



CHAPTER 2

SIP and SPA Product Overview

This chapter provides an introduction to SPA interface processors (SIPs) and shared port adapters (SPAs). It includes the following sections:

- [Introduction to SIPs and SPAs, page 2-1](#)
- [SIP and SPA Compatibility, page 2-2](#)
- [Modular Optics Compatibility, page 2-4](#)

For more hardware details for the specific SIPs and SPAs that are supported on the Cisco ASR 1000 Series Aggregation Services Routers, refer to the companion publication, *Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Hardware Installation Guide*.

Introduction to SIPs and SPAs

Cisco ASR 1000 Series Routers SIPs and SPAs are a carrier card and port adapter architecture that increases modularity, flexibility, and density across Cisco routers for network connectivity. This section describes the SIPs and SPAs and provides some guidelines for their use.

SPA Interface Processors

The following list describes some of the general characteristics of a SIP:

- A SIP is a carrier card that inserts into a router slot like a line card. It provides no network connectivity on its own.
- A SIP contains one or more subslots, which are used to house one or more SPAs. The SPA provides interface ports for network connectivity.
- During normal operation, the SIP should reside in the router fully populated either with functional SPAs in all subslots, or with a blank filler plate (SPA-BLANK=) inserted in all empty subslots.
- SIPs support online insertion and removal (OIR) with SPAs inserted in their subslots. SPAs also support OIR and can be inserted or removed independently from the SIP.



Note

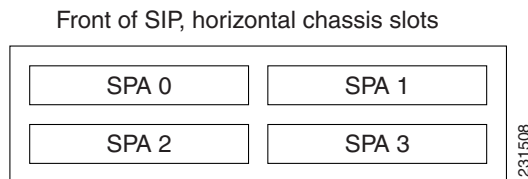
Fully populate all slots and subslots with blank filler plates or functional SPAs for maximum efficiency of the cooling system.

Shared Port Adapters

The following list describes some of the general characteristics of a SPA:

- A SPA is a modular type of port adapter that inserts into a subslot of a compatible SIP carrier card to provide network connectivity and increased interface port density. A SIP can hold one or more SPAs, depending on the SIP type.
- A single-height SPA inserts into one SIP subslot. (See [Figure 2-1](#).)

Figure 2-1 Slot Orientation for SPAs



Caution

SIP subslot 0 is not available on the Cisco ASR 1002 Router as that is the slot occupied by the integrated Route Processor with native Gigabit Ethernet ports.

- Each SPA provides a certain number of connectors, or ports, that are the interfaces to one or more networks. These interfaces can be individually configured using the Cisco IOS command-line interface (CLI).
- Either a blank filler plate or a functional SPA should reside in every subslot of a SIP during normal operation to maintain cooling integrity. Blank filler plates are available in single-height form only.
- SPAs support online insertion and removal (OIR). They can be inserted or removed independently from the SIP. SIPs also support OIR with SPAs inserted in their subslots.

SIP and SPA Compatibility

[Table 2-1](#), [Table 2-2](#), [Table 2-3](#), [Table 2-4](#), and [Table 2-5](#) show SIP and SPA compatibility by SPA technology area on the Cisco ASR 1000 Series Aggregation Services Routers.



Note

For more information about the introduction of support for different SIPs and SPAs, refer to the “Release History” sections in the overview chapters of the *Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Software Configuration Guide*.

Table 2-1 SIP and SPA Compatibility Table for ATM SPAs

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10
1-Port Clear Channel OC-3 ATM SPA	SPA-1XOC3-ATM-V2	Yes
3-Port Clear Channel OC-3 ATM SPA	SPA-3XOC3-ATM-V2	Yes
1-Port Clear Channel OC-12 ATM SPA	SPA-1XOC12-ATM-V2	Yes

