

CloudEngine S5731-S Series Switches Brochure





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Product Overview

The CloudEngine S5731-S series switches were developed based on next-generation high-performing hardware and the Huawei Versatile Routing Platform (VRP). The CloudEngine S5731-S supports simplified operations and maintenance (O&M), intelligent stack (iStack), flexible Ethernet networking. It also provides enhanced Layer 3 features and mature IPv6 features. The CloudEngine S5731-S 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 S5731-S series.

Models and Appearances	Description
 CloudEngine S5731-S24T4X	<ul style="list-style-type: none"> • 24 x 10/100/1000Base-T Ethernet ports, 4 x 10GE SFP+ ports • 1+1 power backup • Forwarding performance: 96 Mpps • Switching capacity: 128 Gbps/672 Gbps
 CloudEngine S5731-S24T4X-A	<ul style="list-style-type: none"> • 24 x 10/100/1000Base-T Ethernet ports, 4 x 10GE SFP+ ports • AC power supply • Forwarding performance: 96 Mpps • Switching capacity: 128 Gbps/672 Gbps
 CloudEngine S5731-S24T4X-D	<ul style="list-style-type: none"> • 24 x 10/100/1000Base-T Ethernet ports, 4 x 10GE SFP+ ports • DC power supply • Forwarding performance: 96 Mpps • Switching capacity: 128 Gbps/672 Gbps
 CloudEngine S5731-S24P4X	<ul style="list-style-type: none"> • 24 x 10/100/1000Base-T Ethernet ports, 4 x 10GE SFP+ ports • 1+1 power backup • PoE+ • Forwarding performance: 96 Mpps • Switching capacity: 128 Gbps/672 Gbps

Models and Appearances	Description
	<p><i>Note: GE 5~48 are GE ports by default. In V200R023C00 and later versions, port mode 2.5ge command can be used to set the port rate to 2.5GE.</i></p>

Note: The value before the slash (/) refers to the device's switching capability, while the value after the slash (/) means the system's switching capability.

Features and Highlights

Powerful Service Processing Capability and Multiple Security Control Mechanisms

- The CloudEngine S5731-S supports many Layer 2/Layer 3 multicast protocols such as PIM SM, PIM DM, PIM SSM, MLD, and IGMP snooping, to support multi-terminal high-definition video backhaul and video conferencing services.
- The CloudEngine S5731-S supports multiple Layer 3 features including OSPF, IS-IS, BGP, and VRRP, meeting enterprises' requirements on access and aggregation service bearing, and enabling a variety of voice, video, and data applications.
- The CloudEngine S5731-S supports MAC address authentication, 802.1x authentication, and Portal authentication, and implements dynamic delivery of policies (VLAN, QoS, and ACL) to users.
- The CloudEngine S5731-S provides a series of mechanisms to defend against DoS 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 change of the DHCP CHADDR value.
- The CloudEngine S5731-S sets up and maintains a DHCP snooping binding table, and discards the packets that do not match the table entries. You can specify DHCP snooping trusted and untrusted ports to ensure that users connect only to the authorized DHCP server.
- The CloudEngine S5731-S supports strict ARP learning, which protects a network against ARP spoofing attacks to ensure normal network access.

Easy O&M

- The CloudEngine S5731-S supports Super Virtual Fabric (SVF), which virtualizes the "Core/aggregation + Access switch + AP" structure into a logical device. The CloudEngine S5731-S provides the innovative network management solution in the industry to simplify device management. It allows plug-and-play access switches and APs. In addition, the CloudEngine S5731-S supports service configuration templates. The templates are configured on core devices and automatically delivered to access devices, enabling centralized control, simplified service configuration, and flexible configuration modification. The CloudEngine S5731-S functions as a client in an SVF system.
- The CloudEngine S5731-S supports zero-touch deployment, replacement of faulty devices without additional configuration, USB-based deployment, batch 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. The CloudEngine S5731-S 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.

Comprehensive VPN Technologies

- The CloudEngine S5731-S supports the MPLS function, and can be used as access devices of high-quality enterprise leased line.
- The CloudEngine S5731-S allows users in different VPNs to connect to the same switch and isolates users through multi-instance routing. Users in multiple VPNs connect to a provider edge (PE) device through the same physical port on the switch, which reduces the cost on VPN network deployment.

