H3C S9850 Series

Data Center Switches

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Product overview

H3C S9850 high-density intelligent switch series is developed for data centers and cloud computing networks. It provides powerful hardware forwarding capacity and abundant data center features. It provides up to 32*100G ports and 2 out-of-band management ports (one fiber port and one copper port). The 100G ports are 100G/40G autosensing and each can be split into four interfaces. This enables the switch to provide up to 128*25G or 10G ports. The switch supports modular power supplies 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 25GE accessing 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 S9850 switch series includes two models:

- S9850-4C: The switch provides 4 × service slots, 2 × 1G SFP ports, 2 × fan tray slots, 2 × out-of-band management ports, 1 × mini USB console port, and 1 × USB port. The switch uses 650W AC or DC removable power modules and supports 2+2 power module redundancy.

- S9850-32H: The switch provides 32 × 100G QSFP28 ports, 2 × 1G SFP ports, 5 × fan tray slots, 2 × out-of-band management ports, 1 × mini USB console port, and 1 × USB port. The switch uses 650W AC or DC removable power modules and supports 1+1 power module redundancy.

S9850-4C front panel

S9850-4C rear panel

S9850-32H front panel

S9850-32H 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 6.4Tbps, which enables the switch to provide high-density server access in high-end data centers without oversubscriptions.

Flexible programmability

- H3C S9850 switch series adopt industry-leading programmable chips, which can define forwarding logic according to user requirements. Users can develop new features that meet the evolving trend of their networks through simple software updates.

Powerful visibility

With the rapid development of data center, the scale of the data center expands rapidly, reliability, operation and maintenance become the bottleneck of data center for further expansion. H3C S9850 switch series conform to the trend of automated data operation and maintenance, and support visualization of data center. H3C S9850 switch series can send real-time resources information, statistics and alarm of RDMA information to the data center operation and maintenance platform through ERSPAN and GRPC protocols. This can allow the operation and maintenance center to perform real-time analysis in order to achieve network quality tracing, troubleshooting, risk warning and system optimization, etc. Visualization can even adjust network configuration automatically and reduce network congestion, which makes it possible to move to automated data center operation and maintenance.

Enhanced SDN features

- H3C S9850 switch series adopt the next-generation chip with more flexible Openflow Flow Table, more resources and accurate ACL matching, which greatly improves the software-defined network (SDN) capabilities and meet the demand of data center SDN network.
- H3C S9850 switch series support standard Openflow protocol, which can be integrated and managed by H3C or mainstream cloud platforms to support flexible network customization and automated management. Users and third-party controllers can use standard interfaces to develop and deploy a dedicated network management strategy for rapid business deployment, functional expansion, and intelligent device management.

Abundant data center features

The switch supports abundant data center features, including:

- FCoE—Allows transmission of FC packets over Ethernet so that FC SAN services and LAN services can run over the same network infrastructure.
- PFC, ECN, 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 16M 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.
- DCB, RoCE, ISSU, and OAM—Provides high-performance services.
- Puppet and Chef—Helps implement automated operation and maintenance of the data center.

Flexible choice of airflow

- 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.

Outstanding management capacity

The switch improves system management through the following ways:

- Provides multiple management interfaces, including the serial console port, mini USB console port, USB port, two out-of-band management ports, and two SFP ports. The SFP ports can be used as service ports or in-band data management ports, through which the sampled packets are encapsulated and sent to the controller or other management devices for in-depth analysis.

- 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 GRPC and provides a flexible programmable interface for customized development.

- Supports Telemetry, allowing for real-time, high-speed, and precise data collection.

H3C Intelligent Resilient Framework 2 (IRF2)

H3C S9850 switch series is a pre-built with intelligent resilient Framework 2 (IRF2). IRF2 provides the

following benefits:

- High scalability: With IRF2, plug-n-play device aggregation can be achieved by adding one or more switches into the IRF2 stack, enabling IRF2 stacking on the new device. New devices can be managed with a single IP, and upgraded at the same time to reduce network expansion cost.
- High reliability: The IRF2 patented 1:N backup technology allows each slave device in the IRF2 stack to serve as the backup of the master, creating control and data link redundancy, and uninterrupted layer-3 forwarding. This improves reliability, avoids unplanned business downtime, and serves to improve overall performance. When the master device fails, traffic remains uninterrupted.
- Load balancing: IRF2 supports cross-device link aggregation, allowing upstream and downstream to be connected to more than one physical link. This creates another layer of network redundancy, and boosts the network resource utilization.
- Availability: H3C Implements IRF2 through standard Hundred Gigabit Ethernet (100GE) or Forty Gigabit Ethernet (40GE) ports. It can allocate bandwidth for business and application access, and reasonably splits local traffic and upstream traffic. IRF2 rules are obeyed within and across the rack, but also across the LAN.

Multiple reliability protection

- The S9850 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.

Rich QoS features

- H3C S9850 switch series support 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.
- S9850 switch series supports five queuing modes include SP (Strict Priority), WRR (Weighted Round Robin), SP+WRR, WFQ, and SP+WFQ.
- S9850 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.

