

# ExtremeSwitching™ 220 Series

Stackable Managed Layer 3 Gigabit Switches for Enterprise

## HIGHLIGHTS

### BUSINESS ALIGNMENT

- 12, 24, or 48 Gigabit Ethernet ports
- 12, 24, or 48 IEEE 802.3at PoE port models
- 2 or 4 10GBase-X SFP+ ports
- Line rate performance on all ports
- Stacking of up to four switches with other 220 Series
- Comprehensive Layer 2 Edge feature set
- Layer 3 RIP routing
- Access control lists for granular security control
- Redundant Power Supply option
- Limited Lifetime Warranty

### FLEXIBLE MANAGEMENT OPTIONS

- ExtremeCloud cloud-based management
- Web browser-based management
- Centralized enterprise management via ExtremeManagement
- Industry-standard command line interface (CLI) with scripting capabilities



## Product Overview

The ExtremeSwitching 220 Series is an economical, fixed-configuration family of Gigabit Ethernet Layer 2/3 switches designed for enterprises, branch offices and small to medium-sized businesses looking for key features in a flexible, yet easy-to-manage solution.

The series consists of six switches including 12-, 24-, and 48-port Gigabit Ethernet switches and 12-, 24-, and 48-port Gigabit PoE+ models. All models provide non-blocking Gigabit per port performance and include either 2 or 4 SFP+ ports for high-speed 10Gbps fiber connectivity. In addition, the 12-port PoE+ and non-PoE+ models can operate in fanless mode, making them ideal for office deployments.

In addition to a rich Layer 2 feature set, the 220 Series offers dynamic IPv4 RIP routing services, stacking of up to 4 switches with single IP management, and redundant power supply option.

The 220 Series also provides multiple management options, including cloud-based management via ExtremeCloud for wired and wireless network oversight through a single pane of glass. The switches can also be set-up via a web browser, or managed by ExtremeManagement for centralized provisioning, monitoring and troubleshooting. And for advanced users, the 220 Series offers an industry-standard CLI along with scripting capabilities.

All ExtremeSwitching 220 Series switches include a Limited Lifetime Warranty, which provides advanced hardware replacement with next business day shipment.

# Technical Specifications

## HARDWARE SUMMARY

| SWITCH MODEL  | PORTS   | PERFORMANCE            | POWER                     | PoE POWER |
|---------------|---|------------------------|---------------------------|-----------|
| 220-12t-10GE2 | <ul style="list-style-type: none"> <li>12 x 10/100/1000BaseT (RJ-45) ports</li> <li>2 x 10GBASE-X (SFP+) unpopulated ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100Base-T out-of-band management port</li> </ul>      | 64 Gbps<br>47.6 Mpps   | Internal                  | N/A       |
| 220-12p-10GE2 | <ul style="list-style-type: none"> <li>12 x 10/100/1000BaseT PoE+ (RJ-45) ports</li> <li>2 x 10GBASE-X (SFP+) unpopulated ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100Base-T out-of-band management port</li> </ul> | 64 Gbps<br>47.6 Mpps   | Internal                  | 150W      |
| 220-24t-10GE2 | <ul style="list-style-type: none"> <li>24 x 10/100/1000BaseT (RJ-45) ports</li> <li>2 x 10GBASE-X (SFP+) unpopulated ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100Base-T out-of-band management port</li> </ul>      | 88 Gbps<br>65.5 Mpps   | Internal,<br>Optional RPS | N/A       |
| 220-24p-10GE2 | <ul style="list-style-type: none"> <li>24 x 10/100/1000BaseT PoE+ (RJ-45) ports</li> <li>2 x 10GBASE-X (SFP+) unpopulated ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100Base-T out-of-band management port</li> </ul> | 88 Gbps<br>65.5 Mpps   | Internal,<br>Optional RPS | 185W      |
| 220-48t-10GE4 | <ul style="list-style-type: none"> <li>48 x 10/100/1000BaseT (RJ-45) ports</li> <li>4 x 10GBASE-X (SFP+) unpopulated ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100Base-T out-of-band management port</li> </ul>      | 176 Gbps<br>130.9 Mpps | Internal,<br>Optional RPS | N/A       |
| 220-48p-10GE4 | <ul style="list-style-type: none"> <li>48 x 10/100/1000BaseT PoE+ (RJ-45) ports</li> <li>4 x 10GBASE-X (SFP+) unpopulated ports</li> <li>1 x Serial console port RJ-45</li> <li>1 x 10/100Base-T out-of-band management port</li> </ul> | 176 Gbps<br>130.9 Mpps | Internal,<br>Optional RPS | 380W      |

