

## ES4626F/ES4650F

### Managed 24/48 port Gigabit Stackable L3 Ethernet Switch with 4 combo SFP slots



#### Product Overview

The Edge-Core ES4600 series is a stackable Gigabit Ethernet routing switch with a choice of 24 or 48 Gigabit 10/100/1000BASE-T ports, 4 combo Gigabit Ethernet SFP slots and 2 optional 10 Gigabit Ethernet slots and 2 stacking ports on the rear panel. The ES4600 series is ideal for service provider edge aggregation, Enterprise wiring closets, data center aggregation and network core deployment. It provides high performance, resilient stacking, wire speed L2 switching and L3 routing, comprehensive QoS and advanced security to deliver the scalability and resiliency to increase your company's productivity while reducing operation cost.

#### Key Features and Benefits

##### Resilient Stacking up to 8 units

The Edge-core ES4600 series currently includes 2 different models ES4626F and ES4650F with dual optional 10 Gigabit Ethernet uplinks. The two models provide fully non-blocking performance to fulfill the most network demands for voice and video streaming. Optional 10GBASE-XFP10 transceivers can support up to 40km for fiber uplinks.

The Edge-core ES4600 series provides two stacking ports for hardware stacking up to 320Gbps throughput. Any combination of ES4600 series units can be stacked up to 8 units high or to a maximum of 400 ports. The stack acts as a single switching unit that is managed by a master switch, elected from one of the member switches. The master switch automatically creates and updates all the switching and optional routing tables. A working stack can add new members or delete old ones without service interruption.

##### High Availability

With IEEE 802.1w Rapid Spanning Tree Protocol, the Edge-Core ES4600 series provides a loop free network and redundant links to the core network with rapid convergence less than 2 second. IEEE 802.1s Multiple Spanning Tree Protocol allows a spanning-tree instance per VLAN, for Layer 2 load sharing on redundant links.

The Edge-Core 4600 series supports IEEE 802.3ad Link Aggregation Control Protocol (LACP). It increases bandwidth by automatically aggregating several physical links together as a logical trunk and offers load balancing and fault tolerance for uplink connections.

Adding Optional Redundant Power Supply ensures that the Edge-Core ES4600 series delivers the stable and redundant power support for today's high-availability, mission-critical environments.

##### Comprehensive QoS

The Edge-Core ES4600 series offers advance QoS for marking, classification, and scheduling to deliver best-in-class performance for data, voice, and video traffic at wire speed. 8 egress queues per port enable differentiated management of up to 8 traffic types across the stack. Traffic is prioritized according to 802.1p, DSCP, IP precedence and TCP/UDP port number to provide optimal performance to real-time applications. Weight Round Robin (WRR) and strict priority ensure differential prioritization of packet flows and avoid congestion of ingress and egress queues.

With bidirectional rate-limiting, per port or traffic class, the Edge-Core ES4600 series preserves network bandwidth and allows full control of network resources.

##### Enhanced Security

The Edge Core ES4600 series provides enhanced security features for connectivity and access control, including ACLs, authentication and port-level security with IEEE 802.1X. Access Control Lists (ACLs) can be used to restrict access to sensitive network resources by denying packets based on L2/L3/L4 headers. SSH and RADIUS authentication protect data communication and ensure data privacy. IEEE 802.1X port-based access control ensures dynamic, port-based security and user authentication for network access.

IP source guard prevents a malicious user from spoofing or taking over another user's IP address by creating a binding table between client's IP and MAC address, port, and VLAN.

##### Simplified Management

For IP multicast traffic, the Edge-Core enables IGMP snooping to provide fast client joins and leaves of multicast streams. It prevents flooding of IP multicast traffic, and limits bandwidth intensive video traffic to only the subscribers.

The Edge-Core ES4600 series supports IPv6 management functions in SNMP/HTTP/Telnet/TFTP/ICMP, SSH, RADIUS/TACACS+ authentication and IPv6 QoS remapping when connecting to the switch or stack.

The Edge-Core ES4600 series can be managed through By industry standard Command Line Interface (CLI) which provides a common industry look and feel to reduce training and operating costs. It also provides easy-of use Web GUI interface through a standard web browser.

With four groups of RMON, the Edge-Core ES4600 series can easily backup and restore Firmware and configuration files via TFTP.

##### Advanced IPv6 and IPv4 Routing

The Edge-Core ES4600 series supports hardware based IPv6 and IPv4 routing hardware for maximum performance. It provides seamless migration path from IPv4 to IPv6 for future network upgrades and investment protection.

