Understand Enhanced Fast Software Upgrade - Quad-SUP on Catalyst 6500 VSS

Contents

Introduction

This document describes a step-by-step ISSU/eFSU procedure on Cisco Catalyst 6500 Series Switches in VSS mode with the use of the Supervisor 6T with dual-homed in a Quad-SUP setup.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Basic knowledge of QUAD-SUP Virtual Switching System (VSS) setup and configuration of catalyst 6500
- Copying images using the TFTP/USB/WebUI method

Components Used

The information in this document is based on the Cisco Catalyst 6500 Virtual Switching System on Cisco IOS® Software Release 15.5(1)SY12 or later

software and hardware versions.

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.

Topology
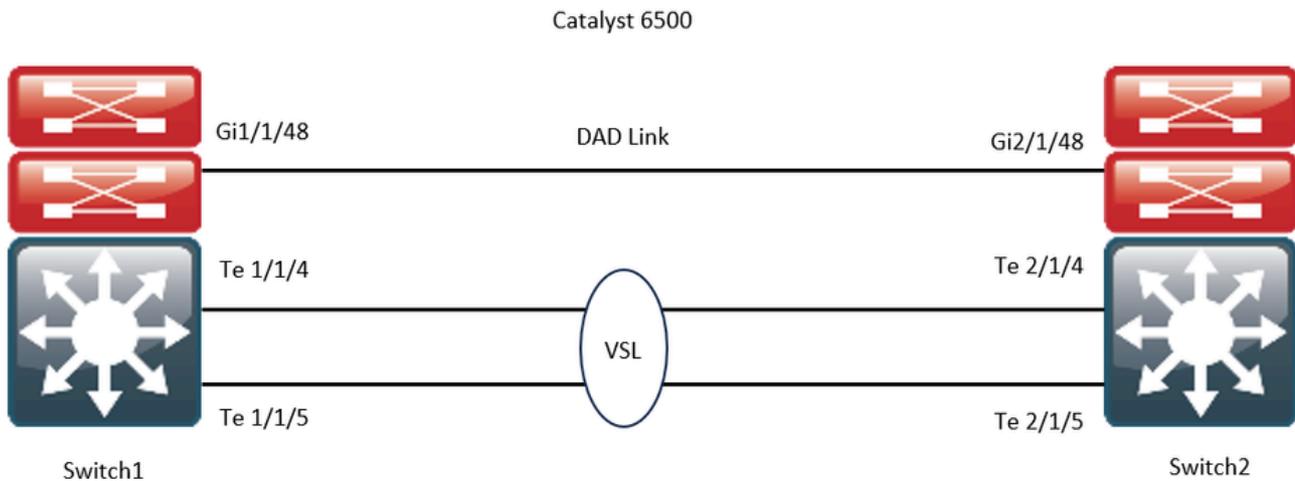
Compatibility Matrix Check

Step 1. Refer to this Cisco Document; **https://www.cisco.com/c/en/us/support/switches/catalyst-6500-series-switches/products-release-notes-list.html#anchor142**.

Step 2. Verify using the command in the device CLI:

```
<#root>

WS-C6504-E-1#

show issu comp-matrix stored


Number of Matrices in Table = 1

(1) Matrix for s2t54-ADVENTERPRISEK9-M(10) - s2t54-ADVENTERPRISEK9-M(10)
==========================================
Start Flag (0xDEADBABE)

My Image ver: 15.5(1)SY13
Peer Version Compatibility
------------ -------------
15.1(2)SY Incomp(1)
15.1(2)SY1 Incomp(1)
15.1(2)SY2 Incomp(1)
15.5(1)SY Dynamic(0)
15.5(1)SY1 Dynamic(0)
15.1(2)SY12 Incomp(1)
15.2(1)SY6 Incomp(1)
15.4(1)SY4 Incomp(1)
15.5(1)SY2 Dynamic(0)

15.5(1)SY3 Dynamic(0)


15.5(1)SY4 Dynamic(0)
```

15.5(1)SY5 Dynamic(0)

15.5(1)SY6 Dynamic(0)

