Layer 3 Multiple Gigabit + 10G SFP+ Managed Ethernet Switch

Powerful 10Gbps and Layer 3 Routing Solution for Enterprise Backbone and Data Center Networking

PLANET GS-6311 series is a Layer 3 Managed Gigabit Switch that provides high-density performance, **Layer 3 static routing**, **RIP (Routing Information Protocol)** and **OSPF (Open Shortest Path First)**. With **10Gbps** interfaces, the GS-6311 series can handle extremely large amounts of data in a secure topology linking to an enterprise backbone or high-capacity servers. The powerful network security features make the GS-6311 series perform effective data traffic control for ISP and enterprise VoIP, video streaming, and multicast applications.

The hardware specifications of these models are shown below:

Models	10/100/1000T Copper	100/1000X SFP	1000/10G SFP+	Switch Capacity	Power Input
GS-6311-24T4X	24	--	4	--	AC
GS-6311-24HP4X	24	--	4	8bt + 16at	AC
GS-6311-16S8C4XR	8 (combo)	24	4	--	AC + DC
GS-6311-48T6X	48	--	6	--	AC
GS-6311-48P6X	48	--	6	48at	AC

High Performance 10Gbps Ethernet Capacity

The four to six SFP+ ports built in the GS-6311 series boast a high-performance switch architecture that is capable of providing non-blocking switch fabric and wire-speed throughput as high as up to **120Gbps**, which greatly simplifies the tasks of upgrading the LAN for catering to increasing bandwidth demands. Each of the SFP+ ports supports **Dual-Speed**, **10GBASE-SR/LR** or **1000BASE-SX/**

IP Routing Features

- IP routing protocol supports **RIPv1/v2**, **OSPFv2**
- Routing interface provides per VLAN routing mode
- Supports route redistribution

Layer 2 Features

- Complies with the IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3z Gigabit Ethernet standard
- Prevents packet loss flow control
  - IEEE 802.3x pause frame flow control in full-duplex mode
  - Back pressure flow control in half-duplex mode
- High performance Store-and-Forward architecture, broadcast storm control, port loopback detection
- 32K MAC address table, automatic source address learning and aging
- Supports VLAN
  - IEEE 802.1Q tag-based VLAN
  - GVRP for dynamic VLAN management
  - Provider Bridging (VLAN Q-in-Q, IEEE 802.1ad) supported
  - Private VLAN Edge (PVE) supported
  - GVRP protocol for Management VLAN
  - Protocol-based VLAN
  - MAC-based VLAN
  - IP subnet VLAN
- Supports Link Aggregation
  - Maximum 64 trunk groups, up to 8 ports per trunk group
  - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
  - Cisco ether-channel (static trunk)
- Supports Spanning Tree Protocol
  - STP, IEEE 802.1D (Classic Spanning Tree Protocol)
  - RSTP, IEEE 802.1w (Rapid Spanning Tree Protocol)
  - MSTP, IEEE 802.1s (Multiple Spanning Tree Protocol, spanning tree by VLAN)
  - Supports BPDU & root guard
- Port mirroring to monitor the incoming or outgoing traffic on a particular port (many to many)
- Provides port mirror (many-to-1)
- Supports G.8032 ERPS (Ethernet Ring Protection Switching)

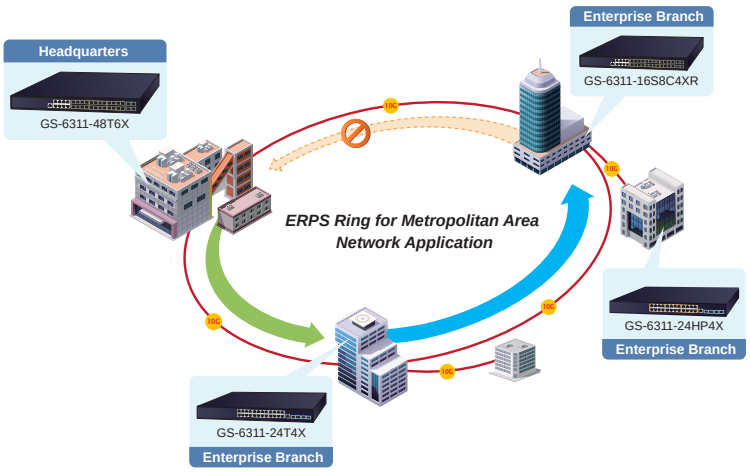
Quality of Service

- 8 priority queues on all switch ports

LX, meaning the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the network efficiently.

Redundant Ring, Fast Recovery for Critical Network Applications

The GS-6311 series supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced ITU-T **G.8032 ERPS** (Ethernet Ring Protection Switching) technology and Spanning Tree Protocol (802.1s MSTP) into customer's network to enhance system reliability and uptime in harsh environments. In a certain simple Ring network, the recovery time could be less than 15ms to quickly bring the network back to normal operation.



