Understand Extended Fast Software Upgrade on Catalyst 9300 Series Switches

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Introduction

This document describes the Extended Fast Software Upgrade (xFSU) feature available on Catalyst 9300

Series Switches.

Prerequisites

Requirements

Minimum Licensing

- Network Essential license level on the standalone switch.
- Network Advantage license level on the stacked switches.

Other Requirements

- This feature is supported only on Access switches running in Install mode.
- The device must be configured with either Rapid Spanning Tree Protocol (RSTP) or Multiple Spanning Tree Protocol (MSTP).
- The device must not be a ROOT BRIDGE: For a device, with STP configured and not defined as the root device, xFSU is supported only if the number of ports in the forwarding state connected to an STP peer is less than or equal to 1.
- NSF timers: ex: When "bgp graceful-restart" is configured, the BGP hold time is recommended to be configured to 10 seconds.

- Run **show version | inc IOS XE** to check which release on your current Catalyst 9300 switch family.

- Recommended Releases: 17.12.5/17.15.4

Since 17.3, 17.6, 17.9 releases are end of software maintainence, we recommended customer to move to the recommended releases to avoid unsupported FPGA issue.

- Release: 17.6.8/17.9.5/17.12.4/17.15.3/17.18.1 and higher

xFSU Pre-Checks

* Execute the CLI command **show xfsu eligibility** to ascertain the eligibility for Fast Reload Upgrades.

* If the switch device utilizes an outdated and unsupported FPGA, the xFSU installation operation fails, displaying this error on the console:

“FAILED: FPGA on switch 1 does not support xFSU. Please upgrade the FPGA via a standard installation.”

Peer1-24U#show xfsu eligibility

xFSU supported: Yes - This indicates that xFSU is supported.

Eligibility Check Status

==========

Autoboot Enabled: Yes

Install Mode: Yes

Supported FPGA: Yes - If FPGA is not compatible, the status is No.

MacSec: Eligible

Spanning Tree: Eligible

Recommendation:

- Upgrade the SW via regular install, if FPGA is not compatible.

Release (17.3.2-x,17.6.1-7, 17.9.1-4,17.12.1-3, 17.15.1-2)

Compatible FPGA check via EEM Script:

* EEM Script Validation: Obtain an EEM script from Cisco Tech Support to confirm the FPGA’s eligibility.

SMU install check on stacked switches via EEM Script:
* EEM Script Validation: Obtain an EEM script from Cisco Tech Support to confirm the SMU patched on stacked switches.
* SMU Deactivated: Ensure that all SMUs are deactivated on stacked switches before performing an xFSU upgrade or execute a standard upgrade

Recommendation:

- Upgrade the SW via regular install, if FPGA is not compatible.

16.12.3 or Earlier Releases

Upgrading from 16.12.3 or earlier release will not automatically upgrade the FPGA. A manual FPGA upgrade is required after upgrading to the latest SW image using the command:

```

**install add file <image> activate commit** <== Move to latest image customer wanted but FPGA still keeps old

**upgrade hw-programmable fpga filename flash: switch <sw #> R0**
**reload** ==> trigger power cycle

```

Components Used

The information in this document is based on these software and hardware versions:

