AVAYA

Media Gateway 1000E PRI Gateway Installation and Commissioning Avaya Communication Server 1000

Chapter 1: New in this release

The following sections detail what's new in *Avaya Media Gateway 1000E PRI Gateway Installation and Commissioning, NN43041-311* for the Avaya Communication Server 1000E (Avaya CS 1000E) system in Release 7.5.

Navigation

Feature changes

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

Other changes

See the following section for information that is not feature-related:

Revision History

October 2011	Standard 05.04. This document is up-issued to reflect changes in technical content for DDCH Daughterboards NTBK51 and XTRK response changed from DB128 to D128 to align with the software and to remove legacy feature and hardware content that is no longer applicable to or supported by Communication Server 1000 systems.
February 2011	Standard 05.03. This document is up-issued to support Avaya Communication Server 1000 Release 7.5.
November 2010	Standard 05.01 and 05.02. This document is up-issued to support Avaya Communication Server 1000 Release 7.5.
June 2010	Standard 04.01. This document is up-issued to support Avaya Communication Server 1000 Release 7.0.

May 2009	Standard 03.05. This document is up-issued to support Nortel Communication Server 1000E system in Release 6.0.
May 2009	Standard 03.04. This document is up-issued to support Nortel Communication Server 1000E system in Release 6.0. This Technical Publication may contain information on or refer to products and naming conventions that are not supported in this release. This information is included for legacy purposes and convenience only. This includes but is not limited to items, such as: SSC; ISP 1100; ITG Pentium cards; and Media Cards running certain IP Line applications.
October 2008	Standard 02.07. This document is up-issued to include updated figure 'configuration2.bmp.'
September 2008	Standard 02.06. This document addresses CR Q01920411-01 to support changes in technical content for the LAN parameters default indicators table.
May 2008	Standard 02.05. This document is issued to reflect changes in T-1 pinouts.
March 2008	Standard 02.04. This document is issued to support Communication Server 1000 Release 5.5. This document addresses CRs Q01849763 and Q01851610.
February 2008	Standard 02.03. This document is issued to support Communication Server 1000 Release 5.5. This document addresses CR Q01819191.
January 2008	Standard 02.02. This document is issued to support Communication Server 1000 Release 5.5. The Applicable systems section contains the relevant note.
November 2007	Standard 02.01. This document is issued to support Communication Server 1000 Release 5.5.
October 2007	Standard 01.03. This document addresses CRs Q01738360, Q01747312, Q01743445, and Q01741413.
August 2007	Standard 01.02. This document addresses CR Q01721342, CR Q01726620, CR Q01727082, and CR Q01727091.
May 2007	Standard 01.01. This document is issued to support Communication Server 1000 Release 5.0.

Chapter 2: Customer service

Visit the Avaya Web site to access the complete range of services and support that Avaya provides. Go to www.avaya.com or go to one of the pages listed in the following sections.

Navigation

- Getting technical documentation on page 5
- Getting product training on page 5
- Getting help from a distributor or reseller on page 5
- Getting technical support from the Avaya Web site on page 6

Getting technical documentation

To download and print selected technical publications and release notes directly from the Internet, go to www.avaya.com/support.

Getting product training

Ongoing product training is available. For more information or to register, go to www.avaya.com/support. From this Web site, locate the Training link on the left-hand navigation pane.

Getting help from a distributor or reseller

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

Getting technical support from the Avaya Web site

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

Chapter 3: Safety instructions

This chapter contains information about the following topics:

Introduction

This section identifies safety issues associated with the installation of the Media Gateway 1000E PRI Gateway. To avoid personal injury and equipment damage, review the safety instructions before handling the equipment.

⚠ **Warning:**

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

⚠ **Electrostatic alert:**

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

Lifting system equipment

Use care when lifting system components. If necessary, get assistance to lift a component or install a component in a rack.

Before lifting or installing a component:

- Ensure that the planned location and the route to that location are free of obstacles and debris.
- Get help with heavy components or components that are to be placed in the upper section of a rack.

Power supply cables

The power supply cables must be no longer then 4.5 m in length and must have attachment plugs rated not less than 3A. Flexible power supply cables must be compatible with Article 400 of NEC and Table 11 and 12 of the CEC.

Handling circuit cards

 Electrostatic alert:

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

Follow these precautions when handling circuit cards:

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

Chapter 4: Regulatory information

This chapter contains information about the following topics:

Electromagnetic compatibility

The system meets Class A Electromagnetic compatibility (EMC) requirements for all countries. For more information, see Table 1: EMC specifications on page 9.

⚠ **Caution:**

In a domestic environment, the system can cause radio interference. In this case, the user could be required to take adequate measures.

Table 1: EMC specifications

Jurisdiction	Standard	Description
United States	FCC CFR 47 Part 15	FCC Rules for Radio Frequency Devices (see Note 1)
Canada	ICES-003	Interference-Causing Equipment Standard: Digital Apparatus (see Note 3)
Europe	EN 55022/ CISPR 22	Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement (see Note 2)
	EN 55024	Information technology equipment — Immunity characteristics — Limits and methods of measurement
	EN 61000-3-2	Limits for harmonic current emissions (equipment input current <= 16 A per phase)
	EN 61000-3-3	Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current <= 16 A

Jurisdiction	Standard	Description
Australia / New Zealand	CISPR 22/ AS/ NZS 3548	Limits and methods of measurement of radio disturbance characteristics of information technology equipment (see Note 2)
Japan	VCCI - Rules for VoluntaryControl	Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (see Note 4)

Note 1: FCC CFR 47 Part 15 Statements: Note 1a: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Note 1b: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Note 1c: The user should not make changes or modifications not expressly approved by Avaya. Any such changes could void the user's authority to operate the equipment.

Note 2: EN 55022/CISPR 22 statement: WARNING This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Note 3: ICES-003 Statement: This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Note 4: Japan VCCI Statement:

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の規定に基づくクラスA 装置です。この装 置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を取るように要求されることがあります。

Translation: This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Repairs to certified equipment must be made by an authorized Canadian maintenance facility designated by the supplier. If you make repairs or modifications to this equipment, or if the equipment malfunctions, the telephone company can ask you to disconnect the equipment. Make sure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, connect together. This precaution is for the users' protection, and is very important in rural areas.

⚡ **Voltage:**

The system frame ground of each unit must be tied to a reliable building ground reference.

⚡ **Voltage:**

Do not attempt to make electrical ground connections yourself. Contact your local electrical inspection authority or electrician to make electrical ground connections.

⚠ 警告

本製品を安全にご使用頂くため、以下のことにご注意ください。

* 接続ケーブル、電源コード、ACアダプタなどの部品は、必ず製品に同梱されております
添付品または指定品をご使用ください。添付品・指定品以外の部品をご使用になると故障
や動作不良、火災の原因となることがあります。

* 同梱されております付属の電源コードを他の機器には使用しないでください。
上記注意事項を守らないと、死亡や大怪我など人身事故の原因となることがあります。

Figure 1: DenAn regulatory notice for Japan

Translation:

⚠ **Warning:**

Please be careful of the following while installing the equipment:

- Please use only the connecting cables, power cord, and AC adapters shipped with the equipment or specified by Avaya to be used with the equipment. If you use any other equipment, it may cause "failures, malfunctioning, or fire".
- Power cords shipped with this equipment must not be used with any other equipment. In case the preceding guidelines are not followed, it may lead to death or severe injury.

Radio and TV interference

The system does not exceed Class A limits for radio noise emissions from digital apparatus, as telephone out in the radio interference regulations of Industry Canada (ICES-003).

Safety specifications

The system meets the CSA C22.2 No 60950-1-03 and UL 60950-1 safety standards.

Notice for United States and Canadian Installations

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the bottom of this equipment is a label that contains among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

USOC Jack: RJ-45 Facility Interface Code (FIC): 04DU9.1SN Service Order Code (SOC): 6.0N

A plug and jack to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advanced notice is not practical, the telephone company will notify you as soon as possible. Also you will be advised of your right to file a compliant with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information please see http://www.avaya.com/support. If the equipment is causing harm to the network, the telephone company can request that you disconnect the equipment until the problem is resolved.

There are no user serviceable parts inside this equipment. For repair please contact your repair service center.

Connections to party line services is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

This equipment meets applicable Industry Canada requirements.

Notice for International installations

If there is not enough planning or technical information available for your country of operation, contact your regional distributor or authority.

European compliance information

This device complies with the essential requirements and other relevant provisions of R&TTE Directive 1999/5/EC. A copy of the declaration maybe obtained from http://support.avaya.com/DoC.

Telecom specifications

The system meets the following European technical regulations: TBR 4, TBR 12, TBR 13.

Supported interfaces

Digital interfaces are approved based on European specifications.

Safety specifications

The system meets the following European safety specifications: EN 60950-1.

Chapter 5: Introduction

This chapter contains information about the following topics:

Overview

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.

This document provides the information necessary to install and configure an Avaya Communication Server 1000 Media Gateway 1000E PRI (Peripheral Rate Interface) Gateway (Avaya MG 1000E PRI Gateway).

The Avaya MG 1000E PRI Gateway is a digital trunk gateway that supports up to eight E1/T1 spans.

> **Important:**
> At this time DTI and JDMI are not supported on the MG1000E PRI Gateway (MGP). Only E1 & T1 PRI protocols are supported on this gateway.

The MG 1000E PRI Gateway can contain the following new components:

- an E1/T1 card (NTDW70AA) that provides a base of four spans and allows an additional four spans with an expansion daughterboard (NTDW75AA) for a total of a possible eight spans
- a 2u Gateway chassis (NTDW72) that provides a power supply, backplane, and fan
- a DB-128 DSP Daughterboard (NTDW78) is available for the MGC card.

The MG 1000E PRI Gateway can contain the following existing hardware components:

- Media Gateway Controller (MGC) (NTDW60) or (NTDW98)
- up to two DSP daughterboards (DSP DB) can be installed on the MGC. Three DSP DB capacities are available:

    - 96-port daughterboard (NTDW64AA)

    - 32-port daughterboard (NTDW62AA)

    - 128-port daughterboard (NTDW78AA)

- up to four optional downloadable D-channel (DDCH) daughterboards (NTBK51AA/ NTBK51AAE5/NTBK51CAE5 or later) or D-channel interface (DCHI) daughterboards (NTAK93AB) mounted on the new E1/T1 card

Legacy products and releases

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

http://www.avaya.com

Applicable systems

This document applies to the following systems:

- Communication Server 1000M Single Group (CS 1000M SG)
- Communication Server 1000M Multi Group (CS 1000M MG)
- Communication Server 1000E (CS 1000E)

Intended audience

This document is intended for individuals responsible for installing and configuring the PRI Gateway.

Only qualified personnel should install a PRI Gateway. To use this document, you need a basic knowledge of CS 1000E equipment and operation. Contact Avaya for information on installation courses. Before you install a system, Avaya recommends that you read and fully understand the CS 1000E publications.

Complete all system engineering and planning activities before using this guide to install a PRI Gateway.

Conventions

In this document, the CS 1000E system is referred to generically as the system. The Media Gateway 1000E PRI Gateway is referred to generically as the PRI Gateway.

Related information

This section lists information sources that relate to this document.

Publications

This document references the following publications:

- *Communication Server 1000E Installation and Commissioning, NN43041-310*
- *ISDN Primary Rate Interface Features Fundamentals, NN43001-569-B1*
- *ISDN Primary Rate Interface Maintenance, NN43001-717*
- *Converging the Data Network with VoIP Fundamentals, NN43001-260*
- *Element Manager System Reference - Administration, NN43001-632*
- *DPNSS1 Fundamentals, NN43001-572*

Other

For related information, see the following publications:

- *Avaya ISDN Primary Rate Interface Installation and Commissioning, NN43001-301*
- *Avaya ISDN Primary Rate Interface Features, NN43001-569-B1*
- *Avaya ISDN Primary Rate Interface Features, NN43001-569-B2*
- *Avaya ISDN Primary Rate Interface Features, NN43001-569-B3*

Online

To access Avaya documentation online, see the Support section on the Avaya home page:

http://www.avaya.com

Chapter 6: Installation summary

This chapter contains information about the following topics:

- •
- •

Introduction

Before you begin the installation, review the information in.

Table 2: Ethernet, IP address, and speed requirements on page 19 provides a summary of the connection requirements.

Table 2: Ethernet, IP address, and speed requirements

Device	ELAN connection	ELAN port	Address requirement	TLAN connection	TLAN port	Address requirement
MGC	1 - 100baseT for HA, 2 for SA	1E (ELAN on back of chassis for HA)	NA	1 - 100baseT for HA, 2 for SA	2T (TLAN on back of chassis for HA)	1 Address in existing T-LAN network
DB1	NA	NA	NA	NA	NA	1 Address in existing T-LAN network, must be in the same subnet as the MGC
DB2	NA	NA	NA	NA	NA	1 Address in existing T-LAN network, must be in the same subnet as the MGC
PRI	1 - 100baseT connected	Ethernet	1 TCP/IP Address in the same	NA	NA	NA

Device	ELAN connection	ELAN port	Address requirement	TLAN connection	TLAN port	Address requirement
	to CE on the MGC *		subnet as the MGC			
	* This is the recommended connection; however, you can connect to an external switch.					

Installation tasks

[Table 3: List of required installation tasks](#) on page 20 lists the tasks involved in installing and configuring a PRI Gateway.

Table 3: List of required installation tasks

Task	See
Rack-mounting and grounding the PRI Gateway	[Rack-mount and ground PRI Gateway components](#) on page 47
Installing the MGC card and DSP DBs	[Install a Media Gateway Controller and DSP daughterboard](#) on page 49
Installing an E1/T1 card and installing its associated daughterboards	[Install an E1/T1 card and daughterboards](#) on page 51
Connecting the components in a PRI Gateway	[Connect PRI Gateway components](#) on page 57
Configuring the PRI Gateway, the MGC card, and the DSP daughterboards	[Configure the Media Gateway Controller and DSP daughterboards in a PRI Gateway](#) on page 63
Configuring an E1/T1 card	[Configure an E1/T1 card](#) on page 75

Chapter 7: Overview of the PRI Gateway

This chapter contains information about the following topics:

Introduction

The PRI (Peripheral Rate Interface) Gateway is a digital trunk gateway that enables access to the Public Switched Telephone Network (PSTN) for telephones and other IP Phones or other PBXs as shown in.
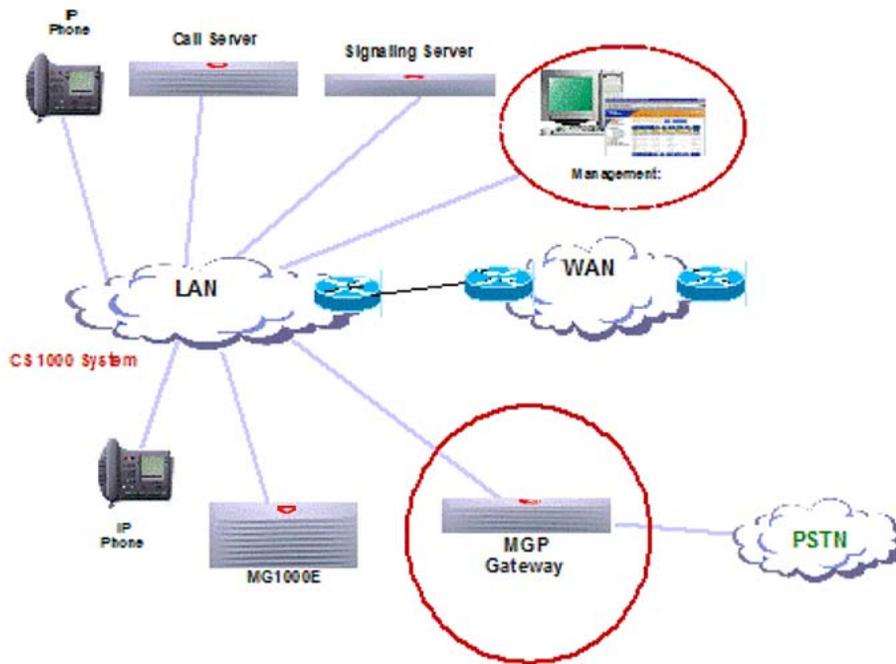
Figure 2: Position of the PRI Gateway in the CS 1000E system

The PRI Gateway supports four E1/T1 spans that can be expanded to eight E1/T1 spans. In addition, the PRI Gateway:

- emulates and is configured as an Avaya CS 1000 Media Gateway 1000E (Avaya MG 1000E)

- is fully compliant with the E1/T1 alarms and Integrated Services Digital Network (ISDN) protocols of the CE-MUX card

- uses one downloadable D-channel daughterboard to serve two E1/T1 spans

- has onboard clock reference functionality (eliminates the need for a clock controller daughterboard), which is system-software transparent

- supports full flexible configuration so that:

    - each of the E1/T1 spans in the PRI Gateway can be configured as E1 or T1

    - multicountry E1/T1 ISDN protocols can be configured for each span; each E1/T1 span can be configured with any PRI protocol variant or interface type, for example, DPNSS, Euro ISDN, NI2, MCDN

- has optional onboard implementation of DASS and DPNSS functionality

System configurations

The Avaya Media Gateway 1000E uses Media Gateway Controllers (MGC) and DSP daughterboards (DSP DB) along with CE-MUX cards to support PRI digital trunks. For each MG 1000E chassis, an IPE shelf configuration supporting only one E1/T1 span for each card along with one D-channel (DCH) daughterboard (for each slot) and one clock controller daughterboard is used.

The PRI Gateway uses the MGCr with its DSP DBs along with an E1/T1 card that supports four to eight E1/T1 spans with up to four downloadable D-channel (DDCH) daughterboards. This configuration supports any PRI protocol variant in the CS 1000E system.

As shown in , the PRI Gateway replaces the MG 1000E as a PRI/PRI2 digital trunk gateway.
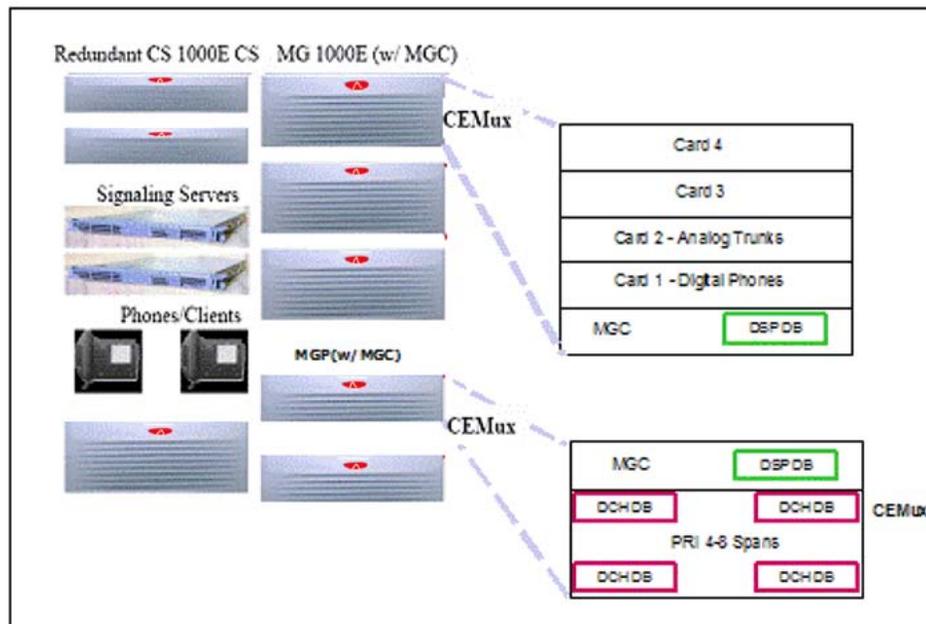
Figure 3: PRI Gateway configuration

CE-MUX support

The E1/T1 card supports the CE-MUX interface from the MGC for up to eight PRI spans. The E1/T1 card emulates the CE-MUX cards (NTAK09 and NTBK50AA).

Table 4: CE-MUX daughterboards supported by the E1/T1 card on page 24 shows the D-channel daughterboards that are supported by the E1/T1 card and its expansion.

Table 4: CE-MUX daughterboards supported by the E1/T1 card

Span use	Daughterboard	Supported CE-MUX application
1.5 MB PRI	DDCH (NTBK51AA/ NTBK51AAE5/ NTBK51CA and later)	Downloadable D-channel
2.0 MB PRI	DDCH (NTBK51AA/ NTBK51AAE5/ NTBK51CAE5 and later)	Downloadable D-channel
	DCHI (NTAK93AB)	Nondownloadable D-channel

> 🛈 **Important:**
> The PRI Gateway eliminates the need for a clock controller daughterboard. The clock controller functionality is provided internally.

Shelf slot assignments

The PRI Gateway chassis has two physical backplane slots: one for the MGC with its DSP daughterboards and the other for the new E1/T1 card and its expansion daughterboards.

The E1/T1 card emulates an MG 1000E with eight CE-MUX PRI/PRI2 cards, supported in card positions 1 to 8 with DSPs using a total of 16 slot assignments.

Table 5: Shelf slot assignments on page 24 describes the 16 slot assignments and their mapping.

Table 5: Shelf slot assignments

Card position system slot assignments	PRI Gateway usage for CS 1000E (Extended Media Gateway PRI (MGP) package 418- not equipped)	PRI Gateway usage for CS 1000E (Extended Media Gateway PRI (MGP) package 418- equipped).
Slot 0	DSP position 2 (32-port daughterboard)	DSP position 2 as follows: • physical – 96-port DSP DB • physical - 128-port DSP DB • configured – 32-port DSP daughterboard (where XTRK = DB32 on Slot 0)

Card position system slot assignments	PRI Gateway usage for CS 1000E (Extended Media Gateway PRI (MGP) package 418- not equipped)	PRI Gateway usage for CS 1000E (Extended Media Gateway PRI (MGP) package 418- equipped).
Slot 1–8	Up to eight E1/T1 spans	Up to eight E1/T1 spans
Slot 9–10	Not used	DSP position 2 as follows: * physical- the same 96 DSP DB used in Slot 0 * physical - the same 128 DSP DB used in Slot 0 * configured- 32-port DSP DBs (where XTRK= DB32 on Slots 9 and 10)
Slot 11–13	DSP position 1 (96-port daughterboard)	DSP position 1 (96-port DSP DB) DSP position 1 (128-port DSP DB)
Slot 14	Assigned to DTR and XTD (optional)	DSP position 1 (128-port DSP DB) Assigned to DTR and XTD (optional)
Slot 15	Assigned to DTR and XTD (optional)	DSP position 2 (128-port DSP DB) Assigned to DTR and XTD (optional)

SIP Line Service

The PRI Gateway interacts with Session Initiation Protocol (SIP) line service to facilitate the interactions with PSTN networks.

SIPL Package (417) must be enabled on the CS 1000 Call Server, which can reside on Linux commercial off-the-shelf (COTS) servers, Common Processor Pentium Mobile (CP PM), Common Processor Media Gateway (CP MG), and Common Processor Dual Core (CP DC) cards. Both the SIP Line Gateway and Element Manager reside on the supported Servers.

To enable, install, and configure the SIP Line service, you must upgrade the Communication Server 1000 systems.

For information about SIP line configuration, see *Avaya SIP Line Fundamentals* (NN43001-508).

For information about SIP Line installation, see *Avaya Linux Platform Base and Applications Installation and Commissioning* (NN43001-315).

Chapter 8: System components

This chapter contains information about the following topics:

Introduction

This chapter identifies the hardware components required for installing the PRI Gateway.

The PRI Gateway is a digital trunk gateway that supports up to eight E1/T1 spans. It houses an existing Media Gateway Controller (MGC) with expansion DSP daughterboards that support 128 DSP ports. The MGC can support up to 256 DSP ports when the Avaya Communication Server 1000 (Avaya CS 1000) Extended Media Gateway PRI (MGP) package 418 is equipped.

Figure 4: PRI Gateway functional block diagram

New components

The PRI Gateway contains the following new components:

a 128-port DSP Daughterboard (NTDW78). The MGC card can support two 128-port DSP Daughterboards when the Avaya CS 1000 Extended Media Gateway PRI (MGP) package 418 is equipped.

Existing components

The following existing hardware components are included in the PRI Gateway:

- an E1/T1 card (NTDW70AA) that provides a base of four spans and allows an additional four spans with an expansion daughterboard (NTDW75AA) for a total of a possible eight spans. The E1/T1 card includes four additional expansion connectors to allow up to four existing D-channel (DCH) daughterboards to be equipped to support DCH Layer 2 (LAP-D) and the UIPE PRI protocols.
- a 2u gateway chassis (NTDW72) that includes power supply, backplane and fan
- Media Gateway Controller (MGC) (NTDW60BA)

- up to two DSP daughterboards can be used with the MGC. Three DSP daughterboard capacities are available:

    - 128-port daughterboard (NTDW78AA)

    - 96-port daughterboard (NTDW64AA)

    - 32-port daughterboard (NTDW62AA)

- up to four optional downloadable D-channel (DDCH) daughterboards (NTBK51AA/ NTBK51AAE5/NTBK51CAE5 or later) or D-channel interface (DCHI) daughterboards (NTAK93AB) that mount on the E1/T1 card

- 19-inch rack (customer-supplied)

Redundancy and field replaceable components

The PRI Gateway does not include redundant components. PRI Gateways with fewer spans can be purchased to achieve the desired redundancy.