Multiple Reliability Mechanisms

- The CloudEngine S5731-S supports iStack. This technology can virtualize up to nine physical switches into one 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 a stack's ports, bandwidth, and processing capacity by simply adding member switches. 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.

- The CloudEngine S5731-S is equipped with two removable power modules that can work in 1+1 redundancy backup mode.
- In addition to traditional STP, RSTP, and MSTP, the CloudEngine S5731-S supports Huawei-developed Smart Ethernet Protection (SEP) technology and the latest Ethernet Ring Protection Switching (ERPS) standard. SEP is a ring protection protocol specific to the Ethernet link layer, and applies to various ring network topologies, such as open ring topology, closed ring topology, and cascading ring topology. This protocol is reliable, easy to maintain, and implements fast protection switching within 50 ms. ERPS is defined in ITU-T G. 8032. It implements millisecond-level protection switching based on traditional Ethernet MAC and bridging functions.
- The CloudEngine S5731-S supports Smart Link. One CloudEngine S5731-S switch can connect to multiple aggregation switches through multiple links, implementing backup of uplinks and significantly improving reliability of access devices.
- The CloudEngine S5731-S supports Ethernet OAM (IEEE 802.3ah/802.1ag) to detect link faults quickly.

Mature IPv6 Technologies

- The CloudEngine S5731-S uses the mature, stable VRP platform and supports IPv4/IPv6 dual stack, IPv6 RIPng, and IPv6 over IPv4 tunnels (including manual, 6-to-4, and ISATAP tunnels). With these IPv6 features, the CloudEngine S5731-S can be deployed on a pure IPv4 network, a pure IPv6 network, or a shared IPv4/IPv6 network, helping achieve IPv4-to-IPv6 transition.

Intelligent Stack (iStack)

- The CloudEngine S5731-S supports the iStack function that 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 a stack's ports, bandwidth, and processing capacity by simply adding member switches. iStack also simplifies device configuration and management. After a stack is set up, up to nine physical switches can be 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.

VXLAN Features

- VXLAN is used to construct a Unified Virtual Fabric (UVF). As such, multiple service networks or tenant networks can be deployed on the same physical network, and service and tenant networks are isolated from each other. This capability truly achieves 'one network for multiple purposes'. The resulting benefits include enabling data transmission of different services or customers, reducing the network construction costs, and improving network resource utilization.
- The CloudEngine S5731-S series switches are VXLAN-capable and allow centralized and distributed VXLAN gateway deployment modes. These switches also support the BGP EVPN protocol for dynamically establishing VXLAN tunnels and can be configured using NETCONF/YANG.

NOTE

For detailed information about VXLAN, visit

<https://e.huawei.com/en/material/onLineView?MaterialID=741ea70ef97e4dd8bc2b4ef350b48949>

PoE Power Supply

- Perpetual PoE: When a PoE switch is rebooted after the software version is upgraded, the power supply to PDs is not interrupted. This capability ensures that PDs are not powered off during the switch reboot.
- Fast PoE: PoE switches can supply power to PDs within 10s 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.

NOTE

For more information about PoE, visit

<https://e.huawei.com/en/material/onLineView?materialid=e28cc3ad158140e8af1547bc510ecd34>

Intelligent O&M

- The CloudEngine S5731-S provides telemetry technology to collect device data in real time and send the data to Huawei campus network analyzer (iMaster NCE-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.

- The CloudEngine S5731-S supports a variety of intelligent O&M features for audio and video services, including the enhanced Media Delivery Index (eMDI). With this eMDI function, the switch can function as a monitored node to periodically conduct statistics and report audio and video service indicators to the CampusInsight platform. In this way, the CampusInsight platform can quickly demarcate audio and video service quality faults based on the results of multiple monitored nodes.

Intelligent Upgrade

- Switches support the intelligent upgrade feature. Specifically, switches obtain the version upgrade path and download 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.

