Cisco ASR 1000 Series Aggregation Services Routers ROMmon Upgrade Guide

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This document contains procedures for upgrading ROMmon on Route Processors (RPs), Embedded Services Processors (ESPs), Modular Interface Processors (MIPs), and Shared Port Adapter Interface Processors (SIPs) on Cisco ASR 1000 Series Aggregation Services Routers.

ROMmon Overview

The ROMmon must be upgraded on an Cisco ASR 1000 Series Aggregation Services Router that requires a ROMmon upgrade. An upgrade to this image is necessary only if a system message on the router indicates that the ROMmon on the router requires an upgrade, or a Cisco technical support representative suggests a ROMmon upgrade.

The ROMmon can be upgraded on any of the following hardware components on a Cisco ASR 1000 Series Aggregation Services Router.

Note The ROMmon for RPs, ESPs, MIPs, and SIPs can be upgraded collectively or individually.

- Integrated RP1, field-replaceable ESP, and integrated SIP10 on the Cisco ASR 1002 Router (Cisco ASR1002)
- Integrated RP1, ESP, and SIP10 on Cisco ASR 1002-Fixed Router (Cisco ASR 1002-F)
- Cisco ASR 1000 Series Route Processor 1 (Cisco ASR1000-RP1)
- Cisco ASR 1000 Series Route Processor 2 (Cisco ASR1000-RP2)
- Cisco ASR 1000 Series Route Processor 3 (Cisco ASR1000-RP3)
- Cisco ASR 1000 Embedded Services Processor 10G Non Crypto Capable (Cisco ASR1000-ESP10-N)
- 5-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP5)
- 10-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP10)
- 20-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP20)
- 40-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP40)
- 100-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP100)
- 200-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP200)
- Cisco ASR 1001 Router
- Cisco ASR 1002-X Router (from Release 15.2(4r)S onward)

- Cisco ASR 1001-HX Router (from Release 16.2(2r) onward)
- Cisco ASR 1002-HX Router (from Release 16.2(1r) onward)
- Cisco ASR 1000 Fixed Ethernet Line Cards (ASR1000-2T+20X1GE, ASR1000-6TGE)
- Cisco ASR 1000 Series SPA Interface Processor (SIP)10 (Cisco ASR1000-SIP10)
- Cisco ASR 1000 Series SPA Interface Processor (SIP) 40 (Cisco ASR1000-SIP40)
- Cisco ASR 1000 Modular Interface Processor (ASR1000-MIP100)
- Cisco ASR 1000 ESP-100-X
- Cisco ASR 1000 ESP-200-X

Compatibility Requirements

The following are the compatibility requirements for upgrading the ROMmon image:

- You must have access to the privileged EXEC mode prompt or the diagnostic mode prompt on the router.
- All the system components must be running Cisco IOS XE Release 2.4.0 or a later release before you perform the upgrade.
- After you upgrade a system component to the current ROMmon release, you cannot run any Cisco IOS XE release earlier than Cisco IOS XE Release 2.4.0.



Note During the downgrade process, if it is found that the existing ROMVAR table is too large to fit into the smaller table used in the target ROMmon release (that is, the earlier ROMmon release), the downgrade stops and an error message is displayed. This error message instructs you to drop the system to the ROMmon prompt and clear some of the variable settings. Follow these instructions, and then retry the downgrade.

ROMmon Release Requirements Matrix

The following table provides information about field-replaceable units (FRUs) of Cisco ASR 1000 Series Aggregation Services Routers supported in each ROMmon release.

Table 1: Supported ROMmon Releases for ASR 1000 Series Aggregation Services Routers FRUs

FRU	16.2(1r)	16.2(2r)	16.3(2r)	16.7(1r)	16.9(4r)	16.9(5r)	16.11(2r)	16.12(8r)	17.3(1r)	17.15(4r)
ASR 1000 RP2	Yes	—	Yes	—	Yes	Yes	—	—	Yes	—
ASR 1000 RP3	—	—	Yes	—	Yes	Yes	—	—	Yes	Yes
ASR 1001-X	Yes	Yes	Yes	—	Yes	—	—	—	Yes	—
ASR 1002-X	Yes	—	Yes	Yes	—	—	—	—	Yes	—
ASR 1001-HX	—	Yes	Yes	—	Yes	—	—	—	Yes	Yes

FRU	16.2(1r)	16.2(2r)	16.3(2r)	16.7(1r)	16.9(4r)	16.9(5r)	16.11(2r)	16.12(8r)	17.3(1r)	17.15(4r)
ASR 1002-HX	—	Yes	Yes	—	Yes	—	—	—	Yes	Yes
ASR 1000-ESP20	Yes	—	Yes	—	—	—	—	—	—	—
ASR 1000-ESP40	Yes	—	Yes	—	—	—	—	—	Yes	—
ASR 1000-ESP100	Yes	—	Yes	—	—	—	—	—	Yes	—
ASR 1000-ESP200	Yes	—	Yes	—	—	—	—	—	Yes	—
ASR 1000-ESP100-X	—	—	—	—	—	—	Yes	Yes	—	Yes
ASR 1000-ESP200-X	—	—	—	—	—	—	Yes	Yes	—	Yes
ASR 1000-SIP40	Yes	—	Yes	—	—	—	—	—	—	—
ASR 1000- 2T+ 20x 1GE	Yes	—	Yes	—	—	—	—	—	—	—
ASR 1000-6TGE	Yes	—	Yes	—	—	—	—	—	—	—
ASR 1000-MIP100	Yes	—	Yes	—	—	—	—	—	—	Yes

Note After upgrading the ROMmon to version 17.15(4r), you cannot revert it to a version earlier than 17.15(4r) for all the cards/platforms. Downgrade to any other lower version is not supported with 17.15(4r).

