

# SWM-9400 SERIES

## LAYER 3 HIGH PERFORMANCE CORE SWITCHES



### BENEFITS

Full 40G Gigabit switch  
Modular switches  
L2/L3 switching  
STP, RSTP, MSTP  
VRRP  
MPLS-VPN  
MPLS-OAM  
MVRP, VRF  
OSPF, OSPF Virtual link  
BGP  
ISSU : uninterrupted system  
upgrade  
PIM-SM and PIM-DM  
IGMP snooping v1,2,3  
IPv4, IPv6  
40G interface board

### Product Overview

CXR S9400 Series is a new generation high-performance core switch oriented for high-performance computing, data center and high-end campuses. S9400 Series adopts advanced hardware architecture design.

S9400 Series supports up to 64Tbps switching capacity, 768 10G ports, 512 40G ports and 128 100G ports. Besides, it is to be configured with 256 100G ports in the future.

S9400 Series supports BVSS, TRILL, SDN and FCoE/FC. By cooperating with S5800 Series, S9400 Series can access to 15000+ 10GE servers.

Developed on the basis of iOS 6 - a software platform CXR with its own independent intellectual property rights, S9400 Series provides high-performance L2/L3/L4 wire speed switching capacity by integrating services such as IPv6, MPLS VPN, network security, flow analysis, virtualization, with high reliable techniques including continuous forwarding, graceful restarting and loop network protection, the work efficiency of S9400 Series and its maximum running time are guaranteed.

S9400 Series supports the "GreenTouch" architecture and "Smart@CHIP". Its power consumption is lower than 200W.

S9400 Series has four models: S9406, S9410, S9414 and S9418.

### Specifications

#### Advanced Hardware Architecture and Industry-Leading Processing capacity

S9400 Series adopts the industry leading hardware architecture design. Its control engine and SFUs are detached, which provides continuous broadband upgrade capacity.

With high-performance ASIC switch chip and multi-core processor, S9400 Series supports up to 40Tbps switching capacity.

S9400 Series supports high-intensity 10G service cards and realizes the wire-speed switching of 3 layers without blocking.

S9400 Series supports 768 10G ports, 256 40G ports and 96 100G ports. Besides, it is to be configured with 256 100G ports in the future.

A single service card of S9400 Series supports up to 512K MAC address entries and 512K layer-3 routing tables.

#### Rich Data Center Services

S9400 Series supports BVSS, which can virtualize multiple physical devices into one in logic. The virtualized system is superior to the independent physical device in performance, reliability, flexibility and management.

- Doubled Performance: The virtualized system makes the best use of each link in the device and avoids the blocking of STP to the link.

- High-reliability: Based on the advanced distributed processing technique and the efficient function of cross-physical device link aggregation, S9400 Series provides with non-stop layer-3 routing forwarding and avoids single points of failure.

- Flexibility: With the function of S9400 virtual cluster service cards, the distance of virtual cluster system can expand to 80KM, breaking the geographic restriction of traditional cluster technique.

- Easy Management: The whole virtual system realizes single IP unified management and simplifies the management of network device and network topology.

- Large Layer-2 Network Technique: S9400 Series adopts large layer-2 network technique which supports TRILL/SPB protocol. With the technique, the network structure has become simple and compress, which can access to data center large-scale servers.

- Unified Architecture: S9400 Series supports FCoE (FC over Ethernet) technique, which

solves the problem of discrepancy between LAN network and FC storage network and integrates computing, data and storage networking.

- SDN: S9400 Series supports SDN (Software Defined Network), which can realize network virtualization and centralized management.

#### Comprehensive Service

- S9400 Series adopts HPS (Hitless Protection System). The key components of S9400 Series such as the power system and the fan system support redundancy design. All system modules support hot-swap and seamless switching without need of manual intervention.

- S9400 Series supports redundancy protection mechanism such as STP/RSTP/MSTP protocol, VRRP protocol, ring network protection, dual up-link active/standby link protection and LACP link aggregation.

- S9400 Series supports ISSU (In-Service Software Upgrade), guaranteeing the user data non-stop forwarding when the system is upgrading.

- S9400 Series supports BFD and realizes fault detection and service recovery in seconds through linking with layer-2 or layer-3 protocol.

- S9400 Series has perfect Ethernet OAM, 802.3ah, 802.1ag and ITU-Y.1731 which can real time monitor the network operating state and rapidly detect and locate the malfunction.

