Summit X770 Series

Highlights

The Summit X770 series switches are high-density, purpose-built top-of-rack switches designed to support emerging 10 Gigabit Ethernet and 40 Gigabit Ethernet-enabled servers in enterprise and cloud data centers. Summit X770 helps optimize new server deployments with its 40 GbE ports – each can be used natively as uplinks to BlackDiamond X8 chassis or other Summit X770 acting as spines – and each 40GbE port can connect directly to servers using 40GbE speeds or by breaking down into 10GbE connections acting as the leaf.

The Summit X770 can be used as a spine or a leaf in fat tree topologies for servers with 10GbE and 40GbE ports.

Size & Weight

Height = 1.73”
Width = 17.36”
Depth = 19.37”
Weight = 16.1 lbs.

Ports:

32 x 40GBase-X QSFP+
1 RJ-45 Serial Port
1 RJ45 Ethernet Management Port
1 USB Port (rear)
2 Mini BNC Ports (rear) 1588 output

Overview

Summit X770 provides high density for 40 Gigabit Ethernet and 10 Gigabit Ethernet switching in a small 1RU form factor.

Port Density	Maximum 40GbE Ports	Maximum 10GbE Ports
Single Summit X770	32	104
Stack of Summit X770 switches	240	816

With its versatile design, the Summit X770 series provides high density Layer 2/3 switching with low latency cut-through switching, and IPv4 and IPv6 unicast and multicast routing to enable enterprise aggregation and core backbone deployment in AC-powered and DC-powered environments.

Summit X770 series simplifies network operation with the ExtremeXOS modular operating system (OS), which is used among all Extreme Networks Summit and BlackDiamond Ethernet switches. The high availability ExtremeXOS operating system provides simplicity and ease of operation through the use of one OS everywhere in the network.

40 Gigabit Ethernet & 10 Gigabit Ethernet Ports

The Summit X770 model provides 32 x 40 GbE QSFP+ ports which can accept QSFP+ passive and active cables, as well as QSFP+ transceivers. 40 GbE ports can be configured as a 40 GbE port or as four 10 GbE ports. The 10 GbE port mode can be supported by a 40GBASE-SR4 QSFP+ transceiver and fan-out optical cables, and is compatible with the 10GBASE-SR optical interface for distances up to 100 meters. 24 of the 32 QSFP+ ports can be broken into 4 ports of 10GbE. The remaining 4 ports of QSFP+ can also be converted into a single port of 10GbE giving a maximum of 104 ports of 10GbE connections in a 1 RU device. The Summit X770 is capable of Layer 2 and Layer 3 forwarding at up to 1904 million packets per second forwarding rate.

High-Speed Stacking

Summit X770 supports three different types of stacking: SummitStack-320, SummitStack-160, and SummitStack-V. SummitStack-320 provides high speed stacking

running at 320 Gbps through the SummitStack-320 technology. SummitStack-320 can be enabled on four 40 Gigabit Ethernet QSFP+ ports as stacking interfaces. SummitStack-160 provides high-speed stacking running at 160 Gbps through the SummitStack-160 technology. SummitStack-160 can be enabled on two 40 Gigabit Ethernet QSFP+ ports as stacking interfaces. SummitStack-V provides high-speed stacking running at 40 Gbps through the SummitStack-V technology. SummitStack-V can be enabled on two 40 Gigabit Ethernet QSFP+ ports configured as 10GbE stacking interfaces.

1588 Precision Time Protocol (PTP)

Summit X770 offers Boundary Clock (BC), Transparent Clock (TC), and Ordinary Clock (OC) for synchronizing phase and frequency and allowing the network and the connected devices to be synchronized down to microseconds of accuracy over Ethernet connection.

Low Latency Switching for High-Frequency Trading and Cluster Computing

Summit X770 can achieve latency less than 600 nanoseconds and supports cut-through switching to help optimize the high frequency trading application as well as latency-sensitive cluster computing.

Green Design – Low Power Consumption with Optimized Cooling Options

The Summit X770 series is designed to be environmentally green. System power consumption is very low at both high-load and idle situations through the power-efficient hardware design. The power supplies are also highly efficient, which minimizes the loss of power and unnecessary heat generated by the power supply. Summit X770 series switches can be used in AC or DC powered environments.

