# L2+ 8-Port 10/100/1000T + 2 100/1000X SFP Managed Switch

Multi-function Managed Switch Solution for Small/Medium-size Network

PLANET WGSD-10020 is a desktop size, 10-port Managed Gigabit Switch with powerful L2 /L4 network switching engine and advanced IPv6 / IPv4 management functions, designed for SMB and FTTx networks. It can handle an extremely large amount of multicast stream and voice data in a secure topology linking to an Enterprise backbone or high capacity network server with 20Gbps switching fabric delivered in a fanless, 13-inch metal case. It is also ideal for the remote access layer of campus or enterprise networks and the aggregation layer of IP metropolitan networks. The powerful features of QoS and network security offered by the WGSD-10020 provides effective data traffic control for ISPs and enterprises utilizing VoIP, video streaming and multicast applications.

8 x 10/100/1000T RJ45 Port

Reset Button   2 x 100/1000X SFP Slot
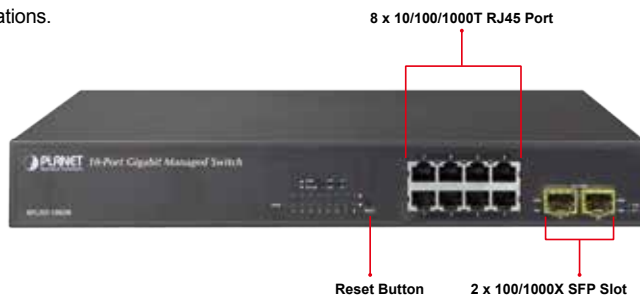
Solution for IPv6 Networking

By supporting IPv6 / IPv4 dual stack and plenty of management functions with easy and friendly management interfaces, the WGSD-10020 is the best choice for video, voice and wireless service providers to connect with the IPv6 network. It also helps SMBs to step in the IPv6 era with the lowest investment but not necessary to replace the network facilities while the ISP constructs the IPv6 FTTx edge network.

Fanless Design

Adopting the latest chip process and green technology, the WGSD-10020 successfully reduces substantial power consumption with the fanless and noiseless design collocating with the effective cooler. Therefore, the WGSD-10020 is able to operate stably and quietly in any environment without affecting its performance.

Fanless Design

Physical Port

- **8-Port 10/100/1000BASE-T** Gigabit Ethernet RJ-45
- **2 100/1000BASE-X mini-GBIC/SFP** slots, SFP type auto detection
- RS-232 DB9 console interface for basic management and setup

Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
    - Broadcast / Multicast / Unicast / Unknown-unicast
- Supports VLAN
    - IEEE 802.1Q tagged VLAN
    - Up to 255 VLANs groups, out of 4095 VLAN IDs
    - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
    - Private VLAN Edge (PVE)
    - Protocol-based VLAN
    - MAC-based VLAN
    - IP Subnet-based VLAN
    - Voice VLAN
    - Management VLAN
- Supports Spanning Tree Protocol
    - STP, IEEE 802.1D Spanning Tree Protocol
    - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
    - MSTP, IEEE 802.1s Multiple Spanning Tree Protocol
    - STP BPDU Guard and BPDU filtering
- Supports Link Aggregation
    - IEEE 802.3ad Link Aggregation Control Protocol (LACP)
    - Cisco ether-channel (Static Trunk)
    - Maximum 5 trunk groups, up to 5 ports per trunk group
    - Up to 20Gbps bandwidth (full duplex mode)

Layer 3 IPv4 and IPv6 Software VLAN Routing for Secure and Flexible Management

To help customers stay on top of their businesses, the WGSD-10020 not only provides ultra high transmission performance and excellent layer 2 technologies, but also offers **IPv4 / IPv6 Software VLAN routing** feature which allows to cross over different VLANs and different IP addresses for the purpose of having a highly secured, flexible management and simpler networking application.