Note After upgrading the ROMmon to version 17.3(1r), you cannot revert it to a version earlier than 17.3(1r) for the following platforms:

- ASR 1001-X
- ASR 1001-HX
- ASR 1002-HX
- ASR 1000-RP3

This restriction is only applicable for these platforms. If you have upgraded to ROMmon version 17.3(1r) on any other platform, reverting to an earlier version of ROMmon is permitted and does not cause any technical issues.

Note ROMmon upgrade on Cisco ASR1000-RP2 may fail due to MD5 signature mismatch. This failure occurs if the VID value of the FRU is greater than or equal to the value of V07. The VID value can be determined by checking the output of the **show inventory** command. For example:

```
show inventory
……..
NAME: "module R0", DESCR: "Cisco ASR1000 Route Processor 2"
PID: ASR1000-RP2 , VID: V02 , SN: JAE153802ZI
```

As a temporary resolution, perform the upgrade using any IOS XE version earlier than the following versions:

- IOS XE 16.6.9 or later
- IOS XE 16.9.6 or later
- IOS XE 16.12.4 or later
- IOS XE 17.3 or later

Note To upgrade your Cisco ASR 1000-RP successfully in a multi-slot chassis, a Cisco Hard Disk Drive (HDD) must be present in the RP. Without the presence of a Cisco HDD, there is a risk of upgrade failure.

Table 2: Minimum and Recommended ROMmon Release for RP and ESP FRUs

IOS XE	RP2		RP3		ESP 20		ESP 40		ESP100	
	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended
16.02	16.2(1r)	16.3(2r)	—	—	16.2(1r)	16.3(2r)	16.2(1r)	16.3(2r)	16.2(1r)	16.3(2r)
16.03	15.2(1r)S	16.3(2r)	16.3(2r)	16.3(2r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.04	15.2(1r)S	16.3(2r)	16.3(2r)	16.3(2r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)

IOS XE	RP2		RP3		ESP 20		ESP 40		ESP100	
	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended	Minimum	Recommend
16.05	15.2(1r)S	16.3(2r)	16.3(2r)	16.3(2r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.06	15.2(1r)S	16.3(2r)	16.3(2r)	16.3(2r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.07	16.3(2r)	16.9(5r)	16.3(2r)	16.3(2r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.08	16.3(2r)	16.9(5r)	16.3(2r)	16.3(2r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.09	16.9(5r)	16.9(5r)	16.9(5r)	16.9(5r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.10	16.9(5r)	16.9(5r)	16.9(5r)	16.9(5r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.11	16.9(5r)	16.9(5r)	16.9(5r)	16.9(5r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
16.12	16.9(5r)	16.9(5r)	16.9(5r)	16.9(5r)	XNC	16.3(2r)	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
17.1	16.9(5r)	16.9(5r)	16.9(5r)	16.9(5r)	—	—	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
17.2	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	15.0(1R)S	16.3(2r)	15.3(1r)	16.3(2r)
17.3	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	15.0(1R)S	17.3(1r)	15.3(1r)	17.3(1r)
17.4	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	15.0(1R)S	17.3(1r)	15.3(1r)	17.3(1r)
17.5	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	15.0(1R)S	17.3(1r)	15.3(1r)	17.3(1r)
17.6	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	15.0(1R)S	17.3(1r)	15.3(1r)	17.3(1r)
17.7	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.8	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.9	16.9(5r)	17.3(1r)	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.10	—	—	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.11	—	—	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.12	—	—	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.13	—	—	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.14	—	—	16.9(5r)	17.3(1r)	—	—	—	—	15.3(1r)	17.3(1r)
17.15	—	—	16.9(5r)	17.15(4r)	—	—	—	—	15.3(1r)	17.3(1r)
17.16	—	—	16.9(5r)	17.15(4r)	—	—	—	—	—	—
17.17	—	—	16.9(5r)	17.15(4r)	—	—	—	—	—	—
17.18	—	—	16.9(5r)	17.15(4r)	—	—	—	—	—	—

Note The last supported release for Cisco ASR 1000-ESP20 is IOS XE release 16.12.x.

Table 3: Minimum and Recommended ROMmon Release for ASR 1000 ESP-100-X and ASR 1000 ESP-200-X

Cisco IOS XE Release	ASR 1000 ESP-100-X		ASR 1000 ESP-200-X	
	Minimum	Recommended	Minimum	Recommended
16.12.3 *	16.11(2r)	16.11(2r)	16.11(2r)	16.11(2r)
17.1	16.11(2r)	16.11(2r)	16.11(2r)	16.11(2r)
17.2.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.3.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.4.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.5.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.6.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.7.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.8.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.9.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.10.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.11.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.12.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.13.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.14.x	16.12(8r)	16.12(8r)	16.12(8r)	16.12(8r)
17.15.x	16.12(8r)	17.15(4r)	16.12(8r)	17.15(4r)
17.16.x	16.12(8r)	17.15(4r)	16.12(8r)	17.15(4r)
17.17.x	16.12(8r)	17.15(4r)	16.12(8r)	17.15(4r)
17.18.x	16.12(8r)	17.15(4r)	16.12(8r)	17.15(4r)