Designed for Cloud Data Centers – VEPA, XNV, DCB, OpenFlow, OpenStack

Summit X770 has a variety of features that fit your data center needs.

Direct Attach (VEPA)

With the optional feature pack, Summit X770 switches can support Direct Attach (VEPA), which eliminates the virtual switch layer, simplifying the network and improving performance. Direct Attach enables data center simplification by reducing network tiers from 4 or 5 tiers to just 3 or 2 tiers, depending on the size of the data center.

ExtremeXOS Network Virtualization (XNV)

To further enhance data center operations, Summit X770 switches support XNV (ExtremeXOS Network Virtualization), which is natively supported in the ExtremeXOS operating system and is a licensable feature pack for Ridgeline, a network and service management application, sold separately. XNV provides insight, control and automation for virtualized data centers.

PFC

Summit X770 switches also support Priority-based Flow Control (PFC, or IEEE 802.1Qbb), which allows network traffic to be controlled independently based on Class of Service. PFC allows network traffic that requires lossless throughput to be prioritized, while other traffic types that do not require or perform better without PFC can continue as normal.

Data Center Bridging (DCB)

The Summit X770 series supports Data Center Bridging features such as Priority Flow Control (PFC), Enhanced Transmission Selection (ETS) and Data Center Bridging eXchange (DCBX) for data center convergence.

Software Defined Networking (SDN) OpenFlow

ExtremeXOS implementations of OpenFlow APIs allow an external OpenFlow-based SDN controller to access and control the forwarding plane of ExtremeXOS network devices. ExtremeXOS-based switches offer a programming interface through OpenFlow to enable a high degree of automation in provisioning network services for many upper layer business-critical applications running the OpenFlow-based SDN controller.

OpenStack

ExtremeXOS-based switches also allow for integration with the OpenStack open source cloud computing platform for public and private clouds through the Extreme Networks Quantum plugin. The plugin provides a scalable, automated, rich API-driven system that enables networking-as-a-service model managing data center interconnect solutions and large multi-tenant networks.

Virtual Routers

In a virtualized environment there is a requirement to support multiple tenants. In an effort to isolate tenants from each other, logical separation is established at Layer 3 and Layer 2 level. ExtremeXOS supports multiple, isolated Layer 3 forwarding domains by way of Virtual Routers.

Enterprise Core Class Scalability

The Summit X770 series offers more cost-effective 10 Gigabit Ethernet switches, for both small-sized core backbone and traditional three-tier network architectures. Summit X770 series can support 10 Gigabit Ethernet campus aggregations with its core class routing and switching scalability.

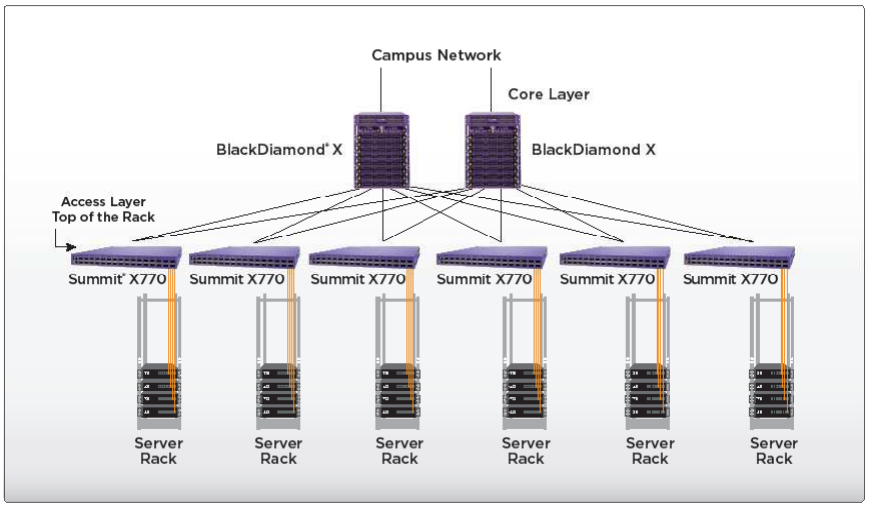


Figure 1: Top of Rack Switch for Servers in the Enterprise Data Center

One Operating System

Extreme Networks simplifies network operation by offering one common OS – ExtremeXOS – throughout the BlackDiamond and Summit portfolio. From 10/100 Mbps switching products such as Summit X430 and Summit X440 to the multi-10 gigabit core backbone BlackDiamond modular chassis switches, all switches can run the same version of the OS, which helps deploy, operate and maintain your entire network and reduce operating costs.

