



WXC Integrated Services Module

Installation and Configuration Guide

Release 9.0

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Table of Contents

	About This Guide	vii
	Objectives	vii
	Audience	viii
	Supported Routing Platforms	viii
	How to Use This Manual	viii
	Document Conventions	xi
	JUNOS Software with Enhanced Services and Related Documentation	xiii
	Documentation Feedback	xvii
	Requesting Support	xvii
Part 1	Installing and Configuring a WXC Integrated Services Module	
Chapter 1	WXC Integrated Services Module Overview	3
	Hardware Overview	3
	Supported Hardware and Software	4
	Hardware Capacity	5
	WXC Integrated Services Module Terms	5
	Sample Deployment Topologies	6
Chapter 2	Installing a WXC Integrated Services Module	9
	Before You Begin	9
	Installing and Removing a WXC ISM 200	10
	Installing a WXC ISM 200	10
	Removing the WXC ISM 200	12
Chapter 3	Configuring a WXC Integrated Services Module	13
	Before You Begin	13
	Configuring the WXC ISM 200 Using J-Web Quick Configuration	14
	Configuring the WXC ISM 200 Using the CLI	16
	Verifying the Initial WXC ISM 200 Configuration	20
	Verifying WAN Acceleration Status	19
	Monitoring the WAN Acceleration Interface	20

Chapter 4	Configuring WAN Acceleration Features	21
	Enabling WAN Acceleration	21
	Configuring IPSec	23
	Configuring Multi-Path Routing Policies	23
	Accessing the WXOS CLI	24
	Restarting WAN Acceleration and Enabling Trace Options	25
	Upgrading the WXC ISM 200 Software	25
 Part 2	 Index	
	Index	29

About This Guide

This preface provides the following guidelines for using the *WXC Integrated Services Module Installation and Configuration Guide*:

- Objectives on page vii
- Audience on page viii
- Supported Routing Platforms on page viii
- How to Use This Manual on page viii
- Document Conventions on page xi
- JUNOS Software with Enhanced Services and Related Documentation on page xiii
- Documentation Feedback on page xvii
- Requesting Support on page xvii

Objectives

This guide contains instructions for installing and completing the initial configuration of a WXC Integrated Services Module (also known as WXC ISM 200) in a J-series Services Router running JUNOS software with enhanced services.



NOTE: This manual documents Release 9.0 of JUNOS software with enhanced services. For additional information—either corrections to or information that might have been omitted from this manual—see the *JUNOS Software with Enhanced Services Release Notes* at <http://www.juniper.net>.

Router operations are controlled by JUNOS software with enhanced services. You direct the software through either a Web browser or a command-line interface (CLI) to perform the tasks shown in Table 1 on page viii.

You use the JUNOS CLI or the J-Web interface to perform the initial configuration of the WXC Integrated Services Module.

For an annotated list of documentation, see “JUNOS Software with Enhanced Services and Related Documentation” on page xiii. All documents are available at <http://www.juniper.net/techpubs/>.

Table 1: Capabilities of J-series User Interfaces

User Interface	WXC Integrated Services Module Tasks
J-Web graphical browser interface	<ul style="list-style-type: none"> ■ Initial configuration. ■ Launching the WXOS Web interface. Select Configuration > Quick Configuration > WAN Acceleration > Manage.
JUNOS CLI	<ul style="list-style-type: none"> ■ Initial configuration. ■ Basic monitoring.
WXOS Web interface	Configuring WAN acceleration features. The WXOS Web interface is part of the J-Web interface, launched in a separate browser window for configuring WAN acceleration.
WXOS CLI	Configuring advanced settings unavailable in the Web interface.

Audience

This manual is designed for anyone who installs, sets up, configures, monitors, or administers a J-series Services Router running JUNOS software with enhanced services. The manual is intended for the following audiences:

- Customers with technical knowledge of and experience with networks and network security, the Internet, and Internet routing protocols
- Network administrators who install, configure, and manage Internet routers

Personnel operating the equipment must be trained and competent; must not conduct themselves in a careless, willfully negligent, or hostile manner; and must abide by the instructions provided by the documentation.

Supported Routing Platforms

For the features described in this manual, JUNOS software with enhanced services currently supports J-series Services Router only.

How to Use This Manual

This manual and the other manuals for JUNOS software with enhanced services explain how to install, configure, and manage J-series Services Routers that are running JUNOS software with enhanced services. To configure and operate these routers, you must also use the configuration statements and operational mode commands documented in the JUNOS configuration guides and command references.

Table 2 on page ix identifies the tasks required to configure and manage the routers and shows where to find task information and instructions.

For an annotated list of the documentation referred to in Table 2 on page ix, see “JUNOS Software with Enhanced Services and Related Documentation” on page xiii. All documents are available at <http://www.juniper.net/techpubs/>.

Table 2: Tasks and Documentation for J-series Routers Running JUNOS Software with Enhanced Services

JUNOS Software with Enhanced Services Tasks	JUNOS Software with Enhanced Services Documentation	Related JUNOS Documentation
Basic Router Installation and Setup		
■ Reviewing safety warnings and compliance statements	■ <i>JUNOS Software with Enhanced Services J-series Services Router Quick Start</i>	■ <i>JUNOS System Basics Configuration Guide</i>
■ Installing hardware and establishing basic connectivity	■ <i>JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide</i>	■ <i>JUNOS System Basics and Services Command Reference</i>
■ Initially setting up a router	■ <i>JUNOS Software with Enhanced Services CLI Reference</i>	
	■ <i>JUNOS Software with Enhanced Services Release Notes</i>	
Migration from ScreenOS or JUNOS to JUNOS Software with Enhanced Services (if necessary)		
■ Migrating from JUNOS Release 8.3 or later to JUNOS software with enhanced services software	<i>JUNOS Software with Enhanced Services Migration Guide</i>	–
■ Migrating from ScreenOS Release 5.4 or later to JUNOS Enhanced Services software		
Context—Changing to Secure Context or Router Context		
Changing the router from one context to another and understanding the factory default settings	<i>JUNOS Software with Enhanced Services Administration Guide</i>	–
Router Interface Configuration		
Configuring router interfaces	■ <i>JUNOS Software with Enhanced Services Interfaces and Routing Configuration Guide</i>	■ <i>JUNOS System Basics Configuration Guide</i>
	■ <i>JUNOS Software with Enhanced Services CLI Reference</i>	■ <i>JUNOS System Basics and Services Command Reference</i>
Services Router Deployment Planning and Configuration		
■ Understanding and gathering information required to design network firewalls and IPSec VPNs	<i>JUNOS Software with Enhanced Services Design and Implementation Guide</i>	–
■ Implementing a JUNOS software with enhanced services firewall from a sample scenario		
■ Implementing a policy-based IPSec VPN from a sample scenario		

Table 2: Tasks and Documentation for J-series Routers Running JUNOS Software with Enhanced Services *(continued)*

