ZyXEL

- 16K MAC address table
- Policy-based QoS optimizes multi-service quality
- IGMP Snooping v1, v2, v3; MVR
- Multilayer-aware (L2/L3/L4) ACL for security protection
- Wire speed
- High redundancy and resilient architecture with RSTP and Port Trunking
- "Front access" design; external alarm input/output block
- IPv6 management support

MES3500-24
MES3500-24F

24-port FE L2 Switch with Four GbE Combo Ports

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

The ZyXEL MES3500-24/MES3500-24F has been specially designed for service providers to deliver profitable Ethernet services. With the high-performance hardware platform, service providers can easily extend network topologies while enabling robust security, QoS and management functions to help customers fulfilling different needs and to support the IPv6 for trouble-free future network expansions.

Benefits

Advanced QoS for significant services

Consistent service quality and reliable connecting ability in a converged network is the key for Carrier to connect and satisfy customers; therefore the ability to control traffic flow and set traffic policy becomes more critical than ever. The ZyXEL MES3500-24/MES3500-24F 24-port FE L2 Switch offers wire-speed flow control that classifies and prioritizes the incoming packets according to the predefine QoS policies that meet requirements of service providers.

In terms of classification, the Differentiated Services Code Point (DSCP) field 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 rules based on IP, MAC addresses, VLAN ID or TCP/UDP port number. For bandwidth management, the MES3500-24/MES3500-24F provides 8 priority queues per port for different types of traffics, allowing service providers to set policy-based rate limitations that take full advantage of constrained network resources and guarantee the best performance.

Enhanced security for protection among customers

Avoiding subscribers affecting each other on a shared network or shared device is a major concern for service providers. The ZyXEL MES3500-24/MES3500-24F offers a complete set of security features to protect user data while administrating the traffics. Port security provides the ability to deny unauthorized users from accessing the network. Moreover, the 802.1X feature cooperating with RADIUS is useful to prevent unauthorized access based on username and password (or other credentials) and acts as powerful access control for converged networks with mixed wired and wireless access.

The MES3500-24/MES3500-24F provides a multilayer (L2/L3/L4) ACL suite of sophisticated policy-based control mechanisms that enables service providers to deploy easily based on actual network environment needs via a Web GUI or command line interface to prevent abnormal or illegal access. The policies can be defined to deny packets based on source and destination MAC addresses, IP addresses or TCP/UDP ports.

MES3500-24
MES3500-24F

24-port FE L2 Switch with Four GbE Combo Ports

Resilient and redundant design

A quick recovery and round-the-clock network is vital for service providers to establish a robust network. The MES3500-24/MES3500-24F provides comprehensive features to make sure network is well operated. The IEEE 802.3ad Link Aggregation feature reduces network downtime by providing redundant paths and bandwidth aggregation to critical connections, while IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) allow immediate recovery from failed connections by sending packets via the backup link.

Digital Diagnostics Monitoring Interface (DDMI) SFP support

The enhanced digital interface allows real-time access to the device operating parameters, and it includes optional digital features such as soft control and monitoring of SFP I/O signals. In addition, the MES3500-24/MES3500-24F fully incorporates the functionality needed to implement digital alarms and warnings from fault isolation and failure prediction tasks as well as component monitoring features, among others.

With the digital diagnostic monitoring interface, the MES3500-24/MES3500-24F enables users to easily detect packet loss from transceivers and aging cables; therefore users can not only avoid troubles such as unstable networking services, but also boost productivity significantly.

Rich IPv6 features built-in for future-proof network expansions

As ZyXEL considers IPv6 management features as a future trend, complete IPv6 host management capabilities are added to the MES3500-24/MES3500-24F for guaranteed IPv6/4 migration and future-proof expansion. It's not only beneficial for high-density Fast Ethernet deployments, but also capable of preventing investment loss and therefore perfectly suitable for both network cores and edges.

Specifications

Model		MES3500-24	MES3500-24F
Product Name		24-port FE L2 Switch with Four GbE Combo Ports 	24-port FE Fiber L2 Switch with Four GbE Combo Ports 
Port Density			
10/100 FE BASE-T, fixed		24	-
Open SFP (FE)		-	24
Dual-personality GbE ports		4	4
Performance			
Switch Capacity (Gbps)		12.8	12.8
Switch Forwarding Rate (Mpps)		9.6	9.6
Packet Buffer (Bytes)		320 K	320 K
MAC Address		16k	16k
Power Requirement			
Input Voltage of AC		AC Power input (100 V ~ 240 V)	AC Power input (100 V ~ 240 V)
Input Voltage of DC		-37 to -72 V DC	-37 to -72 V DC
Maximum Power Consumption (Watt)		14	14
Physical Specifications			
Item	Dimensions (WxDxH)(mm/in.)	440 x 200 x 44.5/17.52 x 7.87 x 1.75	440 x 200 x 44.5/17.52 x 7.87 x 1.75
	Weight (kg/lb.)	2.6/5.73	2.6/5.73
Packing	Dimensions (WxDxH)(mm/in.)	495 x 286 x 71/19.48 x 11.26 x 2.8	495 x 286 x 71/19.48 x 11.26 x 2.8
	Weight (kg/lb.)	3.45/7.6	3.45/7.6
Environmental Specifications			
Operating Environment	Temperature	0°C to 50°C/32°F to 122°F	0°C to 50°C/32°F to 122°F
	Humidity	10% to 95% (Non-condensing)	10% to 95% (Non-condensing)
Storage Environment	Temperature	-40°C to 70°C/-40°F to 158°F	-40°C to 70°C/-40°F to 158°F

