

Lenovo Network Content Pack for VMware vRealize Log Insight

# User's Guide

Version 1.2

**Lenovo**<sup>TM</sup>

**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.

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## Preface

The *Lenovo Networking Content Pack User Guide for VMware vRealize Log Insight* describes how to install, configure, and use the Lenovo Network Content Pack.

## Who Should Use This Guide

This guide is intended for network installers and system administrators engaged in configuring and maintaining a network. The administrator should be familiar with Ethernet concepts, IP addressing, Spanning Tree Protocol, and SNMP configuration parameters.

## What You'll Find in This Guide

This guide will help you plan, implement, and administer the Lenovo Networking Content Pack. Where possible, each section provides feature overviews, usage examples, and configuration instructions.

## Typographic Conventions

The following table describes the typographic styles used in this book.

**Table 1.** *Typographic Conventions*

Typeface or Symbol	Meaning	Example
ABC123	<p>This type is used for names of commands, files, and directories used within the text.</p> <p>It also depicts on-screen computer output and prompts.</p>	<p>View the <code>readme.txt</code> file.</p> <p>Main#</p>
<b>ABC123</b>	<p>This bold type appears in command examples. It shows text that must be typed in exactly as shown.</p>	Main# <b>sys</b>
<ABC123>	<p>This italicized type appears in command examples as a parameter placeholder. Replace the indicated text with the appropriate real name or value when using the command. Do not type the brackets.</p> <p>This also shows book titles, special terms, or words to be emphasized.</p>	<p>To establish a Telnet session, enter:</p> <p>host# <b>telnet</b> <i>&lt;IP address&gt;</i></p> <p>Read your <i>User's Guide</i> thoroughly.</p>
[ ]	<p>Command items shown inside brackets are optional and can be used or excluded as the situation demands. Do not type the brackets.</p>	host# <b>ls [-a]</b>
	<p>The vertical bar (   ) is used in command examples to separate choices where multiple options exist. Select only one of the listed options. Do not type the vertical bar.</p>	host# <b>set left right</b>
<b>AaBbCc123</b>	<p>This block type depicts menus, buttons, and other controls that appear in Web browsers and other graphical interfaces.</p>	Click the <b>Save</b> button.

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## Introduction

The Lenovo Networking Content Pack for VMware vRealize Log Insight enables administrators to take advantage of VMware vRealize Log Insight with their IBM and Lenovo Networking deployments. This applies to VMware administrators, system administrators and network administrators. This capability delivers automated log management that helps to provide operational efficiency in dynamic, hybrid cloud environments.

Value brought to VMware Log Insight deployments with IBM and Lenovo Networking switches and the Lenovo Networking Log Insight Content Pack include:

- Increased reliability:
  - Enabling VMware Log Insight to monitor a physical network which features IBM and Lenovo RackSwitch and Flex System switches allowing users to potential get awareness of issues that need to be looked into or address before failures actually occur.
  - Ability to set up high availability through alerting multiple parties
- Simplicity:
  - Ability to leverage standard or customized dashboards to have greater insight into the network status and health. Now VMware administrators can monitor networking from the same tool they manage VMs. The syslogs feature an extensive collection of supported protocols
  - Reduced complexity by enabling vRealize Log Insight to interface with only a single interface `point to monitor all networking devices in a Flex System Interconnect Fabric deployment
- Investment Protection

Increased network flexibility, cost optimization and switch options by enabling VMware Log Insight to monitor ALL IBM and Lenovo RackSwitch and Flex System embedded switches.
- SDN Ready.

The Lenovo Plug-in enables VMware Log Insight to report in Dashboards syslog events associated with OpenFlow networks when deployed with IBM and Lenovo Networking switches.
- Reduced initial provisioning time by providing VMware Log Insight with 18 pre-built Dashboards for Sys Admins to utilize. Additionally, Log Insight can easily refine these Dashboards as desired
- Reduced time to deploy with simple switch setup to support forwarding syslog messages to the VMware Log Insight server. Increased reliability is provided with the switches ability to support Log Insight HA server configurations.

The Lenovo Networking Content Pack for VMware vRealize Log Insight is custom-designed by Lenovo Networking to provide information specific to IBM and Lenovo Networking switches and switch configurations. When used with Log Insight, the Lenovo Networking Content Pack provides monitoring and analyses of syslogs issued by IBM and Lenovo Networking switches and switch configurations.

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## Supported Devices

The following Lenovo Networking switches and configurations are supported by the Lenovo Networking Content Pack for VMware vRealize Log Insight with the indicated network operating system.

**Table 2.** *Supported switches and configurations*

Switch	Notes
CN4093	Standalone and stacking configuration are supported.
EN2092	
EN4093R	Standalone and stacking configuration are supported.
SI4093	
G7028	
G7052	
G8052	
G8124E	
G8264	Standalone and stacking configuration are supported.
G8264CS	
G8332	
Flex System Interconnect Fabric	G8264CS + SI4093
G8272	
G8296	
SI4091	

To deploy the Lenovo Networking Content Pack for VMware vRealize Log Insight requires Log Insight version 3.0 (minimum).



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## ENOS Switch Configuration Requirements for Log Insight Support

To receive syslogs in Log Insight, Lenovo Networking switches must be provisioned with the IP address of the Log Insight server. The Log Insight server's IP address is set when its VM image is initially deployed onto the vSphere host.

The switch is provisioned using CLI commands. Refer to the relevant CLI guide for the specific switches being provisioned. In general, the CLI commands required for syslog configuration are consistent across all Lenovo Networking switches.

Use the **"logging host <1-2> address <IP address>"** command to set the IP address to where the syslogs will be sent. In this case, the IP address of the Log Insight server. This is a required configuration step for Log Insight integration.

Optionally, the administrator can select the severity level of the syslogs desired to be sent from the switch(es) using the **"logging host <1-2> severity <0-7>"** command. By default, all severity levels are sent.

Optionally, the administrator can enable/disable the sending of syslogs based on the feature. This is accomplished using the **"logging log [<feature>]"** command. All features are enabled by default. This command may also be used to display what features are available on the switch.

When integrating the Lenovo Networking switches with Log Insight servers in a high availability configuration, there is very little difference compared to integrating with Log Insight servers in a standard availability configuration. In an HA configuration, each switch must be provisioned to send its syslogs to all Log Insight servers in the HA configuration. Lenovo Networking switches support sending syslogs to the IP address for multiple servers.

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## ENOS Stacked Switch Configuration Requirements for Log Insight Support

When configuring SIF or stacked switches for Log Insight support, make sure the Floating IP address is configured. Configuring the Floating IP address ensures that the same IP address will be used as the source of the syslog packet regardless of which switch is the master at the time. If it is not configured, then the master and backup's "individual" IP addresses will be used as the source. Since the individual IP address is different for the master and backup, the source of the syslog packets will change if failover occurs. This will, in turn, cause the Log Insight Content Pack's dashboards to show syslogs from two different switches, thus causing confusion to the end user.

When integrating a Lenovo Networking switch configuration with Log Insight servers in a high availability configuration, there is very little difference compared to integrating with Log Insight servers in a standard availability configuration. In an HA configuration, the switch configuration must be provisioned to send its syslogs to all Log Insight servers in the HA configuration. Lenovo Networking switch configurations support sending syslogs to the IP address for multiple servers.

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## CNOS Switch Configuration Requirements for Log Insight Support

To receive CNOS syslogs in Log Insight, the switch's logging server must be configured with the virtual IP address that was configured using the instructions in that section "[Configuring the Log Insight Server for CNOS Support](#)." CNOS syslogs must not be sent to the IP address of the Log Insight server, but to the virtual IP address that was configured in the Log Insight server specifically for CNOS support.

The switch is provisioned using CLI commands. Please refer to the most recent Application Guide at the following site for more information on CNOS syslogs:

[http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp?topic=/com.lenovo.rackswitch.g8272.doc/rs\\_g8272.htm](http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp?topic=/com.lenovo.rackswitch.g8272.doc/rs_g8272.htm)

To set the IP address to where the syslogs will be sent, use the command:

```
logging server <virtual IP address>
```

where *virtual IP address* is the IP address of the Log Insight Server. You can select a facility ranging from local0 – local7 and a user facility with the command

```
logging server <virtual IP address> facility
```

To ensure the configuration is done on server, as an Administrator, use the command:

```
display logging server
```

To view the list of feature-specific syslogs, as an Administrator, use the command:

```
display logging mnemonics [<facility>]
```

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## Downloading the Lenovo Networking Content Pack

Download the Lenovo Networking Content Pack for VMware vRealize Log Insight from the VMware Cloud Management Marketplace on the VMware Solution Exchange using the following procedure:

- Go to the VMware vRealize Log Insight site on the VMware Cloud Management Marketplace:  
<https://solutionexchange.vmware.com/store/loginsight>
- Search for “Lenovo Networking” to find the web page for the Lenovo Networking Log Insight content pack.
- Once on this site, right click on the blue button in the upper right hand side titled “Log in to Try”.
- After logging in with your account information you will be presented with the option to download a zipped file to your workstation. Place this file anywhere convenient on your workstation.
- At a minimum, the zipped file will feature the content pack (Lenovo Networking Content Pack), User Guide and Software License
- Once unzipped, import the .v1cp file into the target instance of Log Insight. Reference VMware vRealize Log Insight documentation for this procedure

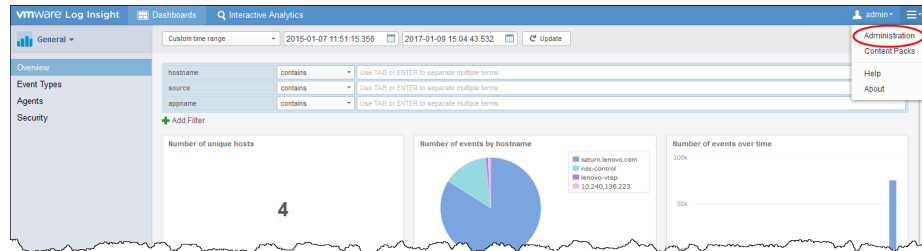
When you import the Lenovo Networking Content Pack for VMware vRealize Log Insight into Log Insight, you are agreeing to the terms and conditions of the Lenovo End User License Agreement (EULA).

