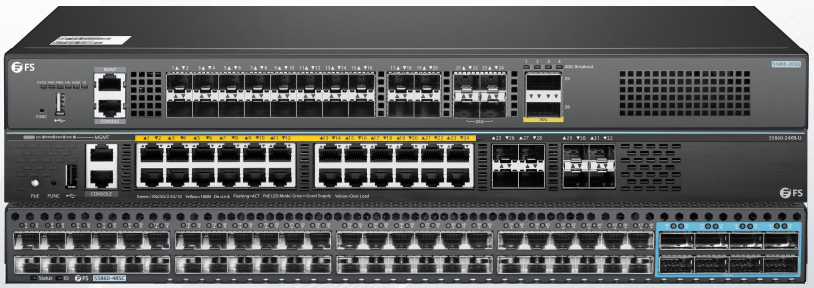
S5860 Series Switches

HIGH PERFORMANCE & STRONG SECURITY 10G ETHERNET SWITCH FOR BUSINESS

S5860 series switches are high-performance and strong-security 10G L3 enterprise switches with 760Gbps/2.56T switching capacity.



Overview

S5860 series switches are next-generation high-performance and strong-security 10G Ethernet switches newly released. With the advanced hardware architecture, the S5860 series switches are capable of providing faster hardware processing and better operation experience.

The S5860 series switches flexibly provide access services at multiple rates (10G/5G/2.5G/1G). They can connect to uplink devices through high-performance 10G/25G/40G/100G ports and fully meet user requirements for high-density access, high-performance convergence. They provide robust performance, sound end-to-end service quality, and rich security settings for the convergence layer of large-sized networks and the core layer of small and medium sized networks.

Benefits

- Layer 3 Switches
- Multiple Rates-100M/1000M/2.5G/5G/10G; 10G/25G/40G/100G Uplinks
- BCM56170/BCM56873 Switch Chip
- Support up to 2 Units Stacking
- 1+1 Redundant Power Supply
- Industry-standard CLI & Web Management
- IPv4/IPv6 Dual-stack Multi-layer Switching
- Multiple Protocols: VRRP, ERPS, IGMP snooping, MLD, RLDP, BFD

Product Characteristics

Multi-gigabit and PoE++ for S5860-24XB-U

The Ethernet interface standards have evolved from 10BASE-T and 100BASE-T to 1000BASE-T (IEEE 802.3ab) rapidly and have gradually gained widespread application in PCs, Access Points (APs), and other devices. The development of the Wi-Fi 6 technology pulls the uplink rate of APs to 10 Gbps, greatly burdening gigabit network devices. The S5860 series switches provides 100M, 1000M, 2.5G, 5G, 10G Base-T adaptive Ethernet ports to adapt to Wi-Fi 6-compliant wireless APs.

Only PoE and PoE+ are available in PoE remote power supply scenarios previously. When the power of a device exceeds 30 W, PoE is unavailable, power cables must be deployed to power the device via mains, and strong current needs to be deployed in some cases. This imposes great burden on the deployment costs, deployment period, future maintenance, and security in the midst of deployment. A single port of the S5860 series switches can provide up to 90W PoE output. The IEEE802.3bt-compliant PoE++ technology improves user experience radically.

IPv4/IPv6 Dual-Stack Multi-Layer Switching

Support line-rate IPv4/IPv6 dual-stack multi-layer switching, and differentiates and processes IPv4 and IPv6 protocol packets. Networks can be planned using the switches based on IPv6 network requirements, or flexible IPv6 network communication solutions can be drawn up, with the network status quo unchanged.

Support a wide range of IPv4 routing protocols, including static routing, Routing Information Protocol (RIP), Open Shortest Path First version 2 (OSPFv2), Intermediate System to Intermediate System version 4 (IS-ISv4), and Border Gateway Protocol version 4 (BGP4). Users can select appropriate routing protocols based on network environments, to flexibly build networks.

Support abundant IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, IS-ISv6, and BGP4+. A routing protocol can be selected flexibly to either upgrade the existing network to an IPv6 network or build a new IPv6 network.

