



## Telco-class Layer 2 Fast Ethernet Switches with Access Control List

- **Multilayer-aware (L2/L3/L4) ACL for security protection and traffic optimization**
- **Policy-based QoS optimizes multi-service quality**
- **VLAN stacking (Q-in-Q) support for Layer-2 VPN**
- **Remote management via IEEE 802.3ah (OAM)**
- **IPTV manipulated by MVR and IGMP snooping v3**
- **Minimizes channels surfing disturbance with fast leave**
- **ZyXEL iStacking™ technology**
- **Backup Power System support**

The ZyXEL Switch 3000 Series consists of full-featured Fast Ethernet switches that provide comprehensive Layer-2 switching capabilities. With multi-layer security, intelligent QoS, redundant design, quick recovery and convenient network management features, the ZyXEL Switch 3000 Series are the best Edge switches for enterprises to build reliable, high-performance networks.

The Switch 3000 Series consists of two models: ES-3124PWR, and ES-3148. The ES-3124PWR is a Layer-2 Fast Ethernet managed switch with the Power-over-Ethernet feature. It's the best edge switch for SME with advanced features like intelligent management, comprehensive security and high-performance QoS. The ES-3148 is an intelligent high-density Layer-2 managed switch aiming for networks requiring high QoS and triple-play performance, network security and resiliency in markets such as enterprises, educational institutes and public sectors.

### Benefits

#### Intelligent QoS for multi-service optimization

Harnessing cost-cutting IP applications such as VoIP, IPTV and video conferencing in today's modern business environment makes a big difference in market advantages. The Switch 3000 Series provides superior QoS capability to fully utilize the power of applications. Features like multi-layer (L2/L3/L4) ACL, 8 priority queues, DSCP and WFQ scheduling algorithm allow you to maximize network bandwidth usage and to provide superior network service quality. With support to MVR and IGMP snooping features, the Switch 3000 Series enables successful IP TV multicasting transmission across multi-VLAN environments. In addition, Fast Leave eradicates streaming quality disturbance when user surf between different channels, while bandwidth control with granularity of 64kbps brings effortless bandwidth administration to network operators.

#### Complete multi-layer protection

The Switch 3000 Series comes with a 4-layer protection framework against network threats. Multi-layer (L2/L3/L4) ACL enables policy-based protection by setting (L2/L3/L4) parameters such as MAC, VLAN, IP Protocol, TCP/UDP, and DSCP. The 4K VLAN range allows maximum administrative freedom on the network. For device access control, MAC freeze and MAC filtering can be configured and the number of MAC addresses on a port can be limited as well. Besides user authentication, IEEE 802.1X provides central network access management and offers further access control on VLAN, bandwidth and traffic priority queues. The intrusion lock feature on the Switch 3000 Series is designed to prevent unauthorized access, and supports to VLAN Stacking can be applied for enterprise-class L2VPN applications. The Switch 3000 Series allows you to implement stricter Layer-1 to Layer-4 security policies.



