



# Cisco NCS540

# IOS-XR Release 7.3.2

## IOS-XR System Upgrade Procedure



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## Purpose, Scope and Audience

This document provides information on the two methods available for system upgrade for NCS540 Series platforms from software version 6.3.x/6.5.x/6.6.x/7.0.x/7.1.x/7.2.x/7.3.1 to 7.3.2



This document covers NGXR to NGXR upgrade procedure only.

Platform	Supported From	To
NCS540 1RU Router (N540-24Z8Q2C-M)	6.3.x/6.5.x/6.6.x/7.0.x/7.1.x/7.2.x/ 7.3.1	7.3.2
16G NCS540 1RU Router (N540-ACC-SYS/ N540X-ACC-SYS)	6.5.3/6.6.x/7.0.x/7.1.x/7.2.x/7.3.1	7.3.2

Cisco Software Manager (CSM) can be used to manage Image, SMUs and SPs. It can help create your own SMU tar ball or find out which SMUs/SPs are applicable to your network. More information on CSM:

[CSM Download page](#)  
[User Documentation](#)

It's highly recommended that CSM be used to come up with a list of optimized set of SMUs or Service Packs that should be installed on the release that is going to be deployed. SMUs/SP + Major release can be installed together in one install operation to save time and avoid multiple reloads. For more information on Service packs, see the following link, when possible it's always preferred to deploy Service Packs <http://www.cisco.com/c/en/us/support/docs/ios-nx-os-software/ios-xr-software/117550-technote-product-00.pdf>

However, in the absence of CSM, the MOP (Method of Procedure) described in this document can be followed for software upgrade of NCS540 series routers.

## Obtain 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:

Package Description	Package Filename
Cisco IOS XR IP Unicast Routing Core Bundle Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, SNMP Agent, and Alarm Correlation.	ncs540-mini-x-7.3.2.iso
Cisco IOS XR Manageability Package Telemetry, Extensible Markup Language (XML), Parser, and HTTP server packages, NETCONF, YANG Models, gRPC.	ncs540-mgbl-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR MPLS Package Label Distribution Protocol (LDP), MPLS Forwarding, MPLS Operations, Administration, and Maintenance (OAM), Link Manager Protocol (LMP), Optical User Network Interface (OUNI) and Layer-3 VPN.	ncs540-mpls-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR MPLS-TE and RSVP Package MPLS Traffic Engineering (MPLS-TE) and Resource Reservation Protocol (RSVP).	ncs540-mpls-te-rsvp-1.0.0.0-r732.x86_64.rpm

Cisco IOS XR MCAST Package Contains Automatic Multicast Tunneling (AMT), IGMP Multicast Listener Discovery (MLD), Multicast Source Discovery Protocol (MSDP) and PIM.	ncs540-mcast-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR Security Package Support for Encryption, Decryption, IP Security (IPSec), Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key Infrastructure (PKI)	ncs540-k9sec-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR OSPF Package Open Shortest Path First (OSPF) version 2 for IPv4 and OSPF version 3 for IPv6.	ncs540-ospf-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR IS-IS Package Intermediate System to Intermediate System (IS-IS).	ncs540-isis-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR LI Package Lawful Intercept	ncs540-li-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR EIGRP Package	ncs540-eigrp-1.0.0.0-r732.x86_64.rpm
Cisco IOS XR USB Boot Package	ncs540-usb_boot-7.3.2.zip

## Configuration Backup

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

```
RP/0/RP0/CPU0:ROUTER# copy running-config harddisk:<filename>
```

- Copy the running-configuration to a remote tftp server

```
RP/0/RP0/CPU0:ROUTER# copy running-config tftp://<tftp server IP Address >/<TFTP Server Location>
```

For Example:

```
copy running-config tftp://223.255.254.25/auto/tftp-good/user1/running_cfg
```

## Install Bridge SMUs

This section lists the \*Bridge SMUs needed to perform a System Upgrade from 6.3.x/6.5.x/6.6.x/7.0.x/7.1.x/7.2.x/7.3.1 to 7.3.2 image.



