Communication Server 1000E Upgrade

Hardware Upgrade Procedures

Avaya Communication Server 1000
Release 7.6

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Contents

List of Procedures

New in this release

Features

There are no updates to the feature descriptions in this document.

Other

Revision history

March 2013

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

December 2011

Standard 05.04. This document is up-issued to include updates to the sections for CP DC and CP MG in the Overview chapter.

August 2011

Standard 05.03. This document is up-issued to provide additional details about the Database Media Conversion Tool.

May 2011

Standard 05.02. This document is up-issued to provide information about supported memory sticks.

November 2010

Standard 05.01. This document is issued to support Avaya Communication Server Release 7.5.

May 2011

Standard 04.04. This document is up-issued to provide information about supported memory sticks.

April 2011

Standard 04.03. This document is up-issued to remove references to the CP PM to CP MG upgrade.

June 2010

Standard 04.02. This document is upissued to update the CS 1000E task flow graphic, to include CP PM version 2, and to include CP PM to CP MG upgrade content.

June 2010

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

October 2009

Standard 03.06. This document is upissued to include Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card content.

September 2009

Standard 03.05. This document is upissued to include Media Gateway 1010 content.

June 2009

Standard 03.04. This document is upissued to include updates for CP PM BIOS upgrades, CP PM Co-resident Call Server and Signaling Server, and MGC setup.

May 2009

Standard 03.03. This document is upissued to include task flow graphics for upgrades to Communication Server 1000 Release 6.0.

May 2009

Standard 03.02. This document is upissued to include clarifications for upgrades to Communication Server 1000 Release 6.0.

May 2009

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

January 2009

Standard 02.09. This document is upissued to add technical content in the Upgrading small system hardware chapter.

October 2008

Standard 02.08. This document is upissued to add technical content in the Overview and Review prerequisites checklist chapters.

August 2008

Standard 02.07. This document is upissued to give reference to the Communication Server 1000E Software Upgrades document.

August 2008

Standard 02.06. This document is upissued to include the PLM inputs to support Communication Server 1000E hardware upgrade Release 5.5.

May 2008

Standard 02.05. This document is upissued to include lab trial information.

April 2008

Standard 02.04. This document is upissued to include lab trial information.

March 2008

Standard 02.03. This document is upissued to include Conversion and Mapping information.

February 2008

Standard 02.02. This document is upissued to support Communication Server 1000 Release 5.5.

December 2007

Standard 02.01. This document is upissued to support Communication Server 1000 Release 5.5. This document contains the hardware upgrade information previously contained in the following Release 5.0 documents:

- *Communication Server 1000E Upgrade Procedures* (NN43041-458)
- *Option 11C Cabinet (TDM) to Communication Server 1000E Upgrade Procedures* (NN43041-464)
- *Option 11C Chassis (TDM) to Communication Server 1000E Upgrade Procedures* (NN43041-465)

- *Communication Server 1000M Cabinet to Communication Server 1000E Upgrade Procedures* (NN43041-466)
- *Communication Server 1000M Chassis to Communication Server 1000E Upgrade Procedures* (NN43041-467)
- *Communication Server 1000S to Communication Server 1000E Upgrade Procedures* (NN43041-470)

For Release 5.5, software upgrade information is covered in *Communication Server 1000E Software Upgrades* (NN43041-458).

July 2007

Standard 01.05. This document is upissued to support Communication Server 1000 Release 5.0.

July 2007

Standard 01.04. This document is upissued to address the following CRs:

- Q01598009
- Q01639378
- Q01650913-01
- Q01649647
- Q01668243-01
- Q01646098

June 2007

Standard 01.03. This document is upissued to address CR Q01652825.

May 2007

Standard 01.02. This document is upissued to support Communication Server 1000 Release 5.0.

May 2007

Standard 01.01. This document is issued to support Communication Server 1000 Release 5.0. This document contains information previously contained in the following legacy document, now retired: Communication Server 1000M and Meridian 1 Small System Upgrade Procedures (553-3011-258).

August 2005

Standard 3.00. This document is upissued to support Communication Server 1000 Release 4.5.

September 2004

Standard 2.00. This document is upissued to support Communication Server 1000 Release 4.0.

October 2003

Standard 1.00. This document is a new NTP for Succession 3.0. It was created to support a restructuring of the Documentation Library, which resulted in the merging of multiple legacy NTPs. This new document consolidates information previously contained in the following legacy documents, now retired:

- *Option 11C Mini: Expansion using Fiber-optic and IP Connectivity Guide* (553-3021-208)
  (Content from *Option 11C Mini: Expansion using Fiber-optic and IP Connectivity Guide* (553-3021-208) also appears in *Communication Server 1000M and Meridian 1: Small System Overview* (NN43011-110) and *Communication Server 1000M and Meridian 1: Small System Planning and Engineering* (NN43011-220).)
- *Option 11C and 11C Mini: Upgrade Procedures Guide* (553-3021-250)
  (Content from *Option 11C and 11C Mini: Upgrade Procedures Guide* (553-3021-250) also appears in *Communication Server 1000M and Meridian 1: Small System Maintenance* (NN43011-700).)

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

Avaya Communication Server 1000E Hardware Upgrade Procedures (NN43041-464) describes the process required to upgrade the hardware for an existing Option 11C or Avaya Communication Server 1000 system to an Avaya Communication Server 1000E Release 7.6 system.

This guide does not describe how to add equipment (such as additional cabinets or line cards) to the system. See *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310) when the upgrade requires installing equipment (such as another cabinet expander at a remote site). Also see the site and system planning information in *Avaya Communication Server 1000E Planning and Engineering* (NN43041-220).

This document contains hardware upgrade procedures for VxWorks based Avaya CS 1000E systems unless otherwise indicated.

Note on legacy products and releases

This NTP contains information about systems, components, and features that are compatible with Avaya CS 1000 software. For more information about legacy products and releases, go to www.avaya.com/support.

Applicable systems

This document applies to the CS 1000E system.

Intended audience

This document is intended for individuals who upgrade and expand existing CS 1000 systems.

Conventions

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

The following systems are referred to generically as Small system:

- Meridian 1 Option 11C Cabinet
- Meridian 1 Option 11C Chassis
- Communication Server 1000S (CS 1000S)

The following hardware is referred to generically as Media Gateway:

- Option 11C Mini Chassis (NTDK91) and Expander chassis (NTDK92)
- Option 11C 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 preceeding list.

The following table shows the 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	yes	yes	no
CP DC	no	yes	yes	no
CP MG	no	no	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-res CS and SS, and the Gateway Controller while occupying Slot 0 in a Media Gateway.

Related information

This section lists information sources that relate to this document.

NTPs

This document references the following publications:

- *Features and Services* (NN43001-106)
- *Signaling Server IP Line Applications Fundamentals* (NN43001-125)
- *Network Routing Service Fundamentals* (NN43001-130)
- *Converging the Data Network with VoIP* (NN43001-260)
- *Circuit Card: Description and Installation* (NN43001-311)
- *IP Peer Networking Installation and Commissioning* (NN43001-313)
- *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)
- *Element Manager: System Administration* (NN43001-332)
- *Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509)
- *Software Input/Output: Administration* (NN43001-611)
- *Element Manager: System Administration* (NN43001-632)
- *Software Input/Output: Maintenance* (NN43001-711)
- *Avaya Communication Server 1000E Overview* (NN43041-110)
- *Avaya Communication Server 1000E Planning and Engineering* (NN43041-220)
- *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310)
- *Avaya Communication Server 1000E Software Upgrades* (NN43041-458)

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Overview

Contents

This chapter contains the following topics:

Introduction

This guide describes how to perform a hardware upgrade from

- an existing small system to an Avaya Communication Server 1000E system

- a Call Processor Pentium II (CP PII) platform to a Call Processor Pentium IV (CP PIV) platform
- a Call Processor Pentium II (CP PII) platform or a Call Processor Pentium IV (CP PIV) platform to a Common Processor Pentium Mobile (CP PM) or Common Processor Dual Core (CP DC) platform.
- a CP PIV or CP PM platform to a Common Processor Media Gateway (CP MG) platform.

The basic steps to upgrade hardware from a previous release to Avaya Communication Server 1000 Release 7.6 requires the following components:

- Supported Avaya CS 1000 Release 7.6 Call Server hardware.
- Signaling Server installations or upgrades.
- Dedicated Signaling Server required for SIP Line software deployment and installation. For more information, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Avaya Communication Server 1000E Software Upgrades (NN43041-458) describes the installation and upgrade of Release 7.6 software.

Note: For your convenience, this document contains the procedures you require to back up the system database prior to the hardware upgrade.

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, see *Avaya Upgrades Guide* (NN43001-408).

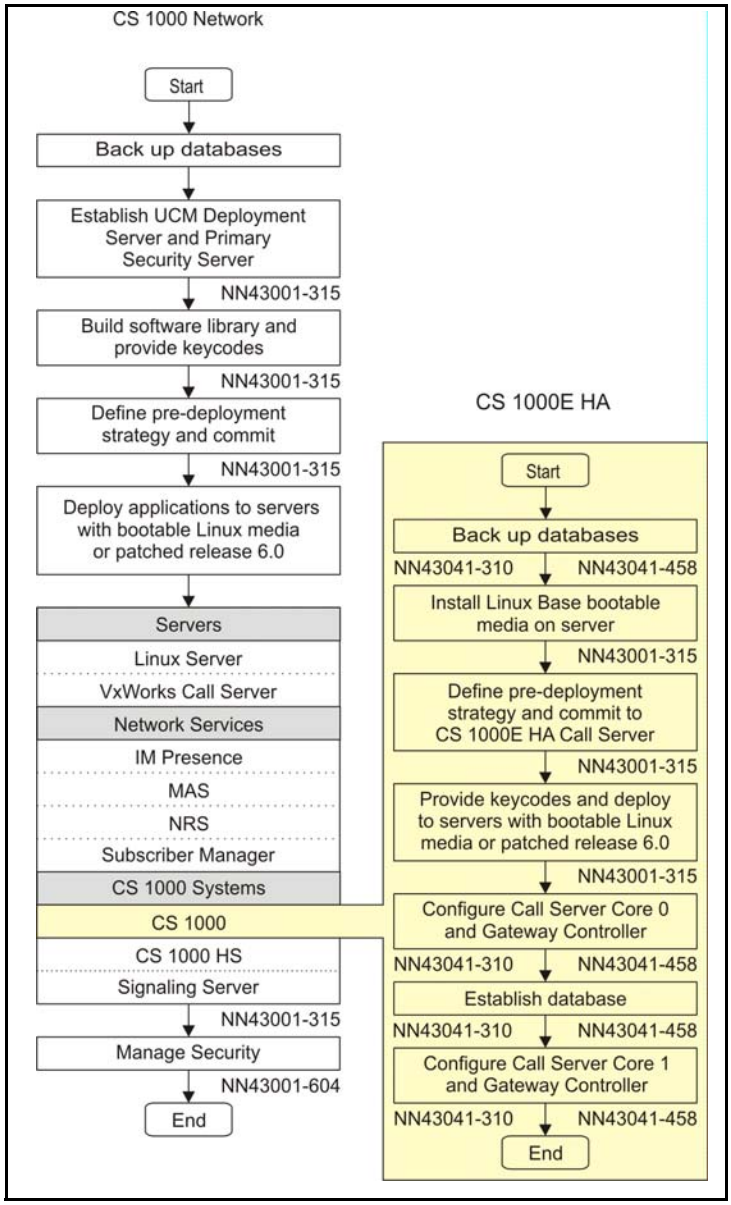
Communication Server 1000 task flow

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

For more information refer to the following NTPs, which are referenced in Figure 1 on page 27:

- *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
CS 1000E task flow



References in preparation for an upgrade

Avaya Communication Server 1000E Planning and Engineering (NN43041-220) and *Converging the Data Network with VoIP* (NN43001-260) describe network planning.

Signaling Server IP Line Applications Fundamentals (NN43001-125) and *IP Deskphones Fundamentals* (NN43001-368) describe installing, configuring, and managing Voice Gateway Media Cards and IP Phones.

Avaya Communication Server 1000E Installation and Commissioning (NN43041-310) describes installing and configuring components. *IP Peer Networking Installation and Commissioning* (NN43001-313), *Network Routing Service Fundamentals* (NN43001-130), and *Avaya Communication Server 1000E Overview* (NN43041-110) describe virtual trunking and the Network Routing Service (NRS).

For all other upgrade tasks, see "Related information" on page 21.

Communication Server 1000 hardware

CS 1000 Release 7.6 does not introduce any new hardware platforms. CS 1000 Release 7.0 introduced the following hardware for the CS 1000E system.

Common Processor Media Gateway card (CP MG)

The hardware for the Common Processor Media Gateway (CP MG) card consists of combining an Intel EP80579 1.2 Ghz integrated processor, a Media Gateway controller, and non-removable Digital Signal Processor (DSP) resources into a single card for use in a CS 1000E system. The CP MG card design is based on the CP PM card and MGC card with DSP daughterboards. The CP MG card is available in two versions:

- NTDW56BAE6 - CP MG card with 32 DSP ports
- NTDW59BAE6 - CP MG card with 128 DSP ports

The CP MG card provides improvements in port density and cost reductions by functioning as a Call Server or Application Server and a Media Gateway

Controller with DSP ports while occupying only one slot in a Media Gateway cabinet or chassis. The CP MG card occupies the system controller slot 0 in a Media Gateway cabinet or chassis.

The CP MG card requires the Linux base Operating System and supports the Co-resident Call Server and Signaling Server and CS 1000E TDM configurations. The CP MG card does not support the stand-alone Signaling Server, CS 1000E standard availability, or CS 1000E high availability Call Server configurations.

For information about Linux base, see the chapter Upgrade Linux Base in *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315). For information about Co-resident Call Server and Signaling Server, see the chapter Upgrades in *Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509).

MGC 128-port DSP daughterboard (optional)

An NTDW78 128-port DSP daughterboard (DB-128) is available for the MGC card. An MGC card populated with one128-port DSP daughterboard can provide 128 DSP ports.

The CS 1000E Peripheral Rate Interface (PRI) Media Gateway (PRI Gateway) can support a MGC card populated with two DB-128 for a maximum of 256 DSP ports.

The Extended Media Gateway PRI (MGP) package 418 is required to support MGC cards populated with two DB-96 or two DB-128.

The MGC card DSP daughterboards provide DSP resources to connect IP and TDM devices. CS 1000E also supports Voice Gateway Media Cards for additional DSP resources.

Common Processor Dual Core (CP DC)

The Common Processor Dual Core (CP DC) card is a Call Processor card for use in a CS 1000E system. The CP DC card is designed to replace the Common Processor Pentium Mobile (CP PM) card. The CP DC card contains an AMD Athlon 65 X2 1.8 Ghz dual core processor and upgraded components which can provide improvements in processing power and speed

over the CP PM card. The CP DC card requires the Linux Base Operating System, and supports Co-resident Call Server and Signaling Server, or stand-alone Signaling Server configurations. The CP DC card does not support standard or high availability Call Server configuration.

The CP DC card is available in two versions:

- NTDW53AAE6 - single slot metal faceplate CP DC card.
  - For use in Media Gateway cabinet or chassis
- NTDW54AAE6 - double slot metal facepate CP DC card.
  - For use in Large System IPE Universal Equipment Modules

The CP DC card requires the Linux base Operating System, and supports the Co-resident Call Server and Signaling Server, or stand-alone Signaling Server configurations. The CP DC card does not support the standard or high availability Call Server configuration.

For information about Linux base, see the chapter Upgrade Linux Base in *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315). For information about Co-resident Call Server and Signaling Server, see the chapter Upgrades in *Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509).

Signaling Server

You can use various hardware platforms as a CS 1000 Signaling Server. For more information, see “Installing a Signaling Server” on page 172 and “Co-resident Call Server and Signaling Server” on page 46.

Estimating installation time

When all equipment and software is available, plan a 2- to 4-hour period in which to perform the hardware upgrade. Service interruptions can occur during this period. Software upgrades and network modifications require significantly more time beyond that of a hardware upgrade. You can perform network modifications after you preform a stand-alone configuration upgrade. Network modifications do not require the interruption of call processing. For more information, see *IP Peer Networking Installation and*

Commissioning (NN43001-313) and *Network Routing Service Fundamentals* (NN43001-130).

System expansions and additional installations require additional time. For more information, see *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310).

Upgrade and installation times depend on the following criteria:

- number and availability of technicians
- familiarity with Avaya Communication Server 1000E
- physical location of hardware components
- amount of hardware you replace or upgrade
- access to the external Domain Name System (DNS) servers to resolve Fully Qualified Domain Names (FQDN)
- access to the upgrade media (DVD, Compact Flash, or USB)
- network capable of routing between ELAN and TLAN networks
- interoperability products (Contact Center, CallPilot, Symposium (5.0), OCS, HMS400, MCS 5100, NMC5.0/MAS 5.1)

Administration tools

Element Manager

Element Manager (EM) is an optional software component you can deploy on a Signaling Server. You must configure at least one Signaling Server with EM to allow for system management. You can access EM from the Avaya Unified Communication Management (UCM) centralized management server.

EM increases the speed and efficiency of system management by organizing parameters in logical groups, where single Web pages provide access to information that was traditionally spread across multiple overlays. The ability of EM to hide or show information helps you to focus on specific information, avoiding the distraction of multiple parameters.

EM reduces configuration errors by providing a full text description of each parameter and acronym. EM also reduces errors by simplifying parameter value selection by using preselected default values and lists.

The following management tasks can be performed using Element Manager:

- **System Status**
  Enables users to perform maintenance actions on Call Server components (D-channel, MSDL, TMDI, Digital Trunk, Clock Controller, Network and Peripheral, Trunk diagnostic) and IP Telephony.
- **Configuration**
  Enables users to configure customer data, trunks and routes (traditionally done in LD 14, 15, and 16), D-channel and Common Equipment data (LD 17), digital trunk interface (LD 73), Flexible Code Restriction and Incoming Digit conversion (LD 49), and the IP telephony node.
- **Network Numbering Plan**
  Enables users to configure the Network Routing Service, and ESN data blocks for the Call Server (LD 86, 87, and 90).
- **Software Upgrade**
  Enables users to obtain Call Server software version, License parameters, and packages list. Users can also upgrade Voice Gateway Media Card loadware and IP Phone firmware.
- **Patching**
  Enables users to download, activate, and deactiveate patches for the Call Server and Voice Gateway Media Cards. CS 1000 Release 7.6 Linux based components use Avaya UCM centralized patching.
- **System Utilities**
  Enables users to backup and restore databases, set time and date, and upload software files and patches to a directory on the Signaling Server.

Configuration procedures for these tasks are in *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310), *System Management* (NN43001-600), and *Element Manager System Reference - Administration* (NN43001-632).

Conversion and mapping information

The following information is required for the database conversion as part of the Release 7.6 software installation.

Option 11C Cabinet or Chassis to Media Gateway mapping

The following pages detail how the Small System TNs are mapped to Large System TNs. The SIPE cabinets are converted to Media Gateways as shown in Table 2.

Table 2
SIPE cabinet/chassis to IPMG conversion

Cabinet/Chassis	Media Gateway
Main	000 0
Expansion Cabinet/Chassis 1	000 1
Expansion Cabinet/Chassis 2	004 0
Expansion Cabinet/Chassis 3	004 1
Expansion Cabinet/Chassis 4	008 0

Minimum software release

The conversion process can be applied to the database of existing small systems provided that the small system has a minimum software version of 23.10.

TN mapping

The following tables map the small system TNs to the CS 1000E TNs (large system TNs). The conversion feature maps the SIPE TNs to CS 1000E TNs on the Media Gateways.

IP phone TN mapping

When you convert from small systems (Option 11C, MG1000B, Avaya Communication Server 1000M or Communication Server 1000S) to a CS 1000E CP PM system, the slot and unit number maps to the loop, shelf,

card, and unit number as shown in Table 3. Because these TNs map from a small system TN format to a large system TN format, the IP Phones do NOT require reprogramming with a new TN.

Table 3
IP phone TN mapping

CS 1000S/M		CS\ 1000E CP PM			
Slot	**Unit**	**Loop**	**Shelf**	**Card**	**Unit**
61-64	0-31	96	0	1-4	0-31
65-68	0-31	100	0	1-4	0-31
69-72	0-31	104	0	1-4	0-31
73-76	0-31	108	0	1-4	0-31
77-80	0-31	112	0	1-4	0-31
81-84	0-31	96	1	1-4	0-31
85-88	0-31	100	1	1-4	0-31
89-92	0-31	104	1	1-4	0-31
93-96	0-31	108	1	1-4	0-31
97-99	0-31	112	1	1-3	0-31

ALC, DLC, analog trunk and regular IPE pack TN mapping

Table 4 provides TN mapping information for analog line cards, digital line cards, analog trunk cards, and xdtrs (digital trunk cards or IP phones are not addressed in this table). Not all slots are present on all small systems.

Table 4
ALC, DLC, analog trunk and regular IPE pack TN mapping (Part 1 of 3)

CS 1000S/M		CS 1000E CP PM			
Slot	**Unit**	**Superloop**	**Shelf**	**Card**	**Unit**
1	0-31	0	0	1	0-31
2	0-31	0	0	2	0-31
3	0-31	0	0	3	0-31
4	0-31	0	0	4	0-31
5	0-31	0	0	5	0-31
6	0-31	0	0	6	0-31
7	0-31	0	0	7	0-31
8	0-31	0	0	8	0-31
9	0-31	0	0	9	0-31
10	0-31	0	0	10	0-31
11	0-31	0	1	1	0-31
12	0-31	0	1	2	0-31
13	0-31	0	1	3	0-31
14	0-31	0	1	4	0-31
15	0-31	0	1	5	0-31
16	0-31	0	1	6	0-31
17	0-31	0	1	7	0-31
18	0-31	0	1	8	0-31

Table 4
ALC, DLC, analog trunk and regular IPE pack TN mapping (Part 2 of 3)

CS 1000S/M		CS 1000E CP PM			
Slot	**Unit**	**Superloop**	**Shelf**	**Card**	**Unit**
19	0-31	0	1	9	0-31
20	0-31	0	1	10	0-31
21	0-31	4	0	1	0-31
22	0-31	4	0	2	0-31
23	0-31	4	0	3	0-31
24	0-31	4	0	4	0-31
25	0-31	4	0	5	0-31
26	0-31	4	0	6	0-31
27	0-31	4	0	7	0-31
28	0-31	4	0	8	0-31
29	0-31	4	0	9	0-31
30	0-31	4	0	10	0-31
31	0-31	4	1	1	0-31
32	0-31	4	1	2	0-31
33	0-31	4	1	3	0-31
34	0-31	4	1	4	0-31
35	0-31	4	1	5	0-31
36	0-31	4	1	6	0-31
37	0-31	4	1	7	0-31
38	0-31	4	1	8	0-31
39	0-31	4	1	9	0-31

Table 4
ALC, DLC, analog trunk and regular IPE pack TN mapping (Part 3 of 3)

CS 1000S/M		CS 1000E CP PM			
Slot	**Unit**	**Superloop**	**Shelf**	**Card**	**Unit**
40	0-31	4	1	10	0-31
41	0-31	8	0	1	0-31
42	0-31	8	0	2	0-31
43	0-31	8	0	3	0-31
44	0-31	8	0	4	0-31
45	0-31	8	0	5	0-31
46	0-31	8	0	6	0-31
47	0-31	8	0	7	0-31
48	0-31	8	0	8	0-31
49	0-31	8	0	9	0-31
50	0-31	8	0	10	0-31

Digital trunk mapping

This mapping (shown in Table 5) applies to DTI, DTI2, PRI, PRI2, MISP, DPNSS and other circuit packs.

Table 5
Digital trunk mapping (Part 1 of 4)

CS 1000S/M		CS 1000E CP PM				
Slot	**Channel**	**Digital Loop**	**Channel**	**Superloop**	**Shelf**	**Card**
1	0 - 31	20	0 - 31	0	0	1
2	0 - 31	21	0 - 31	0	0	2

Table 5
Digital trunk mapping (Part 2 of 4)

CS 1000S/M		CS 1000E CP PM				
Slot	**Channel**	**Digital Loop**	**Channel**	**Superloop**	**Shelf**	**Card**
3	0 - 31	22	0 - 31	0	0	3
4	0 - 31	23	0 - 31	0	0	4
5	0 - 31	24	0 - 31	0	0	5
6	0 - 31	25	0 - 31	0	0	6
7	0 - 31	26	0 - 31	0	0	7
8	0 - 31	27	0 - 31	0	0	8
9	0 - 31	28	0 - 31	0	0	9
11	0 - 31	52	0 - 31	0	1	1
12	0 - 31	53	0 - 31	0	1	2
13	0 - 31	54	0 - 31	0	1	3
14	0 - 31	55	0 - 31	0	1	4
15	0 - 31	56	0 - 31	0	1	5
16	0 - 31	57	0 - 31	0	1	6
17	0 - 31	58	0 - 31	0	1	7
18	0 - 31	59	0 - 31	0	1	8
19	0 - 31	60	0 - 31	0	1	9
21	0 - 31	76	0 - 31	4	0	1
22	0 - 31	77	0 - 31	4	0	2
23	0 - 31	78	0 - 31	4	0	3
24	0 - 31	79	0 - 31	4	0	4

Table 5
Digital trunk mapping (Part 3 of 4)

CS 1000S/M		CS 1000E CP PM				
Slot	**Channel**	**Digital Loop**	**Channel**	**Superloop**	**Shelf**	**Card**
25	0 - 31	80	0 - 31	4	0	5
26	0 - 31	81	0 - 31	4	0	6
27	0 - 31	82	0 - 31	4	0	7
28	0-31	83	0-31	4	0	8
29	0-31	84	0-31	4	0	9
31	0-31	85	0-31	4	1	1
32	0-31	86	0-31	4	1	2
33	0-31	87	0-31	4	1	3
34	0-31	88	0-31	4	1	4
35	0-31	89	0-31	4	1	5
36	0-31	90	0-31	4	1	6
37	0-31	91	0-31	4	1	7
38	0-31	92	0-31	4	1	8
39	0-31	93	0-31	4	1	9
41	0-31	116	0-31	8	0	1
42	0-31	117	0-31	8	0	2
43	0-31	118	0-31	8	0	3
44	0-31	119	0-31	8	0	4
45	0-31	120	0-31	8	0	5
46	0-31	121	0-31	8	0	6

Table 5
Digital trunk mapping (Part 4 of 4)

CS 1000S/M		CS 1000E CP PM				
Slot	**Channel**	**Digital Loop**	**Channel**	**Superloop**	**Shelf**	**Card**
47	0-31	122	0-31	8	0	7
48	0-31	123	0-31	8	0	8
49	0-31	124	0-31	8	0	9

XNET and XPEC conversion

Although XNETs and XPECs are not configured by CS 1000 small systems, the system uses them internally and they appear in the database. You must convert the contents of the XNET blocks to virtual XNET blocks.

TTY conversion

The TTYs from small systems are converted as shown in Table 6.

Table 6
TTY conversion

TTY Port Before Conversion		TTY Port After Conversion		
Cabinet/ Chassis	**Port†**	**Card**	**IPMG**	**Port**
Main	0	CP PM	N/A	0
	1	MGC	000 0	1
	2	MGC	000 0	2
Expansion 1	0	MGC	000 1	0
	1	MGC	000 1	1
	2	MGC	000 1	2

Table 6
TTY conversion

TTY Port Before Conversion		TTY Port After Conversion		
Cabinet/ Chassis	**Port†**	**Card**	**IPMG**	**Port**
Expansion 2	0	MGC	004 0	0
	1	MGC	004 0	1
	2	MGC	004 0	2
Expansion 3	0	MGC	004 1	0
	1	MGC	004 1	1
	2	MGC	004 1	2
Expansion 4	0	MGC	008 0	0
	1	MGC	008 0	1
	2	MGC	008 0	2

Ports on the SSC card (†)

Only the TTY ports from the SSC cards in the small system are converted while the other TTY ports (for example, TTYs from the SDI card) are deleted.

Tone Receiver Conversion

Tone receivers are converted using the same algorithm as that used for IPE shelf conversion. The tone receivers map to cards 14 and 15 for each of the five Media Gateways (see Table 7 on page 42).

In the CS 1000E system, the resources are specific to a cabinet. If tone receiver units are configured on card 0, new tone receiver units are mapped to each new shelf.

In the event of migration from small system (Option 11C) with 2 cabinets and 8 DTRs, these units are mapped to 2 IPMGs of 8 units each , programmed on

card 14. The same applies for card 0 units 8-15, which are mapped to units 0-7 on card 15.

If units 8-11 in the SSCs have MFC, MFE, MFK units provisioned, then these units are provisioned in units 0-3. If these units (8-15) were provisioned as DTRs in the SSC, then these units are provisioned as DTRs in units 0-7.

Table 7
Tone receiver conversion

CS 1000S/M		CS 1000E CP PM			
Slot	**Unit**	**Superloop**	**Shelf**	**Card**	**Unit**
0	0-7	0	0	14	0-7
0	8-11 or 8-15	0	0	15	0-3 or 0-7
If these cabinets are populated with MGCs, then these units must be configured. Unit types and unit numbers in each MG are matched to the configuration that exists in slot 0.		0	1	14	0-7
		0	1	15	0-3 or 0-7
		4	0	14	0-7
		4	0	15	0-3 or 0-7
		4	1	14	0-7
		4	1	15	0-3 or 0-7
		8	0	14	0-7
		8	0	15	0-3 or 0-7

Conference and Tone Generator conversion

All existing Tone and Conference loops are removed and two loops (one for tone and one for conference) are allotted for each Media Gateway as shown in Table 8.

Table 8
Conference and Tone Generator conversion

Media Gateway	MG TDS	MG CONF
000 0	124	125
001 0	126	127
004 0	128	129
004 1	130	131
008 0	132	133

Media Gateway Configuration

The IP address for each Media Gateway must be entered in overlay 97. Note that the SIPE IP addresses cannot not be used in this case since the SIPE IP connections are point to point and may not be in the same subnet as the ELAN IP address.