See Table 6: Replaceable components on page 29 for a list of PRI Gateway components that can be ordered as separate items.

Table 6: Replaceable components

NT code	Description	New or existing
NTDW72AAE5	PRI Gateway chassis	Existing
NTDW71AAE5	PRI Gateway Power Supply Unit	Existing
NTDW73AAE5	PRI Gateway cooling Unit	Existing
NTDW70AAE5	PRI Gateway E1/T1 main pack	Existing
NTDW75AAE5	PRI Gateway E1/T1 expansion daughterboard	Existing
NTDW76AAE5	PRI Gateway Compact Flash Memory Card	Existing
NTDW60BA	Media Gateway Controller (MGC)	Existing
NTDW78AA	MGC DSP daughterboard (128 ports)	New
NTDW64AA	MGC DSP daughterboard (96 ports)	Existing
NTDW62AA	MGC DSP daughterboard (32 ports)	Existing
NTBK51AA/ NTBK51AAE5/ NTBK51CAE5 (and later)	DDCH daughterboard	Existing
NTAK93AB	DCHI daughterboard	Existing

E1/T1 card

For faceplate and backplane views of the E1/T1 card, see Figure 5: Faceplate for the E1/T1 card on page 31 and Figure 6: Backplane for the E1/T1 card on page 31.
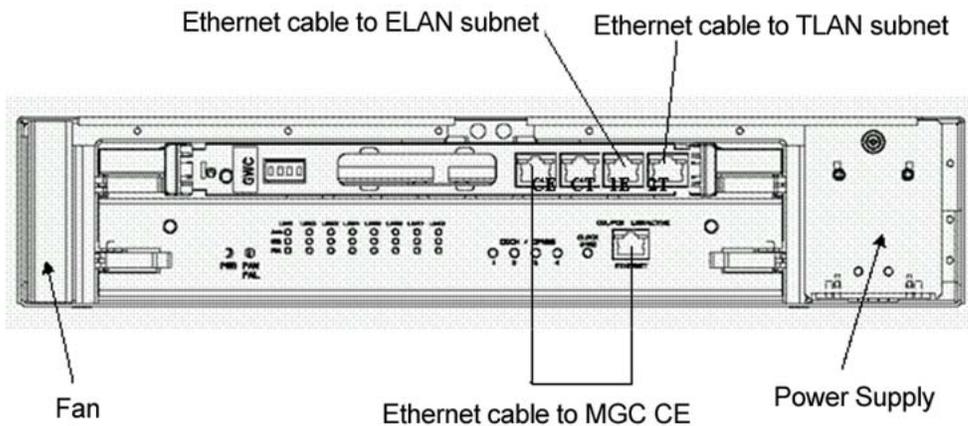
Figure 5: Faceplate for the E1/T1 card
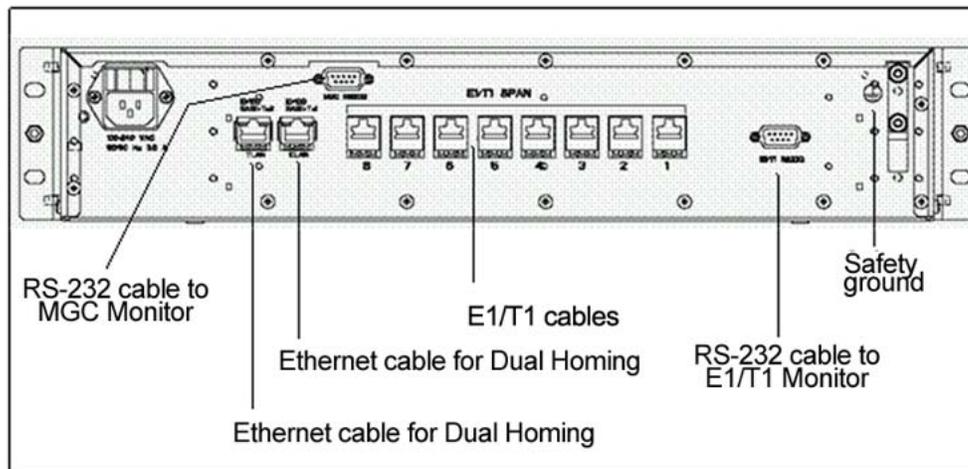
Figure 6: Backplane for the E1/T1 card

The E1/T1 card (excluding DCH daughterboards) provides the following hardware features:

- a Main Processing Unit (MPU) that includes 8 MB Flash memory and SDRAM of 32 MB and provides following functions such as:

    - initializing and controlling other devices such as FPGA and QuadFALC PCM interface

    - interacting with the Web over an Ethernet connection

    - interacting with system software

    - providing the interface to Synchronous Static and Dynamic RAM

> - running applications such as E1/T1 alarms and applications, clock reference functionality, Web interface

- digital Phase Locked Loop (PLL) for synchronizing on an external clock

- compact flash that provides mass storage for software, Web pages, configuration data and reports

- one 10/100BaseT network interface port connected to the faceplate that provides onboard connections to the ELAN subnet

- 33 LEDs on the faceplate to display diagnostic information

- onboard capability for DPNSS/DASS D-channels used to mount downloadable D-channel daughterboards (NTBK50AA emulation)

- I/O access:

  - CardLAN interface

  - RS-232 interface for initial card installation

FPGA circuit that handles:

  - time slot conversion

  - digital padding

  - communication interface with the MGC for system messaging

  - clock reference functionality that interfaces with the CE-MUX bus for clock controller commands (simulates a clock controller daughterboard)

  - switching voice paths

  - switching D-channels between D-channel daughterboards and QuadFALC interfaces

  - a register-based interface to the faceplate LED display

  - D-channel TR/RR handshake

The E1/T1 card features:

- minimum installation configuration

- optional access over the Internet for maintenance and troubleshooting

- command line interface

- embedded Telnet Server

- embedded FTP Server for firmware upgrades over the Internet

- database backup and restore through FTP or e-mail

- Status LEDs

- embedded Clock Reference functionality

- Gain Control and Voice pad

- Web-based Error logs

- continuity tests

- CardLAN interface

The E1/T1 card serves up to four spans (or up to eight spans with E1/T1 expansion daughterboard equipped) and is a motherboard to the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) Downloadable D-channel handler and the NTAK93AB D-channel handler.

The E1/T1 card requires one slot on the 19-inch 2u MGP shelf. The other slot on the shelf is reserved for the Media Gateway Controller.

E1/T1 card expansion daughterboard

The E1/T1 base card houses one E1/T1 expansion daughterboard to support up to eight spans. This expansion mates with connector pins on the E1/T1 card motherboard.

LED indicators

The E1/T1 card is equipped with the following 33 LED indicators on the faceplate controlled by the card software as shown in :

Figure 7: LED indicators on the E1/T1 card

- one LED for power

- one LED for fans

- three LEDs indicators for each E1/T1 span:

    - ENB/DIS indicates if the span is enabled/disabled by the system

    - RED (local) alarm indicator

    - YELLOW (remote) alarm indicator

- one LED per DDCH/DCHI daughterboard to indicate if the D-channel is enabled or disabled. Each DCH LED is associated with one daughterboard as follows:

    - UL LED to DCH upper left daughterboard

    - UR LED to DCH upper right daughterboard

    - LL LED to DCH lower left daughterboard

    - LR LED to DCH lower right daughterboard

- one LED for clock controller functionality that indicates success or failure of Clock Reference recovery

- two LEDs for Ethernet (part of RJ-45 connector) indicating:

    - link activity

    - speed (100 Mbps or 10 Mbps)

See

Table 7: LED functionality for the E1/T1 card

Group	LED Name	Color	Functionality
Power (1 LED)	PWR	Green	Lit when power is OK
Fan (1 LED)	FAN	Red	Lit when one of the fans in the cooling unit is faulty
E1/T1 Spans (8 spans) (24 LEDs)	ENB/DIS	Green	Lit when E1/T1 link is enabled
	ENB/DIS	Red	Lit when E1/T1 link is disabled
	RED	Red	Lit when E1/T1 link has Near End alarm
	YELLOW	Yellow	Lit when E1/T1 link has Far End alarm
D-channels (4 LEDs)	UL, UR, LL, LR	Off	DDCH/DCHI is not equipped
	UL, UR, LL, LR	Red	For DDCH/DCHI: Lit when MSDL/DDSL is disabled. For DCHI-SW: Lit when at least one DDSL (of a pair) is disabled.
	UL, UR, LL, LR	Green	"For DDCH/DCHI: Lit when MSDL/DDSL is enabled. For DCHI-SW: Lit when all configured DDSLs (of a pair) are enabled.
Clock Synch (1 LED)	CLOCK SYNC	Red	Lit when clock controller disabled
	CLOCK SYNC	Green	Lit when locked to a reference or in free-run mode
	CLOCK SYNC	Flashing green	Flashing when in tracking mode
Ethernet (2 LEDs)	LNK/ACT	Green	Flashing when Ethernet Link is receiving data
	SPEED	Yellow	Lit when speed is 100 Mbps Off when speed is 10 Mbps

Media Gateway Controller and DSP daughterboards

The MGC occupies slot 0 of a Media Gateway and supports legacy backplane interfaces (DS30x, CEMUX). The MGC provides Gateway Controller functions, and does not function as a Server. The system requires a separate Server to handle call processing requests.

The MGC card has two expansion slots for DSP daughterboards. A MGC card can provide a maximum of 256 DSP ports (2x128-port DSP daughterboards).

For more information about the Media Gateway Controller and DSP daughterboards, see *Avaya Circuit Card Reference,* NN43001-311.

Power supply

The PRI Gateway power supply characteristics are:

- 100 Watt AC to DC switching power supply
- Universal input: 90 Vac - 265 Vac
- Triple output voltages: +5V/12A, +12V/1A, -12V/1A
- High efficiency = 83%
- Regulation (line and load) 3% max
- Output Ripple 1% rms max
- Convection cooling
- Working temperature: 0°C to +50°C
- High power density
- Fixed switching frequency = 132 kHz
- Approvals: UL/ TUV/ CE
- EMC approvals: FCC part 15, class A
- Safety: UL 60950 3rd edition/ CAN/ CSA
- Size: W = 65 mm, L = 250 mm, H = 40 mm

D-channel daughterboards

Up to four optional D-channel (DCH) daughterboards can be used in the PRI Gateway. Two of them can be connected to the upper side and the other two to the lower side.

The PRI Gateway supports downloadable D-channel (DDCH) daughterboards (NTBK51AA/NTBK51AAE5/NTBK51CAE5 and later) and D-channel interface (DCHI) daughterboards (NTAK93AB).

The PRI Gateway uses only the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) DDCH daughterboards that supports two DCH interfaces (to serve two E1/T1 spans).

The PRI Gateway does not support the NTAK93AB DCHI daughterboard. The NTAK93AB DCHI daughterboard supports only one DCH interface (serves only one E1 span) and is used only for DPNSS/DASS signaling.

D-channel interface allocation and usage

The PRI Gateway allows flexible D-channel configuration as follows:

- pure DDCH daughterboard using only port 1
- pure DDCH daughterboard using only port 0 and 1
- pure DCHI daughterboard using port 1
- pure onboard DPNSS/DASS
- mixed configuration including both DDCH and DCHI

If one DCH interface is used for more than one span (not applicable for the DCHI daughterboard), fewer DDCH daughterboards can be used.

The PRI Gateway uses a fixed allocation map for DCH daughterboards and E1/T1 span numbering. The following rules apply to D-channel interface usage:

- DDCH interfaces (using both ports 0 and 1) can be defined and associated with E1/T1 spans based on the following mapping rules:
  - the upper left daughterboard (ports 0 and 1) is physically mapped to spans 1 and 2 of the PRI Gateway (MGC Intelligent Peripheral Equipment (IPE) card slots 1 and 2 from a system software perspective)
  - the upper right daughterboard (ports 0 and 1) is physically mapped to spans 3 and 4 of the PRI Gateway (MGC IPE card slots 3 and 4 from a system software perspective)

- the lower left daughterboard (ports 0 and 1) is physically mapped to spans 5 and 6 of the PRI Gateway (MGC IPE card slots 5 and 6 from a system software perspective)

- the lower right daughterboard (ports 0 and 1) is physically mapped to spans 7 and 8 of the PRI Gateway (MGC IPE card slots 7 and 8 from a system software perspective)

- DDCH (using only port 1) interfaces can be defined and associated with E1/T1 spans based on the following mapping rules:

  - the upper left daughterboard (port 1) is physically mapped to span 2 of the PRI Gateway (MGC IPE card slot 2 from a system software perspective)

  - the upper right daughterboard (port 1) is physically mapped to span 4 of the PRI Gateway (MGC IPE card slot 4 from a system software perspective)

  - the lower left daughterboard (port 1) is physically mapped to span 6 of the PRI Gateway (MGC IPE card slot 6 from a system software perspective)

  - the lower right daughterboard (port 1) is physically mapped to span 8 of the PRI Gateway (MGC IPE card slot 8 from a system software perspective)

- Because the DCHI daughterboard serves only one DCH interface (to support the DPNSS/DASS protocol) only port 1 in the daughterboard can be used as DCH interface. The following mapping rules apply:

  - the upper left daughterboard (port 1) is mapped to span 2 of the PRI Gateway (MGC IPE card slot 2 from a system software perspective)

  - the upper right daughterboard (port 1) is mapped to span 4 of the PRI Gateway (MGC IPE card slot 4 from a system software perspective)

  - the lower left daughterboard (port 1) is mapped to span 6 of the PRI Gateway (MGC IPE card slot 6 from a system software perspective)

  - the lower right daughterboard (port 1) is mapped to span 8 of the PRI Gateway (MGC IPE card slot 8 from a system software perspective)

- DPNSS/DASS protocols can also be implemented onboard (through a DCHI daughterboard or onboard implementation). Onboard DPNSS/DASS interfaces (DCHI software) can be defined and associated with up to eight E1 spans based on the following mapping rule:

  DCHI software can be defined on any span (1, 2, 3, 4, 5, 6, 7, 8) on the PRI Gateway. Each DCHI software span must be defined in the system software in the MGC IPE card in the slot that is the same as the span number. For example, span 2 of the PRI Gateway must be defined in MGC IPE card slot 2.

- The maximum usage for DCH interfaces in the PRI Gateway is:

  - four spans for pure DCHI daughterboard configuration

  - eight spans for pure onboard DCHI software configuration

- eight spans for pure DDCH configuration

- four to eight spans using mixed configuration

See Table 8: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) four span example on page 38, for samples of DCH configurations. The examples show the use of four E1/T1 spans as well as the use of eight spans (using the E1/T1 expansion daughterboard). The examples describe:

- pure configuration of DDCH

- pure configuration of DCHI daughterboard

- pure onboard DCHI software configuration

- possible mixed configuration

Important:

Any other configuration of four to eight spans that follow the allocation rules are also valid for the PRI Gateway.

For the example described in Table 8: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) four span example on page 38, Table 9: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) four span example with package 418 equipped on page 39and Table 10: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) eight span example with package 418 equipped on page 41 define MSDL or DCHI in the system software as follows:

- For the pure DDCH configuration, with four DDCH interfaces (port 1 enabled), define four MSDL on card numbers 2, 4, 6, and 8 using port 1.

- For the pure DCHI configuration, with four DCHI interfaces (port 1 enabled), define four DCHI on card numbers 2, 4, 6, and 8 using port 1.

- For the mixed configuration, with two DDCH interfaces and two DCHI interfaces, define two MSDL on card numbers 2 and 4 using port 1, and 2 DCHI on card numbers 6 and 8 using port 1.

Table 8: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) four span example

MGC IPE card (slot) number representing the E1/T1 span in LD 17	Pure configuration of DDCH (NTBK51AA/ NTBK51CA) 4 DDCH Interfaces with Port 1 enabled	Pure configuration of DCHI (NTAK93AB) 4 DCHI interfaces with Port 1 enabled	Possible mixed configuration 2 DDCH interfaces and 2 DCHI interfaces	PRI Gateway E1/T1 span number
1	Not supported	Not supported	Not supported	1
2	Upper left DDCH Port 1	Upper left DCHI Port 1	Upper left DDCH Port 1	2

MGC IPE card (slot) number representing the E1/T1 span in LD 17	Pure configuration of DDCH (NTBK51AA/ NTBK51CA) 4 DDCH Interfaces with Port 1 enabled	Pure configuration of DCHI (NTAK93AB) 4 DCHI interfaces with Port 1 enabled	Possible mixed configuration 2 DDCH interfaces and 2 DCHI interfaces	PRI Gateway E1/T1 span number
3	Not supported	Not supported	Not supported	3
4	Upper right DDCH Port 1	Upper right DCHI Port 1	Upper right DDCH Port 1	4
5	Not supported	Not supported	Not supported	5
6	Lower left DDCH Port 1	Lower left DCHI Port 1	Lower left DCHI Port 1	6
7	Not supported	Not supported	Not used	7
8	Lower left DDCH Port 1	Lower right DCHI Port 1	Lower right DCHI Port 1	8

For the example described in , define MSDL or DCHI in the system software as follows:

- for the pure configuration of four DDCH interfaces (port 0 and 1 enabled), define two MSDL on card numbers 2 and 4 using ports 0 and 1

- for the pure configuration of four DCHI (onboard) interfaces (port 1 enabled), define four DCHI on card numbers 1, 2, 3 and 4 using port 1

- for the mixed configuration of two DDCH interfaces and 2 DCHI (onboard) interfaces, define one MSDL on card number 2 using ports 0 and 1 and define two DCHI on card numbers 3 and 4 using port 1

Table 9: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) four span example with package 418 equipped

MGC IPE card (slot) number representing the E1/T1 span in LD 17	Pure configuration of DDCH (NTBK51AA/ NTBK51AAE5/ NTBK51CAE5 and later) 4 DDCH Interfaces with Port 0 and 1 enabled	Pure configuration of onboard DPNSS/ DASS (DCHI) 4 DCHI interfaces with Port 1 enabled	Possible mixed configuration 2 DDCH Interfaces + 2 DCHI interfaces	PRI Gateway E1/T1 span number
1	Upper left DDCH Port 0	DCHI Port 1	Upper left DDCH Port 0	1

MGC IPE card (slot) number representing the E1/T1 span in LD 17	Pure configuration of DDCH (NTBK51AA/ NTBK51AAE5/ NTBK51CAE5 and later) 4 DDCH Interfaces with Port 0 and 1 enabled	Pure configuration of onboard DPNSS/ DASS (DCHI) 4 DCHI interfaces with Port 1 enabled	Possible mixed configuration 2 DDCH Interfaces + 2 DCHI interfaces	PRI Gateway E1/T1 span number
2	Upper left DDCH Port 1	DCHI Port 1	Upper left DDCH Port 1	2
3	Upper right DDCH Port 0	DCHI Port 1	DCHI Port 1	3
4	Upper right DDCH Port 1	DCHI Port 1	DCHI Port 1	4
5	Not supported	Not supported	Not supported	5
6	Not supported	Not supported	Not supported	6
7	Not supported	Not supported	Not supported	7
8	Not supported	Not supported	Not supported	8

🛈 **Important:**

For the PRI Gateway, the following software package for the functionality that allows the use of port 0 or port 1 is provided in CS 1000 Extended Media Gateway PRI (MGP) package 418.

For the example described in , define MSDL or DCHI in the system software as follows:

- for the pure configuration of eight DDCH interfaces (port 0 and 1 enabled), define four MSDL D-channels on card numbers 2, 4, 6 and 8 using ports 0 and 1

- for the pure configuration of eight DCHI (onboard) interfaces (port 1 enabled), define eight DCHI D-channels on card numbers 1, 2, 3, 4, 5, 6, 7 and 8 using port 1

- for the mixed configuration of four DDCH interfaces and four DCHI (onboard) interfaces, define two MSDL D-channels on card number 2 and 4 using ports 0 and 1 and define four DCHI D-channels on card numbers 5, 6, 7, and 8 using port 1

Table 10: DDCH and DCHI fixed allocation map (face-to-faceplate of the E1/T1 card) eight span example with package 418 equipped

MGC IPE card (slot) number representing the E1/T1 span in LD 17	Pure configuration of DDCH (NTBK51AA/ NTBK51AAE5/ NTBK51CAE5 and later) 8 DDCH interfaces with Port 0 and 1 enabled	Pure configuration of onboard DPNSS/DASS (DCHI) 8 DCHI interfaces with Port 1 enabled	Possible mixed configuration 4 DDCH Interfaces + 4 DCHI interfaces	PRI Gateway E1/T1 span number
1	Upper left DDCH Port 0	DCHI Port 1	Upper left DDCH Port 0	1
2	Upper left DDCH Port 1	DCHI Port 1	Upper left DDCH Port 1	2
3	Upper right DDCH Port 0	DCHI Port 1	Upper right DDCH Port 0	3
4	Upper right DDCH Port 1	DCHI Port 1	Upper right DDCH Port 1	4
5	Lower left DDCH Port 0	DCHI Port 1	DCHI Port 1	5
6	Lower left DDCH Port 1	DCHI Port 1	DCHI Port 1	6
7	Lower right DDCH Port 0	DCHI Port 1	DCHI Port 1	7
8	Lower right DDCH Port 1	DCHI Port 1	DCHI Port 1	8

Important:

For the PRI Gateway, the software package for the functionality that allows the use of port 0 or port 1 is provided in CS 1000 Extended Media Gateway PRI (MGP) package 418

PRI Gateway span usage

The PRI Gateway allows flexible configuration DCH interface and B-channels on the E1/T1 card.

For some interface types, the PRI Gateway also supports a nB+D feature by having a single D-channel interface (attached with DDCH daughterboard) support several E1/T1 spans. Therefore, it is possible that one span is not configured with any DCH interface but is used for B-channels which are served by D-channel interface defined in another span.

The following rules and recommendations apply to the span usage of the PRI Gateway and for the D-channels and B-channels as well:

- Each PRI Gateway span can be configured as E1 or T1.

- DCHI supporting DPNSS/DASS protocol can be used with E1 spans only and not with T1s.

- DCHI daughterboards that support the DPNSS/DASS protocol can be used only on spans 2, 4, 6, and 8. Spans 1, 3, 5 and 7 do not support DCHI daughterboard DPNSS/DASS.

- The onboard DPNSS/DASS protocol can be used on all spans (1, 2, 3, 4, 5, 6, 7 and 8).

- DDCH daughterboard port 1 can be used only on spans 2, 4, 6 and 8.

- DDCH daughterboard port 0 can be used only on spans 1, 3, 5 and 7.

- Each span can be used for B-channels (BCH) solely without any attached DCH daughterboard.

- With the use of a DCHI daughterboard, the even span can be used only as a DCH interface. However, the odd span can be used for BCH served by a DCH interface that is controlled by another DCH span.

- With the use of a DDCH daughterboard, a DCH interface can be defined on any span. However, if one of the spans is not used for a DCH interface, it can be used for BCHs served by a DCH interface that is controlled by another DCH span.

- With the use of onboard DPNSS/DASS protocol, a DCH interface can be defined on any span. However, if one of the spans is not used for a DCH interface, it can be used for BCHs served by a DCH interface that is controlled by another DDCH span.

See In this table:

- BCH indicates B-channel is used in the span.

- DDCH0 indicates PRI D-channel of port 0 in the DDCH daughterboard is used in the span.

- DDCH1 indicates PRI D-channel of the port 1 in the DDCH daughterboard is used in the span

- DCHI indicates that the DPNSS/DASS D-channel is using the DCHI daughterboard.

- DCHI-SW indicates that the DPNSS/DASS D-channel is using onboard implementation.

Table 11: DCH interfaces (including DPNSS/DASS) and B-channel usage of the E1/T1 card

E1/T1 Span	IPE card (slot) (LD 17)	Used/ Unused	E1	T1
1	1	E1/T1/ None	BCH/DDCH0/DCHI-SW	BCH/DDCH0
2	2	E1/T1/ None	BCH/DDCH1/DCHI/ DCHI-SW	BCH/DDCH1
3	3	E1/T1/ None	BCH/DDCH0/DCHI-SW	BCH/DDCH0
4	4	E1/T1/ None	BCH/DDCH1/DCHI/ DCHI-SW	BCH/DDCH1
5	5	E1/T1/ None	BCH/DDCH0/DCHI-SW	BCH/DDCH0
6	6	E1/T1/ None	BCH/DDCH1/DCHI/ DCHI-SW	BCH/DDCH1
7	7	E1/T1/ None	BCH/DDCH0/DCHI-SW	BCH/DDCH0
8	8	E1/T1/ None	BCH/DDCH1/DCHI/ DCHI-SW	BCH/DDCH1

19-inch rack (customer-supplied)

The PRI Gateway is mounted in a customer-supplied 19-inch rack. For more information about the rack and the other components it holds, see *Avaya Communication Server 1000E Installation and Commissioning* (NN43041–310).

