



Security Products

PIM and Mini-PIM Installation and Configuration Guide

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If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Caution: Changes or modifications to this product could void the user's warranty and authority to operate this device.

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About This Guide

This guide describes how to install and configure Physical Interface Modules (PIMs) and Mini Physical Interface Modules (Mini-PIMs) for the following Juniper Networks security devices:

- SSG 20
- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

This guide contains basic configuration examples. You can also use the device Initial Configuration Wizard (ICW) to configure PIMs and Mini-PIMs. For more information, refer to the device “Hardware Installation and Configuration Guide”.

NOTE: The configuration instructions and examples in this document are based on a device running the minimum ScreenOS version shown in Table 1, “PIM Types and Hardware and Software Compatibility” on page 13. Your device might function differently depending on the ScreenOS version you are running. For the latest device documentation, refer to the Juniper Networks Technical Publications website at www.juniper.net/techpubs/hardware. To see which ScreenOS versions are currently available for your device, refer to the Juniper Networks Support website at <http://www.juniper.net/customers/support/>.

Organization

This guide contains the following sections:

- Chapter 1, “Understanding PIMs and Mini-PIMs,” describes what PIMs and MINI-PIMs are and lists all that are currently available.
- Chapter 2, “Installing and Removing PIMs and Mini-PIMs,” describes how to install and remove PIMs from SSG 140, SSG 300-series, and SSG 500-series devices.
- Chapter 3, “ISDN Wide Area Network Physical Interface Module,” describes how to connect and configure the ISDN PIM.
- Chapter 4, “T1 Physical Interface Module,” describes how to connect and configure the T1 PIM.
- Chapter 5, “E1 Wide Area Network Physical Interface Module,” describes how to connect and configure the E1 PIM.
- Chapter 6, “DS3 and E3 Wide Area Network Physical Interface Modules,” describes how to connect and configure the DS3/T3 PIM.
- Chapter 7, “Synchronous Serial Wide Area Network Physical Interface Module,” describes how to connect and configure the Synchronous Serial PIM.
- Chapter 8, “16-Port Gigabit Ethernet Universal Physical Interface Module,” describes how to connect and configure the 16-port Ethernet PIM.
- Chapter 9, “8-Port Gigabit Ethernet Universal Physical Interface Module,” describes how to connect and configure the eight-port Ethernet PIM.
- Chapter 10, “6-port SFP Gigabit Ethernet Universal Physical Interface Module,” describes how to connect and configure the six-port small form-factor pluggable (SFP) gigabit Ethernet PIM.
- Chapter 12, “1xGE SFP Ethernet Enhanced Physical Interface Module,” describes how to connect and configure the one-port SFP gigabit Ethernet PIM.
- Chapter 13, “10/100/1000 Ethernet Enhanced Physical Interface Module,” describes how to connect and configure the one-port copper Ethernet PIM.
- Chapter 14, “4x10/100 Ethernet Physical Interface Module,” describes how to connect and configure the four-port copper Ethernet PIM.
- Chapter 15, “G.SHDSL Wide Area Network Physical Interface Module,” describes how to connect and configure the G.SHDSL PIM.
- Chapter 16, “ADSL 2+ Wide Area Network Physical Interface Module,” describes how to connect and configure the ADSL 2+ PIM.
- Chapter 17, “ISDN Mini Physical Interface Module,” describes how to connect and configure the ISDN Mini-PIM.

- Chapter 18, “T1 Mini Physical Interface Module,” describes how to connect and configure the T1 Mini-PIM.
- Chapter 19, “E1 Mini Physical Interface Module,” describes how to connect and configure the E1 Mini-PIM.
- Chapter 20, “Synchronous Serial Mini Physical Interface Module,” describes how to connect and configure the synchronous serial Mini-PIM.
- Chapter 21, “SFP Ethernet Mini Physical Interface Module,” describes how to connect and configure the SFP gigabit Ethernet Mini-PIM.
- Chapter 22, “ADSL 2 + Mini Physical Interface Module,” describes how to connect and configure the ADSL 2 + Mini-PIM.
- Chapter 23, “V.92 Modem Mini Physical Interface Module,” describes how to connect and configure the V.92 Mini-PIM.

WebUI Conventions

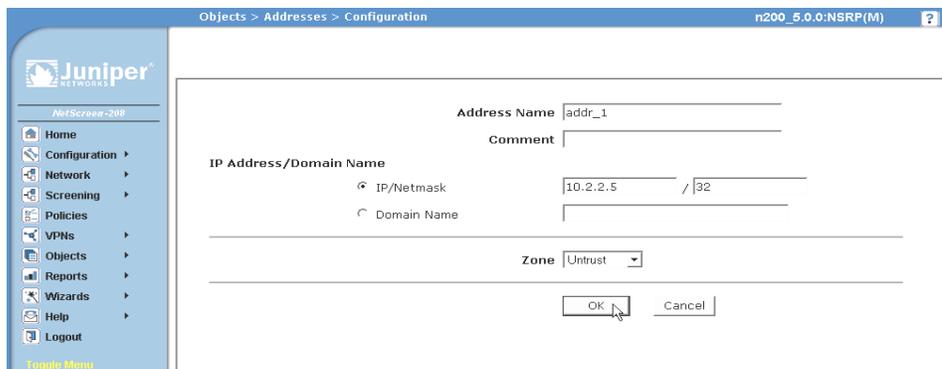
To perform a task with the WebUI, you first navigate to the appropriate dialog box, where you then define objects and set parameters. A chevron (>) shows the navigational sequence through the WebUI, which you follow by clicking menu options and links. The set of instructions for each task is divided into navigational path and configuration settings.

The following figure lists the path to the address configuration dialog box with the following sample configuration settings:

Objects > Addresses > List > New: Enter the following, then click **OK**:

Address Name: addr_1
 IP Address/Domain Name:
 IP/Netmask: (select), 10.2.2.5/32
 Zone: Untrust

Figure 1: Navigational Path and Configuration Settings



CLI Conventions

The following conventions are used to present the syntax of Command Line Interface (CLI) commands in examples and in text.

In examples:

- Anything inside square brackets [] is optional.
- Anything inside braces { } is required.
- If there is more than one choice, each choice is separated by a pipe (|). For example:

```
set interface { ethernet1 | ethernet2 | ethernet3 } manage
```

means “set the management options for the ethernet1, the ethernet2, *or* the ethernet3 interface.”

- Variables are in *italic* type:

```
set admin user name1 password xyz
```

In text:

- Commands are in **boldface** type.
- Variables are in *italic* type.

NOTE: When entering a keyword, you need to type only enough letters to identify the word uniquely. For example, typing **set adm u ani j12fmt54** is enough to enter the command **set admin user anita j12fmt54**. Although you can use this shortcut when entering commands, all the commands documented here are presented in their entirety.

Obtaining Documentation and Technical Support

To obtain technical documentation for any Juniper Networks product, visit www.juniper.net/techpubs/.

For technical support, open a support case using the Case Management link at <http://www.juniper.net/customers/support/> or call 1-888-314-JTAC (from the United States, Canada, or Mexico) or 1-408-745-9500 (from elsewhere).

If you find any errors or omissions in this document, contact Juniper Networks at techpubs-comments@juniper.net.

Chapter 1

Understanding PIMs and Mini-PIMs

PIMs and Mini-PIMs are circuit boards that you install in Juniper Networks Security Services Gateway (SSG) devices. They enable you to easily add or change physical interfaces on a device.

Some PIMs are also supported by Juniper Networks J-series routers. However, this guide only describes the use of PIMs on SSG devices.

PIMs fit into the following SSG devices:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

Mini-PIMs fit only into SSG 20 devices.

Figure 2 shows the parts of a typical PIM.

Figure 2: Typical PIM (8-Port Gigabit Ethernet uPIM Shown, Others Similar)

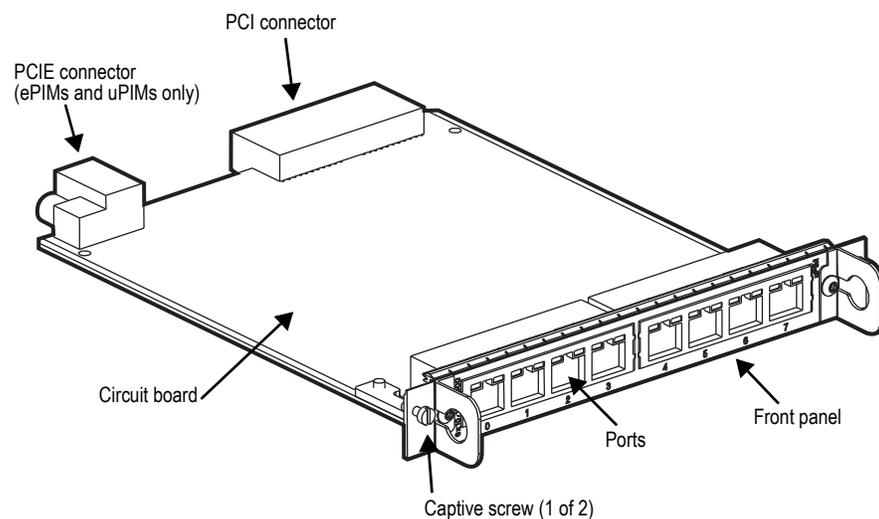
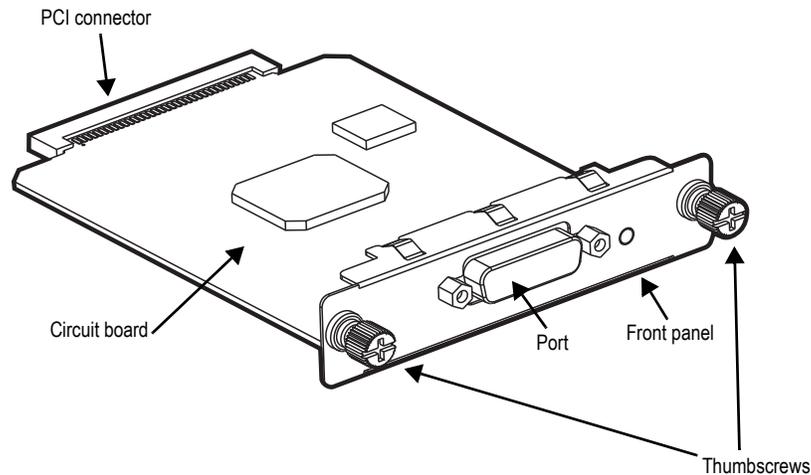


Figure 3 shows the parts of a typical Mini-PIM.

Figure 3: Typical Mini-PIM (Synchronous Serial shown, others similar)



Port Naming Conventions

When configuring a port on a PIM or Mini-PIM you will need to know the slot and port number assigned by the system. The slot number is the slot on the device where you insert the PIM or Mini-PIM and is typically named 1, 2, 3, and so on. The port number is the port on the PIM or Mini-PIM that is being configured and is typically named 0, 1, 2, and so on. Example: If you are installing a 6-port SFP Gigabit Ethernet module in slot 1 of an SSG 140 device and you want to configure port 0, the system name for that port would be *ethernet1/0* (1 being the slot and 0 being the port). With PIMs and Mini-PIMs that only have one port, that port is typically named **0**.

PIM Types

The following sections describe the different PIM types.

Wide Area Network (WAN) PIMs

You use WAN PIMs to add WAN interfaces to SSG series devices. The available WAN interfaces include, but are not limited to:

- ADSL and G.SHDSL
- ISDN
- T3 and E3
- T1 and E1
- Synchronous Serial

Ethernet Enhanced PIMs (ePIMs)

You use ePIMs to add extra Ethernet interfaces to SSG 500-series and SSG 500M-series devices. The ePIMs are only supported on the Enhanced slots of these devices. The ePIMs have an extra connector that lets them tap into the high-speed bus of the Enhanced slots.

