

Product Specification

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

WGSD-10020

Version 2.0

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Change History:

Revision:	Date:	Author:	Change List
Version 0.9	2010/11/18	Kent Kang	Draft version
Version 1.0	2011/8/19	Neo Tsai	Initial release
Version 2.0	2014/7/30	Jos	Change Flash from 8M to 16M

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1. PRODUCT DESCRIPTION



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 IP surveillance, VoIP 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.

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 Layer2 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 a maximum of 5 trunk groups on 5 ports, and supports connection fail-over as well.



Powerful Security

The WGSD-10020 offers comprehensive **layer2 to layer4 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 **Dynamic 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 **SNMPv3** connection which can be encrypted the packet content at each session.

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.

2. PRODUCT FEATURES

➤ **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 (by VLAN)
 - 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)
- 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
- Access Control List
 - IPv4 / IPv6 IP-based ACL
 - MAC-based ACL
- 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

3. PRODUCT SPECIFICATION

3.1 MAIN COMPONENT

Switch ASIC:	VITESSE VSC7424	X 1
CPU:	MIPS 416MHz (integrated with VSC7424)	--
Flash:	MXIC MX25L1284SEMI-10G (128Mbits)	x 1
DDR RAM:	16Mbytes	x 1
Open frame power:	LTE 12V/4.2A	x 1

3.2 FUNCTION SPECIFICATION

Product	WGSD-10020
Hardware Specifications	
Copper Ports	8 10/ 100/1000Base-T RJ-45 Auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 1000Base-SX/LX/BX SFP interfaces (Port-9 and Port-10) Supports 100/1000Mbps dual mode and DDM
Console Port	1 x RS-232 DB9 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	20Gbps / non-blocking
Switch Throughput	14.88Mpps@64Bytes
Address Table	8K entries, automatic source address learning and ageing
Shared Data Buffer	1392 kilobytes
ESD Protection	6KV
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
Dimension (W x D x H)	330 x 155 x 43.5 mm, 1U high
Weight	1.4kg
LED	Power, FAN Alert, 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 <ul style="list-style-type: none"> - 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	
Regulation Compliance	FCC Part 15 Class A, CE

<p>Standards Compliance</p>	<p>IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/100Base-FX IEEE 802.3z Gigabit SX/LX IEEE 802.3ab Gigabit 1000T 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</p>
<p>Environment</p>	
<p>Operating</p>	<p>Temperature: 0 ~ 50 degrees C Relative Humidity: 20 ~ 95% (non-condensing)</p>
<p>Storage</p>	<p>Temperature: -20 ~ 70 degrees C Relative Humidity: 20 ~ 95% (non-condensing)</p>

3.3 PHYSICAL SPECIFICATIONS:

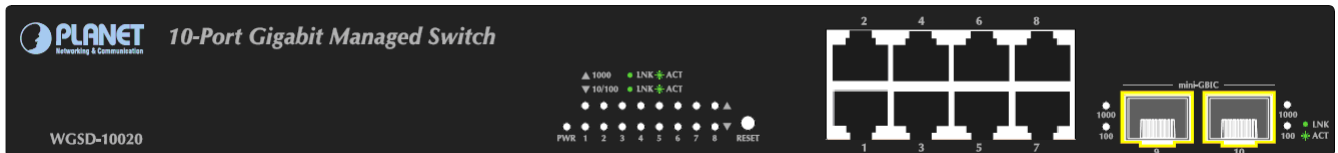
Dimensions:

330 x 155 x 43.5mm (W x D x H), 1U height

Weight:

1.4kg

■ **Front Panel:**



■ **Rear Panel:**



■ **LED definition**

System

LED	Color	Function
PWR	Green	Lights to indicate that the Switch has power.

Per 10/100/1000Mbps port

LED	Color	Function
1000 LNK/ACT	Green	Lights to indicate the port is running in 1000Mbps speed and successfully established. Blink: indicate that the switch is actively sending or receiving data over that port.
10/100 LNK/ACT	Green	Lights to indicate the port is running in 10/100Mbps speed and successfully established. Blink: indicate that the switch is actively sending or receiving data over that port.

Per 100/1000Base-X SFP interfaces

LED	Color	Function
1000	Green	Lights to indicate the link through that port is successfully established. Blink: indicate that the switch is actively sending or receiving data over that port.

100	Green	<p>Lights to indicate the link through that port is successfully established.</p> <p>Blink: indicate that the switch is actively sending or receiving data over that port.</p>
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3.4 ENVIRONMENTAL SPECIFICATION

Operating:

Temperature: 0 ~ 50 degrees C
Relative Humidity: 5% ~ 95% (non-condensing)

Storage:

Temperature: -20 ~ 70 degrees C
Relative Humidity: 5% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATION

Input Voltage: 100 - 240VAC, 50 - 60Hz, Auto-sensing.
Power Consumption 110V: 4.9 Watts / 16.71BTU (Roughly)
(System on): 220V: 5.4 Watts / 18.42BTU (Roughly)
Power Consumption 110V: 9.8 Watts / 33.43BTU (Roughly)
(Ethernet Full Load): 220V: 10.3 Watts / 35.13BTU (Roughly)

3.6 REGULATORY COMPLIANCE

EMI:

EN 55022 CLASS A:2006
 EN61000-3-2:2006
 EN61000-3-3: 1995+1A:2001+A2:2005

EMS:

EN 55024:1998+A1:2001+A2:2003
 IEC 61000-4-2:2001
 IEC 61000-4-3:2008
 IEC 61000-4-4:2004
 IEC 61000-4-5:2005
 IEC 61000-4-6:2008
 IEC 61000-4-8:2001
 IEC 61000-4-11:2004
 IEC/EN 60950-1

3.7 REALIABILITY

MTBF > 50,000 hrs @ 25 degrees C

3.8 BASIC PACKAGING

- WGSD-10020 X1
- Quick Installation Guide X1
- Power Cord X1
- RS232 Cable X1
- SFP Dust Caps X2
- Rubber Fee X4
- Two Rack-mounting brackets with X2
attachment screws

3.9 PACKING DIMENSION

Dimension: 390mm (W) x 233mm (D) x 85mm (H)

Weight: 14.3kg (Gross Weight)

6 pcs in one carton