H3C S9827 Series

Data Center Switches

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New H3C Technologies Co., Limited

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Product overview

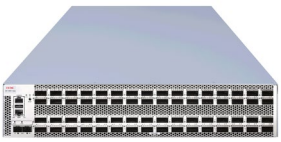
H3C S9827 high-density intelligent series switches is developed for data centers and cloud computing networks. It provides powerful hardware forwarding capacity and abundant data center features. It provides up to 64*800G ports or 128*400G and 1 out-of-band management ports. The switch supports modular power supplies, fan trays (with automatic fan pacing) and flexible pluggable Supervisor Engine.

With the rapid development of data center technology, the scale of data centers grows rapidly.
The current trends in data center networking is ultra-bandwidth and lossless transmission.
The H3C S9827 series switches conform to the development trend. They support ROCEv2, can be used in AIGC network.

S9827 support visibility functions and can transmit realtime resource information, RoCEv2 statistics alarm information from switches to operation and maintenance platforms through protocols such as ER SPAN and gRPC. The operation and maintenance platform can analyze this realtime data to achieve fun ctions such as network quality tracing, fault diagnosis, risk warning, architectural optimization, and even automatic adjustment of network configurations to reduce network congestion, enabling data center o peration and maintenance to move towards automation.

The S9827 series switches includes two models:

- S9827-64E(QSFP-DD800): 2U height with 1+1 power redundancy and 3+1 fan redundancy
- S9827-64EP(OSFP800): 4U height with N+N power redundancy and 7+1 fan redundancy
- S9827-128DH: 4U height with N+N power redundancy and 7+1 fan redundancy

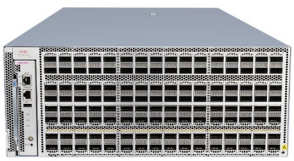


S9827-64E front panel

S9827-64E rear panel

S9827-64EP front panel

S9827-64EP rear panel



S9827-128DH front panel

S9827-128DH rear panel

Features and Benefits

High port density and powerful forwarding capacity

- The switch offers high-density 800G/400G ports and 102.4Tbps forwarding capacity which enables the switch to provide high-density server access in high-end data centers without oversubscription.
- These 800G/400G ports support splitting and downgrading function, such as 800G split into 400G*2, 800G split to 200G*4, downgrading to 400G, etc. It supports full-port insertion of LPO optical transceiver modules and intermixing of LPO and DSP transceiver modules.

Abundant Data Center Features

The switch supports abundant data center features, including:

- H3C S9827 series switches supports MP-BGP EVPN (Multiprotocol Border Gateway Protocol Ethernet Virtual Private Network) which can run as VXLAN control plane to simplify VXLAN configuration, eliminate traffic flooding and reduce full mesh requirements between VTEPs via the introduction of BGP RR.
- H3C S9827 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.

H3C Multichassis link aggregation (M-LAG)

- H3C S9827 series switches M-LAG, which enables links of multiple switches to aggregate into one to implement device-level link backup. M-LAG is applicable to servers dual-homed to a pair of access devices for node redundancy.
- Streamlined topology: M-LAG 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.

Powerful Visibility

H3C S9827 series switches conform to the trend of automated data operation and maintenance, and support visibility of data center.

- INT (Inband-Telemetry) is a network monitoring technology used to collect data from the device. Compared with the traditional network monitoring technology featuring one query, one reporting, INT requires only one-time configuration for continuous data reporting, thereby reducing the request processing load of the device. INT can collect timestamp information, device ID, port information, and buffer information in real time. INT can be implemented in IP, EVPN, and VXLAN networks.
- 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.
- Supports gRPC

Powerful SDN Capability

- H3C S9827 series switches adopt the next-generation chip with more flexible Openflow FlowTable, 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 S9827 series switches can interconnect with H3C SeerEngine-DC Controller through standard protocols such as OVSDB, Netconf and SNMP to implement network automatic deployment and configuration.

Excellent manageability

The switch improves system management through the following ways:

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

Health perception function of optical transceiver modules

- Supports optical transceiver modules health perception function, allowing real-time monitoring and perception of various indicators such as transceiver Receive/Transmit power, temperature, current, voltage, CRC, per-channel bit error rate, SNR, pre-FEC bit error rate, and statistics of uncorrectable bit errors. Collaborates with analyzers to detect and warn about issues like optical link attenuation and optical power loss in advance.
- Supports optical port protection circuit.

