



EdgeSwitch™ 16 XG

10G 16-Port Managed Aggregation Switch

Model: ES-16-XG

Non-Blocking Throughput Switching

Maximum Performance and Low Latency

10G Ethernet SFP+ and RJ45 Ports





Advanced Switching Technology for the Masses

Build and expand your network with Ubiquiti Networks® EdgeSwitch™ XG, part of the EdgeMAX® line of products. The EdgeSwitch XG is a fully managed, 10G fiber switch that enhances network capacity and provides high-bandwidth services to growing networks.

The EdgeSwitch XG offers an extensive suite of advanced Layer-2 switching features and protocols, and also provides Layer-3 routing capability.

Switching Performance

The EdgeSwitch XG offers the forwarding capacity to simultaneously process traffic on all ports at line rate without any packet loss.

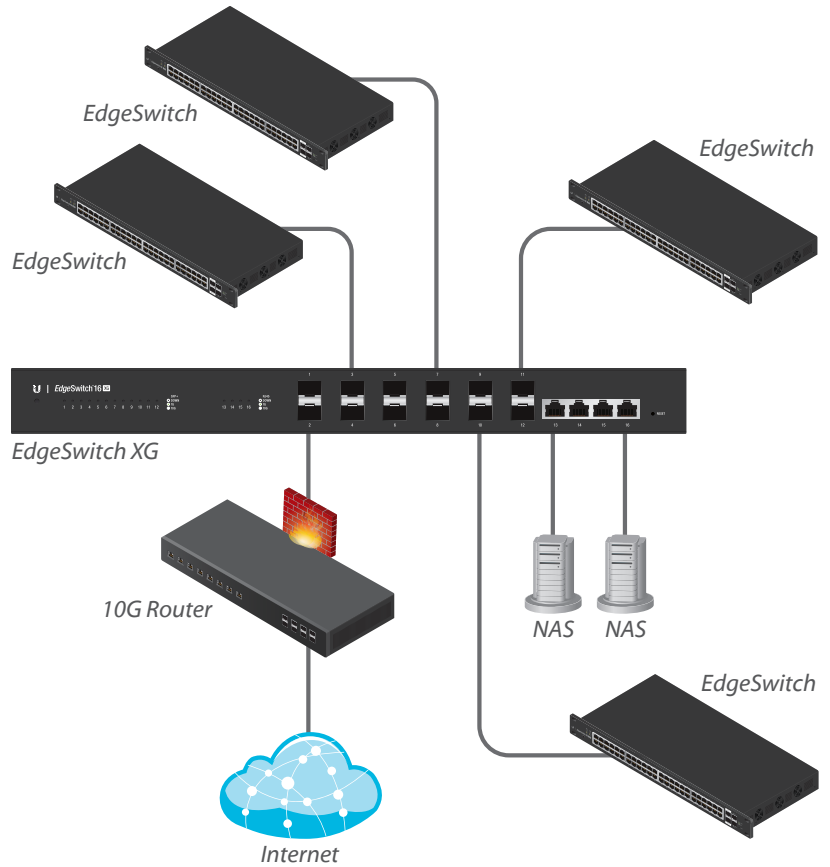
For its total, non-blocking throughput, the EdgeSwitch XG supports up to 160 Gbps.

10G High-Capacity Links

The EdgeSwitch XG offers maximum performance and low latency as an aggregation switch.

For fiber connectivity, it features 12 SFP+ ports. For copper connectivity, the EdgeSwitch XG offers four RJ45 ports that support 10GBASE-T, the standard for 10 Gbps connections using Cat6 (or higher) cabling and RJ45 connectors.

Deployment Example



The EdgeSwitch XG connects to the following:

- Multiple EdgeSwitches and a 10G router via SFP+ ports
- NAS (Network-Attached Storage) devices via 10G RJ45 ports



Comprehensive User Interface

Designed for convenient management, the EdgeSwitch Configuration Interface allows administrators to configure and monitor switch features in a graphical user interface.