**ES-3124PWR**  
**ES-3148**  
24/48-port FE L2 Switch

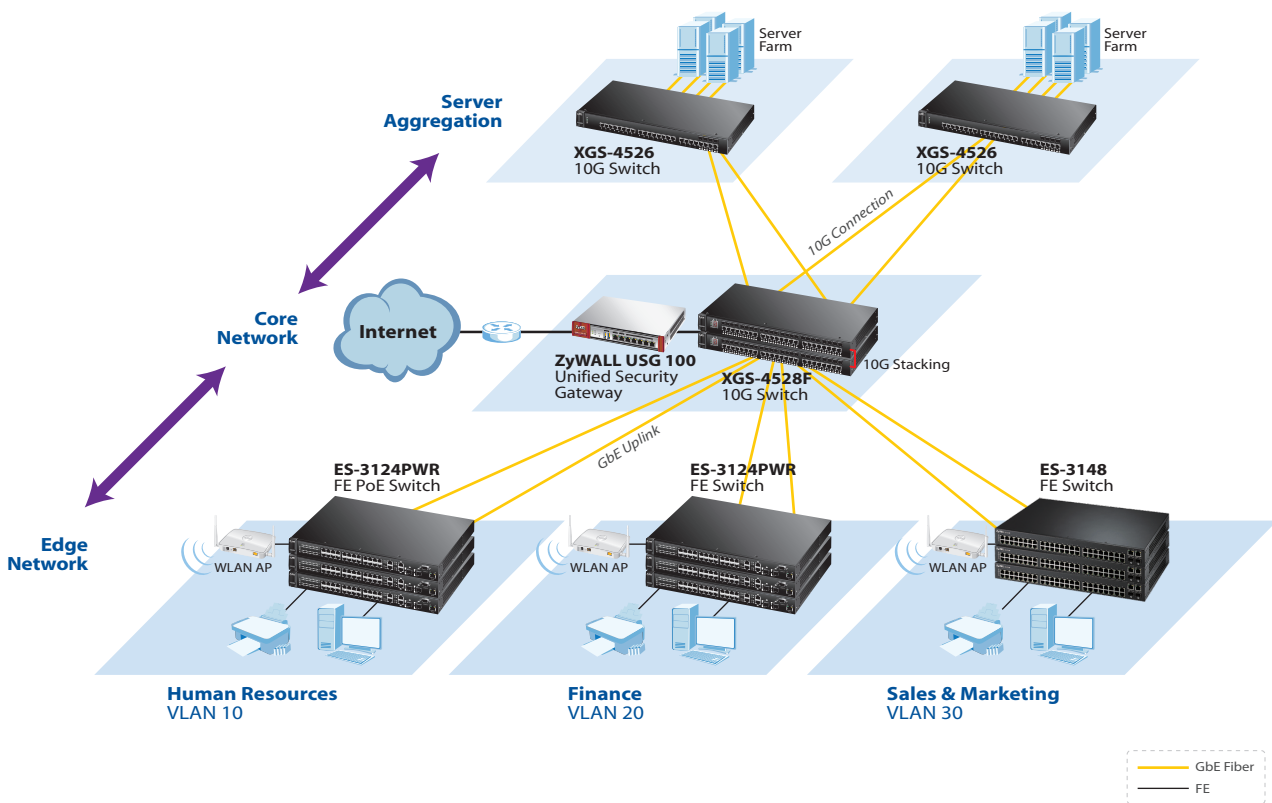
### Convenient, hassle-free network management

ZyXEL's exclusive iStacking™ technology allows you to manage a switch cluster of up to 24 ZyXEL switches through a single master ZyXEL Switch, and various network management options like Web, Telnet and the console port are supported. Network administrators can choose to manage the switch using the friendly Web-based configuration or the convenient text-based Command Line Interface (CLI). Since the Switch 3000 Series supports centralized SNMP-based management software, maintenance tasks can be performed remotely, and this also helps reducing operating cost and improving efficiency. For security, SSHv1/v2 and SSL are used to encrypt management sessions. With these sophisticated features, network administrators can set up powerful corporate networks and streamline their management efforts.



### High redundancy and quick recovery

The Switch 3000 Series comes with comprehensive features to ensure round-the-clock network operations. With backup power system support, power is supplied to the switch in case of any unexpected power outage. The IEEE 802.3ad Link Aggregation feature reduces network downtime by providing redundant paths and bandwidth aggregation to critical connections. By utilizing unique design of 4Gb uplink with trunking function, you can enjoy not only superb transmission bandwidth, but also extra-secure paths for critical transmission by aggregating Gigabit ports. IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) allow immediate recovery from failed links by sending packets via the backup link.

## Key Applications



### Specifications

Model	ES-3124PWR	ES-3148
<b>Product name</b>	24-port FE L2 PoE Switch 	48-port FE L2 PoE Switch 
<b>Port Density</b>		
<b>10/100BASE-TX</b>	-	48
<b>10/100BASE-TX PoE</b>	24	-
<b>1000BASE-T</b>	2	2
<b>Dual personality GbE ports</b>	2	2
<b>Performance</b>		
<b>Switching capacity (Gbps)</b>	12.8	17
<b>Switching forwarding rate (Mpps)</b>	9.6	13.1
<b>Packet buffer</b>	32 MB	32 MB
<b>MAC address</b>	16 K	16 K
<b>Power Requirement - Input Power</b>		
<b>AC power</b>	100 - 240 V, 50/60 Hz	100 - 240 V, 50/60 Hz
<b>Physical Specifications</b>		
<b>Dimensions (WxDxH)(mm/in.)</b>	438 x 420 x 44.5/17.24 x 16.54 x 1.75	438 x 300 x 44.5/17.24 x 11.81 x 1.75
<b>Weight (kg/lb.)</b>	6.8/14.99	4.2/9.26
<b>Environmental Specifications</b>		
<b>Operating temperature</b>	0°C to 45°C/32°F to 113°F	
<b>Storage temperature</b>	-25°C to 70°C/-13°F to 158°F	
<b>Operating humidity</b>	10% to 90% (non-condensing)	
<b>MTBF (hr)</b>	222,625	176,244
<b>Heat dissipation (BTU/hr)</b>	2,046	153.45

