

Highlights

Family of 100Gb Switches with Advanced Enterprise Capabilities

- Full featured ExtremeXOS® operating system with advanced features supporting switching, routing, SDN, and VXLAN
- Spine and high density leaf applications
- Non-blocking 6.4Tbps switching capacity per system
- ExtremeFabric network fabric

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

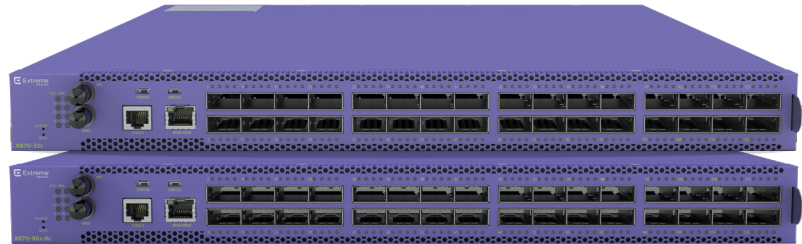
- Wide range of port speeds from 10Gb, 25Gb, 40Gb, 50Gb, and 100Gb
- Hot-swappable modular power and fans
- AC and DC power supply options
- Front to Back and Back to Front air flow options
- Redundancy options for high availability

High-Performance 32 Port 100Gb Ethernet Switch ideal for Spine and Leaf Applications

- 32 QSFP28 100Gb ports
- Hot-swappable modular power and fans
- Up to 128 10Gb or 25Gb Ethernet ports using breakout of QSFP28 ports

High-Density Flexible 10Gb Top of Rack Aggregation Switch

- 96 x 10Gb Ethernet ports (via breakout of ports using QSFP+ 4 x 10Gb Ethernet)
- 8 x QSFP28 100Gb ports
- 10Gb ports upgradeable to full 100Gb capability



ExtremeSwitching™ X870

100Gb Spine Switch and High Density 10Gb Leaf Switch

Product Overview

High Density, Advanced 100Gb Enterprise LAN and Data Center Spine Switching

The ExtremeSwitching X870 product family are high-density, purpose-built 100Gb switches designed for high-performance enterprise and cloud data centers. With 32 QSFP28 ports, the X870 can support a range of interface speeds, including 10Gb, 25Gb, 40Gb, 50Gb and 100Gb, all in a compact 1RU form factor. This enables the ExtremeSwitching X870 to be flexibly deployed in either spine/leaf or high-density top of rack architectures. Low-latency cut-through switching and an advanced feature set make it ideal for high-performance data center applications.

Two Models of the X870 Are Available:

X870-32c – Spine switch with 32 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports.

- Up to 32 100Gb Ethernet ports
- Up to 64 50Gb Ethernet ports
- Up to 128 25Gb Ethernet ports
- Up to 32 40Gb Ethernet ports
- Up to 128 10Gb Ethernet ports

X870-96x-8c – High density 10Gb leaf switch with 96 10Gb ports on 24 QSFP28 ports and 8 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports.

- 10Gb Ethernet connectivity is supported via QSFP+ transceivers and direct attach cables with a 4 x 10Gb Ethernet configuration
- 10Gb QSFP+ Ethernet ports can be enabled to add 25Gb/40Gb/50Gb/100Gb capability with a license for groups of 6 QSFP ports. Up to four licenses can be applied per system.
- 8 ports of 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 in base system

Flexible Deployment Options

The X870 can handle a wide range of high bandwidth applications, including high-density 10Gb top of rack aggregation, emerging 25Gb and 50Gb Ethernet, and 100Gb spine/leaf fabric deployments. The X870 offers unique flexibility for high bandwidth 100Gb spine fabric applications and high density 10G and 25Gb edge leaf aggregation, all with a proven ExtremeXOS operating system. A wide variety of QSFP+ optical transceivers and cables can be used to support 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 X870 family supports sophisticated, intelligent Layer 2 switching, as well as Layer 3 IPv4/IPv6 routing including policy-based switching and routing. The X870 simplifies network operation with the ExtremeXOS modular operating system, which is used among all ExtremeSwitching networking products. The high availability ExtremeXOS operating system provides simplicity and ease of operation through the use of one OS everywhere in the network.

High-Performance 400Gb Stacking

The X870 supports SummitStack-V400 400Gbps high speed stacking using 2 100Gb ports. Up to 8 X590, X690 or X870 systems can be stacked via SummitStack-V400 cables 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 ExtremeControl application provides centralized visibility and granular control of enterprise network resources end to end.

