**HUAWEI RoomPresence 65D**
**20.1**

# Product Overview

**Issue** 01

**Date** 2019-11-20

# Huawei Technologies Co., Ltd.

| | |
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# Contents

# 1 Product Positioning

HUAWEI RoomPresence is a next-generation multifunctional telepresence conference solution developed by Huawei. It has four models with a stately look, ultimate simplicity, and graceful design, delivering a superior, user-centric meeting experience.

HUAWEI RoomPresence is a fully self-contained system that combines the high-performance and cost-effective codec, camera, display, digital microphone array, and integrated mechanical parts into one device, which is effortless to use through the HUAWEI Touch controller, a specific-purpose touch panel developed by Huawei. It fits perfectly with meeting rooms from small to large.

# 2 Product Highlights

## Designed with Ultimate Simplicity

- Aluminum alloy body, light, sleek, and pleasing to eyes
- All-in-one design: no screws, dual screens seamlessly combined like one screen, and ultra-narrow frames
- Floating button and global navigation, enabling easy access to any desired services
- 65-inch screen

## Eye-Catching Ultra-HD Video

- Powerful H.265 encoding and decoding capabilities, presenting 4K ultra-HD video and data in true color and capturing every detail
- Proprietary Video Motion Enhancement (VME) and Super Error Concealment (SEC) technologies, delivering smooth video even at a low bandwidth (4K at 2 Mbit/s) against 20% packet loss

## Dual-Screen Display

- One panoramic wallpaper covers two screens
- Free video viewing of participants

## Easy Operations with a Tablet

- 10-inch tablet, which is stylish and easy to use
- User-friendly GUI
- PoE power supply and reserved Kensington lock slot

# 3 Networking Schemes

## 3.1 CloudVC On-Premises Network

The RoomPresence can be connected to the CloudVC on-premises network to meet video communication requirements of enterprises and carriers.

**Figure 3-1** Networking scheme
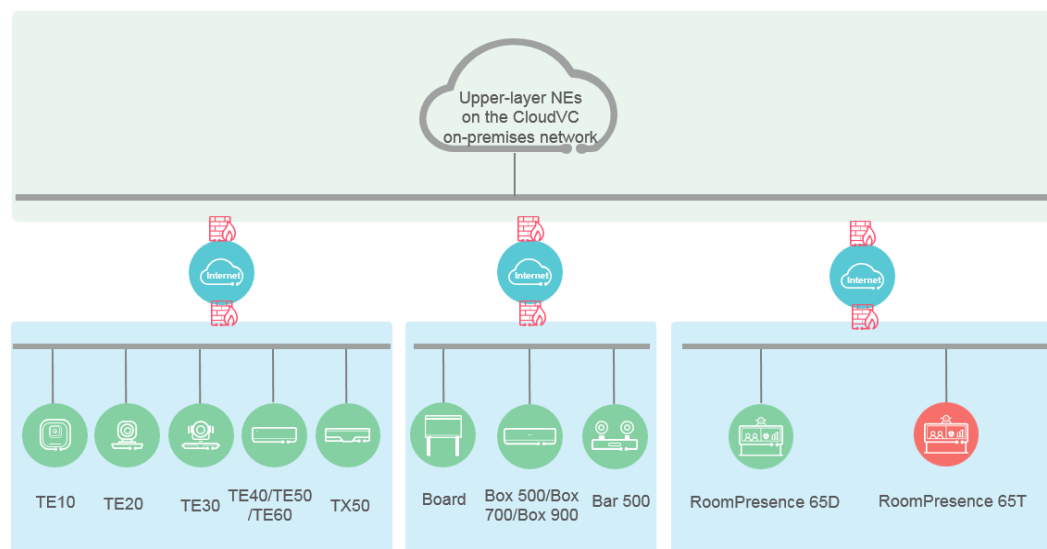


In this networking scheme:

- The RoomPresence connects to the on-premises network through standard H.323 or SIP.

- Audio and video calling, content sharing, and data collaboration can be implemented between the RoomPresence and various types of meeting terminals and clients.

- To learn more, visit **http://support.huawei.com/enterprise/en/index.html** or **http://support.huawei.com/carrier/en/hwe/index.html**, search for the solution's product documentation name, and view or download the documentation.

# 3.2 HUAWEI CLOUD Meeting Network

Meeting services are available on HUAWEI CLOUD, namely Huawei's public cloud platform, to provide enterprises with audio and video conferencing and data collaboration.

**Figure 3-2** Networking scheme
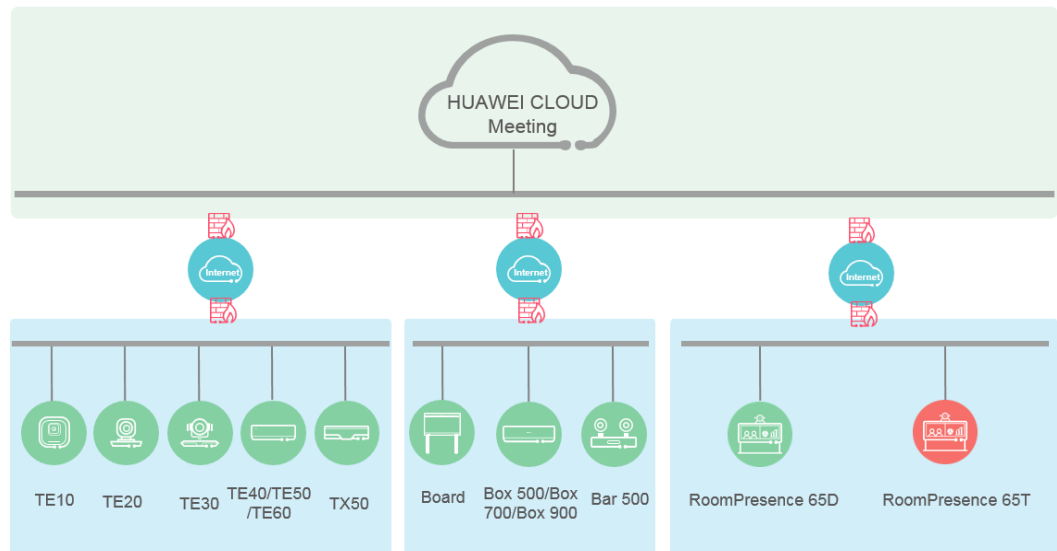


In this networking scheme:

- The RoomPresence accesses the HUAWEI CLOUD Meeting service over the Internet through standard SIP, enabling video conferencing across branches, enterprises, and countries.

- A whole range of hard terminals and soft clients collaborate to extend video conferencing to all office scenarios. Cutting-edge technologies of hard terminals make them fit perfectly with various industries.

# 4 Product Structure

## 4.1 Appearance

The RoomPresence is a highly integrated system with ultimate simplicity and also technically appealing. It fits perfectly with various office environments. It consists of the ultra-HD camera, codec, ultra-HD display, assembly components, Touch, digital microphone array, and loudspeakers, as shown in **Figure 4-1**.

**Figure 4-1** Front view
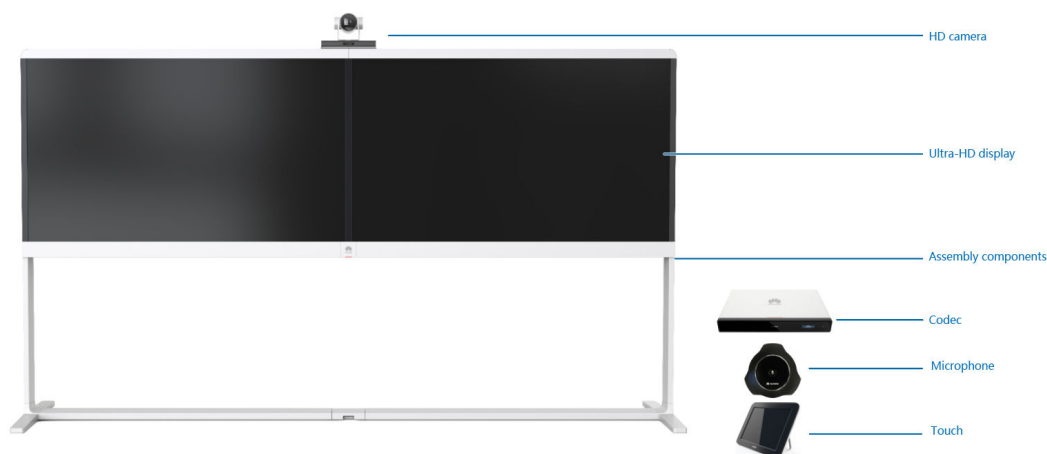


The power switch and USB port of the RoomPresence are on the lower right side, as shown in **Figure 4-2**.

