VioStor NVR

Network Video Recorder

User Manual (Version: 4.0.0)

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use-IP
www.use-ip.co.uk
01304 827609

Thank you for choosing QNAP products! This user manual provides detailed instructions of using the product. Please read carefully and start to enjoy the powerful functions of the product!

- The VioStor NVR is hereafter referred to as the VioStor or the NVR.
- This user manual provides the description of all the functions of the VioStor NVR. The product you purchased may not support certain functions dedicated to specific models.
- This user manual (version 4.0.0) is applicable for the VioStor NVR firmware version 4.0.0 only. If the VioStor NVR is running an older firmware version, please refer to the previous versions of the user manuals.

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CAUTION

1. Back up the system periodically to avoid any potential data loss. QNAP disclaims any responsibility of all sorts of data loss or recovery.
2. Should you return any components of the product package for refund or maintenance, make sure they are carefully packed for shipping. Any form of damages due to improper packaging will not be compensated.

Important Notice

- Reading instructions
  Please read the safety warnings and user manual carefully before using this product.
- Power supply
  This product can only be used with the power supply provided by the manufacturer.
- Service
  Please contact qualified technicians for any technical enquires. Do not repair this product by yourself to avoid any voltage danger and other risks caused by opening this product cover.
- Warning
  To avoid fire or electric shock, do not use this product in rain or humid environment. Do not place any objects on this product.

Regulatory Notice



FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Shielded interface cables, if any, must be used in order to comply with the emission limits.



CE NOTICE

Class B only.

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Safety Warning

1. This product can operate normally in the temperature of 0ºC–40ºC and relative humidity of 0%–90%. Please make sure the environment is well-ventilated.
2. The power cord and devices connected to this product must provide correct supply voltage.
3. Do not place this product in direct sunlight or near chemicals. Make sure the temperature and humidity of the environment are in optimized level.
4. Unplug the power cord and all connected cables before cleaning. Wipe this product with a wet towel. Do not use chemical or aerosol to clean this product.
5. Do not place any objects on this product for the server's normal operation and to avoid overheat.
6. Use the flat head screws in the product package to lock the hard disks in this product when installing hard disks for proper operation.
7. Do not place this product near any liquid.
8. Do not place this product on any uneven surface to avoid falling off and damage.
9. Make sure the voltage is correct in your location when using this product. If you are not sure about the voltage, please contact the distributor or the local power supply company.
10. Do not place any object on the power cord.
11. Do not attempt to repair this product in any occasions. Improper disassembly of the product may expose you to electric shock or other risks. For any enquiries, please contact the distributor.
12. The chassis models should only be installed in the server room and maintained by the authorized server manager or IT administrator. The server room is locked by key or keycard access and only certified staff is allowed to enter the server room.

Warning:

- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- Do NOT touch the fan inside the system to avoid serious injuries.

Chapter 1. Introduction

1.1 Overview

The QNAP VioStor NVR (hereafter referred to as the NVR or the VioStor) is the high performance network surveillance solution for network-based monitoring of IP cameras, video recording, playback, and remote data access. Up to 128 channels from multiple QNAP NVR servers can be monitored simultaneously. The NVR supports IP-based cameras and video servers from numerous brands, for more information please visit http://www.qnapsecurity.com/pro_compatibility_camera.asp.

The NVR supports video recording in H.264, MxPEG, MPEG-4, or MJPEG video compression. The NVR offers diversified display modes and recording features, e.g. scheduled recording, alarm recording, alarm recording schedule. The NVR also supports data search by date and time, timeline, event, and intelligent video analytics (IVA), including motion detection, missing object, foreign object, out of focus, and camera occlusion. All the functions can be configured by an IE web browser.

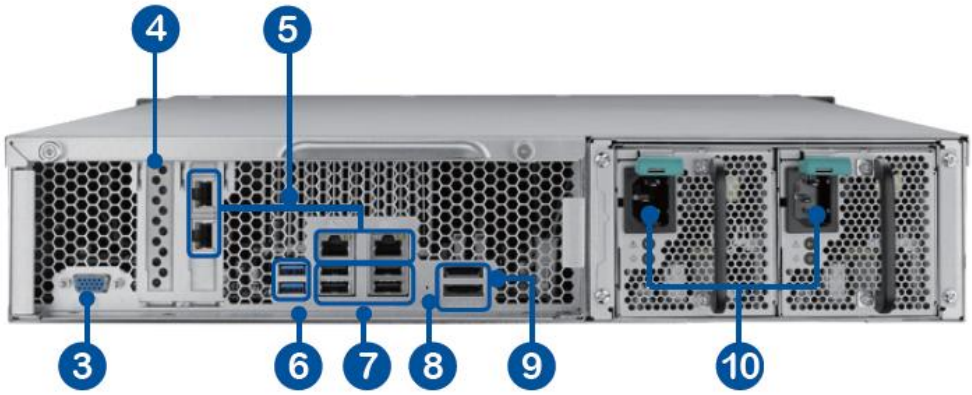
The VioStor Pro Series NVR is the world's first Linux-based NVR capable of truly PC-less quick configuration, monitoring of IP cameras on the network, and video playback via the VGA connector. The NVR can be operated by connecting to a high-definition (HD) VGA monitor or TV, and a USB mouse, USB keyboard (optional), and a USB sound card (optional).

* The MxPEG video compression feature is not supported by VS-2008L, VS-2004L VS-1004L.

1.2 Hardware Illustration

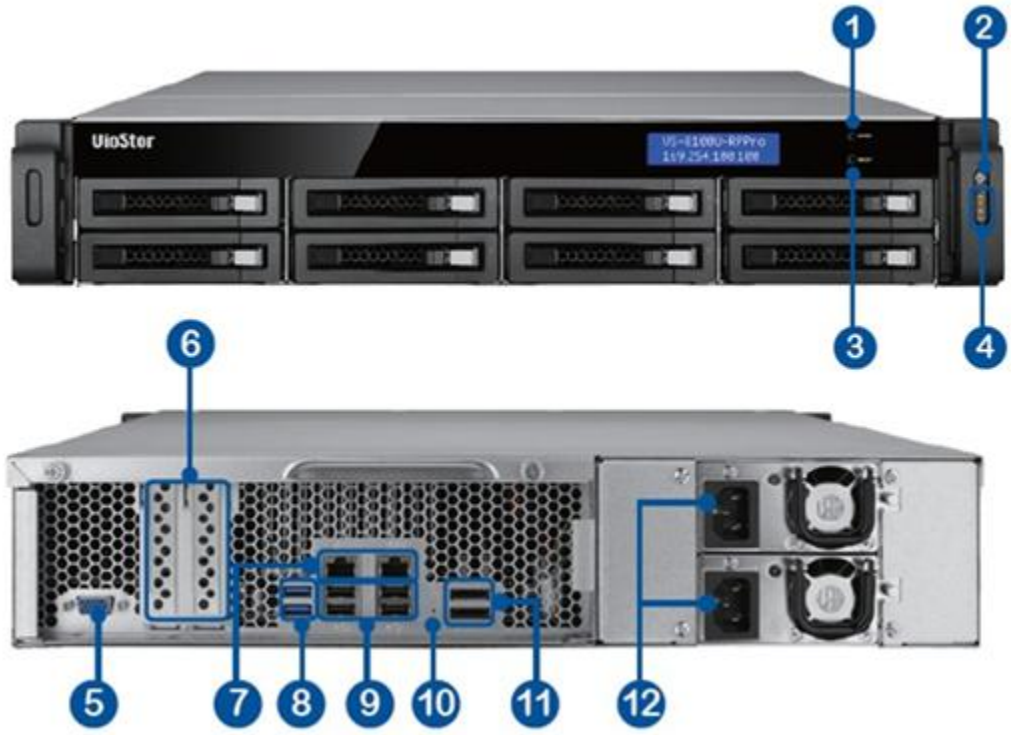
1.2.1 VS – 12164 / 12156 / 12148 / 12140 U-RP Pro





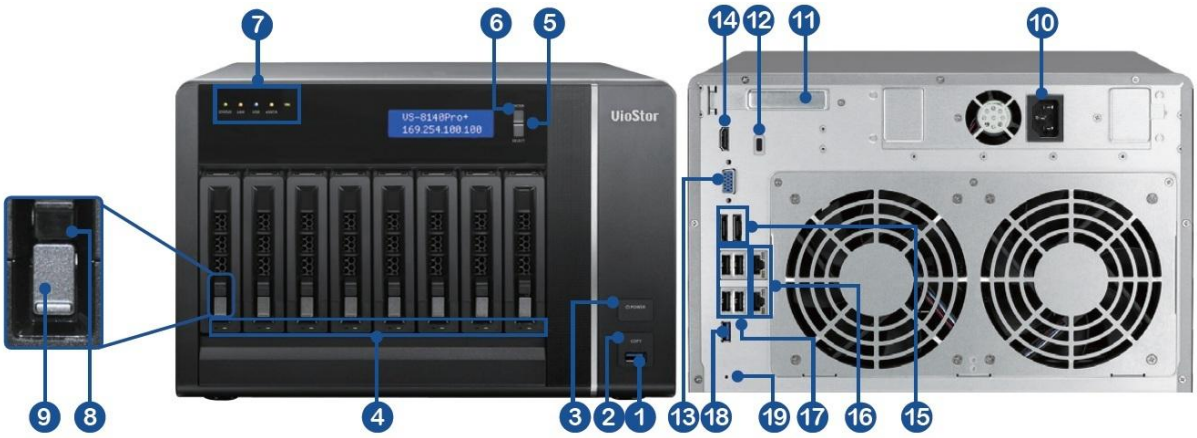
1. Power button
2. LED indicators: 10 GbE, Status, LAN, eSATA Select button
3. VGA
4. Expansion slot x 1 (reserved)
5. Gigabit LAN x 4
6. USB 3.0 x 2
7. USB 2.0 x 4
8. Password & network settings reset button
9. eSATA x 2 (reserved)
10. Power connector x 2

1.2.2 VS – 8148 / 8140 / 8132 / 8124 U-RP Pro



1. Enter button
2. Power button
3. Select button
4. LED indicators: 10 GbE, Status, LAN, eSATA
5. VGA
6. Expansion slot x 2 (reserved)
7. Gigabit LAN x 2
8. USB 3.0 x 2
9. USB 2.0 x 4
10. Password & network settings reset button
11. eSATA x 2 (reserved)
12. Power connector x 2

1.2.3 VS – 8148 / 8140 / 8132 / 8124 Pro+



1. USB 3.0
2. One-touch-auto-video-backup button
3. Power button
4. Hard drive LEDs
5. Select button
6. Enter button
7. LED indicators: Status, LAN, USB, eSATA, 10 GbE
8. Tray lock
9. Release button
10. Power connector
11. Expansion slot
12. Kensington security slot
13. VGA
14. HDMI
15. eSATA x 2 (reserved)
16. Gigabit LAN x 2
17. USB 2.0 x 4
18. USB 3.0
19. Password & network settings reset button

1.2.4 VS – 6120 / 6116 / 6112 Pro+



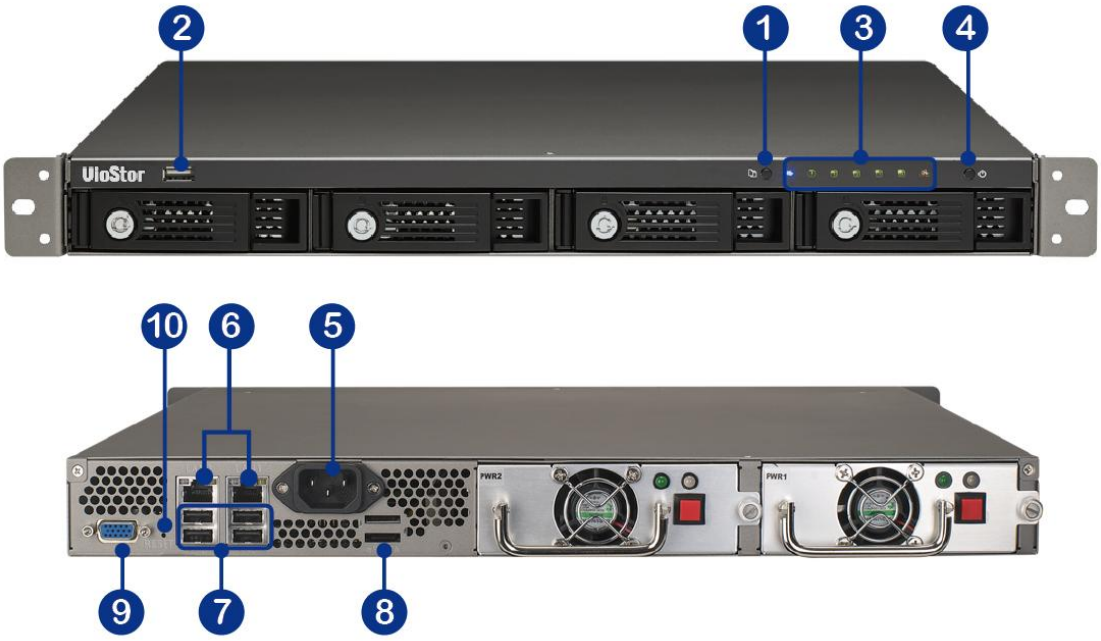
1. One-touch-auto-video-backup button
2. USB 2.0
3. LED indicators: Status, LAN, USB, Power, HDD1-6
4. Power button
5. Select button
6. Enter button
7. Power connector
8. K-Lock Security Slot
9. Gigabit LAN x 2
10. Audio In/Out (Reserved)
11. Password & Network Settings Reset Button
12. USB 3.0 x 2
13. USB 2.0 x 4

1.2.5 VS – 6020 / 6016 / 6012 Pro



1. One-touch-auto-video-backup button
2. USB 2.0
3. LED indicators: Status, LAN, USB, eSATA, HDD1–6
4. Power button
5. Select button
6. Enter button
7. Power connector
8. Gigabit LAN x 2
9. USB 2.0 x 4
10. eSATA x 2 (reserved)
11. VGA
12. Password & network settings reset button
13. Kensington security slot

1.2.6 VS – 4016 / 4012 / 4008 U-RP Pro



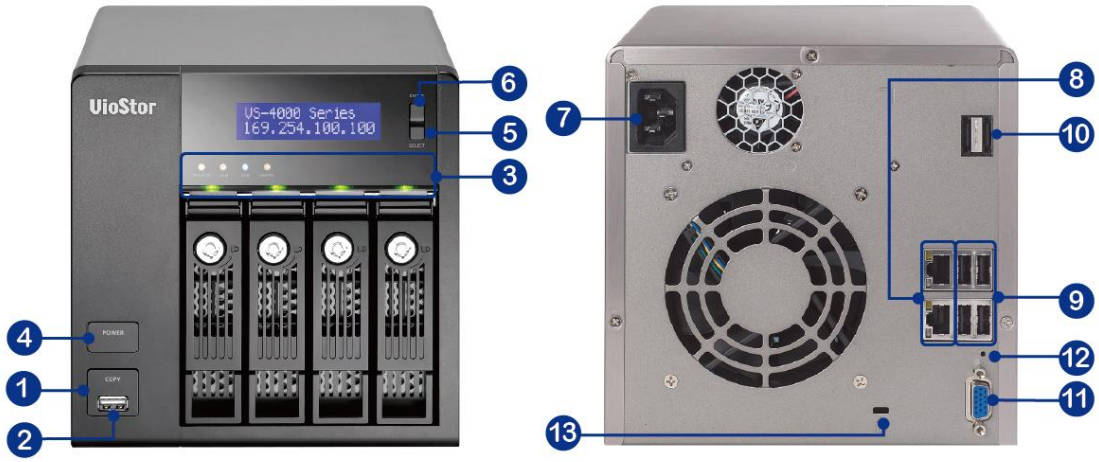
1. One-touch-auto-video-backup button
2. USB 2.0
3. LED indicators: Status, LAN, USB, eSATA, HDD1–4
4. Power button
5. Power connector
6. Gigabit LAN x 2
7. USB 2.0 x 4
8. eSATA x 2 (reserved)
9. VGA
10. Password & network settings reset button

1.2.7 VS – 4116 / 4112 / 4108 Pro+



1. One-touch-auto-video-backup button
2. USB 2.0
3. LED indicators: Status, LAN, USB, HDD1–4
4. Power button
5. Select button
6. Enter button
7. Power connector
8. K-Lock Security Slot
9. Gigabit LAN x 2
10. Audio In/Out (Reserved)
11. Password & network settings reset button
12. USB 3.0 x 2
13. USB 2.0 x 4

1.2.8 VS – 4016 / 4012 / 4008 Pro



1. One-touch-auto-video-backup button
2. USB 2.0
3. LED indicators: Status, LAN, USB, eSATA, HDD1–4
4. Power button
5. Select button
6. Enter button
7. Power connector
8. Gigabit LAN x 2
9. USB 2.0 x 4
10. eSATA x 2 (reserved)
11. VGA
12. Password & network settings reset button
13. Kensington security slot

1.2.9 VS – 2112 / 2108 / 2104 Pro+



1. One-touch-auto-video-backup button
2. USB 3.0
3. LED Indicators: LAN, HDD1, HDD2
4. Power Button
5. Power Connector
6. Gigabit LAN x 2
7. USB 2.0 x 4
8. Password & Network Settings Reset Button
9. K-Lock Security Slot
10. Audio In/Out

1.2.10 VS – 2012 / 2008 / 2004 Pro



1. One-touch-auto-video-backup button
2. USB 2.0
3. LED indicators: HDD1, HDD2, LAN, eSATA
4. Power button
5. Power connector
6. Gigabit LAN x 2
7. USB 2.0 x 2
8. eSATA x 2 (reserved)
9. VGA
10. Password & network settings reset button
11. Kensington security slot

1.2.11 VS – 2008 / 2004 L



1. One-touch-auto-video-backup button
2. USB 2.0
3. LED Indicators: USB, status, HDD1, HDD2, LAN, power
4. Power button
5. Power connector
6. Gigabit LAN
7. USB 2.0 x 2
8. Password & network settings reset button
9. K-Lock security slot
10. Power cord hook

1.2.12 VS – 1004 L



1. One-touch-auto-video-backup button
2. USB 2.0
3. LED Indicators: USB, status, HDD, eSATA, LAN, power
4. Power button
5. Power connector
6. Gigabit LAN
7. USB 2.0 x 2
8. Password & network settings reset button
9. K-Lock security slot
10. eSATA
11. Power cord hook

Note: This model is designed for some projects only.

Chapter 2. Install the NVR

For the information of hardware installation, see the 'Quick Installation Guide' (QIG) in the product package. The QIG can also be found in the product CD-ROM or QNAP website (http://www.qnapsecurity.com).

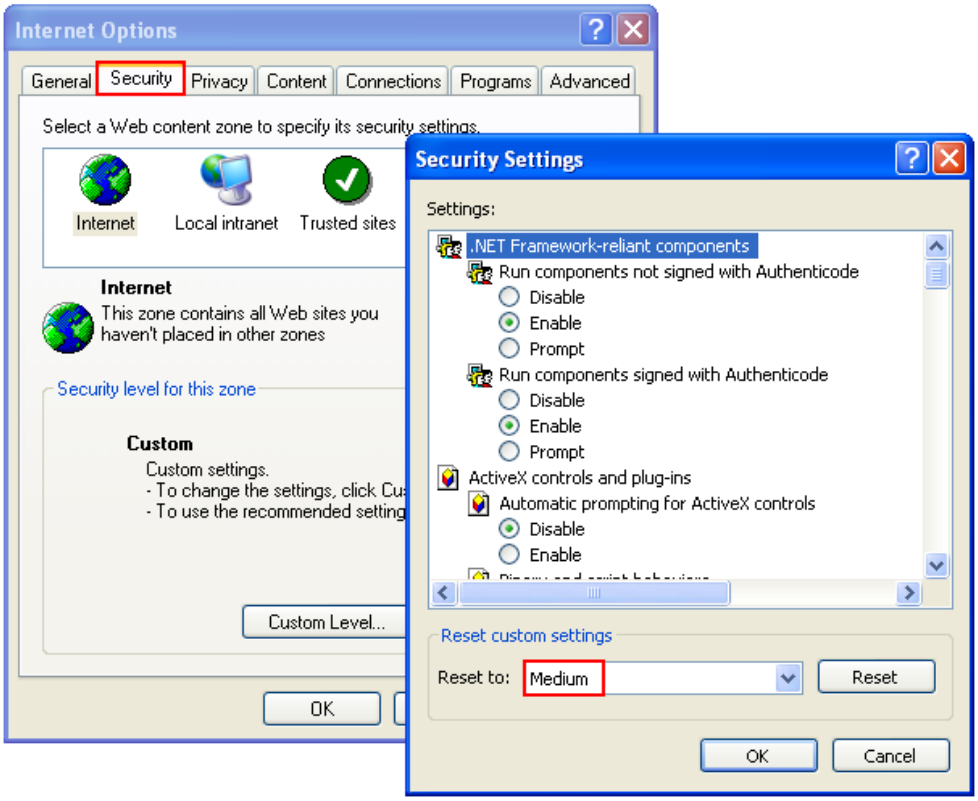
2.1 Personal Computer Requirements

For better system performance, the computer should at least fulfill the following requirements:

No. of Channels	Format	CPU	Others
4	M-JPEG	Intel Pentium 4 CPU, 2.4GHz or above	● Operation system: Microsoft Windows 8, 7, Vista ● Memory: 2GB or above ● Network port: 100Mbps Ethernet port or above ● Web browser: Microsoft Internet Explorer 8/9/10 (desktop mode, 32-bit), Google Chrome 23.0.1271.64 m, Mozilla Firefox 17.0.1 ● CD-ROM drive ● Recommended resolution: 1280 x 720 pixels or above
	MPEG-4/MxPEG/H.264	Dual core CPU, 2.0GHz or above	
8	M-JPEG	Intel Pentium 4 CPU, 2.8GHz or above	
	MPEG-4/MxPEG/H.264	Dual core CPU, 2.4GHz or above	
12	M-JPEG	Intel Pentium 4 CPU, 3.0GHz or above	
	MPEG-4/MxPEG/H.264	Dual core CPU, 2.8GHz or above	
16	M-JPEG	Dual core CPU, 2.4GHz or above	
	MPEG-4/MxPEG/H.264	Quad core CPU, 2.33GHz or above	
20	M-JPEG	Dual core CPU, 2.6GHz or above	
	MPEG-4/MxPEG/H.264	Quad core CPU, 2.6GHz or above	
40	M-JPEG	Quad core CPU 2.33GHz or above	
	MPEG-4/MxPEG/H.264	Core i7 CPU 2.8GHz or above	
48	M-JPEG	Quad core CPU 3.0GHz or above	
	MPEG-4/MxPEG/H.264	Core i7 CPU 3.4GHz or above	

Security Settings of the Web Browser

Please make sure the security level of the IE browser in Internet Options is set to Medium or lower.



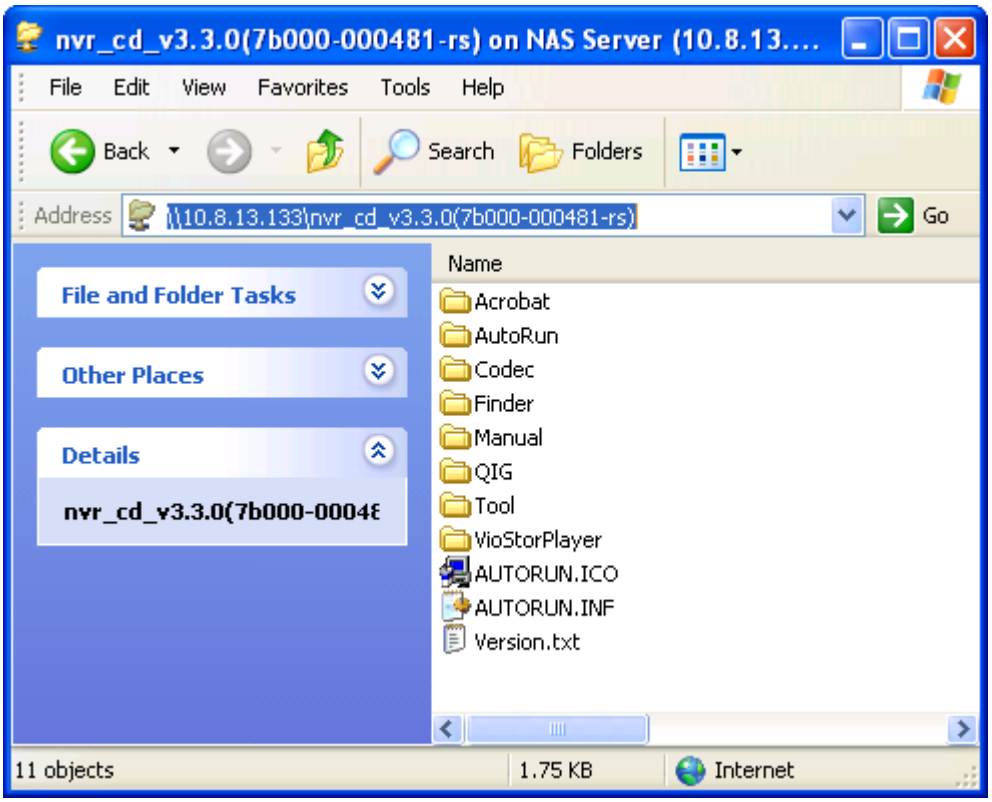
2.2 Browse CD-ROM

Run the product CD-ROM on a Windows PC to access the Quick Start Guide and user manual, and install codec and software utilities Finder and VioStor Player.



Browse the CD-ROM and access the following contents:

- Finder: The setup program of QNAP Finder. This tool is used to discover the NVR servers available on the local network and configure the network settings of the NVR.
- Manual: The user manuals of the NVR.
- QIG: View the hardware installation instructions of the NVR.
- Codec: The codec for playing AVI videos recorded by the NVR via Windows Media Player.
- Tool: This folder contains IPP library and monitor plugin. If you failed to install the ActiveX plugin when connecting to the monitoring page of the NVR by an IE browser, install the plugin from the CD-ROM.
- VioStorPlayer: The setup program of VioStor Player, a tool to play the videos recorded by the NVR. If you failed to install VioStor Player when connecting to the playback page of the NVR by an IE browser, install the plugin from the CD-ROM.



2.3 Hard Disk Drives Compatibility List

This product works with 2.5-inch and 3.5-inch SATA hard disk drives from popular hard disk brands. For the hard disk compatibility list, please visit http://www.qnapsecurity.com/pro_compatibility.asp



QNAP disclaims any responsibility for product damage/malfunction or data loss/recovery due to misuse or improper installation of hard disks in any occasions for any reasons.

2.4 IP Cameras Compatibility List

For the information of supported IP camera models, please visit http://www.qnapsecurity.com/pro_compatibility_camera.asp

2.5 Check System Status

LED Display & System Status Overview

LED	Color	LED Status	Description
System Status	Red/ Green	Flashes green and red alternately every 0.5 sec	1) A hard drive on the NVR is being formatted 2) The NVR is being initialized 3) The system firmware is being updated 4) RAID rebuilding is in process 5) Online RAID Capacity Expansion is in process 6) Online RAID Level Migration is in process
		Red	1) A hard drive is invalid 2) The disk volume has reached its full capacity 3) The disk volume is going to be full 4) The system fan is out of function 5) An error occurs when accessing (read/write) the disk data 6) A bad sector is detected on the hard drive 7) The NVR is in degraded read-only mode (2 member drives fail in a RAID 5 or RAID 6 configuration, the disk data can still be read) 8) (Hardware self-test error)
		Flashes red every 0.5 sec	The NVR is in degraded mode (one member drive fails in RAID 1, RAID 5 or RAID 6 configuration)
		Flashes green every 0.5 sec	1) The NVR is starting up 2) The NVR is not configured 3) A hard drive is not formatted
		Green	The NVR is ready
		Off	All the hard drives on the NVR are in standby mode
LAN	Orange	Orange	The NVR is connected to the network
		Flashes orange	The NVR is being accessed from the network
10 GbE*	Green	(Reserved)	
HDD (Hard Drive)	Red/ Green	Flashes red	The hard drive data is being accessed and a read/write error occurs during the process
		Red	A hard drive read/write error occurs

		Flashes green	The hard drive data is being accessed
		Green	The hard drive can be accessed
USB	Blue	Flashes blue every 0.5 sec	1) A USB device is detected 2) A USB device is being removed from the NVR 3) The USB device connected to the front USB port of the NVR is being accessed 4) The NVR data is being copied to the external USB device
		Blue	The USB device connected to the front USB port of the NVR is ready
		Off	1) No USB is detected 2) The NVR has finished copying the data to the USB device connected to the front USB port of the NVR
eSATA†	Orange	Flashes	The eSATA device is being accessed

*The 10 GbE network expansion function is reserved.

† The eSATA port is available on certain models only. Please refer to http://www.qnapsecurity.com for more information.

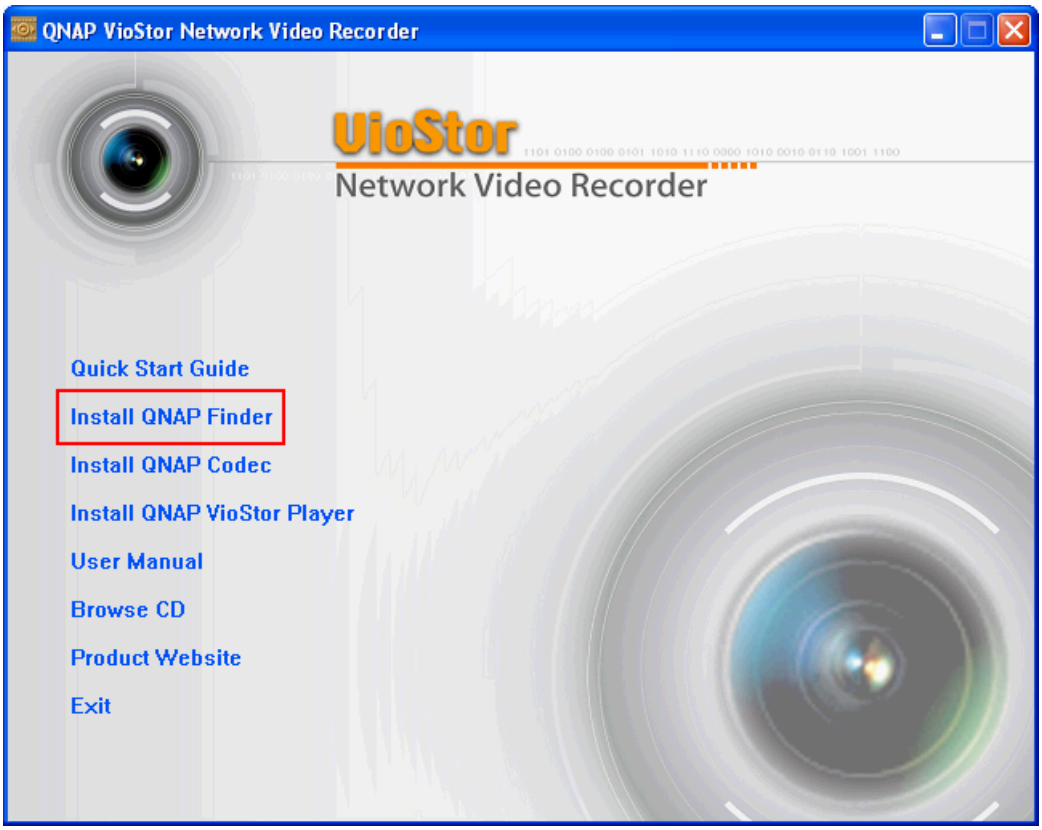
Beep Alarm (beep alarm can be disabled in 'System Tools' > 'Hardware Settings')

Beep sound	No. of Times	Description
Short beep (0.5 sec)	1	1) The NVR is starting up 2) The NVR is being shut down (software shutdown) 3) The reset button is pressed 4) The system firmware has been updated
Short beep (0.5 sec)	3	The NVR data cannot be copied to the external device by pressing the one-touch-auto-video-backup button.
Short beep (0.5 sec), long beep (1.5 sec)	3, every 5 min	The system fan is out of function
Long beep (1.5 sec)	2	1) The disk volume is going to be full 2) The disk volume has reached its full capacity 3) The hard drives on the NVR are in degraded mode 4) Hard disk rebuilding process starts
	1	1) The NVR is turned off by force shutdown (hardware shutdown) 2) The NVR has been turned on successfully and is ready

2.6 System Configuration

Install Finder

1. Run the product CD, the following menu is shown. Click 'Install Finder'.



2. Follow the instructions to install the Finder. Upon successful installation, run the Finder. If the Finder is blocked by the firewall, unblock it.

3. The Finder detects the NVR servers on the local network. If the server has not been initialized, you will be prompted to perform quick setup. Click 'Yes' to continue.

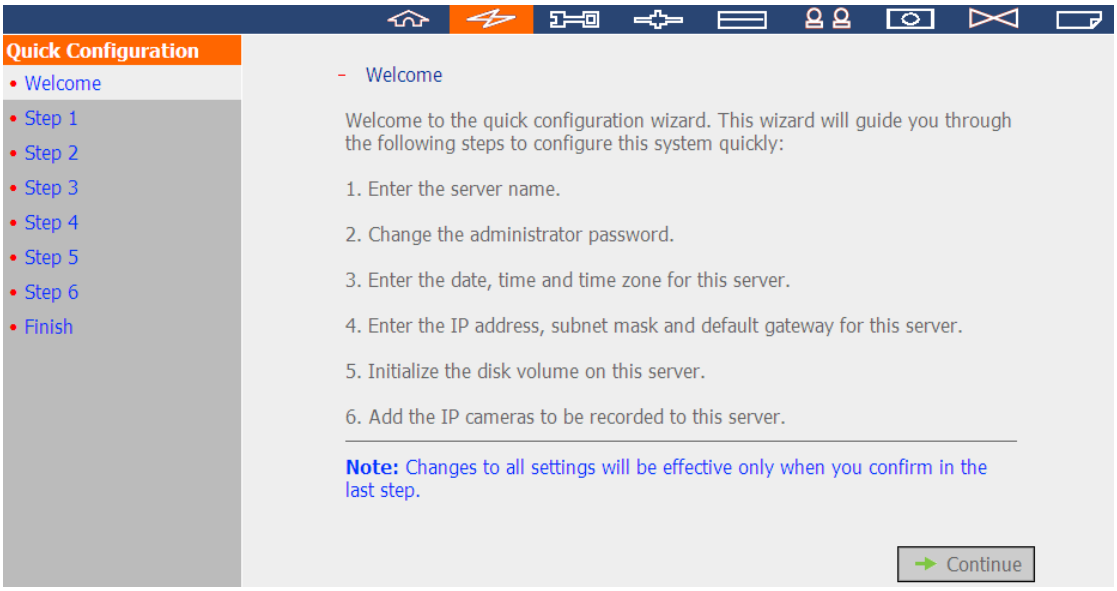
> **Note:** If the NVR is not found, click 'Refresh' to try again.

4. Enter the administrator name and password to perform quick setup. The default administrator name and password are as below:

Use name: **admin** Password: **admin**

Note: Make sure all the IP cameras are configured and connected to the network.

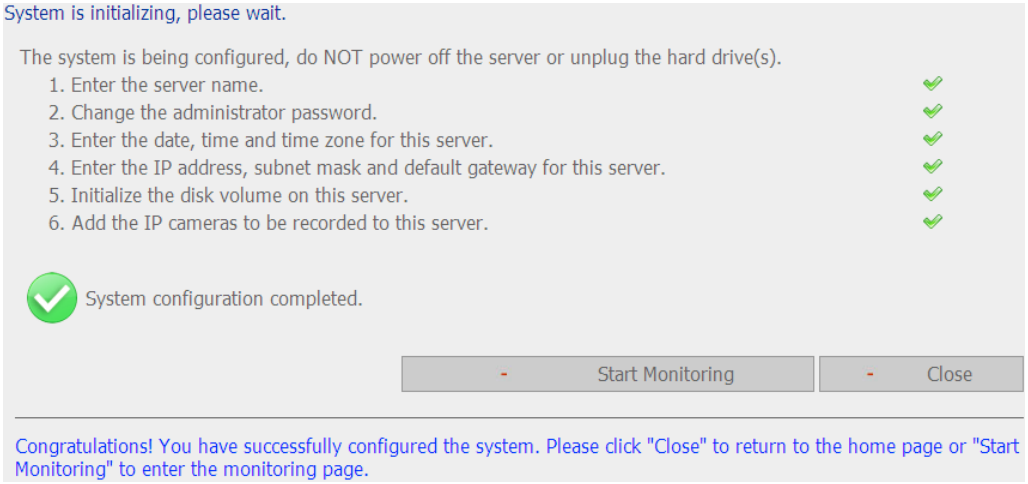
5. The quick configuration page will be shown. Click 'Continue' and follow the instructions to finish the configuration. For further information, please refer to Chapter 6.1.



6. Click ‘Start installation’ to execute the quick configuration.

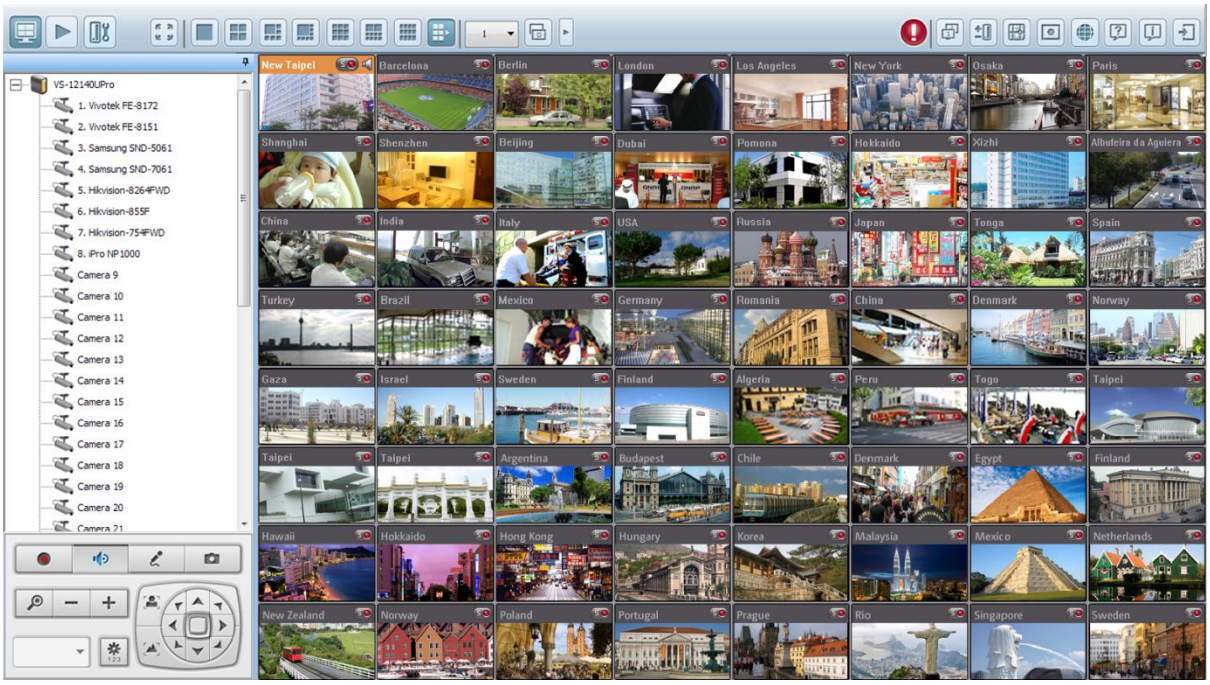


7. After the quick configuration, the NVR is ready for use. Click ‘Start Monitoring’ to view the live video from the IP cameras or click ‘Close’ to return to the home page of the system administration.



8. The first time to connect to the monitoring page of the NVR, install the ActiveX add-on.

   The live video from the IP cameras configured on the NVR and the recording status of each channel are shown.



Chapter 3. Use the NVR by Local Display

Note: This feature is supported by the VioStor Pro Series NVR only. The models include VS-12164U-RP Pro, VS-12156U-RP Pro, VS-12148U-RP Pro, VS-12140U-RP Pro, VS-8148U-RP Pro, VS-8140U-RP Pro, VS-8132U-RP Pro, VS-8124U-RP Pro, VS-8148 Pro+, VS-8140 Pro+, VS-8132 Pro+, VS-8124 Pro+, VS-6120 Pro+, VS-6116 Pro+, VS-6112 Pro+, VS-6020 Pro, VS-6016 Pro, VS-6012 Pro, VS-4016U-RP Pro, VS-4012U-RP Pro, VS-4008U-RP Pro, VS-4116 Pro+, VS-4112 Pro+, VS-4108 Pro+, VS-4016 Pro, VS-4012 Pro, VS-4008 Pro, VS-2112 Pro+, VS-2108 Pro+, VS-2104 Pro+, VS-2012 Pro, VS-2008 Pro, and VS-2004 Pro.

Connect a monitor or TV to the NVR via the HDMI or VGA interface to perform PC-less quick configuration, monitoring, and video playback. To use this feature, follow the steps below:

1. Make sure at least one hard drive has been installed on the NVR.
2. Connect the NVR to the network.
3. Make sure the IP cameras have been configured and connected to the network.
4. Connect an HDMI or a VGA monitor or TV (suggested video output resolution: 1920 x 1080)* to the HDMI or VGA interface of the NVR.
5. Connect a USB mouse and a USB keyboard (optional) to the USB ports of the NVR.
6. Turn on the NVR.

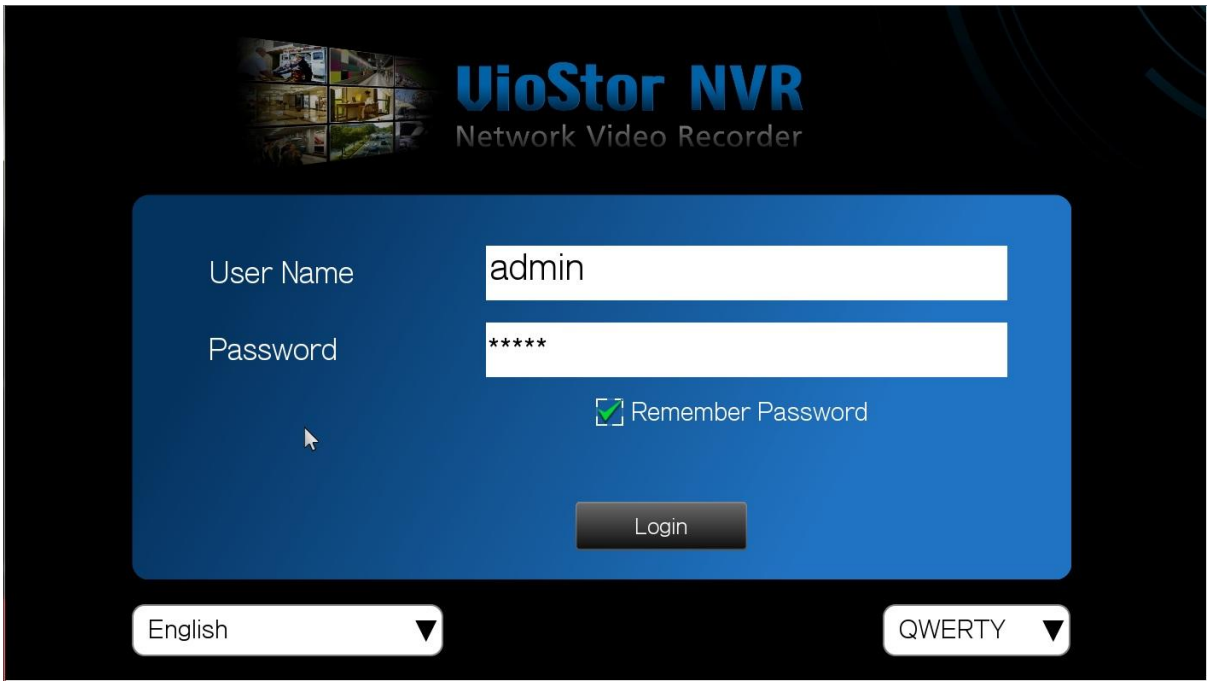
*Only VS-8100 Pro+ series support HDMI interface now.

**When doing monitoring or playback by the local display interface, the resolution width or height of the video stream must not exceed 2048.


VioStor NVR
Network Video Recorder
The system is starting up. Please wait...

When the NVR is turned on, the login screen will be shown. Select the language. Enter the administrator name and password. If the NVR has not been configured, skip the login page and enter Quick Configuration (refer to Chapter 3.1).

Default user name: admin Password: admin



Click English to select the display language. If a USB keyboard is connected, click QWERTY to choose the keyboard layout. Click the keyboard icon to enter the necessary information if a USB keyboard is not available.



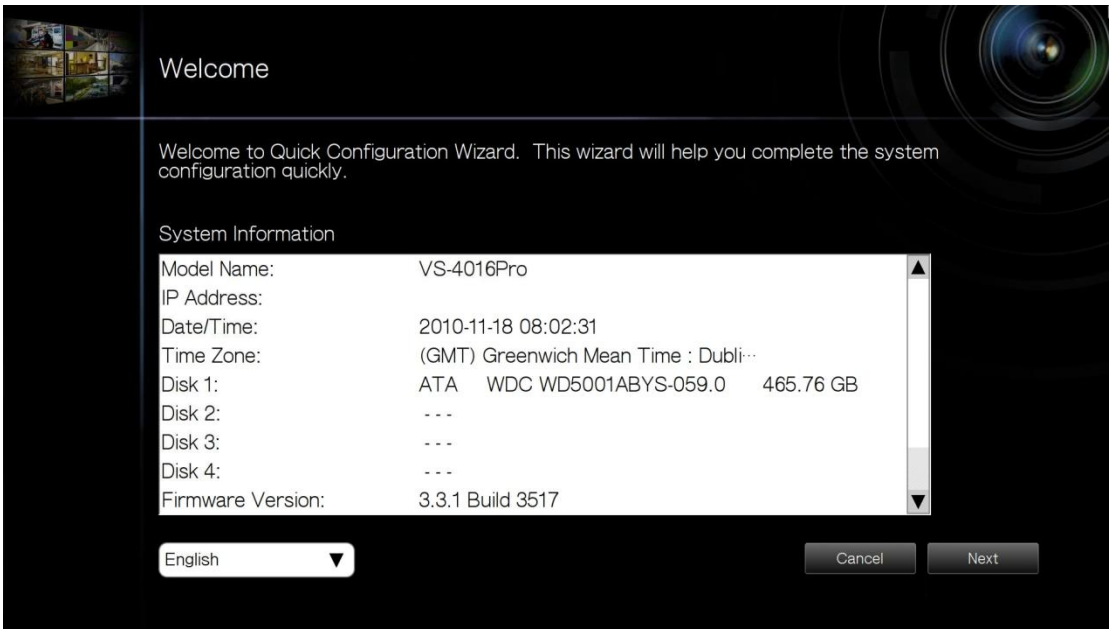
The monitoring page will be shown upon successful login, refer to Chapter 3.3 for details.

3.1 Quick Configuration

If the NVR has not been configured, Quick Configuration Wizard will be shown. Follow the instructions of the wizard to complete the system setup.

Note: All the changes will be effective only after applying the settings in the last step.

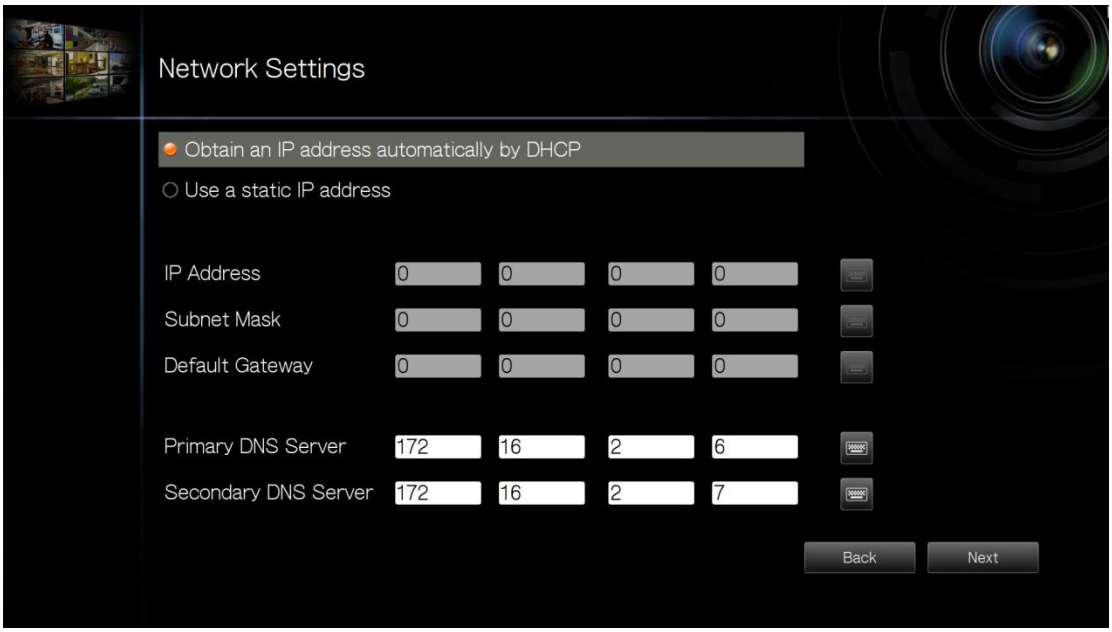
1. The system information will be shown. Select the language and click 'Next'.



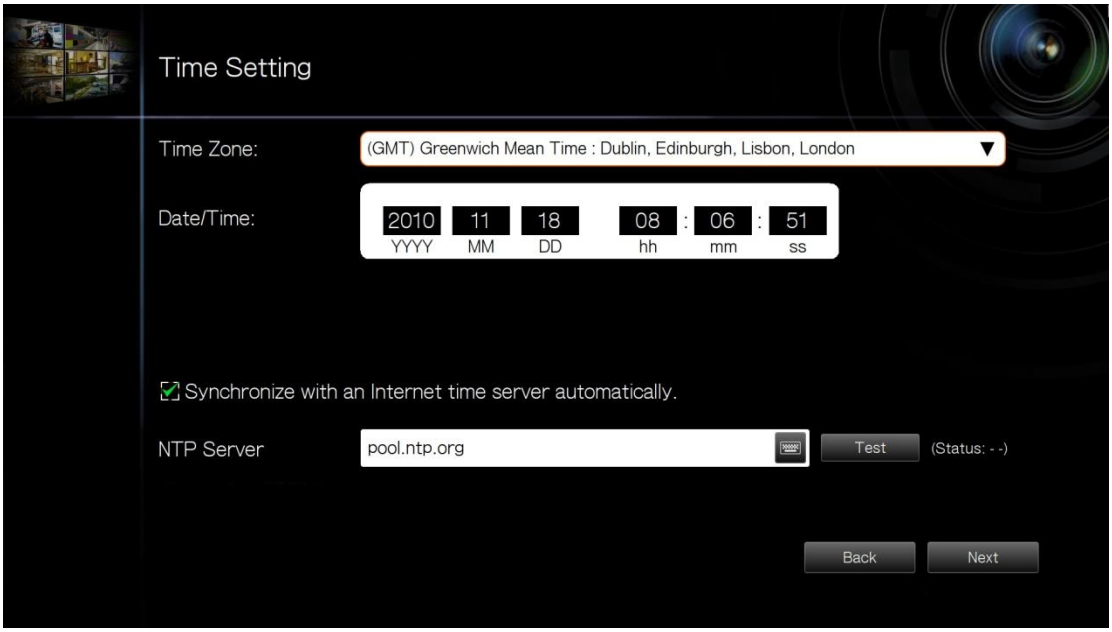
2. Change the admin password or use the default password (admin).



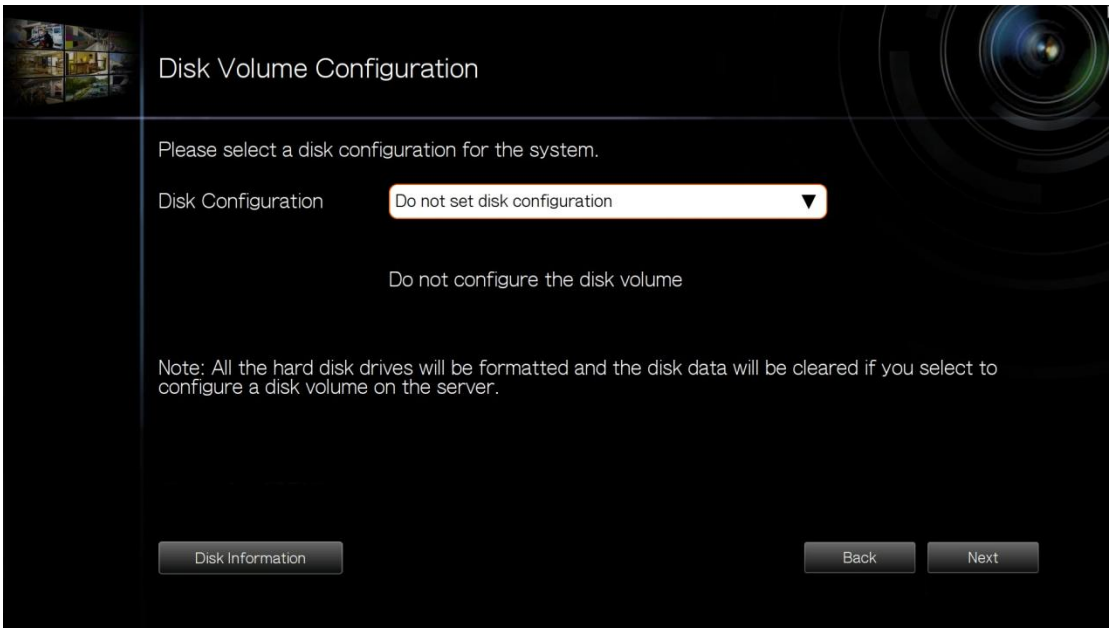
3. Select to obtain the network settings automatically or enter the network settings.



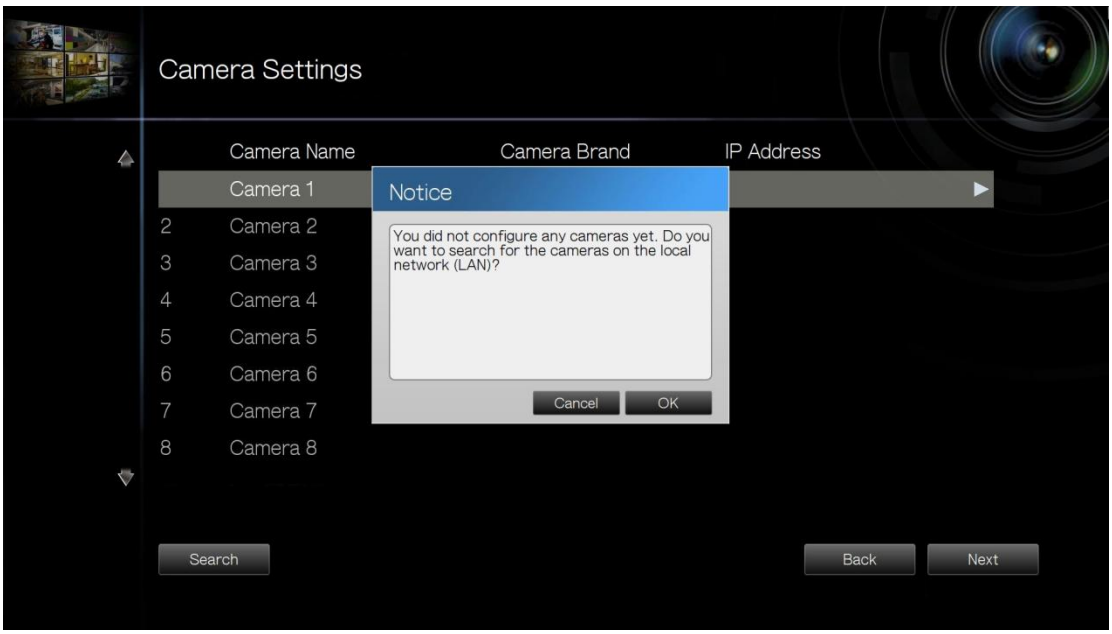
4. Enter the date and time settings. Select to synchronize the server time with an Internet time server. To enter a domain name for the NTP server, make sure the DNS server has been correctly set up.



5. Select the disk configuration. Click 'Disk Information' to view the hard disk drive details. Note that all the disk data will be deleted when the disk volume is initialized.



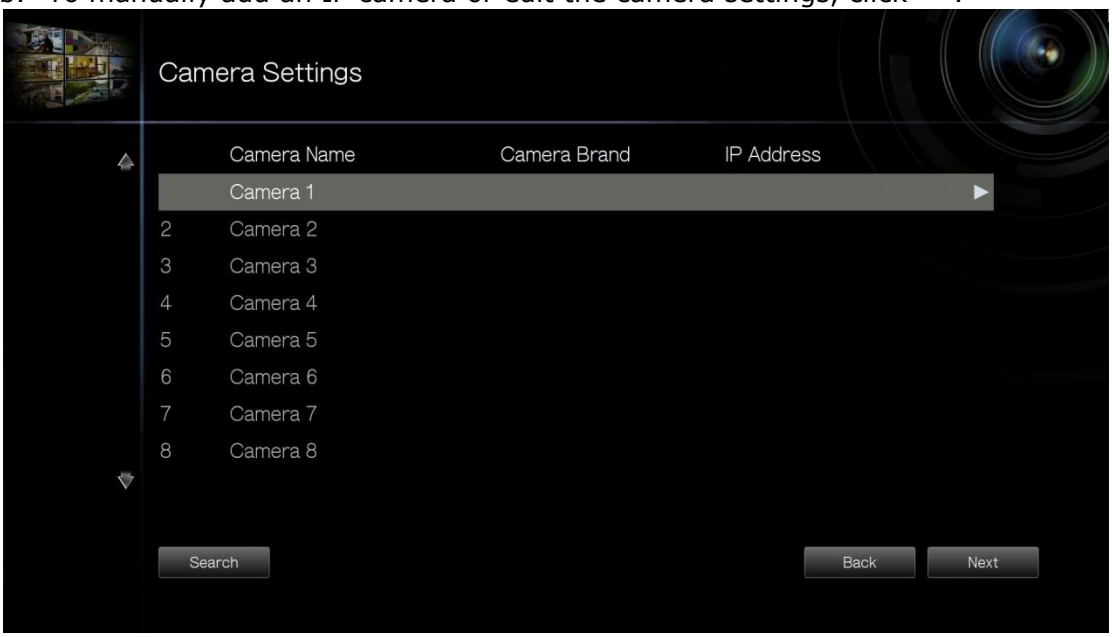
6. Configure the IP camera settings. If no IP cameras have been set, try to search for the cameras on the local network.



