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H3C S9855 Series

Data Center Switches

Release Date: May, 2022

New H3C Technologies Co., Limited

H3C S9855 Series Data Center Switches

Product overview

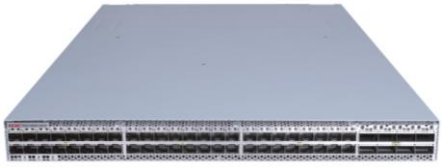
H3C S9855 series switches are a new generation of high-performance, high-density 400GE/100GE Ethernet switches launched by H3C for data centers. Provides high-density 400GE/200GE/100GE ports; supports redundant pluggable power supplies and fans. The S9855 can be used in the core and aggregation networking of the new generation data center. It connects to the S12500 series core switches through 400GE uplinks, and connects to 200GE/100GE servers in the downlink, providing high-bandwidth and large-capacity server access.

The S9855 switch series includes two models:

- H3C S9855-48CD8D: Supports 48 100G DSFP ports + 8 400G QSFP-DD ports
- H3C S9855-24B8D: Supports 24 200G QSFP56 ports + 8 400G QSFP-DD ports
- H3C S9855-40B: Supports 40 200G QSFP56 ports

S9855-24B8D front panel

S9855-24B8D rear panel



S9855-48CD8D front panel

S9855-48CD8D rear panel

S9855-40B front panel

S9855-40B rear panel

Features and Benefits

High port density and powerful forwarding capacity

- The switch offers high-density 400G/200G/10G ports and a forwarding capacity as high as 16Tbps, which enables the switch to provide high-density server access in high-end data centers without oversubscriptions.

Abundant Data Center Features

The switch supports abundant data center features, including:

- H3C S9855 series switches supports MP-BGP EVPN and VxLAN VTEP.
- H3C S9855 series switches support ROCEv2 network, based on Priority-based Flow Control (PFC), ECN Enhanced Transmission Selection (ETS). Which ensures low latency and lossless RDMA applications and high-speed computing services.

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 S9855 switch series conform to the trend of automated data operation and maintenance, and support visualization of data center. H3C S9855 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.

Powerful SDN Capability

- H3C S9855 series switches 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 S9855 series switches can interconnect with H3C SeerEngine-DC Controller for SeerFabric solutions.

Rich QoS features

- H3C S9855 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.
- S9855 switch series supports five queuing modes include SP (Strict Priority), WRR (Weighted Round Robin), SP+WRR, WFQ, and SP+WFQ.
- S9855 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.

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.

Hardware Specification

Item	S9855-48CD8D	S9855-24B8D	S9855-40B
Dimensions (H × W × D)	44 × 440 × 660 mm (1.73 × 17.32 × 25.98 in)	44 × 440 × 660 mm (1.73 × 17.32 × 25.98 in)	44 × 440 × 660 mm (1.73 × 17.32 × 25.98 in)
Weight(Full loaded)	≤ 12.2 kg (26.90 lb)	≤ 12.2 kg (26.90 lb)	≤ 12.2 kg (26.90 lb)
Serial console port	1	1	1
Out-of-band management port	1	1	1
USB port	1	1	1
200G QSFP56 port	/	24	40
DSFP port	48	/	/
QSFP-DD port	8	8	/
Power module slot	2	2	2
Fan tray slot	6	6	6
Air flow direction	From front to rear	From front to rear From rear to front	From front to rear
Minimum power consumption	Single AC input: 125 W Dual AC inputs: 140 W	Single AC input: 133 W Dual AC inputs: 146 W	Single AC input: 131 W Dual AC inputs: 146 W
Typical power consumption	Single AC input: 238 W Dual AC inputs: 250 W	Single AC input: 251 W Dual AC inputs: 263 W	Single AC input: 258 W Dual AC inputs: 263 W
Maximum power consumption	Single AC input: 713 W Dual AC inputs: 719 W	Single AC input: 739 W Dual AC inputs: 748 W	Single AC input: 709 W Dual AC inputs: 748 W
CPU	2.9GHz@4core	2.9GHz@4core	2.9GHz@4core
Flash/SDRAM	240G/16G	240G/16G	240G/16G
Latency	<1.2μs	<1.2μs	<1.2μs
Switching capacity	16Tbps	16Tbps	16Tbps
Forwarding capacity	2680Mpps	2680Mpps	2680Mpps
Buffer(byte)	82M	82M	82M
Operating temperature	0°C to 40°C	0°C to 40°C	0°C to 40°C
Operating humidity	5% to 95%, noncondensing	5% to 95%, noncondensing	5% to 95%, noncondensing
MTBF(year)	49.3	34.9	34.9
MTTR(hour)	<0.5	<0.5	<0.5

