



# Preface

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## Changes to This Document

The following table lists the technical changes made to this document since it was first printed.

**Table 1: New and Changed Information**

Date	Change Summary
April 2021	Added support for A99-10X400GE-X-SE and A99-10X400GE-X-TR line cards. Also referred as Cisco ASR 9900 Series 5th Generation 10-port 400 Gigabit Ethernet line card.
April 2020	Added support for: <ul style="list-style-type: none"> <li>• A99-32X100GE-X-SE, and A99-32X100GE-X-TR line cards. Also referred as Cisco ASR 9900 Series 5th Generation 32-port 100 Gigabit Ethernet line card.</li> <li>• A9K-20HG-FLEX-SE, A9K-20HG-FLEX-TR, A9K-8HG-FLEX-SE, and A9K-8HG-FLEX-TR line cards. Also referred as Cisco ASR 9000 Series 5th Generation High-Density Multi-Rate line cards.</li> </ul>
August 2019	Added support for Staircase FEC for A9K-MPA-1X200GE MPA with CFP2-DCO, A9K-MPA-1X100GE MPA with CFP2, and A9K-MPA-2X100GE MPA with CFP2. Added steps for safe removal of CFP2-DCO modules.
May 2019	Added support for A9K-MPA-1X200GE MPA with CFP2-DCO.
January 2019	Added support for A9K-16X100GE-CM, A99-32X100GE-CM, and A99-16X100GE-X-SE line cards.

Date	Change Summary
December 2018	<p>Added support for A9K-16X100GE-TR and A99-32X100GE-TR line cards.</p> <p>Added support for 32-port GE Modular Port Adapter (MPA) with MACsec.</p>
March 2018	<p>Added support for A9K-24X10GE-1G-CM and A9K-48X10GE-1G-CM line cards.</p>
December 2017	<p>Added support for A9K-4X100GE line card.</p>
July 2017	<ul style="list-style-type: none"> <li>• The MOD-400 modular line card (A9K-MOD400-TR, A9K-MOD400-SE) is supported on the IOS XR 64-bit platform with the A9K-MPA-2x100GE MPA and CPAK-100G-SR10, CPAK-10x10G-LR, and CPAK-100G-LR4 optics.</li> <li>• GLC-LH-SMD, GLC-ZX-SMD, and GLC-TE optics are supported on the Cisco ASR 9000 Series 24-Port Dual-Rate 10GE/1GE Line Card and Cisco ASR 9000 Series 48-Port Dual-Rate 10GE/1GE Line Card (on the IOS XR 32-bit)</li> </ul>
March 2017	<p>Added information about new line cards (A9K-24X10GE-1G-TR, A9K-24X10GE-1G-SE, A9K-48X10GE-1G-TR, A9K-48X10GE-1G-SE, A9K-MOD200-CM)</p> <p>Added new optics supported in IOS XR Release 6.2.1.</p>
August 2016	<p>Added information on the following consumption-model and non consumption-model line cards:</p> <p>A99-8X100GE-CM (ASR 9000 8-port 100GE Consumption Model Line Card)</p> <p>A99-8X100GE</p> <p>A99-12X100GE-CM (ASR 9000 12-port 100GE Consumption Model Line Card)</p>
July 2016	<p>Added information about consumption-model of MOD 400 (A9K-MOD400-CM)</p>
May 2016	<p>Added information about new line cards (A99-12X100GE, A9K-MOD200-SE, A9K-MOD200-TR) MPA (A9K-MPA-1X100GE, A9K-MPA-2X100GE)</p>
December 2015	<p>Added support for 2X100GE MPA, 8x100GE OTN/WAN card with 7-fabric.</p>
September 2015	<p>Added new line cards (A9K-MOD400-SE, A9K-MOD400-TR, A9K-8X100GE-CM, and A9K-400GE-DWDM-TR), MPA (A9K-MPA-20x10GE), and CPAK adapter (CVR-CPAK-QSFP40).</p>
April 2015	<p>Added new next generation line cards 4x100GE (A9K-4X100GE-TR and A9K-4X100GE-SE), 8X100GE (A9K-8X100GE-TR and A9K-8X100GE-SE), and 40GE CPAK breakout support.</p>
January 2015	<p>Added new 8X100GE (A9K-8X100GE-L-SE) next generation line card, combination line cards (A9K-4T16GE-TR/A9K-4T16GE-SE), and new optics supported in Cisco IOS XR Release 5.3.0.</p>
October 2014	<p>Added new optics supported in IOS XR Release 5.2.2. and new low cost 40x1G line cards A9K-40GE-TR and A9K-40GE-SE.</p>
September 2014	<p>Added new optics supported in IOS XR Release 5.1.2.</p>
June 2014	<p>Added new optics supported in IOS XR Release 5.2.0.</p>
January 2014	<p>Information added about the new Fast Ethernet SFP modules, 10GE SFP+ transceivers, DWDM SFP+ transceivers, and 10GE XFP modules.</p>

