank CF card

- 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)

CP PM Media Storage

The CP PM card for a Co-res CS and SS includes an internal Fixed Media Drive (FMD). You must ensure switch S5 on the CP PM card is in position 2 to enable the system to boot from the hard drive FMD. Switch S5 in position 1 configures the CP PM card to boot from an internal Compact Flash (CF) FMD.

The CP PM card supports two types of Removable Media Drives (RMD)

- CF card, supports the installation of Linux Base and Linux applications

- USB memory stick device, supports the installation of Linux applications (cannot use to install Linux Base)

For more information about supported media for Linux-based Co-resident Call Server and Signaling Server installations, see *Avaya Linux Platform Base and Applications Installation and Commissioning (NN43001-315)*.

CP MG, CP DC, and COTS2 media storage

The CP MG card, CP DC card, and COTS2 servers all contain an internal Fixed Media Drive (FMD) pre-loaded with the Linux Base Operating System.

The CP MG and CP DC support USB 2.0 storage devices as Removable Media Drives (RMD). A bootable USB 2.0 storage device can be used to install or patch the Linux Base Operating System. The COTS servers support bootable DVD. CF cards are not supported as RMD on CP MG, CP DC or COTS hardware.

Software applications

The Co-res CS and SS supports the following software applications

- Linux Call Server

- Line Telephony Proxy Server (LTPS)

- Unicode Name Directory (UND)

- Signaling Server Gateway including H.323 Gateway and SIP Gateway

- SIP Line Gateway

- Failsafe SIP Proxy service, Gatekeeper

- Personal Directory (PD)

- Network Routing Service (NRS)

— You can configure the NRS as a Primary, however you can only configure NRS as a Secondary if the Primary is also running on a Co-res CS and SS.

— The CP PM Co-res CS and SS does not support a Secondary or backup NRS to a capacity higher than the Primary NRS due to the small disk size and low call rates on a CP PM Co-res CS and SS system.

- Element Manager (EM)

- Unified Communications Management (UCM) Primary security server in limited deployment. For more information about UCM Primary Security Server procedures, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Element Manager

The Element Manager (EM) interface includes the configuration and enabling of Signaling Server application services such as UNIStim, LTPS, SIP Gateway, H.323 Gateway, and SIP Line.

For more information about EM, see *Avaya Element Manager: System Administration* (NN43001-632).

Secure File Transfer Protocol

Secure Shell (SSH) Secure File Transfer Protocol (SFTP) is installed and enabled on CS 1000 Release 7.6 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 7.6, a password is used by an SFTP server to authenticate an SFTP client.

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

Media Gateway Extended Peripheral Equipment Controller (MG XPEC)

Contents

This section provides information on the following topics:

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 an Avaya CS 1000M system to an Avaya CS 1000E system. The MG XPEC card functions as a Gateway Controller and converts one IPE module into two Media Gateway shelves (IPMG type MGX) for use in a CS 1000E system.

Functional description

System architecture

The MG XPEC is a double wide, dual card Gateway Controller 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 .

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 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 Avaya 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 96-port DB.	Same file as MGC no modifications.
DSP2XX##	Mindspeed load for 32-port DB.	Same file as MGC no modifications.
DSP3XX##	Mindspeed load for 128-port 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 19 on provides a view of the MG XPEC faceplate.

Figure 19
MG XPEC faceplate
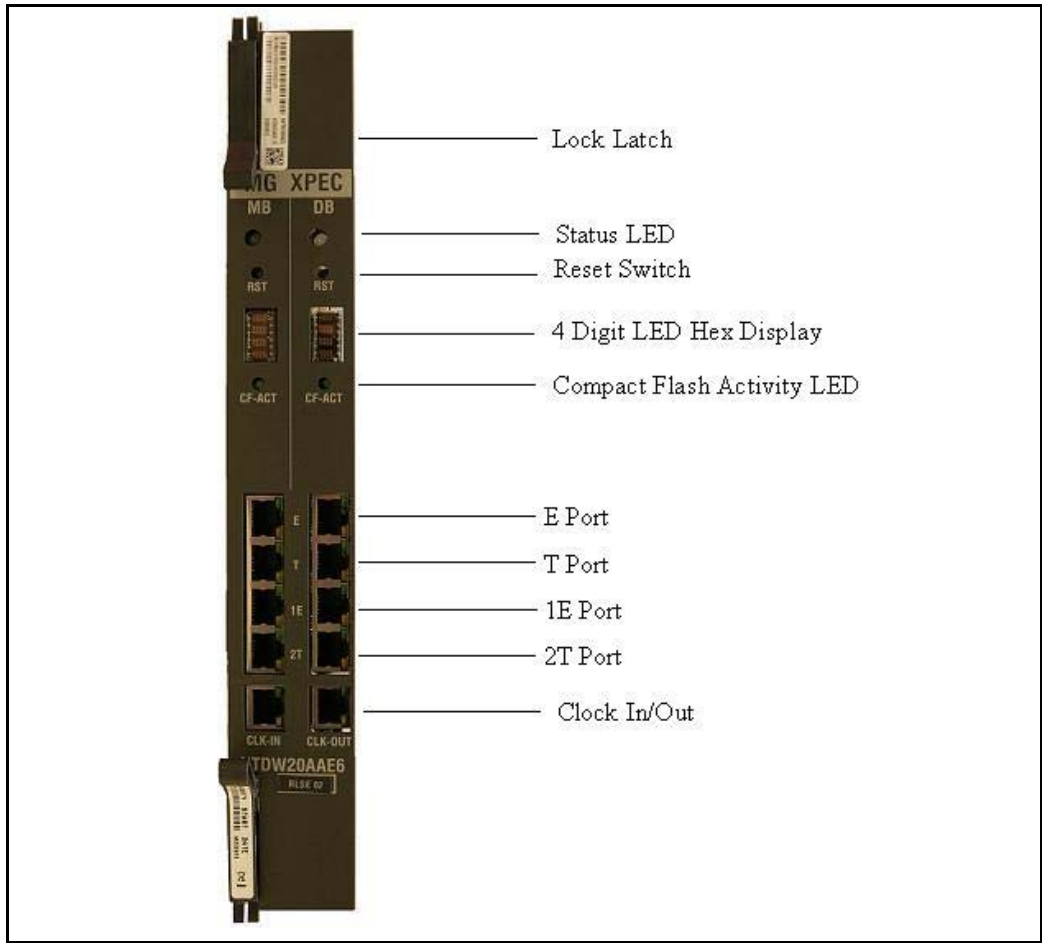
Each half of the MG XPEC must have its own network connections as well as its own set of IP addresses. To connect an MG XPEC for Dual Homing each half requires two ELAN and two TLAN physical connections as well as one ELAN IP address and three TLAN IP addresses. This is a total of four ELAN physical connections, four TLAN physical connections, two ELAN IP address and six TLAN IP addresses for each MG XPEC card. See Figure 20 on .

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 20
Connecting MG XPEC to the network
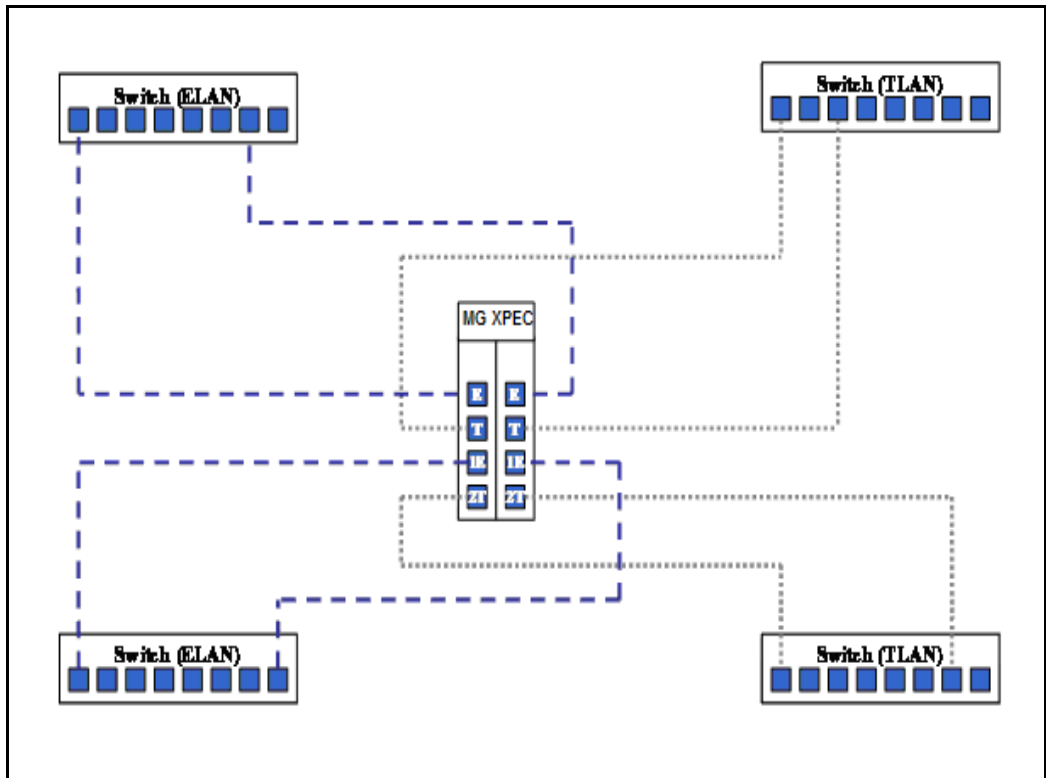
Adding ELAN routes

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 118.

Installing the MG XPEC

Installing the MG XPEC involves the following procedures:

1   Installing the new I/O panels (see Procedure 2 on page 112)

2   Cabling the MG XPEC motherboard (see Procedure 3 on page 113)

3   Cabling the MG XPEC daughterboard (Procedure 4 on page 115)

4   Installing the MG XPEC pack (see Procedure 5 on page 116)

5   Installing the new card slot label (see Procedure 6 on page 116)

6   Installing the Ethernet cables (see Procedure 7 on page 117)

7   (Optional) Installing the XSM cable (see Procedure 8 on page 121)

8   (Optional) Installing the Clock Reference cables (see Procedure 9 on page 126)

9   Preparing the IPE module for configuration (see Procedure 10 on page 127)

10   Configuring the MG XPEC card (see Procedure 11 on page 127)

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 21 on page 114) and insert cables.

Figure 21
TTY cables
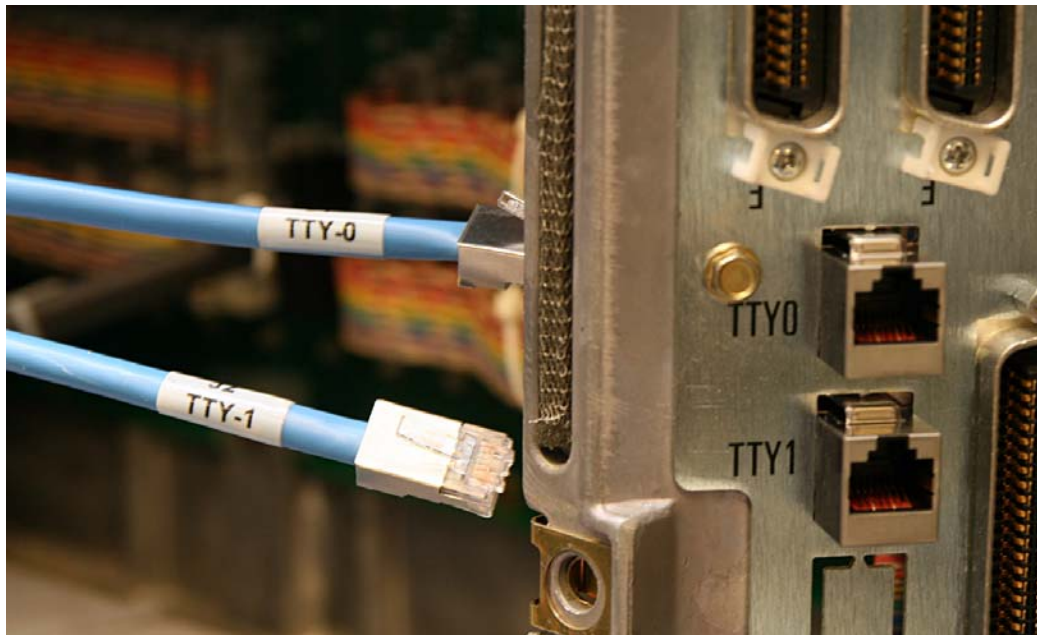
—————————————— **End of Procedure** ——————————————

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 22 on).

Figure 22
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 23 on).

Figure 23
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 24 on).

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 24
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 25 on .

Figure 25
NTDW22BAE6 XSM cable
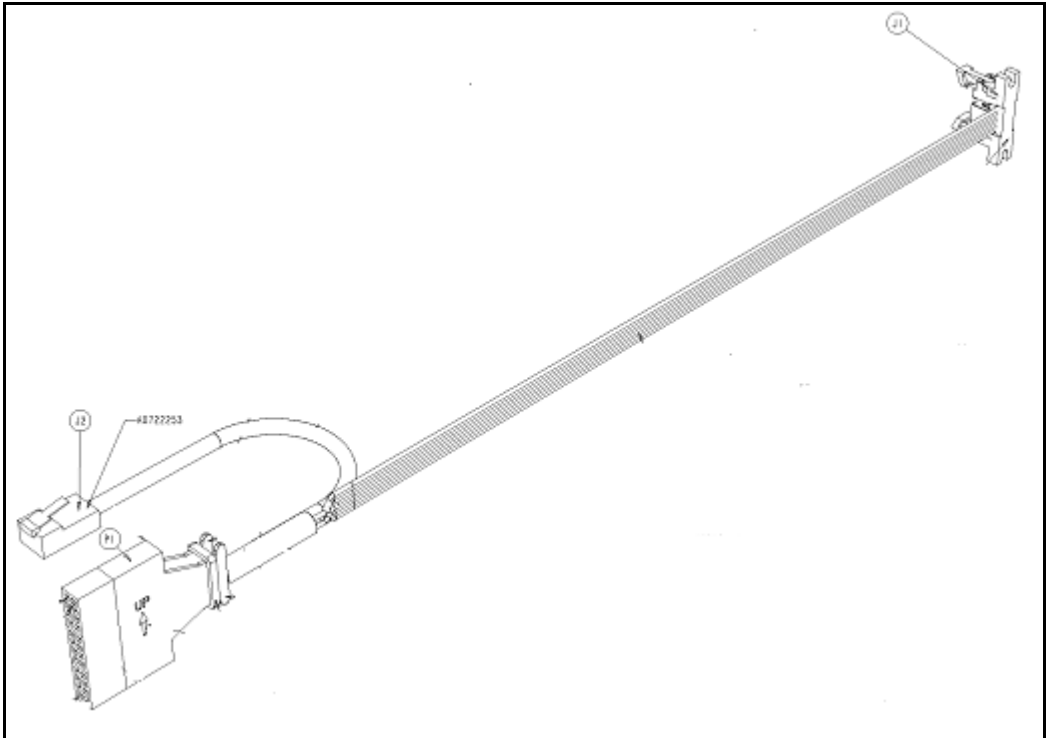
The NT8D46AG cable is shown in Figure 26 on .

Figure 26
NT8D46AG cable
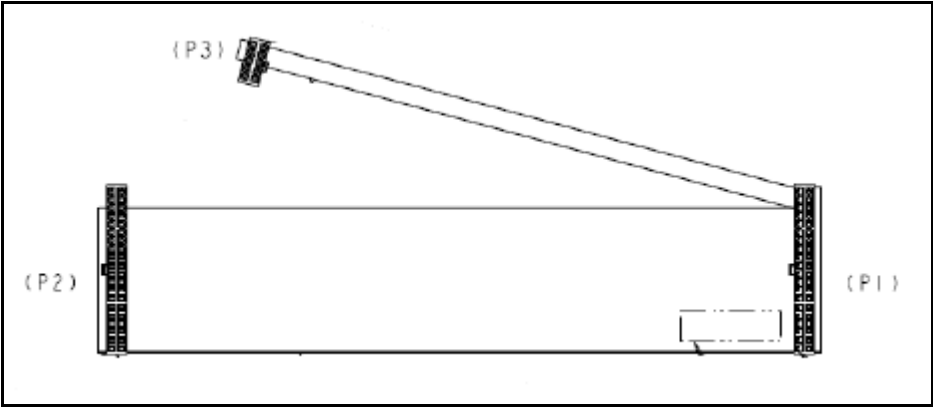
Procedure 8
Installing the XSM cable

1   Connect the P1 connection of the NTDW26BAE6 XSM cable to the SL0
connector on the backplane of the NT8D37 IPE module (see Figure 27 on
page 121).

Figure 27
NT8D37 IPE module SL0 connector
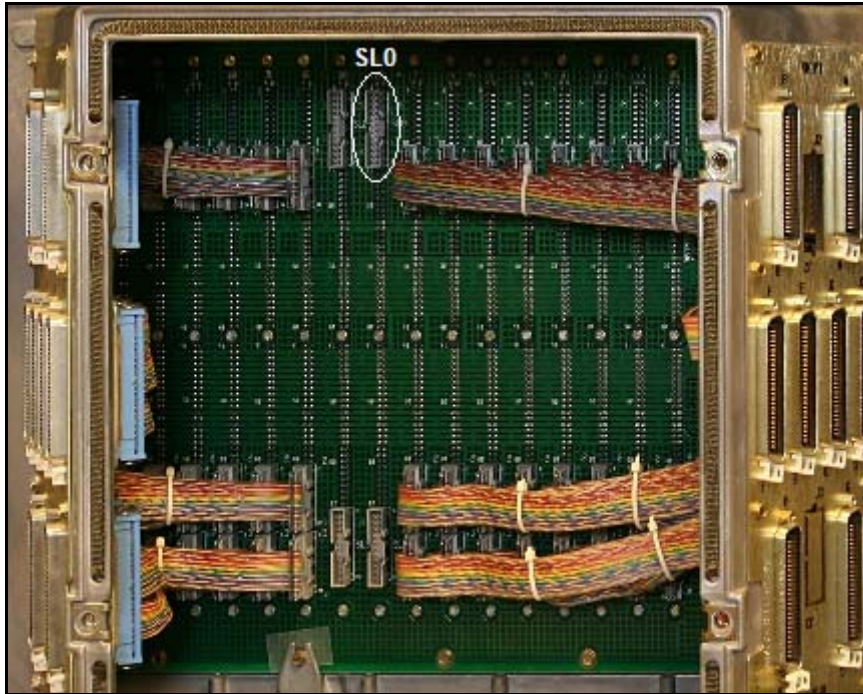
2   Connect the J2 connection of the NTDW26BAE6 XSM cable to a RJ45
coupler in the I/O panel on the IPE module.

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 28 on page 122).

Figure 28
NT8D46AG cable P3 connector in core/net shelf
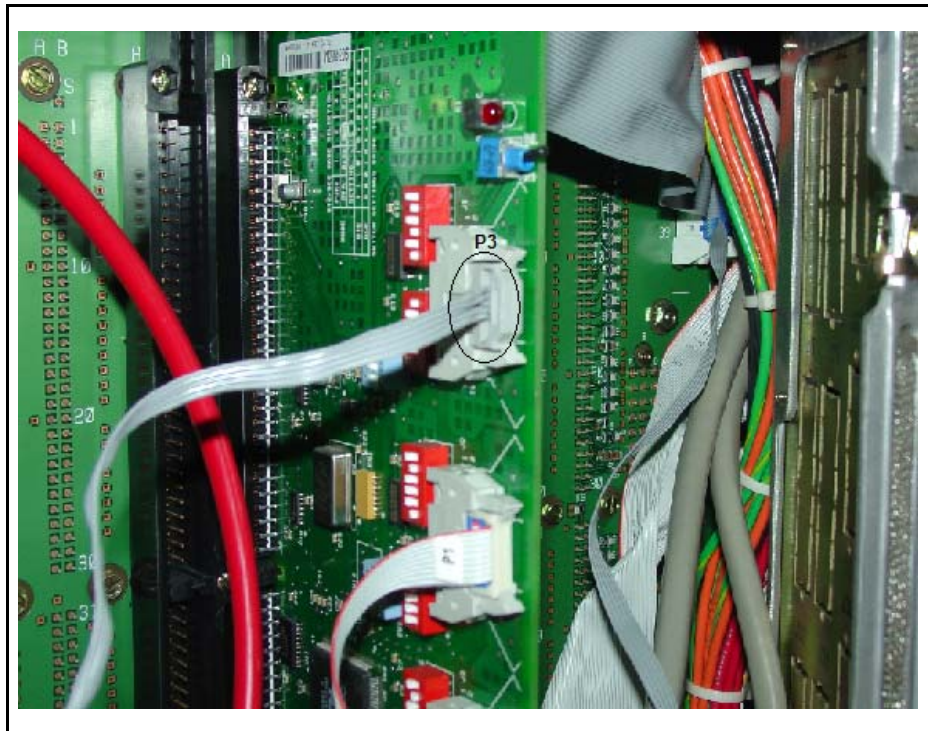
5 Connect the P3 connector on the NT8D46AG cable into the J1 connector on the NTDW26BAE6 XSM cable.

6 Ensure the master XSM is NT8D22AEE5 to support the MG XPEC card, see Figure 29 on . 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.

Figure 29
NT8D22AEE5 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 30 on .

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 30
MDF field PFT wiring to XSM
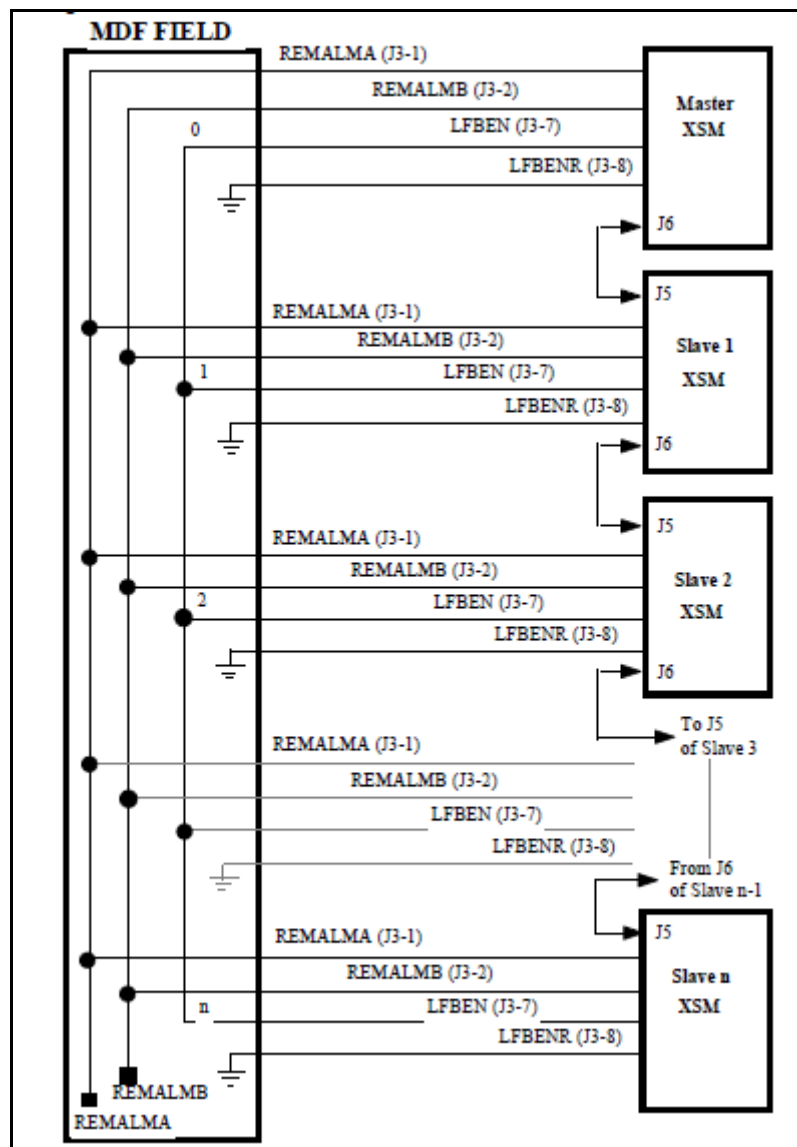
PFT activates if the relay connection between LFBEN and LFBENR closes. The PFT automatically activates if the MG XPEC link to the Call Server is lost, or if the MG XPEC motherboard reboots.

—————————— **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. Avaya 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 Gateway Controller (mgcsetup)" on .

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 31 on page 128 and Figure 32 on page 129 show an IPE shelf with XPEC and MG XPEC installed.

Figure 31
IPE Shelf with XPEC Installed

		0	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15	16
PE PWR SUPPLY	RING GENERATOR	LINE CARD 0	LINE CARD 1	LINE CARD 2	LINE CARD 3	LINE CARD 4	LINE CARD 5	LINE CARD 6	LINE CARD 7	XPEC	LINE CARD 8	LINE CARD 9	LINE CARD 10	LINE CARD 11	LINE CARD 12	LINE CARD 13	LINE CARD 14	LINE CARD 15	MISC

Figure 32
IPE Shelf with MG XPEC Installed

		0	1	2	3	4	5	6	7		0	1	2	3	4	5	6	7	
										MB DB									
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 C A R D 0	L I N E C A R D 1	L I N E C A R D 2	L I N E C A R D 3	L I N E C A R D 4	L I N E C A R D 5	L I N E C A R D 6	L I N E C A R D 7	M G X P E C	L I N E C A R D 0	L I N E C A R D 1	L I N E C A R D 2	L I N E C A R D 3	L I N E C A R D 4	L I N E C A R D 5	L I N E C A R D 6	L I N E C A R D 7	M I S C

Superloop X Shelf 0   Superloop X Shelf 1
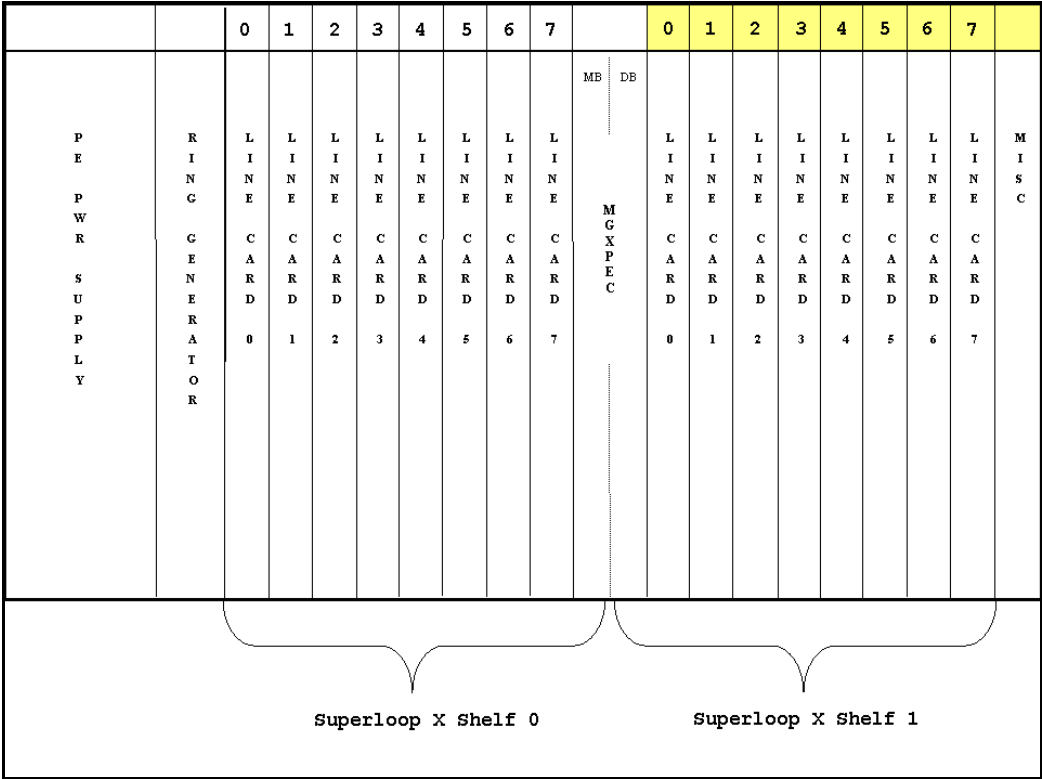
Maintenance

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 33 on .

For details on configuring an MGX type Media Gateway in Element Manager, see "Configuring the Media Gateway" on .

Figure 33
MGX type in Element Manager

Rack-mounting the components

Contents

This section contains information on the following topics:

Introduction

All Avaya Communication Server 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 Avaya Communication Server 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

- Procedure 13: "Rack-mounting a Media Gateway 1000 or Media Gateway Expander" on

- Procedure 14: "Removing the cover of a Media Gateway 1010" on

- Procedure 15: "Rack-mounting a Media Gateway 1010" on

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 132 lists examples of Avaya Communication Server 1000E system component weight. Consult the manufacturer's documentation for the weight of other components installed during the Avaya Communication Server 1000E system installation.

Table 22
Approximate weight of Avaya Communication Server 1000E system components (Part 1 of 2)

Component	Lbs	Kg
Media Gateway 1000		
— without cards	26	12
— with 4 cards	30	13.5

Table 22
Approximate weight of Avaya Communication Server 1000E system components (Part 2 of 2)

Component	Lbs	Kg
Media Gateway Expander		
— without cards	26	12
— with 4 cards	30	13.5
Media Gateway 1010		
— with MGU only	58	26.5
— MGU and 1 power supply	66	30
— MGU and 2 power supplies	74	33.5
— MGU, 2 power supplies, 2 CP PM, 1 MGC, and 10 typical IPE cards)	95	43
Layer 2 Ethernet Switch - approximate typical weight	15	6.8
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 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 34 on .

   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 35 on .

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

Figure 34
Unlock the latches
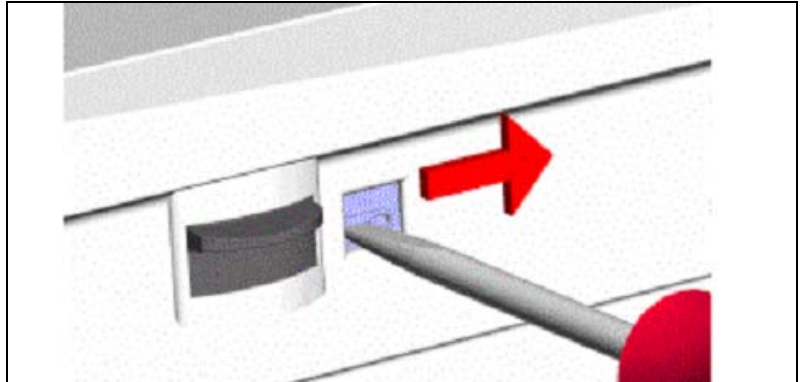
Figure 35
Unlock the cover
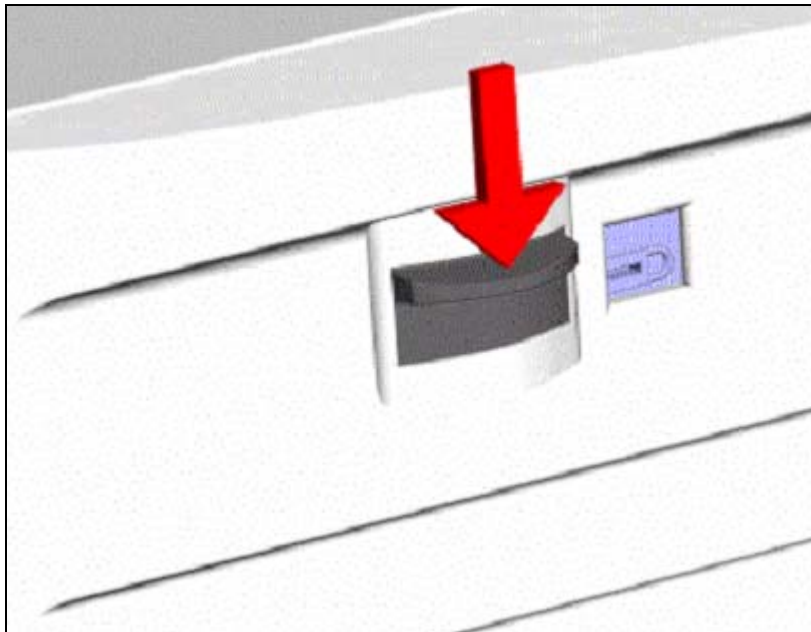
——————— **End of Procedure** ———————

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 36.

    b.   Fasten the screws.

Figure 36
Guide bracket installed in a rack
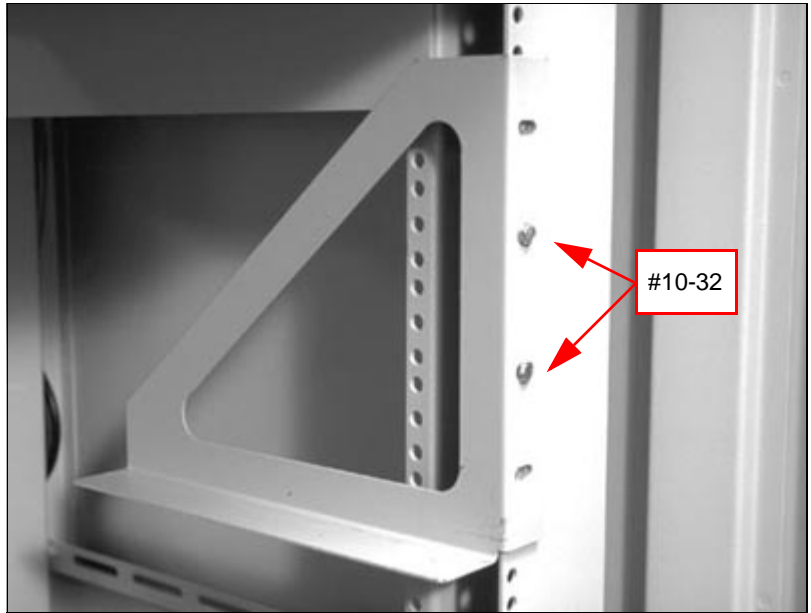
#10-32

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 37).

Figure 37
Right ear bracket on a Media Gateway 1000

Bracket flange marked with an "R". Attach this ear bracket to the right-hand side of the Media Gateway.

Attach the ear bracket to these holes.
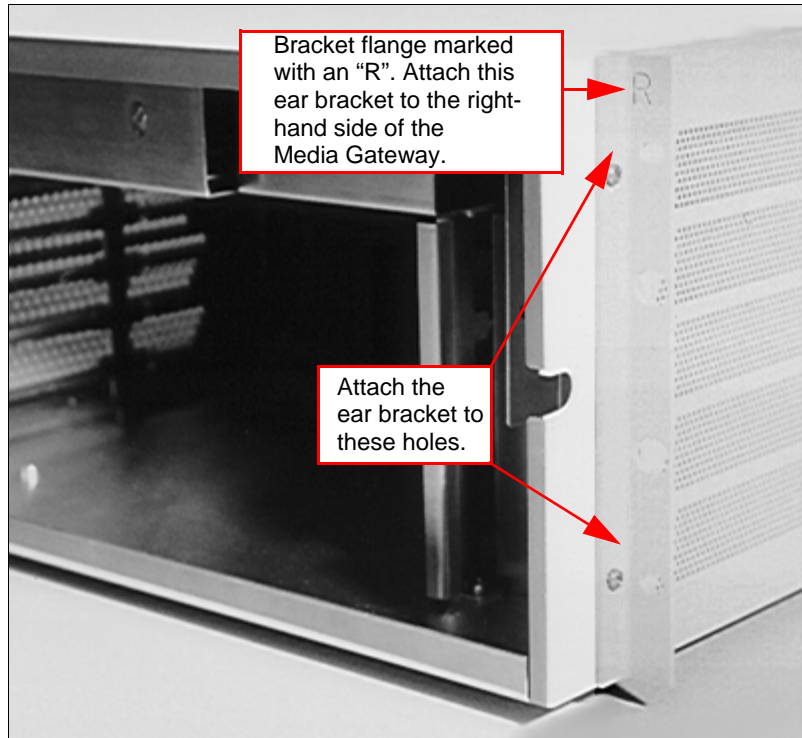
4   Attach the left ear bracket (marked with an "L") to the holes on the left side of the Media Gateway 1000 (near the front).

    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 38 on .

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 38
Media Gateway 1000 installed in a rack

Use two screws on each side to fasten the Media Gateway
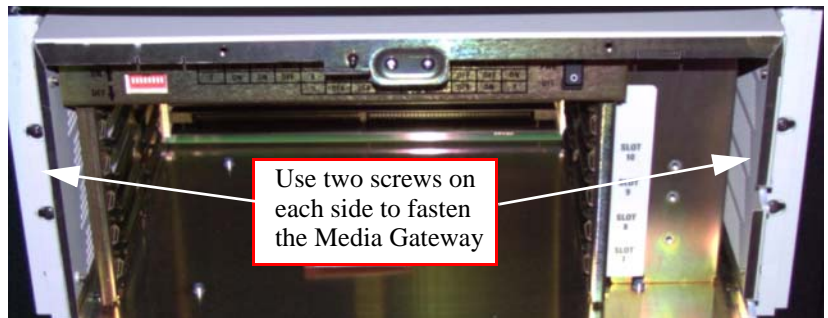
End of Procedure

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.

    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 39 on .

Figure 39
Unlock the cover
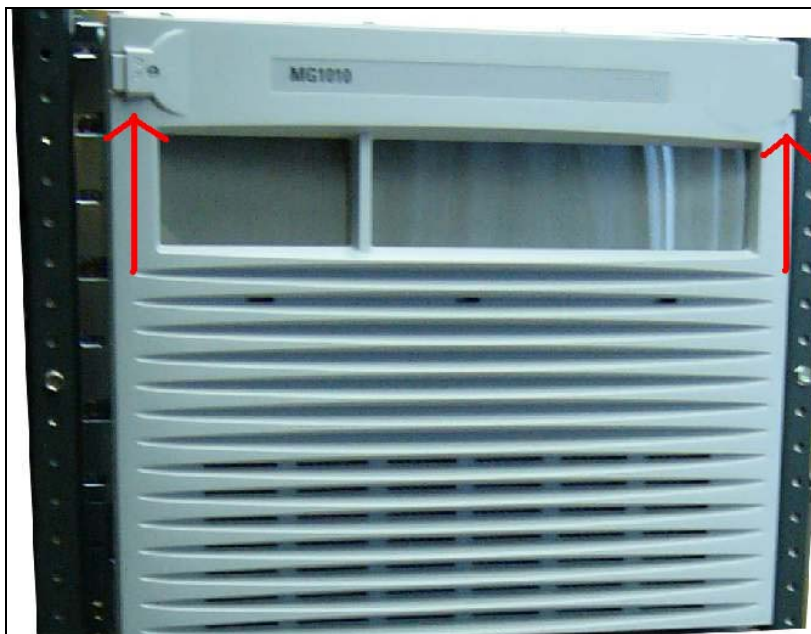
— End of Procedure —

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 36.

    b.   Fasten the screws.

