



# CHAPTER 1

## SIP and SPA Product Overview

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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 1-1](#)
- [SIP and SPA Compatibility, page 1-3](#)
- [Modular Optics Compatibility, page 1-3](#)
- [Power Management, page 1-4](#)
- [Checking Hardware and Software Compatibility, page 1-5](#)

For software details for the specific SIPs and SPAs that are supported on the Cisco uBR10012 router, refer to the companion publication, *Cisco uBR10012 Universal Broadband Router SIP and SPA Software Configuration Guide*.

## Introduction to SIPs and SPAs

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 bays (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 bays, or with a blank filler plate (Part Number SPA-BLANK) inserted in all empty bays.
- SIPs support online insertion and removal (OIR) with SPAs inserted in their bays. SPAs also support OIR and can be inserted or removed independently from the SIP.

## Shared Port Adapters

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

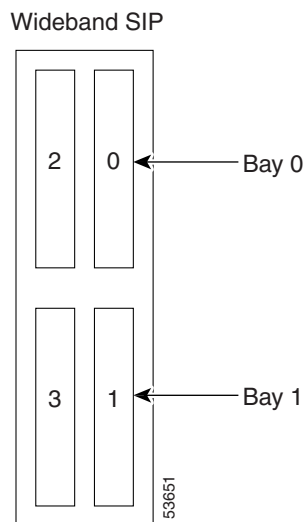
- A SPA is a modular type of port adapter that inserts into a bay (subslot) of a compatible SIP carrier card to provide network connectivity and increased interface port density. A SIP can hold one or more SPAs, depending on the SIP type.
- On the Cisco uBR10012 router, SPAs are currently available in single-wide, half-height form only. The term *bay* is used to describe the location of a SPA in the SIP. The Cisco Wideband SIP has four bays.



### Note

With the Cisco Wideband SIP, bay 0 or bay 1 or both can be used for the Cisco Wideband SPA. Empty bays in the SIP must have blank filler plates inserted. See [Figure 1-1](#).

**Figure 1-1 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 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-wide, half-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

The Cisco uBR10012 router currently supports the following SIPs:

- Cisco Wideband SIP (supports only the Cisco Wideband SPA)
- Cisco 10000 Series SPA Interface Processor-600

The Cisco Wideband SIP can support up to two Cisco Wideband SPAs. The Cisco 10000 Series SPA Interface Processor-600 (referred to as the Cisco SIP-600) can support up to six Cisco Wideband SPAs. For more information about the introduction of support for different SIPs and SPAs, see the “[SIP Summary](#)” section on page 2-1.

## Channel Interface Counts

Table 1-1 provides details about the modular and wideband channel interface counts supported by Cisco IOS Releases.

**Table 1-1** Channel Interface Counts

IOS Release	Modular Cable Interfaces	Wideband Cable Interfaces	Total M-CMTS Interfaces
12.3(21)BC and 12.2(33)SCA	48 (2 SPAs x 24)	64 (2 SPAs x 32)	112
12.2(33)SCB	144 (6 SPAs x 24)	192 (6 SPAs x 32)	336

## Modular Optics Compatibility

Some SPAs implement small form-factor pluggable (SFP or XFP) optical transceivers to provide network connectivity. The SFP and XFP modules are fiber-optic transceiver devices that mount to the front panel to provide network connectivity.



### Note

SFP modules are optics modules with speeds lower than 10 gigabits per second (Gb/s); XFP modules are optics modules with speeds equal to or greater than 10 Gb/s.

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



### Note

The SPAs accept only the optics modules listed as supported in this document. Each time an SFP or XFP module is inserted into a SPA, a check is run. Only SFP and XFP modules that pass this check are usable.

Table 1-2 shows the types of optics modules that are qualified for use with a SPA.

**Table 1-2 SPA Optics Compatibility**

SPA	Qualified Optics Modules—Cisco Part Numbers
Cisco Wideband SPA	<ul style="list-style-type: none"> <li>• GLC-SX-MM</li> <li>• GLC-LH-SM</li> <li>• GLC-ZX-SM</li> </ul>
1-Port 10-Gigabit Ethernet SPA	<ul style="list-style-type: none"> <li>• XFP-10GLR-OC192SR</li> <li>• XFP-10GER-OC192IR</li> </ul>
5-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> <li>• SFP-GE-T</li> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-Z</li> </ul>

## Power Management

SPAs and SIPs consume chassis power; therefore, make sure the chassis is within the power budget on the Cisco uBR10012 router.

Table 1-3 shows the maximum power consumption, in watts, for the SIPs and SPAs.

**Table 1-3 SIP and SPA Power Consumption**

SIPs	Maximum Power Consumption (Watts)
Cisco Wideband SIP	115 <sup>1</sup>
Cisco SIP-600	160 <sup>2</sup>
<b>SPAs</b>	
Cisco Wideband SPA	20 <sup>3</sup>
1-Port 10-Gigabit Ethernet SPA	25
5-Port Gigabit Ethernet SPA	18.1

1. Maximum includes power for two Cisco Wideband SPAs with two SFP modules installed in each SPA.
2. Maximum with four SPAs installed.
3. Maximum includes power for two SFP modules.

If the power limit is exceeded, the SIP and SPA are not powered up and an error message is displayed.

# Checking Hardware and Software Compatibility

To check the minimum software requirements of Cisco IOS software with the hardware installed on your router, Cisco maintains the Software Advisor tool on Cisco.com. This tool does not verify whether SIPs or SPAs within a system are compatible. However, the tool provides the minimum Cisco IOS requirements for individual hardware modules or components.

**Note**

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Access to this tool is limited to users with Cisco.com login accounts.

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To access Software Advisor, click **Login** at Cisco.com, type “Software Advisor” in the SEARCH box, and click **GO**. Click the link for the Software Advisor tool.

Choose a product family or enter a specific product number to search for the minimum supported software release needed for your hardware.