Note: RPS option is for redundant power only. It does not increase available PoE power budget.

## PHYSICAL

| SWITCH MODEL  | WEIGHT             | DIMENSIONS   |
|---------------|--------------------|--|
| 220-12t-10GE2 | 1.51 kg (3.33 lbs) | 4.4 cm (H) x 20.9 cm (W) x 25.5 cm (D)<br>1.73" (H) x 8.23" (W) x 10.0" (D)  |
| 220-12p-10GE2 | 1.88 kg (4.14 lbs) |  |
| 220-24t-10GE2 | 3.21 kg (7.08 lbs) | 4.4 cm (H) x 44.1 cm (W) x 25.4 cm (D)<br>1.73" (H) x 17.38" (W) x 10.0" (D) |
| 220-24p-10GE2 | 3.69 kg (8.14 lbs) |  |
| 220-48t-10GE4 | 3.82 kg (8.42 lbs) |  |
| 220-48p-10GE4 | 4.50 kg (9.92 lbs) |  |

## REDUNDANT POWER SUPPLY SPECIFICATIONS

| RPS MODEL                            | WEIGHT          | DIMENSIONS   | REDUNDANT POWER |
|--------------------------------------|-----------------|--|-----------------|
| RPS 150-XT (for non-PoE models only) | 3.22lb (1.75kg) | Height: 1.77" (4.50cm)<br>Width: 6.07" (15.42cm)<br>Depth: 13.0" (33.02cm) | 150W            |
| RPS-500P (for PoE+ models only)      | 8.06lb (3.66kg) | Height: 1.73" (4.4cm)<br>Width: 17.4" (44.1cm)<br>Depth: 7.9" (20.1cm)     | 500W            |

# Features/Standards and Protocols

## PLATFORM SPECIFICATIONS

- Maximum MAC Addresses: 16,000
- VLANs: Up to 255
- MSTP instances: 4
- Link Access Groups (LAGs): 6
- ACLs: 50 with 10 rules per port
- Traffic Classes (Queues): 8

## SWITCHING

### Core Switching Features

- IEEE 802.1ab—Link Layer Discovery Protocol (LLDP)
- IEEE 802.1d—Spanning tree compatibility
- IEEE 802.1p—Ethernet priority with user provisioning and mapping
- IEEE 802.1s—Multiple spanning tree compatibility
- IEEE 802.1q—Virtual LANs with port-based VLANs
- IEEE 802.1x—Port-based authentication with Guest VLAN support
- IEEE 802.1w—Rapid spanning tree compatibility
- IEEE 802.3—10BASE-T
- IEEE 802.3u—100BASE-T
- IEEE 802.3ab—1000BASE-T
- IEEE 802.1ak—Virtual Bridged Local Area Networks
- IEEE 802.3ac—VLAN tagging
- IEEE 802.3ad—Link aggregation
- IEEE 802.3x —Flow control
- GARP—Generic Attribute Registration Protocol
- GMRP—Dynamic L2 multicast registration
- GVRP—Dynamic VLAN registration
- RFC 4541—Considerations for Internet Group Management Protocol (IGMP) Snooping Switches
- ANSI/TIA-1057—LLDP-Media Endpoint Discovery (MED)
- RFC 5171—Unidirectional Link Detection (UDLD) Protocol

