# Migrating using Manual Method

This document provides the procedure to manually migrate from Cisco IOS XR to Cisco IOS XR 64-bit operating system on the ASR 9000 series routers.

# Supported Hardware

The supported IOS XR 64-bit Product ID (PID) is listed in the table.

| Type | Supported | Release |
|---|---|---|
| Fans PID | ASR-9904-FAN | - |
| | ASR-9006-FAN-V2 | - |
| | ASR-9010-FAN-V2 | - |
| | ASR-9912-FAN | - |
| | ASR-9922-FAN-V2 | - |
| PEMS PID | PWR-2KW-DC-V2 | - |
| | PWR-3KW-AC-V2 | - |
| | PWR-6KW-AC-V3 | - |
| | PWR-4.4KW-DC-V3 | - |
| Fabric PID | A99-SFC2 | 6.1.3 |
| | A99-SFC-S | 6.2.1 |
| | A99-SFC-T | 6.3.1 |

| Type | Supported | Release |
|---|---|---|
| RP, RSP | A99-RP2-SE<br>A99-RP2-TR | 6.1.3 |
| | A9K-RSP880-SE<br>A9K-RSP880-TR | 6.1.3 |
| | A99-RSP-TR<br>A99-RSP-SE | 6.2.1 |
| | A9K-RSP880-LT-TR<br>A9K-RSP880-LT-SE | 6.4.1 |

| Type | Supported | Release |
|---|---|---|
| Line card | A9K-4X100GE-SE | 6.1.3 |
| | A9K-8X100GE-L-SE | |
| | A9K-4X100GE-TR | |
| | A9K-8X100GE-L-TR | |
| | A9K-8X100GE-LB-TR | |
| | A9K-8X100GE-LB-SE | |
| | A9K-8X100GE-SE | |
| | A99-8X100GE-SE | |
| | A99-8X100GE-CM | |
| | A90-8X100GE-CM | |
| | A99-8X100GE-TR | |
| | A9K-8X100GE-TR | |
| | A99-12x100GE | 6.1.3 |
| | A99-12X100GE-CM | |
| | A9K-400GE-DWDM-TR | 6.2.1 |
| | A9K-MOD400-TR | 6.2.1 |
| | A9K-MOD400-SE | |
| | A9K-MOD400-CM | |
| | A9K-MOD200-TR | 6.3.1 |
| | A9K-MOD200-SE | |
| | A9K-MOD200-CM | |
| | A9K-24X10GE-1G-TR | 6.3.2 |
| | A9K-24X10GE-1G-SE | |
| | A9K-48X10GE-1G-TR | |
| | A9K-48X10GE-1G-SE | |
| | A9K-4X100GE | 6.4.1 |
| | A9K-24X10GE-1G-CM | 6.4.2 |
| | A9K-48X10GE-1G-CM | |

# Software Requirement

A version of IOS XR release based on your requirement as outlined in the table in Supported Hardware, on page 1 topic must run on the system before migrating to IOS XR 64 bit.

1. Upgrade the system to the minimum IOS XR release identified or higher.

2. Migrate from IOS XR release to any IOS XR 64 bit release.

# Prepare System for Migration

Prepare the system before migrating to IOS XR 64-bit to enable easy operation.

**Before you begin**

Before you proceed, ensure that you have completed these pre-requisites:

- **Connect port:** connect console port to the terminal server. After migration, the console port will be connected the IOS XR 64-bit plane. If necessary, the AUX port can be used to connect to the management plane.

- **Backup data:** back up data on the router, System Admin plane, and XR plane configurations to an external server. All data drives except for harddiskb:/ drive are formatted during migration. The harddiskb:/ drive, also known as eusb:/ drive is resized. All available data drives can be viewed using the **show media** command.

- **Configure processor:** Configure RSP4/RP2 to reach the external server to download IOS XR 64-bit ISO image.

