Smart solutions for smart networks

Version 1.3

SWM-5664-S

Data Center and High-End Campuses series

FEATURES

- Full 10Gigabit switch
- Large L2 switching
- 48x10GbE + 4x40GbE
- 64xSFP+ : 10GE
- ERP : Ethernet ring protection
- STP, RSTP, MSTP
- VRRP & HSRP
- CVSS : CXR Virtual Switch system
- MPLS-VPN
- MPLS-TE
- MPLS-OAM
- OSPF, OSPF Virtual link
- BGP
- ISSU : uninterrupted system upgrade
- PIM-SM and PIM-DM
- IGMP snooping v1,2,3
- IPv4, IPv6

Data Center Characteristics

- CVSS
- TRILL/SPB large layer-2 technique
- FCoE technique
- SDN

Product Overview

CXR SWM-56 Series is a new generation full-10G TOR switches oriented for high-performance computing, data center and high-end campuses.

The SWM-5664-S adopts advanced hardware architecture design and supports up to 1.28Tbps switching capacity, SWM-56 with 1U height supports 48x10GbE + 4x40GbE ports or 64x10G ports.

The SWM-5664-S supports CVSS, TRILL, SDN and FCoE/FC. Developed on the basis of BDROS 6 -a software platform CXR with its own independent intellectual property rights, The SWM-5664-S 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 SWM-56 Series and its maximum running time are guaranteed.

SWM-56 Series supports the "GreenTouch" architecture and "Smart@CHIP". Its power consumption is lower than 200W.

Specifications

Advanced Hardware Architecture Design & Industry Leading Processing Capacity

- It adopts the industry leading hardware architecture design. SWM-5664-S with 1U height 48x10GbE + 4x40GbE ports or 64 10G ports.
- With high-performance ASIC switch chip and multi-core processor, SWM-5664-S supports up to 1.28Tbps switching capacity.
- SWM-5664-S is designed with front/back wind tunnels of the data center. It supports wind tunnel to switch between front-back mode and back-front mode.

Rich Data Center Services

- ***Innovative CVSS*** (CXR Virtual Switch System) : virtualize multiple physical devices into one. The performance, reliability and management of the virtual system are superior to the physical one.
- ***Improved Performance*** : CVSS makes full use of each link in the physical devices, which avoids STP blocking the link and protects the original link to the maximum extent.
- ***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 distribution mechanism and efficient cross-physical link aggregation, the logic control plane, service control plane and service data plane are separated. Thus, the device can support continuous layer3 routing forwarding, avoiding service interruption as a result of a single point of failure.
- **Flexibility** : With the function of SWM-5664-S virtual clusters, the distance of virtual cluster system can expand to 80KM, breaking the geographic restriction of traditional cluster technique.
- ***Easy Management*** : CVSS realizes single IP management, greatly improving the networking efficiency and lowering the operating cost.

CXR Networks

- **Large Layer-2 Network Technique** : SWM-5664-S 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** : SWM-5664-S 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** : SWM-5664-S supportsSDN (Software Defined Network), which can realize network virtualization and centralized management

Data Center Level High-reliability

- SWM-5664-S adopts HPS (Hitless Protection System). The key components of SWM-5664-S 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.
- SWM-5664-S supports redundancy protection mechanism such as STP/RSTP/MSTP protocol, VRRP protocol, ring network protection, dual uplink active/ standby link protection and LACP link aggregation.
- SWM-5664-S supports ISSU (In-Service Software Upgrade), guaranteeing the user data non-stop forwarding when the system is upgrading.
- SWM-5664-S supports BFD and realizes fault detection and service recovery in seconds through linking with layer-2 or layer-3 protocol.
- SWM-5664-S has perfect Ethernet OAM, 802.3ah, 802.1ag and ITU-Y.1731 which can real time monitor the network operating state and rapidly detect andlocate the malfunction.
- **High Reliability** (99.999%): MTTR of SWM-5664-S is 50ms, meeting the requirement of the carrier-level service.

Comprehensive Service

- SWM-5664-S 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.
- SWM-5664-S 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.
- SWM-5664-S supports complete MPLS VPN of layer-2 and layer-3, which meets the requirement of industry private VPN users and enterprise network VPN users.

Comprehensive IPv6 Solutions

- SWM-5664-S comprehensively supports IPv6 Neighbor Discovery, ICMPv6, Path MTU Discovery and DHCPv6.
- SWM-5664-S supports IPv6 based Ping, Traceroute, Telnet, SSH, ACL, meeting the need of IPv6 network equipment management and service control.
- SWM-5664-S supports IPv6 multicast characteristics including MLD, MLD Snooping and IPv6 layer-3 routing protocols including IPv6 static routing, RIPng, OSPFv3 and BGP4+.
- SWM-5664-S supports IPv4-to-IPv6 technologies including IPv6 manual/automatic tunnel, auto tunnel, IPv6-to-IPv4 tunnel, and ISATAP tunnel.

Comprehensive Security Mechanisms

- SWM-5664-S 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** : SWM-5664 -S complies with IEEE 802.1x, Radius,and BDTacacs+.

Enhanced Service Security Mechanism: SWM-5664-S supports the plaintext or MD5 authentication of relevant routing protocol; uRRF; DPI (Deep Packet Inspection) and (Deep Packet Filtration); DPI for control packets and data packets.

