iVMS-7200

Installation Manual

UD.6L0204A1064A01

Thank you for purchasing our product. If there is any question or request, please do not hesitate to contact the dealer.

This manual is applicable to iVMS-7200.

This manual may contain several technically incorrect places or printing errors, and the content is subject to change without notice. The updates will be added into the new version of this manual.

We will readily improve or update the products or procedures described in the manual.

The figures shown in this manual are for reference only. The appearance and interface of the device are subject to the actual model.

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Chapter 1 Before you Start

1.1 Overview

Adopting multiple advanced technologies such as high-efficiency audio & video encoding technology, wireless transmission technology, GIS technology, mass data storage and search technology, the intelligent video management system iVMS-7200 provides powerful functionalities including real-time live view, remote playback, GPS location monitoring, system operating statistics, etc.

Thanks to these features, iVMS-7200 is widely applied to the transportation industry and contributes to establish a comprehensive monitoring system combined with front-end devices including mobile DVRs, IP cameras, PVRs, etc.

Table 1. 1 Description of Terms and Conventions

Terms / Conventions	Description
CU	Client Unit
PU	Producer Unit
PPVSServer	Register Server
AlarmServer	Alarm Server
RSMServer	Stream Media Server
Windows Server 2008 R2	Operating system, SP1 patch is released on Feb. 23, 2011
Front-end Device	DVR, Encoder, NVR, IP Camera, Mobile DVR, PVR, Mobile Enforcement System, etc.

1.2 Running Environment

1.2.1 Hardware Environment

Server:

Recommended:

Processor: XEON 3440 @ 2.53G, Quad-core, 8M

Motherboard: 3420GPLC

Memory: 2*2GB DDR3 ECC

HDD: 1*500G SATA

Network Card: 1000Mps

Router and Firewall

The router and firewall should support the bidirectional mapping.

Compatible Front-end Devices

For details, see *Appendix I Compatible Front-end Devices*.

1.2.2 Software Environment

Server

Recommended:

Operating System: Windows Server 2008 R2 Standard SP1 (64-bit Operating System)

J2EE Server: Tomcat 6.0.18

Database Server: postgresql-9.2.4

Client

Operating system: Microsoft Windows 7

Web browser: IE8, IE9, IE10, IE11

Firewall

For the network security, hardware firewall is highly recommended for the system.

During the firewall deployment, it is required to open the listening ports of the functional modules in the server. For details, see the table below.

Table 1. 2 Open Ports of Firewall

Server	Port No.	Port Type	Note
Register Server	7660	UDP	--
	7661	TCP	Search server information
	8000-10000	TCP	Playback
Alarm Server	7332	UDP	--
	7280	TCP	Search server information
Stream Media Server	7554	TCP	Listening port
	11000-15000	UDP	Get stream from device via UDP
	16000-18000	TCP	Get stream from device via TCP
	31000-35000	UDP	Forward stream to platform client via UDP
	31000-35000	TCP	Forward stream to mobile client via TCP
Web Server	80	TCP	Default web service port

Firewall opening ports should be modified accordingly if ports in configuration file are changed.

1.3 Installation Environment Check List

Table 1. 3 Installation Environment Check List

Check Items	Criterion

Hardware	Fit to standard in the contract (CPU, Memory, HDD etc.).
Software	Fit to standard in the contract (OS requirement, iVMS-7200 Version)
Front-end Device	Device list in “Appendix I Compatible Front-end Devices”
Firewall Configuration	Ports opening meeting the requirements
Network Connection	Front-end device network connectivity; Central device network connectivity
TCP/IP Configuration	IP address, subnet mask, gateway and DNS in correct configuration

Chapter 2 System Introduction

2.1 System Architecture

The iVMS-7200 video management system platform consists of three modules: front-end devices, centralized servers and application clients.

The front-end devices include the hardware equipment located in the vehicle, such as the mobile host, station reporter, microphone, camera, and emergency alarm button. The central servers and the application clients are composed of server hardware and iVMS-7200 platform client. The central servers get the data stream from the front-end devices, and the platform client communicates with the servers and transfers the collected information to the terminal users.

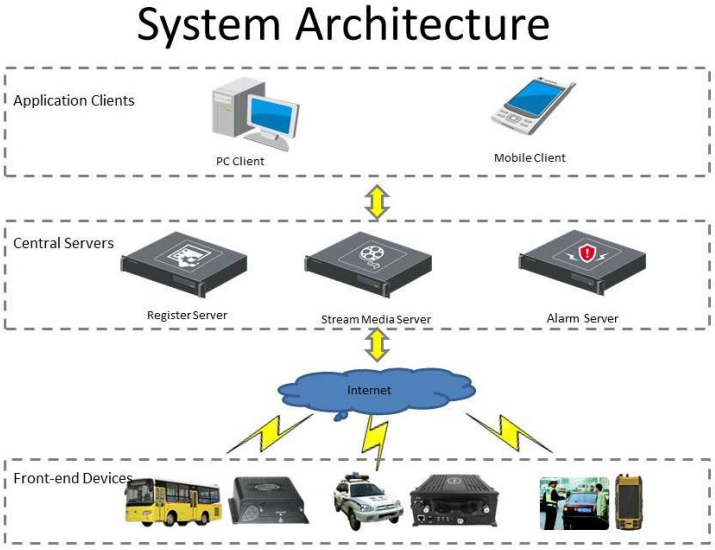


Figure 2. 1 System Architecture

2.2 Network Connection

2.2.1 Front-end Device Connection

The front-end devices can be connected to iVMS-7200 via wireless networks.

2.2.2 Central Server Connection

The central server can be directly connected to the public network, and in this case each server requires for one public statistic IP address. You can also connect those servers to the public network via the router, and in this case, only one public statistic IP address is required for all the servers.

2.3 Bandwidth Calculation

The bandwidth for the surveillance system is related to the resolution and the frame rate. When the frame rate is 25fps, the bandwidths for different resolution are as follows:

- For CIF (Resolution 352×288), the bandwidth is 512Kbps;
- For 4CIF (Resolution 704×576), the bandwidth is 2Mbps;
- For 720P (Resolution 1280×720), the bandwidth is 4Mbps;
- For 1080P (Resolution 1920×1080), the bandwidth is 8Mbps.

Due to different requirements for the real-time and fluency, you can configure the resolution and frame rate according to the real situation.

2.3.1 Front-end Device Bandwidth

Adopting H.264 encoding technology, the video encoding devices requires less network bandwidth.
For example, for 1-ch video stream with 25fps and CIF resolution, the bandwidth needed is 512Kbps; for 1-ch video stream with 25fps and 4CIF resolution, 2Mbps is needed.
Moreover, if you need to transfer N channels of video stream with CIF resolution to the server, the network bandwidth you need is N×512Kbps.

2.3.2 Central Server Bandwidth

The central servers receive the video stream from the front-end devices and forward the video stream to the clients.
Register server: 10Mbps for both uplink and downlink, 1.
Alarm server: 10Mbps for both uplink and downlink, 1.
Stream media server: (E.g. for CIF resolution) 512*N for both uplink and downlink; N refers to the channels you want to view simultaneously.

2.3.3 Client Bandwidth

PC client

The bandwidth needed for the client software installed on the PC is determined by the video channels you need to watch simultaneously.
For example, if you view N-ch video stream with CIF resolution and M-ch video stream with 4CIF resolution, the total bandwidth you need is N×512 Kbps+M×2Mbps.

Mobile Client

In the mobile networks, if the video data is transferred at the lowest frame rate and then the bandwidth should be steady at 30kbit/s to 40kbit/s to realize a fluent video live view.
According to the test (only for reference), the average data transfer rate of GPRS is at 20kbit/s to 40kbit/s; that of CDMA 1X is at 80kbit/s to 100kbit/s.

For example, to transfer video data with QVGA resolution, the bandwidth of the mobile phone should be at 98Kbps each channel.

The real data transfer rate may be lower than the average value due to reasons such as environmental influence, network interference, etc.

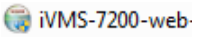
Chapter 3 Platform Installation and Configuration

3.1 Platform Software Installation

3.1.1 Web Installation

Installing Web Server

Steps:

1. Double-click the program file 

to enter the Setup Wizard.
Click **Next** to start the installation.

Figure 3. 1 Open Web Setup Wizard

2. Read the License Agreement, and click **I Agree** to accept.
You can also click **Back** to go to the previous step page.

