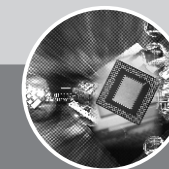


# Video Conferencing System Multi-Point Control Unit

DH-VCS-MCU91XX SERIES

*Video Conferencing System Multi-Point Control Unit*

*Quick Start Guide*



**SAFETY PRECAUTIONS**

Before using the product, read and abide by the following requirements to prevent damage to the product or your belongings.

** Caution**

- Transport, use, and store the product only under the appropriate temperatures and humidity.
- Install the product in a well ventilated place and do not block the device's air vents.
- Install the product in a steady place.
- Do not place the product in damp, dusty, or smoky areas.
- Do not place the product in direct sun light or near a heat source.
- Do not let the product come in contact with liquids.
- Do not disassemble the product at will.

** Warning**

- Turn off all power sources when opening the device cover or when repairing the device to prevent electric shock.
- Use a new battery of the same kind to replace the old one.
- Use the recommended power cord and use it within its rated specifications.
- If a power plug or appliance coupler is used as a disconnecting device, please ensure that the disconnecting device is always easy to operate.

**Important Statements**

- The physical product shall prevail while this User Manual is for reference only.
- The product will automatically update itself. If there is an upgrade, no notifications will be given.
- For the latest procedure and supplementary documentation, please contact the service center.
- Should there be any doubts or any disputes over the product instructions, the company reserves the rights of final interpretation.

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# 1 Overview

## 1.1 Introduction to the Product

Model	Product Introduction	Hardware architecture
MCU91B0	MCU91B0 is a fully adaptable, cost-effective, and high performance MCU product, suitable for small-scale conference system networks. Smart connection with various endpoints provides the ultimate conferencing experience for users. Supports 10 meeting places at 1080P 30FPS for fully adaptable conferencing, and 5 simultaneous meetings including management for 32 conference endpoints.	1U rack. 4 USB ports at the back and 2 USB2.0 ports at the front for convenient debugging. 1 RS232 debug port. Dual gigabit Ethernet ports.
MCU91F0	MCU91F0 is a new generation high performance, high density, high reliability, and fully adaptable MCU product. It is suitable for mid-sized conference system networks and can be stacked to implement large conference system networks. Smart connection with various endpoints provides the ultimate conferencing experience for users. Supports 20/40/80 meeting places at 1080P 30FPS for fully adaptable conferencing, and 10/20/40 simultaneous meetings including management for 64/128/256 conference endpoints.	2U rack. 4 hot-swappable nodes. Supports 1 + 1 redundant power supply. 4 gigabit Ethernet ports, 2 USB ports, and 1 RS232 debug port at each node.

## 1.2 Port Descriptions

### 1.2.1 MCU91B0

#### Front Panel

Figure 1-1 MCU91B0 front panel

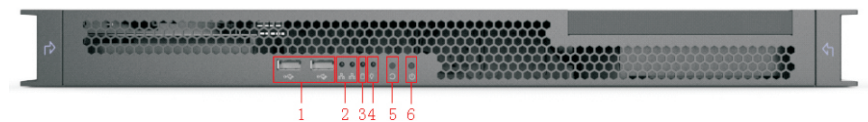


Table 1-1 MCU91B0 front panel description

SN	Name	Function Description
1	USB ports	Connect to mouse/keyboard.
2	Network indicator	Network indicator lights for network port 1 and 2 on the back panel of MCU91B0. Flashes yellow when the device is successfully connected to the network.
3	Hard disk indicator	Flashes red when during hard disk read and write.
4	Power indicator	A blue light will show when power is connected.
5	Reset button	<ul style="list-style-type: none"> <li>● Short press for soft reset.</li> <li>● Long press for hard reset.</li> </ul> <p><b>Note</b> A forced reset may lead to data loss.</p>
6	Power button	Switches on the device. Short press the power button to turn the device on/off.

## Back Panel

Figure 1-2 MCU91B0 back panel

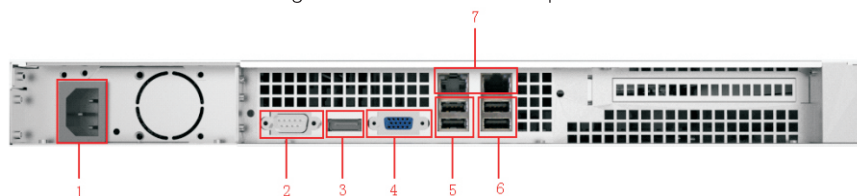


Table 1-2 MCU91B0 back panel description

SN	Name	Function Description
1	Power port	Connects to 100–240V AC power source.
2	RS232 port	Used for regular serial debugging, IP address configuration, and transparent serial data transmission.
3	DP port	Use the accompanying DP to VGA cable to connect to the monitor.
4	VGA port	Not supported currently.
5	USB 2.0 port	Connect to mouse/keyboard.
6	USB 3.0 port	
7	Network port	Used to connect to network. For IP configuration, refer to step 5 System Network Parameter Settings in “3.3 Quick Guide” . <b>Note</b> <ul style="list-style-type: none"> <li>● The left side is the master device port. Default IP address: 192.168.1.108.</li> <li>● The right side is the slave device port. Default IP address: 192.168.2.108.</li> </ul>