Product Specifications

Scaling and Performance

Model	X870-32c	X870-96x-8c
Ports	32 x QSFP28 10Gb/25Gb/40Gb/50Gb/100Gb ports <ul style="list-style-type: none"> • up to 32 x 100Gb Ethernet channels • up to 64 x 50Gb Ethernet channels • up to 128 x 25Gb Ethernet channels • up to 32 x 40Gb Ethernet channels • up to 128 x 10Gb Ethernet channels 1 x Serial console port RJ-45 1 x 10/100/1000BASE-T out-of-band management port Micro-USB Type B console port Micro-USB Type A storage port	96 10Gb Ethernet ports configured via 4 x 10Gb Ethernet <ul style="list-style-type: none"> • 24 x QSFP ports configured for 4 x 10Gb Ethernet (using QSFP+ 4x10Gb Ethernet breakout) • Optional port speed licenses enable ports to support unrestricted 10/25/40/50/100Gb operation 8 x QSFP28 10Gb/25Gb/40Gb/50Gb/100Gb ports <ul style="list-style-type: none"> • up to 8 x 100Gb Ethernet channels • up to 16 x 50Gb Ethernet channels • up to 32 x 25Gb Ethernet channels • up to 8 x 40Gb Ethernet channels • up to 32 x 10Gb Ethernet channels 1 x Serial console port RJ-45 1 x 10/100/1000BASE-T out-of-band management port Micro-USB Type B console port Micro-USB Type A storage port
Power Supplies	Modular 770W AC power supply (up to two PSUs) Modular 1100W DC power supply (up to two PSUs) Front-Back and Back-Front airflow options	Modular 770W AC power supply (up to two PSUs) Modular 1100W DC power supply (up to two PSUs) Front-Back and Back-Front airflow options
Fan Modules	6 fan modules Front-Back and Back-Front airflow options	6 fan modules Front-Back and Back-Front airflow options
Dimensions	17.3in W / 20.5in D / 1.7in H (44.0cm / 52.0cm / 4.3cm)	17.3in W / 20.5in D / 1.7in H (44.0cm / 52.0cm / 4.3cm)
Weight	18.9 lbs / 8.6 Kg (base system)	18.9 lbs / 8.6 Kg (base system)
Performance	6.4Tbps Switching Capacity / 3.17Bpps Forwarding Rate	6.4Tbps Switching Capacity / 3.17Bpps Forwarding Rate
CPU/Memory	2.4GHz Quad core CPU 8GB DDR3 ECC memory 32GB SSD memory	2.4GHz Quad core CPU 8GB DDR3 ECC memory 32GB SSD memory
Packet Buffers	16MB	16MB
Operating Conditions	0° - 45°C operation 10% to 95% relative humidity, non-condensing 0 - 3000 meters altitude Shock (half sine): 98 m/s ² (10 G), 11 ms, 9 shocks Random vibration: 3 to 500 Hz at 1.5 G rms	

- MAC Addresses: 136K
- IPv4 LPM Entries: 192K max (ALPM)
- IPv4 Hosts:
 - with min LPM IPv4 entries: 72K max
 - with max LPM IPv4 entries: 6K
- IPv6 LPM (/64) Entries: 64K max (ALPM)
- IPv6 Hosts: 24K max
- IP Multicast Groups - 4K
- IP Multicast (s,v,g) entries - 68K max
- Flexible Universal Forwarding Tables (UFT)
- 4092 user-created VLAN/VMANs
- 9216 Byte Max Packet Size (Jumbo Frame)
- 8 queues per port
- up to 12k ingress rules per system (3K rules per group of 8 QSFP ports)
- 1K egress rules
- sFlow
- 400Gb stacking (full duplex) with up to 8 X870 systems
- Data Center Bridging
- DCBx Data Center Bridging Exchange Protocol
- Priority Flow Control (PFC)
- Enhanced Transmission Selection (ETS)
- VxLAN Tunneling End Point (VTEP)
- Configurable Store & Forward and Cut Through forwarding modes
- IEEE 802.3 Media Access Standards
- IEEE 802.3ba / 802.3bm 40GBASE-X and 100GBASE-X
- IEEE 802.3ae 10GBASE-X
- IEEE 802.3bj 100Gb Ethernet with Clause 91 FEC
- 25Gb and 50Gb Ethernet implemented per 25G/50G Ethernet Consortium

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)
X870-32c AC	601 BTU/hr	176 W	1614 BTU/hr	473 W
X870-32c DC	629 BTU/hr	184 W	1598 BTU/hr	469 W
X870-96x-8c AC	601 BTU/hr	176 W	1614 BTU/hr	473 W
X870-96x-8c DC	629 BTU/hr	184 W	1598 BTU/hr	469 W

