Stackable L3 Managed Switch Datasheet

MODELS: SG6428X / SG6428XHP / SG6654X / SG6654XHP



Overview

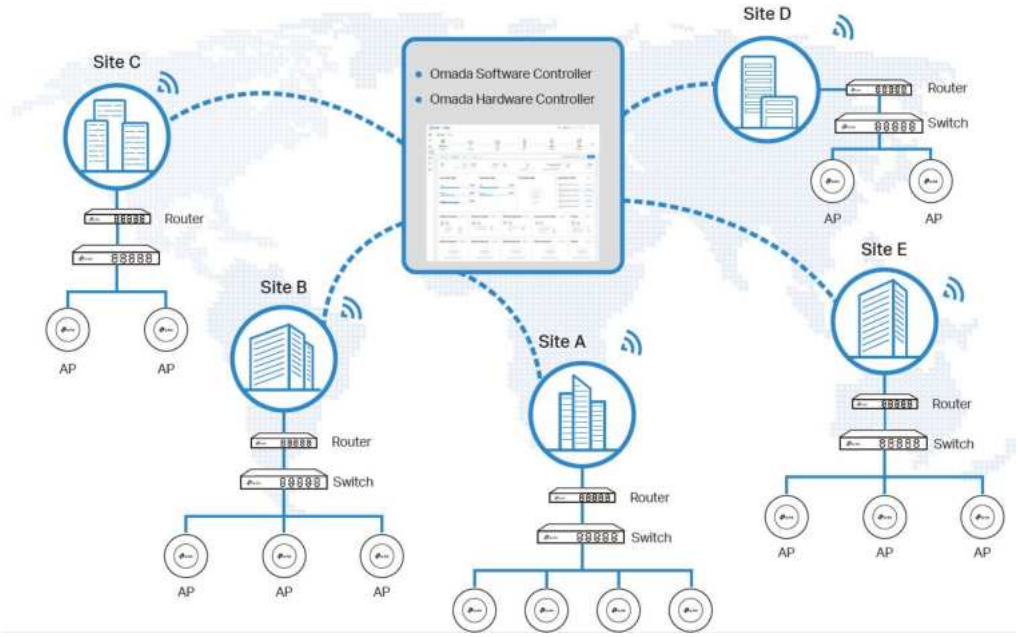
TP-Link's Omada Stackable L3 switches provide a wide range of switches, from Gigabit RJ45 ports to 25 Gbps SFP28 slots. They can be used at the core layer, aggregation layer, or access layer of large enterprise and campus networks. The switches include optional PoE+ support, highly scalable Layer 3 routing, and dual power supplies for mission-critical networks

Omada Solution



Software Defined Networking (SDN) with Cloud Access

Omada Software Defined Networking (SDN) platform integrates network devices, including access points, switches and gateways, providing 100% centralized cloud management. Omada creates a highly scalable network—all controlled from a single interface. Seamless wireless and wired connections are provided, ideal for use in hospitality, education, retail, offices, and more.



