Lenovo Networking Operating System

Data center-class operating system for RackSwitch and embedded switches

Overview

The Networking Operating System (Networking OS) 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 Networking OS delivers advanced capabilities for RackSwitch, Flex System and BladeCenter 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. Networking OS supports the latest advances in cloud networking, flat networks, converged data and storage networking, virtualization awareness and software-defined networking.

Specifications - Software features	
Security	RADIUS TACACS+ SCP Wire speed filtering: allow and deny SSH v2 HTTPS Secure BBI Secure interface login and password MAC address move notification Shift B Boot menu (password recovery/factory default) CoPP Enhanced password security
VLANs	Port-based VLANs 4096 VLAN IDs supported 1024 Active VLANs (802.1Q) 802.1x with Guest VLAN Private VLAN Edge
Lossless Ethernet	802.1 Data Center Bridging Priority Based Flow Control (PFC) Enhanced Transmission Selection (ETS) Data Center Bridge Exchange protocol (DCBX) FIP Snooping Converged Enhanced Ethernet
Trunking	LACP LACP Suspend Port Static trunks (EtherChannel) Configurable trunk hash algorithm
Spanning tree	Multiple spanning tree (802.1s) MSTP in stacking mode Rapid spanning tree (802.1w) PVRST+ BPDU guard Root guard Loop guard

Fibre Channel/FCoE*	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 ● Fabric services: Name server, login services, zoning and registered state change notification (RSCN) ● WWN, FCID or Alias based zoning ● Login load distribution FC classes of service: Class 2 and Class 3 Manageable via ISCLI/BBI FCoE LAG
Quality of service	QoS 802.1p (Priority queues) DSCP remarking Diffserv Metering CoPP WRED/ECN
Routing protocols/Layer 3 features	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
High availability	Layer 2 failover Virtual Router Redundancy Protocol (VRRP) Virtual Link Aggregation (vLAG)
Multicast	IGMP Snooping v1, v2 and v3 with 2K IGMP groups IGMP Querier IGMP Relay MLDv2 Protocol Independent Multicast (PIM Sparse Mode/Dense Mode) PIM Sparse mode with vLAG
Monitoring	Port mirroring VLAN mirroring ACL-based mirroring sFlow version 5 ACL notification UDLD ERR-disable
Virtualization	VMready with VI API support VMready with IEEE 802.1Qbg Edge Virtual Bridging VMready MAC spoofing NMotion® Preconfiguration of VM OUI MACs SNMP management of vNICs Unified Fabric Port (UFP)

Management features	FTP sFTP Netboot USB boot SYSLOG configuration tracking Stacking FCoE with stacking Qbg stacking LLDP stacking Hybrid Ethernet/FC stacking Local preference for stacking Logical Switch Partitioning (SPAR) 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
Clients	isCLI (Cisco-like) Scriptable CLI (XML) Browser-based client or telnet Management ACLs
Standard protocols	IPv6 SNMP v1, v2c and v3 RMON Secondary NTP support 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)
Standard platforms supported*	**RackSwitch:** G7028, G7052, G8000, G8052, G8124/E, G8264/T/CS, G8316, G8332 **BladeCenter:** Virtual Fabric 10 Gb Switch Module and 1/10 Gb Ethernet Switch Module **Flex System:** EN4093, EN4093R, CN4093, EN2092

* 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 on specific feature summaries by platforms, visit: ibm.com/support/documentation and enter in your product name in the "Find and activate a product" field on the top left.

Why Lenovo

Lenovo is the leading provider of x86 systems for the data center. The portfolio includes rack, tower, blade, dense and converged systems, and supports enterprise class performance, reliability and security. Lenovo also offers a full range of networking, storage, software and solutions, and comprehensive services supporting business needs throughout the IT lifecycle.