

# Summit X670-G2 Series

Scalable Advanced 10Gb Aggregation and Data Center Switch with ExtremeXOS Modular Operating System

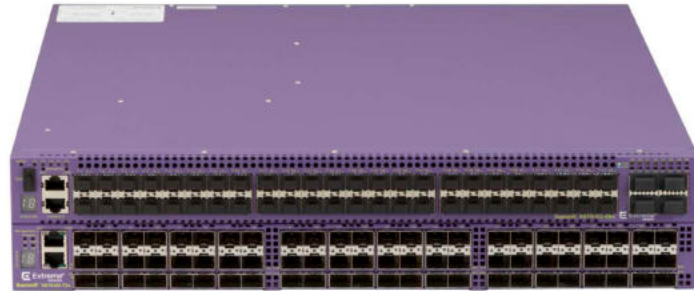
## BENEFITS

### BUSINESS ALIGNMENT

- X670-G2-48x-4q – 48 ports of 1/10Gb SFP+ with 4 ports of 10/40Gb QSFP+
- X670-G2-72x – 72 ports of 1/10Gb SFP+ in 1 RU form factor

### OPERATIONAL EFFICIENCY

- Full ExtremeXOS® feature set supporting switching, routing, SDN, Data Center Bridging, MPLS, and Audio Video Bridging
- SummitStack™ support enables flexible stacking configurations with entire stackable Summit product line
- IEEE 1588 PTP Timing with integrated timing output ports
- All configurations provide non-blocking, line rate performance
- Low latency cut-through mode
- Front-to-Back or Back-to-Front airflow



## Product Overview

The Summit X670-G2 product family provides high density 10 Gigabit Ethernet and 40 Gigabit Ethernet switching in a small 1RU form factor. With its versatile design, the Summit X670-G2 provides high density Layer 2/3 10Gb networking 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.

The Summit X670-G2 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.

The Summit X670-G2 comes in two models:

- X670-G2-48x-4q – 48 ports of 1/10Gb SFP+ with 4 ports of 10/40Gb QSFP+
- X670-G2-72x – 72 ports of 1/10Gb SFP+ in 1 RU form factor

The Summit X670-G2-48x-4q supports four QSFP+ ports of 40 GbE. Each 40 Gigabit Ethernet port can be independently configured as 40 Gigabit Ethernet or 4 x 10 Gigabit Ethernet.

The X670-G2-72x model supports 72 ports of native 1Gb/10Gb SFP+ ports in a single compact system without the requirement to use break-out cables to achieve high density 10Gb connections.

## High-Performance Stacking

The Summit X670-G2 supports 4 different methods of stacking: SummitStack-V, SummitStack-V80, SummitStack-V160, and SummitStack-V320.

### SummitStack-V—Flexible Stacking Over 10 Gigabit Ethernet

ExtremeXOS supports the SummitStack-V capability using 2 of the native 10 GbE ports on the faceplate as stacking ports, enabling the use of standard cabling and optics technologies used for 10 GbE SFP+, SummitStack-V provides

long-distance stacking connectivity of up to 40 km while reducing the cable complexity of implementing a stacking solution. SummitStack-V is compatible with Summit X440, X460, X460-G2, X480, X670, X670V and X770 switches running the same version of ExtremeXOS. SummitStack-V enabled 10 GbE ports must be physically direct-connected.

### **SummitStack-V80/V160/V320—Flexible Stacking Over 40 Gigabit Ethernet**

The Summit X670-G2-48x-4q also supports high-speed 80Gbps, 160 Gbps, and 320Gbps stacking using QSFP+ ports, 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, -V160, and -V320 can support passive copper cables (up to 5m), active multi-mode fiber cable (up to 100m), and QSFP+ optical transceivers for 40 GbE up to 10km. With SummitStack, the Summit X670-G2-48x-4q provides a flexible stacking solution inside the data center or central office to create a virtualized switching infrastructure across rows of racks.

