



## Key Features

- L3 Advanced Routing Protocols, OSPF & RIP
- Multilayer-aware (L2/L3/L4) ACL for Security Protection and Traffic Optimization
- IGMPv3, DVMRP, MVR
- High Redundancy and Resilient Architecture with RSTP, VRRP & Port Trunking
- Port Security and Enhanced 802.1x Port Authentication
- VLAN Stacking for Network-based VPN or Campus VPN
- ZyXEL iStacking™ Technology Clustering Network Management
- SNMP & RMON Support
- IEEE 802.1p 8 Hardware Priority Queue
- Backup Power System Support

## Enterprise LAN Switches

### Switch 4000 Series

ZyXEL Switch 4000 Series are intelligent multilayer (L2/L3/L4) Ethernet switches providing enterprise-class availability, resilient and redundant architecture with OSPF, VRRP, RSTP and port trunking. The Switch 4000 Series offers many advanced features that make it the preferred choice for real-routing enterprise networks. Advanced functionalities like QoS, rate-limiting, rule-based access control lists, multicasting support, wire-speed, high-performance IP routing and simplified management software (iStacking) all contribute to the excellent efficiency of network operations.

The Switch 4000 Series consists of two models: GS-4024 Gigabit switch and ES-4124 Fast Ethernet switch. The GS-4024 provides 20 GbE copper ports plus 4 GbE dual-personality ports as standard. With 48 Gbps high throughput and stacking capability of up to 24 units, the GS-4024 can be easily deployed in most enterprise network aggregation scenarios. The ES-4124 provides 24 10/100Base-TX ports plus 4 GbE uplinks. This is also an ideal Fast Ethernet solution for building converged networks.

## Key Benefits

### Ideal for Multi-service Network Environment

The ZyXEL Switch 4000 Series delivers fully dynamic wire-speed IP routing features like OSPFv2 and RIPv2 using a hardware-based IP routing engine, as well as sophisticated multilayer operating software that quickly and precisely transmits Layer-3 traffics without packet loss or latency. In addition to dynamic IP routing, the ZyXEL Switch 4000 Series supports DVMRP, IGMPv3 and MVR for most applications on today's IP-based multimedia platforms. With the ZyXEL Switch 4000 Series, enterprises can easily employ applications such as IP TV, video conferencing and distant learning.

### Intelligent QoS for Mission-critical Applications

With more and more applications integrated into IP-based networks, the network traffic flows become more and more complicated and diverse than ever. To assure the multi-service quality on a converged network, adopting advanced traffic control technologies to manage different type of traffic flows is critical and necessary to enterprises. The ZyXEL Switch 4000 Series supports Intelligent QoS features to optimize network traffics. With supports to Class of Service (CoS) and Differentiated Services Code Point (DSCP), administrator can easily classify and perform traffic prioritization for business-critical applications such as VoIP and video conferencing. In addition, the Switch 4000 Series provides advanced bandwidth control with granularity of 64 kbps and 8 hardware priority queues to bring better bandwidth administration to network operators.

### Comprehensive Safety Network

Information Security is a critical issue in the era of information economy. In addition to preventing threats from the WAN, enterprises also need LAN security to protect intellectual properties. The ZyXEL Switch 4000 Series provides a complete set of security features to protect important data, administrate traffic and secure the enterprise network.

Through the multilayer (L2/L3/L4) ACL suite, the network administrator can easily check the source and destination information in MAC address, IP address, Ethernet type and TCP/UDP for security and QoS requirements. With 802.1x authentication and port security, administrators can reject unauthorized users from accessing the network.

