



H3C S5820V2 Data Center Switches



S5820V2-52Q switch front view



S5820V2-52Q switch rear view



S5820V2-52QF/-U switch front view



S5820V2-52QF/-U rear view



S5820V2-54QS-GE switch front view



S5820V2-54QS-GE switch rear view

Overview

The H3C S5820V2 series switch is the latest 10 Gigabit Ethernet (10GE) offering made for the space constrained data center. Its "Top of Rack" design provides a rich set of features tailored for the data center, and all packed in standard 1U with record breaking 10GE port density, and 40G upstream port. The S5820V2 series is made for high density 10GE access in data center and cloud computing networks. It also fits nicely as the core or aggregation equipment of enterprise networks and MAN.

Features

High 10GE port density

- As client side network bandwidth grows, 10GE adapters are increasingly common in servers, and switches have to deliver a higher forwarding performance and provide more 10GE expansion space. S5820V2-52Q features 48 1/10G Base-T ports and four 40G QSFP ports, S5820V2-52QF and S5820V2-52QF-U switches feature 48 SFP+ optical ports, and four 40G QSFP ports. S5820V2-54QS-GE features four SFP+ optical ports and two 40G QSFP ports. By plugging in different modules, the 40G port can run as a single 40G port or four 10GE ports. That model supports up to 64 10GE ports and fulfils the need for high density access in the data center.

IRF2 (The Second-generation Intelligent Resilient Framework)

H3C S5820V2 series switches are 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 and 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, as well as uninterrupted layer-3 forwarding. This improves the 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, upstream and downstream can be connected to more than one physical link, which creates another layer of network redundancy and boosts the network resource utilization.
- Availability: H3C Implements IRF2 through standard Forty Gigabit Ethernet (40GE) or Ten Gigabit Ethernet (10GE) ports which allocates bandwidth for business and application access and reasonably splits local traffic and upstream traffic. IRF2 rules can not only be obeyed within and across the rack, but also across the LAN.

VCF (Vertical Converged Framework)

S5820V2 supports VCF (Vertical Converged Framework) technology. VCF takes the box type switches as a remote interface board to the master switches, to achieve heterogeneously vertical extension. The entire system can be treated as a single logical device for unified management and use.

VCF can provide users with the following benefits:

- **Unified Management:** All members can be centrally configured and managed on master devices, with no need to physically be connected to each member and be configured individually.
- **Unified security strategy:** the entire network security policy only needs to be configured on the master device to avoid network device individual configuration and potential policy conflicts, significantly reducing security deployment workload.
- **Reduce network layers:** To support large-scale remote interface board expansion capabilities, the traditional three-layer network architecture can be simplified to be two layers through the VCF technology, simplifying the network's physical and logical complexity.
- **Streamline service:** Service configuration is based on a single logical device configuration, which can greatly simplify VLAN, IP, routing, MPLS VPN and other network planning considerations in the whole network.
- **Easy maintenance:** All access equipment configurations and software versions are automatically assigned by the master device, the new device that joins or leaves can be "hot swappable" with zero-configuration, and does not affect the normal operation of other equipment.

Rich data center features

- S5820V2 series switches support EVB (Edge Virtual Bridging), through VEPA (Virtual Ethernet Port Aggregator) mode, which redirect the data traffic generated by VMs (Virtual Machine) to the physical switch connected to the server for processing. Not only to achieve traffic forwarding between VMs, but also to solve the border management issues between VMs and the network connection.
- FCoE technology leverages Ethernet packet to carry FC packets. This means FC SAN and Ethernet LAN network can share the same network infrastructure, a good solution to solve the problems of coexistence between different types of network. S5820V2 series switch supports full FCoE and FC protocol stack. All downstream SFP + ports can be switched to FCoE ports, which communicate directly to the storage facility with FCoE interfaces. The downstream SFP+ ports of S5820V2-52QF-U model can also be switched to FC port to interoperate with FC SAN. Thus the FC SAN and Ethernet network are fully integrated, greatly simplifying the entire network infrastructure.
- TRILL (Transparent Interconnection of Lots of Links) is an innovative technology that changes the traditional way to build data center networks, it adopts layer 3 routing technology benefits, such as stable, scalable and high performance into an adaptable, but limited scope of layer 2 switching network, to establish a flexible, extensible, high-performance layer 2 network architecture. By using TRILL technology, S5820V2 series switches become the ideal choice to build a large, high-performance, scalable and supporting virtual machine live migration cloud data center network.