Figure 4-2 Bottom view
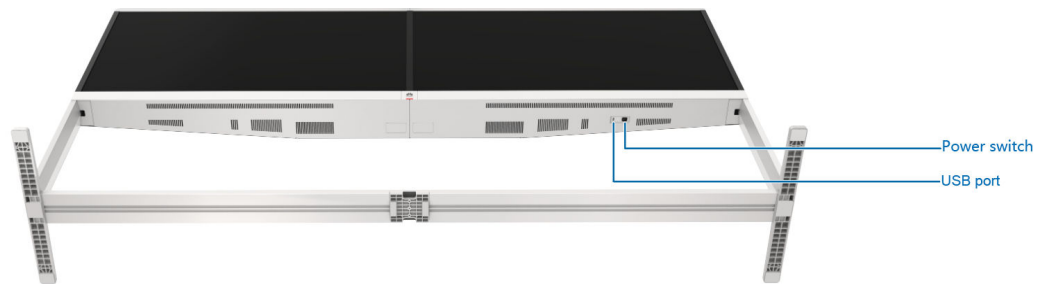


## 4.2 Codec

The RoomPresence uses Huawei's next-generation professional video conferencing endpoint (shown in **Figure 4-3**) as the codec.

Figure 4-3 Codec
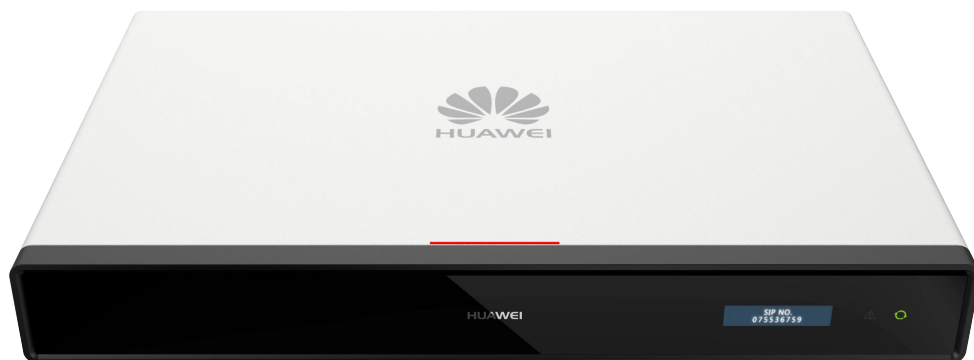


The codec has the following features:

- H.265-based encoding and decoding provide up to 4K 30 fps dual streaming and up to 1080p 30 fps or 4K 8 fps data conferencing.
- High network adaptability and security:
  - Using H.264 SVC, the RoomPresence excellently adapts to different line bandwidths, device capabilities, and network environments.
  - The unique SEC technology ensures satisfying video quality when the network packet loss rate reaches up to 20%.
  - Huawei's proprietary Intelligent Rate Control (IRC) technology is used to automatically detect network service bandwidth occupation and intelligently select the optimal resolution based on the bandwidth to ensure high meeting quality.
  - Various encryption measures are taken, such as SRTP, TLS, and HTTPS, ensuring secure and stable running of the video conferencing system.

## 4.3 Camera

The camera used in the RoomPresence is Camera 200. It has a sleek black design, with a half-hidden lens, metal structure, and integrated housing. The lens is well

protected from damage and debris. The Camera 200 supports 4K 30 fps HD resolution and provides industry-leading video processing capabilities with automatic white balance (AWB), automatic exposure (AE), and automatic focus (AF).

**Figure 4-4** HD camera



## 4.4 Touch

The Touch runs the Huawei Telepresence system with an entirely new UI. You can start a meeting and control it easily with several taps.

**Figure 4-5** shows the appearance of the Touch and its rear components. **Table 4-1** describes the function of each component.

**Figure 4-5** Touch
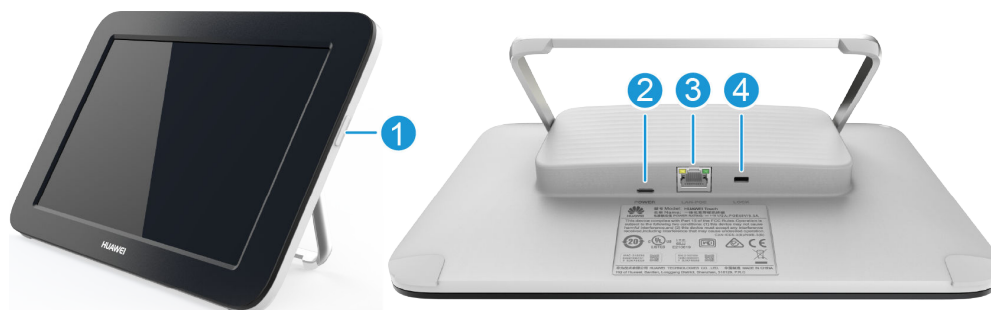
**Table 4-1** Component description

| No. | Component | Function |
|---|---|---|
| 1 | Power button | Press to lock or wake up the screen. Press and hold to turn the Touch on or off. |
| 2 | USB Type-C port | Connects to the Touch power adapter through the Type-C cable to supply power to the Touch. |
| 3 | PoE port | Connects to the TOUCH port on the codec to control the RoomPresence and supply power to the Touch. |
| 4 | Kensington lock slot | Connects to a Kensington lock to secure the Touch. The Kensington lock should be prepared separately. |

# 4.5 Microphone

The RoomPresence can be connected to an HUAWEI Mic 500 microphone array. The Mic 500 provides dual-channel wideband audio, delivering an unprecedented audio experience.

**Figure 4-6** Mic 500



- High-quality audio

  The Mic 500 supports a sampling rate of up to 48 kHz and a full frequency range. It is able to sample sound at rates lower than 22 kHz, which means that it can completely pick up any sound recognized by human ears. The Mic 500 significantly reduces signal loss caused by analog transmission cables, while offering a hi-fi stereo experience. These capabilities are made possible through the integrated digital signal processing and transmission technology and the Acoustic Echo Cancellation (AEC), Automatic Gain Control (AGC), and Automatic Noise Suppression (ANS) functions.

- Superior audio experience

  Embedded with three microphones, a single Mic 500 supports 360-degree sound pickup with an optimal range of 6 meters. This allows participants at the local site to hear every sound nuance coming from participants at the remote site.

- Power saving

  Highly energy-efficient, the Mic 500 requires no more than 2.5 W of power when running.

# 4.6 Assembly Components

The RoomPresence assembly components include the floor stand, tray, bars, front decorative strips, cable covers, rear cover plates, and multifunctional socket. With ultimate simplicity, the assembly components are technically appealing.

- Professional design

  The RoomPresence is an integrated multifunctional collaborative telepresence system with the optimal dimensions for easy human-machine interaction.

- User-centered design

  The RoomPresence has an integrated structure. It can be easily maintained after the rear cover is removed. Cables are easy to connect and manage. All cables and components are hidden or framed inside the RoomPresence. The RoomPresence has a neat appearance. Compared with traditional RP series telepresence systems, the RoomPresence has a much better meeting environment and provides a more enjoyable meeting experience.

# 5 Functions and Features

## 5.1 H.265 4K Ultra-HD Video

Huawei's proprietary VME technology, combined with H.265-based encoding and decoding for video and content, delivers a 4K ultra-HD video experience. 4K provides the incredible clarity and lifelike detail, with a resolution four times that of 1080p, on a larger screen.