Hassle-Free Centralized Cloud Management

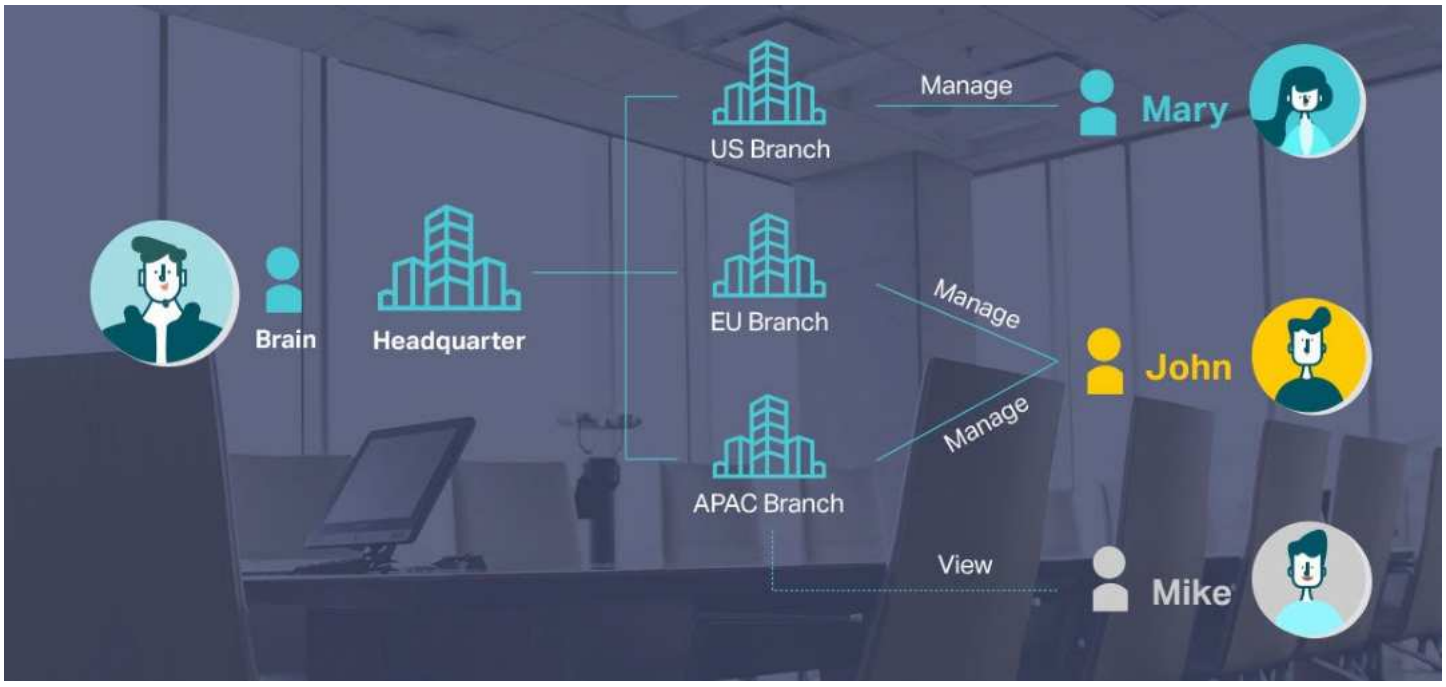
100% centralized cloud management of the whole network from different sites——all controlled from a single interface anywhere, anytime.



- No additional training needed
- Unlimited scalability
- Batch management
- Devices still work even when not connected to the Cloud

Assign Different Management Roles

Multi-user privilege assignment is available to increase management efficiency and security. Multi-person management, multi-level permissions, and the ability to add admins as needed, enable flexible network operation and maintenance.