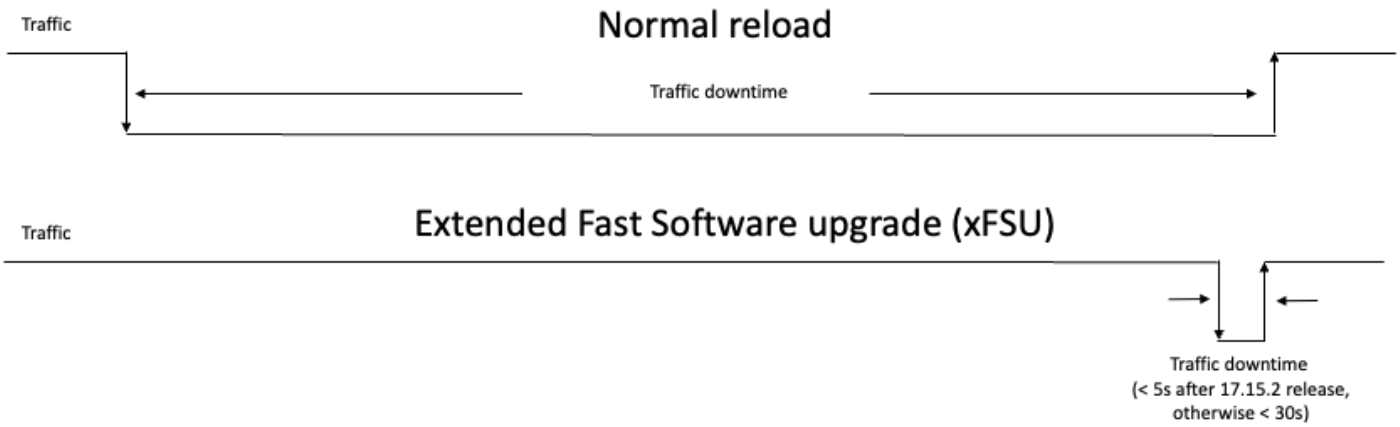
- Catalyst 9300, Catalyst 9300L and Catalyst 9300X Series switches
- Cisco IOS® XE 17.3.2a and later

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

The Extended Fast Software Upgrade (xFSU) is a software enhancement process aimed to reduce traffic downtime during software reload or upgrade operations. xFSU is based on principles of graceful restart feature (also known as Cisco NSF). The general idea behind this feature is to keep the data (forwarding) plane to continue to function, while the control plane is reloading as part of the software upgrade. The role of xFSU is to reconcile the forwarding state in ASIC with the new control plane and restore the forwarding state after a quick reset of forwarding ASIC as shown below.

This image shows the dramatic traffic downtime reduction compared to a normal reload.



xFSU introduces these commands:

install add file <*image URL*> **activate xfsu commit**

- available in Cisco IOS XE 17.8 release and later

install add file <*image URL*> **activate reloadfast commit**

- available in Cisco IOS XE 17.3 and 17.6 releases
- Upgrades the software version with reduced downtime

reload fast

- Reloads the existing software with reduced downtime.

Why xFSU

For systems like Catalyst 9300 switches without true redundant control and forwarding plane, down time/traffic loss during the reloads and upgrades are more than 3 to 4 minutes.

- For access networks, this downtime is critical for the likes of wifi access points, robots, and so on.
- xFSU can help minimize the down time however restrictions apply as not all configurations are supported.

Note: For stacked system, distributing the uplinks across Active and Standby or Active and Member Switches on a Stack as a best practice to further reduce the downtime

---

Supported Protocols

Note: For all protocols not listed here, the traffic downtime is similar to that in a normal reload/upgrade.

- Layer 2 Switching
- Per VLAN Spanning Tree (PVST)
- STP with RSTP or MSTP
- Static Port-channels (Mode on)
- UDLD
- Link Aggregation Control Protocol (LACP)
- BGP (IPv4 and IPv6 address families)
- Open Shortest Path First (OSPF) or OSPFv2 or OSPFv3
- IS-IS
- Virtual routing and forwarding (VRF)
- Flexible NetFlow
- QoS
- IEEE 802.1X Port-Based Authentication
- MAC authentication bypass
- Web authentication
- Internet Group Management Protocol (IGMP) snooping
- Multicast Listener Discovery (MLD) snooping

Limitations

Caution: xFSU is not supported in combination with any of these scenarios. Please do not attempt xFSU if any of these are present on the device.

Standalone and Stacked Devices

- For an STP root device, if any of the device ports in the forwarding state are connected to an STP peer (A device with STP configured and directly connected to the root device).
- The device is configured with Bidirectional Forwarding Detection (BFD).

