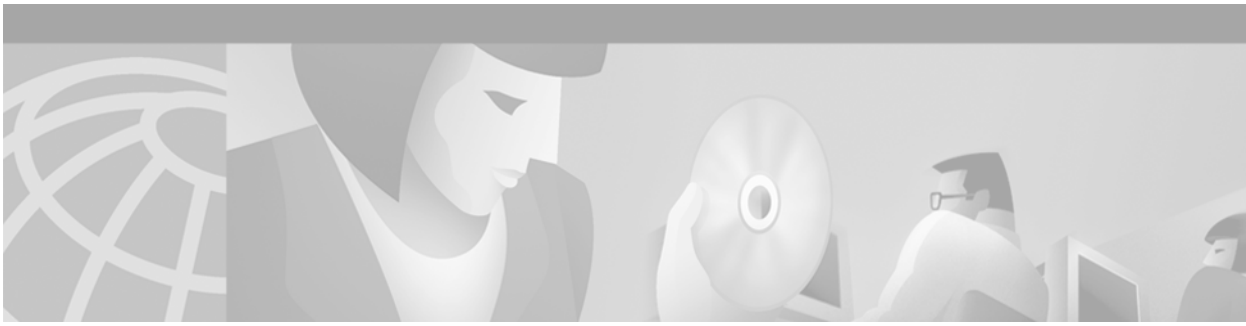

About This Guide

This section discusses the objectives, audience, organization, and conventions of the *Cisco MGX Route Processor Module (RPM-XF) Installation and Configuration Guide, Release 3*.

Objectives

This publication provides instructions for the initial site preparation and installation of the Cisco MGX Route Processor Module (RPM-XF). 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 8850 and Cisco IOS configuration and command reference publications. These publications are available on the Documentation CD-ROM that comes with your RPM-XF, or you can order printed copies.

Audience

This document was written for engineers, users, network administrators, and technicians that are familiar with Cisco MGX Series switches and Cisco routers. Readers should be familiar with electronic circuitry and wiring practices.

Revision History

The updates, additions, and changes to this document are listed in this section by release and chapter.

Note The Revision History was begun with Release 4.

Release 4

- Chapter 5, “Installing and Configuring the MGX-1OC12POS and the MGX-2OC12POS Back Cards”
  - Added new section: MGX-2OC12POS Overview and Features, page 5-4
  - Revised Installation Guidelines, page 5-6.
  - Revised section: Software Configuration, page 5-6
- Chapter 6, “Installing and Configuring the Cisco MGX-1GE and MGX-2GE Gigabit Ethernet Back Cards”
  - Revised chapter to describe both the MGX-1GE and the MGX-2GE cards.
  - Revised section: MGX-1GE Features and Specifications, page 6-2
  - Added new section: MGX-2GE Features and Specifications, page 6-15
  - Added revised section: MGX-1GE and MGX-2GE Installation Troubleshooting, page 6-28
- Chapter 7, “Configuring the MGX RPM-XF”
  - Added new section: Enabling IP Accounting Counters, page 7-18
- Chapter 9, “Configuring MPLS Features”
  - Add new section: Balancing eiBGP Load Sharing, page 9-16
  - Added new section: Multicast VPN, page 9-19
- Chapter 10, “Configuring Quality of Service”
  - Added new section Versatile Traffic Management System (VTMS), page 10-19
  - Added new section MultiLink PPP/Link Fragmentation Interleaving (MLP/LFI), page 10-21
  - Added new section Internet Protocol Header Compression (IPHC), page 10-22

Organization

The major sections of this publication are as follows:

Chapter	Title	Description
Chapter 1	Overview of the MGX RPM-XF	Discusses the features and specifications of the Route Processor Module (RPM-XF).
Chapter 2	Preparing to Install the MGX RPM-XF	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-XF Front and Back Cards	Includes basic installation information and describes how to make connections to LANs, the main PXM[1], and console terminal.
Chapter 4	Installing and Configuring the MGX-XF-UI Management Back Card	Describes how to install and configure the MGX-XF-UI management back card.
Chapter 5	Installing and Configuring the MGX-1OC12POS and the MGX-2OC12POS Back Cards	Describes how to install and configure the single-port OC-12 POS[2] back card.
Chapter 6	Installing and Configuring the Cisco MGX-1GE and MGX-2GE Gigabit Ethernet Back Cards	Describes how to install and configure the single-port GE[3] back card.
Chapter 7	Configuring the MGX RPM-XF	Describes the initial configuration of the RPM-XF using Configuration Mode or AutoInstall. This chapter also explains how to configure and use 1:N redundancy on the RPM-XF.
Chapter 8	Configuring PNNI Communications	Describes how to configure the RPM-XF to operate as an edge router in a PNNI network.This chapter also explains how to configure all port adapter interfaces, followed by procedures for configuring PVCs[4] and connections with other RPM-XFs.
Chapter 9	Configuring MPLS Features	Describes MPLS[5] and VPN[6] features used with the RPM-XF in the MGX 8850 switch.
Chapter 10	Configuring Quality of Service	Describes how to configure QoS[7] on the RPM-XF.
Appendix A	Maintaining the MGX RPM-XF	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-XF and associated cables.
Appendix C	Cisco IOS and Configuration Basics	Provides information on the Cisco IOS operating system and configuring the RPM-XF card.
Appendix D	Command Summary	Provides provides a high level view of many of the commands that run on the RPM-XF.

1. PXM=prpocessor switch control module
2. POS=Packet Over SONET
3. GE=Gigabit Ethernet
4. PVC=Permanent Virtual Circuit
5. MPLS=Multiprotocol Label Switching
6. VPN=Virtual Private Network
7. QoS=Quality of Service

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 but required 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 ([ ]).

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

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

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

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

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. To see translated versions of the warning, refer to the Regulator Compliance and Safety document that accompanied the device.**

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.

Class 1 Laser Product Warning

Warning	Class 1 laser product.
Waarschuwing	Klasse-1 laser produkt.
Varoitus	Luokan 1 lasertuote.
Attention	Produit laser de classe 1.
Warnung	Laserprodukt der Klasse 1.
Avvertenza	Prodotto laser di Classe 1.
Advarsel	Laserprodukt av klasse 1.
Aviso	Produto laser de classe 1.
¡Advertencia!	Producto láser Clase I.
Varning!	Laserprodukt av klass 1.

Laser Beam Warning

Warning	Do not stare into the beam or view it directly with optical instruments.
Waarschuwing	Niet in de straal staren of hem rechtstreeks bekijken met optische instrumenten.
Varoitus	Älä katso säteeseen äläkä tarkastele sitä suoraan optisen laitteen avulla.
Attention	Ne pas fixer le faisceau des yeux, ni l'observer directement à l'aide d'instruments optiques.
Warnung	Nicht direkt in den Strahl blicken und ihn nicht direkt mit optischen Geräten prüfen.
Avvertenza	Non fissare il raggio con gli occhi né usare strumenti ottici per osservarlo direttamente.
Advarsel	Stirr eller se ikke direkte pŒ strŒlen med optiske instrumenter.
Aviso	Não olhe fixamente para o raio, nem olhe para ele directamente com instrumentos ópticos.
¡Advertencia!	No mirar fijamente el haz ni observarlo directamente con instrumentos ópticos.
Varning!	Rikta inte blicken in mot strålen och titta inte direkt på den genom optiska instrument.

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 12

Table 1 lists the product documentation for the Cisco WAN Manager (CWM) network management system for Release 12.

