ACTi Mobile Server
User Manual

03/15/2012

ACTi
Connecting Vision

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Overview

Introduction

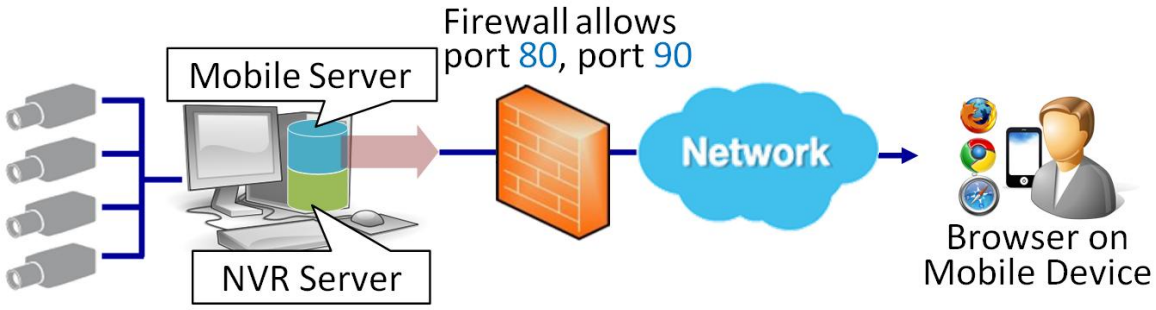
ACTi Mobile Server provides streaming re-direction from NVR Server to all web clients that can see MJPEG format video. Users do not need to modify encoding type of IP devices or NVR settings for Mobile Server, because the service will automatically encode video in MJPEG format. Web clients can directly access ACTi Mobile Server through all the MJPEG-enabled browsers such as Safari, Google Chrome, Firefox except for Internet Explorer, for it has been missing MJPEG streaming support even on its latest IE9.

The service architecture is described in the figure. Please note that the architecture may change to fit different applications.

Network Architecture

Scenario 1

Browser on mobile device connects with Software NVR redirected by Mobile Server (on the same computer).



Scenario 2

Mobile client app – MobileGo! connects with Software NVR redirected by Mobile Server (on the same computer).

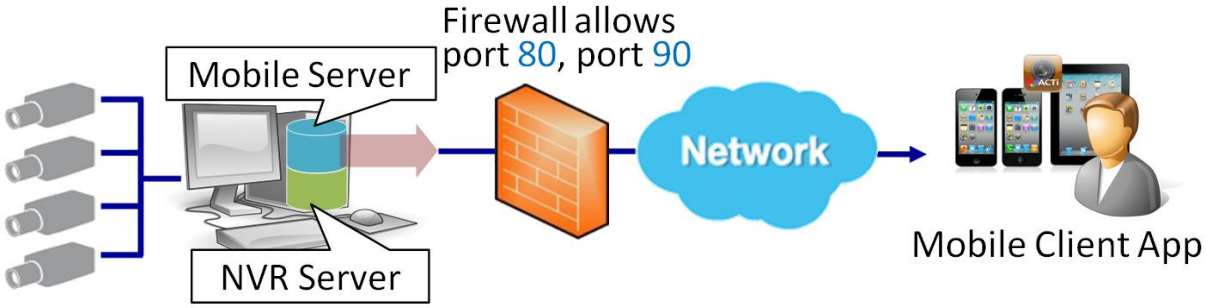


Fig. 1 Network Architecture

Main Specification

Mobile Client	Function		MobileGo!	Browser
	Supported NVR Type		Standalone NVR (XNR-4200, GNR-2000) Software NVR + **Mobile Server**	Software NVR + **Mobile Server**
	Supported Device		iPhone, iPod Touch, and iPad (HD)	Andy device running the supported browser
	Supported Browser		N/A	MJPEG-enabled browsers such as Safari, Google Chrome, Firefox (*)
	Supported Language		Chinese, English, Japanese, Dutch, French, German, Italian, Spanish, Russian, Romanian, and Vietnamese	English
	Main Screen	Single Channel Image Format	640x480 JPEG	160X120 JPEG
		Layout Type	6-grid Display, swipe to go to previous /next page	Grid Layout
		Camera Group	Selectable Camera Groups (Select layout names to change)	X
		Displayed Channels	All channels on NVR	
		Refresh	V	X
	Single Channel Live View	Streaming Video Format	640x480 / 320x240 @3 FPS MJPEG	320x240 @5 FPS MJPEG
		Optical PTZ	V	V
		Optical PTZ Speed	X	V
		Digital PTZ	V	X
		Go to PTZ Preset Points	V	X
		Take Snapshots	V	X
		Go to Previous/Next Channel	Swipe to go to previous /next channel	X
		Camera Info	V	X
	Playback	Streaming Video Format	640x480 / 320x240 @3 FPS MJPEG	320x240 @5 FPS MJPEG
		Digital PTZ	V	X
		Playback Mode	File by file	
		Time Stamp	V	
		Search Criteria	Camera, Start time, End time, Event type (Schedule / Motion / DI)	
	Settings	3G/Wi-Fi Mode Switch	V	X
		Prevent Idling	V	X
Server	Function		Software NVR + Mobile Server	
	Live View	Video Format	Resolution: Up to 4M Compression: MJPEG/MPEG-4/H.264 Frame Rate: Up to 30 FPS (Doesn't support 2M or higher H.264 streaming)	
	Playback			

(*) The below browser-based mobile client approaches have been tested and proven to work.

Browser	Device	O/S version
Firefox for Android	HTC smart phone	Android 2.3
Built-in **Safari**	Apple i-Device	iOS 4.x and later

Compatible NVR Firmware Version

Software NVR: NVR Enterprise v2.3.04 or later

Supported Video Format from Server

Server	Software NVR + Mobile Server		
Compression / Resolution	H.264	MPEG-4	MJPEG
2032X1920	X	V	V
1920X1080	X	V	V
1.3M or below	V	V	V

Note: When connecting to software NVR via Mobile Server's re-direction service, please make sure any of the channels on NVR is not using H.264 video stream with 2M or above resolution, for Mobile Server currently doesn't support this format.