Modular Operating System for Non-Stop Operation

Loadable Software Modules

The modular design of the ExtremeXOS OS allows the adding or upgrading of individual software modules dynamically without requiring a system reboot, leading to higher availability in the network.

Preemptive Multitasking and Protected Memory

Summit X770 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 cross-platform 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.

Rich OAM Suite – CFM, Y.1731, BFD

Summit X770 series switches supports a rich suite of protocols to help with Operations, Administration and Maintenance.

Connectivity Fault Management (CFM) allows detection, verification, and isolation of connectivity failures in virtual bridged LAN.

Y.1731 is largely similar to CFM but also supports performance management by way of frame delay and frame delay variation measurements.

Bidirectional Forwarding Detection (BFD) is a hello protocol that provides the rapid detection of failures in the forwarding path and helps the separation of control plane connectivity from forwarding plane connectivity. By having multiple control plane protocols like OSPF or MPLS rely on BFD to detect forwarding plane connectivity failures, network operators can benefit from simpler network profiling and planning, and consistent and predictable re-convergence times.

MPLS

On the Summit X770 series switches MPLS can be enabled, if needed, by way of an optional feature pack. MPLS provides the ability to implement traffic engineering and multi-service networks, and improve network resiliency. The MPLS protocol suite provides the ability to deploy services based on L2VPNS (VPLS/VPWS), BGP-based L3VPNS; LSP Establishment based on LDP, RSVP-TE, Static provisioning; Integrated OAM tools like VCCV, BFD and CFM; And MPLS Fast Reroute to support rapid local convergence around network failures.

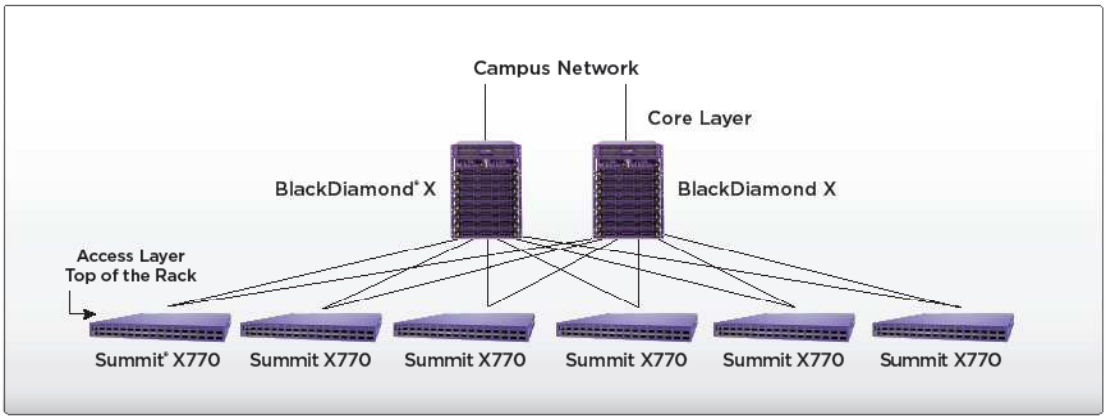


Figure 2: Summit X770 High Speed Uplink Option

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 can achieve sub-second (less than 50 milliseconds) recovery that delivers consistent failover regardless of the number of VLANs, network nodes or network topology in Extreme Networks-recommended configurations.. EAPS functionality increases network recovery time, which results in significant reduction in Voice-over IP call drop rates and improvement in digital video performance in supported solution configurations..

Spanning Tree/Rapid Spanning Tree Protocols

Summit X770 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 X770 continuously checks for problems in the uplink connections using advanced Layer 3 protocols such as OSPF, VRRP and Extreme Standby Router Protocol (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 allows trunking of up to eight links on a single logical connection, for up to 80 Gbps of redundant bandwidth per logical connection.

Multi-Switch LAG (M-LAG)

M-LAG can address bandwidth limitations and improve network resiliency, in part by routing network traffic around bottlenecks, reducing the risks of a single point of failure, and allowing load balancing across multiple switches.

