



About This Guide

This preface describes the objectives, audience, organization, and conventions of the *Cisco MGX 8850 and MGX 8950 Switch Software Configuration Guide*.

Objectives

This guide describes how to configure the MGX 8850/8950 switch software and how to perform some operating procedures after the switch begins operation.

Audience

The *Cisco MGX 8850 and MGX 8950 Switch Software Configuration Guide* provides network operators and administrators with information to set up the MGX 8850 switches to run Release 2.1 software.

Organization

The major sections of this document are as follows:

- Chapter 1, “Preparing for Configuration,” describes information you will need during configuration and provides planning guidelines for configuration.
- Chapter 2, “Configuring General Switch Features,” describes how to configure features that apply to the entire switch, rather than to a single card, line, or trunk.
- Chapter 3, “Preparing AXSM Cards and Lines for Communication,” describes how to configure AXSM cards, card and line redundancy, and individual lines.
- Chapter 4, “Preparing RPM-PR Cards for Operation,” describes how to initialize RPM-PR cards in the switch.
- Chapter 5, “Provisioning AXSM Communication Links,” explains how to configure ATM connections on the lines configured in Chapter 3, “Preparing AXSM Cards and Lines for Communication.”
- Chapter 6, “Managing PNNI Nodes and PNNI Routing,” provides information you can use to optimize PNNI routing.
- Chapter 7, “Switch Operating Procedures,” describes how to manage your configuration after the switch is configured and during day-to-day operation.

- Chapter 8, “Switch Maintenance Procedures,” provides procedures for adding and replacing cards after the initial installation and configuration of the switch.
- Chapter 9, “Viewing and Responding to Alarms,” describes the controls available on the switch and how to view switch alarms.
- Appendix A, “Downloading and Installing Software Upgrades,” explains how to upgrade switch software.
- Appendix B, “PXM45 Backup Boot Procedures,” describes special procedures you can use to manage the switch when only the boot software is loaded.
- Appendix C, “Supporting and Using Additional CLI Access Options,” describes alternative ways to connect management workstations to the switch.

Related Documentation

The following Cisco publications contain additional information related to the operation of this product and associated equipment in a Cisco WAN switching network.

Cisco WAN Manager Release 11

The product documentation for the Cisco WAN Manager (CWM) network management system for Release 11 is listed in Table 1.

Table 1 Cisco WAN Manager Release 11 Documentation

Title	Description
<i>Cisco WAN Manager Installation Guide for Solaris 7, Release 11</i> DOC-7813567=	Provides procedures for installing Release 11 of the CWM network management system and Release 5.4 of CiscoView.
<i>Cisco WAN Manager User’s Guide, Release 11</i> DOC-78-13568=	Describes how to use the CWM Release 11 software, which consists of user applications and tools for network management, connection management, network configuration, statistics collection, and security management.
<i>Cisco WAN Manager SNMP Service Agent, Release 11</i> DOC-7813569=	Provides information about the CWM Simple Network Management Protocol Service Agent, an optional adjunct to CWM that is used for managing Cisco WAN switches using SNMP.
<i>Cisco WAN Manager Database Interface Guide, Release 11</i> DOC-7813542=	Provides information about accessing the CWM Informix OnLine database that is used to store information about the network elements.

Cisco MGX 8850 (PXM45) Multiservice Switch Release 3

The product documentation for the installation and operation of the MGX 8850 Multiservice Switch for Release 3 is listed in Table 2.