**Procedure**

**Step 1**   Upgrade the ASR 9000 router to a minimum version as listed in table Supported Hardware, on page 1:

a) For every available line card in the system, identify the list of 64-bit releases from the Supported Hardware, on page 1 table, and select the latest release.

**Example:**

In the following specification, the minimum required release is 6.3.2.

| RP/LC | Release |
|---|---|
| A99-RP2-SE | 6.1.3 |
| A9K-8X100GE-TR | 6.1.3 |
| A99-SFC2 | 6.1.3 |
| A9K-400GE-DWDM-TR | 6.2.1 |
| A9K-24X10GE-1G-TR | 6.3.2 |

b) Upgrade to IOS XR image as listed in table Supported Hardware, on page 1.

```
RP/0/RSP0/CPU0:ios# admin install add source <path-to-image>/asr9k-mini-px.pie-6.1.3
asr9k-fpd-px-6.1.3 activate prompt-level none synchronous
```

For more information about upgrading the version, see *Upgrading and Managing Software on Cisco ASR 9000 Series Router* in the Cisco ASR 9000 Series Aggregation Services Router System Management Configuration Guide.

c) Verify that the packages are active.

```
RP/0/RSP0/CPU0:ios# show install active summary
Sun Oct 30 09:05:05.333 UTC
Default Profile:
  SDRs:
    Owner
  Active Packages:
    disk0:asr9k-mini-px-6.1.3
    disk0:asr9k-fpd-px-6.1.3
```

d) Commit the upgrade.

```
RP/0/RSP0/CPU0:ios# admin install commit
```

**Step 2** Upgrade FPD on RSP4, RP2, LC, and FC2 with unified FPDs:

**Important** FPD upgrade of new and supported hardware that will be used in IOS XR 64-bit after migration must be done in IOS XR.

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

**Note** During the upgrade of FPDs:

- Do not reload the router or power cycle the router.

- Do not do an online insertion and removal (OIR) of RP2, RSP4, LC, and FC2 cards.

- Check the console logs or syslogs to monitor the progress of the FPD upgrade. If you observe a failure in the logs, stop the upgrade process and contact the Cisco Technical Assistance Center.

**Step 3** Setup a user with `root-lr` privileges only in the XR plane.

XR Plane:

```
username root
group root-lr
password <password>
!
```

**Note** In IOS XR 64-bit, the `root-system` group exists only in the System Admin plane, and not in the XR plane. Instead, `root-lr` group with equal privileges must be setup in the XR plane.

**Step 4** Run script `resize_eusb` to clean up harddisk:/, harddiskb:/, and back up System Admin and XR plane config to harddiskb:/.

**Note** When searching for file in XR shell using **ls –ltr** in `/pkg/bin` for `migrate_to_eXR` or `resize_eusb`, use the complete file name. For example, **ls –ltr pkg/bin/resize_eusb** or **ls –ltr pkg/bin/migrate_to_eXR**. Wild card search is not supported in shell.

```
RP/0/RSP0/CPU0:ios# run /pkg/bin/resize_eusb

Removing content of harddisk:/dumper
Removing content of harddisk:/showtech
Media cleanup operation completed.
Checking harddisk: size.
Sufficient disk space available in harddisk:/ to copy eXR image.
Success: Pre-Migration Operation Completed.
Removing content of harddiskb:/
Saving current configuration to /harddiskb:/cXR_xr_plane.cfg. It will be available in /eusbb/
 after migration to IOS XR 64 bit.
Saving current admin configuration to /harddiskb:/cXR_admin_plane.cfg. It will be available
 in /eusbb/ after migration to
IOS XR 64 bit.
#exit
```

**Step 5**  Copy the converted IOS XR 64-bit configuration to harddiskb:/ drive.

For IOS XR 64-bit to load XR plane configuration automatically during boot up, copy IOS XR to IOS XR 64-bit converted configuration to `harddiskb:/cXR_xr_plane_converted_eXR.cfg`.

For IOS XR 64-bit to load System Admin plane configuration automatically during boot up, copy IOS XR to IOS XR 64-bit converted configuration to `harddiskb:/cXR_admin_plane_converted_eXR.cfg`.

