

Huawei CloudEngine S5535-S-V2 Series Hybrid Optical-Electrical Switches Brochure

Huawei CloudEngine S5535-S-V2 series hybrid optical-electrical switches are standard gigabit Ethernet switches that provide all GE downlink ports, 10GE uplink ports, 1 DB50 port and 2 stack ports.

Product Overview

CloudEngine S5535-S-V2 series hybrid optical-electrical switches are developed based on next-generation high-performing hardware and software platform. CloudEngine S5535-S-V2 switches support simplified operations and maintenance (O&M), and flexible Ethernet networking. It also provides enhanced Layer 3 features and mature IPv6 features. CloudEngine S5535-S-V2 switches can be used in various scenarios. For example, it can be used as an access or aggregation switch on a campus network or as an access switch for Metropolitan Area Network.

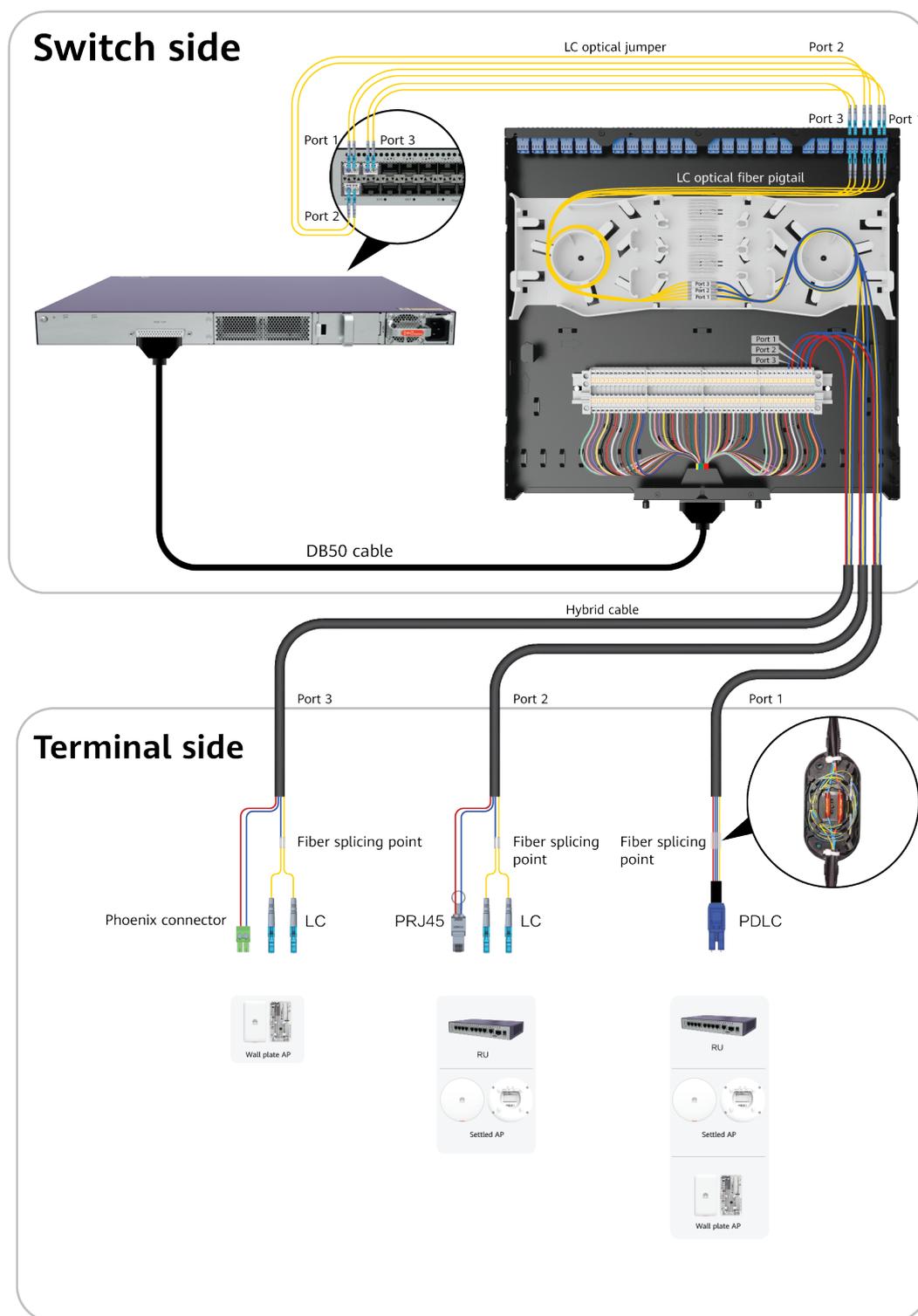
Models and Appearances

The following models are available in the CloudEngine S5535-S-V2 series.

