



HUAWEI DP300 Desktop Presence

Product Overview

Issue 04

Date 2016-12-15

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Huawei Technologies Co., Ltd.

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

Website: <http://e.huawei.com>

About This Document

Purpose

This document provides the features, network, and technical specifications of the HUAWEI DP300 desktop presence (DP300 or endpoint for short).





Intended Audience


This document is intended for:

- End Users
- Agents

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 WARNING	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 DANGER	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
 NOTE	<p>Calls attention to important information, best practices and tips.</p> <p>NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.</p>

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 04 (2016-12-15)

This issue is used for the fourth office application.

- Modified 2 "Product Highlights."
- Modified 4 "Application Scenarios."
- Modified 5.11 "Seamless Integration with IMS."
- Modified 5.17 "Network Address Book."
- Modified 5.20 "Lync Convergence and Interoperability."
- Added 5.21 "Interconnection with the ACS."
- Modified 8.2 "Performance and Capacity."

Issue 03 (2016-03-21)

This issue is used for third office application.

- Modified 2 "Product Highlights".
- Modified 3.2 "Parts Positions".
- Added 4.7 "SIP-based Traversal Between Public and Private Networks".
- Added 5.2 "P2P to Multipoint".
- Added 5.3 "Registering with the SC Using the Same SIP Number as the Soft Client".
- Modified 7.3 "Touchscreen".
- Modified 7.4 "Remote Controlled UI".

Issue 02 (2015-11-20)

This issue is used for second office application.

- Modified 2 "Product Highlights".
- Modified 5.14 "Adjusting the Screen Layout".

Modified 8.4 "Standards Compliance".

Issue 01 (2015-09-15)

This issue is used for first office application (FOA).

Contents

About This Document.....	ii
1 Product Positioning.....	1
2 Product Highlights.....	2
3 Product Structure.....	5
3.1 Appearance.....	5
3.2 Parts Positions.....	7
4 Application Scenarios.....	13
4.1 Huawei IMS Convergence Network.....	13
4.2 IP Network.....	15
4.3 Built-in MCU-based Network.....	16
4.4 Embedded MCU Networking with the RSE.....	18
4.5 MSUC Convergence Network (Lync).....	19
4.6 Networking with the TE Desktop&TE Mobile.....	21
4.7 SIP-based Traversal Between Public and Private Networks.....	23
5 Major Features.....	24
5.1 Document Camera.....	24
5.2 P2P to Multipoint.....	24
5.3 Registering with the SC Using the Same SIP Number as the TE Desktop&TE Mobile.....	25
5.4 Multi-Language User Interface.....	25
5.5 Voice Calling.....	25
5.6 Multi-View.....	27
5.7 Wi-Fi Connectivity.....	27
5.8 Bluetooth Access.....	28
5.9 Air Content Sharing.....	28
5.10 Automatic USB Configuration.....	30
5.11 Seamless Integration with IMS.....	30
5.12 Live-Mode Dual-Stream Conference and Presentation Locking.....	30
5.13 SiteCall.....	30
5.14 Web Interface-based Conference Control.....	31
5.15 Real-time Viewing of HD Images.....	31
5.16 Adjusting the Screen Layout.....	32

5.17 Network Address Book.....	34
5.18 Third-party Application Programming Interfaces (APIs).....	34
5.19 Conference Recording.....	34
5.20 Interworking with the Lync System.....	35
5.21 Interconnection with the ACS.....	35
6 Security Features.....	36
7 Operation and Maintenance.....	40
7.1 Switch Between PC Mode and Videoconferencing Mode.....	40
7.2 PC Monitor.....	40
7.3 Touchscreen.....	40
7.4 Remote Controlled UI.....	41
7.5 Web Interface.....	42
7.6 Logs.....	42
7.7 System Upgrade.....	42
8 Technical Specifications.....	44
8.1 Physical Specifications.....	45
8.2 Performance and Capacity.....	47
8.3 Ports and Protocols.....	48
8.4 Standards Compliance.....	49
A Glossary.....	51

1 Product Positioning

The DP300 is an integrated desktop presence designed by Huawei for individual users and small-sized conference rooms. The DP300 has a top-notch appearance. Its 27-inch touchscreen can be used as a monitor. Additionally, the DP300 offers a wide assortment of videoconferencing functions, such as initiating a point-to-point call and holding a multipoint conference. In a word, the DP300 is a high-end real-time videoconferencing product.

2 Product Highlights

Integrated Design

- Integrates the codec, microphone, loudspeaker, camera, and monitor/touchscreen.
- Provides a 27-inch 16:9 wide-screen LCD touchscreen, which can also be used as a PC monitor.
- Embeds a PTZ camera that features 1080p 60fps, 3X zoom, and 80-degree wide angle, and built-in lens cover.
- Embeds dual microphones and dual loudspeakers that support wideband stereo voice and mega bass, enhancing voice experience.
- Provides microphone and headset jacks.

Innovative Technologies Provide HD Experience with Low-bandwidth

- The endpoint supports a maximum conference rate of 8 Mbit/s and provides industry-leading video quality. The 720p 30 fps video can be maintained even when the bandwidth available is only 384 kbit/s, the 1080p 30 fps video can be delivered when the bandwidth is 512 kbit/s, and the 1080p 60 fps video can be delivered when the bandwidth is 1 Mbit/s.
- The endpoint supports multiple video encoding and decoding protocols including H.264 SVC, H.264 HP, H.264 BP, H.263, H.263+ and RTV. The DP300 also supports multiple HD video formats of up to 720p 30 fps, 720p 60 fps, 1080p 30 fps, 1080p 60 fps and SD video formats such as 4CIF and CIF. Compared with 720p images, 1080p images have a more than twice the definition, sharper edges, and more delicate details.
- The endpoint uses Huawei's new proprietary Video Motion Enhancement (VME) technology to enhance pre- and post-processing of video, noise reduction, contrast, edges, and illuminance. This enhancement enables the endpoint to provide sharper and clearer video when compared with similar systems in the same lighting and camera conditions. Using latest hardware processing chip, and enhanced H.264 encoding and decoding technology, the endpoint's video compression ratio is increased, allowing crisper, smoother and more vivid video to be delivered using the same network bandwidth as competing systems.

Feature-rich Functionalities, Intelligent and Easy-to-use to Satisfy Customer Requirements

- P2P to Multipoint: The call hold and call transfer functions are combined to allow you to turn a P2P call into a multipoint call, preventing unnecessary calling operations and increasing conference efficiency.
- Registration with the same SIP number: A DP300 videoconferencing endpoint and TE Desktop&TE Mobile can register with an SC using the same number.
- Switch between PC mode and videoconferencing mode.
- Document camera: You can share local manuscripts, documents, and books with remote sites in a conference, improving communication efficiency.
- Camera lens cover: You can disable local video by closing the camera lens cover, which protects your privacy.
- Voice dialing: You can call or join a conference simply by saying the conference or site name.
- Multi-view: Images from multi-cameras are transmitted in CP to the far-end via one stream which saves bandwidth and enables far-end sites to view live images from different angles.
- Abundant wireless interfaces: The Wi-Fi module is embedded to support wireless network connection, wireless microphone array access, and wireless presentation sharing at the transmission bandwidth of 54 Mbit/s and frequency of 2.4 GHz, simplifying network deployment. Standalone Wi-Fi routers can be connected to support a frequency as high as 5 GHz, meeting the requirements in various scenarios.
- Live content: More than one site can share full HD content simultaneously, and any site can view any content as needed.
- Bluetooth: The Bluetooth headset can be connected wirelessly, simplifying deployment, facilitating use, and enhancing calling privacy.
- Air content sharing: No cable required, users easily share data as presentations or content over wireless or IP network.
- USB auto configuration: Data configuration is completed via U-disk, providing plug-and-play which is secure, convenient, and effortless.
- Abundant Continuous presence modes.

User-Friendly Interface and Remote-Control Design

- Touch control or remote control
- 27-inch touchscreen: delivers the experience of "what you see is what you get" and works as the PC monitor.
- Remote-control design: integrates most frequently used keys.
- User-friendly interface: supports 3D remote UI and role-based intelligent UI and enables users to join a conference or place a call at the touch of a button.

Outstanding Network Adaptability and Security Mechanism

- Patented Super Error Concealment (SEC) ensures high-quality video experiences even with packet loss at 20%.

- Huawei proprietary Intelligent Rate Control (IRC) technology is used to automatically detect network service bandwidth occupation and intelligently select optimal resolution based on the bandwidth to ensure conference quality.
- Standard H.460 and proprietary SNP technology guarantee secure firewall traversal.
- H.235 media stream and signaling encryption for SRTP, TLS, and HTTPS.

Extensive System Integration

- Inter-operable with standard endpoints and infrastructures.
- Convergence with MSUC: The DP300 can interwork with Skype for Business, Lync 2013, Lync 2010, and Lync Online (Office 365).
- Seamless integration with IMS. Additionally, the DP300 can interconnect with the Auto-Configuration Server (ACS). After the interconnection, the ACS can manage the DP300 through the TR-069 protocol.
- SiteCall: A unique technology in the industry, allowing users to schedule or instantly initiate a multipoint conference using the video terminal, which is as convenient as making phone calls.
- Rich application programming interfaces (APIs): The endpoint provides rich APIs for a third party to facilitate system integration and customization.

(Optional) Built-in MCU

Using the endpoint that has a built-in MCU, users can call multiple sites one by one, or use a predefined conference template to call multiple sites at a time. After a conference starts, sites can dial the number or IP address of the endpoint that houses the built-in MCU to join in the conference.

- Maximum connected sites allowed by a non-encrypted conference: 4 720p 30 fps video sites (local site included) + 3 audio sites
- Maximum connected sites allowed by an encrypted conference: 4 720p 30 fps video sites (local site included)
- Maximum bandwidth required for a conference: 3 Mbit/s (1 Mbit/s for each video site)
- One conference can be simultaneously joined by different types of endpoints, including SD terminals, HD terminals, VoIP terminals, H.323 terminals, SIP terminals, and terminals supporting different audio and video formats and bandwidths.
- Continuous presence per port: Supports a maximum of 4 video panes.
- Supports rich functions, including voice activation, floor request, and dual-stream transmission through H.239 and Binary Floor Control Protocol (BFCP). Can be used in conjunction with Huawei RSE6500 to support multipoint conference recording, meeting the requirements of small- and medium-sized enterprises in terms of equipment price and maintenance costs.
- Supports continuous presence containing local video and presentation.

Simple Installation

- Provides an automatic configuration wizard at your first installation.
- The interfaces are simple and easy to be identified.
- The cables are convenient to connect.

3 Product Structure

3.1 Appearance

The DP300 is equipped with a 27-inch wide-screen LCD touchscreen, features a metallic design, and impresses users with its top-notch and fashionable appearance at the first sight. [Figure 3-1](#) and [Figure 3-2](#) show the front and rear panels of the DP300 respectively.

Figure 3-1 Front panel



Figure 3-2 Rear panel



3.2 Parts Positions

Front Panel

Figure 3-3 shows the positions of the camera indicator, display, power button, and other touch buttons on the DP300. **Table 3-1** describes the functions of these parts. **Table 3-2** describes mappings between status indicators and DP300 status.

Figure 3-3 Front panel



Table 3-1 Front panel description

Type	No.	Part	Description
Core part	1	Built-in microphone	HUAWEI DP300 embeds two microphones: one on the left, and the other on the right.
Indicator	2	Camera status indicator	Shows the camera running status.
Core part	3	Built-in camera lens	HUAWEI DP300 embeds a camera and a lens cover.
	4	Document camera	Pull out the document camera to push texts on the conference desktop to the display.

Type	No.	Part	Description
	5	Slide button of the built-in camera lens cover	Slide to open or close the built-in camera lens cover. You can disable local video by closing the built-in camera lens cover, which protects your privacy.
	6	Touchscreen	A 27-inch wide-screen LCD touchscreen, which can also be used as a PC monitor.
Touch button	7	Volume decrease button	Used to turn up the built-in loudspeaker.
	8	Volume increase button	Used to turn down the built-in loudspeaker.
	9	Mode switching button	Used to switch the display between PC and videoconferencing modes.
	10	Microphone button	Used to mute or unmute local microphones.
	11	Power button	Used to: <ul style="list-style-type: none"> ● Turn off the display ● Hibernate the conferencing system ● Stop or restart the conferencing system ● Wake up a HUAWEI DP300 in sleep state

Table 3-2 Status indicator description

When the Status Indicator Is...	The DP300 Is...
Power button	
Blinking blue twice per second	HUAWEI DP300 is being started.
Steady blue	HUAWEI DP300 is running properly.
Blinking blue once every ten seconds	HUAWEI DP300 is in sleep state.
Blinking blue eight times per second	HUAWEI DP300 is being upgraded.
Blinking red	HUAWEI DP300 is faulty.
Steady red	HUAWEI DP300 is stopped.
Off	HUAWEI DP300 is powered off.
Camera	
Steady blue	The software system is running properly, or a P2P/multipoint conference is in progress.