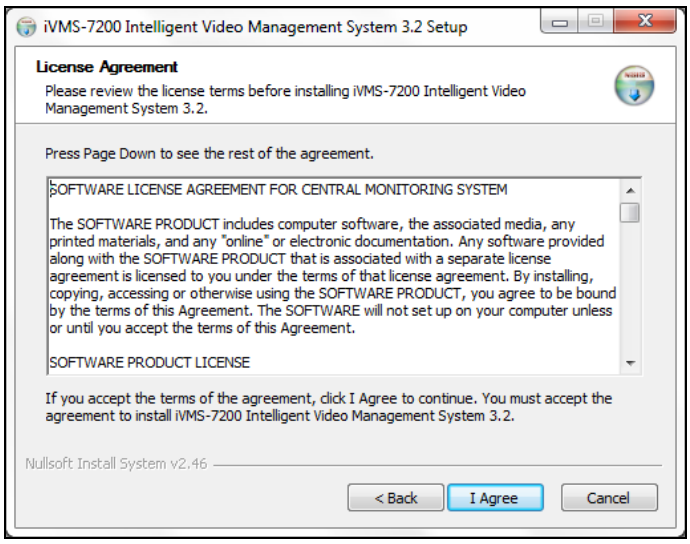


Figure 3. 2 Read & Accept License Agreement

3. Check the checkboxes to choose the components to install, and click **Next** to continue.

NOTE

- All the components are to be installed by default.
- PostgreSQL and InitDB respectively refers to the database and initialized database.
- If the database has been initialized, you can leave the checkboxes of PostgreSQL and InitDB blank.

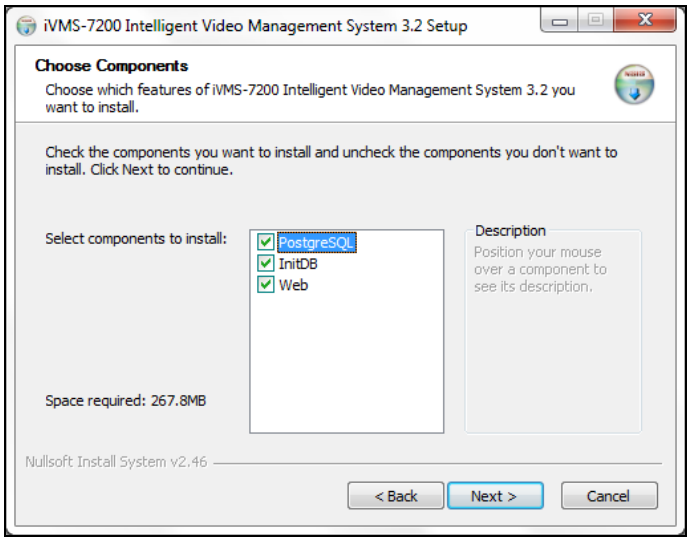


Figure 3. 3 Choose Components for Web Installation

4. Choose the destination folder where the Web server is to be installed. You can either accept the default directory that is displayed, or click **Browse** and select a different directory.
   Click **Next** to continue.

NOTE

- The default destination folder is *C:\Program Files\iVMS-7200-Web*.
- The destination folder cannot contain Chinese characters.

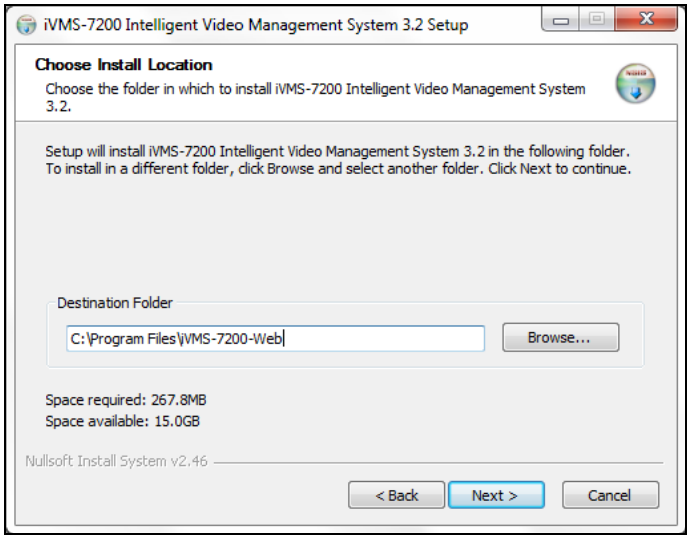


Figure 3. 4 Choose Destination Folder for Web Installation

5. Set the start menu folder in which you would like to create the program's shortcuts.
   You can edit the start menu folder in the text field as desired.
   Click **Install** to start the installation.

NOTE

It is recommended to use the default start menu folder: *iVMS-7200-Web*.

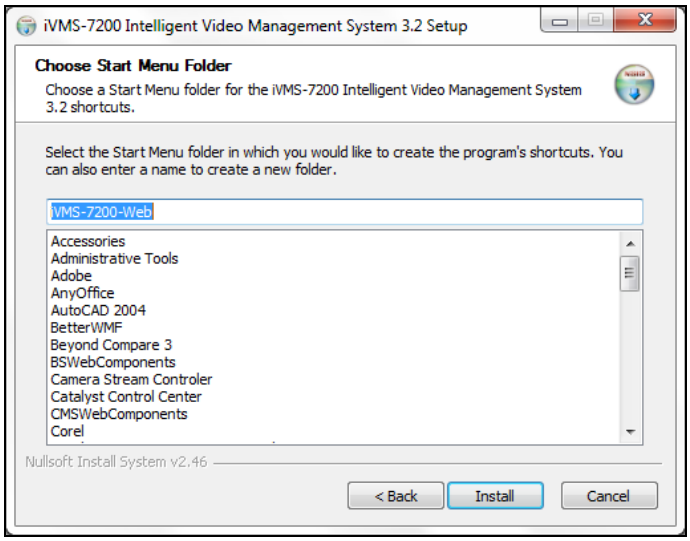


Figure 3. 5 Set Start Menu Folder for Web Installation

6. A panel indicating progress of the installation is displayed. A percentage completion bar is updated as the installation progresses.

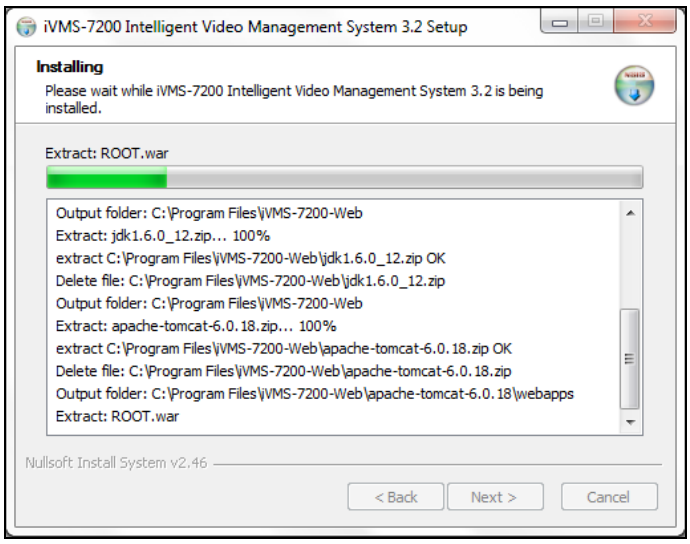


Figure 3. 6 View Web Installation Progress

7. Read the post-install information and click **Finish** to complete the installation process.

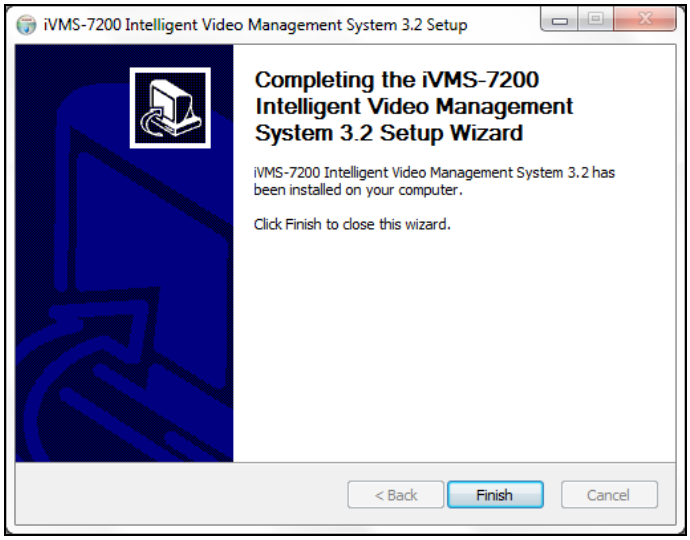


Figure 3. 7 Complete Web Installation

Login Test

Purpose:

You can test whether the iVMS-7200-Web is successfully installed.