Table 2-2 SIP and SPA Compatibility Table for Ethernet SPAs

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10
4-Port and 8-Port Fast Ethernet SPA	SPA-4X1FE-TX-V2 SPA-8X1FE-TX-V2	Yes
1-Port 10-Gigabit Ethernet SPA	SPA-1X10GE-L-V2	Yes
2-Port Gigabit Ethernet SPA	SPA-2X1GE-V2	Yes
5-Port Gigabit Ethernet SPA	SPA-5X1GE-V2	Yes
8-Port Gigabit Ethernet SPA	SPA-8X1GE-V2	Yes
10-Port Gigabit Ethernet SPA	SPA-10X1GE-V2	Yes

Table 2-3 SIP and SPA Compatibility Table for Packet Over SONET SPAs

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10
1-Port OC-12c/STM-4 POS SPA	SPA-1XOC12-POS	Yes
2-Port, 4-Port, and 8-Port OC-12 POS SPA	SPA-2XOC12-POS SPA-4XOC12-POS SPA-8XOC12-POS	Yes
2-Port, 4-Port, and 8-Port OC-3c/STM-1 POS SPA	SPA-2XOC3-POS SPA-4XOC3-POS SPA-8XOC3-POS	Yes
1-Port OC-48 POS SPA	SPA-1XOC48-POS	Yes
2-Port and 4-Port OC-48c/STM-16 POS/RPR SPA	SPA-2XOC48-POS/RPR SPA-4XOC48-POS/RPR	Yes
1-Port OC-192 POS-XFP SPA	SPA-1XOC192-POS	Yes

Table 2-4 SIP and SPA Compatibility Table for Serial SPAs

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10
2-Port and 4-Port T3/E3 Clear Channel Serial SPA	SPA-2XT3/E3 SPA-4XT3/E3	Yes
2-Port and 4-Port Channelized T3 Serial SPA	SPA-2XCT3/DS0 SPA-4XCT3/DS0	Yes
4-Port Serial Interface SPA	SPA-4XT-Serial	Yes
8-Port Channelized T1/E1 Serial SPA	SPA-8XCHT1/E1	Yes
1-Port Channelized STM-1/OC-3 SPA	SPA-1XCHSTM1/OC3	Yes

Table 2-5 SIP and SPA Compatibility Table for Service SPAs

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10
Cisco WebEx Node for ASR 1000 Series	SPA-WMA-K9	Yes

Modular Optics Compatibility

Some SPAs implement small form-factor pluggable (SFP) optical transceivers to provide network connectivity. An SFP module is a transceiver device that mounts into the front panel to provide network connectivity.

Cisco qualifies the SFP modules that can be used with SPAs.



Note

The SPAs will only accept the SFP modules listed as supported in this document. An SFP module check is run every time an SFP module is inserted into a SPA and only SFP modules that pass this check will be usable.

Table 2-6, Table 2-7, Table 2-8, Table 2-9, and Table 2-10 show the types of optics modules that have been qualified for use with a SPA.

For more information about any of the supported transceivers for SPAs in these tables, refer to the Cisco Transceiver Modules site for that module on Cisco.com at:

http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_installation_guides_list.html

Table 2-6 ATM SPA Optics Compatibility

SPA	Qualified Optics Modules (Cisco Part Numbers)
1-Port Clear Channel OC-3 ATM SPA	<ul style="list-style-type: none"> • SFP-OC3-MM • SFP-OC3-IR-1 • SFP-OC3-LR-1
3-Port Clear Channel OC-3 ATM SPA	<ul style="list-style-type: none"> • SFP-OC3-MM • SFP-OC3-IR-1 • SFP-OC3-LR-1
1-Port Clear Channel OC-12 ATM SPA	<ul style="list-style-type: none"> • SFP-OC12-MM • SFP-OC12-SR • SFP-OC12-IR1 • SFP-OC12-LR1 • SFP-OC12-LR2