### Robust and High-Availability System Design

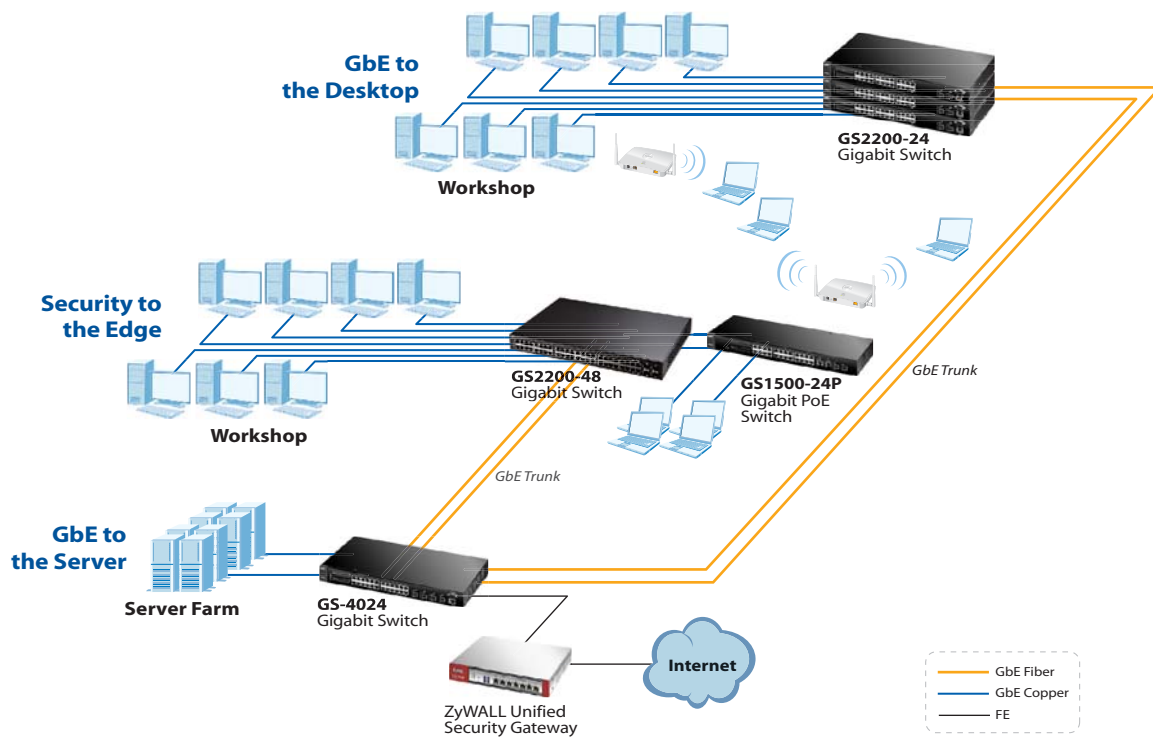
The ZyXEL Switch 4000 Series supports the VRRP routing protocol for failover transmissions, while BPS, the second DC power source, protects the system from internal AC power supply failure. The IEEE 802.3ad Link aggregation reduces network downtime by providing more packet paths and bandwidth aggregation to critical paths. The Gigabit uplink not only gives superb transmission bandwidth, but also allows users to set up Gigabit aggregation to secure transmission on critical paths, while the IEEE 802.1w Rapid spanning tree (RSTP) allows immediate recovery from failed links by sending packets via a backup link path.

### Hassle-free Network Management and 24-Unit Stacking Capability



The ZyXEL Switch 4000 Series provides various network management options. Networking administrators have the freedom to choose the friendly Web-based configuration or the convenient text-based CLI (Command Line Interface) to manage the switch. Since the Switch 4000 Series supports centralized SNMP-based management software, maintenance can be performed remotely. The Switch 4000 Series also supports the ZyXEL-exclusive iStacking™ clustering management technology that works across different floors and routing domains to locate other iStacking-capable switches in the same cluster, allowing administrators to manage up to 24 switches with one single IP. This greatly reduces operating costs and offers flexible maintenance to ZyXEL Switches.

## Key Applications

### Small and Medium-sized Enterprises



## Specifications

Model	GS-4024	ES-4124
Product Photo		
<b>Port Density</b>		
10/100Base-TX, RJ-45 Ports	-	24
1000Base-T, RJ-45 Ports	20	2
Dual Personality GbE Ports	4	2
<b>Performance</b>		
Switching Capacity	48 Gbps	12.8 Gbps
Switching Forwarding Rate	35.7 Mpps	9.6 Mpps
Packet Buffer, Bytes	2 MB	32 MB
MAC Address	16K	16K
IP Address Table	8K	4K
Routing Entries	8K	8K
Routing Domains	64	64
<b>Power Requirement</b>		
Power Supply	AC Power: 100 to 240 V, 50/60 Hz DC Power: -48 to -60 V DC	AC Power: 100 to 240 V, 50/60 Hz DC Power: -48 to -60 V DC
Max Power Rating of AC	78 Watt	60 Watt
Maximum Power Consumption	53.8 Watt	30.2 Watt
<b>Environmental Specification</b>		
Operating Temperature	0°C ~ 45°C	0°C ~ 45°C
Storage Temperature	-25°C ~ 70°C	-25°C ~ 70°C
Operating Humidity	10% ~ 90%, (non-condensing)	10% ~ 90%, (non-condensing)
<b>Physical Feature</b>		
Dimensions, (W) x (D) x (H) mm	438 x 300 x 44.45	438 x 270 x 44.45
Weight, kg	4.0	4.0

