Cisco Software Manager (CSM)
Migrate to ASR9K-X64 (64-bit)

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ASR 9000 64 Bit Migration User Guide

This document will help you in getting started with your migration from ASR9K standard 32 bit image to the new ASR9K-X64 (64-bit) image in three major steps:

- Pre-Migrate – System preparation

- Migrate – Installation of new 64-bit OS

- Post-Migrate – Post-installation actions

Notes on Device Configurations

Important: The ASR 9000 operational configuration is not completely compatible with ASR9K-X64, therefore it must be converted/migrated* for use in the 64-bit version. A copy of the 32-bit configuration is backed up for reference.

You have the following two options:

Option 1: Migration of On-box Configurations	Option 2: Loading Custom Configurations
• CSM will migrate the "on-box" ASR9K configurations (admin & IOS-XR) only	• CSM will migrate the "on-box" ASR9K admin configuration • In addition, CSM will load any valid ASR9K-X64 user-specified IOS-XR configuration

* Configuration migration is accomplished using the NoX tool. For more information, please visit this site:
http://xrgeeks.cisco.com/sox/Nox_Tool.html

Migration Pre-requisites

- In order to migrate to ASR9K-X64 images, your release version MUST be at release 5.3.3 or greater.

- Supported hardware(RP/RSP/FAN/PEM/Fabric). The full list is on next page. The unsupported line cards will not boot up after migration.

- User must provide console connection for all devices on CSM.

- All nodes are in their appropriate final states:

  IOS XR RUN
  PRESENT
  READY
  OK

- FPD package must be already installed on device.

- Must be able to ping the server repository (TFTP, FTP, or SFTP)

Migration Pre-requisites (Cont.)

- Supported hardware: (*Note: Card types in red are only supported in 6.2.1 onwards, everything else is supported in 6.1.1 onwards.)

Supported RP/ RSP	Supported Line Cards	Supported Fans PIDs	Supported PEMS PIDs	Supported Fabric PIDs
ASR-9922-RP-SE	A9K-4X100GE-SE	ASR-9904-FAN	PWR-2KW-DC-V2	A99-SFC2
ASR-9922-RP-TR	A9K-4X100GE-TR	ASR-9006-FAN-V2	PWR-3KW-AC-V2	*A99-SFC-S
A99-RP2-SE	A99-8X100GE-CM	ASR-9010-FAN-V2	PWR-6KW-AC-V3	
A99-RP2-TR	A99-8X100GE-SE	ASR-9910-FAN	PWR-4.4KW-DC-V3	
A9K-RSP880-SE	A99-8X100GE-TR	ASR-9912-FAN		
A9K-RSP880-TR	A9K-8X100GE-CM	ASR-9922-FAN-V2		
*A99-RSP-SE	A9K-8X100GE-SE			
*A99-RSP-TR	A9K-8X100GE-TR			
	A9K-8X100GE-L-SE			
	*A9K-8X100GE-L-TR			
	A99-12x100GE			

CSM Migration to ASR9K-X64

- CSM allows for the migration from IOS-XR (classic) to IOS-XR 64 bit for ASR9K devices.

- **How to access**: Tools > Migrate to ASR9K-X64.

- **Actions**: Pre-Migrate, Migrate and Post-Migrate.

- Pre-Migrate prepares the device(s) for migration. Migrate updates settings and reloads the device(s) to boot ASR9K-X64 image. Post-Migrate loads migrated configurations and upgrades FPD's upon successful booting. (More details later)

Schedule Migration

Install Action	Select Desirable Migration Actions
Scheduled Time	04/20/2016 02:00 PM 📅
Custom Command Profile	Optional

Continue   Cancel

Scheduling a Migration

- Install Action dependencies:
  - In order to complete migration, all three actions must have successfully executed.
  - Install Actions can be scheduled all at once or one at a time, but they must occur in the order shown below.
  - For example, the Migrate action cannot be scheduled unless Pre-Migrate has already run or is scheduled to run.
  - Failures in pre-requisite actions will suspend the execution of any remaining options.
  - Deleting the pre-requisite will also delete all actions that are dependent on it.
- Choose desirable scheduled time.