Date	Change Summary
May 2013	Information added about the new 8-port 10GE Modular Port Adapter (MPA).
December 2012	Information added about the new XFP-10GER-192IR Multirate 10GBASE-ER and OC-192/STM-64 IR-2 XFP, low power (2.5W) transceiver module.
September 2012	Information added about the new 1-port 40GE Modular Port Adapter (MPA), the new 36-Port 10-Gigabit Ethernet Line Card and the new 1-Port 100-Gigabit Ethernet Line Card, plus updates to the transceiver module information.
May 2012	Information added about the new 160G modular line card, the new 2-port 10GE Modular Port Adapter (MPA), the new 2-port 40GE Modular Port Adapter (MPA), and the CFP-40G, CFP-100G, and QSFP+ optical modules.
December 2011	Information added about the new 24-port 10GE fixed line card, the 2-port 100-GE fixed line card, and the modular line card supporting the 20-port 1-GE Modular Port Adapter (MPA), the 4-port 10GE Modular Port Adapter (MPA) and the 2-port 10GE Modular Port Adapter (MPA).
May 2010	Information added about the new 16x10GE SFP+ line card and SFP+ transceiver modules. Also added information about additional versions of existing cards and new supported transceiver modules.
December 2009	Information added about the new 8x10GE 80 Gbps Line Rate Card and 2x10GE + 20x1GE Combination Line Card.
March 2009	Initial release of this document.

## Audience

This guide is written for hardware installers and system administrators of Cisco routers.

This publication assumes that the user has a substantial background in installing and configuring router and switch-based hardware. The reader should also be familiar with electronic circuitry and wiring practices, and have experience as an electronic or electromechanical technician.

## Purpose

This installation guide contains procedures for installing line cards into the router, verifying the installation, and creating a basic startup configuration file.

## Organization

This guide includes the following sections:

Section	Title	Description
1	<a href="#">Overview</a>	Provides instructions for installing the hardware and connecting external network interface cables.

Section	Title	Description
2	<a href="#">Installing and Removing Line Cards and Transceiver Modules</a>	Provides instructions for installing and removing line cards and transceiver modules.
3	<a href="#">Verifying and Troubleshooting Line Card Installation</a>	Provides procedures for verifying the line card installation.
A	<a href="#">Technical Specifications</a>	Lists the specifications for the Ethernet line cards for the Cisco ASR 9000 Series Aggregation Services Router.

## Conventions

This document uses the following conventions:

- **Ctrl** represents the key labeled *Control*. For example, the key combination *Ctrl-Z* means hold down the Control key while you press the Z key.

Command descriptions use these conventions:

- Examples that contain system prompts denote interactive sessions, indicating the commands that you should enter at the prompt. For example:

```
RP/0/RSP0/CPU0:router#
```

- Commands and keywords are in **bold** font.
- Arguments for which you supply values are in *italic* font.
- Elements in square brackets ([ ]) are optional.
- Alternative but required keywords are grouped in braces ({ }) and separated by vertical bars (|).




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**Caution** Means be careful. You are capable of doing something that might result in equipment damage or loss of data.

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**Note** Means *take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

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**Tip** Means *the described action saves time*. You can save time by performing the action described in the paragraph.

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**Warning** This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the Regulatory Compliance and Safety Information document that accompanied this device. Statement 1071.

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# 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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