# Cisco ASR 1000 Series Aggregation Services Routers Release Notes

For release notes information about the Cisco ASR 1000 Series Aggregation Services Routers releases prior to Release 3.6.0S, see *Cisco IOS XE 3S Release Notes.*

**Note** Cisco ASR 1001 Routers support the Cisco IOS XE Release 3.10aS image.

## About Cisco ASR 1000 Series Aggregation Services Routers

Cisco ASR 1000 Series Aggregation Services Routers are Cisco routers deployed as managed service provide routers, enterprise edge routers, and service provider edge routers. These routers use an innovative and powerful hardware processor technology known as the Cisco QuantumFlow Processor.

Cisco ASR 1000 Series Aggregation Services Routers run the Cisco IOS XE software and introduce a distributed software architecture that moves many operating system responsibilities out of the IOS process. In this architecture, Cisco IOS, which was previously responsible for almost all of the internal software processes, now runs as one of many Cisco IOS XE processes while allowing other Cisco IOS XE processes to share responsibility for running the router.

Cisco ASR 1000 Series Aggregation Services Routers Release 3.8.0S have several new software features. For details on the new Cisco ASR 1002-X Router, Cisco ASR 1000 Series Aggregation Services Routers 100-Gbps Embedded Services Processor, and the new features, see the New Software Features in Cisco ASR 1000 Series Aggregation Services Routers Release 3.8S, page 136.

New hardware support and several new software features were introduced as part of the Cisco ASR 1000 Series Aggregation Services Routers Release 3.7.1. For details on the new Cisco ASR 1002-X Router, Cisco ASR 1000 Series Aggregation Services Routers 100-Gbps Embedded Services Processor, and the new features, see the New and Changed Information, page 149.

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The Cisco ASR 1000 Series Aggregation Services Routers consists of the following routers:

- The Cisco ASR 1001 Router is a small form factor router targeted at high-end branch offices needing integrated services, including voice and security with high-speed connectivity (2.5 Gbps w/optional SW license for 5 Gbps). It is designed with integrated Cisco ASR1000-RP, Cisco ASR1000-SIP, and Cisco ASR1000-ESP, with Nitrox complex providing hardware based encryption and decryption. Input/output options include half-height SPA, 4x1GE built-in ports, and factory-installed integrated daughtercard (IDC) with different options.

- The Cisco ASR 1002 Router is a 3-SPA, 2-rack-unit (RU) chassis with integrated Route Processor (RP), Cisco ASR 1000 Series Aggregation Services Routers Shared Port Adapter Interface Processor (SIP), and four Gigabit Ethernet ports built in.

- The Cisco ASR 1002-F Router supports the same features and components as the Cisco ASR 1002 Router and supports 2.5 Gbps bandwidth limit with a single half height SPA. In addition, the Cisco ASR 1002-F Router has an integrated 4x1GE built-in ports and 2.5 GB of fixed system bandwidth.

- The Cisco ASR 1002-X Router is a 3-SPA, 2-RU chassis. The embedded services processor and route processor are integrated into the chassis. There are 6 small form factor pluggable (SFP) Gigabit Ethernet ports. The router provides a forwarding bandwidth of up to 36 Gbps.

- The Cisco ASR 1004 Router is an 8-SPA, 4-RU chassis with one ESP slot, one RP slot, and two SIP slots.

- The Cisco ASR 1006 Router is a 12-SPA, 6-RU, hardware-redundant chassis with two ESP slots, two RP slots, and three SIP slots. The platform offers RP and ESP hardware redundancy, Cisco Nonstop Forwarding (NSF), In-Service Software Upgrade (ISSU), and future RP hardware upgrades.

- The Cisco ASR 1013 Router is a 24-SPA, 13-RU, hardware-redundant chassis with two ESP slots, two RP slots, and six SIP slots. The platform offers full RP hardware redundancy, Cisco Nonstop Forwarding (NSF), In-Service Software Upgrade (ISSU), and future RP hardware upgrades and services upgrades.

