

# XS52HS

## Fully Managed Layer 3 Dual Stack 10 Gigabit Optical Switch



The XenOpt Series XS52HS brings to the market a new set of 10G fully managed Layer 3 Optical Ethernet switches for carrier and MAN networks at an affordable price. With complete dual stack support (IPv4/IPv6) and large portfolio of features, series offers an ideal solution for the Metro Ethernet market, becoming an integral part of the access layer of three-tier networks, providing long distance fiber connections to end users and enabling the use of Triple play service. They are also an excellent choice for use as distribution/aggregation switch for large enterprises, providing long distance fiber connections to aggregate access layer switches that are dispersed in different locations.

- ### Features
- 44 SFP Gigabit Ethernet ports with 4 combo ports for uplink connectivity
  - 2 slots for up to four 10G XFP/SFP+ links
  - Complete support for IPv4 and IPv6
  - Unique Stacking VLAN technology
  - Enhanced Security (IEEE 802.1x, AAA,ACL)
  - Comprehensive QoS (per port, 802.1p, TOS, DSCP, (d/s) WRR/SP)
  - Complete Management (CLI, WEB, Telnet, SSH SNMP v1/v2c/v3, SSL)
  - Additional Multicast features for ISPs
  - DMM and OAM support
  - Redundant AC and DC power supply

### Interface Overview

XenOpt Series XS52HS model comes with 44 SFP gigabit ports and four combo (SFP/RJ-45 10/100/1000 Base-T) ports. Additional 2 slots enable the 10 Gigabit Ethernet connectivity via hot-pluggable 10 Gigabit XFP/SFP+ transceiver module that supports distances up to 300 meters over multimode fiber and 10 to 80km over single-mode fiber. The SFP-based Gigabit ports support various optional 1000Mb/100Mb Ethernet mini GBIC transceivers for different distance fiber connections.

### Performance

With high switching capacity, the XenOpt Series XS52HS switch supports wire-speed L2/L3 forwarding and high routing performance for IPv4 and IPv6 protocols. Other features also include comprehensive QoS, enhanced VLAN functions (Multicast VLAN, Voice VLAN, QinQ, etc), classified bandwidth control, multiple link aggregation, intelligent security control - making switch an ideal solution for next generation enterprise networks.

## VLAN Features

XenOpt Series XS52HS supports IEEE 802.1q, enabling the user to tag all the frames as well as tagging data based on the packet origin MAC. This feature also enables port based VLANs and MAC based VLANs, so when client reconnects from one port to another, switch still recognizes that client as the same user through MAC identification and enables him to keep the same VLAN.

Another advantage of XenOpt Series XS52HS is the unique Stacking VLAN technology, supporting up to 16 million VLANs, providing unique VLAN to each user in your network. This gives the opportunity to:

- minimize broadcast domains to get highest efficiency;
- data seclusion between users on L2/L3 with enhanced security;
- easy user identification through unique VLAN for each user;
- with unique VLANs for each user management and operational levels are improved drastically.

Creation of VLAN VPNs (QinQ) provides lower system cost, clear deployment overview and operation with manageable L2 VPN.

Voice VLAN function enables to add IP Phone to voice VLAN to ensure QoS.

## Quality of Service (QoS)

Series supports 8 queues per port for differentiated management of up to 8 traffic types, traffic prioritization based on IEEE 802.1p, Layer 3 protocol, Class of Service (CoS) port based stream classification, priority tag based on IP address/source port, TOS, DSCP, TCP/UDP port number, assignment of different level of service, IEEE 802.3x Flow control and dWRR/ sWRR/ SP to provide QoS for real time applications such as voice, data and video.

Switches also enable bi-directional per port rate limiting and traffic classification for broadcast, multicast or unknown destination traffic and data maximums for ingress traffic as well as Layer 4 Prioritization based on TCP/ UDP port numbers, enabling user to preserve network bandwidth and allows him full control of network resources.

## Layer 3 Features

The XenOpt Series XS52HS switches deliver high performance hardware based IP routing also supporting IPv4 and IPv6 standard. Features include Routing Information Protocol (RIPv1/v2), static and default routing provide dynamic routing by exchanging routing information with other Layer 3 switches and routers. Series also supports plethora of L3 security features such as ARP guard, Anti-ARP scanning, Local ARP proxy and other ARP and MAC security technologies to protect network and insure its security and high reliability. Enhanced with high reliability VRRP protocol it increases network reliability and makes network upgrades easier.

## Enhanced Security

IEEE 802.1x port-based access control ensures all users are authorized before being granted access to the network. Function enables port and MAC based authentication and supports guest and auto VLAN. User authentication is carried out using any standard-based RADIUS/TACACS+ server.

Access Control Lists (ACLs) can be used to restrict access to sensitive network resources by denying packets based on L2/L3/L4 headers information as well as control the ingress and forwarding by applying different policies.