Hardware Redundancy

Summit X770 series switches support a dual redundant AC/DC power supply to provide high availability. The power supply can be hot-swapped and replaced should it fail. Summit X770 also supports standardized N+1 redundant hot-swappable fan units.

Robust IP and MAC Security Framework

Media Access Control (MAC) Lockdown

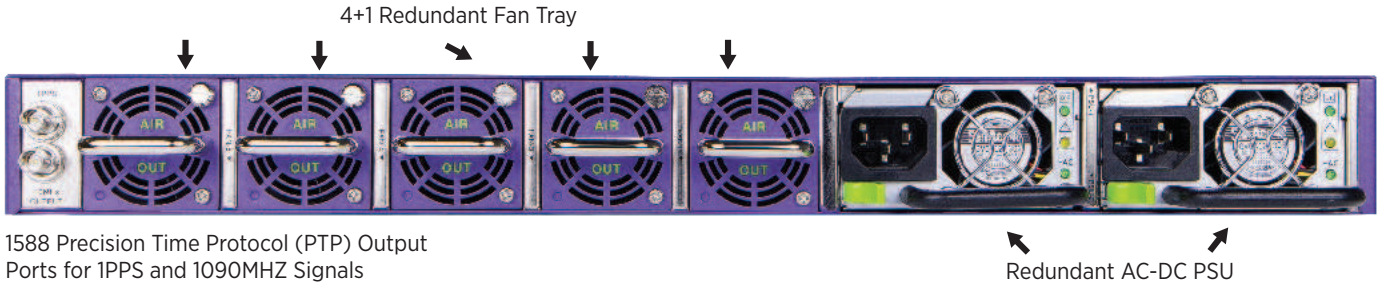
MAC security allows the lockdown of a port to a given MAC address and limiting the number of MAC addresses on a port. This capability can be used to dedicate ports to specific hosts or devices such as VoIP phones or printers and avoid abuse of the port—a capability that can be especially useful in environments such as hotels. In addition, an aging timer can be configured for the MAC lockdown, protecting the network from the effects of attacks using (often rapidly) changing MAC addresses.

IP Security

ExtremeXOS IP security framework helps protect the network infrastructure, network services such as DHCP and DNS and host computers from spoofing and man-in-the-middle attacks. It also protects the network from statically configured and/or spoofed IP addresses and builds an external trusted database of MAC/IP/port bindings providing the traffic's source from a specific address for immediate defense.

Identity Management

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. Further, Identity Manager can create both roles and policies, and then bind them together to create role-based profiles based on organizational structure or other logical groupings, and apply them across multiple users to allow appropriate access to network resources. In addition, support for Wide Key ACLs further improves security by going beyond the typical source/destination and MAC address as identification criteria access mechanism to provide filtering capabilities.



Summit X770

Threat Detection and Response

CLEAR-Flow Security Rules Engine

CLEAR-Flow Security Rules Engine provides first-order threat detection and mitigation, and mirrors traffic to security appliances for further analysis of suspicious traffic in the network.

sFlow

Summit X770 series supports hardware-based sFlow® sampling that provides the ability to sample application-level traffic flows on all interfaces simultaneously.

Port Mirroring

To allow threat detection and prevention, Summit X770 supports 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 Ingress and Egress ACLs

ACLs are one of the most powerful components used in controlling network resource utilization as well as in protecting the network. Summit X770 series supports up to 4,096 ingress ACLs and 1,024 egress ACLs per system 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 X770 series effectively handles Denial of Service (DoS) attacks. If the switch detects an unusually large number of packets in the CPU input queue, it assembles 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 and Comprehensive Network Management

As the network becomes a foundation of the enterprise application, network management becomes an important piece of the solution. Summit X770 supports comprehensive network management through Command Line Interface (CLI), SNMP v1, v2c, v3, and ExtremeXOS ScreenPlay embedded XML-based Web user interface. With a variety of management options and consistency across other Extreme Networks modular and stackable switches, Summit X770 series switches provide ease of management for demanding converged applications.

Extreme Networks has developed tools that simplify and help in efficiently managing your network. Ridgeline network and service management provides fault, configuration, accounting, performance and security functions, allowing more effective management of Extreme Networks products, solutions and third-party devices in a converged network.