Table 4: Minimum and Recommended Release for ASR 1000 Series Routers

Cisco IOS XE Release	ASR 1001-X		ASR 1002-X		ASR 1001-HX		ASR 1002-HX	
	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended
16.2.x	16.2(1r)	16.3(2r)	16.2(1r)	16.3(2r)	16.2(2r)	—	16.2(2r)	16.3(2r)
16.3.x	15.5(3r)S	16.3(2r)	15.5(3r)s	16.3(2r)	16.2(2r)	16.3(2r)	16.2(2r)	16.3(2r)
16.4.x	15.5(3r)S	16.3(2r)	15.5(3r)s	16.7(1r)	16.2(2r)	16.3(2r)	16.2(2r)	16.3(2r)
16.5.x	15.5(3r)S	16.3(2r)	15.5(3r)s	16.7(1r)	16.2(2r)	16.3(2r)	16.2(2r)	16.3(2r)
16.6.x	15.5(3r)S	16.3(2r)	16.7(1r)	16.7(1r)	16.2(2r)	16.3(2r)	16.2(2r)	16.3(2r)
16.7.x	15.5(3r)S	16.3(2r)	16.7(1r)	16.7(1r)	16.2(2r)	16.3(2r)	16.2(2r)	16.3(2r)
16.8.x	15.5(3r)S	16.3(2r)	16.7(1r)	16.7(1r)	16.2(2r)	16.3(2r)	16.2(2r)	16.3(2r)
16.9.x	16.9(4r)	16.9(4r)	16.7(1r)	16.7(1r)	16.9(4r)	16.9(4r)	16.9(4r)	16.9(4r)
16.10.x	16.9(4r)	16.9(4r)	16.7(1r)	16.7(1r)	16.9(4r)	16.9(4r)	16.9(4r)	16.9(4r)
16.11.x	16.9(4r)	16.9(4r)	16.7(1r)	16.7(1r)	16.9(4r)	16.9(4r)	16.9(4r)	16.9(4r)
16.12.x	16.9(4r)	16.9(4r)	16.7(1r)	16.7(1r)	16.9(4r)	16.9(4r)	16.9(4r)	16.9(4r)
17.1.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.2.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.3.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.4.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.5.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.6.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.7.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.8.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.9.x	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.10.x	—	—	—	—	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.11.x	—	—	—	—	17.3(1r)	17.3(1r)	17.3(1r)	17.3(1r)
17.12.x	—	—	—	—	17.3(1r)	17.15(4r)	17.3(1r)	17.15(4r)
17.13.x	—	—	—	—	17.3(1r)	17.15(4r)	17.3(1r)	17.15(4r)
17.14.x	—	—	—	—	17.3(1r)	17.15(4r)	17.3(1r)	17.15(4r)

Cisco IOS XE Release	ASR 1001-X		ASR 1002-X		ASR 1001-HX		ASR 1002-HX	
	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended	Minimum	Recommended
17.15.x	—	—	—	—	17.3(1r)	17.15(4r)	17.3(1r)	17.15(4r)
17.16.x	—	—	—	—	—	—	—	—
17.17.x	—	—	—	—	—	—	—	—
17.18.x	—	—	—	—	—	—	—	—

Note If you are on ASR 1000-RP2 platform, after upgrading ROMmon to 16.9(5r), upgrade FPGA to `asr1000rpx86-hw-programmables.16.08.01.SPA.pkg` or greater [FPGA version >=17071402]

To upgrade `asr1000rpx86-hw-programmables.16.08.01.SPA.pkg`, it is mandatory that you are on IOS XE Polaris 16.x image. Upgrading FPGA from IOS XE 3.x is not supported.

If you are on ASR 1000-RP3 platform, upgrading ROMmon to version 16.9(5r) does not require an upgrade of CPLD or FPGA.

Table 5: Minimum and Supported ROMmon Release for Other FRUs

Cisco IOS XE Release	ASR 1000-2T+20X1GE		ASR 1000-6TGE		ASR 1000-MIP100		ASR 1000-SIP 40 Min	
	Minimum	Recommended	Minimum	Rec ommended	Minimum	Recommended	Mimimum	Recommended
16.2.x	16.2(1r)	16.3(2r)	16.2(1r)	16.3(2r)	16.2(1r)	16.3(2r)	16.2(1r)	16.3(2r)
16.3.x	15.5(3r)S1	16.3(2r)	15.4(2r)S	16.3(2r)	15.5(3r)S1	16.3(2r)	15.5(3r)S1	16.3(2r)
16.4.x	15.5(3r)S1	16.3(2r)	15.4(2r)S	16.3(2r)	15.5(3r)S1	16.3(2r)	15.5(3r)S1	16.3(2r)
16.5.x	15.5(3r)S1	16.3(2r)	15.4(2r)S	16.3(2r)	15.5(3r)S1	16.3(2r)	15.5(3r)S1	16.3(2r)
16.6.x	15.5(3r)S1	16.3(2r)	15.4(2r)S	16.3(2r)	15.5(3r)S1	16.3(2r)	15.5(3r)S1	16.3(2r)
16.7.x	16.3(2r)	15.4(2r)S	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)	15.5(3r)S1	16.3(2r)
16.8.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
16.9.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
16.10.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
16.11.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
16.12.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)

Cisco IOS XE Release	ASR 1000-2T+20X1GE		ASR 1000-6TGE		ASR 1000-MIP100		ASR 1000-SIP 40 Min	
	Minimum	Recommended	Minimum	Rec ommended	Minimum	Recommended	Mimimum	Recommended
17.1.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.2.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.3.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.4.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.5.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.6.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.7.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.8.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.9.x	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	16.3(2r)	15.5(3r)S1	16.3(2r)
17.10.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.11.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.12.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.13.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.14.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.15.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.16.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.17.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—
17.18.x	—	—	—	—	16.3(2r)	16.3(2r)	—	—

Table 6: Supported ROMmon Releases for Upgrading All Subslots Using upgrade rom-monitor filename command

ROMmon Version	16.2(1r)	16.2(2r)	16.3(2r)	16.7(1r)	16.9(4r)	16.9(5r)	16.11(2r)	16.12(3r)	17.3(1r)	17.5(4r)
`upgrade rom-monitor filename all`	Yes	Yes	Yes	—	—	—	—	—	—	—

