Summit X460 Series

Summit® X460 series—the highly scalable advanced aggregation and edge switch with the revolutionary modular operating system, ExtremeXOS®.

High Performance Switching and Routing

- 52-port, 48-port or 28-port Gigabit Ethernet (GbE) connectivity in a 1RU form factor
- Optional two-port 10 GbE to provide 20 Gbps uplinks
- Voice-grade SummitStack™ 40 Gbps and SummitStack-V80 80 Gbps high-speed stacking plus SummitStack-V low-cost, longer distance stacking
- Flexible IEEE 802.3at Power over Ethernet Plus (PoE-plus) to meet the growing demand of converged network applications
- Advanced Layer 2/Layer 3 switching and MPLS/H-VPLS support

Comprehensive Security Management

- User policy and host integrity enforcement, and identity management
- Universal Port Dynamic Security Profiles to provide fine granular security policies in the network
- Threat detection and response instrumentation to react to network intrusion with CLEAR-Flow Security Rules Engine
- Denial of Service (DoS) protection and IP security against man-in-the-middle and DoS attacks to harden the network infrastructure

Performance, Availability and Convergence

- Modular ExtremeXOS Operating System (OS)
- Ethernet Automatic Protection Switching (EAPS) resiliency protocol
- Dual, hot-swappable AC/DC power supplies and hot swappable fan tray

The Summit X460 series switches are industry-leading converged Gigabit Ethernet PoE-plus edge and aggregation stackable switches with the ExtremeXOS modular operating system and optional dual 10 Gigabit Ethernet ports

The Summit X460 series is based on Extreme Networks® revolutionary ExtremeXOS, a highly resilient OS that provides continuous uptime, manageability and operational efficiency. Each switch offers the same high-performance, non-blocking hardware technology, in the Extreme Networks tradition of simplifying network deployments through the use of common hardware and software throughout the network.

The highly flexible and scalable Summit X460 switches are ideal campus edge switches with IEEE 802.3at PoE-plus on every port and ideal aggregation switches for traditional enterprise networks. The Summit X460 series is a great option for DSLAM or CMTS aggregation, or for active Ethernet access.

The Summit X460 is also purpose-built as a top-of-rack switch for many data center environments with features such as high-density Gigabit Ethernet for concentrated data center environments; XNV™ (ExtremeXOS Network Virtualization) for centralized network-based Virtual Machine (VM) inventory, VM location history and VM provisioning; Direct Attach™ to offload VM switching from servers, thereby improving performance; high-capacity Layer 2/ Layer 3 scalability for highly virtualized data centers; and intra-rack and cross-rack stacking with industry-leading flexibility.

Target Applications

- Advanced campus networks or core switch for small networks
- Aggregation switch in a traditional three-tiered network
- Top-of-rack switch for data centers with optional high-speed 80 Gbps cross-rack stacking at up to 100 meters
- Interconnect switch providing low latency connections for High Performance Cluster Computing (HPCC)
- DSLAM aggregation, active Ethernet access or access aggregation device in a Carrier Ethernet network
- Access or access aggregation switch in a business E-Line or E-LAN over VPLS network

High-Performance and Highly Scalable Switching and Routing

Summit X460 offers sophisticated intelligent switching and routing with exceptional port density, scalability and virtualization support plus high-performance stacking technology powered by the ExtremeXOS modular OS. Summit X460 helps enhance the data center, Carrier Ethernet and enterprise campus edge and aggregation network.

High-Performance Switching and Routing

Summit X460 is available in six different port configuration options: 28-port Gigabit Ethernet (Summit X460-24t/24p/24x), 48-port fiber Gigabit Ethernet (Summit X460-48x), or 52-port Gigabit Ethernet (Summit X460-48t/48p). All ports run at non-blocking, wire-speed performance and can carry wire-rate traffic to the option slots, which allow flexible configuration. Option slot A supports a two-port 10 GbE module (XGM3-2sf). For SummitStack stacking ports, a two-port SummitStack module or two-port SummitStack-V80 module can be installed in option slot B (See Figure 1: Port configuration options for Summit X460 switches).

Flexible Port Configuration

Summit X460 offers very flexible port configurations. For Summit X460-24t/24p, with four dedicated Gigabit Ethernet fiber ports and four shared Gigabit Ethernet fiber ports, the switch can have up to 8 fiber GbE ports, while still providing 20 Gigabit Ethernet copper ports (PoE-plus or non-PoE). If higher density copper ports are required, the switch can provide up to 24 Gigabit Ethernet copper ports while providing 4 Gigabit Ethernet fiber ports. Through the two option slots, Summit X460 switches can be equipped with an additional two 10 Gigabit Ethernet and/or SummitStack stacking ports. For stacking, depending upon the needs for bandwidth across the units in a stack, Summit X460 supports 40 Gbps SummitStack or 80 Gbps SummitStack-V80 stacking option modules (See Figure 2: Summit X460-24t flexible port configuration).

SummitStack and SummitStack-V80—High-Performance Stacking

Summit X460 supports SummitStack, which provides 40 Gbps (SummitStack module) or 80 Gbps (SummitStack-V80 module) of stacking bandwidth. The SummitStack module offers high-speed 40 Gbps stacking performance, and provides compatibility with the Summit X250e, Summit X450a/e, Summit X480 and Summit X650 stackable switches.

Alternatively, you may choose high-speed 80 Gbps stacking, which is ideal for demanding applications where a high volume of traffic traverses through the stacking links, yet bandwidth is not compromised through stacking. SummitStack-V80 also breaks the distance limitation for stacking technology by using QSFP+ technology. SummitStack-V80 can support passive copper cable (up to 5m), active multi-mode fiber cable (up to 100m), and QSFP+ optical transceivers which will be the standard technology for 40 GbE. With SummitStack-V80, the Summit X460 provides a very flexible stacking solution inside the data center or central office to create a virtualized switching infrastructure across rows of racks. (See Figure 3: SummitStack-V80 across Rows of Racks and Figure 4: 40 GbE Cabling for SummitStack-V80)

SummitStack-V—Flexible Stacking Over 10 Gigabit Ethernet

ExtremeXOS supports the new SummitStack-V capability to utilize 10 GbE ports as stacking ports, enabling the use of standard cabling and optics technologies used for 10 GbE such as XFP, SFP+, 10GBASE-T and XENPAK. SummitStack-V provides long-distance stacking connectivity of up to 40 km while reducing the cable complexity of implementing a stacking solution. SummitStack-V enabled 10 GbE ports must be physically direct-connected.

Figure 1: Port Configuration Options for Summit X460 Switches

	None (default option)		Option Slot A	Option Slot B	
	Dedicated	Shared	XGM3-2sf	SummitStack	SummitStack-V80
Summit X460-24t	• 20 x 10/100/1000BASE-T (RJ45) • 4 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-48t	• 44 x 10/100/1000BASE-T (RJ45) • 4 x 100/1000BASE-X (SFP	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-24p	• 20 x 10/100/1000BASE-T PoE-plus (RJ45) • 4 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T PoE-plus	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-48p	• 44 x 10/100/1000BASE-T PoE-plus (RJ45) • 4 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T PoE-plus	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-24x	• 4 x 10/100/1000BASE-T (RJ45) • 20 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-48x	• 48 x 100/1000BASE-X (SFP)	None	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-24tDC	• 20 x 10/100/1000BASE-T (RJ45) • 4 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-48tDC	• 44 x 10/100/1000BASE-T (RJ45) • 4 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-24xDC	• 4 x 10/100/1000BASE-T (RJ45) • 20 x 100/1000BASE-X (SFP)	• 4 x 100/1000BASE-X SFP or 10/100/1000BASE-T	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80
Summit X460-48xDC	• 48 x 100/1000BASE-X (SFP)	None	2 x 10GBASE-X (SFP+)	2 x SummitStack	2 x SummitStack-V80

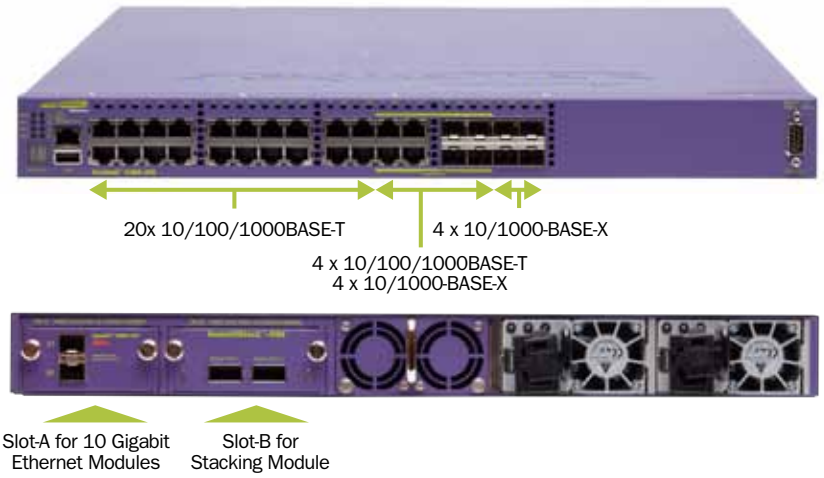


Figure 2: Summit X460-24t Flexible Port Configuration

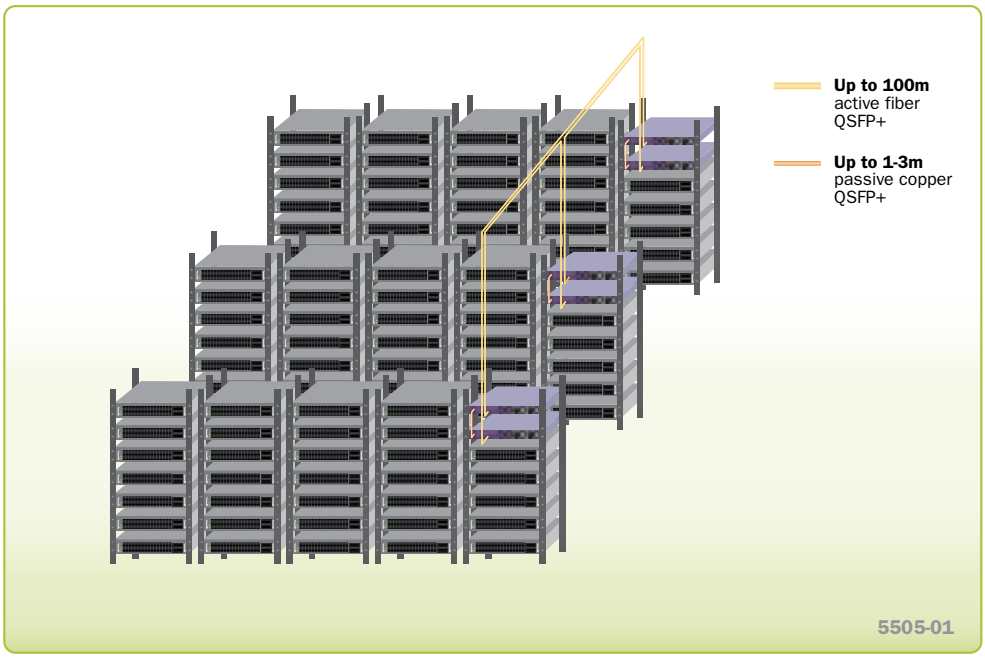


Figure 3: SummitStack-V80 Stacking Across Rows of Racks

	Passive Copper Cable	Active Fiber Cable	SR
Media Type	Copper	MMF	MMF
Connector Type	Not Applicable	Not Applicable	MPO
Distance Range	Up to 5m	Up to 10m	Up to 100m
Image			

