CISCO SYSTEMS

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Cisco DPA 7630/7610 Voice Mail Gateways Administration Guide

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Customer Order Number: DOC-7811069=
Text Part Number: 78-11069-03

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About This Guide

Overview

The *Cisco DPA 7630/7610 Voice Mail Gateways Administration Guide* provides you with the information you need to understand, install, configure, and manage the Cisco DPA 7630 and 7610 voice mail gateways (DPA 7630/7610) on your network.

Audience

Network engineers, system administrators, and telecom engineers should review this guide to learn the steps required to properly set up the DPA 7630/7610 in the network.

The tasks described in this guide are considered to be administration-level tasks. Because of the close interaction of the DPA 7630/7610 with Cisco CallManager, Octel voice messaging system, and Definity or Meridian 1 PBX systems these tasks require that you are familiar with these systems as well.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Objectives

This guide provides the required steps to get the DPA 7630/7610 up and running on the IP telephony network. Because of the complexity of an IP telephony network, this guide does not provide detailed information for required procedures performed on other Cisco or third-party devices. Refer to the documentation provided with these systems for installation and configuration instructions.

Organization

Table 1 provides an overview of the organization of this guide.

Table 1 Cisco Digital PBX Adapter 7630 Administration Guide Organization

Chapter	Description
Chapter 1, “Overview”	Provides conceptual overview of the DPA 7630/7610, explanation of how the device interacts with other components in the IP telephony network.
Chapter 2, “Choosing an Integration Mode”	Explains different available scenarios and configurations in which you can add the DPA7630/7610 to your network.
Chapter 3, “Installing the DPA 7630/7610”	Describes the steps required to properly and safely install and configure the DPA 7630/7610 in your network.
Chapter 4, “Preparing the Cisco CallManager and Octel Systems”	Provides details about information required from the Cisco CallManager and Octel systems. Also includes information about registering the DPA 7630/7610 in Cisco CallManager.
Chapter 5, “Getting Started with the DPA 7630/7610”	Provides procedures for configuring network settings, verifying status, and making global changes to the DPA 7630/7610.
Chapter 6, “Configuring Telephony Settings”	Provides procedures for configuring settings on DPA 7630/7610 that depend upon the Cisco CallManager, Octel, and PBX systems.

Table 1 Cisco Digital PBX Adapter 7630 Administration Guide Organization (continued)

Chapter	Description
Chapter 7, "Troubleshooting the DPA 7630/7610"	Provides diagnostic and troubleshooting suggestions for the DPA 7630/7610.
Appendix A, "Technical Specifications"	Provides a reference of the detailed technical specifications for the DPA 7630/7610.
Appendix B, "Translated Safety Warnings"	Provides translations of safety warnings used in this guide.

Related Documentation

For information about Cisco CallManager and additional information about the Cisco DPA 7630, refer to these publications:

- *Cisco CallManager Administration Guide*
- *Cisco CallManager System Guide*
- *Cisco DPA 7630/7610 Voice Mail Gateways Release Notes*

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- http://www.cisco.com
- http://www-china.cisco.com
- http://www-europe.cisco.com

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

- Nonregistered CCO users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

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Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

http://www.cisco.com

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

http://www.cisco.com/tac

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

http://www.cisco.com/register/

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

http://www.cisco.com/tac/caseopen

Contacting TAC by Telephone

If you have a priority level 1(P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

Document Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in **boldface**.
italic font	Arguments for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.
{ x | y | z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
`screen` font	Terminal sessions and information the system displays are in `screen` font.
`boldface screen` font	Information you must enter is in **`boldface screen`** font.
italic screen font	Arguments for which you supply values are in *italic screen* font.

Convention	Description
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords are in angle brackets.

Notes use the following conventions:

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Cautions use the following conventions:

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Tips use the following conventions:

Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information.

Warnings use the following conventions:

Warning **This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. (To see translations of the warnings that appear in this publication, refer to the appendix, "Translated Safety Warnings.")**

Waarschuwing **Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. (Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het aanhangsel "Translated Safety Warnings" (Vertalingen van veiligheidsvoorschriften) raadplegen.)**

Varoitus **Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. (Tässä julkaisussa esiintyvien varoitusten käännökset löydät liitteestä "Translated Safety Warnings" (käännetyt turvallisuutta koskevat varoitukset).)**

Attention **Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures. Avant d'accéder à cet équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures courantes de prévention des accidents. Pour obtenir les traductions des mises en garde figurant dans cette publication, veuillez consulter l'annexe intitulée « Translated Safety Warnings » (Traduction des avis de sécurité).**

Warnung **Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. (Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Anhang mit dem Titel "Translated Safety Warnings" (Übersetzung der Warnhinweise).)**

Avvertenza **Questo simbolo di avvertenza indica un pericolo. Si è in una situazione che può causare infortuni. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nell'appendice, "Translated Safety Warnings" (Traduzione delle avvertenze di sicurezza).**

Advarsel **Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. (Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i vedlegget "Translated Safety Warnings" [Oversatte sikkerhetsadvarsler].)**

Aviso **Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos fisicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. (Para ver as traduções dos avisos que constam desta publicação, consulte o apêndice "Translated Safety Warnings" - "Traduções dos Avisos de Segurança").**

Advertencia **Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. (Para ver traducciones de las advertencias que aparecen en esta publicación, consultar el apéndice titulado "Translated Safety Warnings.")**

Varning! **Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. (Se förklaringar av de varningar som förekommer i denna publikation i appendix "Translated Safety Warnings" [Översatta säkerhetsvarningar].)**

CHAPTER 1

Overview

The Cisco DPA 7630 and 7610 Voice Mail Gateways (DPA 7630/7610) enable you to integrate Cisco CallManager systems with Octel voice mail systems, which might also be connected to either Definity or Meridian 1 PBX systems. The DPA 7630/7610 enables you to use your existing third-party telephony systems along with your Cisco IP telephony system.

For example, you can ensure that features such as message waiting indicators (MWI) for Octel voice messages are properly set on Cisco IP Phones (connected to Cisco CallManager) and traditional telephony phones (connected to Definity or Meridian 1 PBX systems).

Using the DPA 7630/7610, you can integrate the following systems:

- Cisco CallManager 3.1(1) or higher
- Octel 200 and 300 voice messaging systems (using APIC/NPIC integration)
- Octel 250 and 350 voice messaging systems (using FLT-A/FLT-N integration)
- Lucent Definity G3 PBX systems (DPA 7630 only)
- Nortel Meridian 1 PBX systems (DPA 7610 only)

These sections provide you with an overview of the DPA 7630/7610 and its interactions with the other components in traditional and IP telephony networks:

- Understanding the DPA 7630/7610, page 1-2
- Understanding How the DPA 7630/7610 Works, page 1-8

Understanding the DPA 7630/7610

The DPA 7630/7610 functions as a gateway between the Octel, PBX systems, and Cisco CallManager, performing these tasks:

- Determines the call type from Cisco CallManager and sends envelope (display), light, and ring messages to the Octel system.
- Determines when the Octel system is attempting to transfer, outcall, set message waiting indicators (MWI) and so on, and sends the appropriate messages to Cisco CallManager.
- Converts Dual-Tone Multi-Frequency (DTMF) tones to Skinny Client Control Protocol (SCCP) messages.
- Converts Nortel Display Key commands to Skinny Client Control Protocol (SCCP) messages
- Provides companding-law transcoding, and voice compression.
- Performs Real-Time Transport (RTP) encapsulation of the voice message.

These sections provide additional detail about the interfaces and supported protocols on the DPA 7630/7610:

- DPA 7630/7610 Physical Description, page 1-2
- Supported Protocols on the DPA 7630/7610, page 1-6

DPA 7630/7610 Physical Description

The DPA 7630/7610 is a 19-inch, rack-mountable hardware device capable of emulating digital telephones or digital PBX ports. By emulating these devices, the DPA 7630/7610 enables you to integrate Cisco CallManager with existing Octel voice mail systems and Definity or Meridian 1 PBX systems.

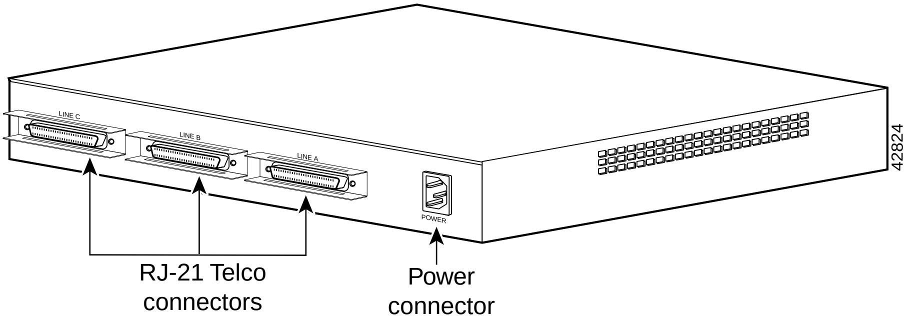
The wiring and external connectors of the DPA 7630 and 7610 differ slightly because the Definity system uses a 4-wire wiring scheme, and the Meridian 1 system uses a 2-wire wiring scheme.

DPA 7630—Rear View

The rear of the DPA 7630 (see Figure 1-1) includes the following interfaces:

- Lines C, B, A—RJ-21 telco connectors used to connect 24 lines (8 ports per connector) to the Definity and Octel systems. These are four-wire telco connectors, matching the wiring scheme used by the Definity PBX systems.
- Power connector—provides power to the DPA 7630.

Figure 1-1 Cisco DPA 7630 Rear View

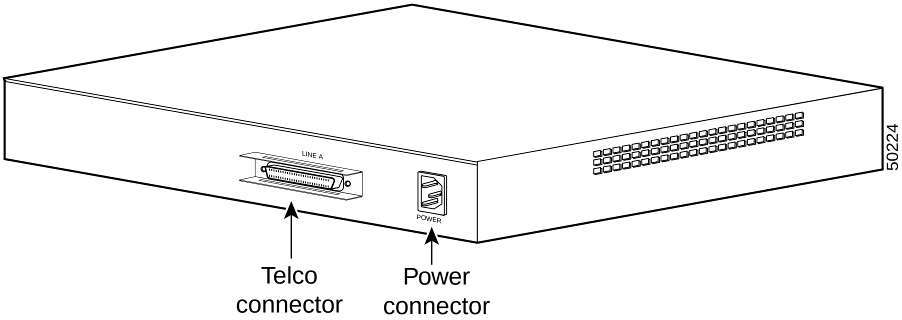


DPA 7610—Rear View

The rear of the DPA 7610 (see Figure 1-2) includes the following interfaces:

- Telco connector—RJ-21 telco connector used to connect 24 lines to the Meridian 1 and Octel systems. This is a two-wire telco connector, matching the wiring scheme used by the Meridian 1 PBX systems.
- Power connector—provides power to the DPA 7610.

Figure 1-2 Cisco DPA 7610 Rear View

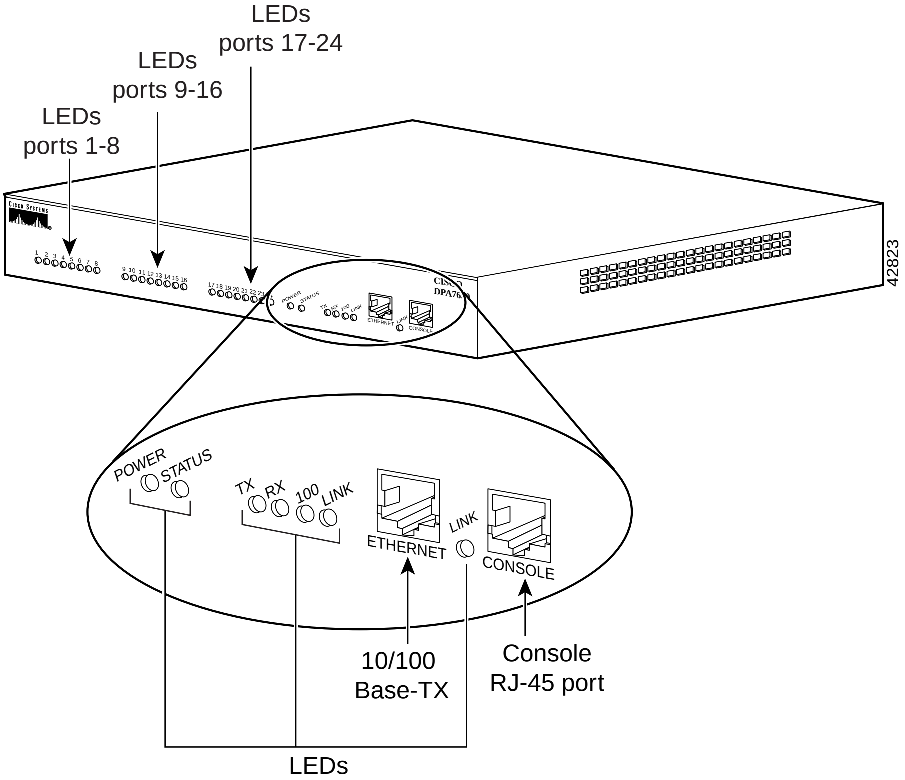


DPA 7630/7610—Front View

The front of the DPA 7630 and 7610 are identical (see Figure 1-3) include the following interfaces:

- 10/100 Mbps Ethernet port—RJ-45 port used to connect to IP network
- Console port—RJ-45 port used for configuring and managing the DPA 7630/7610
- LED status indicators—used to indicate port and line status

Figure 1-3 Cisco DPA 7630/7610 Front View



Supported Protocols on the DPA 7630/7610

The DPA 7630/7610 supports several industry-standard and Cisco networking protocols required for voice communication over an IP network. Additionally, the DPA 7630/7610 supports protocols required for remote network management.

Data and Voice Protocols

The DPA 7630/7610 supports the following data and voice communication protocols.

- Internet Protocol (IP)—addresses and sends packets across the network.
- Trivial File Transfer Protocol (TFTP)—allows you to transfer files over the network.
- File Transfer Protocol (FTP)—allows you to transfer files over the network.
- Dynamic Host Configuration Protocol (DHCP)—dynamically allocates and assigns an IP address to network devices.
- Real-Time Transport Protocol (RTP)—enables transporting of real-time data, such as interactive voice and video over data networks.
- Skinny Client Control Protocol (SCCP)—enables communication between the DPA 7630/7610 and Cisco CallManager.
- Network Time Protocol (NTP)—enables synchronization of time and date

Network Management Protocols

The DPA 7630/7610 supports Simple Network Management Protocol (SNMP) and implements several industry-standard Management Information Bases (MIBs).

Understanding SNMP Support

The DPA 7630/7610 (with software version 1.1 or higher) supports SNMP versions 1 and 2, enabling you to perform the following commands:

- Get—Retrieve a specific node’s value.
- GetNext—Retrieve the first value present in the ordered tree whose node succeeds the one specified.

- GetBulk—Retrieve bounded number of values whose nodes succeed, in the numerical ordering, the one specified. GetBulk is available only in SNMP v2.
- Set—Set a specific value.

Understanding Supported MIBs

The DPA 7630/7610 supports the following MIBs.

RFC 1213

RFC 1213 is the basic MIB 2 specification which indicates the state of network interfaces and statistics for network protocols.

The DPA 7630/7610 supports RFC 1213 on the Ethernet interface with the following caveats:

- The digital telephony interfaces are not listed in the ifTable.
- ifAdminStatus cannot be written, and it is fixed at “up”.
- ifLastChange returns as “0”.
- ifSpecific returns as “0, 0”.
- atTable cannot be written.
- No “ip***” values can be written.
- You cannot write to “tcpConnState” for an active TCP connection.
- The DPA 7630/7610 does not implement the External Gateway Protocol (EGP).

RMON

The DPA 7630/7610 implements the Ethernet Statistics group in Remote Network Monitoring (RMON), with the exception of “EtherStatsStatus.” This is fixed at “valid” and cannot be written.

Cisco CDP MIB

Cisco Discovery Protocol (CDP) is a method that Cisco devices use to advertise their presence and to discover information about other nearby devices. The DPA 7630/7610 implements all objects in this MIB with the exception of “cdpGlobalRun”. This object returns “true” when read, and cannot be written using SNMP.

Cisco Process MIB

This MIB describes the processes currently running on the device. However, because the DPA 7630/7610 has threads, rather than processes, running on it the MIB is implemented with the following caveats:

- The amount of memory allocated is not recorded on a per-thread basis. Therefore, cpmProcExtMemAllocated and cpmProcExtMemFreed are returned as 0.
- All threads run at the same priority. Therefore, for every process cpmProcExtPriority will be returned as “normal.”
- It is not possible to change a process’s priority so attempts to write “cpmProcExtPriority” are unsuccessful.

Calista DPA MIB

The DPA 7630/7610 supports an additional DPA-specific Cisco MIB in version 1.2(1) and later. The MIB OID is: `CALISTA-DPA-MIB`.

For an explanation of this MIB, refer to the SNMP v2 MIBs available at the following location:

http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

Understanding How the DPA 7630/7610 Works

The Cisco DPA 7630/7610 enables you to integrate your existing Octel voice mail with Cisco CallManager and either a Definity PBX system or a Meridian 1 PBX system. If you have a Definity PBX, use the DPA 7630; if you have a Meridian 1 system, use the DPA 7610.

The DPA 7630/7610 functions by emulating digital phone or PBX systems. This capability allows it to appear like these devices to Cisco CallManager, Octel, Definity, and Meridian 1 systems.

These sections provide an understanding of the purpose of the DPA 7630/7610:

- Why is the DPA 7630/7610 Needed?, page 1-9
- Can I Just Use SMDI?, page 1-9
- What If I Cannot Use SMDI?, page 1-9

Why is the DPA 7630/7610 Needed?

If you want to migrate your telephony system from a Definity G3 PBX or a Meridian 1 PBX to Cisco CallManager, you must decide whether to do a complete cutover to Cisco CallManager or to migrate slowly. If you do a complete cutover to Cisco CallManager and Cisco's voice mail solution, you do not need the DPA 7630/7610. However, if you are slowly migrating your systems, you might want to maintain some phones on the Definity or Meridian 1 PBX while installing new phones on the Cisco CallManager system. You might want to use your existing Octel voice mail system with your Cisco CallManager system. In these cases, the DPA 7630/7610 can assist your migration to Cisco CallManager.

Can I Just Use SMDI?

One difficulty with migration is that voice mail systems such as Octel were designed to integrate to only one PBX at a time. To resolve this difficulty, many people use Simplified Message Desk Interface (SMDI), which was designed to enable integrated voice mail services to multiple clients.

However, to use SMDI, your voice mail system must meet several qualifications:

- It must have sufficient database capacity to support two PBX systems simultaneously and to associate each mailbox with the correct PBX in order to send MWI information on the correct link.
- It must be possible to physically connect the IP network to the voice messaging system while maintaining the existing physical link to the PBX.
- It must support analog integration. SMDI is primarily an analog technology.

Additionally, SMDI requires reconfiguration of your existing telephony network.

What If I Cannot Use SMDI?

SMDI might not be an option for you, particularly if you are using a digital interface on your Octel systems. Octel systems with digital line cards emulate digital phones, appearing to the PBX as digital extensions, referred to as per-port or PBX integration cards (PIC). On PIC systems, the voice and data streams (for setting MWI) are on the same path. The MWIs are set and cleared via feature access codes on dedicated ports. Because these PIC ports use proprietary interfaces, you cannot use standard interfaces to connect them to the Cisco CallManager system. However, the DPA 7630/7610 can translate these interfaces to enable communication between the Cisco CallManager, Octel, and Meridian 1 or Definity systems.

CHAPTER 2

Choosing an Integration Mode

The DPA 7630/7610 enables you to integrate the Cisco CallManager, Octel, and Meridian 1 or Definity systems. Depending on the needs of your network, you can choose among several different integration methods.

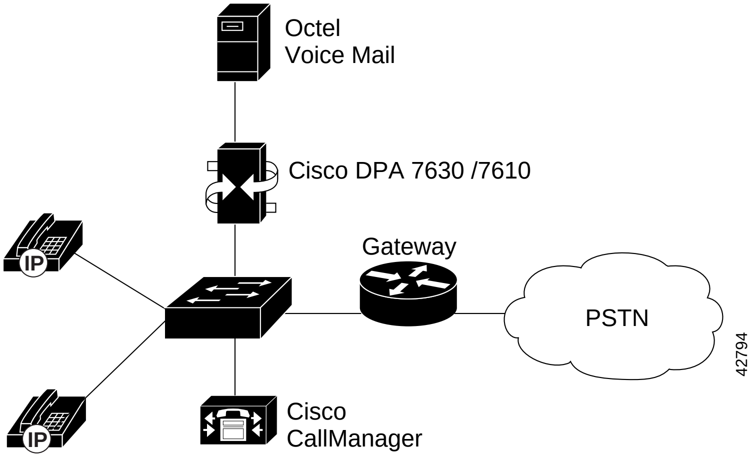
Select an integration mode based on the needs of your IP telephony network:

- Simple—Used to integrate Cisco CallManager with existing Octel voice mail systems. In this solution, you are not using a Definity or Meridian 1 PBX system, or you are choosing not to integrate them with your IP telephony system. See “Using the Simple Integration Mode” section on page 2-2.
- Hybrid—Used to integrate Cisco CallManager with existing Octel voice mail systems and Definity or Meridian 1 PBX systems. See “Using the Hybrid Integration Mode” section on page 2-7.
- Multiple—Used to integrate the systems in larger networks using a combination of simple and hybrid scenarios, which requires multiple DPA 7630/7610 systems. See “Using the Multiple Integration” section on page 2-14.

Using the Simple Integration Mode

In the simple integration mode, the DPA 7630/7610 handles all processing and signaling between the Octel and Cisco CallManager systems (see Figure 2-1).

Figure 2-1 Simple Integration of Cisco CallManager and Octel Systems



Understanding the Simple Integration Mode

In this integration, all 24 ports on the DPA 7630/7610 connect to the Octel system, providing 24 Octel ports for call and MWI processing. The DPA 7630/7610 translates the messaging between Cisco CallManager and the Octel system.

Understanding Interactions with the Octel System

The Octel voice mail system normally works by emulating a set of digital PBX phones. When a call goes to voice mail, the PBX “rings” one of those emulated phones. The Octel voice mail system reads the emulated phone display and gathers information about the call such as the caller, calling party, and the reason that the call was forwarded to voice mail; then, the Octel system answers the call.

When you use the DPA 7630/7610, it emulates a PBX for the Octel voice mail system and emulates up to 24 Cisco IP Phones in Cisco CallManager. In this setup, when a call goes to voice mail, Cisco CallManager rings one of the emulated Cisco IP Phones (which is a port on the DPA 7630/7610). The DPA 7630/7610 translates this ringing to a corresponding Octel voice mail port. Other aspects of the phone behavior that the DPA 7630/7610 translates include the formatting of the information on the display, line light behavior, call transferring, and setting MWIs.

For example, to activate a Definity MWI, the Octel system goes off-hook on one of its ports and dials a feature access code (typically *4) followed by the extension number. The DPA 7630 must recognize this and translate the sequence to the appropriate set of IP messages for Cisco CallManager.

Understanding Interactions with the Cisco CallManager System

The DPA 7630/7610 connects to the IP network and accesses a Cisco CallManager TFTP server to get its port configuration and Cisco CallManager list. After the configuration information has been transmitted using TFTP, the DPA 7630/7610 tries to register its virtual port (port 25) to the first Cisco CallManager from the Cisco CallManager list using Skinny Client Control Protocol (SCCP).

This virtual port handles all the MWI commands sent from the Octel, destined to the Cisco Call Manager. As Octel voice and MWI ports are connected to the DPA 7630/7610, each connected port on the DPA 7630/7610 then registers as a 30VIP IP phone with the Cisco Call Manager.

Implementing the Simple Integration Mode

To implement the simple integration mode, you must connect the DPA 7630/7610 to the Octel and Cisco CallManager systems using these guidelines.

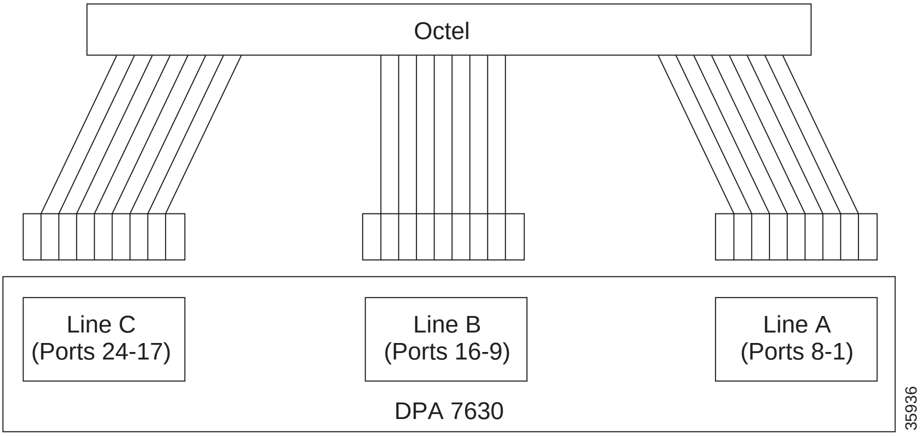
Connecting to the Octel System

Because of the wiring differences on the DPA 7630 and the DPA 7610, you connect them slightly differently.

DPA 7630

Connect all the ports you need in Lines A, B, and C from the DPA 7630 to the Octel system (see Figure 2-2). There are 24 ports, but if you have fewer than 24 Octel ports, you can leave the remaining ports empty. On the Octel system, these 24 ports appear as 24 Definity PBX ports.