Steps:

1. Open the web browser and input the 127.0.0.1 into the address bar, then hit **Enter** key.
2. Input *admin* and *12345* respectively as the user name and password.
3. If you log in to the system successfully, it indicates the Web service is installed properly.

NOTE

If you install the iVMS-7200 for the first time, a prompt message “No valid register server.” will appear in the Login interface. Log in to the system, go to Resource > Server, and then add the resources including Register Server, Stream Media Server, etc.

Figure 3. 8 Login

Troubleshooting

Problem:

- The prompt message “No valid register server” appears in the Login interface.

Possible Reasons:

- PPVS is not running.
- The network connectivity between the platform and PPVS is invalid.
- License expired.

Solutions:

- Run the PPVS
- Check the network connectivity between the platform and PPVS.
- Change the license under PPVS directory.

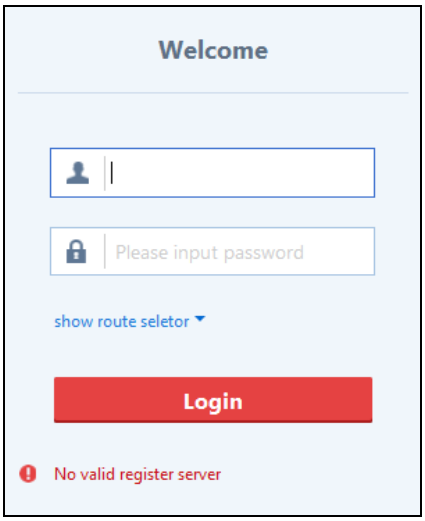


Figure 3. 9 No Valid Register Server

Problem:

- Unable to use the tomcat port.

Possible Reasons:

- The tomcat port works improperly or the port is disabled.

Solutions:

- Modify the tomcat port.
  1) Open the “apache-tomcat-6.0.18→conf” file folder under the Web installation folder.
  2) Find the “server.xml” and open it via Notepad.
  3) Find Connector port="XX" which is marked in the figure below.
  4) Modify the value after the equal sign.

NOTE

- You have to change the WebServerPort No. of the PPVSServer (register server), RSMServer (stream media server), alarm server, and the PicServerPor of the picture-capture server to the same value you configured here.
- Reboot the server to activate the new settings.

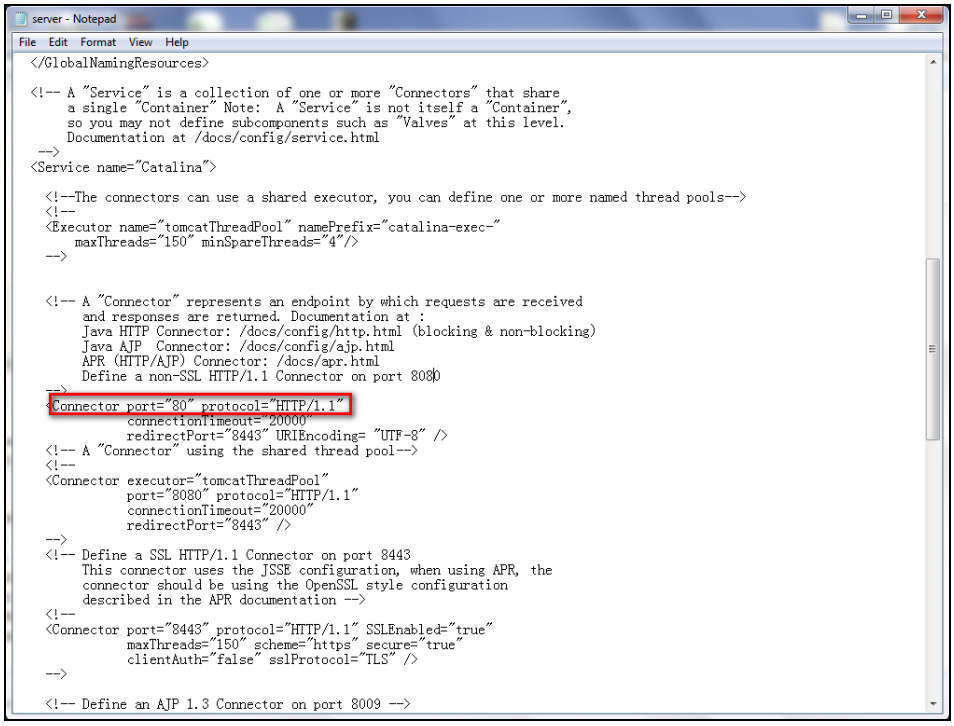


Figure 3. 10 Modify Server Port

3.1.2 Servers Installation

Steps:

1. Double-click the program file iVMS-7200-servers, select the language for installation, and click **OK**.

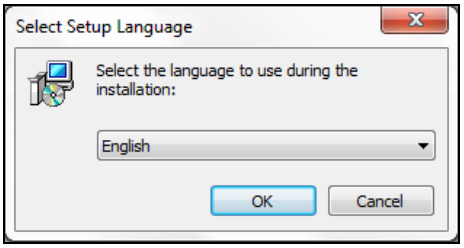


Figure 3. 11 Select Language

2. Enter the Setup Wizard, and click **Next** to start the installation.

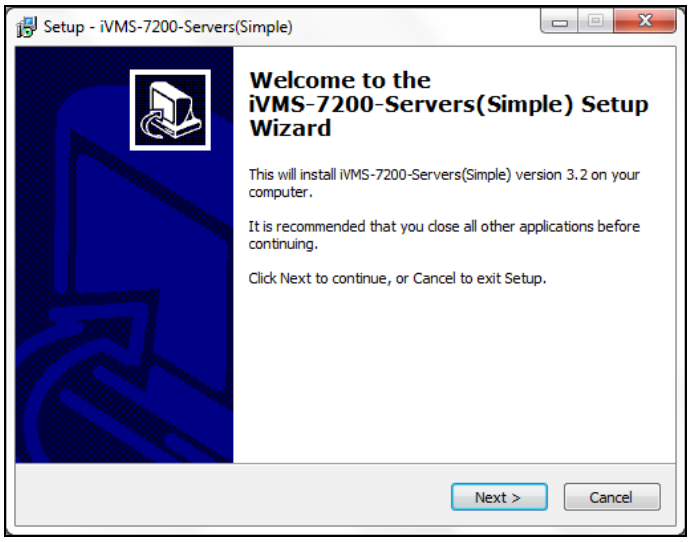


Figure 3. 12 Open Servers Setup Wizard

2. Choose the destination folder where the servers are to be installed. You can either accept the default directory that is displayed, or click **Browse** and select a different directory.
   Click **Next** to continue. You can also click **Back** to go to the previous step page.

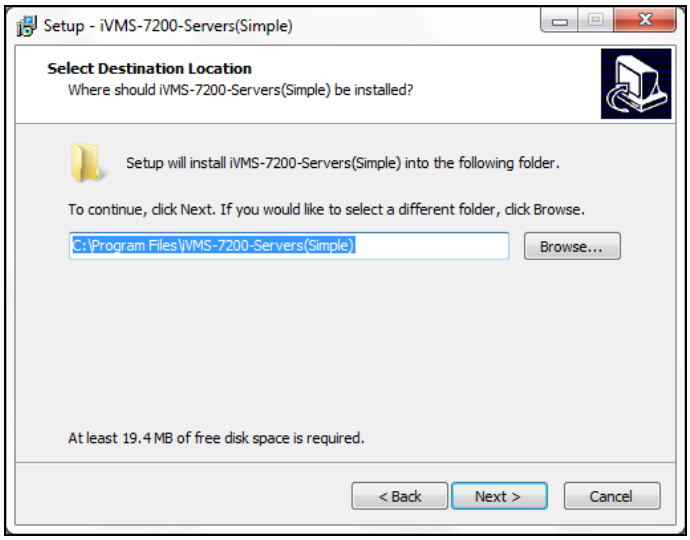


Figure 3. 13 Choose Destination Folder for Servers Installation

3. Check the checkboxes to choose the components to install, and click **Next** to continue.
   - **Monitor:** Work as the watchdog, responsible for the auto-reboot when the service works improperly.
   - **PPVSServer:** Register server, used for the device registration connected to the server.
   - **AlarmServer:** Alarm server, used for writing in the device alarm information to the database.
   - **RSMServer**: Stream media server, used for forwarding the video stream of the device.