Table 1 Cisco WAN Manager Release 12 Documentation

Title	Description
Cisco WAN Manager Installation Guide for Solaris 8, Release 12 OL-3837-01	Provides procedures for installing Release 12 of the CWM network management system and Release 5.4 of CiscoView on a Solaris 8 platform.
Cisco WAN Manager User's Guide, Release 12 OL-3838-01	Describes how to use the CWM Release 12 software, which consists of user applications and tools for network management, connection management, network configuration, statistics collection, and security management.
Cisco WAN Manager SNMP Service Agent Guide, Release 12 OL-3840-01	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.
Cisco WAN Manager Database Interface Guide, Release 12 OL-3839-01	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 4

Table 2 lists the product documentation for the installation and operation of the Cisco MGX 8850 (PXM45) Multiservice Switch Release 4.

Table 2 Cisco MGX 8850 (PXM45) Release 4 Documentation

Title	Description
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Hardware Installation Guide OL-3842-01	Describes how to install the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches. This documentation explains what each switch does and covers site preparation, grounding, safety, card installation, and cabling. The Cisco MGX 8850 switch uses either a PXM45 or a PXM1E controller card and provides support for both serial bus based and cell bus based service modules. The Cisco MGX 8950 supports only serial bus based service modules. This hardware installation guide replaces all previous hardware guides for these switches.
*Frame Relay Software Configuration Guide and Command Reference for the Cisco MGX 8850 FRSM12 Card, Release 3** DOC-7810327=	Describes how to use the high-speed Frame Relay (FRSM-12-T3E3) commands that are available in the CLI of the Cisco MGX 8850 (PXM45) switch.
Cisco ATM Services (AXSM) Software Configuration Guide and Command Reference for MGX Switches, Release 4 OL-3852-01	Explains how to configure the AXSM cards and a command reference that describes the AXSM commands in detail. The AXSM cards covered in this manual are the AXSM-XG, AXSM/A, AXSM/B, AXSM-E, and AXSM-32-T1E1-E.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Software Configuration Guide, Release 4 OL-3845-01	Describes how to configure the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches with PXM45 or PXM1E controller cards to operate as ATM core switches or edge switches. This guide also provides some operation and maintenance procedures.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Command Reference, Release 4 OL-3846-01	Describes the PXM commands that are available on the CLI of the Cisco MGX 8830, Cisco MGX 8850, and Cisco MGX 8950 switches.
Cisco Circuit Emulation Software Configuration Guide and Command Reference, Release 4 OL-3853-01	Provides software configuration procedures for provisioning connections and managing the CESM cards supported in this release. Also provides descriptions for all CESM commands.
PNNI Network Planning Guide for MGX and SES Products OL-3847-01	Provides guidelines for planning a PNNI network that uses Cisco MGX 8830, MGX 8850 (PXM45 and PXM1E), Cisco MGX 8950, and Cisco BPX 8600 switches. When connected to a PNNI network, each Cisco BPX 8600 series switch requires an SES for PNNI route processing.
Cisco MGX Route Processor Module (RPM-XF) Installation and Configuration Guide, Release 4 OL-3186-01	Describes how to install and configure the Cisco MGX Route Processor Module (RPM-XF) in the Cisco MGX 8850 (PXM45) and MGX 8950 Release 4 switch. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and basic Cisco IOS configuration information.

Table 2 Cisco MGX 8850 (PXM45) Release 4 Documentation (continued)

Title	Description
*Cisco VISM Installation and Configuration Guide, Release 3** OL-2521-01	Describes how to install and configure the Voice Interworking Service Module (VISM) in the Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), and Cisco MGX 8950 switches. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and Cisco CLI configuration information.
*Regulatory Compliance and Safety Information for the Cisco MGX 8830, MGX 8850 (PXM45 and PXM1E), and MGX 8950 Switches** DOC-7814790=	Provides regulatory compliance, product warnings, and safety recommendations for the Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), and Cisco MGX 8950 switches.

** This book was last updated for Release 3.*

Cisco MGX 8850 (PXM1E) Multiservice Switch Release 4

Table 3 lists the product documentation for the installation and operation of the Cisco MGX 8850 (PXM1E) Multiservice Switch Release 4.