### **Intelligent Switching and MPLS/H-VPLS Support**

Summit X670-G2 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 X670-G2 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

### **1588 Precision Time Protocol (PTP)**

Summit X670-G2 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.

### **Audio Video Bridging (AVB)**

The X670-G2 series supports IEEE 802.1 Audio Video Bridging to enable reliable, real-time audio/video transmission over Ethernet. AVB technology delivers the quality of service required for today's high-definition and time-sensitive multimedia streams.

### **Low Latency Switching for Cluster Computing**

Summit X670-G2 can achieve latency less than 600 nanoseconds and supports cut-through switching for latency-sensitive cluster computing.

### **GREEN DESIGN - LOW POWER CONSUMPTION WITH OPTIMIZED COOLING OPTIONS**

The Summit X670-G2 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 X670-G2 series switches can be used in AC or DC powered environments.

## **DESIGNED FOR CLOUD DATA CENTERS - VEPA, XNV, DCB, OPENFLOW, OPENSTACK**

Summit X670-G2 has a variety of features that fit your data center needs:

### **DIRECT ATTACH (VEPA)**

With the optional feature pack, Summit X670-G2 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 X670-G2 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.

### **DATA CENTER BRIDGING (DCB)**

The Summit X670-G2 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.

### **PFC**

Summit X670-G2 switches 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.

## 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 businesscritical 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 multitenant 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 X670-G2 series offers more cost-effective 10 Gigabit Ethernet switches, for both small-sized core backbone and traditional three-tier network architectures. Summit X670-G2 series can support 10 Gigabit Ethernet campus aggregations with its core class routing and switching scalability.

## 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 X670-G2 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 X670-G2 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 X670-G2 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.

## 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 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 X670-G2 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 X670-G2 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 32 links on a single logical connection, for up to 320 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 X670-G2 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 X670-G2 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.

## **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 X670-G2 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 X670-G2 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 X670-G2 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 X670-G2 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 X670-G2 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 X670-G2 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 thirdparty 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>

GENERAL SPECIFICATIONS
<b>PERFORMANCE AND SCALE</b>
Summit X670-G2-48x-4q - 1280Gbps switch bandwidth, 952Mpps forwarding rate
Summit X670-G2-72x - 1440Gbps switch bandwidth, 1071Mpps forwarding rate
9216 Byte maximum packet size (Jumbo Frame)
Store-and-Forward and Cut-Through switching support
Less than 600 nanoseconds latency
128 load sharing trunks, up to 32 members per trunk
4096 VLANs (Port, Protocol, IEEE 802.1Q)
4096 ingress and 1024 egress ACL rules per switch
<b>FORWARDING TABLES</b>
Layer 2 / MAC Addresses: 288K
IPv4 Host Addresses: 136K
IPv4 LPM Entries: 16K
IPv6 Host Addresses: 48K
IPv6 LPM Entries: 8K
<b>CPU, MEMORY</b>
1GHz 64-bit CPU
2GB DDR3 ECC SDRAM
4GB eMMC Flash Memory
<b>QOS, RATE LIMITING</b>
4096 ingress bandwidth meters and 1024 egress 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
<b>LED INDICATOR</b>
Per port status LED including power status
System Status LEDs: management, fan and power
<b>EXTERNAL PORTS - X670-G2-48X-4Q</b>
48 ports 10GBASE-X SFP+ (1Gb/10Gb dual speed)
4 ports 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
<b>EXTERNAL PORTS - X670-G2-72X</b>
72 ports 10GBASE-X SFP+ (1Gb/10Gb dual speed)
One RJ-45 RS-232c Serial port (control port)
One 10/100/1000BASE-T out-of-band management port
<b>POWER SUPPLY SUPPORT</b>
Summit 550W AC PSU - Front-Back and Back-Front airflow options
Summit 550W DC PSU - Front-Back and Back-Front airflow options

