

CloudEngine S5336-S Series Switches

Product Overview

CloudEngine S5336-S series switches are developed based on next-generation high-performing hardware and the Huawei Versatile Routing Platform (VRP). CloudEngine S5336-S switches support simplified operations and maintenance (O&M), and flexible Ethernet networking. It also provides enhanced Layer 3 features and mature IPv6 features. CloudEngine S5336-S 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 S5336-S series.

Models and appearances of the CloudEngine S5336-S series

Models and Appearances	Description
 CloudEngine S5336-S48S4X-A	<ul style="list-style-type: none"> • 48 x GE SFP ports(optional RTU upgrade to 10G), 4 x 10 GE SFP+ ports • Built-in AC power • Forwarding performance: 480 Mpps • Switching capacity: 2.72 Tbps • 220mm deep chassis, front access
 CloudEngine S5336-S48S4X-D	<ul style="list-style-type: none"> • 48 x GE SFP ports(optional RTU upgrade to 10G), 4 x 10 GE SFP+ ports • Built-in DC power • Forwarding performance: 480 Mpps • Switching capacity: 2.72 Tbps • 220mm deep chassis, front access
 CloudEngine S5336-S24S4X-A	<ul style="list-style-type: none"> • 24 x GE SFP ports(optional RTU upgrade to 10G, optional RTU upgrade to 48 ports), 4 x 10 GE SFP+ ports • Built-in AC power • Forwarding performance: 480 Mpps • Switching capacity: 2.72 Tbps • 220mm deep chassis, front access

Models and Appearances	Description
 <p data-bbox="129 271 464 297">CloudEngine S5336-S24S4X-D</p>	<ul data-bbox="564 185 1441 416" style="list-style-type: none"> • 24 x GE SFP ports(optional RTU upgrade to 10G, optional RTU upgrade to 48 ports), 4 x 10 GE SFP+ ports • Built-in DC power • Forwarding performance: 480 Mpps • Switching capacity: 2.72 Tbps • 220mm deep chassis, front access

Features and Highlights

Powerful Service Processing Capability

- CloudEngine S5336-S supports a broad set of Layer 2/Layer 3 multicast protocols, such as PIM SM, PIM DM, PIM SSM, MLD, and IGMP snooping. This capability is ideal for high-definition video surveillance and video conferencing access.
- CloudEngine S5336-S 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 S5336-S supports MAC address authentication, 802.1X authentication, and Portal authentication, and implements dynamic delivery of policies (VLAN, QoS, and ACL) to users.
- CloudEngine S5336-S 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 S5336-S 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 S5336-S 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

- In addition to supporting traditional Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and Multiple Spanning Tree Protocol (MSTP), CloudEngine S5336-S is also designed with Huawei-developed Smart Ethernet Protection (SEP) technology and the industry's latest Ethernet Ring Protection Switching (ERPS) technology. 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, and it implements millisecond-level protection switching based on traditional Ethernet MAC and bridging functions.
- CloudEngine S5336-S supports Smart Link, which implements backup of uplinks. One CloudEngine S5336-S switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices.
- CloudEngine S5336-S supports Ethernet OAM (IEEE 802.3ah/802.1ag) to fast-detect link faults.

Easy Network deployment

- CloudEngine S5336-S supports Super Virtual Fabric (SVF), which innovatively virtualizes the "core/aggregation switch + access switch" into one logical device. This simplifies device management and achieves plug-and-play for access switches. In addition, CloudEngine S5336-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 adjustment. CloudEngine S5336-S functions as a client in an SVF system.
- CloudEngine S5336-S 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 S5336-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.

Mature IPv6 Technologies

- CloudEngine S5336-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).
- CloudEngine S5336-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 S5336-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 S5336-S support stacking through fixed downlink/uplink ports.

Intelligent O&M

- CloudEngine S5336-S supports the Sampled Flow (sFlow) function. It uses a method defined in the sFlow standard to sample traffic passing through it and sends sampled traffic to the collector in real time. The collected traffic statistics are used to generate statistical reports, helping enterprises maintain their networks.
- CloudEngine S5336-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.
- CloudEngine S5336-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 iMaster NCE-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

- CloudEngine S5336-S supports the intelligent upgrade feature. Specifically, CloudEngine S5336-S 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 S5336-S 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 S5336-S switch through Python scripts to quickly innovate functions and implement intelligent O&M.