Layer 3 Routing Support

The GS-6311 series enables the administrator to conveniently boost network efficiency by configuring Layer 3 static routing manually, the **RIP** (Routing Information Protocol) or **OSPF** (Open Shortest Path First) settings automatically.

- The RIP can employ the hop count as a routing metric and prevent routing loops by implementing a limit on the number of hops allowed in a path from the source to a destination.
- The OSPF is an interior dynamic routing protocol for autonomous system based on link state. The protocol creates a database for link state by exchanging link states among Layer 3 switches, and then uses the Shortest Path First algorithm to generate a route table based on that database.

Strong Multicast

The GS-6311 series supports abundant multicast features. In Layer 2, it features IPv4 IGMPv1/v2/v3 snooping and IPv6 MLD v1/v2 snooping. With Multicast VLAN Register (MVR), multicast receiver/sender control and illegal multicast source detect functions which make the GS-6311 series great for any robust networking.

Full IPv6 Support

The GS-6311 series provides **IPv6 management** and enterprise-level secure features such as **SSH**, **ACL**, **WRR** and **RADIUS** authentication. It thus helps the

- Support for strict priority and WRR (Weighted Round Robin) CoS policies
- Traffic classification
  - IEEE 802.1p CoS/ToS
  - IPv4/IPv6 DSCP
  - Port-based WRR
- Strict priority and WRR CoS policies

Multicast

- Supports IPv4 IGMP snooping v1, v2 and v3
- Supports IPv6 MLD v1 and v2 snooping
- Querier mode support
- Supports Multicast VLAN Register (MVR)

Security

- IEEE 802.1x port-based network access authentication
- MAC-based network access authentication
- Built-in RADIUS client to cooperate with the RADIUS servers for IPv4 and IPv6
- TACACS+ login users access authentication
- IP-based Access Control List (ACL)
- MAC-based Access Control List
- Supports DHCP snooping
- Supports ARP inspection
- **IP Source Guard** prevents IP spoofing attacks
- **Dynamic ARP Inspection** discards ARP packets with invalid MAC address to IP address binding

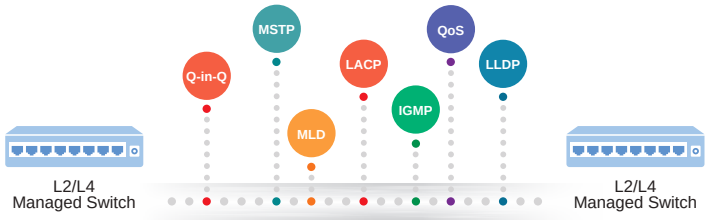
Management

- Management IP for IPv4 and IPv6
- Switch Management Interface
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH/TLS secure access
- BOOTP and DHCP for IP address assignment
- Firmware upload/download via TFTP or HTTP Protocol for IPv4 and IPv6
- SNTP (Simple Network Time Protocol) for IPv4 and IPv6
- User privilege levels control
- Syslog server for IPv4 and IPv6
- Supports DDM
- Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)
- Supports sFlow
- Supports ULDP

enterprises to step in the IPv6 era with the lowest investment. In addition, you don't need to replace the network facilities when the IPv6 FTTx edge network is built.

Robust Layer 2 Features

The GS-6311 series can be programmed for basic switch management functions such as port speed configuration, port aggregation, VLAN, Multiple Spanning Tree Protocol, bandwidth control and IGMP snooping. This switch provides 802.1Q tagged VLAN, Q-in-Q, voice VLAN and GVRP Protocol functions. By supporting port aggregation, the GS-6311 series allows the operation of a high-speed trunk combined with multiple ports. It enables up to 64 groups for trunking with a maximum of 8 ports for each group.



Excellent Layer 2 to Layer 4 Traffic Control

The GS-6311 series is loaded with powerful traffic management and WRR features to enhance services offered by telecoms. The WRR functionalities include wire-speed Layer 4 traffic classifiers and bandwidth limitation which are particularly useful for multi-tenant unit, multi-business unit, Telco, or network service applications. It also empowers the enterprises to take full advantage of the limited network resources and guarantees the best in VoIP and video conferencing transmission.

Powerful Network Security

The GS-6311 series 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, MAC-based and web-based user and device authentications, which can be deployed with RADIUS, to ensure the port level security and block illegal users.

Advanced IP Network Protection

The GS-6311 series 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 administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

Efficient and Secure Management

For efficient management, the GS-6311 series is equipped with console, Web and SNMP management interfaces.

