S5800-48F4S Switch

48-PORT MANAGED SFP FIBER GIGABIT DATA CENTER SWITCH WITH 4 10G SFP+ UPLINKS

S5800-48F4S is an availability, high-compatibility and network-scaling applications of data center as a carrier access switch.

Overview

S5800-48F4S is an availability, high-compatibility and network-scaling applications of data center as a carrier Access switch. It has 48-port 1Gb SFP and 4-port 10Gb SFP+ in a compact 1RU form factor and it's a low latency L2/L3 Ethernet switch. The S5800-48F4S comes with the complete system software with comprehensive protocols and applications to facilitate the rapid service deployment and management for both traditional L2/L3 networks. With support for advanced features, including MLAG, IPv4/IPv6, SFLOW, SNMP etc, this switch is ideal for traditional or fully virtualized data center.

The S5800-48F4S hardware provides high-availability features, including hot-swappable redundant fans and using high quality electronic components. It provides high port density with 48Gb fixed port and adopts flexible modular design to support maximum 4 10Gb uplink.

Benefits

- L2 Switching Vlan Classification
- Static Link Aggregation, LACP
- STP, RSTP, MSTP
- Static IPv4 Routing, RIPv1/v2, OSPF, BGP
- IGMP Snooping v1/v2/v3, MVR
- IGMP v1/v2/v3, PIM-SM, PIM-SSM
- VRRP

Key Features

Rich Software Features to Provide Flexible Deployment Options

Provide rich software features to meet kinds of deploy requirements. Such as enterprise, datacenter, metro Ethernet scenarios.

Carrier Class and High Performance Switching Core ASIC

Provide advanced L2/L3/IPv6 features to meet the requirements in Carrier Ethernet and Enterprise network application. Single chip can provide 176 Gbps high switching capability with main features including full IPv4/IPv6 stack, IPv4/IPv6 tunneling, On-chip OAM (802.1ag/Y.1731/CFM/EFM), Protocol Independent APS (<50ms protect switching) etc.

Multilayer Switching with High Capability at Wire-speed

Provide 176 Gbps switching capacity and 132 Mpps Layer 2&Layer 3 packet forwarding rate with wire-speed for all ports.
Provide 48 GE fixed Ethernet ports, and 4 10GE SFP+ optical ports with different uplink modules to meet the requirement of high density 1GE downlink ports and 10GE uplink ports.

Modularized Uplink Port Design

Support modularized uplink ports: NM-4SFP+ with 4 SFP+ ports. Customers can select different modules according to the requirements which make great investment protection.

System Design for Green and Energy Saving

Support modularized fans with speed control as well as power consumption adjustment which is based on the flow status of the ports. Both can highly save the energy and go for green.

Customized Profile for Different Deployment Scenarios

The Flexible Table Management (FTM™) technology employed by S5800-48F4S offers multiple table size configuration profiles as optimized choices for different network scenarios.

Support up to 64K MAC address table.

Besides these pre-defined profiles, application-specific profile is also applicable with FS Advanced Service.

MEF Certification Ready Product

Carrier Ethernet is a huge growth area for emerging connectivity services which is a comparatively simple, cost-effective and familiar technology whose migration to the WAN will lead to more flexible network connectivity while reducing overall IT costs. However, its deployment is constrained by a shortage of global standards that provide assurance that equipment from different vendors will interoperate. In order to accelerate the adoption of Carrier Ethernet services and technology worldwide, Metro Ethernet Forum (MEF) initiated a certification program to assure them and their customers that products are compliant with MEF specifications. The S5800-48F4S is ready to pass certification of MEF 9 and 14 supporting industry-standard Carrier Ethernet services and advanced QoS features.

Key Features

Intelligent Ethernet OAM: Complete Fault Management and Performance Guarantee

End-to-end OAM based on IEEE 802.1ag and ITU-T Y.1731 enable Ethernet service providers to monitor their services proactively, measure end-to-end performance and guarantee that the customers receive the contracted SLA.
Fault management includes CCM, LTM, LBM and performance measurement includes Frame Delay, Frame Delay Variation.
S5800-48F4S also supports single segment (link) OAM according to 802.3ah for remote management and fault indication, including remote loopback, dying gasp, and MIB parameters retrieval.