**Figure 5-1** H.265 4K ultra-HD video



## 5.2 Hi-Fi Audio

The RoomPresence provides hi-fi audio and clearer full-duplex digital audio, delivering a superb audio experience.

● The endpoint supports Acoustic Echo Cancellation (AEC), Automatic Noise Suppression (ANS), Automatic Gain Control (AGC), VoiceClear, AudioEnhancer, and lip synchronization.

● Opus-related technologies are adopted, including Forward Error Correction (FEC), Backward Error Correction (BEC), Packet Loss Concealment (PLC), Net Automatic Transfer-Enhancement (netATE), and Audio Jitter Buffer (AJB).

● The RoomPresence connects to a wired microphone array VPM220 or Mic 500 for sound pickup. If the meeting room is large, with participants dispersed, microphones can be cascaded for sound pickup within a wider range. Two microphones can be cascaded, with a maximum distance of 12 m between them. The recommended distance is 3 m to 6 m.

# 5.3 Intelligent Content Sharing

## Content Sharing over a Cable Connection

You can connect your endpoint to a computer through the HDMI port to share the computer desktop. If no participants are sharing content in a meeting, your endpoint starts sharing content after the computer is connected. If someone is sharing content when your endpoint and computer are connected, you will be asked to confirm whether to start sharing content.

## Wireless Content Sharing Using the AirPresence Client/AirPresence Key

- Using the AirPresence mobile client, you can share documents, images, or screen.
  - Supported formats of shared files on Android: PDF, PNG, JPG, and BMP
  - Supported formats of shared files on iOS: PDF, DOC/DOCX, XLS/XLSX, PPT, PNG, JPG, and BMP
- Using the AirPresence PC client, you can share the desktop, including played audio and video files, documents, and images.
- You can also use the AirPresence Key to share the desktop, including played audio and video files, documents, and images.
- When a participant is sharing content in a meeting, other participants are still allowed to start sharing, but the existing content sharing session will be dropped. Up to three users can connect to the same RoomPresence.

**Figure 5-2** AirPresence Key

# 5.4 Joining or Initiating a Meeting

## Joining a Meeting

You can join a meeting from the **Next Meeting** popup box or by entering the meeting ID.

## Initiating a Meeting

A meeting can be arranged using any of the following methods:

- Starting a meeting instantly

  You can start a meeting instantly through the Virtual Meeting Room (VMR) with just one click or through SiteCall. This function is applicable to the scenario where you have not scheduled any meetings but need to start a meeting right now. After a meeting is created, you can directly invite participants to the meeting by calling them. Alternatively, send the meeting ID to participants. They can then dial the meeting ID to join the meeting.

- Initiating a multipoint meeting

  Select multiple contacts to initiate a meeting and set parameters, such as the chairperson password and whether to encrypt the meeting.

- Initiating a point-to-point (P2P) meeting

  Enter keywords to search for a site, enter the site number or IP address, or directly select a site to place a call to the site.

# 5.5 Multistream Conferencing

Multistream conferencing leverages the Scalable Video Coding (SVC) technology, with which the RoomPresence is responsible for video codec and continuous presence layout and the CloudMCU only forwards video streams at different resolutions or frame rates. The CloudMCU service load is relieved, the latency is reduced, and access of mass terminals is made possible.

The CloudMCU can receive at most four channels of video streams at a resolution of 90p to 720p from the RoomPresence, and a maximum of 16-channel video streams can be forwarded by the CloudMCU to the RoomPresence. The resolution of the forwarded video streams depends on the actual bandwidth, and the maximum resolution is 720p.

# 5.6 Multiple Layouts

You can view the composite of video and content on one screen by adjusting the screen layout. In a data collaboration conference, video, content, and whiteboard can be simultaneously displayed on one screen.

## Non-Multistream Conferencing

The following layouts are available:

- Full screen

  Video, content, or whiteboard is displayed in full-screen mode.

- Picture in Picture (PiP)

  The PiP mode includes one full-screen video and a small window that can be located at any of the four corners. By default, the small window lies in the upper right corner. In a video conference, the small window size is about 1/16 of the full screen size.

## Multistream Conferencing

The following layouts are available:

- Presenter view

  – When content sharing is in progress, shared content is displayed in the large pane.

  – When no content is shared, the large pane presents the speaker. A speaker can be configured to permanently stay in the large pane.

  – If a user chooses to broadcast or view a participant, the participant will be presented in the large pane.

- PiP view

  – When content sharing is in progress, shared content is displayed in the large pane. The small pane presents video of the broadcast participant, speaker, and other participants, in descending order of priority.

  – When no content is shared, the large pane presents the speaker. A speaker can be configured to permanently stay in the large pane. Video of other participants is displayed in the small pane.

  – If a user chooses to broadcast or view a participant, the participant will be presented in the large pane. The small pane presents shared content or video of other participants.

- Gallery view

  Video of participants and shared content are displayed in panes (16 at most) equivalently.

**Figure 5-3** Video layouts



| Presenter view | PiP | Gallery view |

# 5.7 Meeting Control

Both the chairperson and other participants in a meeting can control the meeting, but the operations they can perform are different, as listed in **Table 5-1**.

**Table 5-1** Operations the chairperson and other participants can each perform

| Role | Operation |
|------|-----------|
| Chairperson | <ul><li>Inviting a participant</li><li>Deleting a disconnected participant</li><li>Redialing a participant</li><li>Disconnecting a participant</li><li>Muting or unmuting the microphone of a participant</li><li>Ending a meeting</li><li>Extending a meeting</li><li>Releasing the chairperson role</li><li>Setting continuous presence</li><li>Broadcasting a participant or continuous presence</li><li>Stopping broadcasting a participant or continuous presence</li><li>Viewing a participant or continuous presence</li><li>Giving the floor</li><li>Revoking the floor</li><li>Enabling or disabling voice activation</li><li>Locking a meeting</li><li>Unlocking a meeting</li><li>Broadcasting participants circularly in turn (available only on the web interface)</li><li>Viewing participants circularly in turn (available only on the web interface)</li><li>Locking the presentation sharing right for a meeting (available only on the web interface)</li><li>Stopping presentation sharing (available only on the web interface)</li></ul> |
| Other participants | <ul><li>Leaving a meeting</li><li>Viewing a participant or continuous presence</li><li>Applying for the chairperson role</li><li>Muting or unmuting the local microphone</li><li>Unmuting itself after being muted by the chairperson</li><li>Requesting the floor</li><li>Revoking the chairperson role (available only on the web interface)</li></ul> After the function of allowing common participants to perform meeting control is enabled, the following operations are allowed: <ul><li>Inviting a participant</li><li>Redialing a participant</li><li>Extending a meeting</li></ul> |

