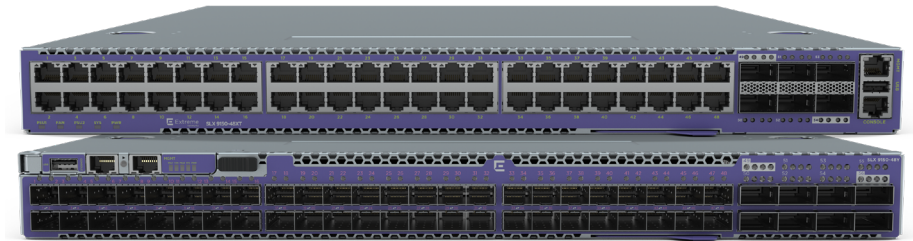


## Highlights

- Delivers agility at all layers of the data center stack
- Two models – 48x25/10/1G + 8x100/40G (fiber) and 48x10/1G copper connectivity + 6 x 100/40G GbE uplink options in a fixed 1U form factor
- Copper ports support 10G and 1G and Fiber ports support 25G, 10G and 1G
- Full featured SLX operating system with advanced features supporting switching, Data Center Fabrics, BGP-EVPN and VXLAN
- Utilizes the SLX Insight Architecture and SLX Visibility Services for flexible, real-time monitoring of virtualized, dynamic workloads to streamline troubleshooting
- Provides payload timestamping to more accurately set and measure performance SLAs
- All models offer a choice of AC/DC power supplies and F/R fans
- Incorporates turnkey and customizable cross-domain workflow automation for the entire network lifecycle through Extreme Workflow Composer
- Extreme Fabric Automation leverages the onboard Extreme Insight Architecture's Guest VM and enables plug-n-play fabrics for day 0 infrastructure provisioning and day 1 configuration of all tenant services across the entire fabric at no additional cost



# ExtremeSwitching<sup>™</sup> SLX9150

## Next-Generation Leaf Switch

SLX9150 switches are purpose-built high density 1/10/25/40/100GbE fixed form factor switches designed for the needs of Enterprise data centers and service providers. They deliver scalable L2 and L3 resources with advanced features for network monitoring and network virtualization offering scalable and deterministic network performance while simplifying deployment and reducing cost.

SLX9150 switches enable organizations to design open networks that accommodate a variety of applications and east-west traffic patterns. With its high-density, scale-out architecture and leading power efficiency and airflow choices, the SLX9150 delivers a cost-effective solution that optimizes power, cooling, and data center space. With a rich set of Layer 2 and Layer 3 features and advanced visibility and automation capabilities, the SLX9150 is built to address dynamic growth in highly virtualized environments, distributed applications, and digital transformation.

## SLX9150 Overview

The SLX9150 is a fixed 1/10/25/40/100GbE top-of-rack leaf switch with 32 MB of packet buffer and an overall throughput of 2 Tbps in and out non-blocking switching capacity. It offers forty-eight 1/10/25 GbE SFP28 ports and 8 100/40 GbE QSFP28 ports.

SFP and QSFP ports offer a choice of speeds — including 100, 40, 25, 10, or 1 GbE — along with a wide choice of transceivers and cables. Ports can be mixed, offering flexible design options to cost-effectively support demanding data center and service provider environments.

## The SLX9150 Switch Comes in Two Flavors:

### SLX9150-48Y

- 48 1/10/25GbE SFP28 ports
- 8 10/40/100GbE QSFP28 ports

### SLX9150-48XT

- 48 1/10GbE 10GBASE-T ports
- 6 10/40/100GbE QSFP28 ports

### Ease of Use - Flexible Management Options

- Advanced command line interface
- Zero Touch Provisioning (ZTP)
- Integrated web based management application

### Flexible System Configurations

- Wide range of port speeds
- Fiber SFP28 and copper 10GBASE-T models
- Hot-swappable modular power and fans
- AC and DC power supply options
- Front to Back and Back to Front air flow options
- Redundancy options for high-availability

Together with Data Center fabrics, the SLX9150 and SLX family of switches and routers help transform data center networks by enabling cloud-based architectures that deliver new levels of scale, agility, and operational efficiency. These highly automated, software-driven and programmable data center fabric design solutions support a wide range of network virtualization options and scale, supporting data center environments ranging from tens to thousands of servers. Moreover, they make it easy for organizations to architect, automate, and integrate current and future data center technologies while they transition to a cloud model on their own timeframe and terms.