### Advanced Layer 2 Features

- Authentication, Authorization, and Accounting (AAA)
- Broadcast Storm Recovery
- Broadcast/Multicast/Unknown unicast storm recovery
- DHCP Snooping
- IGMP Snooping Querier
- Multicast VLAN Registration (MVR)
- Independent VLAN Learning (IVL) support
- Industry Standard Discovery Protocol (CDP interoperability)
- IPv6 Classification APIs
- Jumbo Ethernet frame support
- Port MAC locking
- Port mirroring
- Protected ports
- Static MAC filtering
- TACACS+
- Voice VLANs
- Unauthenticated VLAN
- Internal 802.1X Authentication Server
- 802.1x Monitor Mode
- 802.1x Client Scaling
- CLI Filtering
- Switchport mode configuration
- Link Dependency
- IPv6 RA Guard (Stateless)
- Multi-Switch Link Access Group (MLAG)

## ROUTING

- Dynamic IPv4 Routing (RIP)
- IPv6 Static Routing with up to 64 routes
- ECMP
- ICMP Throttling
- Loopback interfaces
- Multinetting
- ARP and Proxy ARP
- VLAN and port-based routing
- UDP Relay/IP Helper
- Policy-Based Routing
- Bidirectional Forwarding Detection
- RFC 1027 Using ARP to implement transparent subnet gateways (Proxy ARP)
- RFC 1058 Routing Information Protocol (RIP)
- RFC 1256 ICMP router discovery messages
- RFC 1812 Requirements for IP version 4 routers
- RFC 2082 RIP-2 MD5 authentication
- RFC 2131 DHCP relay
- RFC 2453 RIP v2
- RFC 3021 Using 31-Bit Prefixes on IPv4 Point-to-Point Links

## ADVANCED STACKING

- Single IP management of entire stack
- Cross-stack functionality such as LAGs, MSTP instances, VLANs, etc., spanning stack member units
- Centralized control plane
- Configuration and firmware synchronization
- Automatic stack initialization and unit addition/removal and master failover
- Four member units supported in a stack
- Serviceability features for monitoring and diagnosing unit status

## QUALITY OF SERVICE

### Access Control Lists (ACLs)

- Permit/deny actions for inbound IP and Layer-2 traffic classification based on:
  - Time-Based ACL
  - Source/Destination IP address
  - TCP/UDP Source/Destination port
  - IP Protocol Type
  - Type of Service (ToS) or differentiated services (DSCP) field
  - Source/Destination MAC address
  - EtherType
  - IEEE 802.1p user priority (outer and/ or inner VLAN tag)
  - VLAN ID (outer and/or inner VLAN tag)
- RFC 1858—Security Considerations for IP Fragment Filtering

### Optional ACL Rule Attributes

- Assign flow to a specific Class of Service (CoS) queue
- Redirect matching traffic flows

### Differentiated Services (DiffServ)

- Classify traffic based on same criteria as ACLs and optionally:
  - Mark the IP DSCP or Precedence header fields
  - Police the flow to a specific rate with two-color aware support
- RFC 2474—Definition of the differentiated services field (DS field) in the IPv4 and IPv6 headers
- RFC 2475—An architecture for differentiated services
- RFC 2597—Assured forwarding Per-Hop Behavior (PHB) group
- RFC 2697—Single-rate policing
- RFC 3246—An expedited forwarding PHB
- RFC 3260—New terminology and clarifications for DiffServ

### Class of Service (CoS) Queue Mapping Configuration

- Auto-VoIP—Automatic CoS settings for VoIP
- IP DSCP-to-queue mapping
- Configurable interface trust mode (IEEE 802.1p, DSCP, or untrusted)
- Interface egress shaping rate
- Strict priority versus weighted scheduling per queue

