



## Intelligent Pro Gigabit Switching & Routing Solution for Business

- L3+ IP Routing RIP & OSPF Support
- Multicast DVMRP & IGMP Support
- High Redundancy and Resilient Architecture with RSTP, VRRP & Port Trunking
- Backup Power System Optional
- Multilayer (L2/L3/L4) Enterprise Access Control List
- Port Security and Static MAC filtering & Limited MAC number per port
- VLAN Stacking (QinQ) for Network-based VPN or Campus VPN
- 802.1x Authentication
- ZyXEL iStacking™ Technology, Clustering Network Management
- SNMP & RMON Support



12/24-port Managed L3+  
Gigabit Ethernet Switch

GS-4000  
SERIES

### Benefits

#### Intelligent Multilayer Gigabit Ethernet Switch

ZyXEL GS-4000 Series is an intelligent Gigabit multilayer (L2/L3/L4) Ethernet switch that provides enterprise-class availability, resilient and redundant architecture with OSPF, VRRP, RSTP and port trunking. The GS-4000 Series offers many advanced features to make it the preferred choice for real-routing network in the enterprise. Advanced functionalities like QoS, rate-limiting, rule-based access control lists, multicasting support, wire-speed, high-performance IP routing and simplified management software (iStacking) highly improve network operation.

#### High-Performance Wire-speed Switching and IP Routing

The GS-4000 Series consists of two switches: the GS-4024 with 20-port 100/1000BASE-T RJ-45 and four dual-personality GbE interface (RJ-45 or SFP), the GS-4012F with 8-port SFP open slots and four dual-personality GbE interface (RJ-45 or SFP). Base on non-blocking switching architecture, the GS-4000 Series can be deployed as both an intelligent access layer switch for enterprise wiring closets and as a Layer 3 backbone switch for SMB networks.

The GS-4000 Series delivers wire-speed full-dynamic IP routing, like OSPF and RIP using a hardware-based IP routing engine and sophisticated multilayer operating software. In addition to dynamic IP multicast, the GS-4000 Series supports Distance Vector Multicast Routing Protocol (DVMRP) and Internet Group Management Protocol (IGMP) snooping to perfectly handle a variety of datagrams making the ZyXEL GS-4000 Series ideal for today's multi-service network environment.

#### iFlow - Advanced QoS for Significant Service

The GS-4000 Series works with ZyXEL exclusive **iFlow** technology, a set of advanced QoS mechanisms, to insure noteworthy service, and smooth operation via a series of QoS processes to prevent customers' networks being negatively impacted by network congestion. With intelligent multilayer capability, the GS-4000 Series offers wire-speed flow control which can classify, police, and prioritize the incoming packets according to predefined QoS policies. In classification, Differentiated Services Code Point field (DSCP) and the 802.1p class of service (CoS) field are identified to assess the priority of incoming packets. Classification and reclassification can be based on criteria as specific as rule-based on IP, MAC addresses, VLAN ID, TCP/UDP port number, on the other hand, for bandwidth management, the GS-4000 Series is loaded with powerful traffic management tools. For instance, the GS-4000 Series provides eight priority queues per port for different types of traffics, allowing administrators to set rule-based rate limiting which takes full advantage of limited network resources and guarantees the best performance.

## iSafe - High-Security for Business-Critical Applications

The GS-4000 Series works with **iSafe** intelligent 3-tiers security which offers complete data security in the data and management plane via a wide range of security features to protect users' data and administrative traffic, and secure the network from unauthorized users.

802.1x authentication and Port security provide the ability to deny unauthorized users from accessing the network. Limited MAC Number by Port limits the total number of devices connected to a switch port, therefore highly reducing the risk of unknown access from mass deployed wireless networks or Hubs. Cooperating with RADIUS, 802.1x is useful to prevent unauthorized access based on username and password (or other credentials) and acts as powerful access control for convergent networks with mixed wired and wireless access.

The GS-4000 Series multilayer (L2/L3/L4) ACLs suite of sophisticated rule-based control mechanisms is easily deployed, based on realistic network environments via a Web GUI or command line to prevent abnormal and illegal access. The rules can be defined to deny packets based on source and destination MAC addresses, IP addresses, or TCP/UDP ports.