Figure 4: SummitStack-V80 Cabling

Inteligent Switching and MPLS/ H-VPLS Support

Summit X460 supports sophisticated and intelligent Layer 2 switching, as well as Layer 3 IPv4/IPv6 routing including policy-based switching/routing, Provider Bridges, bidirectional ingress and egress Access Control Lists, and bandwidth control by 8 Kbps granularity both for ingress and egress. To provide scalable network architectures used mainly for Carrier Ethernet network deployment, Summit X460 supports MPLS LSP-based Layer 3 forwarding and Hierarchical VPLS (H-VPLS) for transparent LAN services. With H-VPLS, transparent Layer 3 networks can be extended throughout the Layer 3 network cloud by using a VPLS tunnel between the regional transparent LAN services typically built by Provider Bridges (IEEE 802.1ad) technology (See Figure 5: Summit X460 in a Carrier Ethernet application).

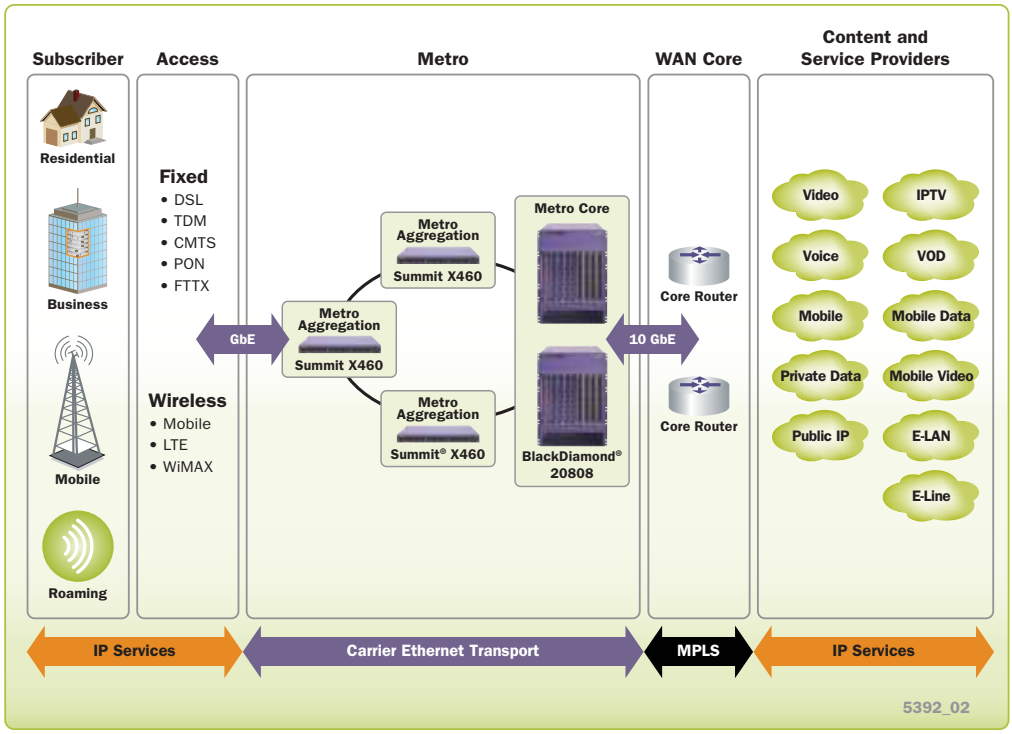


Figure 5: Summit X460 in a Carrier Ethernet Application

IEEE 802.3at PoE-plus

IEEE 802.3af Power over Ethernet has been widely used in the campus enterprise edge network for Ethernet-powered devices such as wireless access points, Voice over IP phones, and security cameras. Ethernet port extenders such as Extreme Networks ReachNXT™ 100-8t can also utilize PoE, making installation and management easier and reducing maintenance costs. The newer IEEE 802.3at PoE-plus standard expands upon Power over Ethernet by increasing the power limit up to 30 watts, and by standardizing power negotiation by using LLDP. Summit X460 supports IEEE 802.3at PoE-plus and supports standards-compliant PoE devices today and into the future.

Comprehensive Security Management

Implementing a secure network means providing protection at the network perimeter as well as the core. Extreme Networks security offerings encompass three key areas: user and host integrity, threat detection and response, and hardened network infrastructure. Furthermore, with policy-based routing, measures can be taken to provide confidentiality of selective data in transit between internal network nodes.

User Authentication and Host Integrity Checking

Network Login and Dynamic Security Profile

Network Login capability implemented in ExtremeXOS enforces user admission and usage policies. Summit X460 series switches support a comprehensive range of Network Login options by providing an 802.1X agent-based approach, a Web-based (agent-less) login capability for guests, and a MAC-based authentication model for devices. With these modes of Network Login, only authorized users and devices can connect to the network and be assigned to the appropriate VLAN. The Universal Port scripting framework available in Summit X460 lets you implement Dynamic Security Profiles, which in sync with Network Login allow you to implement fine-grained and robust security policies. Upon authentication, the switch can load dynamic ACLs/QoS profiles for a user or group of users, to deny/allow the access to the application servers or segments within the network.

Multiple Supplicant Support

Shared ports represent a potential vulnerability in a network. Multiple supplicant capability on a switch allows it to uniquely authenticate and apply the appropriate policies and VLANs for each user or device on a shared port. Multiple supplicant support secures IP Telephony and wireless access. Converged network designs often involve the use of shared ports.

Media Access Control (MAC) Lockdown

MAC lockdown secures printers, wireless APs and servers. The MAC address security/lockdown feature allows Summit X460 to block access to any Ethernet port when the MAC address of a station attempting to access the port is different from the configured MAC address. This feature is used to "lock down" a device to a specific port.

Host Integrity Checking

Host integrity checking helps keep infected or noncompliant machines off the network. Summit X460 series switches support a host integrity or endpoint integrity solution that is based on the model from the Trusted Computing Group. Summit X460 interfaces with the Sentriant® AG200 endpoint security appliance from Extreme Networks to verify that each endpoint meets the security policies that have been set and to quarantine those that are not in compliance.

Identity Manager

Identity Manager allows network managers to track users who access their network. User identity is captured based on NetLogin authentication, LLDP discovery and Kerberos snooping. ExtremeXOS uses the information to then report on the MAC, VLAN, computer hostname, and port location of the user.

Network Intrusion Detection and Response

Hardware-based sFlow Sampling

sFlow® is a sampling technology that provides the ability to continuously monitor application-level traffic flows on all interfaces simultaneously. The sFlow agent is a software process that runs on Summit X460 and packages data into sFlow datagrams that are sent over the network to an sFlow collector. The collector gives an up-to-the-minute view of traffic across the entire network, providing the ability to troubleshoot network problems, control congestion and detect network security threats.

IPFIX Hardware Support

IPFIX (Internet Protocol Flow Information eXport) defines an Internet standards-track protocol for a follow-on protocol to the proprietary Netflow. The technology is a complimentary protocol to sFlow. IPFIX gathers information about network flows through the switch and sends the information to an external collector. Summit X460 includes hardware support to keep track of the flow records.

Port Mirroring

To allow threat detection and prevention, Summit X460 switches support many-to-one and one-to-many port mirroring. This allows the mirroring of traffic to an external network appliance such as an intrusion detection device for trend analysis or for utilization by a network administrator for diagnostic purposes. Port mirroring can also be enabled across switches in a stack.

Line-Rate ACLs

ACLs are one of the most powerful components used in controlling network resource utilization as well as protecting the network. Summit X460 switches support 2,048 centralized ACLs per 24 or 28-port block based on Layer 2, 3 or 4 header information such as the MAC or IP source/destination address. ACLs are used for filtering the traffic, as well as classifying the traffic flow to control bandwidth, priority, mirroring and policy-based routing/switching.

Denial of Service Protection

Summit X460 switches effectively handle DoS attacks. If the switch detects an unusually large number of packets in the CPU input queue, it will assemble ACLs that automatically stop these packets from reaching the CPU. After a period of time, these ACLs are removed, and reinstalled if the attack continues. ASIC-based LPM routing eliminates the need for control plane software to learn new flows, allowing more network resilience against DoS attacks.

Secure Management

To prevent management data from being intercepted or altered by unauthorized access, Summit X460 switches support SSH2, SCP and SNMPv3 protocols. The MD5 hash algorithm used in authentication prevents attackers from tampering with valid data during routing sessions.

Extreme Networks has developed tools that help save you time and resources in managing your network. EPICenter® management suite provides fault, configuration, accounting, performance and security functions, allowing more effective management of Extreme Networks multi-layer switching equipment in a converged network.

For carrier networks, Extreme Networks Ridgeline™ Service Advisor enables the shift from reactive circuit monitoring to proactive service monitoring. Ridgeline Service Advisor unifies service fulfillment, service assurance, and service engineering so carriers can effectively manage next-generation residential triple play and business Ethernet services.

Performance, Availability and Convergence

Powered by the ExtremeXOS OS, Summit X460 supports process recovery and application upgrades without the need for a system reboot. Summit X460 provides the high network availability required for mission-critical servers and applications through its advanced modular OS, highly available hardware architecture and carrier-grade network redundancy protocols.

Modular Operating System for Continuous Operation

Preemptive Multitasking and Protected Memory

Summit X460 series switches allow each of many applications—such as Open Shortest Path First (OSPF) and Spanning Tree Protocol (STP)—to run as separate OS processes that are protected from each other. This drives increased system integrity and inherently protects against DoS attacks.

Process Monitoring and Restart

ExtremeXOS increases network availability using process monitoring and restart. Each independent OS process is monitored in real time. If a process becomes unresponsive or stops running, it can be automatically restarted.

