

# H3C S6520X-HI Series Advanced Aggregation 10GE Switches

## Product overview

H3C S6520X-HI Switch Series –Industry-leading high performance and scalable Layer 3+ 10GE access switching solution with modular dual power, fixed or modular uplinks (10GbE/40GbE/100GbE) and IRF for resiliency. The series offers OSPF/BGP and multicast, SDN enabled and flexible management.

The S6520X-HI switch series contains the following models:

- H3C S6520X-54HC-HI—provides 48 × 1/10G SFP+ ports, 2 × QSFP28 ports(100G, can be split into four 25GE ports), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots
- H3C S6520X-30HC-HI—provides 24 × 1/10G SFP+ ports, 2 × QSFP28 ports(100G, can be split into four 25GE ports), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots
- H3C S6520X-54QC-HI—provides 48 × 1/10G SFP+ ports, 2 × QSFP+ ports (40GE, can be split into four 10GE ports.), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots
- H3C S6520X-30QC-HI—provides 24 × 1/10G SFP+ ports, 2 × QSFP+ ports (40GE, can be split into four 10GE ports.), 2 × expansion slots, 2 × fan tray slots, and 2 × power module slots



S6520X-54HC-HI/S6520X-54QC-HI



S6520X-30HC-HI/S6520X-30QC-HI

## Features and benefits

### Open application architecture

In H3C open application architecture (OAA), the switch can accommodate high-performance OAP modules to offer dedicated services such as firewall, IPS, or load balancing in addition to conventional forwarding services. By installing OAP modules, the customers can use the switch as a multiservice device without having to buy separate service appliances, such as a firewall device.

## High-density 10GE forwarding

The switch offers high-density 10GE forwarding and can expand 10GE ports flexibly. It provides 48/24 10/1GE autosensing SFP+ ports, two QSFP28 or QSFP+ ports onboard, and two expansion slots that support up to 11 kinds of modules range from GE to 10GE, 25GE, 40GE, 100GE and Multi-giga ports. Using a QSFP+ to SFP+ splitter cable, you can split a QSFP+ port into four line-rate 10GE SFP+ ports. Max 72\*10GE supported on one single switch.

## Embedded Access Controller

H3C S6520X-HI implements the WLAN function by installing an AC feature pack on the main control unit, thereby implementing both the wired function and the WLAN function on a single device. Embedded AC is a low-cost WLAN solution, save overall investment, improve forwarding capacity, realized a true unified wired and wireless solution in Campus. Max.256 AP supported on one single switches.

## H3C Intelligent Resilient Framework 2 (IRF2)

H3C Intelligent Resilient Framework 2 (IRF 2) virtualizes multiple S6520X-HI switches into one virtual switch and provides the following benefits:

- **Scalability**—IRF 2 allows you to add devices to the IRF 2 system easily. It provides a single point of management, enables switch plug-and-play, and supports software auto-update for software synchronization from the master to the new member devices. It brings business agility with lower total cost of ownership by allowing new switches to be added to the fabric without network topology change as business grows.
- **High availability**—The H3C proprietary routing hot backup technology ensures redundancy and backup of all information on the control and data planes and non-stop Layer 3 data forwarding in an IRF 2 fabric. It also eliminates single point of failure and ensures service continuity.
- **Redundancy and load balancing**—The distributed link aggregation technology supports load sharing and mutual backup among multiple uplinks, which enhances the network redundancy and improves link resources usage.
- **Flexibility and resiliency**—The switch uses standard GE ports instead of specialized ports for IRF links between IRF member devices. This allows customers to assign bandwidth as needed between uplink, downlink, and IRF system connections. In addition, an S6520X-HI IRF fabric can span a rack, multiple racks, or multiple campuses.

## Intelligent Resilient Framework 3.1 (IRF 3.1)

Intelligent Resilient Framework 3.1 technology (IRF 3.1) is implemented based on IEEE 802.1BR. It integrates lower-layer devices (PEXs) such as access devices with a higher-layer IRF fabric (parent fabric) to provide high-density, low-cost connectivity at the access layer. You can manage and configure the PEXs from the parent fabric as if they were interface modules on the parent fabric.

IRF 3.1 brings the following benefits: Single point of management; Unified security policy; Simplified network topology; Simplified service deployments; Easy scalability and maintenance.

