

# CloudEngine S5731-H Series Hybrid Optical-Electrical Switches Datasheet

CloudEngine S5731-H series hybrid optical-electrical switches are next-generation intelligent switches that provide GE/10GE hybrid optical-electrical downlink ports and four 10GE uplink ports, and provide one extended slot.

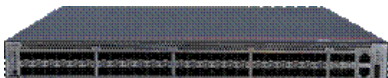
## Introduction

The CloudEngine S5731-H series switches are the next-generation intelligent hybrid optical-electrical fixed switches developed by Huawei. The CloudEngine S5731-H builds on Huawei's unified Versatile Routing Platform (VRP) and boasts various IDN features. For example, the integrated wireless AC capabilities can manage up to 1,024 wireless APs; the free mobility feature ensures consistent user experience; the VXLAN functionality implements network virtualization; supports innovative optical-electrical synergy technologies and integrates optical ports and electrical ports; function as a central switch to provide 60 W PoE++ power for remote units (RUs) at 300 m; and built-in security probes support abnormal traffic detection, threat analysis even in encrypted traffic, and network-wide threat deception. With these merits, the CloudEngine S5731-H can function as core switches for small-sized campus networks and branches of medium- and large-sized campus networks, and also work as access switches for Metropolitan Area Network.

## Product Overview

### Models and Appearances

The following models are available in the CloudEngine S5731-H series.

| Models and Appearances                                                                                            | Description                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>CloudEngine S5731-H24HB4XZ | <ul style="list-style-type: none"> <li>20 x 1/2.5GE SFP ports+ 4 x 2.5/10GE SFP+ ports, 4 x 10GE SFP+ ports</li> <li>One extended slot</li> <li>1+1 power backup</li> <li>PoE++</li> <li>Switching capacity: 420Gbps/672Gbps</li> </ul> <p><i>Note: GE1~20 are GE ports by default. In V200R023C00 and later versions, <b>port mode 2.5ge</b> command can be used to set the port rate to 2.5GE.</i></p> |
| <br>CloudEngine S5731-H48HB4XZ | <ul style="list-style-type: none"> <li>44 x 1/2.5GE SFP ports+ 4 x 2.5/10GE SFP+ ports, 4 x 10GE SFP+ ports</li> <li>One extended slot</li> <li>1+1 power backup</li> <li>PoE++</li> <li>Switching capacity: 492Gbps/672Gbps</li> </ul> <p><i>Note: GE1-8, GE25-44 are GE ports by default. In V200R023C00 and</i></p>                                                                                   |

| Models and Appearances | Description                                                                               |
|------------------------|-------------------------------------------------------------------------------------------|
|                        | later versions, <b>port mode 2.5ge</b> command can be used to set the port rate to 2.5GE. |

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.

## Subcards

The following table lists the subcards applicable to the CloudEngineS5731-H.

Technical specifications of the subcards applicable to the CloudEngineS5731-H series

| Subcards                                                                                            | Technical Specifications                                                                                                                                                                                                                                                                                                                                             | Applied Switch Model                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>S7Q02001       | <ul style="list-style-type: none"> <li>2*40GE QSFP+</li> <li>Operating temperature: 0°C to 45°C (32°F to 113°F)</li> <li>Relative humidity: 5% to 95%</li> <li>Storage temperature: -40°C to +70°C (-40°F to +158°F)</li> </ul>                                                                                                                                      | <ul style="list-style-type: none"> <li>CloudEngineS5731-H24T4XC</li> <li>CloudEngineS5731-H24P4XC</li> <li>CloudEngineS5731-H48T4XC</li> <li>CloudEngineS5731-H48P4XC</li> </ul> <p>Note: Only V200R021C01 and later versions</p> |
| <br>ES5D21Q02Q00   | <ul style="list-style-type: none"> <li>2*40GE QSFP+</li> <li>Operating temperature: 0°C to 45°C (32°F to 113°F)</li> <li>Relative humidity: 5% to 95%</li> <li>Storage temperature: -40°C to +70°C (-40°F to +158°F)</li> </ul>                                                                                                                                      | <ul style="list-style-type: none"> <li>CloudEngineS5731-H24T4XC</li> <li>CloudEngineS5731-H24P4XC</li> <li>CloudEngineS5731-H48T4XC</li> <li>CloudEngineS5731-H48P4XC</li> </ul>                                                  |
| <br>ES5D21X08T00 | <ul style="list-style-type: none"> <li>8*10GE Base-T</li> <li>Operating temperature: 0°C to 45°C (32°F to 113°F)</li> <li>Relative humidity: 5% to 95%</li> <li>Storage temperature: -40°C to +70°C (-40°F to +158°F)</li> </ul>                                                                                                                                     | <ul style="list-style-type: none"> <li>CloudEngineS5731-H24T4XC</li> <li>CloudEngineS5731-H24P4XC</li> <li>CloudEngineS5731-H48T4XC</li> <li>CloudEngineS5731-H48P4XC</li> </ul>                                                  |
| <br>S7X08000     | <ul style="list-style-type: none"> <li>8*10GE SFP+ or 2*25GE SFP28</li> <li>Operating temperature: 0°C to 45°C (32°F to 113°F)</li> <li>Relative humidity: 5% to 95%</li> <li>Storage temperature: -40°C to +70°C (-40°F to +158°F)</li> </ul> <p>Note: The 8*10GE SFP+ subcard works as 8*10GE SFP+ by default, and can be changed to 2*25GE SFP28 as required.</p> | <ul style="list-style-type: none"> <li>CloudEngineS5731-H24T4XC</li> <li>CloudEngineS5731-H24P4XC</li> <li>CloudEngineS5731-H48T4XC</li> <li>CloudEngineS5731-H48P4XC</li> </ul> <p>Note: Only V200R019C10 and later versions</p> |

## Power Supply

The following table lists the power supplies applicable to the CloudEngineS5731-H.

Technical specifications of the power supplies applicable to the CloudEngineS5731-H series

| Power Module                                                                        | Technical Specifications                                                                                                                                         | Applied Switch Model                                                                                   |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>Dimensions (H x W x D): 40 mm x 90 mm x 215 mm (1.6 in. x 3.5 in. x 8.5 in.)</li> <li>Weight: 1.1 kg (2.43 lb)</li> </ul> | <ul style="list-style-type: none"> <li>CloudEngineS5731-H24HB4XZ</li> <li>CloudEngineS5731-</li> </ul> |

| Power Module                                                                                             | Technical Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Applied Switch Model                                                                                           |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| PAC600S56-CB                                                                                             | <ul style="list-style-type: none"> <li>Rated input voltage range: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC; 50/60 Hz</li> <li>100 V AC to 240 V AC, 50/60 Hz</li> <li>240 V DC</li> </ul> </li> <li>Maximum input voltage range: <ul style="list-style-type: none"> <li>90 V AC to 290 V AC, 45 Hz to 66 Hz</li> <li>190 V DC to 290 V DC</li> </ul> </li> <li>Maximum input current: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC: 8 A</li> <li>100 V AC to 240 V AC: 8 A</li> <li>240 V DC: 4 A</li> </ul> </li> <li>Rated output current: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC input: 5.36 A</li> <li>200–240 V AC and 240 V DC input: 10.72 A</li> </ul> </li> <li>Rated output voltage: 56 V</li> <li>Rated output power: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC input: <ul style="list-style-type: none"> <li>Total power: 300 W</li> </ul> </li> <li>200 V AC to 240 V AC input and 240 V DC input: <ul style="list-style-type: none"> <li>Total power: 600 W</li> </ul> </li> </ul> </li> <li>Hot swap: Supported</li> </ul> | H48HB4XZ                                                                                                       |
|  <p>PAC1000S56-DB</p> | <ul style="list-style-type: none"> <li>Dimensions (H x W x D): 40 mm x 90 mm x 215 mm (1.6 in. x 3.5 in. x 8.5 in.)</li> <li>Weight: 1.1 kg (2.43 lb)</li> <li>Rated input voltage range: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC, 50/60 Hz</li> <li>200 V AC to 240 V AC, 50/60 Hz</li> <li>240 V DC</li> </ul> </li> <li>Maximum input voltage range: <ul style="list-style-type: none"> <li>90 V AC to 290 V AC, 45 Hz to 65 Hz</li> <li>190 V DC to 290 V DC</li> </ul> </li> <li>Input current: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC: 12 A</li> <li>200 V AC to 240 V AC: 8 A</li> <li>240 V DC: 8 A</li> </ul> </li> <li>Maximum output current: <ul style="list-style-type: none"> <li>100 V AC to 130 V AC input: 16.08 A</li> <li>200 V AC to 240 V AC input and 240 V DC input: 17.86 A</li> </ul> </li> <li>Maximum output power: <ul style="list-style-type: none"> <li>Total power: 900 W (100 V AC to 130 V AC input)/1000 W (200 V AC to 240 V AC input and 240 V DC input)</li> </ul> </li> <li>Hot swap: Supported</li> </ul>                          | <ul style="list-style-type: none"> <li>CloudEngineS5731-H24HB4XZ</li> <li>CloudEngineS5731-H48HB4XZ</li> </ul> |

| Power Module                                                                                           | Technical Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Applied Switch Model                                                                                               |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|  <p>PDC1000S56-CB</p> | <ul style="list-style-type: none"> <li>• Dimensions (H x W x D): 40 mm x 90 mm x 215 mm (1.6 in. x 3.5 in. x 8.5 in.)</li> <li>• Weight: 1.02 kg (2.25 lb)</li> <li>• Rated input voltage range: -48 V DC to -60 V DC</li> <li>• Maximum input voltage range: -38.4 V DC to -72 V DC</li> <li>• Maximum input current: 30 A</li> <li>• Maximum output current: 83.3 A</li> <li>• Maximum output power: 1000 W</li> <li>• Hot swap: Supported</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• CloudEngineS5731-H24HB4XZ</li> <li>• CloudEngineS5731-H48HB4XZ</li> </ul> |
|  <p>PAC1000S56-CB</p> | <ul style="list-style-type: none"> <li>• Dimensions (H x W x D): 40 mm x 90 mm x 215 mm (1.6 in. x 3.5 in. x 8.5 in.)</li> <li>• Weight: 1.1 kg (2.43 lb)</li> <li>• Rated input voltage range: <ul style="list-style-type: none"> <li>– 100 V AC to 130 V AC, 50/60 Hz</li> <li>– 200 V AC to 240 V AC, 50/60 Hz</li> <li>– 240 V DC</li> </ul> </li> <li>• Maximum input voltage range: <ul style="list-style-type: none"> <li>– 90 V AC to 290 V AC, 45 Hz to 65 Hz</li> <li>– 190 V DC to 290 V DC</li> </ul> </li> <li>• Input current: <ul style="list-style-type: none"> <li>– 100 V AC to 130 V AC: 12 A</li> <li>– 200 V AC to 240 V AC: 8 A</li> <li>– 240 V DC: 8 A</li> </ul> </li> <li>• Maximum output current: <ul style="list-style-type: none"> <li>– 100 V AC to 130 V AC input: 16.08 A</li> <li>– 200 V AC to 240 V AC input and 240 V DC input: 17.86 A</li> </ul> </li> <li>• Maximum output power: <ul style="list-style-type: none"> <li>– Total power: 900 W (100 V AC to 130 V AC input)/1000 W (200 V AC to 240 V AC input and 240 V DC input)</li> </ul> </li> <li>• Hot swap: Supported</li> </ul> | <ul style="list-style-type: none"> <li>• CloudEngineS5731-H24HB4XZ</li> <li>• CloudEngineS5731-H48HB4XZ</li> </ul> |

CloudEngine S5731-H series switches support PoE. They have two power module slots, each of which can have a 1000 W PoE power module installed.