- Supports ULPP (Uplink Protection Protocol)
- Supports ULSM (Uplink State Monitor protocol)
- Supports LLDP/LLDP MED
- Supports DHCP Option82/43/60/61/67
- Supports ping, trace route function for IPv4 and IPv6
- PLANET Smart Discovery Utility for deployment management

Power over Ethernet

- Complies with IEEE 802.3bt Power over Ethernet Plus Plus (GS-6311-24HP4X)
- 8 IEEE 802.3bt PoE++ up to 90 watts on port 1~port 8 (GS-6311-24HP4X)
- 16 IEEE 802.3at PoE+ up to 32 watts on port 9~port 24 (GS-6311-24HP4X)
- Maximum 480-watt PoE budget (GS-6311-24HP4X)
- Complies with IEEE 802.3at/af Power over Ethernet Plus (GS-6311-48P6X)
- Up to 48 ports of IEEE 802.3af/802.3at devices powered (GS-6311-48P6X)
- Supports PoE power up to 32 watts for each PoE port (GS-6311-48P6X)
- 110VAC supports maximum 500-watt PoE budget (GS-6311-48P6X)
- 220VAC supports maximum 600-watt PoE budget (GS-6311-48P6X)
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 meters
- PoE management
  - Total PoE power budget control
  - Per port PoE function enable/disable
  - PoE port power feeding priority
  - Per PoE port power limitation
  - PD classification detection
  - PoE schedule

Redundant Power System (GS-6311-16S8C4XR)

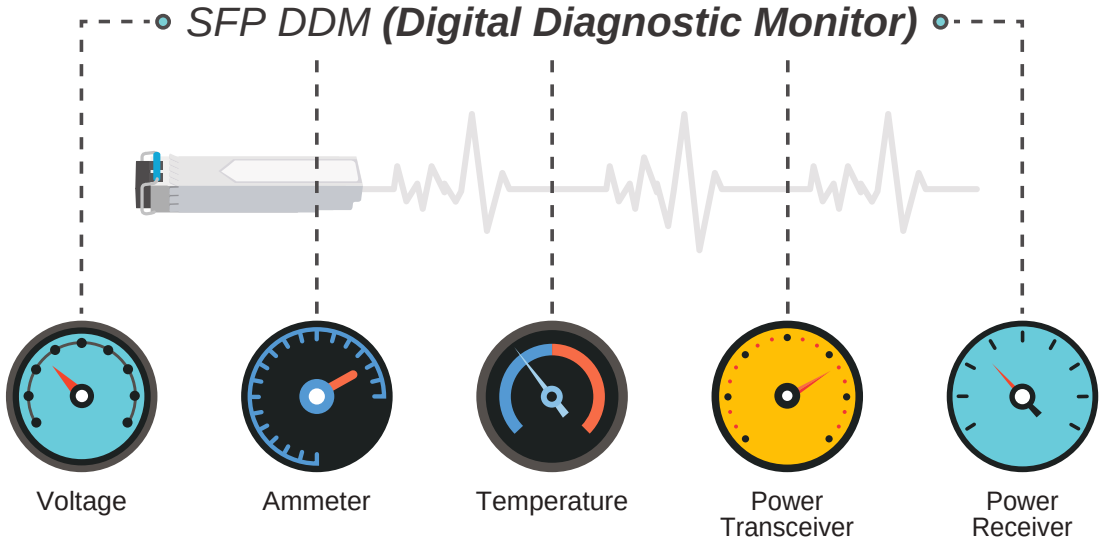
- 100~240V AC / 36 -72V DC dual power redundancy
- Active-active redundant power failure protection
- Backup of catastrophic power failure on one supply

- With the built-in Web-based management interface, the GS-6311 series offers an easy-to-use, platform-independent management and configuration facility.
- For text-based management, it can be accessed via Telnet and the console port. For reducing product learning time, the GS-6311 series offers Cisco-like command and customer doesn't need to learn new command from these switches
- For standard-based monitor and management software, it offers SNMPv3 connection which encrypts the packet content at each session for secure remote management.

Moreover, the GS-6311 series offers secure remote management by supporting SSHv2 connection which encrypts the packet content at each session.

Intelligent SFP Diagnosis Mechanism

The GS-6311 series supports **SFP-DDM (Digital Diagnostic Monitor)** function that greatly helps network administrator to easily monitor real-time parameters of the SFP and SFP+ transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.



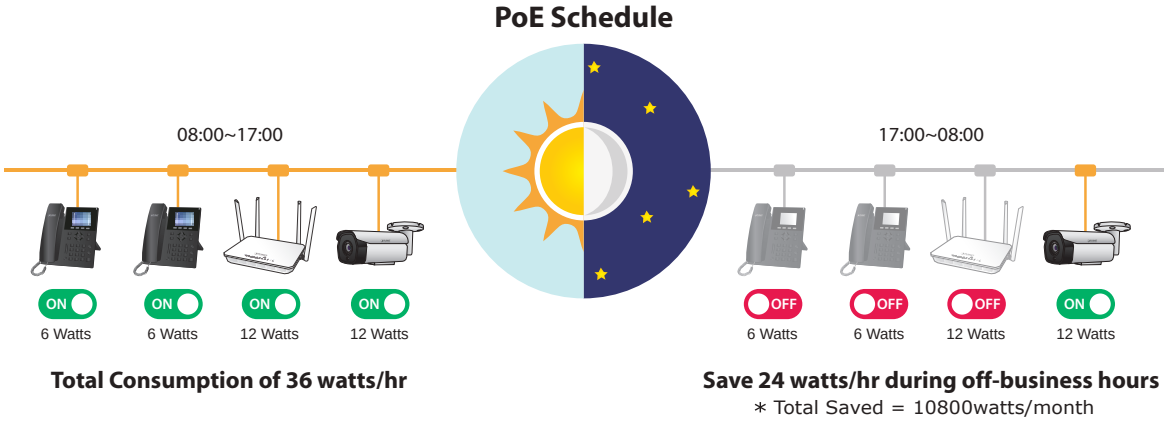
Centralized Power Management for Gigabit Ethernet PoE Networking