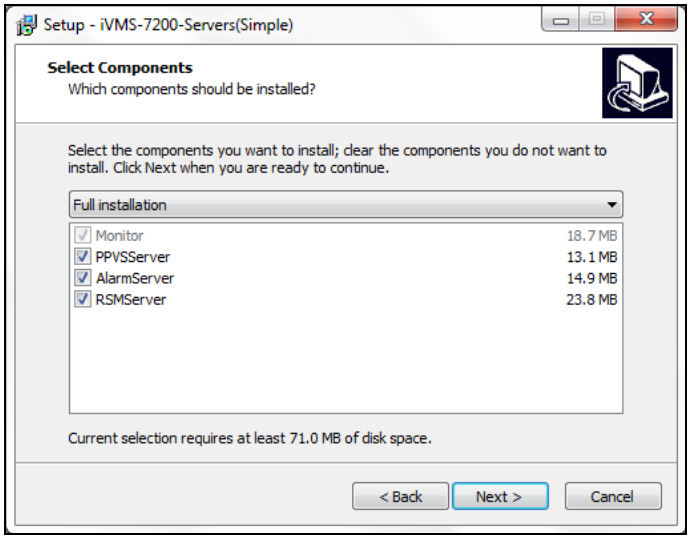


Figure 3. 14 Choose Components for Servers Installation

4. Set the start menu folder in which you would like to create the program's shortcuts.

   You can edit the start menu folder in the text field as desired.

   Optionally, you can check the checkbox of **Don't create a Start Menu folder** to not to create the start menu folder.

   Click **Next** to continue.

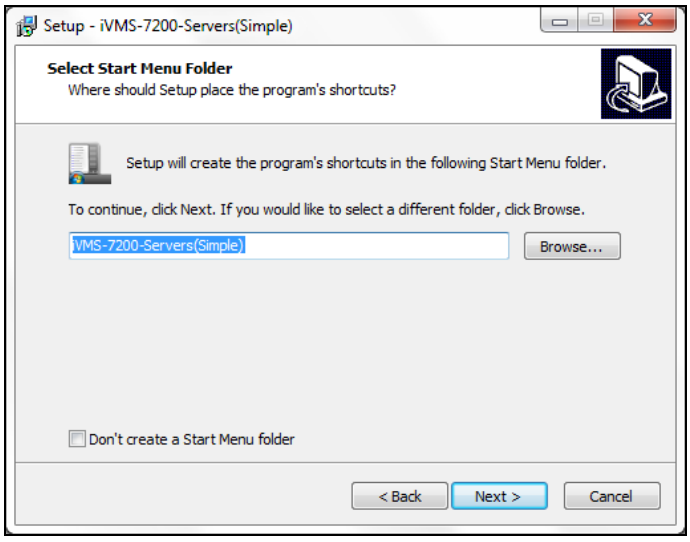


Figure 3. 15 Set Start Menu Folder for Servers Installation

5. Review the settings and click **Install** to start the installation.

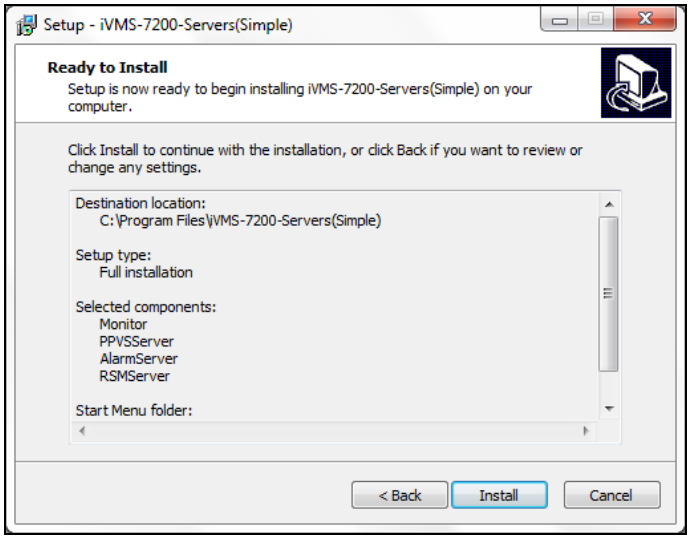


Figure 3. 16 Ready to Install

6. A panel indicating progress of the installation is displayed. A percentage completion bar is updated as the installation progresses.

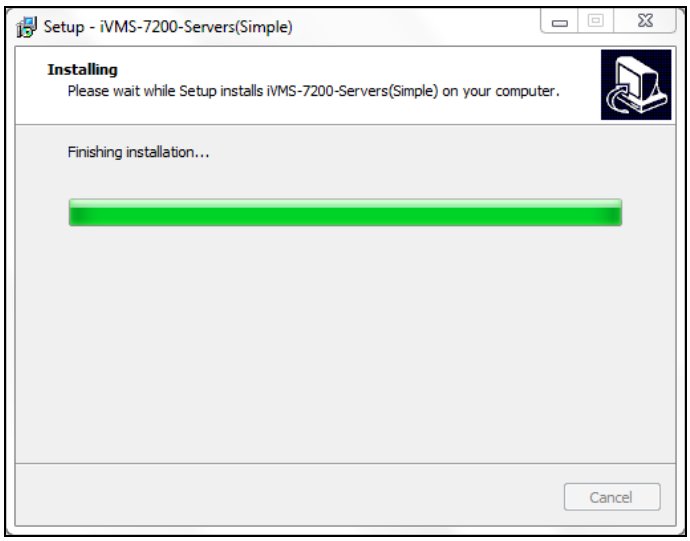


Figure 3. 17 View Servers Installation Progress

7. If the dog driver is not installed properly, click **Install Driver** in the lower-left corner, and click Exit after the driver installation is completed.

Figure 3. 18 Install Dog Driver

8. Read the post-install information and click **Finish** to complete the installation process.

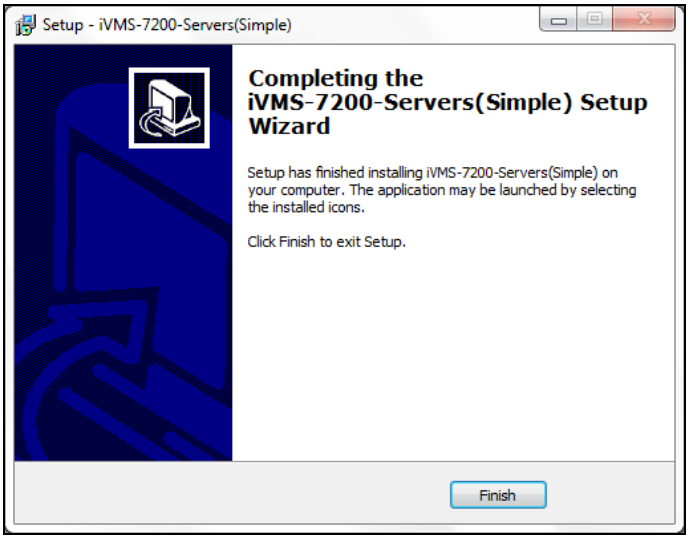


Figure 3. 19 Complete Servers Installation

3.1.3 OCX Installation

Purpose:

OCX plug-in is adopted for the video surveillance client software development of the third-party platform.

