CloudEngine S5736-S Series Multi-GE Switches

CloudEngine S5736-S series switches are standard Multi-GE access switches that provide 24-port model, and provide four 10GE SFP+ uplink ports and one extended slot.

Product Overview

CloudEngine S5736-S series Switches are standard Multi-GE access switches developed by Huawei for the Wi-Fi 6 era. The CloudEngine S5736-S builds on Huawei's unified Versatile Routing Platform (VRP) and boasts various IDN features. This series switches support simplified operations and maintenance (O&M), flexible Ethernet networking, enhanced Layer 3 features and mature IPv6 features.It can also provide flexible port access rates and powerful PoE power supply capabilities, making it to be a good choice for WLAN APs in the high-quality campus networks. With these merits, the CloudEngine S5736-S 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 S5736-S series.

Models and Appearances	Description
 CloudEngine S5736-S24UM4XC	• 24 × 100M/1G/2.5G/5G/10G Base-T Ethernet ports, 4 x 10GE SFP+ ports • One extended slot • PoE++ • 1+1 power backup • Forwarding performance: 480 Mpps • Switching capacity*: 880 Gbps/2.72 Tbps *Note: All ports support GE by default. You can purchase right-to-use (RTU) licenses to upgrade the port rate (every 12 ports per RTU license) from GE to 2.5GE, 5GE, or 10GE.*

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

High-density Multi-GE Access Interface

• The uplink bandwidth of WLAN APs has been increased from 2.5 Gbit/s in 802.11ac to 5 Gbit/s or 10 Gbit/s. Traditional gigabit access or Multi-gigabit bundled access cannot meet the uplink bandwidth requirements of APs. With the launch of the CloudEngine S5736-S series Multi-GE switches, the ports support 100M/1/2.5/5/10G auto-sensing, meeting the bandwidth

requirements of high-speed wireless APs in the Wi-Fi 6 era. In addition, Multi-GE ports support up to 90 W PoE++, which provides high-power power for powered devices (PDs) such as APs and surveillance cameras.

- The S5736-S series switches provide industry-leading Multi-GE port density, switching capacity, and packet forwarding rate. A single switch supports a maximum of 24 100M/1G/2.5G/5G/10G Base-T auto-sensing ports and 10G optical uplink ports, provides one extended slot to support 8*10GE or 4*40GE subcards, meets various device interconnection requirements and can be seamlessly integrated into the existing network.

Flexible Ethernet Networking

- In addition to traditional Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and Multiple Spanning Tree Protocol (MSTP), the CloudEngine S5736-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 S5736-S supports Smart Link and Virtual Router Redundancy Protocol (VRRP), which implement backup of uplinks. One CloudEngine S5736-S switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices.

Various Security Control Methods

- The CloudEngine S5736-S supports 802.1x authentication, MAC address authentication, Portal authentication, and hybrid authentication, and can dynamically delivery user policies such as VLANs, QoS policies, and access control lists (ACL). It also supports user management based on user groups.

- The CloudEngine S5736-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 S5736-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 S5736-S supports strict ARP learning, which prevents ARP spoofing attackers from exhausting ARP entries.

- The CloudEngine S5736-S supports Media Access Control Security (MACsec) with the port of subcard (8*10GE SFP+ subcard) . It provides identity authentication, data encryption, integrity check, and replay protection to protect Ethernet frames and prevent attack packets.

Mature IPv6 Features

- The CloudEngine S5736-S is developed based on the mature, stable VRP and supports IPv4/IPv6 dual stacks, IPv6 routing protocols (RIPng, OSPFv3, BGP4+, and IS-IS for IPv6). With these IPv6 features, the CloudEngine S5736-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)

- CloudEngine S5736-S 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 S5736-S support stacking through fixed downlink/uplink ports or the extended port of subcard.

Intelligent O&M

- The CloudEngine S5736-S 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.

