

## Highlights

### Family of 10Gb/100Gb Switches with Advanced Enterprise Capabilities

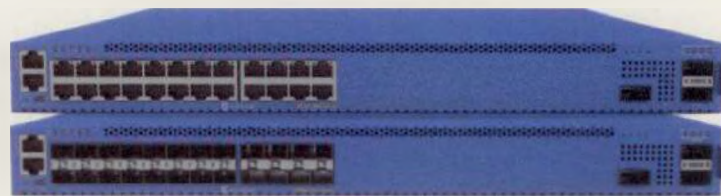
- Full featured ExtremeXOS® operating system with advanced features supporting switching, routing, and VXLAN
- Controlling aggregation switch for V400 edge devices with Extreme's Extended Edge Switching
- High-density 10Gb aggregation applications
- Non-blocking 880 Gbps switching capacity per system

### Ease of Use — Flexible Management Options

- Enterprise Extreme Management Center application support
- Advanced command line interface
- Zero Touch Provisioning (ZTP+)
- Integrated web based management application

### Flexible System Configurations

- Wide range of port speeds from 1Gb, 10Gb, 25Gb, 40Gb, 50Gb, and 100Gb
- Fiber SFP+ and copper 10GBASE-T models
- Hot-swappable modular power and fans
- AC and DC power supply options
- Front to Back and Back to Front air flow options
- Redundancy options for high availability



## ExtremeSwitching™ X590

High-performance 24-port 10Gb aggregation switch.

### Product Overview

#### Advanced 10Gb Enterprise LAN Aggregation Switch

The ExtremeSwitching X590 Series products are purpose-built 24-port 10Gb/100Gb switches designed for high-performance enterprise and aggregation applications. The X590 can support a range of interface speeds, including 1Gb, 10Gb, 25Gb, 40Gb, 50Gb and 100Gb, all in a compact 1RU form factor. This enables the ExtremeSwitching X590 to be flexibly deployed in Enterprise LAN or top-of-rack applications.

The X590 can also serve as the controlling aggregation switch within Extreme's Extended Edge Switching solution.

Two models of the X590 are available:

#### X590-24x-1q-2c

- 24 x 1Gb/10Gb SFP+ ports
- 1 x 10Gb/40Gb QSFP+ port (available as uplink when operating in stack mode)
- 2 x 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports

#### X590-24t-1q-2c

- 24 x 100Mb/1Gb/10Gb 10GBASE-T ports
- 1 x 10Gb/40Gb QSFP+ port (available as uplink when operating in stack mode)
- 2 x 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports

## Flexible Deployment Options

The X590 can handle a range of high bandwidth applications, including high-density 10Gb top of rack aggregation, as well as spine/leaf deployments as an edge leaf switch. With both copper and fiber high-density 10Gb port options, the X590 can flexibly accommodate a variety of data center needs. It can also flexibly support uplinks at 25Gb, 40Gb, 50Gb or even 100Gb rates. A range of SFP+ and QSFP+ optical transceivers are available to support 1Gb, 10Gb and 40Gb Ethernet, while QSFP28 optical transceivers can be used to support 25Gb, 50Gb and 100Gb Ethernet applications.

## ExtremeXOS Intelligent L2/L3 Switching

The ExtremeSwitching X590 family supports sophisticated, intelligent Layer 2 switching, as well as Layer 3 IPv4/IPv6 routing, including policy-based switching and routing. The X590 simplifies network operation with the ExtremeXOS modular operating system, which is used across a wide range of ExtremeSwitching networking products. The high availability ExtremeXOS operating system reduces operational overhead through the use of a single OS across the network.

## Extended Edge Switching

The X590 supports Extreme Extended Edge Switching, an innovative solution that simplifies the deployment and operation of edge switches. With this solution, the X590 can be meshed with economical V400 Series access devices to form a single logical switch. Advanced X590 services can then be seamlessly delivered to the V400 edge switch. The result is a simplified operational model that reduces costs.

## High-Performance 400Gb Stacking

The X590 supports SummitStack-V400 400Gbps high speed stacking using 2 100Gb ports, along with Extreme X690 and X870 Series switches. Up to eight (8) X590, X690 and X870 systems can be stacked via SummitStack-V400, using any of the supported 100Gb QSFP28 direct attach cables for the stacking links.

## Comprehensive Network Management

Extreme Networks has developed tools that simplify and help in efficiently managing your network. The Extreme Management Center application suite provides centralized visibility and granular control of enterprise network resources end to end.

## Product Specifications

Model	X590-24x-1q-2c	X590-24t-1q-2c
Ports	<ul style="list-style-type: none"> <li>• 24 1Gb/10Gb SFP+ ports</li> <li>• 1 10Gb/40Gb QSFP+ ports</li> <li>• 2 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports</li> <li>• 1 x Serial console port RJ-45</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• Micro-USB Type A storage port</li> </ul> <p><b>Selectable QSFP Port Configurations</b></p> <ul style="list-style-type: none"> <li>• 1 10Gb/40Gb QSFP+ and 2 100Gb QSFP28 SummitStack-V400 stacking ports</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• 2 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 (1 QSFP+ port inactive)</li> </ul>	<ul style="list-style-type: none"> <li>• 24 100Mb/1Gb/10Gb 10GBASE-T ports</li> <li>• 1 10Gb/40Gb QSFP+ ports</li> <li>• 2 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports</li> <li>• 1 x Serial console port RJ-45</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• Micro-USB Type A storage port</li> </ul> <p><b>Selectable QSFP Port Configurations</b></p> <ul style="list-style-type: none"> <li>• 1 10Gb/40Gb QSFP+ ports and 2 100Gb QSFP28 SummitStack-V400 stacking ports</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• 2 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 (1 QSFP+ port inactive)</li> </ul>
Power Supplies	<ul style="list-style-type: none"> <li>• Modular 770W AC power supply (up to two PSUs)</li> <li>• Modular 1100W DC power supply (up to two PSUs)</li> <li>• Front-Back and Back-Front airflow options</li> </ul>	<ul style="list-style-type: none"> <li>• Modular 770W AC power supply (up to two PSUs)</li> <li>• Modular 1100W DC power supply (up to two PSUs)</li> <li>• Front-Back and Back-Front airflow options</li> </ul>
Fan Modules	<ul style="list-style-type: none"> <li>• 4 fan modules</li> <li>• Front-Back and Back-Front airflow options</li> </ul>	<ul style="list-style-type: none"> <li>• 4 fan modules</li> <li>• Front-Back and Back-Front airflow options</li> </ul>
Dimensions	• 17.4in W / 19.2in D / 1.7in H (44.1cm / 48.8cm / 4.3cm)	• 17.4in W / 19.2in D / 1.7in H (44.1cm / 48.8cm / 4.3cm)
Performance	• 880Gbps Switching Capacity / 714Mpps Forwarding Rate	• 880Gbps Switching Capacity / 714Mpps Forwarding Rate
CPU Memory	<ul style="list-style-type: none"> <li>• 2.4GHz Quad core CPU</li> <li>• 4GB DDR3 ECC memory</li> <li>• 32GB SSD memory</li> </ul>	<ul style="list-style-type: none"> <li>• 2.4GHz Quad core CPU</li> <li>• 4GB DDR3 ECC memory</li> <li>• 32GB SSD memory</li> </ul>
Packet Buffers	12MB	12MB
MTBF	435,074 hours	337,871 hours
Operating Conditions	<p>0° - 45°C operation            10% to 95% relative humidity, non-condensing            0 - 3000 meters altitude            Shock (half sine): 98 m/s<sup>2</sup> (10 G), 11 ms, 9 shocks            Random vibration: 3 to 500 Hz at 1.5 G rms</p>	

## Scaling and Performance

- MAC Addresses: 272K
- IPv4 LPM Entries: 256K max w/ALPM
- IPv4 Hosts:
  - with min LPM IPv4 entries: 146K
  - with max LPM IPv4 entries: 3K
- IPv6 LPM (/64) Entries: 128K max w/ALPM
- IPv6 Hosts: 32K max
- IP Multicast Groups - 4K
- IP Multicast (s,v,g) entries - 130K max
- Flexible Universal Forwarding Tables (UFT)
- 4092 user-created VLAN/VMANs
- 9216 Byte Max Packet Size (Jumbo Frame)
- 8 queues per port
- 8k ingress ACL rules
- 1K egress ACL rules
- OnePolicy and Scaling
  - Up to 24,576 authenticated policy users per switch
  - Policy Profiles: 63
  - Unique Permit/Deny Rules per switch: 1976
    - Default OnePolicy Profile
      - MAC Rules: 512
      - IPv4 Rules: 512
      - IPv6 Rules: 512
      - L2 Rules: 440

## Key Features

- Data Center Bridging
  - DCBx Data Center Bridging Exchange Protocol
  - Priority Flow Control (PFC)
  - Enhanced Transmission Selection (ETS)
  - VXLAN Tunneling End Point (VTEP)
- SummitStack-V400 400Gb stacking (full duplex)
  - Stacking with up to 8 X590/X690/X870 systems
  - 2 x 100Gb ports for stacking
- sFlow / Application Telemetry

## IEEE 802.3 Media Access Standards

- IEEE 802.3ba / 802.3bm 40GBASE-X and 100GBASE-X
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3 10GBASE-T (up to 100m using Cat6a cabling or better)
- 25Gb and 50Gb Ethernet implemented per 25G/50G Ethernet Consortium specification and IEEE 802.3 standard

## Power and Heat Dissipation

Switch Model	Minimum Heat Dissipation (BTU/hr) (Idle, no ports linked)	Minimum Power Consumption (Watts) (Idle, no ports linked)	Maximum Heat Dissipation (BTU/hr) (Fans high, all ports 100% traffic)	Maximum Power Consumption (Watts) (Fans high, all ports 100% traffic)
X590-24x-1q-2c -AC	278.42 BTU/hr	81.60 W	743.82 BTU/hr	218.00 W
X590-24x-1q-2c -DC	286.61 BTU/hr	84.00 W	786.12 BTU/hr	230.40 W
X590-24t-1q-2c -AC	310.97 BTU/hr	91.14 W	792.27 BTU/hr	232.20 W
X590-24t-1q-2c -DC	332.63 BTU/hr	97.49 W	833.62 BTU/hr	244.32 W
	1 PSU		2 PSU	