# Configuring the Log Insight Server for CNOS Support

Using the Log Insight interface, set up a virtual IP address to filter logs from Lenovo switches and append the appropriate context keyword.

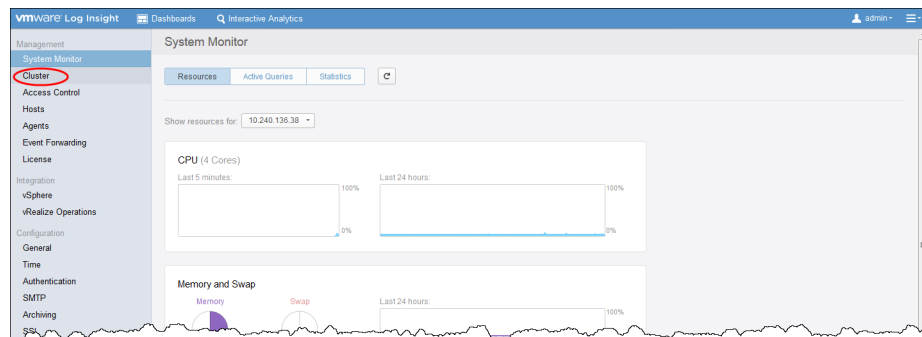
1. In the upper right corner pull-down menu, select **Administration**.

**Figure 1.** Selecting Administration



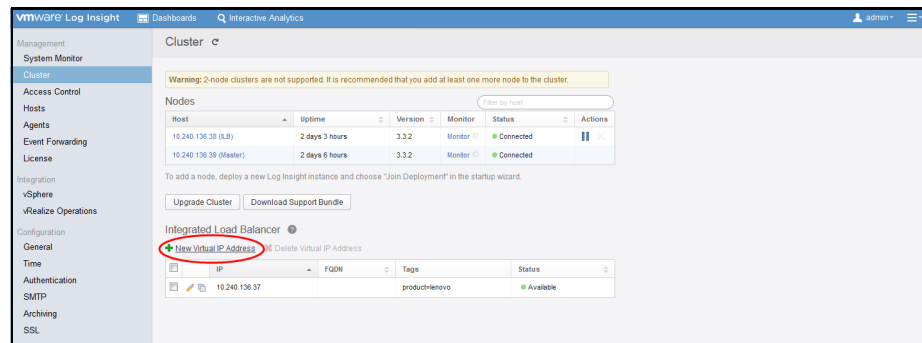
2. In the left menu of the Administration screen, select **Cluster**.

**Figure 2.** Selecting Cluster



3. In the right side of the Cluster pane, select **New Virtual IP Address**.

**Figure 3.** Selecting New Virtual IP Address



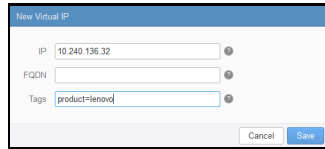
4. In the Virtual IP Address window:

- In the **IP** field, enter the desired virtual IP address.

**Note:** The virtual IP address must be located on the same subnet as the Log Insight node.

- In the **Tags** field, enter product=lenovo.

**Figure 4.** New Virtual IP Address window



The screenshot shows a dialog box titled "New Virtual IP". It contains three input fields: "IP" with the value "10.240.136.32", "FQDN" which is empty, and "Tags" with the value "product=lenovo". Each field has a small circular icon to its right. At the bottom right of the dialog, there are two buttons: "Cancel" and "Save".

Click **Save**.

Logs forwarded to the specified virtual IP address will be tagged with `product=lenovo` and fed into Log Insight for analysis

## The Lenovo Networking Content Pack Dashboards

The Lenovo Networking Content Pack includes the following dashboards:

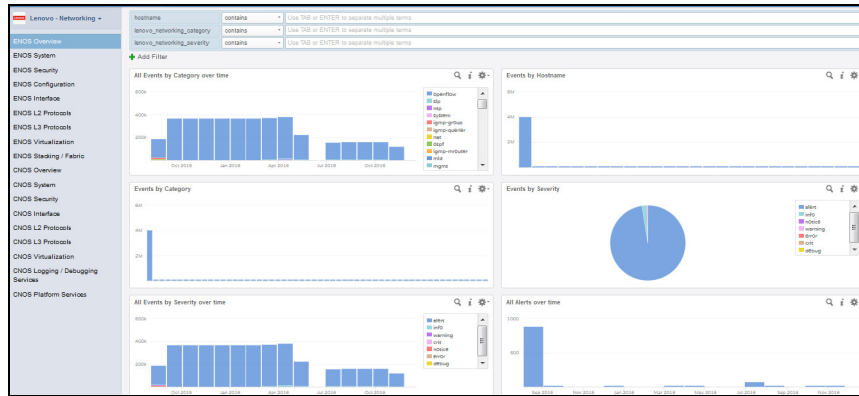
**Table 3.** *Lenovo Networking Content Pack dashboards*

Dashboard	Description
ENOS Overview	Display of all syslogs coming from Lenovo switches and syslogs that cause alerts that are pre-defined in the Content Pack.
ENOS System	Display of system related syslogs
ENOS Security	Display of security related syslogs, such as user login or failures
ENOS Configuration	Display of switch configuration change related syslogs
ENOS Interface	Display of interface related syslogs such as link down or up
ENOS L2 Protocols	Display of 2ayer 2 protocol related syslogs except those covered under Interface and other categories
ENOS L3 Protocols	Display L3 protocol related syslogs except those covered under Interface and other categories
ENOS Virtualization	Displays syslogs related to the features of OpenFlow, SDN, DOVE, and VMready
ENOS Stacking / Fabric	Counts all switch stacking and System Interconnect Fabric (SIF) logs
CNOS Overview	Display of all syslogs coming from Lenovo CNOS switches and syslogs that cause alerts that are pre-defined in the Content Pack.
CNOS System	Display of system related CNOS syslogs
CNOS Security	Display of security related CNOS syslogs
CNOS Interface	Display of interface related CNOS syslogs
CNOS L2 Protocols	Display of Layer 2 protocol related CNOS syslogs except those covered under Interface and other categories
CNOS L3 Protocols	Display L3 protocol related CNOS syslogs except those covered under Interface and other categories
CNOS Virtualization	Displays CNOS syslogs related to the features of NSXGW
CNOS Logging/ Debugging Services	Displays CNOS syslogs related to logging services
CNOS Platform Services	Displays CNOS syslogs related to platform services

### ENOS Overview Dashboard

The ENOS Overview Dashboard and the widgets it features displays all syslogs coming from Lenovo switches and syslogs that cause alerts that are pre-defined in the Content Pack.

**Figure 5.** Lenovo Networking Content Pack ENOS Overview Dashboard



The following table describes the widgets featured on the Overview Dashboard.

**Table 4.** ENOS Overview Dashboard widgets

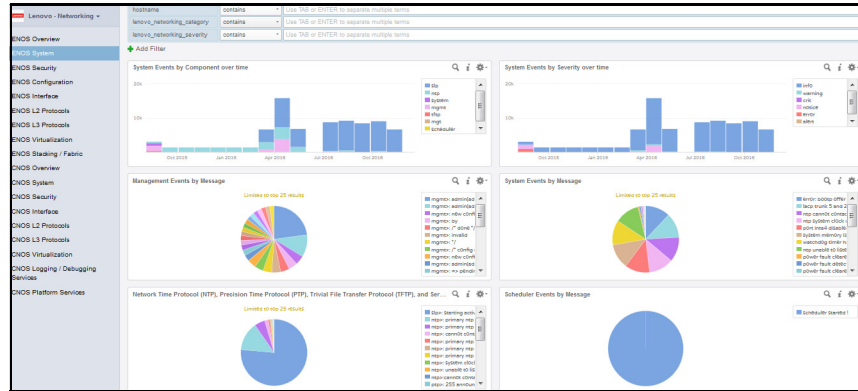
Widget Name	Description	Category/Component
All Events by Category over time	This chart gives information on count of all events by Category over time.	All
Events by Hostname	This chart gives information on count of events by Hostname.	All
Events by Category	This chart gives information on count of events by Category.	All
Events by Severity	This pie chart shows information on the distribution of events by Severity.	All
All Events by Severity over time	This chart gives information on count of all events by severity over time.	All
All Alerts over time	This chart gives information on count of all alerts over time.	All

## ENOS System Dashboard

The ENOS System Dashboard and the widgets it features display system related syslogs.



**Figure 6.** Lenovo Networking Content Pack ENOS System Dashboard



The following table describes the widgets featured on the ENOS System Dashboard.