The following table lists its power supply configurations.

Power supply configurations of CloudEngine S5731-H

| Model                     | Power Module 1                 | Power Module 2 | Available PoE Power | Maximum Number of Ports (Fully Loaded)                                                                                                                                                                |
|---------------------------|--------------------------------|----------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CloudEngineS5731-H24HB4XZ | 1000 W AC (220 V)<br>1000 W DC | –              | 818 W               | <ul style="list-style-type: none"> <li>• 802.3af (15.4 W per port): 24</li> <li>• 802.3at (30 W per port): 24</li> <li>• 802.3bt (60 W per port): 13</li> <li>• 802.3bt (90 W per port): 9</li> </ul> |
|                           | 1000 W AC (110 V)              | –              | 723 W               | <ul style="list-style-type: none"> <li>• 802.3af (15.4 W per port): 24</li> </ul>                                                                                                                     |

| Model                      | Power Module 1                 | Power Module 2                 | Available PoE Power | Maximum Number of Ports (Fully Loaded)                                                                                                                                                         |
|----------------------------|--------------------------------|--------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                                |                                |                     | <ul style="list-style-type: none"> <li>802.3at (30 W per port): 24</li> <li>802.3bt (60 W per port): 12</li> <li>802.3bt (90 W per port): 8</li> </ul>                                         |
|                            | 1000 W AC (220 V)<br>1000 W DC | 1000 W AC (220 V)<br>1000 W DC | 1768 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 24</li> <li>802.3at (30 W per port): 24</li> <li>802.3bt (60 W per port): 24</li> <li>802.3bt (90 W per port): 19</li> </ul> |
|                            | 1000 W AC (110 V)<br>1000 W DC | 1000 W AC (110 V)              | 1578 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 24</li> <li>802.3at (30 W per port): 24</li> <li>802.3bt (60 W per port): 24</li> <li>802.3bt (90 W per port): 17</li> </ul> |
|                            | 600 W AC (220 V)               | –                              | 438 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 24</li> <li>802.3at (30 W per port): 14</li> <li>802.3bt (60 W per port): 7</li> <li>802.3bt (90 W per port): 4</li> </ul>   |
|                            | 600 W AC (110 V)               | –                              | 153 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 9</li> <li>802.3at (30 W per port): 5</li> <li>802.3bt (60 W per port): 2</li> <li>802.3bt (90 W per port): 1</li> </ul>     |
|                            | 600 W AC (220 V)               | 600 W AC (220 V)               | 1008 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 24</li> <li>802.3at (30 W per port): 24</li> <li>802.3bt (60 W per port): 16</li> <li>802.3bt (90 W per port): 11</li> </ul> |
|                            | 600 W AC (110 V)               | 600 W AC (110 V)               | 438 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 24</li> <li>802.3at (30 W per port): 14</li> <li>802.3bt (60 W per port): 7</li> <li>802.3bt (90 W per port): 4</li> </ul>   |
|                            | 1000 W AC (220 V)<br>1000 W DC | 600 W AC (220 V)               | 1388 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 24</li> <li>802.3at (30 W per port): 24</li> <li>802.3bt (60 W per port): 23</li> <li>802.3bt (90 W per port): 15</li> </ul> |
| CloudEngine S5731-H48HB4XZ | 1000 W AC (220 V)<br>1000 W DC | –                              | 795 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 48</li> <li>802.3at (30 W per port): 26</li> <li>802.3bt (60 W per port): 13</li> <li>802.3bt (90 W per port): 8</li> </ul>  |
|                            | 1000 W AC (110 V)              | –                              | 700 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 45</li> <li>802.3at (30 W per port): 23</li> <li>802.3bt (60 W per port): 11</li> <li>802.3bt (90 W per port): 7</li> </ul>  |
|                            | 1000 W AC (220 V)<br>1000 W DC | 1000 W AC (220 V)              | 1745 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 48</li> <li>802.3at (30 W per port): 48</li> </ul>                                                                           |

| Model | Power Module 1                 | Power Module 2    | Available PoE Power | Maximum Number of Ports (Fully Loaded)                                                                                                                                                         |
|-------|--------------------------------|-------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                | 1000 W DC         |                     | <ul style="list-style-type: none"> <li>802.3bt (60 W per port): 29</li> <li>802.3bt (90 W per port): 19</li> </ul>                                                                             |
|       | 1000 W AC (110 V)<br>1000 W DC | 1000 W AC (110 V) | 1555 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 48</li> <li>802.3at (30 W per port): 48</li> <li>802.3bt (60 W per port): 25</li> <li>802.3bt (90 W per port): 17</li> </ul> |
|       | 600 W AC (220 V)               | –                 | 415 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 26</li> <li>802.3at (30 W per port): 13</li> <li>802.3bt (60 W per port): 6</li> <li>802.3bt (90 W per port): 4</li> </ul>   |
|       | 600 W AC (110 V)               | –                 | 130 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 8</li> <li>802.3at (30 W per port): 4</li> <li>802.3bt (60 W per port): 2</li> <li>802.3bt (90 W per port): 1</li> </ul>     |
|       | 600 W AC (220 V)               | 600 W AC (220 V)  | 985 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 48</li> <li>802.3at (30 W per port): 32</li> <li>802.3bt (60 W per port): 16</li> <li>802.3bt (90 W per port): 10</li> </ul> |
|       | 600 W AC (110 V)               | 600 W AC (110 V)  | 415 W               | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 26</li> <li>802.3at (30 W per port): 13</li> <li>802.3bt (60 W per port): 6</li> <li>802.3bt (90 W per port): 4</li> </ul>   |
|       | 1000 W AC (220 V)<br>1000 W DC | 600 W AC (220 V)  | 1365 W              | <ul style="list-style-type: none"> <li>802.3af (15.4 W per port): 48</li> <li>802.3at (30 W per port): 45</li> <li>802.3bt (60 W per port): 22</li> <li>802.3bt (90 W per port): 15</li> </ul> |

## Product Features and Highlights

### Simplified Architecture

Based on Huawei's unique simplified architecture, the traditional three-layer architecture of access, aggregation, and core is simplified into a two-layer architecture of access and core, greatly reducing network deployment and management complexity.

- Based on the simplified architecture, the access switches split into the central switches and the remote units. The remote units function as the port expansion module of the central switch to flexibly expand the port capacity of the central switch. One device is a network.
- The remote units are connected to the central switch through optical cables or optical/electrical hybrid cables, which does not require planning, configuration, management, and plug-and-play. When a device is expanded or faulty, replace the device with a new one, simplifying network planning, deployment, and routine O&M.

Note: The CloudEngine S12700E/S12700/S7700/S6700/S5700 series switches can be upgraded to V200R21C10 or a later version and can work with remote modules to implement simplified networking.

## Enabling Networks to Be More Agile for Services

- The CloudEngine S5731-H has a built-in high-speed and flexible processor chip. The chip's flexible packet processing and traffic control capabilities can meet current and future service requirements, helping build a highly scalable network.
- In addition to capabilities of traditional switches, the CloudEngine S5731-H provides open interfaces and supports user-defined forwarding behavior. Enterprises can use the open interfaces to develop new protocols and functions independently or jointly with equipment vendors to build campus networks meeting their own needs.
- The CloudEngine S5731-H series switches, on which enterprises can define their own forwarding models, forwarding behavior, and lookup algorithms. Microcode programmability makes it possible to provide new services within six months, without the need of replacing the hardware. In contrast, traditional ASIC chips use a fixed forwarding architecture and follow a fixed forwarding process. For this reason, new services cannot be provisioned until new hardware is developed to support the services one to three years later.

## Delivering Abundant Services More Agilely

- The CloudEngine S5731-H provides the integrated WLAN AC(native AC) function that can manage 1,024 APs, reducing the costs of purchasing additional WLAN AC hardware and breaking the forwarding performance bottleneck of an external WLAN AC. With this switch series, customers can stay ahead in the high-speed wireless era.
- With the unified user management function, the CloudEngine S5731-H authenticates both wired and wireless users, ensuring a consistent user experience no matter whether they are connected to the network through wired or wireless access devices. The unified user management function supports various authentication methods, including 802.1x, MAC address, and Portal authentication, and is capable of managing users based on user groups, domains, and time ranges. These functions visualize user and service management and boost the transformation from device-centric management to user experience-centric management.
- The CloudEngine S5731-H provides excellent quality of service (QoS) capabilities and supports queue scheduling and congestion control algorithms. Additionally, it adopts innovative priority queuing and multi-level scheduling mechanisms to implement fine-grained scheduling of data flows, meeting service quality requirements of different user terminals and services.

Note: The CloudEngine S5731-H can manage 16 APs by default . You can purchase licenses for more AP management on demand.

## Providing Fine Granular Network Management More Agilely

- The CloudEngine S5731-H uses the Packet Conservation Algorithm for Internet (iPCA) technology that changes the traditional method of using simulated traffic for fault location. iPCA technology can monitor network quality for any service flow anywhere and anytime, without extra costs. It can detect temporary service interruptions in a very short time and can identify faulty ports accurately. This cutting-edge fault detection technology turns "extensive management" to "fine granular management."
- The CloudEngine S5731-H supports Two-Way Active Measurement Protocol (TWAMP) to accurately check any IP link and obtain the entire network's IP performance. This protocol eliminates the need of using a dedicated probe or a proprietary protocol.
- The CloudEngine S5731-H supports SVF and functions as a parent switch. With this virtualization technology, a physical network with the "small-sized core/aggregation switches + access switches + APs" structure can be virtualized into a "super switch", greatly simplifying network management.
- With the EasyDeploy function, the CloudEngine S5731-H manages access switches in a similar way a WLAN AC manages APs. In deployment, access switches and APs can go online with zero-touch configuration. In the EasyDeploy solution, the Commander collects topology information about the connected clients and stores the clients' startup information based on the topology. Clients can be replaced with zero-touch configuration. The Commander can deliver configurations and scripts to clients in batches and query the delivery results. In addition, the Commander can collect and display information about power consumption on the entire 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 S5731-H 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-H supports Smart Link and Virtual Router Redundancy Protocol (VRRP), which implement backup of uplinks. One CloudEngine S5731-H switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices.