- The CloudEngine S5736-S supports a variety of intelligent O&M features for audio and video services, including the enhanced Media Delivery Index (eMDI). With this eDMI 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.

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 S5736-S series switches are hardware ready to support VXLAN 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.

PoE Function

CloudEngine S5736-S PoE models can support PoE++(up to 90W power supply), Meeting high-power power supply requirements for Wi-Fi 6 APs, IP cameras, and Video phones.

- **Perpetual PoE**: When a PoE switch is abnormal Power-off or 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 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.

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.

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).

Open Programmability System(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

IDN One Software

CloudEngine S5736-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.

Switch Functions	N1 Basic Software	N1 Foundation Software Package	N1 Advanced Software Package
Basic network functions: Layer 2 functions, IPv4, IPv6, SVF, and others Note: For details, see the Service Features	√	√	√
Basic network automation based on the iMaster NCE-Campus: • Basic automation: Plug-and-play • Basic monitoring: Application visualization • NE management: Image and topology management and discovery	×	√	√
Advanced network automation and intelligent O&M: User access authentication and CampusInsight basic functions	×	×	√

Note: Only V200R020C00 and later versions can support N1 mode

RTU license

CloudEngine S5736-S series Multi-GE switches use the innovative RTU license design. The RTU license is used to flexibly manage and control downlink Multi-GE ports (every 12 ports in a group).The switches can be configured and upgraded on demand,when working with Wi-Fi 6 APs, aggregation switches, and core switches, they can quickly build a flexible campus network to meet actual service requirements ,   enable customers' networks and services to grow together, and avoid excessive investment

RTU license

RTU license decription	CloudEngine S5736-S24UM4XC
1G to 2.5G Electronic RTU License, 12-port	√
1G to 5G Electronic RTU License, 12-port	√
1G to 10G Electronic RTU License, 12-port	√
2.5G to 5G Electronic RTU License, 12-port	√
2.5G to 10G Electronic RTU License, 12-port	√
5G to 10G Electronic RTU License, 12-port	√

Product Specifications

Item	CloudEngine S5736-S24UM4XC
Fixed port	24×100M/1G/2.5G/5G/10GBase-T Ethernet ports, 4 x 10GE SFP+ ports
Extended slot	One extended slot, support 2*25GE SFP28 or 8 x 10GE SFP+, 4 x 40GE QSFP+ cards
Dimensions (H x W x D)	43.6 mm x 442 mm x 420 mm
Chassis height	1U

Item	CloudEngine S5736-S24UM4XC
Chassis weight (full configuration weight)	9.7 kg
Power supply type	1000 W PoE AC (pluggable)
Rated voltage range	• AC input (1000 W AC PoE): 100 V AC to 240 V AC, 50/60 Hz • High-voltage DC input (1000 W AC PoE): 240 V DC
Maximum voltage range	• 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)
Maximum power consumption	• 176W (without PD) • 1967W (with PD, PD power consumption of 1791 W)
Noise	• Under normal temperature (sound power): 70.1dB(A) • Under high temperature (sound power): 82.6dB(A) • Under normal temperature (sound pressure): 58.1dB(A)
Operating temperature	• 0-1800 m altitude: -5°C to 45°C • 1800-5000 m altitude: The operating temperature reduces by 1ºC every time the altitude increases by 220 m.
Storage temperature	-40°C～70°C
Relative humidity	5% to 95% (non-condensing)
Surge protection specification (power port)	Differential mode: ±6 kV Common mode: ±6 kV
Heat dissipation	Air cooling heat dissipation, intelligent speed adjustment, and pluggable fans

Service Features

Except for special instructions, the following features are supported by CloudEngine S5736-S with N1 basic software.

