Introduction

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Cisco NCS 520 Series Ethernet Access Device Overview

The Cisco NCS 520 Series Ethernet Access Device is a family of low cost, fixed Carrier Ethernet Network Interface Devices (NID) and a switch that is targeted to be the next generation replacement of the Cisco ME 3400 series Access Switches. The Cisco NCS 520 Series Ethernet Access Device adds 10G NID and low-cost MBH switch to the existing Service Provider Access portfolio, with the following features:

- MEF CE 3.0 compliant

- Premium SKUs with support for extended temperature (from -40C to 65C)

- Conformal coating on the PCBAs (to be able to support installation in ventilated enclosures)

This release note contains information about the Cisco NCS 520 Series Ethernet Access Device, provides features information for these devices, hardware support, limitations and restrictions, and caveats.

This release note provides information for these variants of the Cisco NCS 520 Series Ethernet Access Device:

- N520-4G4Z-A (Base)

- N520-X-4G4Z-A (Premium)

- N520-X-4G4Z-D (Premium)

- N520-20G4Z-A (Base)

- N520-20G4Z-D (Base)

- N520-X-20G4Z-A (Premium)

- N520-X-20G4Z-D (Premium)

Documentation Updates

Rearrangement in the Configuration Guides

- The following are the modifications in the CEM guides.

  - Introduction of the Alarm Configuring and Monitoring Guide:

    This guide provides the following information:

    - Alarms supported for SONET and SDH, and their maintenance

    - Alarm profiling feature

    - Auto In-Service States for cards, ports, and transceivers

  - Rearrangement of Chapter and Topics in the Alarm Configuring and Monitoring Guide:

    - The Auto In-Service States Guide is now a chapter inside the Alarms Configuring and Monitoring Guide.

    - Alarms at SONET Layers topic in the following CEM guides, is added to the Alarms Configuring and Monitoring Guide:

      - 1-Port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide

    - The Alarm History and Alarm Profiling chapters are removed from the below CEM Technology guides, and added into the Alarm Configuring and Monitoring Guide:

      - 1-Port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide

Limitations and Restrictions on the Cisco NCS 520 Series Ethernet Access Device

Note

The error message "PLATFORM-1-NOSPACE: SD bootflash : no space alarm assert" may occur in the following scenarios:

- Any sector of SD Card gets corrupted

- Improper shut down of router

- power outage.

This issue is observed on platforms which use EXT2 file systems.

We recommend performing a reload of the router. As a result, above alarm will not be seen during the next reload due to FSCK(file systems check) execution.

However, If the error persists after a router reload, we recommend to format the bootflash or FSCK manually from IOS.

- The **default interface** command is used to default the parameters under that interface. However, when speed is configured on the interface, the following error is displayed:

  ```
  Speed is configured. Remove speed configuration before enabling auto-negotiation
  ```

- Adding or deleting the Trunk Ethernet flow points (TEFPs) with scaled bridge-domain, without delay causes the Cisco NCS 520 Series Ethernet Access Device to crash.

- Virtual services should be deactivated and uninstalled before performing replace operations.

- The **controller** and **nid-controller** commands are not supported.

- Cisco NCS 520 Series Ethernet Access Device displays an error in Hierarchical QoS policy while trying to remove the **bandwidth** and **bandwidth percent** commands from the default parent class dynamically. To remove the commands, you must first remove the bandwidth from child class and then from the parent class.

- When port is in OPER-DOWN state, applying Hierarchical QoS followed by speed change sets wrong bandwidth values on standard queues. To work around the mismatch, you must reattach the policy to the port level again.

Other Important Information

Upgrade to Cisco IOS XE 17.3.x

This section explains the procedure to upgrade the Cisco NCS 520 Series Ethernet Access Device from Cisco IOS XE Fuji 16.9.x and later to Cisco IOS XE Gibraltar 16.12.x and later.

The minimum base ROMMON version required to boot Cisco IOS XE Gibraltar 16.12.x and later release is **1.5**.