- 2 PSU
- 3.5W Transceivers for max power measurements

Power Supply Specifications

	770W AC PSU 10960 / 10961	1100W DC PSU 10962 / 10963
Dimensions	2.3in W x 1.6in H x 14.1in D (5.9cm x 4.1cm x 35.9cm)	2.3in W x 1.6in H x 14.1in D (5.9cm x 4.1cm x 35.9cm)
Weight	2.2lb (1Kg)	2.2lb (1Kg)
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
X870-32c (Front-Back Airflow)	54.8 dB(A) up to 25°C 57.5 dB(A) up to 30°C 76.5 dB(A) @ 45°C (max)	7.0 bels up to 25°C 7.2 bels up to 30°C 9.2 bels @ 45°C (max)
X870-32c (Back-Front Airflow)	58.9 dB(A) up to 25°C 62.8 dB(A) up to 30°C 76.4 dB(A) @ 45°C (max)	7.4 bels up to 25°C 7.8 bels up to 30°C 9.1 bels @ 45°C (max)
X870-96x-8c (Front-Back Airflow)	54.8 dB(A) up to 25°C 57.5 dB(A) up to 30°C 76.5 dB(A) @ 45°C (max)	7.0 bels up to 25°C 7.2 bels up to 30°C 9.2 bels @ 45°C (max)
X870-96x-8c (Back-Front Airflow)	58.9 dB(A) up to 25°C 62.8 dB(A) up to 30°C 76.4 dB(A) @ 45°C (max)	7.4 bels up to 25°C 7.8 bels up to 30°C 9.1 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/s² (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

- EN60950-1:2006+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 and 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

Warranty

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

Ordering Information

Part Number	Product Name	Product Description
ExtremeSwitching X870 Systems		
17800	X870-32c Base	X870-32c Base unit, 32 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports, unpopulated, ExtremeXOS Advanced Edge License, 2 unpopulated power supply slots, 6 unpopulated fan module slots
17810	X870-96x-8c Base	X870-96x-8c Base unit, 96 10Gb ports on 24 QSFP28 ports, unpopulated, 8 10Gb/25Gb/40Gb/50Gb/100Gb QSFP28 ports, unpopulated, ExtremeXOS Advanced Edge License, 2 unpopulated power supply slots, 6 unpopulated fan module slots
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 Kit compatible with X870

Notes:

- 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.

Part Number	Product Name	Product Description
Firmware Licenses		
17825	X870 Core License	ExtremeXOS X870 Series Core License
17826	X870 OpenFlow Feature Pack	ExtremeXOS X870 OpenFlow Feature Pack
17828	X870 MPLS Feature Pack	ExtremeXOS X870 MPLS Feature Pack
17830	X870-96x Port Speed License	ExtremeXOS X870-96x-8c Port Speed License, upgrades 6 QSFP 10Gb ports to 10Gb/25Gb/40Gb/50Gb/100Gb support
100Gb Optical Transceivers and Direct Attach Cables		
10401	100Gb QSFP28 SR4 MMF	100Gb, 100GBASE-SR4, 70m OM3 / 100m OM4 MMF, QSFP28, MPO (8 fiber)
10332	MPO to 4xLC OM4 MMF patch cord, 5m	MPO to 4xLC OM4 MMF patch cord, 5m(for use with 10401 QSFP28 SR4 4x25Gb breakout)
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)
10327	MPO to 4xLC Breakout Patch Cord, SM, 10m	MPO to 4xLC Breakout Patch Cord, SM, 10m (for use with 10405 QSFP28 PSM4 transceiver for 4x25Gb breakout)
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

Ordering Information (cont.)

Part Number	Product Name	Product Description
40Gb Optical Transceivers and Direct Attach Cables		
10319	QSFP+ SR4 module	40Gb QSFP+ SR4 optical module, MPO connector (8 fiber), 100m MMF OM3
9380014-5M	MPO to 4xLC OM3 MMF	MPO to 4xLC OM3 MMF patch cord, 5m (for use with 10319 QSFP+ SR4 4x10Gb breakout)
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
10327	MPO to 4xLC Breakout Patch Cord, SM, 10m	MPO to 4xLC Breakout Patch Cord, SM, 10m (for use with 10326 40Gb QSFP+ PSM transceiver for 4x10Gb breakout)
10329	40Gb Bidi MMF QSFP+	40Gb 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
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
10202	QSFP+ - 4xSFP+ fan-out cbl, 1m	QSFP+ to 4 x SFP+ fan-out copper cable, 1m
10203	QSFP+ - 4xSFP+ fan-out cbl, 2m	QSFP+ to 4 x SFP+ fan-out copper cable, 2m
10321	QSFP+ - 4xSFP+ fan-out cbl, 3m	QSFP+ to 4 x SFP+ fan-out copper cable, 3m

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

Power Cords

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



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

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