Universal PIMs (uPIMs)

Universal PIMs are high-performance PIMs that let you add additional Ethernet interfaces to your device. They are supported on all SSG devices that accept full-size PIMs. They have increased performance when installed in the enhanced slots of SSG 500 and SSG 500M-series devices.

Mini-PIMs

Mini-PIMs are supported only on SSG 20 devices. Mini-PIMs are available with both WAN and Ethernet interfaces.

PIM Models and Compatibility

Table 1 shows the different PIMs, the SSG devices in which they fit, and the required ScreenOS versions.

Table 1: PIM Types and Hardware and Software Compatibility

Type	PIM Model	Description	Minimum ScreenOS Version				
			SSG 550	SSG 520	SSG 320M	SSG 140	SSG 20
WAN PIM	JX-2T1-RJ48-S	2xT1 PIM	5.1	5.1	6.0r2	5.4	—
	JX-2E1-RJ48-S	2xE1 PIM	5.1	5.1	6.0r2	5.4	—
	JX-2Serial-S	2xSerial PIM	5.1	5.1	6.0r2	5.4	—
	JX-1ADSL-A-S	1xADSL Annex A PIM	6.0	6.0	6.0r2	6.0	—
	JX-1ADSL-B-S	1xADSL Annex B PIM	6.0	6.0	6.0r2	6.0	—
	JX-1DS3-S	1xT3 PIM	5.1	5.1	—	—	—
	JX-1E3-S	1xE3 PIM	6.0	6.0	—	—	—
	JX-1BRI-ST-S	1xISDN BRI - S Interface	—	—	6.1	5.4	—
	JX-2SHDSL-S	2-Port 2-wire G.SHDSL Interface	6.0	6.0	6.0r2	6.0	—
Enhanced PIM (ePIM)	JXE-1GE-TX-S	1xGigabit Copper EPIM	5.1	5.1	—	—	—
	JXE-1GE-SFP-S	1xGigabit SFP EPIM	5.1	5.1	—	—	—
	JXE-4FE-TX-S	4xFE EPIM	5.1	5.1	—	—	—
Universal PIM (uPIM)	JXU-16GE-TX-S	16-Port Gigabit Ethernet Copper uPIM	6.0	6.0	6.0r2	6.0	—
	JXU-8GE-TX-S	8-Port Gigabit Ethernet Copper uPIM	6.0	6.0	6.0r2	6.0	—
	JXU-6GE-SFP-S	6-Port SFP Gigabit Ethernet uPIM	6.0	6.0	6.0r2	6.0	—
	JXU-1SFP-S	1x100/1000 SFP Ethernet uPIM	6.1	6.1	6.1	6.1	—

Table 1: PIM Types and Hardware and Software Compatibility (Continued)

Type	PIM Model	Description	Minimum ScreenOS Version				
			SSG 550 SSG 550M	SSG 520 SSG 520M	SSG 320M SSG 350M	SSG 140	SSG 20
Mini-PIM	JXM-1T1-S	1xT1 Mini-PIM	—	—	—	—	5.4
	JXM-1E1-S	1xE1 Mini-PIM	—	—	—	—	5.4
	JXM-1ADSL2-A-S	1xADSL2 + Annex A Mini-PIM	—	—	—	—	5.4
	JXM-1ADSL2-B-S	1xADSL2 + Annex B Mini-PIM	—	—	—	—	5.4
	JXM-1V92-S	1xv.92 Mini-PIM	—	—	—	—	5.4
	JXM-1BRI-ST-S	1xISDN S/T BRI Mini-PIM	—	—	—	—	5.4
	JXM-1GE-SFP-S	1xSFP Mini-PIM	—	—	—	—	6.0
	JXM-1SERIAL-S	1xSERIAL Mini-PIM	—	—	—	—	6.0

PIM Power and Heat Requirements

Before you add a new PIM to an SSG 140, SSG 300M-series, SSG 500-series, or SSG 500M-series device, verify that the combination of PIMs to be installed does not exceed the power and heat capacities for that device. Add the power and heat tokens required by each PIM, and compare them to the capacity of the device.



CAUTION: Do not install a combination of PIMs in a single device that exceeds the maximum power and heat capacity of the device.

To verify that the combination of PIMs to be installed in a device does not exceed the power and heat capacities for that model:

1. Check Table 2 to determine the token values for power and heat for each PIM that you plan to install in the device.
2. Add the power tokens and heat dissipation tokens for all PIMs to be installed in the device.
3. Verify that the total number of power tokens and the total number of heat dissipation tokens do not exceed the maximums permitted for your device as specified in Table 3 on page 16.

Table 2 shows the power consumption and heat dissipation, represented in non-dimensional tokens, assigned to each PIM.

Table 2: PIM Power Consumption and Heat Dissipation

PIM Model	Description	Tokens	
		Power	Heat
JX-2T1-RJ48-S	2xT1 PIM	6	5
JX-2E1-RJ48-S	2xE1 PIM	6	6
JX-2Serial-S	2xSerial PIM	5	6
JX-1ADSL-A-S	1xADSL Annex A PIM	16	16
JX-1ADSL-B-S	1xADSL Annex B PIM	16	16

Table 2: PIM Power Consumption and Heat Dissipation (Continued)

PIM Model	Description	Tokens	
		Power	Heat
JX-1DS3-S	1xT3 PIM	7	7
JX-1E3-S	1xE3 PIM	7	7
JX-1BRI-ST-S	1xISDN BRI - S Interface	4	6
JX-2SHDSL-S	2-Port 2-wire G.SHDSL Interface	9	10
JXE-1GE-TX-S	1xGigabit Copper EPIM	6	7
JXE-1GE-SFP-S	1xGigabit SFP EPIM	4	4
JXE-4FE-TX-S	4xFE EPIM	9	9
JXU-16GE-TX-S	16-Port Gigabit Ethernet Copper uPIM	38	36
JXU-8GE-TX-S	8-Port Gigabit Ethernet Copper uPIM	21	27
JXU-6GE-SFP-S	6-Port SFP Gigabit Ethernet uPIM	13	13
JXU-1SFP-S	1-Port SFP 100/1000 Ethernet uPIM	8	8

Table 3 lists the maximum power tokens and maximum heat tokens available for each device.

Table 3: Maximum Power and Heat Capacities

Device Model	Power Capacity (Tokens)	Heat Capacity (Tokens)
SSG 140	67	67
SSG 320M	50	68
SSG 350M	84	84
SSG 520	86	100
SSG 550	67	100
SSG 520M	100	100
SSG 550M	100	100

Chapter 2

Installing and Removing PIMs and Mini-PIMs

This chapter describes how to install and remove PIMs and Mini-PIMs from SSG 20, SSG 140, SSG 300M-series, SSG 500-series, and SSG 500M-series devices.

Removing and Installing PIMs

The following sections tell how to remove and install PIMs from SSG 140, SSG 300M-series, SSG 500-series, and SSG 500M-series devices:

- “Removing a Blank PIM Faceplate”
- “Installing a PIM” on page 18
- “Removing a PIM” on page 20



CAUTION: Power off the device before removing or installing PIMs. PIMs are not hot-swappable.

Removing a Blank PIM Faceplate

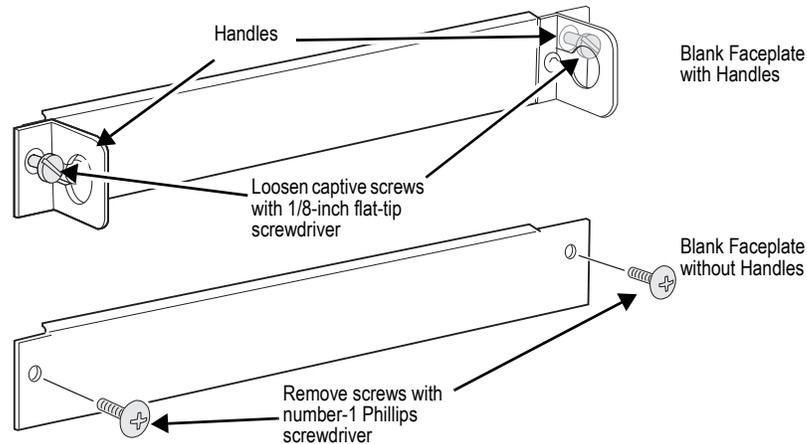
To maintain proper airflow through the device, leave blank faceplates in place over slots that do not contain PIMs. Do not remove a blank faceplate unless you are installing a PIM in the empty slot.

To remove a blank faceplate:

1. Attach an ESD grounding strap to your bare wrist, and connect the strap to the ESD point on the device.
2. If the device is powered on, power off the device. Verify that the POWER LED is off.

3. Loosen the screws on each side of the faceplate as shown in Figure 4:
 - On faceplates with handles, use a 1/8-inch flat-tip screwdriver to loosen but do not remove the captive screws.
 - On faceplates without handles, use a number-1 phillips screwdriver to remove the non-captive screws.

Figure 4: Identifying Blank Faceplate Types



4. Remove the faceplate.

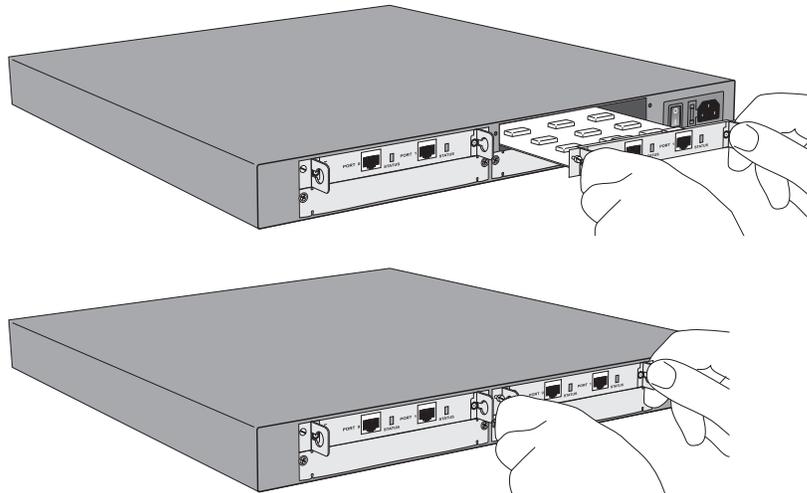
Installing a PIM



CAUTION: Power off the device before removing or installing PIMs. PIMs are not hot-swappable.

To install a PIM:

1. Attach an ESD grounding strap to your bare wrist, and connect the strap to the ESD point on the device.
2. Power off the device. Verify that the POWER LED is off.
3. Grasp the handles on each side of the PIM faceplate. On some PIMs the handles are metal ears attached to the PIM faceplate. Other PIMs have long screws that serve as the handles.
4. Align the edges of the PIM circuit board with the guide rails at each side of the PIM slot.

Figure 5: Installing a PIM (SSG 140 Shown; Others Similar)

5. Slide the PIM in until it seats firmly in the device.



CAUTION: Slide the PIM straight into the slot to avoid damaging the components on the PIM.

6. Tighten the screws on each side of the PIM faceplate:
 - On PIMs with metal ear handles attached to the faceplate, tighten the captive screws using a 1/8-inch flat-tip screwdriver.
 - On PIMs with long screws for handles, tighten the captive screws using a number-2 phillips screwdriver.
7. Insert the appropriate cables into the cable connectors on the PIM.
8. If necessary, arrange the cables to prevent them from dislodging or developing stress points:
 - Secure the cable so that it is not supporting its own weight as it hangs to the floor.
 - Place excess cable out of the way in a neatly coiled loop.
 - Use fasteners to maintain the shape of cable loops.
9. Power on the device. Verify that the POWER LED lights steadily.
10. Verify that the PIM status LED glows steadily green to confirm that the PIM is online.