**Figure 5-4** Meeting control on the Touch
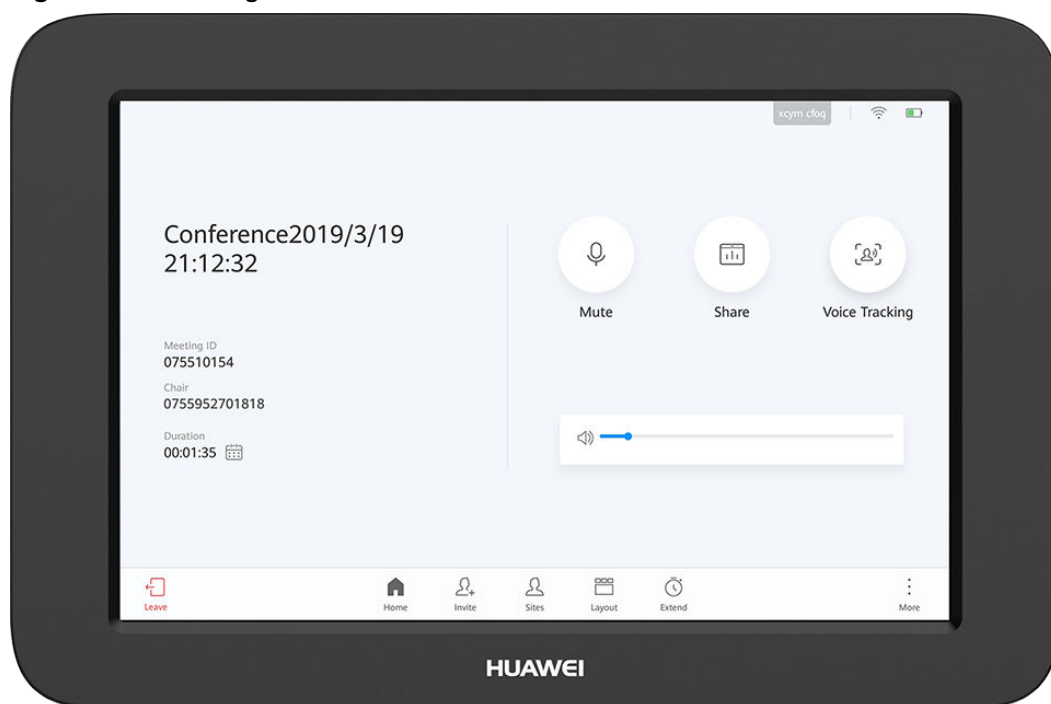


**Figure 5-5** Meeting control on the web interface
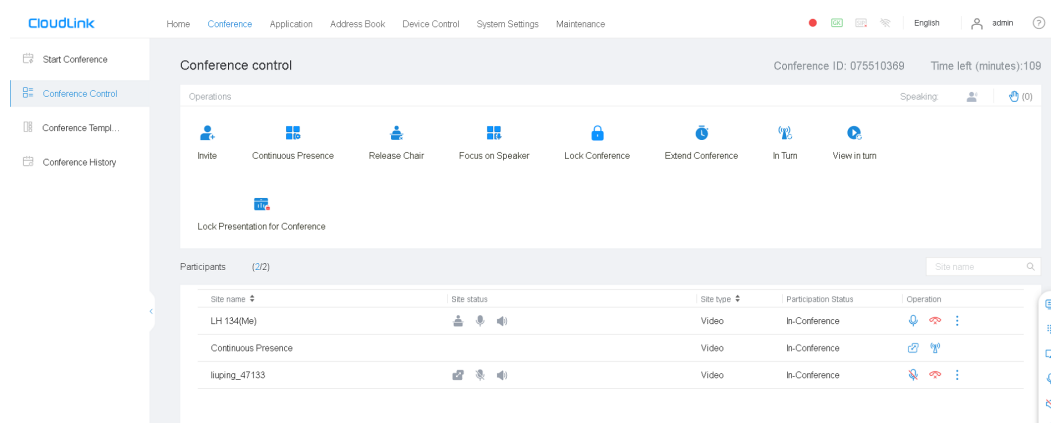


# 5.8 Data Collaboration

- You can use the endpoint to join a data conference, then view the whiteboard, desktop, and annotation.

- Using the endpoint, you can share the desktop, but not make annotations or share the whiteboard.

# 5.9 Network Address Book

The network address book stores participant information, which you can directly use for easily starting a meeting. The RoomPresence can quickly obtain a participant's information from the network address book on the corporate directory or LDAP server.

The administrator can perform the following operations:

- Query, edit, and delete contacts on the web interface, sort contacts, add participants to the address book, and add groups. Contacts that are found from the LDAP address book server can be saved to the local address book, but those found from the corporate directory cannot.
- Update contacts in the local address book in batches by importing/exporting their information into/from the web interface.
- View the status of each participant in the corporate directory on the web interface and initiate calls to participants or invite new participants to a meeting on the Touch, touchscreen, or web interface.

# 5.10 Wireless Connections

The RoomPresence supports 2 x 2 Wi-Fi technology (that is, 2-channel input and 2-channel output of Wi-Fi data), dual antennas, and dual bands (2.4 GHz and 5 GHz). The RoomPresence can serve as a Wi-Fi hotspot and connect to a Wi-Fi network as a client at the same time.

If the RoomPresence is configured as a client, it automatically detects and connects to Wi-Fi networks. You can set the RoomPresence IP address in DHCP or static mode. This function applies to the scenarios in which no wired network is available and you need to connect the RoomPresence to the network through Wi-Fi.

When the RoomPresence has its Wi-Fi hotspot enabled, it can serve as a hotspot for connecting other devices (such as a PC) to Wi-Fi.

# 5.11 Automatic Configuration

## Zero Configuration at Startup

The RoomPresence can automatically obtain the type of the connected cloud platform or server. You only need to set the RoomPresence and server IP addresses or enter the activation code to fast complete the RoomPresence configuration.

## Configuration Import from a USB Device

You can obtain a USB device with a configuration file from the agent or carrier, and then import the configuration file to the RoomPresence through the USB device. In this way, the configuration is automatically completed at a high efficiency.

# 5.12 Connection to eSight

The RoomPresence can be managed by eSight if it is connected to eSight.

- On eSight, you can perform many RoomPresence-related tasks, including query and set parameters, upload and download configuration files, upgrade and restart the RoomPresence, manage public and private networks, collect logs, and upload Call History Record (CHR) data files.

- You can download CA certificates and server certificates from eSight and import them into the RoomPresence in batches.
- HTTPS-based bidirectional authentication is used for establishing a connection between the RoomPresence and eSight, enhancing communications security.

# 5.13 Globalization

The web interface and Touch UI of the RoomPresence support multiple languages and time zone settings. If some countries in the selected time zone use daylight saving time (DST), the RoomPresence automatically enables DST and changes its clock to comply with DST.

All GUIs of the RoomPresence support the following languages: Simplified Chinese, Traditional Chinese, English, Spanish (Europe), French, Russian, Japanese, German, and Portuguese (Brazil).

# 5.14 High Network Adaptability and Security

The RoomPresence features high network adaptability and security.

- Leading technologies, including Super Error Concealment (SEC), Hybrid Automatic Repeat Request (HARQ), and automatic deceleration, are utilized to deliver clear and smooth video even when the packet loss rate reaches 20%.
- The Opus high-quality codec, Net Automatic Transfer-enhancement (netATE), and Audio Jitter Buffer (AJB) are supported to reduce the packet loss rate and improve audio quality.
- Bandwidth sharing is supported among video, content, and data in a meeting. This feature improves network utilization and delivers smooth HD video images.
- Huawei's proprietary Intelligent Rate Control (IRC) technology is used to automatically detect network service bandwidth occupation and intelligently select the optimal resolution based on the bandwidth to ensure high meeting quality.
- Various encryption measures are taken, such as SRTP, TLS, and HTTPS, ensuring secure and stable running of the video conferencing system.

# 5.15 Web-based Monitoring

After the web-based monitoring function is enabled on the Touch, you can log in to the web interface to view the local and remote video in real time during a meeting, as shown in **Figure 5-6**.

**Figure 5-6** Viewing local and remote video
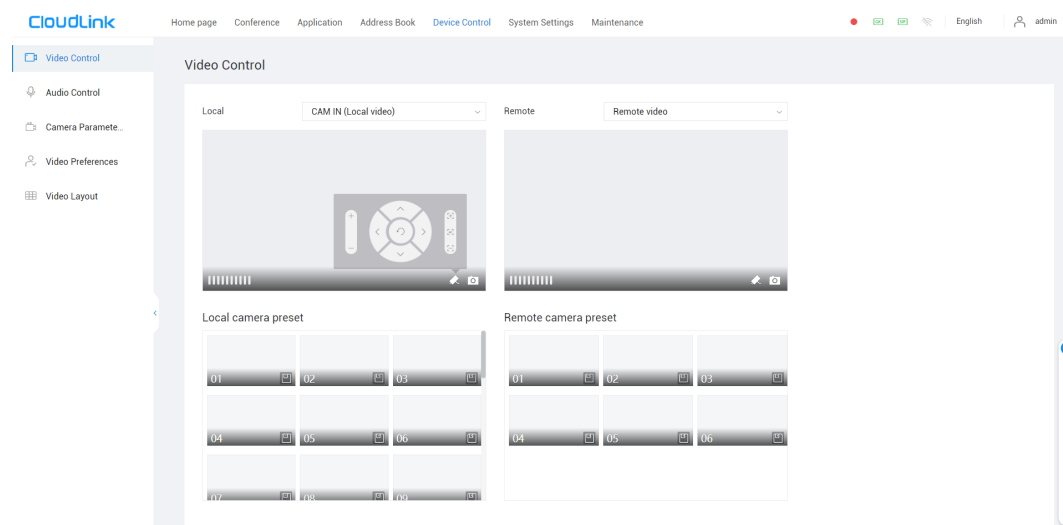


> ⚠ **CAUTION**
>
> This function is related to personal privacy. Ensure that your usage of it complies with local laws and regulations.

