

XRv 9000 General Upgrade Guideline

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Introduction

The Cisco IOS XRv 9000 Router is a cloud-based router that is deployed on a virtual machine (VM) instance on x86 server hardware with 64-bit IOS XR software. Cisco IOS XRv 9000 Router provides traditional Provider Edge services in a virtualized form factor, as well as virtual Route Reflector capabilities. Cisco IOS XRv 9000 Router is based on Cisco IOS XR software, so it inherits and shares the wide range of network protocol functionality available on other IOS XR platforms.

This document introduces the options and procedures to upgrade XRv 9000 Virtual Routers.

Requirements

Cisco recommends that you have knowledge of these topics:

- Basic knowledge of Virtual Machines.
- Knowledge about Cisco IOS XRv 9000 Router installed either on VMware or KVM Hypervisors.
- Basic Knowledge of Cisco IOS XR CLI.

Components Used

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

- Cisco IOS XRv 9000 Router -xrv9k-xr-6.1.4 - The old release

- Cisco IOS XRv 9000 Router -xrv9k-xr-6.2.2 - The new release

The information in this document was created from devices in a specific laboratory environment. All the devices used in this document were initialized with a default configuration. It is recommended to understand the potential impact of any command in the production network.

XRv 9000 Upgrade Options

There are 2 options available in order to upgrade the XRv9000 Router:

1. Install a new XRv 9000 VM from scratch with the new release and migrate the service to the new instance
2. Upgrade the current instance to the new release with standard XR upgrade procedure

Note:

Option 1 provides more flexibility since the VM configuration can be adjusted while the new release is installed. It's also more issue-free.

Option 2 is more straightforward and there is no need to migrate the service. The downtime is normally shorter. But the software bugs of XRv 9000 could affect the upgrade procedure. The list of some known issues which are fixed in latest versions as follows:

- [CSCve31876](#) (version mismatch between cal and host after install add/install activate/reload)
- [CSCvd93807](#) (All lxc's and host remain stuck in booting during v2 activation)
- [CSCvf89481](#) (All LXC's failed to bootup/unresponsive after system reload without install commit after SU)

Install a New XRv 9000 Instance

You can follow the installation guide to install the new XRv 9000 instance. Then you need to migrate the configuration from the old instance to the new instance to restore the service at the new release.

[Cisco IOS XRv 9000 Router Installation and Configuration Guide](#)

Upgrade the Current XRv 9000 Instance

This method follows the standard XR installation procedure.

Step 1. Get your new release file

The ISO for the new release should be ready at a file server. Supported protocols are as follows.

- FTP
- SFTP
- TFTP
- SCP

- HTTP

Note: Please check the MD5 checksum of the image files at the server

The MD5 checksum is in the README file. For example, README-fullk9-R-XRV9000-612.txt has

```
# md5 values of files listed in tar file are listed below
9658016aa10c820c8a90c9c747a7cc7a  xrv9k-fullk9-x.vrr-6.2.2.iso
86632aa97f0f095cbacf0c93f206987e  xrv9k-fullk9-x.vrr-6.2.2.ova
80e8b6a7f38fd7767300dc46341153df  xrv9k-fullk9-x.vrr-6.2.2.qcow2.tar
6f0d29818493810c663dd0e10919b2ff  xrv9k-fullk9-x.vrr.virsh-6.2.2.xml
```

You can use the MD5 checksum tool at the server and compare the output. Below example is for md5sum at Linux platforms. You can see the output matches the value in the README file.

```
[cisco@syd-iox-ftp 6.2.2]$ md5sum xrv9k-fullk9-x.vrr-6.2.2.iso
9658016aa10c820c8a90c9c747a7cc7a  xrv9k-fullk9-x.vrr-6.2.2.iso
```

Step 2. Install add the image into router's repository

Install add source <location of the new ISO file>

```
RP/0/RP0/CPU0:9000XRV-1#install add source tftp://10.66.70.170/XRV9k/6.2.2 xrv$
Wed Oct 11 21:02:43.251 UTC
Oct 11 21:02:44 Install operation 1 started by cisco:
  install add source tftp://10.66.70.170/XRV9k/6.2.2 xrv9k-fullk9-x.vrr-6.2.2.iso
Oct 11 21:02:46 Install operation will continue in the background
```

```
RP/0/RP0/CPU0:9000XRV-1#sh install request
Wed Oct 11 21:02:52.243 UTC
```

The install add operation 1 is 30% complete

```
RP/0/RP0/CPU0:Oct 11 21:23:01.924 : sdr_instmgr[1171]: %INSTALL-INSTMGR-2-OPERATION_SUCCESS :
Install operation 1 finished successfully
```

Examples:

- Install add source tftp://server/directory/ < image.iso>
- Install add source ftp://user@server/directory/ < image.iso>
- Install add source sftp://user@server/directory/ < image.iso>
- Install add source scp://user@server/directory/ < image.iso>
- Install add source http://server/directory/ < image.iso>

You can use "show install repository" to confirm if the image has been added successfully.

```
RP/0/RP0/CPU0:9000XRV-1#show install inactive
Wed Oct 11 22:40:11.079 UTC
1 inactive package(s) found:
  xrv9k-fullk9-x-6.2.2
```

```
RP/0/RP0/CPU0:9000XRV-1#show install repository
Wed Oct 11 22:40:16.497 UTC
2 package(s) in XR repository:
  xrv9k-xr-6.1.4
  xrv9k-fullk9-x-6.2.2
```

Note: If "install add" aborts, please check "show install log" for the reason. Some of the reasons

are as follows:

- Reachibility to the file server
- Incorrect file path
- Incorrect username/password
- Incorrect syntax of the command
- File transfer issue. If the system complains "md5sum does not match. The iso might be corrupted" and the MD5 checksum is correct at the file server, please retry "install add"