ROMMON version 1.5 is backward compatible. The backward compatibility of different ROMMON versions with IOS-XE versions are in the followig table:

Supported Cisco IOS-XE release	ROMMON Version
16.8.x 16.9.x 16.11.x	1.2
16.9.4 and later 16.11.2 and later 16.12.1 and later 17.1.1 and later	1.5
16.9.4 and later 16.11.2 16.12.1 and later 17.3.1 and later	1.6

Perform the following steps to migrate to Cisco IOS XE Amsterdam 17.3.x:

Step 1 On the command prompt, run the following command to check the current ROMMON version.

```
Device# show platform
Chassis type: N520-X-4G4Z-A
Slot       Type                State                 Insert time (ago)
---------  ------------------- --------------------- ----------------
 0/0       4xGE-4x10GE-FIXED   ok                    8w5d
R0         N520-X-4G4Z-A       ok, active            8w5d
F0                             ok, active            8w5d
P0         NCS520-PSU0         ok                    never
P1         NA                  ok                    never
P2         NCS520-FAN          ok                    never

Slot       CPLD Version        Firmware Version
---------  ------------------- ------------------------------------
R0         0003001E            1.2(20180810:133528) [ncs520-dev] --> the ROMMON version is 1.2
F0         0003001E            1.2(20180810:133528) [ncs520-dev]
```

Note Do not migrate if the ROMMON version is 1.5 or above.

Step 2 Copy the running configuration to the bootflash for backup

```
Device# copy running-config bootflash:backup_config
Destination filename [backup_config]?
15549 bytes copied in 0.404 secs (38488 bytes/sec)
```

Step 3 Copy the migration image to bootflash location.

You can download the migration image from the location:
https://software.cisco.com/download/home/286320761/type/286317642/release/1.5.

```
Device# copy tftp: bootflash:
Address or name of remote host []? 10.64.99.152
Source filename []? ncs520-1.5rommon-auto-upgrade-xe.bin
Destination filename [ncs520-1.5rommon-auto-upgrade-xe.bin]?
Accessing tftp://10.64.99.152/ ncs520-1.5rommon-auto-upgrade-xe.bin...
Loading ncs520-1.5rommon-auto-upgrade-xe.bin from 10.64.99.152 (via GigabitEthernet0):!!!
```

Step 4   Copy the Cisco IOS XE Amsterdam 17.3.x (or later) software image to bootflash.

Step 5   Set the boot variable to migration image and reload the router.

```
boot system bootflash:ncs520-1.5rommon-auto-upgrade-xe.bin
```

Caution   Do not perform any power cycle or remove the power cable during the ROMMON upgrade. If there is a power loss during the upgrade, it may result in corruption of the boot image and it may require RMA of the equipment.

Step 6   Verify the ROMMON image version.

For RJ45 console: Look out for the following logs during bootup. These logs indicate successful ROMMON upgrade. After a successful ROMMON upgrade, the node auto reloads, which take at least five minutes.

```
Full Package address :0xC79BF018 Max-Address for IOS-Pkg Allocation:0xC79BEC18
%IOSXEBOOT-4-BOOTLOADER_UPGRADE: (rp/0): ### Wed Jul 31 11:51:41 Universal 2019 PLEASE DO NOT POWER
 CYCLE ### BOOT LOADER UPGRADING

%IOSXEBOOT-4-BOOTLOADER_UPGRADE: (rp/0): Boot loader golden upgrade succesful


%IOSXEBOOT-4-BOOTLOADER_UPGRADE: (rp/0): Boot loader upgrade succesful
%IOSXEBOOT-4-BOOTLOADER_UPGRADE: (rp/0): To activate the new Rommon ,system will reload now!!!!

 %IOSXEBOOT-4-BOOTLOADER_UPGRADE: (rp/0): ### After reload, PLEASE LOAD CCO IMAGE ###
N520-54-S1#show platform
Chassis type: N520-X-4G4Z-A

Slot      Type               State                 Insert time (ago)
--------- ------------------ --------------------- -----------------
 0/0      4xGE-4x10GE-FIXED  ok                    00:00:51
R0        N520-X-4G4Z-A      ok, active            00:03:07
F0                                                 ok, active            00:03:07
P0        NCS520-PSU0        ok                    never
P1        NA                                       ok                    never
P2        NCS520-FAN         ok                    never

Slot      CPLD Version       Firmware Version
--------- ------------------ --------------------------------------
R0        0003001E           1.5(20190415:181241) [ncs520-dev] --> the ROMMON version is 1.5
F0        0003001E           1.5(20190415:181241) [ncs520-dev]
```

For VTY Session: Wait for 30 minutes for auto upgrade to complete and the router to boot up. Reestablish the VTY session.

```
Device#show platform
Chassis type: N520-X-4G4Z-A

Slot      Type               State                 Insert time (ago)
--------- ------------------ --------------------- -----------------
 0/0      4xGE-4x10GE-FIXED  ok                    00:00:51
R0        N520-X-4G4Z-A      ok, active            00:03:07
F0                                                 ok, active            00:03:07
P0        NCS520-PSU0        ok                    never
```

```
P1      NA                 ok                   never
P2      NCS520-FAN         ok                   never

Slot    CPLD Version       Firmware Version
--------- ------------------ --------------------------------------
R0      0003001E           1.5(20190415:181241) [ncs520-dev] --> the ROMMON version is 1.5
F0      0003001E           1.5(20190415:181241) [ncs520-dev]
```