When the Status Indicator Is...	The DP300 Is...
Off	The software system is running properly, but no conference is in progress, or the camera lens is blocked by the lens cover.
Blinking blue	HUAWEI DP300 is being upgraded.
Blinking red	The camera is faulty.
Touch button	
Tap and hold	After you tap and hold a touch button (only volume increase or decrease touch button), its indicator is steady on.
Tap	After you tap a touch button, its indicator blinks once.

Rear panel

Figure 3-4 shows the rear panel. Table 3-3 describes the functions of the ports.

Figure 3-4 Rear panel

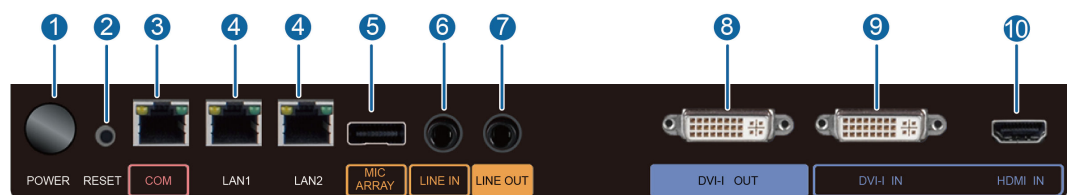


Table 3-3 Rear panel port description


Port Type	No.	Description	Application Scenario
Power port	1	Connects to the 150 W power adapter with the voltage ranging from 19 V to 24 V.	Connects to the power cable.
Functional button	2	RESET button. When HUAWEI DP300 is being powered on, hold down the RESET button for 10s to start the mini system. When HUAWEI DP300 is working, hold down the RESET button for 10s to restore factory defaults.	Used to upgrade the mini system and restore factory defaults.
Others	3	COM port	Used to communicate with the IP network. LAN1 and LAN2 ports




Port Type	No.	Description	Application Scenario
	4	LAN1 and LAN2 ports, which are standard GE ports	work in redundancy mode to support network wake-up and transparent transmission.
Audio ports	5	MIC ARRAY proprietary audio input port	Used in the scenario where MIC ARRAY (for example, VPM220) is required. Only one VPM220 wired array microphone can be connected. Wireless microphones cannot be used together with wired microphones.
	6	3.5 mm Line IN audio input port	Used for audio input from connected devices, such as computer and mobile phone.
	7	3.5 mm Line OUT audio output port	Used to connect to audio output devices, for example, loudspeaker.
Video ports	8	DVI-I OUT port for DVI/VGA HD video output	Conference presentation or video output port, which is used to connect to the projector or display. When the DVI-I IN and HDMI IN ports are both connected to an input source, the DVI-I OUT port is configured to display the input content of DVI-I IN or HDMI IN.
	9	DVI-I IN port for DVI/VGA HD video input	Conference presentation input port, which is used to input presentation video from local computers or video from external cameras.
	10	HDMI IN port for audio and video (up to 1080p 60 fps) input	

Right Panel

[Table 3-4](#) describes the functions of the right panel ports.

Table 3-4 Right panel port description

Port Type	Port Icon	Description	Application Scenario
Other ports		USB port that connects to a USB device and provides the electric current of 500 mA	Used to connect to a USB device, for example, a portable hard disk.

Port Type	Port Icon	Description	Application Scenario
		3.5 mm microphone port	Used for audio input.
		3.5 mm mixed audio port (OMTP-compliant mixed port not supported)	Used for audio input and output.
		Power switch	Used to power on or off HUAWEI DP300.

4 Application Scenarios

4.1 Huawei IMS Convergence Network

Born of the standard IP protocol, IMS uses voice over IP (VoIP) applications based on the 3rd Generation Partnership Project (3GPP) standard SIP applications to provide fixed and mobile multimedia services for operators. MCUs are integrated to enhance the functionality of the Huawei IMS videoconferencing solution.

The DP300 can interconnect with the ACS to implement management functions through the TR-069 service offered by the ACS.

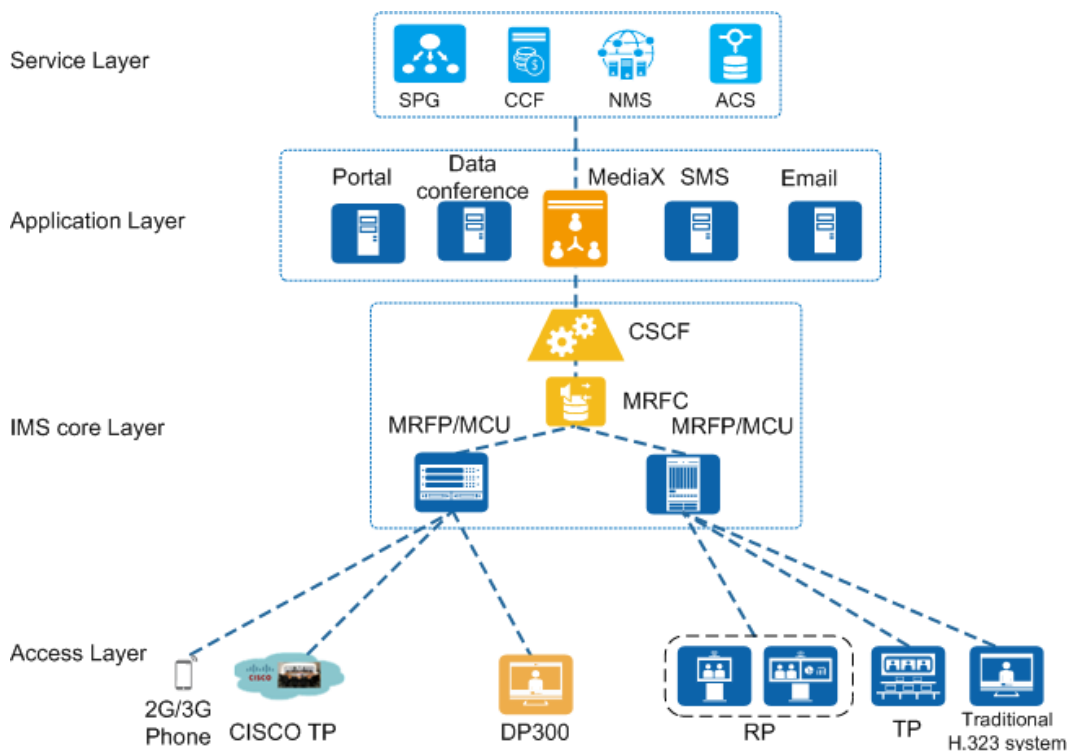
 **NOTE**

The TR-069 service is available only in V500R002C00SPC800 and later versions.

IMS Convergence Network

The IMS convergence network as shown in [Figure 4-1](#).

Figure 4-1 IMS Convergence Network



The network description is as follows:

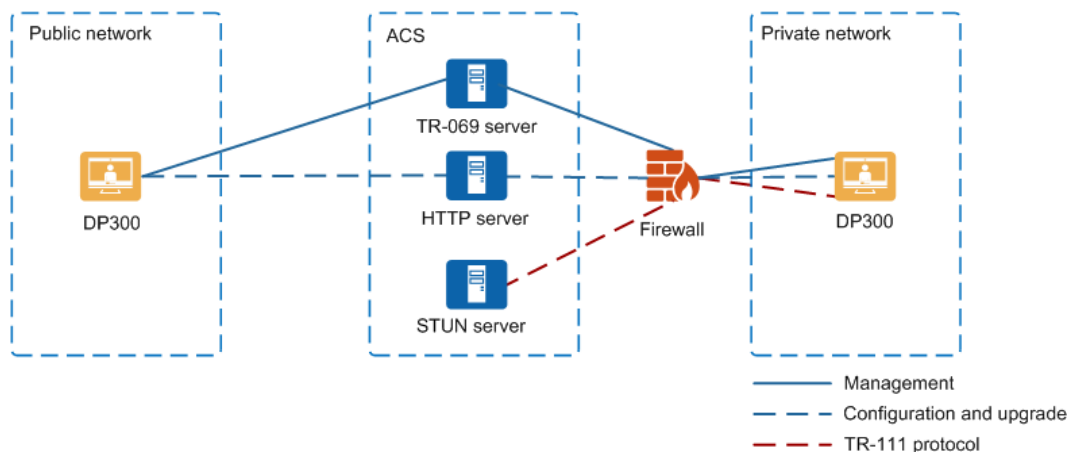
- The DP300 accesses and registers with an IMS network using SIP and joins or initiates an HD video conference on the IMS network.
- The DP300 supports two video inputs and displays the video and presentation at the same time. The DP300 combines still images of presentation materials with moving pictures of people to provide an in-meeting experience.
- After joining the IMS convergence conference, the DP300 interworks with different client devices to provide users with more convenient and diversified video and audio communications services.

Interconnect with the ACS

The DP300 can interconnect with the ACS to implement management functions through the TR-069 service offered by the ACS.

Figure 4-2 shows the interconnection between the DP300 and the ACS.

Figure 4-2 Interconnecting with the ACS



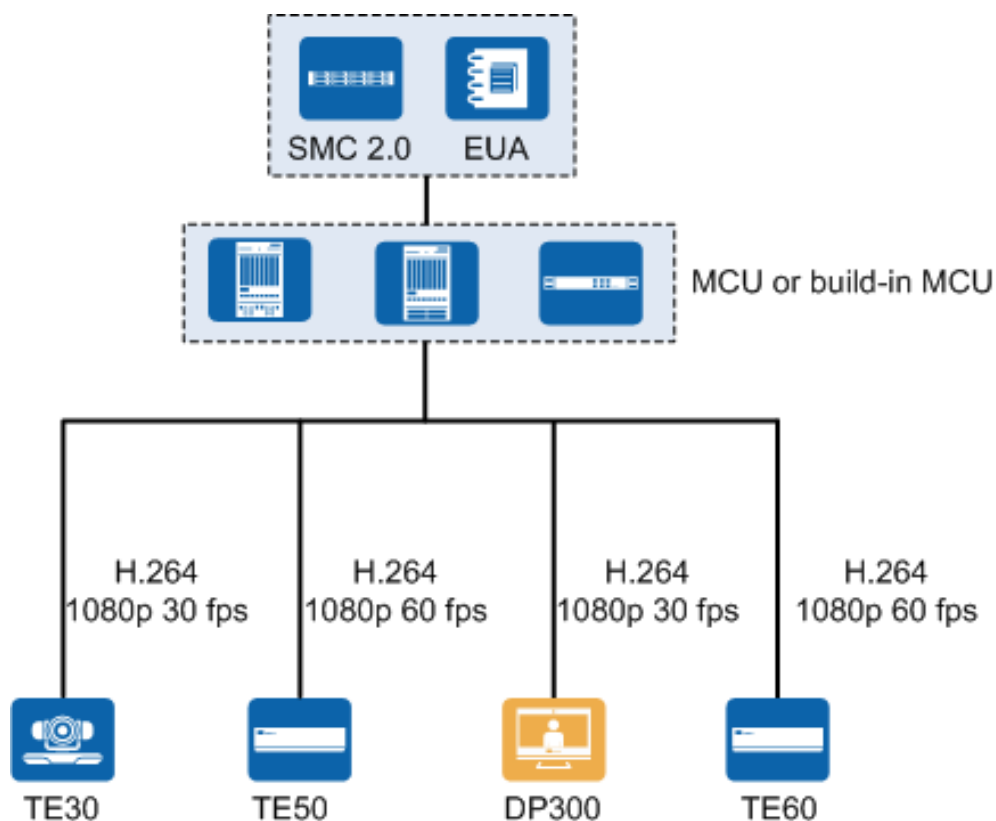
On this network:

- The DP300 communicates with the TR-069 server through the TR-069 protocol.
- The HTTP server is used to upload and download configuration files and download upgrade files.
- The Simple Traversal of UDP through NAT (STUN) server implements traversal between private and public networks and delivers management over all devices on both networks.
- The DP300 can be deployed on a public or private network, while the ACS must be deployed on a public network.
 - If the DP300 is deployed on a public network, it can be managed by the ACS through the TR-069 protocol.
 - If the DP300 is deployed on a private network, the STUN server needs to be deployed for traversal between private and public networks. After the deployment, the TR-111 protocol, an extension of the TR-069 protocol, will be available for the ACS to manage the DP300.

4.2 IP Network

The DP300 supports IP network access and H.264 1080p video calls, and is compatible with various video protocols for SD terminals, as shown in [Figure 4-3](#). The endpoint can work in conjunction with the VP96X0 to provide full-network HD solutions. It provides more powerful functions, more interfaces, and improved scalability. In addition, more protocols (AAC-LD, for example) are supported and higher reliability is implemented by encrypting media streams and signaling with H.235.

