



Image Refresh Using the Archive and Restore Feature

This chapter describes how to backup the most recent Cisco IOS XR software and configuration files available on the Cisco ASR 9000 Series Aggregation Services Routers, and restore the latest Cisco IOS XR software and configuration files using the Archive and Restore feature. This feature is available on RSP2 cards, but not on RSP3 cards.

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Information About Image Refresh

The Cisco IOS XR software and configuration files available on the Cisco ASR 9000 Series Aggregation Services Routers can be backed up and restored using the Archive and Restore feature. This Archive and Restore feature is built into the Cisco ASR 9000 Series Routers Micro Image. A Micro Image is a factory supplied service image that is locally resident on all Cisco ASR 9000 Series Routers RSP cards. A Micro Image allows administrators to perform these service tasks:

- Format Cisco ASR 9000 Series Routers media storage devices
- Archive content from the Cisco ASR 9000 Series Routers
- Restore content to the Cisco ASR 9000 Series Routers
- Review any prior failure logs
- Edit power module cookie

Prerequisites

Before implementing the Archive and Restore feature on the Cisco ASR 9000 Series Routers, verify that the these prerequisites have been met:

- ROMMON version 1.0 or a later version has been installed.

- Cisco IOS XR Release 3.9.0 or a later release has been installed.
- The minimum size of compactflash is 1 GB or higher on all RSP cards.

Archiving Cisco IOS XR Image on a Local Disk

The Cisco IOS XR software and configuration files can also be saved on a local storage device, such as a compactflash disk. You can backup the content of the active RSP card on the compactflash disk. This process creates a backup of these media devices and variables on the compactflash device:

- /disk0:
- /disk0a:
- /disk1:
- /disk1a:
- /bootflash:
- Few variables in NVRAM (puf extension files and ROMMON environment variables)

SUMMARY STEPS

1. **TURBOBOOT=on, {boot-device},[format | clean],[nodisablebreak]**
2. Verify the existence of compactflash in the Active RSP card.
3. **format compactflash:**
4. **show platform** command and **show redundancy summary** command
5. **run** command followed by **ksh /pkg/sbin/archive compactflash:**
6. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	TURBOBOOT=on, {boot-device},[format clean],[nodisablebreak] Example: <pre>rommon B9> TURBOBOOT=on,disk0,format,nodisablebreak</pre>	Sets the TURBOBOOT parameters and saves the configuration in the ROM Monitor configuration mode. Separate each parameter with a comma (,).
Step 2	Verify the existence of compactflash in the Active RSP card. Example: <pre>RP/0/RSP0/CPU0:router# dir compactflash:</pre>	Ensures that the compactflash device is present in the RSP card.
Step 3	format compactflash: Example:	Formats the compactflash device to ensure that its filesystem is initialised to a consistent state.

	Command or Action	Purpose
	RP/0/RSP0/CPU0:router# format compactflash:	Note This step has to be performed on the Active RSP only.
Step 4	<p>show platform command and show redundancy summary command</p> <p>Example:</p> <pre>RP/0/RSP0/CPU0:router# show platform RP/0/RSP0/CPU0:router# show redundancy summary</pre>	<p>Ensures that no Online Insertion and Removal (OIR), configuration changes or reloads are occurring during the format process. Also, ensure that the system is in Cisco IOS XR RUN state.</p> <p>Note This step has to be performed on the Active RSP only.</p>
Step 5	<p>run command followed by ksh /pkg/sbin/archive compactflash:</p> <p>Example:</p> <pre>RP/0/RSP0/CPU0:ios#run # ksh /pkg/sbin/archive compactflash:</pre>	Archives the data available on all available disks to the compactflash device.
Step 6	<p>exit</p> <p>Example:</p> <pre># cd /compactflash: # ls # cd snapshot</pre>	Verifies that the compactflash device contains the backup image of the active RSP in a snapshot directory. You can verify this using the dir command from XR or ls command from ksh in the snapshot directory.