Supported Protocols and Standards

A list of supported protocols and standards is available on the Extreme Networks website at:

http://www.extremenetworks.com/go/xos

Technical Specifications ***

Summit X770 Series

General Specifications
Quality of Service and Policies
2560 Gbps switch bandwidth, 1904 Mpps forwarding rate (Summit X770-32q)
9216 Byte maximum packet size (Jumbo Frame)
Store-and-Forward and Cut-Through switching support
Less than 600 nano second latency (64-byte packet)
128 load sharing trunks, up to 8 members per trunk
4,094 VLANs (Port, Protocol, IEEE 802.1Q)
4,096 ingress and 1,024 egress ACL rules per switch
Forwarding Tables
Layer 2/MAC Addresses: 288K
IPv4 Host Addresses: 104K
IPv4 LPM Entries: 16K
IPv6 Host Addresses: 52K
IPv6 LPM Entries: 4K
CPU, Memory
64-bit MIPS Processor, 1GHz clock
1GB ECC SDRAM
1GB Compact Flash
QoS, Rate Limiting
2,048 ingress bandwidth meters
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 – 1Mbps
LED Indicators
Per port status LED including power status
System Status LEDs: management, fan and power
External Ports
32 port 40GBASE-X QSFP+ (10G/40G dual speed)
One RJ-45 RS-232c Serial port (control port)
One 10/100/1000BASE-T out-of-band management port
Power Supply Support
Summit 550W AC PSU
Summit 550W DC PSU
Physical Specifications
Summit X770
Height: 1.73 Inches/4.4 cm
Width: 17.4 Inches/44.1 cm
Depth: 19.25 Inches/48.9 cm
Weight: • 16.0 lbs/7.3 kg (Summit X770-32q w/o PSU)

Physical Specifications (continued)	
Summit X670 Fan Module*	
Height: 1.65 Inches/4.2 cm	
Width: 1.65 Inches/4.2 cm	
Depth: 3.98 Inches/10.1 cm	
Weight: 0.357 lbs/0.162 kg	
Operating Specifications	
Operating Temperature Range: 0° C to 45° C (32° F to 113° F)	
Operating Humidity: 10% to 95% relative humidity, non-condensing	
Operating Altitude: 0-3,000 meters (9,850 feet)	
Operational Shock (Half Sine): 30 m/s2 (3 g), 11ms, 60 Shocks	
Operational Random Vibration: 3-500 MHz @ 1.5g rms	
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/s2 (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)	
Acoustic Noise	
Summit X770-32q (FB) Sound Pressure (dB(A))	61.2 (LpA) Low, 70.7 (LpA) High
Summit X770-32q (BF) Sound Pressure (dB(A))	60.4 (LpA) Low, 69.8 dB(A) (LpA) High
Regulatory/Safety	
North American Safety of ITE	
UL 60950-1 2nd Ed, 2011-12-19, Listed Device (U.S.)	
CSA 22.2 #60950-1-07 2nd Ed, 2011-12. (Canada)	
Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)	
CDRH Letter of Approval (U.S. FDA Approval)	
European Safety of ITE	
TUV-R GS Mark, EN60950-1:2006+A11+A1+A12	
EN 60825-1+A2:2001 (Lasers Safety)	
2006/95/EC Low Voltage Directive	
International Safety of ITE	
CB Report & Certificate per IEC 60950-1:2005+A1, + National Differences	
BSMI, CNS14336-1 (99) (Taiwan Safety)	
AS/NZS 60950-1 (Australia/New Zealand)	
EMI/EMC Standards	
North America EMC for ITE	
FCC CFR 47 part 15 Class A (U.S.A.)	
ICES-003 Class A (Canada)	
European EMC Standards	
EN 55022:2010/AC:2011, Class A	
EN 55024:2010 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 11	
EN 50121-4:2006 (Railway Applications for Telecom Apparatus)	
EN61000-6-4: 2007+A1:2011 (Emissions for Industrial Environments)	
EN61000-6-2: 2005 (Immunity for Industrial Environments)	
EN 61000-3-2:2006+A2:2009 (Harmonics)	
EN 61000-3-3: 2008 (Flicker)	
ETSI EN 300 386 v1.6.1, 2012-09 (EMC Telecommunications)	
2004/108/EC EMC Directive	