To fulfill the needs of higher power required PoE network applications with Gigabit speed transmission. The GS-6311-24HP4X features 8 10/100/1000BASE-T high-performance Gigabit IEEE 802.3bt PoE++ up to 90 watts on port 1~port 8 and 16 IEEE 802.3at PoE+ up to 32 watts on port 9~port 24. The GS-6311-48P6X features 48 10/100/1000BASE-T high-performance Gigabit IEEE 802.3at PoE+ up to 32 watts on port 1~port 48. It perfectly meets the power requirements of PoE VoIP phone and all kinds of PoE IP cameras such as IR, PTZ, speed dome cameras or even box type IP cameras with built-in fan and heater.

The GS-6311-24P4X's PoE capabilities also help to reduce deployment costs for network devices as a result of freeing from the restrictions of power outlet locations. Power and data switching are integrated into one unit, delivered over a single cable and managed centrally. It thus eliminates the cost for additional AC wiring and reduces installation time.

PoE Schedule for Energy Savings

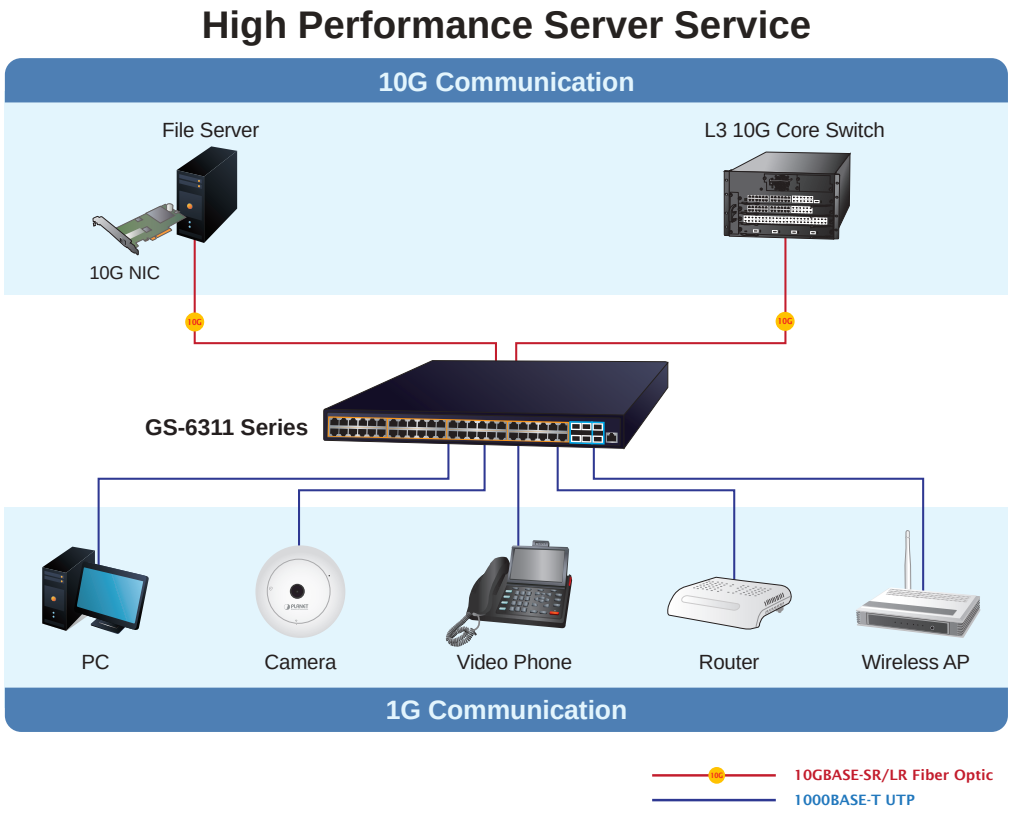
Besides being used for IP surveillance, the GS-6311-24HP4X and GS-6311-48P6X are certainly applicable to build any PoE network including VoIP and wireless LAN. Under the trend of energy saving worldwide and contributing to the environmental protection on the Earth, the GS-6311 PoE Series can effectively control the power supply besides its capability of giving high watts power. The “PoE schedule” function helps you to enable or disable PoE power feeding for each PoE port during specified time intervals and it is a powerful function to help SMBs or enterprises save energy and budget.