For the single-RP Cisco ASR 1000 Router platforms, Cisco ASR 1001, Cisco ASR 1002, Cisco ASR 1002-F, Cisco ASR 1002-X and Cisco ASR 1004, the RP has a dual Cisco IOS software option that allows these routers to use Cisco IOS software redundancy, Cisco high-availability features, and Nonstop Forwarding (NSF). Single-route-processor Cisco ASR 1000 platforms do not support ISSU upgrade or downgrade. Instead sub-package software upgrade is supported only if the router is running in sub-package mode.

The Cisco ASR 1006 Router supports fully redundant RPs that allow for full RP hardware redundancy, NSF, ISSU, and future RP service upgrades.

The Cisco ASR 1013 Router extends the Cisco ASR 1000 Series Routers to a chassis that can hold six SIPs and provides superslots (more height and power) for the route processors and embedded services processors.

**Note** Software redundancy is not supported on the Cisco ASR 1006 Router and the Cisco ASR 1013 Router.

**Cisco IOS XE 3S Releases and Cisco IOS Release Number Mapping**

The Cisco ASR 1000 Series Aggregation Services Routers releases correspond to the Cisco IOS XE releases. For example, Cisco IOS XE Release 3.7.0 is the software release for Cisco ASR 1000 Series Aggregation Services Routers Release 3.7.0.

Table 1 lists the mappings between the Cisco IOS XE 3S releases and their associated Cisco IOS releases.

*Table 1        Cisco IOS XE 3S–to–Cisco IOS Release Number Mapping*

| Cisco IOS XE 3S Release | Cisco IOS Release |
|---|---|
| 3.1.0S | 15.0(1)S |
| 3.1.1S | 15.0(1)S1 |
| 3.1.2S | 15.0(1)S2 |
| 3.1.3S | 15.0(1)S3 |
| 3.1.4S | 15.0(1)S4 |
| 3.1.4aS | 15.0(1)S4a |
| 3.2.0S | 15.1(1)S |
| 3.2.1S | 15.1(1)S1 |
| 3.2.2S | 15.1(1)S2 |
| 3.3.0S | 15.1(2)S |
| 3.3.1S | 15.1(2)S1 |
| 3.3.2S | 15.1(2)S2 |
| 3.4.0S | 15.1(3)S |
| 3.4.0aS | 15.1(3)S0a |
| 3.4.1S | 15.1(3)S1 |
| 3.4.2S | 15.1(3)S2 |
| 3.4.3S | 15.1(3)S3 |
| 3.4.4S | 15.1(3)S4 |
| 3.5.0S | 15.2(1)S |
| 3.5.1S | 15.2(1)S1 |
| 3.5.2S | 15.2(1)S2 |
| 3.6.0S | 15.2(2)S |
| 3.6.1S | 15.2(2)S1 |
| 3.6.2S | 15.2(2)S2 |
| 3.7.0S | 15.2(4)S |
| 3.7.1S | 15.2(4)S1 |
| 3.7.2S | 15.2(4)S2 |
| 3.7.3S | 15.2(4)S3 |
| 3.7.4S | 15.2(4)S4 |
| 3.7.5S | 15.2(4)S5 |
| 3.7.6S | 15.2(4)S6 |
| 3.8.0S | 15.3(1)S |
| 3.8.1S | 15.3(1)S1 |
| 3.8.2S | 15.3(1)S2 |

*Table 1*       *Cisco IOS XE 3S–to–Cisco IOS Release Number Mapping (continued)*

