

# X590

## 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 V300 and 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

- ExtremeCloud IQ - Site Engine 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 airflow options
- Redundancy options for high availability



## High-performance 24-port 10Gb aggregation switch

### Advanced 10Gb Enterprise LAN Aggregation Switch

The X590 Series products are purpose-built 24-port 1Gb/10Gb switches designed for high-performance enterprise and aggregation applications. The X590 can also support a range of uplink interface speeds, including 10Gb, 25Gb, 40Gb, 50Gb, and 100Gb, all in a compact 1RU form factor. This enables the 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.

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## ExtremeXOS Intelligent L2/ L3 Switching

The 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 Extreme's networking products. The high availability ExtremeXOS operating system reduces operational overhead through the use of a single OS across the network.

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## 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 V300 and V400 Series access devices to form a single logical switch. Advanced X590 services can then be seamlessly delivered to the V300 or V400 edge switches. The result is a simplified operational model that reduces costs.

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## High-Performance 400Gb Stacking

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

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## Comprehensive Network Management

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

## External Interfaces

Model	X590 -24x-1q-2c	X590 -24t-1q-2c
Ports	<ul style="list-style-type: none"> <li>• 24 x 1Gb/10Gb SFP+ ports</li> <li>• 1 x 10Gb/40Gb QSFP+ ports</li> <li>• 2 x 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> <p>1 x 10Gb/40Gb QSFP+ and 2 100Gb QSFP28 SummitStack-V400 stacking ports or 2 x 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 (1 QSFP+ port inactive)</p>	<ul style="list-style-type: none"> <li>• 24 x 100Mb/1Gb/10Gb 10GBASE-T ports</li> <li>• 1 x 10Gb/40Gb QSFP+ ports</li> <li>• 2 x 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> <p>1 x 10Gb/40Gb QSFP+ and 2 x 100Gb QSFP28 SummitStack-V400 stacking ports or 2 x 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 (1 QSFP+ port inactive)</p>
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°C - 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), 11ms, 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)
- 40 96 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
- 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

\* 2 VLANs reserved for system use

## Key Features

- Data Center Bridging
  - DCBx Data Center Bridging Exchange Protocol

## Technical Specs

- 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

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

## Power Supply Unit 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 (1Kg)	2.2 lb (1Kg)
Voltage Input Range	100 - 240 VAC +/- 10%	-48 VDC -15% +20%
Line Frequency Range	50Hz - 60Hz +/- 5%	NA
PSU Input Socket	IEC 320 C14	Terminal Block

	<b>770W AC PSU 10960/10961</b>	<b>1100W DC PSU 10962/10963</b>
Power Cord Input Plug	IEC 320 C13	NA
Operating Conditions	0°C - 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 30°C 61.9 dB(A) up to 40°C 79.4 dB(A) @ 45°C (max)	6.8 bels up to 30°C 7.6 bels up to 40°C 9.4 bels @ 45°C (max)
X590 -24t-1q-2c (Back-Front Airflow)	55.5 dB(A) up to 30°C 62.6 dB(A) up to 40°C 79.7 dB(A) @ 45°C (max)	6.8 bels up to 30°C 7.5 bels up to 40°C 9.2 bels @ 45°C (max)

## Other Specifications

### Environmental Specifications

EN/ETSI 300 019-2-1v2.1.2 - 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 20 14 (Canada)  
 Complies with FCC 21 CFR 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, 1kV, 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 100m using Cat6a cabling or better)  
25Gb and 50Gb Ethernet implemented per 25G/50G Ethernet Consortium specification and IEEE 802.3 standard

## Ordering Information

### X590 Systems

Part Number	Product Name	Product Description
16790	X590 -24x-1q-2c Base System	X590 base unit with 24 1Gb/10Gb SFP+ ports, 1 10Gb/40Gb QSFP+ port, 2 10Gb/25Gb/40Gb/50Gb/100Gb capable QSFP28 ports, 2 unpopulated power supply slots, 4 unpopulated fan module slots, ExtremeXOS Advanced Edge License
16791	X590 -24t-1q-2c Base System	X590 base unit with 24 100Mb/1Gb/10GBASE-T ports, 1 10Gb/40Gb QSFP+ port, 2 10Gb/25Gb/40Gb/50Gb/100Gb capable QSFP28 ports, 2 unpopulated power supply 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
10965	LRM/MACsec Adapter	LRM/MACsec Adapter, includes two host cables for host switch connection, and USB cable for optional power connection. Requires MACsec license on host switch.
10966	5-Unit Rack Mount Kit	Optional rack mount bracket for LRM/MACsec Adapter. Holds five units in 1RU

Fan module and power supplies must be ordered separately. Airflow direction of the fan module and power supplies must be the same.