Robust Layer 2 Features

The WGSD-10020 can be programmed for advanced switch management function, such as dynamic port link aggregation, **Q-in-Q VLAN, Multiple Spanning Tree Protocol (MSTP)**, Layer 2/4 QoS, bandwidth control and **IGMP/MLD snooping**. The WGSD-10020 allows the operation of a high-speed trunk combining multiple ports. It enables you to configure up to 5 ports as a trunk group (a maximum of 5 trunk groups are available), and supports connection fail-over as well.

L2/L4 Managed Switch — L2/L4 Managed Switch
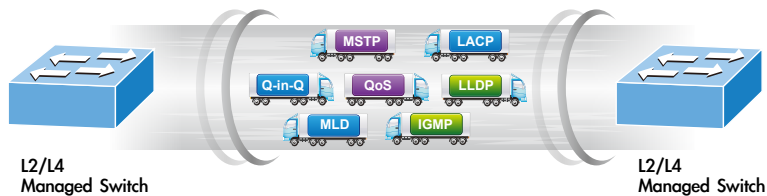
Powerful Security

The WGSD-10020 offers comprehensive **layer 2 to layer 4 access control list (ACL)** for enforcing security to the edge. It can be used to restrict to network access by denying packets based on source and destination IP address, TCP/UDP port number or defined typical network applications. Its protection mechanism also comprises **802.1x port-based** and **MAC-based** user and device authentication.

Enhanced Security and Traffic Control

The WGSD-10020 also provides **DHCP Snooping, IP Source Guard** and D**ynamic ARP Inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrator can now construct highly-secured corporate networks with considerably less time and effort than before.

User-friendly Secure Management

For efficient management, the WGSD-10020 managed switch series is equipped with console, Web and SNMP management interfaces. With the built-in web-based management interface, the WGSD-10020 offers an easy-to-use, platform-independent management and configuration facility. The WGSD-10020 supports SNMP and it can be managed via any management software based on standard of SNMP v1 and v2 protocol. For reducing product learning time, the WGSD-10020 offers Cisco-like command via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the WGSD-10020 offers remote secure management by supporting **SSH**, **SSL** and **SNMP v3** connection which can be encrypted the packet content at each session.

- Provides port mirror (many-to-1)
- Port Mirroring to monitor the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops

Layer 3 IP Routing Features
- Supports maximum 32 software static routes and route summarization

Quality of Service
- Ingress Shaper and Egress Rate Limit per port bandwidth control
- 8 priority queues on all switch ports
- Traffic classification
  - IEEE 802.1p CoS
  - TOS / DSCP / IP Precedence of IPv4/IPv6 packets
  - IP TCP/UDP port number
  - Typical network application
- Strict priority and Weighted Round Robin (WRR) CoS policies
- Traffic-policing policies on the switch port
- DSCP remarking

Multicast
- Supports IGMP Snooping v1, v2 and v3 for IPv4 multicasting network
- Supports MLD Snooping v1 and v2 for IPv6 multicasting network
- Querier mode support
- IGMP Snooping port filtering
- MLD Snooping port filtering
- MVR (Multicast VLAN Registration)

Security
- Authentication
  - IEEE 802.1x Port-based / MAC-based network access authentication
  - Built-in RADIUS client to co-operate with the RADIUS servers
  - TACACS+ login users access authentication
  - RADIUS / TACACS+ users access authentication

Flexible and Extendable Solution

The two mini-GBIC SFP slots built in the WGSD-10020 support dual speed as it features **100BASE-FX** and **1000BASE-SX/LX** SFP (Small Form-factor Pluggable) fiber-optic modules, meaning the administrator can flexibly choose the suitable SFP transceiver according to not only the transmission distance, but also the transmission speed required. The distance can be extended from 550 meters to 2km (multi-mode fiber) and up to above 10/20/30/40/50/70/120 kilometers (single-mode fiber or WDM fiber). They are well suited for applications within the enterprise data centers and distributions.