Product Specifications

Item	CloudEngine S5336-S48S4X-A	CloudEngine S5336-S48S4X-D	CloudEngine S5336-S24S4X-A	CloudEngine S5336-S24S4X-D
Fixed port	48 x GE SFP ports(optional RTU upgrade to 10G), 4 x 10 GE SFP+ ports	48 x GE SFP ports(optional RTU upgrade to 10G), 4 x 10 GE SFP+ ports	48 x GE SFP ports(optional RTU upgrade to 10G, optional RTU upgrade to 48 ports), 4 x 10 GE SFP+ ports	48 x GE SFP ports(optional RTU upgrade to 10G, optional RTU upgrade to 48 ports), 4 x 10 GE SFP+ ports
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	43.6 mm x 442 mm x 220 mm
Chassis height	1 U	1 U	1 U	1 U
Chassis weight (including packaging)	4.7kg	4.3kg	4.7kg	4.3kg
Power supply type	Build-in AC power	Build-in DC power	Build-in AC power	Build-in DC power
Rated voltage range	<ul style="list-style-type: none"> AC input : 100V AC~130V AC, 200V AC~240V AC; 50/60Hz High-Voltage DC input: -240V DC 	<ul style="list-style-type: none"> DC input : -48 V DC to -60 V DC 	<ul style="list-style-type: none"> AC input : 100V AC~130V AC, 200V AC~240V AC; 50/60Hz High-Voltage DC input: -240V DC 	<ul style="list-style-type: none"> DC 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 Hz High-Voltage DC input: 190V DC~290V DC 	<ul style="list-style-type: none"> DC input : -36 V DC to -72V DC 	<ul style="list-style-type: none"> AC input : 90 V AC to 290 V AC, 45 Hz to 65 Hz High-Voltage DC input: 190V DC~290V DC 	<ul style="list-style-type: none"> DC input : -36 V DC to -72V DC
Maximum power consumption	111W	108W	111W	108W
Noise	<ul style="list-style-type: none"> Under normal temperature (sound power): 56.8dB (A) Under high temperature (sound power): 73.9dB (A) Under normal temperature (sound pressure): 44.8dB (A) 	<ul style="list-style-type: none"> Under normal temperature (sound power): 56.8dB (A) Under high temperature (sound power): 73.9dB (A) Under normal temperature (sound pressure): 44.8dB (A) 	<ul style="list-style-type: none"> Under normal temperature (sound power): 56.8dB (A) Under high temperature (sound power): 73.9dB (A) Under normal temperature (sound pressure): 44.8dB (A) 	<ul style="list-style-type: none"> Under normal temperature (sound power): 56.8dB (A) Under high temperature (sound power): 73.9dB (A) Under normal temperature (sound pressure): 44.8dB (A)
Long-term 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 S5336-S48S4X-A	CloudEngine S5336-S48S4X-D	CloudEngine S5336-S24S4X-A	CloudEngine S5336-S24S4X-D
Short-term operating temperature	-5°C ~50°C	-5°C ~50°C	-5°C ~50°C	-5°C ~50°C
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)			
Surge protection specification (power port)	<ul style="list-style-type: none"> AC power port: ±6 kV in differential mode, ±6 kV in common mode 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> DC 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
	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
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
IPv6 features	ND

Item	Description
	Path MTU (PMTU)
	IPv6 ping, IPv6 tracer, 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
	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

