



- 16 K MAC address table
- Policy-based QoS optimizes multi-service quality
- IGMP snooping v1, v2, v3, MVR
- Multilayer (L2/L3/L4) ACL suite for security protection
- High redundancy and resilient architecture with RSTP and port trunking
- IPv6 management support
- IEEE 802.3at PoE Plus standard (ES3500-24HP)
- Enhanced energy efficiency with PoE consumption mode (ES3500-24HP)

## ES3500 Series 8/24-port FE L2 Switch with GbE Uplink

## Business-class Layer 2 Fast Ethernet Switch with Access Control List (ACL)

The ZyXEL ES3500 Series Fast Ethernet layer 2 switches are specifically designed for small and medium-sized businesses to deliver valuable Ethernet services to customers and employees. With Gigabit SFP uplinks and robust access control functions, businesses can easily extend network topologies and fulfill different customer needs. The complete ES3500 Series also supports IPv6 for trouble-free future network expansions.

The ES3500 Series consists of three layer 2 switches with Gigabit uplinks: the ES3500-24, ES3500-24HP and ES3500-8PD. The ES3500-24 has 24 Fast Ethernet ports; the ES3500-24HP features 24 IEEE 802.3at PoE Plus ports; while the ES3500-8PD is an 8-port Fast Ethernet switch with a special powered device (PD) design, enabling it to be powered via an external power adapter or a PoE connection.

### Benefits

#### Advanced access control features for user data protection

Avoiding subscribers from affecting each other on a shared network or device is a major concern for SMB networks. The ZyXEL ES3500 Series offers a complete set of security features to protect user data while administrating network traffic. It features port security, 802.1X authentication and RADIUS accounting to prevent unauthorized access and provide powerful access control for converged networks.

The ES3500 Series features a multilayer (L2/L3/L4) ACL suite of sophisticated policy-based control mechanisms, which can be used to help SMBs prevent abnormal or illegal access. Policies can be defined via a GUI or CLI to deny packets based on source and destination MAC addresses, IP addresses or TCP/UDP ports.

#### Dual-speed SFP uplinks for reliable connections in distributed deployments

The ES3500 Series is an ideal solution for SMBs that need to establish a converged network across long distances or multiple floors. It supports dual-speed (100/1000 Mbps) SFP uplinks, providing more options in establishing fast and reliable connections in distributed and long distance deployments. Supporting Digital Diagnostics Monitoring Interface (DDMI), the ES3500 Series allows administrators to easily detect packet loss from transceivers and aging cables to avoid unstable network service, lower maintenance overhead and boost business productivity.

### Powered device (PD) design for easy deployment (ES3500-8PD)

The ES3500-8PD features a special powered device design, making it easy to install in places where power outlets are not available. Users have the option of powering the switch with either the external power adapter or via a Power over Ethernet (PoE) connection, with the PoE input prioritized when both are available. The ES3500-8PD also comes in a fanless design that ensures silent operation in small or quiet office environments.

