



# 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 1-1](#)
- [SIP and SPA Compatibility, page 1-3](#)
- [Modular Optics Compatibility, page 1-6](#)

For software 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 Software Configuration Guide](#).

## Introduction to SIPs and SPAs

Cisco ASR 1000 Series Aggregation Services 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.



### Note

In some situations an informational PLIM message is displayed on the console. For example: **ASR1K-15.4(3)S3-PE63-XXX-XX-%CMCC-3-PLIM\_STATUS: SIP4: cmcc: A PLIM driver informational error FCM shared - calMemOneBitEccErrInt, block 28 count c8**. These messages are transient in nature and can be resolved by reseating the SPA.

## 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**

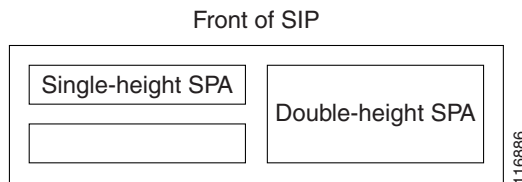
Fully populate all slots and subslots with blank filler plates or functional SPAs for maximum efficiency of the cooling system.

## Shared Port Adapters

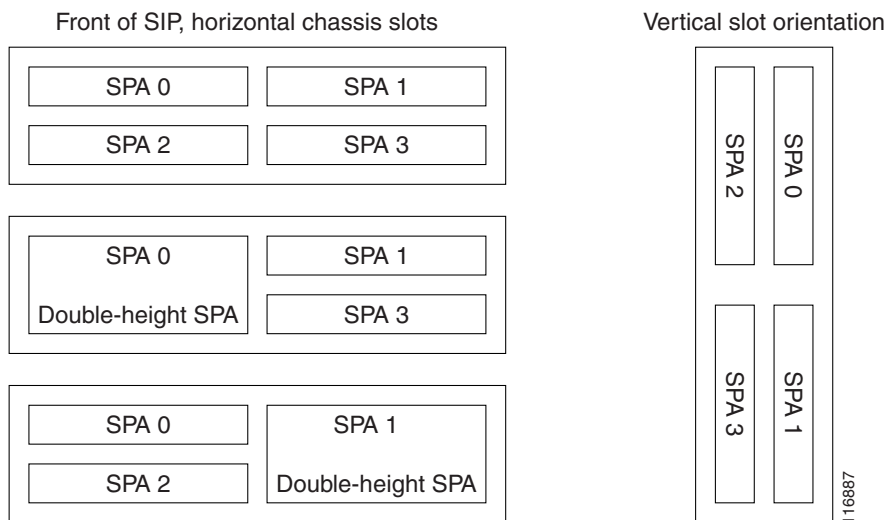
The following list describes some of the general characteristics of a SPA:

- 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.
- Some SPAs provide services rather than network connectivity, and can be inserted into the subslots of a compatible SIP, for example, the Cisco WebEx Node for ASR 1000 Series that provides WebEx meeting services, and the DSP SPA that provides voice transcoding and transrating capabilities.
- SPAs are available in the following sizes, as shown in [Figure 1-1](#) and [Figure 1-2](#):
  - Single-height SPA—Inserts into one SIP subslot.
  - Double-height SPA—Inserts into two single, vertically aligned SIP subslots.

**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 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 1-1, Table 1-2, Table 1-3, Table 1-4, Table 1-5, and Table 1-6 show SIP and SPA compatibility by SPA technology area on the Cisco ASR 1000 Series Router.



