Lenovo ThinkSystem NE0152T RackSwitch

Release Notes

For Lenovo Cloud Network Operating System 10.10

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 10.10 for the Lenovo ThinkSystem NE0152T (referred to as NE0152T throughout this document).

This supplement modifies and extends the following Cloud NOS documentation for use with *CNOS* 10.10:

- *Lenovo Network Application Guide for Lenovo Cloud Network Operating System 10.10*
- *Lenovo Network Command Reference for Lenovo Cloud Network Operating System 10.10*
- *Lenovo Network Python Programming Guide for Lenovo Cloud Network Operating System 10.10*
- *Lenovo Network REST API Programming Guide for Lenovo Cloud Network Operating System 10.10*
- *Lenovo ThinkSystem NE0152T Installation Guide for Lenovo Network Operating System*

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 OS 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 10.10 software is supported on the NE0152T high performance Layer 2-3 network switches.

The NE0152T is 1U in height and can be mounted horizontally or vertically, depending on your application. Mounting options are available for a variety of rack systems.

For superior reliability, the NE0152T uses redundant, hot-swap power supply modules and hot-swap fan modules. Module options are available for either front-to-rear airflow or rear-to-front airflow.

The NE0152T contains the following ethernet ports:

● Forty-eight 10/100/1000 Base-T RJ45 ports

● Four 10 GbE Small Form Pluggable Plus (SFP+) ports

Figure 1. NE0152T front panel

Management Panel   10/100/1000 BASE-T RJ45 Ports   10 GbE SFP+ Ports
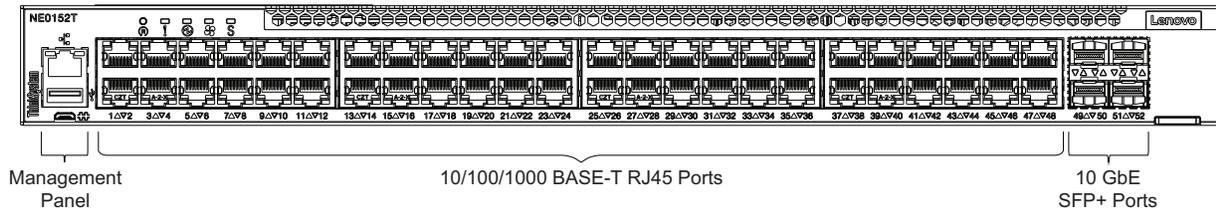
Updating vLAG Switches

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

1. Having an earlier than CNOS 10.10 version on both vLAG switches, load the CNOS 10.10 image on both of them.

   Note: Do not reboot the switch.

2. On the Primary switch, shutdown all the port-channels associated with the vLAG instances. All traffic goes through the Secondary switch.

   Note: Do not save the configuration with the disabled port-channels.

3. Reload the Primary switch so that the current Secondary switch becomes the new Primary.

   Note: The operational VLAG roles are swapped after this step.

4. After reboot, ISL automatically enters in the `Active` state.

5. A syslog notification appears alerting the user that the vLAG OS version is mismatched, but vLAG becomes operational with all its instances in the `Formed` state, after startup-delay expires.

6. On the current Primary switch, shutdown all the port-channels associated with the vLAG instances. All traffic goes through the Secondary switch.

   Note: Do not save the configuration with the disabled port-channels.

7. Reload the current Primary switch so that the current Secondary switch becomes the new Primary.

   Note: The operational VLAG roles are swapped after this step (the initial roles from the beginning of this procedure are restored).

8. After reboot, ISL automatically enters in the `Active` state, and vLAG becomes operational with all its instances in the `Formed` state, after startup-delay expires.

Supplemental Information

This section provides additional information about configuring and operating the NE0152T and CNOS.