# 5.16 APIs for Third-Party Integration

The RoomPresence provides HTTP-compliant third-party APIs to implement various functions, including login authentication, site calling, site query, meeting control, address book management, system configuration, and status query.

Users can choose necessary APIs based on their actual needs to develop required functions and integrate them into other products or applications.

**Figure 5-7** Functions implemented through HTTP APIs
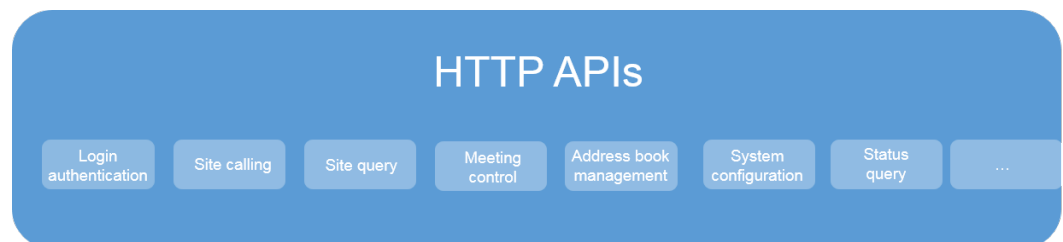
# 6 Security and Reliability

## 6.1 Operating System Security

Security maintenance for the system layer ensures that the operating system runs smoothly and also supports stable services at the application layer. The Touch uses a customized Android operating system, which delivers enhanced security and immunity to viruses.

## 6.2 Network Layer Security

The network layer security policies for the CloudVC on-premises network are as follows:

- The RoomPresence, SMC, and MCU are deployed in the trusted zone, isolated from the Demilitarized Zone (DMZ) and the untrusted zone. Furthermore, firewalls are deployed for security domain division and access control.
- Terminals (such as TE Desktop and TE Mobile) in the untrusted zone communicate with NEs in the trusted zone through the Switch Center (SC) in the DMZ.

## 6.3 Firewall Technology (NAT)

The firewall protects your IP network by separating the internal and external network communication data. Using Network Address Translation (NAT) technology and signaling exchange between public network protocols and private network protocols, the firewall enables participants on local area networks (LANs) in different places to make use of video conferences. With NAT, a device on a LAN is allocated a dedicated internal IP address that uniquely identifies the device on the LAN, and the device uses an external IP address to communicate with external devices. Through NAT mapping, multiple internal IP addresses are mapped to one external IP address. NAT mapping not only reduces the number of IP addresses that are needed for users on a private network to access the Internet, but also enhances the security of the private network.

# 6.4 Traversal Between Public and Private Networks

The media latching and standard H.460 traversal technology are used to set up secure video call connections between public and private networks and between private networks through the firewall.

# 6.5 Email Security

To ensure the security of email accounts and sent emails, the STARTTLS protocol is used by default to authenticate the mail server and send encrypted emails.

# 6.6 Web Request Authentication

- When a user requests access to a specified web page or submits a Servlet request, the endpoint checks whether the user's session identifier is valid and whether the user is authorized to perform the operation.
- The server implements the final authentication on the user.
- Before transmitting user-generated data to clients, the server verifies the data and encodes it using HyperText Markup Language (HTML) to prevent malicious code injection and cross-site scripting attacks.
- Web security software is used to scan the web server and applications to ensure that there are no high-risk vulnerabilities.

# 6.7 Protocol Anti-Attack Measures

- The communication matrix is provided in the product documentation. Do not enable the services and ports that are not described in the communication matrix.

  The communication matrix contains the following information:
  - Open ports
  - Transport layer protocols used by the ports
  - NEs that use the ports to communicate with peer NEs
  - Application layer protocols used by the ports and description of the services at the application layer
  - Whether services at the application layer can be disabled
  - Authentication modes adopted by the ports
  - Port functions (such as data traffic control)
- To ensure the security and stability of the video conferencing system, the endpoint utilizes multiple encryption measures, including H.235 (for encryption of media and signaling streams), SRTP, TLS, and HTTPS.
- For network management, the RoomPresence supports the SNMP v3 protocol, which features higher adaptability and security. User names and passwords are needed to connect the network management system to the RoomPresence.

- Robustness testing tools are used to scan protocols to ensure that there are no high-risk vulnerabilities.

- By default, the LDAP over SSL (LDAPS) protocol is used to encrypt the address book, ensuring data integrity and preventing data from being stolen.

# 6.8 Protection of Sensitive Data

- The log, diagnostics, debug, and alarm information do not contain sensitive data such as passwords and ciphering contexts. If sensitive data is included, it is displayed as "***".

- Sensitive data is transmitted only through secure channels or after being encrypted.

- In the collaborative application scenario, the uPortal uses the root certificate for authentication through HTTPS to protect sensitive information such as accounts and passwords.

- The endpoint checks the complexity of passwords. When a password is being entered, each stroke is displayed as "." or "*", and the entered password cannot be copied.

- Only standard encryption algorithms and key negotiation mechanisms are used. Proprietary algorithms are not allowed.

# 6.9 System Management and Maintenance Security

- Software packages (including patches) are released only after they are scanned by at least five types of mainstream antivirus software and no issues are detected. In special cases, explanation is provided for alarms.

- All user operations and system exceptions are logged.

- A two-level certificate chain is supported to ensure the transmission security of confidential data.

# 6.10 Security Design

- The non-metal parts of the exterior use the V1 flame retardant (FR) materials.

- The component security design meets the requirements of the nine countries in the EU, North America, Australia, Canada, and the Middle East, as well as China. The components of mechanical parts comply with the EU Machinery Directive 2006/42/EC.

- Labels and security tips are used.

# 6.11 Disaster Recovery

The RoomPresence can simultaneously connect to the active and standby corporate directories or SCs for disaster recovery (DR). When the active corporate directory or SC is faulty, the RoomPresence automatically switches to the standby corporate directory or SC to continue providing services.

# 7 Operations and Maintenance

## 7.1 GUIs

### 7.1.1 Touch

The HUAWEI Touch, a 10-inch touch panel, provides a user-friendly UI where you can easily use meeting functions through several taps, including:

- Joining a scheduled meeting
- Creating a P2P or multipoint meeting
- Sharing content
- Setting continuous presence
- Performing meeting control
- Defining system settings
- Controlling the microphone, loudspeaker, local camera, and remote camera
- Conducting a diagnostics, changing the wallpaper, and sending captions

**Figure 7-1** Home screen



## 7.1.2 AirPresence Mobile/PC Client

AirPresence is a wireless content sharing client designed for the RoomPresence. It can be installed on a PC or mobile device to provide functions listed in **Table 7-1**. When a participant is sharing content in a meeting, other participants are still allowed to start sharing, but the existing content sharing session will be dropped. Up to three users can connect to the same RoomPresence.