Note When you upgrade ROMmon using **upgrade rom-monitor filename all** option, all the cards in the chassis are upgraded to the latest ROMmon (See Table 1: Supported ROMmon Releases for ASR 1000 Series Aggregation Services Routers FRUs, on page 2). If the card has an earlier version of ROMmon, it is upgraded to the latest version. But, if the card is already on the latest version of ROMmon, running the **upgrade rom-monitor filename all** command, upgrades the ROMmon to the latest version once again

Hardware Programmable Requirements

The following table lists the required CPLD and FPGA versions for various ASR 1000 platforms:

Table 7: CPLD and FPGA versions

Platform	Recommended CPLD Version	Recommended FPGA Version
ASR 1000-RP2	14111801	18102401
ASR 1000-RP3	19091111	—
ASR 1000-ESP100	19051700	—
ASR 1000-ESP200	19051700	—
ASR 1000-ESP100-X	20030413	1908010d if installed in ASR 1006-X or ASR 1009-X chassis. 19080510 if installed in ASR 1013 chassis.
ASR 1000-ESP200-X	20030413	1908010d
ASR1000-MIP100	19041800	—
ASR1000-2T+20X1GE	19041600	10024
ASR1000-6TGE	19041600	10024
ASR1000-ESP40	1003190E	—
ASR1001-X	19060309	—
ASR1002-X	14012203	20034
ASR1001-HX	19030215	16051716
ASR1002-HX	19030211	15102108

Upgrading to a recommended CPLD and FPGA can be performed using the **upgrade hw-programmable** command. For more details, see https://www.cisco.com/c/en/us/td/docs/routers/asr1000/cpld/hw_fp_upgrade.html.

Table 8: CPLD Versions for Platforms Affected by Cisco Secure Boot Hardware Tampering Vulnerability

Platform	Recommended CPLD Version	CCO URL for the CPLD Image
ASR 1000-RP3	19091111	FPGA Upgrade Tool
ASR 1000-ESP100	19051700	During the installation of the FPGA upgrade tool, all RPs, ESPs, and carrier cards are automatically detected, and their CPLD versions are checked. The ESPs and carrier cards listed below will be automatically upgraded to the required CPLD version after upgrading the RP.
ASR 1000-ESP200	19051700	
ASR 1000-ESP100-X	19041811	
ASR 1000-ESP200-X	19041811	
ASR1000-MIP100	19041800	
ASR1000-2T+20X1GE	19041600	
ASR1000-6TGE	19041600	
ASR1001-X	19060309	FPGA Upgrade Tool
ASR1001-HX	19030215	FPGA Upgrade Tool
ASR1002-HX	19030211	FPGA Upgrade Tool

To upgrade to a platform that is affected by Cisco Secure Boot Hardware Tampering Vulnerability , see https://www.cisco.com/c/en/us/td/docs/routers/asr1000/fpga_upgrade/fpga-upgrade.html.

Note Upgrading the version of hardware programmable supported for ASR 1000-ESP100X and ASR 1000-ESP200X can only be performed using Cisco IOS XE 17.2 or later image. For example, to upgrade the FPGA to 18101111 (Cisco IOS XE 16.12), first load the Cisco IOS XE 17.2 or later image to upgrade the FPGA, and then roll back to the required software version.

Upgrading the ROMmon

This section covers the following topics:

Checking the Current ROMmon Version

If you are unsure whether a ROMmon upgrade is required or if you have installed a new RP, ESP, MIP, or SIP that requires an upgrade, follow the instructions provided in this section.

Run the **show rom-monitor** command or the **show platform** command to display the version of ROMmon running on any RP, ESP, MIP, or SIP in your router. If the output shows that the release to which you plan to upgrade is already installed, you need not upgrade the ROMmon. In the following example, the output of the **show rom-monitor** command indicates that an upgrade to Release 15.2(1r)S is not required:

```
Router# show rom-monitor r0
System Bootstrap, Version 15.2(1r)S, RELEASE SOFTWARE (fc1)
```

```
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2011 by cisco Systems, Inc.
```

If the output of the command indicates an earlier ROMmon version or a system message indicates that one of the ROMmon installations on the Cisco ASR 1000 Series Aggregation Services Routers needs an upgrade, a ROMmon upgrade may benefit the corresponding RP, ESP, MIP, or SIP. In the following example, the output of the **show platform** command shows that an earlier ROMmon version is currently installed. In this scenario, you can upgrade to Release 15.2(1r)S.

```
Router# show platform
Chassis type: ASR1004
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         MCP-CC              ok                    00:03:02
 0/3      SPA-2X1GE-V2        ok                    00:00:37
R0        ASR1000-RP1*        ok, active            00:03:02
F0        ASR1000-ESP10*      ok, active            00:03:02
P0        Unknown             ps, fail              never
P1        Unknown             ps, fail              never
Slot      CPLD Version        Firmware Version
--------- ------------------- ---------------------------------------
0         07091401            15.0(1r)S
R0        09081701            15.0(1r)S
F0        07051650            15.0(1r)S
```

Upgrading the ROMmon for All the RPs, ESPs, MIPs, and SIPs on a Router

If you want to upgrade the ROMMON and IOS at the same time, perform the following steps:

- Copy the XE image to the router and configure the boot system to point to the new image.
- Copy the ROMMON package to the router and perform the ROMMON upgrade.
- Reload the router and verify that it boots to the IOS prompt on the new XE image.
- Verify that the new ROMMON image was successfully installed using a show platform.

Use this procedure to upgrade the ROMmon for all the RPs, ESPs, MIPs, and SIPs on a router:

Note Ensure that all the system components are running Cisco IOS XE Release 2.4.0 or a later release before you perform the procedure.