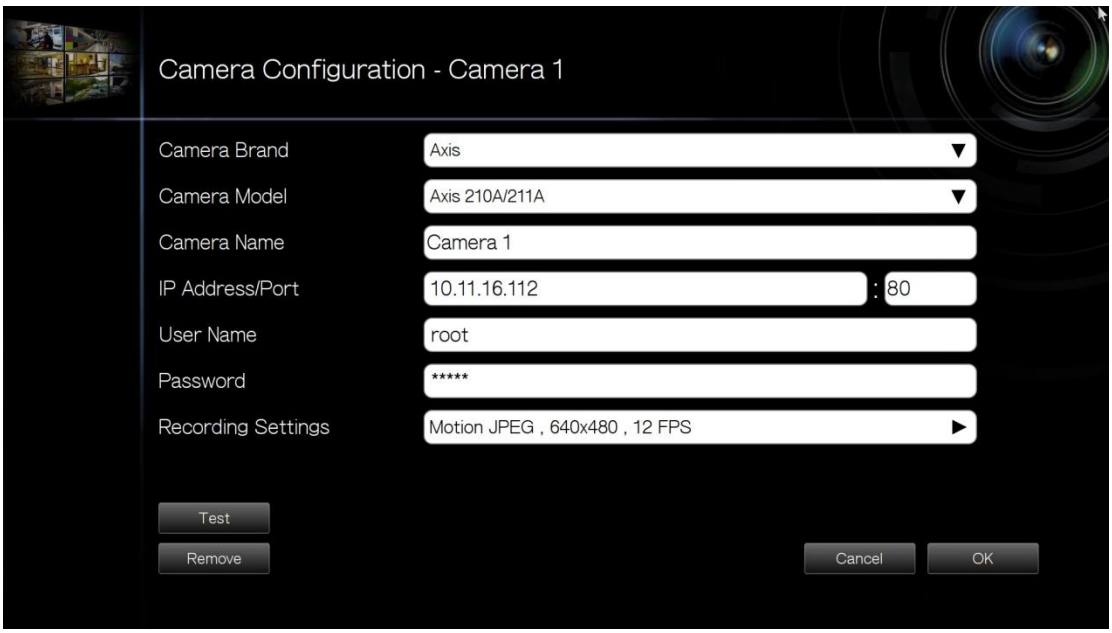
a. The cameras found will be shown. Select the IP cameras and click 'Add' to add the channels.



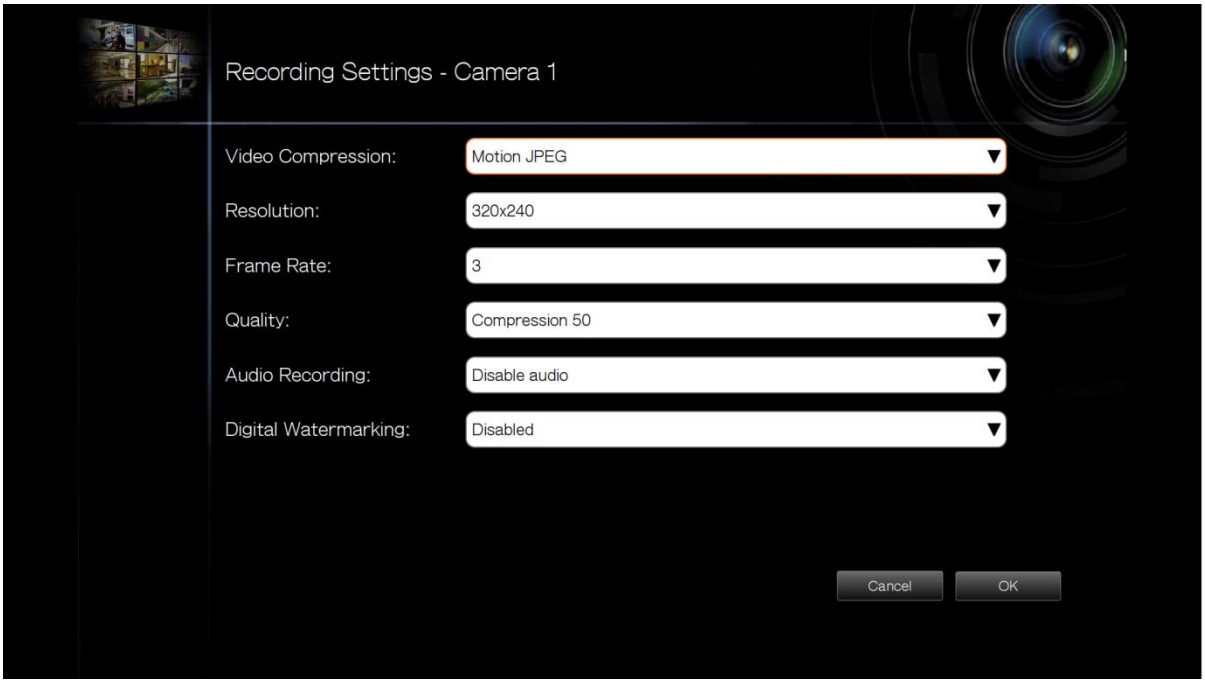
b. To manually add an IP camera or edit the camera settings, click ▶.



c. Enter the camera settings. Click 'Test' to test the connection. Click 'Remove' to delete the camera.

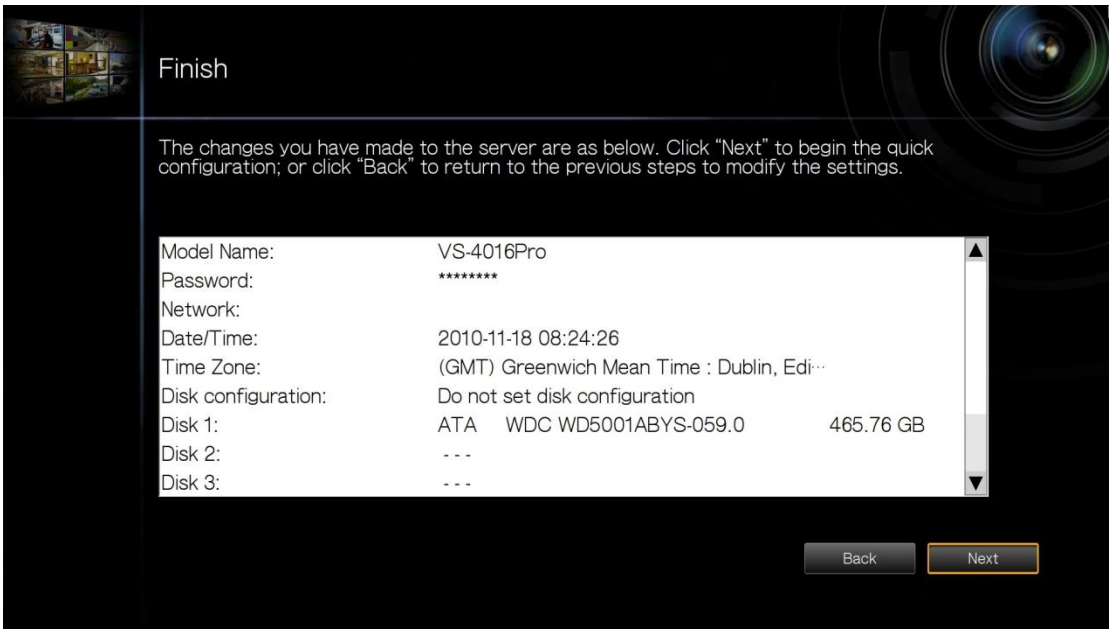


d. To edit the recording settings, click ▶ next to 'Recording Settings'. Define the recording settings and click 'OK'.

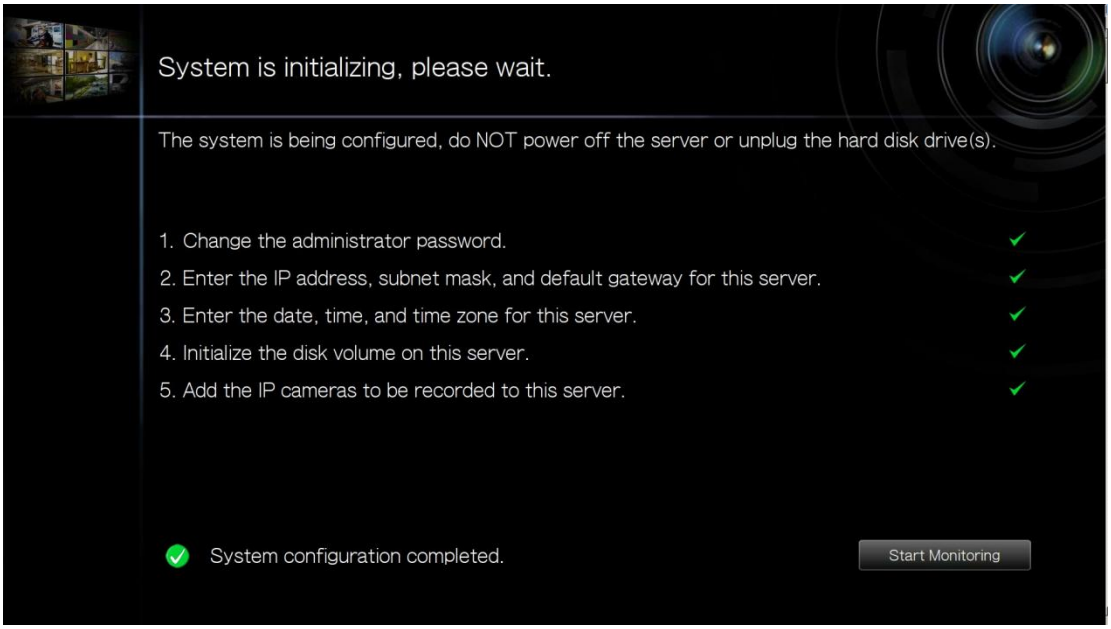


Digital Watermarking: Enable this option to add digital watermarks to the video files recorded to the NVR. Use the Watermark Proof utility to verify if the video files were maliciously modified. For more information, refer to Chapter 5.3.

7. Verify the settings and click 'Next' to initialize the server.

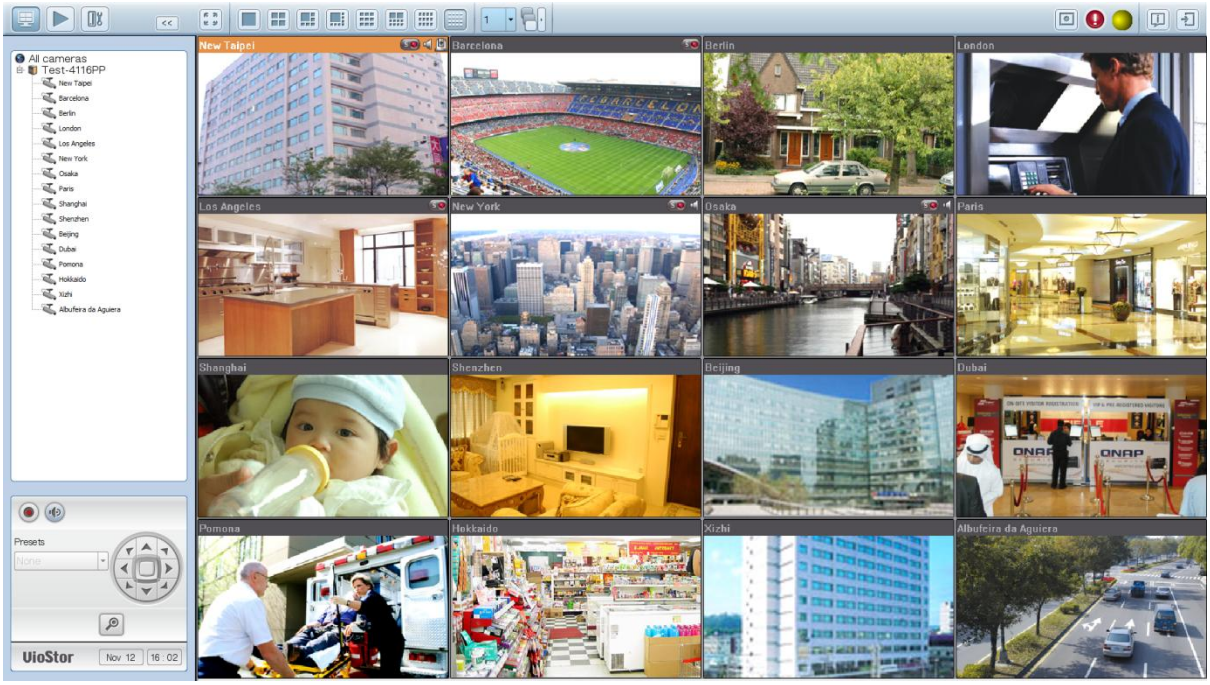


8. After the system has been initialized, the NVR is ready for use. Click 'Start Monitoring' to enter the monitoring screen.

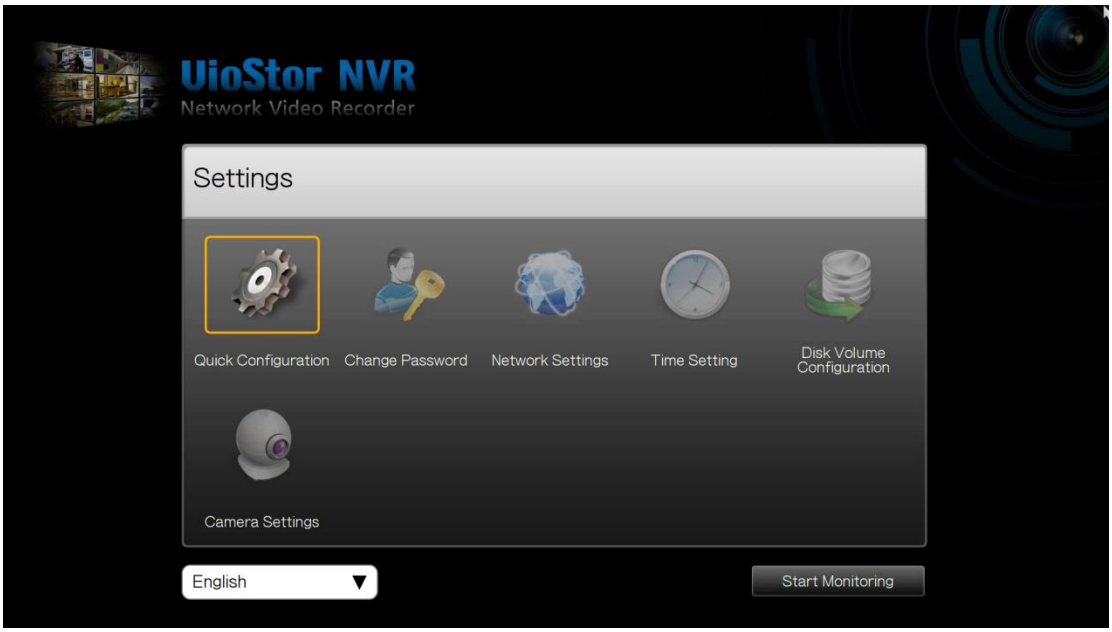


3.2 System Configuration

To manage the system settings such as administrator password, network and time settings, click  on the monitoring screen. Note that this button (option) will be shown for administrator access only.



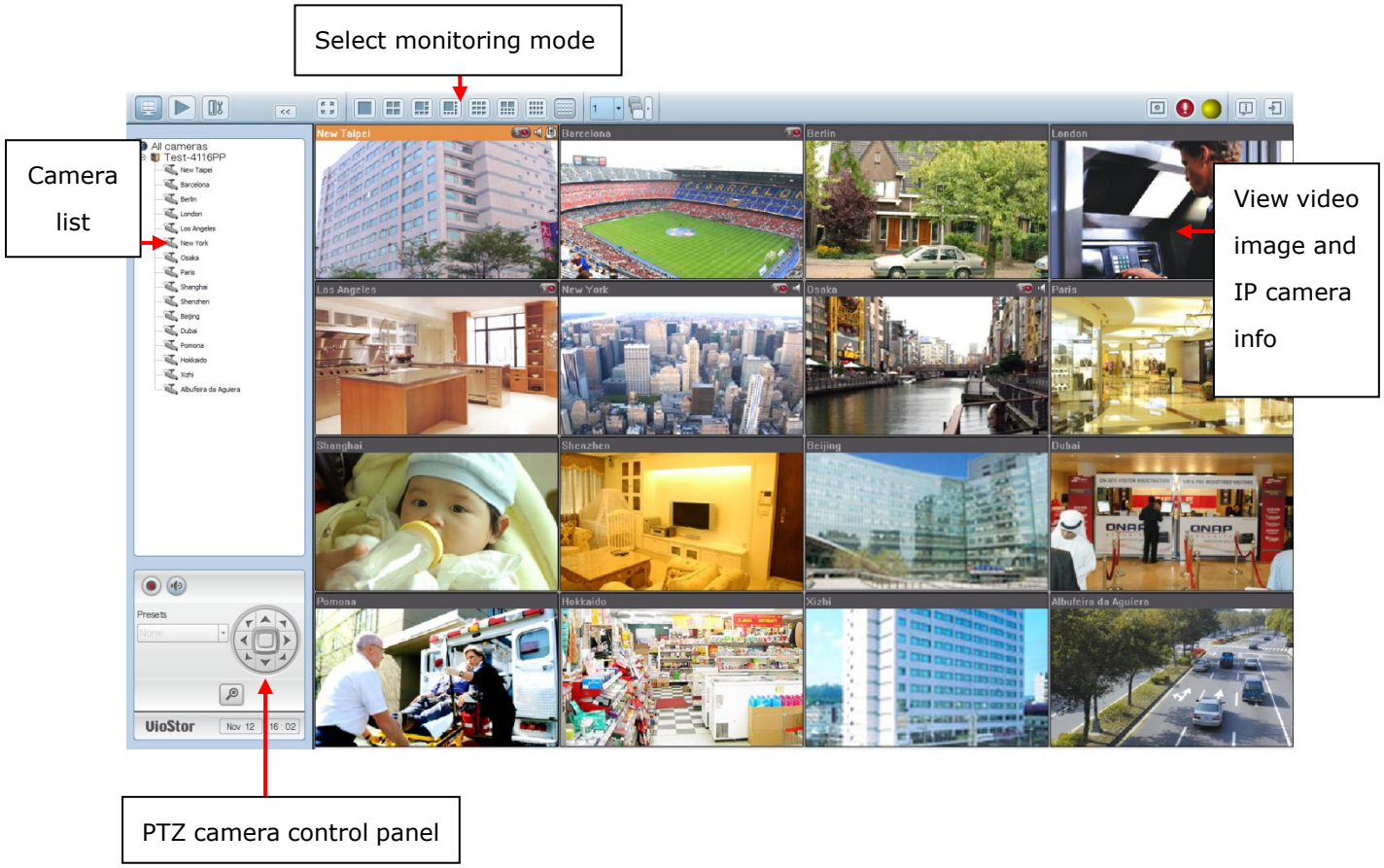
Select the language and click the icons to configure the settings.



Icon	Description
	Perform quick configuration of the system.
	Change the administrator password to login local display.
	Change the network settings.
	Change the date and time settings.
	Configure the disk volume and initialize the hard disks.
	Configure the IP camera settings.

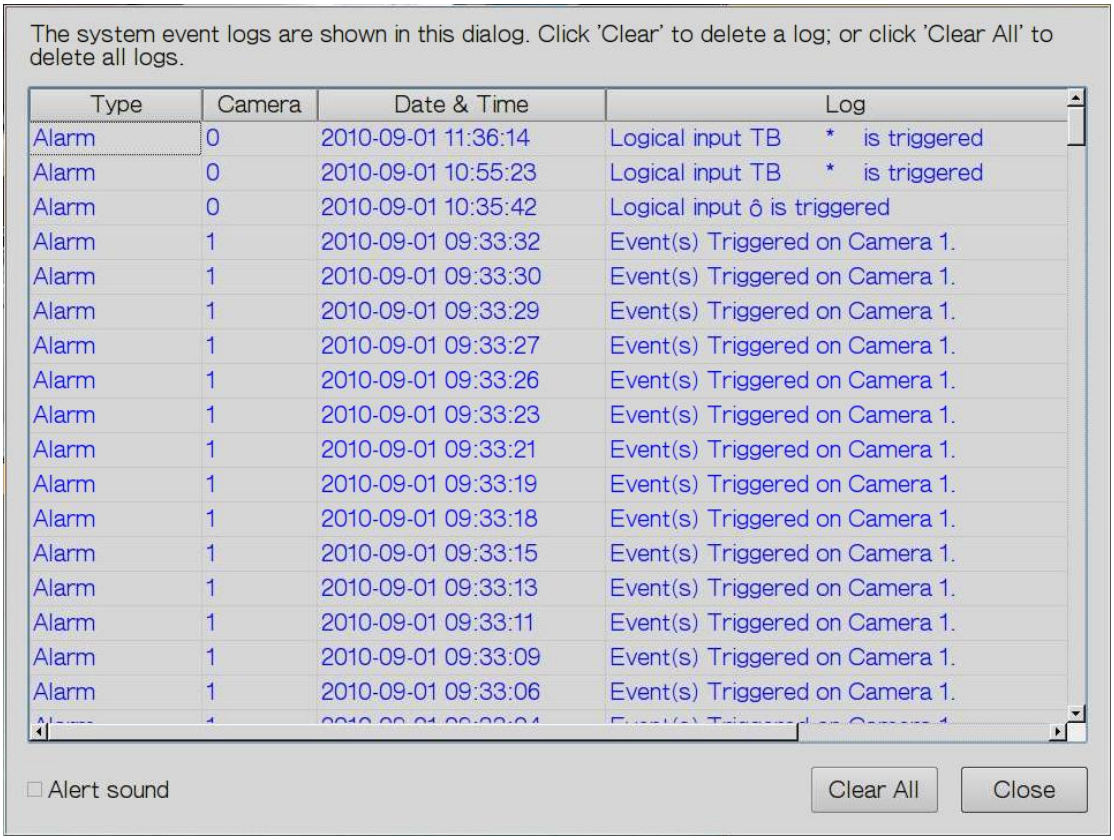
3.3 Monitoring

Upon successful login, the monitoring screen will be shown. Monitor the IP cameras, change the display mode, enable or disable manual recording, control the PTZ cameras, and so on.



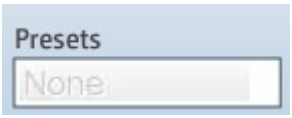
Icon	Description
	Monitor: Enter the monitoring page.
	Playback: Enter the playback page.
	Configuration: Enter the system configuration page; allows admin access only.
	Hide left panel: Hide the panel on the left of the monitoring page.
	Show left panel: Show the panel on the left of the monitoring page.
	Options: Configure the event notification settings, video window display settings, screen resolution, etc.
	About: View the server name, NVR model, and firmware version.
	Logout: Logout the NVR.
	Manual recording: Enable or disable recording on the IP camera. The administrator can select to enable or disable this function in 'Camera Settings' > 'Recording Settings' on the web-based administration interface.
	Audio (optional): Turn on or off the audio support for the monitoring page.

	**Event notification:** When the alarm recording is enabled and an event is detected, this icon will be shown. Click this icon to view the alert details. The alert sound can be turned on or off. To clear all the logs, click 'Clear All'.



PTZ Control Panel

The term 'PTZ' stands for 'Pan/Tilt/Zoom'. If the IP camera supports PTZ, use the control panel on the NVR to adjust the viewing angel of the IP camera. These functions are available depending on the camera models. Please consult the camera's documentation for details. Note that the digital zoom function will be disabled when the PTZ function is in use.

Icon	Description
	Pan and tilt: If the PTZ camera supports pan and tilt functions, click these buttons to pan or tilt the camera.
	Preset positions: Select the preset positions of the PTZ camera.
	Zoom out/Zoom in: If the PTZ camera supports zooming, click these buttons to zoom in or zoom out.
	Digital zoom: Select a channel and click this button to enable the digital zoom function. When enabled, click '+' to zoom in or '-' to zoom out.
	Focus control: Adjust the focus control of the PTZ camera.

Display Mode

The NVR supports various display modes for monitoring. Click the correct icon to switch the display mode.

Icon	Description
	Full screen
	Single-channel mode
	4-channel mode
	6-channel mode
	8-channel mode
	9-channel mode
	10-channel mode
	12-channel mode
	16-channel mode
	Select the display page number
	Sequential mode. This mode can be used with other display modes. Click  to enable or disable sequential mode. Click  to define the time interval of which the channels will be displayed.

Note:
VS-2004 Pro supports 1 to 6-channel display modes only.
VS-2008 Pro, VS-4008 Pro, VS-4008U-RP Pro support 1 to 10-channel display modes only.
VS-8100 Pro+, VS-8100U-RP Pro, and VS-12100U-RP Pro series support 1 to 16-channel display modes.
Other NVR models support 1 to 12-channel display modes.

Live View Screen

Upon successful configuration of the IP cameras, enter the monitoring screen to view the live video from the cameras.



If the camera supports pan and tilt functions, click the channel on the screen and adjust the viewing angle with a mouse. If zooming is supported, scroll the mouse wheel to zoom in or zoom out the video. These functions are available depending on the camera models. Please consult the camera's documentation for details.

Camera Status

The camera status is indicated by the icons shown below:

Icon	Camera Status
	Scheduled or continuous recording is in process
	This IP camera supports audio function
	This IP camera supports PTZ function
	Manual recording is enabled
	The recording triggered by advanced event management (‘Camera Settings’ > ‘Alarm Settings’ > ‘Advanced Mode’) is in process
	The alarm input 1 of the IP camera is triggered
	The alarm input 2 of the IP camera is triggered
	The alarm input 3 of the IP camera is triggered
	Motion detection recording is in process
	Digital zoom is enabled

Connection Message

When the NVR fails to display the video of an IP camera, a message will be shown in the channel window to indicate the status.

Message	Description
Connecting	If the IP camera is located on remote network or the Internet, it may take some time to establish the connection to the camera.
Disconnected	The NVR cannot connect to the IP camera. Please check the network connection of the computer and the availability of the IP camera. If the IP camera is installed on the Internet, open the port on the router or gateway to connect to the IP camera. Please refer to Appendix B.
No Permission	No access right to view the channel. Please login as a user with the access right or contact the system administrator.
Server Error	Check the camera settings or update the firmware of the IP camera (if any). Contact the technical support if the error persists.

Note:

1. Enabling or disabling manual recording will not affect scheduled or alarm recording tasks. They are independent processes.
2. Right click the IP camera channel and select the following options:
   a. Full screen
   b. Keep aspect ratio
   c. Deinterlace (available on particular camera models only)
   d. Keep original size
   e. Dewarp fisheye images: for Vivotek FE8171V/ FE8172
      Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Panorama (Full View), Panorama (Dual View), and Rectangle.
      Remark 1: The camera firmware version should be v0100h or above. About the latest camera firmware, please visit http://www.vivotek.com/index.php.
      Remark 2: If the Mount type is Wall, only Panorama (Full View), and Rectangle are supported in Dewarping mode.
      Remark 3: If Dewarping mode is Rectangle, you can use PTZ control panel to operate PTZ functions, excluding digital zoom.



f. Dewarp panomorph images: for the specific camera models with panomorph lens Before using this feature, you need to select the 'Enable panomorph support' option in the recording settings page. Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Perimeter mode, Quad mode, and PTZ mode.

Remark 1: To know the camera models which can be installed with panomorph lens, please visit http://www.immervision.com/en/security/security_partners/security_partners_2.php.

Remark 2: The function is only available when the resolution of the video stream is higher than 640x480 on the monitoring page.

Remark 3: If Dewarping mode is PTZ mode, for the channel, you can use PTZ control panel or mouse (by clicking and holding down the mouse left button, and then moving the mouse or turning the mouse wheel) to change viewing angles or zooming in/out the screen. If Dewarping mode is Quad mode, the above methods can also be applied to operate PTZ functions in each divided screen.

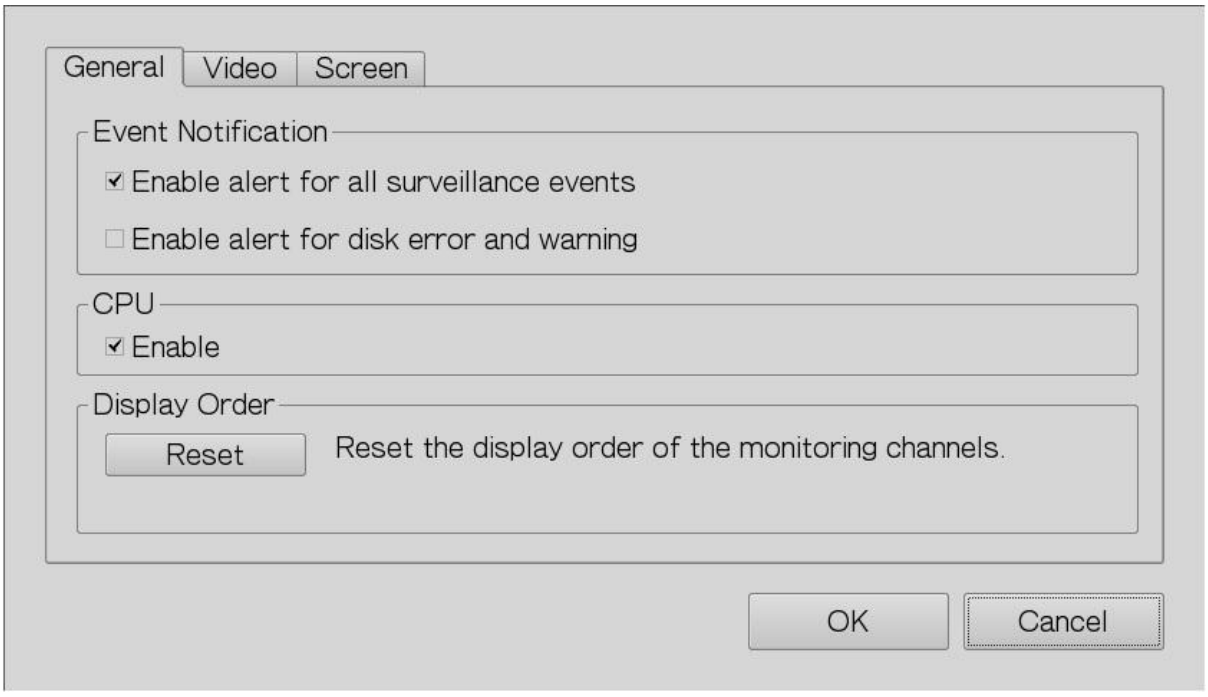


Options

To configure advanced monitor settings, click .

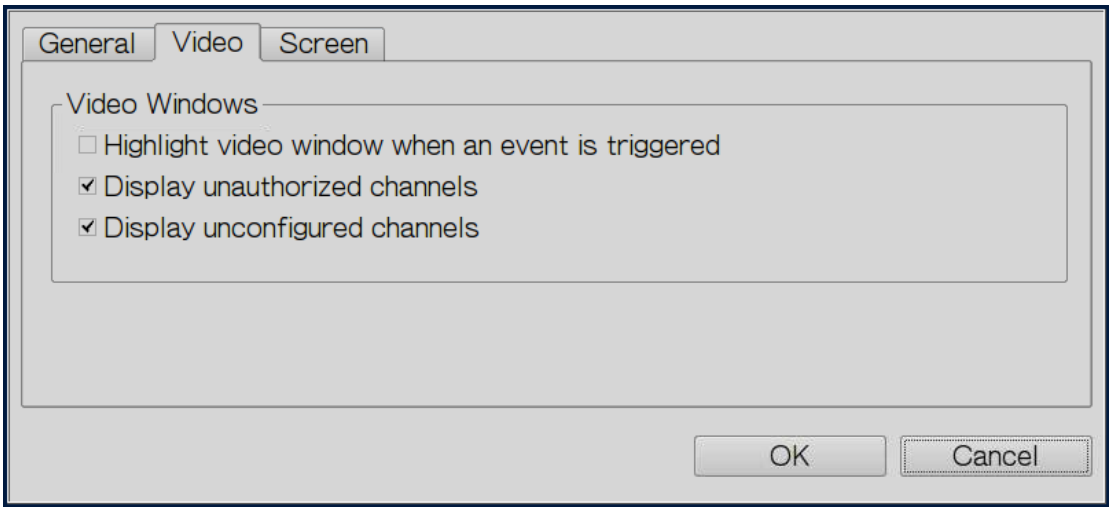
The following options are provided under the 'General' tab.

- Event Notification:
  - ✓ When 'Enable alert for all surveillance events' option is enabled and a surveillance event is triggered, the alert icon  will be shown on the monitoring page instantly. Click the icon to view the alert details.
  - ✓ After enabling 'Issue notification when the disk reaches maximum operation time set below' in System Tools -> Hard Disk SMART (refer to chapter 6.7.8), you can then 'Enable alert for disk error and warning' to receive alarm notifications when hard drive events occur.
- Display Order: Click 'Reset' to reprioritize the monitoring channels to default order.

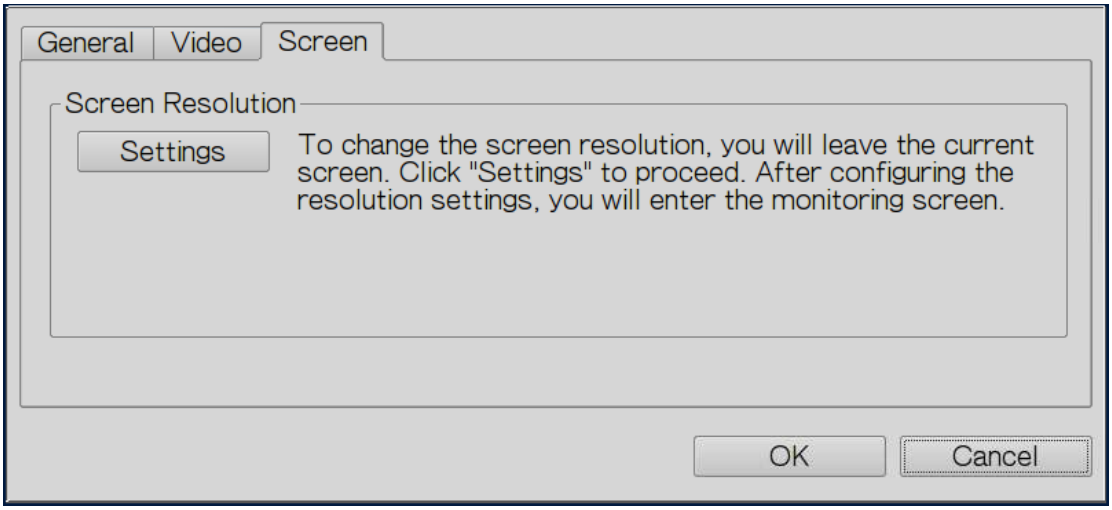


The following options are provided under the 'Video' tab.

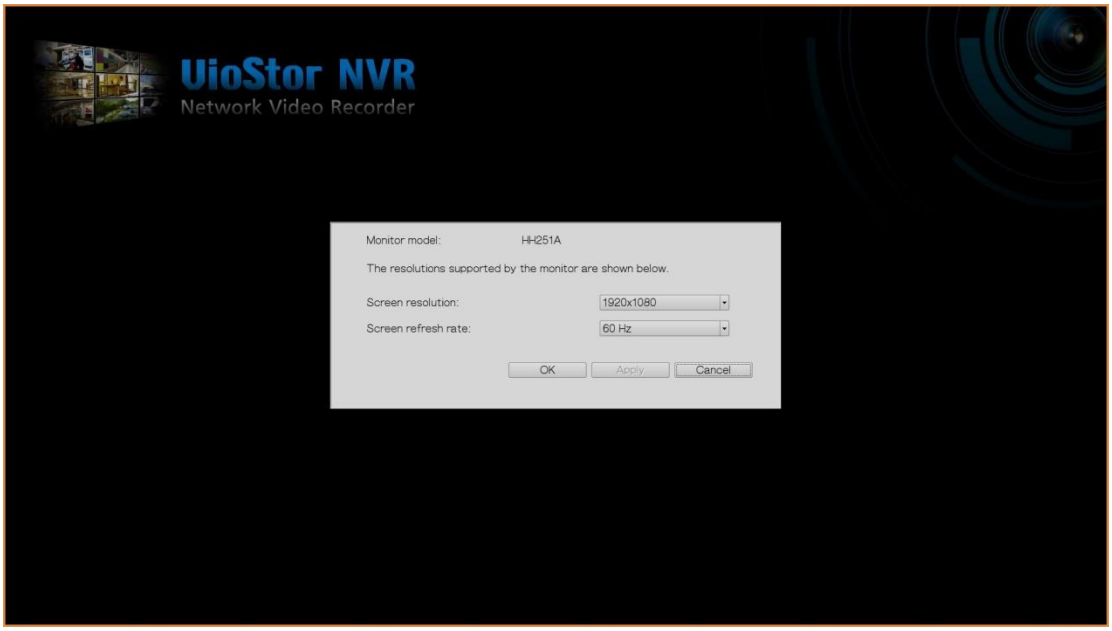
- Highlight the video window when an event is triggered: The video window will flash if an event is triggered.
- Display unauthorized channels: Select this option to show the channels that the user does not have access right to monitor.
- Display unconfigured channels: Select this option to show the channels that have not been configured.



The NVR detects the resolution settings supported by the connected monitor and selects the most appropriate setting automatically. To change the screen resolution, click 'Settings' under the 'Screen' tab. After configuring the resolution settings, the monitoring screen will be shown.



If the monitor model cannot be detected, the NVR will provide the options 1920*1080, 1400*1050, 1280*1024, 1024*768.

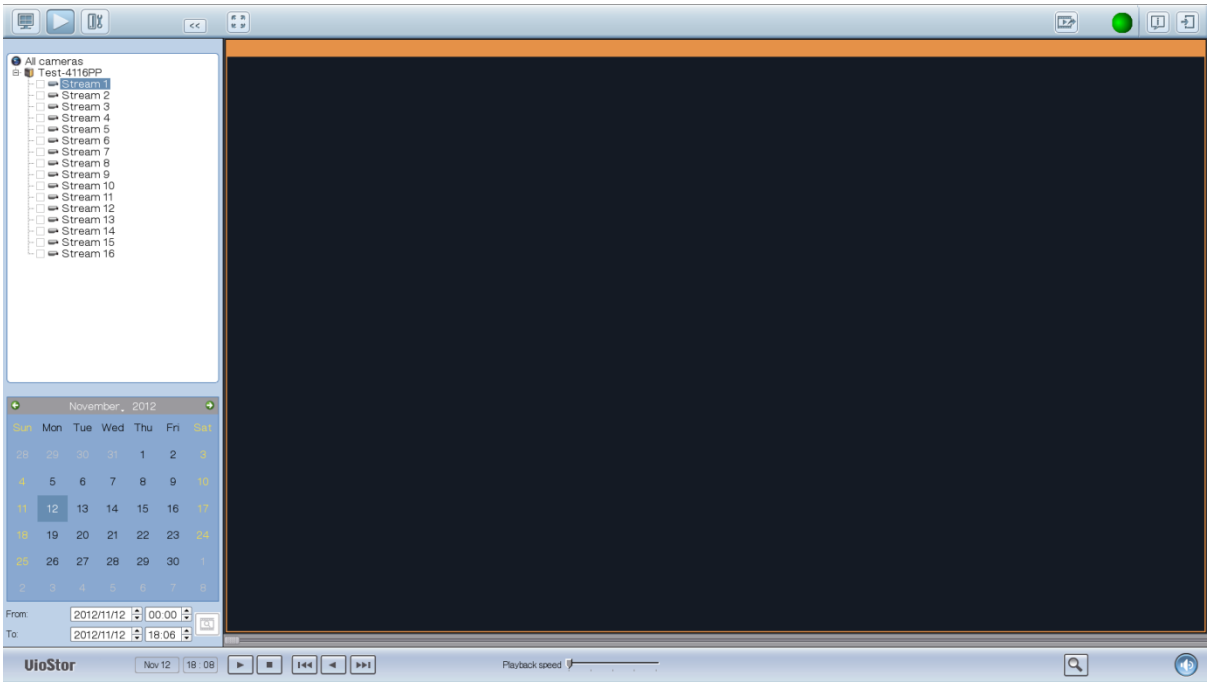


3.4 Video Playback

The videos on the NVR can be played by the local display. To use this feature, click  on the monitoring screen. Most of the icons on the playback screen are the same as those on the monitoring screen. Please refer to Chapter 3.2 for the icon description.

Note: The playback access right to the IP cameras is required to play the videos. Login the NVR as admin and edit the playback access right in 'User Management' by the web-based administration interface.

When the playback screen is shown, select a camera channel on the NVR. Next, select the start and end time of the video, click  to start searching. The videos which match the search criteria will be played automatically.



Note: The number of days between the start and end dates must be less than or equal to 2.

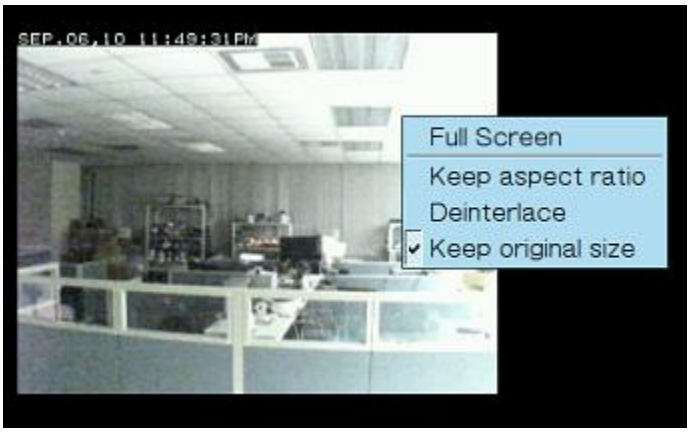
Playback Settings:



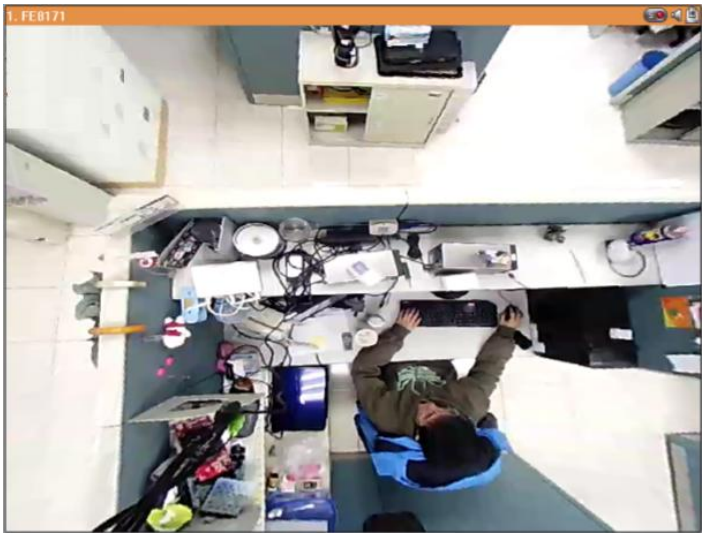
Play, pause, stop, reverse play a video file, or select to play the previous or next file. When playing a video, use the scroll bar to adjust the playback speed or click the digital zoom icon  to zoom in or zoom out the video.

Right click the IP camera channel and select the following options:

a. Full screen
b. Keep aspect ratio
c. Deinterlace (available on particular camera models only)
d. Keep original size



e. Dewarp fisheye images: for Vivotek FE8171V/ FE8172
   Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Panorama (Full View), Panorama (Dual View), and Rectangle.
   Remark 1: The camera firmware version should be v0100h or above. About the latest camera firmware, please visit http://www.vivotek.com/index.php.
   Remark 2: If the Mount type is Wall, only Panorama (Full View), and Rectangle are supported in Dewarping mode.
   Remark 3: If Dewarping mode is Rectangle, you can use PTZ control panel to operate PTZ functions, excluding digital zoom.



f. Dewarp panomorph images: for the specific camera models with panomorph lens
Before using this feature, you need to select the 'Enable panomorph support' option in the recording settings page. Right click channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Perimeter mode, Quad mode, and PTZ mode.
Remark 1: To know the camera models which can be installed with panomorph lens, please visit http://www.qnapsecurity.com/faq.asp.
Remark 2: The function is only available when resolution of video stream is higher than 640x480 on the monitoring page.
Remark 3: If Dewarping mode is PTZ mode, for the channel, you can use PTZ control panel or mouse (by clicking and holding down the mouse left button, and then moving the mouse or turning the mouse wheel) to change viewing angles or zooming in/out the screen. If Dewarping mode is Quad mode, the above methods can also be applied to operate PTZ functions in each divided screen.



3.5 Video Conversion & Export

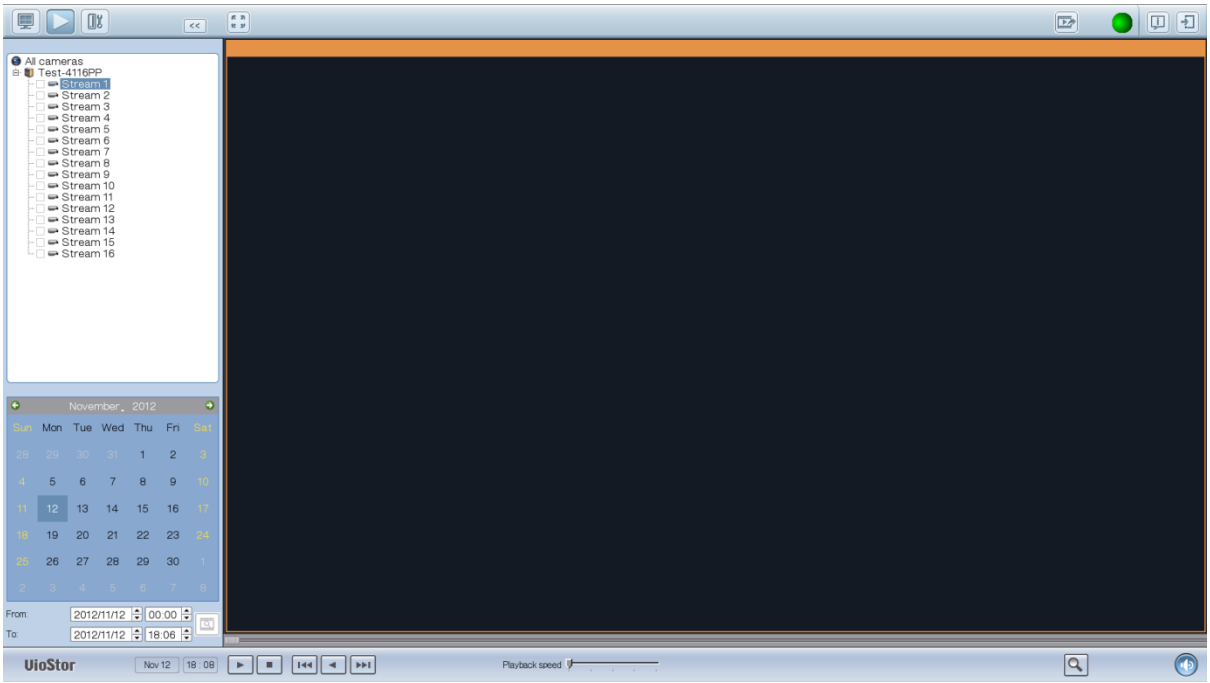
The NVR supports converting the video files to AVI format and saving the files to an external USB storage device.

Note:

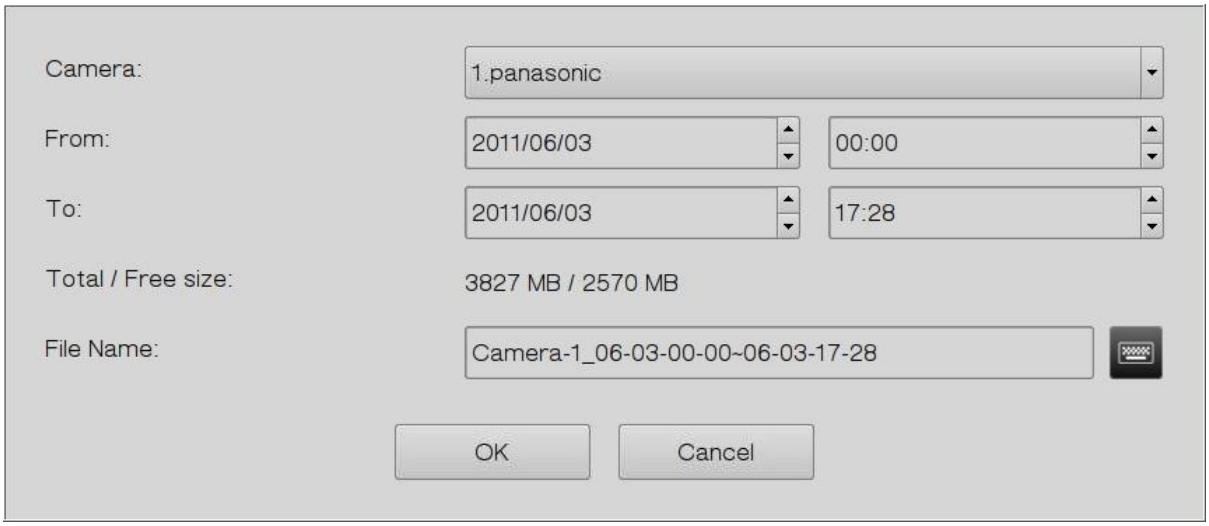
- To use this feature, connect a USB storage device to the front USB port of the NVR and make sure the device has been correctly formatted.
- The access right to play the videos of the IP camera is required to convert the video files.

Follow the steps below to export the video files of an IP camera from the NVR and convert the files to an AVI file.

1. Enter the playback interface of the NVR. Select a camera channel on the NVR. Click  (Convert to AVI file).



2. Select the IP camera and the recording type.
3. Specify the start and end time of the video files.
4. Enter the file name of the video file.
5. Click 'OK' to convert the video files to an AVI file and save them to the external USB storage device.



Chapter 4. Remote Monitoring

Use Google Chrome, Mozilla Firefox, or Microsoft Internet Explorer and QNAP Surveillance Client to monitor the IP cameras of the NVR.

Note: QNAP Surveillance Client is a client application developed by QNAP Systems, inc., used to locally or remotely access QNAP NVR servers for performing video monitoring and playback functions. Users can find and download this application under the 'Utility' section of the QNAP Security website at http://www.qnapsecurity.com/download.asp .

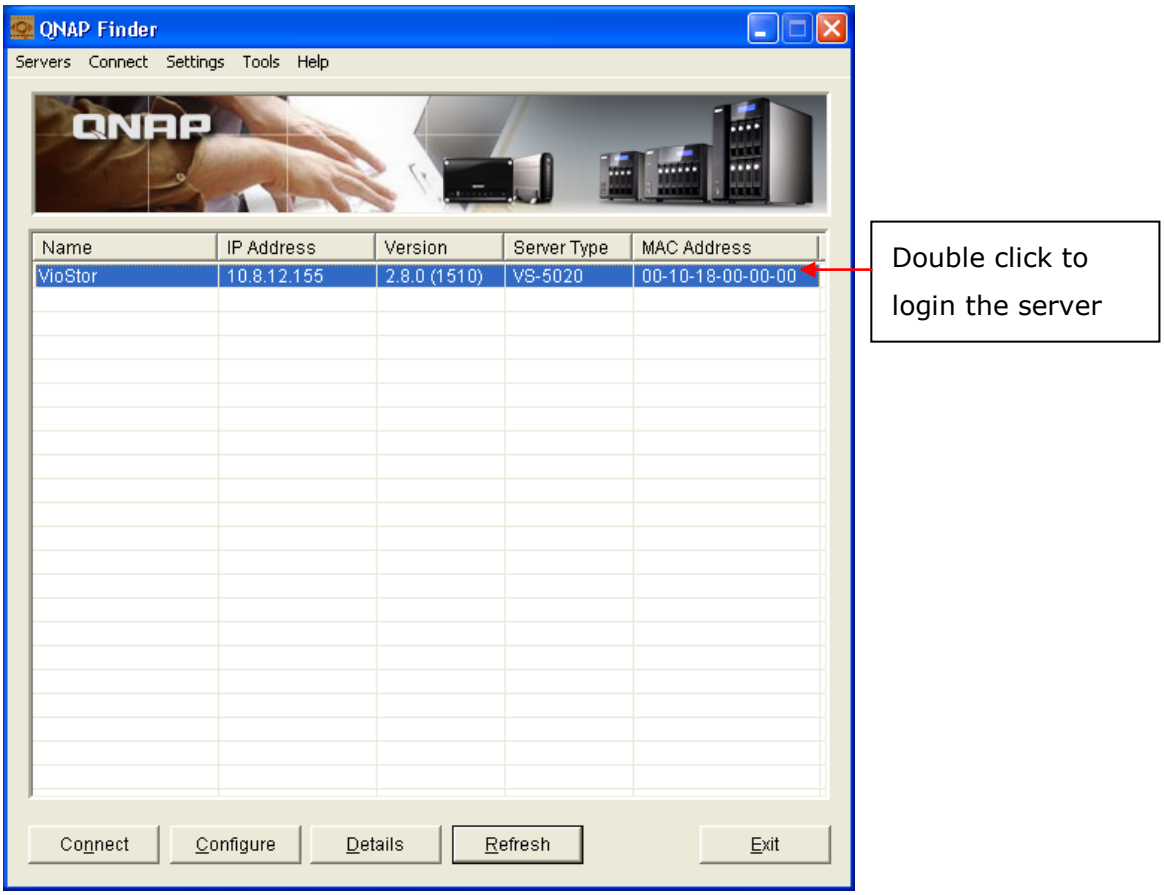
Important Notice:

1. Before using the NVR, install the hard disks in the server correctly and finish the disk formatting and configuration. Otherwise, the server will not function properly.
2. If your Windows OS is Windows Vista, Windows 7 or above, it is suggested to turn off UAC (User Account Control) for full surveillance functions. Please refer to http://www.qnapsecurity.com/faq_detail.asp?faq_id=503.

4.1 Connect to the NVR

Follow the steps below to connect to the monitoring page of the NVR.

1. Run the Finder. Double click the name of the NVR, or enter the IP address of the server in the IE browser to connect to the monitoring page.



2. Enter the user name and password to login the NVR.

   Default user name: **admin**
   Default password: **admin**

3. To view the live video by Internet Explorer, please add the NVR IP address to the list of trusted sites. While accessing NVR via IE, it will be prompted to install the ActiveX add-on.

4. To view the live video by Google Chrome, Mozilla Firefox or QNAP Surveillance Client on Windows PC, please visit http://www.qnapsecurity.com/download.asp to download and install QNAP Surveillance Client for Windows first.

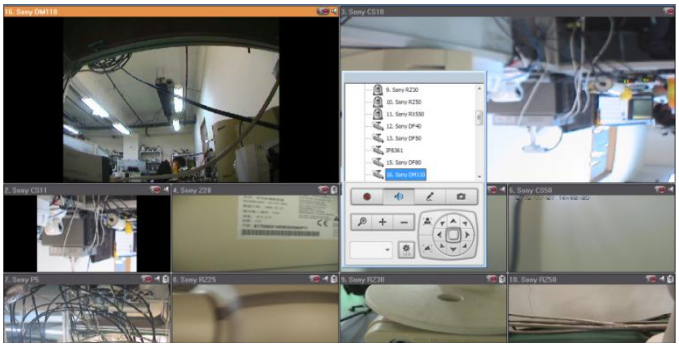
5. To view the live video on Mac, please visit http://www.qnapsecurity.com/download.asp to download and install QNAP Surveillance Client for Mac.

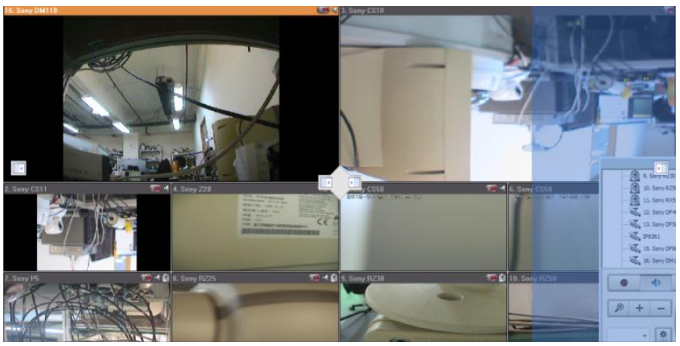
4.2 Monitoring Page

Upon successful login, the monitoring page will be shown. Select the display language. Start to configure the system settings and use the monitoring and recording functions of the server.



You can also drag the control panel to the position you like.