- The device is configured with LISP/VXLAN.
- The device is configured with macsec.
- The device is configured in SDA and EVPN Fabric.
- The device is configured as Meraki mode or DNAC.
- If a BGP peer sends an unsupported hold timer in the BGP Open message, the proposed hold timer is accepted, but BGP is not supported on an xFSU event.

Stacked Devices

- The stacked device is configured with the half-ring state.
- The stacked device is configured with MACsec Key Agreement (MKA) or Cisco TrustSec (CTS)
- the stacked device is configured with multicast since PIM on stack is not in place yet.

Other Limitations

- Application hosting cannot restart automatically after performing Extended Fast Software Upgrade. You need to disable and re-enable Cisco IOx, configure application hosting, install, activate and start an application again.
- Configured Unidirectional Link Detection (UDLD) message intervals are ignored during xFSU. The intervals are restored to the configured values after xFSU is completed.

Required Configurations

This table lists configurations needed prior to performing xFSU to achieve a traffic downtime less than 5 seconds after 17.15.2 release, otherwise less than 30 seconds on respective protocols.



Note: This feature and functionality is not applicable to all configurations. Even if a protocol is listed as supported with xFSU, based on its interaction with other components and time sensitive (stateful protocols) configurations, this could lead to a higher traffic loss. It is recommended to test the specific configuration before using this feature.

Switch Configuration	Protocol	Additional Configuration	Command
Standalone device	IPv6	Set the time limit for a remote IPv6 node to be considered reachable after a reachability confirmation event has occurred.	Device(config)# **ipv6 nd reachable-time 3600000**
	IPv6 with MLD	Enable IPv6 MLD snooping	Device(config)# **ipv6 mld snooping**
	OSPF	Increase more retransmit retries in the stack.	Device(config-router)# **ip ospf retransmit-interval 10**
	OSPFv3	Increase more retransmit retries in	Device(config-router)# **ospfv3**

		the stack.	**retransmit-interval 10**
	OSPFv3	• Enable SNMP ifIndex persistence globally • Set a fixed router ID for an OSPFv3 instance. • Enable SNMP ifIndex persistence	Device(config)# **snmp ifmib ifindex persist** Device(config)# **router ospfv3 1** Device(config-router)# **router-id 192.0.2.5** Device(config-router)# **interface-id snmp-if-index**
	BGP	Enable NSF awareness on a device.	Device(config-router)# **bgp graceful-restart**
Stacked device	OSPF	Increase more retransmit retries in the stack.	Device(config-router)# **ip ospf retransmit-interval 10**
	OSPFv3	Increase more retransmit retries in the stack.	Device(config-router)# **ospfv3 retransmit-interval 10**
	BGP	Enable NSF awareness on all devices in the stack.	Device(config-router)# **bgp graceful-restart all**
	IS-IS	Enable NSF operation for IS-IS.	Device(config-router)# **nsf ietf** OR Device(config-router)# **nsf cisco**

Release Support Matrix

From SM to SM Release

From/To	**17.3.x (SM)***	**17.6.x (SM)**	**17.9.x (SM)**	**17.12.x (SM)**	**17.15.x (SM)**	**17.18.x (SM)**	**26.x.x (SM)**
17.3.x (SM)*	—	✓	✓	✓	✓	✓	**X**

17.6.x (SM)	—	—	✓	✓	✓	✓	**X**
17.9.x (SM)	—	—	—	✓	✓	✓	**X**
17.12.x (SM)	—	—	—	—	✓	✓	**X**
17.15.x (SM)	—	—	—	—	—	✓	**X**
17.18.x (SM)	—	—	—	—	—	—	**X**
26.x.x (SM)	—	—	—	—	—	—	✓

* On Cisco IOS XE 17.3.x train, xFSU is supported only starting 17.3.2 version.

