

CRS-1 Upgrade Procedure:
3.2.x to 3.4.2

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1. Obtain Required PIE files:

The following package files are required to perform the upgrade:

PIE File Description	Sample PIE Filename	Sample Package Name
Composite Mini Package (OS-MBI, Base, Admin, Fwdg, Ic Rout)	comp-hfr-mini.pie-3.4.2	disk0:comp-hfr-mini-3.4.2
Multicast Package	hfr-mcast-p.pie-3.4.2	disk0:hfr-mcast-3.4.2
Manageability Package	hfr-mgbl-p.pie-3.4.2	disk0:hfr-mgbl-3.4.2
MPLS Package	hfr-mpls-p.pie-3.4.2	disk0:hfr-mpls-3.4.2
Security Package	hfr-k9sec-p.pie-3.4.2	disk0:hfr-k9sec-3.4.2
Diags Package	Hfr-diags-p.pie-3.4.2	disk0:hfr-diags-3.4.2

Note1: The filenames listed here may not necessarily be the filenames of the actual files since the files can be renamed. The actual filenames used will not affect the operation.

*Note2: In the 3.4.2 release the following packages have been removed from the mini.pie. They can be installed the same way as the rest of the pies if necessary. It is recommended that the installation of these packages should only be carried out after a successful upgrade. **Please refer to item #8 in the Caveats section for more information.***

[hfr-doc.pie-3.4.2 - documentation package including man pages](#)

[hfr-fpd.pie-3.4.2 - Field Programmable Device package necessary for field firmware upgrades](#)

2. Install Mandatory SMUs:

Install the following SMUs prior to performing the upgrade. These SMUs are available at the following URL (special access privileges are needed to use this link):

<http://www.cisco.com/cgi-bin/tablebuild.pl/iosxr-smu?sort=release>

For versions (3.2.3, 3.2.4, 3.2.6):

SMU Filename	hfr-base-3.2.x.CSCsg41248.pie
DDTS	CSCsg41248
SMU Package Name	<boot device>hfr-base-3.2.x.CSCsg41248-1.0.0 (where 3.2.x is the release number)
Problem Summary	LCs stuck in MBI-RUNNING state, reset by shelfmgr during upgrade
SMU Install Impact	There will be no impact to router operation
SMU Install Procedure	<ul style="list-style-type: none"> ▪ Add SMU: <ul style="list-style-type: none"> ○ router(admin)#install add <path>/hfr-base-3.2.x.CSCsg41248.pie to disk0: sync ▪ Activate SMU: <ul style="list-style-type: none"> ○ router(admin)#install activate disk0:hfr-base-3.2.x.CSCsg41248-1.0.0 sync ▪ Commit SMU: <ul style="list-style-type: none"> ○ router(admin)#install commit

For the following 3.2.x versions (3.2.3, 3.2.4):

SMU Filename	hfr-base-3.2.x.CSCsd68855.pie
DDTS	CSCsd68855
SMU Package Name	<boot device>hfr-base-3.2.x. CSCsd68855-1.0.0
Problem Summary	Config lost on upgrade caused by broken banner config in alternate config
SMU Install Impact	Low. There should be no impact to running system.
SMU Install Procedure	<ul style="list-style-type: none">▪ Add SMU:<ul style="list-style-type: none">○ router(admin)#install add <path>/hfr-base-3.2.x.CSCsd68855.pie to disk0: sync▪ Activate SMU:<ul style="list-style-type: none">○ router(admin)#install activate disk0:hfr-base-3.2.x.CSCsd68855-1.0.0 sync▪ Commit SMU:<ul style="list-style-type: none">○ router(admin)#install commit

For the following 3.2.x versions (3.2.3, 3.2.4):

SMU Filename	comp-hfr-3.2.x.CSCek51590
DDTS	CSCek51590
SMU Package Name	<boot device> comp-hfr-3.2.x.CSCek51590-1.0.0
Problem Summary	memory hog condition is on multiple SP nodes during upgrade
SMU Install Impact	Low. There should be no impact to running system.
SMU Install Procedure	<ul style="list-style-type: none">▪ Add SMU:<ul style="list-style-type: none">○ router(admin)#install add <path>/comp-hfr-3.2.x.CSCek51590.pie to disk0: sync▪ Activate SMU:<ul style="list-style-type: none">○ router(admin)#install activate disk0:comp-hfr-3.2.x.CSCek51590-1.0.0 sync▪ Commit SMU:<ul style="list-style-type: none">○ router(admin)#install commit

Upgrades from 3.2.0, 3.2.1 and 3.2.2 to 3.4 are not supported. Please contact TAC for assistance.