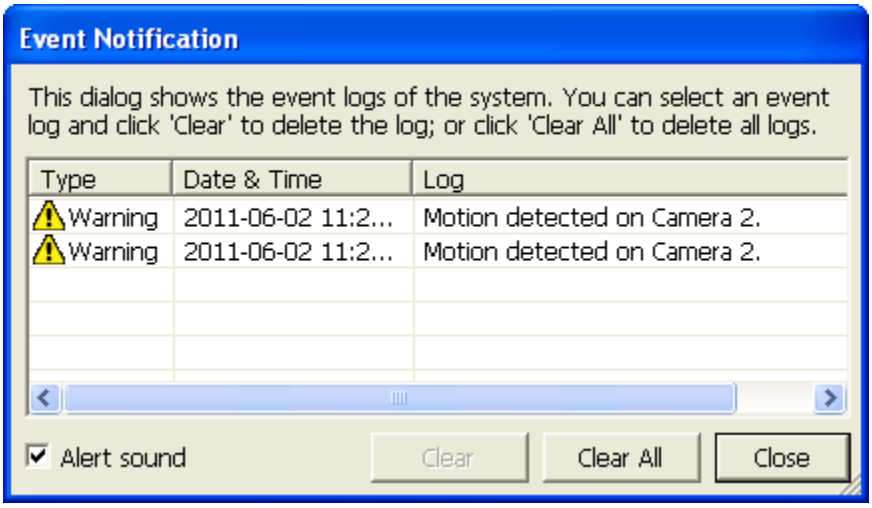




Icon	Description
	**Monitor:** Enter the monitoring page. The administrator can grant access rights to the users to see the live view.
	**Playback:** Enter the video playback page. The administrator can grant access rights to the users to play back the videos.
	**System configuration:** Log into the system administration page (administrator access right required).
	**Event notification:** When the alarm recording is enabled and an event is detected, this icon will be shown. Click this icon to view the alert details.
	**Multi display mode:** The NVR supports multi-display mode. (This function can only be used when the computer or the host is connected to multiple monitors.)
	**Multi-server monitoring:** Up to 128 channels from multiple QNAP NVR servers can be monitored.
	**E-map:** Upload E-map(s) and indicate the locations of the IP cameras. The administrators are allowed to edit and view the E-map(s). Other users can only view the E-map(s).
	**Monitoring settings:** Configure the advanced settings of the monitoring page. Specify the source of the video/audio stream, event notification, and snapshot folder.
	**Select language:** Select the display language.
	**Help:** View the system online help.
	**About:** View the information of QNAP Surveillance Client.
	**Logout:** Logout the NVR.

Note:

- Click the event notification icon to view the event details, enable or disable the alert sound or clear the event logs.



	**Manual recording:** Enable or disable manual recording on the selected channel. The administrator can enable or disable this option on the system configuration page.
	**Audio (optional):** Turn on/off the audio support for the monitoring page. For more information about the compatibility of this feature, please visit http://www.qnap.com/NVR/CompatibilityX01.html.
	**Two-way audio (optional):** Turn on/off the two-way audio support for the monitoring page. For more information about the compatibility of this feature, please visit http://www.qnap.com/NVR/CompatibilityX01.html.
	**Snapshot:** Take a snapshot on the selected channel. When the picture is shown, right click the picture to save it to the computer.

Note:

1. Enabling or disabling the manual recording feature will not affect the scheduled or alarm recording.

2. By default, the snapshots are saved in 'My Documents' or 'Documents'> 'Snapshots' on Windows.

3. If the snapshot time is inconsistent with the actual time that the snapshot is taken, it is caused by the network environment but not a system error.

4. When the digital zoom function is enabled on multiple IP cameras, the zooming function will be affected if the computer performance is not high enough.

Right click the monitoring channel on the live view page. The following functions are available depending on the IP camera model.

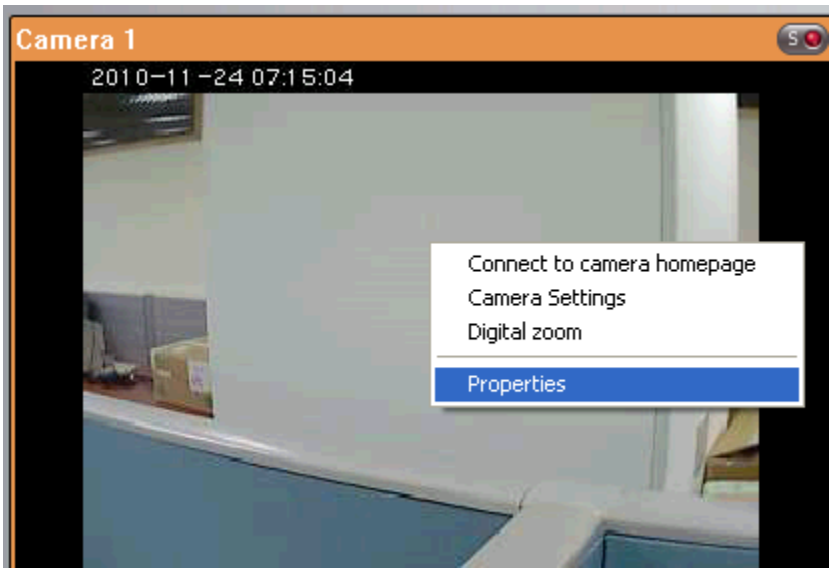
a. Connect to camera homepage.
b. Camera setting: Enter the configuration page of the IP camera.
c. PTZ: Pan/Tilt/Zoom camera control.
d. Preset: Select the preset positions of the PTZ camera.
e. Enable live tracking: Available on Panasonic NS202(A) camera.
f. Disable live tracking: Available on Panasonic NS202(A) camera.
g. Auto cruising: This feature is used to configure the PTZ cameras to cruise according to the preset positions and the staying time set for each preset position.
h. Digital zoom: Enable/disable digital zoom.
i. Keep aspect ratio.
j. Dewarp fisheye images: for Vivotek FE8171V/ FE8172
   Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Panorama (Full View), Panorama (Dual View), and Rectangle.
   Remark 1: The camera firmware version should be v0100h or above. About the latest camera firmware, please visit http://www.vivotek.com/index.php.
   Remark 2: If the Mount type is Wall, only Panorama (Full View), and Rectangle are supported in Dewarping mode.
   Remark 3: If Dewarping mode is Rectangle, you can use PTZ control panel to operate PTZ functions, excluding digital zoom.



k. Dewarp panomorph images: for the specific camera models with panomorph lens
Before using this feature, you need to select the 'Enable panomorph support' option in the recording settings page. Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Perimeter mode, Quad mode, and PTZ mode.
Remark 1: To know the camera models which can be installed with panomorph lens, please visit http://www.immervision.com/en/security/security_partners/security_partners_2.php.
Remark 2: The function is only available when the resolution of the video stream is higher than 640x480 on the monitoring page.
Remark 3: If Dewarping mode is PTZ mode, for the channel, you can use PTZ control panel or mouse (by clicking and holding down the mouse left button, and then moving the mouse or turning the mouse wheel) to change viewing angles or zooming in/out the screen. If Dewarping mode is Quad mode, the above methods can also be applied to operate PTZ functions in each divided screen.

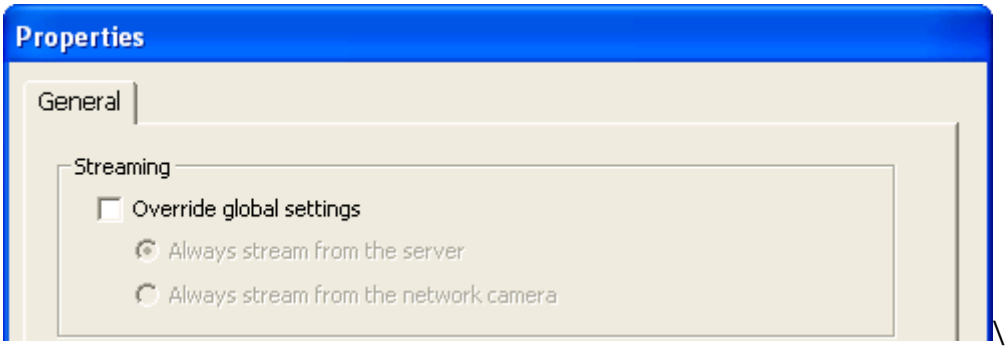


To configure other monitoring options, right click a channel and select 'Properties'.



Streaming:

- Always stream from the server: Select this option to stream the audio and video data from the NVR. If the computer cannot connect to the IP cameras, select this option to allow the NVR to stream the data; no extra port forwarding is required. However, the performance of the NVR may be affected.
- Always stream from the network camera: If the NVR and the IP cameras are connected to the same local network, select this option to stream the video data from the IP cameras. If the NVR, the IP cameras, and the PC are located behind a router, virtual server, or firewall, configure port forwarding on the IP cameras to use certain ports.

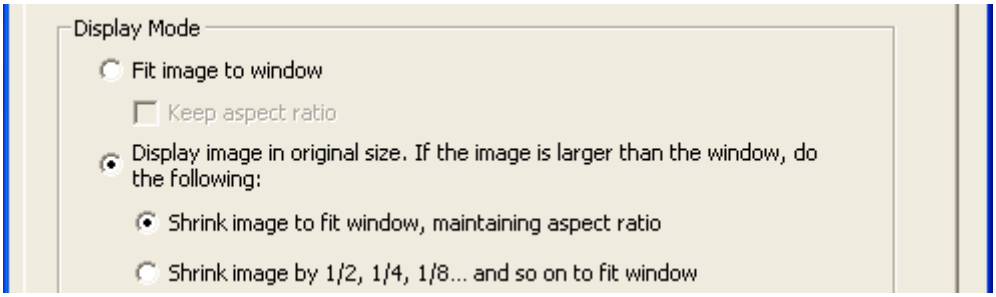


OSD Settings: Specify the font color of the texts on the channels.



Display Mode:

- Fit image to window: Select this option to fit an image to the browser window. Specify to keep the aspect ratio or not when resizing an image.
- Display image in original size: Select this option to display an image in its original size if it is smaller than the browser window. Specify also how an image will be resized if it is larger than the browser window.
  - ✓ Shrink image to fit window, maintaining aspect ratio
  - ✓ Shrink image by 1/2, 1/4, 1/8… and so on to fit window



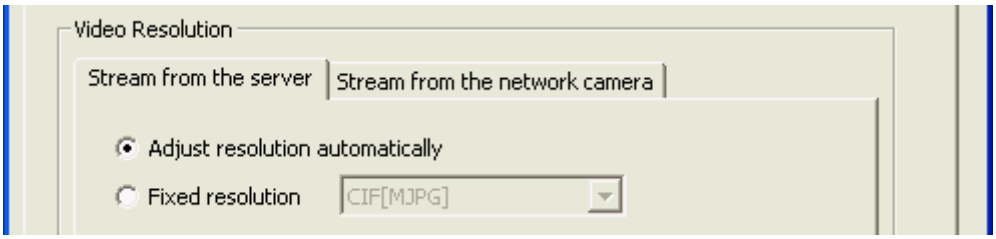
Video Processing: Turn on 'Deinterlace' when there are interlaced lines on the video.



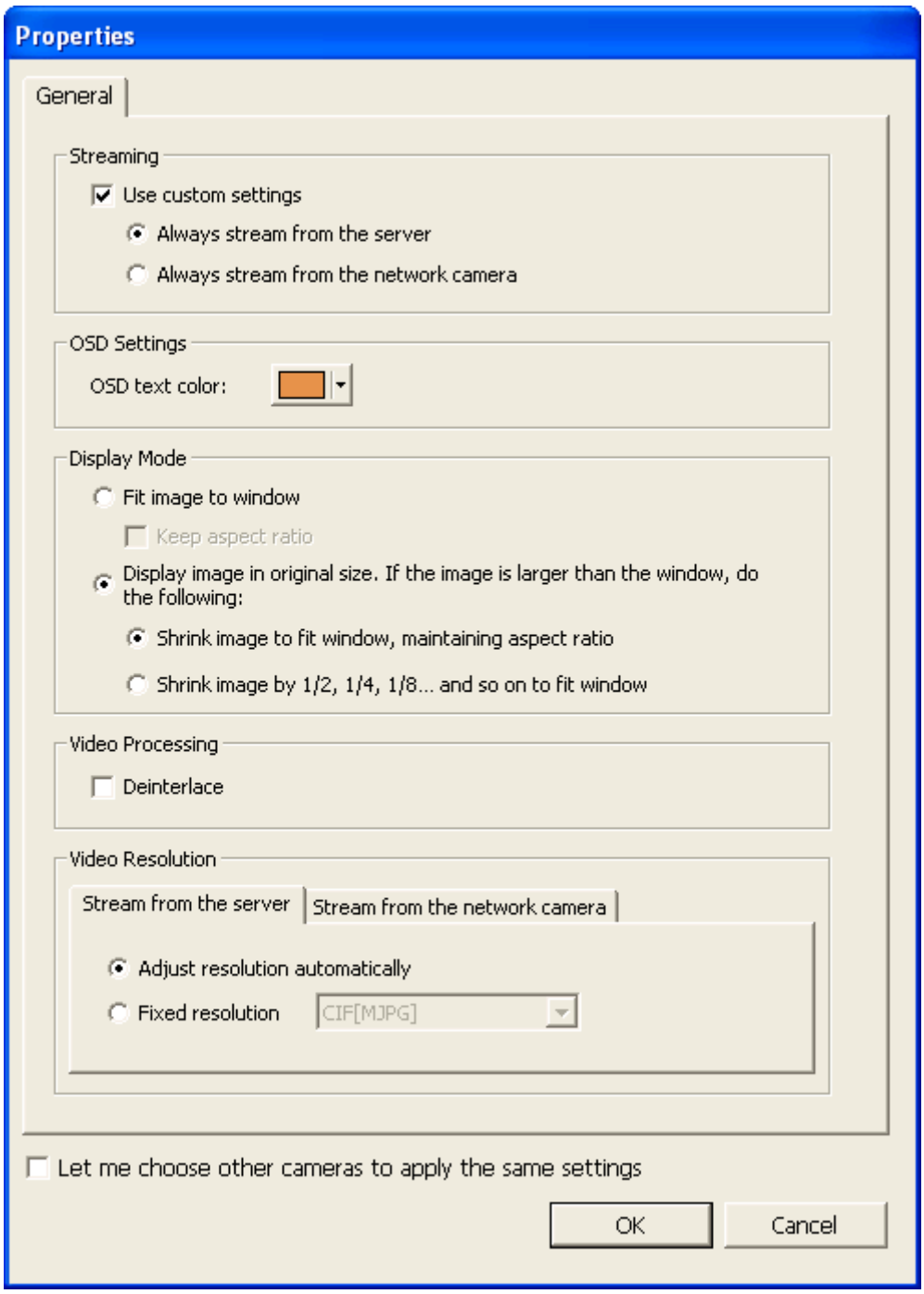
Video Resolution: Specify to adjust the resolution automatically or use a fixed resolution. To adjust the resolution automatically, the NVR will select the resolution setting* which best fits the size of the IE browser window. Note that 'Stream from network camera' will not be available if the IP camera does not support streaming from camera or video resolution configuration. Both options will not be available if the IP camera does not support multiple streams.

*If an IP camera supports different resolution settings, the NVR will select the smallest resolution larger than (or equal to) the size of the browser window.

If all the supported resolution settings of an IP camera are smaller than the browser window, the largest resolution will be selected.

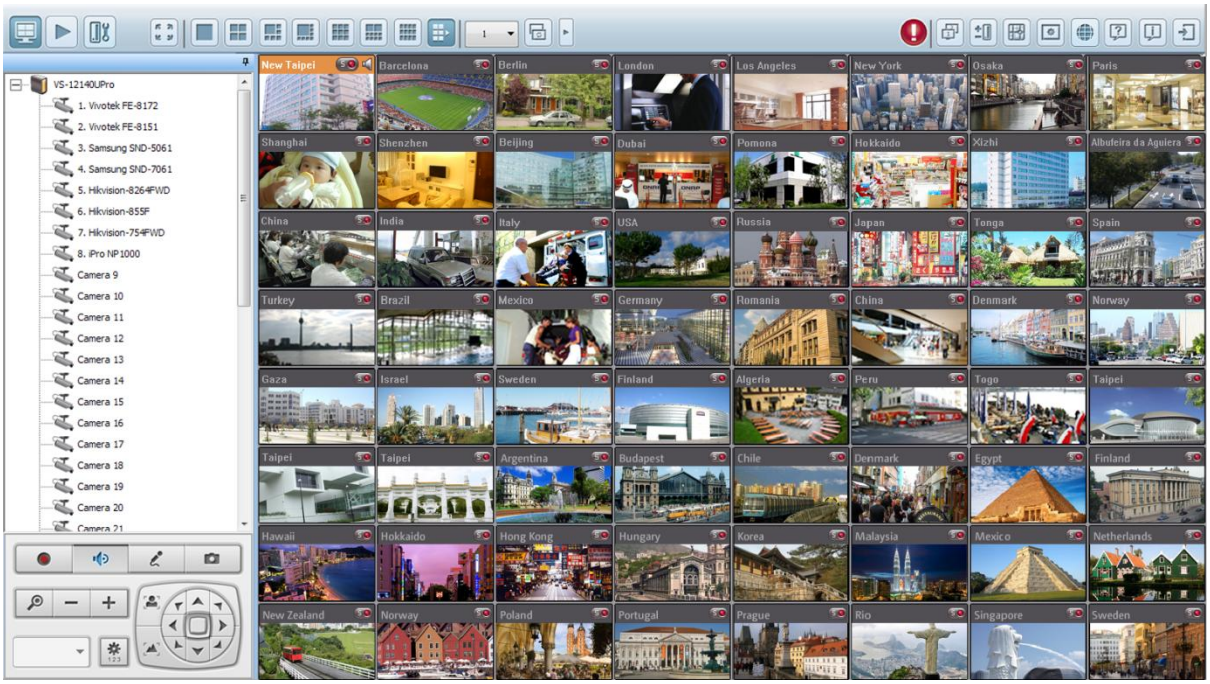


Let me choose other cameras to apply the same settings: Select this option to apply the changes to other IP cameras. Note that some settings may not be applied if the IP camera does not support the features, such as streaming from camera or video resolution configuration.


Properties
General
Streaming
Use custom settings
Always stream from the server
Always stream from the network camera
OSD Settings
OSD text color:
Display Mode
Fit image to window
Keep aspect ratio
Display image in original size. If the image is larger than the window, do the following:
Shrink image to fit window, maintaining aspect ratio
Shrink image by 1/2, 1/4, 1/8... and so on to fit window
Video Processing
Deinterlace
Video Resolution
Stream from the server
Stream from the network camera
Adjust resolution automatically
Fixed resolution
CIF[MJPG]
Let me choose other cameras to apply the same settings
OK
Cancel

4.2.1 Live Video Window

The live videos of the IP cameras configured on the NVR are shown on the monitoring page. Click the channel window to use the features supported by the IP camera, e.g. digital zoom or pan/tilt/zoom.



Camera Status

The camera status is indicated by the icons shown below:

Icon	Camera Status
	Scheduled or continuous recording is in process
	This IP camera supports audio function
	This IP camera supports PT function
	Manual recording is enabled
	The recording triggered by advanced event management (‘Camera Settings’ > ‘Alarm Settings’ > ‘Advanced Mode’) is in process
	The alarm input 1 of the IP camera has been triggered
	The alarm input 2 of the IP camera has been triggered
	The alarm input 3 of the IP camera has been triggered
	A moving object has been detected
	Digital zoom is enabled

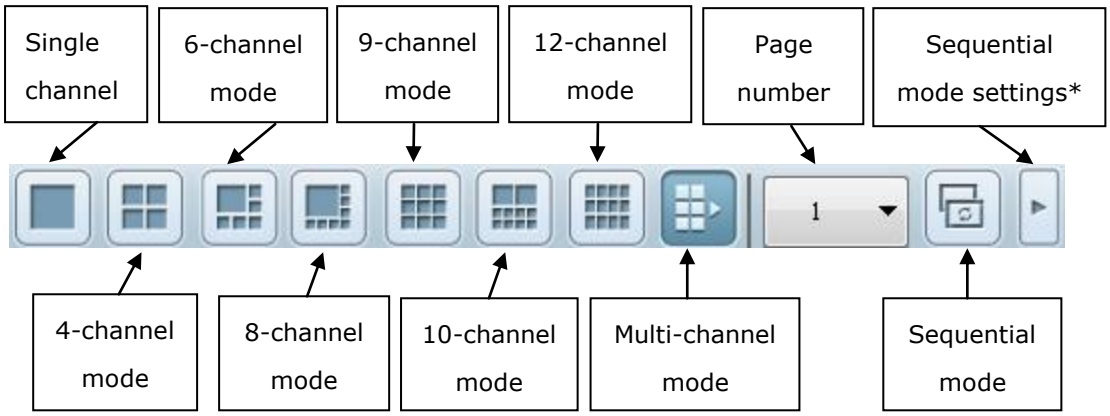
Connection Message

When the NVR fails to display the video of an IP camera, a message will be shown in the channel window to indicate the status.

Message	Description
Connecting	If the IP camera is located on a remote network or the Internet, it may take some time to establish the connection to the camera.
Disconnected	The NVR cannot connect to the IP camera. Please check the network connection of the computer and the availability of the IP camera. If the IP camera is located on the Internet, open the port on the router or gateway.
No Permission	No access right to view the monitoring channel. Please login as an authorized user or contact the system administrator.
Server Error	Please check the camera settings or update the firmware of the IP camera (if any). Contact the technical support if the error persists.

4.2.2 Display Mode

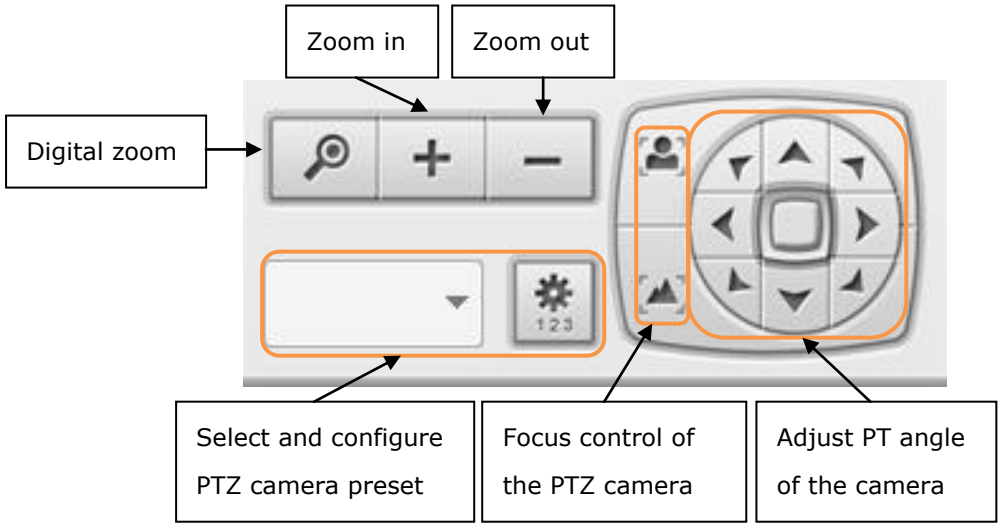
The NVR supports different display modes for viewing the monitoring channels.



*You can configure the sequential interval in the sequential mode settings.

4.2.3 PTZ Camera Control Panel

The term 'PTZ' stands for 'Pan/Tilt/Zoom'. If an IP camera supports the PTZ feature, use the control panel on the NVR to adjust the viewing angle of the IP camera. These functions are available depending on the camera models. Please refer to the user manual of the IP cameras for more information. Note that the digital zoom function will be disabled when the PTZ function is in use.

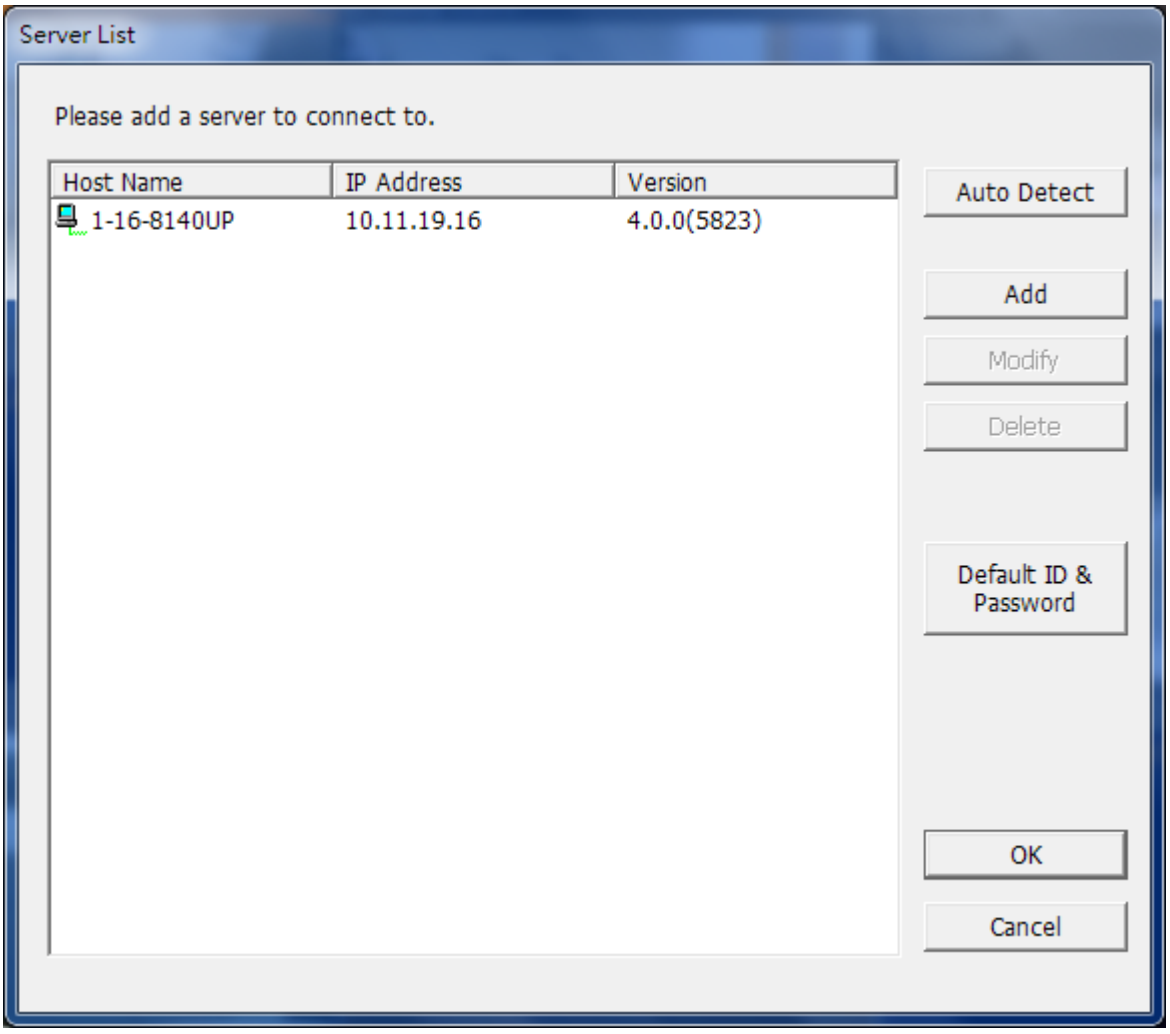


	**Digital zoom:** Select a channel and click this button to enable the digital zoom function. This function can also be enabled by right clicking the display window of the PTZ camera. Press  button to zoom in or  button to zoom out. You can also use the mouse wheel to operate the digital zoom function.
	**Zoom out/zoom in**： If the PTZ camera supports optical zoom, you can press  to optically zoom out or  button to optically zoom in. When digital zoom function is enabled, you can press  to digitally zoom out or  button to digitally zoom in.
	**Select and configure PTZ camera preset positions:** Select and view the preset positions of the IP camera from the list. For some camera models, you can configure PTZ camera preset positions on the monitoring page. For more information about the compatibility of PTZ cameras for preset positions configuration, please visit http://www.qnapsecurity.com/faq.asp. For other PTZ camera models, please refer to the user manual of the IP camera.

4.2.4 Multi-server Monitoring

Follow the steps below to use the multi-server monitoring feature of the NVR.

1. Click 'Server List'  on the monitoring page.

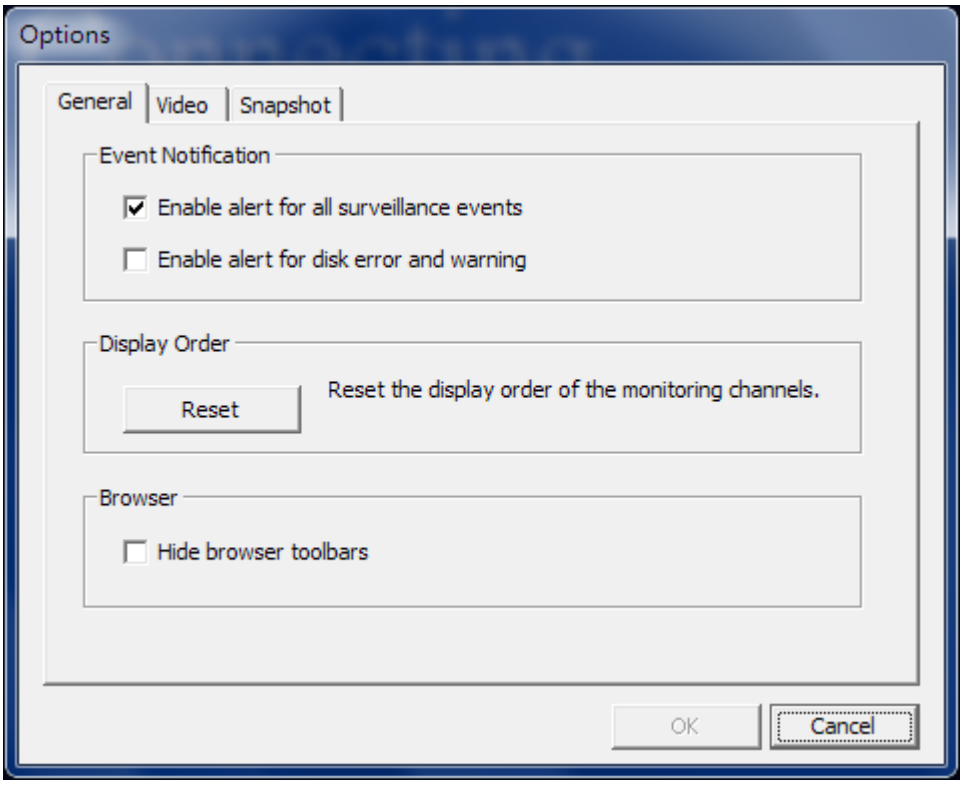


   a. Click 'Auto Detect' to search for the NVR on the LAN and add the server to the server list.
   b. Click 'Add' to add the NVR to the server list.

2. Up to 128 channels from multiple NVR servers can be added for monitoring.

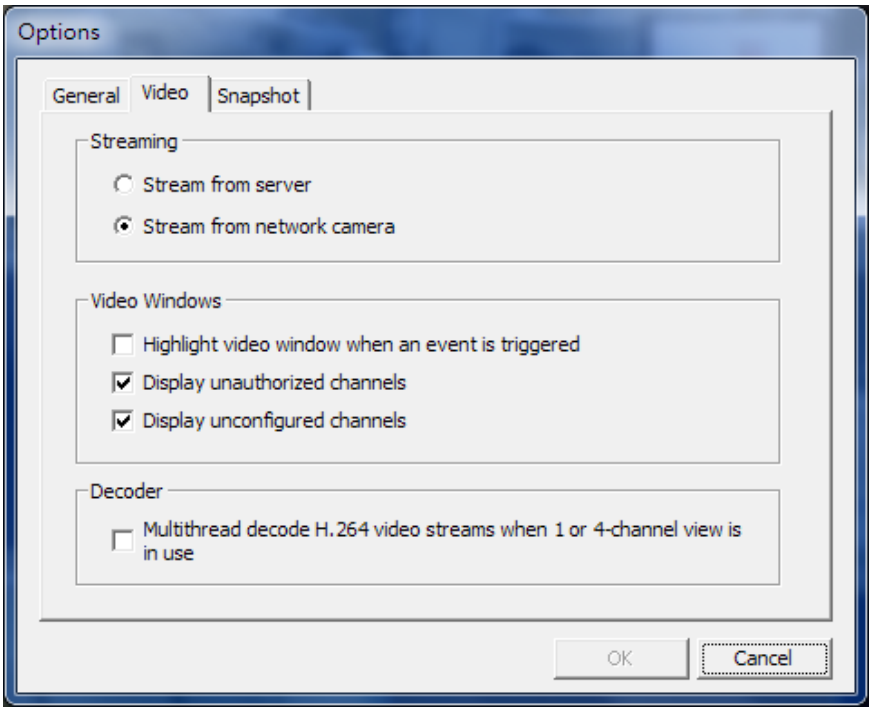
4.2.5 Monitor Settings

To configure advanced monitor settings, click .



The following options are provided under the 'General' tab.

- Event Notification:
  - ✓ When 'Enable alert for all surveillance events' option is enabled and a surveillance event is triggered, the alert icon  will be shown on the monitoring page instantly. Click the icon to view the alert details.
  - ✓ After enabling 'Issue notification when the disk reaches maximum operation time set below' in System Tools -> Hard Disk SMART (refer to chapter 6.7.8), you can then 'Enable alert for disk error and warning' to receive alarm notifications when hard drive events occur.
- Display Order: Click 'Reset' to reprioritize the monitoring channels to the default order.
- Browser: Select to show or hide the toolbars of the IE browser. The feature is only available in Internet Explorer.



The following options are provided under the 'Video' tab.

Video Streaming

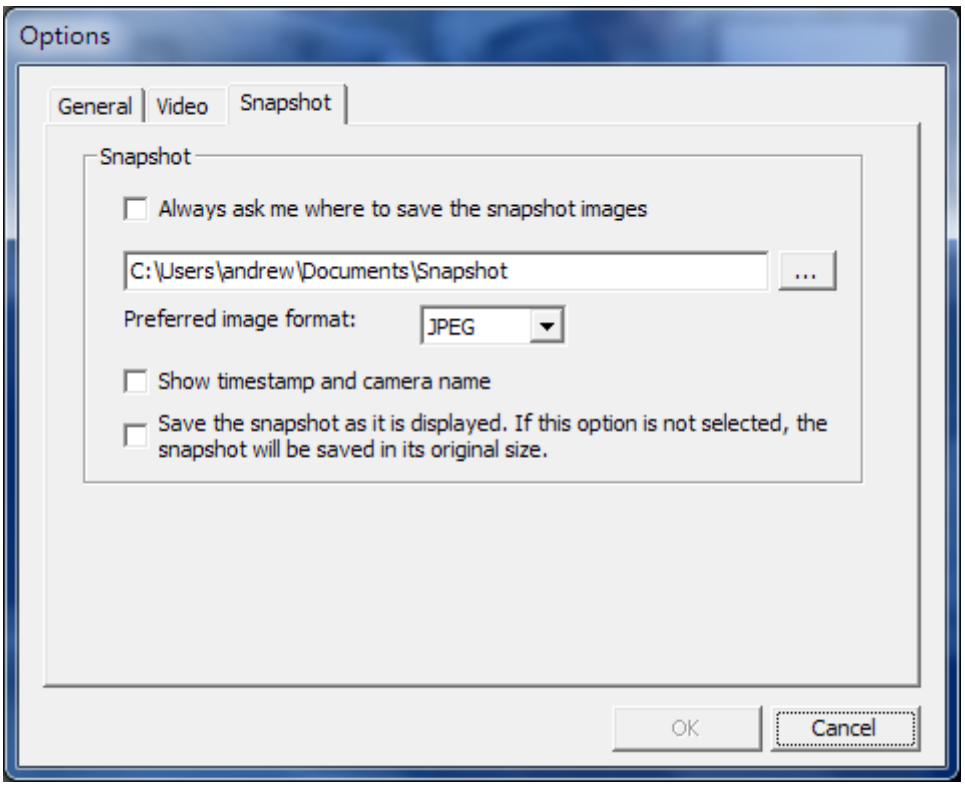
- Stream from the server: If the IP camera cannot be connected from the computer, select this option and the video will be streamed from the NVR. This option does not require extra port mapping configuration; but may influence the performance of the NVR.
- Stream from IP camera: If the NVR and the IP cameras are located on the same LAN, select this option to stream the video from the IP camera. Note that the port forwarding settings on the IP cameras must be configured if the NVR, IP cameras, and the computer are located behind a router, a virtual server, or a firewall.

Video Windows

- Highlight the video window when an event is triggered: The video window will flash if an event is triggered.
- Display unauthorized channels: Select this option to show the channels that the user does not have the access right to monitor.
- Display unconfigured channels: Select this option to show the channels that have not been configured.

Decoder

Select this option to multithread decode H.264 video streams when 1 or 4-channel view is in use.



The following options are provided under the 'Snapshot' tab.

Snapshot: Specify the location where the snapshots are saved and the image format (JPEG or BMP).

Show timestamp and camera name: Show the timestamp and the camera name on the snapshot.

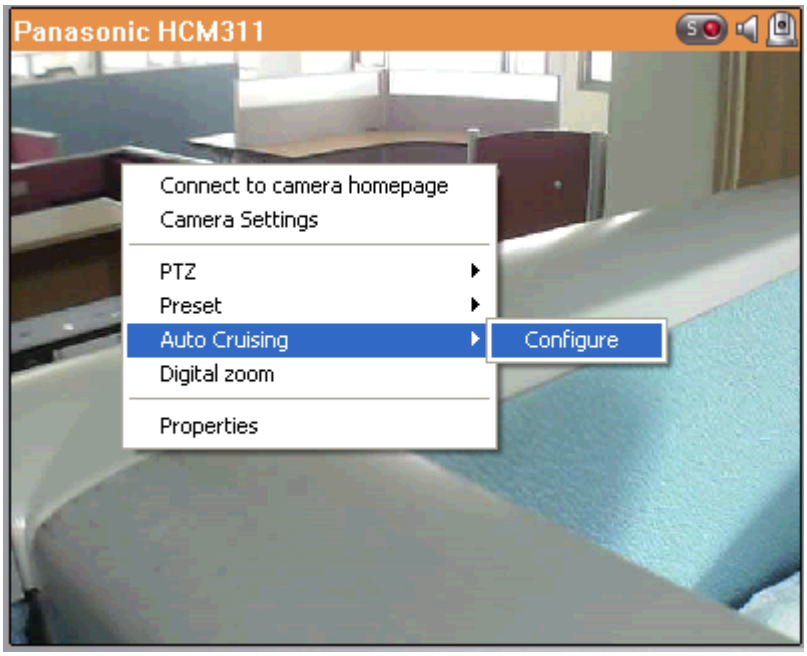
Save the snapshot as it is displayed: Select this option to save the snapshot as it is displayed on the window. Otherwise, the snapshot will be saved in its original size.

4.2.6 Auto Cruising

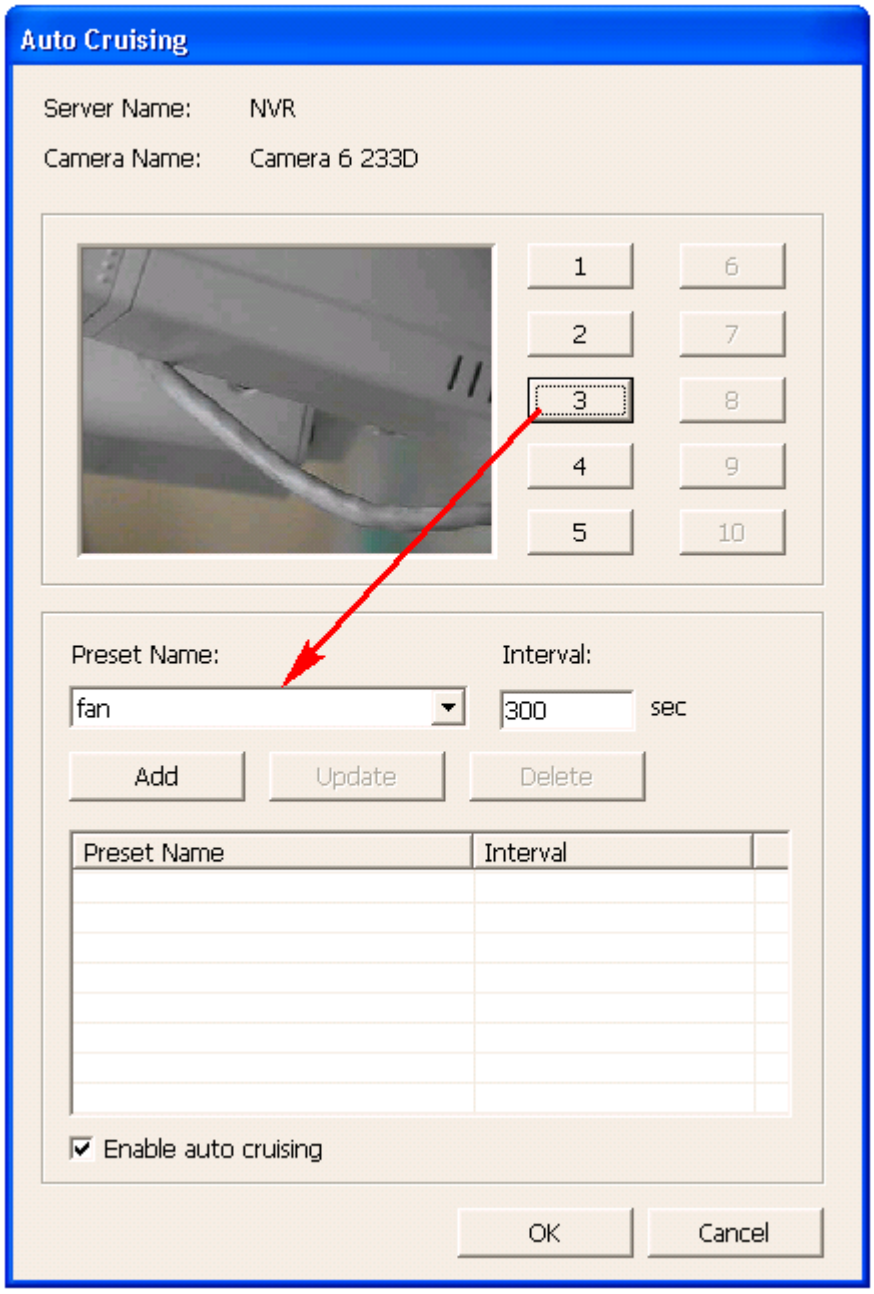
The auto cruising feature of the NVR is used to configure the PTZ cameras to cruise according to the preset positions and the staying time set for each preset position.

To use the auto cruising feature, follow the steps below.

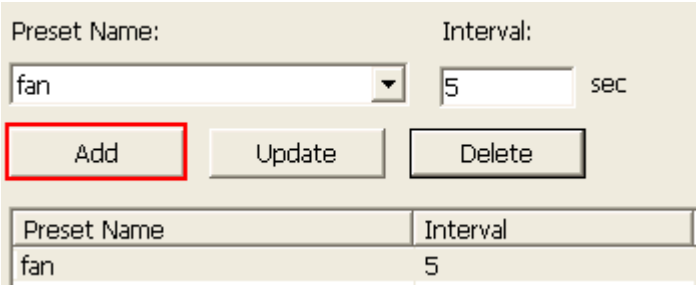
1. On the monitoring page of the NVR, right click the display window of the PTZ camera. Select 'Connect to camera homepage' to go to the configuration page of the PTZ camera.
2. Set the preset positions on the PTZ camera.
3. Return to the monitoring page of the NVR. Right click the display window of the PTZ camera. Select 'Auto Cruising' > 'Configure'.



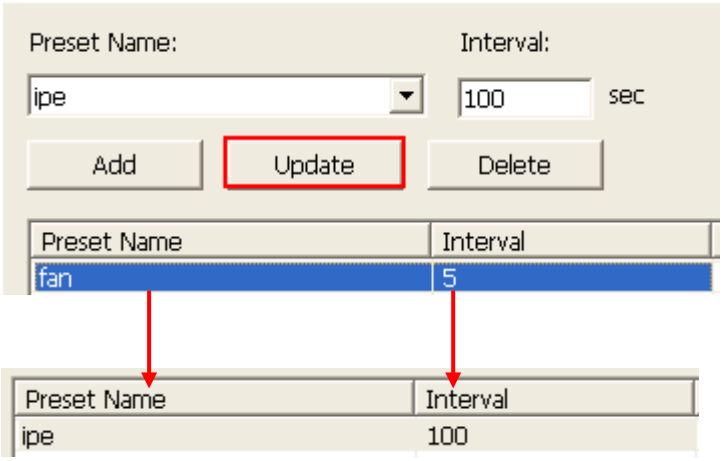
4. Click the number buttons to view the preset positions of the PTZ camera. When this button is clicked, the name of the corresponding preset position is shown on the 'Preset Name' drop-down menu.



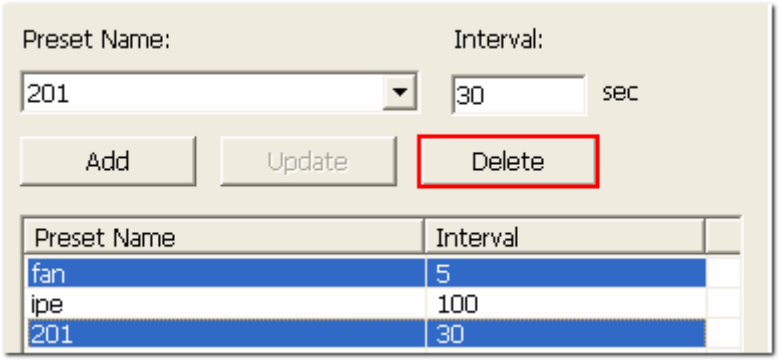
5. Add: To add a setting for auto cruising, select the 'Preset Name' from the drop-down menu and enter the staying time (interval, in seconds). Click 'Add'.



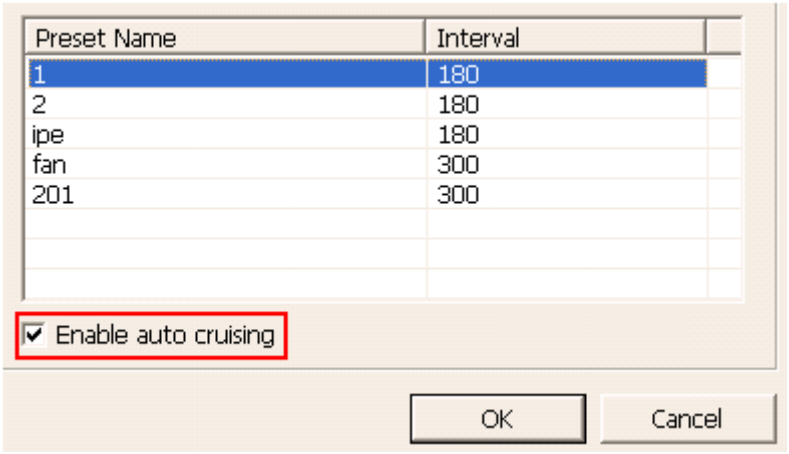
6. Update: To change a setting on the list, highlight the selection. Select another preset position from the drop-down menu and/or change the staying time (interval). Click 'Update'.



7. Delete: To delete a setting, highlight a selection on the list and click 'Delete'. To delete more than one setting, press and hold the Ctrl key and select the settings. Then click 'Delete'.



8. After configuring the auto cruising settings, select the option 'Enable auto cruising' and click 'OK'. The NVR will start auto cruising according to the settings.



Note:

- The default staying time (interval) of the preset position is 5 seconds. Enter 5–999 seconds for this setting.
- The system supports up to 10 preset positions (the first 10) configured on the PTZ cameras. Up to 20 settings for auto cruising can be configured. In other words, the NVR supports maximum 10 selections on the drop-down menu and 20 settings on the auto cruising list.

4.3 E-map

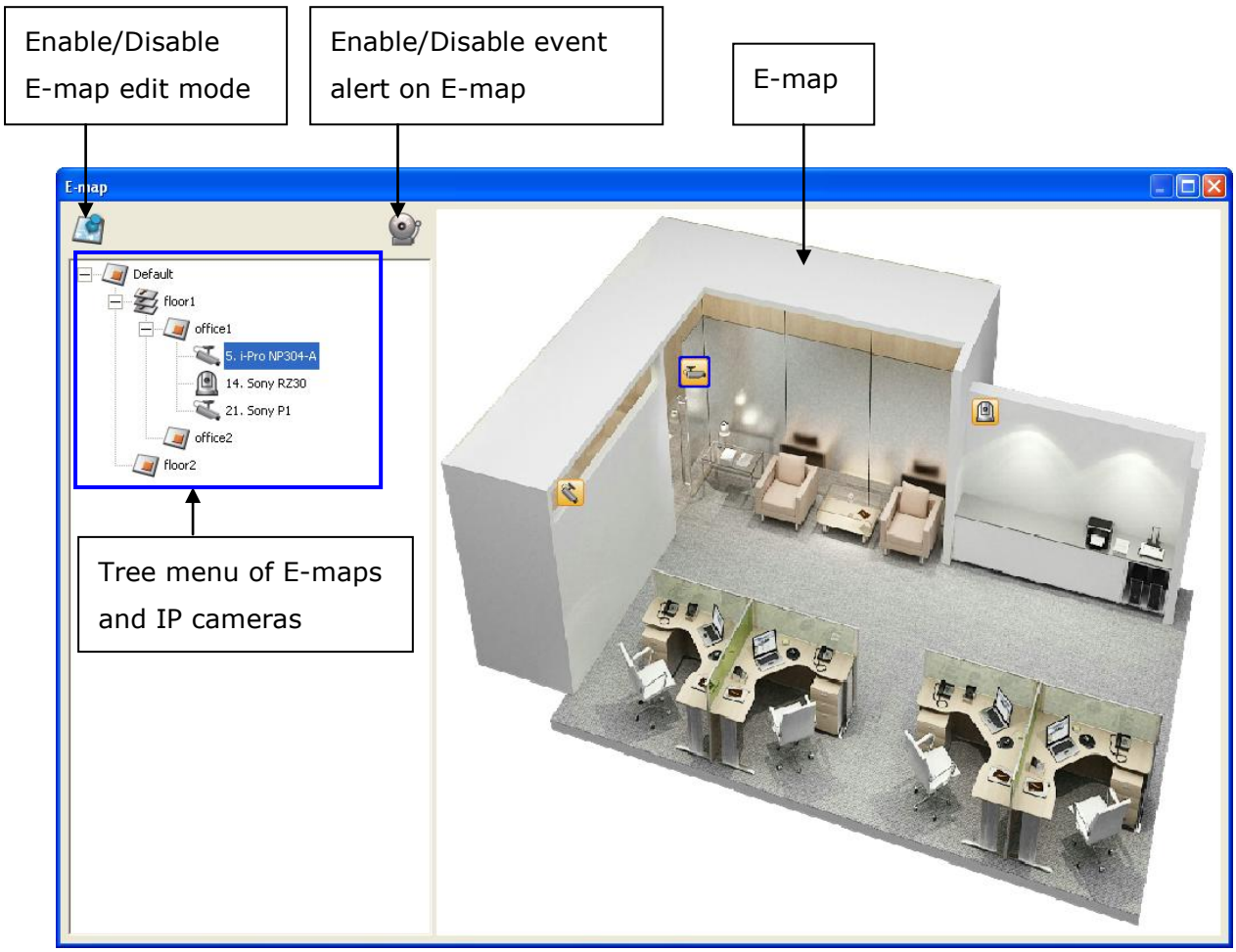
The E-map feature of the NVR is provided to for users to upload electronic maps to the system to indicate the locations of the IP cameras. Users can drag and drop the camera icons* to the E-map and enable event alert to receive instant notification when an event occurs to the IP camera.

*The camera icons are available only when the IP cameras have been configured on the NVR.

To use the E-map feature, login the monitoring page of the NVR as an administrator and click .

An E-map example is shown below. The NVR provides a default E-map. Add or remove the E-maps whenever necessary.

Note: Login as an administrator to edit and view the E-map.

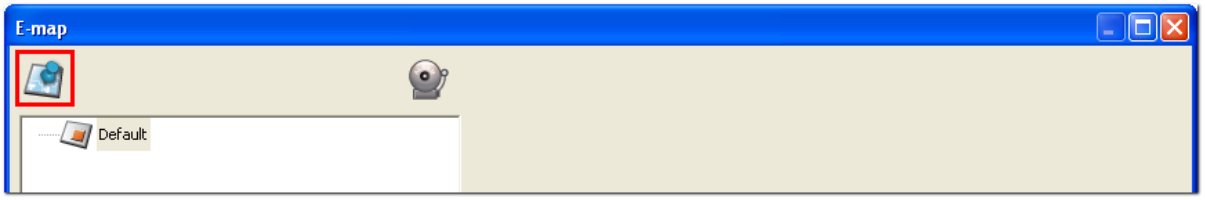


4.3.1 Icons and Description

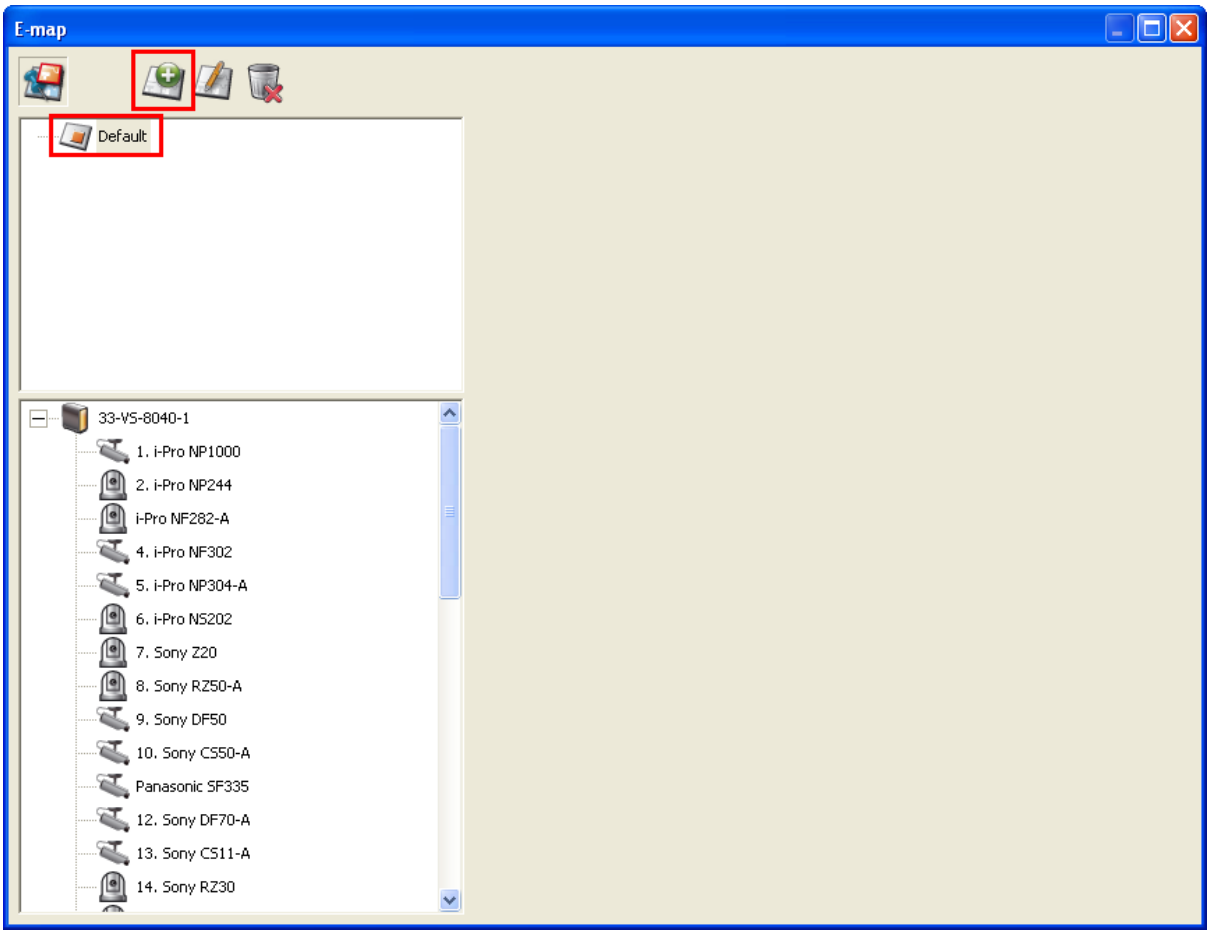
Icon	Description
	Enable E-map edit mode.
	E-map edit mode in use. Click this icon to disable the edit mode.
	Add a map.
	Edit the name of a map.
	Remove a map or a camera icon.
	Event alert not in use. Click this icon to enable event alert on the E-map.
	Event alert in use. When an event occurs to an IP camera, such as a moving object is detected, the camera icon will change and flash to alert the administrator. To disable event alert on the E-map, click this icon. **Note:** When event alert is enabled, the E-map cannot be edited. The icon  will become invisible.
	Icon for a set of E-maps.
	Icon for a single E-map.
	Icon for a PTZ IP camera.
	Icon for a fixed body or fixed dome IP camera. After dragging the icon to a map, right click the camera icon to change the icon direction or delete the icon from the E-map.

4.3.2 Add a Map Set or an E-map

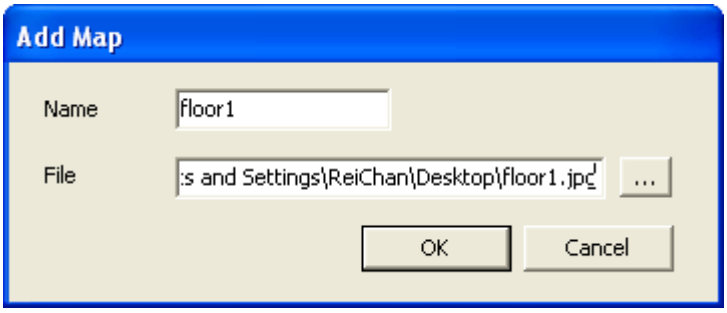
To add a map set or an E-map to indicate the locations of the IP cameras, click  to enable Edit mode.