Stacking

The S5860 series switches support stacking, in which multiple physical devices are connected through aggregate links and virtualized into one logical device. The device uses the same IP address, telnet process, command line interface (CLI) for management, and support automatic version check and automatic configuration. Users need to manage only this logical device to enjoy the work efficiency and use experience brought by multiple devices. Aggregate links can be 10G interfaces or dedicated stacking cards, which can maximize the return on investment for users.

Simplified management: Administrators can manage multiple switches in a unified manner, with no need to connect to each switch for configuration and management.

Simplified network topology: A stacking switch can connect to peripheral devices on a network through aggregate links. Therefore, no layer-2 loop exists and the Multiple Spanning Tree Protocol (MSTP) does not need to be configured.

Fault recovery within milliseconds: A stacking switch connects to peripheral devices through aggregate links. If one device or member link in the stacking malfunctions, data and services can be switched to another member link within only 50–200 milliseconds.

High scalability: User devices can be added to or removed from a virtualized network in a "hot swap" manner, without affecting normal operation of other devices.

Sound Security Protection Policies

The S5860 series switches effectively defend against and control the virus spread and hacker attacks by using multiple inherent mechanisms such as anti-DoS attack, anti-IP scanning, validity check of ARP packets on ports, and multiple hardware ACL policies.

Support hardware-based IPv6 ACLs, which can easily control the access of IPv6 users at the network boundary even in the presence of IPv6 users on an IPv4 network. The switches allow the coexistence of IPv4 and IPv6 users and can control the access permissions of IPv6 users, for example, restrict the access to sensitive resources on the network.

Support hardware CPU protection mechanism. It is a special CPU protection policy, in which data traffic sent to the CPU is classified and processed by queue priority, and the bandwidth rate is limited as required. This mechanism fully protects the CPU against illegitimate traffic occupancy, malicious attacks, and resource consumption, thereby ensuring the CPU security and protecting the switches.
The hardware of the S5860 series switches flexibly bind a port or switch to a user's IP address and MAC address, to strictly restrict the access of users connected to a port or the switch.

Support DHCP snooping, it enables the S5860 series switches to receive DHCP responses only from trusted ports and prevent spoofing from unauthorized DHCP servers. With DHCP snooping, the switches dynamically monitor ARP packets, check users' IP addresses, and discard illegitimate packets whose addresses do not match bound entries, thereby effectively preventing ARP spoofing and source IP address spoofing.

Support the source IP-based Telnet device access control, which can prevent unauthorized users and hackers from maliciously attacking and controlling the devices, thereby enhancing the network management security of the devices.

Support the Secure Shell (SSH) and Simple Network Management Protocol version 3 (SNMPv3), the S5860 series switches can encrypt management information in the telnet and SNMP processes, to ensure information security of management devices and prevent hackers from attacking and controlling the devices.

Support unauthorized users' prevention from accessing networks by using multiple measures. Such measures include multi-element binding, port security, time-based ACL, and data flow-based bandwidth limit. These measures can help enterprise networks and campus networks control user access and restrict the communication of unauthorized users.

Support Network Foundation Protection Policy - a protection mechanism for enhancing the switch security. It isolates the attack sources to protect the processor and channel bandwidth resources of switches, thereby ensuring normal forwarding of packets and protocol status.

High Reliability

The S5860 series switches are equipped with built-in redundant power modules and modular fan assemblies, which can be hot-swapped and do not affect the normal operation of devices. In addition, the S5860 series switches support fault detection and alarm functions for the power and fan modules. The fan speed can be automatically adjusted to better adapt to the ambient environment. The S5860 series switches provide front-to-back ventilation channels to improve the heat dissipation efficiency. The switches also provide device-level and link-level reliability protection as well as over-current protection, over-voltage protection, and overheating protection.

Support the Spanning Tree Protocols (STPs) (802.1d, 802.1w, and 802.1s), it helps the S5860 series switches achieve fast convergence, improve the fault tolerance capability, and ensure stable network operation and load balance of links. The switches utilize network channels appropriately to raise the utilization of redundant links.

