HUAWEI RP100-55 G2, RP200-55 G2, and RP200-55T G2

Product Overview

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Contents

1 Product Positioning

To place equipment in conference rooms in a better layout, install and deliver equipment faster, and accommodate various kinds of conference scenarios, Huawei launches the highly integrated multi-functional telepresence conference solution (including RP100-55 G2, RP200-55 G2, and RP200-55T G2). This solution is competent to support HD, smooth remote video conferences, greatly enhancing user experience from end to end.

This solution incorporates the high-performance and cost-effective codec, 1080p HD precision camera with 12x optical zoom, as well as digital microphone array and touchscreen. They, combined with the full-HD display, are placed on the integrated rack, which can be moved freely.

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 are suitable for conference rooms of all sizes.

2 Product Highlights

All-in-One Design, Easy to Deploy and Install

- The RP comes with embedded cables, supports modular installation, and allows cables to be routed from either the front or rear panel. The RP requires only two persons and 0.5 hours for its installation.
- The rack can be installed in fixed mode or on casters. It can be adjusted up or down. Its front and rear panels can be removed for maintenance.
- Both single-display and dual-display are available.

HD Video, Audio, and Data Experience

- Delivers crisp, smooth 1080p HD video to create a face-to-face video communication.
- Provides CD-quality AAC-LD audio, creating virtual 3D sound effects.
- Simultaneously transmits video and presentation at 1080p.
- Displays video and presentation in multiple modes.

User-Centric Design, Easy to Use

- 10-inch tablet, which is stylish and easy to use
- User-friendly GUI

H.265 and VME Dual-core Technology, Delivering Superb HD Experience over Low Bandwidth

- H.265 works with Huawei-patented Video Motion Enhancement (VME) technology to ensure strong network adaptability against 20% video packet loss.
- Through intelligent face recognition and back-end video enhancement, the VME technology improves light adaptability, reduces bandwidth consumption, improves image definition, and enhances motion images.

High Network Adaptability and Security

- Using H.264 SVC, the RP excellently adapts to different line bandwidths, device capabilities, and network environments.

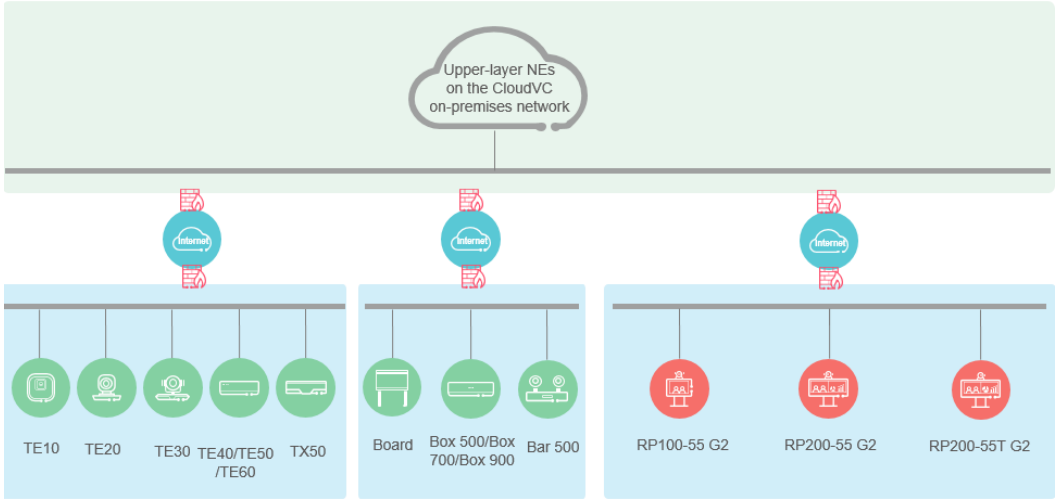
- The RP utilizes Huawei's exclusive Super Error Concealment (SEC) and Intelligent Rate Control (IRC) technologies.
- The RP supports firewall traversal through the standard H.460 protocol or Huawei's proprietary Super Network Passport (SNP) protocol.
- Media and signaling streams are encrypted in multiple ways, ensuring secure and stable running of the videoconferencing system.