Item	Description
MAC address table	IEEE 802.1d compliance
	32K MAC entries
	MAC address learning and aging
	Static, dynamic, and blackhole MAC address entries
	Packet filtering based on source MAC addresses
VLAN	4K VLANs
	Guest VLAN and voice VLAN
	GVRP
	MUX VLAN
	VLAN assignment based on MAC addresses, protocols, IP subnets, policies, and ports
	1: 1 and N: 1 VLAN mapping

Item	Description
Reliability	RRPP ring topology and RRPP multi-instance
	Smart Link tree topology and Smart Link multi-instance, providing millisecond-level protection switchover
	SEP
	STP (IEEE 802.1d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)
	ERPS (G.8032)
	BPDU protection, root protection, and loop protection
IP routing	Static route, RIPv1/v2, RIPng, OSPF, OSPFv3, ECMP, IS-IS, IS-ISv6, BGP, BGP4+, VRRP, and VRRP6
	Up to 8K FIBv4 entries
	Up to 4K FIBv6 entries
IPv6 features	10K ND entries
	Path MTU (PMTU)
	IPv6 ping, IPv6 tracert, and IPv6 Telnet
	6to4 tunnel, ISATAP tunnel, and manually configured tunnel
Multicast	PIM DM, PIM SM, PIM SSM
	IGMP v1/v2/v3, IGMP v1/v2/v3 snooping and IGMP fast leave
	MLD v1/v2 and MLD v1/v2 snooping
	Multicast forwarding in a VLAN and multicast replication between VLANs
	Multicast load balancing among member ports of a trunk
	Controllable multicast
	Port-based multicast traffic statistics
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
	WRR, DRR, SP, WRR+SP, and DRR+SP queue scheduling algorithms
	Re-marking of the 802.1p priority and DSCP priority
	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
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
	MFF

Item	Description
	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, and Portal authentication
	DHCPv4/v6 client/relay/server/snooping
	Attack source tracing and punishment for IPv6 packets such as ND, DHCPv6, and MLD packets
	Supports separation between user authentication and policy enforcement points
	IPSec
VxLAN*	VXLAN L2 and L3 gateways
	Centralized and distributed gateway
	BGP-EVPN
	Configured through the NETCONF protocol
SVF	Plug-and-play SVF client
	Automatically loading the system software packages and patches of SVF clients
	Automatically delivering service configurations in a one-click manner
	Independent running of SVF clients
OAM	Software OAM
	EFM OAM
	CFM OAM
	Y.1731 performance test
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
	sFlow

Item	Description
Interoperability	Supports VBST (Compatible with PVST/PVST+/RPVST)
	Supports LNP (Similar to DTP)
	Supports VCMP (Similar to VTP)

*Hardware ready
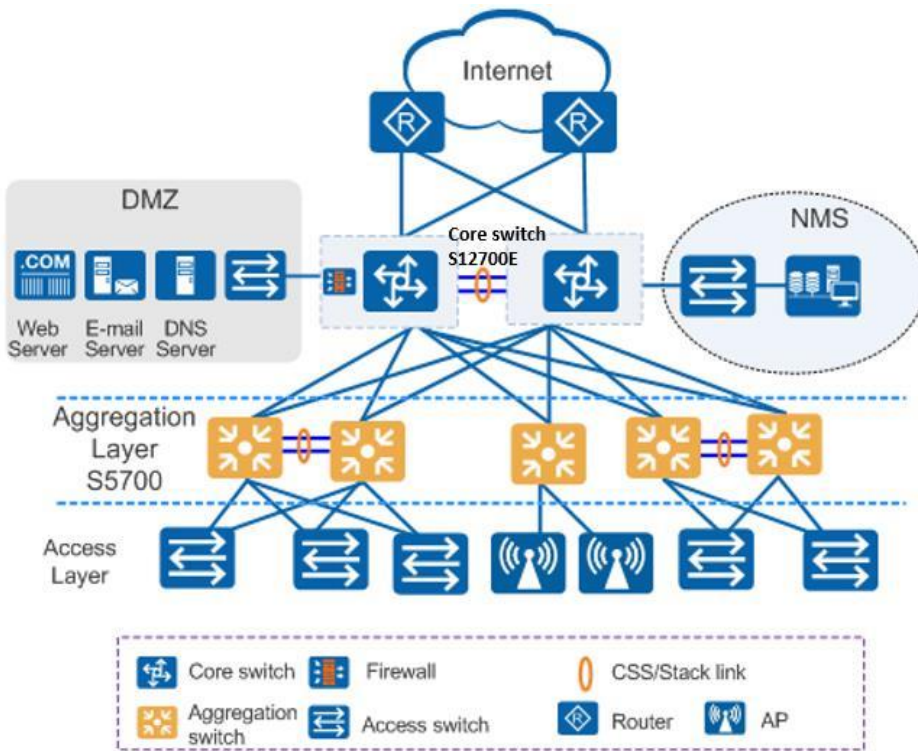
Networking and Applications