System Requirements

The specifications of the computer running both NVR server and Mobile Server should meet the following requirements:

PC Specifications	Number of Channels on NVR	
	16	32/48/64 or above
	Recommended Spec	
CPU	**Intel Core 2 Quad 2.66 GHz**	**Intel i5-670 3.46 GHz**
Memory	4GB +	4GB +
Network	Gigabit Ethernet	Gigabit Ethernet
Graphics Card	nVidia 9800 GT or better	nVidia GTS 250 or better
Graphics Card memory	512 MB or more	512 MB or more
Hard Drive Space	2 GB for NVR, 250 GB for Video	2 GB for NVR, 1TB for Video

1. You may install NVR Server and NVR workstation onto the same PC with Mobile Server.
2. Before starting to record, be sure to reserve storage capacity of 20GB or above on the disk drive for recording.
3. Supported Windows OS for 32 bit and 64 bit systems are listed below

OS	Version	32 bit	64 bit
Windows 7	Professional	Y	Y
Windows 7	Enterprise	Y	Y

Note: For 64 bit NVR version, 64 bit Internet Explorer is not supported. Please use 32 bit Internet Explorer.

Note: Please consult your Network Administrator for service bandwidth capacity for user connections.

Things You Need to Know Before You Start

1. Mobile Server service is a web service working with an NVR Server. Please make sure the NVR Server is working properly, and port connection is free from firewall or other barriers. Otherwise, thumbnails or video traffic may be blocked out and unable to be displayed.

2. NVR Server configuration should still go through NVR Workstation / Web client and is NOT included in Mobile Server.

3. The optical PTZ function works on browser or MobileGo! only if the PTZ device has been enabled on NVR server.

4. Mobile Server doesn't support "Audio-in" function.

Mobile Server Installation

Given that your software NVR is installed and working normally, all that you need to do before start using client application (browser or MobileGo!) to do remote-monitoring is installing and configuring Mobile Server on the server computer.

Step 1 - Set the Ports on Server Computer

NVR Server computer is already using the following ports for data and streaming transporting:

NVR HTTP (default:**80**)

NVR control (default: **6001**)

NVR streaming (default:**6001**)

Please set up another port forwarding rule to open ports for **Mob**ile Server:

Mobile Server streaming (uses only **90**, please don't change it).

Step 2 - Disable UAC Function in Windows

Make sure you have disabled UAC functions. (When using Windows Vista or 7)

If UAC(User Access Control) is enabled in Windows Vista and Windows 7, users must disable UAC first before continuing. TweakUAC is a tool that comes with the install shield, which will help users to turn UAC off. Users may turn it back on later after installation is complete.

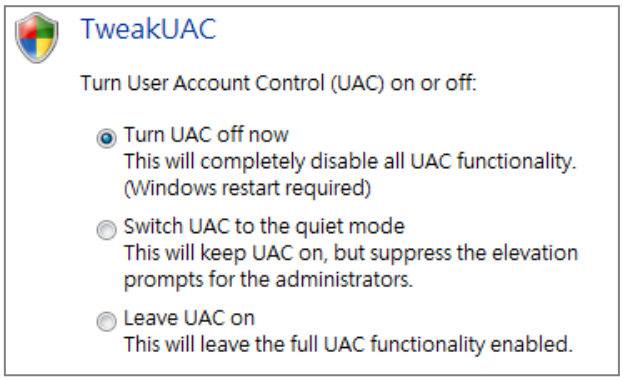


Fig. 2 TweakUAC

Step 3 – Install and Configure Mobile Server

Execute the file '**Mobile Server.msi'** in the same PC.

After it is installed, you have to configure IP address and ports to let web clients access to Mobile Server. There is one file under NVR folder that you have to edit:

C:\Program Files\NVR\IPControlCenter\m\config.xml.

Please open this file with Notepad and you will see the content as below.

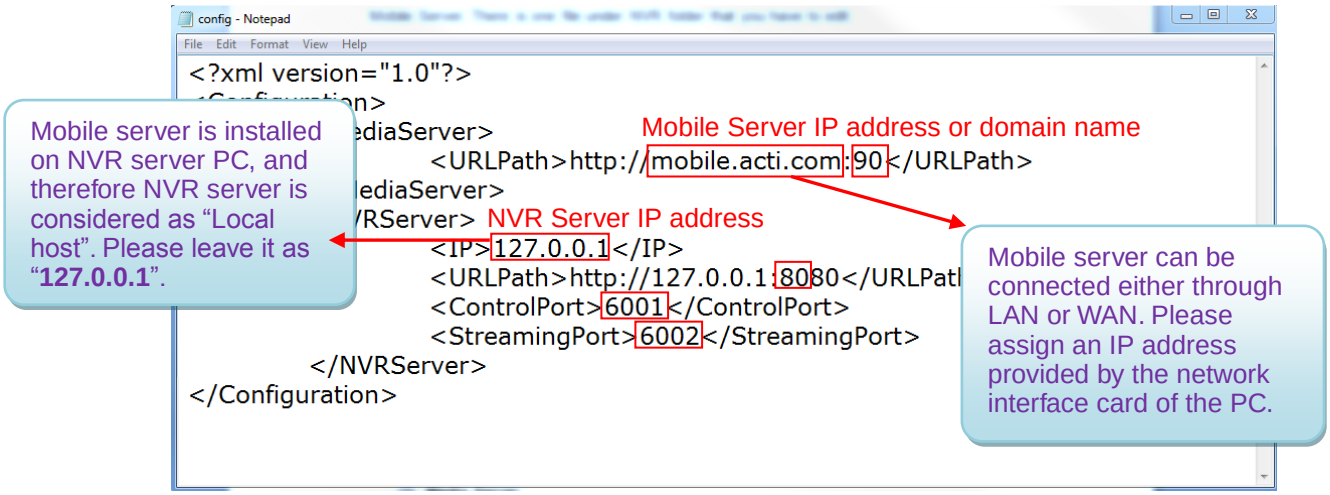


Fig. 3 Configurations of Mobile server

Please follow the instructions to modify parameters according to the settings of your NVR server.