Another feature is time based ACL support for services based on time, enabling traffic restrictions for desired time frames.

## Management

XenOpt Series XS52HS switches support Simple Network Management Protocol (SNMPv1/v2c/v3), enabling in-band and out-of-band control; Command Line Interface (CLI) for advanced configuration and diagnostics; Web graphical user interface (GUI) for web browser configuration; Security IP function to prevent illegal users log in or change the configuration; Secure Shell (SSH), which will ensure the security of switch management and configuration; Remote monitoring (RMON) 1, 2, 3, 9; Syslog and SNMP logging of events; Unified management via NMS software; Dual flash image and configuration; Cluster support for up to 24 devices; Secure FTP and TFTP file transfer from/to switch; BOOTP for DHCP server/client IP Address assignment; Public and Private MIB interface; Management by general network management platform with 3rd party management software.

XenOpt Series XS52HS model also supports DDM (Digital Diagnostic Monitor), which complies to SFF-8472 MSA standard and enables detailed digital diagnostics of optical interfaces and existing connections. Furthermore, series supports Operation and Management (OAM) sublayer in the data link layer, that enables discovery, link monitoring, remote fault detection and remote loopback for every connection present on the switch. This effectively helps to improve overall Ethernet management mechanism in MANs (Metropolitan Area Networks) and Wide Area Networks (WANs).

## Multicast Features

XenOpt Series XS52HS supports abundant multicast features such as IGMPv1/v2/v3 snooping, Multicast VLAN Registration (MVR) with VLAN and Trunk association, multicast receiver/sender control and illegal multicast source detect functions.

## Protocol support

XenOpt Series XS52HS switches support all major protocols such as 802.1d/w/s spanning tree, GVRP, 802.1q, 802.1p, LACP/802.3ad, DHCP standards, SNTP, SSL HTTPS, SSH, etc.

For full list of supported protocols please refer to Technical Specification at the end of this presentation.