PHYSICAL SPECIFICATIONS
<b>SUMMIT X670-G2-48X-4Q</b>
Height: 1.73 Inches/4.4 cm
Width: 17.4 Inches/44.1 cm
Depth: 19.2 Inches/48.7 cm
Weight: 12.85 lbs/5.83 kg
<b>SUMMIT X670-G2-72</b>
Height: 1.73 Inches/4.4 cm
Width: 17.4 Inches/44.1 cm
Depth: 19.2 Inches/48.7 cm
Weight: 15.42 lbs/7.0 kg
<b>SUMMIT X670 FAN MODULE</b>
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
<b>OPERATING SPECIFICATIONS</b>
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/s <sup>2</sup> (3 g), 11ms, 60 Shocks
Operational Random Vibration: 3-500 MHz @ 1.5g rms
<b>STORAGE AND TRANSPORTATION (PACKAGED)</b>
Transportation Temperature: -40° C to 70° C (-40° F to 158° F)
Humidity: 10% to 95% RH, non-condensing
Packaged Shock (Half Sine): 180 m/s <sup>2</sup> (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)
<b>REGULATORY/SAFETY</b>
<b>NORTH AMERICAN SAFETY OF ITE</b>
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)
<b>EUROPEAN SAFETY OF ITE</b>
EN 60950-1:2006 2nd Ed. TUV-R GS
EN 60825-1:2007 (Lasers Safety)
2006/95/EC Low Voltage Directive
<b>INTERNATIONAL SAFETY OF ITE</b>
CB Report & Certificate per IEC 60950-1:2005 2nd Ed., + National Differences
AS/NZS 60950-1 (Australia/New Zealand)

<b>EMI/EMC STANDARDS</b>
<b>NORTH AMERICA EMC FOR ITE</b>
FCC CFR 47 part 15 Class A (U.S.A.)
ICES-003 Class A (Canada)
<b>EUROPEAN EMC STANDARDS</b>
EN 55022:2010 Class A
EN 55024:12020
Class A includes IEC 61000-4-2, 3, 4, 5, 6, 11
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
<b>INTERNATIONAL EMC CERTIFICATIONS</b>
CISPR 22: 2008, (Ed 6.0) 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
EN 55024:1998+A1:2001+A2:2003 Class A (International Immunity)
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
<b>COUNTRY SPECIFIC</b>
VCCI:2003-04, Class A (Japan Emissions)
ACMA (C-Tick) (Australia emissions)
BSMI (Taiwan EMC)
CCC Mark (China)
KCC Mark EMC (Korea)
<b>TELECOM STANDARDS</b>
EN/ETSI 300 386:2008 (EMC Telecommunications)
EN/ETSI 300 019 (Environmental for Telecommunications)
<b>IEEE 802.3 MEDIA ACCESS STANDARDS</b>
IEEE 802.3ab 1000BASE-T
IEEE 802.3z 1000BASE-X
IEEE 802.3ae 10GBASE-X
IEEE 802.3ba 40GBASE-X
<b>ENVIRONMENTAL STANDARDS</b>
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

<b>POWER SUPPLY SPECIFICATIONS</b>
<b>SUMMIT 550W AC PSU</b>
<b>PHYSICAL SPECIFICATIONS</b>
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)
<b>POWER SPECIFICATIONS</b>
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 <ul style="list-style-type: none"> <li>• 7.5 A @ 90 V (low-line)</li> <li>• 3.7 A @ 230 V (high-line)</li> </ul>
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 mm <sup>2</sup> ) up to 6 feet or 2 meters or 16 AWG (1.0 mm <sup>2</sup> ) over 6 feet
Efficiency 84% typical at full load, high line
<b>SUMMIT 550W DC PSU</b>
<b>PHYSICAL SPECIFICATIONS</b>
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)
<b>POWER SPECIFICATIONS</b>
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 mm <sup>2</sup> ) copper stranded
DC Output 12 V , 45 A/3.3 V, 3 A
DC Output Power (W) 550 W