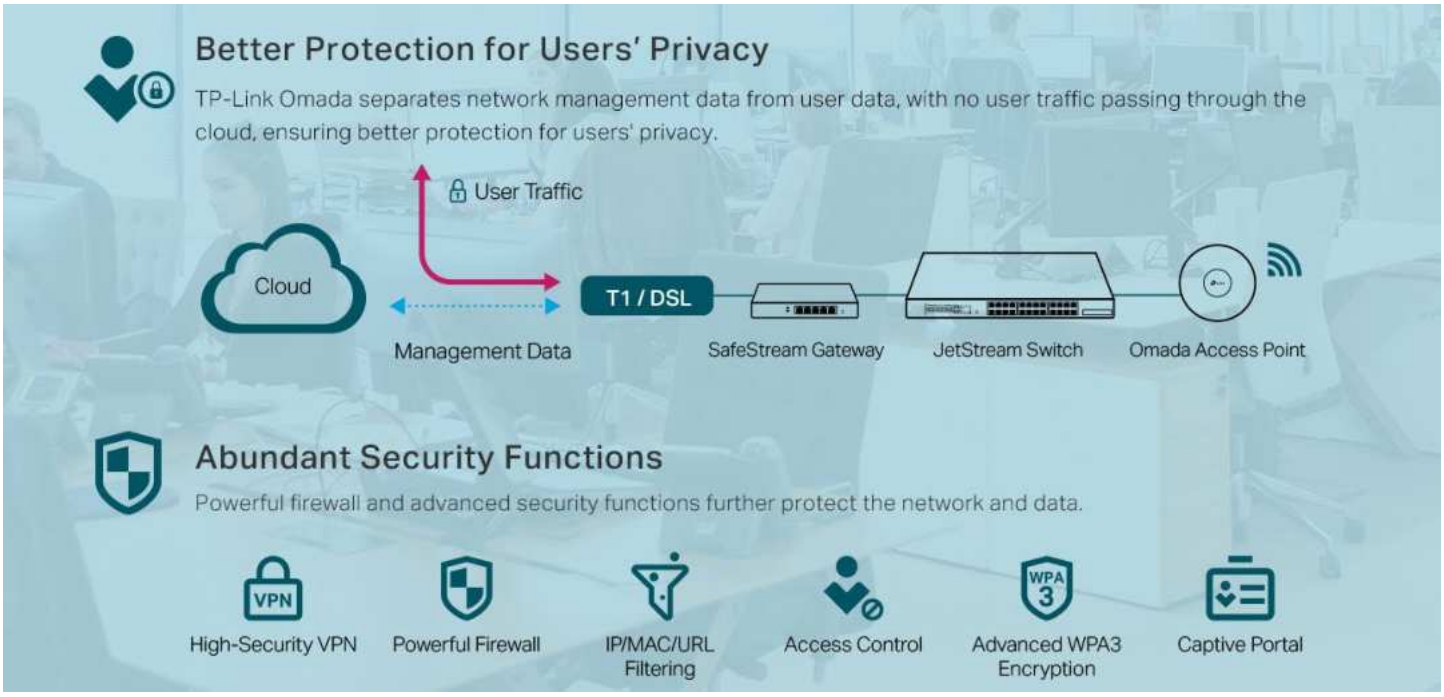


Easy and Intelligent Network Monitoring

The easy-to-use dashboard makes it easy to see your real-time network status; check network usage and traffic distribution; receive network condition logs, abnormal event warnings, and notifications; or even track key data for better business results. Network topology helps admins quickly see and troubleshoot connections at a glance.



Comprehensive Protection for the Whole Network



Switch Product Features

High-Speed and Flexible Connectivity

The core/aggregation switches are equipped with 25 Gbps SFP28 slots and provide up to 820 Gbps switching capacity per unit. The access switches provide 10G SFP+ slots, and Gigabit RJ45 ports, creating flexible options to match your business needs.

Abundant Layer 3 Capabilities

Static Routing, RIP, OSPF, and ECMP come with abundant Layer 3 routing protocols that support a scalable network. Multicast routing protocols guarantee efficient routing for multicast groups. DHCP Server and DHCP Relay are also supported.

Highly Available

Physically stack for built-in redundancy and performance. Redundant power supplies and fans make it an ideal choice for reliable networking architecture. VRRP allows a group of switches to dynamically back up each other. ERPS supports rapid protection and recovery in a ring topology.

Numerous L2+ features

The L3 managed switches support a complete lineup of L2 features, including 802.1Q VLAN, Port Mirroring, STP/RSTP/MSTP, Link Aggregation Control Protocol and 802.3x Flow Control function. Moreover, the switch provides advanced features for network maintenance. Such as Loopback Detection, Cable Diagnostics and IGMP Snooping. IGMP Snooping ensures the switch intelligently forward the multicast stream only to the appropriate subscribers while IGMP throttling & filtering restrict each subscriber on a port level to prevent unauthorized multicast access.

High PoE Capability

Provide 24/48-port 802.3at PoE+ output for powering network devices. Up to 720/1440W PoE budget (depends on the number and model of power modules) meets the needs of most PoE devices. Perpetual PoE provides uninterrupted power to connected PDs even when the PSE switch is rebooting. And with fast PoE, the switch saves PoE power settings across a reboot.

ISP Features

The L3 managed switches support a bundle of ISP features such as 802.3ah OAM, DDM, sFlow, QinQ, L2PT PPPoE ID Insertion, IGMP authentication etc. 802.3ah OAM and Device Link Detection Protocol (DLDP) functions improve monitor and troubleshoot Ethernet networks, help facilitate network management. DDM (Digital Diagnostic Monitoring) function helps view the status of SFP modules inserting to the Switch and to configure alarm settings, warning settings, temperature threshold settings, voltage threshold settings, bias current threshold settings, TX power threshold settings, and RX power threshold settings.