Steps:

1. Double-click the program file iVMS-7200-ocx, select the language for installation, and click **OK**.

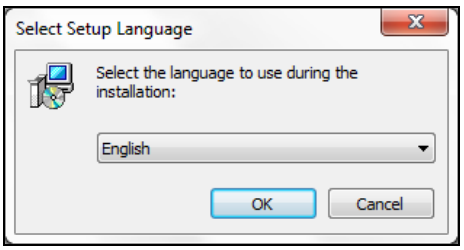


Figure 3. 20 Select Language

2. Enter the Setup Wizard, and click **Next** to start the installation.

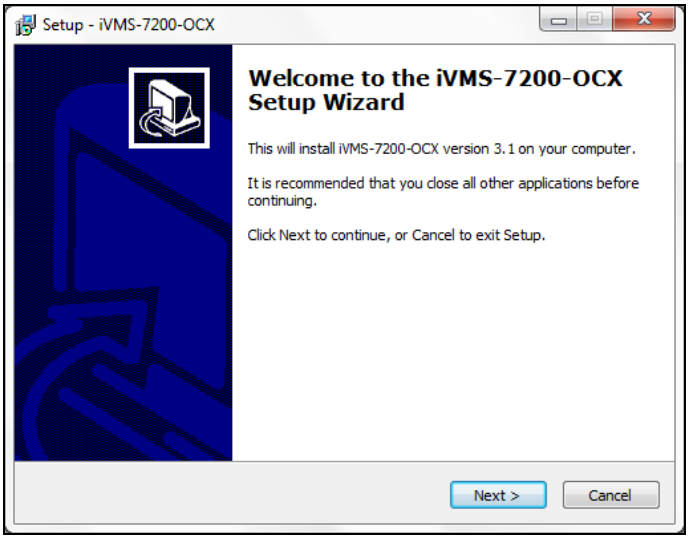


Figure 3. 21 Open Servers Setup Wizard

3. Choose the destination folder where the OCX plug-in is to be installed. You can either accept the default directory that is displayed, or click **Browse** and select a different directory.

   Click **Next** to continue. You can also click **Back** to go to the previous step page.

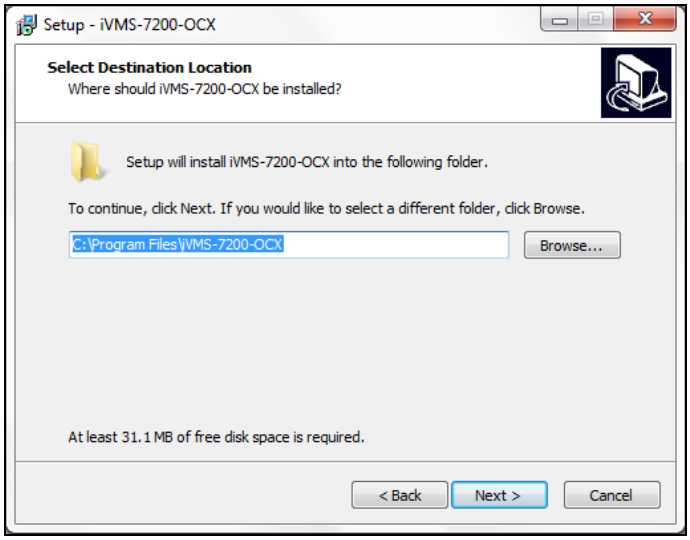


Figure 3. 22 Choose Destination Folder for Servers Installation

4. Set the start menu folder in which you would like to create the program's shortcuts.

   You can edit the start menu folder in the text field as desired.

   Optionally, you can check the checkbox of **Don't create a Start Menu folder** to not to create the start menu folder.

   Click **Next** to continue.

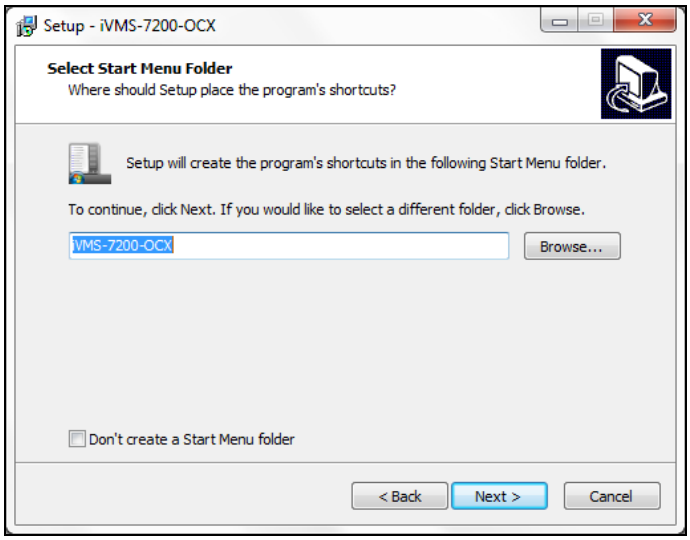


Figure 3. 23 Set Start Menu Folder for OCX Installation

5. Review the settings and click **Install** to start the installation.

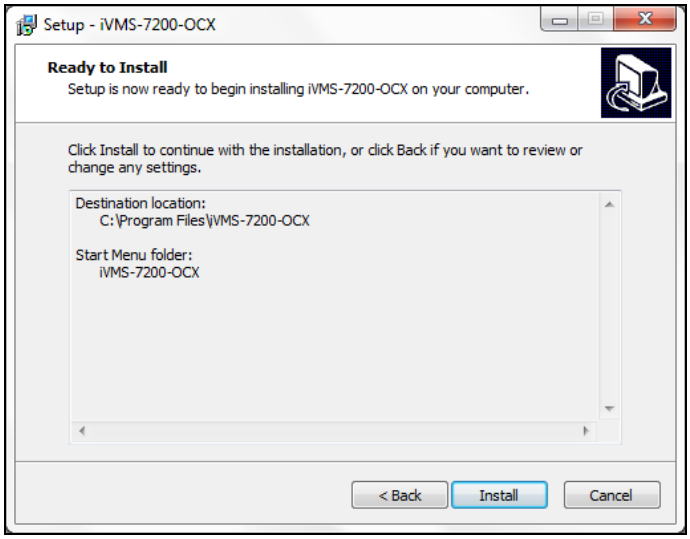


Figure 3. 24 Ready to Install

6. A panel indicating progress of the installation is displayed. A percentage completion bar is updated as the installation progresses.

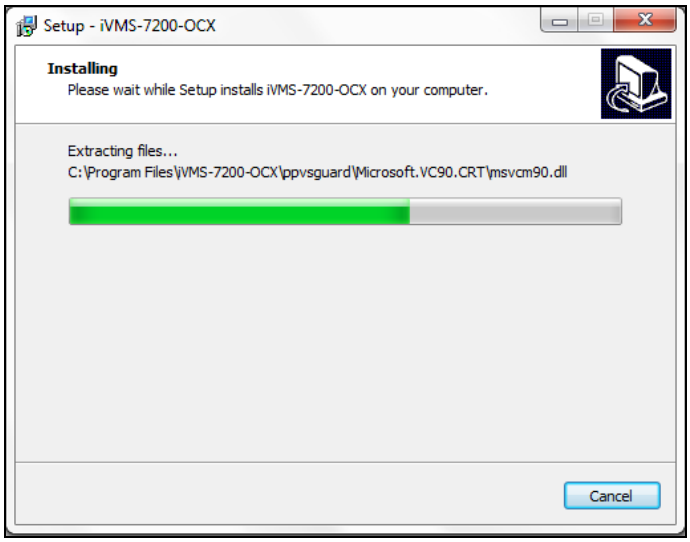


Figure 3. 25 View OCX Installation Progress

7. Read the post-install information and click **Finish** to complete the installation process.

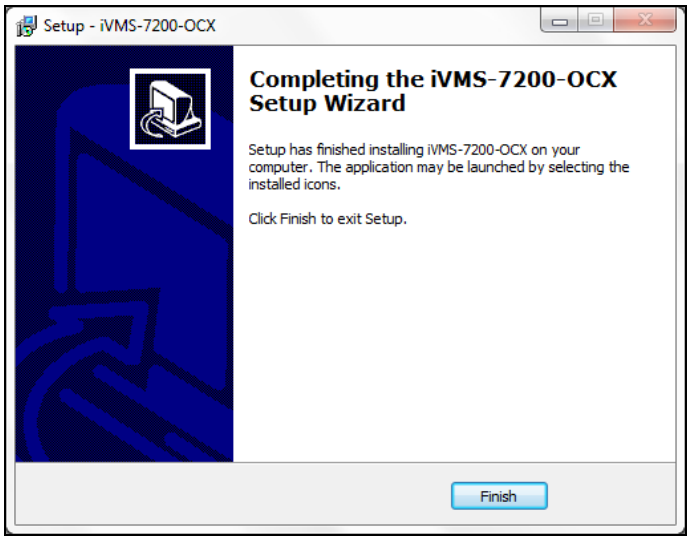


Figure 3. 26 Complete OCX Installation

3.2 Front-end Device Configuration

Purpose:

You can visit the front-end device via Telnet, and modify the registration parameters after inputting the user name and password.