**Table 5.** ENOS System Dashboard widgets

Widget Name	Description	Category/Component
System Events by Component over time	This widget provides a stacked bar syslog counts of System components over time.	<ul style="list-style-type: none"> <li>• MGT, MGMT</li> <li>• System</li> <li>• NTP (Network Time Protocol)</li> <li>• PTP (Precision Time Protocol)</li> <li>• TFTP (Trivial File Transfer Protocol)</li> <li>• SLP (Service Location Protocol)</li> <li>• scheduler</li> </ul>
System Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of System components by severity over time.	<ul style="list-style-type: none"> <li>• MGT, MGMT</li> <li>• System</li> <li>• NTP (Network Time Protocol)</li> <li>• PTP (Precision Time Protocol)</li> <li>• TFTP (Trivial File Transfer Protocol)</li> <li>• SLP (Service Location Protocol)</li> <li>• scheduler</li> </ul>
Management Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Management component.	MGT, MGMT
System Events by Message	This widget provides a pie chart showing the syslog counts by message type from the System component.	System

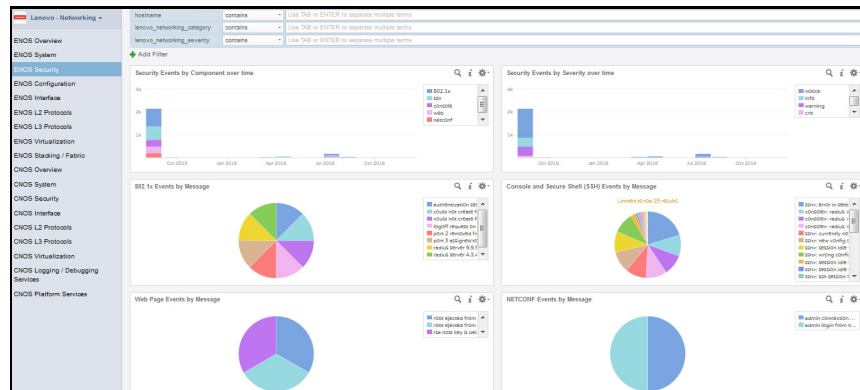
**Table 5.** ENOS System Dashboard widgets (continued)

Widget Name	Description	Category/Component
Network Time Protocol (NTP) Events and Precision Time Protocol (PTP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the NTP and PTP components.	NTP, PTP
Trivial File Transfer Protocol (TFTP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the TFTP component.	TFTP
Service Location Protocol (SLP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the SLP component	SLP
Scheduler Events by Message	This widget provides a pie chart showing the syslog counts by message type from the scheduler component.	scheduler

## ENOS Security Dashboard

The ENOS Security Dashboard and the widgets it features displays security related syslogs, such as user login or failures.

**Figure 7.** Lenovo Networking Content Pack ENOS Security Dashboard



The following table describes the widgets featured on the ENOS Security Dashboard.

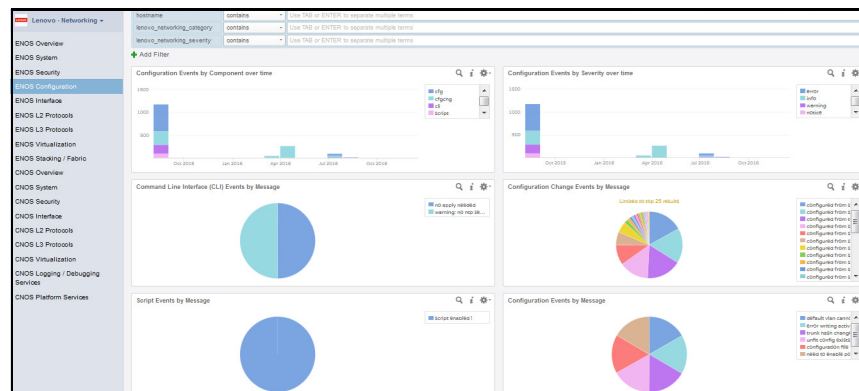
**Table 6.** ENOS Security Dashboard widgets

Widget Name	Description	Category/Component
Security Events by Component over time	This widget provides a stacked bar syslog counts by component over time.	<ul style="list-style-type: none"> <li>SSH (Secure Shell)</li> <li>802.1x</li> <li>CONSOLE</li> <li>WEB (Web pages)</li> <li>NETCONF</li> </ul>
Security Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of Security components by severity over time.	<ul style="list-style-type: none"> <li>SSH (Secure Shell)</li> <li>802.1x</li> <li>CONSOLE</li> <li>WEB (Web pages)</li> <li>NETCONF</li> </ul>
Secure Shell (SSH) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the SSH component.	SSH
802.1x Events by Message	This widget provides a pie chart showing the syslog counts by message type from the 802.1x component.	802.1x
Console Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Console component.	CONSOLE
Web Page Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Web Page component.	WEB
NETCONF Events by Message	This widget provides a pie chart showing the syslog counts by message type from the NETCONF component.	NETCONF

## ENOS Configuration Dashboard

The ENOS Configuration Dashboard and the widgets it features displays switch configuration change related syslogs.

**Figure 8.** Lenovo Networking Content Pack ENOS Configuration Dashboard



The following table describes the widgets featured on the ENOS Configuration Dashboard.

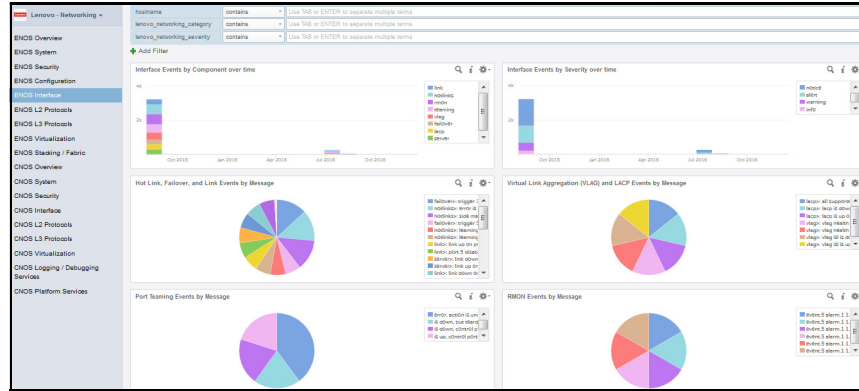
**Table 7.** *ENOS Configuration Dashboard widgets*

Widget Name	Description	Category/Component
Configuration Events by Component over time	This widget provides a stacked bar syslog counts by component over time.	<ul style="list-style-type: none"> <li>• CFG (Configuration)</li> <li>• CFGCHG (Configuration Change)</li> <li>• SCRIPT</li> <li>• CLI (Command Line Interface)</li> </ul>
Configuration Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of Configuration components by severity over time.	<ul style="list-style-type: none"> <li>• CFG (Configuration)</li> <li>• CFGCHG (Configuration Change)</li> <li>• SCRIPT</li> <li>• CLI (Command Line Interface)</li> </ul>
Configuration (CFG) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the CLI component.	CFG
Configuration Change (CFGCHG) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the CFGCHG component.	CFGCHG
Script Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Script component.	SCRIPT
Command Line Interface (CLI) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the CLI component.	CLI

## ENOS Interface Dashboard

The ENOS Interface Dashboard and the widgets it features displays switch configuration change related syslogs.

**Figure 9.** Lenovo Networking Content Pack ENOS Interface Dashboard



The following table describes the widgets featured on the ENOS Interface Dashboard.

**Table 8.** Interface ENOS Dashboard widgets

Widget Name	Description	Category/Component
Interface Events by Component over time	This widget provides a stacked bar syslog counts by component over time	<ul style="list-style-type: none"> <li>VLAG (Virtual Link Aggregation)</li> <li>HOTLINK</li> <li>FAILOVER</li> <li>LINK</li> <li>SERVER</li> <li>TEAMING</li> <li>LACP</li> <li>RMON</li> </ul>
Interface Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of Interface components by severity over time.	<ul style="list-style-type: none"> <li>VLAG (Virtual Link Aggregation)</li> <li>HOTLINK</li> <li>FAILOVER</li> <li>LINK</li> <li>SERVER</li> <li>TEAMING</li> <li>LACP</li> <li>RMON</li> </ul>
Virtual Link Aggregation (VLAG) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the VLAG component.	VLAG
Hot Link and Failover Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Hot Link and Failover components.	HOTLINK, FAILOVER
Link Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Link and Server components.	<ul style="list-style-type: none"> <li>LINK</li> <li>SERVER</li> </ul>
Port Teaming Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Port Teaming component.	TEAMING

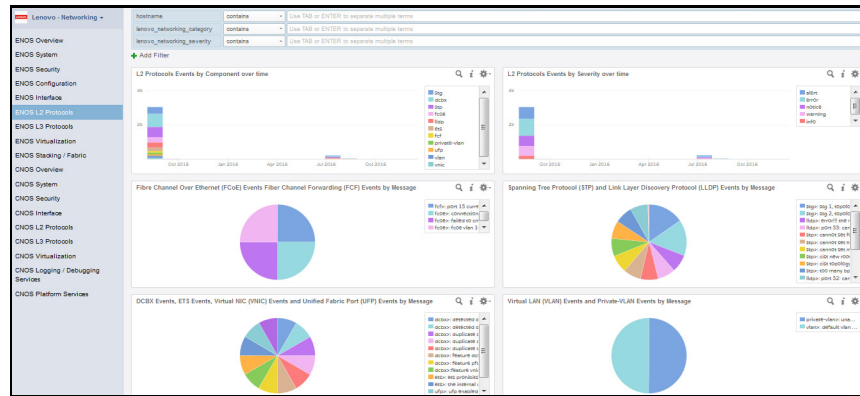
**Table 8.** Interface ENOS Dashboard widgets (continued)

Widget Name	Description	Category/Component
LACP Events by Message	This widget provides a pie chart showing the syslog counts by message type from the LACP component.	LACP
RMON Events by Message	This widget provides a pie chart showing the syslog counts by message type from the RMON component.	RMON

## ENOS L2 Protocols Dashboard

The ENOS L2 Protocols Dashboard and the widgets it features displays Layer 2 protocol related syslogs except those covered under Interface and other categories

**Figure 10.** Lenovo Networking Content Pack ENOS L2 Protocols Dashboard



The following table describes the widgets featured on the ENOS L2 Protocols Dashboard.