Figure 40
Guide bracket installed in a rack
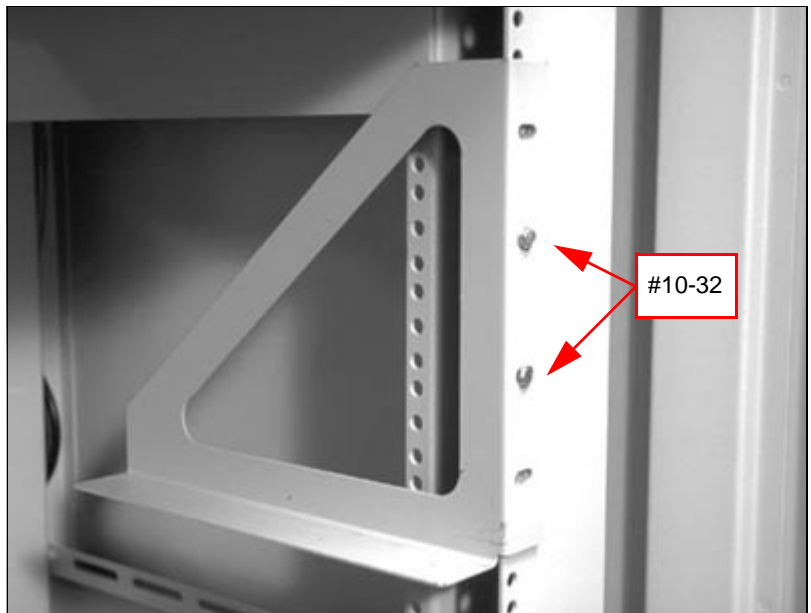
2   Fasten the left guide bracket to the left rack support.

    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 41

Figure 41
Media Gateway 1010 chassis
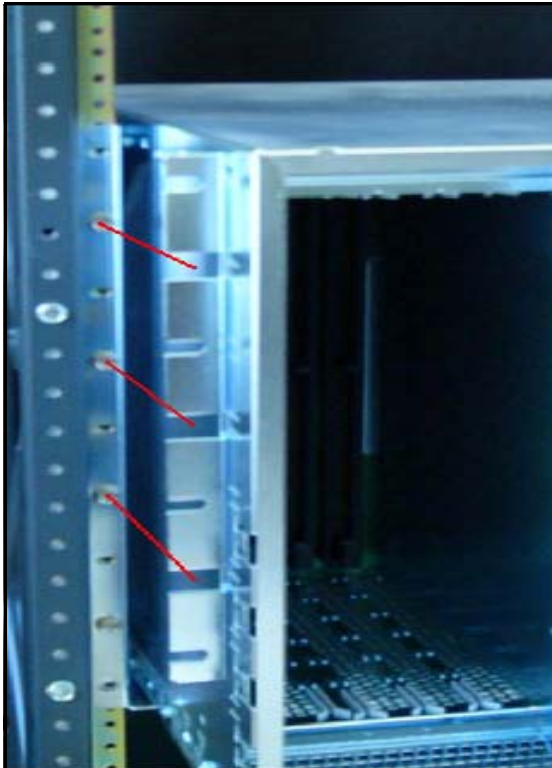
4   Install the remaining 10 screws, 5 on each side. See Figure 42 on
page 143.

Figure 42
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 43 on page 144.

With the door tabs positioned into the MG1010 chassis slots, pivot the MG1010 door closed. See Figure 44 on page 145.

Figure 43
Media Gateway 1010 chassis door tabs

Figure 44
Closing the Media Gateway 1010 chassis door
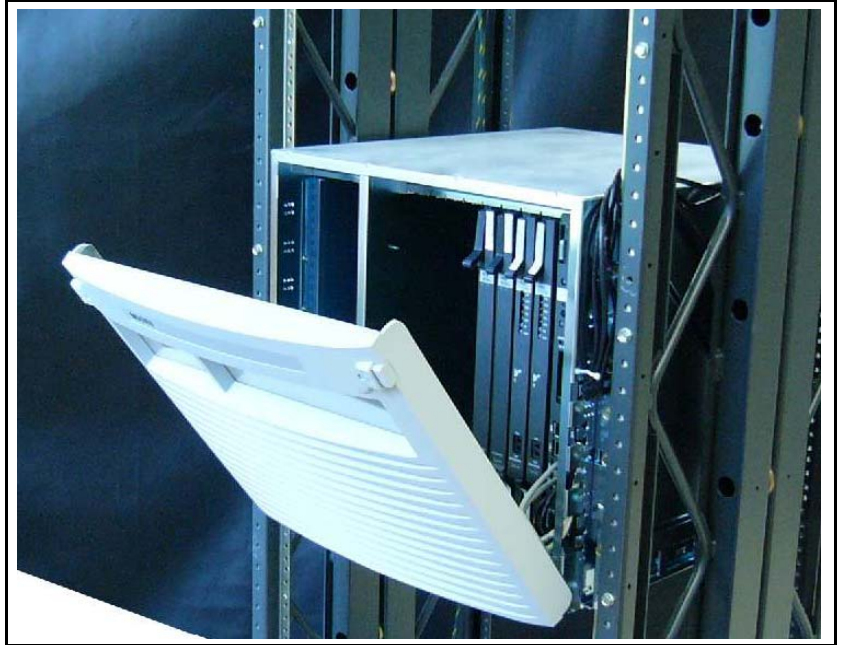
───── **End of Procedure** ─────

Installing system grounds

Contents

This section contains information on the following topics:

Introduction

This chapter contains the following procedures:

- Procedure 16: "Installing an NTBK80 Ground Bar" on

- Procedure 17: "Installing an NTDU6201 Ground Bar" on

- Procedure 18: "Grounding Media Gateways powered by the same electrical panel" on .

- Procedure 19: "Grounding Media Gateways powered by multiple electrical panels" on

- Procedure 20: "Grounding a Media Gateway Expander" on

- Procedure 21: "Grounding equipment in the UK" on

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 publication 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 149 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 45 on page 150 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 45
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 149 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 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 46 on page 152, at the back of the Media Gateway to the ground bar.

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

Figure 46
Media Gateway and Media Gateway Expander ground lug location
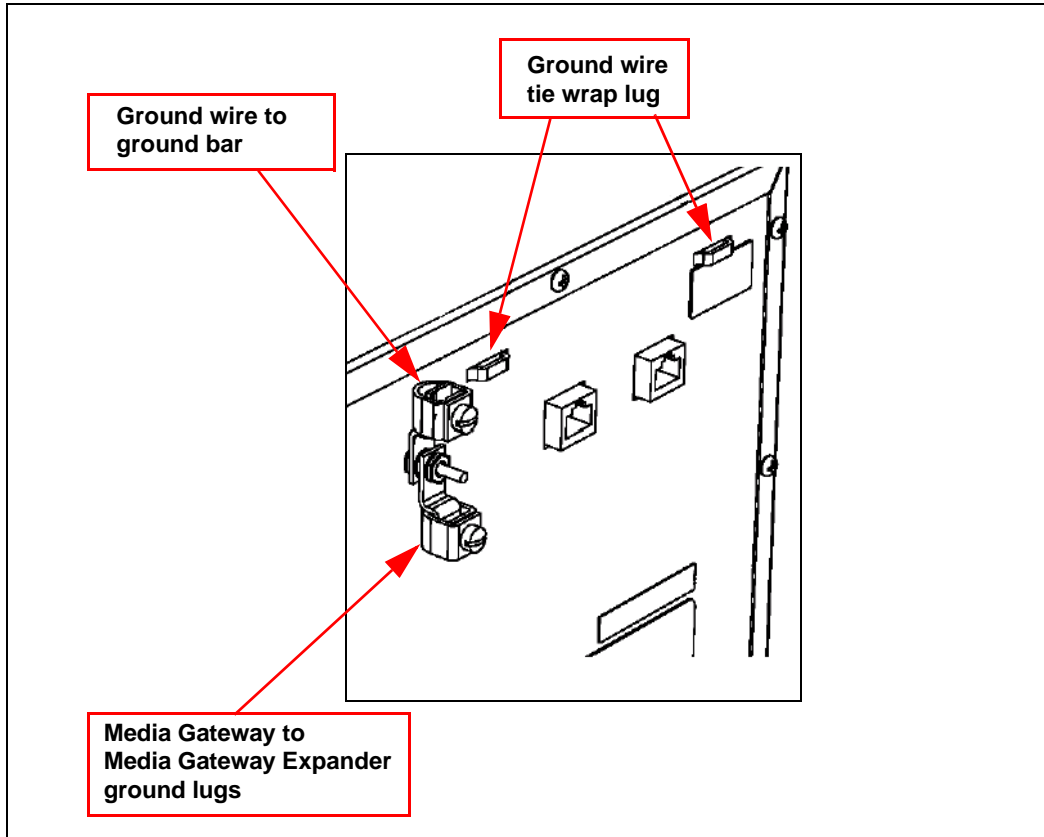
4   Test the ground.

—————— **End of Procedure** ——————

Grounding a Media Gateway powered by multiple electrical panels

Follow Procedure 19 on 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 46 on page 152.

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 47 on page 155.

Figure 47
Grounding multiple pieces of equipment in a rack

Terminal Server

Signaling Server

CS 1000E
Call Server

Media Gateway
Chassis

Media Gateway
Chassis Expansion

Grounding lug on
back of chassis

Other data
communications
equipment with
grounding lug

Rack
grounding
block

NTBK80 or NTDU6201 Ground Bar

553-CSE9027C
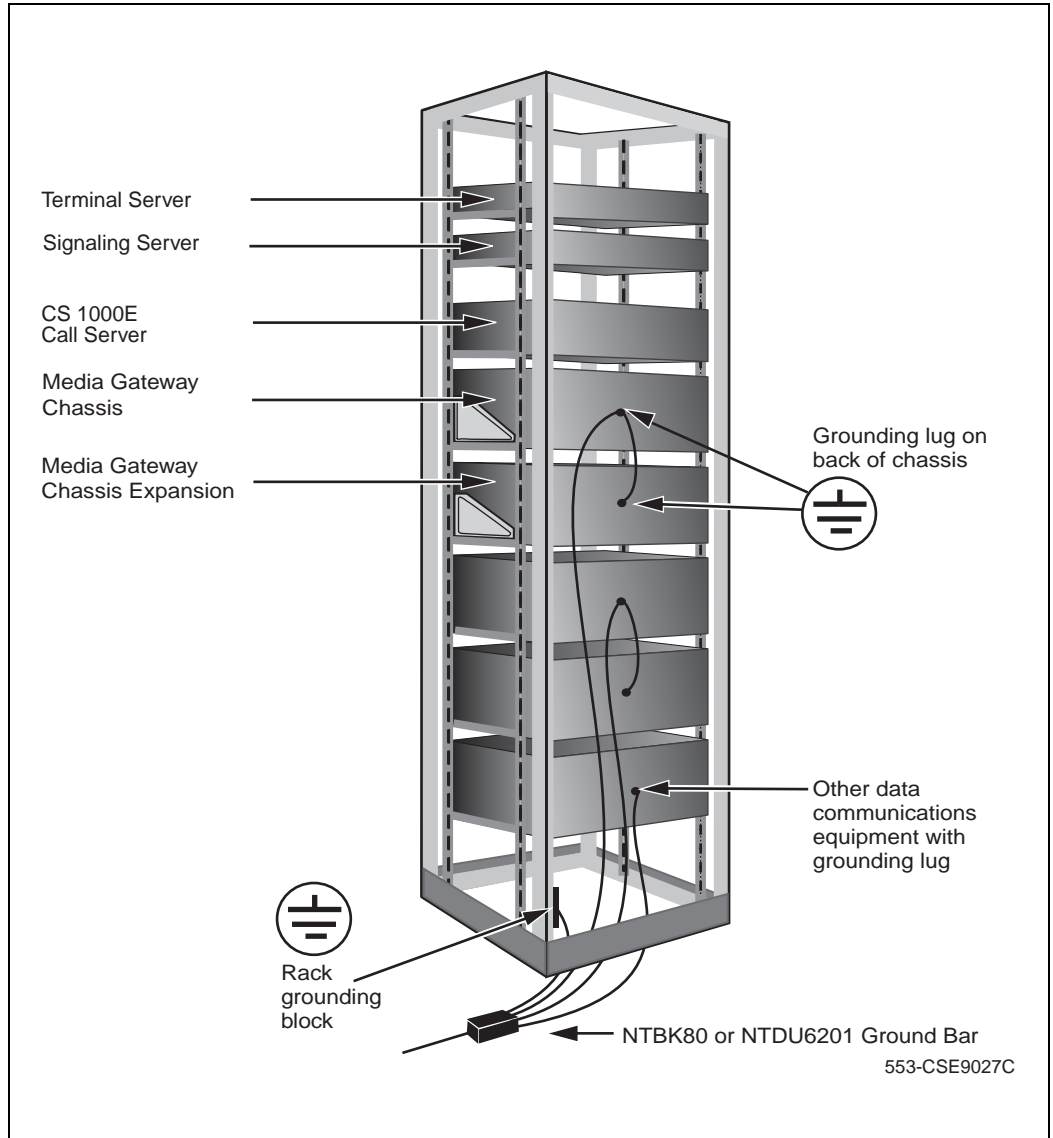
Grounding equipment in the UK

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 mm^2.

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

2   Jumper the Media Gateway Expander ground to the Media Gateway ground. See Figure 46 on .

3   In each Media Gateway:

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

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

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

──────────────── **End of Procedure** ────────────────

Installing and connecting Avaya CS 1000E hardware

Contents

This section contains information on the following topics:

Introduction

Several system connections are required to make the Avaya Communication Server 1000E operational. The Avaya Communication Server 1000E must be connected to the Media Gateway through the ELAN subnet. The system's components, such as the 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

- Procedure 23: "Connecting Campus Redundant Call Servers" on page 159

- Procedure 26: "Installing a DSP Daughterboard" on page 166

- Procedure 24: "Installing the MGC card" on page 161

- Procedure 28: "Installing the Server card (CP PM, CP DC)" on page 170

- Procedure 29: "Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter" on page 178

- Procedure 30: "Connecting a Media Card to the ELAN subnet" on page 179

- Procedure 31: "Connecting a Media Card to the TLAN subnet" on page 180

- Procedure 32: "Connecting a MG 1000E to a Media Gateway Expander" on page 180.

Connecting Server 0 to Server 1 (CP PIV, CP PM)

The Avaya Communication Server 1000E redundant architecture allows for the separation of Server 0 and 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 Ethernet switching products. 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 Servers are collocated, they can be connected using a standard shielded 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 method used to connect Server 0 to Server 1 depends on the proximity of the units. If the units are co-located, follow Procedure 22 to connect the Servers. If the units are configured for Campus Redundancy, follow Procedure 23 to connect the Servers.

Connecting co-located Servers

Follow Procedure 22 to connect co-located CP PM or CP PIV 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 Server 0.

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

———————————— **End of Procedure** ————————————

Connecting Campus Redundant Call Servers

The port-based VLANs used in the Layer 2 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 Layer 2 switch.

2   Connect the CAT5E RJ-45 HSP port of Call Server 1 to a 100BaseT port on the remote Layer 2 switch.

3   Link the two switches with two high-speed single-mode fiber uplinks (1 Gbps per link).

4   Assign three VLANs to the Layer 2 switch ports.

- VLAN 1 – Default

- VLAN 2 – HSP

  — Two ports connect CP PM card 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 Media Gateways, Avaya CallPilot™, Symposium, Element Manager.

  — Four high-speed fiber uplinks (GBIC ports)

─────── **End of Procedure** ───────

Installing Server cards and Gateway Controller cards

Server cards and Gateway Controller cards are circuit cards for use in an Avaya CS 1000E Media Gateway. The following sections describe the installation of Server cards and Gateway Controller cards. Preform the installation procedures appropriate for your hardware.

Gateway Controller installation

The Gateway Controller resides in slot 0 of a Media Gateway. The Gateway Controller can be a Media Gateway Controller (MGC) card, Common Processor Media Gateway (CP MG) card, or Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card.

Note: The MG XPEC card can only be installed in a Large System UEM. For more information about MG XPEC card installation, see "Media Gateway Extended Peripheral Equipment Controller (MG XPEC)" on page 103.

Perform the following procedure to install an MGC card into a Media Gateway.

Procedure 24
Installing the MGC card

1   Insert the MGC into Slot 0 of the Media Gateway.

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 "Serial port connectivity" on .

For the MG 1000E, connect the 3-port SDI cable (NTBK48AA) to the SDI0 port on the Media Gateway. Connect the opposite end of the cable to a maintenance terminal.

For the MG 1010, connect a shielded CAT5 or better Ethernet cable to the NTC325AAE6 serial cable kit. Connect this cable to the MGU faceplate port labelled TTY0 in the Media Gateway. Connect the opposite end of the cable to a maintenance terminal.

Avaya recommends you use direct connections from the faceplate jacks of the Gateway Controller to the Layer 2 switch. Figure 48 on illustrates a Media Gateway chassis with a MGC connected directly to a Layer 2 switch. Figure 49 on illustrates a Media Gateway cabinet with MGC connected directly to the Layer 2 switch.

Figure 48
MGC MG Cable
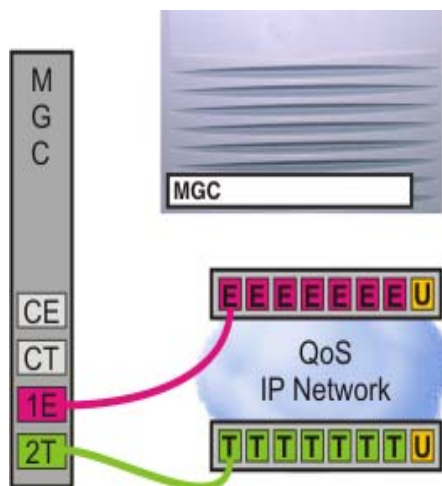
Figure 49
MGC Cabinet Cable
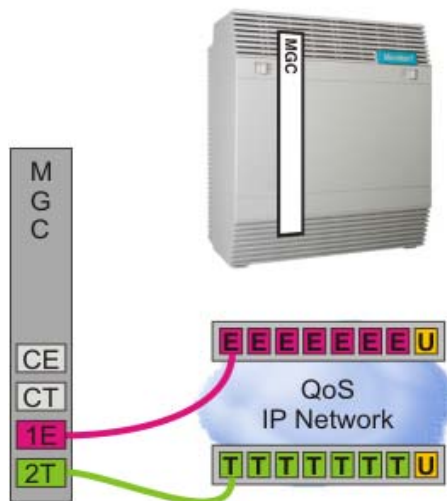
3   Power on the Media Gateway.

• 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** ————————————

Perform the following procedure to install a CP MG card into a Media Gateway

Procedure 25
Installing the CP MG card

1   Ensure that the security dongle is inserted on the CP MG card.

2   Insert and slide the CP MG card into Slot 0 of a Media Gateway.

3   Lock the card in place with the faceplate latches.

4   Connect the serial cable:

   Note: The NTC325AAE6 serial port adapter kit is required.

   • Connect a CAT5e or CAT6 Ethernet cable to the TTY1 port on the CP MG faceplate.

   • Connect a NTC326AAE6 serial port adapter (9 pin or 25 pin) to the other end of the CAT5e or CAT6 Ethernet cable.

   • Connect the CAT5e or CAT6 Ethernet cable with adapter to a serial port on a maintenance terminal. If you require a longer cable to reach your maintenance terminal, you can attach a standard serial port cable to the adapter for extended cable length.

5   Configure the maintenance terminal for VT-100 emulation, 9600 bps, 8-N-1.

The Gateway Controller portion of the CP MG card is ready to configure.

The CP MG card functions as a Server and a Gateway Controller. Perform the following steps to connect the Server portion of the CP MG card to the CS 1000E network.

6   Connect the ELAN cable:

   • Connect one end of a shielded CAT5e or CAT6 Ethernet cable to the 1E (ELAN) port on the CP MG faceplate.

   • Connect the other end of the cable to the ELAN subnet of the CS 1000E network.

7   Connect the TLAN cable:

   • Connect one end of a shielded CAT5e or CAT6 Ethernet cable to the 2T (TLAN) port on the CP MG faceplate.

   • Connect the other end of the cable to the TLAN subnet of the CS 1000E network.

In a MG 1000E or a MG 1010 with a Server card in slots 1-10, the SDI port of the CP PM or CP DC card routes through the backplane to the 50-pin Amphinol connector on the back of the Media Gateway. An NTAK19EC cable is required to adapt the 50-pin Amphinol connector to two 25-pin DB connectors. Use Port 0 for maintenance access, and Port 1 for an external modem connection.

In a MG 1010, the MGU provides TTY0 and TTY1 serial ports for the Server card in slot 22 and slot 23. Connect a shielded CAT5 or better Ethernet cable to a NTC325AAE6 serial port adapter. Attach this cable to the MGU port labelled TTY0 for CP1 or CP2. CP1 is for slot 22, CP2 is for slot 23.

Avaya recommends you use direct connections from the faceplate jacks of the Server cards to the Layer 2 ethernet switches. Figure 50 on page 164 illustrates a Media Gateway chassis with a CP PM Call Processor connected directly to a Layer 2 switch. Figure 51 on page 164 illustrates a Media Gateway chassis with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 50
CP PM CP MG Cable
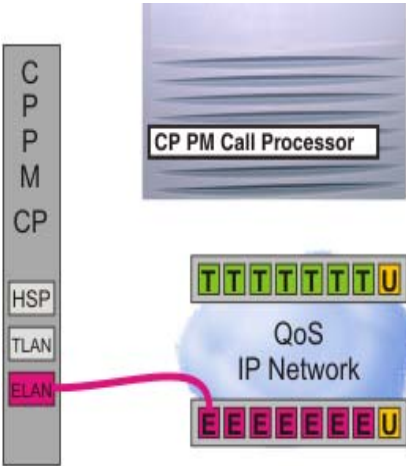
Figure 51
CP PM SS MG cable
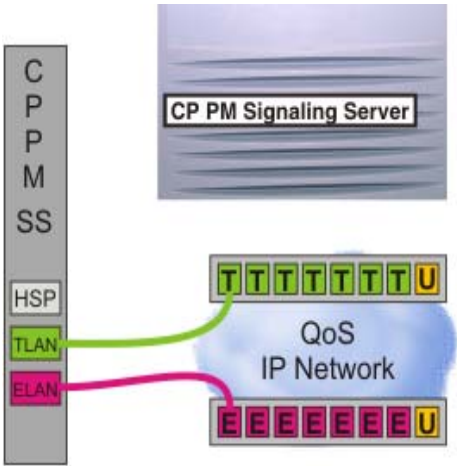
Figure 52 on page 165 illustrates a Media Gateway cabinet with CP PM Call Processor connected directly to a Layer 2 switch.Figure 53 on page 165 illustrates a Media Gateway cabinet with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 52
CP PM CP Cabinet cable
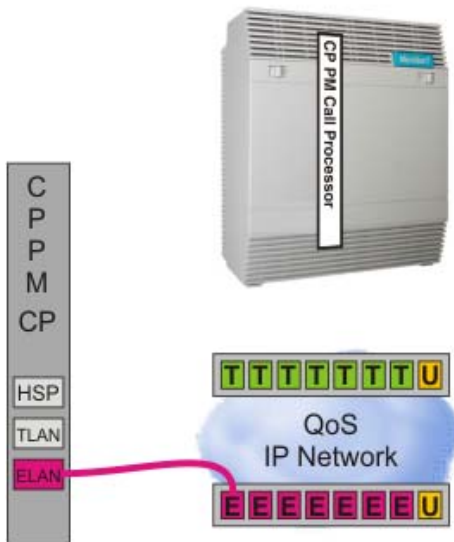
Figure 53
CP PM SS Cabinet cable
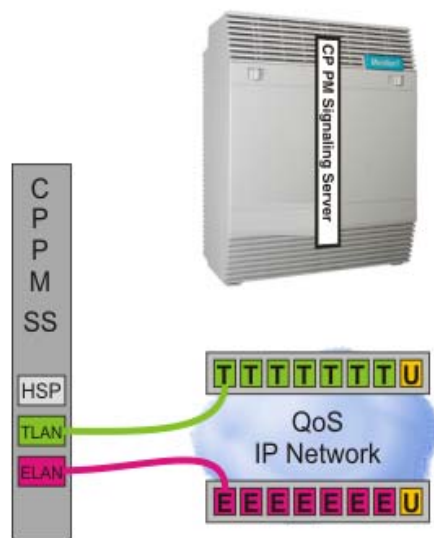
8   Power on the Media Gateway.

- CP MG display will read BOOT.

- Power on self-test will begin. CP MG display will read POST.

- If self-test completes successfully, CP MG display changes to PASS. otherwise, an error code Exxx is displayed.

- The CP MG begins loading application software. Display changes to LOAD.

————   **End of Procedure**   ————

Installing a Media Gateway Controller DSP Daughterboard

The MGC card provides two expansion slots for Digital Signal Processor (DSP) daughterboards (DB). You must install the DSP DB on the MGC card before installing the MGC card into the Media Gateway.

Note: The CP MG card and MG XPEC card contain non-removable DSP resources.

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

Procedure 26
Installing a DSP Daughterboard

1   Place the MGC card on a safe ESD surface.

2   Place the DSP DB in either DB position 1, position 2, or both, depending on how the Daughterboards will be configured. The MGC card supports the DB-32, DB-96 and DB-128 Daughterboards.

3   Ensure the DSP DB is securely attached to the MGC (using the four supplied screws and standoffs).

————   **End of Procedure**   ————

Configuring the Gateway Controller (mgcsetup)

To configure the Gateway Controller in Element Manager, initial configuration of the Gateway Controller must be completed through the command line first using mgcsetup (see Procedure 27 on).

There are 3 ways to enter mgcsetup:

- If no IP information exists on the Gateway Controller, 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 Gateway Controller ships 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 27
Configuring the Gateway Controller (mgcsetup)

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

1 Enter network IP information at the mgcsetup menu.

   Note: You must configure the TLAN with Element Manager on current MGC loadware. TLAN configuration information only appears if the 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
Primary CS IP:            192.168.3.32
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: Avaya CallPilot™, 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]) : n

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.
```

2 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  : CS 1000E_N313
Primary CS IP        : 192.168.3.32
Alternate CS 1 Hostname :
Alternate CS 1 IP       : 0.0.0.0
Alternate CS 2 Hostname :
Alternate CS 2 IP       : 0.0.0.0
TLAN set to auto negotiate.
ELAN set to auto negotiate.
ELAN security Enabled, level is Optimized Security

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

3   IP changes require a reboot. Enter "y" at the prompt.

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

After reboot, the Gateway Controller connects to the Server and downloads the remaining configuration information.

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

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

After reboot, the Gateway Controller registers to the Server and the LED displays the superloop and shelf (eg: 4 0) of the Media Gateway. If registration fails, it shows "UNRG."

If the card does not register, disable sFTP by issuing the following command in LD 117:

```
DIS TRANSFERS SECURE
```

———————————— **End of Procedure** ————————————

Installing the Server card

The following procedure describes how to install the CP PM or CP DC server card in a Media Gateway.

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

For CS 1000 Release 7.6, 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 *Avaya Circuit Card: Description and Installation* (NN43001-311).

Procedure 28
Installing the Server card (CP PM, CP DC)

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

2   Insert the Server card:

   • Slide the Server card into Slot 1 (or higher) of the Media Gateway.

   • Slide the Server card 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 Server card.

   • 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.

   • Server cards in slots 1-10 require the NTAK19EC 2-port SDI cable for serial connections.

   • Connect the other end of the serial cable to the serial port on the maintenance terminal.

Figure 54
2-port SDI cable (NTAK19EC) cable

——————————— **End of Procedure** ———————————

Cabling the cards

The following sections describe the process required to cable Gateway Controller and Server cards.

Cabling the MGC card

The 3-port SDI cable (NTBK48AA) is connected to the SDI (RS-232) port on the Media Gateway. Figure 60 on shows front of MGC. The CE and CT ports are reserved for connections to the Server card. The CE connects to the ELAN port of the Server. The 1E and 2T ports must be attached to the Layer 2 Ethernet switch.

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

Avaya recommends you use direct connections from the faceplate jacks of the Gateway Controller to the Layer 2 switch. Figure 48 on illustrates a Media Gateway chassis with a MGC connected directly to a Layer 2 switch. Figure 49 on illustrates a Media Gateway cabinet with MGC connected directly to the Layer 2 switch.

Figure 55
MGC MG Cable
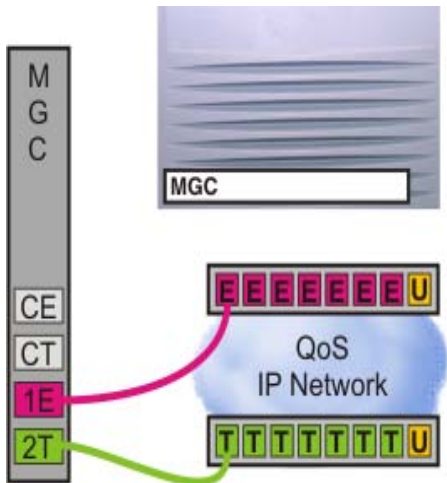
Figure 56
MGC Cabinet Cable
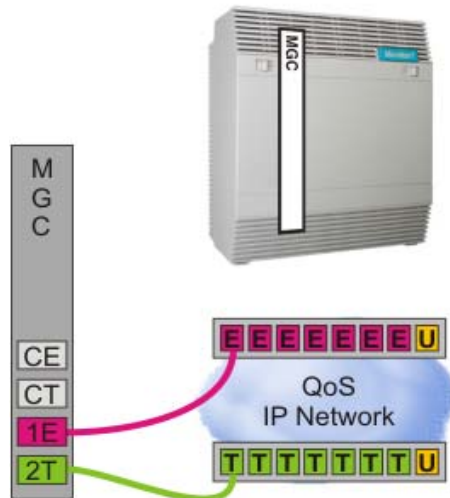
MGC Ethernet Capabilities

An MGC features six Ethernet interfaces set to auto-negotiate by default: four on the faceplate (see Figure 60 on page 176), and two on the back. For details, see Appendix A: "Supported cabling options." on page 475.

Cabling the CP MG card

The CP MG card provides two serial port connections on the CP MG faceplate. An NTC325AAE6 serial port adapter kit is required to connect a 9-pin or 25-pin serial cable to the RJ-45 connector on the faceplate.

The CP MG card provides four external Ethernet connections. Two connections are on the faceplate, and two connections are on the backplane. The two faceplate Ethernet ports (1E, 2T) provide TLAN and ELAN connections.

The CP MG Server and Gateway Controller components are connected internally through the embedded Ethernet switch on the CP MG card. The Server and Gateway Controller are co-located on the motherboard of the CP MG card, therefore you do not require any external cabling to establish IP data links between the CP MG Server and the Gateway Controller.

Avaya recommends you use direct connections from the faceplate jacks of the Server cards to the Layer 2 ethernet switches. Figure 57 on page 174 illustrates a Media Gateway chassis with a CP PM Call Processor connected directly to a Layer 2 switch. Figure 58 on page 174 illustrates a Media Gateway chassis with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 57
CP PM CP MG Cable
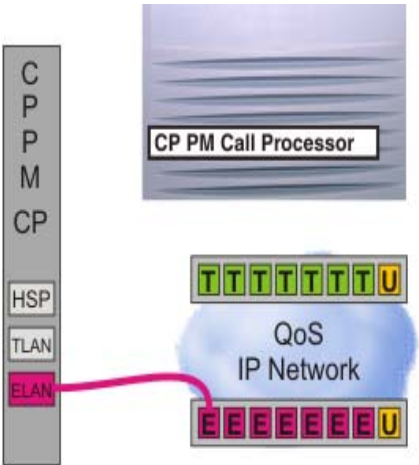
Figure 58
CP PM SS MG cable
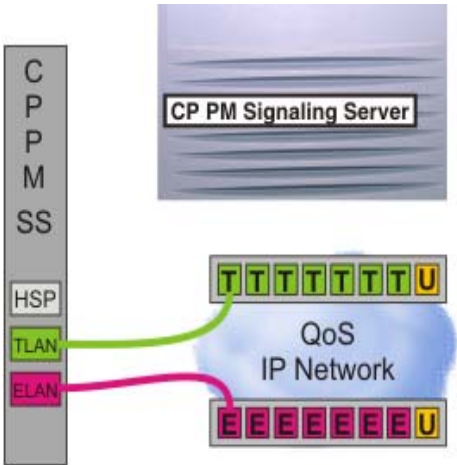
Figure 59 on page 175 illustrates a Media Gateway cabinet with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 59
CP PM SS Cabinet cable
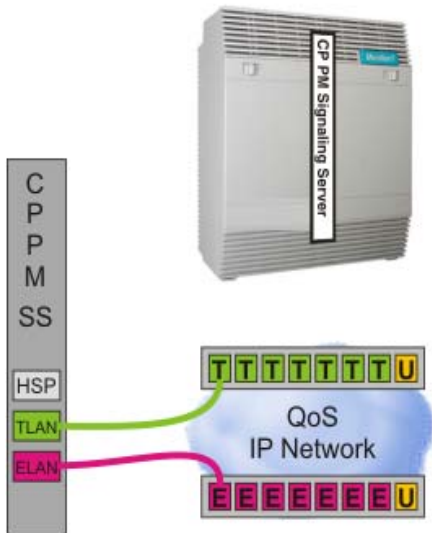
Connecting the Servers to a Media Gateway

A Media Gateway performs functions determined by the CS 1000E Server. The Media Gateway detects stimulus events from its interface cards and passes these events to the Server, where the high-level call processing decisions are made.

The NTBK48AA 3-port SDI cable connects to the SDI port on the Cabinet. shows front of MGC card 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 60
MGC faceplate
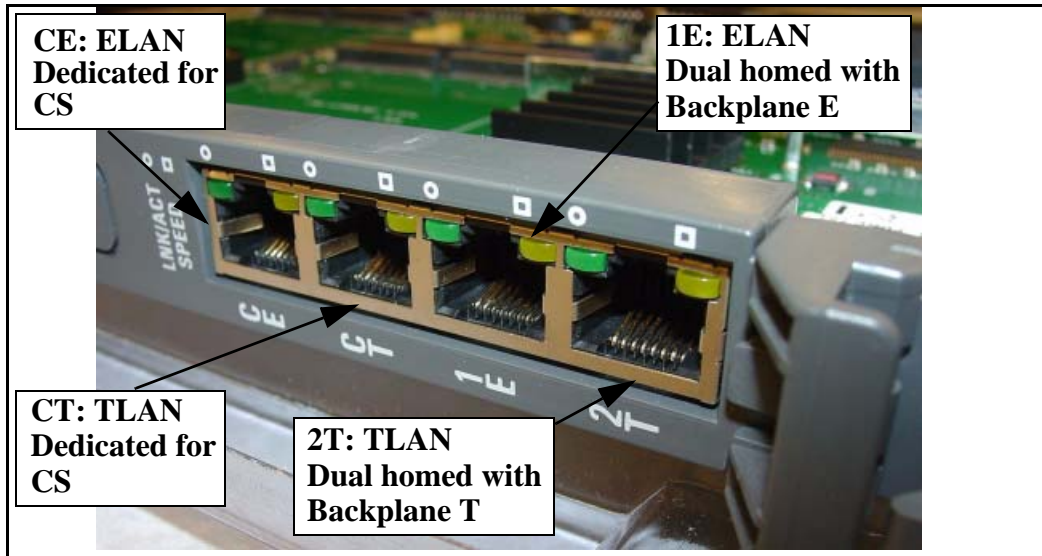
Note: The Media Gateway can be connected directly to the ELAN subnet, or it can be connected to the ELAN subnet through a Layer 2 Ethernet switch.

Cabling the Server

In a typical configuration, the COM (SDI) port of the Server is routed through the backplane of the Media Gateway to the 50-pin Amphinol connector on the back of the shelf. An NTAK19EC cable ships with the Server that adapts the 50-pin Amphinol to a 25-pin DB connector. 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 Server 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. The NTAK19EC cable is required for any Server cards installed in slots 1-10.

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

Appendix A: "Supported cabling options." on page 475 illustrates the different ways to connect the Call Servers, Gateway Controllers, and 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 61 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 61
Shielded 50-pin to Serial/ELAN/TLAN adapter
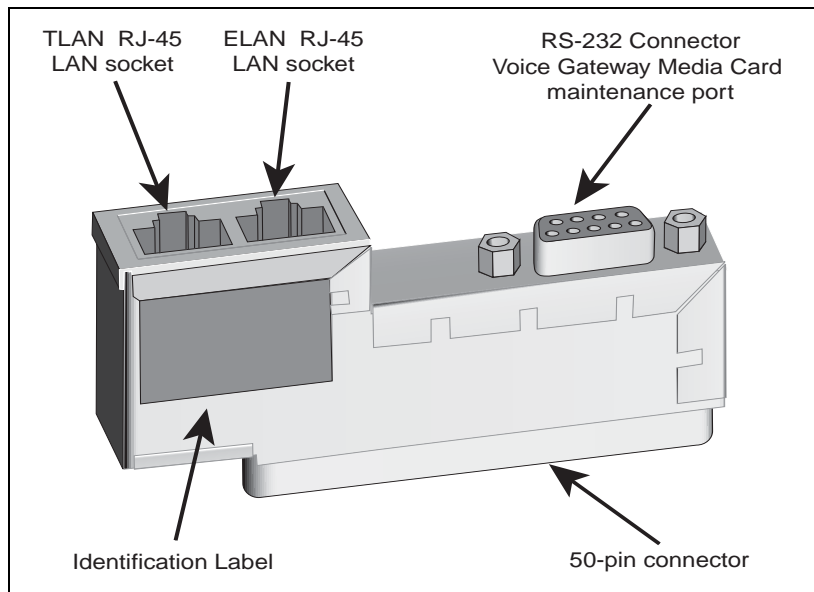
Procedure 29
Inserting a Shielded 50-pin to Serial/ELAN/TLAN adapter

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 358.

4   Insert the adapter, shown in Figure 61, 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 62 on page 179, the Media Card is installed in card slot 1. Therefore, the adaptor is installed in connector Card 1.

———————————— **End of Procedure** ————————————

Connecting a Voice Gateway Media Card to the ELAN subnet

Follow Procedure 30 to connect a Voice Gateway Media Card to the ELAN.

Procedure 30
Connecting a Media Card to the ELAN subnet

1   Connect a standard CAT5 patch cable to the ELAN network interface on the Adaptor (Figure 62 on).

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

Figure 62
Shielded 50-pin to Serial/ELAN/TLAN adapter on the Media Gateway
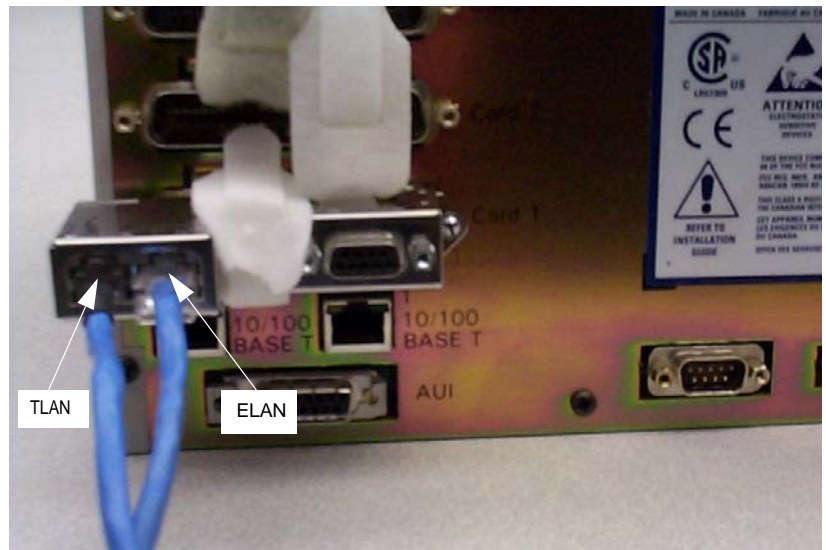
———————— **End of Procedure** ————————

Connecting a Voice Gateway Media Card to the TLAN subnet

Follow Procedure 31 to connect a Voice Gateway Media Card to the TLAN subnet.

Procedure 31
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 62 on).

2   Connect the other end of the standard CAT5 patch cable to an RJ-45 TLAN network interface on the Layer2 Ethernet switch.

——————————————— **End of Procedure** ———————————————

Connecting a MG 1000E to a Media Gateway Expander

Procedure 32 describes how to connect a Media Gateway Expander to the MG 1000E. The Media Gateway Expander Cable Kit (NTDK89) contains two NTDK95 cables used to connect the Media Gateway Expander to the MG 1000E. One cable provides DS-30X connectivity while the second cable provides CE-MUX connectivity to slot 10 only.

Note: The MG 1010 does not require or support a Media Gateway Expander.

Procedure 32
Connecting a MG 1000E to a Media Gateway Expander

1   Connect the non-labeled side of NTDK95 cable to the CE-MUX connector at the back of the MG 1000E 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 MG 1000E 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 63 on page 181 shows the MG 1000E 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 63
MG 1000E and Media Gateway Expander connections
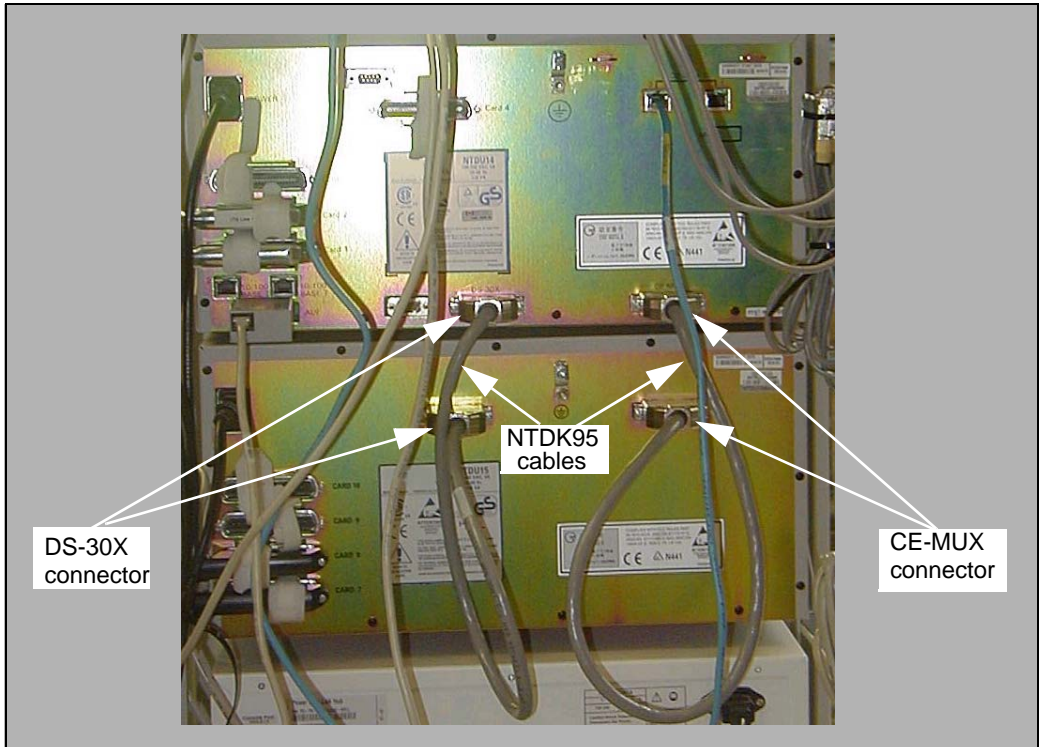
———————   **End of Procedure**   ———————

Installing software on the Avaya Communication Server 1000E

Contents

This section contains information on the following topics:

Introduction

This chapter provides local software installation information for Avaya Communication Server 1000E Standard Availability and High Availability (CP PIV and CP PM) VxWorks-based systems. For information about Linux-based software installations, or Deployment Manager remote software

installations, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315). For information about Co-resident Call Server and Signaling Server systems, see *Avaya Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509).

Software Install Kit

The Software Install Kit required to install CP PM and CP PIV contains 3 Compact Flash (CF) cards:

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

2   The software installation RMD contains the following:

    a   An Avaya CS 1000E Release 7.6 software

    b   keycode files

    c   CS 1000E Release 7.6 Dependency List (PEPs) for systems

    d   default database (if initiated during the installation)

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

Note: The 1GB CF FMD is required for a VxWorks-based SA or HA CP

> **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 Avaya Software Download web site and install the software as part of the installation process.

PM configuration.

Creating a Call Processor software Compact Flash card

The RMD installation CF card ships pre-formatted and bootable from Avaya. If the Avaya CF card does not boot, you can make it bootable by performing Procedure 33 on .

For VxWorks based CP PIV and CP PM cards, see Appendix B for supported media and memory sizes. USB devices are not supported.

Note: Avaya does not provide support for customer provided CF cards.

Perform the following procedure to create a bootable Call Server software CF card.

> **CAUTION — Data Loss**
>
> The PC utility used in the following procedure (mkbootrmd.bat) does not validate whether the drive letter entered is a valid RMD or size of the media. You must enter the correct drive letter when prompted or risk formatting the incorrect drive.
>
> *Note:* This utility is supported by all versions of Microsoft Windows.

Procedure 33
Creating a bootable Call Server software CF card

1   Download the latest software load zip file for your platform type (CP PIV, CP PM) from the Avaya website to a folder on your PC.

2   Navigate to the folder on your PC where you downloaded the file.

3   Extract all the files to a temporary folder. Unzip the Call Server software load zip file to create the following six directories:

•   \backup

•   \install

•   \keycode

•   \licenses

•   \swload

•   \utilities

4   Insert the CF card into the PC.

5   Click on **My Computer** icon to verify the drive letter assigned to the CF drive, see Figure 64 on page 187.

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

Figure 64
Verify CF card drive letter
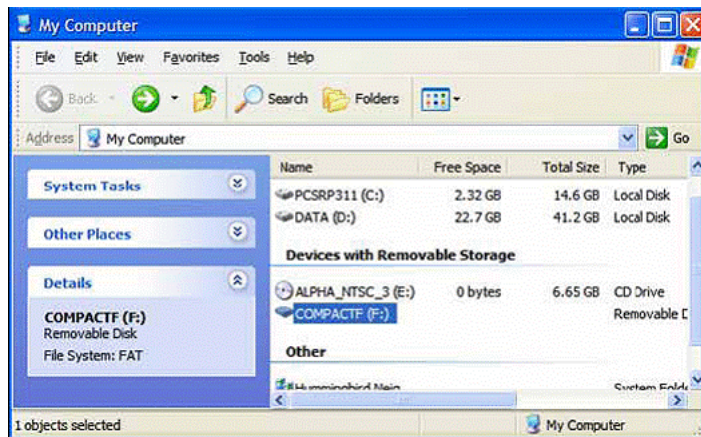
6   Navigate to the folder on your local PC where you unzipped the Call Server software load files.

7   Open the Utilities directory and locate the *mkbootrmd.bat* file, see Figure 65 on page 188.

The mkbootrmd batch file can format the CF card and make the CF card bootable.
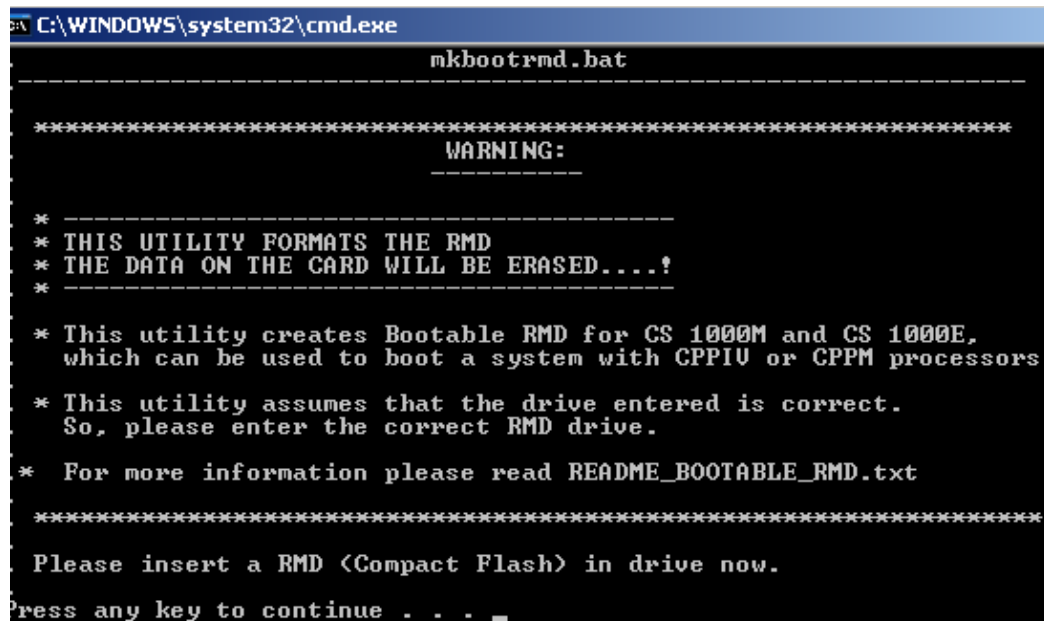
Figure 65
mkbootrmd.bat folder
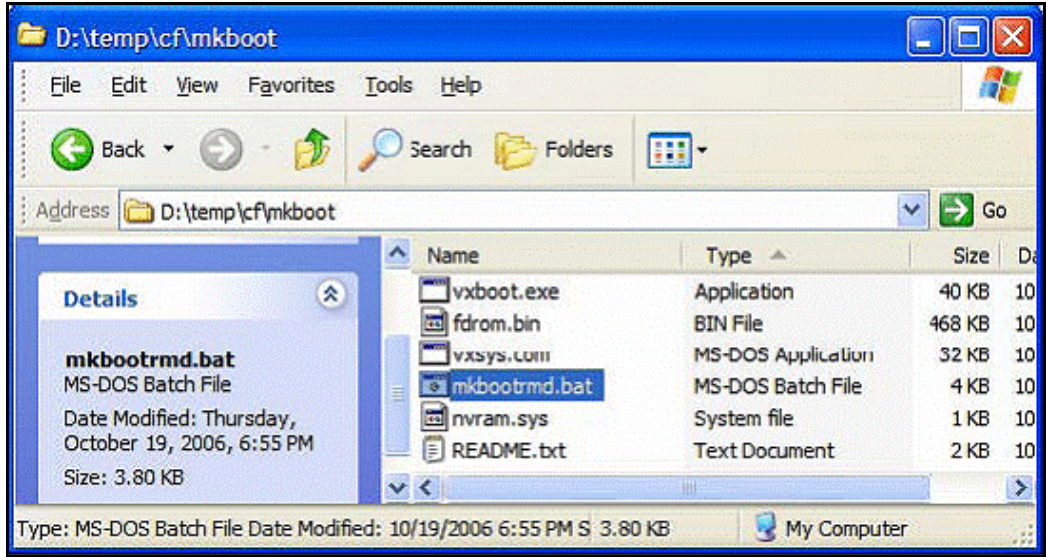
8   Double-click *mkbootrmd.bat* file to start the application.

The warning screen is shown, see Figure 66 on page 189. Press any key to continue.

Figure 66
mkbootrmd.bat