JUNOS Software with Enhanced Services Tasks	JUNOS Software with Enhanced Services Documentation	Related JUNOS Documentation
Configuring and managing the following security services: <ul style="list-style-type: none"> ■ Stateful firewall policies ■ Zones and their interfaces and address books ■ IPSec VPNs ■ Firewall screens ■ Interface modes: Network Address Translation (NAT) mode and Router mode ■ Public Key Cryptography ■ Application Layer Gateways (ALGs) 	<ul style="list-style-type: none"> ■ <i>JUNOS Software with Enhanced Services Security Configuration Guide</i> ■ <i>JUNOS Software with Enhanced Services CLI Reference</i> 	–
Routing Protocols and Services Configuration		
Configuring routing protocols, including static routes and the dynamic routing protocols RIP, OSPF, BGP, and IS-IS	<ul style="list-style-type: none"> ■ <i>JUNOS Software with Enhanced Services Interfaces and Routing Configuration Guide</i> ■ <i>JUNOS Software with Enhanced Services CLI Reference</i> 	<ul style="list-style-type: none"> ■ <i>JUNOS Routing Protocols Configuration Guide</i> ■ <i>JUNOS Routing Protocols and Policies Command Reference</i>
Configuring class-of-service (CoS) features, including traffic shaping and policing		<ul style="list-style-type: none"> ■ <i>JUNOS Class of Service Configuration Guide</i> ■ <i>JUNOS System Basics and Services Command Reference</i>
Configuring packet-based stateless firewall filters (access control lists) to control access and limit traffic rates		<ul style="list-style-type: none"> ■ <i>JUNOS Policy Framework Configuration Guide</i> ■ <i>JUNOS Routing Protocols and Policies Command Reference</i>
Configuring Multiprotocol Label Switching (MPLS) to control network traffic patterns	<ul style="list-style-type: none"> ■ <i>JUNOS Software with Enhanced Services Interfaces and Routing Configuration Guide</i> ■ <i>JUNOS Software with Enhanced Services CLI Reference</i> 	<ul style="list-style-type: none"> ■ <i>JUNOS MPLS Applications Configuration Guide</i> ■ <i>JUNOS Routing Protocols Configuration Guide</i> ■ <i>JUNOS Routing Protocols and Policies Command Reference</i>
WAN Acceleration Module Installation (Optional)		
Installing and initially configuring a WXC Integrated Services Module (ISM 200)	<i>WXC Integrated Services Module Installation and Configuration Guide</i>	–
User and System Administration		

Table 2: Tasks and Documentation for J-series Routers Running JUNOS Software with Enhanced Services (continued)

JUNOS Software with Enhanced Services Tasks	JUNOS Software with Enhanced Services Documentation	Related JUNOS Documentation
Administering user authentication and access	<i>JUNOS Software with Enhanced Services Administration Guide</i>	■ <i>JUNOS System Basics Configuration Guide</i>
Monitoring the router, routing protocols, and routing operations		■ <i>JUNOS System Basics and Services Command Reference</i>
Configuring and monitoring system alarms and events, real-time performance (RPM) probes, and performance		
Monitoring the firewall and other security-related services		–
Managing system log files		<i>JUNOS System Log Messages Reference</i>
Upgrading software		–
Diagnosing common problems		
User Interfaces		
Understanding and using the J-Web interface	■ <i>JUNOS Software with Enhanced Services J-series Services Router Quick Start</i>	<i>J-Web Interface User Guide</i>
Understanding and using the CLI	■ <i>JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide</i>	<i>JUNOS CLI User Guide</i>

Document Conventions

Table 3 on page xi defines the notice icons used in this guide.

Table 3: Notice Icons





Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.

Table 4 on page xii defines the text and syntax conventions used in this guide.

Table 4: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the <code>configure</code> command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>JUNOS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Plain text like this	Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	stub <default-metric <i>metric</i> >;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Enclose a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]

Table 4: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Indentation and braces ({ })	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop address; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> ■ In the Logical Interfaces box, select All Interfaces. ■ To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select Protocols > Ospf .

JUNOS Software with Enhanced Services and Related Documentation

Table 5 on page xiii lists the manuals and release notes supporting JUNOS software with enhanced services.

To configure and operate a J-series Services Router running JUNOS software with enhanced services, you must also use the configuration statements and operational mode commands documented in JUNOS configuration guides and command references. To configure and operate a WXC Integrated Services Module, you must also use WX documentation. Table 6 on page xiv lists the JUNOS software manuals and release notes and WX manuals.

All documents are available at <http://www.juniper.net/techpubs/>.

Table 5: JUNOS Software with Enhanced Services Documentation

Book	Description
<i>JUNOS Software with Enhanced Services Design and Implementation Guide</i>	Provides guidelines and examples for designing and implementing IP Security (IPSec) virtual private networks (VPNs), firewalls, and routing on J-series routers running JUNOS software with enhanced services.
<i>JUNOS Software with Enhanced Services J-series Services Router Quick Start</i>	Explains how to quickly set up a J-series router. This document contains router declarations of conformity.
<i>JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide</i>	Provides an overview, basic instructions, and specifications for J-series Services Routers. This guide explains how to prepare a site, unpack and install the router, replace router hardware, and establish basic router connectivity. This guide contains hardware descriptions and specifications.

Table 5: JUNOS Software with Enhanced Services Documentation (continued)

Book	Description
<i>JUNOS Software with Enhanced Services Migration Guide</i>	Provides instructions for migrating an SSG device running ScreenOS software or a J-series router running the JUNOS software to JUNOS software with enhanced services.
<i>JUNOS Software with Enhanced Services Interfaces and Routing Configuration Guide</i>	Explains how to configure J-series router interfaces for basic IP routing with standard routing protocols, ISDN service, firewall filters (access control lists), and class-of-service (CoS) traffic classification.
<i>JUNOS Software with Enhanced Services Security Configuration Guide</i>	Explains how to configure and manage security services such as stateful firewall policies, IPSec VPNs, firewall screens, Network Address translation (NAT) and Router interface modes, Public Key Cryptography, and Application Layer Gateways (ALGs).
<i>JUNOS Software with Enhanced Services Administration Guide</i>	Shows how to monitor the router and routing operations, firewall and security services, system alarms and events, and network performance. This guide also shows how to administer user authentication and access, upgrade software, and diagnose common problems.
<i>JUNOS Software with Enhanced Services CLI Reference</i>	Provides the complete JUNOS software with enhanced services configuration hierarchy and describes the configuration statements and operational mode commands not documented in the standard JUNOS manuals listed in Table 6 on page xiv.
<i>WXC Integrated Services Module Installation and Configuration Guide</i>	Explains how to install and initially configure a WXC Integrated Services Module in a J-series router for application acceleration.
<i>JUNOS Software with Enhanced Services Release Notes</i>	Summarize new features and known problems for a particular release of JUNOS software with enhanced services on J-series routers, including J-Web interface features and problems. The release notes also contain corrections and updates to the manuals and software upgrade and downgrade instructions for JUNOS software with enhanced services.

Table 6: Related JUNOS and WX Documentation

Book	Description
JUNOS Software Configuration Guides	
<i>JUNOS Class of Service Configuration Guide</i>	Provides an overview of the class-of-service (CoS) functions of the JUNOS software and describes how to configure CoS features, including configuring multiple forwarding classes for transmitting packets, defining which packets are placed into each output queue, scheduling the transmission service level for each queue, and managing congestion through the random early detection (RED) algorithm.

Table 6: Related JUNOS and WX Documentation (continued)

Book	Description
<i>JUNOS Feature Guide</i>	Provides a detailed explanation and configuration examples for several of the most complex features in the JUNOS software.
<i>JUNOS MPLS Applications Configuration Guide</i>	Provides an overview of traffic engineering concepts and describes how to configure traffic engineering protocols.
<i>JUNOS Multicast Protocols Configuration Guide</i>	Provides an overview of multicast concepts and describes how to configure multicast routing protocols.
<i>JUNOS Network Interfaces Configuration Guide</i>	Provides an overview of the network interface functions of the JUNOS software and describes how to configure the network interfaces on the routing platform.
<i>JUNOS Network Management Configuration Guide</i>	Provides an overview of network management concepts and describes how to configure various network management features, such as SNMP and accounting options.
<i>JUNOS Policy Framework Configuration Guide</i>	Provides an overview of policy concepts and describes how to configure routing policy, firewall filters, and forwarding options.
<i>JUNOS Routing Protocols Configuration Guide</i>	Provides an overview of routing concepts and describes how to configure routing, routing instances, and unicast routing protocols.
<i>JUNOS Services Interfaces Configuration Guide</i>	Provides an overview of the services interfaces functions of the JUNOS software and describes how to configure the services interfaces on the router.
<i>JUNOS Software Installation and Upgrade Guide</i>	Describes the JUNOS software components and packaging and explains how to initially configure, reinstall, and upgrade the JUNOS system software.
<i>JUNOS System Basics Configuration Guide</i>	Describes Juniper Networks routing platforms and explains how to configure basic system parameters, supported protocols and software processes, authentication, and a variety of utilities for managing your router on the network.
JUNOS References	
<i>JUNOS Hierarchy and RFC Reference</i>	Describes the JUNOS configuration mode commands. Provides a hierarchy reference that displays each level of a configuration hierarchy, and includes all possible configuration statements that can be used at that level.
<i>JUNOS Interfaces Command Reference</i>	Describes the JUNOS software operational mode commands you use to monitor and troubleshoot interfaces.
<i>JUNOS Routing Protocols and Policies Command Reference</i>	Describes the JUNOS software operational mode commands you use to monitor and troubleshoot routing policies and protocols, including firewall filters.