Large-Scale Enterprise Campus Network

CloudEngine S5736-S series switches can be deployed at the access layer of a campus network to build a high-performance and highly reliable enterprise network.
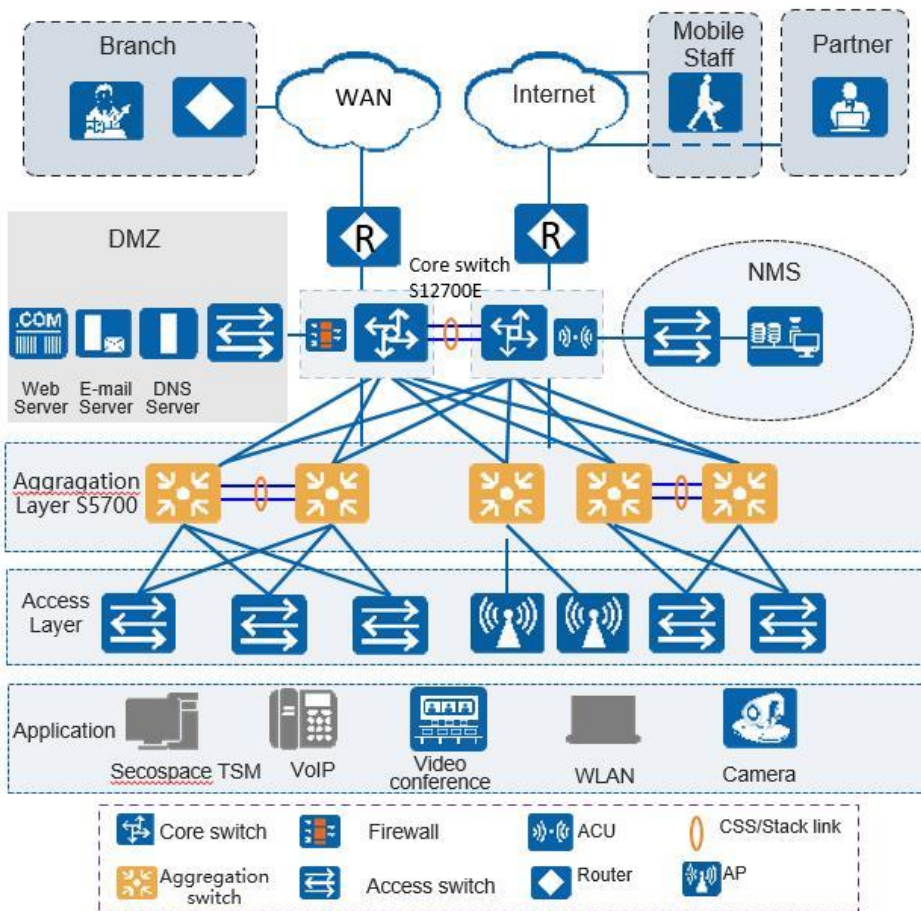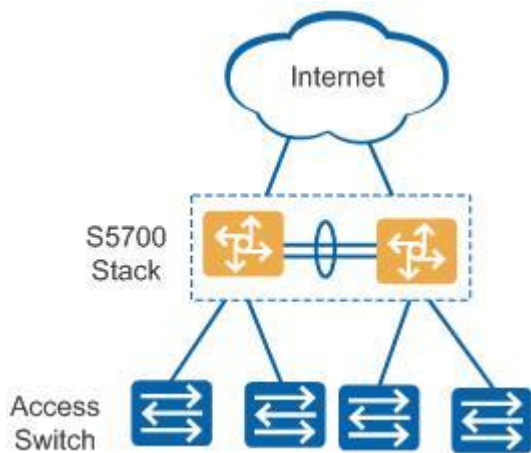