Figure 4-3 IP network



The network description is as follows:

- The DP300 can work with a stand-alone MCU or the built-in MCU of a terminal to establish an IP-only network and initiate multipoint HD conferences using the standard H.323 or SIP protocols.
- The 1080p 30 fps HD video is provided with a transmission rate of 512 kbit/s with AAC_LD high-fidelity audio, implementing excellent conference effects.
- The 720p 60 fps full-frame video is provided with a transmission rate of 512 kbit/s. Even on a low-bandwidth network, the DP300 can provide high-quality video.
- SD and HD video terminals using different resolutions can join the same conference at different bandwidths. All sites can be displayed in continuous presence.
- The DP300 provides strong network adaptability, ensuring video quality across the network and providing an advanced and reliable network.
- The Enterprise Unified Address Book (EUA) is deployed on this network to serve as the Lightweight Directory Access Protocol (LDAP) server to provide address book services for the DP300.

4.3 Built-in MCU-based Network

Figure 4-4 and Figure 4-5 show a built-in MCU-based network of the DP300.

Figure 4-4 Built-in MCU-based network (non-encrypted conference)

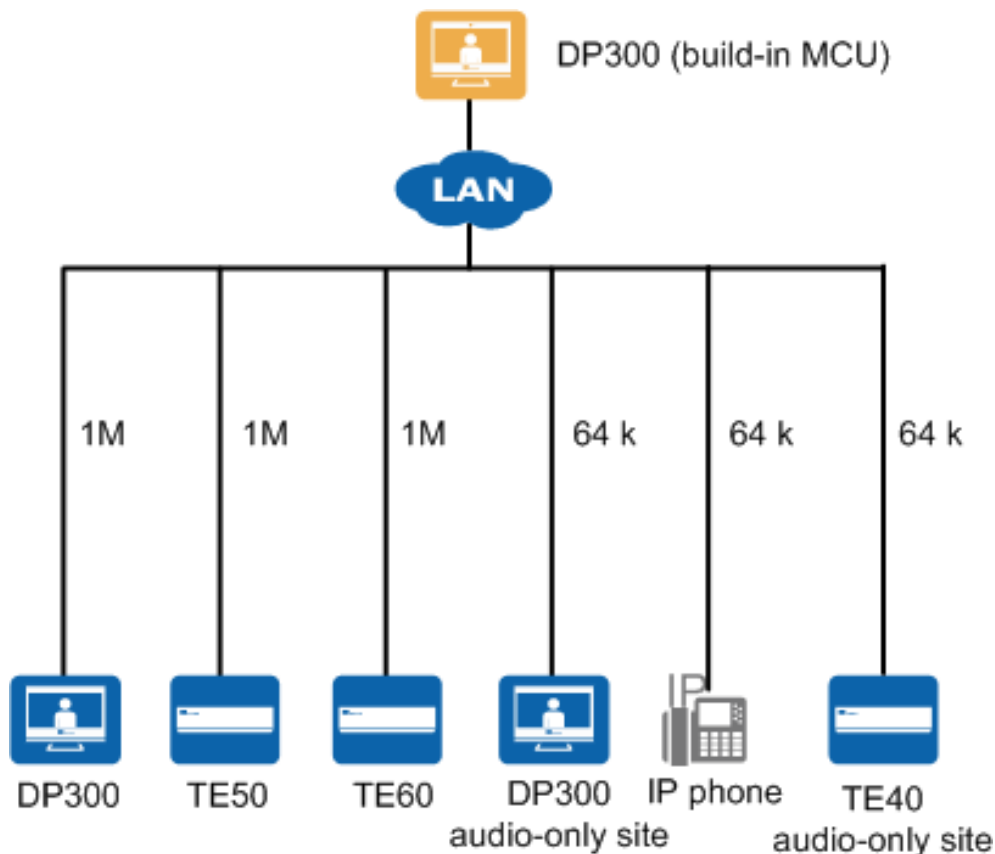
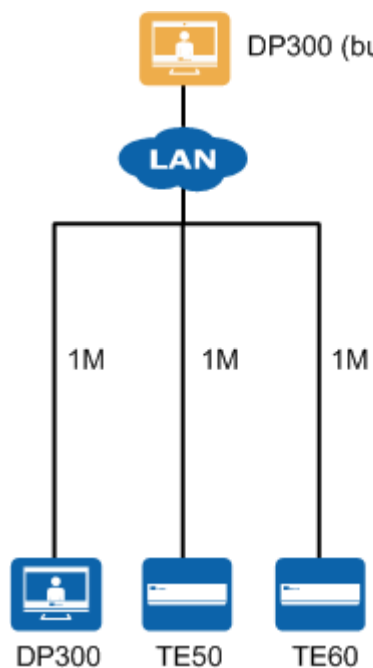


Figure 4-5 Built-in MCU-based network (encrypted conference)



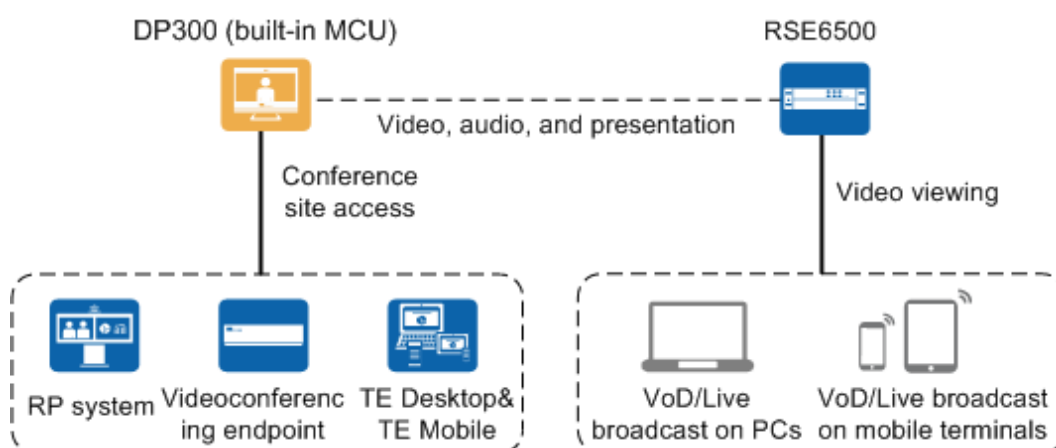
The network is described as follows:

- Non-encrypted conference: The DP300 that has the built-in MCU enabled requires a maximum of 3 Mbit/s to set up a non-encrypted conference. Apart from the DP300 itself, at most 4 720p 30 fps video sites and 3 audio sites can connect to the conference. Each video site consumes 1 Mbit/s bandwidth. The specifications are enough for videoconferencing requirements of small- and medium-sized enterprises.
- Encrypted conference: The DP300 that has the built-in MCU enabled requires a maximum of 3 Mbit/s to set up an encrypted conference. Apart from the DP300 itself, at most 4 720p 30 fps. Each video site consumes 1 Mbit/s bandwidth. The specifications are enough for videoconferencing requirements of small- and medium-sized enterprises.
- To hold conferences, users can call sites one at a time, or use a predefined conference template to call all sites simultaneously. After a conference starts, sites can call the built-in MCU to join in. The built-in MCU automatically detects new sites that join the conference and displays the site in continuous presence. Sites can specify continuous presence to view by themselves.
- SD and HD video sites and audio-only sites of the H.323 or SIP type can join conferences on this network.
- This network supports presentation sharing through the H.239 protocol, as well as simultaneous video and presentation sharing through the Binary Floor Control Protocol (BFCP).
- Conference control functions, such as requesting/releasing chair control rights, allowing/disallowing the operation of requesting chair control rights, locking/unlocking conferences, and specifying the screen layout, are available on the DP300 (with a built-in MCU) in the H.323 networking scenario.
- Audio-only sites can join conferences using IP phones only when the SMC2.0 is deployed on the network.

4.4 Embedded MCU Networking with the RSE

The DP300 with the embedded MCU (also known as miniMCU) can be separately deployed with the RSE to create a videoconferencing system. In this system, the embedded MCU can hold multi-party conferences and provides the recording and live broadcast functions, as shown in [Figure 4-6](#).

Figure 4-6 Embedded MCU networking with the RSE



Network Description:

- The MCU-embedded DP300 is deployed in the same IPv4 or IPv6 network as the RSE6500. The DP300 can call the RSE6500 through the IP address.
- The MCU-embedded DP300 exchanges media streams with the RSE6500 to implement simultaneous recording of conference voice, video, and presentation. Recording control can be performed on the endpoint or RSE6500.
- Users can watch video on demand (VoD) or live broadcast using computers, smartphones, and tablets.

NOTE

The MCU-embedded DP300 and RSE can be networked only through their IP addresses, without any intervention from the GK server or SIP server. To make a call through a conference site number, set H.323 or SIP parameters on the MCU-embedded DP300. For the detailed settings, see **Setting H.323 Parameters** or **Setting SIP Parameters** of *HUAWEI DP300 Desktop Presence V500R002C00 Administrator Guide*.

4.5 MSUC Convergence Network (Lync)

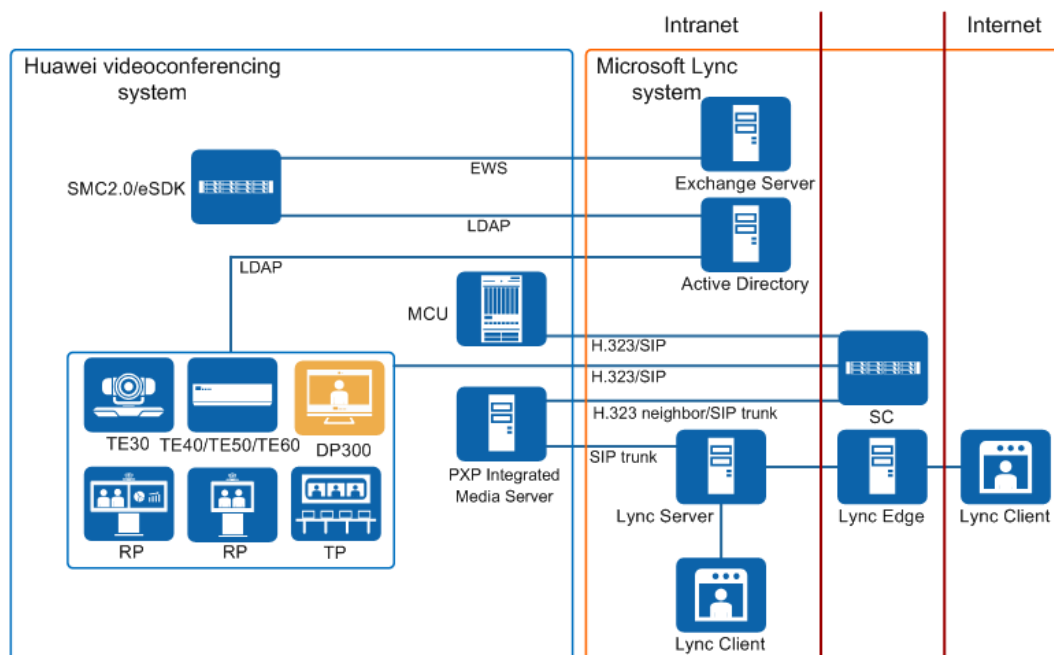
Network Description

- The DP300 registers with the SC using H.323 or SIP.
- The PXP Integrated Media Server functions as the Lync gateway to connect Lync clients including Skype for Business (new-generation Lync client), Lync 2013, Lync 2010, and Lync Online (Office 365) to video conferences, allowing users to join video conferences anytime, anywhere.
- The DP300 can call the Lync client through the following:
 - The DP300 supports the Lightweight Directory Access Protocol (LDAP) address book. Users can search Lync client users on the network and add the users found to the local address book of the DP300.
 - Users can place a video call to contacts in the local address book.
 - Users can enter the SIP URI or number of the called party and initiate a call.
- The Lync client can call the DP300 through the following:
 - Users can search for the desired contact from the contact list and place a video call to the contact.
 - Users can enter the SIP URI or number of the called party and initiate a call.
 - If a call is initiated from the contact list or by entering the SIP URI, the status (online, busy, or offline) of each other (the calling party and called party) is displayed.

Networking with the Lync

Figure 4-7 shows the network where the DP300 works with the Lync.

Figure 4-7 MSUC convergence network (Lync)



The network is described as follows:

- The Lync system includes the Lync server, Edge server, Exchange server, Active Directory (AD) server, and Lync clients. Lync clients can connect to the Lync system through the intranet of an enterprise or through the Internet.
- The PXP Integrated Media Server functions as the communication gateway between the Huawei videoconferencing system and Lync system to exchange audio, video, and presentation between them.
- The PXP Integrated Media Server connects to the SC of the Huawei videoconferencing system through an H.323 neighbor or a SIP trunk.
- The PXP Integrated Media Server connects to the Lync server through a SIP trunk.

