ZyXEL

Key Features

- Non-blocking 384G Switching Performance
- Dual Active-active Switching Fabrics
- Hot-swappable I/O Modules
- Six Slots (Two for Management and Four for I/O Modules), Total of 10U
- Intelligent QoS and Traffic Control for Enhanced Availability
- Extended L3 Routing and L2 Switching Functions for Highest Performance
- Intelligent L2/L3/L4 Local Switching
- Built-in OSPF, VRRP
- High Density Wire Speed Gigabit 802.3af PoE Ports

Enterprise LAN Switches
Switch 7000 Series

The ZyXEL LAN Switch MS-7206 is an intelligent, multilayer modular LAN switch designed for enterprise environments that require always-on availability for mission critical applications with the highest degree of performance, QoS, strict security and granular bandwidth control. The ZyXEL MS-7206 comes with a 6-slot chassis in which two slots are reserved for redundant managed switch fabrics and four are available for intelligent switching I/O modules to support up to 192 Gigabit ports. With dual active-active switch fabrics, hot swappable I/O modules and redundant power supplies the ZyXEL MS-7206 provides a robust architecture that fulfills the needs of businesses for zero tolerance networking.

Key Benefits

Flexible Architecture for Easy Network Deployment & Expansion

To match the growth expectation of an enterprise a network infrastructure needs more flexibility to fulfill possible expansion requirements and new applications in the future. To upgrade or replace this critical core of enterprise network the cost is considerably higher than other system elements.

ZyXEL MS-7206 Switch provides 6 open slots, including two redundant managed slots and four I/O slots that give enterprise sufficient flexibility to deploy their network. With a maximum of 384G non-blocking switching capacity and up to 192 full-power GbE PoE ports, ZyXEL MS7206 Switch can easily satisfy any bandwidth-hungry needs and tomorrow's next-generation multi-service applications.
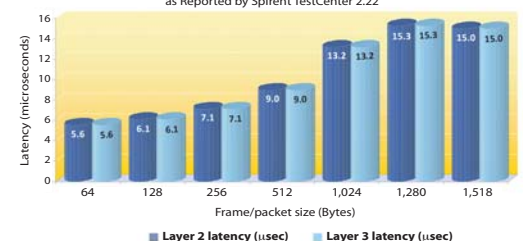
10 Gigabit Backplane Interface

Driven by high-bandwidth converged services such as teleconferencing, video, surveillance, storage and system backup enterprises need non blocking architecture to deal with the increasing demands of traffic on the network. The ZyXEL MS-7206 Switch supports up to four 10G interface I/O modules (MI-7526F) providing up to 8 10G interfaces. This means that enterprises can easily connect the network core to high-bandwidth applications such as servers in the data center or directly distribute 10G connectivity as uplinks to other switches in the enterprise network.

Extremely Low Latency and Zero-Loss Performance Ensure Network Efficiency

ZyXEL MS-7206 Switch offers proven performance on delivering 100% zero-loss throughput with extremely low latency. According to independent tests conducted by The Tolly Group, the MS-7206 shows extremely low latency 5.6 to 15 microseconds while conducting 99% load across 192 GbE ports on Layer-2 or Layer-3 traffics. These astounding outcomes show that the MS-7206 has outstanding performance for enterprises to perform real-time applications such as voice and video without any noticeable delay.
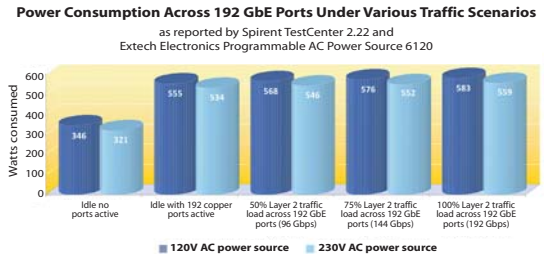
TOLLY Up to Spec CERTIFIED

Layer 2/3 Store and Forward Latency for 99% Load across 192 GbE Ports in a Port-Pairing Scenario with Various Frame/Packet Sizes

as Reported by Spirent TestCenter 2.22

Frame/packet size (Bytes)	Layer 2 latency (μsec)	Layer 3 latency (μsec)
64	5.6	5.6
128	6.1	6.1
256	7.1	7.1
512	9.0	9.0
1,024	13.2	13.2
1,280	15.3	15.3
1,518	15.0	15.0

Latency (microseconds)

Frame/packet size (Bytes)

■ Layer 2 latency (μsec) ■ Layer 3 latency (μsec)

Energy Saving Design, More Green, More Economic

Energy saving is becoming an important issue to enterprises, and it's getting more difficult for IT executives to choose between high performance and high power consumption. To address this, the MS-7206 offers industry-leading energy efficiency. According to tests conducted by The Tolly Group, the MS-7206 uses only 555 watts in idle mode, and it needs only 28 watts additional power with 100% traffic load. The MS-7206 undoubtedly saves energy costs and provides enterprise businesses with excellent performance at the same time.

