PLANET
Networking & Communication

Multipoint Control Unit

MCU-1400/1900

User's manual

Version 1.0.0

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CE mark Warning

The is a class B device, In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

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Revision

User's Manual for PLANET Multipoint Control Unit:

Model: MCU-1400/1900

Rev: 1.0 (July, 2009)

Part No. EM-MCUV1.0

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Chapter 1 Introduction

Overview

Designed for next generation communications networks by the voice and video over IP experts, the PLANET Multipoint Control Unit is the smart solution that offers you an easy way to connect, conference, and collaborate any way you want. In the video conferencing expertise, PLANET MCU multi-function platform is the most flexible and total solution for deploying IP-centric voice, video and Surveillance communications.

PLANET MCU-1400/1900 is a powerful IP multimedia conferencing device, delivering high quality voice and video with IP surveillance capabilities, the platform is a leading solution for deploying real-time voice, video and Surveillance services over IP. Stream your video conference over your intranet or the Internet. The MCU operates with PLANET IP camera to offer viewing at multiple speeds to ensure that everyone can easy video conferencing and watch the IP camera without difficulty.

An easy conferencing start with preset configurations of unified, voice, video, and Surveillance conferencing, the MCU-1400 offers up to 4 video, 20 audio concurrent calls, and up to 50 user registrations, the MCU-1900 offers up to 9 video , 60 audio concurrent calls, and up to 200 user registrations, it's ideal for the small to medium-size enterprise and SOHO markets..

MCU Features

- Multi-Codec for H.263 / H.263p / MPEG-4 compression
- Support Video / Voice Control service
- Simultaneous Voice calls: 20(MCU-1400) / 60(MCU-1900) concurrent calls
- Simultaneous Video calls: 4(MCU-1400) / 12(MCU-1400) concurrent calls
- Support IP-Surveillance Hosting service
- Call Detailed Record (CDR)
- User Management via Web Browsers
- Built-in SIP Proxy Server Following RFC-3261
- Asterisk Compatible MCU
- Recording MCU room's Video/Voice to File
- MCU-1400 Video MCU screen format: 1:1, 1:4
- MCU-1900 Video MCU screen format: 1:1, 1:4, 1: 6, 1:7, 1:8, 1:9
- Call Transfer / Forward / Hold / Call Parking

Package Content

The contents of your product should contain the following items:

Multipoint Control Unit

Quick Installation Guide

User's Manual CD

Power Core

Rail x 2

L-shaped bracket x2

Physical Details

The following figure illustrates the front/rear panel of MCU.

Front Panel Indicators

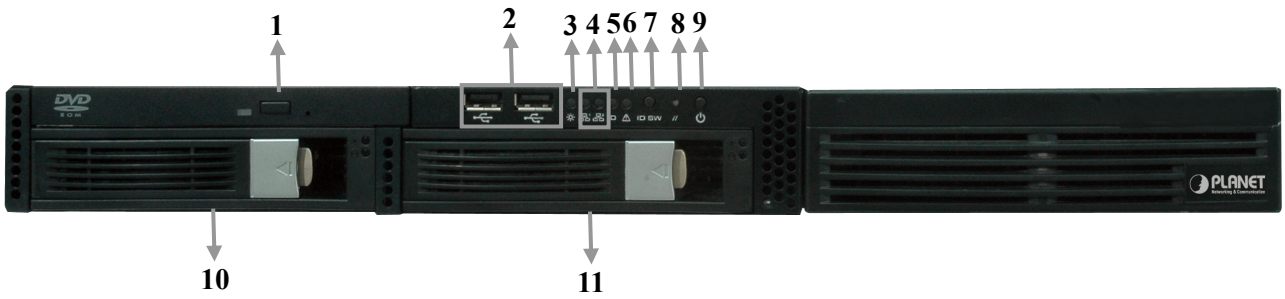

Figure 1-1. Front Panel of MCU

Item		Description
1	**DVD Rom**	Slim DVD-Rom device. *This advanced feature will available in the future.
2	**USB Port**	The USB port allows users to connect an external USB device to the unit, such as a USB ThumbDrive© or a USB mouse. *This advanced feature will available in the future.
3	**Power LED**	It lights up when power source is connected.
4	**Network LED**	1. The green LED is on when there is an active connection on the LAN port. 2. This LED flashes when transmitting or receiving activities to or from the system are detected.
5	**System ID LED**	Reserve for advanced system faculty.
6	**System Alert LED**	Reserve for advanced system faculty.
7	**System ID button**	Reserve for advanced system faculty.
8	**System Reset button**	Press this button once to reboot the system.
9	**Power button**	Press this button once to shut down the system, and then once to switch on.
10	**System HDD Removable Rack**	The system HDD installed in this rack, and we don't suggest removing it for making sure the system could work properly.
11	**HDD Removable Rack**	This HDD rack leaves unused and it also useless to expand HDD. *This advanced feature will available in the future.

Table1-1. Front Panel description of MCU

Rear Panel Indicators

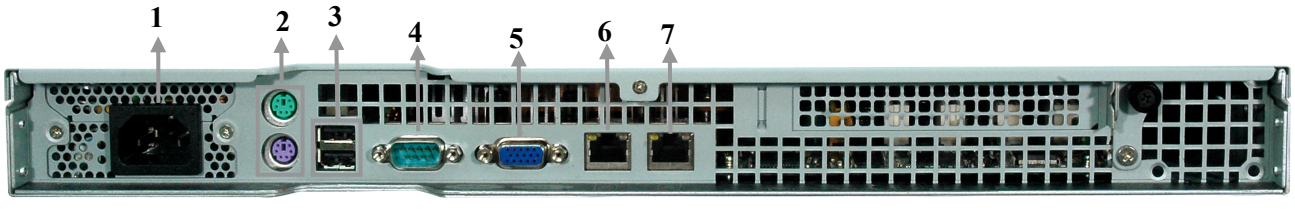

Figure 1-2. Rear Panel of MCU

	Item	Description
1	**Power Jack**	Connect the power supply cord shipped with the system. Use of other power supply cords may cause overloading.
2	**PS/2 Keyboard/Mouse Connector**	The PS/2 allow user to connect keyboard and mouse for operating the system.
3	**USB Port**	The USB port allows users to connect an external USB device to the unit, such as a USB ThumbDrive© or a USB mouse. *This advanced feature will available in the future.
4	**Serial Port**	The serial port for sending and receiving signals.
5	**VGA Port**	A VGA output connector is offered for connecting to a VGA monitor.
6	**LAN Jack (Eth0)**	These RJ-45 ports support auto negotiating Fast Ethernet 10/100/1000 Base-TX networks. That allows your system to be connected to an Internet Access device, e.g. router, cable modem, ADSL modem, through a CAT.5 twisted pair Ethernet cable.
7	**LAN Jack (Eth1)**	

