In Service Software Upgrade for Cisco IOS XR 64 Bit

This module contains the following topics:

Overview of ISSU on ASR 9000 with IOS XR 64 Bit

In-Service Software Upgrade (ISSU) provides the ability to upgrade the IOS XR 64 Bit version on ASR 9000 with minimal disruption on the control plane and forwarding plane. ISSU supports upgrading an image from a lower to a higher version. ISSU supports zero topology loss (ZTL) and causes only a minimal packet loss of less than six seconds.

You can perform ISSU installation in a single step or as multiple phases. You need to perform the pre-installation tasks before executing ISSU. During the pre-installation tasks and ISSU execution, V1 refers to the image currently running on the router and V2 will be the upgraded image.

ISSU execution contains the following phases:

- Prepare phase: The installable files are pre-checked and loaded on the router before activation. This phase is optional.

- Activate phase: The new image (V2) is downloaded to all nodes in the router replacing the old image (V1). This phase can be run in step-by-step phases like *Load*, *Run*, and *Cleanup* or by using a one-shot *Activate* phase.

Note The *Prepare* phase is optional and can be skipped because the *Load* phase prepares the package if *Prepare* phase was not performed before the *Load* phase.

- Commit phase: The ISSU installation is complete with V2 on all nodes.

ISSU supports upgrading the System Admin VM and XR VM individually. Using ISSU, the System Admin VM and XR VM can also be upgraded sequentially. The upgrade sequence is System Admin ISSU followed by XR ISSU. Committing the upgrade from XR VM commits both the System Admin and XR software. But, committing the upgrade from System Admin VM commits only the System Admin software.

Note When RSP1 is the active RP and System Admin VM ISSU is triggered on Cisco ASR 9000 with IOS XR 64 bit, there is an additional VM switch over compared to performing System Admin VM ISSU from RSP0. This is an expected behaviour.

Restrictions and Usage Guidelines

ISSU on ASR 9000 with IOS XR 64 Bit is supported only on few third generation ASR 9000 Series Ethernet line cards, RSPs and RPs.

The third generation of line cards include:

- A9K-8X100G-LB-SE
- A9K-8X100G-LB-TR
- A9K-8X100GE-SE
- A9K-8X100GE-TR
- A9K-4X100GE-SE
- A9K-4X100GE-TR
- A9K-MOD400-SE
- A9K-MOD400-TR
- A9K-MOD200-SE
- A9K-MOD200-TR

The third generation of RSP and RP cards include:

- A9K-RSP880-SE/TR
- A9K-RSP880-LT-SE/TR
- A99-RSP-SE/TR
- A99-RP2-SE/TR

ISSU is not supported on the ASR 9000 Series 24-port and 48-port dual-rate 10GE and 1GE line cards. The line cards include:

- A9K-24X10GE-1G-SE
- A9K-24X10GE-1G-TR
- A9K-48X10GE-1G-SE

- A9K-48X10GE-1G-TR

- A99-48X10GE-1G-SE

- A99-48X10GE-1G-TR

ISSU is not supported on the ASR 9000 fourth generation QSFP28 based dense 100GE line cards. The line cards include:

- A9K-16X100GE-TR

- A99-32X100GE-TR

- A99-16X100GE-X-SE

ISSU is not supported on the single RP system of ASR 9901.

Pre-Installation Tasks

Pre-Installation Tasks

Before performing ISSU on ASR 9000 with IOS XR 64 Bit, complete the following tasks.

1. Configure NTP in XR VM. Once you configure NTP on XR VM, System Admin VM automatically syncronizes with NTP running on RSP. If NTP server is not available, configure clock on both XR VM and System Admin VM in configuration mode and make sure that your clock is set to the correct location and timezone.

```
RP/0/RSP0/CPU0:Router# show ntp associations
      address         ref clock      st   when  poll reach  delay  offset    disp
*~172.27.131.19   171.68.38.65      2    13    64   77    2.05  -1.174  191.09
 ~172.27.130.34   171.68.38.65      2    35    64    0    0.00   0.000  15937
+~172.27.130.33   171.68.38.65      2     9    64   77    2.41  10.370  189.47
 * sys_peer, # selected, + candidate, - outlayer, x falseticker, ~ configured


sysadmin-vm:0_RSP0:Router# show ntp associations
Wed Oct  31 15:18:59.728 UTC-07:00
     remote          refid       st t when poll reach  delay   offset  jitter
===============================================================================
external:
*rsp0_xr          172.27.131.19   3 u  12  128  347   0.171   0.989   0.456
 rsp1_xr          .STEP.         16 u   -  256    0   0.000   0.000   0.000
internal:
*192.0.16.4       172.27.131.19   3 u  12  128  347   0.171   0.989   0.456
 192.0.20.4       .STEP.         16 u   -  256    0   0.000   0.000   0.000
```