**Step 6**  To create crypto keys automatically when k9sec rpm is installed, create `harddiskb:/crypto_auto_key_gen.txt`. In this text file, provide the crypto key CLI to be executed post migration. For example, `crypto key generate rsa 2048`.

**What to do next**

Ensure all supported RSPs, RPs, FCs, and LCs are present so that the new OS takes effect on all of the cards post migration.

For the list of supported IOS XR 64-bit Product ID (PID), see Supported Hardware, on page 1.

After the router is prepared for migration, run the migration script to migrate to IOS XR 64-bit OS.

# Migrate to IOS XR 64-Bit OS

Migration to IOS XR 64 bit is performed using a script `migrate_to_eXR` available in `/pkg/bin/`. The migration script performs these tasks:

- Copies GRUB files to `/harddiskb:/efi/boot/`

- Sets the boot mode on active RSP/RP to boot from `harddiskb:/`

- Sets the boot mode on standby RSP /RP to boot from active RSP/RP

**Before you begin**

- Ensure that you have completed  Prepare System for Migration, on page 4.

- Install the mandatory FPD PIE.

- While migrating, you might face migration abortion due to idle timeout. To avoid this, execute the command `line console exec-timeout 0` in `config` mode on the router:

```
RP/0/RP0/CPU0:router#config
Wed Apr  1 10:06:38.592 UTC
RP/0/RP0/CPU0:router(config)#line console exec-timeout 0
RP/0/RP0/CPU0:router(config)#commit
Wed Apr  1 10:06:51.281 UTC
RP/0/RP0/CPU0:router(config)#end
RP/0/RP0/CPU0:router#
```

**Note**   From IOS XR release 6.1.3, the golden ISO (GISO) migration tar file must be built to migrate from IOS XR to IOS XR 64 bit. For more information about building the GISO migration tar file, see *Customize Installation using GISO* chapter in Cisco ASR 9000 Series Aggregation Services Router Flexible Packaging Configuration Guide.

# Migrate Using eUSB Boot

To migrate using the 64-bit image stored in eUSB:

### Procedure

**Step 1**   Copy the IOS XR 64-bit tar image to harddisk:/ drive. The tar image must be copied only to harddisk:/ drive. This tar image can be mini or GISO tar file. The following example shows a mini tar file copied to harddisk:/ drive. The mini tar file is posted on CCO, and GISO tar file must be created based on required RPMS/SMU.

```
RP/0/RSP0/CPU0:ios# copy <image-location>/asr9k-mini-x64-migrate_to_eXR.tar6.1.3
harddisk:/asr9k-mini-x64-migrate_to_eXR.tar-6.1.3
```

**Step 2**   Run the migration script.

**Note**   Running the script with -r parameter will reload the router. Remove this parameter to reload manually.

```
RP/0/RSP0/CPU0:ios#run /pkg/bin/migrate_to_eXR -m eusb -r
Executing the migration script on the standby node 0/RSP1/CPU0...
Assigning booting mode...
Updated booting mode successfully
Finished executing on the standby node.
Found tar file asr9k-mini-x64-migrate_to_eXR.tar-6.1.3 in /harddisk:/.
This tar file should contain the ASR9K IOS XR 64 Bit ISO and boot files.
Extracting boot/ EFI/ from tar file...
Tar: blocksize = 20
x boot/certs/Root_Certificate_Store.bin, 1047 bytes, 3 tape blocks
x boot/certs/CertFile, 795 bytes, 2 tape blocks
x boot/certs/crl.der, 438 bytes, 1 tape blocks
x boot/bzImage, 4475087 bytes, 8741 tape blocks
x boot/initrd.img, 144796121 bytes, 282805 tape blocks
x boot/signature.initrd.img, 256 bytes, 1 tape blocks
x EFI/boot/grub.efi, 914463 bytes, 1787 tape blocks
x EFI/boot/grub.cfg, 530 bytes, 2 tape blocks
Finished extracting tar file.
Updated the image filename in /harddiskb:/EFI/boot/grub.cfg to
asr9k-mini-x64migrate_to_eXR.tar-6.1.3
Assigning booting mode...
Updated booting mode successfully
Now reloading the system to migrate to ASR9K IOS XR 64 bit.
Proceed with reload? [confirm]
```

```
RP/0/RP0/CPU0::This node received reload command.
Reloading in 5 secs
  Reboot on ASR9912 RP2 (0x100326) in slot 0
By reload via REBOOT_CAUSE_RELOAD (4000001)
Current time: 2016-10-30 11:20:05.651, Up time: 4h 16m 3s
Release mastership on RP2
Normal reboot

# exit
```