Software Specification

Item	Feature description
Device Virtualization	M-LAG(DRNI)
	S-MLAG
Network Virtualization	BGP-EVPN
	VxLAN
VxLAN	L2 VxLAN gateway
	L3 VxLAN gateway
	Distributed VxLAN gateway
	Centralized VxLAN gateway
	EVPN VxLAN
	manual configured VxLAN
	IPv4 VxLAN tunnel
	IPv6 VxLAN tunnel
	QinQ VxLAN access
SDN	H3C SeerEngine-DC for SeerFabric
Lossless network	PFC and ECN
	DCBX
	RDMA and ROCE
	PFC deadlock watchdog
	ROCE stream analysis
Programmability	Openflow1.3
	Netconf
	Python//TCL/Restful API to realize DevOps automated operation and maintenance
Traffic analysis	Sflow
VLAN	Port-based VLANs
	QINQ
MAC address	Dynamic learning and aging of mac address entries
	Dynamic,static and blackhole entries
IPv4 routing	OSPF (Open Shortest Path First) v1/v2
	ISIS(Intermediate System to Intermediate system)
	BGP (Border Gateway Protocol)
	Routing policy
	VRRP
	PBR
IPv6 routing	OSPFv3
	IPv6 ISIS
	BGP4+
	Routing policy
	VRRP
	PBR
Reliability	LACP
	LLDP
	STP/RSTP/MSTP protocol
	STP Root Guard and BPDU Guard
	BFD for OSPF/OSPFv3, BGP/BGP4, IS-IS/IS-ISv6 and Static route
	VRRP and VRRPE

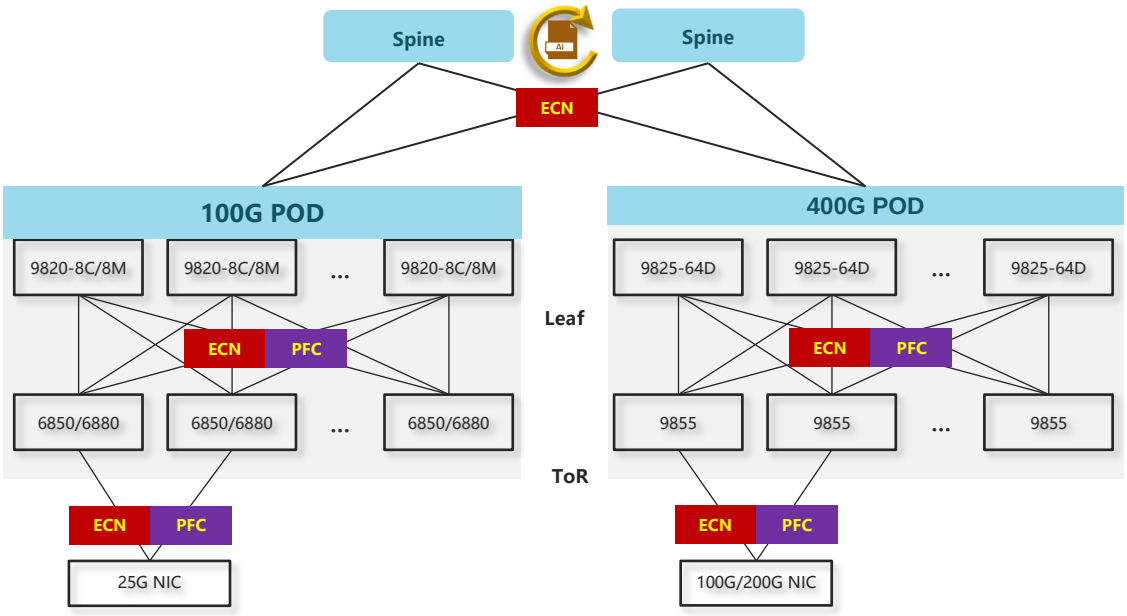
Item	Specification
QOS	Weighted Random Early Detection (WRED) and tail drop
	Flexible queue scheduling algorithms based on port and queue, including strict priority (SP), Weighted Deficit Round Robin (WDRR), Weighted Fair Queuing (WFQ), SP + WDRR, and SP + WFQ.
	Traffic shaping
	Packet filtering at L2 (Layer 2) through L4 (Layer 4); flow classification based on source MAC address, destination MAC address, source IP (IPv4/IPv6) address, destination IP (IPv4/IPv6) address, port, protocol, and VLAN to apply qos policy,including mirroring,redirection,priority remark etc.
	Committed access rate (CAR)
	Account by packet and byte
	COPP
Telemetry	Telemetry Stream
	INT
	Packet capture
Configuration and maintenance	Console telnet and SSH terminals
	SNMPv1/v2/v3
	ZTP
	System log
	File upload and download via FTP/TFTP, BootRom update and remote update
	NQA
	ping,tracert
	NTP
Security and management	Hierarchical management and password protection of users
	AAA /RADIUS/HWTACACS
	SSH 2.0
	HTTPS
	Boot ROM access control (password recovery)
	RMON
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	UL60950-1 EN60950-1 IEC60950-1 GB4943