3 Networking Schemes

3.1 CloudVC On-Premises Networking

RP100-55 G2, RP200-55 G2, and RP200-55T G2 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:

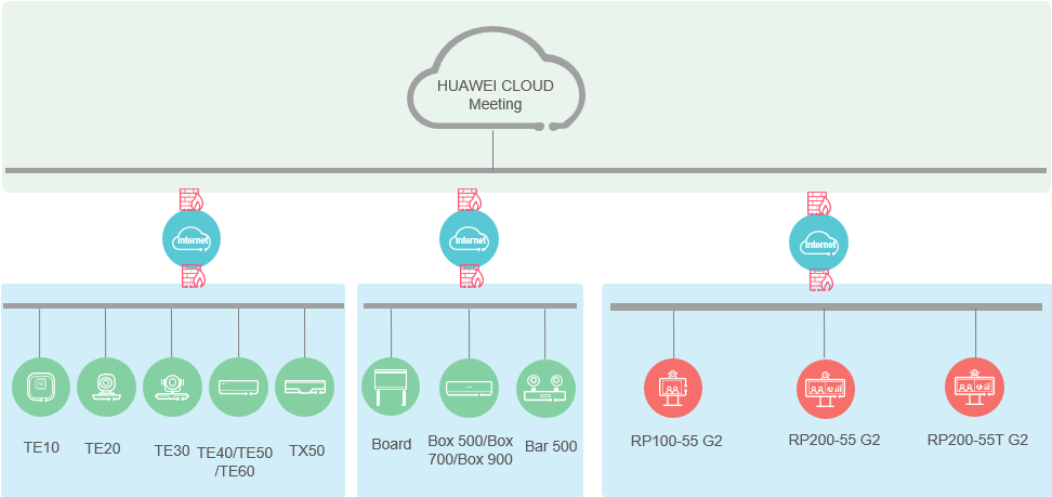
- The endpoint connects to the on-premises network through standard H.323 or SIP.
- Audio and video calling, content sharing, and data collaboration can be implemented between the endpoint and various types of meeting terminals and clients.
- To learn more, visit **http://support.huawei.com/enterprise/en/index.html** 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 HUAWEI CLOUD meeting network



In this networking scheme:

- The RoomPresence system 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.

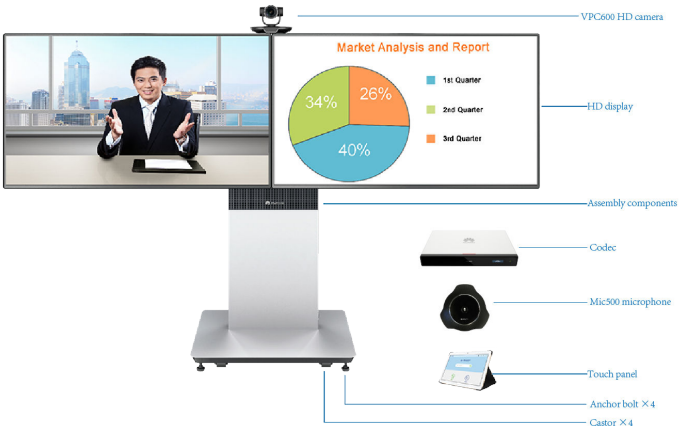
4 Product Structure

4.1 Appearance

Huawei's multi-functional telepresence solution (including RP100-55 G2, RP200-55 G2, and RP200-55T G2) that is compact is designed to meet the requirements of various telepresence conference scenarios. Generally, the RP solution falls into two types: RP100 with only one screen and RP200 with two screens.

This solution (including HUAWEI RP100-55 G2, RP200-55 G2, and RP200-55T G2) comprises the following: the VPC600 HD camera or VPT300 intelligent camera, core codec, full-HD display, assembly components, and Mic 500 microphone. The RP base has castors for rolling stand and anchor bolts for floor stand, as shown in **Table 4-1**.

Table 4-1 RP100-55 G2, RP200-55 G2, and RP200-55T G2 appearance

Product model	Appearance
RP100-55 G2	
RP200-55 G2	
RP200-55T G2	

4.2 Codec

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 use Huawei's new-generation professional video conferencing endpoint as the codec, as shown in **Figure 4-1**.

Figure 4-1 Codec

The codec has the following features:

- The H.265 codec capability provides videos of up to 1080p 60 fps and data conferences of up to 1080p 30 fps.
- High network adaptability and security:
  - Using H.264 SVC, the RP100-55 G2 and RP200-55 G2 excellently adapt 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 HUAWEI RP100-55 G2, RP200-55 G2, and RP200-55T G2 use the VPC600 (HD camera) or VPT300 (intelligent camera) as the camera.

HD Camera

The RP100-55 G2 and RP200-55 G2 use HUAWEI VPC600 HD camera, as shown in **Figure 4-2**. This camera provides HD images such as 1080p 60 fps, 1080i, and 720p. Additionally, the VPC600 provides industry-leading video processing capabilities with Automatic White Balance (AWB), Automatic Exposure (AE), and Automatic Focus (AF).

Figure 4-2 HD camera VPC600

Intelligent Camera

The RP200-55T G2 uses Huawei's in-house VPT300 intelligent camera, as shown in **Figure 4-3**.

Figure 4-3 Intelligent camera VPT300

The VPT300 has a compact design and consists of one base, one sound pickup pole, and two VPC600s. Besides, the VPT300 provides 16 built-in microphones as a microphone array to detect sound and locate the sound source using a function known as sound localization. The VPT300 also provides a dual-camera system for face detection and video location. In a word, the VPT300 supports speaker tracking with accurate localization and fast focus.