Table 2-7 Gigabit Ethernet SPA Optics Compatibility

SPA	Qualified Optics Modules (Cisco Part Numbers)
1-Port 10-Gigabit Ethernet SPA	<ul style="list-style-type: none"> • XFP-10GLR-OC192SR • XFP-10GER-OC192IR • XFP-10GZR-OC192LR • XFP-10G-MM-SR
2-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • GLC-BX-D • GLC-BX-U • SFP-GE-S • SFP-GE-L • SFP-GE-Z • SFP-GE-T
5-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • GLC-BX-D • GLC-BX-U • GLC-FE-100FX • SFP-GE-S • SFP-GE-L • SFP-GE-Z • SFP-GE-T
8-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • SFP-GE-S • SFP-GE-L • SFP-GE-Z • SFP-GE-T
10-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • GLC-BX-D • GLC-BX-U • SFP-GE-S • SFP-GE-L • SFP-GE-Z • GLC-FE-100FX

Table 2-8 *Gigabit Ethernet SPA CWDM Optics Compatibility for All Gigabit Ethernet SPAs Supported on the Cisco ASR 1000 Series Routers*

Qualified Optics Modules (Cisco Part Numbers)

CWDM-SFP-1470=

CWDM-SFP-1490=

CWDM-SFP-1510=

CWDM-SFP-1530=

CWDM-SFP-1550=

CWDM-SFP-1570=

CWDM-SFP-1590=

CWDM-SFP-1610=

Table 2-9 Gigabit Ethernet SPA DWDM Optics Compatibility

SPA	Qualified Optics Modules (Cisco Part Numbers)
2-Port Gigabit Ethernet SPA	DWDM-SFP-3033=
5-Port Gigabit Ethernet SPA	DWDM-SFP-3112=
8-Port Gigabit Ethernet SPA	DWDM-SFP-3190=
10-Port Gigabit Ethernet Spa	DWDM-SFP-3268=
	DWDM-SFP-3425=
	DWDM-SFP-3504=
	DWDM-SFP-3582=
	DWDM-SFP-3661=
	DWDM-SFP-3819=
	DWDM-SFP-3898=
	DWDM-SFP-3977=
	DWDM-SFP-4056=
	DWDM-SFP-4214=
	DWDM-SFP-4294=
	DWDM-SFP-4373=
	DWDM-SFP-4453=
	DWDM-SFP-4612=
	DWDM-SFP-4692=
	DWDM-SFP-4772=
	DWDM-SFP-4851=
	DWDM-SFP-5012=
	DWDM-SFP-5092=
	DWDM-SFP-5172=
	DWDM-SFP-5252=
	DWDM-SFP-5413=
	DWDM-SFP-5494=
	DWDM-SFP-5575=
	DWDM-SFP-5655=
	DWDM-SFP-5817=
	DWDM-SFP-5898=
	DWDM-SFP-5979=
	DWDM-SFP-6061=

Table 2-10 POS SPA SFP and CWDM Optics Compatibility

SPA	Qualified Optics Modules (Cisco Part Numbers)
2-Port, 4-Port, and 8-Port OC-3c/STM-1 POS SPA	<ul style="list-style-type: none"> • SFP-OC3-MM • SFP-OC3-SR • SFP-OC3-IR1 • SFP-OC3-LR1 • SFP-OC3-LR2
1-Port OC-48c/STM-16 POS SPA	<ul style="list-style-type: none"> • SFP-OC48-SR • SFP-OC48-IR1 • SFP-OC48-LR2
2-Port and 4-Port OC-48c/STM-16 POS/RPR SPA	<ul style="list-style-type: none"> • SFP-OC48-SR • SFP-OC48-IR1 • SFP-OC48-LR2
2-Port, 4-Port, and 8-Port OC-12 POS SPA	<ul style="list-style-type: none"> • SFP-OC3-MM • SFP-OC3-SR • SFP-OC3-IR1 • SFP-OC3-LR1 • SFP-OC3-LR2
1-Port OC-12c/STM-4 POS SPA	<ul style="list-style-type: none"> • SFP-OC12-MM • SFP-OC12-SR • SFP-OC12-IR1 • SFP-OC12-LR1 • SFP-OC12-LR2
1-Port OC-192 POS SPA	<ul style="list-style-type: none"> • XFP-10GLR-OC192SR • XFP-10GER-OC192IR • XFP-10GZR-OC192LR