

Cisco NCS5500

IOS-XR Release 7.5.1

IOS-XR System Upgrade Procedure

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1 Introduction

1.1 Purpose, Scope and Audience

The purpose of this document is to describe the upgrade and downgrade procedure for the Cisco NCS 5500 Series Network Convergence System Router, Release 7.5.1

Audience: This guide is for Cisco Systems Field Engineers and Network Operators. It is split into four sections.

- 1) Simple one command install upgrade process & detailed IOS XR install upgrade process
- 2) Other Boot Options
- 3) FPD upgrade
- 4) Caveats and CLI changes

1.2 Upgrade/downgrade Matrix

Single Step Upgrade/Downgrade is supported for following releases:

Platform	Supported From	To
NCS5500 Fixed + Modular Chassis	7.x.x (7.0.1,7.0.2, 7.1.1, 7.1.2, 7.2.1, 7.2.2,7.3.1,7.3.2,7.4.1)	7.5.1

For older releases, it is recommended to first upgrade to one of the supported releases and then move to the target release. Following link can be used to download the files for 7.0.2 release (File name: NCS5500-docs-7.0.2.tar):

<https://software.cisco.com/download/home/286291132/type/280805694/release/7.0.2>

1.3 Summary of Upgrade Steps

1. Any of the below methods can be used for upgrade.

Method A:

- Add the image to the router using `install add source <source remote location or local directory> <packages>`
- Install prepare and install activate the software

Method B:

- Use single command upgrade: `install source <source remote location or local directory> <packages>`

Method C:

- Use single command upgrade: `install replace <source remote location or local directory>/<giso> noprompt commit`

This document covers Method A and Method B.

1.4 Cisco Software Manager

Cisco Software Manager (CSM) can be used to manage SMUs, to create your own SMU tar ball, or find out which SMUs are applicable to your network. More information on CSM: [Download CSM/CSM Documentation](#)

1.5 Packages for Upgrade

Following files are available to download for various boot options:

Table 1: IOS-XR Software files available for download

#	File	Contents	Comment
1	NCS5500-iosxr-7.5.1.tar	NCS 5500 IOS XR Software	Contains all rpms except k9sec

2	NCS5500-iosxr-k9-7.5.1.tar	NCS 5500 IOS XR Software 3DES	Contains all rpms including k9sec
3	NCS5500-docs-7.5.1.tar	NCS5500 IOS XR Documentation	Contains all documentation

1.6 Required Package files

Mini ISO Package is mandatory to perform the System Upgrade and upgrade needs to be done from XR VM. Additional XR packages listed below are needed depending on the router configuration and required features:

Description	Package Name
Boot Image	ncs5500-mini-x-7.5.1.iso [Boot image]
mpls	ncs5500-mpls-2.1.0.0-r751.x86_64.rpm
mpls-rsvp-te	ncs5500-mpls-te-rsvp-3.1.0.0-r751.x86_64.rpm
multicast	ncs5500-mcast-3.0.0.0-r751.x86_64.rpm
ospf	ncs5500-ospf-2.0.0.0-r751.x86_64.rpm
isis	ncs5500-isis-2.1.0.0-r751.x86_64.rpm
eigrp	ncs5500-eigrp-1.0.0.0-r751.x86_64.rpm
li	ncs5500-li-1.0.0.0-r751.x86_64.rpm
k9sec	ncs5500-k9sec-3.1.0.0-r751.x86_64.rpm
mgbl	ncs5500-mgbl-3.0.0.0-r751.x86_64.rpm

2 Pre-Upgrade Task

Note: Config backup, precheck, Image download, tar file copy to router and install add are hitless operation and can be done outside of MW.

