

# CEN-EXTRM-X670-G2-48X-4Q KIT

## Extreme Networks® Summit® X670-G2-48x-4q 10Gb Core Switch

- > Scalable, advanced 10Gb core switch with ExtremeXOS modular operating system
- > 48 ports of 1/10Gb SFP+
- > 4 ports of 10/40Gb QSFP+
- > Full ExtremeXOS feature set supporting switching, routing, SDN, Data Center Bridging, MPLS, and Audio Video Bridging
- > SummitStack support enabling flexible stacking configurations with the 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 airflow via included fan modules
- > Hot-swappable, dual-redundant power supplies
- > Built-in DHCP server, DNS server, email alert, and SNMP client
- > Stackable or 1 RU 19" rack-mountable
- > Includes two 125 Volt NEMA 5-15P type power cords



The Summit X670-G2-48x-4q simplifies network operation with the ExtremeXOS modular operating system (OS), which is used among all Extreme Networks Summit 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-G2-48x-4q included 48 ports of 1/10Gb SFP+ with 4 ports of 10/40Gb QSFP+ in a 1 RU form factor. Each 40 Gigabit Ethernet port can be independently configured as 40 Gigabit Ethernet or 4 x 10 Gigabit Ethernet.

### High-Performance Stacking

The Summit X670-G2-48x-4q 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-G2, X460-G2, and X670-G2 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 80 Gbps, 160 Gbps, and 320 Gbps 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 1m), 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.

### Extreme Networks® and Crestron®

At the core of every adaptable network is a flexible, secure, and efficient switching platform. Extreme Networks provides switching platforms legendary for their high-performance and comprehensive coverage from edge to core. Crestron and Extreme Networks have teamed up to provide a rock-solid solution for Crestron DM® NVX network AV and general network switching needs. Solutions are right-sized for your application and budget. You get Extreme Networks' renowned security and management with Crestron support and control.

### Enterprise and Campus-Wide Deployment

When you need to go beyond 80 DM NVX encoders, or you want to manage at the room level, the Extreme Networks Summit® Series is the right solution. When combined with multiple Summit® edge switches, the Summit X670-G2-48x-4q core switch supports network configurations with up to 480 endpoints. The Summit X670-G2-48x-4q provides 48 10GBase-X SFP+ ports and 4 40GBase-X QSFP+ ports.

*Note: The Crestron CEN-EXTRM-X670-G2-48X-4Q KIT provides a complete packaged solution that includes the Summit X670-G2-48x-4q base switch, three fan modules, dual redundant power supplies, AC power cords, and a Summit X670 series core license.*

### Extreme Networks Summit X670-G2-48x-4q Overview

The Summit X670-G2-48X-4Q provides high density 10 Gigabit Ethernet and 40 Gigabit Ethernet switching in a small 1RU form factor. With its versatile design, it 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 environments.

## Intelligent Switching and MPLS/H-VPLS Support

The Summit X670-G2-48x-4q 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, The Summit X670-G2-48x-4q 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)

The Summit X670-G2-48x-4q 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 Summit X670-G2-48x-4q 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

The Summit X670-G2-48x-4q 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-G2-48x-4q 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.

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

The Summit X670-G2-48x-4q has a variety of features that fit your data center needs:

### • Direct Attach (VEPA)

With the optional feature pack, Summit X670-G2-48x-4q 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.

### • Data Center Bridging (DCB)

The Summit X670-G2-48x-4q 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-G2-48x-4q 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 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 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-G2-48x-4q offers more cost-effective 10 Gigabit Ethernet switches, for both small-sized core backbone and traditional three-tier network architectures. The Summit X670-G2-48x-4q 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 Summit portfolio. All Summit 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-G2-48x-4q 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-G2-48x-4q switches support 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 Summit X670-G2-48x-4q 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**

The Summit X670-G2-48x-4q 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. The Summit X670-G2-48x-4q 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-G2-48x-4q switches include a dual redundant AC power supply to provide high availability. The power supply can be hot-swapped and replaced should it fail. The Summit X670-G2-48x-4q also includes 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®

Support for hardware-based sFlow sampling provides the ability to sample application-level traffic flows on all interfaces simultaneously.

### • Port Mirroring

To allow threat detection and prevention, the Summit X670-G2-48x-4q 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. The Summit X670-G2-48x-4q 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

The Summit X670-G2-48x-4q 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. The Summit X670-G2-48x-4q 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-G2-48x-4q 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.

## Additional Resources

For additional resources related to the Extreme Networks switches, refer to the following:

- For an overview of all the Extreme Networks switches available from Crestron, visit <https://www.crestron.com/extremenetworks>.
- For complete specifications and documentation, visit <https://www.extremenetworks.com/product/x670-g2-series/>.
- For access to the Extreme GTAC (Global Technical Assistance Center) knowledgebase and the Hub Community Extreme Support home page, visit <https://extremeportal.force.com/ExtrSupportHome>.
- For all inquiries and support related to the Extreme Networks switches and accessories, contact Crestron customer support. Please do not contact Extreme Networks customer service or create a case in the Extreme Support Portal.

## SPECIFICATIONS

For complete specifications and documentation, refer to the manufacturer's website at <https://www.extremenetworks.com/product/x670-g2-series/>.