Models and appearances of the CloudEngine S5535-S-V2 series

Models and Appearances	Description
 <p>CloudEngine S5535-S24HS4XE-V2</p>	<ul style="list-style-type: none"> • 24 x GE SFP ports, 1 x DB50 port, 4 x 10 GE SFP+ ports, 2 x 12GE stack ports • 1+1 power supply backup • Forwarding performance: 132 Mpps • Switching capacity: 260 Gbps

Solution Overview



Switch:

The optical ports on the front panel of the switch are connected to the corresponding optical ports on the panel of the fiber management tray through LC jumpers.

The DB50 port on the rear panel of the switch is connected to the DB50 port on the panel of the fiber management tray panel through a DB50 jumper power cord.

Fiber management tray:

The optical fibers of the hybrid cable are spliced with LC pigtails inside the fiber management tray (LC pigtails are prefabricated).

Power cables are connected to interfaces corresponding to power connectors (the DB50 cable is prefabricated).

Port IDs for connecting optical fibers and power cables in the same hybrid cable must be consistent.

Optical-electrical separation

LC + RJ45/Phoenix connector: Optical fibers transmit data through common optical modules while supplying power through RJ45/Phoenix connectors.

Optical-electrical synergy

PLDC: connects to a remote unit or AP through a hybrid module.

Features and Highlights

Optical-Electrical Hybrid Access

- CloudEngine S5535-S-V2 provides 24 GE SFP ports and 1 DB50 electrical ports. The optical ports and DB50 ports are connected to the fiber management tray through LC jumpers and DB50 jumpers respectively. The main optical fiber of the hybrid cable is spliced with the LC pigtail in the fiber management tray. The copper cable is connected to the corresponding power connector to meet the requirements of optical-electrical hybrid access.

Long-distance PoE++ power supply

- When the CloudEngine S5535-S-V2 is used together with hybrid cables, the switch provides 60 W PoE++ power supply at a maximum distance of 300 m based on optical port-electrical port synergy, meeting the power supply requirements of devices (such as Wi-Fi 6 APs and cameras) with a distance of more than 100 m.
- **Perpetual PoE:** Perpetual PoE: When a PoE switch is warm rebooting (Don't turn PSE switch power off), for example, reboot upon the software upgrade, the power supply to PDs is not interrupted. This capability ensures that PDs are not powered off during the switch warm reboot.
- **Fast PoE:** PoE switches can supply power to PDs within seconds after they are powered on. This is different from common switches that generally take 1 to 3 minutes to start to supply power to PDs. When a PoE switch reboots due to a power failure, the PoE switch continues to supply power to the PDs immediately after being powered on without waiting until it finishes reboot. This greatly shortens the power failure time of PDs.

Powerful Service Processing Capability

- CloudEngine S5535-S-V2 supports a broad set of Layer 2/Layer 3 multicast protocols, such as PIM SM, PIM DM, PIM SSM, and IGMP snooping. This capability is ideal for high-definition video backhaul and video conferencing access.
- CloudEngine S5535-S-V2 provides multiple Layer 3 features including OSPF, IS-IS, BGP, and VRRP, meeting enterprises' access and aggregation service needs and enabling a variety of voice, video, and data applications.

Multiple Security Control Mechanisms

- CloudEngine S5535-S-V2 supports MAC address authentication, 802.1X authentication, and implements dynamic delivery of policies (VLAN, QoS, and ACL) to users.
- CloudEngine S5535-S-V2 provides a series of mechanisms to defend against DoS attacks and user-targeted attacks. DoS attacks are targeted at switches and include SYN flood, Land, Smurf, and ICMP flood attacks. User-targeted attacks include bogus DHCP server attacks, IP/MAC address spoofing, DHCP request flood, and changing of the DHCP CHADDR value.
- CloudEngine S5535-S-V2 sets up and maintains a DHCP snooping binding table, and discards the packets that do not match the table entries. The DHCP snooping trusted port feature ensures that users connect only to the authorized DHCP server.
- CloudEngine S5535-S-V2 supports strict ARP learning, which protects a network against ARP spoofing attacks to ensure that users can connect to the Internet normally.