2.1 Configuration Backup

- Copy the running-configuration to a harddisk: on the router.

```
RP/0/RP0/CPU0:55XX# copy running-config harddisk:/running_config
```

- Copy the running-configuration to a remote scp server

```
RP/0/RP0/CPU0:55XX#scp harddisk:/<filename> <username>@172.18.133.135:/<path>
```

2.2 System Stability check

- The following commands should be executed to verify basic system stability before the upgrade. At the XR prompt:

show platform	verify that all nodes are in "IOS XR RUN/OPERATIONAL" state
show platform vm	verify that all nodes are in "FINAL Band" state
show redundancy	verify that a Standby RP is available and the system is in "NSR-ready" state
show ipv4 interface brief <or> show ipv6 interface brief <or> show interface summary	verify that all necessary interfaces are "UP"
show install active	verify that the proper set of packages are active
admin show install active	verify on sysadmin plane
show install committed	verify that the proper set of committed packages are same as active. If not, execute 'install commit'
cfs check/clear configuration inconsistency	verify/fix configuration file system
show hw-module fpd	Ensure all the FPD versions status are CURRENT Please refer to "Field Programmable Versions Document" for FPD version information.
show alarms	Shows any outstanding alarms in system
admin show environment all	Shows temperature, Fan, Voltage, Power status
admin show led	Shows LED status

show media (both XR and Admin mode)	Shows the disk usage in XR and admin state
show inventory	Shows chassis inventory information
show logging	Capture show logging to check for any errors

2.3 Cost out IGP:

Cost-out IGP: To minimize traffic loss during the upgrade please follow below steps:

For OSPF use “max-metric” command.

```
RP/0/RP0/CPU0:55XX(config-ospf)# max-metric router-lsa
```

For ISIS use “spf-overload-bit” command.

```
RP/0/RP0/CPU0:55XX(config-isis)# set-overload-bit
```

2.4 Enable auto-fpd upgrade:

Enable auto FPD auto upgrade from XR and Sysadmin.

```
RP/0/RP0/CPU0:55XX(config)#fpd auto-upgrade enable
```

```
RP/0/RP0/CPU0:55XX(config)#commit
```

2.5 Disk Cleanup:

Check available space in install repository. At least 2GB of free space is required to perform System upgrade. If copying the packages and SMU's to the harddisk ensure 50% free space on the harddisk. Check in Both XR and admin plane

XR:

```
RP/0/RP0/CPU0:55XX# show media location 0/RP0/CPU0
```

```
Thu Nov 18 05:41:37.832 PST
```

```
Media Info for Location: node0_RP0_CPU0
```

Partition	Size	Used	Percent	Avail
rootfs:	3.9G	1.7G	45%	2.1G
apphost:	3.7G	36M	1%	3.5G
harddisk:	35G	11G	34%	22G
log:	459M	54M	13%	371M
config:	459M	3.8M	1%	421M
disk0:	2.0G	3.7M	1%	1.9G
disk2:	29G	3.8G	13%	26G

```
RP/0/RP0/CPU0:55XX# show media location 0/RP1/CPU0
```

Admin:

```
sysadmin-vm:0_RP0# show media location 0/RP0
Thu Nov 18 13:45:57.348 UTC+00:00
```

Location : 0/RP0

Partition	Size	Used	Percent	Avail
rootfs:	2.4G	1.4G	60%	918M
install:	7.4G	1.5G	21%	5.6G
harddisk:/tftpboot	29G	2.3G	9%	25G
harddisk:	35G	3.0G	10%	30G
log:	459M	60M	14%	365M
config:	459M	6.3M	2%	419M
disk0:	2.0G	3.4M	1%	1.9G
rootfs:/mnt/plog	15M	568K	5%	14M
install:/tmp	7.4G	1.5G	21%	5.6G
install:/cache	7.4G	1.5G	21%	5.6G
rootfs:/install/tmp	7.4G	1.5G	21%	5.6G

rootfs: = root file system (read-only)
log: = system log files (read-only)
config: = configuration storage (read-only)
install: = install repository (read-only)

```
sysadmin-vm:0_RP0# show media location 0/RP1
```

Check inactive packages and remove them before upgrading in XR and Admin plane.

XR:

```
RP/0/RP0/CPU0:55XX#install remove inactive all
```

Admin:

```
sysadmin-vm:0_RP0# install remove inactive
```

Check and delete core files and any other files which are not required in harddisk in XR and admin plane

XR:

```
RP/0/RP0/CPU0:55XX#run
[xr-vm_node0_RP0_CPU0:~]$cd /misc/disk1
[xr-vm_node0_RP0_CPU0:/misc/disk1]$rm *core*
```

Admin:

```
RP/0/RP0/CPU0:55XX#admin
sysadmin-vm:0_RP0# run
[sysadmin-vm:0_RP0:~]$ cd /misc/disk1
[sysadmin-vm:0_RP0:~]$ rm *core*
```

3 Software Upgrade

All System Upgrade related install operations should be done in the XR VM plane. The optional packages (mpls, mcast, mgbl etc.) that are being installed/upgraded must match the active packages, else the install will fail. Two methods are explained below for software upgrade procedure.