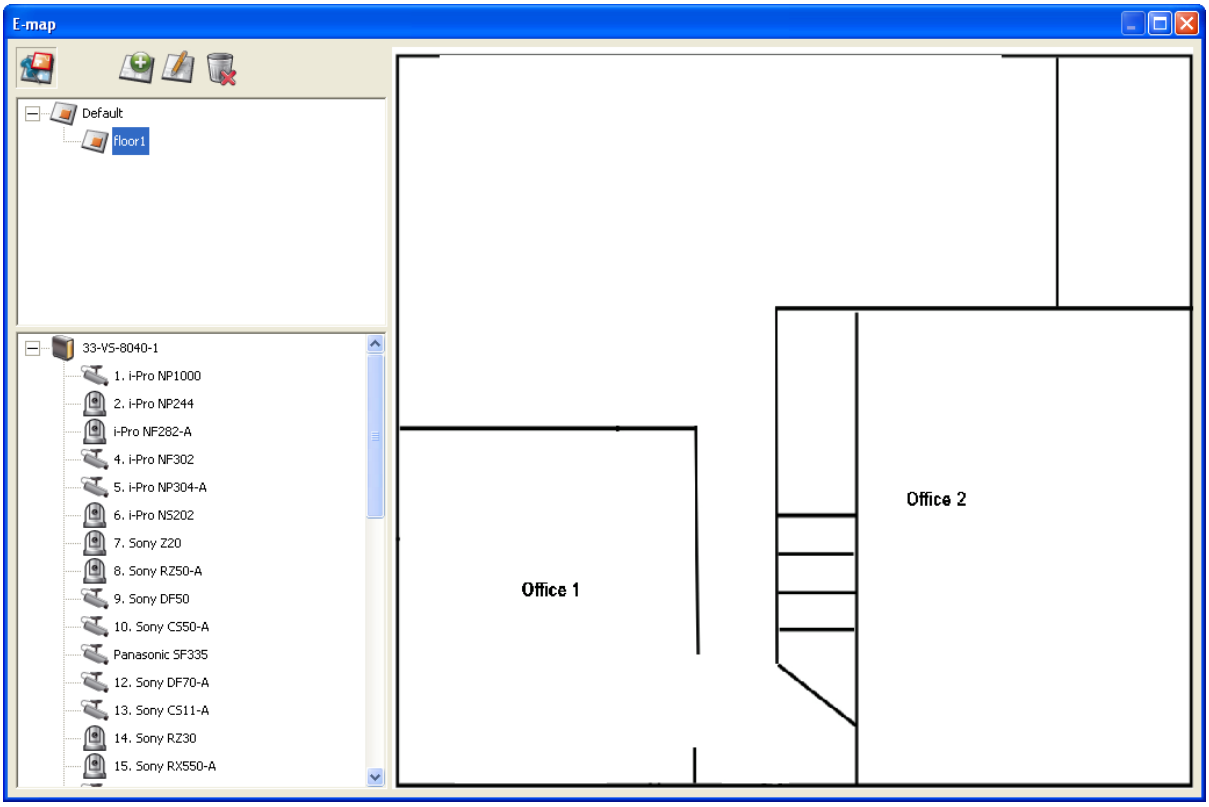
A list of IP cameras configured on the NVR will be shown on the left. Click 'Default' and then  to add an E-map.



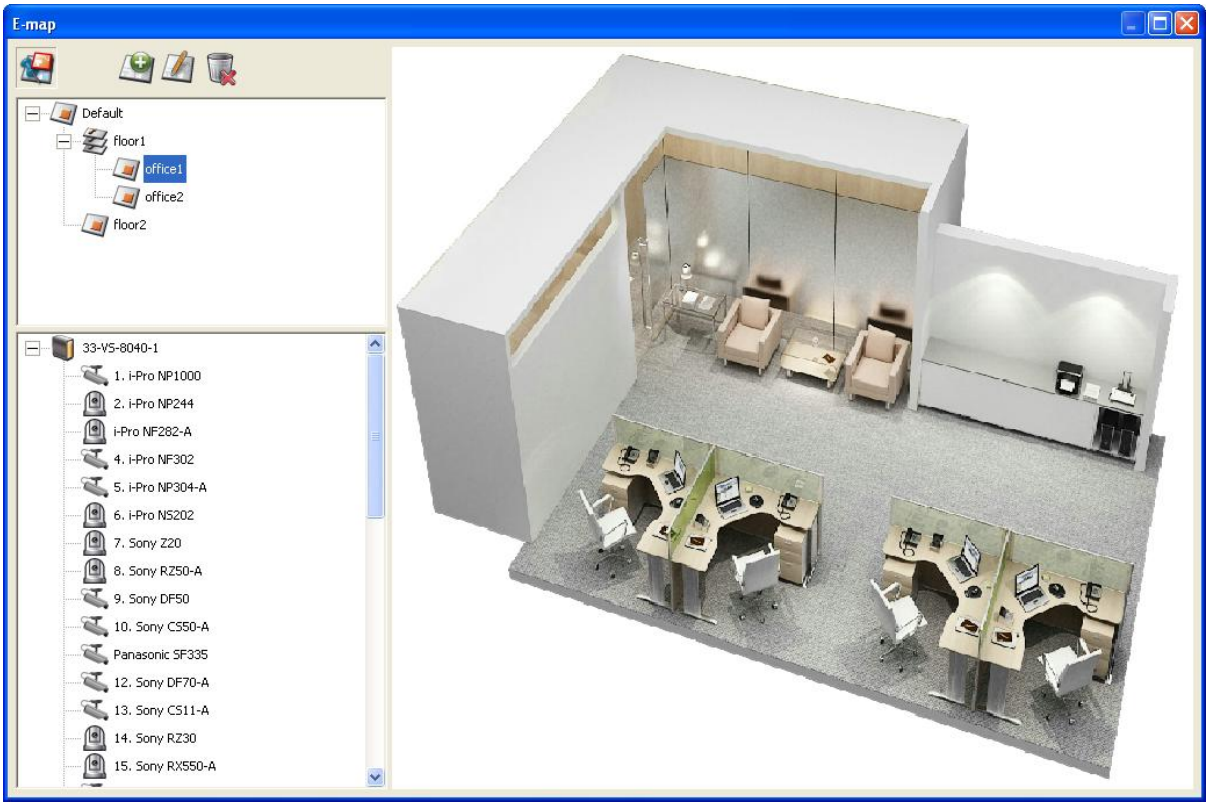
Enter the map name and select the file. **The E-map must be in JPEG format.** Click 'OK'.



The E-map will be shown.



To add one or multiple E-maps, e.g. office1 and office2, under an E-map, e.g. floor1, click the E-map icon of floor1 and then click  to add the E-maps one by one. The icon of floor1 will be changed to  when more than one E-map is added. To add another E-map of the same level of floor1, select 'Default' and add the E-map, e.g. floor2.



4.3.3 Edit a Map Name

To edit the name of an E-map, select the E-map and click . Enter the new name and click 'OK'. To change the picture of the E-map, delete the E-map and add the new file.

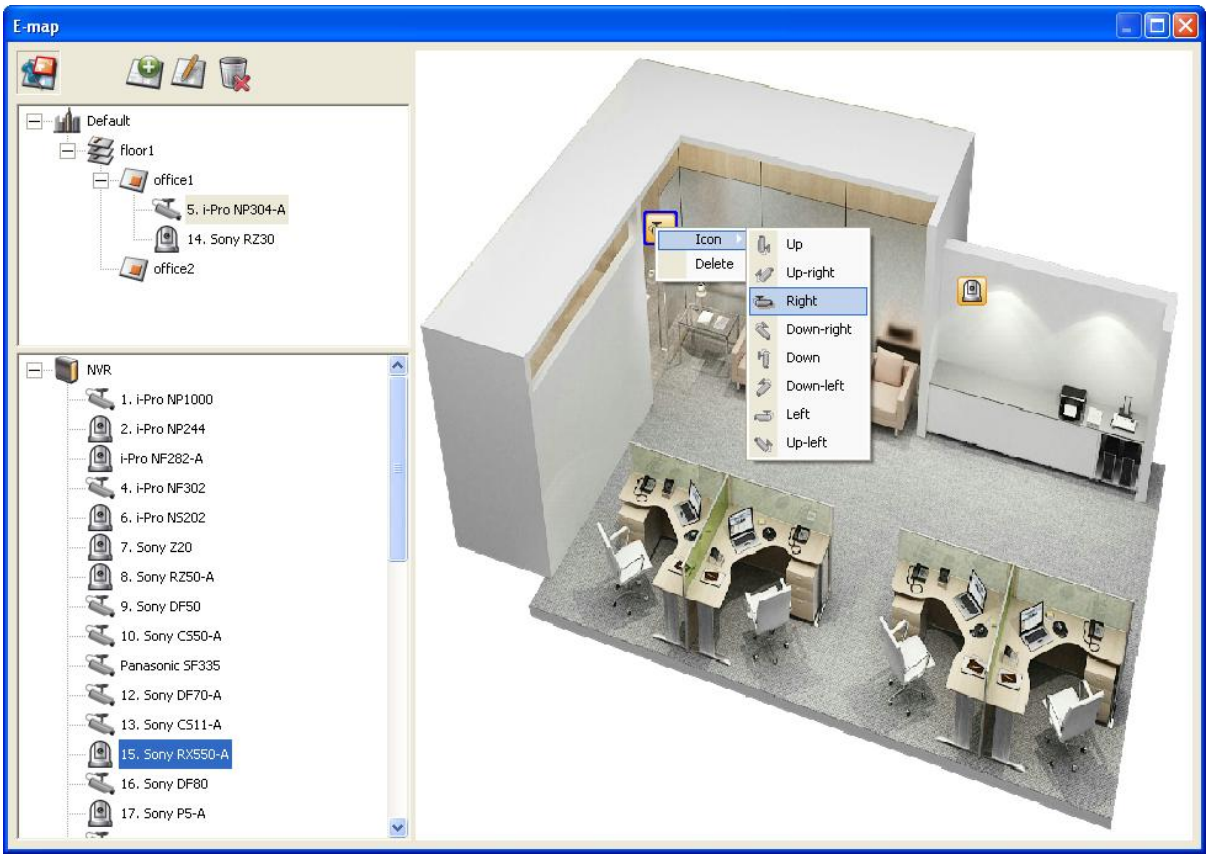
4.3.4 Delete a Map Set or an E-map

To delete an E-map, select the map  and click . To delete a set of maps under the same level, select the map set  and click .

4.3.5 Indicate IP Cameras on an E-map

After uploading the E-maps, drag and drop the IP camera icons to the E-map(s) to indicate the camera location. The camera name will appear under the E-map on the top left column. When an icon of a fixed body or fixed dome IP camera  is dropped to the E-map, right click the camera icon and adjust the icon direction. The icon of a PTZ IP camera  cannot be adjusted.

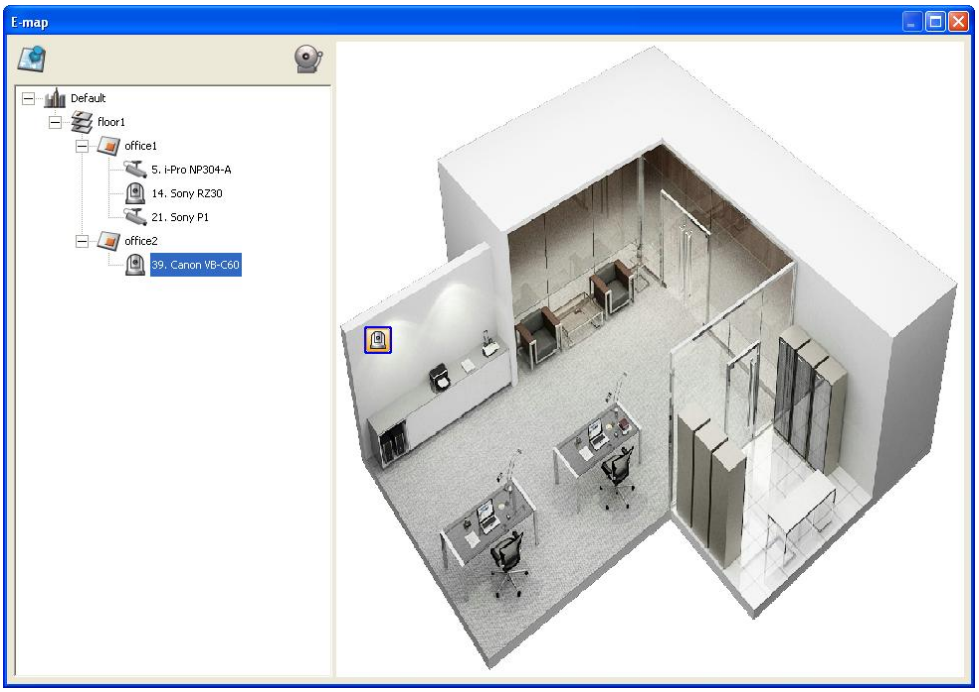
To delete a camera icon from the E-map, right click the icon and select 'Delete'.



To save the changes made to the E-maps, click  to exit the Edit mode.

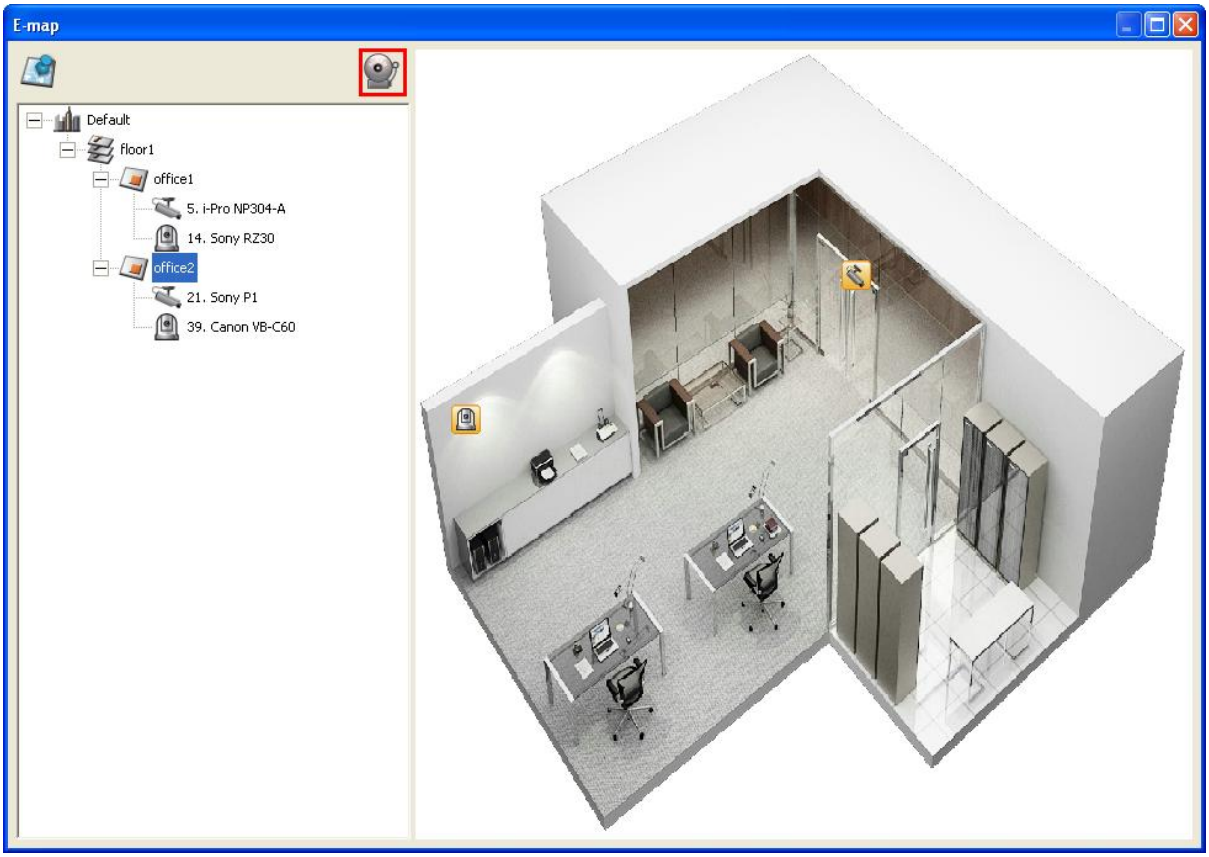
When clicking an E-map or an IP camera on the left, the E-map or the E-map with the camera icon will be shown on the right immediately. The selected camera icon will be highlighted with a blue bracket .

When double clicking a camera icon on an E-map, whether or not Edit mode is enabled, the IP camera will be shown in single-channel mode on the monitoring screen.



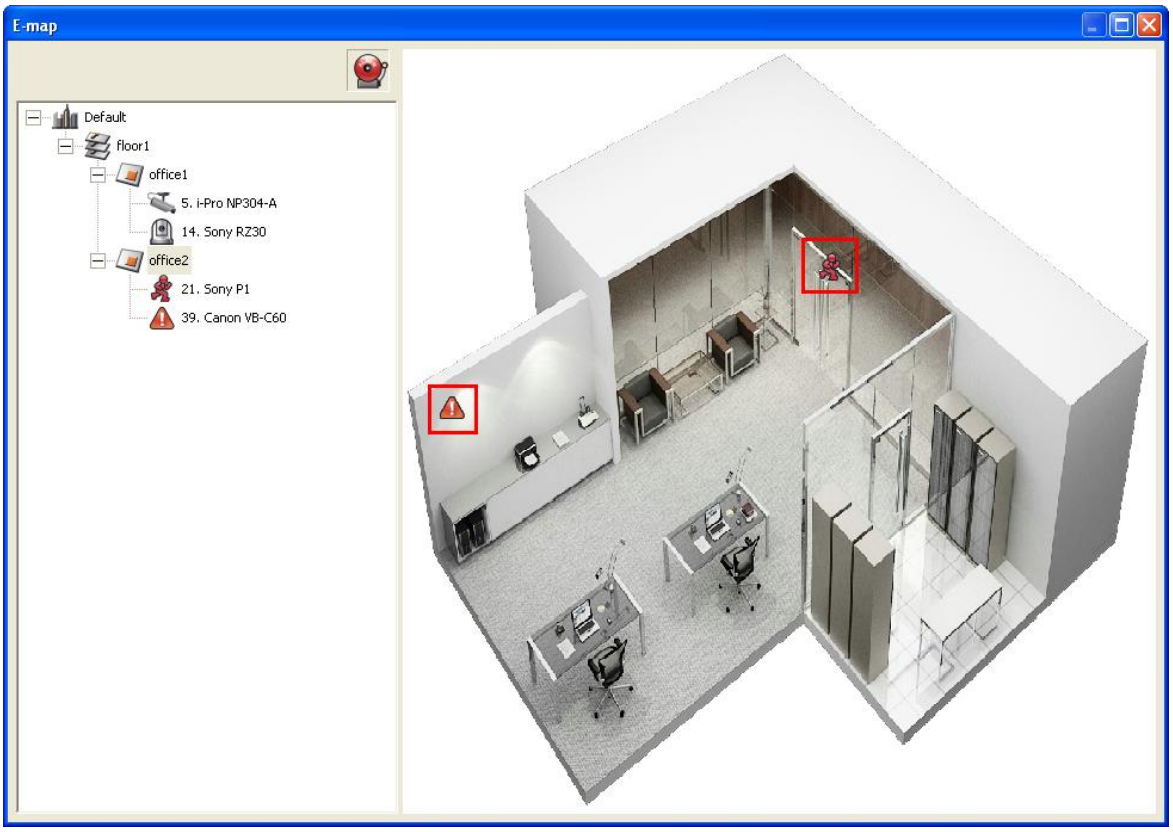
4.3.6 Enable/Disable Event Alert

To enable event alert on an E-map, click .



When an event occurs to an IP camera on the E-map, the camera icon will flash and indicate the event type. The E-map with the IP camera on which an event is triggered will be shown immediately*. Double click the camera/alert icon and the monitor screen will switch to display the alert camera channel in single-channel view on the monitor screen automatically.

*The E-map with event alert will not be switched to display automatically if the time difference between the event time and the last time the user uses the E-map (clicks the E-map window) is less than 20 seconds. In this case, refer to the tree menu on the left to locate the IP cameras with alerts/flashing icons.

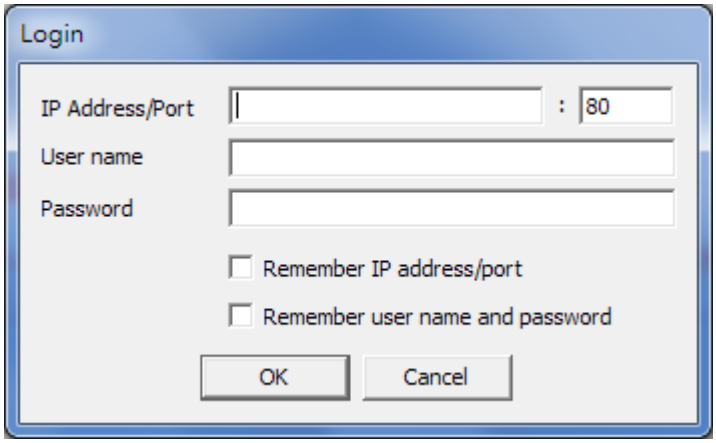


The event type occurred to an IP camera can be identified by the camera icon on an E-map.

Icon	Description
	A moving object has been detected
	The alarm input 1 of the IP camera has been triggered
	The alarm input 2 of the IP camera has been triggered
	The alarm input 3 of the IP camera has been triggered
	An unidentified event has been triggered

4.4 Remote Monitoring from QNAP Surveillance Client for Windows

1. After installing QNAP Surveillance Client for Windows, click Start → All Programs → QNAP → Surveillance → Surveillance Client to open QNAP Surveillance Client for Windows.
2. The following window will be shown.



3. Enter the IP address/port, user name and password to login the NVR.
4. All the monitoring functions of QNAP Surveillance Client for Windows are similar to those of the browser-based interface. Please refer to other sections of this chapter.

Chapter 5. Play Video Files

Use Google Chrome, Mozilla Firefox, or Microsoft Internet Explorer and QNAP Surveillance Client to play the recording files of the NVR.

1. To play the recording files by Internet Explorer, please add the NVR IP address to the list of trusted sites. While accessing NVR via IE, it will be prompted to install the ActiveX add-on.

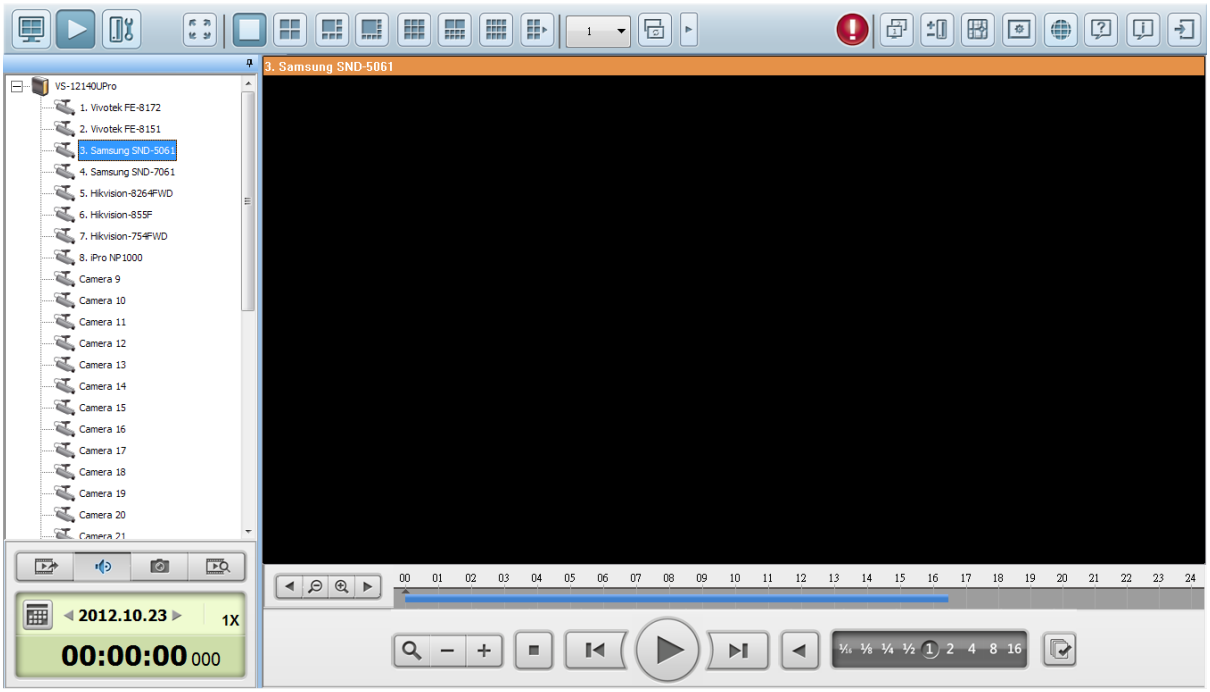
2. To play the recording files by Google Chrome, Mozilla Firefox or QNAP Surveillance Client on Windows PC, please visit http://www.qnapsecurity.com/download.asp to download and install QNAP Surveillance Client for Windows.

3. To play the recording files on Mac, please visit http://www.qnapsecurity.com/download.asp to download and install QNAP Surveillance Client for Mac.

5.1 Playback Page

1. Click the playback button on the monitoring page or the system administration page.

2. The playback page will be shown. You can search and play the video files on the NVR servers. To return to the monitoring page, click . To enter the system administration page, click .



Note: The playback access right to the IP cameras is required to view and play the video files. Please refer to Chapter 6.5 for the access right configuration.



The following table consists of the icons and their descriptions in the playback page.

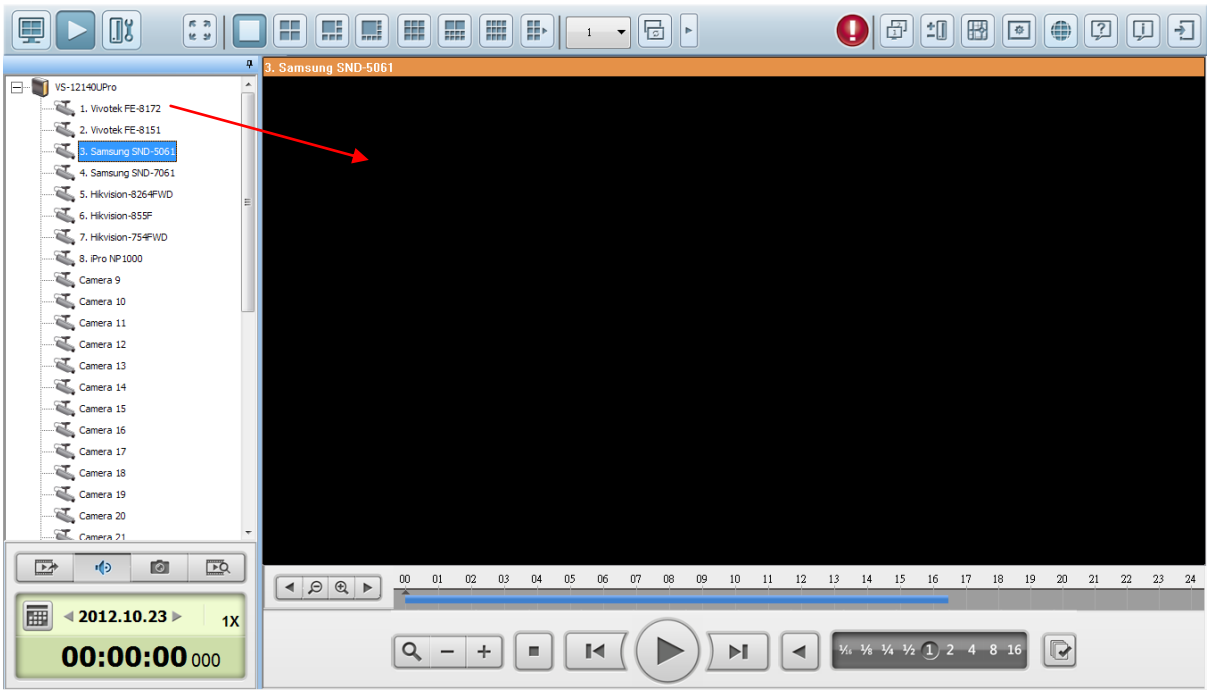
Icons	Description
	Configure the options such as playing mode, snapshot settings, and digital watermark
	Multi-view mode (up to 16-view mode)
	Convert the video files on the NVR to AVI files
	Audio (optional): Turn on/off the audio support
	Take a snapshot of the video
	Search recording files by IVA
	Last time interval
	Increase the interval of scales on the timeline
	Decrease the interval of scales on the timeline

	Next time interval
	Digital zoom: Enable/Disable digital zoom. When digital zoom is enabled (), you can click  to use digital zoom function.
	Stop
	Play/pause a video file
	Last frame
	Next frame
	Reverse play
	Play the video at 1/16x, 1/8x, 1/4x, 1/2x, 1x, 2x, 4x, 8x, 16x speed
	Control all views: Control the playback settings of all the playback windows

5.1.1 Play Video Files from NVR

Follow the steps below to play the video files on the remote NVR servers.

1. Drag and drop camera(s) from the server/camera tree to the respective playback window(s) to select the channel(s) for playback.



2. Select playback date from . You can examine each channel to know the time range when the files are recorded for each IP camera. The blue cells indicate regular recording files and the red cells indicate alarm recording files. If it is blank in the time period, it means no files are recorded at that moment.

3. Click  to start the playback.

4. Specify the time to play back the recording files at that moment.

5. Click  to control all the playback windows to play back the recording files. When this function is enabled, the playback options (play, pause, stop, previous/next frame, previous/next file, speed adjustment) will be applied to all the playback windows.

Right click the channel on the playback page. The following functions are available depending on the IP camera model.

1. Dewarp fisheye images: for Vivotek FE8171V/ FE8172

   Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Panorama (Full View), Panorama (Dual View), and Rectangle.

   Remark 1: The camera firmware version should be v0100h or above. About the latest camera firmware, please visit http://www.vivotek.com/index.php.

   Remark 2: If the Mount type is Wall, only Panorama (Full View), and Rectangle are supported in Dewarping mode.

   Remark 3: If Dewarping mode is Rectangle, you can use PTZ control panel to operate PTZ functions, excluding digital zoom.



2. Dewarp panomorph images: for the specific camera models with panomorph lens

   Before using this feature, you need to select the 'Enable panomorph support' option in the recording settings page. Right click the channel and enable the function. After that, you can select Mount type, including wall, ceiling, and floor and then select Dewarping mode, including Perimeter mode, Quad mode, and PTZ mode.

   Remark 1: To know the camera models which can be installed with panomorph lens, please visit http://www.qnapsecurity.com/faq.asp.

   Remark 2: The function is only available when the resolution of the video stream is higher than 640x480 on the monitoring page.

   Remark 3: If Dewarping mode is PTZ mode, for the channel, you can use PTZ control panel or mouse (by clicking and holding down the mouse left button, and then moving the mouse or turning the mouse wheel) to change viewing angles or zooming in/out the screen. If Dewarping mode is Quad mode, the above methods can also be applied to operate PTZ functions in each divided screen.


8. VivoTek IP-8151

5.1.2 Intelligent Video Analytics (IVA)

The NVR supports intelligent video analytics for video data search.

The following features are supported:

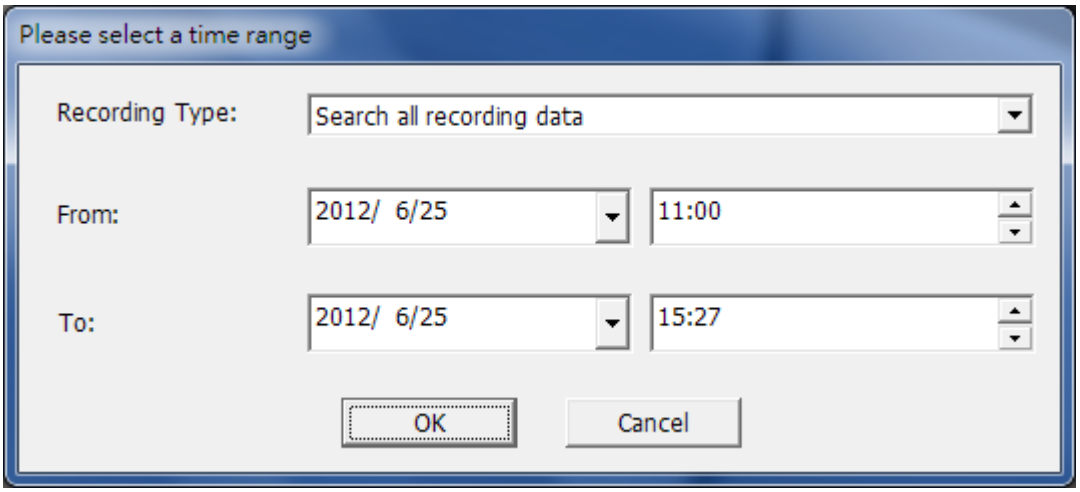
- Motion detection: Detects the movements of the objects in the video.
- Foreign object: Detects new objects in the video.
- Missing object: Detects missing objects in the video.
- Out of focus: Detects if the camera is out of focus.
- Camera occlusion: Detects if the IP camera is obstructed.

To use this function, follow the steps below:

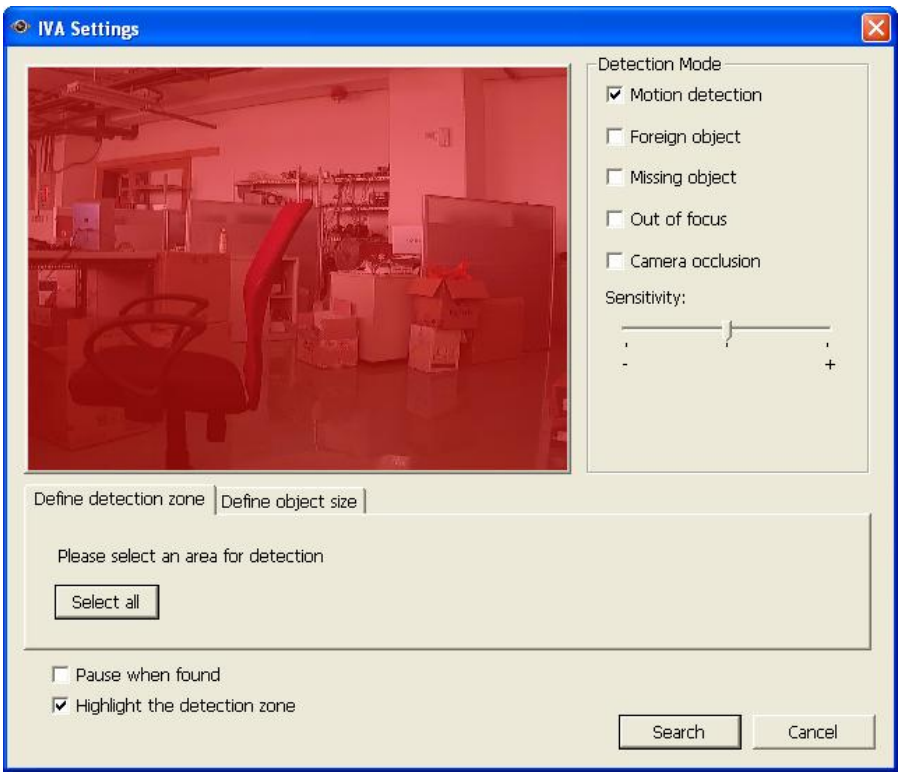
1. Enter the playback page. Select one channel and click .

Note: The intelligent video analytics support video search on one IP camera channel only.

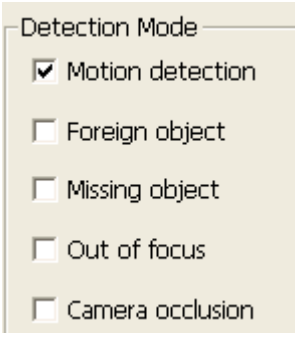
2. Select recording type, start time and end time for video search.



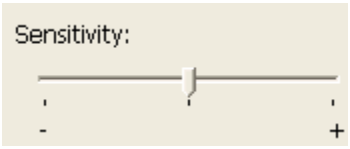
3. Configure the IVA settings for video search.



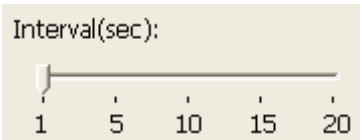
a. Select the detection mode: Motion detection, Foreign object, Missing object, Out of focus, or Camera occlusion. Multiple options can be selected.



b. Adjust the sensitivity for object detection.

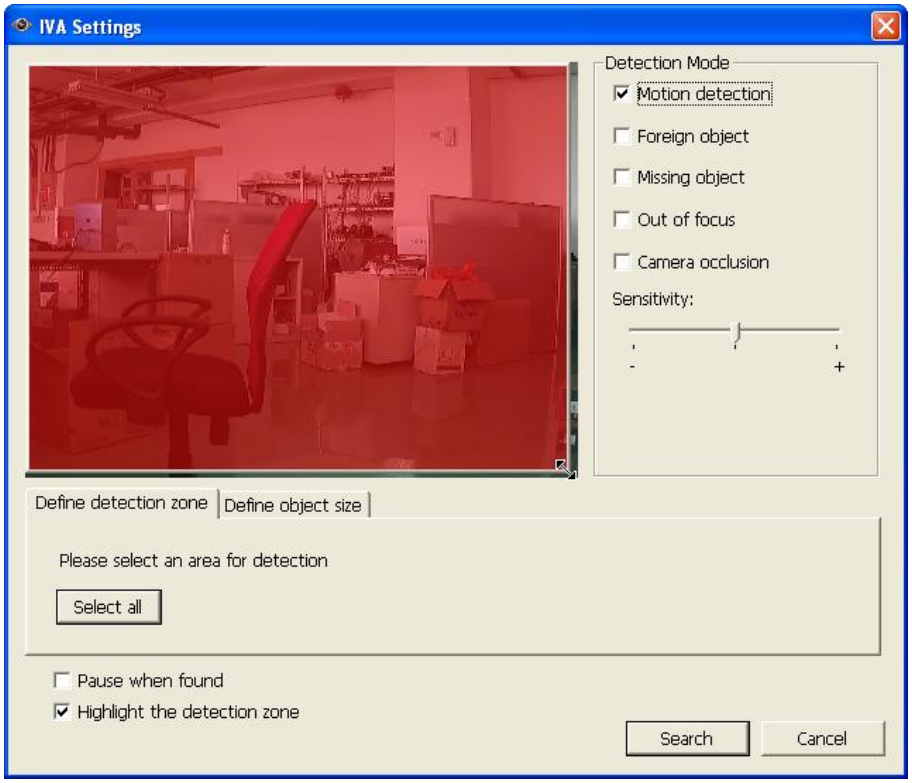


c. Adjust the time interval for detecting the foreign objects and missing objects. If a foreign object appears or a missing object disappears for a period of time which is longer than the time interval, the NVR will record the event.

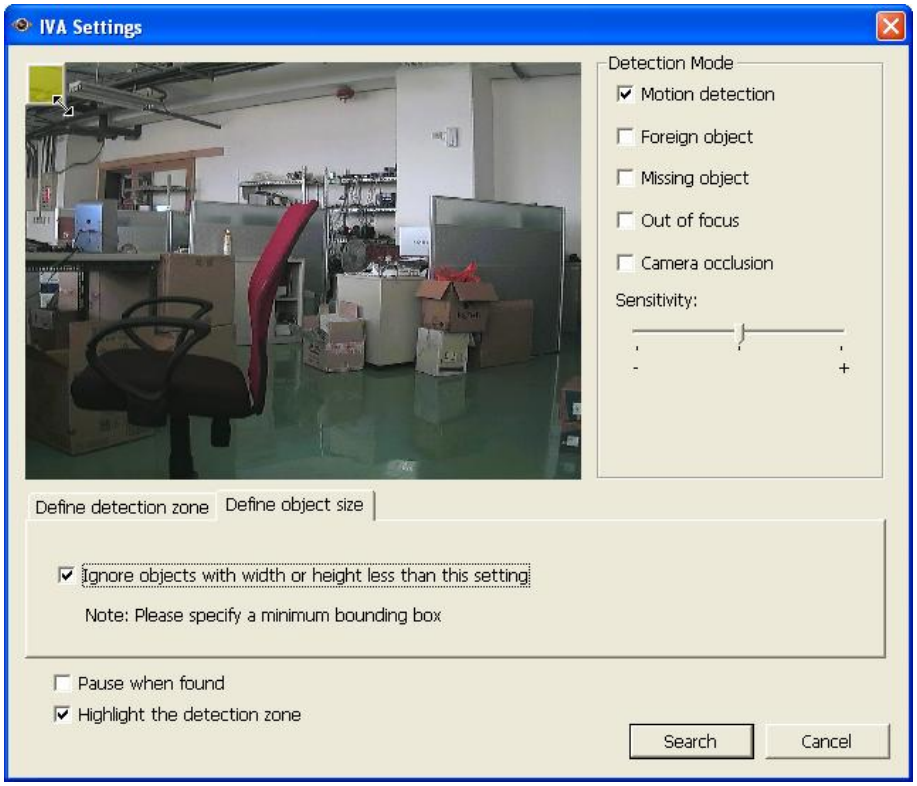


Note: The Interval slide bar appears only when 'Foreign object' or 'Missing object' is selected.

d. Define the detection zone. Mouse over the edge of the red zone and use the mouse to define the detection zone. Click 'Select all' to highlight the entire area.



e. Define the object size for detection. Use the mouse to drag the yellow zone to define the minimum object size for detection.

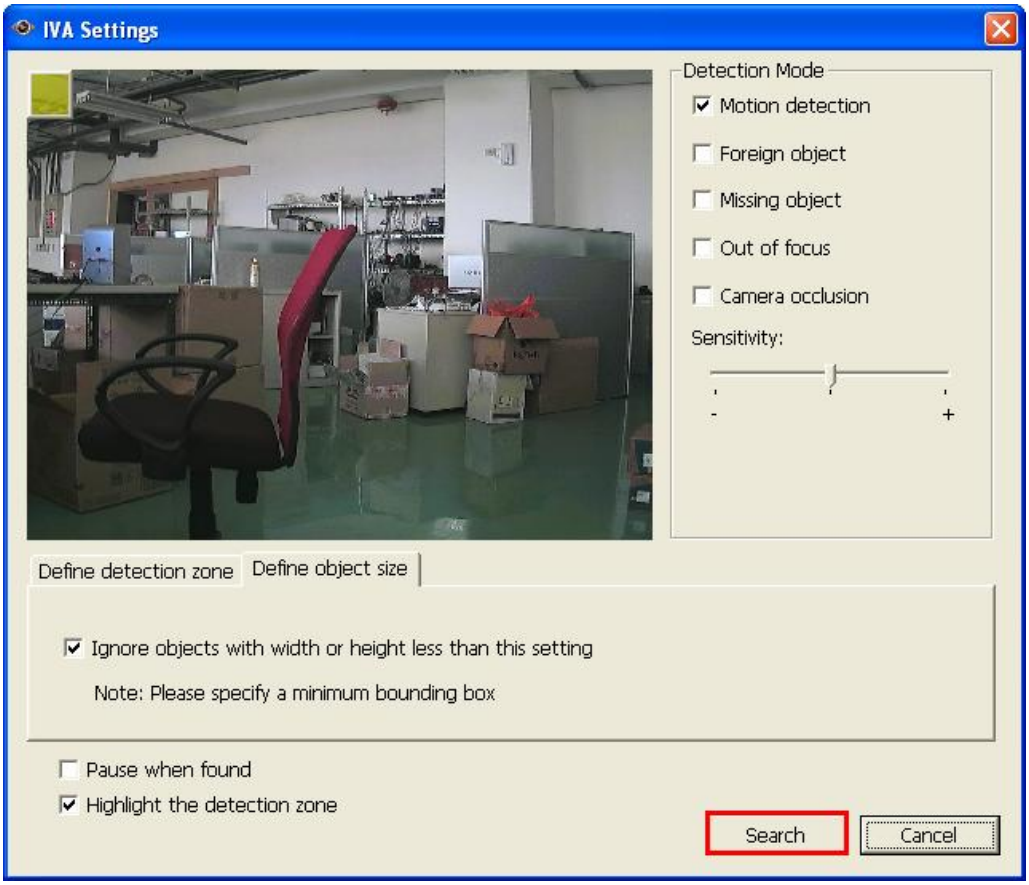


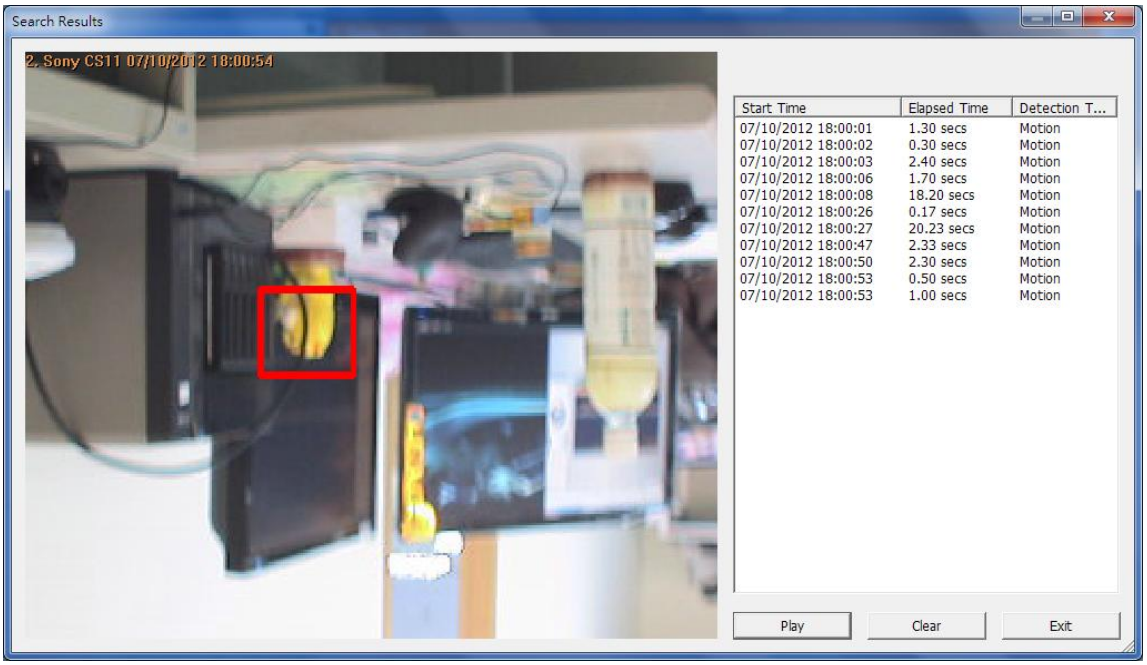
- Ignore objects with width or height less than this setting: Enable this option to ignore all the objects smaller than the yellow zone.

f. Enable/Disable other options for video search.

- Pause when found: Enable this option and the video search will stop when a video file matching the search criteria is found.
- Highlight the detection zone: The moving objects detected in the video will be highlighted in red boxes; the foreign or missing objects will be highlighted in yellow boxes; the video which is out of focus or obstructed will be displayed in transparent red.

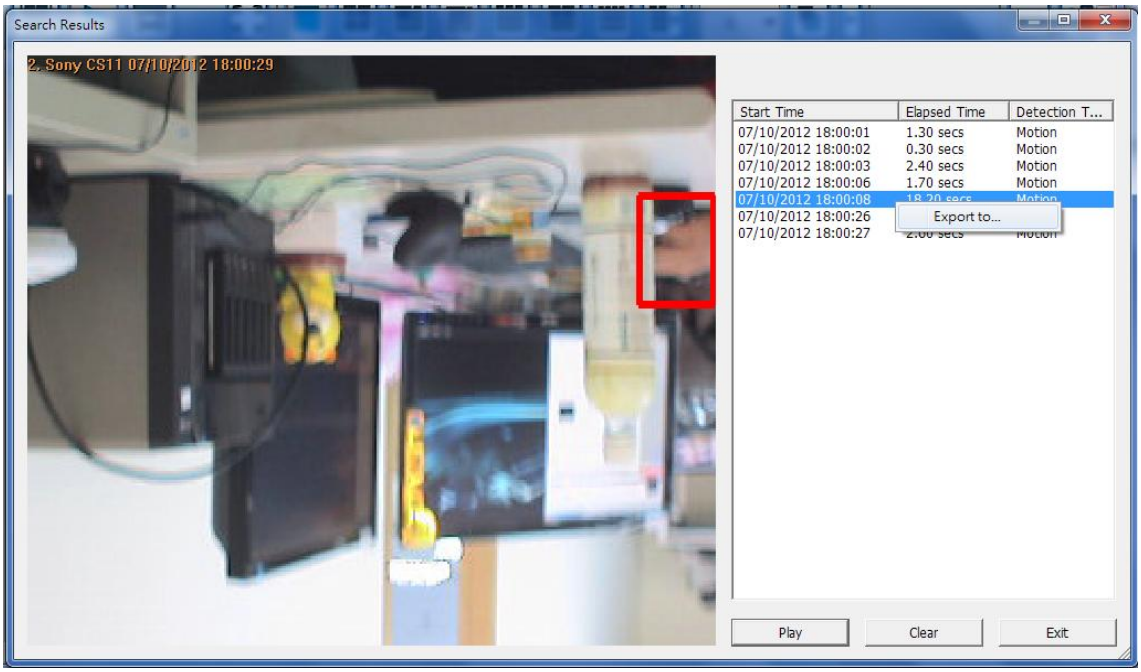
4. Click 'Search' to start searching the video by IVA. The results will be shown.




Search Results
2, Sony CS11 07/10/2012 18:00:54
Start Time
Elapsed Time
Detection T...
07/10/2012 18:00:01 1.30 secs Motion
07/10/2012 18:00:02 0.30 secs Motion
07/10/2012 18:00:03 2.40 secs Motion
07/10/2012 18:00:06 1.70 secs Motion
07/10/2012 18:00:08 18.20 secs Motion
07/10/2012 18:00:26 0.17 secs Motion
07/10/2012 18:00:27 20.23 secs Motion
07/10/2012 18:00:47 2.33 secs Motion
07/10/2012 18:00:50 2.30 secs Motion
07/10/2012 18:00:53 0.50 secs Motion
07/10/2012 18:00:53 1.00 secs Motion
Play
Clear
Exit

Other options:

- Double click an entry on the search result dialog to play the video. The player will play the video starting from 15 seconds before the event to 15 seconds after the event.
- Right click an entry on the search result dialog to export the video (AVI format) and save it to the computer. The exported video starts from 15 seconds before the event to 15 seconds after the event.



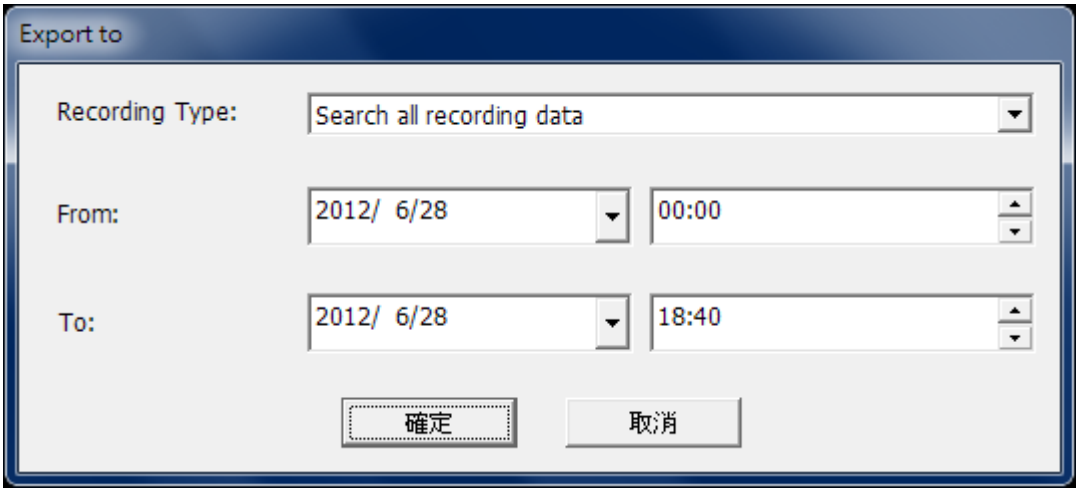
5.1.3 Convert NVR Videos to an AVI File

To convert the video files on the NVR to an AVI file and export the file to the local PC in the playback page, please follow the steps below.

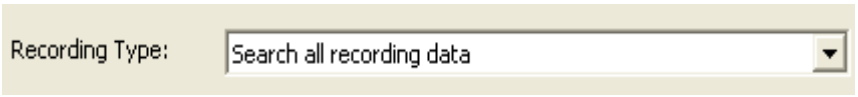
Note: The playback access rights of the IP cameras are required to use this feature.

1. Select an IP camera and click  to 'Convert to AVI file'.

2. Select recording type, start time and end time for video exporting.



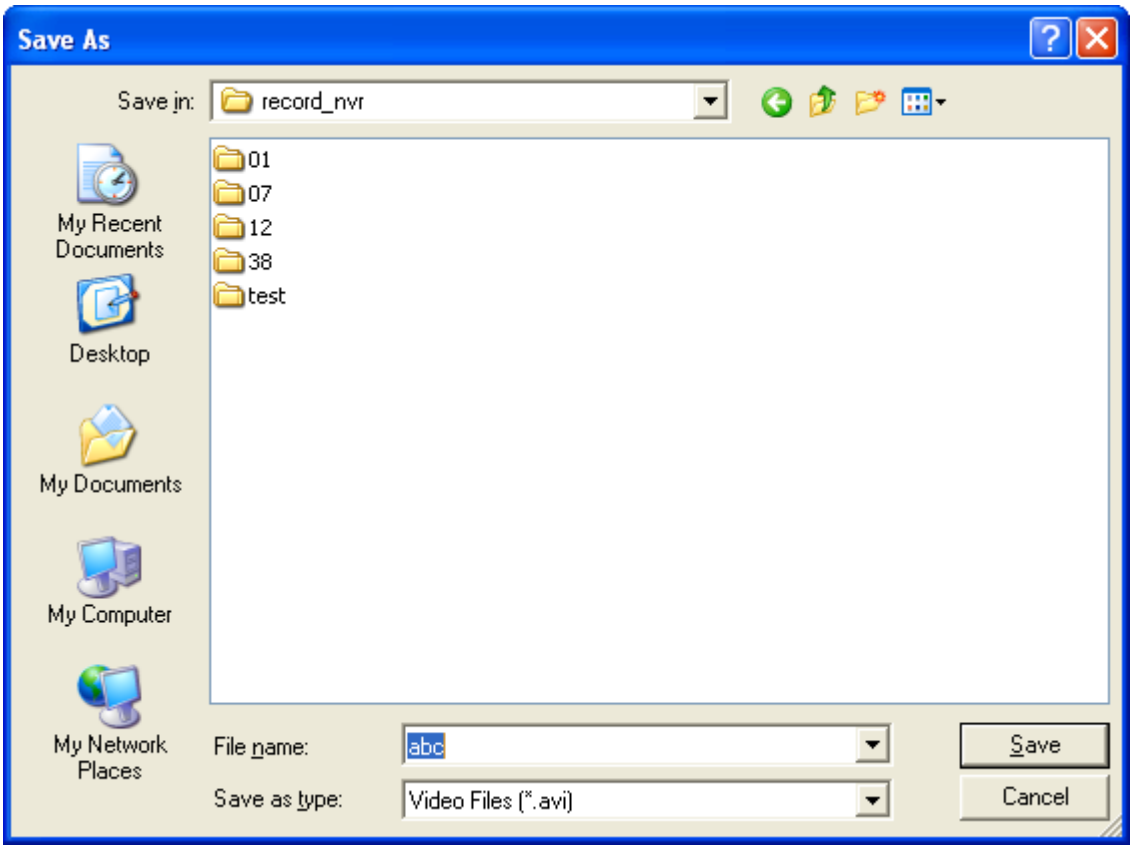
   a. Choose the recording type.



   b. Specify the time range. Specify a smaller time range, or the video file will be too large and take a long time to convert.



3. Click 'OK'. Enter the file name and specify the location where the file will be saved.



4. All the video files that met the search criteria will be converted to an AVI file.

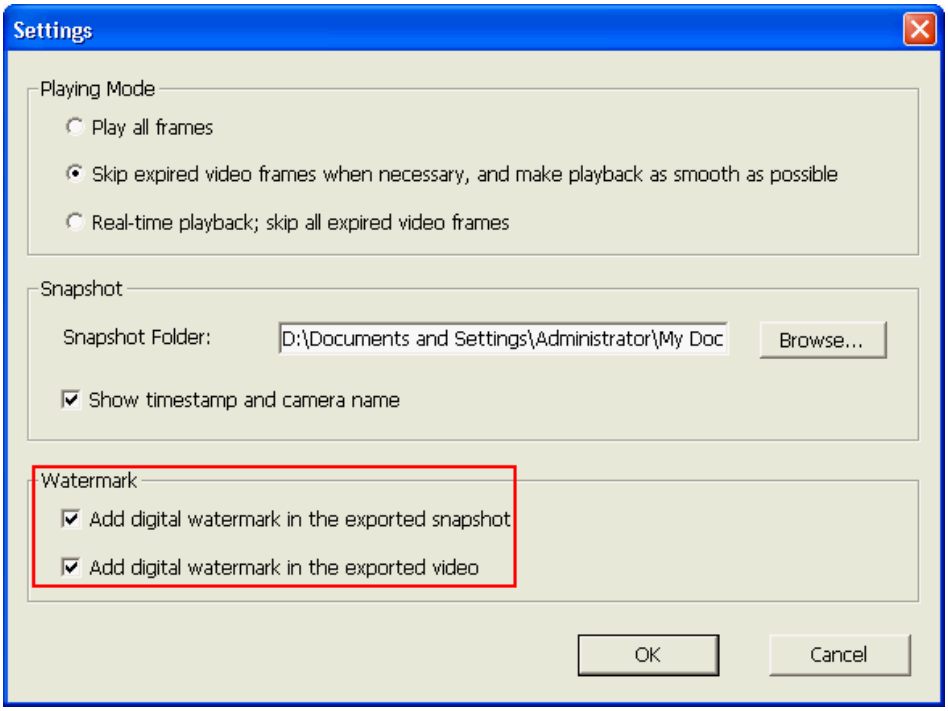
5.1.4 Export Video Files with Digital Watermark

The NVR supports digital watermarking to protect the videos and snapshots from unauthorized modifications. Digital watermarks can be added to the exported videos and snapshots in the playback page. The watermark cannot be removed and can only be verified by the QNAP Watermark Proof software.

To use digital watermarking in the playback page, follow the steps below.

1. Click  to enter the playback page.

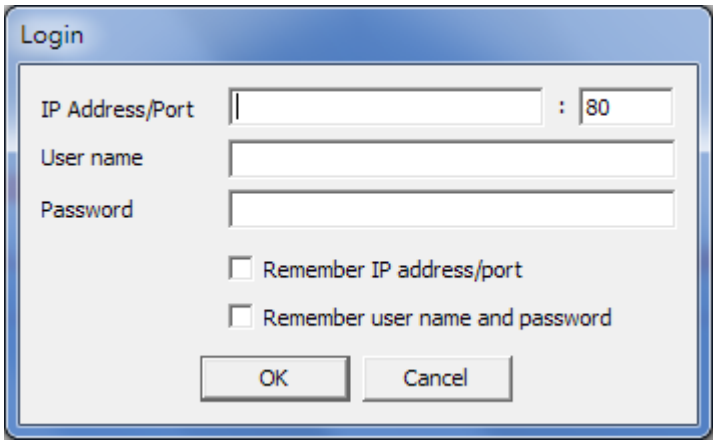
2. Select  to add digital watermarks in the exported snapshots or videos.



