



# SIP and SPA Product Overview

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This chapter provides an introduction to modular services cards (SIPs) and shared port adapters (SPAs). It includes the following sections:

- [Introduction to SIPs and SPAs, page 1-1](#)
- [SIP and SPA Compatibility, page 1-3](#)
- [SPA Optics Compatibility, page 1-3](#)
- [SPA Interface Addresses on Cisco XR 12000 Series Routers, page 1-3](#)
- [SIP Software and Hardware Compatibility, page 1-4](#)

For more hardware details for the specific SIP and SPAs that are supported on the Cisco XR 12000 Series Router, refer to the companion publication, *Cisco XR 12000 Series Router SIP and SPA Hardware Installation Guide, Release 3.2*.

## Introduction to SIPs and SPAs

SIPs and SPAs are a new carrier card and port adapter architecture to increase modularity, flexibility, and density across Cisco Systems 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:

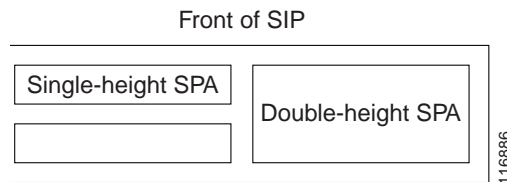
- A SIP is a carrier card that inserts into a router slot like a line card. It provides no network connectivity on its own.
- A SIP can contain two or more subslots, which are used to house one or more SPAs. The SPA provides interface ports for network connectivity.
- During normal operation the SIP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

## Shared Port Adapters

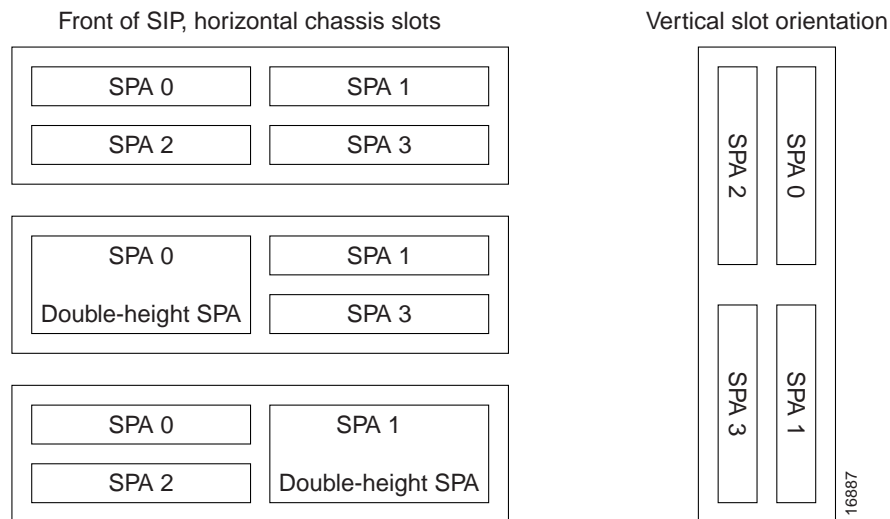
The following list describes some of the general characteristics of a SPA:

- 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.
- SPAs are available in the following sizes, as shown in [Figure 1-1](#) and [Figure 1-2](#):
  - Single-width, single-height SPA—Inserts into a single SIP subslot.
  - Single-width, double-height SPA—Inserts into two single, vertically aligned SIP subslots.
  - Double-width, single-height SPA—Inserts into a two single, horizontally aligned SIP subslots.
  - Double-width, double-height SPA—Inserts into all four SIP subslots, or the entire SPA enclosure.

**Figure 1-1** *Single-height and Double-height SPA Sizes*



**Figure 1-2** *Horizontal and Vertical Chassis Slot Orientation for SPAs*



- 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 within the Cisco IOS-XR command-line interface (CLI).
- Either a blank filler panel or a functional SPA should reside in every subslot of an SIP during normal operation.
- SPAs support online insertion and removal (OIR). They can be inserted or removed independently from the SIP. OIR of a SIP with installed SPAs is also supported.

## SIP and SPA Compatibility

Table 1-1 shows the SIPs that are supported on the Cisco XR 12000 Series Router and the SPAs that they support:

*Table 1-1 SIP and SPA Compatibility on the Cisco XR 12000 Series Router*

SPA	10G SIP
1-Port 10-Gigabit Ethernet SPA	Yes
5-Port Gigabit Ethernet SPA	Yes
10-Port Gigabit Ethernet SPA	Yes
1-Port OC-192c/STM-64 POS/RPR XFP SPA	Yes

## SPA Optics Compatibility

Table 1-2 shows the types of optics modules that have been qualified for use with a SPA:

