



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 2-3](#)

For more hardware details on the specific SIP and SPAs that are supported on the Cisco uBR10012 router, refer to the companion publication, *Cisco uBR10012 Universal Broadband Router SIP and SPA Hardware Installation 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:

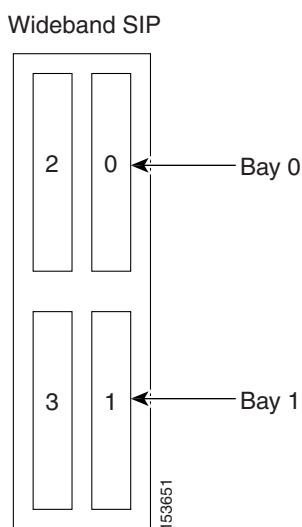
- A SIP is a carrier card that inserts into a router slot like a line card. It provides no network connectivity on its own.
- A SIP contains one or more bays (subslots), which are used to house one or more SPAs. The SPA provides interface ports for network connectivity.
- During normal operation the SIP should reside in the router fully populated either with functional SPAs in all bays, or with a blank filler plate (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 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 various types. The Cisco Wideband SPA is a single-wide, half-height SPA. [Figure 2-1](#) shows how bays are numbered on the Cisco Wideband SIP. The Cisco Wideband SIP supports up to two Cisco Wideband SPAs in bays 0 and 1. On the Cisco Wideband SIP, bays 2 and 3 are empty and must have blank filler plates.

Figure 2-1 Single-Wide, Half-Height SPAs (Vertical Slot Orientation)



- Each SPA provides a certain number of connectors, or ports, that are the interfaces to one or more networks. The Cisco Wideband SPA has two Gigabit Ethernet ports that use small form-factor pluggable (SFP) modules.
- Either a blank filler plate or a functional SPA should reside in every bay 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 bays.

SIP and SPA Compatibility

The Cisco uBR10012 router currently supports the following SIPs:

- Cisco Wideband SIP for 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 four Cisco Wideband SPAs. If you are using PRE4, the Cisco uBR10012 router can support two Cisco SIP-600s with six Cisco Wideband SPAs. For more information about the introduction of support for different SIPs and SPAs, see the “SIP Summary” section on page 3-1.

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

Table 2-1 SPA Optics Compatibility

SPA	Qualified Optics Modules—Cisco Part Numbers	Wavelength
Cisco Wideband SPA	<ul style="list-style-type: none"> • SFP-GE-T • GLC-SX-MM • GLC-LH-SM • GLC-ZX-SM 	<ul style="list-style-type: none"> • SFP-GE-T: N/A • GLC-SX-MM: 850 nm • GLC-LH-SM: 1300 nm • GLC-ZX-SM: 1550 nm
1-Port 10-Gigabit Ethernet Shared Port Adapter	<ul style="list-style-type: none"> • XFP-10GLR-OC192SR • XFP-10GER-OC192IR • XFP-10GZR LR-2 • XFP-10G-MM-SR • DWDM-XFP-xx.xx= 	<ul style="list-style-type: none"> • XFP-10GLR-OC192SR: 1310 nm • XFP-10GER-OC192IR: 1550 nm • XFP-10GZR LR-2: 1550 nm • XFP-10G-MM-SR: 850 nm • DWDM-XFP-xx.xx: 1530.33 to 1550.12 nm
5-Port Gigabit Ethernet Shared Port Adapter	<ul style="list-style-type: none"> • SFP-GE-L • SFP-GE-S • SFP-GE-T • SFP-GE-Z 	<ul style="list-style-type: none"> • SFP-GE-L: 1270 to 1355 nm • SFP-GE-S: 770 to 860 nm • SFP-GE-T: N/A • SFP-GE-Z: 1500 to 1580 nm

For information on the SFP modules supported by the SPAs, see the *Cisco uBR10012 Universal Broadband Router SIP and SPA Hardware Installation Guide*.