Within Same SM or EM Version

From/To	**17.3.x (EM)***	**17.4.x (SM)**	**17.5.x (SM)**	**17.6.x (EM)**	**17.7.x (SM)**	**17.8.x (SM)**	**17.9.x (EM)**
17.3.x (EM)*	✓	—	—	—	—	—	—
17.4.x (SM)	—	✓	—	—	—	—	—
17.5.x (SM)	—	—	✓	—	—	—	—
17.6.x (EM)	—	—	—	✓	—	—	—
17.7.x (SM)	—	—	—	—	✓	—	—
17.8.x (SM)	—	—	—	—	—	✓	—
17.9.x (EM)	—	—	—	—	—	—	✓

* On Cisco IOS XE 17.3.x train, xFSU is supported only starting 17.3.2 version.

Note: There are three releases planned each year – two Standard Maintenance (SM) and one Extended Maintenance (EM). A standard support release has a sustaining support lifetime of 12 months from the first customer shipment (FCS) with two scheduled rebuilds. An extended-support release provides a sustaining support lifetime of 48 months from FCS with ten scheduled rebuilds. xFSU upgrade from major releases 17.X to 26.X is not supported.

Procedure

install **add file** <*image URL*> **activate xfsu commit**

Note: This CLI is available only in Cisco IOS XE 17.8 release and higher. For 17.3 and 17.6 releases, use **install add file** <*image URL*> **activate reloadfast commit**.

- This command upgrades the software version with reduced downtime.
- Here are the steps that happen automatically on running the CLI.
  - **install add:** Download image from TFTP server, copy over to all switches and expand packages on each switch.
  - **xFSU check**: Provide xFSU related check including restriction check.
  - **install activate/commit**: Activate and commit installed packages.
  - **install pre-upgrade:** Pre upgrade MCU, Rommon images
  - **Fast Reload:** fast reload switches