**Table 9.** ENOS L2 Protocols Dashboard widgets

Widget Name	Description	Category/Component
L2 Protocols Events by Component over time	This widget provides a stacked bar syslog counts by component over time	<ul style="list-style-type: none"> <li>STP (Spanning Tree Protocol)</li> <li>STG</li> <li>DCBX</li> <li>ETS</li> <li>LLDP (Link Layer Discovery Protocol)</li> <li>FCoE (Fibre Channel Over Ethernet)</li> <li>FCF (Fiber Channel Forwarding)</li> <li>VNIC (Virtual NIC)</li> <li>UFP (Unified Fabric Port)</li> <li>VLAN (Virtual LAN)</li> <li>PRIVATE-VLAN</li> </ul>

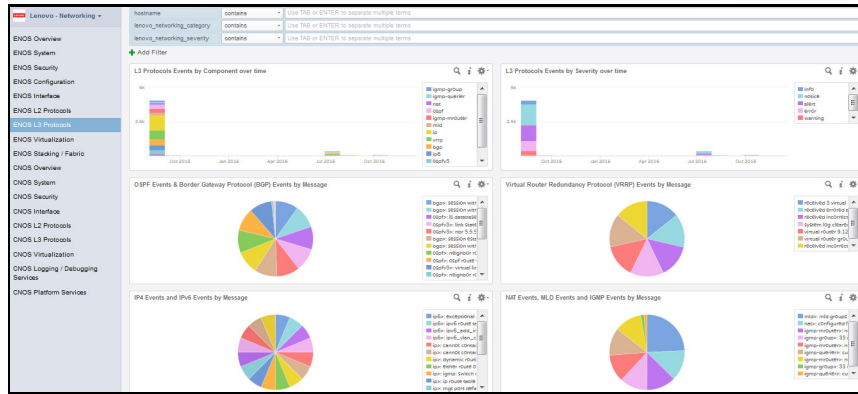
**Table 9.** ENOS L2 Protocols Dashboard widgets (continued)

Widget Name	Description	Category/Component
L2 Protocol Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of L2 Protocol components by severity over time.	<ul style="list-style-type: none"> <li>• STP (Spanning Tree Protocol)</li> <li>• STG</li> <li>• DCBX</li> <li>• ETS</li> <li>• LLDP (Link Layer Discovery Protocol)</li> <li>• FCoE (Fibre Channel Over Ethernet)</li> <li>• FCF (Fiber Channel Forwarding)</li> <li>• VNIC (Virtual NIC)</li> <li>• UFP (Unified Fabric Port)</li> <li>• VLAN (Virtual LAN)</li> <li>• PRIVATE-VLAN</li> </ul>
Spanning Tree Protocol (STP) and Spanning Tree Group (STG) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the STP and STG components.	<ul style="list-style-type: none"> <li>• STP</li> <li>• STG</li> </ul>
DCBX Events and ETS Events by Message	This widget provides a pie chart showing the syslog counts by message type from the DCBX and ETS components.	<ul style="list-style-type: none"> <li>• DCBX</li> <li>• ETS</li> </ul>
Link Layer Discovery Protocol (LLDP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the LLDP component.	LLDP
Fibre Channel Over Ethernet (FCoE) Events Fiber Channel Forwarding (FCF) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the FCoE and FCF components.	<ul style="list-style-type: none"> <li>• FCOE</li> <li>• FCF</li> </ul>
Virtual NIC (VNIC) Events and Unified Fabric Port (UFP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the VNIC and UFP components.	<ul style="list-style-type: none"> <li>• VNIC</li> <li>• UFP</li> </ul>
Virtual LAN (VLAN) Events and Private-VLAN Events by Message	This widget provides a pie chart showing the syslog counts by message type from the VLAN and PRIVATE-VLAN components.	<ul style="list-style-type: none"> <li>• VLAN</li> <li>• PRIVATE-VLAN</li> </ul>

# ENOS L3 Protocols Dashboard

The ENOS L3 Protocols Dashboard and the widgets it features displays Layer 3 protocol related syslogs except those covered under Interface and other categories.

**Figure 11.** Lenovo Networking Content Pack L3 Protocols Dashboard



The following table describes the widgets featured on the ENOS L3 Protocols Dashboard.

**Table 10.** ENOS L3 Protocols Dashboard widgets

Widget Name	Description	Category/Component
L3 Protocols Events by Component over time	This widget provides a stacked bar syslog counts by component over time.	<ul style="list-style-type: none"> <li>• OSPF</li> <li>• OSPFv3</li> <li>• Border Gateway Protocol (BGP)</li> <li>• Virtual Router Redundancy Protocol (VRRP)</li> <li>• IP4 (Ip)</li> <li>• IPv6 (Ipv6)</li> <li>• IPv6 (Ip6)</li> <li>• NAT</li> <li>• MLD</li> <li>• IGMP-mrouter</li> <li>• IGMP-querier</li> <li>• IGMP-group</li> </ul>



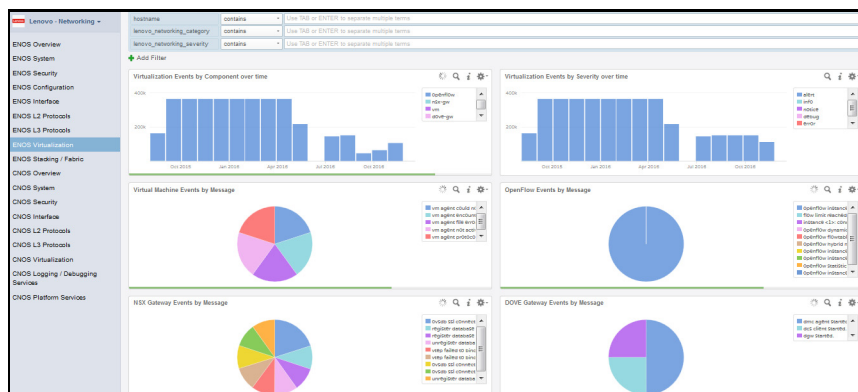
**Table 10.** ENOS L3 Protocols Dashboard widgets (continued)

Widget Name	Description	Category/Component
L3 Protocol Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of L3 Protocol components by severity over time.	<ul style="list-style-type: none"> <li>• OSPF</li> <li>• OSPFv3</li> <li>• BGP (Border Gateway Protocol)</li> <li>• Virtual Router Redundancy Protocol (VRRP)</li> <li>• IP4 (Ip)</li> <li>• IPv6 (Ipv6)</li> <li>• IPv6 (Ip6)</li> <li>• NAT</li> <li>• MLD</li> <li>• IGMP-mrouter</li> <li>• IGMP-querier</li> <li>• IGMP-group</li> </ul>
OSPF & Border Gateway Protocol (BGP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the OSPF, OSPFv3, and BGP components	<ul style="list-style-type: none"> <li>• OSPF</li> <li>• OSPFv3</li> <li>• BGP</li> </ul>
Virtual Router Redundancy Protocol (VRRP) Events by Message	This widget provides a pie chart showing the syslog counts by message type from the VRRP component.	VRRP
IP4 Events and IPv6 Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Ip, Ip6, and Ipv6 components.	<ul style="list-style-type: none"> <li>• IP</li> <li>• IP6</li> <li>• IPv6</li> </ul>
NAT Events by Message	This widget provides a pie chart showing the syslog counts by message type from the NAT component.	NAT
MLD Events by Message	This widget provides a pie chart showing the syslog counts by message type from the MLD component.	MLD
IGMP Events by Message	This widget provides a pie chart showing the syslog counts by message type from the igmp-mrouter, igmp-querier, igmp-group components	<ul style="list-style-type: none"> <li>• igmp-mrouter</li> <li>• igmp-querier</li> <li>• igmp-group</li> </ul>

## ENOS Virtualization Dashboard

The ENOS Virtualization Dashboard and the widgets it features displays syslogs related to the features of OpenFlow, SDN, DOVE, and VMready.

**Figure 12.** Lenovo Networking Content Pack ENOS Virtualization Dashboard



The following table describes the widgets featured on the ENOS Virtualization Dashboard.

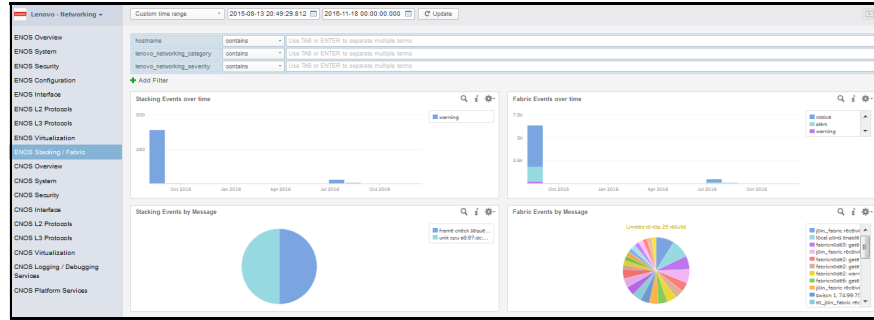
**Table 11.** ENOS Virtualization Dashboard widgets

Widget Name	Description	Category/Component
Virtualization Events by Component over time	This widget provides a stacked bar of syslog counts by component over time.	<ul style="list-style-type: none"> <li>VM</li> <li>NSX-GW</li> <li>OPENFLOW</li> <li>DOVE-GW</li> </ul>
Virtualization Events by Severity over time	This widget provides a stacked bar chart of the syslog counts of Virtualization components by severity over time.	<ul style="list-style-type: none"> <li>VM</li> <li>NSX-GW</li> <li>OPENFLOW</li> <li>DOVE-GW</li> </ul>
Virtual Machine Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Virtual Machine component.	VM
OpenFlow Events by Message	This widget provides a pie chart showing the syslog counts by message type from the OpenFlow component.	OPENFLOW
NSX Gateway Events by Message	This widget provides a pie chart showing the syslog counts by message type from the NSX Gateway component.	NSX-GW
DOVE Gateway Events by Message	This widget provides a pie chart showing the syslog counts by message type from the DOVE Gateway component.	DOVE-GW

## ENOS Stacking/Fabric Dashboard

The ENOS Stacking/Fabric Dashboard and the widgets it features displays events for switch stacking configurations and Flex System Interconnect Fabric configurations.