Removing a PIM



CAUTION: Power off the device before removing or installing PIMs. PIMs are not hot-swappable.

To remove a PIM:

1. Attach an ESD grounding strap to your bare wrist, and connect the strap to the ESD point on the device.
2. Power off the device. Verify that the POWER LED is off.
3. Label the cables connected to the PIM so that you can later reconnect each cable to the correct PIM.
4. Disconnect the cables from the PIM.
5. If necessary, arrange the cables to prevent them from dislodging or developing stress points.
6. Loosen the screws on each side of the PIM faceplate using a 1/8-inch flat-tip screwdriver.
7. Grasp the handles on each side of the PIM faceplate, and slide the PIM out of the device. On some PIMs the handles are metal ears attached to the PIM faceplate. Other PIMs have long screws that serve as the handles.
8. Place the PIM in the electrostatic bag or on the antistatic mat.
9. If you are not reinstalling a PIM into an empty slot, install a blank PIM faceplate over the empty slot to maintain proper airflow.

Removing and Installing Mini-PIMs (SSG 20)

The following sections tell how to remove and install PIMs from SSG 20 devices:

- “Removing a Blank Mini-PIM Faceplate”
- “Installing a Mini-PIM” on page 21
- “Removing a Mini-PIM” on page 22

Removing a Blank Mini-PIM Faceplate

To maintain proper airflow through the SSG 20 device, leave blank faceplates in place over slots that do not contain Mini-PIMs. Do not remove a blank faceplate unless you are installing a Mini-PIM in the empty slot.

To remove a blank faceplate:

1. Attach an ESD grounding strap to your bare wrist, and connect the strap to the grounding point on the back of the device.

2. Unplug the power adapter from the device. Verify that the POWER LED is off.
3. Loosen and remove the screws on each side of the faceplate using a screwdriver.
4. Remove the faceplate.

Installing a Mini-PIM



CAUTION: Power off the device before removing or installing Mini-PIMs. Mini-PIMs are not hot-swappable.

To install a Mini-PIM:

1. Attach an ESD grounding strap to your bare wrist, and connect the strap to the grounding point on the back of the device.
2. Unplug the power adapter from the device. Verify that the POWER LED is off.
3. Grasp the screws on each side of the Mini-PIM faceplate and align the notches in the connector at the rear of the Mini-PIM with the notches in the Mini-PIM slot in the SSG 20 device. Then slide the Mini-PIM in until it lodges firmly in the device.

Figure 6: Installing a Mini-PIM



CAUTION: Slide the Mini-PIM straight into the slot to avoid damaging the components on the Mini-PIM.

4. Tighten the screws on each side of the Mini-PIM faceplate using a 1/8-inch slotted screwdriver.
5. Insert the appropriate cables into the cable connectors on the Mini-PIM.
6. If necessary, arrange the cables to prevent them from dislodging or developing stress points:
 - Secure the cables so that they are not supporting their own weight as they hang to the floor.
 - Place any excess cables out of the way in neatly coiled loops.
 - Use fasteners to maintain the shape of the cable loops.

7. Reconnect the power adapter to the device. Verify that the POWER LED glows steadily green after you press the power button.
8. Verify that the PIM status LED on the system dashboard glows steadily green to confirm that the Mini-PIM is online.

Removing a Mini-PIM



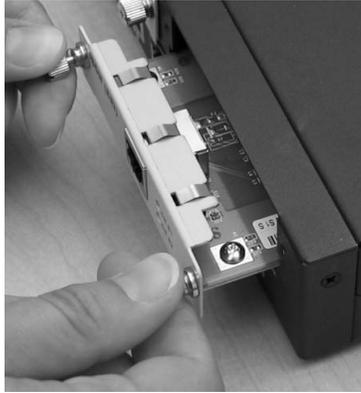
CAUTION: Power off the device before removing or installing Mini-PIMs. Mini-PIMs are not hot-swappable.

Mini-PIMs are installed in the front panel of the SSG 20 device. A Mini-PIM weighs less than 0.2 lb (106g).

To remove a Mini-PIM:

1. Place an electrostatic bag or antistatic mat on a flat, stable surface on which you intend to place the Mini-PIM.
2. Attach an ESD grounding strap to your bare wrist, and connect the strap to the grounding point on the back of the device.
3. Unplug the power adapter from the device. Verify that the POWER LED is off.
4. Label the cables connected to the Mini-PIM so that you can later reconnect each cable to the correct Mini-PIM.
5. Disconnect the cables from the Mini-PIM.
6. If necessary, arrange the cables to prevent them from dislodging or developing stress points.
7. Loosen and remove the screws on each side of the Mini-PIM faceplate using a screwdriver.
8. Grasp the screws on each side of the Mini-PIM faceplate and slide the Mini-PIM out of the device. Place the Mini-PIM in the electrostatic bag or on the antistatic mat.

Figure 7: Removing a Mini-PIM



9. If you are not reinstalling a Mini-PIM into the empty slot, install a blank faceplate over the slot to maintain proper airflow.

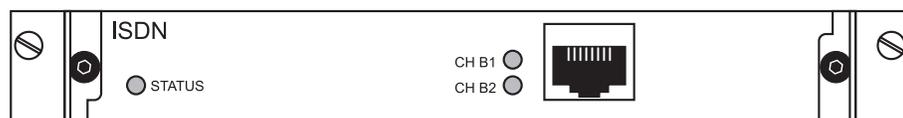
Chapter 3

ISDN Wide Area Network Physical Interface Module

Integrated Services Digital Network (ISDN) is a set of standards for digital transmission over different media created by the Consultative Committee for International Telegraphy and Telephone (CCITT) and International Telecommunications Union (ITU). As a dial-on-demand service, ISDN has fast call setup and low latency as well as the ability to carry high-quality voice, data, and video transmissions. ISDN is also a circuit-switched service that can be used on both multipoint and point-to-point connections. ISDN provides a service router with a Multilink Point-to-Point Protocol (MLPPP) connection for network interfaces. The ISDN interface is usually configured as the backup interface of the Ethernet interface to access external networks.

Figure 8 shows the front panel of the ISDN WAN PIM.

Figure 8: ISDN WAN PIM Front Panel



Supported Device

The following devices support the ISDN WAN PIM:

- SSG 140
- SSG 320M and SSG 350M

LEDs

The ISDN WAN PIM has three LEDs. Table 4 shows the ISDN WAN PIM LED states.

Table 4: ISDN WAN PIM LED States

Name	Color	State	Description
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm; device has detected a failure.
CH B1	Green	On steadily	Indicates that B-Channel 1 is active.
		Off	Indicates that B-Channel 1 is not active.
CH B2	Green	On steadily	Indicates that B-Channel 2 is active.
		Off	Indicates that B-Channel 2 is not active.

Basic Configuration

To perform basic configuration for the ISDN WAN PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (bri1/0): Enter or select the following, then click **OK**:

BRI Mode: Dial Using BRI
 Primary Number: 123456
 WAN Encapsulation: PPP
 PPP Profile: isdnprofile

CLI

```
set interface bri1/0 dialer-enable
set interface bri1/0 primary-number "123456"
set interface bri1/0 encaps ppp
set interface bri1/0 ppp profile isdnprofile
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 5 describes the physical specifications of the interface module.

Table 5: ISDN Physical Specifications

Description	Value
Dimensions	5.45"W x 6.5"L x 0.63"H (13.8 cm x 16.5 cm x 1.6 cm)
Weight	0.37 lb. (165g)
Connector Type	RJ-45
Form Factor	PIM

Chapter 4

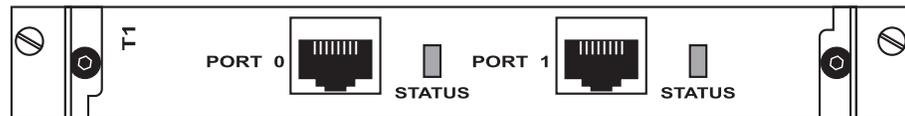
T1 Physical Interface Module

The T1 interface is a basic Physical Layer protocol used by the Digital Signal level 1 (DS1) multiplexing method in North America. A T1 interface operates at a bit-rate of 1.544 Mbps or speeds up to 24 DS0 channels.

The T1 PIM supports the following T1 DS1 standards:

- ANSI T1.107, T1.102
- GR 499-core, GR 253-core
- AT&T Pub 54014
- ITU G.751, G.703

Figure 9: T1 PIM Front Panel



Supported Devices

The following devices support the T1 PIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The T1 PIM has one LED on the right side of each port. Table 6 shows the T1 PIM LED states.

Table 6: T1 PIM LED States

Name	Color	State	Description
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm; device has detected a failure.

Basic Configuration

To perform basic configuration for the T1 PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (serial1/0): Enter or select the following, then click **OK**:

WAN Configure: main link
 WAN Encapsulation: PPP
 Click **Apply**
 Fixed IP: (select)
 IP Address/Netmask 172.18.1.1/24

CLI

```
set interface serial1/0 encap ppp
set interface serial1/0 ip 172.18.1.1/24
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 7 describes the physical specifications of the interface module.

Table 7: T1 WAN Physical Specifications

Description	Value
Dimensions	5.45"W x 6.5"L x 0.63"H (13.8 cm x 16.5 cm x 1.6 cm)
Weight	0.37 lb. (165g)
Connector Type	RJ-48
Form Factor	PIM

Chapter 5

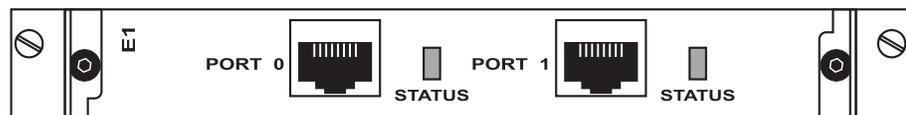
E1 Wide Area Network Physical Interface Module

The E1 interface is a standard wide area network (WAN) digital communications format designed to operate over copper conductors at a rate of 2.048 Mbps. Widely used outside North America, E1 is a basic time-division multiplexing scheme used to carry digital circuits.

The E1 WAN PIM support the following E1 standards:

- ITU-T G.703
- ITU-T G.751
- ITU-T G.775

Figure 10: E1 WAN PIM Front Panel



Supported Devices

The following devices support the E1 WAN PIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The E1 WAN PIM has one LED on the right side of each port. Table 8 shows the E1 WAN PIM LED states.

Table 8: E1 WAN PIM LED States

Name	Color	State	Description
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm; device has detected a failure.