Table 1-2. Rear Panel description of MCU

Chapter 2
Preparations & Installation

Physical Installation Requirement

This chapter illustrates basic installation of MCU

- Network cables. Use standard 10/100/1000Base-TX network (UTP) cables with RJ45 connectors.
- TCP/IP protocol must be installed on all PCs.

For Internet Access, an Internet Access account with an ISP, and either of a DSL or Cable modem (for WAN port usage)

Administration Interface

PLANET MCU provides GUI (Web based, Graphical User Interface) for machine management and administration.

Web configuration access:

To start MCU web configuration, you must have the web browsers installed on computer for management

- Microsoft Internet Explorer 6.0.0 or higher with Java support

Default Eth0 interface IP address of MCU is **172.16.0.1**. You may now open your web browser, and insert ***172.16.0.1*** in the address bar of your web browser to logon MCU web configuration page.

MCU will prompt for logon username/password, please enter: ***admin*** / ***123*** to continue machine administration.

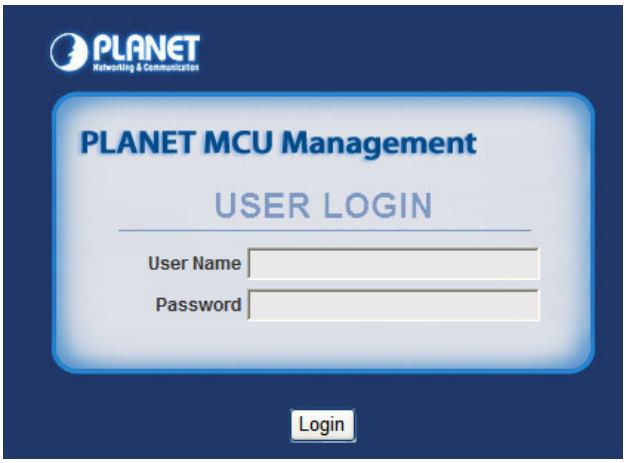

Figure 2-1. Input prompt

Note

In order to connect machine for administration, please locate your PC in the same network segment (172.16.0.x) of MCU. If you're not familiar with TCP/IP, please refer to related chapter on user's manual CD or consult your network administrator for proper network configurations.

Chapter 3 System Configuration

Network Setup

The MCU has installed two NIC (Network Interface Card) in system; it allows you could setup the related network parameters for each NIC, and DNS server in this page.

➢ Eth0/Eth1

The MCU just support the static IP mode. Please enter in the IP address, subnet mask, gateway address address(es) provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which are four IP octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format.

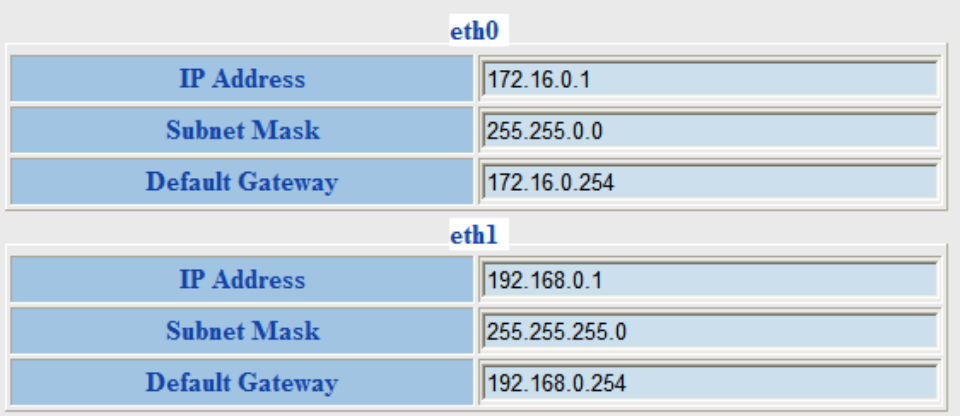

Figure 3-1. Network settings

➢ DNS

DNS stands for Domain Name System. Every Internet host must have a unique IP address; also they may have a user-friendly, easy to remember name such as www.planet.com.tw. The DNS server converts the user-friendly name into its equivalent IP address. The original DNS specifications require that each domain name is served by at least 2 DNS servers for redundancy. When you run your DNS, web, and mail servers all on the same MAChine - if this MAChine goes down, it doesn't really matter that the backup DNS server still works.

The recommended practice is to configure the primary and secondary DNS servers on separate MAChines, on separate Internet connections, and in separate geographic locations.

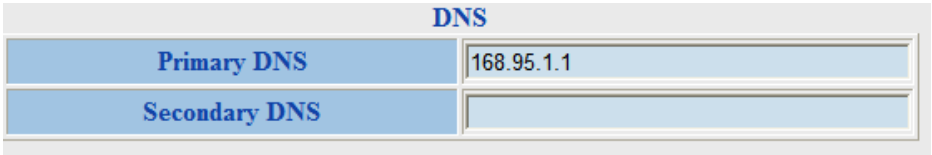

Figure 3-2. DNS server settings

Subscribers

This page allows the users to add /edit /delete extensions in the VoIP telephony network.

