



User's Guide

For Polycom[®] RMX[™] 500 and
Polycom[®] RMX[™] 1000 Systems
(Conference on Ports)

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Table of Contents

System Overview	1-1
RMX System	1-1
RMX Main Features	1-3
Video Display	1-3
LPR	1-4
IVR-Enabled Conferencing	1-4
Recording Link	1-4
Conferencing Capabilities and Options	1-4
User Interfaces	1-5
First Time Installation and Configuration	2-1
Hardware Installation and Setup	2-1
Configuration Preparations	2-2
Obtaining Network Information	2-2
Get the product activation key.	2-3
First Time Configuration	2-3
Connect your computer to RMX	2-3
Login to the Web configuration interface	2-3
Modify the default IP address.	2-4
Configuring Other Network Options (Optional)	2-5
Synchronizing System Time	2-8
Basic Operation	3-1
RMX Screen Components	3-1
User Rights	3-2
Pane Layout	3-3
Common Operations	3-4
Starting a Conference	3-6
Starting a Conference from the Conferences Pane	3-6
Use the Remote Control to Create a Conference – Conference on Demand	3-6
Connecting to a Conference – Dialing Methods	3-10
H.323 Endpoint	3-11
SIP Endpoint	3-11

Conference Profiles	4-1
Defining a Conference Profile	4-3
General Settings	4-4
Advanced	4-5
Video Quality	4-7
Video Setting	4-13
Audio Setting	4-14
Conference Skin Skins	4-15
Conference Recording	4-15
Overlay	4-16
Site Name	4-17
Modifying a Profile	4-17
Deleting a Profile	4-17
Setting a Default Profile	4-18
Recording Link	5-1
Configurations for Default Recording Parameters	5-1
General Settings	5-2
DTMF Code Setting	5-3
Recording Control	5-3
Recording Properties	5-4
Meeting Rooms	6-1
Creating a Meeting Room	6-1
General Settings	6-2
Participant setup	6-3
Recording	6-4
Multicast Configurations	6-5
Other Information	6-7
Modifying a Meeting Room	6-7
Deleting a Meeting Room	6-7
Reservations	7-1
Reservation Views	7-1
Calendar View	7-1
List View	7-2
Adding a Reservation	7-2
Reserve a Permanent Conference	7-4
Reserving One-time Conference	7-4

Reserving a Daily Conference	7-4
Reserving a Weekly Conference	7-4
Reserving a Monthly Conference	7-5
Modifying a Reservation	7-5
Deleting a Reservation	7-6
Address Book	8-1
Adding a Participant to the Local Directory	8-2
Creating a Participant in the Address Book	8-2
Adding a Participant from an Ongoing Conference	8-6
Defining a Participant Group	8-6
Modifying a Participant/Group	8-7
Deleting a Participant/Group	8-7
Importing and Exporting the Local Directory	8-7
Exporting the Local Directory	8-7
Importing the Local Directory	8-7
Internal GK server	8-8
Internal GAB server	8-8
Directory Service	8-8
Enabling Builtin GAB Server	8-8
Configuring Directory Service	8-9
Viewing the Global Directory	8-11
Searching Directory Entries	8-12
Conference/Participant Monitoring	9-1
Conference Monitoring	9-1
Viewing Conferences List Pane	9-1
Viewing Conference Parameters	9-2
Conference Control	9-2
Participant Monitoring	9-8
Viewing Participant List	9-8
Viewing Participant Properties	9-10
Participant Control Buttons and Menus	9-10
Participant Control Operations	9-12
Users and Connections	10-1
User List	10-2
Defining New User	10-2
Deleting User	10-3

Modifying User Password	10-3
Viewing User Connection	10-4
IP Network Services	11-1
LAN Setting	11-2
Routers	11-3
Gatekeeper	11-4
SIP Server	11-5
QoS	11-7
Ports	11-8
Email	11-9
Internal Network Configurations	11-10
IVR Service	12-1
Default IVR Information	12-2
Customizing IVR Information	12-3
Replace the IVR information	12-3
Recording an Audio Message	12-3
CDR	13-1
CDR Files	13-1
Viewing CDR Records	13-2
Saving CDR Records	13-3
System Maintenance	14-1
System Alerts	14-1
H.323 Link	14-2
System Time	14-2
Customization	14-3
Modifying Language	14-4
Setting System Name	14-4
Setting Skins	14-4
Video Standard	14-5
Maximum Bandwidth (RMX 1000 Rev A only)	14-6
Security Setting	14-6
SNMP Setting	14-8
Setting the Agent	14-8
Setting Traps	14-9
Product Activation	14-11
Logger Diagnostics Files	14-11

Software Management	14-12
Backup Configuration / Reservation	14-12
Restoring Configuration / Reservation	14-13
Resources Usage	14-14
Device Upgrade	14-16
Upgrading from Version 2.x to Version 2.5	14-16
Signaling and Hardware Monitoring	15-1
Signaling Monitoring	15-1
Hardware Monitor	15-2
Stacking	15-3
Hot Standby	15-5
Hardware Monitoring	15-7
Personal Conference Manager (PCM)	16-1
Introduction to PCM Interfaces	16-2
Viewing the PCM Interface	16-2
Definitions of DTMF & FECC Keys	16-3
PCM Operations	16-4
Choose a Personalized Layout	16-4
Changing the Multi-screen Mode	16-5
Connect Participant	16-6
Participant mute/status	16-6
Camera Control	16-7
Recording a Conference	16-8
Disconnect Participant	16-8
Terminate Conference	16-8
Appendix A: Connection Failure Diagnosis	17-1
Appendix B: Telnet/Terminal Commands	18-1
HyperTerminal Parameters	18-1
Login	18-1
Command Introduction	18-2
Appendix C: Glossary	19-2
Third-party Software Licenses	20-1
Quick Installation Setup Wizard (RMX500 Rev A only)	21-1
Use Simple Conference Management System	21-2
Simple conference management system user	21-2
Use Simple Conference Management System	21-3

Table of Contents

Setting up Conferences	21-4
Viewing Conferences	21-5
Conference Control	21-5
Set the multi-screen layout	21-6
Automatic Multi-screen Layout	21-7
Dial-in Number	21-8

System Overview

This manual provides detailed information on how to configure, use, and manage the RMX series system. It covers the following RMX series models: RMX 500 Rev A, RMX 500 Rev B, RMX 1000 Rev A, and RMX 1000 Rev C. If not specified otherwise, all of the contents in this manual apply to the above-mentioned models.

This chapter will serve as a brief introduction to the RMX series system and its major functions and features. The following chapters provide detailed description about the installation of the RMX system, as well as how to hold, manage, monitor conferences, and maintain the device.

RMX System

The RMX series real-time media conferencing platform (RMX and SIP) is a high-value multipoint platform for small IP networks, or remote locations on large IP networks.

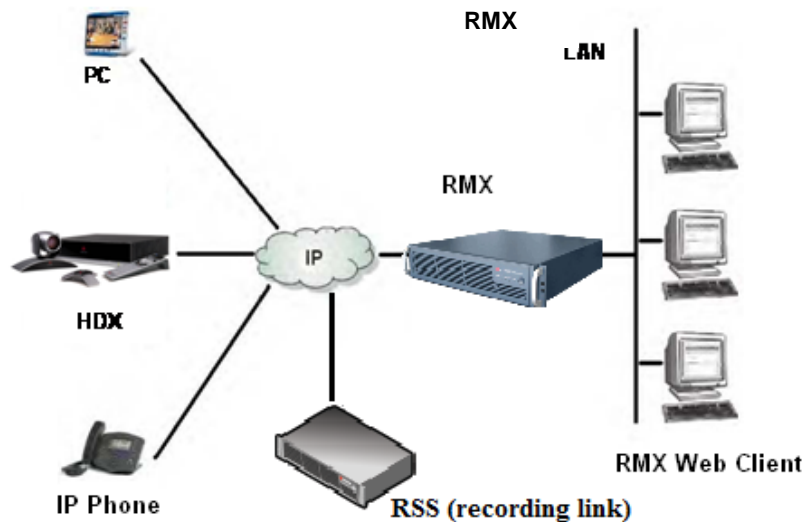
The Polycom RMX system provides the following features:

- Provides All-in-one (video, audio, and content) box which is easy to install, configure, and manage
- Supports video conferences accessible by IP phones, SIP phones, mobile phones, and analog phones
- Provides high quality audio, video, and content sharing
- Provides the Polycom Lost Packet Recovery (LPR) function to ensure an optimal experience even on sub-optimal networks
- Supports Siren 22 Stereo
- Supports H.264 content
- Supports Simple Network Management Protocol (SNMP)
- Supports Security Socket Layer (SSL) certificate encryption
- Supports real-time conference multicasting
- Supports full integration with Polycom RSS recording servers
- Supports reservation (optional)
- Supports Personal Conference Manager (PCM)
- Supports internal GK server
- Supports internal Global Address Book (GAB) server
- Supports Simple Conference Management System



- You need to buy additional licenses to activate internal GK, internal GAB, and quick installation setup wizard services.

The Polycom RMX meets International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) standards for multipoint multimedia bridging devices, and meets ETSI standards for telecommunication products.



Multipoint Video Conferencing Using a Polycom RMX

For performance differences in various models for RMX series, please refer to the following table.

Performance Comparison among Different RMX Series Models

Performance	RMX 500-Rev A	RMX 500-Rev B	RMX 1000-Rev A	RMX 1000- Rev C
Maximum number of participants	48 (24 Video+24 Audio)	48 (24 Video+24 Audio)	96 (48 Video+48 Audio) (64 Video+32 Audio)	96 (48 Video+48 Audio) (64 Video+32 Audio)
Highest Resolution	Multi-screen Conference: 720p Video Switching Conference: 1080p	1080p	1080p	1080p
Maximum number of multi-screen conferences	2	4	4	8
Maximum Bandwidth	Multi-screen Conference: 2M Video Switching Conference: 4M	4M	4M	4M

RMX Main Features

Video Display

Dynamic Continuous Presence

The dynamic Continuous Presence capability of the RMX system ensures viewing flexibility by offering multiple viewing points and window layouts for video conferencing. The multi-screen feature offers a number of multi-screen layouts to accommodate different numbers of participants and conference settings.

High Definition

High Definition (HD) refers to high-quality picture resolution. An HD-compliant endpoint can connect to a conference at a resolution of 1280x720 (720p) and a bit rate of 832kbp~ 4Mb.

Multiple Switching Modes

If the number of participants in a conference is higher than the number of onscreen spaces in the selected layout, the RMX system supports switching between video participants in one of these modes:

- Voice activation
- Administrator-specified (one or more participants configured for display in a selected video window)
- Lecture Mode – The lecturer is viewed in full screen by all the conference participants, while the audience is rotated through the lecturer's view in a "time-switched" mode.

H.239

An H. 239 compliant endpoint can simultaneously send and receive the video streams of the primary channel and the secondary channel so that the participant can simultaneously receive two channels of conference video streams, including the dynamic conference video and a computer screen or dynamic video streams. This can be used for training, remote direction, and displaying necessary information for reporting.

Media Encryption

The system has an optional AES 128-bit media encryption mode, so the conferencing connection is more secure.

LPR

Lost Packet Recovery (LPR) is a Polycom algorithm designed to protect IP video calls from the impact of network packet loss. LPR offers five key benefits:

- Allows users to conduct high quality video calls over packet loss-prone IP networks (DSL, cable, satellite, high contention LANs / WANs.) without suffering the effects of packet loss.
- Protects video calls from short-term network issues by temporarily adjusting the bit rate of the call in progress.
- Reduces the jitter buffer and associated delay.
- Allows an organization to use all available bandwidth for its video calls.
- Protects all elements of the videoconference call; voice, video, and content.

IVR-Enabled Conferencing

The Interactive Voice Response (IVR) function lets participants perform various operations during ongoing conferences according to voice prompts. The participants use their endpoints' keypads and remote control to interact with the conference's menu-driven scripts using Far-End Camera Control (FECC) and DTMF codes.

Recording Link

The RMX system supports recording links similar to other Polycom MCUs. This recording link can work with the Polycom RSS to record the content of an RMX conference.

Conferencing Capabilities and Options

Multiple Ways to Hold a Conference

The following options are available when setting up conferences:

- Instant Conference - Hold an instant one-time-only conference. The conference is deleted from the MCU immediately after its completion.
- Meeting Room - Meeting rooms are stored in the MCU memory, without occupying any MCU resources until used. They can be activated anytime.
- Reserve a Conference - The reserved conference is stored at the RMX and only reserves system resources for the call's specified time. The system automatically initiates and terminates the conference according to the reservation start and end times.

Connection Methods

- Dial-out: automatically connect pre-defined participants (automatic line rate detection)
- Dial-in:
 - Inbound calling by pre-defined participants

- Inbound calling by undefined participants

Directory Service

The RMX fully supports the Global Address Book (GAB) and Lightweight Directory Access Protocol (LDAP) directory service provided by the registered Polycom CMA™ v4.0 system, and enables the user to share the GAB resources and view the status online.

Conference Management and Monitoring Features

The Polycom RMX Web Client provides capabilities for management and monitoring of participants and conferences as follows:

- Lecture Mode in Continuous Presence conferences
- Monitoring the video of each endpoint's conference site during the conference
- Far End Camera Control (FECC/LSD) in video conferences
- Automatic termination of empty (no participant) conferences
- Control of listening and broadcasting audio volume for individual participants
- Conference control via DTMF codes from participant's endpoint or telephone
- Media Encryption
- SSL Certificate Encryption (Https)
- Real-time display of all conferences and participants
- Real-time monitoring of each participant's connection status and properties
- Easily accessible Call Detail Records (CDR) for administrator
- Active display of all system resources

User Interfaces

Web Interface

The system provides a user-friendly Web-based operations interface. To conveniently and easily manage and monitor conferences, or maintain the device, the user only needs to access the Web client program of the RMX system by using the Web browser at the computer. The Web interface is designed for both administrator and operator level users.

Personal Conference Manager (PCM)

The Personal Conference Manager (PCM) is a menu-based onscreen interface viewed on a participant's endpoint. The conference chairperson can perform

common conference operations using the endpoint's remote control and onscreen operation menus. The interface is designed for end users.

2

First Time Installation and Configuration

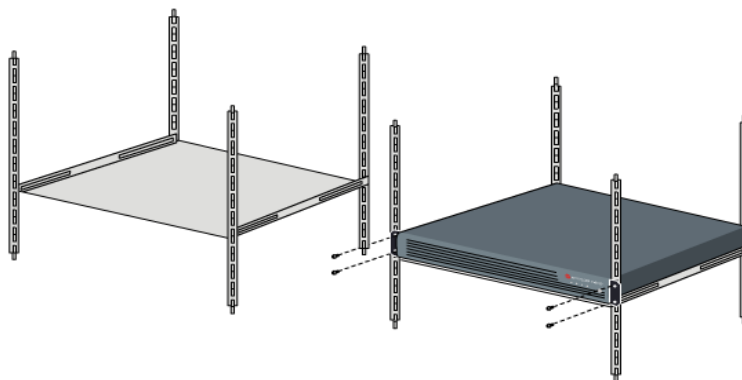
Follow the procedure below to implement First Time Installation and Configuration of the RMX system:

- 1 Hardware Installation and Setup
- 2 Configuration Preparations
 - Get the information needed for network configuration.
 - Get the product activation key.
- 3 First Time Configuration
 - Connect your computer to RMX
 - Log in to the Web interface.
 - Modify the default IP address.
 - Configure other network options.
 - Synchronizing System Time

Hardware Installation and Setup

Install the hardware and connect lines as described below:

- 1 Put the RMX product on a stable surface at the installation site.
- 2 Carefully take the RMX device out of the package. You can install the device in the rack or position it on an even surface.
 - Mount the RMX in the rack:
Install rack brackets, supplied by the rack manufacturer, in the rack.
Mount the RMX on top of the rack brackets.
Fasten the RMX to the rack with screws.



Place RMX on the rack.

- Put the RMX on a safe, even, and clean surface.
- 3** Connect cables on the back panel of the RMX:
- Power Cable: Firmly insert the plug into the power socket to prevent poor contact.
 - LAN Cable: Connect to the LAN1 port of the RMX 1000.



Before powering off, first switch off the device. Do not directly cut off the power supply or unplug the power cable.

Configuration Preparations

Obtaining Network Information

Before the first time configuration, obtain the information below from the network administrator in order to configure the RMX on your local network:

- The IP network type (H.323, SIP or H.323&SIP) and related configuration information.
- The IP address, subnet mask, and default gateway IP address of the RMX LAN port.
- (Optional) DNS server address.
- (Optional) Gatekeeper address, and the H.323 prefix and E.164 number to be assigned to the RMX.
- (Optional) SIP server address

Get the product activation key.

Before using the RMX system, you need to activate the device. Follow the procedure below to obtain the system activation key. When you power on and log in to the RMX for the first time, the system displays the Product Activation dialog box, requesting you to enter a Product Activation Key.

- 1 Go to <http://support.polycom.com>.
- 2 Use your email address and password to log into or register for a new account.
- 3 Go to Licensing & Product Registration > Activation/Upgrade.
- 4 Follow the instructions to generate the activation key.
The License Number and Serial Number for the device are included with the RMX documentation.
- 5 Record the activation key displayed on the page.

First Time Configuration

Connect your computer to RMX

- 1 Connect your computer to the LAN1 port (the LAN1 port is enabled by default) of the RMX with a cross-over network cable, or connect your computer and RMX to the same switch in the LAN.
- 2 Turn on the power switch at the RMX.
- 3 Configure the IP address for your computer, which is in the same network segment as the IP address of the RMX.

The default IP address of the RMX before delivery is:

- IP address of the LAN1 port - 192.168.1.254
- Subnet Mask - 255.255.255.0
- Default gateway IP address - 192.168.1.1

You can also view the current address information for the system using the RMX Discover tool provided with the device.



- a Run the .exe file in the CD provided with the system.
- b Click the Discover button to display the current address information of the system.

Login to the Web configuration interface



When accessing the RMX Web user interface, use Internet Explorer 8.0, 7.0 for the best display quality.

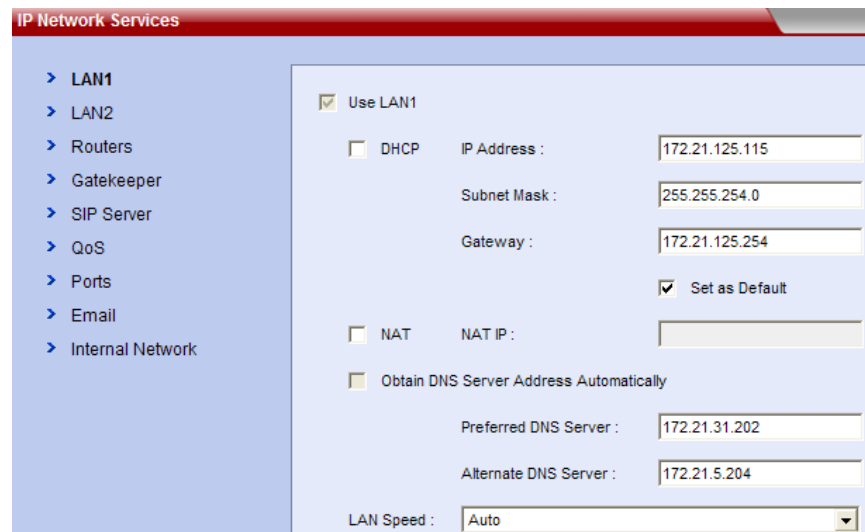
- 1 In the Web browser, enter <http://<RMX IP address>> in the address bar, and then press Enter.
- 2 On the Login interface, enter the default User Name (**POLYCOM**) and Password (**POLYCOM**). Click **Login**.

- 3 The Product Activation dialog box is displayed. Fill the activation key obtained previously from *Get* the product activation key. Enter the product activation Key. Click **Save**. Click **Close**.
- 4 The system displays a message asking whether to restart the system or not. At the prompt, select **Restart Now**.
- 5 After the system restarts, go to Administration->License Information interface in the Web configuration interface to view the activated functions. For the activated functions,  is displayed, or else  is displayed.

Modify the default IP address.

After accessing the RMX Web configuration interface, you can modify the default IP address for the system based on the settings of your local network.

- 1 Click the "IP Network Services" configuration item in the "RMX Management" pane.
- 2 In the "IP Network Services" configuration pane, double-click or right-click "LAN 1->Properties".
- 3 In the LAN1 Properties interface, set the IP address obtained from the network administrator, and configure the system on your local network.



IP Network Services – LAN Port Setting

LAN Port Setting Parameters

Parameter	Description
<i>Use LAN1</i>	Enables/disables the network port.
<i>DHCP</i>	<p>If the user network is configured with a DHCP (Dynamic Host Configuration Protocol) server, select this option to automatically obtain the IP address.</p> <p>Deselect this option to use a static IP address, in which case you must configure the following options.</p> <ul style="list-style-type: none"> - IP Address - Subnet Mask - Gateway

Parameter	Description
<i>IP Address</i>	Set the IP address for this network port.
<i>Subnet Mask</i>	Set the Subnet Mask for this network port.
<i>Gateway</i>	Set the gateway address of this port. If Set as Default is selected and no matched static routes are found, the system packets will be transmitted via this gateway by default. In this case, a default route is displayed in the list of Advanced Setting -> Routers page. For details, see <i>Routers</i> .
<i>NAT</i>	The Network Address Translation (NAT) function of the system enables you to translate the private network IP address of packet into a public network IP address before transmission. To enable NAT, select this check box and then set the public network IP address to be displayed to the outside in the NAT IP field.
<i>Obtain DNS Server Address Automatically</i>	Used in combination with the DHCP option. When the DHCP check box is selected, this option allows you to obtain the DNS server address automatically from a DHCP server in the network.
<i>Preferred/Alternate DNS Server</i>	If you did not select the option for automatic DNS address discovery, you must enter the preferred/alternate DNS server addresses here for the system to resolve domain names.
<i>LAN Speed</i>	Set the speed/duplex modes for LAN ports. The system supports the 10/100M Full Duplex or Half Duplex mode and the 1000M Network mode. You can also select Auto to use auto-negotiation. Note: Contact the network administrator before setting "LAN Speed" to ensure that the link rate of switch is matched with the MCU port.

Configuring Other Network Options (Optional)

You can configure other network parameters according to the following procedure:

- 1 Click the "IP Network Services" configuration item in the "RMX Management" pane.
- 2 In the "IP Network Services" configuration pane, double-click or right-click "LAN 1->Properties".
- 3 Click the "Routers" tab, and set the routing table information according to the network topology.

Router IP Address	Remote IP Address	Subnet Mask
172.21.125.254	0.0.0.0	0.0.0.0

IP Network Services – Routers Settings

Routers Setting

Parameter	Description
<i>Router IP Address</i>	Set the IP address for router that is originating the packet transmission.
<i>Remote IP Address</i>	Set the target network address for packet transmission.
<i>Subnet Mask</i>	Set the subnet mask for the target network.

- 4 If your IP network type is SIP only, go to Step 7.
- 5 To register the system to the gatekeeper, click the "Gatekeeper" tab, and configure related parameters in accordance with the table below:

IP Network Services – Gatekeeper Setting

Gatekeeper Setting

Parameter	Description
<i>IP Network Type</i>	<p>Set the IP network type for the RMX system to make a call. You need to set it based on the call type used for the participant's endpoint. It can be set to:</p> <ul style="list-style-type: none"> • H.323: Only the H.323 call is supported. • SIP: Only the SIP call is supported. • H.323 & SIP: The H.323 call and SIP call are supported at the same time. <p>Settings of the gatekeeper-related parameters are available only when the H.323-supporting network type is selected.</p>
<i>Registered Gatekeeper</i>	Set whether or not to register with the gatekeeper. You must check this option to set the parameters that follow.
<i>Primary (or Alternate) Gatekeeper</i>	Indicate whether or not the system is registered with the primary or alternate gatekeeper.
<i>IP Address for the Gatekeeper</i>	Set the IP address for the primary or alternate gatekeeper.
<i>Port Number for the Gatekeeper</i>	The port number for the primary or alternate gatekeeper.
<i>System prefix/E164.</i>	Set the E.164 number for the system.
<i>H.323Alias</i>	Set the H.323 alias for the system.

- 6 If your IP network type is H.323 only, go to Step 8.
- 7 To configure the SIP server, click the "SIP Server" tab, and configure related parameters in accordance with the table below:

The screenshot displays the 'IP Network Services' configuration interface. On the left is a navigation tree with 'SIP Server' selected. The main area shows the following configuration:

- IP Network Type:** H.323
- Transport Type:** UDP
- Register to Server**
- Primary Server:**
 - Status: **Registration Failed**
 - Server Address: 172.21.102.100
 - Server Port: 5060
 - Server Domain Name: 172.21.102.100
- Alternate Server:**
 - Status: **Unregistered**
 - Server Address: (empty)
 - Server Port: 5060
 - Server Domain Name: (empty)
- User Name:** 3439
- Password:** (masked with dots)
- Outbound Proxy Server:**
 - Server IP Address: (empty)
 - Server Port: 0

IP Network Services – SIP Server Setting

Configuration of SIP Server Parameters

Parameter	Description
<i>IP Network Type</i>	<p>Set the IP network type for the RMX system to make a call. You need to set it based on the call type used for the participant's endpoint. It can be set to:</p> <ul style="list-style-type: none"> • H.323: Only the H.323 call is supported. • SIP: Only the SIP call is supported. • H.323 & SIP: The H.323 call and SIP call are supported at the same time. <p>Settings of the SIP server-related parameters are available only when the STP-supporting network type is selected.</p>
<i>Transmission Type</i>	<p>Set the transport layer protocol used for communicating with the SIP server. It needs to be consistent with the protocol supported by the SIP server.</p>
<i>Registration with the server</i>	<p>Specifies whether to register RMX to the specified SIP server. You need to set the SIP server-related parameters after this function is enabled.</p>
<i>Preferred/Alternate Server</i>	<p>Displays the registration status of the SIP server. When registration of the preferred server fails, the alternate server will function as the current in-use SIP server.</p>
<i>Server IP Address</i>	<p>Provides the IP address of the SIP server for registration service.</p>
<i>Server Port</i>	<p>Provides the connection port of SIP server for registration service.</p>
<i>Server Domain Name</i>	<p>Provides the domain name of the SIP server for registration service.</p>
<i>User Name</i>	<p>Displays the User name provided by the SIP server for the registered user.</p>
<i>Password</i>	<p>Displays the Password matched to the user name.</p>
<i>Outbound Proxy Server</i>	<p>For communication with the SIP server when the RMX system is configured on the internal network, an outbound proxy server is required to implement traversal of the firewall/NAT. In this case, you need to set the IP address and port number for the outbound proxy server.</p>

- 8 Click the "OK" button to complete the configuration.

For more network service configuration information, see *IP Network Services*.

Synchronizing System Time

Before holding a conference using the RMX system, you need to first synchronize the system time to ensure that the conference scheduling time is consistent with your local time.

- 1 In the Web configuration interface, click "Settings -> RMX Time" to go to the system time configuration interface.



RMX Time Configuration Interface

- 2 Select a time synchronization mode:
 - Select the "Manually Synchronize Device Time with a Time Server" option to synchronize the system time with a network time server. In this case, enter the IP address or domain name for the time server in the "Time Server" field.
 - Select the "Manually Synchronize Device Time with a PC" option to synchronize the system time with your computer that is connected to the system.
- 3 Click the Synchronize button to proceed with the synchronization. Then, click "Close".

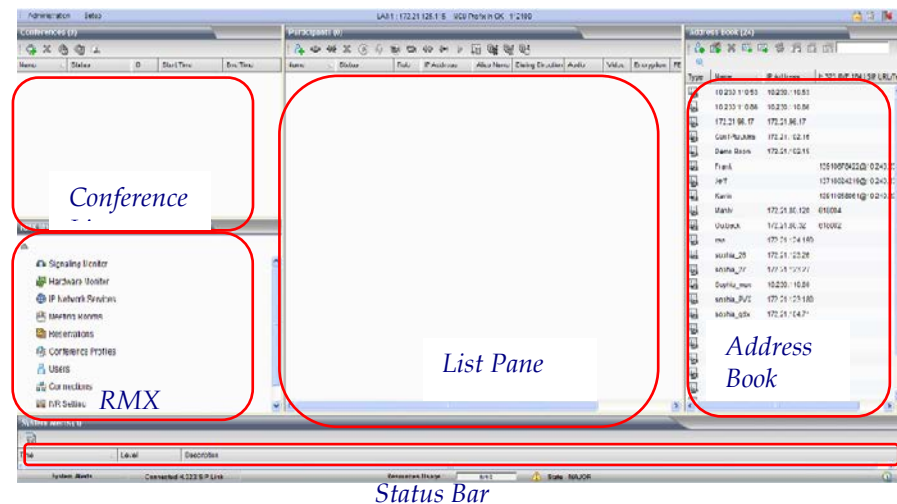
Basic Operation

This chapter introduces the Web UI components of the RMX and common operations, and how to start a simple conference. The goal of this chapter is to provide a quick guide on how to start a conference with minimal effort.

RMX Screen Components

The Web configuration homepage of the RMX consists of five panes:

- Conference List
- RMX Management
- List Pane
- Address Book
- Status Bar



Layout of the Web Interface

User Rights

You can log into the Web interface as a conference chairperson, an operator, or an administrator.



RMX can support up to 20 users logged into the Web UI at the same time.

The table below shows the operation abilities of users at different levels when accessing the Web interface of the RMX.

List of User Rights

	View		
	Chairperson	Operator	Administrator
Conference List	√	√	√
List Pane	√	√	√
Address Book	√	√	√
Status Bar		√	√
RMX Management Pane		√	√
Conference Alert		√	√
Conference Status		√	√
Configuration Interface		√	√
System Operations			
	Chairperson	Operator	Administrator
Start Conference	√	√	√
Monitor Conference	√	√	√
Monitor Participant	√	√	√
Solve Basic Problems		√	√
Modify System Configurations			√



The administrator has all operation rights to the Web interface. Unless otherwise specified, this guide describes the interface operations of an administrator.

Pane Layout

Conference List

The Conferences list pane shows all the conferences running on the current system and their relevant information, including status, ID, start time and end time. Here you can create, delete, lock, and unlock conferences, and view the detailed parameters of conferences. The title bar of the pane indicates the numbers of the ongoing conferences.

If you log in as the chairperson, the pane shows the conferences with no conference chairperson password. To view the conferences for which a chairperson password is set, enter the password in the Chairperson Password box.

RMX Management

The RMX Management pane lists the menu options for conference configuration, in addition to system maintenance and management. Only users at administrator or operator levels can configure the menu options. After an item is selected in the RMX Management pane, the corresponding configuration items will be displayed in the List pane.

List Pane

The List Pane displays a list of the participants of the ongoing conference by default. When you click a menu item in the RMX Management pane, the List Pane displays the related parameter list. You can view all the property parameters and make specific configurations. The panel title varies with the selected option.

Status Bar

Located at the bottom of the Web interface, the status bar shows the system alert information, H.323 link status, resources usage, MCU status and history.

- System Alerts

If there are problems with the system, this indication bar turns red until all the problems are solved.

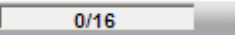
Click System Alerts on the left part of the Status Bar to display the system alert pane. For more information about System Alerts, see *System Alerts*.

- H.323 Link Status

This indication bar shows in real time the endpoints connected with the system and relevant information. When an endpoint is connected to the system, "H.323/SIP H.323 Link" on the status bar is highlighted in red. Click this control to open the H.323 link status pane. For more information about H.323 links, see *H.323 Link*.

- Resources Usage

This indication bar shows the number of resources utilized in the system and the number of resources available in the system.


For example, "**Resources Usage :** " indicates that 16 resources are available and none of them are in use. For more information, refer to *Resources Usage*.

- MCU State

The following explains the information displayed in the MCU State area:

- The MCU is functioning normally.
- State: MINOR - The system has a MINOR problem but keeps working.
- The MCU has a MAJOR problem. MCU behavior could be affected and attention is required.

- History

When a multi-screen conference is held and you invite a participant to join a video stream which is not suitable for him/her, the participant's endpoint will be assigned to other appropriate video streams and relevant information will be recorded in History. Click  to view the history.


Address Book

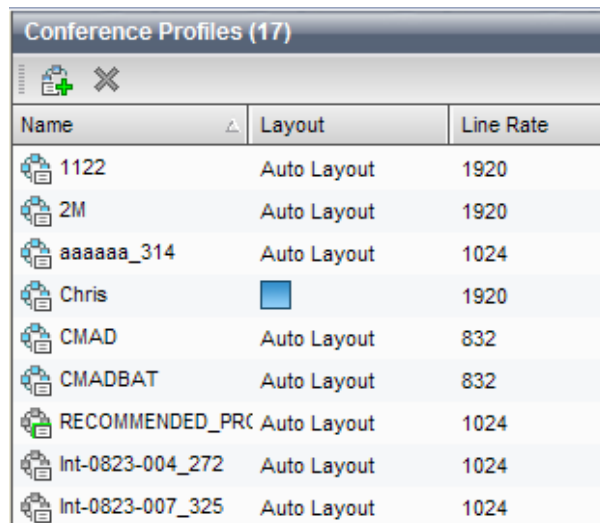
The Address Book shows the participant information set on RMX and the device information stored on the directory server when RMX registered the directory server. It enables users to easily add participants set in the address book to the conference. Here a user can create and delete participants or groups, import and export the address book, etc. For more information about the address book, see *Address Book*.

Common Operations

List Sorting

All the list items (such as the conference list, participant list and address book list) on the Web interface can be sorted by parameter properties.

Click the related column header in the list. When a small triangle  appears, you can sort the list in the ascending order. After a list is sorted by a column header in ascending or descending order, you can click the column header again to sort it in opposite order.