Loadable Software Modules

The modular design of ExtremeXOS OS allows the upgrading of individual software modules, should this be necessary, leading to higher availability in the network (See Figure 7: ExtremeXOS modular design).

High Availability Network Protocols

Ethernet Automatic Protection Switching (EAPS)

EAPS allows the IP network to provide the level of resiliency and uptime that users expect from their traditional voice network. EAPS is more adaptable than Spanning Tree or Rapid Spanning Tree Protocols and offers sub-second (less than 50 milliseconds) recovery that delivers consistent failover regardless of the number of VLANs, network nodes or network topology. Since EAPS allows the network to recover almost transparently, Voice-over-IP (VoIP) calls will not drop and digital video feeds will not freeze or pixelize in most situations.

Spanning Tree/Rapid Spanning Tree Protocols

Summit X460 supports Spanning Tree (802.1D), Per VLAN Spanning Tree (PVST+), Rapid Spanning Tree (802.1w) and Multiple Instances of Spanning Tree (802.1s) protocols for Layer 2 resiliency.

Software-Enhanced Availability

Software-enhanced availability allows users to remain connected to the network even if part of the network infrastructure is down. Summit X460 continuously checks for problems in the uplink connections using advanced Layer 3 protocols such as OSPF, VRRP and ESRP (ESRP supported in Layer 2 or Layer 3), and dynamically routes traffic around the problem.

Equal Cost Multipath

Equal Cost Multipath (ECMP) routing allows uplinks to be load balanced for performance and cost savings while also supporting redundant failover. If an uplink fails, traffic is automatically routed to the remaining uplinks and connectivity is maintained
.

Link Aggregation (802.3ad)

Link aggregation (LAG) allows trunking of up to eight links on a single logical connection. A maximum of 128 link aggregation groups can be created.

Voice-Grade Stacking with SummitStack

Summit X460 provides high-speed 40 Gbps stacking and 80 Gbps stacking through optional stacking modules, as well as 10 GbE stacking through SummitStack-V. The SummitStack stacking architecture is designed to support mission-critical applications through its highly available, rapid failover capability with n-1 master redundancy, distributed Layer 2 and Layer 3 switching, link aggregation across the stack, and distributed uplinks.

SummitStack supports up to eight units in a stack, and provides 50 milliseconds failover for path failure and hitless master/backup failover along with hitless protocol support such as OSPF graceful restart and Network Login user authentication. Summit X460 provides chassis-like management and availability with its SummitStack stacking technology (See Figure 8: SummitStack stacking architecture).

Hardware Redundancy

Summit X460 supports a dual redundant AC/ DC power supply to provide high availability. The power supply can be hot-swapped and replaced should it fail. For non-PoE models, Summit X460 allows AC and DC power supplies to be mixed in the same switch to provide a DC-powered main power source and AC power from a UPS backup. Summit X460 supports a hot-swappable, field replaceable fan.

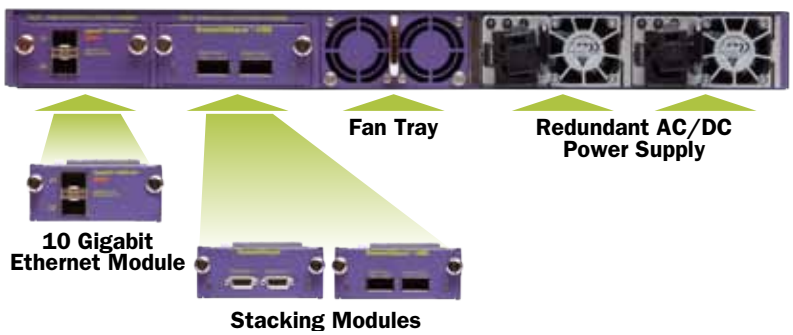


Figure 6: Summit X460 High Availability Design

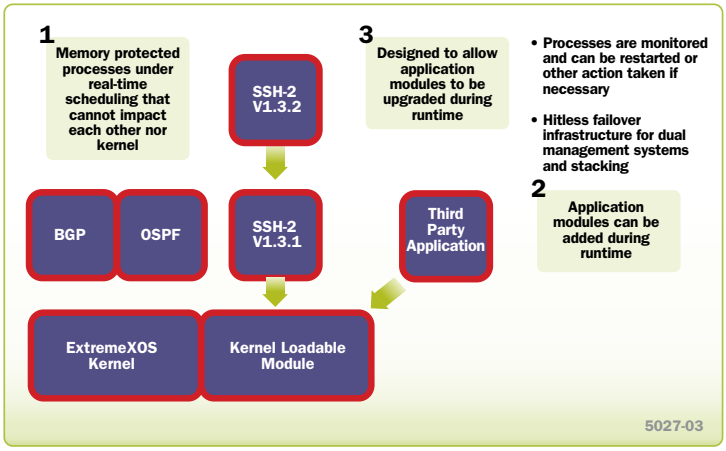


Figure 7: ExtremeXOS Modular Design

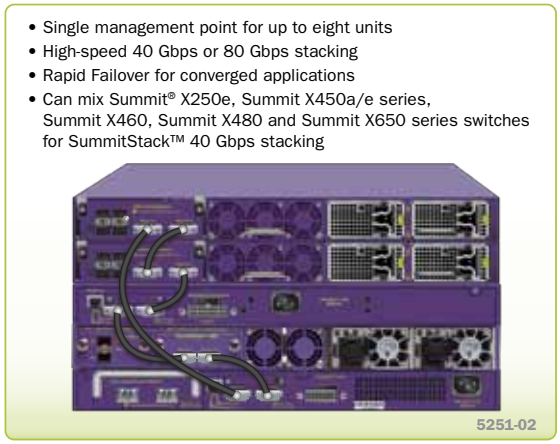


Figure 8: SummitStack Stacking Architecture

Target Applications

Data Center Top-of-Rack Switch

Virtualization, rack servers and blade servers have enabled a high degree of consolidation within the enterprise data center rack. Data center consolidation has led to a need for higher switch density and advanced virtualization capabilities in the top-of-rack switch. Summit X460 provides an ideal combination of Layer 2/Layer 3 scale, port density and virtualization support for the highly virtualized and cloud-based enterprise data center.

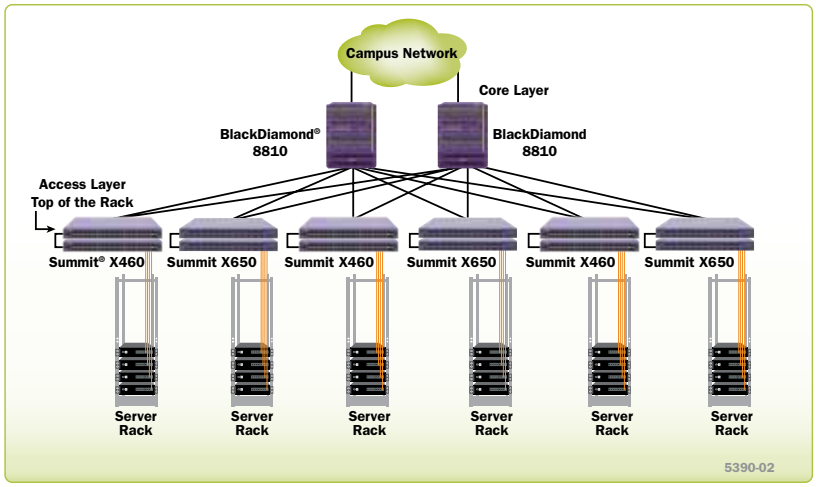


Figure 9: Top-of-Rack Architecture

High-Performance 10 Gigabit Core Switch for a Small Network and Aggregation Switch in a Traditional Three-Tiered Network

Summit X460 offers superior aggregation-class scalability for both Layer 2 and Layer 3 switching. Summit X460 can support up to 32,000 Layer 2 MAC addresses and 12,000 IPv4 longest prefix matching routes.

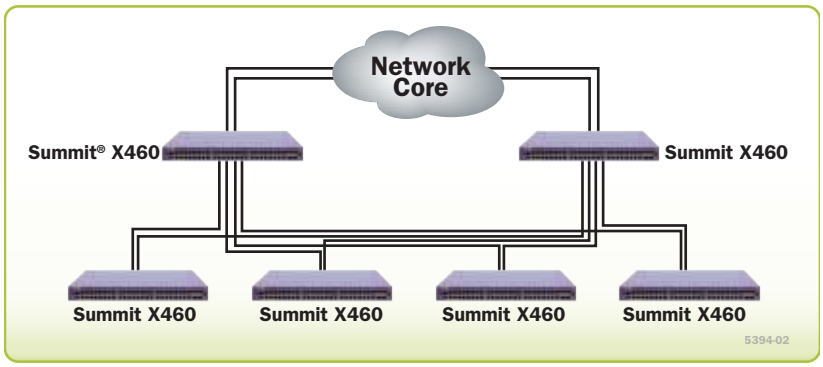


Figure 10: Summit X460 as an Aggregation Switch in a Three-Tier Network

Edge Switch for High-Bandwidth Applications

Here, the Summit X460 switch is deployed as an edge switch, extending the benefits of the ExtremeXOS operating system to the network edge. This uniformity provides consistent quality and performance throughout your converged network while reducing operational inefficiencies. With line-rate performance and low latency, the Summit X460 edge switch connects wireless devices, LAN telephony, PDAs and other equipment without compromising security, scalability, availability, mobility or management.

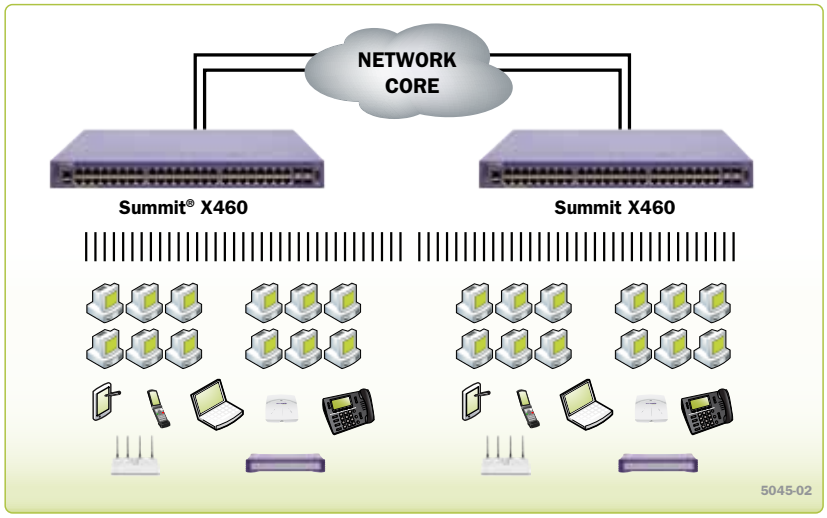


Figure 11: Summit X460 Switches in a Campus Enterprise Edge Application

Target Applications

Carrier Ethernet Network Switch that can Aggregate Connectivity for First Mile Access Concentrators

Summit X460 switches are an ideal service delivery platform for Carrier Ethernet networks. The advanced traffic management, resiliency and scalability features give it the flexibility to be deployed at the Provider Edge or as an aggregation switch. By supporting highly scalable Layer 2 and Layer 3 features along with MPLS/H-VPLS in hardware, the Summit X460 switches simplify network deployment.