Figure 2-2 Logical Connections of Simple Integration on the DPA 7630

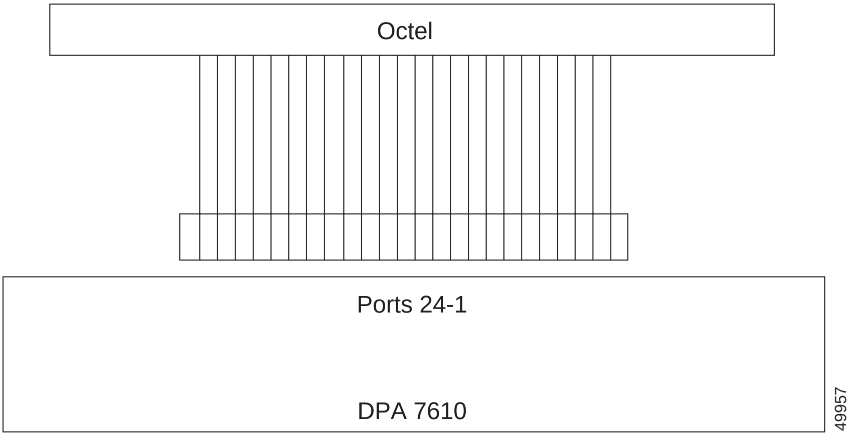


- All 24 ports connected to Octel.
- Configure some lines to handle incoming calls, some for outgoing calls, and some for MWI.
- Do not enable incoming and outgoing calls on the same line.

DPA 7610

Connect all the lines you need from the telco connector on the DPA 7610 to the Octel system (see Figure 2-3). There are 24 ports, but if you have fewer than 24 Octel ports, you can leave the remaining ports empty. On the Octel system, these 24 lines appear as 24 Meridian 1 PBX ports.

Figure 2-3 Logical Connections of Simple Integration on the DPA 7610



- All 24 ports connected to Octel.
- Configure some lines to handle incoming calls, some for outgoing calls, and some for MWI.
- Do not enable incoming and outgoing calls on the same line.

Connecting to Cisco CallManager

Use the Ethernet port on the DPA 7630/7610 to connect to the IP network, from which the DPA 7630/7610 connects to Cisco CallManager.

Resulting Line Configuration

This configuration results in 24 lines available for the following purposes:

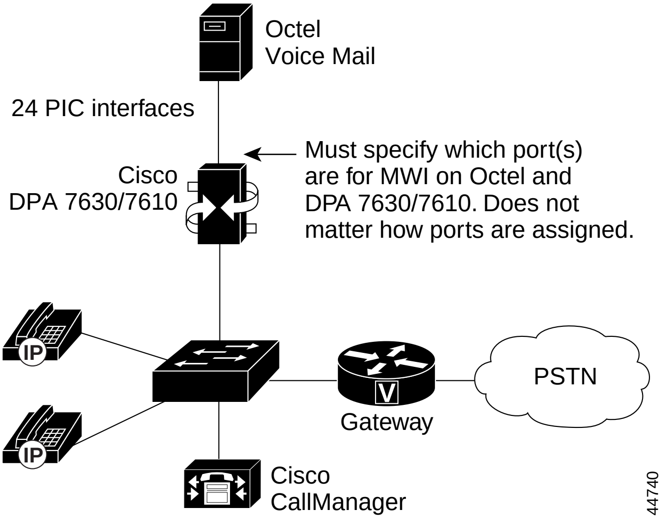
- Incoming and outgoing calls between the Cisco CallManager system and the Octel system via the DPA 7630/7610.
- Message waiting indicator (MWI) commands going from the Octel system to Cisco CallManager via the DPA 7630/7610.

On the Octel system, you can designate which lines are used for handling incoming and outgoing calls to Cisco CallManager and which are used for setting MWIs. You must ensure that all MWI lines from the Octel system connect to the DPA 7630/7610. The DPA 7630/7610 requires that you do not have any one line designated for both incoming call processing and sending MWI commands. You can, however, use the same lines for setting MWIs and handling outgoing calls.

Once these 24 ports successfully connect to Cisco CallManager, they appear in the database as Cisco IP Phones. If some ports are not used, they do not appear in the Cisco CallManager database. For example, if you are only using 12 ports, only 12 IP phones appear in the Cisco CallManager database.

Additionally, a separate virtual IP phone (port 25) appears in Cisco CallManager. This virtual IP phone is created automatically by the DPA 7630/7610, and it is responsible for setting the MWIs on the Cisco IP Phones connected to Cisco CallManager.

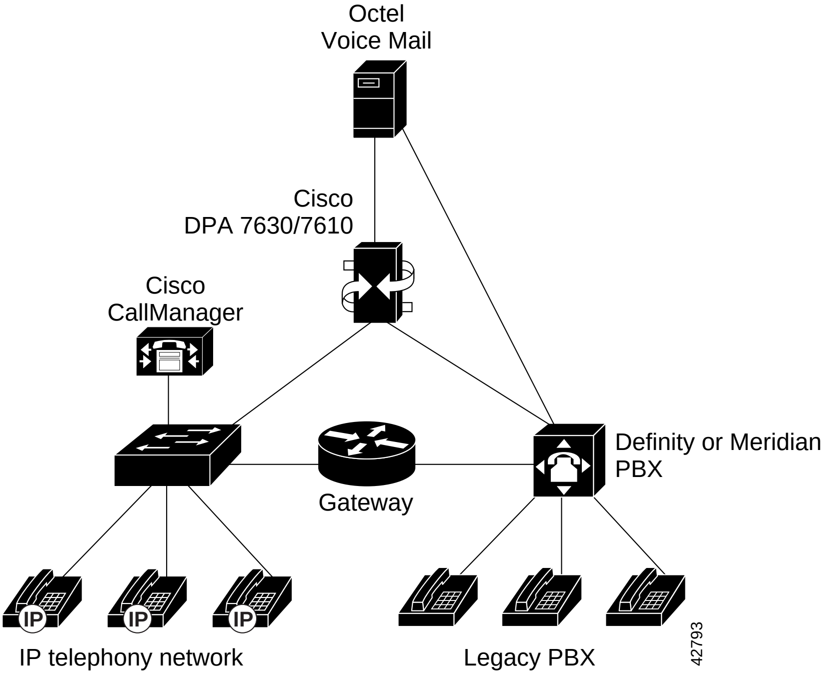
Figure 2-4 Resulting Simple Integrated Network


Octel
Voice Mail
24 PIC interfaces
Must specify which port(s) are for MWI on Octel and DPA 7630/7610. Does not matter how ports are assigned.
Cisco
DPA 7630/7610
IP
IP
V
PSTN
Gateway
Cisco
CallManager
44740

Using the Hybrid Integration Mode

If you want to connect Cisco CallManager to Octel voice mail and Definity or Meridian 1 PBX systems, you must use the hybrid integration mode. In the hybrid configuration, the DPA 7630/7610 handles processing and signaling among the Octel, Cisco CallManager, and Definity or Meridian 1 systems (see Figure 2-5).

Figure 2-5 Hybrid Integration of Cisco CallManager, Octel, Definity, and Meridian 1 Systems



Understanding the Hybrid Integration Mode

The hybrid integration mode requires interaction among the DPA 7630/7610, the Octel voice mail system, Cisco CallManager, and the Definity or Meridian 1 PBX systems.

Understanding Interaction with the Octel and PBX Systems

A Cisco CallManager IP-based telephony system can be connected to a PBX using an ISDN PRI card in the Definity or Meridian 1 PBX systems and an ISDN PRI gateway on the IP network. This setup allows users on the IP phones and users on the Definity or Meridian 1 digital phones to make and receive telephone calls to each other.

However, this configuration does not resolve many of the following issues with the voice mail system:

- The PRI link loses information.

  When a user on an IP phone accesses the voice mail system directly, the extension number of the IP phone is not transferred across the ISDN PRI link. Therefore, the voice mail system cannot give the correct greeting to the user of the IP phone, and users must enter their voice mailbox number.

- The voice mail system cannot activate the MWI light of IP phones.

  On a Definity PBX, the voice mail system controls the phones' MWI lights by dialing feature access codes. This does not work across the ISDN PRI link. For example, if IP phone 1234 is left a message, the voice mail system notifies the PBX to light MWI 1234, which the PBX considers an error because it does not have extension 1234.

To resolve these problems, up to 16 of the ports on the DPA 7630/7610 can connect to the Octel system in the same way as in the simple integration mode. You can then set up a separate hunt group for the IP phones, which is accessed using one of the lines connected to the DPA 7630/7610. This solution enables the following call types to function properly because the caller and number are no longer lost:

- Direct calls to the voice mail system from an IP phone
- Calls to an IP phone that are forwarded to voice mail

Because the Octel voice mail system cannot determine which MWI lines are used for particular extensions, the DPA 7630/7610 must handle all MWI requests from the Octel system. Therefore, the remaining 8 ports on the DPA 7630/7610 must connect to the Definity or Meridian 1 PBX system. The DPA 7630/7610 performs a pass-through operation on these ports, allowing the Octel, Definity, and Meridian 1 systems to function as before.

However, because the DPA 7630/7610 does not have knowledge about the dial plans, it sends the MWI command to the Cisco CallManager and the Definity or Meridian 1 PBX system. The DPA 7630/7610 ignores any errors received from either the PBX or Cisco CallManager.

Understanding Interactions with the Cisco CallManager System

Using the hybrid integration method, the DPA 7630/7610 emulates up to 17 IP phones. There is one emulated phone for each line (up to 16) connected to the Octel system and one for setting MWIs on the Cisco CallManager system. The remaining eight ports on the DPA 7630/7610 connect to the Definity or Meridian 1 system and do not appear in Cisco CallManager.

Because the lines provide specific services (incoming calls, outgoing calls, setting MWIs), you need to configure them accordingly in Cisco CallManager. Refer to the “Configuring the DPA Ports and Phones” section on page 4-10 for details.

Implementing the Hybrid Integration

To implement the hybrid integration, you must connect the DPA 7630/7610 to the Octel, Cisco CallManager, and Definity or Meridian 1 systems using these guidelines.

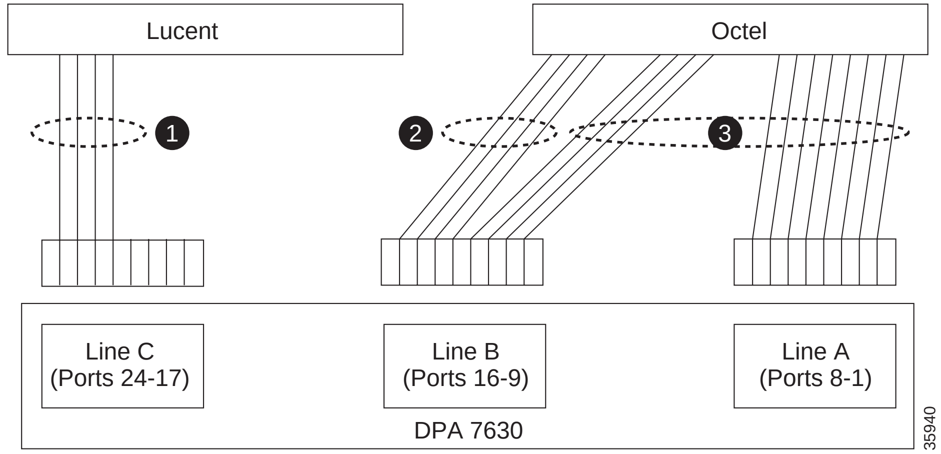
Connecting to the Octel and PBX Systems

Because of the wiring differences on the DPA 7630 and the DPA 7610, you connect them slightly differently.

DPA 7630

To use this configuration, all MWI lines for the Definity and Cisco CallManager systems must pass through the DPA 7630(see Figure 2-6).

Figure 2-6 Logical Connections of Hybrid Integration on the DPA 7630



1 Assign these 4 lines to set MWIs on the Lucent PBX system.

2 Assign these 4 lines to handle MWI commands. Use the same number of lines and corresponding ports as those on Line C.

3 Assign these 12 lines to handle either incoming calls or outgoing calls. Do not enable incoming and outgoing calls on the same line.

Follow these guidelines when configuring the DPA 7630:

- Line A (ports 1-8) connects to the Octel system and handles call processing. You can designate each line to handle incoming or outgoing messaging, but a single line cannot support both.
- Line B (ports 9-16) connects to the Octel system. A portion of these lines can be used for call processing (as with Line A), but all MWI lines must connect through Line B. So, if you have *n* MWI lines, you have 8-*n* available for incoming messages on ports 9-16 (in addition to the 8 ports available on Line A).

  Also, ensure the MWI lines have a one-to-one correspondence with the MWI lines in Line C, in both quantity and physical location. For example, if you assign the last four ports on Line B (ports 13, 14, 15, and 16) to be Octel MWI lines, you must also assign the last four ports on Line C (ports 21, 22, 23, and 24) to be Definity MWI lines.

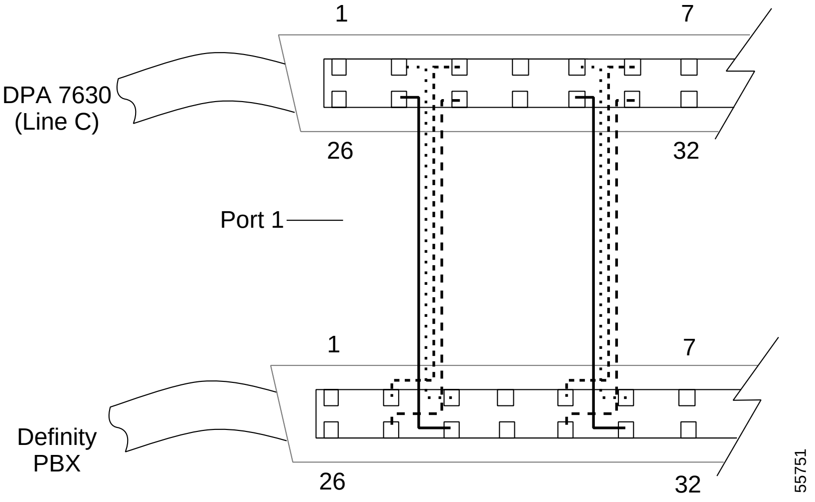
- Line C (ports 17-24) connects to the Definity system for setting the MWIs. Ensure these MWI lines have a one-to-one correspondence with the MWI lines in Line B, in both quantity and physical location. The remaining ports on Line C are not available. You cannot use them to connect to the Octel system.

  For example, if you assign the last four ports on Line B (ports 13, 14, 15, and 16) to be Octel MWI lines, you must also assign the last four ports on Line C (ports 21, 22, 23, and 24) to be Definity MWI lines. The remaining ports on Line C (ports 20, 19, 18, and 17) are not used.

Figure 2-7 illustrates in detail to connect the wires from the DPA 7630 to the Definity PBX system. Starting with port 1, you skip a port, cross the next two ports, skip a port, cross the next two ports, and so on. For example:

- Leave pair 1 unused on both the DPA 7630 and Definity PBX
- Cross pairs 2 and 3, so that Tx (transmit) from DPA 7630 connects with Rx (receive) from the Definity PBX
- Leave pair 4 unused on both the DPA 7630 and Definity PBX
- Cross pairs 5 and 6, so that Tx (transmit) from DPA 7630 connects with Rx (receive) from the Definity PBX

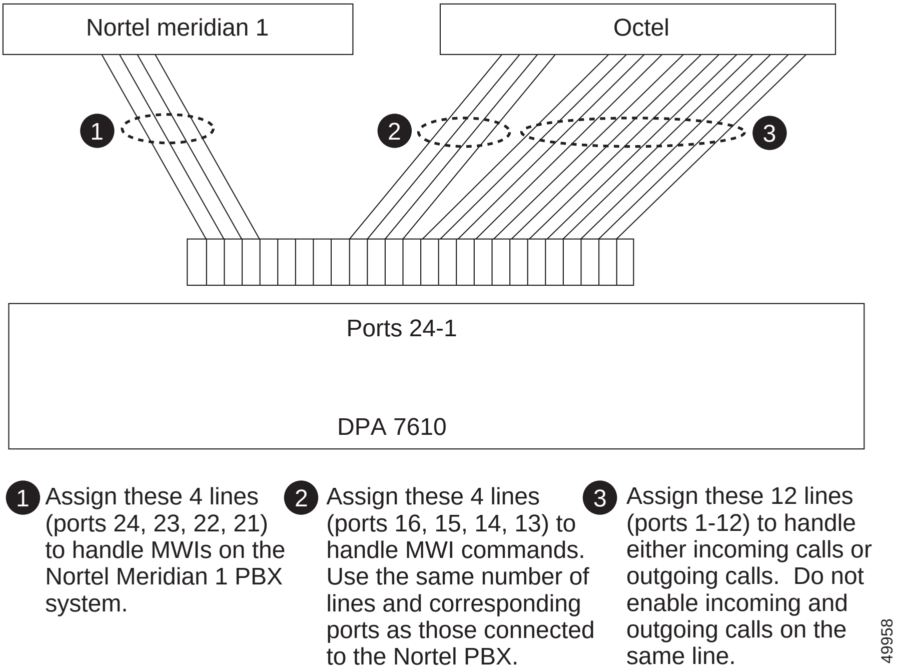
Figure 2-7 DPA 7630 Wiring to the Definity PBX System



DPA 7610

To use this configuration, all MWI lines for the Meridian 1 and Cisco CallManager systems must pass through the DPA 7610 (see Figure 2-8):

Figure 2-8 Logical Connections of Hybrid Integration on the DPA 7610



1 Assign these 4 lines (ports 24, 23, 22, 21) to handle MWIs on the Nortel Meridian 1 PBX system.

2 Assign these 4 lines (ports 16, 15, 14, 13) to handle MWI commands. Use the same number of lines and corresponding ports as those connected to the Nortel PBX.

3 Assign these 12 lines (ports 1-12) to handle either incoming calls or outgoing calls. Do not enable incoming and outgoing calls on the same line.

Follow these guidelines when configuring the DPA 7610:

- Ports 1-8 connect to the Octel system and handle call processing. You can designate each line to handle incoming or outgoing messaging, but a single line cannot support both.
- Ports 9-16 connect to the Octel system. A portion of these lines can be used for call processing (as with lines 1-8), but all MWI lines must connect through lines 9-16. So, if you have *n* MWI lines, you have 8-*n* available for incoming messages on lines 9-16 (in addition to lines 1-8).

Also, ensure the MWI lines have a one-to-one correspondence with the MWI lines in lines 17-24, in both quantity and physical location. For example, if you assign lines 13, 14, 15, and 16 to be Octel MWI lines, you must also assign lines 21, 22, 23, and 24 to be Meridian 1 MWI lines.

- Ports 17-24 connect to the Meridian 1 system for setting the MWIs. Ensure these MWI lines have a one-to-one correspondence with the MWI lines (9-16), in both quantity and physical location. The remaining lines are not available. You cannot use them to connect to the Octel system.

  For example, if you assign lines 13, 14, 15, and 16 to be Octel MWI lines, you must also assign the lines 21, 22, 23, and 24 to be Meridian 1 MWI lines. The remaining lines (20, 19, 18, and 17) are not used.

Connecting to Cisco CallManager

Use the Ethernet port on the DPA 7630/7610 to connect to the IP network, from which the DPA 7630/7610 will connect to Cisco CallManager.

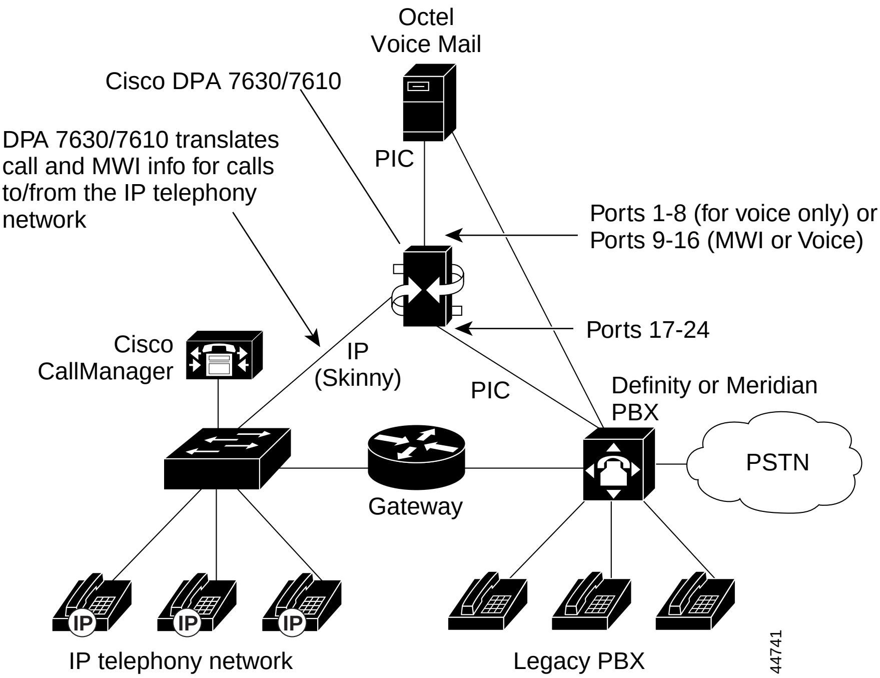
Resulting Line Configuration

This configuration results in the following line configuration, where *n* equals the number of MWI lines assigned to the Octel and Meridian 1 systems:

- 16-*n* lines for call processing to and from the Octel system.
- *n* lines connecting to the PBX (Definity or Meridian 1) are responsible for sending MWI messages to the phones connected to the PBX. You can also use these lines for outgoing messages to the Octel system.
- 8-*n* lines from ports 17-24 (Line C on the DPA 7630) are not used.

Only the lines connected to the Octel system (maximum of 16) appear as Cisco IP Phones in Cisco CallManager. Additionally, another virtual IP phone (port 25) appears in Cisco CallManager. This virtual IP phone is created automatically by the DPA 7630/7610, and it is responsible for setting the MWI messages on the IP phones connected to Cisco CallManager.

Figure 2-9 Resulting Hybrid Integrated Network



Using the Multiple Integration

If your system requires more than the hybrid integration mode provides, you might want to add multiple DPA 7630/7610 systems to your network. You might use multiple DPA 7630/7610 systems if your network needs match any of the following scenarios:

- Connecting Additional Ports to the PBX System, page 2-15
- Connecting More Ports to the Octel System, page 2-15
- Using Multiple DPA 7630/7610 Systems for Redundancy, page 2-16
- Using the DPA 7630/7610 with Cisco CallManager Clusters, page 2-17

Connecting Additional Ports to the PBX System

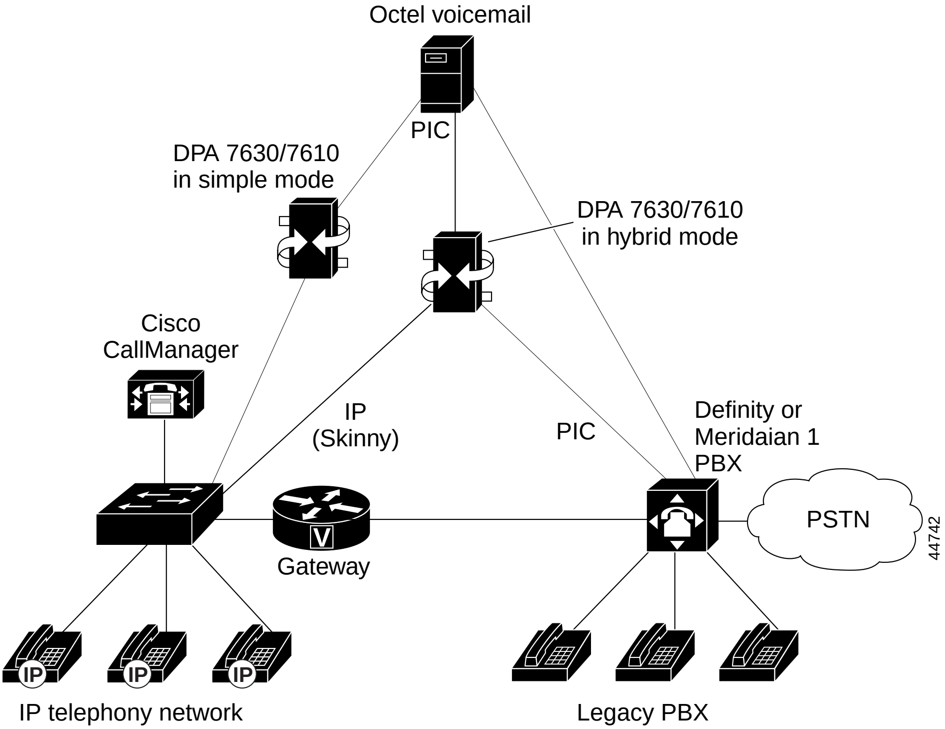
If you need more MWI ports to the Definity or Meridian 1 system, add an additional DPA 7630/7610 in hybrid mode. However, you cannot use all 24 ports for Definity or Meridian 1 MWIs. You must configure the DPA 7630/7610 following the guidelines for the hybrid integration, using up to eight ports.

Figure 2-10 Expanding Ports Connected to the PBX System

Connecting More Ports to the Octel System

If you need more than eight ports for handling calls between Cisco CallManager and the Octel systems, add another DPA 7630/7610 in simple mode. This would provide another full 24 ports dedicated to call processing between the two systems. See Figure 2-11 for an illustration of this scenario.

Figure 2-11 Expanding Ports Connected to the Octel System



Using Multiple DPA 7630/7610 Systems for Redundancy

You can also add an additional DPA 7630/7610 to achieve a higher level of redundancy or fault tolerance. In this situation, you can use two DPA 7630/7610 devices in parallel, sharing the MWI lines between the two units. If one unit were to fail, the Octel system would use only the lines that were still operational, allowing voice mail to function normally.