Name	Layout	Line Rate
1122	Auto Layout	1920
2M	Auto Layout	1920
aaaaaa_314	Auto Layout	1024
Chris		1920
CMAD	Auto Layout	832
CMADBAT	Auto Layout	832
RECOMMENDED_PRC	Auto Layout	1024
Int-0823-004_272	Auto Layout	1024
Int-0823-007_325	Auto Layout	1024

List Sorting

Right-click Shortcut Menu

The Web interface provides right-click shortcut menus for common operations such as viewing detailed parameters, creating/deleting items. Alternatively, you can perform these operations by double-clicking the corresponding list items or by using the corresponding buttons on the toolbar of the pane.

Pane Sizing

Move the mouse pointer to the border of the pane; when the pointer turns into an arrow, drag to size the pane while holding down the left mouse button.

Confirm/Cancel

To confirm your settings on the parameter configuration interface, click the OK button in the lower part of the interface. To abort your settings, click the Cancel button.

Shortcut Windows Operations

To enable the user to easily operate RMX, the system supports some Windows shortcut keys.

- After you select a target from the conference list, participant list, address book list or another list, you can delete the target by pressing the "Delete" key.
- You can perform standard batch-processing operations by pressing "Ctrl + targets" or "Shift + targets".

Starting a Conference


There are several ways to start a conference with the RMX:

- Create an instant conference through the conference list pane of the Web interface.
- Directly start a conference through the remote control from the video endpoint.
- Dial into a meeting room. A meeting room is a conference that is saved in the MCU, without occupying any resources. It remains in passive mode until it is activated by the first participant. For more information about Meeting Rooms, see *Meeting Rooms*.
- Reserve a conference: The reserved conference is stored at the MCU and reserves system resources for the call's specified time. The system automatically convenes the conference according to the reservation time. For more information about conference reservation, see *Reservations*.

This section describes how to create a conference instantly through the Conferences pane and remote control. These two conference modes can be established only when the required system resources are available. They will be deleted right after their completion to maximize system resources. A user can view the current available resources in the system through the "Resource Report" page of Web interface so as to better schedule conferences. For details, see *Resources*.

Starting a Conference from the Conferences Pane


To start a conference from the Conferences pane:

- 1 Click the  button in the Conferences pane to display the "New Conference - General" interface.

The New Conference page displays the default conference name, duration, profile of conference parameters, and the conference ID automatically allocated by the system. These options are configurable, but none of these settings need to be modified to start a conference.

The conference chairperson or organizer should inform other participants of the conference ID used for the conference, so that they can dial in.

If required, you can also set the basic conference parameters for a conference based on real situations. For example, you can set participants to be invited to a conference, and you can also set recording servers or configure multicasting conference videos for computers within a LAN. For detailed configurations, see descriptions in *Creating a Meeting Room*.

- 2 After completing the setup, click OK. After that, the conference list shows that the new conference is running. If no participant is specified for the conference, the status is displayed as  Empty, until a participant dials in to the conference.

Use the Remote Control to Create a Conference – Conference on Demand

Through the remote control a user can enter the call character string that contains the conference ID, and directly start a new conference. The dialing

rule varies, depending on the user's endpoint type, whether the conference password and chairman password need to be created, and whether other participants will be invited.

H.323 Endpoint

For an H.323 endpoint, if the endpoint has been registered to the same gatekeeper as RMX, the dial-in number consists of the E.164 prefix of RMX and conference information, such as the conference ID, conference password, chairperson password and participant address, in the form below:

<RMX E.164 prefix>[Conference ID][##Conference password][##Chairperson password][*participant's E.164 prefix]

Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

For example:

RMX E.164 prefix: 925

ID of the conference to be created: 1001

The table below shows the strings dialed by the endpoint under different scenarios:

H.323 Endpoint's Dial-in Numbers – Registered to a Gatekeeper

Scenario	Dial-in String
Create this conference	9251001
Create this conference and set: Conference password: 1111 Chairperson password: 2222	9251001##1111##2222
Create this conference and invite: Participant 1 - E.164/TEL URI: 123 Participant 2 - E.164/TEL URI: 321	9251001*123*321
Create this conference, set the above passwords, and invite participants	9251001##1111##2222*123*321

If the gatekeeper is not configured on the network, the format of the dial-in string is as follows:

<RMX IP address>[##<Conference ID>][##Conference password][##Chairperson password][*participant's IP address]

Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

For example:

RMX IP address: 172.22.30.40

ID of the conference to be created: 1001

The table below shows the strings dialed by the endpoint under different scenarios:

Endpoint's Dial-in Numbers – Not Registered to a Gatekeeper

Scenario	Dial-in String
Create this conference	172.22.30.40##1001
Create this conference and set: Conference password: 1111 Chairperson password: 2222	172.22.30.40##1001##1111##2222
Create this conference and invite: Participant 1 - IP address: 172.22.30.1 Participant 2 - IP address: 172.22.30.2	172.22.30.40##1001*172.22.30.1*172.22.30.2
Create this conference, set the above passwords, and invite above participants	172.22.30.40##1001##1111##2222*172.22.30.1*172.22.30.2

SIP Endpoint

For an SIP endpoint, if the endpoint has been registered to the same SIP server as RMX, its dial-in number consists of the static route domain name of RMX and conference information (such as the conference ID, conference password, chairperson password and participant address) in the form below:

[Conference ID][\$\$Conference password][\$\$Chairperson password][*Participant's TEL URI/SIP URI]@<RMX's static route domain name>

Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

For example:

RMX static route domain name: polycom.com

ID of the conference to be created: 1001

The table below shows the strings dialed by the endpoint under different scenarios:

SIP Endpoint's Dial-in Numbers – Registered to a Server

Scenario	Dial-in String
Create this conference	1001@polycom.com
Create this conference and set: Conference password: 1111 Chairperson password: 2222	1001\$\$1111\$\$2222@polycom.com
Create this conference and invite: Participant 1 - TEL URI/E.164: 123 Participant 2 - TEL URI/E.164: 321	1001*123*321@polycom.com
Create this conference, set the above passwords, and invite above participants	1001\$\$1111\$\$2222*123*321@polycom.com

If the SIP server is not configured on the network, the format of dial-in string is as follows:

[Conference ID][\$\$Conference password][\$\$Chairperson password][*Participant's IP address or FQDN]<RMX IP address>

Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

For example:

RMX IP address: 172.22.30.40

ID of the conference to be created: 1001

The table below shows the strings dialed by the endpoint under different scenarios:

SIP Endpoint's Dial-in Numbers – Not Registered to a Server

Scenario	Dial-in String
Create this conference	1001@172.22.30.40
Create this conference and set: Conference password: 1111 Chairperson password: 2222	1001\$\$1111\$\$2222@172.22.30.40
Create this conference and invite: Participant 1 - IP address: 172.22.30.1 Participant 2 - IP address: 172.22.30.2	1001*172.22.30.1*172.22.30.2@ 172.22.30.40
Create this conference, set the above passwords and invite above participants	1001\$\$1111\$\$2222*172.22.30.1*172.22.30.2 @172.22.30.40

Calling between the H.323 Endpoint and the SIP Endpoint

The RMX system can act as a gatekeeper and invite an SIP endpoint from the H.323 endpoint, or an H.323 endpoint from the SIP endpoint when a conference is created.

If no GK or SIP servers are configured in a network, you can invite dial-in numbers for endpoints of different IP types, just like you do for those of identical IP types. For detailed information on dial-in numbers, see the previous section.

If RMX and endpoints are registered to a GK or SIP server, the formats for dial-in numbers are as follows:

Dial-in Numbers in Gateway Mode

Dialing Direction	Dial-in Numbers
H.323->SIP	<RMX E.164 prefix>[Conference ID][##Conference password][##Chairperson password]<* SIP endpoint's TEL URI> Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

Dialing Direction	Dial-in Numbers
	<p>Note: When an H.323 conference creator wants to invite an SIP participant, if the H.323 endpoint has been registered to the same gatekeeper as RMX, the SIP endpoint must also be registered to the same SIP server as RMX and have a numeric URI registered at the server.</p>
SIP->H.323	<p>[Conference ID][Conference password][Chairperson password]* H.323 endpoint E.164 prefix>@<RMX static route domain name></p> <p>Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.</p> <p>Note: When an SIP conference creator wants to invite an H.323 participant, if the SIP endpoint has been registered to the same SIP server as RMX, the H.323 endpoint must also be registered to the same gatekeeper as RMX.</p>

In RMX's gateway mode applications, a user can create a point-to-point call like conference between an H.323 participant and an SIP participant:

- 1 In the default conference profile settings, select the "Automatically ends the conference when last participant remains" option, with the idle time set to 0. For more information on conference profiles, see *Defining a Conference Profile*.
- 2 Dial-in number: **[RMX prefix]*[Another participant's E.164 or SIP URI]**

If this method is used and one participant disconnects from the conference, the other one will be automatically disconnected too, just like ordinary phone calls.



- The conference ID is not required. If only RMX's E.164 prefix or IP followed by * and participant's E.164/SIP URI/IP is called, a conference with a random ID will be created.
- The conference ID the user enters for creating a new conference must be unique - different from existing conference IDs.
- If only one password is entered, it will be defined as a chairperson password. In this case, there won't be a conference password and the user will receive the chairperson abilities.
- The conference password and chairperson password must be different. If a user enters the same password for both, the call will be rejected.

Connecting to a Conference – Dialing Methods

To connect an endpoint to the ongoing conference or meeting room, you can use one of the dialing methods below:

- Use the remote control to dial the IP address of the RMX system. If the system is registered to a gatekeeper or SIP server, dial the E.164 prefix or SIP URL to connect to the system, and then enter your conference ID and password to join a conference as prompted.
- Use the remote control to dial directly into the conference. For details, see the content below. In this way, the user must obtain the conference ID

and password if the conference password or chairperson password is set first. For more information, see the following sections.

H.323 Endpoint

For an H.323 endpoint, if the endpoint has been registered to the same gatekeeper as RMX, the dial-in number consists of the E.164 prefix of RMX and conference ID. If the conference to be dialed in is set with a password, you need to add "##Conference password or chairperson password".

For example:

RMX E.164 prefix: 925

ID of the conference to be dialed in: 1001

Then, the endpoint dials 9251001

If the conference to be dialed in is set with the conference password 1111 and chairperson password 2222

Then, the regular participant dials 9251001##1111

The conference chairperson dials 9251001##2222

If the gatekeeper is not configured on the network, the dial-in string consists of the IP address of RMX and conference ID, separated with ##. If the conference to be dialed in is set with a password, you need to add "##Conference password or chairperson password".

For example:

RMX IP address: 172.22.30.40

ID of the conference to be dialed in: 1001

Then, the endpoint dials 172.22.30.40##1001

If the conference to be dialed in is set with the conference password 1111 and chairperson password 2222

Then, the regular participant dials 172.22.30.40##1001##1111

The conference chairperson dials 172.22.30.40##1001##2222

SIP Endpoint

For the SIP endpoint, you can use the remote control to directly dial into the conference only when RMX and the endpoint are registered to the same SIP server. If the endpoint is registered to another SIP server, you can only first call RMX's SIP URL to set up a connection, and then access the conference by entering the conference ID as prompted. The dial-in number of SIP endpoint consists of the static route domain name of RMX and conference ID in the form below:

Conference ID [##Conference password or chairperson password]@RMX static route domain name

Here, the character within the [] symbols are optional. It needs to be entered when the conference is set with a conference password or chairperson password.

For example:

RMX static route domain name: polycom.com

ID of the conference to be dialed in: 1001

Then, the endpoint dials 1001@ polycom.com

If the conference to be dialed in is set with the conference password 1111 and chairperson password 2222

Then, the regular user dials 1001\$\$1111@ polycom.com

The conference chairperson dials 1001\$\$2222@ polycom.com

If RMX is not registered to an SIP server, the dial-in number consists of RMX's IP address or FQDN and conference ID in the form below:

Conference ID [\$\$Conference password or chairperson password]@RMX IP address or FQDN

Here, the character in [] is optional. It needs to be entered when the conference is set with a conference password or chairperson password.

For example:

RMX IP address: 172.22.30.40

ID of the conference to be dialed in: 1001

Then, the endpoint dials 1001@172.22.30.40

If the conference to be dialed in is set with the conference password 1111 and chairperson password 2222

Then, the regular user dials 1001\$\$1111@172.22.30.40

The conference chairperson dials 1001\$\$2222@172.22.30.40



If the conference ID the user entered that does not exist, RMX will create a new conference with this conference ID. For more information, see *Use the Remote Control to Create a Conference*.

Conference Profiles

A conference profile is used to pre-define the basic parameters for conference scheduling, such as the bandwidth, encryption, and video quality. All conferences will be created on the basis of conference profiles. By saving conference profiles on the RMX 1000, users can conveniently and rapidly schedule new conferences without performing repeated configurations. The following parameters generally decide the video conference quality:

- Bit Rate - The transmission rate of the audio and video streams. The higher this value is, the better the displayed video quality.
- Video Protocol, Video Format and Frame Rate - These parameters define the quality of the video picture. When an endpoint is connected to the conference, it will select a video capability based on the video parameters set for the conference. For example, if the video protocol for the conference is H.264, an endpoint that supports the H.264 protocol will select H.264 for video-coding when it connects to this conference.

The following features are commonly used to define a conference:

- H.239 Dual-stream - An H. 239 compliant endpoint can simultaneously send and receive two channels of conference video streams: dynamic conference video and computer screen contents.
- Encryption - The system provides AES 128-based multimedia encryption to strengthen conference security.

To set a conference profile, click "Conference Profiles" in the RMX Management pane. The list pane shows the profiles saved on the current device and their summaries.

Chapter 4 - Conference Profiles

Conferences (1)

Name	Status	ID	Start Time	End Time
C2011082	Empty	1294	2011-08-24 12:23:00	2011-08-24 20:23

Conference Profiles (17)

Name	Layout	Line Rate	Encryption
1122	Auto Layout	1920	NO
2M	Auto Layout	1920	NO
aaaaaa_314	Auto Layout	1024	NO
Chris		1920	NO
CMAD	Auto Layout	832	NO
CMADBAT	Auto Layout	832	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
Int-0823-004_272	Auto Layout	1024	NO
Int-0823-007_325	Auto Layout	1024	NO
RECOMMENDED_PRC	Auto Layout	1536	NO
RECOMMENDED_PRC	Auto Layout	1536	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
RECOMMENDED_PRC	Auto Layout	1024	NO
test1_653	Auto Layout	1024	NO

RMX Management

- Signaling Monitor
- Hardware Monitor
- IP Network Services
- Meeting Rooms
- Reservations
- Conference Profiles**
- Users
- Connections
- IVR Setting

Conference Profile List

RMX is provided with default built-in conference profiles so that users can create conferences easily.

The default built-in profile parameters for RMX 500 Rev A are as follows:

Default Conference Profiles – RMX 500 Rev A


Profile Name	Video stream 1	Video stream 2
720P_832_SD_768	H.264 720p, 832, 25/30	H.264, 4CIF/4SIF, 16:9 768, 25/30
SD_4:3_768_SD_512	H.264, 4CIF/4SIF, 4:3, 768, 25/30	H.264, 4CIF/4SIF, 16:9, 512, 25/30
SD_SD16:9_768	H.264, 4CIF/4SIF, 16:9, 768, 25/30	H.264, 4CIF/4SIF, 16:9, 384, 25/30
SD_16:9_512CIF_512	H.264, 4CIF/4SIF, 16:9, 512, 25/30	H.264, CIF/SIF, 512, 25/30

The default built-in profile parameters for RMX 500 Rev B, RMX 1000 Rev A and RMX 1000 Rev C are as follows:

Default Conference Profiles – RMX 500 Rev B/RMX 1000 Rev A/RMX 1000 Rev C

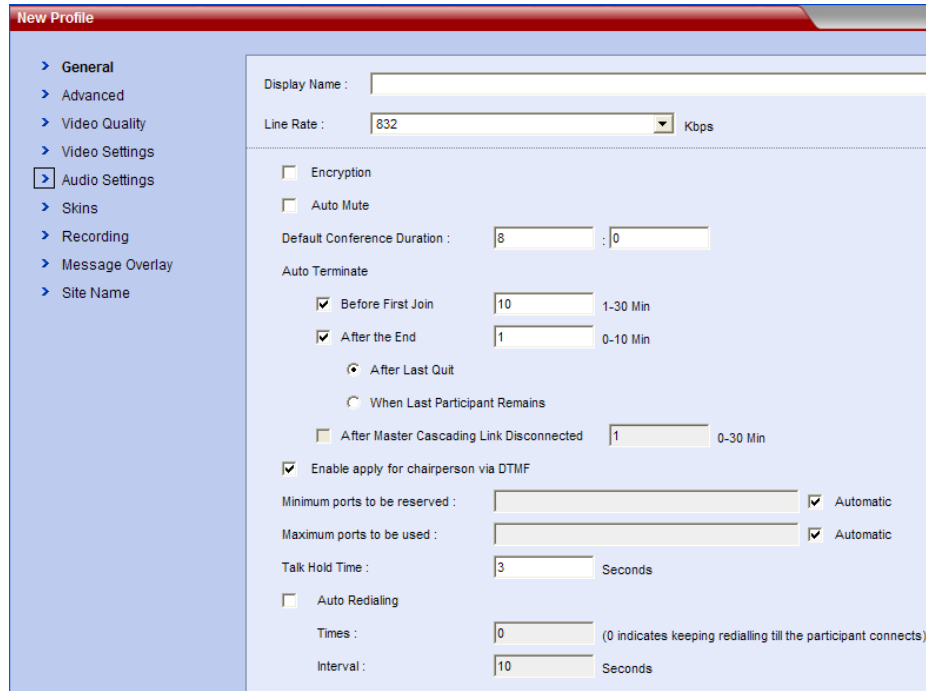
Profile Name	Video stream 1	Video stream 2	Video stream 3	Video stream 4
1080P_1728_720P_1M	H.264 1080p, 1728, 25/30FPS	H.264 720p, 1M, 25/30FPS	H.264 CIF/SIF, 512, 25/30 FPS	H.263 CIF/SIF, 384, 25/30
720P_832_SD_768	H.264 720p, 832, 25/30	H.264, 4CIF/4SIF 16:9, 768, 25/30	H.264 CIF/SIF, 512, 25/30	H.263 CIF/SIF, 384, 25/30
SD_4:3_768_SD_512	H.264, 4CIF/4SIF, 4:3, 768, 25/30	H.264, 4CIF/4SIF, 16:9, 512, 25/30	H.264 CIF/SIF, 384, 25/30	H.263 CIF/SIF, 256, 25/30
SD_SD16:9_768	H.264, 4CIF/4SIF, 16:9, 768, 25/30	H.264, 4CIF/4SIF, 16:9, 384, 25/30	H.264 CIF/SIF, 384, 25/30	H.263 CIF/SIF, 256, 25/30
SD_16:9_512CIF_512	H.264, 4CIF/4SIF, 16:9, 512, 25/30	H.264, CIF/SIF, 512, 25/30	H.264, CIF/SIF, 384	H.263 CIF/SIF, 384, 25/30

Defining a Conference Profile

To create a conference profile, click the  button in the Conference Profile list pane, or right-click in the blank area in the pane, and then click "New Conference Profile". The New Profile interface appears. The system fills in

default settings. For basic operations, you only need to define the display name of the profile. To configure parameters, see the description below.

The New Profile Interface



General Settings

On the "New Profile" page, click the "General" tab to display the interface for configuring general parameters. The table below explains the detailed meanings of these parameters.

General Parameters

Parameter	Description
<i>Name</i>	Enter a unique name to identify this profile. Note: This is the only mandatory parameter when you create a new profile.
<i>Line rate</i>	Select the conference line rate. Line rate indicates the rate that integrates video, audio, and data contents.
<i>Encryption</i>	Set whether to enable the AES encryption function for this profile.
<i>Automatic mute</i>	If this check box is selected, after an endpoint dials into the conference, the RMX will automatically mute it.
<i>Default conference duration</i>	Enter the default duration for a held conference in the format of "H:M". The conference duration cannot exceed 24 hours.

Parameter	Description
<i>Automatic termination</i>	<p>If this check box is selected, the system will automatically terminate the conference when any of the following conditions is satisfied:</p> <ul style="list-style-type: none"> • Before First Join - No participant joined within the predefined period since the conference started. The default idle time is 10 minutes. • After Last Quit - All participants have left the conference, and the idle period has reached the predefined time. The default idle time is 1 minute. • When Last Participant Remains - Only one participant remained in the conference, and that period has reached the predefined time. The default idle time is 1 minute. • After the top-level cascading points disconnect – When a cascading conference is held and when the upper layer devices have disconnected the conference for a predefined period of time. The default time is 1 minute. Only available when devices are cascaded.
<i>Permission to apply for chairperson via DTMF</i>	<p>This check box is selected by default, allowing a participant to apply for the chairperson by pressing the DTMF key on the remote control during the conference. For details, see <i>To request the chairperson</i>. The conference chairperson has more privileges, and is able to control the conference through the Personal Conference Manager (PCM) menu.</p>
<i>Minimum number of reserved resources</i>	<p>"Auto" is selected by default, indicating that the system will decide the number of allowed video participants according to the number of actual idle resources when the conference is created. When "Auto" is deselected, you can specify the minimum number of video participants so that the system can reserve the appropriate resources for this conference when it is being held.</p>
<i>Maximum number of available resources</i>	<p>"Auto" is selected by default, indicating that the system will decide the number of allowed video participants according to the number of actual idle resources when the conference is created. When "Auto" is deselected, you can set the maximum number of video participants. You can add the maximum number of video participants set here when you hold a conference using this template.</p>
<i>Talk hold time</i>	<p>When the period a participant speaking reaches the predefined time, this participant will become the speech giver. Under different video modes, the speaker's image may be displayed in full screens on other participants' screens or switched to the largest window in the multi-screen layout.</p>
<i>Automatic re-invitation</i>	<p>When this function is enabled and a conference is running, the system will automatically invite the endpoint that drops off accidentally to re-join the conference. When this option is selected, you need to set the automatic invitation interval and re-invitation times. If the number of re-invitations is set to 0, it means that the re-invitation status will be kept before a participant is connected successfully.</p>

Advanced

To set the Advanced option for a conference, click the Advanced tab. The table below explains the detailed meanings of these parameters.

Parameter Description of Advanced Options

Parameter	Description
<i>Lost Packet Recovery</i>	<p>Lost Packet Recovery (LPR) is an algorithm designed to protect IP video calls against the impact of network packet loss. This option is enabled by default. In case of packet loss during network transmission, if the endpoint also supports and has packet recovery function enabled, the packet recovery mechanism will be automatically activated. This function can effectively improve the decreased video quality caused by packet loss.</p>
<i>Enable I Frame Suppression</i>	<p>In the event of severe packet loss, the endpoint will frequently send I frame requests to MCU and this will affect the conference's graphic effects. When the I frame suppression function is enabled, MCU's I frame response to the endpoint can be reduced. To enable this option, you need to enter the I frame suppression interval, that is, how often MCU responds to an I frame request.</p>
<i>People video adjustment</i>	<p>When an endpoint's setup sends video-source resolution that does not match the resolution for conference multi-screen panes, the method used to display video graphics in panes:</p> <ul style="list-style-type: none"> • None: keep the screen width/height ratio for a source video. The video will be adjusted without cropping to the maximum supportable resolution suitable for a pane if necessary. Any remaining space between the video and the pane is filled with black. • Zoom: keep the screen width/height ratio for a source video. The image will be adjusted to accurately match one of the orientations of the pane dimension, and at the same time match or exceed another orientation of the pane dimension. The image will be centered by way of cropping.
<i>Allows you to configure an endpoint from the conference list to automatically join a conference from the lobby</i>	<p>When this option is enabled and an endpoint is being dialed into the lobby, the endpoint will join a conference automatically if it has been defined in the invited participant list of the active conference.</p> <p>Instruction: if an endpoint is defined in the invitation list of multiple currently running conferences at a time, the system will add the endpoint to the earliest held conference based on the conference creation time.</p>
<i>Cascading mode</i>	<p>This option can only be used to set the master-slave strategy for cascading devices when multiple RMX devices are cascaded.</p> <ul style="list-style-type: none"> • Root cascading: this option can be selected only if a device is in the uppermost position of cascaded topology. When this option is enabled, conferences using this profile can appoint dual stream senders when they are held. For more information, see <i>Specify the Dual Stream Sender in a Cascading Conference</i> . • Slave cascading: this option can be selected only if a device is in the slave position of cascaded topology. This function is used to enhance the video quality received by slave devices during cascading. When this option is enabled, a conference held on the slave device will be automatically set to Lecture mode, with the master device being set as the lecturer so that the slave device can send video from the conference endpoints or receive video from the master device side.

Parameter	Description
<i>4CIF/4SIF 16 multi-screen mode (RMX 500 Rev A/RMX 1000 Rev A only)</i>	By default, the system-held 4CIF/4SIF conference supports up to 8 multi-screen windows. When this option is enabled, the 4CIF/4SIF conference can support up to 16 multi-screen windows. However, the system-held 4CIF/4SIF conferences will be reduced half in number.
<i>Display the lecturer's conference name (RMX 500 Rev B/RMX 1000 Rev C only)</i>	When this option is enabled, the lecturer's conference name can be displayed at endpoints which are on the same video stream channel as the lecturer, but an extra video resource will be occupied when a 1080p, 720p or CIF conference is held. Note: this function is not supported when a 1080P multi-screen conference is held on RMX 500 Rev B.

Video Quality

To set the video quality parameters for the conference, click the "Video Quality" tab. A user can adjust the quality parameters of the site image during the conference, or define the quality parameters of the second channel video when sharing the dual-stream contents.

Defining People Video Quality

Depending on the user's selection in "People Video Definition", the profile can be defined as two types of conference modes: the multi-screen conference and the video switching conference:

Multi-screen conference

The endpoint screen can spontaneously display the images of multiple sites. A user can also choose a preferred multi-screen layout. However, this mode occupies more MCU video resources. When a multi-screen conference is held, the system codes/decodes several channels of video streams with different capabilities, and exports the video with quality at several grades. RMX 500 Rev A supports two channels of video streams, whereas RMX 500 Rev B, RMX 1000 Rev A, and RMX 1000 Rev C support four channels of video streams. When an endpoint joins the conference, the system will, in accordance with the various channels of video stream parameters, the video protocol, bandwidth, resolution and frame rate, defined by the user, appoint the endpoint to a video stream channel which can match the endpoint's highest capability, so as to optimize the conference video output. The endpoint will access the conference in the pure audio mode when its maximum capability is lower than the parameters defined for all the video streams.

The maximum number of multi-screen conferences for RMX 500 Rev A and RMX 1000 Rev A depends on the resolutions and frame rates for video stream 1 and 2 of those conferences. The following table displays the maximum number of multi-screen conferences supported by RMX 500 Rev B and RMX 1000 Rev C. In the following table, "-" can represent any optional value.

Chapter 4 - Conference Profiles

Conference video parameters and maximum number of multi-screen conferences - RMX 500 Rev A/RMX 1000 Rev A

Video Parameter			Maximum number of multi-screen conferences	
Video Stream 1 Resolution	Video Stream 2 Resolution	Frame Rate	RMX 500-Rev A	RMX 1000-Rev A
1080p	720p or less	-	0	1
720p	720p	30 frames or less	0	1
	4CIF/CIF/SIF	50/60 Frame	0	1
		30 frames or less	1	2
4CIF/4SIF	4CIF/4SIF	-	1	2
	CIF/SIF	-	2	4
CIF/SIF	CIF/SIF	-	2	4



The above-mentioned tables only take into account the situations where no other functional options have been enabled that affect the usage of video resources. For detailed conference number calculation, see *Resources Usage*.

The maximum number of multi-screen conferences for RMX 500 Rev B and RMX 1000 Rev C depends on the resolutions, frame rates and maximum number of multi-screen windows for video stream 1 and 2 of those conferences. The following table displays the maximum number of multi-screen conferences supported by RMX 500 Rev A and RMX 1000 Rev A. In the following table, "-" can represent any optional value.

Conference video parameters and maximum number of multi-screen conferences - RMX 500 Rev B/RMX 1000 Rev C

Video Parameter				Maximum number of multi-screen conferences	
Video Stream 1 Resolution	Video Stream 2 Resolution	Frame Rate	Number of Multi-screen Windows	RMX 500-Rev B	RMX 1000- Rev C
1080p	1080p	-	1-16	0	1
	720p	60 Frame	1-16	0	1
	720p or less	-	1-16	1	2
720p	720p	30 frames or less	10-16	1	2
		50/60 Frame	10-16	1	2
	4CIF/CIF/SIF	30 frames or less	10-16	1	3
		30 frames or less	1- 9	2	4
4CIF/4SIF	4CIF/4SIF or less	-	10-16	1	3
	4CIF/4SIF or less	-	1-9	2	4
CIF/SIF	CIF/SIF	-	7-16	2	4
			1- 6	3	6
	Disable	-	7-16	3	6
			1- 6	6	8



The above-mentioned tables only take into account the situations where no other functional options have been enabled that affect the usage of video resources. For detailed conference number calculation, see *Resources Usage*.

To define the video quality of multi-screen conference:

- 1 As described in the table below, select the highest resolution of multi-screen conference in the "People Video Definition" field, namely, the resolution for the first channel of video stream.


People Video Definition

Video Resolution	Description
Up to H.264, 1080P (RMX 500 Rev B /RMX 1000 Rev A/RMX 1000)	Used for the video display of HD quality. The conference video can be best coded/decoded with the H.264 protocol and displayed with 1920x1080 (1080p) HD resolutions,

Video Resolution	Description
<i>Rev C Only</i>	occupying more system resources. The required bandwidth is not lower than 1728Kbps.
<i>Up to H.264, 720P</i>	Used for the video display of HD quality. The conference video can be best coded/decoded with the H.264 protocol and displayed with 1280x720 (720p) HD resolutions, occupying more system resources. The required bandwidth is not lower than 832Kbps.
<i>Up to H.264, 4CIF/4SIF</i>	Used for the video display of Standard Definition (SD) quality. The conference video can be best coded/decoded with the H.264 protocol and displayed with the 4CIF/4SIF resolution. The required bandwidth is not lower than 256Kbps.
<i>Up to H.264, CIF/SIF</i>	Used for the screen display of standard quality. The conference video can be best coded/decoded with the H.264 protocol and displayed with the CIF/SIF resolution.
<i>Up to H.264 High Profile,... (RMX 500 Rev B/ RMX 1000 Rev C Only)</i>	For RMX 500 Rev B and RMX 1000 Rev C, two coding options are available for one resolution, that is, H.264 and H.264 High Profile. When H.264 High Profile is used, less bandwidth is required for a resolution. The minimum bandwidth requirements are as follows: <ul style="list-style-type: none"> • 1080p: 1024 Kbps • 720p: 512 Kbps • 4CIF: 128 Kbps

- 2 If you set People Video Definition to "Up to 4CIF/4SIF", you can select the width/height ratio of image as 4:3 or 16:9 from the "Aspect Ratio" option.
- 3 Set the frame rate of first-channel video stream in the "Frame Rate" field. The higher the frame rate is, the smoother the received video will be.
- 4 If required, you can configure other options for a multi-screen conference:

Other multi-screen conference options

Video Resolution	Description
If no CP resources are available, the system will automatically switch to the video switching conference.	When the system has no available multi-screen conference resources, a user can still hold a video switching conference. The maximum number of video switching conferences can be held is equal to the number of audio and video connection resources available in the current system. When you select this option and use this profile to create a multi-screen conference, the system will automatically switch to the video switching conference if no resources are available.
<i>Only video stream 1 is enabled.</i>	When this option is selected, the conference will only use the parameters for the first video stream channel. You cannot configure Detailed Configuration. Note: for RMX 500 Rev B and RMX 1000 Rev C, this option can be displayed on the page only if CIF/SIF has been selected in People Video Definition.
<i>Detailed configurations</i>	Click the  button to expand detailed configurations. This shows the parameters for all of the other video stream channels automatically generated in accordance with the

Video Resolution	Description
	<p>user-defined settings for the first channel of video streams. The video capabilities of video streams descend from top to bottom. You can also manually modify the default parameters here.</p> <p>For RMX 500 Rev B and RMX 1000 Rev C, two different protocol coding options are available for one resolution, that is, H.264 and H.264 High Profile. Less bandwidth is required for H.264 High Profile.</p> <p>All models of RMX series have the following common restrictions on settings for video stream parameters:</p> <ul style="list-style-type: none"> • The parameters for two channels of video streams cannot be configured the same. • When the formats of two video streams are the same as the protocol setting, the bandwidth of video stream at a lower capability grade cannot be set greater than that of video stream at a higher capability grade. • The fourth channel of video stream can be configured with the highest resolution of CIF/SIF and maximum bandwidth of 512Kbps. <p>Furthermore, the following different restrictions apply to all models:</p> <ul style="list-style-type: none"> • RMX 500 A version: The second channel of video stream can be configured with the highest resolution of 4CIF/4SIF and the maximum bandwidth of 832Kbps. • RMX 1000 A version: The third channel of video stream can be configured with the highest resolution of CIF/SIF and the maximum bandwidth of 768Kbps. • RMX 500 Rev B and RMX 1000 Rev C: the third channel of video streams can be configured to use a resolution of up to 4CIF/4SIF and a bandwidth of up to 832Kbps, if the second channel of video streams has a resolution of 720p.


Video Switching Conference

The system only dispatches the video stream without coding or decoding. Therefore, this mode does not utilize the MCU video resources, and more conferences can be held. In the video switching conference, all the participants' endpoints use the same bandwidth and video capability, and can only display one image at a time. A user can use the voice activation feature to switch to see each conference site or just see a conference site specified by the administrator. The maximum number of video switching conferences supported by the system is equal to the number of participant connection resources available and is not related to the video capability of an endpoint. The video switching conference has the following limitations:

- Only one type of conference screen layout is supported.
- Settings for the conference skin and Message Overlay are not available.
- Settings for the conference name are not available.
- The PCM menu is not available.

To define the video quality of video switching conference:

- 1 Select **Video Switching** from the **People Video Definition** option.