Applications

Excellent Solution to Enterprise Security and QoS Switch

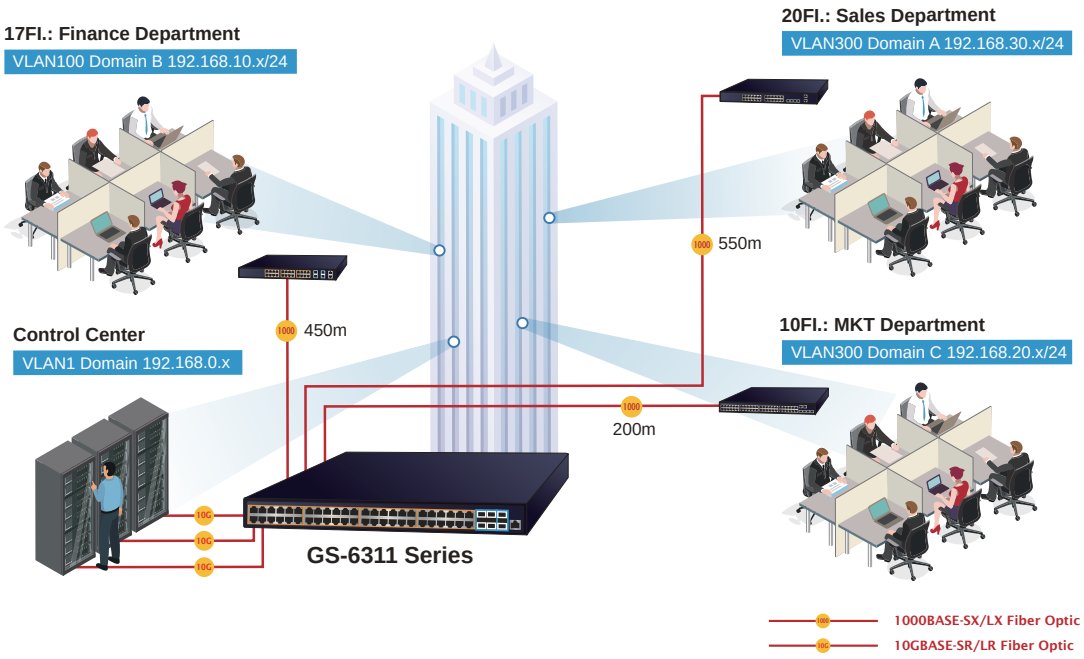
The GS-6311 series performs 128/216 Gigabits per second non-blocking switch fabric, so it can easily provide a local 10Gbps high bandwidth Ethernet network for the backbone of your department. With the four to six built-in SFP+ ports, the GS-6311 series provides the uplink to the backbone network through the 10G Ethernet LR/SR SFP+ modules. It further improves the network efficiency and protects the network clients by offering the security and QoS features.



Layer 3 VLAN Routing

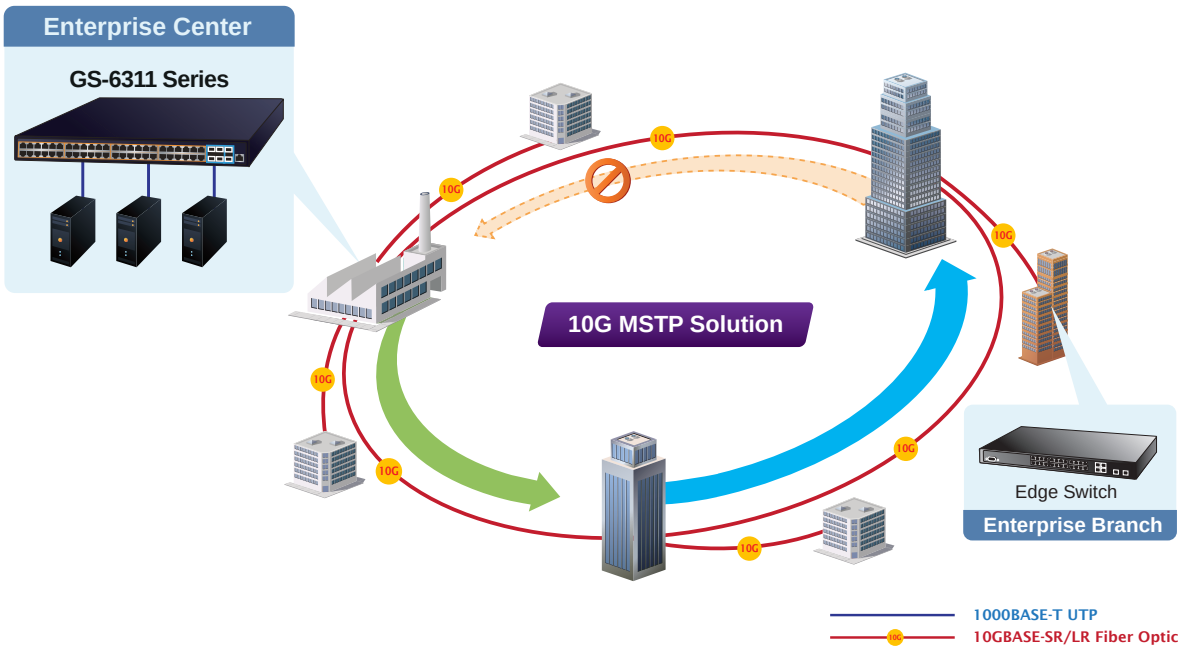
With the built-in robust Layer 3 traffic routing protocols, the GS-6311 series ensures reliable routing between VLANs and network segments. The routing protocols can be applied via VLAN interface. The GS-6311 series is certainly a cost-effective and ideal solution for enterprises.

