

Lenovo ThinkSystem NE2552E Flex Switch

Release Notes

for Lenovo Enterprise Network Operating System 8.4

LenovoTM

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.

Third Edition (August 2018)

© Copyright Lenovo 2018
Portions © Copyright IBM Corporation 2014.

LIMITED AND RESTRICTED RIGHTS NOTICE: If data or software is delivered pursuant a General Services Administration "GSA" contract, use, reproduction, or disclosure is subject to restrictions set forth in Contract No. GS-35F-05925.

Lenovo and the Lenovo logo are trademarks of Lenovo in the United States, other countries, or both.

Release Notes

This release supplement provides the latest information regarding Lenovo Enterprise Network Operating System 8.4 for the Lenovo ThinkSystem NE2552E Flex Switch.

This supplement modifies and extends the following Lenovo Enterprise NOS documentation for use with ENOS 8.4:

- *Lenovo ThinkSystem NE2552E Flex Switch Application Guide for Lenovo Enterprise Network Operating System 8.4*
- *Lenovo ThinkSystem NE2552E Flex Switch Command Reference for Lenovo Enterprise Network Operating System 8.4*
- *Lenovo ThinkSystem NE2552E Flex Switch Installation Guide*

The publications listed are available at the following address:

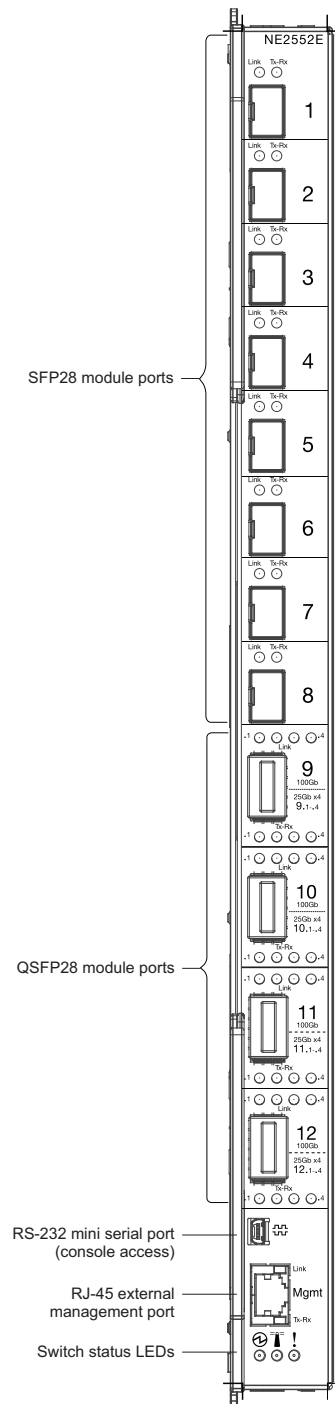
<http://flexsystem.lenovofiles.com/help/index.jsp>

Please keep these release notes with your product manuals.

Hardware Support

Lenovo Enterprise Network Operating System 8.4 software is supported on the Lenovo ThinkSystem NE2552E Flex Switch. The NE2552E, shown in [Figure 1](#), is a high performance Layer 2-3 embedded network switch that features tight integration with the Lenovo Flex System chassis management module.

Figure 1. NE2552E Faceplate



The NE2552E has the following port capabilities:

- A combination of either 28x10G/25G or 14x50G ports internally.
- 8x10G/25G SFP28 ports plus 4x100G QSFP+ ports, and 1/10/100/1000 Base-T management port externally. The 100G ports are capable of 1x40G configuration and 4x10G/25G, or 2x50G breakout configurations.
- A 2x25G or 1x50G connection to an external device via a KR connector.

Updating the Switch Software Image

The switch software image is the executable code running on the NE2552E. A version of the image comes pre-installed on the device. As new versions of the image are released, you can upgrade the software running on your switch. To get the latest version of software supported for your NE2552E, go to the following website:

<http://support.lenovo.com>

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

```
NE2552E> show version
```

The typical upgrade process for the software image consists of the following steps:

- Load a new software image and boot image onto a SFTP, FTP, SCP, or TFTP server on your network.
- Transfer the new images to your switch.
- Specify the new software image as the one which will be loaded into switch memory the next time a switch reset occurs.
- Reload the switch.

For instructions on the typical upgrade process, see [“Loading New Software to Your Switch”](#) on page 7.