Note

Bridge SMU: Here bridge SMU means all the mandatory SMUs required to upgrade to Target release from Base Release

Base (From) Release	Target (To) Release	Bridge SMU
6.3.x/6.5.x/6.6.x/7.0.x/7.1.x/7.2.x/7.3.1	7.3.2	No Bridge SMU Required

# Pre-Upgrade Tasks

- **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 "OPERATIONAL" state)
#show platform vm (verify that all nodes are in "FINAL Band" state)
#show redundancy (verify that a Standby RP is available and in "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 commit (verify that the proper set of committed packages are same as active. If
not, execute 'install commit')
#cfs check <or> 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](#)" section for FPD version information.

```
#show alarms
#admin show env all
#show media (both XR and Admin mode)
#show inventory
#show log
```

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

For OSPF use "max-metric" command.

```
router(config-ospf)# max-metric router-lsa
```

For ISIS use "set-overload-bit" command.

```
router(config-isis)# set-overload-bit
```

- Enable auto FPD auto upgrade from XR and Sysadmin.

```
router(config)# fpd auto-upgrade enable
router(config)# commit
```

- Check available space in install repository. At least 2G 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.

```
sysadmin-vm:0_RP1#show media
```

- Check inactive packages and remove them before upgrading.

```
XR: RP/0/RSP0/CPU0:router#install remove inactive
```

```
Sysadmin: sysadmin-vm:0_RP0#show install inactive
```

- Check and delete core files and any other files which are not required in harddisk

```
RP/0/RP0/CPU0:ROUTER#run
[xr-vm_node0_RP0_CPU0:~]$cd /harddisk\ :
[xr-vm_node0_RP0_CPU0:/harddisk:]$rm *core*
```

## Software Upgrade

### **Classic Method**

All System Upgrade related install operations should be done in the XR VM plane. Make sure 3 to 4 GB disk space is free prior to upgrade. “show media” will show up the free space.

SKIP THIS SECTION IF ‘install update’ CLI IS THE PREFERRED METHOD TO PERFORM A SYSTEM UPGRADE AND CONTINUE TO NEXT SECTION ([Software Upgrade – ‘install update’ CLI Method](#))

- Download 7.3.2 mini ISO and packages tar and SMUs from CCO.  
Copy tar file to tftp / scp / ftp server. Verify the contents of the tar file.

```
bgl-ads-4870:190> tar -tvf NCS540-iosxr-k9-7.3.2.tar
-rw-r--r-- vram/eng      677405 2021-08-04 14:37 ncs540-eigrp-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng      3519685 2021-08-04 14:37 ncs540-isis-1.0.0.0-r732.x86_64.rpm
-rwxr-x--- vram/crypto 1698658 2021-08-04 14:43 ncs540-k9sec-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng      344110 2021-08-04 14:36 ncs540-li-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     12619537 2021-08-04 14:37 ncs540-mcast-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     23126439 2021-08-04 14:37 ncs540-mgbl-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng    1723611136 2021-08-04 14:50 ncs540-mini-x-7.3.2.iso
-rw-r--r-- vram/eng     2373166 2021-08-04 14:37 ncs540-mpls-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     9055301 2021-08-04 14:37 ncs540-mpls-te-rsvp-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     3806878 2021-08-04 14:37 ncs540-ospf-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng         803 2021-08-05 05:40 README-NCS540-iosxr-k9-7.3.2.txt
```

- Copy the 7.3.2 tar file to the router harddisk and verify that file is copied successfully

```
RP/0/RP0/CPU0:ROUTER#scp root@1.56.24.1:/auto/tftp-gud/sit/7.3.2/ncs540/
NCS540-iosxr-k9-7.3.2.tar /misc/disk1/.
```

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

```
[xr-vm_node0_RP0_CPU0:/misc/disk1]$md5sum NCS540-iosxr-k9-7.3.2.tar
```

- Perform ‘install add’ of 732 tar file:

```
RP/0/RP0/CPU0:ROUTER#install add source harddisk: NCS540-iosxr-k9-7.3.2.tar
```

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

```
Install operation 180 finished successfully
```

- Prepare the packages added before

```
RP/0/RP0/CPU0:ROUTER#install prepare id 180
```

- Check if install prepare is successful

```
RP/0/RP0/CPU0:ROUTER#show install prepare
```