15.5(1)SY7 Dynamic(0)

15.5(1)SY8 Dynamic(0)

15.5(1)SY9 Dynamic(0)

15.5(1)SY10 Dynamic(0)

15.5(1)SY11 Dynamic(0)

15.5(1)SY12 Dynamic(0)

15.5(1)SY13 Comp(3)

Upgrade Procedure

Step 1. Ensure that the new Cisco IOS image (Cisco IOS Software Release 15.5(1)SY13) is present in the
bootdisk,slavebootdisk,ics-bootdisk,slave-ics-bootdisk.

```
WS-C6504-E-1#dir bootdisk: | i SY13
8 -rw- 167430292 Apr 16 2024 22:55:58 +00:00 s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
WS-C6504-E-1#dir slavebootdisk: | i SY13
19 -rw- 167430292 Apr 16 2024 00:37:58 +00:00 s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
WS-C6504-E-1#dir ics-bootdisk: | i SY13
11 -rw- 167430292 Apr 16 2024 23:06:18 +00:00 s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
WS-C6504-E-1#dir slave-ics-bootdisk: | i SY13
5 -rw- 167430292 Apr 16 2024 23:20:18 +00:00 s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
```

Step 2. Use these commands in order to verify that the VSS is ready to run the upgrade procedure:

```
<#root>

WS-C6504-E-1#show redundancy
Redundant System Information :
------------------------------
       Available system uptime = 1 day, 4 hours, 41 minutes
```

```
Switchovers system experienced = 0
              Standby failures = 1
         Last switchover reason = none
                 Hardware Mode = Duplex

    Configured Redundancy Mode = sso


      Operating Redundancy Mode = sso


              Maintenance Mode = Disabled
                Communications = Up
Current Processor Information :
------------------------------
               Active Location = slot 1/1
        Current Software state =

ACTIVE                                                  >> Switch 1 Slot 1 is active


       Uptime in current state = 1 day, 4 hours, 41 minutes
                 Image Version = Cisco IOS Software, s2t54 Software (s2t54-ADVENTERPRISEK9-M), Version
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2023 by Cisco Systems, Inc.
Compiled Tue 05-Sep-23 11:24 by mcpre
                          BOOT =

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin

,12;
                   CONFIG_FILE =
                       BOOTLDR =
        Configuration register = 0x2102
Peer Processor Information :
----------------------------
              Standby Location = slot 2/1
        Current Software state =

STANDBY HOT                                             >> Switch 2 Slot 1 is standby


       Uptime in current state = 19 hours, 43 minutes
                 Image Version = Cisco IOS Software, s2t54 Software (s2t54-ADVENTERPRISEK9-M), Version
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2023 by Cisco Systems, Inc.
Compiled Tue 05-Sep-23 11:24 by mcpre
                          BOOT =

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin

,12;
                   CONFIG_FILE =
                       BOOTLDR =
        Configuration register = 0x2102



<#root>

WS-C6504-E-1#show issu state detail
 The system is configured to be upgraded in staggered mode.
 4 supervisor nodes are found to be online.
 Summary: the system will be upgraded in staggered mode.
```

```
Slot = 1/1
RP State = Active
ISSU State = Init
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;
      Operating Mode =

sso


      ISSU Sub-State =

No Upgrade Operation in Progress


      Starting Image = N/A
        Target Image = N/A
      Current Version =

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin



Slot = 2/1
RP State = Standby
ISSU State = Init
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;
      Operating Mode =

sso


      ISSU Sub-State =

No Upgrade Operation in Progress


      Starting Image = N/A
        Target Image = N/A
      Current Version =

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin



Slot = 1/2
RP State = Active-ICS
ISSU State = Init
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;
      Operating Mode =

sso


      ISSU Sub-State =

No Upgrade Operation in Progress


      Starting Image = N/A
        Target Image = N/A
      Current Version =

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
```

```
Slot = 2/2
RP State = Standby-ICS
ISSU State = Init
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;
      Operating Mode =

sso


      ISSU Sub-State =

No Upgrade Operation in Progress


      Starting Image = N/A
        Target Image = N/A
      Current Version =

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
```

Step 3. Use the issu loadversion command in order to start the upgrade process.