A] Install add/activate method:

- Download 7.5.1 image from CCO.

Copy tar file to scp server. Verify the contents of the tar file.

- Copy the 7.5.1 tar file to the router harddisk and verify that file is copied successfully

```
RP/0/RP0/CPU0:55XX#scp root@10.1.1.1://auto/<image file> /misc/disk1/.
```

```
RP/0/RP0/CPU0:PE7#scp vipmakka@172.18.133.135:/auto/tftp-gud/sit/751/NCS5500-iosxr-k9-7.5.1.tar harddisk:/
```

```
Thu Nov 18 05:49:29.514 PST
```

```
Connecting to 172.18.133.135...
```

```
This is a Cisco managed device to be used only for authorized purposes.  
Your use is monitored for security, asset protection, and policy compliance.
```

```
Password:Transferred xxxxxx Bytes
```

```
xxxxxxxx bytes copied in 198 sec (10241595)bytes/sec
```

- Verify the md5 checksum of the tar/individual rpms with the original MD5 values on CCO

```
[xr-vm_node0_RP0_CPU0:/harddisk:]$md5sum NCS5500-iosxr-k9-7.5.1.tar
```

```
[xr-vm_node0_RP0_CPU0:/harddisk:]$md5sum NCS5500-iosxr-k9-7.5.1.tar
```

```
676e2949d976b00d1e5b43ae319bfdd6 NCS5500-iosxr-k9-7.5.1.tar
```

- Perform 'install add' of NCS5500-iosxr-k9-7.5.1.tar file:

```
RP/0/RP0/CPU0:55XX#install add source harddisk:/ NCS5500-iosxr-k9-7.5.1.tar
```

```
Thu Nov 18 07:16:47.882 PST
```

```
2021-11-18 07:16:50 Install operation 11 started by totem:
```

```
install add source harddisk:/ NCS5500-iosxr-k9-7.5.1.tar
```

```
2021-11-18 07:17:03 Install operation will continue in the background
```

- Take a note of the install operation id generated by the add operation in previous step

```
Install operation id# 11 finished successfully
```

```
RP/0/RP0/CPU0:Nov 18 07:20:21.938 PST: sdr_instmgr[1297]: %INSTALL-  
INSTMGR-2-OPERATION_SUCCESS : Install operation 11 finished successfully
```

- **Add recommended SMUs for 7.5.1 if not already in initial tarball (optional)**

```
RP/0/RP0/CPU0:55XX#install add source harddisk: <mandatory SMU tar  
file>
```

N/A

- **Take a note of the install operation id generated by the add operation in previous step**
Install operation **id# <xy>** finished successfully

- **Prepare the packages added before**

```
RP/0/RP0/CPU0:55xx#install prepare id 11  
Thu Nov 18 07:23:14.843 PST  
2021-11-18 07:23:16 Install operation 12 started by root:  
install prepare id 11  
2021-11-18 07:23:16 Package list:  
2021-11-18 07:23:16      ncs5500-mppls-te-rsvp-3.1.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-k9sec-3.1.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-isis-2.1.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-li-1.0.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-eigrp-1.0.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-ospf-2.0.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-mgbl-3.0.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-mppls-2.1.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-mcast-3.0.0.0-r751.x86_64  
2021-11-18 07:23:16      ncs5500-mini-x-7.5.1  
2021-11-18 07:23:16 Install operation will continue in the background
```

Or (if SMU was added)

```
RP/0/RP0/CPU0:55XX#install prepare id 11 <xy>
```

- **Activate all the packages**

```
RP/0/RP0/CPU0:55XX#install activate
```

```
Thu Nov 18 07:28:41.746 PST  
2021-11-18 07:28:43 Install operation 13 started by totem:  
install activate  
This install operation will reload the system, continue?  
[yes/no]:[yes]  
2021-11-18 07:28:48 Install operation will continue in the background
```

- **Router will reload at the end of activation to start using the new packages.**



This operation may take up to 30 minutes to complete.