The SLX9150 helps address the increasing agility and analytics needs of digital businesses with innovative network visibility capabilities and network automation provided by Extreme Workflow Composer.

## High-Availability and Reliability

The SLX9150 delivers the high performance and reliability required by modern data centers. It is designed for high availability from both a software and hardware perspective. Key features include:

- A high-availability architecture with a clear separation between the control plane and data plane
- Redundant power supplies and fan modules that minimize single points of failure
- Active/Active Layer 2 multipathing
- 64-way ECMP routing for load balancing and redundancy
- BFD, OSPF3-NSR, and BGP4-GR

## Modular, Virtualized Operating System

The SLX9150 runs Extreme SLX-OS, a fully virtualized Linux-based operating system that delivers process-level resiliency and fault isolation. SLX-OS supports advanced switching features and is highly programmable with support for REST API with the YANG data model, Python, and NETCONF — enabling full lifecycle automation with Extreme Workflow Composer. It is based on Ubuntu Linux, which offers all the advantages of open source and access to commonly used Linux tools.

SLX-OS runs in a virtualized environment over a KVM hypervisor, with the operating system compartmentalized and abstracted from the underlying hardware. The core operating system functions for the SLX9150 are hosted in the system VM.

This approach provides clean failure domain isolation for the switch operating system while leveraging the x86 ecosystem — thereby removing single-vendor lock-in for system tools development and delivery. In addition, it supports a guest VM, which is an open KVM environment for running third-party and customized monitoring, troubleshooting, and analytics applications.

## Embedded Network Visibility

SLX Visibility Services deliver a new approach to network monitoring and troubleshooting that makes it faster, easier, and more cost-effective to obtain the comprehensive, real-time visibility needed for network operations and automation. This innovative approach provides comprehensive visibility from the network to the workload, and triggers action on the network. These actions can address end-user application or service needs, and provide context-rich data for additional analysis, automation, and reporting.

## Extreme Insight Architecture

The Extreme Insight Architecture leverages an innovative combination of SLX-OS software and SLX hardware features to provide pervasive visibility into the network without impacting network operation or performance.

This flexible and open solution enables organizations to deploy their choice of third-party or customized monitoring and troubleshooting tools directly in the network — providing real-time visibility to meet specific business and operational needs across the network. This enables organizations to improve service and application assurance, as well as dramatically reduce operational impact and cost.

Key components of the SLX Insight Architecture include:

**Guest VM:** The SLX Insight Architecture is based on an open KVM environment that runs third party applications and customized monitoring, troubleshooting, and analytics tools. Enabled by Extreme SLX-OS, this preconfigured guest VM is on the local CPU of each SLX9150 Switch. It hosts third-party network operations and analytics applications on every device, extending visibility to the entire network.

**Dedicated Analytics Path:** The SLX Insight Architecture provides an innovative internal analytics path between the packet processor on the SLX9150 and the SLX Insight Architecture open KVM environment running on the local CPU. This enables applications running in the open KVM environment to extract data without disrupting the forwarding or control plane traffic on the switch.

**Flexible Streaming:** The SLX Insight Architecture provides API streaming, enabling captured data to be delivered to analytics applications off the platform for additional analysis, visualization and reporting, or logging and archiving.