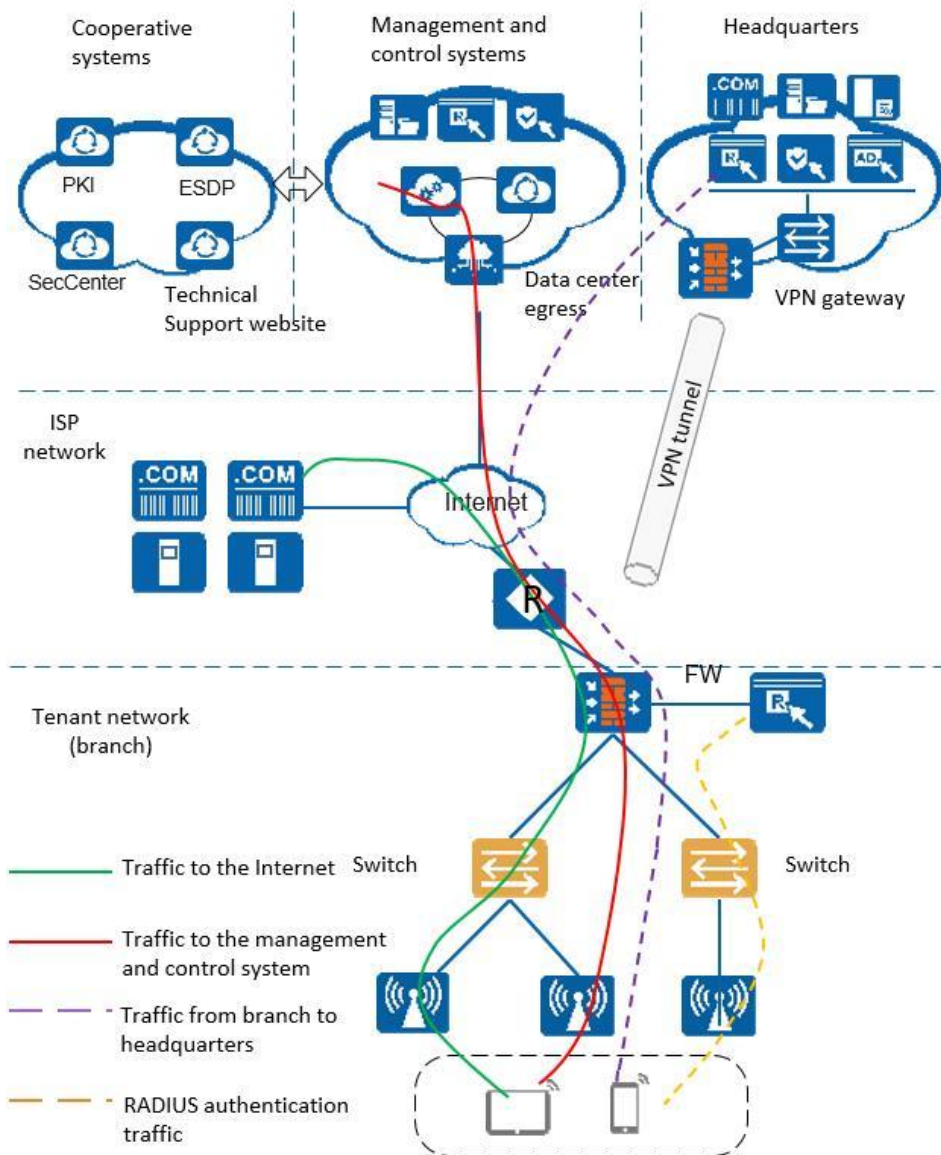

Small- or Medium-scale Enterprise Campus Network

CloudEngine S5736-S series switches can be deployed at the aggregation layer of a campus network to build a high-performance, multi-service, and highly reliable enterprise network.

