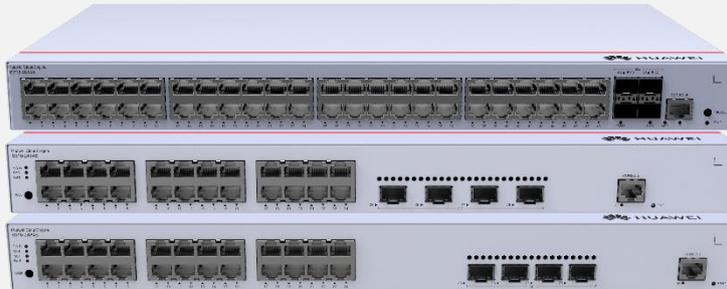# Huawei CloudEngine S310 Series Switches

High reliability

● support the Smart Link function, which implements backup of uplinks. One switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices

Stable PoE power

● Fast PoE:PoE switches can supply power to PDs within seconds upon power-on
● Perpetual PoE:When a PoE switch restarts , it continues to supply power to downstream PDs, ensuring uninterrupted PoE power supply

Smart Upgrade

● The upgrade process is highly automated as it supports one-click upgrade
● This feature helps customers reduce considerable maintenance costs
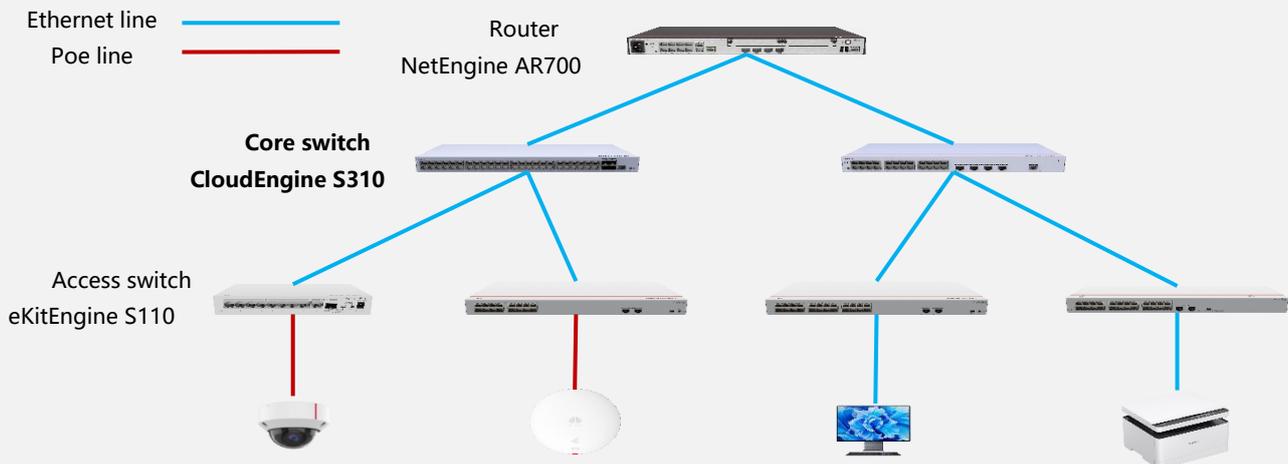
Based on the next-generation high-performance hardware and software platform, Huawei CloudEngine S310 series switches stand out with features such as intelligent stack (iStack), flexible Ethernet networking, and diversified security control. In addition, CloudEngine S310 series switches support multiple Layer 3 routing protocols, delivering higher performance and more powerful service processing capabilities. These make them ideal for various application scenarios, such as enterprise campus access and gigabit to the desktop.

Product Features and Highlights

Flexible Ethernet Networking

- In addition to traditional Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and Multiple Spanning Tree Protocol (MSTP), CloudEngine S310 series switches support Huawei-developed Smart Ethernet Protection (SEP) technology and the latest Ethernet Ring Protection Switching (ERPS) standard in the industry. ERPS is defined in ITU-T G.8032. It provides millisecond-level protection switching based on traditional Ethernet MAC and bridging functions.

