24-Port 10/100/1000T + 4-Port Gigabit TP/SFP Combo Managed Switch
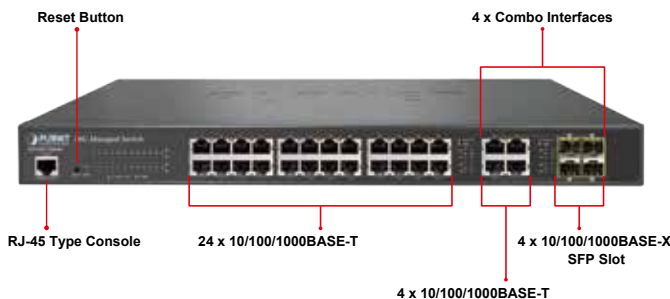
High-Performance, Cost-effective Gigabit Networking Solution for SMBs

PLANET WGSW-28040 Gigabit Managed Switch, which is perfectly designed for SMB and SOHO network infrastructures. Besides the hot IPv6 / IPv4 management and abundant L2 / L4 switching functions, the WGSW-28040 comes with fanless feature and green technology to provide a quiet, energy-saving, high-speed and reliable office network environment. It benefits the SMB and SOHO users as it is in the Gigabit network environment with the cost of Fast Ethernet switches but at a low price. The WGSW-28040 is quite suitable for the next-generation network deployment and offers the lowest total cost of ownership. It is the best investment for business expansion or upgrading its network infrastructure.

High Performance

The WGSW-28040 provides **28 10/100/1000Mbps** Gigabit Ethernet ports including **4 100/1000BASE-x shared Gigabit SFP** slots. It boasts high-performance switch architecture that is capable for providing the non-blocking switch fabric and wire-speed throughput as high as 56Gbps, which greatly simplifies the tasks of upgrading the LAN for catering to increasing bandwidth demands.

Reset Button   **4 x Combo Interfaces**

RJ-45 Type Console   **24 x 10/100/1000BASE-T**   **4 x 10/100/1000BASE-X SFP Slot**

4 x 10/100/1000BASE-T

Fanless Design

Adopting the latest chip process and green technology, the WGSW-28040 successfully reduces substantial power consumption with the fanless and noiseless design collocating with the effective cooler. Therefore, the WGSW-28040 is able to operate stably and quietly in any environment without affecting its performance.

Grounding

Fanless Design   **Power Jack**

Physical Port

- **28-Port 10/100/1000BASE-T** Gigabit RJ45 copper
- **4 100/1000BASE-X** mini-GBIC/SFP slots, shared with Port-25 to Port-28
- RJ45 console interface for switch basic management and setup

Power over Ethernet

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance Store and Forward architecture, runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Supports VLAN
  - IEEE 802.1Q tagged VLAN
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Protocol VLAN
  - Voice VLAN
  - Private VLAN
  - Management VLAN
  - GVRP
- Supports Spanning Tree Protocol
  - STP (Spanning Tree Protocol)
  - RSTP (Rapid Spanning Tree Protocol)
  - MSTP (Multiple Spanning Tree Protocol)
  - STP BPDU Guard, BPDU Filtering and BPDU Forwarding
- Supports Link Aggregation
  - IEEE 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (Static Trunk)
  - Maximum 8 trunk groups, up to 8 ports per trunk group
- Provides port mirror (many-to-1)
- Loop protection to avoid broadcast loops

Quality of Service

- Ingress / Egress Rate Limit per port bandwidth control
- Storm control support
  - Broadcast / Unknown-unicast / Unknown-multicast
- Traffic classification
  - IEEE 802.1p CoS
  - TOS / DSCP / IP Precedence of IPv4 / IPv6 packets
- Strict priority and Weighted Round Robin (WRR) CoS policies

IPv6 / IPv4 Dual Stack

By supporting both IPv6 and IPv4 protocols, the WGSW-28040 helps the SMBs to step in the IPv6 era with the lowest investment but needs not to replace the network facilities while the ISP constructs the IPv6 FTTx edge network.

Robust Layer 2 Features

The WGSW-28040 can be programmed for advanced switch management functions such as dynamic port link aggregation, 802.1Q VLAN and Q-in-Q VLAN, Multiple Spanning Tree protocol (MSTP), Loop and BPDU Guard, and IGMP Snooping. Via aggregation of supporting ports, the WGSW-28040 allows the operation of a high-speed trunk to combine with multiple ports such as a 16Gbps fat pipe and supports fail-over as well.