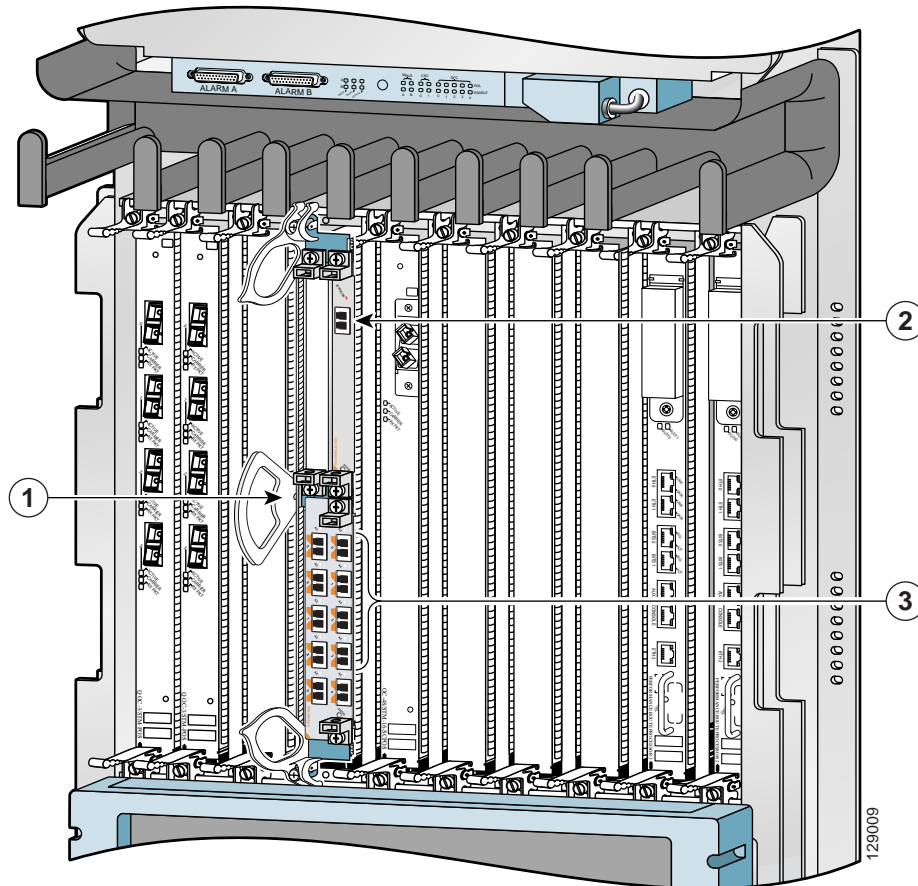
*Table 1-2 SPA Optics Compatibility*

SPA	Qualified Optics Modules
1-Port 10-Gigabit Ethernet SPA	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-Z</li> </ul>
5-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-Z</li> </ul>
10-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-Z</li> </ul>
1-Port OC-192c/STM-64 POS/RPR XFP SPA	<ul style="list-style-type: none"> <li>• XFP-10GLR-OC192SR</li> </ul>

# SPA Interface Addresses on Cisco XR 12000 Series Routers

A Cisco 12000 Series Router identifies a SPA interface address by its rack number, SIP slot number, SPA subslot, and port number on the SPA, in the format *rack/slot/subslot/port*. The rack number is always 0 for the Cisco 12000 Series Router. Slots, subslots and ports are numbered starting from 0, so each Cisco 12000 SIP-600 has two subslots 0 (left) and 1 (right). For example, the interface address of a 1-port SPA located in the second SIP subslot, where the SIP is inserted into router line card slot 3 is 0/3/2/0. [Figure 1-3](#) shows the slot, subslot, and port locations for the 1-Port 10-Gigabit Ethernet SPA and the 10-Port Gigabit Ethernet SPA.

**Figure 1-3** Slot, Subslot, and Port Locations for the 1-Port 10-Gigabit Ethernet SPA and 10-Port Gigabit Ethernet SPA



1	Slot 3
2	Subslot 0, Port 0/3/0/0
3	Subslot 1, Ports 0/3/1/0 to 0/3/1/9

# SIP Software and Hardware Compatibility

For software configuration information, refer to the Cisco IOS XR software configuration and command reference publications for the installed Cisco IOS XR release. Also refer to the Cisco IOS XR software release notes for additional information. [Table 1-3](#) lists the Cisco IOS XR releases that are compatible with supported SIPs.

To ensure compatibility with the software, your SIPs should have a specific hardware revision number. The number is printed on a label affixed to the component side of the card. The hardware revision number can be displayed by using the **show diags slot-number** command. [Table 1-3](#) lists the hardware revision number for all supported SIPs.

*Table 1-3 SIP Hardware and Software Compatibility*

SIP	Part Number	Minimum Cisco IOS Software Release	Minimum Hardware Revision
Cisco 12000 SIP-600	12000-SIP-600	Release 3.2	1.0

The **show version** and **show platform** commands display the current hardware configuration of the router, including the system software version that is currently loaded and running. For complete descriptions of **show** commands, refer to the *Cisco CRS-1 Series Carrier Routing System Getting Started Guide* and the *Hardware Redundancy and Node Administration Commands on Cisco IOS XR Software* for the installed Cisco IOS XR release.

For instructions on getting started with Cisco IOS XR please refer to the *Cisco IOS XR Getting Started Guide* for the installed Cisco IOS XR release.