3. Check System Stability:

The following commands should be executed to verify basic system stability before the upgrade:

- (admin) show platform (verify that all nodes are in "IOS XR RUN" state & PLIM's in "OK" state)
- show redundancy (verify that a Standby RP is available and in "ready" state)
- show ipv4 interface brief
- <or>
- show ipv6 interface brief (verify that all interfaces are "UP")
- show install active (verify that the proper set of packages are active)
- cfs check/clear configuration inconsistency (verify/fix configuration file system in exec and admin mode)

4. Perform Pre-Upgrade Tasks:

- 1) Check for the free space on the LCs bootflash. The minimum required free space can not be smaller than 30MB.

Example:

```
RP/0/RP1/CPU0:PE1#dir bootflash: location 0/10/CPU0 | i bytes free
62390272 bytes total (28227900 bytes free)
```

In the above example free space on LC in slot 10 is only 28.2MB which is not enough. In such a case please remove some SMUs/feature pies before the upgrade or please contact TAC for support.

- 2) Check ROMMON version. Upgrade to the latest ROMMON version supported if necessary. Refer to the Release Notes for the latest version supported and for the ROMMON upgrade procedure.

```
router(admin)# show diag
```

- 3) To minimize traffic loss during the upgrade please follow the procedure:
 - a. Make sure that all the traffic flowing through the router which needs to be upgraded has an alternate path. In this scenario one can take one of the redundant routers out of service, upgrade it and then bring it back into service without any significant traffic loss (this should work for the core routers, for the edge devices usually the redundant path may not be available)
 - b. Set IGP metric to the highest possible value so the IGP will try to route the traffic through the alternate path.
 - i. For OSPF use "max-metric" command.

```
router(config-ospf)#max-metric router-lsa
```
 - ii. For ISIS use "spf-overload-bit" command.

```
router(config-isis)#set-overload-bit
```
 - c. Perform the upgrade
 - d. After all the software is upgraded set the IGP metric to the values before the upgrade
 - i. OSPF:

```
router(config-ospf)#no max-metric router-lsa
```
 - ii. ISIS:

```
router(config-isis)#no set-overload-bit
```

- 4) Copy the running-configuration and admin-configuration to a temporary storage location. This could be on a remote TFTP server or a device such as the harddisk: or disk0: device present on the RP.

```
router#copy running-config disk0:running_config.txt
router#admin
router(admin)#copy running-config disk0:admin-running_config.txt
router(admin)#exit
```

- 5) Check for the boot device. If the boot device is not disk0:, then config loss is expected after upgrading to 3.3 or later. Please refer to the item #2 in the **Caveats** section below for additional details.

Use the 'show install active' command to check the boot device. The output will display a list of active package in the format of <boot device><package name>. In the following example, the boot device is "disk0":

a. disk0:hfr-mcast-3.2.1

5. Upgrade:

Special Upgrade Instructions:

Upgrading from **all 3.2.x** releases:

Execute the following steps prior to upgrading to 3.4.2. Failure to follow these steps can result in config loss after the upgrade:

1. Verify that the mandatory SMU (hfr-base-3.2.x. CSCsd68855-1.0.0) is active. If this SMU is not active, then refer to the **Install Mandatory SMUs** section above on how to activate this mandatory SMU.

```
router# show install active
```

2. Clear NVGEN cache:

```
router# run nvgen -F 1
```

3. Create dummy config commit:

```
router# config
router(config)#hostname <hostname>
router(config)#commit
router(config)#end
```

4. Force commit update by using the reload command. **Press "n" when the confirmation prompt appears:**

```
router# reload
Updating Commit Database. Please wait...[OK]
Proceed with reload? [confirm] <- Press "n"
```

In same cases the following may happen:

```
router#reload
```

```
Preparing system for backup. This may take a few minutes .....System
configuration backup in progress [Retry later]
```

In such a case please re-try the command after some time.

- 1) Add the required pies to disk:

```
router(admin)#install add <source>/<path>/<pie> to <target> sync
```

Note1: The <source> can be one of disk0:, disk1:, compactflash:, tftp:, ftp: or rcp:.