**Dedicated Analytics Storage:** The SLX9150 provides 64 GB of on-device storage dedicated to visibility applications running in the guest VM, providing real-time data capture for fast and easy access

## Plug-n-Play Data Center Fabrics with Extreme Fabric Automation

Extreme Fabric Automation simplifies and accelerates the deployment of the data center IP Fabric. The on-box application runs as a service on the GuestVM within the SLX9150 and uses industry-standard open API based programmable interfaces to provide the easiest way to deploy, provision and automate single or multiple data center IP Fabric networks in the fastest and most efficient way. Extreme Fabric Automation is the point of integration for VMware, Microsoft and OpenStack Simply cable the devices, configure a management

IP and run the application from a single SLX switch. The IP Fabric underlay, overlay and tenants will be fully configured within seconds. A single instance running on the Guest VM scales up to 24 devices and requires the SLX-OS advanced software license. When larger number of devices are required, Extreme Fabric Automation can be installed as a VM on an external server. In this case, thousands of switches can be automated from a single instance.

## SLX Visibility Services

As network complexity increases, isolated data points at the physical or virtual network layer provide little insight into the criticality of an issue. For example, bursty storage backup traffic slowing down an internal website is a lower priority than a slowdown for a revenue-generating application. Network administrators need workload context across the network to ensure the appropriate action is taken in each case.

SLX Visibility Services help simplify network operations with embedded visibility from the physical network to application workloads. By combining physical and virtual network traffic data with overlay and workload information across multiple network layers, this solution enables diverse, rule-based actions to maintain performance and mitigate risk. Other key functions include:

- Pervasive visibility at scale across the network for seamless support of highly distributed multitier application workloads
- Rich multilayer classification (such as IP and MAC addresses, port numbers, VNIs) and workload matching with network-wide scale

- Automated application of rule-based actions (such as count, drop, mirror, sFlow) to incoming network traffic
- Further actions outside the switch, including pushing context-rich data to the Extreme Workflow Composer, and third-party analytics and monitoring applications

## VXLAN RIOT-Ready Hardware

The VXLAN routing into and out of tunnels (RIOT) capability enables intercommunication between data center workloads located across broadcast domains in different subnets. Many switching platforms require two or even three passes through the ASIC for RIOT functionality — either for route and encapsulation; route and decapsulation; or decapsulation, route, and encapsulation. They also tend to unnecessarily waste Ethernet ports for loopback. Ethernet LoopBack LAG (ELBL) is required for RIOT functionality, which reduces the number of available front panel ports on the switch, and each extra pass creates added latency to the RIOT function.

The SLX9150 hardware supports RIOT, providing a flexible application deployment architecture for new and legacy multitier application workloads. With the SLX9150, all RIOT functions — including decapsulation, route, and encapsulation — require only one pass through the ASIC. This maintains efficiency of front panel port availability and reduces latency for RIOT.

## Cross-Domain Automation for IT Operations

To unleash new levels of business innovation and competitive advantage, many organizations are embracing digital transformation. Their success depends on building an agile business, and, in the digital era, IT agility is achievable only with centralized, cross-domain automation.

SLX9150 leverages Extreme Workflow Composer, powered by StackStorm. With its nearly 2,000 pre-built points of integration, this DevOps-inspired, event-driven automation platform enables cross-domain workflows and straightforward integration with disparate IT technologies, platforms, and policies to provide split-second, reliable execution of service provisioning and remediation.

## DevOps-Inspired Automation

Streamline end-to-end IT operations and increase IT agility with event-driven, cross-domain automation.

### SLX9150 and Extreme Workflow Composer

The SLX9150, combined with Extreme Workflow Composer delivers automation for provisioning, validation, troubleshooting, and remediation of network services:

- Unleash IT agility by eliminating cross-domain service provisioning, troubleshooting, and remediation delays
- Accelerate time-to-value and time-to-resolution with automation suites designed, built, and tested for Extreme Networks infrastructure; easily customized as skills and requirements change
- Leverage the power of DevOps methodologies and popular open source technologies that embrace industry best practices, as well as a thriving technical community for peer collaboration and innovation
- Increase agility beyond Day 0 by automating the entire network lifecycle — provisioning, validation, troubleshooting, and remediation of Extreme Networks infrastructure