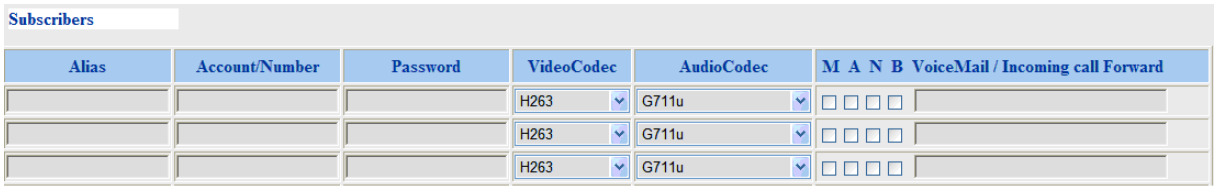

Figure 3-3. Subscriber's settings

Alias	Input User Name
Account Number	Input Subscriber account (number)
Password	Input Subscriber password
Video Codec	There are 3 kinds of video codec's for selection by video phone extension: H.263/H.263p/MPEG4. Please to check which video codec supported by video phone, and to assign for each extension.
Audio Codec	The Audio Codec is used to compress the voice signal into data packets. Each Codec has different bandwidth requirement. There are 3 kinds of codec's for selection by each extension: G.711u/G.729/G.723.
Voice Mail / Incoming Call Forward	To assign the incoming call redirect to voice mail automatically, or assign the call forward function and fill in the forward number at the late field. There are four options to stand for voice mail or call forward: **M (Voice Mail)**: Redirecting the incoming call to voice mail if enable this option. **A (Always Forward)**: Redirecting the incoming call to the specific number directly. **N (No Answer Forward)**: If no answer the incoming call after specific time, it will be redirected to the specific number. **B (Busy Forward)**: If extension on call and there is incoming call simultaneously, the incoming call will be redirected to the specific number.

Table 3-1. Subscriber's description

SIP Trunk

SIP Trunk allows MCU registers to different SIP systems and ITSP Services.

You just need to fill the related account information in the fields. **Maximum 20 registrations on SIP Trunk.**

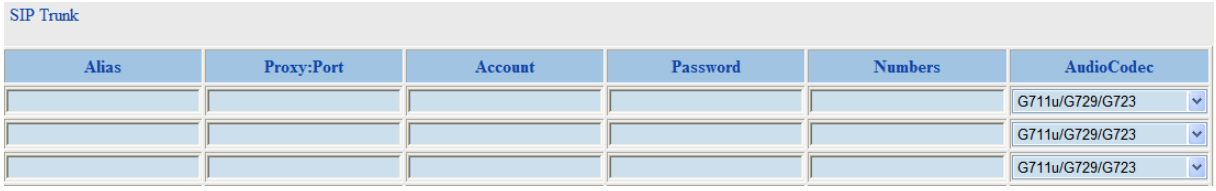

Figure 3-4. SIP Trunk settings

Alias	To mark the trunk name.
Proxy : Port	Assigns the SIP Proxy Server's IP address / Domain name and Port number.
Account	User name for authentication
Password	User password for authentication
Numbers	User number for authentication
Audio Codec	Set allow voice codec

Table 3-2. SIP Trunk description

Dial Plan

When want to make VoIP calls through the above SIP or Gateway Trunk, the user can use the "**Dial Plan**" function to simplify the dialing number.

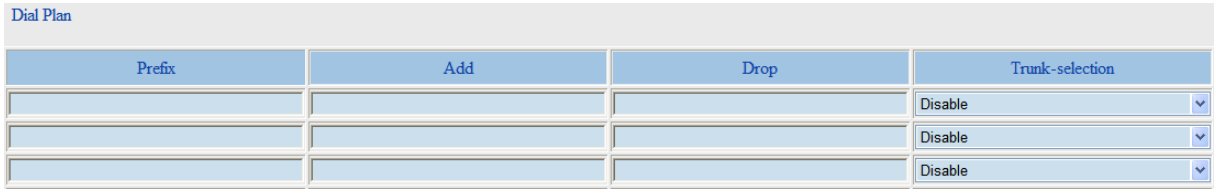

Figure 3-5. Dial Plan settings

Prefix	Prefix number is the leading digit of the call out dialing number.
Add	Add number is the digits that will be added to the beginning of the dialed number.
Drap	Frap length is the number of digits that will be stripped from beginning of the dialed number.
Trunk-selection	To choose the IP Phone, MCU or SIP Trunk.

Table 3-3. Dial Plan description

IP Cam

The MCU has support the **IP-Surveillance Hosting services**, the MCU subscribers could see the IP camera surveillance pictures via video phone or soft phone.

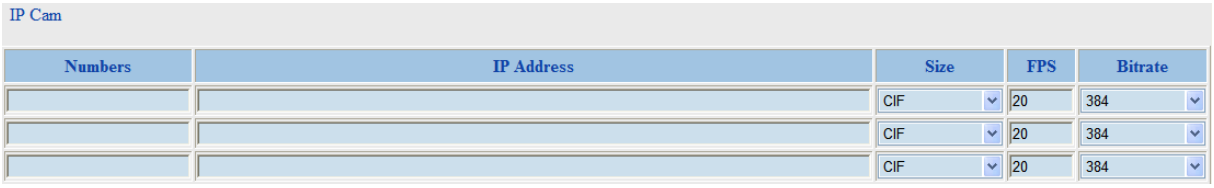

Figure 3-6. IP Cam setting

Number	To assign an phone number for IP camera, so that the subscriber just need to dial the IP camera phone number to see the real time surveillance pictures via video phone.
IP Address	To fill in the IP camera IP address and the RTSP URL. For example: rtsp://192.168.0.20:554/mpeg4/1/media.amp?resolution=vga You could refer to the Appendix B for Planet IP camera RTSP URL, or contact with your provider for the camera RTSP URL.
Frame Size	To define the IP camera's video size: CIF/QCIF
FPS	Defines the targeted frame rate for IP camera. For example, set the frame rate to 15 fps, then the image will be updated for 15 frames per second. User can set the desired max frame rate versus video quality under the limited bandwidth.
Bitrate	Defines Bitrate size, there are five types of bit rates: 64/128/256/384/512 Kbps. User can set the desired bit rate to match the limitation of bandwidth.