VLAN Routing + 10G Uplink Applications



High Availability Mesh Networking Solution for Big Data System

With highly-flexible, highly-extendable and easy-to-install features, the GS-6311 series offers up to 128/216Gbps data exchange speed via optical fiber interface and the transmission distance can be extended to 120km. The GS-6311 series features strong, rapid, self-recovery capability to prevent interruptions and external intrusions. It incorporates **IEEE 802.1s MSTP (Multiple Spanning Tree Protocol, spanning tree by VLAN)** into customer's automation network to enhance system reliability and uptime. The GS-6311 series is the ideal solution for data centers, service providers and telecoms to build redundant connection and establish high bandwidth for **Big Data** server farm.



Specifications

Product	GS-6311-24T4X	GS-6311-24HP4X	GS-6311-16S8C4XR	GS-6311-48T6X	GS-6311-48P6X
Hardware Specifications					
10/100/1000 RJ45 Ports	24	24	8 (combo)	48	48
100/1000BASE-X SFP Ports	--	--	24	--	--
10G SFP+ Ports	4	4	4	6	6
	10GBASE-SR/LR SFP+ interface Backward compatible with 1000BASE-SX/LX/BX SFP transceiver				
Console Port	1 x RJ45-to-RS232 serial port (9600, 8, N, 1)				
CPU	MIPS 800MHz				
RAM	512Mbytes				
Flash Memory	32Mbytes				
Dimensions (W x D x H)	440 x 207 x 44mm	440 x 207 x 44mm	440 x 260 x 44mm	440 x 260 x 44 mm	440 x 330 x 44mm
Weight	2742g	3542g	3495g	3676g	5368g
Power Consumption	23.2 watts/79.11 BTU	15 watts / 51.1BTU (System) 540 watts/ 1841.4 BTU (System+PoE	36.2 watts/ 102.9 BTU	53.7 watts/183BTU	39.9 watts/ 136BTU (System) 698 watts/ 2380 BTU (System+PoE)
Power Requirements- AC	AC 100~240V, 50/60Hz	AC 100~240V, 50/60Hz	AC 100~240V, 50/60Hz	AC: 100~240V, 50/60Hz	AC 100~240V, 50/60Hz
Power Requirements - DC	--	--	DC: 36~72V	--	--
Fan	--	2	2	1	5
LED	**System:** PWR (Green), SYS (Green)	**System:** PWR (Green), SYS (Green)	**System:** PWR (Green), SYS (Green)	**System:** PWR (Green), SYS (Green)	**System:** PWR (Green), SYS (Green)
	Ports: LNK/ACT (Green)	**Ports:** LNK/ACT (Green) PoE-in-Use (Amber)	**Ports:** LNK/ACT (Green)	**Ports:** LNK/ACT (Green)	**Ports:** LNK/ACT (Green) PoE-in-Use (Amber)
Switching Specifications					
Switch Architecture	Store-and-forward				
Switch Fabric	128Gbps/non-blocking			216Gbps/non-blocking	
Switch Throughput	95.23Mpps			160.7Mpps	
Address Table	32K MAC address table with auto learning function				
ARP Table	8K	8K	8K	8K	8K
Routing Table	6K	6K	6K	12K	12K
IP Interface	1024	1024	1024	1024	1024
ACL Table	2K	2K	2K	4K	4K
Shared Data Buffer	12MB	12MB	12MB	16MB	16MB
Jumbo Frame	12KBytes				
Flow Control	Back pressure for half duplex IEEE 802.3x pause frame for full duplex				
Power over Ethernet Specifications					
PoE Standard	--	IEEE 802.3bt PoE++ PSE (Ports 1 to 8) IEEE 802.3af/at PoE+ PSE (Ports 9 to 24)	--	--	IEEE 802.3at PoE+ PSE
PoE Power Supply Type	--	End-span/Mid-span/802.3bt (Ports 1 to 8) End-span (Ports 9 to 24)	--	--	End-span
PoE Power Output	--	Port 1-8 90W (max), Port 9-24 32W (max)	--	--	32W(MAX)
Power Pin Assignment	--	End-span: 1/2 (-), 3/6 (+) Mid-span: 4/5 (+), 7/8 (-) 802.3bt: 1/2 (-), 3/6 (+), 4/5 (+), 7/8 (-)	--	--	1/2(+), 3/6(-)
PoE Power Budget	--	480 watts (max.)	--	--	500W/110V AC / 600W/220V AC