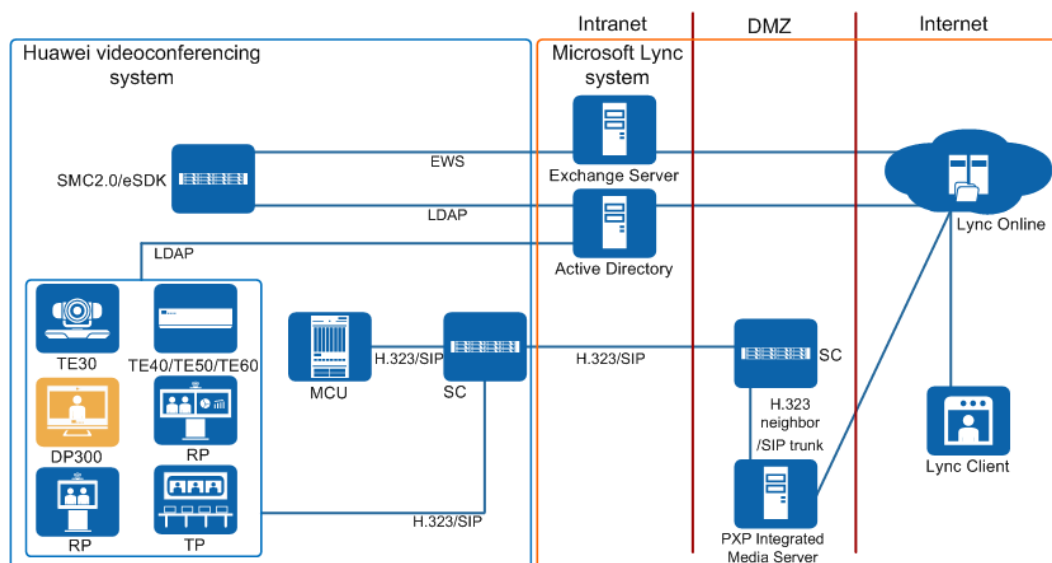
NOTE

The Exchange server and AD server can be deployed in either the intranet or the demilitarized zone (DMZ).

Networking with the Lync Online of Office365

Figure 4-8 shows the network where the DP300 works with the Lync Online of Office365.

Figure 4-8 MSUC convergence network (Lync Online of Office365)



The network is described as follows:

- The enterprise uses the Lync Online of Office365 to implement instant messaging, audio calling, and video calling.
- The PXP Integrated Media Server is deployed in the DMZ. It functions as the communication gateway between the Huawei videoconferencing system and Lync Online to exchange audio, video, and presentation between them.
- The PXP Integrated Media Server connects to the SC of the Huawei videoconferencing system through an H.323 neighbor or a SIP trunk.
- A federation is configured between the PXP Integrated Media Server and the Lync Online.
- Both the Microsoft Outlook and SMC2.0 can be used to schedule conferences. The SMC2.0 and videoconferencing DP300s can query the address book on the AD server of the enterprise.

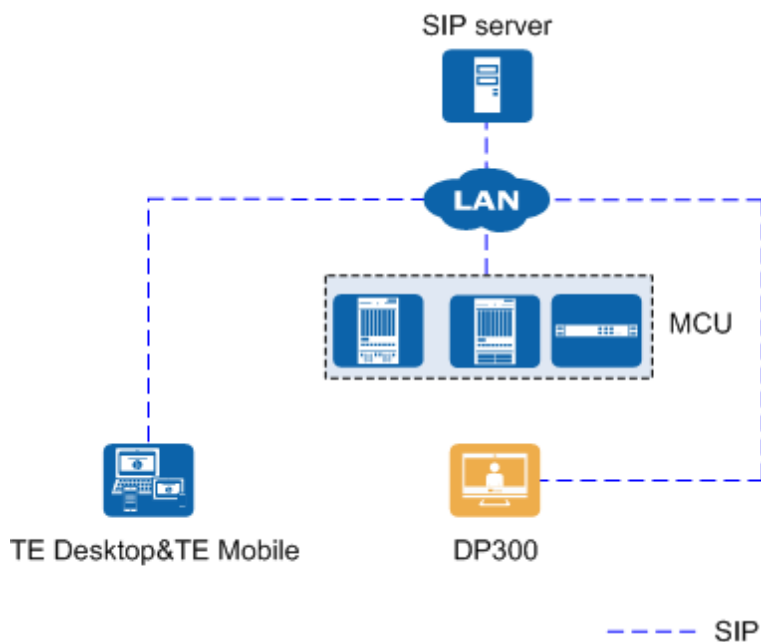
NOTE

- The SC can be installed in back-to-back mode or be deployed only in the DMZ.
- The Exchange server and AD server can be deployed in either the intranet or the DMZ.

4.6 Networking with the TE Desktop&TE Mobile

The DP300 can work with the TE Desktop&TE Mobile in the two modes, either with all endpoints registered with a SIP server, as shown in [Figure 4-9](#), or with the MCU registered with the SC through both H.323 and SIP, as shown in [Figure 4-10](#).

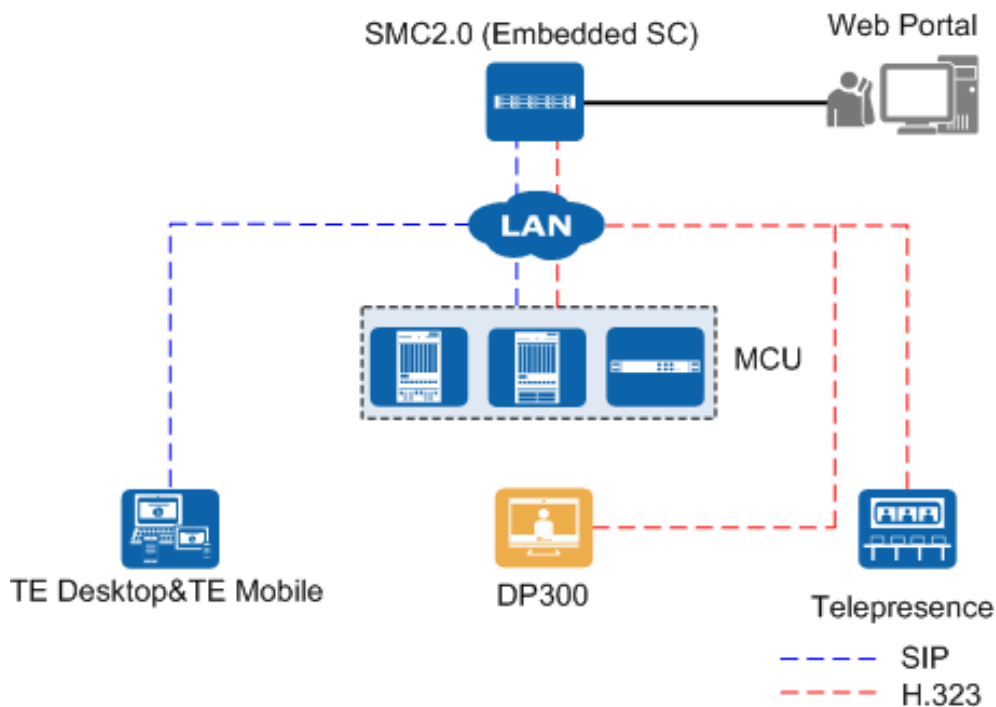
Figure 4-9 All endpoints registered with a SIP server



The network is described as follows:

- The MCU can invite all endpoints to join the same conference using SIP.
- The DP300 can directly communicate with TE Desktop&TE Mobile using SIP.

Figure 4-10 MCU registered with the SC through both H.323 and SIP



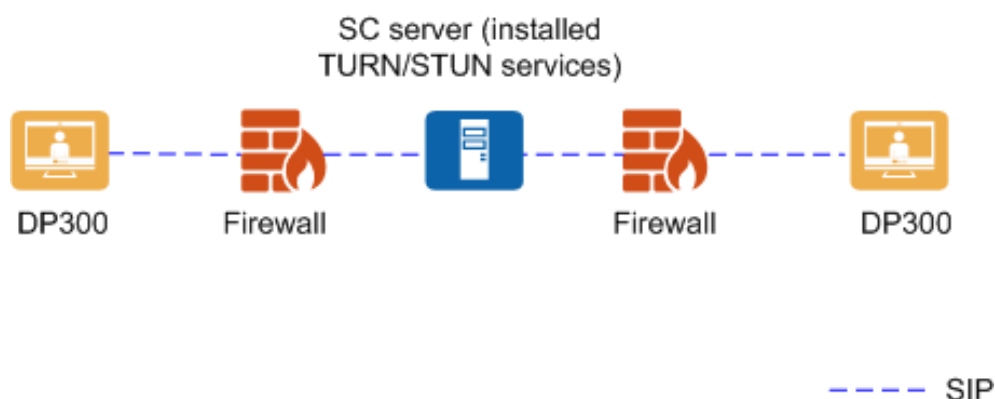
The network is described as follows:

- The SMC2.0 embeds an SC.
- The MCU registers with the SC through both H.323 and SIP.
- TE Desktop&TE Mobile register with the SC using SIP, while the DP300 registers with the SC using H.323.
- The MCU calls the TE Desktop&TE Mobile using SIP and calls DP300 using H.323, inviting them to join the same conference. This allows communication to be established between DP300 and TE Desktop&TE Mobile.

4.7 SIP-based Traversal Between Public and Private Networks

The SIP-based traversal between public and private networks follows the standard ICE process to set up calls and transmit audio, video, presentation, and camera control data between DP300s on the private and public networks (three ways: public network-private network, private network 1-public network-private network 2, private network 1-public network-private network 1), enabling Huawei devices to interwork with devices from other vendors. DP300 shows the network diagram where SIP-based traversal can be implemented.

Figure 4-11 SIP-based traversal



The network description is as follows:

- The calling and called parties must be registered with the SIP server successfully.
- As regulated by the ICE standard, both the Traversal Using Relay NAT (TURN) and Simple Traversal of UDP through NAT (STUN) services are installed on the SC server.
- Only IPv4 is supported by traversal between public and private networks.

5 Major Features

5.1 Document Camera

In a conference, you can share content (such as manuscripts, documents, and books) at your conference table to remote sites through the document camera. It converts local content to A4-sized images. The document camera also adjusts the direction of converted images automatically to ensure that remote sites can view appropriate images.

5.2 P2P to Multipoint

When the DP300 is networked with the MCU, you can easily turn a P2P call into a multipoint call, preventing unnecessary calling operations and increasing conference efficiency.

Local Site Receiving Calls from Other Sites

Local site A is having a P2P call with remote site B. At this time, local site A receives a call from another site or calls from several other sites. In this case, local site A can perform the following operations:

- Answer&Merge: Answer calls from other sites and turn the P2P call into a multipoint conference.
- Answer&Hold: Answer calls from other sites and place the P2P call with remote site B on hold.
- Answer&Release: Answer calls from other sites and release the P2P call with remote site B.
- Ignore: Ignore calls from other sites, close the incoming call notification dialog box, and continue the P2P call with remote site B.
- Reject: Reject calls from other sites and continue the P2P call with remote site B.

Local Site Placing Calls to Other Sites

Local site A is having a P2P call with remote site B. At this time, local site A places a call to another site or to several other sites. In this case, local site A can perform the following operations:

- **Hold&Call:** Place the P2P call with remote site B on hold and place a call to another site or to several other sites.
- **Merge:** Place the P2P call with remote site B on hold, place a call to another site or to several other sites, and turn the P2P call into a multipoint conference.
- **Add:** Add sites to the P2P call to turn it into a multipoint conference.
- **Cancel:** Cancel calling another site or several other sites and continue the P2P call with remote site B.

Call Hold

In call hold state, the local and remote sites cannot hear or video each other. They can do this only after the call hold operation is cancelled.

Local site A is having a P2P call with remote site B. At this time, local site A receives a call from site C. In this case, local site A can perform the following operations:

- **Answer&Hold:** Answer the call from site C and place the P2P call with remote site B on hold.
- **Answer&Release:** Answer the call from site C and release the P2P call with remote site B.
- **Ignore:** Ignore the call from site C, close the incoming call notification dialog box, and continue the P2P call with remote site B.
- **Reject:** Reject the call from site C and continue the P2P call with remote site B.

The site in an active call can be placed on hold and resumed off hold, and the site can be released regardless of whether it is placed on hold or not.

5.3 Registering with the SC Using the Same SIP Number as the TE Desktop&TE Mobile

A DP300 and TE Desktop&TE Mobile can register with an SC using the same number. In this way, a number can be used by two parties, meeting various conference scenarios.

