H3C S9820 Series

Data Center Switches

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Product overview

H3C S9820 high-density intelligent switch series is developed for data centers and high-end campus networks. It provides powerful hardware forwarding capacity and abundant data center features. It provides up to 64*100G QSFP28 ports and 2 out-of-band management ports (one fiber port and one copper port). The 100G QSFP28 ports are 100G/40G autosensing and each QSFP28 ports can be split into four interfaces. This enables the switch to provide up to 128*25G/10G ports. The switch supports modular power modules and fan trays. By using different fan trays, the switch can provide field-changeable airflows.

The switch is an ideal product for high-density 100GE or 40G switching and aggregation at data centers and cloud computing networks. It can also operate as a TOR access switch on an overlay or integrated network.

The S9820 switch series has one model:

- S9820-64H. The switch provides 64 × 100G QSFP28 ports, 2 × out-of-band management ports, 1 × mini USB port, 1 × USB port, 3 × fan tray slots, and 4 × power module slots. The switch uses 650W AC or DC removable power modules and supports 2+2 power module redundancy.

S9820-64H front panel

S9820-64H rear panel

Features and Benefits

High port density and powerful forwarding capacity

- The switch offers high-density 100G/40G/25G/10G ports and a forwarding capacity as high as 12.8 Tbps. By splitting one port into four ports, it can provide a maximum of 128 25G/10G ports. This enables the switch to provide high-density server access in high-end data centers without oversubscriptions.

Powerful SDN capacity

- The new-generation switching chip architecture greatly enhances the SDN capacity of the switch. IFP handles OpenFlow flow tables with more flexibility and resources. The switch supports exact match for ACLs to handle massive traffic on data center SDN networks.
- Supporting the standard OpenFlow protocol, the switch can be managed by an H3C VCF controller, a mainstream cloud management platform, or a third-party controller, which can provide flexible network customization and automated network management. Users or third-parties can use standard interfaces to develop and deploy dedicated network management polices to enable rapid service deployment and expansion and intelligent device management

Abundant data center features

The switch supports abundant data center features, including:

- EVB—Supports using Virtual Ethernet Port Aggregator (VEPA) to upload data traffic of VMs to physical switches connected to the server for processing.
- FCoE—Allows transmission of FC packets over Ethernet so that FC SAN services and LAN services can run over the same network infrastructure.
- PFC, ETS, and DCBX—Helps provide FC storage and high-performance computing services with low-latency and no data loss.
- VXLAN—The switch can operate as a high-performance VXLAN hardware gateway to support multitenant data center services. In conjunction with the H3C cloud management platform, the switch can be used to set up an agile, resilient, highly available high-performance Layer 2 network, with support for long-distance virtual machine mobility, data mobility, and business continuity.

H3C Distributed Resilient Network Interconnection (DRNI)

- H3C S9820 switch series support DRNI, which enables links of multiple switches to aggregate into one to implement device-level link backup. DRNI is applicable to servers dual-homed to a pair of access devices for node redundancy.
- Streamlined topology: DRNI simplifies the network topology and spanning tree configuration by virtualizing two physical devices into one logical device.
- Independent upgrading: The DR member devices can be upgraded independently one by one to minimize the impact on traffic forwarding.
- High availability: The DR system uses a keepalive link to detect multi-active collision to ensure that only one member device forwards traffic after a DR system splits.

Multiple reliability protection

- The S9820 switch series provides multiple reliability protection at both switch and link levels. With over current, overvoltage, and overheat protection, all models have a redundant pluggable power module, which enables flexible configuration of AC or DC power modules based on actual needs. The entire switch supports fault detection and alarm for power supply and fan, allowing fan speed to change to suit different ambient temperatures.
- The switch supports diverse link redundancy technologies such as H3C proprietary RRPP, VRRPE, and Smart Link. These technologies ensure quick network convergence even when large amount of traffic of multiple services runs on the network.

Abundant QoS features

The switch provides abundant QoS features, including:

- H3C S9820 switch series supports Layer 2 to Layer 4 packet filtering, which can provide traffic classification based on source MAC address, destination MAC address, source IP address, destination IP address, TCP/UDP port number, protocol type, and VLAN.
- Each 100G port provides a flexible queues scheduling algorithm, which can be set based on ports and queues at the same time.
- S9820 switch series supports five queuing modes include SP (Strict Priority), WRR (Weighted Round Robin), SP+WRR, WFQ, and SP+WFQ.
- S9820 switch series supports CAR (Committed Access Rate) function with a minimum granularity of 8Kbps, and port mirroring on both directions used to monitor packets on the specified port and forward the packets to the monitoring port for network detection and troubleshooting.
- The special XPE buffer structure in the switching chips allows the system to balance packets to the inbound or outbound port. This avoids buffer congestion on a single port and improves buffer usage efficiency.

