

# HUAWEI VP9830&VP9850&VP9860&VP9860-X 20.1.0

## Product Overview

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# 1 Product Positioning and Features

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## [1.1 Product Positioning](#)

## [1.2 Product Features](#)

## 1.1 Product Positioning

Huawei VP9800 series MCUs include VP9830/VP9850/VP9860/VP9860-X, which are new-generation universal transcoding MCUs that feature large capacity, high cost-effectiveness, flexible port allocation, and smooth capacity expansion. The MCUs provide industry-leading 1080p60 full encoding and decoding capabilities and integrate video, audio, presentation, and data to implement seamless communication and collaboration. The MCUs support resource pool management, backup between MCUs in a resource pool, and backup between MCU resource pools, delivering a superb meeting experience.

## 1.2 Product Features

### High Performance, Universal Transcoding

- Industry-leading 1080p60 full encoding and decoding and continuous presence per port with a maximum of 25 panes delivers the ultimate meeting experience to all participants.
- A brand-new hardware platform with the universal transcoding capability, which automatically identifies and matches terminals regardless of their bandwidth, resolution, and protocol, removes headache from manually configuring or forcibly preconfiguring consistent settings
- The H.264HP technology improves the video quality and saves the network bandwidth by 50%. The AAC-LD wideband audio technology is used for CD-quality audio and three-channel audio technology for sound localization. Intelligent presentation adaptation allows data sharing across endpoints. Various types of endpoints such as meeting room endpoints and mobile or desktop endpoints in the same meeting, with convergence of audio, video, presentation, and data are used for seamless collaboration.
- H.264 SVC 720P30 multistream conferences are supported, which saves MCU resources, increases the number of endpoints that can join conferences, and

reuses AVC endpoints. In addition, the VP9800 series MCUs allow SVC endpoints to select video layouts and zoom in or out any image.

- The data conference resolution can reach 4K 30 fps at most.

### **Easy to Install, Effortless to Use, Simplified O&M**

- Centralized and distributed networking, as well as resource pool deployment, automatic backup, remote disaster recovery (DR), load balancing, and nearby access.
- Fault information export and centralized upgrade; unified management on the SMC for users to check the MCU status in real time, relieving maintenance workload.
- Floating license, centrally managed by the SMC for sharing between MCUs and on-demand allocation.
- Various methods for starting or joining meetings, such as VMR (SMC2.0 network), SiteCall, one-touch, and URI, with support for automatic continuous presence, voice activation, continuous presence per port, and meeting control using the management console, terminal, or IVR.
- Desktop sharing, annotation on shared desktop, whiteboard annotation, and presentation sharing, as well as real-time and dynamic resource conversion between video, audio, and data, supporting web-based data conference accesses using multiple browsers.

### **Large Capacity, Open Convergence, and Flexible Scalability**

- High port density, large capacity, and smooth expansion, reducing customer investment.
- Working with the SMC2.0 and SMC to support cascading of up to six levels through multiple channels and allow for conference recording (SMC2.0 networking), facilitating network construction and expansion.
- Compatible with H.323 and SIP to support convergent conferencing of telepresence systems, SD/HD endpoints, mobile clients, and audio terminals.
- Dynamic allocation of port resources to maximize resource utilization and increase return on investment (ROI).
- Unidirectional large-capacity live broadcast conferencing (on the SMC2.0 network), with a single MCU supporting access of 500 720p30 sites at 768 kbit/s.
- Video push to the connected video wall, and connected to a surveillance platform for viewing surveillance video during a meeting.

### **Stable and Reliable with Powerful Network Adaptability**

- 24/7 sound system operations.
- Resource pool management, backup between MCUs in a resource pool, and backup between MCU resource pools, delivering a superb meeting experience.
- Smooth audio and video conferencing against 30% packet loss, which is a feature of the SEC.
- Up to 1000 ms anti-jitter capability and Intelligent Rate Control (IRC) deliver the optimal conferencing.

- High-reliability real-time embedded operating system that supports QoS policies such as DiffServ (DSCP), IP Precedence, and ARQ.

# 2 Application Scenario

[2.1 Video Conferencing Solution Network](#)

[2.2 Cascaded Network](#)

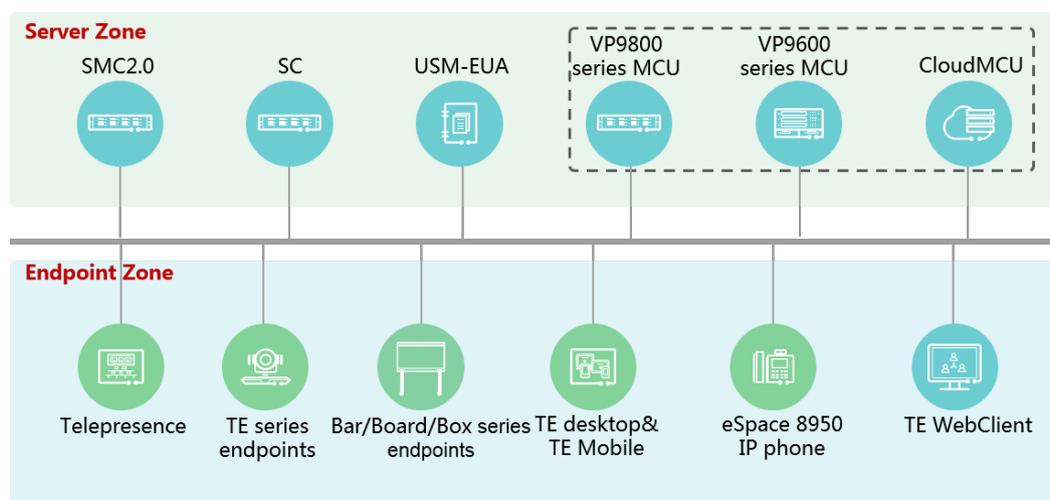
## 2.1 Video Conferencing Solution Network

### Network of the SMC2.0 Video Conferencing Solution

Huawei's video conferencing solution is a comprehensive video conference solution that supports immersive remote conferences, desktop and mobile video access, and enterprise streaming media applications. The solution is developed to serve customers from governments, enterprises of all sizes, and a variety of industries, including transportation, public safety, and finance.