## Power Supply Specifications

	770W AC PSU 10960/10961	1100W DC PSU 10962/10963
Dimensions	2.3 in W x 1.6 in H x 14.1 in D (5.9 cm x 4.1 cm x 35.9 cm)	2.3 in W x 1.6 in H x 14.1 in D (5.9 cm x 4.1 cm x 35.9 cm)
Weight	2.2 lb (1 Kg)	2.2 lb (1 Kg)
Voltage Input Range	100 - 240 VAC +/- 10%	-48 VDC -15% +20%
Line Frequency Range	50 - 60 Hz +/- 5%	N/A
PSU Input Socket	IEC 320 C14	Terminal Block
Power Cord Input Plug	IEC 320 C13	N/A
Operating Conditions	0° - 45°C Operation	

## Acoustic Specifications

Switch Model	Bystander Sound Pressure	Declared Sound Power
X590-24x-1q-2c (Front-Back Airflow)	55.6 dB(A) up to 30°C 57.8 dB(A) up to 40°C 79.8 dB(A) @ 45°C (max)	6.9 bels up to 30°C 7.1 bels up to 40°C 9.5 bels @ 45°C (max)
X590-24x-1q-2c (Back-Front Airflow)	55.8 dB(A) up to 30°C 57.9 dB(A) up to 40°C 79.1 dB(A) @ 45°C (max)	6.9 bels up to 30°C 7.1 bels up to 40°C 9.5 bels @ 45°C (max)
X590-24t-1q-2c (Front-Back Airflow)	54.7 dB(A) up to 25°C 61.9 dB(A) up to 35°C 79.4 dB(A) @ 45°C (max)	6.8 bels up to 25°C 7.6 bels up to 35°C 9.4 bels @ 45°C (max)
X590-24t-1q-2c (Back-Front Airflow)	55.5 dB(A) up to 25°C 62.6 dB(A) up to 35°C 79.7 dB(A) @ 45°C (max)	6.8 bels up to 25°C 7.5 bels up to 35°C 9.2 bels @ 45°C (max)

## Environmental Specifications

- 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

## Environmental Compliance

- EU RoHS - 2011/65/EU
- EU WEEE - 2012/19/EU
- China RoHS - SJ/T 11363-2006
- Taiwan RoHS - CNS 15663(2013.7)

## Packaging and Storage Specifications

- Temp: -40° C to 70° C (-40° F to 158° F)
- Humidity: 10% to 95% relative humidity, non-condensing
- Packaged Shock (half sine): 180 m/s<sup>2</sup> (18 G), 6 ms, 600 shocks
- Packaged Vibration: 5 to 62 Hz at velocity 5 mm/s, 62 to 500 Hz at 0.2 G
- Packaged Random Vibration: 5 to 20 Hz at 1.0 ASD w/-3 dB/oct. from 20 to 200 Hz
- Packaged Drop Height: 14 drops minimum on sides and corners at 42 inches (<15 kg box)

## Regulatory and Safety

### North American ITE

- UL 60950-1 2nd edition A2:2014, Listed Device (U.S.)
- CSA 22.2 No. 60950-1 2nd edition 2014(Canada)
- Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)
- CDRH Letter of Approval (US FDA Approval)

### European ITE EN

- 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 2nd Ed.
- EN 60825-1:2007 / IEC 60825-1:2007 Class 1 (Lasers Safety)
- 2014 / 35/ EU Low Voltage Directive

### International ITE

- CB Report & Certificate per IEC 60950-1: 2005+A1:2009+A2:2013 + National Differences
- AS/NZS 60950-1 (Australia /New Zealand)

## EMI/EMC Standards

### North American EMC for ITE

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

### European EMC Standards

- EN 55032:2015 Class A
- EN 55024:2010
- EN 61000-3-2,2014 (Harmonics)
- EN 61000-3-3 2013 (Flicker)
- EN 300 386 v1.6.1 (EMC Telecommunications)
- 2014/30/EU EMC Directive

### International EMC Certifications

- CISPR 32:2015, Class A (International Emissions)
- AS/NZS CISPR32:2015
- CISPR 24:2010 Class A (International Immunity)
- IEC 61000-4-2:2008/EN 61000-4-2:2009 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A
- IEC 61000-4-3:2010/EN 61000-4-3:2006 +A1:2008 +A2:2010 Radiated Immunity 10V/m, Criteria A
- IEC 61000-4-4:2012. / EN 61000-4-4:2012 Transient Burst, 1 kV, Criteria A
- IEC 61000-4-5:2014 /EN 61000-4-5:2014 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria A
- IEC 61000-4-6:2013/EN 61000-4-6:2014 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 RCM (Australia Emissions)
- CCC Mark
- KCC Mark, EMC Approval (Korea)

### Telecom Standards

- CE 2.0 Compliant

### IEEE 802.3 Media Access Standards

- IEEE 802.3ba / 802.3bm 40GBASE-X and 100GBASE-X
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3 10GBASE-T (up to 100 m using Cat 6a cabling or better)
- 25Gb and 50Gb Ethernet implemented per 25G/50G Ethernet Consortium specification and IEEE 802.3 standard

## Ordering Information

Part Number	Product Name	Product Description
<b>ExtremeSwitching X590 Systems</b>		
16790	X590-24x-iq-2c Base System	ExtremeSwitching X590 base unit with 24 1Gb/10Gb SFP+ ports, 110Gb/40Gb QSFP+ port, 2 10Gb/25Gb/40Gb/50Gb/100Gb capable QSFP28 ports, 2 unpopulated power supplies slots, 4 unpopulated fan module slots, ExtremeXOS Advanced Edge License
16791	X590-24t-iq-2c Base System	ExtremeSwitching X590 base unit with 24 100Mb/1Gb/10GBASE-T ports, 110Gb/40Gb QSFP+ port, 2 10Gb/25Gb/40Gb/50Gb/100Gb capable QSFP28 ports, 2 unpopulated power supplies slots, 4 unpopulated fan module slots, ExtremeXOS Advanced Edge License
17115	Fan Module FB	Fan module, Front to Back airflow
17116	Fan Module BF	Fan module, Back to Front airflow
10960	770W AC PSU F-B	770W AC power supply, Front-to-Back airflow
10961	770W AC PSU B-F	770W AC power supply, Back-to-Front airflow
10962	1100W DC PSU F-B	1100W DC power supply, Front-to-Back airflow
10963	1100W DC PSU B-F	1100W DC power supply, Back-to-Front airflow
16777	Four Piece Rack Mount Kit, Spare	Spare Four Piece Rack Mount compatible with X590
Fan module and power supplies must be ordered separately. Air flow direction of the fan module and power supplies must be the same. AC and DC power supplies cannot be mixed in a system. Rack mount rails are included.		
<b>Firmware Licenses</b>		
EXOS-MPLS-FP-X590	X590 MPLS Feature Pack	MPLS Feature Pack for the ExtremeSwitching X590 Series
16795	X590 EXOS Core License	ExtremeSwitching X590 ExtremeXOS Core license upgrade from Advanced Edge
<b>100Gb Optical Transceivers and Direct Attach Cables</b>		
10401	100Gb QSFP28 SR4 MMF	100Gb, 100GBASE-SR4, 70m OM3 / 100m OM4 MMF, QSFP28, MPO (8 fiber)
10403	100Gb QSFP28 LR4 10km	100Gb, 100GBASE-LR4, 10km SMF, QSFP28, LC
10404	100Gb QSFP28 CWDM4	100Gb, CWDM4, 2km SMF, QSFP28, LC
10405	100Gb QSFP28 PSM4	100Gb, Parallel Single Mode PSM4, 2km SMF, QSFP28, MPO (8 fiber)
10434	100Gb, AOC QSFP28 5m	100Gb, QSFP28-QSFP28 Active optical cable, 5m
10435	100Gb, AOC QSFP28 7m	100Gb, QSFP28-QSFP28 Active optical cable, 7m
10436	100Gb, AOC QSFP28 10m	100Gb, QSFP28-QSFP28 Active optical cable, 10m
10437	100Gb, AOC QSFP28 20m	100Gb, QSFP28-QSFP28 Active optical cable, 20m
10441	100Gb AOC QSFP28 x 4 SFP28 5m	100Gb, QSFP28- 4xSFP28 (4x25Gb) Active optical breakout cable, 5m
10442	100Gb AOC QSFP28 x 4 SFP28 7m	100Gb, QSFP28- 4xSFP28 (4x25Gb) Active optical breakout cable, 7m
10443	100Gb AOC QSFP28 x 4 SFP28 10m	100Gb, QSFP28- 4xSFP28 (4x25Gb) Active optical breakout cable, 10m
10444	100Gb AOC QSFP28 x 4 SFP28 20m	100Gb, QSFP28- 4xSFP28 (4x25Gb) Active optical breakout cable, 20m
10410	100Gb, DAC QSFP28-QSFP28 0.5m	100Gb, QSFP28-QSFP28 Direct attach passive copper cable, 0.5m
10411	100Gb, DAC QSFP28-QSFP28 1m	100Gb, QSFP28-QSFP28 Direct attach passive copper cable, 1m
10413	100Gb, DAC QSFP28-QSFP28 3m	100Gb, QSFP28-QSFP28 Direct attach passive copper cable, 3m
10414	100Gb, DAC QSFP28-QSFP28 5m	100Gb, QSFP28-QSFP28 Direct attach passive copper cable, 5m
10421	100Gb, DAC QSFP28-4xSFP28 1m	100Gb, QSFP28-4 x SFP28 (4x25Gb) Direct attach passive copper breakout, 1m
10423	100Gb, DAC QSFP28-4xSFP28 3m	100Gb, QSFP28-4 x SFP28 (4x25Gb) Direct attach passive copper breakout, 3m
10424*	100Gb, DAC QSFP28-4xSFP28 5m	100Gb, QSFP28-4 x SFP28 (4x25Gb) Direct attach passive copper breakout, 5m
10426	100Gb, DAC QSFP28-2xQSFP28 1m	100Gb, QSFP28-2 x QSFP28 (2x50Gb) Direct attach passive copper breakout, 1m
10428	100Gb, DAC QSFP28-2xQSFP28 3m	100Gb, QSFP28-2 x QSFP28 (2x50Gb) Direct attach passive copper breakout, 3m
10446	100Gb AOC QSFP28-2xQSFP28 5m	100Gb, QSFP28- 2 x QSFP28 (2x50Gb) Active Optical Breakout Cable, 5m
10447	100Gb AOC QSFP28-2xQSFP28 7m	100Gb, QSFP28- 2 x QSFP28 (2x50Gb) Active Optical Breakout Cable, 7m
10448	100Gb AOC QSFP28-2xQSFP28 10m	100Gb, QSFP28- 2 x QSFP28 (2x50Gb) Active Optical Breakout Cable, 10m
10449	100Gb AOC QSFP28-2xQSFP28 20m	100Gb, QSFP28- 2 x QSFP28 (2x50Gb) Active Optical Breakout Cable, 20m