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 4-4 shows the appearance of the Touch and its rear components. **Table 4-2** describes the function of each component.

Figure 4-4 Front and rear appearance of the Touch

Table 4-2 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.

No.	Component	Function
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 RP100-55 G2, RP200-55 G2, or RP200-55T G2 and supplies 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 Mic 500

The HUAWEI CloudLink Mic 500 compact microphone array supports 360-degree sound pickup with an optimal range of six meters, lossless broadband audio transmission, and excellent 3A audio processing technology. It works with Huawei's full series of video conferencing endpoints to deliver an entirely new hi-fi stereo audio experience. (3A = AEC: Acoustic Echo Cancellation; AGC: Automatic Gain Control; ANS: Automatic Noise Suppression)

Figure 4-5 Mic 500

- Elegant appearance and compact design with low power consumption

The appearance of the Mic 500 is designed by a top-notch design company. The metal grid design ensures an extraordinary sound collection. The top cover employs a black glossy style, circled by a bright silver edge, and provides one button for muting or unmuting. The microphone array presents itself as a small-sized (15 cm diameter), visually appealing, and technically professional device.

- Plug and play

  The Mic 500 can be directly connected to an endpoint for use, with no need for any configurations. It fits well with various meeting rooms and is effortless to use.

- Superb hi-fi audio

  The Mic 500 supports a sampling rate of 48 kHz, a full frequency range, and dual-channel hi-fi stereo to deliver an unimaginable audio experience. When working with the endpoint, it automatically adapts to various audio codec protocols such as Opus, AAC-LD, G.722, G.711, and G.728.

- Superior audio experience

  The 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.

- Excellent audio processing technologies
  - Acoustic Echo Cancellation (AEC)

  This technology eliminates echo from video conferences, creating an enjoyable interaction experience.

  - Automatic Noise Suppression (ANS)

  This technology reduces noise for video conferencing to deliver high-fi audio.

  - Automatic Gain Control (AGC)

    This technology guarantees stable and natural audio.

4.6 Assembly Components

The RP100-55 G2, RP200-55 G2, or RP200-55T G2 assembly components include the TV cabinet, equipment cabinet, and multi-functional socket. With ultimate simplicity, the assembly components are smooth and tidy.

- Professional design

  The RP100-55 G2, RP200-55 G2, and RP200-55T G2 are height adjustable at the 0 mm and 150 mm levels. It offers two installation options configurable to a variety of environments and requirements: fixed or movable with optional casters. Front and rear accesses are also provided for simple maintenance.

- User-centered design

  The assembly components were designed with the best practices of user-centered design (UCD) experts. The embedded cables and devices contribute to the sleek appearance, improving the conference environment.

5 Functions and Features

5.1 H.265 Conferencing

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 support H.265-based encoding and decoding for both video and content. Additionally, with Huawei-patented VME technology, these RP endpoints are competent to deliver 1080p HD videos.

5.2 Hi-Fi Audio

RP100-55 G2, RP200-55 G2, or RP200-55T G2 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 RP100-55 G2, RP200-55 G2, and RP200-55 G2 connect to a wired microphone 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, 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 RP100-55 G2, RP200-55 G2, or RP200-55T G2.

Figure 5-1 AirPresence Key

5.4 Facial Recognition Sign-In

With face detection and recognition technologies, the RP100-55 G2, RP200-55 G2, or RP200-55T G2 identifies a participant before or during a meeting and reports the participant information to the server for sign-in, implementing auto sign-in.

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 allow you to view sign-in information on the Touch.

Figure 5-2 Facial recognition sign-in

There are the following three facial recognition sign-in modes. The auto sign-in is used by default.

- Background sign-in

Endpoints perform facial recognition sign-in in the background and do not display the sign-in window in full screen.

- Auto sig-in

  The system automatically enables the full-screen sign-in once the sign-in starts. Then, the system automatically switches to background sign-in after the conference starts.

- Full-screen sign-in

  The sign-in window is displayed in full screen. You can switch this sign-in mode to the background sign-in.

5.5 On-Screen Name Tags

With face detection and recognition technologies, the RP100-55 G2, RP200-55 G2, and RP200-55T G2 automatically identify participants and adds on-screen name tags of participants to the video for easy communication.

Figure 5-3 On-screen name tags

5.6 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.

5.7 Multistream Conferencing

Multistream conferencing leverages the Scalable Video Coding (SVC) technology, with which the RP100-55 G2, RP200-55 G2, and RP200-55T G2 are 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 up to four channels of video streams at a resolution of 90p to 720p from the RP100-55 G2, RP200-55 G2, or RP200-55T G2, and a maximum of 16-channel video streams can be forwarded by the CloudMCU to the RP100-55 G2, RP200-55 G2, or RP200-55T G2. The resolution of the forwarded video streams depends on the actual bandwidth, and the maximum resolution is 720p.