TOLLY Up to Spec CERTIFIED

Power Consumption Across 192 GbE Ports Under Various Traffic Scenarios
as reported by Spirent TestCenter 2.22 and
Extech Electronics Programmable AC Power Source 6120

Watts consumed — 600, 500, 400, 300, 200, 100, 0

| Idle no ports active | Idle with 192 copper ports active | 50% Layer 2 traffic load across 192 GbE ports (96 Gbps) | 75% Layer 2 traffic load across 192 GbE ports (144 Gbps) | 100% Layer 2 traffic load across 192 GbE ports (192 Gbps) |

346 | 321 | 555 | 534 | 568 | 546 | 576 | 552 | 583 | 559

■ 120V AC power source   ■ 230V AC power source

Resilient and Redundant Design for Round-The-Clock Business Continuity

The network is a critical part of daily business operations as such any type of network failure can have a massive cost to the business. The ZyXEL MS-7206 has been developed to offer enterprise a resilient and redundant design to ensure the continuity of enterprise network operations. In terms of hardware architecture, the MS-7206 has two slots for managed switch fabrics; the dual active/active resilient architecture enables two MM-7201 management cards to work together to load balance and share the network traffic processing. Implementing the two management cards also provides the business with resilience in the shape of fast failover in the event of failure.

In addition with dual redundant power supplies and removable fan modules, the MS-7206 provides extremely high redundancy for non-stop operations. In terms of firmware architecture, the MS-7206 supports IEEE 802.3ad Link Aggregation to reduce network downtown by providing redundant paths and bandwidth aggregation to critical connections. With IEEE 802.1w Rapid Spanning Tree Protocol (RSTP), Open Shortest Past First (OSPF) routing and Virtual Router Redundancy Protocol (VRRP), enterprise networks will be capable of recovering immediately from failed links.

Intelligent QoS for Mission-Critical Enterprise Applications

As more applications are integrated into IP-based networks the network traffic flows are now more complicated and diverse than ever. To ensure the quality of multiple services on a converged network, adopting an advanced traffic control technology to manage different types of traffic flow is critical and necessary to enterprise networks. The MS-7206 delivers industry leading throughput by enabling local switching decisions to be made on the switch interface I/O as opposed to forwarding unnecessary traffic to the management fabric.

The ZyXEL MS-7206 Switch supports Intelligent QoS features to organise network traffic into the best condition for mission-critical applications. With support for Class of Service (CoS) and Differentiated Services Code Point (DSCP), administrators can easily classify and perform traffic prioritisation for critical applications such as VoIP and video conferencing. For traffic prioritisation and bandwidth control, the Switch 7000 Series provides a complete set of QoS features such as multi-layer (L2/L3/L4) ACL prioritisation, eight priority queues, SPQ/WRR/WFQ scheduling algorithms and bandwidth control with granularity of 64kbps. Thanks to these excellent features, network administrators can easily set correct priority and adjust the best bandwidth to guarantee the quality of all network services according to different characteristics of business operations.

Completely Safe Enterprise Networks

In the knowledge economy, information security has become a critical issue. Undoubtedly, enterprise networks are the most important platform to acquire and exchange information. In addition to setting a firewall to prevent the threats incoming from the Wide Area Network (WAN), a well secured Local Area Network (LAN) is also important for enterprises to protect intellectual property within the internal network.