5.4 Multi-Language User Interface

The DP300 is designed for the global market and provides multi-language user interfaces (including the touchscreen, remote controller interface and Web interface). Supported languages include English, Chinese (both simplified and traditional), German, Spanish, French, Norwegian, Italian, Polish, Russian, Portuguese (European), Brazilian Portuguese, Hungarian, Finnish, Romanian, Czech, Swedish, Arabic, Turkish, Greek, Thai, Japanese, Dutch, Indonesian, and Malay.

The DP300 supports daylight saving time (DST) and flexible settings for the time format, time zone, and time. It allows users to customize time settings, such as the date format, and displays the default format based on the user location, creating a better user experience.

5.5 Voice Calling

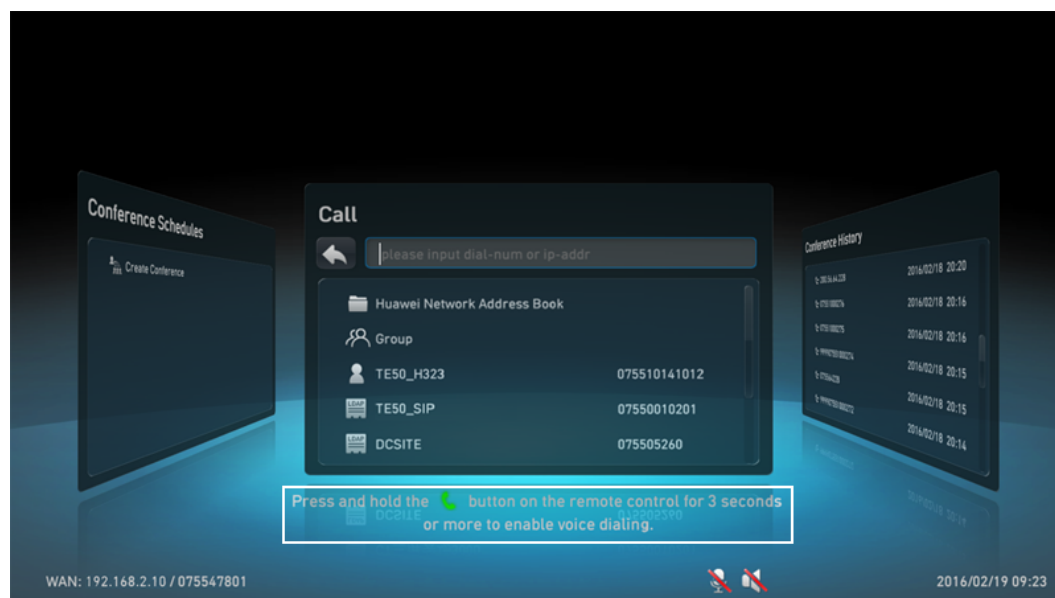
The DP300 in videoconferencing mode uses speech recognition technology to support point-to-point voice calls on the touch control and remote control screens in Chinese and English,

and also allows users to initiate multipoint conferences through templates. The DP300 can recognize site names, conference names, and names of predefined conferences. Then it automatically calls sites to join conferences or initiates sitecalls to convene conferences, enhancing user experience. **Figure 5-1** and **Figure 5-2** show the **Call** screen of the DP300 in touch control and remote control modes respectively.

Figure 5-1 Voice calling (touchscreen)



Figure 5-2 Voice calling (remote control screen)



If there is only one site shown in the list after voice calling is made, then a call is initiated automatically.

If there are two more sites displayed in the list, users can choose one to make a call.

5.6 Multi-View

In multi-view, two channels of local video input are combined into one video channel to form a combined image, which is sent to a remote endpoint. The combined image can be composed of the images captured from camera inputs and computer desktop. It supports dynamic configuration, that is, modes and parameters can be configured during the conference and are effective immediately.

The multi-view layout can be Picture in Picture (PiP), 2-pane. In PiP mode, the PiP window can be in the upper left, upper right, lower left, or lower right corner. One input can be configured to show in one or more panes, but the input cannot be a remote video source.

5.7 Wi-Fi Connectivity

Each product in the DP300 has a built-in Wi-Fi module and is able to function as either a Wi-Fi client, or a Wi-Fi server, or both simultaneously. The Max. bandwidth is 54 Mbit/s, frequency is 2.4 Ghz.

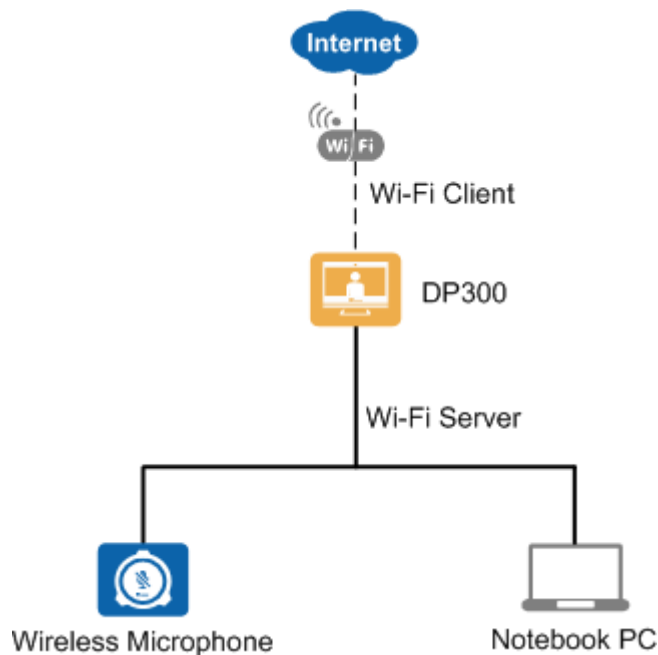
If the DP300 has the Wi-Fi client function enabled, it supports automatic scanning for and wireless connection to access points and dynamic or static setting of the IP address. If the wired network deployment is not convenient, the endpoint can also be connected to Internet through a wireless router.

If the endpoint has the Wi-Fi server function enabled, it can connect to a VPM220W wireless microphone array through Wi-Fi, eliminating the need for physical connections.

When a computer has an air content sharing client installed and is located on the same LAN as a DP300, the computer can connect to the product through Wi-Fi to function as a presentation source. The need for cable connections is therefore eliminated.

The Wi-Fi networking is shown as [Figure 5-3](#).

Figure 5-3 Wi-Fi networking



5.8 Bluetooth Access

The DP300 supports Bluetooth 2.1. The DP300 can scan Bluetooth devices, but cannot be scanned by other devices. A DP300 can connect to only one Bluetooth headset, ensuring calling privacy.

5.9 Air Content Sharing

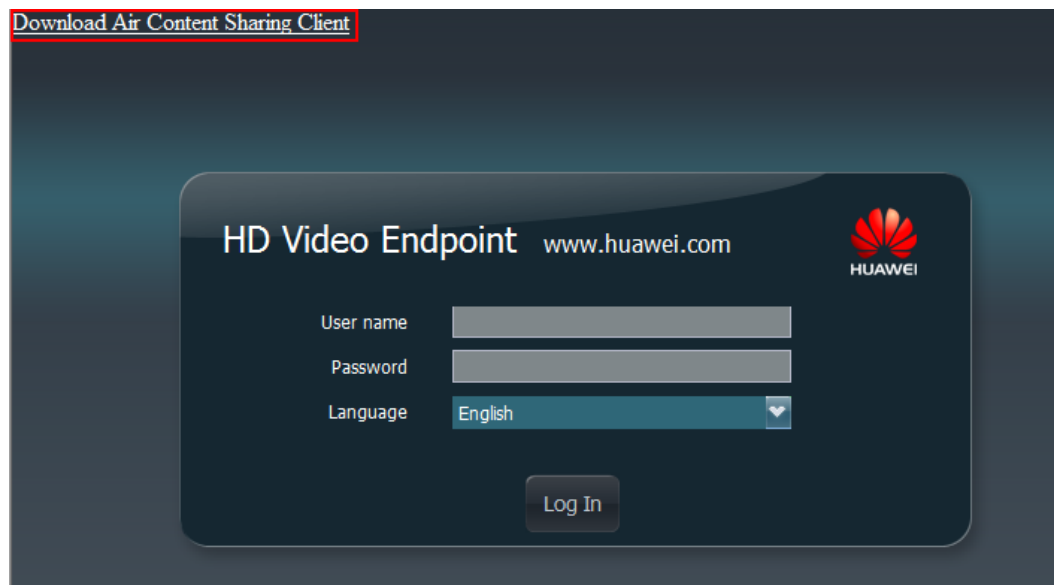
When users want to share PC desktop as presentation, they share data through air content sharing client without using cable to connect PC and DP300. This avoids using traditional video cables, facilitating deployment of conference room and enhancing user experience.

An air content sharing client can be used on a wired or Wi-Fi network.

An air content sharing client supports coded transmission resolutions of 720p and 1024 x 768 pixels and a maximum frame rate of 15 fps.

Log in to the web interface from the PC, and download air content sharing client as shown in [Figure 5-4](#).

Figure 5-4 Download air content sharing client



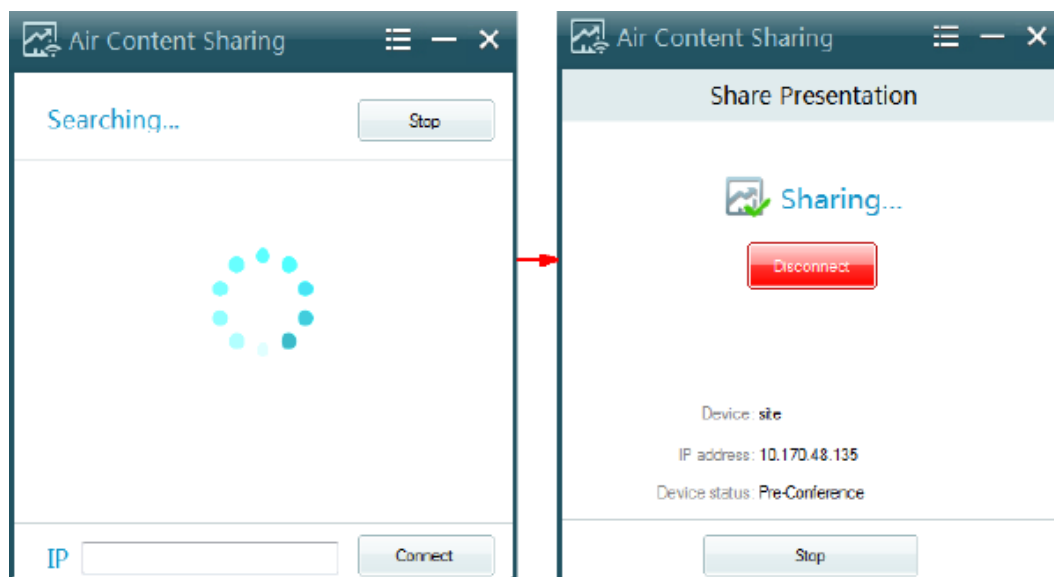
Air content sharing client is enabled to search the endpoints in the current network, as shown in [Figure 5-5](#).

Two authentication modes to connect to DP300:

- Input authentication password which is configured on the DP300 side through air content sharing client.
- When there is connection request, the touchscreen or the remote control operation interface, the web interface automatically pops up prompt box, and click **Yes**.

Run the air content sharing client software on PC desktop, and share the PC desktop as presentation to the DP300 over IP network. It can be used for presentation sharing and viewing, shown as [Figure 5-5](#).

Figure 5-5 Auto search and connect DP300



5.10 Automatic USB Configuration

The DP300 automatically imports the configuration files of USB devices, delivering the plug-and-play convenience to users. USB flash drive with configuration files can be obtained from agents or operators for the first time. When the configuration file is imported to the DP300 from the USB flash drive, setup wizard configuration is completed automatically. Users can easily set the configurations without any professional knowledge, which greatly improves the configuration efficiency.

5.11 Seamless Integration with IMS

Seamless integration with the IP multimedia subsystem (IMS): The DP300 can access and register with an IMS network using SIP, and join or initiate an HD video conference on the IMS network. The DP300 can interconnect with the Auto-Configuration Server (ACS) to implement management functions through the TR-069 service offered by the ACS, including querying and setting parameters, monitoring and reporting alarms, performing upgrades, and managing private and public networks.

5.12 Live-Mode Dual-Stream Conference and Presentation Locking

During a two-party call or multi-party conference, the dual-stream function allows two independent channels of video streams (that is, the video and the presentation) to be transmitted. Users can transmit two channels of videos from the local site or view two channels of videos from a remote site at the same time.

The dual-stream function is available in two modes: Presentation and Live.

- **Presentation:** When the main video is switched, the presentation remains unchanged. During a conference in Presentation mode, only one site can share the presentation at a time.
- **Live:** When the main video is switched, the presentation viewed by each site is also switched. During a conference in Live mode, multiple sites can send presentations simultaneously.

In a multi-party conference, the chair site can restrict the presentation sharing right of a particular site or the entire conference.