If you want to use this configuration, be sure to review the information about setting the port disable policy in the "Setting the Port Disable Policy on the DPA 7630" section on page 6-3 and the "Setting the Port Disable Policy on the DPA 7610" section on page 6-7 for details. The port disable policy ensures that if the Octel MWI lines are distributed between two DPA 7630 systems and the first

DPA 7630 loses its connection to Cisco CallManager, the ports connecting to the first DPA 7630 are disabled, and the Octel system only sends MWIs to the second DPA.

Figure 2-12 Multiple DPA Systems Used for Fault Tolerance

Using the DPA 7630/7610 with Cisco CallManager Clusters

If you are using Cisco CallManager clusters, note that MWI commands do not propagate across inter-cluster links. The DPA 7630/7610 can set MWIs only for those extensions located on the same Cisco CallManager cluster as the DPA 7630/7610 itself. Therefore, to support multiple clusters, you need to add additional DPA 7630/7610 devices.

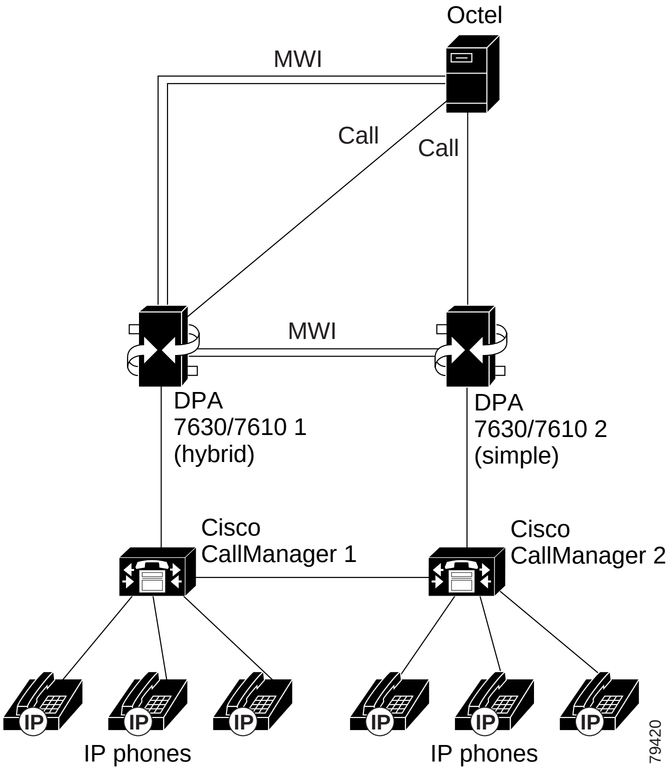
Cisco CallManager Clusters and Octel System

Figure 2-12 illustrates the scenario in which you are using two DPA 7630/7610 systems to interconnect two Cisco CallManager clusters to the Octel system. In this scenario, the two DPA 7630/7610 systems are connected to each other. You cannot connect more than two DPA 7630/7610 systems together.

The first DPA 7630/7610 in the chain is in hybrid mode. It receives and passes MWI information and call processing information between the Octel system and passes MWI information to the next DPA 7630/7610. This DPA 7630/7610 also passes the information to the first Cisco CallManager cluster.

The second DPA 7630/7610 is in simple mode. It only connects to the Octel system to share call processing information, and it passes MWI information to the second Cisco CallManager cluster.

Figure 2-13 Cisco CallManager Clusters and Octel System



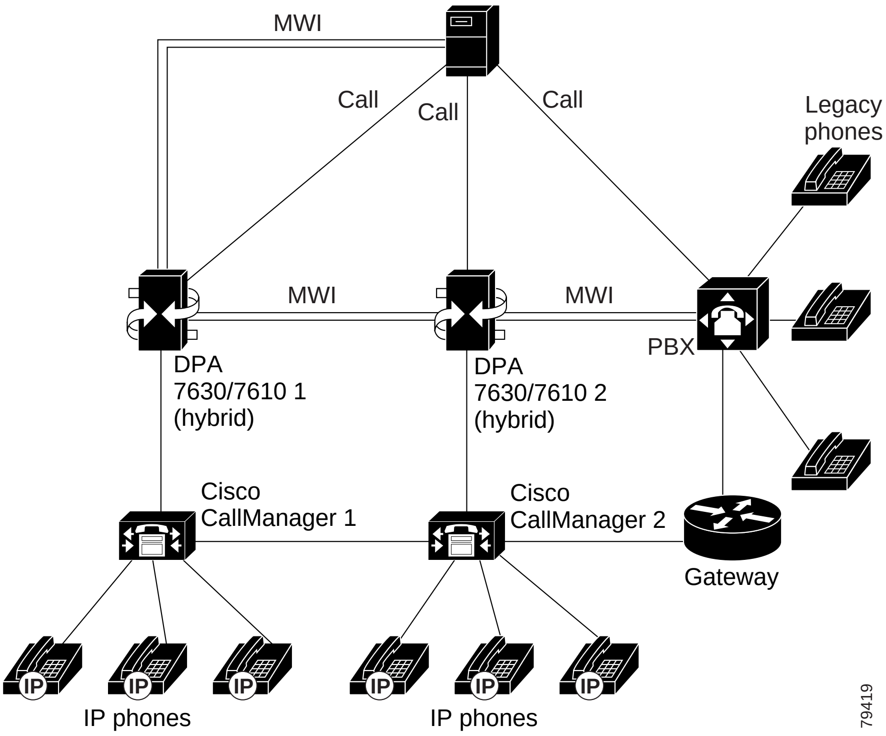
Cisco CallManager Clusters, Octel, and PBX System

Figure 2-14 illustrates the scenario in which you are using two DPA 7630/7610 systems to interconnect two Cisco CallManager clusters, the Octel system, and the PBX system. In this scenario, the two DPA 7630/7610 systems are connected to each other. You cannot connect more than two DPA 7630/7610 systems together.

The first DPA 7630/7610 in the chain is in hybrid mode. It receives and passes MWI information and call processing information between the Octel system and passes MWI information to the next DPA 7630/7610. This DPA 7630/7610 also passes the information to the first Cisco CallManager cluster.

The second DPA 7630/7610 is also in hybrid mode. However, it only connects to the Octel system to share call processing information. It passes MWI information to the PBX system and to the second Cisco CallManager cluster.

Figure 2-14 Cisco CallManager Clusters, Octel, and PBX Systems



CHAPTER 3

Installing the DPA 7630/7610

You must install the DPA 7630/7610 into your network, connecting it to the IP network, to Octel voice mail system, and (if you are using the hybrid integration) to the PBX system. These sections provide instructions for safely installing the DPA 7630/7610:

- Preparing for Installation, page 3-1
- Installing the DPA 7630/7610, page 3-5
- Connecting the DPA 7630/7610 to the Network, page 3-8
- Verifying Installation, page 3-18

After completing the installation, review the information in Chapter 4, “Preparing the Cisco CallManager and Octel Systems.”

Preparing for Installation

Before installing the DPA 7630/7610, review these sections:

- Network Requirements, page 3-2
- Safety, page 3-2
- Required Tools and Cabling, page 3-4

Network Requirements

For the Cisco DPA 7630/7610 to successfully operate in your network, your network must meet the following requirements:

- Working Voice over IP (VoIP) network
- Cisco CallManager 3.1 or higher installed in your network and configured to handle call processing
- Octel 200, 250, 300, or 350 voice mail systems installed and configured with digital line cards
- Lucent Definity G3 PBX systems (optional; only required for hybrid or multiple integration modes on the DPA 7630)
- Nortel Meridian 1 PBX systems (optional; only required for hybrid or multiple integration modes on the DPA 7610)
- IP network that supports DHCP or manual assignment of IP address, gateway, and subnet mask

Safety

⚠ Warning **Read the installation instructions before you connect the system to its power source.**

⚠ Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

⚠ Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Warning **This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

Warning **Unplug the power cord before you work on a system that does not have an on/off switch.**

Warning **The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.**

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).**

Warning **Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.**

Warning **The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.**

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.**

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.**

Warning **The device is designed to work with TN power systems.**

Required Tools and Cabling

To install the DPA 7630/7610, you must have the following equipment:

- Number 2 Phillips screwdriver
- Mounting L brackets (included)
- Electrostatic discharge (ESD)-preventive wrist strap (included)
- Screws to secure the rack-mount brackets to the DPA 7630/7610 (included)
- Screws to attach the DPA 7630/7610 to the rack mount

To connect the DPA 7630/7610 to the different systems, you also need the following items:

- Power cable (included)
- Console cable for connection to a console terminal (included)

- Ethernet cable for connection to an Ethernet port
- Telco cabling for connection to the Octel and PBX systems

Installing the DPA 7630/7610

You have the option of installing the DPA 7630/7610 in a 19-inch rack or setting it on a shelf or other flat surface. Refer to these sections for detailed instructions:

- Installing the DPA 7630/7610 in a Rack, page 3-5
- Setting the DPA 7630/7610 on a Shelf or Table, page 3-7

Installing the DPA 7630/7610 in a Rack

The DPA 7630/7610 includes the brackets and screws required to install it in a 19-inch rack. Follow these instructions to install it safely and securely.

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Attaching the Brackets

The chassis comes with brackets for use with a 19-inch rack. To install the chassis in a rack, attach the brackets in one of the following ways:

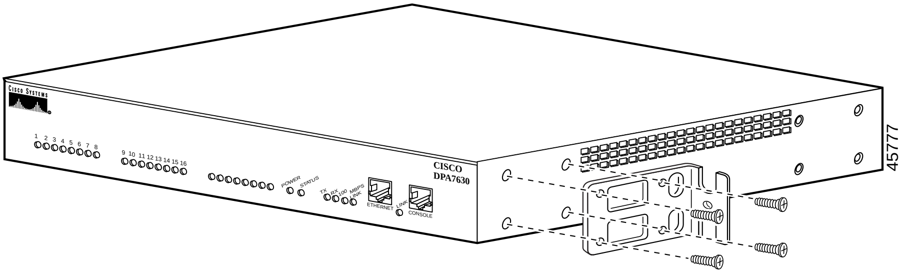
- With the front panel forward (see Figure 3-1)
- With the rear panel forward (see Figure 3-2)

These figures (Figure 3-1 and Figure 3-2) show how to connect the bracket to one side of the chassis. The second bracket connects to the opposite side of the chassis.

Note These graphics show the DPA 7630 with its three telco connectors. The DPA 7610 is similar, but it has only one telco connector.

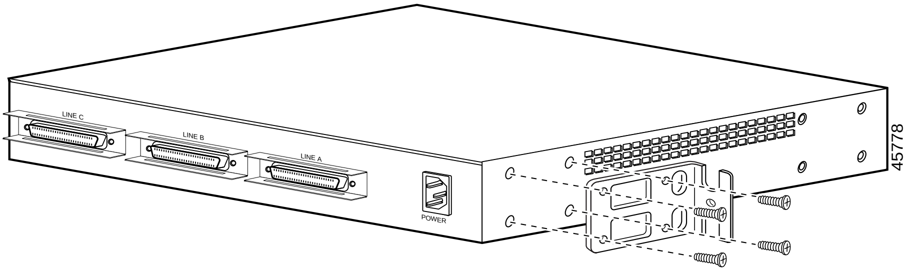
Caution Only use the screws provided when attaching the brackets.

Figure 3-1 Bracket Installation—Front Panel Forward



Note: The second bracket attaches to the other side of the chassis.

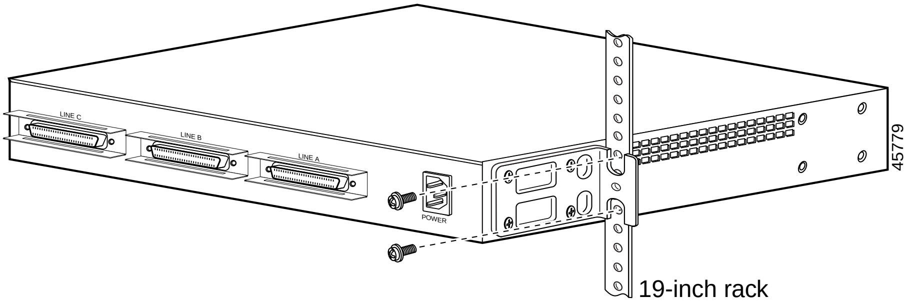
Figure 3-2 Bracket Installation—Rear Panel Forward



Putting the DPA 7630/7610 in a Rack

After the brackets are secured to the chassis, you can rack-mount it (Figure 3-3).

Figure 3-3 Mounting the DPA 7630/7610 in a Rack



The second bracket attaches to the rack at the other side of the chassis.
The brackets can also be installed with the front panel forward.

Step 1 Lift the DPA 7630/7610 and align the mounting holes in the L brackets with the mounting holes in the rack.

Step 2 Secure the chassis by inserting the mounting screws through the holes in the L brackets and into the threaded holes in the mounting posts.

Setting the DPA 7630/7610 on a Shelf or Table

Before setting the DPA 7630/7610 on a desktop, shelf, or other flat, secure surface, adhere the rubber feet included with the DPA 7630/7610. To attach them to the chassis, peel the rubber feet from the adhesive strip and place them adhesive-side down onto the round, recessed areas on the bottom of the chassis. Place the DPA 7630/7610 right-side up on a flat, smooth, secure surface.

Connecting the DPA 7630/7610 to the Network

You must connect the DPA 7630/7610 to the other IP telephony systems in the network, including Cisco CallManager, Octel, and Definity or Meridian 1 systems.

Review these sections before connecting the DPA 7630/7610:

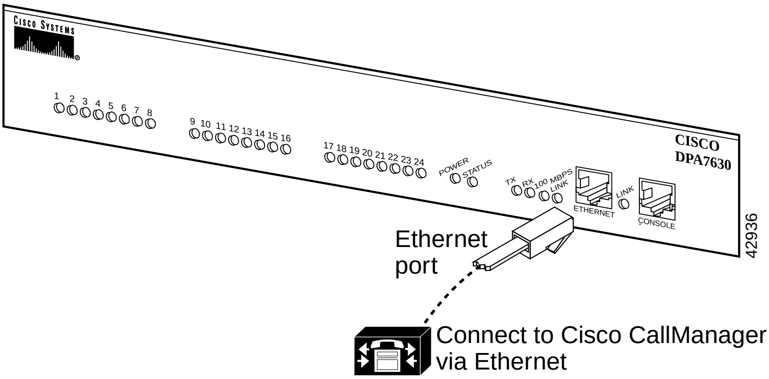
- Connecting to the Ethernet Port, page 3-8
- Connecting to the Console Port, page 3-9
- Connecting to the Telco Connectors, page 3-10

Connecting to the Ethernet Port

Use the Ethernet port to connect the DPA 7630/7610 to the IP network to access Cisco CallManager (see Figure 3-4). The DPA 7630/7610 fully supports 10/100 Mbps half- and full-duplex Ethernet. See the “Configuring Ethernet” section on page 5-5 for details.

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.**

Figure 3-4 Connecting to the Ethernet Port



Connecting to the Console Port

Use the console port to connect the DPA 7630/7610 to a console terminal for configuration and management tasks (see Figure 3-5).

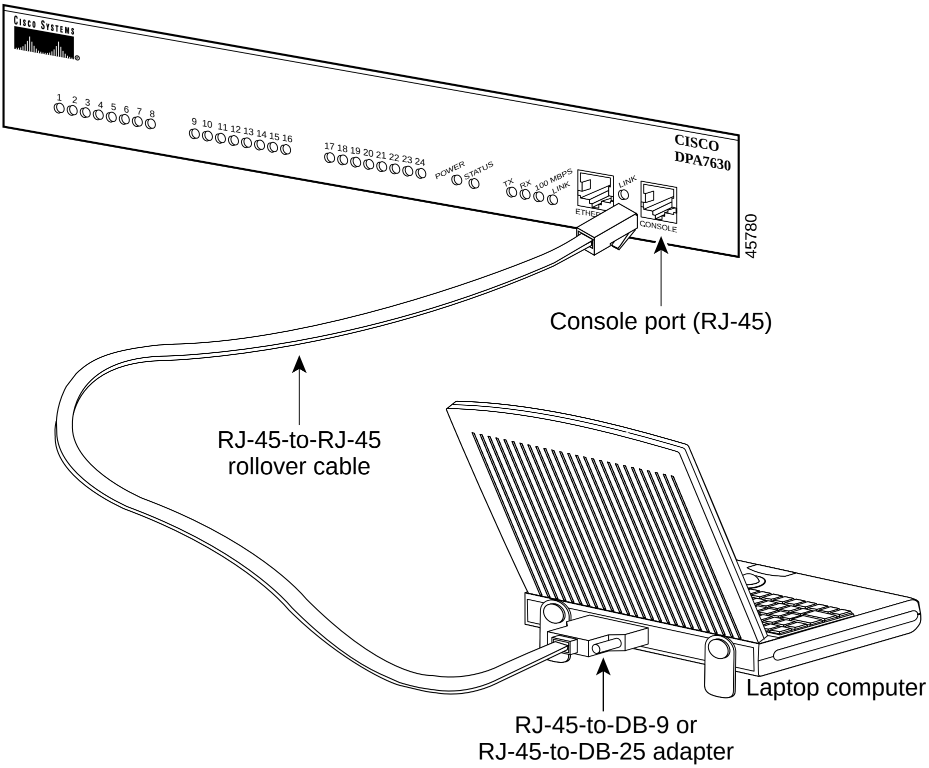
To connect the DPA 7630/7610 to a terminal, perform these steps:

Step 1 Connect the terminal using an RJ-45-to-RJ-45 rollover cable and an RJ-45-to-DB-9 adapter, included with the DPA 7630/7610.

Step 2 Configure your terminal or PC terminal emulation software for the following settings:

Setting	Value
Baud	9600
Data bits	8
Parity	No
Stop bits	1

Figure 3-5 Connecting the DPA 7630/7610 to a Console Terminal



Connecting to the Telco Connectors

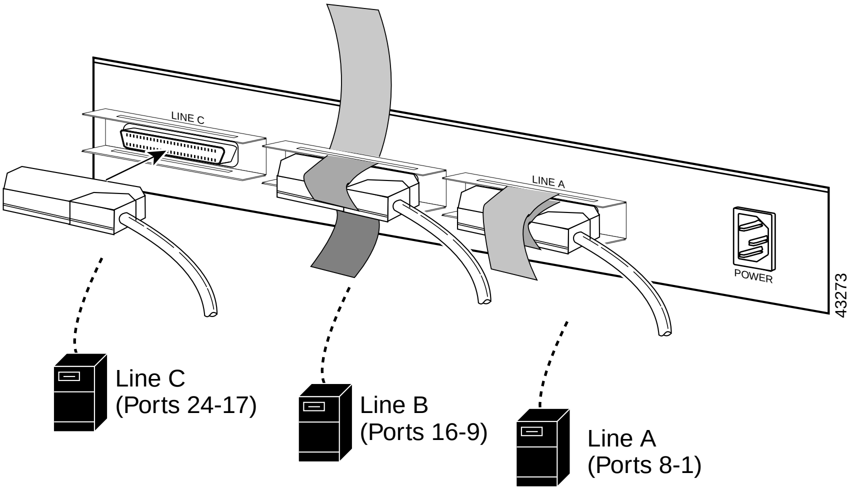
Because of the wiring differences between the DPA 7630 and 7610, you connect to the Octel and PBX systems slightly differently. Refer to the instructions for the specific model you are using in one of the following sections:

- Connecting to the Definity and Octel Systems on a Cisco DPA 7630, page 3-11
- Connecting to the Meridian 1 and Octel Systems on a Cisco DPA 7610, page 3-15

Connecting to the Definity and Octel Systems on a Cisco DPA 7630

Use the three telco connectors to connect the DPA 7630 to the Octel and Definity systems. Each telco connector connects to eight ports on the DPA 7630 (see Figure 3-6).

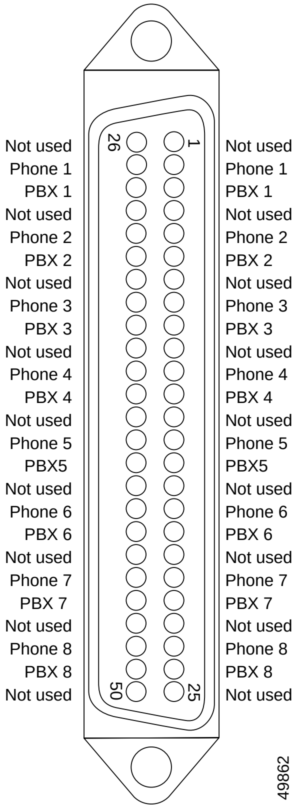
Figure 3-6 Connecting to the Telco Connectors on the DPA 7630



The pinouts on the telco connectors match those on a Definity four-wire line card (see Figure 3-7 for details) with the following characteristics:

- Each port consists of 2 telco pairs
- Each port is preceded by one unused pair; the first unused pair is wires 1 and 26

Figure 3-7 DPA 7630 Telco Connector Pinouts



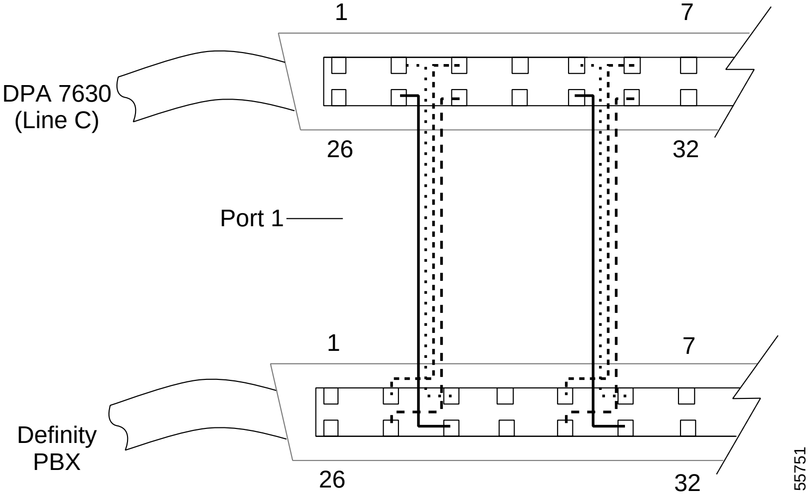
Connecting the DPA 7630 to Definity

Because the wiring matches the Definity PBX, you can easily connect the DPA 7630 to the Definity PBX via a punch panel. Figure 3-8 illustrates in detail how to connect the wires from the DPA 7630 to the Definity PBX system. Starting with port 1, you skip a port, cross the next two ports, skip a port, cross the next two ports, and so on. For example:

- Leave pair 1 unused on both the DPA 7630 and Definity PBX
- Cross pairs 2 and 3, so that Tx (transmit) from DPA 7630 connects with Rx (receive) from the Definity PBX

- Leave pair 4 unused on both the DPA 7630 and Definity PBX
- Cross pairs 5 and 6, so that Tx (transmit) from DPA 7630 connects with Rx (receive) from the Definity PBX

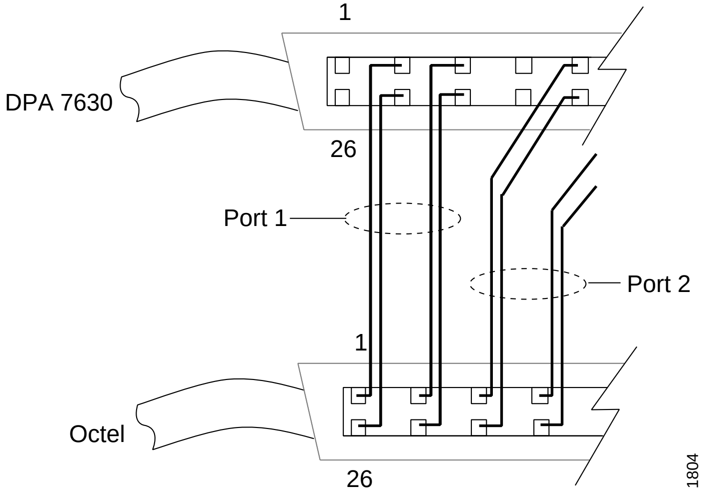
Figure 3-8 DPA 7630 Wiring to the Definity PBX System



Connecting the DPA 7630 to Octel

The wiring to the Octel system is more complicated because there are no unused pairs (see Figure 3-9 for details.)

Figure 3-9 DPA 7630 Wiring to Octel System



The telco connectors must connect to the patch panel or punchdown block in specific ways depending on the configuration you are using.

Simple Integration Mode

In the simple integration mode, you are integrating Cisco CallManager and Octel voice messaging systems. There are 24 ports, but if you have fewer than 24 Octel ports, you can leave the remaining ports empty.

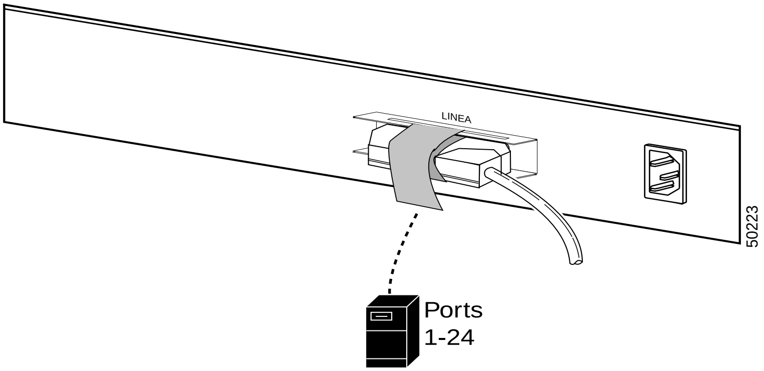
Hybrid Integration Mode

If you want to connect Cisco CallManager, Octel voice messaging system, and Definity PBX system, you must use the hybrid integration mode. To use this configuration, all MWI lines for the Definity and Cisco CallManager phones must pass through the DPA 7630, following the guidelines described in the "Implementing the Hybrid Integration" section on page 2-9.