Efficient Traffic Control

The WGSW-28040 is loaded with robust QoS features and powerful traffic management to enhance services to business-class data, voice, and video solutions. The functionality includes broadcast / multicast storm control, per port bandwidth control, IP DSCP QoS priority and remarking. It guarantees the best performance at VoIP and video stream transmission, and empowers the enterprises to take full advantages of the limited network resources.

Enhanced and Secure Management

For efficient management, the WGSW-28040 is equipped with console, Web, Telnet and SNMP management interfaces. With the built-in Web-BASEd management interface, the WGSW-28040 offers an easy-to-use, platform-independent management and configuration facility. By supporting standard Simple Network Management Protocol (SNMP), the switch can be managed via any standard management software. For text-BASEd management, the switch can be accessed via Telnet and the console port. Moreover, the WGSW-28040 offers secure remote management by supporting SSH and SSL connections which encrypt the packet content at each session.

Powerful Security

PLANET WGSW-28040 offers comprehensive Layer 2 to Layer 4 Access Control List (ACL) for enforcing security to the edge. It can be used to restrict network access by denying packets BASEd on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism also comprises 802.1X port-BASEd authentication, which can be deployed with RADIUS to ensure the port level security and block illegal users. With the Protected Port function, communication between edge ports can be prevented to guarantee user privacy. Port Security allows to limit the number of users on a given port. The network administrators can now construct highly-secured corporate networks with considerably less time and effort than before.

Flexible Extension Solution

The four mini-GBIC slots built in the WGSW-28040 are compatible with 1000BASE-SX/LX and WDM SFP (small form-factor pluggable) fiber-optic modules. The distance can be extended from 550 meters (multi-mode fiber) up to 10/20/30/40/50/70/120 kilometers (single-mode fiber or WDM fiber). The WGSW-28040 supports SFP-DDM (Digital Diagnostic Monitor) function that can easily monitor real-time parameters of the SFP for network administrator, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage. It is well suited for applications in the enterprise data centers and distributions.

Green Networking

In line with the energy-saving trend worldwide, the WGSW-28040 adopts the new-generation green technology which brings both benefits of energy saving and Gigabit performance. The new engine provides up to 60% less energy consumption without reducing the performance, and particularly it offers flexible power-saving mode to meet various demands.

Multicast

- Supports IGMP snooping v2 and v3
- Supports MLD snooping v1, v2
- IGMP querier mode support
- IGMP snooping port filtering
- MLD snooping port filtering

Security

- Authentication
  - IEEE 802.1X port-BASEd network access authentication
  - Built-in RADIUS client to co-operate with the RADIUS servers
  - RADIUS / TACACS+ login user access authentication
- Access Control List
  - IPv4 / IPv6 IP-BASEd ACL
  - MAC-BASEd ACL
- MAC Security
  - Static MAC
  - MAC Filtering
- 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
- DoS attack prevention
- SSH/SSL

Management

- IPv4 and IPv6 dual stack management
- Switch management interface
  - Web switch management
  - Telnet command line interface
  - SNMP v1, v2c and v3
  - SSH / SSL secure access
- User privilege levels control
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System maintenance
  - Firmware upload / download via HTTP / TFTP
  - Configuration upload / download through Web interface
  - Dual images
  - Hardware reset button for system reboot or reset to factory default
- SNTP Network Time Protocol
- Cable diagnostics
- Link Layer Discovery Protocol (LLDP) Protocol and LLDP-MED
- SNMP trap for interface link up and link down notification
- Event message logging to remote Syslog server
- Four RMON groups (history, statistics, alarms and events)
- PLANET Smart Discovery Utility