In this step, the VSS standby chassis reboots, reloads with the new image, and initializes as the VSS standby chassis in Stateful Switchover (SSO) redundancy mode, running the new image. This step is complete when the chassis configuration is synchronized, as indicated by the **Bulk sync succeeded** message. It can take several seconds to a few minutes for the new image to load and for the VSS standby chassis to transition to SSO mode.

<#root>

WS-C6504-E-1#issu loadversion 1/1 bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin 2/1 slavebootdisk


```
System configuration has been modified. Save? [yes/no]: y
Building configuration...
[OK]
```
*Apr 17 00:43:14.195: %ISSU_PROCESS-SW1-3-LOADVERSION: Loadversion sequence will begin in 60 seconds. Er

*Apr 17 00:43:44.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Resetting Standby shortly

*Apr 17 00:43:44.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Resetting Standby ICS shortly


```
*Apr 17 00:43:44.199: %ISSU_PROCESS-SW2_STBY-6-SELF_RELOAD: slot 33 countdown to self-reload started, 3(
*Apr 17 00:43:44.199: %ISSU_PROCESS-SW2-2_STBY-6-SELF_RELOAD: slot 34 countdown to self-reload started,
*Apr 17 00:44:29.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Standby ICS has gone offline
*Apr 17 00:44:29.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Standby has gone offline
*Apr 17 00:46:59.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Standby has come online, wait for Standby IC
*Apr 17 00:47:44.503: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Standby ICS has come online
*Apr 17 00:49:15.363: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Standby reached terminal state
*Apr 17 00:49:29.199: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Standby ICS reached terminal state, wait fo
```
*Apr 17 00:49:59.195: %ISSU_PROCESS-SW1-3-LOADVERSION: Loadversion has completed. Please issue the 'issu

*Apr 17 00:49:59.195: %ISSU_PROCESS-SW1-3-LOADVERSION: Loadversion has completed. Please issue the 'issu

Step 4. The boot variable for standby must point to a new Image in the show issu state detail output.

<#root>

WS-C6504-E-1#

show issu state detail

```
 The system is configured to be upgraded in in-tandem mode.
 4 supervisor nodes are found to be online.
          Summary: an in-tandem upgrade is in progress.

Slot = 1/1
RP State = Active
ISSU State = Load Version
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;bootdisk:s2t54-adventerprisek9-m
      Operating Mode = sso
       ISSU Sub-State = Load Version Completed
       Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
         Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
      Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin

Slot = 2/1
RP State = Standby
ISSU State =
```

Load Version

```
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin,12;bootdisk:s2t54-adventerprisek9-m
      Operating Mode = sso
       ISSU Sub-State = Load Version Completed
       Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
         Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
      Current Version =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

>> Standby Chassis has been upgraded to latest code

```
Slot = 1/2
RP State = Active-ICS
ISSU State = Load Version
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;bootdisk:s2t54-adventerprisek9-m
      Operating Mode = sso
       ISSU Sub-State = Load Version Completed
       Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
         Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
      Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin

Slot = 2/2
RP State = Standby-ICS
ISSU State =
```

Load Version

```
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin,12;bootdisk:s2t54-adventerprisek9-
      Operating Mode = sso
      ISSU Sub-State = Load Version Completed
      Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
        Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
     Current Version =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin   >> Standby Chassis has been u

Step 5. When the VSS standby chassis successfully runs the new image in the SSO redundancy state and all
of the line cards on the VSS standby chassis are up and online, enter the **issu runversion** command in order
to force a switchover. The upgraded VSS standby chassis takes over as the new active chassis, running the
new image. The formerly active chassis reloads and initializes as the new VSS standby chassis in SSO
mode, running the old image (in case the software upgrade needs to be aborted and the old image restored).
This step is complete when the chassis configuration is synchronized, as indicated by the **Bulk sync
succeeded** message.