Migration script parameters:

| Script parameter | Parameter description |
|---|---|
| -m | media |
| -r | reload router |

**Step 3** Reload the router, if not reloaded in previous step using `-r` parameter.

```
 Reload router  (If not reloaded in previous step using -r

Preparing system for backup. This may take a few minutes especially for large configurations.

        Status report: node0_RSP0_CPU0: START TO BACKUP
        Status report: node0_RSP0_CPU0: BACKUP HAS COMPLETED SUCCESSFULLY
[Done]
Proceed with reload? [confirm]
```

# Migrate Using TFTPBOOT

To migrate using TFTPBOOT with management port connectivity:

### Procedure

Run the migration script `migrate_to_eXR` available in `/pkg/bin/`.

```
RP/0/RSP0/CPU0:ios#run /pkg/bin/migrate_to_eXR -s -p tftp -a 1.24.55.61 -n 255.255.255.0
-g 1.24.0.1 -u <image-location>/asr9k-mini-x64.iso
```

For help about the migration script, execute the command `run /pkg/bin/migrate_to_eXR -h`.

Migration script parameters:

| Script parameter | Parameter description |
|---|---|
| -a | IP_ADDRESS |
| -n | IP_SUBNET_MASK |
| -g | DEFAULT_GATEWAY |
| -u | SERVER_URL |
| -p | Protocol |

| Script parameter | Parameter description |
|:---:|:---:|
| -s | Static Settings |

System will boot with IOS XR 64-bit followed by automatic reload, and will boot from disk. The standby RSP and RP, if present, will boot from active RSP and RP.

### What to do next

Set username and password when the system prompts on the XR console. The user is also created on System Admin plane.

# Verify Migration

After running the migration script, verify that the system migrated to IOS XR 64 bit successfully.

### Before you begin

Ensure that you have completed  Prepare System for Migration, on page 4 and Migrate to IOS XR 64-Bit OS, on page 6.

### Procedure

**Step 1**  Run the **show platform** command to verify that RSP4, RP2, LC, and FC2 are in `IOS XR RUN` or `OPERATIONAL` state.

An `IOS XR RUN` or `OPERATIONAL` state indicates that the System Admin and XR planes are booted up. The system is ready for IOS XR 64-bit FPD upgrades and configuration. If an RSP4, RP2, FC2, or LC is not displayed, contact Cisco Technical assistance Center.

An example of **show platform** output from RSP0:

```
RP/0/RSP0/CPU0:ios#show platform
Sun Oct 30 11:25:04.315 UTC
Node            Type                    State           Config state
--------------------------------------------------------------------------
0/RSP0/CPU0     A9K-RSP880-SE(Active)   IOS XR RUN      NSHUT
0/RSP1/CPU0     A9K-RSP880-SE(Standby)  IOS XR RUN      NSHUT
0/FT0           ASR-9904-FAN            OPERATIONAL     NSHUT
0/0/CPU0        A9K-8X100GE-L-SE        IOS XR RUN      NSHUT
0/1/CPU0        A9K-8X100GE-L-SE        IOS XR RUN      NSHUT
0/PT0           A9K-AC-PEM-V3           OPERATIONAL     NSHUT
```