Connecting to the Meridian 1 and Octel Systems on a Cisco DPA 7610

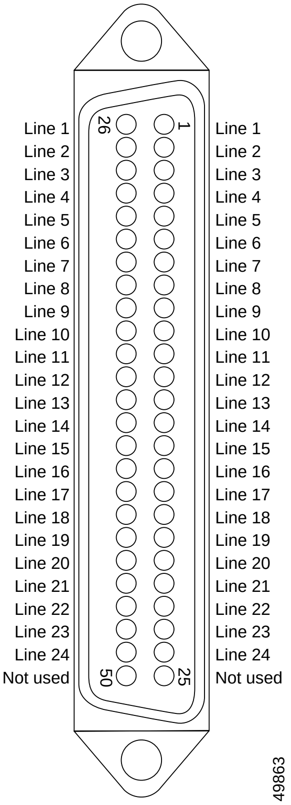
Use the single telco connector to connect the DPA 7610 to the Octel and Meridian 1 systems. The telco connector connects to 24 ports on the DPA 7610 (see Figure 3-10).

Figure 3-10 Connecting to the Telco Connectors on the DPA 7610



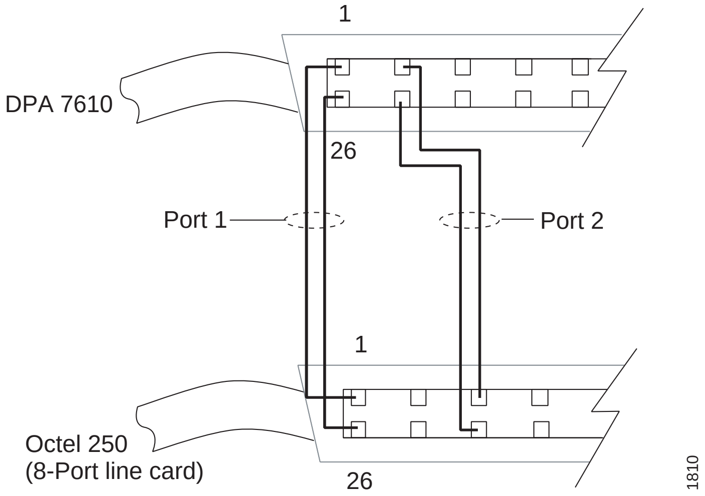
The pinouts on the telco connectors match those on a Meridian 1 two-wire line card (see Figure 3-11 for details) with each port consisting of 1 telco pairs.

Figure 3-11 DPA 7610 Telco Connector Pinouts



Because the wiring matches the Meridian 1 PBX, you can easily connect the DPA 7610 to the Meridian 1 PBX via a punch panel. However, the wiring to the Octel system is more complicated and varies depending on the type of Octel system you are using. For an Octel 200/300 system, the wiring is identical to the DPA 7610 and Meridian 1 system. See Figure 3-12 for an example of wiring to an Octel 250/350 system.

Figure 3-12 DPA 7610 Wiring to Octel 250 System



The telco connectors must connect to the patch panel or punchdown block in specific ways depending on the configuration you are using.

Simple Integration Mode

In the simple integration mode, you are integrating Cisco CallManager and Octel voice messaging systems. There are 24 ports, but if you have fewer than 24 Octel ports, you can leave the remaining ports empty.

Hybrid Integration Mode

If you want to connect Cisco CallManager, Octel voice messaging system and Meridian 1 PBX system, you must use the hybrid integration mode. To use this configuration, all MWI lines for the Cisco CallManager and Meridian 1 phones must pass through the DPA 7610, following the guidelines described in the "Implementing the Hybrid Integration" section on page 2-9.

Verifying Installation

After you complete installation of the DPA 7630/7610 and have connected power to it, connect a console terminal to observe its initial startup procedure. You can only observe these initial startup messages when connected to the console port. Initially, the device uses DHCP by default, but you can reconfigure this after startup.

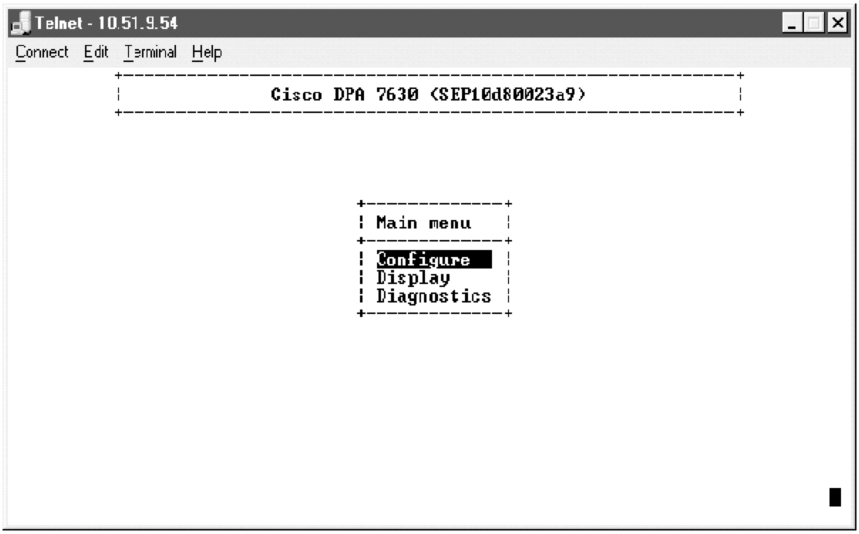
The startup process proceeds as follows:

1. Loads boot loader software image and starts up the DPA 7630/7610.
2. Performs self tests on the hardware, indicating whether the component passed; for example:

```
Testing RAM......passed
Testing FLASH....passed
Testing EEPROM...passed
Testing Ethernet..passed
```

3. Pauses for 10 seconds, allowing you to access the boot loader by pressing the **Esc** key on the console terminal. The boot loader allows you to do the following:
   - Load a software image using FTP, allowing recovery from a previous failed upgrade (see "Resolving an Incomplete Upgrade" section on page 7-4).
   - Load an image using XMODEM
   - Reset to factory default settings
4. Loads the main software image and displays the main menu (see Figure 3-13):

Figure 3-13 DPA 7630/7610 Main Menu



```
+--------------------------------------------------------------+
|              Cisco DPA 7630 (SEP10d80023a9)                  |
+--------------------------------------------------------------+



                        +-------------+
                        | Main menu   |
                        +-------------+
                        | Configure   |
                        | Display     |
                        | Diagnostics |
                        +-------------+
```

If the main software menu displays successfully, you can begin configuring the device as described in Chapter 6, “Configuring Octel/Definity Integration Settings”. If the menu does not display properly, verify your connections and follow suggestions in Chapter 7, “Troubleshooting the DPA 7630/7610.”

CHAPTER 4

Preparing the Cisco CallManager and Octel Systems

Because the DPA 7630/7610 depends on information from the Cisco CallManager system and the Octel voice messaging system, you must verify that these systems are set up properly before configuring the DPA 7630/7610. You must also obtain some information from these systems to set up the DPA 7630/7610.

This guide does not contain details about configuring the Cisco CallManager and Octel systems. Refer to the documentation provided with those systems for installation and configuration instructions.

These sections provide details about the configuration requirements on the Cisco CallManager and Octel systems:

- Overview of Required Tasks, page 4-1
- Configuring Cisco CallManager, page 4-2
- Configuring the Octel Systems, page 4-15

Overview of Required Tasks

Cisco CallManager recognizes the DPA 7630/7610 as another IP telephony device. So, to add the device to the database, you need some information from the DPA 7630/7610. Additionally, to set up the DPA 7630/7610, you need information from both the Cisco CallManager and Octel systems. Refer to Table 4-1 for an overview of the tasks and information you need from them to configure the DPA 7630/7610.

Table 4-1 System Setup Checklist

	Task	For More Information
Cisco CallManager Configuration		
□	Add the DPA 7630/7610 to the Cisco CallManager database.	See "Adding the DPA 7630/7610 to Cisco CallManager" section on page 4-3.
□	Verify that the voice mail hunt group is set up properly.	See "Setting Up the Voice Mail Hunt Group" section on page 4-5
□	Configure the ports from the DPA 7630/7610 as Cisco IP Phones in Cisco CallManager.	See "Configuring the DPA Ports and Phones" section on page 4-10.
□	Verify that the options for enabling and disabling MWI on the Cisco IP Phones are configured in Cisco CallManager.	See "Configuring the Message Waiting Light" section on page 4-13.
Octel Configuration		
□	Set dialing sequence for message waiting indicator.	See the "Setting Dialing Sequence for Message Waiting Indicator" section on page 4-15.
□	Determine incoming call method.	See the "Determining Incoming Call Mode" section on page 4-15.
□	Assign lines to handle incoming calls, outgoing calls, and MWI commands.	See the "Assigning Incoming, Outgoing, and MWI Lines" section on page 4-16.

Configuring Cisco CallManager

The DPA requires minor changes to Cisco CallManager because when you add the DPA 7630/7610 to the IP network, Cisco CallManager recognizes the ports as Cisco IP Phones. Therefore, you need to add these ports to the Cisco CallManager database. Additionally, because of the close interaction of the DPA 7630/7610 with the voice mail system, you must ensure that some key voice mail settings on the Cisco CallManager system are properly configured.

The DPA 7630/7610 connects to Cisco CallManager to provide the following capabilities:

- Access from the Cisco IP Phones to the Octel voice messaging systems.

  The DPA 7630/7610 provides connection to the Octel voice messaging system by emulating IP phones. These emulated phones appear in the Cisco CallManager database.

- Proper signaling to the message waiting indicators (MWIs) on the Cisco IP Phones.

  Some ports on the DPA 7630/7610 handle MWI commands from the Octel system. An additional “virtual” IP phone sends these messages to the Cisco CallManager system. Cisco CallManager then sets the MWI on the Cisco IP Phones.

When reviewing the following tasks, if you need additional instructions, refer to the *Cisco CallManager Administration Guide* or the online help in the Cisco CallManager application:

- Adding the DPA 7630/7610 to Cisco CallManager, page 4-3
- Setting Up the Voice Mail Hunt Group, page 4-5
- Configuring the DPA Ports and Phones, page 4-10
- Configuring the Message Waiting Light, page 4-13

Adding the DPA 7630/7610 to Cisco CallManager

When the DPA 7630/7610 and Cisco CallManager connect, the ports on the DPA 7630/7610 appear as IP phones in the Cisco CallManager database. An additional “virtual” port also appears as an IP phone to Cisco CallManager, but it does not have any correspondence to a physical port. It is created by the DPA 7630/7610 to handle MWI commands to Cisco CallManager.

Using Auto-Registration

You can choose to have the DPA 7630/7610 automatically added to Cisco CallManager using auto-registration. To do this, you must verify that auto-registration is enabled in Cisco CallManager. Refer to the documentation or online help included with the Cisco CallManager application for details.

When the DPA 7630/7610 connects to Cisco CallManager through auto-registration, the ports connected between the DPA 7630/7610 and the Octel system are registered as Cisco IP Phones. These ports are actually emulated IP phones used to access the voice mail system and to process MWI commands.

Cisco CallManager only recognizes these IP phones after the Octel voice mail system is up and running. Therefore, verify that the Octel system and the Cisco DPA 7630/7610 systems are up before completing these tasks in Cisco CallManager.

Auto-registration automatically assigns phones a directory number. The directory number assigned is the next one available in sequential order within the device pool assigned to this phone type in Cisco CallManager. However, if you need to, you can modify this directory number for each emulated phone (see the "Configuring the DPA Ports and Phones" section on page 4-10).

During auto registration, the host name assigned to the DPA 7630/7610 is entered in the MAC address field in the record for the emulated phone in Cisco CallManager. The default host name is: SEP + the last 10 digits of the MAC address. Typically, you should not change the default host name, but to do so, see the "Setting the Host Name" section on page 5-4

Additionally, Cisco CallManager requires unique MAC addresses for all devices, but all 24 ports on the DPA 7630/7610 share the same MAC address. Therefore, auto-registration includes a process that converts the MAC addresses into this format:

1. The first two digits for the MAC address are dropped.
2. The number is shifted two places to the left.
3. The two-digit port number is added to the right.

For example, if the MAC address is

```
000039A44218
```

the MAC address registered for port 12 in CallManager is

```
0039A4421812
```

The 25th (virtual) port is automatically assigned the MAC address of `0039A4421825`.

Manually Adding the DPA 7630/7610

If you want to assign specific directory numbers to the emulated IP phones on the DPA 7630/7610 without using auto-registration, you must manually add each phone to the Cisco CallManager database. Keep in mind several important facts:

- Each port must have a unique MAC address. Use the auto-registration formula to calculate the MAC address for each port.
- Use the host name or other name for the **Description** for each port. For ease of administration, use a similar name for ports configured on the same DPA 7630/7610 system.
- Add each port on the DPA 7630/7610 as a Cisco 30 VIP IP Phone
- Consider adding a descriptive line to the **Display** field, such as voicemail.

Setting Up the Voice Mail Hunt Group

You must configure several settings in Cisco CallManager to ensure that the voice mail hunt group is set up properly for the DPA 7630/7610. You must configure these settings for each Cisco CallManager system in a cluster, and you must stop and restart Cisco CallManager after making these changes.

Refer to the instructions specific to the version of Cisco CallManager that you are using with the DPA 7630/7610.

Setting Up the Voice Mail Hunt Group Using Cisco CallManager 3.1

Follow these steps to set up the voice mail hunt group on Cisco CallManager 3.1:

Step 1 From Cisco CallManager, choose **Service** > **Service Parameters**.

Step 2 From the Server drop-down list box, choose a server.

Step 3 From the Services list, choose Cisco CallManager.

Step 4 Enter the settings described in Table 4-2.

Step 5 Click **Update**.

Table 4-2 Cisco CallManager 3.1 Voice Mail Hunt Group Settings

Field	Description
AdvancedCallForwardHopFlag	Set to true.
Forward Maximum Hop Count	You can specify the number of times Cisco CallManager forwards a call before generating an error tone. The default setting is 12, but you should set it to a number larger than the number of extensions in the largest hunt group.
ForwardNoAnswerTimeout	The no-answer timeout setting determines how much time is spent contacting a directory number before forwarding to voice mail. You can specify the number of seconds allowed before the system determines that a call to an extension forwarded to the voice mail system. When performing supervised transfers, the Octel system expects a certain number of rings before the call forwards to voice mail. If the call forwards to voice mail prematurely, the Octel system assumes the phone was busy. To ensure that the Cisco CallManager system allows enough time for the number of expected rings on the Octel system, you must set the no-answer timeout. In Cisco CallManager, you should set this setting to be 6 seconds times the number of rings. (Six seconds is slightly longer than the ring duration of a Lucent Definity PBX system.) For example, if you have the Octel system set to four rings, set the setting in Cisco CallManager to 24 seconds.
MultiTenantMWIMode	Set this flag to True, if you want Cisco CallManager to use translation patterns to convert voice message box numbers into directory numbers when your voice mail system issues a command to set a message waiting indicator.

Table 4-2 Cisco CallManager 3.1 Voice Mail Hunt Group Settings (continued)

Field	Description
VoiceMail	Enter the number users use to access their voice mail messages. This number should correspond to the directory number of the first voice mail port (see the "Configuring Call Ports" section on page 4-10) and the pilot directory number entered on the DPA 7630/7610 (see "Entering Cisco CallManager "Pilot" Directory Number" section on page 6-11) You can have multiple voice mail hunt groups, but these hunt groups require different voice mail access numbers. For efficiency, enter the directory number of the largest hunt group as the VoiceMail parameter and ensure that the AdvancedCallForwardHopFlag parameter is set to true.
VoiceMailMaximumHopCount	Set this value to be at least as high as the total number of ports in use across all DPA devices.

Setting Up the Voice Mail Hunt Group Using Cisco CallManager 3.2

On Cisco CallManager 3.2, you must configure some service parameters, but you must also configure the voice mail port and voice mail profile. These sections provide an overview of these steps:

- Configuring Voice Mail Service Parameters on Cisco CallManager 3.2, page 4-7
- Creating the Pilot Port for the Voice Mail Hunt Group, page 4-9
- Creating Voice Mail Profile for the Voice Mail Hunt Group, page 4-9

Configuring Voice Mail Service Parameters on Cisco CallManager 3.2

Step 1 From Cisco CallManager, choose **Service > Service Parameters**.

Step 2 From the Server drop-down list box, choose a server.

Step 3 From the Services list, choose Cisco CallManager.

Step 4 Enter the settings described in Table 4-3.

Step 5 Click **Update**.

Table 4-3 Cisco CallManager 3.2 Voice Mail Hunt Group Settings

Field	Description
Forward Maximum Hop Count	You can specify the number of times Cisco CallManager forwards a call before generating an error tone. The default setting is 12, but you should set it to a number larger than the number of extensions in the largest hunt group.
Forward No Answer Timeout	The no-answer timeout setting determines how much time is spent contacting a directory number before forwarding to voice mail. You can specify the number of seconds allowed before the system determines that a call to an extension forwarded to the voice mail system. When performing supervised transfers, the Octel system expects a certain number of rings before the call forwards to voice mail. If the call forwards to voice mail prematurely, the Octel system assumes the phone was busy. To ensure that the Cisco CallManager system allows enough time for the number of expected rings on the Octel system, you must set the no-answer timeout. In Cisco CallManager, you should set this setting to be 6 seconds times the number of rings. (Six seconds is slightly longer than the ring duration of a Lucent Definity PBX system.) For example, if you have the Octel system set to four rings, set the setting in Cisco CallManager to 24 seconds.
VoiceMailMaximumHopCount	Set this value to be at least as high as the total number of ports in use across all DPA devices.

Creating the Pilot Port for the Voice Mail Hunt Group

You need to create the voice mail pilot number, which is the number users use to access their voice mail messages. This number should correspond to the directory number of the first voice mail port (see the “Configuring Call Ports” section on page 4-10) and the pilot directory number entered on the DPA 7630/7610 (see “Entering Cisco CallManager “Pilot” Directory Number” section on page 6-11).

Follow these steps for creating the voice mail pilot port:

Step 1 From Cisco CallManager, choose **Feature > Voice Mail >Voice Mail Pilot**

Step 2 Enter the number of the first port on the DPA 7630/7610in the **Voice Mail Pilot Number** field.

Note This number should correspond to the directory number of the first voice mail port (see the “Configuring Call Ports” section on page 4-10) and the pilot directory number entered on the DPA 7630/7610 (see “Entering Cisco CallManager “Pilot” Directory Number” section on page 6-11)

Step 3 Enter any other optional fields.

Step 4 Click **Insert**.

Creating Voice Mail Profile for the Voice Mail Hunt Group

The voice mail profile enables you to assign a user a different mail box number than their extension number. So, if users have an extension that is a different number than their voicemail box on the Octel system, they can still access their voice mail using the pilot directory number.

Step 1 From Cisco CallManager, choose **Feature > Voice Mail >Voice Mail Profile**

Step 2 Click **Add a New Voice Mail Profile**.

Step 3 Enter the minimum information:

- Profile name
- Voice Mail Pilot box—choose the pilot port you just added (see “Creating the Pilot Port for the Voice Mail Hunt Group” section on page 4-9).

Step 4 Click **Insert**.

Configuring the DPA Ports and Phones

From the perspective of the DPA 7630/7610, several types of ports exist:

- Call ports—Handle call processing (incoming and outgoing calls).
- Octel MWI ports—Receive MWI commands from the Octel system.
- Virtual port—Send MWI commands to Cisco CallManager.
- PBX MWI ports—Send MWI on the Definity and Meridian 1 PBX systems and are only present in the hybrid integration mode.

To Cisco CallManager, these ports on the DPA appear as IP phones, but the PBX MWI ports do not appear in Cisco CallManager. The Cisco CallManager database also contains records of all the end-user phones. You must configure each of these phones in Cisco CallManager to ensure that calls are processed properly. You access the phones using the **Devices > Phone** menu in Cisco CallManager.

These sections provide details about the required settings in Cisco CallManager for the different ports:

- Configuring Call Ports, page 4-10
- Configuring Octel MWI Ports, page 4-11
- Configuring the Virtual Port, page 4-12
- Configuring End-User Phones, page 4-12

Configuring Call Ports

Use call ports to connect lines from the Octel system that handle incoming messages, such as voice mail access, and outgoing calls such as fax calls, outgoing calls to pagers, and so on. However, a particular line from the Octel system must support either incoming or outgoing calls; it cannot support both.

Outgoing Calls

Do not include the call ports supporting outgoing calls in the voice mail hunt groups. Otherwise, configure these lines in Cisco CallManager as you normally would, assigning directory numbers to them.

Incoming Calls

The call ports supporting incoming calls require additional configuration in Cisco CallManager. In these cases, these lines and their corresponding call ports compose the voice mail hunt groups. See Table 4-4 for an overview of the required settings for both Cisco CallManager 3.1 and 3.2.

Table 4-4 Incoming Call Ports Configuration Settings

Field	Description
Directory Number	Assign a directory number to each of these phones. Ensure that these directory numbers are not included in the voice mail hunt group. Assign one of these ports to be the primary or "pilot" directory number in the voice mail hunt group. Record this value because you need it to configure the DPA 7630/7610.
Call Waiting	Disable call waiting.
Call Forwarding	Assign call forwarding numbers (Forward Busy and Forward No Answer settings), so calls roll to next available directory number in the hunt group.
Display	If the DPA 7630/7610 is connected to an Octel 200 or 300 voice mail system, you must enter D-*xxxx*, where *xxxx* is the directory number. However, you do not need to enter anything in the Display field if the DPA 7630/7610 is connected to an Octel 250 or 350 voice mail system

Configuring Octel MWI Ports

The DPA 7630/7610 uses the Octel MWI ports to handle MWI messages from the Octel system. You can also enable these lines to support outgoing call processing. However, you must not configure these ports to handle any incoming call processing. See Table 4-5 for an overview of the required settings for both Cisco CallManager 3.1 and 3.2.

Table 4-5 Octel MWI Ports Configuration Settings

Field	Description
Directory Number	Assign a directory number to each of these phones. Ensure that these directory numbers are not included in the voice mail hunt group.
Call Waiting	Disable call waiting.
Call Forwarding	Do not set

Configuring the Virtual Port

The DPA 7630/7610 automatically creates and uses the virtual port to send MWI messages to Cisco CallManager. One virtual port is created regardless of the number of Octel MWI ports you have. The virtual phone settings are similar to the Octel MWI port. See Table 4-6 for an overview of the required settings for both Cisco CallManager 3.1 and 3.2.

Table 4-6 Virtual Port Configuration Settings

Field	Description
Directory Number	Assign a directory number to this phone.
Call Waiting	Disable call waiting.
Call Forwarding	Do not set

Configuring End-User Phones

Although the DPA 7630/7610 does not directly interact with the end-user phones, verify that you configured these phones properly to forward to voice mail. You might want to divide users into different hunt groups to access the voice mail system. See Table 4-7 for an overview of the required settings for either Cisco CallManager 3.1 or 3.2.

Table 4-7 End User Phones Configuration Settings

Field	Description
Cisco CallManager 3.1	
Forward Busy	Set to Pilot Directory Number
Forward No Answer	Set to Pilot Directory Number
Cisco CallManager 3.2	
Voice Mail Profile	Choose the profile for this directory number.
Forward Busy	Check the Voice Mail option.
Forward No Answer	Check the Voice Mail option.

Configuring the Message Waiting Light

In Cisco CallManager, you must set the option to enable the message waiting light on Cisco IP Phones. After you configure these settings, you must record the values and enter them on the DPA 7630/7610 (see the “Entering MWI for Cisco CallManager” section on page 6-10).

Refer to the section appropriate for the version of Cisco CallManager that you are using in your network:

- Configuring Message Waiting Indicators for Cisco CallManager 3.1, page 4-13
- Configuring Message Waiting Indicators Using Cisco CallManager 3.2, page 4-14

Configuring Message Waiting Indicators for Cisco CallManager 3.1

You must configure these settings for each Cisco CallManager system in a cluster, and you must stop and restart Cisco CallManager after making these changes.

Step 1 From Cisco CallManager, choose **Service** > **Service Parameters**.

Step 2 From the Server drop-down list box, choose a server.

Step 3 From the Services list, choose Cisco CallManager.

Step 4 Enter these settings:

- MessageWaitingOffDN—Specifies the directory number to which calls from a voice mail system are directed to disable or turn off the MWI light for the specified calling party.
- MessageWaitingOnDN—Specifies the directory number to which calls from a voice mail system are directed to enable or turn on a MWI light for the specified calling party.

Step 5 Click **Update**.

Step 6 Record these values and use them to update the DPA 7630/7610. See the "Entering MWI for Cisco CallManager" section on page 6-10).

Configuring Message Waiting Indicators Using Cisco CallManager 3.2

Step 1 From Cisco CallManager, choose **Feature > Voice Mail >Message Waiting Configuration**.

Step 2 To enable MWI, enter the directory number to be used and choose the Message **Waiting Indicator On** option.

Step 3 Click **Insert**

Step 4 To enable MWI, enter the following fields:

- Directory Number—enter directory number to which calls from a voice mail system are directed to enable or turn on the MWI light for the specified calling party.
- Message Waiting Indicator—choose On.

Step 5 Click **Insert**

Step 6 To disable MWI, enter the following fields:

- Directory Number—enter directory number to which calls from a voice mail system are directed to disable or turn off the MWI light for the specified calling party.
- Message Waiting Indicator—choose Off.

Step 7 Record these values and use them to update the DPA 7630/7610. See the "Entering MWI for Cisco CallManager" section on page 6-10).

Configuring the Octel Systems

You should not need to make any changes to your Octel system. However, you should verify your configuration and obtain information from the Octel system to properly set up the DPA 7630/7610. This information should already be configured if you previously used Octel and Definity or Meridian 1 systems together.