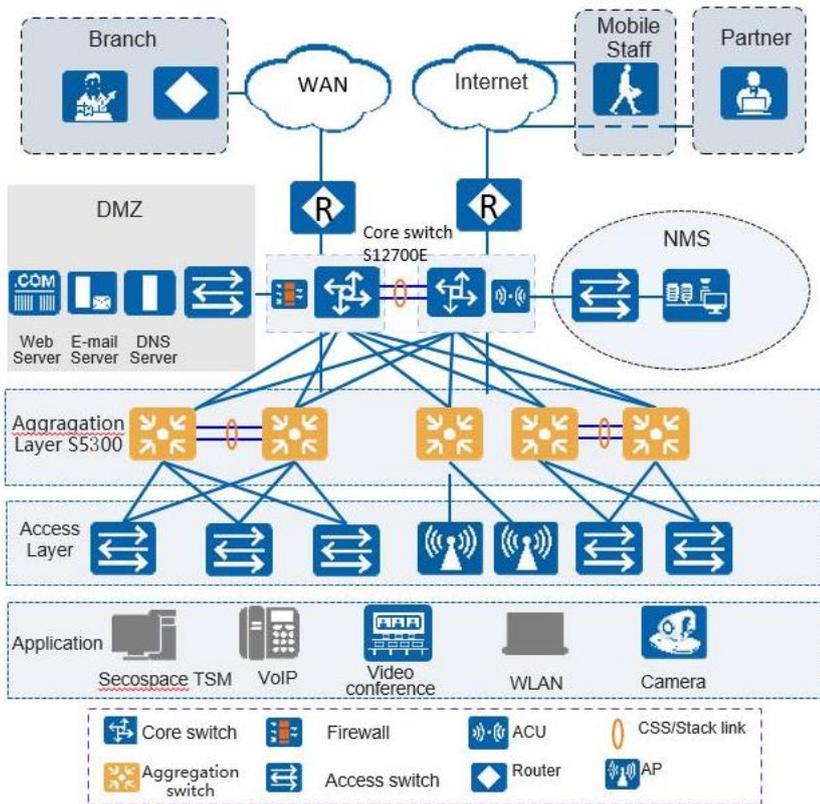
Item	Description
	Attack source tracing and punishment for IPv6 packets such as ND, DHCPv6, and MLD packets
	Supports separation between user authentication and policy enforcement points
	IPSec
VxLAN*	VXLAN L2 and L3 gateways
	Centralized and distributed gateway
	BGP-EVPN
	Configured through the NETCONF 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
Interoperability	Supports VBST (Compatible with PVST/PVST+/RPVST)
	Supports LNP (Similar to DTP)
	Supports VCMP (Similar to VTP)

*Hardware ready

Networking and Applications

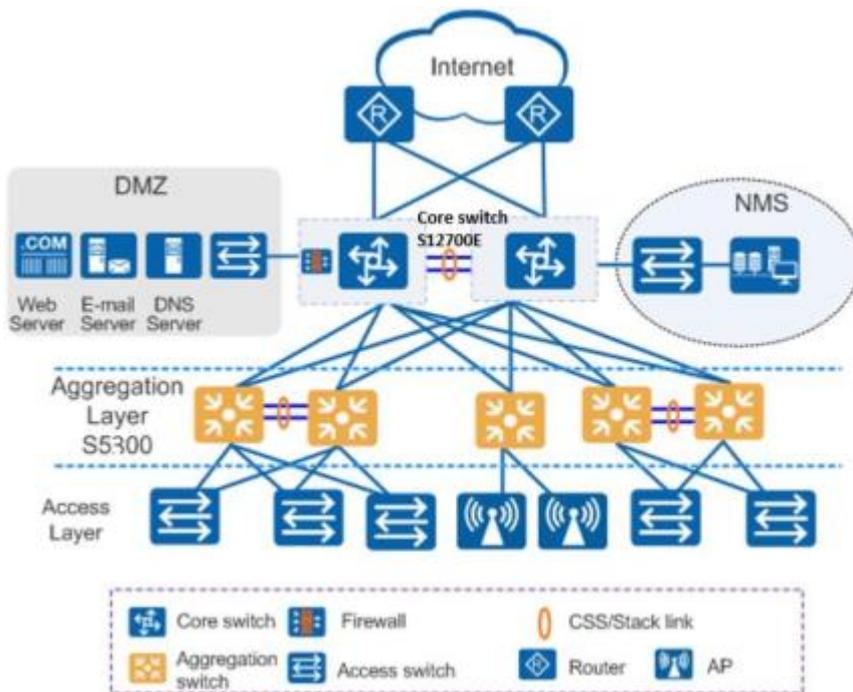
Large-Scale Enterprise Campus Network

CloudEngine S5336-S series switches can be deployed at the access layer of a campus network to build a high-performance and highly reliable enterprise network.