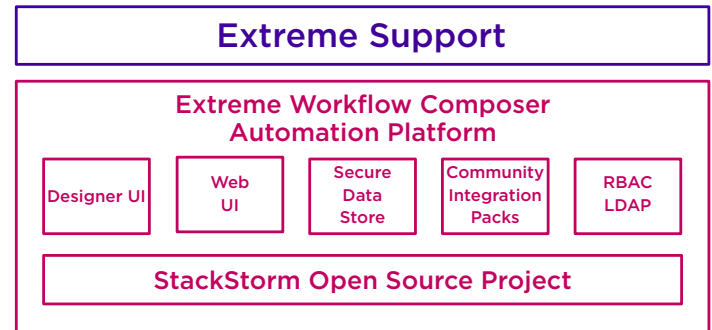


Figure 2: The Workflow Composer architecture

## SLX9150 Switch Specifications

| Model                | SLX9150-48Y   | SLX9150-48XT  |
|----------------------|---|---|
| Ports                | 48 1/10/25GbE SFP28 ports <ul style="list-style-type: none"> <li>8 40/100GbE QSFP28 ports</li> <li>1x Serial console port RJ-45</li> <li>1x 10/100/1000BASE-T out-of-band management port</li> <li>USB Type A storage port</li> </ul> | 48 1/10GbE 10GBaseT ports <ul style="list-style-type: none"> <li>6 40/100GbE QSFP28 ports</li> <li>1x Serial console port RJ-45</li> <li>1x 10/100/1000BASE-T out-of-band management port</li> <li>USB Type A storage port</li> </ul> |
| Power Supplies       | Modular 750W AC power supply (up to two PSUs) <ul style="list-style-type: none"> <li>Modular 750W DC power supply (up to two PSUs)</li> <li>Front to Back and Back to Front airflow options</li> </ul>                                | Modular 750W AC power supply (up to two PSUs) <ul style="list-style-type: none"> <li>Modular 750W DC power supply (up to two PSUs)</li> <li>Front to Back and Back to Front airflow options</li> </ul>                                |
| Fan Modules          | 6 fan modules <ul style="list-style-type: none"> <li>Front -Back and Back-Front airflow options</li> </ul>  | 6 fan modules <ul style="list-style-type: none"> <li>Front -Back and Back-Front airflow options</li> </ul>  |
| Dimensions           | 17.3in W / 20.9in D / 1.7in H (44.0cm / 53.2cm / 4.3cm)   | 17.3in W / 20.9in D / 1.7in H (44.0cm / 53.2cm / 4.3cm)   |
| Performance          | Line rate 4Tbps Switching Capacity (2Tbps ingress, 2Tbps egress)<br>Average Latency: 800 ns   | Line rate 2.16 Tbps Switching Capacity (1.08Tbps ingress, 1.08Tbps egress)<br>Average Latency: 800 ns   |
| CPU Memory           | <ul style="list-style-type: none"> <li>8-core Processor</li> <li>16GB DDR4 ECC memory</li> <li>128GB SSD memory</li> </ul>  | <ul style="list-style-type: none"> <li>8-core Processor</li> <li>16GB DDR4 ECC memory</li> <li>128GB SSD memory</li> </ul>  |
| Packet Buffers       | 32MB  | 32MB  |
| Operating Conditions | 0° - 45°C operation<br>5% to 95% relative humidity, non-condensing<br>0 - 3000 meters' altitude<br>Shock (half sine): 98 m/ s <sup>2</sup> (10 G), 11ms, 9 shocks<br>Random vibration: 3 to 500 Hz at 1.5 G rms                       | 0° - 45°C operation<br>5% to 95% relative humidity, non-condensing<br>0 - 3000 meters' altitude<br>Shock (half sine): 98 m/ s <sup>2</sup> (10 G), 11ms, 9 shocks<br>Random vibration: 3 to 500 Hz at 1.5 G rms                       |