## Wide range of advanced features

The switch offers a wide range of features, including:

- **Modular hardware and software design**—The switch uses modular, hot swapping, and redundancy design for hardware, including power modules and fan trays. The switch also uses modular design for software, which enables feature installation and removal on an as-needed basis. Refined physical architecture and optimized software workflows greatly reduce the end-to-end packet processing delay.
- **Software-defined networking (SDN)**—An innovative network architecture that separates the control plane from the forwarding plane, typically by using OpenFlow. SDN significantly simplifies network management, reduces maintenance complexities and costs, enables flexible traffic management, and offers a good platform for network and application innovations.
- **Virtual eXtensible LAN (VXLAN)**—A MAC-in-UDP technology that provides Layer 2 connectivity between distant network sites across an IP network. VXLAN enables long-distance virtual machine and data mobility and is typically used in data centers and the access layer of campus networks for multitenant services. The H3C implementation of VXLAN supports automatic VXLAN tunnel establishment with EVPN.
- Ethernet Virtual Private Network (EVPN) is a Layer 2 VPN technology that provides both Layer 2 and Layer 3 connectivity between distant network sites across an IP network. EVPN uses MP-BGP in the control plane and VXLAN in the data plane.
- EVPN provides the following benefits: Configuration automation; Separation of the control plane and the data plane; Integrated routing and bridging (IRB).
- In-Service Software Upgrade (ISSU) and Operation, Administration, and Maintenance (OAM)—Ensure business continuity and improve Ethernet management and maintainability.

## Comprehensive security control policies

The switch supports AAA authentications (including RADIUS authentication) and dynamic or static binding of user identifiers such as user account, IP address, MAC address, VLAN, and port number.

Using the switch in conjunction with H3C IMC, you can manage and monitor online users in real time and take prompt action on illegitimate behaviors.

The switch offers a large number of inbound and outbound ACLs and VLAN-based ACL assignment. This simplifies configurations and saves ACL resources.

## MACsec

MACsec is an ideal hop-by-hop link-layer security protocol for Ethernet networks, which are typically insecure. It provides the following services:

- **Data encryption**—Encrypts data over the Ethernet link to protect data against security issues such as eavesdropping.
- **Anti-replay**—Prevents packets from being intercepted and modified en route to protect the network against unauthorized access.
- **Tampering protection**—prevents packet tampering to protect data integrity.

MACsec supports the following deployments:

- Client-oriented—Protects data transmission over the link between the client and its access device.
- Device-oriented mode—Protects data transmission over the link between two peering devices.

The switch can cooperate with H3C iNode client and core switches such as S10500 and S7500E to provide a complete MACsec solution.

## High availability

In addition to node and link protection, the switch offers the following hardware high availability features:

- 1+1 power module redundancy and 1+1 fan tray redundancy.
- Hot-swappable interface modules.
- Automatic power and fan tray status monitoring and alarming mechanisms.
- Automatic fan speed adjustment based on the change in temperature.
- Self-protection mechanisms that protect power modules against overcurrent, overvoltage, and overtemperature conditions.

## Outstanding management capacity

The switch provides a variety of management features and is easy to manage. It offers the following device management features:

- Provides multiple management interfaces, including the console port, out-of-band management Ethernet port, and USB port.
- Supports configuration and management from CLI or a general-purpose Web-based manager, including H3C IMC Intelligent Management Center.
- Supports multiple access methods, including SNMPv1/v2c/v3, Telnet, and more secure SSH 2.0 and SSL.
- Uses OAM to enhance system management capability.
- Supports FTP for system upgrade.

## Smart Management Center (SmartMC)

SmartMC is H3C's latest offering and innovation that helps small and middle size enterprise network to address management issue and is free of charge, easy to use web management tool. SmartMC is embedded network management tool into the switch, it includes commander switches and other access switches.

SmartMC delivers the following benefits:

- Intelligent operation: once the switch is powered on and SmartMC function is enabled, topology will be created automatically and user can go enhanced web GUI to check the latest status.
- Centralized management: all management can be achieved via commander switch such as centralized configuration backup, and software version management, increasing working efficiency.
- One key device replacement: in case of one switch failure, the new added same type switch can download the same configuration and work as old switch immediately