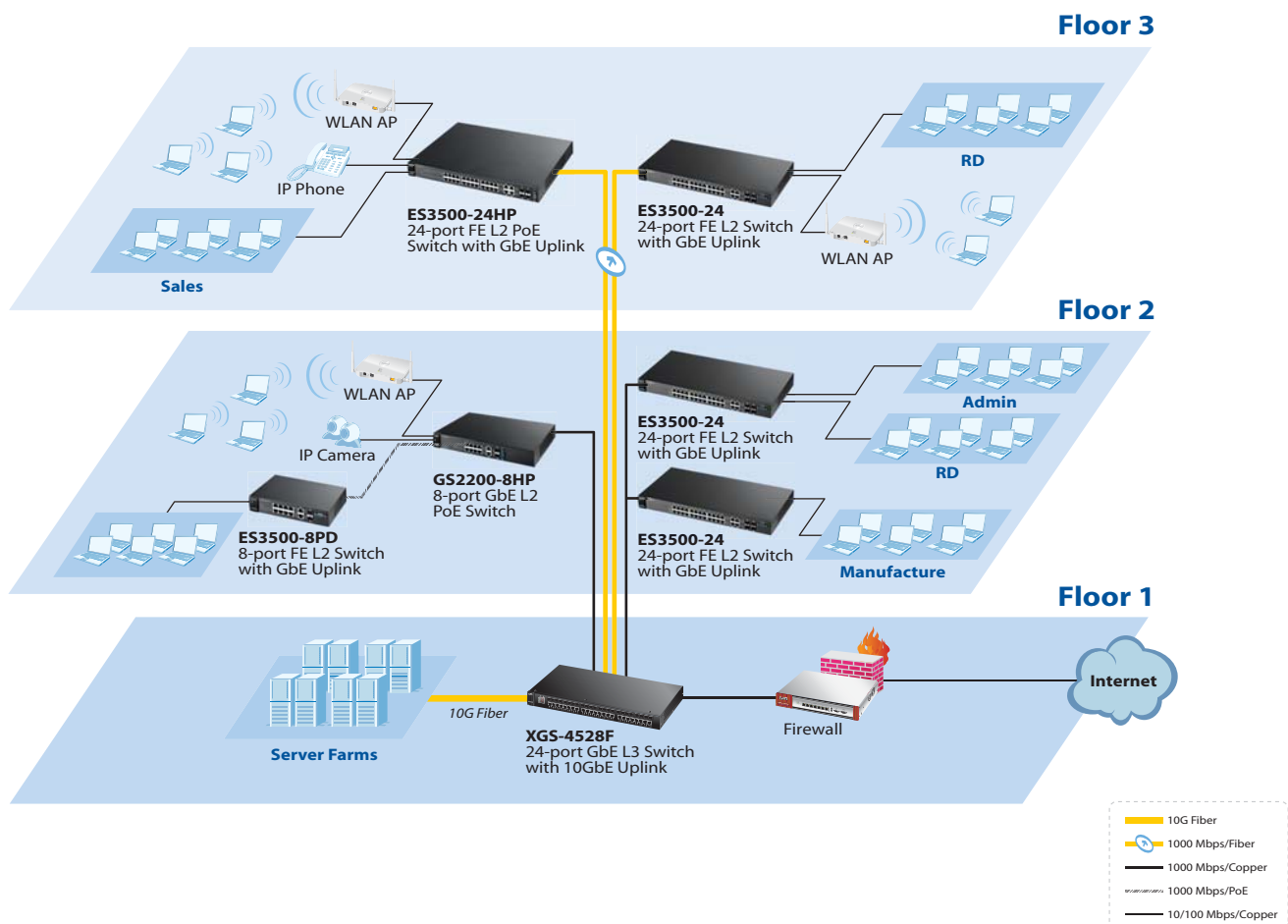
### High power PoE with intelligent PoE consumption mode (ES3500-24HP)

The ES3500-24HP supports the IEEE 802.3at PoE Plus standard to ease the installation of powered devices in challenging spaces such as ceilings or walls. The power supply of up to 30 watts per port allows the ES3500-24HP to power PoE-enabled WLAN APs, VoIP phones and IP surveillance cameras through CAT-5 cables of less than 100 meters (300 feet) in length. The ES3500-24HP also features the intelligent PoE consumption mode, which automatically detects the amount of power each powered device needs and supplies power accordingly for more efficient use of power resources and better ROI for businesses.

### Rich IPv6 features for future-proof network expansions

Designed to protect business investment, the ES3500 Series features a complete set of IPv6 host management functions to guarantee smooth IPv4-to-IPv6 migration. This feature set benefits high-density Fast Ethernet deployments, making the ES3500 Series perfectly suitable for both core and edge networks.

