



About This Guide

This section discusses the objectives, audience, organization, and conventions of the *Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1*.

Objectives

This publication will step you through the initial site preparation and installation of the Cisco MGX Route Processor Module (RPM) for both the RPM/B and RPM-PR. Troubleshooting, maintenance procedures, and cable specifications are also provided.

Only basic software configuration information is included in this publication. For detailed software configuration information, refer to the MGX 8230, MGX 8250, MGX 8850 and Cisco IOS configuration and command reference publications. These publications are available on the Documentation CD-ROM that comes with your RPM card, or you can order printed copies.

Audience

This publication is designed for a person installing the RPM, who should be familiar with electronic circuitry and wiring practices, and has experience as an electronic or electromechanical technician.

Organization

The major sections of this publication are as follows:

Chapter	Chapter Title	Description
Chapter 1	Overview of the MGX RPM	Discusses the features and specifications of the Route Processor Module (RPM).
Chapter 2	Preparing to Install the MGX RPM	Discusses environmental requirements, safety recommendations, and describes the various ports and how to prepare for connections between networks and ports.
Chapter 3	Installing the MGX RPM	Includes basic installation information and describes how to make connections to LANs, the main processor switch control module (PXM), and console terminal.

Chapter	Chapter Title	Description
Chapter 4	Cabling the MGX RPM Back Cards	Provides an overview of the RJ45-4E/B, FE, and FDDI back card functionality, cabling and connectors and procedures for making port adapter connections.
Chapter 5	Configuring the MGX RPM	Describes the initial configuration of the RPM using Configuration Mode or AutoInstall. This chapter also explains how to configure all port adapter interfaces, followed by procedures for configuring permanent virtual circuits (PVCs) and connections with other RPMs.
Chapter 6	Setting Up Connections Between Other Devices and the RPM	Describes how to set up connections between the RPM and the PXM, service modules or BPX.
Chapter 7	Configuring MPLS and VPN	Describes MPLS and VPN features used with the RPM in MGX 8230, MGX 8250, and MGX 8850 switches.
Appendix A	Maintaining the MGX RPM	Provides selected maintenance procedures, including password recovery, virtual configuration register settings, and system code upgrades.
Appendix B	Cable and Connector Specifications	Provides pinouts for the various ports on the RPM and associated cables.
Appendix C	IOS and Configuration Basics	Provides information on the IOS operating system and configuring the RPM card.

Conventions

This publication uses the following conventions to convey instructions and information.

Command descriptions use these conventions:

- Commands and keywords are in **boldface**.
- Arguments for which you supply values are in *italics*.
- Elements in square brackets ([]) are optional.
- Alternative keywords are grouped in braces ({ }) and 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 ([]).



Note

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



Caution

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

**Tip**

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

Warning Definition

**Warning**

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.

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.

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.

Attention

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.

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.

Avvertenza

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. 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.

Advarsel

Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.

Aviso

Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. 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.

¡Atención! 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.

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.

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 10.5 Documentation

The product documentation for the Cisco WAN Manager (CWM) network management system for Release 10.5 is listed in [Table 1](#).

Table 1 *Cisco WAN Manager Release 10.5 Documentation*

Title	Description
<i>Cisco WAN Manager Installation Guide for Solaris, Release 10.5</i> DOC-7812948=	Provides procedures for installing Release 10 of the CWM network management system and Release 5.3 of CiscoView.
<i>Cisco WAN Manager User's Guide, Release 10.5</i> DOC-7812945=	Describes how to use the CWM Release 10 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 10.5</i> DOC-7812947=	Provides information about the CWM Simple Network Management Protocol Service Agent, an optional adjunct to CWM used for managing Cisco WAN switches using SNMP.
<i>Cisco WAN Manager Database Interface Guide, Release 10.5</i> DOC-7812944=	Provides information about accessing the CWM Informix OnLine database that is used to store information about the network elements.

Table 2 WAN CiscoView Release 10 Documentation

Title	Description
<i>WAN CiscoView Release 3 for the MGX 8850 Edge Switch, Release 1</i> DOC-7811242=	Provides instructions for using this network management software application that allows you to perform minor configuration and troubleshooting tasks.
<i>WAN CiscoView Release 3 for the MGX 8250 Edge Concentrator, Release 1</i> DOC-7811241=	Provides instructions for using this network management software application that allows you to perform minor configuration and troubleshooting tasks.
<i>WAN CiscoView Release 3 for the MGX 8230 Multiservice Gateway, Release 1</i> DOC-7810926=	Provides instructions for using this network management software application that allows you to perform minor configuration and troubleshooting tasks.

Cisco MGX 8850 Release 2.1 Documentation

The product documentation for the installation and operation of the MGX 8850 Release 2.1 switch is listed in [Table 3](#).