DSP Resources for Media Gateways

You can add Digital Signal Processor (DSP) resources to a Media Gateway with a CP MG card, MGC card with DSP daughterboards, or a Voice Gateway Media Card. DSP resources are required for inter-gateway calls or TDM to IP calls. Note that a Media Gateway does not require DSP resources for calls within the same Media Gateway (IP to IP calls). The DSP resources are required for TDM to IP calls. These DSP resources are only available to the Media Gateway in which the DSP is located.

Once conversion is complete, the DSP resources that were previously configured are now available to the Media Gateway where the DSP is located. DSP resources are required in all Media Gateways in order to support inter-gateway calls and TDM to IP calls. The configuration required for the

new DSP resources must be performed manually, as it is not part of the conversion process.

Deleted information

The following information is removed during the conversion process:

- SIPE IP addresses (deleted from the database)
- TDS and Conference configuration
- Survivable SSC IP address
- Redundant serial port information
- Meridian Mail LSL, AML and other TNs.

Any deleted items are printed out during the conversion process.

> ***Note:*** Although the above items are removed during the conversion process, the data in the compact flash remains intact with the small system database.

Campus Redundancy (High Availability) Package Support

The CP PM Call Server introduced package 410 to enable and disable the Campus Redundancy or High Availability (HA) feature. For more information, see “Appendix A: Upgrading to High Availability” on page 202.

Software determines if the HA package is present in the keycode. If the package is present, the CP PM call server behaves in the same manner as the CP PIV (for example, it uses the High Speed Pipe (HSP) to detect the presence of the other core). If the other core is detected, then both the cores negotiate to determine which core is active and which core is the standby.

If the CP PM call server is unable to detect the other core, then it comes up as a single core system. If the HA package is not present in the keycode, then the existing call server software is modified to block the HSP connection so that the CP PM call server does not attempt to detect the presence of the core. In the absence of the HA package, the CP PM call server runs as a single core system—even in a system with two cores where the HSP ports on both cores are connected.

Database Media Converter Tool

The Database Media Converter Tool is a Windows application for copying database files from floppy disks to Compact Flash (CF) cards. This application supports only databases converted from CP PII.

Note: You do not require the converter tool for saved database files from a CP PIV or later Server. The database file from these Servers can be stored on a RMD (CF card, or USB storage device). You can directly insert the backup RMD into the target Server f during software installation.

Note: You can use a PC to copy the databases from a CF card backup to a USB 2.0 storage device. No additional software is necessary.

Note: Option 61/81, CS1000M SG/MG databases being migrated to a new CS 1000E database require modifications to the data to create a new CS 1000E database. There is no supported software tool to provide the database conversion from an Option 61/81, CS1000M SG&MG to CS 1000E. Supported methods of conversion are either a rekeying of the system database or through the Avaya Lab Conversion offering.

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. The Co-res CS and SS is supported on various hardaware platforms, see Table 1: “Hardware platform supported roles” on page 20.

The Co-res CS and SS provides a cost effective solution for CS 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-res CS and SS, see *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 (CS 1000E)
- Branch Office Media Gateway (MG 1000B)
- Survivable Media Gateway (SMG)
- Survivable SIP Media Gateway (SSMG)
- Avaya CS 1000E TDM (CS 1000E TDM).

For details on the CS 1000E TDM system, see *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.

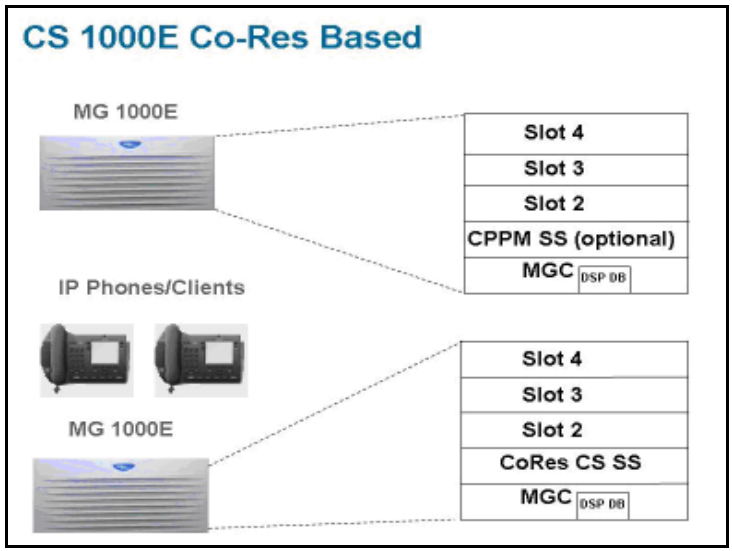
For information about installing an SMG or SSMG, see *Avaya Communication Server 1000 System Redundancy Fundamentals* (NN43001-507).

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 2 on page 48 provides an example of a CS 1000E system with a Co-res CS and SS in a MG 1000E chassis. You can also use a COTS2, or an MG 1010, chassis, or cabinet to deploy a Co-res CS and SS.

Figure 2: CS 1000E Co-res CS and SS system

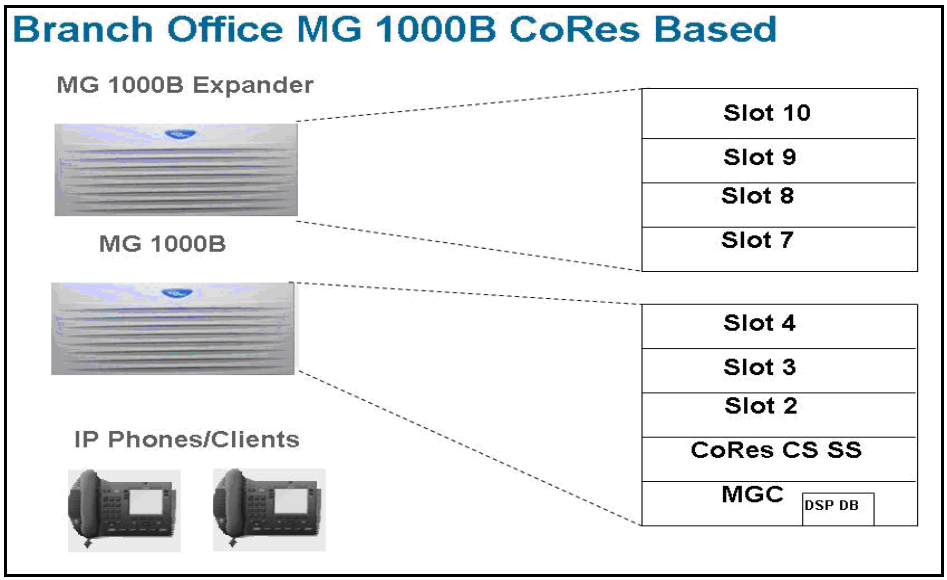


For information about adding an optional second Signaling Server to a Co-res CS and SS as shown, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)

Co-res CS and SS based Branch Office Media Gateway

Figure 3 on page 49 shows an example of a Co-res CS and SS based Branch Office Media Gateway system.

Figure 3: MG 1000B Co-res CS and SS system



CS 1000E TDM

CS 1000 Release 7.6 supports a TDM only version of the Co-res CS and SS system. The CS 1000E TDM system has the following capacity limitations:

- 800 combined TDM users (Traditional, CLASS, 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 CS 1000 system.

Co-res CS and SS upgrade paths

The following upgrade paths are supported for CS 1000 systems.

- Communication Server 1000E Call Server with Standard Availability (SA) to a CS 1000 Release 7.6 Co-resident Call Server and Signaling Server

If you upgrade from a non-CP PM based CS 1000E Call Server, you must replace your old Call Server hardware with a supported Server and upgrade the software.

- CS 1000E Signaling Server to CS 1000 Release 7.6 Co-resident Call Server and Signaling Server
- Meridian 1 Option 11C, CS 1000M, or CS 1000S Call Server to Communication Server 1000 Release 7.6 Co-resident Call Server and Signaling Server
- Meridian 1 Option 11C Call Server to CS 1000 Release 7.6 CS 1000E TDM.

The minimum CS 1000 Release for Small System migration to a Co-resident Call Server and Signaling Server is Release 23.10

Hardware

The CS 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 CS 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, 2 GB memory, and a 40 GB hard drive to support the Co-res CS and SS configuration. All other platforms require 4 GB of memory. You must upgrade CP DC and CP MG hardware from 2 GB memory to 4 GB memory using the Linux Upgrade Kit.

Note: CP PM version 2 cards (NTDW99CAE6) do not require a BIOS update or upgrade kit to support the Co-res CS and SS configuration.

CP PM upgrade kit

The CP PM Linux Upgrade kit includes the following items:

- 2 GB Compact Flash (CF) with Linux software
- 2 GB blank CF card
- CP PM hard drive kit (optional, provided if required)
- 1 GB DDR SO-DIMM memory upgrade (optional, provided if required)

CP PM media Storage

The CP PM card for a Co-res CS and SS requires a 40 GB 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 Linux Base and Linux application software installations, the minimum size supported for the RMD is 1 GB. For more information about supported media for Co-resident Call Server and Signaling Server installations, see *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, COTS servers require an internal Fixed Media Drive (FMD) hard drive 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 on CP MG, CP DC or COTS hardware

> ***Note:*** The N0220961 USB memory stick is supported in Communication Server 1000 Release 7.6. Avaya does not guarantee the operation of any other USB memory stick.

Software applications

The Co-res CS and SS does not directly support SIP Line Gateway and SIP DECT. You must provision an additional stand-alone Signaling Server for this software.

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
- 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)
- Avaya Unified Communications Management (UCM) Primary Security Server in limited deployment. For more information about Avaya UCM Primary Security Server procedures, see *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 Element Manager, see *Element Manager System Reference - Administration* (NN43001-632).

Review prerequisites checklist

Contents

This chapter contains the following topics:

Planning the upgrade

Planning for an upgrade involves the following tasks:

- Review existing power and grounding.
- Determine if additional Cabinets/Chassis' need to be mounted or bolted to the wall.
- Identify all applications that are currently installed on the source platform.
- Identify and correct outstanding service problems.
- Verify the site log is updated with current trunking, call routing, application notes, and site contact information.

- Review all product bulletins and alerts that impact the site.
- Prepare a contingency plan for backing out of the upgrade.

DANGER OF ELECTRIC SHOCK

In a DC-powered system, power to the column can remain on during the following procedures. In an AC-powered system, however, power to the entire column *must* be shut down throughout the procedures.

Preparing for the upgrade

Preparing for an upgrade involves the following tasks:

- Identify and become familiar with all procedures.
- Verify that all installed applications meet the minimum software requirements for the target platform.
- Determine and note current patch or Dep lists installed at the source platform.
- Determine required patch or Dep lists at the target platform for all system-patchable components (Call Servers, Voice Gateway Media Cards, Media Gateway Controllers, Signaling Servers and so on).
- Determine the required patches or DEP lists installed on all applications.
- Determine and communicate the required maintenance window, contingency plan and the impact to the customer to complete the procedure.
- Determine if additional ELAN and TLAN network connections are required to allow for additional MGC cards.
- Perform an inventory on required software and hardware.

Things to know

Review the following sections to prepare for an Avaya Communication Server 1000E hardware upgrade.

Hardware requirements

This section describes the *minimum* hardware and software required for a Small System upgrade. Additional equipment can also be installed during the upgrade. Verify that *all* hardware has been received.

Before the upgrade, check that items on the order form are also on the packing slip. Check that all items been received. If any items are missing, contact your supplier for replacements before you begin the upgrade.

WARNING

Service Interruption

DO NOT proceed with the upgrade if any of the required items are missing. All items must be received to complete the upgrade.

Note: Avaya Communication Server 1000T is not supported post Avaya Communication Server 1000 Release 5.0. For more information, see *Avaya Communication Server 1000E Software Upgrades* (NN43041-458).

Check required hardware

Table 9 lists the hardware required for the upgrade.

Table 9
Hardware requirements

Order number	Description	Quantity in each Media Gateway
NT4N39	Common Processor Pentium IV (CP PIV) card	Depends on configuration
NTDW61 NTDW99 (metal)	Common Processor Pentium Mobile (CP PM) card	Depends on configuration

Table 9
Hardware requirements

Order number	Description	Quantity in each Media Gateway
NTDW53	Common Processor Dual Core (CP DC) card	Depends on configuration
NTDW56 (32-port) NTDW59 (128-port)	Common Processor Media Gateway (CP MG) card	1
NTDW60 NTDW98 (metal)	Media Gateway Controller (MGC) card	1
NTDW62AAE5 (32 Port) NTDW64AAE5 (96 Port) NTDW78AAE6 (128 Port)	DSP Daughterboard (DSP DB)	Depends on configuration
CAT5 cable	For ELAN and TLAN connections	2 or 4
NTAK19EC	2-port SDI cable	1 for MG 1000E 1 for CP PM cards in slots 1-10 of a MG 1010
NTBK48AA	3-port SDI cable	1 for MG 1000E Not required for MG 1010

Table 9
Hardware requirements

Order number	Description	Quantity in each Media Gateway
NTC325AAE6	serial port adapter kit (MG 1010 and CP MG)	1 for MG 1010 1 for each CP MG
Note: A TLAN IP address is needed for each DSP Daughterboard. ***Note:*** A customer supplied straight through DB-25 to DB-25 female to female adapter is required to connect a PC to the NTAK19EC cable. ***Note:*** A customer supplied straight through shielded CAT5 Ethernet cable, and a DB-9 or DB-25 serial cable is required to connect a MG 1010 or CP MG card to a PC with the NTC325AAE6 serial port adapter kit.		

For more information about the hardware, see *Circuit Card Reference* (NN43001-311).

Readiness checklist

As part of the upgrade process, complete the Upgrade readiness checklist.

Table 10
Upgrade readiness checklist (Part 1 of 4)

Action	✓
Received equipment: • Received hardware • Received software • Received keycodes • Received Dongle • Download any current patches • Tools	
Available Card slots: • Are there sufficient card slots (for example, for Server cards)? ***Note:*** If another card is removed to open up a slot for the Server card, it is recommended that all configuration for that slot be removed prior to an upgrade from a small to a large system.	

Table 10
Upgrade readiness checklist (Part 2 of 4)

Action	✓
Cables: • CAT5 cables (for ELAN and TLAN connections) • NTAK19EC 2-port SDI cable for MG 1000E, and Server cards in slots 1-10 of a MG 1010. • Customer supplied straight through DB25 to DB25 female adapter to connect the NTAK19EC cable to a PC. • NTBK48AA 3-port SDI cable for Gateway Controllers • NTC325AAE6 serial port adapter kit. • Customer supplied DB-9 or DB-25 serial cable to connect a PC to a NTC325AAE6 serial port adapter. • Customer supplied straight through shielded CAT5 Ethernet cable to connect a NTC325AAE6 serial port adapter. ***Note:*** To connect a terminal to the Server card with a NTAK19EC cable, complete the following steps: • Connect the NTAK19EC cable to the 50 pin MDF connector on the back of the desired shelf of the Media Gateway. • Connect a 25 pin to 9 pin straight through serial cable to the 25 pin DB connector at the end of the NTAK19EC cable (a female to female gender changer may be required). These are customer provided. • Connect the other end of the 25 pin to 9 pin straight through serial cable to the serial port on the maintenance terminal. These are customer provided.	

Table 10
Upgrade readiness checklist (Part 3 of 4)

Action	✓
Make sure that all the software that was ordered has been received.: • New version and patches / DEP lists • Current version • Compatibility and Planning • Ensure you can perform a direct upgrade. Otherwise, plot the intervening path required or have Avaya do the database conversion • If there are any external applications that have Avaya Communication Server 1000 with a Small System TN format (Card - Unit) configured as part of their interop with the Avaya CS 1000 or M1 solutions, the existing TNs will map to new Large System based TNs that are in the format of SUPL-Shelf-Card-Unit. These applications may need to be changed in order to interop with the new TN that is generated as part of the conversion process.	
Compact Flash and PCMCIA adapter (for SSC conversion)	

Table 10
Upgrade readiness checklist (Part 4 of 4)

Action	✓
Provide a PC or workstation that runs the web browser for Element Manager. The web browser can access the Element Manager web server on either the ELAN subnet or TLAN subnet. Use Microsoft Internet Explorer 6.x or higher. Make sure that the cache settings are enabled to check for new pages every time, and to empty the cache when browser is closed.	
Prepare the network data, such as new IP addresses, in: • *Converging the Data Network with VoIP* (NN43001-260) • *IP Peer Networking Installation and Commissioning* (NN43001-313) • *Network Routing Service Fundamentals* (NN43001-130) • *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310) • *Avaya Communication Server 1000E Software Upgrades* (NN43041-458)	

First steps

This section summarizes the steps to perform on your existing system before you upgrade the hardware for a CS 1000 system.

To install new hardware in a system expansion, refer to *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310).

As a general rule, follow the order of the chapters.

Procedure 1
Preparing for upgrade

1 Read the safety instructions.

2 Review the “Hardware requirements” on page 56.

3 Complete the “Readiness checklist” on page 59.

4 Verify compliance with system and site requirements.

5 Verify compliance with network requirements for system expansions (adding Media Gateways, IP Phones, new sites). Refer to *Converging the Data Network with VoIP* (NN43001-260).

6 Connect a serial cable from the Call Server to a maintenance terminal.

- For an MG 1000E upgrade, connect the three-port SDI cable to DB-9 port to the back of the MG 1000E. Connect the DB-9 serial cable to connector 0.

WARNING

On the MG 1000E, do not connect a serial port to the AUX connector. It can damage the port.

- For a MG 1010 upgrade, connect a sheilded CAT5 Ethernet cable from the MG 1010 Media Gateway Utility card to a NTC325AAE6 serial adapter kit. Connect a DB-9 or DB-25 serial cable from the required adapter to a maintenance terminal.

7 Perform a data dump.

WARNING

Both before and after an upgrade, perform a data dump on the Call Server.

LD 43	Load program
EDD	Data dump

8 Archive the system database on the Call Server and save it to a removable media device (RMD). Label the database backup as the final data from the current software.

LD 43	Load program
BKO	Copy data from primary to backup RMD

9 Remove all obsolete data configurations from the system.

For example, remove Meridian Mail agents, queues, and supporting network loops. Remove all EPE, RPE, TDS, MFS and conference loops (excluding XCT and IP devices).

10 Perform a data dump, see step 7.

11 Archive the system database on the Call Server and save it to an RMD, see step 8. Label the database backup as the data to be upgraded.

12 Upgrade the hardware on the system. Use the data to be upgraded backup when installing software onto the upgraded hardware.

13 Once the upgrade is complete and the system is stable, perform a data dump, see step 7.

14 Cold start the system (sysload) to verify that the system can reload sucessfully with the upgraded database.

Note: System error messages are printed during sysload if the database contains obsolete data. Perform **EDD CLR** to save the database.

End of Procedure

Upgrading Small System hardware

Contents

This chapter contains the following topics:

Backing up the Small System Call Server to an external drive

Note: For your convenience, the procedures required to back up the system database prior to the hardware upgrade are contained in this NTP.

Avaya Communication Server 1000 Servers support converting the databases saved on the Avaya CS 1000 small system through the following methods:

- LD 43 EDD
- LD 143 archive database option (invoked from upgrade menus)

- LD 43 BKO

  Note: The CCBR method of database backup is not supported for small system to large system database conversion.

By combining the EDD and archive methods, the database files are saved onto a Compact Flash (CF) card (with a PCMCIA card adapter when plugged into the SSC card) so that the database can be converted for use on the target Server duringthe software installation. LD 43 EDD updates the database on the internal drive (to ensure that the latest memory contents are backed up) and LD 143 backs up the database to the backup RMD. Failure to perform a recent LD 43 (EDD) may result in the loss of any recent changes to the database.

Note: An alternative to the Archive command in LD 143 is the BKO command in LD 43. However; the Archive in LD 143 is the recommended method as it allows for multiple databases to be copied to the RMD. As a result, there is less risk of overwriting existing files using LD 143 to archive the database.

There is a fundamental difference between the small system, running an SSC, and an Avaya Communication Server 1000E running a Server. This difference is represented in how the format of the TN (Terminal Number) is displayed.

The small system TN is displayed to the administrator using a two-field format, or card-unit. In an Avaya Communication Server 1000E system, the TN is displayed using a four-field format, or loop-shelf-card-unit. This four-field TN format is the same as those used in current large systems.

The end result is that when a small system database is converted to a large system database, the TNs are re-mapped. The result is that the displayed TN changes during the conversion process. The administrator must be aware of the TN mapping. For example, a small system with an IP phone configured in TN 61-0 now has that same IP phone show up in 96-0-1-0 after the conversion process.

LD 43 using EDD command

Procedure 2
Backing up the database using LD 43

1 To back up the customer database to the internal drive (to ensure the most recent database is copied to the backup RMD in LD 143), enter **LD 43** at the command prompt.

2 Enter **EDD**. The following output appears.

```
>LD 43
EDD

EDD000
Backing up reten.bkp
Internal backup complete
All files are backed up!
DATADUMP COMPLETE
.

EDD000
```

3 The internal backup is complete.

End of Procedure

LD 143 using the UPGRADE command

The second step involved in backing up the database involves moving the database from the hard drive to the RMD. This step is performed through the Utilities menu in LD 143.

Procedure 3
Archiving the database in LD 143

1 Insert the PCMCIA card in the card slot A. Enter **LD 143** at the command prompt, then enter **UPGRADE**. The following screen appears.

```
SOFTWARE INSTALLATION PROGRAM
**********************************
Verify
Security ID: XXXXXX
**********************************
```

2 The following menu appears. Enter **2** to select Call Server/Main Cabinet/ Chassis.

```
Technology Software Installation Main Menu:
1. Media Gateway/IPExpansion Cabinet
2. Call Server/Main Cabinet
[q]uit, [h]elp or [?], <cr> - redisplay
Enter Selection : 2
```

3 The Call Server/Main Cabinet/Chassis Software Installation Main Menu appears. Enter **3** to select Utilities.

```
Call Server/Main Cabinet Software Installation Main Menu :
1. New Install or Upgrade from Option 11/11E - From
Software DaughterBoard
2. System Upgrade
3. Utilities
4. New System Installation - From Software Delivery Card

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> -
redisplay
```

```
Enter Selection : 3
```

4 The Utilities menu appears. Enter **2** to select Archive Database Utilities.

```
Utilities Menu :
1.  Restore Backed Up Database
2.  Archive Database Utilities
3.  Install Archived Database
4.  Review Upgrade Information
5.  Clear Upgrade Information
6.  Flash Boot ROM Utilities
7.  Current Installation Summary
8.  Change 3900 series set languages.
9.  IP FPGA Utilities

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> -
redisplay
Enter Selection : 2
```

5 At the Customer Database Archives menu, enter **3** to select Archive a customer database.

```
Customer Database Archives:
1. List customer databases.
2. Remove customer database.
3. Archive a customer database.

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> -
redisplay
Enter Selection : 3
```

6 At this point, you are prompted for a Customer name for your archived database. In this example, the name **CS1000SU** is entered as the Customer name.

```
Enter a Customer name for your customized data :
CS1000SU
Customer database created: CS1000SU
Copying database from primary drive to  CS1000SU
Archive copy completed.
```

7 The archive copy has been saved as CS1000SU. The Customer Database Archives menu appears. Enter **1** to select List customer databases.

```
Customer Database Archives:
1. List customer databases.
2. Remove customer database.
3. Archive a customer database.

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> -
redisplay
Enter Selection : 1
```

The following list is generated:

```
Customer Database Archives available:
1. 450WBASE
2. 450W_CP
3. CS1000SU
```

8 Enter **q** to quit LD 143, and then **y** to confirm your selection.

```
Customer Database Archives:
1. List customer databases.
2. Remove customer database.
3. Archive a customer database.

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> -
redisplay
Enter Selection : Q
Are you sure? (y/n/[a]bort) : Y
```

End of Procedure

Once you have completed the backup and archive of the customer database, shut down the system and remove the PCMCIA card from slot. You are now ready to install the hardware.

Choosing the cabinet or chassis and slot locations

A Media Gateway performs functions under the control of the Avaya Communication Server 1000E Core call server. Traditionally, this core call server was a CP II or CP IV in its own call server cabinet or chassis; however, current Server cards sit in one of the Media Gateway slots. Slot location is based on the type of system:

- For Cabinet systems, see “Cabinet” on page 72
- For MG 1000E chassis systems, see “Chassis” on page 75
- For MG 1010 chassis systems, see “MG 1010 chassis” on page 77
- For Communication Server 1000S systems, see “Avaya Communication Server 1000S” on page 79

Cabinet

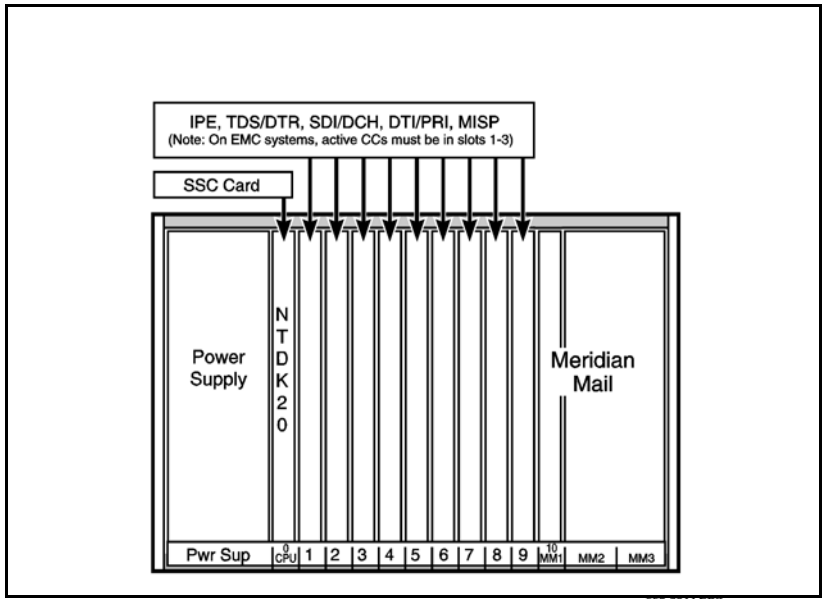
The Server card interfaces with the Media Gateway through the Gateway Controller using the ELAN interface, and therefore does not require backplane connectivity (other than power and slot ID). The following rules apply to the preferential placement of the Server cards in the Media Gateway:

- 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.

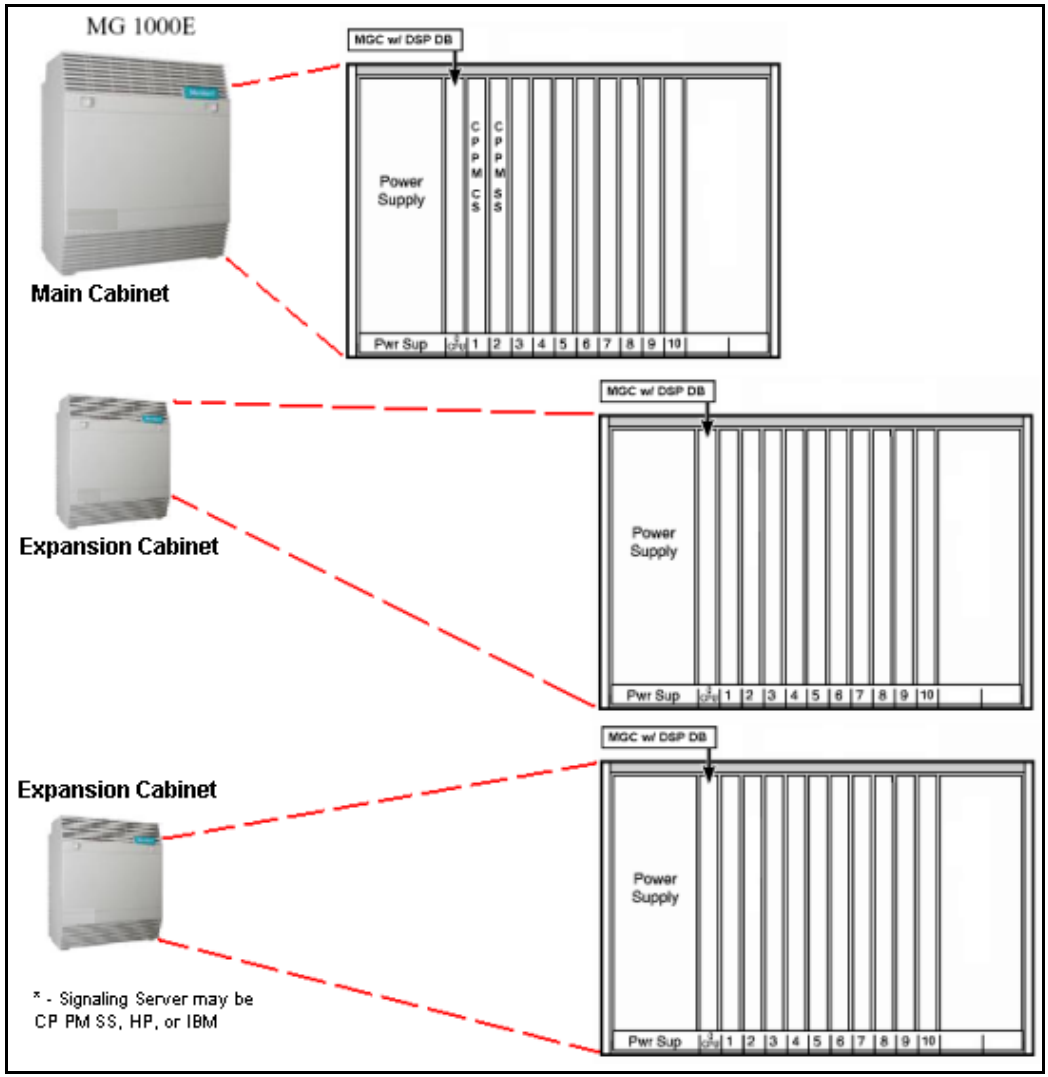
- To allow for ease of cabling, the Server card can be placed in slots 1 through 10 (see Figure 4). The Signaling Server may be placed in slots 1 through 10 (see Figure 5 on page 74) or in another cabinet if necessary.
- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM call servers in separate Media Gateway cabinets to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

Figure 4
NTAK11 Cabinet with SSC card



Once the upgrade is complete, a typical SA three cabinet system resembles Figure 5 on page 74 with an Gateway Controller in slot 0, and a Server cards in the main cabinet. The additional Media Gateways contain Gateway Controller cards only for an SA configuration.