Note2: The above step must be repeated for each pie file, or all of the pies can be added together in a single 'install add ..' command. To add all pies using a single command, list all of the pies (including their source) within the 'install add ..' command in the following manner:

```
router(admin)#install add <source>/comp-hfr-mini.pie-3.4.2 <source>/hfr-
mcast-p.pie-3.4.2 <source>/hfr-mgbl-p.pie-3.4.2 <source>/hfr-mpls-
p.pie-3.4.2 <source>/hfr-k9sec-p.pie-3.4.2 to disk0: sync
```

Note3: The use of 'sync' option will prevent the user from executing any other command during the install operation.

Note4: There may be warning messages from wdsysmon indicating excessive CPU usage on SP nodes. Please refer to item #3 in the **Caveats** section for more details.

Note5: Under idle conditions, this command may take at least 35 minutes to complete, during which the router will be fully functional. This operation will take longer to complete on a Multi-Chassis system.

- 2) Test the activation using the 'test' option. Testing the activation will give you a preview of the activation and results. Note that this process can take 20-30 minutes to complete.

```
router(admin)#install activate disk0:comp-hfr-mini-3.4.2 disk0:hfr-mcast-3.4.2 disk0:hfr-mgbl-3.4.2 disk0:hfr-k9sec-3.4.2 disk0:hfr-mpls-3.4.2 sync test
```

Note1: No actual changes will be made when 'test' option is used.

Note2: Any config that is incompatible with the new version being activated will be identified. The 'show configuration removed' command can be used to view what will be removed as result of the software upgrade (see section 8.1 for details).

Note3: Such removed config can be reapplied using the 'load config removed <config>.cfg' command from config mode (see section 8.1 for details).

- 3) Activate all of the packages added in step 1:

```
router(admin)#install activate disk0:comp-hfr-mini-3.4.2 disk0:hfr-mcast-3.4.2 disk0:hfr-mgbl-3.4.2 disk0:hfr-k9sec-3.4.2 disk0:hfr-mpls-3.4.2 disk0:hfr-os-mpi-3.4.2.CSCsi20380-1.0.0 sync
```

Note1: The output of 'install add' command executed in step 1 provides the list of names of packages to be used in 'install activate ..' command.

Note2: The use of 'sync' option will prevent the user from executing any other command during the install operation.

Note3: The router will reload at the end of activation to start using the new packages.

Note4: Under idle conditions, this operation may take at least 20 minutes to complete.

Note5: The diag package from the 3.2 release would need to be de-activated so that there are no incompatibilities during the installation.

- 4) Verify system stability through commands described under **Check System Stability** section. If system issues are detected or if the upgrade needs to be backed out for any reason, please follow the steps described in **Downgrade** section to rollback the software configuration to the starting point.
- 5) Check to see if there were any failed startup config. If there were any startup config that failed to be applied, then refer to item #1 in the **Caveats** section to see how it should be handled.

```
router#show config failed startup
```

- 6) Commit the newly activated software:

```
router(admin)#install commit
```

6. Downgrade

Special Downgrade Instructions:

1. Downgrading to **3.2.x** images only:
All 'banner' configurations must be removed prior to downgrading from 3.4.2. The removed 'banner' config can be reapplied once the downgrade is completed. Failure to do so can result in a large config loss.

```
router(config)# no banner <>  
router(config)# commit
```

2. Save a backup copy of the router configuration. If there are Logical Routers configured, then login to each dLRSC node of each LR and execute the procedure to save LR specific configuration:

```
router# cfs check  
router# copy running-config <filename>
```

- 1) List the available rollback points:

```
router(admin)# show install rollback ?
```

- 2) Identify the rollback point by executing the following show command and analyzing the software configuration at the rollback point:

```
router(admin)# show install rollback <rollback point>
```

Note1: A valid rollback point must be specified. The output will show list of active packages for that rollback point.

- 3) Test the rollback operation using the 'test' option. Testing the rollback operation can give you a preview of the rollback.

```
router(admin)# install rollback to <rollback point> sync test
```

Note1: The output will detect if any incompatible config and will be removed. In such cases, 'show configuration removed' command can be used to view what will be removed as result of the software downgrade.

Note2: Removed command can be reapplied at a later time using the 'load config removed <config>.cfg' command from config mode.

The following is a sample output:

```
Warning: SDR Owner: No incompatible configuration will be removed due to the  
Warning: 'test' option  
Info: SDR Owner: Detected incompatibility between the activated software  
Info: and router running configuration.  
Info: SDR Owner: Removing the incompatible configuration from the running  
Info: configuration.  
Info: SDR Owner: Saving removed configuration in file '20060316131636.cfg'  
Info: on node 'RP/0/0/CPU0:'  
Info: Use the "show configuration removed 20060316131636.cfg" command to  
Info: view the removed config.  
Info: NOTE: You must address the incompatibility issues with the  
Info: removed configuration above and re-apply it to the running  
Info: configuration as required. To address these issues use the  
Info: "load configuration removed 20060316131636.cfg" and "commit"  
Info: commands.
```

Use the command suggested in the above example to display the config that will potentially be removed after the downgrade.