Features

Standard Compliance

- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-Tx Ethernet
- IEEE 802.ab 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)

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

Redundancy for Fault Backup

- 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)(V400)
- IP Forwarding Table MIB (RFC4292)(V400)
- Management Information Base for Transmission Control Protocol (RFC4022)(V400)
- Management Information Base for User Datagram Protocol (RFC4113)(V400)

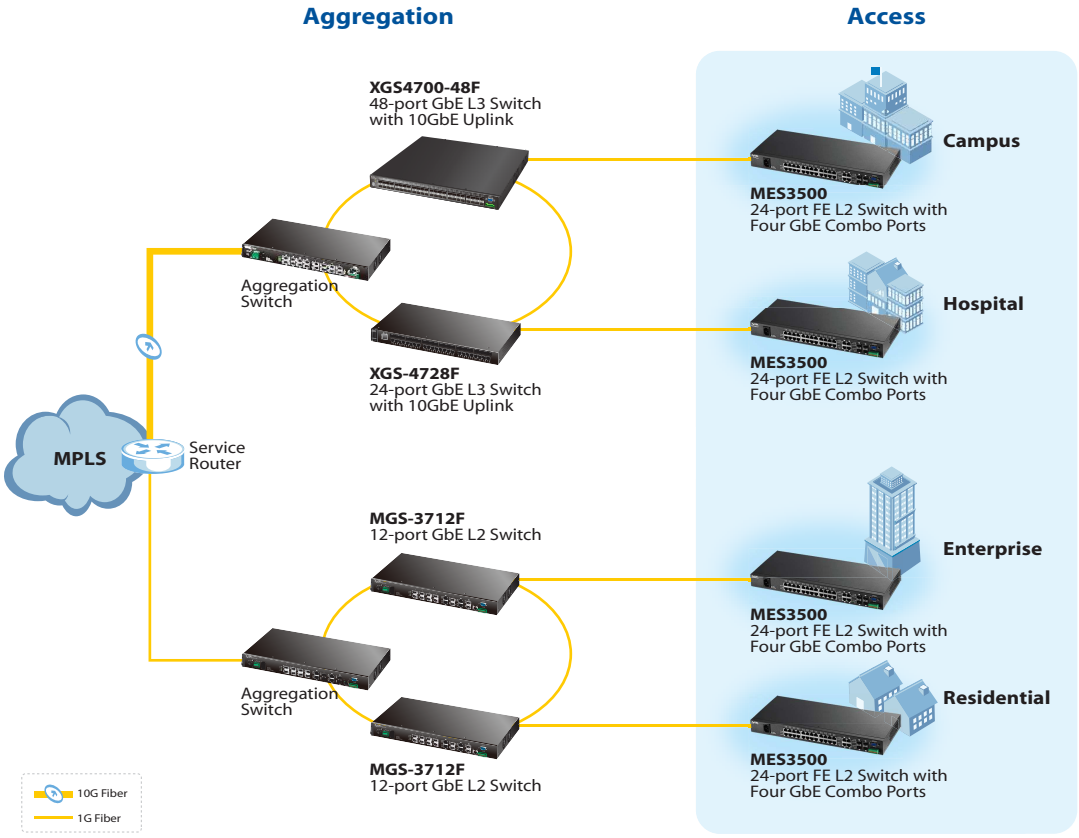
Safety Agency Certification

- BSMI
- CE
- FCC
- EN 60950-1
- IEC 60950-1
- EU RoHS compliant

MES3500-24
MES3500-24F

24-port FE L2 Switch with Four GbE Combo Ports

Application Diagram



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
Fast Ethernet	SFP-100FX-2	LC connector	Singlemode, up to 2 km (1 mi) reach
	SFP-100TX	RJ-45 connector	Up to 100 m (300 ft) reach using standard Ethernet cable
	SFP-100LX-20	LC connector	Singlemode, up to 20 km (12 mi) reach
	SFP-100BX1310-20-D	LC connector	Bidirectional singlemode, up to 20 km (12 mi) reach, DDMI version
	SFP-100BX1550-20-D	LC connector	Bidirectional singlemode, up to 20 km (12 mi) reach, DDMI version

*: Bi-directional SFP must be used in pairs (For example, connect 1 x SFP-BX1310-10-D and 1 x SFP-BX1490-10-D as a solution)

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