- 2 When necessary, click the  button besides "Detailed Configuration" to configure the video parameters used for the conference. Select a protocol parameter from the "Protocol" options:
 - **Auto:** This option is selected by default. When a conference is held, the system will, according to the capability of the participant's endpoint currently joined, automatically select the optimal video parameter supported by all the participants, and automatically adjust it when a new participant joins or an existing participant leaves the conference.
 - H.261/H.263/H.264/H.264-HP (RMX 500 Rev B and RMX 1000 Rev C): select this option to activate the settings for the Format option. When a conference is held, all the participants' endpoints join the conference using the parameter capability set here. The endpoint that does not support the configured parameter can access the conference with audio only. For RMX 500 Rev B and RMX 1000 Rev C, if you choose to use the H.264-HP protocol, less bandwidth is required for a video resolution. The minimum bandwidth requirements for various resolutions are as follows:
 - 1080p: 1024 Kbps
 - 1080p: 1024 Kbps
 - 4CIF: 128 Kbps



The number of endpoint connections supported by the system in the actual conference depends on the number of resources purchased by the user.

Defining Content Video Quality

When the endpoint sends dual streams, the RMX system applies different coding and decoding policies to the primary channel of people video and second channel of content video. The following table provides the video parameters for setting the second channel of content image.

Video Quality Parameters – Second-channel Video Dual-stream Definition

Parameter	Description
<i>Dual stream settings</i>	<p>Set the coding/decoding protocol which can be best used for the dual-stream video. You can select the H.264 or H.263 coding/decoding algorithm based on the endpoint capability and network bandwidth. When None is selected, it indicates dual streams are not enabled.</p> <p>For RMX 500 Rev A and RMX 1000 Rev A, dual stream contents are coded/decoded by default. If you select the Switching option, only dual streams are switched.</p> <p>For RMX 500 Rev B and RMX 1000 Rev C, only dual streams are switched.</p> <p>Note: If this setting is H.264, when an endpoint that supports only H.263 joins in the conference, an H.264 endpoint will send dual streams using the H.263 protocol.</p>
<i>H.239 Setting</i>	<p>The H.239 protocol is used to send dual streams. You can select three kinds of video quality as needed:</p> <ul style="list-style-type: none"> • Graphics: For the standard video display

Parameter	Description
	<ul style="list-style-type: none"> High-resolution graphics: for high quality image detail display, with broader bandwidth required. Live Video: for full-motion of dynamic video display, with the broadest bandwidth required.
When you send videos to an endpoint which does not support H.239, the system will use dual stream contents to replace conference videos	This function is very useful if an endpoint in the conference which does not support H.239 dual streams wants to watch content videos. When this function is enabled and dual streams are sent in a conference, the system will use contents videos instead of conference videos to send to endpoints which do not support H.239 so that contents videos instead of conference videos can be watched on the endpoints. This option does not affect endpoints which support H.239.

Video Setting

To set the multi-screen layout of conference on the endpoint screen, click the "Video Settings" tab on the "New Profile" interface.



Video Setting Parameters

Parameter	Description
<i>Video Mode</i>	<p>The video mode determines the strategy used in a conference for displaying conference videos at each participant's endpoint. You can select one of the following modes:</p> <ul style="list-style-type: none"> Lecture Mode: All the participants' endpoints will display the selected lecturer in full screens, and the lecturer's endpoint will display other participants according to the layout set here. Administrator can specify a lecturer after the conference is held. For details, see the lecture mode description in <i>Choose a personalized layout</i>. Same Layout: All the participants' endpoints in the conference will display the same multi-screen image according to the layout set here. This setting will allow sites to see their own loopback images which usually will not be displayed.
<i>Automatic Polling Interval</i>	Sets the time interval for automatic polling from one conference to another conference, with an optional range of 10-300 seconds. An administrator can specify automatic conference polling in a multi-screen window after a conference is held. For more information, see <i>Customized Polling</i> .











You can set specific multi-screen layouts based on video modes selected. You can choose to allow the system to automatically select a multi-screen layout based on the number of added participants, or specify a fixed multi-screen layout.

To set automatic multi-screen layout:

- 1 Click "Auto" at the left part of the multi-screen setting area to display the automatic multi-screen layout pane.

- 2 Select the largest multi-screen layout so that the conference site displays at most the number of multi-screen windows set here. In this mode:
 - When the number of participants is smaller than or equal to the set number of multi-screens, the system displays the multi-screen image according to the actual number of participants and in line with the default rule. The table below shows the default rule.
 - When the number of participants is greater than the set number of multi-screens, the system uses the largest multi-screen layout to display the first participants who speak the loudest. If the number of participants is greater than 4 and the maximum selection is , the system uses the  layout to display the first four participants who speak the loudest.

Default Rule of Automatic Layout

Number of Participants	Multi-screen Layout
1	
2	
3-4	
5-6	
7-8	
9	
10	
11-13	
14-16	
16+	

If the Symmetric Layout option is selected, the system can only provide a multi-screen layout with the same size windows.

To specify a fixed multi-screen layout:

- 1 To expand the corresponding multi-screen layout profile, click the left part of multi-screen setting area the number of multi-screen windows to be displayed
- 2 Select a multi-screen layout so that the conference site displays the participant's image always according to the layout selected here.

If the Symmetric Layout option is selected, a user can only select the multi-screen layout with the same size windows.

Audio Setting

Click the Audio Setting tab on the New Profile page to set the audio algorithms supported by the RMX system.

Select an option on the page to enable the corresponding audio algorithm capability for the system.

Conference Skin Skins

Click the "Skins" tab in the "New Profile" interface to enter the interface for skin settings. Here, you can define the background picture and outline color of the multi-screen image, and browse the skin effect in the browsing area at the lower part of the interface.

Customize settings for the conference skin by referring to the table below:

Parameter Description of Conference Skin

Parameter	Description
<i>Background Picture</i>	Select the background picture for the conference screen.
<i>Outline Color</i>	A user can respectively set the outline colors of screens for the conference lecturer and regular participant.
<i>Full screen</i>	When this option is selected, multi-screens will extend the full screen, without spacing.

Conference Recording

RMX can work with Polycom RSS recording server to record conferences. Click the "Recording" tab on the "New Profile" interface to enter the related information and set the recording parameters.

The table below explains the configuration parameters.

Conference Recording Configuration

Parameter	Description
<i>Enable Recording</i>	If an RSS is available on your network, you can select this option to enable the recording function.
<i>Recording System Address</i>	Enter the IP address of the RSS system to be connected. This item is optional if an alias is set in the Alias check box below.
<i>Recording System Alias</i>	Enter the E.164 number or H.323 alias of the RSS in accordance with the selected alias type. This item is optional if the IP address of the RSS 2000 is set. Note: If the alias is used for recoding call, both RMX and RSS need to be registered to the same gatekeeper.
<i>Alias Type</i>	Set the alias type of the RSS: H.323 or E.164.
<i>Recording System Extension</i>	If you want to specify a recording link to use one of the VRR parameters on RSS, please enter the number for that VRR. If no parameters are specified, the recording link will use the default VRR parameter for RSS. For more information on VRR, please refer to the user manual included with the RSS system.
<i>Start</i>	Select the start time of the conference recording: <ul style="list-style-type: none"> • Immediately – The recording automatically starts immediately after the first participant joins the conference. • Upon Request – The operator or chairperson starts the recording manually. After this option is selected, the

Parameter	Description
	recording can be manually started through the Web interface or DTMF function. For more information, see <i>Recording Control</i> .
<i>People Video</i>	You can select to record the video for which channel of video stream capability, or the audio only.
<i>Terminates a conference when recording fails or no H.323 Links are available in a conference.</i>	Selecting this option is not recommended if you are not specifically required to do so. If this option is enabled, the system will terminate the conference when the recording fails or no H.323 links are available.



- The Recording Link occupies one participant connection resource.
- If the encryption function is enabled in the "Conference Profiles->General" interface, the recording will succeed only when the recording server also supports encryption.

Overlay

When a message needs to be sent to all the participants in a conference, you can set the message overlay of conference to be displayed on all participants' endpoint screens.

Click the "Message Overlay" tab on the "New Profile" interface to set the message overlay parameters.

Set the message overlay with reference to the table below:

Message Overlay Setting Parameters

Parameter	Description
<i>Enable</i>	Select this option to enable message overlay. Then you can set other parameters.
<i>Contents</i>	Enter the content to be displayed.
<i>Font Size</i>	Set the font size of the message overlay.
<i>Color</i>	Set the color matching scheme for the message overlay font and background.
<i>Display Times</i>	Move the slider to set the display times of the message overlay.
<i>Display Speed</i>	Move the slider to set the display speed of the message overlay. If the display speed is set to 0, the message will be displayed in the center of the screen as a banner.
<i>Vertical Boundary</i>	Move the slider to set the vertical boarder of the message overlay.
<i>Transparency</i>	Move the slider to set the contrast of the message overlay.

Site Name

A user can set the conference to display each of the site names (endpoint names) on the conference screen, so as to mark each site in the viewed screen. The site name displayed at each participant's endpoint comes from the system name set for the endpoint.

To set a site name, click the Site Name tab on the New Profile page to enter the settings page for site names. Here, you can specify the displayed strategies, positions and color matching schemes for site names.


Parameter Description for Site Name Settings

Parameter	Description
<i>Site Name</i>	Set the display strategy for a site name: <ul style="list-style-type: none"> • Auto: a site name will be displayed and automatically disappear in about 10 seconds if there are no changes to the conference video layout. • Enabled: always displays a site name. • Disabled: no site names are displayed.
<i>Font Size</i>	Set the font size for a site name.
<i>Color</i>	Set the text and background color schemes for a site name.
<i>Overlay Position</i>	Set the display position of a site name on the screen.
<i>Horizontal Boundary</i>	Move the slider to set the horizontal border of a site name.
<i>Vertical Boundary</i>	Move the slider to set the vertical border of a site name.
<i>Transparency</i>	Move the slider to set the contrast of the site name.

Modifying a Profile

To modify a saved profile, right-click it in the Profile list, and then click "Profile Properties" to modify its properties.

Deleting a Profile


To delete an existing profile, select it in the Profile list, and then click . Alternatively, right-click the profile to be deleted and then click "Delete Profile".



A profile in use cannot be modified or deleted.

Setting a Default Profile

After a default profile is set, the endpoint will use it when creating a conference directly through the remote control. In addition, when a user creates a meeting room, reserves a conference, or holds an instant conference via the Web interface, the default profile will be used unless otherwise specified.

To set a default profile, right-click the profile to be defined in the Profile list, and then click "Set as Default". After that, the icon of the profile becomes .



A profile with the AES encryption function enabled cannot be set to a default profile.

Recording Link

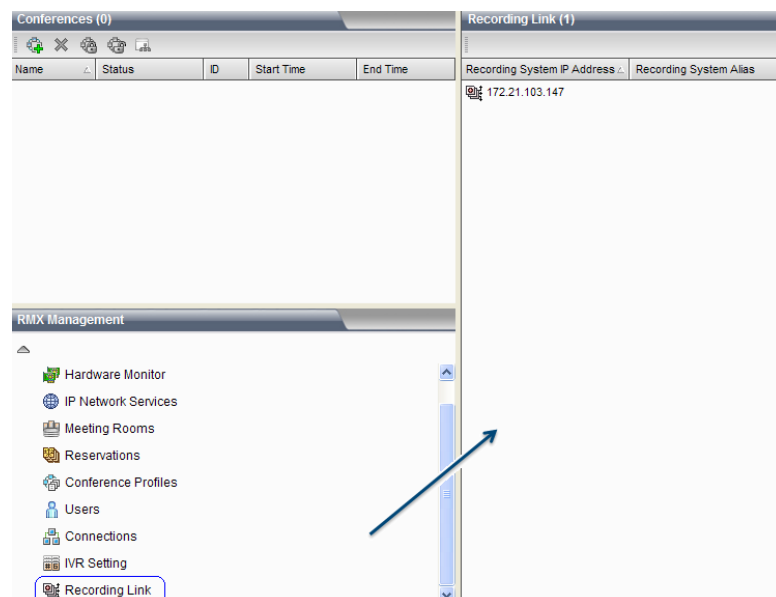
The RMX supports the recording link function. It can work with the Polycom RSS to record conference content. After the recording setup is completed, when the conference starts, the RMX will first call the participants in the participant list, and then call the configured RSS to record the conference. The recording link is displayed in the List pane as a regular participant, thereby enabling users to view and control the recording status easily.

RMX allows you to use different RSS systems for recording in different conferences. There are many ways to configure RSS recording servers on RMX. You can enable recording and configure relevant parameters on the settings pages for conference profiles, meeting rooms, reservations or temporary meetings.

Configurations for Default Recording Parameters

You can configure a default RSS recording server on RMX to help reduce the duplicate configurations for common recording parameters in conference profiles. Every time a new conference profile is created, the profile's configuration page for recording will use the default RSS system parameters unless they are manually modified by users.

In the RMX Management pane, click "Recording Link". The Recording Link interface appears in the list pane located on the right side. Here you can view the IP address and alias configured for the RSS.



Recording Link

Right-click the default empty link or configured RSS IP address in the interface, and then click **Properties** to display the **Recording Link-General** interface.

General Settings

The screenshot shows a light blue background with four rows of settings. Each row consists of a label on the left and an input field on the right. The labels are: 'Recording System IP Address', 'Recording System Alias', 'Alias Type', and 'Recording System Extension'. The 'Alias Type' field is a dropdown menu with 'E.164' selected and a downward arrow on the right.

Recording Link - General Settings

The table below explains the detailed meanings of these parameters.

Recording Link - Description for General Settings

Parameter	Description
<i>Recording System Address</i>	Enter the IP address of the RSS system to be connected. This item is optional if an alias is set in the Alias check box below.
<i>Recording System Alias</i>	Enter the E.164 number or H.323 alias of the RSS in accordance with the selected alias type. This item is optional if the IP address of the RSS 2000 is set. Note: If the alias is used for recording call, both RMX and RSS need to be registered to the same gatekeeper.
<i>Alias Type</i>	Set the alias type of the RSS: H.323 or E.164.
<i>Recording System Extension</i>	If you want to specify a recording link to use one of the VRR parameters on RSS, please enter the number for that VRR. If no parameters are specified, the recording link will use the default VRR parameter for RSS. For more information on VRR, please refer to the user manual included with the RSS system.

DTMF Code Setting

To set the recording control operations and rights for use by connected endpoints, click the DTMF Codes tab.

Name	DTMF Code	Permissions
Pause Recording	*1	Everyone
Start Recording	*2	Everyone
Stop Recording	*3	Everyone


Recording Link - DTMF Codes

The table below explains the detailed meanings of these parameters.




Recording Link - Description for DTMF Code Setting

Parameter	Description
<i>Name</i>	Name of the recording operation
<i>DTMF Code</i>	Set the remote control key combination used to perform the operation. The default numbers can be customized. For example, the default DTMF code for the Start Recording command is *2, you can press the keys *2 to start conference recording. Note: Before using the DTMF command, enable the DTMF function of the endpoint according to that endpoint's instructions.
<i>Privilege</i>	Set the rights of using DTMF codes. Chairperson indicates that the DTMF is available to the conference chairperson only; Everyone indicates that the DTMF is available to all participants.

Recording Control

When a conference is going on, you can view and control the status of the configured recording link. In the Conferences list pane, select this conference. Then the list pane located on the right side shows the defined participants and connected participants in the conference, where the recording link is indicated by the  icon.

When a conference is going on, you can control the recording as follows through the recording buttons in the list pane or the right-click shortcut menu of recording link:

-  - Start Recording
-  - Pause Recording
-  - Stop Recording



- A conference chairperson can also use the PCM interface for recording control. For more information, see *Recording a Conference*.

- For more information about the recording control operations of the RSS, see *RSS User Guide*.

Recording Properties

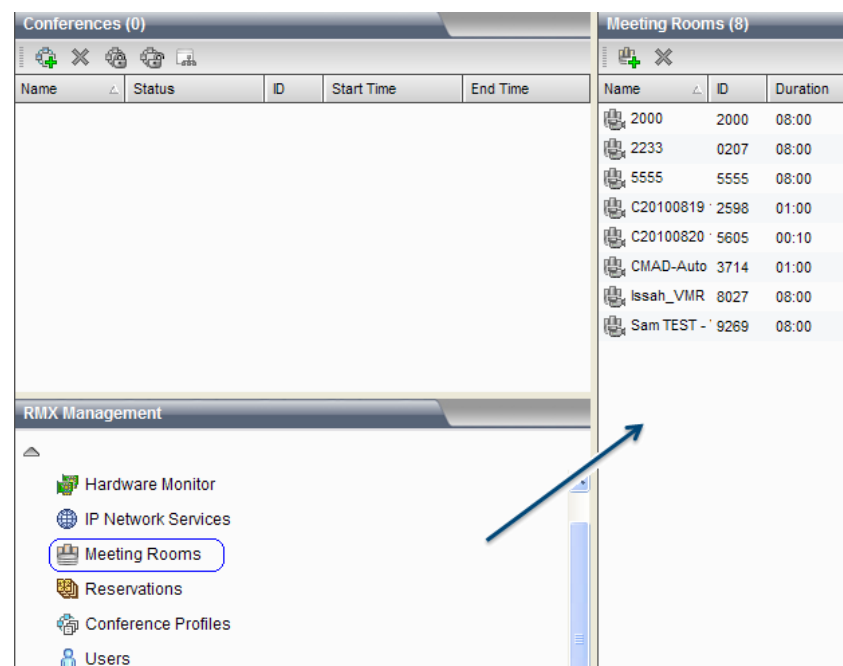
To view the status between the recording link and RMX, double-click the recording link, or right-click it and select "Properties" to view parameters.

- General - Displays the name, address, alias and other information of RSS system.
- DTMF Codes - A participant can use DTMF codes to send real-time commands to an RSS server so as to facilitate the recording operations.
- Connection Status - Displays in real time the RSS-RMX connection status and disconnection cause.

Meeting Rooms


A Meeting Room is a conference saved on the MCU in passive mode, without using any system resources. A Meeting Room is automatically activated when the first participant dials into it. Once activated, a Meeting Room functions as any ongoing conference. All Meeting Rooms are based on a Conference Profile. The RMX can support up to 5000 meeting rooms.

To set a meeting room, click "Meeting Room" in the RMX Management pane. The list pane shows the meeting rooms saved on the current system and their summaries, such as the name, number, duration, conference password, chairperson password, and the conference profile name for the meeting room. Here you can create, modify and delete meeting rooms.



Meeting Rooms List

Creating a Meeting Room

To create a meeting room, click the button in the list pane, or right-click in the blank area of the pane and then click "New Meeting Room". The "New Meeting Room -> General" interface pops up. 

General Settings

Meeting Room Name : C20110824 12:50

Profile : RECOMMENDED_PROFILE_SD-20110823 07:24-

Line Rate : 1024Kbps

Minimum ports to be reserved : Automatic

Maximum ports to be used : Automatic

Duration : 8 : 0

Conference ID : 8069

Conference Password :

Chairperson Password :

Dial Out Manually

New Meeting Room - General

The table below explains the detailed meanings of these parameters.

Parameter Description for New Meeting Room – General

Parameter	Description
<i>Meeting Room Name</i>	Set a unique name to identify the meeting room. When a meeting room is created, the system will automatically generate a unique name for it.
<i>Profile</i>	<p>Select the profile to be used for this conference from the drop-down list. The lower part of this option displays the major parameter values defined for the profile:</p> <ul style="list-style-type: none"> Line Rate: the maximum bandwidth used by a participant in a conference; Minimum Number of Reserved Resources/Maximum Number of Available Resources: the minimum/maximum number of video participants to join a conference. Automatic indicates that the number of video participants is determined according to the available resource of the RMX. <p>The conference profile defines the basic parameters of conference scheduling, such as the bandwidth, encryption, and video quality. For more information on conference profiles, see <i>Conference Profiles</i>. When a conference is created, the system selects the default profile by default.</p>
<i>Conference Duration</i>	Specify the conference duration in the range of 0-24 hours. The input format is H:M and the default value is 8:0, namely, 8 hours.
<i>Conference ID</i>	When a meeting room is created, the system automatically allocates a conference ID. You can also set a unique conference ID on the device. To directly dial into the conference, the participant must know its ID.
<i>Conference Password</i>	Enter the conference password. To connect to this conference, the participant must enter this password. If this parameter is empty, it means the conference has no password.

Parameter	Description
<i>Chairperson Password</i>	Enter the password that identifies the chairperson ID. The system will authorize more rights to the chairperson. If this parameter is empty, it means the conference has no chairperson.
<i>Manual Dial-out</i>	When enabled, the system will not automatically call the participants defined in the meeting room to join the conference unless the administrator dials out manually.

Participant setup

A user can add a participant to the participant list for the meeting room. When this meeting room is activated and running, the system will automatically call the participants defined in the meeting room to join the conference. To set the invited participant list, click the Participants tab to enter the relevant interface, as shown below.

New Meeting Room - Participants

You can add participants to the list in the following two modes:

To create a participant in the list:

- 1 Click the "New" button to create a participant.
- 2 The popup configuration interface is the same as that for adding a new participant to the address book. For explanation on the configuration parameters, see *Creating a Participant in the Address Book*.

To add a participant from the address book to the list:

- 1 Click the Add from Address Book button.
- 2 In the popup address book, select the participant to be added, and then click the "OK" button. To select multiple participants at one time, click

these participants one by one while pressing down the "Ctrl" key, or select adjacent ones while pressing down the "Shift" key.

A user can select the participant to be added, and then specify in the "People Video" field which channel of audio and video stream capability defined on the conference profile will be used by the participant to join the conference. If the participant's endpoint does not support the specified video stream capability, it will be connected with the highest video stream capability supported by it.

To edit or delete a participant that is added to the list, select it, and then click the "Edit" or "Remove" button. A user can also click multiple participants to be deleted one by one while pressing down the "Ctrl" key, or select adjacent ones while pressing down the "Shift" key.

The table below shows the meanings of other optional parameters.

Parameter Description for New Meeting Room – Participants

Parameter	Description
<i>Lecturer</i>	<ul style="list-style-type: none"> - This option is available only when the video mode for the conference profile of meeting room is set to Lecture Mode. About settings of the video mode, see <i>Video Setting</i>. - After adding participants to the list, you can select a participant from the drop-down list to act as the lecturer. The default setting is "Auto", when the system will use the voice activation feature to automatically select the lecturer. - When the conference is running under the Lecture Mode, all participants' endpoints display the lecturer in full screen, and the lecturer's endpoint can switch to display other conference sites in rotation.
<i>Dual Stream Sender</i>	Select a fixed dual stream sender. Only a selected participant can send dual streams in the conference. Auto by default, meaning that all participants can send dual streams.
<i>Allows Only Endpoints in the Participant List to Dial in</i>	When this option is selected, only the participants defined in the Participant List can dial into the conference.
<i>Send Email Notifications</i>	If this option is selected, after you click OK, the system will automatically send an email message to notify each participant in the Participant List to join the conference. This option is enabled only when SMTP is configured in the "IP Network Services->Email" interface. For more information, see <i>Email</i> .

Recording

By default, a meeting room will use the recording parameters configured in its conference profile. You can also manually configure the recording parameters for a meeting room. To set your recording parameters, click the Recording tab.

For meanings of the configuration parameters on this page, see *Conference Recording Configuration*.

Multicast Configurations

RMX supports multicasting to computers within a LAN. You can watch real-time conference videos by using special multicast receiving software on your computer. To set your multicast, click the Multicast tab.

New Meeting Room - Multicast

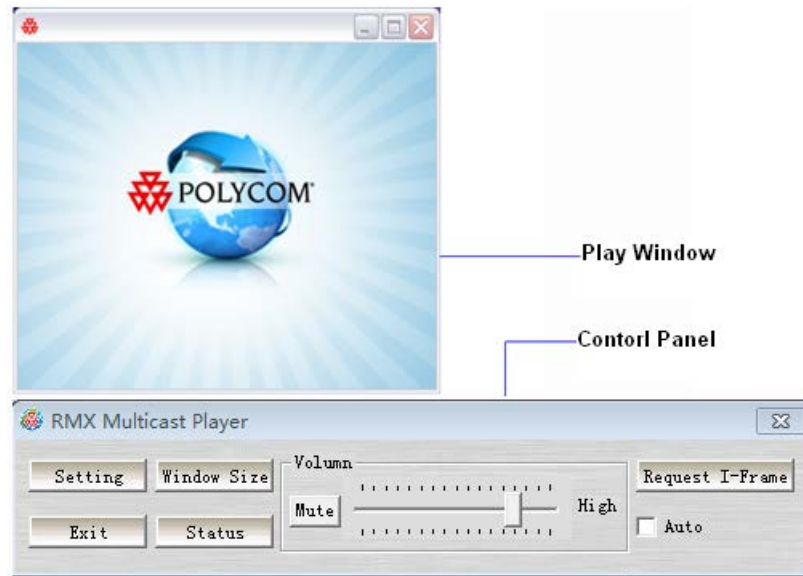
Parameter Description for New Meeting Room – Multicast

Parameter	Description
<i>Enable Multicasting</i>	If this option is selected, the system will start multicasting while this conference is held. You can use the multicast receiving software RMX Multicast Player to play conference videos on your computer. For more information, see the following section.
<i>Password</i>	Set multicasting passwords. Same passwords need to be configured on multicast receiving computers for participants to watch their videos. This item is optional.
<i>Address</i>	Set the multicast address and port number used for sending conference videos.
<i>People Video</i>	Select the videos from a specific video stream channel for multicasting.
<i>LAN1/LAN2</i>	Select computers for multicasting within a LAN where the system's LAN1 port or LAN2 port is located. Note: If port LAN1 and LAN2 are configured within the same network, they should not be selected simultaneously.
<i>Enable I Frame Suppression</i>	In the event of severe packet loss at the multicast receiving side, the computer will frequently send I frame requests to MCU and this will affect the conference's graphic effects on MCU. When the I frame suppression function is enabled, MCU's I frame response to the computer can be suppressed. To enable this option, you need to enter the I frame suppression interval, i.e., how often MCU responds to an I frame request.

Use the RMX Multicast Player Tool to Receive Multicast

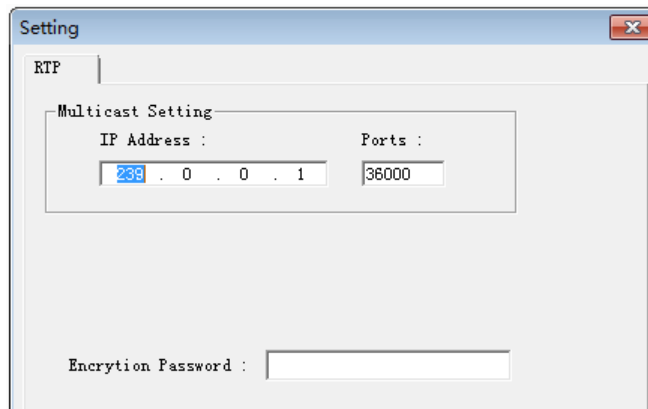
Before using RMX Multicast Player to receive multicast, please configure the firewall in your computer to allow multicast streams to pass through.

- 1 Run the RMX Multicast Player.exe file on the CD included with your computer. Install as prompted by the software installation interface. Usually you can just use the default settings.
- 2 When you complete your installation, click Start -> All Programs -> RMX Multicast Player to run the multicast receiving tool on your computer. The software opens two windows: a video playing window and a multicasting control window, as shown below.



RMX Multicast Player Interface

- 3 In the multicasting control window, click the Open button to enter the dialog box for multicasting parameter settings.



The dialog box for multicasting parameter settings

- 4 Set the following parameter options:
 - **IP Address:** the IP address for receiving multicasting conference videos. This address must be identical to the multicast address configured on RMX.
 - **Start Port:** the port number for receiving multicasting conference videos. This port number must be identical to the multicast port number configured on RMX.

- **Encryption Password:** if a multicast password has been configured on RMX, the same password must be entered here.
- 5 Click the OK button. When a multicasting-enabled conference is held on RMX, the RMX Multicast Player will receive the conference video from the specified multicast address and play it in the video playing window.

When necessary, you can complete the following control operations in the multicasting control window:

- Adjust the volume
You can use the volume slider in the multicasting control window to adjust the volume. Press Mute to mute the video.
- Adjust the video window
Click Window Size to set the window to display in 100%, 200% or full screen. You can also move your cursor to the edge of the window, and then drag and move it to adjust the window to the desirable size when an adjustable symbol appears.
- Check the video statistics
Click the Status button to display the transmission rate, frame rate, I frame requests, etc. for the current video in the video playing window.
- Request I frames
In the event of severe packet loss, click Request I Frames to send your I frame request to MCU to improve the video quality. If Auto is selected, the multicast tool will automatically request I frames in the event of packet loss. Frequent I frame requests will affect the conference's video quality on MCU. As a result, this option is not usually recommended.


Other Information

To configure other information for the meeting room, click the Information tab. Here you can configure conference notes, site details, accounting information, etc.

Modifying a Meeting Room

To modify a meeting room, double-click the desired meeting room in the meeting room list; or right-click the meeting room, and then click Meeting Room Properties. For explanation on the configuration parameters, see *Creating a Meeting Room*.

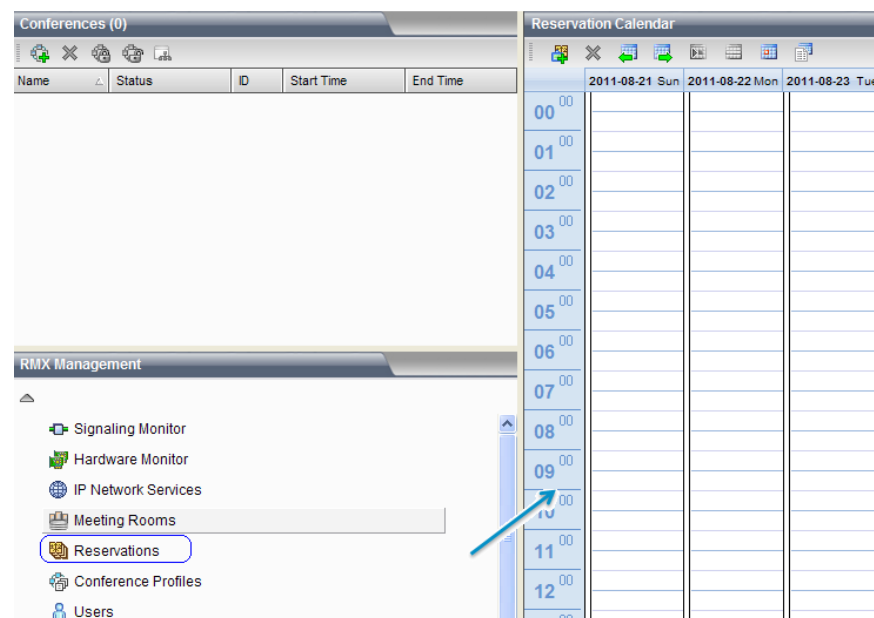
Deleting a Meeting Room

To delete a meeting room from the device, select the meeting room to be deleted in the meeting room list, and then click the  button, or right-click the meeting room, and then click "Delete Meeting Room".

Reservations

Multiple types of conference reservations can be implemented using RMX. A user can reserve a one-time or permanent conference, or hold routine conferences on a daily, weekly, or monthly basis as needed. The system reserves resources for conferences, so the conference can be automatically started at the preset time. The RMX can support up to 1000 reservations.


To configure a reservation, click "Reservations" in the RMX Management pane. The list pane shows the related configuration interface. The reservation function provides two configuration views: the calendar view and list view.



Reservations

Reservation Views




Calendar View

The calendar view is displayed by default. It shows the distribution of reserved conferences in standard time sequence on current RMX through a calendar familiar to users. Under the calendar view, a user can switch to display the reservation information in each time segment by "Today", "Day" or "Week", and directly reserve a conference on a specific date to make conference scheduling clearer. Under the reservation list view, click the  button to switch to the reservation calendar view.


Switching Calendar Modes




Under the calendar view, the system can display the calendar by day or by week so that users can fast view reservations at each time segment. By default, the Week calendar is used to show the distribution of reservations.

To view the reservations per week:


- 1 At the "Today" or "Day" calendar mode, click the  button to show the reservations in a week.
- 2 When necessary, click the  or  button to show the reservations of the previous week or next week.

To view the reservations per day:

- 1 In the Week calendar mode, click  to display the conference on the selected date in the current calendar.



Click  now to show the conference reserved today.
- 2 When necessary, click the  or  button to show the reservations on the previous day or next day of the current date.

List View

Under the reservation calendar view, click the  button to switch to the reservation list view. The list view shows all the reservations on the current system in a list. A user can view all summaries of conferences, including the conference name, dial-in ID of the participant, conference start time and duration, conference password, chairperson password, and conference profile.

Adding a Reservation

To reserve a conference:

- Under the calendar view, click the  button on the pane, or right-click at the blank area besides the selected calendar date and time, and then click "New Reservation".
- Under the list view, click the  button on the reservation list pane, or right-click at the blank area, and then click "New Reservation".

On the New Reservation interface, you can set the basic conference information, participants, reservation time and other related information. The text below only describes the configurations for the Schedule tab. The procedures for setting other tabs are the same as those for setting a meeting room. For explanation on the configuration parameters, see *Creating a Meeting Room*.

To set a reservation, click the "Schedule" tab to enter the reservation interface. From the Schedule Mode drop-down menu, select the desired reservation mode to reserve a permanent, once, daily, weekly, or monthly conference.

Schedule Mode : ▼

Start Date :

Start Time :

Duration : :

:

Setting a Reservation Mode

Reserve a Permanent Conference

A permanent conference can be manually terminated or deleted by a chairperson or web UI user.

To reserve a permanent conference, set the Schedule Mode to Permanent. Set the start date and time for a conference in the page.

Reserving One-time Conference

The one-time conference will be terminated after being held for a specified period of time. To reserve a one-time conference, set the Schedule Mode to Once. The table below explains the configuration parameters.

Parameter Description for Reservation Setup – Once

Parameter	Description
<i>Start Date</i>	Set the start date of the conference.
<i>Start Time</i>	Set the start time of the conference in the format of H:M.
<i>Conference Duration</i>	Set the duration of the conference in the format of H:M.