## Ordering Information (cont.)

Part Number	Product Name	Product Description
<b>40Gb Optical Transceivers and Direct Attach Cables</b>		
10319	QSFP+ SR4 module	40Gb QSFP+ SR4 optical module, MPO connector (8 fiber), 100m MMF OM3, 140m MMF OM4
40GB-ESR4-QSFP	QSFP+ ESR4	40GB QSFP+ Extended Reach SR4, MMF, 300m OM3, 400m OM4 MMF
10320	QSFP+ LR4	40Gb QSFP+ LR4 optical module, LC, 10km SMF
10326	QSFP+ PSM Optical Module	40Gb QSFP+ Parallel Single Mode (PSM) LR4, MPO connector (8 fiber), SMF, 10km
10329	40Gb Bidir MMF QSFP+	40Gb Bidirectional MMF, 100m OM3, QSFP+, duplex LC
10334	40Gb LM4 QSFP+	40Gb QSFP+ LM4, 140m OM3 MMF, 1km SMF, QSFP+, LC
10335	40Gb ER4 QSFP+	40Gb QSFP+ ER4, 40km SMF, QSFP+, LC
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
10336	3m QSFP+ Active Optical Cable	40 Gigabit QSFP+ active optical cable, 3m
10337	5m QSFP+ Active Optical Cable	40 Gigabit QSFP+ active optical cable, 5m
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
10322	QSFP+ - 4xSFP+ fan-out cbl, 5m	QSFP+ to 4 x SFP+ fan-out copper cable, 5m
QSFP-SFP-ADPT	QSFP+ to SFP+ Adapter	QSFP+ to SFP+ adapter, supports a single SFP+ 10Gb Ethernet transceiver in a QSFP+ port (optical transceivers only, 10303 LRM and 10338 10GBASE-T not supported)
<b>10Gb Transceivers and Direct Attach Cables</b>		
10301	SR SFP+ module	10GBASE-SR SFP+, 850nm, LC, 300m OM3 MMF, 400m OM4 MMF
10302	LR SFP+ module	10GBASE-LR SFP+, 1310nm, LC, 10km SMF
10309	10GBASE-ER SFP+	10GBASE-ER SFP+, 1550nm, LC connector, transmission length of up to 40km on SMF
10310	10GBASE-ZR SFP+	10Gb, 10GBASE-ZR, SMF, 1550nm, up to 80km, LC SFP+
10325	10Gb SFP+ DWDM Tunable	10Gb DWDM Tunable, 80km SMF, LC SFP+
10GB-BX10-U	10 GB, SINGLE FIBER SM, -U 10 KM	10Gb, Single Fiber SM, Bidirectional, 1270nm Tx / 1330nm RX, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-D)
10GB-BX10-D	10 GB, SINGLE FIBER SM, -D 10 KM	10Gb, Single Fiber SM, Bidirectional, 1330nm Tx / 1270nm RX, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-U)
10GB-BX40-U	10 GB, SINGLE FIBER SM, -U 40 KM	10Gb, Single Fiber SM, Bidirectional, 1330nm Tx / 1330nm RX, 40Km, Simplex LC SFP+ (must be paired with 10GB-BX40-D)
10GB-BX40-D	10 GB, SINGLE FIBER SM, -D 40 KM	10Gb, Single Fiber SM, Bidirectional, 1270nm Tx / 1270nm RX, 40Km, Simplex LC SFP+ (must be paired with 10GB-BX40-U)
10GB-F10-SFPP	10 GB, ACTIVE OPTICAL DAC, 10 M	10Gb, Active optical direct attach cable with 2 integrated SFP+ transceivers, 10m
10GB-F20-SFPP	10 GB, ACTIVE OPTICAL DAC, 20 M	10Gb, Active optical direct attach cable with 2 integrated SFP+ transceivers, 20m
10304	10GBASE-CR SFP+ 1m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 1m
10305	10GBASE-CR SFP+ 3m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 3m
10306	10GBASE-CR SFP+ 5m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 5m
10307	10GBASE-CR SFP+ 10m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 10m
10338**	10Gb SFP+ 10GBASE-T	10Gb SFP+, 10GBASE-T RJ45, 30m with Cat6a

## Ordering Information (cont.)

Part Number	Product Name	Product Description
<b>1Gb Transceivers</b>		
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
10056H	1000BASE-BX-D BiDi SFP, Hi	1000BASE-BX-D SFP SMF single fiber, 1490-nm TX/1310-nm RX wavelength, 10Km, simplex LC Industrial Temp
10057H	1000BASE-BX-U BiDi SFP, Hi	1000BASE-BX-U SFP SMF single fiber, 1310-nm TX/1490-nm RX wavelength, 10Km, simplex LC Industrial Temp
MGBIC-BX40-U	1000BASE-BX-U BiDi SFP 40Km	1000BASE-BX-U SFP, single fiber, 1310-nm TX/1490-nm RX wavelength, 40Km Industrial Temp
MGBIC-BX40-D	1000BASE-BX-D BiDi SFP 40Km	1000BASE-BX-D SFP, single fiber, 1490-nm TX/1310-nm RX wavelength, 40Km Industrial Temp
MGBIC-BX120-U	1000BASE-BX-U BiDi SFP 120Km	1000BASE-BX-U SFP, single fiber, 1490-nm TX/1590-nm RX wavelength, 120Km Industrial Temp
MGBIC-BX120-D	1000BASE-BX-D BiDi SFP 120Km	1000BASE-BX-U SFP, single fiber, 1590-nm TX/1490-nm RX wavelength, 120Km Industrial Temp
I-MGBIC-LC03	1000BASE-LX MMF SFP	1000BASE-LX SFP MMF, 1310nm, 2km with 62.5 micron OM1 MMF, 1km on 50 micron OM2 MMF, LC
MGBIC-02**	1000BASE-T, RJ-45 SFP	1000BASE-T SFP, RJ45, 100m Cat5e

\* 10424 100Gb DAC passive copper DAC breakout cable can also be used for 40Gb to 4 x 10Gb speed breakout.

\*\* 10338 supported in X590-24x-1q-2c model with configuration of every other SFP+ port in system, up to a maximum of half the 10Gb SFP+ ports configured with 10GBASE-T transceivers. An adjacent SFP+ port should remain unused for every 10GBASE-T SFP+ installed.

\*\*\* MGBIC-02 only supports 1Gb operation on X590.

See the ExtremeXOS Hardware/Software Compatibility and Recommendation Matrices document for a full list of supported devices and ExtremeXOS recommendations.

## Warranty

One year hardware warranty. For warranty details, visit:  
<http://www.extremenetworks.com/go/warranty>

## Power Cords

In support of the Extreme Networks Green Initiatives, power cords can be ordered separately but need to be specified at time of ordering. Please refer to [www.extremenetworks.com/product/powercords](http://www.extremenetworks.com/product/powercords) for details on power cord availability for this product.



<http://www.extremenetworks.com/contact>

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## Highlights

### Performance

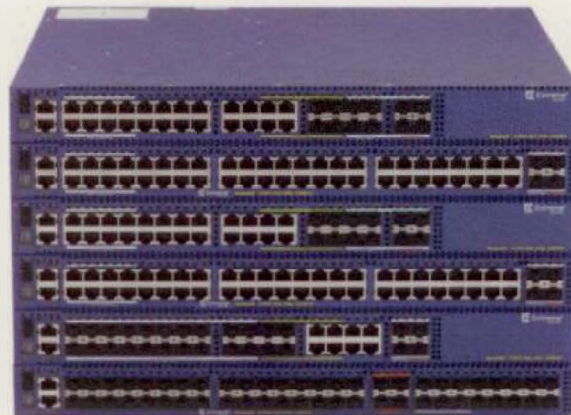
- 48-port or 28-port GbE models
- 4 ports of SFP+ 10GbE or 4 ports of SFP 1GbE on front faceplate
- 16 port multi-rate (100Mb/1/2 5Gb) PoE+ switch with 32 10/100/1000 PoE+ ports
- All configurations Non-blocking full duplex
- Two new 48 port switches with 10GbE uplinks that support 24 ports with half/full-duplex operation
- Copper, Fiber, and PoE-Plus models
- Optional two-port 10 GbE fiber and copper options to provide additional 10Gbps streams of uplink bandwidth
- Optional two-port 40 GbE to provide 80 Gbps uplinks or SummitStack- V160 stacking
- 40 Gbps stacking via front-panel 10Gb Ethernet ports or optional SummitStack

### Form Factor

- 1 RU w/ 1 expansion slot for additional interface ports and 1 expansion slot for timing options

### Features

- Secure Network Access through role based policy or Identity Management
- Front-to-Back or Back-to-Front airflow
- SyncE G.8232 and IEEE 1588 PTP Timing
- 850W of PoE-Plus budget with 1 PSU
- 1440W of PoE-Plus budget with 2 PSUs
- Multi-rate Ethernet (100Mb/1/2 5Gb) support
- Y.1731 OAM Measurements in hardware for accuracy
- Energy Efficient Ethernet - IEEE 802.3az on 10/100/1000 ports
- Hot-Swappable Power Supplies and Fan Tray



## ExtremeSwitching™ X460-G2 Series

Scalable advanced aggregation switch with ExtremeXOS® modular operating system.

