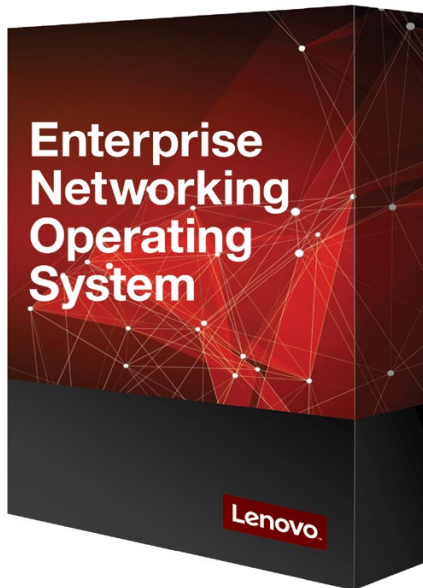


# Lenovo Enterprise Networking Operating System

Data center-class operating system for RackSwitch and Flex System embedded switches

Lenovo™



## Overview

The Lenovo Enterprise Networking Operating System (ENOS) is a data center-class network operating system progressively developed over the past decade to deliver highly reliable, high-performance Ethernet and converged switching and interoperability with existing network infrastructures.

The Enterprise Networking OS delivers advanced capabilities for Lenovo RackSwitch and Flex System switches through its robust feature set, stable implementation of industry standards and innovations such as VMready, and Virtual Fabric.

A GUI and industry-standard CLI deliver easy management. ENOS supports the latest advances in cloud networking, flat networks, converged data and storage networking, virtualization awareness and software-defined networking.

## Why Lenovo

Lenovo is a \$46 billion global Fortune 500 company and a leader in providing innovative consumer, commercial, and enterprise technology. Lenovo enterprise systems deliver industry-leading performance, reliability, and security in virtualized and cloud environments for analytics, database, virtual desktop, infrastructure, and web workloads. Lenovo also offers simplified and extensible systems management tools so you can manage your infrastructure on your own terms. Consistently ranked #1 in reliability and customer satisfaction, the Lenovo enterprise server, storage, and networking portfolio provides the hardware for businesses that never stand still.

## Specifications – Software Features

<b>Security</b>	<p> RADIUS  TACACS+  Secure copy (SCP)  Wire speed filtering: allow and deny  Management ACLs  SSH v2  HTTPS Secure BBI  Secure interface login and password  Secure LDAP  STARTTLS  MAC address move notification  Shift B Boot menu (password recovery/factory default)  Enhanced password security  802.1x with Guest VLAN  Dynamic ARP inspection </p>
<b>VLANs</b>	<p> (802.1Q) Port-based VLANs  Private VLAN </p>
<b>Trunking</b>	<p> Static trunks (EtherChannel)  LACP  LACP Individual  Configurable trunk hash algorithm </p>
<b>Spanning Tree</b>	<p> Multiple spanning tree (802.1s)  Rapid spanning tree (802.1w)  PVRST+  BPDU guard  Root guard  Loop guard </p>
<b>Fibre Channel/FCoE*</b>	<p> Easy connectivity to Fibre Channel or FCoE storage nodes or SANs (supported on converged switch models with built-in Omni Ports)  NPV (N_Port Virtualization) Gateway  FC port speeds: 4 Gb, 8 Gb  Bridging to Fibre Channel SANs  Login load distribution in NPV mode end-to-end  FCoE initiator to target (FCoE initiator/target can be attached to any port that is configured as Ethernet)  Direct attachment of FCoE targets  Manageable via ISCLI/BBI  Full Fabric FC/FCoE  FC port speeds: 4 Gb, 8 Gb  FC-BB5 Compliant Full Fabric  FC/FCoE switch </p> <ul style="list-style-type: none"> <li>Fabric services: Name server, login services, zoning and registered state change notification (RSCN)</li> <li>WWN, FCID or Alias based zoning</li> <li>Login load distribution</li> <li>FC classes of service: <ul style="list-style-type: none"> <li>Class 2 and Class 3</li> </ul> </li> </ul> <p> Manageable via ISCLI/BBI  FCoE LAG  FIP Snooping </p>

## Specifications – Software Features

<b>Quality of Service</b>	QoS 802.1p (Priority queues) DSCP remarking Diffserv Metering Control plane policing (CoPP) WRED/ECN
<b>Routing Protocols/Layer 3 Features</b>	RIP v1/v2 OSPF v1/v2/v3 BGP v4 BGP Route-reflector BGP Next hop self Dynamic BGP Peers eBGP Multi-hop IP interface on physical port Policy-based routing
<b>High Availability</b>	Layer 2 failover Virtual Link Aggregation (vLAG) Virtual Router Redundancy Protocol (VRRP)
<b>Stacking</b>	L2 Stacking FCoE with stacking Qbg stacking LLDP stacking MSTP with stacking Hybrid Ethernet/FC stacking Local preference for stacking
<b>Multicast</b>	IGMP Snooping v1, v2 and v3IGMP Querier IGMP Relay MLDv2 Protocol Independent Multicast (PIM Sparse Mode/Dense Mode) PIM Sparse mode with vLAG
<b>Monitoring</b>	Port mirroring VLAN mirroring ACL-based mirroring sFlow version 5 ACL notification UDLD Port ERR-disable
<b>Virtualization</b>	VMready with VI API support VMready with IEEE 802.1Qbg Edge Virtual Bridging VMready MAC spoofing NMotion Preconfiguration of VM OUI MACs Unified Fabric Port (UFP) NSX Gateway

## Specifications – Software Features

<b>Management Features</b>	FTP sFTP Netboot USB boot SYSLOG configuration tracking Logical Switch Partitioning (SPAR) Network Time Protocol Precision Time Protocol Service Location Protocol HOST-RESOURCES MIB SMI-S and SNMP MIB support for Director management MP packet logging Configurable MTM Microburst Detection EasyConnect configuration wizard
<b>Clients</b>	isCLI (industry standard CLI) Scriptable CLI (XML) Browser-based client or telnet Python scripting
<b>Standard Protocols</b>	IPv6 SNMP v1, v2c and v3 RMON DHCP client DHCP relay DHCP option 82 DHCP option 7 DHCP option 12 DHCP snooping LLDP 802.3 Flow Control OpenFlow OpenFlow with hybrid mode (for simultaneous use of both OpenFlow and L2/L3 switching ports)
<b>Standard Platforms Supported*</b>	RackSwitch: G7028, G7052, G8052, G8124E, G8264, G8264CS, G8272, G8296, G8332 Flex System: EN4093R, CN4093, SI4093, SI4091, Flex System Interconnect Fabric

\* Not all software features listed in this document are supported on all switch models. Support for additional switch models may be added at any time.

## For More Information

To learn more about the Lenovo Enterprise Networking Operating System, contact your Lenovo representative or Business Partner or visit [lenovo.com/systems/networking](http://lenovo.com/systems/networking)

