ZyXEL

Multi-layer Switch with High-performance IP Routing

Benefits

- IP Routing RIP & OSPF Support
- Multicast DVMRP & IGMP Support
- High Redundant by RSTP & VRRP
- Optional Backup Power System
- L3+ (L2/L3/L4) Enterprise Access Control List
- Port Security and Static MAC filtering
- Limited MAC number per port
- 802.1x authentication
- ZyXEL iStacking™ Technology, Clustering Network Management
- SNMP & RMON Support

Managed Layer 3+ Fast Ethernet Switch

ES-4024A

Multi-layer Ethernet Switch

ZyXEL ES-4024A an intelligent Ethernet switch is a multilayer switch that provides enterprise-class availability, complete security, bandwidth management to improve the operation of the network. With 24 ports Fast Ethernet and 4 Gigabit Ethernet uplink configurations, the ES-4024A can be deployed as both an intelligent access layer switch for enterprise wiring closets and as a Layer 3 backbone switch for small networks.

High Performance Wire-speed Switching and IP Routing

With hardware-based IP routing engine and the sophisticated multilayer operating software, the ES-4024A delivers high performance dynamic IP routing, like OSPF,RIP. In addition to dynamic IP unicast or multicast, the ES-4024A supports Distance Vector Multicast Routing Protocol (DVMRP) and Internet Group Management Protocol (IGMP) snooping to handle variety of datagrams perfectly which made the ES-4024A ideal for today's multi-service network environment.

Advanced QoS for Significant Service

The ES-4024A works with advanced QoS mechanism to insure significant service well-operation via a series of QoS process to prevent customers' network be impacted by network congestion. With intelligent multilayer capability, The ES-4024A can classify, police, and prioritize the incoming packets according to well-predefined QoS policies. In classification, Differentiated Services Code Point field (DSCP) and the 802.1p class of service (CoS) field are be identified the priority of the incoming packets. Classification and reclassification can be based on criteria as specific as rule-based on both IP and MAC addresses, on the other hand, for the bandwidth management, the ES-4024A has been loaded with powerful traffic management. For instance, the ES-4024A provides 4 priority queues per port for different types of traffics, allowing administrators to set rule-based shaping and rate limiting based on UDP/TCP, IP address or MAC addresses which takes full advantages of the limited network resources and guarantees the best performance.

High-Security for Business-Critical Application

The ES-4024A offers complete data security in data and management plane via a wide range of security features to protect users' data and administrative traffic, secure the network from unauthorized users. Remote Access Dial-In User Service (RADIUS) authentication enables centralized access control of switches and restricts 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 into a switch port, therefore highly reducing the risk of unknown access from mass deployed wireless network or Hubs. To cooperate with RADIUS, 802.1x is useful to prevent unauthorized access based on username and password (or other credentials) that is powerful access control for convergence network mixed wired and wireless.

The ES-4024A multi-layer (L2/L3/L4) ACLs is a suite of sophisticated rule-based control mechanisms that can be easy deployed based on realistic network environment via Web GUI or command line to prevent abnormal and illegal access in advance. The rules can be defined to deny packets based on source and destination MAC addresses, IP addresses, or TCP/UDP ports.

Enterprise-class Network Management

To compare with conventional bounded network management, ZyXEL ES-4024A demonstrates its power with advanced management capabilities; such as the ZyXEL-exclusive iStacking(tm) clustering management technology that can across different floors and routing domain to locate other iStacking-capable switches in the same management cluster, and it allows administrators to manage 24 switches with one single IP. That high reduces operation cost and more flexible to maintain ZyXEL Switches. IT staff can opt for Web or command line interface to suit their convenience, 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

System Specifications

Standard Compliance
- IEEE 802.3 10Base-T Ethernet
- IEEE 802.3u 100 Base-Tx Ethernet
- IEEE 802.3ab 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 802.1p Class of service, priority protocols
- IEEE 802.1Q VLAN tagging
- IEEE 802.1x Port Authentication
- IEEE 802.3ad LACP aggregation

Performance
- 12.8Gbps non-blocking switching fabric
- 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 and Packet Buffer
- 16K MAC entries
- 2M Bytes packet buffer

Traffic Management and QoS
- IEEE 802.1p with 4 priority queues per port for different types of traffic
- WFQ (Weighted Fair Queuing) scheduling for different prioritization of packets
- IEEE 802.1Q tag-based and port-based VLAN
- 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 traffic mirroring

IP Routing and Service Features
- IPV4 support
- 64 IP routing domains
- 16K IP address table
- Wire-speed IP forwarding
- 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
- Up to 3 aggregation groups, per group support up to 8 ports.
- 8 ports per group randomly selected

Redundancy for Fault Backup
- VRRP(Virtual Router Redundancy Protocol)
- IEEE802.1w 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
- 256 static VLAN, up to 4K dynamic VLAN
- 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
- Telnet CLI
- 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
- Based on IP address
- Based on Protocol type
- Based on DSCP

Hardware Specifications
- 24 10/100Base-T, auto-negotiation and cross-over
- Built-in 2 shared SFP open slots plus one optional GbE module (two 1000Mbps Copper Port),1 console port, D-Sub 9 pin Female (DCE)