### Features

#### Standard Compliance

- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100 BASE-Tx Ethernet
- IEEE 802.ab 1000 BASE-T Ethernet
- IEEE 802.3z
- 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 802.1ad VLAN stacking
- IEEE 802.3af power over Ethernet

#### Traffic Management and QoS

- Bandwidth control/rate limiting: policy-based/ port-based bandwidth control, 64 kbps granularity ingress/egress
- Supports Dual-Rate-Three-Color marking
- Port-based egress traffic shaping
- Broadcast storm control
- Congestion control on all ports
- IEEE 802.1p with 8 hardware priority queues per port for different types of traffic
- Weighted Fair Queuing (WFQ)/WRR/SPQ scheduling algorithm
- DSCP to 802.1p priority mapping
- IGMP snooping v1, v2, v3
- Multicast VLAN Registration (MVR)
- BPDU transparency

#### Link Aggregation

- IEEE 802.3ad LACP link aggregation compliant
- Static manually port trunking
- Up to 6 aggregation groups, per group support up to 8 ports

#### Resilient Network

- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- MRSTP—Multiple RSTP
- IEEE 802.1s multiple spanning tree provides link availability in multiple VLAN environments by allowing multiple spanning trees
- Backup Power System (BPS) power supply redundancy

### User Security and Authentication

- MAC filtering per port secures access to each port
- Static MAC forwarding per port: only specified MAC addresses can access the network (port security)
- Limited MAC number per port
- IP filtering
- TCP/UDP socket filtering
- 802.1X port-based authentication, compensated assignment over VLAN and bandwidth for valid access
- RADIUS MAC Authentication
- Loop guard prevents a switch from being affected by another switch which is already in a looping status
- IP source guard (static IP/MAC binding, DHCP snooping, ARP inspection)
- IEEE 802.1Q tag-based and port-based VLAN
- GVRP, automatic VLAN member registration
- 1K static VLAN, up to 4K dynamic VLAN
- Full range 4K PVID support
- Port-based VLAN, IP subnet VLAN
- MAC freeze
- Port security, port isolation, port mirroring, intrusion lock
- Clone feature copies port settings from one port to other port(s) in one step
- VLAN stacking

### Network Administration Security

- User name/password required for web/telnet/local console administrators
- Two level security by specific SNMP read/write community
- Multiple log-in session
- Multiple access authorization management
- SSH v1/v2
- SSL/TLS
- RADIUS MAC login
- RADIUS accounting
- TACACS+ authentication, accounting
- NTP, daylight saving

### 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 file for scripting
- Telnet CLI (Cisco like)
- SNMP v1, v2c, v3
- SNMP trap group

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

- Based on MAC address
- Based on VLAN
- Based on IP address
- Based on protocol type
- Based on TCP/UDP type
- Based on DSCP

### 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 iVHC Packet Group
- RFC2674 VLAN MIB
- RFC2925 PING-MIB and TRACEROUTE-MIB
- ZyXEL Private MIB

### Certification

- UL 60950-1
- CSA 60950-1
- EN 60950-1
- IEC 60950-1
- EU RoHS compliant

## Accessories

### SFP Transceivers (Optional)

Speed	Model	Type	Description
Gigabit	SFP-1000T	RJ-45 connector	Up to 100 m (300 ft) using standard Ethernet cable
	SFP-SX-D	LC connector	SFP SX 550 m (1800 ft) commercial type transceiver, DDMI version
	SFP-LX-10-D	LC connector	SFP LX 10 km (6 mi) commercial type transceiver, DDMI version
	SFP-BX1310-10-D	LC connector	Bidirectional singlemode, up to 10 km (6 mi) reach, DDMI version
	SFP-BX1490-10-D	LC connector	Bidirectional singlemode, up to 10 km (6 mi) reach, DDMI version
	SFP-LHX1310-40-D	LC connector	SFP LHX 1310 wavelength 40 km (24 mi) commercial type transceiver, DDMI version
	SFP-ZX-80-D	LC connector	SFP ZX 80 km (50 mi) commercial type transceiver, DDMI version*

\*: Bi-directional SFP must be used in pairs (Example: 1 x SFP-BX1310-10-D and 1 x SFP-BX1490-10-D connected together is a solution)

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



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