Enterprise Level Management Features

TP-Link's new Omada L3 managed switches are easy to use and manage. They support various user-friendly standard management features, such as intuitive web-based Graphical User Interface (GUI), industry-standard Command Line Interface (CLI), SNMP (v1/v2c/v3), and RMON. This allows the switch to provide valuable status information and send reports on abnormal events. It also supports Dual Image and Dual Configuration to provide improved reliability and network uptime.

Low-Carbon and Eco-Friendly

The newest chip brings lower energy consumption. The CPU reasonably adjusts workload according to the situation of data forwarded via ports and further reduces power consumption. Smart fans regulate the rotation speed flexibly based on the temperature, guaranteeing lower power consumption.

Specifications

Hardware Features & Performance

Product Picture			
Model		SG6428X	SG6428XHP
General	Interface	24 × 10/100/1000Mbps RJ45 ports 4 × 1/10Gbps SFP+ Slots*	
	Console Ports	1 × RJ45 + 1 × USB Type C	
	Management Port	1 × RJ45	
	USB Ports	2 × USB 2.0	
	Flash	2×4 MB Nor + 8 GB EMMC	
	DRAM	4 GB DDR4	
	Processor	Dual-Core ARM @1.5GHz CPU	
PoE	PoE Standard	-	802.3af/at
	PoE Ports	-	24
	PoE Power Budget	-	402W (with 1× PSM500-AC, by default) 720W (with 1× PSM900-AC) 720W (with 2× PSM500-AC) 720W (with 1× PSM500-AC and 1× PSM900-AC) 720W (with 2× PSM900-AC)
	Fast PoE	-	Yes
	Perpetual PoE	-	Yes
Performance	Switching Capacity	128 Gbps	
	Forwarding Bandwidth	64 Gbps	
	Packet Forwarding Rate	95.2 Mpps	
	MAC Address Table	32K	
	Packet Buffer	3MB	
	Stacking Port	10G SFP+ slot (all uplink ports can be used as stacking ports)	
	Stacking Bandwidth	Up to 80 Gbps (4 stacking ports)	
	Max Stacking Number	8 in standalone mode, 4 in Omada controller mode	
	Compatible Models for Stacking	SG6428X, SG6654X, SG6428XHP, SG6654XHP**	
	Transmission Method	Store and Forward	
	Jumbo Frame	9 KB	
Physical & Environmet	Power Supply	100–240 V~50/60 Hz	
	Redundant Power Supply	2 internal fixed power supply modules	Max 2 hot swappable power supply module (shipping with one PSM500-AC module by default)***
	Suitable Power Supply Module	-	PSM500-AC, PSM900-AC
	Max Power Consumption	28.4 W (220 V/50 Hz)	42.9 W (110 V/60 Hz) (With no PD connected) 916.6 W (110 V/60 Hz) (With 720W PD connected and powered by 2× PSM500-AC)
	Max Heat Dissipation	96.91 BTU/hr (220 V/50 Hz)	146.29 BTU/hr (110 V/60 Hz) (With no PD connected) 3,125.61 BTU/hr (110 V/60 Hz) (With 720W PD connected and powered by 2× PSM500-AC)
	Standby Power Consumption	13.0 W (220 V/50 Hz)	31.95 W (220 V/50 Hz)
	Noise	Min: 15.6 dBA @1m 25 °C Max: 39.7 dBA @1m 25 °C	1× PSM500-AC power supply module: Min: 35.2 dBA @1m 25 °C Max: 55.2 dBA @1m 25 °C 2× PSM500-AC power supply modules: Min: 39.2 dBA @1m 25 °C Max: 57.4 dBA @1m 25 °C
	Fan Quantity	4 internal fixed fans	4 hot swappable fan modules, N+1 redundant
	Airflow	Front-to-back	Front-to-back
	Surge Protection	Service port: ±6 kV in common mode Power port: ±4 kV in differential mode; ±4 kV in common mode	Service port: ±6 kV in common mode Power port: ±6 kV in differential mode; ±6 kV in common mode
	ESD Protection	Air: ±15 kV, Contact: ±8 kV	Air: ±15 kV, Contact: ±8 kV
	MTBF	614,086 h @ 25 °C	753,531 h @ 25 °C
	Dimensions (W x D x H)	17.3 × 15.0 × 1.7 in (440 × 380 × 44 mm)	17.3 × 16.5 × 1.7 in (440 × 420 × 44 mm)
	Installation	Rackmount	
	Operating Temperature & Altitude	-5 °C to 50 °C (23 °F to 122 °F) @ 300 meters -5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meters -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meters	-5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meters -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meters
	Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)	
	Operation Humidity	10% to 90% RH, non-condensing	
	Storage Humidity	5% to 90% RH, non-condensing	
	Certification	CE, FCC, RoHS	