Triple-play Service Support with Bandwidth Guaranty for High Quality Application

Offer high bandwidth for Triple-Play services such as IPTV, video monitoring. The built-in QoS capabilities and flexible queuing technologies guarantee high quality of services. Rich multicast protocol set (IGMP Snooping, IGMP v1/v2, PIM-SM) supports up to 16K multicast groups, 1K physical replications and 4K logical replications per group. With FSOS software, IPTV service and multicast time-delay control is fully supported.

Comprehensive Network Security Policy

Support subscriber-class, switch-class and network class security control. Basic IPv4/IPv6/MAC ACL is employed to filter IPv4/IPv6/Non-IP packet respectively and can be applied to both port and VLAN. Besides that, extended IPv4/IPv6 ACL is also available. In a single ACL rule, both IP and MAC ACE can take effect to filter IP and Non-IP packets simultaneously.
ARP Inspection and IP Source Guard features prevent network from malicious ARP attack. CPU Traffic Protection, Storm Control features optimize CPU load. Centralized 802.1x authentication forbids illegal user access to the network.

Technical Specification

S5800-48F4S switch comes with advanced hardware architecture design and abundant L2 and L3 features. Here's a look at the details.

CHARACTERISTICS

	S5800-48F4S
Ports	
Ports	48x 1G SFP, 4x 10G SFP+
Max. 10G Ports	4
Max. 1G Ports	48
Console Port	1
Ethernet Management Port	1
USB Port	1
Operating System	
OS	FSOS
Key Components	
CPU	Cavium CN5010-500BG564-CP-G/500MHz
Performance	
Layer Type	Layer 3
Switching Capacity	176 Gbps
Forwarding Rate	130.95 Mpps
Latency	2.3us
DDRIII Capacity	512MB
Flash Memory	32MB (Maximum 256MB extensible)
DRAM Memory	256MB (Maximum 512MB extensible)

CHARACTERISTICS

	S5800-48F4S
Performance	
RAM	512MB
Packet Buffer	6MB
Jumbo Frame	9.6KB
MLAG	Support
MAC Address	32K
Number of VLANs	4K
MTBF (Hours)	144669
Authentication Methods	AAA、Dot1X (802.1X)
Remote Management Protocol	SNMP, RMON, HTTP,Telnet、SSH
Status Indicators	SYS, PWR, Interface
DDM	Support
MTU	1.518KB
Power	
Input Voltage	100-240VAC, 50-60Hz
Max. Power Consumption	75W
Physical and Environmental	
Dimensions (H x W x D)	1.72" x 17.32" x 12.99" (43.6 x 440 x 330 mm)
Rack Space	1U
Hot-swappable Power Supplies	2 (1+1 Redundancy)
Hot-swappable Fans	4 (3+1 Redundancy)
Airflow	Front-to-Back
Acoustic Noise	77dB
Operating Temperature	32°F to 113°F (0º to 45ºC) (Long term) 23°F to 131°F (-5 to 55 ºC) (Short term)

CHARACTERISTICS

	S5800-48F4S
Physical and Environmental	
Storage Temperature	-40°F to 158°F (-40 to 70 ºC)
Operating Humidity	10 to 90% (Non-condensing)
Storage Humidity	0 to 95% (Non-condensing)
Weight	13.89 lbs (6.3kg)
Warranty	
Warranty	5 Years

FEATURES

Functionality	Description
Triple-Play Services	• Advanced QoS functionalities provide differentiated class of service treatment to support triple-play service. • Multicast VLAN Registration (MVR) continuously sends multicast streams in a multicast VLAN while isolating the streams from subscriber VLANs to reduce overall bandwidth requirement for multicast distribution in ring based network. • Comprehensive security solution to provide protection of subscribers, switch, and network at the network edge.
MEF9 Services	• Up to 4K EVC are supported • QinQ based EPL/EVPL, ELAN/EVLAN service support
MEF14 Services	• Per port egress shaping and minimum 1 Mbps increments up to port speed • Ingress and egress per port policing and minimum 64 Kbps increments up to port speed. • CIR/PIR, srTCM/trTCM • Classification criteria , COS, Vlan • Ingress / Egress PBIT remarking – 802.1q VLAN • Ingress / Egress PBIT remarking – 802.1ad SVLAN • PBIT Transparency – 802.1q VLAN • PBIT Transparency – 802.1ad VLAN