```
C:\WINDOWS\system32\cmd.exe
                                mkbootrmd.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 CPPIV 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 . . . _
```

      9   Enter the drive letter assigned to your RMD, see Figure 67 on page 190.
            Use the CF card drive letter assigned from your PC that you verified in
            step 5.

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

Figure 67
mkbootrmd.bat RMD selection
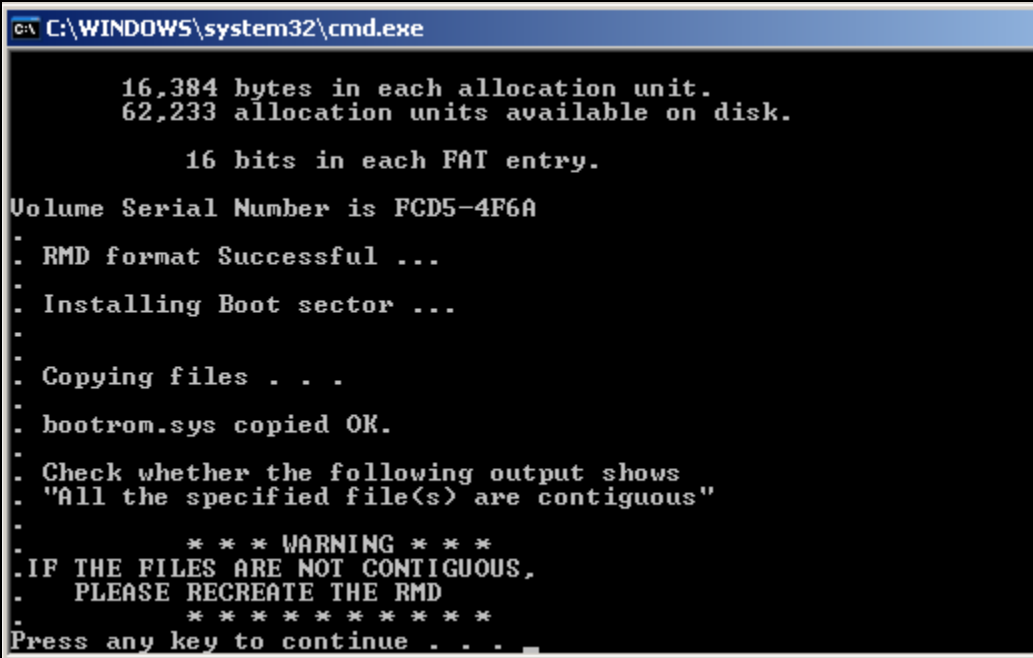
```
 C:\WINDOWS\system32\cmd.exe
                         WARNING:
                         ----------
 .
 . *  -----------------------------------------
 . *  THIS UTILITY FORMATS THE RMD
 . *  THE DATA ON THE CARD WILL BE ERASED....!
 . *  -----------------------------------------
 .
 . * This utility creates Bootable RMD for CS 1000M and CS 1000E,
 .    which can be used to boot a system with CPPIV or CPPM processor
 .
 . * 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:e
 .
 Insert new disk for drive E:
 and press ENTER when ready...
```

10 Press **Enter** to create a bootable Call Server CF card. The CF card formats and the system copies files, see Figure 68 on page 191.

Figure 68
mkbootrmd.bat creation
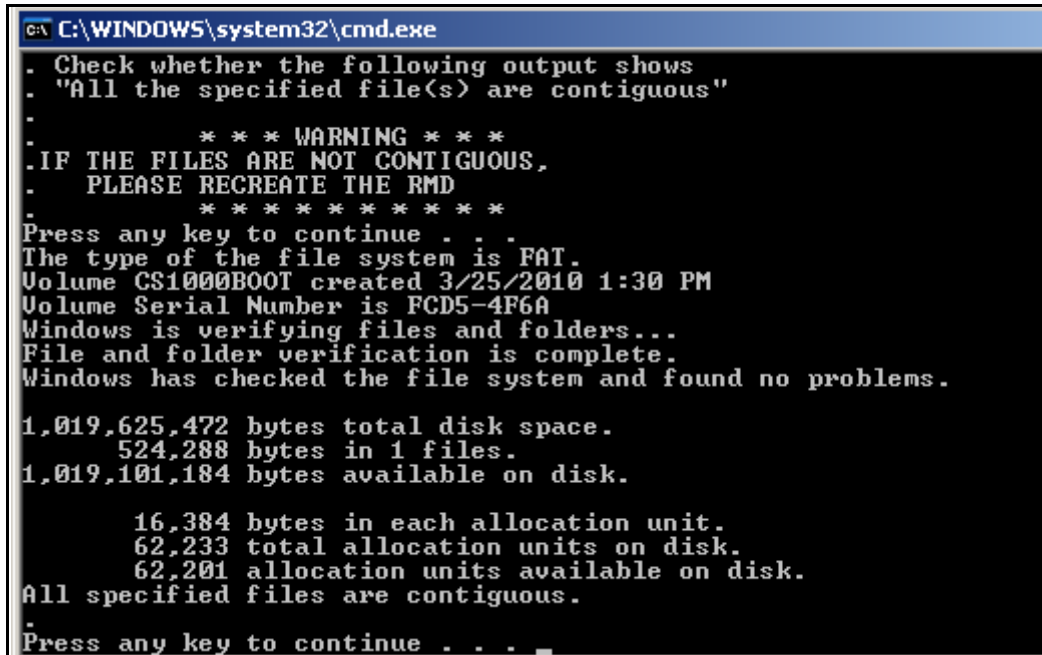

```
          16,384 bytes in each allocation unit.
          62,233 allocation units available on disk.

             16 bits in each FAT entry.

Volume Serial Number is FCD5-4F6A
.
. 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 . . . _
```

11 The boot sector files (bootrom.sys and nvram.sys) are successfully copied making the RMD bootable. Press any key to continue, see Figure 69 on page 192.

Figure 69
mkbootrmd.bat boot sector successfully installed

12 Verify the following message is shown:
    "All the specified files are contiguous".

If this message is not shown, repeat this procedure starting from step 8.

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

13 Press any key to close the mkbootrmd.bat program.

14 Click **My Computer** to verify the CF drive is renamed to CS 1000BOOT, see Figure 70 on page 193.

Figure 70
CS 1000BOOT drive name
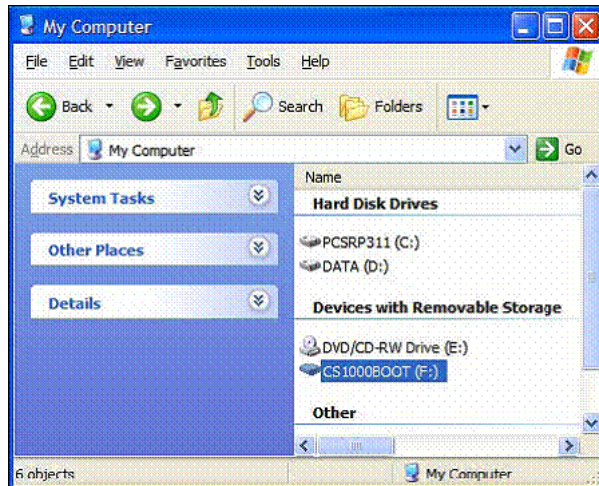
15   Double-click the CF drive to verify that it contains the *bootrom.sys* and *nvram.sys* files, see Figure 71 on .

Figure 71
CF card boot files
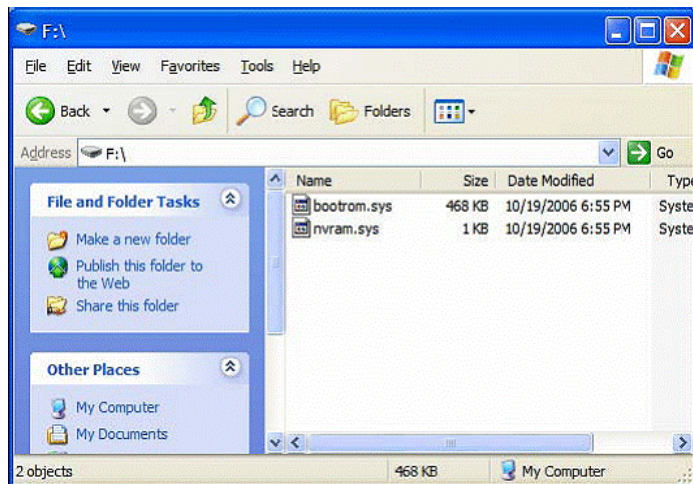
16   Navigate the folder on your PC that contains the Call Server software load folders and files.

17   Copy all the folders to the CF card.

Note: This can take up to 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 can be used to install or upgrade the software on a Call Server.

18   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 Server software version.

—————— **End of Procedure** ——————

Installing the software

This section provides the steps involved in the local installation of VxWorks based CS 1000 software.

Perform the following procedure to install the software on the Call Server.

Procedure 34
Installing the software on the Call Server

1   Connect the terminal to SDI0 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.

4   For CP PM version 1 cards, once prompted (see Figure 72), Press **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).

For CP PM version 2 cards (NTDW66CAE5/E6; NTDW99CAE5/E6), press **F** immediately after the card starts to boot (see Figure 73) to load the boot action menu. The prompt will be replaced by [Entering boot action menu] in acknowledgement. When the memory test completes, the boot action menu displays (see Figure 74 on page 196). Using the cursor keys, move the highlight to the **Faceplate RMD** row and press **Enter** to boot from the faceplate CF card.

Figure 72
CP PM version 1 boot sequence

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

Attempting to boot from faceplate drive.
```

Figure 73
CP PM version 2 boot prompt

```
F=Select different boot device   ^C=preboot menu   ESC=skip memory tests

00000000KB Memory Passed
```

Figure 74
CP PM version 2 boot action menu

The VxWorks banner screen appears (see Figure 75 on). Press enter to continue.

Figure 75
VxWorks banner


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

                              Avaya
             Communication Server 1000 Software

                   Install Tool version 29

                    Copyright 1992 - 2007



             Please press <CR> when ready ...

**************************************************************************
  WARNING:

  This software does not support TNs configured on PE/EPE
  shelves. Upgrading to this software release will permanently
  disable all TNs configured on PE/EPE and will not allow new
  TNs to be configured.

  Proceed with the upgrade? (Y/N| y

**************************************************************************
  WARNING:

  Upgrading from pre-Release 4.5 software to Release 4.5 or higher
  will result in the system PDT passwords being reset to default.

  Proceed with the upgrade? (Y/N| y
```

5   Press **y** for both software warnings to proceed with the installation.

Note: The warnings appear but can be ignored for new installations. PE/
EPE is not applicable for this installation. Upgrade warnings are not
applicable because you are performing a new system installation.

A disk check occurs and the following information appears:

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

>Validate hard disk partitions
```

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

The size of partition /p is 0 Mb:

Disk check failed: the disk is not correctly partitioned

INST0010 Unable to validate Hard disk partition "/u"

        errNo : 0xd0003

Please press <CR> when ready ...

INST0010 Unable to validate Hard disk partition "/p"

Please press <CR> when ready ...

INST0010 Unable to validate Hard disk partition "/e"

Please press <CR> when ready ...

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!

The Fix Media Device on Core 0 is blank.

Install  cannot  continue  unless the FMD is partitioned.

Note: INSTALL WILL REBOOT AFTER THIS PROCEDURE AND FIX
MEDIA WILL BE EMPTY AFTER YOU PARTITION IT. INSTALL
REMOVABLE MEDIA MUST BE IN THE DRIVE AT THIS TIME.

Please enter:

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

<> -

Enter choice>
```

6 Press **a** or **<CR>** to partition the fixed media device. The partitions are formatted and the system reboots.

7 Once prompted, Press **F** to force board to boot from the faceplate drive (see Figure 72, Figure 73, and Figure 74 on page 196) and continue with the installation.

The VxWorks banner screen appears (see Figure 76 on). Press enter to continue.

Figure 76
VxWorks banner
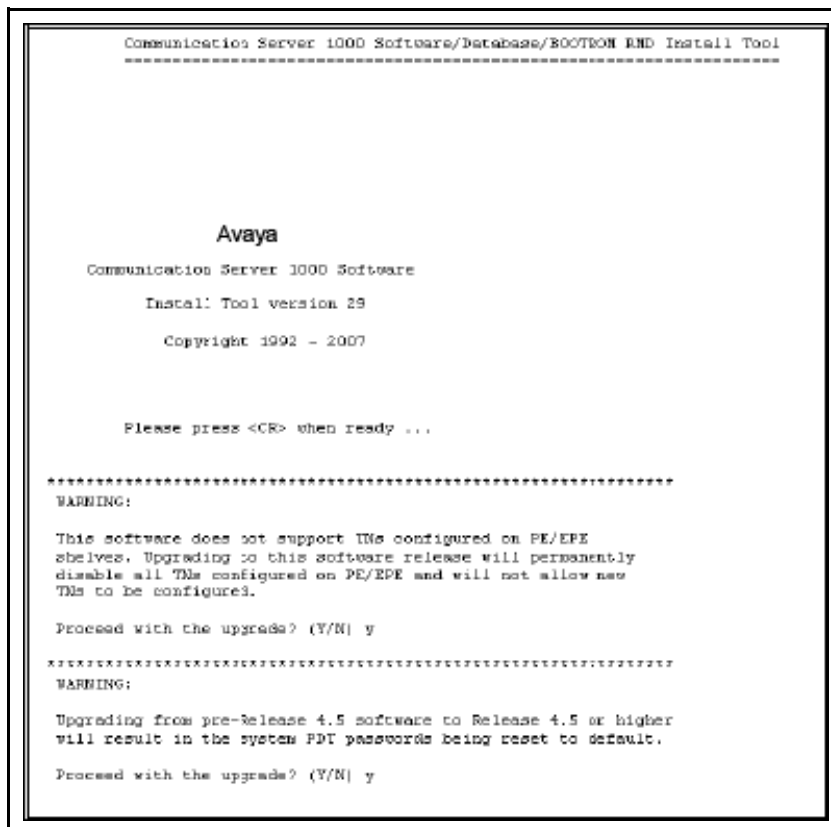
8 Press **y** for both software warnings to proceed with the installation.

Note: The warnings appear but can be ignored for new installations. PE/EPE is not applicable for this installation. Upgrade warnings are not applicable because you are performing a new system installation.

A disk check occurs, the FMD is ready for software installation.

The Software Installation Tool Main Menu appears (see Figure 77 on).

Figure 77
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>
```

9 Press **u** or **<CR>** to access the Install Menu (keycode authorization). The following screen appears (see Figure 78 on page 201).

Note: If your keycode files reside on a separate CF card, remove the software installation CF card and insert the CF card containing the keycode files. Typically the keycode files reside in the keycode folder of the software installation CF card.

The system searches for available keycode files in the keycode directory of the CF card.

Figure 78
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).
```

10 The keycode file(s) appear in a 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 7.6.

11 The system validates the selected keycode and displays the software release and machine type authorized. Press **<CR>** or **y** to confirm that the keycode matches the system software on the RMD (see Figure 78 on page 201 and Figure 79 on page 202).

Figure 79
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 ...
```

12 The Install Menu appears (see Figure 80 on page 202). Press **b** to install
the software, database, and CP-BOOTROM. Option b allows you to either
install the default database or choose to install a preconfigured customer
database.

Figure 80
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 81 on page 203):

13 Press **<CR>** or **y** to confirm that the call processor is set to side 0 or press
n if you need to change the side to side 1.

Figure 81
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>
```

14   The location information screen appears (see Figure 82 on page 203), indicating that the call processor is located in loop 0 and shelf 0 of the IPMG. Press **<CR>** or **y** to confirm their location. If you need to change loop or shelf information, press **n** and follow the prompts.

Figure 82
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>
```

15   Ensure the CF card containing CS 1000 Release 7.6 installation software is installed in the drive and press **<CR>** or **a** (see Figure 83 on page 204).

Figure 83
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>
```

> **16** Press **<CR>** or **y** to confirm that you have the correct software version
> (see Figure 84 on page 204).

Figure 84
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>
```

> **17** Press **<CR>** or **y** to install dependency lists and continue with the upgrade
> (see Figure 85 on page 205).
>
> *Note:* If Dependency Lists are not installed on media, the following
> prompts do not appear. Proceed to step 18 on page 205.

Figure 85
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>
```

18   Press **<CR>** or **y** (the default) to enable the Automatic Centralized
Software Upgrade (CSU) feature (see Figure 86 on page 205).

Figure 86
Centralized Software Upgrade

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

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

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

Enter choice>
```

19 Set the CSU feature to Sequential. Press **<CR>** or **y** (see Figure 87 on).

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 87
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 ...
```

20 The PSDL Installation Menu appears (see Figure 88 on). Select the appropriate location based on your geographical location.

Figure 88
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 ...
```

Once you select a geographic location, the PSDL, loadware and language files
are installed.

21 The Installation Status Summary screen appears (see Figure 89 on
    page 208). Verify the parameters and press **<CR>** when ready.

Figure 89
Installation Status Summary

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

        +=================+========+========+==========================+
        |      Option     | Choice | Status |          Comment         |
        +=================+========+========+==========================+
        | SW: RMD to FMD  |  yes   |        | install for rel 0700x    |
        +-----------------+--------+--------+--------------------------+
        | Dependency Lists|  yes   |        |                          |
        +-----------------+--------+--------+--------------------------+
        | AUTO-CSU Feature|  SEQ   |        | SEQ-CSU Enabled          |
        +-----------------+--------+--------+--------------------------+
        | IPMG Software:  |  yes   |        | install for rel 0700x    |
        +-----------------+--------+--------+--------------------------+
        | 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
```

> **22** Press **<CR>** or **y** to begin the installation (see Figure 90 on).

Figure 90
Install Tool

```
        Communication Server 1000 Software/Database/BOOTROM RMD Install Tool
        ====================================================================
        You selected to install Software release: 0700x 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>
```

The installation process begins.

A message appears indicating that the installation on Core 0 was successful (see Figure 91 on page 209).

Figure 91
Core 0 software installation complete

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

Software release 0700x was installed successfully on Core 0.

All files were copied from RMD to FMD.


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

23 Press **<CR>** to continue. The following screen appears (see Figure 92 on page 209).

Figure 92
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.
```

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

25 A confirmation appears. Verify that it is the correct database and press **a** or **<CR>** (see Figure 93 on page 210).

Figure 93
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 ...
```

> **26** The Installation Status Summary screen appears, indicating that the
>   installation was a success (see Figure 94 on page 210). Press **<CR>** to
>   continue.

Figure 94
Installation Status Summary

```
>Installing release 07xxxx

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

       +================+========+========+==========================+
       |     Option     | Choice | Status |         Comment          |
       +================+========+========+==========================+
       | SW: RMD to FMD |  yes   |   ok   | From 07.00.xx to 07.00.xx|
       +----------------+--------+--------+--------------------------+
       | Dependency Lists|  yes  |        |                          |
       +----------------+--------+--------+--------------------------+
       | AUTO-CSU Feature|  SEQ  |        | SEQ-CSU Enabled          |
       +----------------+--------+--------+--------------------------+
       | IPMG Software: |  yes   |   ok   | From 07.00.xx to 07.00.xx|
       +----------------+--------+--------+--------------------------+
       | Database       |  yes   |        |                          |
       +----------------+--------+--------+--------------------------+
       | CP-BOOTROM     |  yes   |   ok   |                          |
       +----------------+--------+--------+--------------------------+
```

27 The Install Menu appears (see Figure 95 on). Press **q** to quit the Install Tool.

Figure 95
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
```

28 Press **<CR>** or **y** to confirm your selection, as shown in the following figure.

Figure 96
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>
```

> **29** Press **<CR>** or **y** to reboot the system, as shown in the following figure. Once the system has completed its reboot, remove the CF from the faceplate.

Figure 97
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 (Avaya 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 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
      sutl 1 15: 0002
      strn 1 15: 0002
      xsmp 1 15 1: 0002
       eth 1 16 0: 0002

Remote TIER 1 Health Total: 20
```

```
TIER 2 Health Count Breakdown:

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

ELAN 16 IP : 47.11.138.150 Health = 2

ELAN 17 IP : 47.11.138.153 Health = 2


Remote AML over ELAN Total Health:4

Remote Total IPL health = 6


Remote TIER 2 Health Total:10
```

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

LD 135

STAT IPL   Get status of MG 1000E (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 55 on .

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

Initial configuration of the Gateway Controller

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

The Gateway Controller must be given a superloop and shelf reference on the Call Server (see Table 24)**.**

Table 24
Gateway Controller superloop configuration

Loop	Shelf	IPMG #
000	0	1
000	1	2

Table 24
Gateway Controller superloop configuration

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

Perform the following procedure to initially configure the Gateway Controller.

Procedure 45
Configuring the Gateway Controller on the Call Server

Note: Initial configuration of the Gateway Controller is command line ONLY.

The Gateway Controller is shipped with "gold" software in onboard flash memory. If centralized software upgrade is enabled on the Call Server, the Gateway Controller 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 Gateway Controller, 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 mgcsetup menu.

Note: TLAN IP information must be entered with Element Manager. If mgcsetup prompts for TLAN information, the Gateway Controller loadware is older than version MGCBAD.

```
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
Primary CS IP:            192.168.3.32
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: Avaya CallPilot™, 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.
```

2   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  : CS 1000E_N313
Primary CS IP        : 192.168.3.32
Alternate CS 1 Hostname :
Alternate CS 1 IP       : 0.0.0.0
Alternate CS 2 Hostname :
Alternate CS 2 IP       : 0.0.0.0
```

```
TLAN set to auto negotiate.
ELAN set to auto negotiate.
ELAN security Enabled, level is Optimized Security

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

3   IP changes require a reboot. Enter "y" at the prompt.

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

Following the reboot, the Gateway Controller connects to the Call Server and downloads the remaining configuration information.

If centralized software upgrade has been enabled, the Gateway Controller will upgrade its loadware by downloading it from the Call Server.

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

After reboot, the Gateway Controller 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: MGCBAA20

auto-booting...