An example of **show platform** output from RP0:

```
RP/0/RP0/CPU0:ios#show platform
Sun Oct 30 11:30:01.907 UTC
Node            Type                    State           Config state
--------------------------------------------------------------------------
0/RP0/CPU0      A99-RP2-TR(Active)      IOS XR RUN      NSHUT
0/RP1/CPU0      A99-RP2-TR(Standby)     IOS XR RUN      NSHUT
0/FT0           ASR-9912-FAN            OPERATIONAL     NSHUT
0/FT1           ASR-9912-FAN            OPERATIONAL     NSHUT
0/0/CPU0        A9K-8X100GE-L-SE        IOS XR RUN      NSHUT
```

```
0/1/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/2/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/3/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/4/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/5/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/6/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/7/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/8/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/9/CPU0        A9K-8X100GE-L-SE          IOS XR RUN      NSHUT
0/FC0           A99-SFC2                  OPERATIONAL     NSHUT
0/FC1           A99-SFC2                  OPERATIONAL     NSHUT
0/FC2           A99-SFC2                  OPERATIONAL     NSHUT
0/FC3           A99-SFC2                  OPERATIONAL     NSHUT
0/FC4           A99-SFC2                  OPERATIONAL     NSHUT
0/FC6           A99-SFC2                  OPERATIONAL     NSHUT
0/PT0           A9K-AC-PEM-V2             OPERATIONAL     NSHUT
0/PT1           A9K-AC-PEM-V2             OPERATIONAL     NSHUT
0/PT2           A9K-AC-PEM-V2             OPERATIONAL     NSHUT
```

An example of **show platform** output from System Admin:

```
sysadmin-vm:0_RP0# show platform
Sun Oct 30 11:37:04.862 UTC
Location   Card Type              HW State      SW State      Config State
-------------------------------------------------------------------------
0/0        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/1        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/2        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/3        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/4        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/5        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/6        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/7        A9K-8x100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/8        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/9        A9K-8X100GE-L-SE       OPERATIONAL   OPERATIONAL   NSHUT
0/RP0      A99-RP2-TR             OPERATIONAL   OPERATIONAL   NSHUT
0/RP1      A99-RP2-TR             OPERATIONAL   OPERATIONAL   NSHUT
0/FC0      A99-SFC2               OPERATIONAL   N/A           NSHUT
0/FC1      A99-SFC2               OPERATIONAL   N/A           NSHUT
0/FC2      A99-SFC2               OPERATIONAL   N/A           NSHUT
0/FC3      A99-SFC2               OPERATIONAL   N/A           NSHUT
0/FC4      A99-SFC2               OPERATIONAL   N/A           NSHUT
0/FC6      A99-SFC2               OPERATIONAL   N/A           NSHUT
0/FT0      ASR-9912-FAN           OPERATIONAL   N/A           NSHUT
0/FT1      ASR-9912-FAN           OPERATIONAL   N/A           NSHUT
0/PT0      A9K-AC-PEM-V2          OPERATIONAL   N/A           NSHUT
0/PT1      A9K-AC-PEM-V2          OPERATIONAL   N/A           NSHUT
0/PT2      A9K-AC-PEM-V2          OPERATIONAL   N/A           NSHUT
```

**Step 2**     Run the **show hw-module fpd** command from XR or System Admin mode to check if an FPD upgrade is required. If an upgrade is required, perform step 3, else go to step 4.

