Lenovo RackSwitch G8272

Release Notes

For Lenovo Cloud Network Operating System 10.5

Lenovo™

Note: Before using this information and the product it supports, read the general information in the *Safety information and Environmental Notices* and *User Guide* documents on the Lenovo *Documentation* CD and the *Warranty Information* document that comes with the product.

Release Notes

This release supplement provides the latest information regarding Lenovo Cloud Network Operating System 10.5 for the Lenovo RackSwitch G8272 (referred to as G8272 throughout this document).

This supplement modifies and extends the following Cloud NOS documentation for use with *CNOS* 10.5:

- *Lenovo Network Application Guide for Lenovo Cloud Network Operating System 10.5*

- *Lenovo Network Command Reference for Lenovo Cloud Network Operating System 10.5*

- *Lenovo Network Python Programming Guide for Lenovo Cloud Network Operating System 10.5*

- *Lenovo Network REST API Programming Guide for Lenovo Cloud Network Operating System 10.5*

- *Lenovo Rackswitch G8272 Installation Guide*

These publications are available from the following website:

http://systemx.lenovofiles.com/help/topic/com.lenovo.systemx.common.nav.doc/overview_rack_switches.html

Please keep these release notes with your product manuals.

Note: The Lenovo Cloud Network Operating System is based on the Embedded Linux Integration Environment (ELIE). To obtain open source code licenses, go to https://github.com/lenovo/ELIE/tree/master/elie-1.7.1/licenses/. For details on how to obtain open source code, please contact Lenovo Support.

Hardware Support

CNOS 10.5 software is supported on the G8272 high performance Layer 2-3 network switches.

The G8272 is a 1U rack-mountable aggregation switch with unmatched line-rate Layer 2 performance. The G8272 uses a wire-speed, non-blocking switching fabric that provides simultaneous wire-speed transport of multiple packets at low latency on all ports.

The switch unit contains the following switching ports:

● Forty-eight 10 Gigabit Ethernet (GbE) Small Form Pluggable Plus (SFP+) ports which also support legacy 1 GbE connections

● Six 40 GbE Quad Small Form Pluggable Plus (QSFP+) ports, each of which can optionally be used as four 10 GbE SFP+ ports

Figure 1. G8272 front panel

Management Panel   SFP+ Ports   QSFP+ Ports
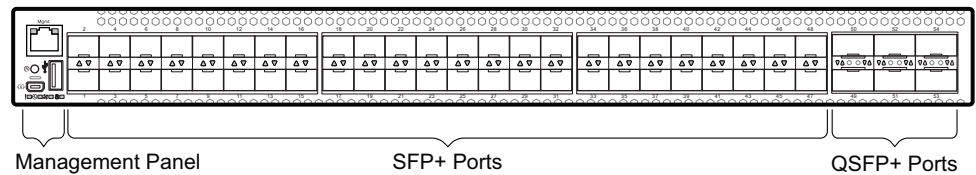
Converting the Switch Software Image from CNOS to ENOS

Follow these directions to convert your switch software image from Lenovo Network Cloud Operating System to Lenovo NOS 8.x. To download all necessary software images, go to the following website:

http://support.lenovo.com

If you already have the legacy 8.x ENOS image on your switch, please go to "Switching between ENOS and CNOS images loaded on the G8272" on page 11.

Note: The first time the switch reboots with ENOS, the CNOS configuration is set to factory default.

1. Download the ENOS boot image to the switch and enter **y** to confirm the download operation.

```
G8272# cp tftp tftp://<tftp server IP>/G8272-8.2.5.0_Boot.imgs system-image
boot vrf management
Confirm download operation? (y/n) [n] y
Download in progress
..........
Copy Success

Install image...This takes about 90 seconds. Please wait
Check image signature succeeded
Extracting image: 100%
Installing eNOS RFS:
Updating flash: 100%
Extracting image: 100%
Installing eNOS Kernel:
Updating flash: 100%
Extracting image: 100%
Installing eNOS DFT:
Updating flash: 100%
Extracting image: 100%
Installing uboot:
Updating flash: 100%
Boot image installation succeeded.
```

2. Download the ENOS system image to the switch and enter **y** to confirm the download operation.

```
G8272# cp tftp tftp://<tftp server IP>/G8272-8.2.5.0_OS.imgs system-image os
vrf management
Confirm download operation? (y/n) [n] y
Download in progress
..........
Copy Success
Install image...This takes about 90 seconds. Please wait
Check image signature succeeded
Extracting image: 100%
Installing E-NOS image to image1
Installing image to E-NOS image1: 100%
Boot image installation failed.
OS image installation succeeded.
```