## Power and Heat Dissipation

| Switch Model    | Minimum Heat Dissipation (BTU/hr) (Idle, no ports linked) | Minimum Power Consumption (Watts) (Idle, no ports linked) | Maximum Heat Dissipation (BTU/hr) (Fans high, all ports 100% traffic) | Maximum Power Consumption (Watts) (Fans high, all ports 100% traffic) |
|-----------------|---|---|---|---|
| SLX9150-48Y AC  | 553 BTU/ hr   | 167W  | 1600 BTU/ hr  | 469W  |
| SLX9150-48Y DC  | 553 BTU/ hr   | 167W  | 1600 BTU/ hr  | 469W  |
| SLX9150-48XT AC | 642 BTU/ hr   | 194W  | 1225 BTU/ hr  | 359W  |
| SLX9150-48XT DC | 642 BTU/ hr   | 194W  | 1225 BTU/ hr  | 359W  |

## Power Supply Specifications

|                      | 750W AC PSU<br>XN-ACPWR-750W-F/ R                          | 750W DC PSU<br>XN-DCPWR-750W-F/ R                          |
|----------------------|--|--|
| Dimensions           | 3.15in W x 1.57in H x 8.11in D (8.0 cm x 4.0 cm x 20.6 cm) | 3.15in W x 1.57in H x 8.11in D (8.0 cm x 4.0 cm x 20.6 cm) |
| Weight               | 1.79lb (0.81kg)  | 1.85lb (0.85 kg)   |
| Voltage Input Range  | 100 -127 VAC / 20 0 -240 VAC                               | -40 to -75 VDC   |
| Line Frequency Range | 50 - 60 HZ   | N/A  |
| PSU Input Socket     | IEC 320 C14  | Terminal Block   |
| PSU Output Cord      | IEC 320 C13  | N/A  |
| Operating Conditions | 0° - 55°C operation  | 0° - 50°C operation  |

# SLX9150 Software Specifications

|                                   |   |
|-----------------------------------|---|
| Connector options                 | <ul style="list-style-type: none"> <li>• 10/1 GbE SFP+</li> <li>• 25 GbE SFP28</li> <li>• 40 GbE QSFP+</li> <li>• 100 GbE QSFP28</li> <li>• Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45</li> <li>• Console management: RJ45 serial port and USB type-C port with serial communication device class support</li> <li>• Storage: USB port, standard-A plug</li> <li>• Sound Pressure</li> </ul> |
| Maximum MAC addresses             | 70,000  |
| Maximum VLANs                     | 4,096   |
| Maximum ACLs (IPv4/IPv6/L2)       | 2,000   |
| Maximum members in a standard LAG | 64  |
| Maximum number of MCT switches    | 2   |
| Maximum number of Bridge Domains  | 4,096   |
| Maximum IPv4 unicast routes       | 128,000   |
| Maximum IPv6 unicast routes       | 10,000  |
| Maximum IPv4 host routes          | 47,000  |
| Maximum IPv4 host routes          | 33,000  |
| Maximum jumbo frame size          | 9,126 bytes   |
| QoS priority queues (per port)    | 8   |

## IEEE Compliance

IEEE 802.1D Spanning Tree Protocol  
 IEEE 802.1s Multiple Spanning Tree  
 IEEE 802.1w Rapid Reconfiguration of Spanning Tree Protocol  
 IEEE 802.3 Ethernet  
 IEEE 802.3ad Link Aggregation with LACP  
 IEEE 802.3ab 1000BASE-T  
 IEEE 802.3z 1000BASE-X  
 IEEE 802.3ba / 80 2.3bm 40 GBASE-X and 100 GBASE-X  
 IEEE 802.1Q VLAN Tagging  
 IEEE 802.1p Class of Service Prioritization and Tagging  
 IEEE 802.1v VLAN Classification by Protocol and Port  
 IEEE 802.1AB Link Layer Discovery Protocol (LLDP)  
 IEEE 802.3x Flow Control (Pause Frames)  
 IEEE 802.3ae 10 GBASE-X  
 IEEE 802.3 10 GBASE-T (up to 100 m using Cat6a cabling or better)

## RFC Compliance

### General Protocols

RFC 768 User Datagram Protocol (UDP)  
 RFC 783 TFTP Protocol (revision 2)  
 RFC 791 Internet Protocol (IP)  
 RFC 792 Internet Control Message Protocol (ICMP)  
 RFC 793 Transmission Control Protocol (TCP)