Figure 5
Typical three cabinet SA system



Note: A High Speed Pipe package (410) must be activated in order to install any type of redundancy option. For more information, see "Appendix A: Upgrading to High Availability" on page 202.

To proceed with the upgrade, proceed to the "Hardware Upgrade Task Overview" on page 82.

Chassis

The Server card interfaces with the Media Gateway through the Gateway Controller using the ELAN interface, and therefore does not require backplane connectivity (other than power and slot ID). The following rules apply to the preferential placement of the 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.

- To allow for ease of cabling, the Server card can be placed in slots 1 through 4 of the chassis, with the exception of the Option 11C Mini chassis. The Option 11C Mini chassis cannot have a Server card installed in slot 4 as this slot was originally allocated for the 48 port DLC only.
- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM call servers in separate chassis' to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

Figure 6 shows an existing Option 11C or Avaya Communication Server 1000M chassis call server with the SSC card. After the upgrade, an SA Media Gateway chassis system resembles Figure 7 on page 76 with a Gateway Controller in slot 0, and Server cards in the main chassis. The additional Media Gateways contain Gateway Controller cards only for an SA configuration.

Figure 6
Option 11C or Avaya CS 1000M chassis call server

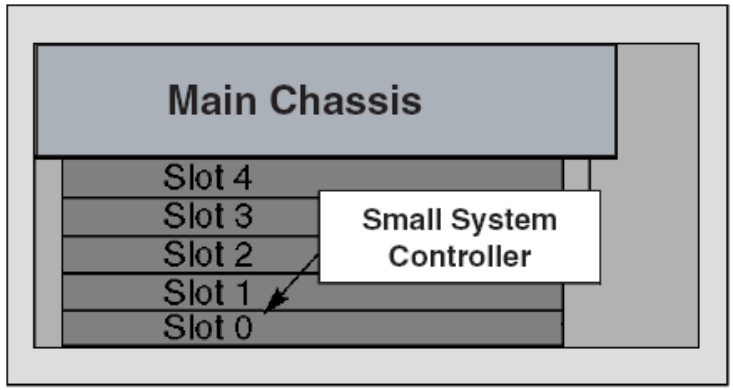
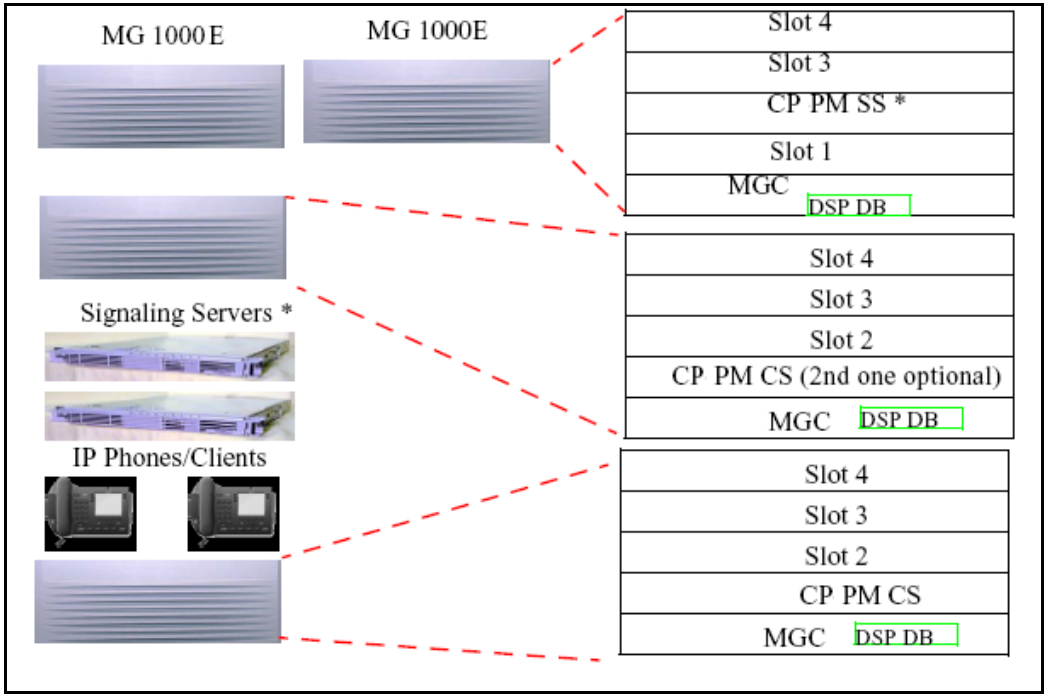


Figure 7
Typical SA chassis system



* stand-alone Signaling Servers may be one of the following:

- CP PM card
- CP DC card
- Commercial off-the-shelf (COTS) server

Server cards reside in a Media Gateway. COTS servers are separate 1U rack mount servers.

You must activate the High Speed Pipe package 410 to install any redundancy options. For more information, see "Appendix A: Upgrading to High Availability" on page 202.)

To proceed with the upgrade, proceed to the "Hardware Upgrade Task Overview" on page 82.

MG 1010 chassis

The Server card interfaces with the Media Gateway through the Gateway Controller using the ELAN interface, and therefore does not require backplane connectivity (other than power and slot ID). The following rules apply to the placement of the Server cards in the Media Gateway 1010:

- When facing the front of the MG 1010, from left to right is MGU slot 21, Server card slots 22and 23, Gateway Controller slot 0, a metal divider, and IPE slots 1 to 10.
- The Server cards cannot be placed in slot 0 of any Media Gateway. Slot 0 is reserved for the Gateway Controller.

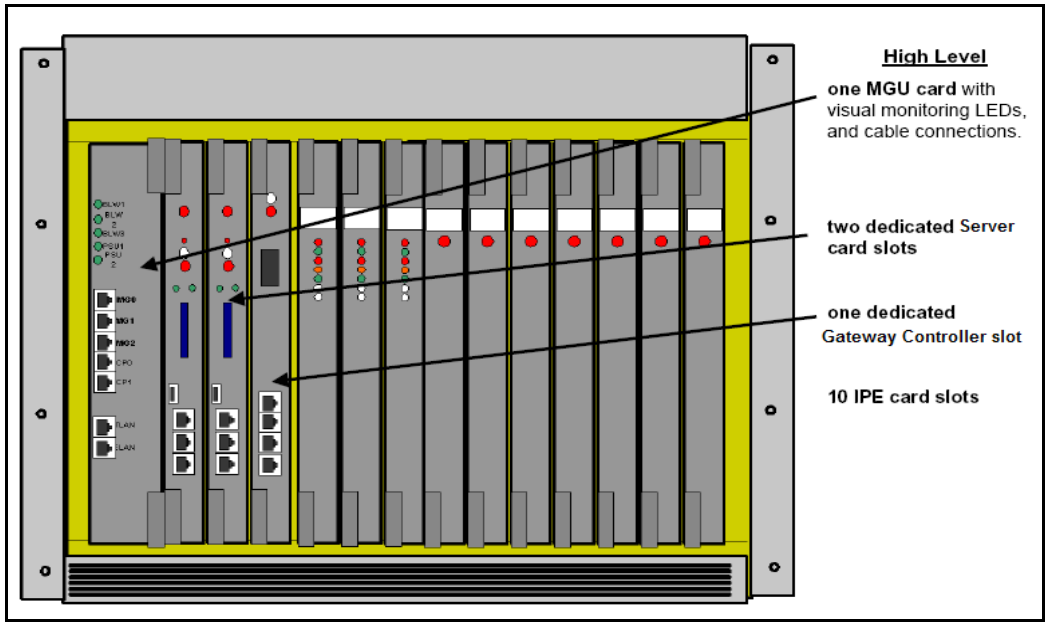
  Note: The CP MG card functions as a Server and a Gateway Controller while occupying slot 0 in a Media Gateway.

- The MG 1010 provides dedicated slots 22 and 23 for Server cards.
- The MG 1010 supports a 12 Server configuration. A maximum of ten additional Server cards can be placed in IPE slots 1 through 10. Server cards in slots 1-10 of a MG 1010 require the NTAK19EC for serial connections.

- An MG 1010 with greater than five but less than 12 Server cards requires a blank card assembly kit (NTC350AAE6) for EMC containment. Five blank cards are included in the blank card assembly kit.
- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM Call Servers in separate chassis' to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

Figure 8 shows an example of a SA Media Gateway 1010 chassis system with an MGC in slot 0, a CP PM Call Server, and a CP PM Signaling Server in the main chassis.

Figure 8
MG 1010 chassis system overview



You must activate the High Speed Pipe package 410 to install any redundancy options. For more information, see "Appendix A: Upgrading to High Availability" on page 202.)

To proceed with the upgrade, proceed to the "Hardware Upgrade Task Overview" on page 82.

Avaya Communication Server 1000S

The Server card interfaces with the Media Gatewaythrough the Gateway Controller using the ELAN interface, and therefore does not require backplane connectivity (other than power and slot ID). The following rules apply to the preferential placement of the Server card in the Media Gateway:

- The Server card cannot be placed in slot 0 of any Media Gateway. Slot 0 is reserved for the Gateway Controller.
- To allow for ease of cabling, theServer card may be placed in slots 1 through 4 of the chassis, with the exception of the Option 11C Mini. The Option 11C Mini cannot have a Server card installed in slot 4 as this slot was originally allocated for the 48 port DLC only. The Signaling Server may be placed in slots 1 through 4 (see Figure 9 on page 80) or in another chassis if necessary.
- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM call servers in separate chassis's to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

Figure 6 shows an existing Avaya CS 1000S call server with the SSC card. Once the upgrade is complete, a typical SA chassis system will resemble Figure 10 on page 81 with an Gateway Controller in slot 0, and Server cards in the main chassis. The additional Media Gateways contain Gateway Controller cards only for an SA configuration.

Figure 9
CS 1000S (NTDU30) call server

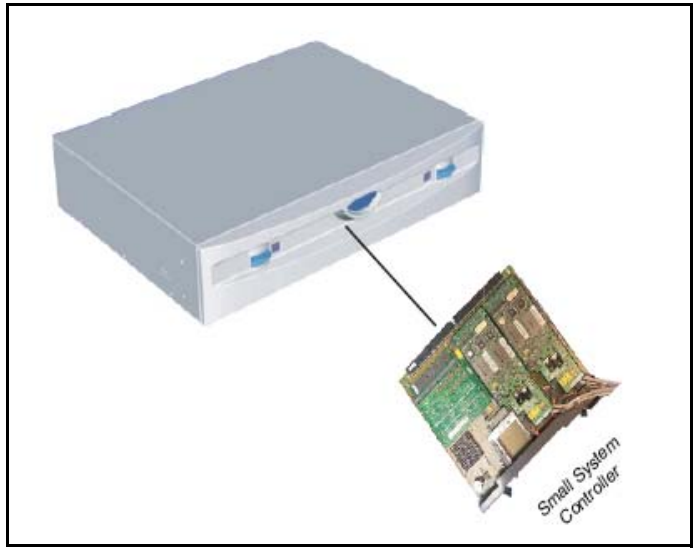
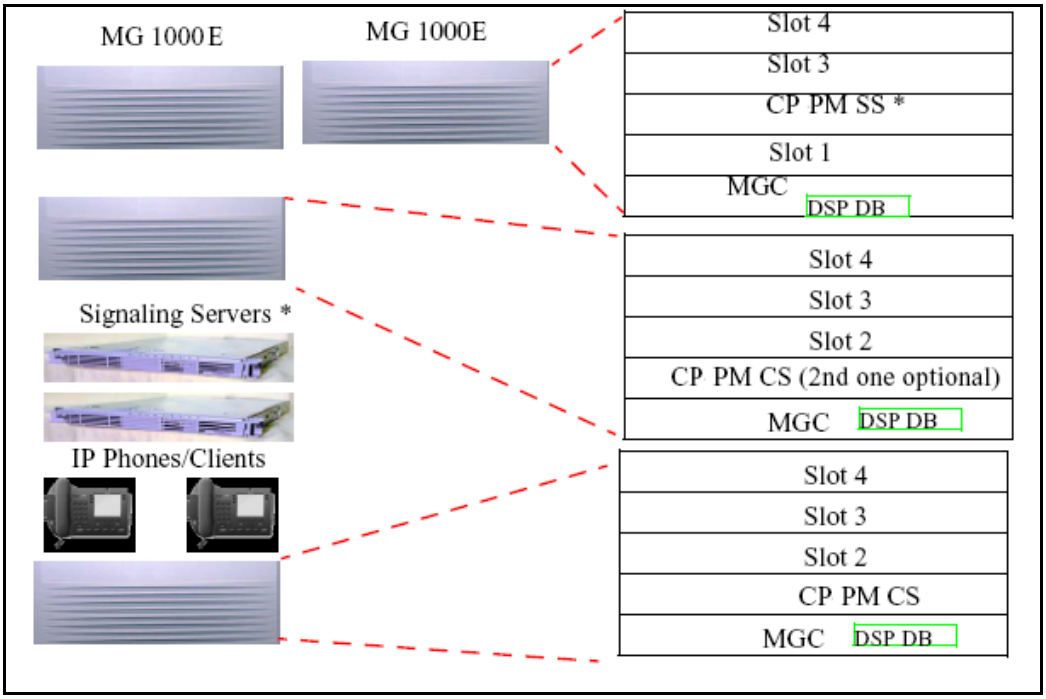


Figure 10
Typical SA Chassis system



*—Signaling Server may be one of the following:

- CP PM card
- CP DC card
- Commercial off-the-shelf (COTS) server

A High Speed Pipe package (410) must be activated in order to install any type of redundancy option. For more information, see “Appendix A: Upgrading to High Availability” on page 202.

Hardware Upgrade Task Overview

To install the hardware for a Small System upgrade, perform the following steps:

1. Power down the Main Cabinet or Chassis.
2. Remove the SSC card as described in Procedure 4 on page 82.
3. If using an MGC as the Gateway Controller, install the DSP Daughterboard on the MGC card as described in Procedure 5 on page 85.
4. Install the Gateway Controller as described in Procedure 6 on page 88.
5. Install the Server card as described in Procedure 8 on page 95.
6. Cable the cards as shown in “Card cabling” on page 98.
7. Power up the Media Gateway.
8. Enter the ‘mgcsetup’ menu and configure the IP parameters, then reboot the Gateway Controller.

If the Centralized Software Upgrade (CSU) feature is enabled on the Call Server, the firmware for the Gateway Controller is downloaded automatically (or if the internal Compact Flash is blank), otherwise initiate the firmware download using Overlay 143 commands.

Installing the cards

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

Removing the SSC card

Procedure 4
Removing the SSC Card

1. Power down the system.
2. Unlatch the SSC card.

3 Remove the SSC card from its slot.

IMPORTANT!

The SSC card and dongle should be preserved for a minimum of five days.

It is illegal to continue to run the system software on the existing SSC card. Please DESTROY or RETURN the SSC dongle to your local Avaya Repairs/Returns center upon confirmation of a successful upgrade. No further orders will be accepted for the serial number since it will be decommissioned and tracked in Avaya's database.

Note: If the upgrade fails, you will not be able to revert back to the old system without the SSC card and dongle.

End of Procedure

Installing a DSP Daughterboard onto an MGC card

Table 11 lists the configuration options for Position 1 and 2.

Table 11
DSP Daughterboard configurations

Position 1 (DB1)	Position 2 (DB2)
DB-32 (card slot 11)	None
None	DB-32 (card slot 0)
DB-32 (card slot 11)	DB-32 (card slot 0)
DB-96 (card slot 11, 12, and 13)	None
DB-96 (card slot 11, 12, and 13)	DB-32 (card slot 0)
DB-128 (card slot 11, 12, 13 and 14)	DB-128 (card slot 0, 9, 10, 15)
Note: Only the PRI - Media Gateway MGC can house two DB-96 or DB-128 DSP daughter boards.	

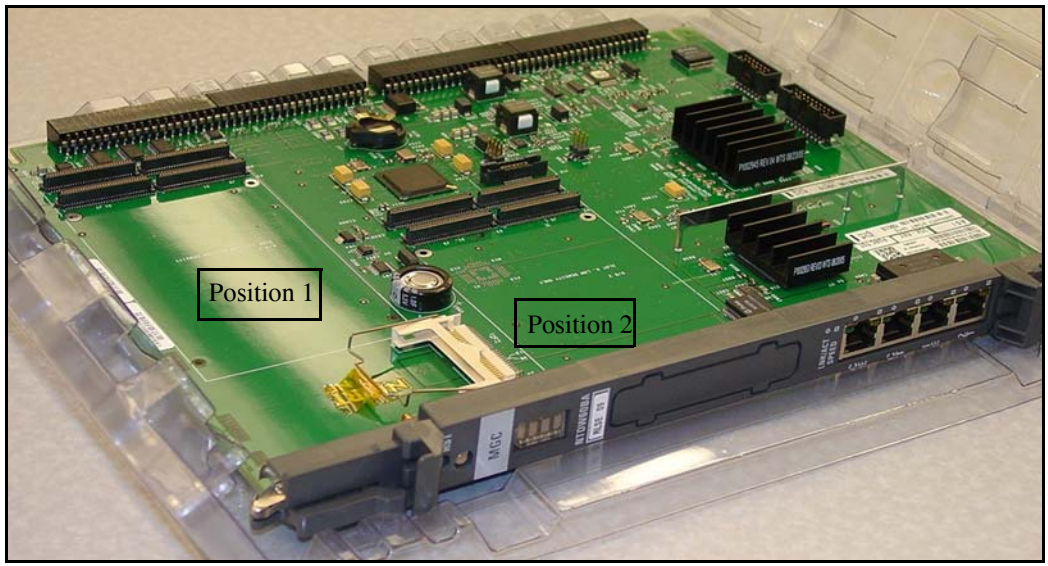
IMPORTANT!

Due to historical TN mapping for the Call Server SL1 software, even though the DSP channels will occupy Card 0 in the Media Gateways, the TN (l s c u) 000 0 00 00 (for example, unit 0 of card 0 in the first Media Gateway <supl sh> = 000 0) is not available.

A single channel (unit 0) is not available on the first Media Gateway ONLY if there is a 32 port DB installed in daughterboard position #2. If there is a 96 port DB installed in daughterboard position #1, all 96 channels are available. If there is a 32 port DB installed in daughterboard position #1, all 32 channels are available.

The following procedure describes how to install a DSP Daughterboard on an MGC card. See Figure 11.

Figure 11
DSP Daughterboard



Procedure 5
Installing a DSP Daughterboard

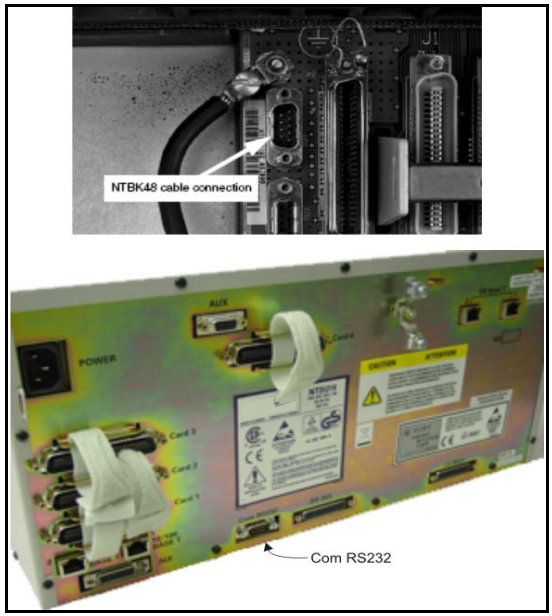
1. Place the MGC on a safe ESD surface.
2. Place the DSP DB in either DB position 1, position 2, or both depending on how the DB is configured from a TN perspective.
3. Ensure the DSP DB is securely attached to the MGC. (using supplied screws).

End of Procedure

Gateway Controller installation

Reuse the existing 3-port SDI cable (NTBK48) for installation of a Gateway Controller in a MG 1000E cabinet or chassis. Connect it to the SDI port on the cabinet and the COM RS232 port on the chassis. Figure on page 86 illustrates the two connectors.

Figure 12
NTBK48 connectors



The 3-port SDI cable is not required for a Gateway Controller installation in a MG 1010 chassis. The MG 1010 MGU card faceplate ports provide the serial connectors. Use the NTC325AAE6 serial port adapter with a MG 1010.

Gateway controller serial port capabilities

Table 12
Gateway Cotnroller serial port Capabilities

Port	Modem Support?	Used for initial Configuration?
SDI0 (TTY0)	Yes (requires null modem to connect to a TTY)	Yes
SDI1 (TTY1)	No (No hardware flow control)	No. Port 1 is not enabled during the initial configuration of the MGC.
SDI2 (TTY2)	No (No hardware flow control)	No (Only available after FPGA is enabled. Not available during initial configuration menu display)

Procedure 6
Installing the Gateway Controller card

The Gateway Controller replaces the existing SSC used in a small system cabinet or chassis.

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

IMPORTANT!

Please DESTROY or RETURN the SSC dongle to your local Avaya Repairs/Returns center upon confirmation of a successful upgrade. If the SSC system was using remote dongles for any expansion cabinets, please DESTROY or RETURN to your local Avaya Repairs/Returns center upon confirmation of a successful upgrade.

Note: If the upgrade fails, you will not be able to revert back to the old system without the SSC card and dongle.

For the Server, you must use the dongle provided with the software kit. Chassis Expander dongles may be disposed of, as they are no longer needed.

2 Connect the serial cable.

- 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 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.

3 Power on the Media Gateway.

- The Gateway Controller display shows BOOT.
- The power on self-test runs. The Gateway Controller display shows POST.
- The Gateway Controller display shows PASS if the self-test is successful. Otherwise the MGC display shows an Exxx error code.
- The Gateway Controller loads the application software. The MGC display shows LOAD.

End of Procedure

The CP MG card functions as a Gateway Controller and the Server while occupying slot 0 in a Media Gateway. The preceding procedure allows you to connect to the Gateway Controller portion of the CP MG card. To install and connect a CP MG card as a Server, see “Installing the CP MG card” on page 97.

Gateway Controller configuration

Use Procedure 7 to configure the Gateway Controller through CLI.

Procedure 7
Configuring the Gateway Controller

Initial configuration of the Gateway Controller is command line ONLY.

The Gateway Controller ships 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 exists, use <CTRL>L<CTRL>D<CTRL>B, (provide LDB username and password to access LDB). Invoke the mgcsetup command.

You can access mgcsetup after you logon to one of the following shells:

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

1 If IP information already exists on the Gateway Controller, input the CLI command **`mgcsetup`**.

2 Enter network IP information at the mgcsetup menu:

```
ELAN IP : 192.168.3.33
ELAN subnet mask : 255.255.255.0
ELAN gateway IP : 192.168.3.1
Primary CS IP : 192.168.3.32
```

Note: Depending on the date of manufacture of a MGC card, the Gold image may prompt for TLAN and/or secondary call server information. If these prompts appear they can be ignored. This information is configured through EM and is retrieved by the Gateway Controller at registration. The new MGC loadware after upgrade will not have these prompts.

3 Enter port and security parameters, if required:

Note: This step is only necessary if you are using advanced security features.

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

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

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

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

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

IMPORTANT!

Avaya recommends that you disable ELAN security during system installation.

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

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

4 Review the network information and enter “y” to confirm (see Figure 13 on page 92).

Figure 13
Network information

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

Hostname              : IPMG0-0
ELAN IP               : 192.168.3.33
ELAN subnet mask      : 255.255.255.0
ELAN gateway IP       : 192.168.3.1
Primary CS IP         : 192.168.3.32
TLAN set to auto negotiate.
ELAN set to auto negotiate.
ELAN security Disabled

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

WARNING

Service Interruption

IP changes to the MGC require a reboot. A service interruption can occur.

5 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.

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

Rebooting the Gateway Controller

The Gateway Controller 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 LD 143. The default values are set so that the upgrade starts automatically once registration is achieved with the Call Server.

The loadware files are updated on the Gateway Controller. These updates are downloaded from the Call Server.

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

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

-> 0x86f8bc30 (tMGCInst):

Upgrading FPGA Loadware...

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

At this point configured Media Gateways synchronize with the Call Server.

Each Gateway Controller IP address must be configured in overlay 97. For more information, see *Avaya Communication Server 1000E Software Upgrades* (NN43041-458).

End of Procedure

Server card installation

The following procedure describes how to install the Server card in a Media Gateway.

MG 1010 slots 22 and 23 require the NTDW53 CP DC card, or NTDW99 CP PM card with metal faceplate. MG 1000E and MG 1010 slots 1-10 support NTDW53 CP DC cards, NTDW61 CP PM cards, and NTDW99 CP PM cards. If you require more than two Server cards in a MG 1010, you can install additional Server cards in slots 1-10.

The CP MG card occupies slot 0 in a Media Gateway.

Ensure that the Dip Switch (S5) is set to position 1 if using the CP PM as a Call Server or position 2 if using the card as a CP PM Signaling Server.

Procedure 8
Installing the CP PM or CP DC card

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

   Note 1: This first step is applicable only when the Server card is used as a Call Server.

   Note 2: For CP PM only, remove the retainer clip from the FMD slot when the card is used as a Signaling Server. The clip must be removed to prevent it from shorting out adjacent cards.

2. Ensure that the FMD is correctly inserted and locked in place.

3. Insert the Server card.

   - Slide the Server cardinto Slot 1 (or higher) of the MG 1000E cabinet or chassis.
   - Slide the Server card into Slot 22 or 23 of the MG 1010 chassis.

4. Lock the card into the faceplate latches.

5 Connect the serial cable.

- For a MG 1000E or MG 1010 with Server cards in slots 1-10, connect the 2-port SDI cable. The 50-pin Amphenol NTAK19EC connects to the back of the Media Gateway.
- For a MG 1010, connect a shielded CAT5 or better Ethernet cable to the NTC325AAE6 serial port adapter. Connect this cable to the MGU faceplate port labelled TTY0 for CP1 or CP2. CP1 is for slot 22, CP2 is for slot 23.
- Connect the opposite end of the serial cable with adapter to the serial port on the maintenence terminal.

Note: To connect a terminal to the Server card with a NTAK19EC cable, complete the following steps:

- Connect the NTAK19EC cable to the 50 pin MDF connector on the back of the desired Media Gateway.
- Connect a 25 pin to 9 pin straight through serial cable to the 25 pin DB connector at the end of the NTAK19EC cable (a female to female gender changer may be required). You must povide this adapter.
- Connect the other end of the 25 pin to 9 pin straight through serial cable to the serial port on the maintenance terminal.

End of Procedure

Figure 14
2-port SDI cable (NTAK19EC) cable

End of Procedure

Perform the following procedure to install and cable the CP MG card as a Server. An NTC325AAE6 serial port adapter kit is required.

Procedure 9
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 cabinet or chassis.
3. Lock the card in place with the faceplate latches.

4 Connect a CAT5 or better Ethernet cable to the TTY1 port on the CP MG faceplate.

5 Connect a NTC325AAE6 serial port adapter (DB-9 or DB-25) to the other end of the Ethernet cable.

6 Connect the Ethernet cable with adapter to a serial port on the maintenance terminal.

Note: 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.

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

8 Connect the ELAN cable:

- Connect one end of a shielded CAT5 or better Ethernet cable to the 1E (ELAN) port on the CP MG faceplate.
- Connect the other end of the Ethernet cable to the ELAN subnet of the CS 1000E system.

9 Connect the TLAN cable:

- Connect one end of a shielded CAT5 or better Ethernet cable to the 2T (TLAN) port on the CP MG faceplate.
- Connect the other end of the Ethernet cable to the TLAN subnet of the CS 1000E system.

10 Power on the Media Gateway.

End of Procedure

The preceding procedures enable you to upgrade the system one Media Gateway at a time. For each additional Media Gateway, repeat the necessary procedures to install a Gateway Controller and Server.

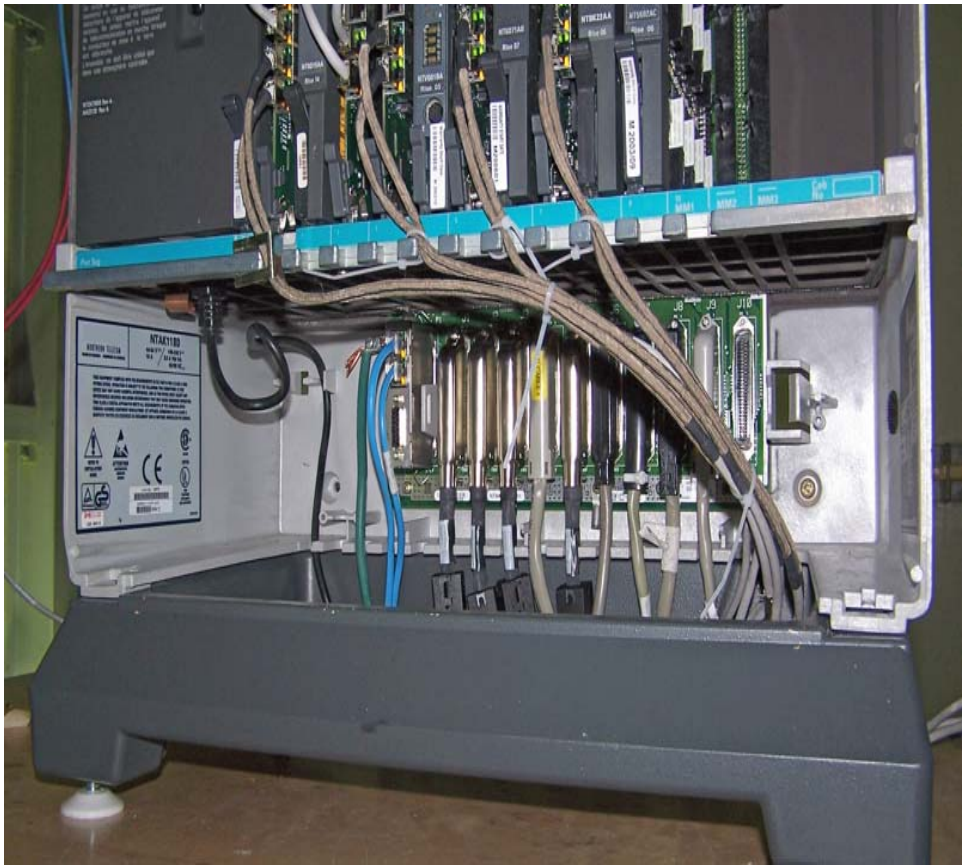
Card cabling

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

Guidelines for cabling an Option 11C cabinet

When you use an Option 11C Cabinet as a Media Gateway Cabinet, Avaya recommends you use shielded cables including shielded CAT5 cable for the ELAN and TLAN. You need to route the cables towards the right side of the cabinet, see Figure 15 on page 99.