- S5820V2 series switches support DCB (Data Center Bridging), and support ISSU (In-service Software Upgrade), OAM (Operations, Administration and Maintenance) and Energy-Efficient Ethernet (EEE), and fully meet the high performance data center requirements, easy to manage with green energy consumption.

Flexible choice of airflow

- To cope with data center cooling aisle design, the H3C S5820V2 series switch 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.

Bullet-proof security

- H3C S5820V2 series switch 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 behavior.
- H3C S5820V2 series switch supports enhanced ACL control logic, which supports 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. S5820V2 series will also be able to take advantage of Unicast Reverse Path Forwarding (Unicast RPF). 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. This will curb the increasingly common originating address spoofing.

Multiple redundancy

- H3C S5820V2 series switch comes with multiple device protection such as ampere protection and voltage surge protection and overheating protection to safeguard your network.
- Hot-pluggable power supply and fan module also add to the availability of the device. H3C S5820V2 series supports dual-power-supply and dual-fan; all models of power modules and fan modules are hot-swappable without interruption of the device operation. Multiple health-checks and alarms are available for power supply and fan, and fan speed will automatically adjust according to temperature changes.

Unparalleled manageability

- H3C S5820V2 series switch supports a rich management interface, including console, external network and USB. Management protocols such as SNMPv1/v2/v3 and RMON are supported aside from iMC Management Console. The network administrator may activate control through CLI, Web interface and TELNET which gives maximum flexibility in accessing and managing the device. The administrator may also choose SSH2.0 and SSL encryption to shield the management session.

Specifications

Features		S5820V2-52Q	S5820V2-52QF	S5820V2-52QF-U	S5820V2-54QS-GE
Dimensions (W × D × H)		440 × 660 × 43.6mm	440 × 660 × 43.6mm	440 × 660 × 43.6mm	440 × 460 × 43.6mm
Weight		≤ 13kg	≤ 13kg	≤ 13kg	≤ 10kg
Console port		1, at the back			
Ethernet port for management		1, at the back			
USB port		1 (full speed) at the back			
10/100/1000Base-T port		0	0	0	48
10G Base-T port		48	0	0	0
SFP Plus/FCoE port		0	48	48	4
FC port		0	0	48	0
QSFP port		4	4	4	2
Input Voltage	AC	Rated voltage range: 100V to 240V AC, 50/60GHz; Maximum voltage range: 90V to 264V AC, 47/63Hz			
	DC	Rated voltage range: -40V to -60V DC; Maximum voltage range: -40V to -72V DC			
Fan		Hot-swappable fan, fan speed adjustable and wind invertible			
Power consumption (idle)		AC: 139W DC: 133W	AC: 200W DC: 197W	AC: 200W DC: 197W	AC: 115W DC: 110W
Power consumption (in full configuration)		AC: 455W DC: 444W	AC: 257W DC: 250W	AC: 257W DC: 250W	AC: 175W DC: 169W
Operating temperature		0°C ~ 45°C			
Operating relative humidity (non-condensing)		10% to 90%			
Wirespeed exchange	Switching capacity	1280G bps			
	Throughput	960 Mpps			252 Mpps
Forwarding mode		Store-forward and cut-through			
Virtualization		Intelligent Resilient Framework 2 (IRF2)			
		Distributed device management			
		Distributed link aggregation			
		Distributed routing			
		Stacking through standard Ethernet port			
		Local and remote stacking			
Link aggregation		LACP, BFD, ARP and MAD based stack collision			
		10GE port aggregation			
		40GE port aggregation			
Data center features		static aggregation, dynamic aggregation			
		802.1Qbb PFC, 802.1Qaz ETS, ECN			
		FCoE and FC protocol stack			
		48 FC/FCoE/Ethernet multiplexing ports (only S5820V2-52QF-U)			
		EVB (support VEB, VEPA, Multi-channel three modes)			
		TRILL			
		TRILL & IRF			
Support SPB					