(1) Media Server

Fig. 4 Media Server URL

- **< URL Path>:**

  The URL Path consists of the address and port of Mobile Server.

  - **IP:** Please modify URL path to the IP address of Mobile Server.
  - **Port:** Mobile Server uses default **port 90** to send video stream to web client.

  For example, if the PC which you install mobile server has the IP address **220.228.146.22** and the media server uses port 90, then you should use **http:// 220.228.146.22:90** as its URL path.

(2) NVR Server

Fig. 5 NVR ports

- **< IP>:** Mobile Server will use it to communicate with NVR server. Since we install Mobile Server in the same PC with NVR Server, we can use 127.0.0.1 as the IP address.
- **<URL Path>**

  The URL Path consists of the address and HTTP port of NVR.

  -IP: This URL path will be used by Mobile Server to communicate with NVR Server. Since we install Mobile Server in the same PC with NVR server, you can leave the IP address as 127.0.0.1.

  - HTTP port: Please change it to your NVR Server's HTTP port. Default is port 80.

  For example: if the HTTP port of your NVR is **8080**, the URL Path will be **http://127.0.0.1:8080**.
- **<Control Port>** Please change it to your NVR Server's control port. Default is 6001
- **<Streaming Port>** Please change it to your NVR Server's streaming port. Default is 6002

Step 4 –Configure PTZ Camera Settings (if needed)

To use PTZ functions on client (browser or MobileGo!), you will also have to configure it for each PTZ camera manually. Please follow the instruction below and configure it through the following steps.

1. Please enable PTZ function in NVR for each PTZ camera. And please make sure PTZ function work in NVR with proper settings.
2. Please go to Media Server folder

"C:\Program Files\ACTi\Mobile Server\Media Services\config\device\", and open MediaSourceConfig.xml file with Notepad. We are going to edit the settings of PTZ camera in this file.

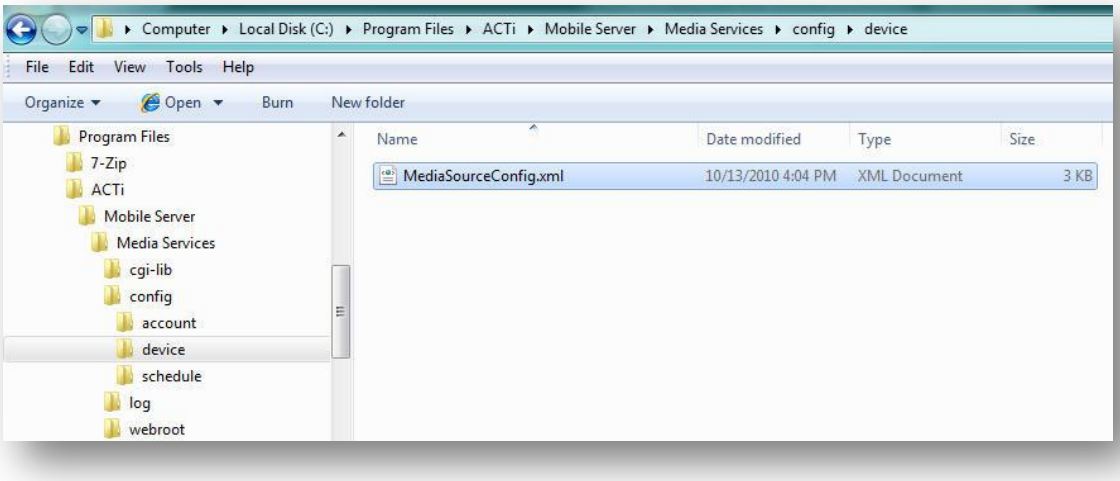


Fig. 6 Configuration file

3. After opening it, you will see the file as below. What we are going to do now is to change the settings to what settings PTZ camera currently has. We will need you to find those settings in NVR and write them back to MediaSourceConfig.xml file.