Step 7   Set the boot variable to the Cisco IOS XE Amsterdam 17.3.x image and delete the migration image from the bootflash. Reload the router to activate the Cisco IOS XE Amsterdam 17.3.x software image.

```
Device#conf t

Device(config)#no boot system bootflash:ncs520-1.5rommon-auto-upgrade-xe.bin
Device(config)#boot system bootflash:<CCO Image>
Device(config)#end
Device#write memory
Device#del bootflash:ncs520-1.5rommon-auto-upgrade-xe.bin
```

Step 8   After booting the 17.3.x image, ROMMON and FPGA will automatically upgrade and the node will be reloaded. Once the node is up, the output will be:

```
Device#show platform
Chassis type: N520-X-20G4Z-A

Slot Type State Insert time (ago)
--------- ------------------ -------------------- -----------------
0/0 20xGE-4x10GE-FIXED ok 1w5d
R0 N520-X-20G4Z-A ok, active 1w5d
F0 ok, active 1w5d
P0 NCS520-PSU0 ps, fail never
P1 NCS520-PSU1 ok never
P2 NCS520-FAN ok never

Slot CPLD Version Firmware Version
--------- ------------------ --------------------------------------
R0 00030025 1.6(20191125:124452) [ncs520-dev]
F0 00030025 1.6(20191125:124452) [ncs520-dev]
```

Software Licensing Overview

The Cisco NCS 520 Series Ethernet Access Device supports the following types of licenses:

- Port Licensing—Port Upgrade license is available as a "Pay as you Grow" model.

  - 10G upgrade license

  - 1G upgrade license

- Metro Access (default)

The following method is used to activate the above licenses:

- Cisco Software Licensing—The Cisco Software License Activation feature is a set of processes and components to activate Cisco software feature sets by obtaining and validating fee-based Cisco software licenses.

Note Licenses that are generated by the Cisco Software Licensing are tied to the UDI of the chassis and a corresponding watchtower device certificate (WDC) is stored in the system.

The following features are supported for the software licenses:

- QoS, with deep buffers and hierarchical QoS (HQOS)
- Layer 2: 802.1D, 802.1Q
- Ethernet Virtual Circuit (EVC)
- Ethernet OAM (802.11g, 802.3ah)
- IPv4 host connectivity
- IP Access License

Smart Licensing

If you are using Cisco IOS XE Bengaluru 17.6.1 or an earlier release version, Smart Licensing is not enabled by default. To enable Smart Licensing, see Software Activation Configuration Guide (Cisco NCS 520 Series).

Feature Navigator

Use the Cisco Feature Navigator to find information about feature, platform, and software image support. To access the Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on cisco.com is not required.

Supported Packages and System Requirements

Determining the Software Version

Use the following commands to verify your software version:

- Consolidated Package— **show version**

Supported FPGA Version

The table below lists the FPGA version of the software releases.

Table 1: FPGA Versions for this release

Release	FPGA Version
Cisco IOS XE Amsterdam 17.3.4	0x00030025

Cisco IOS XE Amsterdam 17.3.5	0x00030025
Cisco IOS XE Amsterdam 17.3.6	0x00030025
Cisco IOS XE Amsterdam 17.3.7	0x00030025
Cisco IOS XE Amsterdam 17.3.8	0x00030025
Cisco IOS XE Amsterdam 17.3.8a	0x00030025

Note   FPGA will automatically upgrade to **0x00030025** from Cisco IOS XE Amsterdam 17.3.x onwards.

The Cisco NCS 520 Series Ethernet Access Device will take around 210 seconds to reboot after a successful FPGA upgrade. Do not power-cycle the Ethernet Access Device during FPGA upgrade.

Supported ROMMON Version

Table 2: Supported ROMMON Version

Supported Cisco IOS-XE Release	ROMMON Version
Cisco IOS XE Amsterdam 17.3.4	1.6
Cisco IOS XE Amsterdam 17.3.5	1.6
Cisco IOS XE Amsterdam 17.3.6	1.6
Cisco IOS XE Amsterdam 17.3.7	1.6
Cisco IOS XE Amsterdam 17.3.8	1.6
Cisco IOS XE Amsterdam 17.3.8a	1.6

Note   ROMMON will automatically upgrade to **1.6** from Cisco IOS XE Amsterdam 17.3.x onwards.