Reserving a Daily Conference

To reserve a daily conference, set Schedule Mode to Daily.

The conference will be convened at the specified time every day. In the specified period, this reservation is also deleted when the last conference is terminated. The table below explains the configuration parameters.

Parameter Description for Reservation Setup – Daily

Parameter	Description
<i>Start Time</i>	Set the start time of the conference in the format of H:M.
<i>Conference Duration</i>	Set the duration of the conference in the format of H:M.
<i>Start Date</i>	Set the start date of the recurrence range of the reservation.
<i>End Date</i>	Set the end date of the recurrence range of the reservation.

Reserving a Weekly Conference

To reserve a monthly conference, set Schedule Mode to Monthly.

The set conference will be convened at the specified time per week. In the specified period, this reservation is also deleted when the last conference is terminated. The table below explains the configuration parameters.

Parameter Description for Reservation Setup – Weekly

Parameter	Description
<i>Start Time</i>	Set the start time of the conference in the format of H:M.
<i>Conference Duration</i>	Set the duration of the conference in the format of H:M.

Parameter	Description
<i>Start Date</i>	Set the start date of the recurrence range of the reservation.
<i>End Date</i>	Set the end date of the recurrence range of the reservation.
<i>Sunday - Saturday</i>	Specify the weekday on which the reserved conference will be convened. Multiple weekdays can be selected. If you select the Mon. and Fri. check boxes, the conference will be automatically started at the specified time on every Monday and Friday.

Reserving a Monthly Conference


To reserve a weekly conference, set Schedule Mode to Weekly.

The conference will be convened at the specified time per month. In the specified period, this reservation is also deleted when the last conference is terminated. The table below explains the configuration parameters.

Parameter Description for Reservation Setup – Monthly

Parameter	Description
<i>Start Time</i>	Set the start time of the conference in the format of H:M.
<i>Conference Duration</i>	Set the duration of the conference in the format of H:M.
<i>Start Date</i>	Set the start date of the recurrence range of the reservation.
<i>End Date</i>	Set the end date of the recurrence range of the reservation.
<i>Conference Date</i>	Specify the day of month on which the reserved conference will be convened. If you enter 1, the conference will be automatically convened at the specified time on the first day of every month.



At the specified time, the reserved conference will be convened automatically, the conference icon will become , and the properties of the conference can be viewed but cannot be modified. In addition, the conference list will show that the conference is ongoing.

Modifying a Reservation

You can modify a reserved conference before it is convened.



To modify the parameters of a reservation:

In the reservation calendar view or list view, double-click the reservation to be modified or right-click this reservation and then click "Reservation Properties" to enter the reservation parameter setting interface. For the meanings of related configuration items, see the previous section *Adding a Reservation*.

Deleting a Reservation

You can delete a reserved conference before it is convened.

Deleting a Reservation:

- In the reservation calendar view, select the reservation to be deleted from the calendar, and then click the  button, or right-click this reservation and then click "Delete Reservation".
- In the list calendar view, select the reservation to be deleted from the list, and then click the  button, or right-click this reservation and then click "Delete Reservation".

For a one-time reservation, you need to confirm in the popup message box whether to delete it or not.

For a recurring reservation:


- If under the calendar view, you need to confirm in the popup message box whether to delete this specific reservation or all the events of this recurring reservation;
- If under the list view, you need to confirm in the popup message box whether to delete this specific reservation or all the events of this recurring reservation.

Adding a Participant to the Local Directory

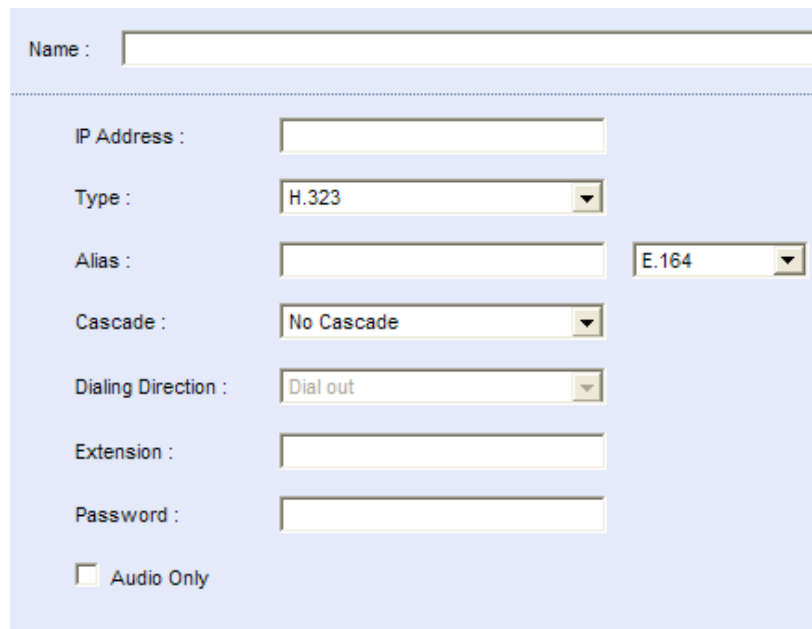
You can add the information of a new participant to the local directory in the following two ways:

- Create a participant in the address book.
- Add a participant in the ongoing conference to the address book.

Creating a Participant in the Address Book

Click the  button on the Address Book pane to add a new participant, and enter the "New Participants-> General" interface.

General Settings



Name :

IP Address :

Type :

Alias :

Cascade :

Dialing Direction :

Extension :

Password :

Audio Only

New Participants – General

The table below explains the detailed meanings of these parameters.

Configuration Description of New Participants – General

Parameter	Description
<i>Name</i>	Enter a name to identify the participant.
<i>IP Address/Routing Address</i>	If the network type is set to H.323, enter the IP address for the participant's endpoint. If the network type is set to SIP, enter the routing address for the participant's endpoint. This item is optional if an H.323 alias or SIP address is set in the "Alias"/"SIP address" check box below.
<i>Type</i>	Select the network communication protocol used when the participant's endpoint dials in to the conference: H.323 or SIP. The option in the "Alias"/"SIP Address" check box will change along with the network type selected here.
<i>Alias/SIP Address</i>	If the network type is set to H.323, select the alias type of H.323 or E.164 in the right drop-down list, and then enter the related alias. If the network type is set to SIP, select the SIP address type in the right list, and then enter the related address. This item is optional if the IP address of the endpoint is set.
<i>Cascading</i>	If the device is a standard endpoint, select No Cascade. If the device will be a cascaded link to another MCU, set the master/slave relationship of the RMX relative to the participant: If the RMX is the master, select Master, otherwise select Slave. In the cascading mode, you need to set the following three items: <i>Dialing Direction</i> , <i>Extension</i> and <i>DTMF</i> .
<i>Dialing Direction</i>	Select the dialing direction: <ul style="list-style-type: none"> Dial-in: The participant's device dials in the conference at the local RMX. It is unnecessary to set the items Extension and DTMF if this option is selected. Dial-out: The local RMX dials out to the participant's device. Note: the Dialing Direction option is available only if the Cascading option has been set to Master or Slave.
<i>Extension</i>	Use this field in case the user would like to send an extension field to the remote end.
<i>Password</i>	Enter a DTMF code that will be sent upon connection to the remote end.
<i>Audio Only</i>	If this option is selected, the participant will be defined as an audio participant, and the system does not support video input and output capabilities.



To add a participant who can communicate only through Polycom VBP (previously known as V2IU), you need to enter the IP address of V2IU in IP Address and the E.164 number of endpoint in Extension. Only in this way can the system successfully call this participant.

Example of cascading configuration

There are two sets of cascaded RMX devices (RMX_1 and RMX_2). The information is as follows:

RMX_1

IP: 172.22.176.9

E.164 Prefix (Register to a GK): 80

ID of Master Conference (Dial out from): 1234

RMX_2

IP: 172.22.176.10

E.164 Prefix (Register to a GK): 80

ID of Master Conference (Dial into): 2222

Password of Master Conference (Dial into): 1111

To set the RMX_1 as the master device and dial to the conference at the RMX_2, perform the following configuration at the RMX_1:

Name : Conf1

IP Address :

Type : H.323

Alias : 86 E.164

Cascade : Master

Dialing Direction : Dial out

Extension : 2222

Password : 1111

Audio Only

Cascading Configuration – RMX_1

At the same time, configure as follows at the RMX_2:

Name : Conf1

IP Address :

Type : H.323

Alias : 86 E.164

Cascade : Master

Dialing Direction : Dial in

Extension : 2222

Password : 1111

Audio Only

Cascading Configuration – RMX_2

Advanced Setting

Usually, you only need to set the parameters on the General tab, and accept other default settings of the system. However, to set advanced parameters, click the Advanced tab.

Line Rate : Auto Kbps

Broadcast Volume : 1 5 10

Listen Volume : 1 5 10

Email :

Enable P+C (only for ViewStation)

New Participants - Advanced

The table below explains the configuration parameters.

Configuration Description of New Participants – Advanced

Parameter	Description
Line rate	Specify the line rate of the participant's endpoint. "Auto" indicates using the line rate specified by the RMX system.
Broadcasting/Listening Volume	Move the corresponding slider to adjust the volume transmitted/received by the participant. Each grid increases or decreases the sound by 3dB. The adjustable range is 1~10 (in the ascending order), while the default value is


Parameter	Description
	5dB.
<i>Email Address</i>	Set the Email address used by the participant to receive conference notices from the system. Up to 2 Email addresses can be set by separating them with a “;”. For example, enter address1@polycom.com;address2@polycom.com.
<i>Enable P+C</i>	Used only for the Polycom ViewStation series endpoints. The ViewStation series endpoints can send and receive dual streams in a conference only if this option is selected.

Other Information

To add other information for the participant such as company name and contact phone, click the Information tab and configure Info1~Info4, then click OK.

Adding a Participant from an Ongoing Conference


You can also add a participant in an ongoing conference to the local directory. Operate as follows:

- 1 Click the desired conference in the Conferences list pane.
- 2 On the list pane, select the participant to be added, and then click the  button or right-click the participant, and then click "Add Participant to Address Book".

Defining a Participant Group

A group is a collection of pre-defined participants. With the grouping function, you can conveniently add a group of participants to the conference. For example, to frequently hold conferences of the marketing department, you can create a group named “Marketing Team” that contains the endpoints of all the marketing department participants. You can invite all the members to the conference to be held.

To define a group:


- 1 In the Address Book pane, click the  button or right-click in the blank area, and then click "New Group".
- 2 The New Group page appears. Enter the name of the group in the "Group Name" field, e.g. “Marketing Team”.
- 3 Click Add From Address Book. In the participant list that appears, select the desired participant, then click OK.

To select multiple participants at one time, click the desired participants one by one while pressing down the Ctrl key, or select adjacent ones while pressing down the Shift key. To delete an added participant from the group, select it and click Remove.
- 4 You can also delete multiple participants from the group. Click OK on the New Group page to add the new group to the address book.

Modifying a Participant/Group

To modify the participants or groups stored in the local directory, right-click the participant or group to be modified in the list and then click Participant Properties or Group Properties to display and modify the detailed parameters.

Deleting a Participant/Group

To delete a participant or a group from the local directory, click the participant or group to be deleted in the list, and then click the  button. Alternatively, right-click the participant or group, and then click "Delete Participant" or "Delete Group". In the confirmation dialog box that appears, click "OK".


You can also select the participant or group to be deleted, and then press the "Del" key to delete it.

Importing and Exporting the Local Directory

Exporting the Local Directory

A user can export entries from the local directory as a .csv file, for the purpose of backup or sharing between RMX systems.

To export the local directory:


- 1 Click the  button at the upper part of address book pane.
- 2 The dialog box for downloading file appears. Click "Save".
- 3 Select or enter the path of saving this file at the local computer, and then click "Save". The local address book will be saved at this specified path as a .csv file.



The groups defined in the address book cannot be exported.

Importing the Local Directory

To import the local directory:

- 1 Click the  button at the upper part of address book pane.
- 2 The interface for importing the address book appears. Click "Open".
- 3 Select or enter the path where the address book file (.csv) to be uploaded is located, and then click "Open" to return to the interface for importing the address book.
- 4 Click "Upload".



When uploading an address book file, the participants in the current address book won't be overwritten by entries with identical participant names in the uploaded file.

Internal GK server

The RMX system has been successfully integrated with internal GK server from version V2.4.3, which allows endpoints register RMX as its gatekeeper.

Internal GAB server

The RMX system has been successfully integrated with internal GAB server from version V2.5.0, which allows endpoints register global directory service or GAB to RMX from endpoint side.

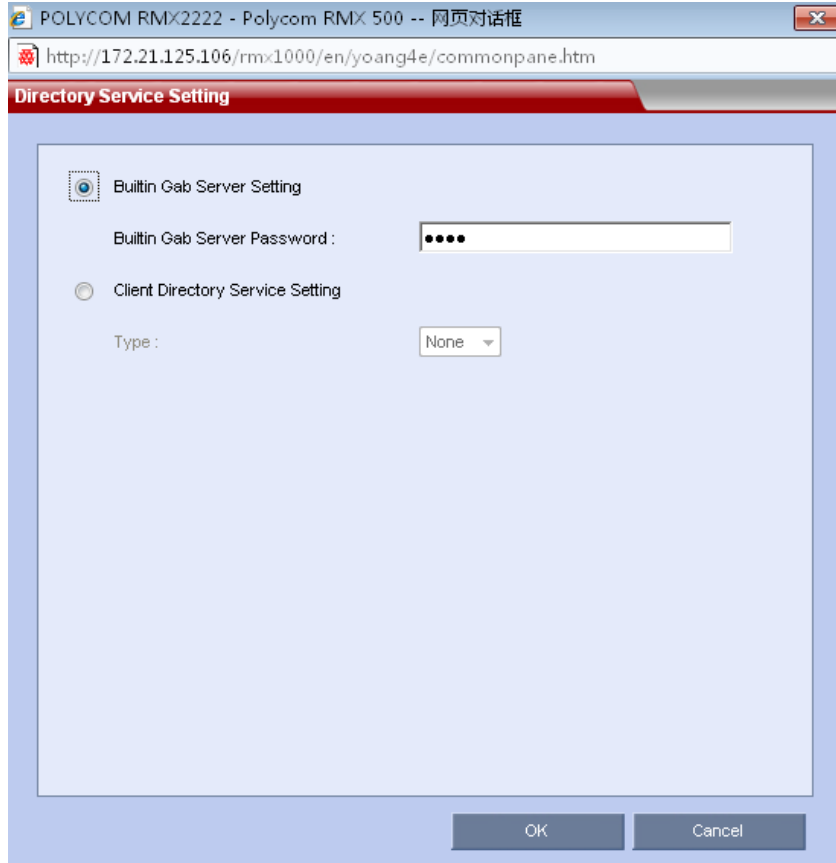
Directory Service

If the RMX system has been successfully integrated with a directory server, the information for other sites registered to this directory server will be synchronized to the address book for RMX. The RMX system allows you to register to the GAB or LDAP directory service provided by Polycom CMA™ v4.0 and internal GAB server.

Enabling Builtin GAB Server

In the Web interface, click the "Setup->Directory Service" menu item at the upper left part to enter the Directory Service interface.

Select **“Builtin Gab Server Setting”**, the RMX can work as GAB server and endpoints can get directory address by registering to it, enter the password if any.



Configuring Directory Service

In the Web interface, click the "Setup->Directory Service" menu item at the upper left part to enter the Directory Service interface.

Select the directory service type from the Type list. "None" is selected by default, indicating that directory service is not used. Depending on different directory service modes selected from "Type" by users, the system requires configuring different parameters.

GAB Server

To register RMX to the GAB server, select "GAB" from "Type".

The screenshot shows the 'Directory Service Setting' window. It has two radio buttons: 'Builtin Gab Server Setting' (unselected) and 'Client Directory Service Setting' (selected). Below the selected option, there are four fields: 'Type' is a dropdown menu with 'GAB' selected; 'Server' is a text box containing '172.21.125.105'; 'Password' is an empty text box; and 'Builtin Gab Server Password' is an empty text box.

Settings for the GAB server

Configure the parameters according to the table below:

GAB Configuration Parameters

Parameter	Description
<i>Server</i>	Set the IP address of GAB server.
<i>Password</i>	Enter the password (if available) of global directory.

LDAP Server

To register RMX to the LDAP server, select "LDAP" from "Type".



The screenshot shows the 'Directory Service Setting' window. The 'Type' dropdown menu is set to 'LDAP'. Other fields include: 'Server' (empty), 'Server Port' (389), 'Base DN (Distinguished Name)' (empty), 'Authentication Type' (SIMPLE), 'Use SSL (Secure Socket Layer)' (checkbox, unchecked), 'Bind DN (Distinguished Name)' (empty), and 'Password' (empty).

Settings for the LDAP server





Configure the parameters according to the table below:

LDAP Configuration Parameters





Parameter	Description
Server	IP address of the LDAP directory server
Server Port	LDAP server port No.
Base DN (Distinguished Name)	LDAP Base DN
Authentication Type	LDAP authentication type. Depending on different authentication types selected by users, the system requires configuring different options.
Use SSL (Security Socket Layer)	Specify whether to use SSL secure transmission or not.
Domain Name	LDAP server domain name
Bind DN (Distinguished Name)	LDAP bind DN
User Name	User name of the LDAP directory
Password	Enter the password (if available) of LDAP directory.


After the configuration is finished,  will be displayed if the directory service is successfully registered, or else  is displayed.

Viewing the Global Directory

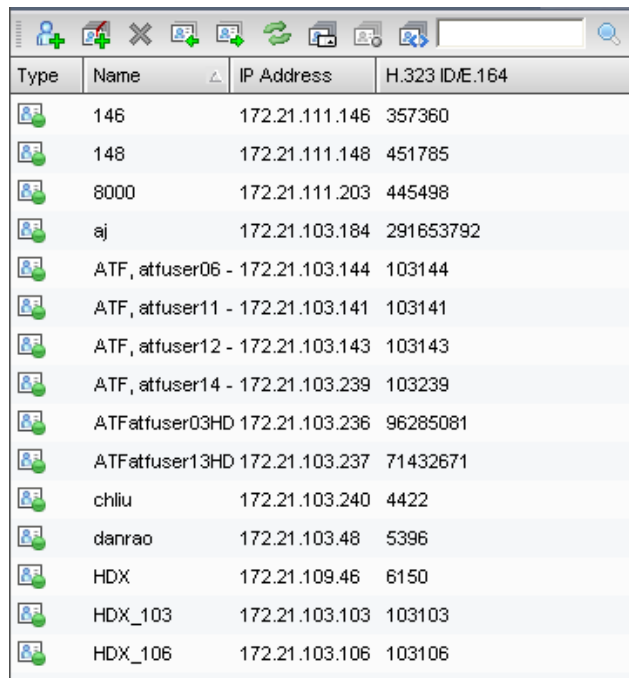
After the directory server is successfully registered, the global directory buttons (   ) on the address book pane will be activated. The table below defines the functions of these buttons:

Function Definitions of Global Directory Buttons

Button	Function
	The global directory will be automatically refreshed at regular intervals to synchronize the address change on the directory server. You can click this button to manually refresh the global directory.
	This button is available when the global directory list is displayed. Click this button to switch to the local directory list.
	This button is available when the dynamic GAB address is displayed. Click this button to switch to the dynamic GAB address.
	Display the local and dynamic GAB directory lists.

Click the  button on the address book pane to display the global directory list, as shown below. The list shows the information of other endpoint sites registered to the directory server. The green icon indicates that

this endpoint can be used to dial in to the conference, and the grey icon indicates that this endpoint is offline.




Type	Name	IP Address	H.323 ID/E.164
	146	172.21.111.146	357360
	148	172.21.111.148	451785
	8000	172.21.111.203	445498
	aj	172.21.103.184	291653792
	ATF, atfuser06 -	172.21.103.144	103144
	ATF, atfuser11 -	172.21.103.141	103141
	ATF, atfuser12 -	172.21.103.143	103143
	ATF, atfuser14 -	172.21.103.239	103239
	ATF atfuser03HD	172.21.103.236	96285081
	ATF atfuser13HD	172.21.103.237	71432671
	chliu	172.21.103.240	4422
	danrao	172.21.103.48	5396
	HDX	172.21.109.46	6150
	HDX_103	172.21.103.103	103103
	HDX_106	172.21.103.106	103106

Global Directory List

Searching Directory Entries

A user can use the "Search" function of address book to fast find the specified participant or participant group when the address book stores the information of numerous participants.

To search for a participant or participant group, enter the name of participant or participant group to be queried in the search box on the address book pane, and click the  button. You can enter the full name of the participant or group for accurate searching or the keyword in this name for fuzzy searching.



To return to the address book after searching, clear the entered keyword, and click to re-query.

Conference/Participant Monitoring

Through the real-time conference monitoring platform of the system, you can easily monitor ongoing conferences; track participants and conference progress, and perform control operations as needed. With the RMX, you can implement two types of monitoring operations:








- Conference monitoring – On the main window, view the ongoing conferences and information about the specified conference and specified video, and change the conference control, management and other parameters as needed.
- Participant monitoring – View the status and detailed parameters of participants, change the multi-screen layout of the endpoint, and set a message overlay to be viewed by the site.

Conference Monitoring


Viewing Conferences List Pane

The Conferences list pane always shows information about ongoing conferences. The table below explains conference information.

Conference Information

Parameter	Conference Information
<i>Name</i>	The interface displays the conference name.
<i>Status</i>	<p>The interface displays the status of the ongoing conference. No indication will be displayed if the connection of participants is normal. Corresponding indicators appear with a warning icon at the occurrence of the following statuses:</p> <ul style="list-style-type: none"> •  Audio – Problems with the participant's audio •  Empty – No participant is connected. •  Faulty Connection – Participants are connected, but the connection is problematic. •  Not Full – Not all the defined participants are connected. •  Partially Connected – The connection process is not yet complete, and the video channel has not been connected. •  Single Participant – Only one participant is connected. •  Video – Problems with the participant's video
<i>Number</i>	The Conference ID assigned to the conference
<i>Start Time</i>	Conference start time

Parameter	Conference Information
<i>End Time</i>	The time the conference is expected to end

For multi-screen conferences, you can click  next to the conference name to display details of the four video stream channels and one pure audio stream channel, including the video protocol, video format and conference bandwidth of each video stream. When you click each channel of video stream or audio stream, the participant list will show the information about participants that access the related conference with this channel of audio/video capability.

Viewing Conference Parameters

In addition to the status information shown in the conference list, you can view detailed parameters of an ongoing conference. Double-click the conference to be viewed or right-click it, and then click Conference Properties. The Conference Parameters interface shows the configuration of the conference. Here you can change the end time, password and chairperson password for the conference, adjust the conference layout, set the conference message overlay, conference name and customized polling, etc. The unavailable options cannot be modified.

Conference Control

Changing End Time

When a conference is created, its duration is also set. The default duration is 8 hours.

When a conference is occurring, you can extend or shorten its duration by changing its End Time. You can also manually delete an ongoing conference.


To change the conference duration:

- 1 Double-click the desired conference in the Conferences list pane.
- 2 On the General tab of the Conference Parameter interface, change End Time, and then click OK.



The conference duration cannot exceed 720 hours (30 days).



To manually terminate a conference:

- 1 In the conference list, click the conference to be deleted, and then click the  button, or right-click the conference, and then click "Delete Conference".
- 2 In the confirmation dialog box that appears, click OK.

Locking/unlocking a Conference

When an ongoing conference is locked, all the endpoints cannot dial into the conference by themselves. After the conference is unlocked, any endpoint can dial into the conference.

To lock or unlock a conference, select one of the following two modes:

- Select the conference in the conference list, and then click the locking button  /unlocking button  on the pane, or right-click the conference, and then select "Conference Lock"/"Conference Unlock" from the shortcut menu.
- Double-click this conference to enter the conference parameter interface. On the "Advanced" tab interface, select or deselect the "Conference Lock" check box.

Setting the Talk Hold Time

In the voice activation mode, if the talk of a participant reaches the set time, this participant will be automatically set to the speaker. In different video modes, different display rules apply to the speaker's endpoint:

- In the Lecture Mode, if a user sets to automatically select a lecturer through voice activation, the speaker will become a lecturer and be displayed in full screens at other participants' endpoints, and the speaker's endpoint will display the screens of other sites.
- In the same multi-screen layout mode, the image outline at the speaker's endpoint will be highlighted when multi-screen windows are at the same size. While, if the multi-screen windows are at different sizes, the image of the speaker's endpoint will be switched to the largest window.

To set the talk hold time, double-click this conference to enter the conference parameter interface. Enter the time in the "Talk Hold Time" text box on the "General" tab interface, in the range of 1-60 seconds.

Changing Conference and Chairperson Passwords

- 1 In the Conferences list pane, double-click the desired conference.
- 2 On the General tab, set Conference Password and Chairperson Password, and then click OK.

Choose a personalized layout

You can change the multi-screen mode and multi-screen layout of an ongoing conference. The initial multi-screen mode and screen layout of the conference accords with the conference profile.

To select a conference multi-screen mode:





- 1 In the Conferences list pane, double-click the desired conference.
- 2 Click the "Video Settings" tab on the conference parameter interface.

- 3 Select the required mode in "Multi-screen Mode".
 - Lecture Mode: All the participants' endpoints will display the lecturer in full screens, and the lecturer's endpoint will display other participants according to the layout set here. After this option is selected, the "Lecture" option is activated. Specify a lecturer in the drop-down list. "Auto" indicates that the voice activation feature will be used to select the participant whose talk time reaches the defined duration as the lecturer. For settings of the talk hold time, see *Setting the Talk Hold Time*.
 - Same Layout: All the participants' endpoints in the conference will display the same multi-screen image according to the layout set here. This setting will allow sites to see their own loopback images.

To set multi-screen layout:

Based on the selected multi-screen mode, a user can set to automatically select the multi-screen layout according to the number of added participants or specify a fixed multi-screen layout.

To set automatic multi-screen layout:

- 1 Click "Auto" at the left part of the multi-screen setting area to display the automatic multi-screen layout pane.
- 2 Select the largest multi-screen layout so that the conference site displays at most the number of multi-screen windows set here. In this mode:
 - When the number of participants is smaller than or equal to the set number of multi-screens, the system displays multi-screen image according to the actual number of participants and in line with the default rule. For the default rule, see *Default Rule of Automatic Layout*.
 - When the number of participants is greater than the set number of multi-screens, the system uses the voice activation feature, and switches to display the first participants who speak loudest with the largest multi-screen layout selected here. If the number of participants is greater than 4 and the maximum selection is , the system will display the first four participants who speak loudest using the  layout.

To set fixed multi-screen layout:

Click the desired layout number, and then select the desired layout. The interface shows the thumbnail of the layout. For the video display in each video window, you can select one of the following modes from the drop-down list:

- Auto: This option is selected by default. Each multi-screen window will automatically select to display a conference site based on the information about connected participants.
- Automatic Polling: by default, if the set multi-screen number is smaller than the number of connected participants, the window will display images of the rest participants in turn. The administrator can also specify the specific conference sites to be displayed in turn. For details, see *Customized Polling*. The time interval for switching between the conference sites is the value of Automatic Polling Interval.

- Directly select an endpoint conference site to be displayed at the window.



- If the "Symmetric Layout" option is selected, a user can only select the multi-screen layout with the same size of windows.
- In the Same Layout mode, participants will view the video of their conference sites.

Set Viewers and Hosts

Define the viewers and hosts in a conference, in spite of the multi-screen mode strategy for a conference; specify the fixed target conference site for a participant to watch. This function has the following limitations:

- Used only for multi-screen conferences satisfying the following conditions:
 - Conferences using fixed multi-screen layout, with the number of participants equal to the number of selected multi-screen panes plus 2
 - Conferences which are not in 16 multi-screen layout
 - The multi-screen pane has been set to display a fixed conference site
 - None of the video stream channels has a capability of H.263, 4CIF
- The viewer must be an endpoint which uses the first channel of video stream capability to access the conference.
- The endpoint which has been appointed as the chairperson cannot become a viewer.
- If the conference is a single channel conference with a capability of 4CIF or CIF, up to 7 endpoints can be displayed on the conference screen when this function is enabled.

Set viewers and hosts:


- 1 In the Conferences list pane, double-click the desired conference.
- 2 Click the Video Settings on the conference parameter page.
- 3 Specify the viewers and hosts on the bottom of the page, and then click **OK**.

Customized Polling

The administrator can customize a polling queue so that the multi-screen window which has been set to do automatic polling can display the conference sites one by one in the queue. The display sequence is the same as the sorting sequence in a queue.

Set the polling queue:




- 1 In the Conferences list pane, double-click the desired conference.
- 2 Click Customized Polling on the conference parameter page to display the list of current participants.

- 3 Select the conference site you want to poll from the list of All Participants, and click **Add**. The list of added conference sites will be displayed in the Polled Participants list.
You can also use "Ctrl + targets" or "Shift + targets" to add multiple conference sites at once. Click Add All to add all conference sites at once.
- 4 If necessary, you can adjust the sequence by dragging and moving the conference sites in the polling list up and down, or by clicking the triangle button  at the bottom of the list. The actual polling will abide by the defined sequence in the list.

Roll Call

By using the roll call function, the conference organizer can easily switch the conference sites to be roll called for one-to-one communication while other conference sites are muted.

To do roll calling:

- 1 In the Conferences list pane, double-click the desired conference.
- 2 Click Video Settings on the conference parameter page to select a fixed multi-screen layout.
When doing roll calling, we suggest that you select the 1 multi-screen layout in Lecture mode and 2 multi-screen layout in Same Layout mode, so that you can operate more directly and intuitively. Roll call cannot be used for the 1 multi-screen layout in Same Layout mode.
- 3 Select Roll Call. The window used for roll call will display the  tag to indicate that the conference sites in this window are allowed for speaking, whereas the conference sites in a window without this tag will be muted.
- 4 Specify a roll call conference site or a conference site to be roll called based on different multi-screen modes:
 - In Lecture mode, the lecturer's conference site is a roll call conference site. Select a conference site to be roll called in the window showing the  tag, and then click Apply.
 - In Same Layout mode, there will be two windows showing the  tag. Specify the roll call conference site in one of the windows, select the conference site to be roll called in another window, and then click **Apply**.

Setting Message Overlay for Conference

When a message needs to be sent to all participants in a conference, you can set the message overlay to be displayed on all participants' endpoints screen.

To set a message overlay:

- 1 In the Conferences list pane, double-click the desired conference.
- 2 On the conference parameter interface, click the "Message Overlay" tab, and set the related parameters.

Setting Message Overlay

Parameter	Description
<i>Enable</i>	Select this option to enable message overlay. Then you can set other parameters.
<i>Contents</i>	Enter the content to be displayed.
<i>Font Size</i>	Set the font size of the message overlay.
<i>Color</i>	Set the color matching scheme for the message overlay font and background.
<i>Display Times</i>	Move the slider to set the display times of the message overlay.
<i>Display Speed</i>	Move the slider to set the display speed of the message overlay. If the display speed is set to 0, the message will be displayed in the center of the screen as a banner.
<i>Vertical Boundary</i>	Move the slider to set the vertical boarder of the message overlay.
<i>Transparency</i>	Move the slider to set the contrast of the message overlay.

Setting the Conference Name

The conference name is also the endpoint name, which marks each site on the viewed screen. The site name displayed at each participant's endpoint comes from the system name set for the endpoint.

To set the conference name:

- 1 In the Conferences list pane, double-click the desired conference.
- 2 On the conference parameter interface, click "Site Name" to enter the site setting interface. Select the "Always show site name" check box, and set the related parameters. You can set the Font Size and Overlay Position.





In the video switching conference mode, you cannot set the conference Message Overlay or conference name.

Specify the Dual Stream Sender in a Cascading Conference

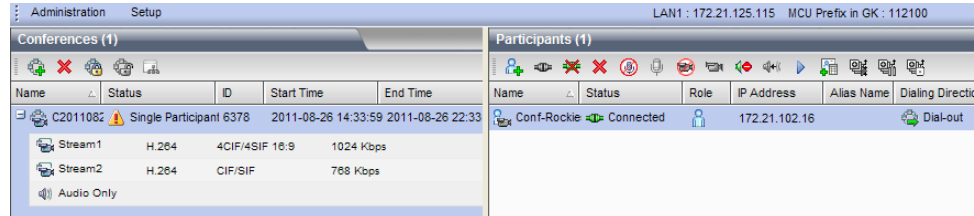
When the profile used by a cascading conference has the root cascading mode enabled (see *Advanced configuration in Conference Profile*), the administrator can specify a participant in the conference as the dual stream sender so that only the dual stream sender can send dual streams in the conference. If no dual stream sender is specified, all participants can send dual streams.

Specify a dual stream sender:

- 1 Click the conference to be configured on the Conferences list pane, and then click  on the toolbar.
- 2 On the popup page, right-click the participant you want to configure in the participant list, and then click Become a Dual Stream Sender.

The information for the participant who has been set as a dual stream sender will be displayed in Current Dual Stream Senders, and  will also be displayed next to the role icon for that participant in the participant list.


Participant Monitoring












Participant Monitoring Pane


















When a conference is occurring, you can view detailed status and properties of each participant's endpoint and perform related setup and operations through the Conferences list pane.

Viewing Participant List

Click an ongoing conference in the conference list. The list pane then shows all the participants connected to the conference and those not connected to the conference but added to the participant list. For multi-screen conferences, you can click  next to the conference name, and then select an audio/video stream, the list pane will display the corresponding participant of this audio/video stream.

Description of Participant List Parameters

Parameter	Description
Name	<p>Displays the name and type of the participant:</p> <ul style="list-style-type: none">  Audio Participant – Connected to an audio user  Video Participant – Connected to a video user  – Recording Link
Status	<p>Displays the connection status of the participant:</p> <ul style="list-style-type: none">  Connected – The participant is successfully connected to the conference.  Disconnected – The participant is disconnected from the conference. This status applies only to defined participants.  Partially Connected – The connection process is not yet complete, and the video channel has not been connected.  Connecting – the participant is being connected to a conference  Re-inviting – the connection has not been set up successfully yet, and the system is trying to re-invite the participant  Faulty Connection – The participant is connected, but problems occurred in the connection, such as synchronization loss.