Table 6: Related JUNOS and WX Documentation (*continued*)

Book	Description
<i>JUNOS System Basics and Services Command Reference</i>	Describes the JUNOS software operational mode commands you use to monitor and troubleshoot system basics, including commands for real-time monitoring and route (or path) tracing, system software management, and chassis management. Also describes commands for monitoring and troubleshooting services such as class of service (CoS), IP Security (IPSec), stateful firewalls, flow collection, and flow monitoring.
<i>JUNOS System Log Messages Reference</i>	Describes how to access and interpret system log messages generated by JUNOS software modules and provides a reference page for each message.
User Interface Guides	
<i>J-Web Interface User Guide</i>	Describes how to use the J-Web graphical user interface (GUI) to configure, monitor, and manage Juniper Networks routing platforms.
<i>JUNOS CLI User Guide</i>	Describes how to use the JUNOS command-line interface (CLI) to configure, monitor, and manage Juniper Networks routing platforms.
JUNOS API and Scripting Documentation	
<i>JUNOScript API Guide</i>	Describes how to use the JUNOScript application programming interface (API) to monitor and configure Juniper Networks routing platforms.
<i>JUNOS XML API Configuration Reference</i>	Provides reference pages for the configuration tag elements in the JUNOS XML API.
<i>JUNOS XML API Operational Reference</i>	Provides reference pages for the operational tag elements in the JUNOS XML API.
<i>NETCONF API Guide</i>	Describes how to use the NETCONF API to monitor and configure Juniper Networks routing platforms.
<i>JUNOS Configuration and Diagnostic Automation Guide</i>	Describes how to use the commit script and self-diagnosis features of the JUNOS software. This guide explains how to enforce custom configuration rules defined in scripts, how to use commit script macros to provide simplified aliases for frequently used configuration statements, and how to configure diagnostic event policies.
JUNOScope Documentation	
<i>JUNOScope Software User Guide</i>	Describes the JUNOScope software graphical user interface (GUI), how to install and administer the software, and how to use the software to manage routing platform configuration files and monitor routing platform operations.
JUNOS and JUNOScope Release Notes	
<i>JUNOS Release Notes</i>	Summarize new features and known problems for a particular software release, provide corrections and updates to published JUNOS, JUNOScript, and NETCONF manuals, provide information that might have been omitted from the manuals, and describe upgrade and downgrade procedures.

Table 6: Related JUNOS and WX Documentation (*continued*)

Book	Description
<i>JUNOScope Release Notes</i>	Contain corrections and updates to the published JUNOScope manual, provide information that might have been omitted from the manual, and describe upgrade and downgrade procedures.
WX Manuals	
<i>WX Central Management System (CMS) Administrator's Guide</i>	Describes how to manage, monitor, and configure up to 2000 WAN acceleration platforms and WXC Integrated Services Modules.
<i>WX/WXC Operator's Guide</i>	Describes how to use the WXOS Web interface and CLI to configure, monitor, and manage individual WAN acceleration platforms and WXC Integrated Services Modules.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/beta/junos/docbug/>. If you are using e-mail, be sure to include the following information with your comments:

- Document name
- Document part number
- Page number
- Software release version

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Part 1

Installing and Configuring a WXC Integrated Services Module

- WXC Integrated Services Module Overview on page 3
- Installing a WXC Integrated Services Module on page 9
- Configuring a WXC Integrated Services Module on page 13
- Configuring WAN Acceleration Features on page 21

Chapter 1

WXC Integrated Services Module Overview

The WXC Integrated Services Module (WXC ISM 200) provides WAN acceleration on a J-series Services Router running JUNOS software with enhanced services. The integration of application acceleration with branch routing platforms provides a consolidated solution for the branch office. The WXC ISM 200 is a LAN-based network device that enhances the throughput of WAN circuits by addressing the three constraints on WAN performance—bandwidth, latency, and application contention—and provides reporting and visibility into WAN traffic and throughput.

The WXC ISM 200 is installed in a J-series chassis like a Physical Interface Module (PIM), but unlike a PIM, it does not provide any physical interfaces. The module is controlled by the WX operating system (WXOS) software rather than the JUNOS software.

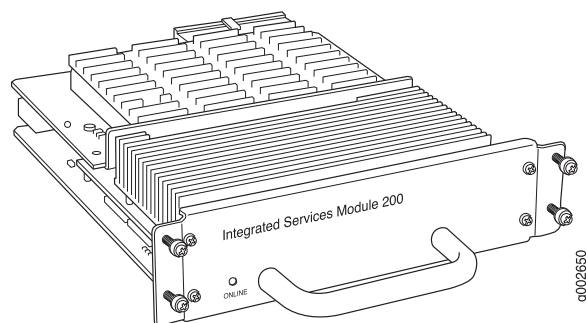
A WXC ISM 200 or WX/WXC device must be installed on each side of a WAN circuit.

This chapter contains the following topics:

- Hardware Overview on page 3
- Supported Hardware and Software on page 4
- Hardware Capacity on page 5
- WXC Integrated Services Module Terms on page 5
- Sample Deployment Topologies on page 6

Hardware Overview

Figure 1 on page 4 shows the WXC ISM 200.

Figure 1: WXC Integrated Services Module (WXC ISM 200)

An ONLINE LED is located on the left side of the WXC ISM 200. Table 7 on page 4 describes the LED states.

Table 7: WXC Integrated Services Module ONLINE LED

Color	State	Description
Green	On steadily	Module is functioning correctly.
Yellow	Blinking	Module is receiving power but has lost contact with the Routing Engine. No traffic is being forwarded to the module.
Amber	Blinking	Module has detected a problem with the disk drive.
Unlit	Off	Module is not receiving power.

The WXC ISM 200 occupies two slots in the J-series chassis. You can install only one WXC ISM 200 in a J-series Services Router chassis.

You can install Physical Interface Modules (PIMs) in the remaining slots to provide physical connections to a LAN or a WAN. PIMs receive incoming packets from the network and transmit outgoing packets to the network. Each PIM is equipped with a dedicated network processor that forwards incoming data packets to the Routing Engine, and receives outgoing data packets from the Routing Engine.



NOTE: The exact combination of PIMs that you can install in a J-series Services Router is affected by power and thermal constraints. For more information, see the *JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide*.

For information about network interfaces, and for instructions on configuring network interfaces, see the *JUNOS Software with Enhanced Services Interfaces and Routing Configuration Guide*.

Supported Hardware and Software

You can install the WXC ISM 200 in any J2320, J2350, J4350, or J6350 Services Router running JUNOS software with enhanced services.

The WXC ISM 200 is supported on the following software releases:

- Release 9.0 of JUNOS software with enhanced services —running on the J-series Services Router
- WXOS Release 5.4.6j—running on the WXC ISM 200

Hardware Capacity

The WXC ISM 200 provides the following:

- Up to 4 Mbps of throughput
- Up to 10 connections to other WX/WXC platforms or modules
- Up to 256 application definitions
- Up to 8000 routes
- 120 GB of disk space

WXC Integrated Services Module Terms

To understand the WXC ISM 200, become familiar with the terms defined in Table 8 on page 5.

Table 8: WXC Integrated Services Module Terms

Term	Definition
JUNOS software with enhanced services	Operating system that combines the security features from ScreenOS with the routing features from the JUNOS software.
J-Web	Graphical user interface used to configure, monitor, and manage individual Juniper Networks routing platforms.
NSM	NetScreen-Security Manager (NSM). A central management tool for J-series Services Routers, including device configuration, network settings, and security policy.
WX WXC	Juniper Networks application acceleration platforms and modules. WX stands for <i>WAN acceleration</i> . The WXC ISM 200 is inserted in a J-series Services Router. All other models are standalone platforms. The WXC platforms and modules use disk-based compression and generally achieve higher compression rates than the non-disk-based WX platforms.
WX CMS	The WX Central Management System software. A central management tool for managing, monitoring, and configuring up to 2000 Juniper Networks WX and WXC application acceleration platforms, including WXC Integrated Services Modules.
WXOS Web interface	Graphical user interface used to configure WAN acceleration features. To open the WXOS Web interface for the WXC ISM 200, select Configuration > Quick Configuration > WAN Acceleration > Manage in the J-Web interface.