**Figure 13.** Lenovo Networking Content Pack ENOS Stacking/Fabric Dashboard



The following table describes the widgets featured on the Stacking/Fabric Dashboard.

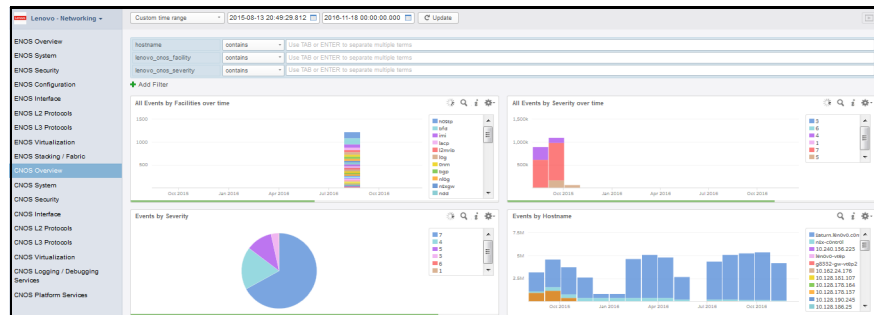
**Table 12.** ENOS Stacking/Fabric Dashboard widgets

Widget Name	Description	Category/Component
Stacking Events over time	This widget provides a bar chart on the count of Stacking events over time by Severity.	STACKING
Fabric Events over time	This widget provides a bar chart on the count of Fabric events over time by Severity.	FABRIC
Stacking Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Stacking component.	STACKING
Fabric Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Fabric component.	FABRIC

## CNOS Overview Dashboard

The CNOS Overview Dashboard and the widgets it features displays all CNOS syslogs coming from Lenovo switches and syslogs that cause alerts that are pre-defined in the Content Pack

**Figure 14.** Lenovo Networking Content Pack CNOS Overview Dashboard



The following table describes the widgets featured on the CNOS Overview Dashboard.

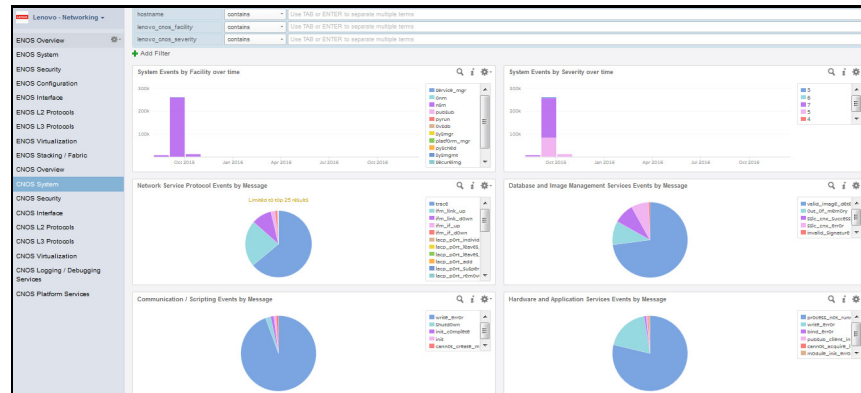
**Table 13.** *CNOS Overview Dashboard widgets*

Widget Name	Description	Category/Component
All Events by Facilities over time	This chart gives information on all events over time by Facility	All
All Events by Severity	This chart gives information on all events by Severity	All
Events by Hostname	This chart gives information on various events by Source.	All
Events by Severity	This chart gives information on count of events by Severity.	All

## CNOS System Dashboard

The CNOS System Dashboard and the widgets it features display system related syslogs.

**Figure 15.** *Lenovo Networking Content Pack CNOS System Dashboard*



The following table describes the widgets featured on the CNOS System Dashboard.

**Table 14.** *CNOS System Dashboard widgets*

Widget Name	Description	Category/Component
System Events by Facility over time	<p>This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are::</p> <ul style="list-style-type: none"> <li>• Network Management (ONM)</li> <li>• Network Service Module (NSM)</li> <li>• Publisher/Subscriber Inter Process Communication Module (PUBSUB)</li> <li>• Python Runtime Environment (PYRUN)</li> <li>• Open vSwitch Database Management Protocol (OVSDB)</li> <li>• System Manager (SYSMGR)</li> <li>• Platform Manager (PLATFORM_MGR)</li> <li>• Python Scheduler (PYSCHED)</li> <li>• Service Manager (SERVICE_MGR)</li> <li>• SYSMGMT</li> <li>• Secure Image Validation Library (SECUREIMG)</li> <li>• NTP</li> </ul>	<ul style="list-style-type: none"> <li>• Communication / Scripting</li> <li>• Hardware and Application Services</li> <li>• Network Service Protocols</li> <li>• Database and Image Management</li> </ul>
System Events by Severity over time	<p>This widget provides a stacked bar chart of syslog counts from the following facilities by severity over time:</p> <ul style="list-style-type: none"> <li>• Communication / Scripting</li> <li>• Hardware and Application Services</li> <li>• Network Service Protocols</li> <li>• Database and Image Management</li> </ul>	<ul style="list-style-type: none"> <li>• Network Management (ONM)</li> <li>• Network Service Module (NSM)</li> <li>• Publisher/Subscriber Inter Process Communication Module (PUBSUB)</li> <li>• Python Runtime Environment (PYRUN)</li> <li>• Open vSwitch Database Management Protocol (OVSDB)</li> <li>• System Manager (SYSMGR)</li> <li>• Platform Manager (PLATFORM_MGR)</li> <li>• Python Scheduler (PYSCHED)</li> <li>• Service Manager (SERVICE_MGR)</li> <li>• SYSMGMT</li> <li>• Secure Image Validation Library (SECUREIMG)</li> <li>• NTP</li> </ul>

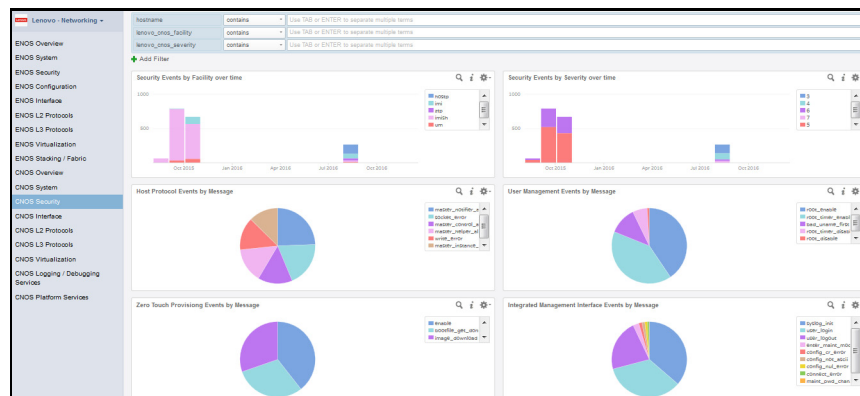
**Table 14.** CNOS System Dashboard widgets (continued)

Widget Name	Description	Category/Component
Network Service Protocol Events by Message	This widget provides a pie chart showing the syslog counts from the Network Service Protocol facility which includes: <ul style="list-style-type: none"> <li>• Network Management</li> <li>• Network Service Module</li> <li>• NTP</li> </ul>	<ul style="list-style-type: none"> <li>• NTP</li> <li>• Network Management (ONM)</li> <li>• Network Service Module (NSM)</li> </ul>
Database and Image Management Services Events by Message	This widget provides a pie chart showing the syslog from the Database and Image Management Services facility which includes: <ul style="list-style-type: none"> <li>• Secure Image Validation Library</li> <li>• Open vSwitch Database Management Protocol</li> </ul>	<ul style="list-style-type: none"> <li>• Secure Image Validation Library (SECUREIMG)</li> <li>• Open vSwitch Database Management Protocol (OVSDB)</li> </ul>
Communication/Scripting Events by Message	This widget provides a pie chart showing the syslog from Communication / Scripting facility which includes: <ul style="list-style-type: none"> <li>• Publisher/Subscriber Inter Process Communication Module</li> <li>• Python Runtime Environment</li> <li>• Python Scheduler</li> </ul>	<ul style="list-style-type: none"> <li>• Publisher/Subscriber Inter Process Communication Module (PUBSUB)</li> <li>• Python Runtime Environment (PYRUN)</li> <li>• Python Scheduler (PYSCHED)</li> </ul>
Hardware and Application Services Events by Message	This widget provides a pie chart showing the syslog from the Hardware and Application Services facility which includes: <ul style="list-style-type: none"> <li>• Platform Manager</li> <li>• System Management Host Protocol</li> <li>• Service Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Platform Manager (PLATFORM_MGR)</li> <li>• SYSMGMT</li> <li>• System Manager (SYSMGR)</li> <li>• Service Manager (SERVICE_MGR)</li> </ul>

## CNOS Security Dashboard

The CNOS Security Dashboard and the widgets it features displays security related syslogs, such as user login or failures.

**Figure 16.** Lenovo Networking Content Pack CNOS Security Dashboard



The following table describes the widgets featured on the CNOS Security Dashboard.