Specifications (continued)

Features	S5820V2-52Q	S5820V2-52QF	S5820V2-52QF-U	S5820V2-54QS-GE
Jumbo frame	✓			
MAC address table	static MAC address			
	blackhole MAC address			
	Configure maximum number of port MAC address learned			
VLAN	Port-based VLAN (4094 items)			
	Default VLAN, Super VLAN, PVLAN			
	QINQ			
	Flexible QINQ			
	VLAN Mapping			
Traffic monitoring	Support sFlow			
DHCP	DHCP Server / Client			
	DHCP Snooping			
	DHCP Relay			
	DHCP Snooping option82/DHCP Relay option82			
ARP	Static table entry			
	Gratuitous ARP			
	Standard proxy ARP and local proxy ARP			
	Dynamic ARP Inspection			
	ARP anti-attack			
	ARP source suppression			
	ARP Detection function (check according to DHCP Snooping safety entry, 802.1x table entry or IP/MAC static binding table entry)			
IPv4 routing	Static routing, RIP v1/2, OSPFv1/V2, BGP, IS-IS			
	Equal-Cost Multi-Path routing (ECMP), VRRP, policy-based routing			
IPv6 routing	RIPng, OSPF v3, IS-IS V6			
	BGP4 + FOR IPV6, VRRP, IPV6 routing strategy			
	ND (Neighbor Discovery)			
	PMTU			
	ICMP V6, Telnet V6, SFTP V6, SNMP V6, BFD V6, VRRP V3			
	IPV6 Portal			
	IPV6 tunnel			
Multicast protocol	IGMP Snooping V2/v3			
	IGMP v1/V2/v3			
	PIM-DM/SM			
	IPv6 PIM-DM/SM/SSM			
	Bi-directional PIM, MSDP			
	MLD Snooping			
	Multicast policy			
Zero configuration	Auto-config			
MPLS	MCE, MPLS L2VPN, MPLS L3VPN, VPLS			
Broadcast / Multicast / Unicast storm suppression	Port-based rate percentage			
	PPS			
	BPS			