- Verify that all the packages are installed correctly in XR and SysAdmin

```
RP/0/RP0/CPU0:55xx#show install active summary
Thu Nov 18 07:41:12.567 PST
Label : 7.5.1
```

```
Active Packages: 10
 ncs5500-xr-7.5.1 version=7.5.1 [Boot image]
 ncs5500-mppls-te-rsvp-3.1.0.0-r751
 ncs5500-k9sec-3.1.0.0-r751
 ncs5500-mcast-3.0.0.0-r751
 ncs5500-mgbl-3.0.0.0-r751
 ncs5500-mppls-2.1.0.0-r751
 ncs5500-isis-2.1.0.0-r751
 ncs5500-ospf-2.0.0.0-r751
 ncs5500-eigrp-1.0.0.0-r751
 ncs5500-li-1.0.0.0-r751
```

```
sysadmin-vm:0_RP0# show install active summary
Thu Nov 18 15:42:11.660 UTC+00:00
Active Packages: 1
 ncs5500-sysadmin-7.5.1 version=7.5.1 [Boot image]
```

- Verify system stability through commands described under Check System Stability section (2.2) after router comes up with new software
- Verify show version to check router is upgraded.

```
RP/0/RP0/CPU0:55xx#sh ver
Thu Nov 18 07:43:11.818 PST
Cisco IOS XR Software, Version 7.5.1
Copyright (c) 2013-2021 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On      : Tue Nov 9 19:44:03 PST 2021
Built Host    : iox-ucs-101
Workspace     : /auto/iox-ucs-101 san1/prod/7.5.1/ncs5500/ws
Version       : 7.5.1
Location      : /opt/cisco/XR/packages/
Label        : 7.5.1
```

```
cisco NCS-5500 () processor
System uptime is 5 minutes
```

- Check to see if there were any failed startup configurations.

```
RP/0/RP0/CPU0:55xx#show config failed startup
Thu Nov 18 07:44:03.678 PST
!!15:38:18 UTC Thu Nov 18 2021
```

- Execute 'install commit' to commit the newly active software (install commit is required after any install activate operation else after router reload, nodes will go back to previously committed software)

```
RP/0/RP0/CPU0:55XX#install commit
```

B] Single command upgrade method:



More information on this method can be found at below link :

<https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/system-setup/73x/b-system-setup-cg-ncs5500-73x/manage-automatic-dependency.html>

- Download 7.5.1 image from CCO.
Copy tar file to scp server. Verify the contents of the tar file.
- Verify the md5 checksum of the tar/individual rpms with the original MD5 values on CCO.
- Untar the downloaded NCS5500-iosxr-k9-7.5.1.tar file on remote server. Create image folder in router /harddisk:/. Copy iso and rpms from server to router.

```
[xr-vm_node0_RP0_CPU0:/misc/disk1/751-Image]$tar -xvf NCS5500-iosxr-k9-7.5.1.tar
```

```
ncs5500-eigrp-1.0.0.0-r751.x86_64.rpm
ncs5500-isis-2.1.0.0-r751.x86_64.rpm
ncs5500-k9sec-3.1.0.0-r751.x86_64.rpm
ncs5500-li-1.0.0.0-r751.x86_64.rpm
ncs5500-mcast-3.0.0.0-r751.x86_64.rpm
ncs5500-mgbl-3.0.0.0-r751.x86_64.rpm
ncs5500-mini-x-7.5.1.iso
ncs5500-mpis-2.1.0.0-r751.x86_64.rpm
ncs5500-mpis-te-rsvp-3.1.0.0-r751.x86_64.rpm
ncs5500-ospf-2.0.0.0-r751.x86_64.rpm
```

```
[xr-vm_node0_RP0_CPU0:/misc/disk1/751-Image]$ls -l
ncs5500-eigrp-1.0.0.0-r751.x86_64.rpm
```

```

ncs5500-isis-2.1.0.0-r751.x86_64.rpm
ncs5500-k9sec-3.1.0.0-r751.x86_64.rpm
ncs5500-li-1.0.0.0-r751.x86_64.rpm
ncs5500-mcast-3.0.0.0-r751.x86_64.rpm
ncs5500-mgbl-3.0.0.0-r751.x86_64.rpm
ncs5500-mini-x-7.5.1.iso
ncs5500-mpis-2.1.0.0-r751.x86_64.rpm
ncs5500-mpis-te-rsvp-3.1.0.0-r751.x86_64.rpm
ncs5500-ospf-2.0.0.0-r751.x86_64.rpm