Figure 2-1 shows the network.

Figure 2-1 Video conferencing solution network (SMC2.0)



On the network, the SMC, SC, USM-EUA, MCU (such as VP9800 series MCU, VP9600 series MCU, or CloudMCU), telepresence endpoints, endpoints, and IP

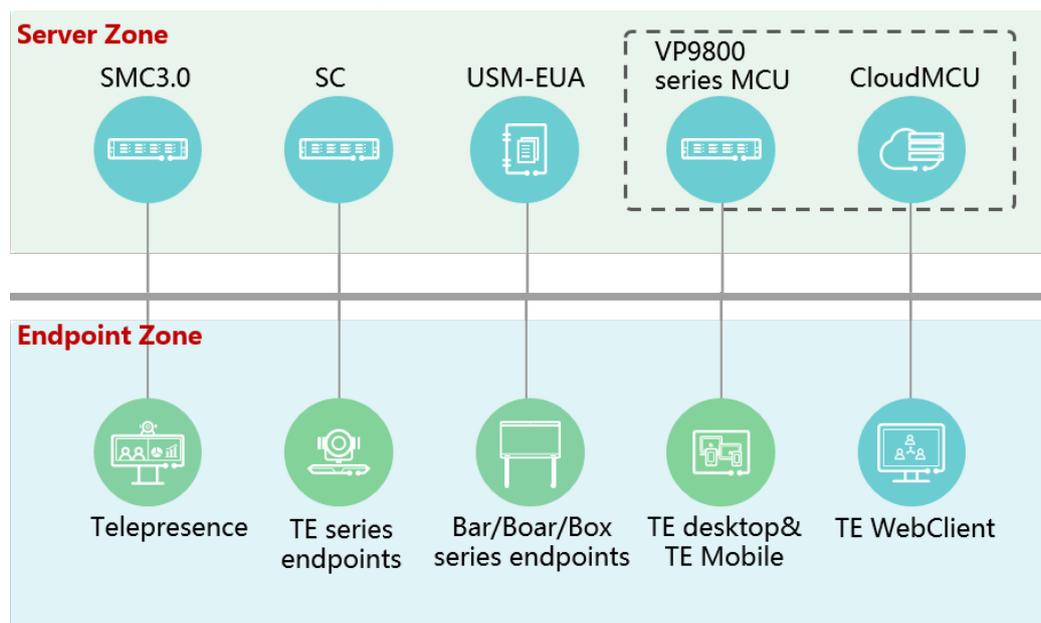
network are deployed. The MCU functions as the media switching platform in the system.

- The VP9800 series MCU is a universal transcoding MCU that integrates audio, video, and data.
- The VP9800 series MCU can be deployed independently or together with VP9600 series MCUs or CloudMCU.
- All-IPv4 networking, and IPv4 and IPv6 hybrid networking are supported.
- The VP9800 series MCU locates in the media switching layer to allow access from a variety types of endpoints at the lower layer and is managed by the SMC.
- Users can click the link in a conference notification email to start the WebClient, join VP9800 series MCU-based voice, video, and data conferences, and use the WebClient to control the conferences.

## Network of the SMC Video Conferencing Solution

Figure 2-2 shows the network.

Figure 2-2 Video conferencing solution network (SMC)



On the network, the SMC, SC, USM-EUA, MCU (such as VP9800 series MCU or CloudMCU), eSight, endpoints, and IP network are deployed. The MCU functions as the media switching platform in the system.

- The VP9800 series MCU is a universal transcoding MCU that integrates audio, video, and data.
- The VP9800 series MCU can be deployed independently or together with CloudMCU.
- All-IPv4 networking, and IPv4 and IPv6 hybrid networking are supported.
- The VP9800 series MCU locates in the media switching layer to allow access from a variety types of endpoints at the lower layer and is managed by the SMC.

- Users can click the link in a conference notification email to start the WebClient, join VP9800 series MCU-based voice, video, and data conferences, and use the WebClient to control the conferences.

## 2.2 Cascaded Network

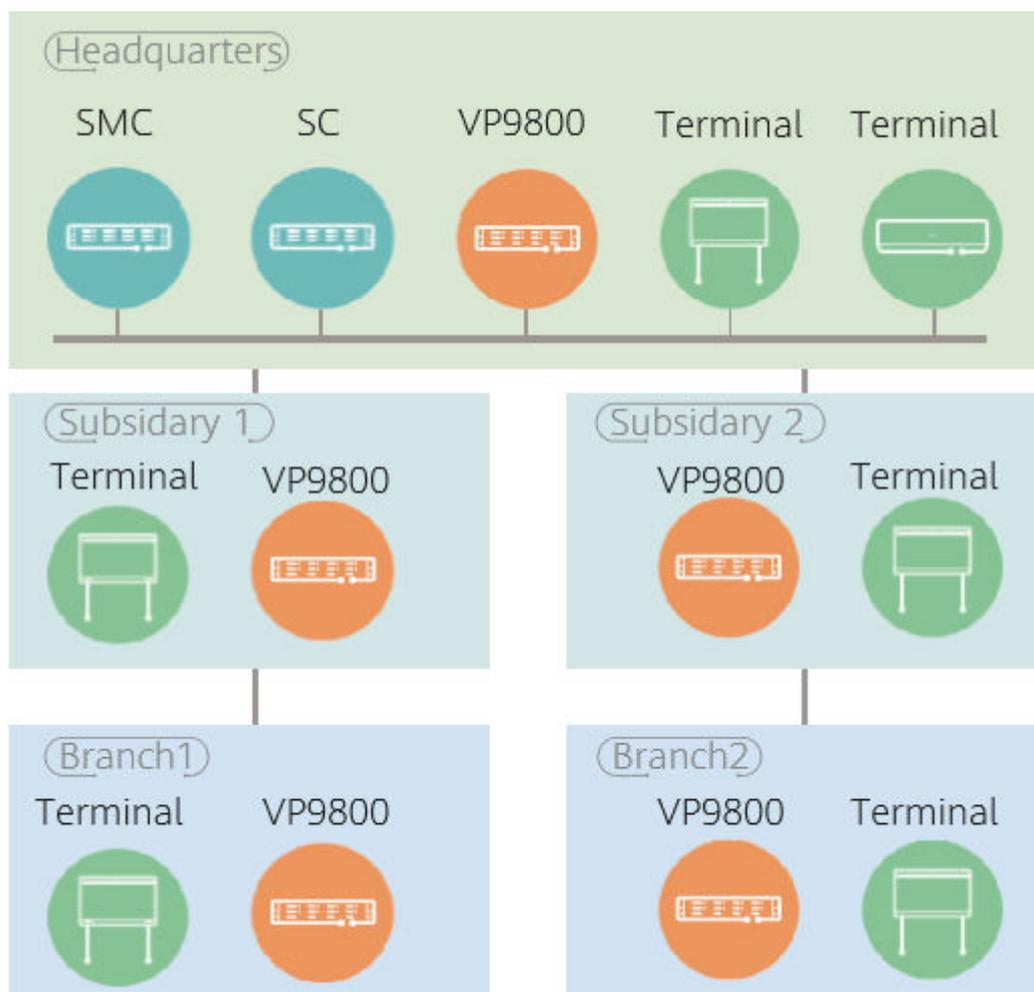
On a cascading network, an upper-level MCU is connected to multiple lower-level MCUs.