## SYSTEM FACILITIES

- Event and error logging facility
- Run-time and configuration download capability
- PING utility
- Xmodem
- FTP Transfers via IPv4/IPv6
- Malicious Code Detection
- RFC 768—UDP
- RFC 783—TFTP
- RFC 791—IP
- RFC 792—ICMP
- RFC 793—TCP
- RFC 826—ARP
- RFC 894—Transmission of IP datagrams over Ethernet networks
- RFC 896—Congestion control in IP/TCP networks
- RFC 951—BOOTP
- RFC 1034—Domain names - concepts and facilities
- RFC 1035—Domain names - implementation and specification
- RFC 1321—Message digest algorithm
- RFC 1534—Interoperability between BOOTP and DHCP
- RFC 2021—Remote network monitoring management information base version 2
- RFC 2030—Simple Network Time Protocol (SNTP)
- RFC 2131—DHCP relay
- RFC 2132—DHCP options and BOOTP vendor extensions
- RFC 2819—Remote Network Monitoring Management Information Base
- RFC 2865—RADIUS client
- RFC 2866—RADIUS accounting
- RFC 2868—RADIUS attributes for tunnel protocol support
- RFC 2869—RADIUS Extensions
- RFC 3579—RADIUS support for EAP
- RFC 3580—IEEE 802.1X RADIUS usage guidelines
- RFC 3164—The BSD syslog protocol
- RFC 3580—802.1X RADIUS Usage Guidelines
- RFC 5176—Dynamic Authorization Server (Disconnect-Request processing only)
- RFC 5424—The Syslog Protocol

## MANAGEMENT

- Industry-standard CLI
- IPv6 management
- Password management
- E-mailing of alerts
- Auto-install support for firmware images and configuration files
- SNMP v1, v2, and v3
- SSH 1.5 and 2.0
  - RFC 4252: SSH authentication protocol
  - RFC 4253: SSH transport layer protocol
  - RFC 4254: SSH connection protocol
  - RFC 4251: SSH protocol architecture
  - RFC 4716: SECSH public key file format
  - RFC 4419: Diffie-Hellman group exchange for the SSH transport layer protocol
- SSL 3.0 and TLS 1.0
  - RFC 2246: The TLS protocol, version 1.0
  - RFC 2818: HTTP over TLS
  - RFC 3268: AES cipher suites for transport layer security
- Secure Copy (SCP)
- Telnet
- Web
- Java Plug-in 1.6.0\_01 and Java Script 1.3
- RESTCONF
- RFC 6020—A Data Modeling Language for NETCONF
- RFC 6415—Web Host Metadata
- RFC 6536—NETCONF Access Control Model
- RFC 7223—YANG Data Model for Interface Management
- RFC 7277—YANG Data Model for IP Management
- RFC 7317—YANG Data Model for System Management
- draft-ietf-netmod-syslog-model-03
- draft-ietf-netconf-yang-library-00
- draft-ietf-httpauth-basicauth-update-03

## Advanced Management Features

- Industry Standard CLI with the following features:
  - Scripting capability
  - Command completion
  - Context sensitive help
- Optional user password encryption
- Multi-session Telnet server
- Remote Switch Port Analyzer (RSPAN)
- ExtremeCloud™ cloud-based management
- Extreme Management Center support
- Zero-touch provisioning with ExtremeCloud and ExtremeManagement