3. Reload the switch, confirming the reboot when prompted.

```
G8272# reload
reboot system (y/n) ? y
```

4. After the switch reboots, log in and verify that the switch is running the ENOS 8.x image.

```
G8272# show boot

Current running image version: 8.2.5
Currently set to boot software image1, unknown config block.
NetBoot: disabled, NetBoot tftp server:  , NetBoot cfgfile:
Current boot Openflow protocol version: 1.0
USB Boot: disabled
Currently profile is default, set to boot with default profile next time.
Current FLASH software:
  image1: version 8.2.5 downloaded 10:29:59 Wed Nov 23, 2016, Mode
Stand-alone
  image2: version 8.2.5, downloaded 10:32:19 Wed Nov 23, 2016, Mode
Stand-alone
  boot kernel: version 8.2.5
  bootloader : version 10.5.2.0
  onie image: version unknown
Currently scheduled reboot time: none
```

Because both ENOS version 8.x and CNOS 10.x use the same boot kernel, the 10.x version will be reflected in the boot kernel version displayed if you switch to ENOS 8.x.

Converting the Switch Software Image from ENOS to CNOS

The new Lenovo Cloud Network Operating System image can coexist on the switch with your legacy 8.x Lenovo NOS. When you install the 10.x image, the previous 8.x installation will be preserved in its original state and can be returned to by the steps outlined. The newly installed 10.x installation will start from a default configuration.

Follow these directions to convert your switch software image from Lenovo NOS 8.x to Lenovo Network Cloud Operating System. To download all necessary software images, go to the following website:

If you already have the CNOS image loaded on your switch, please go to .

1. Connect to the switch through the console terminal. Make sure you are running Lenovo NOS 8.2.5.0 or later.

   To determine the software version currently used on the switch, use the following switch command:

   ```
   G8272# show version [brief]
   ```

   If you are running a version of Lenovo ENOS earlier than 8.2.5, download and install a more recent version of the Lenovo NOS image before going to the next step.

2. From the 8.2.5 or later image, download the Cloud NOS image:

   ```
   G8272# copy tftp image1 address <TFTP server address> filename <location on TFTP
   server relative to tftpboot location>/G8272-CNOS-10.5.2.0.imgs mgt-port
   ```

   Note: CNOS consists of a single image to install that contains all components, including boot and operating system.

   During the download, you are presented with the following message:

   ```
   WARNING: This is the ONLY region with valid bootable image.
            If download fails, switch will not be able to boot.
            Please download into image2 to prevent potential fatal error!

   Confirm overwriting the ONLY bootable image (y/n) ?
   ```

   Enter y to continue.

   ```
   Confirm overwriting the ONLY bootable image (y/n) ? y
   Image download started to image1
   File appears valid
   Download in progress
   ........................
   ```

3. When the image is successfully downloaded, the switch will ask you to confirm the update:

```
Download Complete
Valid image detected.
Confirm upgrade (y/n) ?
```

Enter y to continue.

```
Confirm upgrade (y/n) ? y
```

4. When the download has completed, reset the switch:

```
G8272# reload
Reset will use software "image1" and the active config block.
>> Note that this will RESTART the Spanning Tree,
>> which will likely cause an interruption in network service.
Confirm reload (y/n) ?
```

5. Enter y to continue the reload.

6. When the switch finishes rebooting, log in and verify the image to make sure it is the correct image running the correct version of the software:

```
G8272 login: admin
Password: <password>
Last login: Mon Feb 13 12:19:34 2016 from 10.42.1.100
<build note>

NOS version 10.5.2.0 LENOVO G8272, Tue Feb 14 15:01:20 PDT 2016

G8272# enable
G8272# display boot
Current ZTP State: Enable
Current FLASH software:
  active image: version 10.5.2.0, downloaded 08:56:56 UTC Tue Feb  7 2017
  standby image: version 10.5.2.0, downloaded 10:56:42 UTC Tue Feb  7
2017
  Uboot: version 10.5.2.0, downloaded 08:56:58 UTC Tue Feb  7 2017
  ONIE: version 10.5.2.0, downloaded 14:48:08 UTC Tue Feb  7 2017
Currently set to boot software active image
Current port mode: default mode
```

Note: If this is first time switching NOS versions the image version may appear as unknown. To fix this:

7. Reinstall the CNOS image again following standard image install methods:

```
G8272# cp tftp tftp://<TFTP server address>/G8272-CNOS-10.5.2.0.imgs
system-image all vrf management
Confirm download operation? (y/n) [n] y
```

8. When prompted to change the active boot image to the standby image, enter **y** to confirm:

```
Boot loader now contains Software Version 10.5.2.0
Standby image now contains Software Version 10.5.2.0
Switch is currently set to boot active image.
Do you want to change that to the standby image? (y/n) [n] y
Switch is to be booted with standby image.
```

Note: After this step, reloading the switch is not mandatory.