Parameter	Description
<i>Role</i>	<p>Displays the participants role or function in the conference:</p> <ul style="list-style-type: none">  – Regular participant  – The participant will be defined as the conference chairperson and have more privileges to manage conferences through the endpoint interface.  – This participant is defined as the lecturer.  – This participant is both the lecturer and the chairperson.  – This participant has asked to speak
<i>IP Address</i>	The participant's IP address
<i>Alias</i>	The participant's Alias Name
<i>Video Sources (video switching conferences only)</i>	The target conference site watched by the current participant.
<i>Dialing Direction</i>	<ul style="list-style-type: none">  Dial-in – The participant dials in to the conference.  Dial-out – The system calls the participant.
<i>Audio</i>	<p>Displays the status of the participant's audio channel: If the participant's audio connection is normal and the channel is neither muted nor blocked, no indication is displayed.</p> <ul style="list-style-type: none">  Muted – The selected endpoint is muted by RMX so that its audio cannot be sent to other conference sites.  Blocked – The selected endpoint is blocked so that it cannot hear the audio of other conference sites.  – The selected endpoint is muted and blocked at the same time.  – The selected endpoint has been muted locally.  Lecturer – The selected endpoint is the lecturer's or speaker's.
<i>Video</i>	<p>Displays the status of the participant's video channel: If the participant's video connection is normal and the channel is neither suspended nor secondary, no indication is displayed.</p> <ul style="list-style-type: none">  Suspended – Video transmission from the endpoint to the conference is suspended.  Secondary – Participant is connected only through the audio channel due to problems with the video channel.
<i>Encryption</i>	 Indicates that the endpoint is using encryption for its connection to the conference.
<i>FECC Token</i>	<p> The participant has the Far End Camera Control (FECC) Token and is capable of conducting FECC. FECC Token can only be allocated to one participant at one time. If no participant uses the FECC function, this icon is not displayed.</p>
<i>Content Token</i>	 The participant is sending dual streams.

Viewing Participant Properties

To view detailed parameters of a participant, double-click this participant in the participant list, or right-click the participant, and then click "Participant Properties".

The parameters displayed on the General, Advanced, and Information tab pages are the same as those for adding a new participant. For explanation on configuration parameters, see *Adding a Participant to the Local*.

The Connection Status tab shows the status and detailed information of the participants, including time of connecting/disconnecting, cause of disconnecting, network transfer rate, packet loss ratio, audio, video etc.














In the "Multimedia Settings" tab page, you can set whether to mute, block, or suspend a participant or not.







Participant Control Buttons and Menus

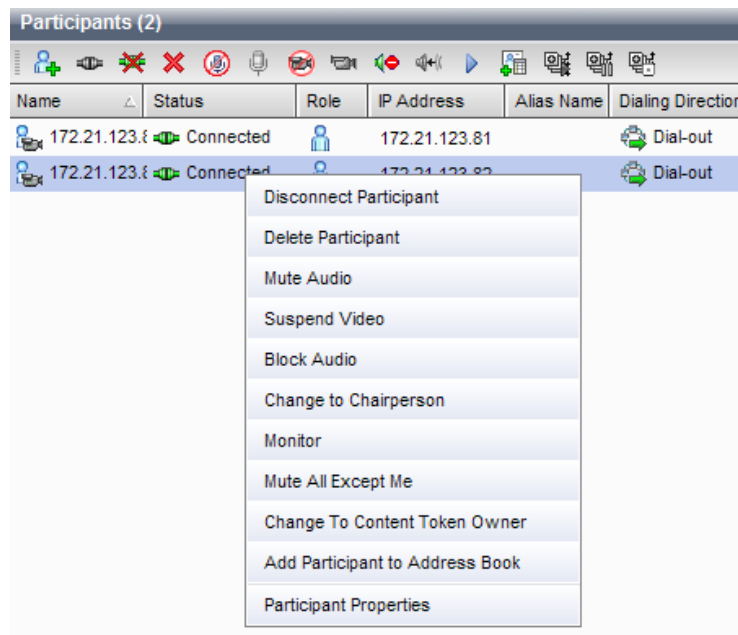
You can control and modify the participant's connection status of an ongoing conference through the buttons in the Participant list pane, the Participant right-click shortcut menu, and the Participant Properties interface.

The table below explains all the buttons in the Participant list pane.

Buttons in the Participant List Pane

Button	Name	Description
	<i>New Participant</i>	Define a new participant. For more information about the New Participant dialog box, see <i>Creating a Participant in the Address Book</i> .
	<i>Connect Participant</i>	Connect a disconnected defined dial-out participant to the conference.
	<i>Disconnect Participant</i>	Disconnect the participant from the conference.
	<i>Delete Participant</i>	Delete the selected participants from the conference.
	<i>Mute Audio</i>	Mute the specified endpoint so that the audio of this endpoint will not be sent to the conference. The <i>Audio Muted</i> indicator appears in the participant list and the Unmute Audio button becomes active ().
	<i>Unmute Audio</i>	Participant's audio transmission to the conference resumes. The Mute Audio button becomes active ().
	<i>Suspend Video</i>	Suspend the video transmission from the participant to the conference. The suppressed participant's video is not transmitted to the conference but the participant still receives conference video. The <i>Suspend Video</i> indicator appears in the participant list and the Resume Video button becomes active ().
	<i>Resume Video</i>	Participant's video transmission to the conference resumes. The Suspend Video button becomes active ().
	<i>Block Audio</i>	The audio of the specified endpoint is turned off. The audio from the conference will not be sent to this site,

Button	Name	Description
		but the conference can still receive audio from this site. The <i>Audio Blocked</i> indicator appears in the participant list and the Unblock Audio button becomes active (🔊🔒).
	<i>Unblock Audio</i>	Conference audio transmission to the participant resumes. The <i>Block Audio</i> button becomes active (🔊🔒).
	<i>Monitor</i>	Monitor the image of the participant's site. After you click this button, a new window appears, displaying the image of this participant's site that is received by MCU.
	<i>Add Participant to Address Book</i>	Open the address book, and then select the desired participants. For more information about the address book, see <i>Address Book</i> .
	<i>Start Recording</i>	Start conference recording.
	<i>Pause Recording</i>	Stop conference recording temporarily.
	<i>Stop Recording</i>	Terminate conference recording.




Participant Right-click Shortcut Menu


In the participant list, right-click any connected participant to display the shortcut menu. Through this shortcut menu, you can conduct common participant control operations. If you right-click an unconnected but defined participant, the shortcut menu only provides some of the above operations.

Participant Control Operations


Mute a Participant

The muted participant cannot speak. If you want to mute a participant in the conference, you can choose one of the following methods:

- Select the participant to be muted from the list, and then click the mute button  at the upper part of the pane.
- Right-click the participant to be muted in the list, and then select Mute. If you want to mute all participants other than the selected participant, select Mute All Other Than the Selected.

The  tag will be displayed in the audio bar for the muted participants.


Ask to Speak

In a conference, if a muted participant's endpoint wants to talk, he/she can press the * key on the remote control to activate the keypad and then press 99 to send a request to the conference administrator. The administrator will see a dynamic Ask to Speak icon  next to the participant's role on the Web management page. This icon lasts for 30 seconds before disappearing.

Specify a Fixed Dual Stream Sender

In a conference, each endpoint can send dual streams by default. The administrator can also specify a participant to be the dual stream sender and only this participant is allowed to send dual streams.

Specify a participant to be a dual stream sender:

Right-click the participant to be configured in the list and select Become a Dual Stream Sender. The  tag will be displayed in the role bar for this participant.

Switch the Target Conference Sites (Video Switching Conferences Only)

When video switching conferences are held, the administrator can randomly switch the target conference site's video watched by the participant's endpoint.



To switch the target conference sites, you can use the following two methods:

- (Recommended) Double-click the participant in the target conference site to be switched in the list, and then click Video Settings. Select the conference site you want to watch from the drop-down list in the window.
- Right-click the participant in the target conference site to be switched in the list, and then select Change Video Source. Select the conference site to be watched from the popup list.

Manually move the participant to another video stream channel.

In the conference, you can move a participant from one of the video stream channels to another video stream channel with lower level quality parameters, and the video accessing capability for this participant's endpoint will be automatically reduced to the capability for the target video stream without disconnecting the conference. The participant cannot be moved to a video stream which has higher level of video stream quality.


Move the participant to another video stream channel:

- 1 In the Conferences list pane, click  next to the conference name to expand the audio and video stream items, and then click the video stream where the participant you want to move is located.
- 2 Click and drag the participant you want to move in the participant list, and the cursor turns into .
- 3 Drag and move the participant to the target video stream in the conference list. You release your mouse key when the target video stream is highlighted so that the participant can be moved into the video stream successfully.

Monitoring an Endpoint's Conference Site

The administrator can monitor the real-time video of any participant directly through the Web interface.

To monitor the real-time view of an endpoint's conference site:

Select the participant to be monitored in the list, right-click it and select "Monitor", or click the operation button  on the pane. A new Web video window appears. To implement this function, you need to install the Active control. Your IE needs to be compatible with this control.

Prevent an Endpoint from Being a Lecturer

When necessary, a specific participant can be disallowed from speaking.

To prevent a participant from being a lecturer:

- 1 Double-click this participant to enter the Participant Properties interface, and select "Advanced".
- 2 Select the "Cannot be set as a lecturer" checkbox.

I Frame Suppression

In the event of severe packet loss, the endpoint will frequently request I frame, which will affect other participants' video quality. By selecting the I frame suppression function for the participant who has poor network conditions, you can reduce MCU's I frame responses to this participant, as well as to prevent this endpoint affecting other participants.

To enable I frame suppression:

- 1 Double-click this participant to enter the Participant Properties interface, and click "Connection Status".
- 2 Check the Enable I-frame Suppression checkbox, and enter the I frame response interval of MCU in the I-Frame Suppression Interval textbox.

Users and Connections

Users who are defined in the Web interface can log into the Web management interface to complete authorized operations. The system supports three user connection levels:

- Chairperson
- Operator
- Administrator

A chairperson can only manage ongoing conferences and participants, but cannot have access to the configuration program of the system.

An Operator user can perform all the RMX tasks a Chairperson does. In addition, Operators can also view the RMX configurations.

An Administrator user can perform all the tasks of Chairpersons and Operator users. In addition, Administrators can perform all configuration and maintenance tasks.

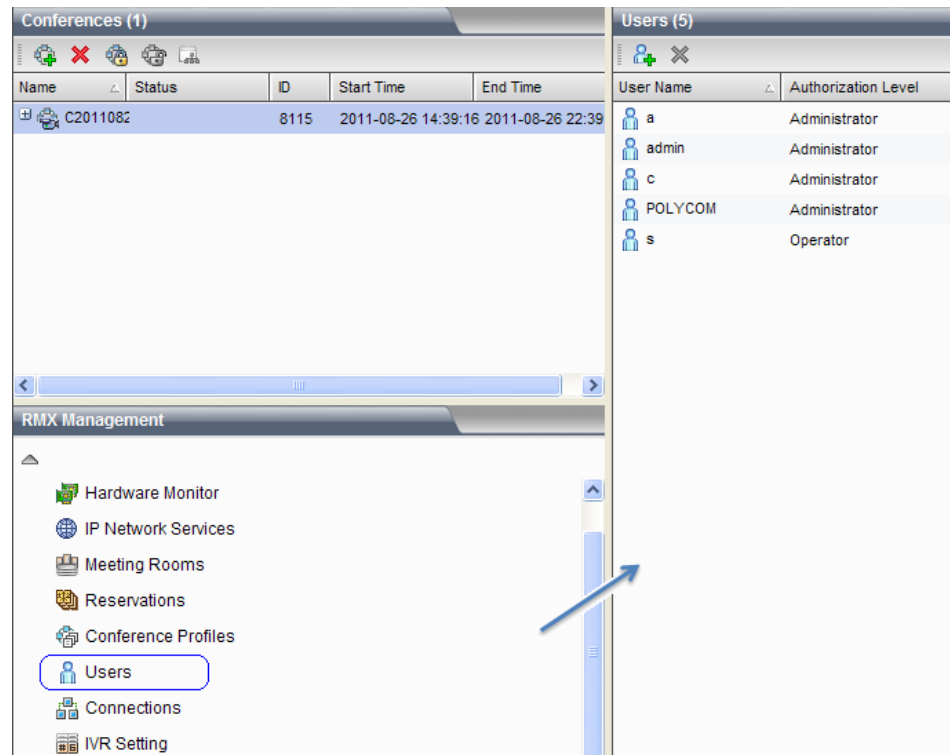
Administrator and Operator users can verify which users are defined in the system. Neither of them can view the user passwords, but an Administrator user can change the passwords that define users in the system.

The Users Pane lists the currently defined users in the system and their authorization levels. The authorization level dictates a user's capabilities within the system. The pane also enables the administrators to add and delete users.

By default, RMX has one administrator. It is recommended that you define users with different privileges, and change the default administrator's password to prevent system invasions.

The name and password for RMX's default administrator are both "POLYCOM".

User List



User List Pane

To view the defined users for the current system, click Users in the RMX Management pane. The defined user list appears in the list pane located on the right side.

The user name displayed in the list is the login name for the user to connect to the system's Web pages, with its permission level indicating the user's authorization level.

Click a column header to automatically sort users by name or authorization levels, which makes it easy for the administrator to manage users.

Defining New User

Only users with Administrator privileges are allowed to define new users.

To create a new user, click the  button in the User List pane, or right-click in the blank area of the list and then click "New User". The New User interface appears.

New User Settings Page

Description for New User Settings

Parameter	Description
<i>User Name</i>	Enter the user name for logging in to the system's Web page
<i>Password</i>	Enter the 4-12 character password for logging in to the system's Web page. Note: If the enhanced password function is enabled, you must enter a password comprised of letters, numbers and special characters (~ ! @ # \$ ^ * () _ - [] ; : , . / ?), with a length of 8-40 characters. For information on how to enable the enhanced password function, see <i>Password Checking</i>
<i>Authorization Level</i>	Set the authorization level of the user to Administrator, Operator, or Chairperson.
<i>Receive the Email When System Alerts</i>	If enabled, the user will receive an Email when a system alert is generated. It is only available for Administrator-level users.
<i>Email Address</i>	Enter the Email addresses for recipients here if Receive the Email When System Alerts is enabled.

Deleting User

Only users with Administrator privileges are allowed to delete defined users.

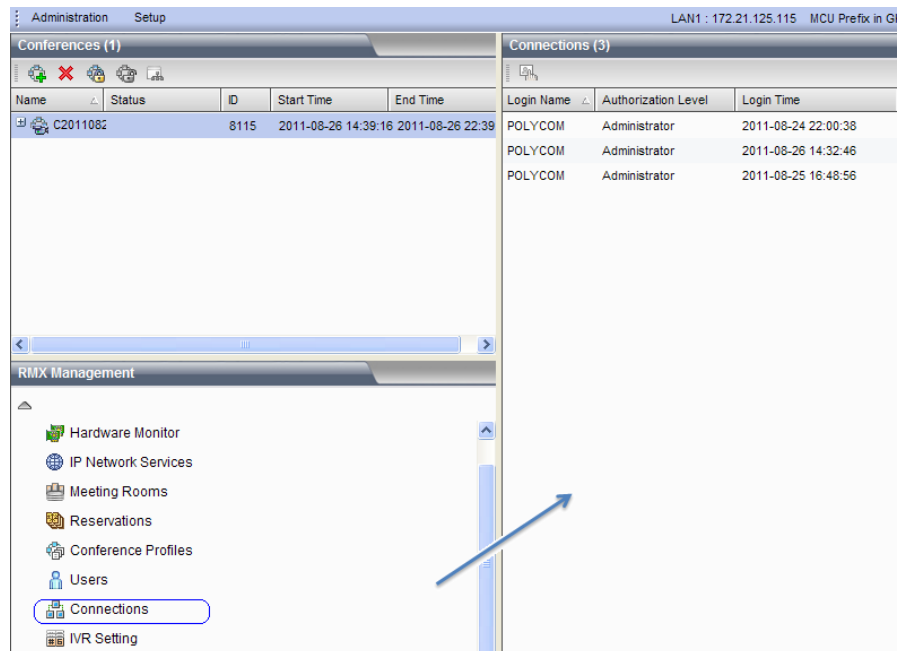
To delete a user, click this user in the user list and then click the  button, or right-click this user and select "Delete User".

Modifying User Password

Only users with Administrator privileges are allowed to modify passwords of other defined users.

To modify the password of a user, right-click the user you want to modify in the user list and select Change User Password. The page for password modification appears. Enter the old password, new password, and confirmation password to complete the modification.

Viewing User Connection



User Connection List

The Web management page for the system can list all connections (all users, servers, or others logged into the system,) to the Web interface.

To view connected users, click Connections in the RMX Management pane. The list of connected users including the following information is displayed in the list pane on the right side.

- User login name
- Authorization level of the user (conference chairperson, operator, or administrator)
- User login time
- User computer name or ID

The administrator can use the  button on the pane to disconnect the logged-in operator or chairperson user.

IP Network Services

Click "IP Network Services" in the RMX Management pane to display the related IP information setting page on the list pane. The corresponding IP information of the system will be displayed on the list pane, including the IP addresses and Gateway addresses for port LAN1 and LAN2, and the addresses of the NAT server and DHCP server.

Name	Status	ID	Start Time	End Time
C2011082		8115	2011-08-26 14:39:16	2011-08-26 22:39

Network Interface	IP Address	Gateway	NAT
LAN1	172.21.125.115	172.21.125.254	NO
LAN2			

IP Network Service Page

Right-click a LAN port and click "Properties" to display the "IP Network Services" interface. You can view and modify the detailed parameter information here.

Parameter	Description
	work when the LAN1 port is unavailable.
<i>Use LAN1(2)</i>	Enables/disables the network port.
<i>DHCP</i>	If the user network is configured with a DHCP (Dynamic Host Configuration Protocol) server, select this option to automatically obtain the IP address. Deselect this option to use a static IP address, in which case you need to configure the next three options.
<i>IP Address</i>	Set the IP address for this network port
<i>Subnet Mask</i>	Set the Subnet Mask for this network port.
<i>Gateway</i>	Set the gateway address of this port. If Set as Default is selected and no matched static routes are found, the system packets will be transmitted via this gateway by default. In this case, a default route is displayed in the list of "IP Network Services->Routers" page. For details, see <i>Routers</i> .
<i>NAT</i>	The Network Address Translation (NAT) function of the system enables you to translate the private network IP address of packet into a public network IP address before transmission. To enable NAT, select this check box and then set the public network IP address to be displayed to the outside in the NAT IP field.
<i>Obtain DNS Server Address Automatically</i>	Used in combination with the DHCP option. When the DHCP check box is selected, this option allows you to obtain the DNS server address automatically from a DHCP server in the network.
<i>Preferred/Alternate DNS Server</i>	If you did not select the option for automatic DNS address discovery, you must enter the preferred/alternate DNS server addresses here for the system to resolve domain names.
<i>LAN Speed</i>	Set the speed/duplex modes for LAN ports. The system supports the 10/100M Full Duplex or Half Duplex mode and the 1000M Network mode. You can also select Auto to use auto-negotiation. Note: Contact the network administrator before setting "LAN Speed" to ensure that the link rate of switch is matched with the MCU port.

Routers

In the "IP Network Services" interface, click "Routers" to configure the routing information.

Router IP Address	Remote IP Address	Subnet Mask
172.21.125.254	0.0.0.0	0.0.0.0

IP Network Services - Routers

The Routers page displays the information for the configured routes in the system. The RMX 1000 packets will be transmitted via these static routes. You can modify or delete an existing route by selecting the route, or just click the New button to create a new route. The table below shows the descriptions for route parameters.

Routers Setting

Parameter	Description
Router IP Address	Set the IP address for the sending router of packet transmission
Remote IP Address	Set the target network address for packet transmission
Subnet Mask	Set the subnet mask for the target network



You cannot modify the default route on this page. To set the default route, select the "IP Network Services->Properties" page, and then select the "Set as Default" check box next to the configured gateway. For more information, see LAN Setting.

Gatekeeper

In the "IP Network Services" interface, click "Gatekeeper" to configure the gatekeeper information.

If a gatekeeper device is configured on your network, you have the option to register RMX with the gatekeeper and configure the related parameters.

Register to Gatekeeper

Primary Gatekeeper Registration Failed

Gatekeeper IP Address :

Gatekeeper Port :

Alternate Gatekeeper Unregistered

Gatekeeper IP Address :

Gatekeeper Port :

System Prefix/E.164 :

System H.323 Alias :

IP Network Services - Gatekeeper

The table below explains the specific meanings for the configuration options.

Gatekeeper Setting

Parameter	Description
<i>IP Network Type</i>	<p>Set the IP network type for the RMX system to make a call. You need to set it based on the call type used for the participant's endpoint. It can be set to:</p> <ul style="list-style-type: none"> • H.323: Only the H.323 call is supported. • SIP: Only the SIP call is supported. • H.323 & SIP: The H.323 call and SIP call are supported at the same time. <p>Settings of the gatekeeper related parameters are available only when the H.323-supporting network type is selected.</p>
<i>Registered Gatekeeper</i>	Set whether or not to register with the gatekeeper. You must check this option to set the parameters that follow.
<i>Primary (or Alternate) Gatekeeper</i>	Indicates whether or not the system is registered with the primary (or alternate) gatekeeper.
<i>IP Address for the Gatekeeper</i>	Set the IP address for the primary (or alternate) gatekeeper.
<i>Port Number for the Gatekeeper</i>	The port number for the primary (or alternate) gatekeeper.
<i>System prefix/E.164</i>	Set the E.164 number for the system.
<i>H.323 Alias</i>	Set the H.323 alias for the system.

SIP Server

If your network supports Session Initiation Protocol (SIP), you can connect an IP call with SIP.

In the "IP Network Services" interface, click "SIP Server" to configure SIP server parameters.

IP Service – SIP Server

Configuration Description of SIP Server Parameters

Parameter	Description
IP Network Type	<p>Set the IP network type for the RMX system to make a call. You need to set it based on the call type used for the participant's endpoint. It can be set to:</p> <ul style="list-style-type: none"> • H.323: Only the H.323 call is supported. • SIP: Only the SIP call is supported. • H.323 & SIP: The H.323 call and SIP call are supported at the same time. <p>Settings of the SIP server related parameters are available only when the STP-supporting network type is selected.</p>
Transmission Type	<p>Set the transport layer protocol used for communicating with the SIP server. It needs to be consistent with the protocol supported by the SIP server.</p>
Registration with the server	<p>Specifies whether to register RMX to the specified SIP server. You need to set the SIP server related parameters after this function is enabled.</p>
Preferred/Alternate Server	<p>Displays the registration status of the SIP server. When registration of the preferred server fails, the alternate server will function as the current in-use SIP server.</p>
Server Address	<p>Provides the IP address of SIP server for registration service.</p>
Server Port	<p>Provides the connection port of SIP server for registration service.</p>

Parameter	Description
<i>Server Domain Name</i>	Provides the domain name of SIP server for registration service.
<i>User Name</i>	User name provided by the SIP server for the registered user.
<i>Password</i>	Password matched with the user name.
<i>Outbound Proxy Server</i>	For communication with the SIP server when the RMX system is configured on the internal network, an outbound proxy server is required to implement traversal of the firewall/NAT. In this case, you need to set the IP address and port number for the outbound proxy server.

QoS

Quality of Service(QoS) is very important in transmission of high-bandwidth audio and video data. You can use QoS to test and guarantee the following parameters:

- Average packet delay
- Delay variation (jitter)
- Error rate

In the "IP Network Services" interface, click "QoS" to configure the QoS information.

The screenshot shows the QoS configuration interface. At the top, there is an unchecked checkbox labeled 'Enable'. Below it, the 'Type' is set to 'Diffserv' in a dropdown menu. There are three input fields: 'Audio' with the value '4' and a range '(0-5)', 'Video' with the value '4' and a range '(0-5)', and 'TOS' set to 'None' in a dropdown menu.

IP Network Services - QoS

The table below explains the meanings for all QoS parameters.

QoS Parameter Settings

Parameter	Description
<i>Enable</i>	Select this option to enable configuration of the QoS settings. When un-checked, the system uses the default QoS settings.
<i>Type</i>	DiffServ and Precedence are two methods for encoding packet priority. The priority set here for audio and video packets should match the priority set in the network

Parameter	Description
	<p>routers.</p> <ul style="list-style-type: none"> Differv: Select when the network router uses Differv for priority encoding. If this option is selected, enter values in the "Audio" and "Video" fields, The value range is 0-63. <p>Note: If you select DiffServ but your router does not support this standard, IP packets queue on the same communication links with data packets. This non-prioritized queuing greatly increases the latency and jitter in their delivery and can negatively impact performance.</p> <ul style="list-style-type: none"> Precedence: Select this option when the network router uses Precedence for priority encoding, or when you are not sure which method is used by the router. Precedence should be matched with "None" in the "Tos" field. If this option is selected, enter values in the "Audio" and "Video" fields, The value range is 0-5. <p>Note: Precedence is the default mode, which can provide priority services to all types of routers and is currently the most common mechanism.</p>
Audio / Video	<p>You can prioritize audio and video IP packets to ensure that all participants in the conference hear and see each other clearly.</p> <p>The recommended priority is 4 for audio and video to ensure that the packet delay for both is the same, that audio and video packets are synchronized, and to ensure lip and audio synchronization (lip sync).</p>
TOS	<p>Select the Type of Service (ToS) that defines optimization tagging for routing the conference audio and video packets.</p> <ul style="list-style-type: none"> Delay: The recommended default for video conferencing; prioritized audio and video packets tagged with this definition are delivered with minimal delay None: No optimization definition is applied. This is a compatibility mode in which routing is based on Precedence priority settings only. Select None if you do not know which standard your router supports.

Ports

Users can set firewall-allowed ports that are used for multimedia conference calls. In the "IP Network Services" interface, click "Ports" to configure the port information.

IP Network Services – Ports

The table below explains the detailed meanings of these parameters.

Description of Port Settings

Parameter	Description
<i>Fixed Ports</i>	<p>Specifies whether to define the TCP and UDP ports.</p> <ul style="list-style-type: none"> • Leave this check box clear if you are defining a Network Service for local calls that does not require configuring a firewall to accept calls from external entities. When this option is not selected, the system uses the default port range. • If the firewall is incompatible with H.323, enable this setting and specify the TCP and UDP port ranges.
<i>TCP/UDP Ports from</i>	Shows the default TCP/ UDP port range. The user can set the start port number here, and the end port number will be calculated automatically.



If the network administrator does not specify an adequate port range, the system will accept the settings and issue a warning. Calls will be rejected when the MCU's ports are exceeded even if hardware ports are still available on the RMX 1000.

Email

If you want the system to send conference notification Emails to participants, you need to configure the email servers first. Users can choose to use the built-in Email server, or configure an external Email server for Email delivery. In the "IP Network Services" interface, click "Email" to configure the Email information.

IP Network Services –Email

Description of Email Settings

Parameter	Description
-----------	-------------

Parameter	Description
<i>Use Simple Mail Transfer Protocol Servers</i>	Configure whether to enable the configurations on Email servers. The system can send conference notification Emails to users only if the Email servers have been configured.
<i>Email Address</i>	Set the Email address for outgoing Email messages.
<i>Use Internal Simple Mail Transfer Protocol Servers</i>	Configure whether to use the built-in Email servers. Before selecting this option, you need to ensure that the DNS server configured on the system can work normally, otherwise your Emails cannot be sent successfully.
<i>Use External Simple Mail Transfer Protocol Servers</i>	Configure whether to use the external Email servers. After selecting this option, you need to configure the address and account information for Email servers.
<i>Simple Mail Transfer Protocol (SMTP)</i>	Set the address and port number for an external Email server.
<i>E-mail Account</i>	Set the user name and password for the Email account.



If you configure the SMTP server address with the domain name, ensure that the DNS-related information is configured.

Internal Network Configurations

If the RMX system has the Network Address Translation (NAT) function enabled, all endpoints must use the system's NAT IP address to communicate with the system via an external network. For endpoints located within the same LAN as RMX, the user can configure the address table for the internal network to allow the endpoint in the internal network to communicate with RMX directly without NAT, so as to save network resources.

On the IP Network Services page, click Intranet. Click New on the page to add the address information, and the endpoint matching this address will communicate with RMX via the intranet. You can add the IP address or network segment address for the endpoint.

The screenshot displays a web-based interface for managing IP network services. At the top, there is a table with two columns: "IP Address" and "Subnet Mask". Below this table, there is a red horizontal bar. Underneath the bar, there are two input fields: "IP Address :" and "Subnet Mask :", each followed by a text input box. To the right of these fields are two buttons: "OK" and "Cancel". Below the input fields, there is a large empty rectangular area. At the bottom of the interface, there are three buttons: "New", "Edit", and "Delete".

IP Network Services – Intranet

IVR Service

RMX provides a conference Interactive Voice Response (IVR) function that allows conference participants to use an endpoint input device (such as a remote control) to interact with the conference following the voice and onscreen operation prompts played in the conference.

The default IVR information is included in the factory default settings, and the participant will hear the default voice prompts when joining a conference. You can also customize the voice prompts if desired.

To view the IVR settings on the RMX, click IVR Setting in the RMX Management pane. The IVR list will be displayed in the list pane on the right side, where you can test all the stored voice prompts, switch between different languages, or customize the voice prompts.

Name	Status	ID	Start Time	End Time
C2011082		8115	2011-08-26 14:39:16	2011-08-26 22:39

Message	Language	Play	Upload File
Apply chairperson successfully	English		
Conference Chairperson Password	English		
Conference expiration warning	English		
Conference ID	English		
Conference Password	English		
First to join	English		
Invalid Chairperson Password	English		
Invalid Conference ID	English		
Invalid Conference Password	English		
Music file			
Ringtone			
The conference is being recorded.	English		
The conference recording has failed.	English		
Welcome message	English		

IVR Setting Page


Default IVR Information

The "Message" bar of IVR shows the names of 12 IVR voice prompts available. The table below shows the default IVR information.

Factory IVR Information

IVR Information	Prompt Message	Description
<i>First to join</i>	You are the first person to join the conference.	This prompt will be played when the first conference participant connects to the conference.
<i>Welcome message</i>	Welcome to Unified Conferencing.	Each participant to dial into a conference will hear this Welcome message as they enter.
<i>Conference Expiration Alert</i>	—	An audio alert is played when a conference is expiring and will be ended soon
<i>Conference ID</i>	"Please enter the conference ID. Press # when complete."	This prompt will be played when the participant is required to enter a conference ID.
<i>Invalid Conference ID</i>	Invalid conference ID. Please try again.	This prompt will be played if the user enters an invalid conference ID.
<i>The Conference is being recorded</i>	The conference is being recorded.	This prompt will be played when conference recording begins.
<i>The Conference recording has failed.</i>	The conference recording has failed.	This prompt will be played when conference recording fails.
<i>Invalid Conference Password</i>	Invalid conference password. Please try again.	This prompt will be played if the user enters an invalid conference password.
<i>Conference Password</i>	"Please enter the conference password. Press # when complete."	This prompt will be played when the participant attempts to join a password-protected conference.
<i>Chairman Applied for Successfully</i>	—	The audio alert will be played when a user successfully applies for the conference chairperson.
<i>Ring Tone</i>	—	The ring tone played when a participant is called
<i>Music file</i>	—	This music will be played for the first conference participant until other participants join the

IVR Information	Prompt Message	Description
		conference.
<i>Invalid Chairperson Password</i>	Invalid chairperson password. Please try again.	This prompt will be played if the user enters an invalid chairperson password.
<i>Conference Chairperson Password</i>	"Please enter the conference chairperson password. Press # when complete."	This prompt will be played when the user attempts to join a conference with a configured chairperson password.



The RMX shipped with IVR information of three languages: Chinese, English and Japanese. You can click the language options on the "Language" bar to switch between different languages. Click the  button to try the related IVR message.

Customizing IVR Information

RMX supports customized IVR prompts. You can upload IVR format-compatible audio files to the system and use personalized voice prompts during conferences.

Replace the IVR information

To replace the existing IVR information:

- 1 In the IVR list, click the corresponding language option for the IVR message you want to replace, set a target IVR language, and then click the related "Upload" button .
- 2 The Upload File dialog box pops up. Enter the path to the audio file you want in the file upload path box, or click the Open button to set the path, and then click the Download button to upload the file.
- 3 A pop-up box opens and prompts you to reboot. You need to reboot the system for all newly uploaded audio files to take effect. Click the confirmation button to reboot your system. After the files are uploaded successfully and the system is rebooted, you can click the corresponding Play button  to test and play the prompt voice and verify if the file replacement is successful.



When uploading an IVR file, the file name is restricted to alphanumeric characters, the file format is restricted to PCM only, and the sampling frequency must be 16 or 32 KHz, 16bit, and stereo or mono.

Recording an Audio Message

You can record voice messages for different languages or customize them to your needs for IVR service.

To record audio messages, use any sound recording utility available in your computer or record them professionally in a recording studio. Make sure that the recorded message can be saved as a Wave file (in the *.wav format) and that the recorded format settings are defined as the sampling frequency of 16 KHz or 32 KHz, 16 bit, and stereo or mono. The files are converted into the RMX internal format during the upload process. This section instructs how to use the "Sound Recorder" utility delivered with Windows95/98/2000/XP/Win7/Vista.

Make sure that a microphone or a sound input device is connected to your computer.