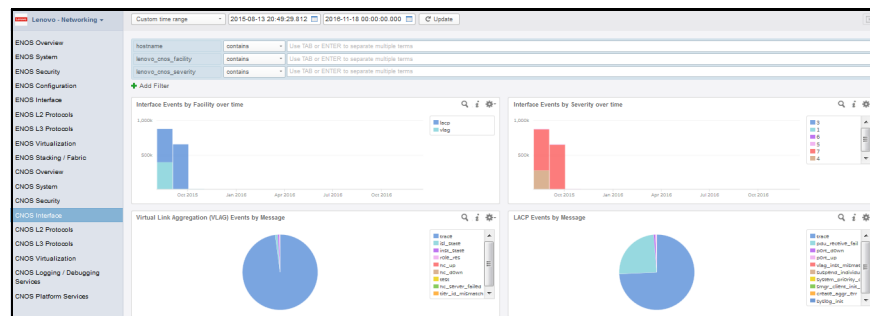
**Table 15.** CNOS Security Dashboard widgets

Widget Name	Description	Category/Component
Logging / Debugging Service Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>Virtual Terminal Logging</li> <li>Logging Control Daemon</li> <li>Logging Management Interface Library</li> </ul>	<ul style="list-style-type: none"> <li>LOG</li> <li>Logging Control Daemon (NLOG)</li> <li>Virtual Terminal Logging Control Daemon (VLOG)</li> </ul>
Logging / Debugging Service Events by Severity over time	This widget provides a stacked bar chart of syslog counts from the following facilities by severity over time: <ul style="list-style-type: none"> <li>Virtual Terminal Logging</li> <li>Logging Control Daemon</li> <li>Logging Management Interface Library</li> </ul>	<ul style="list-style-type: none"> <li>LOG</li> <li>Logging Control Daemon (NLOG)</li> <li>Virtual Terminal Logging Control Daemon (VLOG)</li> </ul>
Virtual Terminal Logging Control Daemon Events by Message	This widget provides a pie chart showing the syslog from the Virtual Terminal Logging Control Daemon facility.	Virtual Terminal Logging Control Daemon (VLOG)
Logging Control Daemon Events by Message	This widget provides a pie chart showing the syslog from the Logging Control Daemon facility.	Logging Control Daemon (NLOG)
Logging Management Interface Library Events by Message	This widget provides a pie chart showing the syslog from the Logging Management Interface Library facility.	LOG

## CNOS Interface Dashboard

The CNOS Interface Dashboard and the widgets it features displays switch configuration change related syslogs.

**Figure 17.** Lenovo Networking Content Pack CNOS Interface Dashboard



The following table describes the widgets featured on the CNOS Interface Dashboard.

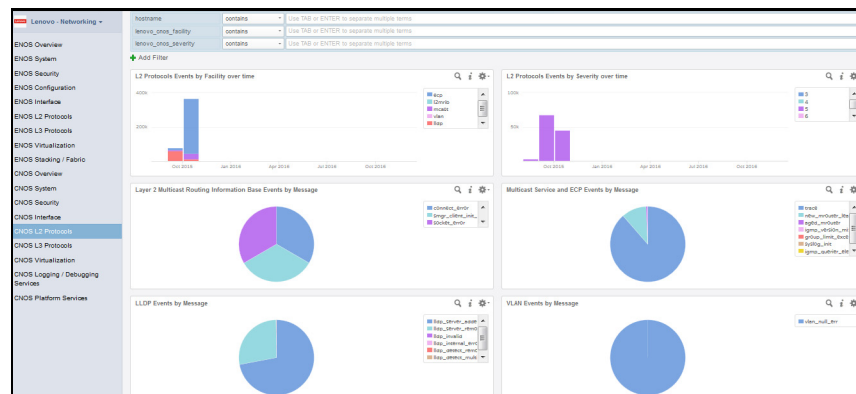
**Table 16.** *CNOS Interface Dashboard widgets*

Widget Name	Description	Category/Component
Interface Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>• VLAG</li> <li>• LACP</li> </ul>	<ul style="list-style-type: none"> <li>• LACP</li> <li>• VLAG</li> </ul>
Interface Events by Severity over time	This widget provides a stacked bar chart of syslog counts from the following facilities by severity over time : <ul style="list-style-type: none"> <li>• VLAG</li> <li>• LACP</li> </ul>	<ul style="list-style-type: none"> <li>• LACP</li> <li>• VLAG</li> </ul>
Virtual Link Aggregation (VLAG) Events by Message	This widget provides a pie chart showing the syslog from the VLAG facility.	VLAG
LACP Events by Message	This widget provides a pie chart showing the from the LACP facility.	LACP

## CNOS L2 Protocols Dashboard

The CNOS L2 Protocols Dashboard displays Layer 2 protocol-related syslogs except those covered under Interface and other categories.

**Figure 18.** *Lenovo Networking Content Pack CNOS L2 Protocols Dashboard*





The following table describes the widgets featured on the CNOS L2 Protocols Dashboard.

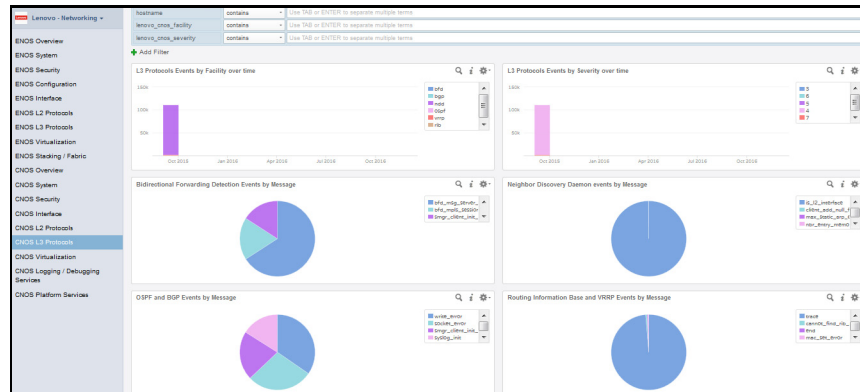
**Table 17.** *CNOS L2 Protocols Dashboard widgets*

Widget Name	Description	Category/Component
L2 Protocols Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>• Multicast Service</li> <li>• Layer 2 Multicast Information Base</li> <li>• LLDP</li> <li>• VLAN</li> <li>• ECP</li> </ul>	<ul style="list-style-type: none"> <li>• Layer 2 Multicast Routing Information Base (L2MRIB)</li> <li>• Multicast Services Library (MCAST)</li> <li>• VLAN</li> <li>• LLDP</li> <li>• ECP</li> </ul>
L2 Protocols Events by Severity over time	This widget provides a stacked bar chart of syslog counts from the following facilities by severity over time: <ul style="list-style-type: none"> <li>• Multicast Service</li> <li>• Layer 2 Multicast Information Base</li> <li>• LLDP</li> <li>• VLAN</li> </ul>	<ul style="list-style-type: none"> <li>• Layer 2 Multicast Routing Information Base (L2MRIB)</li> <li>• Multicast Services Library (MCAST)</li> <li>• VLAN</li> <li>• LLDP</li> <li>• ECP</li> </ul>
Layer 2 Multicast Routing Information Base Events by Message	This widget provides a pie chart showing the syslog from the Layer 2 Multicast Routing Information Base facility.	Layer 2 Multicast Routing Information Base (L2MRIB)
Multicast Service and ECP Events by Message	This widget provides a pie chart showing the syslog from the Multicast Service and ECP facilities which includes: <ul style="list-style-type: none"> <li>• Multicast</li> <li>• ECP</li> </ul>	<ul style="list-style-type: none"> <li>• MCAST</li> <li>• ECP</li> </ul>
LLDP Events by Message	This widget provides a pie chart showing the syslog from the LLDP facility.	LLDP
VLAN Events by Message	This widget provides a pie chart showing the syslog counts by message type from the VLAN facility.	VLAN

## CNOS L3 Protocols Dashboard

The CNOS L3 Protocols Dashboard and the widgets it features display Layer 3 protocol-related syslogs.

**Figure 19.** Lenovo Networking Content Pack CNOS L3 Protocols Dashboard



The following table describes the widgets featured on the CNOS L3 Protocols Dashboard.

**Table 18.** CNOS L3 Protocols Dashboard widgets

Widget Name	Description	Category/Component
L3 Protocols Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>• OSPF</li> <li>• BGP</li> <li>• VRRP</li> <li>• Neighbor Discovery Daemon (NDD)</li> <li>• Bidirectional Forwarding Detection (BFD)</li> <li>• Routing Information Base (RIB)</li> </ul>	<ul style="list-style-type: none"> <li>• Bidirectional Forwarding Detection (BFD)</li> <li>• BGP</li> <li>• Neighbor Discovery Daemon (NDD)</li> <li>• OSPF</li> <li>• VRRP</li> <li>• Routing Information Base (RIB)</li> </ul>
L3 Protocols Events by Severity over time	This widget provides a stacked bar chart of syslog counts from the following facilities by severity over time : <ul style="list-style-type: none"> <li>• OSPF</li> <li>• BGP</li> <li>• VRRP</li> <li>• Neighbor Discovery Daemon (NDD)</li> <li>• Bidirectional Forwarding Detection (BFD)</li> <li>• Routing Information Base (RIB)</li> </ul>	<ul style="list-style-type: none"> <li>• Bidirectional Forwarding Detection (BFD)</li> <li>• BGP</li> <li>• Neighbor Discovery Daemon (NDD)</li> <li>• OSPF</li> <li>• VRRP</li> <li>• Routing Information Base (RIB)</li> </ul>
Bidirectional Forwarding Detection Events by Message	This widget provides a pie chart showing the syslog from the Bidirectional Forwarding Detection facility.	Bidirectional Forwarding Detection (BFD)
Neighbor Discovery Daemon events by Message	This widget provides a pie chart showing the syslog from the Neighbor Discovery Daemon facility.	Neighbor Discovery Daemon (NDD)