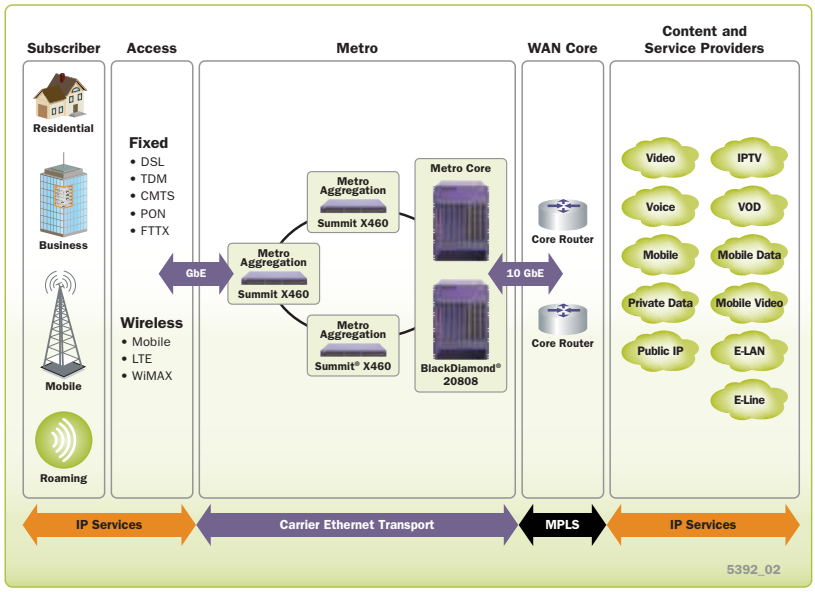


Figure 12: Summit X460 as an Aggregation Switch in a Carrier Ethernet Application

Technical Specifications

ExtremeXOS Supported Protocols

Switching

- RFC 3619 Ethernet Automatic Protection Switching (EAPS) and EAPSv2
- IEEE 802.1D – 1998 Spanning Tree Protocol (STP)
- IEEE 802.1D – 2004 Spanning Tree Protocol (STP and RSTP)
- IEEE 802.1w – 2001 Rapid Reconfiguration for STP, RSTP
- IEEE 802.1Q – 2003 (formerly IEEE 802.1s) Multiple Instances of STP, MSTP
- EMISTP, Extreme Multiple Instances of Spanning Tree Protocol
- PVST+, Per VLAN STP (802.1Q interoperable)
- Draft-ietf-bridge-rstpmib-03.txt – Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol
- Extreme Standby Router Protocol™ (ESRP)
- IEEE 802.1Q – 1998 Virtual Bridged Local Area Networks
- IEEE 802.3ad Static load sharing configuration and LACP based dynamic configuration
- Software Redundant Ports
- IEEE 802.1AB – LLDP Link Layer Discovery Protocol
- LLDP Media Endpoint Discovery (LLDP-MED), ANSI/TIA-1057, draft 08
- Extreme Discovery Protocol (EDP)
- Extreme Loop Recovery Protocol (ELRP)
- Extreme Link State Monitoring (ELSM)
- IEEE 802.1ag L2 Ping and traceroute, Connectivity Fault Management
- ITU-T Y.1731 Frame delay measurements

Management and Traffic Analysis

- RFC 2030 SNTP, Simple Network Time Protocol v4
- RFC 854 Telnet client and server
- RFC 783 TFTP Protocol (revision 2)
- RFC 951, 1542 BootP
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 1591 DNS (client operation)
- RFC 1155 Structure of Management Information (SMIv1)
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB & TRAPs
- RFC 1573 Evolution of Interface
- RFC 1650 Ethernet-Like MIB (update of RFC 1213 for SNMPv2)
- RFC 1901, 1905 – 1908 SNMPv2c, SMIv2 and Revised MIB-II
- RFC 2576 Coexistence between SNMP Version 1, Version 2 and Version 3
- RFC 2578 – 2580 SMIv2 (update to RFC 1902 – 1903)
- RFC 3410 – 3415 SNMPv3, user based security, encryption and authentication
- RFC 3826 – The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model
- RFC 1757 RMON 4 groups: Stats, History, Alarms and Events
- RFC 2021 RMON2 (probe configuration)
- RFC 2613 SMON MIB
- RFC 2925 Ping/Traceroute MIB
- RFC 2668 802.3 MAU MIB
- draft-ietf-hubmib-mau-mib-v3-02.txt
- RFC 1643 Ethernet MIB
- RFC 1493 Bridge MIB
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2737 Entity MIB v2
- RFC 2233 Interface MIB
- RFC 3621 PoE-MIB (PoE switches only)
- IEEE 802.1ag MIB
- Secure Shell (SSH-2) client and server
- Secure Copy (SCP-2) client and server
- Secure FTP (SFTP) server
- sFlow version 5
- RFC 3917 IPFIX
- Configuration logging
- Multiple Images, Multiple Configs
- RFC 3164 BSD Syslog Protocol with Multiple Syslog Servers
  – 999 Local Messages (criticals stored across reboots)
- Extreme Networks vendor MIBs (includes FDB, PoE, CPU, Memory MIBs)
- XML APIs over Telnet/SSH and HTTP/HTTPS
- Web-based device management interface
  – ExtremeXOS ScreenPlay™
- IP Route Compression
- SFF-8472 DDMI (Digital Diagnostics Monitoring Interface)
- Stacking – SummitStack, SummitStack-V, SummitStack-V80 (Summit products with Advanced Edge License and above only)

Security, Switch and Network Protection

- Secure Shell (SSH-2), Secure Copy (SCP-2) and SFTP client/server with encryption/authentication (requires export controlled encryption module)
- SNMPv3 user based security, with encryption/authentication (see above)
- RFC 1492 TACACS+
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 3579 RADIUS EAP support for 802.1x
- RADIUS Per-command Authentication
- Access Profiles on All Routing Protocols
- Access Policies for Telnet/SSH-2/SCP-2
- Network Login – 802.1x, Web and MAC-based mechanisms
- IEEE 802.1x – 2001 Port-Based Network Access Control for Network Login
- Multiple supplicants with multiple VLANs for Network Login (all modes)
- Fallback to local authentication database (MAC and Web-based methods)
- Guest VLAN for 802.1x
- RFC 1866 HTML – used for Web-based Network Login and ExtremeXOS ScreenPlay
- SSL/TLS transport – used for Web-based Network Login and ExtremeXOS ScreenPlay (requires export controlled encryption module)
- MAC Security – Lockdown and Limit
- IP Security – RFC 3046 DHCP Option 82 with port and VLAN ID
- IP Security – Trusted DHCP Server
- Layer 2/3/4 Access Control Lists (ACLs)
- RFC 2267 Network Ingress Filtering
- RPF (Unicast Reverse Path Forwarding) Control via ACLs
- Wire-speed ACLs
- Rate Limiting/Shaping by ACLs
- IP Broadcast Forwarding Control
- ICMP and IP-Option Response Control
- SYN attack protection
- CPU DoS Protection with traffic rate-limiting to management CPU
- Robust against common network attacks:
  – CERT (http://www.cert.org)
  – CA-2003-04: “SQL Slammer”
  – CA-2002-36: “SSHredder”
  – CA-2002-03: SNMP vulnerabilities
  – CA-98-13: tcp-denial-of-service
  – CA-98.01: smurf
  – CA-97.28:Teardrop_Land -Teardrop and “LAND“ attack
  – CA-96.26: ping
  – CA-96.21: tcp_syn_flooding
  – CA-96.01: UDP_service_denial
  – CA-95.01: IP_Spoofing_Attacks_and_Hijacked_ Terminal_Connections
  – IP Options Attack
- Host Attacks
  – Teardrop, boink, opentear, jolt2, newtear, nestea, syndrop, smurf, fraggle, papasmurf, synk4, raped, winfreeze, ping –f, ping of death, pepsi5, Latierra, Winnuke, Simping, Sping, Ascend, Stream, Land, Octopus

Security, Router Protection

- IP Security – DHCP enforcement via Disable ARP Learning
- IP Security – Gratuitous ARP Protection
- IP Security – DHCP Secured ARP/ARP Validation
- Routing protocol MD5 authentication

Security Detection and Protection

- CLEAR-Flow, threshold-based alerts and actions
- Identity Manager

IPv4 Host Services

- RFC 1122 Host Requirements
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 894 IP over Ethernet
- RFC 1027 Proxy ARP
- RFC 2068 HTTP server
- Static Unicast Routes
- Static Multicast Routes
- IGMP v1/v2/v3 Snooping with Configurable Router Registration Forwarding
- IGMP Filters
- PIM Snooping
- Static IGMP Membership
- Multicast VLAN Registration (MVR)

Technical Specifications

IPv4 Router Services

- RFC 1812 Requirements for IP Version 4 Routers
- RFC 1519 CIDR
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1058 RIP v1
- RFC 2453 RIP v2
- Static ECMP
- RFC 1112 IGMP v1
- RFC 2236 IGMP v2
- RFC 3376 IGMP v3
- RFC 2933 IGMP MIB
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 1724 RIPv2 MIB

IPv4 Router Services

Requires Advanced Edge License

- RFC 3768 VRRPV2
- RFC 2787 VRRP MIB
- RFC 2328 OSPF v2 (Edge-mode)
- RFC 2740 OSPF v3 (Edge-mode)
- OSPF ECMP
- OSPF MD5 Authentication
- RFC 1587 OSPF NSSA Option
- RFC 1765 OSPF Database Overflow
- RFC 2370 OSPF Opaque LSA Option
- RFC 3623 OSPF Graceful Restart
- RFC 1850 OSPFv2 MIB
- RFC 2362 PIM-SM (Edge-mode)
- RFC 2934 PIM MIB
- RFC 3569, draft-ietf-ssm-arch-06.txt PIM-SSM PIM Source Specific Multicast
- draft-ietf-pim-mib-v2-o1.txt
- Mtrace, a "traceroute" facility for IP Multicast: draft-ietf-idmr-traceroute-ipm-07
- Mrinfo, the multicast router information tool based on Appendix-B of draft-ietf-idmr-dvmrp-v3-11