5.8 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 5-4 Video layouts

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

Figure 5-5 Meeting control on the Touch

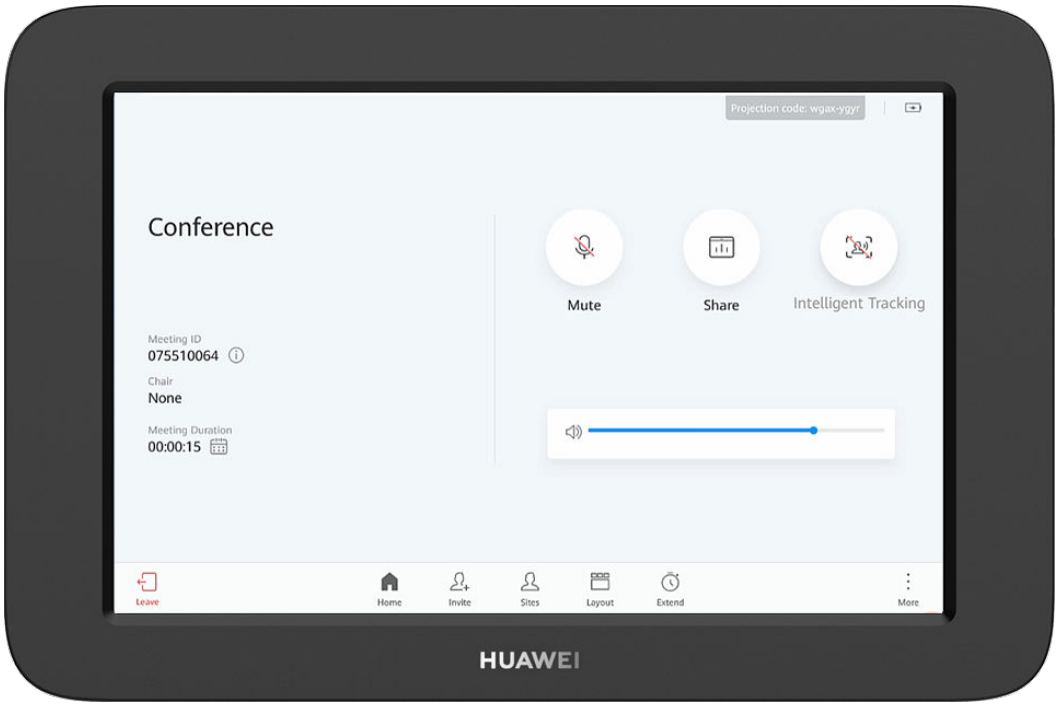
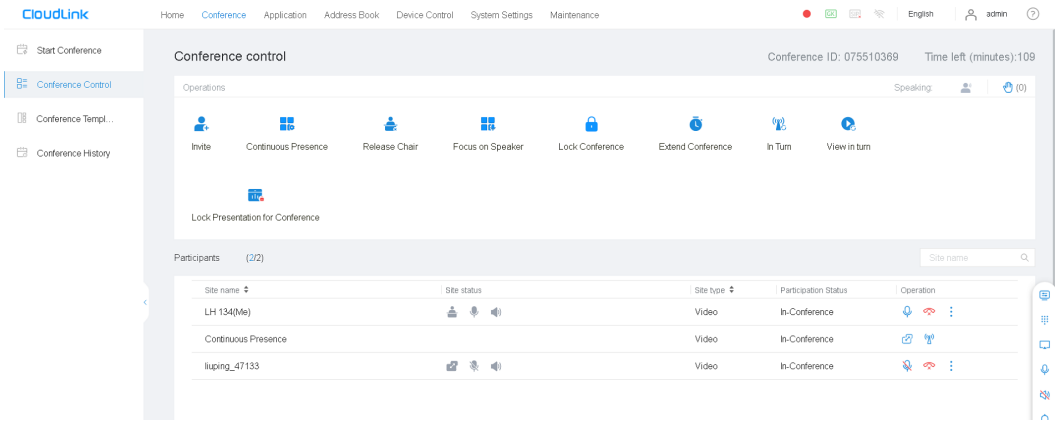


Figure 5-6 Meeting control on the web interface



5.10 Intelligent Tracking

The RP200-55T G2 supports the following intelligent tracking functions:

- Uses voice tracking and facial recognition algorithms for sound detection and localization and collects images for facial recognition to achieve accurate and flexible tracking.
- Automatically presents the optimal view of participants in a meeting room, without requiring any manual intervention. This function is called AutoFrame.
  - The camera automatically identifies whether only one participant is speaking or two participants are having a conversation, and then presents the most suitable close-up of the speaker/speakers.