## 1.2.2 MCU91F0

### Front Panel

Figure 1-3 MCU91F0 front panel



Table 1-3 MCU91F0 front panel description

SN	Name	Function Description
1	Indicator for board 1	Indicator light for the host board in the MCU91F0 back panel. From top to bottom: Board 1, host 2 Board 1, host 1 Board 3, host 2 Board 3, host 1
2	Board 1 power switch	Switches on the device. Short press the power button to turn the device on/off.
3	Indicator for board 2	Indicator light for the host board in the MCU91F0 back panel. From top to bottom: Board 2, host 2 Board 2, host 1 Board 4, host 2 Board 4, host 1
4	Board 2 power switch	Switches on the device. Short press the power button to turn the device on/off.

## Back Panel

Figure 1-4 MCU91F0 back panel

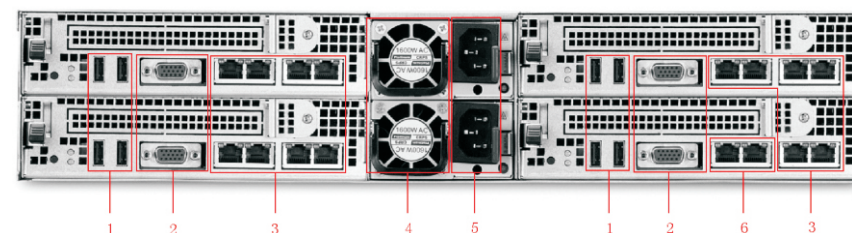


Table 1-4 MCU91F0 back panel description

SN	Name	Function Description
1	USB ports	Connect to mouse/keyboard.
2	VGA port	Used to connect with monitor.
3	Slave device network port	Used to connect to a network. For IP configuration, refer to step 5 System Network Parameter Settings in “3.3 Quick Guide” <b>Note</b> <ul style="list-style-type: none"> <li>● Default IP address for the left port in each group: 192.168.1.108.</li> <li>● Default IP address for the right port in each group: 192.168.2.108.</li> </ul>
4	Fan	Heat dissipation.
5	Power port	Connects to 100–240V AC power source.
6	Master device network port	Used to connect to a network. For IP configuration, refer to step 5 System Network Parameter Settings in “3.3 Quick Guide” <b>Note</b> <ul style="list-style-type: none"> <li>● Default IP address for the left port in each group: 192.168.1.108.</li> <li>● Default IP address for the right port in each group: 192.168.2.108.</li> </ul>

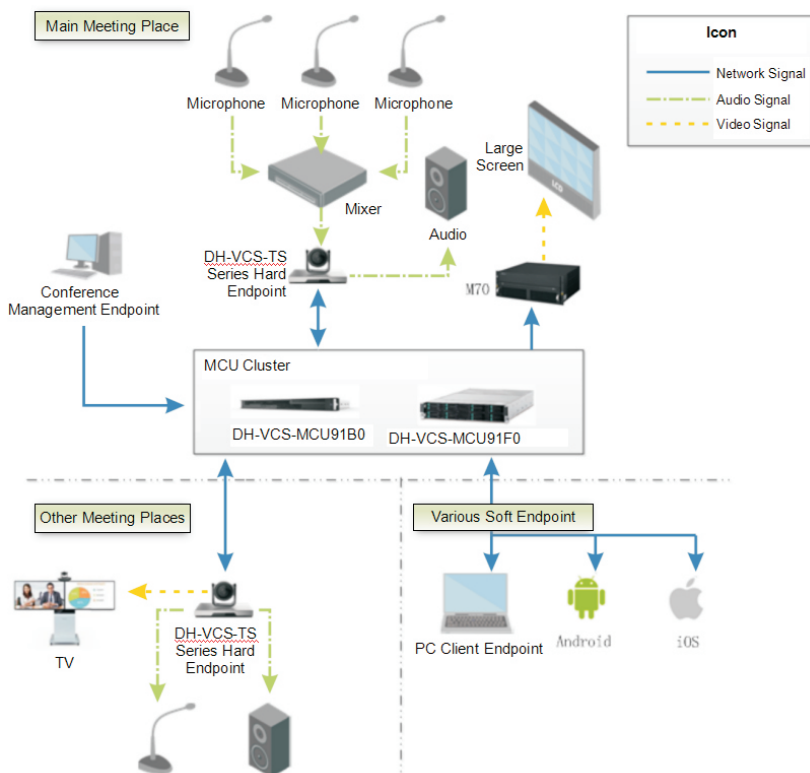
### **Note**

Expansion boards can be removed and replaced.