To define the format settings for audio messages:



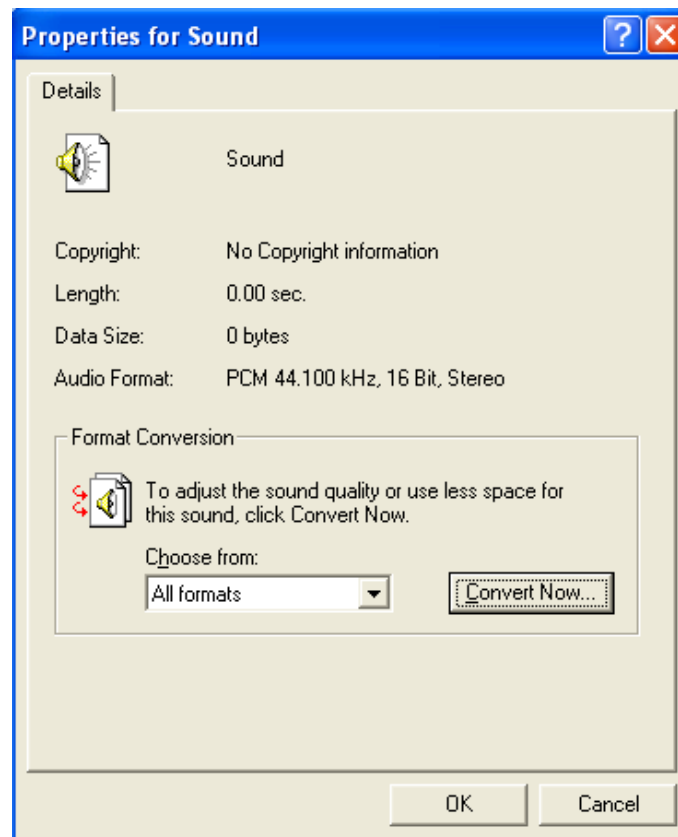
The format settings for audio messages need to be set only once. The settings will then be applied to any new audio messages recorded.

- 1 On your computer, click "Start -> Programs -> Accessories -> Entertainment -> Sound Recorder" to display the "Sound-Sound Recorder" dialog box.



The Sound-Sound Recorder dialog box opens.

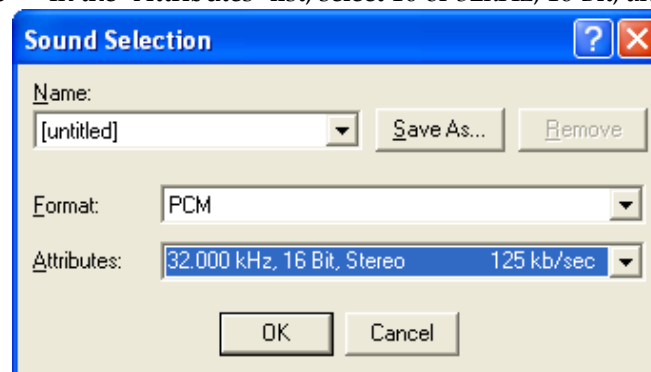
- 2 Sound-Sound Recorder Dialog Box Click "File -> Properties" to display the "Properties for Sound" dialog box.
- 3 Click the Convert Now button.



Properties for Sound Dialog Box

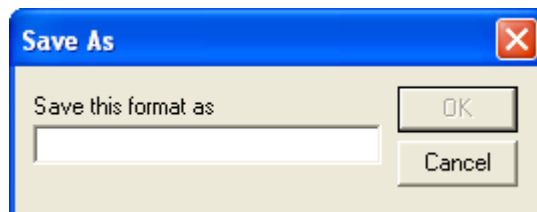
The Sound Selection dialog box opens.

- 4 In the Format field, select PCM.
- 5 In the "Attributes" list, select 16 or 32kHz, 16 Bit, and Stereo or Mono.



Sound Selection Dialog Box

- 6 To save this format, click the Save As button. The Save As dialog box opens.
- 7 Select the location where the format will reside, enter a name and then click OK.
- 8



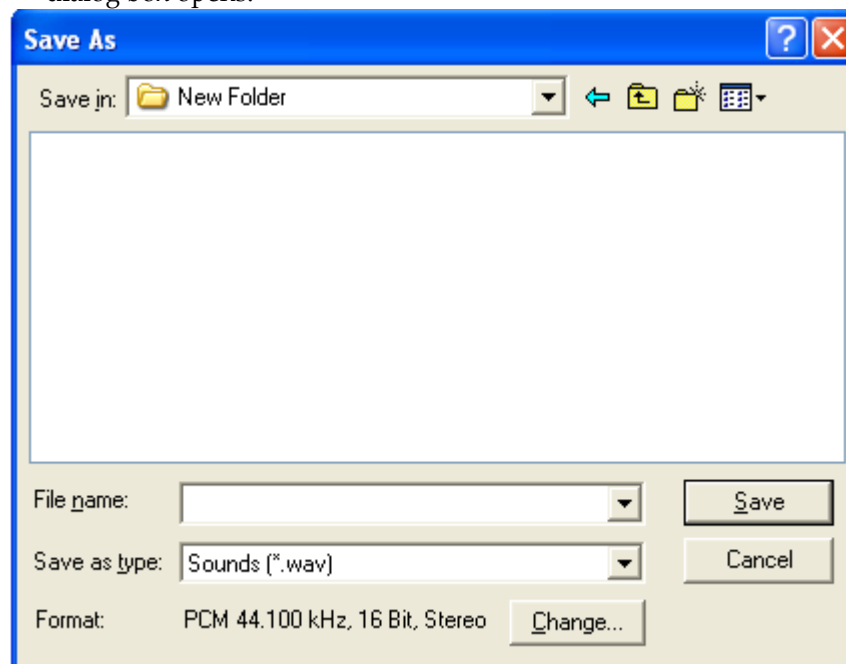
Save the Format

The system returns to the Sound Selection dialog box.

- 9 Click OK. The system returns to the Properties for Sound dialog box.
- 10 Click OK. The system returns to the Sound-Sound Recorder dialog box. You are now ready to record your voice message.

Recording an Audio Message

- 1 On your computer, click "Start -> Programs -> Accessories -> Entertainment -> Sound Recorder" to display the "Sound-Sound Recorder" dialog box.
- 2 Click "File - New".
- 3 Click the Record button. The system starts recording.
- 4 Narrate the desired message.
- 5 Click the Stop Recording button.
- 6 Save the recorded message as a wave file, click File->Save As. The Save As dialog box opens.



Save the Recorded Message

- 7 Verify that the Format reads: PCM 16.000 kHz or 32.000 kHz, 16 Bit, Stereo or Mono. If the format is correct, continue with step 10. If the format is incorrect, click the Change button. The Sound Selection dialog box appears.
- 8 From the Names option, select the filename created in step 7 as shown in *Save the Format*.
- 9 Click OK. The system returns to the Save As dialog box.

- 10** In the Save in field, select the directory where the file will be stored.
- 11** In the "Save as Type" field, select the **.wav** file format.
- 12** In the File name box, type a name for the message file, and then click the Save button.

To record additional messages, repeat the above steps.

To upload your recorded *.wav file to RMX, see *Replace the IVR information*.


```



File Version: 1Conference Name: 1111Internal Conference ID: dell1eb2f47f2dc1195fd6cdf12605721Reserved
Duration: 04:20:47Actual Start Time: 1Actual Duration: 2358Status: Terminated by a userFile Name: 1GMT
Offset: 0File Retrieved: YesCONFERENCE START15.03.2008,04:20:47Stand By: FalseAuto Terminate: NoLine Rate:
768 kbpsAudio Algorithm: AutoVideo Session: Continuous PresenceVideo Format: AutoCIF Frame Rate: AutoCIF
Frame Rate: AutoCONFERENCE START CONTINUE 115.03.2008,04:20:47Entry Tone: ONExit Tone: ONEnd Time Alert Tone:
OFFTalk Hold Time: 0 x 0.01 secondsAudio Mix Depth: 5Video Protocol: AutoMeet Me Per Conference: Yes
Chairperson Password: 1Cascade Mode: NoneMinimum Participants: 0Allow Undefined Participants: YesTime Before
First Participant Joins: 0 minutesTime After Last Participant Quits: 0 minutesConference Lock Flag: NoMaximum
Participants: AutoMessage Service Type: IVRIVR Service: Conference IVR ServiceLecture Mode Type: NoLecturer:
ITime Interval: 0 secondsLecturer View Switching: FalseCONFERENCE START CONTINUE 415.03.2008,04:20:47
Conference ID: 1111Conference Password: 1Chairperson Password: 1Info1: Info2: Info3: Billing Info:
PARTICIPANT DISCONNECTED15.03.2008,04:22:52Participant Name: K60v2AParticipant ID:
a688552247f2dc1195fdaa81ab5a5cbfDisconnection Cause: Participant hung upQ931 Disconnection Cause: Default
cause or not available (0)PARTICIPANT DISCONNECTED15.03.2008,04:29:58Participant Name: K60v2AParticipant ID:
a688552247f2dc1195fdaa81ab5a5cbfDisconnection Cause: Participant hung upQ931 Disconnection Cause: Default
cause or not available (0)USER ADD PARTICIPANT15.03.2008,04:59:55User Name: Participant Name: K60v2A
Participant ID: 0Dialing Direction: Dial outNetwork Service Name: Default IP ServiceAudio Only: No
Identification Method: Calling IP address or aliasMeet Me Method: MCU-ConferenceUSER ADD PARTICIPANT CONTINUE
115.03.2008,04:59:55Network Type: H.323Video Protocol: AutoBroadcasting Volume: 5Undefined Participant: Yes
Node Type: TerminalVideo Bit Rate: AutoIP Address: 192.167.103.24Signaling Port: IgnoreH.323 Participant
Alias Type: E.164H.323 Participant Alias Name: 103166H323 PARTICIPANT CONNECTED15.03.2008,04:59:55Participant
Name: K60v2AParticipant ID: a688552247f2dc1195fdaa81ab5a5cbfParticipant Status: ConnectedNEW UNDEFINED
PARTICIPANT15.03.2008,04:59:55Participant Name: K60v2AParticipant ID: a688552247f2dc1195fdaa81ab5a5cbfDialing
Direction: Dial inNetwork Service Name: DefaultAudio Only: NoIdentification Method: Calling IP address or
aliasMeet Me Method: MCU-ConferenceNetwork Type: H.323Video Protocol: AutoBroadcasting Volume: 5Undefined
Participant: YesNode Type: TerminalVideo Bit Rate: AutoIP Address: 192.167.103.24Signaling Port: IgnoreH.323
Participant Alias Type: E.164H.323 Participant Alias Name: 103166PARTICIPANT DISCONNECTED15.03.2008,05:00:05
Participant Name: K60v2AParticipant ID: a688552247f2dc1195fdaa81ab5a5cbfDisconnection Cause: Disconnected by
the operatorQ931 Disconnection Cause: Default cause or not available (0)CONFERENCE END15.03.2008,05:00:05
Conference End Cause: Terminated by a userOPERATOR TERMINATE CONFERENCE15.03.2008,05:00:05Terminated By:
    
```

CDR File – Formatted

Viewing CDR Records

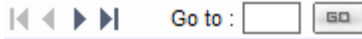
To view the conference records, click the menu options Administration->CDR on the top-left of the page. The CDR List pane appears, showing the saved CDR records.

Parameter Description of CDR

Parameter	Description
Name	Shows the conference name and an icon indicating whether or not the CDR record has been written to the RMX 1000's memory.  - CDR record saved  - CDR record not saved
Start Time	The actual start time for the conference.
Duration	The actual duration of the conference.
Reserved Duration	The reserved duration for the conference. You can check if the conference was extended or shortened by comparing the actual Duration to the Reserved Duration.
Status	Shows the conference status.
File Retrieved	Indicates if the CDR files have been previously retrieved to a formatted text file (Yes/No).

The functions for all these buttons on the page are as follows:

- Refresh List - Refresh the CDR list to show newly created records.
- Select All - Select all CDR records in the list.
- Retrieve Files of Report Type - Save the selected CDR records to a specified location as text of report type (.txt files).
- Retrieve Formatted - Save the selected CDR records to a specified location as formatted text (.txt files).

- Retrieve - Save the selected CDR records to a specified location as plain text (.cdr files).
-  - Move the cursor to the lower right corner of the CDR list to activate this hidden control. It is used for page turning, going to a specified page or directly going to the first page/last page.

Saving CDR Records

To save the CDR records to your local machine:

- 1 Select the records to save from the CDR record list.
Click the Select All button to select all the files. To select multiple files, Ctrl-click or Shift-click the files you want according to the Windows operation.
- 2 Click the Retrieve Files of Report Type button, Retrieve Formatted button or Retrieve button, set a target storage path in the pop-up Save Files dialog box, and then click OK to save the records as formatted/plain text.

System Maintenance

System Alerts

When an error occurs in the system, the System Alerts function will be activated. RMX will record the system alert information and generate a report file in the *.txt format.

When a system error occurs, the system alert area blinks red until the problem is solved.

To view the system alert, click the blinking System Alerts bar on the left-bottom of the page to open the System Alerts pane. It shows all the unresolved event information.

The screenshot shows a 'System Alerts (2)' window with a table of alerts. Below the table are two buttons: 'System Alerts' and 'Connected H.323/SIP Link'.

Time	Level	Description
2011-08-25 16:58:30	Major	IP Network Services configurations changed.
2011-08-26 14:32:46	Major	Registration to primary gatekeeper failed.

System Alerts

System Alert Parameters

Parameter	Description
<i>Time</i>	Shows the date and time when the error occurred. It also shows a severity level identifier for each error (see item Level below)
<i>Level</i>	Shows the severity level of the error (Major, Minor, or Startup), each level corresponds to an identifier: <ul style="list-style-type: none"> • - Major error • - Minor error • - Startup error
<i>Description</i>	Shows the reason of the error with more details

To download the System Alerts report file to your local computer, click the button.

H.323 Link

Name	IP Address	H.323E.164	Connection Time	Room Status	Send Packet Loss	Receive Packet Loss	Total I-Frame Request	Latest I-Frame Request	Audio	Video	H.239
172.21.123.81	172.21.123.81		2011-09-26 14:49:05	C20110026 14:39	0%	0%	1	0	Siren22 120K Stereo	H.264 720P	
172.21.123.82	172.21.123.82		2011-08-26 14:39:06	C20110026 14:39	0%	0%	5	0	Siren22 84K	H.264 4CF	


H.323 Link Status

To view all connected H.323 links, click H.323/SIP H.323 Link on the left-bottom of the page.

The H.323 Link pane opens with the list of connected H.323 links. For the meanings of the H.323 link status parameters, see the table below.

H.323 Link Status Description

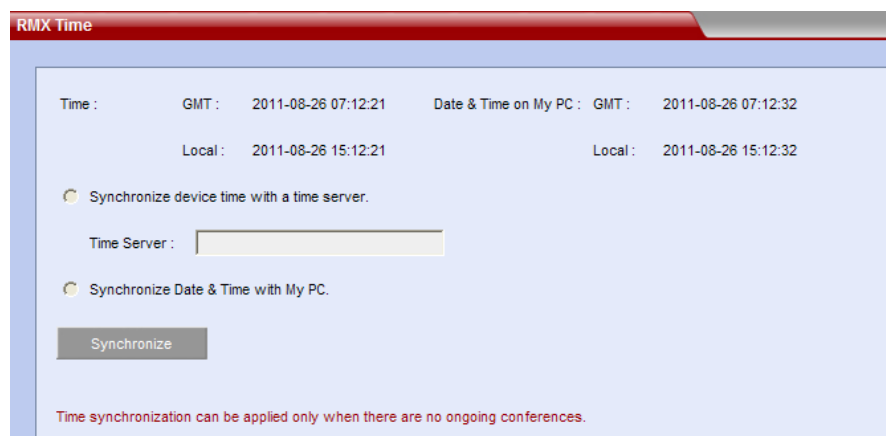
Parameter	Description
<i>Name</i>	Participant name or endpoint identifier.
<i>IP Address</i>	The IP address for the participant's endpoint device.
<i>Alias</i>	The alias for the participant's endpoint device.
<i>Connection Time</i>	The date and time when the connection was established.
<i>Status</i>	Shows the meeting room name of the participant. The menu indicates that the endpoint has connected to the PCM (Personal Conference Manager) lobby but hasn't joined any conference.
<i>Send Packet Loss</i>	The packet loss rate of packets sent from the RMX.
<i>Receive Packet Loss</i>	The packet loss rate of packets received from the RMX.
<i>Total I-frames</i>	The total I-frames requested by an endpoint.
<i>Recently Requested I-frames</i>	The I-frames recently requested by an endpoint.
<i>Audio</i>	The audio protocol negotiated with the endpoint
<i>Video</i>	The video protocol and resolution negotiated with the endpoint
<i>H.239</i>	Indicates whether H.239 was negotiated with the endpoint

To disconnect a connected link manually, select the link, and then click the  button on the pane.

System Time

The system clock can be synchronized with the user computer or a network time server to ensure accurate conference scheduling and initiation.

To set the system time, click the menu options Setup->RMX Time on the top-left of the page. The system time setup page opens.



System Time Setup Page

This page shows the date and time of the system and the user computer. You can set up the system time in one of the following methods:

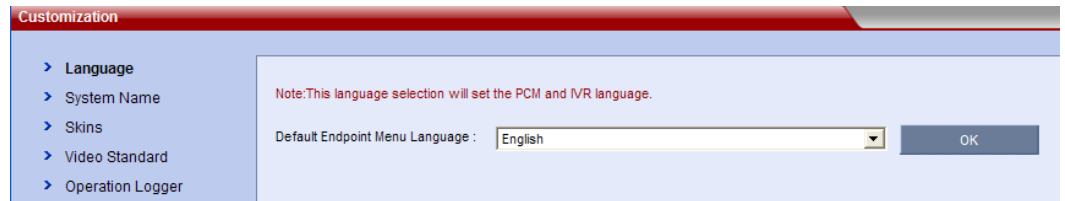
- Synchronize with a network time server
Select the "Manually Synchronize Device Time with a Time Server" option to synchronize the system time with a network time server. In this case, enter the IP address or domain name for the time server in the "Time Server" field.
- Synchronize with the user PC
Select the Synchronize Date & Time on My PC option to synchronize the device time with the connected user PC, and then click the Synchronize button to proceed with the synchronization.



You cannot perform the time synchronization operation if there is an ongoing conference on the system. You should terminate the conference before activating the Synchronize button.

Customization

You can customize the following language settings for the device: the language of the menus to be displayed for the endpoints' PCM and the IVR voice prompt language. You can also change the device's system name, customize the user interface and the skin of conference image, etc. To proceed with the customization, click the menu options "Setup->Customization" on the upper left part of the page to enter the customization page.



Customization Page

Modifying Language

To modify the device language, click the "Language" tab on the customization page, select the required language from the drop-down menu, and then click the "OK" button. You need to reboot your system to ensure that the settings take effect.



The system provides only the IVR information in English, Chinese and Japanese. If a user selects another language beyond the three, the IVR information in English will be used by default.

Setting System Name

The system name will be displayed both on the title of the RMX Web configuration page and on the endpoint connected to RMX, with a default value of *POLYCOM RMX*.

To customize the system name for a device, click the System Name tab on the customized page, enter the system name in System Name, and then click the OK button.

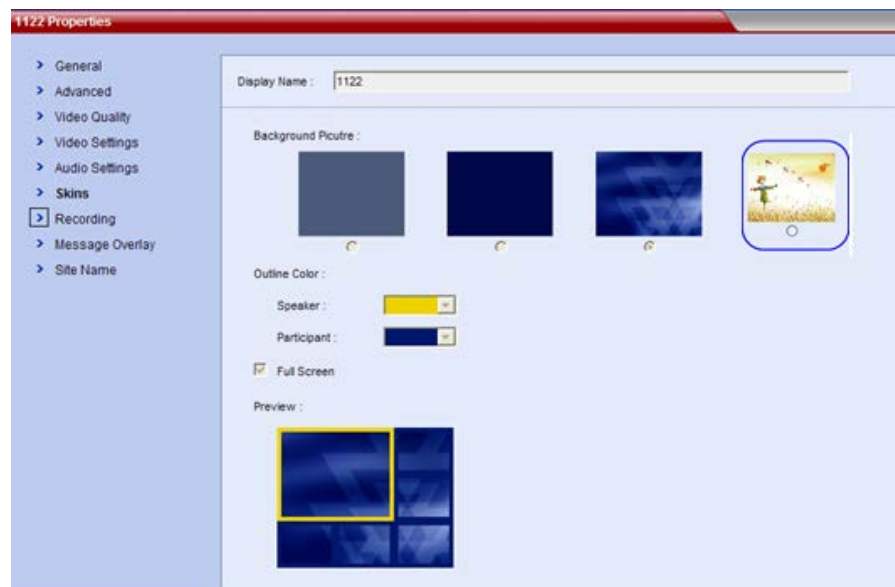
Setting Skins

To customize the Logo for the Web user interface, welcome message on the login interface, or the background of conference screen, click "Skins" in the customization interface. Set the related items with reference to the table below:

Description of Customized Information on User Interface

Customized Item	Description
Web User Interface Logo	Used to customize the Logo picture at the top of the Web management interface of RMX. Click the "Open" button and select the file to be uploaded. Then, click "Upload File". The Logo picture to be uploaded must be in the GIF format, with 1440 * 46 pixels.
Welcome Message on the Login Interface	Used to customize the Welcome Message displayed on the RMX Web login interface First specify in the drop-down list which language interface will display this welcome message (defaulted to "English"), and then enter the welcome message to be displayed in the text box. Click the "Apply" button to validate your setting.
Personal Skins	This item is used to customize the background picture of conference view displayed at the participant's endpoint when

Customized Item	Description
	<p>a conference is held with RMX.</p> <p>Depending on various screen width/height ratios of participants' endpoint displays, you can upload personal pictures that meet different requirements.</p> <ul style="list-style-type: none"> • 4:3 - You are required to upload pictures in the *.bmp format, with 704 * 576 pixels. • 16:9 - You are required to upload pictures in the *.bmp format, with 1024 * 576 pixels. <p>Click the "Open" button and select the file to be uploaded. Then, click "Upload File". After the picture file is uploaded successfully, it will be displayed as the background picture for the New Profiles -> Skins page so that the user can select the customized picture as the graphic background for the conference, as shown in the figure below.</p>



Customizing Background Picture



The file to be uploaded must match the requirements for picture type and size in the system. If the picture fails to meet the requirements, an error message will be displayed. You need not reboot the system after the file is uploaded successfully.

Video Standard

You can set the standard video format supported by RMX to PAL or NTSC. Usually the PAL system is implemented and applied in the mainland of China. You can change this parameter as needed.

To change the video system, click "Video Standard" on the Customization interface. After changing the parameter, you need to reboot the system to validate the change.

Maximum Bandwidth (RMX 1000 Rev A only)

RMX 1000 Rev A's users can set whether to enable the 4M bandwidth capability when the system communicates with participants. To enable the 4M bandwidth, click "Max Bandwidth" on the Customization interface, and then select "Support 4M bandwidth".



- If the 4M bandwidth is selected, at most 48 video resources are available.
- Max Bandwidth is available only when your RMX 1000 Rev A supports more than 64 video resources.

Security Setting

RMX provides multiple security setting options. A user can limit the H.323 connection to the system PCM, limit the LAN port that accesses the Web management interface, and configure the Security Socket Layer (SSL) digital certificate to ensure data transfer security at the time of Web communication. Click the "Setup->Security Setting" menu item at the upper left part to enter the Security Setting interface.

Security Setting Page

You can set the following security restrictions:

- **Deny lobby access to endpoints calling through the following interface:** Select the LAN1 or LAN2 check box. Then, the endpoint device connected to this port cannot dial in to the PCM lobby through the IP address or E.164 prefix of RMX. However, you can still directly dial in to the conference by calling "RMX IP address/E.164 + SIP URL + conference ID".
- **Deny management through the following interface:** Select the LAN1 or LAN2 check box. Then, your computer cannot log into the Web UI through the IP address of this LAN port. LAN 1 and LAN 2 ports shouldn't be disabled at the same time. If only one LAN port is enabled, the setting here is not allowed.

- **Disable ad hoc conference:** When this check box is selected, the endpoint cannot create a conference in the PCM lobby. Also, you cannot create a conference by directly entering the IP address or E.164 prefix of RMX plus conference ID through the remote control.

Configuring the SSL Certificate

After the SSL digital certificate is installed on the system, you can set up the encrypted communication connection between the user client and server, so as to ensure security of the transferred data during Web communication.

- 1 Create a new certificate request.

Click "Certificate Request". In the popup "SSL Configuration" interface, configure the related parameters based on the table below:

SSL Configuration for Certificate Request

Parameter	Description
<i>Common Name (CN)</i>	Common certificate name
<i>Organization Name (O)</i>	Name of the organization that issues the certificate
<i>Organization Unit (OU)</i>	Unit of the organization that issues the certificate
<i>Locality Name (L)</i>	Locality or city to which the certificate is applicable
<i>State Name (SN)</i>	State or city/autonomous region to which the certificate is applicable
<i>Country Code (C)</i>	Code of the country that issues the certificate, e.g. the code of China is CN.
<i>Email Address</i>	Email address used to receive and acknowledge the certificate
<i>Valid Days</i>	Valid days of the certificate, in the range of 1-9999999999 days
<i>Key Size</i>	Key size, defaulted to 512 digits. You can select 1024 digits or 2048 digits as needed.
<i>Challenge Password</i>	Certificate request challenge password, which can further strengthen security of the certificate request

Click "OK" to create the certificate.

- 2 Apply for the certificate.
Click the "View Last Certificate Request" button to display the information about certificate request just created. Copy the information in the text box to the certificate application page of the certificate issuing organization from which you purchased service. The information will be used to generate a certificate.
- 3 Upload the certificate to the server.
After obtaining the certificate, click the "Open" button on the interface, select the folder where the certificate file is saved or enter the saving path

directly in the left text box, and then click "Upload Signed Certificate" to upload the certificate to the RMX system.

Click View Certificate Information to check the information for certificates installed on RMX.

Since the HTTPS protocol is used when the SSL security connection is set up between the user client and server, you must enter through the browser "https: //IP address of the system" to ensure successful connection if you need to access the Web page of system after the system is installed with the certificate. In addition, you must install the certificate at your local computer as instructed by the popup prompt box. After that, communications between the client and Web server will always be encrypted based on the SSL security connection to ensure security of data transmission.

SNMP Setting

RMX supports the Simple Network Management Protocol (SNMP). You can monitor the MCU status by managing the workstation.

Click the "Setup->SNMP Setting" menu item at the upper left part to enter the SNMP Properties interface.

SNMP Properties Interface

Setting the Agent

Configure the following parameters on the "SNMP Properties->Agent" interface:

Parameter Configuration of SNMP Agent

Parameter	Description
<i>SNMP Enabled</i>	With this option selected, the administrator is allowed to manage the RMX system with SNMP from a far end. Only after the SNMP function is enabled, can you configure the following parameters.
<i>Retrieve MIB Files</i>	You can export MIB files by clicking this button.

Parameter	Description
<i>Contact person for this MCU</i>	Specifies the name of the person who manages this MCU from a far end
<i>MCU Position</i>	Specifies the location of MCU
<i>MCU System Name</i>	Specifies the system name of MCU
<i>SNMP Agent Version</i>	<p>Specifies the SNMP agent version used by MCU</p> <ul style="list-style-type: none"> • Version 1 and Version 2 - When this option is selected, you need to configure "Community Name". • Version 3 - Specifies the parameter settings of secure and remote configuration; when this option is selected, you need to configure "User Name", "Security Level" and related options.
<i>Community Name</i>	Specifies the name of community to which the MCU and SNMP management workstation belongs. Community Name is used by the agent to authenticate the SNMP management workstation.
<i>User Name</i>	Set the name of user remotely accessed by SNMP.
<i>Security Level</i>	Specifies whether to enable the authentication mechanism and encryption mechanism
<i>Authentication Protocol</i>	Specifies the authentication algorithm. MD5 and SHA are available.
<i>Authentication Password</i>	You can set a password for the authentication protocol to enhance security.
<i>Encryption Protocol</i>	Specifies the encryption algorithm. DES and AES are available.
<i>Encryption Password</i>	You can set a password for the encryption protocol to enhance security.

Setting Traps

Click the Traps tab on the SNMP Properties page.

Trap Community Name

SNMP Trap Version :

Trap Destinations :

User Name :

Engine ID :

Security Level :

Authentication Protocol :

Authentication Password :

Privacy Protocol :

Privacy Password :

Trap Setting

System Alert Connection

Conference Start/End New Participant in the Lobby

SNMP Properties – Traps

Parameter Configuration of SNMP Traps

Parameter	Description
SNMP Trap Version	<p>Specifies the SNMP Trap version used by MCU</p> <ul style="list-style-type: none"> Version 1 and Version 2 - When this option is selected, you need to configure "Trap Destinations" and "Community Name". Version 3 - Specifies the parameter settings of secure and remote configuration; when this option is selected, you need to configure "User Name", "Security Level" and related options.
Trap Destinations	Specifies sending destinations of SNMP Traps
Community Name	Specifies the name of community to which the MCU and SNMP management workstation belongs. Community Name is used by the agent to authenticate the SNMP management workstation.
User Name	Set the name of user remotely accessed by SNMP.
Engine ID	Specifies the engine ID of SNMP
Security Level	Specifies whether to enable the authentication mechanism and encryption mechanism
Authentication Protocol	Specifies the authentication algorithm. MD5 and SHA are available.
Authentication Password	You can set a password for the authentication protocol to enhance security.
Encryption Protocol	Specifies the encryption algorithm. DES and AES are available.
Trap Setting	<p>Specifies whether the agent sends Traps packets to the management workstation in the following cases:</p> <ul style="list-style-type: none"> System alerts Connection

Parameter	Description
	<ul style="list-style-type: none">• The conference starts/ends.• A new participant enters the lobby.



Product Activation

The Product Activation page is used in the following activation cases:

- To activate the newly purchased system
- To activate the payment function

Click "Setup->Product Activation" in the menu bar at the upper left part on the Web page. The Product Activation page appears, which lists the serial number, current version number, and other device information.

Fill the activation key obtained in the "Activation Key" input box on the page. Then, click the "Save" button to activate RMX.

After the device is successfully activated,  will be displayed at the "Activation Status" property, or else  will be displayed.

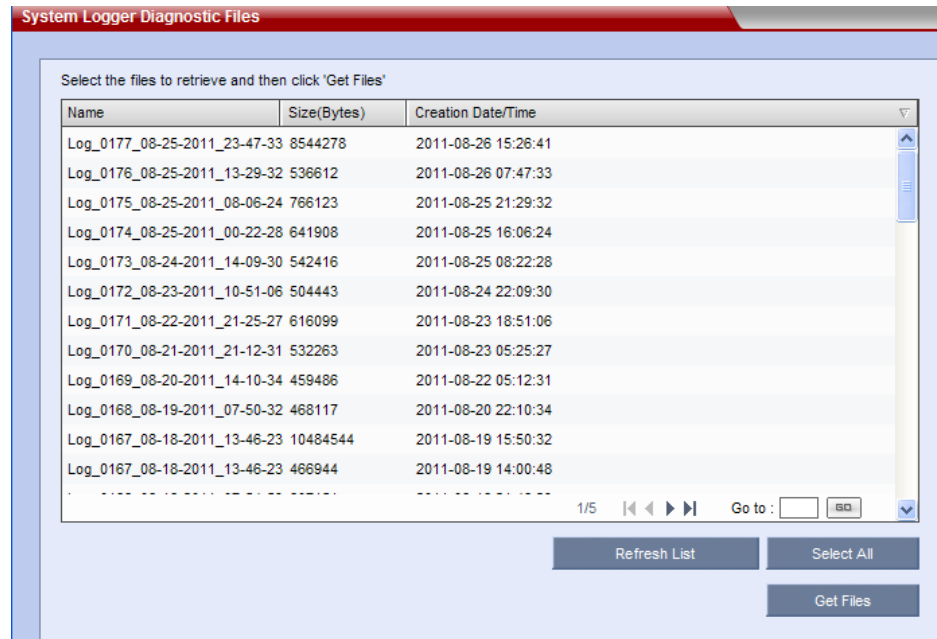
Logger Diagnostics Files

The system supports logging. You can save the log files to your local hard disk for system analysis and diagnosis.

The log program will be activated once the system starts. However, if you manually reboot the system or something goes wrong with the log program (such as a hardware drive error occurs when saving the log files,) the data generated during this period will not be saved. The logs for RMX 500 Rev B and RMX 1000 Rev C have a maximum space capacity of 4G, while the logs for RMX 500 Rev A and RMX 1000 Rev C have a maximum space capacity of 1G. When a log is full, a new log will overwrite the old one.

The system can categorize and save the following log information:

- System logs: record normal and abnormal behavior information for the system itself. Click Administration -> Log Diagnosis -> System Logs on the top-left of the page to enter the system logs page.
- Operational logs: record the operations performed by users on Web pages. Click Administration -> Log Diagnosis -> Operational Logs on the top-left of the page to enter the operational logs page.
- Kernel logs: record the information when the kernel is initiated or in abnormal running condition, so as to facilitate the error diagnosis procedure. Click Administration -> Log Diagnosis -> Kernel Logs on the top-left of the page to enter the kernel logs page.