Table 3-4. IP Cam description

VCS Settings

MCU supports Video / Voice conferencing service, the MCU-1400 supports to 1 video and 3 voice conference rooms. The MCU-1900 supports to 3 video and 9 voice conference rooms.

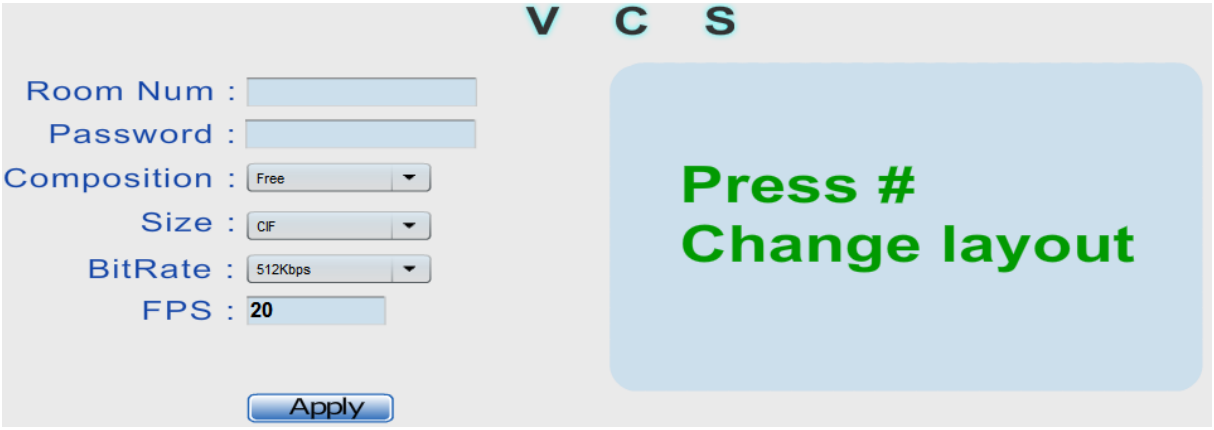

Figure 3-7. VCS setting

Rome Num	To assign the conference room number.
Password	To assign the conference room password.
Composition	To assign the video layout types. If set as Free type, the conferee could dial # button to change video layout.
Size	To define the IP camera's video size: CIF/QCIF
BitRate	Defines Bitrate size, there are five types of bit rates: 64/128/256/384/512 Kbps. User can set the desired bit rate to match the limitation of bandwidth.
FPS	Defines the targeted frame rate for IP camera. For example, set the frame rate to 15 fps, then the image will be updated for 15 frames per second. User can set the desired max frame rate versus video quality under the limited bandwidth.

Table 3-5. VCS description

VCS Status

VCS Status allows administrator to monitor the conference room status. If there is conferee entry the conference room, one of block will show the subscriber's user name and number, and the people icon will become green color: 

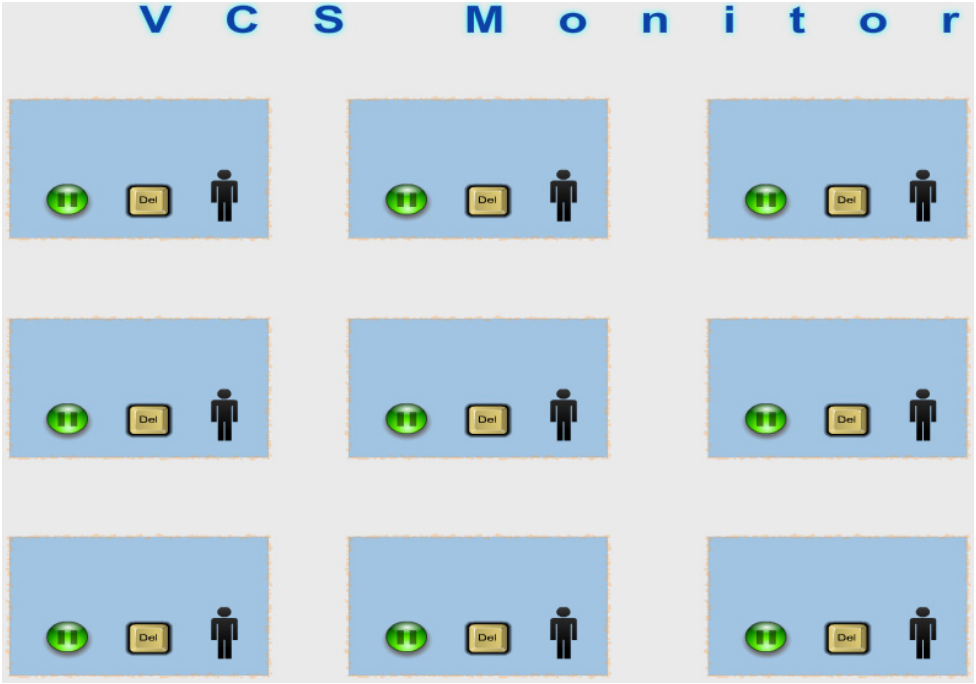

Figure 3-8. VCS Status

	The Administrator could press the button to pause this conferee to make speech, and press it again to revive the speechs.
	The Administrator could press the button to kick this conferee out this conference.
	This icon on behalf of there isn't conferee.
	This icon on behalf of there is conferee.

Table 3-6. VCS status description

Channel Status

This page displays the information of Subscriber/SIP Trunk registration status. Besides show it on **Registrations Status**, you also could discriminate different status by different background colors.