# 2 Connection diagram

The connection diagram for the MCU91XX series is shown in Figure 2–1.

Figure 2–1 Connection Diagram

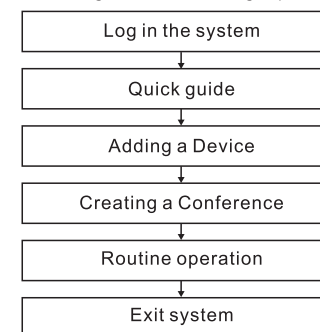


# 3 Basic Operation

## 3.1 Setting Up

Refer to the following steps to complete the set up process. The setup process is shown in Figure 3–1.

Figure 3–1 Setting Up



## 3.2 System Login

### Step 1

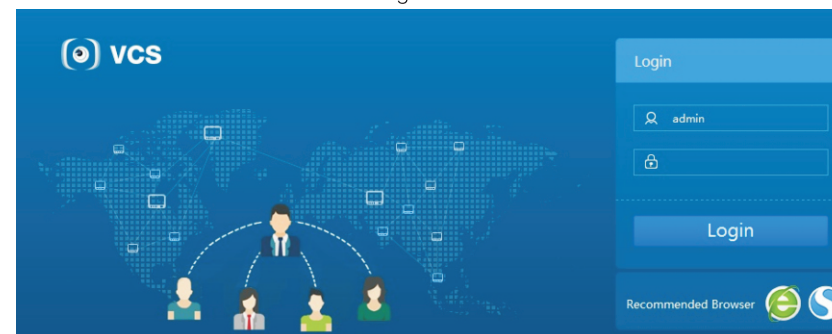
Enter the default “master device IP address” of video conferencing system in the IE address bar, then press [Enter].

#### Note

- Default IP address for the left port in each group: 192.168.1.108.
- Default IP address for the right port in each group: 192.168.2.108.

The system will display the login interface shown in Figure 3–2.

Figure 3–2



**Step 2**

Enter “User Name” and “Password”


The default user name is “admin” and the default password is “12345678” .

**Step 3**

Click “Login” .

- The system will display the booting wizard interface if it is the first time to log in the system. Please refer to “3.3 Quick Guide” for more details.
- It will directly enter the main interface if you log in the system next time.

**Note**

- If a password has already been modified in the startup wizard, use the new password to log in.
- You can go to “System Config > User” interface to select the user which needs to be modified, click  to modify the password.

## 3.3 Quick guide

**Caution**

The quick guide only appears when logging in the system for the first time.

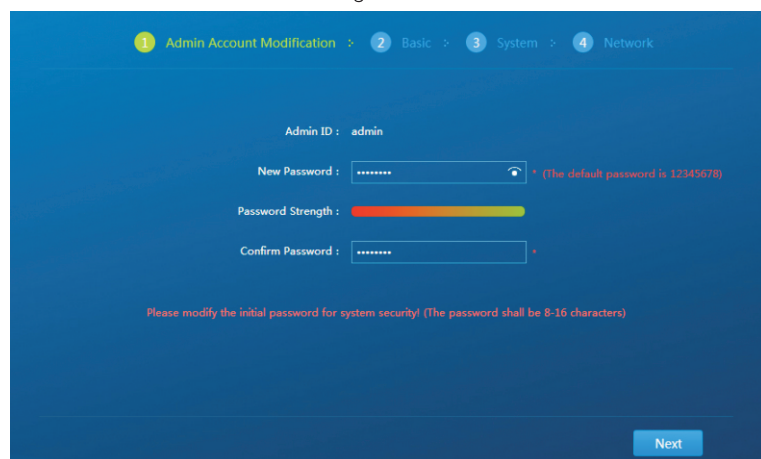
You can refer to the quick guide to quickly familiarize yourself with the system process if this is your first time using the system or if you are unfamiliar with the system,

**Step 1**

Log in the system for the first time. The system will display the interface which is shown in Figure 3–3.

Modify the initial password of the admin account. Input “New Password” and “Confirm Password” .

Figure 3–3

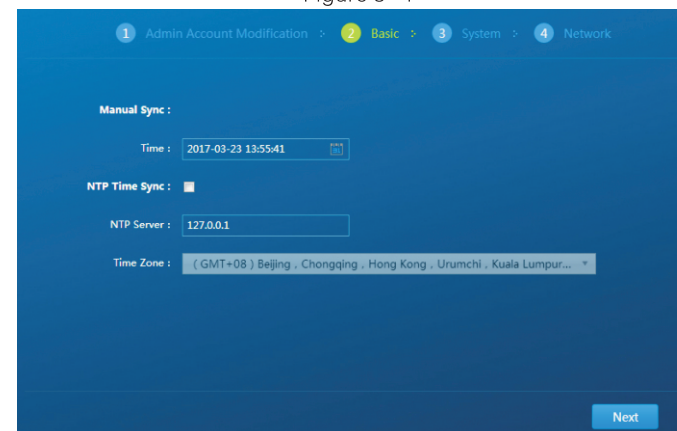

**Step 2**

Click “Next” and then the system will display the interface which is shown in Figure 3–4. For basic setting, you can select “Manual Sync”, “NTP Time Sync” and select “Time Zone” .