## Application Diagram



## Specifications

Model	ES3500-24	ES3500-24HP	ES3500-8PD	
Product Name	24-port FE L2 Switch with GbE Uplink	24-port FE L2 PoE Switch with GbE Uplink	8-port FE L2 Switch with GbE Uplink	
				
Port Density				
10/100BASE-TX	24	-	8	
10/100BASE-TX PoE	-	24	-	
Dual-personality GbE	4	4	2	
Performance				
Switching capacity (Gbps)	12.8	12.8	5.6	
Forwarding rate (Mpps)	9.6	9.6	4.17	
Packet buffer (bytes)	320 K	320 K	320 K	
MAC address	16 K	16 K	16 K	
Power				
Input	100 - 240 V AC, 50/60 Hz	100 - 240 V AC, 50/60 Hz	PoE input (port 9) 100 - 240 V AC, 50/60 Hz	
Maximum power consumption (watt)	14	236	9.5	
Total PoE power budget (watt)	-	180	-	
Physical Specifications				
Item	Dimensions (WxDxH)(mm/in.)	440 x 200 x 44.5/17.32 x 7.87 x 1.75	440 x 330 x 44/17.32 x 12.99 x 1.73	215.5 x 123 x 42/8.48 x 4.84 x 1.65
	Weight (kg/lb.)	2.6/5.73	4.3/9.48	1.04/2.29
Environmental Specifications				
Operating temperature	0°C to 50°C/32°F to 122°F	0°C to 50°C/32°F to 122°F	0°C to 50°C/32°F to 122°F	
Storage temperature	-40°C to 70°C/-40°F to 158°F	-40°C to 70°C/-40°F to 158°F	-40°C to 70°C/-40°F to 158°F	
Operating humidity	10% to 95% (non-condensing)	10% to 95% (non-condensing)	10% to 95% (non-condensing)	
MTBF (hrs)	133798	773887.2	485196	
Heat dissipation (BTU/hr)	48	804.8	32.4	

## Features

### Standard Compliance

- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-Tx Ethernet
- IEEE 802.3ab 1000BASE-T Ethernet
- IEEE 802.3z 1000BASE-X
- IEEE 802.3x flow control
- IEEE 802.1d spanning tree protocol
- IEEE 802.1w rapid spanning tree protocol
- IEEE 802.1s multiple spanning tree protocol
- IEEE 802.1p class of service, priority protocols
- IEEE 802.1Q VLAN tagging
- IEEE 802.1X port authentication
- IEEE 802.3ad LACP aggregation
- IEEE 802.3az Energy Efficient Ethernet (EEE)
- IEEE 802.3at (ES3500-24HP)
- IEEE 802.3af (ES3500-24HP/8PD)

### Traffic Management and QoS

- Broadcast storm control
- IEEE 802.1p with 8 hardware priority queues per port for different types of traffic
- IEEE 802.1Q tag-based and port-based VLAN
- Weighted Fair Queuing (WFQ)/WRR/SPQ scheduling algorithm
- Policy based rate limiting
- Policy based bandwidth control
- Port based traffic shaping
- Policy-based traffic mirroring
- IGMP snooping (v1, v2, v3)
- IGMP filtering
- Jumbo frame support (9K Bytes) for high performance data backup or recovery services
- Support GVRP, automatic VLAN member registration
- Multicast VLAN Registration (MVR)
- Q in Q
- Selected Q in Q

### Link Aggregation

- IEEE 802.3ad LACP link aggregation compliant
- Support static manually port trunking
- Up to 8 aggregation groups, 8 ports/per group randomly selected
- VLAN trunking

### Network Resilience

- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) provides rapid convergence of spanning tree independent of spanning-tree timer
- IEEE 802.1s multiple spanning tree provides link availability in multiple VLAN environments by allowing multiple spanning trees
- MRSTP—Multiple RSTP

#### User Security and Authentication

- IEEE 802.1X authentication
- IP source guard (static IP/MAC binding, DHCP snooping, ARP inspection)
- IP subnet VLAN & VLAN isolation
- Limiting MAC number per port
- Loop guard prevents a switch from being affected by another switch which is already in a looping status
- MAC filtering per port secures access to each port
- MAC freeze
- Port security, port isolation, port mirroring
- Static MAC forwarding per port: only specified MAC addresses can access the network (port security)
- Wire speed filtering per MAC/IP/TCP/UDP
- Wire speed mirroring per MAC/IP/TCP/UDP
- Wire speed rate limiting per MAC/IP/TCP/UDP
- GVRP, automatic VLAN member registration
- Guest VLAN
- CPU protection
- PPPoE option 82