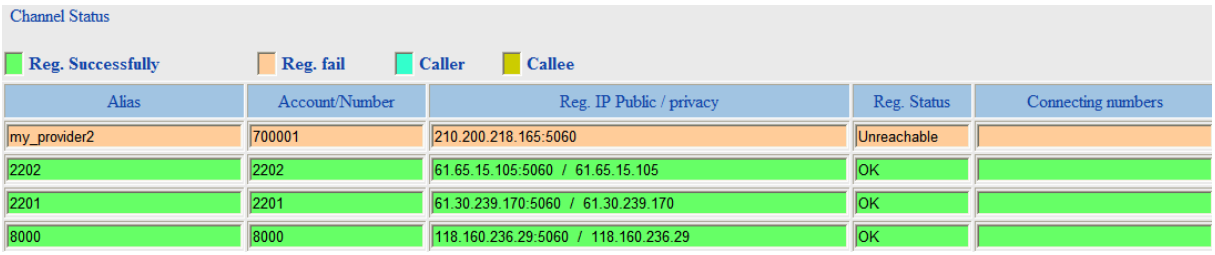

Figure 3-9. Channel Status

Alias	The User name
Account/Number	The SIP Trunk account or Subscriber number
Reg. IP Public / Privacy	It will show what Public IP address was registered to MCU. It also will show Privacy IP address if this device put in Virtual network.
Reg. Status	It will show if device registered to MCU successfully or not.
Connecting numbers	If this subscriber is communicating with other object, it will show object's name.

Table 3-7. Channel Status description

Upgrade / Backup

You can upgrade the firmware of the device using this tool. Make sure that the firmware you want to use is saved on the local hard drive of your computer. Click on Browse to search the local hard drive for the firmware to be used for the update.

Beside the upgrade firmware function, you also could Import the configuration file, or to Export the configuration file.

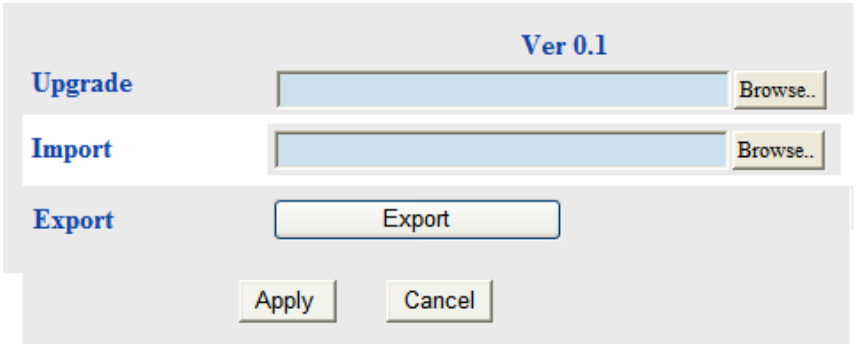

Figure 3-10. Upgrade / Backup settings

Password

You could change the Web Management Interface login Account and Password in this page.

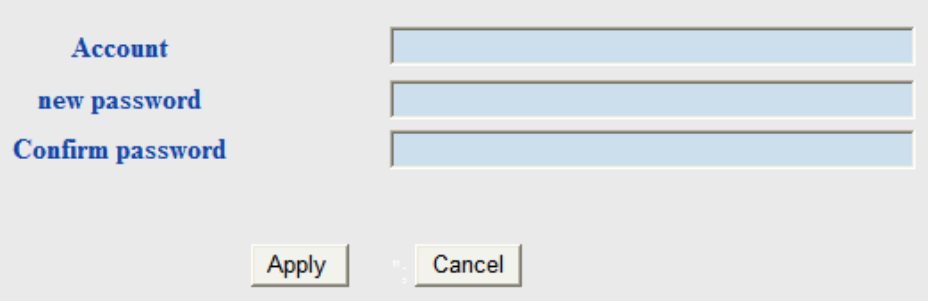

Figure 3-11. Password settings

Reboot

The system will been reboot after press the button.

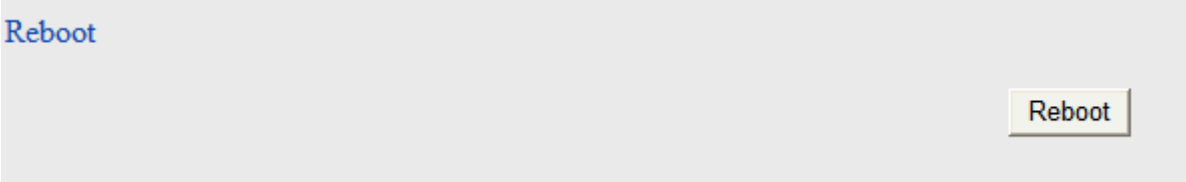

Figure 3-12. Reboot settings

Appendix A

Video Communication Samples

The chapter shows you the concept and command to help you configure your MCU System through sample configuration. And provide several ways to make calls to desired destination in MCU. In this section, we'll lead you step by step to establish your first voice communication via web browsers operations.

IP Phone register to MCU

Bring the power of visual communication to any meeting room, auditorium and training facility with the MCU's professional video and audio technology.