Table 2 Cisco MGX 8850 (PXM45) Multiservice Switch Release 3 Documentation

Title	Description
<p><i>Cisco MGX 8850 Hardware Installation Guide, Release 3 (PXM45/B and PXM1E)</i></p> <p>DOC-7814250=</p>	<p>Describes how to install the MGX 8850 multiservice switch. This guide explains what the switch does and covers site preparation, grounding, safety, card installation, and cabling. The MGX 8850 switch uses either a PXM45 or a PXM1E controller card and provides support for both broadband and narrow band service modules.</p>
<p><i>Cisco MGX 8850, MGX 8950, and MGX 8830 Command Reference (PXM45/B and PXM1E), Release 3</i></p> <p>DOC-7814245=</p>	<p>Describes how to use the PXM and AXSM commands that are available for the MGX 8850, MGX 8950, and MGX 8830 switches.</p>
<p><i>Cisco Frame Relay Software Configuration Guide and Command Reference for the MGX 8850 FRSM12 Card, Release 3</i></p> <p>DOC-7810327=</p>	<p>Describes how to use the high-speed Frame Relay (FRSM12) commands that are available for the MGX 8850 switch.</p>
<p><i>Cisco MGX 8850 (PXM45) and MGX 8950 Software Configuration Guide, Release 3</i></p> <p>DOC-7814577=</p>	<p>Describes how to configure MGX 8850 and MGX 8950 switches with PXM45 controller cards to operate as ATM edge or core switches. This guide also provides some operation and maintenance procedures.</p>
<p><i>Cisco MGX and SES PNNI Network Planning Guide for MGX Release 3 and SES Release 3</i></p> <p>DOC-7814261=</p>	<p>Provides guidelines for planning a PNNI network that uses the MGX 8850 and the MGX 8950 switches and the BPX 8600 switches. When connected to a PNNI network, each BPX 8600 series switch requires a SES for PNNI route processing.</p>
<p><i>Cisco VISM Installation and Configuration Guide, Release 3</i></p> <p>OL-2521-01 (online only)</p>	<p>Describes how to install and configure VISM¹ in several MGX 8000 Series switches. This guide is available online only.</p>
<p><i>Cisco MGX Route Processor Module (RPM-XF) Installation and Configuration Guide, Release 3</i></p> <p>OL-2768-01 (online only)</p>	<p>Describes how to install and configure the MGX Route Processor Module (RPM-XF) in the MGX 8850 Release 3 switch. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.</p>
<p><i>Cisco MGX Route Processor Module (RPM-PR) Installation and Configuration Guide, Release 2.1</i></p> <p>DOC-7812510=</p>	<p>Describes how to install and configure the MGX Route Processor Module (RPM-PR) in the MGX 8850 Release 2.1 and later switches. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.</p>
<p><i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i></p> <p>78-14243-01</p>	<p>Provides the latest feature, upgrade, and compatibility information, as well as known and resolved anomalies for RPM-PR.</p>

1. VISM = Voice Interworking Service Module

Cisco MGX 8850 (PXM1E) Multiservice Switch Release 3

The product documentation for the installation and operation of the Cisco MGX 8850 (PXM1E) Multiservice Switch Release 3 is listed in Table 3.

Table 3 Cisco MGX 8850 (PXM1E) Multiservice Switch Release 3 Documentation

Title	Description
<p><i>Cisco MGX 8850 Hardware Installation Guide (PXM45/B and PXM1E), Release 3</i> DOC-7814250=</p>	<p>Describes how to install the MGX 8850 multiservice switch. This guide explains what the switch does and covers site preparation, grounding, safety, card installation, and cabling. The MGX 8850 switch uses either a PXM45 or a PXM1E controller card and provides support for both broadband and narrow band service modules.</p>
<p><i>Cisco MGX 8850, MGX 8950, and MGX 8830 Command Reference (PXM45/B and PXM1E), Release 3</i> DOC-7814245=</p>	<p>Describes how to use the PXM and AXSM commands that are for the the MGX 8850, MGX 8950, and MGX 8830 switches.</p>
<p><i>Cisco MGX 8850 (PXM1E) and MGX 8830 Software Configuration Guide, Release 3</i> DOC-7814248=</p>	<p>Describes how to configure MGX 8850 and MGX 8830 switches with PXM1E controller cards to operate as ATM edge switches. This guide also provides some operation and maintenance procedures.</p>
<p><i>Cisco Frame Relay Software Configuration Guide and Command Reference for MGX Switches (PXM1E)</i> DOC-7814255=</p>	<p>Provides software configuration procedures for provisioning connections and managing the FRSM cards supported in this release. Also provides command descriptions for all FRSM commands.</p>
<p><i>Cisco MGX and SES PNNI Network Planning Guide for MGX Release 3 and SES Release 3</i> DOC-7814261=</p>	<p>Provides guidelines for planning a PNNI network that uses the MGX 8850 and the MGX 8950 switches and the BPX 8600 switches. When connected to a PNNI network, each BPX 8600 series switch requires a SES for PNNI route processing.</p>
<p><i>Cisco MGX Route Processor Module (RPM-PR) Installation and Configuration Guide, Release 2.1</i> DOC-7812510=</p>	<p>Describes how to install and configure the MGX Route Processor Module (RPM-PR) in the MGX 8850 Release 3 switch. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.</p>
<p><i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i> 78-14243-01</p>	<p>Provides the latest compatibility information, as well as known and resolved anomalies for RPM-PR.</p>

Cisco MGX 8950 Multiservice Switch Release 3

The product documentation for the installation and operation of the MGX 8950 Multiservice Switch for Release 3 is listed in Table 4.