- **Locking site presentation:** After the chair site locks the presentation of a site, only this site has the right of sharing presentation.
- **Locking conference presentation:** After the chair site locks the conference presentation for a conference, a site can share its presentation when no other site in the conference is doing so. After the site shares its presentation, all the other sites are not allowed to share presentation.

5.13 SiteCall

SiteCall is a unique conference function provided by Huawei. With this function, users can define conferences and participants on the DP300, making it an easy job to initiate a multi-

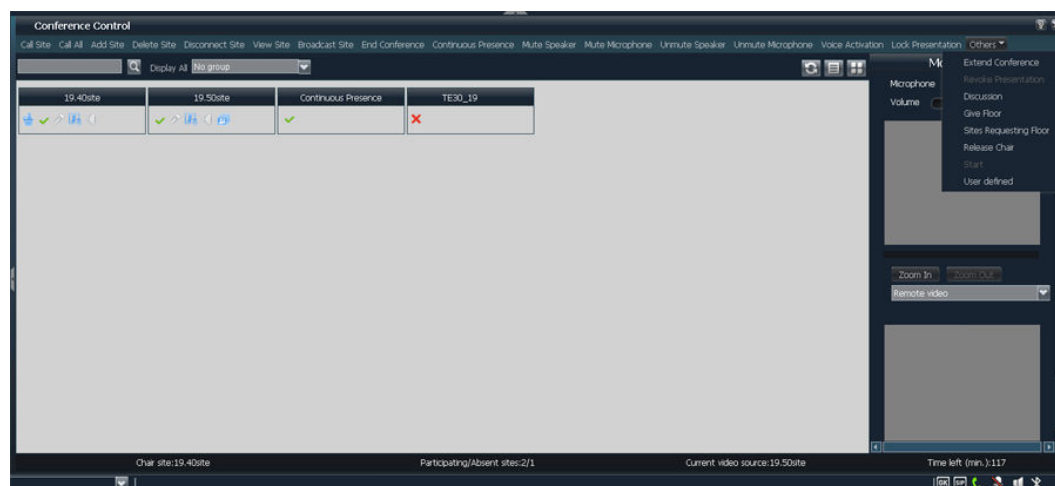
party conference. A user can create a conference on touchscreen, Web interface or using the remote controller of the desktop presence. After configuring conference parameters such as the conference name, data rate, and number of sites, the user can start the conference. The DP300 supports both H.323 SiteCall and SIP SiteCall.

5.14 Web Interface-based Conference Control

Conference control enables a more flexible and functional conference system, improving its usability and value. Conference control can be performed by the chair or non-chair site. The chair site can perform a diverse range of practical conference control operations. The non-chair site can also perform some simple and useful conference control operations.

The chair conference control as shown in [Figure 5-6](#).

Figure 5-6 Chair conference control list



5.15 Real-time Viewing of HD Images

After the remote video surveillance function is enabled, users can log in to the conference management Web page to view the specified video source while the conference is going on. Both local and remote video images can be viewed in real time, as shown in [Figure 5-7](#).

Figure 5-7 View video images





CAUTION

This function involves personal privacy. Ensure that its use complies with local laws and regulations.

5.16 Adjusting the Screen Layout

By adjusting the screen layout, you can view multiple videos on the same monitor.

- By pressing  on the remote control, or tap  on the main menu of touchscreen, you can switch between the full screen, Picture in Picture (PiP), two-pane.
 - PiP: A main program (channel) is displayed on the full TV screen, and at the same time, another program is displayed in an inset window that can appear on the upper left, upper right, lower left, or lower right of the main program. By default, the smaller video is displayed on the lower right corner of the main program. The smaller video is approximately 1/16 of the main program.
 - 2 panes: Users see two sites on one monitor in two panes. The two panes are of the same size and can display images or presentations.

Users who have a layout policy file are allowed to customize the pane layout.


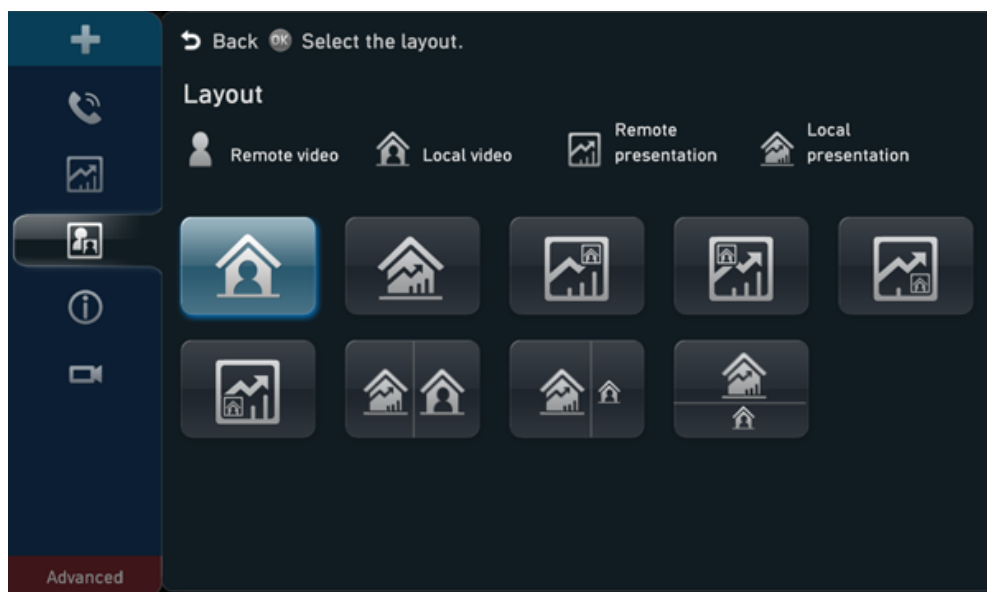
- You can specify the desired pane layout by selecting  on the menu screen and then pressing **OK** on the remote control, as shown in [Figure 5-8](#).

Figure 5-8 Screen layout example (remote control)




- You can also tap  on the main menu of touchscreen to select your desired screen layout, as shown in [Figure 5-9](#).

Figure 5-9 Screen layouts example (using the main menu)



You can swipe or pinch on the touchscreen to access the layout setting screen shown in [Figure 5-10](#) in the following scenario: the built-in MCU is disabled for the local site, the presentation source is connected, and the remote site has joined the conference or the remote site successfully sends presentation.

Figure 5-10 Screen layout example (by pinch)



5.17 Network Address Book

The network address book stores the addresses of the sites in the videoconferencing system. The administrator can download the address book and update the entries in batches. Network address books can be stored on an FTP or Lightweight Directory Access Protocol (LDAP) server.

- If network address books are stored on an FTP server, the DP300 automatically downloads and synchronizes site information from the FTP server. The administrator can also manually download or update the address book.
- An EUA can be deployed to work as an LDAP server to store network address books. The DP300 can access the LDAP server and search for sites on the server. The DP300 also can save the found sites to its local address book.

5.18 Third-party Application Programming Interfaces (APIs)

The DP300 provides rich HTTP-based APIs that can be used by third parties for the purpose of system integration and customization. APIs allow users to integrate services provided by the DP300 with other products or applications. Based on their service needs, users can use specific APIs to implement the desired services, such as calling a site, summoning a conference, and managing conferences.

5.19 Conference Recording

Recording & Streaming Engine (RSE) server is provided to record various conferences, including local conferences, conferences initiated using the built-in MCU, and conferences initiated using a standalone MCU.

- Local conference
The RSE server's IP address is set on the endpoint, and neither the DP300 or the RSE server needs to be registered with a GK server.
- Multipoint conference hosted by SMC2.0
An SMC2.0 uniformly allocates RSE resources. The SMC2.0 sends RSE site information to the MCU, and the MCU adds the specified RSE to the conference to be recorded. Operations such as starting conference recording and configuring the RSE server can be performed on the SMC2.0. In addition, the SMC2.0 supports automatic conference recording and automatic activation of the conference recording function.
- Multipoint conference initiated through SiteCall of the DP300
The DP300 and RSE server need to be registered with a GK server. The URL or IP address of the RSE server need to be configured on the DP300. During a multipoint conference, the chair site and the site where the built-in MCU is used can perform recording operations.
- Multipoint conference hosted by an built-in MCU
Conferences are recorded by the RSE server without the participation of the MCU. Neither the DP300 or RSE server needs to be registered with a GK server. The DP300 adds the RSE server to the conference by calling the URL or IP address of the RSE server, after which the RSE server allocates recording resources and completes the recording task. This mode is easier, flexible, and convenient.

5.20 Interworking with the Lync System

Skype for Business (new-generation Lync client), Lync2013, and Lync2010 are corporate-level unified communications platforms released by Microsoft. Lync Online (a part of Office 365) is Microsoft's high-end cloud service as well as an application suite based on the cloud platform. This suite can deliver communications services by audio, video, and data to devices, such as PCs and smartphones. Based on Microsoft's protocols and processes, the PXP Integrated Media Server is taken as the gateway that enables 720p 30 fps video communication between the DP300 and Lync clients, including Skype for Business (new-generation Lync client), Lync2013, Lync2010, and Lync Online (Office 365). Enterprises that have the Lync platform deployed can access the videoconferencing system using devices, such as PCs, smartphones, and tablets.

5.21 Interconnection with the ACS

You can interconnect your DP300 with an ACS and then use the ACS to manage the DP300 through the TR-069 protocol, such as querying or defining system parameters, upgrading the DP300, and managing public and private networks. Currently, the ACS can only be Huawei Terminal Management System (TMS) and China Mobile Device Management (DM) system.

6 Security Features

The DP300 provides a variety of security features, such as protocol anti-attack and authentication of debug users, web interface users, and web requests.

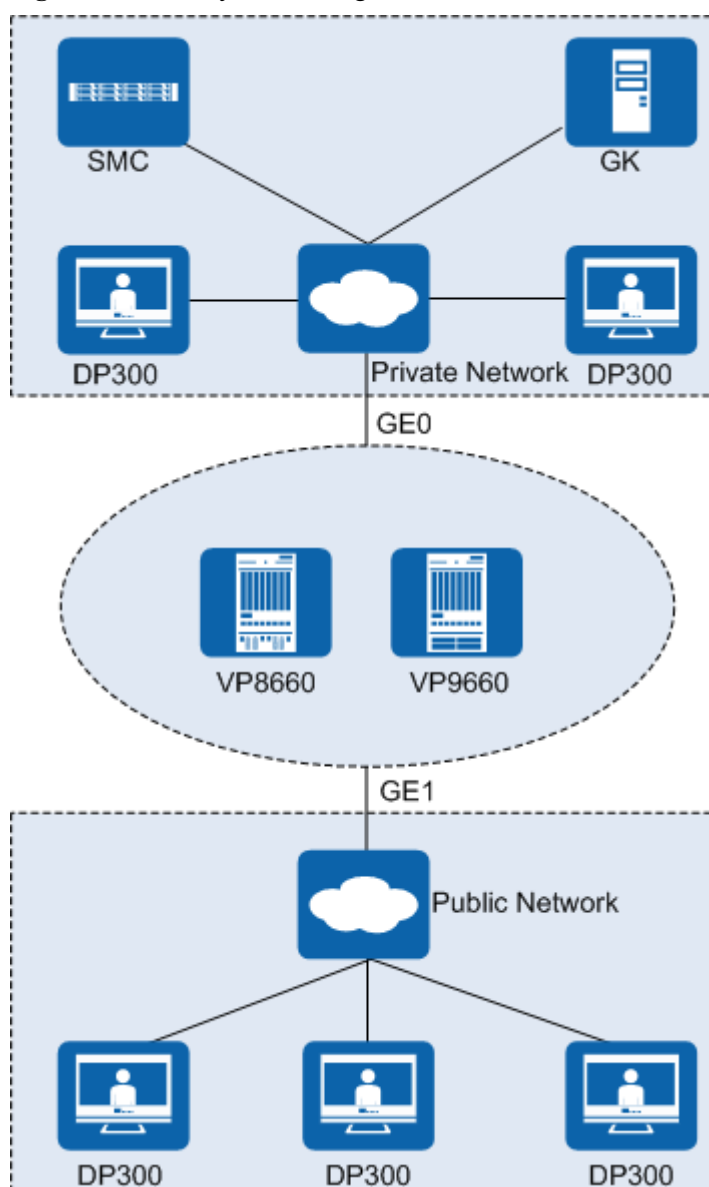
System Layer Security

Security maintenance of the system layer is to ensure a smooth operation of the operating system, which can support the operation of application layer. The DP300 uses Linux, which is more secure and immune to viruses than Windows.

Network Layer Security

[Figure 6-1](#) shows the endpoint security networking.

Figure 6-1 Security networking



The DP300 is connected to the Multipoint Control Unit (MCU) through the private network, which connects to different networks through different ports. The DP300 in the private or public network can join the conference even if you do not change H.323 protocol or the firewall settings (such as opening the port).