Schedule Migration

Install Action	×Pre-Migrate ×Migrate ×Post-Migrate
Scheduled Time	04/20/2016 02:00 PM
Custom Command Profile	Optional

Continue   Cancel

Scheduling a Migration (Cont.)

- (Optional) Use the Custom Command Profile if you wish to capture any CLI command output. These custom commands will be executed **before** each selected migration action executes.

  - Note: By default, the following CLI commands already run in their appropriate stages and do not need to be duplicated in the Custom Command Profile: admin show running-config, show running-config, show platform.

- Click Continue to trigger the Migration Wizard.

Schedule Migration

Install Action	× Pre-Migrate × Migrate × Post-Migrate
Scheduled Time	04/20/2016 02:00 PM 🗓
Custom Command Profile	× show filesystem

Continue   Cancel

Scheduling a Migration (Cont.)

Depending on the migration action(s) selected, the Migration Wizard will prompt the user with different options.

For example, if all migration actions are selected, you will start on the screen shown to the right in the "Select Host" section.

In this first section, you will select the device(s) to schedule the migration actions on.

x

Migrate to ASR9K-X64

Select Host	Pre-Migrate	Post-Migrate

Region San Jose

Role

Software Version

Available Hosts - showing 12

Filter

Hades
Hera
Keres
MTRON21
Mahendra
NCS6K
Uranus
Venus
a9k-Issus
dummy

Selected Hosts - showing 2

Filter

Samurai-1
Tardis-4

Next

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Scheduling a Migration (Cont.)

- If you selected "Pre-Migrate", you will be prompted to specify a TFTP, FTP or SFTP server repository and the directory. At this stage, only the following two packages should be selected:

  1. The ASR9K-X64 tar file containing the ISO image and boot files. The filename must match wildcard expression **asr9k*.tar*.** Example: asr9k-x64-mini.tar-6.1.1

  2. And the mandatory unified FPD SMU

     (asr9k-px-<release>.CSCuy10934.pie)
          *Filename subjected to change.

- (Optional) You can select a customized IOS-XR configuration file for CSM to load during Post-Migrate. If so, the existing IOS-XR configurations on device will be ignored.

- Alternatively, if no file is provided, CSM will migrate and load the existing configurations.

- Hover over the information icon for instructions.

Migrate to ASR9K-X64

Select Host	Pre-Migrate	Post-Migrate

Select Software Packages ⓘ

Server Repository: Building 20 - 223.255.254.245

Server Directory:

Auto Select ASR9K-X64 Image

Available Packages - showing 28

Filter

Samurai-1_admin.cal
Samurai-1_admin.cfg
Samurai-1_admin.iox
Samurai-1_xr.cfg
Samurai-1_xr.iox
Venus_admin.cal
Venus_admin.cfg
Venus_admin.iox
Venus_xr.cfg
Venus_xr.iox

Selected Packages - showing 2

Filter

asr9k-full-x64.iso
asr9k-px-5.3.3.CSCuy10934.pie

Select a custom ASR9K-X64 config file to be loaded after migration: ⓘ

Optional

Previous   Next

Scheduling a Migration (Cont.)

- If you selected "Post-Migrate", you will be prompted to choose whether you'd like to commit the IOS-XR configurations with best effort during this stage.

- Click "Schedule" to schedule the actions.

- The actions can only be scheduled if CSM confirms that:
  - The Pre-requisite for the selected actions is scheduled or completed successfully.
  - The latest configuration migration tool NoX from CCO is in csm_data/ migration/, if not, CSM will download it before scheduling the actions.