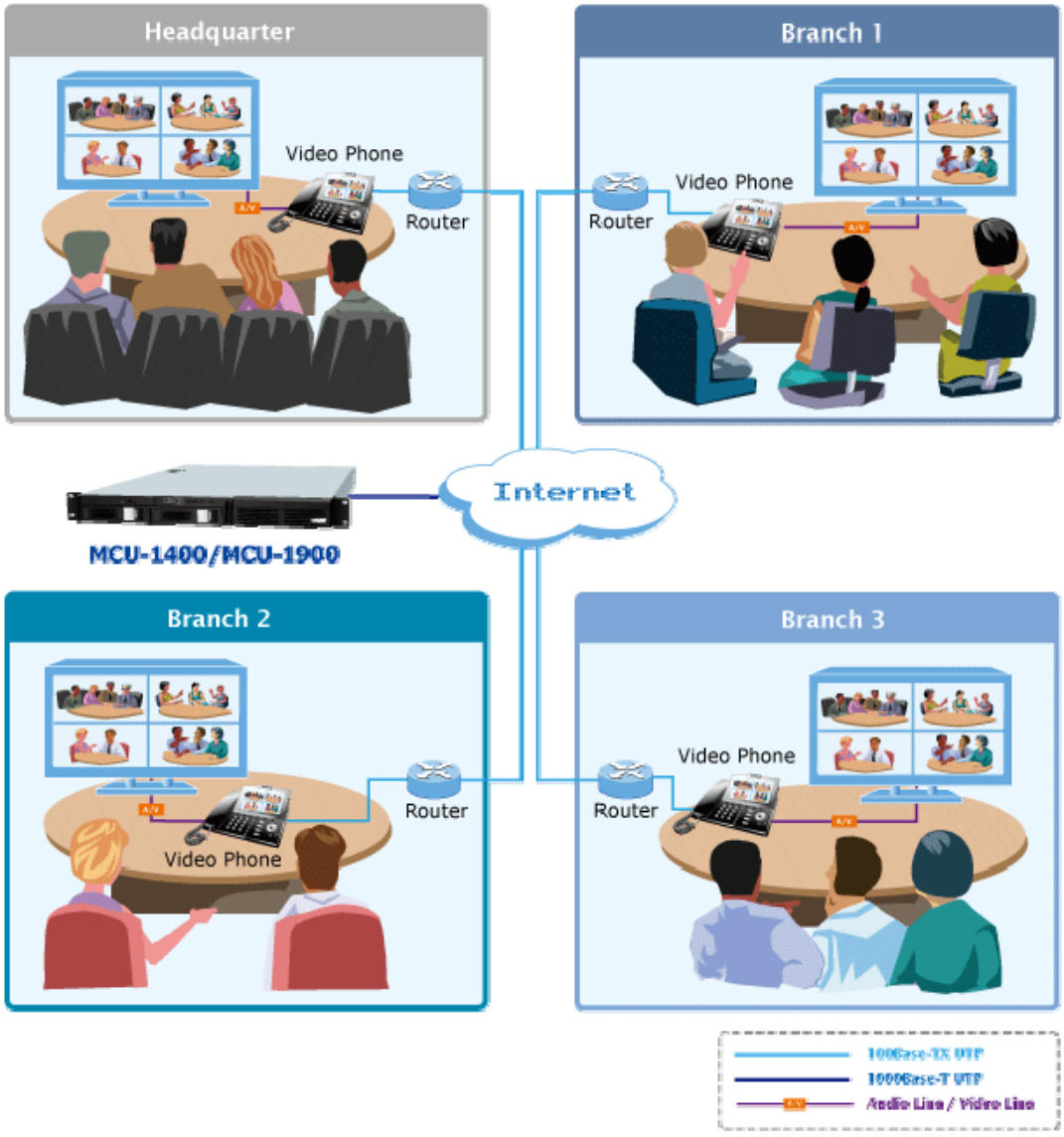

Figure A-1. Video Conference scenario

➢ Machine Configuration:

STEP 1:

Please login to MCU and browse to "**Subscribers**" configuration menu. To add four subscriber accounts for conferees.

Subscribers

Alias	Account/Number	Password	VideoCodec	AudioCodec	M A N B	VoiceMail / Incoming call Forward
Headquarter	100	123	H263	G711u	☐☐☐☐	
Branch_1	200	123	H263	G711u	☐☐☐☐	
Branch_2	300	123	H263	G711u	☐☐☐☐	
Branch_3	400	123	H263	G711u	☐☐☐☐	

Figure A-2. Subscriber's settings

STEP 2:

Please browse to "**VCS Settings**" configuration menu, and to setup the Room Number / Password and related settings.

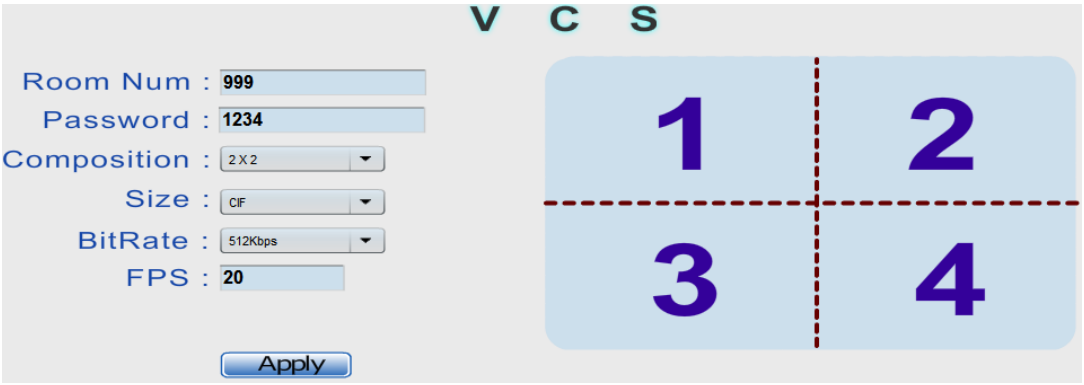

Figure A-3. VCS settings

STEP 3:

Please login in Video Phone (ICF-1600) and browse to "**Basic Settings → SIP Configuration**" configuration menu to fill in the registration settings...

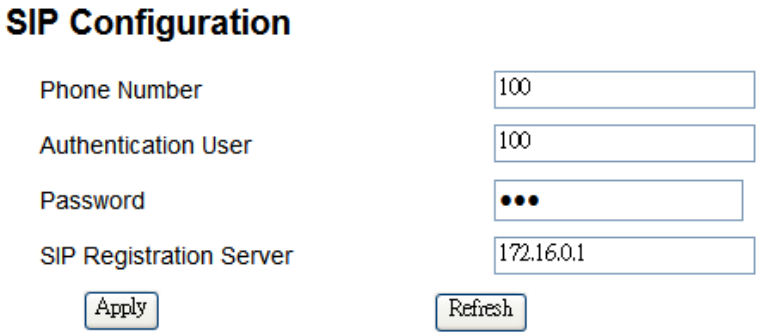

Figure A-4. SIP configuration settings

STEP 4:

Please browse to "**Advance Settings → SIP Settings**" configuration menu to fill in the SIP Proxy Server IP address.