| Cisco IOS XE 3S Release | Cisco IOS Release |
| --- | --- |
| 3.9.0S | 15.3(2)S |
| 3.9.1S | 15.3(2)S1 |
| 3.9.2S | 15.3(2)S2 |
| 3.10.0S | 15.3(3)S |
| 3.10.1S | 15.3(3)S1 |
| 3.10.2S | 15.3(3)S2 |
| 3.10.3S | 15.3(3)S3 |
| 3.10.4S | 15.3(3)S4 |
| 3.10.5S | 15.3(3)S5 |
| 3.10.6S | 15.3(3)S6 |
| 3.10.7S | 15.3(3)S7 |
| 3.10.8S | 15.3(3)S8 |
| 3.10.9S | 15.3(3)S9 |
| 3.10.10S | 15.3(3)S10 |
| 3.11.0S | 15.4(1)S |
| 3.11.1S | 15.4(1)S1 |
| 3.11.2S | 15.4(1)S2 |
| 3.11.3S | 15.4(1)S3 |
| 3.12.0S | 15.4(2)S |
| 3.12.1S | 15.4(2)S1 |
| 3.12.2S | 15.4(2)S2 |
| 3.13.0S | 15.4(3)S |
| 3.13.1S | 15.4(3)S1 |
| 3.13.2S | 15.4(3)S2 |
| 3.13.3S | 15.4(3)S3 |
| 3.13.4S | 15.4(3)S4 |
| 3.13.5S | 15.4(3)S5 |
| 3.13.6S | 15.4(3)S6 |
| 3.13.7S | 15.4(3)S7 |
| 3.13.7aS | 15.4(3)S7a |
| 3.13.8S | 15.4(3)S8 |
| 3.13.9S | 15.4(3)S9 |
| 3.13.10S | 15.4(3)S10 |
| 3.14.0S | 15.5(1)S |
| 3.14.1S | 15.5(1)S1 |
| 3.14.2S | 15.5(1)S2 |

*Table 1*        *Cisco IOS XE 3S–to–Cisco IOS Release Number Mapping (continued)*

| Cisco IOS XE 3S Release | Cisco IOS Release |
|---|---|
| 3.14.3S | 15.5(1)S3 |
| 3.15.0S | 15.5(2)S |
| 3.15.1S | 15.5(2)S1 |
| 3.15.2S | 15.5(2)S2 |
| 3.15.3S | 15.5(2)S3 |
| 3.16S | 15.5(3)S |
| 3.16.1S | 15.5(3)S1 |
| 3.16.2S | 15.5(3)S2 |
| 3.16.3S | 15.5(3)S3 |
| 3.16.4aS | 15.5(3)S4a |
| 3.16.4bS | 15.5(3)S4b |
| 3.16.5S | 15.5(3)S5 |
| 3.16.6S | 15.5(3)S6 |
| 3.16.7S | 15.5(3)S7 |
| 3.16.7aS | 15.5(3)S7a |
| 3.16.7bS | 15.5(3)S7b |
| 3.16.8S | 15.5(3)S8 |
| 3.17S | 15.6(1)S |
| 3.17.1S | 15.6(1)S1 |
| 3.17.2S | 15.6(1)S2 |
| 3.17.3S | 15.6(1)S3 |
| 3.17.4S | 15.6(1)S4 |

**Transition from Cisco IOS XE Release 2.6 to Cisco IOS XE Release 3.1S**

In July 2010, the Cisco IOS XE software moved from Cisco IOS XE Release 2.6 to Cisco IOS
XE Release 3.1S to introduce new hardware (Cisco ASR1000-ESP40, Cisco ASR1000-SIP40, and
Cisco ASR 1013 Router) and an enhanced Cisco IOS Release 15.0(1)S software that runs on improved
componentized code for Cisco IOS features.

One of the key features of the Cisco IOS XE 3.1S software was support for dual Cisco IOS software
consolidated packages in a single RP for software redundancy in the 2-RU and 4-RU chassis systems
(The dual IOS support was extended to ASR1001). The dual Cisco IOS consolidated packages can
consist of the same software consolidated packages for backup or different software consolidated
packages for resilient upgrade.

The Cisco IOS XE release numbering scheme was modified by adding the suffix S to the release number
to denote the release branch that differentiate the different products using the Cisco IOS XE release.

The underlying Cisco IOS software numbering scheme for the Cisco ASR 1000 Series Routers changed
from 12.2(33)XNx to 15.0(1)S. This change was aimed at simpler numbering for new feature releases
(the number in parenthesis) and rebuilds.

Cisco IOS Release 15S aggregates feature inheritance from Cisco IOS Release 12.2SR.The 15.x(x)Sx releases will continue to be time-based and time-synchronized with the Cisco IOS XE releases.

The Cisco IOS XE 3S releases inherit all the Cisco IOS XE Release 2 features that were released prior to the introduction of Cisco IOS XE Release 3.1.0S, with a few exceptions. For information about inherited features, see *Release Notes for Cisco ASR 1000 Series Aggregation Services Routers for Cisco IOS XE Release 2*.