2. Ensure that the dual RP and RSP systems are synchronized and they are in active and standby roles respectively using the **show redundancy summary** command. The line card status should be *Final Band* or *Running*.

```
RP/0/RSP0/CPU0:Router# show redundancy summary

   Active Node    Standby Node
   -----------    ------------
   0/RSP0/CPU0     0/RSP1/CPU0 (Node Ready, NSR:Ready)
```

```
RP/0/RSP0/CPU0:Router# show platform vm
Node name        Node type        Partner name     SW status       IP address
---------------  ---------------  ---------------  --------------  ---------------
0/3/CPU0         LC (ACTIVE)      NONE             FINAL Band      192.0.12.3
0/7/CPU0         LC (ACTIVE)      NONE             FINAL Band      192.0.36.3
0/RSP1/CPU0      RP (STANDBY)     0/RSP0/CPU0      FINAL Band      192.0.20.4
0/4/CPU0         LC (ACTIVE)      NONE             FINAL Band      192.0.24.3
0/RSP0/CPU0      RP (ACTIVE)      0/RSP1/CPU0      FINAL Band      192.0.16.4
```

3. Ensure that firmware on linecards, RSP, and RP is upgraded to the latest version. You can upgrade the router cards in a single step by using the **upgrade hw-module location all fpd all** command. Use the **show hw-module location** *location* **fpd** command to verify the firmware versions.

```
RP/0/RSP0/CPU0:Router# upgrade hw-module location all fpd all
```

This example shows verifying the firmware versions for a node.

```
RP/0/RSP0/CPU0:Router# show hw-module location 0/rsp1 fpd

                                                          FPD Versions
                                                          =================
Location   Card type        HWver  FPD device      ATR Status   Running  Programd
------------------------------------------------------------------------------
0/RSP1     A9K-RSP880-SE    1.0    Alpha-FPGA          CURRENT   0.16     0.16
0/RSP1     A9K-RSP880-SE    1.0    CBC                 CURRENT   34.39    34.39
0/RSP1     A9K-RSP880-SE    1.0    Cha-FPGA            CURRENT   0.08     0.08
0/RSP1     A9K-RSP880-SE    1.0    IPU-FPGA            CURRENT   0.66     0.66
0/RSP1     A9K-RSP880-SE    1.0    IPU-FSBL            CURRENT   1.108    1.108
0/RSP1     A9K-RSP880-SE    1.0    IPU-Linux           CURRENT   1.108    1.108
0/RSP1     A9K-RSP880-SE    1.0    Omega-FPGA          CURRENT   0.16     0.16
0/RSP1     A9K-RSP880-SE    1.0    Optimus-FPGA        CURRENT   0.12     0.12
0/RSP1     A9K-RSP880-SE    1.0    Primary-BIOS        CURRENT   10.60    10.60
0/RSP1     A9K-RSP880-SE    1.0    SSDa-SMART          N/A       7.05     7.05
0/RSP1     A9K-RSP880-SE    1.0    SSDb-SMART          N/A       7.05     7.05
```

4. Check the disk storage space on both System Admin VM and XR VM and ensure that sufficient disk space is available. Remove files like show-tech, cores, kernel dumps, manually created text, log, debug information and so on.