### Note

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

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

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
1-Port Clear Channel OC-3 ATM SPA	SPA-1XOC3-ATM-V2	Yes	Yes
3-Port Clear Channel OC-3 ATM SPA	SPA-3XOC3-ATM-V2	Yes	Yes
1-Port Clear Channel OC-12 ATM SPA	SPA-1XOC12-ATM-V2	Yes	Yes

**Table 1-2 SIP and SPA Compatibility for Ethernet SPAs**

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
4-Port and 8-Port Fast Ethernet SPA	SPA-4X1FE-TX-V2 SPA-8X1FE-TX-V2	Yes	Yes
1-Port 10-Gigabit Ethernet SPA	SPA-1X10GE-L-V2 SPA-1X10GE-L-V2 SPA-1X10GE-L-V2 SPA-1X10GE-L-V2 SPA-1X10GE-L-V2	Yes	Yes
1-Port 10-Gigabit Ethernet LAN/WAN-PHY SPA	SPA-1X10GE-WL-V2	Yes	Yes
2-Port Gigabit Ethernet SPA	SPA-2X1GE-V2	Yes	Yes
5-Port Gigabit Ethernet SPA	SPA-5X1GE-V2	Yes	Yes
8-Port Gigabit Ethernet SPA	SPA-8X1GE-V2	Yes	Yes
10-Port Gigabit Ethernet SPA <sup>1</sup>	SPA-10X1GE-V2	Yes	Yes
2-Port Gigabit Synchronous Ethernet SPA	SPA-2X1GE-SYNCE	Yes	Yes

- The 10-Port Gigabit Ethernet SPA is a double-height SPA. The 10-Port Gigabit Ethernet SPA is not supported on Cisco ASR 1001, Cisco ASR 1001-X, or Cisco ASR 1002-F Routers.

**Table 1-3 SIP and SPA Compatibility for Packet over SONET SPAs**

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
1-Port OC-12c/STM-4 POS SPA	SPA-1XOC12-POS SPA-1XOC12-POS-V2	Yes	Yes
2-Port, 4-Port, and 8-Port OC-3c/STM-1 POS SPA	SPA-2XOC12-POS SPA-4XOC12-POS SPA-8XOC12-POS	Yes	Yes
2-Port, 4-Port, and 8-Port OC-3c/STM-1 POS SPA	SPA-2XOC3-POS SPA-2XOC3-POS-V2 SPA-4XOC3-POS SPA-4XOC3-POS-V2 SPA-8XOC3-POS	Yes	Yes
1-Port OC-48c/STM-16 POS SPA	SPA-1XOC48-POS	Yes	Yes
2-Port and 4-Port OC-48c/STM-16 POS SPA	SPA-2XOC48POS/RPR SPA-4XOC48POS/RPR	Yes	Yes
1-Port OC-192c/STM-64 POS/RPR XFP SPA	SPA-1XOC192POS-XFP	Yes	Yes

**Table 1-4 SIP and SPA Compatibility for Serial SPAs**

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
2-Port and 4-Port Clear Channel T3/E3 SPA	SPA-2XT3/E3 SPA-2XT3/E3-V2 SPA-4XT3/E3 SPA-4XT3/E3-V2	Yes	Yes
8-Port Clear-Channel T3/E3 Serial SPA	SPA-8XT3/E3	No	Yes
2-Port and 4-Port Channelized T3 SPA	SPA-2XCT3/DS0 SPA-2XCT3/DS0-V2 SPA-4XCT3/DS0 SPA-4XCT3/DS0-V2	Yes	Yes
4-Port Serial Interface SPA	SPA-4XT-Serial	Yes	Yes <sup>1</sup>
8-Port Channelized T1/E1 SPA	SPA-8XCHT1/E1 SPA-8XCHT1/E1-V2	Yes	Yes

**Table 1-4 SIP and SPA Compatibility for Serial SPAs (continued)**

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
1-Port Channelized OC-3/STM-1 SPA	SPA-1XCHSTM1/OC3 SPA-1CHSTM1/OC3V2	Yes	Yes
1-Port Channelized OC-12/STM-4 SPA	SPA-1XCHOC12/DS0	Yes	Yes

1. The SPA-4XT-Serial SPA is supported on SIP-40 with the initial Cisco IOS XE Release 3.1.1S when plugged into an ASR1000 SIP-40 linecard.