### Firmware Licences

Part Number	Product Name	Product Description
16795	X590 EXOS Core License	X590 ExtremeXOS Core license upgrade from Advanced Edge
17139	X590 MACsec Feature Pack	MACsec Feature Pack for the X590 Series. Enables MACsec when used with LRM/MACsec Adapter (10965).
EXOS-MPLS-FP-X590	X590 MPLS Feature Pack	MPLS Feature Pack for the X590 Series

### 100Gb Optical Transceivers and Direct Attach Cables

Part Number	Product Name	Product Description
10401	100Gb QSFP28 SR4 MMF	100Gb, 100GBASE-SR4, 70m OM3 / 10 0m OM4 MMF, QSFP28, MPO (8 fiber)
10403	100Gb QSFP28 LR4 10km	100Gb, 100GBASE-LR4, 10 km 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)
10406	100Gb QSFP28 SWDM4 100m	100Gb, QSFP28 SWDM 75m OM3 / 10 0m OM4 MMF LC
10434	100Gb, AOC QSFP28 5m	100Gb, QSFP28-QSFP28 Active optical cable, 5m

Part Number	Product Name	Product Description
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 at tach passive copper cable, 1m
10413	100Gb, DAC QSFP28-QSFP28 3m	100Gb, QSFP28-QSFP28 Direct at tach passive copper cable, 3m
10414	100Gb, DAC QSFP28-QSFP28 5m	100Gb, QSFP28-QSFP28 Direct at tach passive copper cable, 5m
10421	100Gb, DAC QSFP28-4xSFP28 1m	100Gb, QSFP28-4 x SFP28 (4x25Gb) Direct at tach passive copper breakout, 1m
10423	100Gb, DAC QSFP28-4xSFP28 3m	100Gb, QSFP28-4 x SFP28 (4x25Gb) Direct at tach passive copper breakout, 3m
10424*	100Gb, DAC QSFP28-4xSFP28 5m	100Gb, QSFP28-4 x SFP28 (4x25Gb) Direct at tach passive copper breakout, 5m
10426	100Gb, DAC QSFP28-2xQSFP28 1m	100Gb, QSFP28-2 x QSFP28 (2x50Gb) Direct at tach passive copper breakout, 1m
10428	100Gb, DAC QSFP28-2xQSFP28 3m	100Gb, QSFP28-2 x QSFP28 (2x50Gb) Direct at tach 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

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

#### 40Gb Optical Transceivers and Direct Attach Cables

Part Number	Product Name	Product Description
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 module	40 Gigabit Ethernet QSFP+ LR4 optical module, LC connectors, 10km SMF link length
10326	QSFP+ PSM Optical Module	40 Gigabit QSFP+ Parallel Single Mode (PSM) LR4, MPO connector, SMF 10 km
10329	40Gb Bidi MMF QSFP+	40 Gb Bidirectional MMF, 100m OM3, QSFP+, duplex LC
10334	40Gb LM4 QSFP+	40Gb LM4, 140m OM3 MMF, 1Km SMF, QSFP+, LC
10335	40Gb ER4 QSFP+	40Gb 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



Part Number	Product Name	Product Description
103131	QSFP+passive copper cable, 3,0M	40 Gigabit Ethernet QSFP+ passive copper cable assembly, 3m length
103231	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 cable, 3m	QSFP+to 4 x SFP+ fan-out copper cable, 3m
10322	QSFP+ 4xSFP+ fan-out cable, 5m	QSFP+to 4 x SFP+ fan-out copper cable, 5m
QSFP-SFPP-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)