## Technical Specifications

Item	S6520X-54HC-HI/S6520X-54QC-HI	S6520X-30HC-HI/S6520X-30QC-HI
Switching capacity	2160Gbps/1140Gbps	1680Gbps/960Gbps
Packet forwarding rate	1607Mpps/1071Mpps	1250Mpps/714Mpps
Dimensions (H x W x D)	43.6 x 440 x 360 mm (1.72 x 17.32 x 14.17 in)	
Weight	≤ 7.5 kg (16.53 lb)	≤ 7.5 kg (15.43 lb)
Console ports	1	
Management Ethernet ports	1	
USB ports	1	
Micro USB ports	1	
Service ports	48 x 1/10GE SFP+ fiber ports 2 x QSFP28 fiber ports (for S6520X-54HC-HI) 2 x QSFP+ fiber ports(for S6520X-54QC-HI)	24 x 1/10GE SFP+ fiber ports 2 x QSFP28 fiber ports(for S6520X-30HC-HI) 2 x QSFP+ fiber ports(for S6520X-30QC-HI)
Expansion slots	2	
Compatible interface modules	2-port 10G SFP+ with MACSec Interface Module 2-port 10G BASE-T with MACSec Interface Module 8-Port 10G SFP+ Interface Module 8-Port 10G SFP+ with MACSec Interface Module 4-Port 10/100/1000BASE-T Ethernet, 6-Port SFP(2-Port Combo) Interface Module 8-Port 1/2.5/5G BASE-T Ethernet Copper Interface Module 8-Port 1/2.5/5/10G BASE-T Ethernet Copper Interface Module 2-port 25GE SFP28 interface module 2-port 40GE QSFP+ interface module 8-port 25GE SFP28 interface module 2-port 100GE QSFP28 interface module(for S6520X-30HC-EI and S6520X-54HC-EI)	
Input voltage range	Rated: 100 VAC to 240 VAC @ 50 Hz/60 Hz Max.: 90 VAC to 264 VAC @ 47 Hz to 63 Hz	
Fan trays	Hot swappable fan trays, invertible airflow	
Power consumption	MIN: single AC: 39W; dual AC: 44W MAX: single AC: 231W; dual AC: 234W	MIN: single AC: 38W; dual AC: 43W MAX: single AC: 179W; dual AC: 183W
Operating temperature	0°C to 45°C (32°F to 113°F)	
Operating humidity	10% RH to 90% RH, non-condensing	
VxLAN	VXLAN Layer 2 switching VXLAN routing switching VXLAN gateway Centralized VXLAN control through OpenFlow+Netconf	
Virtualization	Intelligent Resilient Framework 2 (IRF2) Intelligent Resilient Framework 3.1 (IRF3.1) Distributed device management	

Item	S6520X-54HC-HI/S6520X-54QC-HI	S6520X-30HC-HI/S6520X-30QC-HI
	Distributed link aggregation Distributed resilient routing Stacking through standard Ethernet ports Local device stacking and remote device stacking LACP-, BFD-, and ARP-based multi-active detection (MAD)	
Link aggregation	10GE/40GE/100GE port aggregation Static aggregation Dynamic aggregation	
Jumbo frame	Supported	
MAC address table	Max. 256K MAC address entries Static MAC address Blackhole MAC address MAC learning limit	
Openflow	Openflow1.3.1	
VLAN	Port-based VLAN (up to 4094 VLANs) Default VLAN QinQ and flexible QinQ VLAN mapping PVST+ and RPVST+	
Traffic monitoring	sFLOW	
DHCP	DHCP client DHCP snooping DHCP relay DHCP server DHCP snooping Option 82/DHCP relay Option 82	
ARP	Max. 128K ARP Static entry Gratuitous ARP Common proxy ARP and local proxy ARP Dynamic ARP inspection ARP anti-attack ARP source suppression ARP detection based on DHCP snooping safety entries, 802.1X entries, and IP/MAC static binding entries	
Routing	Max. 128K IPV4 routing entries Max. 64K IPV6 routing entries IPv4/IPv6 static routing Dynamic routing such as RIP v1/2 and RIPng Policy routing Equal-cost multi-path routing (ECMP) VRRP OSPFv1/v2/v3 BGP IS-IS	
IPv6	Neighbor Discovery (ND)	

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	PMTU ICMP v6, Telnet v6, SFTP v6, SNMP v6, BFD v6, VRRP v3 IPv6 Portal IPv6 tunnel IPV6 SAVI	
Multicast	IGMP Snooping v2/v3 IGMP Snooping fast-leave IGMP Snooping group-policy PIM-SM and PIM-SSM PIM snooping MVRP MFF Enhanced Layer 3 multicast	
Zero configuration	DHCP auto-config CWMP-TR069	
Storm suppression	Storm suppression based on port bandwidth percentage Storm suppression based on PPS Storm suppression based on BPS	
Loop-free redundant Layer 2 topology	STP/RSTP/MSTP STP Root Guard BPDU Guard G.8032 Ethernet ring protection switching (ERPS)	
QoS/ACL	Rate limit for receiving and transmitting packets CAR Eight output queues per port Flexible queue scheduling algorithms based on both port and queue, including SP, WDRR, WRR, WFQ, and SP+WRR 802.1p priority and DSCP priority Layer 2 to Layer 4 packet filtering Traffic classification based on source MAC, destination MAC, source IP, destination IP, port, protocol, and VLAN Time range WRED	
Mirroring	Flow mirroring N:4 port mirroring Local port mirroring and remote port mirroring	
Security	Hierarchical user management and password protection MAC-based authentication 802.1X Storm constrain AAA authentication RADIUS authentication HWTACACS SSH2.0 Port isolation IP/Port/MAC binding	