Table 4 Cisco MGX 8950 Multiservice Switch Release 3 Documentation

Title	Description
<i>Cisco MGX 8950 Hardware Installation Guide, Release 3</i> DOC-7814147=	Describes how to install the MGX 8950 core switch. This guide explains what the switch does and covers site preparation, grounding, safety, card installation, and cabling. The MGX 8950 switch uses a PXM45/B controller card and provides support for broadband service modules.
<i>Cisco MGX 8850, MGX 8950, and MGX 8830 Command Reference (PXM45/B and PXM1E), Release 3</i> DOC-7814245=	Describes how to use the PXM and AXSM commands that are available for the MGX 8850, MGX 8950, and MGX 8830 switches.
<i>Cisco MGX 8850 (PXM45) and MGX 8950 Software Configuration Guide, Release 3</i> DOC-7814577=	Describes how to configure MGX 8850 and MGX 8950 switches with PXM45 controller cards to operate as ATM edge or core switches. This guide also provides some operation and maintenance procedures.
<i>Cisco MGX and SES PNNI Network Planning Guide for MGX Release 3 and SES Release 3</i> DOC-7814261=	Provides guidelines for planning a PNNI network that uses the MGX 8850 and the MGX 8950 switches and the BPX 8600 switches. When connected to a PNNI network, each BPX 8600 series switch requires a SES for PNNI route processing.
<i>Cisco MGX Route Processor Module (RPM-PR) Installation and Configuration Guide, Release 2.1</i> DOC-7812510=	Describes how to install and configure the MGX Route Processor Module (RPM-PR) in the MGX 8950. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.
<i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i> 78-14243-01	Provides the latest feature, upgrade, and compatibility information, as well as known and resolved anomalies for RPM-PR.

Service Expansion Shelf PNNI Controller Release 3

The product documentation for the installation and operation of the Service Expansion Shelf (SES) PNNI Controller is listed in Table 5.

Table 5 SES PNNI Controller Release 3 Documentation

Title	Description
<i>Cisco SES PNNI Controller Software Configuration Guide, Release 3</i> DOC-7814258=	Describes how to configure, operate, and maintain the SES PNNI Controller.
<i>Cisco SES PNNI Controller Command Reference, Release 3</i> DOC-7814260=	Provides a description of the commands used to configure and operate the SES PNNI Controller.
<i>Cisco MGX and SES PNNI Network Planning Guide for MGX Release 3 and SES Release 3</i> DOC-7814261=	Provides guidelines for planning a PNNI network that uses the MGX 8850 and the MGX 8950 switches and the BPX 8600 switches. When connected to a PNNI network, each BPX 8600 series switch requires a SES for PNNI route processing.

Cisco MGX 8830 Multiservice Switch Release 3

The product documentation for the installation and operation of the MGX 8830 Multiservice Switch Release 3 is listed in Table 6.

Table 6 Cisco MGX 8830 Multiservice Switch Release 3 Documentation

Title	Description
<i>Cisco MGX 8830 Hardware Installation Guide, Release 3</i> DOC-7814547=	Describes how to install the MGX 8830 edge switch. This guide explains what the switch does and covers site preparation, grounding, safety, card installation, and cabling. The MGX 8830 switch uses a PXM1E controller card and provides PNNI support for narrow band service modules.
<i>Cisco MGX 8850 (PXM1E) and MGX 8830 Software Configuration Guide, Release 3</i> DOC-7814248=	Describes how to configure MGX 8850 and MGX 8830 switches with PXM1E controller cards to operate as ATM edge switches. This guide also provides some operation and maintenance procedures.
<i>Cisco MGX 8850, MGX 8950, and MGX 8830 Command Reference (PXM45/B and PXM1E), Release 3</i> DOC-7814245=	Describes how to use the PXM and AXSM commands that are available in the CLI of the MGX 8850, MGX 8950, and MGX 8830 switches.
<i>Cisco Frame Relay Software Configuration Guide and Command Reference for MGX Switches (PXM1E)</i> DOC-7814255=	Provides software configuration procedures for provisioning connections and managing the FRSM cards supported in this release. Also provides command descriptions for all FRSM commands.
<i>Cisco MGX and SES PNNI Network Planning Guide for MGX Release 3 and SES Release 3</i> DOC-7814261=	Provides guidelines for planning a PNNI network that uses the MGX 8850 and the MGX 8950 switches and the BPX 8600 switches. When connected to a PNNI network, each BPX 8600 series switch requires a SES for PNNI route processing.
<i>Cisco MGX Route Processor Module (RPM-PR) Installation and Configuration Guide, Release 2.1</i> DOC-7812510=	Describes how to configure the MGX Route Processor Module (RPM-PR) in the MGX 8830 Release 3 switch. Also provides troubleshooting, maintenance, and basic Cisco IOS configuration information. (For RPM-PR software configuration information only.)
<i>Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1</i> DOC-7812278=	Describes how to install the MGX Route Processor Module (RPM-PR) in the MGX 8230 Release 1 switch. Also provides site preparation, troubleshooting and maintenance information, cable and connector specifications, and basic RPM-PR slot and redundancy limitations and constraints. (For RPM-PR hardware installation information only.)
<i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i> 78-14243-01	Provides compatibility information, as well as known and resolved anomalies for RPM-PR.