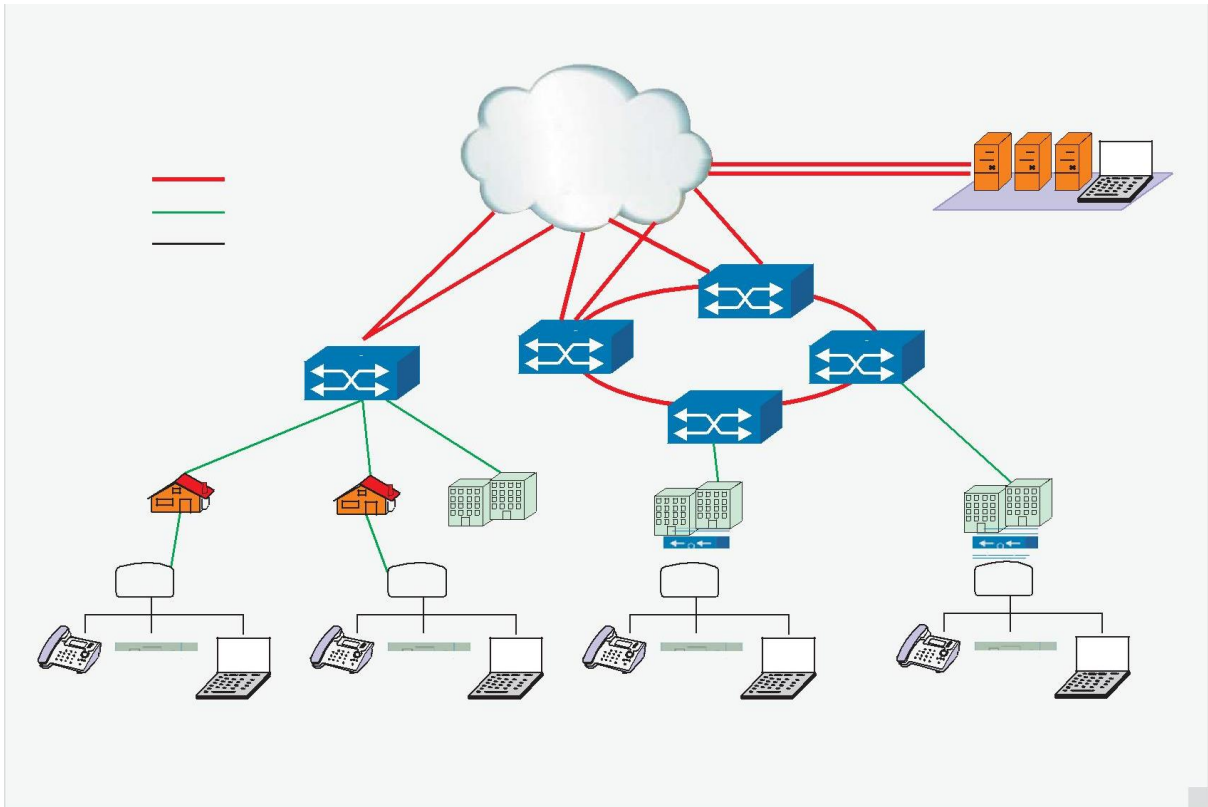
## IPv6 Support

Series has an built-in hardware support for all IPv6 features needed for maximum performance and next generation enterprise network. It acts as IPv6 host and supports Dual Stack connectivity, DHCPv6 based on IPv6, including DHCPv6 server, client, relay and snooping, etc. As more and more networks grow, there is an ever occurring need for larger addressing stack and demand for higher security standards. XenOpt Series XS52HS is the perfect product to meet all the requirements.

## Power features

XenOpt Series XS52HS switches support both, redundant AC and DC power supplies and are designed for different environment applications.

### Typical deployment



## Technical specification

Parameter	XS52HS
Ports	44 x GE SFP ports with 4 x GE SFP/Base-T Combo (SFP/GT) + 2 slots for maximum 4 x 10G XFP/SFP+ module
<b>Performance</b>	
Switching Capacity	176 Gbps
Forwarding Rate	131 Mpps
MAC address	up to 16 k
ACL Table	up to 1k
Queues per port	8
VLAN Table	up to 4 k
Routing Table	up to 128 IPv4 and 128 IPv6
L3 Interface	up to 256
<b>Physical Features</b>	
Dimensions (W×H×D)	440 x 44 x 330mm
Power Supply	100V~240V, Input DC: -48V
Power Consumption	110W, Without 10GE: 85W
MTBF	>160.000 hours
Temperature	Working 0°C~50°C, storage -40°C~70°C
Relative Humidity	5%~90%, non-condensing
EMC safety	FCC, CE, RoHS
Physical protection	Lightning Protection Level: 10/700 4KV
<b>Security Features</b>	
IEEE 802.1x	Works with private client and can manage P2P traffic
	Supports Guest VLAN and Auto VLAN
AAA	RADIUS for IPv4 and IPv6
	TACACS+ for IPv4

Access Control List (ACL)	1k ACLs based on source/destination IP or MAC address, IP type, TCP/UDP port number, IP priority, ToS
	ACL on VLAN interface
	Flow redirect based on ACL
Enhanced	Monitor ping Sweep, illegal multicast filtering, controlled traffic
	IP Source Guard under controlled L3 forwarding block
	Prevents illegal multicast source and limited multicast
DHCP	Supports DHCP Relay, DHCP Relay option 82, DHCP Snooping and DHCP Snooping option 82
	Supports BOOTP, DHCP server/client for IP address assignment
ARP Operation	Supports ARP binding
	Supports ARP limit
	Supports ARP Guard
	Supports Anti-ARP scanning
<b>Layer 1 and Layer 2 Features</b>	
<b>Forwarding</b>	<b>Storage and Forwarding</b>
VLAN	802.1Q based VLAN with support up to 4K VLAN IDs
	Port based VLAN
	Private VLAN
	IP subnet VLAN
	Protocol based VLAN
	MAC based VLAN
	Support for Voice VLAN
	Supports QinQ, Selective QinQ, Flexible QinQ
	Supports GVRP
Spanning Tree	IEEE 802.1d STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
	Supports Root guard, BPDU guard, BPDU forwarding BPDU Tunnel
Link Aggregation	Supports LACP 802.3ad, max 128 groups trunk with max 8 ports for each trunk

	Supports src-mac/dst-mac/src-dst-mac/src-ip/dst-ip/src-dst-ip based load balance
MAC Operation	Supports MAC binding
	Supports MAC filtering
	Supports MAC per port limiting
Broadcast Storm Control	Supports Broadcast / Multicast / Unicast Storm Control
	Supports Broadcast control and data rate setting
Port Features	Supports VCT (Virtual Cable Test) & DDM
	Supports UDLD, LLDP, LLDP-MED
	Jumbo Frame (9k) support
	Loopback interface
	Port loop detection, Supports 1:1 and N:1 port mirroring
	Bandwidth control: At least 64Kbps
	Support for HOL, preventing first packet jam, semi-duplex backpressure, duplex IEEE802.3x
	GE combo ports are compatible with FE SFP module
<b>Quality of Service (QoS) Features</b>	
8 queues per port	
Supports QinQ, Selective QinQ, Flexible QinQ	
Traffic classification based on IEEE 802.1p, Layer 3 protocol, CoS, IP priority, DSCP, TCP/UDP port number, Access Control List	
Supports SP, WRR, sWRR, dWRR	
Supports IEEE 802.3x Flow control	
Supports IEEE 802.1x Port and MAC based Authentication	
Supports Layer 4 prioritization	
<b>Layer 3 Features</b>	
IP Protocol support for both, IPv4 & IPv6	
Default Routing, Static Routing, Black Hole Routing, VLSM and CIDR	