Configuration text start

```
<?xml version="1.0" ?>
- <MediaSourceConfiguration>
  - <MediaSource id="0">
      <Owner>Admin</Owner>
      <Group>Admin</Group>
      <Enable>1</Enable>
      <IdentifyName>123.107</IdentifyName>
    - <MediaConfiguration>
        <ContactType>1</ContactType>
        <StreamID>0</StreamID>
        <ChannelNumber>0</ChannelNumber>
        <RTPVideoTrackID>0</RTPVideoTrackID>
        <RTPAudioTrackID>0</RTPAudioTrackID>
        <UnicastIP>192.168.123.107</UnicastIP>
        <MulticastIP />
        <RegisterPort>6000</RegisterPort>
        <ControlPort>6001</ControlPort>
        <StreamingPort>6002</StreamingPort>
        <MulticastPort>5000</MulticastPort>
        <HTTPPort>80</HTTPPort>
        <RTSPPort>554</RTSPPort>
        <Username>Admin</Username>
        <Password>lenovo</Password>
        <FilePath>.</FilePath>
        <ConnectionTimeout>5</ConnectionTimeout>
      </MediaConfiguration>
    </MediaSource>
  - <MediaSource id="1">
      <Enable>1</Enable>
      <IdentifyName>23.144</IdentifyName>
    - <MediaConfiguration>
        <ContactType>12</ContactType>
        <StreamID>0</StreamID>
        <ChannelNumber>0</ChannelNumber>
        <RTPVideoTrackID>0</RTPVideoTrackID>
        <RTPAudioTrackID>0</RTPAudioTrackID>
        <UnicastIP>172.16.23.144</UnicastIP>
        <MulticastIP>0.0.0.0</MulticastIP>
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        <ControlPort>6001</ControlPort>
        <StreamingPort>6002</StreamingPort>
        <MulticastPort>5000</MulticastPort>
        <HTTPPort>80</HTTPPort>
        <RTSPPort>7070</RTSPPort>
        <Username>root</Username>
        <Password>123456</Password>
        <FilePath>/axis-cgi/mjpg/video.cgi</FilePath>
        <ConnectionTimeout>5</ConnectionTimeout>
      </MediaConfiguration>
    </MediaSource>
  - <MediaSource id="8">
      <Enable>1</Enable>
      <IdentifyName>8</IdentifyName>
    - <MediaConfiguration>
        <AutoReconnect>0</AutoReconnect>
        <ChannelNumber>1</ChannelNumber>
        <ConnectionTimeout>5</ConnectionTimeout>
        <ContactType>1</ContactType>
        <ControlPort>6001</ControlPort>
        <FilePath>.</FilePath>
        <HTTPPort>80</HTTPPort>
        <Link>009</Link>
        <MaxCilent>200</MaxCilent>
        <MaxDuration>300</MaxDuration>
        <Name>ACTI ACM8511</Name>
        <OutputFPS>30</OutputFPS>
        <OutputResolution>720x480</OutputResolution>
        <Password>123456</Password>
        <RegisterPort>6000</RegisterPort>
        <StreamingPort>6002</StreamingPort>
        <UnicastIP>172.16.24.170</UnicastIP>
        <Username>Admin</Username>
      </MediaConfiguration>
    - <ModelInformation>
        <DeviceManufacture>ACTI</DeviceManufacture>
        <Model>ACTI ACM8511</Model>
        <ProductionId>ACM8511</ProductionId>
      </ModelInformation>
    </MediaSource>
  </MediaSourceConfiguration>
```

Configuration text end

Fig. 7 Find PTZ Camera Configuration Section

- In this document, User editable scope is between <MediaSourceConfiguration> and </MediaSourceConfiguration> labels; there are originally three sections in the content, each section begins with "- <MediaSource id="X">"and ends with " </MediaSource>". The last section describes the attributes of PTZ camera"{CAMERA_ID}", where you modify its settings. If you would like to add another PTZ camera, please copy this section, paste it below and configure the properties.

- Insert a new section for another PTZ camera under the last line " </MediaSource>" of previous section.

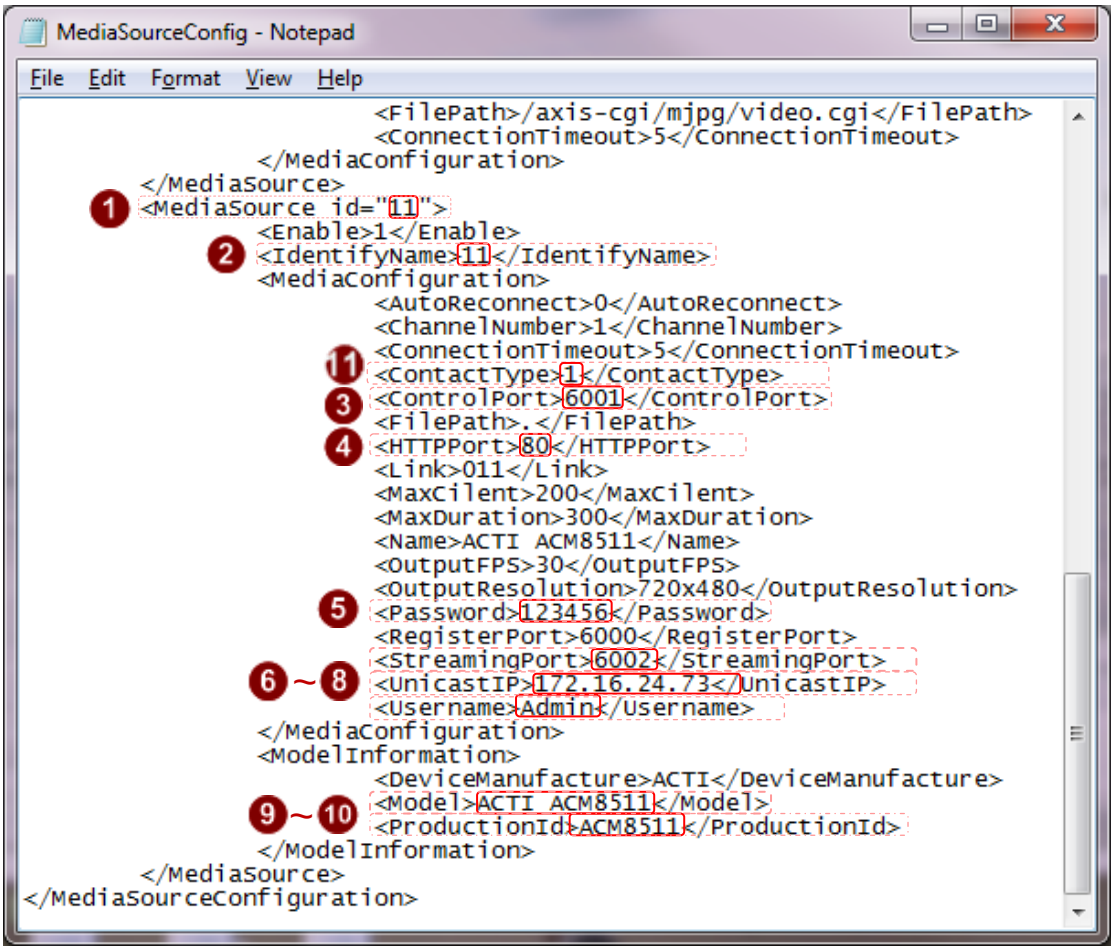

Fig. 8 Configurations of PTZ Cameras (Example)

First, you will have to find the PTZ camera that you have according to Model 9 and Production Id 10. After that, you will be able to start to configure all the other fields. Items from (1) to (11) need to be properly configured. If not, the PTZ function won't be able to work.