Cisco WAN Switching Software Release 9.3.40

The product documentation for the installation and operation of the Cisco WAN Switching Software Release 9.3.40 is listed in Table 7.

Table 7 Cisco WAN Switching Software Release 9.3.40 Documentation

Title	Description
<i>Cisco BPX 8600 Series Installation and Configuration, Release 9.3.30</i> DOC-7812907=	Provides a general description and technical details of the BPX broadband switch.
<i>Cisco WAN Switching Command Reference, Release 9.3.30</i> DOC-7812906=	Provides detailed information on the general command line interface commands.
<i>Cisco IGX 8400 Series Installation Guide</i> OL-1165-01 (online only)	Provides hardware installation and basic configuration information for IGX 8400 Series switches that are running Switch Software Release 9.3.30 or earlier.
<i>Cisco IGX 8400 Series Provisioning Guide</i> OL-1166-01 (online only)	Provides information for configuration and provisioning of selected services for the IGX 8400 Series switches that are running Switch Software Release 9.3.40 or earlier.
<i>Cisco IGX 8400 Series Regulatory Compliance and Safety Information</i> DOC-7813227=	Provides regulatory compliance, product warnings, and safety recommendations for the IGX 8400 Series switch.
<i>9.3.40 Version Software Release Notes for Cisco WAN Switching System Software</i> 78-13538-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

MGX 8850 (PXM1) Multiservice Switch Release 1.2.10

The product documentation for the installation and operation of the MGX 8850 (PXM1) Multiservice Switch is listed in Table 8.

Table 8 MGX 8850 (PXM1) Multiservice Switch Release 1.2.10 Documentation

Title	Description
<i>Cisco MGX 8850 Multiservice Switch Installation and Configuration, Release 1.1.3</i> DOC-7811223=	Provides installation instructions for the MGX 8850 multiservice switch.
<i>Cisco MGX 8800 Series Switch Command Reference, Release 1.1.3</i> DOC-7811210=	Provides detailed information on the general command line for the MGX 8850 switch.
<i>Cisco MGX 8800 Series Switch System Error Messages, Release 1.1.3</i> DOC-7811240=	Provides error message descriptions and recovery procedures.
<i>Cisco MGX 8850 Multiservice Switch Overview, Release 1.1.3</i> OL-1154-01 (online only)	Provides a technical description of the system components and functionality of the MGX 8850 multiservice switch from a technical perspective.

Table 8 MGX 8850 (PXM1) Multiservice Switch Release 1.2.10 Documentation (continued)

Title	Description
<i>Cisco VISM Installation and Configuration Guide, Release 3</i> OL-2521-01 (online only)	Describes how to install and configure VISM in several MGX 8000 Series switches. This guide is available online only.
<i>Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1</i> DOC-7812278=	Describes how to install and configure the MGX Route Processor Module (RPM/B and RPM-PR) in the MGX 8850, MGX 8250, and MGX 8230 Release 1 switch. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.
<i>Release Notes for Cisco MGX 8230, MGX 8250, and MGX 8850 (Release 1), Software Version 1.2.10 (PXM1)</i> 78-14247-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
<i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i> 78-14243-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

MGX 8250 Edge Concentrator Release 1.2.10

The documentation for the installation and operation of the MGX 8250 Edge Concentrator is listed in Table 9.