Figure 15
Cabling an Option 11C cabinet



Gateway Controller cabling

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 16 on page 100 illustrates a Media Gateway chassis with a MGC connected directly to a Layer 2 switch. Figure 17 on page 101 illustrates a Media Gateway cabinet with MGC connected directly to the Layer 2 switch.

Figure 16
MGC MG Cable

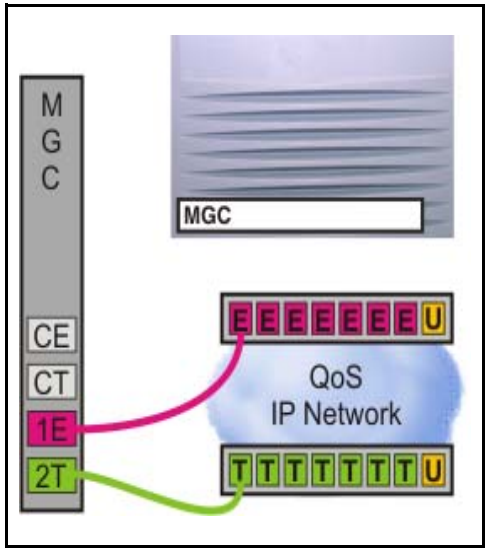
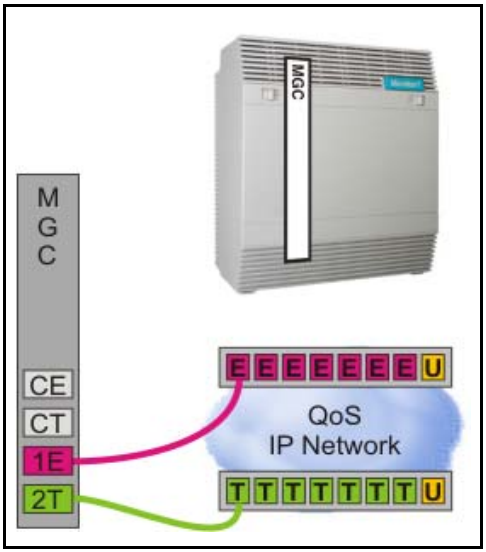


Figure 17
MGC Cabinet Cable



For more information on supported cabling options, see “Appendix C: Supported cabling options” on page 212

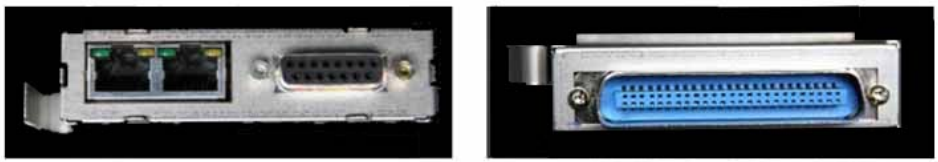
MGC Ethernet ports

The MGC card contains six auto negotiating Ethernet interfaces, four on the faceplate and two on the backplane. Figure 18 on page 102 shows the Ethernet connectors on the front of the MGC. The CE and CT ports are reserved for the Server card only. The CE connects to the ELAN port of the Server card, and the CT connects to the TLAN port of the Server card. The 1E and 2T ports must be attached to the external Layer 2 switch that is dedicated to the ELAN and TLAN subnets for the system.

The E and T ports on the backplane connector are accessible using the MG 1010 MGU faceplate ELAN and TLAN ports, the100BT breakout adapter in a Cabinet, or available through 10/100BaseT Ethernet connectors on the back of the Media Gateway. See Figure 19 on page 102.

Figure 18
MGC faceplate

Figure 19
Breakout adaptor



CP PM or CP DC card cabling

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 20 on page 103 illustrates a Media Gatweay chassis with a CP PM Call Processor connected directly to a Layer 2 switch. Figure 21 on page 104 illustrates a Media Gateway chassis with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 20
CP PM CP MG Cable

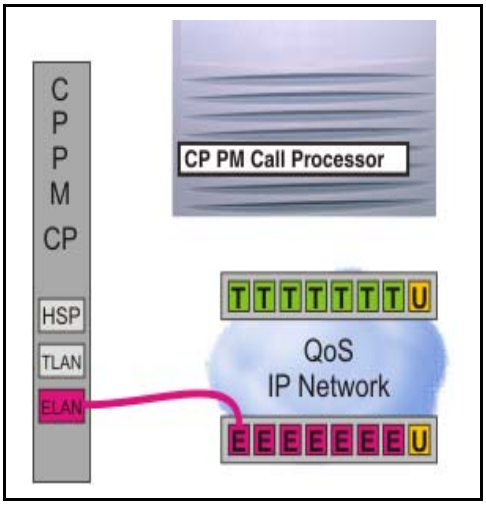


Figure 21
CP PM SS MG cable

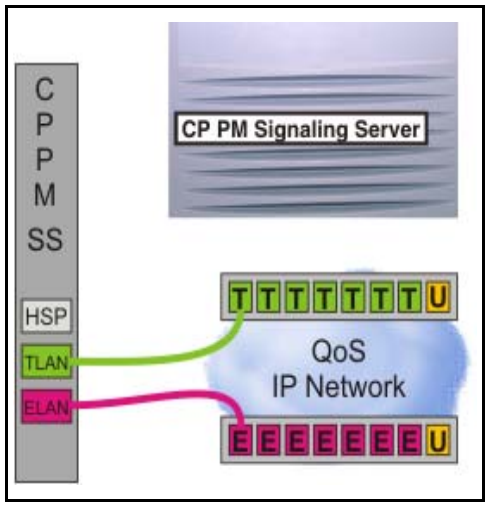


Figure 22 on page 105 illustrates a Media Gateway cabinet with CP PM Call Processor connected directly to a Layer 2 switch.

Figure 22
CP PM CP Cabinet cable

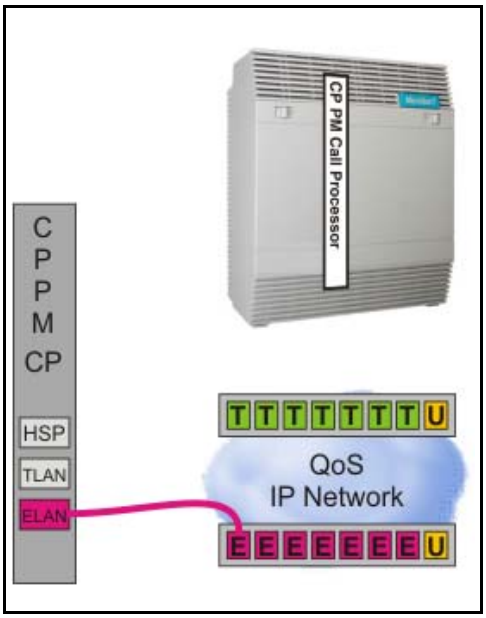
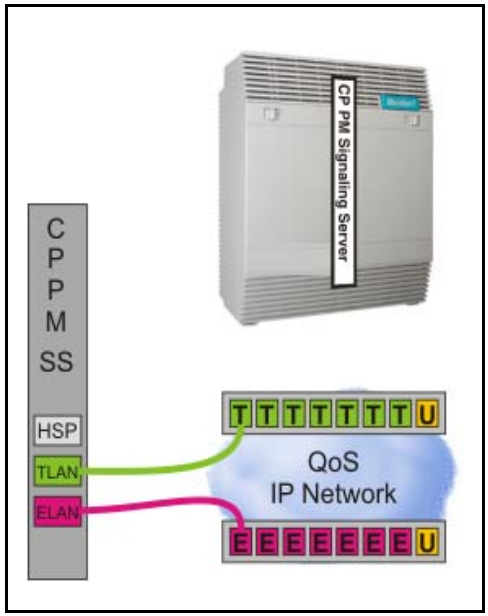


Figure 23 on page 106 illustrates a Mediai Gateway cabinet with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 23
CP PM SS Cabinet cable



For more information about supported cabling options, see "Appendix C: Supported cabling options" on page 212.

Once the cabling of the Gateway Controller and Server cards is complete, power up the system and proceed with the software upgrade.

For information about VxWorks software upgrades, see *Avaya Communication Server 1000E Software Upgrades* (NN43041-458).

For information about upgrades to a Co-resident Call Server and Signaling Server system, see *Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509).

For information about Linux software upgrades, see *Linux Base Platform and Applications Installation and Commissioning* (NN43001-315)

Upgrading a Call Server from CP PII to CP PIV

Contents

This chapter contains the following topics:

Introduction

This chapter provides instructions for performing a hardware upgrade from an Avaya Communication Server 1000E CP PII source platform to an Avaya CS 1000E VxWorks based CP PIV target platform.

Preparing for the upgrade

This document implements a “source- to-target” approach to performing an upgrade. It is important to correctly identify the source platform, target platform, and maintenance window required to perform the upgrade.

IMPORTANT!

This upgrade requires that the PC you are working from is equipped with a floppy disk drive and CF reader (or, if a CF reader is not available, a PCMCIA CF adaptor).

This chapter features check boxes indicating what condition the system should be in at that stage of the upgrade. If the system is not in the proper condition steps should be taken to correct this.

This section is written to maintain Dial Tone where possible and limit service interruptions.

Before attempting any software or hardware upgrade field personnel should follow the steps in Table 13 below:

Table 13
Prepare for upgrade steps

Procedure Step	Page
Planning	110
Upgrade Checklists	110
Preparing	111
Connecting a terminal	112
Printing site data	112
Performing a template audit	115
Backing up the database (data dump)	117

Planning

Planning for an upgrade involves the following tasks:

- Read and understand the current release Product Bulletin.
- Conduct a site inspection to determine proper power and grounding.
- Review the site profile to determine proper foot space if adding new columns or modules.
- Identify all applications (CallPilot, SCCS, IP, etc.) that are currently installed on the source platform.
- Identify and correct outstanding service problems.
- Verify the site log is updated with current trunking, call routing, application notes, and site contact information.
- Review all product bulletins and alerts that impact the site.
- Download a copy of the CP PIV customer database media converter tool. This tool is used to transfer the customer database from floppy disk to CF card.
- Request additional ELAN and TLAN network connections to allow for installation of additional MGC cards.
- Prepare a contingency plan for backing out of the upgrade.

DANGER OF ELECTRIC SHOCK

In a DC-powered system, power to the column can remain on during the following procedures. In an AC-powered system, however, power to the entire column *must* be shut down throughout the procedures.

Upgrade Checklists

Upgrade checklists can be found in the “Upgrade checklists” chapter on page 206. Engineers may print this section in order to facilitate the upgrade.

Preparing

IMPORTANT!

In a Campus configuration, as both cores may be physically separate, it is important to plan for required attendance at both core sites at some point in the upgrade.

Preparing for an upgrade involves the following tasks:

- Identify and become familiar with all procedures.
- Verify that all installed applications meet the minimum software requirements for the target platform.
- Determine and note current patch or Dep lists installed at the source platform.
- Determine required patch or Dep lists at the target platform for all system-patchable components (Call Server, Voice Gateway Media Cards, Signaling Servers and so on).
- Determine the required patches or DEP lists installed on all applications (CallPilot, Symposium Call Center Server, and so on).
- Determine and communicate the required maintenance window, contingency plan and the impact to the customer to complete the procedure.
- Perform an inventory on required software and hardware.
- Secure the source software and key code.
- Secure the target software and key code.
- Verify the new key code using the DKA program.
- Print site data.

Connecting a terminal

Procedure 10
Connecting a terminal

A maintenance terminal is required to access the Call Servers during the upgrade procedure.

1. Connect a terminal to the COM 1 port on the faceplate of CP PII card of the *inactive* Call Server.
2. The settings for the terminal are:
   - **a.** Terminal type: VT100
   - **b.** 9600 Baud
   - **c.** Data bits: 7
   - **d.** Parity: odd
   - **e.** Stop bits: 1
   - **f.** Flow control: none

   Note: If the telnet session is set to 7 odd 1 versus 8 none 1,the system messages generate before the INI prints, otherwise a portion of the database conversion reference of lost TN's does not appear.

End of Procedure

Printing site data

Print site data to preserve a record of the system configuration (Table 14 on page 113). Verify that all information is correct. Make corrections as necessary.

Note: Items marked with an asterisk (*) are required. Other items are recommended for a total system status.

Table 14
Print site data (Part 1 of 3)

Site data	Print command	
Terminal blocks for all TNs	LD 20	
	REQ	PRT
	TYPE	TNB
	TN	<cr>
	CDEN	<cr>
	CUST	<cr>
	DATE	<cr>
	PAGE	<cr>
	DES	<cr>
Directory Numbers	LD 20	
	REQ	PRT
	TYPE	DNB
	CUST	<cr>
Attendant Console data block for all customers	LD 20	LD 20
	REQ	PRT
	TYPE	ATT, 2250
	CUST	<cr>
*Customer data block for all customers	LD 21	LD 21
	REQ	PRT
	TYPE	CDB
	CUST	<cr>
Route data block for all customers	LD 21	
	REQ	PRT
	TYPE	RDB
	CUST	Customer number
	ROUT	<cr>
	ACOD	<cr>

Table 14
Print site data (Part 2 of 3)

Site data	Print command	
*Configuration Record	LD 22	
	REQ	PRT
	TYPE	CFN
*Software packages	LD 22	
	REQ	PRT
	TYPE	PKG
*Software issue, and tape ID	LD 22	
	REQ	ISS
	REQ	TID
* Peripheral software versions	LD 22	
	REQ	PRT
	TYPE	PSWV
Print configured D-channel information	LD 22	
	REQ	PRT
	TYPE	ADAN DCH
ACD data block for all customers	LD 23	
	REQ	PRT
	TYPE	ACD
	CUST	Customer Number
	ACDN	ACD DN (or <CR>)
Multi-purpose ISDN Signaling Processor (MISP) card	LD 27	
	REQ	PRT
	TYPE	MISP
	LOOP	loop number (0-158)
	APPL	<cr>
	PH	<cr>
Review the configured T1 information	LD 60	STAT

Table 14
Print site data (Part 3 of 3)

Site data	Print command	
DTI/PRI data block for all customers	LD 73	
	REQ TYPE	PRT DDB
Review the configured D-channel information	LD 96	STAT DCH
Print the configured host information	LD 117	PRT HOST (provides system IP addresses)
Superloops and XPEs	LD 97	
	REQ TYPE SUPL	CHG SUPL Vxxx V stands for a virtual superloop and xxx is the number of the virtual superloop. xxx = 0-252 in multiples of four for MG 1000E xxx = 96-112 in multiples of four for MG 1000T (See Table 29)
Note: Items marked with asterisks (*) are required printout for conversion. Other items are recommended for a total system status.		

Performing a template audit

A template audit (LD 01) reviews the templates in your system. Corrupted and duplicate templates are cleaned up. An example of the information generated during the audit is listed below.

Note: The template audit may take an extended period of time on large systems. Run the audit during a low traffic period.

CAUTION

Loss of Data

Do not abort this overlay until the audit is complete. If the overlay is interrupted, data will be corrupted.

LD 01 The audit begins as soon as LD 01 is entered.

TEMPLATE AUDIT

CONFIRM TEMPLATE AUDIT NOW? (Y/N)

STARTING PBX TEMPLATE SCAN

TEMPLATE 0001 USER COUNT LOW **CHECKSUM OK**

TEMPLATE 0002 USER COUNT HIGH **CHECKSUM OK**

TEMPLATE 0003 NO USERS FOUND

STARTING SL1 TEMPLATE SCAN

TEMPLATE 0001 USER COUNT OK **CHECKSUM OK**

•

•

TEMPLATE 0120 USER COUNT OK **CHECKSUM OK**

TEMPLATE AUDIT COMPLETE

Backing up the database (data dump)

To back up system data, perform a data dump of backup data to a floppy disk.

Procedure 11
Performing a data dump

1. Log into the system.
2. Insert a floppy disk into the active Core/Net floppy drive to back up the database.
3. Load the Equipment Data Dump Program (LD 43). At the prompt, enter:

   LD 43 Load program

4. When "EDD000" appears on the terminal, enter:

   EDD Begin the data dump

CAUTION

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. The messages "DATADUMP COMPLETE" and "DATABASE BACKUP COMPLETE" will appear once the data dump is complete.

   ******** Exit program

6 The message “Backup process to local Removable Media Device ended successfully” appears. Remove and label the floppy disk.

IMPORTANT!

Database backup information should be preserved for a minimum of 5 days.

End of Procedure

Performing the upgrade

Reviewing upgrade requirements

This section describes the *minimum* hardware required for CP PIV. Additional equipment can also be installed during the upgrade. Verify that *all* hardware has been received.

Before the upgrade, check that items on the order form are also on the packing slip. Check that all items have been received. If any items are missing, contact your supplier for replacements before you begin the upgrade.

WARNING

Service Interruption

DO NOT proceed with the upgrade if any of the required items are missing. All items must be received to complete the upgrade.

Checking required hardware

Table 15 lists the hardware required for the upgrade.

Table 15
Hardware requirements for CS 1000E upgrade

Order number	Description	Quantity per system
NT4N39	Call Processor Pentium IV	2
NTDU68AA	Drive Carrier Card blank faceplate replacement	2

Figure 24 on page 120 shows the CP PIV processor card side view. Figure 25 on page 121 shows the CP PIV processor card front view. Figure 26 on page 122 shows the CP PIV Drive Carrier Card blank faceplate replacement.

Figure 24
CP PIV card (side)

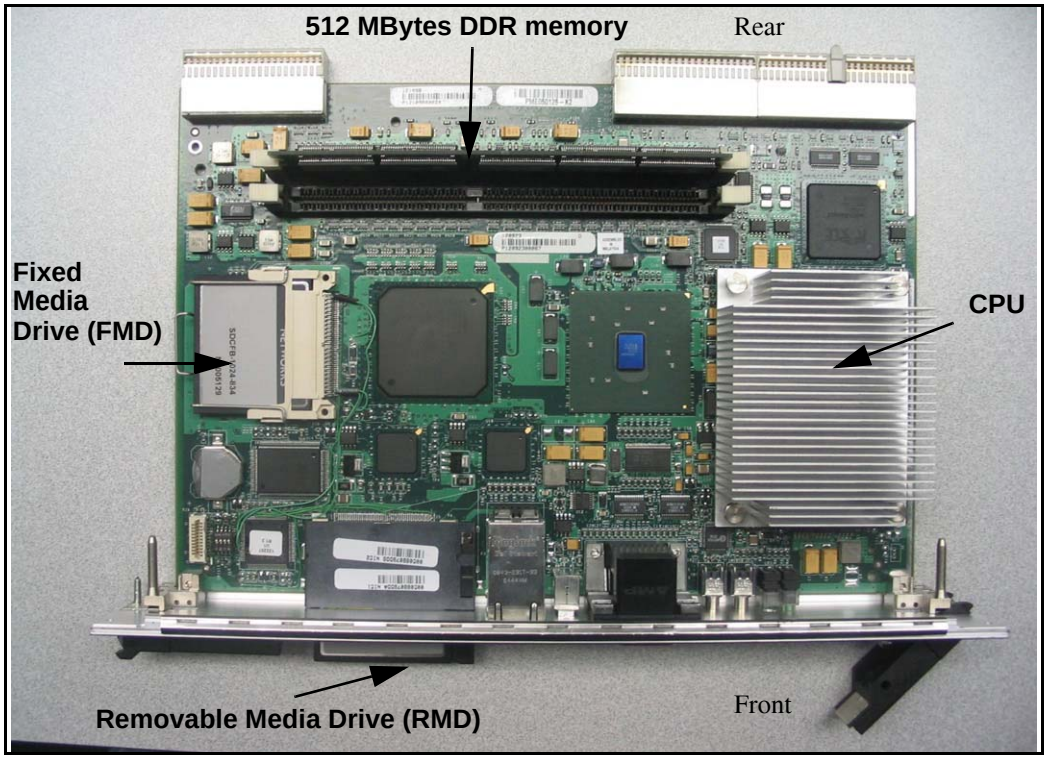


Figure 25
CP PIV card (front)

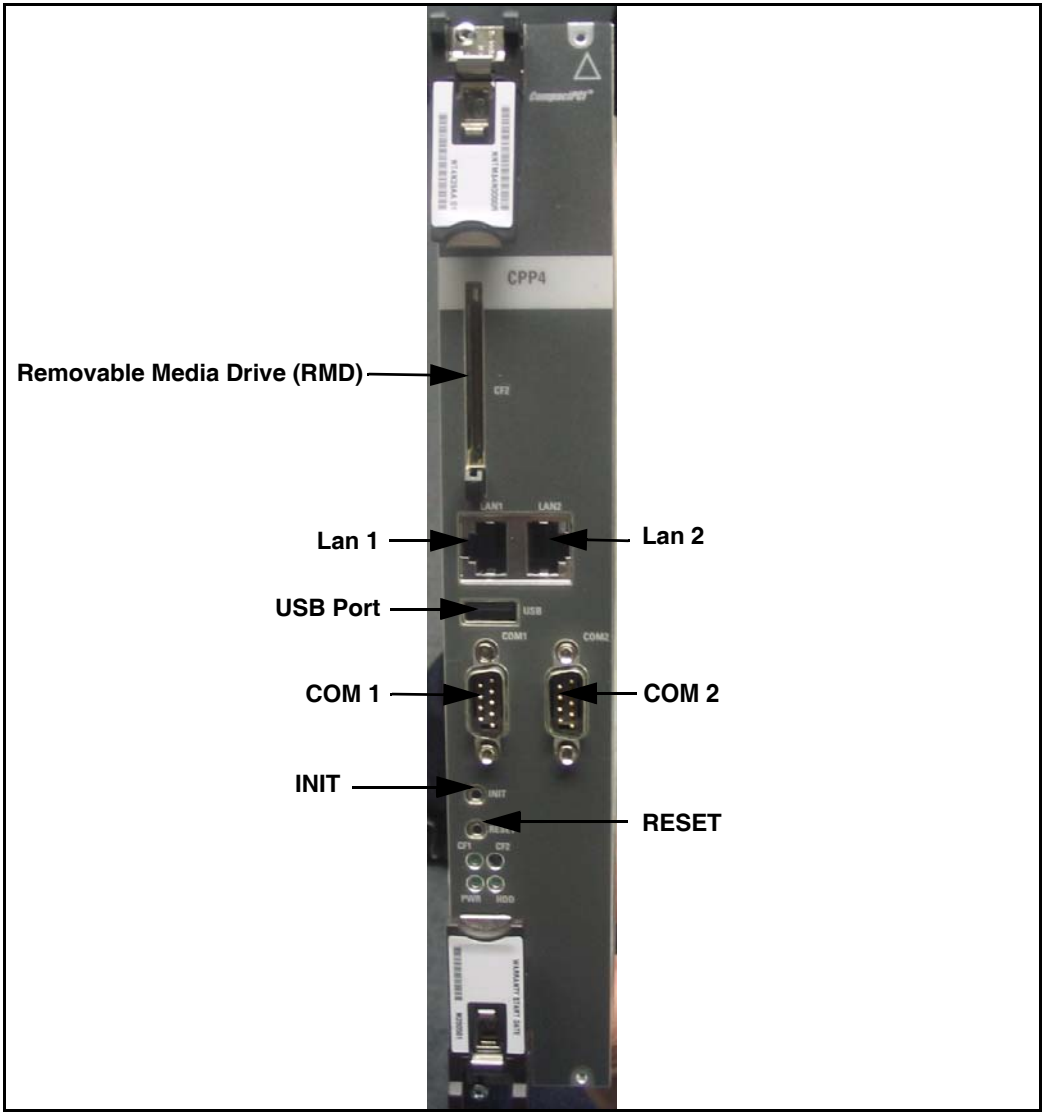


Figure 26
Avaya Communication Server 1000E CP PIV Drive Carrier Card blank faceplate replacement

Verifying CP PIV hardware

Verifying CP PIV card location

The NT4N39 CP PIV card is located in the CP slot (see Figure 25 on page 121).

The NTDU68AA blank faceplate is located at the slot next to the CP PIV card.

Upgrading Call Server 1

Procedure 12
Checking that Call Server 0 is active

To upgrade Call Server 1, verify that Call Server 0 is the active side performing call processing:

1 Verify that Call Server 0 is active.

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

2 If Core 1 is active, make Core 0 active:

SCPU	Switch to Call Server 0 (if necessary)
********	Exit program

End of Procedure

Procedure 13
Splitting the Call Servers

1 In Call Server 0,enter the SPLIT command from LD 135.

LD 135	Load program
SPLIT	Split the Call Servers
********	Exit program

The system is now in split mode, with call processing on Call Server 0.

End of Procedure

Removing Call Server 1 CP PII card and Drive Carrier Card

Procedure 14
Removing the Call Server 1 CP PII Processor and Drive Carrier Card

1 Disconnect and label the LAN1 and LAN 2 cables from the Call Server 1 CP PII card faceplate. See Figure 27 on page 126.

2 Disconnect and label the COM 1 and COM 2 cables from the Call Server 1 CP PII card faceplate. See Figure 27 on page 126.

3 Unscrew and unlatch the Call Server 1 CP PII card. See Figure 27 on page 126.

4 Remove the Call Server 1 CP PII card from its slot.

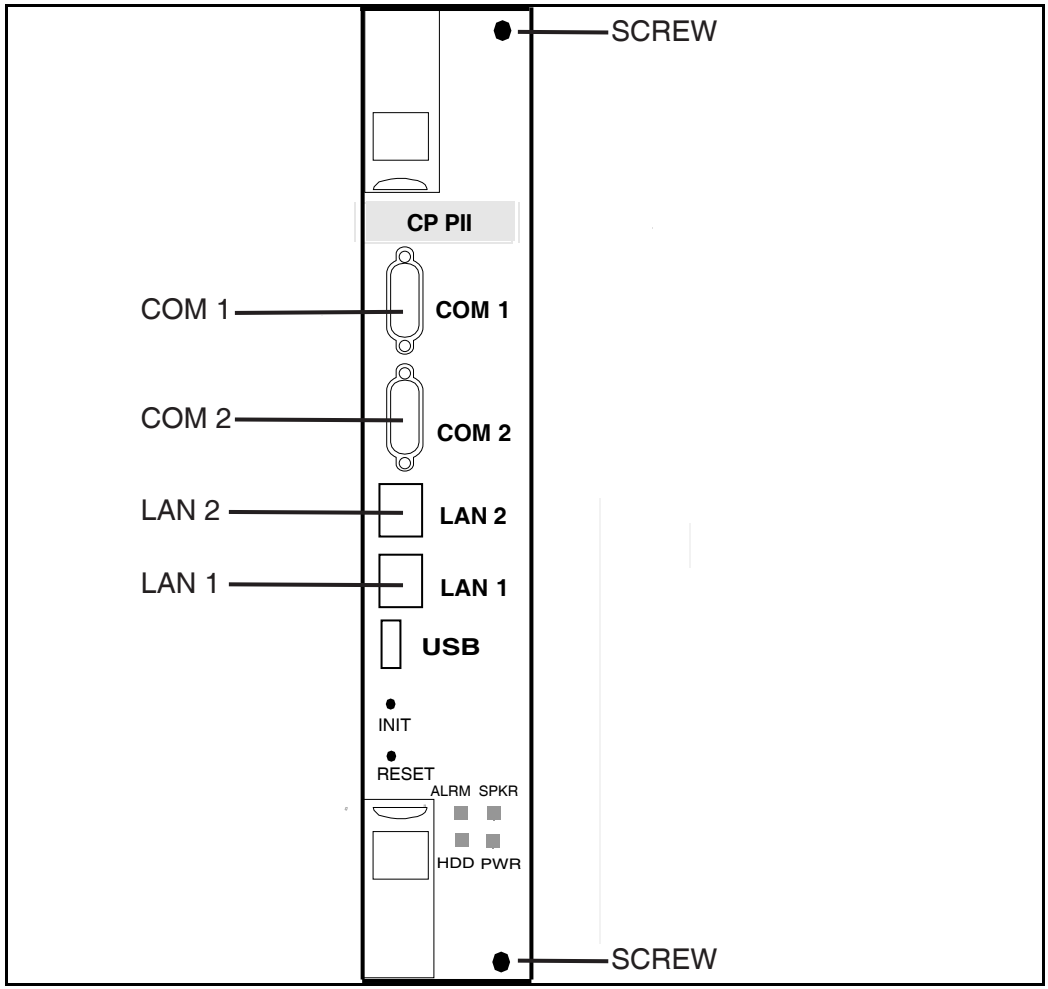
5 Unscrew, unlatch and remove the Drive Carrier Card from its slot. Retain the Drive Carrier Card (and database backup) in a safe and secure location until the successful completion of this upgrade.

IMPORTANT!

Database backup information, the Drive Carrier Card and original CP PII card should be preserved for a minimum of 5 days.