System Log

The log page consists of a list of recorded log files with their corresponding creation times and the following function buttons:

- Refresh List - refresh the log list to show the newly created log files
- Select All - select all the log files in the list
- Get Files - save the selected log files to a specified location

To save the log files to a local location:

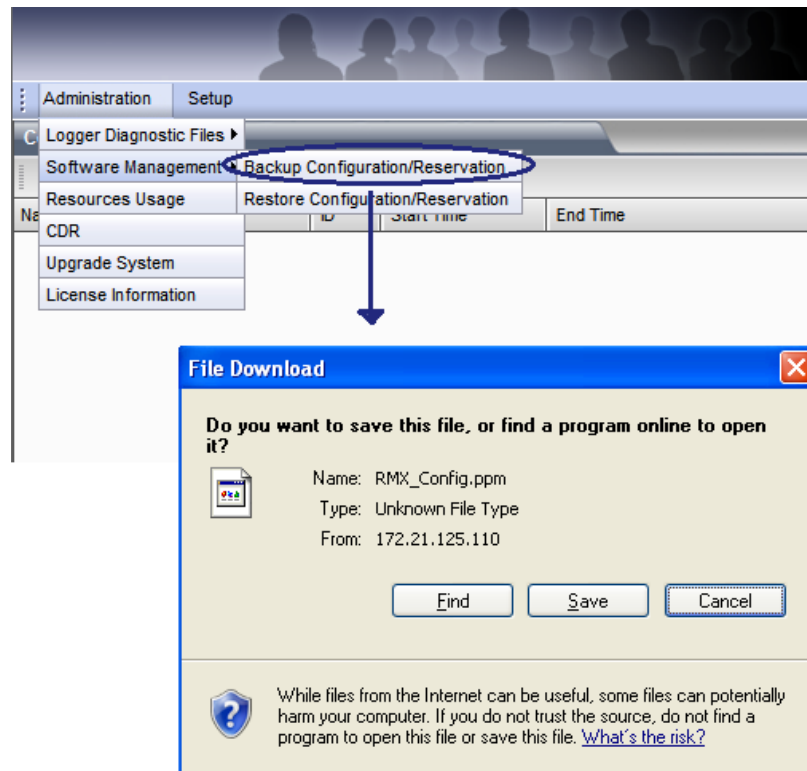
- 1 In the log list, select the log files to be saved. Click the Select All button to select all the files. To select multiple files, Ctrl-click or Shift-click the files you want according to the Windows operation.
- 2 Click the Get Files button, set a target storage path in the pop-up Save Files dialog box, and then click OK to save the files.

Software Management

You can backup and save all the configurations on the current system to your local computer for future use. You can use the backup configuration file to restore the system configuration if necessary.

Backup Configuration / Reservation

To backup the configuration for the current system, click the menu options Administration -> Software Management -> Backup Configuration/Reservation on the top-left of the page. The File Download page appears. Click the Save button, and select a saving path to save the current RMX configuration at the local computer.



Backup Configuration / Reservation

Restoring Configuration / Reservation

To restore the backup configuration file to the system, click the menu options "Administration -> Software Management -> Restore Configuration/Reservation" at the upper left part on the interface. The Restore Configuration/Reservation interface appears.

Enter the path to the configuration file you want or click the Open button to select the file, and then click the Restore button to restore your configuration. When the system displays a message asking whether to restart the system or not, click Restart Now to complete the restoration configurations.

To restore the system to the factory settings, select the Restore Factory Defaults option, and then click the Restore button.

When the system is restored to its factory settings, the following settings will be kept:

- Current software versions
- Activation key
- Logs and CDR files
- Certificates and certificate signing requests
- Customized welcome message on the login interface, personalized background and Web UI Logos
- IVR

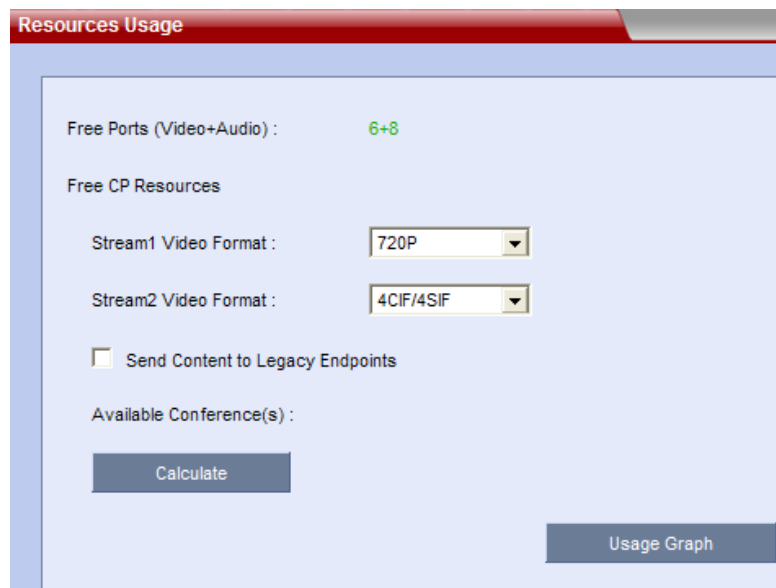
It is recommended that you export the address book before you reset the system. For more information, see *Importing and Exporting the Local Directory*.



Restore Configuration/Reservation Page

Resources Usage

To know the usage of current RMX resources, click the menu options "Administration -> Resources Usage" at the upper left part on the interface. The Resources Usage interface appears.



Resource Report Page – Summary



Resource Report Page – for RMX 1000 Rev C and RMX 500 Rev B

The Resource Usage page displays the currently available video and audio resources, and various conference parameters which affect the system's idle multi-screen resources. You can select some of the parameters to calculate the appropriate number of conferences available.

Idle Multi-screen Resources – Relevant Parameters

Setting	Description
Maximum Number of Multi-screen Windows	Maximum number of multi-screen windows for a conference.
Video Stream 1 Video Format	The parameters for the first video stream channel of a conference.
Video Stream 2 Video Format	The parameters for the second video stream channel of a conference.
Display the lecturer's conference	Whether the "Display the lecturer's conference name" function has been enabled for the conference. This function is configured in the conference profile. For details, see <i>Parameter Description</i>

Setting	Description
<i>name (RMX 500 Rev B/RMX 1000 Rev C only)</i>	<i>of Advanced Options .</i>
<i>When you send dual streams to an endpoint which does not support H.239, the system will use dual stream contents to replace conference videos</i>	Whether the "Use dual stream contents to replace conference videos" function has been enabled for the conference. This function is configured in the conference profile. For details, see <i>Video Quality Parameters – Second-channel Video Dual-stream Definition.</i>
<i>Encryption (RMX 500 Rev B/RMX 1000 Rev C only)</i>	Whether the AES encryption function has been enabled for the conference. This function is configured in the conference profile. For details, see <i>General Parameters.</i>
<i>Lost Packet Recovery (RMX 500 Rev B/RMX 1000 Rev C only)</i>	Whether the Lost Packet Recovery function has been enabled for the conference. This function is configured in the conference profile. For details, see Parameter Description of Advanced Options .

After selecting your parameters, click the Calculate button and the appropriate number of conferences currently available will be displayed in Number of Conference Available.

The user can also click Usage Statistics to view the statistics for resource usage within a period of time.

Device Upgrade

To upgrade the software of your device, click the menu options **Administration -> Upgrade System** on the top-left of the page to enter the system upgrade page.

Upgrade System Page

Upgrading from Version 2.x to Version 2.5



Please don't restart the system until both the two required packages are uploaded into RMX 1000 successfully. Otherwise the upgrade will fail and cause the unavailability of

the Web UI. If that happens, you can use the RMX 1000 Rescue utility provided with the device to restore the upgrade. For details please refer to *System Recovery*.

- 1 Download the required software Version 2.5 (xx-File Systems-xx.ppm and xx-Kernel Systems-xx.ppm) from Polycom web site.
- 2 In the **Upgrade System** page, install the two upgrade packages of software Version 2.5.
- 3 Read the *License Agreement* and select **I Agree** if you accept the terms and conditions.
- 4 Click **Open** to select the *Kernel System* package (.ppm) in the folder where Version 2.5 files are saved and click **Upload File**.
- 5 The system displays "Software upload successfully - reboot system to activate new version now or later?", click **Reboot Later**, **do not restart the system**.
- 6 Continue to upload the *File System* package as described in Step 4.
- 7 When prompted whether to restart the system, click **Reboot Now** to restart your system.

This upgrade requires the installation of an upgrade activation Key. After the system reboot, you need to log into the Web UI to activate the system. Go to *Activating the Upgraded System* section for further operations.

If the upgrade failed due to restarting the system by mistake, move on to the following section for rescuing information.

System Recovery



The following step is required before initiating an RMA (Return Material Authorization) or DOA (Damage on Arrival) Process with Polycom Support team.

In the rare scenario where the upgrade fails (Due to the fact that accidentally, a reset was done between the two upgrade files uploading or any other reason), you can restore the upgrade by the following procedures:

- 1 Start up the RMX 1000 system in the rescue mode via HyperTerminal.
- 2 Use the **RMX 1000 Rescue** utility located in the CD (or you can contact Polycom Support team) to reload software packages.

Each of these steps is described in the following sections.

To start up the RMX 1000 system in the rescue mode:

- 1 Use the RS232 serial cable to connect the serial port of RMX 1000 and the user's PC.
- 2 Run the HyperTerminal in the PC and set the parameters as below:

- Port: COM1 (confirm on the basis of the port used on the PC)
 - Baud rate: 115200 bps
 - Data: 8
 - Parity: none
 - Stop bit: 1
- 3** In the Console session, press the **Enter** key. The login interface appears. Now enter the login password and press the **Enter** key. The default password is **POLYCOM**(case sensitive).

```
Welcome to Polycom RMX 1000 Console Utility
Copyright (C) 2008 POLYCOM
password: _
```

Console Interface - Login

- 4** Enter the command **Reboot** and then **Y** to confirm. You can also restart the system manually. When the screen displays message as shown below, **do not press the Spacebar**.

```
Press <SpaceBar> to update BIOS.
```

Console Interface - Rebooting

- 5** Wait about 50 seconds, when the screen displays menu as shown below, highlight the **rescue** and press **Enter**.

```
GNU GRUB version 0.97 (639K lower / 2095936K upper memory)

normal
rescue

Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
commands before booting, 'a' to modify the kernel arguments
before booting, or 'c' for a command-line.
```

Console Interface – Highlighting Rescue

If you have no operation for 5 seconds on the above interface, the system will automatically enter the normal mode. In that case you need to reboot the system again to recreate the opportunity to select **rescue**.

- 6 The system remains in a startup state for approximately 1 minute. When the screen shows the current system IP address, the system now is running under the rescue mode successfully.

```
EXT3-fs warning: maximal mount count reached, running e2fsck is recommended
EXT3 FS on hda1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
kjournald starting. Commit interval 5 seconds
EXT3-fs warning: maximal mount count reached, running e2fsck is recommended
EXT3 FS on hda2, internal journal
EXT3-fs: recovery complete.
EXT3-fs: mounted filesystem with ordered data mode.
kjournald starting. Commit interval 5 seconds
EXT3-fs warning: maximal mount count reached, running e2fsck is recommended
EXT3 FS on hda3, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
kjournald starting. Commit interval 5 seconds
EXT3-fs warning: maximal mount count reached, running e2fsck is recommended
EXT3 FS on hda4, internal journal
EXT3-fs: recovery complete.
EXT3-fs: mounted filesystem with ordered data mode.
cat: can't open '/etc/resolv.conf.eth1': No such file or directory
System started.

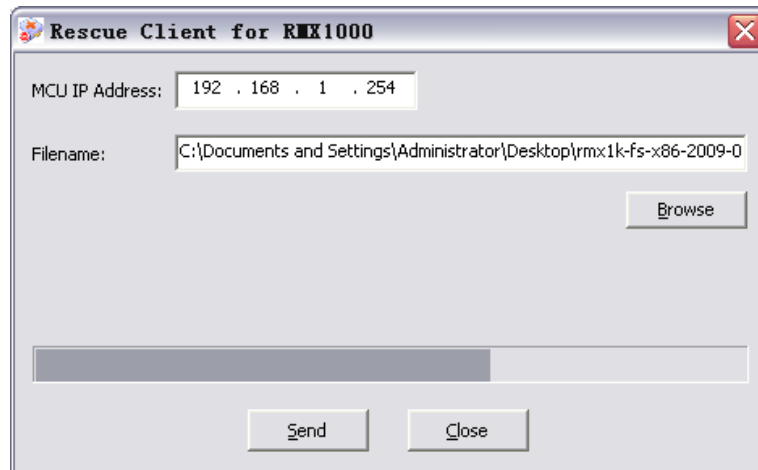
-----
LAN1 IP: 192.168.1.254/24
-----
.....
```

Console Interface – Booting into the Rescue Mode

To use the RMX 1000 Rescue tool to reload software packages:

- 1 In the PC used for uploading the software packages, run the RMX 1000 Rescue utility in the CD provided with the product. Please make sure the PC can communicate with RMX 1000.
- 2 In the **Rescue Client for RMX 1000** interface, input the MCU IP address and then click **Browse** button to select *Kernel System* package (.ppm) in the folder where Version 2.5 files are saved.
- 3 Click **Send**, the progress bar will appear indicating the uploading

progress if the PC is establishing a connection with the MCU.



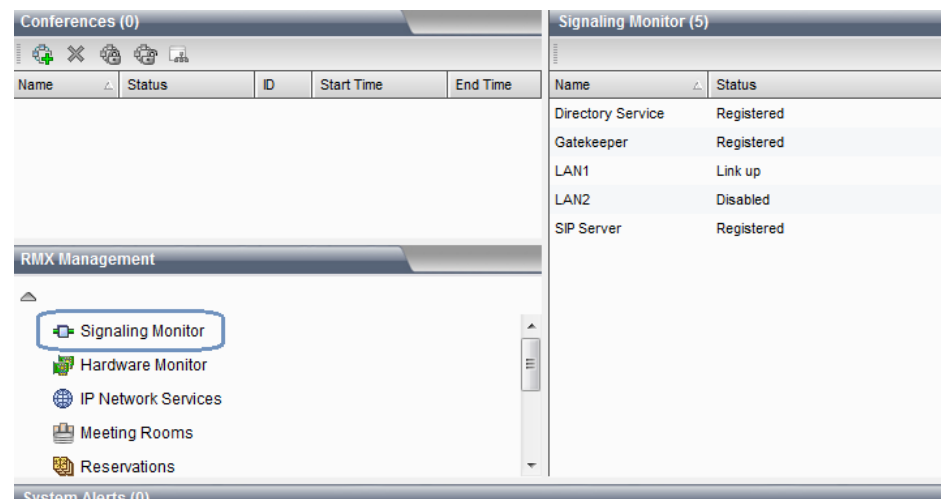
Uploading Package

- 4 When prompted whether to restart the system, click **NO** to upload the other package.
- 5 Continue to upload the *File System* package as described in Step 2 and Step 3.
- 6 When prompted whether to restart the system, click **Yes** to complete the upgrade.

Signaling and Hardware Monitoring

Signaling Monitoring

To monitor the status of LAN1, LAN2, SIP, directory service and gatekeeper of the system you are using, click "Signaling Monitor" in the RMX Management pane. The signaling status list will be displayed in the list pane on the right side.



Signaling Monitor Pane

The table below provides the status meanings of related parameters.

Signaling Monitoring Parameters

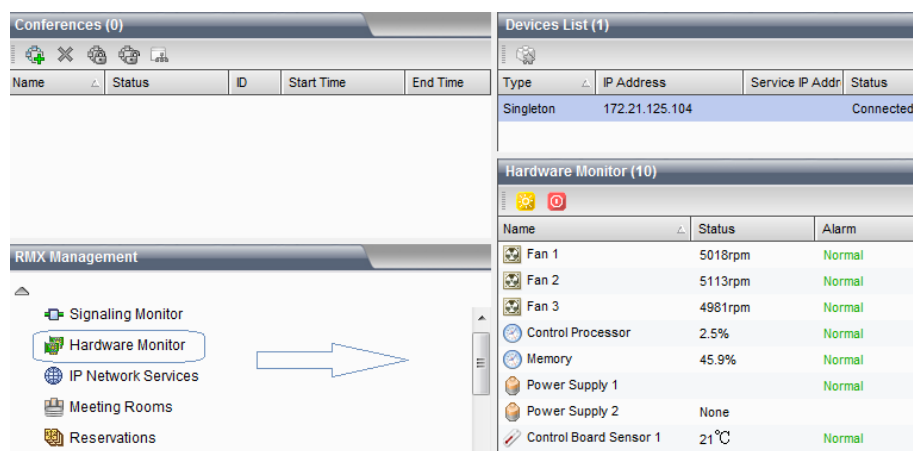
Service Name	Status Indication
LAN1 (LAN2)	<p>Link up: This network interface has been enabled and connected.</p> <p>Link down: This network interface has been enabled but not been connected.</p> <p>Disabled: This network interface is not enabled.</p>
SIP Server	<p>Registered: MCU has been registered to the SIP server.</p> <p>Registration Failed: Registration of MCU to the SIP server failed.</p> <p>Disabled: Registration to the SIP server is disabled for MCU.</p>

Service Name	Status Indication
Directory Service	<p>Registered: MCU has been registered to the directory server.</p> <p>Registration Failed: Registration of MCU to the directory server failed.</p> <p>Disabled: Directory service is disabled for MCU.</p>
Gatekeeper	<p>Registered: MCU has been registered to the gatekeeper.</p> <p>Registration Failed: Registration of MCU to the gatekeeper failed.</p> <p>Disabled: Gatekeeper service is disabled for MCU.</p>

To view status details of the LAN1, LAN2, SIP, directory service and gatekeeper, double-click the related list item, or select an option on the right-click menu to enter the property interface.

Hardware Monitor

To configure the Hot Standby mode or monitor the current system's CPU, memory and resource usage, click Hardware Monitoring on the RMX Management pane. The list pane on the right side displays two areas: the device list area and the hardware monitoring area.



Hardware Monitor

Stacking

RMX supports two devices to be stacked so as to extend the resource capability of a single RMX device to support more conferences and participants without increasing the management complexity. The stacked device can be treated as a single device for unified management.

Stacking Configuration

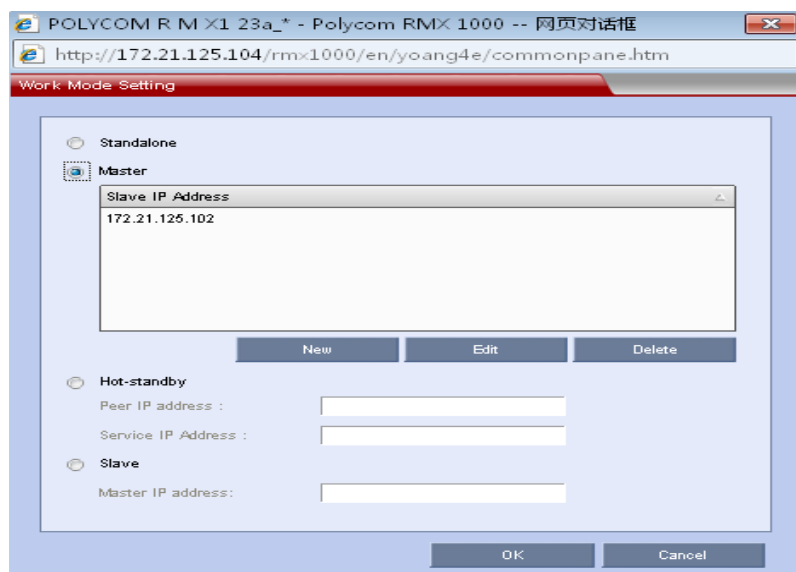
The stacked RMX devices allow you to establish a master-slave relationship and thus implement unified scheduling of conferences via the master device for slave device management.

The two RMX devices used for stacking must meet the following conditions:

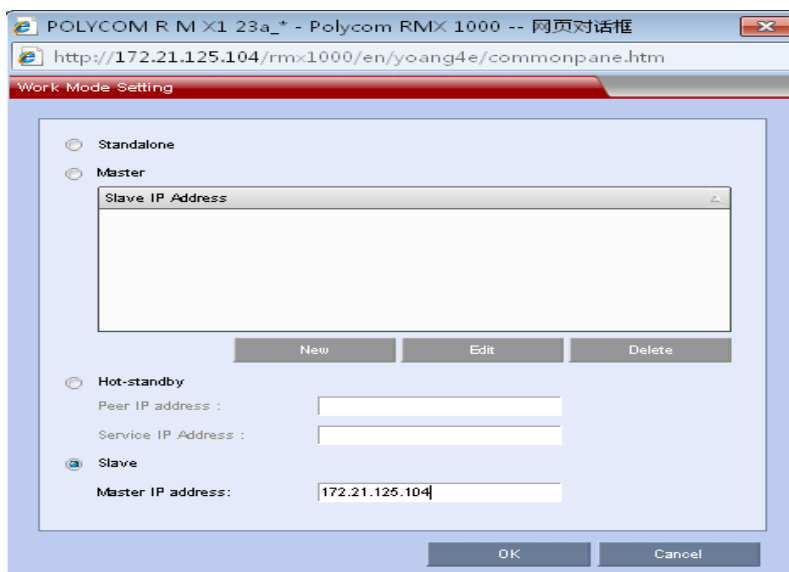
- Both the master device and slave device must be configured within the same subnet
- The number of resources supported by a slave device cannot be bigger than those supported by a master device
- Both the master device and the slave device need to use the 1000M network configuration
- The software version for a master device must be the same as that for a slave device.

Configure the master-slave relationship for stacking:

- 1 In the device list area on the hardware detection page, double-click Single Machine Mode.
- 2 On the Work Mode Settings page, complete the following settings:
 - If you are configuring the master device, please select Master MCU, and then click New to enter the address for that device.



- If you are configuring the slave device, please select Slave, and then enter the IP address for the master MCU.



- 3 Click OK and restart the device if prompted.

When all of the stacked devices are started, go to the Hardware Monitoring page within the Web configuration page for your master device, and you will see the information for stacked devices being displayed in Device List. Right-click the slave MCU and select Login Module. The corresponding device management interface will be displayed, allowing you to complete the device-related management settings for slave RMX.

Conference Scheduling in Stacking

When the stacking procedure is finished, only the master RMX device can be used for conference scheduling and you cannot use the slave device to create a conference. Logically, the stacking can consolidate multiple RMX devices so that the resources allocated for other slave devices can be shared via the master RMX in order to create more conferences and support more participants to join the conference. On the master device, you can click Resource Usage on the right bottom of the screen to check the resource usage on the master device and slave device separately.



The stacking has the following limitations:

- Up to two devices are supported for stacking.
- When stacked, no pure audio resources will be available on the system.
- If the number of remaining resources for the master device and the slave device are less than 4, no conferences can be held.
- When stacked, one conference will consume one video resource point for multicasting.
- When stacked, the slave MCU can no longer use GK, SIP registration, QoS and port locking settings.
- The maximum number of conferences for a stacked RMX system can be doubled when compared with a single machine.

Hot Standby

The RMX system supports hot standby, allowing two MCU devices connected within the same LAN to treat each other as a standby machine for data synchronization. When a power outage, network disconnection, reboot or shutdown occurs on the master MCU or some modules cannot work normally, the standby MCU will automatically switch and take over the services on the master MCU to ensure that the ongoing conferences can resume quickly.

When the master device and slave device configured as standby machines for each other are initially started, the slave device will synchronize all the configurations and status information on the master device which needs to be backed up and restored, except the small bits of information listed below:

- LAN1/LAN2 and routes in IP network service configurations
- User-defined conference skin pictures
- SSL certificate
- Signaling Monitoring
- Hardware Detection
- User Connections
- IVR

Then, when both the master device and slave device are in working status, the master device will synchronize the corresponding updates to the slave device if there are any changes to the status information (such as adding device users, conference profiles, conference rooms, etc.). Some of the conference scheduling configurations, such as adding reserved conferences or scheduling temporary conferences, will also be updated in the slave device but won't be activated until the slave device has been turned into a master device and the relevant resources are available. During status synchronization, you cannot modify the configurations in the slave device which need to be synchronized from the master device.

By synchronizing the configurations and status information, the slave device can restore the devices and currently-held conferences as quickly as possible when turning into a master device. The conference resumption following the master-slave switching has the following restrictions:

- The resumed conference's start time on the conference property page is calculated in accordance with the time when the resumed conference is actually started, which is different from the original conference's start time and duration.
- If the small pane in a conference's multi-screen window is specified as Auto and then the conference is resumed, the multi-screen layout may be different from the multi-screen status before switching occurs.
- If you select Manual Dial-out when a conference is created, the system won't automatically call an endpoint when the conference is resumed. All endpoints will be offline.

Configure Hot Standby

Before configuring hot standby, you need to finish the following tasks:

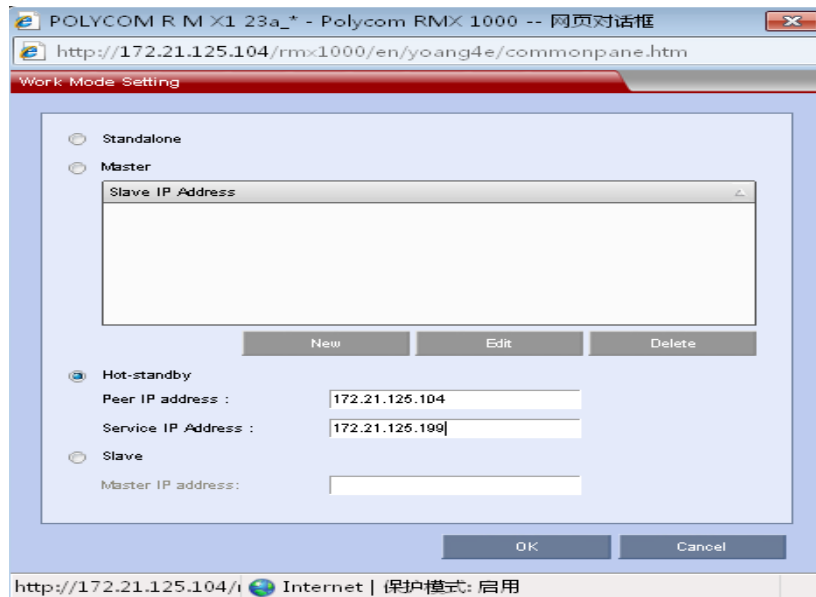
- Ensure that the two MCU devices which can be treated as standby machines for each other have the same software version and model.
- Configure the two MCU devices within the same network segment, which can be treated as standby machines for each other.
- Confirm the master-slave relationship among the two MCU devices. It is recommended that you back up the configurations and address books on the master MCU system to your local computer so that they can be used to restore the relevant data when the data on the master device cannot be correctly synchronized to the slave device.
- With hot standby, you cannot register your SIP server. Please ensure that your MCU system is not registered.
- Hot Standby allows you to enable only one network port. Please ensure that the two MCU devices which can be treated as standby machines for each other have only one LAN port enabled.

Configure the master/slave machine:




When hot standby is configured, the device started first will become a master device and the other one will become a slave device, so you need to configure the MCU that will be used as a master device first.

- 1 In the device list area, double-click Single Machine Mode.
- 2 In the Work Mode Settings dialog box, select Hot Standby.
- 3 In IP Address for Standby Machine, enter the IP address for another MCU device which can be treated as a standby machine.
- 4 Enter the IP address for the services, which must be set within the same network segment as the MCU address. The two MCU devices will use this IP address to provide outward services, and an endpoint must also use this IP address to dial into the system.



- 5 Click OK.
- 6 When the information on the MCU device is backed up, click OK in the popup message box, and then click Restart Now.

When the two RMX devices with hot standby configured are restarted, the device started first will become a master device, and the other one will be used as a slave device.

Log into the Web configuration page for the master device and you can view the information for the master/slave device in the list of hot standby machines. Click the  button to manually switch your master/slave device.




During the period when the hot standby function is enabled, you cannot upgrade your devices.


Hardware Monitoring

In the Hardware Monitoring area, the Status column lists the current working status of a unit, such as the usage, fan speed and temperature. If the status of a hardware unit goes beyond the normal range, the "System Alerts" area blinks red and displays an alert message. The table below shows the normal operating range of each hardware unit.

Normal Range of the Hardware Status

Unit	Normal Range
CPU	0-67 Celsius degree
Motherboard	0-65 Celsius degree
Memory	0-95 Celsius degree
Fan Speed	200-8000 RPM

To restart the system, click the  button on this pane.

To shut off the device, click the  button on this pane.

Personal Conference Manager (PCM)

In addition to the Web interface, RMX also provides end users with the PCM (Personal Conference Manager) interface to control a conference via a remote control.

Only when a multi-screen conference is held can the participant defined as the conference chairperson invoke the PCM function menu through the remote control, and perform the following operations on the conference:

- Connect Participant
- Disconnect Participant
- Choose a personalized layout
- Change the conference multi-screen mode.
- Control the camera of each site from a far end.
- Check or modify the audio or video session status for each participant's endpoint
- Recording a Conference
- Terminate a conference

Next, this chapter will introduce in details the function of each menu option on the PCM interface and related conference operations.

Introduction to PCM Interfaces

Viewing the PCM Interface

The endpoint with chairperson privileges can display the PCM menu only when a multi-screen conference is held.

To request the chairperson:

After accessing the conference, you can request the chairperson in one of the following two ways:

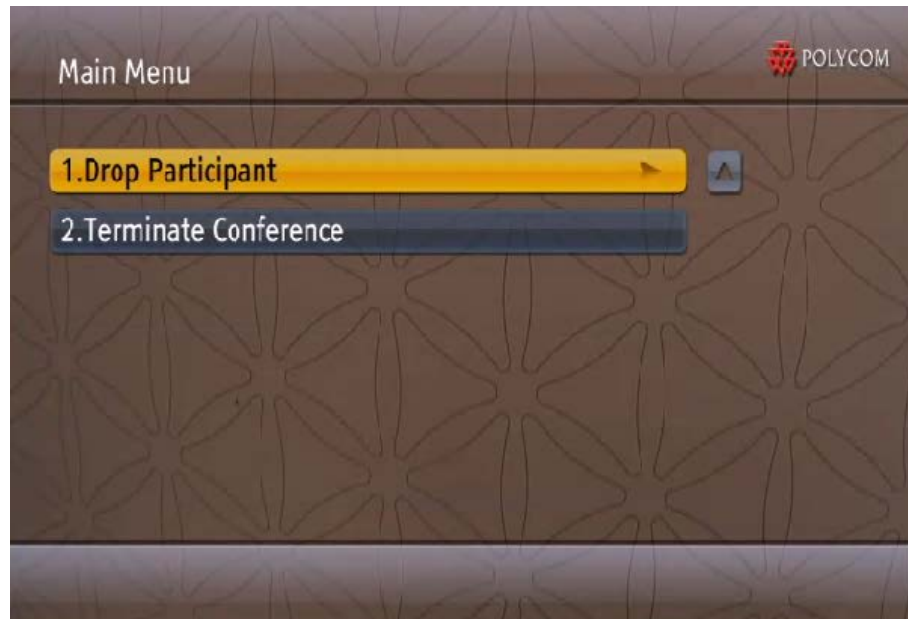
- Use the remote control in accordance with the rule below:
 - When the conference does not have a chairperson password, enter the chairperson application code "00#" to become the chairperson.
 - When the conference has a chairperson password, enter "00 chairperson password #" to become the chairperson.
- Request the chairperson through the Web management interface:
 - In the participant list pane on the Web interface, right click the participant to be changed to the chairperson, and select "Change to Chairperson".



Only one chairperson can be assigned to a conference.

The participant who has become the chairperson can press any arrow key of the remote control to invoke the PCM main menu, as shown below. The main menu consists of two pages and provides the common operation functions in a conference.





PCM Main Menu



If you have no operation for a certain period on the PCM menu interface, the system automatically goes back to the conference image.

Definitions of DTMF & FECC Keys

You can control RMX using FECC and DTMF functions of the remote control. When your endpoint supports FECC or DTMF, use the remote control to operate the PCM menu interface.

On the PCM menu interface, you can select each function menu by pressing the up arrow/down arrow key on the remote control, and go to the next-level page of the highlighted menu item by pressing the right arrow key. If you continuously press the up arrow key or down arrow key, you can cyclically switch between the first menu page and the second menu page. In addition, you can, according to the number of each menu item, press the corresponding number key on the remote control to fast enter this page.

The table below defines in details the FECC and DTMF operation keys on the remote control of Polycom endpoint.

FECC Control Keys

FECC Token	Description
←	<ul style="list-style-type: none"> Return to the higher-level menu Delete the character before the cursor (while inputting menu names) Exit the menu and display the video (if the top level menu is displayed) Shift the selection to the left video

FECC Token	Description
	<ul style="list-style-type: none"> Bring up the menu (if the conference videos are displayed)
→	<ul style="list-style-type: none"> Go to the lower level menu Confirm the selection (if the menu is displayed) Shift the selection to the right video Bring up the menu (if the conference videos are displayed)
↑	<ul style="list-style-type: none"> Return to the higher-level menu, if the menu is displayed (cyclic) Shift the selection to the above video Bring up the menu (if the conference videos are displayed)
↓	<ul style="list-style-type: none"> Go to the lower-level menu, if the menu is displayed (cyclic) Shift the selection to the below video Bring up the menu (if the conference videos are displayed)
Zoom Out	<ul style="list-style-type: none"> Exit a specific state (under some specific states) Zoom in the focus in the remote camera control state
Zoom In	<ul style="list-style-type: none"> Confirm the selection (under some specific states) Zoom out the focus in the remote camera control state

DTMF Control Keys

DTMF	Description
0	<ul style="list-style-type: none"> Shortcut key (if the conference videos or the menu is displayed) Input numbers (while inputting menu names) Go back to the conference (in the far-end camera control status)
1 – 9	<ul style="list-style-type: none"> Shortcut key (if the conference videos or the menu is displayed) Input numbers (while inputting menu names)
*	<ul style="list-style-type: none"> Enable the DTMF function of the Polycom remote control (if the conference video or the menu is displayed) Enter a period "." (while inputting IP addresses to invite participant)
#	Input confirmation to signify completion



Before using the shortcut number keys 0-9, enable the DTMF function of the endpoint according to that endpoint's configurations.

PCM Operations




















Choose a Personalized Layout

The chairperson can set the multi-screen layout of conference image when a conference is running.

To change the multi-screen layout of conference image:

- 1 In the PCM main menu, select "Click View" to go to the interface for selecting a multi-screen legend.
- 2 Select a multi-screen legend by pressing the up arrow/down arrow key on the remote control, or directly press the corresponding number key of the multi-screen legend number.
- 3 Enter the multi-screen layout setting status. By repeatedly pressing the right arrow key on the remote control, you can cyclically switch between different layouts of this multi-screen legend. For the layouts available for each multi-screen legend, see 16-65 *Layout Control Legends*.
- 4 Press the left arrow key on the remote control for multiple times to exit the multi-screen setting status, and return to the conference image.