Note: Because both NOS version 8.x and CNOS 10.x use the same boot kernel, the 10.x version will be reflected in the boot kernel version displayed if you switch to NOS 8.x.

Supplemental Information

This section provides additional information about configuring and operating the G8272 and CNOS.

The Boot Management Menu

The Boot Management menu allows you to switch the software image or to recover from a failed software download.

You can interrupt the boot process and enter the Boot Management menu from the serial console port. When the system displays Memory Test, press **<Shift + B>**. The Boot Management menu appears.

```
Resetting at 10:55:49 Sun Feb 19, 2017…
Memory Test ...............................
Boot Management Menu
        M - Change boot mode (ENOS vs CNOS)
        I - Change booting image
        R - Boot in recovery mode (tftp and xmodem download of images to
recover switch)
        P - Password reset
        O - ONIE boot menu
        Q - Reboot
        E - Exit
Please choose your menu option: I
Current boot image is 1. Enter image to boot: 1 or 2: 2
Booting from image 2
```

The Boot Management menu allows you to perform the following actions:

● To switch between ENOS and CNOS images, press **M** and follow the screen prompts. ENOS refers to Lenovo Enterprise Network OS and CNOS refers to Lenovo Cloud Network OS. For further details, see "Switching between ENOS and CNOS images loaded on the G8272" on page 11.

● To change the booting image, press **I** and follow the screen prompts.

● To boot in recovery mode, press **R**.

● To reset the default user password, press **P** and follow the screen prompts.

● To boot in ONIE menu, press **O**. The submenu is available, but executing any of its options results in an error, unless the ONIE license key is installed.

● To reboot the switch, press **Q**. The booting process restarts.

● To exit the Boot Management menu, press **E**. The booting process continues.

Switching between ENOS and CNOS images loaded on the G8272

If you have both ENOS and CNOS images loaded on your device, you can switch from one to another by using the Boot Management menu. To do so, follow these steps:

1. Reboot the switch.

```
G8272# reload
```

2. When the phrase "Booting Lenovo NOS" appears, quickly press **B** (**Shift**-**b**) to call the Boot Management Menu.

```
Boot Management Menu
        M - Change boot mode (ENOS vs CNOS)
        I - Change booting image
        R - Boot in recovery mode (tftp and xmodem download of images to
recover switch)
        P - Password reset
        O - ONIE boot menu
        Q - Reboot
        E - Exit
Please choose your menu option:
```

3. Enter **M** to change the boot mode.

```
Please choose your menu option: M
```

4. Enter **E** to enter ENOS Boot Mode or **C** to enter CNOS Boot Mode.

```
Currently booting in CNOS mode
Enter boot mode: ENOS or CNOS: E
Boot Management Menu
        M - Change boot mode (ENOS vs CNOS)
        I - Change booting image
        C - Change configuration block
        R - Boot in recovery mode (tftp and xmodem download of images to
recover switch)
        O - ONIE boot menu
        Q - Reboot
        E - Exit
Please choose your menu option:
```

5. At the Boot Management Menu, enter **Q** to reboot.

   Note: All previous CNOS/ENOS configurations are stored and re-applied when switching back to the corresponding OS.

Recovering from a Failed Software Upgrade

Use the following procedure to recover from a failed software upgrade.

1. Connect a PC to the serial port of the switch.

2. Open a terminal emulator program that supports TFTP (preferred) or Xmodem download (for example, HyperTerminal, SecureCRT, PuTTY). If using Xmodem, make sure the following settings are in effect:

   - Speed: 9600 bps
   - Data Bits: 8
   - Stop Bits: 1
   - Parity: None
   - Flow Control: None

3. To access the Boot Management menu, you must interrupt the boot process from the Console port. Boot the G8272, and when the system begins displaying Memory Test progress (a series of dots), press **<Shift B>**. The Boot Management menu will display:

```
Resetting at 10:55:49 Sun Feb 12, 2017…
Memory Test ...............................
Boot Management Menu
        M - Change boot mode (ENOS vs CNOS)
        I - Change booting image
        R - Boot in recovery mode (tftp and xmodem download of images to
recover switch)
        P - Password reset
        O - ONIE boot menu
        Q - Reboot
        E - Exit
Please choose your menu option:
```

4. Select **R** for **Boot in recovery mode**. You will see the following display:

```
Entering Rescue Mode.
Please select one of the following options:
        T) Configure networking and tftp download an image
        X) Use xmodem 1K to serial download an image
        P) Physical presence (low security mode)
        F) Filesystem check
        R) Reboot
        E) Exit

Option?:
```

- If you choose option **T** (TFTP download), go to step 5.
- If you choose option **X** (Xmodem serial download), go to step 6.