### Performance & Ports

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**Performance:** 1280 Gbps switch bandwidth;  
952 Mpps forwarding rate

**Ports:** 48 10GBase-X (SFP+) unpopulated ports;  
4 40GBase-X (QSFP+) unpopulated ports;  
1 x Serial control port (RJ-45);  
1 x 10/100/1000Base-T out-of-band management port

### Power

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**Main Power:** 2 x 100-240 Volts AC, 50/60 Hz, dual redundant power supply modules  
**Power Cords:** Includes (2) 10A, 125V, NEMA 5-15P to IEC 60320 C13 power cords  
**Power Consumption:** 95 Watts minimum, 225 Watts maximum

### Environmental

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**Temperature:** 32° to 113° F (0° to 45° C)  
**Humidity:** 10% to 95% RH (non-condensing)  
**Altitude:** 0 to 9850 ft (0 to 3000 m)  
**Heat Dissipation:** 325 BTU/hr minimum, 768 BTU/hr maximum  
**Ambient Noise:** 60.2 dBA @ 0-45° C bystand

### Construction

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**Housing:** Metal, multispeed fan cooled, vented sides  
**Mounting:** Freestanding or 1 RU 19-inch rack-mountable (rack ears included)

# CEN-EXTRM-X670-G2-48X-4Q KIT

Extreme Networks® Summit® X670-G2-48x-4q

## Dimensions

**Height:** 1.73 in (44 mm)  
**Width:** 17.40 in (441 mm)  
**Depth:** 19.18 in (487 mm)

## Weight

18.78 lb (8.52 kg)  
*Includes power supply and fan modules*

## MODELS & ACCESSORIES

### Available Models

**CEN-EXTRM-X670-G2-48X-4Q KIT:** Extreme Networks® Summit® X670-G2-48x-4q 10Gb Core Switch, 48 10GBase-X SFP+ Ports, 4 40GBase-X QSFP+ Ports, Dual RPS

### Included Accessories

**CEN-EXTRM-CBL-PWR-10A-NEMA5-15P:** Extreme Networks® Power Cord, 10A, 125V, NEMA 5-15P, IEC 60320 C13 (10061) (Qty. 2 included)  
**CEN-EXTRM-PSU-550W-AC-F-B:** Extreme Networks® Summit® 550W AC Power Supply Module for X670-G2 Series, Front to Back Airflow (10925) (Qty. 2 included)  
**CEN-EXTRM-FAN-670-F-B:** Extreme Networks® Summit® Fan Module for X670-G2 Series, Front to Back Airflow (17111) (Qty. 3 included)  
**CEN-EXTRM-LIC-X670-CORE:** Extreme Networks® Summit® X670-G2 Series Core License (17131) (Qty. 1 included)

### Available Accessories

**CEN-EXTRM-QSFP+-40GBASE-SR4:** Extreme Networks® 40GbE QSFP+ SR4 Optical Transceiver Module (10319)  
**CEN-EXTRM-QSFP+-40GBASE-LR4:** Extreme Networks® 40GbE QSFP+ LR4 Optical Transceiver Module (10320)  
**CEN-EXTRM-CBL-0.5MQSFP+PASSIVE COPPER:** Extreme Networks® 40GbE QSFP+ Passive Copper Cable, 0.5m (10311)  
**CEN-EXTRM-CBL-1MQSFP+PASSIVE COPPER:** Extreme Networks® 40GbE QSFP+ Passive Copper Cable, 1m (10312)  
**CEN-EXTRM-CBL-3MQSFP+PASSIVE COPPER:** Extreme Networks® 40GbE QSFP+ Passive Copper Cable, 3m (10313)  
**CEN-EXTRM-CBL-5MQSFP+PASSIVE COPPER:** Extreme Networks® 40GbE QSFP+ Passive Copper Cable, 5m (10323)  
**CEN-EXTRM-CBL-9380014-5M:** Extreme Networks® 10GbE OM3 Multimode Breakout Cable, MPO 8 Parallel Fiber to 4 LC Duplex, 5m (9380014-5M)  
**SFP-1G-SX:** SFP Transceiver Module, Duplex Multimode Fiber, 850 nm  
**SFP-1G-LX:** SFP Transceiver Module, Duplex Single-Mode Fiber, 1310 nm  
**SFP-1G-BX-U:** SFP Transceiver Module, Simplex Single-Mode Fiber, 1310/1490 nm, Uplink  
**SFP-1G-BX-D:** SFP Transceiver Module, Simplex Single-Mode Fiber, 1490/1310 nm, Downlink  
**SFP-10G-SR:** SFP+ Transceiver Module, Duplex Multimode 850 nm

**SFP-10G-BX-U:** SFP+ Transceiver Module, Simplex Single-Mode 1270/1330 nm, Uplink

**SFP-10G-BX-D:** SFP+ Transceiver Module, Simplex Single-Mode 1330/1270 nm, Downlink

### Notes:

This product may be purchased from an authorized Crestron dealer. To find a dealer, please contact the Crestron sales representative for your area. A list of sales representatives is available online at <https://www.crestron.com/How-To-Buy/Find-a-Representative> or by calling 855-263-8754.

For complete specifications and documentation, please visit <https://www.extremenetworks.com/product/x670-g2-series/>.

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