**Note**

- As for manual sync, you can input sync time into the box of time.
- When you select “NTP Time Sync”, you can input the IP address of NTP server into the box of “NTP Server” .

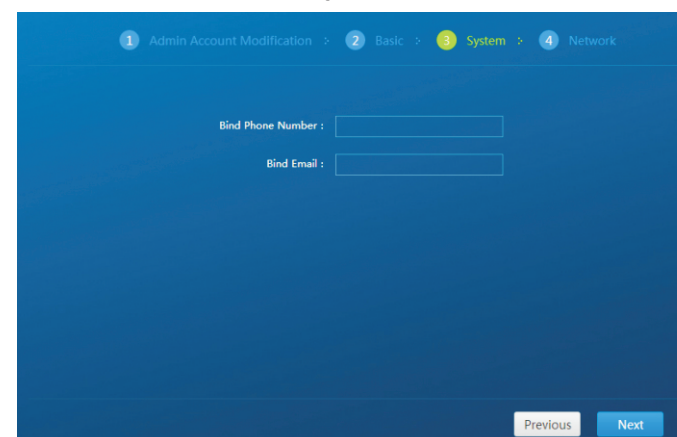
Figure 3–4


**Step 3**

Click “Next” . The system will display the interface which is shown in Figure 3–5.

For system setup, you can bind the administrator with binding phone number and Email.

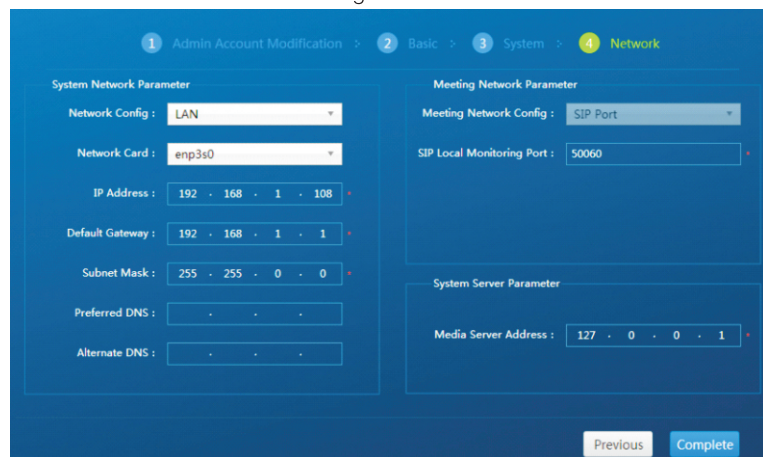
Figure 3–5



**Step 4**

Click “Next” . The system will display the interface which is shown in Figure 3–6.

Figure 3–6



It is to set the parameters of system network.

**Note**

All endpoints connect to the master device.

- Connect the network cable directly to the network port of master device to configure network.

1. Please refer to Table 3–1 for the configuration of network parameters.

Table 3–1

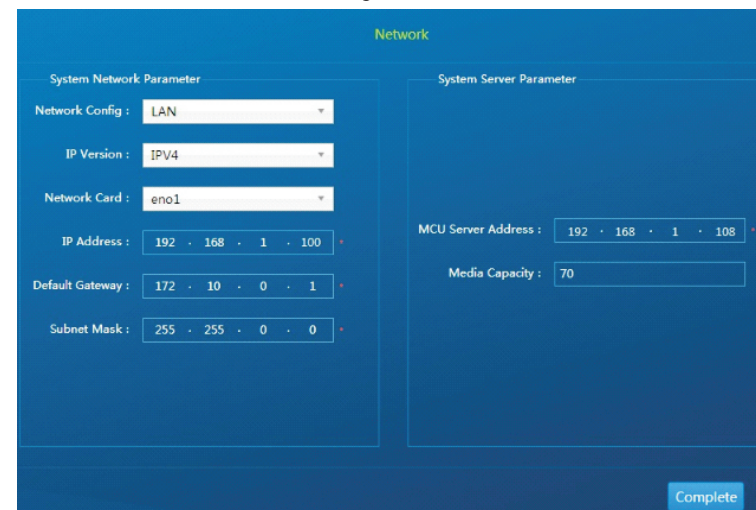
Parameter		Function Description
System Network Parameter Setting	Network Config	Default LAN port.
	Network Card	Here you can select which network card you need to configure master or slave IP address.
	IP Address	Enter the pre-determined IP address (e.g. 172.10.3.148), then configure the relevant “subnet mask” and “default gateway” for the IP address.
	Subnet Mask	
	Default Gateway	
	Preferred DNS Server	We recommend keeping the default DNS server IP address. If you configure a DNS server in the network, modify the DNS server IP address.
Alternate DNS Server		
Conference Network Parameter Setting	Meeting Network Config	SIP (Session Initial Protocol), which is used to create, modify and release the dialog of one or several participants.
	SIP Local Monitoring Port	It is 50060 by default.
System Service Parameter Setting	Media Server Address	The default address is 127.0.0.1; the local machine is used as a media server. Please input the server address here if you are using the exclusive video media server.