```

- **Execute single command to upgrade**

```

RP/0/RP0/CPU0:55xx#install source /harddisk:/751-Image/ ncs5500-mini-x-
7.5.1.iso noprompt
Thu Nov 18 09:17:51.533 PST
+++++
+++++
2021-11-18 09:18:01 Install operation 21 started by totem:
2021-11-18 09:18:01 install source /harddisk:/751-Image/ ncs5500-
mini-x-7.5.1.iso noprompt
2021-11-18 09:18:02 No install operation in progress at this moment
2021-11-18 09:18:02 Checking system is ready for install operation
2021-11-18 09:18:03 'install source' in progress
2021-11-18 09:18:03 ISO ncs5500-mini-x-7.5.1.iso in input package list.
Going to upgrade the system to version 7.5.1.
2021-11-18 09:18:05 Scheme : localdisk
2021-11-18 09:18:05 Hostname : localhost
2021-11-18 09:18:05 Username : None
2021-11-18 09:18:05 SourceDir : /harddisk:/751-Image/
2021-11-18 09:18:05 Collecting software state..
2021-11-18 09:18:05 Getting platform
2021-11-18 09:18:05 Getting supported architecture
2021-11-18 09:18:05 Getting active packages from XR
2021-11-18 09:18:05 Getting inactive packages from XR
2021-11-18 09:18:11 Getting list of RPMs in local repo
2021-11-18 09:18:11 Getting list of provides of all active packages
2021-11-18 09:18:11 Getting provides of each rpm in repo
2021-11-18 09:18:11 Getting requires of each rpm in repo
2021-11-18 09:18:16
Skipped downloading inactive packages:
ncs5500-mini-x-7.5.1.iso
2021-11-18 09:18:16 There is nothing to add, skipping install add
operation
2021-11-18 09:18:16 Activating ncs5500-isis-2.1.0.0-r751 ncs5500-k9sec-
3.1.0.0-r751 ncs5500-mgbl-3.0.0.0-r751 ncs5500-mpis-te-rsvp-3.1.0.0-
r751 ncs5500-mini-x-7.5.1 ncs5500-mcast-3.0.0.0-r751 ncs5500-mpis-
2.1.0.0-r751 ncs5500-li-1.0.0.0-r751 ncs5500-ospf-2.0.0.0-r751 ncs5500-
eigrp-1.0.0.0-r751

```

2021-11-18 09:18:17 Optimized list to prepare after sanitizing input list for superseded packages:

```
ncs5500-isis-2.1.0.0-r751
ncs5500-k9sec-3.1.0.0-r751
ncs5500-mgbl-3.0.0.0-r751
ncs5500-mppls-te-rsvp-3.1.0.0-r751
ncs5500-mini-x-7.5.1
ncs5500-mcast-3.0.0.0-r751
ncs5500-mppls-2.1.0.0-r751
ncs5500-li-1.0.0.0-r751
ncs5500-ospf-2.0.0.0-r751
ncs5500-eigrp-1.0.0.0-r751
```

2021-11-18 09:18:17 Package list:

```
2021-11-18 09:18:17 ncs5500-isis-2.1.0.0-r751
2021-11-18 09:18:17 ncs5500-k9sec-3.1.0.0-r751
2021-11-18 09:18:17 ncs5500-mgbl-3.0.0.0-r751
2021-11-18 09:18:17 ncs5500-mppls-te-rsvp-3.1.0.0-r751
2021-11-18 09:18:17 ncs5500-mini-x-7.5.1
2021-11-18 09:18:17 ncs5500-mcast-3.0.0.0-r751
2021-11-18 09:18:17 ncs5500-mppls-2.1.0.0-r751
2021-11-18 09:18:17 ncs5500-li-1.0.0.0-r751
2021-11-18 09:18:17 ncs5500-ospf-2.0.0.0-r751
2021-11-18 09:18:17 ncs5500-eigrp-1.0.0.0-r751
```

2021-11-18 09:18:17 Action 1: install prepare action started

2021-11-18 09:18:17 Triggering prepare operation.