Procedure

Step 1 (Optional) Run the **show platform** command or the **show rom-monitor** *slot* command for each RP, ESP, MIP, and SIP in the router to see the current release numbers of ROMmon on the hardware. See the Checking the Current ROMmon Version, on page 11 for information about interpreting the output of the command that you run.

Step 2 If the ROMmon image has not been copied onto the router, copy the PKG file that is made available as part of this ROMmon release onto the bootflash: or usb[0-1]: file system using the **copy** *source-location destination-location* command. For example, if you are upgrading to Release 15.2(1r)S, copy the asr1000-rommon.152-1r.S.pkg file.

Step 3 Run the **dir** *file-system* command to verify that the ROMmon file is copied into the specified directory.

Step 4 Run the **upgrade rom-monitor filename** *location* **all** command to begin the ROMmon image upgrade, where *location* is the path to the ROMmon file.

Caution
Do not remove hardware, turn off power, or interrupt the router in any way during the ROMmon upgrade. Although the router should be able to recover from most interruptions during the ROMmon upgrade, certain scenarios may cause unpredictable problems.

Step 5 Messages pertaining to the upgrade are displayed on the console. After the display of these messages stops and the router prompt is available, run the **reload** command to reload the router.

Step 6 If autoboot has not been enabled by using the **config-register 0x2102** command, run the **boot** *filesystem:/file-location* command at the ROMmon prompt to boot the Cisco IOS XE image, where *filesystem:/file-location* is the path to the consolidated package file. The ROMmon upgrade is not permanent for any piece of hardware until the Cisco IOS XE image is booted.

Step 7 Run the **enable** command at the user prompt to enter the privileged EXEC mode after the boot is complete.

Step 8 Run the **show platform** command or the **show rom-monitor** *slot* command for each RP, ESP, MIP, and SIP in the router to verify whether the ROMmon has been upgraded.

Example of Upgrading the ROMmon for All the RPs, ESPs, MIPs, and SIPs on a Router

The following sequence of commands is an example of the procedure to upgrade the ROMmon for all the RPs, ESPs, MIPs, and SIPs on a router:

Note When you upgrade to 17.15(4r) ROMmon using the **upgrade rom-monitor filename all** command, first reload the FP cards with the **hw-module slot <F0/F1> reload** command. After the cards upgrade and reach the ok state, reload the entire chassis with the reload command. During this process, the module will go into a disabled state for up to 15 minutes until it recovers.

Note The release numbers of ROMmon mentioned in this example are for illustrative purposes only.

```
Router# show platform
Chassis type: MCP4RU
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         MCP-CC              ok                    00:03:02
 0/3      SPA-2X1GE-V2        ok                    00:00:37
R0        ASR1000-RP1*        ok, active            00:03:02
F0        ASR1000-ESP10*      ok, active            00:03:02
P0        Unknown             ps, fail              never
P1        Unknown             ps, fail              never
Slot      CPLD Version        Firmware Version
--------- ------------------- ----------------------------------------
0         07091401            15.0(1r)S
R0        09081701            15.0(1r)S
F0        07051650            15.0(1r)S
Router# copy usb0:asr1000-rommon.152-1r.S.pkg bootflash:
Destination filename [asr1000-rommon.152-1r.S.pkg]?
Copy in progress...CCCCCCCCCCCCCCCCCCC
```

```
1253680 bytes copied in 1.977 secs (634133 bytes/sec)
Router# dir bootflash
:
Directory of bootflash:/
   11  drwx       16384  Aug 19 2009 23:27:51 +00:00  lost+found
14657  drwx        4096  Aug 19 2009 23:39:21 +00:00  .ssh
73281  drwx        4096  Oct 12 2011 01:20:10 +00:00  .prst_sync
58625  drwx        4096  Aug 19 2009 23:39:38 +00:00  .rollback_timer
29313  drwx        4096  Aug 19 2009 23:40:52 +00:00  .installer
   12  -rw-     1253680  Oct 12 2011 01:23:56 +00:00  asr1000-rommon.152-1r.S.pkg
   14  -rw-        4096  Jul 12 2010 22:50:55 +00:00  .debug..swp
   16  -rw-     1263920  Jul 20 2010 22:06:15 +00:00  rp1-rommon
   19  -rwx       68272  Jul 13 2010 01:18:05 +00:00  debugfs
   42  -rw-     1270064  Jul 21 2010 01:08:36 +00:00  asr1000-rommon.150-1r.S.pkg
   48  -rw-        3338  Feb 25 2011 21:38:34 +00:00  README_dotfiles
   50  -r--        2391  Jul 17 2011 03:22:23 +00:00  debug.conf
945377280 bytes total (893399040 bytes free)
Router# upgrade rom-monitor filename bootflash:asr1000-rommon.152-1r.S.pkg all
Upgrade rom-monitor on Route-Processor 0
Target copying rom-monitor image file
1966080+0 records in
1966080+0 records out
Checking upgrade image...
1966080+0 records in
3840+0 records out
Upgrade image MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
Burning upgrade partition...
1966080+0 records in
1966080+0 records out
Checking upgrade partition...
1966080+0 records in
1966080+0 records out
Upgrade flash partition MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP.
Upgrade rom-monitor on Embedded-Service-Processor 0
Target copying rom-monitor image file
Checking upgrade image...
1966080+0 records in
3840+0 records out
Upgrade image MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
Burning upgrade partition...
1966080+0 records in
1966080+0 records out
Checking upgrade partition...
1966080+0 records in
1966080+0 records out
Upgrade flash partition MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the linecard.
Upgrade rom-monitor on SPA-Inter-Processor 0
Target copying rom-monitor image file
Checking upgrade image...
1966080+0 records in
3840+0 records out
Upgrade image MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
Burning upgrade partition...
1966080+0 records in
1966080+0 records out
Checking upgrade partition...
1966080+0 records in
1966080+0 records out
Upgrade flash partition MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
ROMMON upgrade complete.
```

```
To make the new ROMMON permanent, you must restart the linecard.
Router# reload
Proceed with reload? [confirm]
<Reload bootup output removed for brevity. In this example, it is assumed that autoboot is
 enabled on the router.>
Press RETURN to get started!
Router> enable
Router# show platform
Chassis type: MCP4RU
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         MCP-CC              ok                    00:03:02
 0/3      SPA-2X1GE-V2        ok                    00:00:37
R0        ASR1000-RP1*        ok, active            00:03:02
F0        ASR1000-ESP10*      ok, active            00:03:02
P0        Unknown             ps, fail              never
P1        Unknown             ps, fail              never
Slot      CPLD Version        Firmware Version
--------- ------------------- ---------------------------------------
0         07091401            15.2(1r)S
R0        07062111            15.2(1r)S
F0        07051680            15.2(1r)S
```