The X460-G2 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 X460-G2 switches are effective campus edge switches that support Energy Efficient Ethernet (EEE - IEEE 802.3az) with IEEE 802.3at PoE-plus and can also serve as aggregation switches for traditional enterprise networks. The X460-G2 series is also an option for DSLAM or CMTS aggregation, or for active Ethernet access.

The X460-G2 can also be used 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.

## Flexible Port Configuration

The X460-G2 offers flexible port configurations. X460-G2 24 port copper models with 10G uplinks can have up to 8 fiber GbE ports (four dedicated ports + four shared ports) and 20 GbE copper ports (PoE-plus or non-PoE). The X460-G2 24 port copper models with 1Gb uplinks can provide up to 12 SFP ports with 20 Gigabit Ethernet ports or eight SFP ports with 24 copper GbE ports.

All models come equipped with either 4 ports of SFP+ 10 GbE or 4 ports of SFP 1GbE resident on the faceplate of each model. Through an optional VIM slot, X460-G2 switches can be equipped with an additional 2 ports of 10 GbE for a total of six 10 Gigabit Ethernet ports on the 10Gb uplink models.

As another option, each unit can be equipped with 2 ports of QSFP+ 40 Gigabit Ethernet for uplinks or stacking.

## High-Performance Stacking

Up to eight X460-G2 switches can be stacked using three different methods of stacking: SummitStack, SummitStack-V, and SummitStack-V160.

### SummitStack — Stacking Using Copper CX4 Connections

The X460-G2 supports SummitStack by using the X460-G2-VIM-2ss module, which offers high-speed 40 Gbps stacking performance and provides compatibility with the X440, X460, X460-G2 and X480 stackable switches running the same version of ExtremeXOS.

### SummitStack-V — Flexible Stacking Over 10GbE

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 40 Gbps stacking connectivity of up to 40 km while reducing the cable complexity of implementing a stacking solution. SummitStack-V is compatible with X440, X440-G2, X450, X450-G2, X460, X460-G2, X480, X670, X670V, X670-G2 and X770 switches running the same version of ExtremeXOS. SummitStack-V enabled 10 GbE ports must be physically direct-connected.

Note: SummitStack-V is NOT supported on the 1GbE (SFP) front panel faceplate ports of non-10Gb X460-G2 models but SummitStack-V is supported on the 10GbE VIM cards (VIM-2x or VIM-2t) when used in the non-10GbE switches.

### SummitStack-V160 — Flexible Stacking Over 40GbE

The X460-G2 also supports high-speed 160 Gbps stacking, ideal for demanding applications where a high volume of traffic traverses through the stacking links, yet bandwidth is not compromised through stacking.

SummitStack-V160 can support passive copper cable (up to 3m), active multi-mode fiber cable (up to 100m), and QSFP+ optical transceivers for 40 GbE up to 10km. With SummitStack-V160, the X460-G2 provides a flexible stacking solution inside the data center or central office to create a virtualized switching infrastructure across rows of racks. SummitStack-V160 is compatible with X460-G2, X480, X670V, X670-G2 and X770 switches running the same version of ExtremeXOS.

Note: The 40Gb Ethernet ports CANNOT be fanned out into four 10Gb ports.

## Intelligent Switching and MPLS/H-VPLS Support

The X460-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 in Carrier Ethernet deployments, the X460-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 using a VPLS tunnel between the regional LAN services typically built by Provider Bridges (IEEE 802.1ad) technology.

## IEEE 802.3af PoE-plus

IEEE 802.3af Power over Ethernet is widely used in campus enterprise edge networks 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 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 using LLDP. The X460-G2 supports IEEE 802.3at PoE-plus and supports standards-compliant PoE devices today and in the future.

## 1588 Precision Time Protocol (PTP)

The X460-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 X460-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.

## 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
- Role Based Policy enables support for policy profiles to secure and provision network resources based upon the role the user or device plays within the network

## Role-based Policy

Utilizing ExtremeControl Policy Management, the role-based policy framework empowers a network administrator to define distinct roles or profiles that represent industry specific operational groups that may exist in an education or a business environment (e.g., administrator, teacher, student, guest). Each defined role is granted individualized access to specific network services and applications and these access privileges remain associated with users as they move across both wired and wireless network access points.

Users can be authenticated via IEEE 802.1X, MAC address, or web authentication, and then assigned a pre-defined operational role. Network operations can be seamlessly tailored to meet business-oriented requirements by providing each role with individualized access to network services and applications, thus aligning network resource utilization with business goals and priorities.

In addition, administrators can easily transition from basic VLAN and complex ACL deployments to the Extreme Networks role based policy framework in a seamless fashion, without the need to make changes to their RADIUS infrastructure.

## Ordering Notes

The X460-G2 base switches do not ship with fan trays or power supplies. The fan tray, power supplies, and any optional VIM cards must be ordered separately. There is only one optional VIM slot on each X460-G2 switch. The optional Timing Module has a separate dedicated slot on the back of the X460-G2 switch. Beginning with EXOS 22.1, all X460-G2 base systems will include an Advanced Edge license -- an upgrade over the Edge License bundled with earlier EXOS releases.

## Specifications

### Performance/Scale

Switch Model	Maximum Active 10/100/1000 Ports	Maximum Active 100/1/2.5GbE Ports	Maximum Active 10GbE Ports	Maximum Active 40GbE Ports	Aggregated Switch Bandwidth	Forwarding Rate (64-byte frames)	Forwarding Rate (84-byte frames*)
X460-G2-24t-10GE4	28	-	6	2	296 Gbps	220.2 Mpps	170.9 Mpps
X460-G2-48t-10GE4	48	-	6	2	336 Gbps	250 Mpps	201.9 Mpps
X460-G2-24x-10GE4	28	-	6	2	296 Gbps	220.2 Mpps	177.9 Mpps
X460-G2-48x-10GE4	48	-	6	2	336 Gbps	250 Mpps	201.9 Mpps
X460-G2-24p-10GE4	28	-	6	2	296 Gbps	220.2 Mpps	177.9 Mpps
X460-G2-48p-10GE4	48	-	6	2	336 Gbps	250 Mpps	201.9 Mpps
X460-G2-24p-24hp-10GE4	48	-	6	2	336 Gbps	250 Mpps	201.9 Mpps
X460-G2-24t-24ht-10GE4	48	-	6	2	336 Gbps	250 Mpps	201.9 Mpps
X460-G2-16mp-32p-10GE4	32	16	6	2	384 Gbps	285.7 Mpps	230.8 Mpps
X460-G2-24t-GE4	32	-	2	2	224 Gbps	166.7 Mpps	134.6 Mpps
X460-G2-48t-GE4	52	-	2	2	264 Gbps	196.4 Mpps	158.7 Mpps
X460-G2-24p-GE4	32	-	2	2	224 Gbps	166.7 Mpps	134.6 Mpps
X460-G2-48p-GE4	52	-	2	2	264 Gbps	196.4 Mpps	158.7 Mpps

\* Minimum frame size for IPv6 is 84 bytes

- Less than 4 microsecond latency (64-byte)
- Layer 2/MAC Addresses: 96K (98,304)
- IPv4 Host Addresses: 62K
- IPv4 LPM Entries: 12K, 16K on X460-G2-16mp-32p-10GE4
- IPv6 Host Addresses: 24K
- IPv6 LPM Entries: 6K, 8K on X460-G2-16mp-32p-10GE4
- 4096 VLAN/VMANs
- 9216 Byte Max Packet Size (Jumbo Frame)
- 128 load sharing trunks, up to 32 members per trunk
- 4,096 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
- All ports Full Duplex - half duplex operation is not supported except for 24 ports on X460-G2-24p-24hp-10GE4 and X460-G2-24t-24ht-10GE4
- Policy Capabilities
  - Rules per Profile: Up to 1464
  - Authenticated Policy Users per Switch: Up to 12,288
  - Authenticated Policy Users per Port: Up to 12,288
- Unique Permit/Deny Rules per switch: 1464
- The following number of rules listed below can be affected by the switch configuration options in EXOS 22.4 or greater
  - MAC Rules: up to 512
  - IPv4 Rules: up to 1280
  - IPv6 Rules: up to 256
  - L2 Rules: up to 184
- Rate Limiting: Per Class of Service

NOTE: Policy and rule limits here reflect support available in EXOS 22.4 or greater

## Specifications (cont.)

### Front-Panel Ports

Switch Hardware	Ports
X460-G2-24t-10GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T (RJ-45) - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-48t-10GE4	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T (RJ-45)</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-24t-24ht-10GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T Full-Duplex (RJ-45)</li> <li>• 24 x 10/100/1000BASE-T Full/Half-Duplex (RJ-45)</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-24x-10GE4	<ul style="list-style-type: none"> <li>• 24 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 8 x 10/100/1000BASE-T (RJ-45) - 4 ports are combo ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-48x-10GE4	<ul style="list-style-type: none"> <li>• 48 x 100/1000BASE-X (SFP) unpopulated ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-24p-10GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T PoE-Plus - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-48p-10GE4	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T PoE-Plus</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-24p-24hp-10GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T Full-Duplex PoE-Plus</li> <li>• 24 x 10/100/1000BASE-T Full/Half-Duplex PoE-Plus</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-24t-GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T (RJ-45) - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>