Migrate to ASR9K-X64

Select Host	Post-Migrate

When the IOS-XR configurations, either migrated by CSM or provided by you during Pre-Migrate, cannot be applied on eXR directly, would you like CSM to:

- ● **Abort the configuration commit**
- ○ **Commit the configurations with best effort**

Previous

Schedule

Install Dashboard

- After scheduling the migration actions, CSM will redirect you to the install dashboard, where you can:
  - Monitor the job in progress by checking the status and clicking into the Session Logs.
  - Edit scheduled or failed jobs and resubmit them.
  - Check completed jobs.
  - Delete scheduled or failed jobs.

⚙ **Install Dashboard**

Action 🔗 ▾

| Scheduled 6 | In Progress 0 | Failed 0 | Completed (showing 94 of 94) |

10 ⬍ records per page   Search: [   ]

Hostname	Install Action	Dependency	Scheduled Time	Packages	Created By	Action
Samurai-1	Pre-Migrate		04/20/2016 02:00 PM	asr9k-full-x64.iso asr9k-px-5.3.3.CSCuy10934.pie	root	Delete
Samurai-1	Migrate	Another Installation	04/20/2016 02:00 PM		root	Delete
Samurai-1	Post-Migrate	Another Installation	04/20/2016 02:00 PM		root	Delete
Tardis-4	Pre-Migrate		04/20/2016 02:00 PM	asr9k-full-x64.iso asr9k-px-5.3.3.CSCuy10934.pie	root	Delete
Tardis-4	Migrate	Another Installation	04/20/2016 02:00 PM		root	Delete
Tardis-4	Post-Migrate	Another Installation	04/20/2016 02:00 PM		root	Delete

Showing 1 to 6 of 6 entries

← Previous 1 Next →

Walk-Through: Pre-Migrate

The CSM Pre-Migrate step is a collection of automated tasks designed to ensure your system is prepared for migration. Actions include (but are not limited to):

- Hardware and software checks

- Romove content from harddiskb:/ and harddisk:/dumper and harddisk:/showtech

- Copy, conversion and storage of existing operational configuration (to be applied later in the Post-Migrate step)

- Copy the ASR9K-X64 tar file to harddisk:/

- Install the unified FPD SMU, check relevant FPD versions and perform FPD upgrades if necessary.

Session Logs: Pre-Migrate

| Venus | Pre-Migrate | 04/20/2016 02:04 PM | 04/20/2016 02:16 PM | 📁 | 04/20/2016 02:24 PM | 📄 | root |

- Session Logs are available for in-progress, failed and completed jobs.

- If a job failed, check plugins.log, session.log and condoor.log for error.

- Other Pre-Migrate logs:
  - .txt – Are CLI command output capture files.
  - Config Log (shown in green) – Are available when the configuration migration tool (NoX) encounters configuration conversion issues. This does not necessarily mean the Pre-Migration step will fail but you are advised to inspect these files if they exist.

Session Logs: Venus 📁

Session Log Files

📄 172_27_143_156-2016_04_20_21_16_54-191/admin-show-running-config.txt

📄 172_27_143_156-2016_04_20_21_16_54-191/condoor.log

📄 172_27_143_156-2016_04_20_21_16_54-191/plugins.log

📄 172_27_143_156-2016_04_20_21_16_54-191/session.log

📄 172_27_143_156-2016_04_20_21_16_54-191/show-platform.txt

📄 172_27_143_156-2016_04_20_21_16_54-191/show-running-config.txt

📄 172_27_143_156-2016_04_20_21_16_54-191/supported_config_in_xr_configuration

📄 172_27_143_156-2016_04_20_21_16_54-191/unsupported_config_in_xr_configuration

Session Logs: Pre-Migrate (Cont.)

More concerning the configuration conversion logs (supported_config_in_xr_configuration and unsupported_config_in_xr_configuration)

- At the end of both files, CSM points you to the original configuration file and the migrated configuration file. They are stored in csm_data/migration/<hostname_of_device>/. The hostname may be slightly different from the one stored in CSM to ensure it's valid filename.

- If you only scheduled a Pre-Migrate, you will have the option of checking how the conversion went. Otherwise, if there is no serious failure, you can check if any configurations failed to be converted/ loaded after the Post-Migrate.