Cascaded networks are gaining in popularity as video conferencing technology is advancing and users demand increasingly larger system capacity. Cascading technology breaks the capacity limits of a single MCU and enables MCUs to be distributed in different areas and large-scale video conferencing networks across regions to be set up.

On the network of the video conferencing solution, VP9800 series MCUs can be cascaded, and VP9800 series MCUs, VP9600 series MCUs (on the SMC2.0 network), and the CloudMCU can be cascaded.

**Figure 2-3** shows the cascaded network in the video conferencing solution.

**Figure 2-3** Cascaded network



- On a cascading network, an upper-level MCU is connected to multiple lower-level MCUs. A VP9800 series MCU can be used as an upper-level MCU or a lower-level MCU.
- The MCU works with the SMC to allocate participants to different MCUs, adaptable to conferencing in a large region or across regions.
- Multiple cascading channels can be established between the upper-level and lower-level MCUs to transmit media streams at the same time and allow participants to view desired video.

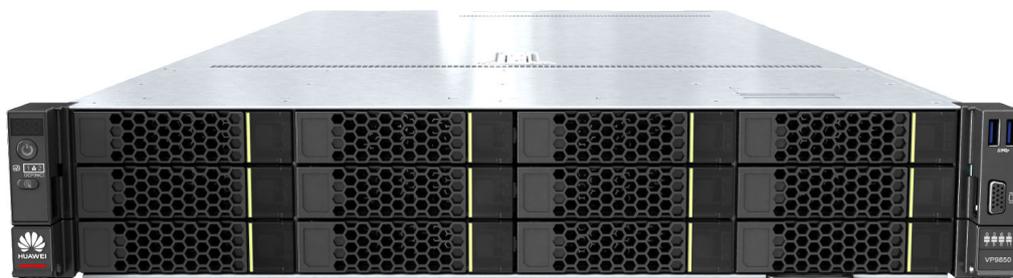
# 3 Product Structure

The VP9830/VP9850/VP9860/VP9860-X is a box-like MCU. Its hardware mainly consists of an integrated chassis.

## Over Structure

The VP9830/VP9850/VP9860/VP9860-X, box-like MCU, provides 1+1 backup of AC power supplies. [Figure 3-1](#) shows the appearance of the VP9830/VP9850/VP9860/VP9860-X.

**Figure 3-1** Appearance



## Front Panel

[Figure 3-2](#) shows the front panel of the VP9830/VP9850/VP9860/VP9860-X.

Figure 3-2 Front panel



Table 3-1 describes the indicators on the front panel.

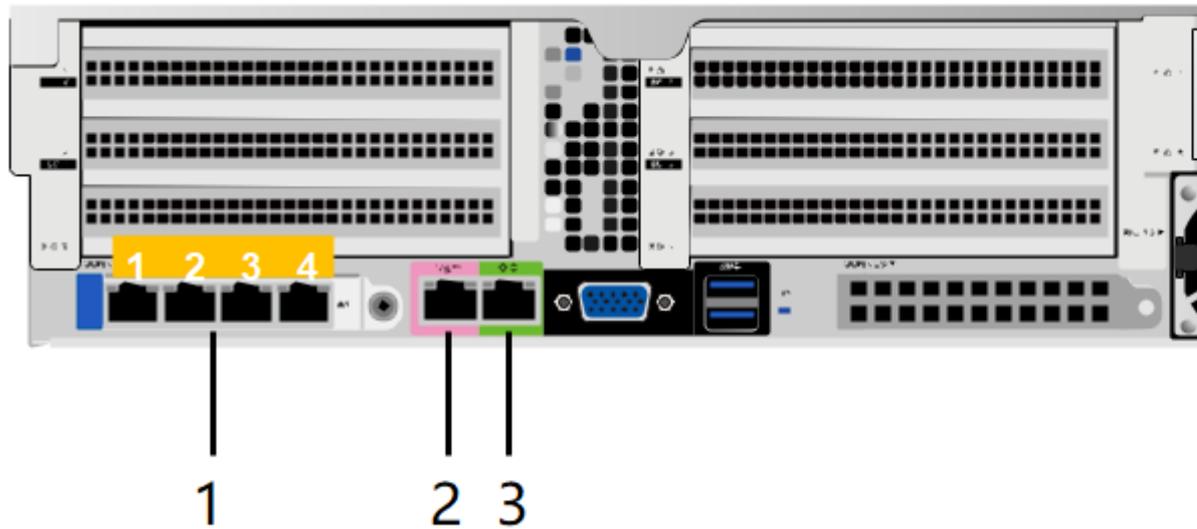
Table 3-1 Front panel indicators

Indicator	Description
Health indicator	<ul style="list-style-type: none"> <li>Steady green: The device is operating properly.</li> <li>Blinking red at 1 Hz: A major alarm has been generated in the system.</li> <li>Blinking red at 5 Hz: A critical alarm has been generated in the system.</li> </ul>
Power button/ indicator	<p>Power indicator:</p> <ul style="list-style-type: none"> <li>Steady yellow: The device is in the standby state.</li> <li>Steady green: The device is properly powered on.</li> <li>Blinking yellow: The iBMC is starting.</li> <li>Off: The device is powered off.</li> </ul> <p>Power button:</p> <ul style="list-style-type: none"> <li>When the device is powered on, you can press this button to shut down the operating system.</li> <li>When the device is powered on, you can press and hold down this button for 6 seconds to force the device to power off.</li> <li>When the device is ready to power on, you can press this button to start the device.</li> </ul>
Fault diagnostic LED	<ul style="list-style-type: none"> <li>---: The device is normal.</li> <li>Error code: The device component is faulty.</li> </ul>

## Rear Panel

Figure 3-3 shows the rear panel of the VP9830/VP9850/VP9860/VP9860-X.