## Specifications (cont.)

### Front-Panel Ports

Switch Hardware	Ports
X460-G2-24p-GE4	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000BASE-T PoE-Plus - 4 ports are combo ports</li> <li>• 8 x 100/1000BASE-X (SFP) unpopulated ports - 4 ports are combo ports</li> <li>• 4 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-48p-GE4	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000BASE-T PoE-Plus</li> <li>• 4 x 1GBASE-X SFP (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2-16mp-32p-10GE4	<ul style="list-style-type: none"> <li>• 16 x 100Mb/1/2.5GbE PoE-Plus</li> <li>• 32 x 10/100/1000BASE-T PoE-Plus</li> <li>• 4 x 10GBASE-X SFP+ (unpopulated ports)</li> <li>• 1 x Serial (console port RJ-45)</li> <li>• 1 x 10/100/1000BASE-T out-of-band management port</li> <li>• 1 x USB port for external USB flash</li> </ul>
X460-G2 VIM-2x	2 x 10GBASE-X SFP+ (unpopulated ports)
X460-G2 VIM-2t	2 x 10GBASE-T Ports
X460-G2 VIM-2ss	2 x SummitStack (CX4) Ports
X460-G2 VIM-2q	2 x 40GBASE-X QSFP+ (unpopulated ports)
X460-G2 TM-CLK	Clock Module for SyncE and 1588 with 2 mini-BNC connectors for 10MHz and 1PPS signals

NOTE: All X460-G2 switches have a USB 2.0 port that is supported as a port to a storage device with all EXOS versions of 22.1 or higher

NOTE: The multi-rate ports do NOT support SyncE

### Physical

Switch Model	Weight	Physical Dimension
X460-G2-24t-10GE4	12.9 lb (5.85 kg)	
X460-G2-48t-10GE4	13.3 lb (6.03 kg)	
X460-G2-24t-24ht-10GE4	13.3 lb (6.03 kg)	Height: 1 RU / 1.73 inches (4.4 cm)
X460-G2-24x-10GE4	13.1 lb (5.94 kg)	Width: 17.4 inches (44.1 cm)
X460-G2-48x-10GE4	14.1 lb (6.4 kg)	Depth: 16.94 inches (43.03 cm)
X460-G2-24t-GE4	12.9 lb (5.85 kg)	
X460-G2-48t-GE4	13.3 lb (6.03 kg)	
X460-G2-24p-10GE4	14.6 lb (6.62 kg)	
X460-G2-48p-10GE4	15.2 lb (6.9 kg)	Height: 1 RU / 1.73 inches (4.4 cm)
X460-G2-24p-24hp-10GE4	15.2 lb (6.9 kg)	Width: 17.4 inches (44.1 cm)
X460-G2-16mp-32p-10GE4	15.2 lb (6.9 kg)	Depth: 19.2 inches (48.8 cm)
X460-G2-24p-GE4	14.6 lb (6.62 kg)	
X460-G2-48p-GE4	15.2 lb (6.9 kg)	
X460-G2 VIM-2x	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
X460-G2 VIM-2t	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
X460-G2 VIM-2ss	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)

## Specifications (cont.)

### Physical (cont.)

Switch Model	Weight	Physical Dimension
X460-G2 VIM-2q	0.57 lb (0.26 kg)	Height: 1.4 inches (3.55 cm) Width: 3.4 inches (8.6 cm) Depth: 5.5 inches (13.9 cm)
X460-G2 TM-CLK	0.19 lb (0.08 kg)	Height: 1.4 inches (3.55 cm) Width: 0.9 inches (2.29 cm) Depth: 6.3 inches (16.0 cm)
X460-G2 Front-to-Back fan module	1.0 lb (0.46 kg)	Height: 1.59 inches (4.04 cm) Width: 4.8 inches (12.2 cm) Depth: 6.2 inches (15.75 cm)
X460-G2 Back-to-Front fan module	1.0 lb (0.46 kg)	Height: 1.59 inches (4.04 cm) Width: 4.8 inches (12.2 cm) Depth: 6.2 inches (15.75 cm)

NOTE: Switch weights include installed fan module. They do not include installed VIM2 modules or PSUs.

\* Please refer to the Summit Family Switches Hardware Installation Guide for packaged weight and dimensions.

### CPU/Memory

- 64-bit MIPS Processor, 1 GHz clock
- 1GB ECC DDR3 DRAM
- 4GB eMMC Flash
- 5MB packet buffer on X460-G2-16mp-32p-10GE4, 4MB packet buffer on other X460-G2 switches

### LED Indicators

- Per port status LED including power status
- System Status LEDs: management, fan and power
- 7 segment display of stack number

### Power Supply Units (Each Has Front-to-Back and Back-to-Front Models)

	300W AC PSU	300 DC PSU	350W AC PSU	715W AC PSU	1100W AC PSU
Dimensions	Height 27 mm (1.06 inches) Width 78 mm (3.09 inches) Depth 277 mm (10.9 inches)	Height 27 mm (1.06 inches) Width 78 mm (3.09 inches) Depth 277 mm (10.9 inches)	Height 40 mm (1.56 inches) Width 82.5 mm (3.25 inches) Depth 287 mm (11.3 inches)	Height 40 mm (1.56 inches) Width 82.5 mm (3.25 inches) Depth 287 mm (11.3 inches)	Height 40 mm (1.56 inches) Width 82.5 mm (3.25 inches) Depth 287 mm (11.3 inches)
Weight	1.02 kg (2.25 lbs)	0.83 kg (1.83 lbs)	1.08 kg (2.38 lbs)	1.16 kg (2.55 lbs)	1.16 kg (2.55 lbs)
Voltage Input Range	85-264 VAC	-18 to -72 VDC	100-127/200-240VAC	100-127/200-240VAC	100-127/200-240VAC
Line Frequency Range	47 to 63 Hz	N/A	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Power Supply Input Socket	IEC 320 C14	N/A	IEC 320 C14	IEC 320 C16	IEC 320 C16
Power Cord Input Plug	IEC 320 C13	N/A	IEC 320 C13	IEC 320 C15	IEC 320 C15
Operating Temperature	0°C to 50°C normal operation	0°C to 50°C normal operation	0°C to 50°C normal operation	0°C to 50°C normal operation	0°C to 50°C normal operation

## Specifications (cont.)

### PoE Power Budget

Switch Model	1 PSU of 350W	1 PSU of 715W	1 PSU of 1100W	2 PSUs of 350W	2 PSUs of 715W	1 PSU of 715W and 1 PSU of 1100W	2 PSUs of 1100W
X460-G2-24p-10GE4	150W	500W	720W	300W	720W	720W	720W
X460-G2-48p-10GE4	150W	500W	850W	300W	1031W	1350W	1440W
X460-G2-24p-24hp-10GE4	150W	500W	850W	300W	1031W	1350W	1440W
X460-G2-16mp-32p-10GE4	150W	500W	850W	300W	1031W	1350W	1440W
X460-G2-24p-GE4	150W	500W	720W	300W	720W	720W	720W
X460-G2-48p-GE4	150W	500W	850W	300W	1031W	1350W	1440W
X460-G2-24p-10GE4	5 ports @ 30W 9 ports @ 15.4W	16 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	10 ports @ 30W 19 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 30W 24 ports @ 15.4W
X460-G2-16mp-32p-10GE4	5 ports @ 30W 9 ports @ 15.4W	16 ports @ 30W 32 ports @ 15.4W	28 ports @ 30W 48 ports @ 15.4W	10 ports @ 30W 19 ports @ 15.4W	34 ports @ 30W 48 ports @ 15.4W	45 ports @ 30W 48 ports @ 15.4W	48 ports @ 30W 48 ports @ 15.4W
X460-G2-16mp-32p-10GE4	5 ports @ 30W 9 ports @ 15.4W	16 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	10 ports @ 30W 19 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 30W 24 ports @ 15.4W
X460-G2-16mp-32p-10GE4	5 ports @ 30W 9 ports @ 15.4W	16 ports @ 30W 32 ports @ 15.4W	28 ports @ 30W 48 ports @ 15.4W	10 ports @ 30W 19 ports @ 15.4W	34 ports @ 30W 48 ports @ 15.4W	45 ports @ 30W 48 ports @ 15.4W	48 ports @ 30W 30W 48 ports @ 15.4W
X460-G2-24p-GE4	5 ports @ 30W 9 ports @ 15.4W	16 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	10 ports @ 30W 19 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 24 ports @ 15.4W	24 ports @ 30W 30W 24 ports @ 15.4W
X460-G2-48p-GE4	5 ports @ 30W 9 ports @ 15.4W	16 ports @ 30W 32 ports @ 15.4W	28 ports @ 30W 48 ports @ 15.4W	10 ports @ 30W 19 ports @ 15.4W	34 ports @ 30W 48 ports @ 15.4W	45 ports @ 30W 48 ports @ 15.4W	48 ports @ 30W 30W 48 ports @ 15.4W

### Minimum/Maximum Power Consumption and Heat Dissipation

Switch Model	Minimum Heat Dissipation (BTU/HR)	Minimum Power Consumption (Watts)	Maximum Heat Dissipation (BTU/HR)	Maximum Power Consumption (Watts)*
X460-G2-24t-10GE4	229	67	427	125
X460-G2-24p-10GE4	260	76	761 (@720W PoE)	943
X460-G2-48t-10GE4	250	73	427	125
X460-G2-48p-10GE4	287	84	1116 (@1440W PoE)	1767
X460-G2-24t-24ht-10GE4	250	73	427	125
X460-G2-24p-24hp-10GE4	287	84	1116 (@1440W PoE)	1767
X460-G2-16mp-32p-10GE4	287	84	1116 (@1440W PoE)	1767
X460-G2-24x-10GE4	209	61	443	130
X460-G2-48x-10GE4	202	59	485	143
X460-G2-24t-GE4	215	63	427	125
X460-G2-24p-GE4	250	73	761 (@720W PoE)	943
X460-G2-48t-GE4	243	71	427	127
X460-G2-48p-GE4	284	83	1116 (@1440W PoE)	1767

\* For PoE switches, this value includes maximum PoE load through the switch.