The FPD pie is bundled with the ISO image installed on the router.

```
RP/0/RSP0/CPU0:ios#show hw-module fpd
Sun Oct 30 12:05:00.674 UTC
                                                           FPD Versions
                                                           ==================
Location   Card type      HWver FPD device      ATR Status   Running Programd
-----------------------------------------------------------------------------
0/RSP0     A9K-RSP880-SE  1.0   Alpha-FPGA           NEED UPGD 0.10    0.10
0/RSP0     A9K-RSP880-SE  1.0   CBC                  CURRENT   34.38   34.38
0/RSP0     A9K-RSP880-SE  1.0   Cha-FPGA             CURRENT   0.04    0.04
0/RSP0     A9K-RSP880-SE  1.0   IPU-FPGA             NEED UPGD 0.40    0.40
0/RSP0     A9K-RSP880-SE  1.0   IPU-FSBL             CURRENT   1.80    1.80
```

```
0/RSP0     A9K-RSP880-SE    1.0   IPU-Linux          CURRENT   1.80   1.80
0/RSP0     A9K-RSP880-SE    1.0   Omega-FPGA         CURRENT   0.11   0.11
0/RSP0     A9K-RSP880-SE    1.0   Optimus-FPGA       NEED UPGD 0.08   0.08
0/RSP0     A9K-RSP880-SE    1.0   Rommon             CURRENT  10.48  10.48


-------------------------------Truncated------------------------------------

RP/0/RSP0/CPU0:ios#
```

A NEED UPGD status indicates that an FPD upgrade of the card is required.

**Step 3**    Run the **upgrade hw-module location all fpd all** command to upgrade the FPD from XR or System Admin plane.

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

**Note**    During the upgrade of FPDs:

- Do not reload the router or power cycle the router.

- Do not do an online insertion and removal (OIR) of RP2, RSP4, LC, and FC2 cards.

- Check the console logs or syslogs to monitor the progress of the FPD upgrade. If you observe a failure in the logs, stop the upgrade process and contact the Cisco Technical Assistance Center.

**Step 4**    Reload the router to upgrade with IOS XR 64-bit FPD.

```
sysadmin-vm:0_RSP0# hw-module location all reload
Sun Oct  30 13:05:56.202 UTC
Reload hardware module ? [no,yes]  yes
```

**Step 5**    Verify that the status of all FPDs is CURRENT.

```
RP/0/RSP0/CPU0:ios#show hw-module fpd

RP/0/RSP0/CPU0:ios#show hw-module fpd
Sun Oct 30 13:48:42.178 UTC
                                                        FPD Versions
                                                        =================
Location   Card type         HWver FPD device   ATR Status   Running Programd
--------------------------------------------------------------------------
0/RSP0     A9K-RSP880-SE     1.0   Alpha-FPGA        CURRENT   0.14   0.14
0/RSP0     A9K-RSP880-SE     1.0   CBC               CURRENT  34.38  34.38
0/RSP0     A9K-RSP880-SE     1.0   Cha-FPGA          CURRENT   0.04   0.04
0/RSP0     A9K-RSP880-SE     1.0   IPU-FPGA          CURRENT   0.42   0.42
0/RSP0     A9K-RSP880-SE     1.0   IPU-FSBL          CURRENT   1.80   1.80
0/RSP0     A9K-RSP880-SE     1.0   IPU-Linux         CURRENT   1.80   1.80
0/RSP0     A9K-RSP880-SE     1.0   Omega-FPGA        CURRENT   0.11   0.11
0/RSP0     A9K-RSP880-SE     1.0   Optimus-FPGA      CURRENT   0.12   0.12
0/RSP0     A9K-RSP880-SE     1.0   Rommon            CURRENT  10.48  10.48
0/RSP1     A9K-RSP880-SE     1.0   Alpha-FPGA        CURRENT   0.14   0.14
0/RSP1     A9K-RSP880-SE     1.0   CBC               CURRENT  34.38  34.38
0/RSP1     A9K-RSP880-SE     1.0   Cha-FPGA          CURRENT   0.04   0.04
0/RSP1     A9K-RSP880-SE     1.0   IPU-FPGA          CURRENT   0.42   0.42
0/RSP1     A9K-RSP880-SE     1.0   IPU-FSBL          CURRENT   1.80   1.80
0/RSP1     A9K-RSP880-SE     1.0   IPU-Linux         CURRENT   1.80   1.80
0/RSP1     A9K-RSP880-SE     1.0   Omega-FPGA        CURRENT   0.11   0.11
0/RSP1     A9K-RSP880-SE     1.0   Optimus-FPGA      CURRENT   0.12   0.12
0/RSP1     A9K-RSP880-SE     1.0   Rommon            CURRENT  10.48  10.48
0/FT0      ASR-9904-FAN      1.0   CBC               CURRENT  31.05  31.05
0/0        A9K-8X100GE-L-SE  0.24  CBC               CURRENT  38.23  38.23
```

```
0/0       A9K-8X100GE-L-SE  0.24  Dalla           CURRENT   1.06   1.06
0/0       A9K-8X100GE-L-SE  0.24  IPU-FPGA        CURRENT   1.76   1.76
0/0       A9K-8X100GE-L-SE  0.24  IPU-FSBL        CURRENT   1.78   1.78
0/0       A9K-8X100GE-L-SE  0.24  IPU-Linux       CURRENT   1.78   1.78


-----------------------------------Truncated--------------------------------
RP/0/RSP0/CPU0:ios#
```