Outstanding management capacity

- Provides multiple management interfaces, including the console port, mini USB port, USB port, and two out-of-band management ports.

- Supports configuration and management from CLI or a mainstream network management platform and H3C IMC Intelligent Management Center.

- Supports multiple access methods, including SNMPv1/v2c/v3, Telnet, SSH 2.0, SSL, and FTP.

- Supports standard NETCONF APIs that allow users to configure and manage the switch, enhancing the compatibility with third-party applications.

- Provides a variety of traffic monitoring and analytic tools, including sFlow, NetStream, SPAN/RSPAN/ERSPAN mirroring, and port mirroring to help customers perform precise traffic analysis and gain visibility into network application traffic. With these tools, customers can collect network traffic data to evaluate network health status, create traffic analysis reports, perform traffic engineering, and optimize resource allocation.

- Supports realtime monitoring of buffer and port queues, allowing for visible and dynamic network optimization.

- Supports PTP (Precision Time Protocol) to achieve highly precise clock synchronization.

Flexible choice of airflows

- To cope with data center cooling aisle design, the H3C S9850 switch series comes with flexible airflow design, which features bi-cooling aisles in the front and back. Users may also choose the direction of airflow (from front to back or vice versa) by selecting a different fan tray.

Comprehensive security control policies

- H3C S9820 switch series supports AAA, RADIUS and user account based authentication, IP, MAC, VLAN, port-based user identification, dynamic and static binding; when working with the H3C iMC platform, it can conduct real time management, instant diagnosis and crackdown on illicit network behaviors

- H3C S9820 switch series supports enhanced ACL control logic, which enables an enormous amount of in-port and out-port ACL, and delegate VLAN based ACL. This simplifies user deployment process and avoids ACL resource wastage.

- S9820 switch series can also take advantage of Unicast Reverse Path Forwarding (Unicast RFP). When the device receives a packet, it will perform the reverse check to verify the source address from which the packets are supposedly originated, and will drop the packet if such path doesn't exist.

Hardware Specification

Item	S9820-64H
Dimensions (H × W × D)	88.1× 440 × 540 mm (3.44 × 17.32 × 21.26 in)
Weight	≤ 18 kg (39.68 lb)
CPU cores	4
CPU main frequency	2.2GHz
Buffer	42M
Latency	64 byte
Console port	1
Out-of-band management port	One GE copper port and one GE fiber port
Mini USB port	1
USB port	1
Flash/SDRAM	4GB/8GB
QSFP28 port	64
Expansion slot	N/A
AC-input voltage	90 VAC to 264 VAC
DC-input voltage	−40 VDC to −72 VDC
Power module slot	4
Fan tray slot	3
Air flow direction	From front to rear or from rear to front
Static power consumption	Dual AC: 336W
Typical power consumption	Dual AC: 519W
Operating temperature	0°C to 45°C (32°F to 113°F)

Software Specification

Item		Specification
Line-rate switching	Switching capacity	12.8 Tbps
	Forwarding capacity	4400 Mpps
Forwarding mode		Store-forward and cut-through modes
Dynamic ARP table		264K max
IPV4 routing table		320K max
IPV6 routing table		160K max
MAC address table		264K max
Virtualization		IRF2
		Distributed device management, distributed link aggregation, and distributed resilient routing
		Using standard Ethernet interfaces for IRF connection
		Setting up an IRF fabric by using IRF member devices in the same site or geographically disper
Link aggregation		10GE/25GE/40GE/100GE port aggregation
		Static aggregation, dynamic aggregation
Data center		VXLAN, VXLAN EVPN
		RoCE
		802.1Qbb PFC, 802.1Qaz ETS, ECN
		EVB: VEB, VEPA, Muti-channel
		OpenFlow 1.3.1
		NETCONF, Python
		Service chain
		Multiple types of OpenFlow controllers
Jumbo Frame		Supported
MAC address table		Static MAC address
		Blackhole MAC address
VLAN		Port-based VLAN (quantity: 4094)
		Default VLAN
Traffic monitoring		sFlow/NetStream
DHCP		DHCP server/client
		DHCP snooping/DHCP relay
		DHCP snooping support for Option 82/DHCP relay agent support for Option 82
ARP		Gratuitous ARP
		Dynamic ARP inspection, ARP anti-attack, ARP source-suppression, ARP detection
IP routing		Stating routing, RIPv1/v2, OSPFv1/v2/v3, BGP, IS-IS
		ECMP, VRRP, policy-based routing
		BGP4+ for IPv6, VRRP, IPv6 policy-based routing
IPV6		IPv6 ND
		IPv6 PMTU
		ICMPv6, Telnetv6, SFTPv6, SNMPv6, BFDv6, VRRPv3
		IPv6 portal/IPv6 tunnel
LLDP		LLDP
		LLDP-MED