<#root>

WS-C6504-E-1#

issu runversion

```
This command will reload the Active unit.  Proceed ? [confirm]y
%issu runversion initiated successfully
*Apr 17 00:54:42.707: %ISSU_PROCESS-SW1-2_STBY-6-SELF_RELOAD: slot 18 countdown to self-reload started,
*Apr 17 00:54:44.715: %RF-SW1-5-RF_RELOAD: Self reload. Reason: Admin ISSU runversion CLI
*Apr 17 00:54:46.719: %SYS-SW1-5-SWITCHOVER: Switchover requested by Exec. Reason: Admin ISSU runversio
Initializing as Virtual Switch STANDBY processor
*Apr 17 00:57:14.023: %VSLP-5-VSL_UP:  Ready for control traffic
*Apr 17 00:57:24.919: %PFREDUN-SW1_STBY-6-STANDBY: Initializing for SSO mode in Default Domain
```

Step 6. Verify the status once the switchover is done.

<#root>

```
WS-C6504-E-1#show issu state detail
 The system is configured to be upgraded in in-tandem mode.
 4 supervisor nodes are found to be online.
        Summary: an in-tandem upgrade is in progress.

Slot = 2/1
RP State = Active
ISSU State =
```

Run Version

```
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin,12;bootdisk:s2t54-adventerprisek9-
      Operating Mode = sso
      ISSU Sub-State = Run Version after Switchover
      Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
        Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
     Current Version =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin   >> Switch 2 became the active

```
Slot = 1/1
RP State = Standby
ISSU State = Run Version
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;
      Operating Mode = sso
      ISSU Sub-State = Run Version in Progress
      Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
        Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
      Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin


Slot = 2/2
RP State = Active-ICS
ISSU State =
```

Run Version

```
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin,12;bootdisk:s2t54-adventerprisek9-m
      Operating Mode = sso
      ISSU Sub-State = Run Version in Progress
      Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
        Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
      Current Version =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
Slot = 1/2
RP State = Standby-ICS
ISSU State = Run Version
Boot Variable = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12;
      Operating Mode = sso
      ISSU Sub-State = Run Version in Progress
      Starting Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin
        Target Image = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
      Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin


<#root>

WS-C6504-E-1#sh redundancy
Redundant System Information :
------------------------------
       Available system uptime = 44 minutes
Switchovers system experienced = 1
             Standby failures = 0
        Last switchover reason = user forced
                 Hardware Mode = Duplex
    Configured Redundancy Mode = sso
     Operating Redundancy Mode = sso
              Maintenance Mode = Disabled
                Communications = Up
Current Processor Information :
------------------------------
               Active Location = slot 2/1
        Current Software state =
```

ACTIVE

```
        Uptime in current state = 7 minutes
                    Image Version = Cisco IOS Software, s2t54 Software (s2t54-ADVENTERPRISEK9-M), Version
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2024 by Cisco Systems, Inc.
Compiled Tue 19-Mar-24 06:59 by mcpre
                             BOOT =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
                    CONFIG_FILE =
                        BOOTLDR =
          Configuration register = 0x2102
Peer Processor Information :
----------------------------
                Standby Location = slot 1/1
          Current Software state =
```

STANDBY HOT

```
        Uptime in current state = 2 minutes
                    Image Version = Cisco IOS Software, s2t54 Software (s2t54-ADVENTERPRISEK9-M), Version
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2023 by Cisco Systems, Inc.
Compiled Tue 05-Sep-23 11:24 by mcpre
                             BOOT =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12

```
.bin,12;
                    CONFIG_FILE =
                        BOOTLDR =
          Configuration register = 0x2102
```

Step 7. Use the **issu acceptversion** command in order to stop the Rollback Timer. This is necessary because if the timer expires, the upgraded chassis reloads and reverts to the previous software version.