Loading New Software to Your Switch

The NE2552E can store up to two different switch software images (called `image1` and `image2`) as well as special boot software (called `boot`). When you load new software, you must specify where it should be placed: either into `image1`, `image2`, or `boot`.

For example, if your active image is currently loaded into `image1`, you would probably load the new image software into `image2`. This lets you test the new software and reload the original active image (stored in `image1`), if needed.

ATTENTION: When you upgrade the switch software image, always load the new boot image and the new software image before you reset the switch. If you do not load a new boot image, your switch might not boot properly (To recover, see [“Recovering from a Failed Image Upgrade” on page 12](#)).

To load a new software image to your switch, you will need the following:

- The image and boot software loaded on a SFTP, FTP, SCP, or TFTP server on your network.

Note: Be sure to download both the new boot file and the new image file.

- The hostname or IP address of the SFTP, FTP, SCP, or TFTP server.

Note: The DNS parameters must be configured if specifying hostnames.

- The name of the new software image or boot file.

When the software requirements are met, use the following procedure to download the new software to your switch.

Loading Software via the Command Line Interface

Follow these steps to load software onto your switch:

1. In Privileged EXEC mode, enter the following command:

```
NE2552E# copy {sftp|tftp|scp|ftp} {image1|image2|boot-image}
```

2. Enter the hostname or IP address of the SFTP, FTP or TFTP server.

```
Address or name of remote host: <name or IP address>
```

3. Enter the name of the new software file on the server.

```
Source file name: <filename>
```

The exact form of the name will vary by server. However, the file location is normally relative to the SFTP, FTP, SCP, or TFTP directory (for example, `tftpboot`).

4. If required by the SFTP, FTP, SCP, or TFTP server, enter the appropriate username and password.
5. The switch will prompt you to confirm your request.

Once confirmed, the software will begin loading into the switch.

6. When loading is complete, use the following commands to enter Global Configuration mode to select which software image (`image1` or `image2`) you want to run in switch memory for the next reboot:

```
NE2552E# configure terminal
NE2552E(config)# boot image {image1|image2}
```

The system will then verify which image is set to be loaded at the next reset:

```
Next boot will use switch software image1 instead of image2.
```

7. Reboot the switch to run the new software:

```
NE2552E(config)# reload
```

The system prompts you to confirm your request. Once confirmed, the switch will reboot to use the new software.

Note: If you select “No” when asked to confirm the reload, any changes made to the configuration since the last reboot will be lost.

Loading Software via BBI

You can use the Browser-Based Interface to load software onto the NE2552E. The software image to load can reside in one of the following locations:

- SFTP server
- FTP server
- SCP server
- TFTP server
- Local computer

After you log onto the BBI, perform the following steps to load a software image:

1. Click the Configure context tab in the toolbar.
2. In the Navigation Window, select System > Config/Image Control.

The Switch Image and Configuration Management page appears.

3. If you are loading software from your computer (HTTP client), skip this step and go to the next. Otherwise, if you are loading software from a SFTP/FTP/SCP/TFTP server, enter the server's information in the SFTP/FTP/SCP/TFTP settings section.
4. In the Image Settings section, select the image version you want to replace (Image for Transfer).
 - If you are loading software from an SFTP/FTP/SCP/TFTP server, enter the file name and click **Get Image**.
 - If you are loading software from your computer, click **Browse**.
In the File Upload Dialog, select the file and click **OK**. Then click **Download via Browser**.

Once the image has loaded, the page refreshes to show the new software.

Updating vLAG Switches with Lenovo Networking OS 8.x

Below are the steps for updating the software and boot images for switches configured with vLAG:

1. Save the configuration on both switches using the following command:

```
NE2552E# copy running-config startup-config
```

2. Use FTP, STFP or TFTP to copy the new Networking OS and boot images onto both vLAG switches. For more details, see [“Loading Software via the Command Line Interface” on page 8](#).
3. Shutdown all ports except the ISL ports and the health check port on the primary switch (Switch 1).
Note: Do not save this configuration.
4. Reload Switch 1. Switch 2 will assume the vLAG primary role. Once Switch 1 has rebooted, Switch 1 will take the vLAG secondary role.
5. Shutdown all ports except the ISL ports and the health check port on Switch 2.
Note: Do not save this configuration.
6. Reload Switch 2. Switch 1 will assume the vLAG primary role. Once Switch 2 has rebooted, make sure that Switch 1 is now the vLAG primary switch and Switch 2 is now the vLAG secondary switch.
7. Verify the all the vLAG clients have converged using the following command:

```
NE2552E> show vlag information
```

Supplemental Information

This section provides additional information about configuring and operating the NE2552E and ENOS.