Sample Deployment Topologies

Figure 2 on page 6, Figure 3 on page 6, and Figure 4 on page 7 show three sample deployment topologies for J-series routers that have the WXC ISM 200 installed.



NOTE: The WXC ISM 200 supports only route-based IPsec VPNs. Policy-based IPsec VPNs are not supported.

Figure 2: Sample Private WAN Deployment

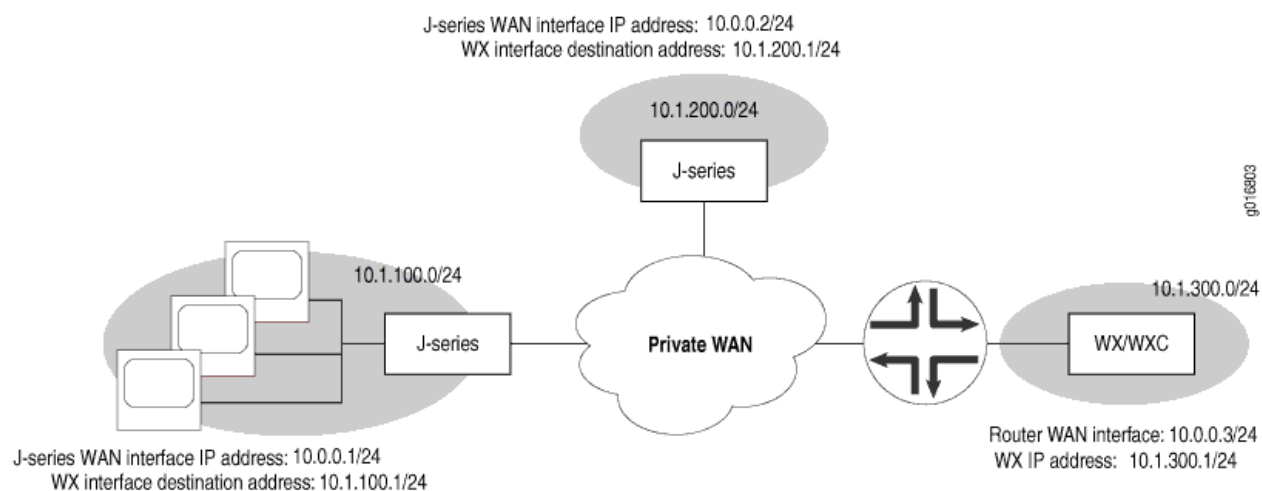


Figure 3: Sample IPsec VPN Deployment

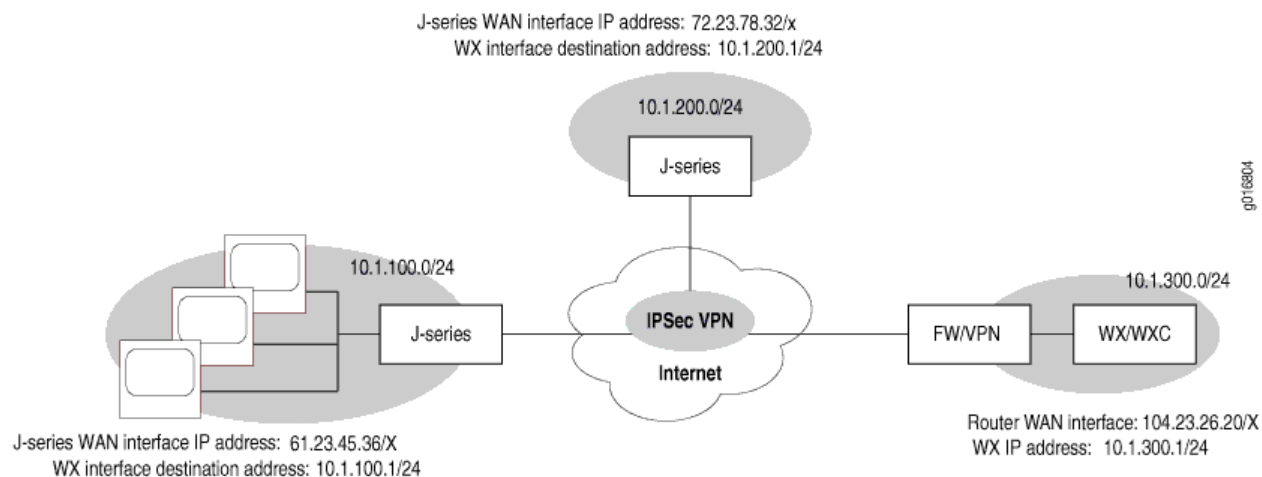
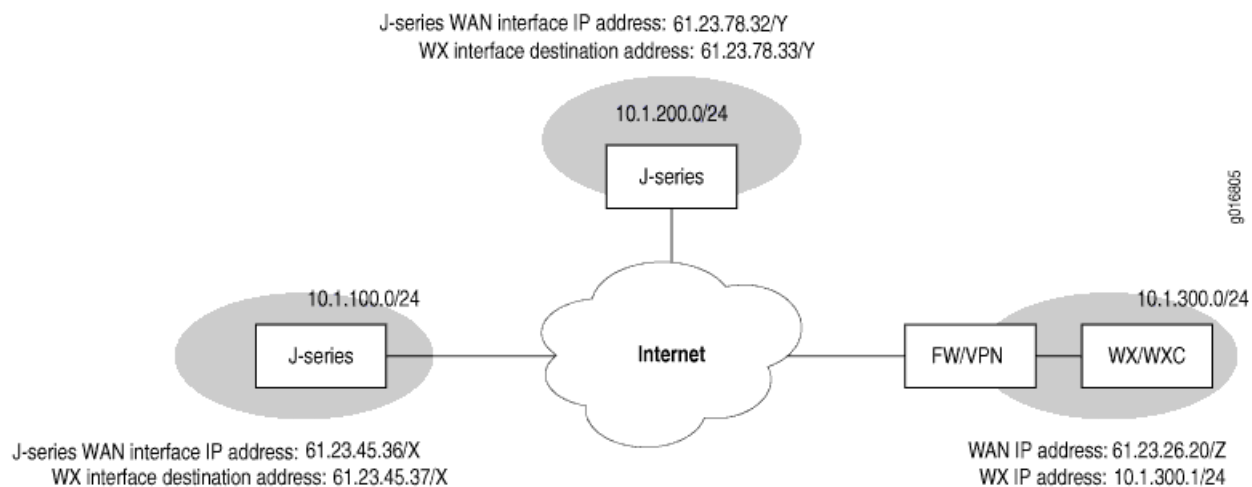


Figure 4: Sample NAT Deployment

NOTE: On the WXC ISM 200, the interface destination address must be a public IP address.

Chapter 2

Installing a WXC Integrated Services Module

A single WXC ISM 200 can be installed in any J2320, J2350, J4350, or J6350 Services Router running the JUNOS software with enhanced services.

This chapter contains the following topics:

- Before You Begin on page 9
- Installing and Removing a WXC ISM 200 on page 10

Before You Begin

Before you begin installing a WXC ISM 200 in a J-series Services Router, complete the following tasks:

- If you have not already done so, install and configure the J-series Services Router as described in the *JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide*.
- If you do not already have the JUNOS software, load the latest version from a console connected to the router. (For release information, see “Supported Hardware and Software” on page 4. For loading instructions, see the *JUNOS Software with Enhanced Services Administration Guide*.)
- Configure the WAN interfaces on the J-series Services Router, as described in the *JUNOS Software with Enhanced Services Interfaces and Routing Configuration Guide*.
- Verify that the WXC ISM 200 you are installing and the PIMs already installed in the router do not exceed the limitations of the chassis. For more information, see the power management section in the *JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide*.