5. **TFTP download**: The switch prompts you to enter the following information:

```
Performing TFTP rescue. Please answer the following questions (enter 'q'
to quit):
IP addr    :
Server addr:
Netmask    :
Gateway    :
Image Filename:
```

a. Enter the required information and press **<Enter>**.

b. You will see a display similar to the following:

```
        Host IP    : 10.10.98.110
        Server IP  : 10.10.98.100
        Netmask    : 255.255.255.0
        Broadcast  : 10.10.98.255
        Gateway    : 10.10.98.254
Installing image G8272-CNOS-10.5.2.0_OS.imgs from TFTP server
10.10.98.100
```

c. When you see the following prompt, enter the image number where you want to install the new software and press **<Enter>**.

```
Install image as image 1 or 2 (hit return to just boot image): 1
```

d. The following message is displayed when the image download is complete. Continue to step 7.

```
Entering Rescue Mode.
Please select one of the following options:
        T) Configure networking and tftp download an image
        X) Use xmodem 1K to serial download an image
        P) Physical presence (low security mode)
        F) Filesystem check
        R) Reboot
        E) Exit

Option?:
```

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6. **Xmodem download**: When you see the following message, change the Serial Port characteristics to 115200 bps:

```
Change the baud rate to 115200 bps and hit the <ENTER> key before
initiating the download.
```

a. Press **<Enter>** to set the system into download accept mode. When the readiness meter displays (a series of "C" characters), start XModem on your terminal emulator.

b. When you see the following message, change the Serial Port characteristics to 9600 bps:

```
Change the baud rate back to 9600 bps, hit the <ESC> key.
```

c. When you see the following prompt, enter the image number where you want to install the new software and press **<Enter>**.

```
Install image as image 1 or 2 (hit return to just boot image): 1
```

d. The following message is displayed when the image download is complete. Continue to step 7.

```
Entering Rescue Mode.
Please select one of the following options:
        T) Configure networking and tftp download an image
        X) Use xmodem 1K to serial download an image
        P) Physical presence (low security mode)
        F) Filesystem check
        R) Reboot
        E) Exit

Option?:
```

7. Image recovery is complete. Perform one of the following steps:

- Press **R** to reboot the switch.

- Press **E** to exit the Boot Management menu

- Press the Escape key (**<Esc>**) to re-display the Boot Management menu.

New Features in This Release

This release of Lenovo Cloud Network Operating System contains the following significant fixes, enhancements, and other changes.

NSX L2 Gateway

NSX is a VMware solution for network virtualization. Lenovo's NSX gateway provides a Hardware Switch Controller (HSC) VxLAN Tunnel Endpoint (VTEP) that enables legacy network devices to communicate with Virtual Machines (VMs) on NSX hypervisors.

Note: Lenovo is actively working with VMware to complete the certification for NSX Gateway. NSX Gateway support is available in this release while VMware certification is pending. Lenovo will fully support the NSX Gateway implementation throughout the certification process. Please work with the controller vendor on issues related to the controller.

Known Issues

This section describes known issues for CNOS 10.5 on the RackSwitch G8272.

Lenovo HCI Solution with Nutanix

This release supports Nutanix AOS software versions 5.1.0 and 5.1.1.

Note: The release of Nutanix AOS 5.1.2 inadvertently removed the network APIs so it cannot be used with ThinkAgile Network Orchestrator. The APIs will be restored in AOS 5.1.3. ThinkAgile Network Orchestrator is supported with Nutanix AOS v5.1.1.3 or 5.1.3.

Virtual Ports

Inconsistent behavior occurs when IEEE 802.1Q (dot1q) tunnel traffic is received on a virtual port. (ID: 101708)

NSX Gateway

The following limitations exist:

- Throughput statistics of the southbound interface of the VXLAN gateway do not display on the NSX GUI. (ID: 113832)

- After Bidirectional Forwarding Detection (BFD) failover, active service node election takes approximately two seconds to occur. (ID: 116882)