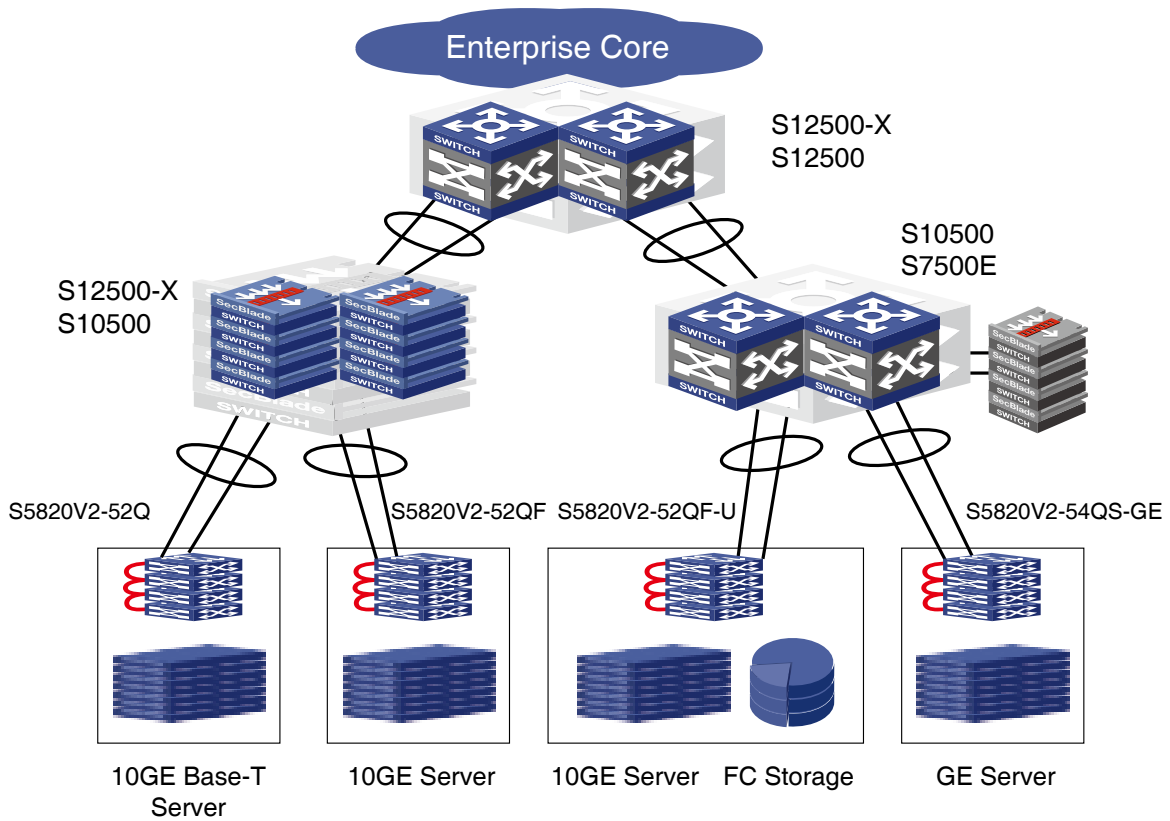
Specifications (continued)

Features	S5820V2-52Q	S5820V2-52QF	S5820V2-52QF-U	S5820V2-54QS-GE
MSTP	STP/RSTP/MSTP			
	STP Root Guard			
	BPDU Guard			
QoS / ACL	Flow control			
	Committed Access Rate (CAR)			
	Eight output queues per port			
	Flexible queue scheduling algorithm can be set based on port and queue, support SP, WDRR, WRR, WFQ, SP + WDRR and other models			
	Buffer can be configured			
	802.1p and DSCP priority re-marking			
	L2 (Layer 2) ~ L4 (Layer 4) packet filtering based on source MAC address, destination MAC address, source IP (IPv4/IPv6) address, destination IP (IPv4/IPv6) address, port, protocol, and VLAN Traffic Classification			
	Time range			
Mirror	Weighted Random Early Detection (WRED)			
	Streaming Mirroring			
	N: 4 port mirroring			
	Local and remote port mirroring			
Security features	Hierarchical user management and password protection			
	Centralized MAC address authentication			
	802.1X			
	Storm constrain			
	AAA authentication support			
	RADIUS authentication			
	Portal Authentication			
	HWTACACS			
	SSH 2.0			
	Port isolation			
	IP + MAC + port binding			
	IP Source Guard			
	HTTPs			
	SSL			
Public Key Infrastructure (PKI)				
Firmware upgrade	Upgrade via the XModem, File Transfer Protocol (FTP) and Trivial File Transfer Protocol (TFTP)			
Management and maintenance	Configuration via CLI, Telnet, and Console port			
	Schedule job			
	ISSU			
	SNMPv1/v2/v3, RMON alarm, event and log			
	H3C Intelligent Management Centre (iMC)			
	NTP			
	Power, fan and temperature alarms			
	System log			
	Alarm propagation			
	Debug string output			
	Ping, Tracert			
	NQA			
	Track			
	Telnet remote maintenance			
	Copy switch files to and from a USB flash drive			