- Check 'show install log' is successful and for any errors

```
RP/0/RP0/CPU0:ROUTER#show install log 181
```

- Activate all the packages

```
RP/0/RP0/CPU0:ROUTER#install activate
```

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



Note

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:ROUTER#show install active
sysadmin-vm:0_RP0#show install active
```

- 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:ROUTER#install commit
```

- Verify system stability through commands described under Check [System Stability](#) section after router comes up with new software

- Verify show version to check router is upgraded.

```
RP/0/RP0/CPU0:ROUTER#show version
Fri Oct 15 11:42:26.993 IST
Cisco IOS XR Software, Version 7.3.2
Copyright (c) 2013-2021 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On     : Wed Oct 13 20:17:42 PDT 2021
Built Host   : iox-ucs-021
Workspace    : /auto/srcarchive17/prod/7.3.2/ncs540/ws
Version      : 7.3.2
Location     : /opt/cisco/XR/packages/
Label       : 7.3.2
```

```
cisco NCS-540 () processor
System uptime is 10 hours 52 minutes
```

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

```
RP/0/RP0/CPU0:ROUTER#show configuration failed startup
```

- Add recommended SMUs for 7.3.2 if not already in initial tarball (optional)

```
RP/0/RP0/CPU0:ROUTER#install add source harddisk: <mandatory SMU tar file for 7.3.2>
```

- Activate the recommended SMUs (If recommended smu's were added)

```
RP/0/RP0/CPU0:ROUTER#install activate id <add id of previous step>
```

- Enter 'yes' to reload prompt
- After system comes up from reload, execute 'install commit'

### **'Install source' CLI Method**

All System Upgrade related install operations should be done in the XR VM plane.

Skip this section if section '[Software Upgrade – Classic Method](#)' has been performed

- Download 7.3.2 mini ISO, packages tar and SMUs from CCO. Copy tar file to tftp / scp / ftp server directory.
- Copy the 7.3.2 tar file to the router harddisk and verify that file is copied successfully

```
RP/0/RP0/CPU0:ROUTER#scp root@1.56.24.1:/auto/tftp-gud/sit/7.3.2/ncs540/NCS540-iosxr-k9-7.3.2.tar /misc/disk1/.
```

- Extract tar file to the directory. Also, extract all 7.3.2 mandatory SMUs and copy to the same directory.

```
bgl-ads-4870:190> tar -tvf NCS540-iosxr-k9-7.3.2.tar
-rw-r--r-- vram/eng      677405 2021-08-04 14:37 ncs540-eigrp-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng      3519685 2021-08-04 14:37 ncs540-isis-1.0.0.0-r732.x86_64.rpm
-rwxr-x--- vram/crypto 1698658 2021-08-04 14:43 ncs540-k9sec-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng      344110 2021-08-04 14:36 ncs540-li-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     12619537 2021-08-04 14:37 ncs540-mcast-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     23126439 2021-08-04 14:37 ncs540-mgbl-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng    1723611136 2021-08-04 14:50 ncs540-mini-x-7.3.2.iso
-rw-r--r-- vram/eng     2373166 2021-08-04 14:37 ncs540-mpls-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     9055301 2021-08-04 14:37 ncs540-mpls-te-rsvp-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng     3806878 2021-08-04 14:37 ncs540-ospf-1.0.0.0-r732.x86_64.rpm
-rw-r--r-- vram/eng         803 2021-08-05 05:40 README-NCS540-iosxr-k9-7.3.2.txt
```

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

```
[xr-vm_node0_RP0_CPU0:/misc/disk1]$md5sum NCS540-iosxr-k9-7.3.2.tar
```

- Perform System Upgrade using 'install update' CLI.

```
RP/0/RP0/CPU0:ROUTER# install source harddisk: NCS540-iosxr-k9-7.3.2.tar
```

- Respond 'yes' to the reload prompt. This step can be skipped if no prompt option was used.