**Figure 3-3** Rear panel



**Table 3-2** Rear panel description

Name	Description
Network adapter	4 x GE electrical port network adapters, providing external 1000 Mbit/s Ethernet ports. Network adapters 1 and 2 work in active/standby mode, and so do network adapters 3 and 4.
Management network port	The 1000 Mbit/s Ethernet port is used to manage the device.
Serial port	System serial port by default for debugging and locating.
Power supply	1+1 backup of power supplies is supported.

**Figure 3-4** Indicators on the rear panel



**Table 3-3** describes the indicators on the rear panel.

**Table 3-3** Rear panel indicators

Indicator	Description
GE electrical port data transmission status indicator	<ul style="list-style-type: none"> <li>● Blinking yellow: Data is being transmitted.</li> <li>● Off: No data is being transmitted.</li> </ul>
GE electrical port connection status indicator	<ul style="list-style-type: none"> <li>● Steady green: The network is properly connected.</li> <li>● Off: The network is not connected.</li> </ul>
Management network port data transmission status indicator	<ul style="list-style-type: none"> <li>● Blinking yellow: Data is being transmitted.</li> <li>● Off: No data is being transmitted.</li> </ul>
Management network port connection status indicator	<ul style="list-style-type: none"> <li>● Steady green: The network is properly connected.</li> <li>● Off: The network is not connected.</li> </ul>
PSU indicator	<ul style="list-style-type: none"> <li>● Steady green: The power input and output are normal.</li> <li>● Steady orange: The input is normal, but no power output is supplied due to overheat protection, overcurrent protection, short circuit protection, output overvoltage protection, or some component failures.</li> <li>● Blinking green at 1 Hz:                             <ul style="list-style-type: none"> <li>– The input is normal, and the device is standby.</li> <li>– The input is overvoltage or undervoltage.</li> </ul> </li> <li>● Blinking green at 4 Hz: under online PSU firmware upgrade.</li> <li>● Off: No AC power input is supplied.</li> </ul>

# 4 Functions and Features

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- [4.1 MCU Resource Pool Load Balancing and Backup](#)
- [4.2 Video Features](#)
- [4.3 SVC Single and Hybrid Multistream Conferences](#)
- [4.4 Data Conference](#)
- [4.5 VMR Conference \(on the SMC2.0 Network\)](#)
- [4.6 Unidirectional Live Broadcast Conference \(on the SMC2.0 Network\)](#)
- [4.7 AI Facial Recognition Sign-in and Electronic Name Tag \(on the SMC2.0 Network\)](#)
- [4.8 High Network Adaptability](#)
- [4.9 Ease to Use](#)

## 4.1 MCU Resource Pool Load Balancing and Backup

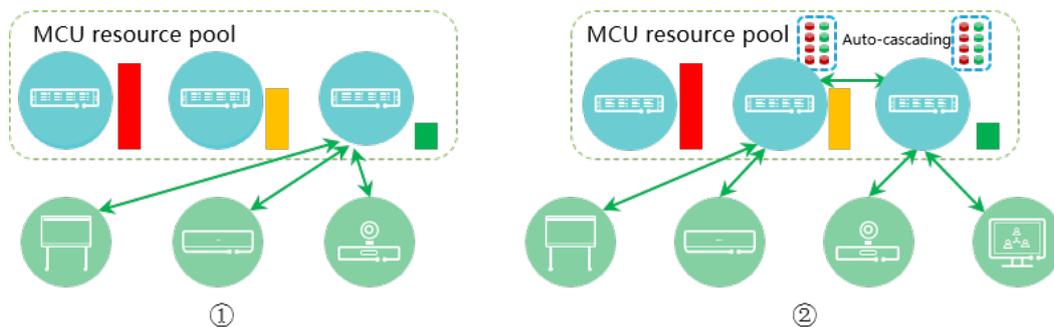
In a large-scale video conferencing networking scenario, multiple MCU ports can be virtualized into a unified port resource pool to enable unified resource provisioning. This function shares MCU port resources across regions, reducing port resource construction costs.

- Resource pool backup: intra-pool and inter-pool MCU backup (SMC2.0 networking)
- Port load balancing: The MCU with the most available ports is selected preferentially to hold conferences
- Maximum port usage: When a single MCU has limited resources in a region, two MCUs with the most available resources in the region are selected preferentially to hold conferences

Load balancing and automatic cascading:

1. The MCU with the most available resources in the MCU resource pool is selected preferentially for site accessing.
2. If the resources of a single MCU in a region are insufficient, the MCU with the most available resources in the region is selected preferentially for cascading.

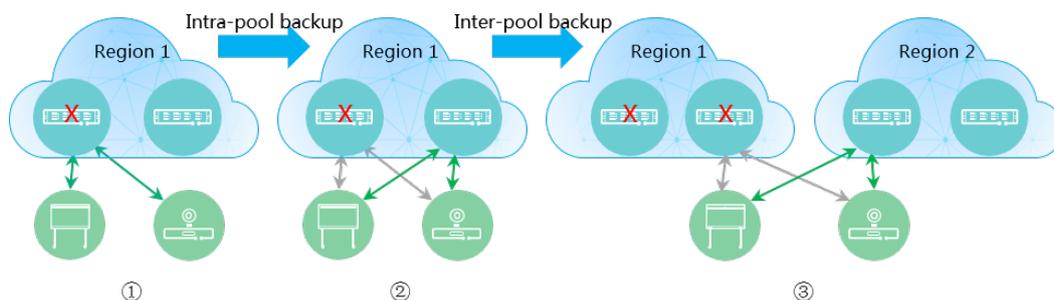
**Figure 4-1** Load balancing and automatic cascading



Flexible conference backup:

1. The MCU that holds the conference is faulty.
2. Intra-pool backup: The system automatically switches the conference to other MCU in the same service area.
3. Inter-pool backup (SMC2.0 networking): When all the MCUs in a service area are faulty, the system automatically switches the conference to the backup service area.