**Table 1-5 SIP and SPA Compatibility for Service SPAs**

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
Cisco WebEx Node for ASR 1000 Series	SPA-WMA-K9	Yes	Yes
Cisco DSP SPA for ASR 1000 Series	SPA-DSP	Yes	Yes

**Table 1-6 SIP and SPA Compatibility for CEoP SPA**

SPA	Product ID	SIP Supported: Cisco ASR1000-SIP10	SIP Supported: Cisco ASR1000-SIP40
1-Port Channelized OC3/STM-1 ATM and Circuit Emulation SPA <sup>1</sup>	SPA-1CHOC3-CE-ATM	Yes	Yes
2-Port Channelized T3/E3 ATM CEoP SPA <sup>2</sup>	SPA-2CHT3-CE-ATM	Yes	Yes
24-Port Channelized T1/E1 ATM CEoP SPA <sup>3</sup>	SPA-24CHT1-CE-ATM	Yes	Yes

1. Restriction: The SPA-1CHOC3-CE-ATM is not supported on the Cisco ASR 1001 Router (1 RU chassis), but supported on all other ASR 1000 chassis. All the other ASR 1000 Routers support the SPA-1CHOC3-CE-ATM for Circuit Emulation application; but not ATM applications. Effective from Cisco IOS XE Release 3.3.0S, the SPA-1CHOC3-CE-ATM is supported only with these software images: ADVANCED ENTERPRISE SERVICES, ADVANCED ENTERPRISE W/O CRYPTO, ADVANCED IP SERVICES, or ADVANCED IP SERVICES W/O CRYPTO. The SPA-1CHOC3-CE-ATM is not supported with these software images: IP BASE and IP BASE W/O CRYPTO.
2. Restriction: Effective from Cisco IOS XE Release 3.4.0S, the SPA-2CHT3-CE-ATM is supported on all the Cisco ASR 1000 Series Routers except on the Cisco ASR 1001 Router. However, the SPA-2CHT3-CE-ATM supports only the T3 ATM mode in Cisco IOS XE Release 3.4.0S and not the Circuit Emulation (CEM) mode. Maximum Virtual Circuits supported are 1024. Interim Local Management Interface (ILMI) 1.0 is not supported. IETF RFC 2364 and 2516 for Point-to-Point Protocol (PPP) over ATM is not supported. IETF RFC 1577 support for classical IP and Address Resolution Protocol (ARP) over ATM is not supported. ATM Forum UNI 3.0, 3.1, and 4.0 is not supported. Effective from Cisco IOS XE Release 3.5.0S, the SPA-2CHT3-CE-ATM supports ATM on clear-channel E3 SPA. All the existing ATM features are supported in the E3 mode. Effective from Cisco IOS XE Release 3.8.0S, the SPA-2CHT3-CE-ATM is supported on the Cisco ASR 1001 Router. The SPA-2CHT3-CE-ATM on the Cisco ASR 1001 Router supports both the T3 and E3 ATM modes and does not support the CEM mode.

3. Restriction: The SPA-24CHT1-CE-ATM is not supported on the Cisco ASR 1001 Router (1 RU chassis), but supported on all other ASR 1000 chassis. Effective from Cisco IOS XE Release 3.4.0S, the SPA-24CHT1-CE-ATM supports only the CEM mode. Effective from Cisco IOS XE Release 3.4.0S, the SPA-24CHT1-CE-ATM is supported only with these software images: ADVANCED ENTERPRISE SERVICES, ADVANCED ENTERPRISE W/O CRYPTO, ADVANCED IP SERVICES, or ADVANCED IP SERVICES W/O CRYPTO. The SPA-24CHT1-CE-ATM is not supported with these software images: IP BASE and IP BASE W/O CRYPTO.