(1) Media Source id and **(2) Identify Name:** Please fill in the Camera ID. See the [Camera ID] shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9).

(3) Control Port: Please fill in the control port of the PTZ camera. See the [Control Port] shown on **NVR Camera Advanced Setting page** of NVR Server(See Fig. 10).

(4) HTTP port: Please fill in the HTTP port of the PTZ camera. See the [HTTP Port] shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9)..

(5) Password: Please fill in the password which is used to login this PTZ camera. See the [Password] shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9).

(6) Streaming Port: Please fill in the steaming port of the PTZ camera. See the [Streaming Port] shown on **NVR Camera Advanced Setting page** of NVR Server(See Fig. 10).

(7) Unicast IP: Please fill in the IP address of the PTZ camera. See the [Camera IP] shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9).

(8) Username: Please fill in the user name which is used to login PTZ camera. See the

[User Name] shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9).

(9) Model and **(10) Production Id:** It shows the model name of the PTZ camera. See the model name shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9).

(11)Contact Type: For Protocol setting, input “1” here if you use TCP; input “2” here if you use RTP. See the [Protocol] shown on **NVR Camera Basic Setting page** of NVR Server(See Fig. 9).

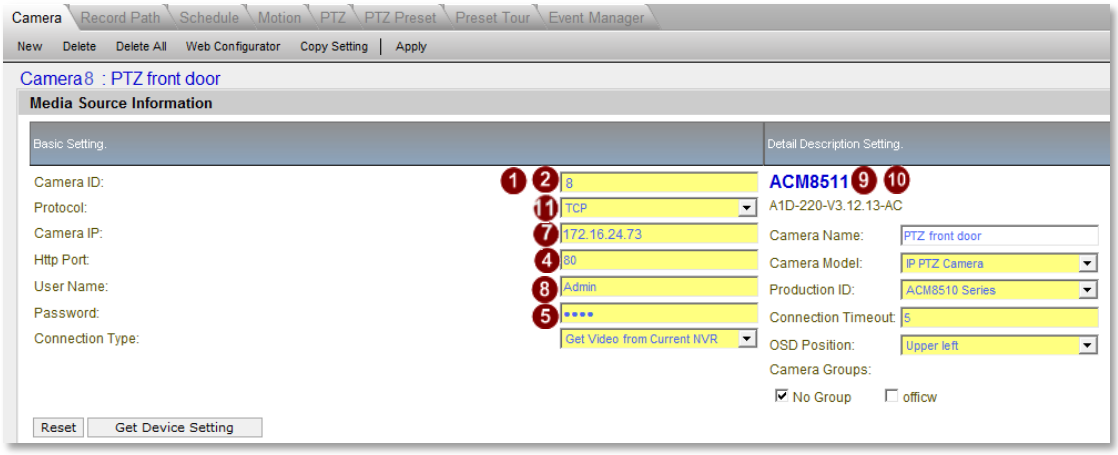

Fig. 9 NVR Camera Basic Setting

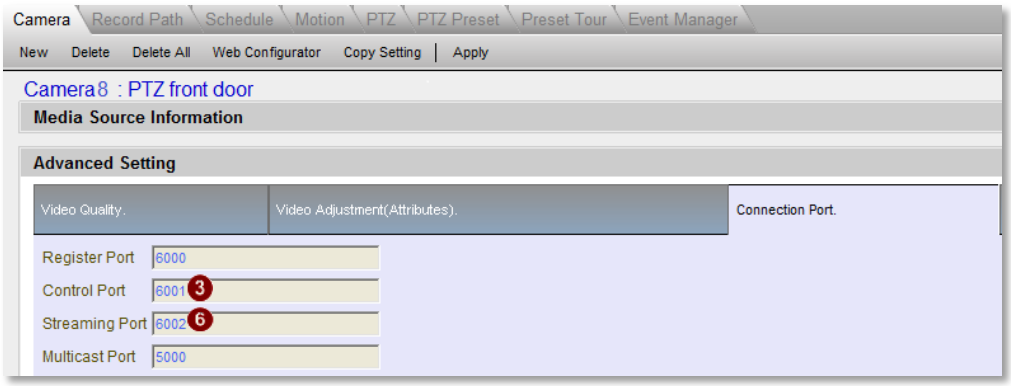

Fig. 10 NVR Camera Advanced Setting

Step 5 –Restart the Server Computer

After all the configuration is done, the server computer needs to be restarted to apply all the settings.

Startup

To connect to mobile server, there are two kinds of clients to use:

Browser

On any device (e.g. computer or, mobile phone, etc) that supports MJPEG-enabled browsers like Safari or Firefox, type in NVR Server URL with the related path “/m/” to start the service.

For example, if your NVR server’s address is 220.228.146.22 and use 80 as HTTP port, you will have to key in the address http://220.228.146.22:80**/m/** in URL bar to connect to the Mobile server from your browser, then key in the Account and Password.

There is a demo of Mobile server. You may try it before you have your own mobile server. Please use your iPhone browser and connect to http://mobile.acti.com:80**/m/**.
Account/password is guest/guest.