- High Reliability (99.999%): MTTR of S9400 Series is 50ms, meeting the requirement of the carrier-level service.

#### Comprehensive Service

- S9400 Series Supports complete layer-2 and layer-3 multicast routing protocol and meets the access requirement of IPTV, multi-terminal high-definition video monitoring and high-definition video meeting.
- S9400 Series supports complete layer-3 routing protocol and a super-large routing table capacity, which make super-large data center network, campus network, enterprise network and industry private networks available.
- S9400 Series supports complete MPLS VPN of layer-2 and layer-3, which meets the

• requirement of industry private VPN users and enterprise network VPN users.

• S9400 Series also provides with value-added services including POE and traffic analysis.

• supports **Layer2 and Layer3 multicast routing protocol**, which enable the device can access to IPTV, HD video surveillance and HD video conference.

• Supports **Layer3 routing protocol** and super-large routing table capacity, which enables the device is available in large campus, enterprise and industry networks.

• Supports **Layer2 and 3 MPLS-VPN**.

#### Comprehensive IPv6 Solutions

• S9400 Series comprehensively supports IPv6 Neighbor Discovery, ICMPv6, Path MTU Discovery and DHCPv6.

• S9400 Series supports IPv6 based Ping, Traceroute, Telnet, SSH, ACL, meeting the need of IPv6 network equipment management and service control.

S9400 Series supports IPv6 multicast characteristics including MLD, MLD Snooping and IPv6 layer-3 routing protocols including IPv6 static routing, RIPng, OSPFv3 and BGP4+.

S9400 Series supports IPv4-to-IPv6 technologies including IPv6 manual/automatic tunnel, auto tunnel, IPv6-to-IPv4 tunnel, and ISATAP tunnel.

#### Complete Security Mechanism

S9400 Series adopts advanced hardware architecture design, realizing the hierarchical scheduling and protection of the packet. It provides multiple security measures to defend against DOS or TCP attacks; and supports command line authority control based on user

levels.

- Comprehensive Security Certification: S9400 Series complies with IEEE 802.1x, Radius, BDTacacs+.

- Enhanced Service Security Mechanism: S9400 Series supports the plain text or MD5 authentication of relevant routing protocol; uRRF; DPI (Deep Packet Inspection) and (Deep Packet Filtration); DPI for control packets and data packets.

#### Innovative Energy-Saving Design

• S9400 Series supports the "GreenTouch" architecture.

• Smart Power Management System: S9400 Series adopts advanced power system architecture design which can realize the function of efficient power switching, private power monitoring, soft start, real-time monitoring, intelligent adjustment and energy-saving.

• Smart Fan Management System: S9400 Series is designed with the intelligent fan and supports switching between front-back mode and back-front mode and fan automatic speed regulation.

• S9400 Series supports Efficient Ethernet and complies with International standard IEEE 802.3az.