Performance and scalability

Item	Description	
Virtualization	M-LAG device number	2
ACL	max number of ingress ACLs	16k-1@160bit/pipe,2pipes
	max number of ingress Car	512*2
	max number of ingress Counter	24k-2
	max number of egress ACLs	2K-1@160bit/pipe，2 pipes
	max number of egress Car	128*2
	max number of egress Counter	4K-2
Forwading table	Jumbo frame length(byte)	9216
	Mirroring group	4
	max number of MACs per switch	routing mode：32K mac mode：224K
	max number of ARP entries IPv4	28K-3
	max ND table size for IPv6	28K-3
	max number of unicast routes IPv4	980000(24B) 1000000(32B)
	max number of unicast routes IPv6	1000000（80B/128B）
	LAGG group	1000
	LAGG member per group	128
	ECMP group	Max Group：4095 2/4(member)--4095; 8--4000; 16--2000; 32--1000; 64--490; 128—240
	ECMP member per group	2-128
	VRF	4K
Interface	Loopback interface number	1K
	L3 sub interface number	4K
	SVI interface number	4K
	VxLAN AC number	14K-10
	VxLAN VSI number	8K-1
	VxLAN tunnel number	4095
	VSI interface number	4K
	VLAN number	4094
Performance	RIB	4M
	MSTP instance	64
	VRRP VRID	255
	VRRP group	4096
	NQA group	32
Static table	static mac-address	16K
	static ARP	28K-3
	static ND	28K-3
	static IPv4 routing table	same as FIB
	static IPv6 routing table	same as FIB

Data Center Application

The typical data center application for S9855 is ROCE scenarios.



