# ZyXEL

# Ultra-low Latency Top-of-rack Switch for Data Center Bridging Deployments

- **1.28 Tbps non-blocking switching capacity**
- **Forty-eight (48) 10GbE SFP+ ports and four (4) 40GbE QSFP+ uplinks**
- **All 48 SFP+ ports support 1GbE/10GbE speeds**
- **Data center optimized with DCBX, 802.1Qaz (ETS) and 802.1Qbb (PFC) protocol support**
- **Redundant and hot-swappable fan trays and power supply modules**
- **Modular and flexible rack-by-rack deployment**
- **IPv6 support**
- **Low power consumption design**

Data centers today are facing a new generation of challenges. Virtualization and data center consolidation have imposed higher bandwidth demands on data center networks. The competitive business landscape has also pushed forward the need for faster application deployments. Next-generation data centers need to provide the efficiency, flexibility and availability to facilitate business agility and competitiveness.

The ZyXEL XS3900-48F is a high-density top-of-rack (ToR) switch designed to facilitate fast and modularized application deployments in next-generation data centers. It supports DCBX, 802.1Qaz (ETS) and 802.1Qbb (PFC) protocols, and offers 10GbE and 40GbE connectivity to provide high bandwidth and ultra-low latency performance for converged networks and virtualized applications. The 48 fixed 10GbE SFP+ ports can also support 1GbE SFP transceivers for added flexibility and easy network transitions. With redundant and hot-swappable fan trays and power supply modules, the XS3900-48F offers the redundancy, reliability and availability for non-stop services.

## Benefits

### Ultra-low latency performance

The ZyXEL XS3900-48F is a high-density ToR switch designed to provide ultra-low latency performance for Data Center Bridging deployments. It features forty-eight (48) 10GbE SFP+ ports and four (4) 40GbE QSFP+ uplinks for high-performance and scalable networking. Built with non-blocking switching architecture, the XS3900-48F delivers 1.28 Tbps switching capacity and 952.4 Mpps forwarding rate, with an additional 9 MB packet buffer. The XS3900-48F offers ultra-low latency IP switching performance on all ports, making it the ideal choice for ToR deployments in data centers.

### Data center optimized service quality

The ZyXEL XS3900-48F is optimized to deliver the service quality required in demanding converged data center networks. This high-performance ToR switch offers enhanced management of data center traffic with support for Data Center Bridging Exchange (DCBX), 802.1Qaz Enhanced Transmission Selection (ETS) and 802.1Qbb Priority-based Flow Control (PFC) protocols. The switch can discover and communicate with other DCB-enabled network devices with the DCBX protocol, and utilize PFC and ETS to manage, pause and schedule the behavior of different traffic to avoid traffic congestions, ensure lossless operation, and guarantee bandwidth for critical applications.
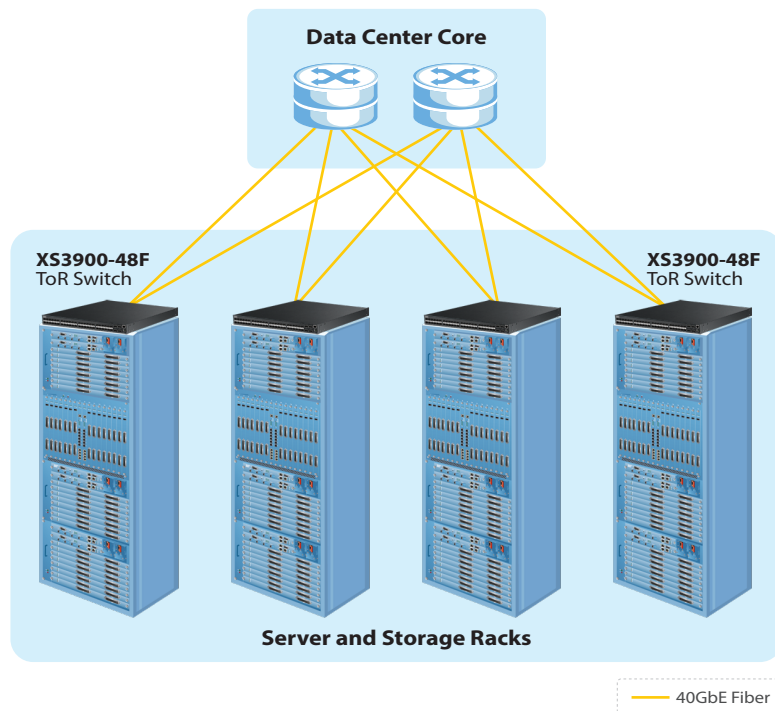
### Modular and flexible rack-by-rack deployment

To meet the demands of rapidly changing business operations, data centers today need to be more agile and flexible than ever before. Purpose-built for top-of-rack deployments, the ZyXEL XS3900-48F facilitates modular data center deployments, which offer fast and easy rack-by-rack server changes or upgrades. Not only do top-of-rack data center designs require less cabling infrastructure and offer cleaner cable management, they also enable quicker deployment and easier scaling of network applications.