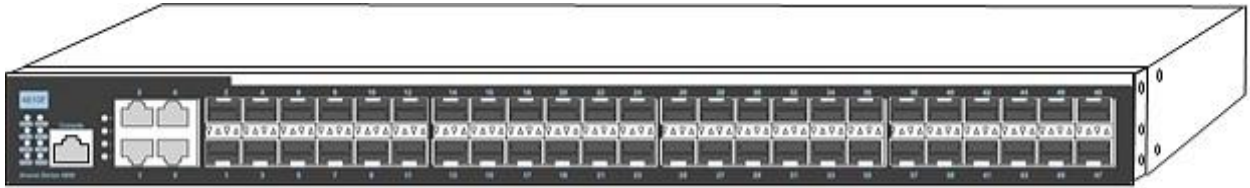
RIPv1/v2	
VRRP, VRRPv3	
Supports BFD	
ARP Guard, Local ARP Proxy, Proxy ARP, ARP binding, Gratuitous ARP, ARP limiting	
<b>Multicast Features</b>	
Supports IGMP v1/v2/v3 snooping	
Supports MLD v1/v2 snooping	
Supports Multicast VLAN Register (MVR) based on port	
Supports Multicast receive control	
Supports illegal multicast source detect	
Supports multicast policy configuration	
<b>IPv6 Features</b>	
Supports ICMPv6, NDP, SNMP over IPv6, HTTP over IPv6, IPv6 Ping/tracer, IPv6 Telnet, IPv6 RADIUS+, IPv6 Syslog, IPv6 SNTP, IPv6 FTP/TFTP	
Supports DHCPv6 Server, Relay, Snooping	
Supports MLD Snooping	
Supports IPv6 MVR	
<b>Management Features</b>	
Switch Management	Full CLI, WEB, Telnet, SNMPv1/v2c/v3 through IPv4 and IPv6
	RMON 1,2,3,9
	SSHv1,v2 & SSL support
	RJ45 Console
	Supports Public & Private MIB interface
	Supports SNTP/NTP, Summer Saving Time
	Supports Multiple Sys-log servers
	Supports OAM 802.3ah
	Supports NMS software management



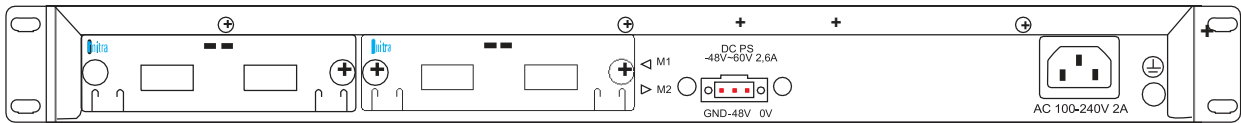
	Support up to 24 devices cluster
	Supports IPv4 and IPv6 Security IP management
Firmware & Configuration	Dual flash for Multiple firmware images/ configuration files support
	Firmware upgrade via TFTP/FTP server
	Configuration file upload/download via TFTP/FTP server

### Device Overview

#### Front View



#### Back View



### Additional Slot Modules

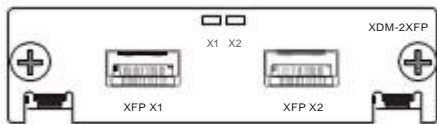


Figure 1: panel diagram of XDM-2XFP

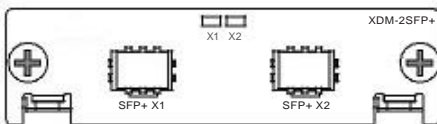


Figure 2: panel diagram of XDM-2SFP+

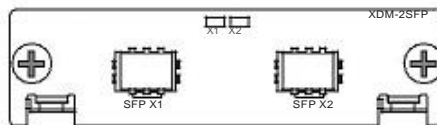


Figure 3: panel diagram of XDM-2GB

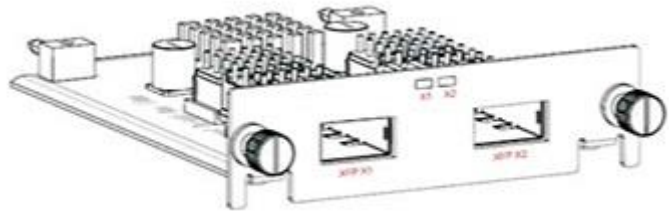


Figure 4: XDM-2XFP structural view

**Ordering information<sup>1</sup>**

PN	Description
XS52HSH	1xAC, 1XDC, front to back fan

**Notes:**

<sup>1</sup> For accurate order specification please contact Xenopt reseller before placing an order. The content of this document is subject to change without notice. Xenopt does not guarantee errorless or outdated information.

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