3. Click  'Convert to AVI file' (refer to Chapter 5.1.3). Digital watermarks will be added to the exported video files and snapshots.

5.2 Play Video Files in QNAP Surveillance Client for Windows

1. Click Start → All Programs → QNAP → Surveillance → Surveillance Client to open QNAP Surveillance Client for Windows.
2. The following window will be shown.

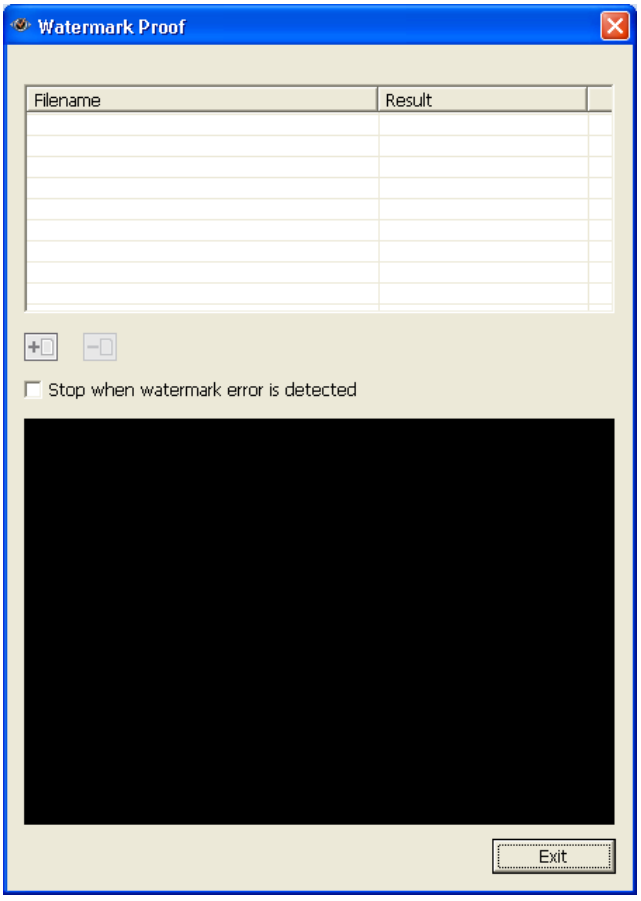


3. Enter IP address/port, user name and password to log into the NVR.
4. All the playback functions of QNAP Surveillance Client for Windows are similar to those of the browser-based interface. Please refer to other sections of this chapter.

5.3 Watermark Proof

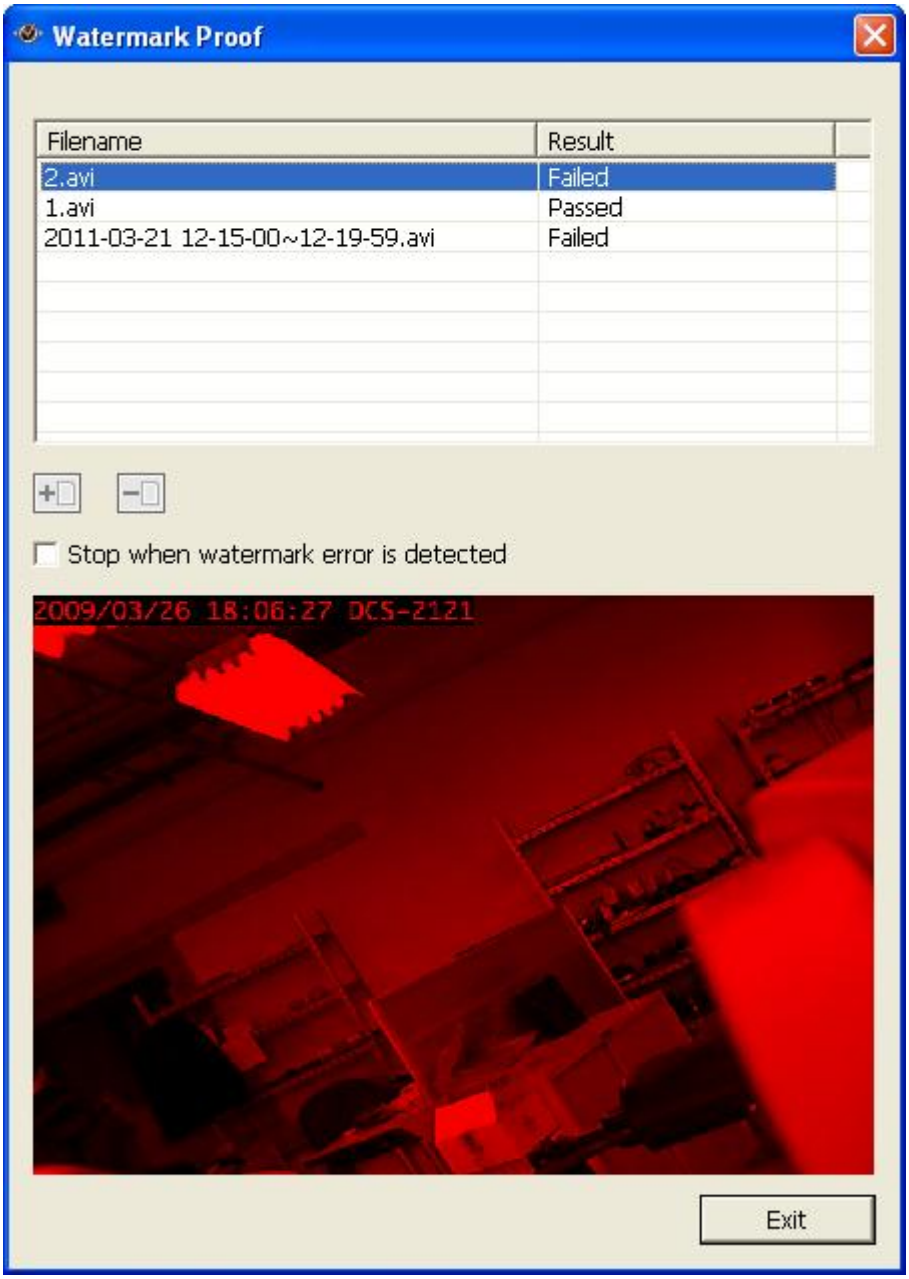
The Watermark Proof utility is installed automatically along with the QNAP Surveillance Client for Windows. From the Windows Start menu, select 'All Programs' > 'QNAP' > 'Surveillance' to locate 'Watermark Proof'.

Run Watermark Proof. The following window will be shown.



Click  to browse and locate the files. Multiple files can be selected at one time.

Click  to check the files and view the proof result. When 'Stop when watermark error is detected' is selected, the checking process will stop if a failed file is detected. Otherwise the program will check all the files selected. If a video file has been modified, or is not exported with digital watermark, or not an NVR video file, the proof result will be shown as 'Failed'.



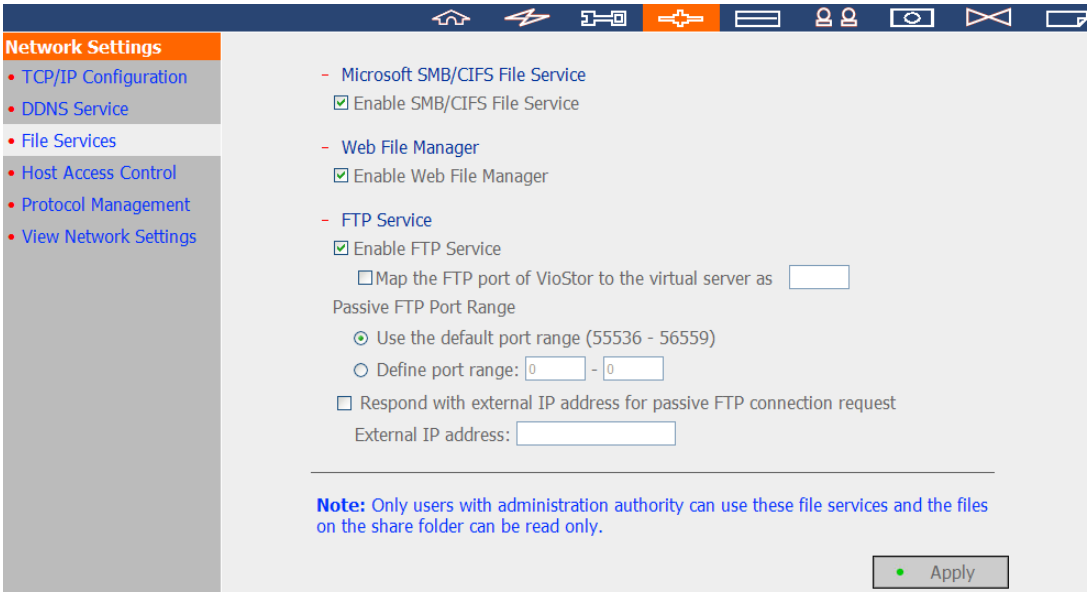
5.4 Access the Recording Data

The recording data on the NVR can be accessed by the following services:

- Microsoft Networking (SMB/CIFS)
- Web File Manager (HTTP)
- FTP Server (FTP)

Note:

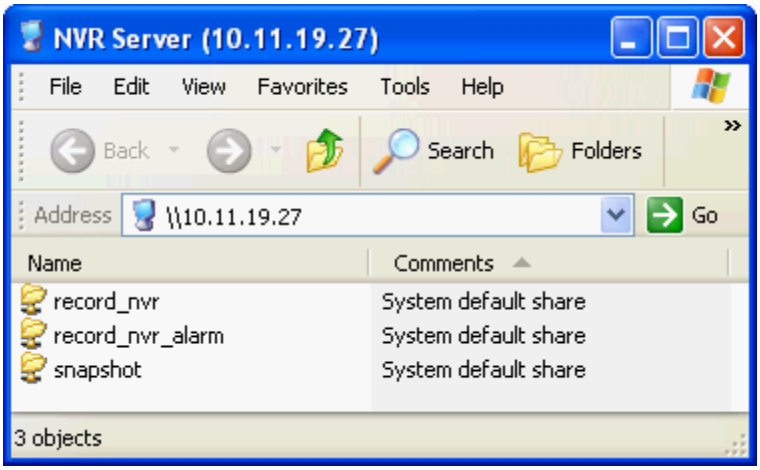
- To access the video files by these protocols, enter the user name and password with the administrator access right.
- To use these services, enable the files services in 'Network Settings' > 'File Services' in the system administration page.



5.4.1 Microsoft Networking (SMB/CIFS)

Access the video files by the SMB/CIFS protocol on Windows OS.

- Run \\NVR_IP from the Windows Start menu. For example, if the NVR IP is 10.11.19.27, enter \\10.11.19.27.



5.4.2 Web File Manager (HTTP)

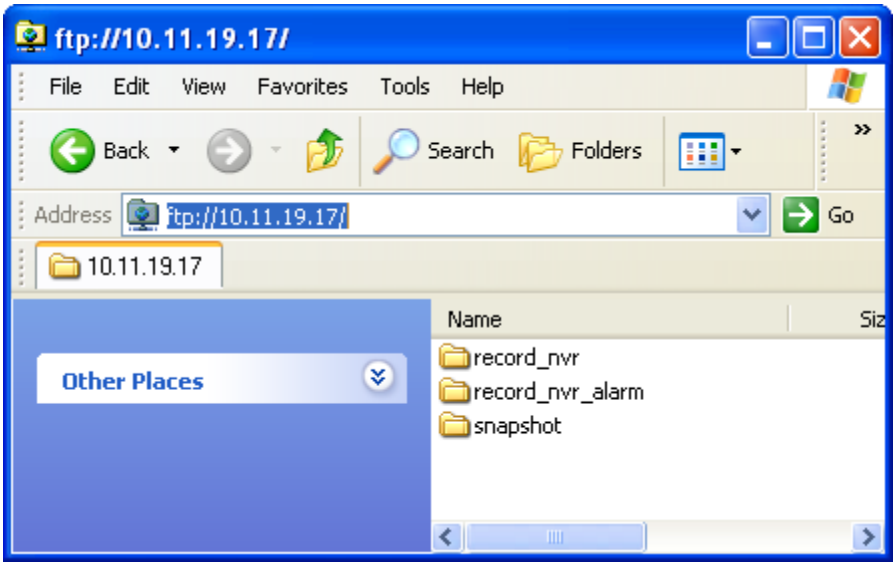
To access the recording data in the NVR by a web browser, go to http://NVR IP Address/cgi-bin/filemanager/filemanager.cgi?folder=/home/httpd/cgi-bin/filemanager/share&ComboBox=ON&lang=eng and login as an administrator.



5.4.3 FTP Server (FTP)

Access the recording data by FTP:

- In Windows Internet Explorer, enter ftp://username:password@NVRIP. For example, enter ftp://admin:admin@172.17.26.154 if the NVR IP is 172.17.26.154.



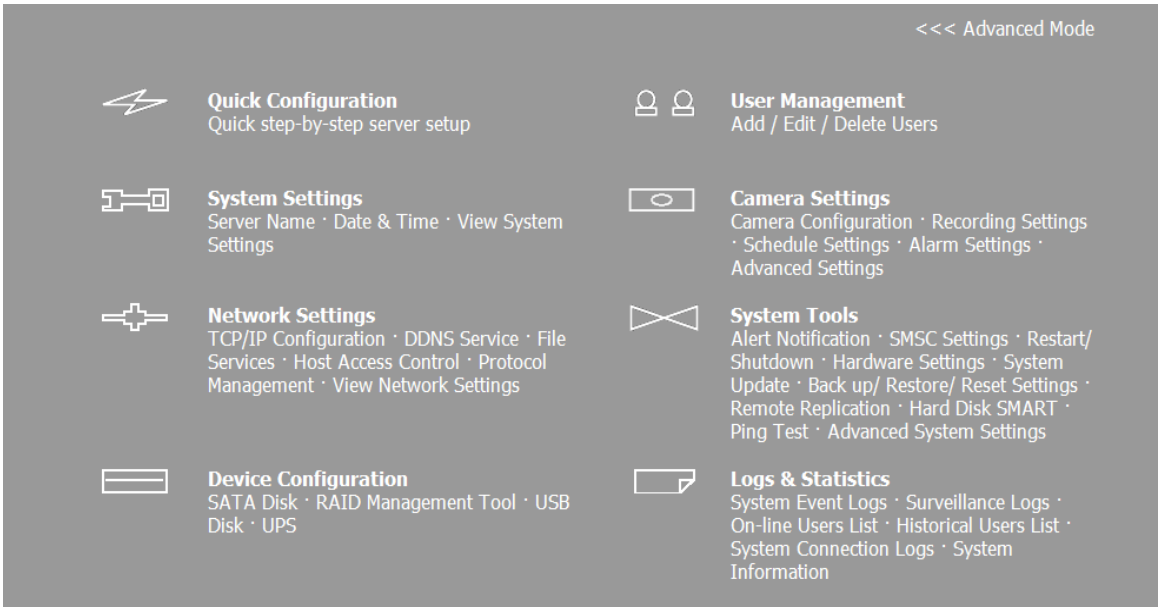
Chapter 6. System Administration

To enter the system configuration page of the NVR, login the monitoring page as an administrator and click .

Upon successful login, the monitoring channels, connection and recording status, and the network bandwidth of the NVR will be shown on the 'Advanced Mode' page.



View the settings by 'Traditional Mode'.



If the NVR is has not been configured yet, the Quick Configuration page will be shown. Follow the instructions to finish the setup.

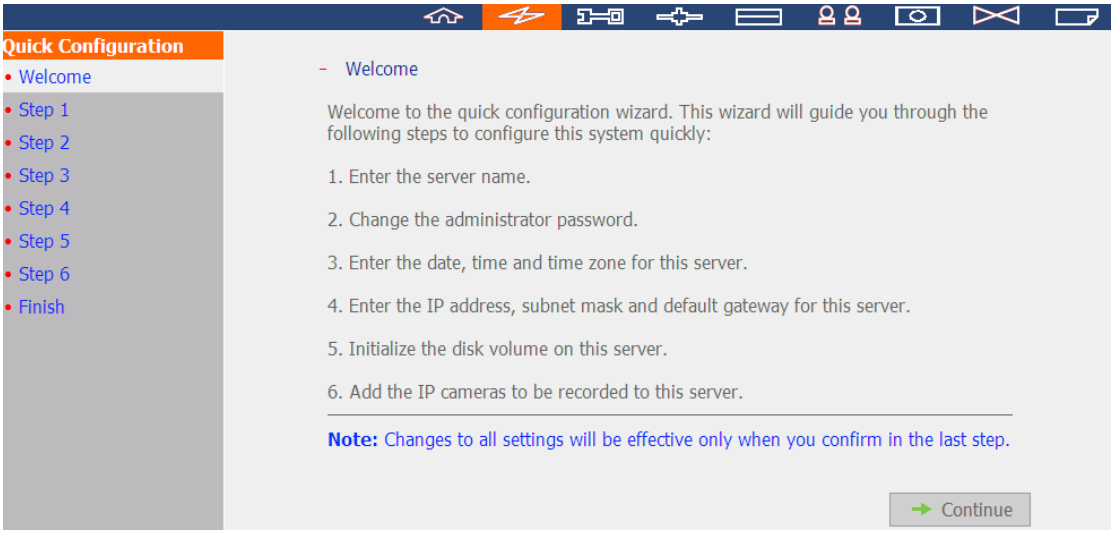
The functions of the buttons on the configuration page are described below:

	Return to the monitoring page
	Playback the videos
	View the on-line help
	Logout the NVR

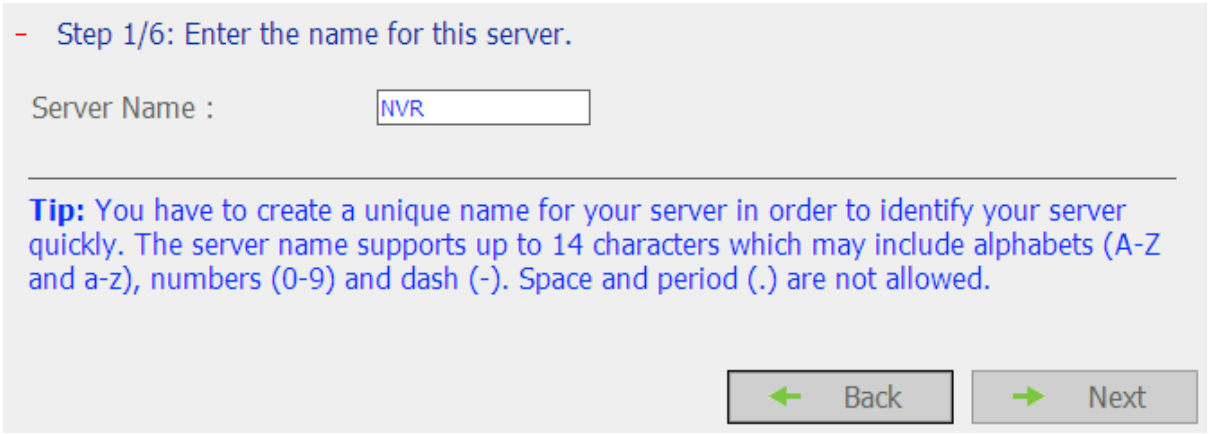
6.1 Quick Configuration

Follow the instructions to configure the NVR.

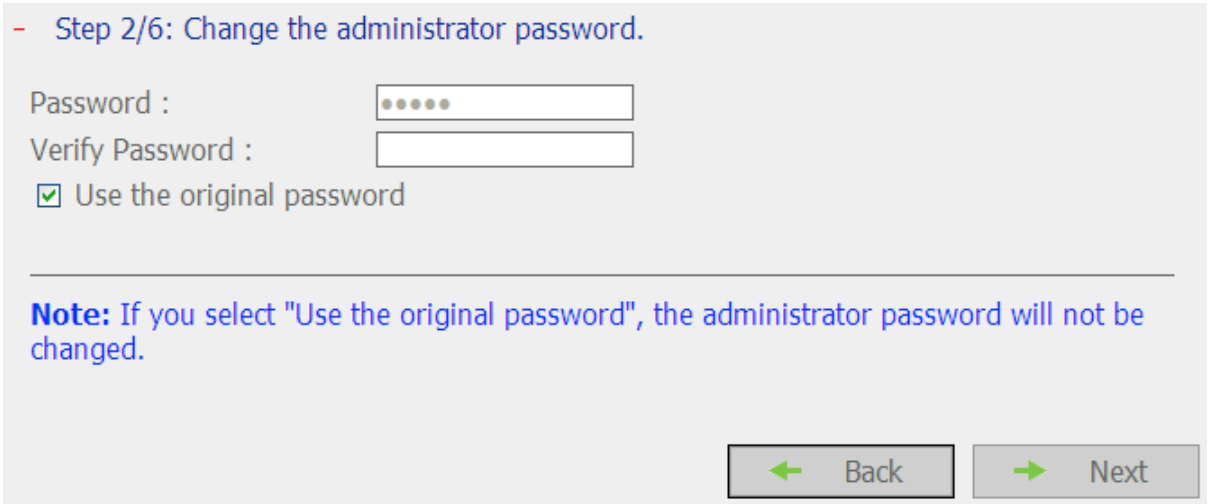
Note: All the changes will be effective only after clicking 'Start installation' in the last step.



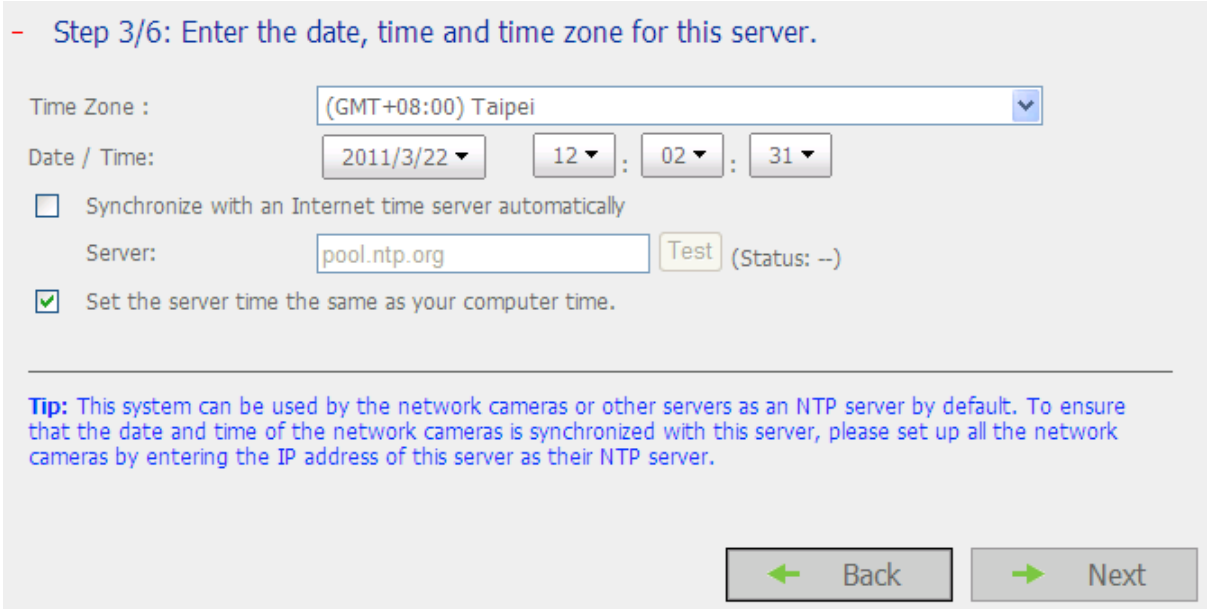
1. Enter the server name. The server name supports up to 14 characters which may include alphabets (A–Z and a–z), numbers (0–9), and dash (-). Space and period (.) are not allowed.



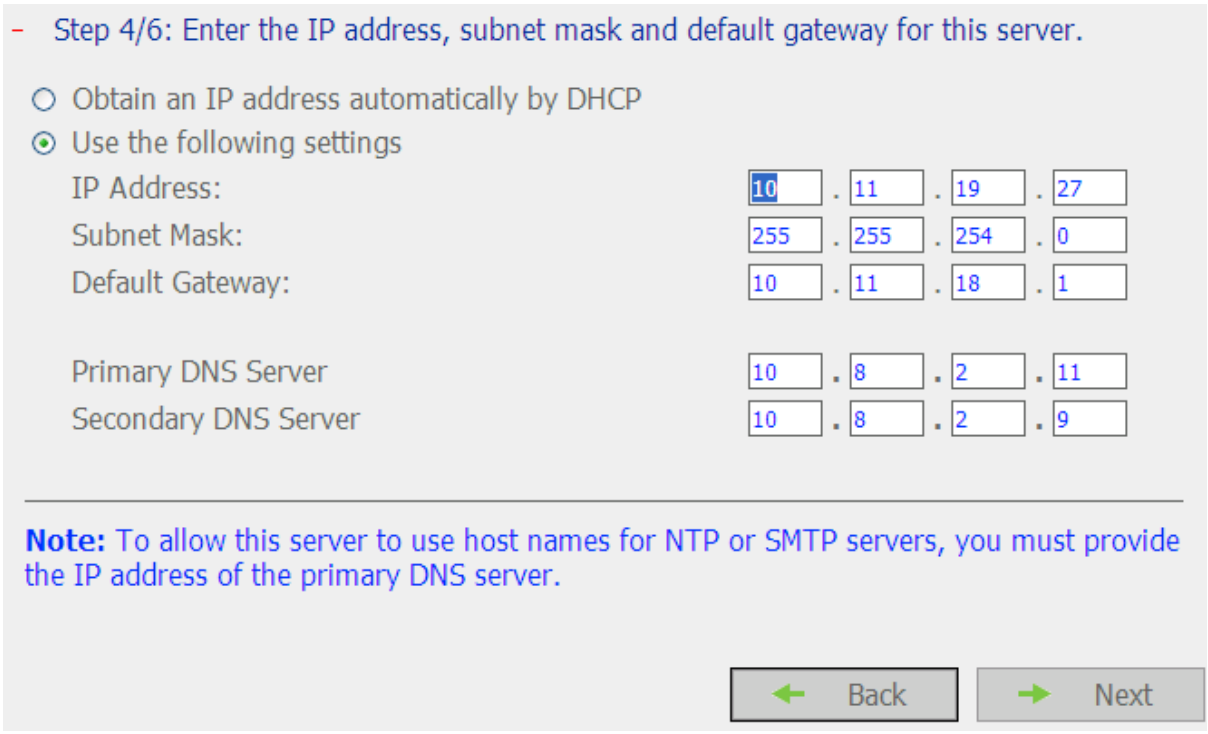
2. Change the administrator password or select to use the default password (admin).



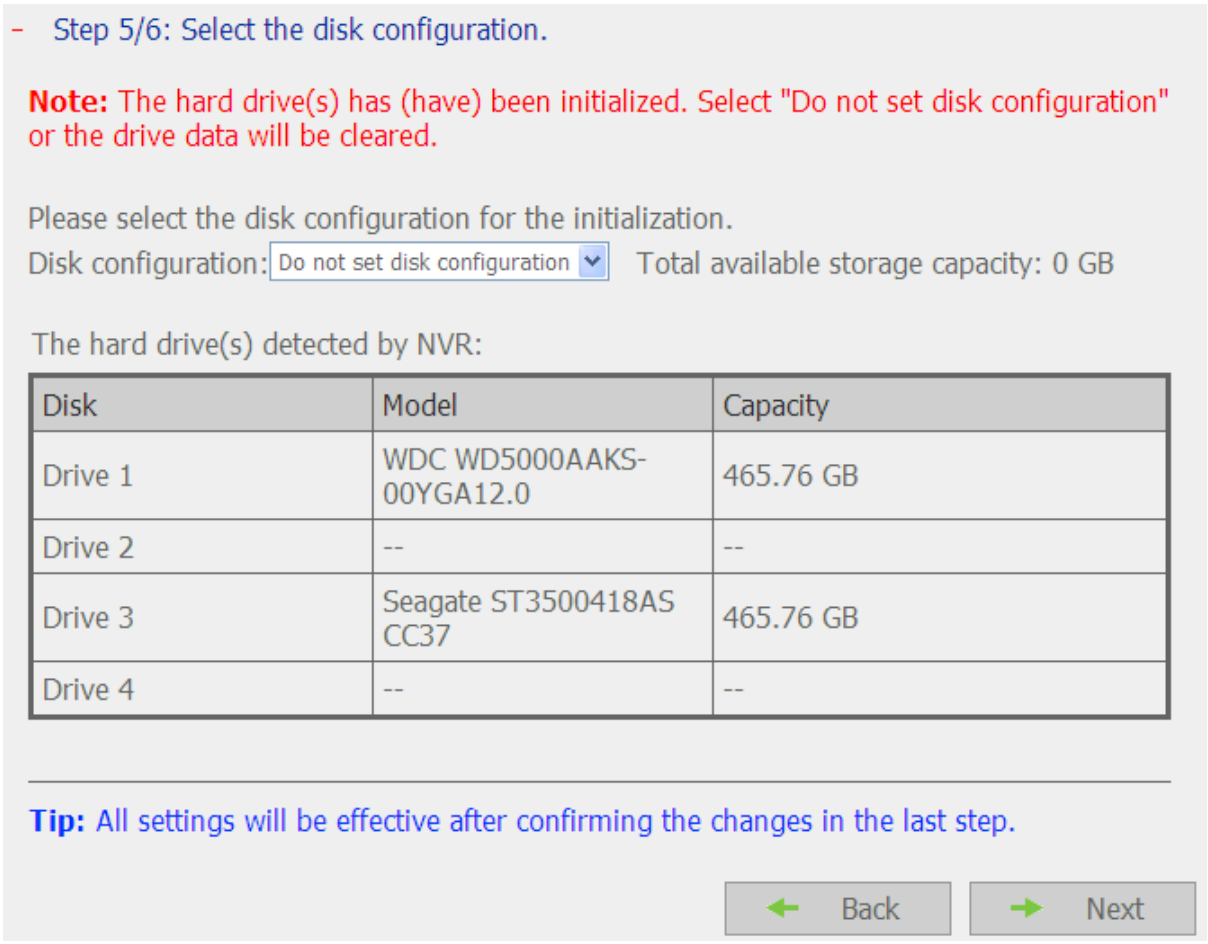
3. Enter the date, time, and time zone of the server.



4. Enter the IP address, subnet mask, and default gateway of the server.



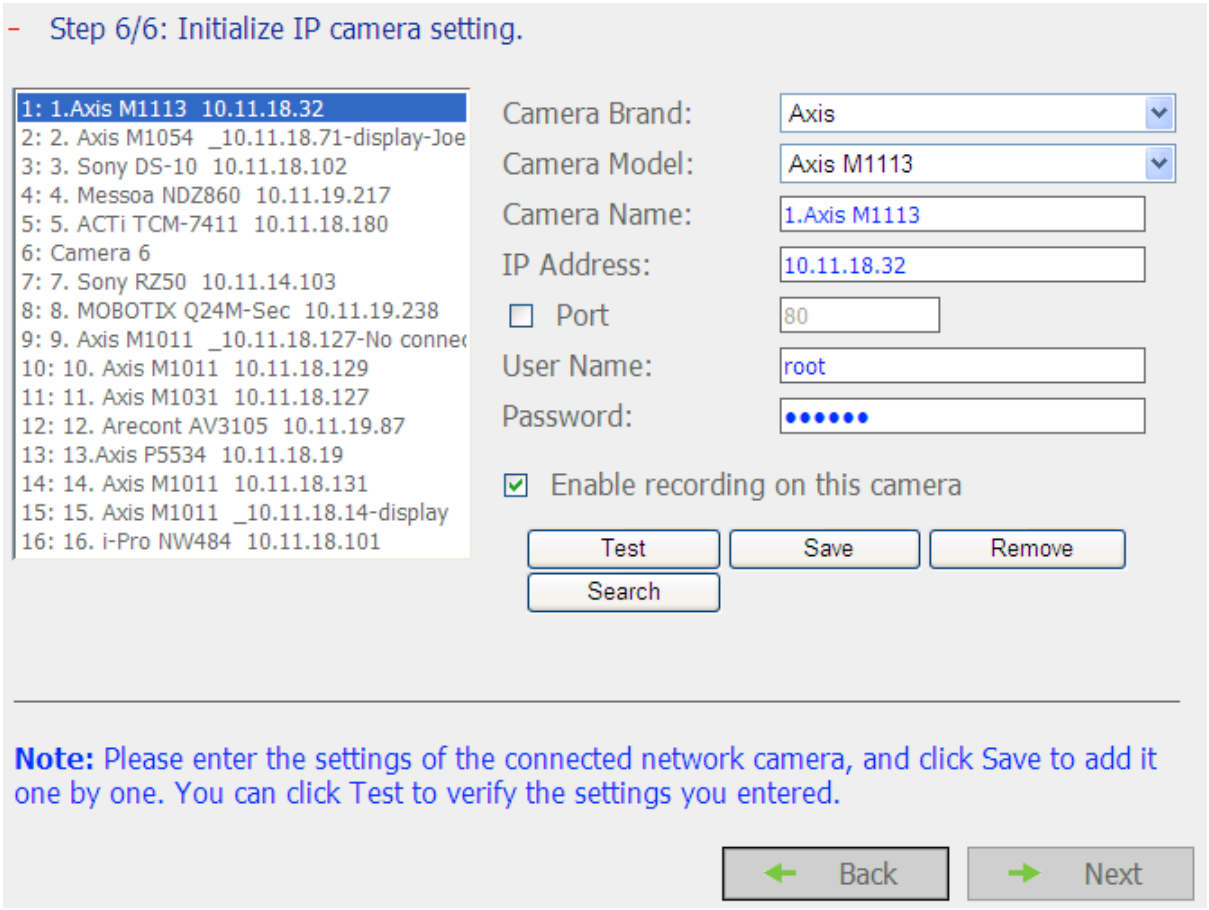
5. Select the disk configuration. All the disk data will be cleared unless 'Do not to set the disk configuration' is selected.



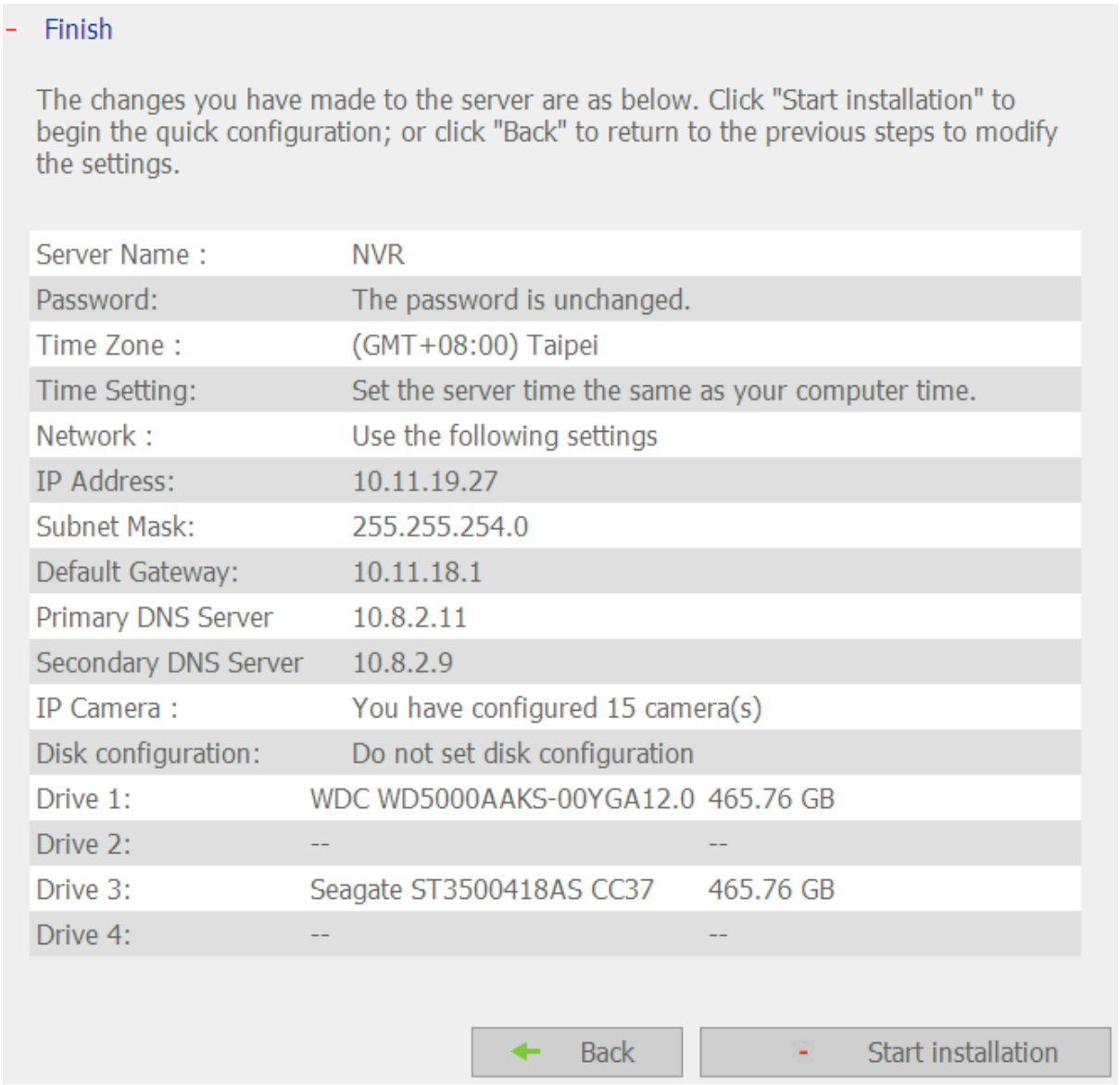
6. Initialize the IP camera settings.

Select the camera brand and model. Enter the name and IP address of the camera, and the user name and password. Enable or disable the recording function on each channel, test the connection to the IP cameras and then click 'Save' to apply the changes.

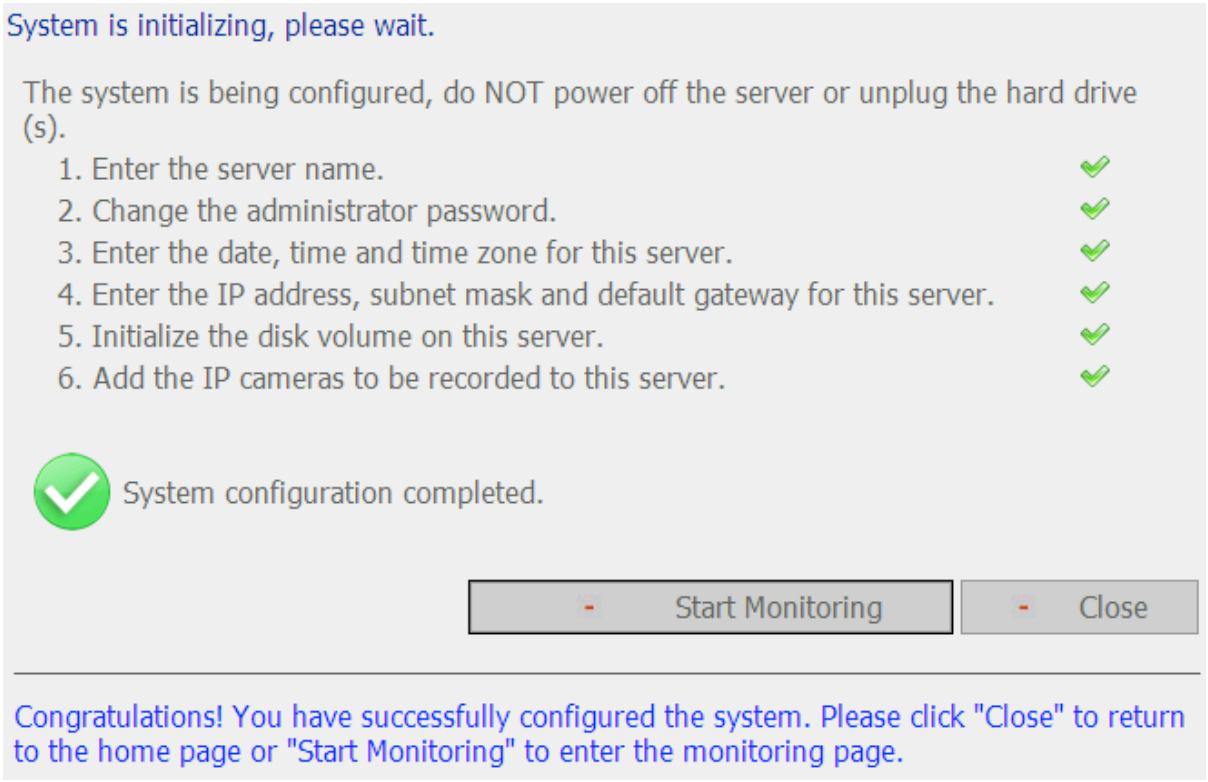
Click 'Search' to search for the IP cameras on the local network. Select a channel and click 'Add' to add the camera. With the search function, the camera model and the IP address are filled in automatically. Click 'Close' to close the search results.



7. Click ‘Start Installation’ to apply the changes and initialize the system.



8. Click ‘Start Monitoring’ to view the live video from the IP cameras or click ‘Close’ to return to the system administration home page.



6.2 System Settings

Configure the basic system settings including the server name, the date & time, and view the system settings.

6.2.1 Server Name

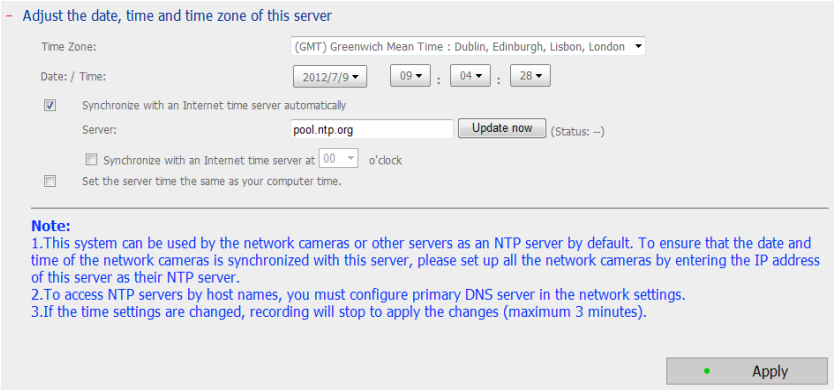
Enter the name of the NVR. The server name supports up to 14 characters which can only contain alphabets (A–Z and a–z), numbers (0–9), and dash (-).



6.2.2 Date & Time

Set the date, time, and time zone. If the settings are incorrect, the following problems may occur:

- Incorrect time display on the video files.
- Incorrect time display on the event logs.



Synchronize with an Internet time server automatically

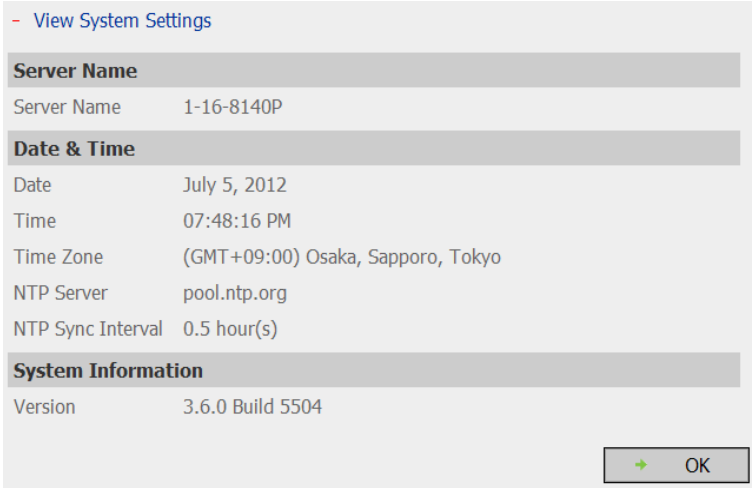
Enable this option to update the date and time of the NVR automatically with an NTP (Network Time Protocol) server. Enter the IP address or the domain name of the NTP server, for example, time.nist.gov or time.windows.com. You can also select when to synchronize the date and time of the NVR with an NTP server.

The NVR can be configured as the NTP server for the IP cameras or other servers. To ensure the date and time of the IP cameras are synchronized with the NVR, enter the NVR IP as the NTP server of the IP cameras. To set the server time the same as the computer time, select 'Set the server time the same as the computer time'.

Note: It may take several minutes to synchronize the time after enabling the NTP server feature.

6.2.3 View System Settings

View the system settings such as the server name on this page.



6.3 Network Settings

Configure the WAN and LAN settings, DDNS service, file service, host access control, protocol management and view the network settings in this section.

6.3.1 TCP/IP Configuration

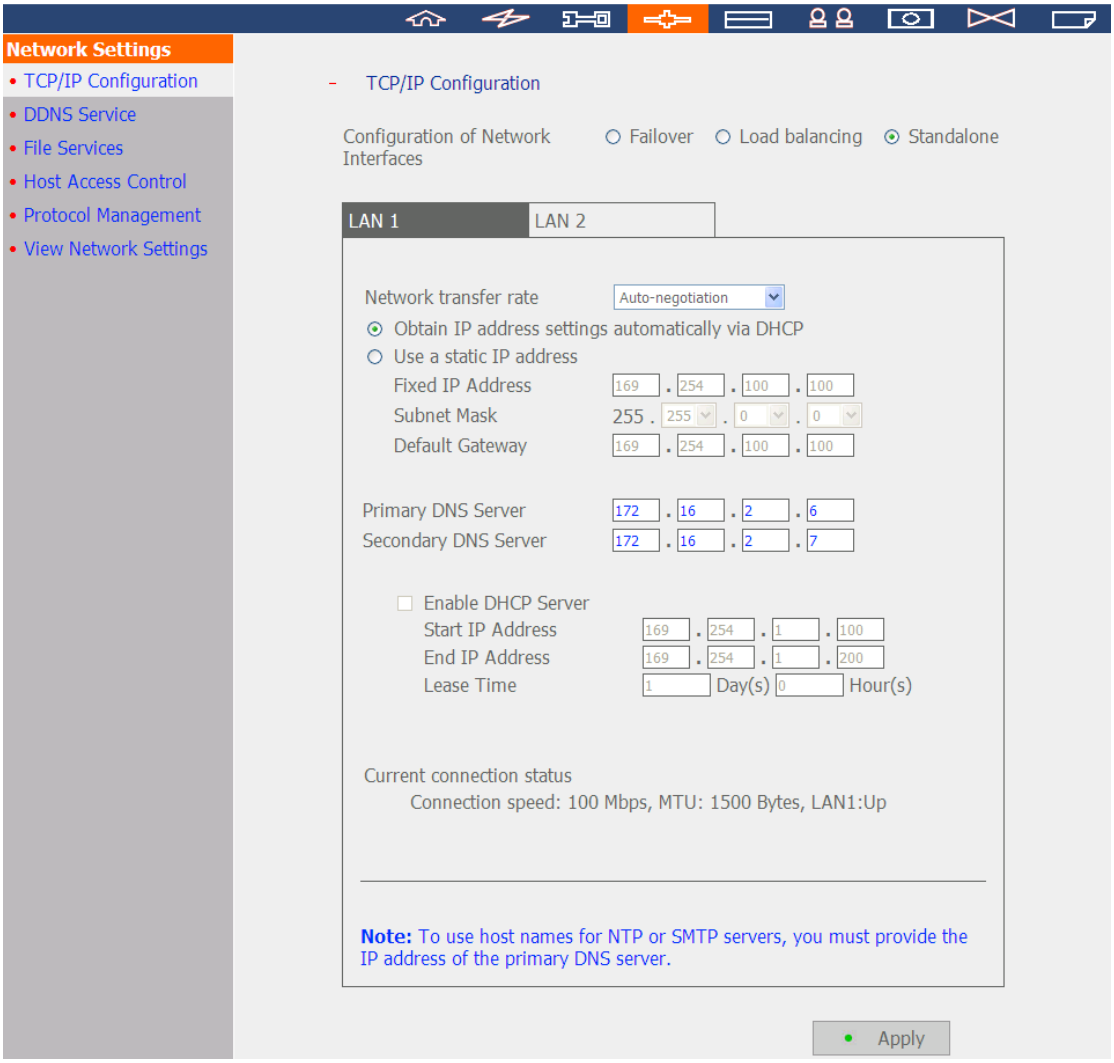
If the NVR supports a single LAN port, select one of the following options to configure the TCP/IP settings of the NVR.

- Obtain IP address settings automatically via DHCP
  Select this option to allow the NVR to acquire an IP address on the local network automatically if a DHCP server is available.
- Use static IP address
  To assign a fixed IP to the NVR, enter the IP address, the subnet mask, and the default gateway.

Primary DNS Server: Enter the IP address of the primary DNS server that provides the DNS service for the NVR on the external network.
Secondary DNS Server: Enter the IP address of the secondary DNS server that provides the DNS service for the NVR on the external network.

Note: The Jumbo Frame setting is valid in Gigabit network environment only. All the network appliances connected must enable Jumbo Frame and use the same MTU value.

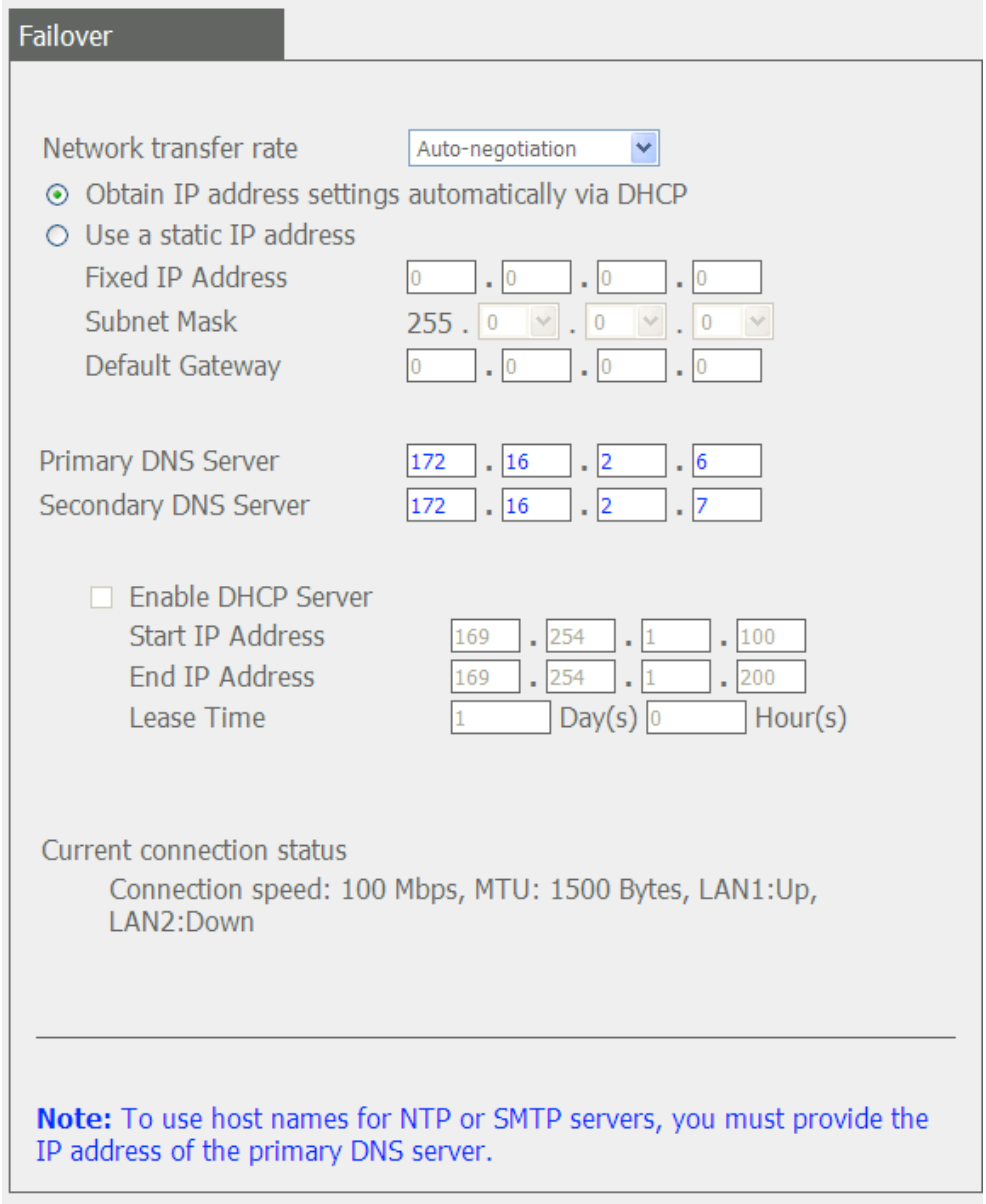
If the NVR supports two LAN ports, select to use failover, load balancing, or standalone settings. To use these features, make sure both LAN ports are connected to the network.



Configuration of Network Interfaces

- **Failover (Default settings for dual LAN NVR models)**

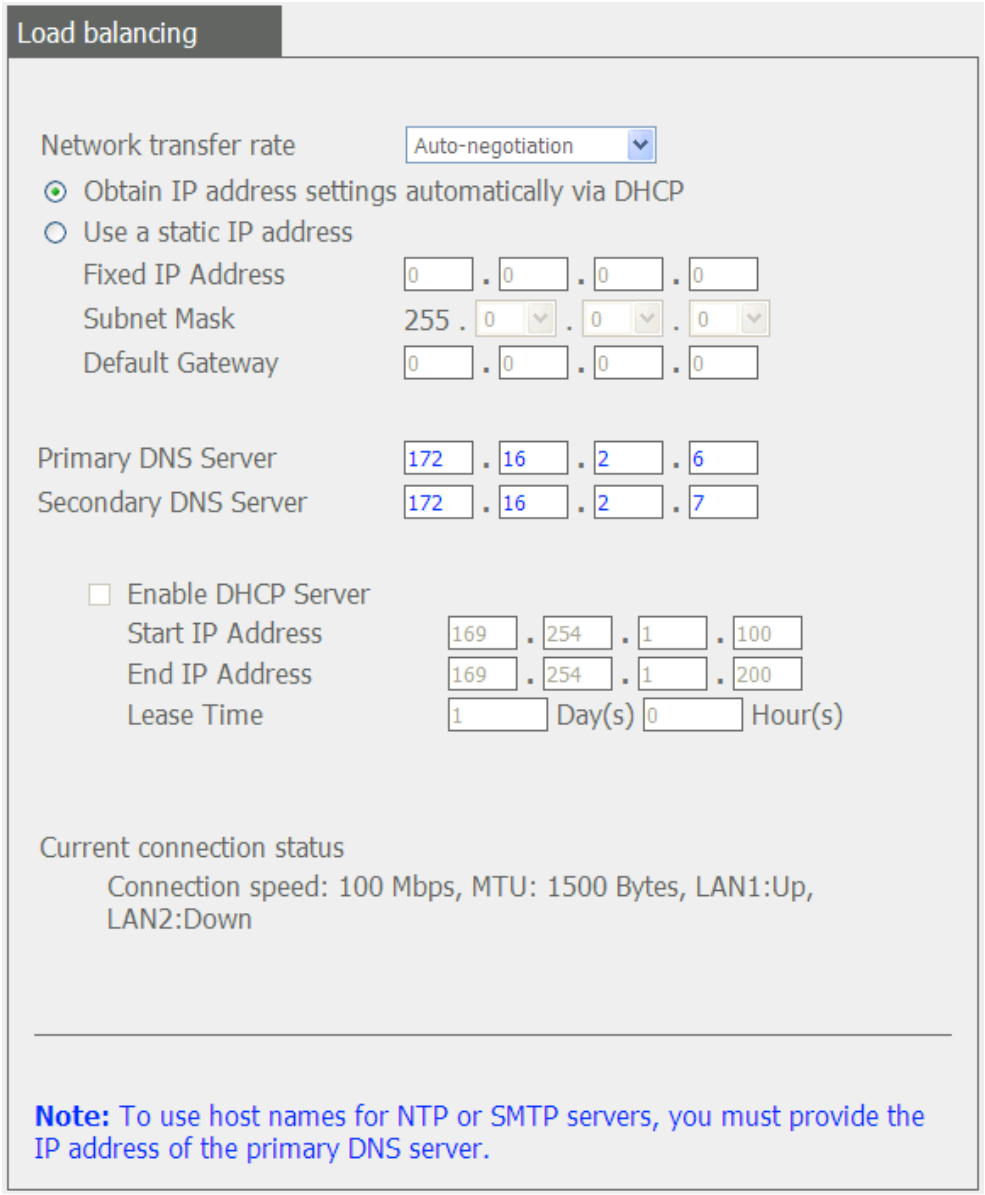
  Failover refers to the capability of switching over the network transfer port to the redundant port automatically when the primary one fails due to hardware or connection error to avoid network disconnection. When the primary network port resumes the connection, the network transfer will be switched over to that port automatically.