*Note3: Please refer to item #1 in the **Caveats** section for more details on how to handle incompatible config.*

- 4) Perform the rollback operation:

```
router(admin)# install rollback to <rollback point> sync
```

Note1: Based on the set of packages being activated and deactivated as part of the rollback operation, one or more nodes may be reloaded. Please be patient as this operation could take some time.

Note2: If you previously executed 'install remove' command to permanently remove any packages in the rollback configuration then the rollback operation will not proceed. To resolve this issue, run the following command to re-add the relevant packages:

```
router(admin)# install add <device or tftp>/<path>/<pie_file_name> sync
```

Note3: The use of 'sync' option will prevent the user from executing any other command during the install operation.
- 5) Restore the original configuration that was backed up in **Perform Pre-Upgrade Tasks** section.
- 6) Install commit the newly activated software.

```
router(admin)# install commit
```
- 7) Verify system stability through commands described in **Check System Stability** Section.

7. Post-Upgrade / Post-Downgrade Procedure:

Once software upgrade or downgrade has been completed, disk space can be recovered (optional) by removing any inactive packages that are no longer needed (if the packages are required at a later time, they can be re-added). The fpd, doc and diag packages may be added at this stage as well. Please follow these steps to remove inactive packages:

- 1) Obtain the list of inactive packages and note the names of packages that are not needed:

```
router(admin)# show install inactive brief
```
- 2) Remove the unnecessary inactive packages:

```
router(admin)# install remove disk0:<package_name1>  
disk0:<package_name2> .. disk0:<pkg_nameN> sync
```

Note1: The use of 'sync' option will prevent the user from executing any other command during the install operation.
- 3) Verify/fix configuration file system

```
router(admin)#cfs check
```

8. Caveats:

1. During software upgrade or downgrade, the system could detect incompatible configuration and remove it from the running configuration. The removed config will be saved to a file on the router. Some configuration could also fail due to syntax or semantic error as the router boots the new version of the software.

The operator must browse the removed or failed configuration and then address the changes so that the config can be properly applied on the new version of software:

- Addressing incompatible and removed configuration:

During the test activation of a new software version, incompatible configuration will be identified and removed from the router running configuration. Syslog and console logs will provide the necessary information on the name of the removed configuration file. To address the incompatible configuration, users should browse the removed configuration file, address the syntax and semantics errors and re-apply the config as required and/or applicable after upgrade.

To display the removed configuration, execute the following command from exec mode:

```
router# show configuration removed <removed config filename>
```

- Addressing failed admin and non-admin configuration during reload:

Some configuration may fail to take effect when the router boots with the new software. These configurations will be saved as failed configuration. During activation of the new software version, operator would be notified via syslog and console log where configuration failed to take effect. To address the failed configuration, user should browse both the admin and non-admin failed configuration, address syntax and semantics errors and re-apply it as required. To display the failed configuration, execute the following command:

```
router# show configuration failed startup
router(admin) # show configuration failed startup
```

2. If the boot device is not disk0:, then config loss is expected upon upgrade to 3.3 or downgrade from 3.3. This is due to fact that in R3.2.x, config is stored in disk0: by default. But in R3.3, config is stored on the boot device. Hence, when the boot device is not disk0: in pre-3.3 release, and when we do an upgrade to R3.3 or downgrade from R3.3 we expect to see config loss. Use the following commands to load any configuration that were backed up prior to upgrade or downgrade:

```
router# configure
router(config)# load <backup config>
router(config)# commit replace
router(config)# end
```