Item	Specification
Multicast	IGMP snooping v2/v3
	IGMPv1/v2/v3
	PIM-DM/SM
	IPv6 PIM-DM/SM/SSM
	Bi-directional -PIM, MSDP
	MLD snooping
	Multicast policy
Zero-configuration	Auto-config
MPLS	MPLS L3VPN
MSTP	STP/RSTP/MSTP
	PVST+/RPVST+
	STP Root Guard
	BPDU guard
QoS/ACL	Inbound and outbound traffic rate limit
	CAR
	Eight output queues on each port
	Flexible port-and queue-based queuing and scheduling algorithms
	SP, WRR, WFQ, SP+WRR, and SP+WFQ queuing
	802.1p and DSCP priority re-marking
	Packet filtering at Layer 2 to Layer 4
	Traffic classification based on source MAC address, destination MAC address, source IPv4/IPv6 address, destination IPv4/IPv6 address, port number, protocol type, and VLA
	Time range
	WRED
Mirroring	Traffic mirroring
	N:4 port mirroring
	Local port mirroring, remote port mirroring
Security	Hierarchical user management and password protection
	AAA /RADIUS/HWTACACS
	SSH 2.0
	IP address+MAC address+port number binding
	IP source guard
	HTTPs/SSL
	PKI
	802.1X
	MAC authentication
	EAD
LACP	LACP
	LACP local forwarding first
	LACP short-time
	LACP Stack split detection

Item	Specification
Loading and upgrading	Loading/upgrading through the XMODEM protocol
	Loading/upgrading through FTP and TFTP
Management and maintenance	Configuration via CLI, Telnet, and Console port Scheduled job
	IRF-based ISSU
	SNMPv1/v2c/v3
	IMC
	System logs
	Hierarchical alarms
	NTP, SNTP
	Power, fan and temperature alarms
	Debugging information output
	Ping and tracert
	File uploading and downloading through the USB port
EMC	FCC Part 15 Subpart B CLASS A
	ICES-003 CLASS A
	VCCI CLASS A
	CISPR 32 CLASS A
	EN 55032 CLASS A
	AS/NZS CISPR32 CLASS A
	CISPR 24
	EN 55024
	EN 61000-3-2
	EN 61000-3-3
	ETSI EN 300 386
	GB/T 9254
	YD/T 993
Safety	UL 60950-1
	CAN/CSA C22.2 No 60950-1
	IEC 60950-1
	EN 60950-1
	AS/NZS 60950-1
	FDA 21 CFR Subchapter J
	GB 4943.1
IEEE Standard	802.3x/802.3ad/802.3AH/802.1P/802.1Q/802.1X/802.1D/802.1w/802.1s/802.1AG
	802.1x/802.1Qbb/802.1az/802.1Qaz