Innovative Green Environmental Design

- SWM-5664-S supports the “GreenTouch" architecture.
- **Smart Power Management System**: SWM-5664-S 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**: SWM-5664-S is designed with the intelligent fan and supports switching between front-back mode and back-front mode and fan automatic speed regulation.
- SWM-5664-S supports Efficient Ethernet and complies with International standard IEEE 802.3az.

Item	SWM-5664-S
Switching Capacity	1920Gbps
Packet forwarding Rate	1440Mpps
Power Slupply	2
Fan Slots	4
Ports	48*10G/GE SFP+ ports, 2*40G QSFP+, 4*100GE/40GE QSFP28 ports
Data Center Characteristics	CVSS TRILL/SPB large Layer-2 technique FCoE technique SDN
MAC Switching Capacity	Static Configuration and Dynamically Learning of MAC Address Check and Delete MAC Address MAC Address Aging Time Limit On MAC Address Learning Number Black-Hole MAC Items
VLAN	4K VLAN entries GVRP 1:1 and N:1 VLAN Mapping Basic QinQ And Selective QinQ Private VLAN
STP	802.1D (STP), 802.1W (RSTP), 802.1S (MSTP) BPDU protection, root protection and ring protection
Multicast	IGMP v1/v2/v3 IGMP Snooping IGMP Fast Leave Multicast Group Policy And Multicast Number Limit Multicast Traffic Cross Vlan Duplication PIM-SM and PIM-DM
IPv4	Static Routing, RIP V1/V2, OSPF And BGP Policy Routing Load Balance Through Equal-Cost Routing BFD For OSPF And BGP
IPv6	ICMPv6, DHCPv6, ACLv6, IPv6 Telnet IPv6 Neighbor Discovery Path MTU Discovery MLD and MLD Snooping IPv6 static routing, RIPng, OSPFv3 and BGP4+ Manual Tunnel, ISATAP Tunnel And 6-To-4 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 FiltrationOf L2/L3/L4 Based ACL Defend Against DOS Or TCP Attacks, Suppression Of Broadcast, MulticastAnd Unknown Unicast Packet.Port Isolation Port Security, Ip+Mac+Port Binding Dhcp Snooping And Dhcp Option 82 Ieee 802.1x Certification Radius And Bdtacacs+ Urpf Command Line Authority Control Based On User Levels

Item	SWM-5664-S-MA
Reliability	Power 1+1 Redundancy Power And Fan Hot Swap Static Lacp Link Aggregation And Cross Service Card Link Aggregation Ring Network Protection Including Eaps Vrrp And Hsrp Ethernet Oam 802.3ah/802.1ag/Itu-Y.1731 Gr For Ospf And Bgp Bfd For Ospf And Bgp Issu
Management and Maintenance	Console, Telnet and SSH SNMP v1/v2/v3 Upload And Download Of TFTP Files Remote Network Monitoring (RMON) Statistics Analysis Of Sflow, Netflow
Energy Saving	IEEE 802.3az green Efficient Ethernet
Environment	Operating temperature/humidity:0°-50°C 10%-90% non-condensing Storage temperature/ humidity: -20°-70°C; 5%-95% non-condensing
Power Supply (hot-swap)	AC: 100V-240V, 50Hz-60Hz or DC: 48VDC
Power consumption	No-load: 120W, full-load: 147W
Dimensions mm (W×D×H)	442×404×44 1U-19inch
MTBF	>100.000 hours (MIL-HDBK-217 standard at 25 °C)

Part Numbers	Description
SWM-5664-S-M2A	SWM-5664, Full 10GE TOR switch, 48x 10GE SFP+ and 4x 40GE QSFP, or 64x10GbE SFP+, 2x power slots equiped with 2x 110-230 Vac power modules, 4x Fan slots equiped with Fan modules. 1.28 Tbps siwtching capacity, IP v4/v6 routing OSPF / BGP, ACL / DPI, VRRP, EAPS, Y.1731 / 802.3ah / 802.1ag. Format 1U/19''
SWM-5664-S-M2D	SWM-5664, Full 10GE TOR switch, 48x 10GE SFP+ and 4x 40GE QSFP, or 64x10GbE SFP+, 2x power slots equiped with 2x 48 Vdc power modules, 4x Fan slots equiped with Fan modules. 1.28 Tbps siwtching capacity, IP v4/v6 routing OSPF / BGP, ACL / DPI, VRRP, EAPS, Y.1731 / 802.3ah / 802.1ag. Format 1U/19''
SWM5600-460-ACFB	SWM5600 hot-swap AC power supply (max power 460W, AC100~240V input, independent fan dissipation, front-back wind tunnel, ventilation opening at the back of the chassis)
SWM5600-460-ACBF	SWM5600 hot-swap AC power supply (max power 460W, AC100~240V input, independent fan dissipation, back-front wind tunnel, ventilation opening in the front of the chassis)
SWM5600-460-DCFB	SWM5600 hot-swap DC power supply (max power 460W, DC-36V ~ -72V input, independent fan dissipation, front-back wind tunnel, ventilation opening at the back of the chassis)
SWM5600-460-DCBF	SWM5600 hot-swap DC power supply (max power 460W, DC-36V ~ -72V input, independent fan dissipation, back-front wind tunnel, ventilation opening inthe front of the chassis)
SWM5600-FAN-FB	SWM5600 Series Hot-Swap Fan (5 Fans must be configured, Front-back wind Tunnel, ventilation opening all the back of the chassis)
SWM5600-FAN-BF	SWM5600 Series Hot-swap Fan (5 fans must be configured, back-front wind tunnel, ventilation opening in the front of the chassis)

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