<#root>

```
C9300_Switch#
```

```
install add file flash:cat9k_iosxe.V178_1A_FC2_2.SSA.bin activate xfsu commit
```

```
install_add_activate_commit: START Tue Apr 19 21:54:03 UTC 2022
STACK_GR: Inside xFSU check if switch stack
Checking STP eligibility: Eligible

[1]: Performing xFSU-pre-check
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.196216 s, 1.6 MB/s
SUCCESS: xFSU-pre-check finished
[1]: xFSU-pre-check package(s) on switch 1
```

```
For all other than the below protocols, the traffic downtime is longer than 30 seconds.
```

```
1) Layer 2 Switching, 2) Per VLAN Spanning Tree (PVST), 3) STP with RSTP or MSTP
4) Static Port-channels (Mode on), 5) UDLD, 6) LACP, 7) BGP (IPv4 and IPv6)




        Open Shortest Path First (OSPF) or OSPFv2 or OSPFv3, 9) IS-IS,
10) Virtual routing and forwarding (VRF), 11) Flexible NetFlow, 12) QoS
SUCCESS: xFSU requirement pre-check
```

```
Downloading file flash:cat9k_iosxe.V178_1A_FC2_2.SSA.bin
Finished downloading file flash:cat9k_iosxe.V178_1A_FC2_2.SSA.bin to flash:cat9k_iosxe.V178_1A_FC2_2.SS
install_add_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
Info: Finished copying flash:cat9k_iosxe.V178_1A_FC2_2.SSA.bin to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
[1] Add package(s) on switch 1
[1] Finished Add on switch 1
Checking status of Add on [1]
Add: Passed on [1]
Finished Add

Image added. Version: 17.08.01.0.1516
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/flash/cat9k-wlc.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-webui.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-srdriver.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-sipspa.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-sipbase.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-rpboot.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-rpbase.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-lni.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-guestshell.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-espbase.V178_1A_FC2_2.SSA.pkg
/flash/cat9k-cc_srdriver.V178_1A_FC2_2.SSA.pkg

--- Verifying Platform specific xFSU admission criteria ---
SUCCESS: xFSU image pre-check

This operation requires a fast reload of the system.

Do you want to proceed? [y/n]y <-- answer y to continue


--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on switch 1
--- Starting list of software package changes ---
Old files list:
Modified cat9k-cc_srdriver.17.08.01a.SPA.pkg
Modified cat9k-espbase.17.08.01a.SPA.pkg
Modified cat9k-guestshell.17.08.01a.SPA.pkg
Modified cat9k-lni.17.08.01a.SPA.pkg
Modified cat9k-rpbase.17.08.01a.SPA.pkg
Modified cat9k-rpboot.17.08.01a.SPA.pkg
Modified cat9k-sipbase.17.08.01a.SPA.pkg
Modified cat9k-sipspa.17.08.01a.SPA.pkg
Modified cat9k-srdriver.17.08.01a.SPA.pkg
Modified cat9k-webui.17.08.01a.SPA.pkg
Modified cat9k-wlc.17.08.01a.SPA.pkg
New files list:
Added cat9k-cc_srdriver.V178_1A_FC2_2.SSA.pkg
Added cat9k-espbase.V178_1A_FC2_2.SSA.pkg
Added cat9k-guestshell.V178_1A_FC2_2.SSA.pkg
Added cat9k-lni.V178_1A_FC2_2.SSA.pkg
Added cat9k-rpbase.V178_1A_FC2_2.SSA.pkg
Added cat9k-rpboot.V178_1A_FC2_2.SSA.pkg
```

```
Added cat9k-sipbase.V178_1A_FC2_2.SSA.pkg
Added cat9k-sipspa.V178_1A_FC2_2.SSA.pkg
Added cat9k-srdriver.V178_1A_FC2_2.SSA.pkg
Added cat9k-webui.V178_1A_FC2_2.SSA.pkg
Added cat9k-wlc.V178_1A_FC2_2.SSA.pkg
Finished list of software package changes
[1] Finished Activate on switch 1
Checking status of Activate on [1]
Activate: Passed on [1]
Finished Activate

--- Starting Commit ---
Performing Commit on all members
[1] Commit package(s) on switch 1
[1] Finished Commit on switch 1
Checking status of Commit on [1]
Commit: Passed on [1]
Finished Commit

Send model notification for install_add_activate_commit before reload
Check xFSU support and verification on switch
[1]: xFSU-Verify-Package package(s) on switch 1
Finished preverifying before xFSU
SUCCESS to verify packages
SUCCESS to verify before xFSU
[1]: Finished xFSU-Verify-Package successful on switch 1
(-2) SUCCESS: Finished xFSU-Verify-Package: Success on [1]
[1]: Performing Upgrade_Service
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.196891 s, 1.6 MB/s
SUCCESS: Upgrade_Service finished
PID TTY TIME CMD
Starting GR:#
Waiting for UDLD processing:UDLD processing complete
cat: /: Is a directory
Wait for ifm backup: Ifm backup is completeApr 19 22:05:04.843: %PMAN-5-EXITACTION: F0/0: pvp: Process
Apr 19 22:05:08.099: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: rp processes exit with




Initializing Hardware......
Reload Fast Detected

System Bootstrap, Version 17.9.0.4r, DEVELOPMENT SOFTWARE
Copyright (c) 1994-2022 by cisco Systems, Inc.
Compiled Tue 03/22/2022 10:39:31.69 by mjagatap

Current ROMMON image : Primary
Last reset cause : SoftwareReload
C9300-24T platform with 8388608 Kbytes of main memory

Preparing to autoboot. [Press Ctrl-C to interrupt] 0
boot: attempting to boot from [flash:packages.conf]
boot: reading file packages.conf
#
################################################################################################
```

Loading image in Verbose mode: 0

Both links down, not waiting for other switches
Switch number is 1

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San Jose, California 95134-1706

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Software feature.

