

In-Service Software Upgrade (ISSU)

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In-Service Software Upgrade (ISSU)

Information About In-Service Software Upgrade (ISSU)

ISSU is a process that upgrades an image to another image on a device while the network continues to forward packets. ISSU helps network administrators avoid a network outage when performing a software upgrade. ISSU is supported in install mode.

ISSU is supported in dual SUP HA and StackWise Virtual system. In-Service Software Upgrade is performed either in a single step or in three-steps.

ISSU Support between Releases

Supported Scenarios	Unsupported Scenarios

• Within a major release train (16.x or 17.x), ISSU is supported between any two Extended Maintenance (EM) releases that are released not more than 3 years apart.
• Within a major release train, ISSU is supported from:
  • Any EM (EM1, EM2, EM3) release to another EM (EM1, EM2, EM3) release
  Example:
  16.9.x to 16.12,
  17.3.x to 17.6.x, 17.3.x to 17.9.x, 17.3.x to 17.12.x and so on
  17.6.x to 17.9.x, 17.6.x to 17.12.x, 17.6.x to 17.15.x and so on
  17.9.x to 17.12.x, 17.9.x to 17.15.x and so on
  • Any release within the same EM release
  Example:
  16.9.2 to 16.9.3 or 16.9.4 or 16.9.x
  16.12.1 to 16.12.2 or 16.12.3 or 16.12.x
  17.3.1 to 17.3.2 or 17.3.3 or 17.3.x
• ISSU Recommendation:
  • From any EM recommended release on CCO to current EM Recommended release on CCO
Note
FPGA upgrade has been decoupled from ISSU to facilitate ISSU within the major release train for 3 years. You can upgrade FPGA through CLI during maintenance windows that require full reload.
	• Between major release trains, ISSU is not supported from:
	  • An EM of a major release train to an EM of another major release train
	  Example: 16.x.x to 17.x.x is not supported
	  • A Standard Maintenance (SM) release to EM release or EM to SM releases
	  Example: 16.10.x or 16.11.x to 16.12.x is not supported
	• ISSU is not supported on engineering special releases and .s (or similar) images.
	• ISSU is not supported between Licensed Data Payload Encryption (LDPE) and No Payload Encryption (NPE) Cisco IOS XE software image.
	• ISSU downgrades are not supported.
	Note
	No configuration changes should be performed while ISSU is being performed.

Supported Platforms and Recommended Releases for ISSU

Platforms	ISSU Starting Release	ISSU Recommended Starting Release
C3850-XS (SVL)	16.9.2	16.9.3
C9400 (4,7,10 slots-dual supervisor single chassis)	16.9.1	16.9.3
C9400 (SVL 10-slot)	16.12.1c	16.12.2
C9400 (SVL 4,7 slots)	16.9.2	16.9.3

Platforms	ISSU Starting Release	ISSU Recommended Starting Release
C9400X (4,7,10 slots-dual supervisor single chassis)	17.9.1	17.9.1
C9400X (SVL)	17.9.1	17.9.1
C9500 (SVL)	16.9.2	16.9.3
C9500 High Performance (SVL)	16.12.1c	16.12.2
C9500X (SVL)	17.12.1	17.12.2
C9600 (Dual supervisor)	16.12.1	16.12.2
C9600 (SVL)	16.12.1	16.12.2
C9600X (Dual supervisor)	17.9.1	17.9.2
C9600X (SVL)	17.12.1	17.12.2

Release Support Matrix

The following tables show ISSU support between EMs.

- For Catalyst 3850, Catalyst 9400, Catalyst 9500 with StackWise Virtual, ISSU support starts from Cisco IOS XE Fuji 16.9.2.
- For Catalyst 9400 in dual supervisor module configuration, ISSU support starts from Cisco IOS XE Fuji 16.9.1.
- For Catalyst 9400X with StackWise Virtual, ISSU support starts from Cisco IOS XE Cupertino 17.9.1.
- For Catalyst 9400X in dual supervisor module configuration, ISSU support starts from Cisco IOS XE Cupertino 17.9.1.
- For Catalyst 9500 High Performance, ISSU support starts from Cisco IOS XE Gibraltar 16.12.1c.
- For Catalyst 9600 in dual supervisor module configuration and with StackWise Virtual, ISSU support starts from Cisco IOS XE Gibraltar 16.12.1.
- For Catalyst 9500X and 9600X with StackWise Virtual, ISSU support starts from Cisco IOS XE Cupertino 17.12.1.
- For Catalyst 9600X in dual supervisor module configuration, ISSU support starts from Cisco IOS XE Cupertino 17.9.1.