## 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.

The following tables 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](http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_installation_guides_list.html)

**Table 1-7 ATM SPA Optics Compatibility**

SPA	Qualified Optics Modules (Cisco Part Numbers)
SPA-1XOC3-ATM-V2, SPA-3XOC3-ATM-V2	<ul style="list-style-type: none"> <li>• SFP-OC3-MM</li> <li>• SFP-OC3-SR</li> <li>• SFP-OC3-IR1</li> <li>• SFP-OC3-LR1</li> <li>• SFP-OC3-LR2</li> </ul>
SPA-1XOC12-ATM-V2	<ul style="list-style-type: none"> <li>• SFP-OC12-MM</li> <li>• SFP-OC12-SR</li> <li>• SFP-OC12-IR1</li> <li>• SFP-OC12-LR1</li> <li>• SFP-OC12-LR2</li> </ul>

**Table 1-8 10-Gigabit Ethernet Optics Compatibility**

SPA	Qualified Optics Modules (Cisco Part Numbers)
Built-in 10-Gigabit Ethernet Ports (SFP+): ASR1001-X	<ul style="list-style-type: none"> <li>• SFP-10G-SR</li> <li>• SFP-10G-LR</li> <li>• SFP-10G-ER</li> <li>• SFP-10G-BXD-I</li> <li>• SFP-10G-BXU-I</li> <li>• SFP-10G-BX40D-I</li> <li>• SFP-10G-BX40U-I</li> <li>• SFP-10G-SR-X</li> <li>• SFP-10G-LR-X</li> <li>• SFP-H10GB-ACU7M</li> <li>• SFP-H10GB-ACU10M</li> <li>• SFP-10G-SR-S (XE 16.6.1)</li> <li>• SFP-10G-LR-S (XE 16.6.1)</li> <li>• SFP-10G-ER-S (XE 16.6.1)</li> <li>• SFP-10G-AOC 1-10M (XE 16.6.1)</li> </ul>

**Table 1-8 10-Gigabit Ethernet Optics Compatibility**

<p>Built-in 10-Gigabit Ethernet Ports (SFP+): ASR1001-HX, ASR1002-HX</p>	<ul style="list-style-type: none"> <li>• SFP-10G-SR</li> <li>• SFP-10G-LR</li> <li>• SFP-10G-ER</li> <li>• SFP-10G-ZR</li> <li>• SFP-10G-BXD-I</li> <li>• SFP-10G-BXU-I</li> <li>• SFP-10G-BX40D-I</li> <li>• SFP-10G-BX40U-I</li> <li>• SFP-10G-SR-X</li> <li>• SFP-10G-LR-X</li> <li>• SFP-H10GB-ACU7M</li> <li>• SFP-H10GB-ACU10M</li> <li>• DWDM (non-tunable)</li> <li>• SFP-10G-SR-S (XE 16.6.1)</li> <li>• SFP-10G-LR-S (XE 16.6.1)</li> <li>• SFP-10G-ER-S (XE 16.6.1)</li> <li>• SFP-10G-ZR-S (XE 16.6.1)</li> <li>• SFP-10G-AOC 1-10M (XE 16.6.1)</li> </ul> <p><b>Note</b> These ports utilize the SFP+ form factor optics, while the 1-Port 10-Gigabit Ethernet SPA uses the XFP form factor optics.</p>
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**Table 1-8 10-Gigabit Ethernet Optics Compatibility**