*No more than two 10G RJ45 SFP+ modules are supported, and they can only be inserted into SFP+ slots 25&27.
**These features are only available when the software is upgraded to the latest version at www.tp-link.com.
***An additional power supply module needs to be purchased separately.

Hardware Features & Performance

Product Picture			
Model		SG6654X	SG6654XHP
General	Interface	48 × 10/100/1000Mbps RJ45 ports 6 × 1/10Gbps SFP+ Slots*	
	Console Ports	1× RJ45 + 1× USB Type C	
	Management Port	1× RJ45	
	USB Ports	2× USB 2.0	
	Flash	2×4 MB Nor + 8GB EMMC	
	DRAM	4 GB DDR4	
	Processor	Dual-Core ARM @1.5GHz CPU	
PoE	PoE Standard	-	802.3af/at
	PoE Ports	-	48
	PoE Power Budget	-	384W (with 1× PSM500-AC) 764W (with 1× PSM900-AC, by default) 812W (with 2× PSM500-AC) 1176W (with 1× PSM900-AC and 1× PSM500-AC) 1440W (with 2× PSM900-AC)
	Fast PoE	-	Yes
	Perpetual PoE	-	Yes
Performance	Switching Capacity	216 Gbps	
	Forwarding Bandwidth	108 Gbps	
	Packet Forwarding Rate	160.7 Mpps	
	MAC Address Table	32 K	
	Packet buffer	3MB	
	Stacking Port	10G SFP+ slot (all uplink ports can be used as stacking ports)	
	Stacking Bandwidth	Up to 120 Gbps (6 stacking ports)	
	Max Stacking Number	8 in standalone mode, 4 in Omada controller mode	
	Compatible Models for Stacking	SG6428X, SG6654X, SG6428XHP, SG6654XHP**	
	Transmission Method	Store and Forward	
	Jumbo Frame	9 KB	
Physical & Environmet	Power Supply	100-240 V ~50/60 Hz	
	Redundant Power Supply	2 internal fixed power supply modules	Max 2 hot swappable power supply module (shipping with one PSM900-AC module by default)***
	Suitable Power Supply Module	-	PSM500-AC, PSM900-AC
	Max Power Consumption	39.8 W (220 V/50 Hz)	67.24 W (110 V/60 Hz) (With no PD connected) 1767.7 W (110 V/60 Hz) (With 1440W PD connected and powered by 2× PSM900-AC)
	Max Heat Dissipation	135.81 BTU/hr (220 V/50 Hz)	229.29 BTU/hr (110 V/60 Hz) (With no PD connected) 6,027.86 BTU/hr (110 V/60 Hz) (With 1440W PD connected and powered by 2× PSM900-AC)
	Standby Power Consumption	16.2 W (220 V/50 Hz)	41.43 W (220 V/50 Hz)
	Noise	Min: 14.8 dBA @1m 25 °C Max: 40.7 dBA @1m 25 °C	1× PSM900-AC power supply module: Min: 38.2 dBA @1m 25 °C Max: 60.6 dBA @1m 25 °C 2× PSM900-AC power supply modules: Min: 39.9 dBA @1m 25 °C Max: 62.3 dBA @1m 25 °C
	Fan Quantity	4 internal fixed fans	4 hot swappable FAN modules, N+1 redundant
	Airflow	Front-to-back	Front-to-back
	Surge Protection	Service port: ±6 kV in common mode Power port: ±4 kV in differential mode; ±4 kV in common mode	Service port: ±6 kV in common mode Power port: ±6 kV in differential mode; ±6 kV in common mode
	ESD Protection	Air: ±15 kV, Contact: ±8 kV	Air: ±15 kV, Contact: ±8 kV
	MTBF	547,093 h @ 25 °C	648,538 h @ 25 °C
	Dimensions (W x D x H)	17.3 × 15.0 × 1.7 in (440 × 380 × 44 mm)	17.3 × 16.5 × 1.7 in (440 × 420 × 44 mm)
	Installation	Rackmount	
	Operating Temperature	-5 °C to 50 °C (23 °F to 122 °F) @ 300 meters -5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meters -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meters	-5 °C to 45 °C (23 °F to 113 °F) @ 2,000 meters -5 °C to 40 °C (23 °F to 104 °F) @ 3,000 meters
	Storage Temperature	-40 °C to 70 °C (-40 °F to 158 °F)	
	Operation Humidity	10% to 90% RH, non-condensing	
	Storage Humidity	5% to 90% RH, non-condensing	
	Certification	CE, FCC, RoHS	