Basic Configuration

To perform basic configuration for the E1 WAN PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (serial1/0): Enter or select the following, then click **OK**:

WAN Configure: main link
 WAN Encapsulation: PPP
 Binding a PPP Profile: junipertest
 Click **Apply**
 Fixed IP: (select)
 IP Address/Netmask 172.18.1.1/24

CLI

```
set interface serial1/0 encapsulation ppp
set ppp profile "junipertest" static-ip
set ppp profile "junipertest" auth type chap
set ppp profile "junipertest" auth local-name "juniper"
set ppp profile "junipertest" auth secret "password"
set interface serial1/0 ppp profile "junipertest"
set interface serial1/0 ip 172.18.1.1/24
set user "server" type wan
set user "server" password "server"
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 9 describes the physical specifications of the interface module.

Table 9: E1 WAN Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.37 lb. (165g)
Connector Type	RJ-48
Form Factor	PIM

Chapter 6

DS3 and E3 Wide Area Network Physical Interface Modules

Digital Signal 3 (DS3, also referred to as T3) and E3 are high-speed data-transmission mediums.

DS3 is formed by multiplexing 28 DS1 signals into seven separate DS2 signals and combining the DS2 signals into a single DS3 signal. DS3 operates at 43.736 Mbps. DS3 is most commonly implemented in North America.

E3 is the European equivalent of DS3. It is formed by multiplexing sixteen E1 signals together. It operates at 34.368 Mbps.

NOTE: The E3 WAN PIM is only supported on ScreenOS 6.0.0 and later.

The DS3 and E3 PIMs for SSG devices are similar, differing only in firmware and labeling.

The DS3 WAN PIM supports the following standards:

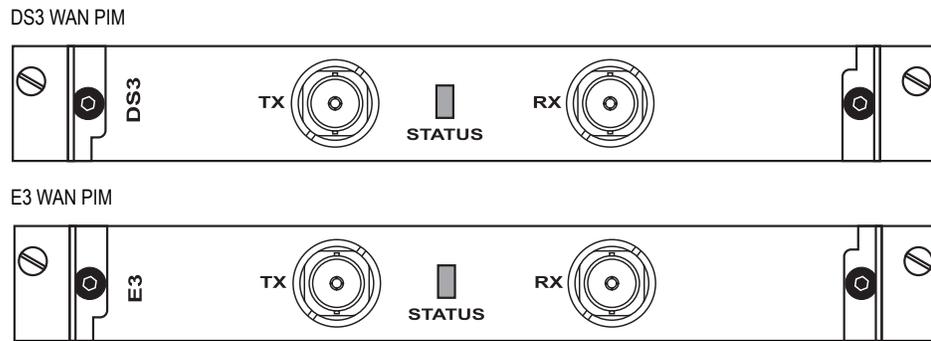
- ANSI T1.107, T1.102
- Telcordia GR 499-CORE, GR 253-CORE
- Telcordia TR-TSY-000009
- AT&T Technical Reference 54014
- ITU G.751, G.823

The E3 WAN PIM supports the following standards:

- ITU-T G.751, G.703, G.823
- Telcordia GR-449-CORE

Figure 11 shows the front panels of the DS3 and E3 PIMs.

Figure 11: DS3 and E3 WAN PIM Front Panels



Supported Devices

The following devices support the DS3 and E3 PIMs:

- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The DS3 and E3 PIMs have one LED located between the TX and RX connectors. Table 10 shows the DS3 and E3 PIMs LED states.

Table 10: DS3 and E3 WAN PIM LED States

Name	Color	State	Description
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm; device has detected a failure.

Basic Configuration

To perform basic configuration for the DS3 and E3 PIMs, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (WAN interface): Enter or select the applicable option value, then click **OK**.

WAN Configure: main link
WAN Encapsulation: ppp

Click **Apply**.

Fixed IP (select)
IP Address/Netmask 172.18.1.1/24

Click **OK**.

CLI

```
set interface serial1/0 encap ppp
set interface serial1/0 ip 172.18.1.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 11 describes the physical specifications of the interface module.

Table 11: DS3 and E3 WAN Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.43 lb. (193g)
Connector Type	Coax Fiber
Form Factor	PIM

Chapter 7

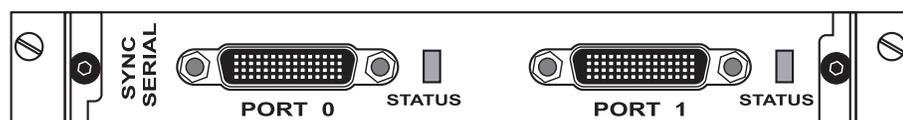
Synchronous Serial Wide Area Network Physical Interface Module

Serial WAN links provide bidirectional links that require very few control signals. In a basic serial setup, the data circuit-terminating equipment (DCE) is responsible for establishing, maintaining, and terminating a connection. A modem is a typical DCE device. A serial cable connects the DCE to a telephony network where, ultimately, a link is established with data terminal equipment (DTE). DTE is typically where a link terminates.

The synchronous serial WAN PIM supports the following serial standards:

- TIA/EIA 530
- V.35
- X.21
- RS-232
- RS-449

Figure 12: Synchronous Serial WAN PIM



Supported Devices

The following devices support the synchronous serial WAN PIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The synchronous serial WAN PIM has one LED on the right side of each port. Table 12 shows the synchronous serial WAN PIM LED states.

Table 12: Synchronous Serial WAN PIM LED States

Name	Color	State	Description
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm; device has detected a failure.

Interface Cables

Table 13 lists the cables that you can order from Juniper Networks to connect to a port on the synchronous serial WAN PIM. The device to which you are connecting and the serial interface type determine which cable you need.

Table 13: Juniper Networks Serial Cables

Product Number	Interface Type	Length (in Feet)	Connector Type
JX-CBL-EIA530-DCE	EIA 530 (DCE)	10	Female
JX-CBL-EIA530-DTE	EIA 530 (DTE)	10	Male
JX-CBL-RS232-DCE	RS-232 (DCE)	10	Female
JX-CBL-RS232-DTE	RS-232 (DTE)	10	Male
JX-CBL-RS449-DCE	RS-449 (DCE)	10	Female
JX-CBL-RS449-DTE	RS-449 (DTE)	10	Male
JX-CBL-V35-DCE	V.35 (DCE)	10	Female
JX-CBL-V35-DTE	V.35 (DTE)	10	Male
JX-CBL-X21-DCE	X.21 (DCE)	10	Female
JX-CBL-X21-DTE	X.21 (DTE)	10	Male

Basic Configuration

To perform basic configure for the synchronous serial WAN PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (*WAN Interface*) > WAN: Select the following, then click **Apply**:

DTE Options
Select your options

CLI

```
set interface interface serial-options dte-options { ... }
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 14 describes the physical specifications of the interface module.

Table 14: Synchronous Serial WAN Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.37 lb. (167g)
Connector Type	60-pin Synchronous Serial (female)
Form Factor	PIM

Chapter 8

16-Port Gigabit Ethernet Universal Physical Interface Module

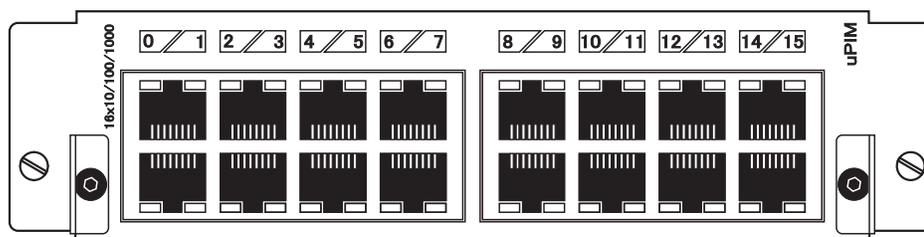
The 16-Port Gigabit Ethernet Universal Physical Interface Module (uPIM) provides connectivity to up to 16 Gigabit Ethernet devices or networks.

NOTE: The 16-Port Gigabit Ethernet uPIM is only supported on ScreenOS 6.0.0 and later.



CAUTION: Before installing a 16-Port Gigabit Ethernet uPIM with any other PIM, confirm that your device has adequate power and heat dissipation capacity to support it. See “PIM Power and Heat Requirements” on page 14 for more information.

Figure 13: 16-Port Gigabit Ethernet uPIM Front Panel



The 16-Port Gigabit Ethernet uPIM is a double-height unit that physically occupies two PIM slots in the device. The uPIM connects only with the backplane connector for the lower of the two slots. When you configure the uPIM, use the slot number corresponding to the lower slot.

The 16-Port Gigabit Ethernet uPIM supports up to eight bridge groups (bgroups). Bgroups let you group multiple Ethernet interfaces together. Each bgroup constitutes its own broadcast domain and provides high-speed Ethernet switching between interfaces within the group. You can assign a single IP address to each bgroup interface. You can bind a bgroup interface to any zone.

When you configure the 16-Port Gigabit Ethernet uPIM, you can create bgroups containing some or all of the Ethernet interfaces on the module. The bgroups are identified as bgroupx/y, where x is the slot number for the module containing the grouped ports and y is a number from 0 through 7 you assign when creating the bridge group.

NOTE: All the Ethernet interfaces in a bgroup must be on the same uPIM.

Supported Devices

The following devices support the 16-Port Gigabit Ethernet uPIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SG 520M
- SSG 550 and SSG 550M

LEDs

Each Ethernet port has two LEDs. Figure 14 shows the LED locations.

Figure 14: Ethernet Port LEDs

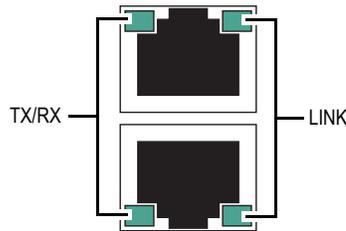


Table 15 shows the Ethernet port LED states.

Table 15: Ethernet Port LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online.
		Off	Port is offline.
TX/RX	Green	Blinking	Port is receiving or sending data.
		Off	Port might be on but is not receiving or sending data.

Note: During startup, the uPIM executes a self-test during which all LEDs flash briefly regardless of Link and TX/RX state.

Basic Configuration

To use the ports on the 16-Port Gigabit Ethernet uPIM, you must assign them to a zone other than the Null zone. Optionally, you can also assign each port an IP address.

To perform basic configuration for a port on the 16-Port Gigabit Ethernet uPIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/y): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernet2/3 zone trust
set interface ethernet2/3 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Bridge Group Interface Configuration

To configure a bgroup, you create the bgroup and then bind Ethernet interfaces to it. All the Ethernet interfaces in the bgroup must be on the same uPIM.

To create a new bgroup and bind Ethernet interfaces to it, use the WebUI or CLI as follows:

WebUI

Network > Interfaces > (choose **Bgroup IF** from list) > New

Choose the PIM slot and enter a number to identify the bgroup, enter an IP address and netmask for the new bgroup interface, then click **Apply**.

Choose a zone for the new bgroup, then click **Apply**.

Click **Bind Port**, mark checkboxes for the ports to bind to the bgroup, then click **Apply**.

CLI

```
set bgroup 5 0
set interface bgroup5/0 port ethernet5/0
set interface bgroup5/0 port ethernet5/1
set interface bgroup5/0 port ethernet5/2
set interface bgroup5/0 port ethernet5/3
set interface bgroup5/0 zone dmz
set interface bgroup5/0 ip 10.0.0.1/24
save
```

Bridge Group Statistics and MAC learning table

Traffic between the ports of a bgroup does not pass through the CPU of the security device, so you cannot monitor bgroup counters with the **get counter statistics interface <interface>** command. Instead, use the **get interface <interface> counter** CLI command as follows:

```
get interface bgroup5/1 counter
```

To display the MAC addresses learned by each member of the bgroup, use the **get interface <interface> mac-table** command as follows:

```
get interface bgroup5/1 mac-table
```

Specifications

Table 16 describes the physical specifications of the interface module.

Table 16: 16-Port Gigabit Ethernet Universal Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.72 lb. (325g)
Connector Type	RJ-45
Form Factor	PIM

Chapter 9

8-Port Gigabit Ethernet Universal Physical Interface Module

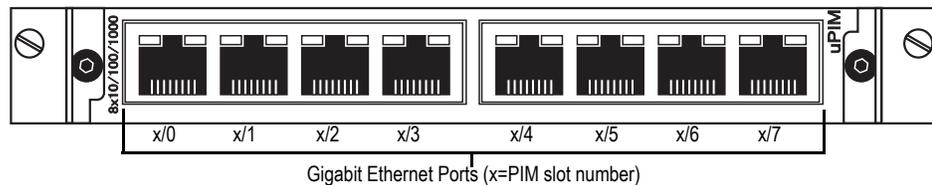
The 8-Port Gigabit Ethernet Universal Physical Interface Module (uPIM) provides connectivity to up to 8 Gigabit Ethernet devices or networks.

NOTE: The 8-Port Gigabit Ethernet uPIM is only supported on ScreenOS 6.0.0 and later.



CAUTION: Before installing an 8-Port Gigabit Ethernet uPIM with any other PIM, confirm that your device has adequate power and heat dissipation capacity to support it. See “PIM Power and Heat Requirements” on page 14 for more information.

Figure 15: 8-Port Gigabit Ethernet uPIM Front Panel



The 8-Port Gigabit Ethernet uPIM supports up to four bridge groups (bgroups). Bgroups let you group multiple Ethernet interfaces together. Each bgroup constitutes its own broadcast domain and provides high-speed Ethernet switching between interfaces within the group. You can assign a single IP address to each bgroup interface. You can bind a bgroup interface to any zone.

When you configure the 8-Port Gigabit Ethernet uPIM, you can create bgroups containing some or all of the Ethernet interfaces on the module. The bgroups are identified as bgroupx/y, where x is the slot number for the module containing the grouped ports and y is a number from 0 through 3 you assign when creating the bridge group.

NOTE: All the Ethernet interfaces in a bgroup must be on the same uPIM.

Supported Devices

The following devices support the 8-Port Gigabit Ethernet uPIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

Each Ethernet port has two LEDs. Figure 16 shows the LED locations.

Figure 16: Ethernet Port LEDs

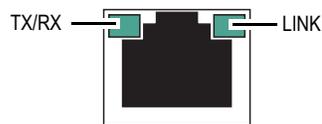


Table 17 shows the Ethernet port LED states.

Table 17: Ethernet Port LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online.
		Off	Port is offline.
TX/RX	Green	Blinking	Port is receiving or sending data.
		Off	Port might be on but is not receiving or sending data.

Note: During startup, the uPIM executes a self-test during which all LEDs flash briefly regardless of Link and TX/RX state.

Basic Configuration

To use the ports on the 8-Port Gigabit Ethernet uPIM, you must assign them to a zone other than the Null zone. Optionally, you can also assign each port an IP address.

To perform basic configuration for a port on the 8-Port Gigabit Ethernet uPIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/y): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernet2/3 zone trust
set interface ethernet2/3 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Bridge Group Interface Configuration

To configure a bgroup, you create the bgroup and then bind Ethernet interfaces to it. All the Ethernet interfaces in the bgroup must be on the same uPIM.

To create a new bgroup and bind Ethernet interfaces to it, use the WebUI or CLI as follows:

WebUI

Network > Interfaces > (choose **Bgroup IF** from list) > New

Choose the PIM slot and enter a number to identify the bgroup, enter an IP address and netmask for the new bgroup interface, then click **Apply**.

Choose a zone for the new bgroup, then click **Apply**.

Click **Bind Port**, mark checkboxes for the ports to bind to the bgroup, then click **Apply**.

CLI

```
set bgroup 5 0
set interface bgroup5/0 port ethernet5/0
set interface bgroup5/0 port ethernet5/1
set interface bgroup5/0 port ethernet5/2
set interface bgroup5/0 port ethernet5/3
set interface bgroup5/0 zone dmz
set interface bgroup5/0 ip 10.0.0.1/24
save
```

Bridge Group Statistics and MAC learning table

Traffic between the ports of a bgroup does not pass through the CPU of the security device, so you cannot monitor bgroup counters with the **get counter statistics interface <interface>** command. Instead, use the **get interface <interface> counter** CLI command as follows:

```
get interface bgroup5/1 counter
```

To display the MAC addresses learned by each member of the bgroup, use the **get interface <interface> mac-table** command as follows:

```
get interface bgroup5/1 mac-table
```

Specifications

Table 18 describes the physical specifications of the interface module.

Table 18: 8-Port Gigabit Ethernet Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.55 lb. (248g)
Connector Type	RJ-45
Form Factor	uPIM

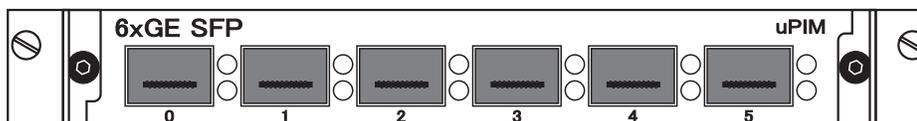
Chapter 10

6-port SFP Gigabit Ethernet Universal Physical Interface Module

The 6-port Small Form factor Pluggable (SFP) Ethernet Universal Physical Interface Module (uPIM) provides connectivity to up to six Gigabit Ethernet devices or networks.

NOTE: The 6-Port SFP Gigabit Ethernet uPIM is only supported on ScreenOS 6.0.0 and later.

Figure 17: 6-Port SFP Gigabit Ethernet uPIM Front Panel



You can customize the Ethernet interface type by using different SFP modules. Table 19 shows the available SFP modules.

Table 19: Gigabit Ethernet SFP Modules

Product Number	Interface Type	Connector
JX-SFP-1GE-LX	1000BASE-LX	LC
JX-SFP-1GE-SX	1000BASE-SX	LC
JX-SFP-1GE-TX	1000BASE-TX	RJ-45

The 6-Port SFP Gigabit Ethernet uPIM supports up to three bridge groups (bgroups). Bgroups let you group multiple Ethernet interfaces together. Each bgroup constitutes its own broadcast domain and provides high-speed Ethernet switching between interfaces within the group. You can assign a single IP address to each bgroup interface. You can bind a bgroup interface to any zone.

When you configure the 6-Port SFP Gigabit Ethernet uPIM, you can create bgroups containing some or all of the Ethernet interfaces on the module. The bgroups are identified as bgroupx/y, where x is the slot number for the module containing the grouped ports and y is a number from 0 through 2 you assign when creating the bridge group.

NOTE: All the Ethernet interfaces in a bgroup must be on the same uPIM.

Supported Devices

The following devices support the 6-Port SFP Gigabit Ethernet uPIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

Two LEDs are located to the right of each SFP socket. Table 18 shows the location of the LEDs.

Figure 18: SFP Socket LEDs

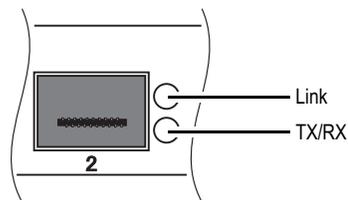


Table 20 shows the SFP socket LED states.

Table 20: 6xGE SFP uPIM LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online.
		Off	Port is offline.
TX/RX	Green	Blinking	Port is receiving or sending data.
		Off	Port might be on but is not receiving or sending data.

Basic Configuration

To use the ports on the 6-Port SFP Gigabit Ethernet uPIM, you must assign them to a zone other than the Null zone. Optionally, you can also assign each port an IP address.

To perform basic configuration for a port on the 6-Port SFP Gigabit Ethernet uPIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/y): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernet2/3 zone trust
set interface ethernet2/3 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Bridge Group Interface Configuration

To configure a bgroup, you create the bgroup and then bind Ethernet interfaces to it. All the Ethernet interfaces in the bgroup must be on the same uPIM.

To create a new bgroup and bind Ethernet interfaces to it, use the WebUI or CLI as follows:

WebUI

Network > Interfaces > (choose **Bgroup IF** from list) > New

Choose the PIM slot and enter a number to identify the bgroup, enter an IP address and netmask for the new bgroup interface, then click **Apply**.

Choose a zone for the new bgroup, then click **Apply**.

Click **Bind Port**, mark checkboxes for the ports to bind to the bgroup, then click **Apply**.

CLI

```
set bgroup 5 0
set interface bgroup5/0 port ethernet5/0
set interface bgroup5/0 port ethernet5/1
set interface bgroup5/0 port ethernet5/2
set interface bgroup5/0 port ethernet5/3
set interface bgroup5/0 zone dmz
set interface bgroup5/0 ip 10.0.0.1/24
save
```

Bridge Group Statistics and MAC learning table

Traffic between the ports of a bgroup does not pass through the CPU of the security device, so you cannot monitor bgroup counters with the **get counter statistics interface < interface >** command. Instead, use the **get interface < interface > counter** CLI command as follows:

```
get interface bgroup5/1 counter
```

To display the MAC addresses learned by each member of the bgroup, use the **get interface < interface > mac-table** command as follows:

```
get interface bgroup5/1 mac-table
```

Specifications

Table 21 describes the physical specifications of the interface module.

Table 21: 6xGE SPF Ethernet Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.56 lb. (252g)
Connector Type	SFP
Form Factor	uPIM

Chapter 11

1x100/1000 SFP Ethernet Universal Physical Interface Module

The 1x100/1000 SFP (Small Form factor Pluggable) Ethernet Universal Physical Interface Module (uPIM) provides connectivity to one 100/1000 Ethernet device or network.

NOTE: The 1-Port SFP Gigabit Ethernet uPIM is only supported on ScreenOS 6.1.0 and later.

Figure 19: 1x100/1000 SFP Ethernet uPIM Front Panel



You can customize the Ethernet interface type by using different types of optical transceiver SFP modules. Table 22 describes the available SFP modules.

Table 22: 100/1000 Ethernet SFP Modules

Product Number	Interface Type	Connector
JX-SFP-1FE-FX	100BASE-FX	LC
JX-SFP-1GE-LX	1000BASE-LX	LC
JX-SFP-1GE-SX	1000BASE-SX	LC
JX-SFP-1GE-T	1000BASE-T	RJ-45

Supported Devices

The following devices support the 1x100/1000 SFP Ethernet uPIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The SFP socket has two LEDs located to the right of the socket. Table 23 describes the Ethernet port LEDs.

Table 23: 1x100/1000 SFP uPIM LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online
		Off	Port is offline
TX/RX	Green	Blinking	Port is receiving or sending data
		Off	Port might be on, but is not receiving or sending data

Basic Configuration

To perform basic configuration for the 1x100/1000 SFP Ethernet uPIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/0): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernet1/0 zone trust
set interface ethernet1/0 ip 192.168.3.1/24
save
```

For advanced configuration information, see the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

The following table describes the physical specifications of the interface module.

Table 24: 1x100/1000 SFP Ethernet Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.49 lb. (224g)
Connector Type	Available in LC and RJ-45. See Table 22 for product numbers.
Form Factor	uPIM

Chapter 12

1xGE SFP Ethernet Enhanced Physical Interface Module

The 1xGE SFP (Small Form factor Pluggable) Ethernet Enhanced Physical Interface Module (ePIM) provides connectivity to one Gigabit Ethernet device or network.

Figure 20: 1xGE SFP Ethernet ePIM Front Panel



You can customize the Ethernet interface type by using different SFP modules. Table 25 describes the available SFP modules.

Table 25: Gigabit Ethernet SFP Modules

Product Number	Interface Type	Connector
JX-SFP-1GE-LX	1000BASE-LX	LC
JX-SFP-1GE-SX	1000BASE-SX	LC
JX-SFP-1GE-TX	1000BASE-TX	RJ-45

Supported Devices

The following devices support the 1xGE SFP Ethernet ePIM:

- SSG 520 and SSG 520M (Enhanced slots 3 and 6 only)
- SSG 550 and SSG 550M (Enhanced slots 2, 3, 5, and 6 only)

LEDs

The SFP socket has two LEDs located to the right of the socket. Table 26 shows the SFP socket LEDs.