**Table 7-1** Functions supported by AirPresence

| AirPresence | Function |
|---|---|
| Mobile client | Sharing content, initiating a call, joining a meeting, controlling the microphone and loudspeaker, adjusting the shooting angle of the camera, and controlling the RoomPresence using the virtual remote control |
| PC client | Sharing content |

**Figure 7-2** AirPresence mobile client for Android
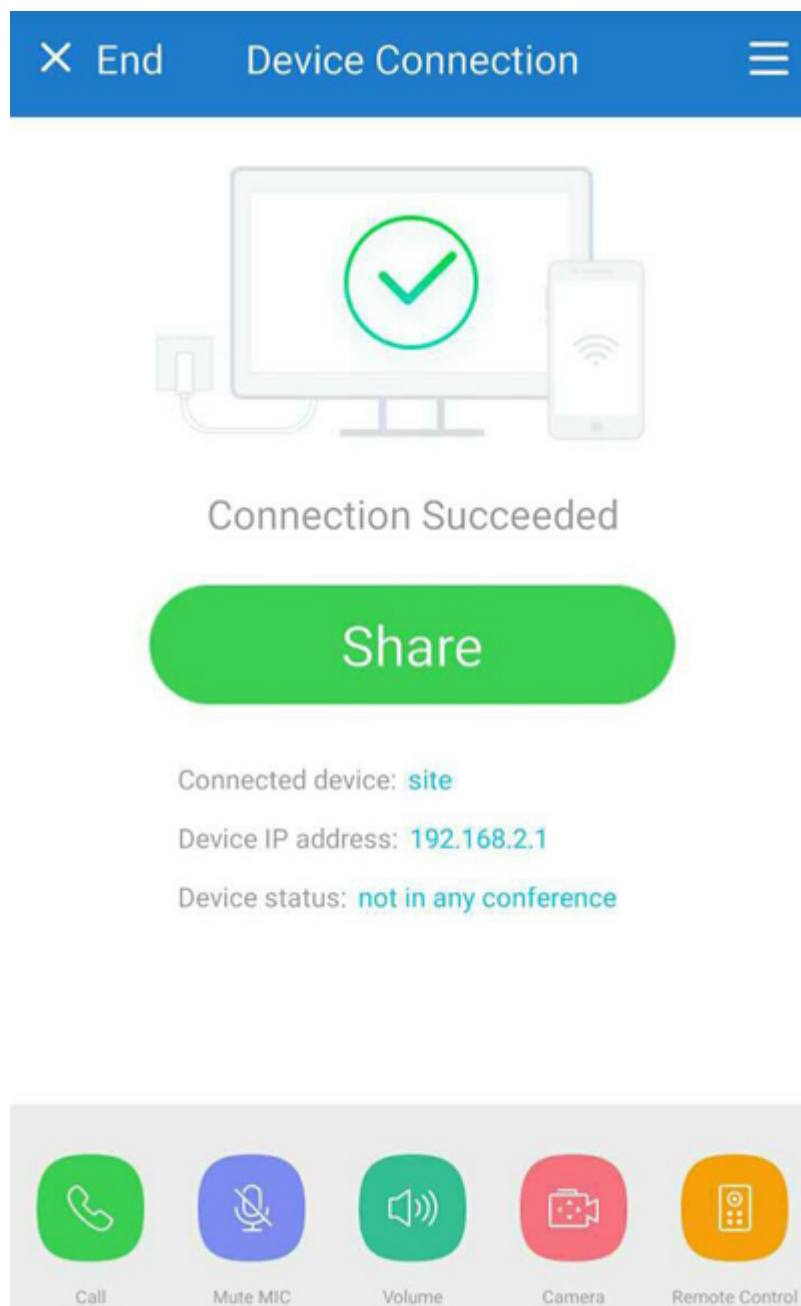
**Figure 7-3** AirPresence PC client
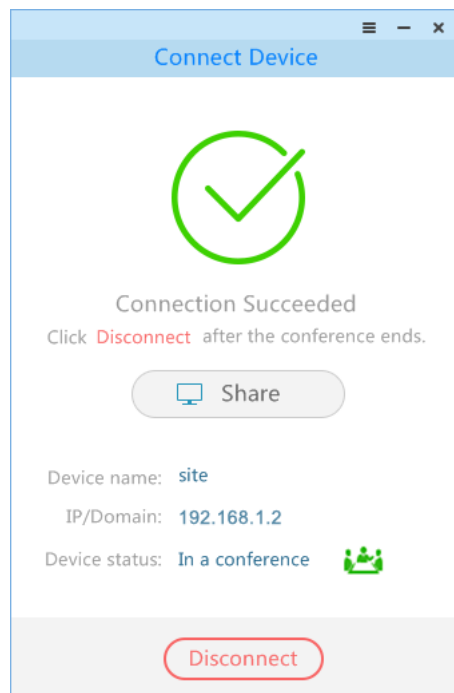


## 7.1.3 Web Interface

The RoomPresence can be remotely operated by the administrator from its web interface. The web interface allows simultaneous operations from up to 10 users through the same account. However, only the last operation takes effect.

The main functions available on the web interface are as follows:

- Configuring the address book
- Modifying system settings
- Configuring and sending captions
- Performing system maintenance
- Placing calls and controlling meetings

# 7.2 Maintenance and Upgrade

## 7.2.1 Log Management

The RoomPresence records logs about user operations and system exceptions, helping the administrator maintain the system and locate faults.

Logs are stored as files. On the RoomPresence web interface, the administrator can query, export, or delete logs of a specified time frame or all logs.

## 7.2.2 Diagnostics

The RoomPresence can detect the hardware running status, network connections, audio input/output, video input/output, common parameter settings, and server registration status to help users locate faults.

## 7.2.3 Inspection

The RoomPresence can be inspected using the SMC2.0 and eSight. You can:

- Check the status of IP lines.
- Check the system software version.
- Check the system performance, including the temperature and fan status.
- Check the registration status.
  - SMC2.0: Check the H.323 and SIP registration status.
  - eSight: Check the SIP registration status.
- Check the camera control status.
- Check the content source connection status and input port settings.
- Check the video input cable connection status and video input port settings.
- Continue inspection after the endpoint restarts or ends a call.
- Check the inspection status and result. (This function is supported only on the SMC2.0.)

## 7.2.4 Upgrade

You can upgrade the RoomPresence to the latest version to fix its vulnerabilities and use the new functions provided in the latest version.

- You can manually upgrade the RoomPresence using the upgrade tool or web interface.
- The RoomPresence can be first restored to factory defaults and then upgraded.
- The RoomPresence supports silent upgrade mode, in which the RoomPresence is upgraded at a scheduled time without affecting services.
- RoomPresence systems can be upgraded in batches.
- The RoomPresence upgrade can be paused and resumed.
- Any RoomPresence connected to eSight can be upgraded using eSight.
- As a manageable device, the RoomPresence can be upgraded using the SMC2.0. If multiple RoomPresence systems exist, they can be upgraded in batches from the SMC2.0.

# 7.3 CHR Data Collection

After connecting to eSight, the RoomPresence can send its session and media CHR files to eSight. SessionInsight obtains CHR data files from eSight and analyzes them to quickly locate faults.

# 8 Technical Specifications

## 8.1 Physical Specifications

Table 8-1 lists the physical specifications of the RoomPresence main unit.

Table 8-1 Main unit specifications

| Item | Specification |
|---|---|
| **Electricity supply requirements** | |
| Operating voltage | 100–240 V AC |
| Operating frequency | 50–60 Hz |
| Maximum power consumption | 290 W |
| **Environmental requirements (in use)** | |
| Ambient temperature | Main unit: 0°C to 40°C (32 ℉ to 104 ℉)<br>Touch: 0°C to 35°C (32 ℉ to 95 ℉) |
| Relative humidity | 10% to 80% non-condensing |
| Ambient noise | ≤35 dB |
| Minimum illuminance | 7 lux |
| Recommended illuminance | > 200 lux |
| EMC | Class A |
| Operating altitude | < 4000 m |
| **Environmental requirements (idle)** | |

| Item | Specification |
|---|---|
| Ambient temperature | −20°C to +60°C (−4°F to +140°F) |
| Relative humidity (non-condensing) | 10% to 90% non-condensing |
| **Dimensions and weight** | |
| Device dimensions (H x W x D) | 1771.3 mm x 2947.2 mm x 700 mm (69.7 in. x 116.0 mm x 27.6 in.) |
| Package dimensions (H x W x D) | 1876 mm x 1050 mm x 700 mm (73.9 in. x 41.3 in. x 27.6 in.) |
| Net weight | 140 kg (308.6 lb) |
| Gross weight | 225 kg (496.0 lb) |
| **Wi-Fi** | |
| Frequency bands | 2.4 GHz and 5 GHz |
| Working frequency ranges (codec) | 2.4 GHz: 2400 MHz to 2483.5 MHz<br>5 GHz: 5150 MHz to 5250 MHz |
| Working frequency ranges (Touch) | 2.4 GHz: 2400 MHz to 2483.5 MHz<br>5 GHz: 5150 MHz to 5250 MHz |
| Maximum transmission power | < 20 dBm |
| Working range in an environment without barriers | 20 m (65.6 ft)<br>Recommended: 10 m (32.81 ft) |
| **Display** | |
| Screen size | 65-inch |
| Screen resolution | 4K |

Table 8-2 lists the physical specifications of the Camera 200.