FEATURES

Functionality	Description
Intelligent Ethernet OAM	• Industry standard OAM 802.3ah (EFM) feature allows continuous standard Ethernet network across the globe, eliminating non-native transport such as Ethernet over ATM from the access networks, which eases OAM and provides compatibility with new transport media types, eg. PON. • Industry standard OAM 802.3ah (EFM) feature allows continuous standard Ethernet network across the globe, eliminating non-native transport such as Ethernet over ATM from the access networks, which eases OAM and provides compatibility with new transport media types, eg. PON.
Basic Switching and Routing	• L2 Switching Vlan Classification • Static Link Aggregation, LACP • STP, RSTP, MSTP • Static IPv4 Routing, RIPv1/v2, OSPF, BGP • VRRP • IGMP Snooping v1/v2/v3, MVR • IGMP v1/v2/v3, PIM-SM, PIM-SSM • ACL, QoS, Storm Control, Port Security, MAC filters, DHCP Snooping, IP Source Guard, ARP Inspection, 802.1x, Radius • Management: Telnet, TFTP, NTP, SSH, DNS, SNMPv1/v2/v3, RMON, Port&Vlan Mirror, sFlow
IPv6 Features	• Static IPv6 Routing • RIPnG and OSPFv3 • MLD Snooping v1/v2 • MLD v1/v2, PIM-SM6, PIM-SSM6 • MVR6 • Manual Tunnel, 6to4 Tunnel, ISATAP • Applications over IPv6 • Management over IPv6
Metro Ethernet	• QinQ and VLAN Mapping • ERPS and APS(G.8031, G.8032) • Ethernet OAM (CFM, EFM), Y.1731 • Static MPLS Forwarding • VPWS, VPLS • LDP

FEATURES

Functionality	Description
Layer 2 VPN Service	• FS Selective QinQ feature strictly conforms to 802.1Q and 802.1ad and provides more flexibility to customers while classifying VLAN based on port, original VLAN or L2/L3 information for the purpose of segregating subscriber traffic in the network. • VLAN translation in both ingress and egress translates VLAN IDs carried in the data packets between different virtual LANs or between VLAN and non-VLAN encapsulating interfaces at Layer 2. • Virtual Private Wire Services (VPWS) provide point-to-point connectivity between customer sites. • Virtual private LAN service (VPLS) provides any-to-any (multipoint) communication over IP networks to extend each site in a LAN to extend the edge of the service providers' network. • Port or VLAN based VPWS and VPLS are both supported; both services can work in raw or tagged mode. • QinQ access based Hierarchical VPLS (H-VPLS) is also supported.
Superior Redundancy for Fault Backup	• IEEE 802.1d Spanning Tree Protocol (STP) support for redundant backbone connections and loop-free networks simplifies network configuration and improves fault tolerance. • IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) allows a spanning-tree instance per VLAN, for Layer 2 load sharing on redundant links. • IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) provides rapid spanning-tree convergence independent of spanning-tree timers and also offers the benefit of distributed processing. • Link Aggregation Control Protocol (LACP) allows the creation of Ethernet channeling with devices that conform to IEEE 802.3ad.

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Functionality	Description
Superior Redundancy for Fault Backup	• Equal-Cost MultiPath (ECMP) works for routing packets along multiple paths of equal cost for load balancing and redundancy. • Virtual Router Redundancy Protocol (VRRP) is supported to create redundant, failsafe routing topologies. • FS-patented Sysmon mechanism monitors real-time CPU status and pauses switch work while unexpected fault happens. • ERPS (Ethernet Ring Protection Switching) is used to create a fault tolerant topology by configuring a primary and secondary path for each VLAN. • SmartLink is a fault tolerant topology for two uplink application, can provide < 50ms protection time.
High-Performance IP Routing	• Basic IP unicast routing protocols (static, Routing Information Protocol Version 1 [RIPv1], and RIPv2) are supported for small-network routing applications. • Advanced IP unicast routing protocols (Open Shortest Path First [OSPF] and Border Gateway Protocol Version 4 [BGPv4]) is supported for load balancing and constructing scalable LANs. • Protocol Independent Multicast sparse mode (PIM-SM) for IP multicast routing is supported. • Up to 256 switch virtual interfaces (SVIs) are supported; all physical ports can be routed port. • Proxy Address Resolution Protocol (ARP) allows a network host to answer the ARP queries for the network address that it does not have configured on the receiving interface. • Gratuitous Address Resolution Protocol (ARP) assists in the updating of other machines' ARP tables and helps detect IP conflicts and ensure load balancing on incoming traffic in some cases. • IPv6 routing support in hardware for maximum performance. • VRRP provides dynamic load balancing and failover for routed links.