Table 3 Cisco MGX 8850 (PXM1E) Release 4 Documentation

Title	Description
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Hardware Installation Guide OL-3842-01	Describes how to install the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches. This documentation explains what each switch does and covers site preparation, grounding, safety, card installation, and cabling. The Cisco MGX 8850 switch uses either a PXM45 or a PXM1E controller card and provides support for both serial bus based and cell bus based service modules. The Cisco MGX 8950 supports only serial bus based service modules. This hardware installation guide replaces all previous hardware guides for these switches.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Software Configuration Guide, Release 4 OL-3845-01	Describes how to configure the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches with PXM45 or PXM1E controller cards to operate as ATM core switches or edge switches. This guide also provides some operation and maintenance procedures.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Command Reference, Release 4 OL-3846-01	Describes the PXM commands that are available on the CLI of the Cisco MGX 8830, Cisco MGX 8850, and Cisco MGX 8950 switches.
Cisco Circuit Emulation Software Configuration Guide and Command Reference, Release 4 OL-3853-01	Provides software configuration procedures for provisioning connections and managing the CESM cards supported in this release. Also provides descriptions for all CESM commands.
Cisco Frame Relay Software Configuration Guide and Command Reference, Release 4 OL-3851-01	Provides software configuration procedures for provisioning connections and managing the FRSM cards supported in this release. Also provides descriptions for all FRSM commands.

Table 3 Cisco MGX 8850 (PXM1E) Release 4 Documentation (continued)

Title	Description
*Cisco AUSM Software Configuration Guide and Command Reference for Cisco MGX 8850 (PXM1E) and Cisco MGX 8830, Release 3** DOC-7814254=	Provides software configuration procedures for provisioning connections and managing the AUSM cards supported in this release. Also provides descriptions for all AUSM commands.
PNNI Network Planning Guide for MGX and SES Products OL-3847-01	Provides guidelines for planning a PNNI network that uses Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), Cisco MGX 8950, and Cisco BPX 8600 switches. When connected to a PNNI network, each Cisco BPX 8600 series switch requires an SES for PNNI route processing.
*Cisco VISM Installation and Configuration Guide, Release 3** OL-2521-01	Describes how to install and configure VISM in the Cisco MGX 8850, Cisco MGX 8950, and Cisco MGX 8830 Release 4 switches. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and Cisco CLI configuration information.
*Regulatory Compliance and Safety Information for the Cisco MGX 8830, MGX 8850 (PXM45 and PXM1E), and MGX 8950 Switches. ** DOC-7814790=	Provides regulatory compliance, product warnings, and safety recommendations for the Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), and Cisco MGX 8950 switches.
** This book was last updated for Release 3.*	

Cisco MGX 8950 Multiservice Service Release 4

Table 4 lists the product documentation for the installation and operation of the Cisco MGX 8950 Multiservice Switch Release 4.

Table 4 Cisco MGX 8950 Release 4 Documentation

Title	Description
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Hardware Installation Guide OL-3842-01	Describes how to install the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches. This documentation explains what each switch does and covers site preparation, grounding, safety, card installation, and cabling. The Cisco MGX 8850 switch uses either a PXM45 or a PXM1E controller card and provides support for both serial bus based and cell bus based service modules. The Cisco MGX 8950 supports only serial us based service modules. This hardware installation guide replaces all previous hardware guides for these switches.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Software Configuration Guide, Release 4 OL-3845-01	Describes how to configure the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches with PXM45 or PXM1E controller cards to operate as ATM core switches or edge switches. This guide also provides some operation and maintenance procedures.