Multiple Reliability Mechanisms

- CloudEngine S5535-S-V2 is equipped with two pluggable power modules that work in 1+1 redundancy backup mode. Mixed installation of AC and DC power modules is supported, allowing for flexible configuration of AC or DC power modules according to service requirements.

- In addition to supporting traditional Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and Multiple Spanning Tree Protocol (MSTP), CloudEngine S5535-S-V2 is also designed with the industry's latest Ethernet Ring Protection Switching (ERPS) technology. This protocol is reliable, easy to maintain, and implements fast protection switching within 50 ms. ERPS is defined in ITU-T G.8032, and it implements millisecond-level protection switching based on traditional Ethernet MAC and bridging functions.
- CloudEngine S5535-S-V2 supports Smart Link, which implements backup of uplinks. One CloudEngine S5535-S-V2 switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices.

Easy Network deployment

- CloudEngine S5535-S-V2 supports Huawei Easy Operation, a solution that provides zero-touch deployment, replacement of faulty devices without additional configuration, USB-based deployment, batch device configuration, and batch remote upgrade. The capabilities facilitate device deployment, upgrade, service provisioning, and other management and maintenance operations, and also greatly reduce O&M costs. CloudEngine S5535-S-V2 can be managed using SNMP v1/v2c/v3, CLI, web-based network management system, or SSH v2.0. Additionally, it supports RMON, multiple log hosts, port traffic statistics collection, and network quality analysis, which facilitate network optimization and reconstruction.

Intelligent Stack (iStack)

- CloudEngine S5535-S-V2 supports intelligent stack (iStack). This technology combines multiple switches into a logical switch. Member switches in a stack implement redundancy backup to improve device reliability and use inter-device link aggregation to improve link reliability.
- iStack provides high network scalability. You can increase ports, bandwidth, and processing capacity of a stack by simply adding member switches to the stack.
- iStack also simplifies device configuration and management. After a stack is set up, multiple physical switches are virtualized into one logical device. You can log in to any member switch in the stack to manage all the member switches in the stack. CloudEngine S5535-S-V2 support stacking through electrical ports.
- CloudEngine S5535-S-V2 supports two 12GE dedicated stack ports, which release uplink ports and do not need to be configured.

Network Slicing Functions

- CloudEngine S5535-S-V2 provides a range of VLAN slicing functions to meet diversified SLA requirements of different services and customers. Service isolation and bandwidth guarantee are implemented based on QoS. Slices can be completely isolated from each other without affecting each other. Traffic is isolated at the physical layer, and network slicing is performed for services on the same physical network. The Network Slicing technology can be used at the access, aggregation, and core layers to meet differentiated SLA requirements of new services on campus networks.

Intelligent O&M

- CloudEngine S5535-S-V2 provides telemetry technology to collect device data in real time and send the data to Huawei campus network analyzer CampusInsight. The CampusInsight analyzes network data based on the intelligent fault identification algorithm, accurately displays the real-time network status, effectively demarcates and locates faults in a timely manner, and identifies network problems that affect user experience, accurately guaranteeing user experience.

Intelligent Upgrade

- CloudEngine S5535-S-V2 supports the intelligent upgrade feature. Specifically, CloudEngine S5535-S-V2 obtains the version upgrade path and downloads the newest version for upgrade from the Huawei Online Upgrade Platform (HOUP). The entire upgrade process is highly automated and achieves one-click upgrade. In addition, preloading the version is supported, which greatly shortens the upgrade time and service interruption time.
- The intelligent upgrade feature greatly simplifies device upgrade operations and makes it possible for the customer to upgrade the version independently. This greatly reduces the customer's maintenance costs. In addition, the upgrade policies on the HOUP platform standardize the upgrade operations, which greatly reduces the risk of upgrade failures.

Cloud Management

- The Huawei cloud management platform allows users to configure, monitor, and inspect switches on the cloud, reducing on-site deployment and O&M manpower costs and decreasing network OPEX. Huawei switches support both cloud management and on-premise management modes. These two management modes can be flexibly switched as required to achieve smooth evolution while maximizing return on investment (ROI).

OPS(Open Programmability System)

- CloudEngine S5535-S-V2 supports Open Programmability System (OPS), an open programmable system based on the Python language. IT administrators can program the O&M functions of a CloudEngine S5535-S-V2 switch through Python scripts to quickly innovate functions and implement intelligent O&M.