## iManage - Enterprise-class Network Management

The GS-4000 Series works with **iManage** intelligent network management tool kits. Compared with conventional bounded network management, ZyXEL GS-4000 Series demonstrates its power with advanced management capabilities; such as ZyXEL-exclusive **iStacking™** clustering management technology that can cross different floors and routing domains to locate other iStacking-capable switches in the same management cluster, thus allowing administrators to manage 24 switches with one single IP. This greatly reduces operating costs and offers more flexible maintenance of ZyXEL Switches. IT staff can opt for the Web or command line interface to suit their needs, and even encrypt their instructions with SSHv1/v2 and SSL/TLS. With these sophisticated functionalities, the IT staff is empowered to build a highly secure and efficient corporate network with minimum effort.

## Specifications

### Standard Compliance

- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-Tx Ethernet
- IEEE 802.3ab 1000BASE-T Ethernet
- IEEE 802.3z
- IEEE 802.3x Flow control
- IEEE 802.1d Spanning tree protocol
- IEEE 802.1w Rapid Spanning tree protocol
- IEEE 802.1p Class of service, priority protocols
- IEEE 802.1Q VLAN tagging
- IEEE 802.1x Port Authentication
- IEEE 802.3ad LACP aggregation

### Performance

- 48/24Gbps non-blocking switching fabric (GS-4024/GS-4012F)
- Flexible design for both Gigabit copper and Gigabit fiber connectivity
- 1488000pps forwarding rate for 1000BASE-T/1000BASE-X connectivity, 148800pps forwarding rate for 100BASE-TX connectivity
- Wire-speed performance

### MAC

- 16K MAC entries

### Traffic Management and QoS

- Jumbo frame support (9K Bytes) for high performance data backup or recovery services
- IEEE 802.1p with 8 priority queues per port for different types of traffic
- WRR (Weighted Round Robin) scheduling for different prioritization of packets
- Support GVRP, automatic VLAN member registration
- Supports IGMP snooping
- Congestion control on all ports
- Rate Limiting: Rule-based bandwidth control
- Port-based egress traffic shaping
- Rule-based flow control
- Any to any port mirroring

### IP Routing and Service Features

- IPv4 support
- 64 IP routing domains
- 8K IP address table
- 8K routing path
- Wire-speed IP routing
- RIPV1/V2
- OSPF V2
- Static routing protocol
- IGMP V1/V2
- DVMRP
- Support DHCP Server/Relay

### 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

### Redundancy for Fault Backup

- 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

### User Security and Authentication

- MAC filtering per port secures access to each port
- Specific 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
- IEEE 802.1Q tag-based 256 static VLAN, up to 4K dynamic VLAN
- Port-based VLAN
- Support VLAN Stacking (QinQ)
- Private VLAN provides security and isolation between ports on a switch, ensures that users can not snoop on each other's traffic

### Network Administration Security

- User name/password required for web/telnet/local console administrators
- Two level security by specific SNMP read/write community

### Network Management

- Supports ZyXEL **iStacking™**, up to 24 switches can be managed by one IP address
- Web-based management
- Support out-of-band management RJ-45 port for management VLAN
- Telnet CLI
- Text-based configuration file for scripting
- SNMP v2c
- RS-232c Local console
- IP management: static IP or DHCP client
- 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

### Hardware Specifications

#### GS-4024

- Ports: 20 10/100/1000BASE-T RJ-45 ports and 4 dual-personality GbE interface (RJ-45 or SFP open slots)
- Console: D-Sub 9 pin Female (DCE)
- Management: 1 out-of-band management RJ-45 port

#### GS-4012F

- Ports: 8 SFP open slots and 4 dual-personality GbE interface (RJ-45 or SFP open slots)
- Console: D-Sub 9 pin Female (DCE)
- Management: 1 out-of-band management RJ-45 port