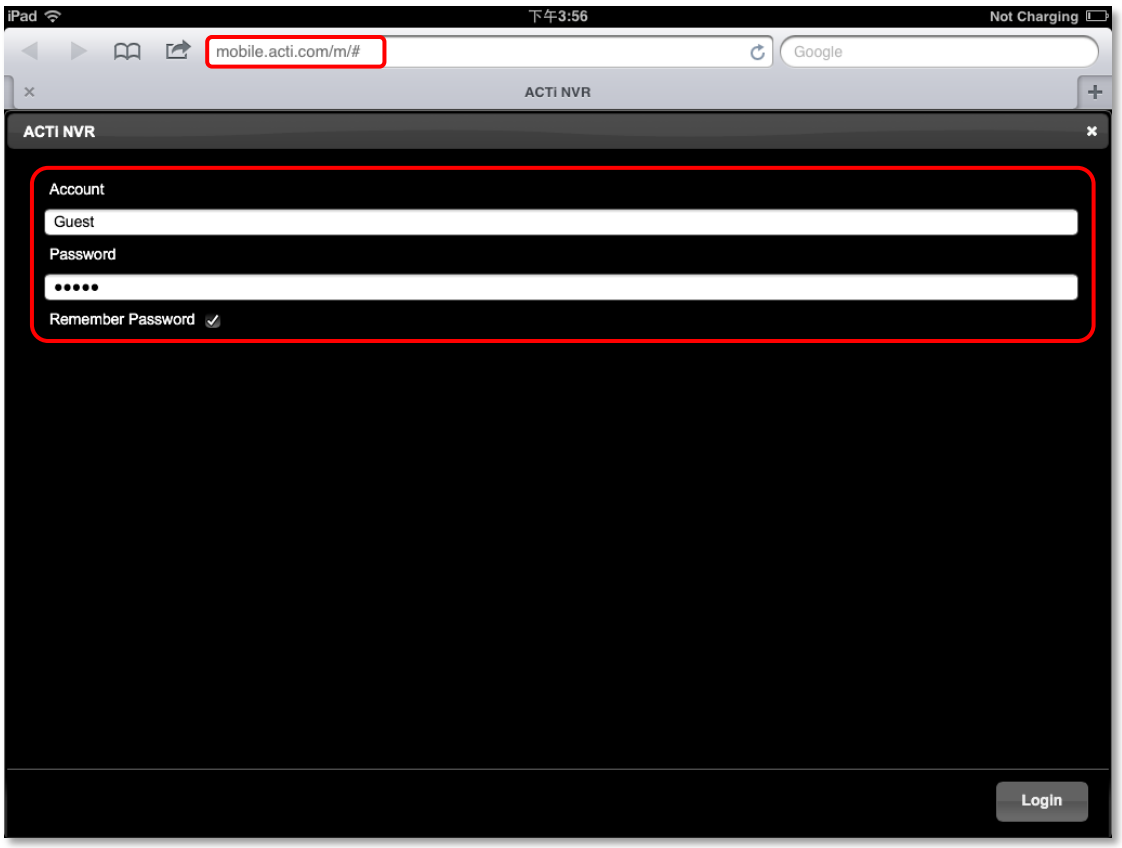

Fig. 11 Safari Browser

MobileGo!

MobileGo! is an app for i-devices like iPod, iPhone or iPad to connect Mobile Server and do remote-monitoring. You need to download it first from App Store and install it. For details, please refer to MobileGo! User Manual provided on ACTi Corporate website via this link: http://www.acti.com/product/detail/Video_Management_System/ACTi_Utility_Suite

To login, simply type in Account/password, the NVR ip, and port number.

For example: Account/password: guest/guest , NVR ip: mobile.acti.com, and port number: 80

Fig. 12 MobileGo!

Login

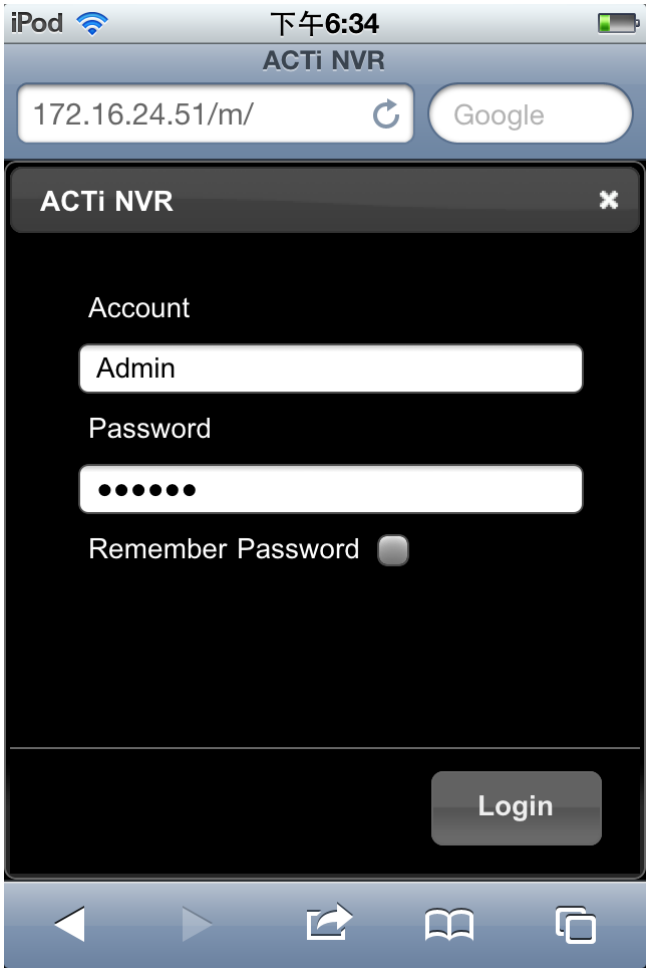

Fig. 13 Login Screen

1 **Username**

Please key in account username. Default username for NVR server is **Admin**.

2 **Password**

Please key in account password. Default password for NVR server is **123456**.

3 **Remember Password**

Check the box to remember username and password.

4 **Login**

Please Click on **Login** button to log into the service.

Live View

Live Main Screen

Upon login of the system, **Live** tab will automatically display thumbnails of all the channels captured on that second from IP devices. Thumbnail layout may change in accordance with display panel resolution.