Hardware Specification

Item	S9827-64E	S9827-64EP	S9827-128DH
Dimensions (W × D × H)	440×760×88.1 mm	442×760×175 mm	442×760×175 mm
Weight (Full loaded)	24.5kg	40.5kg	≤45kg
Serial console port	1	1	1
Out-of-band management port	1	1	1
USB2.0	1	1	1
QSFP-DD800	64	/	/
OSFP 800	/	64	/
400GE QSFP112	/	/	128
Supervisor Engine Module	/	1	1
CPU	2.6GHz @4Cores		
Flash/SDRAM	64GB/16GB		
Latency	960ns		
Switching capacity	102.4Tbps		
Forwarding performance	21.1Bpps		
Buffer	165.2M		
Power module slot	2	4	4
Fan tray slot	4	8	8
Air flow direction	From front to rear	From front to rear	From front to rear
Input voltage (AC)	100V~240V		
Input voltage (HVDC)	180V~320V		
Static Power Consumption	2 AC: 260W	4 AC: 310W	4 AC: 297W
Typical Power Consumption	2 AC: 880W	4 AC: 1280W	4 AC: 850W
Transceivers	VR/SR/DR/FR	VR/SR/DR/FR	VR/SR/DR/FR
Operating temperature	0°C to 40°C	0°C to 40°C	0°C to 40°C
Storage temperature	-40°C ~ 70°C	-40°C ~ 70°C	-40°C ~ 70°C
Operating humidity	5% to 95%, noncondensing	5% to 95%, noncondensing	5% to 95%, noncondensing

Software Specification

Item	Feature description
Layer 2	VLAN based on port, protocol, and MAC.
	MAC address learning and aging function
	dynamic MAC, static MAC, and black hole MAC entries.
Availability	M-LAG
	S-MLAG
SDN	H3C SeerEngine-DC
Lossless network	RDMA and ROCEv2
	PFC and ECN ,AI ECN， PFC deadlock watchdog
	DCB/DCBX
	iNOF ， IPCC
	Supports intelligent network card docking with mainstream 100G/200G/400G network cards, such as NVIDIA CX6/CX7 series.
Load balance algorithm	path navigation load balancing and Traffic Matrix load balancing; routing based on flow table issuance and 5-tuple
	LBN, DLB，Spraylink
	Consistent HASH function and symmetric HASH
Programmability	Openflow1.3
	Netconf,
	Ansible
	Python/TCL/Restful API to realize DevOps automated operation and maintenance
Traffic analysis	Sflow
	Netstream
	ROCEv2 stream analysis
IPv4 routing	static routes and default routes.
	RIP(Routing Information Protocol) v1/2
	OSPF (Open Shortest Path First) v1/v2
	ISIS(Intermediate System to Intermediate system)
	BGP (Border Gateway Protocol)
	Routing policy
	VRRP
	PBR
	GR functionality and smooth restart technology for routing protocols such as OSPF, BGP, ISIS, RIP
IPv6 routing	static routes and default routes.
	RIPng
	OSPFv3
	IPv6 ISIS
	BGP4+
	Routing policy
	VRRP
	PBR
	GR functionality and smooth restart technology for routing protocols such as OSPFv2,OSPFv3, BGP+, ISISv6, and RIPng

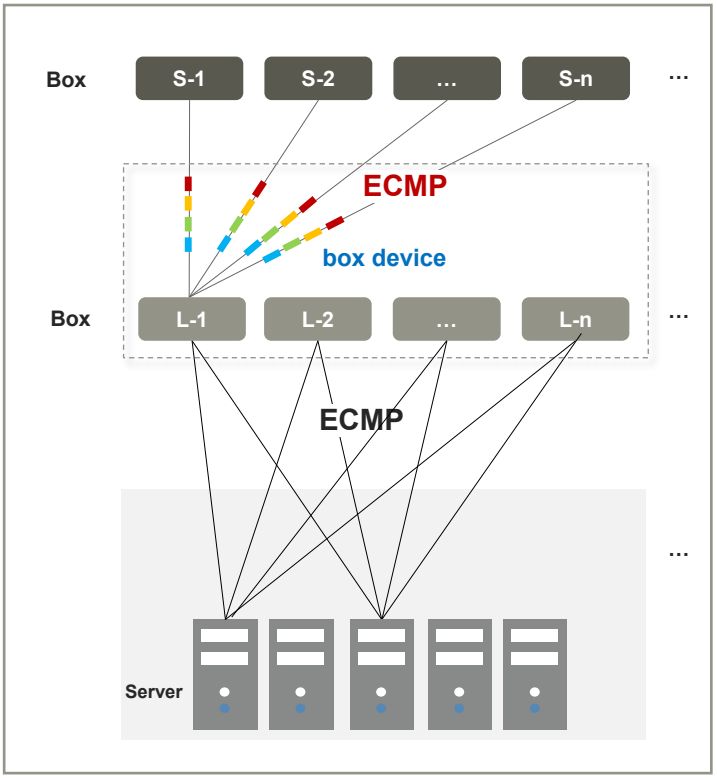
Item	Specification
Reliability	LACP
	STP/RSTP/MSTP protocol, PVST compatible
	STP Root Guard and BPDU Guard
	RRPP and ERPS
	Ethernet OAM
	Smartlink，Monitor-link
	DLDP
	BFD for OSPF/OSPFv3, BGP/BGP4, IS-IS/IS-ISv6, PIM/IPM for IPv6 and Static route
	VRRP and VRRPE
	IP FRR (OSPF/BGP/ISIS FRR switching)
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, car, priority remark etc. on inbound and outbound
	Committed access rate (CAR)
	Account by packet and byte
	COPP
Telemetry	gRPC
	ERSPAN
	Mirror on drop
	Telemetry Stream
	INT
	MOD
	Packet capture
Configuration and maintenance	Console telnet and SSH terminals
	SNMPv1/v2/v3
	ZTP (Zero Touch Provisioning)
	System log
	File upload and download via FTP/TFTP BootRom update and remote update
	NQA
	ping,tracert
	NTP
	GIR Graceful Insertion and Removal (Future)
	Hierarchical management and password protection of users
	Authentication methods,including AAA,RADIUS and HWTACACS
	SSH 2.0
	HTTPS
	SSL
	PKI
	Boot ROM access control (password recovery)
	RMON
	Commit and configuration rollback