This may take a while...

2021-11-18 09:22:52 Action 1: install prepare action completed successfully

2021-11-18 09:23:07 Prepare operation completed. Trigger activate.

This may take a while...

2021-11-18 09:23:07 Prepare completed. Operation ID 21 will be taken up for activate operation

2021-11-18 09:23:07 Activate operation ID is: 21 for 'install source' ID:21

2021-11-18 09:23:09 Install operation 21 started by totem:

install activate noprompt synchronous

2021-11-18 09:23:10 Action 1: install activate action started

2021-11-18 09:23:11 The software will be activated with reload upgrade

2021-11-18 09:23:13 Following nodes are available for System Upgrade activate:

2021-11-18 09:23:13 0/2 0/4 0/FC1 0/FC3 0/FC5 0/RP0 0/RP1 0/SC0 0/SC1

2021-11-18 09:26:07 Action 1: install activate action completed successfully

2021-11-18 09:26:19 Install operation 21 finished successfully

2021-11-18 09:26:19 Ending operation 21

- Router will reload at the end of activation to start using the new packages.



This operation may take up to 30 minutes to complete.

- Verify that all the packages are installed correctly in XR and SysAdmin

```
RP/0/RP0/CPU0:55xx#show install active summary
Thu Nov 18 09:40:00.019 PST
Label : 7.5.1
```

```
Active Packages: 10
 ncs5500-xr-7.5.1 version=7.5.1 [Boot image]
 ncs5500-mppls-te-rsvp-3.1.0.0-r751
 ncs5500-k9sec-3.1.0.0-r751
 ncs5500-mcast-3.0.0.0-r751
 ncs5500-mgbl-3.0.0.0-r751
 ncs5500-mppls-2.1.0.0-r751
 ncs5500-isis-2.1.0.0-r751
 ncs5500-ospf-2.0.0.0-r751
 ncs5500-eigrp-1.0.0.0-r751
 ncs5500-li-1.0.0.0-r751
```

```
sysadmin-vm:0_RP0# show install active summary
Thu Nov 18 17:40:48.878 UTC+00:00
Active Packages: 1
 ncs5500-sysadmin-7.5.1 version=7.5.1 [Boot image]
```

```
sysadmin-vm:0_RP0#
```

- Verify system stability through commands described under Check System Stability section (2.2) after router comes up with new software
- Verify show version to check router is upgraded.

```
RP/0/RP0/CPU0:55xx#sh ver
Thu Nov 18 09:41:20.857 PST
Cisco IOS XR Software, Version 7.5.1
Copyright (c) 2013-2021 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On      : Tue Nov 9 19:44:03 PST 2021
Built Host    : iox-ucs-101
Workspace     : /auto/iox-ucs-101- san1/prod/7.5.1/ncs5500/ws
Version       : 7.5.1
Location      : /opt/cisco/XR/packages/
Label         : 7.5.1
```

```
cisco NCS-5500 () processor
System uptime is 9 minutes
```

- Check to see if there were any failed startup configurations.

```
RP/0/RP0/CPU0:55xx#show config failed startup
Thu Nov 18 09:42:26.280 PST
!!17:32:50 UTC Thu Nov 18 2021
```

- Execute 'install commit' to commit the newly active software (install commit is required after any install activate operation else after router reload, nodes will go back to previously committed software)

```
RP/0/RP0/CPU0:55XX#install commit
```

4 Post Upgrade Tasks

- Disk cleanup: Once software upgrade has been completed, disk space can be recovered by removing any inactive packages that are no longer needed (if the packages are required at a later time, they can be re-added):

```
RP/0/RP0/CPU0:55XX#install remove inactive all
```

- Verify/fix configuration file system (mandatory):

```
RP/0/RP0/CPU0:55XX#cfs check
```

- Verify fpd versions running are current:

```
RP/0/RP0/CPU0:55XX#show hw-module fpd
```