Order information

PID	Description
LS-9820-64H	H3C S9820-64H L3 Ethernet Switch with 64 QSFP28 Ports
Power	
LSVM1AC650	650W AC Power Supply Module
LSVM1DC650	650W DC Power Supply Module
Fan	
LSWM1BFANSCB	Fan Module with Port to Power Airflow
LSWM1BFANSC	Fan Module with Power to Port Airflow
Module	
LSWM18CQ	H3C S6820 8-Port QSFP28 Ethernet Optical Interface Module
LSWM124TG2H	H3C S6820 24-Port SFP28 and 2-Port QSFP28 Ethernet Optical Interface Module
Transceiver	
QSFP-100G-SR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SR4,MPO)
QSFP-100G-LR4-WDM1300	100G QSFP28 Optical Transceiver Module(1310nm,10km,LR4,WDM,LC)
QSFP-100G-PSM4-SM1310	100G QSFP28 Optical Transceiver Module (1310nm,500m,PSM4,MPO/APC)
QSFP-100G-LR4L-WDM1300	100G QSFP28 Optical Transceiver Module (1310nm,2km,LR4L,CWDM4,LC)
QSFP-100G-ER4L-WDM1300	100G QSFP28 Optical Transceiver Module (1310nm,40km,ER4L,WDM,LC)
QSFP-40G-LR4-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,LR4,LC)
QSFP-40G-CSR4-MM850	QSFP+ 40GBASE Optical Transceiver Module (850nm,300m,CSR4,Support 40G to 4*10G)
QSFP-40G-SR4-MM850	QSFP+ 40GBASE Optical Transceiver Module (850nm,100m,SR4,Support 40G to 4*10G)
QSFP-40G-LR4-PSM1310	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,MPO/APC,LR4,Parallel Single Mode)
QSFP-40G-LR4L-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,2km,LR4L,LC)
QSFP-40G-BIDI-SR-MM850	QSFP+ 40GBASE BIDI Optical Transceiver Module (850nm,100m,SR)
SFP-GE-LH80-SM1550	1000BASE-LH80 SFP Transceiver, Single Mode (1550nm, 80km, LC)
SFP-FE-LX-SM1310-A	100BASE-LX SFP Transceiver, Single Mode (1310nm, 15km, LC)
SFP-FE-SX-MM1310-A	100BASE-FX SFP Transceiver, Multi-Mode (1310nm, 2km, LC)
SFP-FE-LH40-SM1310	100BASE-LH40 SFP Transceiver, Single Mode (1310nm, 40km, LC)
SFP-GE-LX-SM1310-A	1000BASE-LX SFP Transceiver, Single Mode (1310nm, 10km, LC)
SFP-GE-LH40-SM1310	1000BASE-LH40 SFP Transceiver, Single Mode (1310nm, 40km, LC)
SFP-GE-LH40-SM1550	1000BASE-LH40 SFP Transceiver, Single Mode (1550nm, 40km, LC)
SFP-GE-SX-MM850-A	1000BASE-SX SFP Transceiver, Multi-Mode (850nm, 550m, LC)
SFP-GE-T	SFP GE Copper Interface Transceiver Module (100m,RJ45)

PID	Description
Cable	
QSFP-100G-D-CAB-1M	100G QSFP28 to 100G QSFP28 1m Passive Cable
QSFP-100G-D-CAB-3M	100G QSFP28 to 100G QSFP28 3m Passive Cable
QSFP-100G-D-AOC-7M	100G QSFP28 to 100G QSFP28 7m Active Optical Cable
QSFP-100G-D-AOC-10M	100G QSFP28 to 100G QSFP28 10m Active Optical Cable
QSFP-100G-D-AOC-20M	100G QSFP28 to 100G QSFP28 20m Active Optical Cable
QSFP-100G-D-CAB-5M	100G QSFP28 to 100G QSFP28 5m Passive Cable
QSFP-100G-4SFP-25G-CAB-1M	100G QSFP28 to 4x25G SFP28 1m Passive Cable
QSFP-100G-4SFP-25G-CAB-3M	100G QSFP28 to 4x25G SFP28 3m Passive Cable
QSFP-100G-4SFP-25G-CAB-5M	100G QSFP28 to 4x25G SFP28 5m Passive Cable
LSWM1QSTK0	40G QSFP+ Cable 1m
LSWM1QSTK1	40G QSFP+ Cable 3m
LSWM1QSTK2	40G QSFP+ Cable 5m
LSWM1QSTK3	40G QSFP+ to 4x10G SFP+ Cable 1m
LSWM1QSTK4	40G QSFP+ to 4x10G SFP+ Cable 3m
LSWM1QSTK5	40G QSFP+ to 4x10G SFP+ Cable 5m
QSFP-40G-D-AOC-7M	40G QSFP+ to 40G QSFP+ 7m Active Optical Cable
QSFP-40G-D-AOC-10M	40G QSFP+ to 40G QSFP+ 10m Active Optical Cable
QSFP-40G-D-AOC-20M	40G QSFP+ to 40G QSFP+ 20m Active Optical Cable

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