<#root>

```
WS-C6504-E-1# show issu rollback-timer
```

Rollback Process State = In progress

```
 Configured Rollback Time = 00:45:00
 Automatic Rollback Time = 00:37:28
```

<#root>

```
WS-C6504-E-1# issu acceptversion
% Rollback timer stopped. Please issue the commitversion command.
View the rollback timer to see that the rollback process has been stopped:
WS-C6504-E-1# show issu rollback-timer
```

Rollback Process State = Not in progress   >> Roll

Step 8. In case Fabric Extender (FEX) is used in the setup, use the **issu runversion fex all** command in order to start the image download and upgrade procedure on the FEX (6800IA). The FEX triggers the image download from the new software bundle of the Supervisor6T (here, Cisco IOS Software Release 15.5(1)SY13). If you use FEX stacks, the master is responsible for extracting the image from its members.

Step 9. In order to continue, enter the **issu commitversion** command to upgrade the VSS standby chassis and complete the In-Service Software Upgrade (ISSU) sequence. The VSS standby chassis reboots, reloads with the new image, and initializes as the VSS standby chassis in the SSO redundancy state, running the new image. This step is complete when the chassis configuration is synchronized, as indicated by the **Bulk sync succeeded** message, and all of the linecards on the new VSS-Standby are up and online.

```
<#root>

WS-C6504-E-1# issu commitversion


%issu commitversion initiated successfully, upgrade sequence will continue shortly



WS-C6504-E-1#
*Apr 17 01:02:57.607: %ISSU_PROCESS-SW2-3-COMMITVERSION: issu commitversion; Commitversion sequence wil
*Apr 17 01:03:27.607: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Resetting Standby shortly
*Apr 17 01:03:27.607: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Resetting Standby ICS shortly
*Apr 17 01:03:27.611: %ISSU_PROCESS-SW1-2_STBY-6-SELF_RELOAD: slot 18 countdown to self-reload started,
*Apr 17 01:03:27.611: %ISSU_PROCESS-SW1_STBY-6-SELF_RELOAD: slot 17 countdown to self-reload started, 3
*Apr 17 01:04:12.607: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Standby ICS has gone offline
*Apr 17 01:04:12.607: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Standby has gone offline
*Apr 17 01:06:42.607: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Standby has come online, wait for Standby
*Apr 17 01:07:28.315: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Standby ICS has come online
*Apr 17 01:08:59.623: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Standby has reached terminal state
*Apr 17 01:09:12.699: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Standby ICS reached terminal state
*Apr 17 01:09:12.751: %ISSU_PROCESS-SW2-6-COMMITVERSION_INFO: Upgrade has completed, updating boot conf
Building configuration...
[OK]
```

Step 10. Verify if the upgrade has been completed.

```
<#root>

WS-C6504-E-1#

sh redundancy


Redundant System Information :
------------------------------
       Available system uptime = 55 minutes
Switchovers system experienced = 1
             Standby failures = 1
       Last switchover reason = user forced
                 Hardware Mode = Duplex
   Configured Redundancy Mode = sso
     Operating Redundancy Mode = sso
             Maintenance Mode = Disabled
               Communications = Up
Current Processor Information :
```

```
-------------------------------
             Active Location = slot 2/1
      Current Software state = ACTIVE
     Uptime in current state = 17 minutes
               Image Version = Cisco IOS Software, s2t54 Software (s2t54-ADVENTERPRISEK9-M), Version
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2024 by Cisco Systems, Inc.
Compiled Tue 19-Mar-24 06:59 by mcpre
                        BOOT =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13

```
.bin,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
                 CONFIG_FILE =
                     BOOTLDR =
       Configuration register = 0x2102
Peer Processor Information :
----------------------------
             Standby Location = slot 1/1
      Current Software state = STANDBY HOT
     Uptime in current state = 3 minutes
               Image Version = Cisco IOS Software, s2t54 Software (s2t54-ADVENTERPRISEK9-M), Version
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2024 by Cisco Systems, Inc.
Compiled Tue 19-Mar-24 06:59 by mcpre
                        BOOT =
```

bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
```

>> Standby has been upgraded

```
                 CONFIG_FILE =
                     BOOTLDR =
       Configuration register = 0x2102
```