End of Procedure

Figure 27
CP PII faceplate connections

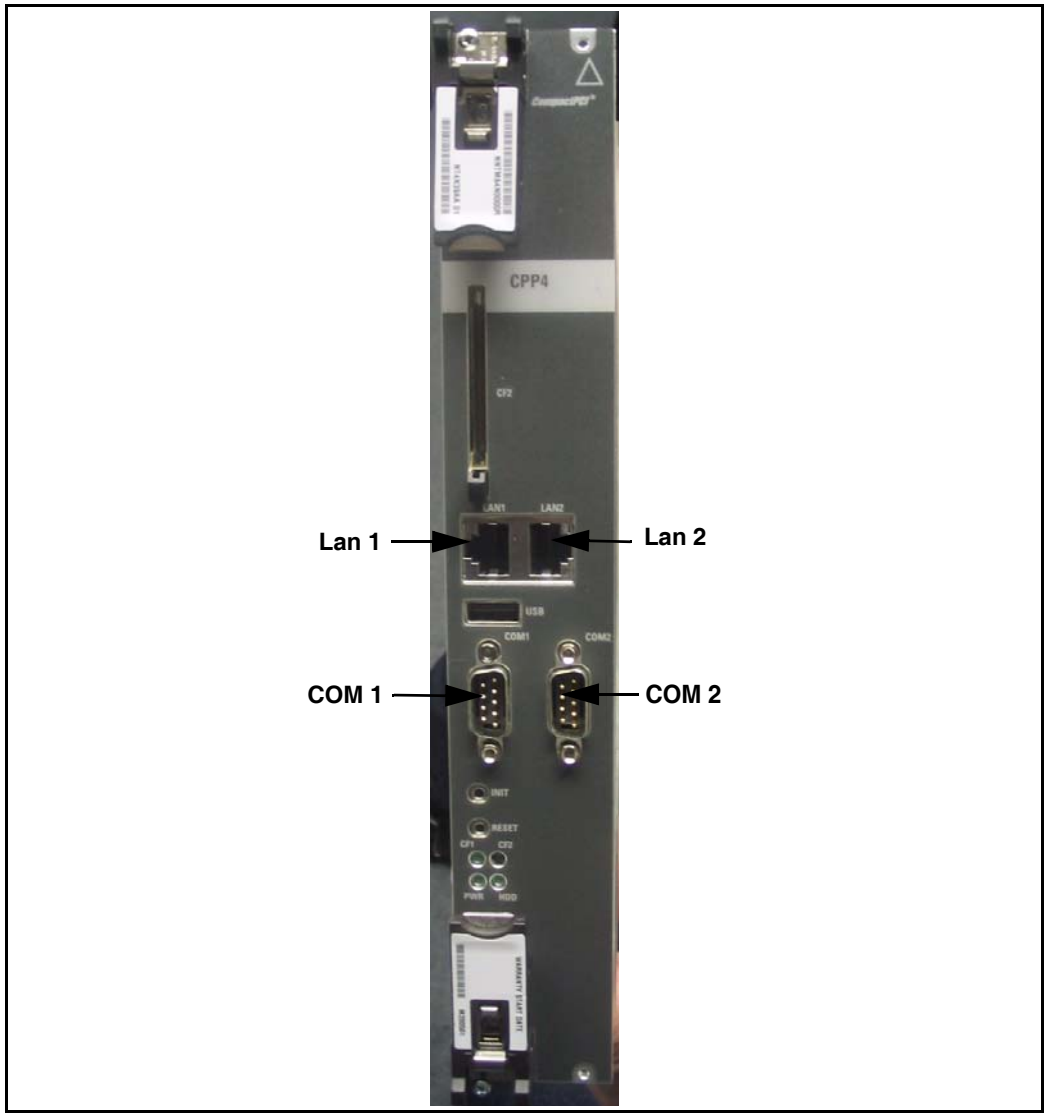


Installing Call Server 1 CP PIV card and blank faceplate

Procedure 15
Installing Call Server 1 CP PIV Processor and blank faceplate

1. Insert the CS 1000E CP PIV Drive Carrier Card blank faceplate replacement into the empty Drive Carrier Card slot using the supplied screws.
2. Insert the CP PIV card into the empty CP slot in Call Server 1. Seat the card and secure the latches and screws.
3. Attach the COM 1 and COM 2 cables to the CP PIV card faceplate. See Figure 28 on page 128.

Figure 28
CP PIV faceplate connections



4 Attach the LAN 1 and LAN 2 cables to the CP PIV card faceplate at this point in the upgrade.

End of Procedure

At this point, the hardware upgrade is complete for Call Server 1. To perform the software upgrade, or to upgrade to a High Availability system (which requires a second Call Server), see *Avaya Communication Server 1000E Software Upgrades* (NN43041-458). To install the hardware required for Call Server 0, repeat Procedure 10 through Procedure 15.

Upgrading a CP PII or CP PIV to CP PM

Contents

This section contains information on the following topics:

Task overview

The following task overview list provides a summary of steps to perform the hardware upgrade from an Avaya Communication Server 1000E CP PII or CP PIV source platform to an Avaya CS 1000E VxWorks based CP PM target platform.

- “Connecting a terminal” on page 134
- “Printing site data” on page 134
- “Performing a template audit” on page 137
- “Backing up the CP PII or CP PIV customer database” on page 139
- “Removing the SSC card” on page 151

- "Installing a DSP Daughterboard onto an MGC card" on page 152
- "Installing the MGC card" on page 154
- "Installing the CP PM card" on page 163
- "Cabling the MGC" on page 166
- "Cabling the CP PM card" on page 169

Preparing for the upgrade

This chapter implements a "source- to-target" approach to performing an upgrade. It is important to correctly identify the source platform, target platform, and maintenance window required to perform the upgrade.

IMPORTANT!

This upgrade requires that the PC you are working from is equipped with a CF reader (or, if a CF reader is not available, a PCMCIA CF adaptor).

This chapter features check boxes indicating what condition the system should be in at that stage of the upgrade. If the system is not in the proper condition steps should be taken to correct this.

This section is written to maintain Dial Tone where possible and limit service interruptions.

Before attempting any software or hardware upgrade field personnel should follow the steps in Table 16 below:

Table 16
Prepare for upgrade steps (Part 1 of 2)

Procedure Step	Page
Planning	132
Upgrade Checklists	133
Preparing	133

Table 16
Prepare for upgrade steps (Part 2 of 2)

Procedure Step	Page
Connecting a terminal	134
Printing site data	134
Performing a template audit	137
Backing up the CP PII or CP PIV customer database	139

Planning

Planning for an upgrade involves the following tasks:

- Read and understand the current release Product Bulletin.
- Conduct a site inspection to determine proper power and grounding.
- Review the site profile to determine proper foot space if adding new columns or modules.
- Identify all applications (CallPilot, SCCS, IP, etc.) that are currently installed on the source platform.
- Identify and correct outstanding service problems.
- Verify the site log is updated with current trunking, call routing, application notes, and site contact information.
- Review all product bulletins and alerts that impact the site.
- Download a copy of the customer database media converter tool. This tool is used to transfer the customer database from floppy disk to CF card if you are upgrading from a CP PII.
- Prepare a contingency plan for backing out of the upgrade.

DANGER OF ELECTRIC SHOCK

In a DC-powered system, power to the column can remain on during the following procedures. In an AC-powered system, however, power to the entire column *must* be shut down throughout the procedures.

Upgrade Checklists

Upgrade checklists can be found in the "Upgrade checklists" chapter on page 206. Engineers may print this section in order to facilitate the upgrade.

Preparing

IMPORTANT!

In a Campus configuration, as both cores may be physically separate, it is important to plan for required attendance at both core sites at some point in the upgrade.

Preparing for an upgrade involves the following tasks:

- Identify and become familiar with all procedures.
- Verify that all installed applications meet the minimum software requirements for the target platform.
- Determine and note current patch or Dep lists installed at the source platform.
- Determine required patch or Dep lists at the target platform for all system-patchable components (Call Server, Voice Gateway Media Cards, Signaling Servers and so on).
- Determine the required patches or DEP lists installed on all applications (Avaya CallPilot, Symposium Call Center Server, and so on).
- Determine and communicate the required maintenance window, contingency plan and the impact to the customer to complete the procedure.
- Perform an inventory on required software and hardware.
- Determine if additional ELAN and TLAN network connections are required for the installation of MGC cards.
- Verify that the target CP PM card can support CS 1000 Release 7.6.
- Secure the source software and key code.
- Secure the target software and key code.

- Verify the new key code using the DKA program.
- Print site data.

Connecting a terminal

Procedure 16
Connecting a terminal

A maintenance terminal is required to access the Call Servers during the upgrade procedure.

1 Connect a terminal to the COM 1 port on the faceplate of the CP PII or CP PIV card of the *inactive* Call Server.

2 The settings for the terminal are:

a. Terminal type: VT100

b. 9600 Baud

c. Data bits: 7

d. Parity: odd

e. Stop bits: 1

f. Flow control: none

Note: If the telnet session is set to 7 odd 1 versus 8 none 1,the system messages generate before the INI prints, otherwise a portion of the database conversion reference of lost TN's does not appear.

End of Procedure

Printing site data

Print site data to preserve a record of the system configuration (Table 17 on page 135). Verify that all information is correct. Make corrections as necessary.

Note: Items marked with an asterisk (*) are required. Other items are recommended for a total system status.

Table 17
Print site data (Part 1 of 3)

Site data	Print command	
Terminal blocks for all TNs	LD 20	
	REQ	PRT
	TYPE	TNB
	TN	<cr>
	CDEN	<cr>
	CUST	<cr>
	DATE	<cr>
	PAGE	<cr>
	DES	<cr>
Directory Numbers	LD 20	
	REQ	PRT
	TYPE	DNB
	CUST	<cr>
Attendant Console data block for all customers	LD 20	LD 20
	REQ	PRT
	TYPE	ATT, 2250
	CUST	<cr>
*Customer data block for all customers	LD 21	LD 21
	REQ	PRT
	TYPE	CDB
	CUST	<cr>
Route data block for all customers	LD 21	
	REQ	PRT
	TYPE	RDB
	CUST	Customer number
	ROUT	<cr>
	ACOD	<cr>

Table 17
Print site data (Part 2 of 3)

Site data	Print command	
*Configuration Record	LD 22	
	REQ	PRT
	TYPE	CFN
*Software packages	LD 22	
	REQ	PRT
	TYPE	PKG
*Software issue, and tape ID	LD 22	
	REQ	ISS
	REQ	TID
* Peripheral software versions	LD 22	
	REQ	PRT
	TYPE	PSWV
Print configured D-channel information	LD 22	
	REQ	PRT
	TYPE	ADAN DCH
ACD data block for all customers	LD 23	
	REQ	PRT
	TYPE	ACD
	CUST	Customer Number
	ACDN	ACD DN (or <CR>)
Multi-purpose ISDN Signaling Processor (MISP) card	LD 27	
	REQ	PRT
	TYPE	MISP
	LOOP	loop number (0-158)
	APPL	<cr>
	PH	<cr>
Review the configured T1 information	LD 60	STAT

Table 17
Print site data (Part 3 of 3)

Site data	Print command	
DTI/PRI data block for all customers	LD 73	
	REQ TYPE	PRT DDB
Review the configured D-channel information	LD 96	STAT DCH
Print the configured host information	LD 117	PRT HOST (provides system IP addresses)
Superloops and XPEs	LD 97	
	REQ TYPE SUPL	CHG SUPL Vxxx V stands for a virtual superloop and xxx is the number of the virtual superloop. xxx = 0-252 in multiples of four for MG 1000E xxx = 96-112 in multiples of four for MG 1000T (See Table 29)

Note: Items marked with asterisks (*) are required printout for conversion. Other items are recommended for a total system status.

Performing a template audit

A template audit (LD 01) reviews the templates in your system. Corrupted and duplicate templates are cleaned up. An example of the information generated during the audit is listed below.

Note: The template audit may take an extended period of time on large systems. Run the audit during a low traffic period.

CAUTION

Loss of Data

Do not abort this overlay until the audit is complete. If the overlay is interrupted, data will be corrupted.

LD 01 The audit begins as soon as LD 01 is entered.

TEMPLATE AUDIT

CONFIRM TEMPLATE AUDIT NOW? (Y/N)

STARTING PBX TEMPLATE SCAN

TEMPLATE 0001 USER COUNT LOW CHECKSUM OK

TEMPLATE 0002 USER COUNT HIGH CHECKSUM OK

TEMPLATE 0003 NO USERS FOUND

STARTING SL1 TEMPLATE SCAN

TEMPLATE 0001 USER COUNT OK CHECKSUM OK

•

•

TEMPLATE 0120 USER COUNT OK CHECKSUM OK

TEMPLATE AUDIT COMPLETE

Backing up the CP PII or CP PIV customer database

To back up call server data, perform a data dump to backup the customer database to floppy on CP PII or Compact Flash (CF) on CP PIV.

Procedure 17
Performing a data dump to backup the customer database:

1 Log into the system.

2 Insert the appropriate backup media. Perform **a** for CP PII. Perform **b** for CP PIV.

a. Insert a floppy disk into the active Core/Net floppy drive to back up the database.

b. Insert a CF card into the active Core/Net RMD slot to back up the database.

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

LD 43	Load program

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

EDD	Begin the data dump

CAUTION

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 The messages “DATADUMP COMPLETE” and “DATABASE BACKUP COMPLETE” will appear once the data dump is complete.

****	Exit program

6 The message “Backup process to local Removable Media Device ended successfully” appears. Remove and label the floppy disk or CF card.

IMPORTANT!

Database backup information should be preserved for a minimum of 5 days.

End of Procedure

Note: Before attempting any upgrade, the loop, shelf, and side must be verified.

Once you have completed the backup and archive of the Call Server customer database, shut down the system and remove the backup media. You are now ready to install the hardware.

Transferring the CP PII database from floppy disk to CF card

You must convert the CP PII floppy disk backup to a CF card. The CP PM card requires a CF card with backup data for restoration. To transfer using the customer database media converter tool, see Procedure 18 on page 141.

Transferring the database from floppy disk to CF card (customer database media converter tool)

The floppy disk that contains the backed up customer database needs to be transferred to a Compact Flash (CF) card. Avaya recommends you use the extra CF card included with the Software Install Kit.

IMPORTANT!

This upgrade requires that the PC you are working from is equipped with a floppy disk drive and CF reader (or, if a CF reader is not available, a PCMCIA CF adaptor).

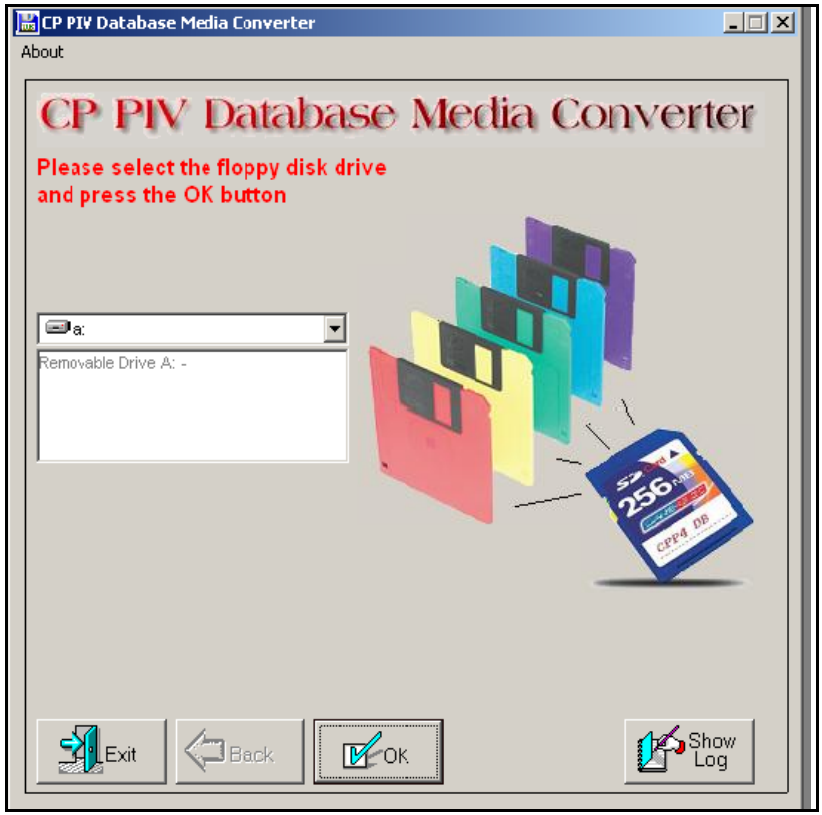
Procedure 18
Transferring the customer database from floppy disk to CF

1 Insert the floppy disk containing the backed up customer database from Procedure 17 on page 139.

2 Insert a CF card (there is one blank one included in the Software Install Kit) into the CF reader or PCMCIA CF adapter.

3 Start the customer database media converter tool. The first screen (Figure 29 on page 141) prompts you to select the correct drive letter for the floppy disk drive.

Figure 29
Select the floppy disk drive



4 Insert the the floppy disk (diskette 1) and click OK (see Figure 30 on page 142).

Figure 30
Insert diskette 1

5 After verifying the database on the floppy disk, the utility prompts you to select the CF drive (see Figure 31 on page 143).

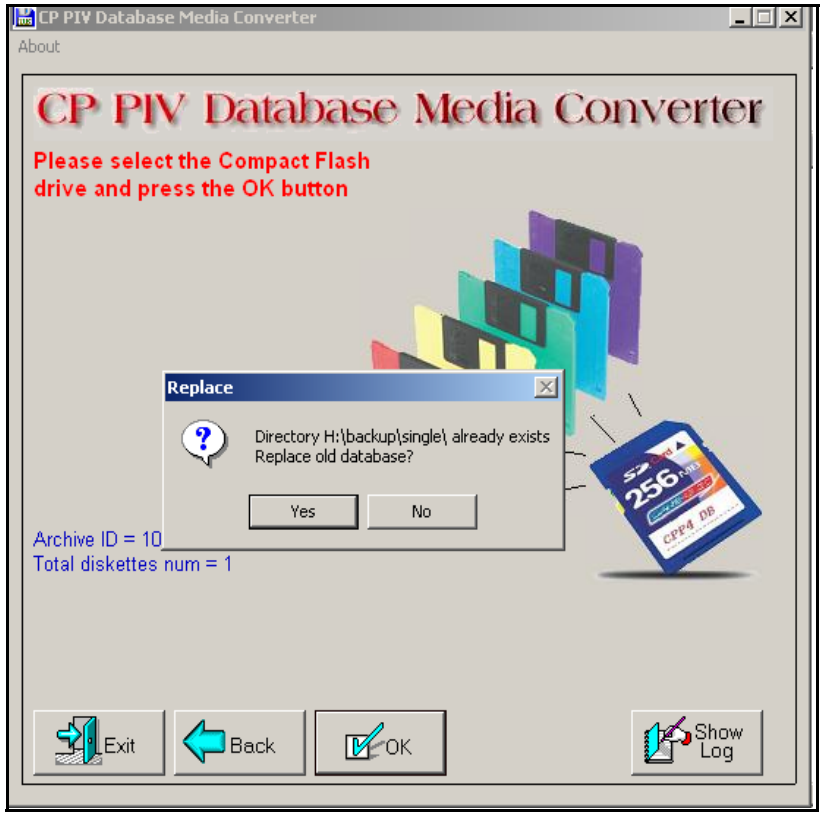
Figure 31
Select the CF drive

6 At this point, 2 options are available:

a. If the CF card already contains a previously backed-up database, a dialog box appears (see Figure 32 on page 144). Click yes to replace old database.

b. If the CF card is blank, the database is backed up to the CF card.

Figure 32
Replace database on CF drive



7 The utility completes the transfer to CF and prompts you to copy another or EXIT (see Figure 32 on page 144).

Figure 33
Copy another or exit

End of Procedure

Installing the cards

Hardware Upgrade Task Overview

To install the hardware for a CP PM upgrade, perform the following steps:

1. Power down the CP PII or CP PIV Call Server.
2. Remove any SSC cards as described in Procedure 19 on page 151.
3. Install the DSP Daughterboard on the MGC card as described in Procedure 20 on page 154.
4. Install the MGC card as described in Procedure 21 on page 156.
5. Install the CP PM as described in Procedure on page 163.
6. Cable the cards as shown in “Cabling the cards” on page 165.
7. Power up the Media Gateway.
8. Enter the ‘mgcsetup’ menu and configure the IP parameters, then reboot the MGC.

If the Centralized Software Upgrade (CSU) feature is enabled on the Call Server, the firmware for the MGC is downloaded automatically (or if the internal Compact Flash is blank), otherwise initiate the firmware download using Overlay 143 commands.

Media Gateway slot locations

A Media Gateway performs functions under the control of the Avaya Communication Server 1000E core call server. Traditionally, this core call server was a CP PII or CP PIV in its own call server cabinet or chassis; however, the CP PM call server sits in one of the Media Gateway slots.

The CP PM Call Server interfaces with the Media Gateway through the Gateway Controller using the ELAN interface, and therefore does not require backplane connectivity (other than power and slot ID).

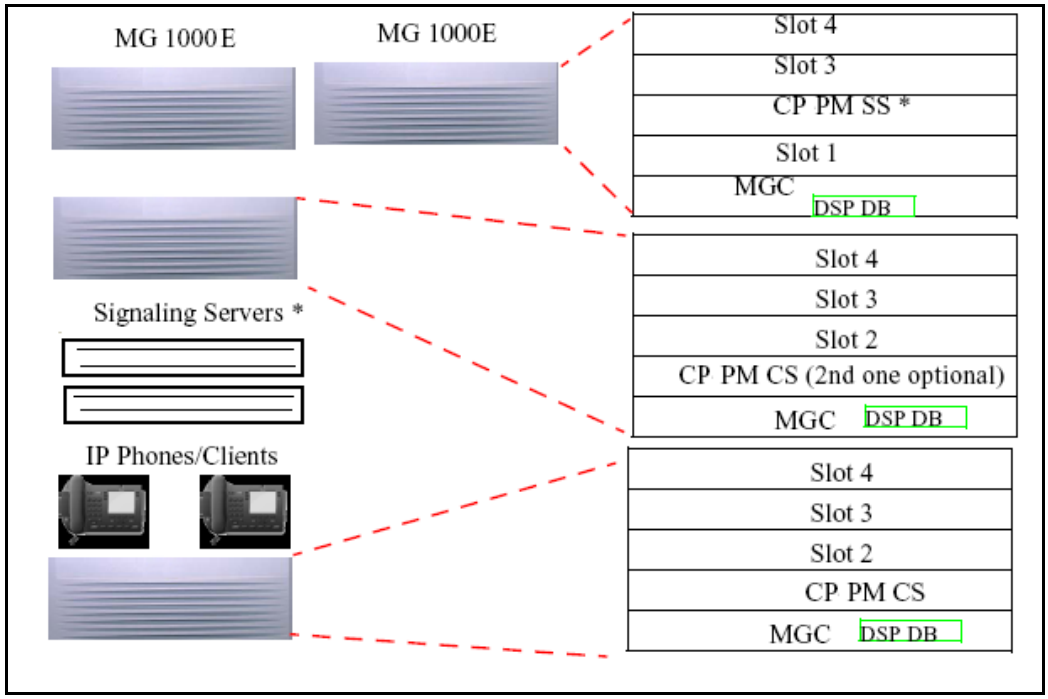
Media Gateway 1000E

The following rules apply to the placement of the CP PM cards in a Media Gateway 1000E:

- The CP PM Call Server cannot be placed in slot 0 of any Media Gateway. Slot 0 is reserved for the Gateway Controller.
- To allow for ease of cabling, the CP PM call server may be placed in slots 1 through 4 of the MG 1000E chassis, with the exception of the Option 11C Mini. The Option 11C Mini cannot have a CP PM card installed in slot 4 as this slot was originally allocated for the 48 port DLC only.
- The CP PM Signaling Server may be placed in slots 1 through 4 (see Figure 34 on page 148) or in another chassis if necessary.
- If utilizing the Campus Redundancy High Availability Call Server option, place the two CP PM call servers in separate Chassis' to allow for increased survivability.

Once the upgrade is complete, a typical SA MG 1000E chassis system will resemble Figure 34 on page 148 with an MGC in slot 0, and a CP PM call server and signaling server in the main chassis. The additional Media Gateways contain Gateway Controller cards only for an SA configuration.

Figure 34
MG 1000E chassis system



*—Signaling Server may be one of the following:

- CP PM card
- CP DC card
- Commercial off-the-shelf (COTS) server

Server cards reside in a Media Gateway, COTS servers are separate 1U rack mount servers.

You must activate the High Speed Pipe package (410) to install any redundancy options. For more information, see “Appendix A: Upgrading to High Availability” on page 202.)

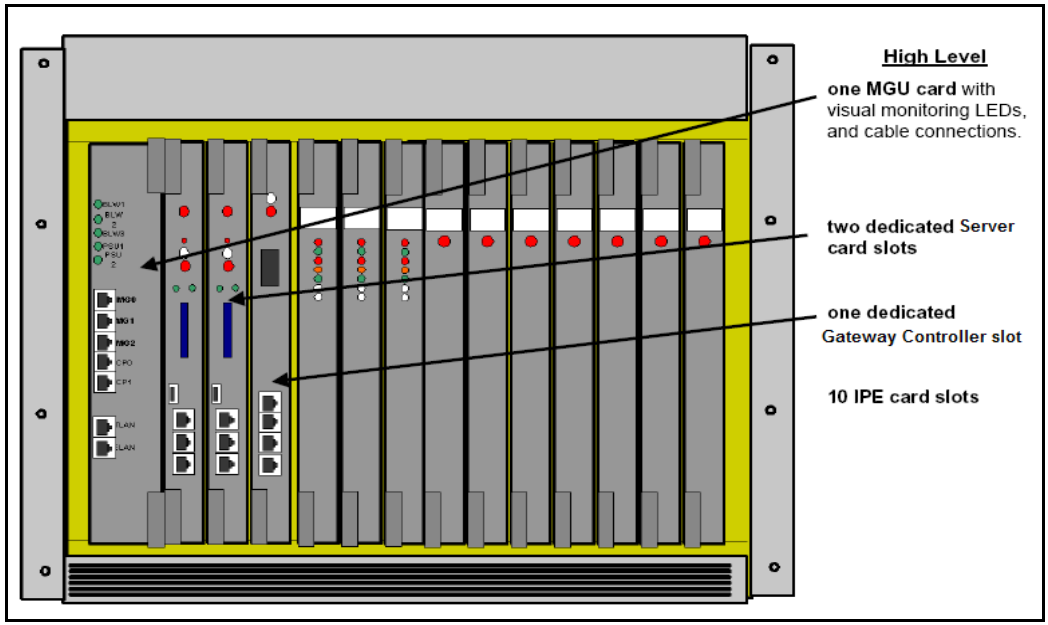
Media Gateway 1010

The following rules apply to the placement of the CP PM cards in the Media Gateway 1010:

- When facing the front of the MG 1010, from left to right is MGU slot 21, Server card slots 22and 23, Gatewy Controller slot 0, a metal divider, and IPE slots 1 to 10.
- The CP PM card cannot be placed in slot 0 of any Media Gateway. Slot 0 is reserved for the Gateway Controller.
- The MG 1010 provides dedicated slots 22 and 23 for Server cards
- The MG 1010 supports a 12 CP PM configuration. A maximum of ten additional CP PM cards can be placed in IPE slots 1 through 10. CP PM cards in slots 1-10 of a MG 1010 require the NTAK19EC for serial connections.
- An MG 1010 with greater than five but less than 12 CP PM cards requires a blank card assembly kit (NTC350AAE6) for EMC containment. Five blank cards are included in the blank card assembly kit.
- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM Call Servers in separate chassis' to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

Figure 35 on page 150 shows a SA Media Gateway 1010 chassis system with an MGC in slot 0, a CP PM Call Server, and a CP PM Signaling Server in the main chassis.

Figure 35
MG 1010 chassis system overview



You must activate the High Speed Pipe package 410 to install any redundancy options. For more information, see “Appendix A: Upgrading to High Availability” on page 202.)

Media Gateway Extended Peripheral Equipment Controller (MG XPEC) card

You can convert NT8D37 Avaya Communication Server 1000M and Meridian 1 large system IPE modules into CS 1000E Media Gateways with the 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 Avaya CS 1000M system to a CS 1000E system. The MG XPEC card converts one IPE module into two Media Gateway shelves (type MGX) for use in a CS 1000E system.

The following rules apply to the placement of the CP PM cards in an IPE module with MG XPEC card:

- The CP PM Call Server cannot be placed in the controller slot. The controller slot is reserved for the MG XPEC.
- The CP PM Call Server can be placed inslots 0 through 7 on the left and right side or the IPE module. You renumber the IPE module right side slots 8 to 15 as 0 to 7 with a new label included in the MG XPEC cable kit. CP PM cards in an IPE module require the NTAK19EC for serial connections.
- If utilizing the Campus Redundancy High Availability (HA) Call Server option, place the two CP PM Call Servers in separate IPE modules to allow for increased survivability. HA is not supported on a Co-resident Call Server and Signaling Server system.

For more information about converting an NT8D37 IPE module into Media Gateways with an NTDW20 MG XPEC card, see *Avaya Communication Server 1000M and Meridian 1 Planning and Engineering* (NN43021-220).

For information about the installion and cabling of an MG XPEC card, see *Avaya Communication Server 1000E: Installation and Commissioning* (NN43041-310).

Removing the SSC card

Procedure 19
Removing the SSC Card

1. Power down the system.
2. Unlatch the SSC card.

3 Remove the SSC card from its slot.

IMPORTANT!

The SSC card and dongle should be preserved for a minimum of five days.

It is illegal to continue to run the system software on the existing SSC card. Please DESTROY or RETURN the SSC dongle to your local Avaya Repairs/Returns center upon confirmation of a successful upgrade. No further orders will be accepted for the serial number since it will be decommissioned and tracked in Avaya's database.

Note: If the upgrade fails, you will not be able to revert back to the old system without the SSC card and dongle.

End of Procedure

Installing a DSP Daughterboard onto an MGC card

Table 18 lists the configuration options for Position 1 and 2.