Reference	S9406	S9410	S9414
Switching capacity	16Tbps	32Tbps	64Tbps
Packet forwarding rate	3840Mpps/7680Mpps	7680Mpps/15360Mpps	7680Mpps/23040Mpps
Total Number of Slots	10	14	18
MPU slots	2		
SFU slots	4		
Service card slots	4	8	12
Dimensions (WxDxH) mm	482×564×486 11U	482×564×620 14U	482×564×798 18U
Power	AC:100V-240V, 50Hz±10% DC:-48V		
Environment	Operating temperature/humidity : 0°C-50°C; 10%-90% non-condensing Storage temperature/humidity : -20°C-70°C, 5%~95% non-condensing		
MAC Switching Capacity	Static configuration and dynamically learning of MAC address Check and delete MAC address Configuring of MAC address aging time Limit on MAC address learning number MAC address filtering function, Black-hole MAC items		
Data Center Characteristics	BVSS, TRILL/SPB large layer-2 technique FCoE technique, SDN		
VLAN	4K VLAN, GVRP, 1:1 VLAN mapping and N:1 VLAN mapping QinQ and flexible QinQ, Private VLAN		
STP	802.1D (STP), 802.1W (RSTP) and 802.1S (MSTP) BPDU protection, root protection and loopback protection		
Multicast	IGMP v1/v2/v3, IGMP Snooping, IGMP Fast Leave, Multicast group strategy and quantity limitation, Multicast flow copying over VLANs, PIM-SM and PIM-DM		
IPv4	Static routing, RIP v1/v2, OSPF, BGP, policy based routing, load balance by equivalent routing, BFD for OSPF, BGP		
IPv6	ICMPv6, DHCPv6, ACLv6 and IPv6 Telnet, IPv6 neighbor discovery, path MTU discovery, MLD V1/V2, IGMP snooping, IPv6 Static Routing, RIPv6, OSPF V3, BGP4+, Manual tunnel, ISATAP Tunnel, 6to4 tunnel		
MPLS VPN	LDP protocol, MCE, P/PE of MPLS VPN, MPLS Traffic Engineering (TE) MPLS Operations, Administration, and Maintenance (OAM)		
QoS	Traffic classification of each field of L2/L3/L4 protocol headers CAR traffic control 802.1P/DSCP priority remark, Multiple queuing algorithms such as SP, WRR or SP+WRR Tail-Drop, WRED Traffic supervision and traffic shaping		
Security features	Identification and filtering of L2/L3/L4 based ACL Defend against DDos attack, SYN Flood attack of TCP, and UDP Flood attack Suppression of broadcast, multicast and unknown unicast packet Port isolation Port security, IP + MAC + port binding DHCP Snooping, DHCP Option 82 IEEE 802.1x certification Radius and BDTacacs+ uRPF Command line authority control based on user levels		
Reliability	Dual Master Control Redundancy (except S9403) Power supply 1+1 backup Master control, service card hot swap and service automatic recovery Static/LACP link aggregation and cross service card link aggregation Ring network protection including EAPS VRRP, Ethernet OAM 802.3ah/802.1ag/ITU-Y.1731 GR for OSPF and BGP BFD for OSPF and BGP, ISSU		
Management	Console, Telnet, SSH 2.0, Web, SNMP v1/v2/v3, Upload and download of TFTP files Remote Network Monitoring (RMON) Statistics analysis of sFLOW, Netflow		
Value-added services	POE function		
Energy saving	IEEE 802.3az green Efficient Ethernet		
MTBF	200,000 hours (MIL-HDBK-217 standard at 25 °C)		

## Ordering Information

Part number	Description
<b>SWM-9406-CHASSIS</b>	Integrated High performance Core switch Chassis S9410 (3 fan trays included, 7 power slots, 2 master slots, 4 SFU slots, 4 service slots). 938W.
<b>SWM-9410-CHASSIS</b>	Integrated High performance Core switch Chassis S9410 (3 fan trays included, 7 power slots, 2 master slots, 4 SFU slots, 8 service slots). 938W.
<b>SWM-9414-CHASSIS</b>	Integrated High performance Core switch Chassis S9410 (3 fan trays included, 7 power slots, 2 master slots, 4 SFU slots, 12 service slots). 938W.
	<b>Power supply</b>
<b>SWM-94-PWR-AC</b>	S9400 Series 1200W AC power module. 82W.
<b>SWM-94-PWR-DC</b>	S9400 Series 1200W AC power module. 118W.
<b>SWM-94-CB-MCU</b>	Console Board of S9400 Series. Maxi 2 for redundancy. 16,3W.
	<b>Switching Boards of S9400 Series</b>
<b>SWM-9406-SFU-II</b>	CPU card SFU-II of S9406 Series.4 cards maxi. 125,4W.
<b>SWM-9410-SFU-II</b>	CPU card SFU-II of S9410 Series.4 cards maxi. 125,4W.
<b>SWM-9414-SFU-II</b>	CPU card SFU-II of S9414 Series.4 cards maxi. 125,4W.
	<b>Gigabit Service Board</b>
<b>SWM-94-48TS</b>	Service board with 48 10GE SFP+ ports. (without SFP modules). 165W.
<b>SWM-94-48GT</b>	Service board with 48 GE RJ45. 165W.
<b>SWM-94-48GT-POE</b>	Service board with 48 port Gigabit Base-T, Service board (RJ45), sup-ports POE/POE+. 165W.
<b>SWM-94-48GS</b>	Service board with 48-port gigabit SFP (without SFP modules). 165W.
	<b>40 Gigabit Service Board</b>
<b>SWM-94-8QS</b>	Service board with 8 40GE QSFP+ ports. (without QSFP+ modules). 187W.



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