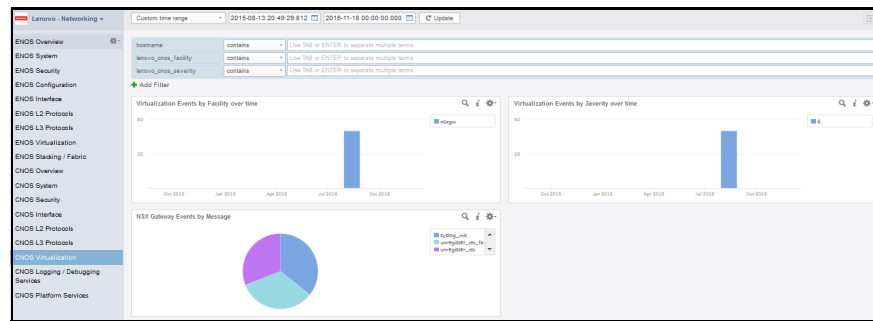
**Table 18.** *CNOS L3 Protocols Dashboard widgets (continued)*

Widget Name	Description	Category/Component
OSPF and BGP Events by Message	This widget provides a pie chart showing the syslog counts by message type from the OSPF and BGP facilities.	<ul style="list-style-type: none"> <li>OSPF</li> <li>BGP</li> </ul>
Routing Information Base and VRRP Events by Message	This widget provides a pie chart showing the syslog counts by message type from the Routing Information Base and VRRP facilities.	<ul style="list-style-type: none"> <li>Routing Information Base (RIB)</li> <li>VRRP</li> </ul>

## CNOS Virtualization Dashboard

The CNOS Virtualization Dashboard and the widgets it features display syslogs related to the features of the NSXGW.

**Figure 20.** *Lenovo Networking Content Pack CNOS Virtualization Dashboard*



The following table describes the widgets featured on the CNOS Virtualization Dashboard.

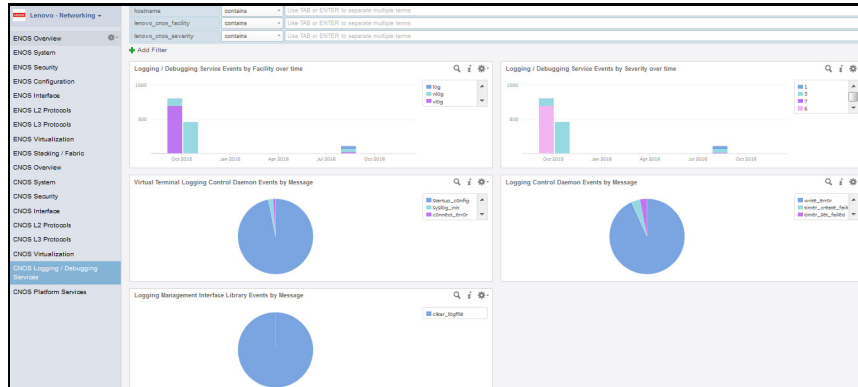
**Table 19.** *CNOS Virtualization Dashboard widgets*

Widget Name	Description	Category/Component
Virtualization Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facility included in this widget is NSX Gateway.	NSXGW
Virtualization Events by Severity over time	This widget provides a stacked bar chart of syslog from the NSX Gateway facility by severity over time.	NSXGW
NSX Gateway Events by Message	This widget provides a pie chart showing the syslog from the NSX Gateway facility.	NSXGW

## CNOS Logging / Debugging Services Dashboard

The CNOS Logging / Debugging Services Dashboard and the widget it features display syslogs related to the NSX Gateway feature.

**Figure 21.** Lenovo Networking Content Pack CNOS Logging / Debugging Services Dashboard



The following table describes the widgets featured on the Logging / Debugging Services Dashboard.

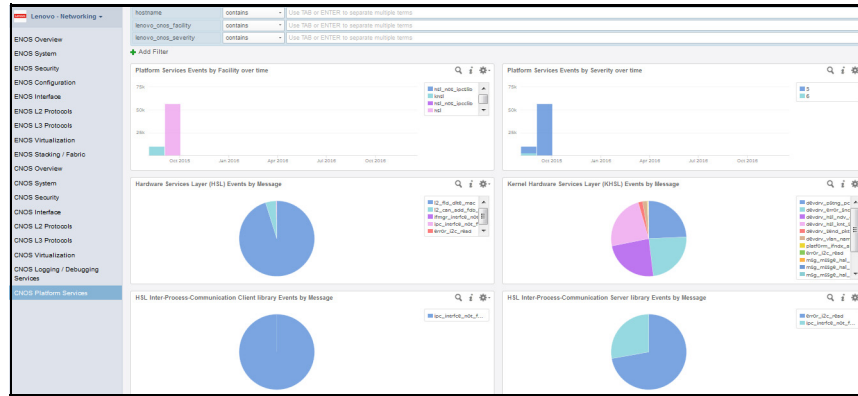
**Table 20.** ENOS Logging / Debugging Services Dashboard widgets

Widget Name	Description	Category/Component
Logging / Debugging Service Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>Virtual Terminal Logging</li> <li>Logging Control Daemon</li> <li>Logging Management Interface Library</li> </ul>	<ul style="list-style-type: none"> <li>LOG</li> <li>Logging Control Daemon (NLOG)</li> <li>Virtual Terminal Logging Control Daemon (VLOG)</li> </ul>
Logging / Debugging Service Events by Severity over time	This widget provides a stacked bar chart of syslog counts from the following facilities by severity over time: <ul style="list-style-type: none"> <li>Virtual Terminal Logging</li> <li>Logging Control Daemon</li> <li>Logging Management Interface Library</li> </ul>	<ul style="list-style-type: none"> <li>LOG</li> <li>Logging Control Daemon (NLOG)</li> <li>Virtual Terminal Logging Control Daemon (VLOG)</li> </ul>
Virtual Terminal Logging Control Daemon Events by Message	This widget provides a pie chart showing the syslog from the Virtual Terminal Logging Control Daemon facility.	Virtual Terminal Logging Control Daemon (VLOG)
Logging Control Daemon Events by Message	This widget provides a pie chart showing the syslog from the Logging Control Daemon facility.	Logging Control Daemon (NLOG)
Logging Management Interface Library Events by Message	This widget provides a pie chart showing the syslog from the Logging Management Interface Library facility.	LOG

# CNOS Platform Services Dashboard

The CNOS Platform Services Dashboard and the widgets it features displays syslogs related to the features of Hardware Services Layer and Kernel Hardware Services Layer

**Figure 22.** Lenovo Networking Content Pack CNOS Platform Services Dashboard



The following table describes the widgets featured on the CNOS Platform Services Dashboard.

**Table 21.** CNOS Platform Services Dashboard widgets

Widget Name	Description	Category/Component
Platform Services Events by Facility over time	This widget provides a stacked bar syslog counts by facility over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>Kernel Hardware Services Layer</li> <li>Hardware Services Layer</li> <li>HSL Inter-Process-Communication Client library</li> <li>HSL Inter-Process-Communication Server library</li> </ul>	<ul style="list-style-type: none"> <li>Hardware Service Layer (HSL)</li> <li>Kernel Hardware Service Layer (KHSL)</li> </ul>
Platform Services Events by Severity over time	This widget provides a stacked bar syslog counts by severity over time. The facilities included in this widget are: <ul style="list-style-type: none"> <li>Kernel Hardware Services Layer</li> <li>Hardware Services Layer</li> <li>HSL Inter-Process-Communication Client library</li> <li>HSL Inter-Process-Communication Server library</li> </ul>	<ul style="list-style-type: none"> <li>Hardware Service Layer (HSL)</li> <li>Kernel Hardware Service Layer (KHSL)</li> </ul>
Hardware Services Layer (HSL) events by Message	This widget provides a pie chart showing the syslog from the HSL facility.	Hardware Service Layer (HSL)
Kernel Hardware Services Layer (KHSL) events by Message	This widget provides a pie chart showing the syslog from the KHSL facility.	Kernel Hardware Service Layer (KHSL)

## The Lenovo Networking Content Pack Alarms

The Lenovo Networking Content Pack includes the following preconfigured alarms and can be used to trigger alerts to an email address configured by the Log Insight administrator:

**Table 22.** *ENOS Preconfigured Content Pack alarms*

Alert Name	Notes
Lenovo – Switch, not enough memory	This indicates that there is not enough memory left to perform operation.
Lenovo – Switch, a table has be filled to capacity	Possible tables types: Routing, ACL, FDB, OSPF, VM, ARP, IGMP, L3 GEA, L2 Multicast, L2
Lenovo – Switch Temperature Sensor: Above Fail Threshold	This alert is generated whenever temperature is above fail threshold. If this alert is generated, please check the text of this syslog and log into the switch and check the temperature of each of the sensors.
Lenovo - Switch Temperature Sensor: Above Warning Threshold	This alert is generated when temperature is above warning threshold. If this alert is generated, please check the text of this syslog and log into the switch and check the temperature of each of the sensors.
Lenovo - Switch Temperature Sensor: Platform Thermal Shutdown	This alert indicates that the switch has performed a thermal shutdown. If this alert is generated, the switch may have overheated and shut down to avoid damage to the switch.
Lenovo - Switch Power Fault	This alert indicates a power fault has been detected/cleared. If this alert is generated, please check the text of this syslog and log into the switch and check the status of the power supplies.
Lenovo – Switch Power Supply: Warning Cleared	This indicates that warning due to power supply has been cleared.
Lenovo - Switch Power Supply - Disconnected/failure	This indicates power supply is either disconnected or has failed. Please check the connection and try connecting to the switch again.
Lenovo – Switch Fan Failure: Warning	This indicates that a fan in the switch has failed. If this alert is generated, please log into the switch and check the status of each of the fans.
Lenovo – Switch Fan Fault	This alert indicates fan fault is cleared/detected. If this alert is generated, please check the text of this syslog and log into the switch and check that status of each of the fans.