ZyXEL MS-7206 Switch provides a complete set of security features to protect important data, administer traffic and secure enterprise networks. Through the multilayer (L2/L3/L4) ACL security filtering, network administrators can easily monitor and secure enterprise networks with transparent sources and destination information like MAC addresses, IP addresses, Ethernet type and TCP/UDP. With 802.1x authentication and port security, administrator can deny unauthorised users from accessing the network. The intrusion lock function detects the "plugged" and "unplugged" status change of Ethernet cables, and the switch can deactivate the port automatically if needed. Though all these choreographed security features, the MS-7206 Switch gives customers a completely safe enterprise network environment.
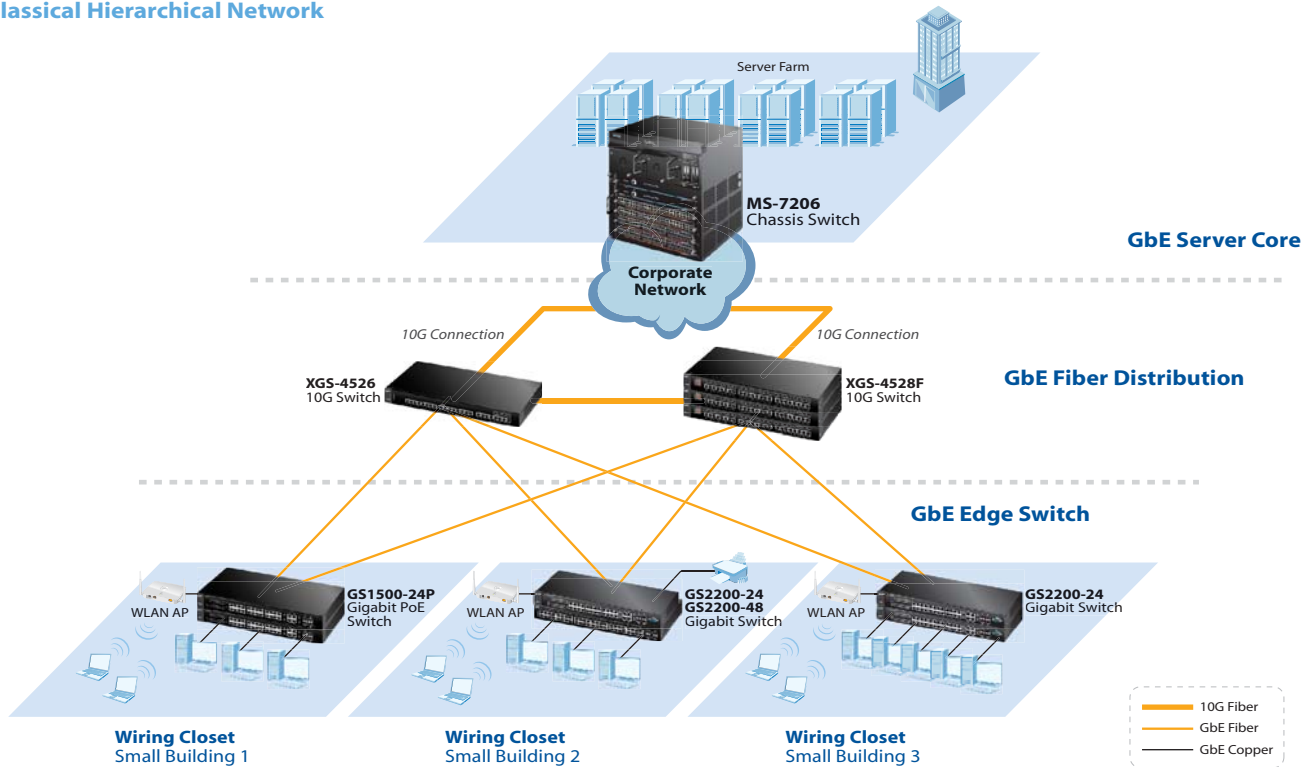
Reducing Operation Costs with Enterprise-Class Trouble-Free Network Management