- **Load balancing**

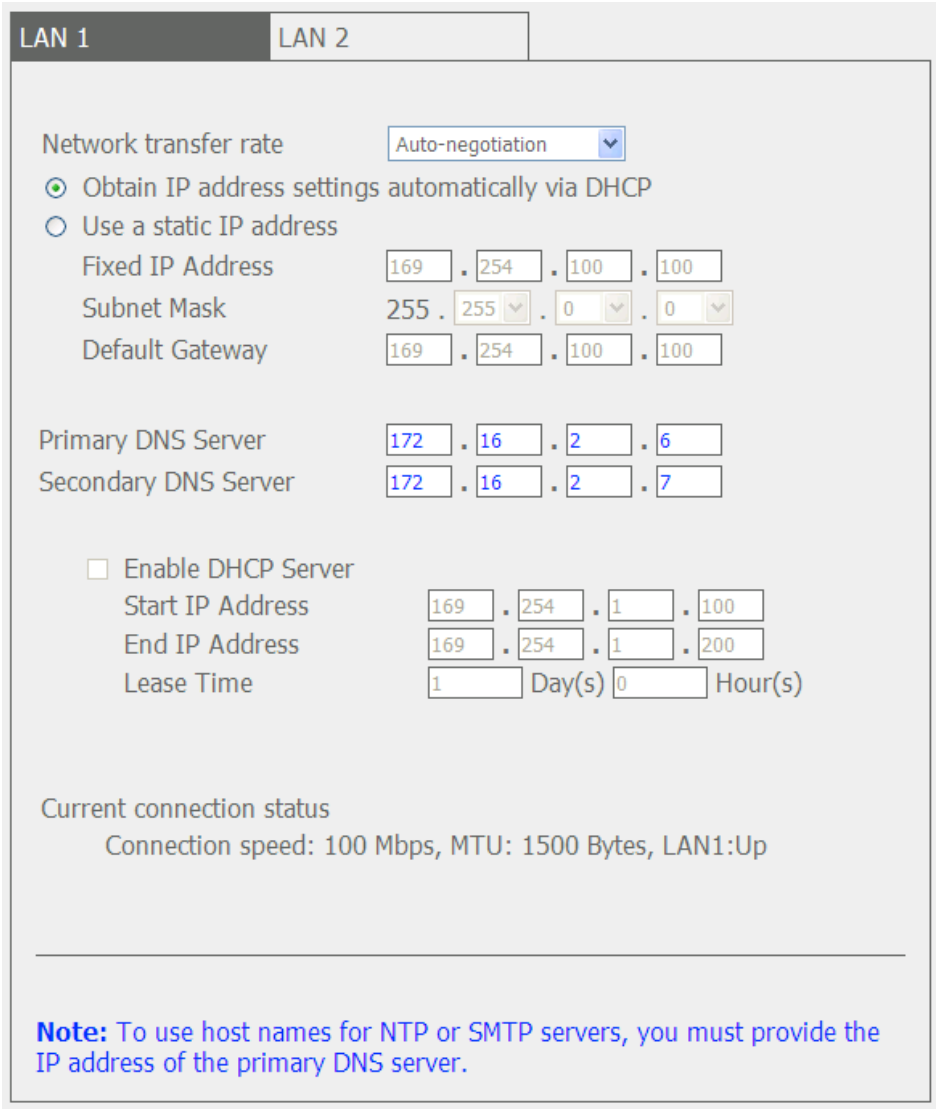
  Load balancing enables the network resources to spread between two or more network interfaces to optimize the network transfer and enhance the system performance. It operates on layer 3 protocol (IP, NCP IPX) only. Multicast/broadcast and other non-routable protocols such as NetBEUI can only be transferred via the main network port.

  Note: To optimize the network transfer speed of the NVR in load balancing mode, use a managed Ethernet switch and enable 802.3ad (or link aggregation) on the ports of the switch that the Gigabit LAN ports of the NVR are connected to.



- **Standalone**

  Assign different IP settings for each network port. The NVR can be accessed by different workgroups on two different subnets. When load balancing is enabled, failover does not work. The DHCP server can only be enabled for the primary network port (LAN 1).



Network Transfer Rate

Select auto-negotiation (default), 1000 Mbps, or 100 Mbps. It is recommended to use the default setting that the server will determine the network speed automatically.

Obtain IP address settings automatically via DHCP

If the network supports DHCP, select this option to allow the NVR to retrieve an IP address and the related information automatically.

Use static IP address

To assign a fixed IP to the NVR, enter the IP address, subnet mask, and default gateway.

Primary DNS Server

Enter the IP address of the primary DNS server that provides the DNS service for the NVR on the external network.

Secondary DNS Server

Enter the IP address of the secondary DNS server that provides the DNS service for the NVR on the external network.

Enable DHCP Server

If no DHCP server is available on the LAN where the NVR locates, enable the NVR as a DHCP server to allocate dynamic IP address to the DHCP clients on the LAN.

Set a range of IP addresses allocated by the DHCP server and the lease time. The lease time refers to the time that the IP address is leased to the clients by the DHCP server. When the time expires, the client has to acquire an IP address again.

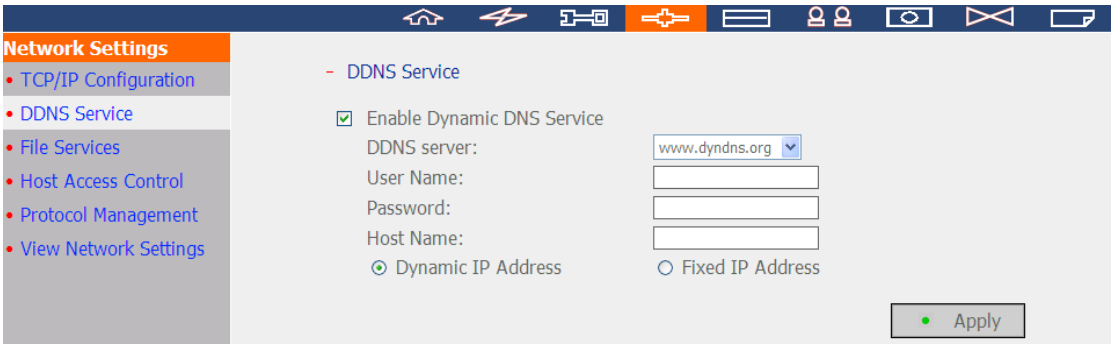
Note: If there is an existing DHCP server on the LAN, do not enable this function to avoid IP address allocation failure and network access error.

6.3.2 DDNS (Dynamic Domain Name) Service

The DDNS service enables the users to connect to the NVR by the domain name directly. There is no need to memorize the lengthy IP address of the server. To enable the DDNS service, register a DDNS account from a DDNS provider. Please refer to Appendix A for details.

The NVR currently supports the DDNS service provided by:

1. DynDNS (http://www.dyndns.org)
2. OSD (http://ods.org)
3. DHS (http://www.dhs.org)
4. DyNS (http://www.dyns.cx)
5. http://www.3322.org
6. No-IP (http://www.no-ip.com)
7. http://ipcam.jp
8. http://www.nwcam.jp



6.3.3 File Services

Enable the SMB/CIFS file service, Web File Manager, and FTP service to access the video files. These settings are enabled by default.

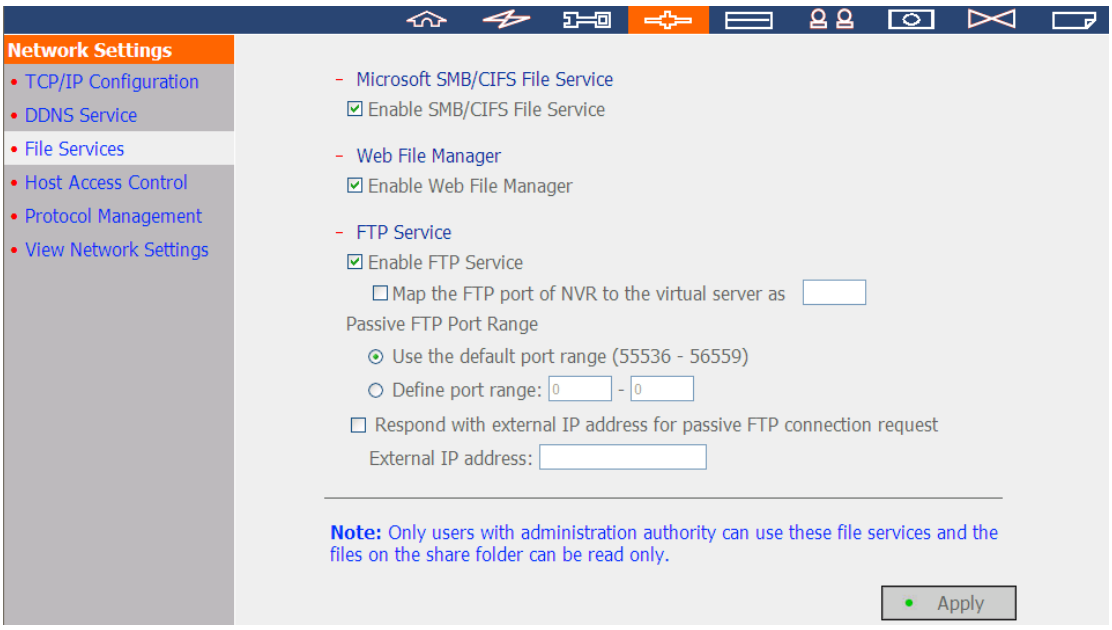
If the NVR is installed behind the router, enable FTP port mapping to allow the users from the external network to connect to the NVR via FTP (please refer to Appendix B).

Passive FTP Port Range

Use the default port range (55536–56559) or specify a port range larger than 1023. When using this function, make sure the ports on the router or firewall have been opened.

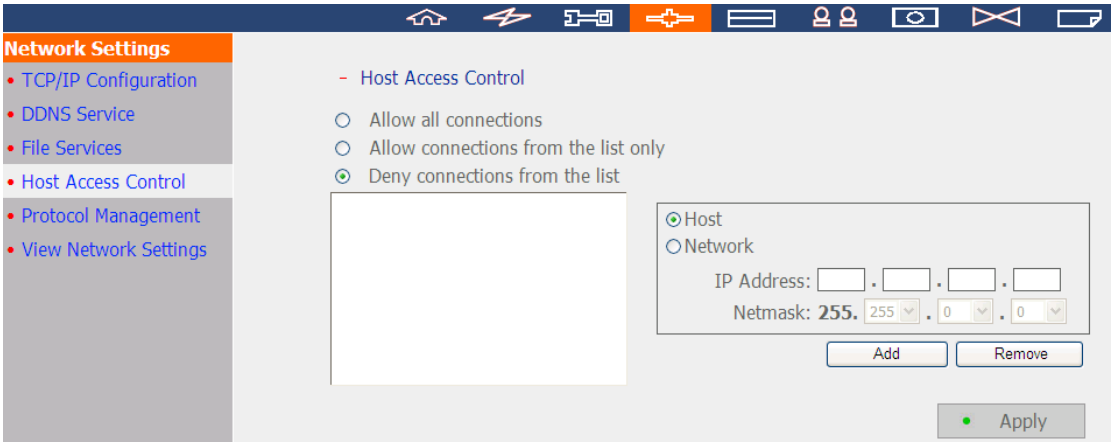
Respond with external IP address for passive FTP connection request

When passive FTP connection is in use and the NVR is configured behind a router, enable this function to allow connection to the NVR on WAN. By enabling this function, the FTP service replies the specified IP address or automatically detects the external IP address so that the remote computer can connect to the NVR.



6.3.4 Host Access Control

Specify the connections to be allowed or denied to connect to the NVR. Choose one of the following options to restrict the access from a network or an IP address (host) to the server:



1. Allow all connections (Default setting)
   Allow the connection from all the hosts to the server.

2. Allow connections from the list only
   Allow the connection from the hosts specified on the list only.

   Note: When this function is enabled, only the specified IP on the list will be able to find and connect to the NVR.

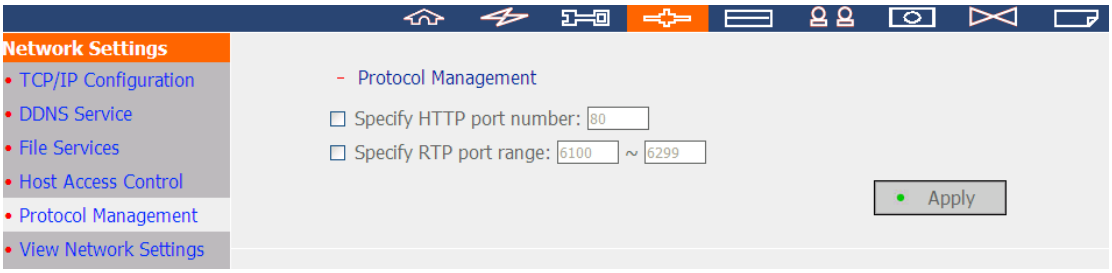
3. Deny connections from the list
   Deny the connection from the hosts or IP specified on the list.

6.3.5 Protocol Management

To connect to the NVR by a specific HTTP port number, enable the option 'Specify HTTP port number' and enter the port number. The default setting is 80.

RTP (Real-time Transfer Protocol) is a standardized packet format for delivering real-time audio and video data of the IP cameras on the Internet. The real-time data transfer is monitored and controlled by RTP (also RTCP). The default setting is 6100–6299. If the IP cameras use different RTP ports, enable 'Specify RTP port range' and specify the port numbers.

Note: Make sure the ports have been opened on the router or firewall to ensure normal monitoring and recording.



6.3.6 View Network Settings

View the current network settings and the status of the NVR in this section.



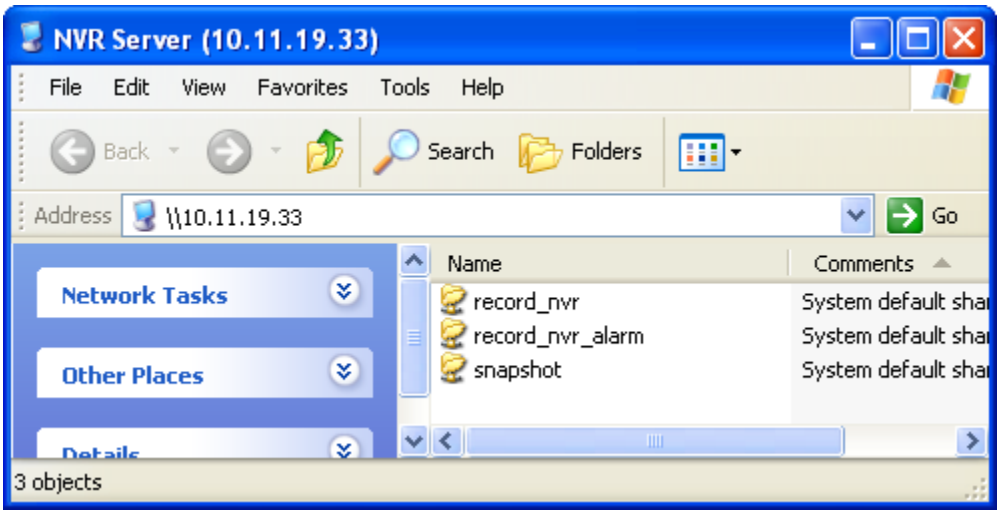
6.4 Device Configuration

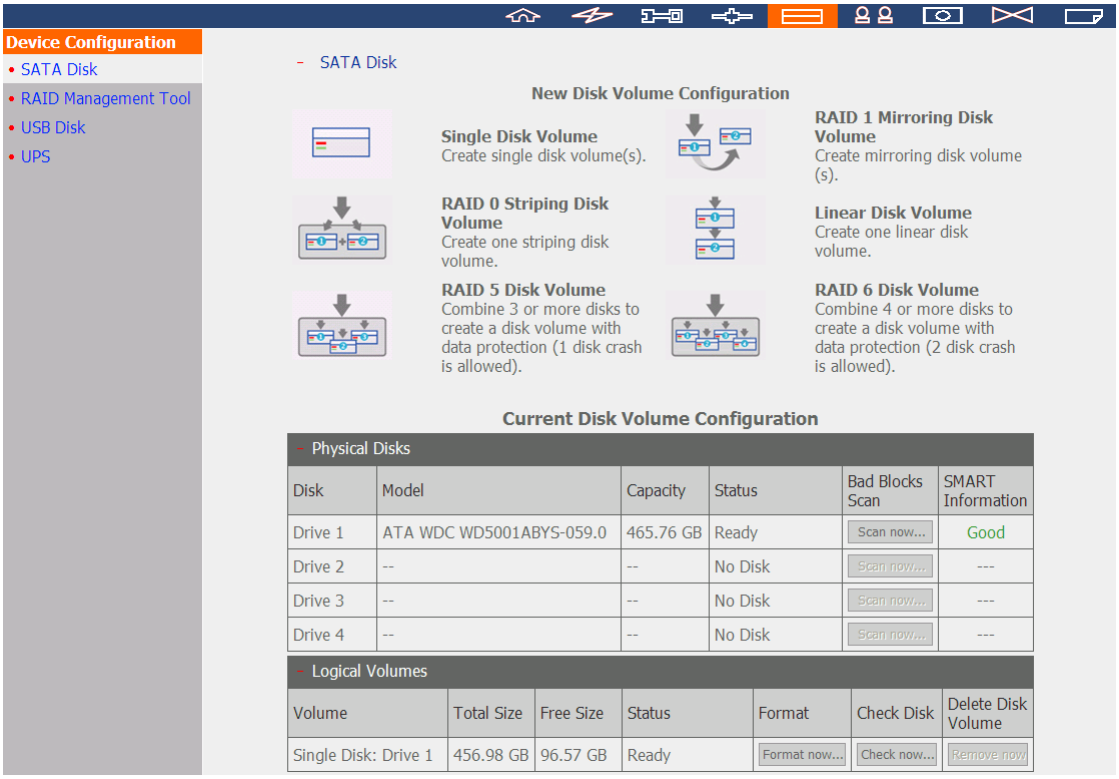
Configure the SATA disk, RAID management tool, USB disk, and the UPS settings in this section.

6.4.1 SATA Disk

This page shows the model, size and current status of the hard disk drive(s) installed on the NVR. Other options include formatting the hard disks and viewing the status, and scanning the hard drive bad blocks. When the hard disks are formatted, the NVR will create the following default share folders:

- record_nvr: The network share for saving regular recording files.
- record_nvr_alarm: The network share for saving alarm recording files.
- snapshot: The network share for saving snapshots.

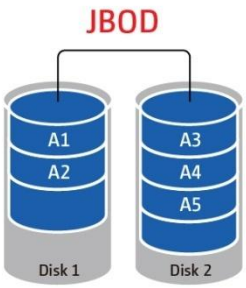
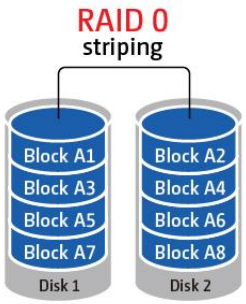
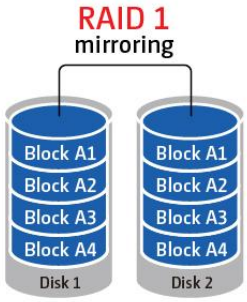


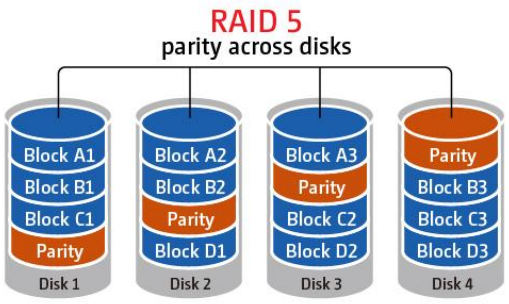
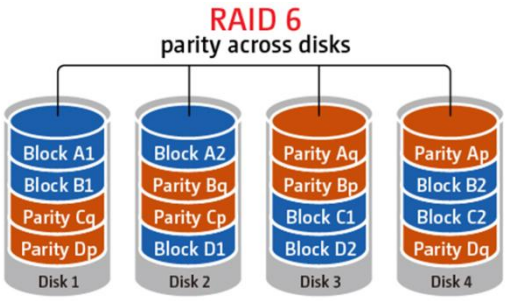


Click the icons on the 'SATA Disk' page to format the hard disk drive(s).

Disk Configuration	**Applied NVR Models**
Single disk volume	All models
RAID 1, JBOD (just a bunch of disks)	2-bay models or above
RAID 5, RAID 6, RAID 5+hot spare	4-bay models or above
RAID 6+hot spare	5-bay models or above

Note: Do NOT turn off the server or unplug any hard drives when RAID rebuilding is in process.

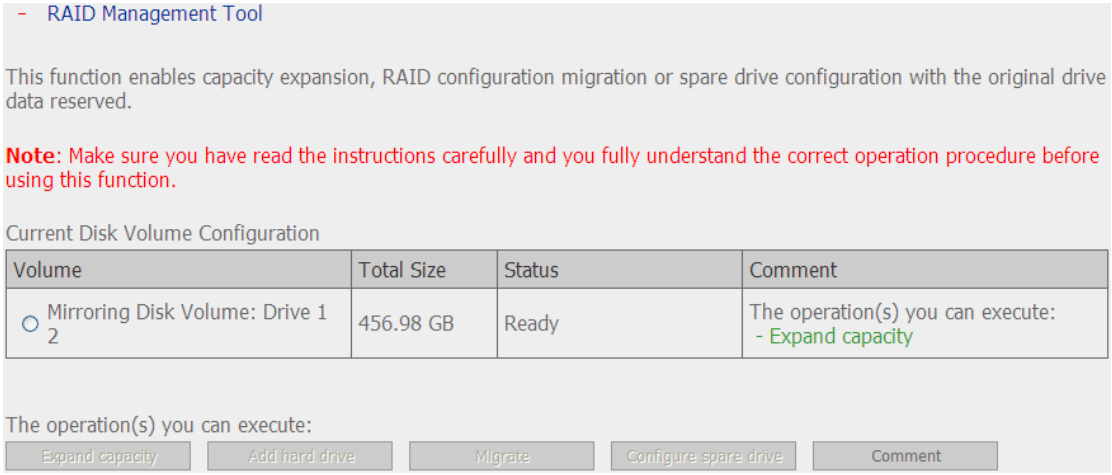
Single Disk Volume Each hard disk drive is used as a standalone disk. If a disk is damaged, all the data will be lost.	
JBOD (Just a bunch of disks) JBOD is a collection of hard disk drives that does not offer any RAID protection. The data are written to the physical disks sequentially. The total storage capacity equals to the sum of the capacity of all the member drives.	
RAID 0 Striping Disk Volume RAID 0 (striping disk) combines 2 or more hard disk drives into one larger volume. The data is written to the hard disk drives without any parity information and no redundancy is offered. The total storage capacity equals to the sum of the capacity of all the member drives.	
RAID 1 Mirroring Disk Volume RAID 1 duplicates the data between two hard disk drives to provide disk mirroring. To create a RAID 1 array, a minimum of 2 hard drives are required. The storage capacity of a RAID 1 disk volume is equal to the size of the smallest hard drive.	

RAID 5 Disk Volume The data are striped across all the drives in a RAID 5 array. The parity information is distributed and stored across each drive. If a member drive fails, the array enters degraded mode. After installing a new drive to replace the failed one, the data can be rebuilt from other member drives that contain the parity information. To create a RAID 5 disk volume, a minimum of 3 hard disks are required. The storage capacity of a RAID 5 array equals (N-1) * (size of smallest hard drive). N is the total number of hard drive members in the array.	
RAID 6 Disk Volume The data are striped across all the drives in a RAID 6 array. RAID 6 differs from RAID 5 that a second set of parity information is stored across the member drives in the array. It tolerates failure of two member drives. To create a RAID 6 disk volume, a minimum of 4 hard disks are required. The storage capacity of a RAID 6 array equals (N-2) * (size of smallest hard drive). N is the total number of hard drive members in the array.	

6.4.2 RAID Management Tool

*This function is not supported by the VS-1004L.

The RAID management tool supports capacity expansion, RAID migration, or spare drive configuration with the original drive data reserved.



Expand capacity

This function enables capacity expansion of a RAID configuration by replacing the member drives one by one. This option is supported by RAID 1, RAID 5, or RAID 6 configurations.

Add hard drive

This function enables adding new drive member to a RAID configuration. It is supported by RAID 5 configuration.

Migrate

This function enables a drive configuration to be migrated to a different RAID configuration. Use this feature to:

- Migrate a single drive to RAID 1, 5, or 6
- Migrate a RAID 1 configuration to RAID 5 or 6
- Migrate a RAID 5 configuration to RAID 6

Configure spare drive

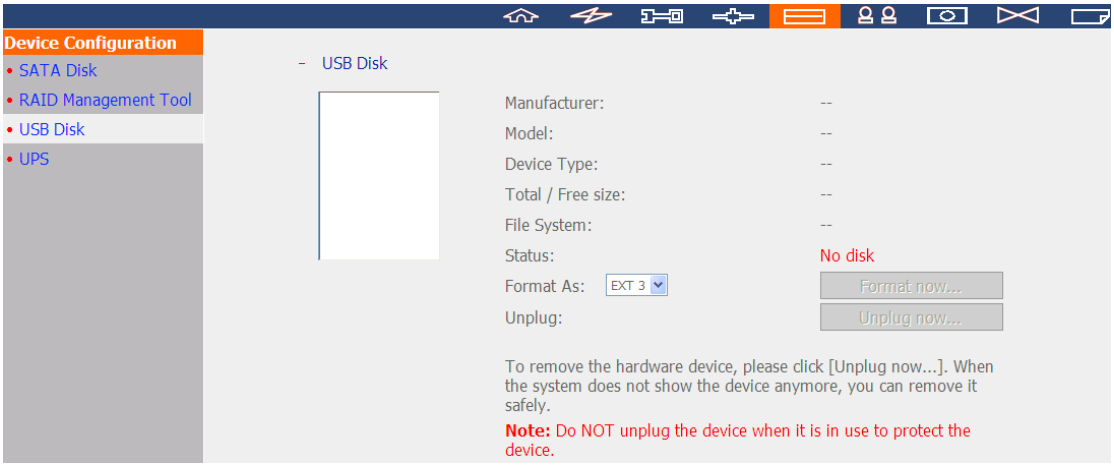
This function enables adding or removing a spare drive from a RAID 5 configuration. The options available are:

- Add a spare drive to a RAID 5 configuration
- Remove a spare drive from a RAID 5 configuration

For detailed operation instructions, click ‘Comment’ on the management interface.

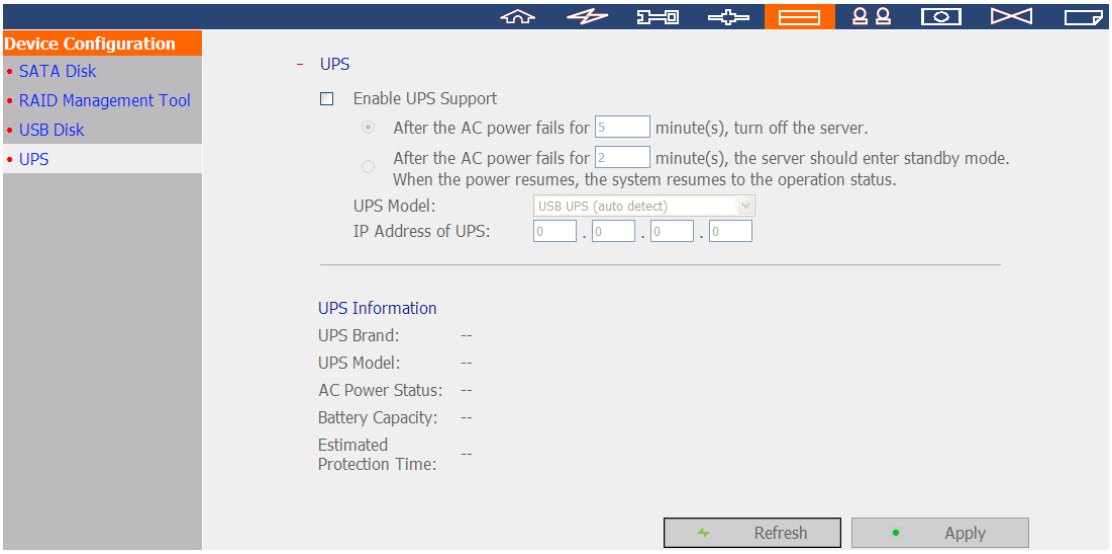
6.4.3 USB Disk

The NVR supports data backup to the external USB storage devices. Connect the USB storage device to the USB port of the NVR, when the device is successfully detected, the details will be shown.



6.4.4 UPS

The NVR supports UPS (uninterruptible power supply). When an expected power outage occurs, the UPS is able to supply the power to the NVR continuously. Configure the settings to turn off the NVR after the AC power fails. If the power of the UPS is insufficient to last for the time specified, the NVR will shut down immediately for optimized server protection.



* It is recommended to connect the UPS to one of the USB ports on the rear side of the NVR.

Enable UPS Support

Select this option to enable the UPS support. Enter the time the NVR should wait before shutting down after the AC power fails. In general, the UPS can supply the power for 5-10 minutes when AC power fails depending on the maximum load and the number of connected devices.

UPS Model

Select the UPS model on the list. If the UPS is not available on the list, please contact the distributor or QNAP technical support.

IP Address of UPS

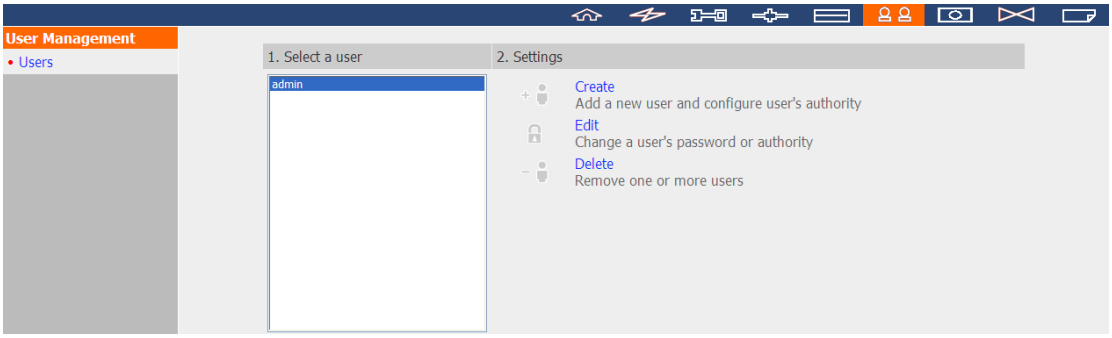
If 'APC UPS with SNMP Management' is selected, enter the IP address of the UPS.

Note: It is recommended to use APC Smart-UPS 700+ APC Network Management Card.

6.5 User Management

The NVR supports secure user access right management. A user can be defined as an administrator, a system manager, or a general user and given different rights of monitoring, playback, and system administration.

Note: The NVR supports up to 32 users (including the system default users).



The NVR supports 3 types of users:

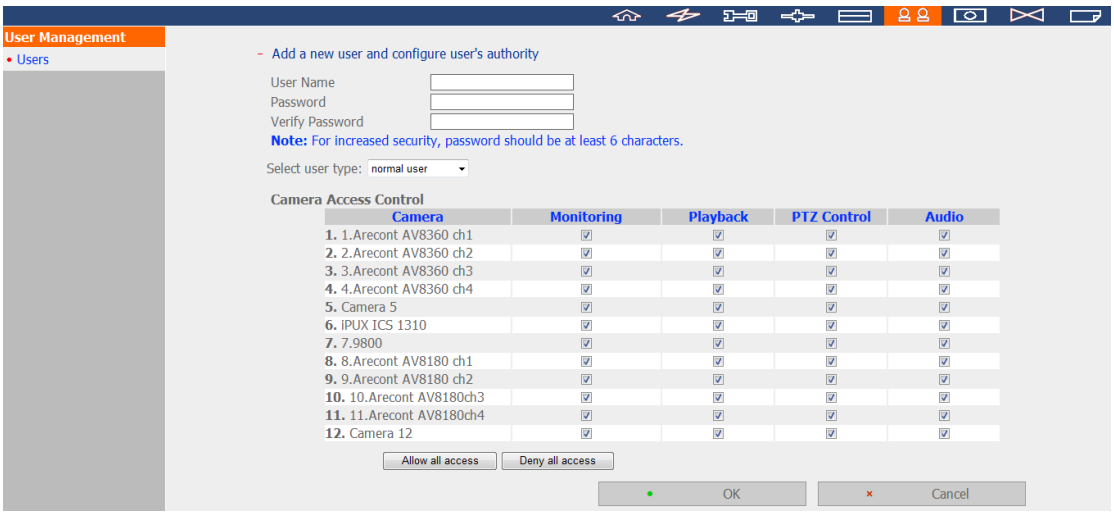
1. administrator
   The system default administrator accounts are 'admin' and 'supervisor' (default password: **admin**). Both of them have the rights of system administration, monitoring, and playback. The administrators cannot be deleted. They have the rights to create and delete new administrators, system managers, and general users, and change their passwords. Other newly created 'administrators' have the rights of system administration, monitoring, and playback but some rights are different from 'admin' and 'supervisor'. Please refer to Chapter 6.5.4 for more details.

2. system manager
   The default system manager account is 'sysmgr' (default password: **admin**). This account has the right of system administration and cannot be deleted. 'sysmgr' can create and delete other system manager and general user accounts, and assign monitoring, playback, and administration rights to them. Other newly created system managers will also have the administration right but some rights are different from 'sysmgr'. Please refer to Chapter 6.5.4 for more details.

3. user

   The general users have only the rights of monitoring and video playback. They have no administration authority. Please refer to Chapter 6.5.4 for more details.

6.5.1 Create user



User Name

The user name must be 1 to 32 characters in length. It supports alphabets (A-Z), numbers (0-9), and underscores (_). It is case-insensitive and supports double-byte characters, such as Chinese, Japanese, and Korean but cannot be a pure number or contain the following characters:

" / \ [ ] : ; | = , + * ? < > ` '

Password

The password is case-sensitive and supports maximum 16 characters. It is recommended to use a password of at least 6 characters.

Select user type

Define the user as an administrator, system manager, or general user.

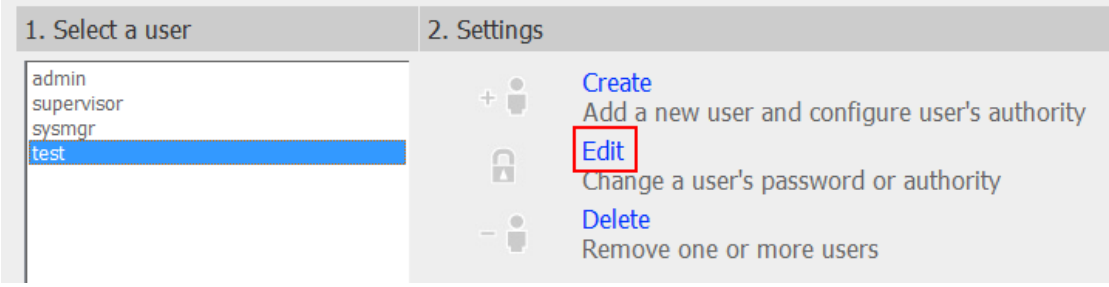
Camera Access Control

Assign the rights of monitoring (video/audio), playback, and PTZ control to the user.

Note: Please refer to Chapter 6.5.4 for further information of the user access rights.

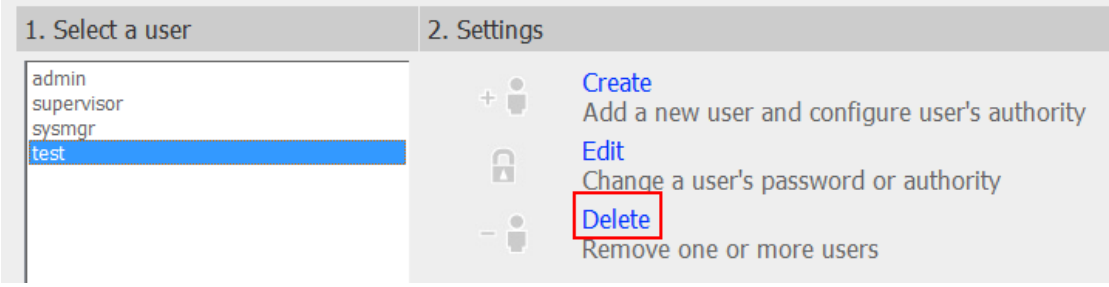
6.5.2 Edit User

Select a user on the list and click 'Edit'. Change the password; assign the rights of system administration and camera access to the user. However, the user name cannot be changed.



6.5.3 Delete User

To delete a user, select the user on the list and click 'Delete'. Click 'OK' to confirm.



Note: The system administrator (admin, supervisor, sysmgr) cannot be deleted.

6.5.4 User Access Rights Comparison

The NVR supports three types of users including system administrator, system manager, and general user. The default system administrators are 'admin' and 'supervisor' who cannot change one another's password, user type, and access rights to the IP cameras.

Note 1: The user can delete his/her account

Note 2: The user can change his/her password

		administrator			**system manager**		**user**
	Rights	**admin**	**supervisor**	**Other administrators**	**sysmgr**	**Other system managers**	**User**
1.	Create new 'admin' account	Default	Default	No	No	No	No
2.	Create new 'supervisor' account	Default	Default	No	No	No	No
3.	Create new administrator accounts	Yes	Yes	Yes	No	No	No
4.	Delete other administrator accounts	Yes	Yes	No (Note 1)	No	No	No
5.	Change the password of 'admin'	Yes	No	No	No	No	No
6.	Change the password of 'supervisor'	No	Yes	No	No	No	No
7.	Change the password of other administrators	Yes	Yes	No (Note 2)	No	No	No
8.	Change the user type of admin	Default	No	No	No	No	No
9.	Change the user type of supervisor	No	Default	No	No	No	No
10.	Change the user type of other administrators	Yes	Yes	Default	No	No	No
11.	Change the camera access control of admin	Default	No	No	No	No	No

		administrator			system manager		user
	Rights	**admin**	**supervisor**	**Other administrators**	**sysmgr**	**Other system managers**	**User**
12.	Change the camera access control of supervisor	No	Yes	No	No	No	No
13.	Change the camera access control of other administrators	No	No	Yes	No	No	No
14.	Create sysmgr	No	No	No	Default	No	No
15.	Create other system manager accounts	Yes	Yes	Yes	Yes	Yes	No
16.	Delete sysmgr	No	No	No	No	No	No
17.	Delete other system manager accounts	Yes	Yes	Yes	Yes	No (Note 1)	No
18.	Change the password of sysmgr	Yes	Yes	Yes	No (Note 2)	No	No
19.	Change the password of other system managers	Yes	Yes	Yes	Yes	No (Note 2)	No
20.	Change the user type of sysmgr	No	No	No	Default	No	No
21.	Change the user type of other system managers	Yes	Yes	Yes	Yes	No	No
22.	Change the camera access control of sysmgr	No	No	No	No	No	No
23.	Change the camera access control of other system managers	No	No	No	No	No	No
24.	Create new users	Yes	Yes	Yes	Yes	Yes	No
25.	Delete users	Yes	Yes	Yes	Yes	Yes	No
26.	Change the user password	Yes	Yes	Yes	Yes	No	No

		administrator			**system manager**		**user**
	Rights	**admin**	**supervisor**	**Other administrators**	**sysmgr**	**Other system managers**	**User**
27.	Change the user type of normal users	Yes	Yes	Yes	Yes	No	No
28.	Change the camera access control of normal users	Yes	Yes	Yes	Yes	Yes	No
29.	System administration	Yes	Yes	Yes	Yes	Yes	No
30.	Monitoring	Yes	Yes	Yes	No	No	Default
31.	Playback	Yes	Yes	Yes	No	No	Default
32.	Open data encryption password	Yes	Yes	No	No	No	No

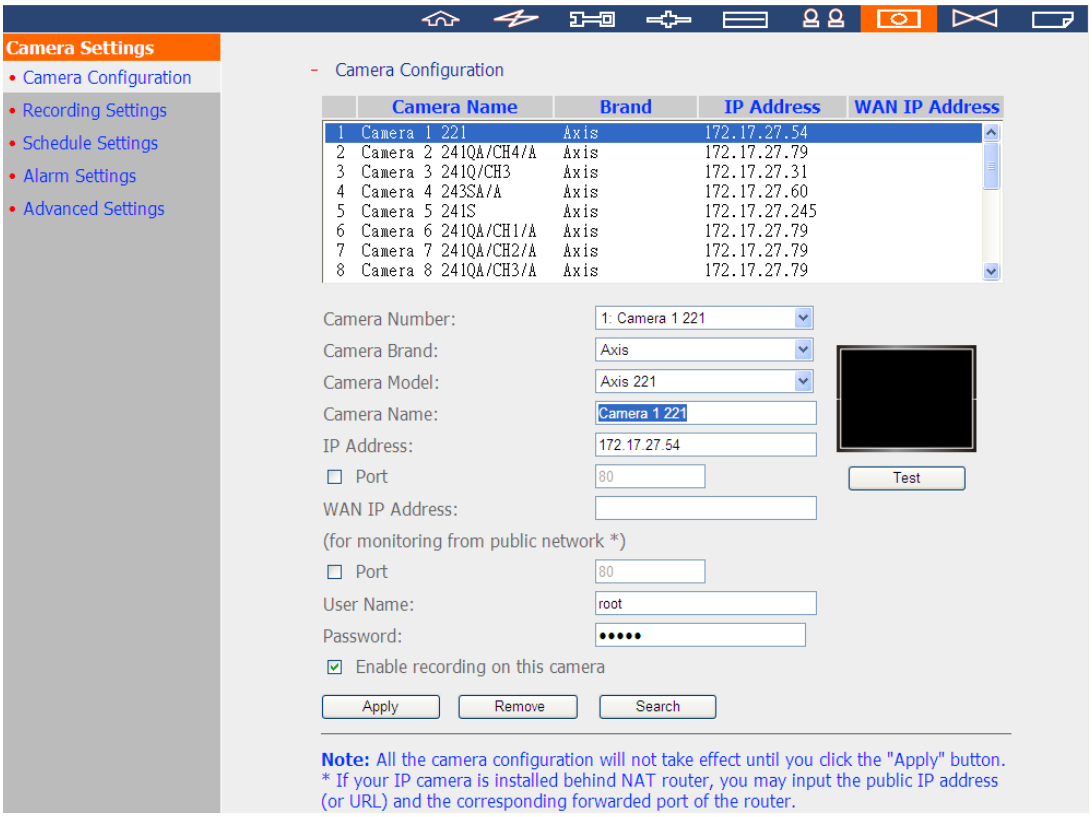
6.6 Camera Settings

Configure the IP camera, recording, schedule, alarm, and advanced settings.

6.6.1 Camera Configuration

Please follow the steps below to configure the IP cameras.

1. Select a camera number.
2. Select the camera brand.
3. Select the camera model.
4. Enter the camera name.
5. Enter the IP address or domain name of the camera.
6. Enter the user name and the password to login the camera.
7. Select to enable the recording or not.
8. Click 'Apply' to save the settings.



Note:

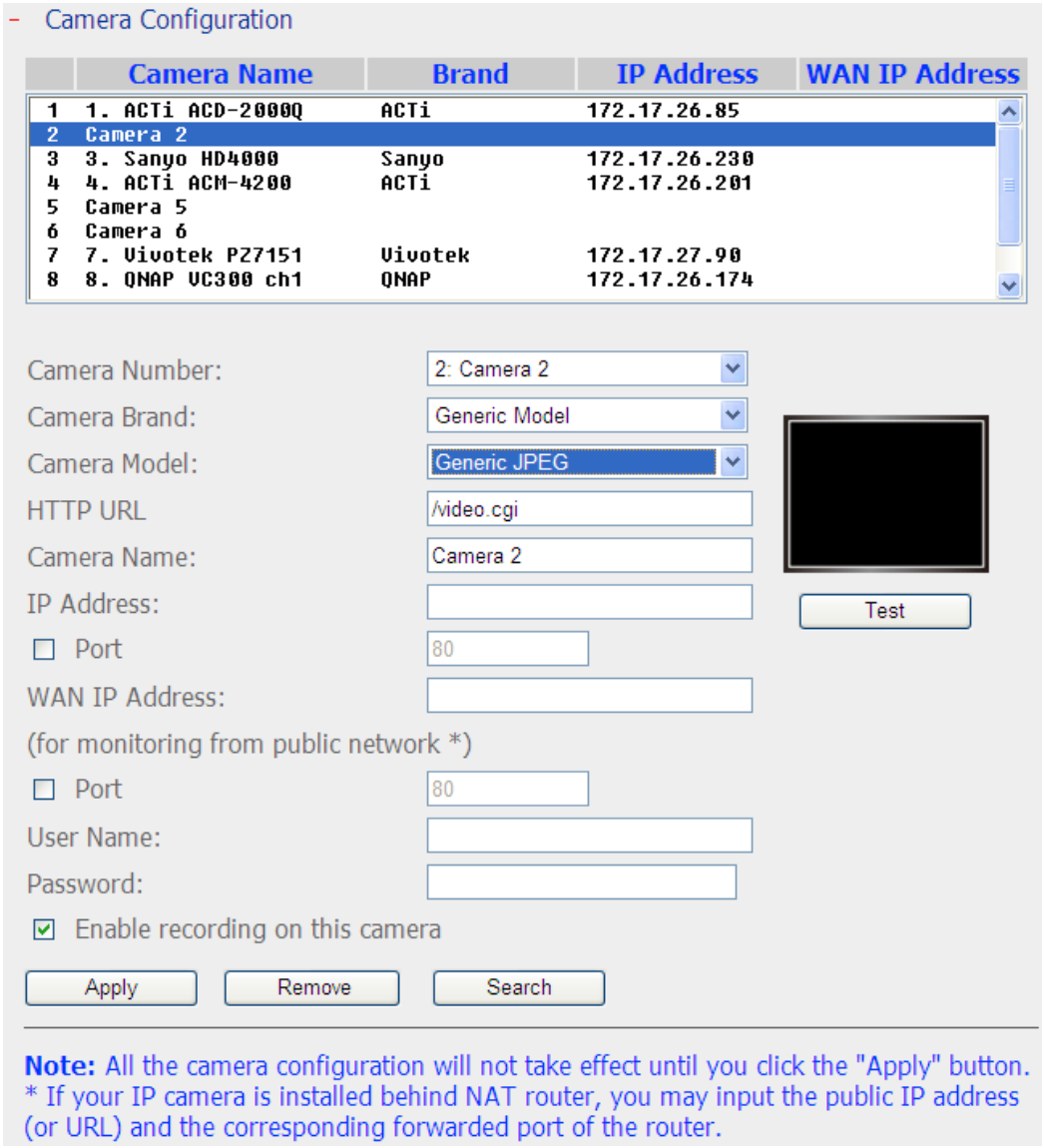
- All the settings will not take effect until 'Apply' is clicked. When applying the changes, the recording operation will stop for a while (maximum 1 minute) and then restart.
- Click 'Search' to search for the IP cameras on the local network. Select a channel for the IP camera and click 'Add' to add the camera. By using the search function, the camera model and the IP address are filled in automatically. Click 'Close' to close the search results.

Add generic IP camera support by the CGI command

The NVR provides an interface for the users to enter the JPEG CGI command of the IP cameras in order to receive the video and audio streaming data from the IP cameras and monitor, record, and playback the video of the IP cameras on the NVR.

Follow the steps below to configure the IP camera.

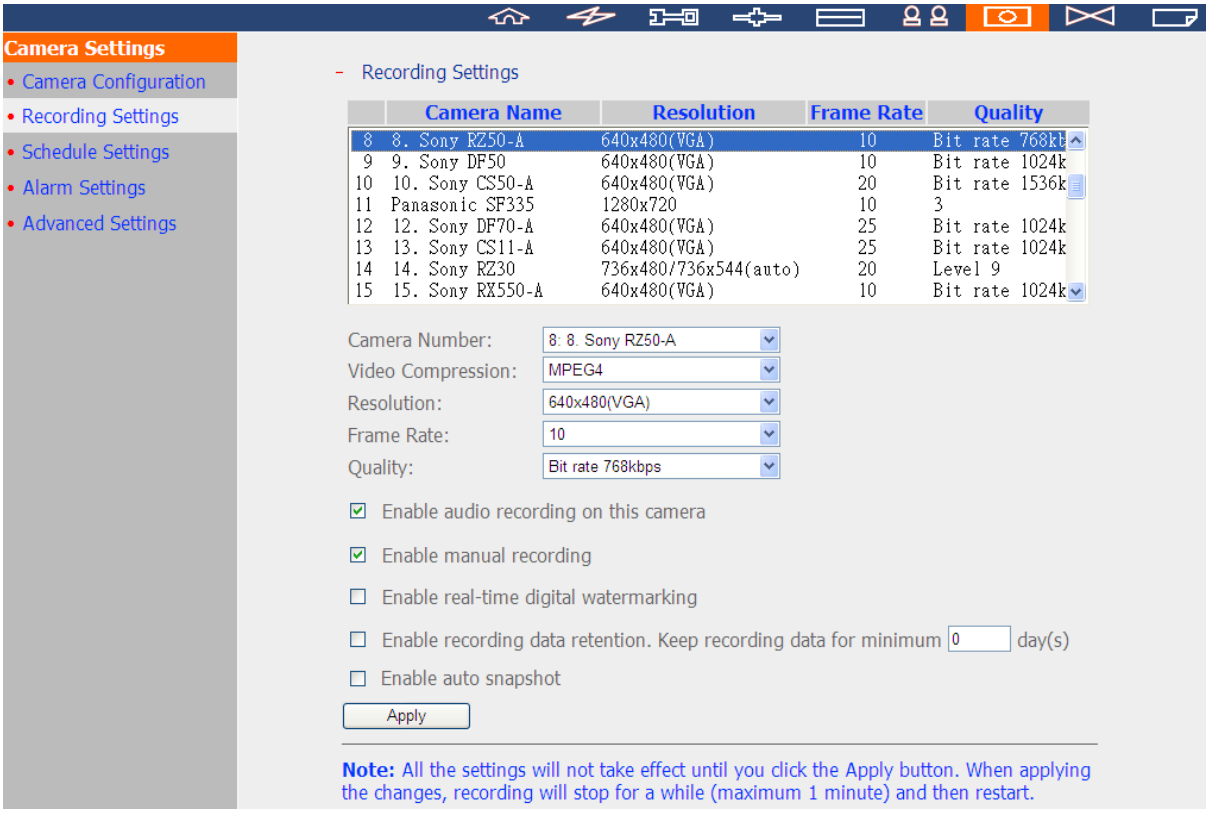
1. Select the IP camera number.
2. Select 'Generic Model' for the camera brand.
3. Select 'Generic JPEG' for the camera model.
4. Enter the CGI path of the IP camera in the 'HTTP URL' field.
5. Enter the camera name or the IP address of the camera.
6. Enter the user name and the password of the IP camera.
7. Select to enable the recording or not.
8. Click 'Apply' to save the settings.



Note: The NVR only supports JPEG CGI command interface, but does not guarantee the compatibility with all the IP camera brands.

6.6.2 Recording Settings

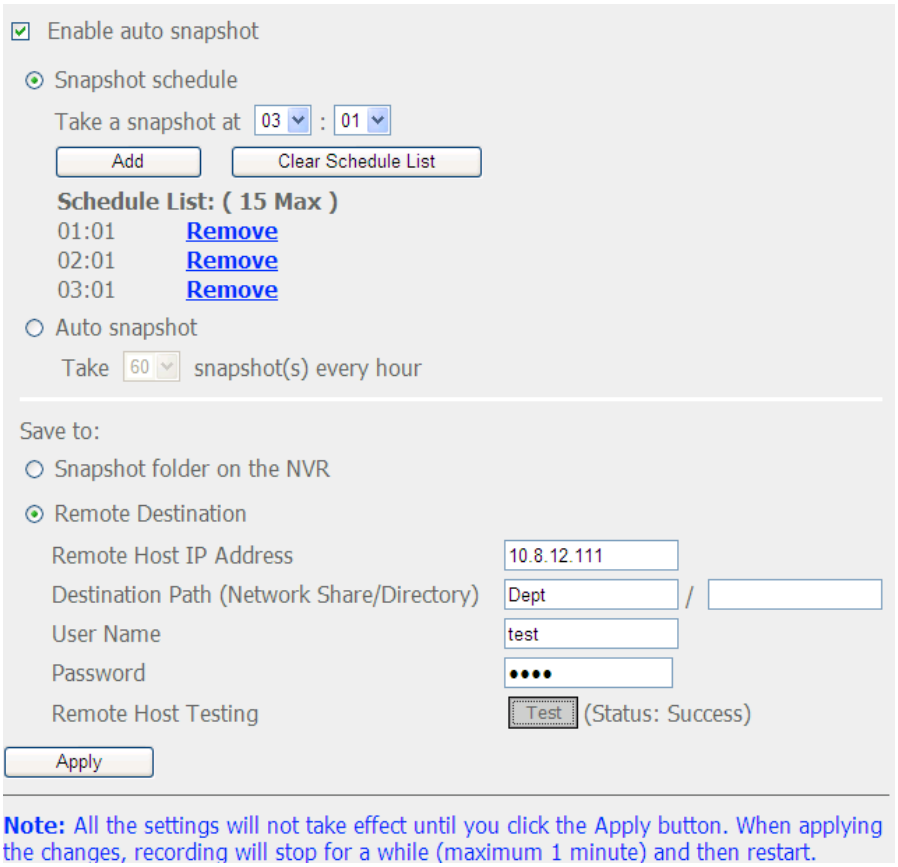
Select a camera on the list and configure the recording resolution, frame rate, and quality. Enable audio recording, manual recording, recording data retention, real-time digital watermarking, and auto snapshot settings. Click 'Apply' to save the settings.



1. Video compression: Choose a video compression format for the recording.
2. Resolution: Select the recording resolution.
3. Frame rate: Adjust the frame rate for the recording. Note that the frame rate of the IP camera may be affected by the network traffic.
4. Quality: Select the image quality for the recording. More disk space is required to save higher quality recording.
5. Audio recording (optional): To enable the audio recording, click 'Enable audio recording on this camera'.
6. Estimated storage space for recording: The number of the estimated storage space for recording is only for reference. The actual space required depends on the network environment and the camera performance.
7. Enable panomorph support: For the specific camera models with panomorph lens, you can enable this option.
   Note: To know the camera models which can be installed with panomorph lens, please

visit http://www.immervision.com/en/security/security_partners/security_partners_2.php.

8. Manual recording: To allow manual activation and deactivation of manual recording function on the monitoring page, enable this option.
9. Real-time digital watermarking: Enable this option to add digital watermarks to the video files as soon as they are recorded to the NVR. Use the Watermark Proof utility to verify if the video files were maliciously modified. For more information of digital watermarking, refer to Chapter 5.3.
10. Enable recording data retention: Turn on this function and specify the minimum number of days to keep the recording data. Note that the number of days entered here must be smaller than the maximum number of days to keep all recordings configured in 'Camera Settings' > 'Advanced Settings'.
11. Enable auto snapshot: Select this option and the settings will be displayed. Configure up to 15 schedules for automatic snapshot taking or specify the number of snapshots (max 60) the NVR should take every hour. The snapshots are saved to the share folder of the NVR by default. Specify a remote server to where the files will be saved. Read/write access to the remote server is required.

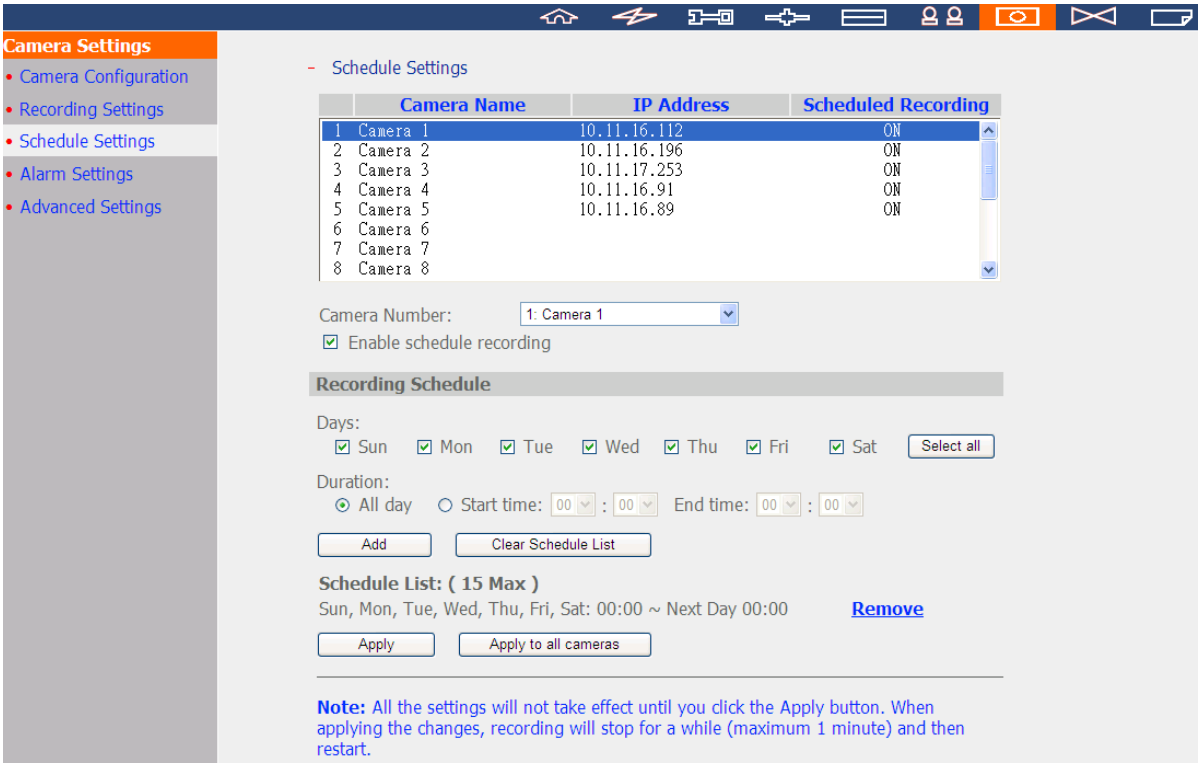


Note:

- Starting and stopping manual recording will not affect scheduled or alarm recording tasks. They are independent processes.
- All the settings will not take effect until 'Apply' is clicked. When applying the changes, recording will stop for a while (maximum 1 minute) and then restart.
- The settings of the snapshot folder are global settings which will be applied to all the channels.

6.6.3 Schedule Settings

Select continuous recording or scheduled recording. The default setting is continuous recording. To set up a recording schedule, select a camera number on the list. Then select the date and time and click 'Add'. Click 'Apply' to save the settings for the particular IP camera or click 'Apply to all cameras' to apply the settings to all the IP cameras. To delete a schedule, click 'Remove' on the schedule list.



Note:

- Up to 15 schedules can be added.
- All the settings will not take effect until 'Apply' is clicked. When applying the changes, the recording will stop for a while (maximum 1 minute) and then restart.