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Functionality	Description
Robust Multicast Control	• Internet Group Management Protocol (IGMP) snooping provides fast client joins and leaves of multicast streams and limits bandwidth-intensive video traffic to only the requestors. • IGMP Snooping TCN provides quick response capability to topology changes so that the service provider's multicast service will not be paused even the topology is altered temporarily. • IGMP immediate leave overrides the normal checks to see if there are other hosts or proxy devices on the local segment interested in the multicast group and shorten the time of changing channels for IPTV services. • IGMP filtering provides multicast authentication by filtering out nonsubscribers and limits the number of concurrent multicast streams available per port. • IGMP proxy enables the system to issue IGMP host messages on behalf of hosts that the system discovered through standard IGMP interfaces to allow users on any downstream network to join an upstream sourced multicast group. • Multicast VLAN Registration (MVR) allows one single multicast VLAN to be shared among different subscriber VLANs on the network which improves bandwidth utilization by reducing multicast traffic in the subscriber VLANs and simplifies multicast group management.
Bandwidth Optimization	• Per-port broadcast, multicast, and unicast storm control prevents faulty end stations from degrading overall systems performance. • Equal-cost routing facilitates Layer 3 load balancing and redundancy across the stack. • Switch-port autorecovery automatically attempts to reactivate a link that is disabled because of a network error. • Up to 127 Link Aggregation groups are supported with 16 member ports per group.

FEATURES

Functionality	Description
IPv6 Ready	• Fully distributed handling and forwarding IPv6 packets at wire speed. • IPv4 and IPv6 Dual Stacking. • Support kinds of IPv4/v6 Tunnels. • Support IPv6 ACL and QoS. • Rich IPv6 muliticast features. • Management and applications over IPv6.
Advanced QoS	• FS QoS queuing mechanism differentiates flows according to any L2/L3/L4 identity and enqueues flexibly; meanwhile modifies CoS/DSCP and limits throughout. • Ingress and egress policer is provided based on 802.1p Class of Service (CoS), Differentiated Services Code Point (DSCP), VLAN ID and QoS ACLs (IP ACLs or MAC ACLs), which can include source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields. • Ingress and egress aggregate policer reinforces traffic policing across all of the applied ports. QoS applies the bandwidth limits specified in an aggregate policer cumulatively to all the flows matching the criteria. • Support 8 differ-service domain, could provide flexible differ service for the ports. • There is no performance loss when using advanced QoS functionalities. • Weighted Random Early Detection (WRED) generally drops packets selectively based on IP precedence and packets with a higher IP precedence are less likely to be dropped than packets with a lower precedence; WRED ensures higher priority traffic to be delivered with a higher probability than lower priority traffic. • In contrast to WRED, Tail Drop provides per QoS class congestion avoidance at the queues before a disruption occurs. • Queue, service and port based three-level traffic shaping contributes to up to 64 Kbps granularity.

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Advanced QoS	• Weighted Deficit Round Robin (WDRR) extends the quantum idea from the DRR to provide weighted throughput for each queue. Different queues have different weights and the quantum assigned to each queue in its round is proportional to the relative weight of the queue among all the queues serviced by that scheduler. • Strict Priority queue (SP) provides strict-priority queuing for a traffic class that enables delay-sensitive data, such as voice, to be sent before packets in other queues are sent. The priority queue is serviced first until it is empty. • Strict priority queuing helps ensure that the highest-priority packets are serviced ahead of all other traffic. • 8 egress queues per port help enable differentiated management of up to 8 traffic types across the st ack.
Comprehensive Security Solutions	• Subscriber Security • - IEEE 802.1x allows dynamic, port-based security by providing user authentication. • - IEEE 802.1x and port security are provided to authenticate the port and manage network access for all MAC addresses, including that of the client. • - DHCP Snooping prevents malicious users from spoofing a DHCP server and sending out bogus addresses. This feature is used by other primary security features to prevent a number of other attacks such as Address Resolution Protocol (ARP) poisoning. • DHCP Snooping helps administrators with consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database and to rate-limit the amount of DHCP traffic that enters a switch port. • Dynamic ARP Inspection helps ensure user integrity by preventing malicious users from exploiting the insecure nature of the ARP protocol. • IP Source Guard prevents a malicious user from spoofing or taking over another user's IP address by creating a binding table between client's IP and MAC address, port, and VLAN.