Intelligent SFP Diagnosis Mechanism

The WGSD-10020 supports **SFP-DDM (Digital Diagnostic Monitor)** function that greatly helps network administrator to easily monitor real-time parameters of the SFP transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

Applications

Department / Edge Security and QoS Switches for SMBs

The WGSD-10020 connects up to 10 high-speed workstations in the Ethernet environment, in which its two SFP mini-GBIC interfaces uplink to a department backbone. Moreover, the Switch provides 20 Gigabit per second switch fabric and high bandwidth for backbone connection. The WGSD-10020 improves the network efficiency and protects the network clients with the following powerful features:

• IPv6 / IPv4 management
• Layer 2 to Layer 4 security
• QoS
• 802.1x Port-based and MAC-based network access authentication security
• Multicast IGMP/MLD Snooping

The advanced functionality of the WGSD-10020 eliminates traditional issues associated with the use of Ethernet. Users can be separated with advanced VLAN functionality to enhance security. It makes the WGSD-10020 one of the best and most cost-effective switch solutions for SMBs.
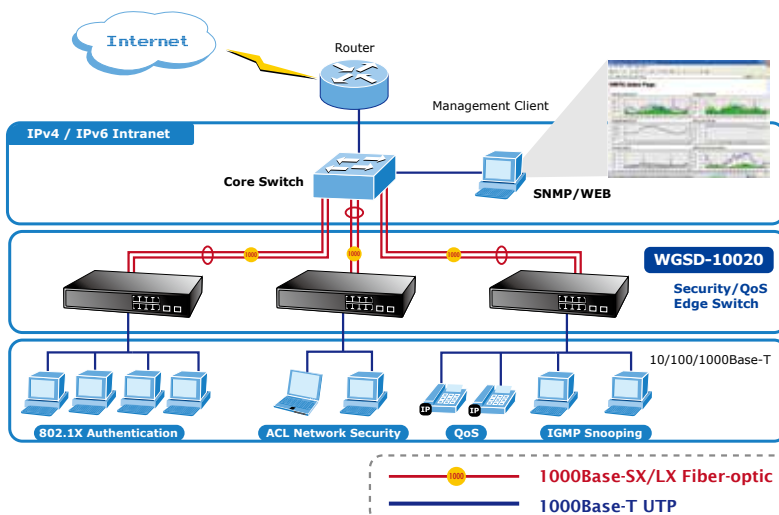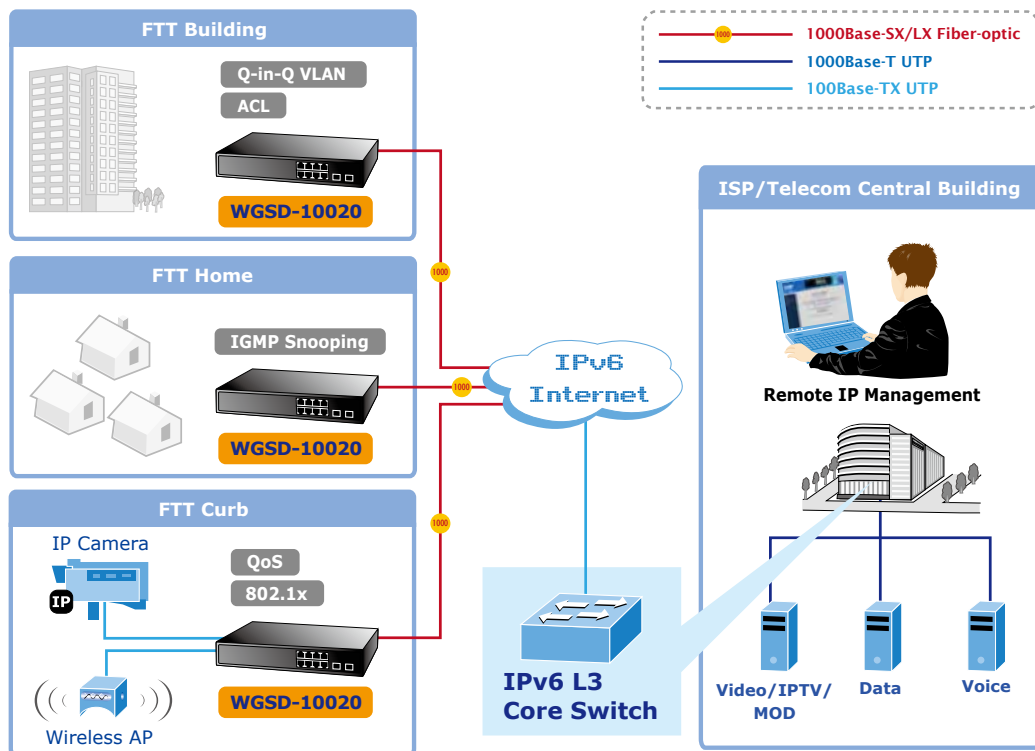
- Source MAC / IP address binding
- Port Security for Source MAC address entries filtering
- **DHCP Snooping** to filter distrusted DHCP messages
- **Dynamic ARP Inspection** discards ARP packets with invalid MAC address to IP address binding
- **IP Source Guard** prevents IP spoofing attacks
- Auto DoS rule to defend DoS attack
- IP address access management to prevent unauthorized intruder