  - When no one is speaking, the camera automatically adjusts its lens to provide a dynamic overview of the entire meeting room based on the number and location of participants.
- Can be set to **Auto**, **AutoFrame**, or **Auto (no AutoFrame)** mode.
- Allows users to set the screen layout. When only one participant is speaking, the panoramic view is displayed in full-screen mode and the close-up of the speaker is displayed in a small window at a corner. When two participants are having a conversation, their close-up is displayed in two different panes. When no participant is speaking, the panoramic view is displayed in full-screen mode.

5.11 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.

5.12 Network Address Book

The network address book stores participant information, which you can directly use for easily starting a meeting. The RP100-55 G2, RP200-55 G2, and RP200-55T G2 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.
- Initiate calls to participants or invite new participants to join a meeting on the Touch, or web interface.

5.13 Wireless Connections

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 support 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). Each of them can serve as a Wi-Fi hotspot and connect to a Wi-Fi network as a client at the same time.

If the RP100-55 G2, RP200-55 G2, or RP200-55T G2 is configured as a client, it automatically detects and connects to Wi-Fi networks. You can set their IP addresses in DHCP or static mode. This function applies to the scenarios in which no wired network is available and you need to connect the RP100-55 G2, RP200-55 G2, or RP200-55T G2 to the network through Wi-Fi.

When the RP100-55 G2, RP200-55 G2, or RP200-55T G2 has its Wi-Fi hotspot enabled, it can serve as a hotspot for connecting other devices (such as a PC) to Wi-Fi.

5.14 Automatic Configuration

Zero Configuration at Startup

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 can automatically obtain the type of the connected cloud platform or server. You only need to set the IP addresses of these endpoints and the server or enter the activation code to fast complete endpoint 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 RP100-55 G2, RP200-55 G2, or RP200-55T G2 through the USB device. In this way, the configuration is automatically completed at a high efficiency.

5.15 Connection to eSight

The RP100-55 G2, RP200-55 G2, or RP200-55T G2 can be managed by eSight if it is connected to eSight.

- On eSight, you can perform many RP100-55 G2, RP200-55 G2, or RP200-55T G2-related tasks, including querying and setting parameters, uploading and downloading configuration files, upgrading and restarting the endpoint, managing public and private networks, collecting logs, and uploading Call History Record (CHR) data files.
- You can download CA certificates and server certificates from eSight and import them into the RP100-55 G2, RP200-55 G2, or RP200-55T G2 in batches.
- HTTPS-based bidirectional authentication is used for establishing a connection between the RP100-55 G2, RP200-55 G2, or RP200-55T G2 and eSight, enhancing communications security.

5.16 Customizing a Boot Screen and Changing a Wallpaper

- You can replace the customized boot screen and logo using the upgrade tool to meet personalized requirements.
- You can change the wallpapers of the home screens of the Touch and display through the Touch or web interface.

5.17 Globalization

The web interface and Touch UI of the RP100-55 G2, RP200-55 G2, and RP200-55T G2 support multiple languages and time zone settings. If some

countries in the selected time zone use daylight saving time (DST), the RP100-55 G2, RP200-55 G2, and RP200-55T G2 automatically enable DST and changes its clock to comply with DST.

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 GUIs support the following languages: Simplified Chinese, Traditional Chinese, English, Spanish (Europe), French, Russian, Japanese, German, and Portuguese (Brazil).

5.18 High Network Adaptability and Security

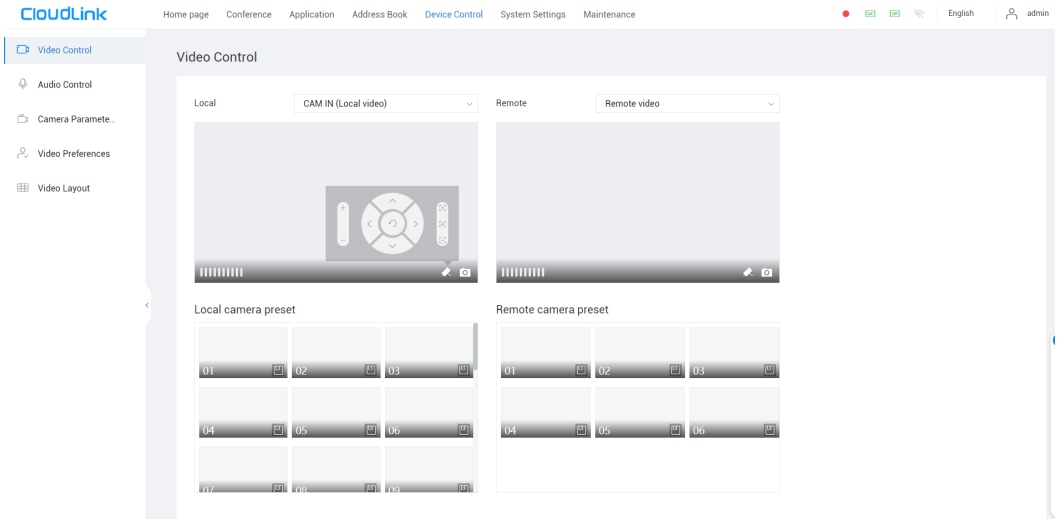
The RP100-55 G2, RP200-55 G2, and RP200-55T G2 feature high network adaptability and security.