Order information

PID	Description
LS-9855-24B8D	H3C S9855-24B8D L3 Ethernet Switch with 24 200G QSFP56 Ports and 8 400G QSFP-DD Ports
S9855-48CD8D	H3C S9855-48CD8D L3 Ethernet Switch,with 2 AC Power Supplies and 6 Fan Modules
S9855-40B	H3C S9855-40B 40 Port 200G QSFP56 Switch
Power	
PSR1600C-12A-B	1600W AC Power Supply Module (Power Panel Side Exhaust Airflow)
Fan	
FAN-40B-1-C	Fan Module (Fan Panel Side Exhaust Airflow, Electronic Label Supported)
FAN-40F-1-D	H3C Fan Module(Fan Panel Side Intake Airflow)
Transceiver	
QSFP-100G-LR4-WDM1300	100G QSFP28 Optical Transceiver Module(1310nm,10km,LR4,WDM,LC)
QSFP-100G-LR4L-WDM1300	100G QSFP28 Optical Transceiver Module (1310nm,2km,LR4L,CWDM4,LC)
QSFP-100G-PSM4-SM1310	100G QSFP28 Optical Transceiver Module (1310nm,500m,PSM4,MPO/APC)
QSFP-100G-eSR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,300m OM4,eSR4,MPO)
QSFP-100G-SWDM4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SWDM4,LC)
QSFP-100G-SR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SR4,MPO)
QSFPDD-400G-FR4-WDM1300	400G QSFPDD Optical Transceiver Module(1300nm,2km,FR4,LC)
QSFPDD-400G-SR8-MM850	400G QSFPDD Optical Transceiver Module(850nm,100m OM4,SR8,MPO16/APC)
QSFP-40G-LR4-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,LR4,LC)
QSFP-40G-BIDI-SR-MM850	QSFP+ 40GBASE BIDI Optical Transceiver Module (850nm,100m,SR)
QSFP-40G-BIDI-WDM850	QSFP+ 40GBASE BIDI Optical Transceiver Module (850nm,300m)

QSFP-40G-LR4L-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,2km,LR4L,LC)
QSFP-40G-ER4-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,40km,ER4,LC)
QSFP-40G-LR4-PSM1310	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,MPO/APC,LR4,Parallel Single Mode)
QSFP-40G-LR4-PSM1310-A	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,MPO/APC,LR4,Parallel Single Mode)
QSFP-40G-SR4-MM850	QSFP+ 40GBASE Optical Transceiver Module (850nm,100m,SR4,Support 40G to 4*10G)
QSFP-40G-CSR4-MM850	QSFP+ 40GBASE Optical Transceiver Module (850nm,300m,CSR4,Support 40G to 4*10G)
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-100G-SR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SR4,MPO)
QSFP-40G-BIDI-WDM850	QSFP+ 40GBASE BIDI Optical Transceiver Module (850nm,300m)
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)
QSFP-100G-LR4-WDM1300	100G QSFP28 Optical Transceiver Module(1310nm,10km,LR4,WDM,LC)
QSFP-40G-ER4-WDM1300	QSFP+ 40GBASE Optical Transceiver Module (1310nm,40km,ER4,LC)
QSFP-100G-SWDM4-MM850	100G QSFP28 Optical Transceiver Module (850nm,100m OM4,SWDM4,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-eSR4-MM850	100G QSFP28 Optical Transceiver Module (850nm,300m OM4,eSR4,MPO)
QSFP-40G-LR4-PSM1310-A	QSFP+ 40GBASE Optical Transceiver Module (1310nm,10km,MPO/APC,LR4,Parallel Single Mode)
QSFP56-200G-SR4-MM850	200G QSFP56 Optical Transceiver Module (850nm,100m OM4,SR4,MPO12/UPC)
QSFPDD-400G-LR8-WDM1300	400G QSFP-DD Optical Transceiver Module (1300nm,10km,LR8,LC)
Cable	
QSFP-100G-D-AOC-10M	100G QSFP28 to 100G QSFP28 10m Active Optical Cable
QSFP-100G-D-CAB-1M	100G QSFP28 to 100G QSFP28 1m Passive Cable
QSFP-100G-D-AOC-20M	100G QSFP28 to 100G QSFP28 20m Active Optical 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-D-AOC-7M	100G QSFP28 to 100G QSFP28 7m Active Optical Cable
LSWM1QSTK0	40G QSFP+ Cable 1m
LSWM1QSTK1	40G QSFP+ Cable 3m
LSWM1QSTK2	40G QSFP+ Cable 5m
QSFP-40G-D-AOC-3M	40G QSFP+ to 40G QSFP+ 3m 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
QSFP-40G-D-AOC-7M	40G QSFP+ to 40G QSFP+ 7m Active Optical Cable
LSWM1QSTK3	40G QSFP+ to 4x10G SFP+ Cable 1m
LSWM1QSTK4	40G QSFP+ to 4x10G SFP+ Cable 3m
LSWM1QSTK5	40G QSFP+ to 4x10G SFP+ Cable 5m
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
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-40G-D-AOC-3M	40G QSFP+ to 40G QSFP+ 3m Active Optical Cable

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