Table 4 Cisco MGX 8950 Release 4 Documentation (continued)

Title	Description
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Command Reference, Release 4 OL-3846-01	Describes the PXM commands that are available on the CLI of the Cisco MGX 8830, Cisco MGX 8850, and Cisco MGX 8950 switches.
Cisco ATM Services (AXSM) Software Configuration Guide and Command Reference for MGX Switches, Release 4 OL-3852-01	This guide explains how to configure the AXSM cards and a command reference that describes the AXSM commands in detail. The AXSM cards covered in this manual are the AXSM-XG, AXSM/A, AXSM/B, AXSM-E, and AXSM-32-T1E1-E.
PNNI Network Planning Guide for MGX and SES Products OL-3847-01	Provides guidelines for planning a PNNI network that uses Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), Cisco MGX 8950, and Cisco BPX 8600 switches. When connected to a PNNI network, each Cisco BPX 8600 series switch requires an SES for PNNI route processing.
Cisco MGX Route Processor Module (RPM-XF) Installation and Configuration Guide, Release 4 OL-3186-01	Describes how to install and configure the Cisco MGX Route Processor Module (RPM-XF) in the Cisco MGX 8850 Release 4 switch. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and basic Cisco IOS configuration information.
*Regulatory Compliance and Safety Information for the Cisco MGX 8830, MGX 8850 (PXM45 and PXM1E), and MGX 8950 Switches. ** DOC-7814790=	Provides regulatory compliance, product warnings, and safety recommendations for the Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), and Cisco MGX 8950 switches.
** This book was last updated for Release 3.*	

SES PNNI Release 4

Table 5 lists the product documentation for the understanding, the installation, and the operation of the Service Expansion Shelf (SES) Private Network-to-Network Interface (PNNI) Controller.

Table 5 SES PNNI Controller Release 4 Documentation

Title	Description
*Cisco SES PNNI Controller Software Configuration Guide, Release 3** DOC-7814258=	Describes how to configure, operate, and maintain the SES PNNI Controller.
*Cisco SES PNNI Controller Command Reference, Release 3** DOC-7814260=	Provides a description of the commands used to configure and operate the SES PNNI Controller.

Table 5 SES PNNI Controller Release 4 Documentation (continued)

Title	Description
PNNI Network Planning Guide for MGX and SES Products OL-3847-01	Provides guidelines for planning a PNNI network that uses Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), Cisco MGX 8950, and Cisco BPX 8600 switches. When connected to a PNNI network, each Cisco BPX 8600 series switch requires an SES for PNNI route processing.

** This book was last updated for Release 3.*

Cisco MGX 8830 Multiservice Switch Release 4

Table 6 lists the product documentation for the installation and operation of the Cisco MGX 8830 Multiservice Switch Release 4.

Table 6 Cisco MGX 8830 Release 4 Documentation

Title	Description
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Hardware Installation Guide OL-3842-01	Describes how to install the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches. This documentation explains what each switch does and covers site preparation, grounding, safety, card installation, and cabling. The Cisco MGX 8850 switch uses either a PXM45 or a PXM1E controller card and provides support for both serial bus based and cell bus based service modules. The Cisco MGX 8950 supports only serial bus based service modules. This hardware installation guide replaces all previous hardware guides for these switches.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Software Configuration Guide, Release 4 OL-3845-01	Describes how to configure the Cisco MGX 8950, the Cisco MGX 8850 (PXM1E/PXM45), and the Cisco MGX 8830 switches with PXM45 or PXM1E controller cards to operate as ATM core switches or edge switches. This guide also provides some operation and maintenance procedures.
Cisco MGX 8850 (PXM1E/PXM45), Cisco MGX 8950, and Cisco MGX 8830 Command Reference, Release 4 OL-3846-01	Describes the PXM commands that are available on the CLI of the Cisco MGX 8830, Cisco MGX 8850, and Cisco MGX 8950 switches.
Cisco Circuit Emulation Software Configuration Guide and Command Reference, Release 4 OL-3853-01	Provides software configuration procedures for provisioning connections and managing the CESM cards supported in this release. Also provides descriptions for all CESM commands.
Cisco Frame Relay Software Configuration Guide and Command Reference, Release 4 OL-3851-01	Provides software configuration procedures for provisioning connections and managing the FRSM cards supported in this release. Also provides descriptions for all FRSM commands.
*Cisco AUSM Software Configuration Guide and Command Reference for MGX 8850 (PXM1E) and MGX 8830, Release 3** DOC-7814254=	Provides software configuration procedures for provisioning connections and managing the AUSM cards supported in this release. Also provides descriptions for all AUSM commands.