To manage and maintain a complicated enterprise network is a tough job for network administrators, therefore employing friendlier network management interfaces with more options can relieve the difficulty and take more advantage of the enterprise networks. The MS-7206 supports comprehensive network management features like ZyXEL's exclusive iStacking™ technology that allows administrators to manage a switch cluster (of up to 24 ZyXEL switches) through a single master ZyXEL Switch.
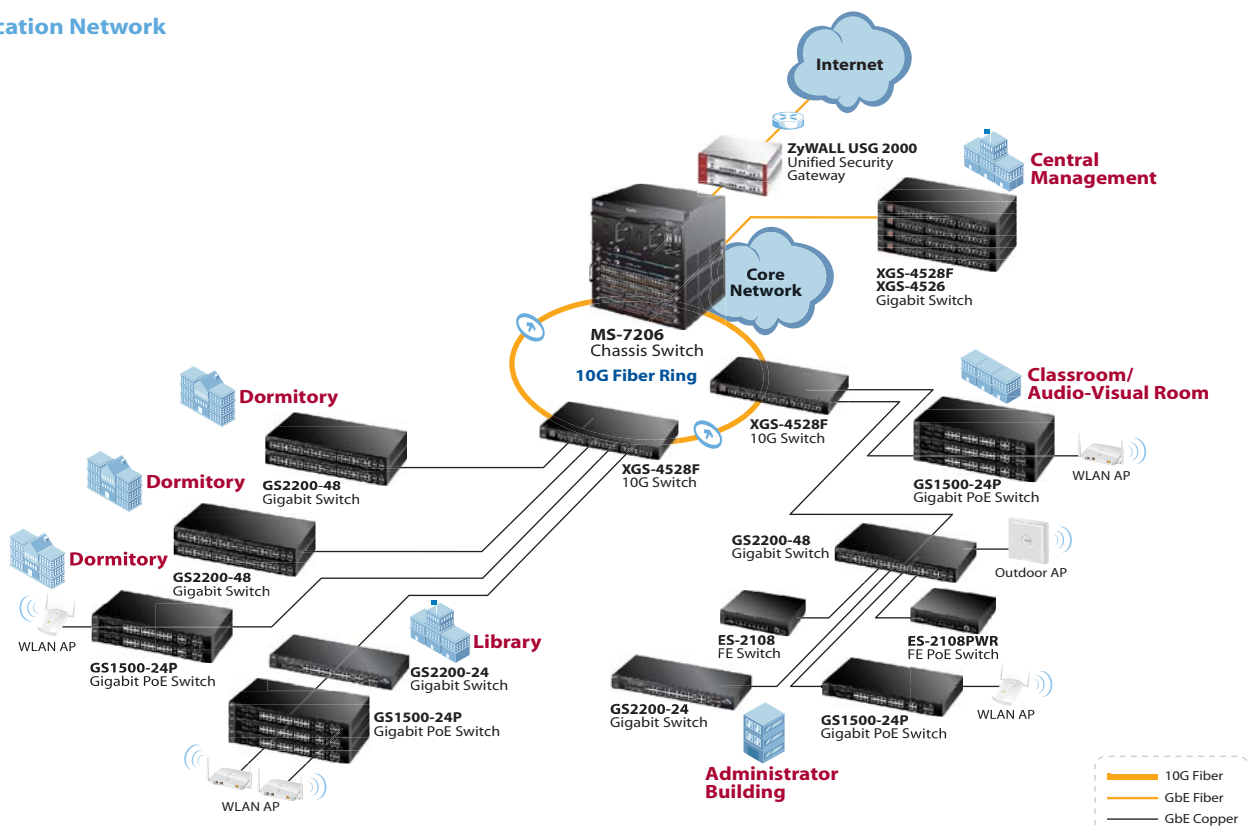
In addition, various network management options are available on the MS-7206: Web, Telnet and the console port are all supported, so network administrators can choose to manage the switch using the friendly Web-based configuration or the convenient text-based CLI (Command Line Interface). Furthermore, the MS-7206 also supports centralized SNMP management software for the switch maintenance tasks to be done remotely. This helps reducing the operation costs and greatly increasing efficiency. For more security, SSHv1/v2 and SSL can be introduced to encrypt management sessions.