Comprehensive security control policies

- H3C S9850 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 S9850 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. S9850 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	S9850-4C	S9850-32H
Dimensions (H × W × D)	88.1 × 440 × 660 mm (3.47 × 17.32 × 25.98 in)	43.6 × 440 × 460 mm (1.72 × 17.32 ×
Weight(Full loaded)	≤ 27 kg (59.53 lb)	≤ 15 kg (33.07 lb)
Serial console port	1	1
Out-of-band management port	One GE copper port and one GE fiber port	One GE copper port and one GE fiber
Mini USB console port	1	1
USB port	1	1
Flash/SDRAM	4GB/8GB	4GB/8GB
QSFP28	/	32
SFP port	2	2
Expansion slot	4	-
AC-input voltage	90v to 264v	90v to 264v
DC-input voltage	–40v to –72v	–40v to –72v
Power module slot	4	2
Fan tray slot	2	5
Air flow direction	From front to rear or from rear to front	From front to rear or from rear to fron
Static power consumption	Dual AC: 152 W Dual DC: 159 W	Single AC: 154 W Dual AC: 166 W Single DC: 154 W Dual DC: 163 W
Typical power consumption	Dual AC inputs: 355 W (with LSWM18CQ) Dual DC inputs: 361 W (with LSWM18CQ)	Single AC: 198 W Dual AC: 210 W Single DC: 197 W Dual DC: 208 W
Operating temperature	0°C to 45°C (32°F to 113°F)	
Operating humidity	5% to 95%, noncondensing	

Software Specification

Item		Specification
Line-rate switching	Switching capacity	6.4 Tbps
	Forwarding capacity	2024 Mpps
Forwarding mode		Store-forward and cut-through modes
Virtualization		IRF2
		Distributed device management, distributed link aggregation, and distributed resilient routing
		Using standard Ethernet interfaces for IRF connection
		Local and remote stacking
Link aggregation		10GE/25GE/40GE/100GE port aggregation
		Static aggregation, dynamic aggregation
Data center		VXLAN
		802.1Qbb PFC, 802.1Qaz ETS, ECN, DCBX
		FCoE
		OpenFlow 1.3.1
		Multiple types of OpenFlow controllers
		EVPN distributed gateway
		NETCONF, Python
		Service chain
		RDMA, RoCE
Jumbo frame		Supported
MAC address table		Static MAC address
		Black hole 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
		IPv6 DHCP server/client
		IPv6 DHCP snooping/DHCP relay
ARP		Gratuitous ARP
		Dynamic ARP inspection
		ARP source-suppression
		ARP black hole
		Multicast ARP
		ARP detection

Item	Specification
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
	RIPng, OSPFv3, ISISv6
IPV6	IPv6 ND
	IPv6 PMTU
	ICMPv6, Telnetv6, SFTPv6, SNMP over IPv6, BFDv6, VRRPv3
	IPv6 portal/IPv6 tunnel
Multicast	IGMP snooping v2/v3
	IGMPv1/v2/v3
	PIM-DM/SM
	IPv6 PIM-DM/SM/SSM
	Bi-directional -PIM, MSDP
	MLD snooping
	Multicast VPN
	MBGP
	Multicast policy
Zero-configuration	Auto-config
MPLS	MPLS L3VPN
	VPLS
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 VLAN
	Time range
	Inbound and outbound ACLs
	VLAN-based ACL assignment
	WRED

Item	Specification
Mirroring	Traffic mirroring
	N:4 port mirroring
	Local port mirroring, remote port mirroring
	Multiple remote mirroring ports (reflector-port)
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
	IPv6 RADIUS Sever
	IPv6 port binding
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
	Telemetry
	GRPC
	PTP
	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

Item	Specification
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

Order information

PID	Description
LS-9850-4C	H3C S9850-4C L3 Ethernet Switch with 4*Interface Module Slots
LS-9850-32H-A	H3C S9850-32H L3 Ethernet Switch with 32 QSFP28 Ports
Power	
LSVM1AC650	650W AC Power Supply Module
LSVM1DC650	650W DC Power Supply Module
Fan	
LSWM1FANSAB	Fan Module with Port to Power Airflow, for S9850-32H
LSWM1FANSA	Fan Module with Power to Port Airflow, for S9850-32H
LSWM1BFANSCB	Fan Module with Port to Power Airflow, for S9850-4C
LSWM1BFANSC	Fan Module with Power to Port Airflow, for S9850-4C
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

PID	Description
Transceiver	
SFP-GE-T	1000BASE-T SFP
SFP-GE-SX-MM850-A	1000BASE-SX SFP Transceiver, Multi-Mode (850nm, 550m, 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-LH80-SM1550	1000BASE-LH80 SFP Transceiver, Single Mode (1550nm, 80km, LC)
SFP-XG-SX-MM850-A	SFP+ Module(850nm,300m,LC)
SFP-XG-LX-SM1310	SFP+ Module(1310nm,10km,LC)
SFP-25G-SR-MM850	25G SFP28 Optical Transceiver Module (850nm,100m,SR,MM,LC)
QSFP-40G-LR4-WDM1300	40GBASE-LR4 QSFP+ Optical Transceiver Module
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-BIDI-SR-MM850	QSFP+ 40GBASE BIDI Optical Transceiver Module (850nm,100m,SR)
QSFP-40G-LR4L-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,2km,LR4L,LC)
QSFP-40G-LR4-PSM1310	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,MPO/APC,LR4,Parallel Single Mode)
QSFP-100G-SR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SR4,MPO)
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-LR4-WDM1300	100G QSFP28 Optical Transceiver Module(1310nm,10km,LR4,WDM,LC)

PID	Description
Cable	
LSWM1STK	SFP+ Cable 0.65m
LSWM2STK	SFP+ Cable 1.2m
LSWM3STK	SFP+ Cable 3m
LSTM1STK	SFP+ Cable 5m
SFP-25G-D-CAB-1M	25G SFP28 to 25G SFP28 1m Passive Cable
SFP-25G-D-CAB-3M	25G SFP28 to 25G SFP28 3m 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-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-CAB-5M	100G QSFP28 to 100G QSFP28 5m Passive Cable
QSFP-100G-4SFP-25G-CAB-3M	100G QSFP28 to 4x25G SFP28 3m Passive Cable
QSFP-100G-4SFP-25G-CAB-1M	100G QSFP28 to 4x25G SFP28 1m Passive Cable

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