## Comprehensive VPN Technologies

- The CloudEngine S5731-H supports the MPLS function, and can be used as access devices of high-quality enterprise leased line.
- The CloudEngine S5731-H 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.

## Various Security Control Methods

- The CloudEngine S5731-H supports Layer 2 and Layer 3 multicast protocols, PIM SM, PIM DM, PIM SSM, MLD, and IGMP snooping, meeting the requirements of multi-terminal HD video surveillance and video conference access.
- The CloudEngine S5731-H supports Layer 3 features such as OSPF, IS-IS, BGP, and VRRP, meeting enterprise access and aggregation service bearer requirements, and supporting more voice, video, and data applications.
- The CloudEngine S5731-H 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 (ACLs). It also supports user management based on user groups.
- The CloudEngine S5731-H 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-H 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-H supports strict ARP learning, which prevents ARP spoofing attackers from exhausting ARP entries.

## Mature IPv6 Features

- The CloudEngine S5731-H 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 S5731-H 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-H 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 powerful network expansion capabilities. By adding member devices, you can easily expand the number of ports, bandwidth, and processing capability of a stack system.
- iStack simplifies configuration and management. After a stack is formed, multiple physical devices are virtualized into one device. Users can log in to the stack through any member device to configure and manage all member devices in the stack in a unified manner.

## 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-H 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.

## Innovative PoE Power Supply

Based on innovative hybrid optical-electrical ports, the switches provide ultra-long-distance high-power power supply for remote modules: 220 m@90 W PoE++ power supply, 330 m@60 W PoE++ power supply, and 650 m@30 W PoE+ power supply. Meet the power supply distance and transmission distance requirements in specific scenarios. In addition, some RRUs support level-2 PoE to provide data access and power supply for terminals such as cameras, APs, and IP phones.

- **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.
- **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.

### NOTE

For more information about PoE, visit

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

## Intelligent O&M

- The CloudEngine S5731-H 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-H 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-H switches use NetStream to collect campus network data and then report such data to the Huawei HiSec Insight. The purposes of doing so are to 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-H 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-H 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).

## 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

CloudEngine S5731-H 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 campus network deployments in enterprise private cloud mode, and 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 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------|------------------------------|
| <b>Basic network functions:</b><br>Layer 2 functions, IPv4, IPv6, MPLS, SVF, and others<br>Note: For details, see the Service Features                                                                                                                                                                                                                                                                                   | √                 | √                              | √                            |
| <b>Basic network automation based on the iMaster NCE-Campus:</b> <ul style="list-style-type: none"><li>• Basic automation: Plug-and-play, SSID, and AP group management</li><li>• Basic monitoring: Application visualization</li><li>• NE management: Image and topology management and discovery</li><li>• WLAN enhancement: Roaming and optimization for up to 128 APs</li><li>• User access authentication</li></ul> | ×                 | √                              | √                            |
| <b>Advanced network automation and intelligent O&amp;M:</b><br>VXLAN, free mobility, and CampusInsight basic functions                                                                                                                                                                                                                                                                                                   | ×                 | ×                              | √                            |

Note: Only V200R021C10 and later versions can support N1 mode

## Product Specifications

### Functions and Features

Except for special instructions, the following features are supported by CloudEngine S5731-H with N1 basic software.

#### Function and feature metrics for the CloudEngine S5731-H series

| Function and Feature |                 | Description                                    | CloudEngine S5731-H |
|----------------------|-----------------|------------------------------------------------|---------------------|
| Ethernet features    | Ethernet basics | Full-duplex, half-duplex, and auto-negotiation | Yes                 |

| Function and Feature |      | Description                                                          | CloudEngine S5731-H |
|----------------------|------|----------------------------------------------------------------------|---------------------|
|                      |      | Rate auto-negotiation on an interface                                | Yes                 |
|                      |      | Auto MDI and MDI-X                                                   | Yes                 |
|                      |      | Flow control on an interface                                         | Yes                 |
|                      |      | Jumbo frames                                                         | Yes                 |
|                      |      | Link aggregation                                                     | Yes                 |
|                      |      | Load balancing among links of a trunk                                | Yes                 |
|                      |      | Transparent transmission of Layer 2 protocol packets                 | Yes                 |
|                      |      | Device Link Detection Protocol (DLDP)                                | Yes                 |
|                      |      | Link Layer Discovery Protocol (LLDP)                                 | Yes                 |
|                      |      | Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED)    | Yes                 |
|                      |      | Interface isolation                                                  | Yes                 |
|                      |      | Broadcast traffic suppression on an interface                        | Yes                 |
|                      |      | Multicast traffic suppression on an interface                        | Yes                 |
|                      |      | Unknown unicast traffic suppression on an interface                  | Yes                 |
|                      |      | VLAN broadcast traffic suppression                                   | Yes                 |
|                      |      | VLAN multicast traffic suppression                                   | Yes                 |
|                      |      | VLAN unknown unicast traffic suppression                             | Yes                 |
|                      | VLAN | VLAN specification                                                   | 4094                |
|                      |      | VLANIF interface specification                                       | 1024                |
|                      |      | Access mode                                                          | Yes                 |
|                      |      | Trunk mode                                                           | Yes                 |
|                      |      | Hybrid mode                                                          | Yes                 |
|                      |      | QinQ mode                                                            | Yes                 |
|                      |      | Default VLAN                                                         | Yes                 |
|                      |      | VLAN assignment based on interfaces                                  | Yes                 |
|                      |      | VLAN assignment based on protocols                                   | Yes                 |
|                      |      | VLAN assignment based on IP subnets                                  | Yes                 |
|                      |      | VLAN assignment based on MAC addresses                               | Yes                 |
|                      |      | VLAN assignment based on MAC address + IP address                    | Yes                 |
|                      |      | VLAN assignment based on MAC address + IP address + interface number | Yes                 |

| Function and Feature |      | Description                                                | CloudEngine S5731-H |
|----------------------|------|------------------------------------------------------------|---------------------|
|                      |      | Adding double VLAN tags to packets based on interfaces     | Yes                 |
|                      |      | Super-VLAN                                                 | Yes                 |
|                      |      | Super-VLAN specification                                   | 256                 |
|                      |      | Sub-VLAN                                                   | Yes                 |
|                      |      | Sub-VLAN specification                                     | 1K                  |
|                      |      | VLAN mapping                                               | Yes                 |
|                      |      | Selective QinQ                                             | Yes                 |
|                      |      | MUX VLAN                                                   | Yes                 |
|                      |      | Voice VLAN                                                 | Yes                 |
|                      |      | Guest VLAN                                                 | Yes                 |
|                      | GVRP | GARP                                                       | Yes                 |
|                      |      | GVRP                                                       | Yes                 |
|                      | VCMP | VCMP                                                       | Yes                 |
|                      | MAC  | MAC address                                                | 288K                |
|                      |      | Automatic learning of MAC addresses                        | Yes                 |
|                      |      | Automatic aging of MAC addresses                           | Yes                 |
|                      |      | Static, dynamic, and blackhole MAC address entries         | Yes                 |
|                      |      | Interface-based MAC address learning limiting              | Yes                 |
|                      |      | Sticky MAC                                                 | Yes                 |
|                      |      | MAC address flapping detection                             | Yes                 |
|                      |      | Configuring MAC address learning priorities for interfaces | Yes                 |
|                      |      | MAC address spoofing defense                               | Yes                 |
|                      |      | Port bridge                                                | Yes                 |
|                      | ARP  | Static ARP                                                 | Yes                 |
|                      |      | Dynamic ARP                                                | Yes                 |
|                      |      | ARP entry                                                  | 128K                |
|                      |      | ARP aging detection                                        | Yes                 |
|                      |      | Intra-VLAN proxy ARP                                       | Yes                 |
|                      |      | Inter-VLAN proxy ARP                                       | Yes                 |
|                      |      | Routed proxy ARP                                           | Yes                 |
|                      |      | Multi-egress-interface ARP                                 | Yes                 |
| Ethernet loop        | MSTP | STP                                                        | Yes                 |

| Function and Feature |                          | Description                                             | CloudEngine S5731-H |
|----------------------|--------------------------|---------------------------------------------------------|---------------------|
| protection           |                          | RSTP                                                    | Yes                 |
|                      |                          | MSTP                                                    | Yes                 |
|                      |                          | VBST                                                    | Yes                 |
|                      |                          | BPDU protection                                         | Yes                 |
|                      |                          | Root protection                                         | Yes                 |
|                      |                          | Loop protection                                         | Yes                 |
|                      |                          | Defense against TC BPDU attacks                         | Yes                 |
|                      | Loopback detection       | Loop detection on an interface                          | Yes                 |
|                      | SEP                      | SEP                                                     | Yes                 |
|                      | Smart Link               | Smart Link                                              | Yes                 |
|                      |                          | Smart Link multi-instance                               | Yes                 |
|                      |                          | Monitor Link                                            | Yes                 |
|                      | RRPP                     | RRPP                                                    | Yes                 |
|                      |                          | Single RRPP ring                                        | Yes                 |
|                      |                          | Tangent RRPP ring                                       | Yes                 |
|                      |                          | Intersecting RRPP ring                                  | Yes                 |
|                      |                          | Hybrid networking of RRPP rings and other ring networks | Yes                 |
|                      | ERPS                     | G.8032 v1                                               | Yes                 |
|                      |                          | G.8032 v2                                               | Yes                 |
|                      |                          | ERPS semi-ring topology                                 | Yes                 |
|                      |                          | ERPS closed-ring topology                               | Yes                 |
| IPv4/IPv6 forwarding | IPv4 and unicast routing | IPv4 static routing                                     | Yes                 |
|                      |                          | VRF                                                     | Yes                 |
|                      |                          | DHCP client                                             | Yes                 |
|                      |                          | DHCP server                                             | Yes                 |
|                      |                          | DHCP relay                                              | Yes                 |
|                      |                          | DHCP policy VLAN                                        | Yes                 |
|                      |                          | URPF check                                              | Yes                 |
|                      |                          | Routing policies                                        | Yes                 |
|                      |                          | IPv4 routes                                             | 512K                |
|                      |                          | RIPv1                                                   | Yes                 |
|                      |                          | RIPv2                                                   | Yes                 |
|                      |                          | OSPF                                                    | Yes                 |
|                      |                          | BGP                                                     | Yes                 |