Setting Dialing Sequence for Message Waiting Indicator

On Definity and Octel systems, you must set the dialing sequence that is used to enable and disable the MWI on phones connected to the Definity system. After you configure this setting on the Definity and Octel systems, record the setting. You need it when you configure the DPA 7630. Meridian 1 PBX systems set MWI differently so you do not need to set this for the DPA 7610.

Determining Incoming Call Mode

The Octel system has two methods of receiving incoming calls on a Meridian 1 system, using Hunt or Automatic Call Distribution (ACD). The Hunt method involves groups of forwarded phones, which is similar to the method used in Cisco CallManager. However, the Meridian 1 system has a restriction on the number of hops in a forwarding chain (similar to the ForwardMaxHopCount setting in Cisco CallManager). This setting is fixed between 18 and 30 hops (depending on the PBX version), and you cannot modify it. This restriction limits both the number of phones available to the hunt group and the number of Octel ports that can be part of the group.

To avoid this restriction, you can use ACD groups, which can be much larger than the hunt groups.

Regardless of the method you use, you must verify the method in use so you can set the proper setting on the DPA 7610. To quickly verify this method, on the Meridian 1 system, check the configuration of key 0 on the phones connected to the Octel system:

- If key 0 is defined to be an ACD key, then Octel is in ACD mode.
- If key 0 is defined to be an SCR or SCN key, then Octel is in Hunt mode.

Assigning Incoming, Outgoing, and MWI Lines

On the Octel system, you must specify how each line is used, following these guidelines:

- When possible, separate the lines so that distinct lines are used for the three types of call handling: incoming calls, outgoing calls, and MWI.

  You can assign a single line to process outgoing calls and MWI commands. However, you must not have a single line supporting both incoming call processing and MWI commands.
- Follow specific guidelines when physically connecting these lines to the DPA 7630/7610 (see "Connecting to the Telco Connectors" section on page 3-10).

You have some flexibility in determining the number of lines used for each of these tasks. For example, a company with a 144-port Octel voice mail system using a DPA 7630 in hybrid integration mode might use the following configuration:

- Line A
  - 8 ports for incoming calls
- Line B
  - 2 ports for incoming calls
  - 6 ports for MWIs
- Line C
  - 2 ports unused
  - 6 ports for MWI pass through to PBX

CHAPTER 5

Getting Started with the DPA 7630/7610

Before you can configure the telephony features on the DPA 7630/7610 to interact with Cisco CallManager, Octel, and PBX systems, you must first configure the basic network, SNMP, and password settings. These settings enable the DPA 7630/7610 to connect to the IP network and help you manage the device.

These sections provide details about configuring these settings on the DPA 7630/7610:

- Accessing Configuration Options, page 5-1
- Configuring Network Settings, page 5-4
- Configuring Passwords, page 5-13
- Configuring SNMP Settings, page 5-14

Accessing Configuration Options

You can access the Cisco DPA 7630/7610 configuration options, after the device has started up, using a console terminal connected to the RJ-45 console port or through a Telnet session.

Using the Console Port

You might want to use the console port to connect to the DPA 7630/7610 when you initially install the device. This enables you to observe the initial startup procedure and manually assign an IP address and host name if you are not using DHCP.

To access the Cisco DPA 7630/7610 through the console RJ-45 port, perform these steps.

	Task	Description
Step 1	Connect the console terminal to the console port.	See the "Connecting to the Console Port" section on page 3-9.
Step 2	At the prompt, enter the password. The DPA 7630/7610 does not have a default password. If no password has been configured, the main menu displays.	<*password*>
Step 3	Choose the necessary options to complete your desired tasks.	Choose the desired option from the menus.
Step 4	When finished, exit the session.	Press the Esc key or disconnec the serial port.

Using Telnet

To access the DPA 7630/7610 through a Telnet session, you must know its IP address or host name. By default, the device uses DHCP. If you want to assign a specific IP address or host name, you must first configure the network settings using the console port before connecting through a Telnet session.

To access the DPA 7630/7610 from a remote host with Telnet, perform these steps:

	Task	Command
Step 1	From the remote host, enter the telnet command and the host name or IP address of the DPA 7630/7610 that you want to access.	**telnet** *hostname* | *ip_addr*
Step 2	At the prompt, enter the password, if you have configured one. The DPA 7630/7610 does not have a default password. If no password has been configured, the main menu displays.	<*password*>
Step 3	Choose the necessary options to complete your desired tasks.	Choose the desired option from the menus.
Step 4	When finished, exit the Telnet session	—

Displaying the Main Menu

After connecting to the DPA 7630/7610 through the console port or a Telnet session, the main menu appears (see Figure 5-1). Follow these guidelines to navigate the menus:

- Use the arrow keys to navigate the available options.
- Press **Enter** to choose an option.
- Press **Esc** to return to the previous menu.

Tip After connecting to the DPA 730/7610, you might need to press **Ctrl-r** on the keyboard to refresh the screen to display the main menu.

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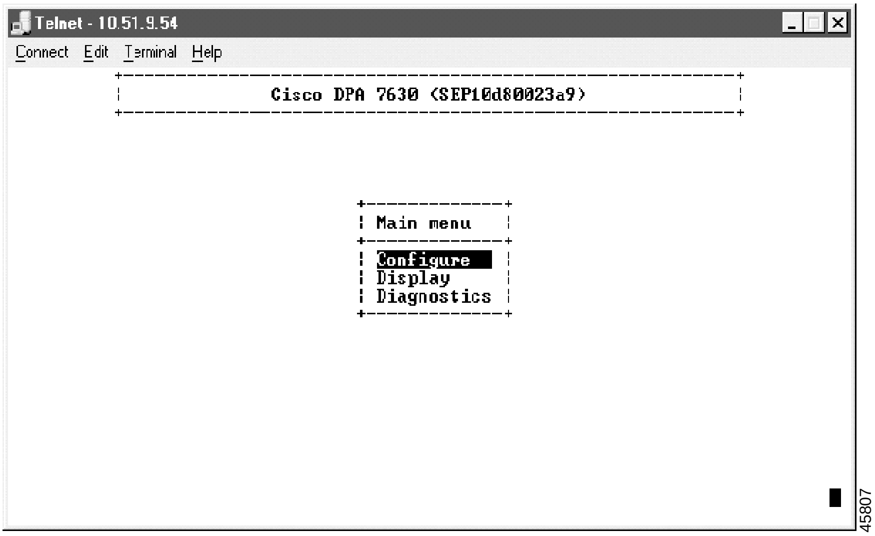
Figure 5-1 DPA 7630/7610 Main Menu



```
+-------------------------------------------------------------+
|              Cisco DPA 7630 (SEP10d80023a9)                 |
+-------------------------------------------------------------+

                        +-------------+
                        | Main menu   |
                        +-------------+
                        | Configure   |
                        | Display     |
                        | Diagnostics |
                        +-------------+
```

Configuring Network Settings

You must configure the network settings on the DPA 7630/7610 to connect it to the IP network. After configuring any network settings, you must restart the DPA 7630/7610. See the "Restarting the DPA 7630/7610" section on page 7-1.

Setting the Host Name

The host name is the device name sent to the Cisco CallManager server (with the port number appended to it) when the DPA 7630/7610 registers with Cisco CallManager. It appears in the MAC address field. See the "Adding the DPA 7630/7610 to Cisco CallManager" section on page 4-3 for details.

The host name cannot be the same as the name used to identify the DPA on the network.

To set the host name, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Host Name**.

Step 4 Enter the host name to be used by the DPA 7630/7610.

Step 5 Restart the DPA 7630/7610.

Configuring Ethernet

The DPA 7630/7610 fully supports 10/100 Mbps half- and full-duplex Ethernet. Follow these steps to configure these settings on DPA 7630/7610 appropriate for your network.

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Ethernet**.

Step 4 Choose the option that matches the setting on the switch to which the DPA 7630/7610 is connected:

- auto-negotiation
- 10Mb/s half duplex
- 10Mb/s full duplex
- 100Mb/s half duplex
- 100Mb/s full duplex

Step 5 Restart the DPA 7630/7610.

Using DHCP

If you are using Dynamic Host Configuration Protocol (DHCP) in your network, the DPA 7630/7610 automatically obtains an IP address when you connect it to the network. Although the DPA 7630/7610 uses DHCP by default, you can disable DHCP and manually assign an IP address to the DPA 7630/7610.

To use DHCP, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Use DHCP**.

Step 4 Press Enter to toggle between **yes** (use DHCP) and **no** (do not use DHCP).

If you use DHCP, you can only modify the host name; you cannot modify the other network settings. See "Setting the Host Name" section on page 5-4 for details.

If you do not use DHCP, you must enter the additional network settings. See these sections for details:

- Setting the Host Name, page 5-4
- Setting the IP Address, page 5-7
- Setting the Subnet Mask, page 5-7
- Setting the Default Router, page 5-8
- Assigning the DNS Server, page 5-8
- Setting the Domain Name, page 5-9
- Identifying the Time Source for Event Logs, page 5-10

Renewing IP Address from DHCP

You might need to renew the IP address automatically assigned to the DPA 7630/7610. For example, if you have changed the physical location of the DPA 7630/7610 from one subnet to another or if you need assistance troubleshooting a connectivity problem.

To renew an IP address assigned from DHCP, follow these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Renew DHCP**.

Setting the IP Address

The IP address identifies each DPA 7630/7610 on your TCP/IP network. You must enter the IP address if you are not using DHCP. The DPA 7630/7610 automatically obtains an IP address if you are using DHCP.

To assign an IP address, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **IP address**.

Step 4 Enter the IP address to be used by the DPA 7630/7610.

Step 5 Restart the DPA 7630/7610.

Setting the Subnet Mask

You must enter the subnet mask if you are not using DHCP. The DPA 7630/7610 automatically obtains a subnet mask if you are using DHCP.

To set the subnet mask, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Subnet mask**.

Step 4 Enter the subnet mask.

Step 5 Restart the DPA 7630/7610.

Setting the Default Router

You must enter the default router if you are not using DHCP. The DPA 7630/7610 automatically obtains a default router if you are using DHCP.

To set the default router, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Default router**.

Step 4 Enter the IP address of the default router.

Step 5 Restart the DPA 7630/7610.

Assigning the DNS Server

Domain Name System (DNS) allows users to specify remote computers by host names. The DPA 7630/7610 uses DNS to resolve the host name of TFTP servers and Cisco CallManager systems when the system is configured to use names rather than IP addresses.

To set the DNS server, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **DNS server**.

Tip You can enter a secondary DNS server by selecting **Network interface > DNS server 2** and entering the IP address.

Step 4 Enter the IP address of the DNS server.

Step 5 Restart the DPA 7630/7610.

Setting the Domain Name

The domain name is the name of the Domain Name System (DNS) domain in which the DPA 7630/7610 is located.

To set the domain name, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Domain name**.

Step 4 Enter the domain name.

Step 5 Restart the DPA 7630/7610.

Synchronizing Date and Time Settings

The DPA 7630/7610 can synchronize its date and time settings with either a Network Time Protocol (NTP) server or Cisco CallManager. This ensure that the log files record the accurate date and time for diagnostic traces.

These sections describe these settings:

- Identifying the Time Source for Event Logs, page 5-10
- Setting Time Offset, page 5-10
- Assigning the NTP Server, page 5-11

Identifying the Time Source for Event Logs

You can synchronize the date and time setting in the event logs on the DPA 7630/7610 with one of the following:

- NTP—Choosing this setting makes it less likely that the time is synchronized with Cisco CallManager, unless it also gets its time from the NTP server. However, this method uses a standardized protocol and eliminates a dependency on the Cisco CallManager server.
- CallManager—Synchronizing with the Cisco CallManager server makes it easier to compare logs from the Cisco CallManager server and the DPA 7630/7610. You also do not need an NTP server if you use this option.

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Time source**.

Step 4 Choose one of the following:

- NTP
- CallManager

Step 5 Restart the DPA 7630/7610.

Setting Time Offset

The DPA 7630/7610 uses the time offset to define the time zone of the NTP or Cisco CallManager servers if they are located in different timezones.

You set the time offset using seconds. For example, if the NTP server sends GMT time and you are in PST, the offset is -8 hours, which is:

-8 (hours) x 60 (minutes) x 60 (seconds) = -28800 seconds

Therefore, in this example, enter -28800 in the time offset field.

If the NTP server reports using your local time, set the value to 0.

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Time offset**.

Step 4 Enter the appropriate value in seconds.

Step 5 Restart the DPA 7630/7610.

Assigning the NTP Server

If you choose to use an NTP server to synchronize the time settings on the DPA 7630/7610 (see "Identifying the Time Source for Event Logs" section on page 5-10), you must assign an NTP server and designate its timezone.

To set the NTP server, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **NTP server**.

Step 4 Enter the IP address of the NTP server.

Note If you are using DHCP to obtain an IP address on the DPA 7630/7610, the DHCP server should also indicate the NTP server.

Step 5 Restart the DPA 7630/7610.

Enabling CDP

The DPA 7630/7610 can advertise itself to other network devices using Cisco Discovery Protocol (CDP). Many network management applications require that CDP is enabled.

To enable CDP, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **CDP**.

Step 4 Press Enter to toggle between **enabled** and **disabled**.

Step 5 Restart the DPA 7630/7610.

Setting DSCP Quality of Service Values

Differentiated Services Code Point (DSCP) is an IETF standard that uses 6 bits in the IPv4 header's ToS (Type of Service) field to specify the class of service for each packet. This enables you to apply differentiated grades of service to different packet types.

You can modify the assigned DSCP Quality of Service (QoS) value for certain types of traffic. This enables you to give priority to media traffic over control traffic.

To enable modify the DSCP QoS values, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Network interface**.

Step 3 Choose **Set DSCP QoS values**

Step 4 Choose one of the following options:

- Media traffic—RTP packets carrying voice, fax, and modem calls
- Control traffic—SCCP data packets carrying telephony control data
- All other traffic—such as FTP, HTTP, SNMP, and so on

Step 5 Enter the new value for Media traffic or Control traffic from 0 to 63, using decimal format.

By default, Media traffic is set to 46, and Control traffic is set to 26. You cannot change the value for All other traffic; it is set to 0.

Step 6 Restart the DPA 7630/7610.

Configuring Passwords

The Cisco DPA 7630/7610 ships without a password set or enabled on it. You should enable passwords to prevent unauthorized access to and control of the DPA 7630/7610. The DPA 7630/7610 does not support or use user names.

Once you set a password, however, the DPA 7630 requires that you use it, whether you are accessing it using the console port, telnet, or FTP. When accessing the DPA 7630/7610 using FTP, the FTP server adopts the highest level of security currently set. For example, if you have set both a login and enable password, you must use the enable password to use FTP.

Caution By default, the DPA 7630/7610 does not have an assigned password. To avoid unauthorized access, assign passwords to this device.

Configuring the Login Password

The login password enables you or other users to view the current status of the DPA 7630/7610.

To configure the login password, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Passwords**.

Step 3 Choose **Login password**.

Step 4 Enter the new password.

Configuring the Enable Password

The enable password allows you to view current settings and make changes to the DPA 7630/7610. Once set, you must use the enable password to make changes to the DPA 7630/7610.

To configure the enable password, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Passwords**.

Step 3 Choose **Enable password**.

Step 4 Enter the new password.

Configuring SNMP Settings

The DPA 7630/7610 supports Simple Network Management Protocol (SNMP) by supporting standard MIBs. Modify the SNMP settings as appropriate for your network management needs. You need to configure the SNMP settings if you want to manage the DPA 7630/7610 remotely.

Setting Community Strings

The community string settings enable network management systems to access the DPA 7630/7610 for remote management.

You can configure a read-only password, which restricts access to the device, allowing users to view information but not to make changes. You can also configure a read-write community string, which allows users to make changes to the device remotely.

You must assign community strings (“read-only” and “read-write”) to complete the configuration process. By default, the “read-only” community string is set to public, which provides read-only access. If you do not set these community strings on the DPA 7630, you cannot manage the device remotely using the Simple Network Management Protocol (SNMP).

To set the community strings, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **SNMP**.

Step 3 To set the read-only community string, choose **Read-only community string**.

Step 4 To set the read-write community string, choose **Read-write community string**.

Step 5 Enter the community string value.

Configuring Contact Information

You can enter the contact name of the person responsible for the DPA 7630/7610 and the location of the DPA 7630/7610 on your campus.

Configuring Contact Name

The contact name on the DPA 7630/7610 corresponds to the sysContact variable defined in RFC 1213.

To add a contact name indicating the person responsible for the DPA 7630/7610, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **SNMP**.

Step 3 Choose **Contact name**.

Step 4 Enter the name of the person responsible for the DPA 7630/7610.

Configuring System Name

The system name on the DPA 7630/7610 corresponds to the sysName variable defined in RFC 1213.

To specify the system name of the DPA 7630/7610 to the network management system perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **SNMP**.

Step 3 Choose **System name**.

Step 4 Enter the system name of the DPA 7630/7610.

Configuring Location

The location on the DPA 7630/7610 corresponds to the sysLocation variable defined in RFC 1213.

To add the location of the DPA 7630/7610 in your network or on your site, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **SNMP**.

Step 3 Choose **Location**.

Step 4 Enter the location of the DPA 7630/7610.

Configuring Trap Settings

You can configure the DPA 7630/7610 to notify a network management system when certain significant system events occur. You can also specify the IP address for the network management system that is acting as a trap receiver.

The DPA 7630/7610 supports the following traps:

- Cold start trap—generated when the DPA 7630/7610 starts up and obtains an IP address.
- Warm start trap—generated if the IP address changes.
- Authentication trap—generated when attempting to access the DPA 7630/7610 using SNMP with an incorrect community string.

Enabling Authentication Traps

To enable authentication traps, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **SNMP**.

Step 3 Choose **Generate authentication traps**.

Step 4 Press Enter to toggle between **yes** and **no**.

Configuring Trap Receiver Stations

To set up to four trap receiver stations, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **SNMP**.

Step 3 Choose **Trap receiver stations**.

Step 4 Enter the IP address or host name of the network management system used to receive the traps.

CHAPTER 6

Configuring Telephony Settings

Because of its close interaction with Cisco CallManager, Octel, Definity, and Meridian 1 systems, the DPA 7630/7610 has several critical settings that you must properly configure. You typically do not need to make any changes on the other systems to add the DPA 7630/7610 to your network. However, you need information from these systems to configure these DPA 7630/7610 settings, and you should verify that they are set up properly. Be sure to review Chapter 4, "Preparing the Cisco CallManager and Octel Systems" to ensure you have the information you need.

These sections provide details about the settings you need to configure on the DPA 7630/7610:

- Configuring Octel/Definity Integration Settings, page 6-1
- Configuring Octel/Meridian 1 Integration Settings, page 6-6
- Configuring Cisco CallManager Settings, page 6-9

Configuring Octel/Definity Integration Settings

If you are using the DPA 7630, you must configure settings specific to the Definity PBX system. The DPA 7630 is designed to integrate into your network without requiring any changes to the current Definity and Octel settings. However, you must obtain information from these systems to enable the DPA 7630 to function properly.

Setting the Integration Mode on DPA 7630

You must choose the mode of integration by which you are implementing the DPA 7630:

- Simple—Cisco CallManager and Octel integration
- Hybrid—Cisco CallManager, Octel, and Definity integration

Selecting the integration mode automatically forces the 24 ports on DPA 7630 to support particular settings. To understand these settings, review Chapter 2, "Choosing an Integration Mode" before selecting an integration method.

To set the integration mode, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Definity integration**.

Step 3 Choose **Mode**.

Step 4 Choose the appropriate configuration type:

- **Simple**—Cisco CallManager and Octel integration
- **Hybrid**—Cisco CallManager, Octel, and Definity integration

Step 5 Restart the DPA 7630.

Entering Dialing Sequences for MWI Activation on DPA 7630

On Definity and Octel systems, you must set the dialing sequence used to enable and disable the MWI on phones connected to the Definity system. Verify and obtain the dialing sequences set on the Octel and Definity systems (see the "Setting Dialing Sequence for Message Waiting Indicator" section on page 4-15 for details).

To enter the dialing sequences, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Definity integration**.

Step 3 Choose the appropriate settings:

- **Definity MWI ON pre-extension dial string**
- **Definity MWI OFF pre-extension dial string**

Step 4 Enter the appropriate values obtained from the Octel and Definity systems.

The dialing sequence can also optionally include a comma (,) to indicate a pause of 200 milliseconds (ms). These are additive, so a series of four commas (,,,,) is an 800 ms pause. Each pause causes the DPA 7630 to wait an additional 200 ms while receiving MWI commands from the Octel system, and it also creates a 200 ms delay while sending the command on to the PBX.

For example, if you enter #40,,,,, as the dialing sequence, the DPA 7630 waits an additional second for MWI commands. The DPA 7630 also inserts a 1 second pause when dialing the command to the PBX (after dialing #40 and before dialing the extension number).

Step 5 Restart the DPA 7630.

Setting the Port Disable Policy on the DPA 7630

The disable policy is designed to prevent the Octel system from assuming a port is up when there is not an active Cisco CallManager or PBX connection. Changing this policy can prevent the Octel system from attempting outgoing calls or setting MWIs. This might be useful if you have configured your system for redundancy. For example, if the Octel MWI lines are distributed between two DPA 7630 systems and the first DPA 7630 loses its connection to Cisco CallManager, the ports connecting to the first DPA 7630 are disabled, and the Octel system only sends MWIs to the second DPA.

Note The Cisco CallManager connection is considered lost if the DPA 7630 recognizes that it is down and has been down for 60 seconds.

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Definity integration**.

Step 3 Choose **Octel connection disable policy**.

Step 4 Choose one of the following:

- **Never disable**—Never disable the ports
- **Disable when CM down—** Disable a DPA 7630/7610 Octel port when the connection to the corresponding DPA 7630/7610 port on Cisco CallManager is lost
- **Disable when PBX down—**Disable a DPA 7630/7610 Octel port only when the corresponding PBX port is down. In simple mode, this command has no effect. In hybrid mode, the Octel port will be disabled when the DPA notices the corresponding PBX port is down. For example, if port 24 goes down, port 16 will be disabled. In this case, ports 1-8 are never be disabled.
- **Disable when either down—**Disables a DPA 7630/7610 Octel port when either the connection to the PBX or to Cisco CallManager is lost.
- **Disable when both down—**Disables a DPA 7630/7610 Octel port when both the Cisco CallManager connection is lost and the PBX connection is lost.

Step 5 Restart the DPA 7630.

Setting Companding Law on DPA 7630

You must configure the encoding algorithm, A-law or mu-law, used by the Definity and Octel systems. The settings on the DPA 7630 must match the settings on the Definity and Octel systems. Typically, North American systems use mu-law, and European systems use a-law.

To set the companding law, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Definity integration**.

Step 3 Choose **Companding law**.

Step 4 Choose the appropriate option so that it corresponds to the setting on the Octel system:

- **A-law**
- **mu-law**

Step 5 Restart the DPA 7630.

Clearing Definity MWIs on DPA 7630

The Octel system sends all MWI messages to the Definity system through the DPA 7630. The same DPA 7630 port that sends a message to the Definity system to enable an MWI must also send the message to disable it. However, if the DPA 7630 is turned off or restarted after the Octel system has sent a MWI message, the message might be lost.

Although the setting on the Octel system is correct, if DPA 7630 was turned off before sending the message to the Definity system, some user phones might have MWI lights constantly enabled. If this happens, you need to clear the Definity MWI messages.

To clear Definity MWIs, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Definity integration**.

Step 3 Choose **Clear Definity MWIs**.

Step 4 Enter the directory numbers or range of directory numbers to clear, using this format: 4419, 4420, 4440-4450.

Configuring Octel/Meridian 1 Integration Settings

If you are using the DPA 7610, you must configure settings specific to the Meridian 1 PBX system. The DPA 7610 is designed to integrate into your network without requiring any changes to the current Meridian 1 and Octel settings. However, you must obtain information from these systems to enable the DPA 7610 to function properly.

Setting the Integration Mode on DPA 7610

You must choose the mode of integration by which you are implementing the DPA 7610:

- Simple—Cisco CallManager and Octel integration
- Hybrid—Cisco CallManager, Octel, and Meridian 1 integration

Selecting the integration mode automatically forces the 24 ports on DPA 7610 to support particular settings. To understand these settings, review Chapter 2, “Choosing an Integration Mode” before selecting an integration method.

To set the integration mode, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Meridian 1 integration**.

Step 3 Choose **Mode**.

Step 4 Choose the appropriate configuration type:

- **Simple**—Cisco CallManager and Octel integration
- **Hybrid**—Cisco CallManager, Octel, and Meridian 1 integration

Step 5 Restart the DPA 7610.

Configuring Octel Incoming Call Mode

You can configure the Octel system to handle incoming calls using hunt or ACD groups, and you must set the DPA 7610 to use the same mode. See "Determining Incoming Call Mode" section on page 4-15 to verify the mode used.

To set the incoming call mode on the DPA 7610, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel incoming call mode**.

Step 3 Choose the appropriate incoming call mode:

- **ACD**
- **Hunt**

Step 4 Restart the DPA 7610.

Setting the Port Disable Policy on the DPA 7610

The disable policy is designed to prevent the Octel system from assuming a port is up when there is not an active Cisco CallManager or PBX connection. Changing this policy can prevent the Octel system from attempting outgoing calls or setting MWIs. This might be useful if you have configured your system for redundancy. For example, if the Octel MWI lines are distributed between two DPA 7610 systems and the first DPA 7610 loses its connection to Cisco CallManager, the ports connecting to the first DPA 7610 are disabled, and the Octel system only sends MWIs to the second DPA.

Note The Cisco CallManager connection is considered lost if the DPA 7610 recognizes that it is down and has been down for 60 seconds.

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Meridian 1integration**.

Step 3 Choose **Octel connection disable policy**.