- After user enter 'yes' to the reload prompt router will reload at the end of activation to start using the new packages. [This step can be skipped if no prompt option was used]



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:ROUTER#show install active
```

- Verify show version to check router is upgraded to 732

```
RP/0/RP0/CPU0:ROUTER#show version
Fri Oct 15 11:42:26.993 IST
Cisco IOS XR Software, Version 7.3.2
Copyright (c) 2013-2021 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On     : Wed Oct 13 20:17:42 PDT 2021
Built Host   : iox-ucs-021
Workspace    : /auto/srcarchive17/prod/7.3.2/ncs540/ws
Version      : 7.3.2
Location     : /opt/cisco/XR/packages/
Label       : 7.3.2
```

```
cisco NCS-540 () processor
System uptime is 10 hours 52 minutes
```

- 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:ROUTER#install commit
```

- Verify system stability through commands described under Check [System Stability](#) section (3.1) after router comes up with new software
- Check to see if there were any failed startup config.

```
RP/0/RP0/CPU0:ROUTER#show configuration failed startup
```

## **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:ROUTER##install remove inactive all
```

- Verify/fix configuration file system (mandatory):

```
RP/0/RP0/CPU0:ROUTER#cfs check
```

- Verify fpd versions running are current:

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

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

OSPF

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

ISIS

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

## **Caveats**

There are no caveats for System Upgrade to 7.3.2

## **Pre-Downgrade Tasks**

- Follow all the procedures mentioned in [Pre-Upgrade Tasks](#).

From Cisco IOS XR Release 7.0.1 and later, 3 new types of encryption method as type-8 (SHA-256), type-9 (scrypt) & type-10 (SHA-512) is supported and type-10 is used as the default encryption for all the username configurations. For versions earlier to 7.0.1, these encryptions are not supported and downgrading may result in authentication failure, downgrade abort, or XR-VM down scenario.

Check if the username encrypted as type-8, type-9 or type-10 before downgrading.

```
RP/0/RP0/CPU0:ROUTER# show run username lab1
```

```
username lab1
```

```
secret 10
```

```
$6$3N9/n/qGkQ2A5n/.$fjvwhtDdlZJ45aECxC5j0tloLgRd3kCafRtHNZ2zUt86x.wC59sG/.h/z9fh  
dBvF.k1Z5v2UDcVzTn0WGq000
```

```
!
```

```
RP/0/RP0/CPU0:ROUTER#
```

Ignore the below steps and proceed to Software Downgrade if secret is 5.

- o Delete the user configurations on both VMs before you downgrade.
- o Perform all install operation for downgrade except the install activate.
- o Back up the user configurations on both the VMs and delete the data from the VMs.
- o Initiate install activate.
- o Create new user credentials when prompted for the first root-system user creation.
- o Login with the new user credentials.
- o Apply the configurations from that you saved on both the VMs.

## **Software Downgrade**

### ***Classic Method***

All System Upgrade related install operations should be done in the XR VM plane.

SKIP THIS SECTION IF [‘install source’ CLI](#) IS THE PREFERRED METHOD TO PERFORM A SYSTEM UPGRADE AND CONTINUE TO NEXT SECTION ([Software Upgrade – ‘install source’ CLI Method](#))

- Download 6.3.3 mini ISO and packages tar and SMUs from CCO.  
Copy tar file to tftp / scp / ftp server. Verify the contents of the tar file”

```
sit-auto:185> tar -tvf NCS540-iosxr-k9-6.3.3.tar
```

- Copy the 6.3.3 tar file to the router harddisk and verify that file is copied successfully

```
RP/0/RP0/CPU0:ROUTER#scp root@1.56.24.1:/auto/tftp-gud/sit/633/ncs540/NCS540-iosxr-k9-6.3.3.tar /misc/disk1/
```

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

```
[xr-vm_node0_RP0_CPU0:/misc/disk1]$md5sum NCS540-iosxr-k9-6.3.3.tar
```

- Perform ‘install add’ of 633 tar file:

```
RP/0/RP0/CPU0:ROUTER#install add source harddisk: NCS540-iosxr-k9-6.3.3.tar
```

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

```
Install operation 185 finished successfully
```

- Prepare the packages added before

```
RP/0/RP0/CPU0:ROUTER#install prepare id 185
```

- Check if install prepare is successful

```
RP/0/RP0/CPU0:ROUTER#show install prepare
```

- Check ‘show install log’ is successful and for any errors

```
RP/0/RP0/CPU0:ROUTER#show install log 186
```

- Activate all the packages

```
RP/0/RP0/CPU0:ROUTER#install activate
```

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



Note

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:ROUTER#show install active  
sysadmin-vm:0_RP0# show install active
```

- 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:ROUTER#install commit
```

- Verify system stability through commands described under Check [System Stability](#) section (3.1) after router comes up with new software
- Verify show version to check router is upgraded.