## Power Consumption

SWITCH MODEL	MINIMUM HEAT DISSIPATION	MINIMUM POWER CONSUMPTION	MAXIMUM HEAT DISSIPATION	MAXIMUM POWER CONSUMPTION
Summit X670-G2-48x-4q	325 BTU/hr	95 W	768 BTU/hr	225 W
Summit X670-G2-72x	325 BTU/hr	95 W	939 BTU/hr	275 W

SWITCH MODEL	ACOUSTIC INFORMATION	
Summit X670-G2-48x-4q	Dual 550W AC PS with Front to Back (FB) air flow	
	Bystander Sound Pressure* • 60.2 dB(A), 0°C to 45°C	Declared Sound Power (LWAd)** • 7.3 bels, 0°C to 45°C
	Dual 550W DC PS with Front to Back (FB) air flow	
	Bystander Sound Pressure* • 61.3 dB(A), 0°C to 45°C	Declared Sound Power (LWAd)** • 7.4 bels, 0°C to 45°C
	Dual 550W AC PS with Back to Front (BF) air flow	
	Bystander Sound Pressure* • 58.3 dB(A), 0°C to 35°C • 70.1 dB(A), 45°C	Declared Sound Power (LWAd)** • 7.0 bels, 0°C to 35°C • 8.4 bels, 45°C
Summit X670-G2-72x	Dual 550W DC PS with Back to Front (BF) air flow	
	Bystander Sound Pressure* • 55.0 dB(A), 0°C to 35°C • 68.8 dB(A), 45°C	Declared Sound Power (LWAd)** • 6.5 bels, 0°C to 35°C • 8.1 bels, 45°C
	Dual 550W AC PS with Front to Back (FB) air flow	
	Bystander Sound Pressure* • 58.9 dB(A), 0°C to 35°C • 62.5 dB(A), 45°C	Declared Sound Power (LWAd)** • 7.3 bels, 0°C to 35°C • 7.6 bels, 45°C
	Dual 550W DC PS with Front to Back (FB) air flow	
	Bystander Sound Pressure* • 58.5 dB(A), 0°C to 35°C • 62.4 dB(A), 45°C	Declared Sound Power (LWAd)** • 7.3 bels, 0°C to 35°C • 7.6 bels, 45°C
	Dual 550W AC PS with Back to Front (BF) air flow	
	Bystander Sound Pressure* • 59.8 dB(A), 0°C to 35°C • 72.6 dB(A), 45°C	Declared Sound Power (LWAd)** • 7.3 bels, 0°C to 35°C • 8.2 bels, 45°C
	Dual 550W DC PS with Back to Front (BF) air flow	
	Bystander Sound Pressure* • 56.4 dB(A), 0°C to 35°C • 73.0 dB(A), 45°C	Declared Sound Power (LWAd)** • 6.7 bels, 0°C to 35°C • 8.3 bels, 45°C

\* Bystander Sound Pressure is presented only for comparison to other products.

\*\*Declared Sound Power is presented in accordance with ISO-7779:2010(E), ISO 9296:2010 per ETSI/EN 300 753:2012-01



## Supported System Configurations

Fan modules and power supplies must be ordered with all base models. A full complement of fan modules is required. A single power supply is required with an optional second power supply for redundancy. AC and DC power supplies can be mixed in a system. Air flow direction of fan modules and power supplies must match.

Base Model	FAN MODULES		AC POWER SUPPLIES		DC POWER SUPPLIES	
	17111 X670 fan module Front-Back	17112 X670 fan module Back-Front	10925 550W AC PSU Front- Back	10927 550W AC PSU Back-Front	10926 550W DC PSU Front-Back	10928 550W DC PSU Back- Front
17310 Summit X670-G2-48x-4q- Base-Unit	3		1 or 2			
					1 or 2	
			1		1	
	3		1 or 2			
						1 or 2
			1		1	
17300 Summit X670-G2-72x-Base- Unit	5		1 or 2			
					1 or 2	
			1		1	
	5		1 or 2			
						1 or 2
			1		1	

## Warranty

- One Year with Advanced Hardware Replacement
- For warranty details, visit <http://www.extremenetworks.com/go/warranty>