Support Virtual Router Redundancy Protocol (VRRP), it helps the switches effectively ensure the network stability.

Support Ethernet Ring Protection Switching (ERPS) to provide sub-50ms protection and recovery switching for Ethernet traffic in a ring topology and at the same time ensuring that there are no loops formed at the Ethernet layer.

Support Rapid Link Detection Protocol (RLDP), the switches can quickly detect the link connectivity and unidirectional optical fiber links. The port loop detection function helps the switches prevent network failures caused by loops resulting from unauthorized port connection to hubs.

Support Rapid Ethernet Uplink Protection Protocol. When STP is disabled, the Rapid Ethernet Uplink Protection Protocol can still provide basic link redundancy and millisecond-level fault recovery faster than STP.

Support Bidirectional Forwarding Detection (BFD), which provides upper-level protocols (such as routing protocols) with a method of rapidly detecting connectivity of the forwarding path between two routers. BFD greatly shortens the convergence time for the upper-level protocols in the case of link status changes.

Strong Multi-Service Support Capability

Support the IPv4 and IPv6 multicast functions as well as multiple multicast protocols, including IGMP snooping, IGMP, Multicast Listener Discovery (MLD), Protocol Independent Multicast (PIM), PIM for IPv6, and Multicast Source Discovery Protocol (MSDP). The switches provide multicast service support for IPv4 networks, IPv6 networks, and IPv4 and IPv6 coexistent networks.
Support IGMP source port and source IP check function, they can effectively eliminate illegitimate multicast sources and enhance the network security.

QoS

Support classifying and controlling various flows including MAC flows, IP flows, and application flows, to implement fine flow bandwidth control, forwarding priority, and other flow policies. Furthermore, the switches can provide services based on applications and characteristics of the service quality required by different applications.
Support 802.1p, IP ToS, layer-2 to layer-7 traffic filtering, SP, WRR, and other QoS policies, and implement the QoS logic for multiple services throughout the network.

Energy Efficiency

Support the next-generation hardware architecture, advanced energy-efficient circuit design and components, to reduce energy consumption and noise. The S5860 series switches are equipped with variable-speed axial fans to intelligently control the fan speed based on the current ambient temperature, so as to reduce the power consumption and noise while ensuring stable operation of the devices.

Easy Network Maintenance

Support the Simple Network Management Protocol (SNMP), Remote Network Monitoring (RMON), log and configuration backup using USB flash drives, and Syslog for routine network diagnosis and maintenance. Administrators can also use CLI, Web-based management, telnet, and other diversified methods to manage and maintain devices conveniently.

Technical Specification

S5860 series switches come with the industry-standard hardware and FSOS. Here's a look at the details.

CHARACTERISTICS

	S5860-20SQ	S5860-48SC	S5860-24XB-U
Ports			
100M/1000M/2.5G/5G/10G-T RJ45	--	--	24
10G SFP+	20	48	4
25G SFP28	4	--	4
40G QSFP+	2	--	--
100G QSFP28	--	8	--
Management Ports	1	1	1
Console Port	1	1	1
USB	1	1	1

Notes:

RJ45 ports can be used as 100M/1/2.5/5/10G ports for Ethernet connection. SFP+ ports can be used for 1/10G connection. SFP28 can be used for 10/25G connection. QSFP+ can be used for 40G or 4x 10G connection. QSFP28 can be used for 40/100G connection.

	S5860-20SQ	S5860-48SC	S5860-24XB-U
Operating System			
OS	FSOS	FSOS	FSOS
Key Components			
Switch Chip	BCM56170	BCM56873	BCM56170
CPU	ARM A9 Single-Core CPU,1.25GHz	ARM A9 Quad-Core CPU,1.2GHz	ARM A9 Single-Core CPU,1.25GHz
Performance			
Layer Type	Layer 3	Layer 3	Layer 3
Switching Capacity	760 Gbps	2.56T	760 Gbps
Forwarding Rate	565 Mpps	1904 Mpps	565 Mpps
Latency	1.11μs	7.56μs	1.11μs
Flash Memory	1GB	8GB (EMMC)	1GB