Layout Control Legends

Legend	Layout States and Function Description
	
	
	
	
	
	
	
	
	
	Fit the layout to the Auto mode


Changing the Multi-screen Mode

The chairperson can select one of the following multi-screen modes:

- Same Layout: All the conference sites display the same multi-screen image.
- Lecture: The lecturer's image is displayed in full screens at all the conference sites, and the lecturer's endpoint displays the multi-screen layout of each site.

To change the conference multi-screen mode:

- 1 Select "Layout Mode" from the PCM main menu, and press the right arrow key to confirm.
- 2 Select the required multi-screen mode by pressing the up arrow key and down arrow key on the remote control, or press the corresponding number key of this mode number. For the lecture mode, you need to select

a lecturer. The endpoint for which participant is selected as the lecturer will be identified with  in the list. If Auto is selected, the voice activation feature will be used to select the participant whose speech reaches the predefined time as the lecturer.

Connect Participant

When a conference is going on, the chairperson can fast invite a participant to join this conference through the PCM interface.

To invite a participant to join:

- 1 Select "Connect Participant" from the PCM main menu, and press the right arrow key to confirm.
- 2 Select Connection Type, and press the **Zoom In** key to display the list.
- 3 Select a connection type, and press the **Zoom In** key to confirm.
- 4 Call the participant to be invited using one of the following two methods:
 - Manually enter the IP address or suffix of the participant to make a call. This method is applicable when the address of this participant is not added to the system address book. For details of the address book, see *Address Book*.
 - a Select the text box, and enter the IP address of the participant's endpoint through number keys on the remote control. If a gatekeeper is registered, you need to enter the E.164 number of the endpoint.
 - b Press the # key to initiate the call.
 - If the IP address of the participant to be invited exists in the address book, you can directly select this participant from the address book to make a call.
 - a Select the "Directory" menu option to enter the directory interface. The list displays by default the address book entries added by users through the local computer.

The chairperson can display addresses in the local and global directories by category through the drop-down menu on the interface, and manually enter the participant name to search directly or select the alphabetic or numerical range for filtering according to the initial character of the name. On this interface, press the **Zoom In** key to confirm the operation.
 - b Select a participant to be invited from the list by pressing the up arrow, down arrow, left arrow and right arrow keys on the remote control, and press the **Zoom In** key to initiate a call.








Participant mute/status

A user can view and control the audio and video status of each participant's endpoint. Select Participant Mute/Status from the PCM main menu and you will enter the participant's endpoint interface for audio and video control and status checking.

The interface lists the mute, blocking and video suspending status of all participants' endpoints. The conference chairperson can select a status icon by pressing the up arrow, down arrow, left arrow and right arrow keys on the

remote control, and then press the **Zoom In** key to switch this status (repeatedly press the Zoom In key to cyclically switch the on/off status). The table below provides the meanings of status icons. "ALL" can be selected to mute and unmute all the endpoints except the conference chairperson's and lecturer's.


Status Legend Descriptions

Legend	Description
	The audio output to the endpoint is allowed. Other conference participants can hear the audio from this endpoint.
	The endpoint is MUTED. Other conference participants will hear this endpoint.
	The audio input from the endpoint is allowed. This endpoint can hear the audio from other conference sites.
	The audio output to the endpoint is blocked. This endpoint will not hear the audio from other participants.
	The video output of the endpoint is allowed. Other conference participants can see the image of this endpoint.
	The video transmission from the endpoint is blocked. Other conference participants will not see this endpoint.
	This icon is displayed when the endpoint is neither muted nor suspended. You can click this icon to mute this endpoint and prevent it from sending video data to other conference sites.

Camera Control

A user can control the camera of endpoint's conference site that supports the FECC function from a far end, e.g. turn the camera of the selected conference site to the up, down, left and right directions, and zoom in/out the focus.

To control the camera from a far end:

- 1 Select Far End Camera Control from the PCM main menu.
- 2 Select the site to be controlled by pressing the up arrow, down arrow, left arrow and right arrow keys on the remote control.
- 3 Press the **Zoom In** key to enter the FECC operation status. Now, the  icon appears on the image of the controlled site.
- 4 Turn the direction of the far-end camera by pressing the up arrow, down arrow, left arrow and right arrow keys on the remote control, or press **Zoom In**, **Zoom Out** to zoom in/out the focus.
- 5 Press the number key 0 on the remote control to quit the far-end control status, and then press the **Zoom Out** key to return to the conference video.



In the FECC status, if you performed no FECC operation in 10 seconds or used the DTMF function, you will be automatically signed out of the FECC state and brought to the conference image.

Recording a Conference

When a recording link has been set up in the conference, the conference chairperson can start recording, suspend recording, and stop recording through the PCM interface. For more information about recording links, see Recording Link.

Start conference recording:

- 1 Select Recording from the PCM main menu, and press the right arrow key to confirm.
- 2 Press the right arrow key on the remote control to start conference recording. Now, the page shows the recording suspending and stopping menu so that you can control the recording process.

Disconnect Participant

Disconnect Participant:

- 1 Enter the second page of the PCM main menu, select "Disconnect Participant", and then press the right arrow key to confirm.
- 2 Select the participant to be disconnected by pressing the up arrow key and down arrow key on the remote control, and press the right arrow key to confirm.

Terminate Conference

Terminate Conference:

- 1 Enter the second page of the PCM main menu, select "Terminate Conference", and then press the right arrow key to confirm.
- 2 The interface displays the prompt message for confirming deletion. Press the left arrow key to cancel, or press the right arrow key to confirm the deletion.

Appendix A: Connection Failure Diagnosis

When a participant failed to connect to a conference or was disconnected from a conference, the Connection Status page of Participant Properties pages appears, listing the cause and more details about the connection failure. When possible, it also provides you the possible solutions.

This appendix lists the causes that may be shown in Call Disconnected Cause and the corresponding descriptions.

Description for Disconnection Failure

Parameter	Description
CALL_REJECT_GK	Call rejected by the gatekeeper
NO_NET_CONNECTION	Network connection failed
RESOURCE_DEFICIENCY	No enough resources
NETWORK_ERROR	Network error
CALL_REJECT_NO_ANSWER	No answer to the call
CALL_REJECT_BUSY	The remote end is busy.
CALL_REJECT_IMMEDIATELY	Call rejected
NON_ENCRYPT_TERM_JOIN_ENCRYPT_MEETING	Non-encrypted endpoints are not allowed to join an encrypted conference
ENDPOINT_HANGUP	The endpoint hangs up initiatively
Operator_DISCONNECT	Disconnected by the administrator

Appendix B: Telnet/Terminal Commands

RMX also supports device debugging from the command line. You can configure command settings in either of the following two methods: using the HyperTerminal after connecting it to the device through a serial port or configuring via telnet. Both methods use the same command format. Next, we will describe how to configure command setting using the HyperTerminal.

HyperTerminal Parameters

- Port: COM1 (basing on the port used)
- Speed: 115200 baud
- Data bits: 8
- Parity bit: None
- Stop bit: 1

Furthermore, you may need to set some other parameters based on the simulation software used:

- No echo for local input
- Settings for the DEL and Backspace keys
- Enter/New line
- The simulation type for the endpoint: "Automatic" or "ANSI"

Login

If you have completed all the above configurations and launched the HyperTerminal simulation software successfully, press the "Enter" key. The login interface appears.

The login interface shows all of the software information and you'll be prompted to enter the login password. Now enter the login password and press the Enter key.



The factory default login password is POLYCOM (case sensitive).

If you entered a wrong password, you may be required to re-login to the system.

If you entered the right password, you will be brought directly to the command setting interface.

```
User logged in.  
Type ? or help to get the help information  
#
```

Command Introduction

Help

After logging in to the system, you can enter "?" or "help" after the prompt "#" to show the command prompt information.



- "<>" indicates the optional parameter.
- "{}" indicates the required parameter.
- "|" indicates a 1-out-of-N parameter.

Exit

Enter "exit" after the prompt "#" to exit the command control interface.

```
# exit  
  
User logged off
```

View Device Information

Enter "show" after the prompt "#" to view the current device information, including the system information, license information, interface information, and IP address.

Idle Timeout Setting

Enter "keepalive <timeout>" after the prompt "#" to modify the keep-live timeout setting. If no operation was executed in the defined time interval, the device will time out and exit.

Parameters Description

Parameter	Description
timeout	Defaults to 120 seconds and can be modified to any value in the range of 5 – 600 seconds

[Example] Set the timeout time to 60 seconds:

```
# keepalive 60
current keepalive timeout value is 60 seconds
```

Reboot Device

Enter "reboot" after the prompt "#" to reboot the device.

```
# reboot
restart system ...
```

Restore Password

Key in "reset password" after the prompt "#" to restore the user password for Web login to the default password (POLYCOM). The system displays the prompt message "Are you sure?". Key in "Y" to proceed, or key in "N" to cancel the setting.

After resetting the password, the RMX must be restarted in order for the new settings to take effect.

[Example] Restore the Web login password to the default configuration:

```
# reset password

Are you sure? [Y for yes / N for no]Y
reset password ... OK

Reboot is require in order for the change to take affect - Reboot now? [Y for y
es / N for no]_
```

Restore System Configuration

Enter "reset config" after the prompt "#" to restore the system to the default configuration. The system displays the prompt message "Are you sure?". Key in "Y" to proceed, or key in "N" to cancel the setting.

After resetting the system configuration, the RMX must be restarted in order for the new settings to take effect.

Clean Key Code

Key in "cleankey" after the prompt "#" to remove the existing activation key. This command is used to deactivate the RMX.

The system displays the prompt message "Are you sure?". Key in "Y" to proceed, or key in "N" to cancel the setting.

Telnet Setting

Key in "telnet {on | off}" after the prompt "#" to turn on/off the telnet session. For example, enter telnet on to enable the telnet function.



The default setting is telnet on. If "telnet off" is entered to disable RMX's telnet function, the user can only use the serial port to perform above system setting tasks. The default telnet port is 23, which cannot be modified. The password and command operations for remote telnet login are identical to those for serial port login.

Password Modification

Key in "password" after the prompt "#" to modify the login password for the command setting interface.

The password can be set to a maximum of 20 characters. This command is only used to change the login password for the telnet session and serial interface. No effect for the web UI password.

```
# set telnet password
enter new password: █
```

Ping

Key in "ping <ip> {-n<count>} {-w<time>} {-l<size>}" after the prompt "#" to view the network connection status.

Parameters Description

Parameter	Description
ip	IP address of the destination host
-n<count>	Packet sending times, defaulted to 10
-w<time>	Waiting time, defaulted to 1000 ms
-l<size>	Size of the sent packet, defaulted to 32 bytes

[Example] Send the host whose IP address is 172.21.100.111 a Ping packet with the size of 1500 bytes for five times cyclically. The wait time is 1000 ms:

```
# ping 172.21.100.111 -n5 -w1000 -l1500

Pinging 172.21.100.111 with 1500 bytes, loop 5 times, wait 1000 ms.

1520 bytes from 172.21.100.111 : seq=1, ttl=127, delay=1ms.
1520 bytes from 172.21.100.111 : seq=2, ttl=127, delay=2ms.
1520 bytes from 172.21.100.111 : seq=3, ttl=127, delay=2ms.
1520 bytes from 172.21.100.111 : seq=4, ttl=127, delay=2ms.
1520 bytes from 172.21.100.111 : seq=5, ttl=127, delay=1ms.

send 5 packets, receive 5 packets, lost 0(0.0%) packets.
time is 5005ms, bandwidth is 12.1kbps
```

Network Service

Key in the following commands after the prompt "#" to set network configurations:

"set {lan1 | lan2} ip {dhcp | static <ip> netmask <mask> gw <gateway>}" - set the IP address for LAN 1 or LAN 2 interface.

"set {lan1 | lan2} speed {auto | 1000 | 100 full | 100 half | 10 full | 10 half}" - set the connection features for the LAN 1 or LAN2 interface.

Network Setting Parameters – LAN Interface IP Address

Parameter	Description
dhcp	Automatically gets the address information through the DHCP server.
static	Specifies the static IP address information - IP: IP address of the network port mask: subnet mask of the network port gateway: gateway address of the network port

Network Setting Parameters – LAN Interface Connection Rate

Parameter	Description
auto	Auto negotiation mode
1000	1000Mbps
100 full	100Mbps full duplex
100 half	100Mbps half duplex
10 full	10Mbps full duplex
10 half	10Mbps half duplex

[Example 1] Set the IP address of the LAN1 interface to 172.21.103.29, subnet mask to 255.255.255.0, and the gateway address to 172.21.103.254:

```
# set lan1 ip static 172.21.103.29 netmask 255.255.255.0 gw 172.21.103.254

Reboot is require in order for the change to take effect. Reboot now? [Y for yes / N for no]Y

restart system ...
```

[Example 2] Set the 100M half duplex for the LAN 1 interface:

```
# set lan1 speed 100 half  
  
Reboot is require in order for the change to take effect. Reboot now? [Y for yes  
/ N for no]Y  
  
restart system ...
```



After you set the connection feature or IP address for the LAN interface, the system must be restarted in order for the new settings to take effect.

Password Checking

Key in "password checking {on | off}" after the prompt "#" to enable or disable the password checking function.

When password checking are enabled and you are setting a user password on the Web page, you must enter a password consisting of letters, numbers and special characters (~ ` ! @ # \$ ^ * () _ - [] ; : , . / ?), with a length of 8-40 characters.

Password Encryption

Key in "password encryption {on | off}" after the prompt "#" to enable or disable the password encryption function.

When password encryption is enabled and a user is logging into the Web configuration page, the system will use a more complex encryption algorithm for the entered login password to ensure the security of this network-transmitted password, and at the same time, the system will use the HTTPS protocol to establish an SSL security connection with the client. In this mode, when a user enters his/her username and password and click Login, the user may be prompted that this website has been blocked or the security certificate has expired based on the currently-used IE browser's version. In order to enter the system, the user must allow the website contents to be displayed and re-enter his/her login information when prompted. If high security requirement is not necessary, we recommend that you disable this function.

Set I-frame Timing Interval

Key in "iframe timing interval {value}" after the prompt "#" to set the timing interval for an endpoint to launch an I-frame request.

Parameters Description

Parameter	Description
value	Time interval, 10 seconds by default, with a modification range of 10 – 300 seconds.

[Example] Set the I frame request time interval to 60 seconds:

```
# iframe timing interval 30
current fast update stat timing interval value is 30

Reboot is require in order for the change to take effect. Reboot now? [Y for yes
/ N for no] _
```

19

Appendix C: Glossary

Abbreviation/Term	Explanation
<i>Bandwidth</i>	Defines the information-carrying capacity of a channel. In analog systems, it is the difference between the highest frequency that a channel can carry and the lowest, measured in hertz. In digital systems, bandwidth is measured in bits per second. The larger a connection's bandwidth, the more data can be transmitted in a given amount of time, allowing for greater video resolution and more sites in a conference.
<i>Coder-decoder.</i>	A device that converts voice and video into digital code and vice versa. Refers to the endpoint video camera and video board that are used for videoconferencing.
<i>Conference</i>	Connection between two or more endpoints exchanging video and audio information. If only two endpoints are involved, a conference is called point-to-point and no MCU is required. If more than two endpoints are involved, it is called a multipoint conference, and a Multipoint Control Unit (MCU) is required as the management system.
<i>Endpoint</i>	A hardware device, or set of devices, that can call, and be called by an MCU or another endpoint. For example, an endpoint can be a phone, a camera, or microphone connected to a computer or conferencing system.
<i>Frame</i>	A group of bits that make up an elementary block of video data for transmission by certain protocols.
<i>Frame Rate</i>	The number of video frames displayed on-screen during one second, measured in fps (frames per second).
<i>Gatekeeper</i>	A type of server that performs two main functions: translates LAN alias addresses of terminals and gateways to IP addresses and provides bandwidth management.
<i>Line rate</i>	The amount of bandwidth used by a communication device, measured in Kbps (kilobits per second).
<i>Participant</i>	A person using an endpoint to connect to a conference.
<i>High Definition (HD)</i>	HD refers to the ultra-high quality video resolution. An HD-compliant endpoint can connect to a conference at a resolution of 1280x720 (720p) and at a bit rate of 384kbp~4Mb. When setting up an HD video conference, all participants connected to the conference are required to use the same conference bit rate and same HD settings. Those endpoints unable to meet the above requirements will be treated as secondary connections (audio only).
<i>Bps, Kbps</i>	Bits and kilobits per second a unit of bandwidth--that is the

Abbreviation/Term	Explanation
	amount of data that can flow during one second over a communications line (using a transmission medium). 1 Kbps=1000 Bps.
<i>CIF, 4CIF, QCIF</i>	Common Intermediate Format, an optional part of the ITU-T's H.261 and H.263 standards. CIF specifies 288 non-interlaced luminance lines that contain 176 pixels. CIF can be sent at frame rates of 7.5, 10, 15, or 30 per second. When operating with CIF, the amount of data to transmit cannot exceed 256K bits. The CIF video format has the capacity to transmit video images of 352x288 pixels at 36.45 Mbps and 30 frames per second. A 4CIF format has four times the capacity of CIF; QCIF has quarter the capacity of CIF.
<i>DTMF</i>	Dual Tone Multi Frequency, a system of coded signals used by touch-tone telephones in which a specific sound, frequency, or tone is assigned to each key so that the signal can be easily recognized by a computer. The codes enable data input and control of voice-processing systems. DTMF signals can pass through the entire connection to the destination device and therefore are used for remote control after the connection with the MCU is established.
<i>G.711</i>	ITU-T audio algorithm, 64Kbps, 3.4 kHz.
<i>G.722</i>	ITU-T audio algorithm, 64Kbps, 7 kHz.
<i>G0.728</i>	ITU-T audio algorithm, 16Kbps, 3.4 kHz.
<i>H.221</i>	An ITU-T standard that defines how to multiplex video, audio, control, and user data into one serial bit stream before transmission.
<i>H.230</i>	An ITU-T standard that defines simple multipoint control system procedures and describes network maintenance functions.
<i>H.231</i>	An ITU-T standard that defines a set of MCU functions and operational requirements.
<i>H.242</i>	An ITU-T standard that defines initiation of communications between systems and capabilities negotiation procedures.
<i>H.243</i>	An ITU-T standard that defines communication initiation and procedure negotiation capabilities between systems in multipoint conferences.
<i>H.261</i>	An ITU-T standard that defines the Px64 video coding algorithm.
<i>H.263</i>	An ITU-T standard that provides improved compression and quality of video images at a line rate lower than 384Kbps. This standard is not supported by all codecs.
<i>H.264</i>	An ITU-T standard that provides improved compression and quality of video images in low line rate connections and is a part of the Highest Common mechanism in video switching conferences.

Abbreviation/Term	Explanation
<i>H.323</i>	An ITU-T standard for audio, video and data communications across IP-based (LAN) networks, including the Internet.
<i>IP</i>	Internet Protocol. The working protocol that forms the basis of the Internet.
<i>ITU-T Standard</i>	International Telecommunications Union, Telecommunication Standardization Sector (formerly CCITT). An international group that produces official standards for telecommunications.
<i>LAN</i>	Local Area Network (LAN), a group of computers and other devices linked via a network's operating system.
<i>MCU</i>	Multipoint Control Unit (MCU), the device which allows two or multiple sites to be connected in a video conference.
<i>PCM</i>	Personal Conference Manager, a user interface displayed on the endpoint's video output screen. The user interacts with the PCM through the DTMF command and FECC function by using the endpoint remote control, to implement conference control at the MCU. For example, create a conference, dial into a conference, set the window layout, remotely control the camera, and terminate a conference.
<i>QCIF</i>	Quarter CIF. A video format with the image size of 176x144 pixels that transmits 30 frames at 9.115 Mbps per second (a quarter of the capacity of CIF). For more information, see CIF.
<i>QoS</i>	Quality of Service (QoS). QoS defines the performance of a network service, such as the average delay between packets.
<i>ToS</i>	Type of Service (ToS). It defines optimization tagging for routing audio and video packets.
<i>WAN</i>	Wide Area Network (WAN). A communications network that services a geographical area larger than the LAN.

20

Third-party Software Licenses

Listed in this appendix are some of the third-party software products used by Polycom RMX and the relevant copyright announcements.

Third Party Licenses

Software Source File	License Type	License Conditions
Busybox 1.7.1	GPL V3.0	Copyright 2007. Distributed under the GPL License V3. 0, which may be found at www.gnu.org/copyleft/gpl.html Copies of modified source code available upon request.
Grub 0.97	GPL V3.0	Copyright 2007. Distributed under the GPL License V3. 0, which may be found at www.gnu.org/copyleft/gpl.html Copies of modified source code available upon request.
Linux kernel 2.6.24 rc7	GPL V3.0	Copyright 2007. Distributed under the GPL License V3. 0, which may be found at www.gnu.org/copyleft/gpl.html Copies of modified source code available upon request.
Glibc 2.6	GPL V3.0	Copyright 2007. Distributed under the GPL License V3. 0, which may be found at www.gnu.org/copyleft/gpl.html Copies of modified source code available upon request.
Openssl 0.9.8b	BSD-style	The actual license texts may be found at www.openssl.org/source/license.html
Net-snmp ver 5.4	Net-SNMP	http://www.net-snmp.org/about/license.html
Apache ver 2.2.4	Apache License v2.0	http://www.apache.org/licenses/LICENSE-2.0
Libpcap	libpcap	http://sourceforge.net/projects/libpcap/

**User Guide for Polycom® RMX™ 500 and Polycom® RMX™1000 Systems
(Conference on Ports)**

Software Source File	License Type	License Conditions
OpenLDAP	OpenLDAP Public License v 2.8 (17 August 2003)	http://www.openldap.org/software/release/license.html
Libpng	libpng License	http://www.opensource.org/licenses/zlib-license.php
Jpeg.v6b	-	http://www.ijg.org/files/
bmp2png-1.62	-	http://pmt.sourceforge.net/bmp2png/index.html
srtp 1.4.2	BSD-based	http://srtp.sourceforge.net/license.html
reSiprocate 1.3	-	-

21

Quick Installation Setup Wizard (RMX500 Rev A only)

Before using the simple conference management system, you need to first configure your system using the setup wizard, such as setting RMX time and creating address book.

Using quick installation setup wizard:

- 1 In the Web browser, enter `http://<RMX IP address>` in the address bar, and then press **Enter**.
- 2 On the top right corner of the Login interface, select **English** from **Select Language** drop-down list.
- 3 On the Login interface, enter the default User Name (**POLYCOM**) and Password (**POLYCOM**). Click **Login**.
- 4 Go to **Setup > Quick Installation Setup Wizard** to run quick installation setup wizard.
- 5 Set RMX system time. Select a time synchronization mode and click **Next**:
 - Select the **Synchronize device time with a time server** to synchronize the system time with a network time server. In this case, enter the IP address or domain name for the time server in the **Time Server** field.
 - Select the **Synchronize Date & Time with My PC** option to synchronize the system time with your computer that is connected to the system.
- 6 Configure the **IP Address**, **Subnet Mask**, and default **Gateway** IP address of the RMX LAN port per information from network administrator.
- 7 Configure RMX system information and click **Next**. If system needs to enable the builtin GAB server, click **Enable Builtin Gab Server** and enter password if any.
- 8 If you want the system to send conference notification Emails to participants, you need to configure the email servers firstly. Users can choose to use the Internal Mail Server, or configure an External Mail Server for Email delivery. Once you are done with configuration, click **Next**.
- 9 Set video quality and connection rate and click **Next**.

When you make new conference reservations, system will configure highest resolution and connection rate in accordance with your settings.

- 10 (Optional) If you need to create new contacts, click **New**, enter contact information as suggested by prompts and click **OK**.
- 11 (Optional) To import the address book:
 - a Click **Download profile**, name the profile and select the path of saving this profile, click **Save**.



Don't change the profile extension .csv.

- b Open the exported profile, add contact names and email addresses in accordance with profile format and set the Email address used by the participant to receive conference notices from the system.



Don't change the profile's first line.

- c Click **Open** under **Select the Path for Importing Contact Person:** and find the .csv file.
- d Click **Open**, once it's finished, you can find your contacts from participant list when making new conference reservations.
- e Click **Finish**.

Use Simple Conference Management System

Simple conference management system user

To use simple conference management system, you need to log in as simple conference management system user firstly. Your system defines a default simple conference management system user:

- User Name: user
- Password: POLYCOM


You can log into normal Web interface as administrator to modify the default password, or you can create more simple conference management system users.

To modify default simple conference management system user password:

- 1 In the Web browser, enter `http://<RMX IP address>` in the address bar, and then press **Enter**.
- 2 On the top right corner of the Login interface, select **English** from **Select Language** drop-down list.
- 3 On the Login interface, enter the default User Name (**POLYCOM**) and Password (**POLYCOM**). Click **Login**.
- 4 Click **Users** from **RMX Management** Pane, right click **user** (system default simple conference management system) from the **Users** Pane and select **Change User Password**.

- 5 Follow the on-screen prompts to enter the new password and click **OK**.

Create Simple Conference Management System User:

- 1 In the Web browser, enter `http://<RMX IP address>` in the address bar, and then press **Enter**.
- 2 On the top right corner of the Login interface, select **English** from **Select Language** drop-down list
- 3 On the Login interface, enter the default User Name (**POLYCOM**) and Password (**POLYCOM**). Click **Login**.
- 4 Click **Users** from RMX Management Pane and click **New User**  from the Users Pane.
- 5 Enter **User Name**, **Password** and mark **Simple UI Management User** checkbox, then click **OK**.

Log into Simple Conference Management System:

- 1 In the Web browser, enter `http://<RMX IP address>` in the address bar, and then press **Enter**.
- 2 On the top right corner of the Login interface, select **English** from **Select Language** drop-down list.
- 3 On the Login interface, enter the default User Name (**user**) and Password (**POLYCOM**). Click **Login**.

Use Simple Conference Management System

With simple conference management system you can use address book profile to create address books, create and manage conferences.

Create Address Book Using Profile

- 1 Click **Address book**  > **Download Profile**, set profile name and select the path of saving this profile, click **Save**.



Don't change the profile's extension .csv.

- 2 Open the exported profile, add contact names and email addresses defined in the profile, set the Email address used by the participant to receive conference notices from the system.



Don't change the profile's first line.

- 3 When the interface for importing the address book appears, click **Open** and find the .csv file.
- 4 Click **Upload File**, once it's finished, you can find your contacts from participant list when making new conference reservations.

5 Click **Back**.



When uploading an address book file, the participants in the current address book will be overwritten. If contacts email address in the .csv file incorrect, even the address book successfully imported, the contact won't appear in new conference reservation participant list or will not receive conference notices from the system.



You may get the following message: "contacts_profile.csv may contain features that are not compatible with Unicode Text. Do you want to keep the workbook in this format? Click yes.
When closing .csv file, click no at the prompt.

Setting up Conferences

You can either hold an instant one-time-only conference (Instant Conference) or reserve a conference for future use (Reserved Conference)

To reserve a conference:

- 1 Click **New Reservation**
- 2 Enter conference name, click **Next**.
- 3 Set reservation time and click **Next**:
 - Instant conference: Set **Duration**, current time is set as start time by default.
 - Reserved conference: select a date from the calendar, set **Start Time** and **Duration**.
- 4 (Optional for reserved conferences) Select single or multiple participants, you can either enter the full name of the participant for accurate searching or the keyword in this name for fuzzy searching. Click **Next**.



If participant list unavailable, you need to create address book firstly.

- 5 (Optional) Select single or multiple meeting rooms, you can enter full name or the keyword of the meeting room to start searching. Click **Next**.



If no meeting room list shows up, please contact your system administrator, you can add up to 12 meeting rooms (support up to 6 video and 6 audio simultaneously)

- 6 Click **Finish**. System will send out an auto-Email titled *Video Conference Notice* to all participants including the conference name, dia-in ID of the participant, conference start and end time, participants and meeting room.








- You can add participants and meeting rooms prior to the start of the meeting, or you can add meeting rooms during the meeting.
- The dial-in ID in the meeting notifications is defined by your system settings, for more information, see dial-in ID.
- If participants could not receive the conference notice, please check the accuracy of the participant's Email address in your imported address book.

Viewing Conferences

You can view all ongoing conferences and related parameters, modify conference settings and conduct conference control. The title bar of the conference list pane indicates the number of the ongoing conferences.

View conference list:



- 1 Click **Conference List** .
- 2 You can see the following conference parameters:







Parameter	Description
<i>Name</i>	Conference name
<i>Status</i>	Indicate conference status: <ul style="list-style-type: none"> •  instant conference •  reserved conference
<i>ID</i>	When a meeting room is created, the system automatically allocates a conference ID. To directly dial into the conference, the participant must know its ID.
<i>Start Time</i>	Conference start time.
<i>End Time</i>	The time the conference is expected to end.
<i>Control</i>	Click to enable conference control: <ul style="list-style-type: none"> •  Control an instant conference. •  Control a reserved conference. For more information, refer to <i>Conference Control</i> on page 13
<i>Delete</i>	Deleting the conference.

Conference Control



You can control an instant conference by connecting or disconnecting conference rooms, you can also modify start time for a reserved conference, participants or meeting rooms.

To monitor an instant conference:

- 1 Click **Conference List** .
- 2 Click **Control** .
- 3 Click one or more meeting rooms to be controlled.
- 4 Click meeting room control toolbar to carry out control.

Button	Name	Description
	<i>Add Meeting Room</i>	Add a new meeting room to the current conference.
	<i>Connect</i>	Connect the allocated meeting room to the conference.
	<i>Disconnect</i>	Disconnect the allocated meeting room from the conference.
	<i>Delete</i>	Delete the allocated meeting room.
	<i>Mute Audio</i>	Mute the allocated meeting rooms so that the audio of this meeting room will not be sent to the conference.
	<i>Unmute Audio</i>	Unmute audio of the allocated meeting room.

To control a reserved conference:

- 1 Click **Conference List** .
- 2 Click **Control** .
- 3 Modify conference time, modify or add participants or meeting rooms following the on-screen prompts.



Set the multi-screen layout






The user can modify the number of images of multiple sites spontaneously displayed on the endpoint screen, also choose a preferred multi-screen layout so that the conference site displays the participant's image always according to the layout selected here.



Multi-screen layout occupies more MCU video resource. When a multi-Screen conference is held, the system codes/decodes several channels Of video streams with different capabilities, and exports the video with quality at several grades. When an endpoint joins the conference, the system will, in accordance with the various channels of the video stream parameters (the video protocol, bandwidth, resolution and frame rate defined by the user, appoint the endpoint to a video stream channel which can match the endpoint's highest capability, so as to optimize the conference video output. The endpoint will access the conference in the pure audio mode when its parameters defined for all the video streams. Default multi-screen layout is defined by the conference profile used by The system. For more information about conference profiles, please consult your system administrator.



To change a multi-screen mode of an instant conference:







- 1 Click **Conference List** .
- 2 Click **Control** .
- 3 Click single or multiple meeting rooms, then click **Change Layout**.
- 4 Select a layout mode and click **OK**.





Multi-screen Mode	Description
	A user can set to automatically select the multi-screen layout according to the number of added meeting rooms, for more information about automatic multi-screen layout, see <i>automatic multi-screen layout</i> .
	Displays the first participants who speak loudest.
	Displays the first two participants who speak loudest.
	Displays the first four participants who speak loudest.
	Displays the first six participants who speak loudest.

Automatic Multi-screen Layout

You can choose to allow the system to automatically select a multi-screen layout based on the number of added meeting rooms.

- When the number of meeting rooms is smaller than or equal to the set number of multi-screens, the system displays the multi-screen image according to the actual number of meeting rooms and in line with the default rule. The table below shows the default rule.
- When the number of meeting rooms is greater than the set number of multi-screens, the system uses voice activation feature, and switches to display the first meeting rooms who speak loudest with the largest multi-screen layout selected here. If the number of meeting rooms is greater than 4 and the maximum selection is , the system uses the  layout to display the first four meeting rooms who speak the loudest.

Number of Meeting Rooms	Multi-screen Layout
1	
2	
3-4	
5-6	
7-8	
9	

Number of Meeting Rooms	Multi-screen Layout
10	
11-13	
14-16	
16+	

Dial-in Number

For an H.323 endpoint, if the endpoint has been registered to the same gatekeeper as RMX, the dial-in number consists of the E.164 prefix of RMX and conference information, such as the conference ID, conference password, chairperson password and participant address, in the form below:

<RMX E.164 prefix>[Conference ID][##Conference password][##Chairperson password][*participant's E.164 prefix]

Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

For example:

RMX E.164 prefix: 925

ID of the conference to be created: 1001

The table below shows the strings dialed by the endpoint under different scenarios:

H.323 Endpoint's Dial-in Numbers – Registered to a GK

Scenario	Dial-in String
Create this conference	9251001
Create this conference and set: Conference password: 1111 Chairperson password: 2222	9251001##1111##2222
Create this conference and invite: Participant 1 - E.164/TEL URI: 123 Participant 2 - E.164/TEL URI: 321	9251001*123*321
Create this conference, set the above passwords and invite participants	9251001##1111##2222*123*321

If the gatekeeper is not configured on the network, the format of the dial-in string is as follows:

<RMX IP address>[##<Conference ID>][##Conference password][##Chairperson password][*participant's IP address]

Here, the character within the <> symbols are mandatory, and those within the [] symbols are optional.

For example:

RMX IP address: 172.22.30.40

ID of the conference to be created: 1001

The table below shows the strings dialed by the endpoint under different scenarios:

H.323 Endpoint's Dial-in Numbers – Not Registered to a GK

Scenario	Dial-in String
Create this conference	172.22.30.40##1001
Create this conference and set: Conference password: 1111 Chairperson password: 2222	172.22.30.40##1001##1111##2222
Create this conference and invite: Participant 1 - IP address: 172.22.30.1 Participant 2 - IP address: 172.22.30.2	172.22.30.40##1001*172.22.30.1*172.22.30.2
Create this conference, set the above passwords and invite above participants	172.22.30.40##1001##1111##2222*172.22.30.1*172.22.30.2

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