**Figure 4-2** Flexible conference backup



## 4.2 Video Features

### Multiple Continuous Presence Modes

The VP9800 series MCU supports 60 continuous presence layouts, and up to 25 panes in one continuous presence layout.

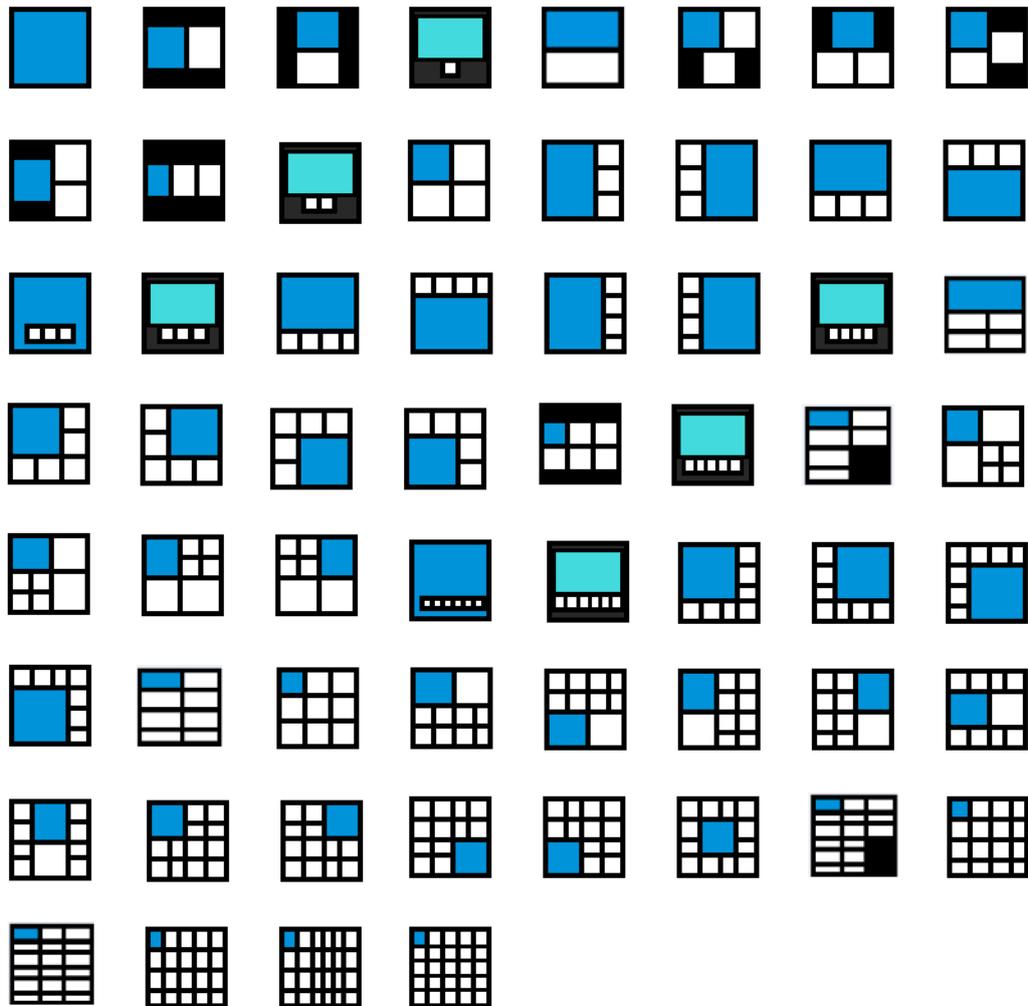
The VP9800 series MCU supports manual configuration of continuous presence layouts, as shown in [Figure 4-3](#). Eight of them support automatic configuration, as shown in [Figure 4-4](#).

The following continuous presence layouts are combined by the VP9800 series MCU. The continuous presence layouts of SVC conferences are determined by endpoints.

**NOTE**

- Blue: continuous presence layouts supported by MCUs (including the VP9800 series MCU, CloudMCU, and 9600 series MCU)
- Green: continuous presence layouts supported by the VP9800 series MCU and CloudMCU.

**Figure 4-3** Manual configuration of continuous presence layouts



**Figure 4-4** Automatic configuration of continuous presence layouts



## 4.3 SVC Single and Hybrid Multistream Conferences

The VP9800 series MCU supports multistream conferences based on the Scalable Video Coding (SVC) standard. A multistream conference performs video forwarding only on the network side, without video encoding/decoding and

transcoding. Endpoints perform video encoding/decoding and continuous presence layout. Scalable Video Coding (SVC), a successor to H.264, adopts the Advanced Video Coding (AVC) technology and relevant efficient algorithm tools to generate video at different frame rates, resolutions, and quality levels.

## Function Description

- Single and hybrid multistream conferences are supported. Hybrid multistream conferences support the accesses of SVC and AVC conferencing endpoints.

### NOTE

Single multistream conferences are an exception of hybrid multistream conferences, and collectively referred to as hybrid multistream conferences.

- The cascading between hybrid multistream conferences and between hybrid multistream conferences and universal transcoding conferences is supported.
- SVC conferencing endpoints include TE Desktop, TE WebClient, HUAWEI Bar 500, HUAWEI Board, HUAWEI Box 300/500/600/700/900, and RoomPresence series.

## Continuous Presence Layouts

SVC conferencing endpoints support multiple continuous presence layouts.

- Presenter view: displays one large window and multiple small windows.
- PiP: includes one full-screen video and one small window that can be placed in any of the four corners. The small window can also be hidden.
- Gallery view: displays all site images evenly.