Table 18
DSP Daughterboard configurations

Position 1 (DB1)	Position 2 (DB2)
DB-32 (card slot 11)	None
None	DB-32 (card slot 0)
DB-32 (card slot 11)	DB-32 (card slot 0)
DB-96 (card slot 11, 12, and 13)	None
DB-96 (card slot 11, 12, and 13)	DB-32 (card slot 0)
DB-128 (card slot 11, 12, 13 and 14)	DB-128 (card slot 0, 9, 10, and 15)
Note: Only the PRI - Media Gateway MGC can house two DB-96 or DB-128 DSP daughterboards.	

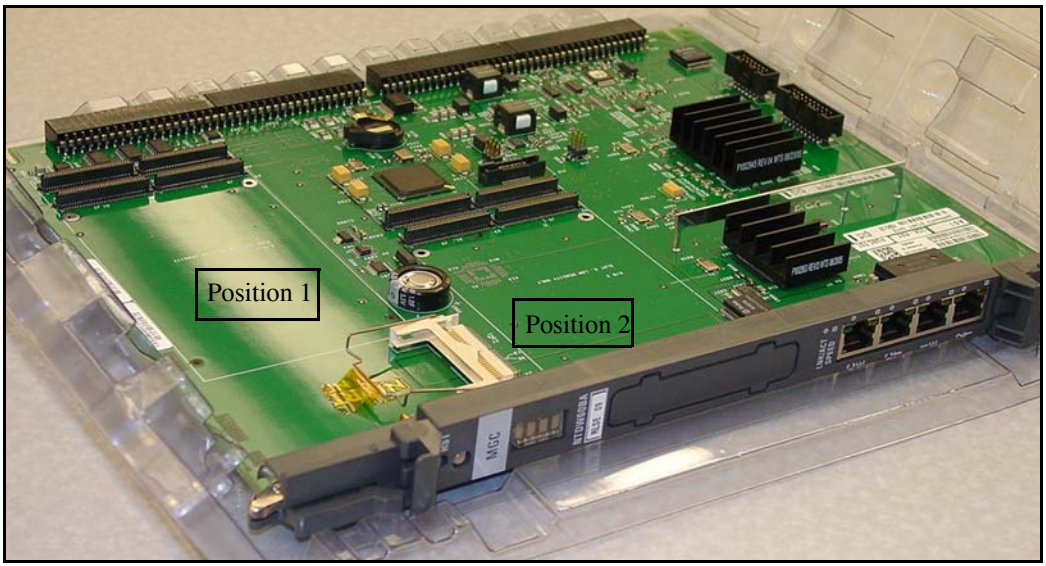
IMPORTANT!

Due to historical TN mapping for the Call Server SL1 software, even though the DSP channels will occupy Card 0 in the Media Gateways, the TN (l s c u) 000 0 00 00 (ie unit 0 of card 0 in the first Media Gateway <supl sh> = 000 0) is not available.

A single channel (unit 0) is not available on the first Media Gateway ONLY if there is a 32 port DB installed in daughterboard position #2. If there is a 96 port DB installed in daughterboard position #1, all 96 channels are available. If there is a 32 port DB installed in daughterboard position #1, all 32 channels are available.

The following procedure describes how to install a DSP Daughterboard on an MGC card. See Figure 36.

Figure 36
DSP Daughterboard



Procedure 20
Installing a DSP Daughterboard

1 Place the MGC on a safe ESD surface.

2 Place the DSP DB in either DB position 1, position 2, or both depending on how the DB is configured from a TN perspective.

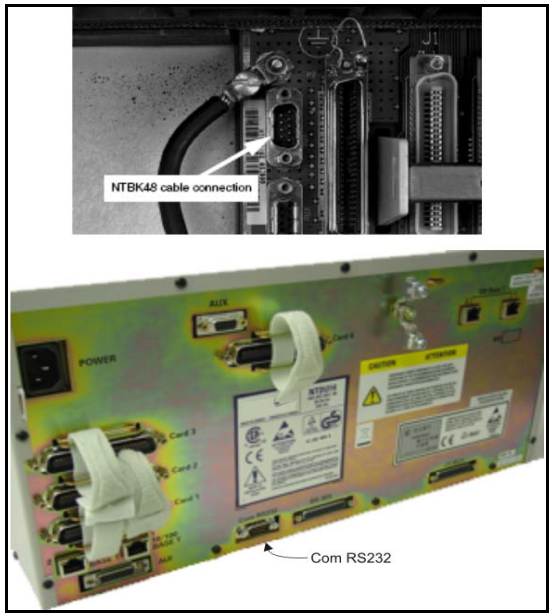
3 Ensure the DSP DB is securely attached to the MGC. (using supplied screws).

End of Procedure

Installing the MGC card

Reuse the existing 3-port SDI cable (NTBK48) for installation of a MGC in a MG 1000E chassis. Connect it to the COM RS232 port on the chassis. Figure 37 on page 154 illustrates the two connectors.

Figure 37
NTBK48 connectors



The 3-port SDI cable is not required for a MGC installation in a MG 1010 chassis. The MG 1010 MGU card provides a the serial connection. Use the NTC325AAE6 serial cable kit with a MG 1010.

MGC serial port capabilities

Table 19 on page 155 shows the MGC Serial Port Capabilities.

Table 19
MGC Serial Port Capabilities

Port	Modem Support?	Used for initial Configuration?
SDI0 (TTY0)	Yes (requires null modem to connect to a TTY)	Yes
SDI1 (TTY1)	No (No hardware flow control)	No. Port 1 is not enabled during the initial configuration of the MGC.
SDI2 (TTY2)	No (No hardware flow control)	No (Only available after FPGA is enabled. Not available during initial configuration menu display)

Procedure 21
Installing the MGC card

The MGC card replaces the existing SSC card. The MG 1010 does not support the SSC card.

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

IMPORTANT!

Please DESTROY or RETURN the SSC dongle to your local Avaya Repairs/Returns center upon confirmation of a successful upgrade. If the SSC system was using remote dongles for any expansion cabinets, please DESTROY or RETURN to your local Avaya Repairs/Returns center upon confirmation of a successful upgrade.

Note: If the upgrade fails, you will not be able to revert back to the old system without the SSC card and dongle.

For the CP PM Call Server, you must use the dongle provided with the software kit. Chassis Expander dongles may be disposed of, as they are no longer needed.

2 Connect the serial cable.

- 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 Ethernet cable to the NTC325AAE6 serial cable kit. Connect this cable to the MGU faceplate port labelled MGC TTY0 in the Media Gateway. Connect the opposite end of the cable to a maintenance terminal.

3 Power on the Media Gateway.

- The MGC display shows BOOT.
- The power on self-test runs. The MGC display shows POST.
- The MGC display shows PASS if the self-test is successful. Otherwise the MGC display shows an Exxx error code.
- The MGC loads the application software. The MGC display shows LOAD.

End of Procedure

Configuring the MGC

Use Procedure 22 to configure the MGC through CLI.

Procedure 22
Configuring the MGC on the Call Server

Initial configuration of the MGC is command line ONLY.

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

There are two ways to enter mgcsetup:

- If no IP information exists on the MGC, it will boot directly into the setup menu.
- If IP information exists, use <CTRL>L<CTRL>D<CTRL>B, (provide LDB username and password to access LDB). 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 If IP information already exists on the MGC card, input the CLI command **`mgcsetup`**.

2 Enter network IP information at the MGC setup menu:

```
ELAN IP : 192.168.3.33
ELAN subnet mask : 255.255.255.0
ELAN gateway IP : 192.168.3.1
Primary CS IP : 192.168.3.32
```

Note: Depending on the date of manufacture, the Gold image may prompt for TLAN and/or secondary call server information. If these prompts appear they can be ignored. This information is configured through EM and is retrieved by the MGC at registration. The new image after upgrade will not have these prompts.

3 Enter port and security parameters, if required:

Note: This step is only necessary if you are using advanced security features.

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

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

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

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

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

IMPORTANT!

Avaya recommends that you disable ELAN security during system installation.

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

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

4 Review the network information and enter “y” to confirm (see Figure 38 on page 160).

Figure 38
Network information

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

Hostname              : IPMG0-0
ELAN IP               : 192.168.3.33
ELAN subnet mask      : 255.255.255.0
ELAN gateway IP       : 192.168.3.1
Primary CS IP         : 192.168.3.32
TLAN set to auto negotiate.
ELAN set to auto negotiate.
ELAN security Disabled

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

WARNING

Service Interruption

IP changes to the MGC require a reboot. A service interruption can occur.

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

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

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

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

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

Rebooting the MGC

The MGC reboots and registers with the Call Server.

```
Found device : INTEL 82365SL
```

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

                              VxWorks System Boot

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

auto-booting...

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

Found device : INTEL 82365SL

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

Loadware upgrade

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

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

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

Upgrade of MSP loadware initiated.
Upgrade of APP loadware initiated.
```

```
Upgrade of FPGA loadware initiated.
Upgrade of DBL1 initiated.

-> 0x86f8bc30 (tMGCInst):

Upgrading FPGA Loadware...

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

At this point configured Media Gateways synchronize with the Call Server.

Each Media Gateway IP address must be configured in overlay 97. For more information, see *Avaya Communication Server 1000E Upgrade Procedures* (NN43041-458)

End of Procedure

Installing the CP PM card

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

MG 1010 slots 22 and 23 require the NTDW99 CP PM card with metal faceplate. MG 1000E and MG 1010 slots 1-10 support NTDW61 and NTDW99 CP PM cards. If you require more than two CP PM cards in a MG 1010, you can install additional CP PM cards in slots 1-10.

Ensure that the Dip Switch (S5) is set to position 1 if using the CP PM as a Call Server or position 2 if using the card as a CP PM Signaling Server.

Procedure 23
Installing the CP PM card

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

Note 1: This first step is applicable only when the CP PM card is used as a Call Server.

Note 2: Remove the retainer clip from the FMD slot when the card is used as a Signaling Server. The clip must be removed to prevent it from shorting out adjacent cards.

2 Ensure that the FMD (1 GB) is correctly inserted and locked in place.

3 Insert the CP PM card.

- Slide the CP PM call processor into Slot 1 (or higher) of the MG 1000E cabinet or chassis.
- Slide the CP PM call processor into Slot 22 or 23 of the MG 1010 chassis.

4 Lock the card into the faceplate latches.

5 Connect the serial cable.

- On a MG 1000E or MG 1010 with CP PM cards in slots 1-10,connect the 2-port SDI cable. The 50-pin Amphenol NTAK19EC connects to the back of the CP PM call server.
- For a MG 1010, connect a shielded CAT5 Ethernet cable to the NTC325AAE6 serial cable kit. Connect this cable to the MGU

faceplate port labelled TTY0 for CP1 or CP2. CP1 is for slot 22, CP2 is for slot 23.

- Connect the opposite end of the serial cable to the serial port on the maintenence terminal.

Note: To connect a terminal to the CP PM card with a NTAK19EC cable, perform the following steps:

- Connect the NTAK19EC cable (shipped with the CP PM Signaling Server) to the 50 pin MDF connector on the back of the desired MG 1000E.
- Connect a 25 pin to 9 pin straight through serial cable to the 25 pin DB connector at the end of the NTAK19EC cable (a female to female gender changer may be required). You must povide this adapter.
- Connect the other end of the 25 pin to 9 pin straight through serial cable to the serial port on the maintenance terminal.

End of Procedure

Figure 39
2-port SDI cable (NTAK19EC) cable

End of Procedure

The preceding steps enable users to upgrade the system one Media Gateway at a time. For each additional Media Gateway, repeat Procedure 19 to Procedure 21 on page 156.

Cabling the cards

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

Cabling the MGC

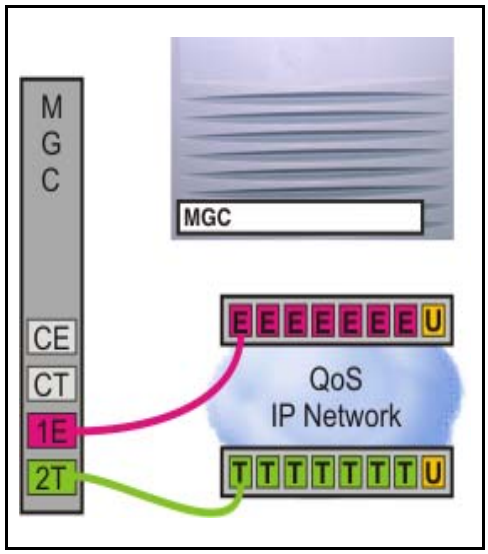
A MGC features six Ethernet interfaces set to autonegotiate by default, four on the faceplate and two on the backplane. Figure 40 on page 166 shows the Ethernet connectors on the front of the MGC. The CE and CT ports are available for supported cabling to the CP PM card or as maintenance ports to the ELAN and TLAN. The two ports on the backplane connector are accessible using the MG 1010 MGU faceplate ELAN and TLAN ports, the 100BT breakout adapter (See Figure 41 on page 167) in a Cabinet, or available through 10/100BaseT Ethernet connectors on the back of the Media Gateway. The 1E (ELAN) and 2T (TLAN) Ethernet ports must be attached to a Layer 2 switch.

Figure 40
MGC faceplate

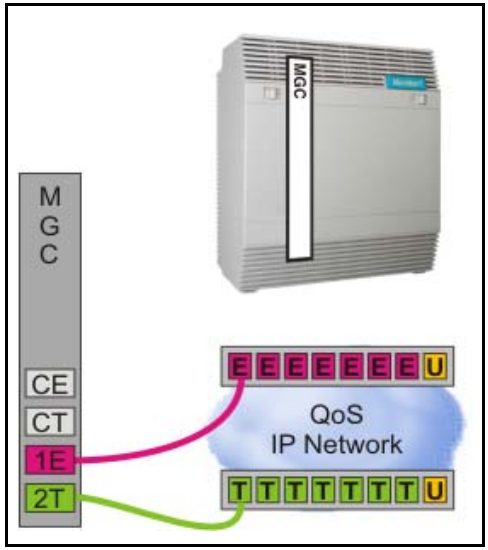
Figure 41
Breakout adaptor

Avaya recommends you use direct connections from the faceplate jacks of the MGC to the Layer 2 switch. Figure 42 on page 168 illustrates a Media Gateway chassis with a MGC connected directly to a Layer 2 switch. Figure 42 on page 168 illustrates a Media Gateway cabinet with MGC connected directly to the Layer 2 switch.

Figure 42
MGC MG Cable



MGC Cabinet Cable



For more information on supported cabling options, see “Appendix C: Supported cabling options” on page 212.

Cabling the CP PM card

In a MG 1000E or a MG 1010 with CP PM cards in slots 1-10, the SDI port of the CP PM card routes through the backplane to the 50-pin Amphinol connector on the back of the MG 1000E. A SDI cable (NTAK19) ships with the CP PM that adapts 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 CP PM card in slot 22 and slot 23. Connect a shielded CAT5 Ethernet cable to the NTC325AAE6 serial cable kit. 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 CP PM cards to the Layer 2 ethernet switches. Figure 43 on page 170 illustrates a Media Gateway chassis with a CP PM call processor connected directly to a Layer 2 switch. Figure 44 on page 170 illustrates a Media Gateway chassis with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 43
CP PM CP MG Cable

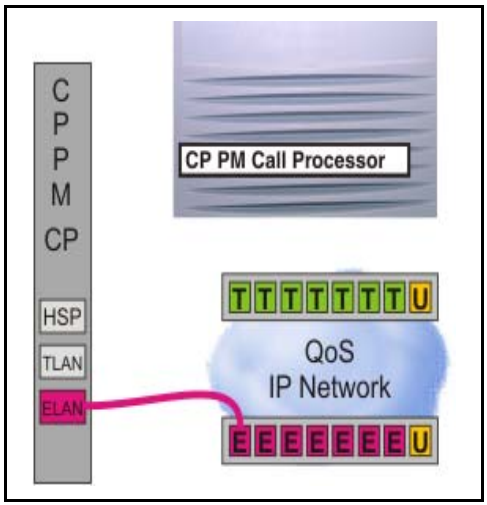


Figure 44
CP PM SS MG cable

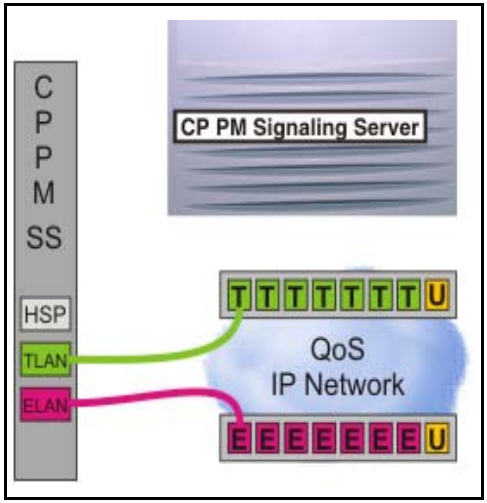
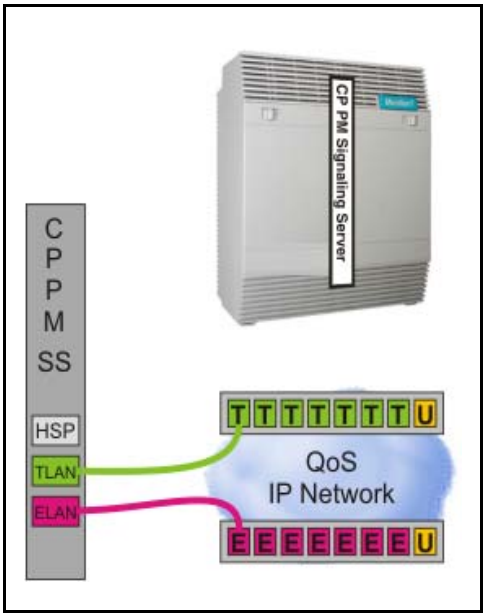


Figure 45 on page 171 illustrates a Media Gateway cabinet with a CP PM Signaling Server connected directly to a Layer 2 switch.

Figure 45
CP PM SS Cabinet cable



For more information about supported cabling options, see "Appendix C: Supported cabling options" on page 212.

Once the cabling of the MGC and CP PM cards is complete, power up the system. You may now proceed to *Avaya Communication Server 1000E Upgrade Procedures* (NN43041-458) to begin the software upgrade and restore the customer database.

For information about upgrades to a Co-resident Call Server and Signaling Server system, see *Co-resident Call Server and Signaling Server Fundamentals* (NN43001-509).

Installing a Signaling Server

Contents

This chapter contains the following topics:

Introduction

This chapter contains general instructions to install and connect Server card hardware. This chapter also contains general instructions to connect Commercial off-the-shelf (COTS) servers.

Linux Signaling Server software is supported on various hardware platforms. For more information, see Table 1: "Hardware platform supported roles" on page 20

A Server that you deploy with Linux Signaling Server applications is referred to as a Signaling Server,. A Server that you deploy with the Linux SIP Line application can be referred to as a SIP Line Gateway.

IMPORTANT!

Instructions to install an IBM X306m, IBM x3350, or HP DL320-G4, or Dell R300 COTS server are not included in this chapter. For detailed installation instructions, see the manufacturers User Guide for your COTS server.

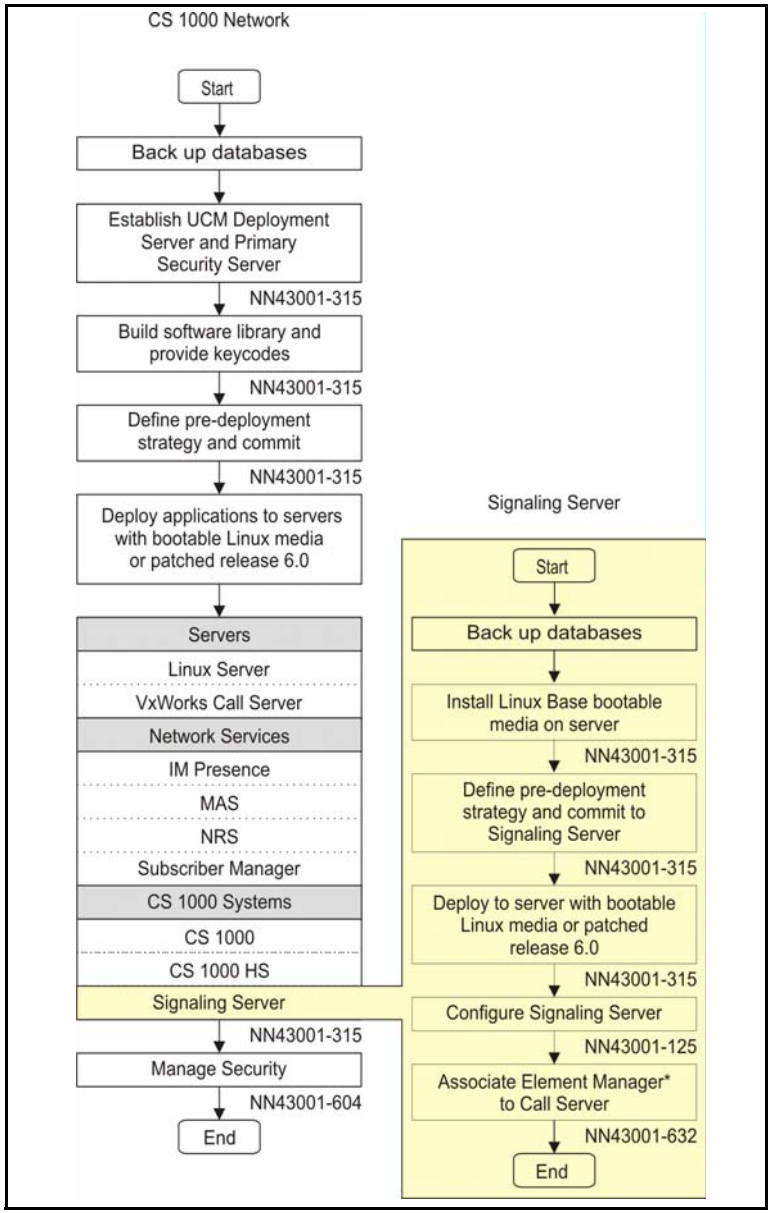
Signaling Server task flow

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

For more information refer to the following NTPs, which are referenced in Figure 46 on page 174:

- *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315)
- *Element Manager System Administration* (NN43001-632)
- *Signaling Server IP Line Applications Fundamentals* (NN3001-125)

Figure 46
Signaling Server task flow



Readiness checklist

Before you install a Signaling Server in an Avaya CS 1000 system, complete the following checklist.

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

Table 20
Readiness checklist (Part 1 of 2)

Have you:	
Read all safety instructions in *Avaya Communication Server 1000E: Installation and Commissioning* (NN43041-310) as appropriate for your CS 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: — NTDW6108E5 - CP PM Signaling Server Hard Drive kit (Linux 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 • NTC325AAE6 - MG 1010 and CP MG serial port adapter kit • 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 meets all required specifications (2GB ram, 40GB hard drive, NTDW61AAE6 or NTDW99AAE6 CP PM BIOS version 18 or higher)?	
Checked for correct grounding facilities?	

Table 20
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 • shielded CAT5 or better Ethernet cables • a computer (maintenance terminal) to connect directly to the Signaling Server, with: — teletype terminal (ANSI-W emulation, serial port, 9600 bps) — a Web browser for Element Manager (configure cache settings to check for new Web pages — every time the browser is invoked, and to empty the cache when the browser is closed)	
Prepared the network data as suggested in *Converging the Data Network with VoIP* (NN43001-260) or *Communication Server 1000E Planning and Engineering* (NN43041-220), as appropriate for your CS 1000 system?	
Read all safety instructions in *Communication Server 1000E Planning and Engineering* (NN43041-220), as appropriate for your CS 1000 system?	

Server card hardware installation

This section contains general instructions to install the Server card in a Media Gateway. For additional software installation instructions, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

IMPORTANT!

CP PM circuit cards contain several switches. All switch settings must be factory defaults except for the switch labelled S5. Switch S5 must be in position 2 to support the internal hard drive on the CP PM card when you deploy a CP PM Signaling Server or a CP PM Co-resident Call Server and Signaling Server.

Installation in an Avaya Communication Server 1000E system

The original CP PM card introduced in Release 5.0 can be used as a Signaling Server, however upgrades to the hardware and software are required. The CP PM card must meet all required specifications (2GB ram, 40GB hard drive, CP PM BIOS version 18 or higher). You can upgrade a CP PM card with the Linux upgrade kit. For more information, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Note: The CP PM version 2 card (NTDW99CAE6) does not require a BIOS upgrade or upgrade kit to support Linux.

Ensure that the Dip Switch (S5) is set to position position 2 if using the CP PM card as a Signaling Server.

Server cards cannot use slot 4 on the older Option 11C Mini Chassis (slot 4 is allocated for the 48 port DLC only on older chassis).

MG 1010 slots 22 and 23 require the NTDW53 CP DC card, or NTDW99 CP PM card with metal faceplate. MG 1000E and MG 1010 slots 1-10 support NTDW53 CP DC cards, NTDW61 CP PM cards, and NTDW99 CP PM cards. If you require more than two Server cards in a MG 1010, you can install additional Server cards in slots 1-10.

The CP MG card occupies slot 0 in a Media Gateway.

The following procedures describe how to install the Server card in a Media Gateway.

Perform the following procedure to install a CP PM or CP DC card in a Media Gateway.

Procedure 24
Installing the CP PM or CP DC card

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

Note 1: This first step is applicable only when the Server card is used as a Call Server.

Note 2: For CP PM only, remove the retainer clip from the FMD slot when the card is used as a Signaling Server. The clip must be removed to prevent it from shorting out adjacent cards.

2 Ensure that the FMD is correctly inserted and locked in place.

3 Insert the Server card.

- Slide the Server cardinto Slot 1 (or higher) of the MG 1000E cabinet or chassis.
- Slide the Server card into Slot 22 or 23 of the MG 1010 chassis.

4 Lock the card into the faceplate latches.

End of Procedure

Proceed to connecting the CP PM or CP DC card, see Procedure 26: "Connecting a CP PM or CP DC card as a Signaling Server" on page 182

Perform the following procedure to install a CP MG card as a Server in a Media Gateway. An NTC325AAE6 serial port adapter kit is required.

Procedure 25
Installing the CP MG card

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

Note: This first step is applicable only when the CP MG card is used as a Call Server.

2 Insert and slide the CP MG card into slot 0 of a Media Gateway cabinet or chassis.

3 Lock the card in place with the faceplate latches.

End of Procedure

Proceed to connecting the CP MG card, see Procedure 27: "Connecting a CP MG card" on page 185.

Signaling Server connections

The following sections describe the connections for a Signaling Server in an Avaya CS 1000E system

Connection checklist

WARNING

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

IMPORTANT!

Server cards are powered through the backplane of the Media Gateway and do not require a power cord.

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

Table 21
Connections checklist

Have you:	
Obtained a serial cable (DTE-DTE null modem cable) to connect the server to a maintenance terminal? The IBM x3350 requires a NTRX26NPE6 9 pin femail to 9 pin female null modem cable.	
Obtained the NTAK19EC cable (required for MG 1000E and MG 1010 with Server cards in slots 1-10). This cable adapts the 50-pin MDF connector on the back of the MG 1000E, Universal Equipment Module, or 11C cabinet to a 25-pin DB connector. A DB-25 female to DB-25 female gender changer is required.	
Obtained theNTC325AAE6 serial port adapter kit (required for MG 1010 and CP MG). This cable kit adapts customer supplied shielded CAT5 Ethernet cables for serial connections.	
Obtained the CAT5 cables (or better) to connect the server to the ELAN and TLAN subnets?	

Connecting a Server card

This section contains instructions to connect a Server to the ELAN and TLAN subnet of an Avaya CS 1000E system. It also contains instructions to connect a maintenance terminal to the Server.

Insert the Server card into the appropriate slot of the Media Gateway. For more infomation on installing the Server cards, see “Server card hardware installation” on page 178. The Media Gateway also hosts the Gateway Controller , which has Ethernet ports to connect to the ELAN and TLAN subnets of your system. For more information on installing the Gateway Controller, see “Gateway Controller installation” on page 86.

It is common in a CS 1000E system for a Call Server to connect directly to the MGC CE and CT Ethernet ports. If the Call Server is not connected to the MGC CE and CT Ethernet ports, the Signaling Server can use them to connect to the ELAN and TLAN subnets of your system. If the Call Server uses the MGC CE and CT Ethernet ports, you require a long Ethernet cable to connect the Signaling Server ELAN and TLAN Ethernet ports directly to the ELAN and TLAN subnet of the Layer 2 switches.

Procedure 26
Connecting a CP PM or CP DC card as a Signaling Server

1 Connect the serial cable.

- On a MG 1000E or MG 1010 with Server cards in slots 1-10, connect the 2-port SDI cable. The 50-pin Amphenol NTAK19EC connects to the back of the Media Gateway.
- On a MG 1010, connect a shielded CAT5 or better Ethernet cable to the NTC325AAE6 serial port adapter kit. Connect this cable to the

MGU faceplate labelled TTY0 for CP1 or CP2. CP1 is for the Server card in slot 22, CP2 is for the Server card in slot 23.

- Connect the other end of the serial cable to the serial port on the maintenence terminal.

Note: To connect a terminal to the Server card with a NTAK19EC cable, perform the following steps:

- Connect the NTAK19EC cable to the 50 pin MDF connector on the back of the desired Media Gateway.
- Connect a 25 pin to 9 pin straight through serial cable to the 25 pin DB connector at the end of the NTAK19EC cable (a female to female gender changer may be required). You must povide this adapter.
- Connect the other end of the 25 pin to 9 pin straight through serial cable to the serial port on the maintenance terminal.