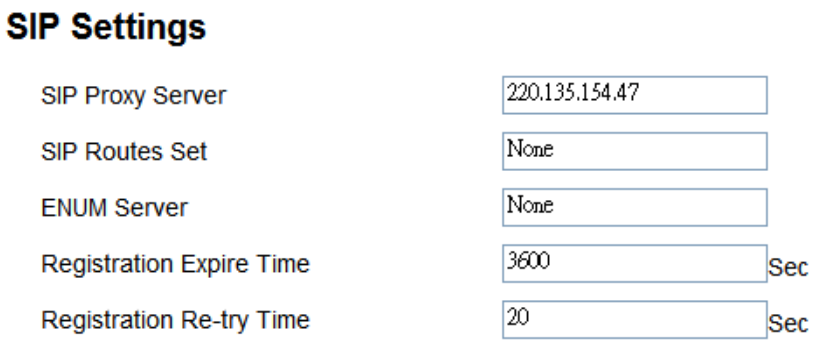

Figure A-5. SIP settings

STEP 5:

Please browse to "**Advance Settings → System Settings**" configuration menu to setup the Video codec and Audio Codec settings.

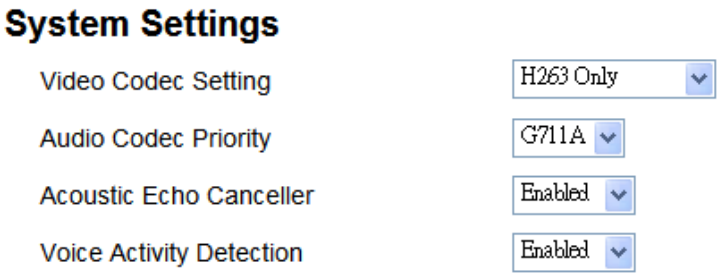

Figure A-6. System settings

STEP 6:

Please refer to the above descriptions (Step 3~5) and let other Video Phone (ICF-1600) register to MCU.

- **Test the Scenario:**

1. All of Video Phone dial **999** and input the password (**1234**) to entry the conference room.
2. Each conferee will see everyone's video pictures by 2x2 division layout and they could precede the video conference.

IP Phone register to MCU

By the MCU's powerful video streaming feature, it is convenient to achieve the surveillance network via Video Phone.

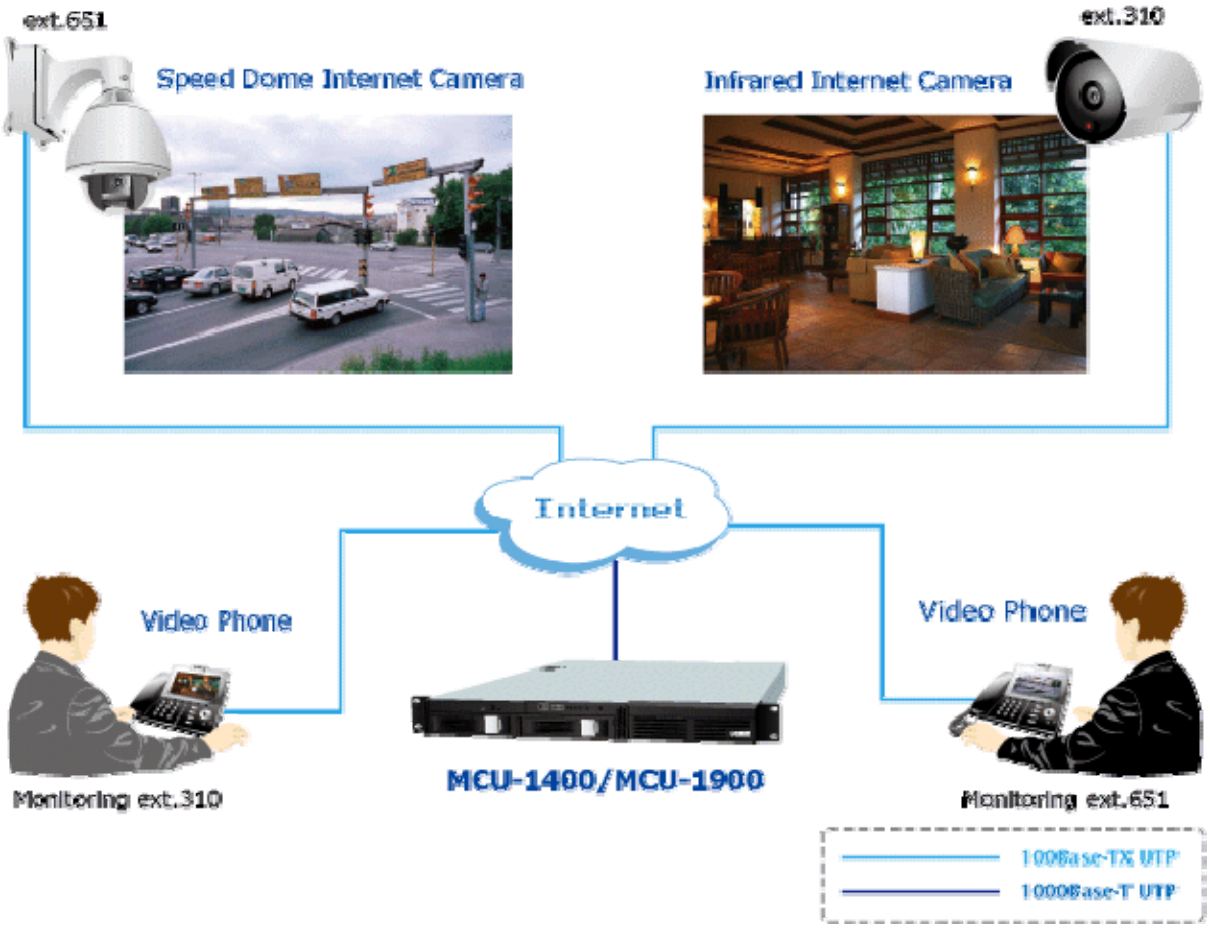

Figure B-1. IP-Surveillance Hosting sample scenario

STEP 1:

Please refer to the first sample and let Video Phone register to MCU.