Big Data Security Collaboration

- The CloudEngine S5731-S switches can detect network security threats, display the security posture across the entire network, and enable automated or manual response to security threats. The HiSec Insight delivers the security policies to the iMaster NCE-Campus. The iMaster NCE-Campus then delivers such policies to switches that will handle security events accordingly. All these ensure campus network security.
- The CloudEngine S5731-S supports Encrypted Communication Analytics(ECA). It uses built-in ECA probes to extract characteristics of encrypted streams based on NetStream sampling and Service Awareness(SA), generates metadata, and reports the metadata to HiSec Insight. The HiSec Insight uses the AI algorithm to train the traffic model and compare characteristics of extracted encrypted traffic to identify malicious traffic. The HiSec Insight displays detection results on the GUI, provides threat handling suggestions, and automatically isolates threats with the iMaster NCE-Campus to ensure campus network security.
- The CloudEngine S5731-S supports deception. It functions as a sensor to detect threats such as IP address scanning and port scanning on a network and lures threat traffic to the honeypot for further checks. The honeypot performs in-depth interaction with the initiator of the threat traffic, records various application-layer attack methods of the initiator, and reports security logs to the HiSec Insight. The HiSec Insight analyzes security logs. If the HiSec Insight determines that the suspicious traffic is an attack, it generates an alarm and provides handling suggestions. After the administrator confirms the alarm, the HiSec Insight delivers a policy to the iMaster NCE-Campus. The iMaster NCE-Campus delivers the policy to the switch for security event processing, ensuring campus network security.

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 (OPS) is an open programmable system based on the Python language. IT administrators can program the O&M functions of a switch through Python scripts to quickly innovate functions and implement intelligent O&M.

Licensing

CloudEngine S5731-S supports both the traditional feature-based licensing mode and the latest Huawei IDN One Software (N1 mode for short) licensing mode. The N1 mode is ideal for deploying Huawei CloudCampus Solution in the on-premises scenario, as it greatly enhances the customer experiences in purchasing and upgrading software services with simplicity.

Software Package Features in N1 Mode

Switch Functions	N1 Basic Software	N1 Foundation Software Package	N1 Advanced Software Package
Basic network functions:	√	√	√

Switch Functions	N1 Basic Software	N1 Foundation Software Package	N1 Advanced Software Package
Layer 2 functions, IPv4, IPv6, SVF, and others Note: For details, see the Service Features			
Basic network automation based on the iMaster NCE-Campus: <ul style="list-style-type: none"> Basic automation: Plug-and-play Basic monitoring: Application visualization NE management: Image and topology management and discovery User access authentication 	x	√	√
Advanced network automation and intelligent O&M: VxLAN, free mobility, and CampusInsight basic functions	x	x	√

Note: Only V200R019C00 and later versions can support N1 mode

Product Specifications

Item	CloudEngine S5731-S24T4X	CloudEngine S5731-S24P4X	CloudEngine S5731-S48T4X	CloudEngine S5731-S48P4X
Fixed port	24 x 10/100/1000Base-T ports, 4 x 10GE SFP+ ports	24 x 10/100/1000Base-T (PoE+) ports, 4 x 10GE SFP+ ports	48 x 10/100/1000Base-T ports, 4 x 10GE SFP+ ports	48 x 10/100/1000Base-T (PoE+) ports, 4 x 10GE SFP+ ports
Dimensions (H x W x D)	43.6 mm x 442 mm x 420 mm	43.6 mm x 442 mm x 420 mm	43.6 mm x 442 mm x 420 mm	43.6 mm x 442 mm x 420 mm
Chassis height	1 U	1 U	1 U	1 U
Chassis weight (including packaging)	8.4 kg	8.6 kg	8.55 kg	8.8 kg
Power supply type	<ul style="list-style-type: none"> 150 W AC (pluggable) 600 W AC (pluggable) 180 W DC (pluggable) 1000 W DC (pluggable) 	<ul style="list-style-type: none"> 1000 W PoE AC (pluggable) 1000 W PoE DC (pluggable) 600 W PoE AC (pluggable) 	<ul style="list-style-type: none"> 150 W AC (pluggable) 600 W AC (pluggable) 180 W DC (pluggable) 1000 W DC (pluggable) 	<ul style="list-style-type: none"> 1000 W PoE AC (pluggable) 1000 W PoE DC (pluggable) 600 W PoE AC (pluggable)
Rated voltage range	<ul style="list-style-type: none"> AC input (150 W AC): 100 V AC to 240 V AC, 50/60 Hz AC input (600 W AC): 100 V AC to 240 V AC, 50/60 Hz DC input (180/1000 W DC): -48 VDC to -60 V 	<ul style="list-style-type: none"> AC input (1000 W AC PoE): 100 V AC to 240 V AC, 50/60 Hz DC input (1000 W AC PoE): 240 V DC DC input (1000 W DC PoE): -48 VDC to -60 V DC 	<ul style="list-style-type: none"> AC input (150 W AC): 100 V AC to 240 V AC, 50/60 Hz AC input (600 W AC): 100 V AC to 240 V AC, 50/60 Hz DC input (180/1000 W DC): -48 VDC to -60 V 	<ul style="list-style-type: none"> AC input (1000 W AC PoE): 100 V AC to 240 V AC, 50/60 Hz DC input (1000 W AC PoE): 240 V DC DC input (1000 W DC PoE): -48 VDC to -60 V DC