*No more than two 10G RJ45 SFP+ modules are supported, and they can only be inserted into SFP+ slots 49&53.
**These features are only available when the software is upgraded to the latest version at www.tp-link.com.
***An additional power supply module needs to be purchased separately.

Software Features[△]

Model	SG6428X / SG6428XHP / SG6654X / SG6654XHP	
SDN Support	• Support Omada Hardware Controller • Automatic Device Discovery • Batch Configuration • Batch Firmware Upgrading	• Intelligent Network Monitoring • Abnormal Event Warnings • Unified Configuration • Reboot Schedule
Basic Function	• Auto Negotiation/Auto MDI/MDIX • 802.3X Flow Control & Back Pressure	• Auto-Uplink Every Port
Stacking	• Basic Feature - Max Unit Number - Topology - Hot Plug in/out • Global Fabric Config - Unit ID Config - Stack Status/Error-Info - Automatic Stacking	• Fabric Port Config - Port Config - Port Status
L3 Features	• IP Interfaces: - IPv4: Max 256, IPv6: Max 256 • Static Routing - Max 1,024, IPv6: Max 512 • Host Route Table: Max 6,100 entries • RIP: Version v1/v2, Max 8,190 - RIPng: Max 4,097 • OSPF: Version v2/v3; v2: Max 8,190, v3: Max 4,097 • VRRP: Version v2/v3, Max 64 groups • ECMP: 256 entries, max 32 ECMP Nexhops per Destination	• Policy-based Routing (PBR) • Static ARP - 512 static entries • Dynamic ARP - 7,680 dynamic entries • Proxy ARP • DHCP Server: - Max 64 IP Pools - Max 1,000 Manual Binding Entries • DHCP Relay: - Relayed Interface - Relayed VLAN
L2 Features	• Link Aggregation - Static link aggregation - 802.3ad LACP - Up to 8 ports per group - Up to 64 LAG Groups • Spanning Tree Protocol - 802.1d STP - 802.1w RSTP - 802.1s MSTP - Up to 16 MSTI instances - STP Security: TC Protect, BPDU Filter, BPDU Protect, Root Protect, Loop Protect • Loopback Detection - Port based - VLAN based • Flow Control - 802.3x Flow Control - HOL Blocking Prevention	• Supports 2,048 IGMP groups • ERPS: Up to 16 ERPS rings • Mirroring - Port Mirroring - CPU Mirroring - One-to-One - Many-to-One - Tx/Rx/Both • RSPAN • MAC Address - MAC Address Table - Static MAC: Max 128 entries - Dynamic MAC Address: Max 32k entries - Filtering MAC Address: Max 128 entries • Virtual MAC • Sticky MAC
Multicast	• IGMP Snooping - IGMP v1/v2/v3 Snooping - Fast Leave - IGMP Snooping Querier - IGMP Authentication - L2 Multicast Table - Dynamic Multicast: Max 4,093 entries - Static Multicast: Max 4,093 entries • IGMP Authentication • Static Multicast IP • Multicast VLAN Registration (MVR): - Max 4,093 entries	• MLD Snooping - MLD v1/v2 Snooping - Fast Leave - MLD Snooping Querier - Static Group Config - Limited IP Multicast • Multicast Filtering: 256 profiles and 16 entries per profile • PIM-DM/SM (IPv4) - Max 1,024 Multicast Route Entries
VLAN	• VLAN Group (802.1q VLAN) - Max 4K VLAN Groups • 802.1Q Tagged VLAN • MAC VLAN entries: 200 • Multicast VLAN • Management VLAN • VLAN VPN (QinQ): Max 256 entries • GVRP	• Protocol VLAN: Protocol Template 16, Protocol VLAN 12 entries • VLAN VPN - VLAN Mapping - VLAN Replace • Voice VLAN • Private VLAN
QoS	• Class of Service - 8 Queues of Priority - Port Priority - IEEE 802.1p Priority - DSCP Priority - Queue Min-Bandwidth - Schedule Mode (SP, WRR, SP+WRR)	• Bandwidth Control - Rate Limit - Storm Control • User-Defined OUI • Smoother Performance • Action for Flows - QoS remark (802.1P Remark, DSCP Remark)