2. Click “Complete” to finish the setting of booting wizard.

- Connect the network cable directly to the network port of slave device to configure the slave network.

1. Input “Slave Device Default IP Address” into the IE address bar and press [Enter]. The system will enter the network setup interface, which is shown in Figure 3–7.

Figure 3–7



2. In the setting of system network parameter, input the IP address planned for slave config which is slave IP (such as 192.168.1.100).

3. In the setting of system server parameter, input host IP address in the blank of “MCU Server Address (such as 192.168.1.108).

4. Click “Complete” to finish the setting of slave config network.

**3.4 Adding Devices**

The video conferencing management system supports adding both soft endpoints and hard endpoints devices.

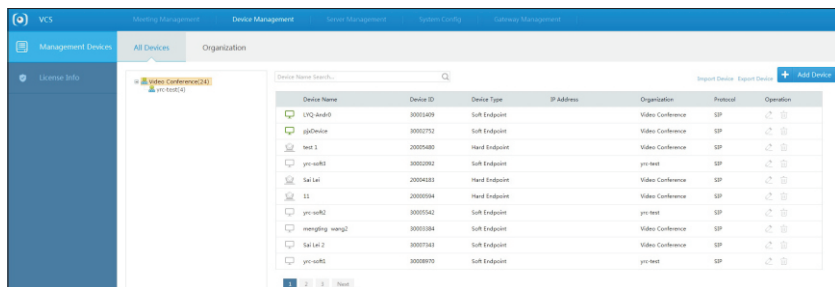
- Hard endpoint: TS series devices.
- Soft endpoint: mobile conferencing endpoint and PC conferencing endpoint. The client software needs to be applied separately.

The specific operation steps are shown as follows:

**Step 1**

Select “Device Management > Management Devices > All Devices” and the system will display the interface which is shown in Figure 3–8.

Figure 3–8



**Step 2**

Click **+ Add Device** and the system will display the interface of “Add Device”, which is shown in Figure 3–9.

Figure 3–9

Add Device
✕

Device Type :

Organization Name :

Device Name :

Device ID :

Password :

Number of Camera :

IP Address :

Phone :

E-mail :

Continue to add device :  OK

**Step 3**

Configure parameters. Please refer to Table 3–2 for more details.

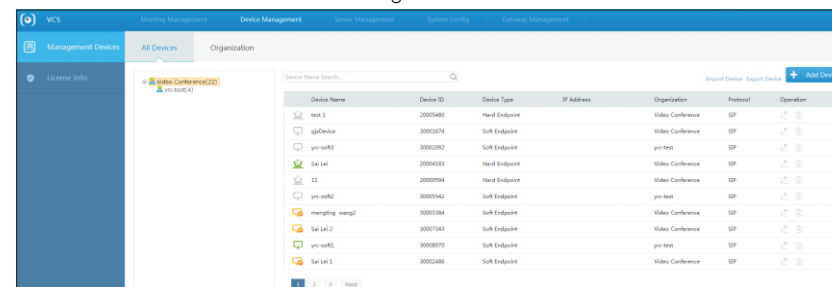
Table 3–2 Add Device–parameter descriptions

Parameter	Description
Device Type	Categorized as hard endpoints and soft endpoints.
Organization Name	The organization which the endpoint belongs to.
Device Name	Custom name.
Device ID	The device ID is automatically generated and is used as: <ul style="list-style-type: none"> <li>● Hard endpoints: the device ID for system registration.</li> <li>● Soft endpoints: user name to log into PC or mobile conferencing endpoints.</li> </ul>
Password	Applies to login passwords for hard and soft endpoints. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p><b>Note</b> If the authentication password has not yet been set, the system automatically assigns the default password: 123456.</p> </div>
Number of Cameras	Input the number of cameras, default 1 is integrated endpoint.
IP Address	Device IP address. Enter the device IP address. By default, endpoints under this IP address can create and join conferences.
Phone	The phone number for the person responsible for this device.
Email	The email address for the person responsible for this device.
Continue to add devices	<ul style="list-style-type: none"> <li>● Checked: continue to add devices.</li> <li>● Unchecked: do not continue adding devices.</li> </ul>

**Step 4**

Click “OK” to finish adding devices, the system will display the interface of “All Devices”, which is shown in Figure 3–10.