The Boot Management Menu

The Boot Management menu allows you to switch the software image, reset the switch to factory defaults, 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 the System ...
Memory Test .....

Boot Management Menu
  I - Change booting image
  C - Change configuration block
  R - Boot in recovery mode (tftp and xmodem download of images to
recover switch)
  Q - Reboot
  E - Exit
Please choose your menu option:
```

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

- To change the booting image, press **I** and follow the screen prompts.
- To change the configuration block, press **C** and follow the screen prompts.
- To perform a software image recovery, press **R** and follow the screen prompts.
- To reboot the switch press **Q** and follow the screen prompts.
- To exit the Boot Management menu, press **E**. The booting process continues.

Recovering from a Failed Image Upgrade

The Boot Management menu allows you to perform fundamental device management operations, such as selecting which software image will be loaded, resetting the NE2552E to factory defaults or recovering from a failed image download.

Use the following procedure to recover from a failed image upgrade:

1. Connect a PC to the serial Console port of the NE2552E.
2. Open a terminal emulator program that supports XModem Download (for example, HyperTerminal, SecureCRT or PuTTY) and select the following port characteristics:
 - Speed: 9,600 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 NE2552E, and when the system begins displaying Memory Test progress (a series of dots), press **Shift + B**.

The Boot Management menu appears:

```
Resetting the System ...
Memory Test .....

Boot Management Menu
  I - Change booting image
  C - Change configuration block
  R - Boot in recovery mode (tftp and xmodem download of images to
recover switch)
  Q - Reboot
  E - Exit
Please choose your menu option:
```

4. Select **R** to boot in recovery mode. The following menu appears:

```
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
  I) Select which image to boot
  C) Select configuration block to use
  R) Reboot
  E) Exit
Option? :
```

If you choose option **X** (Xmodem serial download), go to [Step 5](#).

If you choose option **T** (TFTP download), go to [Step 6](#).

5. **Xmodem download:** When you see the following message, change the serial port characteristics to 115,200 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. You will see a display similar to the following:

```
... Waiting for the <Enter> key to be hit before the download can
start...
CC
```

- b. When you see the following message, change the serial port characteristics to 9,600 bps:

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

- c. Press **Enter** to start installing the image. If the file is a software image, enter the image number:

```
install software image 1 or 2 (hit return to just boot image):
```

The image install will begin. After the procedure is complete, the Recovery Mode menu is displayed.

```
Extracting images ... Do *NOT* power cycle the switch.
Installing Root Filesystem:
Image signature verified. 100%
Installing Kernel:
Image signature verified. 100%
Installing Device Tree:
Image signature verified. 100%
Installing Boot Loader: 100%
Updating install log. File image installed from xmodem at 18:06:02 on
6-1-2018
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)
    R) Reboot
    E) Exit

Option? :
```

Continue to [Step 7](#).

6. **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**. 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 8.4.0_OS.img from TFTP server 10.10.98.100
```

b. If the file is a software image, you will be prompted to enter an image number:

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

The following message is displayed when the image download is complete:

```
Image2 updated succeeded
Updating install log. File 8.4.0_OS.img installed from 10.10.98.100 at
15:29:30 on 6-1-2018
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)
  R) Reboot
  E) Exit

Option? :
```

Continue to [Step 7](#).

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.

Chassis Management Module

When configuring the IP interface, which is dedicated to the internal management port (IF128, MGT1), you cannot use a subnet that is already configured on any other enabled interface (IF1-127). This results in IF128 being disabled and an IP configuration of all zeros displayed on the CMM user interface. The CMM event log will indicate that a "Duplicate route" was detected.

For example, consider that the interface dedicated to the external management port (EXTM, IF127) is configured or enabled to the following IP address and mask:

```
Interface information:
127: IP4 192.168.71.120 255.255.255.0
```

The switch will reject an attempt made from the CMM CLI to configure the internal management port (MGT1, IF128) to the following IP address and mask:

```
system:switch[1]> ifconfig -i 192.168.71.130 -s 255.255.255.0
```

In this scenario, the switch rejects the attempt by disabling any current configuration on IF128, and responds to the CMM with an IP address, mask, and gateway that contains all zeros.