Core switch
S12700E

Core switch	Firewall	CSS/Stack link
Aggregation switch	Access switch	Router / AP

Small-scale Enterprise Campus Network

With powerful aggregation and routing capabilities of CloudEngine S5736-S series switches make them suitable for use as core switches in a small-scale enterprise network. Two or more S5736-S switches use iStack technology to ensure high reliability. They provide a variety of access control policies to achieve centralized management and simplify configuration.

Application on a MAN

CloudEngine S5736-S series switches can be deployed at the access layer of a MAN(Metropolitan Area Network) to build a high-performance, multi-service, and highly reliable ISP MAN network.
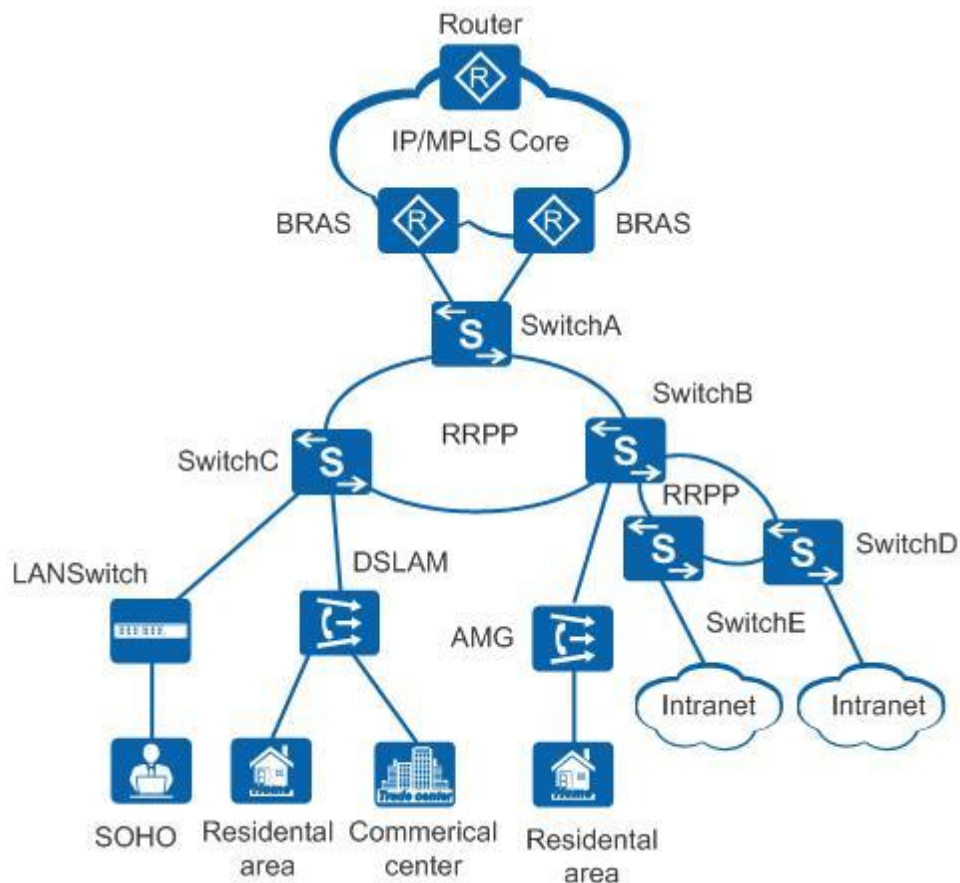
Application in Public Cloud

CloudCampus Solution is a network solution suite based on Huawei public cloud. CloudEngine S5736-S   series switches can be located at the access layer.