Figure 3–10



- Select the device, and then click to modify the device information.
- Select the device, and then click to delete the device.

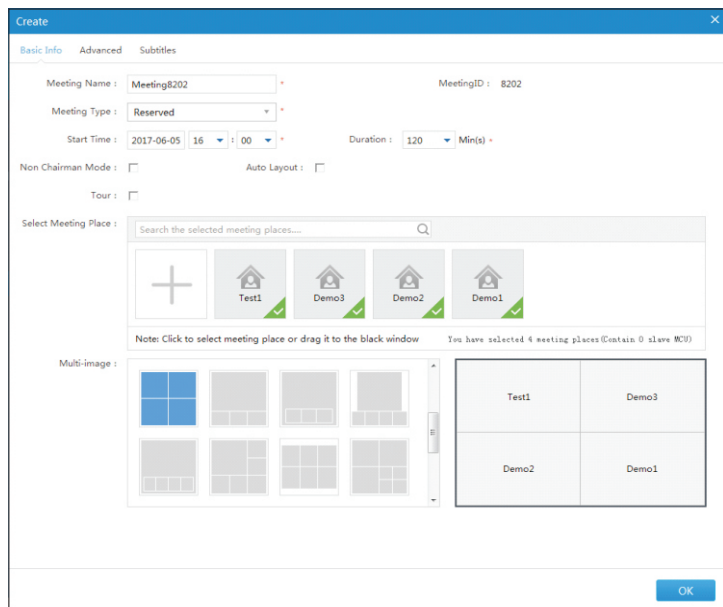
### 3.5 Create

**Step 1**

Select “Meeting Management” on the main interface and click **Create**. The system will display the interface of “Create”, which is shown in Figure 3–11.



Figure 3-11



**Step 2**

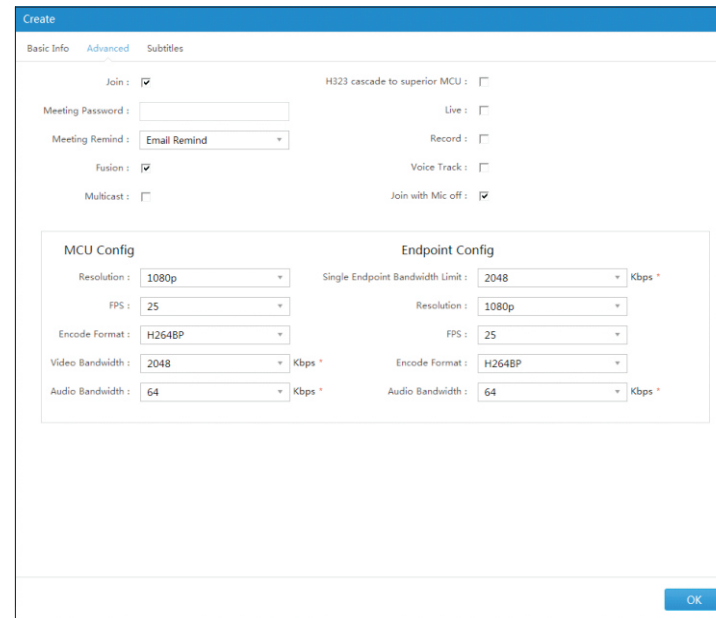
Click “Basic Info” to set the basic info of the meeting, please refer to Table 3-3 for more details.

Parameter	Note	
Basic Information	Meeting Name	Custom meeting name.
	Meeting Type	Classified as “Immediate Meeting” or “Reserved Meeting” . ● Immediate Meeting: set a meeting name, duration, meeting place and other such information, then start the meeting immediately. ● Reserved Meeting: schedule a meeting time according to user requirements.
	Start Time	Set up the meeting start time. When “Immediate Meeting” is chosen for the “Meeting Type” , there is no need to set a start time.
	Duration	The duration of the meeting, the minimum is 30 minutes.
	Non Chairman Mode	It will create meeting in the non-chairman mode if it is selected, it can't allocate chairman when selecting meeting place.
	Auto Layout	It will enable auto layout if it is selected, the multi-image below can't be set.
	Select Meeting Place	Select the device which needs to join the meeting. ● Input meeting name in the box, click Q to add meeting place. ● Click + and select device in the dialog box of “Add Device” , click “OK” to add meeting place. ● Move the mouse to the [ ] and click it to set it as chairman if “Non Chairman Mode” is not selected, click again to cancel.
	Multi-image	You can select multiple image preview layout according to your requirements.

**Step 3**

Click “Advanced” and the system will display the interface of “Advanced” , which is shown in Figure 3-12.

Figure 3-12



**Step 4**

It is to set the parameters of advanced, please refer to Table 3-4 for more details.