Management
- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console / Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH / SSL secure access
- User Privilege levels control
- System Maintenance
  - Firmware upload/download via HTTP / TFTP
  - Configuration upload / download through Web interface
  - Dual Images
  - Reset button for system reboot or reset to factory default
  - Built-in Trivial File Transfer Protocol (TFTP) client
- Four RMON groups (history, statistics, alarms, and events)
- **IPv6** IP Address / NTP / DNS management and ICMPv6
- BOOTP and DHCP for IP address assignment
- DHCP Relay
- DHCP Option82
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) Protocol and LLDP-MED
- Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues
- PLANET Smart Discovery Utility for deploy management

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FTTX / MAN Application Switch

The WGSD-10020 applies the double tag VLAN (Q-in-Q) technology to providing low cost and easy operation for service providers carrying traffic for multiple customers across their networks. It features SNMP v3 and RMON Groups security functions. The SNMP v3 security structure consists of security models and helps to isolate each model with its own security levels to enhance the security protections in the FTTX and MAN networks. With its two built-in dual-speed SFP slots, the deployment distance of the WGSD-10020 can be extended up to 120 kilometers, which provides a high-performance edge service for FTTx solutions. To build a network solution of FTTH (Fiber to the Home) or FTTC (Fiber to the Curb) for ISPs and FTTB (Fiber to the Building) for enterprises, the various distances of SFP and Bidi (WDM) transceivers are optional for customers' choices. For security and various applications, the 10 Gigabit ports of the WGSD-10020 can be configured with VLAN settings and connect to different units, offices, floors, houses and departments.

Specifications

Product	WGSD-10020
Hardware Specifications	
Copper Ports	8 10/ 100/1000BASE-T RJ-45 Auto-MDI/MDI-X ports
10/100/1000Mbps / SFP Combo Interfaces	2 1000BASE-SX/LX/BX SFP interfaces (Port-9 and Port-10) Supports 100/1000Mbps dual mode and DDM
Switch Architecture	Store-and-Forward
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	9Kbytes
Reset Button	< 5 seconds: System reboot > 5 seconds: Factory Default
Dimensions (W x D x H)	330 x 155 x 43.5 mm, 1U high
Weight	1.4kg
LED	Power 10/100/1000 Link / Act per RJ-45 port, 100/1000 Link / Act per SFP port,
Power Consumption	Max. 10.3 watts / 35.13 BTU
Power Requirements	100~240V AC, 50/60Hz
Layer 2 function	
Port Configuration	Port disable / enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable / enable
Port Status	Display each port's speed duplex mode, link status, flow control status, auto-negotiation status, trunk status
Port Mirroring	TX / RX / Both Many-to-1 monitor
VLAN	802.1Q tagged based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN IP Subnet-based VLAN MVR (Multicast VLAN Registration) Up to 255 VLAN groups, out of 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP / Static Trunk 5 groups of 5-Port trunk supported
Spanning Tree Protocol	STP, IEEE 802.1D Spanning Tree Protocol RSTP, IEEE 802.1w Rapid Spanning Tree Protocol MSTP, IEEE 802.1s Multiple Spanning Tree Protocol
QoS	Traffic classification based, Strict priority and WRR 8-Level priority for switching - Port Number - 802.1p priority - 802.1Q VLAN tag - DSCP/TOS field in IP packet
IGMP Snooping	IGMP (v1/v2/v3) Snooping, up to 255 multicast groups IGMP Querier mode support
MLD Snooping	MLD (v1/v2) Snooping, up to 255 multicast groups MLD Querier mode support
Access Control List	IP-based ACL / MAC-based ACL Up to 256 entries
Bandwidth Control	Per port bandwidth control Ingress: 100Kbps~1000Mbps Egress: 100Kbps~1000Mbps
Layer 3 Functions	
IP Interfaces	Max. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software Static Routing IPv6 software Static Routing