- CloudEngine S310 series switches support the Smart Link function, which implements backup of uplinks. One switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices.

Diversified Security Control

- CloudEngine S310 series switches support MAC address authentication and 802.1X authentication and can dynamically deliver policies (VLAN, QoS, and ACL) for users. CloudEngine S310 series switches support port-based 802.1X authentication, MAC address authentication, and multi-mode authentication.

- CloudEngine S310 series switches provide 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 spoofing attacks, DHCP request flood attacks, and attacks with variable DHCP CHADDR values in packets.

- CloudEngine S310 series switches can generate and maintain DHCP snooping binding entries and discard invalid packets that do not match the binding entries. DHCP snooping trusted and untrusted ports can be specified to ensure that users connect only to the authorized DHCP server.

- CloudEngine S310 series switches support strict ARP entry learning, which prevents ARP spoofing from exhausting ARP entries and ensures Internet access of authorized users.

Easy Operations and Maintenance

- CloudEngine S310 series switches support Easy Operation, a solution that provides zero-touch deployment, replacement of faulty devices without additional configuration, USB-based deployment, batch configuration, and batch remote upgrade. The Easy Operation solution facilitates device deployment, upgrade, service provisioning, and other management and maintenance operations, and also greatly reduces O&M costs. CloudEngine S310 series switches can be managed and maintained using SNMPv1, SNMPv2c, SNMPv3, CLI, web system, or SSHv2.0. Additionally, they support remote network monitoring (RMON), multiple log hosts, port traffic statistics collection, and network quality analysis, facilitating network optimization and reconstruction.

- CloudEngine S310 series switches support the MUX VLAN function. MUX VLAN contains a principal VLAN and multiple subordinate VLANs. Subordinate VLANs can be classified into group VLANs and separate VLANs. Subordinate VLANs can communicate with the principal VLAN. Ports on a subordinate group VLAN can communicate with each other, whereas ports on a subordinate separate VLAN cannot communicate with each other. Additionally, CloudEngine S310 series switches support VLAN Central Management Protocol (VCMP) and VLAN-based Spanning Tree (VBST).

Note: All models that provide USB ports support this function.

PoE Power Supply

PoE models of CloudEngine S310 series switches provide the following capabilities:

- Fast PoE: PoE switches can supply power to PDs within seconds upon power-on, which is different from common switches that supply power to PDs in 1 to 3 minutes after power modules are installed. When a PoE switch restarts due to a power failure, it continues to supply power to PDs immediately after being powered on without waiting until it completes the restart. This greatly shortens the power-off time of PDs.

- Perpetual PoE: When a PoE switch restarts (for example, during software upgrade), it continues to supply power to downstream PDs, ensuring uninterrupted PoE power supply.

Smart Upgrade

- Based on Huawei Online Upgrade Platform (HOUP), CloudEngine S310 series switches support smart upgrade. They obtain the version upgrade path from the HOUP and download the new system software. The upgrade process is highly automated as it supports one-click upgrade. In addition, this feature supports system software pre-loading, which greatly shortens the upgrade time and reduces the service interruption time.

- Smart upgrade greatly simplifies device upgrade operations, making it possible for customers to upgrade versions by themselves. This feature helps customers reduce considerable maintenance costs. In addition, the upgrade policy of the HOUP is used to standardize the upgrade path, which greatly reduces the risk of upgrade failure.

Cloud Management

- CloudEngine S310 series 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).
- The Huawei cloud management platform allows users to configure, monitor, and inspect switches on the cloud, reducing onsite deployment and O&M manpower costs and decreasing network OPEX.

OPS

- The 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.