NOTE

For Win7 operating system, it is required to enable the Telnet service in the Win 7 OS. For details, see *Appendix VI Enable Telnet Service in Win7.*

Steps:

1. Click "**Start**", input *cmd* in the text field, and hit the **Enter** key to bring up the command window.

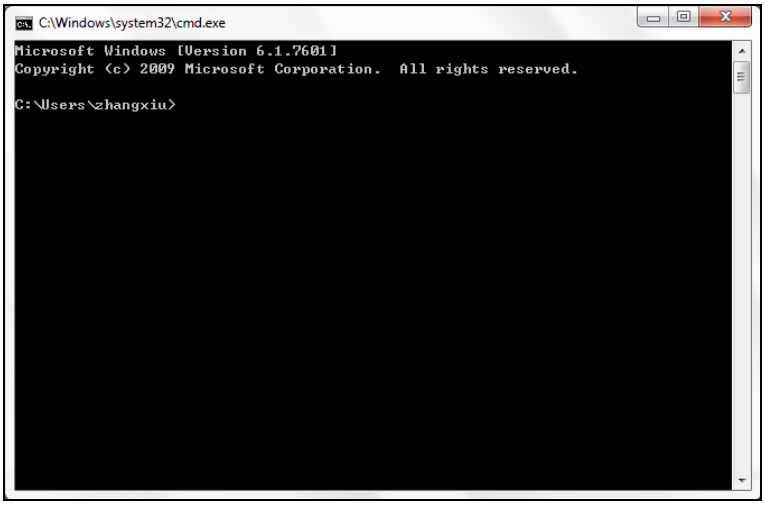


Figure 3. 27 Run

2. Input "Telnet XXX.XXX.XXX.XXX", and hit the **Ente**r key to go to the login interface

NOTE

- XXX.XXX.XXX.XXX refers to the device IP address. The default device IP address is 192.0.0.64
- We take 10.12.2.99 as the example in this section.

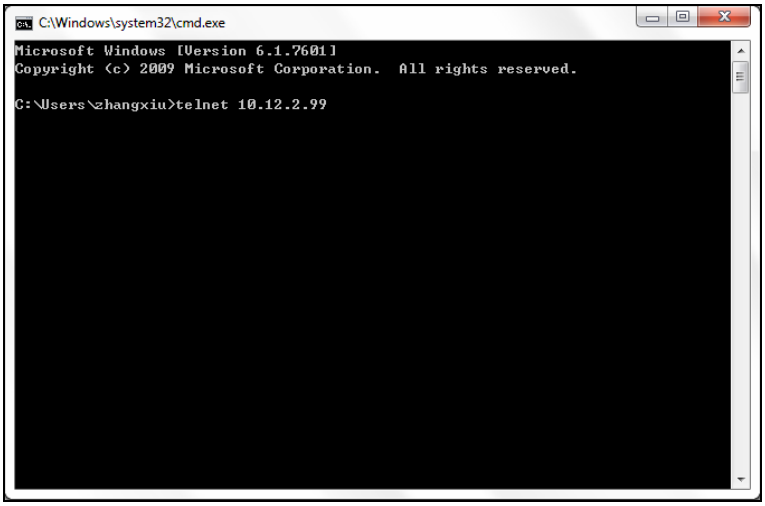


Figure 3. 28 Telnet IP

3. Input the device telnet username and password, and hit **Enter** key to go to the telnet operation interface.

NOTE

The input password remains blank when typing in.

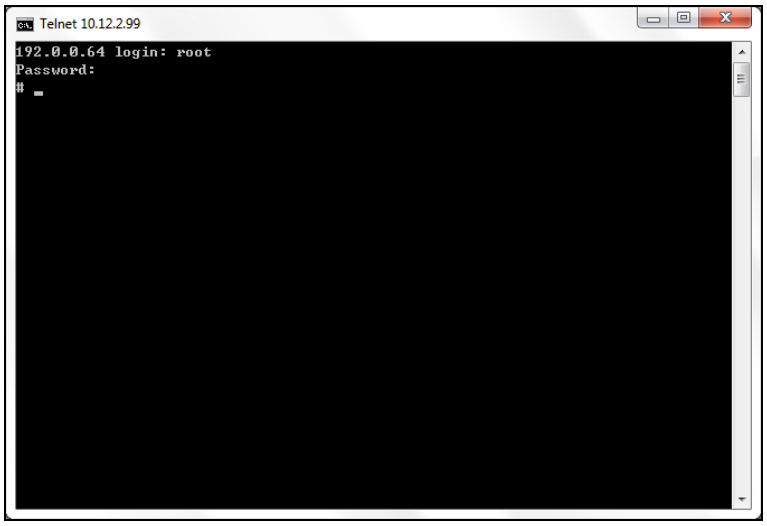


Figure 3. 29 Login

4. Configure the Device ID.

Type in "*setFrontId* X" in the command window. X refers to the device ID, and it is the ID you use on the client side when adding the device.

Here we take 12345 as the example.

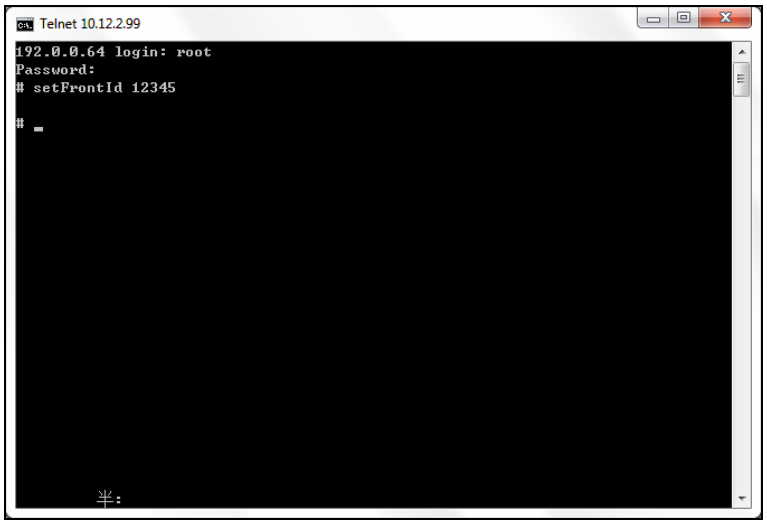


Figure 3. 30 Configure Device ID

5. Configure the IP address and the Port No. of the Register Server

Input "*setCMS XXX.XXX.XXX.XXX: N*" in the command window. XXX.XXX.XXX.XXX is the IP address of the register server, and the N refers to the port No..

Here we take IP address 10.12.5.13 and port No. 7660 as the example in this section.

NOTE

The port No. should be the same with the No. in <ListenPort>7660 in the configuration file of the register server, which is 7660 by default.

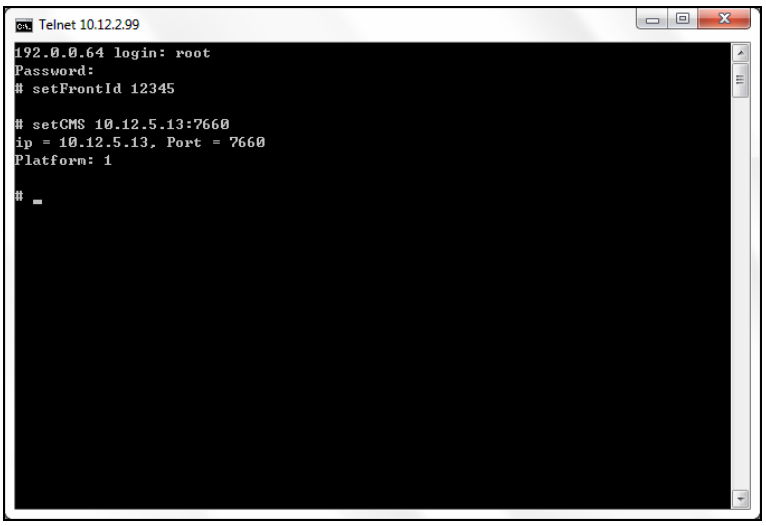


Figure 3. 31 Configure Register Server Settings

6. Enable iVMS Platform

   Input “setPlatform 1” in the command window to enable iVMS platform.