FIPS: Flash Key Check : Key Not Found, FIPS Mode Not Enabled
cisco C9300-24T (X86) processor with 1310600K/6147K bytes of memory.
Processor board ID FJC2327E0UB
2048K bytes of non-volatile configuration memory.

```
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.

Base Ethernet MAC Address : d4:ad:bd:f0:38:80
Motherboard Assembly Number : 73-18270-03
Motherboard Serial Number : FJZ23271DDG
Model Revision Number : E0
Motherboard Revision Number : B0
Model Number : C9300-24T
System Serial Number : FJC2327E0UB
CLEI Code Number :


WARNING: Command has been added to the configuration using a type 7 password. However, recommended to m


Press RETURN to get started!

C9300_Switch#sh log | inc FAST
*Apr 19 22:10:05.943: %FED_IPC_MSG-5-FAST_RELOAD_COMPLETE: Switch 1 F0/0: fed: Fast reload operation co
```

Reload Fast

- This command reloads the existing software with reduced downtime.
- Here are the steps that happen automatically on running the CLI.
    - **xFSU check**: Provide xFSU related check including restriction check.
    - **Fast Reload**: fast reload switches

<#root>

```
C9300_Switch#
```

```
reload fast
```

```
Reload fast command is being issued on Active unit, this will reload fast the whole stack
Proceed with reload fast? [confirm]
STACK_GR: Inside xFSU check if switch stack
Checking STP eligibility: Eligible

[1]: Performing xFSU-pre-check
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.196405 s, 1.6 MB/s
SUCCESS: xFSU-pre-check finished
[1]: xFSU-pre-check package(s) on switch 1
```

```
For all other than the below protocols, the traffic downtime will be longer than 30 seconds.
```

```
1) Layer 2 Switching, 2) Per VLAN Spanning Tree (PVST), 3) STP with RSTP or MSTP
4) Static Port-channels (Mode on), 5) UDLD, 6) LACP, 7) BGP (IPv4 and IPv6)




        Open Shortest Path First (OSPF) or OSPFv2 or OSPFv3, 9) IS-IS,
10) Virtual routing and forwarding (VRF), 11) Flexible NetFlow, 12) QoS
```

```
SUCCESS: xFSU requirement pre-check

--- Verifying Platform specific xFSU admission criteria ---
SUCCESS: xFSU image pre-check
Check xFSU support and verification on switch
[1]: xFSU-Verify-Package package(s) on switch 1
Finished preverifying before xFSU
SUCCESS to verify packages
SUCCESS to verify before xFSU
[1]: Finished xFSU-Verify-Package successful on switch 1
(-2) SUCCESS: Finished xFSU-Verify-Package: Success on [1]
[1]: Performing Upgrade_Service
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.196099 s, 1.6 MB/s
mount: /tmp/microcode_update/boot_pkg: WARNING: source write-protected, mounted read-only.
SUCCESS: Upgrade_Service finished
PID TTY TIME CMD
Starting GR:#
Waiting for UDLD processing:UDLD processing complete
cat: /: Is a directory
Wait for ifm backup: Ifm backup is completeApr 19 21:43:03.283: %PMAN-5-EXITACTION: F0/0: pvp: Process
Apr 19 21:43:05.337: %PMAN-5-EXITACTION: R0/0: pvp: Process ger is exiting: rp processes exit with relo




Initializing Hardware......
Reload Fast Detected

System Bootstrap, Version 17.9.0.4r, DEVELOPMENT SOFTWARE
Copyright (c) 1994-2022 by cisco Systems, Inc.
Compiled Tue 03/22/2022 10:39:31.69 by mjagatap

Current ROMMON image : Primary
Last reset cause : SoftwareReload
C9300-24T platform with 8388608 Kbytes of main memory

Preparing to autoboot. [Press Ctrl-C to interrupt] 0
boot: attempting to boot from [flash:packages.conf]
boot: reading file packages.conf
#
##############################################################################################################




Loading image in Verbose mode: 0




Both links down, not waiting for other switches
Switch number is 1

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of the applicable license term (e.g., 90-day trial period). Cisco reserves
the right to terminate any such Software feature electronically or by any
other means available. While Cisco may provide alerts, it is your sole
responsibility to monitor your usage of any such term Software feature to
ensure that your systems and networks are prepared for a shutdown of the
Software feature.

FIPS: Flash Key Check : Key Not Found, FIPS Mode Not Enabled
cisco C9300-24T (X86) processor with 1310600K/6147K bytes of memory.
Processor board ID FJC2327E0UB
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.

Base Ethernet MAC Address : d4:ad:bd:f0:38:80
Motherboard Assembly Number : 73-18270-03
Motherboard Serial Number : FJZ23271DDG
Model Revision Number : E0
Motherboard Revision Number : B0
Model Number : C9300-24T
System Serial Number : FJC2327E0UB
CLEI Code Number :

WARNING: Command has been added to the configuration using a type 7 password. However, recommended to m