Table 26: 1xGE SFP ePIM LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online
TX/RX	Green	Blinking	Port is receiving or sending data
		Off	Port might be on, but is not receiving or sending data

Basic Configuration

To use the port on the 1xGE SFP Ethernet ePIM, you must assign it to a zone other than the Null zone. Optionally, you can also assign the port an IP address.

To perform basic configuration for a port on the 1xGE SFP Ethernet ePIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/0): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernet2/0 zone trust
set interface ethernet2/0 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 27 describes the physical specifications of the interface module.

Table 27: 1xGE SFP Physical Specifications

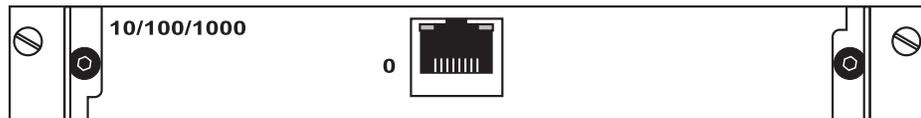
Description	Value
Dimensions	5.45"W x 6.5"L x 0.63"H (13.8cm x 16.5cm x 1.6cm)
Weight	0.36 lb. (164g). With SFP module 0.4 lb. (181g)
Connector Type	Available in LC and RJ-45. See Table 25 for product numbers.
Form Factor	ePIM

Chapter 13

10/100/1000 Ethernet Enhanced Physical Interface Module

The 10/100/1000 Ethernet Enhanced Physical Interface Module (ePIM) for the Secure Services Gateway (SSG) 500-series and SSG 500M-series devices complements the four on-board 10/100/1000 Ethernet interfaces with expanded Ethernet connectivity options. The 10/100/1000 Ethernet ePIM has a single RJ-45 connector.

Figure 21: 10/100/1000 Ethernet ePIM Front Panel



Supported devices

The following devices support the 10/100/1000 Ethernet ePIM:

- SSG 520 and SSG 520M (Enhanced slots 3 and 6 only)
- SSG 550 and SSG 550M (Enhanced slots 2, 3, 5, and 6 only)

LEDs

Each Ethernet port has two LEDs. Figure 22 shows the LED locations.

Figure 22: Ethernet Port LEDs

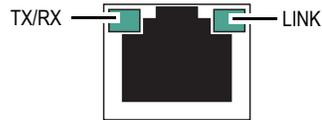


Table 28 shows the Ethernet port LED states.

Table 28: Ethernet Port LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online.
		Off	Port is offline.
TX/RX	Green	Blinking	Port is receiving or sending data.
		Off	Port might be on but is not receiving or sending data.

Basic Configuration

To use the port on the 10/100/1000 Ethernet ePIM, you must assign it to a zone other than the Null zone. Optionally, you can also assign the port an IP address.

To perform basic configuration for a port on the 10/100/1000 Ethernet ePIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/y): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernetx/0 zone trust
set interface ethernetx/0 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 29 describes the physical specifications of the interface module.

Table 29: 10/100/1000 ePIM Physical Specifications

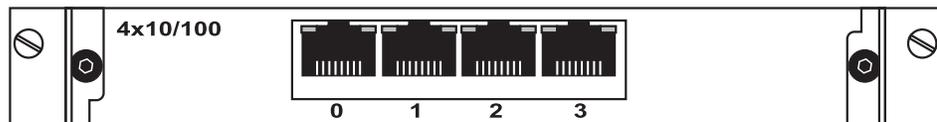
Description	Value
Dimensions	5.45"W x 6.5"L x 0.63"H (13.8cm x 16.5cm x 1.6cm)
Weight	0.38 lb. (170g)
Connector Type	RJ-45
Form Factor	ePIM

Chapter 14

4x10/100 Ethernet Physical Interface Module

The 4x10/100 Ethernet Enhanced Physical Interface Module (ePIM) for the Secure Services Gateway (SSG) 500-series and SSG 500M-series devices complements the four on-board 10/100/1000 Ethernet interfaces with expanded Ethernet connectivity options.

Figure 23: 4x10/100 Ethernet ePIM Front Panel



Supported devices

The following devices support the 4x10/100 Ethernet ePIM:

- SSG 520 and SSG 520M (Enhanced slots 3 and 6 only)
- SSG 550 and SSG 550M (Enhanced slots 2, 3, 5, and 6 only)

LEDs

Each Ethernet port has two LEDs. Figure 24 shows the LED locations.

Figure 24: Ethernet Port LEDs

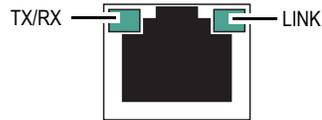


Table 30 shows the Ethernet port LED states.

Table 30: Ethernet Port LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online.
		Off	Port is offline.
TX/RX	Green	Blinking	Port is receiving or sending data.
		Off	Port might be on but is not receiving or sending data.

Basic Configuration

To use the port on the 4x10/100 Ethernet ePIM, you must assign it to a zone other than the Null zone. Optionally, you can also assign the port an IP address.

To perform basic configuration for a port on the 4x10/100 Ethernet ePIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/y): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernet2/1 zone trust
set interface ethernet2/1 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 31 describes the physical specifications of the interface module.

Table 31: 4x10/100 Physical Specifications

Description	Value
Dimensions	5.45"W x 6.5"L x 0.63"H (13.8cm x 16.5cm x 1.6cm)
Weight	0.38 lb. (170g)
Connector Type	RJ-45
Form Factor	ePIM

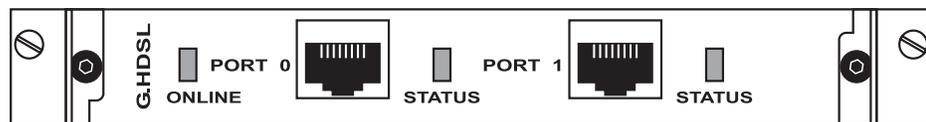
Chapter 15

G.SHDSL Wide Area Network Physical Interface Module

The G.SHDSL Wide Area Network Physical Interface Module (WAN PIM) provides symmetric high-speed digital subscriber line (SHDSL) physical interfaces to ATM network media types. The G.SHDSL WAN PIM has two ports for ATM-over-SHDSL connections.

NOTE: The G.SHDSL WAN PIM is only supported on ScreenOS 6.0.0 and later.

Figure 25: G.SHDSL WAN PIM



The G.SHDSL WAN PIM supports the following key features:

- Onboard network processor
- 2-port two-wire mode and 1-port four-wire mode
- Programmable line rates in both modes:
 - 2-port two-wire mode supports autodetection of line rate and fixed line rates from 192 Kbps to 2.304 Mbps in 64-Kbps increments.
 - 1-port four-wire mode supports fixed line rates from 384 Kbps to 4.608 Mbps in 128-Kbps increments.
- 12 virtual channels per interface
- ATM-over-G.SHDSL framing
- “Dying gasp” notification
- Local and remote loopback diagnostics
- ITU-T G.991.2, ITU-T G.994.1, and ITU-T G.997.1 standards compliance

For instructions on installing and removing a PIM, see “Removing and Installing PIMs” on page 17.

Supported Devices

The following devices support the G.SHDSL WAN PIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The G.SHDSL WAN PIM has two LEDs to indicate the status of the PIM and its ports. Table 32 shows the G.SHDSL WAN PIM LED states.

Table 32: G.SHDSL WAN PIM LED States

Name	Color	State	Description
ONLINE	Green	On steadily	Online with no alarms or failures.
	Red	Disconnected	Initialization of the PIM has failed.
	Unlit	Off	PIM is starting.
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm. The device has detected a failure.

Basic Configuration

To perform basic configuration for the G.SHDSL WAN PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (shdsl interface): Enter the following, then click **OK**:

Zone Name: Untrust (selected)
 VPI/VCI: **8/35**
 Multiplexing Method: LLC (selected)
 RFC1483 Protocol Mode: Bridged (selected)

Operating Mode

Annex: Annex-A (selected)
 Line Rate: auto (selected)
 Loopback: local (selected)
 Oam-Liveness: Down **5** Up **5**
 Oam-Period: Period **5**
 Snr-margin: Current **0** Snext **11**

CLI

```

set interface shdsl1/0 pvc 8 35 mux llc protocol bridge zone untrust
set interface shdsl1/0 operating-mode annex-a
set interface shdsl1/0 phy operating-mode line-rate auto
set interface shdsl1/0 phy operating-mode loopback local
set interface shdsl1/0 phy operating-mode oam-liveness 5
set interface shdsl1/0 phy operating-mode oam-period 5
set interface shdsl1/0 phy operating-mode snr-margin current 0
set interface shdsl1/0 phy operating-mode snr-margin snext 11
save

```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 33 describes the physical specifications of the interface module.

Table 33: G.SHDSL WAN Physical Specifications

Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.48 lb. (198g)
Connector Type	RJ-11
Form Factor	PIM

Chapter 16

ADSL 2+ Wide Area Network Physical Interface Module

The ADSL 2 + Wide Area Network (WAN) PIM provides a single physical interface to asymmetric digital subscriber line (ADSL) network media types. The ADSL WAN PIM is available in two versions:

- Annex A over plain old telephone service (POTS)
- Annex B over ISDN, include one physical ADSL port for an ATM-over-ADSL connection.

NOTE: The ADSL 2 + WAN PIM is only supported on ScreenOS 6.0.0 and later.



CAUTION: Before installing an ADSL 2 + WAN PIM with any other PIM, confirm that your device has adequate power and heat dissipation capacity to support it. See “PIM Power and Heat Requirements” on page 14 for more information.

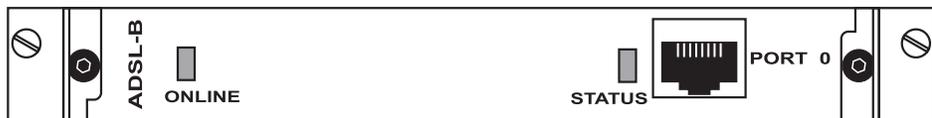
Figure 26 shows the two versions of the ADSL WAN PIM.

Figure 26: ADSL WAN PIM versions

ADSL Annex A WAN PIM



ADSL Annex B WAN PIM



The ADSL 2 + WAN PIM provides the following key features:

- Onboard network processor
- ADSL, ADSL2, and ADSL2 + protocols on the same PIM

- “Dying gasp” notification
- Asynchronous Transfer Mode (ATM) Adaptation Layer 5 (AAL5) encapsulation

For instructions on installing and removing a PIM, see “Removing and Installing PIMs” on page 17.

Supported Devices

The following devices support the ADSL 2 + PIM:

- SSG 140
- SSG 320M and SSG 350M
- SSG 520 and SSG 520M
- SSG 550 and SSG 550M

LEDs

The ADSL WAN PIM has two LEDs to indicate the status of the PIM and its port. Table 34 shows the meaning of the LED states.

Table 34: ADSL WAN PIM LED States

Name	Color	State	Description
ONLINE	Green	On steadily	PIM passed the self-test and is online and operational.
	Unlit	Off	PIM is offline.
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with local or remote alarms. The device has detected a failure.