RFC 826 ARP  
 RFC 854 Telnet Protocol Specification  
 RFC 894 A Standard for the Transmission of IP Datagram over Ethernet Networks  
 RFC 959 FTP  
 RFC 1027 Using ARP to Implement Transparent Subnet Gateways (Proxy ARP)  
 RFC 1112 IGMP v1  
 RFC 1157 Simple Network Management Protocol (SNMP) SNMP v1 and v2c  
 RFC 1305 Network Time Protocol (NTP) Version 3  
 RFC 1492 TACACS+  
 RFC 1519 Classless Inter-Domain Routing (CIDR)  
 RFC 1584 Multicast Extensions to OSPF  
 RFC 1765 OSPF Database Overflow  
 RFC 1812 Requirements for IP Version 4 Routers  
 RFC 1997 BGP Communities Attribute  
 RFC 1908 Coexistence between Version 1 and Version 2 of the Internet-standard Network Management Framework  
 RFC 2068 HTTP Server  
 RFC 2131 Dynamic Host Configuration Protocol (DHCP)  
 RFC 2154 OSPF with Digital Signatures (Password, MD-5)  
 RFC 2236 IGMP v2  
 RFC 2267 Network Ingress Filtering Option — Partial Support  
 RFC 2328 OSPF v2  
 RFC 2370 OSPF Opaque Link-State Advertisement (LSA)  
 RFC 2375 IPv6 Multicast Address Assignments  
 RFC 2385 Protection of BGP Sessions with the TCP MD5 Signature Option



RFC 2439 BGP Route Flap Damping

RFC 2460 Internet Protocol, Version 6 (v6) Specification (on management interface)

RFC 2462 IPv6 Stateless Address Auto-Configuration

RFC 2464 Transmission of IPv6 Packets over Ethernet Networks (on management interface)

RFC 2474 Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers

RFC 2571 An Architecture for Describing SNMP Management Frameworks

RFC 2545 Use of BGP-MP Extensions for IPv6

RFC 2578 Structure of Management Information Version 2

RFC 2579 Textual Conventions for SMIV2

RFC 2580 Conformance Statements for SMIV2

RFC 2710 Multicast Listener Discovery (MLD) for IPv6 (future)

RFC 2711 IPv6 Router Alert Option

RFC 2740 OSPFv3 for IPv6

RFC 2865 Remote Authentication Dial-In User Service (RADIUS)

RFC 3101 The OSPF Not-So-Stubby Area (NSSA) Option

RFC 3137 OSPF Stub Router Advertisement

RFC 3176 sFlow

RFC 3392 Capabilities Advertisement with BGPv4

RFC 3410 Introduction and Applicability Statements for Internet Standard Management Framework

RFC 3411 An Architecture for Describing SNMP Frameworks

RFC 3412 Message Processing and Dispatching for the SNMP

RFC 3413 Simple Network Management Protocol (SNMP) Applications

RFC 3414 User-based Security Model

RFC 3415 View-based Access Control Model

RFC 3416 Version 2 of SNMP Protocol Operations

RFC 3417 Transport Mappings

RFC 3418 Management Information Base (MIB) for the SNMP

RFC 3584 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network

RFC 3587 IPv6 Global Unicast Address Format RFC 4291 IPv6 Addressing Architecture

RFC 3623 Graceful OSPF Restart — IETF Tools

RFC 3768 VRRP

RFC 3826 The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model

RFC 4271 BGPv4

RFC 4443 ICMPv6 (replaces 2463)

RFC 4456 BGP Route Reflection

RFC 4510 Lightweight Directory Access Protocol (LDAP): Technical Specification Road Map

RFC 4724 Graceful Restart Mechanism for BGP

RFC4750 OSPFv2.MIB

RFC4760 MP-BGP

RFC 4861 IPv6 Neighbor Discovery

RFC 4893 BGP Support for Four-Octet AS Number Space

RFC 5082 Generalized TTL Security Mechanism (GTSM)

RFC 5880 Bidirectional Forwarding Detection (BFD)

RFC 5881 Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)