This example shows verifying the disk storage space for System Admin VM and XR VM on RSP0. You also need to verify the disk space on the standby RSP (RSP1). If required you can verify the disk storage on line cards using the **show media location** command.

```
RP/0/RSP0/CPU0:Router# show media

Media Information for local node.

-------------------------------------------------
Partition                Size     Used   Percent    Avail
rootfs:                  3.8G     1.3G    34%       2.4G
/run                     14G      340K     1%        14G
harddisk:                5.5G     1.6G    31%       3.6G
/run/netns               14G      340K     1%        14G
log:                     469M      33M     8%       401M
config:                  469M     1.7M     1%       432M
disk0:                   968M     5.3M     1%       897M
harddiska:               3.6G      11M     1%       3.5G
/misc/app_host           2.4G      61M     3%       2.2G
-------------------------------------------------
rootfs: = root file system (read-only)
log: = system log files (read-only)
config: = configuration storage (read-only)

RP/0/RSP0/CPU0:Router# admin show media
-----------------------------------------------------------------
```

```
Partition                    Size    Used  Percent    Avail
----------------------------------------------------------------
rootfs:                      2.4G    838M     38%     1.4G
harddisk:                    7.6G    1.2G     17%     6.0G
log:                         469M     22M      5%     412M
config:                      469M    3.3M      1%     431M
disk0:                       968M    1.6M      1%     900M
a9ksys:                      736M    4.3M      1%     695M
harddiskb:                   3.0G    1.2G     41%     1.8G
install:                     4.8G    932M     21%     3.6G
install:/tmp                 7.6G    1.2G     17%     6.0G
install:/cache               7.6G    1.2G     17%     6.0G
rootfs:/install/tmp          7.6G    1.2G     17%     6.0G
----------------------------------------------------------------
rootfs:  = root file system (read-only)
log:     = system log files (read-only)
config:  = configuration storage (read-only)
install: = install repository (read-only)
a9ksys:  = ASR9K system storage (read-only)
```

5. Populate the repository with RPMs and SMUs. You can pick and install individual RPMs, SMUs, one by one, or make a tarball and install one tarball or break it down with multiple tarballs.

Note You cannot include a tarball within another tarball. However, multiple tarballs can be specified at once.

```
RP/0/RSP0/CPU0:Router# install add source tftp://172.27.131.19/xrimages/e652/
asr9k-mini-x64-6.5.2.13I.iso  ASR9K-RPMS-65213I.tar

RP/0/RSP0/CPU0:Router# show install request
The install add operation 4 is 80% complete
RP/0/RSP0/CPU0:Router#

RP/0/RSP0/CPU0:Router#
RP/0/RSP0/CPU0:Oct 31 19:44:34.076 : sdr_instmgr[1156]:
%INSTALL-INSTMGR-2-OPERATION_SUCCESS : Install operation 4 finished successfully
Oct 31 19:44:35 Install operation 4 finished successfully
```

6. Check the repository to validate that packages, images, or SMUs are populated properly in the router's repository by using the **show install repository** command. There should be a one to one relationship between V1 and V2 images and SMUs. For example, if you install a SMU on V1, you also need the corresponding V2 version in the repository to execute ISSU.

```
RP/0/RSP0/CPU0:Router# show install repository | i mini
asr9k-mini-x64-6.2.3              <--V1 iso image currently running
asr9k-mini-x64-6.5.2.13I          <--V2 iso image to upgrade to
```

7. Extract the ISO image in System Admin VM or XR VM depending on the version of the image.

- For IOS XR versions prior to 6.5.1: You should extract the ISO image in XR VM as well as in System Admin VM because the system can only use packages in RPM format.

- For IOS XR version 6.5.1 and onwards: System automatically extracts the system admin package from the ISO file once you mentioned the file name while executing ISSU. You only need to extract the XR package separately.

```
RP/0/RSP0/CPU0:Router# install extract asr9k-mini-x64-6.5.2.13I
Oct 31 20:50:30 Install operation 9 started by root:
  install extract asr9k-mini-x64-6.5.2.13I
Oct 31 20:50:30 Package list:
```

```
Oct 31 20:50:30      asr9k-mini-x64-6.5.2.13I
Oct 31 20:50:31 Install operation will continue in the background

RP/0/RSP0/CPU0:Router# show install repository | i xr-

    asr9k-xr-6.5.2.13I                      <--V2 extracted image to upgrade to
    asr9k-xr-6.2.3

sysadmin-vm:0_RSP0:Router# install extract asr9k-mini-x64-6.5.2.13I
result Wed Oct 31 20:36:34 2018 Install operation 1 (install extract) started by user
'root' will continue asynchronously.
sysadmin-vm:0_RSP0:MYISSU#

sysadmin-vm:0_RSP0:Router# show install repository | i sys
asr9k-sysadmin-6.2.3
 asr9k-sysadmin-6.5.2.13I                   <--V2 extracted image to upgrade to
```

ISSU on ASR 9000 with IOS XR 64 Bit: Single Phase Installation

This section shows how to perform ISSU on ASR 9000 with IOS XR 64 Bit in a single step. You can either upgrade the system or install a patch in a single step. The system upgrade is done using an ISO image file, while the patch installation is done using packages and SMUs.