Network Applications

Networking application 1: Typical data center deployment

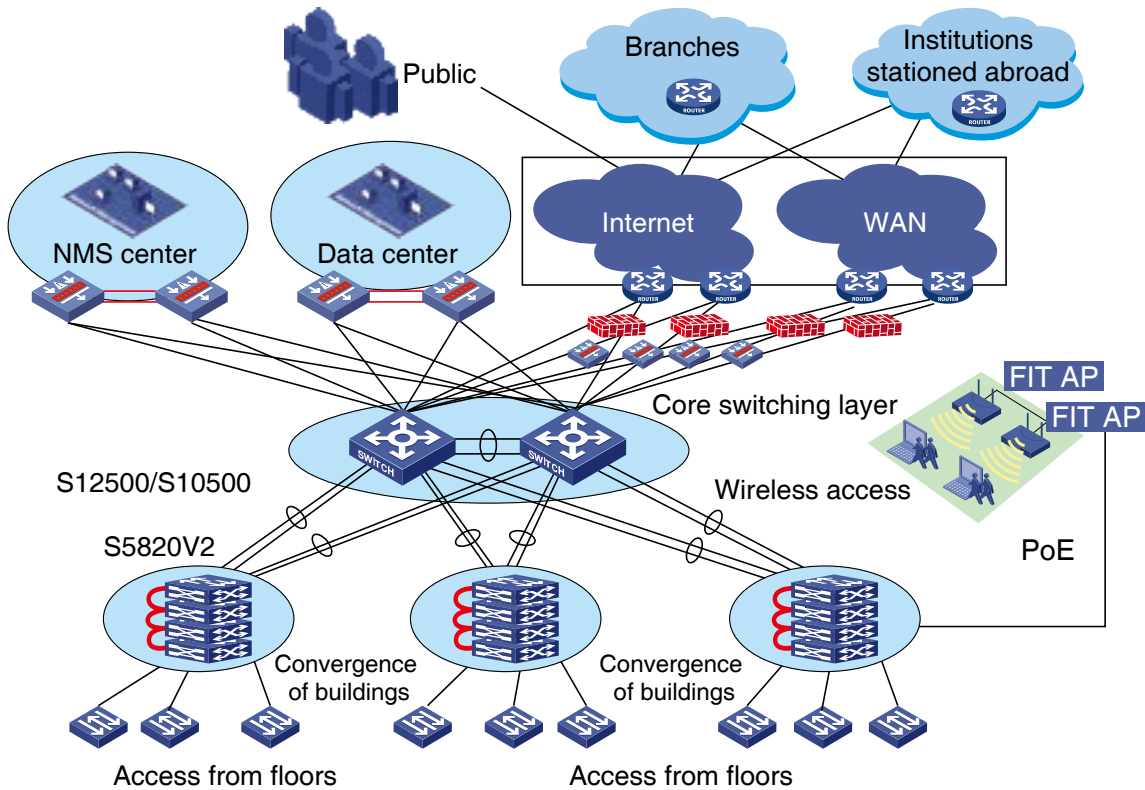
H3C employed 100G based S12500/12500-X series switch as the core of the data center, while the S12500 or S10500 may be used in the aggregation layer. Security and flow control can be maintained through the integrated firewall and load balancing multifunction modules. S5820V2 may be used in the access layer to provide high density 10GE server access.



S5820V2 in a typical data center

Networking application 2: Typical large enterprise network/campus network deployment

In a medium or large enterprise network or campus network, one may use S5820V2 series switch as the building aggregation switch. IRF can stack several switches as a virtual device and it can be managed as a single logical device to simplify management and maintenance, plus provide room for scaling up. S5820V2 series switch can also be used for 10GE aggregation, as well as to connect storage and service with a higher throughput requirement.



Typical enterprise/campus network layout with S5820V2

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