2 Connect the Server card to the ELAN subnet.

- if the Call Server is not connected to the MGC card CE port
  - — Insert the end of one customer supplied 25-cm RJ-45 CAT5 Ethernet cable into the ELAN network interface port (ELAN port) on the faceplate of the Signaling Server
  - — insert the other end of the 25-cm RJ-45 CAT5 Ethernet cable into the MGC card CE (ELAN) Ethernet port
- if the Call Server is connected to the MGC card CE port
  - — Insert the end of a longer RJ-45 CAT5 Ethernet cable (not supplied) into the ELAN network interface port (ELAN port) on the faceplate of the server
  - — Insert the other end of the RJ-45 CAT5 Ethernet cable into an Ethernet port on the ELAN subnet of the Layer 2 switch

3 Connect the Server card to the TLAN subnet.

- if the Call Server is not connected to the MGC card CT port
  - — Insert the end of one customer supplied 25-cm RJ-45 CAT5 Ethernet cable into the TLAN network interface port (TLAN port) on the faceplate of the Signaling Server
  - — Insert the other end of the 25-cm RJ-45 CAT5 Ethernet cable into the MGC card CT (TLAN) Ethernet port
- if the Call Server is connected to the MGC card CT port

— Insert the end of a longer RJ-45 CAT5 Ethernet cable (not supplied) into the TLAN network interface port (TLAN port) on the faceplate of the Signaling Server

— Insert the other end of the RJ-45 CAT5 Ethernet cable into an Ethernet port on the TLAN subnet of the Layer 2 switch

Note: When you connect using this method, data packet captures cannot be captured from the device without disrupting service.

If the Call Server connects directly to the Gateway Controller, you must obtain shielded CAT5 Ethernet cables that are long enough to connect the Signaling Server ELAN and TLAN Ethernet ports directly to the ELAN and TLAN ports of the Layer 2 switches.

4 Configure the COM port on the maintenance terminal as follows:

- Terminal type: VT-100
- Speed: 9 600
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

Note: The CP PM card ships with the Admin Serial port configured to 9600 Bit/s. Other available speeds are 19 200, 38 400, and 115 200 Bits. You can change the port speed by using the maintenance terminal. To verify or change the baud rate on a CP PM card, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

5 Configure the Signaling Server with the maintenance terminal. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

End of Procedure

Perform the following procedure to cable a CP MG cardas a Signaling Server.

Note: The CP MG card functions as a Gateway Controller and Server while occupying slot 0 in a Media Gatweay. For the CP MG card, you do not require external Ethernet cables to link the Ethernet ports of the Server and the Gateway Controller. The Ethernet connections between the Server and Gateway Controller are embedded onthe CP MG card.

Note: To configure the Gateway Controller function of a CP MG card, you require an NTBK48AA 3-port SDI cable. This connection is not required in the following procedure. For more information, see Procedure 6, "Installing the Gateway Controller card," on page 88.

Procedure 27
Connecting a CP MG card

1. Connect a CAT5 or better Ethernet cable to the TTY1 port on the CP MG faceplate.
2. Connect a NTC325AAE6 serial port adapter (DB-9 or DB-25) to the other end of the Ethernet cable.
3. Connect the Ethernet cable with adapter to a serial port on the maintenance terminal.

   Note: 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.
4. Configure the COM port on the maintenance terminal as follows:
   - Terminal type: VT-100
   - Speed: 9 600
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow control: none
5. Connect the ELAN cable:
   - Connect one end of a shielded CAT5 or better Ethernet cable to the 1E (ELAN) port on the CP MG faceplate.
   - Connect the other end of the Ethernet cable to the ELAN subnet of the CS 1000E system.

6 Connect the TLAN cable:

- Connect one end of a shielded CAT5 or better Ethernet cable to the 2T (TLAN) port on the CP MG faceplate.
- Connect the other end of the Ethernet cable to the TLAN subnet of the CS 1000E system.

End of Procedure

Connecting an IBM COTS server

In geographic regions that are susceptible to electrical storms, Avaya recommends that you plug the IBM COTS server into an AC surge suppressor.

Figure 47 shows the rear view of the IBM X306m server.

Figure 47
IBM X306m (rear view)

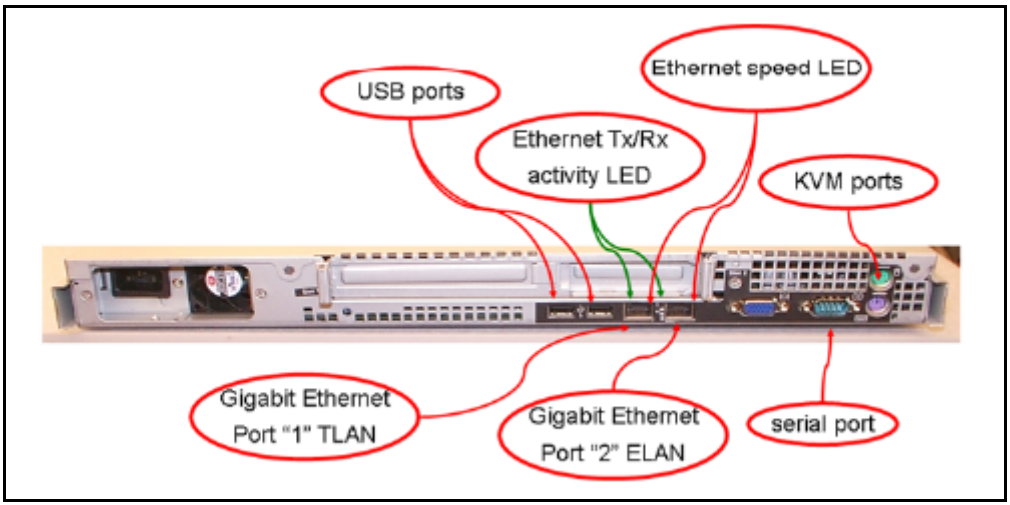
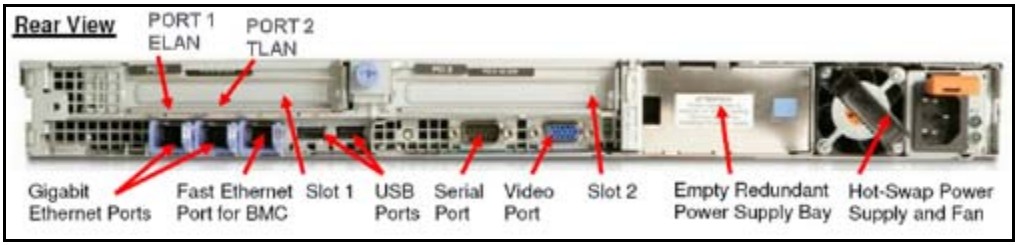


Figure 48 shows the rear view of the IBM x3350 server.

Figure 48
IBM x3350 (rear view)



Note: Refer to Figure 47 or Figure 48 when you preform Procedure 28, "Connecting an IBM COTS server," on page 188.

Procedure 28
Connecting an IBM COTS server

1. Connect the IBM server to the TLAN subnet. Insert the RJ-45 CAT5 (or better) cable into TLAN Ethernet port on the back of the server. Insert the other end of the cable into the TLAN subnet of the Layer 2 switch.
2. Connect the IBM server to the ELAN subnet. Insert the RJ-45 CAT5 (or better) cable into ELAN Ethernet port on the back of the server. Insert the other end of the cable into the ELAN subnet of the Layer 2 switch.
3. Connect a DTE–DTE null modem serial cable from the serial port on the back of the server to the serial port on a maintenance terminal. The IBM x3350 requires a NTRX26NPE6 9 pin female to 9 pin female null modem cable.
4. Connect the IBM server power cord.
   a. Check that the power cord is the type required in the region where the server is used. Do not modify or use the supplied AC power cord if it is not the correct type.
   b. Attach the female end of the power cord to the mating AC power receptacle on the server back panel. Plug the male end of the AC power cord into the AC power source (wall outlet).
5. Configure the baud rate for the serial port on the server to 9 600 b/ps. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

   Note: The IBM X306m Signaling Server ships with the serial port set to 9600 b/ps.
6. Configure the connected maintenance terminal. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).
7. Press the Power switch.

   Note: Refer to the IBM User Guide for server installation information.

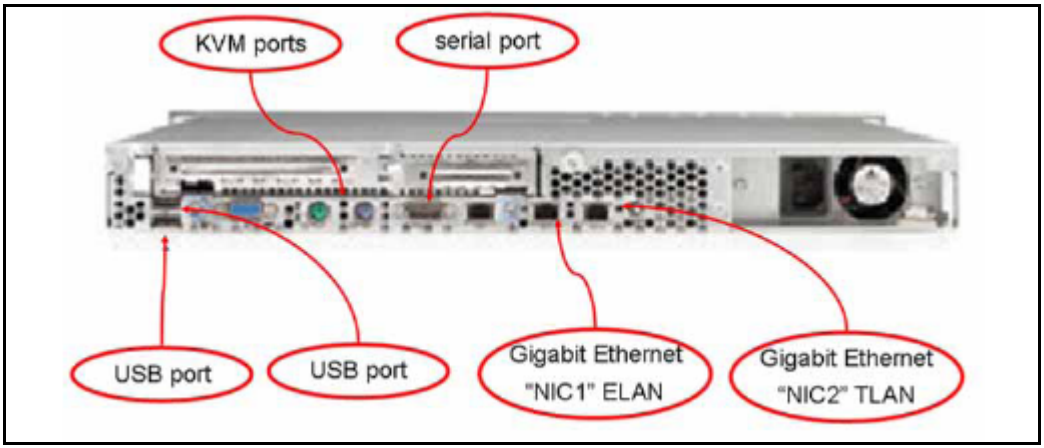
End of Procedure

Connecting an HP COTS server

In geographic regions that are susceptible to electrical storms, Avaya recommends that you plug the HP server into an AC surge suppressor.

Figure 49 shows the rear view of the HP DL320-G4 server.

Figure 49
HP DL320-G4 (rear view)



Note: Refer to Figure 49 when you perform Procedure 29, "Connecting an HP COTS server," on page 189.

Procedure 29
Connecting an HP COTS server

1. Connect the HP server to the TLAN subnet. Insert the RJ-45 CAT5 (or better) cable into the TLAN Ethernet port on the back of the server. Insert the other end of the cable into the TLAN subnet of the Layer 2 switch.
2. Connect the HP server to the ELAN subnet. Insert the RJ-45 CAT5 (or better) cable into the ELAN Ethernet port on the back of the server. Insert the other end of the cable into the ELAN subnet of the Layer 2 switch
3. Connect a DTE–DTE null modem serial cable from the Serial Port on the back of the server to a maintenance terminal.
4. Connect the HP server power cord.

a. Check that the power cord is the type required in the region where the server is used. Do not modify or use the supplied AC power cord if it is not the correct type.

b. Attach the female end of the power cord to the mating AC power receptacle on the right-hand side of the server back panel. Plug the male end of the AC power cord into the AC power source (wall outlet).

5 Configure the COM1 serial port as the communication port for the connected maintenance terminal. Set the COM 1 baud rate for the serial port on the server to 9 600 b/ps. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

6 Configure the connected maintenance terminal. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

7 Press the Power switch.

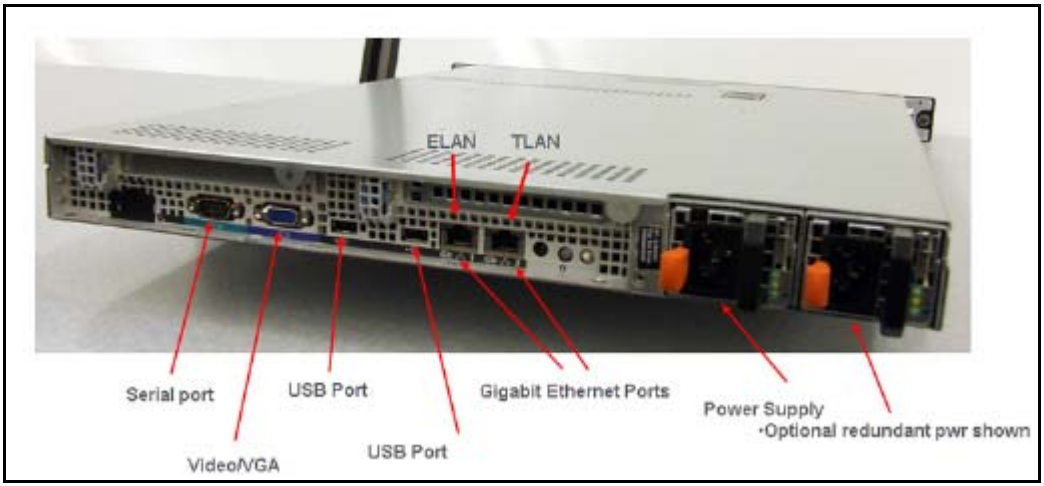
End of Procedure

Connecting a Dell COTS server

In geographic regions that are susceptible to electrical storms, Avaya recommends that you plug the Dell server into an AC surge suppressor.

Figure 50 shows the rear view of the Dell R300 server.

Figure 50
Dell R300 server (rear view)



Note: Refer to Figure 50 when you perform Procedure 30, "Connecting a Dell COTS server," on page 191.

Procedure 30
Connecting a Dell COTS server

1. Connect the Dell server to the TLAN subnet. Insert the RJ-45 CAT5 (or better) cable into the TLAN Ethernet port on the back of the server. Insert the other end of the cable into the TLAN subnet of the Layer 2 switch.
2. Connect the Dell server to the ELAN subnet. Insert the RJ-45 CAT5 (or better) cable into the ELAN Ethernet port on the back of the server. Insert the other end of the cable into the ELAN subnet of the Layer 2 switch.
3. Connect a DTE–DTE null modem serial cable from the Serial Port on the back of the server to a maintenance terminal.

4 Connect the Dell server power cord.

   a. Check that the power cord is the type required in the region where the server is used. Do not modify or use the supplied AC power cord if it is not the correct type.

   b. Attach the female end of the power cord to the mating AC power receptacle on the right-hand side of the server back panel. Plug the male end of the AC power cord into the AC power source (wall outlet).

5 Configure the COM1 serial port as the communication port for the connected maintenance terminal. Set the COM 1 baud rate for the serial port on the server to 9 600 b/ps. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

6 Configure the connected maintenance terminal. See *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

7 Press the Power switch.

End of Procedure

Maintenance terminal configuration parameters

To configure Signaling Server maintenance terminal configuration parameters, see the Maintenance chapter of *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Installing the software

IMPORTANT!

The CP PM and COTS server are out of service during software installation.

Introduction

This section provides references you can use when you install CS 1000 Linux Base and application software a Server.

IMPORTANT!

Servers support no Signaling Server software prior to CS 1000 Release 5.0 and support no SIP Line software prior to CS 1000 Release 6.0.

CS 1000 Release 7.6 Signaling Server and SIP Line software runs only on the Linux Base platform.

Before you begin

Before installing the software, you must perform the following

- Connect and power up the server. See “Signaling Server connections” on page 180.
- For CP PM cards, ensure that Switch S5 is in position 2 (to support the internal hard drive)
- Obtain the CS 1000 Release 7.6 Linux Base installation media.
- For CP PM cards, Avaya advises that you remove the wire on the CF card clip before you insert a CP PM card into the slot. The clip can fall open and cause an electrical short.

Upgrade the CP PM BIOS

The NTDW99CAE6 CP PM card (CP PM version 2) does not require a BIOS upgrade. The CP PM version 2 uses an updated design, BIOS, and boot manager. Older NTDW61 and NTDW99 CP PM cards (CP PM version 1) can require a BIOS upgrade to support Linux.

The CS 1000 Release 7.6 Linux Platform Base installer requires that a CP PM version 1 card runs BIOS version 18 or higher. If the installer detects a lower version on the CP PM card it automatically loads software for you to upgrade the CP PM BIOS. Perform the steps in Procedure 31 to upgrade the CP PM BIOS to version 18.

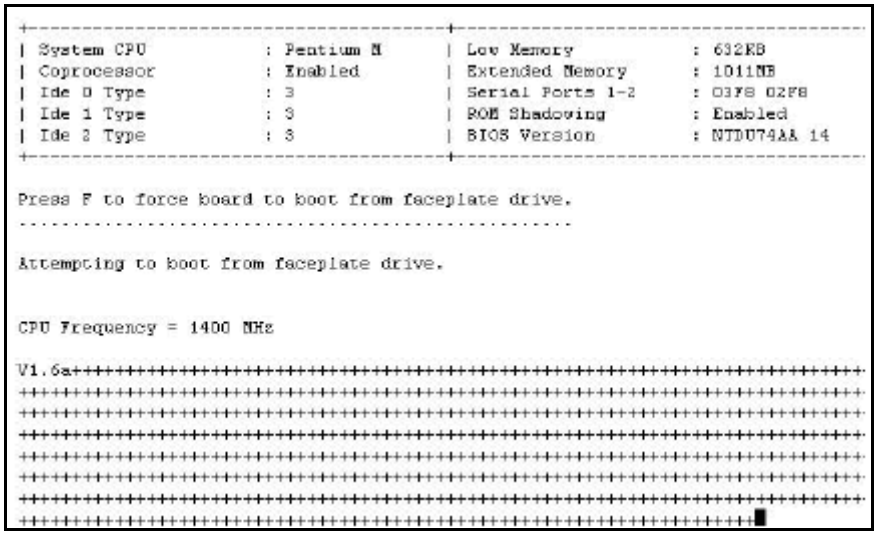
For information about manually upgrading the CP PM BIOS with VxWorks software, see *Communications Server 1000E Maintenance* (NN43041-700).

Procedure 31
Upgrading the CP PM BIOS

1. Connect to serial port 1 on the CP PM.
2. Insert the Linux Base installation CF card into the faceplate CF slot.
3. Power on the system.
4. Once the initial boot and memory check completes for a CP PM version 1 card, Figure 51 appears. Press the **F** key to boot from the Linux Base installation faceplate CF card.

   Note: For CP PM version 2 cards, press the **F** key to enter the boot menu, select Faceplate RMD, and press **Enter** to boot from the faceplate CF card.

Figure 51
CP PM faceplate drive boot



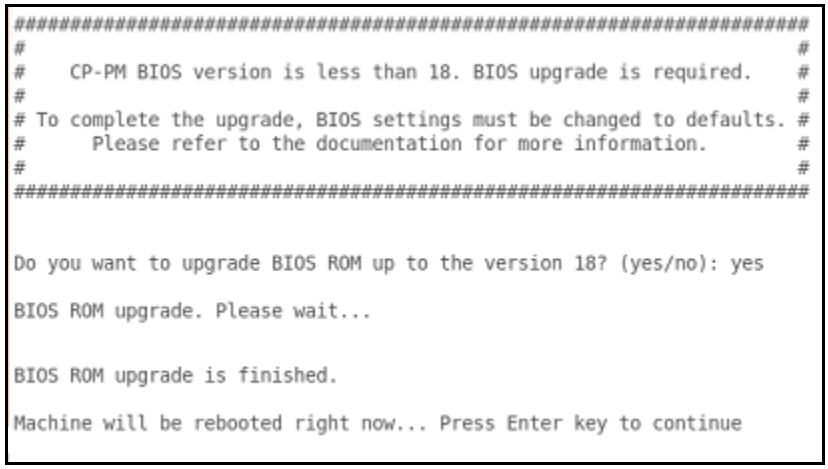
5 The welcome screen appears. Press **ENTER** to direct the input and output to COM1.

6 Figure 52 appears if the CP PM card has a BIOS version lower than 18. Enter **yes** to proceed with the automatic upgrade.

CAUTION — Damage to Equipment

Do not interrupt the BIOS upgrade process.

Figure 52
CP PM BIOS automatic upgrade



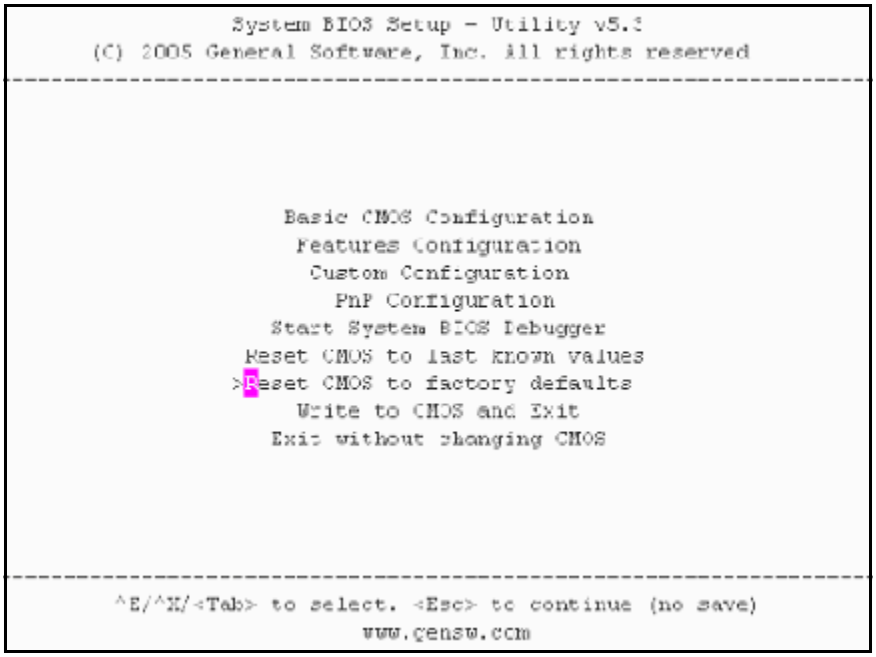
7 Verify that the BIOS upgrade is finished. Press **Enter** to reboot.

8 During the reboot memory check, press **Ctrl c** to access the CP PM BIOS setup menu.

Note: If you miss the timing to press **Ctrl c** you must reboot the system and try again. The Linux Platform Base installation software will display a warning if you do not reset the CP PM BIOS to factory defaults.

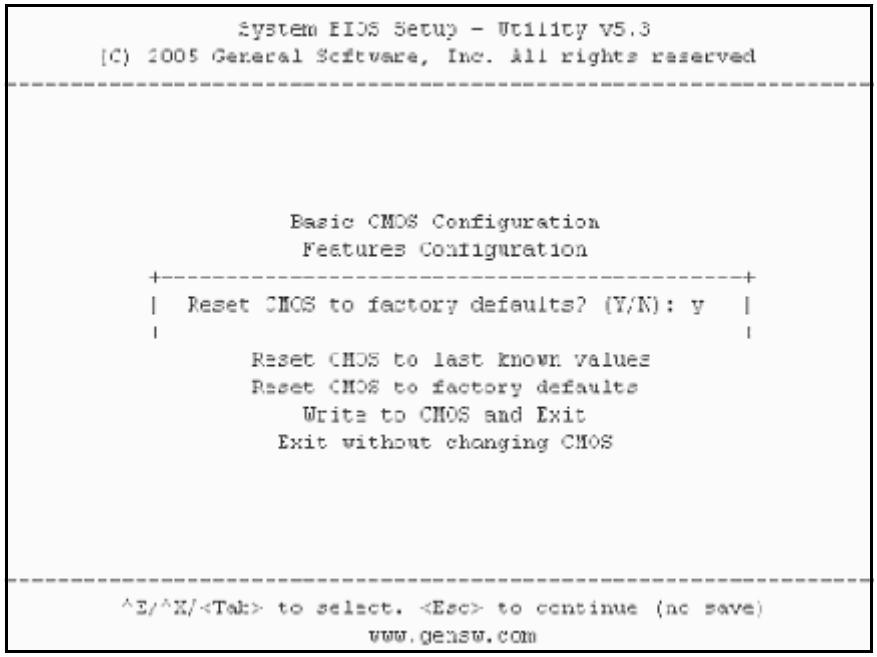
9 Figure 53 appears. Select **Reset CMOS to factory defaults** from the menu.

Figure 53
CP PM BIOS setup



10 Figure 54 appears. Press **y** to reset CMOS to factory defaults.

Figure 54
CP PM BIOS reset



11 The system reboots. After initial boot Figure 51 appears and the new BIOS version is displayed. Verify BIOS version is 18. You can now press the **F** key to boot from the faceplate CF card and proceed with the Linux Platform Base software installation.

Note: For CP PM version 2 cards, press the **F** key to enter the boot menu, select Faceplate RMD, and press **Enter** to boot from the faceplate CF card.

End of Procedure

Installing Linux Base

Perform the Linux Base installation if your Server does not currently run Linux Base for Release 7.6. The CP PM Linux upgrade kit contains a hard drive with Linux Base preloaded. You can install Linux Base from the command line interface (CLI) using a bootable CF card on CP PM, a bootable USB 2.0 storage device on CP DC and CP MG, and using a bootable optical disk on COTS servers.

> ***Note:*** The N0220961 USB memory stick is supported in Communication Server 1000 Release 7.6. Avaya does not guarantee the operation of any other USB memory stick.

Configure the ELAN, TLAN, IP address, Gateway, subnet masks, date, and time settings during the Linux Base installation. For more information about installing or upgrading Linux Base, see *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Installing Linux applications

CS 1000 Release 4.5 Signaling Server and SIP line software are Linux applications. Linux applications install on Linux Base and interact with the Linux Base application framework. You can deploy and install Linux applications with the Deployment manager. You can configure and deploy SIP Line with Element Manager (EM).

For information about Linux applications, Deployment Manager, and EM, see *Element Manager System Administration* (NN43001-632), *Signaling Server IP Line Applications Fundamentals* (NN3001-125), and *Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Joining the UCM security domain

The Avaya Unified Communication Management (UCM) Primary Security Server acts as the RADIUS server that CS 1000 devices use to obtain authentication and access control parameters for CLI access. The Avaya UCM Primary Security Server sends RADIUS related parameters to CS 1000 devices using the SSH protocol.

When a device joins the UCM security domain, a mutually-trusted SSH channel is created. You must manually confirm the fingerprint of the public key before the UCM Primary Security Server RSA public key is added to the authorized key file, . This verification prevents third-party intercepts.

When a mutually-trusted SSH tunnel establishes a connection to a CS 1000 device, the UCM Primary Security Server can send SSH remote commands to the device using RSA public key-based authentication.

For more information about joining the UCM security domain, see *Security Management Fundamentals* (NN43001-604).

Appendix A: Upgrading to High Availability

Campus Redundancy (High Availability) Package Support

The CP PM CS project introduces a package for enabling and disabling the Campus Redundancy or High Availability (HA) feature. The software performs a check to determine whether the HA package is present in the keycode. If the package is present, then the CP PM call server behaves in the same manner as the Release 4.5 or later CP II or CP IV (for example, it uses the HSP to try to detect the presence of the other core). If the other core is detected, then both cores negotiate to determine which is the active core and which core is the standby core.

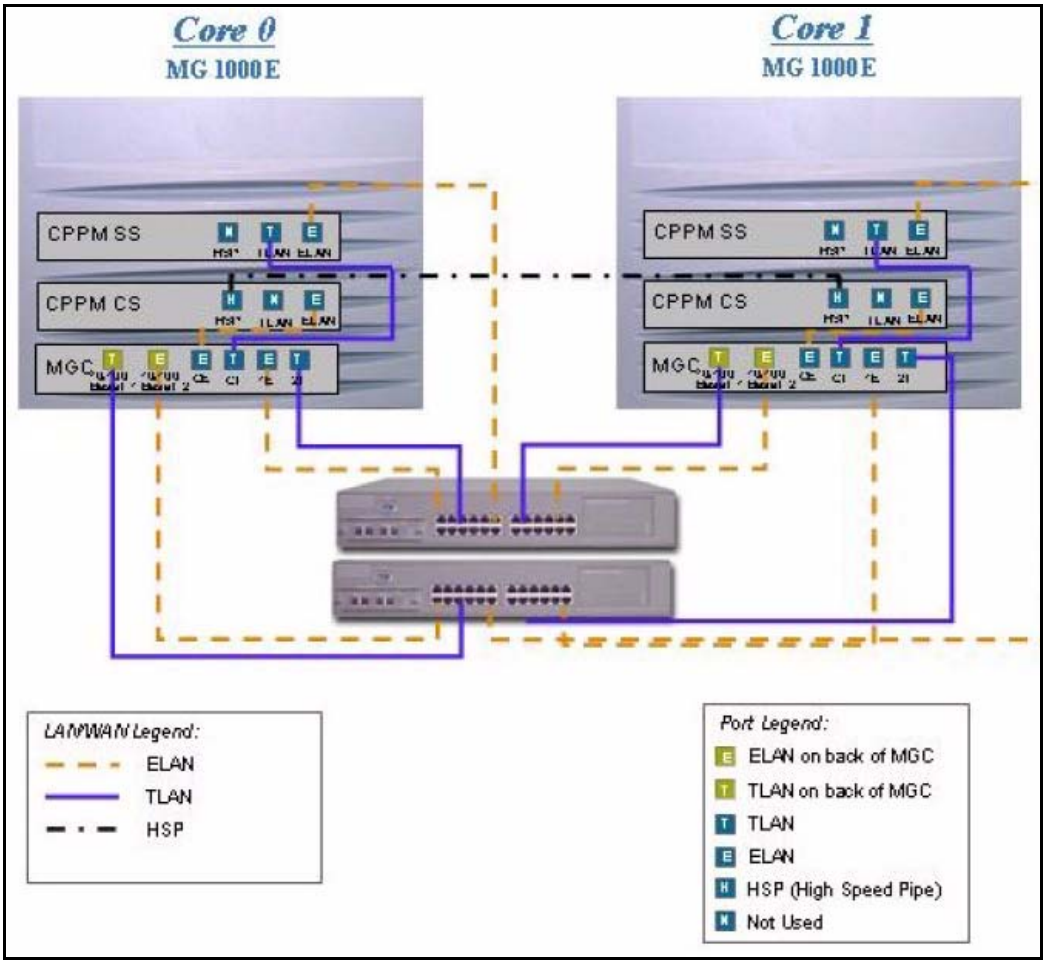
If the CP PM call server is not able to detect the other core, then it comes up as a single core system. If the HA package is not present in the keycode, then the existing call server software is modified to block the HSP connection so that the CP PM call server does not attempt to detect the presence of the core. In the absence of the HA package, the CP PM call server runs as a single core system even in a system with two cores and the HSP ports on both cores are connected.

Campus Redundancy with co-located Call Servers

Figure 55 on page 203 depicts the configuration of the MG 1000E based Avaya Communication Server 1000E CP PM system with co-located call servers. Utilizing the dual homing feature of the MGC, the ELAN of the CP PM call server and MGC, and the TLAN of the Signaling Server and MGC is dual homed to the Baystack switches. If one of the LAN links to the switches fails, or the switch is out of service then the dual homing feature allows the Avaya CS 1000E CP PM system to continue to function normally.