EMI/EMC Standards (continued)
International EMC Certifications
CISPR 22: 2010, Class A (International Emissions)
CISPR 24:2010 Class A (International Immunity)
IEC/EN 61000-4-2:2009 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A
IEC/EN 61000-4-3:2006+A1: 2008+A2:2010, Radiated Immunity, 80-2500MHz, 5-20V/m, Criteria A
IEC/EN 61000-4-4:2012 Transient Burst, 2 kV, Criteria A
IEC/EN 61000-4-5:2006 Surge, 2 kV L-L, 4 kV L-G, Level 3, Criteria A
IEC/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:2003-04, Class A (Japan Emissions)
ACMA -RCM Mark, AS/NZS CISPR 22:2009+A1:2010 (Australia/New Zealand Emissions)
BSMI, CNS 13438:95-06-01 (Taiwan EMC)
CQC, CCC Mark, GB4943.1-2011, GB9254-2008, YD/T993-1998 (China)
MSIP, KCC Mark EMC (Korea)
Customs Union, EAC Mark (Russia, Belarus, & Kazakhstan)
Russian FAC-CoC (Telecom)
Belarus FAC-DoC (Telecom)
Telecom Standards
EN/ETSI 300 386:v1.6.1 (2012-09) EMC Telecommunications)
EN/ETSI 300 019 (Environmental for Telecommunications)
MEF9 and MEF14 certified for EPL, EVPL and ELAN
NEBS Level 3 compliant to portions of GR-1089 Issue 4 & GR-63 Issue 3 as defined in SR3580 with exception to filter requirement
IEEE 802.3 Media Access Standards
IEEE 802.3ab 1000BASE-T
IEEE 802.3z 1000BASE-X
IEEE 802.3ae 10GBASE-X
IEEE 802.3ba 40GBASE-X
Environmental Standards
EN/ETSI 300 019-2-1 v2.1.2 (2000-09) – Class 1.2 Storage
EN/ETSI 300 019-2-2 v2.3.1 (2013-04) – Class 2.3 Transportation
EN/ETSI 300 019-2-3 v2.3.1 (2013-04) – Class 3.1e Operational
EN/ETSI 300 753 (1997-10) – Acoustic Noise
ASTM D3580 Random Vibration Unpackaged 1.5G
Warranty
Ltd. 1-year on Hardware
90-days on Software
For warranty details, visit www.extremenetworks.com/go/warranty

Power

	PSU Type	100% Traffic with Passive Copper Cables	100% Traffic with 32 QSFP+ Optics
Summit X770-32q	AC	199W	355W

Summit 550W AC PSU
Physical Specifications
Height: 1.57 inches (4.0 cm)
Width: 3.07 inches (7.8 cm)
Depth: 13.31 Inches (33.8 cm)
Weight 3.64 lb (1.65 kg)
Power Specifications
Voltage input range 90 to 264 V
Nominal input ratings 100 to 240 V, 50 to 60 Hz, 8 A
Nominal input current at full loads • 7.5 A @ 90 V (low-line) • 3.7 A @ 230 V (high-line)
Line frequency range 47 to 63 Hz
Maximum inrush current 15 A
Output 12 V, 45 A max, 540 Watts 3.3 V, 3 A max, 9.9 Watts
Maximum continuous DC output shall not exceed 550 Watts
Power supply input socket IEC 320 C14
Power cord input plug IEC 320 C13
Power supply cord gauge 18 AWG (0.75 mm2) up to 6 feet or 2 meters or 16 AWG (1.0 mm2) over 6 feet
Efficiency 84% typical at full load, high line
Summit 550W DC PSU
Physical Specifications
Height: 1.57 inches (4.0 cm)
Width: 3.07 inches (7.8 cm)
Depth: 13.31 Inches (33.8 cm)
Weight 2.58 lb (1.17 kg)
Power Specifications
Nominal Input -48 to -60 VDC, 24 A
DC Voltage Input Range -35 to -75 V
Inrush Current 21A peak
Minimum wire size 14 AWG (1.5 mm2) copper stranded
DC Output 12 V , 45 A/3.3 V, 3 A
DC Output Power (W) 550 W