### Physical Specifications

#### GS-4024

- Dimensions: 438 (W) x 300 (D) x 44.45 (H) mm
- Weight: 4 Kg

#### GS-4012F

- Dimensions: 438 (W) x 225 (D) x 44.45 (H) mm
- Weight: 3.4 Kg

### Power Requirements

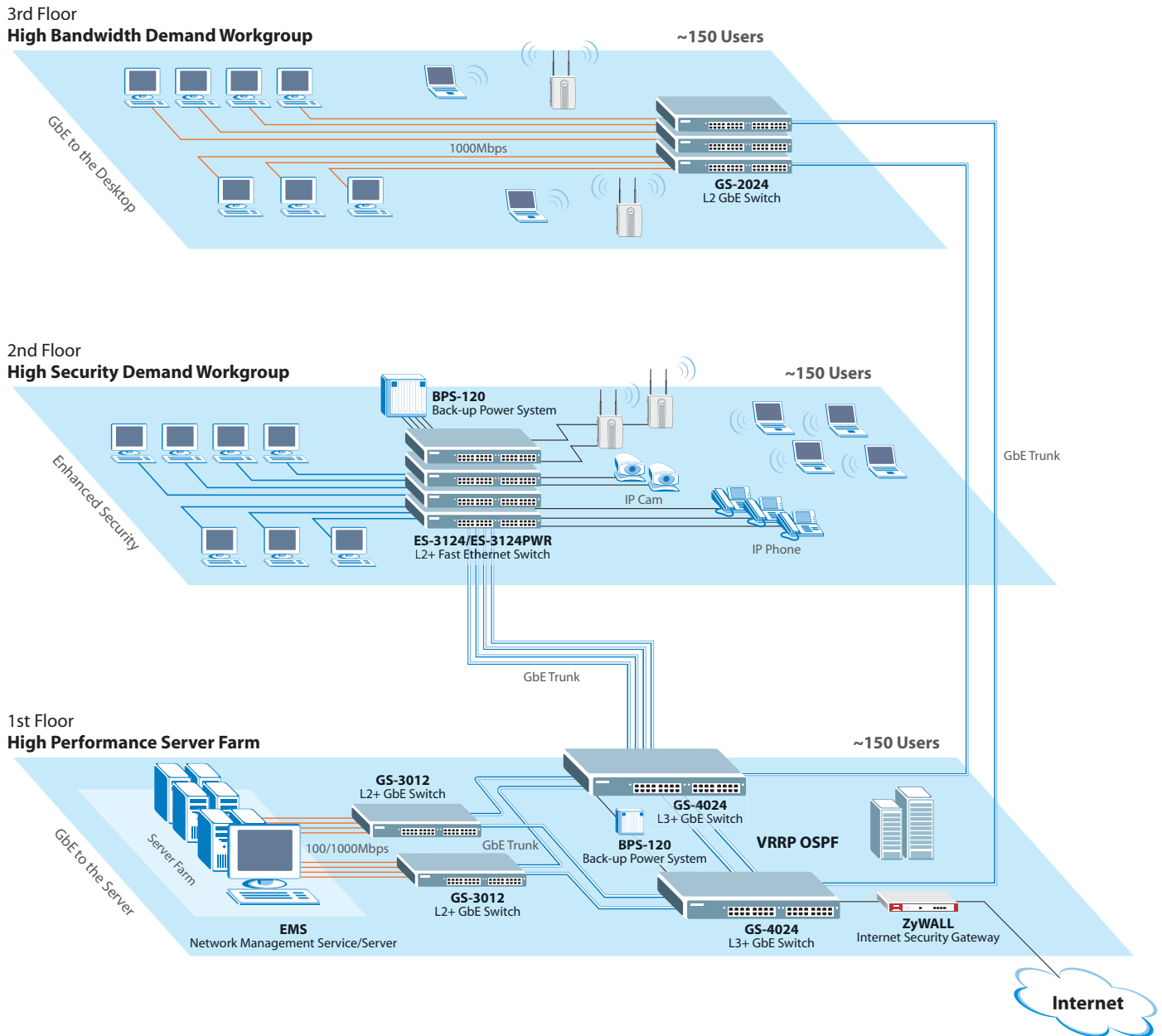
- Input voltage of AC: 100-240VAC, 50/60Hz
- Max power rating of AC: 50 Watts
- Backup power supply into 12V DC

### Environmental Specifications

- Operating temperature: 0°C ~ 45°C
- Storage temperature: -25°C ~ 70°C
- Operating humidity: 10% ~ 90%, non-condensing