- 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.

5.19 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 5-7**.

Figure 5-7 Viewing local and remote video



CAUTION

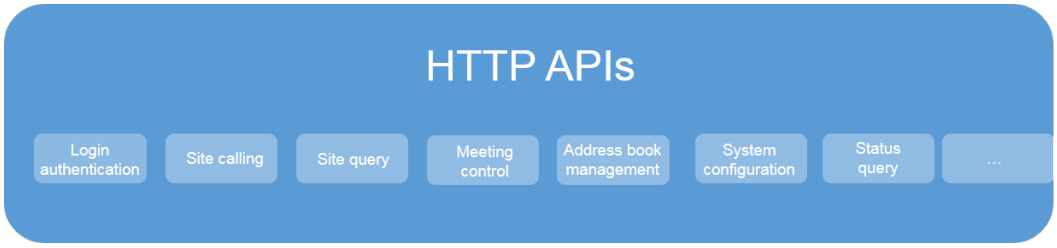
This function is related to personal privacy. Ensure that your usage of it complies with local laws and regulations.

5.20 APIs for Third-Party Integration

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 provide 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, as shown in **Figure 5-8**.

Users can choose necessary APIs based on their site requirements to develop required functions and integrate these functions into other products or applications

Figure 5-8 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 RP100-55 G2, RP200-55 G2, RP200-55T G2, 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. The user name and password are required for the NMS to connect to the RP100-55 G2, RP200-55 G2, and RP200-55T G2.
- 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 RP100-55 G2, RP200-55 G2, and RP200-55T G2 can simultaneously connect to the active and standby corporate directories or SCs for disaster recovery (DR). If the active corporate directory or SC is faulty, the RP100-55 G2, RP200-55 G2, or RP200-55T G2 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, such as calling a participant and controlling a meeting through several taps, also including:

- Joining a scheduled meeting
- Creating a P2P or multipoint meeting
- Sharing content
- Setting continuous presence
- Controlling a meeting
- Setting system parameters
- Controlling the microphone, loudspeaker, local camera, and remote camera
- Conducting 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 RP100-55 G2, RP200-55 G2, and RP200-55T G2. 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 RP100-55 G2, RP200-55 G2, or RP200-55T G2.

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 RP100-55 G2, RP200-55 G2, or RP200-55T G2 using the virtual remote control
PC client	Sharing content