Item	S6520X-54HC-HI/S6520X-54QC-HI	S6520X-30HC-HI/S6520X-30QC-HI
	IP source guard HTTPS SSL Public Key Infrastructure (PKI) CPU protection	
Loading and upgrading	Loading and upgrading through XMODEM/FTP/TFTP Loading and upgrading from USB	
Management and maintenance	Configuration from CLI Login through Telnet, and the console port Job scheduler ISSU 802.1ag and 802.3ah Simple Network Management Protocol (SNMP) IMC network management system System log Alarming based on severity NTP Power, fan, and temperature alarming Debugging information output Ping and Tracert Track Telnet-based remote maintenance	

## Ordering Information:

Product ID	Product Description
LS-6520X-30QC-HI-GL	H3C S6520X-30QC-HI L3 Ethernet Switch(24SFP Plus+2QSFP Plus+2Slot),No Power
LS-6520X-54QC-HI-GL	H3C S6520X-54QC-HI L3 Ethernet Switch(48SFP Plus+2QSFP Plus+2Slot),No Power
LS-6520X-30HC-HI-GL	H3C S6520X-30HC-HI L3 Ethernet Switch(24SFP Plus+2QSFP28+2Slot),No Power
LS-6520X-54HC-HI-GL	H3C S6520X-54HC-HI L3 Ethernet Switch(48SFP Plus+2QSFP28+2Slot),No Power
<b>Fan</b>	
LSWM1FANSCE	Ethernet Switch Fan Module(Power to Port Airflow)
LSWM1FANSCEB	Ethernet Switch Fan Module(Port to Power Airflow)
<b>Power supply</b>	
PSR250-12A-GL	250W AC Power Supply Module
PSR250-12A1-GL	250W AC Power Supply Module
<b>Modules</b>	
LSWM2QP2P	2-Port 40G QSFP Plus Interface Card
LSW2SP2PM	2-Port 10G SFP Plus Interface Card with MACSec
LSW2XGT2PM	2-Port 10G BASE-T Interface Card with MACSec
LSWM2SP8P	8-Port 10G SFP Plus Interface Card
LSWM4SP8PM	8-Port 10G SFP Plus with MACSec Interface Module



LSPM4G4T6P	4-Port 10/100/1000BASE-T Ethernet,6-Port SFP(2-Port Combo) Interface Module
LSWM2MGT8P	8-Port 1/2.5/5G BASE-T Ethernet Copper Interface Module
LSWM2XMGT8P	8-Port 1/2.5/5/10G BASE-T Ethernet Copper Interface Module
LSWM2ZSP2P	2-Port 25G SFP28 Ethernet Optical Interface Module
LSWM2ZSP8P	8-Port 25G SFP28 Interface Module
LSWM2ZQP2P	2-Port 100G QSFP28 Interface Module
<b>Transceivers</b>	
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-GE-LH100-SM1550	1000BASE-LH100 SFP Transceiver, Single Mode (1550nm, 100km, LC)
SFP-GE-LX-SM1310-BIDI	1000BASE-LX BIDI SFP Transceiver, Single Mode (TX1310/RX1490, 10km, LC)
SFP-GE-LX-SM1490-BIDI	1000BASE-LX BIDI SFP Transceiver, Single Mode (TX1490/RX1310, 10km, LC)
SFP-GE-T	1000BASE-T SFP
SFP-XG-LH40-SM1550	SFP+ Module(1550nm,40km,LC)
SFP-XG-LX-SM1310-E	SFP+ Module(1310nm,10km,LC)
SFP-XG-SX-MM850-E	SFP+ Module(850nm,300m,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-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-LR4L-WDM1300	100G QSFP28 Optical Transceiver Module (1310nm,2km,LR4L,CWDM4,LC)
<b>Cables</b>	
CAB-CON-1.8m	Single Cable,Console Serial Port Cable,1.8m,D9F,28UL20276(4P)(P296U),MPH-8P8C
LSWM1STK	SFP+ Cable 0.65m
LSWM2STK	SFP+ Cable 1.2m
LSWM3STK	SFP+ Cable 3m
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
SFP-25G-D-CAB-5M	25G SFP28 to 25G 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-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-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
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
OP-MPO8-8LC-10-M	Fiber Connector,MPO(8 core)/PC,8LC/PC(0.5m),Multimode(OM3),3.0mm,10.0m
OP-MPO8-MPO8-10-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,10.0m
OP-MPO8-MPO8-50-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,50.0m
OP-MPO8-MPO8-100-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,100.0m
OP-MPO8-MPO8-200-M	Fiber connector,MPO(8 core)/PC,MPO(8 core)/PC,Multimode(OM3),3.0mm,200.0m

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