



## Preface

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This preface describes the objectives and organization of this document and explains how to find additional information on related products and services. This preface contains the following sections:

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## Objectives

This document describes the SPA interface processors (SIPs) and shared port adapters (SPAs) that are supported on the Cisco ASR 1000 Series Aggregation Services Routers. This document also describes how to install the supported SIPs and SPAs and how to troubleshoot the installation.

## Document Revision History

The Document Revision History records technical changes to this document. The table shows the Cisco IOS XE software release number and document revision number for the change, the date of the change, and a brief summary of the change.

Release No.	Revision	Date	Change Summary
Cisco IOS XE Denali 16.2	OL-14126-16	October 09, 2016	Added information pertaining to support for Cisco 10GBASE SFP+ Modules on Cisco ASR 1000 Series Aggregation Services Routers.
Cisco IOS XE Release 3.15	OL-14126-15	March 26, 2015	Added information pertaining to the support for the Cisco 1000BASE-T SFP Module (GLC-TE) on the ASR 1000 Series Routers.

Release No.	Revision	Date	Change Summary
Cisco IOS XE Release 3.8.1S	OL-14126-14	February 13, 2013	Added information pertaining to the support for the 8-Port Clear-Channel T3/E3 Serial SPA (SPA-8XT3/E3) on the Cisco ASR 1000 Series SIP in <a href="#">“2-Port, 4-Port, and 8-Port Clear-Channel T3/E3 Serial SPA Overview”</a> section on page 58.
Cisco IOS XE Release 3.7.0S	OL-14126-13	July 2012	<p>Added information pertaining to the following updates:</p> <ul style="list-style-type: none"> <li>• Introduction of the Cisco ASR 1002-X Router</li> <li>• Introduction of the Cisco ASR1000-ESP100</li> <li>• Support for Cisco ASR1000-SIP40 on all routers that support Cisco ASR1000-SIP10</li> </ul> <p>Information about these new features has been added in various sections in this guide.</p>
Cisco IOS XE Release 3.6.0S	OL-14126-12	March 29, 2012	Added information about support for the circuit emulation (CEM) mode on the <a href="#">2-Port Channelized T3/E3 ATM CEoP SPA</a> .
Cisco IOS XE Release 3.5.0S	OL-14126-11	November 28, 2011	Added information about feature enhancement in the following SPA: <a href="#">Support for ATM on clear E3 mode for SPA-2CHT3-CE-ATM</a>
Cisco IOS XE Release 3.4.0S	OL-14126-10	July 25, 2011	<p>Added information about the following SPAs:</p> <ul style="list-style-type: none"> <li>• <a href="#">SPA-2CHT3-CE-ATM (Asynchronous Transfer Mode only)</a></li> <li>• <a href="#">SPA-24CHT1-CE-ATM (Circuit Emulation mode only)</a></li> </ul> <p>Added information pertaining to feature change for <a href="#">CPU-Usage show command</a>.</p>
Cisco IOS XE Release 3.3.0S	OL-14126-09	March 30, 2011	<p>Added information about the following SPAs:</p> <ul style="list-style-type: none"> <li>• <a href="#">1-Port 10-Gigabit Ethernet LAN/WAN-PHY SPA</a></li> <li>• <a href="#">1-Port Channelized OC-3 STM1 ATM Circuit Emulation over Packet (CEoP) SPA (Circuit Emulation Mode only)</a></li> </ul>

Release No.	Revision	Date	Change Summary
Cisco IOS XE Release 3.2S	OL-14126-08	November 24, 2010	<p>Added information about the following SPAs:</p> <ul style="list-style-type: none"> <li>• <a href="#">2-Port Gigabit Synchronous Ethernet SPA</a></li> <li>• <a href="#">SPA-DSP</a></li> </ul> <p>Information added for supporting SIP-40 and ESP-40 on Cisco ASR 1004 Router.</p>
Cisco IOS XE Release 3.1S	OL-14126-07	July 23, 2010	<p>Added information about:</p> <ul style="list-style-type: none"> <li>• <a href="#">Cisco ASR1000-SIP40 in Cisco IOS XE Release 3.1S (the new hardware SIP)</a></li> <li>• <a href="#">default maximum bandwidth of SIP-10 when SIP-40 is downgraded to SIP-10</a></li> </ul>
Cisco IOS XE Release 2.6	OL-14126-06	February 26, 2010	<p>Information added for the following SPA and other information updates:</p> <ul style="list-style-type: none"> <li>• <a href="#">1-Port Channelized OC-12/STM-4 SPA</a></li> <li>• Updates for optics module behavior and compatibility including: <ul style="list-style-type: none"> <li>– Correction to show support for the GLC-GE-100FX optics module for the 5-Port and 10-Port Gigabit Ethernet SPA.</li> <li>– Correction to the auto negotiation behavior for the SFP-GE-T module.</li> <li>– Correction to show support for additional modules for the 2-Port, 4-Port, and 8-Port OC-3c/STM-1 and OC-12c/STM-4 POS SPA.</li> </ul> </li> <li>• Added descriptions for the services SPAs and double-height SPAs.</li> </ul>