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

Found device : INTEL 82365SL

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

Loadware upgrade

If the Gateway Controller 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 Gateway
Controller. 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 card.

```
-> 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:

Signaling Server task flow

Avaya Linux Platform Base and Applications Installation and Commissioning (NN43001-315) provides installation, upgrade, and configuration information for Signaling Servers. 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. The task flow refers to the publication number that contains the detailed procedures required for the task.

For more information refer to the following publications, which are referenced in Figure 98 on :

*   *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)

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

*   *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125)

Figure 98
Signaling Server taskflow
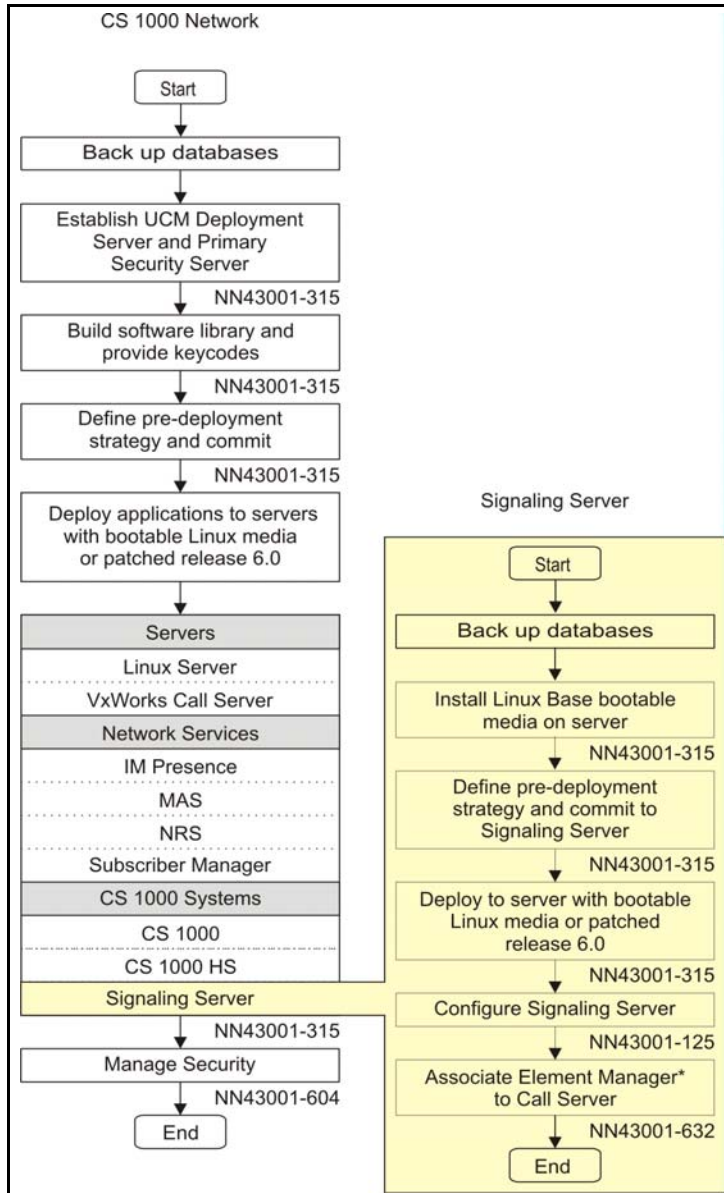
Supported hardware

Avaya Communication Server 1000 Release 7.6 supports the following hardware platforms as stand-alone Signaling Servers:

- Server cards

    — Common Processor Pentium Mobile (CP PM) card

    — Common Processor Dual Core (CP DC) card

- Commercial off-the-shelf (COTS) servers

For more information about the supported roles for hardware platforms, see Table 1: "Hardware platform supported roles" on .

IP subnet configuration

Avaya CS 1000 Release 7.6 Signaling Servers support IPv6 and IPv4 addresses. 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. For more information, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

ISP1100 migration

CS 1000 Release 7.6 does not support the ISP1100 Signaling Server. To migrate an ISP1100 Signaling Server to a CS 1000 Release 7.6 hardware platform, see *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125).

Installing Signaling Server hardware

For Signaling Server hardware installation information, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

For information about the hardware platforms, see *Avaya Circuit Card: Description and Installation* (NN43001-311).

Installing Signaling Server software

Signaling Server software requires the Linux base operating system. For information on performing Linux software installations, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315) and *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125).

Configuring the Avaya Communication Server 1000E Call Server

Contents

This section contains information on the following topics:

Introduction

The Avaya Communication Server 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 Avaya Communication Server 1000E. Copies

of both files are maintained on each node component (Signaling Server and Voice Gateway Media Card).

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

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

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

IMPORTANT!

Do not attempt to alter the configuration files either manually or with 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 46: "Launching Element Manager" on

- Procedure 47: "Importing an existing node" on

- Procedure 48: "Performing a datadump using Element Manager" on

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 *Avaya 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.

LD 17--Configure login username and password

Prompt	Response	Comment
REQ:	CHG	Change
TYPE:	PWD	Configuration Record
PWD2	a....a	Enter valid password for admin2 login
PSWD_COMP	(OFF)	Turns (OFF) the password complexity check for the ADMIN, LAPW and PDT passwords
...		
ACCOUNT_REQ	NEW	Change Account Request
PWD_TYPE	pwd2	Specifies the user type being changed. Choices are: PWD2, PWD1, LAPW
USER_NAME	a....a	Unique user name - up to 11 characters
PASSWORD	a....a	Validates the login credentials of the user. Must be 4 to 16 characters in length.
CONFIRM	a....a	Confirm the password
PDT	pdt2	PDT2 for PDT access. This prompt is only available when adding or modifying LAPW, Level 1 (PWD1) and Level 2 (PWD2) users
OVLA	ALL	For access to all Overlays
...		

Prompt	Response	Comment
CUST	aaa	Customer Number to be accessible by way of PWnn (Password)
HOST	(NO) YES	Enable HOST mode Log In for password PWnn
MAT	(NO) YES	Enable MAT Log In for password PWnn
OPT	a...a	Options for password PWnn

Note: The message PWD ACCOUNT SETTINGS SAVED displays when the user input information is completed. The completed user information is saved to protected memory. If you end the program with **** or ** abort, the changes are not reset.

Enabling the multi-user option

LD 17--Enable multi-user option

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	ovly	
....		
MULTI_USER	on	
REQ	****	

Configuring pseudo-terminals (PTYs)

Avaya Communication Server 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 Avaya CS 1000E system. Avaya 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. Avaya 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.

LD 17--Configuring pseudo-terminals (PTYs)

Prompt	Response	Comment
REQ	CHG	Change existing data
TYPE	CFN	
ADN NEW TTY	<x>	Where <x> = an available TTYP number (0-15)
CTYP	PTY	
PORT	<y>	Where <y> = an available PTY port (0-7)

Prompt	Response	Comment
DES	<z>	Where <z> = designator (for example """ether 1")
FLOW	NO	
USER MTC BUG SCH		
TTYLOG	NO	
BANR	YES	
ADAN	****	

Checking PTY status

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

LD 37--Check PTY status

Prompt	Response	Comment
STAT		Provide status of all system input/output devices.

LD 43--Perform a datadump

Prompt	Response	Comment
EDD		Invoke the datadump program to save changes.

Configuring Virtual Tone and Conference Circuits

Virtual Tone and Conference Circuits must be defined for use by each MG 1000E. Use LD 17 to add MGTDS and MG Conference loops. The

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 *Avaya 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 Avaya Communication Server 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) is a component of the Avaya 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 *Avaya 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 46 on . Element Manager supports Microsoft ^{TM} Internet Explorer 6.0.2600 for Windows operating systems.

Before following this procedure, see *Avaya Signaling Server IP Line Applications 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 46
Launching Element Manager

1   Open the Web browser.

2   In the 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.
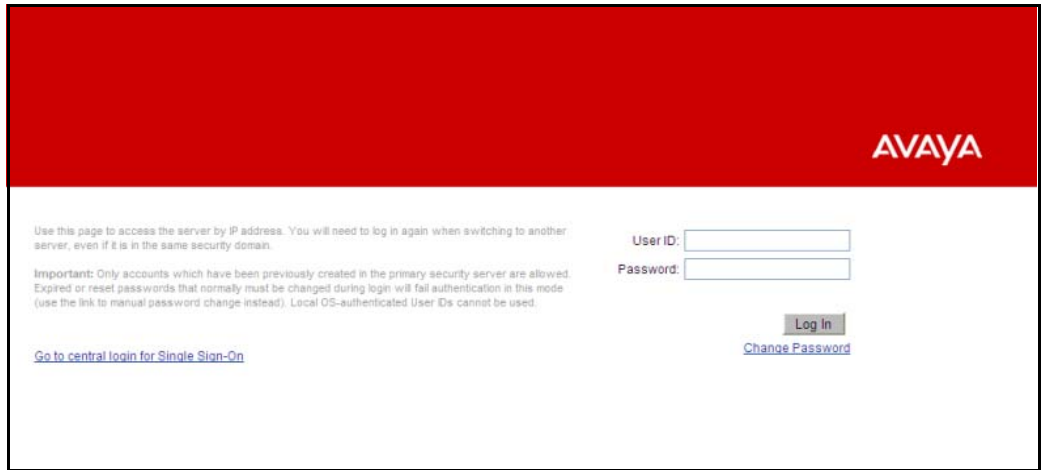
3   The Security Alert Web page opens, as shown in (see Figure 99).

Figure 99
Security Alert Web page

4 Click **Yes**. The UCM log in Web page opens, as shown in Figure 100.

Figure 100
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 101 on page 250.

Figure 101
UCM elements web page
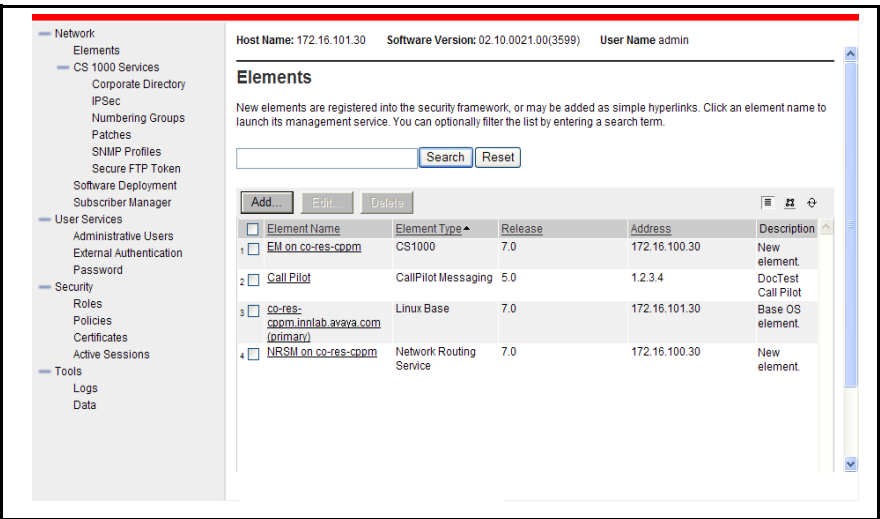
6   Click the link to the Element Manager in the Element Name column. The Element Manager System Overview Web page opens, as shown in Figure 102 on .

Figure 102
Element Manager System Overview Web page
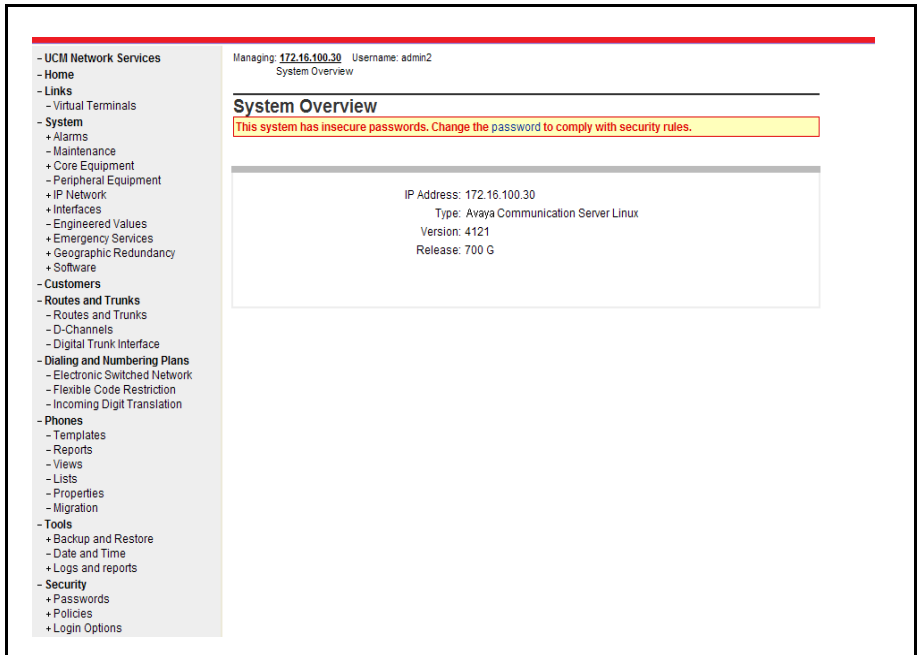
—————— **End of Procedure** ——————

Importing preconfigured IP telephony files

Follow Procedure 47 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 47
Importing an existing node

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 103 on appears.

   b. Select the Existing Server radio button and enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 103
Import IP Telephony Nodes – Retrieve and upgrade configuration files
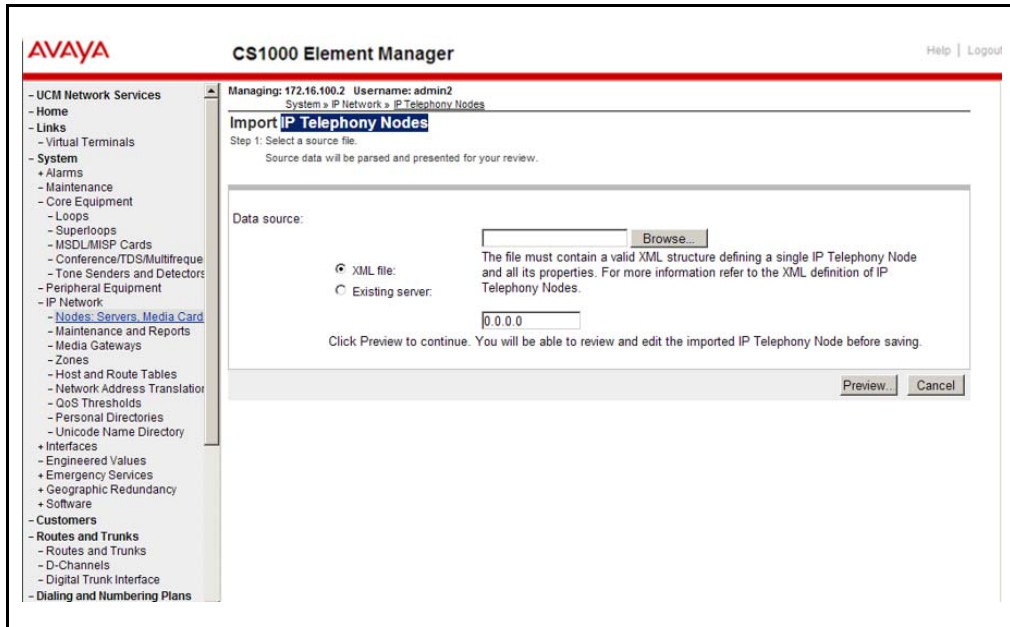
3   Click **Preview**.

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 *Avaya Signaling Server IP Line Applications 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 *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125) or *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Performing a datadump

Follow Procedure 48 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 Avaya Communication Server 1000E at the same time that it backs up the customer database.

Procedure 48
Performing a datadump using Element Manager

From Element Manager (see Figure 100 on 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 104).

Figure 104
Call Server Backup and Restore web page
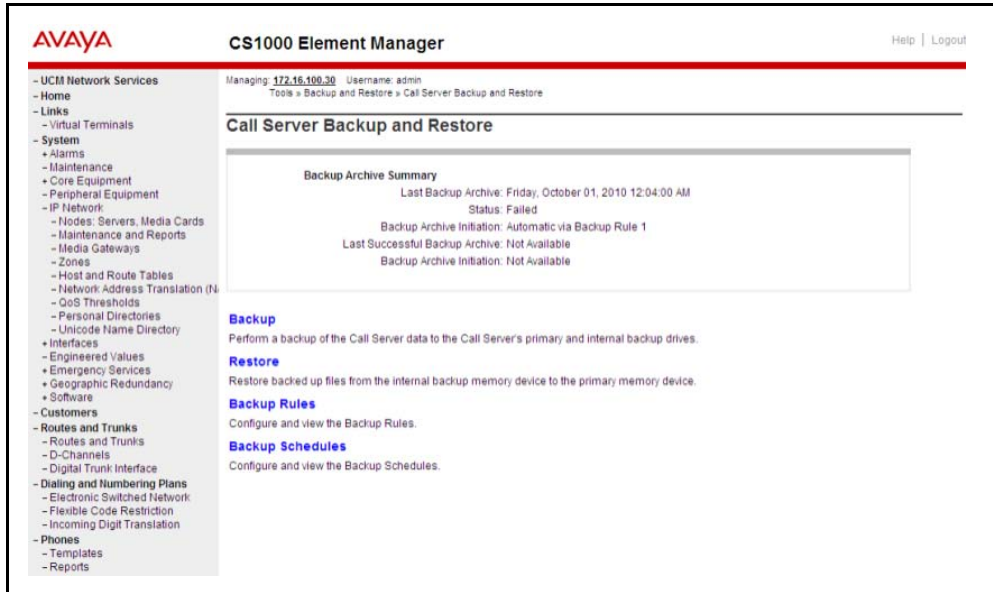
2 Select **Backup**.

The **Call Server Backup** web page appears (see Figure 105 on).

Figure 105
Avaya Communication Server 1000E Backup

3   Select **Backup** from the **Action** drop-down list box.

4   Click **Submit**.

The message displays indicating "Backup in progress. Please wait..."

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

The Backup function then displays information in a tabular form, indicating the actions that were performed.

——— **End of Procedure** ———

Port blocking

You can use port blocking 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). The Co-resident Call Server and Signaling Server (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 a Co-res CS and SS, but you can administer the port access for other VxWorks components.

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 an IP telephony node

Contents

This section contains information on the following topics:

Introduction

An IP Telephony node is defined as a collection of Signaling Servers and Voice Gateway Media Cards. Each network node has a unique Node ID, which is an integer value. A node has only one Leader Signaling Server. All other Signaling Servers and Voice Gateway Media Cards are defined as Followers. An IP Telephony node must be configured to make an Avaya Communication Server 1000 system operational. For more information about IP Telephony nodes and their configuration, refer to *Avaya Signaling Server IP Line Applications 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 Avaya Communication Server 1000E as:

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

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

IMPORTANT!

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

This chapter contains the following procedures:

- Procedure 49: "Turning off browser caching in Internet Explorer" on page 261

- Procedure 50: "Launching Element Manager" on page 264

- Procedure 51: "Importing an existing node" on page 268

- Procedure 52: "Reviewing and submitting IP telephony node configuration" on page 270

- Procedure 53: "Adding a Follower Signaling Server to the IP telephony node in Element Manager" on page 274

- Procedure 54: "Performing a datadump using Element Manager" on page 275

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 54 on page 275.

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 49 to prevent caching of web pages by Internet Explorer.

Procedure 49
Turning off browser caching in Internet Explorer

1   Launch Internet Explorer.

2   Click **Tools > Internet Options**. The **Internet Options** window opens (see Figure 106 on).

Figure 106
Internet Explorer – Internet Options
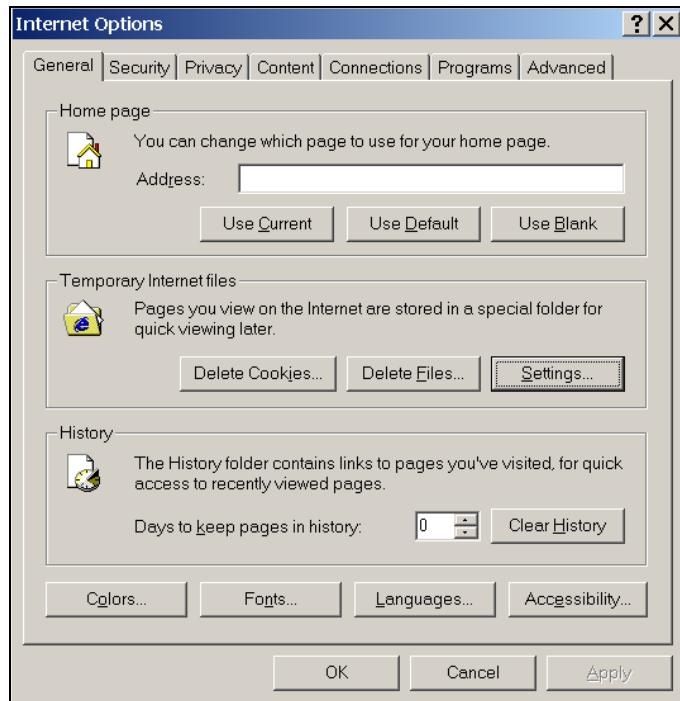
3 On the **General** tab, under the **Temporary Internet files** section, click **Settings**. The **Settings** window opens (see Figure 107 on page 263).

Figure 107
Temporary Internet files – Settings window
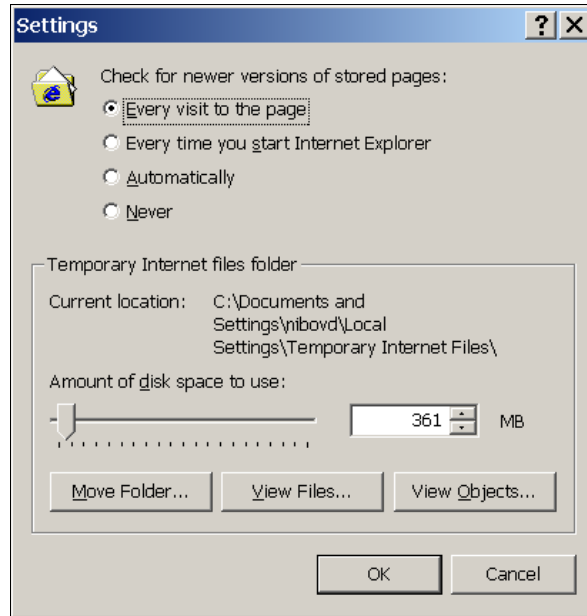
4   Click **Every visit to the page**. This checks for new versions of stored pages on every visit to the web page.

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 Avaya CS 1000 is a component of the Avaya 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 *Avaya*

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 50 on page 264.
Element Manager supports Microsoft ^{TM} Internet Explorer 6.0.2600 for
Windows operating systems.

Before following this procedure, see *Avaya Signaling Server IP Line
Applications 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 50
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 108).

Figure 108
Security Alert Web page

4   Click the Yes button. The UCM log in Web page opens, as shown in Figure 109.

Figure 109
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 110 on .

Figure 110
UCM elements web page
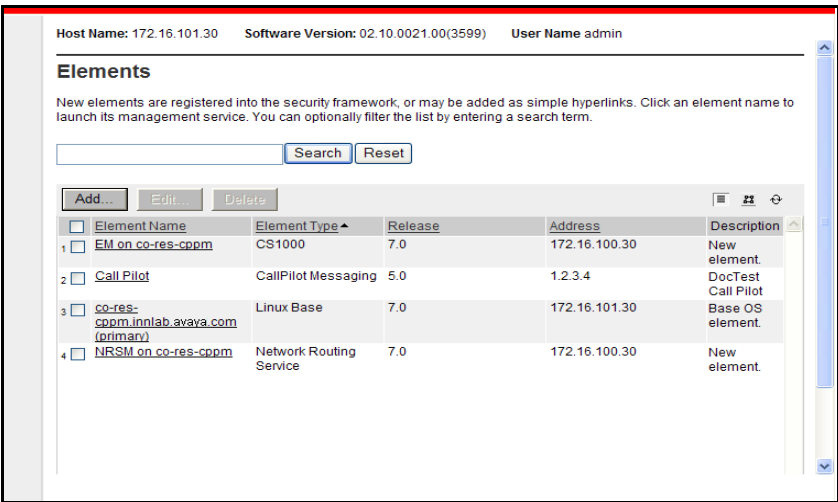
6   Click the link to the Element Manager in the Element Name column. The Element Manager System Overview Web page opens, as shown in Figure 111 on .

Figure 111
Element Manager System Overview Web page
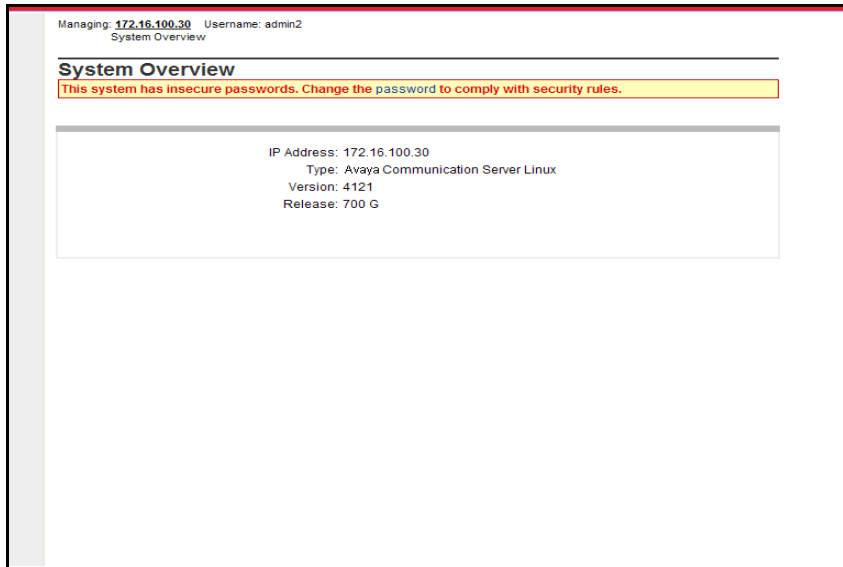
Importing preconfigured IP telephony files

Follow Procedure 51 to import the preconfigured IP telephony files from the Signaling Server.

Procedure 51
Importing an existing node

Figure 112 displays the **Element Manager System Information** home page.

Figure 112
Element Manager – System Information
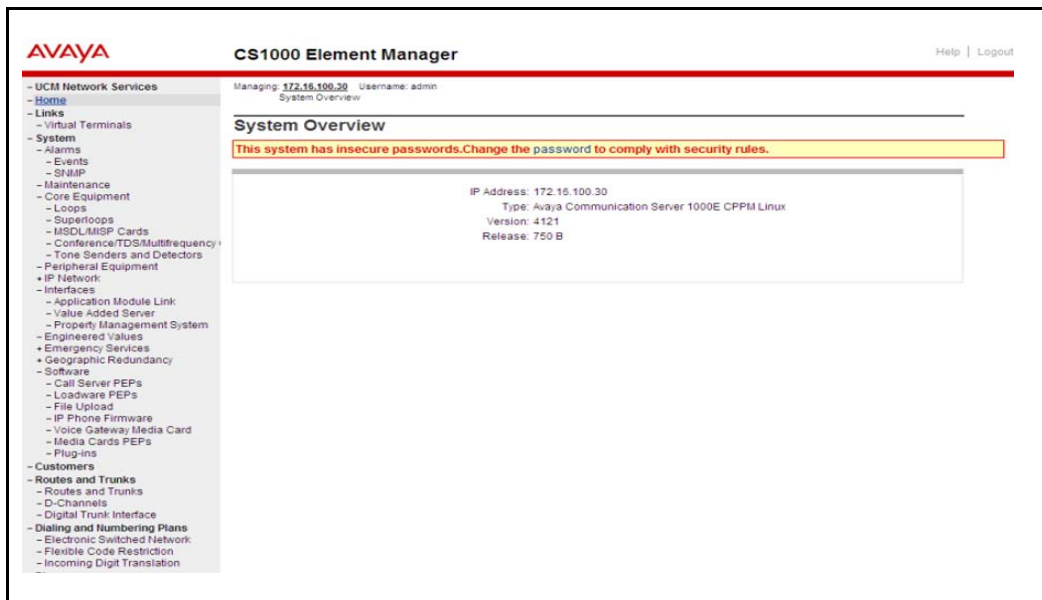
1   Select **Nodes: Servers, Media Cards** from the navigator.

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 113 on appears.

b.   Select the Existing Server radio button and enter the ELAN IP address of the leader Signaling Server in the input box.

Figure 113
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 52 to review and submit IP telephony node configuration files.

Procedure 52
Reviewing and submitting IP telephony node configuration

1   From the Node Summary web page (see Figure 138 on), click **Edit** to view the node parameters.

The **Edit** web page appears as shown in Figure 139 on .

Note 1: Clicking **Transfer / Status** displays the **Transfer / Status** web page (see Figure 117 on). 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 *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125).

3   Click **Save and Transfer**.

4   Click **OK** to save the node configuration to the Avaya Communication Server 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 114 on).

The Voice Gateway Media Cards retrieve the CONFIG.INI and BOOTP.TAB files from the Avaya Communication Server 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 114 on).

- The Status column displays "Transfer" as the node configuration is transferred to the elements (see Figure 115 on).

- The Status column displays "Complete" if the transfer is successful for an element (see Figure 116 on).

- The Status column displays "Fail" if the transfer is unsuccessful.

Figure 114
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	☐	☐
192.167.102.18	Starting	☐	☐

Figure 115
Transfer Progress – Transferring

When the file transfer is complete, the Transfer Progress web page
displays a status of complete (see Figure 116 on).

Figure 116
Transfer Progress – Complete

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

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

Note: The Transfer / Status web page (see Figure 117) 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 117 shows some elements as unreachable; you can transfer to these elements again.

Figure 117
Transfer / Status web page

The previous status of the node displays, and the failure reason is displayed for elements in nodes that failed to get configuration files (BOOTP.TAB and CONFIG.INI) from the Avaya Communication Server 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 53 to add a Follower Signaling Server to the IP telephony node in Element Manager.

Procedure 53
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 Avaya Communication Server 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 Avaya Communication Server 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 54 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 Avaya Communication Server 1000E at the same time that it backs up the customer database.

Procedure 54
Performing a datadump using Element Manager

From Element Manager (see Figure 109 on 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 118 on).

Figure 118
Call Server Backup and Restore web page

> **2**   Select **Backup**.
>
>   The **Call Server Backup** web page appears (see Figure 119 on).

Figure 119
Avaya Communication Server 1000E Backup

> **3**   Select **Backup** from the **Action** drop-down list box.
>
> **4**   Click **Submit**.
>
>   The message displays indicating "Backup in progress. Please wait..."

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

The Backup function then displays information in a tabular form, indicating the actions that were performed.

——————————————— **End of Procedure** ———————————————

Configuring the Media Gateway

Contents

This section contains information on the following topics:

Configuring the Media Gateway in Element Manager

Procedure 55 on describes how to configure the Media Gateway in Element Manager.

Perform the following procedure to configure a Media Gateway in Element Manager.

Procedure 55
Configuring the Media Gateway (Element Manager)

Note: You must use Element Manager to add Media Cards and Media Gateway Controllers to Communication Server 1000 or Communication Server 1000 HS systems. If you use CLI to configure these elements, you must save the configurations again using Element Manager. If you upgrade a system to Communication Server 1000 Release 7.0 from an older release you must use EM to save the existing Media Card and Media Gateway Controller configurations. Otherwise, the elements do not appear in the IPSec targets list.

1   In Element Manager, select **IP Network** > **Media Gateways**. Select the appropriate Superloop Number and Shelf. See Figure 120 on .

2   Click **Add**.

Figure 120
Add IPMG

Enter the IP address, zone number, and the IPMG type. The remaining fields are automatically filled in.

You can use a Media Gateway Controller (MGC) card, a Common Processor Media Gateway (CP MG) card, or a Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card as the Gateway Controller in a Media Gateway.

MGC is the default IPMG type. If you use an MG XPEC as the Gateway Controller, select IPMG type MGX. If you use a CP MG card as the Gateway Controller, select IPMG type MGS. See Figure 121 on .

Figure 121
Select IPMG type in Element Manager

3   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.

4   Enter the Gateway IP addresses and Voice LAN IP addresses (IPv4 and IPv6). If the MGC has DSP daughterboards connected, select the type and enter the IP addresses. See Figure 122 on .

If configuring an MGX type Media Gateway, see Figure 123 on .

Note: IPMG type MGX only allows for the configuration of the DB96 daughterboard.

If configuring an MGS type Media Gateway, select DB32 or DB128 as the type of DSP daughterboard.

Note: The CP MG card is available with 32 or 128 DSP ports. IPMG type MGS only allows for the configuration of the DB32 or DB128 daughterboard

Figure 122
Media Gateway MGC type configuration

Figure 123
Media Gateway MGX type configuration

5 Once configuration of the Media Gateway is complete, the Media Gateways screen appears (Figure 124 on), listing the superloop and shelf numbers, IP address (IPv4 or IPv6), 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 124
Media Gateways

6 The Add VGW channels screen appears (Figure 125 on).
   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.

7 Click **Save**.

Figure 125
Add VGW channels

Figure 126 on page 285 appears. The Media Gateway has been added to the list.

Figure 126
VGW Channels - IPMG

--------- **End of Procedure** ---------

Configuring conference TDS

Procedure 56 on page 286 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 57 on page 287.

Procedure 56
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 57 describes how to configure conference TDS for a Media Gateway using Element Manager.

Procedure 57
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 127). Click the **Digital Trunking** button.

Figure 127
Media Gateway configuration

The loop configuration page appears.

3   From the drop down menu (see Figure 128 on), select **TDS** from the first drop down box to add a TDS loop.

Figure 128
Loop configuration

The TDS loop configuration page appears (see Figure 129).

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

Figure 129
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 130
Confirmation

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

The updated loop configuration page appears (see Figure 131). The new Conference loop is displayed.

Figure 131
Loop configuration (updated)

———————— **End of Procedure** ————————

Configuring DSP Daughterboard Voice gateway channels

Procedure 58 describes how to configure DSP Daughterboard Voice gateway channels using the Command Line Interface (CLI). To configure DSP Daughterboard Voice gateway channels using Element Manager see Steps 5 and 6 of Procedure 55 on .

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.

CP MG considerations

For DB96, if the TN is on a CP MG a SCH2303 error message is printed. DB96 cannot be configured for this type of IPMG.

Perform the following procedure to configure DSP resources using the CLI.

Procedure 58
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 MRV LX8020S-102AC-R Terminal Server

Contents

This section contains information on the following topics:

Introduction

Many third-party applications require serial port interfaces to provide a connection to a PBX. As well, support staff traditionally use serial ports to connect maintenance terminals and modems to a system for maintenance. As the Avaya Communication Server 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 Avaya CS 1000E system currently supports the MRV LX8020S-102AC-R (ROHS) Terminal Server. The IR-8020M-101 (non-ROHS) is no longer supported. This chapter contains information on connecting the LX8020S-102AC-R.

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.

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 59: "Connecting a Terminal Server to the system" on

- Procedure 60: "Configure IP address for the Terminal Server" on

- Procedure 61: "Running telnet from PC" on

Configuring a Terminal Server

Follow Procedure 59 to connect a Terminal Server with a Avaya Communication Server 1000E system. Table 25 lists the MRV cables required to install the LX8020S-102AC-R Terminal Server in a Avaya Communication Server 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 can also be used. See Table 26.

Table 26
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
8	CTS	8	RTS
9	N/C		

Procedure 59
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 60
Configure IP address for the Terminal Server

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

1   Configure the Terminal Server's IP address:

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

2   Configure the Terminal Server's IP subnet mask:

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

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

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

4   Save the configuration and check it:

    `InReach:0 >>save config flash`

    `InReach:0 >>show system chara`

    `InReach:0 >>show interface1 chara`

Example commands:

`InReach:0 >>config interface 1 address 47.11.244.101`

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

———————————— **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 61
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 63 on

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

Procedure 62
Accessing a Avaya Communication Server 1000E from a PC through telnet Terminal Server

1   Connect to the management port or virtual management port as shown in Procedure 61 on page 298 or Procedure 59 on page 296.

2   Define the port baud rate to equal the baud rate of the Avaya Communication Server 1000E COM port. Enter:

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

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

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

3   To avoid autohangup:

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

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

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

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

InReach:0 >>save config flash

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

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

InReach:0 >>save config flash

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

5   Run telnet on the PC.

a. In Windows:

   Start > Run

b. Enter the Input telnet command.

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

   Where:

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

   xxxx = telnet port (for port 1 to 20)

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

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

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

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

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

   telnet 47.11.244.101 2100

Example:

telnet 47.11.244.101 (telnet to virtual management port)

──────── **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 63 to configure a transparent rlogin port.

Procedure 63
Configuring an rlogin port for various applications

1   Enable TCP keep alive timer.

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

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

2   To modify the sysctl.conf file:

   a.   Connect to the management port or virtual management port

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

```
InReach: 0 >>shell

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

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

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

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

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

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

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

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

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

Use the command: sysctl -a

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

```
net.ipv4.tcp_keepalive_intvl=75 ;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 62 on and Procedure 63 on 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 64
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 63 on .

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 59 on).

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

Table 27
System components and COM port type

System component	COM port type
NTDU27 Signaling Server	9-pin DTE (male)
	Signaling Server comes with a six-foot female-to-female null modem cable.
A0852632 Media Card L-adapter	9-pin DCE (female)
A0870611 MIRAN L-adapter	9-pin DCE (female)
P0609204 Media Card L-adapter	9-pin DTE (male)
P0609205 MIRAN L-adapter	9-pin DTE (male)
NTDU14 Gateway	9-pin DTE (male) (modified to isolate pins 6, 7, and 8)
	Use PORT 0 of NTBK48AA 3-port SDI cable.

Configuring a terminal and SDI ports

Contents

This section contains information on the following topics:

Introduction

In the Avaya Communication Server 1000E system, each component (CP PM Call Server, Media Gateway, Signaling Server, and Layer 2 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 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 132 shows the setup values for a traditional terminal setup.

Figure 132
VT220 setup values

```
Global Set-Up
On Line                                  Comm1=RS232
Sessions on Comm1                                              70Hz
CRT Saver                                Printer Shared

Display Set-Up
80 Columns                               Light Text, Dark Screen
Interpret Controls                       Cursor
Auto Wrap                                Block Style Cursor
Jump Scroll

General Set-up
VT200 Mode, 7-bit Controls               Application Keypad
User Defined Keys Unlocked               Normal Cursor Keys
User Features Unlocked                   No New Line
Multinational

Communications Set-Up
Transmit=2400                            No Local Echo
Receive=Transmit                         Data Leads Only
Xoff at 64                               Disconnect, 2 s Delay
8bits, No Parity                         Limited Transmit
1 Stop Bit


Printer Set-Up
Speed=9600
Normal Print Mode                        Print Full Page
8bits, No Parity,                        Print National Only
1 Stop bit                               No Terminator

Keyboard Set-up
Typewriter Keys                          Warning Bell
Caps Lock                                Break
Auto Repeat                              Answerback=
Keyclick High                            Not Concealed
Margin Bell