## Specifications (cont.)

### Environmental Specifications

- 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

- Temp: 0° C to 50° C (32° F to 122° F)
- Humidity: 10% to 95% relative humidity, non-condensing
- Altitude: 0 to 3,000 meters (9,850 feet)
- Shock (half sine): 30 m/s<sup>2</sup> (3 G), 11 ms, 60 shocks
- Random vibration: 3 to 500 Hz at 1.5 G rms

### Environmental Compliance

- EU RoHS 2011/65/EU
- EU WEEE 2012/19/EU
- China RoHS SJ/T 11363-2006
- Taiwan RoHS CNS 15663(2013.7)

### Packaging and Storage Specifications

- Temp: -40° C to 70° C (-40° F to 158° F)
- Humidity: 10% to 95% relative humidity, non-condensing
- Packaged Shock (half sine): 180 m/s<sup>2</sup> (18 G), 6 ms, 600 shocks
- Packaged Vibration: 5 to 62 Hz at velocity 5 mm/s, 62 to 500 Hz at 0.2 G
- Packaged Random Vibration: 5 to 20 Hz at 1.0 ASD w/-3 dB/oct. from 20 to 200 Hz
- Packaged Drop Height: 14 drops minimum on sides and corners at 42 inches (<15 kg box)

### Regulatory and Safety

- North American ITE
  - UL 60950-1 2nd edition A2:2014, Listed Device (U.S.)
  - CSA 22.2 No. 60950-1 2nd edition 2014 (Canada)
  - Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)
  - CDRH Letter of Approval (US FDA Approval)
- European ITE
  - EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 2nd Ed.
  - EN 60825-1:2007 / IEC 60825-1:2007 Class 1 (Lasers Safety)
  - 2014 / 35/ EU Low Voltage Directive
- International ITE
  - CB Report & Certificate per IEC 60950-1: 2005+A1:2009+A2:2013 + National Differences
  - AS/NZX 60950-1 (Australia /New Zealand)

### EMI/EMC Standards

- North American EMC for ITE
  - FCC CFR 47 part 15 Class A (USA)
  - ICES-003 Class A (Canada)
- European EMC Standards
  - EN 55032:2015 Class A
  - EN 55024:2010
  - EN 61000-3-2: 2014 (Harmonics)
  - EN 61000-3-3: 2013 (Flicker)
  - EN 300 386 v1.6.1 (EMC Telecommunications)
  - 2014/30/EU EMC Directive

## Specifications (cont.)

### Fan and Acoustics

Switch Model	Acoustic Information	
X460-G2-24t-10GE4 X460-G2-24t-GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 49.1 dB(A), 0C to 45C</li> <li>• 54.9 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 6.0 bels, 0C to 45C</li> <li>• 6.6 bels @ 50C</li> </ul>
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
X460-G2-48t-10GE4 X460-G2-48t-GE4 X460-G2-24t-24ht-10GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 48.9 dB(A), 0C to 35C</li> <li>• 59.5 dB(A), 45C</li> <li>• 65.6 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 5.9 bels, 0C to 35C</li> <li>• 7.2 bels, 45C</li> <li>• 7.8 bels, 50C</li> </ul>
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
X460-G2-48p-10GE4 X460-G2-48p-GE4 X460-G2-24p-24hp-10GE4 X460-G2-16mp-32p-10GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 47.6 dB(A), 0C to 45C</li> <li>• 64.5 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 5.9 bels, 0C to 45C</li> <li>• 7.7 bels, 50C</li> </ul>
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
X460-G2-48p-10GE4 X460-G2-48p-GE4 X460-G2-24p-24hp-10GE4 X460-G2-16mp-32p-10GE4	Dual 715W or 1100W AC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 52.2 dB(A), 0C to 45C</li> <li>• 64.3 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 6.9 bels, 0C to 45C</li> <li>• 7.6 bels, 50C</li> </ul>
	Dual 715W or 1100W AC PS with Back to Front (BF) Air Flow	
X460-G2-24p-10GE4 X460-G2-24p-GE4	Dual 715W or 1100W AC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 52.2 dB(A), 0C to 45C</li> <li>• 61.8 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 7.3 bels, 0C to 35C</li> <li>• 8.1 bels, 50C</li> </ul>
	Dual 715W or 1100W AC PS with Back to Front (BF) Air Flow	
X460-G2-24x-10GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 48.8 dB(A), 0C to 45C</li> <li>• 61.9 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 6.0 bels, 0C to 45C</li> <li>• 7.5 bels, 50C</li> </ul>
	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
X460-G2-24x-10GE4	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 48.8 dB(A), 0C to 35C</li> <li>• 58.7 dB(A), 45C</li> <li>• 66.7 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 6.0 bels, 0C to 35C</li> <li>• 6.9 bels, 45C</li> <li>• 7.8 bels, 50C</li> </ul>

## Specifications (cont.)

### Fan and Acoustics

Switch Model	Acoustic Information	
X460-G2-4Bx-10GE4	Dual 300W AC or DC PS with Front to Back (FB) Air Flow	
	Bystander Sound Pressure*	Declared Sound Power (LWAd)**
	<ul style="list-style-type: none"> <li>• 48.9 dB(A), 0C to 45C</li> <li>• 60.5 dB(A) @ 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 6.0 bels, 0C to 45C</li> <li>• 7.4 bels, 50C</li> </ul>
	Dual 300W AC or DC PS with Back to Front (BF) Air Flow	
Bystander Sound Pressure*	Declared Sound Power (LWAd)**	
<ul style="list-style-type: none"> <li>• 48.8 dB(A), 0C to 35C</li> <li>• 57.5 dB(A), 45C</li> <li>• 66.1 dB(A), 50C</li> </ul>	<ul style="list-style-type: none"> <li>• 6.0 bels, 0C to 35C</li> <li>• 6.9 bels, 45C</li> <li>• 7.8 bels, 50C</li> </ul>	

\* Bystander Sound Pressure is presented for comparison to other products measured using Bystander Sound Pressure. \*\*Declared Sound Power is presented in accordance with ISO-7779:2010(E), ISO 9296:2010 per ETSI/EN 300 753:2012-01

## Accessories

### X460-G2 POWER SUPPLIES

All X460-G2 series switches are sold a la carte so power supplies and fans must be ordered separately. If redundancy or higher power Power-over-Ethernet plus capability is required, an additional power supply can be installed in the system. Each power supply has a front-to-back model and an equivalent back-to-front model for air flow control.

- 300W AC PSU
  - 300W AC PSU is compatible with X460-G2-24t/48t/24x/48x switches.
- 300W DC PSU
  - 300W DC PSU is compatible with X460-G2-24t/48t/24x/48x switches.
- 350W PoE AC PSU
  - 350W PoE AC PSU is compatible with all X460-G2 PoE switches and provides 150 watts of PoE-plus power budget per one supply. When two PSUs are installed, the total PoE-plus power budget becomes 300 watts.
- 715W PoE AC PSU
  - 715W PoE AC PSU is compatible with all X460-G2 PoE switches and provides 500 watts of PoE-plus power budget per one supply. When two PSUs are installed, the total PoE-plus power budget becomes 1031 watts.
- 1100W PoE AC PSU
  - 1100W PoE AC PSU is compatible with all X460-G2 PoE switches and provides 850 watts of PoE-plus power budget per one supply. When two PSUs are installed, the total PoE-plus power budget becomes 1440 watts.

- Optional Rear Rail Mounting Kit
  - The Rear Rail Kit (order code 16776) is an optional accessory for certain X460-G2 non-PoE and SFP models. It enables front mounting for non-PoE and SFP X460-G2 models when needed. Please note that "deeper" X460-G2 PoE models already ship with this mounting option included.

## X460-G2 Optional Modules

X460-G2 series switches have two slots, VIM and Timing, to support optional modules that support 10 Gigabit Ethernet, 40 Gigabit Ethernet, stacking and timing modules. The VIM slot supports a two-port SFP+ 10 Gigabit Ethernet module, a two-port 10GBase-T Gigabit Ethernet module, a two-port SummitStack module, or a two-port QSFP+ 40 Gigabit Ethernet module. The Timing slot supports a timing module for SyncE and 1588PTP.

- VIM Modules
  - X460-G2 VIM-2x
  - X460-G2 VIM-2t
  - X460-G2 VIM-2ss
  - X460-G2 VIM-2q
- Timing Module
  - X460-G2 TM-CLK

### X460-G2 VIM-2X

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.

### X460-G2 VIM-2T

2-port 10 Gigabit Ethernet module, provides two 10GBase-T copper ports.

### X460-G2 VIM-2SS

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 X440, Summit X460, and Summit X480.

### X460-G2 VIM-2Q

2-port 40 Gigabit Ethernet module - provides 2 fully functional QSFP+ ports for uplinks or can be used for SummitStack-V160 providing a 160 Gigabit stacking solution.

### X460-G2 TM-CLK

Module required for supporting G.8232 Synchronous Ethernet (SyncE) and ITU 1588 Precision Time Protocol (PTP) - available on all X460-G2.