Product Specifications

Item	CloudEngine S5535-S24HS4XE-V2
Fixed port	24 x GE SFP ports, 1 x DB50 port, 4 x 10 GE SFP+ ports, 2 x 12GE stack ports
Dimensions (H x W x D)	43.6 mm x 442 mm x 420 mm
Chassis height	1 U
Chassis weight (including packaging)	7.35 kg
Power supply type	<ul style="list-style-type: none">600 W PoE AC1000 W PoE AC1000 W PoE DC
Rated voltage range	<ul style="list-style-type: none">AC input: 100 V AC to 240 V AC, 50/60 HzHigh-Voltage DC input: 240 V DCDC input: -48 V DC to -60 V DC
Maximum voltage range	<ul style="list-style-type: none">AC input: 90 V AC to 290 V AC, 45 Hz to 65 HzHigh-Voltage DC input: 190 V DC to 290 V DCDC input: -38.4 V DC to -72 V DC
Typical power consumption	53.1W
Maximum power consumption	<ul style="list-style-type: none">72.72 W (without PD)1940.45 W(with PD,PD Power consumption of :1710W)
Noise	<ul style="list-style-type: none">Under normal temperature (sound power): 48.7dB (A)Under high temperature (sound power): 58.2dB (A)Under normal temperature (sound pressure): 36.7dB (A)
Long-term operating temperature	<ul style="list-style-type: none">0-1800 m altitude: -5°C to +50°C1800-5000 m altitude: The operating temperature reduces by 1°C every time the altitude increases by 220 m.
Storage temperature	-40°C to +70°C
Relative humidity	5% to 95% (non-condensing)
Surge protection specification (service port)	NA
Surge protection specification (power port)	<ul style="list-style-type: none">AC power port: ±6 kV in differential mode, ±6 kV in common modeDC power port: ±2 kV in differential mode, ±4 kV in common mode
Heat dissipation	Air-cooled heat dissipation and intelligent speed adjustment

