



CHAPTER 2

SIP, SSC, and SPA Product Overview

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

- [Introduction to SIPs, SSCs, and SPAs, page 2-1](#)
- [SIP, SSC, and SPA Compatibility, page 2-3](#)
- [Modular Optics Compatibility, page 2-6](#)

For more hardware details for the specific SIPs, SSCs, and SPAs that are supported on the Catalyst 6500 Series switch, refer to the companion publication, *Cisco 7600 Series Router SIP, SSC, and SPA Hardware Installation Guide*.

Introduction to SIPs, SSCs, and SPAs

SIPs, SSCs, and SPAs are a new carrier card and port adapter architecture to increase modularity, flexibility, and density across Cisco Systems switches for network connectivity. This section describes the SIPs, SSCs, 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 switch 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 switch 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.

SPA Services Cards

The following list describes some of the general characteristics of an SSC:

- An SSC is a carrier card that inserts into a switch slot like a line card. It provides no network connectivity.
- An SSC provides one or more subslots, which are used to house one or more SPAs. The supported SPAs do not provide interface ports for network connectivity, but provide certain services.
- During normal operation the SSC should reside in the switch fully populated either with functional SPAs in all subslots, or with a blank filler plate (SPA-BLANK=) inserted in all empty subslots.
- SSCs 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 SSC.

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.
- Some SPAs provide services rather than network connectivity, and insert into subslots of compatible SSCs. For example, the IPsec VPN SPA provides services such as IP security (IPsec) encryption/decryption, generic routing encapsulation (GRE), and Internet Key Exchange (IKE) key generation.
- SPAs are available in the following sizes, as shown in [Figure 2-1](#) and [Figure 2-2](#):
 - Single-height SPA—Inserts into one SIP subslot.
 - Double-height SPA—Inserts into two single, vertically aligned SIP subslots.

Figure 2-1 Single-Height and Double-Height SPA Sizes

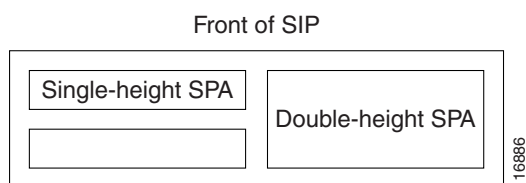
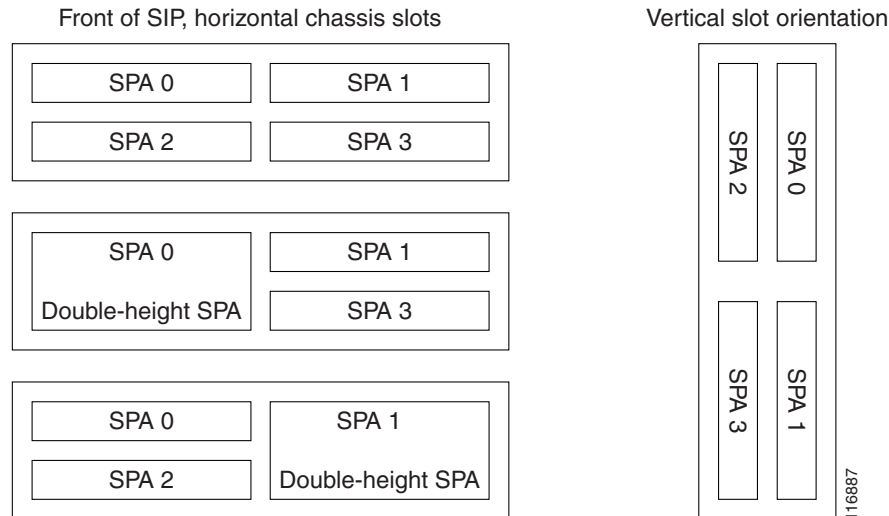


Figure 2-2 Horizontal and Vertical Chassis Slot Orientation for SPAs

- 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 using the Cisco IOS command-line interface (CLI).
- Either a blank filler plate or a functional SPA should reside in every subslot of an 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 online insertion and removal (OIR) with SPAs inserted in their subslots.

SIP, SSC, and SPA Compatibility

The following tables show SIP, SSC, and SPA compatibility by SPA technology area on the Catalyst 6500 Series switch.


Note

Do not install the IPsec VPN SPA in the same chassis as a Cisco 7600 SIP-600 with releases earlier than Cisco IOS Release 12.2(33)SXI.

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

SPA	Product ID	SIP Type			
		SIP-200	SIP-400	SIP-600	SSC-400
2-Port and 4-Port OC-3c/STM-1 ATM SPA	SPA-2XOC3-ATM SPA-4XOC3-ATM	(Note1)	(Note1)	No	No
1-Port OC-12c/STM-4 ATM SPA	SPA-1XOC12-ATM	No	(Note1)	No	No
1-Port OC-48c/STM-16 ATM SPA	SPA-1XOC48-ATM	No	(Note1)	No	No

For more information about the introduction of support for different ATM SPAs, see the [“Release History”](#) section on page 6-2.