You should perform the following steps before performing this task:

- Copy the package to be installed either on the router's hard disk or on a network server to which the router has access.

- Ensure that dual route processor (RP) system with standby is in "is ready" state.

Preform the following steps to upgrade the system or install a patch in a single step.

Note   Depending on whether you are installing a System Admin package or a XR package, execute these commands in the System Admin EXEC mode or XR EXEC mode respectively

1. (Optional) Prepare the installable files by using the **install prepare issu** *package_name* command. During the prepare phase, pre-activation checks are made, and the components of the installable files are loaded on to the router setup.

    For System Admin VM:

    `sysadmin-vm:0_RSP0#` **install prepare issu asr9k-xr-<release-version>**

    For XR VM:

    `RP/0/RSP0/CPU0:router#` **install prepare issu asr9k-xr-<release-version>**

2. Activate the ISSU installation in XR VM or System Admin VM in a single step by using the **install activate issu** command.

    For System Admin VM:

    `sysadmin-vm:0_RSP0#` **install activate issu asr9k-xr-<release-version>**

    For XR VM:

    RP/0/RSP0/CPU0:router# **install activate issu asr9k-xr-<release-version>**

Note ISSU operation takes about 30 minutes to complete. If the ISSU operation is not concluded in 40 minutes, the ISSU may timeout or abort.

3. Commit the newly active software by using the **install commit** command.

For System Admin VM:

```
sysadmin-vm:0_RSP1# install commit
```

For XR VM:

```
RP/0/RSP0/CPU0:router# install commit
```

Examples: Install Packages Using ISSU Single Step Installation on ASR 9000 with IOS XR 64 Bit

This example shows performing System Admin VM upgrade using ISSU and how to verify the installation using show commands.

```
!# Verify packages in the repository

sysadmin-vm:0_RSP0:Router# show install repository all | i "host|sysadmin"
asr9k-sysadmin-6.2.3
 asr9k-sysadmin-6.5.2.13I
 host-6.2.3
 host-6.5.2.13I
sysadmin-vm:0_RSP0:Router#

!# Performing ISSU installation

sysadmin-vm:0_RSP0:Router# install activate issu asr9k-sysadmin-6.5.2.13I host-6.5.2.13I
This install operation will result in admin VMs reload
Do you want to proceed [yes/no]: yes
Proceeding with operation
result Wed Oct 31 21:12:21 2018 Install operation 2 (install prepare and activate issu)
started by user 'root' will continue asynchronously.
sysadmin-vm:0_RSP0:Router#

!# Monitoring the progress of the installation.
!# The installation may take up to 30 minutes.

sysadmin-vm:0_RSP0:Router# show install request

User root, Op Id 2

 install prepare issu

 host-6.5.2.13I

 This operation is 40% complete

 Waiting for agents to complete host prepare ..

sysadmin-vm:0_RSP0:#


!# Verifying the installation status again after few minutes

sysadmin-vm:0_RSP0:Router# show install request
```

```
User root, Op Id 2
 install activate issu
 ISSU stage Phase1
 asr9k-sysadmin-6.5.2.13I
   Node 0/RSP0 [RP] : 90% of current state is completed
   Node 0/RSP1 [RP] : 90% of current state is completed
   Node 0/1 [LC] : 90% of current state is completed
   Node 0/3 [LC] : 90% of current state is completed
   Node 0/4 [LC] : 90% of current state is completed
   Node 0/7 [LC] : 90% of current state is completed

sysadmin-vm:0_RSP0:MYISSU#

!#  Message after successful completion. Admin VM will reload after this message. . There
should be no packet drop.

0/RSP0/ADMIN0:Oct 31 21:27:53.260 : inst_mgr[5019]: %INFRA-INSTMGR-2-OPERATION_SUCCESS :
Install operation 2 completed successfully

!# Verifying the active package

sysadmin-vm:0_RSP1# show install active summary
    Active Packages: 1
        asr9k-sysadmin-6.5.2.13I version=6.5.2.13I [Boot image]

!# Verifies the image previously committed

sysadmin-vm:0_RSP1# show install commit summary
    Committed Packages: 1
        asr9k-sysadmin-6.2.3 version=6.2.3 [Boot image]

!# Commits the latest image

sysadmin-vm:0_RSP1# install commit
result Wed Oct 31 21:32:58 2018 Install operation 3 (install commit) started by user 'root'
 will continue asynchronously.
sysadmin-vm:0_RSP1# 0/RSP1/ADMIN0:Oct 31 21:33:02.061 : inst_mgr[6913]:
%INFRA-INSTMGR-2-OPERATION_SUCCESS : Install operation 3 completed successfully
Wed Oct 31 21:33:02 2018 Install operation 3 completed successfully.
sysadmin-vm:0_RSP1#
```