Firewall Technology (NAT)

The firewall protects your IP network by separating the internal and external network communication data. By means of the Network Address Translation (NAT) technology and exchanging signaling between public network protocols and private network protocols, the firewall enables sites on local area networks (LANs) in different places to enjoy the convenience of communication through video conferences. With NAT, a device on an 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.

Network Diagnostics

Network diagnostic tools are provided to ensure correct network settings and proper network performance indicators, such as routing information, port filtering policies on the firewall, network delay, packet loss rate, packet missequencing ratio, jitter, types of NAT devices, and modification of H.323 and SIP messages by the application level gateway (ALG). Network diagnostic tools allow users the convenience of professional network diagnostic service, and help them rectify network faults quickly.

When a web-based diagnostic tool is used to connect to the DP300, the user must enter the user name and password, which are encrypted and then transmitted to the DP300.

Web Request Authentication

- When a user requests to access 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 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.

Protocol Anti-Attack Measures

- The communication port matrix is provided in the product documentation. Services and ports not mentioned in the communication port matrix must not be enabled.
The communication port matrix contains the following information: open ports, transport layer protocols used by the ports, network elements (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, and port functions (such as data traffic control).
- The Real-time Transport Protocol (RTP) and Transport Layer Security (TLS) are used to encrypt voice services to ensure secure communication between users.
- For network management, the endpoint supports the Simple Network Management Protocol v3 (SNMP v3), which features higher adaptability and security. User names are needed to connect the network management system to the endpoint.
- Robustness testing tools are used to scan protocols to ensure that there are no high-risk vulnerabilities.
- By default, the endpoint uses File Transfer Protocol over SSL (FTPS) to encrypt data through the Secure Sockets Layer (SSL), preventing data from being intercepted and ensuring data integrity.

Protection of Sensitive Data

- To prevent sensitive data from being disclosed, the endpoint checks the complexity of the default password and user-defined passwords. A password is displayed as "." or "*" when entered in the password input box, and entered passwords cannot be copied.
- No proprietary encryption algorithms are used.

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 alarm is generated. Should an informational alarm exist, explanation is provided.
- All user operations and system abnormalities are logged.

7 Operation and Maintenance

7.1 Switch Between PC Mode and Videoconferencing Mode

You can tap the mode switching button in the lower right corner of the display to switch the DP300 between PC mode and videoconferencing mode.

- PC mode: The LCD screen of the DP300 works as the PC's monitor, and its loudspeaker works as the PC's external sound box.

If the DP300 joins a conference in PC mode, the LCD screen can still be used as the PC's monitor. Video of the remote site is displayed on the LCD screen in a pane (in the lower right corner by default), and conference voice can be heard from the loudspeaker.

- Videoconferencing mode: You can perform conferencing operations such as conference controls and continuous presence settings using touch control or remote control.

7.2 PC Monitor

The DP300 display changes to the desktop of the PC monitor 5 seconds after being powered on. The desktop is neat, orderly, and environmentally friendly. After the DP300 joins a conference, video of the remote site is displayed in a pane on the desktop. The pane position is adjustable.

7.3 Touchscreen

The DP300 uses the brand-new Linux-based touch control system, as well as a 27-inch HD wide screen. With a compact UI, the DP300 allows you to perform conference controls simply by tap or slide, delivering excellent technological experience.

By touch control, you can hold and control conferences, perform system configurations, and control local devices, such as microphones, loudspeakers, and cameras. During a conference, you can also control remote cameras if the cameras allow Far-End Camera Control (FECC). [Figure 7-1](#) shows the touchscreen.

Figure 7-1 27-inch touchscreen

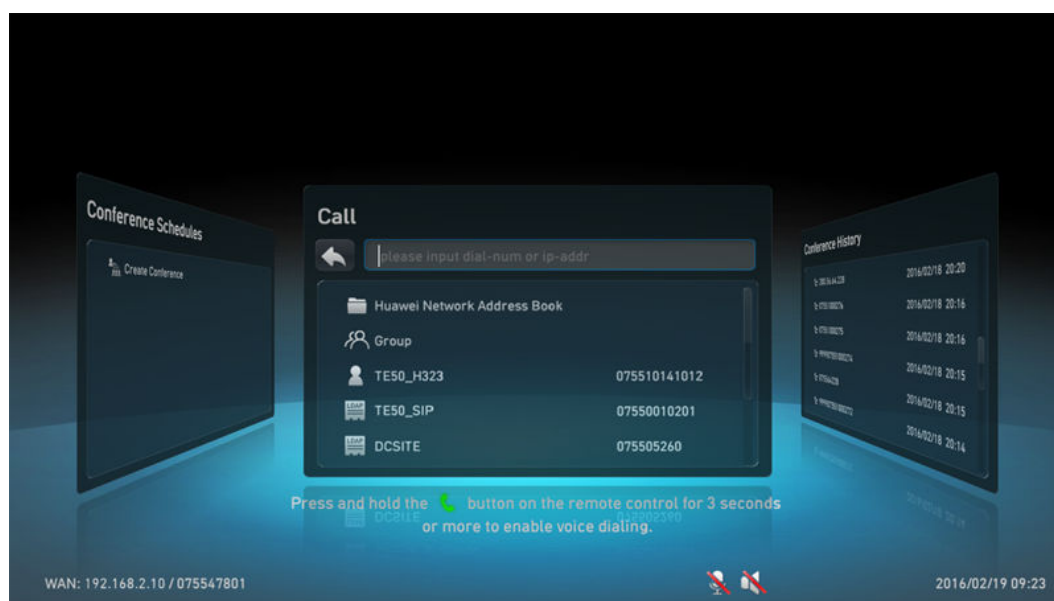


7.4 Remote Controlled UI

A remote control is provided to allow convenient operations for users. The remote controlled UI adopts the what you see is what you get (WYSIWYG) design, which is easy to understand and use.

Using the remote control, users can perform various operations, such as initiating a conference, making a voice call, controlling a conference, controlling captions, modifying the system configurations, controlling microphones and speakers, and selecting and controlling cameras. Remote controlled UI home screen as shown in [Figure 7-2](#).

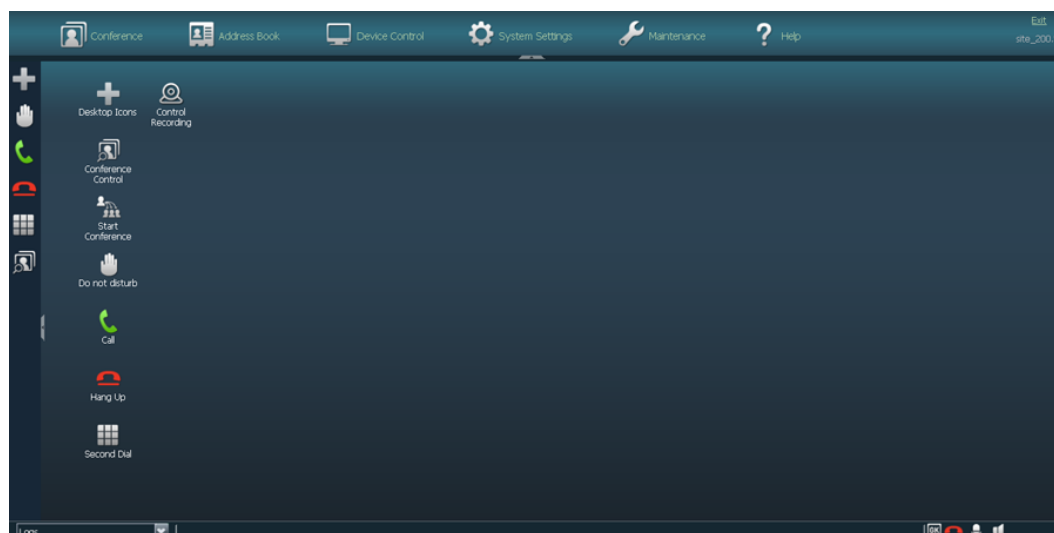
Figure 7-2 Remote controlled UI home screen



7.5 Web Interface

Web-based management is supported, which allows users to initiate calls, control conferences, save address books, and modify system configurations. Users in different locations can concurrently access and use the DP300 through the web interface, which eliminates the restriction of space. The administrator can remotely control the DP300. The web interface supports concurrent operations by a maximum of 10 users (including API users). The same user name and password can be used by multiple users. When multiple users perform operations on the DP300, the last operation takes effect. Web login page as shown in [Figure 7-3](#).

Figure 7-3 Web login page



7.6 Logs

User operations and system abnormalities are logged, which help the system administrator maintain the system and locate faults. Logs are saved as files in the endpoint. A maximum of 100,000 logs can be stored. Users can query, output, and delete logs generated by the endpoint.

Users can query history logs either on the web UI or using the remote control. Querying logs of the specified date is supported. Using the web UI, users can output logs as files to the local PC for detailed analysis, or delete all history logs.

7.7 System Upgrade

The endpoint supports two upgrade modes: manual upgrade and automatic upgrade. By upgrading the system software of the endpoint to the latest version, users can enjoy enhanced and the latest features and functions.

Manual upgrade: Users use the upgrade tool to initiate the system upgrade. They can also upgrade the system on the web UI.

Automatic upgrade: The endpoint automatically triggers a system upgrade at the interval specified by users.

The DP300 connected to the ACS can be upgraded using the ACS.

As a manageable device of the SMC2.0, the DP300 can be upgraded using the SMC2.0. If multiple DP300s exist, they can be upgraded in batches from the SMC2.0.

8 Technical Specifications

This chapter describes the product specifications, external ports, system performance and capacity, and standards compliance.

8.1 Physical Specifications

Table 8-1 Physical specifications

Item	Specifications
Electricity supply requirements	
Power supply	Differential mode: 2 kV; common mode: 4 kV
Operating voltage and frequency	19.5 V/7.7 A DC
Maximum power consumption	120 W
Working state environment requirements	
Ambient temperature	0°C to 40°C (32°F to 104°F) The temperature rise on the surface of the touchscreen does not exceed 12°C. The temperature rise of the outlets on the top and at the rear panel does not exceed 18°C. The temperature rise of the rear panel does not exceed 15°C.
Relative humidity	10% to 80%
Ambient noise	< 46 dBA SPL
Non-working state environment requirements	
Ambient temperature	- 40°C to +85°C
Relative humidity	0% to 95%
Physical specifications	
Codec dimensions (H x W x D)	565.3 mm x 653.5 mm x 218 mm
Weight	18.3 kg (net weight)
Built-in camera features	
Lens	
Lens specifications	2-megapixel and 1/2.8 type CMOS imaging chip
Resolution	1080p 50/60 fps
Video	
Zoom	a maximum of 3X optical zoom

Item	Specifications
Focal length	F = 3 mm (WIDE end) to 9 mm (TELE end)
Lens aperture	F1.8
Maximum horizontal field of view	80°
Maximum Vertical field of view	45°
Maximum Pan/Tilt range	+/-80° (Pan), +/-45° (Tilt)
Minimum illuminance	7 lux
Recommended illuminance	> 300 lux
PTZ adjustment	up 5° and down 15°, left and right 15°
Number of preset positions	16 for FECC
Image Mode	
Image Mode	standard, vivid, natural, and user defined
Automatic adjustment	
AWB (Auto White Balance), AE (Auto Exposure), AF (Auto Focus)	
Special Functions	
Built-in camera	Camera that can be manually stopped, built-in lens cover, and running status indicator
Denoising adjustment	Support denoising adjustment
Document Camera	
Shooting scope	A4 size (297 mm x 210 mm)
Bluetooth headset	
Recommended Bluetooth headset brands and models	The recommended Bluetooth headset brands are Samsung, Jabra, and Plantronics. <ul style="list-style-type: none"> ● Samsung: HM1300 and HM1100 ● Jabra: Jabra WAVE+, Jabra MOTION, and Jabra BT2046 ● Plantronics: PLT - M70
Allowed distance	10 m

Item	Specifications
Scanning duration	12 s
Connection duration	< 5 s
Number of simultaneously connected Bluetooth headsets	1
Built-in microphones	
The DP300 supports 180-degree audio pickup at a radius of up to 6 meters.	
Number of external microphones	
The VPM220 and VPM220W cannot be used together.	
VPM220	1
VPM220W	1
PC monitor	
Display size	27" 16:9 touchable display
Display parameters	<ul style="list-style-type: none"> ● Brightness, image mode, contrast, sharpness, color temperature, hue, and saturation ● Angle of view: 170° left and right and 170° up and down

8.2 Performance and Capacity

Table 8-2 lists the DP300 performance and capacity specifications.