<#root>

WS-C6504-E-1#

show module switch all

```
 Switch Number:     1   Role:  Virtual Switch Standby
---------------------  -----------------------------
Mod Ports Card Type                              Model              Serial No.
--- ----- -------------------------------------- ------------------ -----------
  1    5  Supervisor Engine 2T 10GE w/ CTS (Hot) VS-SUP2T-10G       xxxx
  2    5  Supervisor Engine 2T 10GE w/ CTS (CSSO VS-SUP2T-10G       xxxx
  3   48  CEF720 48 port 10/100/1000mb Ethernet  WS-X6748-GE-TX     xxxx
Mod MAC addresses                       Hw    Fw           Sw           Status
--- ---------------------------------- ------ ------------ ------------ -------
  1  xxxx. xxxx. xxxx to xxxx. xxxx. xxxx 1.5   12.2(50r)SYS 15.5(1)SY13  Ok
  2  xxxx. xxxx. xxxx to xxxx. xxxx. xxxx 1.3   12.2(50r)SYS 15.5(1)SY13  Ok
  3  xxxx. xxxx. xxxx to xxxx. xxxx. xxxx 3.2   12.2(18r)S1  15.5(1)SY13  Ok
Mod  Sub-Module                  Model             Serial      Hw     Status
---- --------------------------- ----------------- ----------- ------- -------
  1  Policy Feature Card 4       VS-F6K-PFC4        xxxx        1.2     Ok
  1  CPU Daughterboard           VS-F6K-MSFC5       xxxx        2.0     Ok
  2  Policy Feature Card 4       VS-F6K-PFC4        xxxx        1.2     Ok
```

```
  2   CPU Daughterboard          VS-F6K-MSFC5       xxxx        1.4    Ok
  3   Centralized Forwarding Card WS-F6700-CFC       xxxx        4.1    Ok
Mod  Online Diag Status
---- ------------------
  1  Pass
  2  Pass
  3  Pass
 Switch Number:    2   Role:   Virtual Switch Active
--------------------- -----------------------------
Mod Ports Card Type                              Model             Serial No.
--- ----- ------------------------------------- ----------------- -----------
  1    5  Supervisor Engine 2T 10GE w/ CTS (Acti VS-SUP2T-10G      xxxx
  2    5  Supervisor Engine 2T 10GE w/ CTS (CSSO VS-SUP2T-10G      xxxx
  3   48  CEF720 48 port 10/100/1000mb Ethernet  WS-X6748-GE-TX    xxxx
Mod MAC addresses                      Hw    Fw           Sw           Status
--- ---------------------------------- ------ ------------ ------------ -------
  1 xxxx. xxxx. xxxx to xxxx. xxxx. xxxx 1.5   12.2(50r)SYS 15.5(1)SY13  Ok
  2 xxxx. xxxx. xxxx to xxxx. xxxx. xxxx 2.1   12.2(50r)SYS 15.5(1)SY13  Ok
  3 xxxx. xxxx. xxxx to xxxx. xxxx. xxxx 3.6   12.2(18r)S1  15.5(1)SY13  Ok
Mod  Sub-Module                 Model             Serial      Hw     Status
---- -------------------------- ----------------- ----------- ------- -------
  1  Policy Feature Card 4       VS-F6K-PFC4       xxxx        1.2    Ok
  1  CPU Daughterboard          VS-F6K-MSFC5       xxxx        2.0    Ok
  2  Policy Feature Card 4       VS-F6K-PFC4       xxxx        3.0    Ok
  2  CPU Daughterboard          VS-F6K-MSFC5       xxxx        3.1    Ok
  3  Centralized Forwarding Card WS-F6700-CFC       xxxx        4.1    Ok
Mod  Online Diag Status
---- ------------------
  1  Pass
  2  Pass
  3  Pass
```

<#root>

WS-C6504-E-1#

sh issu state detail

```
 The system is configured to be upgraded in in-tandem mode.
 4 supervisor nodes are found to be online.
 Summary: the system will be upgraded in in-tandem mode.
Slot = 2/1
RP State = Active
ISSU State = Init
Boot Variable = bootdisk:
```

s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
     Operating Mode = sso
     ISSU Sub-State =
```

No Upgrade Operation in Progress