| Function and Feature       |                            | Description                      | CloudEngine S5731-H |
|----------------------------|----------------------------|----------------------------------|---------------------|
|                            |                            | MBGP                             | Yes                 |
|                            |                            | IS-IS                            | Yes                 |
|                            |                            | Policy-based routing (PBR)       | Yes                 |
|                            | Multicast routing features | IGMPv1/v2/v3                     | Yes                 |
|                            |                            | PIM-DM                           | Yes                 |
|                            |                            | PIM-SM                           | Yes                 |
|                            |                            | MSDP                             | Yes                 |
|                            |                            | IPv4 multicast routes            | 16K                 |
|                            |                            | IPv6 multicast routes            | 16K                 |
|                            |                            | Multicast routing policies       | Yes                 |
|                            |                            | RPF                              | Yes                 |
|                            | IPv6 features              | IPv6 protocol stack              | Yes                 |
|                            |                            | ND                               | Yes                 |
|                            |                            | ND entry                         | 64K                 |
|                            |                            | ND snooping                      | Yes                 |
|                            |                            | DHCPv6 snooping                  | Yes                 |
|                            |                            | RIPng                            | Yes                 |
|                            |                            | DHCPv6 server                    | Yes                 |
|                            |                            | DHCPv6 relay                     | Yes                 |
|                            |                            | OSPFv3                           | Yes                 |
|                            |                            | BGP4+                            | Yes                 |
|                            |                            | IS-IS for IPv6                   | Yes                 |
|                            |                            | IPv6 routes                      | 64K                 |
|                            |                            | VRRP6                            | Yes                 |
|                            |                            | MLDv1/v2                         | Yes                 |
|                            |                            | PIM-DM for IPv6                  | Yes                 |
|                            |                            | PIM-SM for IPv6                  | Yes                 |
|                            | IPv6 transition technology | IPv6 manual tunneling            | Yes                 |
| Layer 2 multicast features | -                          | IGMPv1/v2/v3 snooping            | Yes                 |
|                            |                            | IGMP snooping proxy              | Yes                 |
|                            |                            | MLD snooping                     | Yes                 |
|                            |                            | Multicast traffic suppression    | Yes                 |
|                            |                            | Inter-VLAN multicast replication | Yes                 |
| MPLS & VPN                 | MPLS basic functions       | LDP protocol                     | Yes                 |

| Function and Feature |                 | Description                                                      | CloudEngine S5731-H |
|----------------------|-----------------|------------------------------------------------------------------|---------------------|
|                      |                 | Double MPLS labels                                               | Yes                 |
|                      |                 | Mapping from 802.1p priorities to EXP priorities in MPLS packets | Yes                 |
|                      |                 | Mapping from DSCP priorities to EXP priorities in MPLS packets   | Yes                 |
|                      | MPLS TE         | MPLS-TE tunnel establishment                                     | Yes                 |
|                      |                 | MPLS-TE tunnel specification                                     | 256                 |
|                      |                 | MPLS-TE protection group                                         | Yes                 |
|                      | VPN             | MCE                                                              | Yes                 |
|                      |                 | GRE tunneling                                                    | Yes                 |
|                      |                 | GRE tunnel specification                                         | 512                 |
|                      |                 | VLL                                                              | Yes                 |
|                      |                 | PWE3                                                             | Yes                 |
|                      |                 | VPLS                                                             | Yes                 |
|                      |                 | MPLS L3VPN                                                       | Yes                 |
|                      |                 | IPSec Efficient VPN                                              | Yes                 |
| Device reliability   | BFD             | Single-hop BFD                                                   | Yes                 |
|                      |                 | BFD for static routes                                            | Yes                 |
|                      |                 | BFD for OSPF                                                     | Yes                 |
|                      |                 | BFD for IS-IS                                                    | Yes                 |
|                      |                 | BFD for BGP                                                      | Yes                 |
|                      |                 | BFD for PIM                                                      | Yes                 |
|                      |                 | BFD for VRRP                                                     | Yes                 |
|                      | Stacking        | Service interface-based stacking                                 | Yes                 |
|                      |                 | Maximum number of stacked devices                                | 9                   |
|                      |                 | Stack bandwidth (Bidirectional)                                  | 240Gbps(MAX)        |
|                      | VRRP            | VRRP standard protocol                                           | Yes                 |
| Ethernet OAM         | EFM (802.3ah)   | Automatic discovery of links                                     | Yes                 |
|                      |                 | Link fault detection                                             | Yes                 |
|                      |                 | Link troubleshooting                                             | Yes                 |
|                      |                 | Remote loopback                                                  | Yes                 |
|                      | CFM (802.1ag)   | Software-level CCM                                               | Yes                 |
|                      |                 | 802.1ag MAC ping                                                 | Yes                 |
|                      |                 | 802.1ag MAC trace                                                | Yes                 |
|                      | OAM association | Association between 802.1ag and 802.3ah                          | Yes                 |

| Function and Feature          |                                        | Description                                      | CloudEngine S5731-H |
|-------------------------------|----------------------------------------|--------------------------------------------------|---------------------|
|                               | Y.1731                                 | Unidirectional delay and jitter measurement      | Yes                 |
|                               |                                        | Bidirectional delay and jitter measurement       | Yes                 |
| QoS features                  | Traffic classification                 | Traffic classification based on ACLs             | Yes                 |
|                               |                                        | Matching the simple domains of packets           | Yes                 |
|                               | Traffic behavior                       | Traffic filtering                                | Yes                 |
|                               |                                        | Traffic policing (CAR)                           | Yes                 |
|                               |                                        | Modifying the packet priorities                  | Yes                 |
|                               |                                        | Modifying the simple domains of packets          | Yes                 |
|                               |                                        | Modifying the packet VLANs                       | Yes                 |
|                               | Traffic shaping                        | Traffic shaping on an egress interface           | Yes                 |
|                               |                                        | Traffic shaping on queues on an interface        | Yes                 |
|                               | Congestion avoidance                   | Weighted Random Early Detection (WRED) on queues | Yes                 |
|                               |                                        | Tail drop                                        | Yes                 |
|                               | Congestion management                  | Priority Queuing (PQ)                            | Yes                 |
|                               |                                        | Weighted Deficit Round Robin (WDRR)              | Yes                 |
|                               |                                        | PQ+WDRR                                          | Yes                 |
|                               |                                        | Weighted Round Robin (WRR)                       | Yes                 |
|                               |                                        | PQ+WRR                                           | Yes                 |
| ACL                           | Packet filtering at Layer 2 to Layer 4 | Basic IPv4 ACL                                   | Yes                 |
|                               |                                        | Advanced IPv4 ACL                                | Yes                 |
|                               |                                        | Basic IPv6 ACL                                   | Yes                 |
|                               |                                        | Advanced IPv6 ACL                                | Yes                 |
|                               |                                        | Layer 2 ACL                                      | Yes                 |
|                               |                                        | User group ACL                                   | Yes                 |
|                               |                                        | User-defined ACL                                 | Yes                 |
| Configuration and maintenance | Login and configuration management     | Command line interface (CLI)-based configuration | Yes                 |
|                               |                                        | Console terminal service                         | Yes                 |
|                               |                                        | Telnet terminal service                          | Yes                 |
|                               |                                        | SSH v1.5                                         | Yes                 |
|                               |                                        | SSH v2.0                                         | Yes                 |
|                               |                                        | SNMP-based NMS for unified configuration         | Yes                 |
|                               |                                        | Web page-based configuration and management      | Yes                 |
|                               |                                        | EasyDeploy (client)                              | Yes                 |

| Function and Feature |                            | Description                     | CloudEngine S5731-H |
|----------------------|----------------------------|---------------------------------|---------------------|
|                      |                            | EasyDeploy (commander)          | Yes                 |
|                      |                            | SVF                             | Yes                 |
|                      |                            | Cloud management                | Yes                 |
|                      |                            | OPS                             | Yes                 |
|                      | File system                | Directory and file management   | Yes                 |
|                      |                            | File upload and download        | Yes                 |
|                      | Monitoring and maintenance | Deception                       | Yes                 |
|                      |                            | ECA                             | Yes                 |
|                      |                            | eMDI                            | Yes                 |
|                      |                            | Hardware monitoring             | Yes                 |
|                      |                            | Log information output          | Yes                 |
|                      |                            | Alarm information output        | Yes                 |
|                      |                            | Debugging information output    | Yes                 |
|                      |                            | Port mirroring                  | Yes                 |
|                      |                            | Flow mirroring                  | Yes                 |
|                      |                            | Remote mirroring                | Yes                 |
|                      |                            | Energy saving                   | Yes                 |
|                      | Version upgrade            | Version upgrade                 | Yes                 |
|                      |                            | Version rollback                | Yes                 |
| Security             | ARP security               | ARP packet rate limiting        | Yes                 |
|                      |                            | ARP anti-spoofing               | Yes                 |
|                      |                            | Association between ARP and STP | Yes                 |
|                      |                            | ARP gateway anti-collision      | Yes                 |
|                      |                            | Dynamic ARP Inspection (DAI)    | Yes                 |
|                      |                            | Static ARP Inspection (SAI)     | Yes                 |
|                      |                            | Egress ARP Inspection (EAI)     | Yes                 |
|                      | IP security                | ICMP attack defense             | Yes                 |
|                      |                            | IPSG for IPv4                   | Yes                 |
|                      |                            | IPSG user capacity              | 3000                |
|                      |                            | IPSG for IPv6                   | Yes                 |
|                      |                            | IPSGv6 user capacity            | 1500                |
|                      | Local attack defense       | CPU attack defense              | Yes                 |
|                      | MFF                        | MFF                             | Yes                 |
|                      | MACSec                     | MACSec-256                      | Yes                 |

| Function and Feature           |                    | Description                              | CloudEngine S5731-H |
|--------------------------------|--------------------|------------------------------------------|---------------------|
|                                | DHCP snooping      | DHCP snooping                            | Yes                 |
|                                |                    | Option 82 function                       | Yes                 |
|                                |                    | Dynamic rate limiting for DHCP packets   | Yes                 |
|                                | Attack defense     | Defense against malformed packet attacks | Yes                 |
|                                |                    | Defense against UDP flood attacks        | Yes                 |
|                                |                    | Defense against TCP SYN flood attacks    | Yes                 |
|                                |                    | Defense against ICMP flood attacks       | Yes                 |
|                                |                    | Defense against packet fragment attacks  | Yes                 |
|                                |                    | Local URPF                               | Yes                 |
| User access and authentication | AAA                | Local authentication                     | Yes                 |
|                                |                    | Local authorization                      | Yes                 |
|                                |                    | RADIUS authentication                    | Yes                 |
|                                |                    | RADIUS authorization                     | Yes                 |
|                                |                    | RADIUS accounting                        | Yes                 |
|                                |                    | HWTACACS authentication                  | Yes                 |
|                                |                    | HWTACACS authorization                   | Yes                 |
|                                |                    | HWTACACS accounting                      | Yes                 |
|                                | NAC                | 802.1X authentication                    | Yes                 |
|                                |                    | MAC address authentication               | Yes                 |
|                                |                    | Portal authentication                    | Yes                 |
|                                |                    | Hybrid authentication                    | Yes                 |
|                                | Policy association | Functioning as the control device        | Yes                 |
| Network management             | -                  | Ping                                     | Yes                 |
|                                |                    | Tracert                                  | Yes                 |
|                                |                    | NQA                                      | Yes                 |
|                                |                    | NTP                                      | Yes                 |
|                                |                    | iPCA                                     | Yes                 |
|                                |                    | Smart Application Control (SAC)          | Yes                 |
|                                |                    | NetStream                                | Yes                 |
|                                |                    | SNMP v1                                  | Yes                 |
|                                |                    | SNMP v2c                                 | Yes                 |
|                                |                    | SNMP v3                                  | Yes                 |
|                                |                    | HTTP                                     | Yes                 |
|                                |                    | HTTPS                                    | Yes                 |