## ZyXEL green

## XS3900-48F
**48-port 10GbE Top-of-rack Switch with 40GbE Uplink**

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## Key Applications

**Data Center Core**

**XS3900-48F**
ToR Switch

**XS3900-48F**
ToR Switch

**Server and Storage Racks**

— 40GbE Fiber

## Specifications

| Model | XS3900-48F | | |
|---|---|---|---|
| **Switch class** | Layer 2 | | |
| **Port Density** | | | |
| **Total port count** | 52 | | |
| **10-Gigabit SFP+** | 48 | | |
| **40-Gigabit QSFP+** | 4 | | |
| **Performance** | | | |
| **Switching capacity (Gbps)** | 1,280 | | |
| **Forwarding rate (Mpps)** | 952.4 | | |
| **Packet buffer (byte)** | 9 M | | |
| **MAC address table** | 128 K | | |
| **Power** | | | |
| **Input** | 100 - 240 V AC, 50/60 Hz | | |
| **Max. power consumption (watt)** | 232 | | |
| **Removable power module** | Yes | | |
| **Physical Specifications** | | | |
| **Dimensions (WxDxH)(mm/in.)** | 440 x 455 x 43/17.32 x 17.91 x 1.69 | | |
| **Weight (kg/lb.)** | 10.2/22.49 | | |
| **Removable power & fan modules** | Yes | | |
| **Environmental Specifications** | | | |
| Operating | **Temperature** | 0°C to 50°C/32°F to 122°F | |
| | **Humidity** | 10% to 95% (non-condensing) | |
| Storage | **Temperature** | –47°C to 70°C/-52.6°F to 158°F | |
| | **Humidity** | 10% to 90% (non-condensing) | |
| **MTBF (hr)** | 156,472 | | |
| **Heat dissipation (BTU/hr)** | 1,024.32 | | |

# Features

## Standard Compliance
- IEEE 802.3x flow control
- IEEE 802.1Qbb Priority-based Flow Control (PFC)
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
- IEEE 802.3ad LACP aggregation
- IEEE 802.3ah OAM
- IEEE 802.1ag CFM
- IEEE 802.1AB LLDP
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- IEEE 802.1Q VLAN tagging
- IEEE 802.1p Class of Service (CoS) prioritization
- IEEE 802.3z 1000BASE-X
- IEEE 802.3aq 10GbE
- IEEE 802.3ba 40GbE
- IEEE 802.1X port authentication

## Data Center Bridging (DCB)
- IEEE 802.1Qbb Priority-based Flow Control (PFC)
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
- IEEE 802.1Qaz DCB capability exchange protocol (Proposed under the DCB task group of the IEEE 802.1 working group)

## Resilience and Availability
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- MRSTP (ZyXEL proprietary)
- IEEE 802.3ad LACP link aggregation
- Up to 24 aggregation groups, 8 ports per group
- Link aggregation algorithm of source/destination IP addresses
- Loop guard
- ErrDisable recovery
- Dual configuration files
- Dual hot-swappable 350 W AC power supplies
- Dual hot-swappable fan modules

## Traffic Control
- 802.1Q static/dynamic VLANs (4 K/4 K)
- Port-based VLAN
- Protocol-based VLAN
- IP-subnet-based VLAN
- VLAN trunking
- VLAN translation
- VLAN ingress filtering
- 802.1ad VLAN stacking (Q-in-Q)
- LACP algorithm of source/destination IP addresses
- GVRP
- Selective Q-in-Q
- L2PT