The switches are plug-and-play. They go online automatically after being powered on and connected with network cables, without the need for complex configurations. The switches can connect to the management and control system (iMaster NCE-Campus for switches running V200R020C00 and later versions), and use bidirectional certificate authentication to ensure management channel security. The switches provide the NETCONF and YANG interfaces, through which the management and control system delivers configurations to them. In addition, remote maintenance and fault diagnosis can be performed on the management and control system.

Traffic to the Internet

Traffic to the management and control system

Traffic from branch to headquarters

RADIUS authentication traffic

Ordering Information

The following table lists ordering information of the CloudEngine S5736-S series switches.

Model	Product Description
CloudEngine S5736-S24UM4XC	S5736-S24UM4XC Base(24*100M/1G Ethernet ports,Optional RTU upgrade to 2.5/5/10G, 4*10GE SFP+ ports, 1*expansion slot, PoE++, without power module)
CloudEngine S5736-S24UMXC	S5736-S24UM4XC 2.5&10G Bundle(12*100M/1G/2.5G Ethernet ports, 12*100M/1G/2.5G/5G/10G Ethernet ports, Optional RTU upgrade to 5/10G, 4*10GE SFP+ ports, 1*expansion slot, PoE++, 1*1000W AC power)
CloudEngine S5736-S24UMXC	S5736-S24UM4XC 10G Bundle(24*100M/1G/2.5G/5G/10G Ethernet ports, 4*10GE SFP+ ports, 1*expansion slot, PoE++, 1*1000W AC power)
PAC1000S56-CB	1000W AC PoE power module
ES5D21Q04Q01	4-port 40GE QSFP+ interface card
S7X08000	2-port 25GE SFP28 or 8-port 10GE SFP+ interface card

Model	Product Description
FAN-023A-B	Fan module
L-1GUPG2.5G-S57S	S57-S series, 1G to 2.5G Electronic RTU License, 12-port
L-1GUPG5G-S57S	S57-S series, 1G to 5G Electronic RTU License, 12-port
L-1GUPG10G-S57S	S57-S series, 1G to 10G Electronic RTU License, 12-port
L-2.5GUPG5G-S57S	S57-S series, 2.5G to 5G Electronic RTU License, 12-port
L-2.5GUPG10G-S57S	S57-S series, 2.5G to 10G Electronic RTU License, 12-port
L-5GUPG10G-S57S	S57-S series, 5G to 10G Electronic RTU License, 12-port
N1-S57S-M-Lic	S57XX-S Series Basic SW,Per Device
N1-S57S-M-SnS1Y	S57XX-S Series Basic SW,SnS,Per Device,1Year
N1-S57S-F-Lic	N1-CloudCampus,Foundation,S57XX-S Series,Per Device
N1-S57S-F-SnS1Y	N1-CloudCampus,Foundation,S57XX-S Series,SnS,Per Device,1Year
N1-S57S-A-Lic	N1-CloudCampus,Advanced,S57XX-S Series,Per Device
N1-S57S-A-SnS1Y	N1-CloudCampus,Advanced,S57XX-S Series,SnS,Per Device,1Year
N1-S57S-FToA-Lic	N1-Upgrade-Foundation to Advanced,S57XX-S,Per Device
N1-S57S-FToA-SnS1Y	N1-Upgrade-Foundation to Advanced,S57XX-S,SnS,Per Device,1Year

More Information

For more information about Huawei Campus Switches, visit http://e.huawei.com or contact us in the following ways:

- Global service hotline: http://e.huawei.com/en/service-hotline
- Logging in to the Huawei Enterprise technical support website: http://support.huawei.com/enterprise/
- Sending an email to the customer service mailbox: support_e@huawei.com