Four screws (.216 - 24 X .500 STL 289A) are provided with the PRI Gateway (P097F813).

Important:
Depending on the rack chosen, customers may have to supply their own screws.

Cables and connectors

The PRI Gateway on the chassis includes the existing six RJ-45 Ethernet connectors (four on the faceplate and two in the back panel) and one RS-232 connector.

The PRI Gateway includes the following physical connectors for the E1/T1 card:

- Ethernet connector. The E1/T1 card is connected to the ELAN subnet through the CE ports on the MGC.

- RS-232 connector. This connector is on the back panel of the E1/T1 card for installation and monitoring. This connection is used for initial configuration of basic LAN parameters in the command line interface (CLI). (After installation, all configuration, administration and maintenance is carried out through the Web-based interface.)

- Eight RJ-45 connectors on the back panel for the E1/T1 interfaces. The PRI Gateway does not provide BNC (co-axial) connectors.

- Two RJ-45 connectors on the back panel for dual homing

These cables are provided:

- power cord

- Ethernet cable (NTDU0606E6)

- up to eight shielded RJ-45 E1/T1 cables

All the cables listed here including the MGC cables as well as the connectors listed here are not provided by Avaya and are the responsibility of the distributor to provide:

- Power supply cable

- RJ-45 Ethernet shielded cable

- RJ-45 E1/T1 shielded cables

- RS-232 serial port (D-type 9) cable

- BNC connectors

  Important:
  If you require a coaxial cable to RJ-45 cable converter or adaptor, the RoHS compatible part is A0741330—Balum Impedance Converter 70 OHM Coax Male 120 OHM RJ-45.

Pinout for a T1-E1

T1/E1 wiring can use an RJ-45, DB-15 or BNC connectors. The following pinout table describes the RJ-45 pinout and is known as USOC RJ-48C. T1 is a North American (primarily) digital service providing 1.544 Mbps.

Table 12: T1/E1 color designator table

RJ-45 Pin	Signal	Notes
1	RX1	Wh Or

RJ-45 Pin	Signal	Notes
2	RX2	Or Wh
3	FGND	Ground/Shield
4	TX1	Wh Bl
5	TX2	Bl Wh
6	FGND	Ground/Shield
7	NC	Unused
8	NC	Unused

✱ **Note:**

NC stands for not connected.
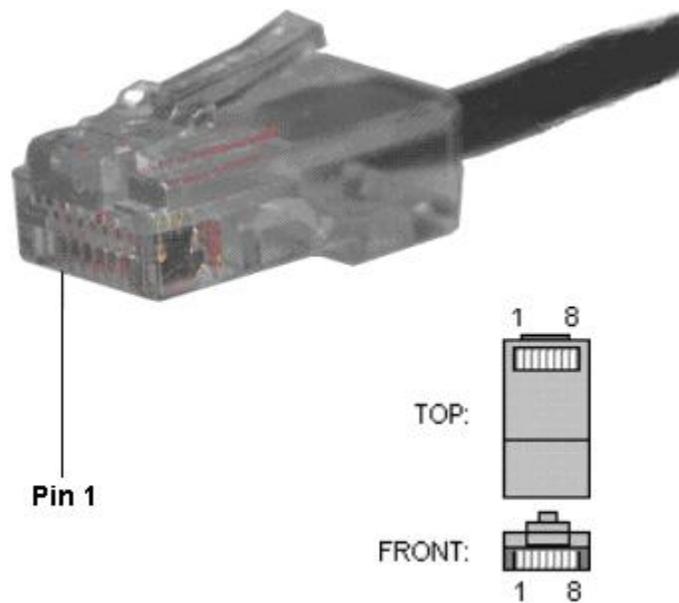
Figure 8: RJ-45 connector pins

Do not use standard or crossover CAT5 Ethernet cables with RJ-48 pinned CSUs and 568 pinned patch panels. The RX and TX signals are reversed for standard CAT5 Ethernet cables compared to E1/T1 cables and can cause problems if used with RJ-48 pinned CSUs and 568 pinned patch panels.

Comments? infodev@avaya.com

Chapter 9: Rack-mount and ground PRI Gateway components

This chapter contains information about the following topics:

- Introduction on page 47
- Rack-mount a PRI Gateway on page 47
- Ground a PRI Gateway on page 48

Introduction

This chapter contains the procedures for mounting components into the customer-supplied, 480 mm (19 in.) rack.

This chapter contains the following procedures:

- Rack-mounting a PRI Gateway on page 48
- Grounding PRI Gateway components on page 48

For more information about the layout of an Avaya Communication Server 1000E (Avaya CS 1000E) equipment rack, see *Avaya Communication Server 1000E Installation and Commissioning* (NN43041–310).

Rack-mount a PRI Gateway

To install the PRI Gateway in a 480 mm (19 in.) rack, the following items are required:

- equipment layout plan
- a 480 mm (19 in.) rack

> **Important:**
> The 480 mm (19 in.) rack is a customer supplied item.

- four .216 - 24 X .500 STL 289A screws (code P097F813)

Rack-mounting a PRI Gateway

1. Slide the PRI Gateway into the rack. Make sure it is supported.

2. Use the four screws to fasten the PRI Gateway to the rack.

3. Ground the PRI Gateway. See Grounding PRI Gateway components on page 48.

Ground a PRI Gateway

Perform the steps in Grounding PRI Gateway components on page 48.

⚠️ **Warning:**

Only a qualified person must make the connection in the AC electrical panel.

Grounding PRI Gateway components

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

2. Install a #6 - #10 AWG ground wire from the ground lug at the back of the PRI Gateway to the ground bar/frame ground bar.

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

Chapter 10: Install a Media Gateway Controller and DSP daughterboard

This chapter contains information about the following topics:

Install a Media Gateway Controller

Install the MGC in slot 0 of a Media Gateway cabinet or chassis.

Install a DSP daughterboard

describes how to install a DSP daughterboard on an MGC.

Installing a DSP daughterboard

1. Follow electrostatic safety procedures and place the MGC on a safe Electrostatic Discharge (ESD) surface.

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

   Important:
   For the PRI Gateway, the DB-96 and DB-128 daughterboards can be used in both positions. A software package for this functionality is required- Extended Media Gateway PRI (MGP) package 418

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

Chapter 11: Install an E1/T1 card and daughterboards

This chapter contains information about the following topics:

Introduction

This chapter describes the procedures involved in installing the E1/T1 card and its associated daughterboards as follows:

- Install the downloadable D-channel (DDCH) daughterboard (NTBK51AA/NTBK51CA) to support PRI/PRI2 protocols and the D-channel interface (DCHI) daughterboard (NTAK93AB) for DPNSS/DASS protocols. See Installing NTBK51AA/NTBK51AAE5/ NTBK51CAE5 and the NTAK93AB daughterboards on an E1/T1 card on page 52.

- Install the E1/T1 expansion daughterboard on the E1/T1 card (optional for eight-span configuration). See Installing an E1/T1 expansion daughterboard on page 53.

- Install the E1/T1 card on the PRI Gateway chassis. See Installing an E1/T1 card on a PRI Gateway chassis on page 55.

This chapter also describes how to remove a daughterboard. See Removing NTBK51AA/ NTBK51AAE5/NTBK51CAE5 and NTAK93AB daughterboards from an E1/T1 card on page 53.

You can install the E1/T1 card, DDCH daughterboard, and the DCHI daughterboard in any order. However, before you define the DCH links (LD 17), you must configure the PRI, PRI2, and DPNSS/DASS loops in the software (LD 17).

Install NTBK51AA/NTBK51AAE5/NTBK51CAE5 and NTAK93AB daughterboards

You can install the NTBK51AA, NTBK51AAE5, NTBK51CAE5 or the NTAK93AB, and the E1/T1 card in any order. However, PRI, PRI2 and DPNSS/DASS loops (LD 17) in the PRI Gateway must be configured in software before the DCH links are defined (in LD 17).

Follow the steps in [Installing NTBK51AA/NTBK51AAE5/NTBK51CAE5 and the NTAK93AB daughterboards on an E1/T1 card](#) on page 52.

Important:

The MG 1000E PRI Gateway supports both DDCH Daughter Boards (NTBK51) and DCHI Daughter Boards (NTAK93). However, the MG 1000E PRI Gateway supports only dual D-channel NTBK51 daughterboards: NTBK51AA, NTBK51AAE5, and NTBK51CAE5 (and later). It does not support the single D-channel NTBK51BA.

Electrostatic alert:

You must wear the static discharge bracelet located inside the cabinet before you handle circuit cards. Failure to wear the bracelet can result in damage to the circuit cards.

Installing NTBK51AA/NTBK51AAE5/NTBK51CAE5 and the NTAK93AB daughterboards on an E1/T1 card

1. Unpack and inspect the DCH daughterboards.

   Each daughterboard comes with four standoffs for mounting the daughterboard on the E1/T1 card.

   Important:

   If you are installing a DCH daughterboard on the lower side (lower left or lower right) of the E1/T1 card, use the standoffs that come with the DCH daughterboard.

   If you are installing a DCH daughterboard on the upper side (upper right or upper left) of the E1/T1 card, use the standoffs that come with the E1/T1 package.

2. Align the standoffs on the daughterboard with the mounting holes on the E1/T1 card.

   Make sure the daughterboard is mounted to the appropriate socket in the E1/T1 card and matched with the configured spans (either upper left, upper right, lower left, or lower right). If a DCH is present, the LED marked DCH lights up.

3. Enable the PRI (LD 60) or DPNSS/DASS loop (LD 75).

4. Enable the DCH interface (LD 96 for PRI or LD 75 for DPNSS/DASS).

   The DCH LED then flashes three times.

Remove NTBK51AA/NTBK51AAE5/NTBK51CAE5 and NTAK93AB daughterboards

The NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) and NTAK93AB daughterboards can only be removed after they are disabled in the software (LD 96 for PRI loops or LD 75 for DPNSS/DASS loops). Gateway ports in the E1/T1 card must also be disabled. To remove the daughterboards, follow the steps in Removing NTBK51AA/NTBK51AAE5/NTBK51CAE5 and NTAK93AB daughterboards from an E1/T1 card on page 53.

Removing NTBK51AA/NTBK51AAE5/NTBK51CAE5 and NTAK93AB daughterboards from an E1/T1 card

1. Change the removed E1/T1 span configuration to **not defined** through the E1/T1 card Web-based System Setting.

2. Remove the E1/T1 card and dismount the required daughterboard from the proper place (associated with the disabled span or spans).

3. Insert the E1/T1 card back into the lower slot.

4. Re-enable the other E1/T1 spans (LD 60 for PRI loops or LD 75 for DPNSS/DASS loops) and associated D-channels in the system software (LD 96 for PRI loops or LD 75 for DPNSS/DASS loops).

Install an E1/T1 expansion daughterboard

The PRI Gateway supports a base of four spans in the E1/T1 card. However, you can upgrade to eight E1/T1 spans by adding an expansion daughterboard.

To upgrade the spans in the PRI Gateway from four to eight spans, follow the steps in Installing an E1/T1 expansion daughterboard on page 53. For more information, see Figure 9: Expansion daughterboard on page 54 and Figure 10: Expansion daughterboard positioning on page 55.

Installing an E1/T1 expansion daughterboard

1. Unpack and inspect the E1/T1 expansion daughterboard.

2. Mount the expansion daughterboard so that it mates with connector pins on the E1/T1 card.

3. Define the new loops and DCH interfaces in the system software.

4. Configure the E1/T1 parameters through the Web-based system setting.

5. Configure the new spans from the system software (LD 60 for the PRI loops and LD 75 for the DPNSS/DASS loops).

6. Configure the D-channel for the system software (LD 96 for PRI interfaces or LD 75 for DPNSS/DASS interfaces).
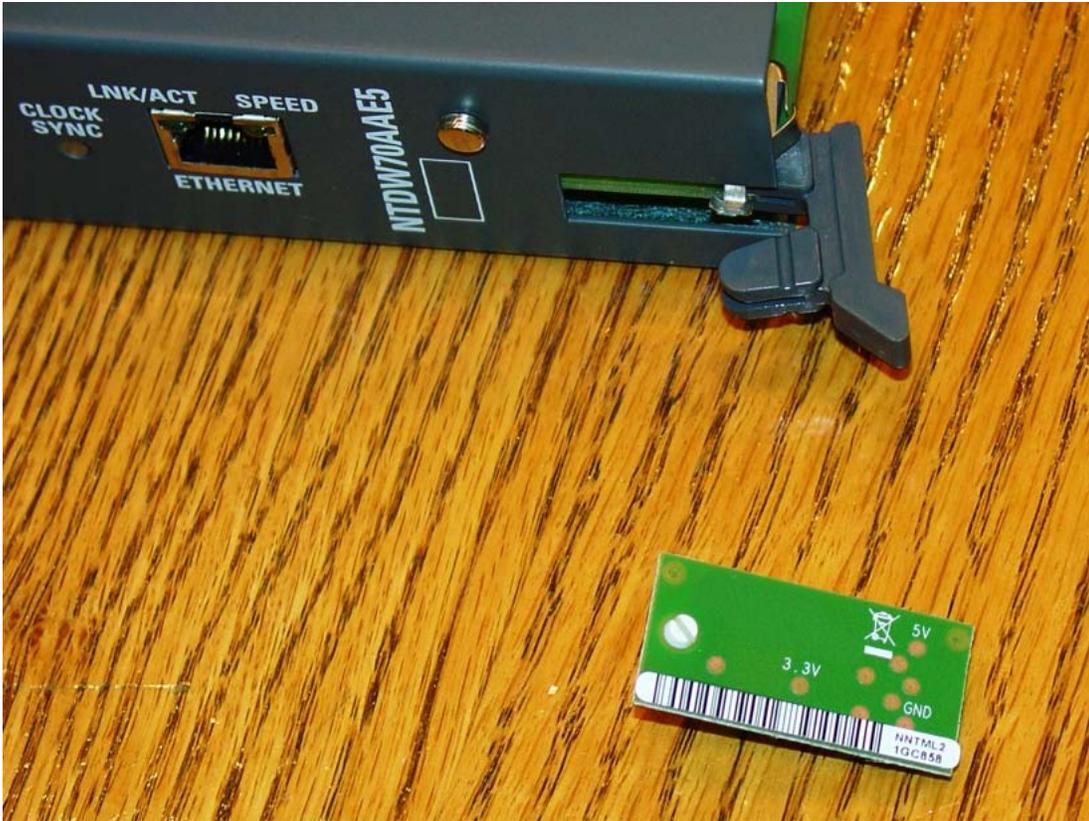
Figure 9: Expansion daughterboard

Figure 10: Expansion daughterboard positioning on page 55 shows the position of the header marked J2 and the expansion daughterboard in position on the E1/T1 card.
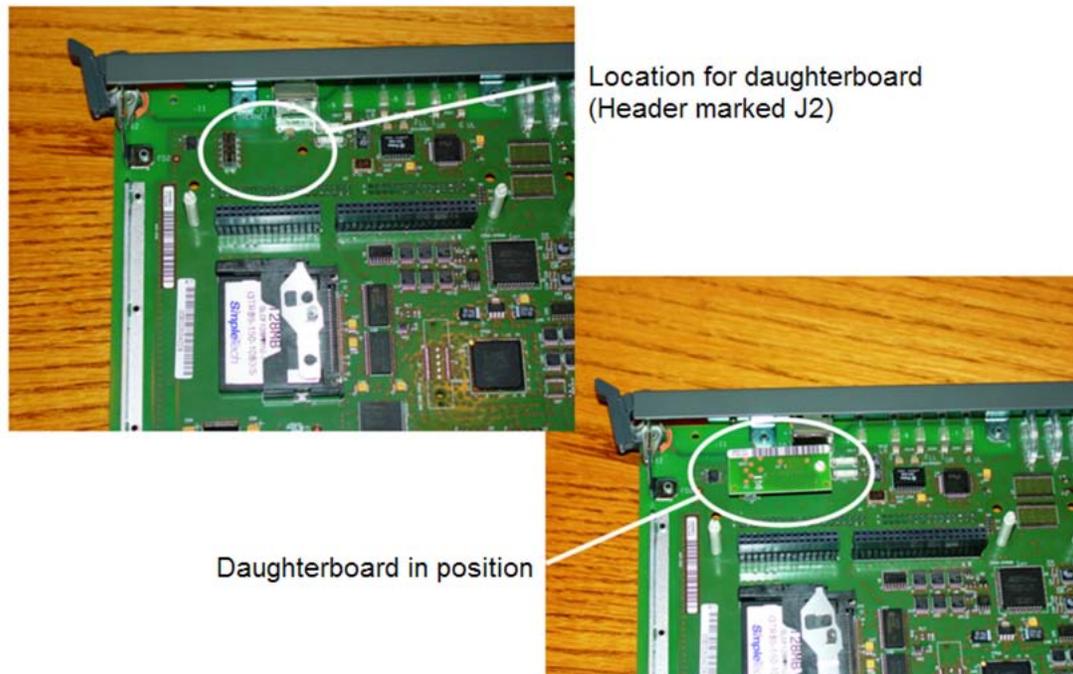
Figure 10: Expansion daughterboard positioning

Install an E1/T1 card

The E1/T1 card serves four to eight spans and is a motherboard to the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) downloadable D-channel handler and the NTAK93AB D-channel handler.

The E1/T1 card requires the lower slot on the 19-inch 2u PRI Gateway chassis. The upper slot on the chassis is reserved for the Media Gateway Controller.

See . For information about the connectors and cables, see .

Installing an E1/T1 card on a PRI Gateway chassis

1. Determine the location of the shelf where you are installing the E1/T1 card.

2. Unpack and inspect the E1/T1 card and DCH daughterboards.

3. Mount the D-channel daughterboards on the E1/T1 card.

4. Insert the E1/T1 card in the dedicated lower slot of the PRI Gateway chassis. If the DCH daughterboard is installed, the DCH LED flashes three times.

5. Connect the E1/T1 cables (RS-232, Ethernet, and RJ-45 E1/T1 connectors).

6. Connect the power cable.

7. Turn on the power.

Connect the RS-232 cable

This connection is used for the initial setup of basic LAN parameters by CLI. After initial setup, all configuration, administration and maintenance are done through the Web interface. See Connecting the RS-232 cable on page 56.

Connecting the RS-232 cable

1. Connect the RS-232 serial port (D-type 9 pins) to a terminal or a PC with terminal emulation (for example, HyperTerminal).

   🛈 **Important:**
   To connect the RS-232 cable, you require a null modem adapter.

2. Configure the RS-232 serial port interface as follows:

   • 9600 baud

   • 8 data bits

   • 1 stop bit

   • No parity

   • Flow control is "none"

Chapter 12: Connect PRI Gateway components

This chapter contains information about the following topics:

Introduction

The PRI Gateway with Media Gateway Controller (MGC) communicates with the Call Server using the built-in 100BaseT network interface on the MGC.

Three network interface ports on the MGC can be used for connecting to the ELAN subnet: two for use by the dual-homing feature and one for a direct connection to the E1/T1 card.

The E1/T1 card serves four to eight spans and is a motherboard to the NTBK51AA/ NTBK51AAE5/NTBK51CAE5 (and later) downloadable D-channel handler and the NTAK93AB D-channel handler. The E1/T1 card requires the lower slot on the 19-inch 2u chassis. The upper slot is reserved for the MGC.

The MGC can be connected to a Layer 2 switch to handle signaling between the Call Server and the PRI Gateway. If two of the ELAN network interfaces of the MGC are connected to separate Layer 2 switches, the PRI Gateway can remain operational in the event of a failure of one of the Layer 2 switches.

The PRI Gateway must have data network connectivity to the ELAN network interface of the Call Server. For more information about the engineering of the data network, see *Converging the Data Network with VoIP Fundamentals, NN43001–260*.

By default, the PRI Gateway with the MGC supports autonegotiate mode on the embedded network interfaces; the networking equipment to which they are connected must be configured as autonegotiate. If the MGC network interfaces do not autonegotiate to 100 Mb full-duplex, an alarm is generated as issues could arise if the speed is not 100 Mb and if the duplex is only half. See Media Gateway Controller system alarms, events, and messages on page 143 for a list of all system messages. A CLI command is also available on the MGC to turn off auto-negotiation for the embedded network interfaces, which configures the interfaces to 100 MB full-duplex. No other speed or duplex options are available on the MGC.

Figure 11: Data network providing redundancy on page 58 illustrates a typical robust network topology.
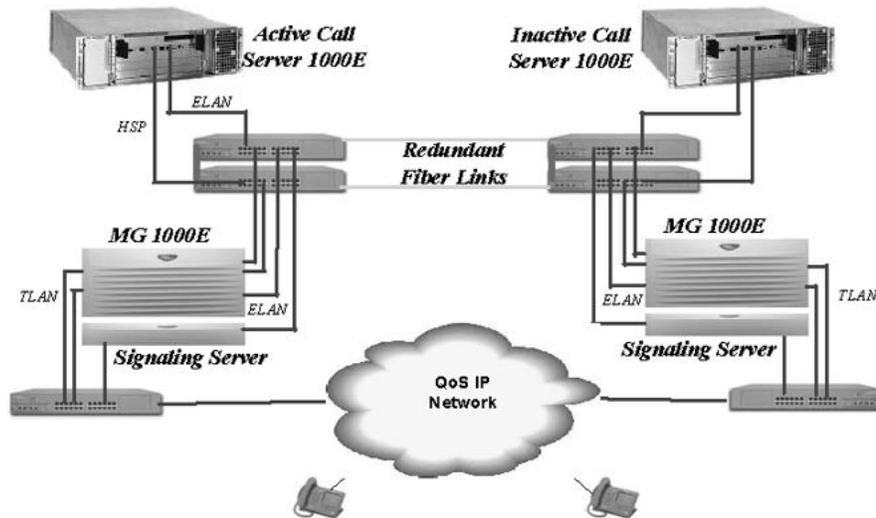
Figure 11: Data network providing redundancy

Media Gateway Controller network connections

Figure 12: Single server port configuration: no dual-homing on page 59 and Figure 13: Single server port configuration: dual-homing (nondistributed) on page 59 show two different connections to the external data equipment for the dual-homing feature: distributed and nondistributed.

Nondistributed means that both network interfaces (TLAN or ELAN) of the dual-homing feature are connected to a single Layer 2 switch, which provides a single point of failure if that switch goes out of service.

Distributed means that the two network interfaces (TLAN or ELAN) of the dual-homing feature are connected to separate Layer 2 switches, which provides another level of redundancy and no single point of failure with a Layer 2 switch. Avaya recommends the use of distributed connections, however, nondistributed is supported if the cost of the additional data networking equipment is an issue.

Figure 12: Single server port configuration: no dual-homing on page 59 shows the supported configuration for a single server configuration without redundant network configurations. This is the standard configuration of a cost-effective single server configuration.
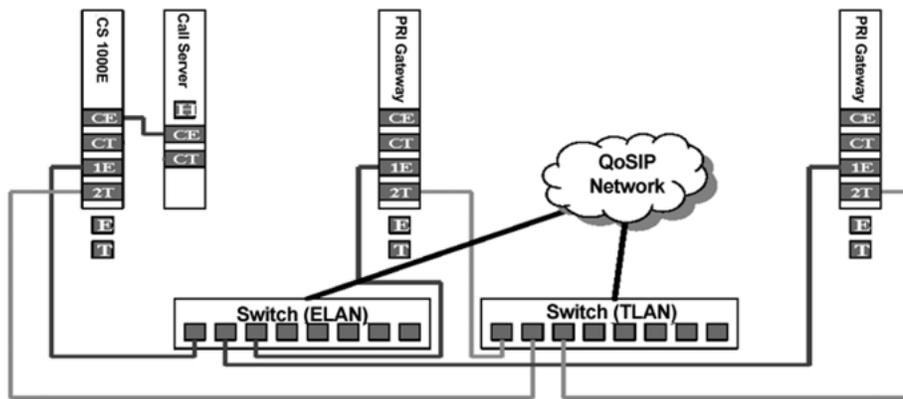
Figure 12: Single server port configuration: no dual-homing

A single server supports multiple MGCs using external networking equipment.