On the CMM CLI, the resulting condition appears as follows:

```
system:switch[1]> ifconfig
Ethernet ScSE
Enabled
-c static
-i 0.0.0.0
-s 0.0.0.0
-g 0.0.0.0
system:mm[1]> displaylog
1 I IOMod_01 04/03/12 08:02:49 (iomodule01) Duplicate route detected
to I/O module iomodule01.
2 I IOMod_01 04/03/12 08:02:49 (iomodule01) I/O module 1 IP address
was changed to 0.0.0.0.
```

VLAGs

For optimal VLAG operation, adhere to the following configuration recommendations:

- Any port-related configuration, such as applied ACLs, should be the same for all ports included in the same VLAG, across both peer switches.
- Configure VLAG health checking as shown in the *Application Guide*.

After configuring VLAG, if you need to change any configuration on the VLAG ports, you must follow these guidelines:

- If you want to change the STP mode, first disable VLAG on both the peers. Make the STP mode-related changes and re-enable VLAG on the peers.
- If you have MSTP on, and you need to change the configuration of the VLAG ports, follow these steps:

On the VLAG Secondary Peer:

1. Shutdown the VLAG ports on which you need to make the change.
2. Disable their VLAG instance using one of the following commands:

```
NE2552E(config)# no vlag adminkey <key> enable
```

```
NE2552E(config)# no vlag portchannel <LAG number> enable
```

3. Change the configuration as needed.

On the VLAG Primary Peer:

4. Disable the VLAG instance.
5. Change the configuration as needed.
6. Enable the VLAG instance.

On the VLAG Secondary Peer:

7. Enable the VLAG instance.
8. Enable the VLAG ports.

Note: This is not required on non-VLAG ports or when STP is off or when STP is PVRST.

External Port Link Negotiation

Auto-negotiation settings for each external switch port must be the same as those of the devices being connected. In a valid configuration, both ends of a port link are set with auto-negotiation on, or both ends are set to specific speed and link properties with auto-negotiation disabled.

Port Mirroring Tags BPDUs

When you perform port mirroring, Spanning Tree BPDUs are VLAN tagged at the monitoring port. This is standard behavior of port mirroring on the NE2552E. All mirrored egress traffic is tagged.

Secure Management Network

The following NE2552E attributes are reserved to provide secure management access to and from the chassis management module:

- MGT port (MGT1)
- VLAN 4095
- IP interfaces 127, 128
- Gateway 4
- STG 128

For more information about remotely managing the NE2552E through the external ports, see “Accessing the Switch” in the *Lenovo Enterprise Network Operating System 8.4 Application Guide*.

Note: The external uplink ports (EXTx) cannot be members of management VLANs.

Secure Shell (SSH)

Because SSH key generation is CPU intensive, the NE2552E attempts to avoid unnecessary key generation. The process generates three server keys:

1. One key is generated to replace the current server key, if used.
2. A second key is generated as a spare, in case the current server key is used and the specified interval expires.
3. A third key is generated for use at the next reboot.

Therefore, if you never login via SSH, you will only see two key generation events. You may see all three events directly following a reboot. If you want to witness the key generation after the specified interval has expired, then you must login via SSH at least once during each expiration interval.

Spanning Tree Configuration Tips

To ensure proper operation with switches that use Cisco Per VLAN Spanning Tree (PVST+), you must do one of the following:

- Create a separate Spanning Tree Group for each VLAN.
- Manually add all associated VLANs into a single Spanning Tree Group.

When using Layer 2 Trunk Failover, disable Spanning Tree Protocol on external ports.

Syslog Configuration Tip

The *facility* parameter traditionally is used to correlate services (such as IP, CLI, etc.) to messages. This is done to distinguish between the different services that are running in the network/device. However, for the NE2552E, there is a single configured facility value (0-7) used on all messages. By configuring a unique facility value for each switch, a single SYSLOG server can distinguish between the various NE2552Es in the network. Refer to “System Host Log Configuration” in the *Command Reference*.

Trunk Group Configuration Tips

Please be aware of the following information when you configure trunk groups:

- Always configure trunk groups first, on both ends, before you physically connect the links.
- Configure all ports in a trunk group to the same speed.
- Configure all ports in a trunk group with the same duplex.
- Configure all ports in a trunk group with the same flow control.

New and Updated Features

Lenovo Enterprise Network Operating System 8.4 for NE2552E has been updated to include several new features, summarized in the following sections. For more detailed information about configuring NE2552E features and capabilities, refer to the complete ENOS 8.4 documentation as listed on [page 3](#).