**Table 22.** *ENOS Preconfigured Content Pack alarms (continued)*

<b>Alert Name</b>	<b>Notes</b>
Lenovo – Switch Fan Failure: Warning Cleared	This alert shows that warning due to fan failure is cleared. If this alert is generated, please log into the switch and check the status of each of the fans.
Lenovo – Switch Rebooted	<p>This indicates that the switch rebooted for one of the following reasons:</p> <ul style="list-style-type: none"> <li>• Boot watchdog reset</li> <li>• console PANIC command</li> <li>• console RESET KEY</li> <li>• hard reset by SNMP</li> <li>• hard reset by WEB-UI</li> <li>• hard reset from console</li> <li>• hard reset from Telnet</li> <li>• low memory</li> <li>• MM Cycled Power Domain</li> <li>• power cycle</li> <li>• Reset Button was pushed</li> <li>• reset by SNMP</li> <li>• reset by WEB-UI</li> <li>• reset from console</li> <li>• reset from EM</li> <li>• reset from Telnet/SSH</li> <li>• scheduled reboot</li> <li>• SMS-64 found an over-voltage</li> <li>• SMS-64 found an under-voltage</li> <li>• software ASSERT</li> <li>• software PANIC</li> <li>• software VERIFY</li> <li>• Telnet PANIC command</li> <li>• unknown reason</li> <li>• watchdog timer</li> </ul>

**Table 23.** *CNOS Preconfigured Content Pack alarms*

<b>Alert Name</b>	<b>Notes</b>
Lenovo - CNOS Switch Power Supply - Disconnected/failure	This indicates power supply is either disconnected or has failed. Please check the connection and try connecting to the switch again.
Lenovo – CNOS Switch Temperature Sensor: Above Fail Threshold	This alert is generated whenever temperature is above fail threshold. If this alert is generated, please check the text of this syslog, log into the switch, and check the temperature of each of the sensors.
Lenovo - CNOS Switch Fan Shutdown	This indicates few fans are operational. Check the status of each of the fans.
Lenovo - CNOS Switch Temperature Sensor: Platform Thermal Shutdown	This alert indicates that the CNOS switch has performed a thermal shutdown.If this alert is generated, the switch may have overheated and shut down to avoid damage to the switch.

**Table 23.** *CNOS Preconfigured Content Pack alarms (continued)*

<b>Alert Name</b>	<b>Notes</b>
Lenovo - CNOS Switch Temperature Sensor: Platform Thermal Return	This alert indicates that the CNOS switch has performed a thermal return.
Lenovo – CNOS Switch Fan Failure: Warning	This indicates that a fan in the switch has failed. If this alert is generated, please log into the switch and check the status of each of the fans.
Lenovo - CNOS Switch Fan Disconnected	This indicates fan is either disconnected or has failed. Please check the connection and try connecting to the switch again.
Lenovo - CNOS Switch Power Fault	This alert indicates a power fault has been detected or cleared.If this alert is generated, please check the text of this syslog, log into the switch, and check the status of the power supplies.
Lenovo – CNOS Switch Fan Fault	This alert indicates a fan fault has been cleared or detected.If this alert is generated, please check the text of this syslog, log into the switch, and check that status of each of the fans.
Lenovo - CNOS Switch Temperature Sensor: Above Warning Threshold	This alert is generated when temperature is above the warning threshold.If this alert is generated, please check the text of this syslog, log into the switch, and check the temperature of each of the sensors.



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# Lenovo Networking Syslog Formats

All Lenovo switches conform to syslog protocol defined in RFC 3164.

## ENOS Syslog Message Format

The following description of the message part of the syslog packet is derived from an Appendix in the IBM/Lenovo switch *ISCLI - Industry Standard CLI Command Reference* guides. There is a unique ISCLI guide for each version of a switch produced by IBM/Lenovo.

The message (MSG) part of the syslog packet is a textual string that contains information regarding the specific event in the switch that caused the generation of the syslog packet.

All syslogs generated by Lenovo and IBM switches follow a standard format at the beginning of the message part that can be used to uniquely identify them from other vendors' syslogs. The following is an example of the message part of a syslog:

```
Nov 19 12:59:02 Switch22 NOTICE Switch OS <802.1x>: Authentication session terminated with Success on port 17
```

The message part format is as follows:

<Date/Time stamp> <IP/Hostname> <Log Severity> Switch OS <Feature>: <Message>

The following parameters are used in the message part:

**Table 24.** *Lenovo ENOS syslog message parameters*

Parameter	Definition
<Date/Time stamp>	The time of the message event is displayed in the following format: <month (3 characters)> <day> <hour (1-24)> : <minute> : <second> For example: Nov 19 12:59:02
<IP/Host name>	The host name is displayed when configured otherwise the IP address is used. For example: Switch22
<Log Severity>	The log severity string that the switch display is defined in the previously mentioned RFC. They are: 1 EMERGENCY 2 ALERT 3 CRITICAL 4 ERROR 5 WARNING 6 NOTICE 7 INFORMATIONAL 8 DEBUG

**Table 24.** *Lenovo ENOS syslog message parameters*

Parameter	Definition
<Feature>	This is the switch-internal software process thread that is generating the message. The Feature is also sometimes referred to as the syslog "category" or "Thread ID". Note that this string is always contained between the less-than (" $<$ ") and greater-than (" $>$ ") symbols in the message. For example, <802.1x>
<Message>:	Text is displayed describing the specific event that occurred in that feature/category of the switch. For example: Authentication session terminated with Success on port 17

Note that there is a fixed string, "Switch OS", in the message part of the syslog packet that is unique to IBM and Lenovo switches.

Please refer to Appendix A in the following Lenovo RackSwitch document for more information on syslogs:

[http://publib.boulder.ibm.com/infocenter/systemx/documentation/topic/com.lenovo.rackswitch.g8272.doc/G8272\\_CR\\_8-2.pdf](http://publib.boulder.ibm.com/infocenter/systemx/documentation/topic/com.lenovo.rackswitch.g8272.doc/G8272_CR_8-2.pdf)

## CNOS Syslog Message Format

Each CNOS dashboard defines a set of widgets that are defined by CNOS syslog mappings. These mappings are based on the *facility* label in each CNOS syslog message. In the Content Pack, we refer to these as syslog *facilities*. The CNOS Syslog message format is:

<time> <hostname> %<facility>-<severity>-<mnemonic>: [<process>] <message>

where:

**Table 25.** *Lenovo CNOS syslog message parameters*

Parameter	Definition
<i>time</i>	The time of the message event is displayed in the following format: <month (3 characters)> <day> <hour (1-24)> : <minute> : <second> For example: Jul 4 11:55:02
<i>hostname</i>	The host name is displayed when configured otherwise the IP address is used. For example: Switch22
<i>facility</i>	The facility label. CNOS supports the following types of facilities: <ul style="list-style-type: none"><li>• <b>Process:</b> Main application processes</li><li>• <b>Sub-application:</b> Threads or subsets of code relevant enough to be individually identified that reside within a process. This is the typical case when a process implements multiple protocols</li><li>• <b>Library:</b> Code that is commonly used by multiple processes</li></ul>

**Table 25.** *Lenovo CNOS syslog message parameters*

<b>Parameter</b>	<b>Definition</b>
<i>severity</i>	The log severity string that the switch display is defined in the previously mentioned RFC. They are: 0 EMERGENCY 1 ALERT 2 CRITICAL 3 ERROR 4 WARNING 5 NOTICE 6 INFORMATIONAL 7 DEBUG
<i>mnemonic</i>	Text string containing detailed information about the event being reported.
<i>process</i>	The process in which the error occurred. The process name is only added to the message when the message is logged by a shared library facility.
<i>message</i>	Text is displayed describing the specific event that occurred in that feature/category of the switch. For example: Authentication session terminated with Success on port 17

The syslog ID portion of the message consists of *<facility>-<severity>-<mnemonic>*.

For more information on the CNOS syslog message format, see the most recent Application Guide at the following site:

[http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp?topic=/com.lenovo.rackswitch.g8272.doc/rs\\_g8272.htm](http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp?topic=/com.lenovo.rackswitch.g8272.doc/rs_g8272.htm)

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## Product Support

The Lenovo Networking Content Pack is provided “as is” with no warranty.

If you have questions or need support on the Log Insight application, please contact VMware.

For additional information, please refer to the following sources:

- VMware Solution Exchange:  
<https://solutionexchange.vmware.com>
- VMware vRealize Log Insight:  
<http://www.vmware.com/products/vrealize-log-insight>
- Lenovo RackSwitch and Flex System switch syslog information (Appendix A):
  - Rackswitch switches:  
[http://publib.boulder.ibm.com/infocenter/systemx/documentation/topic/com.ibm.lenovo.rackswitch.g8272.doc/G8272\\_CR\\_8-2.pdf](http://publib.boulder.ibm.com/infocenter/systemx/documentation/topic/com.ibm.lenovo.rackswitch.g8272.doc/G8272_CR_8-2.pdf)
  - Flex switches:  
[http://pic.dhe.ibm.com/infocenter/flexsys/information/topic/com.ibm.lenovo.acc.s4091pt.doc/SI4091\\_CR\\_8-2.pdf](http://pic.dhe.ibm.com/infocenter/flexsys/information/topic/com.ibm.lenovo.acc.s4091pt.doc/SI4091_CR_8-2.pdf)

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