Figure 13: Single server port configuration: dual-homing (nondistributed) on page 59 shows a typical network configuration that supports dual-homing of both the ELAN and TLAN network interfaces. With this configuration, however, a single Layer 2 switch is still a single point of failure.
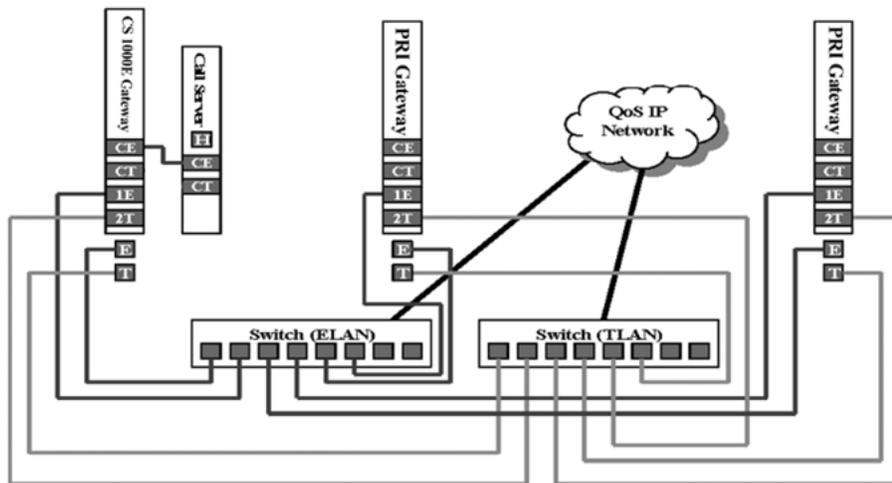
Figure 13: Single server port configuration: dual-homing (nondistributed)

Figure 14: Single server port configuration: dual-homing (distributed) on page 60 shows a typical network configuration that supports dual-homing of both the ELAN and TLAN network interfaces. Multiple Layer 2 switches are used to ensure there is no single point of failure. Avaya recommends this configuration for highest reliability in a single CPU Call Server configuration. Note that the Layer 2 switch must be partitioned into separate VLANs to keep the ELAN and TLAN traffic on separate subnets.
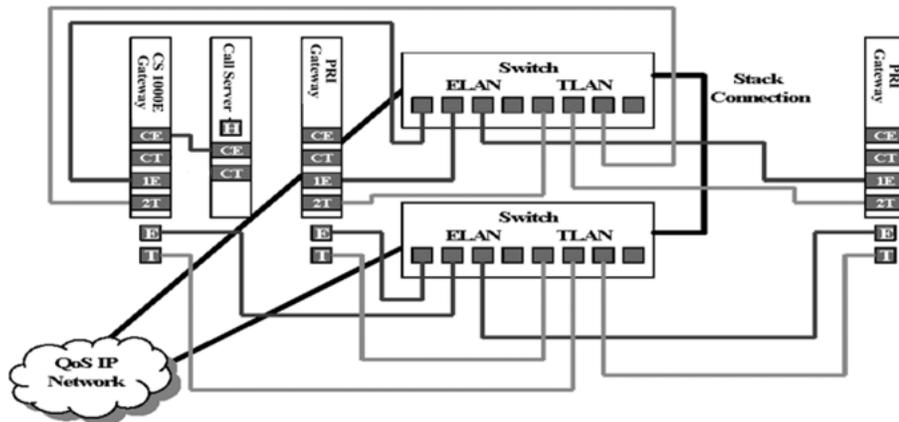
Figure 14: Single server port configuration: dual-homing (distributed)

Figure 15: Multiserver port configuration: dual homing (distributed) on page 60 shows a typical network configuration for a dual CPU Call Server configuration that supports dual-homing of both the ELAN and TLAN. Multiple Layer 2 switches are used to ensure there is no single point of failure. This is the recommended configuration in a dual CPU Call Server configuration. In this configuration, the Call Server benefits from the dual-homing feature of the MGC and remains connected to the network even if one of the Layer 2 ELAN subnet switches fail, therefore avoiding a CPU switchover because of a network outage.
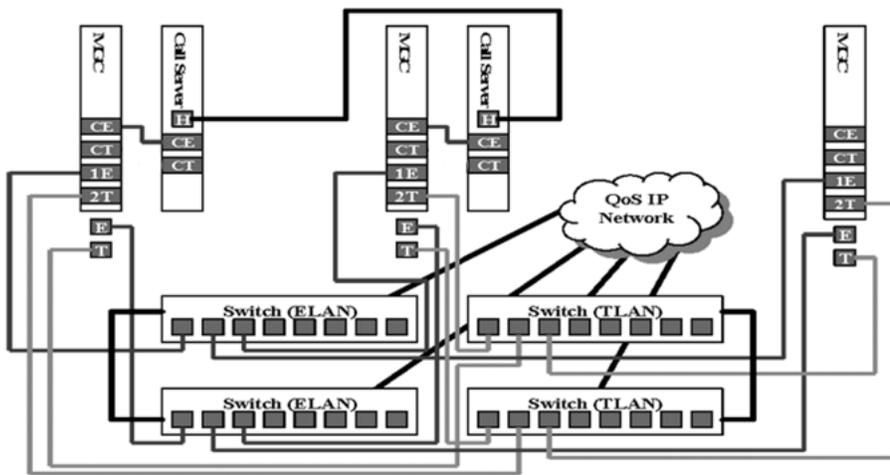
Figure 15: Multiserver port configuration: dual homing (distributed)

Cascading of the MGC network connections is allowed, up to a maximum of two chassis. The MGCs can be cabled directly without the need for external Layer 2 switches, which is the type of configuration recommended for a pure TDM solution.

ELAN and TLAN subnet connections

An MGC installed in the PRI Gateway requires both ELAN subnet and TLAN subnet connections. These procedures are the same as for the Avaya CS 1000 MG 1000E (Avaya MG 1000E) with the MGC. For a full description of connecting Avaya Communication Server 1000E (Avaya CS 1000E) system components, see *Avaya Communication Server 1000E Installation and Commissioning* (NN43041–310).

Connect a Media Gateway Controller to the ELAN subnet

Follow the steps in to connect an MGC to the ELAN subnet.

Connecting a Media Gateway Controller to the ELAN subnet

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

Connect a Media Gateway Controller to the TLAN subnet

Follow the steps in to connect an MGC to the TLAN subnet.

Connecting a Media Gateway Controller to the TLAN subnet

1. Connect a standard CAT5 patch cable to the TLAN network interface on the adaptor.
2. Connect the other end of the standard CAT5 patch cable to an RJ-45 TLAN network interface on the Layer 2 switch.

Connect a Media Gateway Controller to the E1/T1 card

Follow the steps in to connect the MGC to the E1/T1 card.

Connecting a Media Gateway Controller to the E1/T1 card

1. Connect a RJ-45 shielded Ethernet cable to the ELAN connection.
2. Connect the RJ-45 shielded Ethernet cable to the CE ports on the MGC.

Chapter 13: Configure the Media Gateway Controller and DSP daughterboards in a PRI Gateway

This chapter contains information about the following topics:

- [Introduction](#) on page 63
- [Configure the Media Gateway Controller on the Call Server](#) on page 63
- [Configure the Media Gateway Controller](#) on page 65
- [Configure DSP daughterboards](#) on page 69

Introduction

Following installation of the PRI Gateway chassis, the Media Gateway Controller (MGC) and associated peripheral cards, two tasks must be carried out before the MGC can register to the Avaya Communication Server 1000E (Avaya CS 1000E) Call Server:

- You must configure the MGC on the Call Server.
- You must configure the MGC itself.

The order of these tasks is not critical. However, Avaya recommends that you configure the MGC on the Call Server before you install the MGC.

You also configure the DSP daughterboards to support Voice Gateway Channels.

Configure the Media Gateway Controller on the Call Server

To configure the MGC on the Call Server, follow the steps in:

- [Configuring the Media Gateway Controller on a Call Server using LD 97](#) on page 64
- [Configuring Media Gateway Controller Tone and Conference using LD 17](#) on page 64

For more information about configuring DTMF tone detection (DTR), see *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310).

Configuring the Media Gateway Controller on a Call Server using LD 97

1. Log on to the Avaya CS 1000E Call Server.

2. To access LD 97, enter:

   LD 97

3. Enter the responses shown in

Table 13: Media Gateway Controller configuration (LD 97)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, NEW)
TYPE	Supl	Superloop
SUPL	0–252	Superloop number. Add prefix X to delete.
SLOT	<CR>	Select default.
SUPT	IPMG	IP Media Gateway
The following prompts are for IPMG superloops only.		
IPR0	nn.nn.nn.nn	Shelf 0 IPMG Uplink IP address. <CR> to skip to IPR1 when configuring new superloop; X to remove IPR0, DES0, and ZONE0 data.
IPMG_TYPE	MGC	IPMG is controlled by MGC card.
ZONE0	0-8000	Shelf 0 IPMG zone number. Zones used for IPMG purposes must be configured as shared so that other IP devices that are not in the same zone can gain access to the IPMG devices.
DES0		No input, simply a header for the ELAN/TLAN designators. This header and the ELAN/TLAN prompts only apply to MGC-based IPMGs.
...	...	
DES1		No input, simply a header for the ELAN/TLAN designators. This header and the ELAN/TLAN prompts only apply to MGC-based IPMGs.
...	...	

Configuring Media Gateway Controller Tone and Conference using LD 17

1. Log on to the CS 1000E Call Server.

2. To access LD 17, enter:

LD 17

3. Enter the responses shown in

Table 14: Media Gateway tone and Conference configuration (LD 17)

Prompt	Response	Description
REQ	CHG	
TYPE	CFN	Configuration record.
CEQU	YES	Common equipment.
...		
MGTDS	aaa bbb	Allows the configuration of two Media Gateway TDS loops simultaneously. aaa = loop, bbb = 0–255, X to delete the loop
IPMG	supl sh	Superloop and shelf of IPMG on which this MGTDS are associated. No default value is assigned if the IPMG is not associated. This prompt allows for the association of the MGTDS with a particular IPMG. supl = IPMG superloop, sh = IPMG shelf
MGCONF	aaa bbb ccc ddd	Allow the configuration of up to four Media Gateway conference loops simultaneously. aaa = loop, bbb = 0–255, X to delete the loop
IPMG	supl sh	Superloop and shelf of IPMG on which this MGTDS are associated. No default value is assigned if IPMG is not associated. This prompt allows for the association of the MGTDS with a particular IPMG. supl = IPMG superloop, sh = IPMG shelf

Configure the Media Gateway Controller

The MGC command line can be accessed using the NTBK48AA three-port SDI cable. A null modem adapter is used to connect to the MGC serial port.

Enter the following information:

- The ELAN configuration of the IPMG:
    - IP address
    - subnet mask

- gateway address

- The TLAN configuration of the IPMG (through Element Manager):

    - IP address

    - subnet mask

    - default gateway address

- Information for the Call Server controlling the PRI Gateway:

    - hostname of the Call Server on the ELAN subnet [optional through Element Manager]

    - IP address of the Primary Call Server

- Hostname for the PRI Gateway:

    hostname of the IPMG [optional through Element Manager]

You do not need to enter other configuration information on the MGC. All other information necessary to the operation of the PRI Gateway is configured through Element Manager and is automatically downloaded to the MGC from the Call Server.

After configuration is complete and the MGC has rebooted, the MGC attempts to register to the Call Server. The Call Server then attempts to match the IP address configured in LD 97 for this PRI Gateway against the IP address included in the registration request. If either of these checks fail, appropriate error messages are displayed. For more information, see Media Gateway Controller system alarms, events, and messages on page 143.

MGC configuration information is entered two ways:

- If the MGC detects that no IP configuration exists, the setup menu appears.

- Through the mgcsetup shell command.

🛈 **Important:**

Any changes to the configuration of the MGC ELAN must be reflected in similar changes on the Call Server.

Here is an example of the configuration of an MGC without any installed DSP daughterboards:

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

ELAN IP : 47.11.216.79

ELAN subnet mask : 255.255.254.0

ELAN gateway IP : 47.11.216.1

Primary CS IP : 47.11.216.61

Change MGC advanced parameters? (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 is Disabled, change? (y/[n]) : y

Enable ELAN security ? (y/[n]) : y

Optimized Security level, change level? (y/[n]) : y

Enter security level OPTI, FUNC or FULL :opti

Change public key? (y/[n]) : y

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

Please input PSK(16-32 chars):

Strength of PSK: Weak

Please reenter PSK(16-32 chars):

_____

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

ELAN IP : 47.11.216.79

ELAN subnet mask : 255.255.254.0

ELAN gateway IP : 47.11.216.1

Primary CS IP : 47.11.216.61

ELAN set to auto negotiate.

ELAN security Enabled, level is Optimized Security

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

If DSP daughterboards are installed on the MGC, additional prompts for TLAN configuration information appear. An example is shown here:

```
Please define the data networking parameters for this PRI Gateway
now.

ELAN IP : 47.11.216.79

ELAN subnet mask : 255.255.254.0

ELAN gateway IP : 47.11.216.1

Primary CS IP : 47.11.216.61
```

```
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 setting? (y/[n]) : y

Enable ELAN security ? (y/[n]) : y

Optimized Security level, change level? (y/[n]) : y

Enter security level OPTI, FUNC or FULL :opti

Change public key? (y/[n]) : y

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

_____

Please input PSK(16-32 chars):

Strength of PSK: Weak

Please reenter PSK(16-32 chars):

_____

You have entered the following parameters for this PRI Gateway:

ELAN IP : 47.11.216.79

ELAN subnet mask : 255.255.254.0

ELAN gateway IP : 47.11.216.1

Primary CS IP : 47.11.216.61

TLAN set to auto negotiate.

ELAN set to auto negotiate.

ELAN security Enabled, level is Optimized Security
```

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

The following MGC configuration changes require a reboot to take effect:

- ELAN IP, gateway, subnet mask
- TLAN IP, gateway, subnet mask

The following MGC configuration changes do not require a reboot to take effect:

Hostname, Call Server Hostname

After you have confirmed that the configuration changes have been made successfully, you are prompted (Y/N) to reboot the MGC if the configuration changes require a reboot to make the change.

Configure DSP daughterboards

Configure the Voice Gateway Channels (VGC) on DSP daughterboards in one of two ways:

- through Element Manager as described in Configure Voice Gateway Channels in Element Manager on page 69
- through LD 14 as described in Configuring a DSP daughterboard to support Voice Gateway Channels using LD 14 on page 72

Configure Voice Gateway Channels in Element Manager

Configuring an MGC in Element Manager on page 69 describes how to configure an MGC on the CS 1000E in Element Manager.

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

Configuring an MGC in Element Manager

1. In Element Manager, select **System > IP Network > Media Gateways**.
2. Choose the Superloop Number and Shelf and click **Add**.

   The window shown in Figure 16: Add IPMG on page 70 appears.

Figure 16: Add IPMG

3. Enter the IP address, zone number, and the Media Gateway type (in this case, a Media Gateway Controller). When you select **MGC**, the remaining fields automatically fill in ("CE", "E1", "E", "CT", "T2", and "T"). Click **Submit**.

4. Click **Submit**.

   Note:

   You must configure the DSP Daughterboard 2 same as DSP Daughterboard 1.

5. Enter the Gateway IP addresses and Voice LAN (TLAN) IP addresses for both IPv4 and IPv6. Global unicast IPv6 addressing is the only supported IPv6 address type. For the DSP daughterboards connected, select the type and enter the IP addresses (IPv4 or IPv6).

   After configuration of the MGC is complete, the window shown in appears.

Figure 17: Media Gateways

The Media Gateways window lists the superloop and shelf numbers, IP address, zone, and type of the MGC just configured.

6. From the **More Actions** list, select **Add VGW channels**.

The window shown in Figure 18: Add VGW channels on page 71 appears.
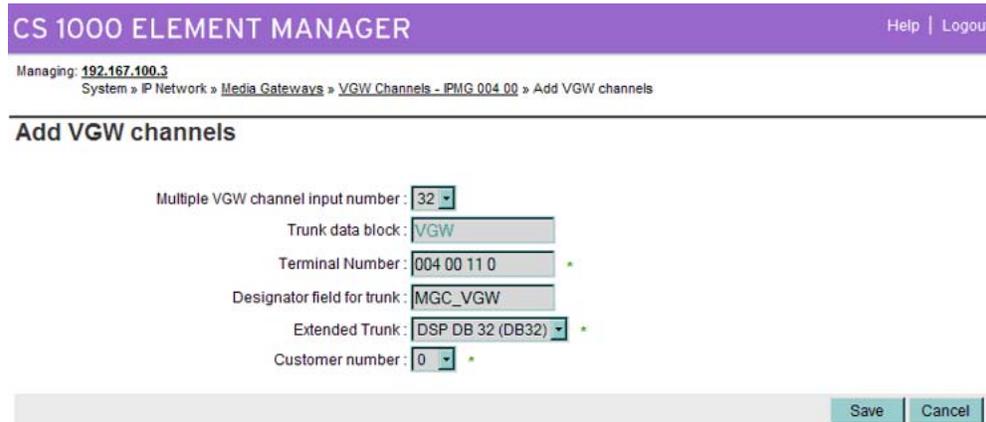
Figure 18: Add VGW channels

7. Select the number of required channels, the Terminal Number (the superloop and shelf numbers of the MGC, the card number, and the unit).

8. Provide a name and the daughterboard and customer number and then click **Save**.

The window shown in Figure 19: VGW Channels - IPMG on page 72 appears.

Figure 19: VGW Channels - IPMG

The MGC is added to the list.

Configure a DSP daughterboard to support Voice Gateway Channels using LD 14

Follow the steps in Configuring a DSP daughterboard to support Voice Gateway Channels using LD 14 on page 72.

> **Important:**
> You can also configure the MGC and the DSP daughterboards using Element Manager. For more information, see Configure Voice Gateway Channels in Element Manager on page 69.

Configuring a DSP daughterboard to support Voice Gateway Channels using LD 14

1. Log on to the CS 1000E Call Server.

2. To access LD 14, enter:

   LD 14

3. Enter the responses shown in Table 15: Configure the DSP daughterboard (LD 14) on page 73.

> ⓘ **Important:**
> See <u>Shelf slot assignments</u> on page 24 for available shelf slot assignment for DSP daughterboards in the PRI Gateway.

Table 15: Configure the DSP daughterboard (LD 14)

Prompt	Response	Description
REQ	a...a	Request (CHG, NEW).
TYPE	VGW	Voice Gateway.
TN	l s c u	TN of the first Voice Gateway Media Card unit. The card number is 0.
DES	<CR>	Description of the gateway channels.
XTRK	D128	128-port DSB daughterboard.
CUST	xx	The customer to which the IPTN resources are assigned.
...	...	
REQ	a...a	Request (CHG, NEW).
TYPE	VGW	Voice Gateway.
TN	l s c u	TN of the first Voice Gateway Media Card unit. The card number is 11.
DES	<CR>	Description of the gateway channels.
XTRK	DB96	96-port DSB daughterboard.
CUST	xx	The customer to which the IPTN resources are assigned.
...	...	
REQ	a...a	Request (CHG, NEW).
TYPE	VGW	Voice Gateway.
TN	l s c u	TN of the first Voice Gateway Media Card unit. The card number is 0.
DES	<CR>	Description of the gateway channels.
XTRK	DB32	32-port DSB daughterboard.
...	...	
CUST	xx	The customer to which the IPTN resources are assigned.
REQ	a...a	Request (CHG, NEW).
TYPE	VGW	Voice Gateway.

Prompt	Response	Description
TN	l s c u	TN of the first Voice Gateway Media Card unit. The card number is 9.
DES	<CR>	Description of the gateway channels.
XTRK	DB32	32-port DSB daughterboard.
CUST	xx	The customer to which the IPTN resources are assigned.
...	...	
REQ	a...a	Request (CHG, NEW).
TYPE	VGW	Voice Gateway.
TN	l s c u	TN of the first Voice Gateway Media Card unit. The card number is 10.
DES	<CR>	Description of the gateway channels.
XTRK	DB32	32-port DSB daughterboard.
CUST	xx	The customer to which the IPTN resources are assigned.
...	...	

4. Exit from LD 14. Enter the command:

* * * *

Configuring the DTR

For detailed instructions on configuring the DTR, see *Avaya Communication Server 1000E Installation and Commissioning* (NN43041-310).

Chapter 14: Configure an E1/T1 card

This chapter contains information about the following topics and the tasks to configure an E1/T1 card as shown in the following table.

Section	Related procedures
Configure E1/T1 ports on a Call Server on page 76	• Configuring PRI loops using LD 17 on page 77 • Configuring PRI2 loops using LD 17 on page 78 • Configuring DPNSS/DASS loops using LD 17 on page 78 • Configuring a D-channel interface to support PRI/NI2 using LD 17 on page 80 • Configuring a D-channel interface to support PRI2/EURO D-channels using LD 17 on page 81 • Configuring DPNSS/DASS D-channels in the PRI Gateway using LD 17 on page 82 • Configuring DPNSS/DASS D-channel interface using LD 74 on page 85 • Configuring a digital data block using LD 73 on page 86 • Configuring PRI2 data block for system timers using LD 73 on page 87 • Configuring the PRI2 loop timers using LD 73 on page 88 • Configuring PRI trunk routes using LD 16 on page 89 • Configuring PRI2 trunk routes using LD 16 on page 90 • Configuring DPNSS/DASS trunk routes using LD 16 on page 91 • Configuring PRI and PRI2 trunks with Trunk Data Block data using LD 14 on page 92 • Reconfiguring existing Dchannels on an NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) on page 93 • Changing the protocol on an established D-channel using Element Manager on page 93 • Configuring the DPNSS/DASS trunks with Trunk Data Block data using LD 14 on page 94

Section	Related procedures
Enable PRI spans on page 95	• Enabling the NTBK51AA/NTBK51AAE5/NTBK51CAE5 daughterboard on page 95 • Enabling the NTAK93AB daughterboard on page 96 • Enabling the clock controller on page 96
Initial configuration of the E1/T1 card on page 97	• Configuring basic parameters through CLI on page 97 • Entering LAN parameters on page 99 • Verifying a network connection from the CLI on page 100 • Verifying a network connection from a PC on page 101 • Configuring basic LAN parameters by CLI on page 103 • Accessing the command line interface over the Web on page 103
Access and configure an E1/T1 card through the Web on page 104	• Accessing the basic parameters for the E1/T1 card through the Web on page 104 • Adding administrative users through the Web on page 105 • Viewing and changing administrative user settings through the Web on page 106 • Changing a password through the Web on page 107 • Configuring basic parameters for an E1/T1 card through the Web on page 108
Configure ISDN E1/T1 trunks on page 109	Configuring ISDN E1/T1 trunks on page 109

Configure E1/T1 ports on a Call Server

When you configure E1/T1 ports on a Call Server, you must configure:

• PRI, PRI2, and DPNSS/DASS trunk loops

• PRI, PRI2, and DPNSS/DASS D-channels

• CE-MUX clock controllers

• PRI, PRI2, and DPNSS/DASS routes

• PRI, PRI2, and DPNSS/DASS trunks

PRI digital trunk loop configuration

Configuring PRI loops using LD 17 on page 77 describes the configuration in LD 17 to support PRI/T1 loops (common equipment parameters) on the PRI Gateway.

Configuring PRI loops using LD 17

1. Log on to the Avaya Communication Server 1000E (Avaya CS 1000E).

2. To access LD 17, enter:

   LD 17

3. Enter the responses shown in Table 16: PRI loop configuration (LD 17) on page 77.

   💡 **Important:**
   VDC configuration is not required for DASS signaling.

Table 16: PRI loop configuration (LD 17)

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CEQU	Make changes to common equipment parameters.
CFN	YES	Common equipment.
...		
DLOP	loop dd ff	Digital loop (1.5 Mb) The format is: loop is 0–254, dd is 0-24 (maximum simultaneous calls) and ff is D2, D3, D4, or ESF. Enter X to delete the loop.
MG_CARD	supl sh card	The physical card for the digital loop association to the PRI Gateway is required. The format is: superloop, shelf num, card num. For the PRI Gateway, card 1-8 is applicable.
MODE	PRI	Mode of operation.
TMDI	NO	TMDI functionality is not supported for MGP gateway.
...	...	
YALM	FDL, DG2	Yellow alarm method.
TRSH	0 - 15	Threshold.

Prompt	Response	Description
...	...	

on page 78 describes the configuration in LD 17 to support PRI2/E1 loops (common equipment parameters) on the PRI Gateway.

Configuring PRI2 loops using LD 17

1. Log on to the Avaya CS 1000E.

2. To access LD 17, enter:

   `LD 17`

3. Enter the responses shown in

   Table 17: PRI2 loop configuration (LD 17)

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CEQU	Make changes to common equipment parameters.
CFN	YES	Common equipment.
...		
PRI2	loop	Digital loop (2.0 Mb) (0 - 254)
MG_CARD	supl sh card	The physical card for the PRI2 loop association to the PRI Gateway. The format is superloop, shelf, card. For the PRI Gateway, card 1 to 8 is applicable.

on page 78 shows the configuration in LD 17 needed to support DPNSS loops (common equipment parameters) on the PRI Gateway.

Configuring DPNSS/DASS loops using LD 17

1. Log on to the CS 1000E.

2. To access LD 17, enter:

   `LD 17`

3. Enter the responses shown in

   Table 18: DPNSS/DASS loop configuration (LD 17)

Prompt	Response	Description
REQ	CHG	Change existing data.

Prompt	Response	Description
TYPE	CEQU	Make changes to common equipment parameters.
CFN	YES	Common equipment.
...		
DDCS	loop	The PRI loop number for the new DPNSS/DASS link.
MG_CARD	supl sh card	The physical card for the DPNSS/DASS loop association to the PRI Gateway. The format is superloop, shelf, card. 🛈 **Important:** If using the NTAK93AB daughterboard, odd card numbers are applicable (1, 3, 5, 7). If using the onboard DPNSS/DASS, odd and even numbers are applicable (1, 2, 3, 4, 5, 6, 7, 8).