IPv4 Layer 3 Functions	
IP Routing Protocol	Static route RIPv1/v2 OSPFv2
Layer 3 Protocol	ARP ARP Proxy IGMP Proxy
IPv6 Layer 3 Functions	
Other	ICMPv6,ND,DNSv6
Layer 2 Functions	
Port Configuration	Port disable/enable Flow control disable/enable Bandwidth control on each port Port loopback detect
Port Status	Display each port's speed duplex mode, link status, flow control status and auto negotiation status
VLAN	802.1Q tagged VLAN, up to 4K VLAN groups 802.1ad Q-in-Q (VLAN stacking) GVRP for VLAN management Private VLAN Edge (PVE) supported Protocol-based VLAN MAC-based VLAN IP subnet VLAN
Bandwidth Control	TX/RX/Both
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 64 groups with 8 ports per trunk group
QoS	8 priority queues on all switch ports Supports strict priority and Weighted Round Robin (WRR) CoS policies Traffic classification: - IEEE 802.1p CoS/ToS - IPv4/IPv6 DSCP - Port-based WRR
Multicast	IPv4 IGMP v1/v2/v3 snooping IPv4 Querier mode support IPv6 MLD v1/v2 snooping Multicast VLAN Register (MVR) Up to 1024
Security Functions	
Access Control List	Supports Standard and Expanded ACL IP-based ACL/MAC-based ACL Time-based ACL Up to 2K entries
Security	Port isolation Supports IP + MAC + port binding Identification and filtering of L2/L3/L4 based ACL Defend against DOS or TCP attacks Suppression of broadcast, multicast and unknown unicast packet DHCP Snooping, DHCP Option 82/43/60/61/67 Command line authority control based on user levels
AAA	TACACS+ and IPv4/IPv6 over RADIUS
Authentication	IEEE 802.1x port-based network access control
Switch Management Functions	
System Configuration	Console, Telnet, Web browser, SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLSv1.2, SNMPv3

Management	IPv4 and IPv6 dual stack management User IP security inspection for IPv4/IPv6 SNMP SNMP v1, v2c and v3 SNMP MIB and TRAP SNMP RMON 1, 2, 3, 9 four groups IPv4/IPv6 FTP/TFTP IPv4/IPv6 NTP RADIUS authentication for IPv4/IPv6 Telnet user name and password IPv4/IPv6 SSH The right configuration for users to adopt RADIUS server's shell management CLI, console, Telnet Security IP safety net management function: avoid unlawful landing at nonrestrictive area Syslog server for IPv4 and IPv6 TACACS+ PLANET Smart Discovery Utility
SNMP MIBs	RFC 1213 MIB-II RFC 1215 Internet Engineering Task Force RFC 1271 RMON RFC 1354 IP-Forwarding MIB RFC 1493 Bridge MIB RFC 1643 Ether-like MIB RFC 1907 SNMP v2 RFC 2011 IP/ICMP MIB RFC 2012 TCP MIB RFC 2013 UDP MIB RFC 2096 IP forward MIB RFC 2233 if MIB RFC 2452 TCP6 MIB RFC 2454 UDP6 MIB RFC 2465 IPv6 MIB RFC 2466 ICMP6 MIB RFC 2573 SNMP v3 notify RFC 2574 SNMP v3 vacm RFC 2674 Bridge MIB Extensions (IEEE 802.1Q MIB) RFC 2674 Bridge MIB Extensions (IEEE 802.1P MIB)
Standard Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3z Gigabit 1000BASE-SX/LX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3ae 10Gb/s Ethernet IEEE 802.3x flow control and back pressure IEEE 802.3ad port trunk with LACP IEEE 802.1ag CFM 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 Power over Ethernet PLUS IEEE 802.3bt 4-pair Power over Ethernet Plus Plus RFC 768 UDP RFC 783 TFTP RFC 793 TCP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP

Standards Compliance	RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2710 MLD v1 RFC 3810 MLD v2 RFC 2328 OSPF v2 RFC 1058 RIP v1 RFC 2453 RIP v2 ITU-T G.8032 ERPS Ring
Environment	
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 90% (non-condensing)
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 90% (non-condensing)