CAUTION: Do not install a combination of modules in a single chassis that exceeds the maximum power and heat capacity of the chassis. If J-series power management is enabled, modules that exceed the maximum power and heat capacity remain offline when the chassis is powered on.

- Gather the following tools and parts:

- WXC ISM 200 (For release information, see “Supported Hardware and Software” on page 4.)
- Electrostatic bag or antistatic mat
- Electrostatic discharge (ESD) grounding wrist strap
- Phillips (+) screwdriver, number 2

Installing and Removing a WXC ISM 200

WXC Integrated Services Modules are field-replaceable. You must power off the router before installing or removing modules. This section contains the following topics:

- Installing a WXC ISM 200 on page 10
- Removing the WXC ISM 200 on page 12

Installing a WXC ISM 200

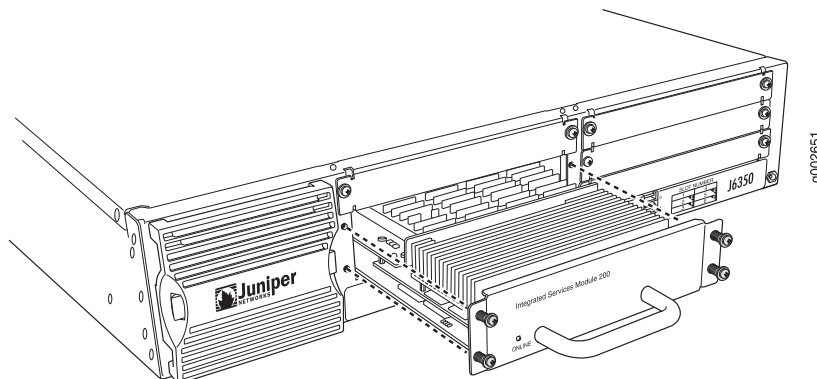
You can install a single WXC ISM 200 in either regular or high-speed slots of a J2320, J2350, J4350, or J6350 Services Router. The module occupies two slots, and the extra connector on high-speed slots is detected and configured automatically. If you insert a second WXC ISM 200, the module in the higher slot numbers will not power on.



CAUTION: Do not hot-swap WXC Integrated Services Modules or PIMs. Failure to power off the router before removing or installing a module might result in damage to the hardware.

To install a WXC ISM 200 (see Figure 5 on page 10):

Figure 5: Installing a WXC Integrated Services Module



1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to the ESD point on the chassis, or to an outside ESD point if the Services Router is disconnected from earth ground. For more information about ESD, see the *JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide*.
2. Back up the current router configuration.
3. To power off the router, use the CLI command **request system power-off** (recommended), or hold down the power button for at least 2 seconds. Verify that the **POWER** LED blinks and then turns off.
4. Remove the faceplates from two of the slots.
5. Align the notches in the connector at the rear of the WXC ISM 200 with the notches in the Services Router slot, and slide the module in until it lodges firmly in the router.



CAUTION: Slide the WXC ISM 200 straight into the slot to avoid damaging the components on the module.

6. Tighten the screws on each side of the module faceplate.
7. Press and release the power button to power on the router. Verify that the **POWER** LED for the J-series Services Router lights steadily after you press the power button.
8. Verify that the **ONLINE** LED on the module lights steadily green.

You can also verify the module is online by issuing the **show chassis fpc pic-status** command:

```
user@host> show chassis fpc pic-status

Slot 0 Online FPC
  PIC 0 Online 4x GE Base PIC
Slot 2 Online FPC
  PIC 0 Online Integrated Services Module
```



NOTE: In **show chassis fpc-pic-status** output, the higher of the two slot numbers occupied by the WXC ISM 200 is reported as an FPC number, and the PIC number is always zero.

For more information about **show chassis fpc pic-status**, see the *JUNOS System Basics and Services Command Reference*.

9. Complete the initial configuration of the WXC ISM 200, as described in “Configuring a WXC Integrated Services Module” on page 13.

Removing the WXC ISM 200

The WXC ISM 200 is installed in the front of the Services Router.



CAUTION: Do not hot-swap WXC Integrated Services Modules or PIMs. Failure to power off the router before removing or installing a module might result in damage to the hardware.

To remove the WXC ISM 200:

1. Place an electrostatic bag or antistatic mat on a flat, stable surface to receive the WXC ISM 200.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to the ESD point on the chassis, or to an outside ESD point if the Services Router is disconnected from earth ground. For more information about ESD, see the *JUNOS Software with Enhanced Services J-series Services Router Getting Started Guide*.
3. To power off the router, use the CLI command **request system power-off** (recommended), or hold down the power button for at least 2 seconds. Verify that the **POWER** LED blinks and then turns off.
4. Loosen the screws on each side of the WXC ISM 200 faceplate.
5. Grasp the handle on the WXC ISM 200 faceplate, and slide the module out of the router. Place it in the electrostatic bag or on the antistatic mat.
6. If you are not reinstalling a PIM or WXC ISM 200 in the emptied slots, install blank PIM panels over the slots to maintain proper airflow.

Chapter 3

Configuring a WXC Integrated Services Module

You can use the J-Web interface or the JUNOS CLI to perform the initial configuration of the WXC ISM 200.

This chapter contains the following topics:

- Before You Begin on page 13
- Configuring the WXC ISM 200 Using J-Web Quick Configuration on page 14
- Configuring the WXC ISM 200 Using the CLI on page 16
- Verifying the Initial WXC ISM 200 Configuration on page 20
- Monitoring the WAN Acceleration Interface on page 20

Before You Begin

Before you begin configuring the WXC ISM 200, install the module in the chassis, as described in “Installing a WXC ISM 200” on page 10.

When installation is complete and the router is powered on, the operating system automatically creates two interfaces:

- **wx-slot/0/0**—You must configure an IP address for this internal interface.
- **pc-slot/0/0**—This internally configured interface is used by the system as a control path between the WXC ISM 200 and the Routing Engine (RE).

In both interface names, *slot* is the higher number of the two slots in which the WXC ISM 200 is installed. For example, for a module installed in slots 5 and 6, the interface names are **wx-6/0/0** and **pc-6/0/0**. If you later move the module to another pair of slots, the interface names are changed, and you must configure an IP address for the new wx- interface.

Configuring the WXC ISM 200 Using J-Web Quick Configuration

You can use the WAN Acceleration Quick Configuration page to perform the initial configuration of a WXC ISM 200, as shown in Figure 6 on page 14. If the J-series Services Router is operating in a router context (that is, all interfaces are in the same zone), the acceleration zone policies are replaced by local and remote LAN addresses.

Figure 6: WAN Acceleration Quick Configuration Page

The screenshot displays the J-Web interface for configuring the WXC ISM 200. The top navigation bar includes 'Monitor', 'Configuration', 'Diagnose', 'Manage', 'Events', and 'Alarms'. The 'Configuration' tab is active, and the breadcrumb trail shows 'Configuration > Quick Configuration > WAN Acceleration > Setup'. The left sidebar contains 'Quick Configuration', 'View and Edit', 'History', and 'Rescue'. The main content area is titled 'Quick Configuration' and 'WAN Acceleration'. It features three main sections: 'Logical Interfaces' with a message 'No WX interfaces configured.' and an 'Add...' button; 'Configure Acceleration Zone Policies' with a heading 'Select the Trust and Untrust Zones for WAN Acceleration' and three dropdown menus for 'Accelerate From', 'Accelerate To', and 'Please specify the Management zone'; and an 'OSPF' section with a text box for 'Select the Area ID to be exported' containing '0.0.0.1' and an 'or' field. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

To perform the initial WXC ISM 200 configuration with Quick Configuration:

1. In the J-Web interface, select **Configuration > Quick Configuration > WAN Acceleration > Setup**.
2. Enter information into the WAN Acceleration Quick Configuration page as described in Table 9 on page 15.
3. Click one of the following buttons:
 - To apply the configuration and stay in the Quick Configuration page, click **Apply**.
 - To apply the configuration and return to the previous Quick Configuration page, click **OK**.
 - To cancel your entries and return to the previous Quick Configuration page, click **Cancel**.
4. To check the configuration, go on to “Verifying the Initial WXC ISM 200 Configuration” on page 20.