**Table 8-2** Camera 200 specifications

| Item | Specification |
|---|---|
| **Lens** | |

| Item | Specification |
|---|---|
| Lens | 8.51-megapixel, 1/2.5-inch CMOS |
| Zoom | 12x optical zoom |
| Focal length and aperture | F = 3.85-43.06 mm ±5%, F1.8-F3.56 (±5%) |
| **Video** | |
| Output video formats | 1080p 50 fps, 1080p 60 fps |
| Maximum horizontal field of view | 80° |
| Maximum vertical field of view | 50° |
| Minimum illuminance | 0.1 lux (F1.8, 50 IRE) |
| Shutter speed | 1/25–1/10000 seconds |
| Number of presets | 254 (configured and invoked by commands through the serial port and saved on the camera) |
| **Pan/Tilt** | |
| Pan | Range: ±110° Speed: 1.7°/s-80°/s Relocation precision: < ±0.1° |
| Tilt | Range: ±30° Speed: 0.7°/s-28°/s Relocation precision: < ±0.1° |
| **Automatic adjustment** | |
| Automatic White Balance (AWB) | Auto, manual, one-button-push, or specified color temperature |
| Automatic Exposure (AE) | Auto, manual, aperture priority, shutter priority, or brightness priority |
| Automatic Focus (AF) | Auto, manual, or one-button-push |
| **Infrared remote control** | |
| Infrared signal reception | Remote control distance: 7 m Remote control angle: 45° up/down and 45° lef/right |

# 8.2 Performance Specifications

Table 8-3 describes the performance specifications of the RoomPresence.

**Table 8-3** Performance specifications

| Item | Specification |
|---|---|
| Call bandwidth | 64 kbit/s to 8 Mbit/s |
| Video capabilities (H. 264) | Minimum bandwidth required to deliver video of a specific resolution (without any packet loss): <br>● 1 Mbit/s for 1080p 60 fps <br>● 512 kbit/s for 1080p 30 fps <br>● 768 kbit/s for 720p 60 fps <br>● 384 kbit/s for 720p 30 fps <br>● 128 kbit/s for 4SIF/4CIF 30 fps <br>● 64 kbit/s for SIF/CIF/QSIF/QCIF/SQSIF/SQCIF 30 fps |
| Video capabilities (H. 265) | Minimum bandwidth required to deliver video of a specific resolution (without any packet loss): <br>● 2 Mbit/s for 4K 30 fps <br>● 768 kbit/s for 1080p 60 fps <br>● 384 kbit/s for 1080p 30 fps <br>● 512 kbit/s for 720p 60 fps <br>● 256 kbit/s for 720p 30 fps |

| Item | Specification |
|------|---------------|
| Content sharing capabilities | ● Content sharing over a wireless connection<br>In a remote meeting:<br>  – AirPresence mobile client: up to 1080p 15 fps for Android; up to 1080p 3 fps for iOS<br>  – AirPresence PC client (Windows): up to 1080p 15 fps<br>  – AirPresence PC client (Mac): up to 1080p 5 fps<br>In a local meeting:<br>  – AirPresence mobile client: up to 1080p 15 fps for Android; up to 1080p 3 fps for iOS<br>  – AirPresence PC client (Windows): up to 1080p 25 fps<br>  – AirPresence PC client (Mac): up to 1080p 15 fps<br><br>● Content sharing over a cable connection<br>Input resolution (HDMI): 3840 x 2160 25/30/50/60 fps, 1920 x 1200 60 fps, 1920 x 1080 24/25/30/50/60 fps, 1680 x 1050 60 fps, 1600 x 1200 60 fps, 1600 x 900 60 fps, 1400 x 1050 60 fps, 1440 x 900 60 fps, 1366 x 768 60 fps, 1360 x 768 60 fps, 1280 x 1024 60/75/85 fps, 1280 x 960 60/75/85 fps, 1280 x 800 60/75/85 fps, 1280 x 768 60/75/85 fps, 1280 x 720 60/75/85 fps, 1280 x 600 60 fps, 1152 x 864 60/75/85 fps, 1024 x 768 60/70/75/85 fps, 800 x 600 56/60/72/75/85 fps, 640 x 480 60/72/75/85 fps<br><br>Codec resolution: CIF (352 x 288), 640 x 480, 4CIF (704 x 576), 800 x 600, 1024 x 768, 720p (1280 x 720), 1280 x 1024, 448p (768 x 448), 1080p (1920 x 1080), 1600 x 1200, 1920 x 1200, 1152 x 864, 1280 x 600, 1280 x 768, 1280 x 800, 1280 x 960, 1360 x 768, 1366 x 768, 1440 x 900, 1400 x 1050, 1600 x 900, 1680 x 1050, 2048 x 1152, 2048 x 1236, 2048 x 1536, 2048 x 1556, 2560 x 1440, 2560 x 1600, 2560 x 2048, 2880 x 1620, 2880 x 1800, 3200 x 1800, 4K (3840 x 2160)<br><br>Output resolution: 1920 x 1080 and 3840 x 2160 |
| Dual streaming | Video conferencing:<br>1080p 30 fps + 1080p 30 fps, 1080p 30 fps + 4K 8 fps, 1080p 60 fps + 1080p 60 fps, 1080p 60 fps + 4K 15 fps, 4K 30 fps + 4K 30 fps<br>Data conferencing:<br>1080p 30 fps, 4K 8 fps |

| Item | Specification |
|------|---------------|
| Operating system and hardware requirements for AirPresence mobile client installation | • Android 5.0 or later, CPU with the ARMv7 Neon chip or above, dominant frequency of 1.5 GHz or above, memory of 1 GB or above<br>• iOS 7.0 or later, iPhone 5 or later or iPad2 or later |
| Operating system requirements for AirPresence PC client installation | • 32-bit or 64-bit Windows 7, 8, 8.1 or 10<br>• 32-bit and 64-bit macOS 10.7 to 10.11 |

# 8.3 Standards Compliance

Table 8-4 lists the standards that the RoomPresence complies with.

Table 8-4 Standards compliance

| Item | Standards |
|------|-----------|
| Video encoding and decoding protocols | H.265, H.264 HP, H.264 BP, H.264 SVC, H.263, and H.263+ |
| Audio encoding and decoding protocols | AAC-LD (mono/stereo), G.711A, G.711U, G.722, G.722.1C, G.729A, and Opus |
| Multimedia framework protocols | ITU-T H.323 and IETF SIP |
| Data conference | Data conference 1.0/2.0 |
| Dual-stream protocols | ITU-T H.239 and Binary Floor Control Protocol (BFCP) |
| Network transmission protocols | TCP/IP, RTP, RTCP, DHCP, DNS, SMTP, SNMP, SNTP, Telnet, SSH, HTTP, HTTPS, and TR-069 |
| Other communications protocols | H.225, H.235, H.241, H.245, H.281, H.350, H.460, RFC2833, LDAP, and LDAPS |
| IP protocol | IPv4 and IPv6 dual stack |
| Encryption protocols | H.235, STARTTLS, TLS, and SRTP |
| Wi-Fi standards | IEEE 802.11 a/b/g/n/ac, IEEE 802.1p/q, IEEE 802.1x, WEP, WPA, WPA2, and WPS |

