ZyXEL

Robust and Reliable Network Core for Small- to Medium-sized Businesses

- **Fully managed Layer 3 switching solution**
- **High performance switching with 10GbE uplink connectivity**
- **Resilient networking with RSTP, MSTP, MRSTP, ECMP and VRRP support**
- **RIP, RIPv2, DVMRP and OSPF for advanced routing applications**
- **Advanced security with multilayer (L2/L3/L4) ACL, Guest VLAN and CPU protection**
- **CoS, DSCP, IGMP snooping v1, v2, v3 and MVR for convergence**
- **Future-proofed with IPv6 support**

The increasing adoption of server applications and demand for service availability has triggered an evolution to virtualized networks in small- to medium-sized businesses. At the network edge, more and more SMBs are incorporating data, video and voice communications into a single IP network to better support business operations. To address this dual trend of server virtualization and network convergence, SMBs today need a more resilient network core with advanced routing, security and traffic shaping capabilities.

Robust and reliable, the ZyXEL XGS4500 Series is the most ideal network core for SMBs. This is a Series of Layer 3 switches with advanced routing, security, traffic shaping and high-availability features that enable SMBs to deploy resilient networks to meet the challenges of virtualization and convergence. The XGS4500 Series consists of 2 models. The XGS-4528F offers 24 Gigabit combo ports with 2 built-in 10GbE CX4 interfaces, and 1 open slot for the optional EM-412 2-port CX4 module or the EM-422 2-slot XFP fiber module. The XGS-4526 provides 20 Gigabit RJ-45 ports, 4 Gigabit combo ports, and 1 open slot for the aforementioned uplink modules.

Benefits

Robust SMB network core

The ZyXEL XGS4500 Series switch is designed with an advanced Layer 3 feature set that provides the most resilient network core for small- to medium-sized businesses. In addition to supporting IEEE 802.3ad link aggregation and IEEE 802.1w Rapid Spanning Tree Protocol (RSTP), the Series supports Equal Cost Multipath Routing (ECMP) and Virtual Router Redundancy Protocol (VRRP) for increased network availability and reliability. With ECMP, the XGS4500 Series switch can distribute traffic across multiple high-bandwidth links to increase bandwidth availability. VRRP provides a dynamic and automatic approach to virtual router redundancy. It allows several first-hop virtual routers to dynamically share an IP address, with one assigned as master and the others as backup. Should the master fail, a backup is automatically assigned to fill its place. The result is improved network resiliency and lower administrative overhead compared to running dynamic routing protocols or client discovery mechanisms.

High-performance routing

The ZyXEL XGS4500 Series utilizes the latest technology to provide wire speed communication and dynamic IP routing with such features as RIP, RIPv2, OSPF and ECMP. SMBs can adopt basic static routing technologies such as RIP and RIPv2 for small network routing applications. When fully resilient and scalable networks are required, businesses can deploy advanced routing protocols such as OSPF and ECMP for load balancing. Additionally, the ZyXEL XGS4500 Series provides businesses with a smooth migration path from IPv4-based networks to a full IPv6 infrastructure, providing investment protection for future network upgrades.

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XGS4500 Series
24-port GbE L3 Switch with 10GbE Uplink

Model List

XGS-4526
24-port GbE L3 Switch with
10GbE Uplink

- 20 x GbE RJ-45 ports
- 4 x GbE combo (RJ-45/SFP) ports
- 1 x open slot for optional uplink modules
  (EM-412 or EM-422)

XGS-4528F
24-port GbE L3 Switch with
10GbE Uplink

- 24 x GbE combo (RJ-45/SFP) ports
- 2 x 10GbE CX4 port
- 1 x open slot for optional uplink modules
  (EM-412 or EM-422)

Key Applications

Robust SMB network core

- For Layer 3 network resiliency, SMBs can
  set up two VRRP groups with one first-hop
  virtual router as master and the other as
  backup to get active-passive virtual router
  redundancy and failover

- Each Layer 2 switch can establish a MSTP
  ring with both VRRP master switches for
  load balancing and better resiliency from
  Layer 2 to Layer 3

3-tier network security

The ZyXEL XGS4500 Series works with an intelligent 3-tier security mechanism that offers comprehensive data and management protection, protects subscriber data, and deters unauthorized users with effective traffic administration. The IEEE 802.1X authentication and port security features significantly reduce the risk of unknown access from massively deployed wireless networks or hubs. With the Guest VLAN feature, the Series allows visitors to access the Internet without entering the business's internal network. The multilayer (L2/L3/L4) ACL suite offers sophisticated rule-based control mechanisms to prevent illegitimate access. Additionally, the CPU protection function ensures normal switch operation by preventing malicious traffic from trying to shut down the switch.