Table 6 Cisco MGX 8830 Release 4 Documentation (continued)

Title	Description
PNNI Network Planning Guide for MGX and SES Products OL-3847-01	Provides guidelines for planning a PNNI network that uses Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), Cisco MGX 8950, and Cisco BPX 8600 switches. When connected to a PNNI network, each Cisco BPX 8600 series switch requires an SES for PNNI route processing.
*Cisco VISM Installation and Configuration Guide, Release 3** OL-2521-01	Describes how to install and configure VISM in the Cisco MGX 8850, Cisco MGX 8950, and Cisco MGX 8830 Release 4 switches. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and Cisco CLI configuration information.
*Regulatory Compliance and Safety Information for the Cisco MGX 8830, MGX 8850 (PXM45 and PXM1E), and MGX 8950 Switches.** DOC-7814790=	Provides regulatory compliance, product warnings, and safety recommendations for the Cisco MGX 8830, Cisco MGX 8850 (PXM45 and PXM1E), and Cisco MGX 8950 switches.

** This book was last updated for Release 3.*

Cisco WAN Switching Software Release 9.4

Table 7 lists the product documentation for the installation and operation of the Cisco WAN Switching Software Release 9.4.

Table 7 Cisco WAN Switching Release 9.4 Documentation

Title	Description
9.4.00 Version Software Release Notes Cisco WAN Switching System Software OL-3189-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
Cisco BPX 8600 Series Installation and Configuration, Release 9.3.30 DOC-7812907=	Provides a general description and technical details of the Cisco BPX broadband switch.
Cisco WAN Switching Command Reference, Release 9.3.30 DOC-7812906=	Provides detailed information on the general command line interface commands.
Cisco IGX 8400 Series Installation Guide OL-1165-05	Provides hardware installation and basic configuration information for Cisco IGX 8400 Series switches that are running Switch Software Release 9.3.30 or later.
Cisco IGX 8400 Series Provisioning Guide OL-1166-03	Provides information for configuration and provisioning of selected services for the Cisco IGX 8400 Series switches that are running Switch Software Release 9.3.30 or later.
Cisco IGX 8400 Series Regulatory Compliance and Safety Information DOC-7813227=	Provides regulatory compliance, product warnings, and safety recommendations for the Cisco IGX 8400 Series switch.

MGX 8850 (PXM1) Edge Concentrator Release 1.2.20

Note The Release 1.x books have not been updated recently. Please check the Release Notes for the latest information.

Table 8 lists the product documentation for the installation and operation of the Cisco MGX 8850 Edge Concentrator.

Table 8 MGX 8850 Edge Concentrator Release 1.2.20 Documentation

Title	Description
Release Notes for Cisco WAN MGX 8850 (PXM1), MGX 8250, and MGX 8230 Software Version 1.2.20 OL-3244-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
Cisco MGX 8850 Edge Concentrator Installation and Configuration, Release 1.1.3 DOC-7811223=	Provides installation instructions for the Cisco MGX 8850 edge concentrator.
Cisco MGX 8800 Series Switch Command Reference, Release 1.1.3 DOC-7811210=	Provides detailed information on the general command line for the Cisco MGX 8850 edge concentrator.
Cisco MGX 8800 Series Switch System Error Messages, Release 1.1.3 DOC-7811240=	Provides error message descriptions and recovery procedures.
Cisco MGX 8850 Multiservice Switch Overview, Release 1.1.3 OL-1154-01	Provides a technical description of the system components and functionality of the Cisco MGX 8850 edge concentrator from a technical perspective.
Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1 DOC-7812278=	Describes how to install and configure the Cisco MGX Route Processor Module (RPM/B and RPM-PR) in the Cisco MGX 8850, the Cisco MGX 8250, and the Cisco MGX 8230 edge concentrators. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and basic Cisco IOS configuration information.
Cisco VISM Installation and Configuration Guide, Release 3 OL-2521-01	Describes how to install and configure VISM in the Cisco MGX 8850, Cisco MGX 8250, and Cisco MGX 8230 switches. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and Cisco CLI configuration information.