Basic Configuration

To perform basic configuration for the ADSL WAN PIM, use the WebUI or CLI as follows:

WebUI

1. Interface

Network > Interfaces (List) > Edit (adsl or shdsl interface): Enter the following, then click **OK**:

Zone Name: Untrust (selected)
 VPI/VCI: **8/35**
 Multiplexing Method: LLC (selected)
 RFC1483 Protocol Mode: Bridged (selected)
 Operating Mode: ADSL2Plus (selected)

CLI**1. Interface**

```
set interface adsl1/0 pvc 8 35 mux llc protocol bridge zone untrust
```

2. Physical Operational Mode

```
set interface adsl1/0 phy operating-mode adsl2plus
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Splitters and Microfilters

In some cases where the incoming ADSL line shares the same line as your telephone equipment it may be necessary to install Splitters and Microfilters.

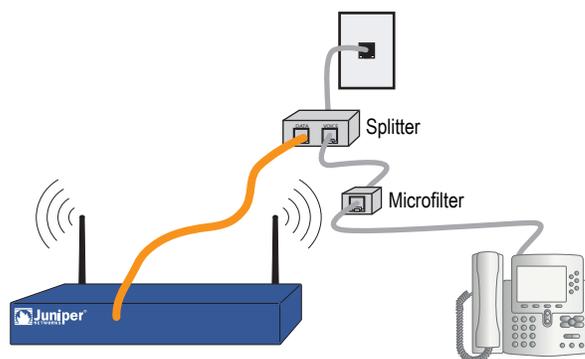
A *signal splitter* divides the telephone signal into low-frequency voice signals for voice calls and high-frequency data signals for data traffic. Your service provider usually installs the splitter as part of the equipment that connects your site telephone lines to the provider network.

There are also splitters that you may be able to install yourself, depending upon your service-provider equipment. If you are installing such a splitter yourself, connect the ADSL cable from the device and the telephone line to the appropriate connectors (for example, “data” or “voice”) on the splitter. You connect the other end of the splitter to the telephone outlet.

You may need to install a *microfilter* on each telephone, fax machine, answering machine, or analog modem that connects to the ADSL line. The microfilter filters out high-frequency noise on the telephone line. You install the microfilter on the telephone line between the telephone, fax machine, answering machine, or analog modem and the voice connector on the splitter.

Figure 27 shows an example of a microfilter and a splitter that you install on your site. (You must obtain the appropriate microfilters or splitters from your service provider.)

Figure 27: Microfilter and Splitter on Your Network Connection



Specifications

Table 35 describes the physical specifications of the interface module.

Table 35: ADSL 2+ WAN Physical Specifications

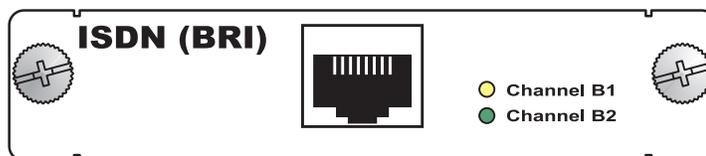
Description	Value
Dimensions	6.30"W x 7.87"L x 0.80"H (16 cm x 20 cm x 2.0 cm)
Weight	0.48 lb. (198g)
Connector Type	Annex A (over POTS): RJ-11 Annex B (over ISDN): RJ-45
Form Factor	PIM

Chapter 17

ISDN Mini Physical Interface Module

Integrated Services Digital Network (ISDN) is a set of standards for digital transmission over different media created by the Consultative Committee for International Telegraphy and Telephone (CCITT) and International Telecommunications Union (ITU). As a dial-on-demand service, it has fast call setup and low latency as well as the ability to carry high-quality voice, data, and video transmissions. ISDN is also a circuit-switched service that can be used on both multipoint and point-to-point connections. ISDN provides a service router with a multilink Point-to-Point Protocol (PPP) connection for network interfaces. The ISDN interface is usually configured as the backup interface of the Ethernet interface to access external networks. The ISDN Mini-PIM has a single RJ-45 connector.

Figure 28: ISDN Mini-PIM Front Panel



Supported Devices

The ISDN Mini-PIM is supported only on the SSG 20.

LEDs

The ISDN Mini-PIM has two LEDs. Table 36 shows the LED states.

Table 36: ISDN Mini-PIM LED States

Name	Color	State	Description
CH B1	Yellow	On steadily	Indicates that B-Channel 1 is active
		Off	Indicates that B-Channel 1 is not active
CH B2	Green	On steadily	Indicates that B-Channel 2 is active
		Off	Indicates that B-Channel 2 is not active

Basic Configuration

To perform basic configuration for the ISDN Mini-PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (bri1/0): Enter or select the following, then click **OK**:

BRI Mode: Dial Using BRI
 Primary Number: 123456
 WAN Encapsulation: PPP
 PPP Profile: isdnprofile

CLI

```
set interface bri1/0 dialer-enable
set interface bri1/0 primary-number "123456"
set interface bri1/0 encaps ppp
set interface bri1/0 ppp profile isdnprofile
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 37 describes the physical specifications of the interface module.

Table 37: ISDN Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5 cm x 14.5 cm x 2.0 cm)
Weight	0.17 lb. (77g)
Connector Type	RJ-45
Form Factor	Mini-PIM

Chapter 18

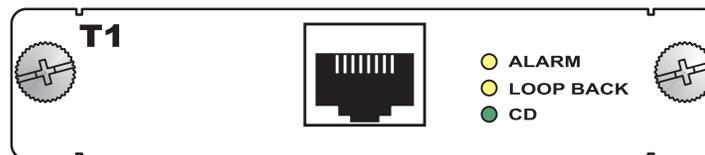
T1 Mini Physical Interface Module

The T1 interface is a basic Physical Layer protocol used by the Digital Signal level 1 (DS1) multiplexing method in North America. A T1 interface operates at a bit-rate of 1.544 Mbps or speeds up to 24 DS0 channels. The T1 Mini-PIM has a single RJ-45 connector.

The T1 Mini-PIM supports the following T1 DS1 standards:

- ANSI T1.107, T1.102
- GR 499-core, GR 253-core
- AT&T Pub 54014
- ITU G.751, G.703

Figure 29: T1 Mini-PIM Front Panel



Supported Devices

The T1 Mini-PIM is supported only on the SSG 20.

LEDs

The T1 Mini-PIM has three LEDs. Table 38 shows the LED states.

Table 38: T1 Mini-PIM LED States

Name	Color	State	Description
ALARM	Yellow	On steadily	Indicates that there is a local or remote alarm; device has detected a failure
		Off	Indicates that there are no alarms or failures
LOOP BACK	Yellow	On steadily	Indicates that a loopback or line state is detected
		Off	Indicates that the loopback is not active
CD	Green	On steadily	Indicates a carrier was detected and the internal DSU/CSU in the Mini-PIM is communicating with another DSU/CSU
		Off	Indicates that carrier detect is not active

Basic Configuration

To perform basic configuration for the T1 Mini-PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (serial x/0): Enter or select the following, then click **OK**:

WAN Configure: main link
 WAN Encapsulation: cisco-hdlc
 Click **Apply**
 Fixed IP: (select)
 IP Address/Netmask 172.18.1.1/24

CLI

```
set interface serial1/0 encap cisco-hdlc
set interface serial1/0 ip 172.18.1.1/24
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 39 describes the physical specifications of the interface module.

Table 39: T1 Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5 cm x 14.5 cm x 2.0 cm)
Weight	0.18 lb. (82g)
Connector Type	RJ-48
Form Factor	Mini-PIM

Chapter 19

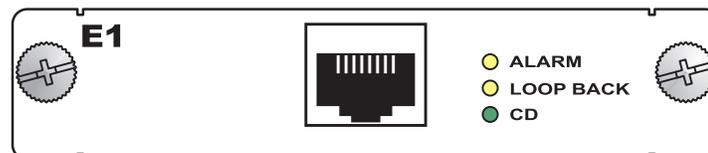
E1 Mini Physical Interface Module

The E1 interface is a standard wide area network (WAN) digital communications format designed to operate over copper facilities at a rate of 2.048 Mbps. Widely used outside North America, E1 is a basic time-division multiplexing scheme used to carry digital circuits. The E1 Mini-PIM has a single RJ-45 connector.

The E1 Mini-PIM supports the following E1 standards:

- ITU-T G.703
- ITU-T G.751
- ITU-T G.775

Figure 30: E1 Mini-PIM Front Panel



Supported Devices

The E1 Mini-PIM is supported only on the SSG 20.

LEDs

Table 40 shows the E1 Mini-PIM LED states.

Table 40: E1 Mini-PIM LED States

Name	Color	State	Description
ALARM	Yellow	On steadily	Indicates that there is a local or remote alarm; device has detected a failure
		Off	Indicates that there are no alarms or failures
LOOP BACK	Yellow	On steadily	Indicates that a loopback or line state is detected
		Off	Indicates that the loopback is not active
CD	Green	On steadily	Indicates a carrier was detected and the internal DSU/CSU in the Mini-PIM is communicating with another DSU/CSU
		Off	Indicates that carrier detect is not active

Basic Configuration

To perform basic configuration for the E1 Mini-PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (serial1/0): Enter or select the following, then click **OK**:

WAN Configure: main link
 WAN Encapsulation: PPP
 Binding a PPP Profile: junipertest
 Click **Apply**
 Fixed IP: (select)
 IP Address/Netmask 172.18.1.1/24

CLI

```
set interface serial1/0 encapsulation ppp
set ppp profile "junipertest" static-ip
set ppp profile "junipertest" auth type chap
set ppp profile "junipertest" auth local-name "juniper"
set ppp profile "junipertest" auth secret "password"
set interface serial1/0 ppp profile "junipertest"
set interface serial1/0 ip 172.18.1.1/24
set user "server" type wan
set user "server" password "server"
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 41 describes the physical specifications of the interface module.

Table 41: E1 Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5cm x 14.5cm x 2.0cm)
Weight	0.18 lb. (82g)
Connector Type	RJ-48
Form Factor	Mini-PIM

Chapter 20

Synchronous Serial Mini Physical Interface Module

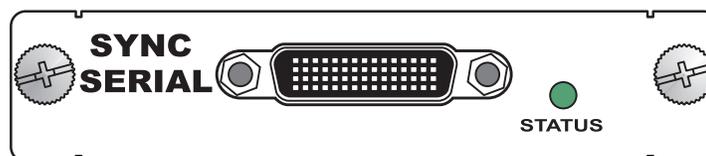
Serial WAN links provide bidirectional links that require very few control signals. In a basic serial setup, the data circuit-terminating equipment (DCE) is responsible for establishing, maintaining, and terminating a connection. A modem is a typical DCE device. A serial cable connects the DCE to a telephony network where, ultimately, a link is established with data terminal equipment (DTE). DTE is typically where a link terminates.

NOTE: The synchronous serial Mini-PIM is only supported on ScreenOS 6.0.0 and later.

The synchronous serial Mini-PIM supports the following serial standards:

- TIA/EIA 530
- V.35
- X.21
- RS-232
- RS-449

Figure 31: Synchronous Serial Mini-PIM



Supported Devices

The synchronous serial Mini-PIM is supported only on the SSG 20.

LEDs

The synchronous serial Mini-PIM has one LED located to the right of the serial port. Table 42 shows the LED states.

Table 42: Synchronous Serial Mini-PIM LED States

Name	Color	State	Description
STATUS	Green	On steadily	Online with no alarms or failures.
	Red	On steadily	Active with a local alarm; device has detected a failure.

Interface Cables

Table 43 lists the cables that you can order from Juniper Networks to connect to a port on the synchronous serial Mini-PIM. The device to which you are connecting and the serial interface type determine which cable you need.