```
     Starting Image = N/A
       Target Image = N/A
     Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
Slot = 1/1
RP State = Standby
ISSU State = Init
```

```
Boot Variable = bootdisk:
```

s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
      Operating Mode = sso
       ISSU Sub-State =
```

No Upgrade Operation in Progress

```
      Starting Image = N/A
        Target Image = N/A
     Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
Slot = 2/2
RP State = Active-ICS
ISSU State = Init
Boot Variable = bootdisk:
```

s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
      Operating Mode = sso
       ISSU Sub-State =
```

No Upgrade Operation in Progress

```
      Starting Image = N/A
        Target Image = N/A
     Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
Slot = 1/2
RP State = Standby-ICS
ISSU State = Init
Boot Variable = bootdisk:
```

s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin

```
,12;bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY12.bin,12
      Operating Mode = sso
       ISSU Sub-State =
```

No Upgrade Operation in Progress

```
      Starting Image = N/A
        Target Image = N/A
     Current Version = bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin
```

Troubleshooting Case Studies

Scenario 1. Upgrading in Staggered Mode when Cross VSL Connectivity is Absent

```
<#root>

WS-C6504-E-1#

issu loadversion 1/1 bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin 2/1 slavebootdisk:s2t54-advent

WS-C6504-E-1#*Apr 16 23:31:12.528: SW1:  Quad-sup ISSU Staggered mode VSL requirement(Parallel/Cross VSL
```

You get an error message mentioning the requirement is not met as you do not have a cross-VSL connection to proceed with.

You can perform the upgrade by disabling the staggered.

<#root>

WS-C6504-E-1(conf t)#

no issu upgrade staggered

```
WS-C6504-E-1#issu loadversion 1/1 bootdisk:s2t54-adventerprisek9-mz.SPA.155-1.SY13.bin 2/1 slavebootdis
System configuration has been modified. Save? [yes/no]: y
Building configuration...
[OK]
*Apr 17 00:43:14.195: %ISSU_PROCESS-SW1-3-LOADVERSION: Loadversion sequence will begin in 60 seconds. E
*Apr 17 00:43:44.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Resetting Standby shortly
*Apr 17 00:43:44.195: %ISSU_PROCESS-SW1-6-LOADVERSION_INFO: Resetting Standby ICS shortly
```

Tandem Versus Staggered

Upgrading the VSS for tandem or dual Supervisor (SUP) is also feasible, However, it takes one chassis offline during the supervisors' whole boot period.

One supervisor at a time is reloaded in the default mode of the Sup2T, staggered mode. This implies that a supervisor using that version is present when the linecards are prepared for reloading. Since the linecards reload much faster than the supervisors, the chassis experiences significantly less downtime as a result.

Additionally, it indicates that a supervisor using the outdated program is available, providing for a far faster rollback time if necessary. For Sup2T, the default mode is staggered.

The staggered upgrade method can be disabled using this command.

Scenario 2. Active Struck with Older Image

Here, basically, you can be struck at the **ISSU Run Version**.

For the **ISSU Run Version** there is already a roll-back timer enabled. In case you are unable to proceed further, the timer automatically rolls back to the older image.

With respect to the **ISSU Commit Version**, the roll-back timer is disabled since you gave an accepted version. Hence, you have to perform this command in order to roll back to the older image.

```
WS-C6504-E-1# issu abortversion
```

Scenario 3. Post Switchover the Standby is Not Coming Up

Disconnect the Virtual Switch Link (VSL) link physically and upgrade the device to the new image using the USB/TFTP method.

After the upgrade, power off the device. Connect the VSL link and bring the device into the VSS so that it can form a standby.

Scenario 4. Post Upgrade ICS SUP Remains in Older Version

Connect the SUP alone in a spare chassis or standby chassis where the impact is not seen since the active is working fine.

Upgrade the device to a new image using the USB/TFTP method.

Then, power it off and bring it to the same slot so that the image is upgraded and comes back as In-Chassis Standby (ICS) again with a newer image.