| Function and Feature |   | Description                             | CloudEngine S5731-H             |
|----------------------|---|-----------------------------------------|---------------------------------|
|                      |   | RMON                                    | Yes                             |
|                      |   | RMON2                                   | Yes                             |
|                      |   | NETCONF/YANG                            | Yes                             |
| WLAN                 | - | AP management                           | Yes                             |
|                      |   | Number of managed APs                   | 1,024                           |
|                      |   | Radio management                        | Yes                             |
|                      |   | WLAN service management                 | Yes                             |
|                      |   | WLAN QoS                                | Yes                             |
|                      |   | WLAN security                           | Yes                             |
|                      |   | WLAN user management                    | Yes                             |
| VXLAN                | - | VXLAN Layer 2 gateway                   | Yes, require additional license |
|                      |   | VXLAN Layer 3 gateway                   | Yes, require additional license |
|                      |   | Centralized gateway                     | Yes, require additional license |
|                      |   | Distributed gateway                     | Yes, require additional license |
|                      |   | BGP-EVPN                                | Yes, require additional license |
|                      |   | BGP-EVPN neighbor capacity              | 256, require additional license |
| Interoperability     | - | VLAN-based Spanning Tree (VBST)         | Yes                             |
|                      |   | Link-type Negotiation Protocol (LNP)    | Yes                             |
|                      |   | VLAN Central Management Protocol (VCMP) | Yes                             |

#### NOTE

This content is applicable only to regions outside mainland China. Huawei reserves the right to interpret this content.

## Hardware Specifications

The following table lists the hardware specifications of the CloudEngine S5731-H.

| Item                    |                                      | CloudEngine S5731-H24HB4XZ                                         | CloudEngine S5731-H48HB4XZ                |
|-------------------------|--------------------------------------|--------------------------------------------------------------------|-------------------------------------------|
| Physical specifications | Dimensions (H x W x D, mm)           | 43.6 x 442 x 420                                                   | 43.6 x 442 x 420                          |
|                         | Chassis height                       | 1 U                                                                | 1 U                                       |
|                         | Chassis weight (including packaging) | 8.4 kg                                                             | 8.8 kg                                    |
| Fixed port              | GE port                              | 20                                                                 | 44                                        |
|                         | 2.5GE port                           | 24                                                                 | 32                                        |
|                         | 10GE SFP+ port                       | 4 uplinks, 4 downlinks, can work at 1Gbps                          | 4 uplinks, 4 downlinks, can work at 1Gbps |
| Extended slot           |                                      | One extended slot, support 2 x 40GE QSFP+, 8 x 10GE Base-T and 8 x |                                           |

| Item                    |                                                   | CloudEngine S5731-H24HB4XZ                                                                                                                                                                                                                                                                               | CloudEngine S5731-H48HB4XZ                                                                                                                                                                                                                                                                               |
|-------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                                                   | 10GE SFP+ or 2*25GE cards                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                          |
| Management port         | ETH port                                          | Supported                                                                                                                                                                                                                                                                                                | Supported                                                                                                                                                                                                                                                                                                |
|                         | Console port (RJ45)                               | Supported                                                                                                                                                                                                                                                                                                | Supported                                                                                                                                                                                                                                                                                                |
|                         | USB port                                          | USB 2.0                                                                                                                                                                                                                                                                                                  | USB 2.0                                                                                                                                                                                                                                                                                                  |
| CPU                     | Frequency                                         | 1.4 GHz                                                                                                                                                                                                                                                                                                  | 1.4 GHz                                                                                                                                                                                                                                                                                                  |
|                         | Cores                                             | 4                                                                                                                                                                                                                                                                                                        | 4                                                                                                                                                                                                                                                                                                        |
| Storage                 | Memory (RAM)                                      | 2 GB                                                                                                                                                                                                                                                                                                     | 2 GB                                                                                                                                                                                                                                                                                                     |
| Power supply system     | Power supply type                                 | <ul style="list-style-type: none"> <li>600 W PoE AC (pluggable)</li> <li>1000 W PoE AC (pluggable)</li> <li>1000 W PoE DC (pluggable)</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>600 W PoE AC (pluggable)</li> <li>1000 W PoE AC (pluggable)</li> <li>1000 W PoE DC (pluggable)</li> </ul>                                                                                                                                                         |
|                         | Rated voltage range                               | <ul style="list-style-type: none"> <li>AC input (600 /1000 W PoE AC ): 100 V AC to 240 V AC, 50/60 Hz</li> <li>AC input (600 /1000 W PoE AC ): 240 V DC,</li> <li>DC input (1000 W PoE DC): -48 VDC to -60 V DC</li> </ul>                                                                               | <ul style="list-style-type: none"> <li>AC input (600 /1000W PoE AC ): 100 V AC to 240 V AC, 50/60 Hz</li> <li>AC input (600 /1000 W PoE AC ): 240 V DC,</li> <li>DC input (1000 W PoE DC): -48 VDC to -60 V DC</li> </ul>                                                                                |
|                         | Maximum voltage range                             | <ul style="list-style-type: none"> <li>AC input (600W /1000 W PoE AC ): 90 V AC to 290 V AC, 45 Hz to 65 Hz</li> <li>High-voltage DC input (600W /1000 W PoE AC): 190 V DC to 290 V DC (meeting 240 V high-voltage DC certification)</li> <li>DC input (1000 W PoE DC): -38.4 V DC to -72V DC</li> </ul> | <ul style="list-style-type: none"> <li>AC input (600W /1000 W PoE AC ): 90 V AC to 290 V AC, 45 Hz to 65 Hz</li> <li>High-voltage DC input (600W /1000 W PoE AC): 190 V DC to 290 V DC (meeting 240 V high-voltage DC certification)</li> <li>DC input (1000 W PoE DC): -38.4 V DC to -72V DC</li> </ul> |
|                         | Maximum power consumption                         | <ul style="list-style-type: none"> <li>127 W (without PD)</li> <li>1927 W (with PD, PD power consumption of 1768W)</li> </ul>                                                                                                                                                                            | <ul style="list-style-type: none"> <li>151 W (without PD)</li> <li>1927 W (with PD, PD power consumption of 1745W)</li> </ul>                                                                                                                                                                            |
|                         | Minimum power consumption                         | 66W                                                                                                                                                                                                                                                                                                      | 66W                                                                                                                                                                                                                                                                                                      |
|                         | Typical Power Consumption                         | 87W                                                                                                                                                                                                                                                                                                      | 118W                                                                                                                                                                                                                                                                                                     |
|                         |                                                   |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                          |
| Heat dissipation system | Heat dissipation mode                             | Air cooling for heat dissipation, intelligent fan speed adjustment                                                                                                                                                                                                                                       | Air cooling for heat dissipation, intelligent fan speed adjustment                                                                                                                                                                                                                                       |
|                         | Number of fan modules                             | 2                                                                                                                                                                                                                                                                                                        | 2                                                                                                                                                                                                                                                                                                        |
|                         | Airflow                                           | Air intake from left, front, and right and air exhaust from rear                                                                                                                                                                                                                                         | Air intake from left, front, and right and air exhaust from rear                                                                                                                                                                                                                                         |
|                         | Maximum heat dissipation of the device (BTU/hour) | POE: 6575.12<br>non PoE: 433.34                                                                                                                                                                                                                                                                          | POE: 6575.12<br>non PoE: 515.23                                                                                                                                                                                                                                                                          |
| Environment parameters  | Long-term operating temperature                   | <ul style="list-style-type: none"> <li>0-1800 m: -5°C to 45°C</li> <li>1800-5000 m: The operating</li> </ul>                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>0-1800 m: -5°C to 45°C</li> <li>1800-5000 m: The operating</li> </ul>                                                                                                                                                                                             |

| Item          |                                              | CloudEngine S5731-H24HB4XZ                                                                                                                                                                                                                                                                                              | CloudEngine S5731-H48HB4XZ                                                                                                                                                                                                              |
|---------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                              | temperature decreases 1°C every time the altitude increases 220 m.                                                                                                                                                                                                                                                      | temperature decreases 1°C every time the altitude increases 220 m.                                                                                                                                                                      |
|               | Storage temperature                          | -40°C to +70°C                                                                                                                                                                                                                                                                                                          | -40°C to +70°C                                                                                                                                                                                                                          |
|               | Relative humidity                            | 5%–95% (non-condensing)                                                                                                                                                                                                                                                                                                 | 5%–95% (non-condensing)                                                                                                                                                                                                                 |
|               | Operating altitude                           | 0–5000 m                                                                                                                                                                                                                                                                                                                | 0–5000 m                                                                                                                                                                                                                                |
|               | Noise under normal temperature (sound power) | <ul style="list-style-type: none"> <li>Dual-AC 600 W, 70% load: 57.77 dBA</li> <li>Dual-AC 1000 W, 70% load: 63.78 dBA</li> <li>Dual-DC 1000 W, 70% load: 62.38 dBA</li> <li>Dual-AC 600 W, 100% load: 63.78 dBA</li> <li>Dual-AC 1000 W, 100% load: 68.07 dBA</li> <li>Dual-DC 1000 W, 100% load: 66.26 dBA</li> </ul> | Dual-AC 600 W, 70% load: 57.77 dBA<br>Dual-AC 1000 W, 70% load: 63.78 dBA<br>Dual-DC 1000 W, 70% load: 62.38 dBA<br>Dual-AC 600 W, 100% load: 63.78 dBA<br>Dual-AC 1000 W, 100% load: 68.07 dBA<br>Dual-DC 1000 W, 100% load: 66.26 dBA |
|               | Noise under high temperature (sound power)   | Dual-AC 600 W, 100% load: 70.63 dBA<br>Dual-AC 1000 W, 100% load: 81.05 dBA<br>Dual-DC 1000 W, 100% load: 73.79 dBA                                                                                                                                                                                                     | Dual-AC 600 W, 100% load: 70.63 dBA<br>Dual-AC 1000 W, 100% load: 81.05 dBA<br>Dual-DC 1000 W, 100% load: 73.79 dBA                                                                                                                     |
|               | Surge protection specification (power port)  | <ul style="list-style-type: none"> <li>AC power port: ±6 kV in differential mode, ±6 kV in common mode</li> <li>DC power port: ±2 kV in differential mode, ±4 kV in common mode</li> </ul>                                                                                                                              | <ul style="list-style-type: none"> <li>AC power port: ±6 kV in differential mode, ±6 kV in common mode</li> <li>DC power port: ±2 kV in differential mode, ±4 kV in common mode</li> </ul>                                              |
| Reliability   | MTBF (year) <sup>2</sup>                     | 53.82                                                                                                                                                                                                                                                                                                                   | 53.82                                                                                                                                                                                                                                   |
|               | MTTR (hour)                                  | 2                                                                                                                                                                                                                                                                                                                       | 2                                                                                                                                                                                                                                       |
|               | Availability                                 | > 0.99999                                                                                                                                                                                                                                                                                                               | > 0.99999                                                                                                                                                                                                                               |
| Certification |                                              | <ul style="list-style-type: none"> <li>EMC certification</li> <li>Safety certification</li> <li>Manufacturing certification</li> </ul> For details about certifications, see the section Safety and Regulatory Compliance.                                                                                              | <ul style="list-style-type: none"> <li>EMC certification</li> <li>Safety certification</li> <li>Manufacturing certification</li> </ul> For details about certifications, see the section Safety and Regulatory Compliance.              |