**Figure 4-5** Continuous presence layouts



- TE Desktop: Only the **Presenter View** layout is supported.
- WebClient: Only the **Presenter View** layout is supported. Participant video can be moved from a small window to the large window.
- HUAWEI Bar 500, HUAWEI Board, HUAWEI Box 300/500/600/700/900, and RoomPresence series: The **Presenter View**, **PiP**, and **Gallery View** layouts are all supported. In **Presenter View**, participant video can be moved from a small window to the large window.

## 4.4 Data Conference

Data conferencing is a type of conferencing service provided by the video conferencing system. In a data conference, participants can share data with each

other through functions such as screen sharing, file transfer, document sharing, media sharing, instant messaging, and voting.

These functions enable users to enjoy diversified conference experience, implementing value-added services and improving competitiveness. For users, data conferencing provides real-time data sharing and exchange, meeting user requirements in different scenarios.

As a key component for data conferencing, the VP9800 series MCU implements data conferencing service logic and data conference control, and provides media resources for data conferences.

By clicking a link in a conference notification email, a user can start the WebClient to join a data conference on the VP9800 series MCU. The conference can be controlled on the WebClient.

The video conferencing solution supports 4K30 and 1080p60 HD data conference resolutions. Users can select a proper HD resolution based on their network bandwidth and endpoints to enjoy HD data conference experience. Currently, only HUAWEI Bar 500, HUAWEI Board, and HUAWEI Box 300/500/600/700/900 support desktop sharing with the encoding resolution of 4K. The total call bandwidth must be 2 Mbit/s or higher.

## 4.5 VMR Conference (on the SMC2.0 Network)

On the SMC2.0 network, the VP9800 series MCU supports personal Virtual Meeting Room (VMR) conferences. A VMR enables users to hold conferences anytime and anywhere by using a specified VMR number or conference URL without reservations. When the specified VMR number is bound to a single user or device, the VMR is called a personal VMR.

The VMR conferencing service is provided in the personal VMR mode. The VMR conference resource is allocated to a user or conference device. That is, a VMR number is bound to an account. In this case, the VMR conference belongs only to this account. Only this account can activate the VMR. After the VMR is activated, other participants can dial to join the conference. If the VMR is not activated for the account, other participants cannot join the conference. A VMR can hold only one conference at a time.

The VMR can ensure that the conference resources of individual users are not occupied, and the conference can be successfully held at any time.

## 4.6 Unidirectional Live Broadcast Conference (on the SMC2.0 Network)

The VP9800 series MCU supports unidirectional live broadcast on the SMC2.0 network. A unidirectional live broadcast conference is a special video conference. Users can join the conference as viewers. Viewers can receive audio, video, and presentation but cannot send local audio, video, or presentation. When a viewer is allowed to speak, the viewer becomes a normal participant and can send local audio, video, and presentation.

- Users cannot join voice, multistream, or VMR conferences as viewers.

- The organization where users are located must subscribe to the VP9800 series MCU or CloudMCU; otherwise, unidirectional live broadcast conferences are not supported.
- Only the TE10/TE20, TE Desktop, TE Mobile, HUAWEI Box300/600, and RoomPresence 65D/65S/75S support unidirectional live broadcast conferences.
- A unidirectional live broadcast conference can be held by using a multi-level conference template.

## 4.7 AI Facial Recognition Sign-in and Electronic Name Tag (on the SMC2.0 Network)

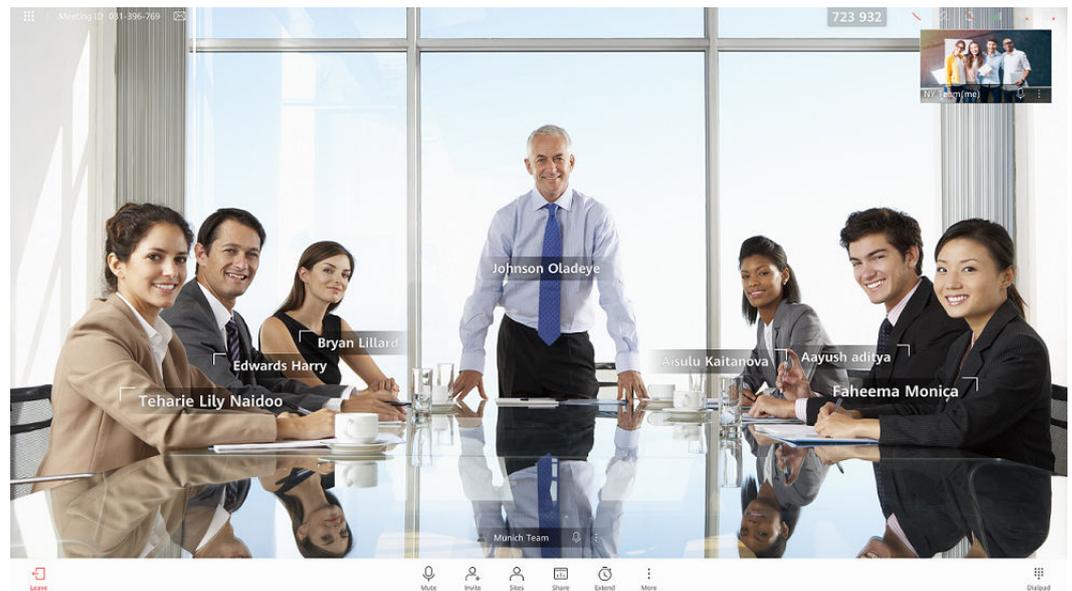
- Facial recognition sign-in: A sign-in conference is reserved. Before the conference starts, participants' faces are scanned using Bar&Board&Box series endpoints and RoomPresence series endpoints to sign in.

Figure 4-6 Facial recognition sign-in



- Electronic name tag: During a conference, Bar&Board&Box series endpoints and RoomPresence series endpoints work with the facial recognition function to display the participant names matching the participant profiles on the screens.