Archiving Cisco IOS XR Image on a Local Disk: Example

```
RP/0/RSP0/CPU0:Router# dir compactflash:
```

```
Mon Nov 23 19:16:48.920 UTC
```

```
Directory of compactflash:
```

```
3          drwx  4096          Mon Nov 23 19:16:48 2009  LOST.DIR
```

```
919867392 bytes total (919859200 bytes free)
```

```
RP/0/RSP0/CPU0:Router# format compactflash:
```

```
Fri Nov 20 00:37:13.432 UTC
```

```
Format will destroy all data on "compactflash:". Continue? [confirm]
```

```
RP/0/RSP0/CPU0:Nov 20 00:37:14.771 : syslog_dev[93]: mkdosfs:
```

```
RP/0/RSP0/CPU0:Nov 20 00:37:14.771 : syslog_dev[93]: mkdosfs: Format complete: FAT16
(16384-byte clusters), 998624 kB available.
```

```
Device partition compactflash: is now formatted and is available for use.
```

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

```
Sun Jun  6 04:37:35.842 DST
```

```
Node              Type                               State           Config State
-----
```

```
0/RSP0/CPU0      A9K-RSP-4G(Active)                IOS XR RUN      PWR, NSHUT, MON
```

```
0/1/CPU0         A9K-40GE-B                         IOS XR RUN      PWR, NSHUT, MON
```

```

0/4/CPU0          A9K-8T/4-B          IOS XR RUN          PWR, NSHUT, MON
0/6/CPU0          A9K-4T-B            IOS XR RUN          PWR, NSHUT, MON

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

Sun Jun  6 04:38:07.306 DST
  Active Node      Standby Node
  -----
  0/RSP0/CPU0      N/A
RP/0/RSP0/CPU0:Router# run
Fri Nov 20 00:37:18.558 UTC
# ksh /pkg/sbin/archive compactflash:
This operation will remove any earlier backups in /compactflash:/snapshot:
Enter Yes, to continue: Yes
Continuing
Space available in compactflash: 998608 KBytes
Space needed for this archive 443136 KBytes
Archive disk0: to compactflash: Please wait ...
Computing MD5 signature of disk0: on compactflash: Please wait ...
Completed archive of disk0: to compactflash:
Archive disk0a: to compactflash: Please wait ...
Computing MD5 signature of disk0a: on compactflash: Please wait ...
Completed archive of disk0a: to compactflash:
Archive disk1: to compactflash: Please wait ...
Computing MD5 signature of disk1: on compactflash: Please wait ...
Completed archive of disk1: to compactflash:
Archive diskla: to compactflash: Please wait ...
Computing MD5 signature of diskla: on compactflash: Please wait ...
Completed archive of diskla: to compactflash:
Archive bootflash: to compactflash: Please wait ...
Computing MD5 signature of bootflash: on compactflash: Please wait ...
Completed archive of bootflash: to compactflash:
Saving common NVRAM variables
 1464.12s real   11.62s user   40.88s system
Archive to compactflash: success
# cd /compactflash:
# ls
.          ..          LOST.DIR   snapshot
# cd snapshot
# ls
.          disk0a.cpio  license_opid.puf
..         disk0a.md5   nvram.values
bootflash.cpio  disk1.cpio  placed.puf
bootflash.md5  disk1.md5   powerup_info.puf
disk0.cpio     diskla.cpio
disk0.md5     diskla.md5
# exit
RP/0/RSP0/CPU0:Router#

```

Restoring Cisco IOS XR Image from the local device

Restoring means refreshing the content of the active RSP card. Restoring refreshes the Cisco ASR 9000 Series Routers with images from the compactflash device. The content of these devices and a few variables get updated.

- /disk0:
- /disk0a:

- /disk1:
- /disk1a:
- /bootflash:
- Few items in NVRAM (puf files and installation-related ROMMON variables)



Note After this restore operation is complete, the previously-saved content in the devices is irrecoverably lost.