3. During the upgrade from 3.2.x to 3.3.x, wdsysmon cpu hog warning messages could be seen on SP nodes. These indicate that there is a temporary cpu hog on the node. There is no side-effect on the install upgrade operation and it will complete successfully (CSCsd94329, CSCei24761).

```
Install 8: [ 1%] Going ahead to install the package...SP/0/FC1/SP:Mar 28
20:58:45.983 : wdsysmon[125]: %HA-HA_WD-6-CPU_HOG_1 : CPU hog: cpu 0's
sched count is 0.
SP/0/FC1/SP:Mar 28 20:58:45.990 : wdsysmon[125]: %HA-HA_WD-6-CPU_HOG_2 :
CPU hog: cpu 0's ticker last ran 3.749 seconds ago.
SP/0/13/SP:Mar 28 20:58:45.804 : wdsysmon[125]: %HA-HA_WD-6-CPU_HOG_1 :
CPU hog: cpu 0's sched count is 0.
SP/0/FC0/SP:Mar 28 20:58:46.354 : wdsysmon[125]: %HA-HA_WD-6-CPU_HOG_1 :
CPU hog: cpu 0's sched count is 0.
SP/0/1/SP:Mar 28 20:58:45.156 : wdsysmon[125]: %HA-HA_WD-6-CPU_HOG_1 : CPU
hog: cpu 0's sched count is 0.
```

4. Changes have been made in release 3.4.2 to the format of the file system used to store router configuration files. These result in the following behavior when upgrading from software releases 3.2.6 and earlier:

- On the first upgrade from 3.2.6 (or earlier) to 3.4.2, the 3.4.2 software will create new-format configuration files based on the contents of the old-format files left behind by the 3.2.6 (or earlier) software. Included in the files created in this way are those that contain the persistent copy of the router configuration, which will be used to restore the running configuration. The history of changes to the running configuration, however, is not re-created. This means that after the upgrade, it will not be possible to view or rollback any changes previously contained in the configuration history.

- If the router is subsequently downgraded back to 3.2.6 (or earlier), the default behavior is to restore the router running configuration using the old-format configuration files left behind from the last time 3.2.6 (or earlier) was running. This means that any changes to the running configuration made while 3.4.2 was running will be lost. To prevent this from happening, the following command should be run on all RPs before performing the downgrade operation:

```
delete disk0:/config/running/commitdb/*
```

("disk0:" should be substituted with the appropriate device name if an alternate boot device is being used.)

This will force the 3.2.6 (or earlier) software to create old-format configuration files based on the contents of the new-format files left behind by the 3.4.2 software. Included in the files created in this way are those that contain the persistent copy of the router configuration, which will be used to restore the running configuration. The history of changes to the running configuration, however, is not re-created. This means that after the downgrade, it will not be possible to view or rollback any changes previously contained in the configuration history.

- If the router is then re-upgraded back to 3.4.2, the default behavior is to restore the router running configuration using the new-format configuration files left behind from the last time 3.4.2 was running. This means that any changes to the running configuration made while 3.2.6 (or earlier) was running will be lost. To prevent this from happening, the following command should be run on all RPs before performing the re-upgrade operation:

```
delete disk0:/config/lr/running/commitdb/*
```

("disk0:" should be substituted with the appropriate device name if an alternate boot device is being used.)

This will force the 3.4.2 software to create new-format configuration files based on the contents of the old-format files left behind by the 3.2.6 (or earlier) software - just as was done during the first upgrade.

5. CSCsg37012 - SDR user install commit operations need package compatibility checks

After router reload 1 or more SDRs may not be able (de)active pies due to incompatibility issues. In order to avoid the issue do install commit (in admin mode) after any rebase upgrade, before any SDR install commit operations. If the issue has already been hit perform the rebase upgrade to the router (or a rebase downgrade to the SDR), and then issue an (admin) install commit.

6. CSCsg52882 – upgrade from 3.2.3 to 3.3.x fails due to eth_server problem

When user tries to upgrade from 3.2.3 to 3.3.x or 3.4 then after activation command, install gets stuck for about 3-4 hours or more and upgrade would not complete. To workaround the problem after about 30mins after start of the "install activate" command user needs to login to the Mgmt Interface and perform the following procedure.

Perform "run gsp_ping -g 1 -rv -c 20". Look for any nodes with the receive count at 0. These are the problem nodes. For the problem nodes, verify Q is at non-zero. This is done by, show control b e location <location of node> detailed | inc "packets waiting for clients" from RP for each of the problem nodes. Repeat this 2-3 times in 5 sec interval to verify the value is greater than zero always.

On all the problem nodes, restart the eth_server process. This is done by process restart eth_server location <location of node>. This should recover eth_server from problem state and upgrade should complete successfully.