Performance and scalability

Item	Description	
Virtualization	M-LAG device number	2
ACL	max number of ingress ACLs	2K-1@160bit/pipe,8pipes
	max number of egress ACLs	511@160bit/pipe，8 pipes
Forwarding table	Jumbo frame length(byte)	9216
	Mirroring group	6
	max number of MACs per switch	8K
	max number of ARP entries IPv4	32K
	max ND table size for IPv6	32K
	max number of unicast routes IPv4	1M
	max number of unicast routes IPv6	1M
	LAGG group	312
	LAGG member per group	64
	ECMP group	4K
	ECMP member per group	2-128
	VRF	4K
Interface	Loopback interface number	1K
	L3 sub interface number	2K
	SVI interface number	4K
	VLAN number	4094
Performance	RIB	1.4M
	MSTP instance	62
	VRRP VRID	255
	VRRP group	512
	NQA group	4096

Data Center Application

The typical data center application for S9827 is AI/HPC scenarios.



Order information

PID	Description
LS-9827-64EP	H3C S9827-64EP L3 Ethernet Switch Host
LSWM1SUPX1	H3C S9800 Supervisor Engine Module
FAN-80B-1-D	Fan Module (Fan Panel Side Exhaust Airflow)
PSR2000-12A-S	2000W AC Power Supply Module(Power Panel Side Exhaust Airflow)
OSFP800-800G-DR8-SM1310-DMPO	800G OSFP800 Single Mode Optical Transceiver Module (1310nm, 500m, SMF, DR8, Dual MPO/APC, 1-to-2 Breakout Supported)
OSFP800-800G-VR8-MM850-DMPO	800G OSFP800 Multimode Optical Transceiver Module (850nm, 50m, OM5, 50m, OM4, 30m, OM3, VR8, Dual MPO/APC, 1-to-2 Breakout Supported)
OSFP800-800G-VR8-MM850-MPO	800G OSFP800 Multimode Optical Transceiver Module (850nm, 50m, OM5, 50m, OM4, 30m, OM3, VR8, MPO16/APC, 1-to-2 Breakout Supported)
LS-9827-64E	H3C S9827-64E L3 Ethernet Switch Host
FAN-80B-1-D	Fan Module (Fan Panel Side Exhaust Airflow)
PSR2700-12A-A	2700W AC Power Supply Module (Power Panel Side Exhaust Airflow)
LS-9827-128DH	H3C S9827-128DH Ethernet Switch,With 128 QSFP112 Ports
FAN-80B-1-C	Fan Module(Fan Panel Side Exhaust Airflow,Electronic Label Supported)
PSR2000-12A-C-A	2000W AC & 240V HVDC Power Supply Module(Fan Panel Side Exhaust Airflow)
LSWM1SUPD1	H3C S9827-128DH Supervisor Engine Module
QSFP112-400G-VR4-MM850	400G QSFP112 Multimode Optical Transceiver Module(850nm,50m OM4,30m OM3,VR4,MPO12/APC,1-to-2 Breakout Supported)
QSFP112-400G-DR4-SM1310	400G QSFP112 Single-Mode Optical Transceiver Module(1310nm,500m,DR4,MPO12/APC,1-to-4 Breakout Supported)
QSFP112-400G-FR4-WDM1300	400G QSFP112 Single-Mode Optical Transceiver Module(1300nm,2km,FR4,LC)

The Leader in Digital Solutions

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