MGX 8250 Edge Concentrator Release 1.2.20

Table 9 lists the product documentation for the installation and operation of the Cisco MGX 8250 Edge Concentrator.

Table 9 MGX 8250 Multiservice Gateway Documentation

Title	Description
Release Notes for Cisco WAN MGX 8850 (PXM1), MGX 8250, and MGX 8230 Software Version 1.2.20 OL-3244-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
Cisco MGX 8250 Edge Concentrator Installation and Configuration, Release 1.1.3 DOC-7811217=	Provides installation instructions for the Cisco MGX 8250 Edge Concentrator.
Cisco MGX 8250 Multiservice Gateway Command Reference, Release 1.1.3 DOC-7811212=	Provides detailed information on the general command line interface commands.
Cisco MGX 8250 Multiservice Gateway Error Messages, Release 1.1.3 DOC-7811216=	Provides error message descriptions and recovery procedures.
Cisco MGX 8250 Edge Concentrator Overview, Release 1.1.3 DOC-7811576=	Describes the system components and functionality of the Cisco MGX 8250 Edge Concentrator from a technical perspective.
Cisco MGX Route Processor Module Installation and Configuration Guide, Release 1.1 DOC-7812278=	Describes how to install and configure the Cisco MGX Route Processor Module (RPM/B and RPM-PR) in the Cisco MGX 8850, the Cisco MGX 8250, and the Cisco MGX 8230 edge concentrators. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and basic Cisco IOS configuration information.
Cisco VISM Installation and Configuration Guide, Release 3 OL-2521-01	Describes how to install and configure VISM in the Cisco MGX 8850, Cisco MGX 8250, and Cisco MGX 8230 switches. Also provides site preparation procedures, troubleshooting procedures, maintenance procedures, cable and connector specifications, and Cisco CLI configuration information.

MGX 8230 Edge Concentrator Release 1.2.20

Table 10 lists the product documentation for the installation and operation of the Cisco MGX 8230 Edge Concentrator.

Table 10 MGX 8230 Edge Concentrator Documentation

Title	Description
Release Notes for Cisco WAN MGX 8850 (PXM1), MGX 8250, and MGX 8230 Software Version 1.2.20 OL-3244-01	Provides new feature, upgrade, and compatibility information, as well as known and resolved anomalies.
Cisco MGX 8230 Edge Concentrator Installation and Configuration, Release 1.1.3 DOC-7811215=	Provides installation instructions for the Cisco MGX 8230 Edge Concentrator.

Table 10 MGX 8230 Edge Concentrator Documentation (continued)

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

Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

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

http://www.cisco.com/en/US/support/tsd_documentation.html

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this 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 may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

Registered Cisco.com users can order a single Documentation CD-ROM (product number DOC-CONDOCCD=) through the Cisco Ordering tool:

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  http://www.cisco.com/en/US/partner/ordering/index.shtml

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

Documentation Feedback

You can submit comments electronically on Cisco.com. On the Cisco Documentation home page, click **Feedback** at the top of the page.

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

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

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

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance.

Cisco TAC Website

The Cisco TAC website (http://www.cisco.com/tac) provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year.

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

Opening a TAC Case

The online TAC Case Open Tool (http://www.cisco.com/tac/caseopen) is the fastest way to open P3 and P4 cases. (Your network is minimally impaired or you require product information). After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using these recommendations, your case will be assigned to a Cisco TAC engineer.

For P1 or P2 cases (your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

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

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The Cisco Product Catalog describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide, and the Internetworking Design Guide. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- Packet magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

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

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

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

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

  http://www.cisco.com/en/US/learning/index.html