#### NOTE

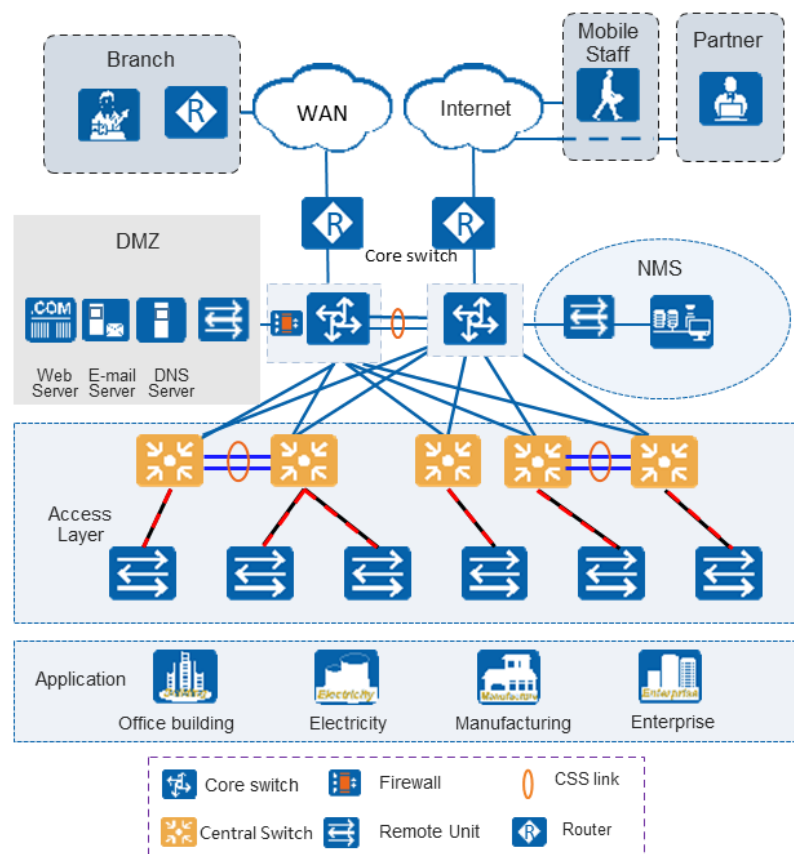
1: The power consumption under different load conditions is calculated according to the ATIS standard. Additionally, the EEE function is enabled and there is no PoE power output.

2: The reliability parameter values are calculated based on the typical configuration of the device. The parameter values vary according to the modules configured by the customer.

# Networking and Applications

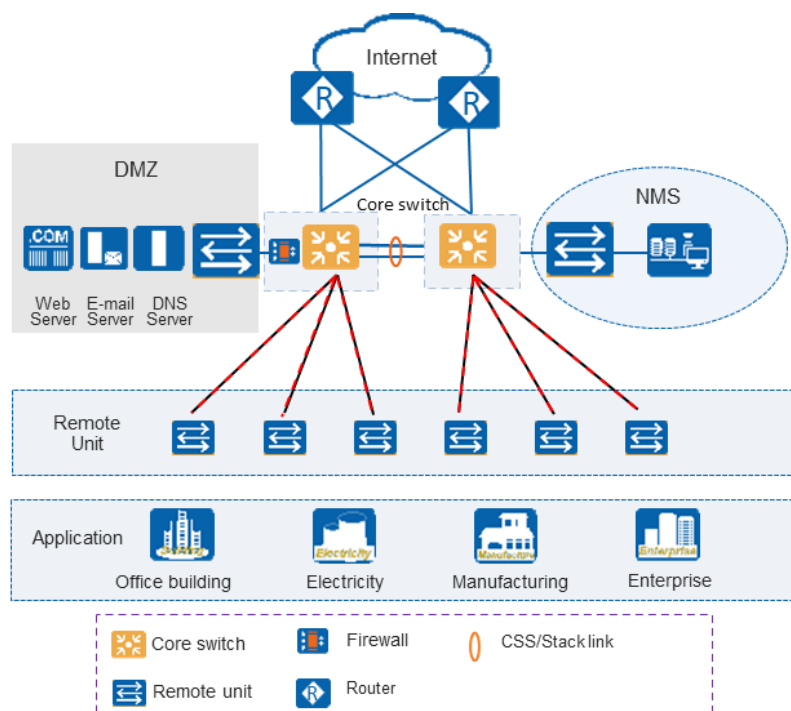
## Large-Scale Enterprise Campus Network

CloudEngine S12700E or S7700 switches are used as the core of the campus network. Independent firewalls are used to implement platform security in the DMZ. Central switches and remote units as access switches to provide wired or wireless access services for campus terminals. These switches can be widely used in government and enterprise offices, commercial buildings, energy and electricity, manufacturing and other industries.



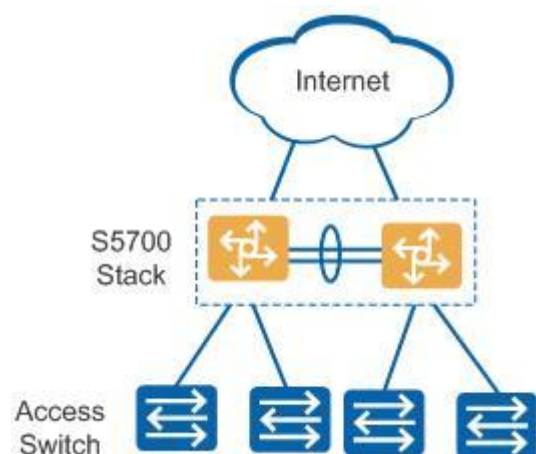
## Small- or Medium-scale Enterprise Campus Network

CloudEngine S5731-H series switches are used as the core of a small- and medium-sized campus network. Independent firewalls are used to implement platform security in the DMZ. Central switches use remote modules to flexibly expand ports to provide access services for end users.



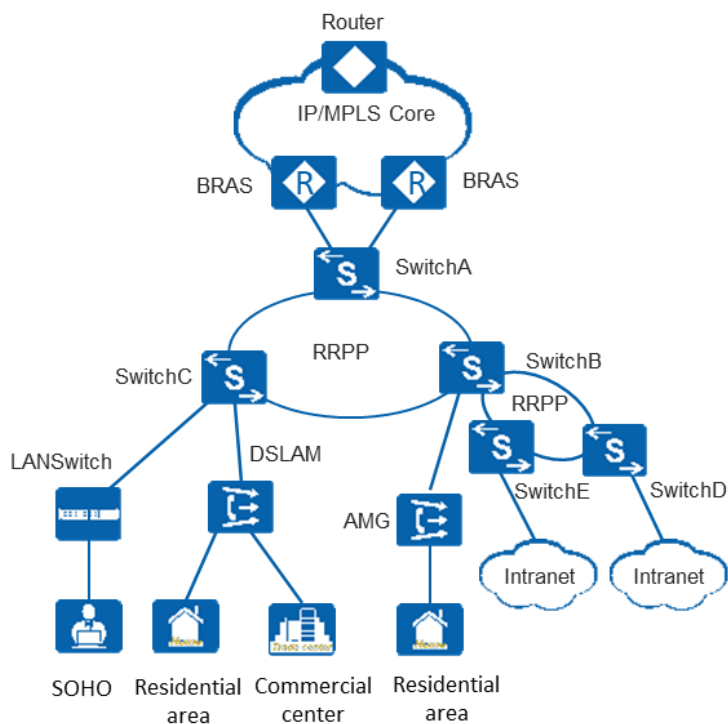
## Small-scale Enterprise Campus Network

With powerful aggregation and routing capabilities of CloudEngine S5731-H series switches make them suitable for use as core switches in a small-scale enterprise network. Two or more S5731-H 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