Applications

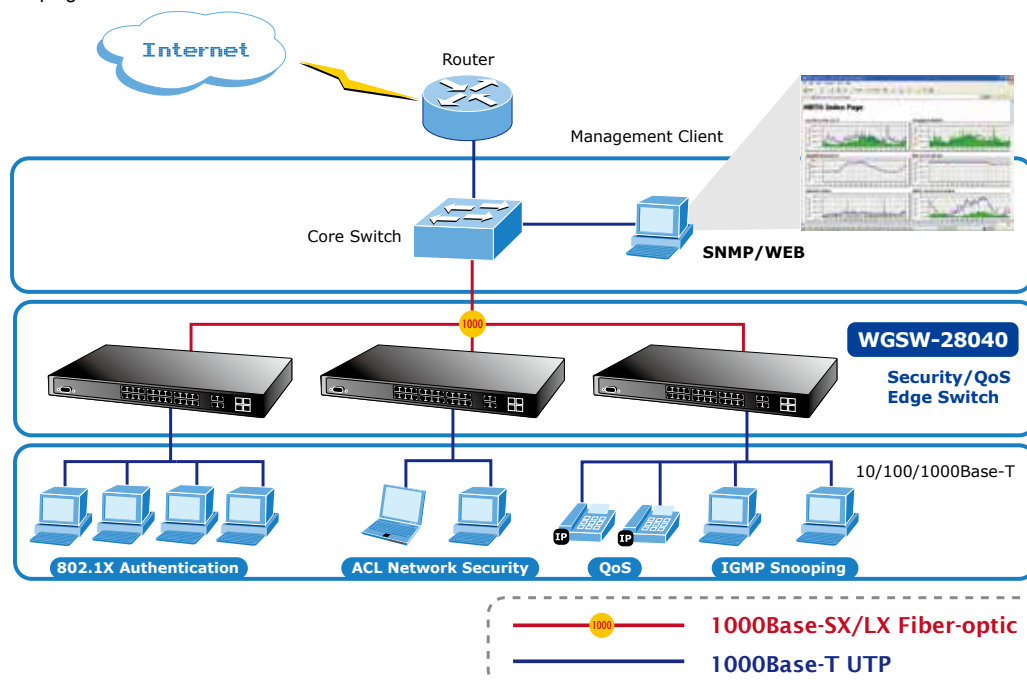## *High Performance Backbone / Server Farm Switch*

Gigabit Ethernet supported equipment has become the fundamental unit of enterprises and network servers. With up to 56 Gigabits per second of non-blocking switch fabric, the WGSW-28040 can easily provide the high bandwidth required from now on. It can easily provide a local, high bandwidth and Gigabit Ethernet network for the backbone of enterprises or SMBs. With its port trunking function, a 16Gbps fat pipe is provided for connecting to the backbone if required. It is ideal to be used as a server farm switch to connect servers. With the four SFP ports, the WGSW-28040 provides the uplink to the edge network through Gigabit Ethernet LX/SX SFP modules.
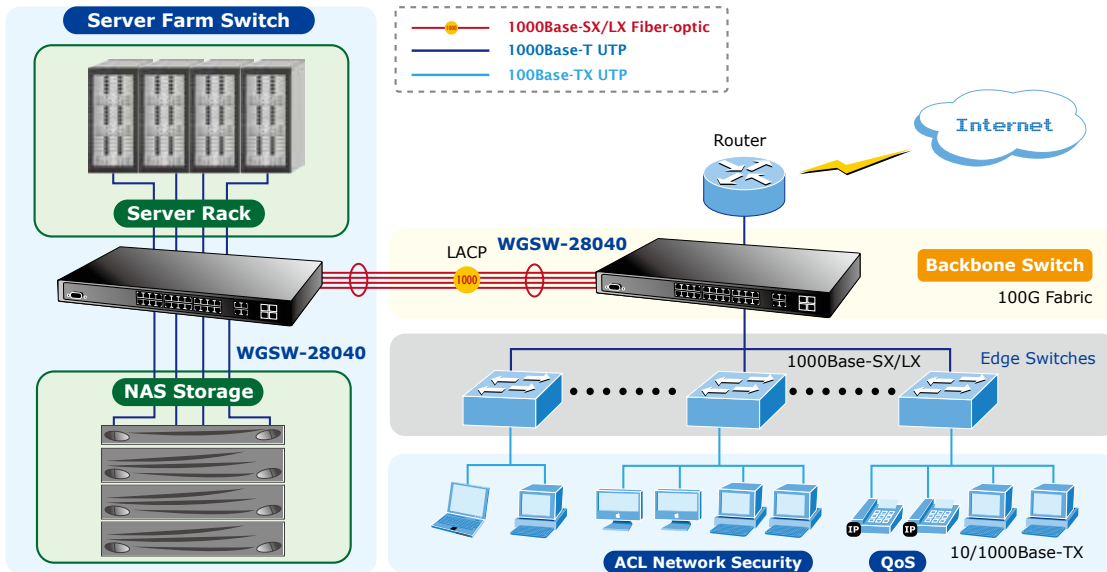
Department / Edge ACL, Security and QoS Switch