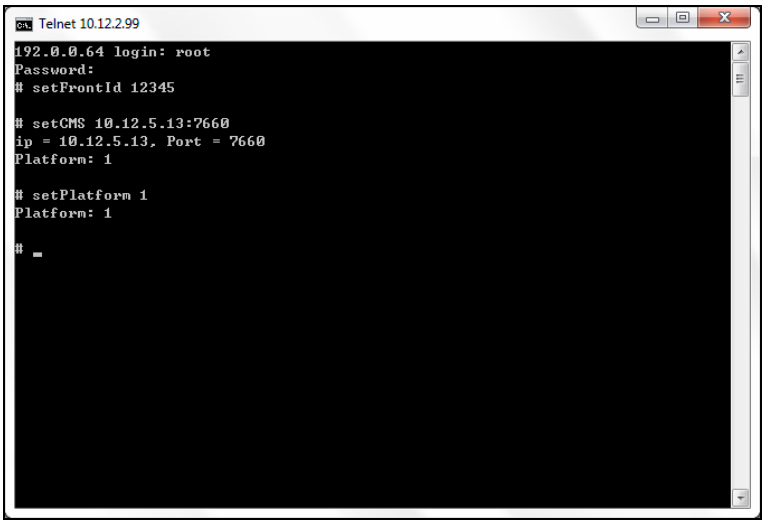


Figure 3. 32 Enable iVMS-7200 Platform

7. After the device is registered successfully, input “outputOpen” in the command window to receive the heartbeat information from the device.

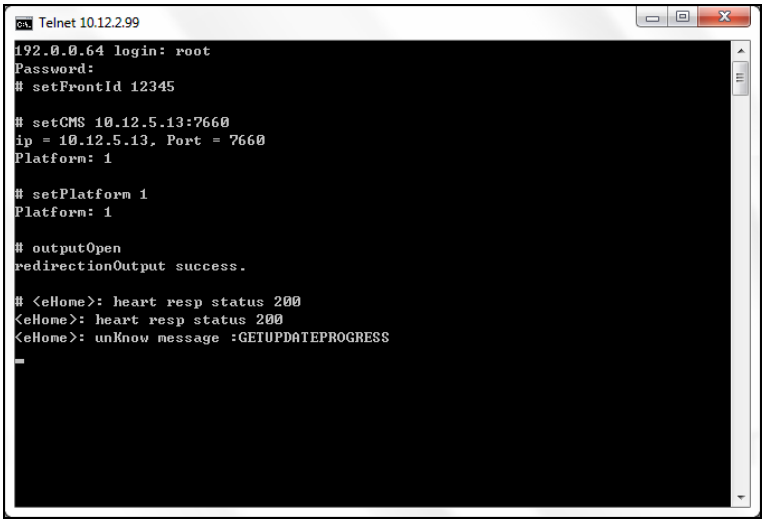


Figure 3. 33 View Heartbeat Information

3.3 License Replacement

Purpose:

Up to 3 devices (16 channels) can be added to the newly installed platform. To connect more devices, you are required to submit an application form to the license authorities (usually the headquarters) to apply for the authorized license and hardware dongle.

Steps:

1. Insert the provided hardware dongle into the USB interface of the server, to Install the hardware dongle.
2. On the server side, enter the installation directory of the platform …*IVMS-7200-Servers**PPVSServer*, and replace the old license.cyt file with the new one.
3. Reboot the register server (PPVS) to activate the new settings.
4. To verify whether the license is replaced properly:
   1) Log in to the platform via the IE web browser.
   2) Click Status > Server Status to enter the Server Status Search interface.
   3) Check the checkbox of PPVS, and click Search to view the register server (PPVS) status.
   4) Click **More** to view the details. You can view the current maximum connectable channels.

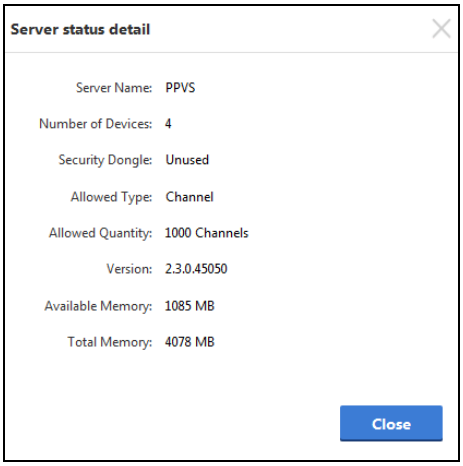


Figure 3. 34 Server Status Details

Chapter 4 Mobile Client Installation

Purpose:

Mobile client is supported for the iVMS-7200 platform. You can install the mobile client on your mobile phone and get access to the real-time video conveniently and efficiently.

Steps:

1. Enter the iVMS-7200 platform via the B/S client.
2. Go to the Download Center on the Home Page interface.
3. Select the mobile client you need, and click the corresponding icon  .
4. Select the local saving path for the software and save it on your PC.
5. Copy the software to your mobile phone.
6. Install the mobile client software according to the instructions.
7. You can log in to the iVMS-7200 platform via the mobile client after the installation.

- For iPhone user, go to App Store and download iVMS-5060 software for installation.
- There are some differences in the functionalities of C/S client and B/S client

Appendix I Compatible Front-end Devices

Device Name	Device Model
Mobile DVR	DS-8100HM(F)I-ST/XX
	DS-8104HMI-STM/XX
	DS-9000HMFI-ST/XX
	iDS-9000HMFI-N /XX
	DS-M5504HMI/XX
Mobile Enforcement System	DS-8600HMFI-TC/GW
PVR	DS-6101HLI-T
	DS-6102HLI
	DS-6102HLI-SE

Appendix II System Configuration Requirements

The requirements here are for reference only. The final system deployments should be adjusted according to the actual needs.

Front-end Device				
No.	Device Name	Type and Requirements	Quantity	Note
1	Mobile DVR			
2	Tandem Exchange	Gigabit Switch		
3	Access Exchange	100M Switch		
Hub Station				
No.	Device Name	Type and Requirements	Quantity	Note
1	Register Server	Processor: XEON 3440 2.53G Quad core 8M Motherboard:3420GPLC Memory:2*2GB DDR3 ECC Hard Drive:1*500G SATA Network Adapter:1000M		
2	Alarm Server	Processor: XEON 3440 2.53G Quad core 8M Motherboard:3420GPLC Memory:2*2GB DDR3 ECC Hard Drive:1*500G SATA Network Adapter:1000M		
3	Stream Media Server	Processor: XEON 3440 2.53G Quad core 8M Motherboard:3420GPLC Memory:2*2GB DDR3 ECC Hard Drive:1*500G SATA Network Adapter:1000M		
4	Web Server	Processor: XEON 3440 2.53G Quad core 8M Motherboard:3420GPLC Memory:2*2GB DDR3 ECC Hard Drive:1*500G SATA Network Adapter:1000M		
5	Operating System	Windows Server 2008 R2 Standard SP1		
6	Management Software	iVMS-7200		
7	Switch	Gigabit Switch		
8	Firewall	Hardware firmware (recommended)		
Monitoring Center				

No.	Device Name	Type and Requirements	Quantity	Note
1	Operating System	Windows 7		
2	IE Web Browser	IE8, IE9, IE10, IE11		

Appendix III System Network Requirements

The requirements here are for reference only. The final system deployments should be adjusted according to the actual needs.