- The following files are available after Pre-Migrate completes:
  - admin.cfg and xr.cfg are the original configurations on device.
  - admin.cal is a part of the migrated admin.cfg that should be loaded in Calvados in ASR9K-X64.
  - admin.iox is is a part of the migrated admin.cfg that should be loaded in XR in ASR9K-X64.
  - xr.iox is a part of the migrated xr.cfg that should be loaded in XR in ASR9K-X64.
  - admin.csv and xr.csv contain the line by line migration detail.

```
Configurations Known and Supported to the NoX Conversion Tool

Line No.    Configuration
5           interface MgmtEth0/RSP0/CPU0/0
6            ipv4 address 1.66.27.25 255.255.0.0
8           interface MgmtEth0/RSP0/CPU0/1
9            shutdown
11          interface MgmtEth0/RSP1/CPU0/0
12           shutdown
14          interface MgmtEth0/RSP1/CPU0/1
15           shutdown
23          interface HundredGigE0/0/0/0
24           shutdown
26          interface HundredGigE0/0/0/1
27           shutdown
29          interface HundredGigE0/0/0/2
30           shutdown
32          interface HundredGigE0/0/0/3
33           shutdown
35          interface HundredGigE0/0/0/4
36           shutdown
38          interface HundredGigE0/0/0/5
39           shutdown
41          interface HundredGigE0/0/0/6
42           shutdown
44          interface HundredGigE0/0/0/7
45           shutdown
47          router static
48           address-family ipv4 unicast
49            223.255.254.0/24 MgmtEth0/RSP0/CPU0/0 1.66.0.1


Please find original configuration in csm_data/migration/Venus/xr.cfg
The final converted configuration is in csm_data/migration/Venus/xr.iox
```

Walk-Through: Migrate

CSM manages the system migration which includes (but is not limited to) these major steps:

- Un-tars the tar file to put image and boot files in place.

- Sets the boot mode to load the ASR9K-X64 image from /harddiskb:/

- Backs up the admin and IOS-XR configurations

- Reloads the device in order to load the ASR9K-X64 image

- Waits for all RSP/RP and Tomahawk line cards to reach their final operational state

Session Logs: Migrate

- A completed Migrate action will have the logs shown below (or more if added by the operator during the scheduling phase).

- By default, "show platform" is executed after the device boots up ASR9K-X64 image. Click the red file comparison icon to compare the node status after Migrate completes with the node status during Pre-Migrate.

Session Log Files

172_27_143_156-2016_04_20_21_58_52-193/condoor.log

172_27_143_156-2016_04_20_21_58_52-193/plugins.log

Click to view diff

172_27_143_156-2016_04_20_21_58_52-193/session.log

172_27_143_156-2016_04_20_21_58_52-193/show-platform.txt

Walk-Through: Post-Migrate

Once the Migrate action has completed, CSM performs the following during the Post-Migrate phase:

- Ensures all RSP/RP and Tomahawk line cards are in their final operational state

- Loads the migrated (converted) admin configurations

- CSM loads either the (a) migrated (converted) IOS-XR configuration or (b) a user-provided (custom) IOS-XR configuration (depending on the operators selection during scheduling)

- Checks FPD versions and, if needed, upgrade FPD's and reload device

Session Logs: Post-Migrate

- A completed Post-Migrate will have at least the txt files below besides the logs. Post-Migrate executes "admin show running-config" and "show running-config" after loading corresponding configurations. It executes "show platform" in the end. Click the red icon to compare outputs with those from Pre-Migrate.

Session Log Files

172_27_143_156-2016_04_20_22_20_54-194/admin-show-running-config.txt

172_27_143_156-2016_04_20_22_20_54-194/condoor.log

172_27_143_156-2016_04_20_22_20_54-194/plugins.log

172_27_143_156-2016_04_20_22_20_54-194/session.log

172_27_143_156-2016_04_20_22_20_54-194/show-platform.txt

172_27_143_156-2016_04_20_22_20_54-194/show-running-config.txt