



## About This Guide

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Welcome to the software configuration manual for the Service Expansion Shelf (SES) controller. The SES controller is a virtual switch interface (VSI) controller that provides a BPX 8600 series wide-area switch with the capability to create switched virtual circuits (SVCs) by using the UNI and PNNI protocols, and soft permanent virtual circuits by using the PNNI protocol. Each BPX 8600 series node that will originate, transport, or terminate SVC/SPVC connections must be collocated and directly connected to an SES controller to deploy PNNI functionality.

The combined BPX 8600 and SES controller are referred to as a SES PNNI node in this manual.

This preface contains the following sections:

- Objectives
- Audience
- Organization
- Related Documentation
- Conventions
- Obtaining Documentation
- Obtaining Technical Assistance

## Objectives

This publication describes the SES controller hardware, software, services, and configuration procedures for adding PNNI, IISP, ATM SVCs/SVPs, and ATM SPVCs/SPVPs to a BPX 8600 network.

## Audience

This publication is designed for the network operator responsible for configuring the SES controller(s) in a BPX 8600 network, and for provisioning PNNI services. Both the installer and network operator should be familiar with Cisco WAN switching networks, the BPX 8600 series of wide area switches, and the Cisco WAN Manager (CWM)—formerly known as StrataView Plus—and CiscoView network management systems.



Note

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Installation of the equipment must be performed by trained service personnel.

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# Organization

This document contains the following chapters and appendices:

- [Chapter 1, “Preparing For Configuration,”](#) provides an overview of the SES controller, the SES PNNI node, and ATM SVCs and SPVCs.
- [Chapter 2, “Configuring General Switch Features,”](#) provides procedures for setting general switch features on an SES controller.
- [Chapter 3, “Provisioning Communication Links,”](#) provides bring-up and initial configuration procedures for communication links of the SES node.
- [Chapter 4, “Managing PNNI Routes,”](#) provides procedures for setting up PNNI Routing parameters and SPVC/SVC connections on the SES node.
- [Chapter 5, “Switch Operating Procedures,”](#) provides general operational procedures for the SES node.
- [Chapter 6, “Viewing and Responding to Alarms,”](#) provides information about alarms on the SES node.
- [Chapter 7, “Network Management,”](#) introduces the network management tools used in conjunction with the SES controller: Cisco WAN Manager, CiscoView, SES CLI show commands, and call tracing in a PNNI network.
- [Appendix A, “Downloading and Installing Software Upgrades,”](#) provides procedures for downloading and installing software on an SES controller.
- [Appendix B, “Technical Specifications,”](#) lists the relevant specifications for the SES controller.
- [Appendix C, “Virtual Switch Interface,”](#) provides an overview of the Virtual Switch Interface protocol used by the SES controller to control the BPX switch for PNNI networking.
- [Appendix D, “SNMP Management Information Base,”](#) describes the SNMP MIBs used by the SES controller for PNNI and ATM signaling.

## 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.

**Table 1** Cisco WAN Manager Release 10.5 Documentation (continued)

Title	Description
<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 <sup>1</sup> of the MGX 8850 switch.
<i>Cisco MGX 8850 Switch Software Configuration Guide, Release 2.1</i> DOC-7812551=	Describes how to configure the MGX 8850 switch 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 <sup>2</sup> objects, support restrictions, traps, and alarms for the AXSM, PXM45, and RPM. PNNI is also supported.

**Table 3** Cisco MGX 8850 Switch Release 2.1 Documentation (continued)

Title	Description
<i>Cisco MGX and SES PNNI Network Planning Guide</i> DOC-7813543=	Provides guidelines for planning a PNNI network that uses the MGX 8850 switch and the BPX 8600 switch. 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 switch and the BPX 8600 switch. 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 functionary of the MGX 8850 multiservice switch from a technical perspective.

**Table 6** MGX 8850 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.

## 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.
<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 functionary 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.

## Conventions

The *Cisco SES PNNI Controller Software Controller Configuration Guide* 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 *italic* font.
- Elements in square brackets ( [ ] ) are optional.
- Alternative but required keywords are grouped in braces ( { } ) and are separated by vertical bars ( | ).
- 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, warnings, and tips use the following conventions and symbols:



Note

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



Warning

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 the warning, refer to the Regulatory Compliance and Safety document that accompanied the device.



Tip

Means the following information will help you solve a problem.

## Obtaining Documentation

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

### World Wide Web

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

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

### Documentation CD-ROM

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



## Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:  
[http://www.cisco.com/cgi-bin/order/order\\_root.pl](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, in North America, by calling 800 553-NETS(6387).

## Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to [bug-doc@cisco.com](mailto:bug-doc@cisco.com).

To submit your comments by mail, for your convenience many documents contain a response card behind the front cover. Otherwise, you can mail your comments to the following address:

Cisco Systems, Inc.  
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. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

## Cisco.com

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

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

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

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

<http://www.cisco.com>

## Technical Assistance Center

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

### Contacting TAC by Using the Cisco TAC Website

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

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

P3 and P4 level problems are defined as follows:

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

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

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

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

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

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

### Contacting TAC by Telephone

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

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

P1 and P2 level problems are defined as follows:

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