Product Specifications

CloudEngine S310 series:

Item	CloudEngine S310-24T4S	CloudEngine S310-24P4S	CloudEngine S310-48T4S
Fixed port	24 x 10/100/1000BASE-T ports, 4 x GE SFP ports	24 x 10/100/1000BASE-T PoE+ ports, 4 x GE SFP ports	48 x 10/100/1000BASE-T ports, 4 x GE SFP ports
Chassis dimensions (H x W x D)	43.6 mm x 442 mm x 220 mm	43.6 mm x 442 mm x 220 mm	43.6 mm x 442 mm x 220 mm
Chassis height	1 U	1 U	1 U
Weight	3.44 kg (including packaging materials) 2.32 kg (excluding packaging materials)	3.79 kg (including packaging materials) 2.92 kg (excluding packaging materials)	3.59 kg (including packaging materials) 2.71 kg (excluding packaging materials)
Power module type	Built-in AC power module	Built-in AC power module	Built-in AC power module
Rated voltage	100 V AC to 240 V AC, 50/60 Hz	100 V AC to 240 V AC, 50/60 Hz	100 V AC to 240 V AC, 50/60 Hz
Maximum voltage	AC input: 90 V AC to 290 V AC, 45 Hz to 65 Hz	AC input: 90 V AC to 290 V AC, 45 Hz to 65 Hz	AC input: 90 V AC to 290 V AC, 45 Hz to 65 Hz
Maximum power consumption	34.04 W	- Without PoE: 43.6 W - With PoE: 488.6 W (PoE: 400 W)	52.05 W
Noise	- Sound power at normal temperature: 47 dB (A) - Sound power at high temperature: 51 dB (A) - Sound pressure at normal temperature: 35 dB (A)	- Sound power at normal temperature: 49.3 dB (A) - Sound power at high temperature: 63 dB (A) - Sound pressure at normal temperature: 37.3 dB (A)	- Sound power at normal temperature: 46.6 dB (A) - Sound power at high temperature: 54.3 dB (A) - Sound pressure at normal temperature: 34.6 dB (A)

Item	CloudEngine S310-24T4S	CloudEngine S310-24P4S	CloudEngine S310-48T4S
Long-term operating temperature	• −5°C to +50°C (0 m to 1800 m) • When the altitude ranges between 1800 m and 5000 m, the operating temperature reduces by 1°C each time the altitude increases by 220 m.	• −5°C to +50°C (0 m to 1800 m) When the altitude ranges between 1800 m and 5000 m, the operating temperature reduces by 1°C each time the altitude increases by 220 m.	• −5°C to +50°C (0 m to 1800 m) When the altitude ranges between 1800 m and 5000 m, the operating temperature reduces by 1°C each time the altitude increases by 220 m.
Storage temperature	−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)
Heat dissipation mode	Air cooling, intelligent fan speed adjustment	Air cooling, intelligent fan speed adjustment	Air cooling, intelligent fan speed adjustment

Service Features

Feature	Description
MAC features	Automatic MAC address learning and aging
	16K MAC address entries at maximum
	Static, dynamic, and blackhole MAC address entries
	MAC address synchronization
	MAC security
VLAN features	4094 VLANs
	Voice VLAN
	MUX VLAN
	Basic/Selective QinQ
	VLAN stacking
Ethernet switching	Smart Link tree topology and Smart Link multi-instance, providing millisecond-level protective switchover
	G.8032 Ethernet Ring Protection Switching (ERPS)
	STP (IEEE 802.1d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)
	VBST
	BPDU tunneling and BPDU MAC address modification
	Eth-Trunk: Eth-Trunk interface creation, interface addition and removal, trunk hash algorithms, DLB, independent VLAN, flexibly independent VLAN, etc.
	LACP: static LACP and Eth-Trunk interface control
	M-LAG Lite: cross-device link aggregation mechanism supported by YunShan devices (load balancing supported)
IPv4 features	IPv4 protocol stack: ICMP, UDP, TCP, and ping/trace