The HSP is connected directly from one CP PM call server to the other CP PM call server and allows for redundancy between call servers.

Figure 55
Campus Redundancy with CP PM call servers co-located



For the MG 1010, the ELAN and TLAN connections on the back of the MGC are provided by the ELAN and TLAN ports on the MGU faceplate.

As the main cabinet has already been built in previous chapters, the steps required to upgrade to an HA system are:

1. Pick an empty card slot and insert CP PM card into that slot
2. Set the ID of the new call server to core 1
3. Install software (as performed in *Avaya Communication Server 1000E Software Upgrades* (NN43041-458))
4. Run LD 137 on the active call server
5. Perform HSP tests and connect the two call servers.

For more information about upgrading to High Availability, see the following NTPs:

- *Avaya Communication Server 1000E Overview* (NN43041-110)
- *Avaya Communication Server 1000E Planning and Engineering* (NN43041-220)
- *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310)
- *Avaya Communication Server 1000E Software Upgrades* (NN43041-458)

Network check

Checking the status of the HSP ports

Use the LD 137 STAT HSP command to check the status of the HSP. The following is a sample output of the STAT HSP command.

```
LD 137
.stat hsp
HSP LINK CARRIER: OK
Auto Negotiation: Enabled
Auto Negotiation Completed: YES
Actual Line Speed: 1000 Mbps
Actual Duplex Mode: Full Duplex
LCS HSP STATE is UP
```

Ethernet (gei unit number 1):
Internet address: 127.2.0.2
Broadcast address: 127.255.255.255
Ethernet address: 00:c0:8b:07:a5:9f
Netmask: 0xff000000; Subnetmask: 0xff000000
39698 packets received; 80156 packets sent
0 input errors; 0 output errors
0 collisions

Appendix B: Upgrade checklists

Contents

This appendix contains the following topics:

Introduction

The following section provides upgrade checklists.

Technical Support

Avaya can provide an Installation and Upgrade Support team to assist with PBX upgrades on a scheduled basis. This service is billable and a purchase order is required. Please refer to current price book for rates.

> ***Note:*** This service requires that a service request be opened in advance of the upgrade.

Site details

Table 22
Site Details

Customer Name	
Tape ID (LD 22)	
Modem Number (Core)	
Switch Room Telephone	
Baud Rate	
Modem Password	
PBX Password	
System Type	
Software Generic	

Upgrade details

Table 23
Upgrade details

Current Software - Generic	
Target Software - Generic	
Hardware being added	
Feature Upgrade	
License Upgrade	

Pre-upgrade checklists

Software Upgrade

Software audit

Table 24
Software audit

Software Audit		
Perform the software audit prior to the scheduled upgrade.		
Take corrective action if answer is no		
	Yes	No
Software Disk Ready		
Keycode Disk Ready		
Install Disk Ready		
DEP Patch Disk Ready		
Review Keycode Data Sheet - (SDID, PKGS, License, TID)		
Review Site Specific Patches - (Non MDCS)		
Read GRB for target Release – (Verify Memory Requirements)		

License Upgrade

Table 25
Keycode audit

Keycode Audit		
Perform the keycode Audit prior to the scheduled upgrade.		
Take corrective action if answer is no		
	Yes	No
Keycode Disk Ready		
Keycode Data Sheet Ready		
SDID Matches System		
TID Matches System		
Perform a KDIFF in LD 143 to compare keycodes		

Hardware Upgrade

Hardware audit

Table 26
Hardware audit

Hardware Audit		
Perform the Hardware Audit prior to the scheduled upgrade.		
	Yes	No
Verify Shipping List - Complete and Accurate		
Audit Site for new hardware locations		
Pre Run Cables if possible		
Review All switch settings for new cards		
Read all applicable NTP Procedures completely		

Pre-conversion steps

Table 27
Pre-conversion steps (Part 1 of 2)

Pre Conversion Steps
A capture file should be made of the following information using a PC or Printer.
Perform an overall system check:
LD 135 SCPU (ensure that the system is redundant)
LD 137 STAT/TEST CMDU
LD 48 STAT AML
LD 32 STAT
LD 60 STAT
LD 30 LDIS (Verify what Is disabled if any)

Table 27
Pre-conversion steps (Part 2 of 2)

Get Software Information from LD 22
ISSP - Patches in service - Future Reference if required
TID/SLT - License Parameters - To compare with converted database
LD 21 - PRT CFN
LD 97 - PRT SUPL/XPEC
Run a Template Audit
LD 1 - Auto Run
Perform a Datadump
Backup at least two copies of the current database, retain the copies.
Print History File or System Event Log
Ld 22 - Print AHST - Capture Systems Events to compare will new software if required
Ld 117 - PRT SEL 500 - Same as above

Post-conversion checks

Table 28
Post-conversion checks

Post Conversion Checks
Perform these checks after a successful INI.
Test for dial tone
Ensure that all AUX applications are working
LD 30 LDIS (Verify that output is the same prior to upgrade)

Appendix C: 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 Server card faceplate ELAN and TLAN connections.

The Gateway Controller can use the features of the MG 1000E by using two short cables to connect from the card faceplate Ethernet connectors to the two front bulkhead Ethernet connectors that are internally wired to the 100BaseT Ethernet connectors on the rear of the MG 1000E. 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 56 on page 214 shows both options.

Connecting to the 1E and 2T ethernet connectors cause the 10/100BaseT leds to function on the rear of the MG 1000E.

If the NTDW67 MGC Reference ROHS cable is used the LED on the back of the MG 1000E 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 MGC backplane Ethernet connections are provided by the Media Gateway Utility (MGU) faceplate ELAN and TLAN ports.

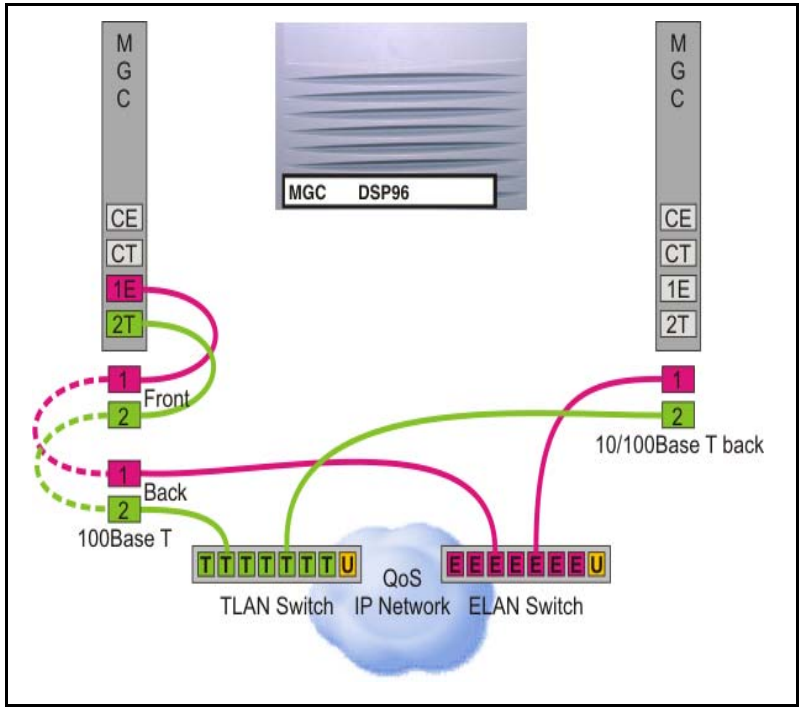
Avaya Communication Server 1000E dual-homing is supported in accordance with the following cabinets and chassis:

Table 29
Supported Cabinets and MG Chassis

Product Number	Product Name	Vintage	Release 5.0	Dual Homing Supported
NTDU14	Media Gateway Chassis	AA	Supported	No
		CA	Supported	Yes
		DA, DAE5	Supported	Yes
NTDU15	Media Gateway Expansion Chassis	AA	Supported	N/A
		DA	Supported	N/A
		DAE5	Supported	N/A
NTDK91	Chassis System Main Chassis	BBE5	Supported	No
NTDK92	Chassis System Chassis Expander	BB	Supported	N/A
NTAK11	Main/Expansion Cabinet	BD	Supported	Yes
NTC310	Media Gateway Chassis	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.

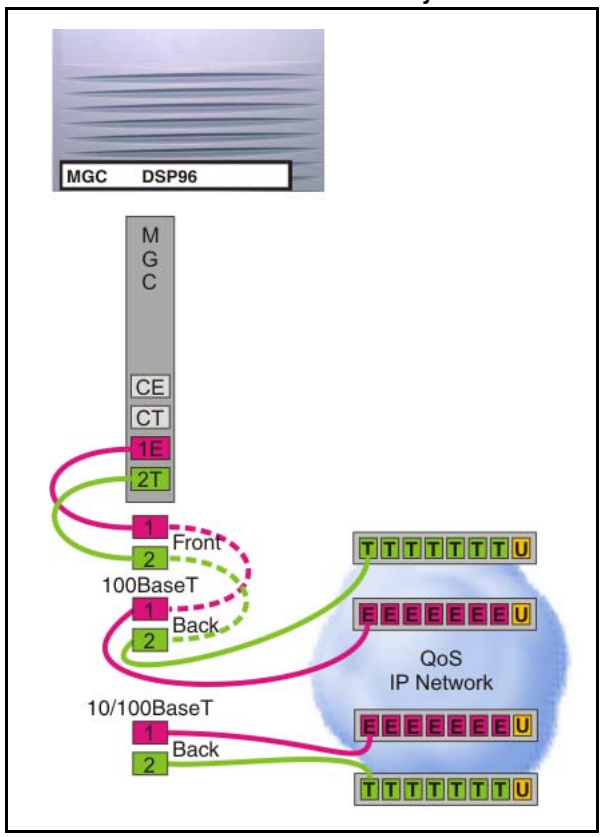
Figure 56
MGC cabling in a Media Gateway



Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 57 on page 215 demonstrates the MGC cabling in a dual-homed configuration.

Figure 57
MGC Dual-homed in a Media Gateway



Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 58 on page 216 shows the MGC cabling from the backplane connector to the MGC 100BT connector Cabinet.

Figure 58
MGC using MGC 100BT in a Cabinet

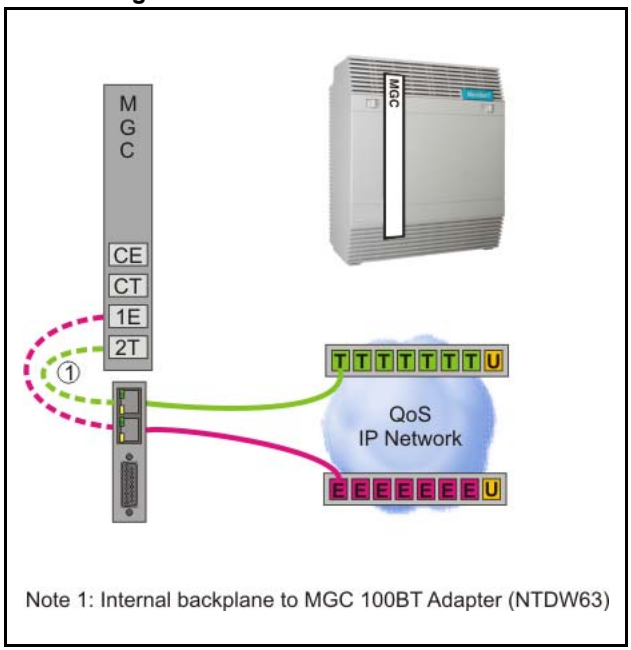


Figure 59 on page 217 shows the MGC in a dual-homed configuration in a Cabinet.

Figure 59
MGC Dual-homed in a Cabinet

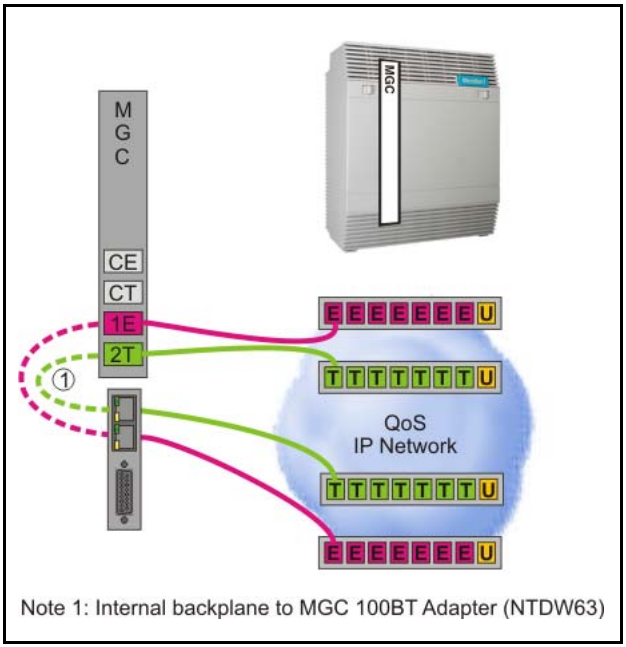


Figure 60 on page 218 shows the MGC and CP PM card as a SA Call Server in a Media Gateway.

Figure 60
SA Call Server in a Media Gateway

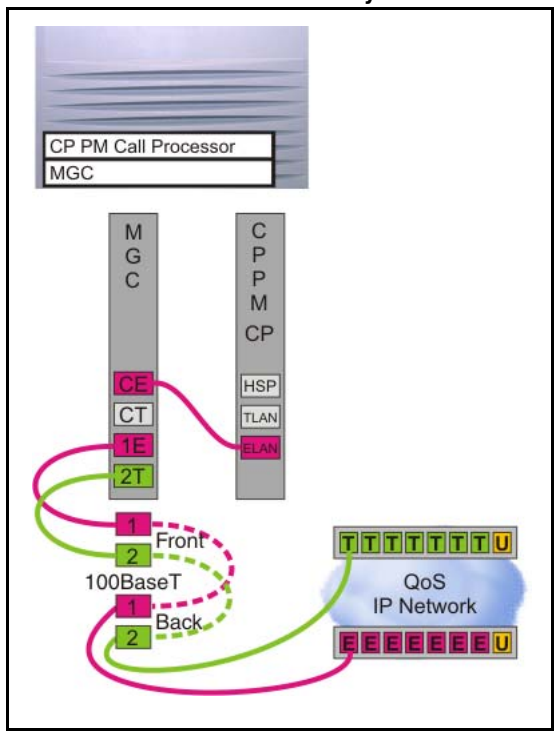


Figure 61 on page 219 shows the MGC and CP PM card as a SA Call Server in a Cabinet.

Figure 61
SA Call Server in a Cabinet

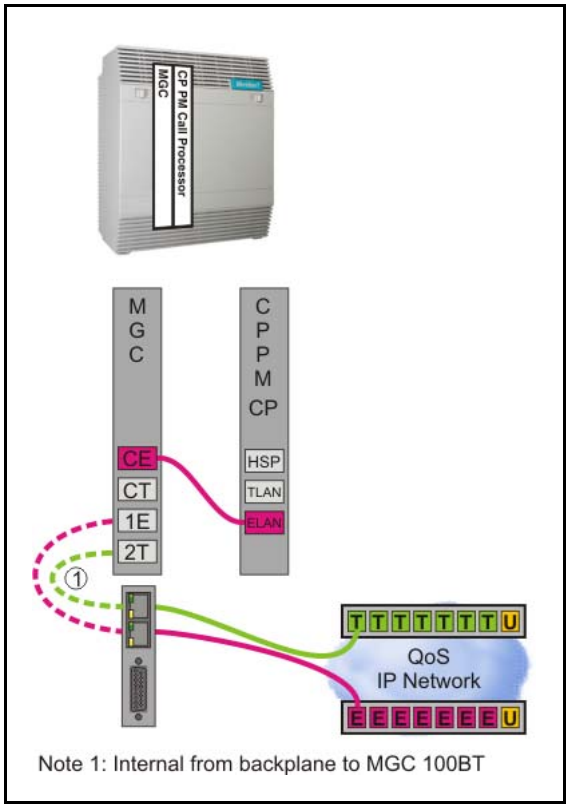
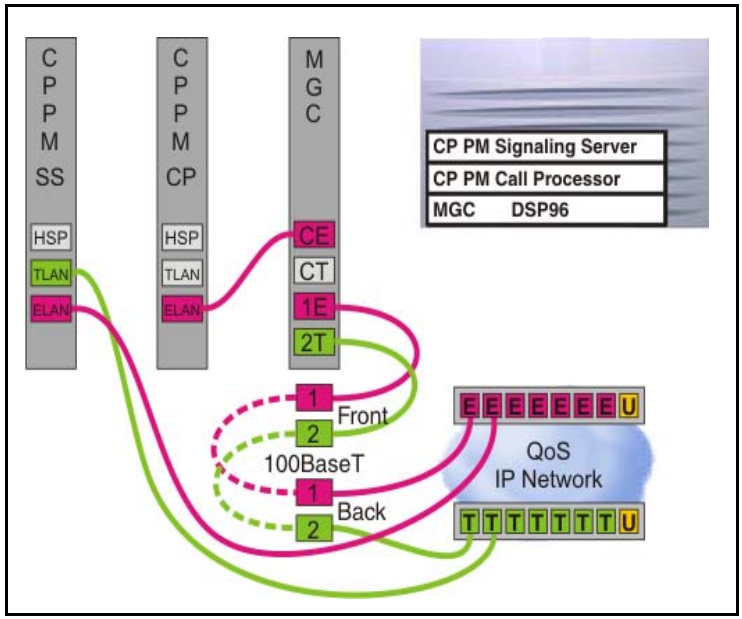


Figure 62 on page 220 shows a SA Call Server with a Signaling Server in a Media Gateway.

Figure 62
SA Call Server with SS in a MG



Gateway Controller back Ethernet connections are MGU faceplate ports in a MG 1010.

Figure 63 on page 221 shows a SA Call server with a Signaling Server in a Cabinet.

Figure 63
SA Call Server with SS in a Cabinet

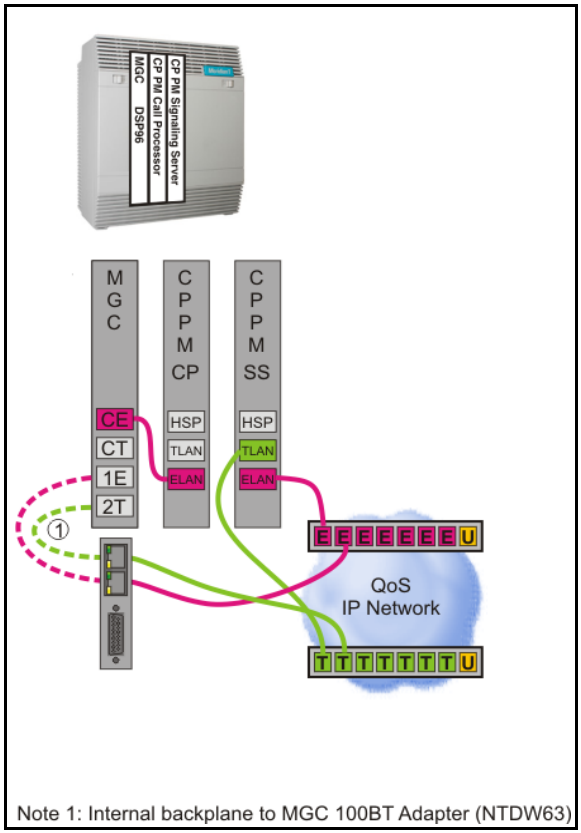


Figure 65 on page 223shows the supported configuration for a Dual-homed SA Call Server in an MG 1010 chassis.

Figure 64
Dual-homed SA Call Server in an MG 1010

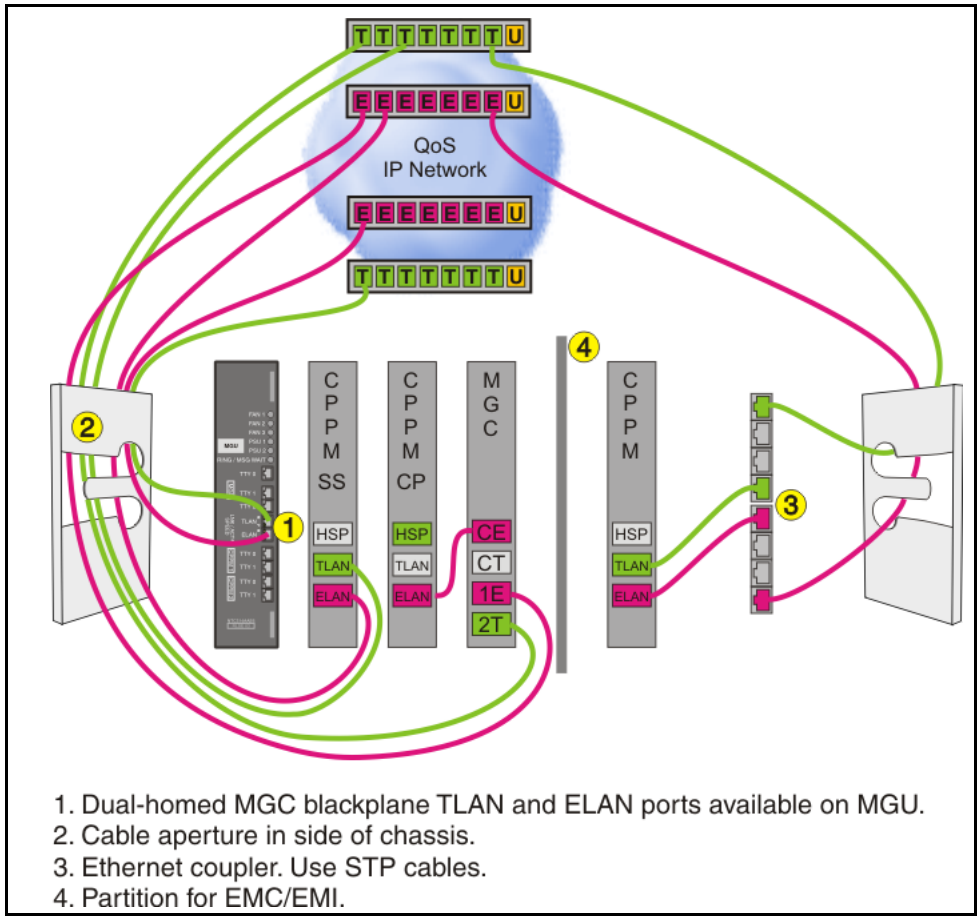
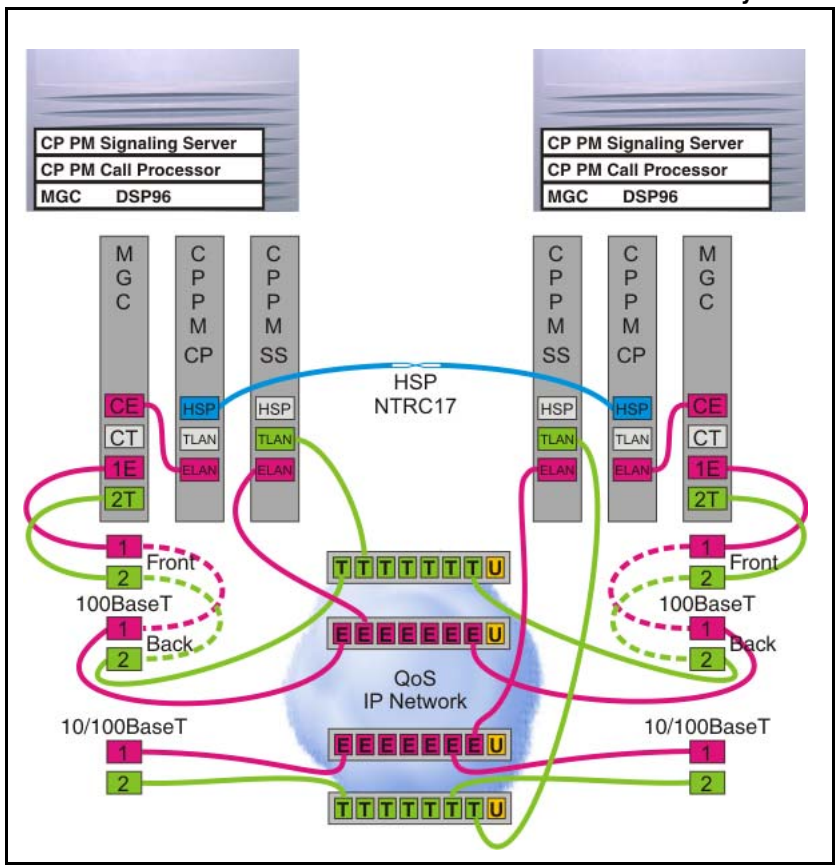


Figure 65 on page 223shows a Dual-homed HA Call Server with the HSP in Media Gateways. High Availability is supported with CP PM cards only.

Figure 65
Dual-homed HA Call Server with HSP in Media Gateway



MGC back connections are MGU faceplate ports in a MG 1010.

Figure 66 on page 224 shows a Dual-homed HA Call Server with the HSP in Cabinets.

Figure 66
Dual-homed HA Call Server with HSP in Cabinets

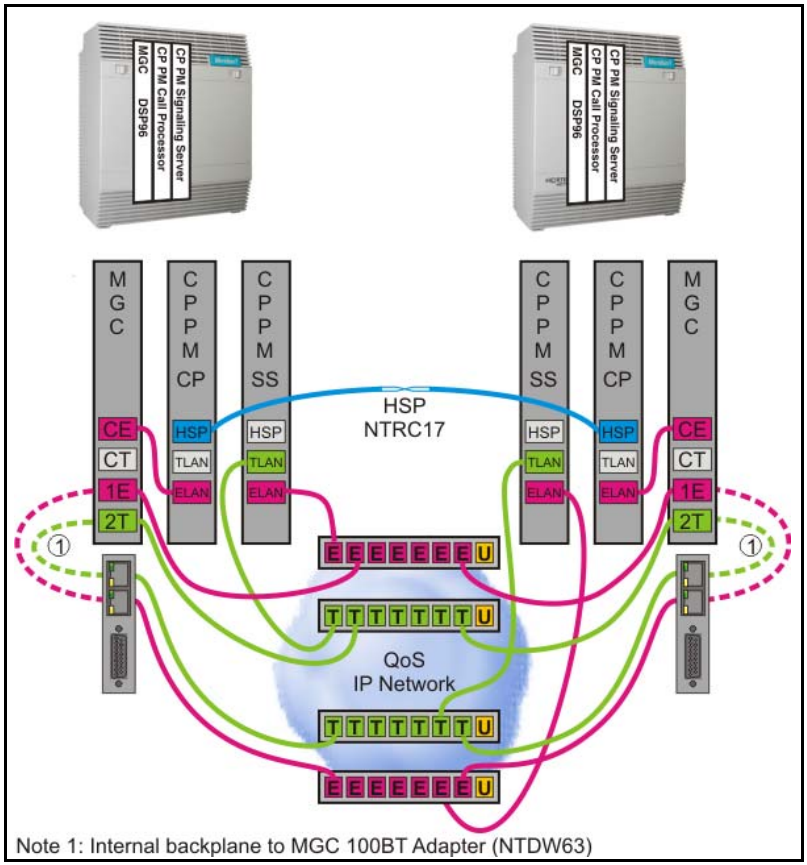
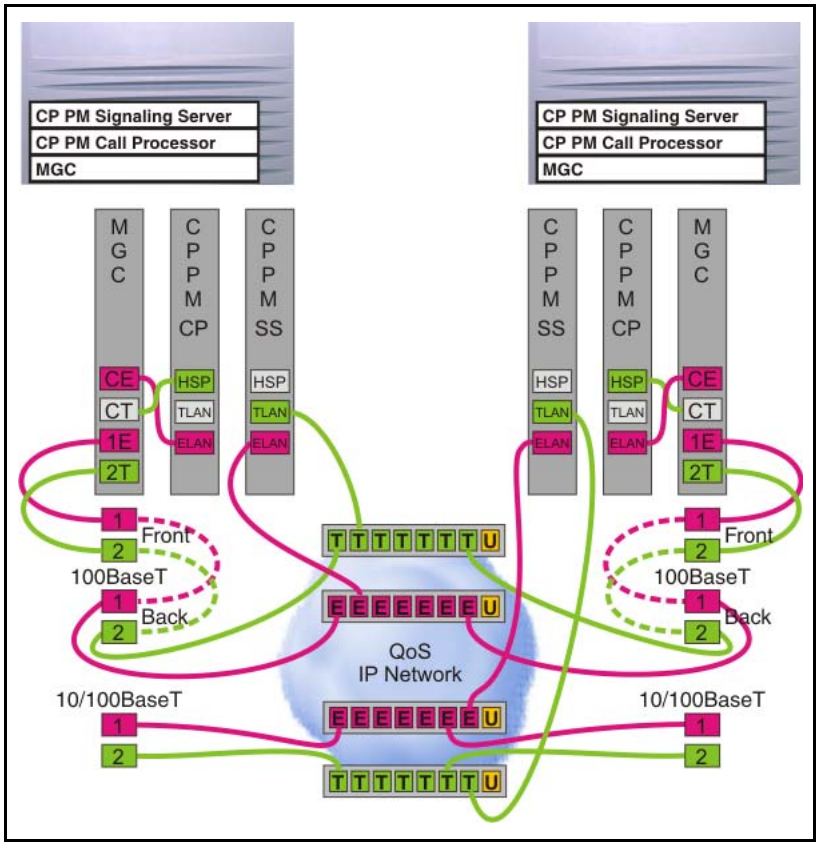


Figure 67 on page 225 shows a Dual-homed HA Call Server with a dual-homed HSP in Media Gateways.

> ***Note:*** This configuration does not support DSP daughterboards on the MGC.

Figure 67
Dual-homed HA Call Server with a dual-homed HSP



MGC back connections are MGU faceplate ports in a MG 1010.

Figure 68 on page 226 shows a Dual-homed HA Call Server with a dual-homed HSP in Cabinets.

This configuration does not support DSP daughterboards on the MGC.

Figure 68
Dual-homed HA Call Server with dual-homed HSP