Figure 4-7 Electronic name tag



## 4.8 High Network Adaptability

- packet loss concealment (PLC)  
The SEC algorithm is supported for video, and the packet loss compensation (PLC)/forward error correction (FEC) algorithm is supported for audio. Opus and NetATE supports a maximum of 50% packet loss concealment. When packet losses occur on the network, audio-visual quality is ensured through these algorithms.
- Anti-jitter  
The audio jitter buffer (AJB) protocol is supported for both audio and video to enhance the anti-jitter capability and support a maximum of 1000ms network jitter compensation.
- Intelligent rate control  
If the network encounters continuous packet losses, the VP9800 series MCU can automatically start intelligent deceleration. When the packet loss rate becomes normal, the system can automatically start intelligent broadband acceleration (IBA) to deliver the optimal audio and video experience.
- Audio 3A  
When G.711A, G.711U, G.729, or iLBC is used as the audio protocol, the VP9800 series MCU supports audio 3A (ANS/AGC/AEQ) to perform audio post-processing, improving voice quality. ANS refers to automatic noise suppression, AGC refers to automatic gain control, and AEQ refers to automatic equalizer.

## 4.9 Ease to Use

The VP9800 series MCU provides a user-friendly web user interface (UI) with simplified service functions, enabling users to conveniently and efficiently to initiate conferences.

## Built-in Web

- The VP9800 series MCU provides a built-in web interface. You are able to connect to the VP9800 series MCU on any computer with a browser installed.
- The VP9800 series MCU web interface provides configuration functions, enabling you to complete configuration as on a network management system.

## Conference Control on the SMC Network

The VP9800 series MCU can be managed by the SMC. In this way, the VP9800 series MCU can be used in the video conferencing solution to provide multipoint conferencing functions.

## Dynamic Service Switching

Endpoints in a conference are allowed to enable and disable conference capabilities. For example, a video endpoint can join a conference with only the audio capability and enables the video or presentation function in the conference. It can also disable the video the presentation function in the conference.

## Endpoint Audio and Video Capability Adaptation

- The VP9800 series MCU supports universal transcoding of audio streams. It provides an independent channel for each participant to transmit audio streams. Therefore, the sound from each participant connecting to the VP9800 series MCU can be mixed into the conference.
- The VP9800 series MCU supports universal transcoding of video streams. It provides an independent channel for each participant to transmit video streams. Therefore, each participant connecting to the VP9800 series MCU can have customized local continuous presence layouts.

## Support for Conferences Integrating Audio, Video, and Data Capabilities

The VP9800 series MCU supports audio, video, and data conference capabilities, enabling users to use these capabilities in the same conference.

## SNMPv3 Support

The standard SNMPv3 protocol is supported. Maintenance personnel can use the network management system (NMS) to view the statuses of managed VP9800 series MCUs through SNMP V3.

# 5 Reliability

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With the development of the Internet, the importance of the network makes it necessary for network operators to ensure that services are not interrupted due to the failure of a single device. Therefore, the VP9800 series MCU provides multiple backup mechanisms to ensure the long-term and stable running.

- Hardware backup

Based on the Kunpeng platform developed by Huawei, the VP9800 series MCU adopts carrier-class components and engineering processes and supports power supply module backup, network port backup, fan backup, and hard disk backup.

- Resource Pool Backup

The DR function of the VP9800 series MCU is implemented by resource pool, which supports local and remote DR functions. When an MCU is faulty, the conference on the MCU is automatically scheduled to other VP9800 series MCU with the lightest load.

# 6 Security

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The VP9800 series MCU has comprehensive security mechanisms to ensure information security in conferences.

- The VP9800 series MCU supports H.235-based negotiation and encryption with H.323 endpoints.
- The VP9800 series MCU can communicate with SIP endpoints through SIP over TLS and transmit streams with endpoints through Secure Real-time Transport Protocol (SRTP).

# 7 Openness

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## Different Protocols for the Same Conference

- The VP9800 series MCU allows endpoints that use H.323 or SIP to join conferences and use conferencing services such as presentation, encryption, dual tone multiple frequency (DTMF), and packet loss concealment (PLC).
- The VP9800 series MCU supports the access of H.323 and SIP endpoints from third-party mainstream vendors.

## Third-Party Video Wall

The video wall is an ultra-large screen that consists of multiple display units. It is able to display images and texts in a perfect way.

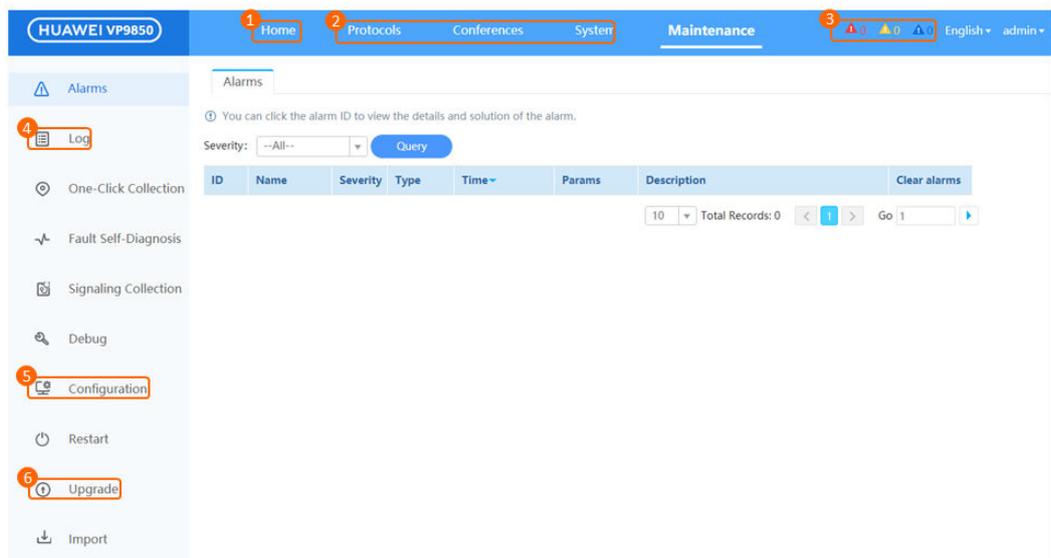
The VP9800 series MCU supports the third-party video wall. The video wall can be configured to simultaneously display multiple video participants.

Using the video wall does not require extra network bandwidth resources.

# 8 Operation and Maintenance

The VP9800 series MCU has a built-in web interface that allows users to log in to and manage the VP9800 series MCU anytime. **Figure 8-1** shows the VP9800 series MCU web interface.