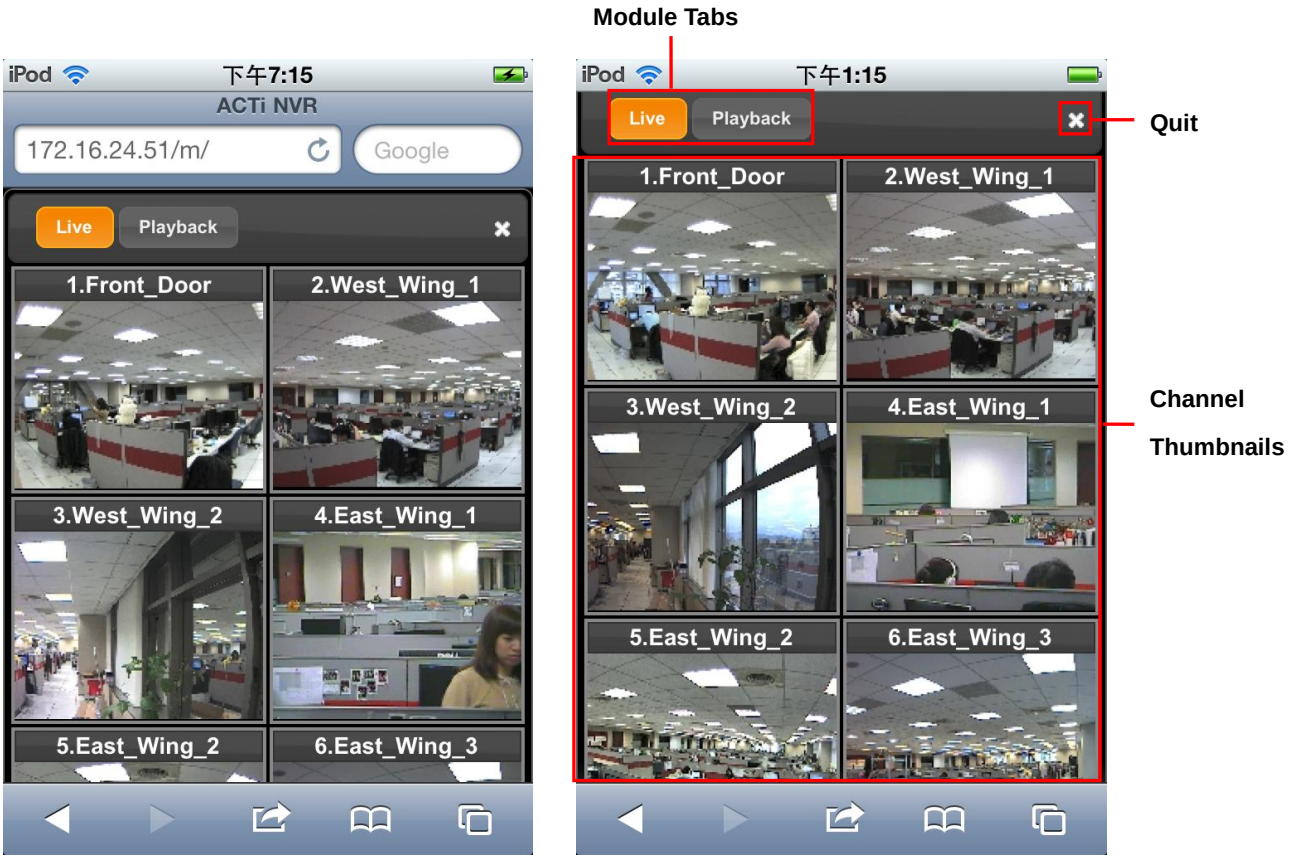

Fig. 14 Live Main Screen

Summary of the Live Main Screen

1. **Module Tab**

   To switch modules, user may click on one of the tabs to change modules.

2. **Channel Thumbnails**

   Still images captured on the spot when users log in. The main display where user may select the camera

3. **Quit**

   To logout the service and stop streaming.

Module Tabs

There are two modules in the system, **Live** and **Playback**, to carry out live streaming and playback.

Fig. 15 Module Tabs

Under Live module when a specific channel is selected, tabs may vary depending upon IP device model. Some channels might have PTZ-enabled tab if they are PTZ models. Users may double click on one of the thumbnails to start live stream, and tabs on the top-left-hand-side shall be displayed as in Fig. 16.

Fig. 16 Tabs of Live streaming

Users may click on **Playback** tab as in Fig. 15 or Fig. 16 while a channel is selected to switch to Playback module. Tabs shall display **Home** and **Live**, therefore users may click on **Home** to go back to the main screen, or click on **Live** to start streaming. If there are search results listed, **Search Result** button shall display and let users go to the search result list.

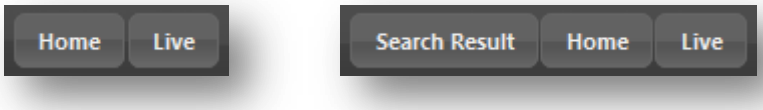

Fig. 17 Tabs of Playback

Live Streaming

In **Live** main page, double click on a channel to start live view.

Fig. 18 Live View

1. **Home**

   To go back to Live main page.

2. **Playback**

   To switch to **Playback** page.

3. **PTZ**

   To control PTZ. Details please refer to PTZ Function.

4. **Quit**

   To log out from the service.

PTZ Function

Fig. 19 Live streaming with PTZ control

1. **Speed**

   You may define speed of movement here.
2. **Preset**

   To select a preset point.
3. **Go**

   Click on **Go** to move to the preset point with pre-defined speed.
4. **On-screen PTZ**

   Users may move the PTZ device via on-screen PTZ control buttons.

To control PTZ, click on the display panel, then PTZ buttons shall overlay transparently. Click on one of the buttons to control PTZ. These buttons will fade out when there are no more cursor clicks.

Users may operate in the following ways:

Select speed and preset point. Then click on **Go** to move to the preset point.

Fig. 20 PTZ Speed and Preset

Playback

Playback Overview

Users may search recorded video clips regarding channels, date/time, duration, and type.

Fig. 21 Playback Main Screen

Summary of the Playback Main Screen

1. **Module Tab**

   To switch modules.

2. **Search Panel**

   Users may search for playback under several search conditions .

3. **Submit**

   To send out search criteria to the Server.