D-channel configuration

on page 80 and on page 81 show the D-channel interface configuration in LD 17 needed to support PRI/NI2 and PRI2/EURO D-channel interfaces.

The example given in the tables is specific to EURO and NI2 interfaces. However, PRI D-channel in the PRI Gateway is also supported on other interface types as well.

For CTYP=MSDL configuration, CS 1000 software is flexible. An E1/T1 span can use port 0 or port 1 of the DDCH along with MG_CARD prompt added to support the Media Gateway Controller (MGC).

Backup D-channels are supported. Use the CLI to configure backup D-channels in the same manner as the primary D-channels.

🛈 **Important:**

If configuring the NTBK51AA dual D-channel daughterboard on a MG 1000E PRI Gateway, do not configure port 0 as the backup D-channel. This generates a SCH4765 error message and causes the configuration build to fail. You must configure backup D-channels on port 1 of the D-channel daughterboard.

🛈 **Important:**

For the PRI Gateway, the following software package for the functionality that allows the use of port 0 or port 1 is provided in CS 1000 Extended Media Gateway PRI (MGP) package 418

For the PRI Gateway, digital trunk loop and D-channel configuration is not supported on TMDI card types.

nB+D PRI is supported by the PRI Gateway but is not shown in these examples. For more information about configuring nB+D PRI, see *Avaya ISDN Primary Rate Interface Features Fundamentals* (NN43001-569-B1).

Use Configuring a D-channel interface to support PRI/NI2 using LD 17 on page 80 to configure the PRI/NI2 D-channel interface in the PRI Gateway.

Configuring a D-channel interface to support PRI/NI2 using LD 17

1. Log on to the CS 1000E.

2. To access LD 17, enter:

   LD 17

3. Enter the responses shown in Table 19: PRI/NI2 D-channel interface configuration (LD 17) on page 80.

Table 19: PRI/NI2 D-channel interface configuration (LD 17)

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	ADAN	Action device and number.
ADAN	NEW DCH xx	Add a D-channel on logical port 0 - 254.
CTYP	MSDL	D-channel configuration on MSDL card. MSDL= NTBK51AA/NTBK51AAE5/ NTBK51CAE5 (and later) downloadable D-channel daughterboard. TMDI is not supported for MGP.
MG_CARD	supl sh card	The physical card for the digital loop association to the PRI Gateway. The format is: superloop, shelf number, card number. 🛈 **Important:** Even card numbers are applicable (that is, 2, 4, 6, 8). ⚠ **Warning:** DO NOT use odd loop numbers. Odd loop numbers may cause issues with existing equipment.
PORT	0 - 1	Port number of the NTBK51AA/NTBK51AAE5/ NTBK51CAE5 for the D-channel.

Prompt	Response	Description
		Important: If configuring the NTBK51AA dual D-channel daughterboard on a MG1000E PRI Gateway, do not configure port 0 as the backup D-channel. This generates a SCH4765 error message and causes the configuration build to fail. You must configure backup D-channels on port 1 of the D-channel daughterboard. **Important:** For the PRI Gateway, the following software package for the functionality that allows the use of port 0 or port 1 is provided in CS 1000 Extended Media Gateway PRI (MGP) package 418
USR	PRI	This D-channel is used for Primary Rate only.
IFC	NI2	Interface type for the D-channel.
DCHL	0 - 254	Loop number for the D-channel. (See DLOP loop number.)
SIDE	(USR) NET	The system is network/user side.
...	...	

Use the steps in Configuring a D-channel interface to support PRI2/EURO D-channels using LD 17 on page 81 to configure the PRI2/Euro D-channel interface for the PRI Gateway.

Configuring a D-channel interface to support PRI2/EURO D-channels using LD 17

1. Log on to the CS 1000E.

2. To access LD 17, enter:

   LD 17

3. Enter the responses shown in Table 20: PRI2/Euro D-channel interface configuration (LD 17) on page 81.

Table 20: PRI2/Euro D-channel interface configuration (LD 17)

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	ADAN	Action device and number.
ADAN	NEW DCH xx	Add a D-channel on logical port 0 - 254.
CTYP	MSDL	D-channel configuration on MSDL card.

Prompt	Response	Description
		MSDL= NTBK51AA/NTBK51AAE5/ NTBK51CAE5 (and later) downloadable D-channel daughterboard. TMDI is not supported for the PRI Gateway.
MG_CARD	supl sh card	The physical card for the digital loop association to the PRI Gateway. The format is: superloop, shelf number, card number. **Important:** Even card numbers are applicable (2, 4, 6, 8).
PORT	0 - 1	Port number of the NTBK51AA/NTBK51AAE5/ NTBK51CAE5 (and later) for the D-channel.
USR	PRI	This D-channel is used for Primary Rate only.
IFC	EURO	Interface type for the D-channel.
CNTY	aaaa	Country
...	...	
DCHL	0 - 254	Loop number for the D-channel. (See PRI2 loop number.)
SIDE	(USR) NET	The system is network/user side.
...	...	

Use Configuring DPNSS/DASS D-channels in the PRI Gateway using LD 17 on page 82 to configure the DPNSS D-channel interface in the PRI Gateway.

Configuring DPNSS/DASS D-channels in the PRI Gateway using LD 17

1. Log on to the CS 1000E.

2. To access LD 17, enter:

   LD 17

3. Enter the responses shown in Table 21: DPNSS/DASS D-channel interface configuration (LD 17) on page 82.

Table 21: DPNSS/DASS D-channel interface configuration (LD 17)

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	ADAN	Action device and number.
ADAN	NEW DCH xx	Add a D-channel on logical port 0 - 15.

Prompt	Response	Description
CTYP	DCHI	D-channel configuration on DCHI card Type (NTAK93AB).
MG_CARD	supl sh card	The physical card for the digital loop association to the PRI Gateway. The format is: superloop, shelf number, card number. ⚠️ **Important:** If using a NTAK93AB daughterboard, even card numbers are applicable (2, 4, 6, 8). If using the onboard DPNSS/DASS, odd and even numbers are applicable (1, 2, 3, 4, 5, 6, 7, 8).
PORT	1	Port number of the NTAK93AB for DPNSS/DASS D-channel. For a DPNSS/DASS D-channel, the port is always 1.
...	...	
DES	DPNSS	Designator (up to 16 alphanumeric characters).
DPNS	YES	Digital Private Network Signaling.
...	...	

D-channel configuration example

shows a configuration example in the PRI Gateway of two D-channel interfaces on the same downloadable D-channel daughterboard that serves two PRI2 loops as follows:

- Two PRI2/E1 loops (numbered 200 and 201) are configured (for example, superloop 4 0). Each loop simulates different physical cards (3 and 4).

- Two D-channel interfaces are defined to serve two different loops/spans (200 and 201). They use the same downloadable D-channel daughterboard (port 0 and port 1) simulated through the physical location of card 4.

Table 22: D-channel configuration example

Prompt	Response	Description
REQ	CHG	New data.
TYPE	CEQU	Make changes to common equipment parameters.
...		
PRI2	200	Digital loop (2.0 Mb) number 200.

Prompt	Response	Description
MG_CARD	4 0 3	The first PRI2 loop (simulating physical card 3 on the PRI Gateway) – superloop 4, shelf 0 (PRI Gateway), card 3.
...		
PRI2	201	Digital loop (2.0 Mb) number 201.
MG_CARD	4 0 4	The second PRI2 loop (simulating physical card 4 on the PRI Gateway) – superloop 4, shelf 0 (PRI Gateway), card 4.
...		
TYPE	ADAN	Action device and number.
ADAN	NEW DCH 70	Add a D-channel interface on logical port 70.
CTYP	MSDL	D-channel configuration on MSDL card. MSDL= NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) downloadable D-channel daughterboard.
MG_CARD	4 0 4	Simulated physical location of DDCH NTBK51AA/ NTBK51AAE5/NTBK51CAE5 (and later) daughterboard in the PRI Gateway. The format is: superloop, shelf number, card number (even card number - 4).
PORT	0	Port 0 of the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) daughterboard handles the interface.
DCHL	200	The E1 loop served by this interface (200).
...	...	
ADAN	NEW DCH 71	Add a D-channel on logical port 0 - 254.
CTYP	MSDL	D-channel configuration on MSDL card. MSDL= NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) Downloadable D-channel daughterboard.
MG_CARD	4 0 4	Simulated physical location of DDCH. NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) daughterboard in the PRI Gateway. The format is: superloop, shelf number, card number. (even card number – 4)
PORT	1	Port 1 of the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) daughterboard handles the interface.
DCHL	201	The E1 loop served by this interface (201).
...	...	

DPNSS/DASS configuration - DDSL data blocks

Configuring DPNSS/DASS D-channel interface using LD 74 on page 85 describes the configuration required for the DDSL data blocks used for DPNSS protocols.

Configuring DPNSS/DASS D-channel interface using LD 74

1. Log on to the CS 1000E.

2. To access LD 74, enter:

   LD 74

3. Enter the responses shown in Table 23: DPNSS/DASS D-channel interface configuration (LD 74) on page 85.

Table 23: DPNSS/DASS D-channel interface configuration (LD 74)

Prompt	Response	Description
REQ	NEW	New data.
TYPE	DDSL	Digital Signaling Link.
S2	0	DCHI switch setting (the normal addressing mode for MGP).
DDSL	0 - 15	The D-channel logical port number, entered in LD 17.
SIGL	DA	DPNSS1/DASS2 digital signaling.
DDCS	0 - 254	Loop number used for the PRI link (reference to DDCS in LD 17).
PRIV	YES/NO	YES = Private DPNSS1 link. NO = DASS2 link.
SIDE	AET/BNT	The AET/BNT end of DPNSS1 link.
...	...	

Configure CE-MUX clock controllers

You must configure the CE-MUX clock controllers as well as error detection thresholds in PRI Gateway.

These prompts are enabled when the IPMG package (package number 403) is enabled, regardless of the state of the softswitch package.

🛈 **Important:**

The primary reference (PREF) must match the primary clock span number configured through the Web interface.

You must configure a clock controller on each PRI Gateway containing digital trunks. Clock references cannot be used between PRI Gateways.

Configuring a digital data block using LD 73 on page 86 describes the digital data block configuration required for a 1.5 Mb/s PRI data block including the clock controller and loop alarm thresholds.

Configuring a digital data block using LD 73

1. Log on to the CS 1000E.

2. To access LD 73, enter:

   LD 73

3. Enter the responses shown in Table 24: Digital data block configuration for PRI (LD 73) on page 86.

Table 24: Digital data block configuration for PRI (LD 73)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, END, NEW, OUT, or PRT).
TYPE	DDB	Digital data block.
MGCLK	sl s c	Superloop, shelf, card number of PRI containing the Primary Clock Reference. The card number (1 to 8) should match the PRI Gateway span number configured through the Web interface.
- PREF	Card	Card number of PRI containing the primary clock reference for the first IPMG.
- SREF	Card	Card number of PRI containing the Secondary Clock Reference for the first IPMG. To modify, use the CHG command (you can change the PREF only if you change the MGCLK).
MGCLK	sl s c	Superloop, shelf, card number of PRI containing the Primary Clock Reference for the second IPMG. The card number (1 to 8) should match the PRI Gateway span number configured through the Web interface.
- PREF	Card	Card number of PRI containing the Primary Clock Reference for the second IPMG.

Prompt	Response	Description
- SREF	Card	Card number of PRI containing the Secondary Clock Reference for the second IPMG. To modify, use the CHG command (you can change the PREF only if you change the MGCLK).
...	...	
TRSH	0 - 15	Create or change a PRI threshold set. Enter this number in LD 17 when defining the PRI loop.
RALM	1–(3)–128	Yellow alarm (remote alarm) 24-hour threshold. Number of remote alarm clear signals received in 24 hours.
...	...	

Use to configure the 2 Mb/s PRI2 data block including system timers.

Configuring PRI2 data block for system timers using LD 73

1. Log on to the CS 1000E.

2. To access LD 73, enter:

   LD 73

3. Enter the responses shown in

   Table 25: Configuration for PRI2 data block system timers (LD 73)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, END, NEW, OUT, or PRT).
TYPE	PRI2	DTI2 and JDMI are not supported for MGP.
FEAT	SYTI	Feature = SYTI (System Timers)
...	...	
MGCLK	sl s c	Superloop, shelf, card number of PRI2 containing the Primary Clock Reference for the first IPMG. The card number (1 - 8) should match the span number configured through the Web interface.
- PREF	Card	Card number of PRI2 containing the Primary Clock Reference for the first IPMG.
- SREF	Card	Card number of PRI2 containing the Secondary Clock Reference for the first IPMG.

Prompt	Response	Description
		To modify, use the CHG command (you can change the PREF only if you change the MGCLK).
MGCLK	sl s c	Superloop, shelf, card number of PRI2 containing the Primary Clock Reference for the second IPMG. The card number (1 - 8) should match the span number configured through the Web interface.
- PREF	Card	Clock Reference for the second IPMG.
- SREF	Card	Card number of PRI2 containing the Secondary Clock Reference for the second IPMG. To modify, use the CHG command (the PREF cannot be changed unless the MGCLK is changed).
...	...	

Use Configuring the PRI2 loop timers using LD 73 on page 88 to configure the PRI2 loop timers and thresholds.

Configuring the PRI2 loop timers using LD 73

1. Log on to the CS 1000E.

2. To access LD 73, enter:

   LD 73

3. Enter the responses shown in Table 26: PRI2 loop timers and thresholds (LD 73) on page 88.

Table 26: PRI2 loop timers and thresholds (LD 73)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, END, NEW, OUT, or PRT).
TYPE	PRI2	DTI2 and JDMI are not supported for the PRI Gateway.
FEAT	LPTI	Feature = SYTI (System Timers).
LOOP	loop	Loop number for PRI2.
MFF	aaa	Multiframe format (aaa = AFF or CRC).
ACRC	(NO) YES	Automatic reporting of CRC-4 error.
ALRM	aaa	Default alarm handler selected (aaa = REG or ALT).
RAIE	(NO) YES	RAIE Group II alarm state enabled or disabled.

Prompt	Response	Description
SLP	mc mt oc ot	Slip count.
...	...	
OSG1	nnnM	Out-of-Service Guard time Group 1.
...	...	
OSG2	nnnS	Out-of-Service Guard time Group 2.
...	...	

Configure PRI, PRI2 and DPNSS routes

Configuring PRI trunk routes using LD 16 on page 89 describes how to configure Route Data Block data required for PRI T1 trunks. The example given in Table 27: PRI route (LD 16) on page 89 is specific to NI2 interface; however, the PRI trunk route is also supported on other PRI interface types.

Configuring PRI trunk routes using LD 16

1. Log on to the CS 1000E.

2. To access LD 16, enter:

   LD 16

3. Enter the responses shown in Table 27: PRI route (LD 16) on page 89.

Table 27: PRI route (LD 16)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, NEW)
TYPE	RDB	Route Data Block.
CUST	xx	Customer number, as defined in LD 15.
ROUT	0 - 511	Route number. Range the same as for Large System and CS 1000E system.
...	...	
TKTP	xx	Trunk type.
DTRK	YES	Digital trunk route.
DGTP	PRI	Select a digital trunk type of 2.0 Mb/s PRI.
ISDN	YES	Integrated Services Digital Network.
MODE	PRA	ISDN PRI route.
IFC	NI2	NI-2 TR-1268 interface type.

Prompt	Response	Description
...	...	
ICOG	xx	Either incoming, outgoing, or both way trunks.
SRCH	(LIN) RRB	Search method for outgoing trunk member.
ACOD	xxx..x	One seven-digit access code for the trunk route.
TARG	0-(1)-31	Trunk Access Restriction Group Number.
...	...	

Configuring PRI2 trunk routes using LD 16 on page 90 describes how to configure Route Data Block data required for PRI2/E1 trunks. The example given in Table 28: PRI2 route (LD 16) on page 90 is specific to the EURO interface, however, the PRI trunk route is also supported on other PRI2 interface types.

Configuring PRI2 trunk routes using LD 16

1. Log on to the CS 1000E.

2. To access LD 16, enter:

   LD 16

3. Enter the responses shown in Table 28: PRI2 route (LD 16) on page 90.

   Table 28: PRI2 route (LD 16)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, NEW)
TYPE	RDB	Route Data Block.
CUST	xx	Customer number, as defined in LD 15.
ROUT	0 - 511	Route number. Range the same as for Large System and CS 1000E system.
...	...	
TKTP	xx	Trunk type.
DTRK	YES	Digital trunk route.
DGTP	PRI2	Select a digital trunk type of 2.0 Mb/s PRI.
IFC	EURO	Euro ISDN interface type.
CNTY	aaaa	Country.
...	...	
ISDN	YES	Integrated Services Digital Network.
MODE	PRA	ISA route for ISDN PRA. (ISL mode is not supported in the PRI Gateway.)

Prompt	Response	Description
...	...	
ICOG	xx	Either incoming, outgoing, both way trunks.
SRCH	(LIN) RRB	Search method for outgoing trunk member.
ACOD	xxx..x	One seven-digit access code for the trunk route.
TARG	0-(1)-31	Trunk Access Restriction Group Number.
...	...	

Configuring DPNSS/DASS trunk routes using LD 16 on page 91 describes how to configure Route Data Block data required for DPNSS trunks.

Configuring DPNSS/DASS trunk routes using LD 16

1. Log on to the CS 1000E.

2. To access LD 16, enter:

   LD 16

3. Enter the responses shown in Table 29: DPNSS/DASS Route (LD 16) on page 91.

Table 29: DPNSS/DASS Route (LD 16)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, NEW)
TYPE	RDB	Route Data Block.
CUST	xx	Customer number, as defined in LD 15.
ROUT	0 - 511	Route number. Range is the same as for Large System and CS 1000E system.
DES	DPNSS/ DASS	Designator (up to 16 alphanumeric characters)
...	...	
TKTP	IDA	Trunk type – integrated digital access trunks
SIGL	DPN/DAS	DPN = DPNSS signaling DAS = DASS signaling
...	...	
ICOG	xx	Either incoming, outgoing, or both way trunks.
SRCH	(LIN) RRB	Search method for outgoing trunk member.
ACOD	xxx..x	One seven-digit access code for the trunk route.
TARG	0-(1)-31	Trunk Access Restriction Group Number.

Configure PRI, PRI2 and DPNSS trunks

Configuring PRI and PRI2 trunks with Trunk Data Block data using LD 14 on page 92 describes how to configure the Trunk Data Block data required for PRI and PRI2 trunks.

Configuring PRI and PRI2 trunks with Trunk Data Block data using LD 14

1. Log on to the CS 1000E.
2. To access LD 14, enter:

   LD 14

3. Enter the responses shown in Table 30: Trunk Data Block data for PRI and PRI2 trunks (LD 14) on page 92.

Table 30: Trunk Data Block data for PRI and PRI2 trunks (LD 14)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, NEW)
TYPE	xx	Trunk data block.
TN	l ch	Terminal Number for digital trunks where l=loop, ch=channel.
DES	PRI	Designator field for trunk.
PDCA	(1) - 16	Pad category table number.
PCML	A MU	Pulse Code Modulation Law. Enter the appropriate value, based on which companding law is being used on the system. A = A-Law MU = Mu-Law
...	...	
RTMB	0-511 1-4000	Route number and Member Number. Range is the same as that for CS 1000E system.
...	...	
MNDN	xxx..x	One seven-digit manual directory number.
TGAR	0 - (1) - 31	Trunk Group Access Restriction. The default value (1) automatically blocks direct access.
...	...	
CLS	aaaa	Class of Service.
...	...	

Reconfiguring existing Dchannels on an NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) on page 93 describes how to change the protocol on an established D-channel using

LD 22, LD 96 and LD 17. <u>Changing the protocol on an established D-channel using Element Manager</u> on page 93 describes how to use Element Manager to change the protocol on an established D-channel.

Reconfiguring existing Dchannels on an NTBK51AA/NTBK51AAE5/ NTBK51CAE5 (and later)

1. Log on to the CS 1000E.

2. Enter the command: `LOGI`

    System response: USERID?

3. Enter the username.

    System response: PASS?

4. Enter the password.

5. To access LD 22, enter: `LD 22`

6. Determine the MSDL which hosts the D-Channel to be changed.

7. At the prompt, enter: `prt`

    System response: TYPE

8. Enter: `adan dch x`

    Where x is the D-Channel number

    System response: MG_CARD x y z

    Where x = loop, y = shelf, z = card

9. Enter: `End`

10. Access LD 96 and enter the command: `LD 96`

11. Enter: `dis msdl x y z all`

    Where x, y, and z are the values returned in LD 22

12. Exit LD 96.

13. Make the required changed to the D-Channel in LD 17.

14. Access LD 96 and enter:

    `enl msdl x y z all`

    Where x, y, and z are the values returned in LD 22

Changing the protocol on an established D-channel using Element Manager

1. Log on to Element Manager.

2. In the sidebar, click on the **Routes and Trunks » D-Channels** link.

    The **D-Channel property** page appears.

3. Click on the **EDIT** button beside the D-Channel you want to change.

The property page for the D-channel appears.

4. Note the Media Gateway Card (MG_CARD) value.

5. Return to the **Routes and Trunks » D-Channels** page.

6. Click the **MSDL Diagnostics (LD 96)** link.

    The **MSDL Diagnostics** page appears.

7. From the menu, select disable **MSDL Device (DIS)** and select the **All** check box.

8. Select the radio button for the **MSDL (MG_Card)**.

9. Click **Submit**.

10. Click **OK**

11. Return to the **D-Channel configuration** page and make the required changes.

12. Return to the **MSDL diagnostics** page.

13. From the menu, select the enable **MSDL Device (ENL)** command and select the **All** check box.

14. Select the radio button for the **MSDL (MG_Card)**.

15. Click **Submit**.

16. Click **OK**

describes how to configure the DPNSS trunks with Trunk Data Block data. This configuration is required for both real (RDC) and virtual (VDC) channel types.

⊕ Important:

VDC configuration is not required for DASS signaling.

Configuring the DPNSS/DASS trunks with Trunk Data Block data using LD 14

1. Log on to the CS 1000E.

2. To access LD 14, enter:

    LD 14

3. Enter the responses shown in

Table 31: Trunk Data Block data for DPNSS/DASS trunks (LD 14)

Prompt	Response	Description
REQ	aaa	Request (aaa = CHG, NEW)
TYPE	RDC/VDC	Real/virtual digital channel.
TN	l ch	Terminal Number for digital trunks where l=loop, ch=channel.
DES	DPNSS	Designator field for trunk.

Prompt	Response	Description
...	...	
DDSL	0 - 15	DASS2/DPNSS D-channel logical port number, entered in LD 74.
SIGL	DPN/DAS	DPN = DPNSS signaling DAS = DASS signaling
CUST	xx	Customer number, as defined in LD 15.
NCOS	(0) - 99	Network Class of Service group.
...	...	
RTMB	0-511 1-4000	Route number and member number. Range is the same as that for CS 1000E system.
...	...	
TGAR	0 - (1) - 31	Trunk Group Access Restriction. The default "1" automatically blocks direct access.
...	...	
CLS	aaaa	Class of Service.
...	...	

Enable PRI spans

For every span on the E1/T1 card, enable the NTBK51AA/NTBK51AAE5/NTBK51CAE5 card (and later) or the NTAK93AB daughterboard and enable the clock controller.

If you use the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) daughterboard, follow the procedure described in to enable the PRI spans through software.

If you use the NTAK93AB daughterboard, follow the procedure described in to enable the DPNSS/DASS spans through software.

To enable the clock controller, follow the procedure described in .

Enabling the NTBK51AA/NTBK51AAE5/NTBK51CAE5 daughterboard

1. In LD 60, enter the command to enable all 1.5/2.0 Mb PRI loops through the software:

```
ENLL L
```

2. If the DDCH is disabled, enter the command in LD 96 to enable the DDCH:

```
ENL MSDL sl s c
```

3. To enable the D-channels, enter the command in LD 96:

```
ENL DCH X
```

4. To request the current status of the D-channel, enter the command:

```
STAT DCH
```

   If the D-channel is established and operational, the system responds with `DCH x EST` in LD 96.

Enabling the NTAK93AB daughterboard

1. In LD 75, enter the command to enable all PRI loops:

```
ENL DDCS l
```

2. Enter the command to enable the DCHI where the DCHI is enabled, but all channels are disabled:

```
ENL DDSL n
```

3. To enable the D-Channels, enter this command:

```
STRT n
```

4. To request the current status of the D-channel, enter the command:

```
STAT DDSL
```

   If the D-channel is operational and enabled, the response is `ENBL ACTIVE`. All configured channels are normally enabled.

Enabling the clock controller

1. In LD 60, enter the command to enable the system clock controller on the specific superloop and shelf:

```
ENI CC l s
```

2. Enter the command to enable clock tracking on the Gateway specified by the superloop and shelf tracking to primary, secondary, or free run:

```
TRCK aaa l s
```

   where aaa is:

   - PCK for the primary track clock
   - SCLK is the track secondary clock
   - FRUN is the free run mode

3. To check the status of the system clock on the specified superloop and shelf, enter the command:

```
SSCK 1 s
```

Initial configuration of the E1/T1 card

Configure basic parameters through command line interface

Follow Configuring basic parameters through CLI on page 97 to configure the basic parameters.