**Figure 8-1** VP9800 series MCU web interface



1. Supports resource statistics
2. Supports the setting of web system parameters, conference parameters, and protocol parameters
3. Supports abnormal alarms
4. Supports log recording
5. Supports configuration import and export
6. Supports upgrade using the web interface

# 9 Technical Specifications

- [9.1 Physical Parameters](#)
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## 9.1 Physical Parameters

**Table 9-1** lists the VP9800 series MCU physical parameters.

**Table 9-1** Physical parameters

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	86.1 mm (2U) x 447 mm x 790 mm (3.39 in. x 17.60 in. x 31.10 in.)
	Weight	Net weight: 29 kg Gross weight: 34 kg
Environment adaptability	Ambient temperature range	<ul style="list-style-type: none"><li>• Operating temperature: 5°C to 40°C (41°F to 104°F) (complaint with ASHRAE Classes A2 and A3)</li><li>• Storage temperature: -40°C to +65°C (-40°F to +149°F)</li><li>• Long-term storage temperature: 21°C to 27°C (69.8°F to 80.6°F)</li><li>• Maximum temperature change rate: 20°C/h (36°F/h)</li></ul>

Category	Item	Specifications
	Relative humidity range	<ul style="list-style-type: none"> <li>Operating humidity: 8% to 90%</li> <li>Storage humidity: 5% to 95%</li> <li>Long-term storage humidity: 30% to 69%</li> <li>Maximum change rate: 20%/h</li> </ul>
	Rated operating atmospheric pressure	63–106 KPa
Electricity supply requirements	Rated operating voltage	AC voltage range: 100V AC to 240V AC
	Power consumption	< 900 W
	Electromagnetic environment	The following requirements must be met: Low frequency magnetic field: 50 Hz to 20,000 Hz 0.025 RMS to 10 RMS Amplitude modulation RF electric field 0.009 MHz to 18 000 MHz <3 RMS Pulse modulation RF electric field 1 GHz to 18 GHz < 3V/m (peak)
Mean time between failures (MTBF)	-	> 200,000 hours
Mean time to repair (MTTR)	-	< 1 hour

## 9.2 Performance and Capacity

**Table 9-2** describes the performance and capacity specifications of the VP9800 series MCU.

**Table 9-2** Performance and capacity specifications of the VP9800 series MCU

Item	Specifications			
	VP9830	VP9850	VP9860	VP9860-X
Video	<ul style="list-style-type: none"> <li>Universal transcoding ports: 12 1080p60 ports/25 1080p30 ports/50 720p ports/100 SD ports</li> <li>SVC ports: 100 1080p ports</li> </ul>	<ul style="list-style-type: none"> <li>Universal transcoding ports: 25 1080p60 ports/50 1080p30 ports/100 720p ports/200 SD ports</li> <li>SVC ports: 200 1080p ports</li> </ul>	<ul style="list-style-type: none"> <li>Universal transcoding ports: 50 1080p60 ports/100 1080p30 ports/200 720p ports/400 SD ports</li> <li>SVC ports: 200 1080p ports</li> </ul>	<ul style="list-style-type: none"> <li>Universal transcoding ports: 100 1080p60 ports/200 1080p30 ports/400 720p ports/800 SD ports</li> <li>SVC ports: 200 1080p ports</li> </ul>
Audio	Audio-only ports: 2000	Audio-only ports: 3000	Audio-only ports: 3000	Audio-only ports: 3000

## 9.3 Ports

**Table 9-3** Ports and the specifications of the VP9800 series MCU

Name	Quantity	Specifications
Network adapter	1	<ul style="list-style-type: none"> <li>Physical port: RJ45 port</li> <li>Function: provides four GE electrical ports for service network interconnection.</li> </ul>
Management network port	1	<ul style="list-style-type: none"> <li>Physical port: RJ45 port</li> <li>Function: manages the device.</li> </ul>
Serial port	1	<ul style="list-style-type: none"> <li>Physical port: RJ45 port</li> <li>Function: system serial port by default for debugging and locating.</li> </ul>

## 9.4 Protocols and Standards

**Table 9-4** describes the protocols and standards that the VP9800 series MCU complies with.

**Table 9-4** Protocols and standards

Name	Specifications
Communication framework protocol	ITU-T, H.323, and SIP
Video protocol	,H.264HP SVC, H.264HP, H.264 BP, and H.263
Audio protocol	AAC-LD, G.722.1*, G.722.1C*, G.711a/u, G.722, G.729A, iLBC, Opus
Dual-stream protocol	ITU-T H.239 and BFCP
Transmission protocol	TCP/IP, FTP/FTPS, RTP, RTCP, HTTP/HTTPS, SNMPv3, DNS/DDNS, ASN.1, T.140, and NTP
Encryption protocol	H.235, AES, and TLS/SRTP
Video resolution	1080p60, 1080p30, 720p60, 720p30, 4CIF, CIF, QCIF, 180p, and 90p
Presentation/Data resolution	4K30, 1080P60, 1080P30, 720P, 4CIF, CIF, SXGA (1280 x 1024 pixels), SVGA (800 x 600 pixels), XGA (1024 x 768 pixels), WXGA, WXGA+, SXGA+ (1400 x 1050 pixels), UXGA+, and WUXGA+

## 9.5 Acronym/Abbreviation

Acronym or Abbreviation	Full Name
AJB	Adaptive jitter buffer
AES	Advanced Encryption Standard
BFCP	Binary Floor Control Protocol
DTMF	Dual Tone Multiple Frequency
FE	Fast Ethernet
FTPS	File Transfer Protocol over SSL
GE	Gigabit Ethernet
IP	Internet Protocol
ITU-T	International Telecommunications Union-Telecommunication
IVR	Interactive Voice Response
MCU	Multipoint Control Unit

<b>Acronym or Abbreviation</b>	<b>Full Name</b>
NAT	Network Address Translation
RTCP	Real-time Transfer Control Protocol
RTP	Real-time Transfer Protocol
SEC	Super Error Concealment
SIP	Session Initiation Protocol
SMC	Service Management Center
SNMP	Simple Network Manager Protocol
SRTP	Security Real Time Protocol
SSH	Secure SHell
TLS	Transport Layer Security
URL	Uniform Resource Locator
MTBF	Mean Time Between Failure
MTTR	Mean Time To Repair