Key Applications

Classical Hierarchical Network

Server Farm

MS-7206
Chassis Switch

GbE Server Core

Corporate
Network

10G Connection

10G Connection

XGS-4526
10G Switch

XGS-4528F
10G Switch

GbE Fiber Distribution

GbE Edge Switch

WLAN AP

GS1500-24P
Gigabit PoE
Switch

WLAN AP

**GS2200-24
GS2200-48**
Gigabit Switch

WLAN AP

GS2200-24
Gigabit Switch

Wiring Closet
Small Building 1

Wiring Closet
Small Building 2

Wiring Closet
Small Building 3

- ▬▬ 10G Fiber
- ▬▬ GbE Fiber
- ▬▬ GbE Copper

Education Network

Internet

ZyWALL USG 2000
Unified Security
Gateway

**Central
Management**

**XGS-4528F
XGS-4526**
Gigabit Switch

Core
Network

MS-7206
Chassis Switch

10G Fiber Ring

Dormitory

XGS-4528F
10G Switch

**Classroom/
Audio-Visual Room**

Dormitory

GS2200-48
Gigabit Switch

XGS-4528F
10G Switch

GS1500-24P
Gigabit PoE
Switch

WLAN AP

Dormitory

GS2200-48
Gigabit Switch

GS2200-48
Gigabit Switch

Outdoor AP

WLAN AP

GS1500-24P
Gigabit PoE Switch

Library

GS2200-24
Gigabit Switch

ES-2108
FE Switch

ES-2108PWR
FE PoE Switch

GS1500-24P
Gigabit PoE Switch

GS2200-24
Gigabit Switch

GS1500-24P
Gigabit PoE Switch

WLAN AP

WLAN AP

**Administrator
Building**

- ▬▬ 10G Fiber
- ▬▬ GbE Fiber
- ▬▬ GbE Copper

Modular

MM-7201
Redundant Management
Fabric Module

- 1 10/100Base-TX management port
- Two series port: RS-232 console & alarm console
- 192 Gbps switch fabric
- Load sharing and non-blocking performance
- CLI, SNMP and RMON
- System status LEDs

MI-7248
48 100/1000Base-T Module

- 48 100/1000Base-T RJ-45 ports
- L2/L3/L4 local switching support

MI-7248TF
24 1000Base-T +
24 GbE SFP Module

- 24 1000Base-T RJ-45 ports
- 24 GbE SFP open slots
- L2/L3/L4 local switching support

MI-7248PWR
48 1000Base-T PoE Module

- 48 1000Base-T PoE RJ-45 ports
- L2/L3/L4 local switching support

MI-7526F
24 GbE ports +
2 optional 10G uplink Modular

- 20 GbE SFP open slots
- 4 dual personality ports
- 1 x 2-port 10 GbE open slots

MP-7201
600 W Redundant
Power Supply Unit

- 600 W PSU for MS-7206 system
- Dual active/active load sharing design
- AC power input

MP-7202
750 W External
Power Supply Unit for PoE

- 750 W external PSU to provide full 48-port PoE power
- Isolated PoE & system power to increase system stability

MP-7203
600 W Redundant Power Supply Unit

- Dual active/active load sharing design
- DC power input

MS-7206S
MS-7206 Shelf

- 10U height
- Dimensions:
  435 (W) x 316 (D) x 447 (H) mm
- Weight: 13 kg

A Quick Look at MS-7206

1. Dual Redundancy Power Supplies
2. Removable FAN
3. Up to 4 external PoE power units to support MI-7248PWR
4. Dual Switch Fabrics & Mgmt. slot
5. Four I/O Modules

Specifications

Standard Compliance
- IEEE 802.3u 100Base-Tx Ethernet
- IEEE 802.ab 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
- IEEE 802.1ad VLAN stacking

System Capacity
- Switch fabric slot: 2
- I/O module slot: 4
- Power supply unit slot: 2
- Fan module slot: 1
- 1000Base-T, RJ-45 ports: Max. 192 (4 x MI-7248)
- 1000Base-T PoE, R-45 ports: Max. 192 (4 x MI-7248PWR)
- 10 Gigabit Ethernet: Max. 8 (4 x MI-7526F)

System Performance
- Switching capacity: Max. 384 Gbps non-blocking switching fabric (2 x MM-7201)
- Switching forwarding rate: Max. 286 Mpps (2 x MM-7201)
- Packet buffer: Max. 2304 K (2 x MM-7201)
- MAC address: 16K
- IP address table: 8K
- Routing entries: 8K
- Routing domains: 256

Resilience and Availability
- IEEE 802.1D STP/802.1w RSTP/802.1s MSTP
- Dual configuration files
- IEEE 802.3ad LACP (max #trunks/links per trunk): 24/8
- MRSTP
- VRRP
- Switch fabric high availability
- Redundant power supply support
- Swappable fan module
- Loop guard

Traffic Control
- 4K static VLAN, up to 4K dynamic VLAN
- GVRP
- VLAN trunking
- 802.1ad VLAN stacking (QinQ)
- BPDU transparency