Item	CloudEngine S5731-S24T4X	CloudEngine S5731-S24P4X	CloudEngine S5731-S48T4X	CloudEngine S5731-S48P4X
	DC	<ul style="list-style-type: none"> AC input(600 /1000W AC PoE): 100 V AC to 130 V AC, 200 V AC to 240 V AC, 50/60 Hz 	DC	<ul style="list-style-type: none"> AC input(600 /1000W AC PoE): 100 V AC to 130 V AC, 200 V AC to 240 V AC, 50/60 Hz
Maximum voltage range	<ul style="list-style-type: none"> AC input (150 W AC): 90 V AC to 264 V AC, 47 Hz to 63 Hz AC input (600 W AC): 90 V AC to 290 V AC, 45 Hz to 65 Hz High-voltage DC input (600 W AC): 190 V DC to 290 V DC (meeting 240 V high-voltage DC certification) DC input (180/1000 W DC): -38.4 V DC to -72V DC 	<ul style="list-style-type: none"> AC input (1000 W AC PoE): 90 V AC to 290 V AC, 45 Hz to 65 Hz High-voltage DC input (1000 W AC PoE): 190 V DC to 290 V DC (meeting 240 V high-voltage DC certification) DC input (1000 W DC PoE): -38.4 V DC to -72V DC AC input(600 /1000W AC PoE): 90 V AC to 290 V AC, 45 Hz to 65 Hz 	<ul style="list-style-type: none"> AC input (150 W AC): 90 V AC to 264 V AC, 47 Hz to 63 Hz AC input (600 W AC): 90 V AC to 290 V AC, 45 Hz to 65 Hz High-voltage DC input (600 W AC): 190 V DC to 290 V DC (meeting 240 V high-voltage DC certification) DC input (180/1000 W DC): -38.4 V DC to -72V DC 	<ul style="list-style-type: none"> AC input (1000 W AC PoE): 90 V AC to 290 V AC, 45 Hz to 65 Hz High-voltage DC input (1000 W AC PoE): 190 V DC to 290 V DC (meeting 240 V high-voltage DC certification) DC input (1000 W DC PoE): -38.4 V DC to -72V DC AC input(600 /1000W AC PoE): 90 V AC to 290 V AC, 45 Hz to 65 Hz
Maximum power consumption	114 W	<ul style="list-style-type: none"> 121 W (without PD) 977 W (with PD, PD power consumption of 720 W) 	124 W	<ul style="list-style-type: none"> 132 W (without PD) 1750 W (with PD, PD power consumption of 1440 W)
Noise	<ul style="list-style-type: none"> Under normal temperature (sound power): 57.5dB (A) Under high temperature (sound power): 70.9dB (A) Under normal temperature (sound pressure): 47.5dB (A) 	<ul style="list-style-type: none"> Under normal temperature (sound power): 62.3dB (A) Under high temperature (sound power): 71.8dB (A) Under normal temperature (sound pressure): 52.8dB (A) 	<ul style="list-style-type: none"> Under normal temperature (sound power): 57.5dB (A) Under high temperature (sound power): 70.9dB (A) Under normal temperature (sound pressure): 47.5dB (A) 	<ul style="list-style-type: none"> Under normal temperature (sound power): 62.3dB (A) Under high temperature (sound power): 71.8dB (A) Under normal temperature (sound pressure): 52.8dB (A)
Operating temperature	<ul style="list-style-type: none"> 0-1800 m altitude: -5°C to +45°C 1800-5000 m altitude: The operating temperature reduces by 1°C every time the altitude increases by 220 m. 	<ul style="list-style-type: none"> 0-1800 m altitude: -5°C to +45°C 1800-5000 m altitude: The operating temperature reduces by 1°C every time the altitude increases by 220 m. 	<ul style="list-style-type: none"> 0-1800 m altitude: -5°C to +45°C 1800-5000 m altitude: The operating temperature reduces by 1°C every time the altitude increases by 220 m. 	<ul style="list-style-type: none"> 0-1800 m altitude: -5°C to +45°C 1800-5000 m altitude: The operating temperature reduces by 1°C every time the altitude increases by 220 m.

