



Migrating from Cisco IOS XR 32-bit to 64-bit OS

This document provides the procedure to migrate from Cisco IOS XR 32-bit to 64-bit operating system (OS) on the ASR9000 series routers.

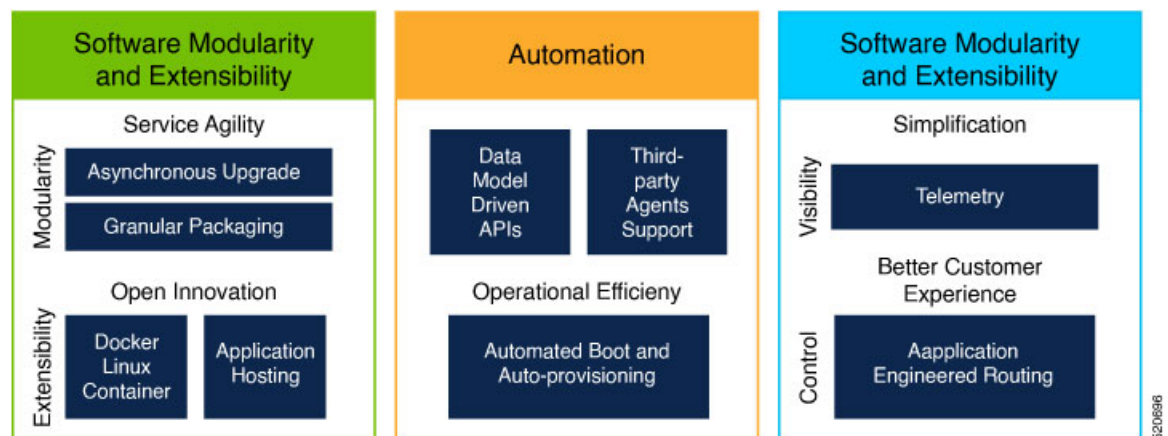
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Why Migrate to IOS XR 64-Bit OS?

IOS XR 64-bit operating system (OS) is the next-generation IOS XR OS that runs on virtualized environment with underlying 64-bit Linux kernel. The Linux kernel distinctively separates the admin and the routing plane and their functions.

The key capabilities of IOS XR 64-bit OS include the following cloud-scale operational enhancements:

Figure 1: Cloud-scale Operational Enhancements



- Industry trends—Significantly improved ability to track technology, performance, scale and security trends with 64-bit processors, operating systems and third party applications.

- Software modularity—Redhat Packet Manager (RPM)-based software packaging and management with major features delivered as independent packages To explore easy routine upgrades and maintenance with modularized RPM packages, see the *System Setup and Software Installation Guide for Cisco ASR 9000 Series Routers*.
- Telemetry—push toward smarter visibility of the network by streaming data to a configured receiver for analysis and troubleshooting purposes. To get started with streaming telemetry data using model-driven telemetry, see the *Telemetry Configuration Guide for Cisco ASR 9000 Series Routers*.
- Application Hosting—leverage hosting of third-party applications in a container environment To take advantage of containers and host applications, see the *Application Hosting Configuration Guide for Cisco ASR 9000 Series Routers*.
- Data Models—automate configurations that belong to multiple routers across the network. To automate configuration tasks across heterogeneous devices in a network, see the *Programmability Configuration Guide for Cisco ASR 9000 Series Routers*.

For more information, see the [Cisco Software Innovations for Cloud-Scale Networking ebook](#).

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 A99-RP2-TR	6.1.3
	A9K-RSP880-SE A9K-RSP880-TR	6.1.3
	A99-RSP-TR A99-RSP-SE	6.2.1
	A9K-RSP880-LT-TR 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 2](#) 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 2](#):
- a) For every available line card in the system, identify the list of 64-bit releases from the [Supported Hardware, on page 2](#) 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 2](#).

```
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
```

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 2](#).

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



Note

- The IOS XR 32-bit to 64-bit conversion script does not support file names exceeding 48 characters.
 - The IOS XR 32-bit operating system has a maximum file size limit of 2 GB. Ensure that GISO does not exceed that limit.
 - When using the migration tar file, ensure that it is the only tar file on `harddisk:/` drive.
-

Before you begin

- Ensure that you have completed [Prepare System for Migration, on page 5](#).
- 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:

```
Router# config
Router(config)# line console exec-timeout 0
Router(config)# commit
Router(config)# end
```



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 *System Setup and Software Installation Guide for Cisco ASR 9000 Series Routers*.

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.

```
Router# 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.

```
Router# 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/`.

Example:

```
Router# 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
-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.

Note Files related to 32-bit installation are deleted after the software is migrated to 64-bit OS.

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 5](#) and [Migrate to IOS XR 64-Bit OS, on page 7](#).

Procedure

Step 1

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

Example:

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
```

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.

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.

Example:

```
Router# show hw-module fpd
Sun Oct 30 12:05:00.674 UTC
```

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					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-----

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

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.

Example:

```
Router# 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 syslog 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.

Example:

```
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`.

Example:

```

Router# show hw-module fpd
Sun Oct 30 13:48:42.178 UTC

                                         FPD Versions
                                         =====
Location   Card type           HWver FPD device           ATR Status   Running Program
-----
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-----

```

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.

Example:

```

Router# 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

```

Step 7 Activate the RPMs.

Example:

```
Router# install activate id 1
```

or

```

Router# 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

```

Step 8 Commit the operation.

Example:

```
Router# install commit
Wed Oct 30 13:56:29.705 UTC
Oct 30 14:46:30 Install operation 3 started by root: install commit
```

Step 9 Verify that the RPMs are successfully installed.

Example:

```
Router# 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.