Advanced routing protocols such as RIP and OSPF provide dynamic routing by exchanging routing information with other Layer 3 switches or routers. Multicast routing is supported under independent multicast protocol, including PIM-DM\*, and PIM-SM\*. DVMRP\* is also supported to interconnect two multicast-enabled networks across non-multicast networks. VRRP prevents your system from failing by dynamically backing up multiple L3 switches for routing.

# ES4626F/ES4650F Product Specifications



## Features

### Physical Ports

20 or 44 RJ-45 10/100/1000Base-T ports  
4 Combo G (RJ-45/SFP) ports  
2 stacking ports on the rear panel  
2 optional I/O Slots for 10G uplink  
1 RJ-45 console port  
1 Redundant Power Supply Connector

### Performance

Switching Capacity: 88Gbps/136Gbps  
Forwarding Rate: 65.5Mpps/101.2Mpps  
MAC Address Table Size: 16K  
Packet Buffer Size: 2MB/4MB

### L2 Features

Auto-negotiation for port speed and duplex mode  
Flow Control: IEEE 802.3x & Back-Pressure  
Spanning Tree Protocol:

- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

VLANs:

- Support 4K IEEE 802.11Q VLANs, port-based VLANs, GVRP
- Private VLAN

Link Aggregation:

- Static Trunk, IEEE 802.3ad Link Aggregation Control Protocol
- Trunk groups: 8
- Trunk links: 2~8 for Gigabit Ethernet port
- Trunk links: 2~4 for 10 Gigabit Ethernet port

IGMP Snooping: IGMP v1 , v2 and v3\* snooping and IGMP queries

### L3 Features

2K IP Address entries  
512 static routes  
ARP  
Multi-netting, Super-netting (CIDR)  
RIPv1, RIPv2  
OSPF  
DVMRP\*, PIM-DM\* , PIM-SM\*  
VRRP  
IPv6 hardware IP routing, future firmware upgrade  
Policy based routing  
DHCP/BootP relay, DHCP server

### QoS Features

Priority Queues: 8 hardware queues per port  
Traffic classification based on IEEE 802.1p CoS, IP Precedence, DSCP, TCP/UDP port number, Access Control List, Marking  
DiffServ  
Supports WRR and Strict Priority  
Port Rate Limiting

### Security

Port Security  
IP Source Guard\*  
Supports IEEE 802.1X port-based and MAC based access control  
IP filtering configuration for management interface (SNMP, Telnet, Web)  
RADIUS authentication  
Access Control List  
SSH v2  
HTTPS/SSL

### Management

Switch Management:

- CLI via console port or Telnet
- WEB management
- SNMP v1, v2c, v3
- IGMP snooping (v1/v2)

Firmware & Configuration:

- Dual firmware images
- Firmware upgrade via TFTP/FTP/Xmodem
- Multiple configuration files
- Configuration file upload/download via TFTP/FTP server

Supports RMON (groups 1, 2, 3 and 9)  
Supports BOOTP, DHCP for IP address assignment  
DHCP Snooping\*  
DHCP option 82\*  
Supports SNTp  
Supports Event/Error log/ System log  
IPv6:  
SNMP/HTTP/Telnet/SSH/ICMP/RADIUS/SSH/SMTP/ACL/Dual Stack/Neighbor discover/ DSCP remapping CoS/System log/DNS resolver/TFTP/Remote Ping

### SNMP Standards

RFC 1907 SNMPv2-MIB (MIB-II)  
RFC 2011 IP-MIB (MIB-II)  
RFC 2012 TCP-MIB (MIB-II)  
RFC 2013 UDP-MIB (MIB-II)  
IEEE 802.1X IEEE8021-PAE-MIB  
RFC 1493 Bridge MIB  
RFC 2863 IF-MIB  
RFC 2819 RMON MIB  
RFC 2618 RADIUS MIB  
RFC 2665 Etherlike MIB  
RFC 2737 Entity MIB  
RFC 2674 P-bridge, Q-bridge  
V-Bridge MIB  
RFC 3036 MAU MIB  
RFC 1612 DNS Resolver MIB  
RFC 3411 SNMP FrameWork  
RFC 3412 SNMP MPD MIB  
RFC 3413 SNMP Target MIB, SNMP Notify MIB  
RFC 3415 SNMP View-Based ACM MIB  
SNMP Trap Supported:

- RFC 1215, 1907, 2863, 1493, 1757, 2819

Private MIB

### Mechanical

Dimensions (H x W x D): 4.4 x 44 x 41.5 cm (1RU)  
LED Indicators: Port, Uplink, System, Diagnostic  
AC Power Input: 100 ~ 240VAC, 50 ~ 60Hz  
Weight:

- ES4626F: 3.72 kg (8.44 lbs)
- ES4650F: 4.34 kg (9.59 lbs)

### Safety

CSA/NRTL (UL60950, CSA 22.2.No 60950-00)  
TUV/GS (EN60950)  
CB

### Electromagnetic Compatibility

CE Mark(EN50081-1: EN55022 Class A, EN50082-1:IEC 1000-4-2/3/4/6),  
EN60555-2 Class A, EN60555-3  
FCC Class A  
VCCI Class A

\* Future Release

# ES4626F/ES4650F Product Specifications



## Features

Environmental Specifications	Reliability
<p>Temperature:</p> <ul style="list-style-type: none"><li>IEC 68-2-14</li><li>0°C to 50°C (Standard Operating)</li><li>-40°C to 70°C (Non-Operating)</li></ul> <p>Humidity: 5% to 95% (Non-condensing)</p> <p>Vibration: IEC 68-2-36, IEC 68-2-6</p> <p>Shock: IEC 68-2-29</p> <p>Drop: IEC 68-2-32</p>	<p>ES4626F</p> <ul style="list-style-type: none"><li>MTBF 250C 122,388 hours</li><li>MTBF 550C 35,535 hours</li></ul> <p>ES4650F</p> <ul style="list-style-type: none"><li>MTBF 250C 132,087 hours</li><li>MTBF 550C 45,739 hours</li></ul>
Electrical	Warranty
<p>Power Consumption (Max.):</p> <p><b>ES4626F</b></p> <ul style="list-style-type: none"><li>49.6 Watts (without expansion XFP modules)</li><li>63.96 Watts (with two expansion XFP modules)</li></ul> <p><b>ES4650F</b></p> <ul style="list-style-type: none"><li>98.16 Watts (without expansion XFP modules)</li><li>104.16 Watts (with two expansion XFP modules)</li></ul> <p>Power characteristics:</p> <ul style="list-style-type: none"><li>Voltage: 100-240V AC auto-ranging</li><li>Frequency: 47-63Hz</li></ul> <p>Current:</p> <p><b>ES4626F</b></p> <ul style="list-style-type: none"><li>0.58 A @ 110 VAC (without expansion XFP modules)</li><li>0.74 A @ 110 VAC (with two expansion XFP modules)</li><li>0.312 A @ 240 VAC (without expansion XFP modules)</li><li>0.375 A @ 240 VAC (with two expansion XFP modules)</li></ul> <p><b>ES4650F</b></p> <ul style="list-style-type: none"><li>0.995 A @ 110 VAC (without expansion XFP modules)</li><li>1.21 A @ 110 VAC (with two expansion XFP modules)</li><li>0.54 A @ 240 VAC (without expansion XFP modules)</li><li>0.605 A @ 240 VAC (with two expansion XFP modules)</li></ul>	Limited lifetime warranty
Standards & Compliance	
<p>IEEE 802.1D (STP)</p> <p>IEEE 802.1p (Cos)</p> <p>IEEE 802.1Q (VLANs)</p> <p>IEEE 802.1w Rapid Reconfiguration Spanning Tree</p> <p>IEEE 802.2 (LLC)</p> <p>IEEE 802.3 10Base-T</p> <p>IEEE 802.3u 100BASE-TX and 100BASE-FX</p> <p>IEEE 802.3x flow control support</p> <p>IEEE 802.3z (1000Base-SX/LX)</p> <p>IEEE 802.3ab (1000Base-TX)</p> <p>IEEE 802.3ac (VLAN tag)</p> <p>IEEE 802.3ad (Link Aggregation)</p> <p>IEEE 802.1Q (VLANs)</p>	

## Ordering Information

Optional Accessories	Product Description
<p>RPS600WA</p> <p>EM4625-STKCABLE-S</p> <p>EM4625-STKCABLE-L</p> <p>EM4626H-XG-XFP</p> <p>ET4201-SX</p> <p>ET4201-LX</p> <p>ET4201-LHX</p> <p>ET4201-ZX</p> <p>ET5302-SR</p> <p>ES5302-LR</p> <p>ET5302-ER</p>	<p>4 DC output redundant power supply connectors (Supports max. power output 150W/12V per port)</p> <p>1 port 10GBase-LR module with XFP connector</p>