RFC 5882 Generic Application of Bidirectional Forwarding Detection (BFD)

RFC 5883 Bidirectional Forwarding Detection (BFD) for Multihop Paths

RFC 5942 IPv6 Neighbor Discovery

RFC 7348 Virtual eXtensible Local Area Network (VxLAN)

RFC 7432 BGP-EVPN — Network Virtualization Using VXLAN Data Plane

## SSH/SCP/SFTP

RFC 4250 Secure Shell (SSH) Protocol Assigned Numbers

RFC 4251 Secure Shell (SSH) Protocol Architecture

RFC 4252 Secure Shell (SSH) Authentication Protocol

RFC 4253 Secure Shell (SSH) Transport Layer Protocol

RFC 4254 Secure Shell (SSH) Connection Protocol

RFC 4344 SSH Transport Layer Encryption Modes

RFC 4419 Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport Layer Protocol

## MIBs

RFC 2674 Bridge MIB

RFC 2819 RMON Groups 1, 2, 3, 9

RFC 2863 The Interfaces Group MIB

RFC 3826 SNMP-USM-AES-MIB

RFC 4022 TCP MIB

RFC 4113 UDP.MIB

RFC 4133 Entity MIB (Version 3); rmon.mib, rmon2.mib, sflow\_v5.mib, bridge.mib, pbridge.mib, qbridge.mib, rstp.mib, lag.mib, lldp.mib, lldp\_ext\_dot1.mib, lldp\_ext\_dot3.mib

RFC 4273 BGP-4 MIB

RFC 4292 IP Forwarding MIB

RFC 4293 Management Information Base for the Internet Protocol (IP)

RFC 4750 OSPFv2.MIB

RFC 7331 BFD MIB

## Virtualization Support

VXLAN Routing

VXLAN Bridging

VXLAN Tunnel End Point

VXLAN Multi-VNI

## Layer 2 Switching

Conversational MAC Learning

Virtual Link Aggregation Group (vLAG) spanning

Layer 2 Access Control Lists (ACLs)

Address Resolution Protocol (ARP) RFC 826

Layer 2 Loop prevention in an overlay environment

MLD Snooping

IGMP v1/v2 Snooping

MAC Learning and Aging

Link Aggregation Control Protocol (LACP) IEEE 802.3ad/802.1AX

Virtual Local Area Networks (VLANs)

VLAN Encapsulation 802.1Q

Per-VLAN Spanning Tree (PVST+ / PVRST+)

Rapid Spanning Tree Protocol (RSTP) 802.1w

Multiple Spanning Tree Protocol (MSTP) 802.1s

STP PortFast, BPDU Guard, BPDU Filter

STP Root Guard

- Pause Frames 802.3x
- Static MAC Configuration
- Multi-Chassis Trunking (MCT)
- DCB features (HW ready)

## Layer 3 Routing

- Border Gateway Protocol (BGP4+)
- DHCP Helper
- Layer 3 ACLs
- IGMPv2
- OSPF v2/v3
- Static routes
- IPv4/v6 ACL
- Bidirectional Forwarding Detection (BFD)
- 64-Way ECMP
- VRF Lite
- VRF-aware OSPF, BGP, VRRP, static routes
- VRRP v2 and v3
- IPv4/IPv6 dual stack
- ICMPv6 Route-Advertisement Guard
- Route Policies
- IPv6 ACL packet filtering
- BGP Additional-Path
- BGP-Allow AS
- BGP Generalized TTL Security Mechanism (GTSM)
- BGP Peer Auto Shutdown
- IPv6 routing
- OSPF Type-3 LSA Filter
- Wire-speed routing for IPv4 and IPv6 using any routing protocol
- BGP-EVPN Control Plane Signaling RFC 7432
- BGP-EVPN VXLAN Standard-based Overlay
- Multi-VRF
- IP Unnumbered Interface
- VRRP-E

## Automation and Programmability

- gRPC Streaming protocol and API
- REST API with YANG data model
- Python
- PyNOS libraries
- DHCP automatic provisioning
- NETCONF API