For advanced users, an industry-standard command-line interface (CLI) is available through the serial console port, telnet, and SSH.

```

Last login: Tue May 13 15:52:28 on tty00
root@edge16:~# telnet 10.242.116.1
Trying 10.242.116.1...
Connected to 10.242.116.1.
Escape character is '^]'.

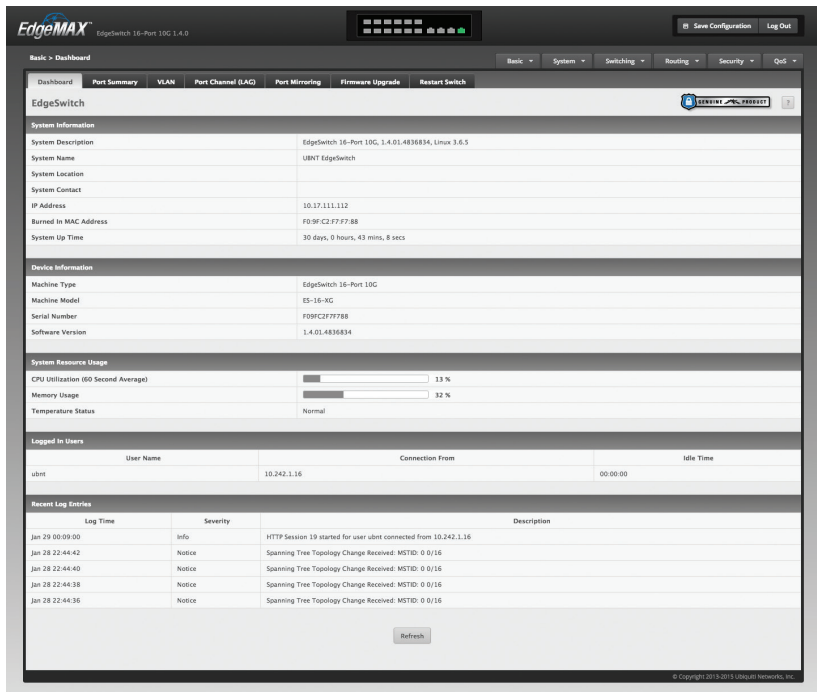
telnet>
telnet> user ubnt
Enter user name, press RETURN.
telnet>
telnet> enable
Enter user name, press RETURN.
telnet>
telnet> show
System Information
-----
System Description: EdgeSwitch 16-Port 10G, Linux 3.6.5
System Name: UBNT EdgeSwitch
System Location:
System Contact:
IP Address: 10.17.111.112
Burned In MAC Address: F09FC27F7788
System Up Time: 30 days, 0 hours, 43 mins, 8 secs

Device Information
-----
Machine Type: EdgeSwitch 16-Port 10G
Machine Model: ES-16-XG
Serial Number: F09FC27F7788
Software Version: 1.4.01.4836834

System Resource Usage
-----
CPU Utilization (60 Second Average): 13 %
Memory Usage: 32 %
Temperature Status: Normal

Logged In Users
-----
User Name      Connection From      Idle Time
-----
ubnt           10.242.116          00:00:00

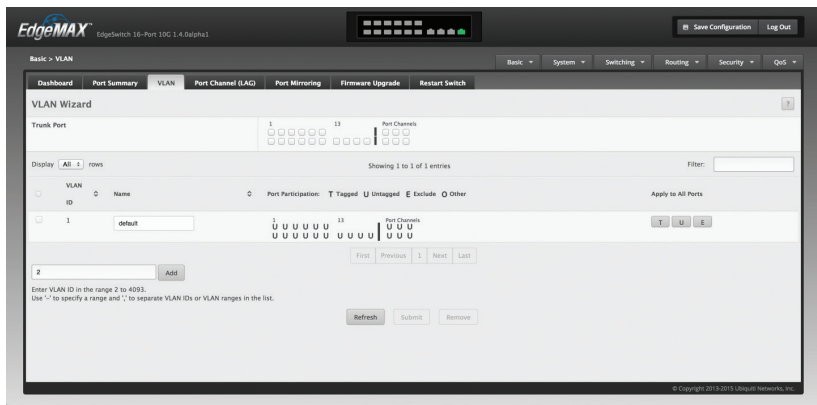
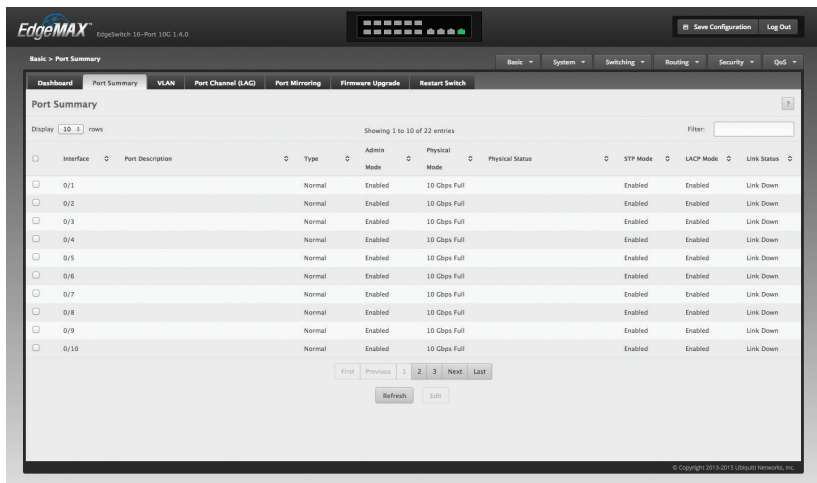
Recent Log Entries
-----
Log Time      Severity      Description
-----
Jan 29 00:09:00      Info      HTTP Session 19 started for user ubnt connected from 10.242.116
Jan 28 22:44:42      Notice     Spawning Tree Topology Change Received: MSTID: 0/0/16
Jan 28 22:44:40      Notice     Spawning Tree Topology Change Received: MSTID: 0/0/16
Jan 28 22:44:38      Notice     Spawning Tree Topology Change Received: MSTID: 0/0/16
Jan 28 22:44:36      Notice     Spawning Tree Topology Change Received: MSTID: 0/0/16
    
```