Table 8-2 Performance and capacity

Item	Specifications
Call bandwidth (IP)	64 kbit/s-8 Mbit/s
Video resolution	<ul style="list-style-type: none"> ● 1080p 60 fps with a minimum bandwidth of 1 Mbit/s (optional) ● 1080p 30 fps with a minimum bandwidth of 512 kbit/s (optional) ● 720p 60 fps with a minimum bandwidth of 512 kbit/s ● 720p 30 fps with a minimum bandwidth of 384 kbit/s ● 4SIF/4CIF with a minimum bandwidth of 128 kbit/s ● SIF/CIF with a minimum bandwidth of 64 kbit/s ● SQSIF/SQCIF/QSIF/QCIF with a minimum bandwidth of 64 kbit/s

Item	Specifications
Presentation resolution	<ul style="list-style-type: none"> ● Input: VGA (640 x 480) 60/72/75/85 fps, SVGA (800 x 600) 56/60/72/75/85 fps, XGA (1024 x 768) 60/70/75/85 fps, 1152 x 864 60/75/85 fps, 1280 x 600 60 fps, WXGA (1280 x 768) 60/75/85 fps, WXGA (1280 x 800) 60/75/85 fps, 1280 x 960 60/75/85 fps, SXGA (1280 x 1024) 60/75/85 fps, 1360 x 768 60 fps, 1366 x 768 60 fps, 1440 x 900 60 fps, XGA+ (1400 x 1050) 60 fps, 720p 60/75/85 fps, 1080p 60 fps, 1600 x 900 60 fps, 1600 x 1200 60 fps, 1680 x 1050 60 fps, 1920 x 1200 60 fps ● Output: 800 x 600 56/60/72/75/85 fps, 1024 x 768 60/70/75/85 fps, 1280 x 1024 60/75/85 fps, 720p 60 fps, 1080p 60 fps ● Coding/Decoding resolution: 800 x 600, 1024 x 768, 1280 x 1024, 1280 x 720, 1920 x 1080
Other video features	<ul style="list-style-type: none"> ● A maximum of 1080p 60 fps dual stream ● Video Motion Enhancement ● VideoIntensifier ● ViewProcessing ● Super Error Concealment
Audio features	AEC, ANS, AGC, VoiceClear, AudioEnhancer, and lip synchronization
Built-in MCU capability	<p>Maximum number of connected sites:</p> <ul style="list-style-type: none"> ● Non-encrypted conference: four 720p 30 fps video sites (local site included) and three audio-only sites ● Encrypted conference: four 720p 30 fps video sites (local site included) <p>Maximum bandwidth: 3 Mbit/s (1 Mbit/s for each video site)</p> <p>Continuous presence per port: supports a maximum of 4 video panes</p>
Bluetooth features	2.4 GHz ISM frequency band at the rate of 2 Mbit/s
Wi-Fi features	54 Mbit/s transmission bandwidth at the frequency of 2.4 GHz

8.3 Ports and Protocols

Table 8-3 Ports on the DP300

Port	Description and Quantity	Standards and Protocols Compliance	Remarks
Video input	<ul style="list-style-type: none"> ● 1 x HDMI (up to 1080p 60 fps) ● 1 x DVI-I 	-	HDMI for audio input.

Port	Description and Quantity	Standards and Protocols Compliance	Remarks
Video output	1 x DVI-I	-	-
Audio input	<ul style="list-style-type: none"> ● 1 x HD-AI MIC ARRAY port ● 1 x 3.5 mm RCA ● 1 x 3.5 mm MIC 	-	<ul style="list-style-type: none"> ● Used in the scenario where MIC ARRAY (for example, VPM220) is required. Only one VPM220 wired array microphone can be connected. ● RCA and MIC are used for conference presentation or video input.
Audio input and output mix port	1 x 3.5 mm RCA	-	Used for audio input and output.
Audio output	1 x 3.5 mm RCA Bluetooth audio output Built-in sound box	-	RCA is used to connect to audio output devices, for example, loudspeaker.
USB port	1 x USB 2.0	USB 2.0	-
Network port	<ul style="list-style-type: none"> ● 2 x 10/100/1000 Mbit/s RJ45 LAN ● 1 x Wi-Fi (built-in) ● 1 x Bluetooth (built-in) 	-	-
Serial port	1 x RS232 COM	-	-
Infrared remote control port	Infrared signal receiving	NEC	-

8.4 Standards Compliance

Table 8-4 lists the standards that the DP300 complies with.

Table 8-4 Standards compliance

Item	Specifications
Video encoding and decoding protocols	H.264 SVC, H.264 HP, H.264 BP, H.263, RTV and H.263+
Audio encoding and decoding protocols	AAC-LD, G711A, G711U, G72248K, G72264K, G728, HWA-LD, G.7221C, G.719, G.729A
Multimedia frame protocols	ITU-T H.323 and IETF SIP
Dual-stream standard	ITU-T H.239 and BFCP
Network transmission protocols	TCP/IP, RTP, RTCP, FTP, DHCP, SNMP, Telnet, HTTP, SSH, HTTPS, PPPoE, and SNTP
Other communications protocols	H.225, H.235, H.241, H.245, H.281, H.350, H.460, and T.140
IP protocol	IPv4/IPv6 dual stack
Wi-Fi	IEEE 802.11b/g/n WEP, WPA, WPA2, and WPS authentication
Protocol for signaling and media stream encryption	H.235, TLS and SRTP
H.323 remote camera control	H.281 and H.224
Bluetooth protocol	Bluetooth 2.0 + EDR

A Glossary

Numerics

3GPP	3rd Generation Partnership Project
4 x Common Intermediate Format (4CIF)	A video resolution of 704 x 576 pixels.
4 x Source Input Format (4SIF)	A video format with a resolution of 704 x 480 pixels and using progressive scanning.
4CIF	See 4 x Common Intermediate Format .
4SIF	See 4 x Source Input Format .

A

AAC	advanced audio coding
AEC	See acoustic echo cancellation .
API	See application programming interface .
acoustic echo cancellation (AEC)	A type of signal processing commonly used in teleconferencing. The speech from the far-end caller is broadcast by the speakerphone or the hands-free cellular phone and then repeats itself by bouncing off the inside surfaces of a room or car. This repetition of sound is called an echo. Echoes are picked up by the near-end microphone, creating a feedback loop where the far-end caller hears an echo of his or her own voice. AEC is developed to solve this problem.
application programming interface (API)	An application programming interface is a particular set of rules and specifications that are used for communication between software programs.

B

built-in MCU	A built-in unit of an endpoint, by using the built-in MCU, the endpoint can hold a multipoint conference that supports multiple functions, such as site access, video exchange, audio mixing, data processing, and signaling interaction.
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C

CIF	Common Intermediate Format
chair site	A site that has chair control rights.
contacts	Users can save the information about the IP address, number, type, and bandwidth of a remote site to a contact.
D	
DHCP	See Dynamic Host Configuration Protocol .
DMZ	See demilitarized zone .
DST	daylight saving time
DVI	digital visual interface
DVI-I	digital visual interface-integrated
Dynamic Host Configuration Protocol (DHCP)	A client-server networking protocol. A DHCP server provides configuration parameters specific to the DHCP client host requesting information the host requires to participate on the Internet network. DHCP also provides a mechanism for allocating IP addresses to hosts.
demilitarized zone (DMZ)	A buffer area between an insecure system and the secure system and is used to solve the problem that the external network equipped with a firewall cannot access the internal network server. The DMZ is located between the internal network and the external network. In the DMZ, some public server facilities, such as the enterprise Web server and FTP server, can be located. The DMZ effectively protects the internal network.
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 presentation (such as a computer desktop).
E	
EUA	See enterprise unified address book .
enterprise unified address book (EUA)	A next-generation address book server launched by Huawei. It provides LDAP-based unified address book services for Huawei videoconferencing and enterprise communication solutions.
F	
FTPS	See File Transfer Protocol over SSL .
File Transfer Protocol over SSL (FTPS)	An extension to the commonly used File Transfer Protocol (FTP) that adds support for the Transport Layer Security (TLS) and the Secure Sockets Layer (SSL) cryptographic protocols.
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 have simultaneous transmission of 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 characteristics.

H.323 protocol A communication control protocol defined by the International Telecommunication Union (ITU). It offers multimedia services in the packet-switched (PS) network. Call control is an essential component in H.323 and is used to establish point-to-point media sessions and multi-point media conferences.

HD high definition

HP higher order path

HTML Hypertext Markup Language

HTTPS See [Hypertext Transfer Protocol Secure](#).

Hypertext Transfer Protocol Secure (HTTPS) An HTTP protocol that runs on top of transport layer security (TLS) and Secure Sockets Layer (SSL). It is used to establish a reliable channel for encrypted communication and secure identification of a network web server. For details, see RFC2818.

I

ICE intelligent concept extraction

IEEE See [Institute of Electrical and Electronics Engineers](#).

IMS IP multimedia subsystem

Institute of Electrical and Electronics Engineers (IEEE) A professional association of electrical and electronics engineers based in the United States, but with membership from numerous other countries. The IEEE focuses on electrical, electronics, and computer engineering, and produces many important technology standards.

initiate a multipoint conference To initiate a multipoint conference by making calls from the video terminal or by using the Multipoint Control Unit (MCU) or the resource manager of the videoconferencing system. A multipoint conference contains at least two sites.

L

LCD liquid crystal display

LDAP See [Lightweight Directory Access Protocol](#).

Lightweight Directory Access Protocol (LDAP) 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

MCU	See multipoint control unit .
media stream	Data stream (such as audio, video and fax) between different bearer networks.
multipoint call	A site makes calls to multiple sites, to hold a conference that has multiple participants.
multipoint control unit (MCU)	Data connection equipment used in a videoconferencing system. An MCU is used for terminal access, video exchange, audio mixing, data processing, and signaling exchange.

N

NAT	See Network Address Translation .
Network Address Translation (NAT)	An IETF standard that allows an organization to present itself to the Internet with far fewer IP addresses than there are nodes on its internal network. The NAT technology, which is implemented in a router, firewall or PC, converts private IP addresses (such as in the 192.168.0.0 range) of the machine on the internal private network to one or more public IP addresses for the Internet. It changes the packet headers to the new address and keeps track of them via internal tables that it builds. When packets come back from the Internet, NAT uses the tables to perform the reverse conversion to the IP address of the client machine.

O

offline	Pertaining to the disconnection between a device or a service unit and the system or the network, or no running of a device and service unit.
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P

PPPoE	Point-to-Point Protocol over Ethernet
PiP	Picture in Picture
point-to-point call	A site makes a call to another site, to hold a conference that has two participants.
power on	To start up a computer; to begin a cold boot procedure; to turn on the power
presentation	During a conference, the local site shares the content input from a computer with remote sites, such as an excel file, a diagram, or slides.

R

RP	routing performer
RSE	Recording & Streaming Engine

S

SC	service controller
SIF	Source Input Format
SIP URI	It is used for SIP to identify users. A SIP URI includes a user name and a domain name. It can also contain other parameters.
SNMP	See Simple network management protocol .

SNTP	See Simple Network Time Protocol .
SRTP	See Secure Real-time Transport Protocol .
SSH	See Secure Shell .
STUN	Simple Traversal of UDP through NAT
SVGA	Super Video Graphics Array
Secure Real-time Transport Protocol (SRTP)	A real time transport protocol with enhanced security and encryption mechanism-based RTP.
Secure Shell (SSH)	A set of standards and an associated network protocol that allows establishing a secure channel between a local and a remote computer. A feature to protect information and provide powerful authentication function for a network when a user logs in to the network through an insecure network. It prevents IP addresses from being deceived and simple passwords from being captured.
Simple Network Time Protocol (SNTP)	A protocol that is adapted from the Network Time Protocol (NTP) and synchronizes the clocks of computers over the Internet.
Simple network management protocol (SNMP)	"An IETF protocol for monitoring and managing systems and devices in a network. The data being monitored and managed is defined by a MIB. The functions supported by the protocol are the request and retrieval of data, the setting or writing of data, and traps that signal the occurrence of events."
steady on	Pertaining to a state in which an indicator light is always illuminated and no flicker.
T	
TLS	Transport Layer Security
TMS	terminal management system
V	
VGA	video graphics array
voice activation	A function used for discussion or arguing scenarios. The site with the loudest voice is broadcast.
W	
WEP	wired equivalent privacy
WPA	See Wi-Fi Protected Access .
WYSIWYG	See what you see is what you get .
Wi-Fi	See Wireless Fidelity .
Wi-Fi Protected Access (WPA)	A wireless security protocol replacing WEP and aiming to provide more powerful security performance for the IEEE 802.11 WLAN. WPA is a subset of IEEE 802.11i, whose core is IEEE 802.1x and TKIP.
Wireless Fidelity (Wi-Fi)	A short-distant wireless transmission technology. It enables wireless access to the Internet within a range of hundreds of feet wide.

what you see is what you get (WYSIWYG) Used in computing to describe a system in which content displayed during editing appears very similar to the final output. The final output might be a printed document, web page, or slide presentation.

X

XGA Extended Graphics Array