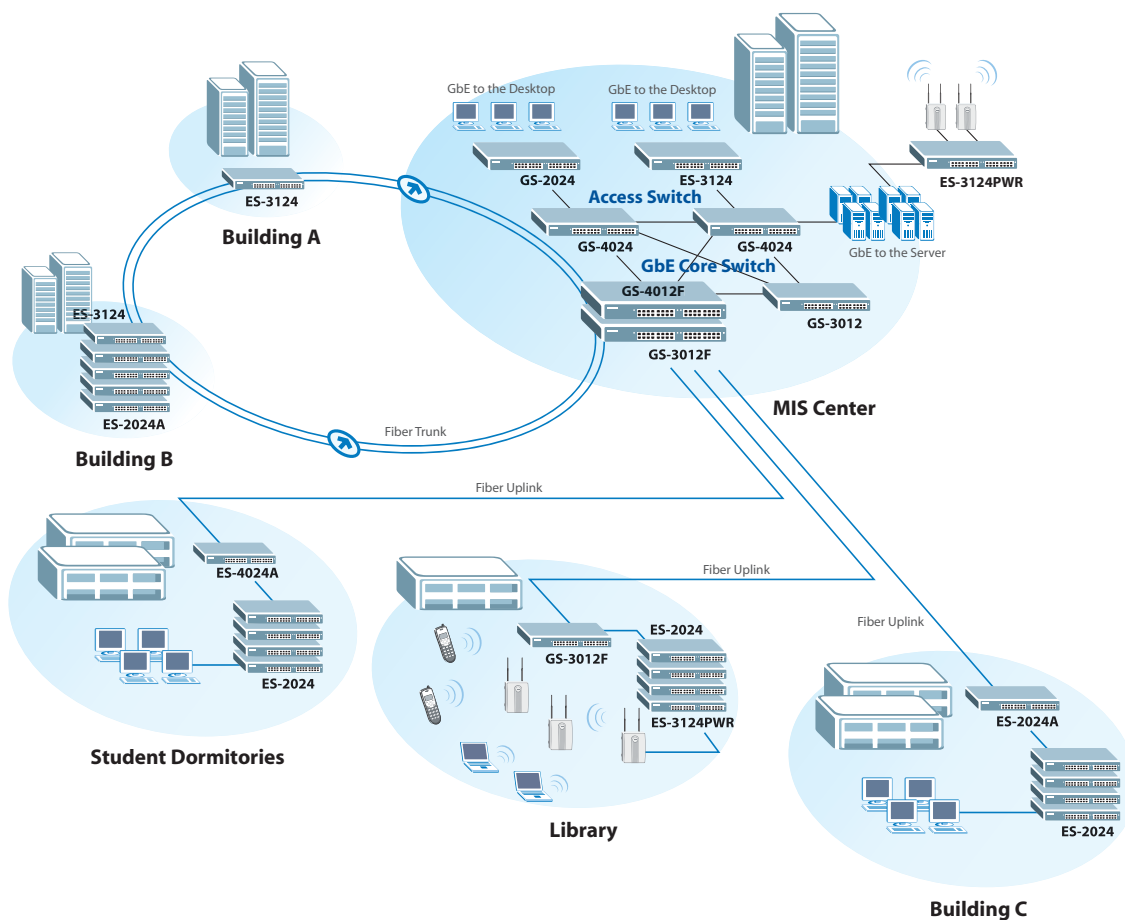
# Application Diagram

## GS-4024 Deployment for SMB Core Network



# Application Diagram

## GS-4012F Deployment for Campus Fiber Aggregation



# Operational Information

## Transceiver (Optional)

Model Name	Optical Receiver Sensitivity	Wavelength	Connector	Transmission Distance vs. Fiber Cable Specification			Operational Ranges	
				62.5um Multi-Mode Fiber	50um Multi-Mode Fiber	9/10um Single-Mode Fiber	Supply Voltage	Max Current
SFP-SX	-17 dBm	850 nm	LC	220 m	550 m	-	3.15 ~ 3.45 V	300 mA
SFP-LX-10	-20 dBm	1310 nm	LC	550 m	550 m	10 km	3.15 ~ 3.45 V	300 mA
SFP-LHX1310-40	-23 dBm	1310 nm	LC	-	-	40 km	3.15 ~ 3.45 V	300 mA
SFP-ZX-80	-24 dBm	1550 nm	LC	-	-	80 km	3.15 ~ 3.45 V	300 mA

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

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