EPA-10X10GE (SFP+)	<ul style="list-style-type: none"> <li>• SFP-10G-SR</li> <li>• SFP-10G-LR</li> <li>• SFP-10G-ER</li> <li>• SFP-10G-ZR</li> <li>• SFP-10G-BXD-I</li> <li>• SFP-10G-BXU-I</li> <li>• SFP-10G-BX40D-I</li> <li>• SFP-10G-BX40U-I</li> <li>• SFP-10G-SR-X</li> <li>• SFP-10G-LR-X</li> <li>• SFP-H10GB-ACU7M</li> <li>• SFP-H10GB-ACU10M</li> <li>• DWDM (non-tunable)</li> <li>• SFP-10G-SR-S (Cisco IOS XE 16.6.1)</li> <li>• SFP-10G-LR-S (Cisco IOS XE 16.6.1)</li> <li>• SFP-10G-ER-S (Cisco IOS XE 16.6.1)</li> <li>• SFP-10G-ZR-S (Cisco IOS XE 16.6.1)</li> <li>• SFP-10G-AOC 1-10M (Cisco IOS XE 16.6.1)</li> </ul>
SPA-1X10GE-L-V2, SPA-1X10GE-WL-V2 (XFP)	<ul style="list-style-type: none"> <li>• XFP-10GER-192IR+</li> <li>• XFP10GER-192IR-L</li> <li>• XFP10GLR-192SR-L</li> <li>• XFP-10GLR-OC192SR</li> <li>• XFP-10GER-OC192IR</li> <li>• XFP-10GZR-OC192LR</li> <li>• XFP-10G-MM-SR</li> <li>• DWDM-XFP-C</li> </ul>
ASR1000-2T+20X1GE, ASR1000-6TGE (XFP)	<ul style="list-style-type: none"> <li>• XFP-10GER-192IR+</li> <li>• XFP10GER-192IR-L</li> <li>• XFP10GLR-192SR-L</li> <li>• XFP-10GLR-OC192SR</li> <li>• XFP-10GER-OC192IR</li> <li>• XFP-10GZR-OC192LR</li> <li>• XFP-10G-MM-SR</li> <li>• DWDM-XFP-C</li> </ul>

**Table 1-9 40-Gigabit Ethernet Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
EPA-CPAK-2X40GE	CPAK-100G-SR10 + CAB-MPO24-2XMPO12
EPA-1X40GE and EPA-2X40GE	<ul style="list-style-type: none"> <li>• QSFP-40G-BD-RX</li> <li>• QSFP-40G-ER4</li> <li>• QSFP-40G-LR4-S</li> <li>• QSFP-40G-CSR4</li> <li>• QSFP-40G-SR4</li> <li>• QSFP-40G-SR4-S</li> <li>• QSFP-40G-SR-BD</li> <li>• QSFP-40G-LR4</li> <li>• QSFP-H40G-AOC1M</li> <li>• QSFP-H40G-AOC2M</li> <li>• QSFP-H40G-AOC3M</li> <li>• QSFP-H40G-AOC5M</li> <li>• QSFP-H40G-AOC7M</li> <li>• QSFP-H40G-AOC10M</li> <li>• QSFP-H40G-AOC15M</li> <li>• QSFP-H40G-AOC20M</li> <li>• QSFP-H40G-ACU7M</li> <li>• QSFP-H40G-ACU10M</li> </ul>

**Table 1-10 100-Gigabit Ethernet Optics Compatibility**

SPA	Qualified Optics Modules (Cisco Part Numbers)
EPA-1X100GE	<ul style="list-style-type: none"> <li>• CPAK-100G-SR10</li> <li>• CPAK-100G-LR4</li> <li>• CPAK-100G-SR4 (XE 16.6.1)</li> <li>• CPAK-100G-ER4L (XE 16.9.1)</li> </ul>
EPA-QSFP-1X100GE	<ul style="list-style-type: none"> <li>• QSFP-100G-SR4-S</li> <li>• QSFP-100G-LR4-S</li> <li>• QSFP-100G-ER4L-S</li> <li>• QSFP-100G-CWDM4-S</li> <li>• QSFP-100G-PSM4-S</li> <li>• 100G passive copper cables:               <ul style="list-style-type: none"> <li>– QSFP-100G-CU1M</li> <li>– QSFP-100G-CU2M</li> <li>– QSFP-100G-CU3M</li> <li>– QSFP-100G-CU5M</li> </ul> </li> </ul> <div style="margin-top: 10px;">  <p style="margin: 0;"><b>Note</b> In Cisco IOS XE 16.9.1 release, autonegotiation is not supported on copper cables.</p> </div> <ul style="list-style-type: none"> <li>• 100G active optical cables:               <ul style="list-style-type: none"> <li>– QSFP-100G-AOC1M</li> <li>– QSFP-100G-AOC2M</li> <li>– QSFP-100G-AOC3M</li> <li>– QSFP-100G-AOC5M</li> <li>– QSFP-100G-AOC7M</li> <li>– QSFP-100G-AOC10M</li> <li>– QSFP-100G-AOC15M</li> <li>– QSFP-100G-AOC20M</li> <li>– QSFP-100G-AOC25M</li> <li>– QSFP-100G-AOC30M</li> </ul> </li> </ul>