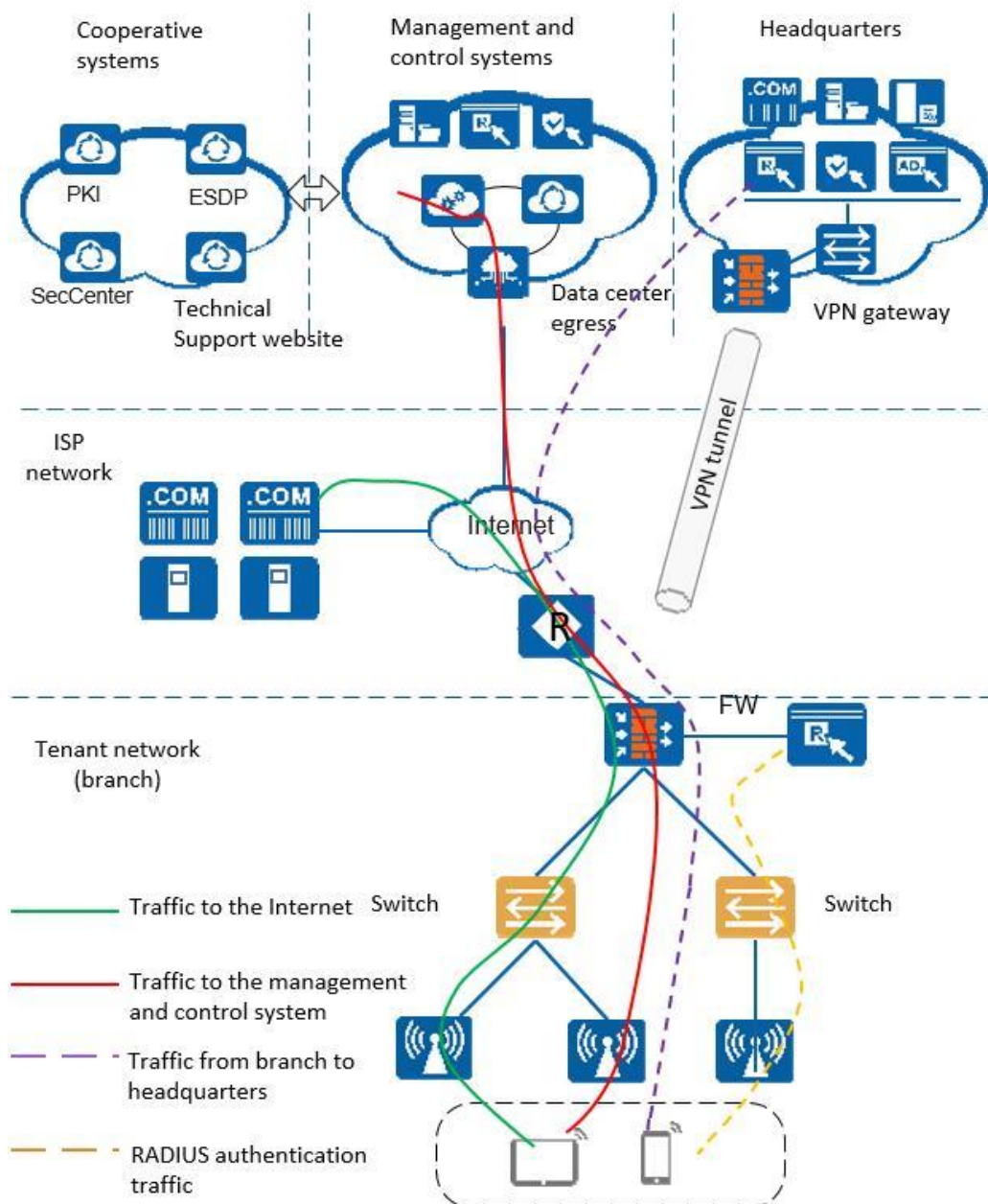
CloudEngine S5731-H series switches can be deployed at the access layer of a MAN(Metropolitan Area Network) to build a high-performance, multi-service, and highly reliable ISP MAN network.



## Application in Public Cloud

CloudCampus Solution is a network solution suite based on Huawei public cloud. CloudEngine S5731-H 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 (CloudCampus@AC-Campus for switches running V200R019C00 and earlier versions; iMaster NCE-Campus for switches running V200R019C10 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.



## Safety and Regulatory Compliance

The following table lists the safety and regulatory compliance of the CloudEngine S5731-H.

Safety and regulatory compliance of the CloudEngine S5731-H series

| Certification Category | Description                                                                                                                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety                 | <ul style="list-style-type: none"> <li>• IEC 60950-1</li> <li>• EN 60950-1/A11/A12</li> <li>• UL 60950-1</li> <li>• CSA C22.2 No 60950-1</li> <li>• AS/NZS 60950.1</li> <li>• CNS 14336-1</li> <li>• IEC60825-1</li> <li>• IEC60825-2</li> </ul> |

| Certification Category              | Description                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | <ul style="list-style-type: none"> <li>• EN60825-1</li> <li>• EN60825-2</li> </ul>                                                                                                                                                                                                                                                                                                                                |
| Electromagnetic Compatibility (EMC) | <ul style="list-style-type: none"> <li>• CISPR22 Class A</li> <li>• CISPR24</li> <li>• EN55022 Class A</li> <li>• EN55024</li> <li>• ETSI EN 300 386 Class A</li> <li>• CFR 47 FCC Part 15 Class A</li> <li>• ICES 003 Class A</li> <li>• AS/NZS CISPR22 Class A</li> <li>• VCCI Class A</li> <li>• IEC61000-4-2</li> <li>• ITU-T K 20</li> <li>• ITU-T K 21</li> <li>• ITU-T K 44</li> <li>• CNS13438</li> </ul> |
| Environment                         | <ul style="list-style-type: none"> <li>• RoHS</li> <li>• REACH</li> <li>• WEEE</li> </ul>                                                                                                                                                                                                                                                                                                                         |

#### NOTE

- EMC: electromagnetic compatibility
- CISPR: International Special Committee on Radio Interference
- EN: European Standard
- ETSI: European Telecommunications Standards Institute
- CFR: Code of Federal Regulations
- FCC: Federal Communication Commission
- IEC: International Electrotechnical Commission
- AS/NZS: Australian/New Zealand Standard
- VCCI: Voluntary Control Council for Interference
- UL: Underwriters Laboratories
- CSA: Canadian Standards Association
- IEEE: Institute of Electrical and Electronics Engineers
- RoHS: restriction of the use of certain hazardous substances
- REACH: Registration Evaluation Authorization and Restriction of Chemicals
- WEEE: Waste Electrical and Electronic Equipment

## MIB and Standards Compliance

### Supported MIBs

The following table lists the MIBs supported by the CloudEngine S5731-H.

MIBs supported by the CloudEngine S5731-H series

| Category   | MIB                                                            |
|------------|----------------------------------------------------------------|
| Public MIB | <ul style="list-style-type: none"> <li>• BRIDGE-MIB</li> </ul> |

| Category               | MIB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <ul style="list-style-type: none"> <li>• DISMAN-NSLOOKUP-MIB</li> <li>• DISMAN-PING-MIB</li> <li>• DISMAN-TRACEROUTE-MIB</li> <li>• ENTITY-MIB</li> <li>• EtherLike-MIB</li> <li>• IF-MIB</li> <li>• IP-FORWARD-MIB</li> <li>• IPv6-MIB</li> <li>• LAG-MIB</li> <li>• LLDP-EXT-DOT1-MIB</li> <li>• LLDP-EXT-DOT3-MIB</li> <li>• LLDP-MIB</li> <li>• MPLS-FTN-STD-MIB</li> <li>• MPLS-L3VPN-STD-MIB</li> <li>• MPLS-LDP-GENERIC-STD-MIB</li> <li>• MPLS-LDP-STD-MIB</li> <li>• MPLS-LSR-STD-MIB</li> <li>• MPLS-TE-STD-MIB</li> <li>• NOTIFICATION-LOG-MIB</li> <li>• NQA-MIB</li> <li>• OSPF-TRAP-MIB</li> <li>• P-BRIDGE-MIB</li> <li>• Q-BRIDGE-MIB</li> <li>• RFC1213-MIB</li> <li>• RIPv2-MIB</li> <li>• RMON2-MIB</li> <li>• RMON-MIB</li> <li>• SAVI-MIB</li> <li>• SNMP-FRAMEWORK-MIB</li> <li>• SNMP-MPD-MIB</li> <li>• SNMP-NOTIFICATION-MIB</li> <li>• SNMP-TARGET-MIB</li> <li>• SNMP-USER-BASED-SM-MIB</li> <li>• SNMPv2-MIB</li> <li>• TCP-MIB</li> <li>• UDP-MIB</li> </ul> |
| Huawei-proprietary MIB | <ul style="list-style-type: none"> <li>• HUAWEI-AAA-MIB</li> <li>• HUAWEI-ACL-MIB</li> <li>• HUAWEI-ALARM-MIB</li> <li>• HUAWEI-ALARM-RELIABILITY-MIB</li> <li>• HUAWEI-BASE-TRAP-MIB</li> <li>• HUAWEI-BRAS-RADIUS-MIB</li> <li>• HUAWEI-BRAS-SRVCFG-EAP-MIB</li> <li>• HUAWEI-BRAS-SRVCFG-STATICUSER-MIB</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Category | MIB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <ul style="list-style-type: none"> <li>• HUAWEI-CBQOS-MIB</li> <li>• HUAWEI-CDP-COMPLIANCE-MIB</li> <li>• HUAWEI-CONFIG-MAN-MIB</li> <li>• HUAWEI-CPU-MIB</li> <li>• HUAWEI-DAD-TRAP-MIB</li> <li>• HUAWEI-DC-MIB</li> <li>• HUAWEI-DATASYNC-MIB</li> <li>• HUAWEI-DEVICE-MIB</li> <li>• HUAWEI-DHCPR-MIB</li> <li>• HUAWEI-DHCPS-MIB</li> <li>• HUAWEI-DHCP-SNOOPING-MIB</li> <li>• HUAWEI-DIE-MIB</li> <li>• HUAWEI-DNS-MIB</li> <li>• HUAWEI-DLDP-MIB</li> <li>• HUAWEI-ELMI-MIB</li> <li>• HUAWEI-ERPS-MIB</li> <li>• HUAWEI-ERRORDOWN-MIB</li> <li>• HUAWEI-ENERGYMNGT-MIB</li> <li>• HUAWEI-EASY-OPERATION-MIB</li> <li>• HUAWEI-ENTITY-EXTENT-MIB</li> <li>• HUAWEI-ENTITY-TRAP-MIB</li> <li>• HUAWEI-ETHARP-MIB</li> <li>• HUAWEI-ETHOAM-MIB</li> <li>• HUAWEI-FLASH-MAN-MIB</li> <li>• HUAWEI-FWD-RES-TRAP-MIB</li> <li>• HUAWEI-GARP-APP-MIB</li> <li>• HUAWEI-GTSM-MIB</li> <li>• HUAWEI-HGMP-MIB</li> <li>• HUAWEI-HWTACACS-MIB</li> <li>• HUAWEI-IF-EXT-MIB</li> <li>• HUAWEI-INFOCENTER-MIB</li> <li>• HUAWEI-IPPOOL-MIB</li> <li>• HUAWEI-IPV6-MIB</li> <li>• HUAWEI-ISOLATE-MIB</li> <li>• HUAWEI-L2IF-MIB</li> <li>• HUAWEI-L2MAM-MIB</li> <li>• HUAWEI-L2VLAN-MIB</li> <li>• HUAWEI_LDT-MIB</li> <li>• HUAWEI-LLDP-MIB</li> <li>• HUAWEI-MAC-AUTHEN-MIB</li> <li>• HUAWEI-MEMORY-MIB</li> <li>• HUAWEI-MFF-MIB</li> <li>• HUAWEI-MFLP-MIB</li> <li>• HUAWEI-MSTP-MIB</li> <li>• HUAWEI-BGP-VPN-MIB</li> </ul> |

| Category | MIB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <ul style="list-style-type: none"> <li>• HUAWEI-CCC-MIB</li> <li>• HUAWEI-MULTICAST-MIB</li> <li>• HUAWEI-NAP-MIB</li> <li>• HUAWEI-NTPV3-MIB</li> <li>• HUAWEI-PERFORMANCE-MIB</li> <li>• HUAWEI-PORT-MIB</li> <li>• HUAWEI-PORTAL-MIB</li> <li>• HUAWEI-QINQ-MIB</li> <li>• HUAWEI-RIPv2-EXT-MIB</li> <li>• HUAWEI-RM-EXT-MIB</li> <li>• HUAWEI-RRPP-MIB</li> <li>• HUAWEI-SECURITY-MIB</li> <li>• HUAWEI-SEP-MIB</li> <li>• HUAWEI-SNMP-EXT-MIB</li> <li>• HUAWEI-SSH-MIB</li> <li>• HUAWEI-STACK-MIB</li> <li>• HUAWEI-SWITCH-L2MAM-EXT-MIB</li> <li>• HUAWEI-SWITCH-SRV-TRAP-MIB</li> <li>• HUAWEI-SYS-MAN-MIB</li> <li>• HUAWEI-TCP-MIB</li> <li>• HUAWEI-TFTPC-MIB</li> <li>• HUAWEI-TRNG-MIB</li> <li>• HUAWEI-XQOS-MIB</li> </ul> |

## Standard Compliance

The following table lists the standards that the CloudEngine S5731-H complies with.