Step 4 Choose one of the following:

- **Never disable**—Never disable the ports
- **Disable when CM down—** Disable a DPA 7630/7610 Octel port when the connection to the corresponding DPA 7630/7610 port on Cisco CallManager is lost
- **Disable when PBX down—**Disable a DPA 7630/7610 Octel port only when the corresponding PBX port is down. In simple mode, this command has no effect. In hybrid mode, the Octel port will be disabled when the DPA notices the corresponding PBX port is down. For example, if port 24 goes down, port 16 will be disabled. In this case, ports 1-8 are never be disabled.
- **Disable when either down—**Disables a DPA 7630/7610 Octel port when either the connection to the PBX or to Cisco CallManager is lost.
- **Disable when both down—**Disables a DPA 7630/7610 Octel port when both the Cisco CallManager connection is lost and the PBX connection is lost.

Step 5 Restart the DPA 7630.

Setting Companding Law on DPA 7610

You must configure the encoding algorithm, A-law or mu-law, used by the Meridian 1 and Octel systems. The settings on the DPA 7610 must match the settings on the Meridian 1 and Octel systems. Typically, North American systems use mu-law, and European systems use a-law.

To set the companding law, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Meridian 1 integration**.

Step 3 Choose **Companding law**.

Step 4 Choose the appropriate option corresponding to the setting on the Octel system:

- **A-law**
- **mu-law**

Step 5 Restart the DPA 7610.

Clearing Meridian 1 MWIs on DPA 7610

The Octel system sends all MWI messages to the Meridian 1 system through the DPA 7610. If the DPA 7610 is turned off or restarted after the Octel system has sent a MWI message, the message might be lost. The result is that some user phones might have MWI lights disabled erroneously or constantly enabled. If this happens, you need to clear the Meridian 1 MWI messages.

To clear Meridian MWIs, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **Octel/Meridian 1 integration**.

Step 3 Choose **Clear M1 MWIs**.

Step 4 Enter the directory numbers or range of directory numbers to clear, using this format: 4419, 4420, 4440-4450.

Configuring Cisco CallManager Settings

You must configure the DPA 7630/7610 with specific settings based on your Cisco CallManager configuration.

After configuring these Cisco CallManager settings, you must restart the DPA 7630/7610. See “Restarting the DPA 7630/7610” section on page 7-1.

Assigning TFTP Server

The DPA 7630/7610 uses the TFTP server to identify the correct Cisco CallManager system. If you are not using DHCP to get the TFTP server, you must identify the address of the TFTP server.

Note If you use DHCP to get the TFTP server, the DPA 7630 uses option 66, option 150, or si-addr in that order of precedence.

To assign a TFTP server, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **CallManager**.

Step 3 Choose **TFTP server address**.

Step 4 Enter the IP address or domain name of the TFTP server.

To enter multiple TFTP servers, separate them using a comma (,) or semicolon (;). You can enter a maximum of five (5) TFTP servers.

Step 5 Restart the DPA 7630/7610.

Entering MWI for Cisco CallManager

On Cisco CallManager, you must set the dialing sequence used to enable and disable the MWI on phones connected to Cisco CallManager. These settings must match those entered in Cisco CallManager (see the “Configuring the Message Waiting Light” section on page 4-13).

To enter the MWI settings, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **CallManager**.

Step 3 Choose the appropriate settings:

- **CallManager MWI ON directory number**
- **CallManager MWI OFF directory number**

Step 4 Enter the appropriate values obtained from the Cisco CallManager system.

Step 5 Restart the DPA 7630/7610.

Entering Cisco CallManager “Pilot” Directory Number

When Cisco CallManager is configured, one port on the DPA 7630/7610 serves as the primary or “pilot” directory number for a voice mail hunt group. Typically, you only need to specify this number if

- You are using multiple DPA 7630/7610 systems in your network (multiple integration mode).
- Any voice mail hunt group spans multiple DPA 7630/7610 devices.

For example, DPA 7630/7610 A has extensions 1000-1010, and DPA 7630/7610 B has extensions 1011-1020. These extensions form one large voice mail hunt group, with all the end-user phones forwarding to extension 1000.

You would not need to enter a pilot directory number for DPA 7630/7610 A because extension 1000 is one of its own voice mail ports. However, you would need to enter 1000 as the pilot directory number on DPA 7630/7610 B.

This pilot directory number should match the one defined in Cisco CallManager (see the “Setting Up the Voice Mail Hunt Group” section on page 4-5).

To enter a pilot directory number, perform these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **CallManager**.

Step 3 Choose **CallManager “Pilot” directory number**.

Step 4 Enter the directory number for the primary number in the voice mail hunt group. You can enter multiple numbers separated by a comma.

Step 5 Restart the DPA 7630/7610.

Configuring Cisco Fax Relay

The DPA 7630/7610 supports Cisco fax relay. Cisco fax relay provides a more reliable method of transporting fax data over the IP network rather than sending the fax information as a voice call. However, the terminating device must also support Cisco fax relay.

When fax relay is enabled, the DPA 7630/7610 attempts to negotiate fax relay first on the incoming voice over IP (VoIP) call. If this fails, then the DPA 7630/7610 automatically tries to negotiate the fax call in fax pass through mode.

By default, Cisco fax relay is enabled on the DPA 7630/7610. Follow these steps to disable it:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **CallManager**.

Step 3 Choose **Fax Relay**.

Step 4 Choose one of the following:

- **enabled**
- **disabled**

Step 5 Restart the DPA 7630/7610.

Using Cached TFTP Responses to Access Cisco CallManager

If the TFTP server is down, you can configure the DPA 7630/7610 to rely on its last known good configuration setting to access Cisco CallManager using cached TFTP responses.

To use cached TFTP responses, follow these steps:

Step 1 From the main menu, choose **Configure**.

Step 2 Choose **CallManager**.

Step 3 Choose **Use cached TFTP responses**.

Step 4 Choose one of the following:

- **yes**
- **no**

Step 5 Restart the DPA 7630/7610.

CHAPTER 7

Troubleshooting the DPA 7630/7610

The DPA 7630/7610 includes several built-in troubleshooting and diagnostic features. Use these sections for details about troubleshooting:

- Restarting the DPA 7630/7610, page 7-1
- Upgrading Software Images, page 7-2
- Troubleshooting Suggestions, page 7-4
- Interpreting LED Status, page 7-6
- Displaying Status and Configuration Settings, page 7-8
- Working with the Event Log, page 7-16
- Resolving Error and Warning Messages, page 7-18

Restarting the DPA 7630/7610

After configuring options on the DPA 7630/7610, you might need to restart it for the changes take effect. Restarting the DPA 7630/7610 causes it to lose any queued MWIs so check the queue before restarting. To restart the DPA 7630/7610, perform these steps:

Step 1 From the main menu, choose **Display** and choose **Octel integration status**.

Step 2 Verify that the “Queued MWI commands” field is empty.

Step 3 From the main menu, choose **Configure**.

Step 4 Choose **Restart**.

Upgrading Software Images

The Cisco DPA 7630/7610 has two software images: a main software image and a boot loader. If necessary, you can upgrade these software images.

Upgrading the Main Image

The main software image might need to be updated if a new release is available on CCO as a bug update or feature enhancement.

Caution When you send a new software image to the DPA 7630/7610 using FTP, the current image is automatically deleted. If the FTP transfer terminates before the new file is copied to the DPA 7630/7610, the DPA 7630/7610 might not be able to start up. See the "Resolving an Incomplete Upgrade" section on page 7-4 to resolve this problem.

To upgrade the main software image, perform these steps:

Step 1 Obtain a configuration file whose name is in the following format: `dpa-main.<version>.tar`, where <*version*> indicates the release number, such as 1-1-2.

Step 2 Connect to the DPA 7630/7610 using FTP and send the configuration file to it.

Step 3 Restart the DPA 7630/7610 for the new image to take effect.

Step 4 From the main menu on the DPA 7630/7610, choose **Display**.

Step 5 Choose **Versions** to verify the updated version has been installed.

Upgrading the Boot Loader

The boot loader is the initial startup image. You should not upgrade this image unless instructed by a Cisco technical representative.

Caution Only upgrade the boot loader if you are instructed to do so by a Cisco technical representative. If you encounter difficulties during this upgrade, such as a loss of power, the DPA 7630/7610 might not be able to start up.

To upgrade the boot loader image, perform these steps:

Step 1 Obtain a configuration file whose name is in the following format: `dpa-loader.<version>.bin`, where *<version>* indicates the release number, such as 1-1-2.

Step 2 Ensure the DPA 7630/7610 has started up normally.

Step 3 Connect to the DPA 7630/7610 using FTP and send the configuration file to it.

Step 4 While still connected to the DPA 7630/7610 using FTP, enter a `dir` command to verify that the new file is on the DPA 7630/7610.

Step 5 On the DPA, choose **Diagnostics** from the main menu.

Step 6 Choose **Reprogram boot ROM**.

Caution If the DPA 7630/7610 loses power or experiences a failure at this step, the DPA 7630/7610 might not start up. If this occurs, contact a Cisco technical representative for assistance.

Step 7 Choose **Yes** to confirm.

The Boot ROM reprogrammed message appears verifying the programming has finished.

Step 8 Restart the DPA 7630/7610 for the changes to take effect.

Resolving an Incomplete Upgrade

If you initiated an upgrade to the main software image, but terminated it before the FTP transfer of the new image completed, the DPA 7630/7610 might not start up properly.

If this occurred, the next time the DPA 7630/7610 starts up, one of the following occurs:

- The boot loader loads, but the DPA 7630/7610 waits indefinitely at the `Pausing for FTP` prompt.
- The DPA 7630/7610 partially loads the main image, pauses, and then restarts.

To resolve either of these errors, while connected to the DPA 7630/7610 using the console port (see "Connecting to the Console Port" section on page 3-9), establish an FTP session and transfer the main image file again, following the steps in the "Upgrading the Main Image" section on page 7-2.

Troubleshooting Suggestions

Table 7-1 includes recommended troubleshooting suggestions for some common issues associated with the DPA 7630/7610.

Table 7-1 DPA 7630/7610 Troubleshooting Suggestions

Symptom	Solution	For More Information
The Message Waiting Indicator (MWI) feature does not travel across an inter-cluster trunk.	MWI commands are not propagated across inter-cluster links. Therefore, the DPA 7630/7610 can set MWIs only for those extensions located on the same Cisco CallManager cluster as the DPA 7630/7610 itself.	Refer to the "Using the DPA 7630/7610 with Cisco CallManager Clusters" section on page 2-17.
Ports do not come up.	Verify the wiring and connections to the PBX and Octel systems. Also, verify that you have properly set the integration mode on the DPA 7630/7610.	Refer to the "Connecting to the Telco Connectors" section on page 3-10 and to the "Setting the Integration Mode on DPA 7630" section on page 6-2 and the "Setting the Integration Mode on DPA 7610" section on page 6-6.

Table 7-1 DPA 7630/7610 Troubleshooting Suggestions (continued)

Symptom	Solution	For More Information
MWIs do not turn off.	On the DPA 7630, verify that the dialing sequences match the Definity and Octel systems.	Refer to "Entering Dialing Sequences for MWI Activation on DPA 7630" section on page 6-2.
	Clear the MWIs from the DPA 7630/7610: 1. From the main menu, choose **Configure**. 2. On the DPA 7630, choose **Octel/Definity integration** > **Clear Definity MWIs**. 3. On the DPA 7610, choose **Octel/Meridian 1 integration** > **Clear M1 MWIs**. 4. Enter the directory numbers or range of directory numbers to clear, using this format: 4419, 4420, 4440-4450.	Refer to the "Clearing Definity MWIs on DPA 7630" section on page 6-5 and the "Clearing Meridian 1 MWIs on DPA 7610" section on page 6-9 for details.
	Check the event log to verify that MWI messages are being sent.	Refer to the "Selecting Logging Levels and Logged Ports" section on page 7-17. For the logging level, choose Octel/CM, and enter the affected port numbers.
	This might occur immediately following an installation of a hybrid system if some Octel ports had their outgoing call (or MWI setting ability) removed. On the Definity PBX, enter `clear amw all` *`xxxx`*, where *`xxxx`* is the extension number.	Refer to the documentation included with your PBX system.

Table 7-1 DPA 7630/7610 Troubleshooting Suggestions (continued)

Symptom	Solution	For More Information
Voice mail hunt groups containing more than 13 extensions can cause voice mail access to fail with an error tone.	By default, the Cisco CallManager supports a maximum of 12 forwarding hops, leading to a maximum of 13 extensions in any one hunt group. To avoid this error, do one of the following: • Set the hop count system parameter to more than 12. • Divide the DPA 7630/7610 into several hunt groups (possibly all in the same forwarding chain) to improve load balance.	Refer to the “Setting Up the Voice Mail Hunt Group” section on page 4-5.

Interpreting LED Status

The DPA 7630/7610 includes several LED status indicators on the front panel (see Figure 7-1). Table 7-2 includes descriptions of these LEDs.

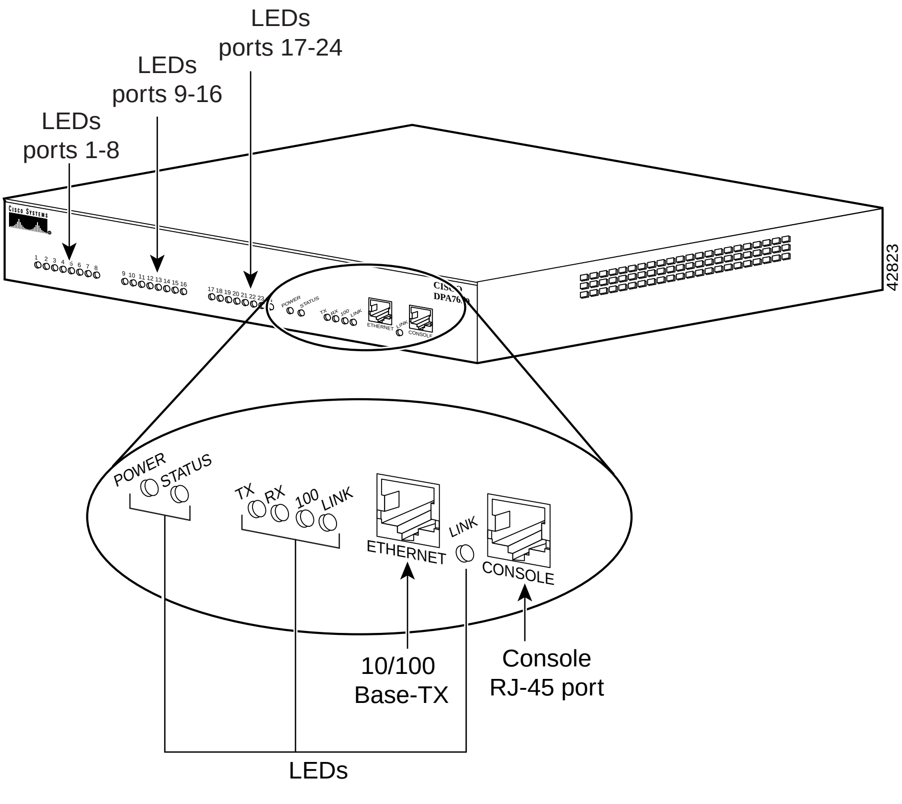
Table 7-2 LED Status Explanation

LED	On	Flashing	Off
Power	Power connected and operating normally	N/A	Power not connected
Status	Operating normally	Potential hardware error detected. Check the event log for details.	Not operating normally
TX	N/A	Packet transmitted.	Nothing transmitted
RX	N/A	Packet received.	Nothing received
100 MBPS	Connected at 100 Mbps	N/A	Connected at 10 Mbps or not connected

Table 7-2 LED Status Explanation (continued)

LED	On	Flashing	Off
Ethernet Link	Ethernet link connected	N/A	Not connected
Console Link	Console link connected	N/A	Console link not connected
24 Ports	Connected but not on-call	On call	Not connected

Figure 7-1 Cisco DPA 7630/7610 Front View



Displaying Status and Configuration Settings

Use these sections to obtain information about the current status and settings of the DPA 7630/7610 and its connections:

- Displaying System Status, page 7-8
- Displaying Network Statistics, page 7-9
- Displaying Port Status, page 7-9
- Displaying Cisco CallManager Status, page 7-13
- Displaying Octel Integration Status, page 7-14
- Displaying Current Configuration, page 7-15

Displaying System Status

The system status provides an overview of the current network settings on the DPA 7630/7610. Use this procedure to quickly check your network settings and connectivity information.

To display system status, perform these steps:

Step 1 From the main screen, choose **Display**.

Step 2 Choose **System status**.

The system status displays:

- Up time
- Serial number
- Ethernet MAC address
- IP address
- Subnet mask
- Default router
- DNS server
- Domain
- NTP Server

- Time offset
- Ethernet speed
- TFTP Server (1-5)

Displaying Network Statistics

Use the network statistics to observe the network traffic and packet errors through the IP connection on the DPA 7630/7610.

To display network statistics, perform these steps:

Step 1 From the main screen, choose **Display**.

Step 2 Choose **Network statistics**.

These statistics display for transmitted and received packets:

- Octets
- Unicast packets
- Nonunicast packets
- Discarded packets

Tip Press the **Tab** key to reset the network statistics while viewing.

Displaying Port Status

The port status provides detailed information about each port on the DPA 7630/7610. This is useful when determining the current state and activity on a particular port.

To display port status, perform these steps:

Step 1 From the main screen, choose **Display**.

Step 2 Choose **Port status**.

Step 3 Use the information in Table 7-3 and Table 7-4 to interpret the port status.

Table 7-3 Types of Ports

Type	Description
Call	This port is used for general call processing.
Oct MWI	This port is used to receive MWI commands from the Octel system.
PBX MWI	This port is used to set MWI commands on the Definity or Meridian 1 PBX systems.
Virtual	This “port” is an IP phone used for setting MWI commands on Cisco CallManager.
Down	The link to the Octel or PBX port is not connected. Unused ports display as “down.”

Table 7-4 Port Status

Status	Description	Used By Port Type	DPA 7630/7610
Octel registering	This indicates an intermediate state when the DPA 7630/7610 is starting up a port’s connection to the Octel system.	• Call • Oct MWI	DPA 7630/7610
Octel link down	The port previously had a connection to the Octel system, but the connection is down.	• Call • Oct MWI	DPA 7630/7610
CM link registering	This indicates an intermediate state when the DPA 7630/7610 is registering an IP phone with Cisco CallManager.	• Call • Oct MWI • Virtual	DPA 7630/7610

Table 7-4 Port Status (continued)

Status	Description	Used By Port Type	DPA 7630/7610
CM link down	This indicates an intermediate state when the DPA 7630/7610 has successfully started the port connected to the Octel system but cannot establish a connection to Cisco CallManager.	• Call • Oct MWI • Virtual	DPA 7630/7610
DN=*xxxx* <*substate*>	This is the normal status for the ports. The Octel port has started, and the IP phone associated with the port has registered and has a directory number assigned to it, where DN=*xxxx* indicates the directory number, and <*substate*> indicates current port activity: • On hook. • Off hook. • Call in—Octel emulated phone is ringing. • Call out—Octel has made an outgoing call. • *xxxx*—Octel has dialed out. • On call—Octel port is on a call. • Transfer—Octel system is transferring the caller. • Outcall—Octel is dialling out a number. • Hanging up—The DPA 7630/7610 is waiting for the Octel system to hang up.	• Call • Oct MWI	DPA 7630/7610
Disabled PBX down	Port has been disabled because the PBX or the connection to it has gone down.	• Call • Oct MWI	DPA 7630/7610

Table 7-4 Port Status (continued)

Status	Description	Used By Port Type	DPA 7630/7610
Disabled CM down	Port has been disabled because the Cisco CallManager or the connection to it has gone down.	• Call • Oct MWI	DPA 7630/7610
Disabled Both down	Port has been disabled because the Cisco CallManager, PBX, or the connections to them have gone down.	• Call • Oct MWI	DPA 7630/7610
DN=*xxxx*, Q=*yyyy*	IP phone is up with assigned directory number, and there are MWI messages queued for Cisco CallManager.	Virtual	DPA 7630/7610
Down	The PBX port is down, or the port has no physical link to the PBX.	PBX MWI	DPA 7630/7610
Registering	The PBX port is starting up.	PBX MWI	DPA 7630/7610
Q=x*xxx*	The PBX port is up, and there are MWI messages queued.	PBX MWI	DPA 7630
O=*xxxx*	DPA is dialing out the MWI command *xxx* to the PBX.	PBX MWI	DPA 7630/7610
Disabled	The port is connected, but is either disabled or misconfigured.	PBX MWI	DPA 7610
Idle	The port is available to set MWIs, but is currently inactive.	PBX MWI	DPA 7610
O=<number>	The port is setting an MWI on the given extension.	PBX MWI	DPA 7630/7610
Busy	The port is busy preparing to set an MWI.	PBX MWI	DPA 7610

Displaying Cisco CallManager Status

You can obtain detailed information about the connection from the DPA 7630/7610 to the Cisco CallManager system.

To display Cisco CallManager status, perform these steps:

Step 1 From the main screen, choose **Display**.

Step 2 Choose **Port status**.

Step 3 Choose a port and press **Enter**.

Step 4 Refer to Table 7-5 for a description of the fields.

Table 7-5 Cisco CallManager Port Status

Type	Description
Codec requested	Indicates which codec requested and whether silence suppression was requested to be on or off: G711 mu-law (SS on/off), G711 A-law (SS on/off), G729A **Note** If G729 or G729A is requested, G729A/AB is used: A if silence suppression is off, AB if silence suppression is on.
Codec in use	Indicates which codec used: G711 mu-law (SS on/off), G711 A-law (SS on/off), G729A, G729AB, G711 Fax Passthrough, Cisco Fax Relay
CallManager connection	Indicates whether the connection to Cisco CallManager is up.
CallManager device name	Indicates the name assigned to the port in the Cisco CallManager database.

Table 7-5 Cisco CallManager Port Status (continued)

Type	Description
TFTP server	Indicates name of the TFTP server from which the configuration for this port was obtained. Displays "none" if it's not configured or available.
CallManager name	Indicates the name of Cisco CallManager.
IP address	Indicates the IP address of Cisco CallManager.
State	Indicates the current status of the connection to Cisco CallManager: • Idle—No connection is in progress. • Connecting—The port is attempting to register with this Cisco CallManager system. • Retry back-off—A connection attempt failed, and the DPA 7630/7610 is waiting before retrying. • Connect pending—The connection to this Cisco CallManager system was lost, and the port is attempting to re-establish the connection. • Active—The connection is established, and this is the primary Cisco CallManager system. • Standby—The connection to a standby Cisco CallManager system is established.

Displaying Octel Integration Status

To obtain detailed information about the Octel integration, perform these steps:

Step 1 From the main screen, choose **Display**.

Step 2 Choose **Octel integration status**.

The system displays the following information:

- Received calls
- Ports in use (call processing
- Ports in use (MWI received)
- Ports in use (MWI set)
- Outgoing calls made
- MWI commands received
- CM Queued MWI commands
- Executed CM MWI commands
- MWI errors

Tip In hybrid mode, the MWI status options display as separate settings for the Cisco CallManager and Definity or Meridian 1 systems.

Tip Press the **Tab** key to reset the network statistics while viewing.

Displaying Current Configuration

You can quickly display all the settings you have configured on the DPA 7630/7610.

To display the configured settings, perform these steps:

Step 1 From the main screen, choose **Diagnostics**.

Step 2 Choose **Show configuration**.

Working with the Event Log

The event log enables you to capture errors, warnings, and other informational messages from the DPA 7630/7610. Typically, you use these options only when troubleshooting a complex issue, perhaps while working with a Cisco technical representative.

However, using the default settings and these options, you can resolve many errors on your own:

- Identifying a Syslog Server, page 7-16
- Selecting Logging Levels and Logged Ports, page 7-17
- Displaying Recent Messages, page 7-18
- Resolving Error and Warning Messages, page 7-18

Identifying a Syslog Server

You can identify a syslog server to automatically capture and receive event logs for remote network management by performing these steps:

Step 1 From the main screen, choose **Diagnostics**.

Step 2 Choose **Event log**.

Step 3 Choose **Syslog server**.

Step 4 Enter the IP address or host name of the network management system you want to designate as the syslog server.

Identifying the Syslog Facility

You can identify the syslog facility used on messages sent to the syslog server. To choose the syslog facility, perform these steps:

Step 1 From the main screen, choose **Diagnostics**.

Step 2 Choose **Event log**.

Step 3 Choose **Syslog facility**.

Step 4 Choose one of the available options, including **kernel**, **user**, and several **local** options.

Step 5 Work with a Cisco technical representative to determine the best options to choose.

Selecting Logging Levels and Logged Ports

You can set the DPA 7630/7610 to log progressively more detail (information, errors, or warnings), or you can restrict logging to specific ports.

Typically, you should only configure these options when working with a Cisco technical representative because the nature of the problem determines the amount of information required to resolve it.

⚠ **Caution** You should not have the DPA 7630/7610 log any levels set to "Errors + warnings + info + trace" unless you are actively troubleshooting, or the DPA 7630/7610 might experience degraded performance.

To set logging levels or logged ports, perform these steps:

Step 1 From the main screen, choose **Diagnostics**.

Step 2 Choose **Event log**.

Step 3 Choose **Set logging levels** or **Set logged ports**.

Step 4 Work with a Cisco technical representative to determine the best options to choose and enter.

Displaying Recent Messages

You can obtain a list of recent messages from the DPA 7630/7610 to help you resolve some configuration issues.

To display recent messages, perform these steps:

Step 1 From the main screen, choose **Diagnostics**.

Step 2 Choose **Event log**.

Step 3 Choose **View recent** to display recent messages.

Step 4 See “Resolving Error and Warning Messages” section on page 7-18 for information on resolving these errors.

Tip You can also choose **View all** to display all errors, or **View new** to display new errors only.