Front-end Device								
No.	Device Name	CIF (512Kbps) channel number	4CIF (2Mbps) channel number	720P (4Mbps) channel number	1080P (8Mbps) channel number	Total Uplink Bandwidth (Mbps)	Total Downlink Bandwidth (Mbps)	Note
1	MDVR	4	0	0	0	2	2	
Switch port bandwidth: 100M switch								
Hub Station								
No.	Device Name	CIF (512Kbps) channel number	4CIF (2Mbps) channel number	720P (4Mbps) channel number	1080P (8Mbps) channel number	Total Uplink Bandwidth (Mbps)	Total Downlink Bandwidth (Mbps)	Note
1	Register Server					10	10	Statistic IP
2	Alarm Server					10	10	Statistic IP
3	Stream Media Server	4		0	0	2	2	Statistic IP
Switch port bandwidth: Gigabit switch								
Monitoring Center Clients								
No.	Device Name	CIF (512Kbps) channel number	4CIF (2Mbps) channel number	720P (4Mbps) channel number	1080P (8Mbps) channel number	Total Uplink Bandwidth (Mbps)	Total Downlink Bandwidth (Mbps)	Note
1	B/S Client	4	0	0	0	0.5	2	
2	Mobile Client					0.1	0.1	
Switch port bandwidth: 100M switch								

Appendix IV Server Loading Capacity

Register Server Performance Parameters	
Running Environment	Processor: I3 CPU 3.0GHz or above Memory: 4GB Gigabit network Windows Server 2008 R2 Standard SP1
Max. Access Devices	5000
Recommended Access Devices	No more than 3000
Alarm Server Performance Parameters	
Running Environment	Processor: I3 CPU 3.0GHz or above Memory: 4GB Gigabit network Windows Server 2008 R2 Standard SP1
Alarm / GPS Write Speed	20000 items / second
Storage Space of Every Million GPS Info Items	60MB
Storage Space of Every Million Alarm Info Items	60MB
Time for Search	2~5 seconds
Max. Access Devices	5000
Recommended Access Devices	No more than 3000
Stream Media Server Performance Parameters	
Running Environment	Processor: I3 CPU 3.0GHz or above Memory: 4GB Gigabit network Windows Server 2008 R2 Standard SP1
Forwarding Performance of 256Kbps Stream	Max.:900; Recommended: 600
Forwarding Performance of 512Kbps Stream	Max.:700; Recommended: 500
Forwarding Performance of 1048Kbps Stream	Max.:250; Recommended: 200

Appendix V Enable NTP Service in Windows 2008 Server

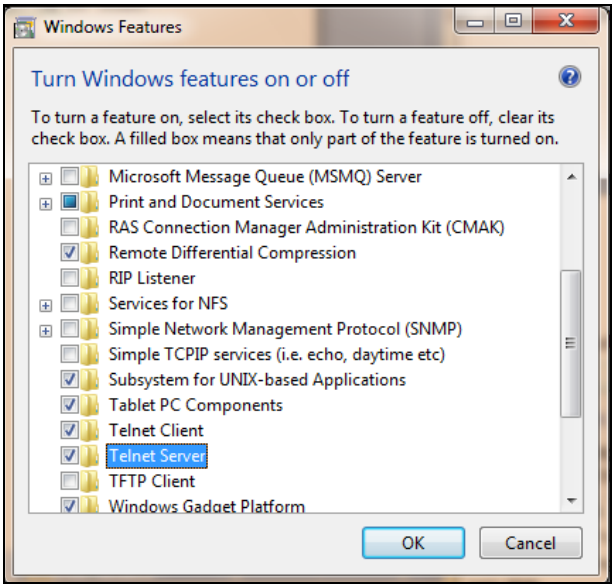
Steps:

1. Open **Start** menu then click **Run**, type in *regedit*, and then click **OK**.
2. Edit the value of AnnounceFlags.
   1) Find and click the following registry subkey:
      HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Config\AnnounceFlags
   2) In the right pane, right-click **AnnounceFlags**, and then click **Modify**.
   3) Type in 5 in the "Value data" of "Edit DWORD value" box.
   4) Click **OK** to save the settings.
3. Edit the value of Enabled.
   1) Find and click the following registry subkey:
      HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders\NtpServer
   2) In the right pane, right-click **Enabled**, and then click **Modify**.
   3) Type in 1 in the "Value data" of "Edit DWORD value" box.
   4) Click **OK** to save the settings.
4. Run the command of "net stop w32time && net start w32time" in the command box and restart the win32time service.

Appendix VI Enable Telnet Service in Win7

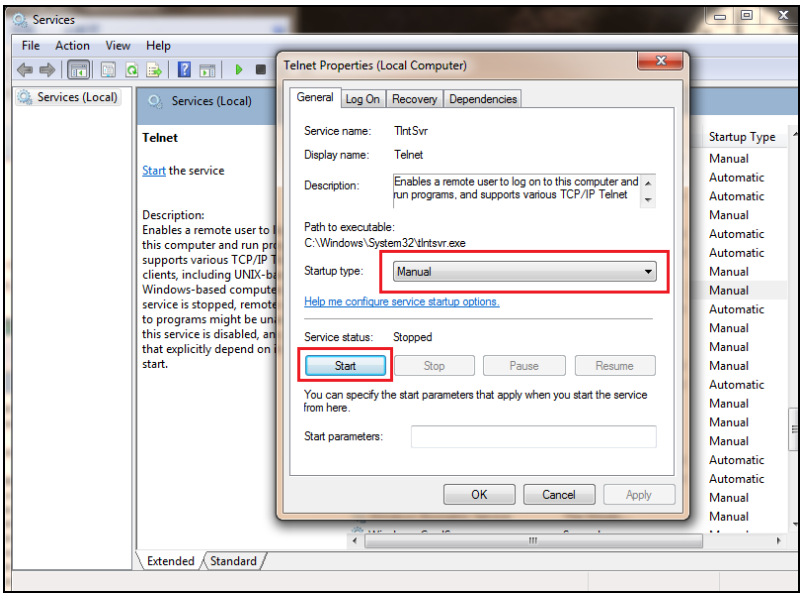
Steps:

1. Click **Start→Control Panel→Program**, open **Turn Windows features on or off** in **Program and Features**, check the checkboxes to enable the **Telnet Client** and **Telnet Server**, then click **OK** for completing installation.



2. Telnet service is disabled in default after installation.

   Click **Start**, and input *Servcies.msc* in the text field to search and open the services manager. Find and double-click the **Telnet** item, set “manual” as its startup type (more secure, only start when needed), click the **Start** button and then click the **OK** button to finish the settings.



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Appendix VII Uninstall iVMS-7200

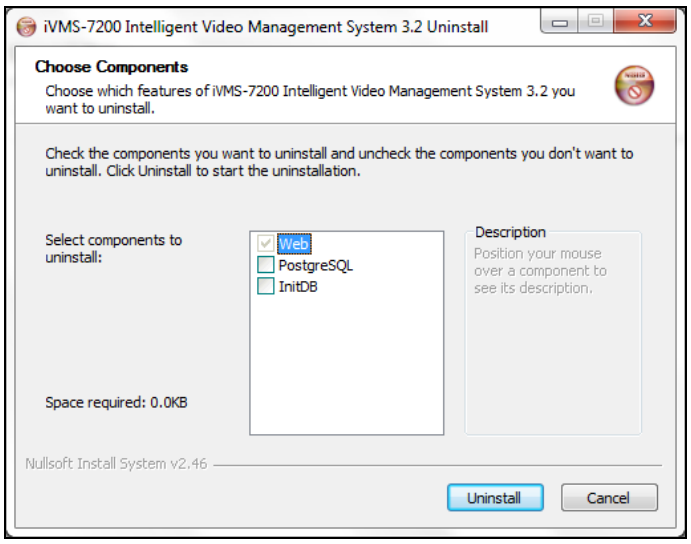
Uninstall Web

Steps:

1. Go to **Start** > **All Programs** > **iVMS-7200-Web**, and click **Uninstall**.
2. Select the components of uninstallation.

NOTE

It is recommended not to uninstall the PostgreSQL and Init DB unless, or you will lose all the data stored in the database.



Uninstall Servers

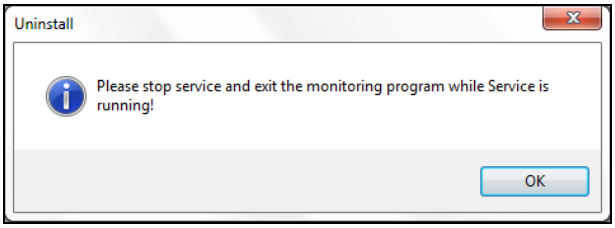
After the servers are installed, a shortcut  is created on the desktop.

Steps:

1. Double-click the icon  to enter the Watchdog interface. You can view the status of the servers.
2. Select the server which is running and click the Stop button.
   You can also click Stop All to stop running all the servers at one time.
3. Right-click the icon  on the taskbar and select Exit to quit the watchdog program.
4. Go to **Start** > **All Programs** > **iVMS-7200-Servers**, click **Uninstall iVMS-7200-Servers**, and then uninstall the servers according to the instructions.

Uninstallation Exception

If a message box pops up as follows, and the servers have been stopped on the Watchdog interface, you can open the task manager, and then end the server processes, including RSMServer.exe, PPVSServer.exe and AlarmServer.exe.



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