Release No.	Revision	Date	Change Summary
Cisco IOS XE Release 2.5	OL-14126-05	November 25, 2009	<p>Information added for the following hardware in Cisco IOS XE Release 2.5:</p> <ul style="list-style-type: none"> <li>• <a href="#">1-Port Clear Channel OC-12 ATM SPA</a></li> <li>• Cisco 10GBASE-SR XFP transceiver module for MMF, 850-nm wavelength, dual LC connector (XFP-10G-MM-SR)</li> <li>• Cisco 1000BASE-BX10 SFP module for single-strand SMF, 1490-nm TX/1310-nm RX wavelength (GLC-BX-D)</li> <li>• Cisco 1000BASE-BX10 SFP module for single-strand SMF, 1310-nm TX/1490-nm RX wavelength (GLC-BX-U)</li> </ul>
Cisco IOS XE Release 2.4	OL-14126-04	June 30, 2009	<ul style="list-style-type: none"> <li>• Information added for the following SPAs: <ul style="list-style-type: none"> <li>– <a href="#">2-Port, 4-Port, and 8-Port OC-12 POS SPA</a></li> <li>– <a href="#">1-Port OC-48 POS SPA</a></li> <li>– <a href="#">8-Port OC-3 POS SPA</a></li> <li>– <a href="#">1-Port OC-192 POS SPA</a></li> <li>– <a href="#">Cisco WebEx Node for ASR 1000 Series SPA</a></li> </ul> </li> <li>• New information on the use of SPA cable clips to help with removal of SPAs from a SIP on the Cisco ASR 1000 Series Routers was added.</li> </ul>
Cisco IOS XE Release 2.3	OL-14126-03	November 24, 2008	<p>Information added for the following SPAs:</p> <ul style="list-style-type: none"> <li>• <a href="#">1-Port and 3-Port OC-3 ATM SPA</a></li> </ul>
Cisco IOS XE Release 2.2	OL-14126-02	September 10, 2008	<p>Information added for the following SPAs:</p> <ul style="list-style-type: none"> <li>• <a href="#">2-Port and 4-Port OC-48c/STM-16 POS SPA</a></li> <li>• <a href="#">1-Port Channelized STM-1/OC-3 SPA</a></li> </ul>
Cisco IOS XE Release 2.1	OL-14126-01	April 25, 2008	First release.

# Organization

This document contains the following chapters:

Section	Title	Description
Chapter 1	<a href="#">SIP and SPA Product Overview</a>	Provides an introduction to SPA interface processors (SIPs) and shared port adapters (SPAs).
Chapter 2	<a href="#">Overview: Cisco ASR 1000 Series Aggregation Services Routers SIPs</a>	Provides SIP and SPA compatibility summary. For each supported SIP, provides a summary of SIP characteristics and a SIP overview.
Chapter 3	<a href="#">Overview: Cisco ASR 1000 Series Aggregation Services Routers SPAs</a>	For each supported SPA, provides a summary of SPA characteristics and a SPA overview.
Chapter 4	<a href="#">Preparing to Install a SIP or a SPA</a>	Describes the required tools, equipment, and safety guidelines for installing SIPs and SPAs.
Chapter 5	<a href="#">Installing and Removing a SIP</a>	Describes the procedures involved in installing and removing a SIP on Cisco ASR 1000 Series Routers.
Chapter 6	<a href="#">Installing and Removing a SPA</a>	Describes the procedures for installing and removing a SPA on Cisco ASR 1000 Series Routers. It also describes how to verify the SIP and SPA installation.
Chapter 7	<a href="#">Troubleshooting the Installation</a>	Provides information about troubleshooting the installation of SIPs and SPAs. It also provides packing information to ship a SIP or SPA.

## Related Documentation

The documentation listed below is available online and on the Documentation DVD.

Your router and the Cisco IOS XE software running on it contain extensive features, which are documented in the following resources:

- [Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Software Configuration Guide](#)
- Cisco IOS XE software:
  - For Cisco IOS XE configuration information and support, refer to the Cisco IOS XE configuration guide or command reference. You can also refer to the specific Cisco IOS XE software document for a particular feature.
  - To see if a feature is supported by a Cisco IOS XE release, to locate the software document for that feature, or to check the minimum software requirements of Cisco IOS XE software with the hardware installed on your router, Cisco maintains the Software Advisor tool on Cisco.com. You must be a registered user on Cisco.com to access this tool. 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.

**Note**

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You can access Cisco IOS XE software configuration and hardware installation and maintenance documentation on the World Wide Web at <http://www.cisco.com>. Translated documentation is available at: <http://www.cisco.com/web/siteassets/locator/index.html>.

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- For international agency compliance, safety, and statutory information for SPA interfaces, see the *Regulatory Compliance and Safety Information for the Cisco ASR 1000 Series Aggregation Services Routers*.

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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