Table 9 MGX 8250 Edge Concentrator Release 1.2.10 Documentation

Title	Description
<i>Cisco MGX 8250 Edge Concentrator Installation and Configuration, Release 1.1.3</i> DOC-7811217=	Provides installation instructions for the MGX 8250 Edge Concentrator.
<i>Cisco MGX 8250 Multiservice Gateway Command Reference, Release 1.1.3</i> DOC-7811212=	Provides detailed information on the general command line interface commands.
<i>Cisco MGX 8250 Multiservice Gateway Error Messages, Release 1.1.3</i> DOC-7811216=	Provides error message descriptions and recovery procedures.
<i>Cisco MGX 8250 Edge Concentrator Overview, Release 1.1.3</i> DOC-7811576=	Describes the system components and functionality of the MGX 8250 Edge Concentrator from a technical perspective.
<i>Cisco VISM Installation and Configuration Guide, Release 3</i> OL-2521-01 (online only)	Describes how to install and configure VISM in several MGX 8000 Series switches. This guide is available online only.

Table 9 MGX 8250 Edge Concentrator Release 1.2.10 Documentation (continued)

Title	Description
<i>Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1</i> DOC-7812278=	Describes how to install and configure the MGX Route Processor Module (RPM/B and RPM-PR) in the MGX 8850, MGX 8250, and MGX 8230 Release 1 switch. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.
<i>Release Notes for Cisco MGX 8230, MGX 8250, and MGX 8850 (Release 1), Software Version 1.2.10 (PXM1)</i> 78-14247-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
<i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i> 78-14243-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

MGX 8230 Edge Concentrator Release 1.2.10

The documentation for the installation and operation of the MGX 8230 Edge Concentrator is listed in Table 10.

Table 10 MGX 8230 Edge Concentrator Documentation

Title	Description
<i>Cisco MGX 8230 Edge Concentrator Installation and Configuration, Release 1.1.3</i> DOC-7811215=	Provides installation instructions for the MGX 8230 Edge Concentrator.
<i>Cisco MGX 8230 Multiservice Gateway Command Reference, Release 1.1.3</i> DOC-7811211=	Provides detailed information on the general command line interface commands.
<i>Cisco MGX 8230 Multiservice Gateway Error Messages, Release 1.1.3</i> DOC-78112113=	Provides error message descriptions and recovery procedures.
<i>Cisco MGX 8230 Edge Concentrator Overview, Release 1.1.3</i> DOC-7812899=	Provides a technical description of the system components and functionality of the MGX 8250 Edge Concentrator from a technical perspective.
<i>Cisco VISM Installation and Configuration Guide, Release 3</i> OL-2521-01 (online only)	Describes how to install and configure VISM in several MGX 8000 Series switches. This guide is available online only.
<i>Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1</i> DOC-7812278=	Describes how to install and configure the MGX Route Processor Module (RPM/B and RPM-PR) in the MGX 8850, MGX 8250, and MGX 8230 Release 1 switch. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic Cisco IOS configuration information.

Table 10 *MGX 8230 Edge Concentrator Documentation (continued)*

Title	Description
<i>Release Notes for Cisco MGX 8230, MGX 8250, and MGX 8850 (Release 1), Software Version 1.2.10 (PXM1)</i> 78-14247-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
<i>Release Notes for Cisco MGX Route Processor Module (RPM/B and RPM-PR) for Release 1.2.10 and Release 3</i> 78-14243-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

Conventions

This publication uses the following conventions.

Command descriptions use these conventions:

- Commands and keywords are in **boldface**.
- Arguments for which you supply values are in *italics*.
- Required command arguments are inside angle brackets (< >).
- Optional command arguments are in square brackets ([]).
- Alternative keywords or variables are separated by vertical bars (|).

Examples use these conventions:

- Terminal sessions and information the system displays are in `screen` font.
- Information you enter is in **boldface screen** font.
- Nonprinting characters, such as passwords, are in angle brackets (< >).
- Default responses to system prompts are in square brackets ([]).

Notes, cautions, and tips use the following conventions and symbols



Note

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.



Caution

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



Tips

Provides additional information that can help you understand the product or complete a task more efficiently.

**Warning**

This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and familiar with standard practices for preventing accidents. (To see translated versions of this warning, refer to the *Regulatory Compliance and Safety Information* document that accompanied the product.)

Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

World Wide Web

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

<http://www.cisco.com>

Translated documentation is available at the following URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped 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 through an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

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

Documentation Feedback

If you are reading Cisco product documentation on Cisco.com, you can submit technical comments electronically. Click the **Fax** or **E-mail** option under the “Leave Feedback” at the bottom of the Cisco Documentation home page.

You can e-mail your comments to bug-doc@cisco.com.

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

Cisco Systems
Attn: Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

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 by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you to

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No work-around is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No work-around is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

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

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

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

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

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

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.