Upgrading the ROMmon for a Single RP, ESP, MIP, or SIP on a Router

Use this procedure to upgrade the ROMmon for a single RP, ESP, MIP, or SIP on a Cisco ASR 1000 Series Aggregation Services Router:

Note Ensure that all the system components are running Cisco IOS XE Release 2.4.0 or a later release before you perform the procedure.

Procedure

Step 1 (Optional) Run the **show platform** command or the **show rom-monitor** *slot* command for each RP, ESP, MIP, and SIP in the router to see the current release numbers of ROMmon on the hardware. See the Checking the Current ROMmon Version, on page 11 for information about interpreting the output of the command that you run.

Step 2 If the ROMmon image has not been copied onto the router, copy the PKG file that is made available as part of this ROMmon release onto the bootflash: or usb[0-1]: file system using the **copy** *source-location destination-location* command. For example, if you are upgrading to Release 15.2(1r)S, copy the asr1000-rommon.152-1r.S.pkg file.

Step 3 Run the **dir** *file-system* command to verify whether the ROMmon file is copied into the specified directory.

Step 4 Run the **upgrade rom-monitor filename** *location slot* command to begin the ROMmon image upgrade, where *location* is the path to the ROMmon file and *slot* specifies the hardware that will receive the ROMmon upgrade.

Caution
Do not remove hardware, turn off power, or interrupt the router in any way during the ROMmon upgrade. Although the router should be able to recover from most interruptions during the ROMmon upgrade, certain scenarios may cause unpredictable problems.

Step 5 Messages pertaining to the upgrade are displayed on the console. After the display of these messages stops and the router prompt is available, run the **hw-module slot** *slot* **reload** command to reload the hardware that was upgraded.

Note
The **hw-module slot** *slot* **reload** command cannot be used to reload an active RP. If you must reload an active RP to complete a ROMmon upgrade, reload the RP using one of the following methods:- Run the **reload** command to reload the entire router.- Force a switchover using the **redundancy force-switchover** command, and then run the **hw-module slot** *slot* **reload** command on the RP after it has become the standby RP.

Note
The ROMmon upgrade is not permanent for any piece of hardware until a Cisco IOS XE Release 12.2(33r)XND1 or newer image is booted. If ROMmon is configured to manually boot on your system, run the **boot** command to boot the Cisco IOS XE image and make the upgrade permanent.

Step 6 Run the **show platform** command or the **show rom-monitor** *slot* command for each RP, ESP, MIP, and SIP in the router to confirm that the ROMmon has been upgraded.

Example of Upgrading the ROMmon for a Single RP, ESP, MIP, or SIP on a Router

The following sequence of commands is an example of the procedure to upgrade the ROMmon for a single RP, ESP, MIP, or SIP on a router:



Note The release numbers of ROMmon mentioned in this example are for illustrative purposes only.

```
Router# show platform

Chassis type: MCP4RU
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         MCP-CC              ok                    00:03:02
 0/3      SPA-2X1GE-V2        ok                    00:00:37
R0        ASR1000-RP1*        ok, active            00:03:02
F0        ASR1000-ESP10*      ok, active            00:03:02
P0        Unknown             ps, fail              never
P1        Unknown             ps, fail              never
Slot      CPLD Version        Firmware Version
--------- ------------------- ----------------------------------------
0         07091401            15.0(1r)S
R0        09081701            15.2(1r)S
F0        07051650            15.2(1r)S
Router# copy usb0:asr1000-rommon.152-1r.S.pkg bootflash
:
Destination filename [asr1000-rommon.152-1r.S.pkg]?
Copy in progress...CCCCCCCCCCCCCCCCCCC
1253680 bytes copied in 1.977 secs (634133 bytes/sec)
Router# dir bootflash
:
Directory of bootflash:/
   11  drwx       16384  Aug 19 2009 23:27:51 +00:00  lost+found
14657  drwx        4096  Aug 19 2009 23:39:21 +00:00  .ssh
73281  drwx        4096  Oct 12 2011 01:20:10 +00:00  .prst_sync
58625  drwx        4096  Aug 19 2009 23:39:38 +00:00  .rollback_timer
29313  drwx        4096  Aug 19 2009 23:40:52 +00:00  .installer
```

```
   12  -rw-     1253680  Oct 12 2011 01:23:56 +00:00  asr1000-rommon.152-1r.S.pkg
   14  -rw-        4096  Jul 12 2010 22:50:55 +00:00  .debug..swp
   16  -rw-     1263920  Jul 20 2010 22:06:15 +00:00  rp1-rommon
   19  -rwx       68272  Jul 13 2010 01:18:05 +00:00  debugfs
   42  -rw-     1270064  Jul 21 2010 01:08:36 +00:00  asr1000-rommon.150-1r.S.pkg
   48  -rw-        3338  Feb 25 2011 21:38:34 +00:00  README_dotfiles
   50  -r--        2391  Jul 17 2011 03:22:23 +00:00  debug.conf
945377280 bytes total (893399040 bytes free)
Router# upgrade rom-monitor filename bootflash:asr1000-rommon.152-1r.S.pkg
0
Upgrade rom-monitor on SPA-Inter-Processor 0
Target copying rom-monitor image file
Checking upgrade image...
1966080+0 records in
3840+0 records out
Upgrade image MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
Burning upgrade partition...
1966080+0 records in
1966080+0 records out
Checking upgrade partition...
1966080+0 records in
1966080+0 records out
Upgrade flash partition MD5 signature is 119275e3054c3cfdc0f32a2a334dd253
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the linecard.
Router# hw-module slot 0 reload
<Reload bootup output removed for brevity. In this example, it is assumed that autoboot is
 enabled on the router.>
Router# show platform

Chassis type: MCP4RU
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         MCP-CC              ok                    00:03:02
 0/3      SPA-2X1GE-V2        ok                    00:00:37
R0        ASR1000-RP1*        ok, active            00:03:02
F0        ASR1000-ESP10*      ok, active            00:03:02
P0        Unknown             ps, fail              never
P1        Unknown             ps, fail              never
Slot      CPLD Version        Firmware Version
--------- ------------------- ---------------------------------------
0         07091401            15.2(1r)S
R0        07062111            15.2(1r)S
F0        07051680            15.2(1r)S
Router# show rom-monitor r0
System Bootstrap, Version 15.2(1r)S, RELEASE SOFTWARE
Copyright (c) 1994-2011 by cisco Systems, Inc.
```