The WGSW-28040 improves the network efficiency and protects the network clients with the powerful features:

- Layer 2 to Layer 4 ACL
- QoS
- 802.1X port-BASEd network access authentication security
- Multicast IGMP snooping

Specifications

Product	WGSW-28040
Hardware Specifications	
Hardware Version	3.0
Copper Ports	24 x 10/100/1000BASE-T RJ45 Auto-MDI/MDI-X ports 4 x 10/100/1000BASE-T RJ45/SFP combo ports
SFP/mini-GBIC Slots	4 100/1000BASE-X SFP interfaces, shared with Port-25 to Port-28 Supports 100/1000Mbps dual mode and DDM
Console	1 x RS-232-to-RJ45 serial port (115200, 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	56Gbps / non-blocking
Switch Throughput@64Bytes	41.67Mpps @64Bytes
Address Table	8K entries
Share Data Buffer	4.1 megabits
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10K bytes
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
LED	System: Power (Green) Sys (Green) 10/100/1000T RJ45 Interfaces (Port 1 to Port 28): 1000Mbps (Orange), LNK/ACT (Green) 100/1000Mbps SFP Interfaces (Port 25 to Port 28): 1000Mbps (Orange), LNK/ACT (Green)
Thermal Fan	Fanless design (no fan)
Power Requirement	AC 100~240V, 50/60Hz, auto-sensing.
ESD Protection	6KV DC
Power Consumption / Dissipation	21.4 watts / 73.0 BTU
Dimensions (W x D x H)	440 x 200 x 44.5 mm, 1U height
Weight	2.7 kg
Enclosure	Metal
Layer 2 Functions	
Port Mirroring	TX / RX / Both Many-to-1 monitor
VLAN	802.1Q tagged-BASEd VLAN Up to 256 VLAN groups, out of 4094 VLAN IDs 802.1ad Q-in-Q tunneling Voice VLAN Protocol VLAN Private VLAN (Protected port) GVRP
Link Aggregation	IEEE 802.3ad LACP and static trunk Supports 8 groups of 8-port trunk
Spanning Tree Protocol	STP / RSTP / MSTP
IGMP Snooping	IGMP (v2/v3) snooping IGMP querier Up to 256 multicast groups
MLD Snooping	MLD (v1/v2) Snooping, up to 256 multicast groups
Access Control List	IPv4 / IPv6 IP-based ACL / MAC-based ACL
QoS	8 mapping ID to 8 level priority queues - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP field in IP Packet Traffic classification based, Strict priority and WRR

Security	IEEE 802.1X – port-BASEd authentication Built-in RADIUS client to co-operate with RADIUS server RADIUS / TACACS+ user access authentication IP-MAC port binding MAC filter Static MAC address DHCP snooping and DHCP Option82 STP BPDU Guard, BPDU filtering and BPDU forwarding DoS attack prevention ARP Inspection IP Source Guard

Management Functions

Basic Management Interfaces	Web browser / Telnet / SNMP v1, v2c Firmware upgrade by HTTP / TFTP protocol through Ethernet network Remote / Local Syslog System log LLDP protocol SNTP
Secure Management Interfaces	SSH, SSL, SNMP v3
SNMP MIBs	RFC 3635 Ethernet-like MIB RFC 2863 Interface Group MIB RFC 2819 RMON (1, 2, 3, 9) RFC 1493 Bridge MIB

Standards Conformance

Regulation Compliance	FCC Part 15 Class A, CE
Standards Compliance	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 IEEE 802.3af Power over Ethernet IEEE 802.3at High Power over Ethernet 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 RFC 3810 MLD version 2

Environment

Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -20 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

Ordering Information

WGSW-28040	24-Port 10/100/1000T + 4-Port Gigabit TP/SFP Combo Managed Switch

Related Products

WGSW-28040P	24-Port 10/100/1000Mbps PoE + 4-Port Gigabit TP/SFP Combo Managed Switch / 180W PoE budget
WGSW-28040P4	24-Port 10/100/1000Mbps PoE + 4-Port Gigabit TP/SFP Combo Managed Switch / 380W PoE budget
GSD-1020S	8-Port 10/100/1000Mbps + 2-Port 100/1000X SFP Managed Desktop Switch

Available Modules for WGSW-28040

MGB-GT	SFP-Port 1000BASE-T Module
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module - 220/550m
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module - 10km
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

Available 100Mbps Modules for WGSW-28040

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

WGSW-28040v3