```
Press RETURN to get started!


C9300_Switch>
C9300_Switch>en
C9300_Switch#sh log | inc FAST
*Apr 19 21:48:01.667: %FED_IPC_MSG-5-FAST_RELOAD_COMPLETE: Switch 1 F0/0: fed: Fast reload operation co
```

Verify

Commands/outputs to be collected to validate after xFSU is completed successfully.

Basic Show Commands

- **show switch detail** - To display the switch detail information.
- **show version** - To display the switch version.

. **show version | in reason** - display reason as Image Install with Reloadfast or Reload Fast Command on all switches.

- **show running-config** - To display the switch running configuration.
- **show logging** - To display the switch console log.
- **show log | in FAST** (collect this post xFSU) - To grep FAST_RELOAD_COMPLETE from the switch console log.

xFSU Related Logs

show graceful-reload - To display the xFSU graceful reload log.

<#root>

```
C9300_Switch#
```

```
show graceful-reload
```

```
Graceful Reload Infra Status: Not running
Minimum required system uptime before fast reload can be supported is 10 seconds
Client OSPFV3 : (0x10203008) Status: Up
Client OSPF : (0x10203007) Status: Up
Client GR_CLIENT_BGP : (0x10203006) Status: Up
Client IS-IS : (0x10203005) Status: Up
Client LACP_xFSU : (0x10203004) Status: Up
Client GR_CLIENT_TOPO : (0x10203003) Status: Up
Client GR_CLIENT_VRF : (0x10203002) Status: Up
Client GR_CLIENT_RIB : (0x10203001) Status: Up
Client GR_CLIENT_FIB : (0x10203000) Status: Up
```

show xfsu status - To display the xFSU status (This CLI is available only in Cisco IOS XE 17.8 release and higher. For 17.3 and 17.6 releases, use **show reloadfast status**)

<#root>

C9300_Switch#

show xfsu status