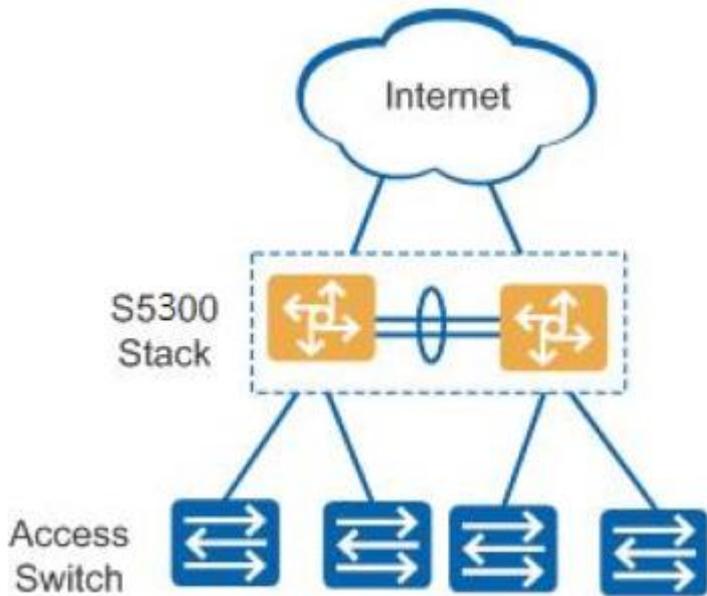
Small- or Medium-scale Enterprise Campus Network

CloudEngine S5336-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.



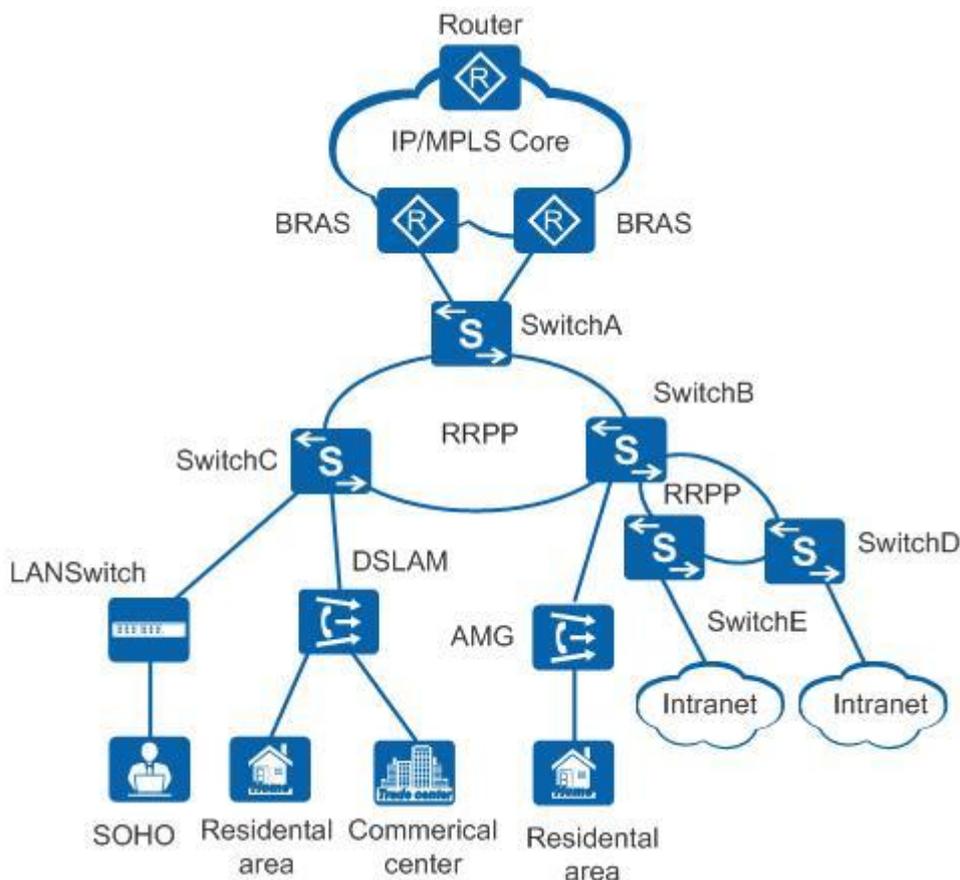
Small-scale Enterprise Campus Network

With powerful aggregation and routing capabilities of CloudEngine S5336-S series switches make them suitable for use as core switches in a small-scale enterprise network. Two or more S5336-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 S5336-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.