IPv6 Host Services

- RFC 5095, Internet Protocol, Version 6 (IPv6) Specification
- RFC 4861, Neighbor Discovery for IP Version 6, (IPv6)
- RFC 2463, Internet Control Message Protocol (ICMPv6) for the IPv6 Specification
- RFC 2464, Transmission of IPv6 Packets over Ethernet Networks
- RFC 2465, IPv6 MIB, General Group and Textual Conventions
- RFC 2466, MIB for ICMPv6
- RFC 2462, IPv6 Stateless Address Auto Configuration – Host Requirements
- RFC 1981, Path MTU Discovery for IPv6, August 1996 – Host Requirements
- RFC 3513, Internet Protocol Version 6 (IPv6) Addressing Architecture
- RFC 3587, Global Unicast Address Format
- Telnet server over IPv6 transport
- SSH-2 server over IPv6 transport
- Ping over IPv6 transport
- Traceroute over IPv6 transport

IPv6 Interworking and Migration

- RFC 2893, Configured Tunnels
- RFC 3056, 6to4

IPv6 Router Services

- RFC 2462, IPv6 Stateless Address Auto Configuration – Router Requirements
- RFC 1981, Path MTU Discovery for IPv6, August 1996 – Router Requirements
- RFC 2710, IPv6 Multicast Listener Discovery v1 (MLDv1) Protocol
- RFC 3810, IPv6 Multicast Listener Discovery v2 (MLDv2) Protocol
- Static Unicast routes for IPv6
- RFC 2080, RIPng
- Static ECMP

Core Protocols for Layer 2, IPv4 and IPv6

Requires Core License or above

- EAPSv2 Shared Ports – multiple interconnections between rings
- PIM-DM Draft IETF PIM Dense Mode draft-ietf-idmr-pim-dm-05.txt, draft-ietf-pim-dm-new-v2-04.txt
- RFC 3618 Multicast Source Discovery Protocol (MSDP)
- RFC 3446 Anycast RP using PIM and MSDP
- RFC 2740 OSPFv3, OSPF for IPv6
- RFC 1771 Border Gateway Protocol 4
- RFC 1965 Autonomous System Confederations for BGP
- RFC 2796 BGP Route Reflection (supersedes RFC 1966)
- RFC 1997 BGP Communities Attribute
- RFC 1745 BGP4/IDRP for IP-OSPF Interaction
- RFC 2385 TCP MD5 Authentication for BGPv4
- RFC 2439 BGP Route Flap Damping
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 3392 Capabilities Advertisement with BGP-4
- RFC 4360 BGP Extended Communities Attribute
- RFC 4486 Subcodes for BGP Cease Notification message
- draft-ietf-idr-restart-10.txt Graceful Restart Mechanism for BGP
- RFC 4760 Multiprotocol extensions for BGP-4
- RFC 1657 BGP-4 MIB
- RFC 4893 BGP Support for Four-Octet AS Number Space
- Draft-ietf-idr-bgp4-mibv2-02.txt – Enhanced BGP-4 MIB
- RFC 1195 Use of OSI IS-IS for Routing in TCP/IP and Dual Environments (TCP/IP transport only)
- RFC 2763 Dynamic Hostname Exchange Mechanism for IS-IS
- RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS
- RFC 2973 IS-IS Mesh Groups
- RFC 3373 Three-way Handshake for IS-IS Point-to-Point Adjacencies
- Draft-ietf-isis-restart-02 Restart Signaling for IS-IS
- Draft-ietf-isis-ipv6-06 Routing IPv6 with IS-IS
- Draft-ietf-isis-wg-multi-topology-11 Multi Topology (MT) Routing in IS-IS

QoS and VLAN Services

Quality of Service and Policies

- IEEE 802.1D – 1998 (802.1p) Packet Priority
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2475 DiffServ Core and Edge Router Functions

Traffic Engineering

- RFC 3784 IS-IS Externs for Traffic Engineering (wide metrics only)

VLAN Services: VLANs, vMANs

- IEEE 802.1Q VLAN Tagging
- IEEE 802.1v: VLAN classification by Protocol and Port
- Port-based VLANs
- Protocol-based VLANs
- MAC-based VLANs
- Multiple STP domains per VLAN
- Upstream Forwarding Only/Disable Flooding
- RFC 5517 Private VLANs
- VLAN Translation
- IEEE 802.1ad Provider Bridge Network, virtual MANs (vMANs)
- vMANEthertype Translation/Secondary vMA-NEthertype
- Multicast Support for PVLAN
- Multicast Support for VLAN Aggregation
- VLAN Aggregation (Requires Advanced Edge License or above)

MPLS and VPN Services

Multi-Protocol Label Switching (MPLS)

Requires MPLS Feature Pack License

- RFC 2961 RSVP Refresh Overhead Reduction Extensions
- RFC 3031 Multiprotocol Label Switching Architecture
- RFC 3032 MPLS Label Stack Encoding
- RFC 3036 Label Distribution Protocol (LDP)
- RFC 3209 RSVP-TE: Extensions to RSVP for LSP Tunnels
- RFC 3630 Traffic Engineering Extensions to OSPFv2
- RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management
- RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB)
- RFC 3813 Multiprotocol Label Switching (MPLS) Label Switching Router (LSR) Management Information Base (MIB)
- RFC 3815 Definitions of Managed Objects for the Multiprotocol Label Switching (MPLS), Label Distribution Protocol (LDP)
- RFC 4090 Fast Re-route Extensions to RSVP-TE for LSP (Detour Paths)
- RFC 4379 Detecting Multi-Protocol Label Switched (MPLS) Data Plane Failures (LSP Ping)
- draft-ietf-bfd-base-09.txt Bidirectional Forwarding Detection

Layer 2 VPNs

Requires MPLS Feature Pack License

- RFC 4447 Pseudowire Setup and Maintenance using the Label Distribution Protocol (LDP)
- RFC 4448 Encapsulation Methods for Transport of Ethernet over MPLS Networks
- RFC 4762 Virtual Private LAN Services (VPLS) using Label Distribution Protocol (LDP) Signalling

Technical Specifications

- RFC 5085 Pseudowire Virtual Circuit Connectivity Verfication (VCCV)
- RFC 5542 Definitions of Textual Conventions
- RFC 5601 Pseudowire (PW Management Information Base (MIB)
- RFC 5602 Pseudowire (PW) over MPLS PSN MIB
- RFC 5603 Ethernet Pseudowire (PW) MIB
- draft-ietf-l2vpn-vpls-mib-02.txt Virtual Private LAN Services (VPLS) MIB

Timing Protocol

Requires Network Timing Feature Pack, supported on Summit X460-24x/24xDC/48x/48xDC

- ITU-T G.8261/Y.1361 Timing and Synchronization Aspects in Packet Networks
- ITU-T G.8262/Y.1362 Timing Characteristics of Synchronous Ethernet Equipment Slave Clock (EEC)
- ITU-T G.8264/Y.1364 Timing Distribution through Packet Networks

Data Center

- Direct Attach (VEPA) (Supported in a feature pack)

Summit X460 General Specifications

Performance

- 176 Gbps (24t/24p/24x), 224 Gbps (48t/p), 216 Gbps (48x) aggregated switch bandwidth
- 130.9 Mpps (24t/24p/24x), 166.7 Mpps (48t/48p) and 160.7 Mpps (48x) frame forwarding rate
- Less than 4 microsecond latency (64-byte)
- 9216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 4,192 ingress and 512 egress ACL rules, meters and counters/24-port

Forwarding Tables

- Layer 2/MAC Addresses: 32K
- IPv4 LPM Entries: 12K
- IPv6 LPM Entries: 6K

CPU, Memory

- 64-bit MIPS Processor, 600 MHz clock
- 1GB ECC DRAM
- 1GB Compact Flash

QoS, Rate Limiting

- 4,096 ingress bandwidth meters/24 ports
- Ingress and egress bandwidth policing/rate limiting per flow/ACL
- 8 QoS egress queues/port
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 8 Kbps

LED Indicators

- Per port status LED including power status
- System Status LEDs: management, fan and power

External Ports

- 24-port 10/100/1000BASE-T, 8-port 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), slot for optional XGM3-2sf module(s), slot for optional stacking module (Summit X460-24t)
- 48 10/100/1000BASE-T, 4 100/1000BASE-X unpopulated SFP, slot for optional XGM3-2sf module(s), slot for optional stacking module (Summit X460-48t)
- 24-port 10/100/1000BASE-T PoE-plus, 8-port 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), slot for optional XGM3-2sf module(s), slot for optional stacking module (Summit X460-24p)
- 48-port 10/100/1000BASE-T PoE-plus, 4-port 100/1000BASE-X unpopulated SFP, slot for optional XGM3-2sf module(s), slot for optional stacking module (Summit X460-48p)
- 24-port 100/1000BASE-X unpopulated SFP, 8-port 10/100/1000BASE-T (4 10/100/1000BASE-T ports shared with SFP ports), slot for optional XGM3-2sf module(s), slot for optional stacking module (Summit X460-24x)
- 48-port 100/1000BASE-X unpopulated SFP, slot for optional XGM3-2sf module(s), slot for optional stacking module (Summit X460-48x)

Option Slots

- XGM3 slot (slot A)
- Stacking module slot (slot B)

External Ports for XGM3 Module (slot A)

- 2-port 10GBASE-X SFP+ (XGM3-2sf)

External Ports for Stacking Module (slot B)