Table 9: WAN Acceleration Quick Configuration Summary

Field	Function	Your Action
Logical Interfaces		
Add logical interface	Specifies IP addresses for the <code>wx-slot/0/0.0</code> interface that is created automatically when you install the WXC ISM 200. The <code>slot</code> indicates the higher of the two slot numbers occupied by the WXC ISM 200.	Click Add to configure the interface for the first time, or select the interface name to change the interface description or IP addresses.
Logical Interface Description	(Optional) Describes the logical interface.	Type a text description of the logical interface to more clearly identify it in monitoring displays.
IPv4 Address and Prefix	Specifies the IPv4 address and prefix for the primary interface.	Type an IPv4 address and prefix. The address can be any value, but the prefix must be <code>/32</code> . For example: <code>2.2.2.2/32</code>
Destination Address	Specifies the primary IP address, which is used to manage the WXC ISM 200, and as the source and destination address of optimized traffic sent across the WAN.	Type an IP address on the LAN that is in the same subnet as the Services Router. If NAT is used, the destination address must be a public WAN IP address.
Configure Multipath	If a WXC ISM 200 has two possible WAN paths to a remote WX endpoint, you can configure a secondary address and next-hop gateway to route selected application traffic to a designated secondary path.	Click Configure Multipath to configure a secondary address. For more configuration options, see “Configuring Multi-Path Routing Policies” on page 23.
IPv4 Address and Prefix	Specifies the IPv4 address and prefix for the secondary interface.	Type an IPv4 address and prefix. The address can be any value, but the prefix must be <code>/32</code> .
Destination Address	Specifies the secondary IP address of the WXC ISM 200, which is used as the source address of optimized traffic to be routed to the secondary path.	Type an IP address on the LAN that is in the same subnet as the Services Router.
Secondary WAN Link Nexthop Destination Address	Specifies the IP address of the WAN link for the secondary path.	Type the IP address of the secondary WAN link.
Configure Acceleration Zone Policies (Security Context Only)		
Accelerate From	Identifies the source and destination zones of the traffic that is redirected to the WXC ISM 200 for acceleration.	Select the From and To zones of the traffic to be accelerated, such as trust and untrust . The From and To zones must be for LAN and WAN interfaces, respectively.
Accelerate To		
		If the appropriate zones are not listed, select Configuration > Quick Configuration > Zones to create the zones.

Table 9: WAN Acceleration Quick Configuration Summary *(continued)*

Field	Function	Your Action
Management Zone	Identifies the zone from which the WXC ISM 200 is managed.	Select the source zone of the management traffic (the untrust zone is the default).
Configure the Local and Remote LAN Network Address (Router Context Only)		
Local LAN Network Address	Specifies the local LAN network addresses for which traffic is redirected to the WXC ISM 200.	Type the local network address and prefix.
Remote LAN Network Address	Specifies the remote LAN network addresses for which traffic is redirected to the WXC ISM 200.	Type a remote network address and prefix, and click Add . You can add any number of remote addresses.
OSPF [Local routes are dynamically exported...]		
Select the Area ID to be exported	Identifies the OSPF area ID of the routes to be exported to the WXC ISM 200.	Select the Area ID or type in the Area ID number.

Configuring the WXC ISM 200 Using the CLI

This section describes how to perform the initial configuration of a WXC ISM 200 using the JUNOS software with enhanced services CLI. The WXC ISM 200 in this sample procedure is installed in slots 5 and 6 of the J-series Services Router.

To initially configure the WXC ISM 200:

1. Assign IP addresses to the wx-6/0/0 interface:

```
user@host# set interfaces wx-6/0/0 unit 0 family inet address 2.2.2.2/32
destination 10.8.51.2
```

The internal IP prefix and netmask 2.2.2.2/32 can be any IP address, but the netmask /32 is required. The primary (destination) IP address 10.8.51.2 can be any real address on the LAN in the same subnet as the router. To use the WXC ISM 200 with NAT, the destination address must be a public WAN IP address.

2. Assign the wx-6/0/0 interface to OSPF area 0.0.0.1; import static routes, direct routes, RIP routes, OSPF routes, and IS-IS routes from the routing table; and create a policy to accept the routes:

```
user@host# set protocols ospf export wx-export
user@host# set protocols ospf area 0.0.0.1 interface wx-6/0/0.0
user@host# set policy-options policy-statement wx-export from instance master
protocol [ static direct rip ospf isis ]
user@host# set policy-options policy-statement wx-export then accept
```

3. If the J-series Services Router is operating in a security context, create the following zones and policies. If the router is operating in a router context (one zone), go to Step 4.

- a. Configure a trust security zone and an untrust security zone and assign them to LAN and WAN interfaces, respectively. The router cannot be accessed remotely until you assign at least one interface to the trust zone.

```
user@host# set security zones security-zone trust interfaces ge-0/0/0.0
host-inbound-traffic system-services all
user@host# set security zones security-zone untrust interfaces ge-0/0/1.0
host-inbound-traffic system-services all
```

- b. Create the internal zone wx-zone that includes only the wx-6/0/0.0 interface to which all accelerated traffic is to be directed:

```
user@host# set security zones security-zone wx-zone interfaces wx-6/0/0.0
host-inbound-traffic system-services all
user@host# set security zones security-zone wx-zone interfaces wx-6/0/0.0
host-inbound-traffic protocols all
```

- c. Create the acceleration zone security policy trust-to-untrust to redirect traffic sent from the trust zone to the untrust zone. In the following example, all traffic from the trust to untrust zone is redirected to the WXC ISM 200:

```
user@host# set security policies from-zone trust to-zone untrust policy
trust-to-untrust match source-address any
user@host# set security policies from-zone trust to-zone untrust policy
trust-to-untrust match destination-address any
user@host# set security policies from-zone trust to-zone untrust policy
trust-to-untrust match application any
user@host# set security policies from-zone trust to-zone untrust policy
trust-to-untrust then permit application-services redirect-wx
```

Packets sent from the LAN to the WAN are redirected to the WXC ISM 200 by the application service redirect-wx.

- d. Similarly, specify an untrust-to-trust policy that redirects traffic from the untrust zone to the trust zone:

```
user@host# set security policies from-zone untrust to-zone trust policy
untrust-to-trust match source-address any
user@host# set security policies from-zone untrust to-zone trust policy
untrust-to-trust match destination-address any
user@host# set security policies from-zone untrust to-zone trust policy
untrust-to-trust match application any
user@host# set security policies from-zone untrust to-zone trust policy
untrust-to-trust then permit application-services reverse-redirect-wx
```

Packets sent from the WAN to the LAN are redirected to the WXC ISM 200 by the application service reverse-redirect-wx.

- e. Create security policies wx-to-untrust and untrust-to-wx to allow traffic between the internal zone wx-zone and the untrust zone:

```

user@host# set security policies from-zone wx-zone to-zone untrust policy
wx-to-untrust match source-address any
user@host# set security policies from-zone wx-zone to-zone untrust policy
wx-to-untrust match destination-address any
user@host# set security policies from-zone wx-zone to-zone untrust policy
wx-to-untrust match application any
user@host# set security policies from-zone wx-zone to-zone untrust policy
wx-to-untrust then permit

```

```

user@host# set security policies from-zone untrust to-zone wx-zone policy
untrust-to-wx match source-address any
user@host# set security policies from-zone untrust to-zone wx-zone policy
untrust-to-wx match destination-address any
user@host# set security policies from-zone untrust to-zone wx-zone policy
untrust-to-wx match application any
user@host# set security policies from-zone untrust to-zone wx-zone policy
untrust-to-wx then permit

```

- f. Create a wx-to-wx policy to allow the WXC ISM 200 to send pings and registration server traffic:

```

user@host# set security policies from-zone wx-zone to-zone wx-zone policy
wx-to-wx match source-address any
user@host# set security policies from-zone wx-zone to-zone wx-zone policy
wx-to-wx match destination-address any
user@host# set security policies from-zone wx-zone to-zone wx-zone policy
wx-to-wx match application any
user@host# set security policies from-zone wx-zone to-zone wx-zone policy
wx-to-wx then permit