Ordering Information

Part Number	Product Name	Product Description
17701	Summit X770-32q-FB-AC	32 40GBASE-X QSFP+ ports (unpopulated) , ExtremeXOS Advanced Edge License, 2 Front-to-Back 550W AC power supplies, 5 Front-to-Back airflow fan modules
17702	Summit X770-32q-BF-AC	32 40GBASE-X QSFP+ ports (unpopulated) , ExtremeXOS Advanced Edge License, 2 Back-to-Front 550W AC power supplies, 5 Back-to-Front airflow fan modules
17703	Summit X770-32q-FB-DC	32 40GBASE-X QSFP+ ports (unpopulated) , ExtremeXOS Advanced Edge License, 2 Front-to-Back 550W DC power supplies, 5 Front-to-Back airflow fan modules
17704	Summit X770-32q-BF-DC	32 40GBASE-X QSFP+ ports (unpopulated) , ExtremeXOS Advanced Edge License, 2 Back-to-Front 550W DC power supplies, 5 Back-to-Front airflow fan modules
17705	Summit X770-32q-FB-MIX	32 40GBASE-X QSFP+ ports (unpopulated) , ExtremeXOS Advanced Edge License, 1 Front-to-Back 550W AC power supply, 1 Front-to-Back 550W DC power supply, 5 Front-to-Back airflow fan modules
17706	Summit X770-32q-BF-MIX	32 40GBASE-X QSFP+ ports (unpopulated) , ExtremeXOS Advanced Edge License, 1 Back-to-Front 550W AC power supply, 1 Back-to-Front 550W DC power supply, 5 Back-to-Front airflow fan modules
17725	Summit X770 Series Core License	ExtremeXOS Core License, Summit X770 Series
17726	Summit X770 MPLS Feature Pck	ExtremeXOS MPLS Feature Pack for Summit X770 series switches
11011	Direct Attach Feature Pack	Direct Attach Feature Pack for Summit X450a/X460/X480, X650, X670, X770 and BlackDiamond 8800, X Series
17729	Summit X770 Timing 1588 PTP	ExtremeXOS Network Timing Feature Pack for Summit X770 - enables 1588v2 PTP (Precision Time Protocol)
10925*	Summit 550W AC PSU FB	550W AC Power Supply module for Summit switches, Front-to-Back airflow
10926*	Summit 550W DC PSU FB	550W DC Power Supply module for Summit switches, Front-to-Back airflow
10927*	Summit 550W AC PSU BF	550W AC Power Supply module for Summit switches, Back-to-Front airflow
10928*	Summit 550W DC PSU BF	550W DC Power Supply module for Summit switches, Back-to-Front airflow
17111*	Summit X670 fan module FB	Fan module for Summit X670 series switches, Front-to-Back airflow, spare
17112*	Summit X670 fan module BF	Fan module for Summit X670 series switches, Back-to-Front airflow, spare
10311	0.5m QSFP+ Passive Copper Cable	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 0.5m length
10312	1m QSFP+ Passive Copper Cable	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 1m length
10313A**	3m QSFP+ Passive Copper Cable	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 26 AWG, 3m length
10202	1m QSFP+ to 4xSFP+ fanout,26 AWG	QSFP+ to 4 x SFP+ fan-out copper cable, 26 AWG, 1m length.
10203	2m QSFP+ to 4xSFP+ fanout,26 AWG	QSFP+ to 4 x SFP+ fan-out copper cable, 26 AWG, 2m length.
10315	10m QSFP+ Active Optical Cable	40 Gigabit Ethernet QSFP+ active optical cable assembly, 10m length
10316	20m QSFP+ Active Optical Cable	40 Gigabit Ethernet QSFP+ active optical cable assembly, 20m length
10318	100m QSFP+ Active Optical Cable	40 Gigabit Ethernet QSFP+ active optical cable assembly, 100m length
10319	QSFP+ SR4 module	40 Gigabit Ethernet QSFP+ SR4 optical module, MPO connector, 100m link length
10320	QSFP+ 40GBASE-LR4	40 Gigabit Ethernet QSFP+ LR4 optical module, LC connectors, 10km SMF link length

* Fans and Power Supplies are common between X670 and X770 models

**This cable has thicker gauge copper than the previous 10313 number and is required on the Summit X770

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