Software Features

Model	SG6428X / SG6428XHP / SG6654X / SG6654XHP
ACL	• MAC ACL - Source MAC - Destination MAC - VLAN ID - User Priority - Ether Type • IP ACL -Source IP - Destination IP - Fragment - IP Protocol - TCP Flag - TCP/UDP Port - DSCP/IP TOS • Combined ACL • IPv6 ACL • Policy - Mirroring - Redirect - Rate Limit - QoS Remark • ACL apply to Port/VLAN • Time-based ACL - default template: IPv4 ACL Rules: 300 entries MAC ACL Rules: 300 entries Combined ACL: 300 entries IPv4 Source Guard: 299 entries - IPv4 access template: IPv6 ACL Rules: 0 entries MAC ACL Rules: 300 entries Combined ACL: 500 entries IPv4 Source Guard: 499 entries - IPv6 access template: IPv4 ACL Rules: 0 entries MAC ACL Rules: 200 entries IPv6 ACL: 250 entries IPv6 Source Guard: 249 entries - Omada template: IPv4 ACL Rules: 0 entries MAC ACL Rules: 0 entries Combined ACL: 600 entries IPv4 Source Guard: 0 entries
Security	• Port Isolation • CPU-Deffend • ARP Inspection (Dynamic ARP Inspection) • DoS Defend • IP-MAC-Port Binding -1,024 Entries - DHCP Snooping - ARP Inspection - IPv4 Source Guard • IPv6-MAC -Port Binding -1,024 Entries - DHCPv6 Snooping - ND Detection - ND Snooping - IPv6 Source Guard • DHCP Filter • Static/Dynamic Port Security - Up to 64 MAC addresses per port • Broadcast/Multicast/Unknown-unicast Storm Control - kbps/ratio control mode • 802.1X - Port base authentication - Mac base authentication - VLAN Assignment - MAB - Guest VLAN - Support RADIUS authentication and accountability • AAA (including TACACS+) • Secure web management through HTTPS with SSLv3/TLS 1.2 • Secure Command Line Interface (CLI) management with SSHv2 • IP/Port/MAC based access control
ISP Features	• 802.3ah Ethernet Link OAM • L2PT (Layer 2 Protocol Tunneling) • PPPoE ID Insertion • Device Link Detect Protocol (DLDP) • sFlow • DDM
Management	• Web-based GUI • Web-Based HTTP or HTTPS • TFTP/TFTPv6 • FTP/FTPv6 • File System • Debug • CLI - Console - Telnet - Telnetv6 • SNMP - v1/v2c/v3 - SNMP Trap - SNMP Inform - RMON (1, 2, 3, 9 groups) • Link Layer Discovery Protocol (LLDP) • VCT (Virtual Cable Test) • System IP - Static IP - DHCP Client - BOOTP Client • 802.1ab LLDP/LLDP-MED • DHCP Auto Install • Maintenance - CPU/Memory Monitor - System Log - Cable Test - Ping/Tracert - Pingv6 - ICMP/ICMP v6 • Time Setting - NTP - DST • System Tools - Dual Image - Config Restore/Backup - Firmware Upgrade - System Reboot/Reset • User Management - User Settings - Access Level - Password Recorvery Settings • SDM Template • IEEE 802.3az Energy-Efficient Ethernet (EEE)
MIBs	• MIB II (RFC1213) • Interface MIB (RFC2233) • Ethernet Interface MIB (RFC1643) • Bridge MIB (RFC1493) • P/Q-Bridge MIB (RFC2674) • RMON MIB (RFC2819) • RMON2 MIB (RFC2021) • RADIUS Accounting Client MIB (RFC2620) • RADIUS Authentication Client MIB (RFC2618) • Remote Ping, Traceroute MIB (RFC2925) • Support TP-Link Private MIB

[△] Some features are only available when the software is upgraded to the latest version at www.tp-link.com.