Resolved Caveats

The following sections list the issues resolved in each ROMmon release:

Resolved Caveats in ROMmon Release 17.15(4r)

The following issue has been resolved in Release 17.15(4r):

- CSCwk13110
- CSCvy08919

Fixed some issues around secure bios feature.

- Updated the Tam library
- Security Fixes

Resolved Caveats in ROMmon Release 17.3(1r)

The following issues have been resolved in Release 16.9(5r):

- CSCvr71872

ASR1K RP2 ROMMON: Remove the DALLOW_UNSIGNED_IMAGES flag from rommon.inf

- CSCvb22604

Explore options to add image validation checks in ASR 1000 ROMmon.

- CSCvm02958

Evaluation of ASR 1000 for August CPU Side-Channel Information Disclosure Vulnerabilities

- CSCvo16671

Hardening: prevent /proc/cmdline injections.

- CSCvp71663

Evaluation of ASR 1000 for Intel 2019.1 QSR – MDS.

- CSCvs82628

Bios Protection support for ASR1001-X, ASR1001-HX, ASR 1002-HX

- CSCvs98262

ASR 1000 ROMmon: Integrity Check informational messages need to be clearer.

- CSCvu97556

Disable CPU C-State configuration

Note After upgrading the ROMmon to version 17.3(1r), you cannot revert it to a version earlier than 17.3(1r) for the following platforms:

- ASR 1001-X
- ASR 1001-HX
- ASR 1002-HX
- ASR 1000-RP3

This restriction is only applicable for these platforms. If you have upgraded to ROMmon version 17.3(1r) on any other platform, reverting to an earlier version of ROMmon is permitted and does not cause any technical issues.

Resolved Caveats in ROMmon Release 16.12(8r)

The following issues have been resolved in Release 16.12(8r):

- CSCvs56782

Add support for CPLD upgrade via ROMmon

Resolved Caveats in ROMmon Release 16.11(2r)

The following support was introduced :

Support is introduced for ASR1000-ESP100-X and ASR 1000-ESP200-X.

Resolved Caveats in ROMmon Release 16.9(5r)

The following issues have been resolved in Release 16.9(5r):

- CSCvm01013

Fixed an issue when ROMmon fails diag signature verification fails when diag image size is more than 512MB.

- CSCvj69550

Fixed an issue when TFTP buffer size is more than 1G

- CSCvm90995

Fixed an issue when TFTP boot fails on RP2 with 16.9(4r).

Resolved Caveats in ROMmon Release 16.9(4r)

The following issues have been resolved in Release 16.9(4r):

- CSCvh15933

Fixed an issue with microcode update.

- CSCvb48400

Fixed an issue with buffer overflow vulnerability.

Resolved Caveats in ROMmon Release 16.3(2r)

Release 16.3(2r) supports the following new hardware:

- Cisco ASR 1000 Series Route Processor 3 (Cisco ASR1000-RP3)

The following issues have been resolved in Release 16.3(2r):

- CSCux93176

Fixed an issue where the ASR1000-RP2 occasionally experienced failures while booting from STEC eUSB bootflash: devices.

- CSCva55070

Fixed an issue in the ROMmon’s validation of codesigned images.

- CSCva78476

The Intel CPU microcode was updated for the following products: ASR1000-X, ASR1001-HX, ASR1002-X, ASR1002-HX, ASR1000-ESP100, ASR1000-ESP200

- CSCuz98080

Fixed an issue with the ASR1000-MIP100 that could lead to interface link flaps.

Resolved Caveats in ROMmon Release 16.2(2r)

Release 16.2(2r) supports the following new hardware:

- Cisco ASR 1001-HX Router
- Cisco ASR 1002-HX Router

Resolved Caveats in ROMmon Release 16.2(1r)

The following issues have been resolved in Release 16.2(1r):

- CSCux17622

Fixed an issue where the ASR1001-X equipped with Numonyx Serial Peripheral Interface (SPI) Flash devices experiences multiple resets cycles and an inability to enable its virtualization framework.