## Warranty

Limited Lifetime with eAHR-2. For warranty details, visit <http://www.extremenetworks.com/go/warranty>

### Power Supplies, Fan Tray, Timing Modules and VIMS Are Ordered Separately

Ordered Empty



Shipped Empty with blank panels for 1 PSU slot, VIM slot & Timing Module slot



Optional: Timing Module for SyncE and 1588 PTP ordered separately



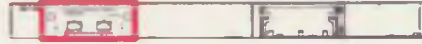
Optional: VIM Cards ordered separately

Required: Fan Tray with Air Flow Direction ordered separately

Optional: Redundant/Additive Power Supply with Air Flow Direction ordered separately

Required: First Power Supply with Air Flow Direction ordered separately

## Transceiver Support Matrix



Part Number	Name	16701, 16702, 16703, 16704, 16705, 16706, 16720, 16756, 16757	16711
<b>10GB Transceivers and Cables</b>		<b>10Gb Front Panel</b>	
		<b>10Gb SFP+ VIM</b>	
10301	10GBASE-SR SFP+	Y	Y
10302	10GBASE-LR SFP+	Y	Y
10309	10GBASE-ER SFP+	Y	Y
10310	ZR SFP+ module	Y	Y
10303	10GBASE-LRM SFP+	N	Y
10304	10GBASE-CR4 1m	Y	Y
10305	10GBASE-CR4 3m	Y	Y
10306	10GBASE-CR4 5m	N	Y
10307	10GBASE-CR4 10m	N	Y



Part Number	Name	16701, 16702, 16703, 16704, 16705, 16706, 16720, 16756, 16757	16711
<b>1GB and 100MB Transceiver</b>		<b>10Gb Front Panel</b>	
		<b>10Gb SFP+ VIM</b>	
10051H, 10071H	1000BASE-SX SFP	Y	Y
10052H, 10072H	1000BASE-LX SFP	Y	Y
10053H	1000BASE-ZX SFP	Y	Y
10056H, 10057H	1000BASE-BX-D SFP and BX-U SFP	Y	Y
10064	1000BASE-LX100 SFP	Y	Y
10063	100FX SFP	N	N
10060	100FX/100LX SFP	N	N
10070H, 10065	10/100/1000BASE-T SFP	1Gb Mode Only	
10067	100BASE-FX SFP	N	N
10066	100BASE-LX10 SFP	N	N
10058, 10059	100BASE-BX-D SFP and BX-U SFP	N	N

## Transceiver Support Matrix (cont.)



Part Number	Name	16705, 16706	16701, 16703, 16716, 16718
1GB and 100MB Transceiver		24/48 Port SFP Switches	
10051H, 10071H	1000BASE-SX SFP	Y	Y
10052H, 10072H	1000BASE-LX SFP	Y	Y
10053H	1000BASE-ZX SFP	Y	Y
10056H, 10057H	1000BASE-BX-D SFP and BX-U SFP	Y	Y
10064	1000BASE-LX100 SFP	Y	Y
10063	100FX SFP	Y	N
10060	100FX/1000LX SFP	Y	N
10070H, 10065	10/100/1000BASE-T SFP	Y	N
10067	100BASE-FX SFP	Y	Y
10066	100BASE-LX10 SFP	Y	Y
10058, 10059	100BASE-BX-D SFP and BX-U SFP	Y	Y



Part Number	Name	16716, 16717, 16718, 16719
1GB and 100MB Transceiver		1Gb Front Panel
10051H, 10071H	1000BASE-SX SFP	Y
10052H, 10072H	1000BASE-LX SFP	Y
10053H	1000BASE-ZX SFP	Y
10056H, 10057H	1000BASE-BX-D SFP and BX-U SFP	Y
10064	1000BASE-LX100 SFP	Y
10063	100FX SFP	Y
10060	100FX/1000LX SFP	Y
10070H, 10065	10/100/1000BASE-T SFP	1Gb Mode Only
10067	100BASE-FX SFP	N
10066	100BASE-LX10 SFP	N
10058, 10059	100BASE-BX-D SFP and BX-U SFP	N

## Ordering Information

Part Number	Name	Description
16701	X460-G2-24t-10GE4-Base-Unit	24 10/100/1000BASE-T, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16702	X460-G2-48t-10GE4-Base-Unit	48 10/100/1000BASE-T, 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16703	X460-G2-24p-10GE4-Base-Unit	24 10/100/1000BASE-T PoE-plus, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16704	X460-G2-48p-10GE4-Base-Unit	48 10/100/1000BASE-T PoE-plus, 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16705	X460-G2-24x-10GE4-Base-Unit	24 100/1000BASE-X unpopulated SFP, 8 10/100/1000BASE-T (4 10/100/1000BASE-T ports shared with SFP ports), 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16706	X460-G2-48x-10GE4-Base-Unit	48 100/1000BASE-X unpopulated SFP, 4 1000/10GBaseX unpopulated SFP+ ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16716	X460-G2-24t-GE4-Base-Unit	24 10/100/1000BASE-T, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1GBase-X unpopulated SFP ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16717	X460-G2-48t-GE4-Base-Unit	48 10/100/1000BASE-T, 4 1GBaseX unpopulated SFP ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16718	X460-G2-24p-GE4-Base-Unit	24 10/100/1000BASE-T PoE-plus, 8 100/1000BASE-X unpopulated SFP (4 SFP ports shared with 10/100/1000BASE-T ports), 4 1GBaseX unpopulated SFP ports, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16719	X460-G2-48p-GE4-Base-Unit	48 10/100/1000BASE-T PoE-plus, 4 1GBaseX, Rear VIM Slot (unpopulated), Rear Timing Slot (unpopulated), 2 unpopulated PSU slots, fan module slot (unpopulated), ExtremeXOS Advanced Edge license with EXOS Release 22.1 or greater (earlier releases include an Edge license only)
16710	X460-G2 VIM-2q	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 40GBase-X ports unpopulated QSFP+
16711	X460-G2 VIM-2x	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 1000/10GBase-X ports unpopulated SFP+
16712	X460-G2 VIM-2t	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 10GBase-T ports
16713	X460-G2 VIM-2ss	Optional Virtual Interface Module for the rear of the X460-G2 providing 2 ports of Extreme's SummitStack
16715	X460-G2 TM-CLK	Optional Timing Module for the rear of the X460-G2 providing the hardware for SyncE and 1588 PTP clocking with 2 ports of mini-BNC connectors for clocking outputs
16720	X460-G2-16mp-32p-10GE4	16 100Mb/1.0/2.5GbE PoE+, 32 10/100/1000BASE-T PoE+, 4 1000/10GBaseX unpop'd SFP+ ports, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 unpopulated PSU slots, fan module slot (unpop'd), EXOS Advanced Edge license with policy
16756	X460-G2-24p-24hp-10GE4-Base	X460-G2 24 10/100/1000BASE-T full duplex PoE+, 24 10/100/1000BASE-T full/half duplex PoE+, 4 1000/10GBaseX unpop'd SFP+ ports, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 unpop'd PSU slots, fan module slot (unpop'd), ExtremeXOS Advanced Edge
16757	X460-G2-24t-24ht-10GE4-Base	X460-G2 24 10/100/1000BASE-T full duplex, 24 10/100/1000BASE-T full/half duplex, 4 1000/10GBaseX unpop'd SFP+ ports, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 unpop'd PSU slots, fan module slot (unpop'd), ExtremeXOS Advanced Edge
16716T	X460-G2-24t-GE4-FB-AC-TAA	TAA 24 10/100/1000BASE-T, 4 1000BASE-X unpopulated SFP, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 300W PS, fan module Front-to-Back, ExtremeXOS Advanced Edge license with Policy

## Ordering Information (cont.)

Part Number	Name	Description
16703T	X460-G2-24p-10GE4-FB-715-TAA	TAA 24 10/100/1000BASE-T POE+, 4 10GBASE-X unpopulated SFP+. Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 715W PS, fan module Front-to-Back, ExtremeXOS Advanced Edge license with Policy
16704T	X460-G2-48p-10GE4-FB-1100-TAA	TAA 48 10/100/1000BASE-T POE+, 4 10GBASE-X unpopulated SFP+. Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 1100W PS, fan module Front-to-Back, ExtremeXOS Advanced Edge license with Policy
16705T	X460-G2-24x-10GE4-FB-AC-TAA	TAA 24 SFP, 4 10GBASE-X unpopulated SFP+. Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 300W PS, fan module Front-to-Back, ExtremeXOS Advanced Edge license with Policy
16706T	X460-G2-48x-10GE4-FB-AC-TAA	TAA 48 SFP, 4 10GBASE-X unpopulated SFP+. Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 300W PS, fan module Front-to-Back, ExtremeXOS Edge license with Policy
16718T	X460-G2-24p-GE4-FB-715-TAA	TAA 24 10/100/1000BASE-T POE+, 4 1000BASE-X unpopulated SFP, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 715W PS, fan module Front-to-Back, ExtremeXOS Advanced Edge license with Policy
16719T	X460-G2-48p-GE4-FB-1100-TAA	TAA 48 10/100/1000BASE-T POE+, 4 1000BASE-X unpopulated SFP, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 power supply slots populated with 1100W PS, fan module Front-to-Back, ExtremeXOS Advanced Edge license with Policy
16710T	X460-G2 VIM-2q-TAA	TAA-compliant Optional Virtual Interface Module for the rear of the X460-G2 providing 2 40GBASE-X ports unpopulated QSFP+
16711T	X460-G2 VIM-2x-TAA	TAA-compliant Optional Virtual Interface Module for the rear of the X460-G2 providing 2 10GBASE-X ports unpopulated SFP+
16712T	X460-G2 VIM-2t-TAA	TAA-compliant Optional Virtual Interface Module for the rear of the X460-G2 providing 2 10GBASE-T ports
16713T	X460-G2 VIM-2ss-TAA	TAA-compliant Optional Virtual Interface Module for the rear of the X460-G2 providing 2 ports of Extreme's SummitStack
16715T	X460-G2 -TM-CLK-TAA	TAA-compliant Optional Timing Module for the rear of the X460-G2 providing the hardware for SyncE and 1588 PTP clocking with 2 ports of mini-BNC connectors for clocking outputs
16720T	X460-G2-16mp-32p-10GE4-FB-TAA	TAA-compliant 16 100Mb/10/2.5GbE PoE+, 32 10/100/1000BASE-T PoE+, 4 1000/10GBaseX unpop'd SFP+ ports, Rear VIM Slot (unpop'd), Rear Timing Slot (unpop'd), 2 1100 watt power supplies, fan module Front-to-Back, EXOS Advanced Edge license w Policy
16756T	X460-G2-24p-24hp-10GE4-FB-TAA	TAA-compliant X460-G2 24 10/100/1000 full duplex PoE+, 24 10/100/1000 full/half duplex PoE+, 4 1000/10G SFP+ ports, Rear VIM Slot, Rear Timing Slot, 2 1100W AC power supplies, fan module, Front-to-Back airflow, ExtremeXOS Advanced Edge w Policy
16757T	X460-G2-24t-24ht-10GE4-FB-TAA	TAA-compliant X460-G2 24 10/100/1000 full duplex, 24 10/100/1000 full/half duplex, 4 1000/10G SFP+ ports, Rear VIM Slot, Rear Timing Slot, two 300W AC power supplies, fan module, Front-to-Back airflow, ExtremeXOS Advanced Edge w Policy
16776	Rear Rail Kit-4 Post Mounting	Adapter kit for adding rear rails to enable four post mounting of X460-G2 17" or deeper switches
16777	Four Place Rack Mount Kit, Spare	Spare Rack-Mount Kit for X460-G2
16421	X460 Advanced Edge Lic	ExtremeXOS Advanced Edge License for X460 series switches. For those upgrading a X460-G2 switch already installed with an Edge License.
16422	X460 Core License from Edge Lic	ExtremeXOS Advanced Core License upgrade from Edge License for X460 series switches. For those upgrading a X460-G2 switch already installed with an Edge License.
16423	X460 Core License from Advanced Edge	ExtremeXOS Advanced Core License upgrade from Advanced Edge License for X460 series switches
16424	X460 MPLS Feature Pack	ExtremeXOS MPLS Feature Pack for X460 series switches
11011	Direct Attach Feature Pack	Direct Attach Feature Pack
16755	X460-G2 Network Timing Feature Pack	X460-G2 Network Timing Feature Pack
16425	X460 OpenFlow Feature Pack	ExtremeXOS SDN - OpenFlow Feature Pack for X460 series switches
16426	X460 Multimedia (AVB) Feature Pack	Multimedia (AVP) Feature Pack for X460-G2
10941	1100W AC PSU FB	1100 Watt AC PoE Power Supply module for X460-G2 and X450-G2 series switches with Front-to-Back airflow