Catalyst 3850 with StackWise Virtual

From/To	16.9.2	16.9.3a	16.9.4	16.9.5	16.9.6	16.9.7	16.9.8	16.12.1	16.12.3	16.12.3a	16.12.4	16.12.5	16.12.5b	16.12.6	16.12.7	16.12.8	16.12.9	16.12.10	16.12.10a
16.9.2	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.3a	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.4	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.5	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.6	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

16.9.7	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.8	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.1	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.3	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.3a	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓
16.12.4	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓
16.12.5	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓
16.12.5b	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓
16.12.6	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓
16.12.7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓
16.12.8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓
16.12.9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓
16.12.10	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—
16.12.10a	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—

Catalyst 9400 with Dual Supervisor Module Configuration

From/To	16.9.1	16.9.2	16.9.3	16.9.4	16.9.5	16.9.6	16.9.7	16.9.8	16.12.1c	16.12.2	16.12.3	16.12.3a	16.12.4	16.12.5	16.12.5b	16.12.6	16.12.7	16.12.8
16.9.1*	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.2*	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.3*	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.4*	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.5	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.6	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.7	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.8	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.1c*	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.2	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓
16.12.3	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓
16.12.3a	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓

16.12.4	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓
16.12.5	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓
16.12.5b	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓
16.12.6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓
16.12.7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓
16.12.8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—

*Requires SMU installation before performing ISSU. See Release Notes for Cisco Catalyst 9400 Series Switches, Cisco IOS XE Fuji 16.9.x for upgrades in the 16.9.x train and Release Notes for Cisco Catalyst 9400 Series Switches, Cisco IOS XE Gibraltar 16.12.x for upgrades in the 16.12.x train, for detailed steps.

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9400 with StackWise Virtual

From/To	16.9.2	16.9.3*	16.9.4	16.9.5	16.9.6	16.9.7	16.9.8	16.12.1c	16.12.2	16.12.3	16.12.3a	16.12.4	16.12.5	16.12.5b	16.12.6	16.12.7	16.12.8
16.9.2*	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.3	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.4	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.5	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.6	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.7	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.8	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.1c	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.2	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓
16.12.3	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓
16.12.3a	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓
16.12.4	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓
16.12.5	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓
16.12.5b	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓
16.12.6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓
16.12.7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓
16.12.8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—

*Requires SMU installation before performing ISSU from 16.9.2 to 16.9.3. See Release Notes for Cisco Catalyst 9400 Series Switches, Cisco IOS XE Fuji 16.9.x for upgrades in the 16.9.x train.

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9500 with StackWise Virtual

From/To	16.9.2	16.9.3*	16.9.4	16.9.5	16.9.6	16.9.7	16.9.8	16.12.1	16.12.2	16.12.3	16.12.3a	16.12.4	16.12.5	16.12.5b	16.12.6	16.12.7	16.12.8
16.9.2*	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.3	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.4	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.5	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.6	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.7	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.9.8	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.1	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.2	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓	✓
16.12.3	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓	✓
16.12.3a	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓	✓
16.12.4	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓	✓
16.12.5	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓	✓
16.12.5b	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓	✓
16.12.6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓	✓
16.12.7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—	✓
16.12.8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	—

*Requires SMU installation before performing ISSU from 16.9.2 to 16.9.3. See Release Notes for Cisco Catalyst 9500 Series Switches, Cisco IOS XE Fuji 16.9.x for upgrades in the 16.9.x train.