Intelligent QoS

In order to ensure the quality of multiple services on a converged network, the ZyXEL XGS4500 Series adopts advanced traffic control technologies to manage different types of traffic flows to optimize performance. Taking advantage of Class of Service (CoS) and Differentiated Services Code Point (DSCP), network administrators can easily classify and enable traffic prioritization for critical business applications such as VoIP and video conferencing. The Series also supports IGMP snooping and Multicast VLAN Registration (MVR) that provide more agile traffic shaping and more efficient bandwidth utilization for the converged applications of today.
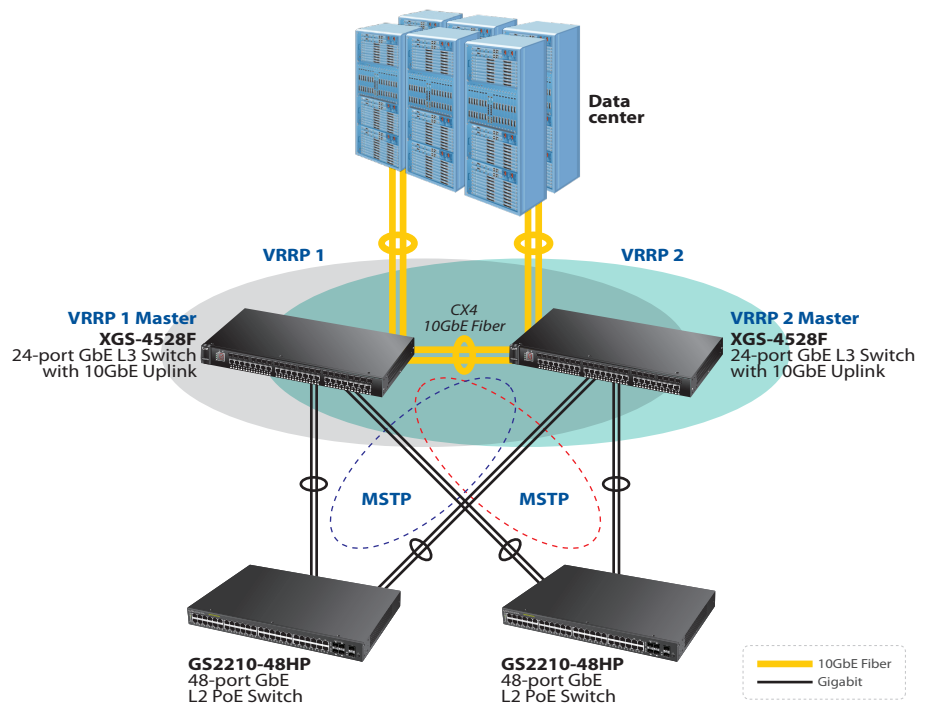
Specifications

Model	XGS-4528F	XGS-4526
Product name	24-port GbE L3 Switch with 10GbE Uplink	24-port GbE L3 Switch with 10GbE Uplink
Switch class	Layer 3	Layer 3
Port Density		
Total port count	28	26
100/1000 Mbps	-	20
Gigabit combo (SFP/RJ-45)	24	4
10GbE CX4 port	2	-
Expansion module slot	1	1
Performance		
Switching capacity (Gbps)	144	96
Forwarding rate (Mpps)	107.1	71.4
Packet buffer (byte)	768 K	768 K
MAC address table	8 K	8 K
IP address table	2 K	2 K
Routing entries	512	512
Routing domains (IPv6)	128	128
Routing domains (IPv4)	64	64
Power		
Input	100 - 240 V AC, 50/60 Hz	100 - 240 V AC, 50/60 Hz
Max. power consumption (watt)	80	72
Physical Specifications		
Item — Dimensions (WxDxH)(mm/in.)	438 x 310 x 44.5/17.24 x 12.20 x 1.75	438 x 310 x 44.5/17.24 x 12.20 x 1.75
Item — Weight (kg/lb.)	4.9/10.80	4.8/10.58
Packing — Dimensions (WxDxH)(mm/in.)	580 x 466 x 176/22.83 x 18.35 x 6.93	580 x 466 x 176/22.83 x 18.35 x 6.93
Packing — Weight (kg/lb.)	5.9/13.01	5.67/12.50
Environmental Specifications		
Operating — Temperature	0°C to 45°C/32°F to 113°F	0°C to 45°C/32°F to 113°F
Operating — Humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)
Storage — Temperature	-10°C to 70°C/14°F to 158°F	-10°C to 70°C/14°F to 158°F
Storage — Humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)
MTBF (hr)	125,667	119,814
Heat dissipation (BTU/hr)	289.85	245.52

Features

Standard Compliance
- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-TX Ethernet
- IEEE 802.3ab 1000BASE-T Ethernet
- IEEE 802.3x Flow Control
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- IEEE 802.1p Class of Service (CoS)
- IEEE 802.1Q VLAN tagging
- IEEE 802.1X Port authentication
- IEEE 802.3ad LACP aggregation

Traffic Management and QoS
- Rate limiting: policy-based/port-based bandwidth control with 64 kbps granularity
- Two Rate Three Color Marker (trTCM)
- CIR/PIR bandwidth control
- Port-based egress traffic shaping
- Broadcast storm control
- IEEE 802.1p with 8 priority queues per port
- WFR, WRR, SPQ scheduling algorithms