## Security
- IEEE 802.1x
- Port security
- MAC authentication
- Layer 2 MAC filtering
- Layer 3 IP filtering
- Layer 4 TCP/UDP socket filtering
- BPDU transparency
- Static MAC forwarding
- Multiple RADIUS servers
- Multiple TACACS+ servers
- IEEE 802.1x VLAN and bandwidth assignment by RADIUS
- Login authentication by RADIUS
- Login authentication by TACACS+
- TACACS+ accounting
- RADIUS accounting
- Authorization on TACACS+
- SSH v1/v2
- SSL
- Intrusion lock
- MAC freeze
- DHCP snooping
- ARP inspection
- Static IP/MAC binding
- Policy-based security filtering
- Port isolation
- IP source guard
- Limit number of MAC per port
- MAC search
- Guest-VLAN
- ACL packet filtering (IPv4/IPv6)
- PPPoE relay agent
- PPPoE option 82
- PPPoE intermediate agent
- CPU protection

## Quality of Service (QoS)
- IEEE 802.1p priority queues per port: 8
- IEEE 802.1p queuing method: SPQ/WRR/WFQ
- IEEE 802.1p class of service (SPQ, WFQ, SPQ/WFQ combination capable)
- DiffServ (DSCP)
- Policy-based CoS
- Broadcast storm control: Broadcast, multicast, unknown unicast (DLF) storm control
- Port-based (ingress/egress) rate limiting
- Rate limiting per IP/TCP/UDP per port
- Policy-based rate limiting
- Policy-based bandwidth control granularity
- Ingress CIR for bandwidth control
- IEEE 802.3x flow control
- Port-based egress traffic shaping CIR/PIR supported
- Policy-based prioritization
- Two Rate Three Color Marking (TRTCM)

## Layer 2 Multicast
- L2 multicast (Group)
- IGMP snooping (v1, v2, v3)
- IGMP snooping fast leave
- Configurable IGMP snooping timer and priority
- IGMP snooping statistics
- IGMP throttling
- MVR support
- IGMP filtering
- IGMP snooping immediate leave
- IGMP proxy mode & snooping mode selection
- IPv6 MLD snooping proxy
- Manageability
- SNMP v1, v2c, v3
- SNMP trap group
- RMON (1, 2, 3, 9)
- ICMP echo/echo reply
- Syslog
- IEEE 802.3ah OAM (Link discovery, loopback)
- IEEE 802.1ag CFM
- IEEE 802.1AB LLDP

## IPv6 Management
- IPv6 over Ethernet (RFC 2464)
- IPv6 addressing architecture (RFC 4291)
- Dual stack (RFC 4213)
- ICMPv6 (RFC 4443)
- Path MTU (RFC 1981)
- Minimum path MTU size of 1280 (RFC 5095)
- Encapsulation for maximum PMTU of 1500
- Neighbor discovery (RFC 4861)
- DHCPv6 relay

## Device Management

- iStacking
- Web interface
- Management through console, Telnet, SNMP
- Remote firmware upgrade by FTP/Web
- Configuration saving and retrieving
- Multiple logins supported
- Configure clone
- Multilevel CLI
- CLI (Cisco-like)
- DHCP relay per VLAN
- DHCP client
- DHCP option 82
- Daylight saving
- NTP
- Port mirroring
- Port mirroring per IP/TCP/UDP
- Policy-based port mirroring
- RJ-45 out-of-band management port
- USB type RS-232 out-of-band console port
- sFlow

## MIB

- RFC 1066 TCP/IP-based MIB
- RFC 1213, 1157 SNMPv2c/v3 MIB
- RFC 1493 Bridge MIB
- RFC 1643 Ethernet MIB
- RFC 1757 RMON Group 1, 2, 3, 9
- RFC 2011, 2012, 2013 SNMPv2 MIB
- RFC 2233 SMIv2 MIB
- RFC 2358 Ethernet-like MIB
- RFC 2460 IPv6 specification
- RFC 2674 Bridge MIB extension
- RFC 2819, 2925 remote management MIB
- RFC 4022 management information base for transmission control protocol
- RFC 4113 management information base for user datagram protocol
- RFC 4292 IP forwarding table MIB
- RFC 4293 Management Information Base (MIB) for IP
- RFC 4862 IPv6 stateless address auto-configuration

## Certifications

- CE EMC Class A
- EN 60950-1
- RoHS compliant

# Accessories

### Transceivers (Optional)

| Model | Speed | Connector | Wavelength | Max. Distance | DDMI |
|---|---|---|---|---|---|
| SFP10G-LR | 10-Gigabit | Duplex LC | 1310 nm | 10000 m (10936 yd) | Yes |
| SFP10G-SR | 10-Gigabit | Duplex LC | 850 nm | 300 m (984 ft) | Yes |

### Other

| Model | Description |
|---|---|
| RM410 | Rack mount kit for the XS3900 Series |

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