- Restore IGP metric if changed before the upgrade (this is done from xr vm)

OSPF

```
RP/0/RP0/CPU0:55XX# (config-ospf)# no max-metric router-lsa
```

ISIS

```
RP/0/RP0/CPU0:55XX# (config-isis)# no set-overload-bit
```

5 Other Boot Options (GISO/IPXE)

Please refer to <https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/system-setup/73x/b-system-setup-cg-ncs5500-73x.html> for various boot options:

Router Bring up:

<https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/system-setup/73x/b-system-setup-cg-ncs5500-73x/bring-up-the-router.html>

GISO:

<https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/system-setup/73x/b-system-setup-cg-ncs5500-73x/customize-installation-using-giso.html>

IPXE option:

<https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/system-setup/73x/b-system-setup-cg-ncs5500-73x/perform-disaster-recovery.html>

6 FPD Upgrade

Fpd auto-upgrade feature if configured on router should take care of fpd upgrade. Manual fpd upgrade can be performed after 7.5.1 upgrade is install committed. Run the “show hw-module fpd location all” command to check which firmware files need to be upgraded, by inspecting the Upg/Dng column. If there is any ‘Yes’ marked, manual upgrade is required. After Manual upgrade, a reload is required for the fpd to take effect. Issue the following command to upgrade FPD:

```
RP/0/RP0/CPU0:router#upgrade hw-module location all fpd all
```

Auto-FPD requirements:

N/A

7 Downgrade from 7.5.1 IOS XR Release

Downgrade can be performed by following options.

1) Disable fpd auto-upgrade

Option 1: If install commit was not done post upgrade, a router reload will bring it back to previous install committed image

Option 2: If downgrade image is part of inactive packages (the mini ISO is broken down into individual ISOs (XR, sysadmin and host) ex – ncs5500-mini-x-7.5.1, ncs5500-xr-7.5.1

`install remove ncs5500-mini-x-7.5.1` (This will remove the mini as well as individual ISOs) and then `install add *mini.iso` .

Install prepare, activate the packages along with iso.

Option 3: install add downgrade image iso +rpm, prepare and activate

Example:

```
install add source harddisk: <tar file>
```

```
install prepare id 10
```

```
install activate id 11 noprompt
```

Note: Please do refer the caveats for known anomalies.

7.1 Post Downgrade Tasks

- Disk cleanup: Once software upgrade has been completed, disk space can be recovered by removing any inactive packages that are no longer needed (if the packages are required at a later time, they can be re-added):

```
RP/0/RP0/CPU0:55XX#install remove inactive all
```

- Verify/fix configuration file system (mandatory):

```
RP/0/RP0/CPU0:55XX#cfs check
```

- Verify fpd versions running are current:

```
RP/0/RP0/CPU0:55XX#show hw-module fpd
```

- Restore IGP metric if changed before the upgrade (this is done from xr vm)

OSPF

```
RP/0/RP0/CPU0:55XX(config-ospf)# no max-metric router-lsa
```

ISIS

```
RP/0/RP0/CPU0:55XX(config-isis)# no set-overload-bit
```

8 Caveats

Software Upgrade from IOS-XR 6.6.x and older release to IOS-XR 7.5.1 release

Upgrade from IOS-XR 6.6.3 and older release to IOS-XR 7.5.1 release for NCS5501 and NCS5502 platforms may fail because of low free space in the install partition.

The recommendation is to first move to 7.x.x release and then upgrade to 7.5.1 release (if upgrade is done using install add and activate).

Alternatively, GISO/iPXE upgrade can be used for upgrade.

Software Upgrade from IOS-XR 7.x.x to IOS-XR 7.5.1 release

Upgrade from IOS-XR 7.x.x release to IOS-XR 7.5.1 release for NCS5501 and NCS5502 platforms may fail when using wildcard during activate, because of low free space in the install partition.

Optimized upgrade feature, to avoid the issue because of low free space in install partition, helps to avoid NCS5501/NCS5502 upgrade issues from IOS-XR 7.x.x to IOS-XR 7.5.1 release. This feature however is not available when install activate is done using wildcard (install activate pkg *7.5.1* *751*).

install id or full package names can be used to avoid this issue.