40G QSFP28 Port Speed

The NE2552E's QSFP28 ports can now be configured as 1x40G ports.

100G SFP28 Port Speed

The switch has eight SFP28 external ports that can be configured as two 100G ports. In this port mode, only ports EXT1 and EXT5 are configured as 100G, while the other ports are inactive.

25G/50G Internal Port Auto-negotiation

Internal ports configured with auto-negotiation operate at 25G or 50G depending on the port speed configured on the other end of the link.

ACL Logging

Redesigned ACL logging with cache capabilities.

Dynamic Port Mode

You can now change the speed of both internal and external ports without reloading the switch.

UFP and IGMP

Unified Fabric Port (UFP) allows a physical port to be divided in up to 8 virtual ports. Each virtual port can be configured as a member of one or multiple VLANs, but two virtual ports belonging to the same physical port cannot be members of the same VLAN.

UFP works together with Internet Group Management Protocol (IGMP) to allow IGMP entries, such as IGMP/IPMC groups and multicast routers, to be learned on virtual ports.

Known Issues

This section describes known issues for ENOS 8.4 on the NE2552E.

Note: Please review the Change History documentation posted with the Switch Firmware to check if any of these issues have been fixed in the latest release.

CEE

When configuring Priority Flow Control (PFC) for a non-default priority (other than priority 3), PFC stops working for the non-default priority, thus the oversubscribed traffic is drop on egressing instead of being paused. (ID: 143838)

Dynamic Port Mode

The following dynamic port mode issues exist:

- In ENOS 8.4.6, when QSFP28 ports are configured in 50G port mode, only subports 1 and 2 are configured as 50G ports. The other two subports (3 and 4) are inactive.
In ENOS 8.4.8, when QSFP28 ports are configured in 50G port mode, subports 1 and 3 are configured as 50G ports. The other two subports (2 and 4) are inactive. When upgrading the firmware from 8.4.6 to 8.4.8, the configuration of subport 2 in 8.4.6 must be copied to subport 3 in 8.4.8. To correctly copy the subport configuration, the subports speed is set to 25Gbps. A warning message is displayed on screen in regards to the subport speed change.
You are then required to overwrite the port speeds back to 50Gbps or change the port configuration as needed. (ID: 142053)
- When using Browser Based Interface (BBI) or Simple Network Management Protocol (SNMP) to change the port mode, the change is done immediately after pressing the **Submit** button, and not after pressing the **Apply** button. (ID: 137852)

LACP

When configuring switch ports as members of a dynamic Link Aggregation Control Protocol (LACP) LAG, this is saved in the running configuration file. If the file is replaced with another configuration file where those switch ports are members of a static Link Aggregation Group (LAG), the new configuration is not applied correctly. The port state of each LAG member transitions to BLOCKING and all traffic received on the LAG is dropped. To avoid this scenario, we recommend that you delete the LACP LAG configuration before overwriting the current running configuration file. (ID: 123778)

Port Configuration

- For a link between the switch and another network device to function properly, both link endpoints (ports) must be configured with the same port speed or have auto-negotiation enabled. (ID: 126383, 143903)
- When downgrading the switch software image, make sure all ports are configured to modes supported in previous images - ports configured in 40G mode must be reconfigured. (ID:136593)

Port Statistics

At times, the switch displays a slightly incorrect interface packet rate when running port statistics commands. To avoid reading an incorrect packet rate, we recommend that you run such statistics commands several times. (ID: 123602)

SNMP

When running ethernet port configuration or display commands from the CLI or Browser Based Interface (BBI), you must use port aliases, such as INTA1, INTB3, EXT12. When using Simple Network Management Protocol (SNMP) to remotely access the switch, you can also use port indexes for ethernet port configuration or display commands. (ID: 122861)

To view the correspondence between port aliases and port indexes, use the following command:

```
NE2552E> show interface port-index
```

UFP

The following Unified Fabric Port (UFP) issues exist:

- Double tagged Internet Group Management Protocol (IGMP) related packets are not forwarded to tagged virtual machines based on their inner VLAN tag when:
 - The tagging of ingress frames with the port's VLAN ID is enabled;
 - UFP virtual ports are configured in tunnel mode. (ID: 143164)
- You cannot enable or disable UFP globally, per port, or per virtual port if a static IGMP entry, such as a IGMP/IPMC group or a multicast router, is configured on the UFP virtual port. (ID: 144977)