```

4. If the router is operating in a router context, create one zone and the following policies:

- a. Configure a trust security zone for all interfaces that specifies the local and remote address ranges. For example:

```

user@host# set security zones security-zone trust interfaces all
user@host# set security zones security-zone trust host-inbound-traffic
system-services all
user@host# set security zones security-zone trust host-inbound-traffic
protocols all
user@host# set security zones security-zone trust address-book address
local_lan_network 20.10.10.0/30
user@host# set security zones security-zone trust address-book address
remote_lan_network 30.10.10.0/30

```

- b. Create a security policy redirect so that traffic sent from the local to the remote network is redirected to the WXC ISM 200:

```

user@host# set security policies from-zone trust to-zone trust policy redirect
match source-address local_lan_network
user@host# set security policies from-zone trust to-zone trust policy redirect
match destination-address remote_lan_network
user@host# set security policies from-zone trust to-zone trust policy redirect
match application any

```

```
user@host# set security policies from-zone trust to-zone trust policy redirect
then permit application-services redirect-wx
```

The application service `redirect-wx` redirects each packet to the WXC ISM 200.

- c. Create a security policy `reverse` so that traffic sent from the remote to the local network is redirected to the WXC ISM 200:

```
user@host# set security policies from-zone trust to-zone trust policy reverse
match source-address remote_lan_network
user@host# set security policies from-zone trust to-zone trust policy reverse
match destination-address local_lan_network
user@host# set security policies from-zone trust to-zone trust policy reverse
match application any
user@host# set security policies from-zone trust to-zone trust policy reverse
then permit application-services reverse-redirect-wx
```

The application service `reverse-redirect-wx` redirects each packet to the WXC ISM 200.

- d. Specify the following security flows:

```
user@host# set security flow allow-dns-reply
user@host# set security flow tcp-session no-syn-check
user@host# set security flow tcp-session no-syn-check-in-tunnel
user@host# set security flow tcp-session no-sequence-check
```

5. Commit the configuration to make it the operating configuration on the router:

```
user@host# commit
```

6. To check the configuration, go on to “Verifying the Initial WXC ISM 200 Configuration” on page 20.

Verifying the Initial WXC ISM 200 Configuration

To verify that the WXC ISM 200 is properly configured, perform the following task.

Verifying WAN Acceleration Status

Purpose Verify the status of the WXC ISM 200, and the compatibility of the router and WXOS software.

Action From configuration mode in the CLI, enter the `show wan-acceleration status` command.

```
user@host> show wan-acceleration status
Redirection status: active, Interface: wx-2/0/0
Primary address: 10.87.5.2, Secondary address: 0.0.0.0
JUNOS version: 9.0R1 Enhanced Services
WXOS version: 5.4.6.0j
JUNOS/WXOS protocol: Version compatible
```

What It Means Verify that the status of the WXC ISM 200 interface is active, the correct IP address is assigned to the interface, and the router and WXOS software versions are compatible.

Related Topics For a complete description of `show wan-acceleration status`, see the *JUNOS Software with Enhanced Services CLI Reference*.

Monitoring the WAN Acceleration Interface

To view status information and traffic statistics for the WAN acceleration interface, select **Monitor > WAN Acceleration** in the J-Web interface, or select **Monitor > Interfaces** and select the interface name (`wx-slot/0/0`). Alternatively, enter the following CLI command:

```
user@host> show interfaces wx-slot/0/0 detail
```

For a description of the interface properties and statistics, see the *JUNOS Software with Enhanced Services Administration Guide*.

Chapter 4

Configuring WAN Acceleration Features

This chapter contains the following topics:

- Enabling WAN Acceleration on page 21
- Configuring IPSec on page 23
- Configuring Multi-Path Routing Policies on page 23
- Accessing the WXOS CLI on page 24
- Restarting WAN Acceleration and Enabling Trace Options on page 25
- Upgrading the WXC ISM 200 Software on page 25

Enabling WAN Acceleration

After you perform the initial configuration of the WXC ISM 200, use the following procedure to enable WAN acceleration:

1. Select **Configuration > Quick Configuration > WAN Acceleration > Manage** in the J-Web interface to open the WXOS Web interface in a separate window (see Figure 7 on page 22).

Figure 7: Entry Page to the WXOS Web interface

If you have difficulty opening multiple WXOS Web interface windows using Microsoft Internet Explorer, version 6, go to **Tools > Internet Options > Temporary Internet Files > Settings** and select **Automatically**.

2. If you already have a WX registration server, do the following:
 - a. Click **Device Setup > Registration Server**.
 - b. Click **Transfer registration server**.
 - c. Type the IP address of your current registration server, and click **Submit**.

Alternatively, change your remote WX endpoints to use the WXC ISM 200 as the registration server. WAN acceleration can occur only between endpoints that use the same registration server and belong to the same WX community (the default).

3. Log in to each remote WX endpoint where you want to establish a tunnel to the WXC ISM 200, and do the following:
 - a. Click **Compression > Advanced > Tunnel Mode**, change the tunnel mode from IpComp (the default) to UDP, and click **Submit**. The tunnel mode on a WXC ISM 200 is always set to UDP, and cannot be changed.



CAUTION: Traffic to remote WX endpoints will be blocked unless the tunnel mode is set to UDP.

- b. Click **Compression > Endpoints** and verify that a tunnel to the WXC ISM 200 is enabled.

- c. Click **Acceleration** to verify that TCP Acceleration to the WXC ISM 200 is enabled.
4. On the WXC ISM 200, click **Compression > Endpoints** to enable or disable tunnels to the appropriate endpoints. Click **Acceleration** to verify that TCP Acceleration is enabled. To accelerate traffic to a remote endpoint, compression and acceleration must be enabled in both directions.
5. Click **Compression > Compression Subnets**, select the local subnets that you want to advertise to remote endpoints for compression, and click **Submit**. Only the local subnet of the `wx-slot/0/0` interface is advertised by default.

For more information about configuring WXC features, see the *WX/WXC Operator's Guide*, available at <http://www.juniper.net/techpubs/hardware/wx/>.

Configuring IPSec

The WXC ISM 200 module cannot establish encrypted tunnels with other WX endpoints. However, the WXC ISM 200 module supports route-based IPSec VPNs configured between J-series routers. Policy-based VPNs are not supported. To configure route-based IPSec VPNs, refer to the *JUNOS Enhanced Services Security Configuration Guide*.

Configuring Multi-Path Routing Policies

If a WXC ISM 200 has two possible WAN paths to a remote WX endpoint, you can designate one path as the primary and the other as the secondary. You can then route application traffic to the primary or secondary path based on the performance requirements of the application and the performance of the path.

To configure the J-series Services Router to support Multi-Path:

1. Specify a secondary address for the `wx-slot/0/0` interface:

```
user@host# set interfaces wx-6/0/0 unit 0 family inet filter input
classify-secondary
user@host# set interfaces wx-6/0/0 unit 0 family inet address 2.2.2.2/32
destination 10.8.51.3
```

The secondary address (10.8.51.3) is displayed automatically in the WXOS Web interface.