- 2-port 20G SummitStack module
- 2-port 40G SummitStack-V80 module

Power Supply Support

- Summit 300W AC PSU
- Summit 300W DC PSU
- Summit 750W AC PoE PSU

Fan Speed

- Minimum speed 2500 RPM
- Maximum speed 15900 RPM

Physical Specifications

Weight and Physical Dimensions

Switch Model	Weight	Physical Dimension
Summit X460-24t/24tDC switch	12.8 lb (5.81 kg)	Height: 1.73 inches (4.4 cm) Width: 17.4 inches (44.1 cm) Depth: 17.0 inches (43.2 cm)
Summit X460-48t/48tDC switch	13.6 lb (6.15 kg)	
Summit X460-24x/24xDC switch	13.2 lb (6.01 kg)	
Summit X460-48x/48xDC switch	14.1 lb (6.4 kg)	
Summit X460-24p switch	13.1 lb (5.94 kg)	
Summit X460-48p switch	13.9 lb (6.3 kg)	
XGM3-2sf module	0.463 lb (0.21 kg)	Height: 1.4 inches (3.55 cm) Width: 2.91 inches (7.4 cm) Depth: 4.93 inches (12.5 cm)
SummitStack module	0.419 lb (0.19 kg)	Height: 1.4 inches (3.55 cm) Width: 2.91 inches (7.4 cm) Depth: 4.93 inches (12.5 cm)
SummitStack-V80 module	0.529 lb (0.24 kg)	Height: 1.4 inches (3.55 cm) Width: 3.39 inches (8.6 cm) Depth: 4.93 inches (12.5 cm)
Summit X460 fan module	0.661 lb (0.30 kg)	Height: 1.63 inches (4.15 cm) Width: 3.25 inches (8.26 cm) Depth: 4.93 inches (12.53 cm)
Packaged Weight and Dimensions		
Summit X460-24t/24tDC switch	23.6 lb (10.7 kg)	Height: 1.4 inches (3.55 cm) Width: 2.91 inches (7.4 cm) Depth: 4.93 inches (12.5 cm)
Summit X460-48t/48tDC switch	24.3 lb (11.0 kg)	
Summit X460-24x/24xDC switch	0.463 lb (0.21 kg)	
Summit X460-48x/48xDC switch	24.9 lb (11.3 kg)	
Summit X460-24p switch	23.8 lb (10.8 kg)	
Summit X460-48p switch	24.6 lb (11.2 kg)	
XGM3-2sf module	0.46 lb (0.21 kg)	Height: 1.4 inches (3.6 cm) Width: 2.9 inches (7.4 cm) Depth: 4.9 inches (12.5 cm)
SummitStack module	0.42 lb (0.19 kg)	Height: 1.4 inches (3.6 cm) Width: 3.4 inches (8.6 cm) Depth: 4.9 inches (12.5 cm)
SummitStack-V80 module	0.53 lb (0.24 kg)	Height: 1.4 inches (3.6 cm) Width: 3.4 inches (8.6 cm) Depth: 4.9 inches (12.5 cm)
Summit X460 fan module	0.66 lb (0.30 kg)	Height: 1.6 inches (4.2 cm) Width: 3.25 inches (8.3 cm) Depth: 4.9 inches (12.5 cm)

NOTE: Switch weights include installed fan module and one power supply. They do not include XGM3 module, stacking module, or additional PSU.

Technical Specifications

Physical Specifications (con't)

Acoustic Noise

Switch Model	Accoustic Noise
Summit X460-24t	43.3dB/63dB
Summit X460-48t	43.3dB/63.9dB
Summit X460-24p	42.9dB/62.9dB
Summit X460-48p	42.9dB/62.9dB
Summit X460-24x	43.3dB/63dB
Summit X460-48x	43.3dB/63.9dB
Summit X460-24tDC	43.3dB/63dB
Summit X460-48tDC	43.3dB/63.9dB
Summit X460-24xDC	43.3dB/63dB
Summit X460-48xDC	43.3dB/63.9dB

Power Specifications

Summit X460 with No Installed Option Card or Stacking Module

Switch Model	Nominal input ratings	Input current	Heat dissipation	Power consumption
Summit X460-24t	100 to 240 V, 50/60 Hz, 1 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	83 W, 284 BTU/hr	83 W, 284 BTU/hr
Summit X460-48t	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	105 W, 359 BTU/hr	105 W, 359 BTU/hr
Summit X460-24p	100 to 240 V, 50/60 Hz, 5.25 A per PSU	4.9 A @ 100 V per PSU (low-line) 2.0 A @ 240 V per PSU (high-line)	202 W, 690 BTU/hr per PSU	481 W, 1650 BTU/hr per PSU 962 W, 3284 BTU/hr (dual PSU)
Summit X460-48p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.0 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	221 W, 755 BTU/hr per PSU	493W, 1682 BTU/hr per PSU 986 W, 3364 BTU/hr (dual PSU)
Summit X460-24x	100 to 240 V, 50/60 Hz, 1 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	89 W, 304 BTU/hr	89 W, 304 BTU/hr
Summit X460-48x	100 to 240 V, 50/60 Hz, 1.2 A	1.1 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	101 W, 345 BTU/hr	101 W, 345 BTU/hr
Summit X460-24tDC	48VDC, 2 A	1.3 A @ 48 VDC (low-line) 1.15 A @ 60 VDC (high-line)	67.8 W, 324 BTU/hr	67.8 W, 324 BTU/hr
Summit X460-48tDC	48VDC, 2 A	1.9 A @ 48 VDC (low-line) 1.6 A @ 60 VDC (high-line)	95 W, 324 BTU/hr	95 W, 324 BTU/hr
Summit X460-24xDC	48VDC, 1.75 A	1.5 A @ 48 VDC (low-line) 1.3 A @ 60 VDC (high-line)	74 W, 253 BTU/hr	74 W, 253 BTU/hr
Summit X460-48xDC	48VDC, 2.25 A	2.1 A @ 48 VDC (low-line) 1.8 A @ 60 VDC (high-line)	107 W, 365 BTU/hr	107 W, 365 BTU/hr

Technical Specifications

Summit X460 with SummitStack Module

Switch Model	Nominal input Ratings	Input Current	Heat Dissipation	Power Consumption
Summit X460-24t	100 to 240 V, 50/60 Hz, 1.25 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	84 W, 287 BTU/hr	84 W, 287BTU/hr
Summit X460-48t	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	112 W, 384 BTU/hr	112 W, 384 BTU/hr
Summit X460-24p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	4.9 A @ 100 V per PSU (low-line) 2.0 A @ 240 V per PSU (high-line)	218 W, 796 BTU/hr per PSU	497W, 1696 BTU/hr per PSU 994 W, 3392 BTU/hr (dual PSU)
Summit X460-48p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.0 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU	223 W, 796 BTU/hr per PSU	497W, 1696 BTU/hr per PSU 994 W, 3392 BTU/hr (dual PSU)
Summit X460-24x	100 to 240 V, 50/60 Hz, 1.25 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	89 W, 304 BTU/hr	89 W, 304 BTU/hr
Summit X460-48x	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	101 W, 345 BTU/hr	101 W, 345 BTU/hr
Summit X460-24tDC	48VDC, 1.5 A	1.35 A @ 48 VDC (low-line) 1.15 A @ 60 VDC (high-line)	68 W, 232 BTU/hr	68 W, 232 BTU/hr
Summit X460-48tDC	48VDC, 2 A	1.9 A @ 48 VDC (low-line) 1.6 A @ 60 VDC (high-line)	88 W, 302 BTU/hr	88 W, 302 BTU/hr
Summit X460-24xDC	48VDC, 1.75 A	1.5 A @ 48 VDC (low-line) 1.3 A @ 60 VDC (high-line)	75 W, 256 BTU/hr	75 W, 256 BTU/hr
Summit X460-48xDC	48VDC, 2.25 A	2.1 A @ 48 VDC (low-line) 1.8 A @ 60 VDC (high-line)	107 W, 365 BTU/hr	107 W, 365 BTU/hr

Summit X460 with SummitStack-V80 Module

Switch Model	Nominal input Ratings	Input Current	Heat Dissipation	Power Consumption
Summit X460-24t	100 to 240 V, 50/60 Hz, 1.25 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	95 W, 324 BTU/hr	95 W, 324 BTU/hr
Summit X460-48t	100 to 240 V, 50/60 Hz, 1.25 A	1.16 A @ 100 V (low-line) 0.55 A @ 240 V (high-line)	121 W, 414 BTU/hr	121 W, 414 BTU/hr
Summit X460-24p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	4.9 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	202 W, 690 BTU/hr per PSU	481 W, 1650 BTU/hr per PSU
Summit X460-48p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.1 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	242 W, 826 BTU/hr per PSU	501 W, 1710 BTU/hr per PSU 1002 W, 3420 BTU/hr (dual PSU)
Summit X460-24x	100 to 240 V, 50/60 Hz, 1.25 A	1.0 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	98 W, 335 BTU/hr	98 W, 335 BTU/hr
Summit X460-48x	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.6 A @ 240 V (high-line)	109 W, 373 BTU/hr	109 W, 373 BTU/hr
Summit X460-24tDC	48VDC, 1.75 A	1.5 A @ 48 VDC (low-line) 1.3 A @ 60 VDC (high-line)	77 W, 263 BTU/hr	77 W, 263 BTU/hr
Summit X460-48tDC	48VDC, 2.25 A	2.0 A @ 48 VDC (low-line) 1.7 A @ 60 VDC (high-line)	101 W, 345 BTU/hr	101 W, 345 BTU/hr
Summit X460-24xDC	48VDC, 2 A	1.7 A @ 48 VDC (low-line) 1.5 A @ 60 VDC (high-line)	86 W, 293 BTU/hr	86 W, 293 BTU/hr
Summit X460-48xDC	48VDC, 2.5 A	2.3 A @ 48 VDC (low-line) 1.9 A @ 60 VDC (high-line)	114 W, 389 BTU/hr	114 W, 389 BTU/hr

Technical Specifications

Summit X460 with XGM3-2sf Module

Switch Model	Nominal input Ratings	Input Current	Heat Dissipation	Power Consumption
Summit X460-24t	100 to 240 V, 50/60 Hz, 1.25 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	94 W, 320 BTU/hr	94 W, 320BTU/hr
Summit X460-48t	100 to 240 V, 50/60 Hz, 1.25 A	1.15 A @ 100 V (low-line) 0.55 A @ 240 V (high-line)	119 W, 406 BTU/hr	119 W, 406 BTU/hr
Summit X460-24p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	4.9 A @ 100 V per PSU (low-line) 2.0 A @ 240 V per PSU (high-line)	210 W, 690 BTU/hr per PSU	485 W, 1665 BTU/hr per PSU 970 W, 3330 BTU/hr(dual PSU)
Summit X460-48p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.0 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	234 W, 799 BTU/hr per PSU	497W, 1696 BTU/hr per PSU 994 W, 3392 BTU/hr (dual PSU)
Summit X460-24x	100 to 240 V, 50/60 Hz, 1.25 A	1.0 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	97 W, 332 BTU/hr	97 W, 332 BTU/hr
Summit X460-48x	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.6 A @ 240 V (high-line)	109 W, 373 BTU/hr	109 W, 373 BTU/hr
Summit X460-24tDC	48VDC, 1.75 A	1.45 A @ 48 VDC (low-line) 1.25 A @ 60 VDC (high-line)	75 W, 256 BTU/hr	75 W, 256 BTU/hr
Summit X460-48tDC	48VDC, 2.25 A	2.0 A @ 48 VDC (low-line) 1.7 A @ 60 VDC (high-line)	99 W, 338 BTU/hr	99 W, 338 BTU/hr
Summit X460-24xDC	48VDC, 1.75 A	1.7 A @ 48 VDC (low-line) 1.5 A @ 60 VDC (high-line)	85 W, 291 BTU/hr	85 W, 291 BTU/hr
Summit X460-48xDC	48VDC, 2.5 A	2.2 A @ 48 VDC (low-line) 1.9 A @ 60 VDC (high-line)	110 W, 376 BTU/hr	110 W, 376 BTU/hr