Management	
Basic Management Interfaces	Console / Telnet / Web browser / SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMP v3
SNMP MIBs	RFC-1213 MIB-II RFC-1493 Bridge MIB RFC-1643 Ethernet MIB RFC-2863 Interface MIB RFC-2665 Ether-Like MIB RFC-2819 RMON MIB (Group 1, 2, 3 and 9) RFC-2737 Entity MIB RFC-2618 RADIUS Client MIB RFC-2863 IF-MIB RFC-2933 IGMP-STD-MIB RFC-3411 SNMP-Frameworks-MIB RFC-4292 IP Forward MIB RFC-4293 IP MIB RFC-4836 MAU-MIB IEEE 802.1X PAE LLDP

Standards Conformance	
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/100BASE-FX IEEE 802.3z Gigabit SX/LX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3x Flow Control and Back pressure IEEE 802.3ad Port trunk with LACP 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 IEEE 802.1Q VLAN Tagging IEEE 802.1X Port Authentication Network Control IEEE 802.1ab LLDP RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP version 1 RFC 2236 IGMP version 2 RFC 3376 IGMP version 3 RFC 2710 MLD version 1 FRC 3810 MLD version 2

Environment	
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 20 ~ 95% (non-condensing)
Storage	Temperature: -20 ~ 70 degrees C Relative Humidity: 20 ~ 95% (non-condensing)

Ordering Information

WGSD-10020	L2+ 8-Port 10/100/1000T + 2 100/1000X SFP Managed Switch

Related Products

WGSD-10020HP	L2+ 8-Port 10/100/1000T + 2 100/1000X SFP Managed 802.3at PoE Switch
WGSW-20160HP	L2+ 16-Port 10/100/1000T 802.3at PoE + 4-Port Gigabit TP/SFP Combo Managed Switch (230W)
WGSW-24040	L2+ 24- Port 10/100/1000T + 4-Port Gigabit TP/SFP Combo Managed Switch
XGSW-28040	L2+ 24-Port 10/100/1000T with 4-Port Shared SFP + 4-Port 10G SFP+ Managed Switch

Available Modules

MGB-GT	SFP-Port 1000BASE-T Module
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module
MGB-L30	SFP-Port 1000BASE-LX mini-GBIC module - 30km
MGB-L50	SFP-Port 1000BASE-LX mini-GBIC module - 50km
MGB-L70	SFP-Port 1000BASE-LX mini-GBIC module - 70km
MGB-L120	SFP-Port 1000BASE-LX mini-GBIC module -120km
MGB-LA10	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 10km
MGB-LB10	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 10km
MGB-LA20	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 20km
MGB-LB20	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 20km
MGB-LA40	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 40km
MGB-LB40	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 40km
MFB-FX	SFP-Port 100BASE-FX Transceiver (1310nm) - 2km
MFB-F20	SFP-Port 100BASE-FX Transceiver (1310nm) - 20km
MFB-F40	SFP-Port 100BASE-FX Transceiver (1310nm) - 40km
MFB-F60	SFP-Port 100BASE-FX Transceiver (1310nm) - 60km
MFB-FA20	SFP-Port 100BASE-BX Transceiver (WDM,TX:1310nm) - 20km
MFB-FB20	SFP-Port 100BASE-BX Transceiver (WDM,TX:1550nm) - 20km

2015-04