This example shows performing XR VM upgrade using ISSU and verifying the installation using show commands.

```
!# Verify the active packages

RP/0/RSP0/CPU0:Router# show install active summary
    Active Packages: 8
        asr9k-xr-6.2.3 version=6.2.3 [Boot image]
        asr9k-isis-x64-1.3.0.0-r623
        asr9k-mpls-x64-2.0.0.0-r623
        asr9k-mpls-te-rsvp-x64-1.3.0.0-r623
        asr9k-ospf-x64-1.0.0.0-r623
        asr9k-mgbl-x64-2.0.0.0-r623
        asr9k-mcast-x64-2.2.0.0-r623
        asr9k-k9sec-x64-3.2.0.0-r623

!# Performing ISSU Installation

RP/0/RSP0/CPU0:Router# install activate issu asr9k-xr-6.5.2.13I *r65213I
Oct 31 21:48:14 Install operation 10 started by root:
  install activate issu asr9k-xr-6.5.2.13I *r65213I
Oct 31 21:48:14 Package list:
```

```
Oct 31 21:48:14     asr9k-isis-x64-1.1.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-ospf-x64-1.0.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-mcast-x64-2.0.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-mpls-te-rsvp-x64-2.1.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-mgbl-x64-2.0.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-k9sec-x64-2.1.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-mpls-x64-2.0.0.0-r65213I.x86_64
Oct 31 21:48:14     asr9k-xr-6.5.2.13I
This install operation will start the issu, continue?
 [yes/no]:[yes] yes
Oct 31 21:49:13 Install operation will continue in the background
RP/0/RSP0/CPU0:Router#

!# Monitoring the progress of the installation.
!# The installation may take up to 30 minutes.

RP/0/RSP1/CPU0:Router# show issu
INSTALL Operation ID    : Operation 11 Started at Wed Oct 31 22:23:30 2018
ISSU Progress           : 100.0%
Total ISSU Time         : 00:25:07
ISSU Type               : SMU


Phase            Start-Time      End-Time              State
-------------------------------------------------------------------------------
Prepare          22:23:30        22:34:21              Completed
Load             22:34:28        22:47:01              Completed
Run              22:47:01        22:47:44              Completed
Cleanup          22:47:44        22:48:44              Completed
-------------------------------------------------------------------------------
Current Status          : ISSU Orchestration Successfully Completed

Setup Information        : Single Chassis
ISSU Ready/Not Ready     : 0 / 0


Node ISSU readiness per rack per slot
Key: Ready - 'Y', Not ready - 'N', Primary node - '*', Complete - '-'


Rack 0    RP0    RP1    LC1    LC3    LC4    LC7
           -      -      -      -      -      -


!# Verifying the VM status after the installation

RP/0/RSP1/CPU0:Router# admin show sdr


SDR: default-sdr
Location     IP Address      Status          Boot Count  Time Started
-------------------------------------------------------------------------------
0/1/VM2      192.0.4.4       RUNNING         1           10/31/2018 22:34:55
0/3/VM2      192.0.12.4      RUNNING         1           10/31/2018 22:34:54
0/RSP0/VM2   192.0.16.6      RUNNING         1           10/31/2018 22:49:58
0/RSP1/VM2   192.0.20.6      RUNNING         1           10/31/2018 22:35:39
0/4/VM2      192.0.24.4      RUNNING         1           10/31/2018 22:34:55
0/7/VM2      192.0.36.4      RUNNING         1           10/31/2018 22:34:55


!# Verify the active packages

RP/0/RSP1/CPU0:Router# show install active sum
    Active Packages: 8
        asr9k-xr-6.5.2.13I version=6.5.2.13I [Boot image]
        asr9k-isis-x64-1.1.0.0-r65213I
        asr9k-ospf-x64-1.0.0.0-r65213I
        asr9k-mcast-x64-2.0.0.0-r65213I
        asr9k-mpls-te-rsvp-x64-2.1.0.0-r65213I
        asr9k-mgbl-x64-2.0.0.0-r65213I
```

```
                        asr9k-k9sec-x64-2.1.0.0-r65213I
                        asr9k-mpls-x64-2.0.0.0-r65213I


        !# You can either perform install commit and stay with the latest image or reload the router
         to continue using the old image.

        !# Commits the latest image after the necessary checks
        RP/0/RSP0/CPU0:Router# install commit
```