4. **Quit**

   To quit the service.

Search Panel

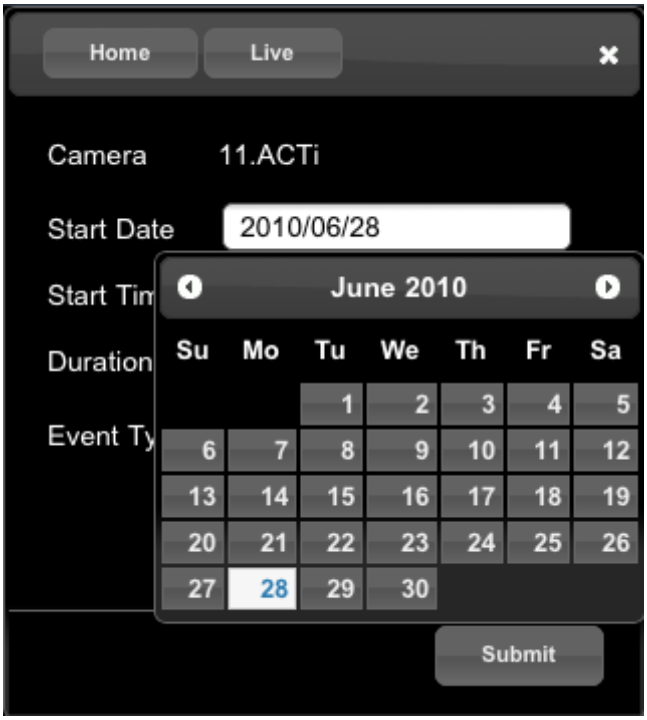

Fig. 22 Search Panel

1. **Camera**

   The service allow users to search playback from a single channel.

2. **Start Date**

   To select a date.

3. **Start Time**

   To define the start time.

4. **Duration**

   To define the duration of search period.

5. **Event Type**

   Event type allows users to specify whether they would like to search playback of scheduled recording, motion-triggered recording, or DI-triggered recordings. The selection may be multiple choices.

In Fig. 22, the search criteria are camera 11, all types of recordings at 11 AM thru 12 PM by June 28th, 2010. The search results are listed as in Fig. 23. If the search result list is longer than the display screen, please slide the page or use scroll bar, and click on arrows to turn pages. To watch playback, please click on one of the items, and the playback shall be displayed automatically.

To return to Search Result list, please click on **Search Result** button. Clicking on **Home** will return to Live main page, and clicking on **Live** button will start live video of the channel.

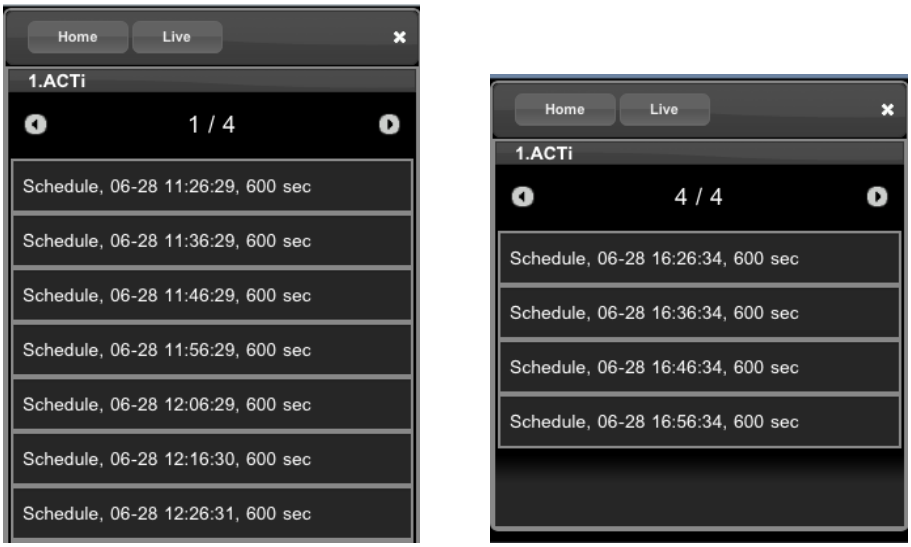

Fig. 23 Search results

Fig. 24 Playback

Note: Please note that recording file length and pre-event recording length are defined in NVR Server configuration. Users are not allowed to change any NVR settings through the Mobile Server service.

Note: Timestamp may have 3 seconds offset due to connection limitation.

Optimize the Performance of Client

Mobile Server makes remote-monitoring possible as soon as you install and configure it on your NVR server computer. With normal network connectivity, you may enjoy the convenient functions it provides and satisfactory video streaming quality. However, you may experience certain unstable video display performance, for example, certain channels take longer to display the images upon logging in, or the live view streaming is not smooth enough. Please consider the following factors that are possibly influencing the performance of live view result:

How fast the Mobile server can provide the output image

Mobile Server would transform the original image to lighter format before outputting it to the mobile client (browser or MobileGo).However, the higher compression level or resolution the original image comes with, the more CPU usage is required to process image-transforming, and the longer processing time is needed to generate the output image before it can be delivered.

Network quality

This is the major factor to affect the display result. With more bandwidth of the network connection, your mobile client gets the images sooner and the streaming gets smoother.

There are several tips you may try to get better live view result as possible, given that your network condition is not easy to control:

1. To preserve more CPU power for image-transforming to generate the images faster and more efficiently, you may make use of the dual-streaming devices on your site. Mobile Server supports dual-streaming devices and would recognize **Stream 1** output from video source. Simply use lower video format for **Stream 1** for Live view (640X480 resolution is recommended for MobileGo! client; 320X240 for browser client), while **Stream 2** uses better format for the purpose of recording. Thus it may take shorter for the mobile device to obtain the image data and display the view.

2. As video stream with better compression level will consume more CPU usage for Mobile Server or Standalone NVR to decode the image, you may try using lower compression levels such as MPEG-4 or MJPEG for high resolution video.