## Ordering Information

PART NUMBER	PRODUCT NAME	PRODUCT DESCRIPTION
17300	Summit X670-G2-72x-Base-Unit	72 10GBASE-X SFP+, ExtremeXOS Advanced Edge License, unpopulated dual PSU power slot and 5 unpopulated fan airflow slots
17310	Summit X670-G2-48x-4q-Base-Unit	48 10GBASE-X SFP+ and 4 40GBASE-X QSFP+, ExtremeXOS Advanced Edge License, unpopulated dual PSU power slot , and 3 unpopulated fan airflow slots
17111	Summit X670 fan module FB	Fan module for Summit X670 series switches, Front-to-Back airflow
17112	Summit X670 fan module BF	Fan module for Summit X670 series switches, Back-to-Front airflow
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
17131	Summit X670 Series Core License	Summit X670 Series Core License
17133	Summit X670 MPLS Feature Pck	Summit X670 MPLS Feature Pack
17134	Summit X670 OpenFlow FeaturePack	ExtremeXOS SDN - OpenFlow Feature Pack for Summit X670 series switches
17135	X670 AVB	ExtremeXOS Audio Video Bridging Feature Pack for Summit X670 series switches
17136	X670-G2 Timing 1588 PTP	ExtremeXOS Network Timing Feature Pack for Summit X670-G2 - enables 1588v2 PTP (Precision Time Protocol)
11011	Direct Attach Feature Pack	Direct Attach Feature Pack
16499	Summit X670-3rd Party Optics License	ExtremeXOS 3rd Party Optics (40G and 100G) Feature-Pack for Summit X670
10319	QSFP+ SR4 module	40 Gigabit Ethernet QSFP+ SR4 optical module, MPO connector, 100m MMF link length
10320	QSFP+ LR4 module	40 Gigabit Ethernet QSFP+ LR4 optical module, LC connectors, 10km SMF link length
10311	QSFP+ passive copper cable, 0.5M	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 0.5m length.
10312	QSFP+ passive copper cable, 1.0M	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 1m length.
10313'	QSFP+ passive copper cable, 3.0M	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 3m length.
10323'	QSFP+ passive copper cable, 5.0M	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 5m 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.
10321	QSFP+ - 4xSFP+ fan-out cbl, 3m	QSFP+ to 4 x SFP+ fan-out copper cable, 3m
10301	SR SFP+ module	10GBASE-SR SFP+, 850nm, LC Connector, transmission length of up to 300m on MMF
10302	LR SFP+ module	10GBASE-LR SFP+, 1310nm, LC Connector, transmission length of up to 10km on SMF
10309	ER SFP+ module	10GBASE-ER SFP+, 1550nm, LC Connector, transmission length of up to 40km on SMF
10310	ZR SFP+ module	10GBASE-ZR SFP+, 1550nm, LC connector, transmission length up to 80km on SMF
10304	SFP+ Cable Assembly 1M	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 1m

PART NUMBER	PRODUCT NAME	PRODUCT DESCRIPTION
10405	SFP+ Cable Assembly 3M	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 3m
10306	SFP+ Cable Assembly 5M	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 5m
10051H	1000BASE-SX SFP, Hi	1000BASE-SX SFP, MMF 220 & 550 meters, LC connector, Industrial Temp
10052H	1000BASE-LX SFP, Hi	1000BASE-LX SFP, MMF 220 & 550 meters, SMF 10km, LC connector, Industrial Temp
10053H	1000BASE-ZX SFP, Hi	1000BASE-ZX SFP, SMF 70km, LC connector, Industrial Temp
10070H <sup>2</sup>	10/100/1000BASE-T SFP, Hi	10/100/1000BASE-T SFP module, CAT5 cable 100m link, RJ45-connector for Giga Bit Ethernet SFP Port, Industrial Temp

1 - Not supported for SummitStack links, 40GbE only

2 - Only 1Gb speed supported with 10070H when used with X670-G2



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