Standard compliance list of the CloudEngine S5731-H series

| Standard Organization | Standard or Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IETF                  | <ul style="list-style-type: none"> <li>• RFC 768 User Datagram Protocol (UDP)</li> <li>• RFC 792 Internet Control Message Protocol (ICMP)</li> <li>• RFC 793 Transmission Control Protocol (TCP)</li> <li>• RFC 826 Ethernet Address Resolution Protocol (ARP)</li> <li>• RFC 854 Telnet Protocol Specification</li> <li>• RFC 951 Bootstrap Protocol (BOOTP)</li> <li>• RFC 959 File Transfer Protocol (FTP)</li> <li>• RFC 1058 Routing Information Protocol (RIP)</li> <li>• RFC 1112 Host extensions for IP multicasting</li> <li>• RFC 1157 A Simple Network Management Protocol (SNMP)</li> <li>• RFC 1256 ICMP Router Discovery</li> <li>• RFC 1305 Network Time Protocol Version 3 (NTP)</li> <li>• RFC 1349 Internet Protocol (IP)</li> <li>• RFC 1493 Definitions of Managed Objects for Bridges</li> <li>• RFC 1542 Clarifications and Extensions for the Bootstrap Protocol</li> </ul> |

| Standard Organization | Standard or Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <ul style="list-style-type: none"> <li>• RFC 1643 Ethernet Interface MIB</li> <li>• RFC 1757 Remote Network Monitoring (RMON)</li> <li>• RFC 1901 Introduction to Community-based SNMPv2</li> <li>• RFC 1902-1907 SNMP v2</li> <li>• RFC 1981 Path MTU Discovery for IP version 6</li> <li>• RFC 2131 Dynamic Host Configuration Protocol (DHCP)</li> <li>• RFC 2328 OSPF Version 2</li> <li>• RFC 2453 RIP Version 2</li> <li>• RFC 2460 Internet Protocol, Version 6 Specification (IPv6)</li> <li>• RFC 2461 Neighbor Discovery for IP Version 6 (IPv6)</li> <li>• RFC 2462 IPv6 Stateless Address Auto configuration</li> <li>• RFC 2463 Internet Control Message Protocol for IPv6 (ICMPv6)</li> <li>• RFC 2474 Differentiated Services Field (DS Field)</li> <li>• RFC 2740 OSPF for IPv6 (OSPFv3)</li> <li>• RFC 2863 The Interfaces Group MIB</li> <li>• RFC 2597 Assured Forwarding PHB Group</li> <li>• RFC 2598 An Expedited Forwarding PHB</li> <li>• RFC 2571 SNMP Management Frameworks</li> <li>• RFC 2865 Remote Authentication Dial In User Service (RADIUS)</li> <li>• RFC 3046 DHCP Option82</li> <li>• RFC 3376 Internet Group Management Protocol, Version 3 (IGMPv3)</li> <li>• RFC 3513 IP Version 6 Addressing Architecture</li> <li>• RFC 3579 RADIUS Support For EAP</li> <li>• RFC 4271 A Border Gateway Protocol 4 (BGP-4)</li> <li>• RFC 4760 Multiprotocol Extensions for BGP-4</li> <li>• draft-grant-tacacs-02 TACACS+</li> <li>• RFC 6241 Network Configuration Protocol (NETCONF)</li> <li>• RFC 6020 YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)</li> </ul> |
| IEEE                  | <ul style="list-style-type: none"> <li>• IEEE 802.1D Media Access Control (MAC) Bridges</li> <li>• IEEE 802.1p Traffic Class Expediting and Dynamic Multicast Filtering</li> <li>• IEEE 802.1Q Virtual Bridged Local Area Networks</li> <li>• IEEE 802.1ad Provider Bridges</li> <li>• IEEE 802.2 Logical Link Control</li> <li>• IEEE Std 802.3 CSMA/CD</li> <li>• IEEE Std 802.3ab 1000BASE-T specification</li> <li>• IEEE Std 802.3ad Aggregation of Multiple Link Segments</li> <li>• IEEE Std 802.3ae 10GE WEN/LAN Standard</li> <li>• IEEE Std 802.3x Full Duplex and flow control</li> <li>• IEEE Std 802.3z Gigabit Ethernet Standard</li> <li>• IEEE802.1ax/IEEE802.3ad Link Aggregation</li> <li>• IEEE 802.3ah Ethernet in the First Mile.</li> <li>• IEEE 802.1ag Connectivity Fault Management</li> <li>• IEEE 802.1ab Link Layer Discovery Protocol</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Standard Organization | Standard or Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <ul style="list-style-type: none"> <li>• IEEE 802.1D Spanning Tree Protocol</li> <li>• IEEE 802.1w Rapid Spanning Tree Protocol</li> <li>• IEEE 802.1s Multiple Spanning Tree Protocol</li> <li>• IEEE 802.1x Port based network access control protocol</li> <li>• IEEE 802.3af DTE Power via MIDI</li> <li>• IEEE 802.3at DTE Power via the MDI Enhancements</li> <li>• IEEE 802.3az Energy Efficient Ethernet</li> </ul>                                                                                                                                                                                                                                                               |
| ITU                   | <ul style="list-style-type: none"> <li>• ITU SG13 Y.17ethoam</li> <li>• ITU SG13 QoS control Ethernet-Based IP Access</li> <li>• ITU-T Y.1731 ETH OAM performance monitor</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ISO                   | <ul style="list-style-type: none"> <li>• ISO 10589 IS-IS Routing Protocol</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| MEF                   | <ul style="list-style-type: none"> <li>• MEF 2 Requirements and Framework for Ethernet Service Protection</li> <li>• MEF 9 Abstract Test Suite for Ethernet Services at the UNI</li> <li>• MEF 10.2 Ethernet Services Attributes Phase 2</li> <li>• MEF 11 UNI Requirements and Framework</li> <li>• MEF 13 UNI Type 1 Implementation Agreement</li> <li>• MEF 15 Requirements for Management of Metro Ethernet Phase 1 Network Elements</li> <li>• MEF 17 Service OAM Framework and Requirements</li> <li>• MEF 20 UNI Type 2 Implementation Agreement</li> <li>• MEF 23 Class of Service Phase 1 Implementation Agreement</li> <li>• Xmodem XMODEM/YMODEM Protocol Reference</li> </ul> |

## Ordering Information

| Model                      | Product Description                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| CloudEngine S5731-H24HB4XZ | CloudEngine S5731-H24HB4XZ(20*GE SFP ports, 4*10GE SFP+ ports, 4*10GE SFP+ ports, 1*expansion slot, PoE++, without power module) |
| CloudEngine S5731-H48HB4XZ | CloudEngine S5731-H48HB4XZ(44*GE SFP ports, 4*10GE SFP+ ports, 4*10GE SFP+ ports, 1*expansion slot, PoE++, without power module) |
| S7Q02001                   | 2-port 40GE QSFP+ interface card                                                                                                 |
| ES5D21X08T00               | 8-port 10GBASE-T interface card                                                                                                  |
| S7X08000                   | 2-port 25GE SFP28 or 8-port 10GE SFP+ interface card                                                                             |
| PAC600S56-CB               | 600 W AC Power Module                                                                                                            |
| PAC1000S56-DB              | 1000 W AC PoE power module                                                                                                       |
| PAC1000S56-CB              | 1000 W AC PoE power module                                                                                                       |
| PDC1000S56-CB              | 1000 W DC PoE power module                                                                                                       |
| FAN-023A-B                 | Fan module, Air flows in from the front side and exhausts from the rear panel.                                                   |
| L-512AP-S57                | S57 Series, Wireless Access Controller AP Resource License-512AP                                                                 |
| L-64AP-S57                 | S57 Series, Wireless Access Controller AP Resource License-64AP                                                                  |

| Model              | Product Description                                                |
|--------------------|--------------------------------------------------------------------|
| L-32AP-S57         | S57 Series, Wireless Access Controller AP Resource License-32AP    |
| L-1AP-S57          | S57 Series, Wireless Access Controller AP Resource License-1AP     |
| L-VxLAN-S57        | S57 Series, VxLAN License, Per Device                              |
| N1-S57H-M-Lic      | S57XX-H Series Basic SW, Per Device                                |
| N1-S57H-M-SnS1Y    | S57XX-H Series Basic SW, SnS, Per Device, 1Year                    |
| N1-S57H-F-Lic      | N1-CloudCampus, Foundation, S57XX-H Series, Per Device             |
| N1-S57H-F-SnS1Y    | N1-CloudCampus, Foundation, S57XX-H Series, SnS, Per Device, 1Year |
| N1-S57H-A-Lic      | N1-CloudCampus, Advanced, S57XX-H Series, Per Device               |
| N1-S57H-A-SnS1Y    | N1-CloudCampus, Advanced, S57XX-H Series, SnS, Per Device, 1Year   |
| N1-S57H-FToA-Lic   | N1-Upgrade-Foundation to Advanced, S57XX-H, Per Device             |
| N1-S57H-FToA-SnS1Y | N1-Upgrade-Foundation to Advanced, S57XX-H, 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

Copyright © Huawei Technologies Co., Ltd. 2024. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

### Trademarks and Permissions

 HUAWEI and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

### Notice

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

### Huawei Technologies Co., Ltd.

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

Website: [e.huawei.com](http://e.huawei.com)