```
Reload Fast PLATFORM Status: Dataplane update done
Graceful Reload Infra Status: Not running
Minimum required system uptime before fast reload can be supported is 10 seconds
Client OSPFV3 : (0x10203008) Status: Up
Client OSPF : (0x10203007) Status: Up
Client GR_CLIENT_BGP : (0x10203006) Status: Up
Client IS-IS : (0x10203005) Status: Up
Client LACP_xFSU : (0x10203004) Status: Up
Client GR_CLIENT_TOPO : (0x10203003) Status: Up
Client GR_CLIENT_VRF : (0x10203002) Status: Up
Client GR_CLIENT_RIB : (0x10203001) Status: Up
Client GR_CLIENT_FIB : (0x10203000) Status: Up
```

Troubleshoot

Outputs to be collected in case if xFSU fails.

FPGA Version

<#root>

show platform hardware fpga switch <sw_num> | inc Version

- display FPGA version

Complete Topology Including SKU/FRU/Uplink/Downlink Details

<#root>

show inventory

- display switch inventory

show cdp neighbor

- display switch CDP neighbor

show etherchannel summary

- display switch etherchannel summary

show spanning-tree

- display switch spanning-tree configuration

show romvar switch all | in BOARD

- display switch board ID

Btrace & Crash Related Info

<#root>

show platform software trace message fed switch <sw-num>

- display switch fed trace configuration

request platform software trace rotate all

- rotate switch trace logs to archive

Copy logs from

crashinfo-<sw_num>:/tracelogs/fed_F0*

If crash happens during xFSU, copy

crashinfo-<sw_num>:system-report*

If stack SSO not ready or archive trace generated during bootup,

copy crashinfo-<sw_num>:*archive*

Interface Related Info

<#root>

show interface status | inc connected

- display switch connected interface status.

show ip interface brief | inc up

- display switch those interfaces which stay up.

show interface <intf-id> status -

display interface status for particular interface.

show interface <intf-id> status err-disabled

- display interface err-disabled status for particular interface.

XCVR/Phy/Uplink Related Info

<#root>

show controllers ethernet-controller <intf-id> phy detail

- To display switch phy detail for particular ethernet-controller interface.

show controllers ethernet-controller <intf-id> mac

- To display switch mac information for particular ethernet-controller interface.

show controllers ethernet-controller <intf-id> link-status

- To display switch link status for particular ethernet-controller interface.

show controllers ethernet-controller <ints-id>

- To display information for particular ethernet-controller interface.

xFSU **show tech-support xfsu**

<#root>

show tech-support xfsu

- display xFSU technical support information

Note: This CLI is available only in Cisco IOS XE 17.8 release and later. For 17.3 and 17.6 releases, use show tech-support reloadfast.

---

xFSU eligibility

Note: **show xfsu eligibility** -To display xFSU eligibility information (This CLI is available only in Cisco IOS XE 17.8 release and later).

---

show xfsu eligibility (standalone switch)

<#root>

C9300_Switch#

show xfsu eligibility

```
Reload fast supported: Yes
Reload Fast PLATFORM Status: Not started yet
Stack Configuration: No
Eligibility Check         Status
=================         ======
Autoboot Enabled          No
Install Mode              Yes
Supported FPGA            Yes
Check macsec eligibility  Eligible
```

<-- All the status must be Yes or eligible to continue xFSU

```
Spanning Tree             Eligible
```

<-- For STP status must be eligible to continue xFSU

show xfsu eligibility (stack switches)

<#root>

```
Switch#
```

show xfsu eligibility

```
Reload fast supported: Yes
Reload Fast PLATFORM Status: Not started yet
Stack Configuration: Yes
Eligibility Check         Status
=================         ======
Autoboot Enabled          Yes
Install Mode              Yes
Supported FPGA            Yes
```

Supported FPGA Yes

<#root>

```
Network Advantage License Yes
Full ring stack           Yes
Check macsec eligibility  Eligible
```

<--

All the status must be Yes or eligible to continue xFSU

```
Spanning Tree             Eligible
```

<-- For STP status must be eligible to continue xFSU

```
SSO Mode                  Yes
```

<-- If 'SSO mode' status is 'No', please wait until condition is met, then proceed

Cavets

Bug ID	Headline	Impacted Release	Fix Release
Cisco bug ID CSCwk44644	xFSU failure on stacked switches with SMU installed.	17.12.2	17.12.3 17.15.1
Cisco bug ID CSCwr07980	FPGA starts upgrading when fast reload is performed.	17.12.3 17.15.2	17.12.4 17.15.3

Related Information

- Technical Support & Documentation - Cisco Systems
- List of protocols not supported: refer the link here
- List of protocols supported: refer to the link here