Table 3 Cisco MGX 8850 Switch Release 2.1 Documentation

Title	Description
<i>Cisco MGX 8850 Routing Switch Hardware Installation Guide, Release 2.1</i> DOC-7812561=	Describes how to install the MGX 8850 routing switch. It explains what the switch does, and covers site preparation, grounding, safety, card installation, and cabling.
<i>Cisco MGX 8850 Switch Command Reference, Release 2.1</i> DOC-7812563=	Describes how to use the commands that are available in the CLI ¹ of the MGX 8850 switches.
<i>Cisco MGX 8850 Switch Software Configuration Guide, Release 2.1</i> DOC-7812551=	Describes how to configure the MGX 8850 switches to operate as ATM edge and core switches. This guide also provides some operation and maintenance procedures.
<i>Cisco MGX 8850 SNMP Reference, Release 2.1</i> DOC-7812562=	Provides information on all supported MIB ² objects, support restrictions, traps, and alarms for the AXSM, PXM45, and RPM. PNNI is also supported.
<i>Cisco MGX and SES PNNI Network Planning Guide</i> DOC-7813543=	Provides guidelines for planning a PNNI network that uses the MGX 8850 switches and the BPX 8600 switches. When connected to a PNNI network, each BPX 8600 series switch requires a Service Expansion Shelf (SES) for PNNI route processing.
<i>Cisco MGX Route Processor Module 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 8850 Release 2.1 switch. Also provides site preparation, troubleshooting, maintenance, cable and connector specifications, and basic IOS configuration information.

1. CLI = command line interface

2. MIB = Management Information Base

SES PNNI Release 1.1 Documentation

The product documentation that contains information for the understanding, the installation, and the operation of the Service Expansion Shelf (SES) PNNI Controller is listed in [Table 4](#).

Table 4 SES PNNI Controller Release 1.1 Documentation

Title	Description
<i>Cisco SES PNNI Controller Software Configuration Guide, Release 1.1</i> DOC-7813539=	Describes how to configure, operate, and maintain the SES PNNI Controller.
<i>Cisco SES PNNI Controller Software Command Reference, Release 1.1</i> DOC-7813541=	Provides a description of the commands used to configure and operate the SES PNNI Controller.
<i>Cisco MGX and SES PNNI Network Planning Guide</i> DOC-7813543=	Provides guidelines for planning a PNNI network that uses the MGX 8850 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 WAN Switching Software, Release 9.3 Documentation

The product documentation for the installation and operation of the Cisco WAN Switching Software Release 9.3 is listed in [Table 5](#).

Table 5 Cisco WAN Switching Release 9.3 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, Release 9.3.30</i> OL-1165-01 (online only)	Provides hardware installation and basic configuration information for IGX 8400 Series switches running Switch Software Release 9.3.30 or earlier.
<i>Cisco IGX 8400 Series Provisioning Guide, Release 9.3.30</i> OL-1166-01 (online only)	Provides information for configuration and provisioning of selected services for the IGX 8400 Series switches running Switch Software Release 9.3.30 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.

MGX 8850 Multiservice Switch, Release 1.1.40 Documentation

The product documentation that contains information for the installation and operation of the MGX 8850 Multiservice Switch is listed in [Table 6](#).

Table 6 MGX 8850 Multiservice Gateway 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.
<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 IOS configuration information.
<i>1.1.40 Version Software Release Notes Cisco WAN MGX 8850, MGX 8230, and MGX 8250 Switches</i> DOC-7813594=	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

MGX 8250 Edge Concentrator, Release 1.1.40 Documentation

The documentation that contains information for the installation and operation of the MGX 8250 Edge Concentrator is listed in [Table 7](#).

Table 7 MGX 8250 Multiservice Gateway 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.

Table 7 MGX 8250 Multiservice Gateway Documentation (continued)

Title	Description
<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 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 IOS configuration information.
<i>1.1.40 Version Software Release Notes Cisco WAN MGX 8850, MGX 8230, and MGX 8250 Switches</i> DOC-7813594=	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

MGX 8230 Multiservice Gateway, Release 1.1.40 Documentation

The documentation that contains information for the installation and operation of the MGX 8230 Edge Concentrator is listed in [Table 8](#).

Table 8 MGX 8230 Multiservice Gateway 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.

Table 8 MGX 8230 Multiservice Gateway 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 IOS configuration information.
<i>1.1.40 Version Software Release Notes Cisco WAN MGX 8850, MGX 8230, and MGX 8250 Switches</i> DOC-7813594=	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.

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 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 **Feedback** at the top of the Cisco Documentation home page. After you complete the form, print it out and fax it to Cisco at 408 527-0730.

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 workaround 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 workaround 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.

■ Obtaining Technical Assistance