## 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

### Traffic Management and QoS

- Jumbo frame support (9K Bytes) for high performance data backup or recovery services
- IEEE 802.1p with hardware 8 priority queues per port for different types of traffic
- WFQ (Weighted Fair Queuing)/WRR/SPQ scheduling algorithm (WFQ: only for ES-4124)
- Support GVRP, automatic VLAN member registration
- Bandwidth control/rate limiting: policy-based/port-based bandwidth control, 64 kbps granularity ingress/egress
- Supports Dual-Rate-Three-Color marking
- Supports IGMP/IGMP snooping v1, v2, v3

- Congestion control on all ports
- Rate limiting: policy-based bandwidth control
- Port-based egress traffic shaping
- Policy-based flow control
- Any to any port mirroring
- MVR (Multicast VLAN Registration)
- BPDU transparency

### IP Routing and Service Features

- Wire-speed IP routing
- RIPV1/V2
- OSPF V2
- Static routing protocol
- DVMRP

## Features

### Link Aggregation

- IEEE 802.3ad compliant
- Support LACP, static and dynamic link aggregation
- Link aggregation: up to 6 aggregation groups, per group support up to 8 ports (manually or dynamically selected)
- VLAN trunking

### Resilient Network

- VRRP (Virtual Router Redundancy Protocol)
- BPS (Backup Power System) support, one power connector with ZyXEL BPS-120
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) provides rapid convergence of spanning tree independent of spanning-tree timer
- MRSTP—Multiple RSTP
- IEEE 802.1s Multiple spanning tree provides link availability in multiple VLAN environments by allowing multiple spanning trees

### 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 lock)
- Limited maximum MAC number per port
- IP filtering
- TCP/UDP socket filtering
- 802.1x port-based security, prevent unauthorized client access to the network
- 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 1K static VLAN, up to 4K dynamic VLAN
- Port-based VLAN, IP subnet VLAN & VLAN Isolation
- Private VLAN provides security and isolation between ports on a switch, ensures that users can not snoop on each other's traffic
- 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
- 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
- Out-of-Band management: RS-232c local console & RJ-45 management port
- Telnet CLI (Cisco like)
- Text-based configuration file for scripting
- SNMP v1, v2c, v3
- SNMP trap group

- DHCP relay, DHCP relay per VLAN, DHCP relay option 82, DHCP client
- 802.3ah Ethernet OAM (Operations, Administration and Management)
- RMON four RMON groups 1, 2, 3, 9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis
- Port mirroring: supports source/destination/both port mirroring

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

- Based on MAC address
- Based on VLAN ID
- Based on IP address or subnet
- Based on protocol type or TCP/UDP port number
- 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 iFVHC 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 using standard Ethernet cable
	SFP-SX-D	LC connector	SFP SX 550 m commercial type transceiver, DDMI version <sup>*1</sup>
	SFP-LX-10-D	LC connector	SFP LX 10 km commercial type transceiver, DDMI version <sup>*1</sup>
	SFP-BX1310-10-D	LC connector	Bidirectional singlemode, up to 10 km reach, DDMI version <sup>*1,*2</sup>
	SFP-BX1490-10-D	LC connector	Bidirectional singlemode, up to 10 km reach, DDMI version <sup>*1,*2</sup>
	SFP-LHX1310-40-D	LC connector	SFP LHX 1310 wavelength 40 km commercial type transceiver, DDMI version <sup>*1</sup>
	SFP-ZX-80-D	LC connector	SFP ZX 80 km commercial type transceiver, DDMI version <sup>*1</sup>

\*1: Switch 4000 series don't support DDMI (Digital Diagnostics Monitoring Interface) feature.

\*2: 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)