ISSU on ASR 9000 with IOS XR 64 Bit: Multi Step Installation

This section shows how to perform ISSU on ASR 9000 with IOS XR 64 Bit in multiple steps.

You should perform the following steps before performing the steps in this task:

- Copy the package to be installed either on the router's hard disk or on a network server to which the router has access.

- Ensure that dual route processor (RP) system with standby is in "is ready" state.

Perform the following steps to upgrade the system or install a patch in multiple phases.

Note Depending on whether you are installing a System Admin package or a XR package, execute these commands in the System Admin EXEC mode or XR EXEC mode respectively.

Note You should update the System Admin VM first and then update the XR VM. IOS XR 64 bit ISSU will fail if the System Admin VM is not updated first.

1. (Optional) Prepare the installable files by using the **install prepare issu** *package_name* command. During the prepare phase, pre-activation checks are performed and the components of the installable files are loaded on to the router setup.

   For System Admin VM :

   sysadmin-vm:0_RSP0# **install prepare issu asr9k-xr-<release-version>**

   For XR VM:

   RP/0/RSP0/CPU0:router# **install prepare issu asr9k-xr-<release-version>**

2. Start the load phase by issuing the **install activate issu load** command.

   For System Admin VM :

   sysadmin-vm:0_RSP0# **install activate issu load asr9k-xr-<release-version>**

   For XR VM:

   RP/0/RSP0/CPU0:router# **install activate issu load asr9k-xr-<release-version>**

   This step downloads the new image (V2) to all nodes in the router. The new image is checked for compatibility to ensure that the router can be upgraded. At the start of the *Load* phase, the router configuration mode is locked, and you cannot perform any configuration on the router until ISSU completes

the phase. At the end of this stage, all standby nodes run V2 and all active nodes (including all line cards) still run the original software images (V1).

3. Starts the run phase by issuing the **install activate issu run** command.

For System Admin VM :

```
sysadmin-vm:0_RSP0# install activate issu run
```

For XR VM:

```
RP/0/RSP0/CPU0:router# install activate issu run
```

This phase starts version switch from V1 to V2. All the packages that have been prepared are activated to make the package configurations active on the router.

4. Starts the cleanup phase by issuing the **install activate issu cleanup** command.

For System Admin VM :

```
sysadmin-vm:0_RSP0# install activate issu cleanup
```

For XR VM:

```
RP/0/RSP0/CPU0:router# install activate issu cleanup
```

This phase Initiates shutdown of VMs with previous versions after running the activation. The cleanup phase concludes the ISSU process and the new software runs on all nodes in the system.

5. Commit the newly active software by using the **install commit** command.

For System Admin VM:

```
sysadmin-vm:0_RSP0# install commit
```

For XR VM:

```
RP/0/RSP0/CPU0:router# install commit
```

Installing Packages Using ISSU : Related Commands

Related Commands	Purpose
show install active	Displays the active packages on the system.
show install request	Displays the progress of the ISSU installation.
show issu	Displays the state or status of the ISSU operation. Effective with Cisco IOS XR version 6.5.1, this command is also supported for System Admin VM ISSU.
install prepare clean	Clears the existing prepared image. If there is a failure in the prepare phase, you can run this command to clear the prepared image.