**Table 1-11 Gigabit Ethernet Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
Built-in Gigabit Ethernet Ports  ASR1001, ASR1001-X, ASR1002, ASR1002, ASR1002-X	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-T</li> <li>• GLC-TE</li> <li>• SFP-GE-Z</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-BX40-D-I</li> <li>• GLC-BX40-DA-I</li> <li>• GLC-BX40-U-I</li> <li>• GLC-BX80-D-I</li> <li>• GLC-BX80-U-I</li> <li>• GLC-GE-100FX=</li> <li>• GLC-SX-MM</li> <li>• GLC-SX-MMD</li> <li>• GLC-LH-SM</li> <li>• GLC-LH-SMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> <li>• DWDM</li> <li>• CWDM</li> </ul>

**Table 1-11 Gigabit Ethernet Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
Built-in Gigabit Ethernet Ports ASR1001-HX, ASR1002-HX	<ul style="list-style-type: none"> <li>• SFP-GE-T</li> <li>• GLC-TE</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-BX40-D-I</li> <li>• GLC-BX40-DA-I</li> <li>• GLC-BX40-U-I</li> <li>• GLC-BX80-D-I</li> <li>• GLC-BX80-U-I</li> <li>• GLC-GE-100FX=</li> <li>• GLC-SX-MM</li> <li>• GLC-SX-MMD</li> <li>• GLC-LH-SM</li> <li>• GLC-LH-SMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> <li>• DWDM</li> <li>• CWDM</li> </ul>

**Table 1-11 Gigabit Ethernet Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
SPA-2X1GE-V2, SPA-8X1GE-V2	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-T (Not supported on SPA-2X1GE-V2)</li> <li>• GLC-TE (Not supported on SPA-2X1GE-V2)</li> <li>• SFP-GE-Z</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-BX40-D-I</li> <li>• GLC-BX40-DA-I</li> <li>• GLC-BX40-U-I</li> <li>• GLC-BX80-D-I</li> <li>• GLC-BX80-U-I</li> <li>• GLC-LH-SMD</li> <li>• GLC-SX-MMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> <li>• DWDM</li> <li>• CWDM</li> </ul>

**Table 1-11 Gigabit Ethernet Optics Compatibility**

SPA	Qualified Optics Modules (Cisco Part Numbers)
SPA-5X1GE-V2, SPA-10X1GE-V2	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-T</li> <li>• GLC-TE</li> <li>• SFP-GE-Z</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-BX40-D-I</li> <li>• GLC-BX40-DA-I</li> <li>• GLC-BX40-U-I</li> <li>• GLC-BX80-D-I</li> <li>• GLC-BX80-U-I</li> <li>• GLC-GE-100FX=</li> <li>• GLC-LH-SMD</li> <li>• GLC-SX-MMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> <li>• DWDM</li> <li>• CWDM</li> </ul>
SPA-2X1GE-SYNCE	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• GLC-TE</li> <li>• SFP-GE-Z</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-LH-SMD</li> <li>• GLC-SX-MMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> </ul> <p data-bbox="878 1667 1482 1724"><b>Note</b> The SPA-2X1GE-SYNCE is not supported on ASR1002-X.</p>



**Table 1-11 Gigabit Ethernet Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
ASR1000-2T+20X1GE	<ul style="list-style-type: none"> <li>• SFP-GE-S</li> <li>• SFP-GE-L</li> <li>• SFP-GE-T</li> <li>• GLC-TE</li> <li>• SFP-GE-Z</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-BX40-D-I</li> <li>• GLC-BX40-DA-I</li> <li>• GLC-BX40-U-I</li> <li>• GLC-BX80-D-I</li> <li>• GLC-BX80-U-I</li> <li>• GLC-GE-100FX=</li> <li>• GLC-LH-SMD</li> <li>• GLC-SX-MMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> <li>• DWDM</li> <li>• CWDM</li> </ul>