## 10Gb Transceivers and Direct Attach Cables

Part Number	Product Name	Product Description
10301	SR SFP+ module	10GBASE-SRSFP+, 850nm, LC Connector, transmission length of up to 300m on MMF
10302	LR SFP+ module	10GBASE-LRSFP+, 1310nm, LC Connector, transmission length of up to 10km on SMF
10309	10GBASE-ER SFP+	10GBASE-ERSFP+, 1550nm, LC Connector, transmission length of up to 40km on SMF
10310	10GBASE-ZR SFP+	10GBASE-ZRSFP+, 1550nm, LC connector, transmission length up to 80km on SMF
10325	10Gb SFP+ DWDM Tunable	10Gb DWDM Tunable, 80 km SMF, LC SFP+
10GB-BX10-D	10Gb, SINGLE FIBER SM, -D 10 KM	10Gb, Single Fiber SM, Bidirectional, Downstream, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-U)
10GB-BX10-U	10Gb, SINGLE FIBER SM, -U 10 KM	10Gb, Single Fiber SM, Bidirectional, Upstream, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-D)
10GB-BX40-D	10Gb, SINGLE FIBER SM, -D 10 KM	10Gb, Single Fiber SM, Bidirectional, Downstream, 40Km, Simplex LC SFP+ (must be paired with 10GB-BX40-U)
10GB-BX40-U	10Gb, SINGLE FIBER SM, -U 10 KM	10Gb, Single Fiber SM, Bidirectional, Upstream, 40Km, Simplex LC SFP+ (must be paired with 10GB-BX40-D)
10GB-F10-SFPP	10Gb, ACTIVE OPTICAL DAC, 10 M	10Gb, Single Fiber SM, Bidirectional, Downstream, 10Km, Simplex LC SFP+ (must be paired with 10GB-BX10-U)
10GB-F20-SFPP	10Gb, ACTIVE OPTICAL DAC, 20 M	10Gb, Active optical direct a tach cable with 2 integrated SFP+ transceivers, 10m
10304	10GBASE-CR SFP+ 1m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link length of 1m
10305	10GBASE-CR SFP+ 3m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link length of 3m
10306	10GBASE-CR SFP+ 5m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link length of 5m
10307	10GBASE-CR SFP+ 10m	10GBASE-CR SFP+ pre-terminated twin-ax copper cable with link length of 10m
10338**	10Gb SFP+ 10GBASE-T	10Gb SFP+, 10GBASSE-T RJ45, 30m with Cat6a

\*\* 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.

## 1Gb Transceivers

Part Number	Product Name	Product Description
10051H	1000BASE-SX SFP, Hi	1000BASE-SXSFP, MMF 220 & 550 meters, LC connector, Industrial Temp
10052H	1000BASE-LX SFP, Hi	1000BASE-LXSFP, MMF 220 & 550 meters, SMF 10km, LC connector, Industrial Temp
10053H	1000BASE-ZX SFP, Hi	1000BASE-ZXSFP, 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, 1490-nm TX/1310-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, 1310-nm TX/1490-nm RX wavelength, 40Km Industrial Temp
MGBIC-BX120-U	1000BASE-BX-U BiDi SFP 120Km	1000BASE-BX-U SFP, single fiber, 1310-nm TX/1490-nm RX wavelength, 120Km Industrial Temp
MGBIC-BX120-D	1000BASE-BX-D BiDi SFP 120Km	1000BASE-BX-D SFP, single fiber, 1310-nm TX/1490-nm RX wavelength, 120Km Industrial Temp
I-MGBIC-LC03	1000BASE-LX MMF SFP	1000BASE-LX SFP MMF, 1310 nm, 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

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

## Warranty

One-year hardware warranty. For warranty details, visit <https://www.extremenetworks.com/support/policies/>.

## Maintenance Services

Extreme's maintenance and support services are provided 100% by in-house engineering experts. We have a rate of over 90% first-person resolution, ensuring efficient operation of your business-essential network.

With 24x7x365 phone support, advanced parts replacement, and on-site support, we augment your staff with expert resources to help you mitigate

critical network issues fast. Visit [Extreme Maintenance Services](#) for more information.

## Transceivers / Optics

For the latest and most up-to-date list of the optics and transceivers supported on this platform, refer to our [Extreme Optics Compatibility Tool](#).

## Power Cords

In support of the Extreme Networks Green initiatives, powercords can be ordered separately, but need to be specified at time of ordering.



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