Tab Set-Up Screen
Leave this screen at the default values
```

Avaya CS 1000E CP PM Call Server serial port connections

There are two serial ports on the CP PM Call Server, Port 0 and Port 1. They are accessed through an NTAK19 cable that attaches to the MDF port at the back of the chassis or cabinet. Both ports are standard RS232 DTE ports. The supported TTY settings for both ports are:

- Baud rate - 9600

- Data bit - 8

- Stop bit - 1

- Parity - none

- Flow control - none

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

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

Note: You do not require the NTAK19 cable for CP PM cards installed in slots 22 or 23 of an MG 1010 chassis. The Server serial connections for slots 22 and 23 are provided by the MG 1010 Media Gateway Utility (MGU) card.

MG 1000E SDI connection

SDI connection to the MG 1000E is made at the back. See Figure 133 on page 311 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 Gateway Controller 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 and CP MG provide three Gateway Controller 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.

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 Gateway Controller bootup, it cannot be used to access the installation menus.

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

Procedure 65
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 133).

Figure 133
SDI port access to the Media Gateway MGC card
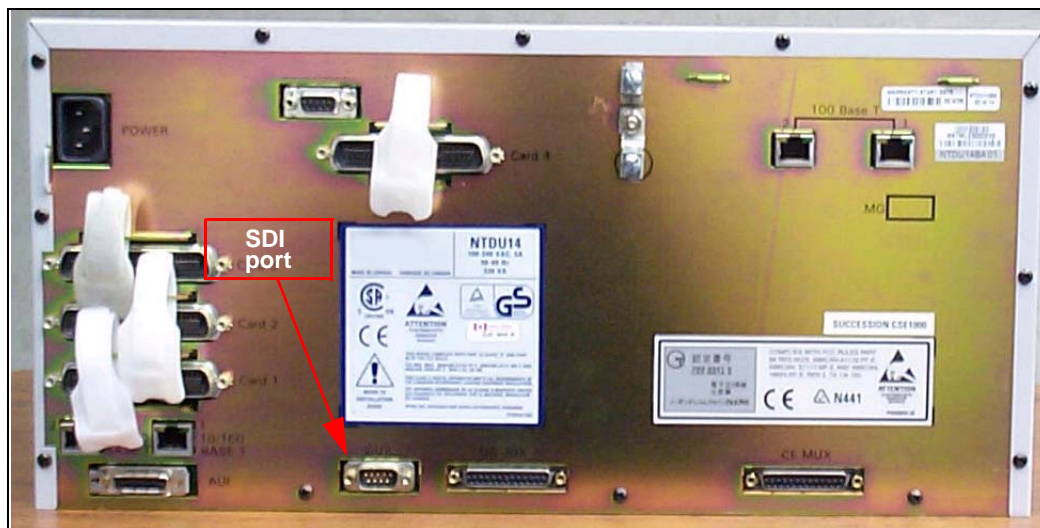
2   Connect the system terminal to the cable marked "port 0" on the NTBK48 3-port cable. You require a Modem Eliminator adapter to connect the system to a TTY terminal. This adapter is included in the Avaya Communication Server 1000E and the Media Gateway cable kits.

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** ────────

Voice Gateway Media Card SDI connection

The SDI ports on a Voice Gateway Media Card can be used for basic configuration or maintenance. Figure 134 shows the maintenance port location on the Voice Gateway Media Card and the Shielded 50-pin to Serial/ELAN/TLAN adapter.

Figure 134
Maintenance port location on the Voice Gateway Media Card and the
Shielded 50-pin to Serial/ELAN/TLAN adapter
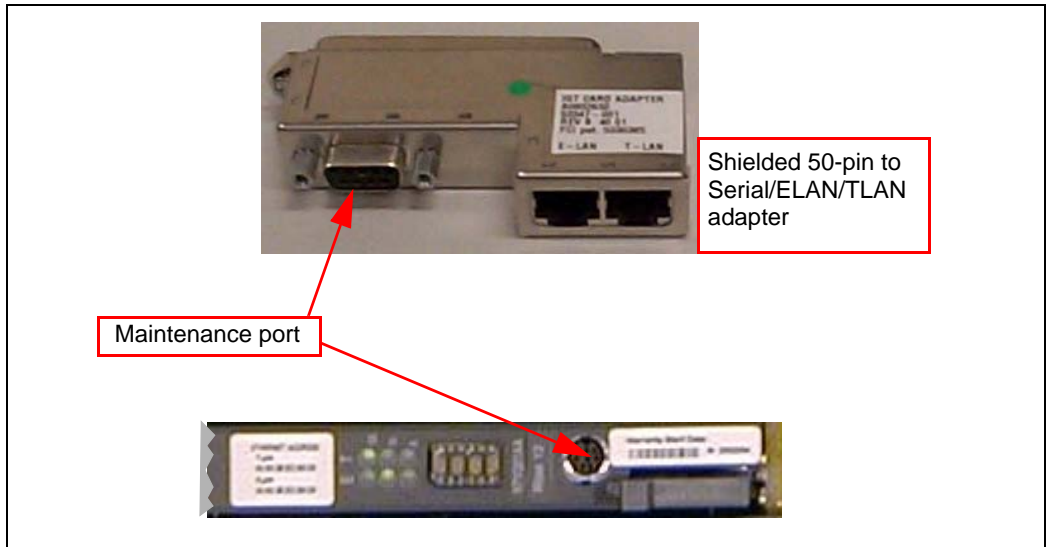
The Voice Gateway Media Card faceplate provides a female 8-pin mini-DIN serial maintenance port connection. The maintenance port on the Shielded 50-pin to Serial/ELAN/TLAN adapter provides an alternative to the faceplate maintenance port. Both are DTE ports with a speed of 9600 bit/s.

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

Installing and cross-connecting a trunk card

Contents

This section contains information on the following topics:

Introduction

The following sections outline the placement of circuit cards in the Media Gateways and Media Gateway Expander. Analog trunks can be installed in MG 1010, MG 1000E and Media Gateway Expander. For information about the circuit cards, see *Avaya Circuit Card: Description and Installation* (NN43001-311).

> **IMPORTANT!**
>
> Digital Trunk cards can be installed only in slots 1 to 4 of the
> Media Gateway 1000E. Digital Trunk cards can be installed in slots 1-10
> of the Media Gateway 1010.

Figure 135 shows the circuit card slots in a Media Gateway 1000E. To view
the circuit card slots available in a Media Gateway Expander, see Figure 136
on .

Figure 135
Circuit card assignments in the Media Gateway 1000E
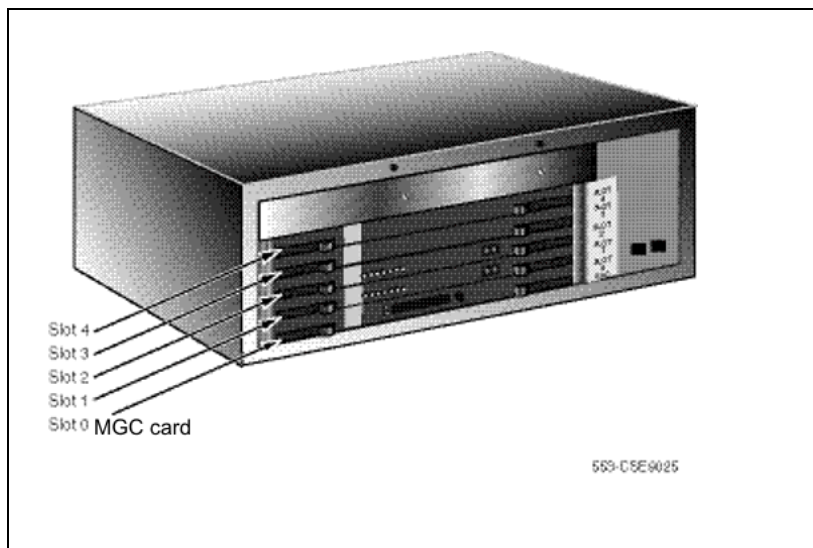
Figure 136
Circuit card assignments in the Media Gateway Expander

SLOT 10
SLOT 9
SLOT 8
SLOT 7

Slot 10
Slot 9
Slot 8
Slot 7

553-CSE9032
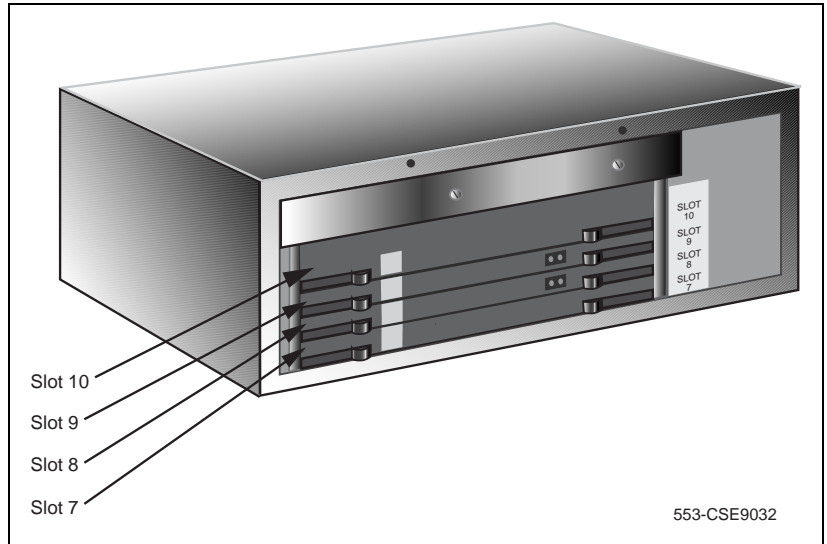
⚠️ **WARNING**

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 , 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 *Avaya 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 137 on , when handling circuit cards. Static electricity can damage circuit card components.

Figure 137
Antistatic wrist strap

Antistatic
wrist strap
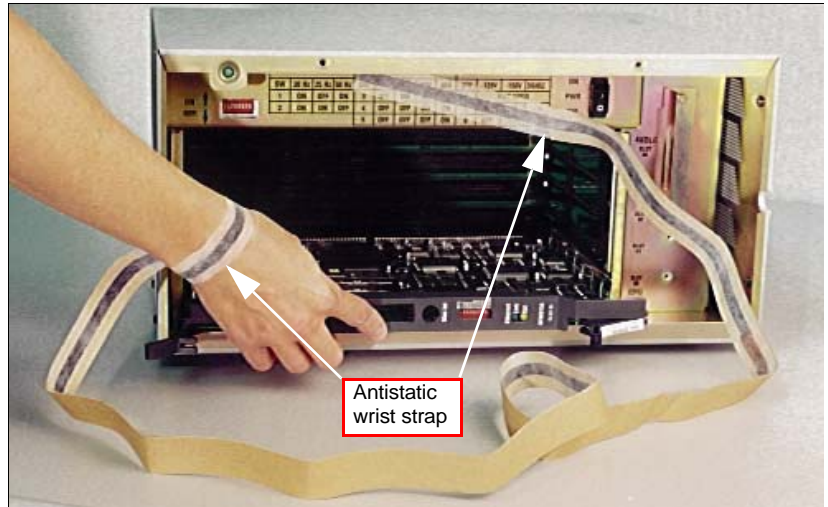
Circuit card options

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 66 to connect a trunk.

Procedure 66
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 28 on page 321 to Table 30 on page 324 list the connections for trunks.

- For European trunk connections, see Table 31 on page 326 to Table 39 on page 335.

- For UK trunk connections, see Table 40 on page 337 to Table 46 on page 344.

Note: See "Installing and cross-connecting a Power Fail Transfer Unit" on page 445 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 28. Refer to Table 29 on page 322 for the connections to the Universal trunk at the cross-connect terminal.

Table 28
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 29
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 29
NT8D14 Universal Trunk connections (Part 2 of 2)

Cable from equipment		Unit	RAN mode	Paging mode	All other modes
Pair	**Color**		**Designations**		
13T	BK-G	6	T6	T6	T6
13R	G-BK		R6	R6	R6
14T	BK-BR		CP	A	
14R	BR-BK		MB	PG	
15T	BK-S	7	T7	T7	T7
15R	S-BK		R7	R7	R7
16T	Y-BL		CP	A	
16R	BL-Y		MB	PG	
Note: Remaining pairs are spare.					

E&M Trunk card connections

Table 30 lists the connections required by the E&M Trunk card (NT8D15).

Table 30
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 30
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 31
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 31
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 32
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	
E1 E2	28 3	W-G G-W	0
M1 M2	29 4	W-G G-W	
T1 R1	31 6	R-BL BL-R	
E1 E2	32 7	R-O O-R	1
M1 M2	33 8	R-G G-R	

Table 32
E&M 2-wire Type 2 (Part 2 of 2)

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

Table 33
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		26 1	RA RB	TA TB
2T 2R	W-O O-W	0	27 2	TA TB	RA RB
3T 3R	W-G G-W		28 3	E M	E M

Table 33
E&M TIE Trunk card (4-Wire) (Part 2 of 2)

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

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

Table 34
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 34
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	BK-G		38	RA	RA
13R	G-BK		13	RB	RB
		3			
14T	BK-BR		39	TA	TA
14R	BR-BK		14	TB	TB
15T	BK-S		40	E1	E
15R	S-BK		15	E2	M
16T	Y-BL		41	M1	SIG3A
16R	BL-Y		16	M2	SIG3B

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

Table 35
E&M 2280 Hz TIE Trunk connections (Part 1 of 2)

Lead designations	Pins	Pair color	Unit number
TA	26	W-BL	
TB	1	BL-W	
RA	27	W-O	0
RB	2	O-W	
TA	30	W-S	
TB	5	S-W	
RA	31	R-BL	1
RB	6	BL-R	

Table 35
E&M 2280 Hz TIE Trunk connections (Part 2 of 2)

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

Table 36
E&M 2-wire Recorded Announcement Trunk connections

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

Table 37
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 38
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 38
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	R-O	3	32	T3	T3	A3
7R	O-R		7	R3	R3	B3
8T	R-G		33		PPM3	C3
8R	G-R		8		—	Spare
9T	R-BR	4	34	T4	T4	A4
9R	BR-R		9	R4	R4	B4
10T	R-S		35		PPM4	C4
10R	S-R		10		—	Spare
11T	BK-BL	5	36	T5	T5	A5
11R	BL-BK		11	R5	R5	B5
12T	BK-O		37		PPM5	C5
12R	O-BK		12		—	Spare
13T	BK-G	6	38	T6	T6	A6
13R	G-BK		13	R6	R6	B6
14T	BK-BR		39		PPM6	C6
14R	BR-BK		14		—	Spare
15T	BK-S	7	40	T7	T7	A7
15R	S-BK		15	R7	R7	B7
16T	Y-BL		41		PPM7	C7
16R	BL-Y		16		—	Spare

Table 39
Central Office Trunk connections (Part 1 of 2)

Pair	Color	Unit	Pins	Lead designations
1T 1R	W-BL BL-W		26 1	T0 R0
2T 2R	W-O O-W	0	27 2	
3T 3R	W-G G-W		28 3	
4T 4R	W-BR BR-W		29 4	
5T 5R	W-S S-W		30 5	T1 R1
6T 6R	R-BL BL-R	1	31 6	
7T 7R	R-O O-R		32 7	
8T 8R	R-G G-R		33 8	
9T 9R	R-BR BR-R		34 9	T2 R2
10T 10R	R-S S-R	2	35 10	
11T 11R	BK-BL BL-BK		36 11	
12T 12R	BK-O O-BK		37 12	

Table 39
Central Office Trunk connections (Part 2 of 2)

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

Trunk connections (UK)

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

- Table 40: "NT5K17 Direct Inward Dial card terminations" on page 337

- Table 41: "NT5K18 Exchange line trunk card cross-connect terminations" on page 338

- Table 42: "NT5K19 2W paging mode terminations" on page 340

- Table 43: "NT5K19 2W Type 1 mode terminations" on page 340

- Table 44: "NT5K19 4W Type 1 mode terminations" on page 342

- Table 45: "NT5K19 AC15 mode pair terminations" on page 343

- Table 46: "NT5K19 Recorded Announcement mode pair terminations" on page 344

Table 40
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 40
NT5K17 Direct Inward Dial card terminations (Part 2 of 2)

Pair	Pins	Pair color	Unit
	39	BK-BR	
	14	BR-BK	
T7	40	BK-S	
R7	15	S-BK	7
	41	Y-BL	
	16	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 41
NT5K18 Exchange line trunk card cross-connect terminations
(Part 1 of 2)

Pair	Pins	Pair color	Unit
T0	26	W-BL	
R0	1	BL-W	0
	27	W-O	
	2	O-W	
T1	28	W-G	
R1	3	G-W	1
	29	W-BR	
	4	BR-W	
T2	30	W-S	
R2	5	S-W	2
	31	R-BL	
	6	BL-R	

Table 41
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 42
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 43
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 43
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 44
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 45
NT5K19 AC15 mode pair terminations

Pair	Pins	Pair color	Unit
TA	26	W-BL	
TB	1	BL-W	0
RA	27	W-O	
RB	2	O-W	
TA	30	W-S	
TB	5	S-W	1
RA	31	R-BL	
RB	6	BL-R	
TA	34	R-BR	
TB	9	BR-R	2
RA	35	R-S	
RB	10	S-R	
TA	38	BK-G	
TB	13	G-BK	3
RA	39	BK-BR	
TB	14	BR-BK	

Table 46
NT5K19 Recorded Announcement mode pair terminations

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

Verifying trunk functionality

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

Installing and configuring a Voice Gateway Media Card

Contents

This section contains information on the following topics:

Introduction

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 cards 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.

TPS functions are not supported on the Voice Gateway Media Cards. They do not participate in the Election process to be come 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 Avaya Communication Server 1000M systems and into a Media Gateway and Media Gateway 1000E Expander in the Avaya CS 1000E system.

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

The Media Card 32S card provides the following features:

- Secure Real-time Transport Protocol (SRTP)

- two Digital Signal Processors (DSP), based on an ARM processor

- channel density of 32 ports

- cost improvement over existing Media Cards

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

- 32-port card packet processing power is greater than that of the ITG-P 24-port line card

- increases the channel density from 24 to 32 ports (for the 32-port version)

- reduces the slot count from a dual IPE slot to a single IPE slot

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

This chapter contains the following procedures:

- Procedure 67: "Adding a Voice Gateway Media Card to an IP telephony node" on page 348

- Procedure 68: "Adding voice gateway channels using Element Manager" on page 353

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 259.

- the voice gateway channels defined on the Avaya Communication Server 1000E. See "Configuring voice gateway channels using Element Manager" on page 353.

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 67
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 138.

Figure 138
Node Configuration web page

Managing: **207.179.153.99**
   IP Telephony » Nodes: Servers, Media Cards » Node Configuration

Node Configuration

New Node [   ]   to Add

Import Node Files

+ Node: 8   Node IP: 192.168.253.7   Edit | Transfer / Status | Delete

3   Click **Node**, then click **Select**.

4   Choose **Media Card** then click **Add**. See Figure 139 on .

Figure 139
Add Media Card

The Cards tab expands (see Figure 140 on page 350).

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

Figure 140
New media card details

Embedded LAN (ELAN) IP address	0.0.0.0 *
Embedded LAN (ELAN) MAC address	00:00:00:00:00:00 *
Telephony LAN (TLAN) IP address	0.0.0.0 *
Voice LAN (TLAN) gateway IP address	0.0.0.1
Hostname	Hostname *
Card TN	*
Card processor type	Voice Gateway Media Card ▼
H323 ID	CS1000E_PM1
Enable Line TPS	☑
	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.
Primary Call Server IP address	192.167.104.53 *
Alternate Call Server1 IP address	0.0.0.0 *

> **6** Click **Save** the node.
>
> **7** Verify card has been added. See Figure 141 on .
>
> *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 *Avaya Security Management* (NN43001-604).
>
> *Note 2:* You may also need to upgrade the Media Card's loadware before joining the security domain. See *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125).

Figure 141
Media Card added

8   Click **Save**. The **Node Saved** screen appears. See Figure 142 on
.

Figure 142
Node saved
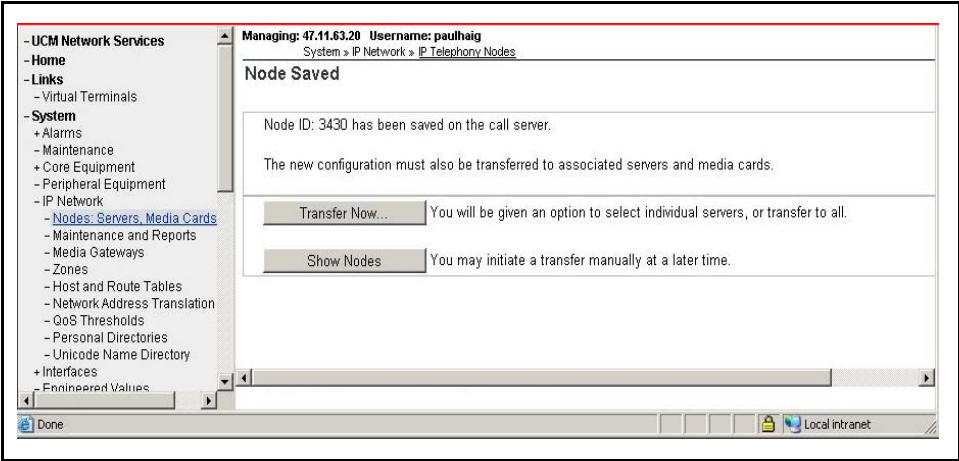
> 9   Click **Transfer Now**. The Synchronize Configuration Files screen appears. See Figure 143.

Figure 143
Synchronize Configuration Files
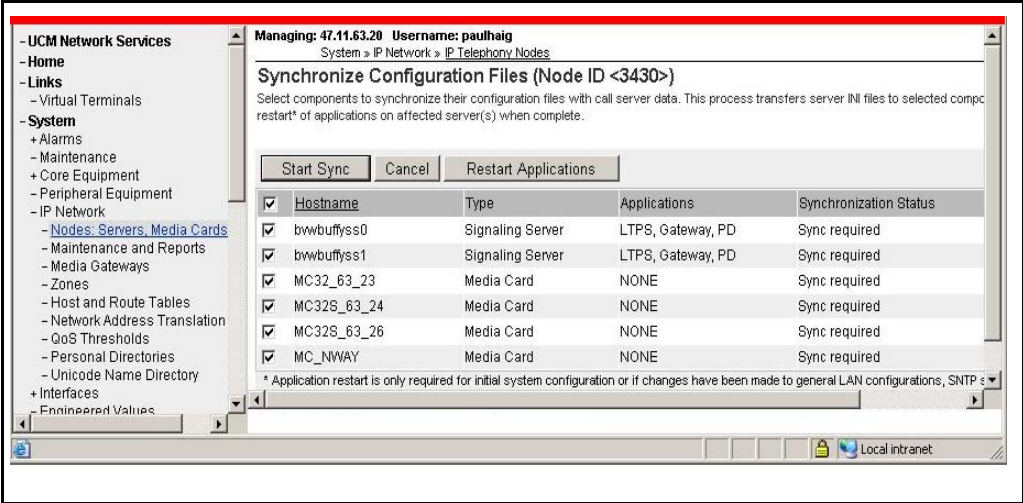
10   Select all of the elements and click **Start Sync.**

──────── **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 68 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 69 on .

Procedure 68
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 138 on page 348.

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 144.

Figure 144
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 145.

Figure 145
Add VGW channels

5   Enter the appropriate parameters to configure the VGW channels.

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

Note: The Media Card has 32 channels.

6   Click **Submit**.

The VGW channels for this card are displayed. See Figure 146 on
page 355.

Figure 146
VGW channels list

Configuring voice gateway channels using LD 14

The voice gateway channels are also called "DSP channels" or the card's "physical TNs." Follow Procedure 69 on page 356 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 68 on page 353.

Procedure 69
Configuring voice gateway channels using LD 14

1   Log in to the Avaya Communication Server 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 47.

Table 47
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 48 on page 365 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 47
LD 14 – Configure physical TNs (Part 2 of 2)

Prompt	Response	Description
MAXU	32	32 is the maximum number of voice Media Gateway channels on the Media Card.
ZONE	0-255	Zone number to which the Voice Gateway Media Card Physical TNs belong. Verify that the zone exists in LD 117. The ZONE prompt is not available when configuring VGW in an MG 1000E. The VGWs are assigned the same zone as the MG 1000E. *Note:* If the Zone of an MG 1000E is changed, all VGW in the MG 1000E must be removed and reconfigured to assume the new Zone of the MG 1000E.
CUST	xx	The customer to which the IPTN resources are assigned. *Note:* This means that for multi-customer Avaya Communication Server 1000E systems, each customer must have a dedicated IP Telephony node for IP Phones.

4   Exit from LD 14. Enter the command:

****

──────────   **End of Procedure**   ──────────

Saving configuration changes

Perform a datadump to save configuration changes. Complete the steps in Procedure 54: "Performing a datadump using Element Manager" on page 275.

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 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 147 on page 359 shows the CF card location on the Voice Gateway Media Card.

Figure 147
CF card location
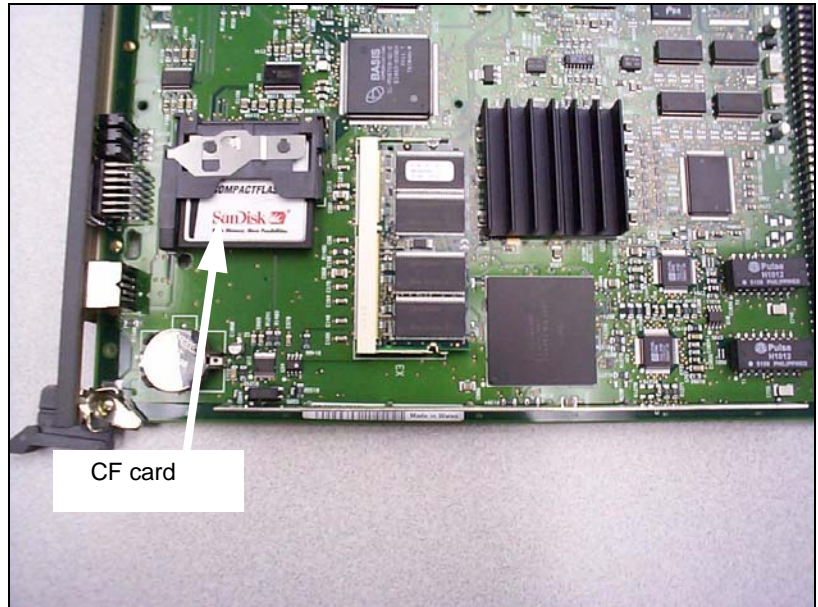
CF card

Procedure 70
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 148 on).

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 148.

Figure 148
Position the CF card in socket
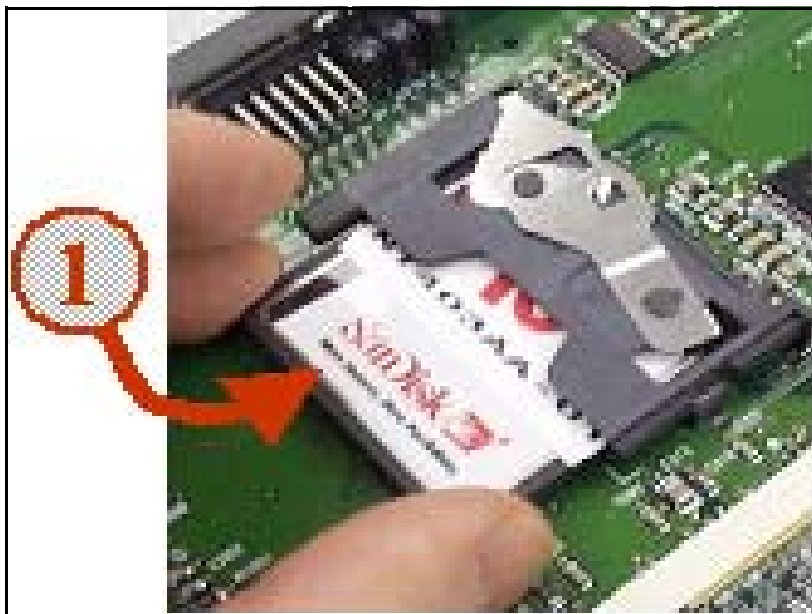
4   Insert the CF card in the socket.

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 149) 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 149
Retaining pin hole

8   Insert the Retaining Pin in this hole (labeled 1 in Figure 150).

Press the Retaining Pin into the hole until the pin clicks as it locks into position (labeled 2 in Figure 150). The underside of the head of the Retaining Pin should be flat against the card.

Figure 150
Inserting the retaining pin
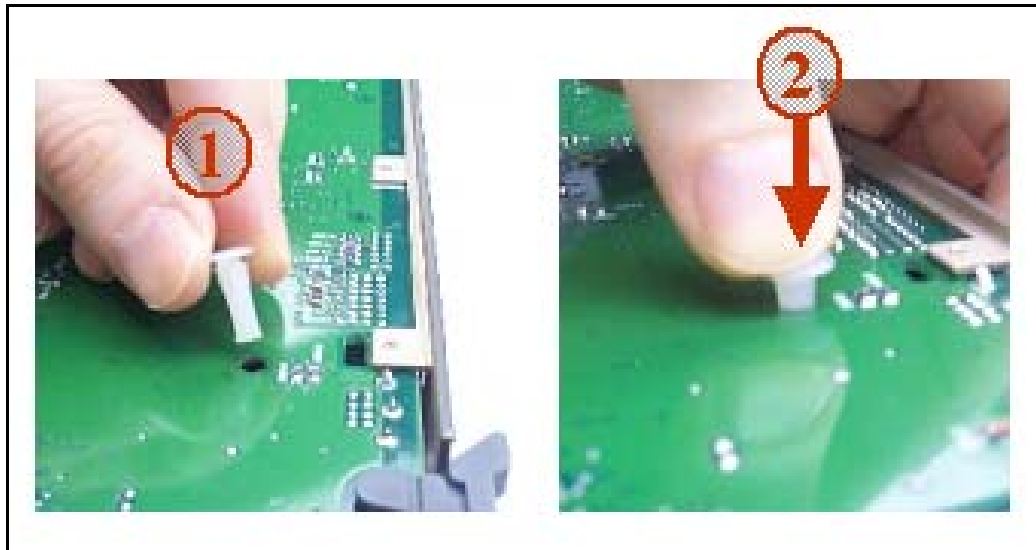
9   Turn the card over to view the front of the card. Ensure the Retaining Pin is in place.

——————— **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 151 on page 363 and Figure 152 on page 364 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 151 shows the circuit card assignments in the Media Gateway 1000E.

Figure 151
Media Gateway 1000E card slot location
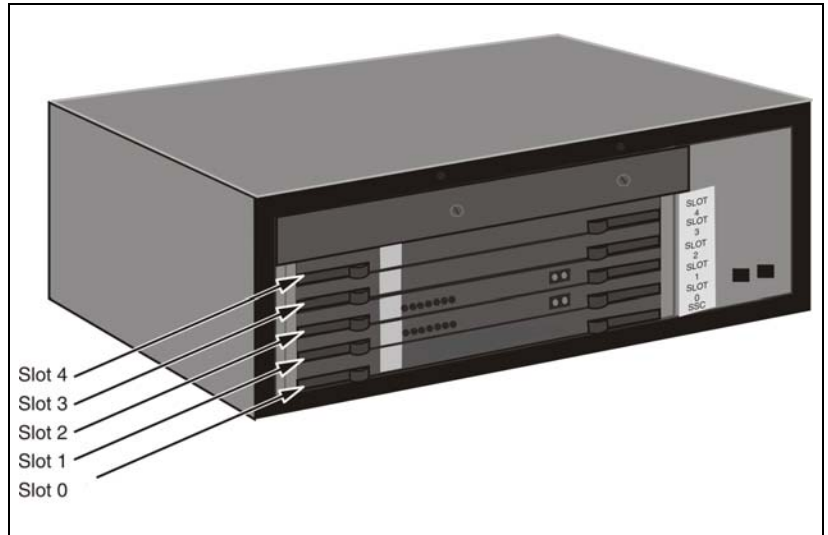
The Media Gateway 1010 (MG 1010) supports Voice Gateway Media Cards in slots 1 to 10.

Figure 152 on shows the circuit card assignments in the Media Gateway Expander.

Figure 152
Media Gateway Expander card slot location
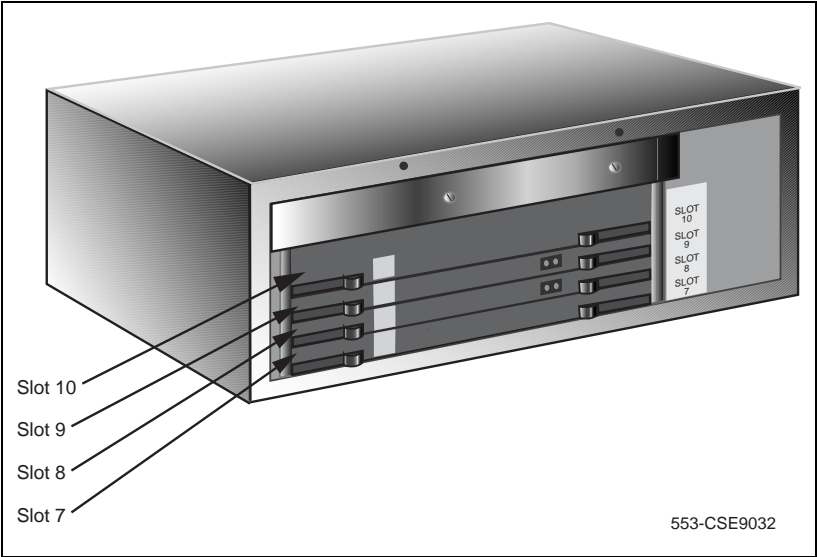
Table 48 on page 365 shows the TN assignments for the MG 1000E.
Communication Server 1000 Release 7.6 supports up to 50 MG 1000E.

Table 48
TN assignments for MG 1000E

Slots	MG 1000E				MG 1000E Expander			
	1	**2**	**3**	**4**	**7**	**8**	**9**	**10**
TN	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**
MG 1000E								
1	000 0 01	000 0 02	000 0 03	000 0 04	000 0 07	000 0 08	000 0 09	000 0 10
2	000 1 01	000 1 02	000 1 03	000 1 04	000 1 07	000 1 08	000 1 09	000 1 10
3	004 0 01	004 0 02	004 0 03	004 0 04	004 0 07	004 0 08	004 0 09	004 0 10
4	004 1 01	004 1 02	004 1 03	004 1 04	004 1 07	004 1 08	004 1 09	004 1 10
5	008 0 01	008 0 02	008 0 03	008 0 04	008 0 07	008 0 08	008 0 09	008 0 10
6	008 1 01	008 1 02	008 1 03	008 1 04	008 1 07	008 1 08	008 1 09	008 1 10
7	012 0 01	012 0 02	012 0 03	012 0 04	012 0 07	012 0 08	012 0 09	012 0 10
8	012 1 01	012 1 02	012 1 03	012 1 04	012 1 07	012 1 08	012 1 09	012 1 10
9	016 0 01	016 0 02	016 0 03	016 0 04	016 0 07	016 0 08	016 0 09	016 0 10
10	016 1 01	016 1 02	016 1 03	016 1 04	016 1 07	016 1 08	016 1 09	016 1 10
11	020 0 01	020 0 02	020 0 03	020 0 04	020 0 07	020 0 08	020 0 09	020 0 10
12	020 1 01	020 1 02	020 1 03	020 1 04	020 1 07	020 1 08	020 1 09	020 1 10
13	024 0 01	024 0 02	024 0 03	024 0 04	024 0 07	024 0 08	024 0 09	024 0 10
14	024 1 01	024 1 02	024 1 03	024 1 04	024 1 07	024 1 08	024 1 09	024 1 10
...								
...								
127	252 0 01	252 0 02	252 0 03	252 0 04	252 0 07	252 0 08	252 0 09	252 0 10
128	252 1 01	252 1 02	252 1 03	252 1 04	252 1 07	252 1 08	252 1 09	252 1 10

Note: The bottom most card slot in the Media Gateway is reserved for the MGC card.

Procedure 71
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 Avaya CS 1000E hardware" on .

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 by 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 *Avaya Signaling Server IP Line Applications 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 *Avaya Signaling Server IP Line Applications Fundamentals* (NN43001-125) for detailed maintenance procedures.

4 Once the card initializes you need to upgrade the loadware to CS 1000 Release 7.6. See "Loadware upgrade" on .

5 Login with SEC_ADMIN priv (admin2)

6 Join the UCM security domain (joinSecDomain). For details, see *Avaya 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 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 72: "Manually assigning the MC32S card an IP address" on .

Procedure 72
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 73: "Displaying the Voice Gateway Media Card status" on page 368

- Procedure 74: "Displaying the Voice Gateway status for all voice gateway channels" on page 369

- Procedure 75: "Displaying the status of Voice Gateway Media Card units" on page 370

- Procedure 76: "Displaying the status of one unit on a Voice Gateway Media Card" on page 373

Procedure 73
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 74
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 75
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 153. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 153.

Figure 153
Maintenance (by Overlay) web page
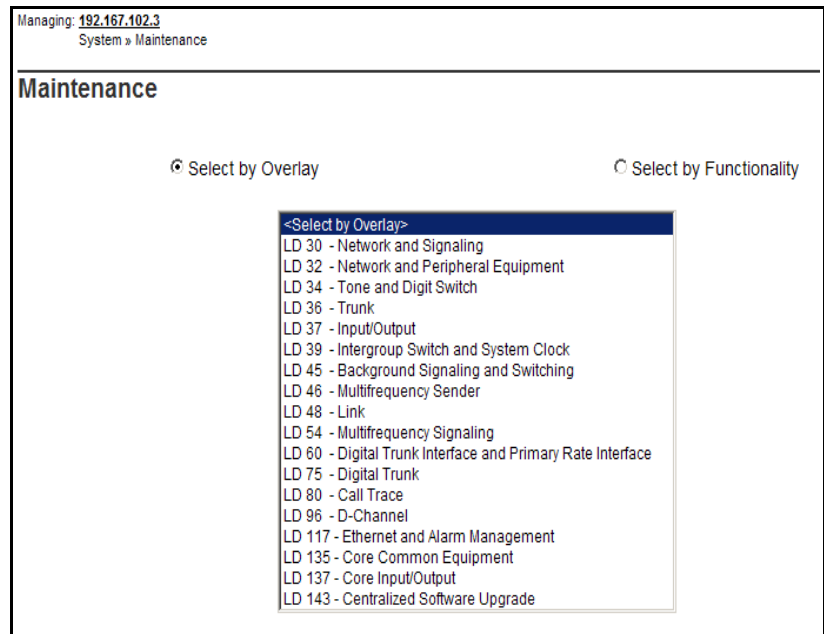
2   Select **Select by Functionality**.

The list in the web page changes to show a list of diagnostics you can use, as shown in Figure 154 on .

Figure 154
Maintenance (by functionality) web page
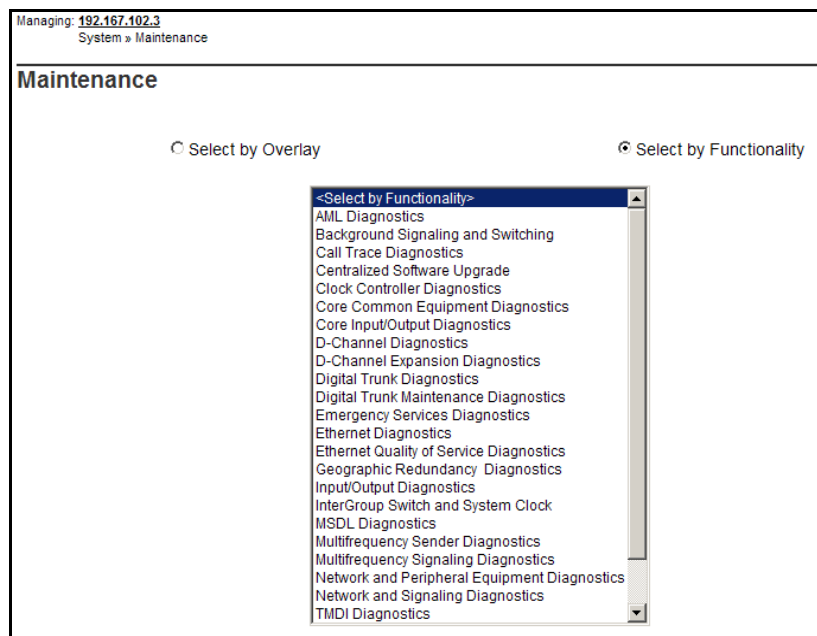
3   Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 154.

The **Network and Peripheral Diagnostics** web page opens, as shown in .

Figure 155
Network & Peripheral Diagnostics web page

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

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

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

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

———————————— **End of Procedure** ————————————

Procedure 76
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 153 on page 370. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 153.

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 154 on page 371.

3   Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 154 on page 371.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 155 on page 372.

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 77 to disable a Voice Gateway Media Card using Element Manager.

Procedure 77
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 153 on page 370. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 153.

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 154 on page 371.

3   Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 154 on page 371.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 155 on page 372.

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

Disabling a card unit

Follow Procedure 78 to disable a Voice Gateway Media Card unit in Element Manager.

Procedure 78
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 153 on page 370. This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 153.

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 154 on page 371.

3   Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 154 on page 371.

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 155 on .

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 79 to enable a Voice Gateway Media Card using Element Manager.

Procedure 79
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 153 on . This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 153.

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 154 on .

3   Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 154 on .

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 155 on .

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 80 to enable a Voice Gateway Media Card unit using Element Manager.

Procedure 80
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 153 on . This page allows you to perform maintenance using overlays or using a selected functionality. The default is overlay, as shown in Figure 153.

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 154 on .

3   Select **Network & Peripheral Equipment Diagnostics** from the list in Figure 154 on .

The **Network and Peripheral Diagnostics** web page opens, as shown in Figure 155 on .

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

This chapter describes how to install and connect an Avaya Communication Server 1000E system using the BIX, or Krone Test Jack Frame (UK) cross-connect terminals.

This chapter contains the following procedures:

1   Procedure 81: "Installing a BIX cross-connect terminal" on .

2   Procedure 82: "Installing the Krone Test Jack Frame (UK)" on .

3   Procedure 83: "Connecting the cables to the Media Gateways" on .

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

Procedure 81
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 156 on .

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 156
Typical BIX cross-connect terminal layout

End of Procedure

Installation and Commissioning
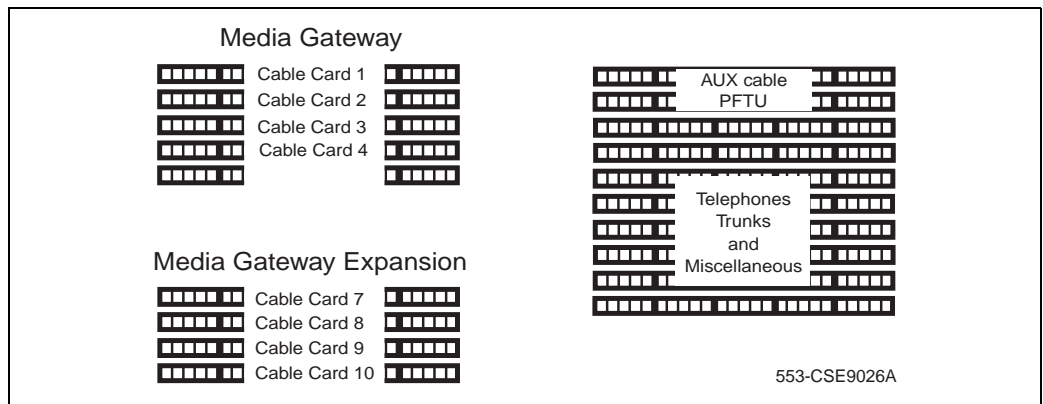
Installing a Krone Test Jack Frame for the UK

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 157 on shows how one 25-pair cable is divided among three terminating strips on the Krone Test Jack Frame.

Figure 157
25-pair cable on three Krone strips

Pair	Pin Number	Wire Colour	Krone Strip
1T	26	W-BL	
1R	1	BL-W	
2T	27	W-O	
2R	2	O-W	
3T	28	W-G	
3R	3	G-W	
4T	29	W-BR	1
4R	4	BR-W	
5T	30	W-S	
5R	5	S-W	
6T	31	R-BL	
6R	6	BL-R	
7T	32	R-O	
7R	7	O-R	
8T	33	R-G	
8R	8	G-R	
9T	34	R-BR	
9R	9	BR-R	
10T	35	R-S	
10R	10	S-R	
11T	36	BK-BL	
11R	11	BL-BK	
12T	37	BK-O	2
12R	12	O-BK	
13T	38	BK-G	
13R	13	G-BK	
14T	39	BK-BR	
14R	14	BR-BK	
15T	40	BK-S	
15R	15	S-BK	
16T	41	Y-BL	
16R	16	BL-Y	
17T	42	Y-O	
17R	17	O-Y	
18T	43	Y-G	
18R	18	G-Y	
19T	44	Y-BR	
19R	19	BR-Y	
20T	45	Y-S	
20R	20	S-Y	
21T	46	V-BL	3
21R	21	BL-V	
22T	47	V-O	
22R	22	O-V	
23T	48	V-G	
23R	23	G-V	
24T	49	V-BR	
24R	24	BR-V	
25T	50	V-S	
25R	25	S-V	

553-CSE0019

Procedure 82 describes how to install the Krone Test Jack Frame for the UK. For detailed information, refer to the Krone documentation.

Procedure 82
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 158 on .

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 158
Typical Krone cross-connect terminal layout (UK)

Pair

		Pair
17	Spare	24
9	PFTU termination	16
1		8
1	AUX cable	6
	Grounding block	
17		24
9		16
1		8

Other equipment

Media Gateway Expansion

17		24
9	Card 10	16
1		8
17		24
9	Card 9	16
1		8
17		24
9	Card 8	16
1		8
17		24
9	Card 7	16
1		8

9		16
9		16
1		8
1		8
9	Card 4	16
1		8

Media Gateway

17		24
9	Card 3	16
1		8
17		24
9	Card 2	16
1		8
17		24
9	Card 1	16
1		8

553-CSE9033
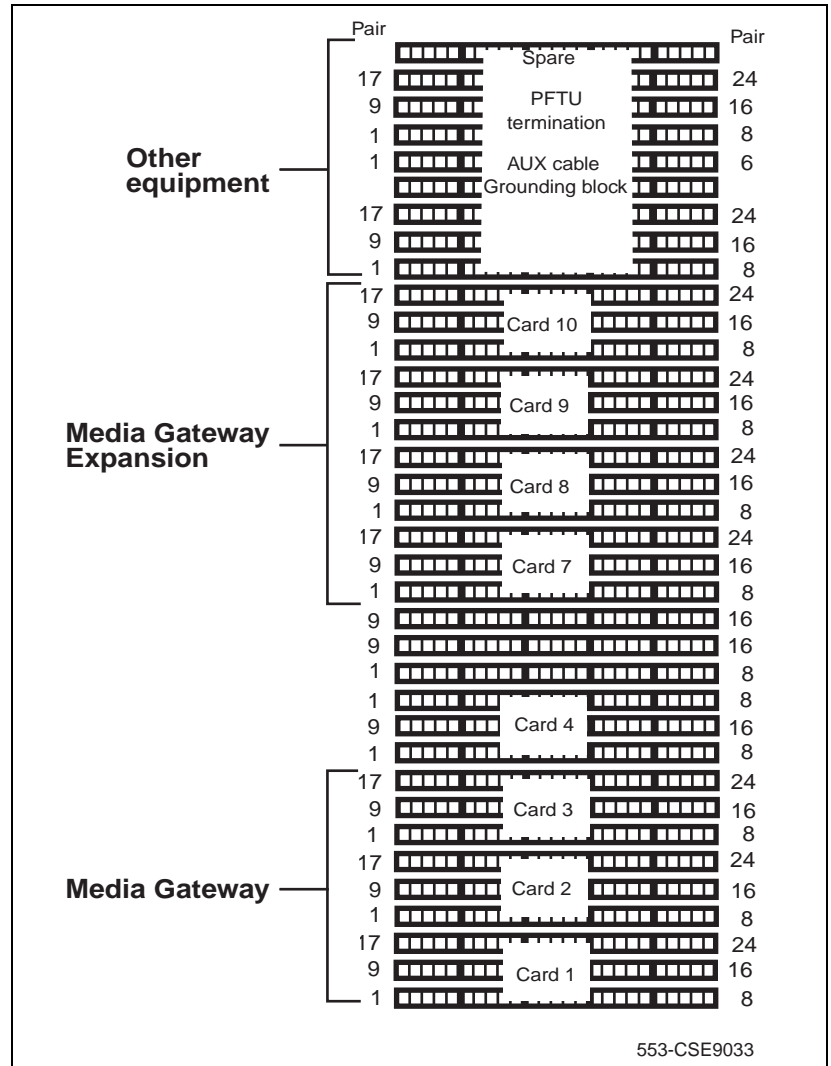
—————— **End of Procedure** ——————

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 Avaya Communication Server 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 83
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 159 on and Figure 160 on .

Figure 159
Cable connectors at the back of the Media Gateway
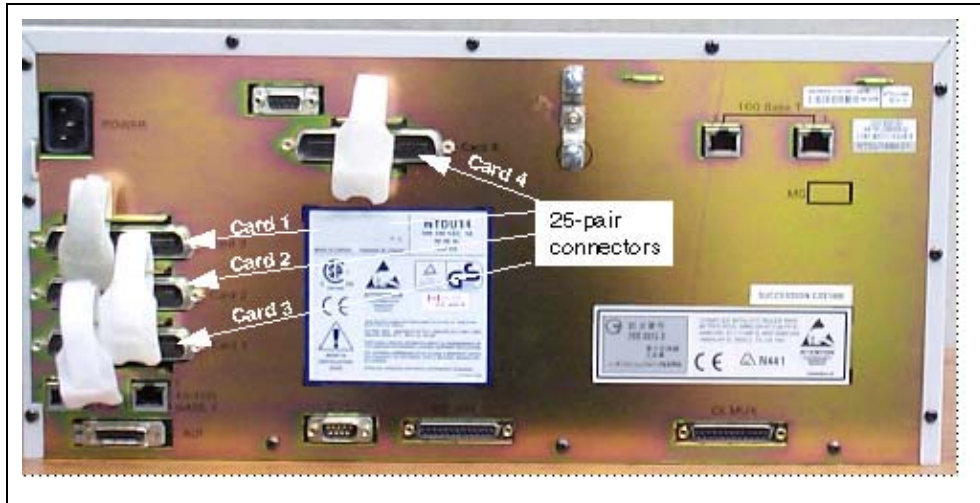
Figure 160
Cable connectors at the back of the Media Gateway Expander
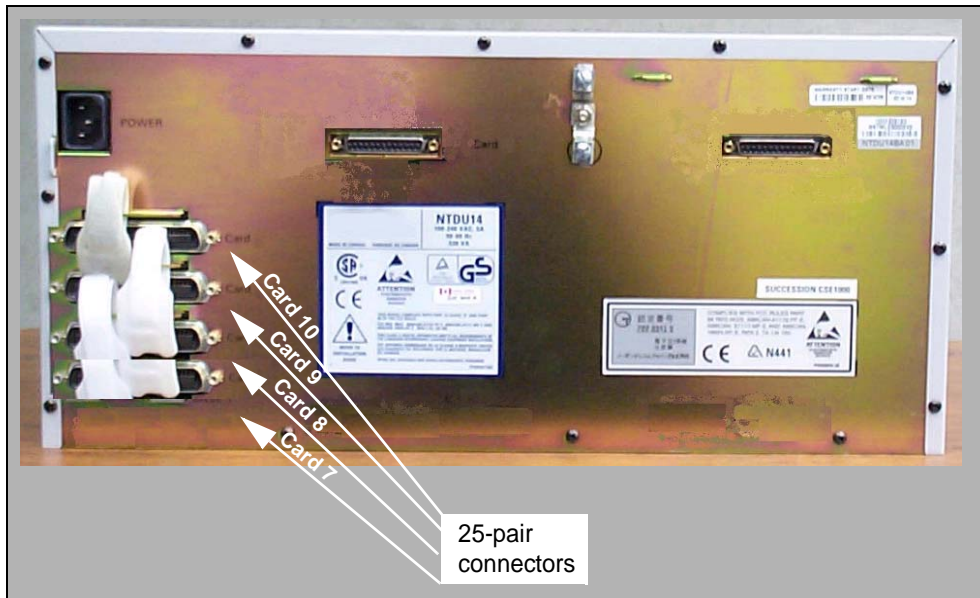
4   Tighten the velcro straps when you have connected each cable to the system.

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 161 on page 388.

Figure 161
AUX cable connector
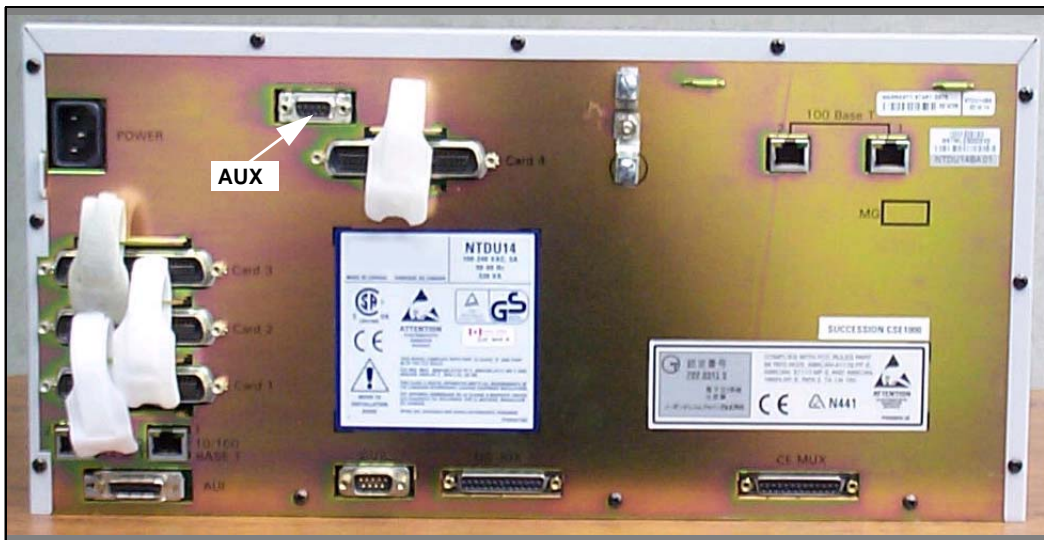
8   When auxiliary power is required from the QUA6 PFTU, terminate the AUX cable at the PFTU cross-connect terminal, according to Table 60 on page 448.

———————————— **End of Procedure** ————————————

Installing and configuring IP Phones

Contents

This section contains information on the following topics:

Introduction

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

The following IP Phones can be installed on an Avaya Communication Server 1000E system:

- IP Phone 2001, IP Phone 2002, IP Phone 2004 and Avaya 2007 IP Deskphones

- Avaya 2050 IP Softphone

- Avaya 2033 IP Conference Phone

- Avaya 1120E IP Deskphone, Avaya 1140E IP Deskphone and Avaya 1150E IP Deskphone

- Avaya 1110 IP Deskphone

- Expansion Module for Avaya 1100 Series IP Deskphones

- WLAN Handsets 2210/2211/2212

- MVC 2050

The system must be configured before the IP Phones can be installed. The configuration includes:

- The IP Phone TN blocks must be defined on the Call Server (See "VoIP bandwidth management zones" on page 403 or "Using Set-Based Installation" on page 426).

- 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 259).

- The IP Phones require local boot parameter configuration (see "Configuring the IP Phone boot parameters" on page 417).

Package components for the IP Phones

Table 49 lists the IP Phone 2001 package components and product codes.

Table 49
IP Phone 2001 components list (Part 1 of 2)

IP Phone 2001 package contents include:	
• IP Phone 2001 • Handset • Handset cord • Footstand • 7 ft. Cat5 Ethernet cable • Getting Started card	
IP Phone 2001(Ethergray) with Icon keycaps	NTDU90AA16/A0533387
IP Phone 2001 (Ethergray) with English text label keycaps	NTDU90BA16/A0533388
IP Phone 2001 (Charcoal) with Icon keycaps	NTDU90AA70/A0053389
IP Phone 2001 (Charcoal) with English text label keycaps	NTDU90BA70/A0533390
IP Phone 2001 (Charcoal with Bezel) with Icon keycaps	NTDU90AB70
IP Phone 2001 (Charcoal with Bezel) with Icon keycaps (RoHS)	NTDU90AC70E6
IP Phone 2001 (Charcoal with Bezel) with English text label keycaps	NTDU90BB70
IP Phone 2001 (Charcoal with Bezel) with English text label keycaps (RoHS)	NTDU90BC70E6
Replacement parts	
7 ft. Cat5 Ethernet Cable	A0648375
Handset, Ethergray	A0788874
Handset, Charcoal	A0758634
Handset cord, Ethergray; for IP Phone 2004 and IP Phone 2001	A088682

Table 49
IP Phone 2001 components list (Part 2 of 2)

Handset cord, Charcoal; for IP Phone 2004 and IP Phone 2001	N0000764
IP Phone 2001/2002/2004 Power Adapters	
Power transformer (117/120 VAC 50/60 Hz) (North America)	A0619627
Power transformer 3 prong AC to AC, direct plug-in, 8W, 240 VAC, 50Hz to 16 VAC at 500 mA (Ireland and UK)	A0656598
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 50 lists the IP Phone 2002 package components and product codes.

Table 50
IP Phone 2002 components list (Part 1 of 2)

IP Phone 2002 package contents include:	
• IP Phone 2002	
• Handset	
• Handset cord	
• Footstand	
• 7ft Cat5 Ethernet cable	
• Getting Started card	
IP Phone 2002 (Ethergray) with Icon keycaps	NTDU91AA16/A0533404
IP Phone 2002 (Ethergray) with English text label keycaps	NTDU91BA16/A0533405
IP Phone 2002 (Charcoal) with Icon keycaps	NTDU91AA70/A0533406
IP Phone 2002 (Charcoal) with English text label keycaps	NTDU91BA70/A0533407

Table 50
IP Phone 2002 components list (Part 2 of 2)

IP Phone 2002 (Charcoal with Bezel) with Icon keycaps	NTDU91AB70
IP Phone 2002 (Charcoal with Bezel) with Icon keycaps (RoHS)	NTDU91AC70E6
IP Phone 2002 (Charcoal with Bezel) with English text label keycaps	NTDU91BB70
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
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 51 lists the IP Phone 2004 package components and product codes.

Table 51
IP Phone 2004 component list (Part 1 of 2)

IP Phone 2004package contents includes	
• IP Phone 2004 • Handset • Handset cord • Footstand • 7 ft. Ethernet cable • Getting Started card	
IP Phone 2004 (Ethergray) with Icon keycaps	NTDU92AA16/ A0533408
IP Phone 2004 (Ethergray) with English text label keycaps	NTDU92BA16/ A0533409
IP Phone 2004 (Charcoal) with Icon keycaps	NTDU92AA70/ A0533410
IP Phone 2004 (Charcoal) with English text label keycaps	NTDU92BA70/ A0533411
IP Phone 2004 (Charcoal with Bezel) with Icon keycaps	NTDU92AB70
IP Phone 2004 (Charcoal with Bezel) with Icon keycaps (RoHS)	NTDU92AC70E6
IP Phone 2004 (Charcoal with Bezel) with English text label keycaps	NTDU92BB70
IP Phone 2004 (Charcoal with Bezel) with English text label keycaps (RoHS)	NTDU92BC70E6
IP Phone 2004 wall mount kit (Charcoal), used with Ethergray and Charcoal models	NTMN15BA70/ A0503076
Replacement parts	

Table 51
IP Phone 2004 component list (Part 2 of 2)

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 52 lists the Avaya 2007 IP Deskphone package components and product codes.

Table 52
Avaya 2007 IP Deskphone component list (Part 1 of 2)

Avaya 2007 IP Deskphone package contents includes • Avaya 2007 IP Deskphones (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
Avaya 2007 IP Deskphone power adapter	
Global power adapter	N0014020
Avaya 2007 IP Deskphone 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
Meridian 1 Option 11C Standard European Power Cord 250Vac Other EMEA, Kenya	NTTK16AB
Meridian 1 Option 11C Swiss Power Cord, 9.9 ft. 125Vac Switzerland	NTTK17AB

Table 52
Avaya 2007 IP Deskphone component list (Part 2 of 2)

Meridian 1 Option 11C UK Power Cord 240Vac Hong Kong, Ireland, UK, Singapore, Malaysia, India, Bangladesh, Pakistan, Brunei, Sri Lanka	NTTK18AB
Meridian 1 Option 11C Denmark Power Cord Kit, 9.9 ft. 125Vac Denmark	NTTK22AB

Table 53 lists the Avaya 2033 IP Conference Phone package components and product codes.

Table 53
Avaya 2033 IP Conference Phone components list

Avaya 2033 IP Conference Phone package contents include: • Avaya 2033 IP Conference Phone (charcoal) • 7 ft. CAT5 Ethernet cable • Power Interface Module (PIM) with 25 ft. console cable • Avaya 2033 IP Conference Phone Quick Reference Card • Universal power supply	NTEX11AA70
Avaya 2033 IP Conference Phone package contents include: • Avaya 2033 IP Conference Phone (charcoal) • 7 ft. CAT5 Ethernet cable • Power Interface Module (PIM) with 25 ft. console cable • Avaya 2033 IP Conference Phone Quick Reference Card • 2 Extension microphones (charcoal) • Universal power supply	NTEX11BA70
Additional Extension microphones with 7 ft. cable	NTEX11DA70
Power accessory kit (PIM, Universal power supply, cabling)	NTEX11CA
IP Phone Avaya 2033 IP Conference Phone 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 54 lists the Package components for the WLAN Handsets.

Table 54
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 & Avaya 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 54
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
WLAN IP Telephony Manager 2245, a minimum of one Telephony Manager is required per system order	NTTQ60AA/A048950

Table 54
WLAN Handset component list (Part 3 of 4)

WLAN Application Gateway 2246	
64 users	NTTQ65AB/N0023211
128 users	NTTQ65BA/A0548971
256 users	NTTQ65CA/A0548972
512 users	NTTQ65DA/A0548973
1,024 users	NTTQ65EA/A0548974
10,000+ users	NTTQ65FA/A0548975
The following items must be ordered with the applicable power supply: WLAN Handset 2210 Desktop Charger WLAN Handset 2211 Desktop Charger WLAN Handset 2211 Gang Charger WLAN IP Telephony Manager 2245 WLAN Application Gateway 2246 - 64 users WLAN Application Gateway 2246 - 128 users WLAN Application Gateway 2246 - 256 users WLAN Application Gateway 2246 - 512 users WLAN Application Gateway 2246 - 1024 users WLAN Application Gateway 2246 - 10,000 users	

Table 54
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:	NTTQ4101/A0548499
• North America	NTTQ4111/A0548956
• Europe	NTTQ4121/A0548958
• UK-HK	NTTQ4131/A0548959
• Switzerland	NTTQ4141/A0548960
• Australia-New Zealand	NTTQ4151
• Mexico	
WLAN IP Telephony Manager 2245 & WLAN Application Gateway 2246 (128+ users):	NTTQ4201/A0548961
• North America	NTTQ4211/A0548962
• Europe	NTTQ4221/A0548964
• UK-HK	NTTQ4231/A0548966
• Switzerland	NTTQ4241/A0548967
• Australia-New Zealand	NTTQ4251
• Mexico	

Connectivity and power requirements

Each IP Phone requires:

- a dedicated 10BaseT or 100BaseT or 10/100BaseT Ethernet interface

- a small desktop hub or switch if sharing an existing desktop Ethernet connection with a PC.

- a local power supply appropriate for the voltage in the area or a Power over LAN unit. (The IP Phone 2002 comes with a built-in 3-port switch and is ready for LAN powering.)

Installation and configuration procedures

This chapter contains the following procedures:

- Procedure 84: "Configuring virtual superloops" on page 403

- Procedure 85: "Configuring the IP Phones" on page 404

- Procedure 86: "Setting passwords for the administrator and temporary IP Telephone Installer" on page 410

- Procedure 87: "Installing IP Phone hardware components" on page 413

- Procedure 88: "Entering IP Telephone boot parameters using manual configuration" on page 418

- Procedure 89: "Entering IP Phone boot parameters using full DHCP parameters" on page 421

- Procedure 90: "Entering boot parameters using partial DHCP parameters" on page 423

- Procedure 91: "Using Set-Based Installation" on page 426

- Procedure 92: "Configuring the Avaya 2050 IP Softphone" on page 429

- Procedure 93: "Installing the USB Headset Kit" on page 430

- Procedure 94: "Installing the Avaya 2050 IP Softphone on your PC" on page 430

- Procedure 95: "Displaying registered IP Phones in Element Manager" on page 432

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 *Avaya Converging the Data Network with VoIP* (NN43001-260). For more information about Element Manager, see *Avaya Element Manager: System Administration* (NN43001-632).

Configuring virtual superloops

Follow Procedure 84 to configure the virtual superloops. For more details on virtual superloops, see *Signaling Server IP Line Applications Fundamentals* (NN43001-125).

Procedure 84
Configuring virtual superloops

1   Access LD 97. Enter the command:

   LD 97

2   Enter responses shown in Table 55.

Table 55
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 an IP Phone using LD 11

Follow Procedure 85 to configure an IP Phone. The configuration can be completed using the CLI.

Procedure 85
Configuring the IP Phones

1   Access LD 11. Enter the command:

LD 11

2   Enter the appropriate responses shown in Table 56.

Table 56
LD 11 – Configure an 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 Avaya 1110 IP Deskphone, Avaya 1120E IP Deskphone, Avaya 1140E IP Deskphone, Avaya 1150E IP Deskphone, IP Phone 2001, IP Phone 2002, IP Phone 2004, Avaya 2007 IP Deskphones, Avaya 2033 IP Conference Phone, Avaya 2050 IP Softphone.

Table 56
LD 11 – Configure an IP Phone (Part 2 of 5)

Prompt	Response	Description
TN		Terminal Number
	l s c u	Format for Avaya 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 66 on page 464)
DES	d...d	Office Data Administration System Station Designator
CUST	xx	Customer number as defined in LD 15
ZONE	0-255	Zone number to which this IP Phone belongs
CLS	ADD	Class of Service
		ADD - Automatic Digit Display, (default for IP Phone)
		For a complete list of responses, refer to *Avaya Software Input/Output: Administration* (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.

Table 56
LD 11 – Configure an IP Phone (Part 3 of 5)

Prompt	Response	Description
		The cccc or D entry deals specifically with the Calling Line identification feature. Where:
		cccc = CLID table entry of (0)-N, where N = the value entered at the SIZE prompt in LD 15 minus 1.
		D = the character "D". When the character "D" is entered, the system searches the DN keys from key 0 and up, to find a DN key with CLID table entry. The CLID associated with the found DN key will then be used.
		Note: The position of the (cccc or D) field varies depending on the key name or function.
		You may enter a CLID table entry if aaa = ACD, HOT d, HOT L, MCN, MCR, PVN, PVR, SCN or SCR.
		Type xx NUL to remove a key function or feature.
		Some data ports require specific key assignments. Refer to the *Meridian Data Services* publications for information regarding these requirements.
		Key number limits that can be assigned are as follows:
		0-7 for Meridian Communications Adapter (MCA) 0-5 for M2006 0-7 for M2008 0-59 for M2616, varies with number of add-on modules 0-79 for I2002, varies with value of KEM 0-79 for I2004, varies with value of KEM
		Note: The first IP Phone KEM is assigned keys 32-55, and the second IP Phone KEM is assigned keys 56-79.
		Type xx = NUL to remove a key function or feature for i2002 and i2004.

Table 56
LD 11 – Configure an IP Phone (Part 4 of 5)

Prompt	Response	Description
		If either the Meridian Programmable Data Adapter (MPDA) or the Display Module is equipped, then key 7 on sets M2008, M2216, and M2616 sets and key 5 on set M2006 will become Program keys which cannot be used as function keys.
		Any printout of the TN block will not show key 7 because it is a local function key.
		On the M2616, if CLS = HFA, key 15 on the voice TN defaults to the Handsfree key. No other feature assignment is accepted.
		Primary and secondary data DNs must be unique.
		A station SCR, SCN, MCR, or MCN DN must be removed as a member from all Group Hunt lists before the DN can be modified.

Table 56
LD 11 – Configure an IP Phone (Part 5 of 5)

Prompt	Response	Description
		On the Avaya 3903 Digital Deskphone, keys 4-15 are blocked. No feature assignment is accepted for keys 2-15.
		On the Avaya 3903, 3904, and 3905 Digital Deskphones, keys 29-31 are reserved. No feature assignment is accepted for keys 29-31 other than NUL.
		On the Avaya 3904 Digital Deskphone, no feature assignment is accepted for keys 12-15.
		On the Avaya 3905 Digital Deskphone, the technician can assign NUL or a server application on key 5. On key 6, the craftsperson can assign NUL or a local application.
		On the Avaya 3905 Digital Deskphone, the technician can assign NUL or the program key on key 7.
		On the Avaya 3905 Digital Deskphone, the technician can assign AAG, AMG, ASP,DWC, EMR, MSB, or NRD on keys 8-11. Other features are blocked.
		For IP Phones: xx = Keys 0-5 (and 6-11 using Shift key). These are self-labeled physical keys that can be programmed with any feature.
		Note 1: The IP Phone 2002 does not have a Shift key. Only keys 0-3 can be programmed.
		Note 2: Keys 16-26 are reserved for dedicated IP Phone soft keys.
		Table 57 on page 409 lists the dedicated IP Phone key name values (aaa). Other key name values can be found in *Avaya Software Input/Output: Administration* (NN43001-611).

3   Configure the dedicated soft keys, as shown in Table 57.

Table 57
IP Phone dedicated soft key assignment (Part 1 of 2)

IP Phone key number	Response(s) Allowed
Key 16	MWK, NUL MWK – Message Waiting key
Key 17	TRN, NUL TRN – Call Transfer key
Key 18	A03 or A06, NUL AO3 – 3-party conference key AO6 – 6-party conference key
Key 19	CFW, NUL CFW – Call Forward key
Key 20	RGA, NUL RGA – Ring Again key
Key 21	PRK, NUL PRK – Call Park key
Key 22	RNP, NUL RNP – Ringing Number pickup key
Key 23	SCU – Speed Call User SSU – System Speed Call User SCC – Speed Call Controller SSC – System Speed Call Controller NUL
Key 24	PRS, NUL PRS – Privacy Release key

Table 57
IP Phone dedicated soft key assignment (Part 2 of 2)

IP Phone key number	Response(s) Allowed
Key 25	CHG, NUL
	CHG – Charge Account key
Key 26	CPN, NUL
	CPN – Calling Party Number key

4   Repeat Steps 2 and 3 for each IP Phone.

———————————— **End of Procedure** ————————————

Setting administrator and temporary IP Telephone Installer passwords

IP Phone Installer Passwords is an optional feature that provides protection against unauthorized modification of the TN on the IP Phones. For detailed information about the IP Phone Installer Passwords, see *Signaling Server IP Line Applications Fundamentals* (NN43001-125).

The IP Phone Installer Passwords are configured on either a Signaling Server or a Media Card in a node. The passwords then apply to all components in the node.

Procedure 86
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 .

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 162.

Figure 162
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 [-- Select A Group -- ▼]   [RUN]

IP address [192.167.102.3]   Number of Pings [3]   [PING]

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 IP Phone Installer Password in the **Node Password** box (see Figure 163).

Figure 163
Node Password

Note: The entered password appears as asterisks. The valid characters are 0-9 * #. The password can be null or 6 to 14 digits in length.

> **WARNING**
>
> If the administrator password is null (zero length), then the Node ID, TN, and Password screens are not displayed on the IP Phones during their registration process. This provides security as it prevents any entry of passwords or TNs on the IP Phones. However, it is impossible to install new IP Phones (unless a temporary password is set).

10   Select **NodePwd** from the **Group** drop-down list.

11   Select **nodePwdShow** from the **Command** drop-down list.

12   Click **RUN**.
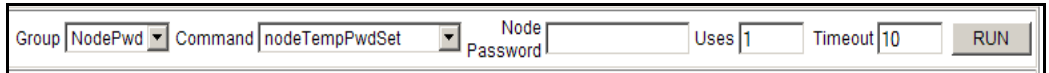
The updated administrator IP Phone Installer Password is displayed in the text area at the bottom of the web page.

13   Enter the temporary IP Phone Installer Password (see Figure 164):

a.   Enter the password in the **Node Password** text box.

b.   Select **NodePwd** from the **Group** drop-down list.

c.   Select **nodeTempPwdSet** from the **Command** drop-down list.

The area then displays the **Uses** and **Timeout** text boxes.

d.   Enter a value for the number of uses or a value for timeout (in hours) or both.

14   Click **SET**.

The temporary password is set.

Figure 164
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 IP Phone Installer Password is displayed.

——— **End of Procedure** ———

Installing IP Phone hardware components

Follow Procedure 87 to install IP Phone hardware components.

Procedure 87
Installing IP Phone hardware components

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

1 Refer to Figure 165 on page 414, when installing the following:

a. Footstand

b. 3-Port Switch only on the IP Phone 2004, required if a single Ethernet connection is shared with a PC

c. Ethernet cable from the set to the 3-Port Switch

d. Power Transformer or Power Splitter for Power over LAN unit

e. Handset

f. Handset cord

Figure 165
IP Phone 2004 components
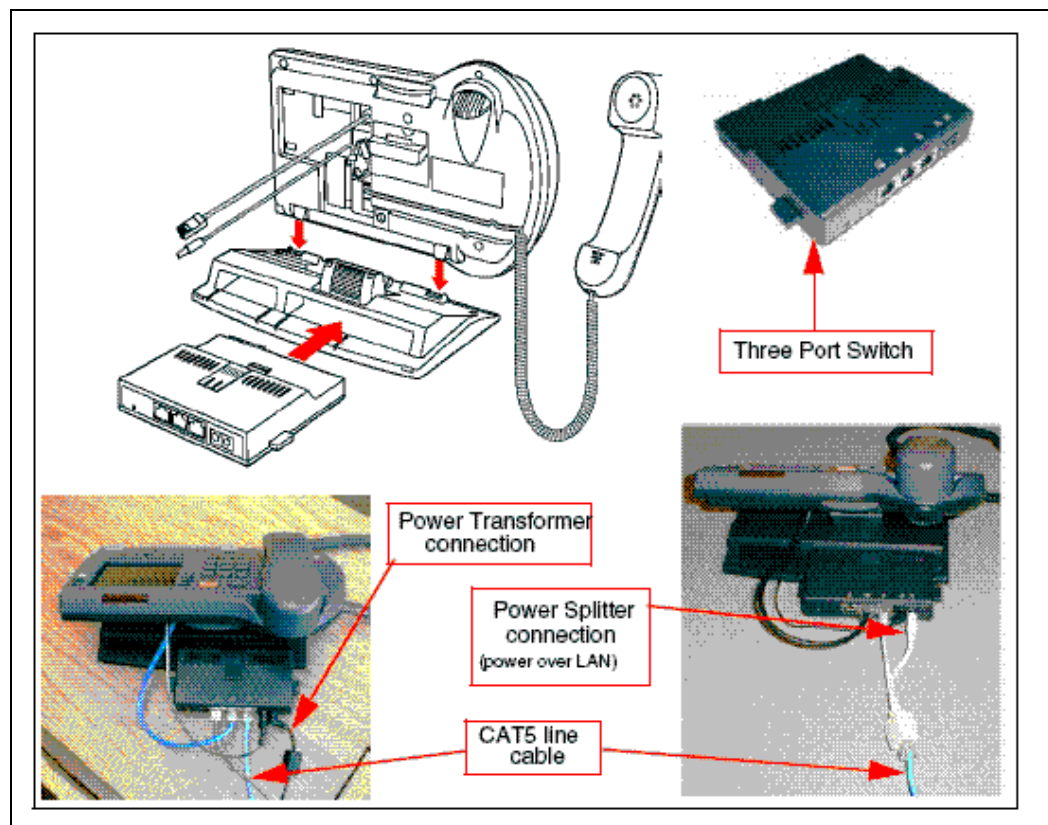
2 Connect one end of the CAT5 line cable to the Ethernet jack at the back of the telephone. See Figure 165 on .

3 Connect the other end into the IP voice network (Ethernet), using an RJ-45 connector. See Figure 166 on .

WARNING

Do not plug the IP Phone into an ISDN connection. Severe damage can result. Consult the system administrator to ensure that the telephone is being plugged in to a 10/100BaseT Ethernet jack.

4 Power the IP Phone with one of the following methods:

a. Using a 16V AC power adaptor, plug the AC power transformer into the nearest power outlet. Check the IP Phone User Guide for country-specific parameters.

b. Using a Power over LAN unit, connect the Power over LAN unit as shown in Figure 166 on .

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 166
IP Phone connections
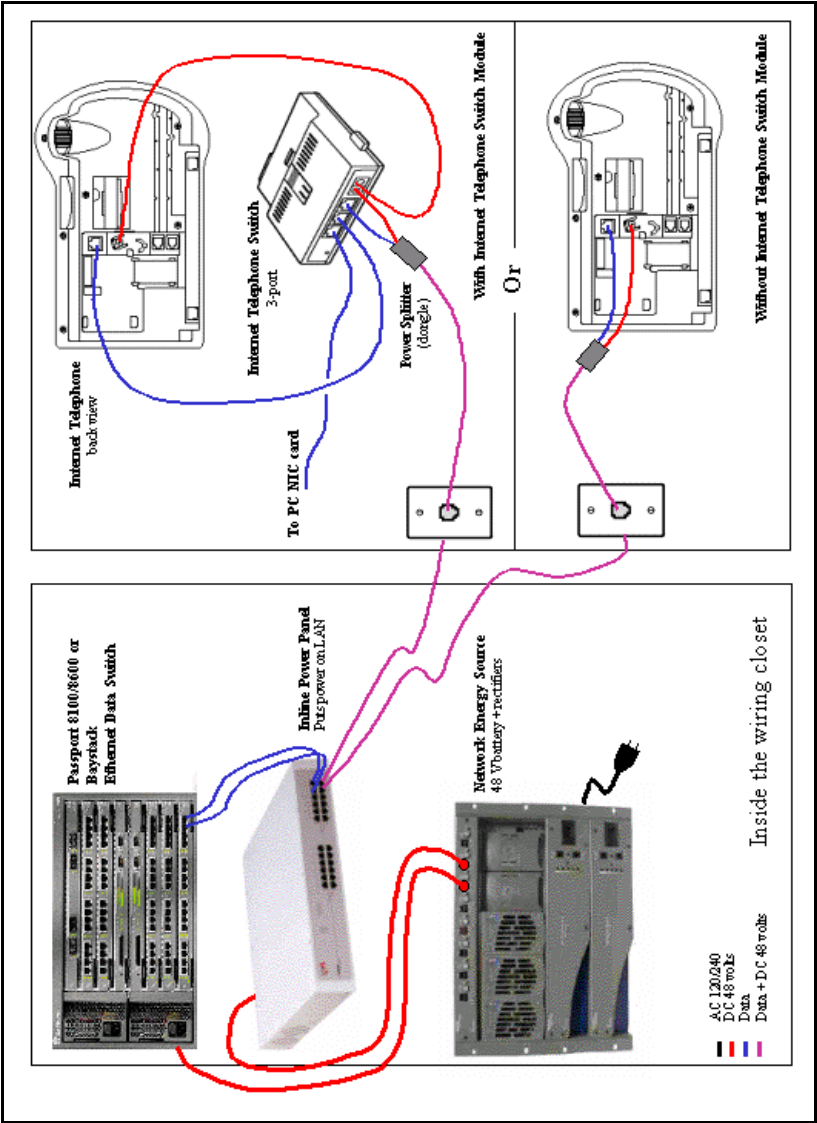
─────── **End of Procedure** ───────

Configuring the IP Phone boot parameters

The IP Phone boot parameters are configured during telephone installation. The following configuration modes are available:

- Manual configuration

  — All of the IP Phone's boot parameters are statically configured at the IP Phone.

  — See Procedure 88: "Entering IP Telephone boot parameters using manual configuration" on .

- Partial Dynamic Host Configuration Protocol (DHCP) mode

  — Works with standard DHCP server. The DHCP server automatically provides the IP Phone with an IP address; the remainder of the IP Phone's boot parameters are statically configured at the IP Phone.

  — See Procedure 89: "Entering IP Phone boot parameters using full DHCP parameters" on .

- Full DHCP mode

  — Requires special configuration of the DHCP server to recognize the IP Phone. The DHCP server provides all boot parameters to the IP Phone, including IP address and server address.

  — See Procedure 90: "Entering boot parameters using partial DHCP parameters" on .

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

Entering IP Phone boot parameters using manual configuration

Follow Procedure 88 to enter IP Telephone boot parameters using manual configuration.

Procedure 88
Entering IP Telephone boot parameters using manual configuration

1   Power the IP Phone.

    Within four seconds, the Avaya logo appears.

2   When the Avaya 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 Avaya 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 O**K** key to accept your selection.

    The IP Phone prompts:

    ```
    DHCP? (0-No, 1-Yes): 0
    ```

4   Enter **0** for manual boot parameter configuration.

    The IP Phone prompts:

    ```
    SET IP: x.x.x.x
    ```

5   Enter the IP Phone IP address.

    The IP Phone prompts:

    ```
    NETMSK: x.x.x.x
    ```

6   Enter the subnet mask.

    The IP Phone prompts:

    ```
    DEF GW: x.x.x.x
    ```

7   Enter the default gateway.

The IP Phone prompts:

```
S1 IP: x.x.x.x
```

8   Enter the Server 1 IP (node IP).

The IP Phone prompts:

```
S1 PORT: 4100
```

9   Enter the Server 1 port.

The IP Phone prompts:

```
S1 ACTION: 1
```

10   Enter the Server 1 action.

The IP Phone prompts:

```
S1 RETRY COUNT: 10
```

11   Enter the Server 1 retry count.

The IP Phone prompts:

```
S2 ...
```

12   Enter same information as for Server 1.

The IP Phone prompts:

```
VLAN?(0-No,1-Ma,2-Au)0
```

13   Choose one of the following:

    a.   Enter **0** to configure no VLAN.

        The IP Phone displays:

```
Locating server...
```

        After several seconds, the IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```


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

       The IP Phone prompts:

```
VLAN: x
```

       Go to step 14 on .

    c. Press the **OK** key.

       The IP Phone prompts:

```
Invalid TN: x.x

Reason: Unequipped.

Go offhook to do SBI
```

14 Enter the VLAN ID.

The IP Phone displays:

```
Locating server...
```

If you did not configure an IP Phone Installer Password, after several seconds, the IP Phone prompts:

```
Node: x
TN: x.x
```

15 Enter the node number and the IP Phone's (virtual) TN, then go to Step 18.

If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: x
```

16 Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times out, or if you do not successfully enter the password in three attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

```
TN: x.x
```

17   Enter the IP Phone's (virtual) TN.

The IP Phone displays the logo, the date and time, and the DN keys.

18   Check for dial tone and the correct DN above the display.

———— **End of Procedure** ————

Entering IP Phone boot parameters using full DHCP parameters

Follow Procedure 89 to enter IP Phone boot parameters using full DHCP parameters.

Procedure 89
Entering IP Phone boot parameters using full DHCP parameters

1   Power the IP Phone.

Within four seconds, the Avaya logo appears.

2   When the Avaya 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 Avaya logo times out, repeat step 1 and step 2.

3   For the following prompts:

a.   Press the **BKSpace** (backspace) or **Clear** keys to change an entry.

b.   Enter new values using the telephone's keypad.

c.   Press the **OK** key to accept your selection.

The IP Phone prompts:

```
DHCP? (0-No, 1-Yes): 0
```

4   Enter **1** to use DHCP.

The IP Phone prompts:

```
DHCP:0-Full, 1-Partial:0
```

5   Enter the 0 to use Full DHCP.

The IP Phone prompts:

```
VLAN?(0-No,1-Ma,2-Au)0
```

6   Choose one of the following:

    a.   Enter **0** to configure no VLAN.

        The IP Phone displays:

```
Locating server...
```

        After several seconds, the IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```


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

        The IP Phone prompts:

```
VLAN: x
```

        Go to step 7.

    c.   Enter **2** to configure automatic VLAN.