Resolving Error and Warning Messages

The even log displays errors and warning messages on the DPA 7630/7610. Other messages also appear on screen. Use the following sections to interpret and resolve these errors:

- Resolving Hardware Errors, page 7-19
- Resolving Network and System Errors, page 7-19
- Resolving Cisco CallManager Errors, page 7-21
- Resolving Generic MWI Errors, page 7-23
- Resolving Definity Errors, page 7-24
- Resolving Meridian 1 Errors, page 7-27

Resolving Hardware Errors

Table 7-6 describes errors and warnings that might appear on the DPA 7630/7610 either on-screen or in the event log, which are caused by a hardware fault. Use this information to resolve these errors.

Table 7-6 Hardware Errors and Warnings Explanation

Error	Explanation	Action
`Fan fault detected`	The fan is not working correctly.	Turn off the DPA 7630/7610 and contact a Cisco technical representative for assistance.
`Fault detected in power supply`	The power supply is not working correctly.	Immediately turn off the DPA 7630/7610 and unplug it. Contact a Cisco technical representative for assistance.

Resolving Network and System Errors

Table 7-7 describes errors and warnings that might appear on the DPA 7630/7610 either on-screen or in the event log, which are caused by a misconfiguration or miscommunication with the network or system settings. Use this information to resolve these errors.

Table 7-7 Network and System Errors and Warnings Explanation

Error	Explanation	Action
`IP address refused`	The DHCP server rejected the DPA 7630/7610's request for an IP address.	Check configuration of DHCP server. If errors persist, assign a static IP address. Refer to "Configuring Network Settings" section on page 5-4 for details on assigning a static IP address.
`IP address cannot be allocated`	No DHCP server responded to the request.	Check configuration of DHCP server. If errors persist, assign a static IP address. Refer to "Configuring Network Settings" section on page 5-4 for details on assigning a static IP address.

Table 7-7 Network and System Errors and Warnings Explanation (continued)

Error	Explanation	Action
`Server address not configured`	DHCP is not being used so you must assign a static IP address.	Refer to "Configuring Network Settings" section on page 5-4 for details on assigning a static IP address.
`Static IP address conflict with device <address>`	The DPA 7630/7610 has a static IP address that is already assigned to another device on the network.	Assign a different static IP address for either the DPA or the conflicting device. Refer to "Configuring Network Settings" section on page 5-4 for details on assigning a static IP address.
`IP address conflict with device <address>`	The DHCP server allocated an IP address to the DPA 7630/7610 that is already in use by another device on the network.	**1.** Check your DHCP server configuration to ensure that addresses allocated are not reserved for static IP use. **2.** Check your network for misconfigured devices.
`Network interface will be shut down`	A previous error caused the network interface to be shut down.	Check the event log for earlier errors.
`Server address not configured`	A DNS query has been attempted, but no DNS server has been configured.	**1.** If the DPA 7630/7610 has a static IP address, verify the DNS server has been configured. Refer to "Assigning the DNS Server" section on page 5-8 for details. **2.** If you are using DHCP, the DHCP server has not provided a DNS server. Check the DHCP server configuration.
`No TFTP server address`	The TFTP server has not been set.	**1.** If using DHCP to obtain TFTP server, check your DHCP server configuration. **2.** If you want to use a fixed TFTP server, you must configure it on the DPA 7630/7610. Refer to "Assigning TFTP Server" section on page 6-9 to assign a TFTP server for details.

Table 7-7 Network and System Errors and Warnings Explanation (continued)

Error	Explanation	Action
`Ethernet failed to start`	The Ethernet cable is not properly connected to the DPA 7630/7610 or to the hub or switch.	Check the Ethernet cable and reconnect it to the DPA 7630/7610 and the hub or switch. If error persists, replace cable.
`Incorrect password entered`	A user attempted to use a telnet, console, or FTP connection to the DPA 7630/7610 but entered an incorrect password.	Check the passwords and verify that you are using the correct one. Change the password if you suspect an unauthorized login attempt. Refer to the "Configuring Passwords" section on page 5-13 for details.
`Attempt to use Get with invalid community name "<name>"`	The DPA 7630/7610 received an SNMP request with an invalid read-only community name (password).	Check the community string setting on the DPA 7630/7610 and ensure that your network management system has the correct password. Refer to the "Configuring SNMP Settings" section on page 5-14 for details.
`Attempt to use Set with invalid community name "<name>"`	The DPA 7630/7610 received an SNMP request with an invalid read-write community name (password).	Check the community string setting on the DPA 7630/7610 and ensure that your network management system has the correct password. Refer to the "Configuring SNMP Settings" section on page 5-14 for details.
`Received invalid packet`	The SNMP server received an invalid SNMP request.	Verify that your network management is set up properly.

Resolving Cisco CallManager Errors

Table 7-8 describes errors and warnings that might appear on the DPA 7630/7610 either on-screen or in the event log, which are caused by a misconfiguration or miscommunication with the Cisco CallManager system. Use this information to resolve these errors.

Table 7-8 Cisco CallManager Errors and Warnings Explanation

Error	Explanation	Action
`CM MWI ON DN not set`	You have not configured the options for enabling MWI on the Cisco CallManager system.	1. From the DPA 7630/7610 main menu, choose **Configure**. 2. Choose **CallManager**. 3. Choose **CallManager MWI ON directory number**. 4. Enter the appropriate values obtained from the Cisco CallManager system.
`CM MWI OFF DN not set`	You have not configured the options for disabling MWI on the Cisco CallManager system.	1. From the DPA 7630/7610 main menu, choose **Configure**. 2. Choose **CallManager**. 3. Choose **CallManager MWI OFF directory number**. 4. Enter the appropriate values obtained from the Cisco CallManager system.
`CM MWI queue full`	The MWI queue for the virtual port is full. You might have too many MWI lines assigned to the DPA 7630/7610.	Consider using multiple DPA 7630/7610 systems to off-load the MWI activity. Refer to "Using the Multiple Integration" section on page 2-14 for additional instructions.
`Failed to set CallManager MWI`	The MWI on the Cisco CallManager system was not set.	1. Verify that Cisco CallManager is up-and-running properly. 2. Verify the Ethernet network connection between the DPA 7630/7610 and Cisco CallManager.
`<num> Queued messages for down virtual port`	The virtual port is down, and there are queued MWIs. This message repeats hourly until the port is up.	1. Verify that Cisco CallManager is up-and-running properly. 2. Verify the Ethernet network connection between the DPA 7630/7610 and Cisco CallManager.

Table 7-8 Cisco CallManager Errors and Warnings Explanation (continued)

Error	Explanation	Action
`CM register reject`	The port attempted to register with Cisco CallManager but was rejected.	Verify that Cisco CallManager and the settings for this port in Cisco CallManager are properly configured. Refer to "Configuring Cisco CallManager" section on page 4-2 for details and online help included with Cisco CallManager for additional assistance.
`<port number>: Port using cached TFTP response`	The port is using a cached TFTP response to access the Cisco CallManager server.	The Cisco CallManager server is currently not reachable. Verify that it is up-and-running and that the network connection to it from the DPA 7630/7610 is operational. If you do not want to use cached TFTP responses, see the "Using Cached TFTP Responses to Access Cisco CallManager" section on page 6-12 for details.

Resolving Generic MWI Errors

Table 7-9 describes errors and warnings that might appear on the DPA 7630/7610 either on-screen or in the event log, which are caused by a misconfiguration or miscommunication with setting and receiving MWI signals on the Definity or Meridian 1 PBX systems. Use this information to resolve these errors.

Table 7-9 Generic MWI Errors and Warnings Explanation

Error	Explanation	Action
`MWI queue full`	The PBX MWI queue for this port is full.	Verify the connection to the PBX system, and verify that the PBX is up and running properly.

Table 7-9 Generic MWI Errors and Warnings Explanation (continued)

Error	Explanation	Action
`Failed to set MWI: PBX port went down`	A PBX port went down while setting an MWI.	Verify the connection to the PBX system, and verify that the PBX is up and running properly.
`MWI set from call port`	An MWI has been set from a port that is a call-only port (ports 1-8). In hybrid mode, you cannot use ports 1-8 for setting MWI.	Move the MWI line from a call port (1-8) to an MWI port (9-16).

Resolving Definity Errors

Table 7-10 describes errors and warnings that might appear on *only* the DPA 7630 either on-screen or in the event log, which are caused by misconfiguration or miscommunication with the Definity PBX system. Use this information to resolve these errors.

Table 7-10 Definity Errors and Warnings Explanation

Error	Explanation	Action
`Failed to set MWI: No dialtone`	When attempting to set the MWI on the PBX system, no dialtone was detected.	Verify that the Definity PBX system is up-and-running properly.
`<num> Queued messages for down PBX port`	There are <num> queued messages for a PBX port, which is down. This message repeats hourly until the port comes back up.	Verify the connection to the PBX system, and verify that the PBX is up and running properly.

Table 7-10 Definity Errors and Warnings Explanation (continued)

Error	Explanation	Action
`Octel/Definity integration mode not set`	You have not configured the integration mode.	1. From the DPA 7630 main menu, choose **Configure**. 2. Choose **Octel/Definity integration**. 3. Choose **Mode**. 4. Choose the appropriate configuration type: • Simple—Cisco CallManager and Octel integration • Hybrid—Cisco CallManager, Octel, and Definity integration
`Definity MWI ON dial string not set`	You have not configured the dialing sequence options for setting MWI on the Definity/Octel systems.	1. From the DPA 7630 main menu, choose **Configure**. 2. Choose **Octel/Definity integration configuration**. 3. Choose **Definity MWI ON pre-extension dial string**. 4. Enter the appropriate values obtained from the Octel and Definity systems.

Table 7-10 Definity Errors and Warnings Explanation (continued)

Error	Explanation	Action
`<port> Definity MWI controller <port> not up`	A request to set or clear a Definity MWI light was received from the Octel system, but the corresponding port connected to the PBX is not responding.	Verify that the cabling between the DPA 7630 and the Definity and Octel systems is set up properly. Refer to the "Connecting to the Telco Connectors" section on page 3-10 for instructions on configuring these connections.
`Definity MWI OFF dial string not set`	You have not configured the dialing sequence options for turning off MWI on the Definity/Octel systems.	1. From the DPA 7630 main menu, choose **Configure**. 2. Choose **Octel/Definity integration configuration**. 3. Choose **Definity MWI OFF pre-extension dial string**. 4. Enter the appropriate values obtained from the Octel and Definity systems.

Resolving Meridian 1 Errors

Table 7-11 describes errors and warnings that might appear on *only* the DPA 7610 either on-screen or in the event log, which are caused by misconfiguration or miscommunication with the Meridian 1 PBX system. Use this information to resolve these errors.

Table 7-11 Meridian 1 Errors and Warnings Explanation

Error	Explanation	Action
`Octel/Meridian 1 integration mode not set`	You have not configured the integration mode.	1. From the DPA 7610 main menu, choose **Configure**. 2. Choose **Octel/Meridian 1 integration**. 3. Choose **Mode**. 4. Choose the appropriate configuration type: – Simple—Cisco CallManager and Octel integration – Hybrid—Cisco CallManager, Octel, and Definity integration
`Failed to set MWI: MWI key lamps did not come on`	The PBX did not set the MWI lamps properly.	Verify the connection to the PBX system, and verify that the PBX port is configured properly and enabled.
`Failed to set MWI: MWI key lamps did not go off`	The PBX did not set the MWI lamps properly.	Verify the connection to the PBX system, and verify that the PBX port is configured properly.
`Octel incoming call mode not set.`	You have not configured the incoming call mode.	1. From the DPA 7610 main menu, choose **Configure**. 2. Choose **Octel incoming call mode**. 3. Choose the appropriate incoming call mode: – **ACD** – **Hunt**

Table 7-11 Meridian 1 Errors and Warnings Explanation (continued)

Error	Explanation	Action
`PBX port is down or disabled.`	The PBX port is down or has been disabled.	Verify the connection to the PBX system, and verify that the PBX port is configured properly and enabled.
`Failed to set MWI: PBX port is down or disabled.`	The PBX port is down or has been disabled while setting an MWI. The MWI queue is full so the MWI request cannot be put back on the queue for another PBX port to try later.	Verify the connection to the PBX system, and verify that the PBX port is configured properly and enabled.

APPENDIX A

Technical Specifications

These sections describe the technical specifications and regulatory complaince for the DPA 7630/7610:

- Physical and Operating Specifications, page A-1
- Port and Cable Specifications, page A-2
- Port Pinouts, page A-2
- Regulatory Compliance, page A-6

Physical and Operating Specifications

Table A-1 includes the physical and operating specifications of the DPA 7630/7610.

Table A-1 Cisco DPA 7630/7610 Specifications

Specification	Value or Range
Dimensions (H x W x D)	1.75 x 17.25 x 15.5 inches
Weight	5.2kg (11lbs 8oz)
Power	100-240 VAC, 50-60 Hz
Processor	50 MHz MPC 860T
Operating environment	0° to 40° C (32° to 104° F), 10% to 95% noncondensing humidity
Nonoperating environment	-10° to 60° C (14° to 140° F)

Port and Cable Specifications

The DPA 7630/7610 includes the following ports:

- RJ-21 telco connectors
  - DPA 7630—Three RJ-21 telco connectors for connection to Octel and Definity systems (labeled Lines A, B, and C).
  - DPA 7610—Single RJ-21 telco connector for connection to Octel and Meridian 1systems (labeled Line A).
  - Maximum cable length between the DPA 7630/7610 and the Definity, Meridian 1, and Octel systems is 100 meters.
- RJ-45 jack for the 10/100BaseT connection (labeled Ethernet).
- RJ-45 jack for the console connector (labeled Console).
- 3-pin IEC AC adapter.

Port Pinouts

These sections describe the port pinouts on the DPA 7630:

- Console Port Pinouts, page A-2
- Telco Port Pinouts—DPA 7630, page A-3
- Telco Port Pinouts—DPA 7610, page A-4
- Ethernet Port Pinouts, page A-5

Console Port Pinouts

Table A-2 describes the console port connector pinouts.

Table A-2 Console Port Connector Pinouts

Pin Number	Function
1, 8	Unconnected
2	DTR

Table A-2 Console Port Connector Pinouts (continued)

Pin Number	Function
3	TxD
4,5	Ground
6	RxD
7	DSR

Telco Port Pinouts—DPA 7630

Table A-3 describes the telco port connector pinouts on the DPA 7630.

Table A-3 Telco Port Connector Pinouts on DPA 7630

Pin Number	Function
1, 26	Unused
2, 27	Port 1 receive
3, 28	Port 1 transmit
4,29	Unused
5, 30	Port 2 receive
6,31	Port 2 transmit
7, 32	Unused
8, 33	Port 3 receive
9, 34	Port 3 transmit
10, 35	Unused
11, 36	Port 4 receive
12, 37	Port 4 transmit
13, 38	Unused
14, 39	Port 5 receive
15, 40	Port 5 transmit
16, 41	Unused

Table A-3 Telco Port Connector Pinouts on DPA 7630 (continued)

Pin Number	Function
17, 42	Port 6 receive
18, 43	Port 6 transmit
19, 44	Unused
20, 45	Port 7 receive
21, 46	Port 7 transmit
22, 47	Unused
23, 48	Port 8 receive
24, 49	Port 8 transmit
25, 50	Unused

Telco Port Pinouts—DPA 7610

Table A-4 describes the telco port connector pinouts on the DPA 7610.

Table A-4 Telco Port Connector Pinouts on DPA 7610

Pin Number	Function
1, 26	Port 1 transmit/receive
2, 27	Port 2 transmit/receive
3, 28	Port 3 transmit/receive
4,29	Port 4 transmit/receive
5, 30	Port 5 transmit/receive
6,31	Port 6 transmit/receive
7, 32	Port 7 transmit/receive
8, 33	Port 8 transmit/receive
9, 34	Port 9 transmit/receive
10, 35	Port 10 transmit/receive
11, 36	Port 11 transmit/receive

Table A-4 Telco Port Connector Pinouts on DPA 7610 (continued)

Pin Number	Function
12, 37	Port 12 transmit/receive
13, 38	Port 13 transmit/receive
14, 39	Port 14 transmit/receive
15, 40	Port 15 transmit/receive
16, 41	Port 16 transmit/receive
17, 42	Port 17 transmit/receive
18, 43	Port 18 transmit/receive
19, 44	Port 19 transmit/receive
20, 45	Port 20 transmit/receive
21, 46	Port 21 transmit/receive
22, 47	Port 22 transmit/receive
23, 48	Port 23 transmit/receive
24, 49	Port 24 transmit/receive
25, 50	Unused

Ethernet Port Pinouts

Table A-5 describes the Ethernet port connector pinouts.

Table A-5 Ethernet Port Connector Pinouts

Pin Number	Function
1	TD+
2	TD-
3	RD+
4	—
5	—
6	RD-

Table A-5 Ethernet Port Connector Pinouts (continued)

Pin Number	Function
7	—
8	—

Regulatory Compliance

The DPA 7630/7610 meets the following regulatory compliance:

Table A-6 DPA 7630/7610 Regulatory Compliance

Item	Description
Regulatory Compliance	Products bear CE[1] Marking indicating compliance with the 99/5/EC directive, which includes the following safety and EMC standards.
Safety	UL[2] 1950, CSA[3] C22.2 No. 950, EN[4] 60950, IEC[5] 60950
EMC	FCC[6] Part 15 (CFR[7] 47) Class A, ICES[8] 003 Class A with UTP[9] Cable, EN55022 Class A with UTP Cable, CISPR22 Class A with UTP Cable, AS/NZS[10] 3548 Class A with UTP Cable, VCCI[11] Class A with UTP cable, EN55022 Class B with FTP[12] Cable, CISPR22 Class B with FTP Cable, AS/NZS 3548 Class B with FTP[13]Cable, VCCI Class B with FTP cable, EN 55024, EN 50082-1, ETS[14] 300 386

[1] CE—European Compliance

[2] UL—Underwriters Laboratory

[3] CSA—Canadian Standards Association

[4] EN—European Norm

[5] IEC—International Electrotechnical Commission

[6] FCC—Federal Communications Commission

[7] CFR—Code of Federal Regulations

[8] ICES—Interference-Causing Equipment Standard

[9] UTP—Unshielded twisted-pair

[10] AS/NZS—Standards Australia/Standards New Zealand

[11] VCCI—Voluntary Control Council for Information Technology Equipment (Japan)

[12] FTP—Foil twisted-pair

[13] FTP—Foil twisted-pair

[14] ETS—European Telecommunication Standard

EMC Environmental conditions for product to be installed in the European Union.

This equipment is intended to operate under the following environmental conditions with respect to EMC:

1. A separate defined location under user’s control.
2. Earthing and bonding shall meet the requirements of ETS 300 253 or CCITT K27.
3. Where applicable, AC power distribution shall be one of the following types: TN-S and TN-C [as defined in IEC 364-3].

EMI Class A Warnings

(FCC) Class A Warning

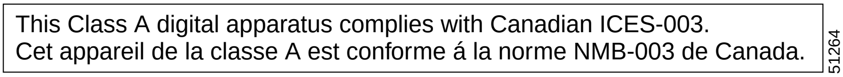
⚠

Warning **Modifying the equipment without Cisco's authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense. [cfr reference 15.21]**

⚠

Warning **NOTE: 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. [cfr reference 15.105]**

Canada Class A Warning



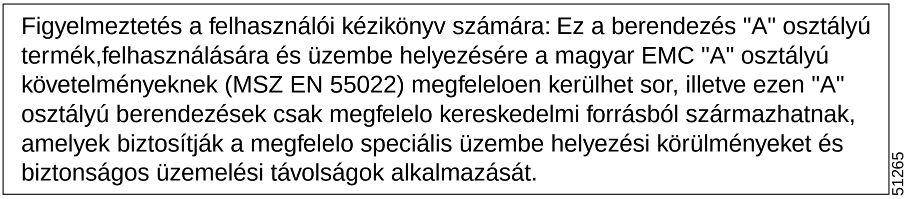
This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil de la classe A est conforme á la norme NMB-003 de Canada.

(CISPR 22) Class A Warning

Warning

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.

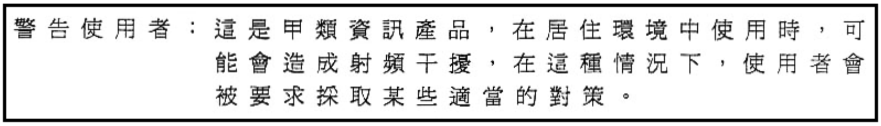
Hungarian Class A Warning:



Figyelmeztetés a felhasználói kézikönyv számára: Ez a berendezés "A" osztályú termék,felhasználására és üzembe helyezésére a magyar EMC "A" osztályú követelményeknek (MSZ EN 55022) megfeleleoen kerülhet sor, illetve ezen "A" osztályú berendezések csak megfelelo kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelo speciális üzembe helyezési körülményeket és biztonságos üzemelési távolságok alkalmazását.

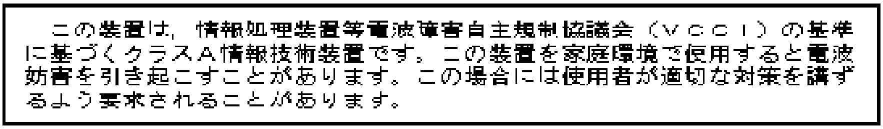
This equipment is a class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZEN55022), the Class A equipment are derived for typical commercial establishments for which special conditions of installation and protection distance are used.

Taiwan (BSMI) Class A Warning



警告使用者：這是甲類資訊產品，在居住環境中使用時，可
能會造成射頻干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Japan (VCCI)



この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準
に基づくクラスＡ情報技術装置です。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講ず
るよう要求されることがあります。

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 disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

APPENDIX B

Translated Safety Warnings

These sections include the translations for the safety warnings used in this guide.

Qualified Personnel Warning

Warning	**Only trained and qualified personnel should be allowed to install or replace this equipment.**
Waarschuwing	**Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.**
Varoitus	**Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.**
Avertissement	**Tout installation ou remplacement de l'appareil doit être réalisé par du personnel qualifié et compétent.**
Achtung	**Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.**
Avvertenza	**Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.**

Advarsel **Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.**

Aviso **Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.**

¡Atención! **Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.**

Varning **Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.**

Installation Warning

Warning **Read the installation instructions before you connect the system to its power source.**

Waarschuwing **Raadpleeg de installatie-aanwijzingen voordat u het systeem met de voeding verbindt.**

Varoitus **Lue asennusohjeet ennen järjestelmän yhdistämistä virtalähteeseen.**

Attention **Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.**

Warnung **Lesen Sie die Installationsanweisungen, bevor Sie das System an die Stromquelle anschließen.**

Avvertenza **Consultare le istruzioni di installazione prima di collegare il sistema all’alimentatore.**

Advarsel **Les installasjonsinstruksjonene før systemet kobles til strømkilden.**

Aviso **Leia as instruções de instalação antes de ligar o sistema à sua fonte de energia.**

¡Advertencia! **Ver las instrucciones de instalación antes de conectar el sistema a la red de alimentación.**

Varning! **Läs installationsanvisningarna innan du kopplar systemet till dess strömförsörjningsenhet.**

Product Disposal Warning

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.**

Waarschuwing **Het uiteindelijke wegruimen van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.**

Varoitus **Tämä tuote on hävitettävä kansallisten lakien ja määräysten mukaisesti.**

Attention **La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.**

Warnung **Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.**

Avvertenza **Lo smaltimento di questo prodotto deve essere eseguito secondo le leggi e regolazioni locali.**

Advarsel **Endelig kassering av dette produktet skal være i henhold til alle relevante nasjonale lover og bestemmelser.**

Aviso **Deitar fora este produto em conformidade com todas as leis e regulamentos nacionais.**

¡Advertencia! **Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.**

Varning! **Vid deponering hanteras produkten enligt gällande lagar och bestämmelser.**

Restricted Area Warning

Warning **This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

Waarschuwing **Dit toestel is bedoeld voor installatie op plaatsen met beperkte toegang. Een plaats met beperkte toegang is een plaats waar toegang slechts door servicepersoneel verkregen kan worden door middel van een speciaal instrument, een slot en sleutel, of een ander veiligheidsmiddel, en welke beheerd wordt door de overheidsinstantie die verantwoordelijk is voor de locatie.**

Varoitus **Tämä laite on tarkoitettu asennettavaksi paikkaan, johon pääsy on rajoitettua. Paikka, johon pääsy on rajoitettua, tarkoittaa paikkaa, johon vain huoltohenkilöstö pääsee jonkin erikoistyökalun, lukkoon sopivan avaimen tai jonkin muun turvalaitteen avulla ja joka on paikasta vastuussa olevien toimivaltaisten henkilöiden valvoma.**

Attention Cet appareil est à installer dans des zones d'accès réservé. Ces dernières sont des zones auxquelles seul le personnel de service peut accéder en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité. L'accès aux zones de sécurité est sous le contrôle de l'autorité responsable de l'emplacement.

Warnung Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Ein Bereich mit beschränktem Zutritt ist ein Bereich, zu dem nur Wartungspersonal mit einem Spezialwerkzeugs, Schloß und Schlüssel oder anderer Sicherheitsvorkehrungen Zugang hat, und der von dem für die Anlage zuständigen Gremium kontrolliert wird.

Avvertenza Questa unità deve essere installata in un'area ad accesso limitato. Un'area ad accesso limitato è un'area accessibile solo a personale di assistenza tramite un'attrezzo speciale, lucchetto, o altri dispositivi di sicurezza, ed è controllata dall'autorità responsabile della zona.

Advarsel Denne enheten er laget for installasjon i områder med begrenset adgang. Et område med begrenset adgang gir kun adgang til servicepersonale som bruker et spesielt verktøy, lås og nøkkel, eller en annen sikkerhetsanordning, og det kontrolleres av den autoriteten som er ansvarlig for området.