- DSCP/DSCP to 802.1p priority mapping
- IGMP/IGMP snooping v1, v2, v3
- IGMP throttling
- IGMP snooping fast leave
- IGMP snooping statistics
- Multicast VLAN Registration (MVR)
- Congestion control on all ports
- Selective Q-in-Q

IP Routing
IPv4
- Wire-speed IP forwarding
- RIP v1, v2
- OSPF
- Static routing
- DHCP server/relay
- OSPF summary address
- DVMRP
- ECMP
- IP port moving
- VRRP

IPv6
- IPv6 over Ethernet
- IPv6 addressing

- ICMPv6
- Dual Stack
- IPv6 static routing
- Neighbor discovery
- DHCPv6 relay

Link Aggregation
- IEEE 802.3ad LACP link aggregation
- Static port trunking
- Up to 12 aggregation groups, 8 ports per group randomly selected
- Link aggregation algorithm of source/destination IP address

Resiliency
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- Equal Cost Multipath Routing (ECMP)
- Virtual Router Redundancy Protocol (VRRP)
- CPU protection

User Security and Authentication
- IEEE 802.1Q tag-based and port-based VLAN
- GVRP automatic VLAN member registration
- 1 K static VLANs and up to 4 K dynamic VLANs
- Full range 4 K PVID support
- Port-based VLAN and VLAN isolation
- IP classification VLAN
- VLAN counter
- VLAN search
- VLAN translation
- VLAN MAC limit
- Intrusion lock
- MAC freeze
- MAC search
- MAC filtering
- Port security
- Limited MAC number per port
- IP source guard
- Loop guard
- IP filtering
- TCP/UDP socket filtering
- BPDU transparency
- IEEE 802.1X port-based authentication
- Enhanced 802.1X compensation assignment over VLAN
- TACACS+
- Layer 2 protocol tunneling
- Guest VLAN

Network Administration Security
- Username/password required for Web/Telnet/ local console administrators
- Two-level security by specific SNMP read/ write community
- Multiple login sessions
- Multiple access permission management
- SSH v1, v2
- SSL/TLS

Network Management
- ZyXEL iStacking™, up to 24 switches managed by a single IP address
- Web-based management
- Telnet
- SSH
- SNMP v1, v2c, v3
- RS-232c local console
- IP management: static IP
- Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)
- Port mirroring: ingress/egress/both port mirroring
- IEEE 802.1ag CFM
- IEEE 802.1AB LLDP
- Transceiver DDMI information (including MIB)
- sFlow

Intelligent ACL (L2/L3/L4)
- 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
- RFC 1066 TCP/IP-based MIB
- RFC 1213, 1157 SNMPv2c/v3 MIB
- RFC 2011, 2012, 2013 SNMPv2 MIB
- RFC 1493 bridge MIB
- RFC 2674 bridge MIB extension
- RFC 1643 Ethernet MIB
- RFC 2358 Ethernet-like MIB
- RFC 1757 RMON group 1, 2, 3, 9
- RFC 2819, 2925 remote management MIB
- ZyXEL private MIB

Certifications
Safety
- ANSI/UL 60950-1
- CSA 60950-1
- EN 60950-1
- IEC 60950-1

EMC
- FCC Part 15 (Class A)
- CE EMC (Class A)

Accessories

Expansion Module (Optional)

Model		Features
EM-412		• 2-port CX4 module • 10GbE CX4 connectivity for short distance deployments
EM-422		• 2-slot XFP fiber module • 10GbE XFP connectivity for long distance deployments

Transceivers (Optional)

Model	Speed	Connector	Wavelength	Max. Distance	DDMI
XFP-SR	10-Gigabit XFP	Duplex LC	850 nm	300 m (984 ft)	Yes
XFP-LR	10-Gigabit XFP	LC	1310 nm	10 km (10936 yd)	Yes
SFP-1000T	Gigabit SFP	RJ-45	-	100 m (328 ft)	-
SFP-BX1310-10-D*	Gigabit SFP	LC	1310 nm (Tx) 1490 nm (Rx)	10 km (10936 yd)	Yes
SFP-BX1490-10-D*	Gigabit SFP	LC	1490 nm (Tx) 1310 nm (Rx)	10 km (10936 yd)	Yes
SFP-LHX1310-40-D	Gigabit SFP	LC	1310 nm	40 km (43744 yd)	Yes
SFP-LX-10-D	Gigabit SFP	LC	1310 nm	10 km (10936 yd)	Yes
SFP-SX-D	Gigabit SFP	LC	850 nm	550 m (1804 ft)	Yes
SFP-ZX-80-D	Gigabit SFP	LC	1550 nm	80 km (87488 yd)	Yes

Bi-directional SFP transceivers must be used in pairs (for example, use one SFP-BX1310-10-D and one SFP-BX1490-10-D as a solution)

For more product information, visit us on the web at www.ZyXEL.com

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