Step 3. Prepare the new release

It is possible to prepare these installable files before activation. During the prepare phase, pre-activation checks are made and the components of the installable files are loaded on to the router setup. The prepare process runs in the background and the router is fully usable during this time. When the prepare phase is over, all the prepared files can be activated instantaneously. The advantages of preparation before activation are:

- If the installable file is corrupted, the prepare process fails. This provides an early alert of the problem. If the corrupted file was activated directly, it can cause router malfunction.
- Direct activation of ISO image for system upgrade takes considerable time during which the router is not usable. However, if the image is prepared before activation, not only does the prepare process run asynchronously, but when the prepared image is subsequently activated, the activation process too takes very less time. As a result, the router downtime is considerably reduced.

```
RP/0/RP0/CPU0:9000XRV-1#install prepare xrv9k-fullk9-x-6.2.2
Wed Oct 11 22:49:26.222 UTC
Oct 11 22:49:27 Install operation 3 started by cisco:
  install prepare pkg xrv9k-fullk9-x-6.2.2
Oct 11 22:49:27 Package list:
Oct 11 22:49:27      xrv9k-fullk9-x-6.2.2
Oct 11 22:49:31 Install operation will continue in the background
...
RP/0/RP0/CPU0:9000XRV-1#show install prepare
Wed Oct 11 22:54:33.325 UTC
Prepared Boot Image:  xrv9k-fullk9-x-6.2.2
Prepared Boot Partition:  /dev/panini_vol_grp/xr_lv3
Restart Type: Reboot
Prepared Packages:
  xrv9k-fullk9-x-6.2.2
```

Use the "install activate" command to activate the prepared packages.
Use the "install prepare clean" command to undo the install prepare operation.

Note: "install prepare" and "install activate" can use "install operation id" as the parameter to avoid the trouble to give all packages names. The above command could be "install prepare id 1". You can find the ID 1 from the output of step 2.

Step 4: Activate the new release

Since we prepared the image in step 3, you can just enter "install activate" to activate the new release.

```
RP/0/RP0/CPU0:9000XRV-1#install activate
Wed Oct 11 22:56:04.184 UTC
Oct 11 22:56:05 Install operation 4 started by cisco:
install activate
This install operation will reload the sdr, continue?
[yes/no]:[yes]
Oct 11 22:56:09 Install operation will continue in the background
```

```
RP/0/RP0/CPU0:9000XRV-1#show install request
Wed Oct 11 22:57:18.437 UTC
```

The install service operation 4 is 20% complete

```
RP/0/RP0/CPU0:9000XRV-1#RP/0/RP0/CPU0:Oct 11 22:58:01.339 : sdr_instmgr[1171]: %INSTALL-INSTMGR-
2-OPERATION_SUCCESS : Install operation 4 finished successfully
Oct 11 22:58:02 Install operation 4 finished successfully
RP/0/RP0/CPU0:Oct 11 22:58:02.825 : sdr_instmgr[1171]: %INSTALL-INSTMGR-2-SYSTEM_RELOAD_INFO :
The whole system will be reloaded to complete install operation 4
```

Otherwise, you need to enter "install activate xrv9k-fullk9-x-6.2.2" or "install activate id 3".

Note: This operation will reload the router

After the router comes back up, it runs with 6.2.2 as the active release.

```
RP/0/RP0/CPU0:9000XRV-1#sh install active
Wed Oct 11 23:04:17.872 UTC
Node 0/RP0/CPU0 [RP]
Boot Partition: xr_lv5
Active Packages: 1
    xrv9k-xr-6.2.2 version=6.2.2 [Boot image]
```

Step 5. Install commit

This step will commit the last upgrade permanently after the router comes back up. Otherwise, the router will rollback to the previous release after next reload.

You can use "show install commit" and "show install active" to verify if the upgrade is successful.

```
RP/0/RP0/CPU0:9000XRV-1#install commit
Wed Oct 11 23:05:45.176 UTC
Oct 11 23:05:46 Install operation 5 started by cisco:
install commit
Oct 11 23:05:47 Install operation will continue in the background
```

```
RP/0/RP0/CPU0:9000XRV-1#RP/0/RP0/CPU0:Oct 11 23:05:53.232 : sdr_instmgr[1184]: %INSTALL-INSTMGR-
2-OPERATION_SUCCESS : Install operation 5 finished successfully
```

Known issues

Upgrade is aborted due to "failed to prepare logical volume for new VM"

This issue could be seen before 6.1.4. Please retry when you hit this issue. If it still fails, please use option 1 instead.

Router boots up with old release after install activate

This issue could be seen before 6.2.2. Please retry when you hit this issue. If it still fails, please use option 1 instead.

Related Information

- You can refer to this link for more information on provisioning the VM:
[Cisco IOS XRv 9000 Router Installation and Configuration Guide-Chapter: Preparing for Installation](#)
- You can refer to this link for more information about system requirements for XRv 9000 release 6.2.2:
[Release Notes for Cisco IOS XRv 9000 Router,IOS XR Release 6.2.2](#)
- You can refer to this link to get more information about Cisco IOS XRv 9000 Router Installation and Configuration Guide:
[Cisco IOS XRv 9000 Router Installation and Configuration Guide- Chapter: Installing the Cisco IOS XR...](#)
- You can refer to this link for further information:
[Cisco IOS XRv 9000 Router Installation and Configuration Guide- Chapter: Cisco IOS XRv 9000 Router S...](#)
- You can refer to these links for licensing of XRv 9000:
[Smart Account Manager Satellite](#)
[Cisco Smart Software Manager Satellite Data Sheet](#)