CHARACTERISTICS

	S5860-20SQ	S5860-48SC	S5860-24XB-U
SDRAM	1GB	4GB	1GB
Packet Buffer	4MB	32MB	4MB
Jumbo Frame	9216	9216	9216
MAC Address	32K	32K	32K
ARP Table	16000	16000	16000
IPv4 Routing Table	16K	16K	16K
IPv6 Routing Table	4094	14K	4094
BGP	Support	Support	Support
Number of VLANs	4K	4K	4K
MTBF (Hours)	>366K	>300K	>233K
Switch Method	Storage and forward	Storage and forward	Storage and forward
Authentication Methods	802.1X, AAA	802.1X, AAA	802.1X, AAA
Status Indicators	Status, M1, M2, FAN, MGMT, ID	Status, PWR, FAN, MGMT, ID	SYS, PWR, FAN, PoE, MGMT
Remote Management Protocol	SNMP V1/V2/V3, RMON, Syslog, SFLOW, CLI, WEB	SNMP V1/V2/V3, RMON, Syslog, SFLOW, CLI, WEB	SNMP V1/V2/V3, RMON, Syslog, SFLOW, CLI, WEB
Stackability			
Stackability	Up to 2 Units	Up to 2 Units	Up to 2 Units
Throughput by 4x 10G SFP+ of 2 Units Stacking	40 Gbps	40 Gbps	40 Gbps
Throughput by 4x 25G SFP28 of 2 Units Stacking	100 Gbps	--	100 Gbps
Throughput by 4x 40G QSFP+ of 2 Units Stacking	160 Gbps	--	--
Throughput by 4x 100Gb QSFP28 of 2 Units Stacking	--	400 Gbps	--
Power			
Max. Power Consumption	85W	550W	515W (Single-power); 1030W (Dual-power)
Input Voltage	100-240VAC, 50-60Hz, 3A Max	100-240VAC, 50-60Hz, 3.6A Max	100-240VAC, 50-60Hz, 3A Max
Power Output	150W	550W	135W@12V, 380W@53.5V
PoE Standard	Not support	Not support	IEEE 802.3af/at/bt
Power Budget	--	--	370W (Single-power); 740W (Dual-power)

CHARACTERISTICS

	S5860-20SQ	S5860-48SC	S5860-24XB-U
Physical and Environmental			
Dimensions (HxWxD)	1.72"x17.32"x12.99" (43.6x440x330mm)	1.73"x17.4"x15.24" (44x442x387mm)	1.74"x17.32"x17.81" (44.1x440x452.5mm)
Rack Space	1U	1U	1U
Power Devices	2x Hot-swappable Power Supplies (1+1 Redundancy)	2x Hot-swappable Power Supplies (1+1 Redundancy)	2x Hot-swappable Power Supplies (1+1 Redundancy)
Fan Number	2x Hot-swappable Fans	4x Hot-swappable Fans (3+1 Redundancy)	3x Hot-swappable Fans (2+1 Redundancy)
Airflow	Front-to-Back	Front-to-Back	Front-to-Back and Left-to-Back
Acoustic Noise	<78dB	<78dB	<78dB
Weight	10.14 lbs (4.6kg)	14.2 lbs (6.44kg)	21.6 lbs (9.8kg)
Distance	--	--	100M
Operating Temperature	32°F to 122°F (0°C to 50°C)	32°F to 113°F (0°C to 45°C)	32°F to 113°F (0°C to 45°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Operating Humidity	10% to 90% (Non-condensing)	10% to 90% (Non-condensing)	10% to 90% (Non-condensing)
Storage Humidity	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)	5% to 95% (Non-condensing)
Temperature Alarm	Support	Support	Support
Warranty			
Warranty	5 Years	5 Years	5 Years