The BIOS Menu

The Basic Input/Output System (BIOS) menu allows you to have complete system control at boot.
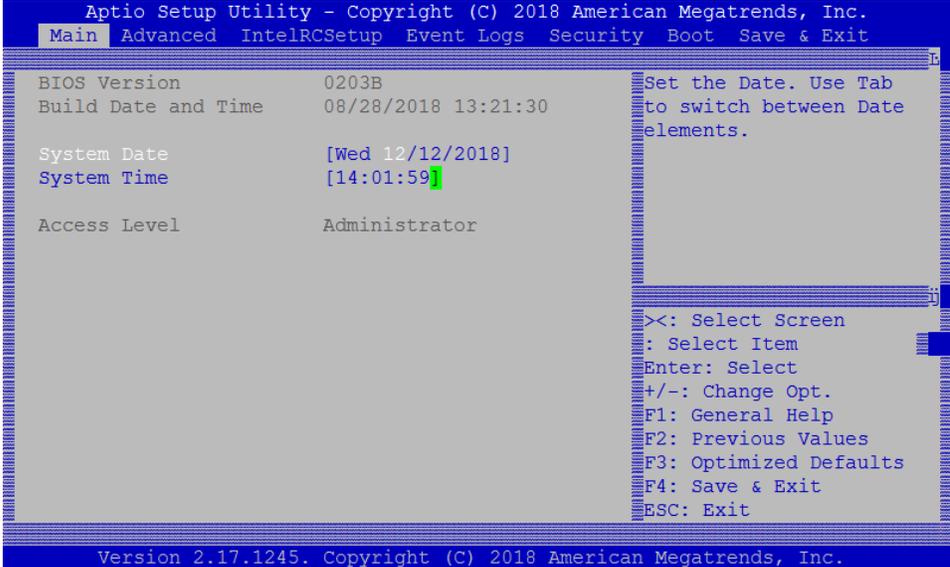
You can interrupt the startup process of the switch and enter the BIOS menu from the serial console port. When the system displays the following message, press **Delete** or **Esc**.

```
Version 2.17.1245. Copyright (C) 2018 American Megatrends, Inc.
BIOS Date: 08/28/2018 13:21:30 Ver:0203B

Press <DEL> or <ESC> to enter setup.

Entering Setup...
```

The BIOS menu appears.

```
       Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
       Main  Advanced  IntelRCSetup  Event Logs  Security  Boot  Save & Exit

   BIOS Version              0203B                    Set the Date. Use Tab
   Build Date and Time       08/28/2018 13:21:30      to switch between Date
                                                      elements.
   System Date               [Wed 12/12/2018]
   System Time               [14:01:59]

   Access Level              Administrator


                                                      ><: Select Screen
                                                      : Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit

       Version 2.17.1245. Copyright (C) 2018 American Megatrends, Inc.
```

This menu permits the following actions:

- Monitoring system configuration

- Setting user passwords

- Switching to Secure Boot Mode

- Performing key provisioning

The Grub Menu

The Grub menu allows you to switch the software image. The menu appears on the screen automatically during the switch startup process.

```
Welcome to GRUB!


                        GNU GRUB  version 2.00

+--------------------------------------------------------------------+
|CNOS slot 1                                                         |
|CNOS slot 2                                                         |
|Recovery Mode                                                       |
|ONIE                                                                |
|                                                                    |
|                                                                    |
|                                                                    |
|                                                                    |
|                                                                    |
+--------------------------------------------------------------------+

      Use the ^ and v keys to select which entry is highlighted.
      Press enter to boot the selected OS, `e' to edit the commands
      before booting or `c' for a command-line. ESC to return
      previous menu.
```

Note: For more information on ONIE, please see the *Lenovo ThinkSystem NE0152T RackSwitch ONIE User Guide*.

Rescue Mode

The Rescue Mode option allows you to recover from a failed firmware or boot image upgrade using TFTP or a USB drive.

To enter Rescue Mode, select Recovery Mode in the GRUB menu. The following menu appears.

```
Entering Rescue Mode.
Please select one of the following options:
        T) Configure networking and tftp download an image
        U) Install image from USB stick
        F) Run filesystem check
        I) Select which image to boot
        C) Reset configuration to factory default
        Z) Reset the Network Administrator (admin) password
        B) Reset the password required to enter privileged exec mode
        R) Reboot
        E) Exit

Option? :
```

The Rescue Mode menu allows you to perform the following actions:

● To recover from a failed software or boot image upgrade using TFTP, press **T** and follow the screen prompts.

● To recover using an image from a USB stick, press **U**.

● To enter the Filesystem Menu, press **F**. The following menu appears:

```
Filesystem Options.
Please select one of the following options:
        F) Run filesystem check
        W) Wipe filesystem
        E) Exit
```

    ○ To check if the switch is ready to run Cloud NOS, press **F**. It performs a check to see if the filesystem is optimally partitioned and updates it accordingly.

    ○ To erase CNOS firmware images and configuration files from the switch, press **W**.

    ○ To go back to the Rescue Mode menu, press **E**.

● To select which firmware image to boot, press **I**.

● To reset the switch configuration to factory defaults, press **C**.

● To reset the Network Administrator account (admin) password, press **Z**.

● To reset the password required to enter Privileged EXEC mode, press **B**.

● To restart the reload process from the beginning, press **R**.

● To exit the Rescue Mode menu, press **E**.

New Features in This Release

This release of Lenovo Cloud Network OS contains the following significant enhancements.

Open Linux Shell

This feature provides the capability for a CNOS administrator to load and install system applications that provide enhanced functionality that is not part of the standard CNOS distribution.