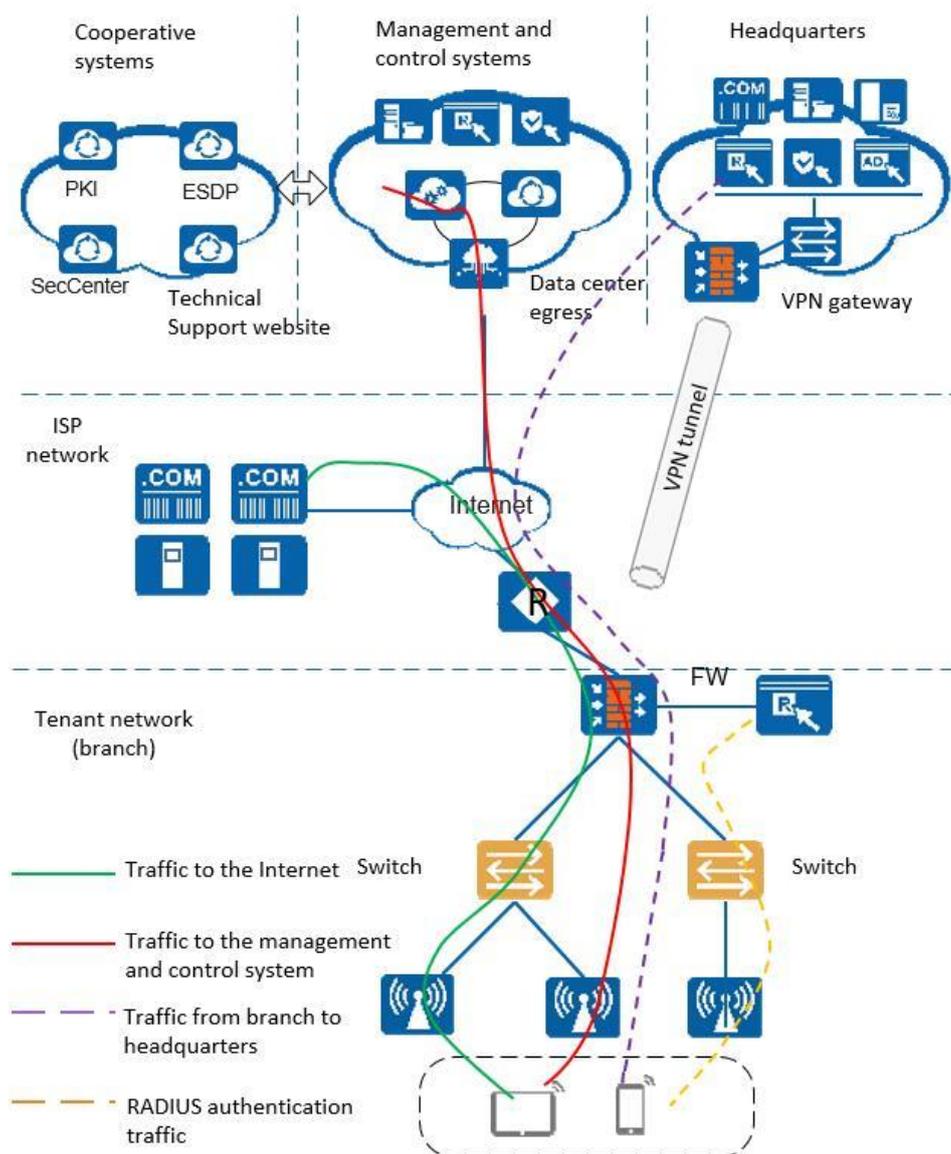


Application in Public Cloud

CloudCampus Solution is a network solution suite based on Huawei public cloud. CloudEngine S5336-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.



Ordering Information

The following table lists ordering information of the CloudEngine S5336-S series switches.

Model	Product Description
CloudEngine S5336-S48S4X-A	CloudEngine S5336-S48S4X-A base (48*GE SFP ports, optional RTU upgrade to 10G, 4*10GE SFP+ ports, AC power supply, front access)
CloudEngine S5336-S48S4X-D	CloudEngine S5336-S48S4X-D base (48*GE SFP ports, optional RTU upgrade to 10G, 4*10GE SFP+ ports, DC power supply, front access)
CloudEngine S5336-S24S4X-A	CloudEngine S5336-S24S4X-A base (24*GE SFP ports, optional RTU upgrade to 10G, optional RTU upgrade to 48 ports, 4*10GE SFP+ ports, AC power supply, front access)
CloudEngine S5336-S24S4X-D	CloudEngine S5336-S24S4X-D base (24*GE SFP ports, optional RTU upgrade to 10G, optional RTU upgrade to 48 ports, 4*10GE SFP+ ports, DC power supply, front access)
S53S-M-Lic	S53XX-S Series Basic SW, Per Device

More Information

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

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Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base Bantian,
Longgang Shenzhen 518129 People's
Republic of China

Website: www.huawei.com