## SNMP MIBS

- IEEE 802.1x MIB (IEEE 802.1-PAEMIB 2004 Revision)
- IEEE 802.3ad MIB (IEEE 802.3-ADMIB)
- IANAifType-MIB
- RFC 1213—MIB II
- RFC 1493—Bridge MIB
- RFC 1612—DNS resolver MIB extensions
- RFC 1643—Definitions of managed objects for the Ethernet-like interface types
- RFC 2233—Interfaces group MIB using SMI v2
- RFC 2613—SMON MIB
- RFC 2618—RADIUS authentication client MIB
- RFC 2620—RADIUS accounting MIB
- RFC 2674—VLAN MIB
- RFC 2737—Entity MIB version 2
- RFC 2819—RMON groups 1, 2, 3, and 9
- RFC 2863—IF-MIB
- RFC 2925—Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- RFC 3273—RMON MIB for high capacity networks
- RFC 3291—Textual conventions for Internet network addresses
- RFC 3434—RMON MIB extensions for high capacity alarms
- RFC 4022—TCP-MIB
- RFC 4113—UDP-MIB
- RFC 2096—IP forwarding table MIB
- RFC 3636—MAU MIB
- RFC 3289—Management information base for the DiffServ architecture (read only)

## OPERATING CONDITIONS

- Operating Temp: °OC to 40°C (32° F to 122° F)
- Operating Relative Humidity: 10% to 95% (non-condensing)
- Operating Altitude: 0-3000 meters (9,850 feet)\*

*\*Note: 220-12p-GE2 is limited to 0-2000 meters (6,857 feet)*

## PACKAGING AND STORAGE

- Storage 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)

## 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

## 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)

## Ordering Information

| PRODUCT NAME                   | PRODUCT DESCRIPTION   |
|--------------------------------|---|
| EXTREMESWITCHING 220 SYSTEMS   |   |
| 220-12t-10GE2                  | 220-Series 12 port 10/100/1000BASE-T, 2 10GbE unpopulated SFP+ ports, 1 Fixed AC PSU, L2 Switching  |
| 220-12p-10GE2                  | 220-Series 12 port 10/100/1000BASE-T PoE+, 2 10GbE unpopulated SFP+ ports, 1 Fixed AC PSU, L2 Switching   |
| 220-24t-10GE2                  | 220-Series 24 port 10/100/1000BASE-T, 2 10GbE unpopulated SFP+ ports, 1 Fixed AC PSU, L2 Switching  |
| 220-24p-10GE2                  | 220-Series 24 port 10/100/1000BASE-T PoE+, 2 10GbE unpopulated SFP+ ports, 1 Fixed AC PSU, L2 Switching   |
| 220-48t-10GE4                  | 220-Series 48 port 10/100/1000BASE-T, 4 10GbE unpopulated SFP+ ports, 1 Fixed AC PSU, L2 Switching  |
| 220-48p-10GE4                  | 220-Series 48 port 10/100/1000BASE-T PoE+, 4 10GbE unpopulated SFP+ ports, 1 Fixed AC PSU, L2 Switching   |
| RPS-150XT                      | External Redundant Power Supply Unit 150 watts with cable for non-PoE 220 Series models - extended temperature range from 0 to +60 degrees Celsius. Power cord ordered separately |
| RPS-500p                       | External Redundant Power Supply unit 500 Watts with cable for PoE+ models. Power cord ordered separately  |
| 200 Series Dual Rack Mount Kit | Hardware kit for mounting two 12-port 200-Series switches (210 and/or 220) side-by-side in a 19-inch rack   |
| 200 Series Wall Mount Kit      | Hardware kit for wall mounting one 12-port 200-Series switch (either 210 or 220)  |

## Warranty

As a customer-centric company, Extreme Networks is committed to providing quality products and solutions. In the event that one of our products fails due to a defect, we have developed a comprehensive warranty that protects you and provides a simple way to get your product repaired or media replaced as soon as possible.

All 200-Series switches come with the Extreme Networks lifetime warranty against manufacturing defects. For full warranty details, visit: <http://www.extremenetworks.com/support/policies>

## Service and Support

Extreme Networks provides comprehensive service offerings that range from Professional Services to design, deploy and optimize customer networks, customized technical training, to service and support tailored to individual customer needs. Please contact your Extreme Networks account executive for more information about Extreme Networks Service and Support.



<http://www.extremenetworks.com/contact> / Phone +1-408-579-2800

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