Summit X460 with SummitStack Module and XGM3-2sf Module

Switch Model	Nominal input Ratings	Input Current	Heat Dissipation	Power Consumption
Summit X460-24t	100 to 240 V, 50/60 Hz, 1.25 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	95 W, 324 BTU/hr	95 W, 324BTU/hr
Summit X460-48t	100 to 240 V, 50/60 Hz, 1.25 A	1.143 A @ 100 V (low-line) 0.525 A @ 240 V (high-line)	119 W, 406 BTU/hr	119 W, 406 BTU/hr
Summit X460-24p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	4.9 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	218 W, 744 BTU/hr per PSU	489 W, 1669 BTU/hr per PSU 978 W, 3338 BTU/hr (dual PSU)
Summit X460-48p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.0 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	242 W, 826 BTU/hr per PSU	501W, 1710 BTU/hr per PSU 1002 W, 3420 BTU/hr (dual PSU)
Summit X460-24x	100 to 240 V, 50/60 Hz, 1.2 5 A	1.0 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	99 W, 338 BTU/hr	99 W, 338 BTU/hr
Summit X460-48x	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.6 A @ 240 V (high-line)	110 W, 376 BTU/hr	110W, 376 BTU/hr
Summit X460-24tDC	48VDC, 1.75 A	1.5 A @ 48 VDC (low-line) 1.3 A @ 60 VDC (high-line)	77 W, 263 BTU/hr	77 W, 263 BTU/hr
Summit X460-48tDC	48VDC, 2.25 A	2.0 A @ 48 VDC (low-line) 1.7 A @ 60 VDC (high-line)	101 W, 345 BTU/hr	101 W, 345 BTU/hr
Summit X460-24xDC	48VDC, 2 A	1.7 A @ 48 VDC (low-line) 1.5 A @ 60 VDC (high-line)	85 W, 291 BTU/hr	85 W, 291 BTU/hr
Summit X460-48xDC	48VDC, 2.5 A	2.3 A @ 48 VDC (low-line) 1.9 A @ 60 VDC (high-line)	114 W, 389 BTU/hr	114 W, 389 BTU/hr

Technical Specifications

Summit X460 with SummitStack-V80 Module and XGM3-2sf Module

Switch Model	Nominal input Ratings	Input Current	Heat Dissipation	Power Consumption
Summit X460-24t	100 to 240 V, 50/60 Hz, 1.25 A	0.9 A @ 100 V (low-line) 0.45 A @ 240 V (high-line)	103 W, 284 BTU/hr	103 W, 284 BTU/hr
Summit X460-48t	100 to 240 V, 50/60 Hz, 1.5 A	1.25 A @ 100 V (low-line) 0.6 A @ 240 V (high-line)	129 W, 443 BTU/hr	129 W, 443 BTU/hr
Summit X460-24p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.0 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	226 W, 772 BTU/hr per PSU	493W, 1682 BTU/hr per PSU 986 W, 3364 BTU/hr (dual PSU)
Summit X460-48p	100 to 240 V, 50/60 Hz, 5.5 A per PSU	5.1 A @ 100 V per PSU (low-line) 2.1 A @ 240 V per PSU (high-line)	250 W, 854 BTU/hr per PSU	505 W, 1723 BTU/hr per PSU 1010 W, 3446 BTU/hr (dual PSU)
Summit X460-24x	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.5 A @ 240 V (high-line)	107 W, 365 BTU/hr	107 W, 365 BTU/hr
Summit X460-48x	100 to 240 V, 50/60 Hz, 1.25 A	1.1 A @ 100 V (low-line) 0.6 A @ 240 V (high-line)	119 W, 406 BTU/hr	119 W, 406 BTU/hr
Summit X460-24tDC	48VDC, 2 A	1.7 A @ 48 VDC (low-line) 1.45 A @ 60 VDC (high-line)	85 W, 291 BTU/hr	85 W, 291 BTU/hr
Summit X460-48tDC	48VDC, 2.5 A	2.2 A @ 48 VDC (low-line) 1.9 A @ 60 VDC (high-line)	110 W, 376 BTU/hr	110 W, 376 BTU/hr
Summit X460-24xDC	48VDC, 2 A	1.9 A @ 48 VDC (low-line) 1.6 A @ 60 VDC (high-line)	93 W, 320 BTU/hr	93 W, 320 BTU/hr
Summit X460-48xDC	48VDC, 2.75 A	2.4 A @ 48 VDC (low-line) 2.1 A @ 60 VDC (high-line)	121 W, 414 BTU/hr	121 W, 414 BTU/hr

Power Supply Units

Summit X460 300W AC PSU (Model 10930)

Physical Specifications	
Dimensions	Height 40 mm (1.57 inches) Width 80 mm (3.15 inches) Depth 241.5 mm (9.5 inches)
Weight	2.30 lb (1 kg)
Power Specifications	
Voltage input range	85-264 VAC
Nominal input ratings	100 to 240 VAC, 50 to 60 Hz, 5 A
Nominal input current at full load	4.2 A at 90 VAC (low-line) 1.7 A at 230 VAC (high-line)
Line frequency range	47 to 63 Hz
Maximum inrush current	30 A
Output	12 VDC, 25 A maximum, 300 Watts 3.3 VDC, 3.03 A maximum, 10 Watts
Power Supply input socket	IEC 320 C14
Power cord input plug	IEC 320 C13
Power supply cord gauge	18 AWG (0.75 mm^2) up to 6 feet or 2 meters or 16 AWG (1.0 mm^2) over 6 feet
Efficiency	Low-line: 85% at 50% load and 88% at 100% load High-line: 86% at 50% load and 89% at 100% load
Environmental Specifications	
Operating Temperature	0 deg C to 45 deg C normal operation
Storage Temperature	-40 deg C to 70 deg C
Operating Humidity	20% to 90% relative humidity, non-condensing
Operational Shock	30 m/s^2 (3g)

Technical Specifications

Summit X460 750W AC PSU (Model 10931) for PoE switches

Physical Specifications	
Dimensions	Height 40 mm (1.57 inches) Width 80 mm (3.15 inches) Depth 241.5 mm (9.5 inches)
Weight	2.25 lb
Power Specifications	
Voltage input range	85-264 VAC
Nominal input ratings	100 to 240 VAC, 50 to 60 Hz, 10 A
Nominal input current at full load	10 A at 90 VAC (low-line) 3.7 A at 230 VAC (high-line)
Line frequency range	47 to 63 Hz
Maximum inrush current	35 A
Output	12 VDC, 25 A maximum, 300 Watts 55 VDC, 8.18 A maximum, 450 Watts 3.3 VDC, 3.03 A maximum, 10 Watts
Power Supply input socket	IEC 320 C14
Power cord input plug	IEC 320 C13
Efficiency	Low Line: 88% at 50% load and 86% at 100% load High Line: 90% at 50% and 100% loads
Environmental Specifications	
Operating Temperature	0 deg C to 45 deg C normal operation
Storage Temperature	-40 deg C to 70 deg C
Operating Humidity	20% to 90% relative humidity, non-condensing
Operational Shock	30 m/s^2 (3g)

Summit X460 300W DC PSU (Model 10934)

Physical Specifications	
Dimensions	Height 40 mm (1.57 inches) Width 80 mm (3.15 inches) Depth 241.5 mm (9.5 inches)
Weight	2.30 lb (1 kg)
Power Specifications	
Nominal Input	-40 to -72 VDC, 9 A
DC Voltage Input Range	-48 VDC
Maximum Input Amperages	9 A at 40 VDC 7.5 A at 48 VDC 5 A at 72 VDC
DC Output	12 VDC, 25 A/ 3.3 VDC, 3.03 A
DC Output Power (W)	310 W
Efficiency	87% at 50% and 100% loads at -48V input
Environmental Specifications	
Operating Temperature	0 deg C to 45 deg C normal operation
Storage Temperature	-40 deg C to 70 deg C
Operating Humidity	20% to 90% relative humidity, non-condensing
Operational Shock	30 m/s^2 (3g)

Technical Specifications

Storage & Transportation Conditions (Packaged)

- Transportation Temperature: -40° C to 70° C (-40° F to 158° F)
- Storage and Transportation Humidity: 10% to 95% RH, non-condensing
- Packaged Shock (Half Sine): 180 m/s^2 (18 G), 6ms, 600 shocks
- Packaged Sine Vibration: 5-62 Hz @ Velocity 5mm/s, 62-500 Hz @ 0.2G
- Packaged Random Vibration: 5-20 Hz @ 1.0 ASD w/-3dB/oct. from 20-200 Hz
- 14 drops min on sides & corners @ 42" (<15 kg box)

Safety Standards

North American Safety of ITE

- UL 60950-1 2nd Ed., Listed Device (U.S.)
- CSA 22.2 #60950-1-03 2nd Ed. (Canada)
- Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)
- CDRH Letter of Approval (US FDA Approval)

European Safety of ITE

- EN 60950-1:2007 2nd Ed.
- EN 60825-1+A2:2001 (Lasers Safety)
- TUV-R GS Mark by German Notified Body
- 2006/95/EC Low Voltage Directive

International Safety of ITE

- CB Report & Certificate per IEC 60950-1 2nd Ed. + National Differences
- AS/NZX 60950-1 (Australia /New Zealand)

EMI/EMC Standards

North America EMC for ITE

- FCC CFR 47 part 15 Class A (USA)
- ICES-003 Class A (Canada)

European EMC Standards

- EN 55022:2006+A1:2007 Class A
- EN 55024:A2-2003 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 11
- EN 61000-3-2,8-2006 (Harmonics)
- EN 61000-3-3 2008 (Flicker)
- ETSI EN 300 386 v1.4.1, 2008-04 (EMC Telecommunications)
- 2004/108/EC EMC Directive