Physical Specifications
Dimensions: 438 (L) x 270 (D) x 44.45 (H)mm
Weight: 4 Kg

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

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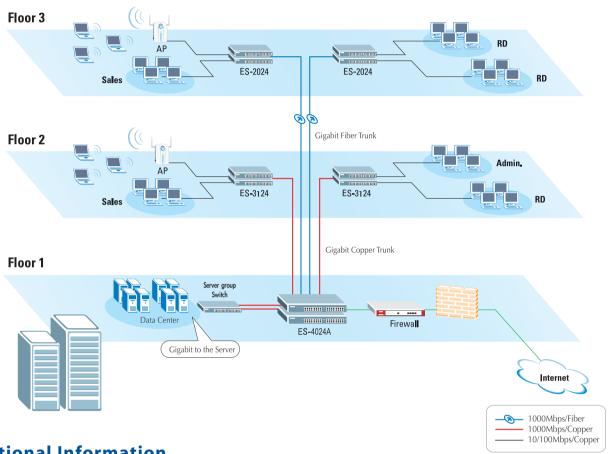- Operating humidity: 10% ~ 90%, non-condensing

Feature Matrix
ZyXEL Managede Ethernet Switch

Feature/Model	ES-2008 Series	ES-2024	ES-3124	ES-3124PWR	ES-4024A	GS-2024	GS-3012 GS-3012F	GS-4024 GS-4012F
General Specs								
Layer 3 IP Switching					×			×
Height	1U	1U	1U	1U	1U	1U	1U	1U
No. of 100Base-TX	8(All Series)	24	24	24	24			
No. of 100Base-FX	1 x MM (ES-2008-SC) 1 x SM (ES-2008-SC30)							
No. of 1000Base-T	1(ES-2008-GTP)	2	4	4	2+ optional stacking Slot	24	12/4(shared)	12/4(shared)
No. of 1000Base-X		2 x SFP slots(shared)	2 x SFP slots(shared)	2 x SFP slots(shared)	2 x SFP slots(shared)	2 x SFP slots(shared)	4 x SFP slots(shared) 12 x SFP slots	4 x SFP slots(shared) 12 x SFP slots
Switching fabric	3.6Gbps	8.8Gbps	12.8Gbps	12.8Gbps	12.8Gbps	48Gbps	24Gbps	48Gbps/24Gbps
Routing Protocol								
RIP					×			×
OSPF V2					×			×
DVMRP					×			×
Availability								
802.1D STP	×	×	×	×	×	×	×	×
802.1w RSTP		×	×	×	×	×	×	×
802.1s MSTP			*	*			*	*
VRRP					×			×
BPS Support			×	×	×		×	×
802.3ad Link Aggregation	×	×	×	×	×	×	×	×
QoS								
802.1p	×	×	×	×	×	×	×	×
No. of CoS Per Port	2	2	8	8	4	4	8	8
Port based Rate Limiting		×	×	×	×	×	×	×
Policy based Rate Limiting			×	×	×		×	×
Port based traffic shaping		×	×	×	×	×	×	×
Broadcast Storm Control	×	×	×	×	×	×	×	×
IGMP Snooping		×	×	×	×	×	×	×
DiffServ (DSCP)			×	×	×	×	*	×
Security								
802.1x		×	×	×	×	×	×	×
Port Security	×	×	×	×	×	×	×	×
Static MAC Filtering	×	*	×	×	×	×	×	×
Limited MAC number per Port			×	×	×		×	×
IP Filtering			×	×	×		×	×
TCP/UDP Socket Filtering			×	×	×		×	×
SSH v1/v2		*	×	×			*	×
SSL/TLS			×	×			*	×
Port-Based VLAN	×	×	×	×	×		×	×
802.1Q VLAN	256	2k	4k	4k	4k	4k	4k	4k
802.1ad VLAN Stacking			×					
Management								
SNMP	×	×	×	×	×	×	×	×
RMON 1.2.3.9	×	×	×	×	×	×	×	×
Web Management	×	×	×	×	×	×	×	×
Telnet CLI	×	×	×	×	×	×	×	×
iStacking		×	×	×	×	×	×	×
Out-of-band MGMT Port			×	×		×	×	×
Console Port	×	×	×	×	×	×	×	×
DHCP Server					×			×
DHCP Relay					×			×
DHCP Client		×	×	×			×	×
NTP		×	×	×	×	×	×	×
Port Mirroring	×	×	×	×	×	×	×	×
ACL								
Based on MAC address			×	×	×		×	×
Based on VLAN			×	×			×	×
Based on IP address			×	×	×		×	×
Based on protocol type			×	×	×		×	×
Based on TCP/UDP port			×	×	×		×	×
Based on DSCP			×	×	×		*	×

Firmware upgradeable for future enhancement

ZyXEL

Ethernet Architecture for Enterprise

Floor 3

Sales — AP — ES-2024 — ES-2024 — RD — RD

Gigabit Fiber Trunk

Floor 2

Sales — AP — ES-3124 — ES-3124 — Admin. — RD

Gigabit Copper Trunk

Floor 1

Data Center — Server group Switch — ES-4024A — Firewall — Internet

Gigabit to the Server

- 1000Mbps/Fiber
- 1000Mbps/Copper
- 10/100Mbps/Copper

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	850nm	LC	220m	550 m	–	3.15 ~ 3.45 V	300 mA
SFP-LX-10	-20 dBm	1310nm	LC	550m	550 m	10 km	3.15 ~ 3.45 V	300 mA
SFP-LHX1310-40	-23 dBm	1310nm	LC	–	–	40 km	3.15 ~ 3.45 V	300 mA
SFP-ZX-80	-24 dBm	1550nm	LC	–	–	80 km	3.15 ~ 3.45 V	300 mA

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

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