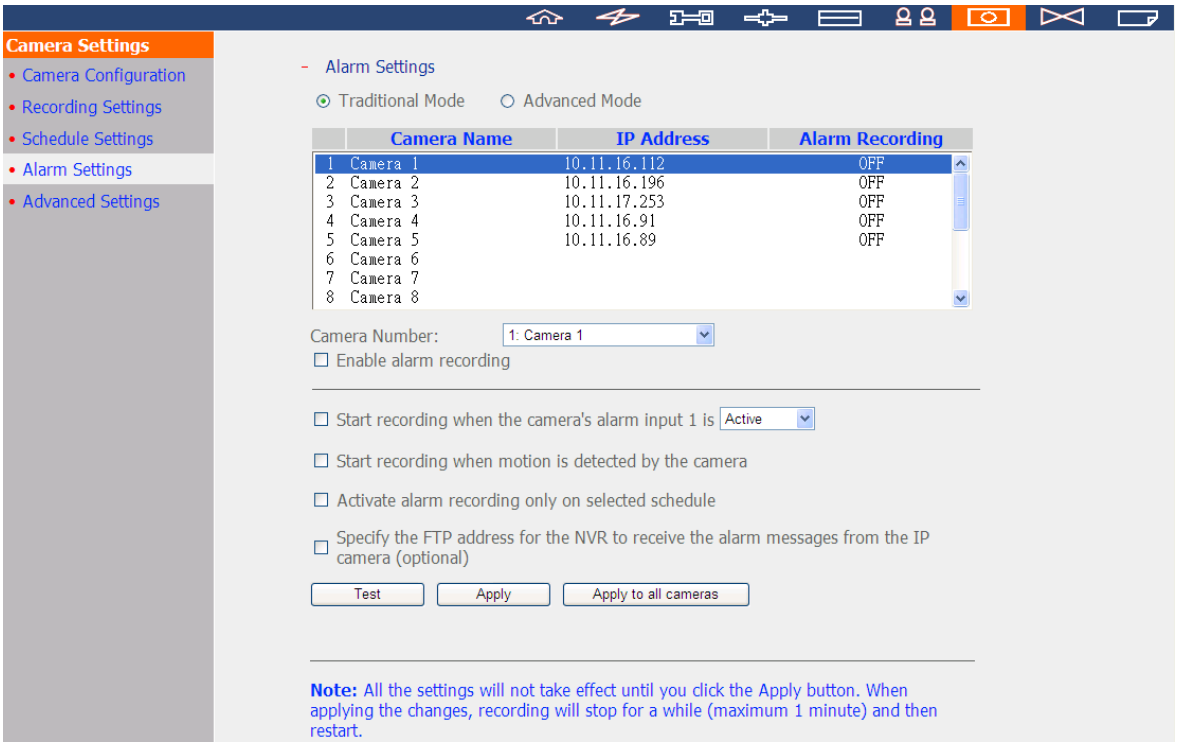
6.6.4 Alarm Settings

The NVR provides 'Traditional Mode' and 'Advanced Mode' for alarm settings. Select 'Traditional Mode' to use the standard alarm settings in response to the alarm events. To use advanced event management, select 'Advanced Mode'.

Traditional Mode

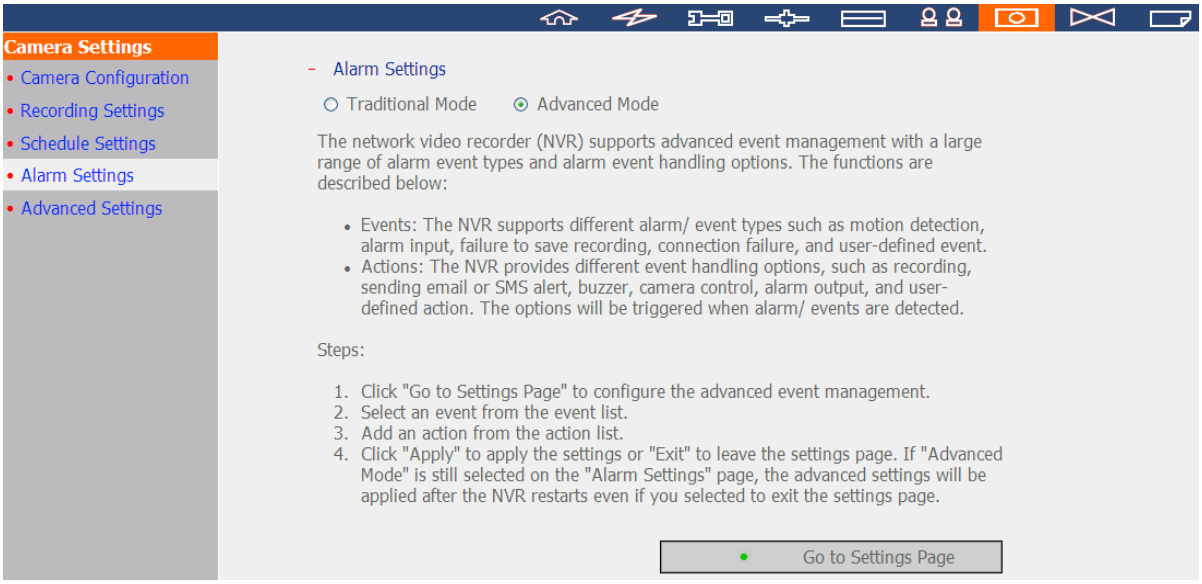
Select a channel (IP camera/video server) on the list and configure the alarm settings. The video recording will be activated when the alarm input of the selected channel is triggered or a moving object is detected.

When the option 'Activate alarm recording only on selected schedule' is enabled, the alarm recording will be activated only when the alarm input is triggered or a moving object is detected within the schedule. Test the settings by clicking 'Test'. Click 'Apply' to apply the settings to the selected channel. To apply the same settings to all the channels on the list, click 'Apply to all cameras'.



Note:

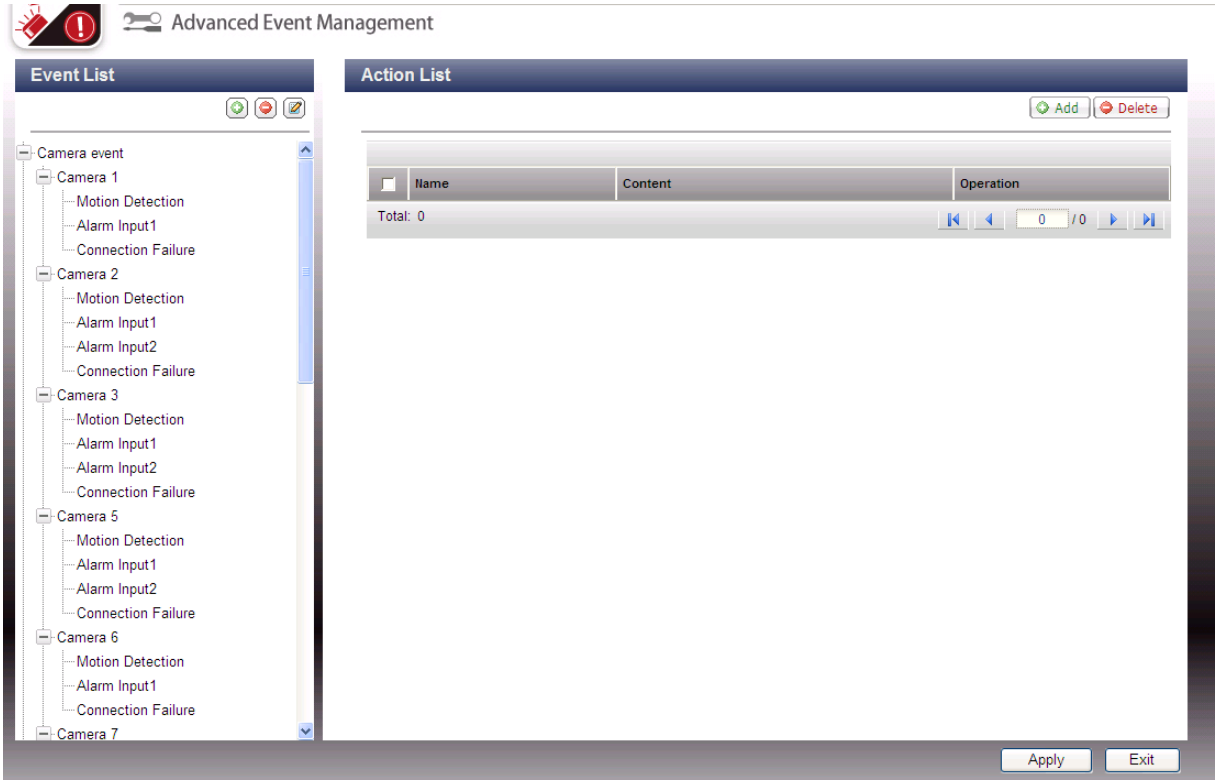
- All the settings will be effective after clicking 'Apply'. When applying the changes, the current recording process will stop for a while (maximum 1 minute) and then restart.
- To avoid blocking by the firewall, the IP cameras or the video servers configured for alarm recording must be located on the same subnet as the NVR.
- To switch from traditional mode to advanced mode, select 'Advanced Mode' and click 'Go to the settings page'.



Advanced Mode:

The advanced mode consists of the event and action sections. Define the action to take for each event triggered on the IP cameras or the video servers connected to the NVR.

To configure the advanced event management by the 'Advanced Mode', select an event type on the left channel list and configure the actions to take on the right.



Note:

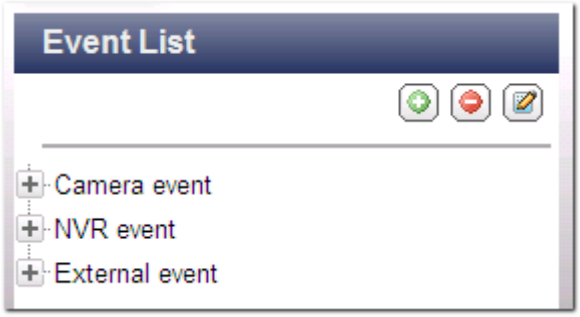
- Click 'Apply' to apply the settings or 'Exit' to exit the settings page. If the 'Advanced Mode' is selected on the 'Alarm Settings' page, the advanced settings will be applied after the NVR restarts even if you have selected to exit the settings page. The settings will be cancelled if 'Traditional Mode' is selected after exiting the 'Advanced Mode'.
- To avoid blocking by the firewall, the IP cameras or the video servers configured for the alarm recording must be located on the same subnet as the NVR.
- To switch from the advanced mode to the traditional mode, select 'Traditional Mode' and click 'Apply'.

Events:

The events supported by the NVR are classified as camera events (motion detection, alarm input, camera disconnection), NVR events (recording failure), and external events (user-defined events).

Note: The camera events available depend on the features supported by the IP cameras or video servers.

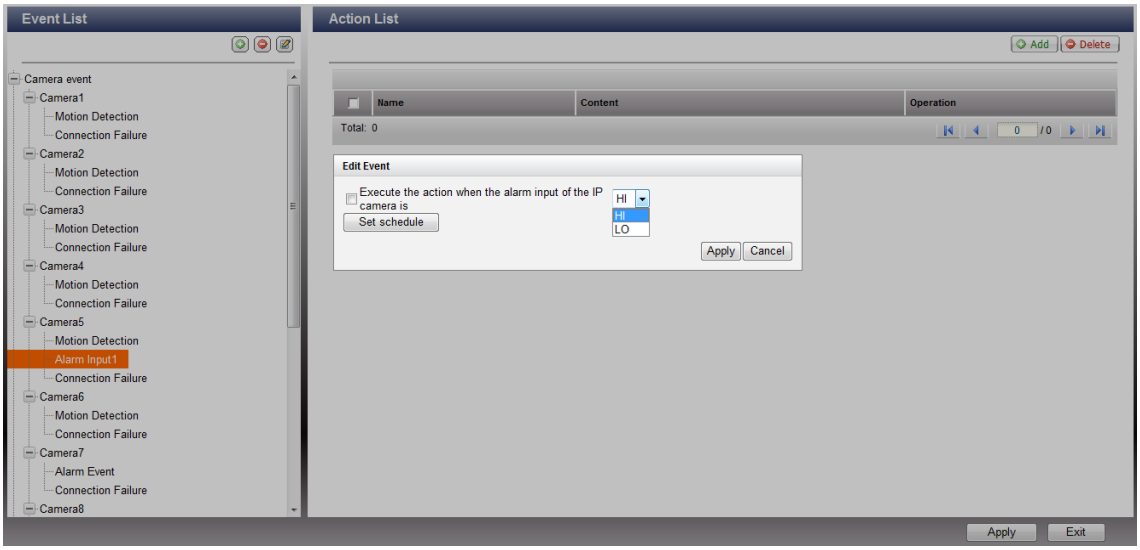
Button	Description
	Add an external event. This button is not applicable to the camera events and the NVR events.
	Edit an event. This button cannot be used to edit camera disconnection.
	Delete an external event. This button is not applicable to the camera events and the NVR events.



The NVR supports the following event types. Before specifying the action settings, select the events to manage and configure the settings.

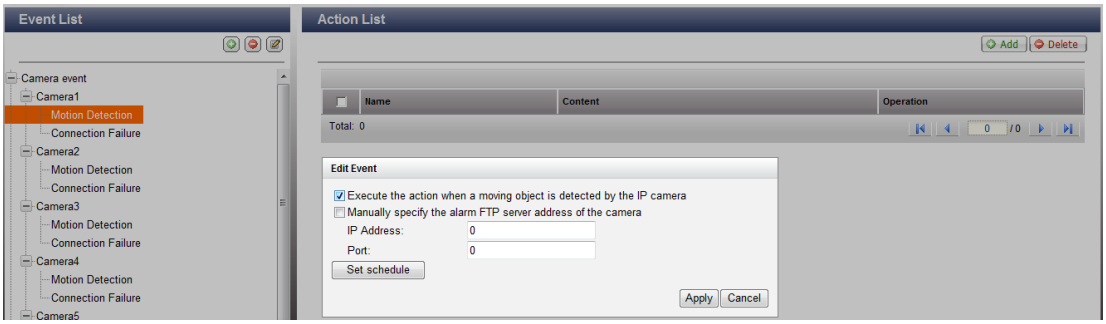
(1) Alarm input

This option allows the NVR to trigger an action when the alarm input of the IP camera or the video server is triggered. Select 'Camera event' from the 'Event List'. Locate the channel which supports alarm input and click 'Alarm Input'. Next, click the edit button ( ), enable this option, configure the settings, and click 'Apply'. Set the schedule to define the active period of the alarm settings. After that, define the action on the right (discussed in the later sections).



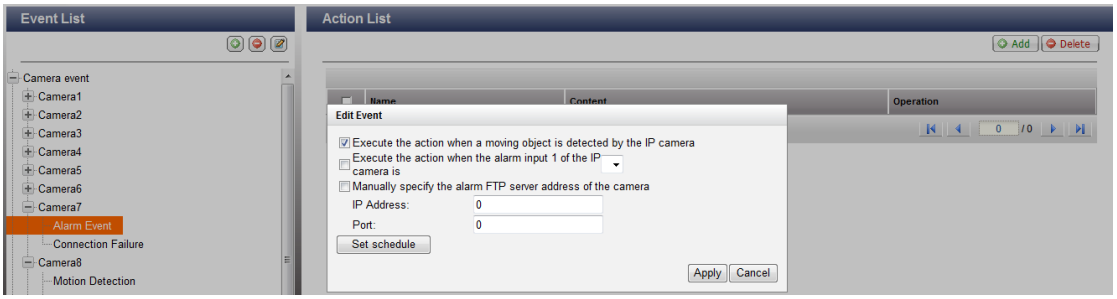
(2) Motion detection

This option allows the NVR to trigger an action when a moving object is detected by the IP camera or the video server. Select 'Camera event' from the 'Event List'. Locate the channel and click 'Motion Detection'. Next, click the edit button ( ), enable this option, configure the settings, and click 'Apply'. Set the schedule to define the active period of the alarm settings and define the action on the right (discussed in the later sections).



(3) Alarm event

The alarm input and the motion detection settings of some IP cameras or video servers may be combined together and called 'Alarm Event' on the Event List. Edit the event settings and define the action on the right (discussed in the later sections).



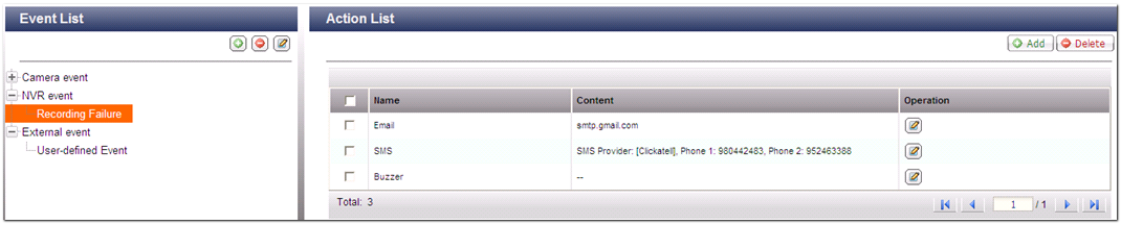
(4) Connection failure

This option allows the NVR to trigger an action when the IP camera or the video server is disconnected. Select 'Camera Event' from the 'Event List'. Locate the channel and click 'Connection Failure'. After that, define the action on the right (discussed in the later sections).



(5) Recording failure (NVR event)

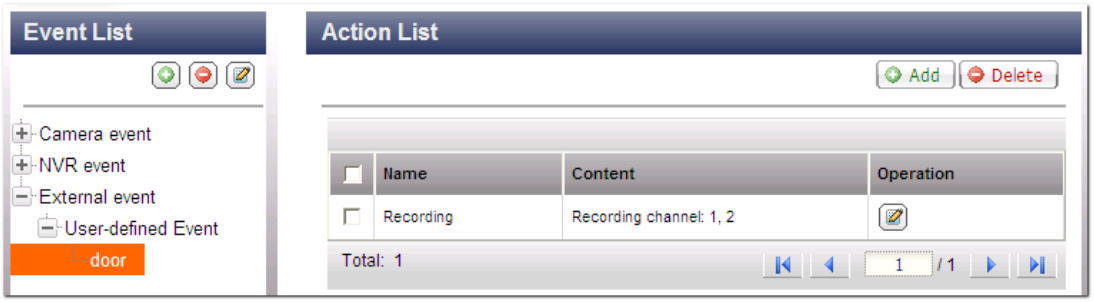
This option allows the NVR to trigger an action when the video recording of the IP camera or the video server fails due to the hard disk bad blocks, file system crash, or other reasons. Select 'NVR event' from the 'Event List'. Click 'Recording failure'. Then define the action settings on the right (discussed in the later sections).



(6) External event (user-defined events)

To create a self-defined event on the NVR, select 'User-defined Event' under 'External event' on the 'Event List'. Then click the + button. Enter the event name, for example, 'door'.

After creating an event, click the event name and define the action on the right (discussed in the later sections). After configuring the action settings, enter the CGI command (including the self-defined event name) in the web browser (Internet Explorer) to trigger the action anytime. The format of the CGI command is: http://*NVRIP*/cgi-bin/logical_input.cgi?name=*event-name*. For example, http://10.8.12.12:80/cgi-bin/logical_input.cgi?name=door

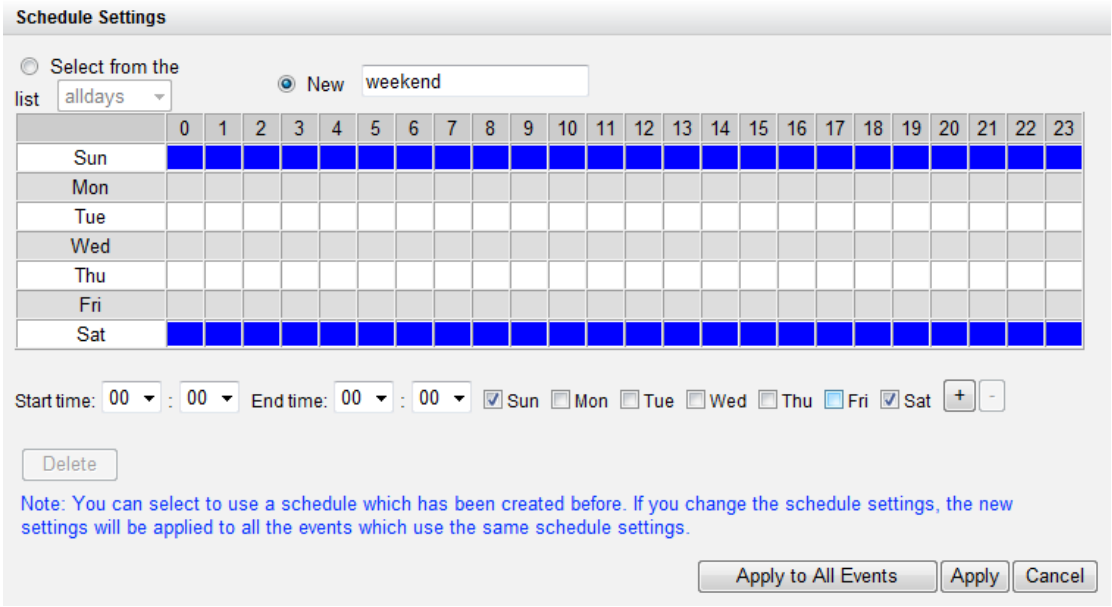


Event schedule settings:

When editing an event (not including camera disconnection, NVR events, and external events), click 'Set Schedule' to define when the alarm settings will be active.

To create a new schedule, select 'New' and enter the schedule name. The schedule supports maximum 25 characters (double-byte characters, spaces, and symbols are allowed). Select the day and time when the alarm settings should be active. Click + to add a schedule; or – to delete a schedule. Up to 6 settings can be defined for each schedule.

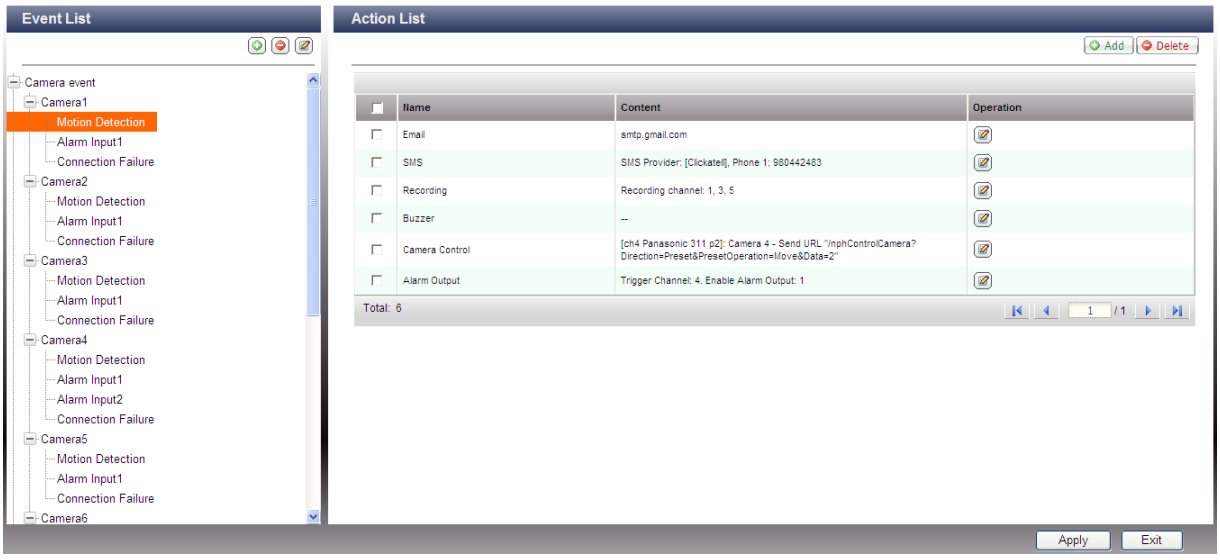
The settings will be shown on the graphical table. Click 'Apply' to save the settings. To use the same schedule for all the events, click 'Apply to All Events'. Select to use the default schedule or a formerly created schedule from the list. The default alarm settings are active all day, every day.



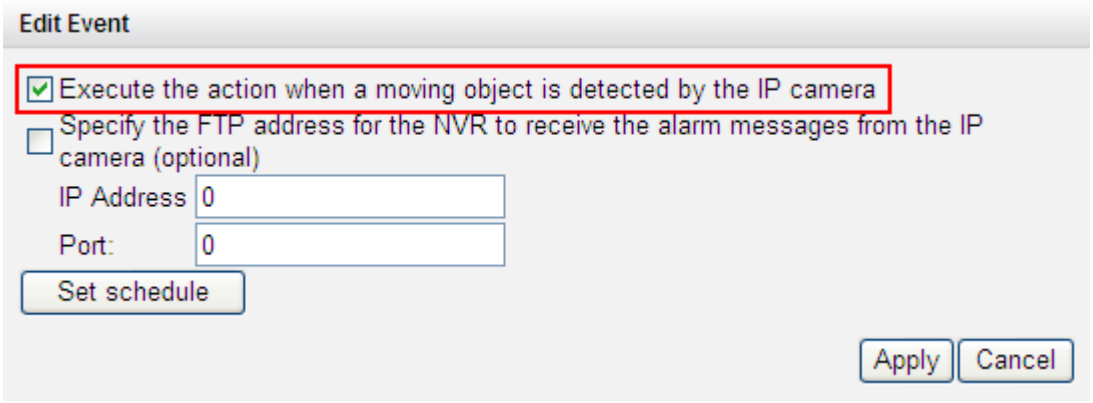
Actions:

The NVR supports different actions which can be activated when the selected events are triggered on the IP cameras or the video servers. The actions include video recording, email alert, SMS alert, buzzer, PTZ camera control, alarm output, and logic output.

Button	Description
Add	Add an action: After configuring an event on the left, click 'Add' to create an action in response to the event. Click 'Apply' to save the settings.
	Edit an action: Select an event on the left. All the actions defined for this event will be shown. Select the box in front of the action name to edit. Then click this button on the 'Action' column to edit the action settings.
Delete	Delete an action: Select an event on the left. All the actions defined for this event will be shown. Select the box in front of the action name to delete and click 'Delete'. Multiple actions can be deleted.



Note: Make sure the action in the event settings has been enabled; otherwise the action will not be executed.


Edit Event
Execute the action when a moving object is detected by the IP camera
Specify the FTP address for the NVR to receive the alarm messages from the IP camera (optional)
IP Address
0
Port:
0
Set schedule
Apply
Cancel

(1) Recording

Select the channels (IP cameras or video servers) which will start recording when an event occurs. The following options are also available:

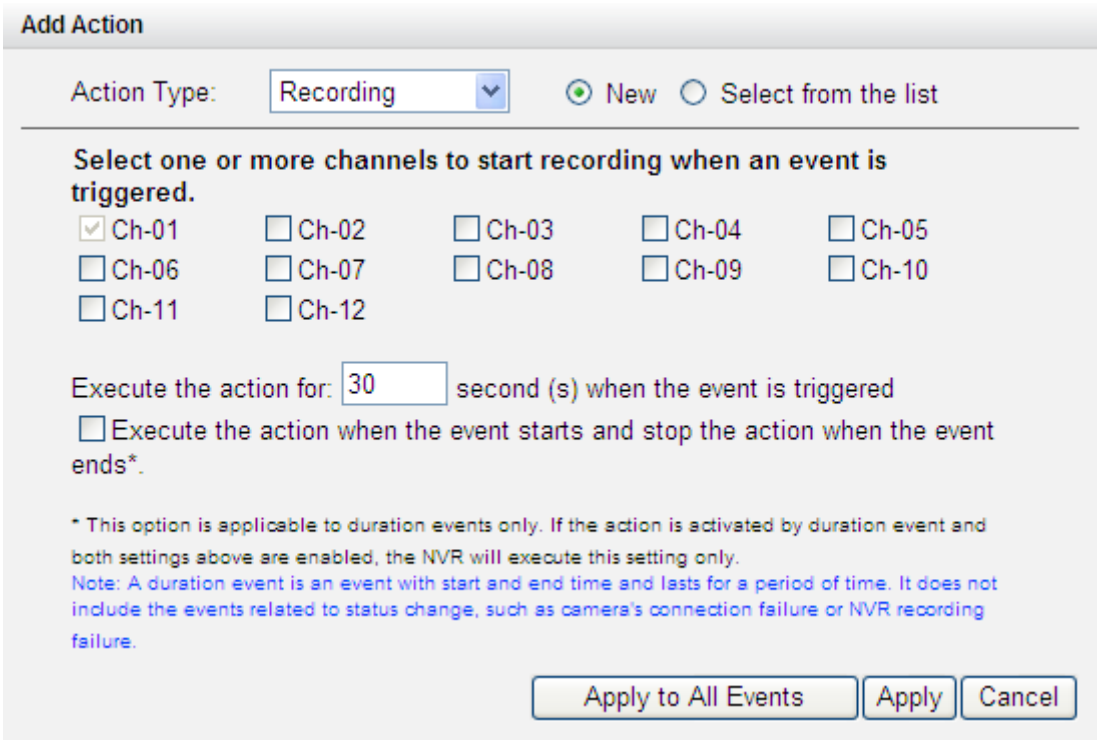
(i) Enter the time (in seconds) the recording should be executed after the event is triggered.

(ii) Start recording when the event starts and stop recording when the event ends.

The option (ii) is applicable to the duration events only. A duration event is an event with the start and end time and lasts for a period of time. It does not include the events related to status change, such as camera disconnection or NVR recording failure.

If the action is triggered by a duration event and both settings (i, ii) are enabled, the NVR will execute the second setting (ii) only.

Click 'Select from the list' to select an action setting which has been configured before.

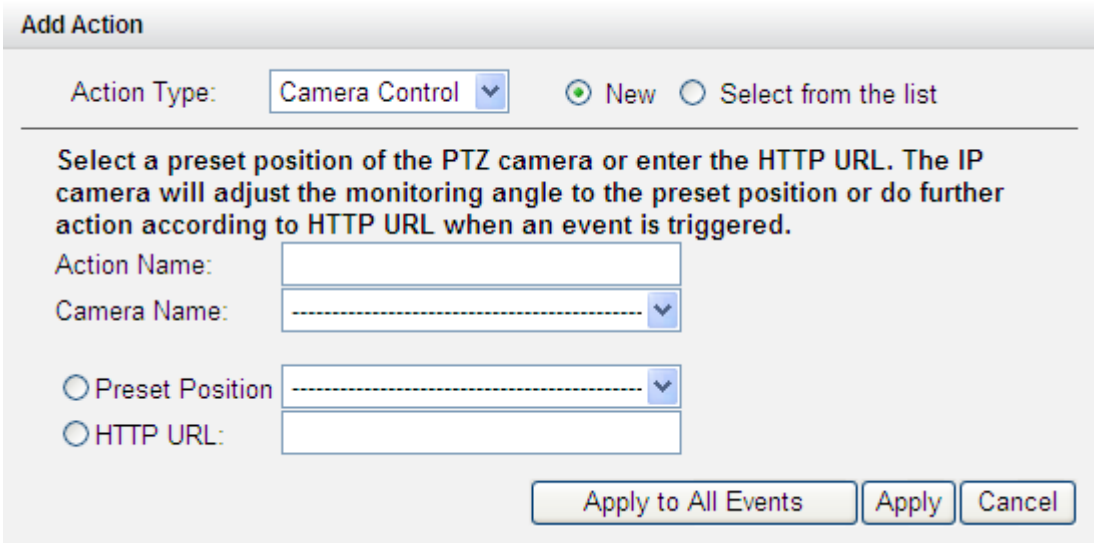


(2) Camera control

Configure the PTZ camera to adjust to the preset position for monitoring or act according to the HTTP URL entered when an event is triggered. Select a preset position from the drop-down menu or enter the HTTP URL.

Click 'Select from the list' to select an action setting which has been configured before.

Note: The preset names will appear only after the preset settings of the PTZ cameras have been configured.



(3) Alarm output

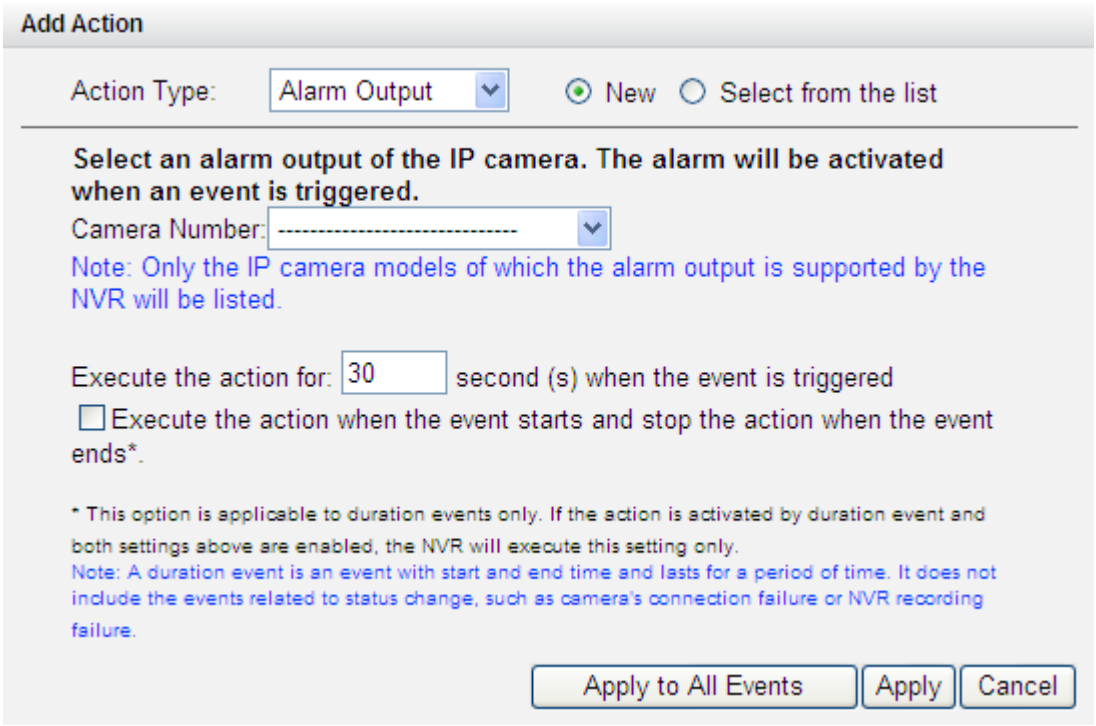
Select to activate the alarm device connected to the IP camera when an event is triggered. The following options are available:

(i) Enter the number of second(s) the alarm device will be active when the event is triggered.

(ii) Activate the alarm device when the event starts and stop the alarm device when the event ends.

The option (ii) is applicable to the duration events only. A duration event is an event with the start and end time and lasts for a period of time. It does not include the events related to status change, such as camera disconnection or NVR recording failure.

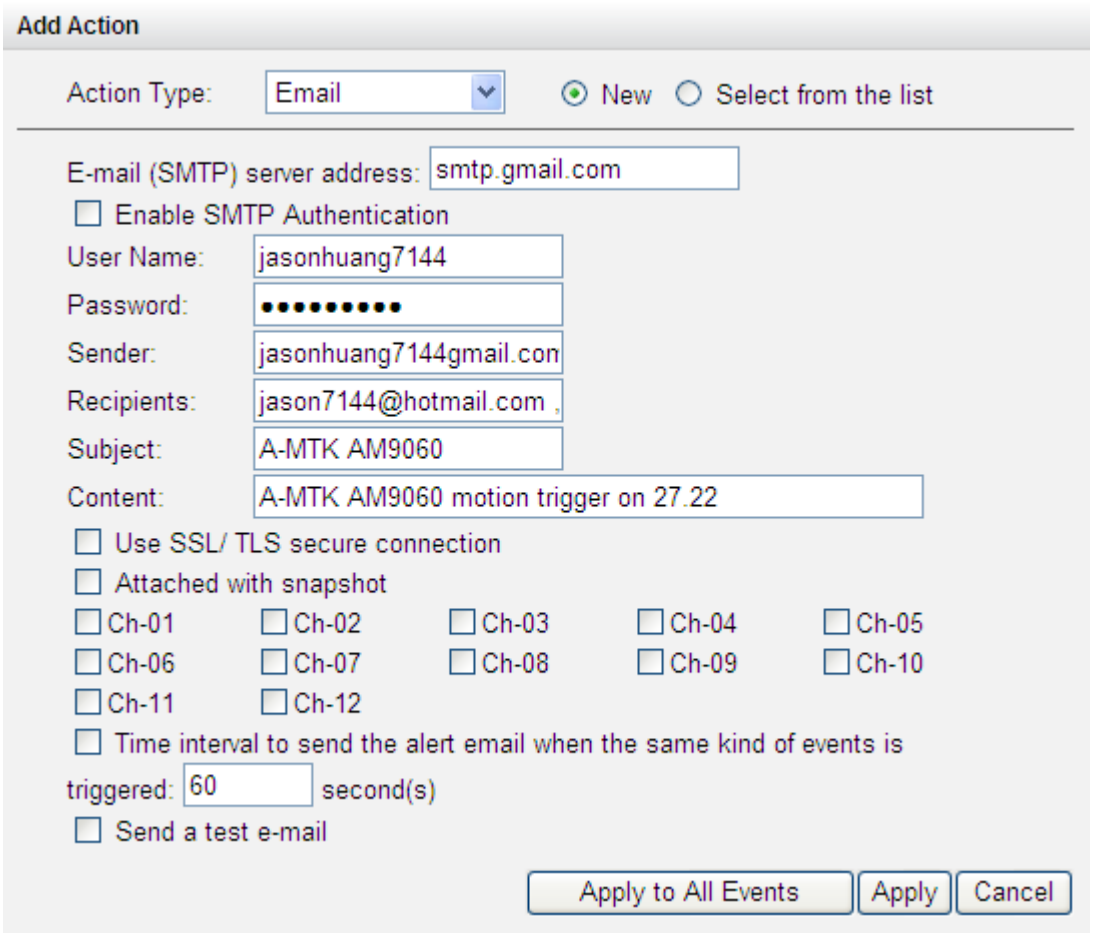
Click 'Select from the list' to select an action setting which has been configured before.



(4) Email

To receive an instant email alert when an event is triggered, enter the SMTP settings. Multiple email addresses can be entered as the recipients. Snapshots of multiple channels (IP cameras/video servers) can be attached to the alert emails.

Click 'Select from the list' to select an action setting which has been configured before.

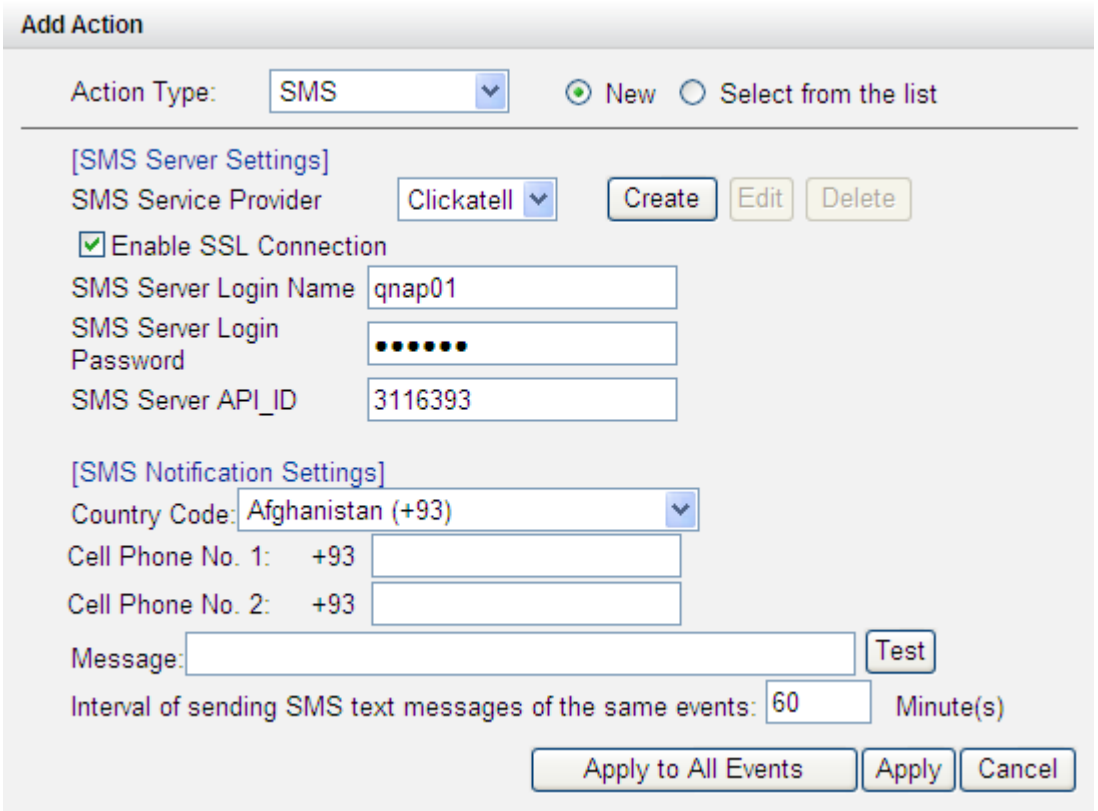


(5) SMS

To allow the system administrator to receive an instant SMS alert when an event is triggered, enter the SMS server settings. The default SMS service provider is Clickatell. To add other SMS service providers, click 'Add' and enter the provider's name and the URL template text.

Click 'Select from the list' to select an action setting which has been configured before.

Note: Always follow the standard of the SMS service provider to receive the SMS properly.



(6) Buzzer

Enable the buzzer when an event is triggered. The following options are also available:

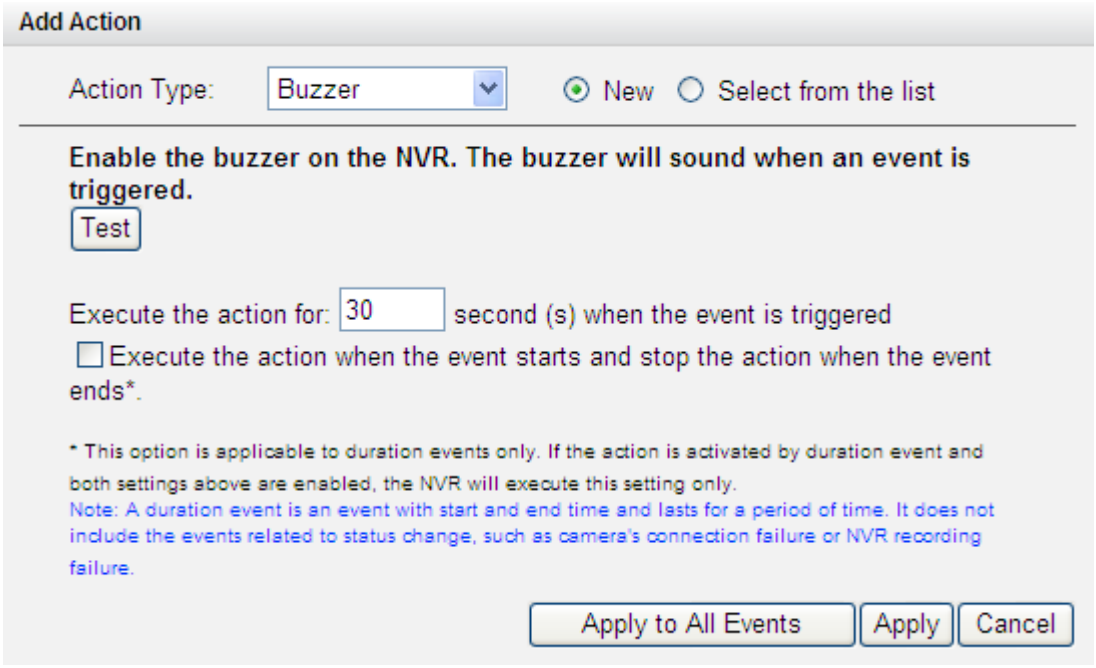
(i) Enter the time (in seconds) the buzzer will sound when the event is triggered.

(ii) Execute the buzzer when the event starts and stop the buzzer when the event ends.

The option (ii) is applicable to the duration events only. A duration event is an event with the start and end time and lasts for a period of time. It does not include the events related to status change, such as camera disconnection or NVR recording failure.

If the action is triggered by a duration event and both settings (i, ii) are enabled, the NVR will execute the second setting (ii) only.

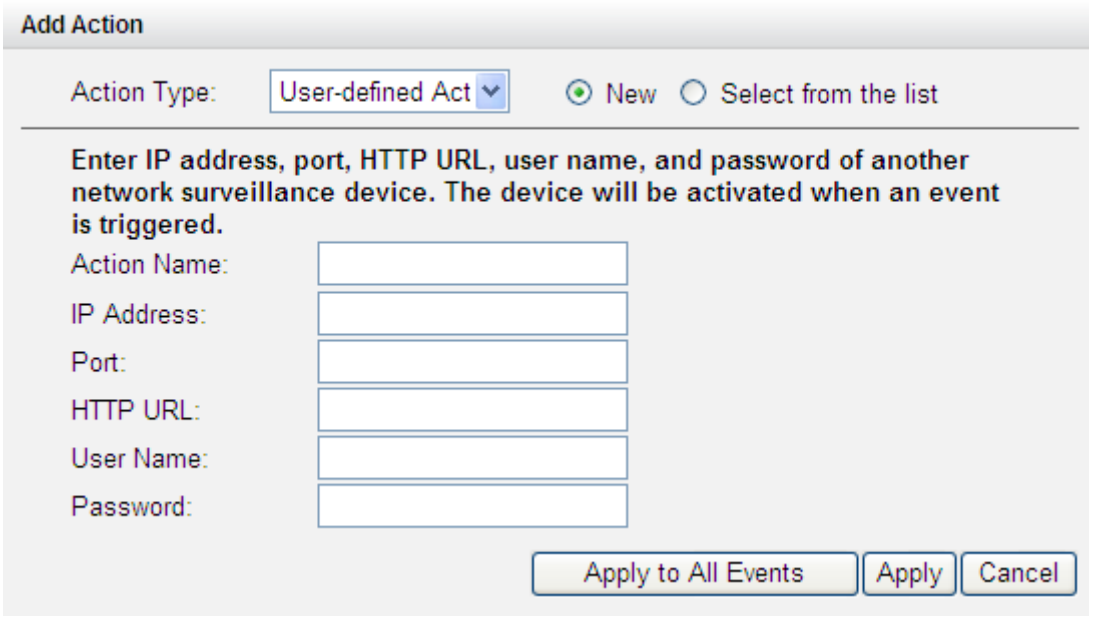
Click 'Select from the list' to select an action setting which has been configured before.



(7) User-defined Action

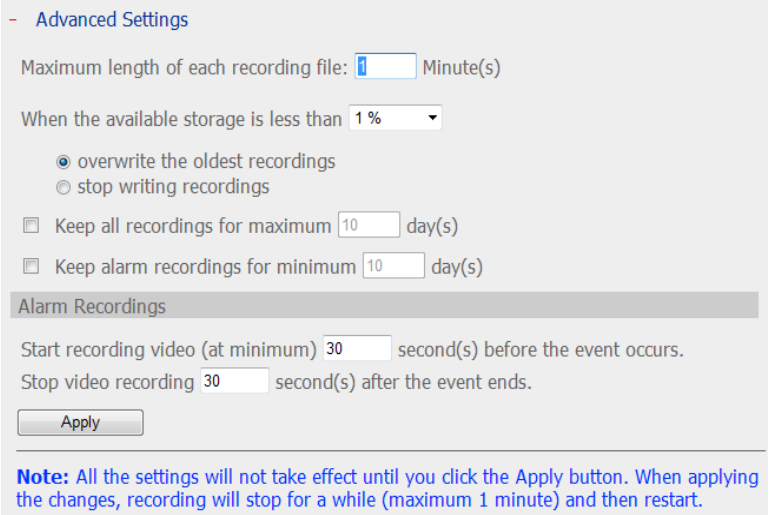
Add a self-defined action when an event is triggered. Enter the login account and password, IP address, port, and the HTTP URL of other surveillance devices to manage the devices such as fire protection devices, power controller, and air conditioning control.

Click 'Select from the list' to select an action setting which has been configured before.



6.6.5 Advanced Settings

Configure the advanced recording settings in this section.



- Maximum period for each recording file: Specify the maximum length of each recording file (maximum 15 min).

- When the available storage is less than…%: Specify if the NVR should overwrite the oldest recordings or stop recording when the available storage capacity is less than the specified percentage of the total storage capacity. It is strongly suggested to select 5% or above.

- Keep alarm recordings for at least…day(s): Specify the number of days that alarm recordings will be retained.

- Remove recordings after…day(s): Enter the number of calendar days for the NVR to keep the recording files.
  Please make sure the storage capacity is enough to save the data for the number of calendar days specified. When the recording data has reached the expiry date, all the expired video files will be deleted. For example, if the NVR is configured to delete the recording data after 7 calendar days, on the 8th day, the files recorded on the first day of each camera will be deleted so that the NVR can start to save the data on the 8th day.

- Pre-/Post-alarm Recordings
  - ✓ Start recording video…second(s) before the event occurs: Enter the number of seconds to start the recording before an event occurs.
  - ✓ Stop video recording…second(s) after the event ends: Enter the number of seconds to stop the recording after an event ends.

  The maximum number of seconds for the above settings is 300, i.e. 5 minutes.

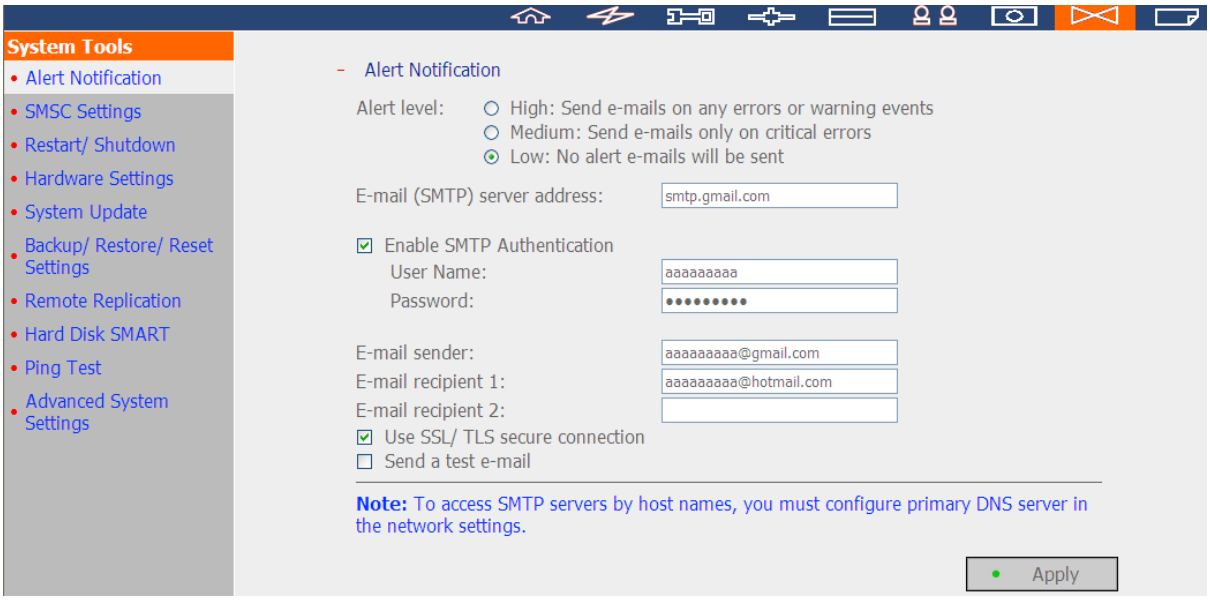
Note: All the settings will be effective only after clicking 'Apply'. When applying the changes, the recording will stop for a while (maximum 1 minute) and then restart.

6.7 System Tools

The System Tools help optimize the system maintenance and management. Set the alert notification, restart or shut down the server, configure the hardware settings, update the system firmware, back up/restore/reset the system settings, set the E-map, and run the ping test.

6.7.1 Alert Notification

Enter the email address of the administrator and the IP address of the SMTP server. When an error occurs, e.g. power outage or a hard disk drive is unplugged, an alert email will be sent to the specified recipients automatically. To view the details of all the errors and warnings, go to 'Logs & Statistics' > 'System Event Logs'.



Note: It is recommended to send a test email to make sure the mail server settings are correct.

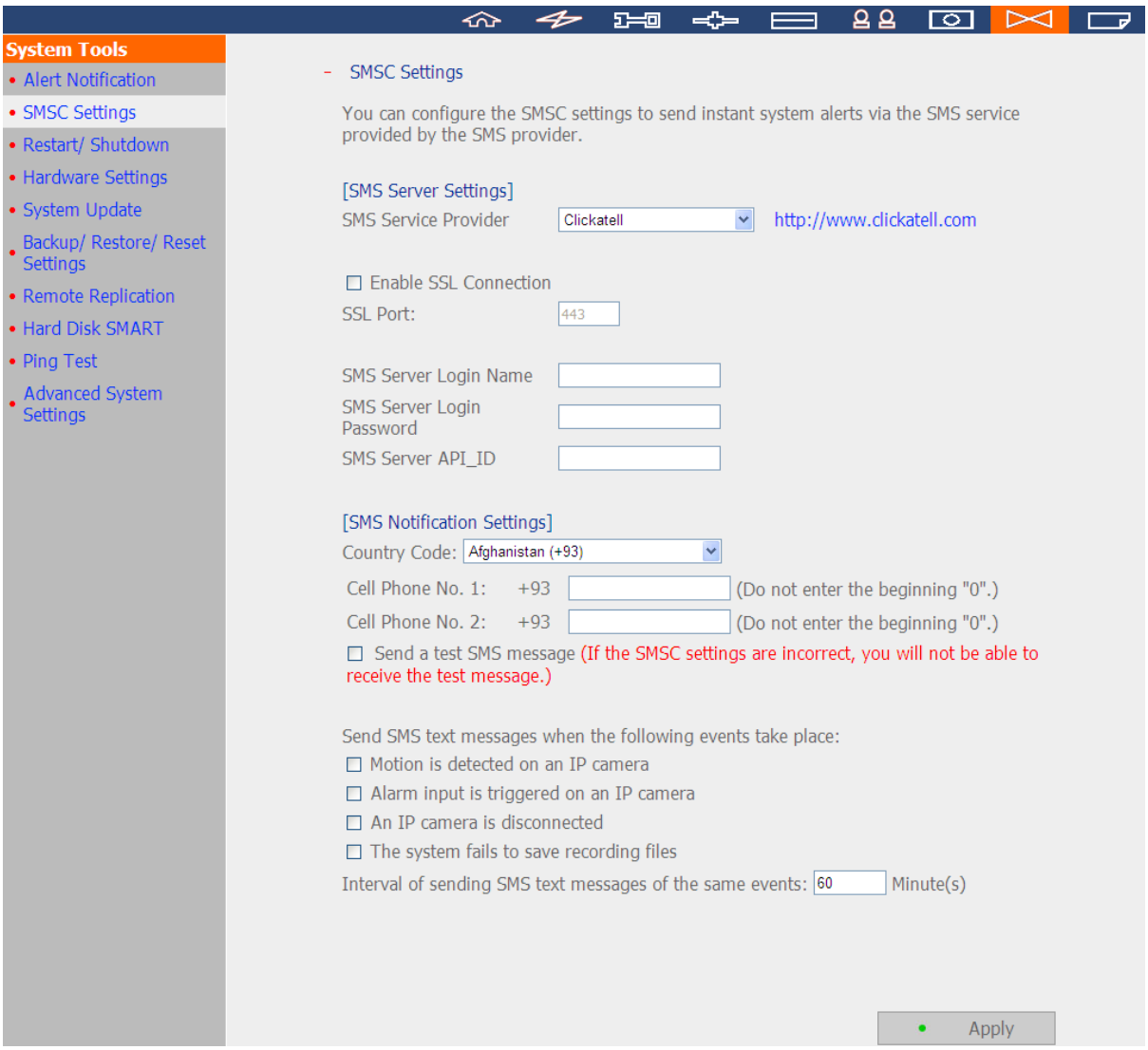
6.7.2 SMSC Settings

Configure the SMSC (Short message service centre) settings to send the SMS text messages to the particular mobile phone numbers when an event takes place on the NVR. The default SMS service provider is Clickatell. Add an SMS service provider by selecting 'Add SMS Provider' from the drop-down menu.

When 'Add SMS service provider' is selected, enter the name of the SMS provider and the URL template text.

Note:

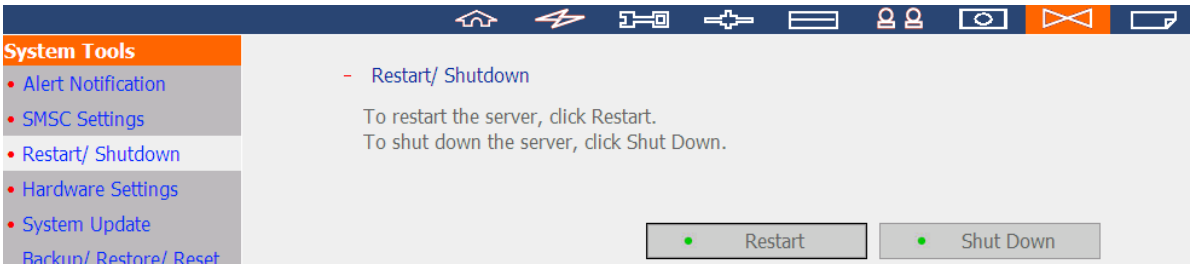
- Always follow the standard of the SMS service provider to receive the SMS properly.
- Send a test SMS to verify the settings are correct.
- When the 'Advanced mode' is in use in the 'Alarm Settings', this page will become inactive. Go to 'Camera Settings' > 'Alarm Settings' > 'Advanced Mode' to edit the SMS settings or select to use the 'Traditional Mode' and configure the SMS settings on this page.