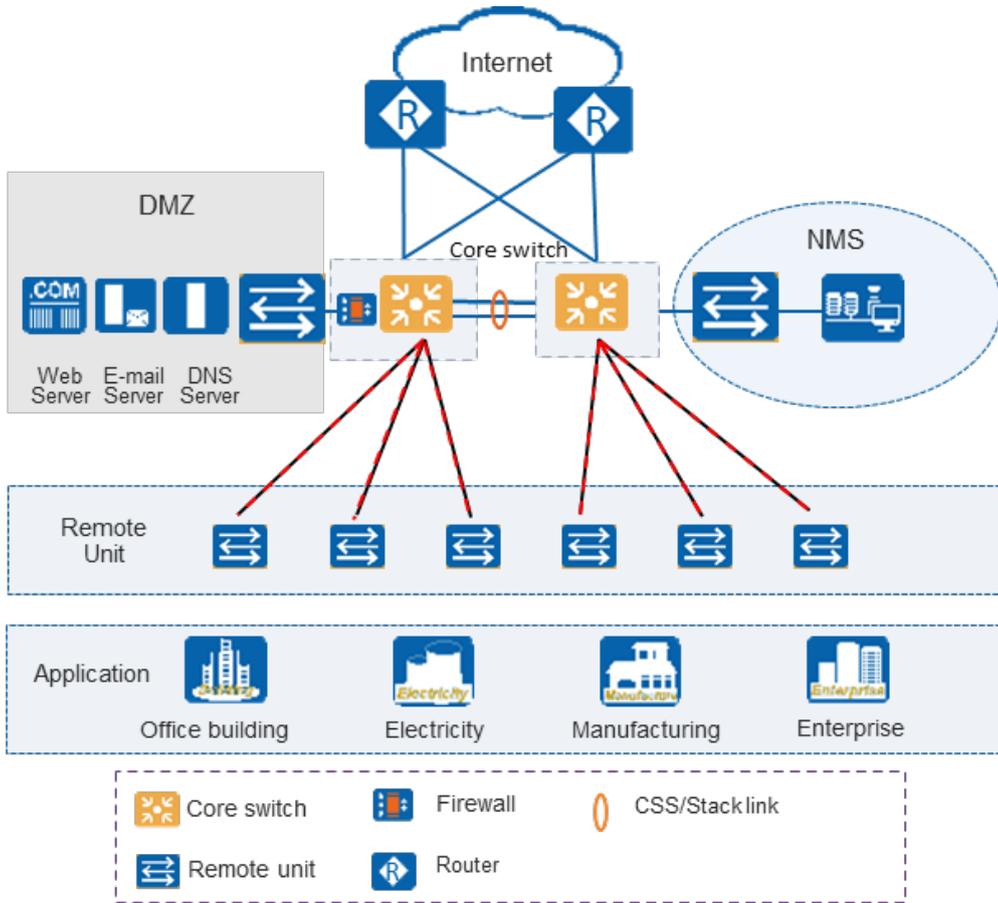
Service Features

Item	Description
MAC address table	IEEE 802.1d compliance
	32K MAC entries(MAX)
	MAC address learning and aging
	Static, dynamic, and blackhole MAC address entries
	Packet filtering based on source MAC addresses
VLAN	4K VLANs
	Voice VLAN
	MUX VLAN
	VLAN assignment based on MAC addresses, protocols, IP subnets, policies, and ports
	Basic QinQ & Selective QinQ
Reliability	Smart Link tree topology and Smart Link multi-instance, providing millisecond-level protection switchover
	STP (IEEE 802.1d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)
	ERPS (G.8032)
	BPDU protection, root protection, and loop protection
	LLDP
IP routing	Static route, RIPv1/v2, RIPng, OSPF, OSPFv3, IS-IS, IS-ISv6, BGP, BGP4+, ECMP, VRRP, VRRP6, Routing Policy, Policy-Based Routing
	Up to 8192 FIBv4 entries
	Up to 3072 FIBv6 entries
IPv6 features	Up to 3072 ND entries
	Path MTU (PMTU)
	IPv6 ping, IPv6 tracer, and IPv6 Telnet
Multicast	PIM DM, PIM SM, PIM SSM
	IGMP v1/v2/v3, IGMP v1/v2/v3 snooping, MLD Snooping and IGMP fast leave
	Multicast load balancing among member ports of a trunk
	Port-based multicast traffic statistics
	Multicast VLAN
QoS/ACL	Rate limiting on packets sent and received by a port
	Packet redirection
	Port-based traffic policing and two-rate three-color CAR
	Eight queues on each port
	DRR, SP and DRR+SP queue scheduling algorithms
	Re-marking of the 802.1p priority and DSCP priority

Item	Description
	Packet filtering at Layer 2 to Layer 4, filtering out invalid frames based on the source MAC address, destination MAC address, source IP address, destination IP address, TCP/UDP port number, protocol type, and VLAN ID
	Rate limiting in each queue and traffic shaping on ports
	Network Slicing (VLAN)
Security	Hierarchical user management and password protection
	DoS attack defense, ARP attack defense, and ICMP attack defense
	Binding of the IP address, MAC address, port number, and VLAN ID
	Port isolation, port security, and sticky MAC
	Blackhole MAC address entries
	Limit on the number of learned MAC addresses
	IEEE 802.1x authentication and limit on the number of users on a port
	AAA authentication, RADIUS authentication, HWTACACS authentication, and NAC
	SSH v2.0
	HTTPS
	CPU defense
	Blacklist and whitelist
	IEEE 802.1x authentication, MAC address authentication
	DHCPv4 client/relay/server/snooping
	DHCPv6 client/relay
	Attack source tracing and punishment for IPv6 packets such as ND, DHCPv6
Management and maintenance	iStack
	Cloud management based on Netconf/Yang
	Virtual cable test
	SNMP v1/v2c/v3
	RMON
	Web-based NMS
	System logs and alarms of different levels
	802.3az EEE
	IFIT
	Port mirroring
	Registration Center Deployment
Interoperability	Supports VBST (Compatible with PVST/PVST+/RPVST)

Networking and Applications

CloudEngine S5535-S-V2 series hybrid optical-electrical switches are used in remote power supply scenarios. They can function as central switches to flexibly expand ports through remote units to provide access services for users.



Ordering Information

The following table lists ordering information of the CloudEngine S5535-S-V2 series hybrid optical-electrical switches.

Model	Product Description
CloudEngine S5535-S24HS4XE-V2	S5535-S24HS4XE-V2 (24*bundled ports(24*GE SFP ports, 24*PoE++ ports(DB50)), 4*10GE SFP+ ports, 2*12GE stack ports, without power module)
PAC600S56-EB	600 W PoE AC&240 V DC Power Module
PAC1000S56-EB	1000 W PoE AC&240 V DC Power Module
PDC1000S56-EB	1000 W PoE DC Power Module
L-MLIC-S55S	S55XX-S Series Basic SW,Per Device

More Information

For more information about Huawei Campus Switches, visit <http://www.huawei.com>

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