        The IP Phone prompts:

```
VLAN: x
```

        Go to step 7

7   Enter the VLAN ID.

    The IP Phone displays:

```
Locating server...
```

    If you did not configure an IP Phone Installer Password, after several seconds, the IP Phone prompts:

```
Node: x
TN: x.x
```

8   Enter the node number and the IP Phone's (virtual) TN, and then go to

    If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: 0
```

9   Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times out, or if you do not successfully enter the password in three attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

```
TN: x.x
```

10   Enter the IP Phone's (virtual) TN.

The IP Phone displays the logo, the date and time, and the DN keys.

11   Check for dial tone and the correct DN above the display.

—————————   **End of Procedure**   —————————

Entering boot parameters using partial DHCP parameters

Follow Procedure 90 to enter IP Telephone boot parameters using partial DHCP parameters.

Procedure 90
Entering boot parameters using partial DHCP parameters

1   Power up the IP Phone.

Within four seconds, the Avaya logo appears.

2   When the Avaya 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 Avaya logo times out, repeat step 1 and step 2.

3   For the following prompts:

   a.   Press the **BKSpace** (backspace) or **Clear** keys to change an entry.

   b.   Enter new values using the telephone's keypad.

   c.   Press the **OK** key to accept your selection.

The IP Phone prompts:

```
DHCP? (0-No, 1-Yes): 0
```

4   Enter **1** to use DHCP.

The IP Phone prompts:

```
DHCP:0-Full, 1-Partial:0
```

5   Enter the **1** to use Partial DHCP.

The IP Phone prompts:

```
S1 IP: x.x.x.x
```

6   Enter the Server 1 IP (node IP).

The IP Phone prompts:

```
S1 PORT: 4100
```

7   Enter the Server 1 port.

The IP Phone prompts:

```
S1 ACTION: 1
```

8   Enter the Server 1 action.

The IP Phone prompts:

```
S1 RETRY COUNT: 10
```

9   Enter the Server 1 retry count.

The IP Phone prompts:

```
S2 ...
```

10 Enter same information as for Server 1.

The IP Phone prompts:

```
VLAN?(0-No,1-Ma,2-Au)0
```

11 Choose one of the following:

a. Enter **0** to configure no VLAN.

The IP Phone displays:

```
Locating server...
```

After several seconds, the IP Phone prompts:

```
Connect Svc
Node: x
TN: x.x
```

Go to step 12.

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

The IP Phone prompts:

```
VLAN: x
```

Go to step 12 on .

c.   Enter **2** to configure automatic VLAN.

The IP Phone prompts:

```
VLAN: x
```

Go to step 12.

12   Enter the VLAN ID.

The IP Phone displays:

```
Locating server...
```

If you did not configure an IP Phone Installer Password, after several seconds, the IP Phone prompts:

```
Node: x
TN: x.x
```

13   Enter the node number and the IP Phone's (virtual) TN then go to step 16.

If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: 0
```

14   Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times out, or if you do not successfully enter the password in three attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

```
TN: x.x
```

15   Enter the IP Phone's (virtual) TN.

The IP Phone displays the logo, the date and time, and the DN keys.

16   Check for dial tone and the correct DN above the display.

——————————   **End of Procedure**   ——————————

Using Set-Based Installation

Set-Based Installation enables the delegation of telephone installation to trusted users. To have a trusted user perform this function, configure a temporary IP Phone Installer Password for the system. See "Setting administrator and temporary IP Telephone Installer passwords" on page 410.

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

Follow Procedure 91 to use Set-Based Installation.

Procedure 91
Using Set-Based Installation

This procedure is the same as Procedure 88 on page 418, Procedure 89 on page 421, and Procedure 90 on page 423, except when the system response, displayed on the IP Phone, is as follows:

If you did not configure an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
TN: x.x
```

1   Enter the node number and the IP Phone's (virtual) TN, then go to Step 4.

If you configured an IP Phone Installer Password, the IP Phone prompts:

```
Node: x
PassWord: 0
```

2   Enter the node number and the temporary or administrator IP Phone Installer Password.

Note 1: An asterisk is displayed for each password digit entered; the actual password is not displayed.

Note 2: If this screen times-out, or if you do not successfully enter the password in 3 attempts, the IP Phone continues its registration process as if no entry had been made to this prompt. You can reboot the telephone and try again if more tries are needed.

The IP Phone prompts:

TN: x.x

3   Enter the IP Phone's (virtual) TN.

4   Press the **OK** key.

The IP Phone responds Unequipped...

5   Lift the handset. The system accepts the TN.

6   Listen for the continuous dial tone.

The system response, displayed on the IP Phone, is as follows:

Model ? (20)

7   Press the **#** key to select the default model, or enter the model number and press **#**.

8   Listen for a special tone.

The system response, displayed on the IP Phone, is as follows:

OK, ZONE? (0)

9   Press the **#** key to select the default zone, or enter the zone number and press **#**.

The system response, displayed on the IP Phone, is as follows:

OK, EXTENSION? 2244

10   Press the **#** key to select the default DN, or enter a DN and press **#**.

11   Listen for a relocation tone.

The system response, displayed on the IP Phone, is as follows:

OK

12   Replace the handset.

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

─────── **End of Procedure** ───────

Installing the Avaya 2050 IP Softphone

This chapter contains the following procedures:

*   Procedure 92: "Configuring the Avaya 2050 IP Softphone" on

*   Procedure 93: "Installing the USB Headset Kit" on

*   Procedure 94: "Installing the Avaya 2050 IP Softphone on your PC" on

*   "Running the Avaya 2050 IP Softphone for the first time" on

Procedure 92
Configuring the Avaya 2050 IP Softphone

1   Access LD 11. Enter the command:

   LD 11

2   Enter appropriate responses shown in Table 58.

Table 58
LD 11 – Configure the Avaya 2050 IP Softphone

Prompt	Response	Description
REQ:	NEW CHG	Add new data Change existing data
TYPE:	I2050pc	Type of data block
TN	l s c u	Terminal number
DES	x...x	ODAS telephone designator
CUST	xx	Customer number, as defined in LD 15
...		
ZONE	0-255	Zone number
FDN	x...x	Flexible CFNA DN
...		
CLS	aaa	Class of service
		HFA - Digital Telephone Handsfree Allowed is default for Avaya 2050 IP Softphone 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 Avaya 2050 IP Softphone software application enables the Avaya 2050 IP Softphone 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 93
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 Avaya 2050 IP Softphone application

Procedure 94
Installing the Avaya 2050 IP Softphone 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 Avaya 2050 IP Softphone Configuration Utility to assign a server address, select sound devices, and select a server type.

———————————————— **End of Procedure** ————————————————

Running the Avaya 2050 IP Softphone for the first time

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

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

• Select **Start > Programs > Avaya > Avaya 2050 IP Softphone**.

• Click the desktop shortcut (if one was created during the installation).

• Automatic start-up sequence.

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

When an Avaya 2050 IP Softphone 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 Avaya 2050 IP Softphone 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 Avaya 2050 IP Softphone. See *Signaling Server IP Line Applications 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 Avaya 2050 IP Softphone configuration is complete.

Verifying IP Phone functionality

You can now use the IP Phones. To test the telephones, make IP Phone-to-IP Phone calls.

Displaying registered IP Phones

Follow Procedure 95 to display the IP Phones registered on a Signaling Server or Voice Gateway Media Card.

Procedure 95
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 Applications Fundamentals* (NN43001-125), to check for the latest IP Phone firmware version and how to upgrade to the latest IP Phone firmware.

Installing Line cards and cross-connecting telephones

Contents

This section contains information on the following topics:

Introduction

This chapter contains instructions for connecting telephone Line cards located in the Media Gateway and Media Gateway Expander to the MDF cross-connect terminal.

This chapter contains the following procedures:

- Procedure 96: "Cross-connecting telephones" on

- Procedure 97: "Connecting a telephone without a PFTU" on

- Procedure 98: "Connecting an off-premise telephone" on

- Procedure 99: "Connecting an attendant console" on

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 379, 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 167 and Figure 168 on page 435 show the circuit card assignments for the Media Gateway 1000E and Media Gateway Expander. Refer to these figures to make sure that you have all circuit cards inserted in the correct slots.

The Media Gateway 1010 (MG 1010) supports IPE circuit cards in slots 1 to 10. Slot 0 is reserved for the Gateway Controller. Slots 22 and 23 are dedicated for Server cards. The MG 1010 does not support or require an Expander.

Figure 167
Circuit card assignments in a Media Gateway 1000E
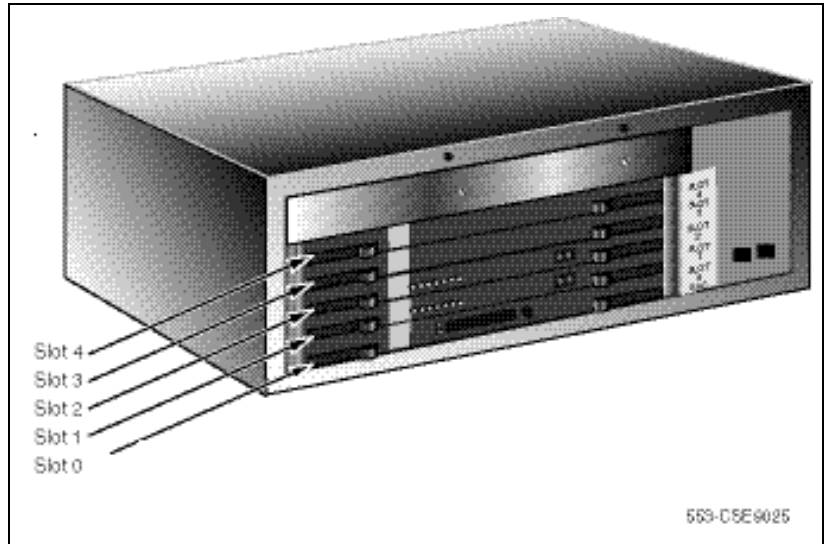
Figure 168
Circuit card assignments in a Media Gateway Expander
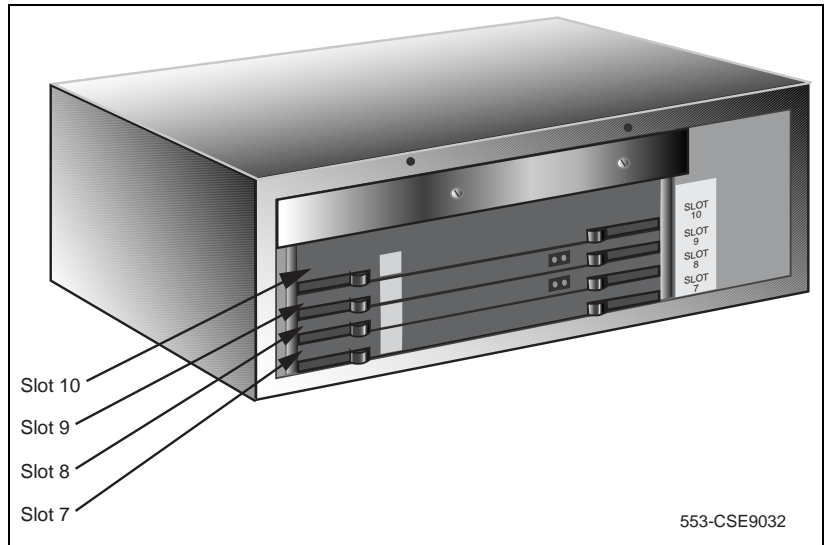
Circuit cards features

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 169 on and Figure 170 on .

Procedure 96
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 169
NE-500/2500-type telephone cross connections


```
Cable pairs                    Lead
                               designation
Line
Pack                                        Cross connect
                                            terminal

Unit
 0      W-BL        T                        ●  ●    To 500/2500-type
        BL-W        R                        ●  ●    telephone
Unit    W-O         T                        ●  ●    To 500/2500-type
 1      O-W         R                        ●  ●    telephone

Unit
 2      W-G         T                        ●  ●    To 500/2500-type
        G-W         R                        ●  ●    telephone
Unit    W-BR        T                        ●  ●    To 500/2500-type
 3      BR-W        R                        ●  ●    telephone

Unit
 4      W-S         T                        ●  ●    To 500/2500-type
        S-W         R                        ●  ●    telephone
Unit    R-BL        T                        ●  ●    To 500/2500-type
 5      BL-R        R                        ●  ●    telephone

Unit
 6      R-O         T                        ●  ●    To 500/2500-type
        O-R         R                        ●  ●    telephone
Unit    R-G         T                        ●  ●    To 500/2500-type
 7      G-R         R                        ●  ●    telephone

Unit
 8      R-BR        T                        ●  ●    To 500/2500-type
        BR-R        R                        ●  ●    telephone
Unit    R-S         T                        ●  ●    To 500/2500-type
 9      S-R         R                        ●  ●    telephone

Unit
10      BK-BL       T                        ●  ●    To 500/2500-type
        BL-BK       R                        ●  ●    telephone
Unit    BK-O        T                        ●  ●    To 500/2500-type
11      O-BK        R                        ●  ●    telephone

Unit
12      BK-G        T                        ●  ●    To 500/2500-type
        G-BK        R                        ●  ●    telephone
Unit    BK-BR       T                        ●  ●    To 500/2500-type
13      BR-BK       R                        ●  ●    telephone

Unit
14      BK-S        T                        ●  ●    To 500/2500-type
        S-BK        R                        ●  ●    telephone
Unit    Y-BL        T                        ●  ●    To 500/2500-type
15      BL-Y        R                        ●  ●    telephone