Configuring basic parameters through CLI

1. Connect to the CLI through RS-232. Make sure the CLI screen is active.

   ⓘ **Important:**
   The E1/T1 card ignores all RS-232 control signals, so a modem eliminator (null modem) is required as shown in Figure 24: Modem connection on page 102.

2. Power up the system.

3. Enter the LAN settings. For detailed information, see Configure LAN parameters on page 99.

4. Verify the network connections. For detailed information, see Verify network connections on page 100.

Power up the system

When you first install and power up the PRI Gateway, the E1/T1 banner appears on the window. See Figure 20: General status display on page 98 which displays an example of three enabled spans. After the first power-up, the banner parameters are empty.

The window displays the following information:

- logo
- customer-defined card name
- status of the E1/T1 spans
- IP address

The window displays one line for each E1/T1 span.

The Protocol column displays:

- E1
- T1
- not defined

The Usage column displays what hardware is used for D-channel:

- DDCH
- DCHI
- DCHI-SW
- BCH (for BCH, no DCH hardware is needed)

The ClockReference column displays which span is the primary and secondary reference clock. The Clock Controller track on field displays on which span it is synchronized:

- primary
- secondary
- free run

The Status displays the span status: either enabled or disabled.

The Group I and Group II alarms display the alarm status. For more details about alarms, see

```
*****************************************************************
                        MG 1000E PRI Gateway
                        --------------------------------
System name: first-MGP
```

Span	Protocol	Usage	ClockReference	Status	Group I Alarm	Group II Alarm
1	Undefined					
2	T1	DDCH	Primary	Enable	None	None
3	Undefined					
4	T1	DDCH	Secondary	Enable		LOS
5	Undefined					
6	T1	DDCH		Enable	BPV	None
7	Undefined					
8	T1	DDCH		Disable	None	None

```
Clock Controller track on: Primary  (enable)
IP address: 141.226.128.172              Last refreshed: Jun. 22, 2006 07:24
*****************************************************************
Login:
```

Figure 20: General status display

Configure LAN parameters

A logon prompt appears following power-up. You can now configure the LAN parameters. See

Entering LAN parameters

1. To log on to the CLI, enter the command:

   admin

   The system displays the current directory (/ root directory).

2. Press enter for the password.

3. To move to the system administration directory, enter the command:

   cd sadmin

   The system displays the /sadmin directory.

4. Enter the command:

   system

   The system displays the system attributes and prompts you to modify, save, or cancel.

5. Enter the command:

   m

6. Fill in the fields with the values shown in Values entered must match your network configuration.

   Table 32: LAN Parameters

Field	Enter this value
system name:	(e.g.) first-MGP
report aging days: 5	(e.g.) 14
subnet mask: 255.255.255.0	(e.g.) 255.255.255.0
ELAN gateway address: 1.1.1.1	(e.g.) 141.226.128.254
ELAN IP address: 1.1.1.124	(e.g.) 141.226.128.172

7. To save the values, enter this command:

   s

   The system saves the attributes and prompts you to restart the card.

8. To restart the card, when you see the prompt **Restart the card?**, enter this command:

y

Figure 21: Sample procedure screen print

Verify network connections

You can verify the network connections from the CLI of the E1/T1 card. See Verifying a network connection from the CLI on page 100. You can also verify the network connections from a PC on the ELAN subnet. See Verifying a network connection from a PC on page 101.

Verifying a network connection from the CLI

1. To log on to the system, enter this command:

   admin

2. Press enter for the password.

3. Enter this command:

   cd smaint

4. Enter this command:

   ping xxx.xxx.xxx.xxx

   Where **xxx.xxx.xxx.xxx** represents your ELAN MGC IP address.

5. Observe the result of the ping.

   A successful E1/T1 connection results in output as shown in Figure 22: Ping results of a successful E1/T1 connection to ELAN subnet on page 101.

   No connection results in output as shown in Verifying a network connection from a PC on page 101.

Verifying a network connection from a PC

1. On a PC, click Start and the select Run from the Start Menu.

2. In the Open: box, enter the following and click OK:

   ping xxx.xxx.xxx.xxx

   Where **xxx.xxx.xxx.xxx** represents your ELAN MGC IP address.

3. Observe the result of the ping.

   An example of successful results is shown in Figure 22: Ping results of a successful E1/T1 connection to ELAN subnet on page 101. An example of no connection is shown in Figure 23: Ping results of no E1/T1 connection to ELAN subnet on page 101.

```
MGP [2 /smaint] ping 141.226.128.172
PING 141.226.128.172: 56 data bytes
64 bytes from 141.226.128.172: icmp_seq=0. time=4. ms
64 bytes from 141.226.128.172: icmp_seq=1. time=0. ms
64 bytes from 141.226.128.172: icmp_seq=2. time=0. ms
----141.226.128.172 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 0/1/4
```

Figure 22: Ping results of a successful E1/T1 connection to ELAN subnet

```
MGP [3 /smaint]
MGP [3 /smaint] ping 141.226.128.172
PING 141.226.128.172: 56 data bytes
ping: timeout
no answer from 141.226.128.172
```

Figure 23: Ping results of no E1/T1 connection to ELAN subnet

Remote access to the E1/T1 card

Remote access to the E1/T1 card is supported through:

- Telnet
- FTP

You can connect a modem to the E1/T1 card through a serial port 9-pin connector. The E1/T1 card ignores all RS-232 control signals, so a modem eliminator (null modem) is required as shown in
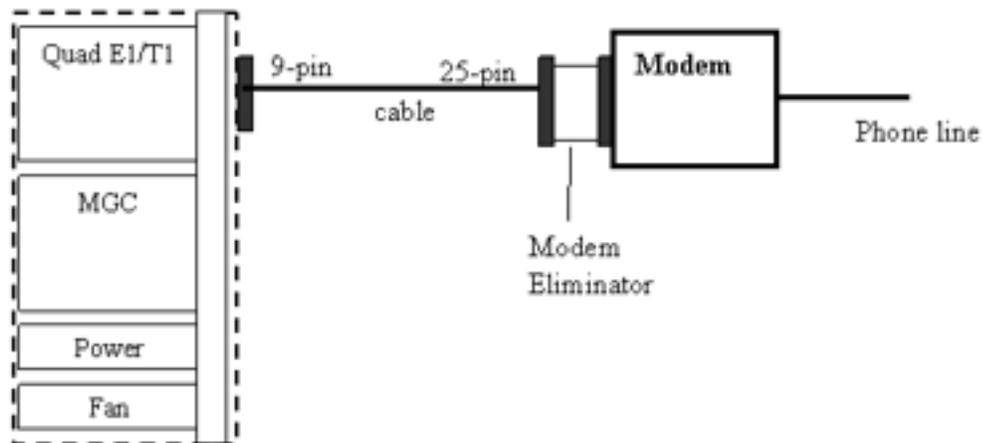

Figure 24: Modem connection

Telnet

You can use the CLI to access Telnet as follows:

- For the logon, enter:

  mgp

- For the password, enter:

  admin

Upon access to the CLI, you must log on through the administrative or debug level. See

FTP

You can access the E1/T1 card remotely by FTP for the file transfer. The FTP logon and password are the same as those defined for Telnet. After you log on, standard FTP commands apply.

Initial configuration of an E1/T1 card through the command line interface

Follow the steps in Configuring basic LAN parameters by CLI on page 103. After the initial configuration, you carry out all configuration, administration and maintenance through the Web-based interface.

Configuring basic LAN parameters by CLI

1. Connect the RS-232 serial port (D-type 9 pins) to a terminal or a PC with terminal emulation (for example, HyperTerminal).

2. Configure the interface to:

    • 9600 baud

    • 8 data bits

    • 1 stop bit

    • no parity

3. Make sure that flow control is none.

CLI over a Web-based interface

You can access the CLI through the administrative console, which is useful if a firewall does not allow Telnet access. See Accessing the command line interface over the Web on page 103.

Accessing the command line interface over the Web

1. To open a CLI screen, access the administration console and click CLI on the toolbar at the top of the screen.

    A separate window opens.

2. Enter commands and text as needed.

Access and configure an E1/T1 card through the Web

You can configure the E1/T1 card basic parameters and access basic information through the Web. The information includes:

- system settings
- password change
- users
- upgrades
- reports
- backups
- restores

See Accessing the basic parameters for the E1/T1 card through the Web on page 104.

Accessing the basic parameters for the E1/T1 card through the Web

1. Enter the IP address of the E1/T1 card using this format: `http://xxx.xxx.xxx.xxx`.

   The MG 1000E PRI logon window appears.

2. Click **Login**. The dialog box shown in Figure 25: Logon dialog box on page 104 appears.

Figure 25: Logon dialog box

3. For the both the **User Name** and the **Password**, type **admin**.

   The window shown in Figure 26: Home - System Overview window on page 105 appears.
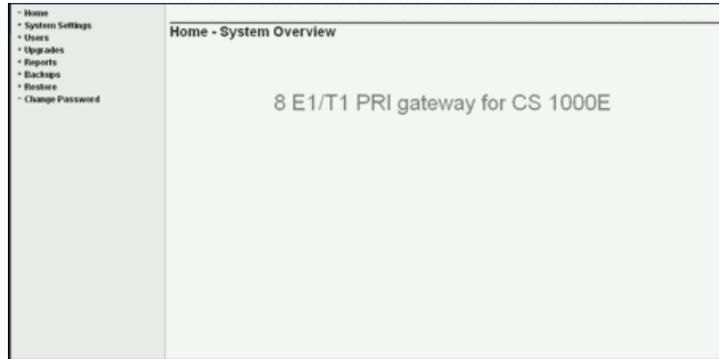
Figure 26: Home - System Overview window

4. In the left pane, click **System Settings**.

Define administrative users

You can define a maximum of 10 administrative users. See Adding administrative users through the Web on page 105.

Adding administrative users through the Web

1. On the Home - System Overview screen, select Users > Add a New User on the left menu.

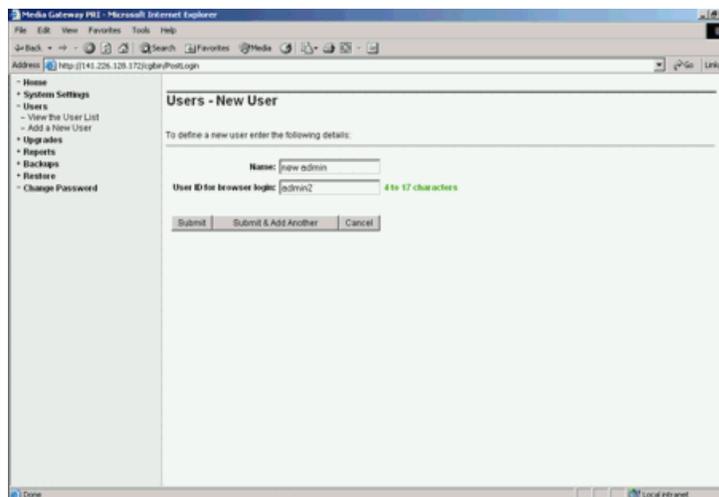   The New User window appears.

Figure 27: New User window

2. In the Name box, enter the new administrative user's name.

3. In the User ID for browser login box, enter the user ID (four to 17 characters) for the new administrator.

4. To save the new administrative user settings, click **Submit** .

View and change administrative user settings

To view and change administrative user settings, see Viewing and changing administrative user settings through the Web on page 106.

Viewing and changing administrative user settings through the Web

1. To view all administrative users, select **Users > View the User List** in the left pane.

   The window shown in Figure 28: View the User List window on page 106 appears.
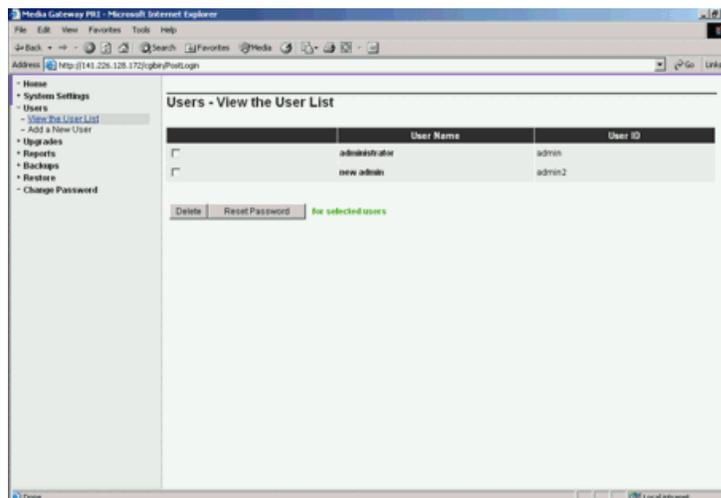
Figure 28: View the User List window

2. To select an administrative user, select the check box beside the user name.

3. To delete an administrative user, click **Delete**.

4. To reset a password for an administrative user, click **Reset Password**. The user's password is reset to Admin.

5. To modify user attributes, click the user name you want to modify. The window shown in Figure 29: Edit User Attributes window on page 107 appears.
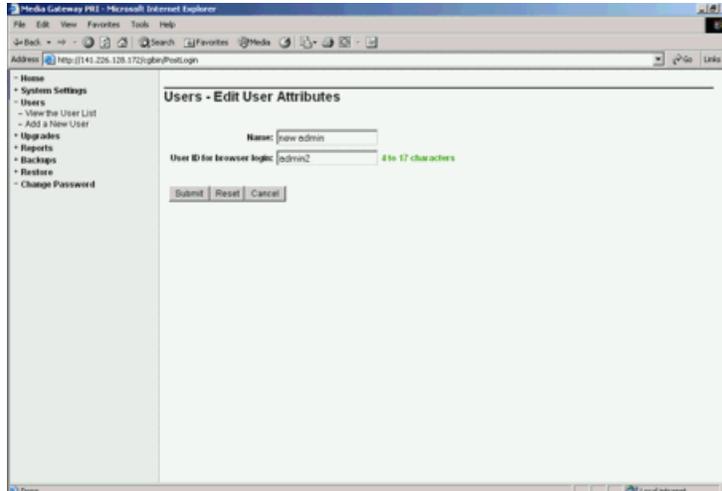
Figure 29: Edit User Attributes window

Change password

Administrative users can change their own passwords as shown in Changing a password through the Web on page 107.

Changing a password through the Web

1. On the Home - System Overview window, select Change Password .

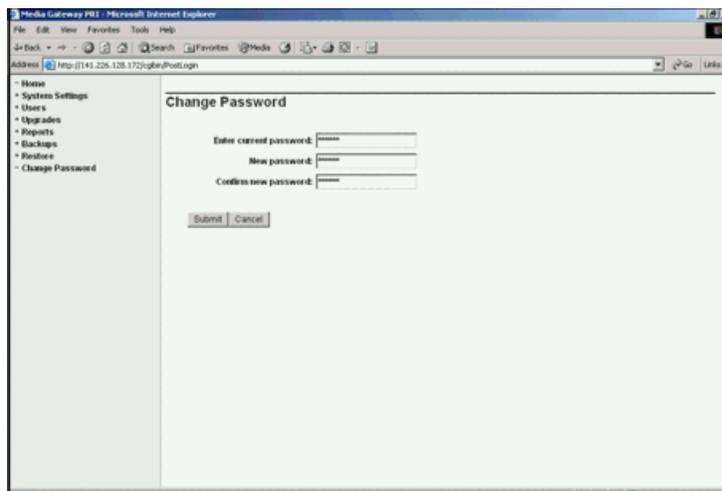   The window shown in Figure 30: Change Password window on page 107 appears.

Figure 30: Change Password window

2. Enter the current password.

3. Enter the new password in the New password field and enter it again in the Confirm new password field.

4. Click **Submit**.

Configure basic system parameters

The administrator completes the basic parameters for the E1/T1 card. See <u>Configuring basic parameters for an E1/T1 card through the Web</u> on page 108.

Configuring basic parameters for an E1/T1 card through the Web

1. On the Home - System Overview screen, select **System Settings > Basic Setting**.

    The window shown in <u>Figure 31: System Settings - Basic Settings window</u> on page 108 appears.
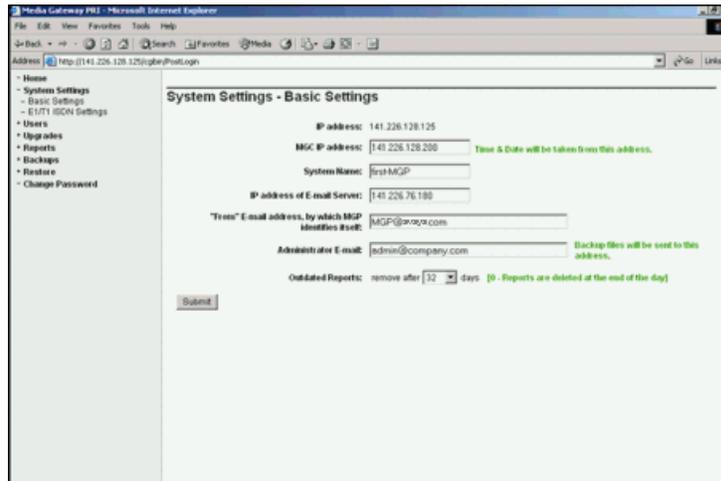
Figure 31: System Settings - Basic Settings window

    The IP address was previously defined through a CLI command as shown in <u>Configure LAN parameters</u> on page 99.

2. In the MGC IP address field, type the IP address of the Media Gateway Controller.

    The E1/T1 card uses this address to receive the time and date from the Media Gateway Controller.

3. In the System Name field, type up to 15 alphanumeric characters for the name of the system.

4. In the IP address of E-mail Server field, type the IP address.

    The E1/T1 card uses this address to send system backup files. If this field is left empty or is incorrect, the E1/T1 card does not send e-mail messages. However, the rest of the system operates properly.

> 🛈 **Important:**
> The E1/T1 card uses SMTP. The e-mail server must support this protocol.

5. In the From E-mail address field, type the e-mail address that the E1/T1 card uses to identify itself (the default is MGP@company.com). This is the e-mail address that appears in the From field of a received e-mail; some e-mail servers require this information.

6. In the Administrator E-mail address field, type the e-mail address to which the backup files are sent (the default is admin@company.com).

7. In the Outdated Reports field, select the number of days that the E1/T1 card keeps date-related files before they are deleted. The range is 0 to 120 days. If you select 0, the files are deleted at the end of the day.

8. To save the settings, click **Submit**.

# Configure ISDN E1/T1 trunks

To define the parameters for the ISDN E1/T1 trunks, see Configuring ISDN E1/T1 trunks on page 109. This basic configuration is used by the E1/T1 card to shorten alarm conditions if the card is recovered from power-up or restarts.

Configuring ISDN E1/T1 trunks

1. On the Home - System Overview screen, select System Settings > E1/T1 ISDN Settings on the left pane.

   The window shown in Figure 32: E1/T1 Settings window on page 110 appears.
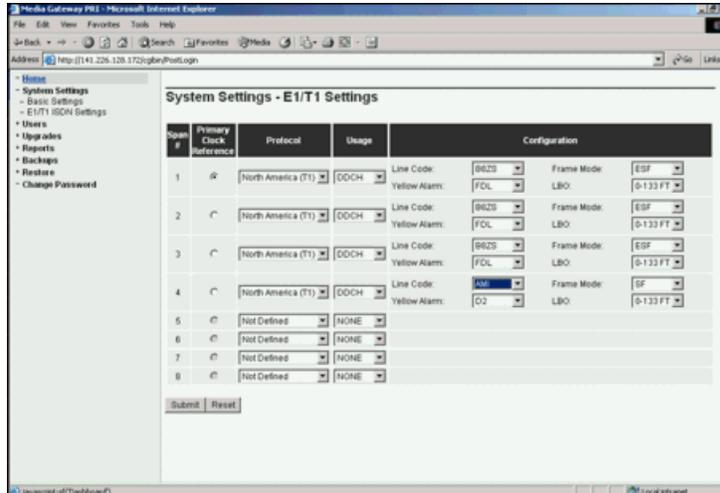
Figure 32: E1/T1 Settings window

2. From the Span # list, select the primary span (1 to 8). The span number must match the MGCLK field defined in LD 17.

3. For each E1/T1 span, complete these steps:

   a. For Protocol, select E1 or T1.

   b. For Usage, select one of the following:

      • DDCH (PRI D-channel usage attached to the DDCH daughterboard)

      • DCHI (DPNSS/DASS D-channel usage attached to the DCHI daughterboard)

      • DCHI-SW (DPNSS/DASS D-channel usage attached to onboard DPNSS/DASS protocols)

      • BCH (B-channel only)

   > **Important:**
   > You can select DCHI only for E1 spans. The DCHI daughterboard is allowed only in spans 2, 4, 6, and 8 (corresponding to system software IPE card slots 2, 4, 6, and 8).

   c. For each T1 span, configure the parameters as described in Table 33: Parameters for T1 spans on page 111.

   > **Important:**
   > For T1 spans on the E1/T1 card, the following Web interface parameters are automatically overridden by the Call Server configuration if a mismatch between the Web interface configuration and the Call Server configuration exists:

      • Line Code

      • Frame Mode

• Yellow Alarm

Table 33: Parameters for T1 spans

Parameter	Value
Line Code	B8ZS
Frame Mode	ESF
Yellow Alarm	FDL
LBO	0–133 FT

d. For each E1 span, configure the parameters as described in

🛈 Important:

For E1 spans on the E1/T1 card, the CRC4 parameter on the Web interface is automatically overridden by the Call Server configuration if a mismatch between the Web interface configuration and the Call Server configuration exists.

Table 34: Parameters for E1 spans

Parameter	Value
CRC4	No
Impedance	120 ohm
Shield Ground	No—for 75 Ohm only

e. To save the parameters, click **Submit**.

Chapter 15: Maintenance and diagnostics

This chapter contains information about the following topics:

Introduction

Maintenance and diagnostic information is provided here for the PRI Gateway.

This section contains the following procedures:

To see maintenance and diagnostic information for the E1/T1 card, see Reports, upgrades, and backups on page 125.

> **Note:**
> Some cards have a switch on the faceplate to enable and disable the hardware. When removing a card, first disable the card in software, then disable the hardware by setting the switch to DIS. Before installing a card, hardware-disable it by setting the switch to DIS. After the card is locked into position, set the switch to ENB, and then enable the card in software.

Disable and enable cards as described in *Avaya Software Input Output Administration, NN43001-611*.

Maintain PRI digital trunk loops

PRI digital trunk loop maintenance is supported by the PRI Gateway. See Maintaining PRI digital trunk loops using LD 60 on page 114.

Maintaining PRI digital trunk loops using LD 60

1. Log on to the Avaya Communication Server 1000E (Avaya CS 1000E).

2. To access LD 60, enter:

   LD 60

3. Enter the commands shown in Table 35: Digital trunk loop maintenance (LD 60) on page 114.

Table 35: Digital trunk loop maintenance (LD 60)

Command	Description
DISI loop	Disable loop when all channels are idle.
DISL loop	Disable network and DTI/PRI cards of loop.
DSCH l ch	Disable channel ch of loop.
DSYL loop	Disable yellow alarm processing for loop.
ENCH loop	Enable all channels on 2.0 Mb/s DTI/PRI.
ENCH l ch	Enable channel ch of DTI/PRI loop.
ENLL loop	Enable network and DTI/PRI cards of loop.
ENYL loop	Enable yellow alarm processing for loop.
SLFT loop	Invoke hardware self-test on loop.
SLFT l ch	Invoke partial hardware self-test on channel ch.
LCNT (loop)	List contents of alarm counters on one or all DTI/PRI loops
RLBK loop	Close loop at carrier interface point of testing. (The card must be disabled.)
RLBK loop ch	Close channel ch at carrier interface point. (The channel must be disabled.)
STAT	Get status of all loops.
STAT loop	Get status of DTI/PRI loop
STAT loop ch	Get status of channel

Command	Description
DLBK loop	Disable remote loop back test
DLBK l ch	Disable remote loop back test.
RCNT	Reset alarm counters of all DTi/PRI loops.
RCNT loop	Reset alarm counter of DTI/PRI loop.
RMST loop	Perform self-test on loop.
RMST l ch	Perform self-test on specified channel (2.0 Mb/s DTI/PRI only.)

To maintain the clock controller, follow Maintaining the clock controller using LD 60 on page 115.

Maintaining the clock controller using LD 60

1. Log on to the Avaya CS 1000E.

2. To access LD 60, enter:

   LD 60

3. Enter the commands as shown in Table 36: Clock controller maintenance (LD 60) on page 115.

Table 36: Clock controller maintenance (LD 60)

Command	Description
DIS CC l s	Disable system clock controller on specified superloop and shelf.
ENL CC l s	Enable system clock controller on specified superloop and shelf.
SSCK l s	Get status of system clock on specified superloop and shelf
TRCK aaa l s	Configure clock controller on IPMG specified by the superloop and shelf tracking to primary, secondary or free run, where aaa is: PCK = track primary clock SCLK = track secondary clock FRUN = free run mode

Maintain downloadable D-channels

D-channel commands for the DDCH/MSDL are supported for the E1/T1 card. See Maintaining the DDCH using LD 96 on page 116.