FEATURES

Functionality	Description
Comprehensive Security Solutions	• Switch Security - Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) provide network security by encrypting administrator traffic during Telnet and SNMP sessions. - Multilevel security on console access prevents unauthorized users from altering the switch configuration. - RADIUS authentication facilitates centralized control of the switch and restricts unauthorized users from altering the configuration. - Three MAC based security mechanisms are offered to control access: MAC filtering MAC port binding MAC number limitation per port - CPU traffic protection refuses abnormal data flow to avoid malicious attack. • Network Security - FS ACLs allows for multiple layer rules coexistence such L2 with L3, or even with L4. - FS security VLAN ACLs on all VLANs prevent unauthorized data flows from being bridged within VLANs. - Port-based ACLs for Layer 2 interfaces allow security policies to be applied on individual switch ports. - Three different mechanisms are supported to protect the STP topology from loops or undesired topology changes caused by addition of switches, mis-configuration of devices or even malicious attempts to override the current Spanning Tree Root Bridge. - Bridge Protocol Data Unit (BPDU) Guard/ Filtering - Root Guard - BPDU Guard and BPDU Filtering protect against possible loops created by switches added on ports configured with the STP Port Fast feature. Root Guard protect against added switches attempting to become the Root Bridge.

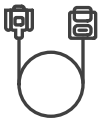
FEATURES

Functionality	Description
Superior Manageability	• FSOS Software CLI support provides common user interface and command set with all FS routing switch. • IEEE 802.1ag Connectivity Fault Management (CFM) provides standard support for transport fault management. It allows for discovery and verification of path for Layer 2 services. • IEEE 802.1ah Ethernet in the First Mile (EFM) allows detection of faults on an EFM link and enable service providers to fully monitor a customer's end-to-end Ethernet service. • Layer 2 traceroute eases troubleshooting by identifying the physical path that a packet takes from source to destination. • Network Timing Protocol (NTP) client guarantees accurate and consistent time synchronization with the whole network. • File Transfer Protocol (FTP)/Trivial File Transfer Protocol (TFTP) reduce the cost of administering software upgrades by downloading from a centralized location. • Dynamic Host Configuration Protocol (DHCP) Relay allows a DHCP relay agent to broadcast DHCP requests to the network DHCP server. • IGMP snooping provides fast client joins and leaves of multicast streams and limits bandwidth-intensive video traffic to only the requestors. • Multifunction LEDs per port for port status; half-duplex and full-duplex mode; and 10BASE-T, 100BASE-TX, 1000BASE-T, 10GBASE-LR indication as well as switch-level status LEDs for system, redundant-power supply, and bandwidth utilization provide a comprehensive and convenient visual management system.

Management Support for S5800-48F4S Switch

Description	Specification	
Management	BGP4.mib	P-BRIDGE-MIB.mib
	BRIDGE-MIB.mib	PIM-BSR-MIB.mib
	DIFFSERV-DSCP-TC.mib	PIM-STD-MIB.mib
	DIFFSERV-MIB.mib	Q-BRIDGE-MIB.mib
	IANA-ADDRESS-FAMILY-NUMBERS-MIB.mib	RIPv2-MIB.mib
	IANAifType-MIB.mib	RMON2.mib
	IANA-RTPROTO-MIB.mib	RMON-MIB.mib
	IEEE8021-PAE-MIB.mib	RSTP-MIB.mib
	ieee8023-lag.mib	SFLOW-MIB.mib
	IF-MIB.mib	SNMP-FRAMEWORK-MIB.mib
	INET-ADDRESS-MIB.mib	SNMP-MPD-MIB.mib
	INTEGRATED-SERVICES-MIB.mib	SNMP-NOTIFICATION-MIB.mib
	IP-FORWARD-MIB.mib	SNMP-TARGET-MIB.mib
	IP-MIB.mib	SNMP-USM-MIB.mib
	LAG-MIB.mib	SNMPv2-MIB.mib
	lldp.mib	SNMP-VACM-MIB.mib
	lldp_dot1.mib	TOKEN-RING-RMON.mib
	lldp_dot3.mib	VRRP-MIB.mib
	MGMD-STD-MIB.mib	
	OSPF-MIB.mib	
	OSPF-TRAP-MIB.mib	

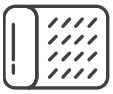
Accessories


Console Cable*1


Power Cords*2


Rack Mount Brackets*2


Bracket Screws*10


Rubber Pads*4


Cat5e Cable *1


Grounding Cable*1


User Manual*1

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