Figure 7-2 AirPresence mobile client for Android

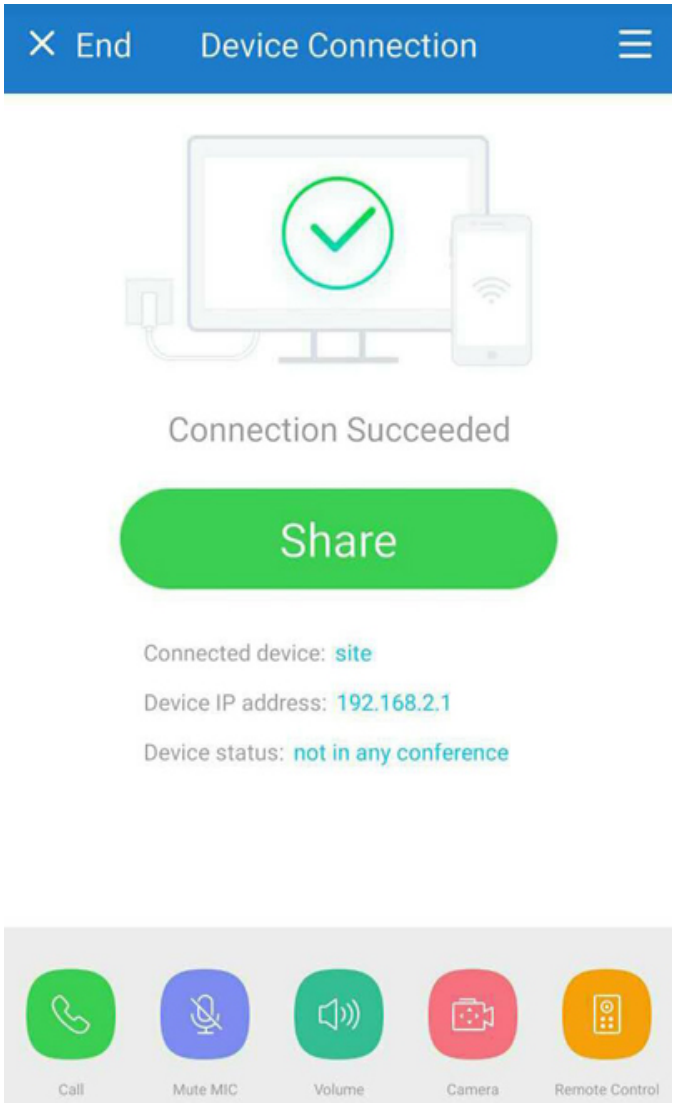
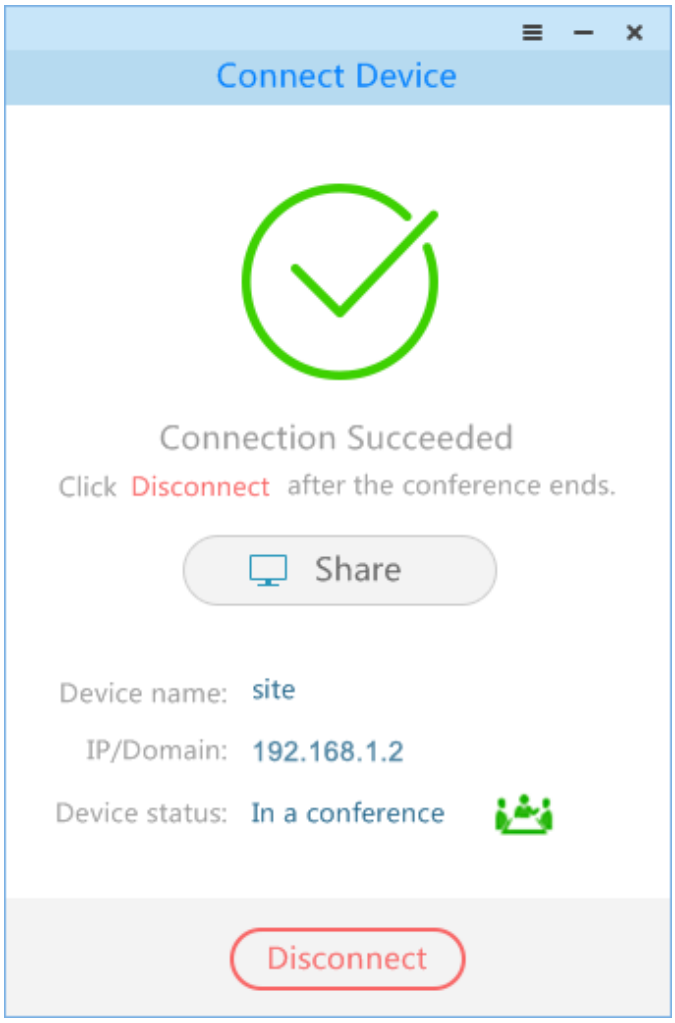


Figure 7-3 AirPresence PC client



7.1.3 Web Interface

Administrators can remotely operate RP100-55 G2, RP200-55 G2, and RP200-55T G2 from the web interface. A maximum of 10 users are allowed to remotely manage RP100-55 G2, RP200-55 G2, and RP200-55T G2. Multiple users can use one 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 RP100-55 G2, RP200-55 G2, or RP200-55T G2 records logs about user operations and system exceptions, helping the administrator maintain the system and locate faults.

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

7.2.2 Diagnostics

The RP100-55 G2 or RP200-55 G2 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 SMC2.0 and eSight can inspect the RP100-55 G2, RP200-55 G2, and RP200-55T G2.

- 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 RP100-55 G2, RP200-55 G2, or RP200-55T G2 to the latest version to fix its vulnerabilities and use the new functions provided in the latest version. The following upgrade methods are supported:

- Manual upgrade using the upgrade tool or web interface
- Upgrade after the system is restored to factory defaults
- Silent upgrade
- Batch upgrade
- Resumable upgrade
- Upgrade using eSight (when RP100-55 G2, RP200-55 G2, and RP200-55T G2 are connected to eSight)
- Automatic or batch upgrade using the SMC2.0 (as a manageable device)

7.3 CHR Data Collection

After connecting to eSight, the RP100-55 G2, RP200-55 G2, and RP200-55T G2 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.