Aviso Esta unidade foi concebida para instalação em áreas de acesso restrito. Uma área de acesso restrito é uma área à qual apenas tem acesso o pessoal de serviço autorizado, que possua uma ferramenta, chave e fechadura especial, ou qualquer outra forma de segurança. Esta área é controlada pela autoridade responsável pelo local.

¡Advertencia! **Esta unidad ha sido diseñada para instalarse en áreas de acceso restringido. Área de acceso restringido significa un área a la que solamente tiene acceso el personal de servicio mediante la utilización de una herramienta especial, cerradura con llave, o algún otro medio de seguridad, y que está bajo el control de la autoridad responsable del local.**

Varning! **Denna enhet är avsedd för installation i områden med begränsat tillträde. Ett område med begränsat tillträde får endast tillträdas av servicepersonal med ett speciellt verktyg, lås och nyckel, eller annan säkerhetsanordning, och kontrolleras av den auktoritet som ansvarar för området.**

No On/Off Switch Warning

Warning **Unplug the power cord before you work on a system that does not have an on/off switch.**

Waarschuwing **Voordat u aan een systeem werkt dat geen aan/uit schakelaar heeft, dient u de stekker van het netsnoer uit het stopcontact te halen.**

Varoitus **Ennen kuin teet mitään sellaiselle järjestelmälle, jossa ei ole kaksiasentokytkintä, kytke irti virtajohto.**

Attention **Avant de travailler sur un système non équipé d'un commutateur marche-arrêt, débrancher le cordon d'alimentation.**

Warnung **Bevor Sie an einem System ohne Ein/Aus-Schalter arbeiten, ziehen Sie das Netzkabel heraus.**

Avvertenza **Prima di lavorare su un sistema che non è dotato di un interruttore on/off, scollegare il cavo di alimentazione.**

Advarsel **Før det skal utføres arbeid på et system som ikke har en av/på-bryter, skal strømledningen trekkes ut.**

Aviso **Antes de começar a trabalhar num sistema que não possua um interruptor ON/OFF, desligue o cabo de alimentação.**

¡Advertencia! **Antes de trabajar sobre cualquier sistema que carezca de interruptor de Encendido/Apagado (ON/OFF), desenchufar el cable de alimentación.**

Varning! **Dra ur nätsladden innan du utför arbete på ett system utan strömbrytare.**

Main Disconnecting Device

Warning **The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.**

Waarschuwing **De combinatie van de stekker en het elektrisch contactpunt moet te allen tijde toegankelijk zijn omdat deze het hoofdmechanisme vormt voor verbreking van de aansluiting.**

Varoitus **Pistoke/liitinkohta toimii pääkatkaisumekanismina. Pääsy siihen on pidettävä aina esteettömänä.**

Attention **La combinaison de prise de courant doit être accessible à tout moment parce qu'elle fait office de système principal de déconnexion.**

Warnung **Der Netzkabelanschluß am Gerät muß jederzeit zugänglich sein, weil er als primäre Ausschaltvorrichtung dient.**

Avvertenza **Il gruppo spina-presa deve essere sempre accessibile, poiché viene utilizzato come dispositivo di scollegamento principale.**

Advarsel **Kombinasjonen støpsel/uttak må alltid være tilgjengelig ettersom den fungerer som hovedfrakoplingsenhet.**

Aviso **A combinação ficha-tomada deverá ser sempre acessível, porque funciona como interruptor principal.**

¡Advertencia! **El conjunto de clavija y toma ha de encontrarse siempre accesible ya que hace las veces de dispositivo de desconexión principal.**

Varning! **Man måste alltid kunna komma åt stickproppen i uttaget, eftersom denna koppling utgör den huvudsakliga frånkopplingsanordningen.**

Circuit Breaker (15A) Warning

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).**

Waarschuwing **Dit produkt is afhankelijk van de installatie van het gebouw voor kortsluit- (overstroom) beveiliging. Controleer of er een zekering of stroomverbreker van niet meer dan 120 Volt wisselstroom, 15 A voor de V.S. (240 Volt wisselstroom, 10 A internationaal) gebruikt wordt op de fasegeleiders (alle geleiders die stroom voeren).**

DRAFT - CISCO CONFIDENTIAL

Varoitus

Tämä tuote on riippuvainen rakennukseen asennetusta oikosulkusuojauksesta (ylivirtasuojauksesta). Varmista, että vaihevirtajohtimissa (kaikissa virroitetuissa johtimissa) käytetään Yhdysvalloissa alle 120 voltin, 15 ampeerin ja monissa muissa maissa 240 voltin, 10 ampeerin sulaketta tai suojakytkintä.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifier qu'un fusible ou qu'un disjoncteur de 120 V alt., 15 A U.S. maximum (240 V alt., 10 A international) est utilisé sur les conducteurs de phase (conducteurs de charge).

Warnung

Dieses Produkt ist darauf angewiesen, daß im Gebäude ein Kurzschluß- bzw. Überstromschutz installiert ist. Stellen Sie sicher, daß eine Sicherung oder ein Unterbrecher von nicht mehr als 240 V Wechselstrom, 10 A (bzw. in den USA 120 V Wechselstrom, 15 A) an den Phasenleitern (allen stromführenden Leitern) verwendet wird.

Avvertenza

Questo prodotto dipende dall'installazione dell'edificio per quanto riguarda la protezione contro cortocircuiti (sovracorrente). Verificare che un fusibile o interruttore automatico, non superiore a 120 VCA, 15 A U.S. (240 VCA, 10 A internazionale) sia stato usato nei fili di fase (tutti i conduttori portatori di corrente).

Advarsel

Dette produktet er avhengig av bygningens installasjoner av kortslutningsbeskyttelse (overstrøm). Kontroller at det brukes en sikring eller strømbryter som ikke er større enn 120 VAC, 15 A (USA) (240 VAC, 10 A internasjonalt) på faselederne (alle strømførende ledere).

Aviso

Este produto depende das instalações existentes para protecção contra curto-circuito (sobrecarga). Assegure-se de que um fusível ou disjuntor não superior a 240 VAC, 10A é utilizado nos condutores de fase (todos os condutores de transporte de corrente).

¡Advertencia! **Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) deló propio edificio. Asegurarse de que se utiliza un fusible o interruptor automático de no más de 240 voltios en corriente alterna (VAC), 10 amperios del estándar internacional (120 VAC, 15 amperios del estándar USA) en los hilos de fase (todos aquéllos portadores de corriente).**

Varning! **Denna produkt är beroende av i byggnaden installerat kortslutningsskydd (överströmsskydd). Kontrollera att säkring eller överspänningsskydd används på fasledarna (samtliga strömförande ledare) för internationellt bruk max. 240 V växelström, 10 A (i USA max. 120 V växelström, 15 A).**

Ground Conductor Warning

Warning **Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.**

Waarschuwing **De aardingsleiding mag nooit buiten werking gesteld worden en de apparatuur mag nooit bediend worden zonder dat er een op de juiste wijze geïnstalleerde aardingsleiding aanwezig is. Neem contact op met de bevoegde instantie voor elektrische inspecties of met een elektricien als u er niet zeker van bent dat er voor passende aarding gezorgd is.**

Varoitus **Älä koskaan ohita maajohdinta tai käytä laitteita ilman oikein asennettua maajohdinta. Ota yhteyttä asianmukaiseen sähkötarkastusviranomaiseen tai sähköasentajaan, jos olet epävarma maadoituksen sopivuudesta.**

Attention **Ne jamais rendre inopérant le conducteur de masse ni utiliser l'équipement sans un conducteur de masse adéquatement installé. En cas de doute sur la mise à la masse appropriée disponible, s'adresser à l'organisme responsable de la sécurité électrique ou à un électricien.**

Warnung **Auf keinen Fall den Erdungsleiter unwirksam machen oder das Gerät ohne einen sachgerecht installierten Erdungsleiter verwenden. Wenn Sie sich nicht sicher sind, ob eine sachgerechte Erdung vorhanden ist, wenden Sie sich an den zuständigen elektrischen Fachmann oder einen Elektriker.**

Avvertenza **Non escludere mai il conduttore di protezione né usare l'apparecchiatura in assenza di un conduttore di protezione installato in modo corretto. Se non si sa con certezza che è disponibile un collegamento di messa a terra adeguato, esaminare le Norme CEI pertinenti o rivolgersi a un elettricista qualificato.**

Advarsel **Omgå aldri jordingslederen og bruk aldri utstyret uten riktig montert jordingsleder. Ta kontakt med det riktige organet for elektrisk inspeksjon eller en elektriker hvis du er usikker på om det finnes velegnet jording.**

Aviso **Nunca anule o condutor à terra nem opere o equipamento sem ter um condutor à terra adequadamente instalado. Em caso de dúvida em relação ao sistema de ligação à terra, contacte os serviços locais de inspecção eléctrica ou um electricista qualificado.**

¡Advertencia! No inhabilitar nunca el conductor de tierra ni hacer funcionar el equipo si no existe un conductor de tierra instalado correctamente. Póngase en contacto con una autoridad apropiada de inspección eléctrica o con un electricista competente si no está seguro de que hay una conexión a tierra adecuada.

Varning! Koppla aldrig från jordledningen och använd aldrig utrustningen utan en på lämpligt sätt installerad jordledning. Om det föreligger osäkerhet huruvida lämplig jordning finns skall elektrisk besiktningsauktoritet eller elektriker kontaktas.

Safety Cover Requirement

Warning **The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.**

Waarschuwing Het beveiligingsdeksel is een integraal onderdeel van het product. Deze eenheid niet bedienen als het beveiligingsdeksel niet geïnstalleerd is. Als het deksel niet op zijn plaats is tijdens de bediening, zal dit de veiligheidsaanbevelingen ongeldig maken en een risico op brand en elektrische gevaren vormen.

Varoitus Suojakansi on tärkeä osa tuotetta. Yksikköä ei saa käyttää ilman suojakantta. Yksikön käyttö ilman suojakantta mitätöi turvallisuushyväksynnät ja aiheuttaa tulipalon ja sähköiskun vaaran.

Attention Le plateau de sécurité est une partie intégrante du produit. Pour éviter tout risque de feu ou d'accident électrique, n'utilisez jamais l'unité lorsque ce plateau n'est pas installé. Les garanties de sécurité seraient annulées.

Warnung **Die Sicherheitsabdeckung ist integraler Bestandteil des Produkts. Die Einheit darf nicht ohne installierte Sicherheitsabdeckung betrieben werden. Ein Betreiben der Einheit ohne korrekt installierte Abdeckung verstößt gegen die Sicherheitsnormen und führt zu Brandgefahr sowie elektrischen Sicherheitsrisiken.**

Avvertenza **Attenzione: Il pannello di sicurezza è parte integrante del prodotto. Non fate funzionare il sistema senza il pannello di sicurezza. Far funzionare il sistema senza il pannello invaliderà le certificazioni di sicurezza e può'dare luogo a rischi di incendio e a cortocircuiti.**

Advarsel **Dette sikkerhetsdekselet er en integral del av produktet. Enheten skal ikke brukes uten at sikkerhetsdekselet er montert. Bruk av enheten uten at sikkerhetsdekselet sitter på plass, vil ugyldiggjøre sikkerhetsgodkjenningene, og kan dessuten utgjøre fare for brann og faremomenter i forbindelse med elektrisitet.**

Aviso **A cobertura de segurança é uma parte integral do produto. Não opere a unidade sem a respectiva cobertura de segurança instalada. Operar a unidade sem esta cobertura anulará as aprovações de segurança e constituirá um risco de incêndio e perigo eléctrico.**

¡Advertencia! **La cubierta de seguridad forma parte integral del producto. No haga funcionar este producto sin la cubierta de seguridad instalada, de lo contrario se invalidarían las aprobaciones de seguridad y se correría el riesgo de incendio o de descargas eléctricas.**

Varning! **Skyddshuven är en väsentlig del av produkten. Använd inte enheten utan installerad skyddshuv. Om enheten används utan skyddshuven på plats upphävs alla säkerhetsgodkännanden och risk för brandfara och elektrisk fara föreligger.**

Jewelry Removal Warning

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

Waarschuwing **Alvorens aan apparatuur te werken die met elektrische leidingen is verbonden, sieraden (inclusief ringen, kettingen en horloges) verwijderen. Metalen voorwerpen worden warm wanneer ze met stroom en aarde zijn verbonden, en kunnen ernstige brandwonden veroorzaken of het metalen voorwerp aan de aansluitklemmen lassen.**

Varoitus **Ennen kuin työskentelet voimavirtajohtoihin kytkettyjen laitteiden parissa, ota pois kaikki korut (sormukset, kaulakorut ja kellot mukaan lukien). Metalliesineet kuumenevat, kun ne ovat yhteydessä sähkövirran ja maan kanssa, ja ne voivat aiheuttaa vakavia palovammoja tai hitsata metalliesineet kiinni liitäntänapoihin.**

Attention **Avant d’accéder à cet équipement connecté aux lignes électriques, ôter tout bijou (anneaux, colliers et montres compris). Lorsqu’ils sont branchés à l’alimentation et reliés à la terre, les objets métalliques chauffent, ce qui peut provoquer des blessures graves ou souder l’objet métallique aux bornes.**

Warnung **Vor der Arbeit an Geräten, die an das Netz angeschlossen sind, jeglichen Schmuck (einschließlich Ringe, Ketten und Uhren) abnehmen. Metallgegenstände erhitzen sich, wenn sie an das Netz und die Erde angeschlossen werden, und können schwere Verbrennungen verursachen oder an die Anschlußklemmen angeschweißt werden.**

Avvertenza **Prima di intervenire su apparecchiature collegate alle linee di alimentazione, togliersi qualsiasi monile (inclusi anelli, collane, braccialetti ed orologi). Gli oggetti metallici si riscaldano quando sono collegati tra punti di alimentazione e massa: possono causare ustioni gravi oppure il metallo può saldarsi ai terminali.**

Advarsel **Fjern alle smykker (inkludert ringer, halskjeder og klokker) før du skal arbeide på utstyr som er koblet til kraftledninger. Metallgjenstander som er koblet til kraftledninger og jord blir svært varme og kan forårsake alvorlige brannskader eller smelte fast til polene.**

Aviso **Antes de trabalhar em equipamento que esteja ligado a linhas de corrente, retire todas as jóias que estiver a usar (incluindo anéis, fios e relógios). Os objectos metálicos aquecerão em contacto com a corrente e em contacto com a ligação à terra, podendo causar queimaduras graves ou ficarem soldados aos terminais.**

¡Advertencia! **Antes de operar sobre equipos conectados a líneas de alimentación, quitarse las joyas (incluidos anillos, collares y relojes). Los objetos de metal se calientan cuando se conectan a la alimentación y a tierra, lo que puede ocasionar quemaduras graves o que los objetos metálicos queden soldados a los bornes.**

Varning! **Tag av alla smycken (inklusive ringar, halsband och armbandsur) innan du arbetar på utrustning som är kopplad till kraftledningar. Metallobjekt hettas upp när de kopplas ihop med ström och jord och kan förorsaka allvarliga brännskador; metallobjekt kan också sammansvetsas med kontakterna.**

Lightning Activity Warning

Warning Do not work on the system or connect or disconnect cables during periods of lightning activity.

Waarschuwing Tijdens onweer dat gepaard gaat met bliksem, dient u niet aan het systeem te werken of kabels aan te sluiten of te ontkoppelen.

Varoitus Älä työskentele järjestelmän parissa äläkä yhdistä tai irrota kaapeleita ukkosilmalla.

Attention Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.

Warnung Arbeiten Sie nicht am System und schließen Sie keine Kabel an bzw. trennen Sie keine ab, wenn es gewittert.

Avvertenza Non lavorare sul sistema o collegare oppure scollegare i cavi durante un temporale con fulmini.

Advarsel Utfør aldri arbeid på systemet, eller koble kabler til eller fra systemet når det tordner eller lyner.

Aviso Não trabalhe no sistema ou ligue e desligue cabos durante períodos de mau tempo (trovoada).

¡Advertencia! No operar el sistema ni conectar o desconectar cables durante el transcurso de descargas eléctricas en la atmósfera.

Varning! Vid åska skall du aldrig utföra arbete på systemet eller ansluta eller koppla loss kablar.

SELV Circuit Warning

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.**

Waarschuwing **Om elektrische schokken te vermijden, mogen veiligheidscircuits met extra lage spanning (genaamd SELV = Safety Extra-Low Voltage) niet met telefoonnetwerkspanning (TNV) circuits verbonden worden. LAN (Lokaal netwerk) poorten bevatten SELV circuits en WAN (Regionaal netwerk) poorten bevatten TNV circuits. Sommige LAN en WAN poorten gebruiken allebei RJ-45 connectors. Ga voorzichtig te werk wanneer u kabels verbindt.**

Varoitus **Jotta vältyt sähköiskulta, älä kytke pienjännitteisiä SELV-suojapiirejä puhelinverkkojännitettä (TNV) käyttäviin virtapiireihin. LAN-portit sisältävät SELV-piirejä ja WAN-portit puhelinverkkojännitettä käyttäviä piirejä. Osa sekä LAN- että WAN-porteista käyttää RJ-45-liittimiä. Ole varovainen kytkiessäsi kaapeleita.**

Attention **Pour éviter une électrocution, ne raccordez pas les circuits de sécurité basse tension (Safety Extra-Low Voltage ou SELV) à des circuits de tension de réseau téléphonique (Telephone Network Voltage ou TNV). Les ports du réseau local (LAN) contiennent des circuits SELV et les ports du réseau longue distance (WAN) sont munis de circuits TNV. Certains ports LAN et WAN utilisent des connecteurs RJ-45. Raccordez les câbles en prenant toutes les précautions nécessaires.**

Warnung **Zur Vermeidung von Elektroschock die Sicherheits-Kleinspannungs-Stromkreise (SELV-Kreise) nicht an Fernsprechnetzspannungs-Stromkreise (TNV-Kreise) anschließen. LAN-Ports enthalten SELV-Kreise, und WAN-Ports enthalten TNV-Kreise. Einige LAN- und WAN-Ports verwenden auch RJ-45-Steckverbinder. Vorsicht beim Anschließen von Kabeln.**

Avvertenza **Per evitare scosse elettriche, non collegare circuiti di sicurezza a tensione molto bassa (SELV) ai circuiti a tensione di rete telefonica (TNV). Le porte LAN contengono circuiti SELV e le porte WAN contengono circuiti TNV. Alcune porte LAN e WAN fanno uso di connettori RJ-45. Fare attenzione quando si collegano cavi.**

Advarsel **Unngå å koble lavspenningskretser (SELV) til kretser for telenettspenning (TNV), slik at du unngår elektrisk støt. LAN-utganger inneholder SELV-kretser og WAN-utganger inneholder TNV-kretser. Det finnes både LAN-utganger og WAN-utganger som bruker RJ-45-kontakter. Vær forsiktig når du kobler kabler.**

Aviso **Para evitar choques eléctricos, não conecte os circuitos de segurança de baixa tensão (SELV) aos circuitos de tensão de rede telefónica (TNV). As portas LAN contêm circuitos SELV e as portas WAN contêm circuitos TNV. Algumas portas LAN e WAN usam conectores RJ-45. Tenha o devido cuidado ao conectar os cabos.**

¡Advertencia! **Para evitar la sacudida eléctrica, no conectar circuitos de seguridad de voltaje muy bajo (safety extra-low voltage = SELV) con circuitos de voltaje de red telefónica (telephone network voltage = TNV). Los puertos de redes de área local (local area network = LAN) contienen circuitos SELV, y los puertos de redes de área extendida (wide area network = WAN) contienen circuitos TNV. En algunos casos, tanto los puertos LAN como los WAN usan conectores RJ-45. Proceda con precaución al conectar los cables.**

Varning! **För att undvika elektriska stötar, koppla inte säkerhetskretsar med extra låg spänning (SELV-kretsar) till kretsar med telefonnätspänning (TNV-kretsar). LAN-portar innehåller SELV-kretsar och WAN-portar innehåller TNV-kretsar. Vissa LAN- och WAN-portar är försedda med RJ-45-kontakter. Iaktta försiktighet vid anslutning av kablar.**

TN Power Warning

Warning **The device is designed to work with TN power systems.**

Waarschuwing **Het apparaat is ontworpen om te functioneren met TN energiesystemen.**

Varoitus **Koje on suunniteltu toimimaan TN-sähkövoimajärjestelmien yhteydessä.**

Attention **Ce dispositif a été conçu pour fonctionner avec des systèmes d'alimentation TN.**

Warnung **Das Gerät ist für die Verwendung mit TN-Stromsystemen ausgelegt.**

Avvertenza **Il dispositivo è stato progettato per l’uso con sistemi di alimentazione TN.**

Advarsel **Utstyret er utfomet til bruk med TN-strømsystemer.**

Aviso **O dispositivo foi criado para operar com sistemas de corrente TN.**

¡Advertencia! **El equipo está diseñado para trabajar con sistemas de alimentación tipo TN.**

Varning! **Enheten är konstruerad för användning tillsammans med elkraftssystem av TN-typ.**

Chassis Warning—Rack-Mounting and Servicing

Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Waarschuwing **Om lichamelijk letsel te voorkomen wanneer u dit toestel in een rek monteert of het daar een servicebeurt geeft, moet u speciale voorzorgsmaatregelen nemen om ervoor te zorgen dat het toestel stabiel blijft. De onderstaande richtlijnen worden verstrekt om uw veiligheid te verzekeren:**

- Dit toestel dient onderaan in het rek gemonteerd te worden als het toestel het enige in het rek is.
- Wanneer u dit toestel in een gedeeltelijk gevuld rek monteert, dient u het rek van onderen naar boven te laden met het zwaarste onderdeel onderaan in het rek.
- Als het rek voorzien is van stabiliseringshulpmiddelen, dient u de stabilisatoren te monteren voordat u het toestel in het rek monteert of het daar een servicebeurt geeft.

Varoitus **Kun laite asetetaan telineeseen tai huolletaan sen ollessa telineessä, on noudatettava erityisiä varotoimia järjestelmän vakavuuden säilyttämiseksi, jotta vältytään loukkaantumiselta. Noudata seuraavia turvallisuusohjeita:**

- Jos telineessä ei ole muita laitteita, aseta laite telineen alaosaan.
- Jos laite asetetaan osaksi täytettyyn telineeseen, aloita kuormittaminen sen alaosasta kaikkein raskaimmalla esineellä ja siirry sitten sen yläosaan.
- Jos telinettä varten on vakaimet, asenna ne ennen laitteen asettamista telineeseen tai sen huoltamista siinä.

Attention **Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel :**

- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.
- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.
- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

Warnung **Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:**

- Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.
- Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.
- Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

Avvertenza **Per evitare infortuni fisici durante il montaggio o la manutenzione di questa unità in un supporto, occorre osservare speciali precauzioni per garantire che il sistema rimanga stabile. Le seguenti direttive vengono fornite per garantire la sicurezza personale:**

- Questa unità deve venire montata sul fondo del supporto, se si tratta dell'unica unità da montare nel supporto.
- Quando questa unità viene montata in un supporto parzialmente pieno, caricare il supporto dal basso all'alto, con il componente più pesante sistemato sul fondo del supporto.
- Se il supporto è dotato di dispositivi stabilizzanti, installare tali dispositivi prima di montare o di procedere alla manutenzione dell'unità nel supporto.

Advarsel **Unngå fysiske skader under montering eller reparasjonsarbeid på denne enheten når den befinner seg i et kabinett. Vær nøye med at systemet er stabilt. Følgende retningslinjer er gitt for å verne om sikkerheten:**

- Denne enheten bør monteres nederst i kabinettet hvis dette er den eneste enheten i kabinettet.
- Ved montering av denne enheten i et kabinett som er delvis fylt, skal kabinettet lastes fra bunnen og opp med den tyngste komponenten nederst i kabinettet.
- Hvis kabinettet er utstyrt med stabiliseringsutstyr, skal stabilisatorene installeres før montering eller utføring av reparasjonsarbeid på enheten i kabinettet.

Aviso **Para se prevenir contra danos corporais ao montar ou reparar esta unidade numa estante, deverá tomar precauções especiais para se certificar de que o sistema possui um suporte estável. As seguintes directrizes ajudá-lo-ão a efectuar o seu trabalho com segurança:**

- Esta unidade deverá ser montada na parte inferior da estante, caso seja esta a única unidade a ser montada.
- Ao montar esta unidade numa estante parcialmente ocupada, coloque os itens mais pesados na parte inferior da estante, arrumando-os de baixo para cima.
- Se a estante possuir um dispositivo de estabilização, instale-o antes de montar ou reparar a unidade.

¡Advertencia! **Para evitar lesiones durante el montaje de este equipo sobre un bastidor, o posteriormente durante su mantenimiento, se debe poner mucho cuidado en que el sistema quede bien estable. Para garantizar su seguridad, proceda según las siguientes instrucciones:**

- Colocar el equipo en la parte inferior del bastidor, cuando sea la única unidad en el mismo.
- Cuando este equipo se vaya a instalar en un bastidor parcialmente ocupado, comenzar la instalación desde la parte inferior hacia la superior colocando el equipo más pesado en la parte inferior.
- Si el bastidor dispone de dispositivos estabilizadores, instalar éstos antes de montar o proceder al mantenimiento del equipo instalado en el bastidor.

Varning! **För att undvika kroppsskada när du installerar eller utför underhållsarbete på denna enhet på en ställning måste du vidta särskilda försiktighetsåtgärder för att försäkra dig om att systemet står stadigt. Följande riktlinjer ges för att trygga din säkerhet:**

- Om denna enhet är den enda enheten på ställningen skall den installeras längst ned på ställningen.
- Om denna enhet installeras på en delvis fylld ställning skall ställningen fyllas nedifrån och upp, med de tyngsta enheterna längst ned på ställningen.
- Om ställningen är försedd med stabiliseringsdon skall dessa monteras fast innan enheten installeras eller underhålls på ställningen.

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