- CSCux56486

Fixed an issue where the ASR1001-X fails to properly load package.conf style packages.

Resolved Caveats in ROMmon Release 15.5(3r)S1

Release 15.5(3r)S1 supports the following new hardware:

- Cisco ASR 1000 Modular Interface Processor (ASR1000-MIP100)
- 1-Port 100 Gigabit Ethernet Port Adapter (EPA-1X100GE)
- 10-Port 10 Gigabit Ethernet Port Adapter (EPA-10X10GE)

The following issues have been resolved in Release 15.5(3r)S1:

- CSCuj45924

Fixed an issue with ASR1002-X intermittently experiencing slow network boot times.

- CSCum89375

Fixed an issue where the ASR1001-X and ASR1002-X failed to generate a kernel core file on watchdog timeout.

- CSCup40376

Added support in ASR1000-RP2 and ASR1002-X for Micron N25Q032 boot rom devices.

- CSCuq16289

Support added in ASR1001-X for eMMC bootflash devices.

- CSCus69314

Added basic checks of IOS image codesigning information for ASR1000-RP2.

- CSCus69322

Support for loading 16.x-based IOS-XE images.

- CSCut92421

Fixed an issue with ASR1002-X ROMMON 15.4(2r)S intermittently halting during autoboot from the bootflash: file system.

- CSCuu70271

With “no service password recovery” enabled, allow the user to cancel a request to perform factory default clearing of router information.

- CSCuu75086

Fixed an issue with codesigning key storage on ASR1001-X and ASR1002-X whereby an administrative user could overwrite the revocation key, potentially allowing secure boot to be bypassed.

- CSCuv59014

Fixed a vulnerability in the ROMmon secure boot feature that could allow an authenticated, local attacker to bypass secure boot and allow arbitrary code to be loaded and executed on the affected device.

Resolved Caveats in ROMmon Release 15.4(2r)S

Release 15.4(2r)S supports the following new hardware:

- Cisco ASR1000-6TGE Fixed Ethernet Line Card
- Cisco ASR 1001-X Router

The following issues have been resolved in Release 15.4(2r)S:

- CSCuw27745

Fixed an issue where the ASR1000-2T+20X1GE built-in SPA is displayed in the output of the **show platform** command as SPA-2XOC48POS/RPR. This is an intermittent issue and can cause failure of field programmable devices (FPD upgrade) on ASR1000-2T+20X1GE.

- CSCul93322

Cisco ASR 1002-X Router: On systems with 16 GB memory, allocate more memory to the Cisco IOSd.

- CSCum68812

CPU microcode maintenance upgrade now supports all x86 CPUs such as RP2, the Cisco ASR 1001 Router, the Cisco ASR 1002-X Router, FP40, FP100, and FP200.

- CSCud13142

Support for the new management Ethernet port 82577 PHY in the Cisco ASR 1002-X Router.

Resolved Caveats in ROMmon Release 15.3(3r)S1

The following issue has been resolved in Release 15.3(3r)S1:

- CSCui25176

Modified the CPLD’s HKP PLL configuration register value in the Cisco ASR1000-2T+20x1GE Ethernet Line Card to reflect IBM’s recommended value for the correct HKP PLL configuration.

Resolved Caveats in ROMmon Release 15.3(3r)S

Release 15.3(3r)S supports the following new hardware:

- 200-Gbps Cisco ASR 1000 Series ESP (Cisco ASR1000-ESP200)
- Cisco ASR1000-2T+20x1GE Fixed Ethernet Line Card

The following issues have been resolved in Release 15.3(3r)S:

- CSCue41800

Uninitialized early access to CPLD is not compatible with a newer model of boot flash.

- CSCue55809

A new feature to configure “no service password recovery” has been added.

- CSCuf85827

Netboot failure when using a TFTP server or network that does not support 1500 byte MTU sizes.

Resolved Caveats in ROMmon Release 15.3(1r)S

The following issues have been resolved in Release 15.3(1r)S:

- CSCud07826

CPU microcode maintenance upgrade now supports the latest Intel release for ASR1002-X and ASR1000-ESP100/ESP200.

- CSCtc18691

Error correction is now enabled on all the latest hardware configurations of the ASR1000-SIP10 processor memory.

- CSCud13086

CPU configuration maintenance incorporates latest CPU vendor data (ASR1000-RP1, ASR1000-ESP5/10/20, ASR1000-SIP10/40, ASR1002).

Resolved Caveats in ROMmon Release 15.2(4r)S1

The following issue has been resolved in Release 15.2(4r)S1:

- CSCua27722

The Cisco Flexible NetFlow (FNF) timestamp clock drift issue is resolved on ESP40, ASR1001.

Resolved Caveats in ROMmon Release 15.2(4r)S

There are no resolved issues in Release 15.2(4r)S. This release was created to support the Cisco ASR 1002-X Router and Cisco ASR1000-ESP100/ESP200.

Resolved Caveats in ROMmon Release 15.2(1r)S

The following issues have been resolved in Release 15.2(1r)S:

- CSCto91590

The ROMmon image installation process now supports the loading of images that are larger than 512 MB.

- CSCth42243

The ROMmon image installation process now supports long boot file names.

- CSCti77689

The ROMmon image now supports the VTx virtualization mode for third-party applications on a Cisco ASR 1001 Router or a router on which the Cisco ASR1000-RP2 is installed.

Resolved Caveats in ROMmon Release 15.0(1r)S

The following issues have been resolved in Release 15.0(1r)S:

- CSCtf20517

Issues encountered on booting a zero size file when the 0x8000 config-register setting is used have been resolved.

- CSCtf97260

The ROMmon upgrade process now supports the ATMEL SPI flash device.

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