Table 8-1 Physical specifications

Parameter	Value
Electricity supply requirements	
Input voltage	100–240 V AC
Maximum power (excluding lighting and air conditioning)	• RP100-55 G2: 160 W • RP200-55 G2: 255 W • RP200-55T G2: 298 W
Environmental requirements (in use)	
Operating temperature	0–40°C
Relative humidity	10% to 80% RH
Minimum illuminance	7 lux
Recommended illuminance	> 200 lux
Operating altitude	< 4000 m

Parameter	Value
Environmental requirements (idle)	
Operating temperature	–20°C to +60°C
Relative humidity (non-condensing)	5%–85%
Dimensions and weight	
Dimensions (H x W x D)	• RP100-55 G2: 1238 mm × 618 mm × 1741 mm • RP200-55 G2: 2476 mm × 618 mm × 1741 mm • RP200-55T G2: 2476 mm × 618 mm × 1741 mm
Gross weight	• RP100-55 G2: 140.6 kg • RP200-55 G2: 168.4 kg • RP200-55T G2: 174.2 kg
Net weight	• RP100-55 G2: 103.3 kg • RP200-55 G2: 124.5 kg • RP200-55T G2: 129.2 kg
Wi-Fi	
Frequency bands	2.4 GHz and 5 GHz
Working frequency band	2.4 GHz: 2400 MHz to 2483.5 MHz 5 GHz: 5150 MHz to 5250 MHz
Maximum transmission power	< 20 dBm
HD camera	
Lens	
Lens	2-megapixel, 1/2.8-inch CMOS
Video output resolution	1080p 50/60, 1080p 25/30, 1080i 50/60, and 720p 50/60
Video	
Zoom	A maximum of 12x optical zoom and 12x digital zoom
Focal length	F = 3.9 mm to 46.8 mm
Aperture	F1.8
Maximum horizontal field of view	72°

Parameter	Value
Maximum vertical field of view	44.5°
Maximum pan/tilt range	Pan: ±100°; tilt: ±30°
Number of presets	30 videos
Image mode	
Image mode	Four image modes: standard, vivid, natural, and picturesque
Automatic adjustment	
Automatic adjustment	Automatic White Balance (AWB), Automatic Exposure (AE), and Automatic Focus (AF)
Exposure mode	Auto, shutter priority, iris priority, and manual
White balance mode	Automatic, one-push, and manual
VPT300	
Exposure mode	Automatic and manual
White balance mode	Automatic and manual
Sound pickup	Distance: 10 m; range: 140°
Highlights	
Installation method	Wall-mounted for VPC600
Camera control	Far-End Camera Control (FECC) supported
Full HD display	
Screen size	55-inch display
Screen resolution	1920 x 1080

8.2 Performance and Capacity

Table 8-2 lists the performance and capacity specifications.

Table 8-2 Performance and capacity

Item	Specifications
Call bandwidth	64 kbit/s to 8 Mbit/s

Item	Specifications
Video capabilities (H. 264)	Minimum bandwidth required to deliver video of a specific resolution (without any packet loss): ● 1 Mbit/s for 1080p 60 fps ● 512 kbit/s for 1080p 30 fps ● 768 kbit/s for 720p 60 fps ● 384 kbit/s for 720p 30 fps ● 128 kbit/s for 4SIF/4CIF 30 fps ● 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): ● 768 kbit/s for 1080p 60 fps ● 384 kbit/s for 1080p 30 fps ● 512 kbit/s for 720p 60 fps ● 256 kbit/s for 720p 30 fps

Item	Specifications
Content sharing capabilities	• Content sharing over a wireless connection In a remote meeting: – AirPresence mobile client: up to 1080p 15 fps for Android; up to 1080p 3 fps for iOS – AirPresence PC client (Windows): up to 1080p 15 fps – AirPresence PC client (Mac): up to 1080p 5 fps In a local meeting: – AirPresence mobile client: up to 1080p 15 fps for Android; up to 1080p 3 fps for iOS – AirPresence PC client (Windows): up to 1080p 25 fps – AirPresence PC client (Mac): up to 1080p 15 fps • Content sharing over a cable connection 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 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 Output resolution: 1920 x 1080 and 3840 x 2160
Dual streaming capability	Video conferencing: 1080p 30 fps + 1080p 30 fps (4K 8 fps), 1080p 60 fps + 1080p 60 fps (4K 15 fps) Data conferencing: 1080p 30 fps, 4K 8 fps
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 • iOS 7.0 or later, iPhone 5 or later or iPad2 or later

Item	Specifications
Operating system and hardware requirements for AirPresence PC client installation	• 32-bit or 64-bit Windows 7, 8, 8.1 or 10 • 32-bit and 64-bit macOS 10.7 to 10.11

8.3 Standards Compliance

The RP100-55 G2, RP200-55 G2, and RP200-55T G2 comply with the protocol standards listed in **Table 8-3**.

Table 8-3 Standards compliance

Item	Standards
Video encoding and decoding protocols	H.265, H.265 screen content coding (SCC) decoding, 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, SRTP, and Chinese cryptographic algorithms
Wi-Fi standards	IEEE 802.11 a/b/g/n/ac, IEEE 802.1p/q, IEEE 802.1x, WEP, WPA, WPA2, and WPS