                                                    553-8349.EPS
```

Figure 170
Digital telephone cross connections
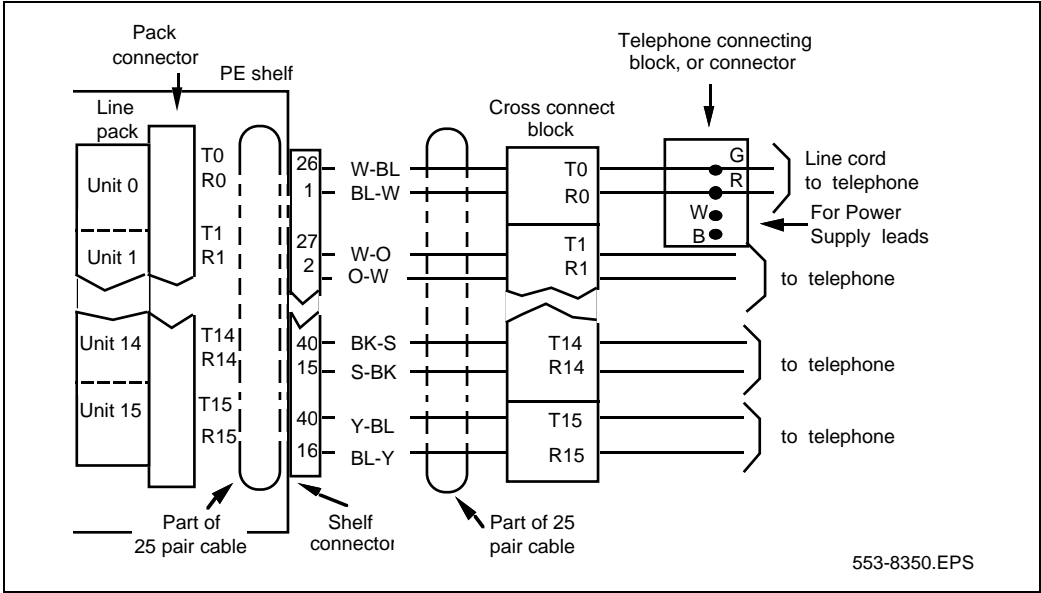
End of Procedure

Connecting a telephone without a PFTU

See "Installing and cross-connecting a Power Fail Transfer Unit" on page 445 for connecting telephones with the PFTU.

Procedure 97
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 98
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 171 on .

> **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 169 on .

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 171
NTAK92BA Off-Premise Protection Module connections

553-8351.EPS
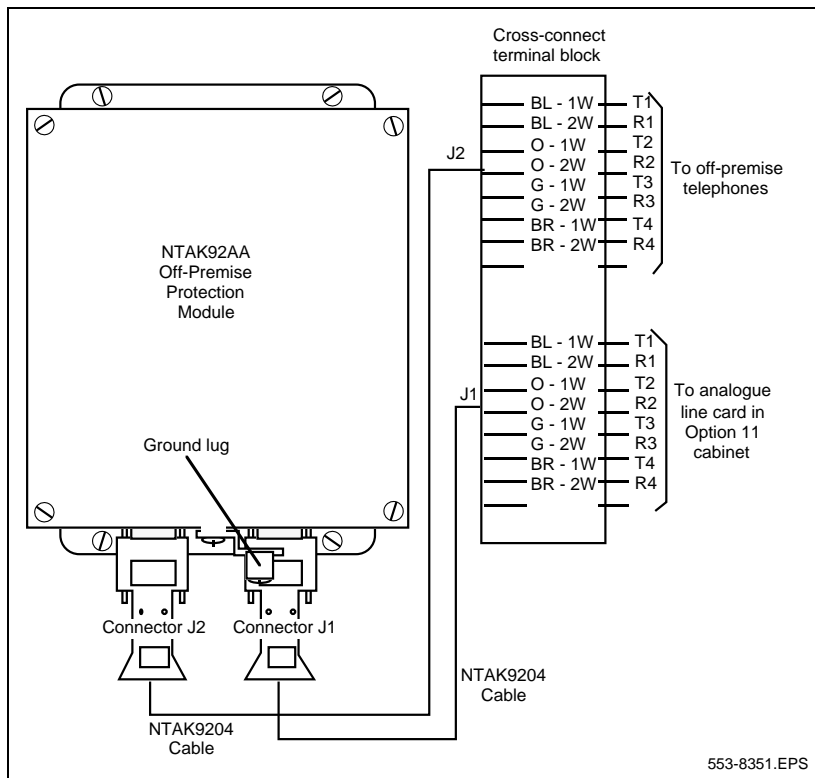
End of Procedure

Connecting an attendant console

Procedure 99
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 172 on .

Figure 172
Attendant console connections
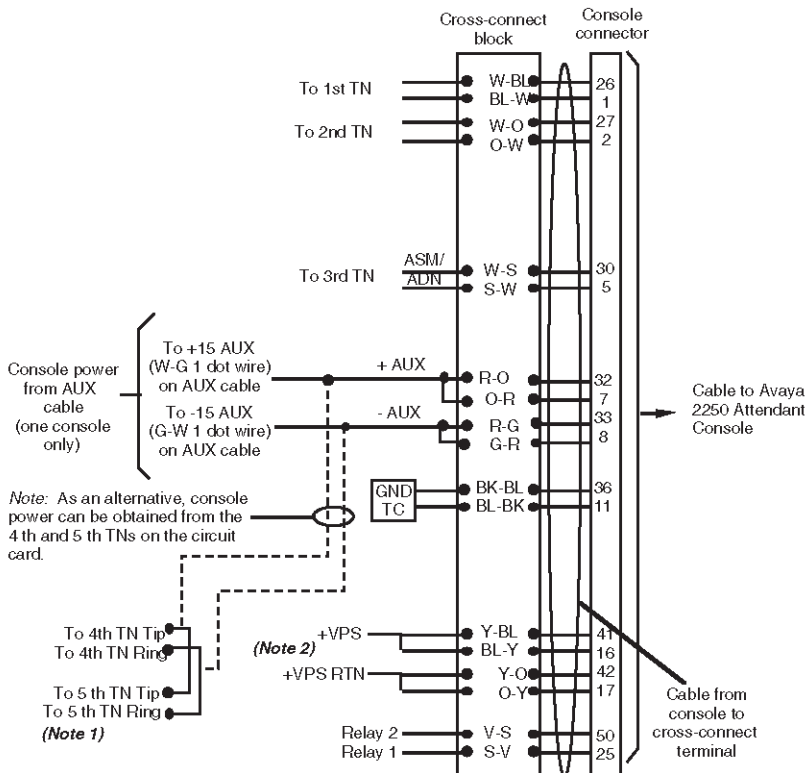
Note 1: The Avaya 2250 Attendant Console is powered using the line circuits and if required from the AUX cable. In addition to the primary TN, secondary TN and ASMTN, two TNs are for power from the AUX cable are cabled to the Avaya 2250 Attendant Console through the + AUX and - AUX leads. Maximum loop length is 3000 ft (915 m) of 24 AWG (5.0 Metric Wire Gauge).

Note 2: When additional options are used (BLF), an additional 16V DC power supply is required. The 16V DC source is cabled through +VPS and +VPS RTN leads. The maximum distance from the console to the power source is 120 ft (36 m) of 24 AWG (5.0 Metric Wire Gauge) wire.

553-8352.EPS

Table 59
Color combinations of cable pairs

Color	W-Bl Bl-W	W-O O-W	W-G G-W	W-BR BR-W	W-S S-W	R-BL BL-R	R-O O-R	R-G G-R
Unit	0	1	2	3	4	5	6	7
Color	R-BR BR-R	R-S S-R	BK-BL BL-BK	BK-O O-BK	BK-G G-BK	BK-BR BR-BK	BK-S S-BK	Y-B B-Y
Unit	8	9	10	11	12	12	14	15

End of Procedure

Installing and cross-connecting a Power Fail Transfer Unit

Contents

This section contains information on the following topics:

Introduction

Power fail transfer occurs when the main power to the Avaya Communication Server 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:

Installing and connecting a QUA6 PFTU

Follow Procedure 100 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 100
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 173 on page 446.

Figure 173
J1 cable labels

Pairs 1 to 4	Pairs 1 to 4	Pairs 1 to 4	Pairs 1 to 4	Pairs 1 to 4	Pairs 1 to 4	1 Pair
Control	PFT1	PFT2	PFT3	PFT4	PFT5	PFT1 Power

Label the pairs on the terminal block as shown. If using BIX blocks, attach the appropriate designation strip.
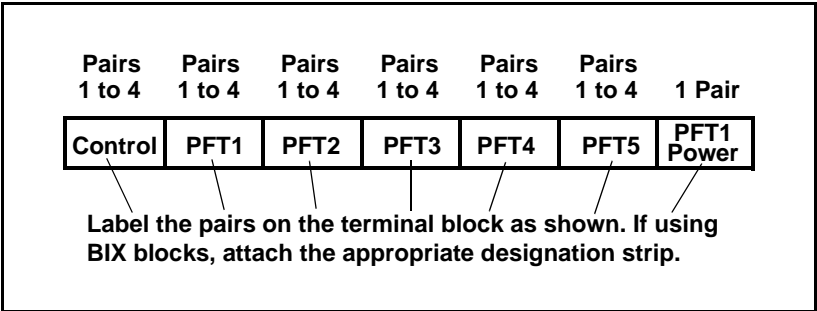
4   Connect the PFTU power and control connections to the AUX connector on the Media Gateway. See Figure 174 on page 447, Table 61 on page 449, Table 60 on page 448 and Figure 176 on page 450. The Meridian 1 Option 11C AUX connector is shown in Figure 175 on page 448.

Figure 174
AUX cable connector on Media Gateway
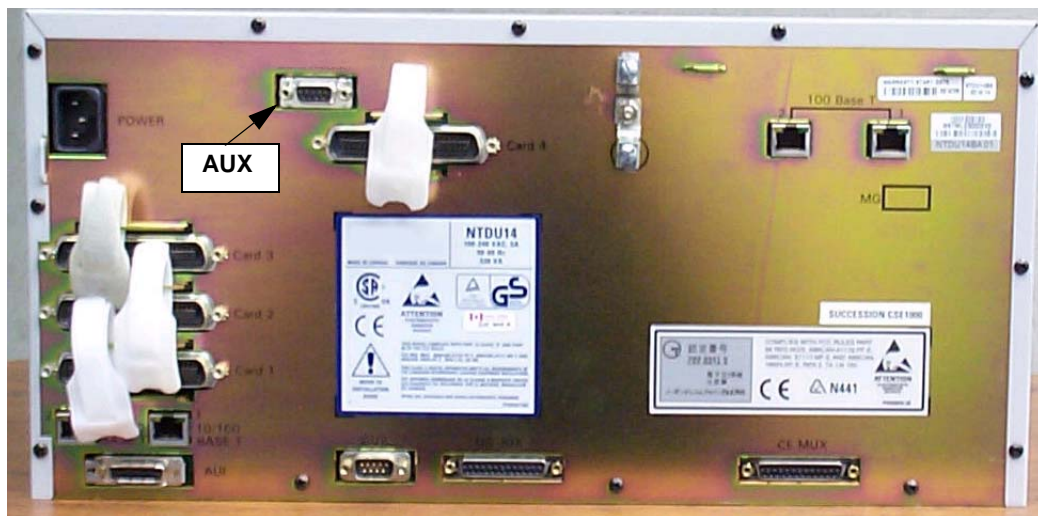
Figure 175
AUX cable connector on Meridian 1 Option 11C
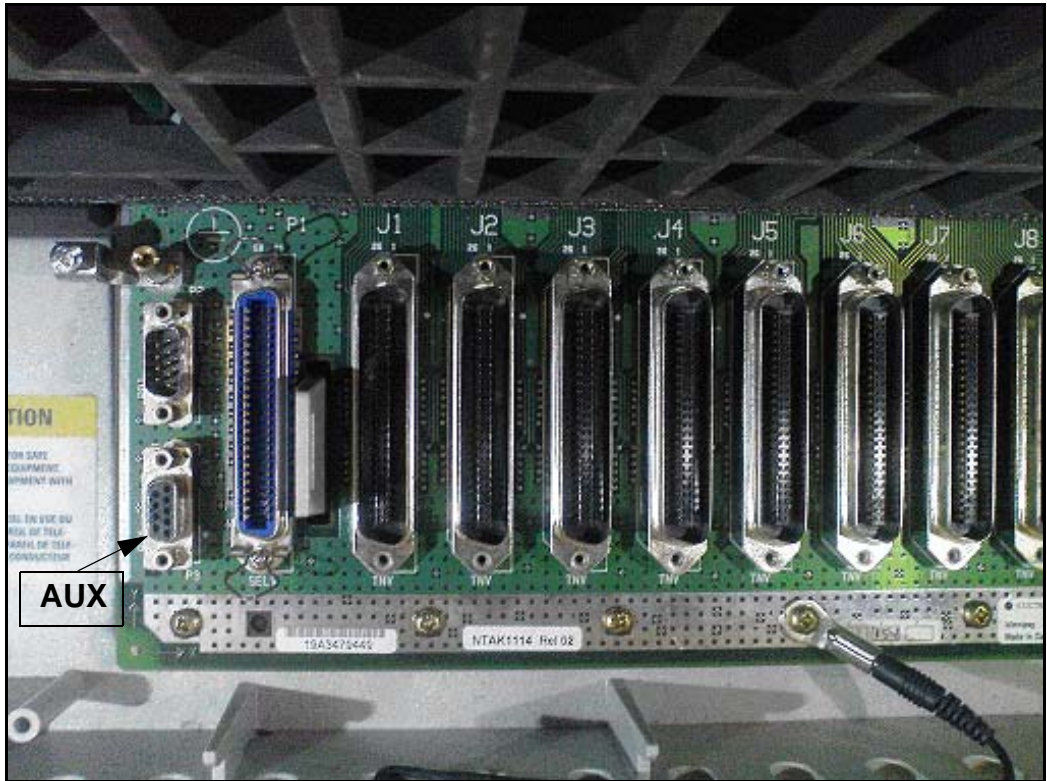
Table 60 (Part 1 of 2)
NTAK1104E6 AUX cable termination information

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 60 (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 61
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 176
Power fail transfer
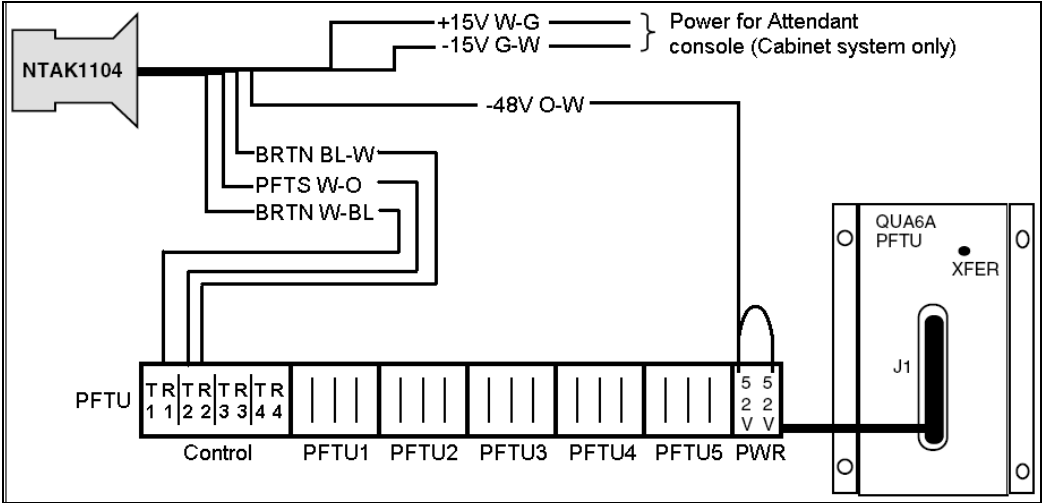
End of Procedure

Installing and connecting a third-party PFTU

Follow the equipment manufacturer's instructions for installing the PFTU. Use the information in Table 62 to connect a third-party PFTU.

Table 62
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 62
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 174 on page 447 and Table 63 on page 451 for Auxiliary cable connections to the Avaya Communication Server 1000E system.

Note 2: If power is removed from the QUA6, a transfer of the PFTU can occur.

Table 63
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 379.

Follow Procedure 101 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 177
Analog Line card cable distribution

553-8349.EPS
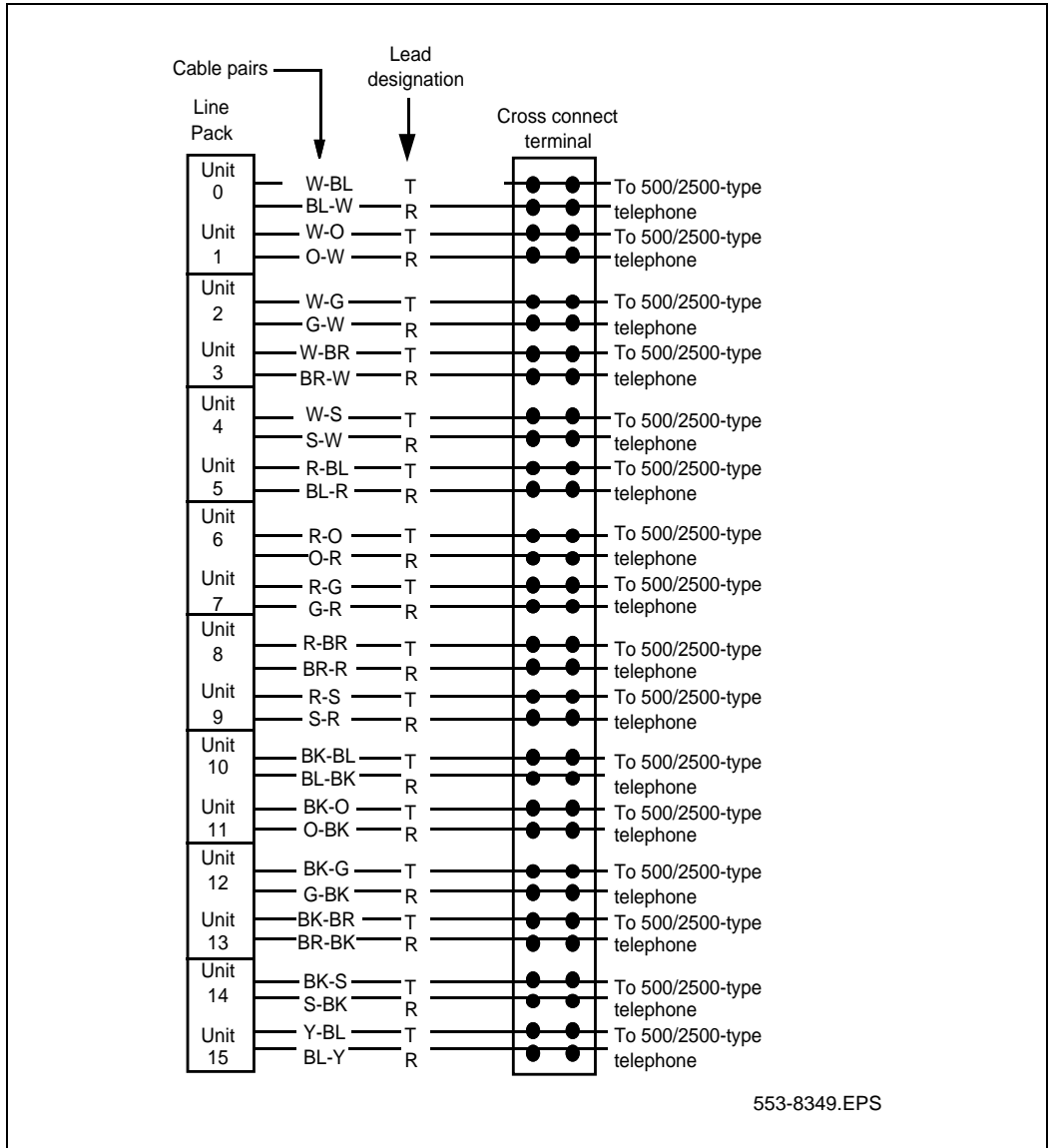
Procedure 101
Connecting an analog (500/2500-type) telephone to a PFTU

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 64 on .

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 64
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 64
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 64
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 102 to connect a Trunk to a PFTU.

Procedure 102
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 65 on 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 65
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 65
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

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 103: "Configuring the basic system" on .

Basic system configuration

Programming the Avaya Communication Server 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 178 on 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 179 on , and Figure 180 on 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. Publication references are shown in the flowchart shaded boxes for those features and options beyond the scope of this guide.

Procedure 103
Configuring the basic system

Use the overlays to configure basic system features offered by the Avaya Communication Server 1000E.

1   Complete the configuration using the overlays in the order shown in Figure 178 on , Figure 179 on , and Figure 180 on .

Figure 178
Data-entry-sequence for new systems
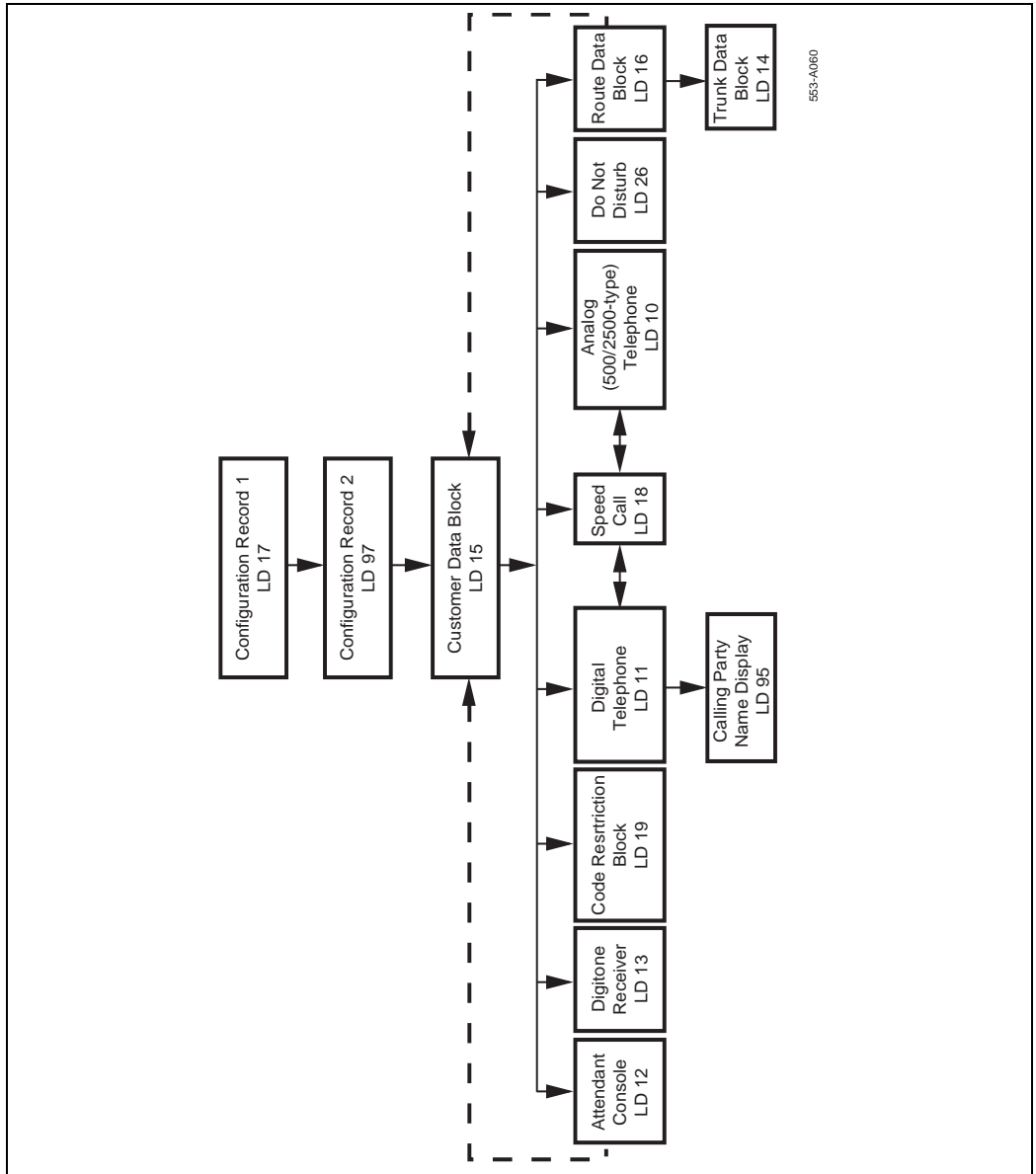
Figure 179
Configuration Record
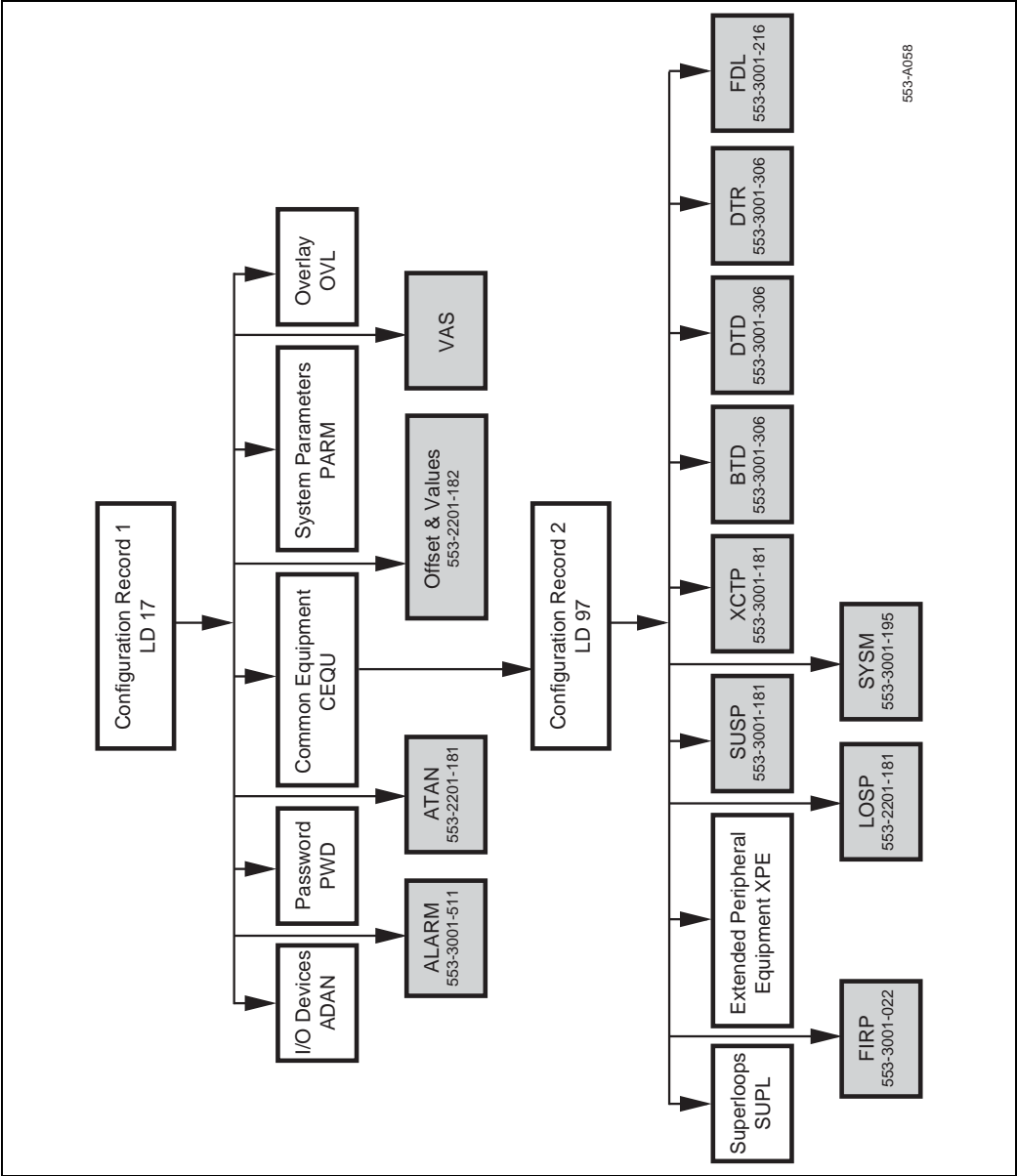
Figure 180
Customer Data Block

553-A059
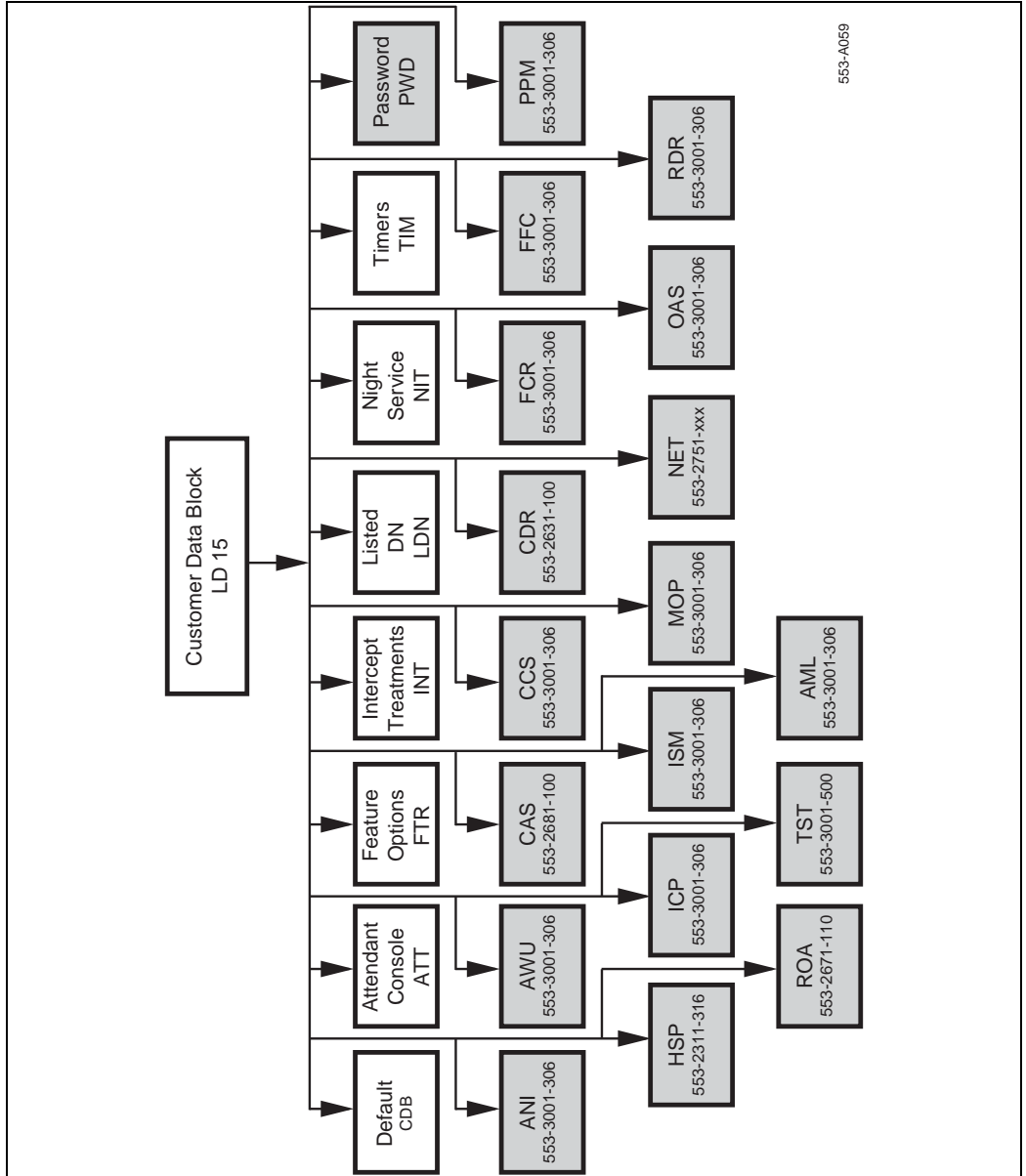
TN assignment

Table 66 shows the TN assignments for the MG 1000E.

Table 66
TN assignments for MG 1000E

Slots	MG 1000E				MG 1000E Expander			
	1	**2**	**3**	**4**	**7**	**8**	**9**	**10**
TN	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**	**l s c**
MG 1000E								
1	000 0 01	000 0 02	000 0 03	000 0 04	000 0 07	000 0 08	000 0 09	000 0 10
2	000 1 01	000 1 02	000 1 03	000 1 04	000 1 07	000 1 08	000 1 09	000 1 10
3	004 0 01	004 0 02	004 0 03	004 0 04	004 0 07	004 0 08	004 0 09	004 0 10
4	004 1 01	004 1 02	004 1 03	004 1 04	004 1 07	004 1 08	004 1 09	004 1 10
5	008 0 01	008 0 02	008 0 03	008 0 04	008 0 07	008 0 08	008 0 09	008 0 10
6	008 1 01	008 1 02	008 1 03	008 1 04	008 1 07	008 1 08	008 1 09	008 1 10
7	012 0 01	012 0 02	012 0 03	012 0 04	012 0 07	012 0 08	012 0 09	012 0 10
8	012 1 01	012 1 02	012 1 03	012 1 04	012 1 07	012 1 08	012 1 09	012 1 10
9	016 0 01	016 0 02	016 0 03	016 0 04	016 0 07	016 0 08	016 0 09	016 0 10
10	016 1 01	016 1 02	016 1 03	016 1 04	016 1 07	016 1 08	016 1 09	016 1 10
11	020 0 01	020 0 02	020 0 03	020 0 04	020 0 07	020 0 08	020 0 09	020 0 10
12	020 1 01	020 1 02	020 1 03	020 1 04	020 1 07	020 1 08	020 1 09	020 1 10
13	024 0 01	024 0 02	024 0 03	024 0 04	024 0 07	024 0 08	024 0 09	024 0 10
14	024 1 01	024 1 02	024 1 03	024 1 04	024 1 07	024 1 08	024 1 09	024 1 10
...								
...								
127	252 0 01	252 0 02	252 0 03	252 0 04	252 0 07	252 0 08	252 0 09	252 0 10
128	252 1 01	252 1 02	252 1 03	252 1 04	252 1 07	252 1 08	252 1 09	252 1 10

Installing and cross-connecting an external alarm from a PFTU

Contents

This section contains information on the following topics:

Introduction

This chapter describes the procedures for connecting an external alarm to the Avaya Communication Server 1000E system.

This chapter contains the following procedure: Procedure 104: "Installing an alarm using an alarm port assigned in LD 15" on page 466

The following are the two methods of connecting an external alarm to the Avaya Communication Server 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 104 to install an alarm using an alarm port assigned in LD 15.

Procedure 104
Installing an alarm using an alarm port assigned in LD 15

1   Install an analog (500/2500-type) line as described in "Installing and configuring IP Phones" on .

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 67).

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 67
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 68.

Table 68
The AC capacities

Maximum	AC capacities
Switching power	50.0 V A
Switching voltage	125.0 V rms
Switching current	0.5 A

Figure 181 on page 468 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 69 on page 468 provides the connections for all units on the PFTU.
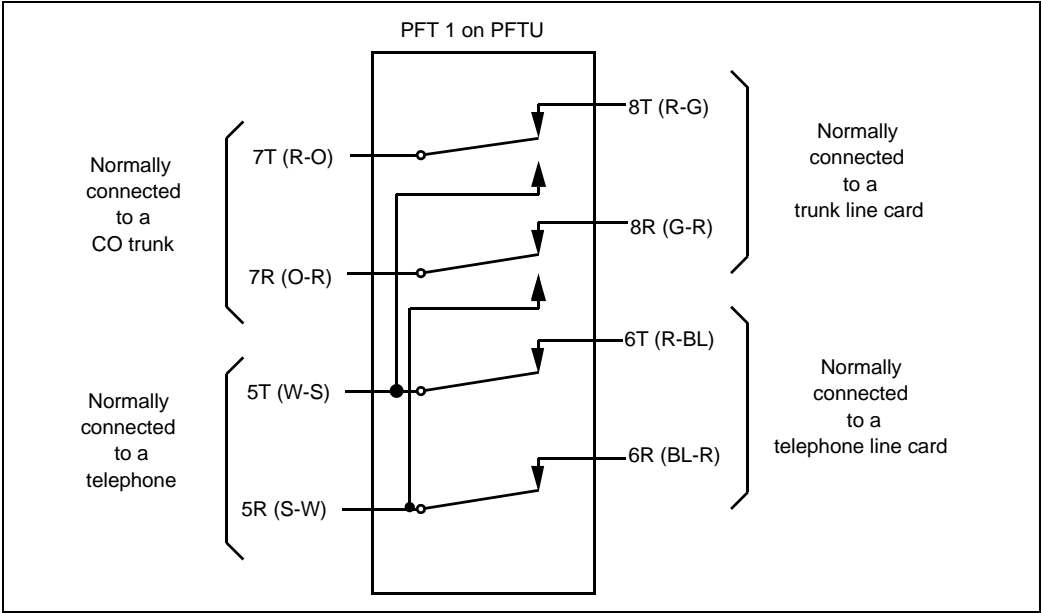
Figure 181
Contacts in PFTU

PFT 1 on PFTU

7T (R-O) — Normally connected to a CO trunk
7R (O-R)

5T (W-S) — Normally connected to a telephone
5R (S-W)

8T (R-G) — Normally connected to a trunk line card
8R (G-R)

6T (R-BL) — Normally connected to a telephone line card
6R (BL-R)

Table 69
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 69
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 69
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

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) publication 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 an Avaya Communication Server 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 Avaya Communication Server 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 Avaya recommends using direct connections from the faceplate Ethernet connectors of the Gateway Controller and Server 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 Avaya supplied cables for Server cards, you must use shielded twisted pair Ethernet cables for the faceplate ELAN and TLAN connections.

The Gateway Controller can use the features of the Media Gateway 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 Media Gateway. In addition the Gateway Controller backplane connector provides both an ELAN and TLAN connection to the 10/100BaseT ethernet connectors on the rear of the Media Gateway. Figure 182 on shows both options.

Connecting to the 1E and 2T ethernet connectors cause the 10/100BaseT leds to function on the rear of the Media Gateway.

If the NTDW67 MGC Reference ROHS cable is used the LED on the back of the Media Gateway will not function. Only the faceplate LEDs will function.

The MGC card CE and CT faceplate ethernet ports can be used as local Ethernet maintenance ports.

In a Media Gateway 1010 (MG 1010), the Gateway Controller backplane Ethernet connections are provided by the Media Gateway Utility (MGU) faceplate ELAN and TLAN ports.

Avaya Communication Server 1000E dual-homing is supported in accordance with the following cabinets and chassis:

Table 70
Supported Cabinets and Media Gateway

Product Number	Product Name	Vintage	Release 7.6	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
NTC310	Media Gateway 1010	AAE6	Supported	Yes

The following figures show supported cabling options. The MGC card is shown, but the Gateway Controller can also be an CP MG card.
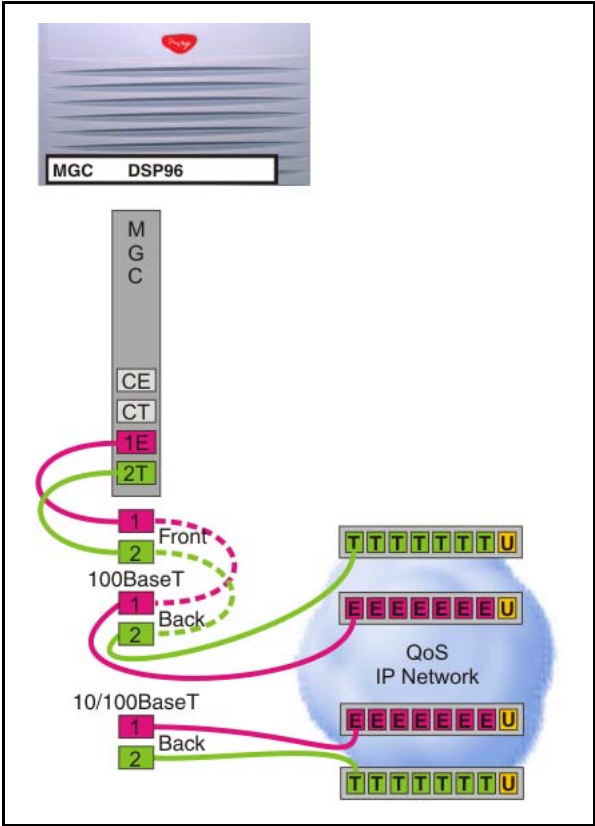
Figure 182
MGC cabling in a Media Gateway
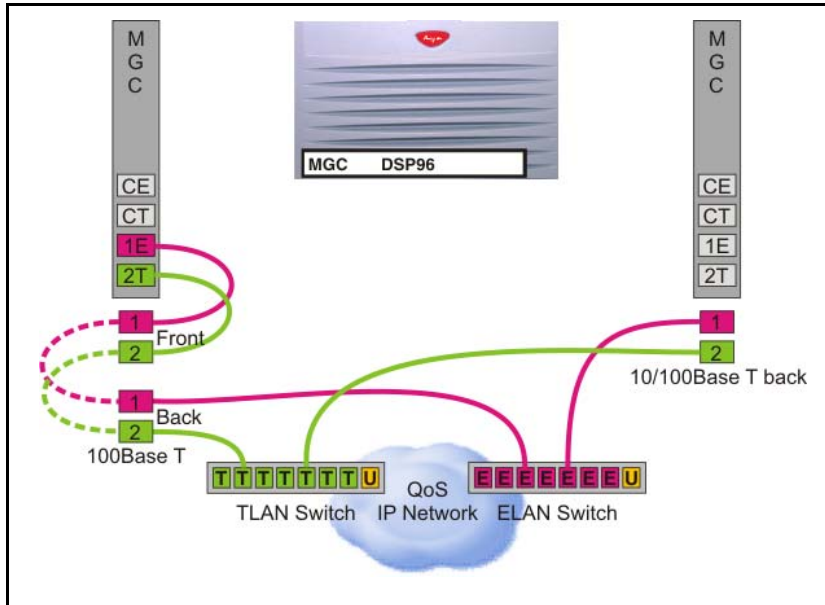
Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 183 on demonstrates the MGC cabling in a dual-homed configuration.

Figure 183
MGC Dual-homed in a Media Gateway

Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 184 on shows the MGC cabling from the backplane connector to the MGC 100BT connector Cabinet.

Figure 184
MGC using MGC 100BT in a Cabinet

Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)
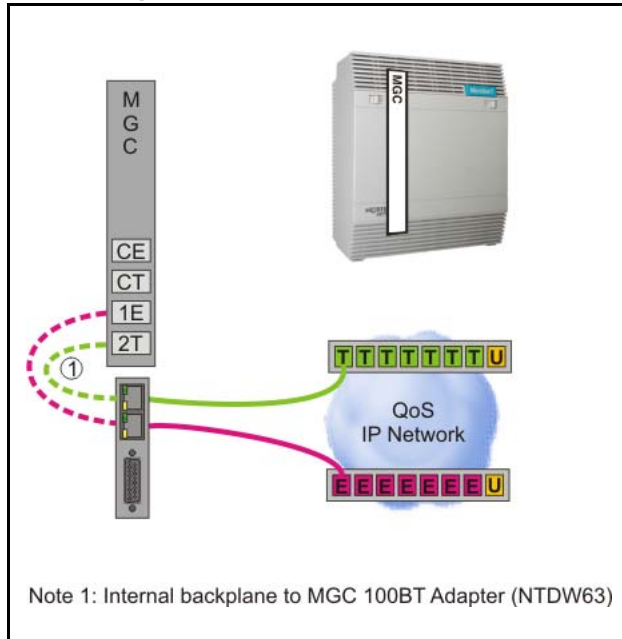
Figure 185 on page 480 shows the MGC in a dual-homed configuration in a Cabinet.

Figure 185
MGC Dual-homed in a Cabinet

Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)
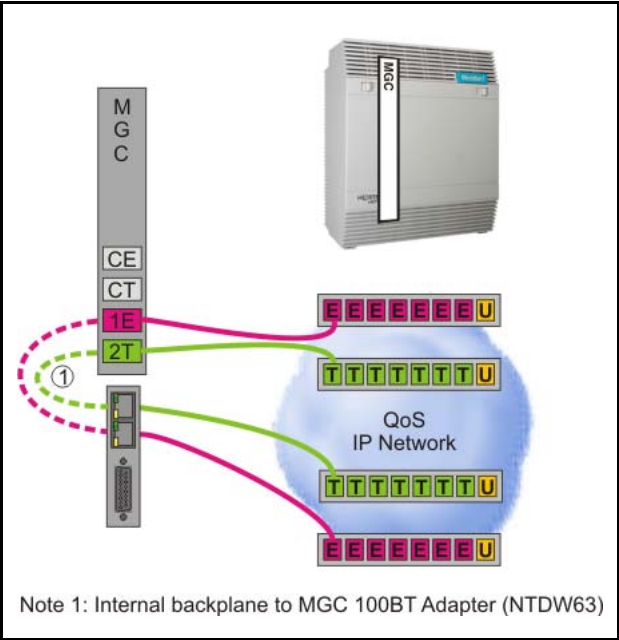
Figure 186 on page 481 shows the MGC and CP PM card as a SA Call Server in a Media Gateway.

Figure 186
SA Call Server in a Media Gateway
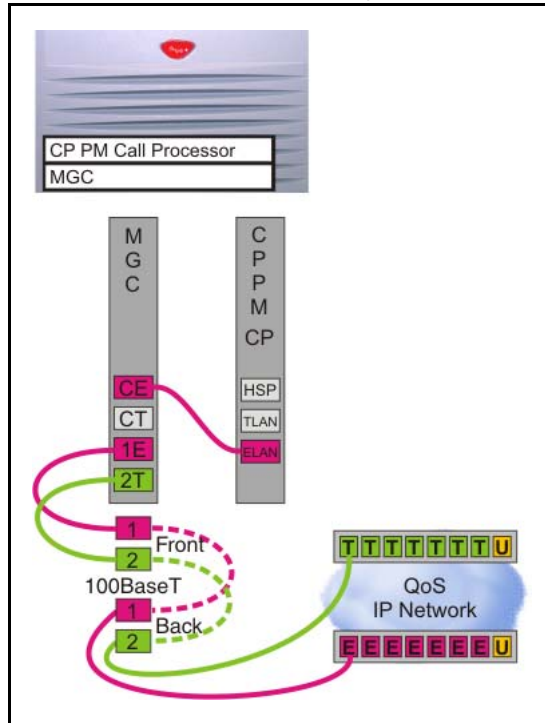
Figure 187 on shows the MGC and CP PM as a SA Call Server in a Cabinet.
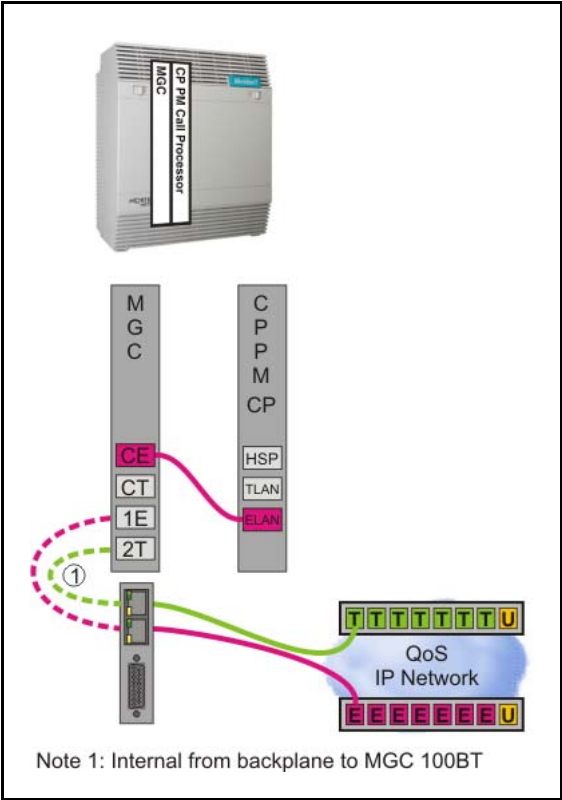
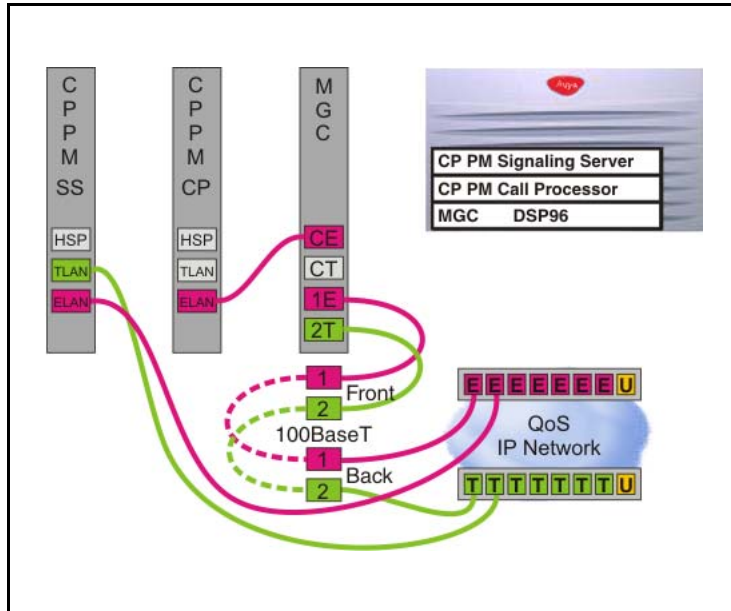**Figure 187**
SA Call Server in a Cabinet

Figure 188 on page 483 shows a SA Call Server with a Signaling Server in a
Media Gateway.

Figure 188
SA Call Server with SS in a MG

Gateway Controller back Ethernet connections are MGU faceplate ports in a
MG 1010.

Figure 189 on page 484 shows a SA Call server with a Signaling Server in a Cabinet.

Figure 189
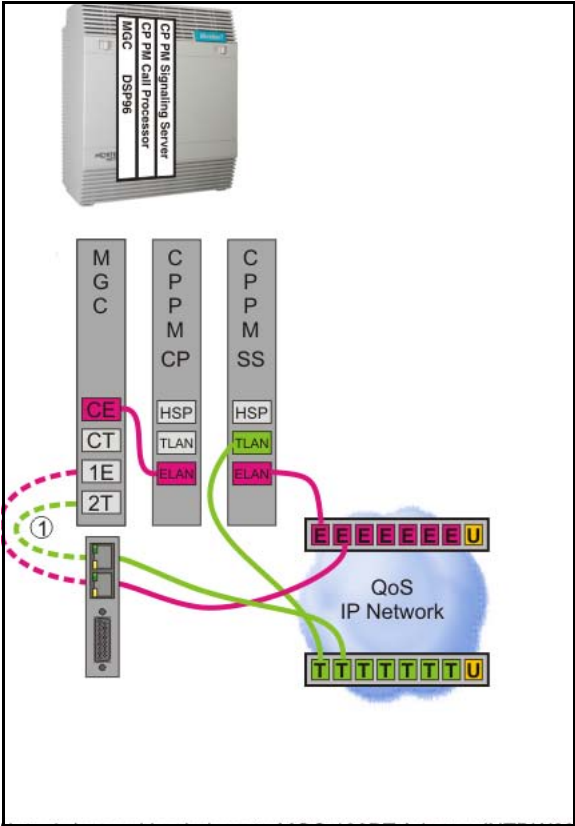**SA Call Server with SS in a Cabinet**

Figure 190 on page 485 shows the supported configuration for a Dual-homed SA Call Server in an MG 1010 chassis.

Figure 190
Dual-homed SA Call Server in an MG 1010

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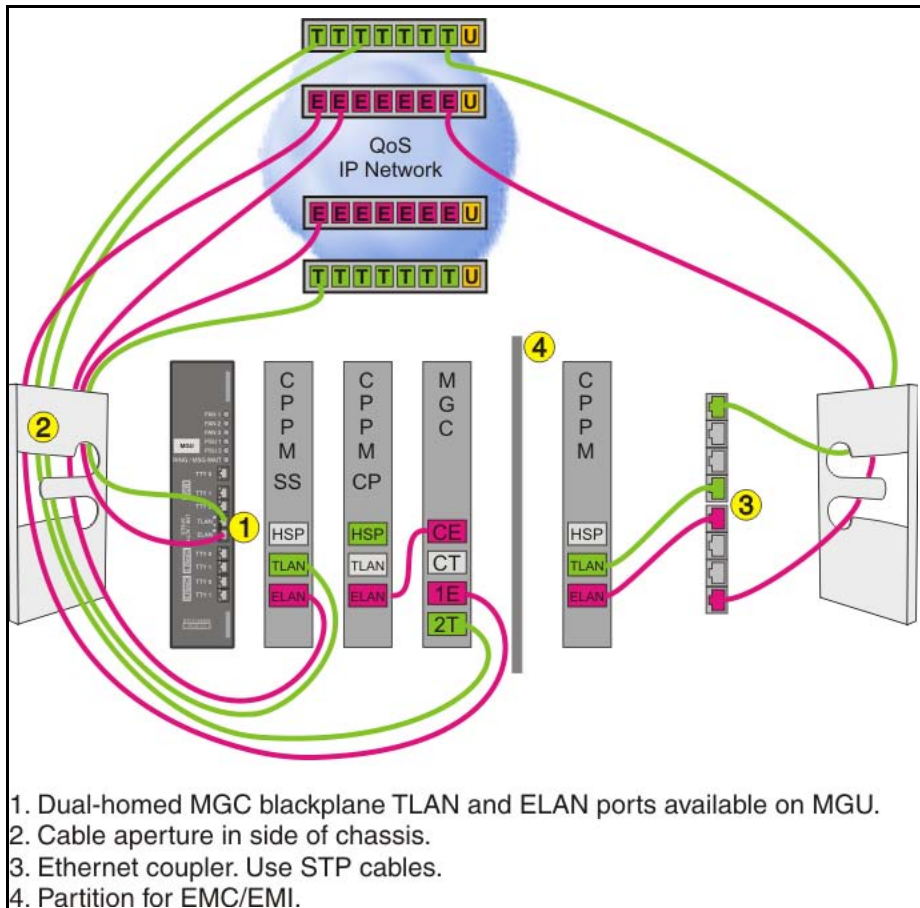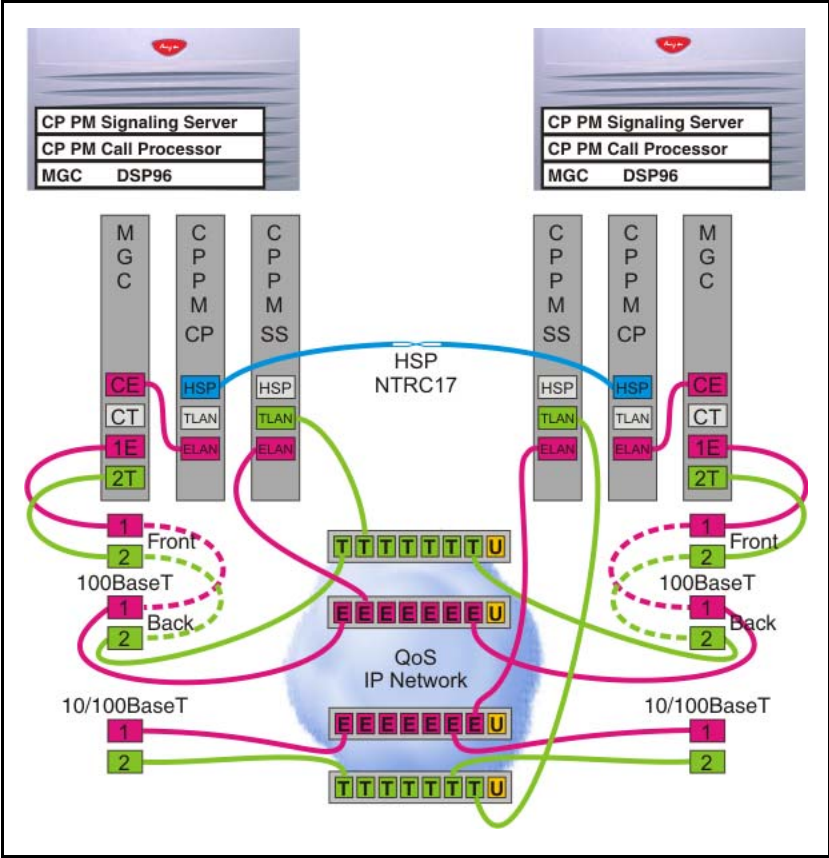3. Ethernet coupler. Use STP cables.
4. Partition for EMC/EMI.

Figure 191 on page 486 shows a Dual-homed HA Call Server with the HSP in Media Gateways. High Availability is supported with CP PM cards only.

Figure 191
Dual-homed HA Call Server with HSP in Media Gateway

Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

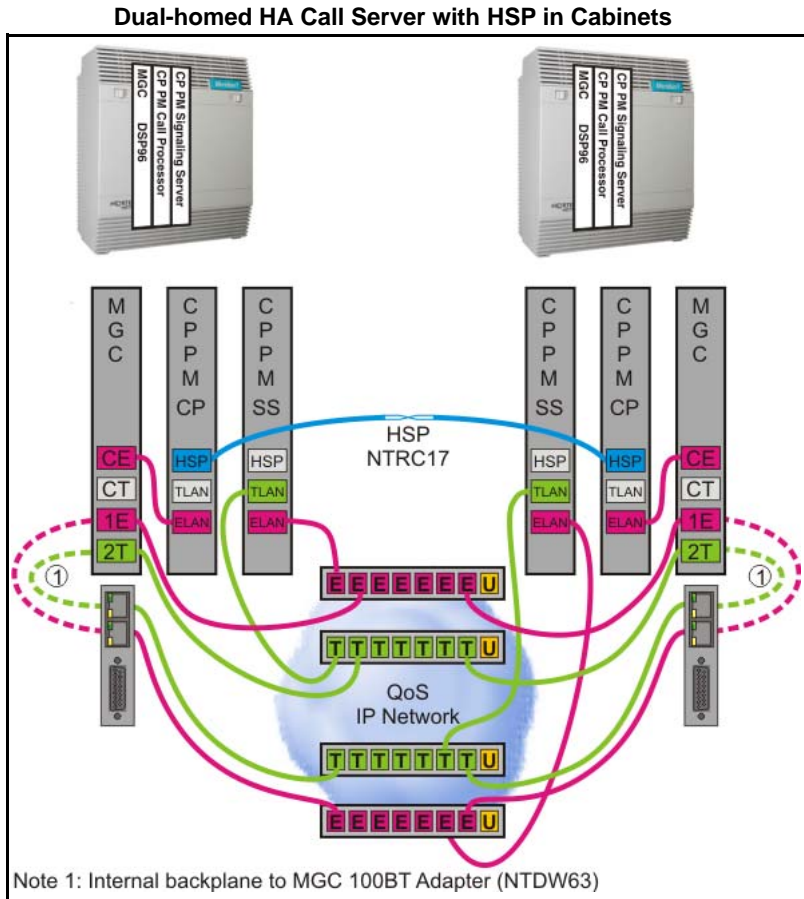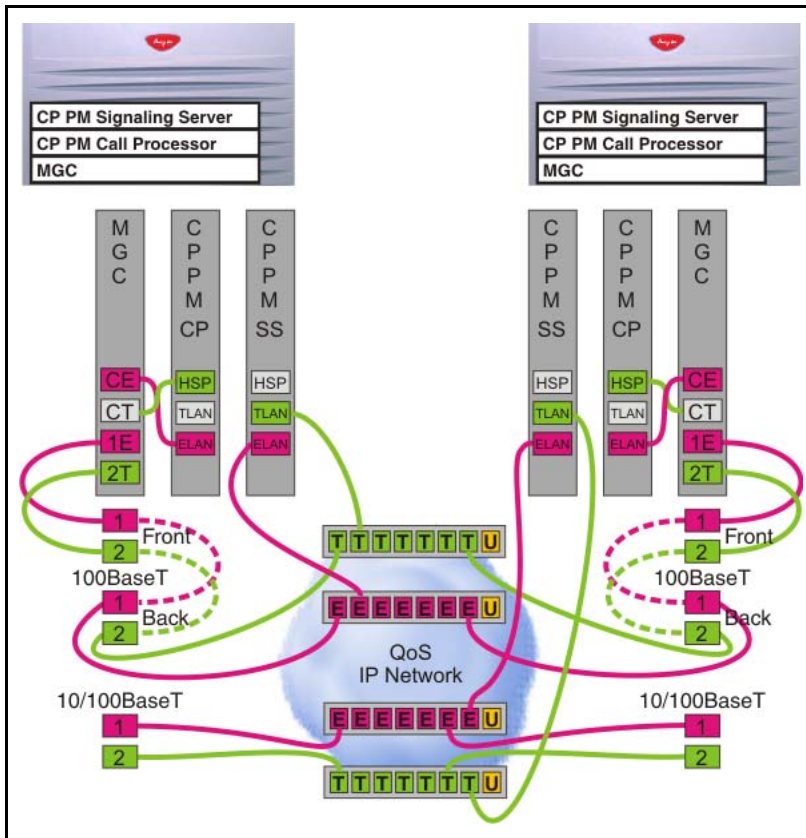Figure on page 487 shows a Dual-homed HA Call Server with the HSP in Cabinets.

Dual-homed HA Call Server with HSP in Cabinets

Note 1: Internal backplane to MGC 100BT Adapter (NTDW63)

Figure 192 on 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.

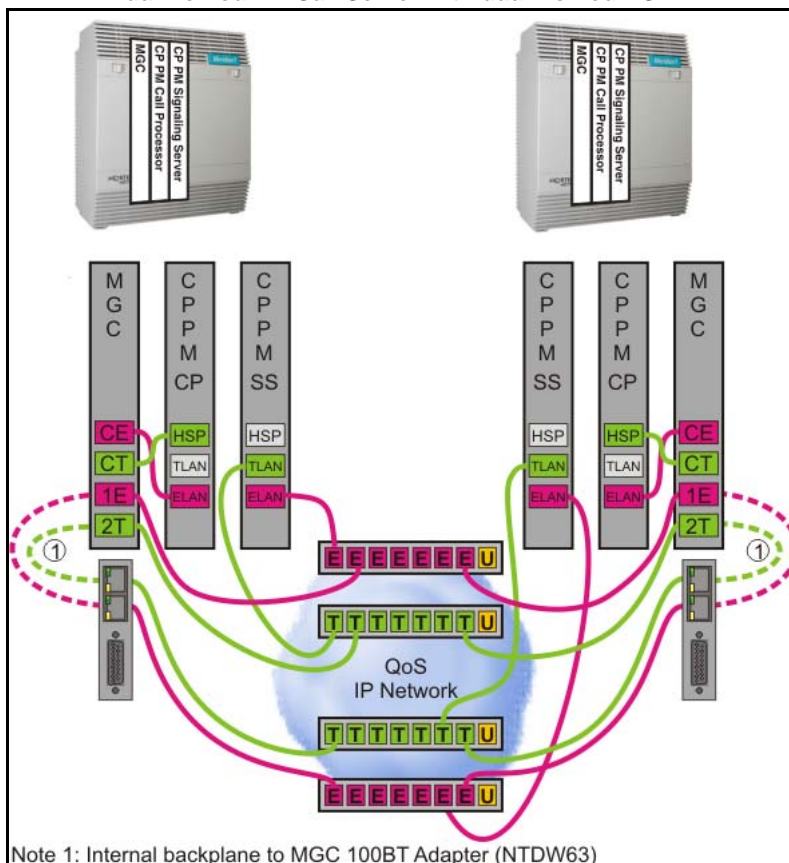**Figure 192**
Dual-homed HA Call Server with a dual-homed HSP

Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 193 on page 489 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 193
Dual-homed HA Call Server with dual-homed HSP

Appendix B: Supported media and memory sizes.

The following table lists supported media and memory sizes.

Note: Avaya does not provide technical support for customer provided media.

Table 71
Supported media and memory sizes

Release and Call Processor	RMD		FMD		RAM
	USB	CF	CF	HDD	
6.0					
CP PIV VxWorks CS	-	512 MB	1 GB	-	512 MB
CP PM VxWorks CS	-	512 MB	1 GB	-	1 GB
CP PM Linux (Co-Res)	-	2 GB	-	40 GB	2 GB
7.0/7.5/7.6					
CP PIV VxWorks CS	-	512 MB	1 GB	-	512 MB
CP PM VxWorks CS	-	512 MB	1 GB	-	1 GB
CP PM Linux (Co-Res)	*	2 GB	-	40 GB	2 GB

Table 71
Supported media and memory sizes

Release and Call Processor	RMD		FMD		RAM
	USB	**CF**	**CF**	**HDD**	
CP DC Linux (Co-Res)	4 GB	-	-	160/250 MB	2 GB 4 GB (7.6)
CP MG Linux (Co-Res)	4 GB	-	-	160/250 MB	2 GB 4 GB (7.6)

* 4 GB USB applies to installation of applications only.