#### Network Administration Security

- SSH v1/v2
- SSL
- RADIUS accounting
- TACACS+ authentication, accounting
- NTP, daylight saving

#### IPv6 Host

- IPv6 over Ethernet (RFC 2464)
- IPv6 Addressing Architecture (RFC 4291)

- Dual stack (RFC4213)
- ICMPv6 (RFC4884)
- Path MTU (RFC 1981)
- Minimum Path MTU size of 1280 (RFC 5905)
- Encapsulation for minimum PMTU of 1500
- Neighbor Discovery (RFC4861)
- DHCPv6 Relay/Client

#### Network Management

- Supports ZyXEL iStacking™, up to 24 switches can be managed by one IP address
- Intuitive Web-based management with all features configurable
- Text-based configuration profile for massive deployment
- Telnet CLI (Cisco like)
- SNMP v1, v2c, v3
- SNMP trap group
- RMON four RMON groups 1, 2, 3, 9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis
- Out-of-Band management: RS-232c local console
- Firmware upgrade, configuration backup/restore via ftp
- Alarm led indicator for early warning of hardware troubles
- Send system trap to trap server
- DHCP relay, DHCP relay per VLAN, DHCP relay option 82, DHCP client
- Port mirroring: supports source/destination/ both port mirroring
- IEEE 802.3ah Ethernet Operations, Administration and Management (OAM)
- sflow

#### Intelligent ACL

##### (L2/L3/L4 Access List Control)

- Based on port
- Based on MAC + VLAN ID
- Based on IP address (source/destination)
- Based on protocol type
- Based on TCP/UDP port number

#### MIB Information

- RFC1213 MIB II
- RFC1493 Bridge MIB
- RFC1643 Ethernet MIB
- RFC1757 RMON group 1, 2, 3, 9
- RFC2011 IP MIB
- RFC2012 TCP MIB
- RFC2013 UDP MIB
- RFC2233 iFVHC Packet Group
- RFC2674 VLAN MIB
- RFC2925 PING-MIB and TRACEROUTE-MIB
- ZyXEL private MIB
- Management Information Base (MIB) for IP (RFC4293)
- IP Forwarding Table MIB (RFC4292)
- Management Information Base for Transmission Control Protocol (RFC4022)
- Management Information Base for User Datagram Protocol (RFC4113)

#### Safety Agency Certification

- EN 55022: 2006+A1: 2007
- EN 61000-3-2
- EN 61000-3-3
- EN 55024
- AS/NZS CISPR 22: 2009
- FCC Part 15 (Class A, Class B)
- ICES-003
- BSMI (CNS13438, CNS14336)
- EN 60950-1

## Accessories

#### SFP Transceivers (Optional)

Transceiver Class	Gigabit SFP							Fast Ethernet SFP				
	SFP -1000T	SFP -SX-D	SFP-LX -10-D	SFP-BX1310 -10-D	SFP-BX1490 -10-D	SFP-LHX1310 -40-D	SFP-ZX -80-D	SFP -100FX-2	SFP -100TX	SFP-100LX -20	SFP-100BX1310 -20-D	SFP-100BX1550 -20-D
Connector	RJ-45	LC	LC	LC	LC	LC	LC	LC	RJ-45	LC	LC	LC
Wavelength	-	850 nm	1310 nm	1310 nm (TX) 1490 nm (RX)	1490 nm (TX) 1310 nm (RX)	1310 nm	1550 nm	1550 nm	-	1310 nm	1310 nm (TX) 1550 nm (RX)	1550 nm (TX) 1310 nm (RX)
Max Transmission Distance	100 m	550 m	10 km	10 km	10 km	40 km	80 km	2 km	-	20 km	20 km	20 km
Support DDMI Features	-	Yes	Yes	Yes	Yes	Yes	Yes	-	-	-	Yes	Yes

For more product information, visit us on the web at [www.ZyXEL.com](http://www.ZyXEL.com)



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