Feature	Description
	Static routing and policy-based routing (PBR)
	512 FIBv4 entries at maximum
IPv6 features	IPv6 protocol stack: IPv6 stack, ICMP6, UDP6, and TCP6
	512 FIBv6 entries at maximum
ARP	ARP basics
	1024 ARP entries at maximum
ND	Neighbor Discovery (ND)
	512 ND entries at maximum
DNS	DNS client supported by both IPv4 and IPv6 devices (only A and AAAA types supported)
DHCPv4	DHCPv4 client, DHCPv4 server, and DHCPv4 snooping
DHCPv6	DHCPv6 client and DHCPv6 snooping
IP multicast	IGMP snooping
Reliability	Smart Link
	Monitor Link
	BFD
	VRRPv4 and VRRPv6
User access authentication	AAA, RADIUS, HWTACACS, Dot1x Access, and MAC Access
QoS	MQC
	QoS LSW: priority mapping, traffic policing, traffic shaping, congestion avoidance, congestion management, and AutoQoS CE: "priority mapping, CPU packet sending priority, congestion avoidance, congestion management, buffer management, traffic shaping, and traffic policing" in chapters related to QoS in the product documentation, and "telemetry-based buffer microburst monitoring" in chapters related to O&M and monitoring in the product documentation
Security features	Port isolation: port isolation modes and isolation groups
	Storm control: storm control and storm suppression
	ACL: ACL basic functions and simplified ACL (SACL not supported)
	CPU defense: CPU attack defense, MAC address attack defense, and attack defense
	ARP security: dynamic ARP inspection (DAI), ARP packet rate limiting, ARP anti-spoofing, and ARP gateway conflict detection
	ND security: IPv6 RA guard
	IP security: IPSG (IPv4), abnormal packet detection, and attack defense
	Port security: secure dynamic MAC addresses, secure static MAC addresses, and sticky MAC addresses
	PKI
Network	LLDP

Feature	Description
management and monitoring	iPCA
	NQA
	Telemetry
	OPS
	SNMP
	Web management
	NETCONF
	RMON
	Cloud management
Device management	Hardware: 1. Hardware-related management, including LPU, power module, fan module, electronic label, memory, and flash management, including HG fault isolation 2. Features of LPU startup program 3. Energy saving, LPU registration management, optical module management, port management, electronic labels, and FMEA detection 4. Indicators
	NTP
	Information center
	Fault management
Management and maintenance	User login management: Telnet, SSH, and VTY
	File management: FTP, SFTP, TFTP, and local files
	Configuration management: CLI, NETCONF, RESTful, and northbound APIs
	Competence center: competence center and PAF
	Time management: time, time zone, and DST
	Resource monitoring: ● CPU, memory, file handles, task monitoring, memory monitoring, CPU monitoring, exceptions, interruptions, system snapshots, watchdog, patches, Docker mechanism, container repositories, etc. ● Message mechanism, process management, resource monitoring (such as CPU and memory), resource management (such as memory, SMBUF, and storage media), MOD, system diagnosis (such as black boxes, logs, and system statistics), basic mechanism services (including queues, timers, locks, lock-free, events, atomic operations, and other common basic modules), capability sets, system startup, installation and deployment, etc.
	Exception monitoring: separately listed infinite loops, assertions, memory, Kbox, black boxes, and corefiles
	Black box
	Corefile
	Security permission: SELinux and file permissions
	Key management
	Deployment: 1. ZTP

Feature	Description
	2. USB-based deployment
	3. PnP-based deployment
Other high-value features	SZTP
	Configuration rollback
	RESTCONF
	Telemetry
	gRPC
	EVA
Interoperability	VBST, working with PVST, PVST+, and RPVST

More Information

For more information about Huawei switches, visit **https://e.huawei.com/en/** or contact Huawei's local sales office.

Alternatively, you can contact us through one of the following methods:

- Global branches: **https://e.huawei.com/en/about/service-hotline**
- Enterprise technical support website: **https://support.huawei.com/enterprise/en/index.html**
- Email: support_e@huawei.com

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