Powerful Functionality

The EdgeSwitch XG uses a sophisticated operating system that provides basic switching features and a variety of advanced features including:

- MSTP/RSTP/STP
- VLAN, Private VLAN, Voice VLAN
- Link Aggregation
- DHCP Snooping, IGMP Snooping
- TACACS+, RADIUS, 802.1X, MAC Filtering, ACL
- DiffServ, CoS
- Static Routing
- DHCP Server Functionality



Models

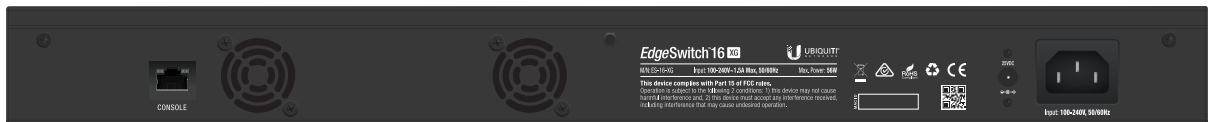
EdgeSwitch 16 XG

Model: ES-16-XG

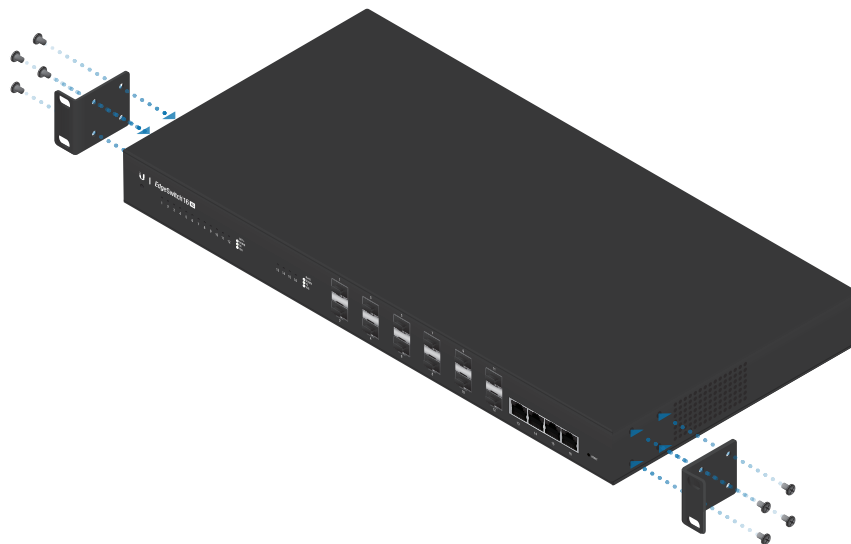
- (12) SFP+ Ports
- (4) 10G RJ45 Ports
- (1) RJ45 Serial Console Port
- Non-Blocking Throughput: 160 Gbps
- Switching Capacity: 320 Gbps
- Forwarding Rate: 238.10 Mpps
- Rack Mountable with Rack-Mount Brackets (Included)
- DC Input Option (Redundant or Stand-Alone)



Front Panel



Back Panel



Attaching Rack-Mount Brackets to the EdgeSwitch XG

EdgeSwitch™ 16 XG

Hardware Specifications

ES-16-XG		
Dimensions	443 x 221 x 43 mm (17.44 x 8.70 x 1.69")	
Weight	Rack-Mount Brackets Included	Rack-Mount Brackets Excluded
	2.71 kg (5.97 lb)	2.62 kg (5.78 lb)
Enclosure Characteristics	SGCC Steel	
Total Non-Blocking Throughput	160 Gbps	
Switching Capacity	320 Gbps	
Forwarding Rate	238.10 Mpps	
Max. DC Power Consumption	36W (Excludes SFP/SFP+ Modules)	
Power Method	AC	DC
	100-240VAC/50-60 Hz, Universal Input	DC 56W, 25 to 16V, with 2.5 mm DC Power Inline Connector
Supported Voltage Range	100 to 240VAC	25 to 16VDC
Power Supply	AC/DC, Internal, 56W DC	
LEDs Per Data Port	Speed/Link/Activity	
Networking Interfaces	(12) 1/10 Gbps SFP+ Ethernet Ports (4) 1/10 Gbps RJ45 Ethernet Ports	
Management Interface	(1) RJ45 Serial Port, Ethernet In/Out Band	
Certifications	CE, FCC, IC	
Rack Mount	Yes, 1U High	
ESD/EMP Protection	Air: ± 24 kV, Contact: ± 24 kV	
Operating Temperature	-5 to 40° C (23 to 104° F)	
Operating Humidity	5 to 95% Noncondensing	
Shock and Vibration	ETSI300-019-1.4 Standard	