Example:

```
# gsp_ping -g 1 -rv -c 10
```

Node	Sent	Rcv.	Drop	Lost
0/AM0/SP (0x600:1)	10	0	7	3
0/AM1/SP (0x610:2)	10	5	4	1
0/SM0/SP (0x800:3)	10	5	4	1
0/SM5/SP (0x850:4)	10	5	4	1
0/SM1/SP (0x810:5)	10	5	4	1
0/SM6/SP (0x860:6)	10	5	4	1
0/SM7/SP (0x870:7)	10	5	4	1
0/SM4/SP (0x840:8)	10	5	4	1
0/SM3/SP (0x830:9)	10	5	4	1
0/SM2/SP (0x820:10)	10	5	4	1
0/1/SP (0x10:11)	10	5	4	1
0/9/SP (0x90:13)	10	5	4	1
0/6/SP (0x60:14)	10	5	4	1
0/2/SP (0x20:15)	10	5	4	1
0/3/SP (0x30:16)	10	5	4	1
0/4/SP (0x40:18)	10	5	4	1
0/FC1/SP (0x410:20)	10	5	4	1
0/FC0/SP (0x400:21)	10	5	4	1
0/6/CPU0 (0x61:22)	10	5	4	1
0/4/CPU0 (0x41:23)	10	7	3	0
0/2/CPU0 (0x21:24)	10	5	4	1
0/1/CPU0 (0x11:25)	10	9	1	0
0/3/CPU0 (0x31:27)	10	9	0	1
0/9/CPU0 (0x91:28)	10	5	4	1

- In the above example, 0/AM0/SP has a receive count at 0.

```
RP/0/RP0/CPU0:neo-1#show control b e location 0/am0/sp det | in "packets waiti" 15 packets waiting for clients
```

```
RP/0/RP0/CPU0:neo-1#show control b e location 0/am0/sp det | in "packets
waiti" 15 packets waiting for clients
RP/0/RP0/CPU0:neo-1#show control b e location 0/am0/sp det | in "packets
waiti" 15 packets waiting for clients
```

- Here all the number of packets in the control ethernet q is stuck at 15.

```
RP/0/RP0/CPU0:BB02(admin)#process restart eth_server location 0/AM0/SP
```

- restart eth_server to recover from this state. Installation should proceed to completion after this.

7. MDR – Minimum Disruption Restart

This feature is not supported for upgrades to 3.4.2 release due to:

- boot flash limitation
- Kernel Changes

8. Pie upgrade

For a .PIE upgrade from 3.2.x to 3.4.x, do NOT enable the diags and fpg .pie files. This provides sufficient bootflash space for the upgrade to proceed successfully. The diags and fpg packages can then be added after the install activate and router reload has taken place.

Some MSC's do not boot after an upgrade:

```
RP/0/RP0/CPU0:router#show platform
Node          Type          PLIM          State          Config State
-----
0/0/CPU0      MSC           8-10GbE      IN-RESET      PWR,NSHUT,MON
0/7/CPU0      MSC           8-10GbE      IOS XR RUN    PWR,NSHUT,MON
0/8/CPU0      MSC           8-10GbE      IN-RESET      PWR,NSHUT,MON
0/12/CPU0     MSC           Jacket Card  IOS XR RUN    PWR,NSHUT,MON
0/12/0        MSC(SPA)      8X1GE        OK             PWR,NSHUT,MON
0/15/CPU0     MSC           8-10GbE      IN-RESET      PWR,NSHUT,MON
0/RP0/CPU0    RP(Active)    N/A          IOS XR RUN    PWR,NSHUT,MON
0/RP1/CPU0    RP(Standby)   N/A          IOS XR RUN    PWR,NSHUT,MON
RP/0/RP0/CPU0:router#
```

We can see that MSC's in slot 0, 8 and 15 are in the IN-RESET state.

This message will be seen after reloading with the new software version:

```
LC/0/8/CPU0:Mar 13 17:14:01.001 GMT0GMT,M3.5.0/: insthelper[60]:
```

%INSTALL-INSTHELPER-3-EXIT_ERROR : Insthelper encountered a fatal error condition, and is exiting: Error value = 0xA2DF101C, Error string = ('Install Helper' detected the 'fatal' condition 'read()/write() failed': No space left on device)

Conditions:

This happens when the bootflash: of the MSC gets full during the upgrade while it's holding the old and the new packages at the same time.

Workaround:

Contact the Cisco Technical Assistance Center. A customer support engineer should be able to attach to the console of the MSC and delete a file to recover some space to be able to boot the MSC.

Alternatively, once the CRS is running 3.4.x and the affected MSC's are in the 'IOS-XR PREP' mode (in show platform), the following cisco-support command would free some space :

```
RP/0/RP1/CPU0:crs#run rm /net/node0_*_CPU0/bootflash:/nvram.dump
```