Item	CloudEngine S5731-S24T4X	CloudEngine S5731-S24P4X	CloudEngine S5731-S48T4X	CloudEngine S5731-S48P4X
Storage temperature	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Relative humidity	5% to 95% (non-condensing)	5% to 95% (non-condensing)	5% to 95% (non-condensing)	5% to 95% (non-condensing)
Surge protection specification (service port)	Common mode: ±6 kV	Common mode: ±6 kV	Common mode: ±6 kV	Common mode: ±6 kV
Surge protection specification (power port)	<ul style="list-style-type: none"> AC power port: ±6 kV in differential mode, ±6 kV in common mode DC power port: ±2 kV in differential mode, ±4 kV in common mode 	<ul style="list-style-type: none"> AC power port: ±6 kV in differential mode, ±6 kV in common mode DC power port: ±2 kV in differential mode, ±4 kV in common mode 	<ul style="list-style-type: none"> AC power port: ±6 kV in differential mode, ±6 kV in common mode DC power port: ±2 kV in differential mode, ±4 kV in common mode 	<ul style="list-style-type: none"> AC power port: ±6 kV in differential mode, ±6 kV in common mode DC power port: ±2 kV in differential mode, ±4 kV in common mode
Heat dissipation	Air cooling heat dissipation, intelligent speed adjustment	Air cooling heat dissipation, intelligent speed adjustment, and pluggable fans	Air cooling heat dissipation, intelligent speed adjustment	Air cooling heat dissipation, intelligent speed adjustment, and pluggable fans

Item	CloudEngine S5731-S32ST4X	CloudEngine S5731-S32ST4X-A/D	CloudEngine S5731-S48S4X	CloudEngine S5731-S48S4X-A
Fixed port	24 x 1/2.5GE SFP ports, 8 x 10/100/1000Base-T ports, 4 x 10GE SFP+ ports	24 x 1/2.5GE SFP ports, 8 x 10/100/1000Base-T ports, 4 x 10GE SFP+ ports	44 x 1/2.5GE SFP ports, 4 x GE SFP ports, 4 x 10GE SFP+ ports	44 x 1/2.5GE SFP ports, 4 x GE SFP ports, 4 x 10GE SFP+ ports
Dimensions (H x W x D)	43.6 mm x 442 mm x 420 mm	43.6 mm x 442 mm x 220 mm	43.6 mm x 442 mm x 420 mm	43.6 mm x 442 mm x 220 mm
Chassis height	1 U	1 U	1 U	1 U
Chassis weight (including packaging)	7.35 kg	4.02/3.87 kg	7.51 kg	4.69 kg
Power supply type	<ul style="list-style-type: none"> 150 W AC (pluggable) 600 W AC (pluggable) 180 W DC (pluggable) 1000 W DC (pluggable) 	Built-in AC/DC	<ul style="list-style-type: none"> 150 W AC (pluggable) 600 W AC (pluggable) 180 W DC (pluggable) 1000 W DC (pluggable) 	Built-in AC
Rated voltage range	<ul style="list-style-type: none"> AC input (150 W AC): 100 V AC to 240 V AC, 50/60 Hz AC input (600 W AC): 100 V AC to 240 V AC, 50/60 	AC model: <ul style="list-style-type: none"> AC input : 100 V AC to 240 V AC, 50/60 Hz DC input: 240V DC DC model:	<ul style="list-style-type: none"> AC input (150 W AC): 100 V AC to 240 V AC, 50/60 Hz AC input (600 W AC): 100 V AC to 240 V AC, 50/60 	<ul style="list-style-type: none"> AC input: 100 V AC to 240 V AC, 50/60 Hz DC input: 240V DC