**Table 1-11 Gigabit Ethernet Optics Compatibility**

SPA	Qualified Optics Modules (Cisco Part Numbers)
EPA-18X1GE	<ul style="list-style-type: none"> <li>• SFP-GE-T</li> <li>• GLC-TE</li> <li>• GLC-BX-D</li> <li>• GLC-BX-U</li> <li>• GLC-BX40-D-I</li> <li>• GLC-BX40-DA-I</li> <li>• GLC-BX40-U-I</li> <li>• GLC-BX80-D-I</li> <li>• GLC-BX80-U-I</li> <li>• GLC-GE-100FX=</li> <li>• GLC-LH-SMD</li> <li>• GLC-SX-MMD</li> <li>• GLC-EX-SMD</li> <li>• GLC-ZX-SMD</li> <li>• DWDM</li> <li>• CWDM</li> </ul>

**Table 1-12 Gigabit Ethernet SPA Optics Compatibility**

SPA	Qualified Optics Modules (Cisco Part Numbers)
Fixed Ethernet Line Card, 2x10GE + 20x1GE, Fixed Ethernet Line Card, 6x10GE	<ul style="list-style-type: none"> <li>• XFP-10GER-192IR+</li> <li>• XFP10GER-192IR-L</li> <li>• XFP10GLR-192SR-L</li> <li>• XFP-10GLR-OC192SR</li> <li>• XFP-10GER-OC192IR</li> <li>• XFP-10GZR-OC192LR</li> <li>• XFP-10G-MM-SR</li> <li>• DWDM-XFP-C</li> </ul>

**Table 1-13** CWDM Optics Compatibility on the Cisco ASR 1000 Series Routers

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
<p>Built-in Gigabit Ethernet Ports: ASR1001, ASR1001-X, ASR1002, ASR1002-X, ASR1001-HX, ASR1002-HX</p> <p>SPA-2X1GE-V2, SPA-5X1GE-V2, SPA-8X1GE-V2, SPA-10X1GE-V2</p> <p>EPA-18X1GE</p>	<ul style="list-style-type: none"> <li>• CWDM-SFP-1470=</li> <li>• CWDM-SFP-1490=</li> <li>• CWDM-SFP-1510=</li> <li>• CWDM-SFP-1530=</li> <li>• CWDM-SFP-1550=</li> <li>• CWDM-SFP-1570=</li> <li>• CWDM-SFP-1590=</li> <li>• CWDM-SFP-1610=</li> </ul>

**Table 1-14 DWDM Optics Compatibility for Gigabit Ethernet Ports on the Cisco ASR 1000 Series Routers**

SPA	Qualified Optics Modules (Cisco Part Numbers)
Built-in Gigabit Ethernet Ports: ASR1001, ASR1001-X, ASR1002, ASR1002-X, ASR1001-HX, ASR1002-HX	<ul style="list-style-type: none"> <li>• DWDM-SFP-3033=</li> <li>• DWDM-SFP-3112=</li> <li>• DWDM-SFP-3190=</li> </ul>
SPA-2X1GE-V2, SPA-5X1GE-V2, SPA-8X1GE-V2, SPA-10X1GE-V2	<ul style="list-style-type: none"> <li>• DWDM-SFP-3268=</li> <li>• DWDM-SFP-3425=</li> <li>• DWDM-SFP-3504=</li> </ul>
EPA-18X1GE	<ul style="list-style-type: none"> <li>• DWDM-SFP-3582=</li> <li>• DWDM-SFP-3661=</li> <li>• DWDM-SFP-3819=</li> <li>• DWDM-SFP-3898=</li> <li>• DWDM-SFP-3977=</li> <li>• DWDM-SFP-4056=</li> <li>• DWDM-SFP-4214=</li> <li>• DWDM-SFP-4294=</li> <li>• DWDM-SFP-4373=</li> <li>• DWDM-SFP-4453=</li> <li>• DWDM-SFP-4612=</li> <li>• DWDM-SFP-4692=</li> <li>• DWDM-SFP-4772=</li> <li>• DWDM-SFP-4851=</li> <li>• DWDM-SFP-5012=</li> <li>• DWDM-SFP-5092=</li> <li>• DWDM-SFP-5172=</li> <li>• DWDM-SFP-5252=</li> <li>• DWDM-SFP-5413=</li> <li>• DWDM-SFP-5494=</li> <li>• DWDM-SFP-5575=</li> <li>• DWDM-SFP-5655=</li> <li>• DWDM-SFP-5817=</li> <li>• DWDM-SFP-5898=</li> <li>• DWDM-SFP-5979=</li> <li>• DWDM-SFP-6061=</li> </ul>