Linux shell access provides CNOS users with support for installing different applications.

You must install secure applications. For any user-installed applications, scripts or programs, the user is wholly responsible for the sanity and integrity of the system.

802.1X Port Authentication

802.1X is a standardized framework that provides port-based access control. This protocol authenticates the network clients by using a unique information like personal credentials (username/password) or digital certificates. In 802.1X architecture, the switch is a Network Access Server (NAS), and relies on a central identity/attributes repository to authenticate and authorize the client. The 802.1X standard specifies the Extensible Authentication Protocol (EAP) as a method to provide authentication and authorization using a centrally administered Authentication Server and defines the EAP over LAN (EAPoL) message format.

Telemetry Data Set Extension

New features allow CNOS telemetry to store data using an embedded Redis database. When used, the database can help streamline the REST/Python API processing for pull requests by allowing direct access from the Python API layer to the database.

MAC-move Notification

This feature enables MAC-move notification, which generates syslog messages when the switch detects that a MAC address has moved between switch ports.

MAC-move Loop Detection

This feature enables MAC-move loop detection, which detects MAC-move loops and error-disable ports that appear in the loops.

OSPFv2 with VRF

Using VRF together with OSPF enables multiple OSPF instances to be run on the switch.

NTP Server Support

The switch can be configured to act as an NTP server.

Link Flap Dampening

Link-Flap Dampening (LFD) allows the switch to separately monitor each interface for flapping events. If flapping events on an interface exceed the maximum allowed number of flaps within a time interval, then the switch automatically shuts down that interface.

PKI CRL, CDP Check and Credential Expiry

Added support for Public Key Infrastructure (PKI) CRL, CDP check, and credential expiry alert.

vLAG Orphan Ports and SVI Shutdown

Added the vLAG Orphan port option to set a port that is not part of a vLAG aggregation to also go to suspend state on secondary vLAG switch when the ISL fails with the peer vLAG switch alive.

Similarly, added the option to shutdown on a secondary vLAG switch the Layer 3 SVIs that the ISL LAG belongs to in order to disable Layer 3 forwarding while being in dual-active state.

Management ACLs

Management ACLs allow you to add an access list to incoming VTY (Virtual Teletype) lines. This way, you can control who can access the switch. The Management ACL attached to VTY lines applies to all the packet destined to the switch CPU, coming from interfaces that are part of VRFs where MACLs are attached.

VRF Enhancement

This feature adds support to increase non-management VRF (VPN Routing/Forwarding instance) from 8 to 64.

Known Issues

This section describes known issues for CNOS 10.10 on the Lenovo ThinkSystem NE0152T RackSwitch.

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

ARP

The NE0152T supports up to 15,872 entries in its ARP table. (ID: 146430)

IGMP

- When populating the hardware multicast table with IGMP groups, hash collisions might occur and prevent entries from being added to the table. (ID: 148693)

  The following message appears when such collisions take place:

  ```
  Group limit exceeded - hardware hash collision
  ```

- The number of IGMPv3 source entries (for a multicast group) is limited to 64 when VLAG is enabled. (ID: 171858)

Logging

- When establishing a second SSH or Telnet session with the switch, terminal logging may not properly initialize for the session. (ID: 158589) The following message appears:

  ```
  %IMI-6-TTY_LOGGING_INIT_IGNORE: Terminal logging initialization
  ignored due to log service busy (cannot obtain mutex lock), no log
  messages will forward to the corresponding terminal (/dev/pts/0)
  ```

- If the logging service is busy, syslog messages are cached and logged once the service is free. In this situation, the log message timestamp is not sequenced in the log file or on the terminal. (ID: 158487)

Network Policy Agent

On the NE0152T, the Network Policy Agent (NPA) only works with VMware's Virtual Domain Manager (VDM). (ID: 146604)

PVID Ingress Tagging

The inner tag of Layer 3 double tagged packets is deleted at egress. (ID: 147563)

Firmware Update Error

- When upgrading the firmware to CNOS 10.10 from 10.7.1, 10.8.1 or 10.9.1, an incorrect error message appears:

```
WARNING: Downgrade from 10.7.x or later to 10.6.x or earlier version
detected.Prior to proceeding with the downgrade, please save/backup
the 10.6.x or earlier version startup-config file by using the 'copy
file config-10-6' command.
After the downgrade, once the switch comes up on 10.6.x or earlier
version, the saved 10.6.x or earlier version startup-config file needs
to be copied over to the running and startup configuration manually.
```

This message does not affect the upgrade process and should be ignored. (ID: 157431)

- When upgrading from an earlier version to 10.10, make sure both the software image and the boot image are updated. (ID: 161315)