STEP 2:

Please put Speed Doom Internet Camera (ICA-H651) and Infrared Internet Camera (ICA-H312) on the same network topology with MCU and Video Phone, and make sure they could reach to each other via network connections properly.

STEP 3:

Please login to MCU and browse to “**IP Cam**” configuration menu. According to the IP camera RTSP URL format to fill in the related fields.

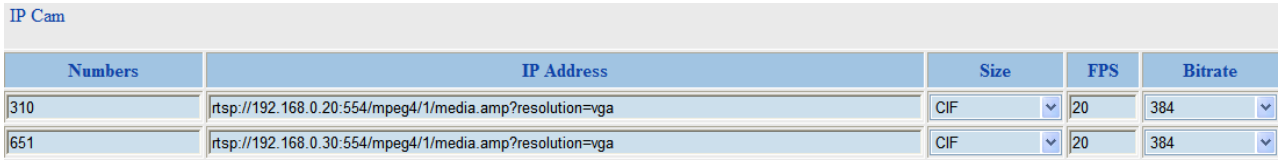

Figure B-2. IP Cam settings

- **Test the Scenario:**

1. The Video Phone dials **310** to view the surveillance pictures of ICA-H312.
2. The Video Phone dials **651** to view the surveillance pictures of ICA-H651.

Appendix B

PLANET IP Camera RTSP URL References

The following table lists the greater part of Planet IP camera RTSP streaming links sample for performing the MCU's IP-Surveillance Hosting function.

Group 1 / Camera Model	ICA-108/108W, ICA-120, ICA-HM130/135, ICA-230/M230/HM230, ICA-312/H312, ICA-501, ICA-525, ICA-530, ICA-651/H651, ICA-601, ICA-310, ICA-350/HM350, IVS-110
Group 1 Streaming link	rtsp://<IP address>:554/mpeg4/1/media.amp?resolution=vga
Group 2 / Camera Model	ICA-750, ICA-151, ICA-150W, ICA-550W
Group 2 Streaming link	rtsp://<IP address>:554/img/media.sav
Group 3 / Camera Model	ICA-M220/M220W, ICA-107/107W
Group 3 Streaming link	rtsp://<IP address>:554/ipcam.sdp
Group 4 / Camera Model	ICA-510, ICA-700
Group 4 Streaming link	rtsp://<IP address>:8554/video.3gp

Appendix C

FAQ

Q1: What is the default IP address to login the MCU?
A: • By default, the Eth0 interface IP address of MCU is **172.16.0.1**, and the Eth1 interface IP address of MCU is **192.168.0.1**
Q2 : What is the default Username and Password to login the MCU?
A: • By default, the login username is **admin**, password is **123**
Q3 : Why I can not use the Voice / Video Conference function?
A: • Please to create a conference room number and related settings at first via web management interface. • Then the devices could dial the conference room number for establishing the conference function.
Q4 : When I performing the Video Conference, how can I change the video layout?
A: • Please press the **#** key to change the division pictures for different video layouts.
Q5 : Why I can not perform the IP camera host function?
A: • Please make sure the IP camera has support RTSP streaming feature, and to check the streaming format for it. • Then please setup the IP address plus streaming links and related settings via web management. So that you could dial the IP camera number to view the surveillance pictures.

Appendix D

MCU Series Specifications

Product	Multipoint Control unit	
Model	MCU-1400	MCU-1900
Hardware		
LAN	2 RJ-45 (10/100/1000Base-TX, Auto-Sensing/Switching)	
Standards and Protocol		
Call control	SIP 2.0 (RFC3261) , SDP (RFC 2327), Symmetric RTP	
SIP Registration	50	200
Voice Concurrent Calls	20	60
Video Concurrent Calls	4	12
Voice Room Number	3	9
Video Room Number	1	3
Voice CODEC Support	G.711u, G.723, G.729	
Video	MPEG-4, H.263, H.263p	
Voice Processing	DTMF detection and generation In-Band and Out-of-Band (RFC 2833), (SIP INFO) Supports password authentication using MD5 digest	
PBX Features	Voicemail Support (VM) Call Detailed Record (CDR) User Management via Web Browsers Web Firmware Upgrade Backup and Restore Configuration file Displays Registered User's Status: Unregistered / Registered / Caller / Callee	
Call Features	Caller ID Call Hold Call Transfer Call Forward (Always, Busy, No Answer) Call Pickup Call Parking Music/Video on Hold Three-way voice conference with feature phones (VIP-254T series, VIP-155PT / 255PT / 351PT / ICF-1600 and ATA series: VIP-156 / 157, ATA-150 / 150S)	
MCU Room Features	MCU Room Configuration MCU status display on Web Browser Mute / Kick function MCU Voice/Video Recording	
Video MCU Display Division	1, 4	1, 4, 6, 7, 8, 9
Internet Sharing		
Protocol	TCP/IP, UDP/RTP/RTCP, HTTP, ICMP, ARP, NAT, DHCP, DNS	
Connection Type	Static IP	
Management	HTTP Web Browser	

LED Indications	System: 1, PWR LAN: 2, LNK/ACT System ID: 1 System Fault: 1
Hardware Specification	
CPU Processor	Quad-Core Intel Xeon 2.0GHz
RAM	1GB
Built-in Storage Device	1 x DVD Rom, 1 x 160GB HDD
Ethernet Interface	2 x RJ-45 10/100/1000Base-TX
Input/Output Interface	2 x PS2 Mouse/Keyboard, 2 x USB 2.0, 1 x Serial, 1 x VGA
Form Factor	1U, 19” Rack Mountable
EMC/EMI	CE, FCC Class B
Environment	
Dimension (W x D x H)	428 x 442 x 44.4 mm
Operating Temperature	0~40 degree C, 0~90% humidity
Power Source	AC 100~240V, 50-60Hz
Power Requirement	300W
Safety	UL, CB, BSMI
EMC/EMI	CE Class A, FCC Class A, BSMI Class B