Ordering Information

GS-6311-24T4X	L3 24-Port 10/100/1000T + 4-Port 10G SFP+ Managed Ethernet Switch
GS-6311-24HP4X	L3 8-Port 802.3bt PoE + 16-Port 802.3at PoE + 4-Port 10G SFP+ Managed Ethernet Switch
GS-6311-16S8C4XR	L3 16-Port 100/1000X SFP + 8-Port Gigabit TP/SFP + 4-Port 10G SFP+ Managed Ethernet Switch with 36-72V DC Redundant Power
GS-6311-48T6X	L3 48-Port 10/100/1000T + 6-Port 10G SFP+ Managed Ethernet Switch
GS-6311-48P6X	L3 48-Port 10/100/1000T 802.3at PoE + 6-Port 10G SFP+ Managed Ethernet Switch

Related Products

XGS-5240-24X2QR	Layer 2+ 24-Port 10G SFP+ + 2-Port 40G QSFP+ Stackable Managed Switch
XGS-6320-12X4TR	Layer 3 12-Port 10GBASE-X SFP+ + 4-Port 10GBASE-T Managed Ethernet Switch with 48V DC Redundant Power
XGS-6320-8X8TR	Layer 3 8-Port 10GBASE-X SFP+ + 8-Port 10GBASE-T Managed Ethernet Switch with 48V DC Redundant Power
MGS-6320-2T6S2X	L3 2-Port 100/1000T + 2-Port 100/1000X SFP + 4-Port 2.5G SFP + 2-Port 10G SFP+ Metro Ethernet Switch
SGS-6310-48T6X	L3 48-Port 10/100/1000T + 6-Port 10G SFP+ Stackable Managed Switch
SGS-6310-48P6XR	L3 48-Port 10/100/1000T 802.3at PoE + 6-Port 10G SFP+ Stackable Managed Switch with 55V DC Redundant Power
XGS-6350-48X2Q4C	Layer 3 48-Port 10G SFP+ + 2-Port 40G QSFP+ + 4-Port 100G QSFP28 Managed Switch

Available Modules for GS-6311 series

10Gigabit Ethernet Transceiver

MTB-LB40	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 40km (TX:1330nm RX:1270nm) (-40~85°C)
MTB-LA40	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 40km (TX:1270nm RX:1330nm) (-40~85°C)
MTB-LB20	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 20km (TX:1330nm RX:1270nm) (-40~85°C)
MTB-LA20	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 20km (TX:1270nm RX:1330nm) (-40~85°C)
MTB-SR	1-Port 10GBASE-SR SFP+ Fiber Optic Module - 300m (-40~85°C)
MTB-LR	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 10km (-40~85°C)
MTB-LA60	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 60km (TX:1270nm RX:1330nm) (-40~85°C)
MTB-LB60	1-Port 10GBASE-BX SFP+ Fiber Optic Module - 60km (TX:1330nm RX:1270nm) (-40~85°C)
MTB-LR40	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 40km (-40~85°C)
MTB-SR2	1-Port 10GBASE-SR SFP+ Fiber Optic Module – 2km (-40~85°C)
MTB-LR20	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 20km (-40~85°C)
MTB-LR60	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 60km (-40~85°C)
MTB-LR80	1-Port 10GBASE-LR SFP+ Fiber Optic Module - 80km (-40~85°C)

Gigabit Ethernet Transceiver (1000BASE-X SFP)

MGB-GT	SFP-Port 1000BASE-T Module (-40~85°C)
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module - 20km (-40~85°C)
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module - 550m (-40~85°C)
MGB-SX2	SFP-Port 1000BASE-SX mini-GBIC module - 2km (-40~85°C)
MGB-L40	SFP-Port 1000BASE-LX mini-GBIC module - 40km (-40~85°C)
MGB-L80	SFP-Port 1000BASE-LX mini-GBIC module - 80km (-40~85°C)
MGB-LA10	SFP-Port 1000BASE-BX (WDM, TX:1310nm) mini-GBIC module - 10km (-40~85°C)
MGB-LB10	SFP-Port 1000BASE-BX (WDM, TX:1550nm) mini-GBIC module - 10km (-40~85°C)
MGB-LA20	SFP-Port 1000BASE-BX (WDM, TX:1310nm) mini-GBIC module - 20km (-40~85°C)
MGB-LB20	SFP-Port 1000BASE-BX (WDM, TX:1550nm) mini-GBIC module - 20km (-40~85°C)
MGB-LA40	SFP-Port 1000BASE-BX (WDM, TX:1310nm) mini-GBIC module - 40km (-40~85°C)
MGB-LB40	SFP-Port 1000BASE-BX (WDM, TX:1550nm) mini-GBIC module - 40km (-40~85°C)
MGB-LA80	SFP-Port 1000BASE-BX (WDM, TX:1490nm) mini-GBIC module - 80km (-40~85°C)
MGB-LB80	SFP-Port 1000BASE-BX (WDM, TX:1550nm) mini-GBIC module - 80km (-40~85°C)
MGB-LA120	SFP-Port 1000BASE-BX (WDM, TX:1490nm) mini-GBIC module - 120km (-40~85°C)
MGB-LB120	SFP-Port 1000BASE-BX (WDM, TX:1550nm) mini-GBIC module - 20km (-40~85°C)

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