FEATURES

Functionality	Description
VLANs	4K 802.1Q VLANs Port-based VLAN Private VLAN GVRP Super VLAN
QinQ	Basic QinQ
Link Aggregation	Support for LACP (802.3ad)
Port Mirroring	Flow-based mirroring Many-to-one port mirroring and one-to-many port mirroring RSPAN Mirroring of aggregate links
Spanning Tree Protocols	STP, RSTP, MSTP
DHCP	DHCP server DHCP client DHCP snooping DHCP relay IPv6 DHCP snooping IPv6 DHCP client IPv6 DHCP relay
IPv6 Basic Protocols	IPv6 addressing, ICMPv6, Path MTU Discovery
IP Routing	Static routing RIP, RIPng OSPFv2, OSPFv3, IS-ISv4, IS-ISv6 BGP4, BGP4+ Equal and Weighted Cost Multi-Path (ECMP) Routing Policy Virtual Routing and Forwarding (VRF)

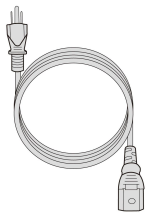
FEATURES

Functionality	Description
Multicast	IGMP v1/v2/v3, IGMP proxy IGMP v1/v2/v3 snooping IGMP filtering, IGMP immediate leave PIM-DM, PIM-SM, PIM-SSM MLD snooping, MLD MSDP
ACL	Standard IP ACLs (IP-based hardware ACLs) Extended IP ACLs (hardware ACLs based on IP addresses or TCP/UDP port IDs) MAC-based extended ACLs (hardware ACLs based on source MAC addresses, destination MAC addresses, and optional Ethernet type) Time-based ACLs Expert-level ACLs (hardware ACLs based on flexible combinations of the VLAN ID, Ethernet type, MAC address, IP address, TCP/UDP port ID, protocol type, and time) ACL 80 IPv6 ACLs
QoS	Port traffic identification Port traffic rate limiting 802.1p/DSCP/ToS traffic classification Eight priority queues per port SP, WRR, DRR, SP+WRR, SP+DRR, RED/WRED queue scheduling mechanisms
Security Features	Filtering of invalid MAC addresses Broadcast storm suppression Hierarchical management of administrators and password protection RADIUS and TACACS+ SSH BPDU guard CPU Protection Policy, Network Foundation Protection Policy
Management Features	SNMP, CLI (telnet/console), RMON (1, 2, 4, 9), Syslog, NTP, SNMP over IPv6, IPv6 MIB support for SNMP, Telnet v6, FTP/TFTP v6, DNS v6, NTP for v6, Traceroute v6. Support for sFlow, which utilizes the random sampling technology to conduct flow information sampling on the traffic of a switch.

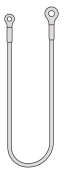
FEATURES

Functionality	Description
High Reliability	GR for RIP, OSPF, BGP, and other routing protocols BFD Rapid Ethernet Uplink Protection Protocol RLDP VRRP ERPS 1+1 power supplies Hot-swappable of power modules and modules fan modules
Power Supply	AC input: Rated voltage range: 100-240VAC; 50-60Hz Maximum voltage range: 90-264VAC; 47-63Hz Rated input current: 3A HVDC input: Rated voltage: 240VDC Maximum voltage range: 192-288VAC Rated current per circuit: 3A

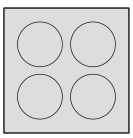
S5860-20SQ/S5860-24XB-U Switches Accessories



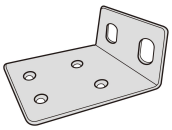
Power Cord x2



Grounding Cable x1



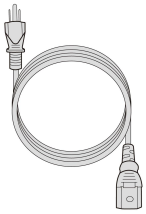
Rubber Pad x4



Mounting Bracket x2

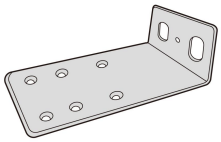
M4 Screw x8

S5860-48SC Switch Accessories



Power Cord x2

Grounding Cable x1

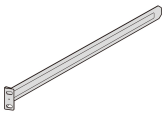


Mounting Bracket x2

M6 Screw x8

M4 Screw x14

M6 Nut x8



Side Rail x2

Inner Rail x2

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