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9500 High Performance with StackWise Virtual

From/To	16.12.1c	16.12.2	16.12.3	16.12.3a	16.12.4	16.12.5	16.12.5b	16.12.6	16.12.7	16.12.8
16.12.1.c	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.2	x	—	✓	✓	✓	✓	✓	✓	✓	✓

16.12.3	**x**	**x**	—	✓	✓	✓	✓	✓	✓	✓
16.12.3a	**x**	**x**	**x**	—	✓	✓	✓	✓	✓	✓
16.12.4	**x**	**x**	**x**	**x**	—	✓	✓	✓	✓	✓
16.12.5	**x**	**x**	**x**	**x**	**x**	—	✓	✓	✓	✓
16.12.5b	**x**	**x**	**x**	**x**	**x**	**x**	—	✓	✓	✓
16.12.6	**x**	**x**	**x**	**x**	**x**	**x**	**x**	—	✓	✓
16.12.7	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	—	✓
16.12.8	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	—

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9500X with StackWise Virtual

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9600 in Dual Supervisor Module Configuration and with StackWise Virtual

From/To	16.12.1	16.12.2	16.12.3	16.12.3a	16.12.4	16.12.5	16.12.5b	16.12.6	16.12.7	16.12.8
16.12.1	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
16.12.2	**x**	—	✓	✓	✓	✓	✓	✓	✓	✓
16.12.3	**x**	**x**	—	✓	✓	✓	✓	✓	✓	✓
16.12.3a	**x**	**x**	**x**	—	✓	✓	✓	✓	✓	✓
16.12.4	**x**	**x**	**x**	**x**	—	✓	✓	✓	✓	✓
16.12.5	**x**	**x**	**x**	**x**	**x**	—	✓	✓	✓	✓
16.12.5b	**x**	**x**	**x**	**x**	**x**	**x**	—	✓	✓	✓
16.12.6	**x**	**x**	**x**	**x**	**x**	**x**	**x**	—	✓	✓
16.12.7	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	—	✓
16.12.8	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	—

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9600X with Dual Supervisor Module Configuration

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Catalyst 9600X with Quad Supervisor Module Configuration

For supported ISSU paths in the 17.x and later release trains, refer to In-Service Software Upgrade (ISSU) Release Matrix.

Limitations and Restrictions for ISSU

- All upgrades from 16.9.x up to 16.9.5 in the 16.9 release train, and up to 16.12.2 in the 16.12 release train, require installation of Software Maintenance Upgrade (SMU) packages. Upgrades from 16.9.5 and 16.12.2 to later releases do not require installation of SMU packages.
- On Quad-Supervisor setups that use C9600-Sup1 or C9600X-Sup2, ISSU and install operations may fail if timezone configuration is present. Remove the timezone configuration before starting the operation. After the operation completes, reconfigure the timezone setting.

How to Configure ISSU

To configure ISSU, see Stack Manager and High Availability → Configuring ISSU chapter of the corresponding release software configuration guide of the respective platform:

- Software Configuration Guides (Catalyst 3850 Switches)
- Software Configuration Guides (Catalyst 9400 Switches)
- Software Configuration Guides (Catalyst 9500 Switches)
- Software Configuration Guides (Catalyst 9600 Switches)

Additional References for ISSU

Related Topic	Document Title
Software Configuration Guides	Software Configuration Guides (Catalyst 3850 Switches) Software Configuration Guides (Catalyst 9400 Switches) Software Configuration Guides (Catalyst 9500 Switches) Software Configuration Guides (Catalyst 9600 Switches)
Release Notes	Release Notes (Catalyst 3850 Series Switches) Release Notes (Catalyst 9400 Series Switches) Release Notes (Catalyst 9500 Series Switches) Release Notes (Catalyst 9600 Series Switches)
Command References	Command References (Catalyst 3850 Series Switches) Command References (Catalyst 9400 Series Switches) Command References (Catalyst 9500 Series Switches) Command References (Catalyst 9600 Series Switches)
Troubleshooting TechNote	In-Service Software Upgrade (ISSU) on Catalyst 3850, Catalyst 9000 series switches

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