SUMMARY STEPS

1. **admin** command, **config-register boot-mode rom-monitor location all** command and **reload location all** command
2. **boot hsbi:**
3. **format_all**
4. **fullbake**
5. **show platform** command and **show redundancy summary** command

DETAILED STEPS

	Command or Action	Purpose
Step 1	admin command, config-register boot-mode rom-monitor location all command and reload location all command Example: <pre>RP/0/RSP0/CPU0:router(admin)# config-register boot-mode rom-monitor location all RP/0/RSP0/CPU0:router(admin)# reload location all</pre>	Place all RSPs in ROM Monitor mode.
Step 2	boot hsbi: Example: <pre>rommon B9> boot hsbi:</pre>	From ROM Monitor mode, load a micro image by entering the boot hsbi command at the ROMMON prompt. This command lets you restore a previously-archived image.
Step 3	format_all Example: <pre># format all</pre>	Enter format_all command on the standby RSP.
Step 4	fullbake Example: <pre># fullbake Phase 1 - Read and compare FATs Phase 2 - Check cluster chains Phase 3 - Check directories Phase 4 - Check for lost files</pre>	Insert the compactflash device consisting of previously-saved archive images in the active RSP card. Run the fullbake command to execute the restore operation. Note This command performs a device format, followed with the restore operation.

	Command or Action	Purpose
Step 5	<p>show platform command and show redundancy summary command</p> <p>Example:</p> <pre>RP/0/RSP0/CPU0:router# show platform RP/0/RSP0/CPU0:router# show redundancy summary</pre>	<p>Reboot the active RSP to run the restored Cisco IOS XR software on it. The Cisco IOS XR software on the active notices the standby RSP and provide the requisite images. Both the active and the standby RSPs run the Cisco IOS-XR release.</p>

Restoring Cisco IOS XR Image from the Local Device: Example

```
Rommon P4E-31 B1 >boot hsbi:
Beginning HSBI boot:
Loading B image:
.....
program load complete, entry point: 0x1fbfb0, size: 0x3bb854
Attempting to start second CPU
SMP initialized.
Config = SMP, Running = SMP
#####
BSP: Board type : RO-RSP2
Use private TLB mappings
*****
Welcome to micro XR on a ASR9K RSP
BUILD DATE: Thu Aug 27 02:47:38 PDT 2009
To start C/F: ksh /etc/cf_start
To stop C/F: ksh /etc/cf_stop
To format C/F drive with DOS: ksh /etc/cf_dos_init (cf_start first)
To format C/F drive with QNX: ksh /etc/cf_qnx_init (cf_start first)
To format eUSB0 drive: ksh /etc/usb0_init
To format eUSB1 drive: ksh /etc/usb1_init
To format both usb: ksh /etc/usb_init
To format configflash: ksh /etc/flash1_init
To format bootflash: ksh /etc/flash0_init
To start hard drive: ksh /etc/hd_start
To format hard drive: ksh /etc/hd_init
To format HD, eUSB and bootflash: ksh /etc/format_all (diskboot)
To edit Power Module cookie: pwrcookie <module_num> edit

*****

#

# format_all
Step 1/6: format bootflash

Formatting sector 1
Step 2/6: format HD
Step 3/6: format eUSB0
Step 4/6: format eUSB1
Step 5/6: format configflash

Formatting sector 1
Step 6/6 clear NVRAM syslog files
Set BOOT=
#
# fullbake
Phase 1 - Read and compare FATs
```

```
Phase 2 - Check cluster chains
Phase 3 - Check directories
Phase 4 - Check for lost files

423408 kb used, 575248 kb free, 14 files, 3 directories
Filesystem is clean.
Step 1/6: format bootflash

Formatting sector 1
Step 2/6: format HD
Step 3/6: format eUSB0
Step 4/6: format eUSB1
Step 5/6: format configflash

Formatting sector 1
Step 6/6 clear NVRAM syslog files
This operation will remove all installed software on this RSP, and
replace with software from /compactflash:/snapshot
Enter Yes, to continue: Continuing
Restoring image to disk0: from compactflash: Please wait ...
Restored archive of disk0: from compactflash:
Restoring image to disk0a: from compactflash: Please wait ...
Restored archive of disk0a: from compactflash:
Restoring image to disk1: from compactflash: Please wait ...
Restored archive of disk1: from compactflash:
Restoring image to disk1a: from compactflash: Please wait ...
Restored archive of disk1a: from compactflash:
Restoring image to bootflash: from compactflash: Please wait ...
Restored archive of bootflash: from compactflash:
Restoring common NVRAM variables
Set BOOT=disk0:asr9k-os-mpi-3.9.0.31I/mbiasr9k-rp.vm,1;
 395.58s real    2.51s user    2.53s system
Restore from compactflash: success
#
```