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

SPA	Product ID	SIP Type			
		SIP-200	SIP-400	SIP-600	SSC-400
1-Port 10-Gigabit Ethernet SPA	SPA-1XTENGE-XENPK SPA-1XTENGE-XFP	No	No	(Note3)	No
	SPA-1X10GE-L-V2	No	(Note6)	(Note6)	No
2-Port Gigabit Ethernet SPA	SPA-2X1GE	No	Yes	No	No
5-Port Gigabit Ethernet SPA	SPA-5X1GE	No	Yes	(Note3)	No
	SPA-5X1GE-V2	No	(Note5)	No	No
10-Port Gigabit Ethernet SPA	SPA-10X1G	No	No	(Note3)	No
4-Port and 8-Port Fast Ethernet SPA	SPA-4X1FE-V2 SPA-8X1FE-V2	(Note2)	No	No	No

For more information about the introduction of support for different Ethernet SPAs, see the [“Release History”](#) section on page 9-1.

Table 2-3 SIP and SPA Compatibility Table for POS SPAs

SPA	Product ID	SIP Type			
		SIP-200	SIP-400	SIP-600	SSC-400
2-Port and 4-Port OC-3c/STM-1 POS SPA	SPA-2XOC3-POS SPA-4XOC3-POS	Yes	Yes	No	No
	SPA-1XOC12-POS	No	Yes	No	No
1-Port OC-48c/STM-16 POS SPA	SPA-1XOC48POS/RPR	No	(Note4)	No	No
2-Port OC-48c/STM-16 POS SPA	SPA-2XOC48POS/RPR	No	No	(Note5)	No
1-Port OC-192c/STM-64 POS/RPR SPA	SPA-OC192POS-LR	No	No	(Note3)	No
	SPA-OC192POS-VSR				
	SPA-OC192POS-XFP				

For more information about the introduction of support for different POS SPAs, see the [“Release History”](#) section on page 12-1.

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

SPA	Product ID	SIP Type			
		SIP-200	SIP-400	SIP-600	SSC-400
1-Port Channelized OC-3/STM-1 SPA	SPA-1XCHSTM1/OC3	(Note2)	No	No	No
2-Port and 4-Port Channelized T3 SPA	SPA-2XCT3/DS0 SPA-4XCT3/DS0	Yes	(Note5)	No	No
	SPA-2XT3/E3 SPA-4XT3/E3	Yes	(Note5)	No	No
8-Port Channelized T1/E1 SPA	SPA-8XCHT1/E1	Yes	(Note5)	No	No

For more information about the introduction of support for different serial SPAs, see the [“Release History”](#) section on page 14-1.

Table 2-5 SIP and SPA Compatibility Table for the IPsec VPN SPA

SPA	Product ID	SIP Type			
		SIP-200	SIP-400	SIP-600	SSC-400
IPsec VPN SPA	SPA-IPSEC-2G	No	No	No	Yes

For more information about the introduction of support for the IPsec VPN SPA, see the [“Release History”](#) section on page 20-1.

The following notes apply to the SIP, SSC, and SPA compatibility tables:

- Note1—Supported in 12.2SXE and SXF. Support removed in 12.2(33)SXH. Support restored in 12.2(33)SXI.
- Note2—Support added in 12.2(33)SXH.
- Note3—Supported in 12.2SXF. Support removed in 12.2(33)SXH.
- Note4—Support added in 12.2(18)SXF10.
- Note5—Support added in 12.2(33)SXJ.
- Note6—Support added in 12.2(33)SXI2.

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


Note

The SPAs will accept only the SFP modules listed as supported in this document. An SFP 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 shows the types of optics modules that have been qualified for use with a SPA:

Table 2-6 SPA Optics Compatibility

SPA	Qualified Optics Modules (Cisco Part Numbers)
2-Port and 4-Port OC-3c/STM-1 ATM 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 ATM 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-48c/STM-16 ATM SPA	<ul style="list-style-type: none"> • SFP-OC48-IR1 • SFP-OC48-SR
1-Port 10-Gigabit Ethernet SPA	<ul style="list-style-type: none"> • XFP-10GLR-OC192SR • XFP-10GER-OC192IR • SFP-GE-T
2-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • SFP-GE-S • SFP-GE-L • SFP-GE-Z • SFP-GE-T
5-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • SFP-GE-S • SFP-GE-L • SFP-GE-Z • SFP-GE-T

Table 2-6 SPA Optics Compatibility (continued)

SPA	Qualified Optics Modules (Cisco Part Numbers)
10-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • SFP-GE-S • SFP-GE-L • SFP-GE-Z • SFP-GE-T
2-Port and 4-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-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-48c/STM-16 POS SPA	<ul style="list-style-type: none"> • SFP-OC48-SR • SFP-OC48-IR1 • SFP-OC48-LR2
1-Port OC-192c/STM-64 POS/RPR XFP SPA	<ul style="list-style-type: none"> • XFP-10GLR-OC192SR • XFP-10GER-OC192IR
1-Port Channelized OC-3/STM-1 SPA	<ul style="list-style-type: none"> • SFP-OC3-SR • SFP-OC3-IR1 • SFP-OC3-LR1 • SFP-OC3-LR2
1-Port Channelized OC-3 ATM CEoP SPA	<ul style="list-style-type: none"> • SFP-OC3-MM • SFP-OC3-SR • SFP-OC3-IR1 • SFP-OC3-LR1 • SFP-OC3-LR2