International EMC Certifications

- CISPR 22: 2006 Ed 5.2, Class A (International Emissions)
- CISPR 24:A2:2003 Class A (International Immunity)
- IEC 61000-4-2:2008/EN 61000-4-2:2009 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A
- IEC 61000-4-3:2008/EN 61000-4-3:2006+A1:2008 Radiated Immunity 10V/m, Criteria A
- IEC 61000-4-4:2004 am1 ed.2./EN 61000-4-4:2004/A1:2010 Transient Burst, 1 kV, Criteria A
- IEC 61000-4-5:2005 /EN 61000-4-5:2006 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria A
- IEC 61000-4-6:2008/EN 61000-4-6:2009 Conducted Immunity, 0.15-80 MHz, 10V/m unmod. RMS, Criteria A
- IEC/EN 61000-4-11:2004 Power Dips & Interruptions, >30%, 25 periods, Criteria C

Country Specific

- VCCI Class A (Japan Emissions)
- ACMA (C-Tick) (Australia Emissions)
- CCC Mark
- KCC Mark, EMC Approval (Korea)

Telecom Standards

- ETSI EN 300 386:2001 (EMC Telecommunications)
- ETSI EN 300 019 (Environmental for Telecommunications)
- NEBS Level 3 compliant to portions of GR-1089 Issue 4 & GR-63 Issue 3 as defined in SR3580 with exception to filter requirement
- MEF 9 compliant
- MEF 14 compliant

IEEE 802.3 Media Access Standards

- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3at PoE Plus

Environmental Data

Environmental Standards

- EN/ETSI 300 019-2-1 v2.1.2 - Class 1.2 Storage
- EN/ETSI 300 019-2-2 v2.1.2 - Class 2.3 Transportation
- EN/ETSI 300 019-2-3 v2.1.2 - Class 3.1e Operational
- EN/ETSI 300 753 (1997-10) - Acoustic Noise
- ASTM D3580 Random Vibration Unpackaged 1.5 G

Operating Conditions

Temperature Range

Summit X460-24t, X460-48t, X460-24x, and X460-48x

- 0° C to 45° C (32° F to 113° F)

Summit X460-24p, X460-48p

- 0° C to 40° C (32° F to 104° F)
- **Humidity:** 10% to 95% relative humidity, non-condensing
- **Altitude:** 0 to 3,000 meters (9,850 feet)
- **Shock (half sine):** 30 m/s^2 (3 G), 11 ms, 60 shocks
- **Random vibration:** 3 to 500 Hz at 1.5 G rms

Warranty

- Ltd. Lifetime with express Advanced Hardware Replacement
- For warranty details, visit http://www.extremenetworks.com/go/warranty

Accessories

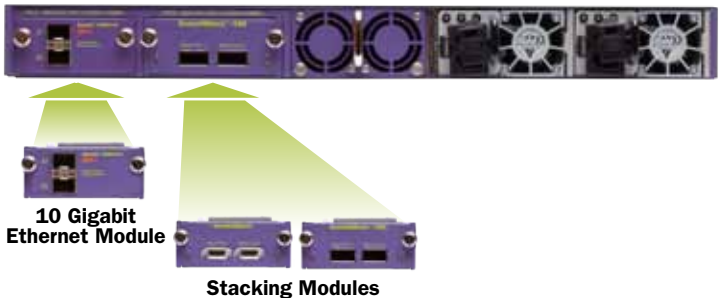
Summit X460 Power Supplies

All Summit X460 series switches come with one power supply. If redundancy or higher power Power-over-Ethernet plus capability is required, an additional power supply can be installed in the system.

Summit 300W AC PSU	Summit 300W AC PSU is compatible with Summit X460-24t/48t/24x/48x switches.
Summit 750W PoE AC PSU	Summit 750W PoE AC PSU is compatible with Summit X460-24p/48p switches and provides 380 watts of PoE-plus power budget per one supply. When two PSUs are installed, the total PoE-plus power budget becomes 760 watts.
Summit 300W DC PSU	Summit 300W DC PSU is compatible with Summit X460-24tDC/48tDC/24xDC/48xDC switches.

Summit X460 Option Modules

Summit X460 series switches have two option module slots to support 10 Gigabit Ethernet and stacking modules. Slot A supports a two-port 10 Gigabit Ethernet module; Slot B supports stacking modules (SummitStack module or SummitStack-V80 module).



XGM3-2sf

2-port 10 Gigabit Ethernet module, provides two SFP+ ports. These two SFP+ ports can support both 10 Gigabit Ethernet SFP+ transceivers and Gigabit Ethernet transceivers.

SummitStack Module

SummitStack module has two SummitStack stacking ports, and provides a 40 Gigabit stacking solution. This stacking module offers compatibility with other Extreme Networks stackable switches, which are Summit X250e, Summit X450e, Summit X480 with VIM2-SummitStack, and Summit X650 with VIM1-SummitStack or VIM1-10G8X.

SummitStack-V80 Module

SummitStack-V80 module has two SummitStack-V80 stacking ports, and provides an 80 Gigabit stacking solution. SummitStack-V80 offers a variety of stacking cable solutions: QSFP+ passive copper cable for short distance, and QSFP+ active fiber cable for long distance up to 100 meters.

Ordering Information

Part Number	Product Name	Descriptions
16401	Summit X460-24t	24 10/100/1000BASE-T, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), slot for optional XGM3 module(s), slot for optional stacking module, AC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16402	Summit X460-48t	48 10/100/1000BASE-T, 4 100/1000BASE-X unpopulated SFP, slot for optional XGM3 module(s), slot for optional stacking module, AC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16403	Summit X460-24p	24 10/100/1000BASE-T PoE, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), slot for optional XGM3 module(s), slot for optional stacking module, AC PoE PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16404	Summit X460-48p	48 10/100/1000BASE-T PoE, 4 100/1000BASE-X unpopulated SFP, slot for optional XGM3 module(s), slot for optional stacking module, AC PoE PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16405	Summit X460-24x	24 100/1000BASE-X unpopulated SFP, 8 10/100/1000BASE-T (4 10/100/1000BASE-T ports shared with SFP ports), slot for optional XGM3 module(s), slot for optional stacking module, AC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16406	Summit X460-48x	48 100/1000BASE-X unpopulated SFP, slot for optional XGM3 module(s), slot for optional stacking module, AC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16407	Summit X460-24tDC	24 10/100/1000BASE-T, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), slot for optional XGM3 module(s), slot for optional stacking module, DC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16408	Summit X460-48tDC	48 10/100/1000BASE-T, 4 100/1000BASE-X unpopulated SFP, slot for optional XGM3 module(s), slot for optional stacking module, DC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16409	Summit X460-24xDC	24 100/1000BASE-X unpopulated SFP, 8 10/100/1000BASE-T (4 10/100/1000BASE-T ports shared with SFP ports), slot for optional XGM3 module(s), slot for optional stacking module, DC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16410	Summit X460-48xDC	48 100/1000BASE-X unpopulated SFP, slot for optional XGM3 module(s), slot for optional stacking module, DC PSU with one unpopulated PSU slot, Fan module, ExtremeXOS Edge license
16419	SummitStack module	SummitStack module for Summit X460
16420	SummitStack-V80 module	SummitStack-V80 module for Summit X460
16117	XGM3-2sf	Option card, two unpopulated 10 Gigabit SFP+ slots, compatible with Summit X460
16421	Summit X460 Advanced Edge Lic	ExtremeXOS Advanced Edge License for Summit X460 series switches
16422	Summit X460 Core License from Edge Lic	ExtremeXOS Advanced Core License upgrade from Edge License for Summit X460 series switches
16423	Summit X460 Core License from Advanced Edge	ExtremeXOS Advanced Core License upgrade from Advanced Edge License for Summit X460 series switches
16424	Summit X460 MPLS feature pack	ExtremeXOS MPLS Feature Pack for Summit X460 series switches
16125	Summit X460 Network Timing feature pack	ExtremeXOS Network Timing feature pack for Summit X460 series switches (supported on Summit X460-24x/24xDC/48x/48xDC)
11011	Direct Attach Feature Pack	Direct Attach Feature Pack
10930	Summit 300W AC PSU	AC Power Supply module for Summit X460 series switches
10931	Summit 750W PoE AC PSU	PoE AC Power Supply module for Summit X460 series switches

Ordering Information

Part Number	Product Name	Descriptions
10934	Summit 300W DC PSU	DC Power Supply module for Summit X460 series switches
10935	Summit X460 fan module	Fan module for Summit X460 series switches, spare
10312	QSFP+ passive copper cable, 1.0M	QSFP+ passive copper cable, 1.0M
10315	QSFP+ active fiber cable, 10M	QSFP+ active fiber cable, 10M
10318	QSFP+ active fiber cable, 100M	QSFP+ active fiber cable, 100M
10051	1000BASE-SX SFP	1000BASE-SX SFP, LC Connector
10052	1000BASE-LX SFP	1000BASE-LX SFP, LC Connector
10053	1000BASE-ZX SFP	1000BASE-ZX SFP, Extra Long Distance SMF 70 km/21 dB Budget, LC Connector
10056	1000BASE-BX-D SFP	1000BASE-BX-D SFP, SMF (1490nm TX/1310nm RX Wavelength)
10057	1000BASE-BX-U SFP	1000BASE-BX-U SFP, SMF (1310nm TX/1490nm RX Wavelength)
10060	100FX/1000LX SFP[1]	100FX/1000LX SFP, SMF, LC Connector (Requires MCP and 6dB Attenuator for 100FX-MMF Operation)
10063	100FX SFP[1]	100FX SFP, MMF, LC Connector
10064	1000BASE-LX100 SFP	1000BASE-LX100 SFP, Extra Long Distance SMF 100 km/30dB Budget, LC Connector
10065	10/100/1000BASE-T SFP[1]	10/100/1000BASE-T, SFP, CAT 5 cable 100m, RJ-45 Connector
10067	100BASE-FX SFP	100M SFP, 100FX MMF, (1310nm, 2km multimode transmission) LC connector
10066	100BASE-LX10 SFP	100M SFP, 100LX10 SMF, (1310nm 10km single mode transmission) LC connector
10058	100BASE-BX-D SFP	100M SFP, 100BASE-BX-D, SMF (1550nm TX/1310nm RX wavelength), 100 Mbps bidirectional
10059	100BASE-BX-U SFP	100M SFP, 100BASE-BX-U, SMF (1310nm TX/1550nm RX wavelength), 100 Mbps bidirectional
16106	Stacking Cable, 0.5M	SummitStack/UniStack™ Stacking Cable, 0.5M
16107	Stacking Cable, 1.5M	SummitStack/UniStack Stacking Cable, 1.5M
16108	Stacking Cable, 3.0M	SummitStack/UniStack Stacking Cable, 3.0M
16105	Stacking Cable, 5.0M[2]	SummitStack Stacking Cable, 5.0M

[1] Not supported on Combo ports for Summit X460, Summit X450, Summit X450a and Summit X450e

[2] Not supported when using with Summit X650 or UniStack

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