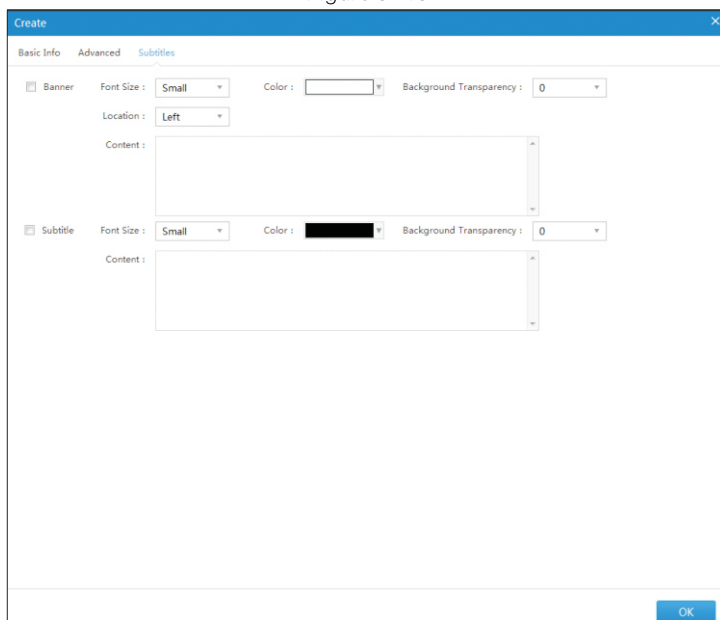
Parameter	Note
Join	Select the check box and you can join meeting automatically.
Meeting Password	It is to set meeting password, it needs to input corresponding password if others want to join the meeting.
Fusion	Click it to enable fusion function, and then you can set the “MCU Config” below, it can fuse a video with the video of each endpoint via MCU, which is to save bandwidth.
Multicast	Click it to enable multicast mode.
H323 cascade to superior MCU	Select the box and the meeting can be cascaded to superior MCU via H323 protocol.
Live	Click it to enable live, then you can make the meeting live in the recording and broadcasting system.
Record	Click it to enable record, then you can record and replay the meeting in the recording and broadcasting system.
Voice Track	Click it to enable the function. ● The meeting place with loudest voice of participant will be displayed in the big image if it is set in the meeting layout. ● The meeting place with loudest voice of participant will be displayed in the first image if the big image is not set in the meeting layout.

Parameter	Note
Join with Mic off	Click the box and the participants will join the meeting in the form of Mic off.
MCU Config	<p>When fusion function is enabled, it can set the image resolution, PFS, encode format, video bandwidth and audio bandwidth after fusion.</p> <ul style="list-style-type: none"> <li>● Resolution, it can select standard definition, high definition and ultra-high definition, such as 720P, 1080P and 2160P.</li> <li>● FPS, the frame rate of fusion stream shall be set in accordance with that of the endpoint device.</li> <li>● Encode format, H264HP, H264BP and H265 optional.</li> <li>● Video bandwidth, select video transmission bandwidth according to the actual situation.</li> <li>● Audio bandwidth, select audio transmission bandwidth according to the actual situation.</li> </ul>
Endpoint Config	It is to configure the uplink parameters of the endpoint.

**Step 5**

Click “Subtitles” and the system will display the interface of “Subtitles”, which is shown in Figure 3–13.

Figure 3–13

**Step 6**

Set “Banner” and “Subtitles”.

- Banner, it is displayed on the top of the screen; you can adjust display location, font size, color and background transparency according to requirements.
- Subtitles, it is scrolling displayed on the bottom of the screen, you can adjust font size, color and background transparency according to requirements.

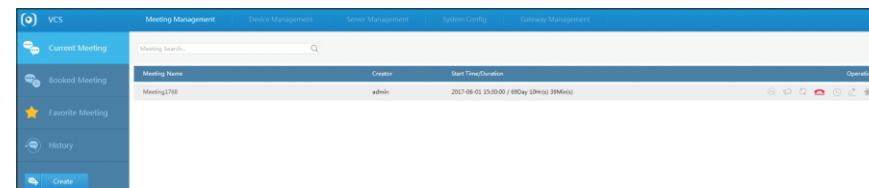
**Step 7**

Click “OK” to finish creating meeting, you can check on the interface of “Meeting Management > Current Meeting”.

**3.6 Conference Control**

Select the interface of “Meeting Management > Current Meeting” and the system will display the interface of “Current Meeting”, which is shown in Figure 3–14.