Software Specifications

Software Information	
Core Switching Features	<ul style="list-style-type: none"> • ANSI/TIA-1057: LLDP-Media Endpoint Discovery (MED) • IEEE 802.1AB: Link Layer Discovery Protocol (LLDP) • IEEE 802.1D: Spanning Tree Compatibility • IEEE 802.1S: Multiple Spanning Tree Compatibility • IEEE 802.1W: Rapid Spanning Tree Compatibility • IEEE 802.1Q: Virtual LANs with Port-Based VLANs • IEEE 802.1p: Ethernet Priority with User Provisioning and Mapping • IEEE 802.1X: Port-Based Authentication with Guest VLAN Support • IEEE 802.3ab: 1000BASE-T • IEEE 802.3an-2006: 10GBASE-T • IEEE 802.1ak: Virtual Bridged Local Area Networks - Amendment 07: Multiple Registration Protocol • IEEE 802.3ac: VLAN Tagging • IEEE 802.3ad: Link Aggregation • IEEE 802.3x: Flow Control • IEEE 802.1D-2004: Generic Attribute Registration Protocol: Clause 12 (GARP) • IEEE 802.1D-2004: Dynamic L2 multicast registration: Clause 10 (GMRP) • IEEE 802.1Q-2003: Dynamic VLAN registration: Clause 11.2 (GVRP) • RFC 4541: Considerations for Internet Group Management Protocol (IGMP) Snooping Switches • RFC 5171: Unidirectional Link Detection (UDLD) Protocol
Advanced Layer 2 Features	<ul style="list-style-type: none"> • Broadcast Storm Recovery • Broadcast/Multicast/Unknown Unicast Storm Recovery • DHCP Snooping • IGMP Snooping Querier • Independent VLAN Learning (IVL) Support • Jumbo Ethernet Frame Support • Port MAC Locking • Port Mirroring • Protected Ports • Static MAC Filtering • TACACS+ • Voice VLANs • Unauthenticated VLAN • Internal 802.1X Authentication Server

Software Information

Platform Specifications	<ul style="list-style-type: none"> • DHCP Server <ul style="list-style-type: none"> • Maximum Number of Pools: 128 • Maximum Number of Leases (Total): 2048 • Routing <ul style="list-style-type: none"> • Number of Routes: 16 • Number of Routing Interfaces: 15 • VLANs: 255 • MAC Addresses: 16,384 • MSTP Instances: 4 • LAGs: 6 • ACLs: 100 with 10 Rules per Port • Traffic Classes (Queues): 8
System Facilities	<ul style="list-style-type: none"> • Event and Error Logging Facility • Run-Time and Configuration Download Capability • PING Utility • FTP/TFTP Transfers via IPv4/IPv6 • Malicious Code Detection • BootP and DHCP • RFC 2021: Remote Network Monitoring Management Information Base Version 2 • RFC 2030: Simple Network Time Protocol (SNTP) • 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: BSD Syslog Protocol
Management	<ul style="list-style-type: none"> • Web UI • Industry-Standard CLI • IPv6 Management • Password Management • Autoinstall Support for Firmware Images and Configuration Files • SNMP v1, v2, and v3 • SSH 1.5 and 2.0 • SSL 3.0 and TLS 1.0 • Secure Copy (SCP) • Telnet (Multi-Session Support)
Layer 3 Routing	<ul style="list-style-type: none"> • Static Routing

Software Information

QoS	<ul style="list-style-type: none"> • Access Control Lists (ACLs), Permit/Deny Actions for Inbound IP and Layer 2 Traffic Classification Based on: <ul style="list-style-type: none"> • 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 • VLAN ID • RFC 1858: Security Considerations for IP Fragment Filtering • Optional ACL Rule Attributes <ul style="list-style-type: none"> • Assign Flow to a Specific Class of Service (CoS) Queue • Redirect Matching Traffic Flows • Differentiated Services (DiffServ) <ul style="list-style-type: none"> • Classify Traffic Based on Same Criteria as ACLs • Mark the IP DSCP or Precedence Header Fields, Optional • 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 3246: An Expedited Forwarding PHB • RFC 3260: New Terminology and Clarifications for DiffServ • Class of Service (CoS) Queue Mapping Configuration <ul style="list-style-type: none"> • AutoVoIP: 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
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