Maintaining the DDCH using LD 96

1. Log on to the CS 1000E.

2. To access LD 96, enter:

   LD 96

3. Enter the commands shown in Table 37: DDCH maintenance commands (LD 96) on page 116.

   🛈 **Important:**

   In this table, x = the DCH number, and X = the MSDL address (loop shelf card).

Table 37: DDCH maintenance commands (LD 96)

| Command	Description
DIS DCH x	Disable DCH x.
ENL DCH x (FDL)	Enable DCH x and attempt to establish the link, and force download to MSDL.
EST DCH x	Establish multiple frame operation on D-channel x.
RLS DCH x	Release D-channel x.
RST DCH x	Reset D-channel x, inhibit signaling.
STAT DCH (x)	Get status of one or all D-channels.
STAT MON (x)	Display the incoming and outgoing monitoring status of one or all D-channels.
DIS MSDL sl s c (ALL)	Disable DCHI card sl s c.
ENL MSDL sl s c (FDL, ALL)	Enable DCHI card sl s c, with or without Force Download.
RST MSDL sl s c	Reset MSDL card sl s c.
STAT MSDL sl s c (FULL)	Get MSDL status sl s c, or a FULL STATUS.

PRI startup

Use Starting up the PRI on page 116 to take the PRI/PRI2 and DDCH from a disabled state to an operational state.

Starting up the PRI

1. Check the status of all PRI/PRI2 cards.

In [Figure 33: PRI startup](#) on page 117, the PRI shown is disabled. (For the DCH, the red LED is lit.)

SP1-8

○ } ENB/DIS
○ } RED
● ● ● ● ○ } YELLOW

UL UR LL LR
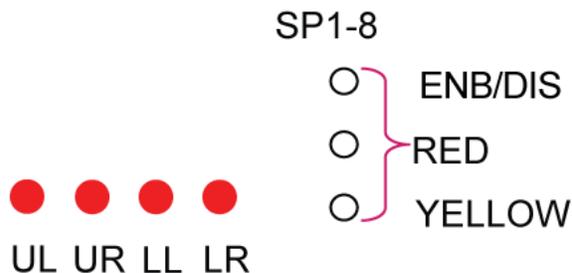
Figure 33: PRI startup

2. To test all PRIs, enter:

   LD 60

   DISL loop

   SLFT loop

   The response is:

   SLFT OK.

3. To enable all configured PRIs, enter:

   LD 60

   ENLL loop

   The PRI loop is now up, the remote alarm is cleared, and the D-channel is disabled.

4. To enable the NTBK51AA/NTBK51AAE5/NTBK51CAE5 (and later) DDCH daughterboard, enter:

   LD 96

   ENL MSDL sl s c

   The DDCH card is downloaded and enabled. The D-channel is disabled.

5. To enable the D-channels, enter:

   LD 96

   ENL DCH X

   If the D-channel is established, the response is:

   DCH EST time and date

   If you do not get the DCH EST time and date response, enter **EST DCH x**.

6. Perform a status check as shown in [Checking PRI status](#) on page 118.

Use the steps in [Checking PRI status](#) on page 118 to verify that a PRI/PRI2 is working normally. This check assumes that the PRI and DDCH daughterboards are properly installed

(for example, correctly cabled) and operational. If the PRI status is not as shown in this procedure, complete the check and see the PRI fault clearing procedures in Avaya ISDN Primary Rate Interface Maintenance.
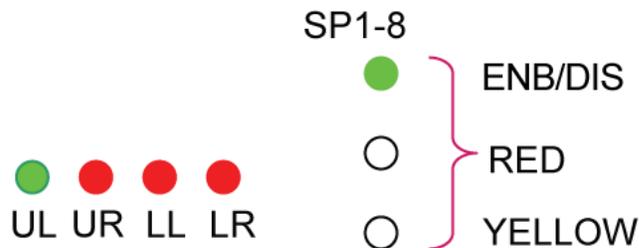
Checking PRI status

1. Check the status LEDs on all PRI spans.

   For normal operation, only the green ENB/DIS LED is lit.

2. Check the associated DCH LED (upper left, upper right, lower left, lower right).

   If both ports are configured, the red LED is lit only when both ports are disabled.

   In the example shown in , the upper-left DDCH associated with spans 1 and 2 is enabled.

Figure 34: PRI status check

3. To check the status of the DDCH port, enter:

   LD 96

   STAT DCH x

4. To check the status of all PRI loops, enter:

   LD 60

   STAT L

5. To list the PRI alarm counters, enter:

   LD 60

   LCNT (L)

   The response is:

   ```
   PRI2 LOOP L

   MNT  NNDC  NNC  OOS

   BVP- xxx xxx xxx xxx

   FAP- xxx xxx xxx xxx

   SLP- xxx xxx xxx xxx

   CRC- xxx xxx xxx xxx
   ```

```
G2 xxx xxx xxx xxx

MAINT NONEWCALL UNAVAIL SEVERE

TOTAL 24HR BVP - XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX

TOTAL 24HR CRC - XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX

TOTAL 24HR FAP - XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX

TOTAL 24HR SLPREP - XXXXXXXXX

TOTAL 24HR SLPDEL - XXXXXXXXX

TOTAL 24 HOUR G2 AIS - XXXXXXXXX

TOTAL 24 HOUR G2 LFAS - XXXXXXXXX

TOTAL 24 HOUR G2 LMAS - XXXXXXXXX

TOTAL 24 HOUR G2 RAI - XXXXXXXXX

TOTAL 24 HOUR G2 LOS - XXXXXXXXX

TOTAL 24 HOUR G2 RAIE - XXXXXXXXX
```

6. To check the status of the DCH link and the status of the MSDL card, enter:

   LD 96

   STAT MDSL sl s c FULL

7. Check that the PRI cables are connected to the E1/T1 span connectors.

Maintain DPNSS/DASS and DCHI

Table 38: DPNSS and DASS trunk maintenance commands (LD 75) on page 120 lists the basic commands supported for DPNSS/DASS (IDA) loop and DCHI (D-channel) maintenance. See Maintaining DPNSS and DASS trunks using LD 75 on page 119.

Maintaining DPNSS and DASS trunks using LD 75

1. Log on to the CS 1000E.

2. To access LD 75, enter:

   LD 75

3. Enter the commands shown in Table 38: DPNSS and DASS trunk maintenance commands (LD 75) on page 120.

Table 38: DPNSS and DASS trunk maintenance commands (LD 75)

| Command	Description
ENL DDSL n	Enable DCHI port n.
ENL DDCS l	Enable PRI loop l.
ENL DTRC l c	Enable real channel (loop, channel).
DIS DDSL n	Disable DCHI, port n.
DIS DDCS l	Disable PRI loop n.
DISI DDCS l	Disable all channels, loop l as they become idle.
DIS DTRC l c	Disable real digital channel (loop, channel).
STAT DDSL	Give status of entire DCHI.
STAT DDSL n	Give status of DCHI port n.
STAT DDCS	Give status of all PRI loops.
STAT DDCS l	Give status of PRI loop l and a count of the number of channels in each state.
STAT DTRC l c	Give status of real digital channel (loop, channel).
STRT n	Start DCHI, port n. The message OK STARTING appears and you can enter more commands. The message DTM301 appears when the link starts successfully.

DPNSS/DASS startup and status check

Use DPNSS/DASS and DCHI (IDA) startup on page 120 to take DPNSS/DASS and DCHI from a disabled state to an operational state.

DPNSS/DASS and DCHI (IDA) startup

1. Check the status of all DPNSS/DASS cards.

   In Figure 35: IDA startup on page 121, the PRI shown is disabled. (For DCH, the red ENB/DIS LED is lit.)
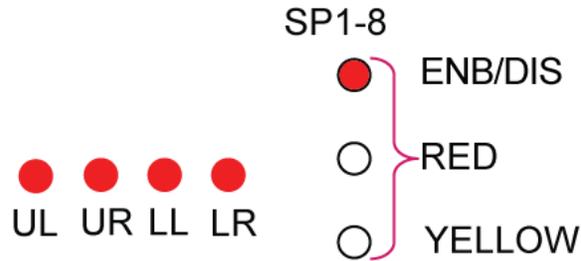
Figure 35: IDA startup

2. To enable the PRI, enter:

   LD 75

   ENL DDCS loop

   The response is:

   OK

3. To enable the DCHI (NTAK93AB), enter:

   LD 75

   ENL DDSL n

   The response is:

   OK

   STAT DDSL n

   The response is:

   ENBL IDLE (DCHI is enabled, but all channels are disabled.)

4. To enable the LAP protocols for each real and virtual channel configured on the DPNSS1/DASS2 link, enter:

   LD 75

   STRT n

   The response is:

   OK, STARTING

   The configured LAP protocols for each real and virtual channel configured on the DPNSS1/DASS2 link are being enabled.

   Both ends of the link should be started within five minutes of each other. When this occurs, DTM301 is issued.

5. To check the status, enter:

   STAT DDSL n

   The response is:

`ENBL ACTIVE` (The configured LAP protocols for each real and virtual channel configured on the DPNSS1/DASS2 link are enabled.)

Use DPNSS/DASS (IDA) status check on page 122 to verify that the DPNSS/DASS link is working normally. This check assumes that the PRI and DCHI are properly installed (for example, properly cabled) and operational.

If the DPNSS/DASS status is not as shown in these steps, complete the check and proceed to DPNSS/DASS fault-clearing procedures. For more information about DPNSS/DASS and fault-clearing procedures, see *Avaya DPNSS1 Fundamentals* .

After you clear the problems, go to DPNSS/DASS and DCHI (IDA) startup on page 120.

DPNSS/DASS (IDA) status check

1. Check the status LEDs on all PRI spans (1–8). For normal operation, only the green ACT LED is lit.

2. Check the associated DCH LED (upper left, upper right, lower left, or lower right). If the red LED is lit, the D-channel is disabled.

   The DCH LED indicates the status of only one port associated with one span (2, 4, 6, 8).

   The red LED is lit only when this port is disabled.

   The example in Figure 36: IDA status check on page 122 shows that the upper-left DCHI (associated with span 2) is enabled.
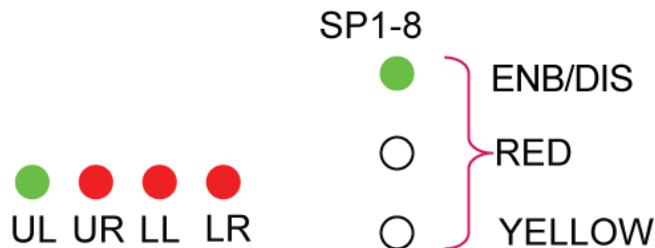
Figure 36: IDA status check

3. To check the status of PRIs, enter:

   LD 75

   STAT DDCS n

4. To check the status of all DCHI ports, enter:

   LD 75

   STAT DDSL (n)

   The response for the DCHI status is:

   `ENBL ACTIVE`

DCHI is enabled and all configured channels are normally enabled.

5. Check that the PRI cables are connected to the E1/T1 span connectors.

Inventory cards

Printing a PRI Gateway inventory (LD 117)

All installed PRI Gateways are included in the output of the Inventory feature when executed for cards or for all devices.

To print the inventory card for the PRI Gateway, enter:

inv prt cards

The card inventory prints out as shown in this example:

```
...

PRI, 262, NTDW70AAE5 01 NNTML2????????????

PRI2, 264, NTDW70AAE5 01 NNTML2????????????

...

DPNSS1-DTCS, 266, NTDW70AAE5 01 NNTML2????????????
```

where:

field 1 = card type (PRI or PRI2 or DPNSS)

field 2 = loop number of the PRI Gateway for which the E1/T1 card is being used

field 3 = PEC code (NTDW70AAE5)

field 4 = release of the card

field 5 = factory code, source code, serial number, and manufacturing data of the card

Only E1/T1 cards and spans that are configured in the software are printed.

Chapter 16:   Reports, upgrades, and backups

This chapter contains information about the following topics:

Introduction

This section contains the following procedures:

Reports

Reports are stored by the E1/T1 card on a daily basis. Each day is stored in a separate file and it is stored in the system as specified in the System Settings window. For more information, see Configuring basic parameters for an E1/T1 card through the Web on page 108.

To view and download a report, follow Viewing and downloading reports on page 126. The file format for error reports is simple text.

Viewing and downloading reports

1. On the Home - System Overview window, click Reports > View an Error Report. See Figure 37: View an Error Report window on page 126.
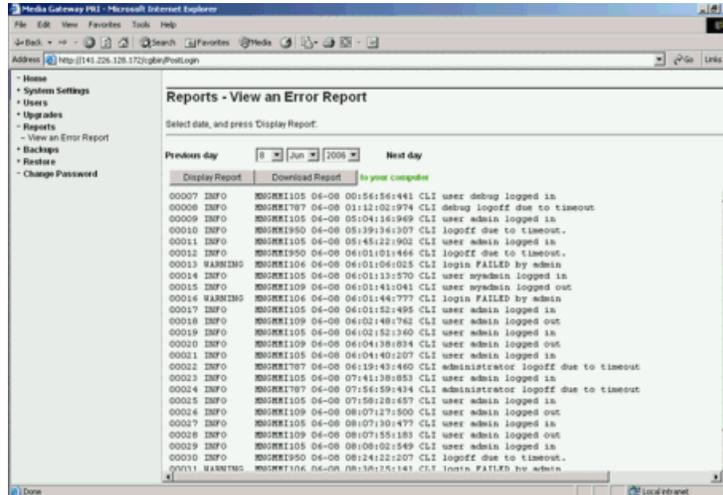

Figure 37: View an Error Report window

2. Select the date and click **Display Report**.

3. To download the report to your computer, click **Download Report** .

Upgrades

You can upgrade the system and check the status of the software upgrades.

Software upgrade

Software upgrades are performed through:

- FTP. See Performing a software upgrade through FTP on page 127.
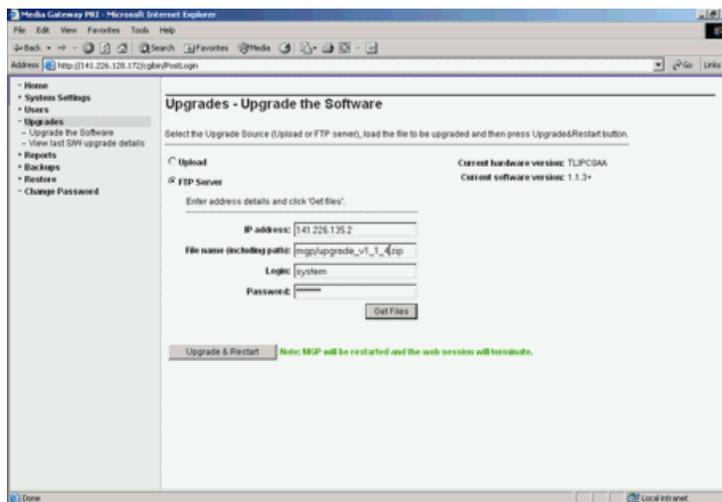
 Important:
 You can also perform an FTP upgrade from a CLI command.

- file upload. See Performing a software upgrade through upload on page 127.

Performing a software upgrade through FTP

1. Place the new software load file on an FTP server that is accessible from the E1/T1 card. This file must be a zip file, for example, upgrade_v1_1_1.zip..

2. On the Home - System Overview window, click Upgrades > Upgrade the Software. See .

Figure 38: Upgrade the Software window

3. Select FTP Server.

4. Type the details into the IP Address, File name (including path), Login, and Password fields.

5. Click **Get Files**.

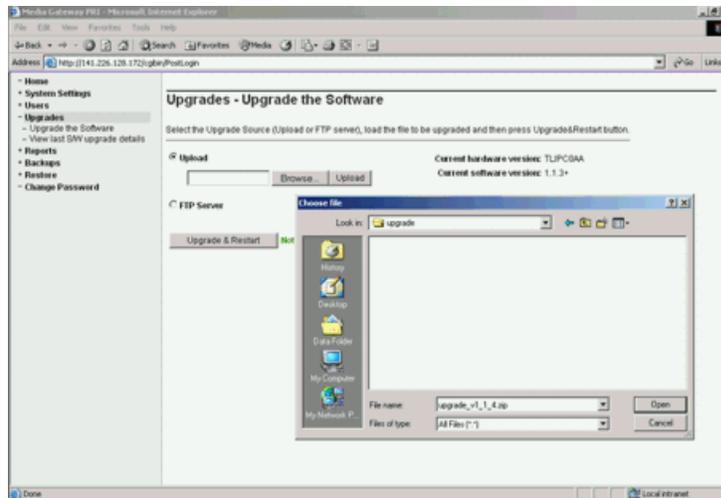6. To complete the installation of the software, click Upgrade & Restart.

   The E1/T1 card installs the new software and restarts the system. Because the system restarts, your Web session ends. You must log on again to resume working through the Web interface.

7. If the upgrade fails, or if you want to check the status of the upgrade, check the details on the View Last Upgrade Details window. For more information, see .

Performing a software upgrade through upload

1. On the Home - System Overview window, click Upgrades > Upgrade the Software.

   The window shown in appears.

Figure 39: Upgrade the Software window from a PC

2. Click **Browse** and select the software file.

3. Click **Upload**.

4. To complete the installation of the software, click **Upgrade & Restart**.

   The E1/T1 card installs the new software and restarts the system. Because the system restarts, your Web session ends. You must log on again to resume working through the Web interface

5. If the upgrade fails, or if you want to check the status of the upgrade, check the details on the View Last Upgrade Details window. See Check software upgrades on page 128.

Check software upgrades

To check the status of the last software upgrade, and to confirm if an upgrade succeeded or failed, follow Checking the status of software upgrades on page 128.

Checking the status of software upgrades

1. On the Home - System Overview window, click Upgrades > View last S/W upgrade details.

   The window shown in Figure 40: View Last Upgrade Details window on page 129 appears.
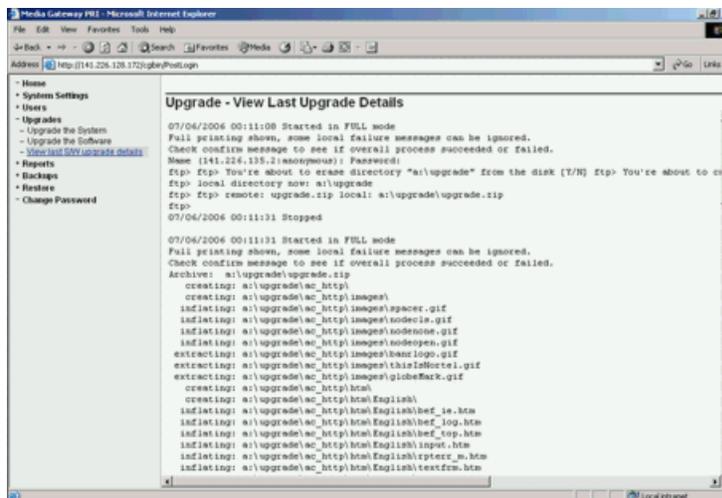
Figure 40: View Last Upgrade Details window

2. Scroll as needed to view the details of the last software upgrade.

Dependency list upgrade

The Media Gateway software upgrade tool manages all aspects of the Media Gateway software upgrade process.

During patch activation or deactivation in the upgrade process, the following special messages appear on the console:

```
Patch has Special Instructions
==============================
Special Instruction is displayed here ….
PCH0227: Patch handle number has special instruction at the time of
loading (For POOS)
PCH0228: patch handle number has special instruction at the time of
deactivating (For PLOAD)
Continue with patch load (y/n)? [y]
```

Some patches can depend on one or other more patches to be in service before the patch is activated. You must activate or deactivate the dependent patches before activating or deactivating the actual patch.

For example, three patches are available Patch A, Patch B, and Patch C. Patch A depends on Patch B and Patch B depends on Patch C. Patch C is activated first, then Patch B, and finally Patch A.

The patch dependency list (DepList) installation prompt appears on the screen only when DepList patches are in the software media. Therefore, the following DepList prompt is available when DepLists are to be added to the Software image.

```
Succession Enterprise Software/Database/BOOTROM CDROM Install Tool
----------------------------------------------------------------------------
----------------------------------
----------------------------------------------------------------------------
----------------------------------

Do you want to install Dependency Lists?

Please enter:

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

<n> No, Continue without Dependency Lists installation

<Enter choice> y


The installation status summary before the installation will be as follows:
```

Dependent patch information is available in the DepList index file, as shown in the following file.

```
mcore_01.cpm:

# Beta Version for CP PM / 00W

name: CORE

issue: 01

release: X2105.00W

created: 2007-06-06 17:17:12 (EST)

patches: 6

patch: p12345_1.cpm

patch: p12341_1.cpm

patch: p54321_1.cpm

patch: p54444_1.cpm

patch: p53333_1.cpm

patch: p10000_1.cpm

Dependent patches: 2

patch: p12345_1.cpm

patch: p12341_1.cpm
```

Backups and restores

The E1/T1 card supports automated scheduled backups or manual backups:

- to schedule an automated backup, see Automatic backups on page 131
- to perform a manual backup, see Manual backups on page 132

For each type of backup, the data is compressed into one zip file and sent to the specified destination. The destination can be the Administrator's e-mail address or a remote FTP server. The format of the backup file is D1yymmdd.zip where:

- yy = the last two digits of the year
- mm = the two digits representing the month
- dd = the two digits representing the day

Because each backup file name contains the date, each file name is different and the files accumulate on the FTP server. Avaya recommends that you periodically delete old backup files.

For information about how to check the status of backups, see Check backup status on page 133.

Automatic backups

> **Important:**
> To ensure that automatic backups occur as scheduled, test the backup using the FTP remote server parameters. To perform the test, select a daily backup and the nearest hour and check to see that the backup occurs at the appointed time.

Scheduling an automatic backup

1. On the Home - System Overview window, click Backups > Define Scheduled Backup.

   The window shown in Figure 41: Define Scheduled Backup window on page 132 appears.
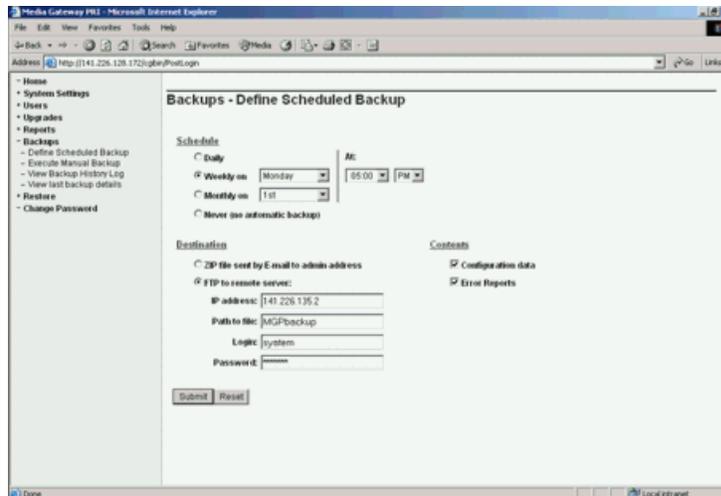
Figure 41: Define Scheduled Backup window

2. For the schedule, select either Daily, Weekly on, or Monthly on. If you select Weekly on, you must select the day of the week from the list, and if you select Monthly on, you must select the day of the month from the list. Avaya recommends that you select the time in which the least activity occurs.

3. Determine the destination of the backup (where and how the backup is sent). Select one of the following options:

   a. Zip file sent by E-mail to admin address. If you select this option, the system sends the backup file by e-mail to the administrator address that you defined in the Basic Setting window. For more information, see Configure basic system parameters on page 108.

   b. FTP to remote server. If you select this option, you must enter the IP address of the server to which you want to back up the file, the path to the backup file, the user id, and the password.

4. Select Configuration data or Error Reports or both.

5. Click **Submit**.

Manual backups

A manual backup is carried out once, as required, immediately upon request. A manual backup does not affect any scheduled automatic backups. See Performing a manual backup on page 132.