**Table 1-15 POS SPA SFP Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
SPA-2XOC3-POS, SPA-2XOC3-POS-V2, SPA-4XOC3-POS, SPA-4XOC3-POS-V2, SPA-8XOC3-POS	<ul style="list-style-type: none"> <li>• SFP-OC3-MM</li> <li>• SFP-OC3-SR</li> <li>• SFP-OC3-IR1</li> <li>• SFP-OC3-LR1</li> <li>• SFP-OC3-LR2</li> </ul>
SPA-1XOC12-POS-V2, SPA-2XOC12-POS	<ul style="list-style-type: none"> <li>• SFP-OC12-MM</li> <li>• SFP-OC12-SR</li> <li>• SFP-OC12-IR1</li> <li>• SFP-OC12-LR1</li> <li>• SFP-OC12-LR2</li> </ul>
2-Port and 4-Port OC-48c/STM-16 POS SPA	<ul style="list-style-type: none"> <li>• SFP-OC48-SR</li> <li>• SFP-OC48-IR1</li> <li>• SFP-OC48-LR2</li> </ul>
SPA-1XOC48-POS, SPA-2XOC48POS/RPR, SPA-4XOC48POS/RPR	<ul style="list-style-type: none"> <li>• SFP-OC48-SR</li> <li>• SFP-OC48-IR1</li> <li>• SFP-OC48-LR2</li> </ul>
SPA-1XOC192POS-XFP	<ul style="list-style-type: none"> <li>• XFP10GER-192IR-L</li> <li>• XFP10GLR-192SR-L</li> <li>• XFP-10GLR-OC192SR</li> <li>• XFP-10GER-OC192IR</li> <li>• XFP-10GZR-OC192LR</li> </ul>

**Table 1-16 Serial SPA SFP Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
SPA-1XCHSTM1/OC3, SPA-1CHSTM1/OC3V2	<ul style="list-style-type: none"> <li>• SFP-OC3-MM</li> <li>• SFP-OC3-SR</li> <li>• SFP-OC3-IR1</li> <li>• SFP-OC3-LR1</li> <li>• SFP-OC3-LR2</li> </ul>
SPA-1XCHOC12/DS0	<ul style="list-style-type: none"> <li>• SFP-OC12-MM</li> <li>• SFP-OC12-SR</li> <li>• SFP-OC12-IR1</li> <li>• SFP-OC12-LR1</li> <li>• SFP-OC12-LR2</li> </ul>

**Table 1-17 CEOp SPA SFP Optics Compatibility**

<b>SPA</b>	<b>Qualified Optics Modules (Cisco Part Numbers)</b>
1SPA-1CHOC3-CE-ATM	<ul style="list-style-type: none"> <li>• SFP-OC3-MM</li> <li>• SFP-OC3-SR</li> <li>• SFP-OC3-IR1</li> <li>• SFP-OC3-LR1</li> <li>• SFP-OC3-LR2</li> </ul>
SPA-2CHT3-CE-ATM	<ul style="list-style-type: none"> <li>• CAB-T3E3-RF-BNC-M</li> <li>• CAB-T3E3-RF-BNC-F</li> <li>• CAB-T3E3-RF-OPEN</li> </ul>
SPA-24CHT1-CE-ATM	<ul style="list-style-type: none"> <li>• CABLE-24T1E1</li> </ul>