2. Specify a firewall filter so that packets that have the secondary address as their source address are forwarded by the routing instance `wx-multipath`:

```
user@host# set interfaces wx-6/0/0 unit 0 family inet filter input
classify-secondary
user@host# set firewall family inet filter classify-secondary term 1 from
source-address 10.8.51.3
user@host# set firewall family inet filter classify-secondary term 1 then
routing-instance wx-multipath
user@host# set firewall family inet filter classify-secondary term default then
accept
```

3. Optionally, you can add an IP precedence or class-of-service DiffServ code point value to the firewall filter. For example, if the WXC ISM 200 is configured to mark packets for the secondary path with an IP precedence value of 2, use the following command to update the firewall filter:

```
user@host# set firewall family inet filter classify-secondary term 1 from
precedence 2
```

4. Define the routing instance wx-multipath to route the filtered packets to the appropriate WAN interface:

```
user@host# set routing-instances wx-multipath instance-type forwarding
routing-options static route 0.0.0.0/32 next-hop 10.8.4.1 retain
```

5. Import routes from default inet.0 routing table to the wx-multipath.inet routing table:

```
user@host# set routing-options interface-routes rib-group inet fb1
user@host# set routing-options rib-groups fb1 import-rib [ inet.0
wx-multipath.inet.0 ]
```

6. On both the local WXC ISM 200 and the remote WX endpoint:
 - a. Enable Multi-Path and configure an IP precedence or DSCP value as a supplemental marking method (optional).
 - b. Define the appropriate traffic classes, and define Multi-Path templates that specify the preferred path (primary or secondary) for each traffic class.
 - c. Apply a template to the remote WX endpoint, and specify the congestion and latency thresholds for each path.

The router for the remote WX endpoint must also be configured to support Multi-Path. For more information about configuring Multi-Path, see the *WX/WXC Operator's Guide*.

Accessing the WXOS CLI

Use any of the following methods to access the WXOS CLI:

- From the JUNOS CLI, enter the following command, where *slot* is the higher number of the two slots occupied by the WXC ISM 200:

```
user@host> request wan-acceleration login fpc slot
Copyright 2001-2007 Juniper Networks, Inc. All Rights Reserved.
```

```
WXC-10.1.1.2#
```

To view the slot number, enter the `show chassis fpc pic-status` command. Note that users require `interface` permission for read-only access, and `interface-control` and `configure` permission for read-write access.

- From the WXOS Web interface, select **Admin>Tools>Command Line Interface**. Some CLI commands cannot be entered from the Web interface (refer to the *WX/WXC Operator's Guide*).

Restarting WAN Acceleration and Enabling Trace Options

If you cannot access the WXC ISM 200, or the module is not responding, you can restart the WAN acceleration process (wxd) on the router:

```
user@host> restart wan-acceleration gracefully
```

If necessary, you can stop WAN acceleration temporarily by disabling the WAN acceleration process:

```
user@host# set system processes wan-acceleration disable
user@host# commit
```

To enable trace options for WAN acceleration:

```
user@host# set system processes wan-acceleration traceoptions flag <all |
configuration | fpc-ipc | fpc-ipc-heartbeat | memory | ssam | wx-login>
user@host# commit
```

By default, the trace is saved in the `/var/log/wxd` file. Note that setting the `all` or `fpc-ipc-heart-beat` options will add a large volume of entries to the log file.

Upgrading the WXC ISM 200 Software

The procedure to upgrade the boot image on a WXC ISM 200 is the same as for upgrading a standalone WX device. Loading a boot image does not affect the configuration settings stored in the `startup.cfg` file. All configuration settings are preserved.

To load a new boot image on the WXC ISM 200:

1. Copy the new boot image to a local disk, an FTP server, or a TFTP server.
2. Select **Configuration > Quick Configuration > WAN Acceleration > Manage** in the J-Web interface to open the WXOS Web interface.
3. In the WXOS Web interface, select **Admin>Load Boot Image**.
4. On the Load Boot Image page, select the source of the boot image (**Local Disk**, **TFTP server**, or **FTP server**), specify the image location and filename, and click **Load**. Loading the boot image may take several minutes.
5. Select **Reboot** in the left-hand navigation frame, and click the **Reboot** button to activate the new system software.

Part 2

Index

- Index on page 29

Index

Symbols

#, comments in configuration statements.....	xii
(), in syntax descriptions.....	xii
< >, in syntax descriptions.....	xii
[], in configuration statements.....	xii
{ }, in configuration statements.....	xiii
(pipe), in syntax descriptions.....	xii

A

acceleration zones, configuring	
with J-Web Quick Configuration.....	15

B

braces, in configuration statements.....	xiii
brackets	
angle, in syntax descriptions.....	xii
square, in configuration statements.....	xii

C

comments, in configuration statements.....	xii
commit command.....	19
configuring a WXC Integrated Services Module	
initial CLI configuration.....	16
initial Quick Configuration	14
prerequisites.....	13
control path interface.....	13
conventions	
notice icons.....	xi
text and syntax.....	xii
curly braces, in configuration statements.....	xiii
customer support.....	xvii
contacting JTAC.....	xvii

D

datasheets URL.....	4
documentation set	
comments on.....	xvii
list of.....	xiii

F

font conventions.....	xii
FPC, module slot number in command displays.....	11

G

ge/0/0/0, assigning a trust security zone.....	17
glossary, WXC Integrated Services Module.....	5

H

hardware	
product overview.....	3
supported platforms.....	viii, 4
hot-swap caution.....	10

I

installing a WXC Integrated Services Module	
prerequisites.....	9
procedure.....	10
Internet Explorer, version 6, accessing the WXOS Web	
interface with.....	21
IP address, assigning to the WXC Integrated Services	
Module.....	16
IPSec VPN deployment topology example.....	6
IPSec, configuring.....	23

J

J-Web interface	
link to WXOS Web interface.....	21
WAN acceleration configuration.....	14
JUNOS documentation	
list of	xiv
JUNOS software with enhanced services	
documentation.....	xiii
release notes, URL.....	vii
supported software.....	4

L

LED states.....	4
logical interface, WXC interface.....	15

M

maintenance, tools and parts required.....	9
management interface, assigning a trust security zone.....	17
manuals	
comments on.....	xvii
list of	xiii
module number, always 0.....	11
monitoring the wx interface.....	20
Multi-Path policies.....	15, 23

N

NAT deployment topology example.....	7
notice icons.....	xi

O

OSPF	
enabling on the WXC interface (CLI).....	16
enabling on the WXC interface (Quick Configuration).....	16

P

parentheses, in syntax descriptions.....	xii
primary IP address.....	15
private WAN deployment topology example.....	6
product overview.....	3

Q

Quick Configuration, for WAN acceleration.....	14
------------------------------------------------	----

R

release notes, URL.....	vii
removing a WXC Integrated Services Module	
prerequisites.....	9
procedure.....	12
restarting the WAN acceleration process.....	25
router context.....	16, 17
routes, importing to the WXC Integrated Services Module.....	16

S

sample topologies	
IPSec VPN deployment.....	6
NAT deployment.....	7
private WAN deployment.....	6
secondary IP address.....	15
security context.....	14, 15, 17
show chassis fpc pic-status command.....	11
show wan-acceleration status command.....	19

slot numbers, displayed as FPC number in command output.....	11
software, supported.....	4
support, technical <i>See</i> technical support	
syntax conventions.....	xii

T

technical publications list.....	xiii
technical support	
contacting JTAC.....	xvii
terminology, WXC Integrated Services Module.....	5
tools and equipment for WXC Integrated Services Module replacement.....	9
topologies <i>See</i> sample topologies	
trace options, enabling.....	25
trust zone, configuring.....	17, 18

U

untrust zone, configuring.....	17
upgrading the WXOS software.....	25
URLs	
datasheets.....	4
PIM information and datasheets.....	4
release notes.....	vii

V

verifying a WXC Integrated Services Module.....	19
-------------------------------------------------	----

W

WAN acceleration features, WXOS Web interface for.....	21
WAN acceleration process, restarting.....	25
WAN Acceleration Quick Configuration page.....	14
WX documentation, list of	xiv
WXC Integrated Services Module	
configuration.....	13
configuring zones.....	17, 18
importing routes.....	16
installation.....	10
overview.....	3
removal.....	12
sample topologies.....	6
supported hardware and software.....	4
terminology.....	5
verification.....	19
WXC interface	
assigning IP addresses.....	16
description.....	13
Quick Configuration page.....	15
WXC ISM 200 <i>See</i> WXC Integrated Services Module	
WXOS CLI, accessing.....	24
WXOS software, upgrading.....	25

WXOS Web interface	
accessing through J-Web.....	21
problem with Internet Explorer, version 6.....	21
WXOS, supported software.....	4

Z

zones

configuring acceleration zones (Quick Configuration).....	15
configuring trust and untrust security zones.....	17
configuring trust security zones.....	18