Performing a manual backup

1. On the Home - System Overview window, select Backups > Execute Manual Backup.

   The window shown in Figure 42: Execute Manual Backup window on page 133 appears.
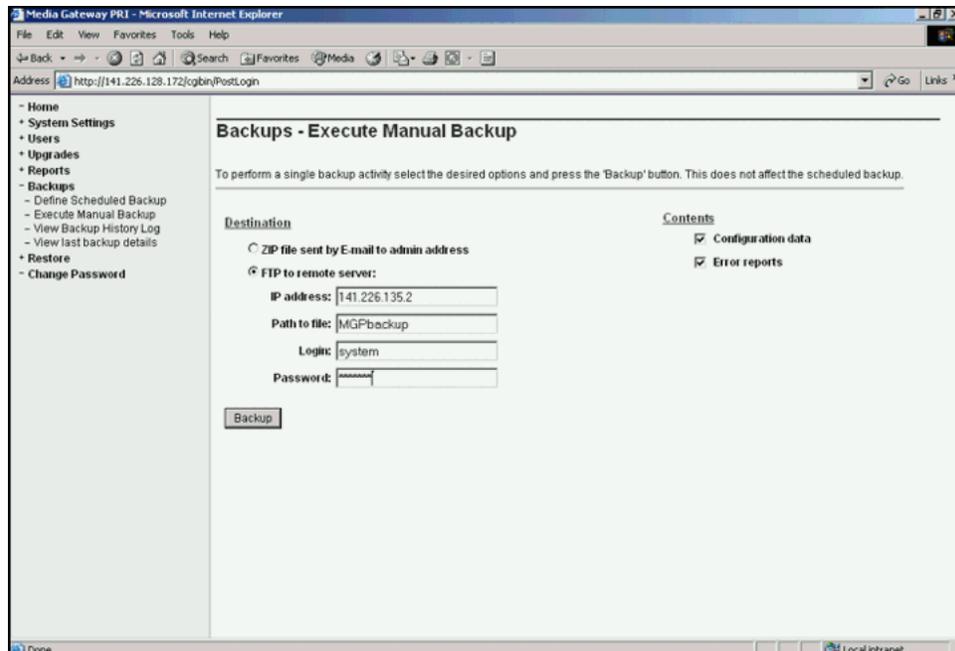
Figure 42: Execute Manual Backup window

2. Determine the destination of the backup (where and how the backup is sent). Select one of the following options:

   a. Zip file sent by E-mail to admin address. If you select this option, the systems sends the backup file by e-mail to the administrator address that you defined in the Basic Setting window. For more information, see Configure basic system parameters on page 108.

   b. FTP to remote address. If you select this option, you must enter the IP address of the server the file is being backed up to, the path to the backup file, the user id (logon) and the password.

3. Select Configuration data or Error Reports or both.

4. Click **Submit**.

Check backup status

You can check the status of a backup by viewing:

- the View Backup History Log window as shown in Figure 43: View Backup History Log window on page 134

- the View Last Backup Details window as shown in Figure 44: View Last Backup Details window on page 135

On the Home - System Overview window, select Backups > View Backup History Log or Backups > View last backup details.
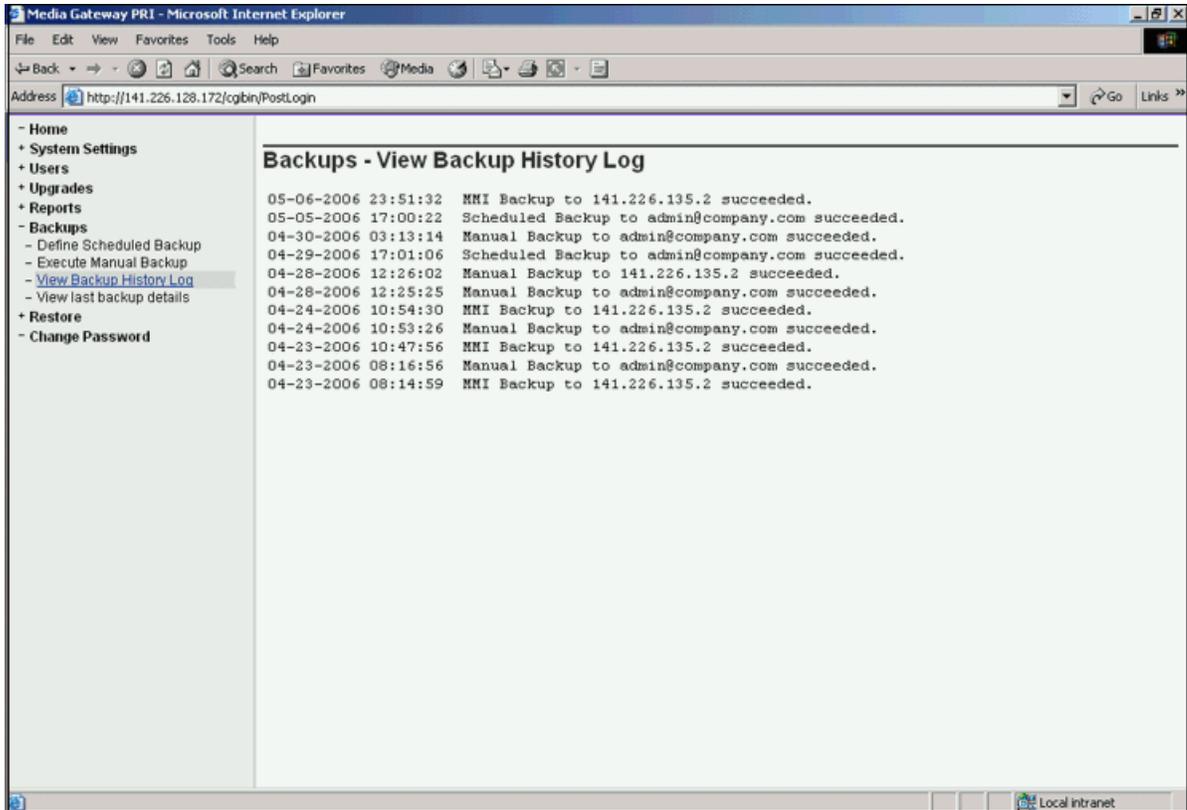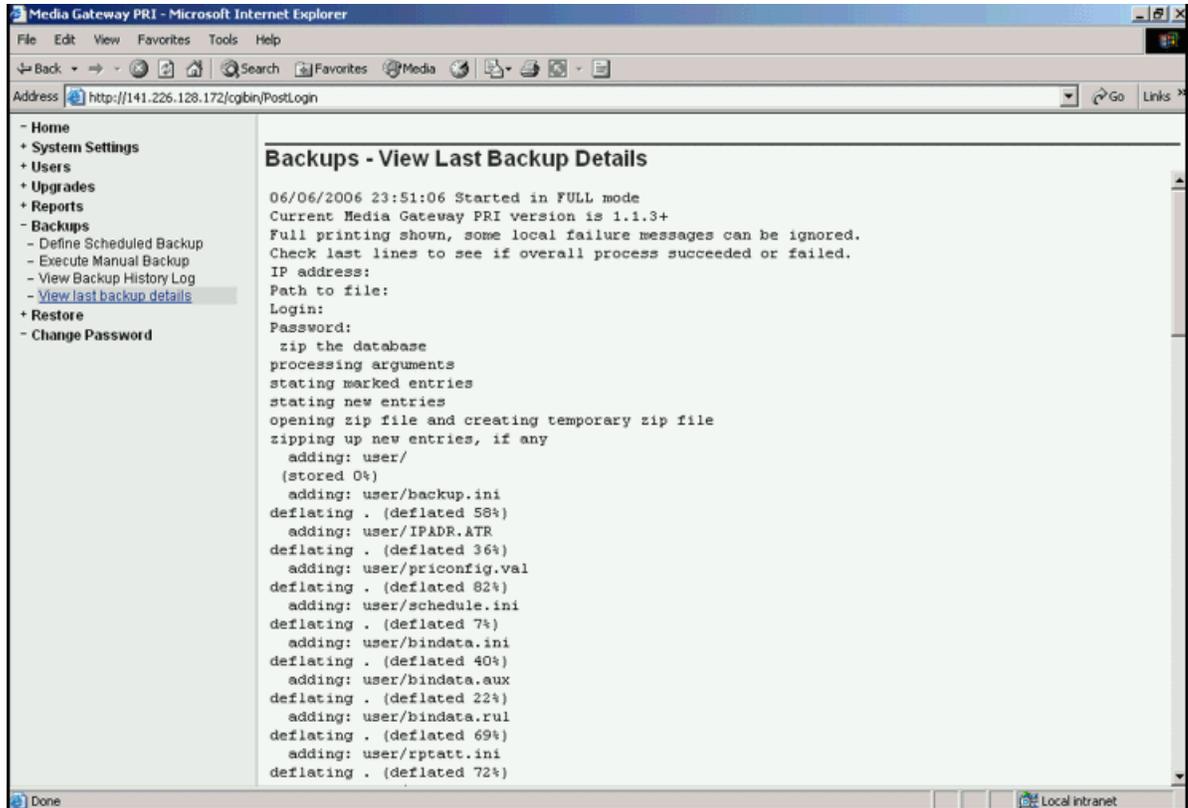
Figure 43: View Backup History Log window

The View Backup History Log window displays one line (record) for each backup attempt with a status of either succeeded or failed.

Figure 44: View Last Backup Details window

The View Last Backup Details window displays which files were processed and if the backup was successful. If you see a failed backup, check the backup schedule details and the disk space on the server.
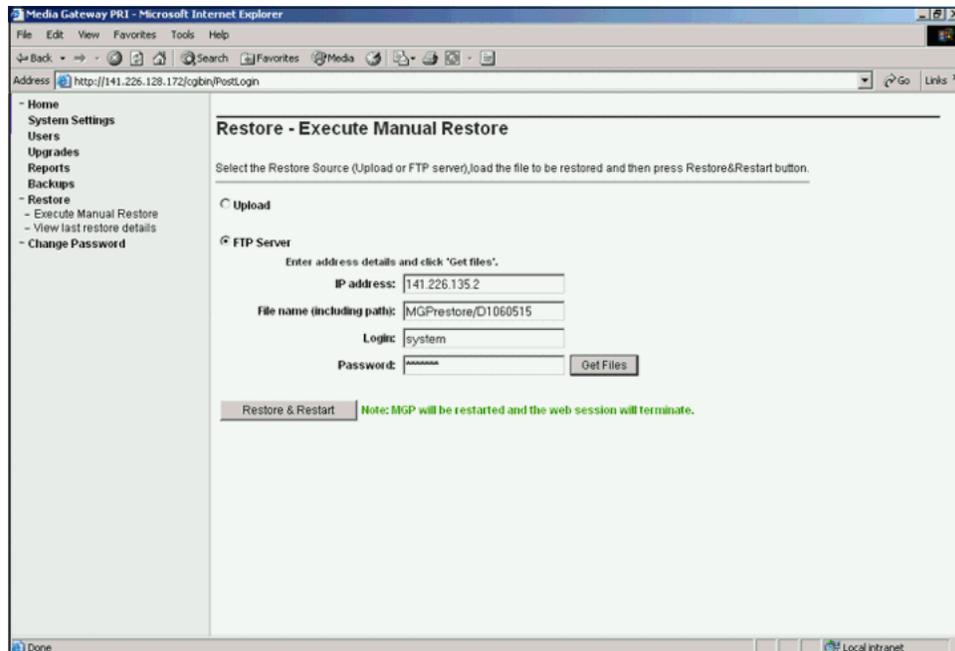
Restore backups

You can restore a backup file and install it to replace the current file. You can restore a file in two ways:

- the FTP method. See Restoring a file through FTP on page 135.

- the upload method on a PC. See Restoring a file through upload on a PC on page 137.

Restoring a file through FTP

1. On the Home - System Overview window, select Restore > Execute Manual Restore.

   The window shown in Figure 45: Execute Manual Restore window - FTP on page 136 appears.

Figure 45: Execute Manual Restore window - FTP

2. Enter the details of the FTP server and the path to the backup file (including the file name).

3. Click **Get Files**.

4. To complete the restore process, click **Restore & Restart**.

   The system restarts and your Web session ends. You must log on again to resume working through the Web interface.

5. You can view the details of the restore as shown in

Figure 46: View Last Restore Details window
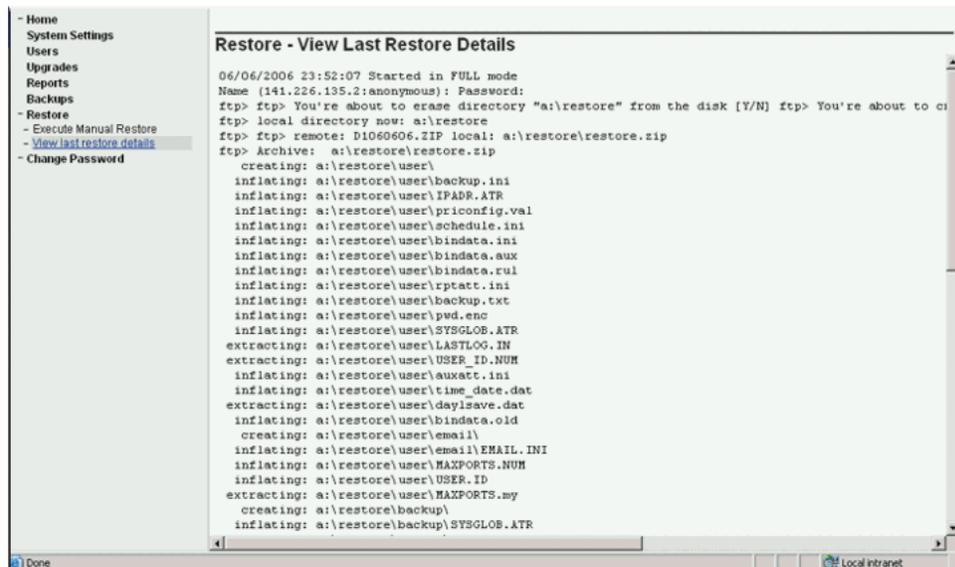
Restoring a file through upload on a PC

1. Copy the backup file to the PC.

2. On the Home - System Overview window, select Restore > Execute Manual Restore.

   The window shown in Figure 47: Execute Manual Restore window - Upload on page 137 appears.
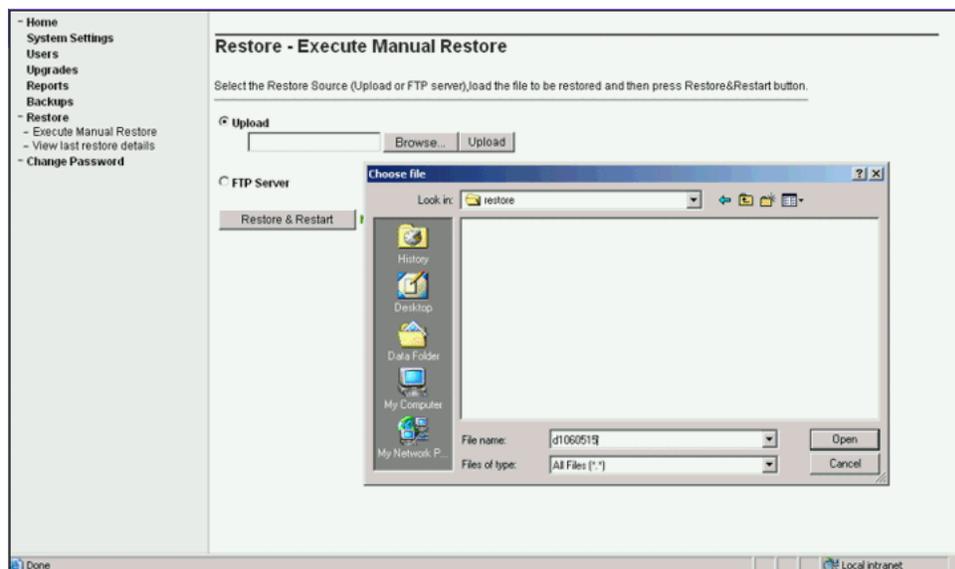

Figure 47: Execute Manual Restore window - Upload

3. Click **Browse** to locate the restore file.

4. Click **Upload**.

5. To complete the restore process, click **Restore & Restart**.

   The system restarts and your Web session ends. You must log on again to resume working through the Web interface.

6. You can view the details of the restore as shown in .

Chapter 17: CLI commands

This chapter contains information about the following topics:

- Introduction on page 139
- Organization of CLI commands on page 139

Introduction

You can access the command line interface (CLI) commands locally through the terminal or through a terminal emulation connected to the E1/T1 card serial port. See Initial configuration of an E1/T1 card through the command line interface on page 103.

You can also access the CLI remotely. For more information, see Remote access to the E1/T1 card on page 102.

Organization of CLI commands

CLI commands are organized in a tree structure as shown in Figure 48: Tree structure of CLI commands on page 140. Navigating the CLI tree is very similar to the UNIX file system:

- to list commands and directories in the current directory, enter:

  ls

- to move to the specified directory, enter:

  CD <name>

- to return one level up, enter:

  CD ..

- to display a short description of each command or directory in the current level, enter:
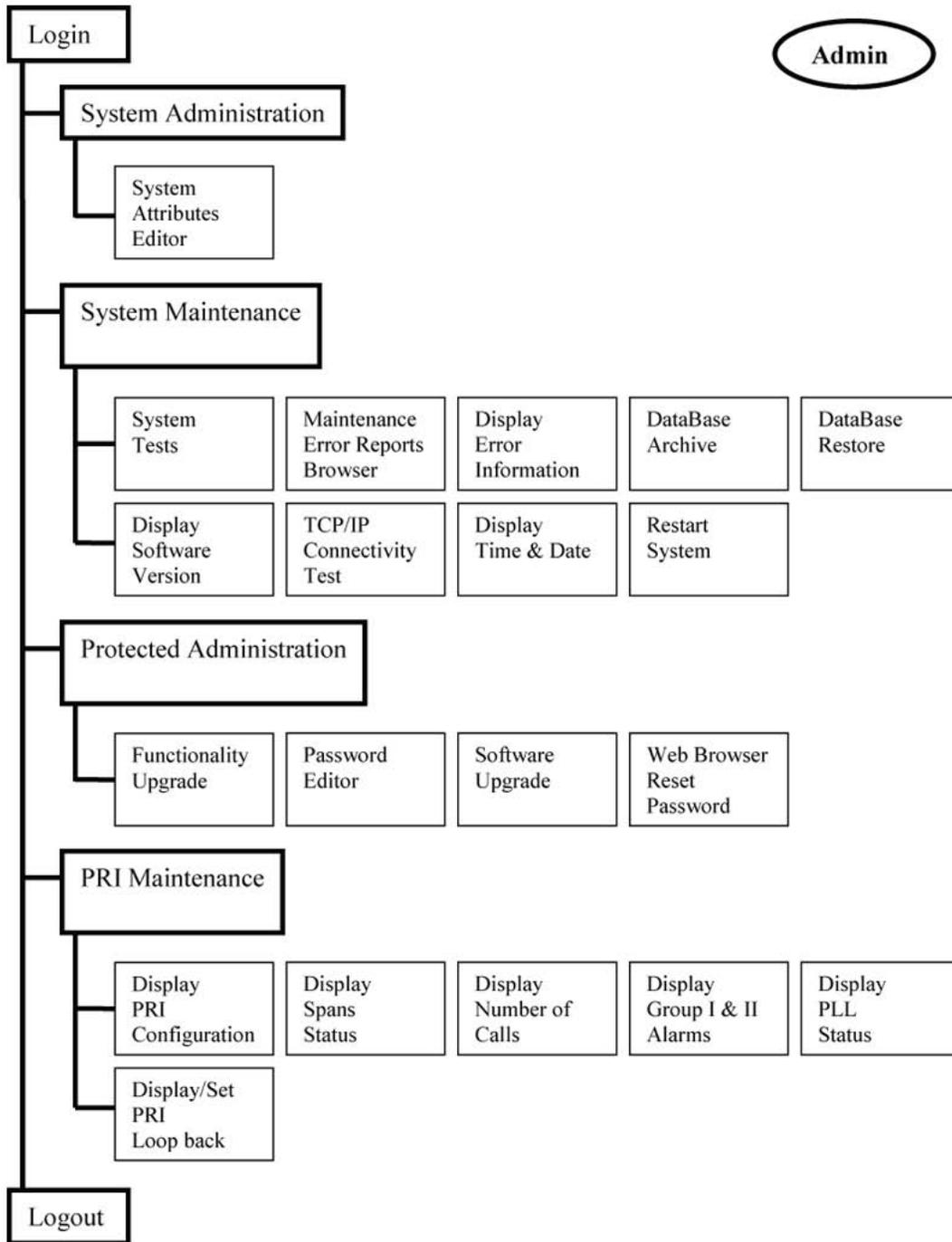
  ?

Figure 48: Tree structure of CLI commands

Appendix A: PRI Gateway alarms

The alarms as shown in [Table 39: PRI Gateway alarms](#) on page 141 appear in LD 60, CLI status commands, and on the product LEDs.

Table 39: PRI Gateway alarms

E1, European ISDN Alarms		
Level 1	Alarm type (receive side)	Description
	BPV	Bipolar violation
	FE (Ber)	Frame alignment errors (bit error rate)
	CRC4 errors	CRC4 errors
	FEBE	CRC4 errors reported by remote side
	Slip	
Level 2	AIS	All one
	RAI (ts0)	Remote alarm indication
	Los	Loss of signal
	LFAS	Lost frame alignment signal
	CLMAS	Lost of CRC4 frame alignment signal
T1 ISDN SF and ESF		
Level 1	BPV	Bipolar violation
	FE (Ber)	Frame alignment errors (bit error rate)
	ESF CRC6 errors	CRC6 errors
	ESF - FEBE	CRC6 errors reported by remote side
	Slip	
Level 2	AIS	All one
	SF – Digit 2 yellow alarm	Yellow alarm
	ESF – FDL,(D2) yellow alarm	Yellow alarm
	Los	Loss of signal
	LFAS	Lost frame alignment signal
	ESF – CLMAS	Loss of CRC6 frame alignment signal

Comments? infodev@avaya.com

Appendix B: Media Gateway Controller system alarms, events, and messages

The Media Gateway Controller (MGC) platform displays the messages shown in . They include, for example, hardware level faults and firmware faults, including Tones and Conference, Call Server synchronization problems.

Table 40: MGC system alarms, events, and messages

Message	Severity	Description	Corrective action	Output (TTY, LOG, SNMP, LED)
MGC0000	Critical	Cold start of the MGC <supl shelf> occurred. Reason: <Power cycle / Hardware watchdog expired / User initiated/ Software error>.	Depending on the reason code, contact Avaya support.	TTY, LOG, SNMP
MGC0001	Critical	Warm start of the MGC <supl shelf> occurred. Reason: <Normal after cold start / Rest button pressed / User initiated / Software error>.	Depending on the reason code, contact Avaya support.	TTY, LOG, SNMP
MGC0002 (E002)	Critical	Unable to send MGC <supl shelf> registration request to the Call Server.	Check IP configuration and network connections.	TTY, LOG, SNMP, LED
MGC0003	Clear (E002)	MGC <supl shelf> registered to the Call Server.	None	TTY, LOG, SNMP, LED
MGC0004	Major	MGC <supl shelf> unable to process the upgrade request from the Call Server.	Contact Avaya support.	TTY, LOG, SNMP
MGC0005	Major	MGC <supl shelf> unable to upgrade loadware <loadware version>.	Contact Avaya support.	TTY, LOG, SNMP
MGC0006	Major	MGC <supl shelf> unable to download loadware	Check IP configuration and network	TTY, LOG, SNMP

Message	Severity	Description	Corrective action	Output (TTY, LOG, SNMP, LED)
		<loadware version> from the Call Server.	connections. Confirm the loadware exists in the appropriate directory on the Call Server.	
MGC0007	Major	MGC <supl shelf> unable to synchronize passwords from the Call Server.	Check IP configuration and network connections. Confirm the password file exists in the appropriate directory on the Call Server.	TTY, LOG, SNMP
MGC0008	Major	MGC <supl shelf> detected a problem with loadware <loadware version>, reverting to the Gold image.	Contact Avaya Support.	TTY, LOG, SNMP
MGC0011 (E003)	Critical	MGC <supl shelf> - Link down to the Call Server.	Check IP configuration and network connections.	TTY, LOG, SNMP
MGC0012	Clear (E003)	MGC <supl shelf> - Link down to the Call Server.	None	TTY, LOG, SNMP
MGC0013	Info	MGC <supl shelf> - Physical/link layer problem detected, port <port name>, <error code or description?>	Check IP configuration and network connections.	TTY, LOG, SNMP
MGC0014	Info	MGC <supl shelf> - User <LDS1/LDS2> has logged into the card.	None	TTY, LOG, SNMP
SCH6718	Info	The IPMG_TYPE can not be modified when the link to the IPMG is established.	Either disconnect the IPMG from the network or power off the IPMG so the link gets disabled.	TTY, LOG
SCH1983	Info	The maximum number of MGTDS loops that can be configured for a MG 1000E is 2.	Do not configure more than 2 MGTDS loops for MG 1000E.	TTY, LOG
SCH2155	Info	The maximum number of MGCNF loops that can be configured for an SSC MG 1000E is 4	Do not configure more than 4 MGCNF loops for an SSC MG 1000E	TTY, LOG
SCH2156	Info	The maximum number of MGCNF loops that can be	Do not configure more than 2 MGCNF loops for a MGC MG 1000E	TTY, LOG

Message	Severity	Description	Corrective action	Output (TTY, LOG, SNMP, LED)
		configured for a MGC MG 1000E is 2		
TDS0009	Info	There are no MGTDS loops configured in this IPMG.	Check the configuration and try again.	TTY, LOG
BUGnnnn	Info	Cannot set the IPMG flag on a non-IPMG loop.		TTY, LOG
SRPT0174	Info	STARTUP: "EXP_CAB" registration denied. Unconfigured IP address nnn.nnn.nnn.nnn.		TTY, LOG, SNMP