```
RP/0/RP0/CPU0:ROUTER#show version
```

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

```
RP/0/RP0/CPU0:ROUTER#show configuration failed startup
```

- Add recommended SMUs for 6.3.3 if not already in initial tarball (optional)

```
RP/0/RP0/CPU0:ROUTER#install add source harddisk: <mandatory SMU tar file for 6.3.3>
```

- Activate the recommended SMUs (If recommended smu's were added)

```
RP/0/RP0/CPU0:ROUTER#install activate id <add id of previous step>
```

- Enter 'yes' to reload prompt
- After system comes up from reload, execute 'install commit'

### ***'Install source' CLI Method***

All System Upgrade related install operations should be done in the XR VM plane. Skip this section if section ['Software Upgrade – Classic Method'](#) has been performed.



**Note** "install update" CLI is replaced by "install source" from 6.5.x

- Download 6.6.3 mini ISO, packages tar and SMUs from CCO. Copy tar file to tftp / scp / ftp server directory.
- Extract tar file to the directory. Also, extract all 663 mandatory SMUs and copy to the same directory.

```
sit-auto:185> tar -tvf NCS540-iosxr-k9-6.6.3.tar
```

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

```
[xr-vm_node0_RP0_CPU0:/misc/disk1]$ md5sum NCS540-iosxr-k9-6.6.3.tar
```

- Perform System Upgrade using 'install source' CLI.

```
RP/0/RP0/CPU0:ROUTER# install source harddisk:/ NCS540-iosxr-k9-6.6.3.tar
```

- Respond 'yes' to the reload prompt. This step can be skipped if no prompt option was used.
- After user enter 'yes' to the reload prompt router will reload at the end of activation to start using the new packages. [This step can be skipped if no prompt option was used]



Note

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:ROUTER#show install active
```

- Verify show version to check router is downgraded to 663.

```
RP/0/RP0/CPU0:ROUTER#show version
```

- 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:ROUTER#install commit
```

- Verify system stability through commands described under Check System Stability section (3.1) after router comes up with new software

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

```
RP/0/RP0/CPU0:ROUTER#show configuration failed startup
```

## **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:ROUTER##install remove inactive all
```

- Verify/fix configuration file system (mandatory):

```
RP/0/RP0/CPU0:ROUTER#cfs check
```

- Verify fpd versions running are current:

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

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

OSPF

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

ISIS

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

## Caveats

There are no caveats for System Downgrade from 7.3.2

## Field Programmable Versions

PID	FPD Device	FPD Versions - Release											
		6.3.2	6.3.3	6.5.3	6.6.1	6.6.25	6.6.3	7.0.1	7.1.1	7.2.1	7.2.2	7.3.1	7.3.2
N540-24Z8Q2C-M	Bootloader	1.07	1.07	1.10	1.11	1.11	1.11	1.12	1.13	1.13	1.13	1.13	1.14
	CPU-IOFPGA	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.07	0.07	0.07	0.07	0.07
	MB-IOFPGA	0.14	0.18	0.18	0.18	0.18	0.18	0.18	0.20	0.22	0.22	0.23	0.23
	MB-MIFPGA	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05
	SATA-M500IT-MU-B												4.0
N540-ACC-SYS	Bootloader	NA	NA	1.10	1.11	1.11	1.12	1.12	1.13	1.13	1.13	1.12	1.14
	CPU-IOFPGA	NA	NA	0.03	0.03	0.03	0.03	0.03	0.07	0.07	0.07	0.07	0.07
	MB-IOFPGA	NA	NA	0.18	0.18	0.18	0.18	0.18	0.20	0.22	0.22	0.23	0.23
	MB-MIFPGA	NA	NA	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05
		SATA-M500IT-MU-B											

\*\* FPD versions on the boards shipped by manufacturing may have higher versions than the fpd package integrated in XR

\*\* Auto FPD upgrade is supported on NCS540