## Ordering Information (cont.)

Part Number	Name	Description
10942	1100W AC PSU BF	1100 Watt AC PoE Power Supply module for X460-G2 series switches with Back-to-Front airflow
10951	715W AC PSU FB	715W AC PoE Power Supply Module for X460-G2 and X450-G2 series switches with Front-to-Back airflow
10952	715W AC PSU BF	715W AC PoE Power Supply Module for X460-G2 series switches with Back-to-Front airflow
10930A	300W AC PSU XT	300W AC Power Supply module for X460 & E4G-400 Series Switches - Extended Temperature Range from -10 to +50 degrees Celsius - Front-to-Back airflow
10953	350W AC PSU FB	350W AC Power Supply Module - front to back airflow
10954	350W AC PSU BF	350W AC Power Supply Module - back to front airflow
10943	300W AC PSU BF	300W AC Power Supply Module - Back-to-Front airflow
10933	300W +24V/-48V DC PSU	300W +24V / -48V DC Power Supply Module for the X460 and the E4G-400 platforms - Front-to-Back airflow
10944	300W DC PSU BF	300W DC Power Supply Module - Back-to-Front airflow
10945	X460-G2 Fan Module FB	Front-to-back airflow fan module for X460-G2 series switches
10946	X460-G2 Fan Module BF	Back-to-front airflow fan module for X460-G2 series switches
10319	QSFP+ SR4 Module <sup>1</sup>	40 Gigabit Ethernet QSFP+ SR4 optical module, MPO connector, 100m link length <sup>1</sup>
10320	QSFP+ 40GBASE-LR4 <sup>1</sup>	40 Gigabit Ethernet QSFP+ LR4 optical module, LC connectors, 10km SMF link length <sup>1</sup>
10326	QSFP+ PSM Optical Module <sup>1</sup>	QSFP+ (4X10GBASE) breakout optical module, MPO connector, 10km SMF link length <sup>1</sup>
10335	40Gb ER4 QSFP+ <sup>1</sup>	40Gb ER4, 40km SMF, QSFP+, LC <sup>1</sup>
10334	40Gb LM4 QSFP+ <sup>1</sup>	40Gb LM4 140m OM3 MMF, 1Km SMF, QSFP+, LC <sup>1</sup>
10301	10GBASE-SR SFP+	10GBASE-SR SFP+, 850nm, LC Connector, transmission length of up to 300m on MMF
10302	10302 10GBASE-LR SFP+	10GBASE-LR SFP+, 1310nm, LC Connector, transmission length of up to 10km on SMF
10309	10GBASE-ER SFP+	10GBASE-ER SFP+, 1550nm, LC connector, transmission length of up to 40km on SMF
10303	SFP+ LRM Module	10 Gigabit Ethernet SFP+ module, 1310nm, legacy MMF 220m link, LC connector
10310	SFP+ ZR Module	10GBASE-ZR SFP+, 1550nm, LC connector, transmission length up to 80km on SMF
10325	Tunable DWDM SFP+	10 Gigabit Ethernet SFP+ Tunable DWDM module, SMF 80km, LC connector 10052H 1000BASE-LX SFP, Hi 1000BASE-LX SFP, MMF 220 & 550 meters, SMF 10km, LC connector, Industrial
10052H	1000BASE-LX SFP, Hi	1000BASE-LX SFP, MMF 220 & 550 meters, SMF 10km, LC connector, Industrial Temp
10056H	1000BASE-BX-D BiDi SFP, Hi	1000BASE-BX-D SFP, 1490-nm TX/1310-nm RX wavelength, Industrial Temp
10057H	1000BASE-BX-U BiDi SFP, Hi	1000BASE-BX-U SFP, 1310-nm TX/1490-nm RX wavelength, Industrial Temp
10060	100FX/1000LX SFP	Dual-speed 100 FX / 1000 LX SFP, LC connector
10063	100BASE-FX SFP (1G elec)	100BASE-FX SFP module, MMF 2km link, LC-connector for Fast Ethernet SFP Port, 1G electrical data rate
10067	100Base-FX SFP	100BASE-FX SFP module, MMF 2km link, LC-connector for Fast Ethernet SFP Port
10070H	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
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
10072H	1000BASE-LX SFP 10 Pack, Hi	1000BASE-LX SFP 10 Pack, Industrial Temp
10051H	1000BASE-SX SFP, Hi	1000BASE-SX SFP, MMF 220 & 550 meters, LC connector, Industrial Temp
10053H	1000BASE-ZX SFP, Hi	1000BASE-ZX SFP, SMF 70km, LC connector, Industrial Temp
10066	100BASE-LX10 SFP	100BASE-LX10 SFP module, SMF 10km link, LC-connector for Fast Ethernet SFP Port
10071H	1000BASE-SX SFP 10 Pack, Hi	1000BASE-SX SFP 10 Pack, Industrial Temp

## Ordering Information (cont.)

Part Number	Name	Description
10311	QSFP+ passive copper cable, 0.5M	QSFP+ passive copper cable, 0.5M
10312	QSFP+ passive copper cable, 1.0M	QSFP+ passive copper cable, 1.0M
10313	QSFP+ Passive Copper Cable, 3.0M	QSFP+ passive copper cable, 3.0M
10323	QSFP+ Passive Copper Cable, 5.0M <sup>2</sup>	QSFP+ passive copper cable, 5.0M <sup>2</sup>
10315	QSFP+ active fiber cable, 10M	QSFP+ active fiber cable, 10M
10316	20m QSFP+ Active Optical Cable	QSFP+ active fiber cable, 20M
10318	QSFP+ active fiber cable, 100M	QSFP+ active fiber cable, 100M
10304	10GBASE-CR SFP+ 1m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 1m
10305	10GBASE-CR SFP+ 3m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 3m
10306	10GBASE-CR SFP+ 5m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 5m
10307	10GBASE-CR SFP+ 10m <sup>1</sup>	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link lengths of 10m
10329	40Gb BiDi MMF QSFP+	40Gb Bidirectional MMF, 100m OM3, QSFP+, LC
10336	3m QSFP+ Active Optical Cable	40 Gigabit Ethernet QSFP+ active optical cable assembly, 3m length
10337	5m QSFP+ Active Optical Cable	40 Gigabit Ethernet QSFP+ active optical cable assembly, 5m length
10338	10Gb SFP+, 10GBASE-T <sup>3</sup>	10Gb SFP+, 10GBASE-T RJ45, 30m with Cat6a3
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	SummitStack Stacking Cable, 5.0M
10GB-F10-SFPP	10 GB, ACTIVE OPTICAL DAC, 10 M	10Gb, Active optical direct attach cable with 2 integrated SFP+ transceivers, 10m
10GB-F20-SFPP	10 GB, ACTIVE OPTICAL DAC, 20 M	10Gb, Active optical direct attach cable with 2 integrated SFP+ transceivers, 20m
10GB-BX10-D	10 GB, SINGLE FIBER SM, -D 10 KM	10Gb, Single Fiber SM, Bidirectional, 1330nm Tx / 1330nm RX, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-U)
10GB-BX10-U	10 GB, SINGLE FIBER SM, -U 10 KM	10Gb, Single Fiber SM, Bidirectional, 1330nm Tx / 1330nm RX, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-D)
10GB-BX40-D	10 GB, SINGLE FIBER SM, -D 40 KM	10Gb, Single Fiber SM, Bidirectional, 1330nm Tx / 1330nm RX, 40Km, Simplex LC SFP+ (must be paired with 10GB-BX40-U)
10GB-BX40-U	10 GB, SINGLE FIBER SM, -U 40 KM	10Gb, Single Fiber SM, Bidirectional, 1330nm Tx / 1330nm RX, 40Km, Simplex LC SFP+ (must be paired with 10GB-BX40-D)

<sup>1</sup> 1x40Gb Mode Only

<sup>2</sup> Data networking, not stacking

<sup>3</sup> Supported configuration is to populate every other SFP+ port in system, with a maximum of half the 10Gb SFP+ ports configured with 10GBASE-T transceivers. An adjacent SFP+ port should remain unused for every 10GBASE-T SFP+ installed

NOTE: Power supplies and fan tray MUST be ordered separately. They are NOT INCLUDED in the base switch model.



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