Security
- 802.1x
- Port security
- MAC filtering
- Static MAC forwarding
- SSH v1/v2
- SSL
- Intrusion lock
- MAC freeze
- ACL (L2/L3/L4) security filtering
- TACACS+
- RADIUS

Quality of Service (QoS)
- 802.1p priority queues per port: 8
- 802.1p queuing method: SPQ/WRR/WFQ
- Broadcast storm control
- Rate limiting, port based (ingress/egress)/ bandwidth control granularity: 64 Kbps
- Traffic shaping, port based
- ACL (L2/L3/L4) prioritization (layer 4)

Classic of Service (CoS)
- 802.1p Class of Service
- DiffServ (DSCP)

IP Multicast
- IGMP v1, v2, v3
- IGMP snooping v1, v2, v3
- MVR
- DVMRP
- IGMP filtering
- IGMP snooping immediate leave

Routing
- Static IP routing, number of routes: 256
- IP routing
- RIP v1, v2
- OSPF v2

Device Management
- iStacking
- Web interface
- CLI
- DHCP relay per VLAN
- DHCP client (management)
- DHCP option 82
- NTP
- Daylight saving
- Port mirroring
- RJ-45 out-of-band management port
- RS-232 out-of-band console port

Manageability
- SNMP v1, v2c, v3
- RMON (1, 2, 3, 9)
- syslog

Misc
- Jumbo frame support on gigabit ports
- 802.3af PoE support

Power Requirement
- Input voltage of AC: 100 - 240 VAC, 50/60 Hz
- Max power consumption: 583 Watt (100% traffic load across 192 GbE ports)

Environmental Specifications
- Operating temperature: 0°C to 45°C
- Storage temperature: -25°C to 70°C
- Operating humidity: 10% to 90% (non-condensing)

MIB Information
- RFC 1066 TCP/IP-based MIB
- RFC1213, 1157 SNMPv2c/v3 MIB
- RFC 2011, 2012, 2013 SNMPv2 MIB
- RFC1493 bridge MIB
- RFC 2674 bridge MIB extension
- RFC1643 Ethernet MIB
- RFC 2358 Ethernet-like MIB
- RFC1757 RMON group 1, 2, 3, 9
- RFC 2819, 2925 Remote Management MIB
- RFC 2233 ifVHC packet group
- RFC 3621 (rfc3621)—Power Ethernet MIB
- ZyXEL private MIB

Certification
- UL 60950-1
- CSA 60950-1
- EN 60950-1
- IEC 60950-1
- EU RoHS compliant

Accessories

10-Gigabit Module (Optional)

Model		Features
EM-412		• 2-slot CX4 10 GbE module • Extended 10 GbE CX4 module for short distance deployment
EM-422		• 2-slot XFP 10 GbE module • Extended 10 GbE XFP module for long distance deployment

Backup Power System (Optional)

Model		Features
BPS-120		• Up to 6 switches can be connected to one BPS-120 • Provides power to one switch without traffic or user interruption or switch rebooting in the event of a switch internal power supply failure • Temperature, power and fan speed monitoring

SFP Transceivers (Optional)

Speed	Model	Type	Description
10 Gigabit	FTLX8511D3 (XFP-SR)	SC connector	Multimode, up to 300 m reach
	FTLX1611M3 (XFS-ER)	SC connector	Singlemode, up to 40 km reach
	FTLX1412D3BCL (XFP-LR)	SC connector	Singlemode, up to 10 km reach
Gigabit	SFP-1000T	RJ-45 connector	Up to 100 m using standard Ethernet cable
	SFP-SX-D	LC connector	SFP SX 550 m commercial type transceiver, DDMI version
	SFP-LX-10-D	LC connector	SFP LX 10 km commercial type transceiver, DDMI version
	SFP-BX1310-10-D	LC connector	Bidirectional singlemode, up to 10 km reach, DDMI version*
	SFP-BX1490-10-D	LC connector	Bidirectional singlemode, up to 10 km reach, DDMI version*
	SFP-LHX1310-40-D	LC connector	SFP LHX 1310 wavelength 40 km commercial type transceiver, DDMI version
	SFP-ZX-80-D	LC connector	SFP ZX 80 km commercial type transceiver, DDMI version

*: Bi-directional SFP must be used in pairs (Example: 1 x SFP-BX1310-10-D and 1 x SFP-BX1490-10-D connected together is a solution)

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