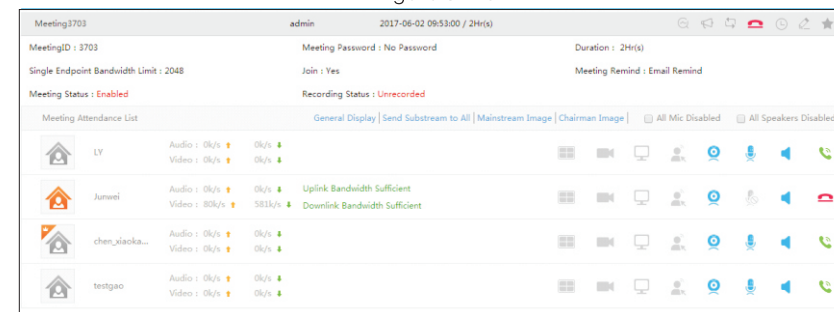
Figure 3–14



Icon	Note
	Click it to check the report of meeting quality.
	Click it to set broadcast info, it will disappear automatically after it is displayed and reminded on the endpoint screen.
	Click it to set roll call tour. It can make roll call upon each meeting place according to the “Tour Interval” which has been set.
	<p><b>Note</b></p> <p>Only after the chairman is set, the chairman has authority to use the function.</p>
	Click it to end meeting.
	Click it to modify meeting end time.
	Click it to modify meeting info.
	Click it to add it as regular meeting, you can check on the interface of “Meeting Management > Favorite Meeting”.

Click the selected meeting to check the detailed info of the meeting, which is shown in Figure 3–15.

Figure 3–15



Icon	Note
	Click it to disable Mic for all the members.
	Click it to make it mute for all meeting members.
	Click the icon to apply for and cancel chairman. <ul style="list-style-type: none"> <li>●  , it means chairman.</li> <li>●  , it means non-chairman.</li> </ul>
	Click the icon to select fusion stream of the endpoint image, switch image of other participants and the image layout displayed on the endpoint. <ul style="list-style-type: none"> <li>● Image select, it is to select fusion stream according to the actual network situation, click “OK” to make it valid.</li> <li>● Layout setting, it is to select the needed layout, click “OK” to make it valid.</li> </ul>
	Click the icon to preview endpoint video, adjust endpoint image, resolution, and total bandwidth etc. You can select the meeting place which needs to be adjusted in the “Meeting Place List” .
	Click the icon to switch if it is to display demo image.
	Click the icon and the chairman can make roll call of the meeting participants, both chairman and meeting participant can see the image of opposite side, but it fails to see his own image.
	Click the icon to control the video signal of the meeting place. <ul style="list-style-type: none"> <li>● Blue means that it can see the image of the meeting place.</li> <li>● Gray means that it fails to see the image of meeting place.</li> </ul>
	Click the icon to control if it is to disable mic. <ul style="list-style-type: none"> <li>● Blue means that mic is enabled.</li> <li>● Gray means that mic is disabled.</li> </ul>
	Click the icon to control if it is to make the meeting place mute. <ul style="list-style-type: none"> <li>● Blue means that it can hear the voice of the meeting place.</li> <li>● Gray means that the meeting place is mute.</li> </ul>
	Click the icon to hang up and ask meeting participant to leave.
	Click the icon to invite the participant to join the meeting.

# 4 Network configuration

The factory default IP address for the MCU91XX series is 192.168.1.108 or 192.168.2.108. IP address network segment may not be in accordance with the current depends on this IP address. Hence, you can use a PC to login to the video conferencing management system to modify the IP address of the MCU91XX series device so that it can have access to the required network and make it more convenient for later use and maintenance. You can operate according to the following steps if you haven't completed network config during booting wizard.

### Step 1

Select “System Config > Config > Network Config” to enter the interface of “Network Config” . The system will display the interface of “Network Config” , which is shown in Figure 4-1.

### Step 2

It is to configure parameters, please refer to Table 4-1 for more details.

Figure 4-1

Local Setting	Network Config
	Binding Mode : <input type="text" value="Multiple Access Mode"/>
	Network Card : <input type="text" value="bond0"/>
	IP Address : <input type="text" value="10"/> · <input type="text" value="35"/> · <input type="text" value="8"/> · <input type="text" value="86"/>
	Subnet Mask : <input type="text" value="255"/> · <input type="text" value="255"/> · <input type="text" value="252"/> · <input type="text" value="0"/>
	Default Gateway : <input type="text" value="10"/> · <input type="text" value="35"/> · <input type="text" value="11"/> · <input type="text" value="254"/>
	<input type="button" value="OK"/>

Parameter	Note	
System Network Parameter Setting	Binding Mode	It is to select multiple access mode.
	Network Card	Here you can select which network card you need to configure master or slave IP address.
	IP Address	Input the IP address which has been planned in advance (such as: 192.168.1.108), and then set the “Subnet Mask” and “Default Gateway” of the corresponding IP address.
	Subnet Mask	
Default Gateway		

### Step 3

Click “OK” to save setting.

## Appendix 1 Port Mapping Table

Name of port	Type of port	Type of port
SIP service port (configurable)	TCP	50060
WEB management port (configurable)	TCP	80
Multimedia port	UDP	20100~21900
SSH management port (optional)	TCP	22