Table 43: Juniper Networks Serial Cables

Product Number	Interface Type	Length (in feet)	Connector Type
JX-CBL-EIA530-DTE	EIA 530 (DTE)	10	Male
JX-CBL-RS232-DTE	RS-232 (DTE)	10	Male
JX-CBL-RS449-DTE	RS-449 (DTE)	10	Male
JX-CBL-V35-DTE	V.35 (DTE)	10	Male
JX-CBL-X21-DTE	X.21 (DTE)	10	Male

Basic Configuration

To perform basic configure for the synchronous serial Mini-PIM, use the WebUI or CLI:

WebUI

Network > Interfaces (List) > Edit (*WAN Interface*) > WAN: Select the following, then click **Apply**:

DTE Options
Select your options

CLI

```
set interface interface serial-options dte-options { ... }
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 44 describes the physical specifications of the interface module.

Table 44: Synchronous Serial Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5cm x 14.5cm x 2.0cm)
Weight	0.19 lb. (84 g)
Connector Type	60-pin Synchronous Serial (female)
Form Factor	Mini-PIM

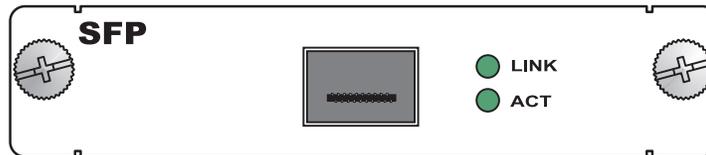
Chapter 21

SFP Ethernet Mini Physical Interface Module

The SFP (Small Form factor Pluggable) Ethernet Mini-PIM provides connectivity to one Gigabit Ethernet device or network.

NOTE: The SFP Ethernet Mini-PIM is only supported on ScreenOS 6.0.0 and later.

Figure 32: SFP Ethernet Mini-PIM Front Panel



You can customize the Ethernet interface type by using different SFP modules. Table 45 shows the available SFP modules.

Table 45: Gigabit Ethernet SFP Modules

Product Number	Interface Type	Connector
JX-SFP-1GE-LX	1000BASE-LX	LC
JX-SFP-1GE-SX	1000BASE-SX	LC
JX-SFP-100BASE-FX	100BASE-FX	LC
JX-SFP-1000BASE-T	1000BASE-TX	RJ-45

Supported Devices

The SFP Ethernet Mini-PIM is supported only on the SSG 20.

LEDs

The SFP socket has two LEDs located to the right of the socket. Table 46 shows the LED states.

Table 46: 1xGE SFP Mini-PIM LED States

Name	Color	State	Description
Link	Green	On steadily	Port is online
		Off	Port is offline
ACT	Green	Blinking	Port is receiving or sending data
		Off	Port might be on, but is not receiving or sending data

Basic Configuration

To use the port on the SFP Ethernet Mini-PIM, you must assign it to a zone other than the Null zone. Optionally, you can also assign the port an IP address.

To perform basic configuration for a port on the SFP Ethernet Mini-PIM, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (ethernetx/0): Enter or select the following, then click **OK**:

Zone Name: Trust (select)
IP Address/Netmask: 192.168.3.1/24

CLI

```
set interface ethernetx/0 zone trust
set interface ethernetx/0 ip 192.168.3.1/24
save
```

For advanced configuration information, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 47 describes the physical specifications of the interface module.

Table 47: SFP Ethernet Mini-PIM Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5cm x 14.5cm x 2.0cm)
Weight	0.21 lb. (97 g)
Connector Type	SFP
Form Factor	Mini-PIM

Chapter 22

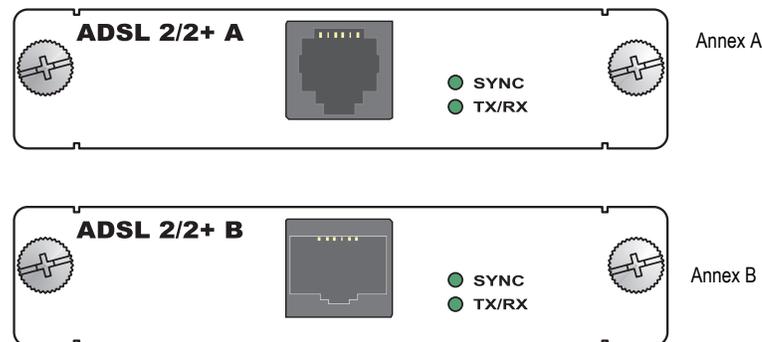
ADSL 2+ Mini Physical Interface Module

The ADSL 2 + Mini-PIM provides a single physical interface to asymmetric digital subscriber line (ADSL) network media types. The ADSL Mini-PIM is available in two versions:

- Annex A (RJ-11) over plain old telephone service (POTS)
- Annex B (RJ-45) over ISDN, include one physical ADSL port for an ATM-over-ADSL connection.

Figure 33 shows the two versions of the ADSL Mini-PIM.

Figure 33: ADSL 2/2+ Mini-PIM



The ADSL 2 + Mini-PIM provides the following key features:

- Onboard network processor
- ADSL, ADSL2, and ADSL2 + protocols on the same Mini-PIM
- “Dying gasp” notification
- Asynchronous Transfer Mode (ATM) Adaptation Layer 5 (AAL5) encapsulation
- ANSI T1.413 Issue 2 (Annex A only), ITU G.992.1 (G.dmt), ITU G.992.3 (ADSL2), ITU G.992.5 (ADSL2 +) standards compliance.

For pinouts of cable connectors for ADSL Mini-PIMs, see “ADSL and G.SHDSL RJ-11 Connector Pinout” on page 183.

For installing and removing a Mini-PIM, see “Removing and Installing Mini-PIMs (SSG 20)” on page 20.

Supported Devices

The ADSL 2 + Mini-PIM is supported only on the SSG 20.

LEDs

The ADSL Mini-PIM has two LEDs to indicate the status of the Mini-PIM and its port. Table 48 shows the LED states.

Table 48: Mini PIM LED States on the SSG 20

Name	Color	State	Description
SYNC	Green	On steadily	Indicates that the ADSL interface is trained
		Blinking	Indicates training is in progress
		Off	Indicates that the interface is idle
TX/RX	Green	Blinking	Indicates that traffic is passing through
		Off	Indicates that no traffic is passing through

Basic Configuration

To perform basic configuration for the ADSL 2 + PIM, use the WebUI or CLI as follows:

WebUI

1. Interface

Network > Interfaces (List) > Edit (adsl or shdsl interface): Enter the following, then click **OK**:

Zone Name: Untrust (selected)
 VPI/VCI: **8/35**
 QoS: UBR (selected)
 Multiplexing Method: LLC (selected)
 RFC1483 Protocol Mode: Bridged (selected)
 Operating Mode: ADSL2Plus (selected)

CLI

1. Interface

```
set interface adsl1/0 pvc 8 35 mux llc protocol bridge zone untrust
```

(Mini-PIM Only) ATM QoS

```
set interface adsl1/0 qos ubr
```

2. Physical Operational Mode

```
set interface adsl1/0 phy operating-mode adsl2plus  
save
```

Splitters and Microfilters

In some cases where the incoming ADSL line shares the same line as your telephone equipment it may be necessary to install Splitters and Microfilters.

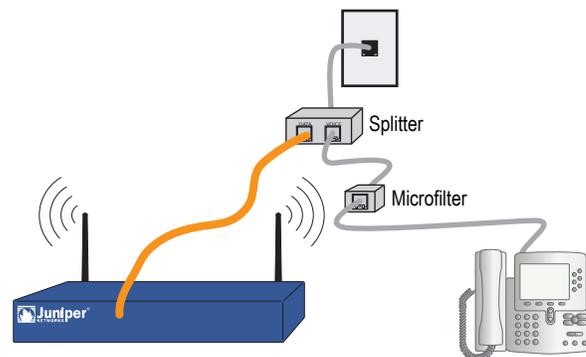
A *signal splitter* divides the telephone signal into low-frequency voice signals for voice calls and high-frequency data signals for data traffic. Your service provider usually installs the splitter as part of the equipment that connects your site telephone lines to the provider network.

There are also splitters that you may be able to install yourself, depending upon your service-provider equipment. If you are installing such a splitter yourself, connect the ADSL cable from the device and the telephone line to the appropriate connectors (for example, “data” or “voice”) on the splitter. You connect the other end of the splitter to the telephone outlet.

You may need to install a *microfilter* on each telephone, fax machine, answering machine, or analog modem that connects to the ADSL line. The microfilter filters out high-frequency noise on the telephone line. You install the microfilter on the telephone line between the telephone, fax machine, answering machine, or analog modem and the voice connector on the splitter.

Figure 34 shows an example of a microfilter and a splitter that you install on your site. (You must obtain the appropriate microfilters or splitters from your service provider.)

Figure 34: Microfilter and Splitter on Your Network Connection



Specifications

Table 49 describes the physical specifications of the interface module.

Table 49: ADSL 2+ Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5 cm x 14.5 cm x 2.0 cm)
Weight	0.17 lb. (77g)
Connector Type	Annex A (over POTS): RJ-11 Annex B (over ISDN): RJ-45
Form Factor	Mini-PIM

Chapter 23

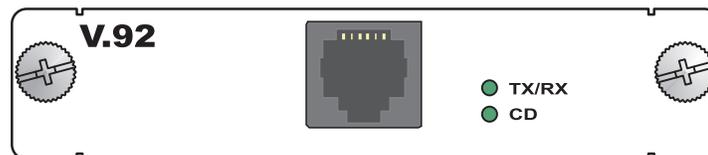
V.92 Modem Mini Physical Interface Module

The V.92 interface provides an internal analog modem to establish a PPP connection to a service provider. You can configure the serial interface as a primary interface, or as a backup interface that is used in case of interface failover. The V.92 Modem has a single RJ-11 connector with speeds from 9600 bps-115 Kbps/RS-232 and serial autosensing duplex and polarity.

NOTE: The V.92 interface does not work in Transparent mode.

Figure 35 shows the V.92 Mini-PIM.

Figure 35: V.92 Mini-PIM



For installing and removing a Mini-PIM, see “Removing and Installing Mini-PIMs (SSG 20)” on page 20.

Supported Devices

The V.92 Mini-PIM is supported only on the SSG 20.

LEDs

The V.92 Mini-PIM has two LEDs to indicate the status of the Mini-PIM and its port. Table 50 shows the LED states.

Table 50: V.92 Mini-PIM LED States

Name	Color	State	Description
CD	Green	On steadily	Indicates that the link is active
		Off	Indicates that the serial interface is not in service
TX/RX	Green	Blinking	Indicates that traffic is passing through
		Off	Indicates that no traffic is passing through

Basic Configuration

To configure the V.92 interface, use the WebUI or CLI as follows:

WebUI

Network > Interfaces (List) > Edit (for serial1/0): Enter the following, then click **OK**:

Zone Name: untrust (select)

ISP: Enter the following, then click **OK**:

ISP Name: isp_juniper
 Primary Number: 1234567
 Login Name: juniper
 Login Password: juniper

Modem: Enter the following, then click **OK**:

Modem Name: mod1
 Init String: AT&FS7=255S32=6
 Active Modem setting
 Inactivity Timeout: 20

CLI

```
set interface serial1/0 zone untrust
set interface serial1/0 modem isp isp_juniper account login juniper password
juniper
set interface serial1/0 modem isp isp_juniper primary-number 1234567
set interface serial1/0 modem idle-time 20
set interface serial1/0 modem settings mod1 init-strings AT&FS7=255S32=6
set interface serial1/0 modem settings mod1 active
```

For information on how to configure the V.92 modem interface, refer to the *Concepts & Examples ScreenOS Reference Guide*.

Specifications

Table 51 describes the physical specifications of the interface module.

Table 51: V.92 Modem Physical Specifications

Description	Value
Dimensions	3.75"W x 5.9"L x 0.80"H (9.5 cm x 14.5 cm x 2.0 cm)
Weight	0.17 lb. (77g)
Connector Type	RJ-11
Form Factor	Mini-PIM