## High Availability

- BFD

## Quality of Service

- ACL-based QoS
- Class of Service (CoS) IEEE 802.1p
- DSCP Trust
- DSCP to Traffic Class Mutation
- DSCP to CoS Mutation

- DSCP to DSCP Mutation
- Random Early Discard
- Per-port QoS configuration
- ACL-based Rate Limit
- Dual-rate, three-color token bucket
- ACL-based remarking of CoS/DSCP/Precedence
- ACL-based sFlow
- Scheduling: Strict Priority (SP), Deficit Weighted Round-Robin (DWRR)

## Management and Monitoring

- Zero-Touch Provisioning (ZTP)
- IPv4/IPv6 management
- Industry-standard Command Line Interface (CLI)
- NETCONF API
- RESTCONF API with YANG data model
- SSH/SSHv2
- Link Layer Discovery Protocol (LLDP) IEEE 802.1AB
- MIB II RFC 1213 MIB
- Syslog (RASlog, AuditLog)
- Management VRF
- Switched Port Analyzer (SPAN)
- Telnet
- SNMwP v1, v2C, v3
- sFlow version 5
- Out-of-band management
- RMON-1, RMON-2
- NTP
- Management Access Control Lists (ACLs)
- Role-Based Access Control (RBAC)
- Range CLI support
- Python
- DHCP Option 82 Insertion
- DHCP Relay
- Timestamping

## Security

- Port-based Network Access Control 802.1X
- RADIUS
- AAA
- TACACS+
- Secure Shell (SSHv2)
- TLS 1.1, 1.2
- HTTP/HTTPS
- BPDU Drop
- Lightweight Directory Access Protocol (LDAP)
- Secure Copy Protocol
- Control Plane Policing (CPP)
- LDAP/AD
- SFTP
- Port Security



## Ordering Information

| Part Number          | Description  |
|----------------------|--|
| SLX9150-48Y-8C       | Extreme SLX9150-48Y Switch with two empty power supply slots, six empty fan slots, Supports 48x25GE/10GE/1GE + 8x100GE/40GE                |
| SLX9150-48Y-8C-AC-F  | Extreme SLX9150-48Y Switch AC with Front to Back Airflow, Supports 48x25GE/10GE/1GE + 8x100GE/40GE with dual power supplies, six fans      |
| SLX9150-48Y-8C-AC-R  | Extreme SLX9150-48Y Switch AC with Back to Front Airflow, Supports 48x25GE/10GE/1GE + 8x100GE/40GE with dual power supplies, six fans      |
| SLX9150-48XT-6C      | Extreme SLX9150-48XT 10GBaseT Switch with two empty power supply slots, six empty fan slots, Supports 48x10GE/1GE + 6x100GE/40GE           |
| SLX9150-48XT-6C-AC-F | Extreme SLX9150-48XT 10GBaseT Switch AC with Front to Back Airflow, Supports 48x10GE/1GE + 6x100GE/40GE with dual power supplies, six fans |
| SLX9150-48XT-6C-AC-R | Extreme SLX9150-48XT 10GBaseT Switch AC with Back to Front Airflow, Supports 48x10GE/1GE + 6x100GE/40GE with dual power supplies, six fans |
| SLX9150-ADV-LIC-P    | SLX9150 Advanced Feature License for GuestVM, Analytics Path, BGP-EVPN, EFA  |
| XN-FAN-001-F         | Single Fan module, Front to Back Airflow for use in VSP7400, SLX9150   |
| XN-FAN-001-R         | Single Fan module, Back to Front Airflow for use in VSP7400, SLX9150   |
| XN-ACPWR-750W-F      | AC 750W PSU, Front to Back Airflow for use in VSP7400, SLX9150   |
| XN-ACPWR-750W-R      | AC 750W PSU, Back to Front Airflow for use in VSP7400, SLX9150   |
| XN-DCPWR-750W-F      | DC 750W PSU, Front to Back Airflow for use in VSP7400, SLX9150   |
| XN-DCPWR-750W-R      | DC 750W PSU, Back to Front Airflow for use in VSP7400, SLX9150   |



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