**Step 6**    Install required RPMs if mini.iso is installed on the router. If full.iso is installed, only k9 sec package is required to be installed on the router.

Configure RSP4/RP2 to reach the external server to install the required RPMs.

In the following sample output, with mini.iso installed on the router, all the RPMs are installed.

```
RP/0/RSP0/CPU0:ios# install add source <image-location>/asr9k-mcast-x64-2.0.0.0r613.x86_64.rpm

asr9k-eigrp-x64-1.0.0.0-r613.x86_64.rpm  asr9k-mgbl-x642.0.0.0-r613.x86_64.rpm
asr9k-isis-x64-1.0.0.0-r613.x86_64.rpm
asr9k-mpls-tersvp-x64-1.0.0.0-r613.x86_64.rpm asr9k-k9sec-x64-1.1.0.0r613.x86_64.rpm
asr9k-mpls-x64-2.0.0.0-r613.x86_64.rpm asr9k-li-x64-1.1.0.0r613.x86_64.rpm
asr9k-optic-x64-1.0.0.0-r613.x86_64.rpm
asr9k-m2m-x64-2.0.0.0r613.x86_64.rpm asr9k-ospf-x64-1.0.0.0-r613.x86_64.rpm

RP/0/RSP0/CPU0:ios# install activate id 1 << (Pick ID from install add step)
 Or
RP/0/RSP0/CPU0:ios# install activate <rpm 1> <rpm 2> <rpm 3> <rpm n>
RP/0/RSP0/CPU0:Oct 30 14:44:03.316 : sdr_instmgr[1139]: %INSTALL-INSTMGR-6OPERATION_SUCCESS
 :
Install operation 2 finished successfully

RP/0/RSP0/CPU0:ios# install commit
Wed Oct 30 13:56:29.705 UTC
Oct 30 14:46:30 Install operation 3 started by root:   install commit
```

**Step 7**    Verify that the RPMs are successfully installed.

```
RP/0/RSP0/CPU0:ios#show install committed
Sun Oct 30 15:06:15.991 UTC
Node 0/RSP0/CPU0 [RP]
  Boot Partition: xr_lv0
  Committed Packages: 12
        asr9k-xr-6.1.1 version=6.1.3 [Boot image]
        asr9k-eigrp-x64-1.0.0.0-r613
        asr9k-isis-x64-1.0.0.0-r613
        asr9k-mcast-x64-2.0.0.0-r613
        asr9k-mgbl-x64-2.0.0.0-r613
        asr9k-mpls-te-rsvp-x64-1.0.0.0-r613
        asr9k-k9sec-x64-1.1.0.0-r613
        asr9k-li-x64-1.1.0.0-r613
        asr9k-m2m-x64-2.0.0.0-r613
        asr9k-mpls-x64-2.0.0.0-r613
        asr9k-optic-x64-1.0.0.0-r613
        asr9k-ospf-x64-1.0.0.0-r613
```

The router is migrated to IOS XR 64 bit successfully.