Ordering Information

Host Switch	
Model	Description
SG6428X	Omada 24-Port Gigabit Stackable L3 Managed Switch with 4 10G Slots
SG6428XHP	Omada 24-Port Gigabit Stackable L3 Managed PoE+ Switch with 4 10G Slots
SG6654X	Omada 48-Port Gigabit Stackable L3 Managed Switch with 6 10G Slots
SG6654XHP	Omada 48-Port Gigabit Stackable L3 Managed PoE+ Switch with 6 10G Slots

Power Supply Module	
Model	Description
PSM500-AC	500 W AC Power Supply Module
PSM900-AC	900 W AC Power Supply Module

SFP/SFP+ Modules	
Model	Description
SM311LS	Gigabit SFP module, Single-mode, LC interface, Up to 20km distance
SM311LM	Gigabit SFP module, Multi-mode, LC interface, Up to 550m distance
SM321A	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1550 nm/RX: 1310 nm, 20 km
SM321A-2	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1550 nm/RX: 1310 nm, 2 km
SM321B	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1310 nm/RX: 1550 nm, 20 km
SM321B-2	Gigabit WDM Bi-Directional SFP Module, single-mode, LC connector, TX: 1310 nm/RX: 1550 nm, 2 km
SM5110-LR	10GBase-LR SFP+ LC Transceiver, single-mode, LC connector, 1310nm, 10 km
SM5110-SR	10GBase-SR SFP+ LC Transceiver, multi-mode, LC connector, 850nm, 300 m

Direct Attach Cable	
Model	Description
SM5220-1M	1 Meter 10G SFP+ Direct Attach Cable
SM5220-3M	3 Meter 10G SFP+ Direct Attach Cable

RJ45 SFP/SFP+ Modules	
Model	Description
SM331T	1000BASE-T RJ45 SFP Module
SM5310-T	10GBASE-T RJ45 SFP+ Module

MC Series Media Converter	
Model	Description
MC210CS	Gigabit Single-Mode Media Converter, up to 20 km, chassis mountable
MC200CM	Gigabit multi-mode SC SFP Transceiver, up to 550 m, chassis mountable
MC200L	Gigabit SFP slot supporting mini-GBIC modules, chassis mountable
MC1400	14-slot power supply chassis for TP-LINK MC Series Media Converter, 19-inch rack-mountable

FC Series Media Converter	
Model	Description
FC111A-20	100Mbps Single-Mode WDM Media Converter, up to 20 km, TX:1550nm, RX:1310nm, chassis mountable
FC111B-20	100Mbps Single-Mode WDM Media Converter, up to 20 km, TX:1310nm, RX:1550nm, chassis mountable
FC311A-2	Gigabit Single-Mode WDM Media Converter, up to 2 km, TX:1550nm, RX:1310nm, chassis mountable
FC311B-2	Gigabit Single-Mode WDM Media Converter, up to 2 km, TX:1310nm, RX:1550nm, chassis mountable
FC311A-20	Gigabit Single-Mode WDM Media Converter, up to 20 km, TX:1550nm, RX:1310nm, chassis mountable
FC311B-20	Gigabit Single-Mode WDM Media Converter, up to 20 km, TX:1310nm, RX:1550nm, chassis mountable
FC1400	14-slot power supply chassis for TP-LINK FC Series Media Converter, 19-inch rack-mountable

Some models featured in this guide may be unavailable in your country or region. Visit TP-Link website for local sales information: www.tp-link.com.

PoE budget calculations are based on laboratory testing. Actual PoE power budget is not guaranteed and will vary as a result of client limitations and environmental factors.

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