# A Glossary

| Numerics | |
|---|---|
| **4CIF** | 4 x Common Inediate Format<br><br>A video resolution of 704 x 576 pixels. |
| **4SIF** | 4 x Source Input Format<br><br>A video format with a resolution of 704 x 480 pixels that uses progressive scanning. |
| A | |
| **AAC** | Advanced Audio Coding |
| **AEC** | Acoustic Echo Cancellation |
| **AGC** | Automatic Gain Control |
| **AI** | Artificial Intelligence |
| **AJB** | Audio Jitter Buffer |
| **ANS** | Automatic Noise Suppression |
| **API** | Application Programming Interface<br><br>A particular set of rules and specifications that are used for communication between software programs. |
| **AutoFrame** | Based on the number, location, and motion of participants, this function automatically adjusts the camera to provide a dynamic overview of the full room. |
| **Address Book** | Stores the information of remote participants, including the IP address, number, type, and bandwidth. |
| C | |
| **CHR** | Call History Record |
| **CIF** | Common Intermediate Format |

| CPE | Customer Premises Equipment |
| --- | --- |
| | Any terminal and associated equipment located at a subscriber's premises and connected with a carrier's telecommunication channel at the demarcation point. |
| CSCF | Call Session Control Function |
| | The core component of the IMS network. It performs the functions such as registration, authentication, session control, service triggering, topology hiding, QoS control, NAT traversal, and security management. |
| D | |
| DMZ | demilitarized zone |
| | A buffer area between an insecure system and the secure system and is used to solve the problem of an external network being unable to access an internal network equipped with a firewall. The DMZ is located between the internal network and the external network. The DMZ contains some public server facilities, such as the enterprise Web server and FTP server. The DMZ protects the internal network. |
| DNS | Domain Name System |
| | A mechanism that maps easy-to-remember domain names to IP addresses recognizable for network devices. |
| DVI | Digital Visual Interface |
| DVI-I | Digital Visual Interface-Integrated |
| E | |
| EUA | Enterprise Unified Address Book |
| | A next-generation address book server launched by Huawei. It provides LDAP-based unified address book services for Huawei videoconferencing and enterprise communication solutions. |
| G | |
| G.722 | Audio codec standard that uses adaptive differential pulse-code modulation (ADPCM). Its data rate is 48 kbit/s, 56 kbit/s, or 64 kbit/s. |
| G.728 | Audio codec standard that uses low-delay code excited linear prediction (LD-CELP). Its data rate is 16 kbit/s. |
| H | |
| H.239 | A standard recommended by ITU-T. It enables a video conference to simultaneously transmit both video and data content (for example, computer desktop). |

| H.263 | A video codec standard for video conferences at low rates. Five formats are available: SQCIF, QCIF, CIF, 4CIF, and 16CIF. |
|---|---|
| H.264 | Compared with H.263, H.264 can provide the same-quality video at half of the bit rate, with strong error resilience. |
| HD | High Definition |
| HDMI | High Definition Multimedia Interface |
| HTTP | Hypertext Transfer Protocol |
| HTTPS | Hypertext Transfer Protocol over Secure Sockets Layer<br><br>An HTTP protocol that runs over transport layer security (TLS) and Secure Sockets Layer (SSL) for secured transactions. It is used to establish a reliable channel for encrypted communication and secure identification of a network web server. |
| loopback test | The terminal can transmit audio or video data on a channel to simulate the actual application and test whether the output is satisfactory. A user can perform a local loopback test to check the local network connection or a remote loopback test to check the remote network connection. If a remote loopback test is performed, data is transmitted from the local site to a remote site, and then back to the local site. |
| I | |
| IMS | IP multimedia subsystem |
| IWB | interactive whiteboard |
| initiate call | To initiate a call is a process where the calling party dials the called party's alias or IP address to set up a call and exchange audiovisual information with the called party. |
| L | |
| LAN | Local Area Network |
| LCD | Liquid Crystal Display |
| LDAP | Lightweight Directory Access Protocol<br><br>A network protocol based on TCP/IP, which allows access to a directory system agent (DSA). It involves some reduced functionality from X.500 Directory Access Protocol (DAP) specifications. |
| M | |
| MediaX | Media Switch Server |
| media stream | Data stream (such as audio, video and fax) between different bearer networks. |
| N | |

| netATE | Net Automatic Transfer-enhancement |
|---|---|
| **P** | |
| **PPPoE** | Point-to-Point Protocol over Ethernet |
| **Q** | |
| **HD display** | An HD plasma TV that is used to display the video from a telepresence codec. |
| **R** | |
| **RSE** | Recording & Streaming Engine |
| **RTCP** | Real-Time Transport Control Protocol<br><br>A protocol used to monitor data delivery. RTCP enables the receiver to detect if there is any packet loss and to compensate for any delay jitter. |
| **S** | |
| **SBC** | Session Border Control |
| **SEC** | Super Error Concealment |
| **SIF** | Source Input Format |
| **SIP** | Session Initiation Protocol |
| **SMC** | Service Management Center<br><br>A videoconferencing service management system that manages videoconferencing devices (including GKs, MCUs, and participant endpoints) and allocates videoconferencing resources. |
| **SP** | service provider<br><br>A system that provides services to users. In IAM, the SP for federated identity authentication is the public cloud system. |
| **SRTP** | Secure Real-time Transport Protocol<br><br>A real time transport protocol with enhanced security and encryption mechanism-based RTP. |

| | |
|---|---|
| **SSH** | Secure Shell |
| | A network security protocol formulated by the IETF's Network Working Group on the basis of the application layer to implement secure remote login and other secure network services. The use of SSH can effectively prevent information leakage during remote management. It is initially a program in the Unix operating system and adopted by other operating platforms soon. SSH can fix vulnerabilities on the network when it is used correctly. The SSH client is applicable to multiple platforms. SSH can run on almost all UNIX platforms, including HP-UX, Linux, AIX, Solaris, Digital UNIX, Irix, and other platforms. |
| **STG** | Security Traversing Gateway |
| **STUN** | Simple Traversal of UDP through NAT |
| **SVC** | Scalable Video Coding |
| **SVGA** | Super Video Graphics Array |
| **power on** | To start up a computer; to begin a cold boot procedure; to turn on the power |
| **sound pickup distance** | The maximum distance within which sounds can be picked up by a microphone. |
| **dual-stream** | During a conference, two channels of video streams can be sent or received simultaneously. One channel is used for transmitting video (such as the video captured by a camera) and the other channel is used for transmitting content (such as a computer desktop). |
| **T** | |
| **TCP/IP** | Transmission Control Protocol/Internet Protocol |
| **TLS** | Transport Layer Security |
| **V** | |
| **VGA** | Video Graphics Array |
| **VMR** | Virtual Meeting Room |
| **W** | |
| **WPA** | Wi-Fi Protected Access |
| | A wireless security protocol replacing WEP and aiming to provide stronger security for the IEEE 802.11 WLAN. WPA is a subset of IEEE 802.11i, whose core is IEEE 802.1x and TKIP. |
| **Wi-Fi** | Wireless Fidelity |
| | A short-distance wireless transmission technology. It enables wireless access to the Internet within a range of hundreds of feet wide. |

| Switch Center | A Switch Center (SC) is Huawei's new-generation network switch system that provides H.323 GK, SIP server, and media proxy functions. |
|---|---|
| **X** | |
| XGA | Extended Graphics Array |
| **Y** | |
| schedule conference | Specify the start time and duration of a conference. Then the system schedules the conference automatically. |
| **Z** | |
| telepresence | The Huawei telepresence system provides users with a comfortable video conferencing environment in which they can have true-to-life and face to face remote conferences. |
| Endpoint | A device that converts voice, sound, text, image, table, data and video from physical display to electronic signals or from electronic signals to physical display. A terminal generates and sends signals (such as telecommunications circuit setup or release) that maintain the normal running state of the telecommunications network, and it receives the call signals of telecommunications switch and transmission. |
| chair site | A site that has chair control rights. |
| caption | Text information that appears on video. During a conference, a site can add captions to the video sent by the local site. Users can add captions to the top, middle, and bottom areas of the screen. |