System Tools
• Alert Notification
• SMSC Settings
• Restart/ Shutdown
• Hardware Settings
• System Update
• Backup/ Restore/ Reset Settings
• Remote Replication
• Hard Disk SMART
• Ping Test
• Advanced System Settings
SMSC Settings
You can configure the SMSC settings to send instant system alerts via the SMS service provided by the SMS provider.
[SMS Server Settings]
SMS Service Provider
Clickatell
http://www.clickatell.com
Enable SSL Connection
SSL Port:
443
SMS Server Login Name
SMS Server Login Password
SMS Server API_ID
[SMS Notification Settings]
Country Code:
Afghanistan (+93)
Cell Phone No. 1: +93
(Do not enter the beginning "0".)
Cell Phone No. 2: +93
(Do not enter the beginning "0".)
Send a test SMS message (If the SMSC settings are incorrect, you will not be able to receive the test message.)
Send SMS text messages when the following events take place:
Motion is detected on an IP camera
Alarm input is triggered on an IP camera
An IP camera is disconnected
The system fails to save recording files
Interval of sending SMS text messages of the same events:
60
Minute(s)
Apply

6.7.3 Restart/Shut Down

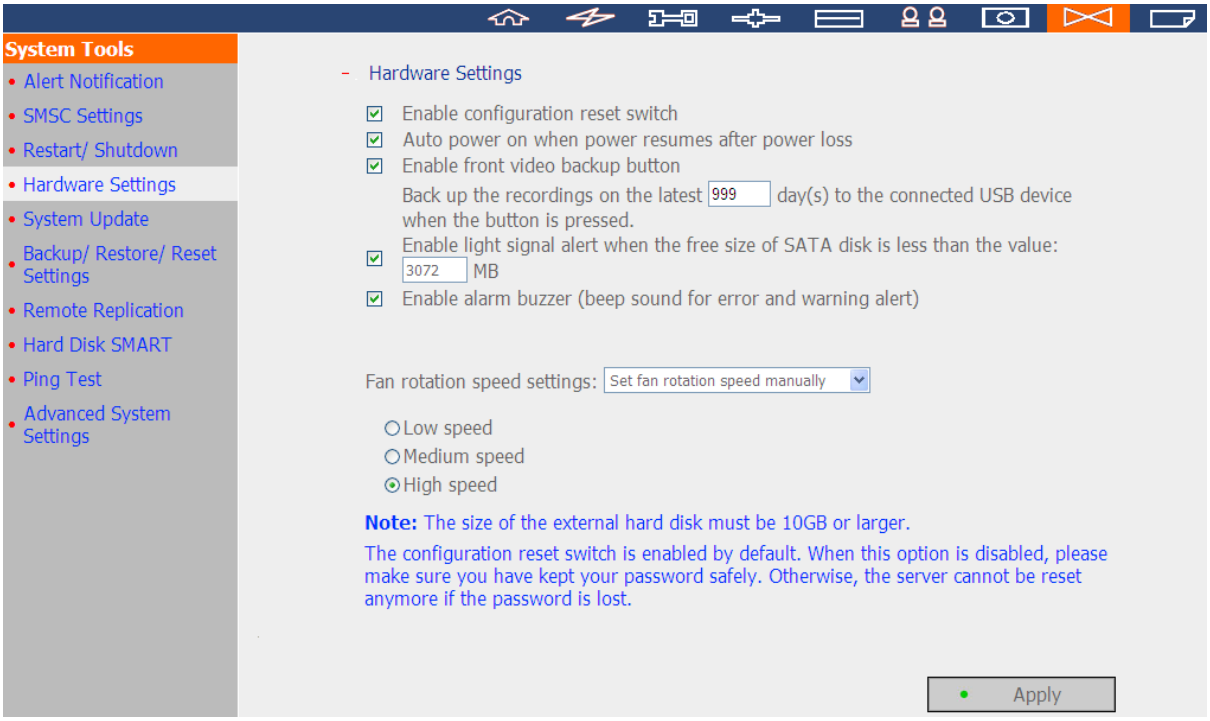
Follow the steps below to restart or shut down the server.

1. Go to 'System Tools' > 'Restart/Shutdown'.
2. Click 'Restart' to reboot the server or 'Shut Down' to turn off the NVR.



6.7.4 Hardware Settings

Enable or disable the hardware functions of the NVR.



Enable the configuration reset switch

By enabling this option, press the reset button for 5 seconds to reset the administrator password and system settings to default.

Note: The configuration reset switch is enabled by default. When this option is disabled, keep the password safely. Otherwise, the NVR cannot be reset anymore if the password is lost.

Auto power on when power resumes after power loss

When this function is enabled, the server will turn on automatically when the power resumes after a power loss.

Enable front video backup button

The NVR supports direct copy of the recording data on the NVR to the connected USB device via the USB port. Set the number of days that the videos are recorded to copy to the device. To use this function, please follow the steps below:

1. Set the number of days that the latest recordings should be backed up. If 3 days are entered, the recordings of today, yesterday and the day before yesterday will be backed up.
2. Connect a USB storage device, for example, USB disk drive to the front USB port of the NVR.
3. Press and hold the video backup button for 3 seconds. The NVR will start copying the recording data to the USB device instantly. If the USB device is recognized, the USB LED glows blue. The USB LED flashes blue when the data is being copied. The LED will turn off after the data has been copied. Then safely remove the device.

Note: The video backup function supports only the USB devices of 10GB storage capacity or above.

Enable light signal alert when the free size of SATA disk is less than the value

The status LED flashes red and green when this function is enabled and the free space of the hard disk drive(s) on the NVR is less than the value. The range of the value is 1–51200 MB.

Enable alarm buzzer

Enable this option to allow the NVR to sound when an error occurs.

Enable redundant power supply mode

When the redundant power supply mode is enabled, the NVR beeps if any of the power supply units does not function properly.

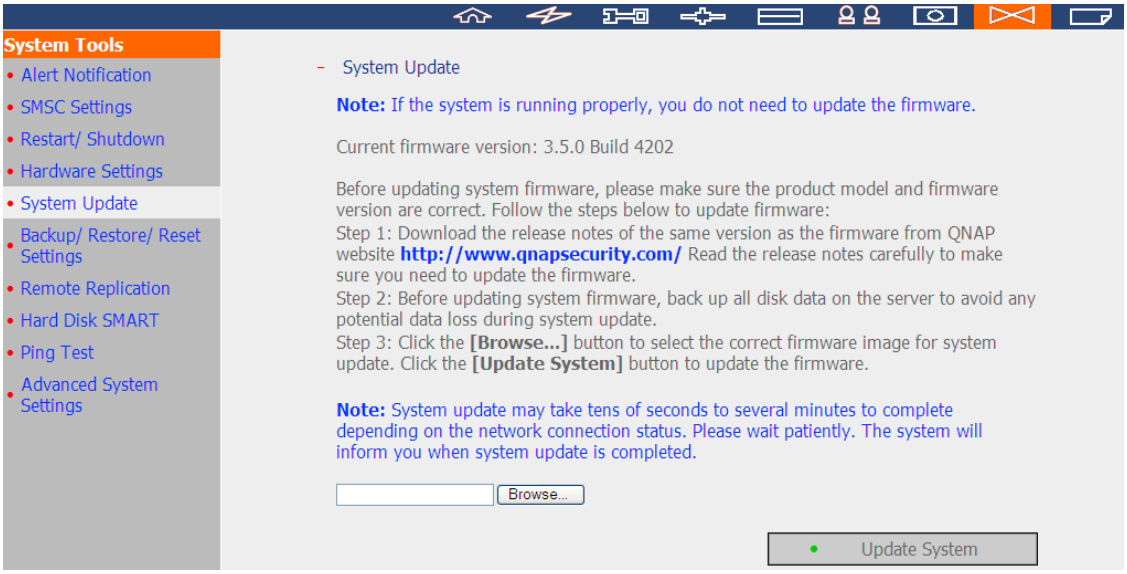
*This function applies to the models with redundant power supply only.

Smart fan configuration

After enabling the smart fan, the fan rotation speed is automatically adjusted according to the system temperature of the NVR. It is recommended to enable this option. By manually setting the fan rotation speed, the fan rotates at the defined speed continuously.

6.7.5 System Update

QNAP provides new firmware release for the NVR from time to time to provide updated features and enhancements. Update the system firmware to use these new features. Before doing so, make sure the product model and the firmware version are correct.



Note: If the NVR is running properly, it may not be necessary to update the firmware. QNAP is not responsible for any forms of data loss caused by improper or illegal system update.

Follow the steps below to update firmware:

1. Download the release notes of the firmware from the QNAP website http://www.qnapsecurity.com. Read the release notes carefully to make sure it is necessary to update the firmware.
2. Download and unzip the firmware file to the local computer.
3. Before updating the system firmware, it is strongly suggested to back up all the disk data on the NVR to avoid any potential data loss during the system update.
4. Click 'Browse…' to select the correct firmware image. Click 'Update System' to update the firmware.

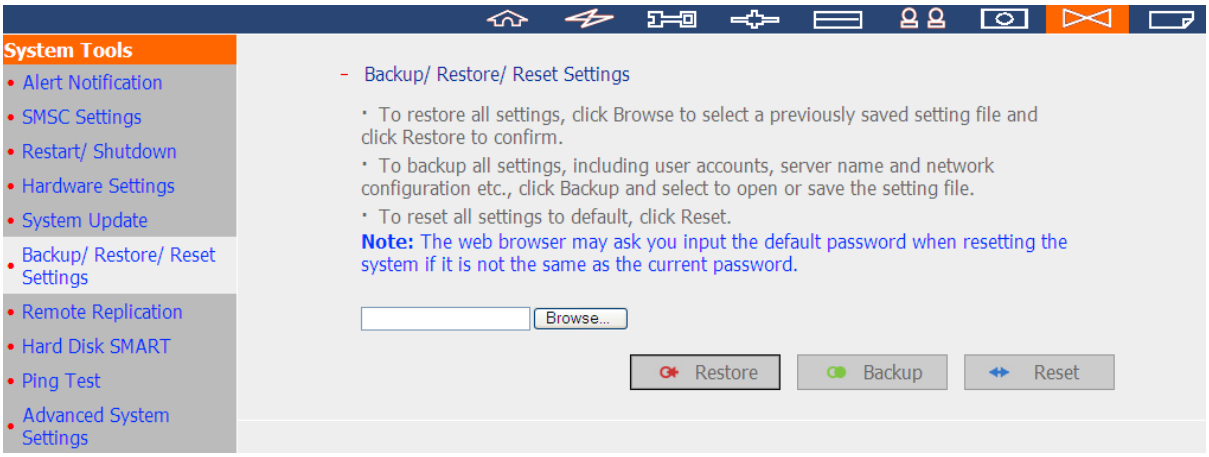
The system update may take several minutes to complete depending on the network connection status. Please wait patiently. The NVR will inform you when the system update is completed.

When updating the firmware, make sure the power supply is at a steady state. Otherwise, the NVR may be unable to start up.

6.7.6 Back up/Restore/Reset Settings

To back up all the settings, including the user accounts, the server name and the network configuration, click 'Back up' and select to open or save the setting file. To restore all the settings, click 'Browse' to select a previously saved setting file and click 'Restore'. To reset all the settings to default, click 'Reset'. **All the disk data will be deleted.**

Caution: When the 'Reset' button is clicked, all the drive data, user accounts, network shares, and the system settings will be cleared and restored to default. Please make sure all the important data and the system settings have been backed up before resetting the NVR.

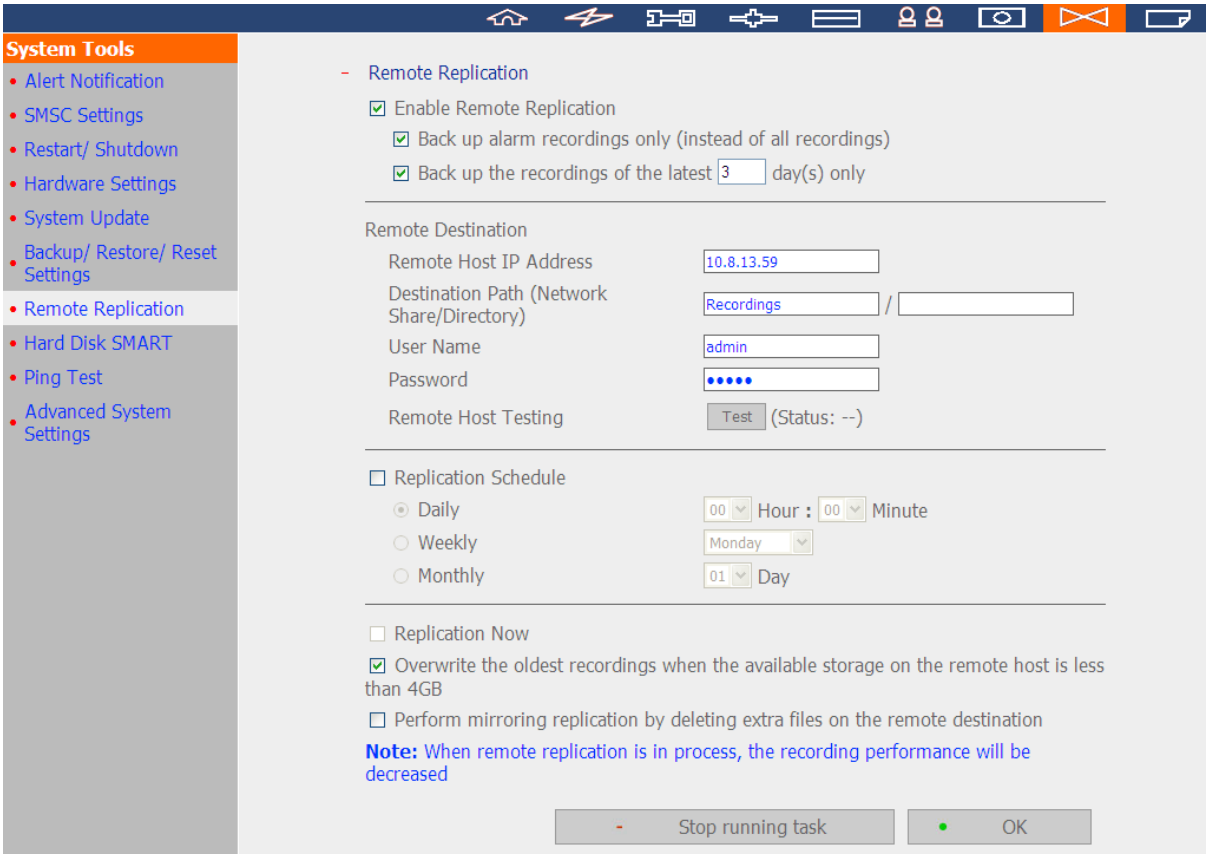


6.7.7 Remote Replication

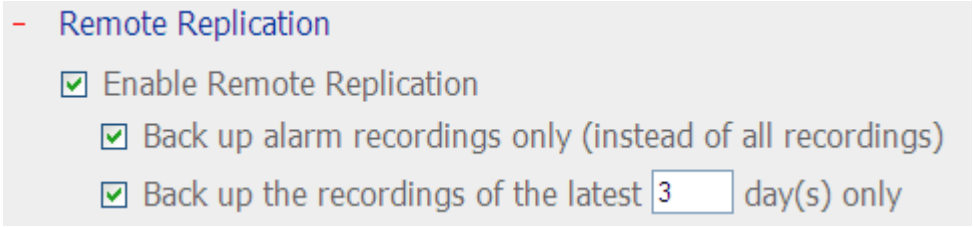
Use the remote replication feature to copy the recording data of the local NVR to a remote QNAP network attached storage (NAS). The remote QNAP NAS is hereafter referred to as 'the remote storage device'.

Note: Before using this function, make sure the Microsoft networking service of the remote storage device is enabled, and the corresponding path and user access right have been correctly configured.

1. Login the NVR and go to 'System Tools' > 'Remote Replication'.



2. Enable remote replication (support multiple choices)



In the above example, the NVR only copies the alarm recording data of the latest 3 days to the remote storage device.

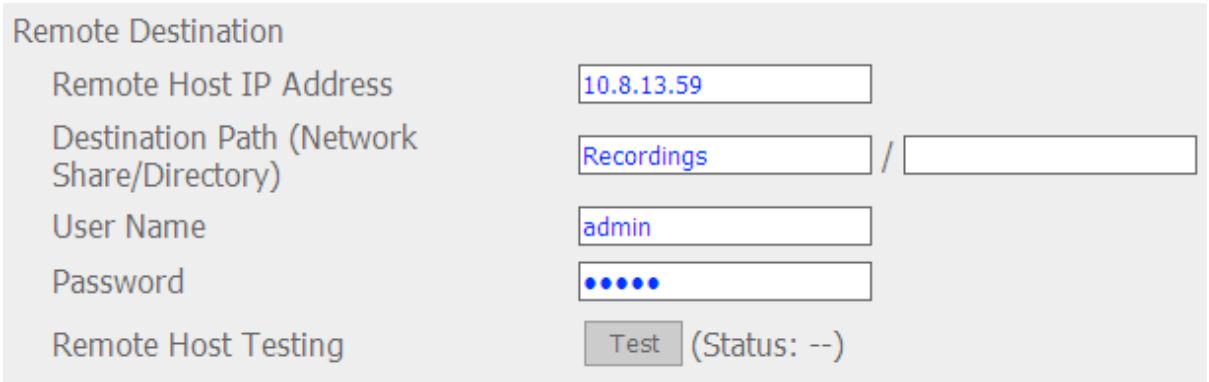
- Select 'Enable remote replication' to activate this feature. The NVR executes automatic backup of the recording data to the remote storage device according to the settings.

- Select 'Back up alarm recordings only (instead of all recordings)', the NVR will only copy the alarm recording data to the remote storage device. If this option is unselected, the NVR will back up all the recording data to the remote storage device.

- Select 'Back up the recordings of the latest…day(s) only' and enter the number of days, the NVR will back up the latest recording data to the remote storage device automatically according to the settings. If this option is unselected, the NVR will copy all the recording data to the remote storage device.

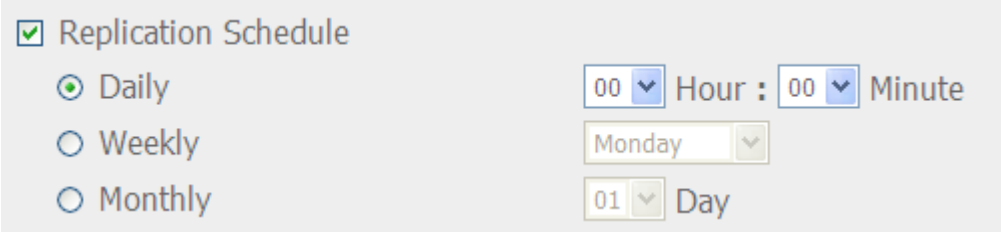
3. Configure the remote storage server

Enter the IP address, path, user name and password of the remote storage device.



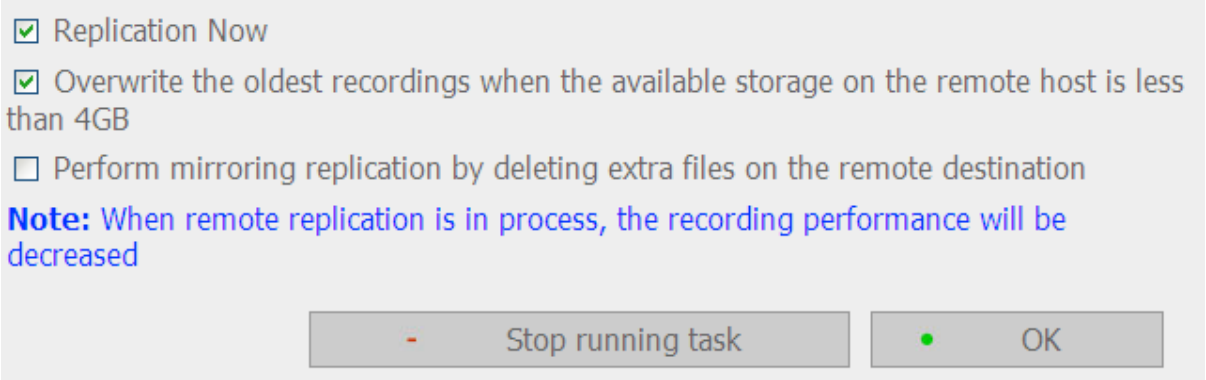
Note: It is recommended to execute the 'Remote host testing' function to verify the connection to the remote storage device is successful.

4. Configure the remote replication schedule



For example, to enable the NVR to copy the recording data automatically to the remote storage device at 01:15 every Monday, please do the following:
Select 'Replication Schedule', select 'Weekly', enter 01 Hour: 15 minute, and select 'Monday'.

5. Select the backup options



- Select 'Replication Now', the NVR will back up the recording data to the remote storage device immediately.
- Select 'Overwrite the oldest recordings when the available storage on the remote host is less than 4GB'; the NVR will overwrite the oldest recording data when the free space on the server is less than 4GB.
- Select 'Perform mirroring replication by deleting extra files on the remote replication', the NVR will synchronize the recording data between itself and the remote storage device and delete any extra files on the remote storage device.

When the above options are all selected and remote replication is executed, the NVR will do the following:

i. The NVR checks if there are files on the remote storage device that are different from the local source. If yes, the differentiated files will be deleted.
ii. Next, the NVR checks the free space of remote storage device. If the free space is larger than 4GB, the remote replication will be executed immediately.
iii. If the free space of the remote storage device is less than 4GB, the NVR will overwrite the recording data of the oldest day and then executes the remote replication.

6. The NVR displays the latest 10 remote replication records.

Start Time	Finish Time	Replicated Data Size	Status
2011-06-07 15:08:26	2011-06-08 00:02:32	56.06 GByte(s)	Succeeded
2011-06-07 14:36:23	2011-06-07 15:04:04	2.68 GByte(s)	Aborted (The remote replication was cancelled)

In the above example:

- When the status is shown as 'Failed (Remote access error)': Check if the remote storage device is running or the network settings are correct.
- When the status is shown as 'Failed (An internal error occurred)': View the hard drive status of the NVR or view the Event Logs.

Note: The time required by the NVR to replicate the data to the remote storage device varies depending on the network environment. If the remote replication takes too long, some recording files may be overwritten by the NVR. To avoid this, it is recommended to refer to the status messages to analyze the time required for the remote replication and adjust the replication schedule accordingly.

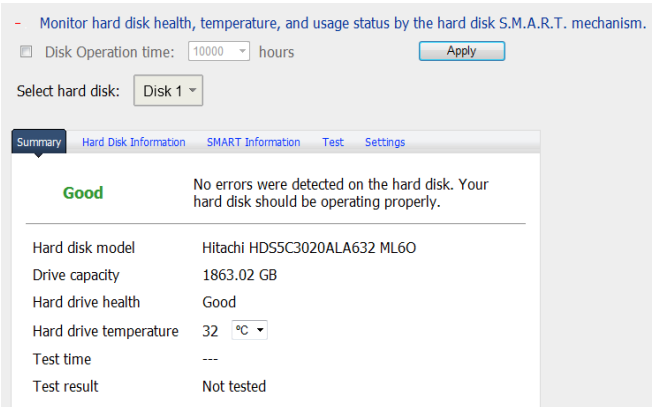
6.7.8 Hard Disk SMART

Monitor the health, temperature, and status of the hard disk drives by the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology).

Enable 'Issue notification when the disk reaches maximum operation time set below'. When the operation time of each installed hard drive exceeds the value, the system will record the event to the log. You can also enable the alert of this event in the remote monitoring page and the local display UI.

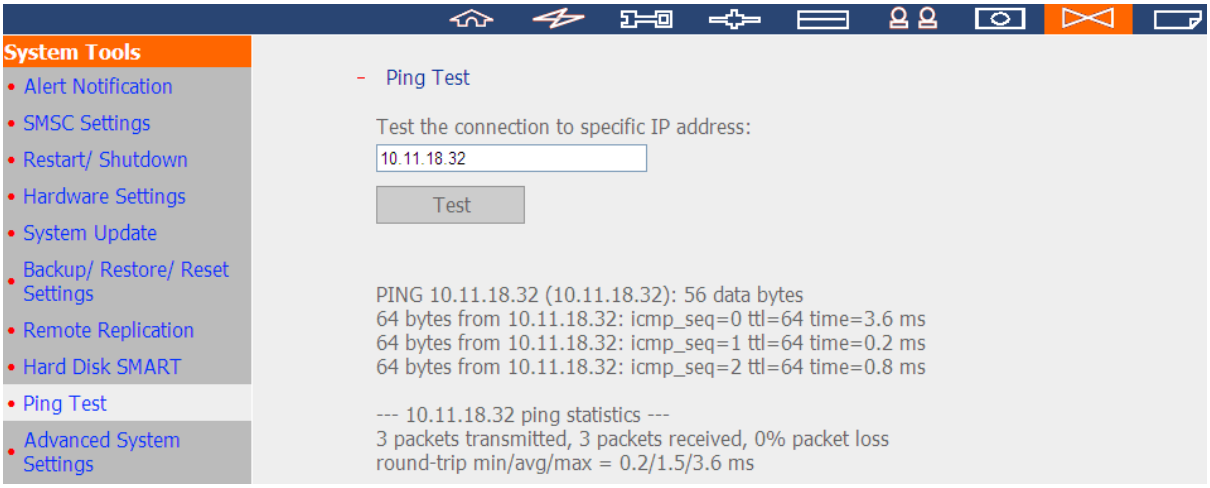
Select a hard disk drive to view the following information by clicking the corresponding buttons.

Field	Description
Summary	Displays the summary and the latest test result of the hard disk drive.
Hard disk information	Displays the hard disk drive details such as the model, the serial number, and the drive capacity.
SMART information	Displays the hard disk drive S.M.A.R.T. The items of which the values are lower than the threshold are regarded as abnormal.
Test	To perform a quick or complete hard drive S.M.A.R.T. test and display the results.
Settings	To configure the temperature alarm. When the hard drive temperature is higher than the preset value, the NVR will record the error logs. Configure the quick and complete test schedule. The latest test result is shown on the Summary page.



6.7.9 Ping Test

To test the connection to an IP address, enter the IP address and click 'Test'.



6.7.10 Advanced System Settings

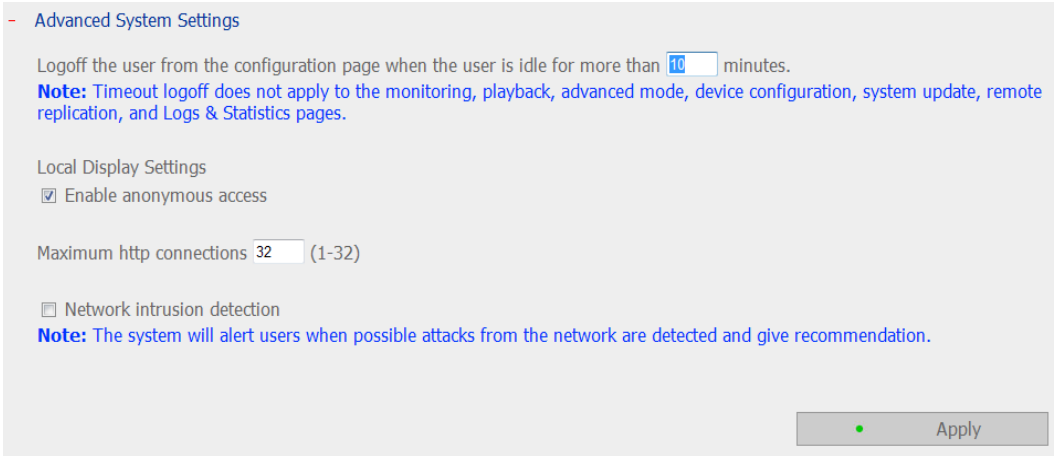
Set the timeout period to log off the users from the configuration page of the NVR when the idling time has reached.

To allow guest access to the monitoring screen of the NVR by local display, select 'Enable anonymous access'.

Note: The timeout logoff does not apply to the monitoring, playback, advanced mode, device configuration, system update, remote replication, and logs & statistics pages.

Maximum number of concurrent logins (http): You can define the maximum number of http user sessions at the same time, up to 32.

Network intrusion detection: The system will alert users when possible attacks from the network are detected and give recommendations.

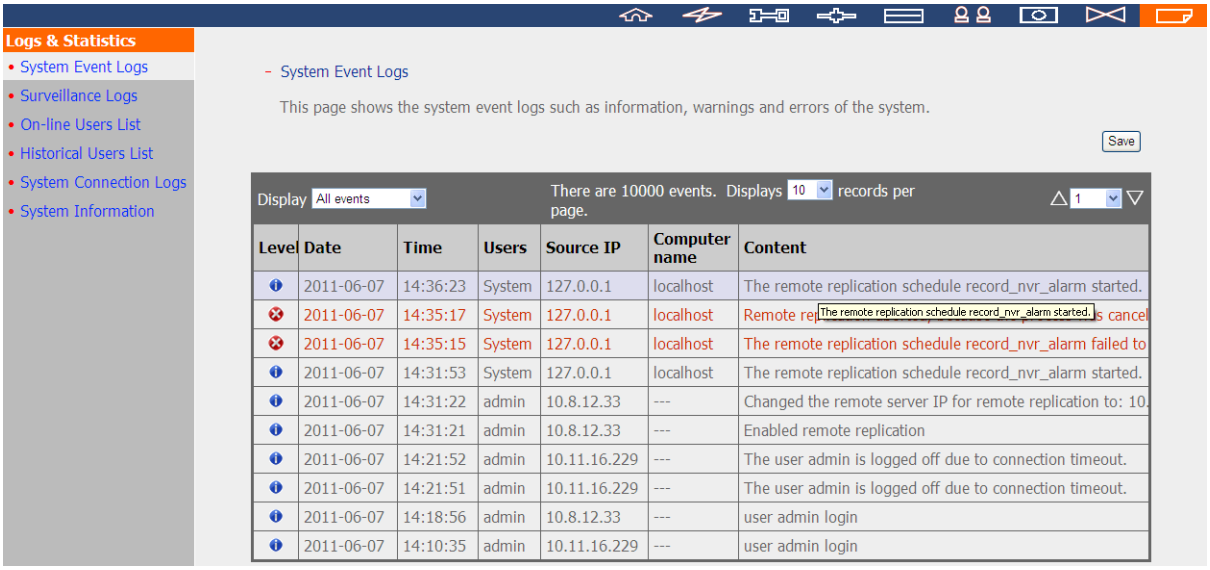


6.8 Logs & Statistics

6.8.1 System Event Logs

The NVR can save maximum 10,000 recent event logs, including warning, error, and information messages. In case of system malfunction, the event logs (only in English) can be retrieved to analyze the system problems.
Click 'Save' to save the logs as a CSV file.

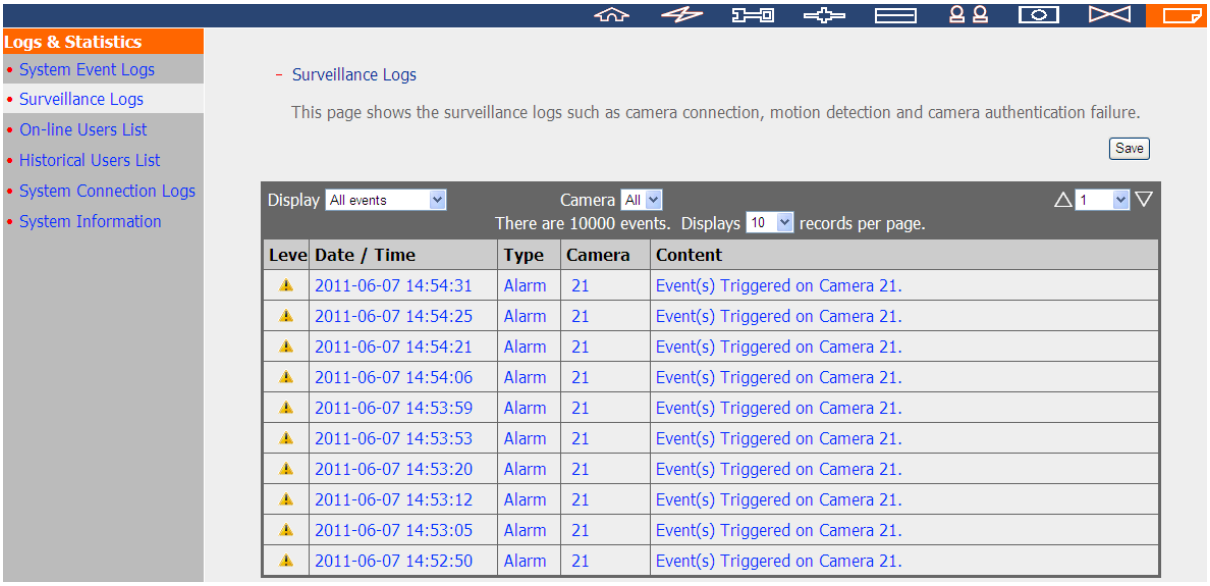
Note: The logs are only available in English.



6.8.2 Surveillance Logs

This page shows the surveillance logs such as camera connection, motion detection, and camera authentication failure.

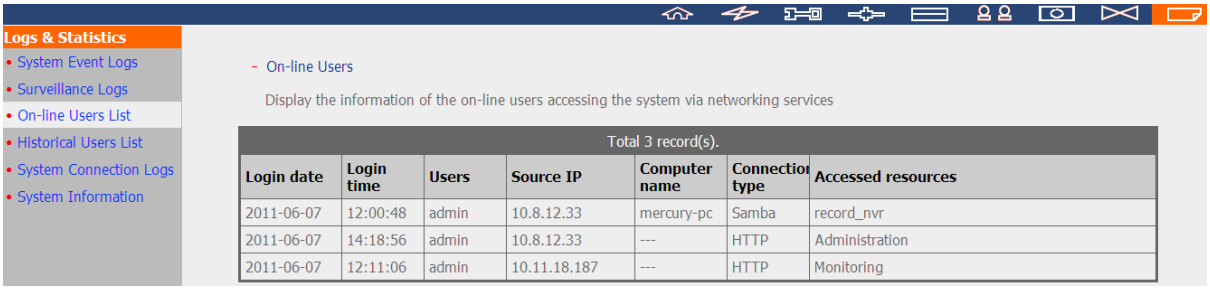
Note: The logs are only available in English.



6.8.3 On-line Users List

This page shows the information of the currently active users, e.g. the user name, IP address, and login time.

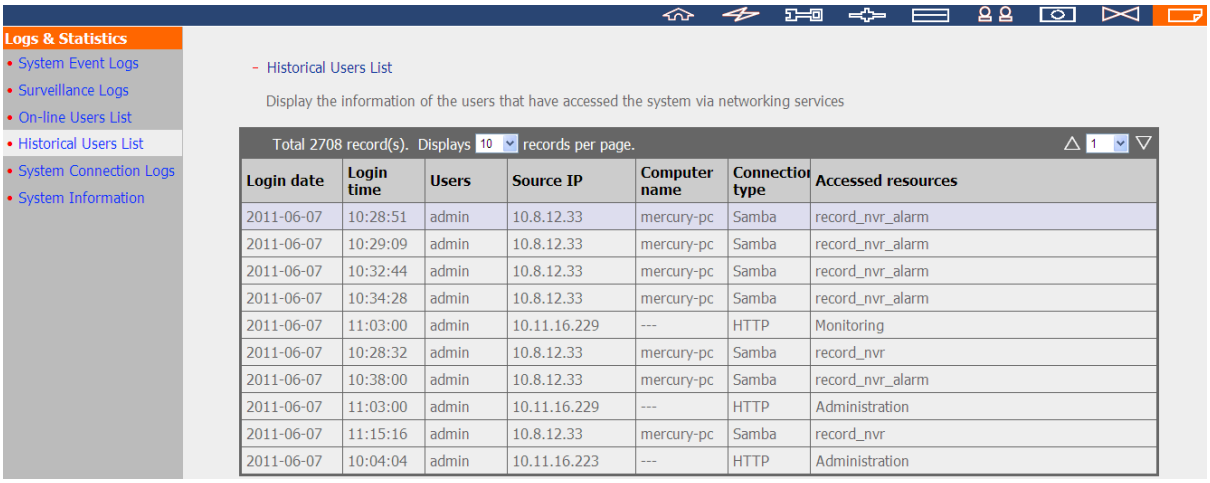
Note: The logs are only available in English.



6.8.4 Historical Users List

This page shows the information of the users who have logged in the system including the user name, IP address, login time, and the services they have accessed etc.

Note: The logs are only available in English.

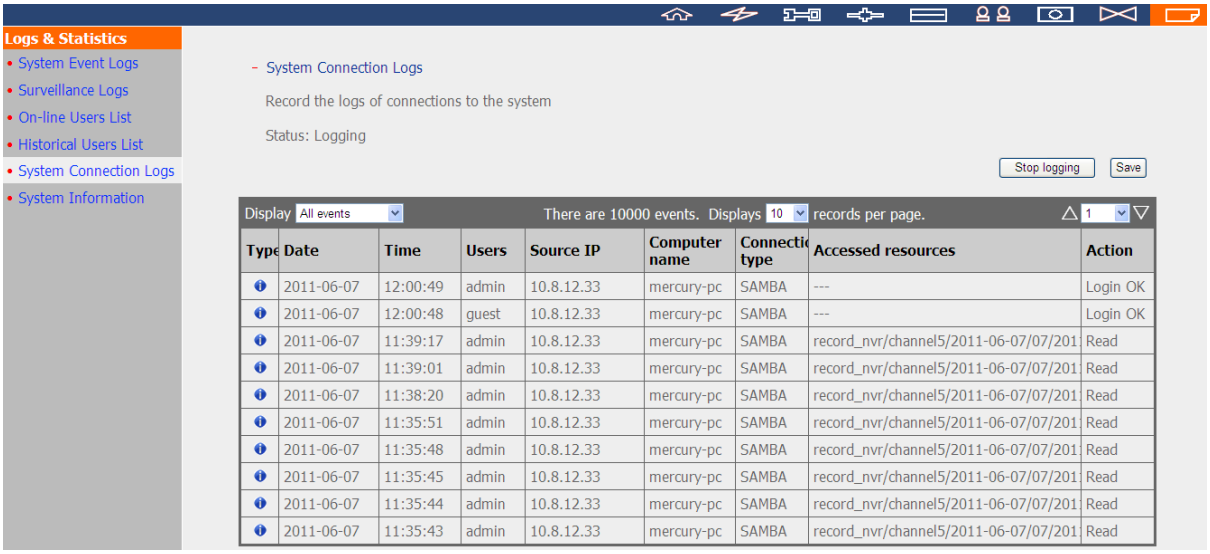


6.8.5 System Connection Logs

The connection logs to the NVR by Samba, FTP, and HTTP are recorded on this page.

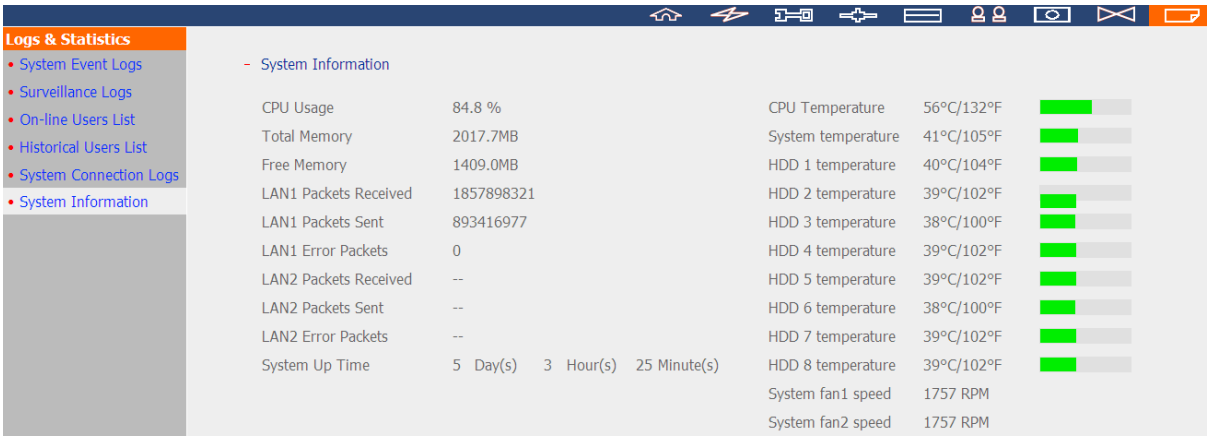
Select to start or stop the logging. The file transfer performance may be slightly affected by enabling the event logging.

Note: The logs are only available in English.



6.8.6 System Information

This page shows the system information, such as the CPU usage, memory, and system temperature.



Chapter 7. System Maintenance

This section provides a general overview of the system maintenance.

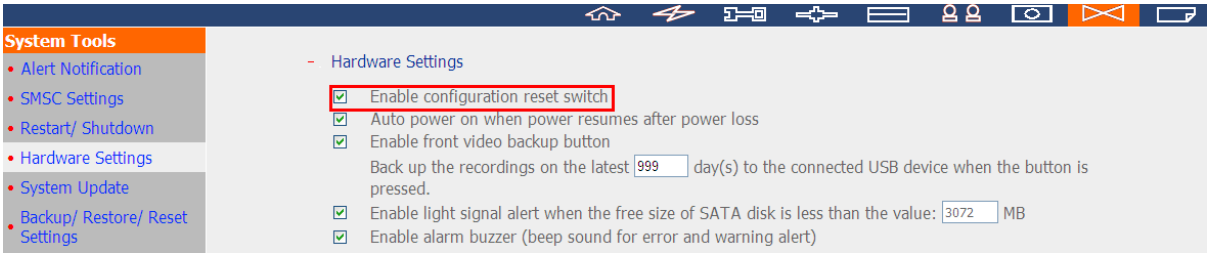
7.1 Reset the Administrator Password and Network Settings

To reset the administrator password and the network settings, press the reset button of the server for five seconds. A beep sound will be heard.

After resetting the system, login the server with the default user name and password:

Default user name: **admin** Password: **admin**

Note: To reset the system by the reset button, the option 'Enable configuration reset switch' in the 'Hardware Settings' must be activated.



7.2 Power Outage or Abnormal Shutdown

In case of power outage or improper shutdown of the server, the server will resume to the state before it is shut down. If the server does not function properly after the restart, please do the following:

1. If the system configuration were lost, configure the system again.
2. If the problem persists, contact the technical support.

7.3 Hot Swapping Hard Disk Drives (RAID Configuration)

This function is not supported by the one-bay NVR models.

When a hard drive of a RAID configuration fails, the failed hard drive can be replaced by a new one immediately without shutting down the server, and the recording data can be reserved. However, if the hard drives are working properly and the recording is in process, do not hot swap the hard drives to avoid damage to the hard drives or to the recording files.

Warning: It is strongly recommended to turn OFF the server before replacing the hard drive to reduce the risk of electric shock. The server should only be maintained by an authorized and trained technician.

Chapter 8. LCD Panel

* This section is applicable to the NVR models with an LCD panel only.

The NVR provides a handy LCD panel for users to perform the disk configuration and view the system information.

When the NVR has started up, the server name and the IP address will be shown:



For the first time installation, the LCD panel shows the number of the hard disk drives detected and the IP address. Configure the hard drives accordingly.

Number of hard drives detected	Default disk configuration	Available disk configuration options*
1	Single	Single
2	RAID 1	Single -> JBOD ->RAID 0 -> RAID 1
3	RAID 5	Single -> JBOD -> RAID 0 -> RAID 5
4 or above	RAID 5	Single ->JBOD -> RAID 0 -> RAID 5 -> RAID 6

*Press the 'Select' button to choose the option, and press the 'Enter' button to confirm.

For example, when five hard drives have been installed, the LCD panel shows:



Press the 'Select' button to browse more options, e.g. RAID 6.

Press the 'Enter' button and the following message shows. Press the 'Select' button to select 'Yes' to confirm.



When the configuration has finished, the server name and the IP address will be shown. If the NVR fails to create the disk volume, the following message will be shown.



View the system information by the LCD panel

When the LCD panel shows the server name and the IP address, press the 'Enter' button to enter the Main Menu. The Main Menu consists of the following items:

1. TCP/IP
2. Physical disk
3. Volume
4. System
5. Shut down
6. Reboot
7. Password
8. Back

1. TCP/IP

In TCP/IP, the following options are available:

- 1.1 LAN IP Address
- 1.2 LAN Subnet Mask
- 1.3 LAN Gateway
- 1.4 LAN PRI. DNS
- 1.5 LAN SEC. DNS
- 1.6 Enter Network Settings
  - 1.6.1 Network Settings – DHCP
  - 1.6.2 Network Settings – Static IP*
  - 1.6.3 Network Settings – BACK
- 1.7 Back to Main Menu

* In 'Network Settings – Static IP', configure the IP address, subnet mask, gateway, and the DNS of LAN 1 and LAN 2.

2. Physical disk

In Physical disk, the following options are available:

2.1 Disk Info

2.2 Back to Main Menu

The disk info shows the temperature and the capacity of the hard disk drive.



3. Volume

This section shows the disk configuration of the NVR. The first line shows the RAID configuration and storage capacity; the second line shows the member drive number of the configuration.



If there is more than one volume, press the 'Select' button to view the information. The following table shows the description of the LCD messages for the RAID 5 configuration.

LCD Display	Drive configuration
RAID5+S	RAID5+spare
RAID5 (D)	RAID 5 degraded mode
RAID 5 (B)	RAID 5 rebuilding
RAID 5 (S)	RAID 5 re-synchronizing
RAID 5 (U)	RAID 5 is unmounted
RAID 5 (X)	RAID 5 non-activated

4. System

This section shows the system temperature and the rotation speed of the system fan.





5. Shut down

Use this option to turn off the NVR. Press the 'Select' button to select 'Yes'. Then press the 'Enter' button to confirm.

6. Reboot

Use this option to restart the NVR. Press the 'Select' button to select 'Yes'. Then press the 'Enter' button to confirm.

7. Password

The default password of the LCD panel is blank. Enter this option to change the password of the LCD panel. Select 'Yes' to continue.



Enter a password of maximum 8 numeric characters (0-9). When the cursor moves to 'OK', press the 'Enter' button. Verify the password to confirm the changes.



8. Back

Select this option to return to the main menu.

System Messages

When the NVR encounters system error, an error message will be shown on the LCD panel. Press the 'Enter' button to view the message. Press the 'Enter' button again to view the next message.



System Message	Description
Sys. Fan Failed	The system fan fails
Sys. Overheat	The system overheats
HDD Overheat	The hard drive overheats
CPU Overheat	The CPU overheats
Network Lost	Both LAN 1 and LAN 2 are disconnected in failover or load-balancing mode
LAN1 Lost	LAN 1 is disconnected
LAN2 Lost	LAN 2 is disconnected
HDD Failure	The hard drive fails
Vol1 Full	The volume is full
HDD Ejected	The hard drive is ejected
Vol1 Degraded	The volume is in degraded mode
Vol1 Unmounted	The volume is unmounted
Vol1 Nonactivate	The volume is not activated

Chapter 9. Troubleshooting

1. The monitoring screen did not display.

Please check the following:

a. Check if the ActiveX add-on has been installed when logging in the monitoring page of the NVR. Set the security level to 'Medium' or lower in Internet Options of the IE browser.
b. The NVR is turned on and the network is correctly connected.
c. The IP address of the NVR does not conflict with other devices in the same subnet.
d. Check the IP address settings of the NVR and the computer. Make sure they are on the same subnet.

2. A channel on the monitoring page cannot be displayed.

Please check the following:

a. The IP address, the name, and the password entered on the camera configuration page are correct. Use the 'Test' function to verify the connection.
b. When the PC and the IP camera are on the same subnet, while the NVR is on another subnet, the monitoring screen cannot be viewed from the PC. Solve the problems by the following methods.
   Method 1: Enter the IP address of the IP camera as the WAN IP on the NVR.
   Method 2: Configure the router to allow internal access to the public IP address and the mapped ports of the IP cameras.

3. The recording is not working properly.

a. Install the hard drive(s) correctly in the NVR.
b. Make sure each hard disk tray is correctly locked.
c. Check if the recording function is enabled on the Camera Configuration page (the function is enabled by default). Make sure the IP address, the login name, and the password of the IP camera are correct.
d. If the above items are verified to work properly while the status LED flashes green, the hard drive may be damaged or cannot be detected. In this case, turn off the NVR and install a new hard disk. If the problem persists, please contact the technical support.

Note: When the configurations of the NVR are being updated, the recording will be stopped temporarily and restart again shortly.

4. I cannot login the administration page of the NVR.

Please check if you have the administrator authority. Only administrators are allowed to login the NVR.

5. The live video is not clear or smooth sometimes.

a. The image quality may be restricted and interfered by the network traffic.
b. When there are multiple connections to the IP camera or the NVR, the image quality will be reduced. It is recommended to allow only three simultaneous connections to the monitoring page at maximum. For higher recording performance, do not open too many IE browsers to view the live video.
c. The same IP camera may be shared by multiple NVR servers for recording at the same time.

6. The alarm recording does not function.

a. Please login the NVR and go to 'Camera Settings' > 'Alarm Settings'. Make sure the alarm recording is enabled for the IP camera.
b. If the NVR is installed behind a router while the IP camera is not, the alarm recording will not work.
c. When the alarm recording is enabled, make sure the number of days that the alarm recordings will be retained have been specified in 'Camera Settings' > 'Advanced Settings'. Otherwise, the recordings may be overwritten.

7. The estimated storage space for recording displayed on the 'Recording Settings' page is different from the actual value.

This estimated value is a reference value only. The actual disk space may vary according to the image contents, the network environment, and the performance of the IP cameras.

8. The E-map cannot be displayed correctly.

Please check the file format. The NVR supports E-map in JPEG only.

9. I cannot find the NVR by the QNAP Finder.

a. Check if the NVR has been turned on.
b. Connect the local PC and the NVR to the same subnet.
c. Install the latest version of Finder from www.qnapsecurity.com.
d. Run Finder again to search for the NVR. Make sure all the firewall software on the computer have been turned off; or add the Finder to the list of allowed programs in the firewall.

e. If the NVR is not found, click 'Refresh' on the Finder to try again.
f. If the problem persists, contact the technical support.

10. The changes to the system configuration did not take effect.

After changing the settings on the administration page, click 'Apply' to apply the changes.

11. The monitoring page cannot be fully displayed in Internet Explorer.

When using the zooming function of Internet Explorer, the page may not be displayed properly. Please click F5 to refresh the page.

12. I cannot use the SMB, FTP, and Web File Manager services of the NVR.

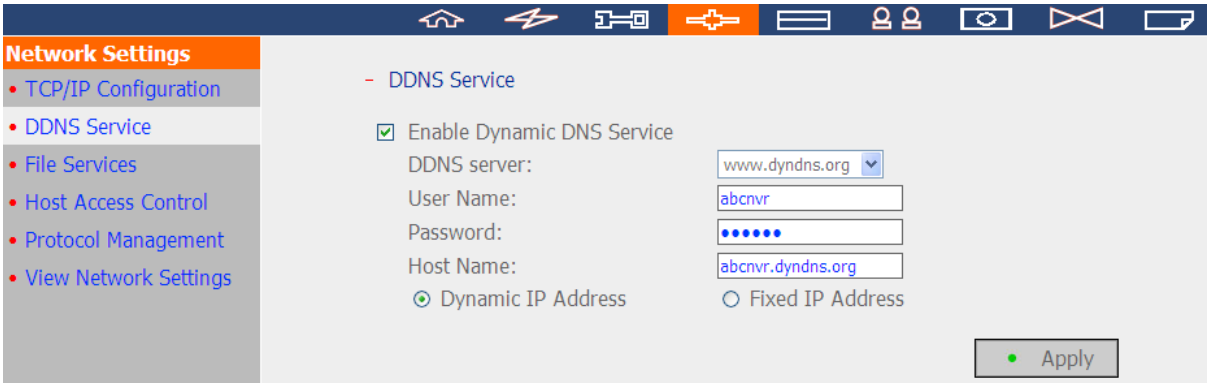
a. Login the NVR as an administrator. Go to 'Network Settings' > 'File Services' and check if these three functions are enabled.
b. If the NVR is installed behind a router, the SMB and FTP services can only be accessed from the same subnet. Please refer to Appendix B for details.

13. The NVR takes too long to restart.

When the NVR takes more than 5 minutes to restart, turn off the power and turn on the server again. If the problem persists, please contact the technical support.

Appendix A Dynamic Domain Name Registration

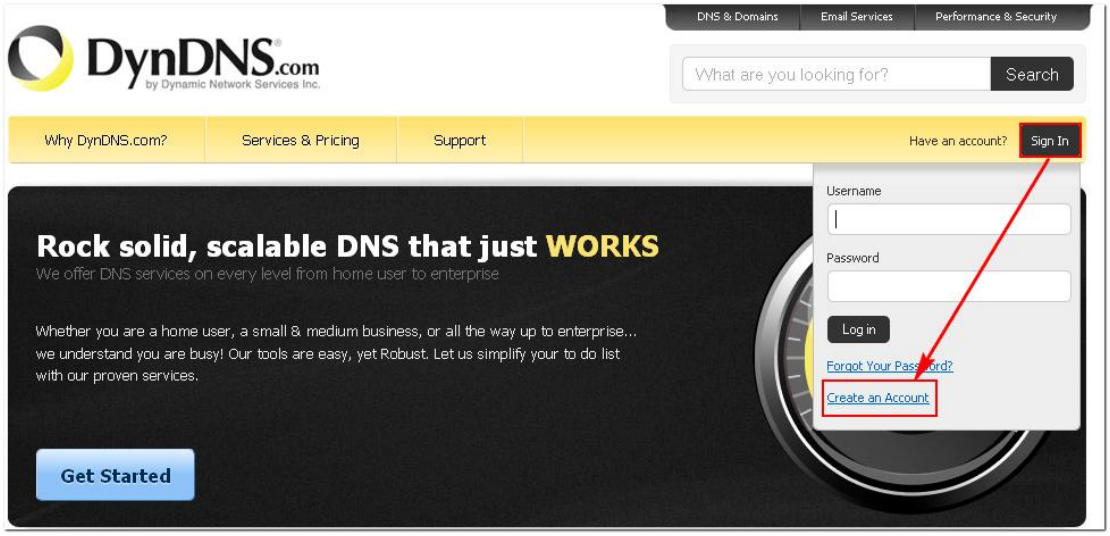
The NVR supports the DDNS service provided by DynDNS. Configure and activate the DDNS service to enable the Internet users to connect to the NVR by this dynamic domain name. When the ISP assigns a new WAN IP address, the NVR will update the new address to the DynDNS server automatically.



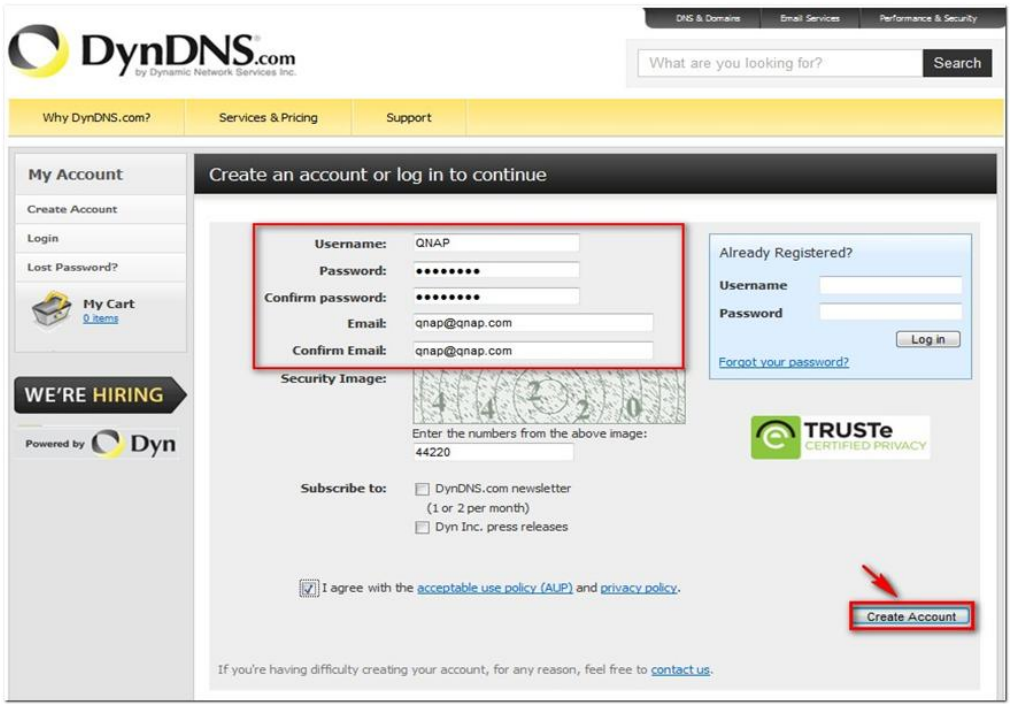
Registration Procedure

Follow the steps below to register a dynamic domain name. This guide is for reference only. If there are any changes, please refer to the instructions or the documents on the web site.

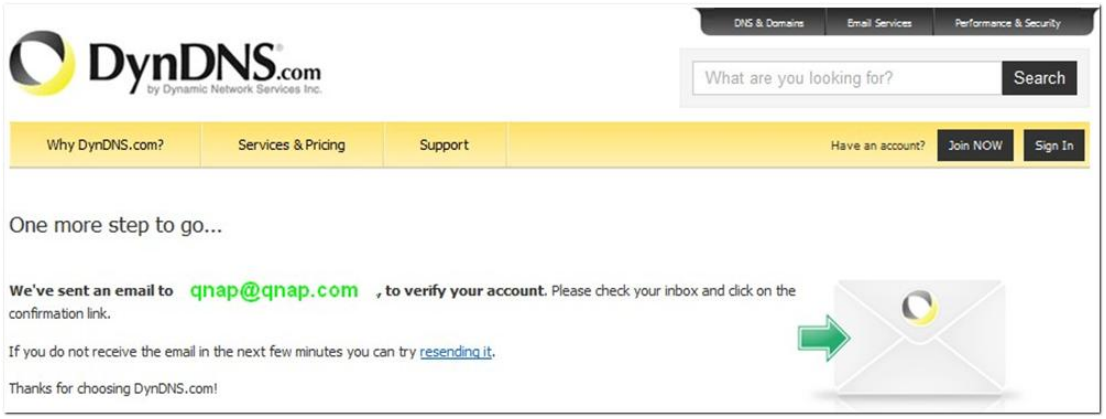
1. Visit http://www.dyndns.org. Click 'Sign In' and 'Create an Account' to register a DynDNS account.



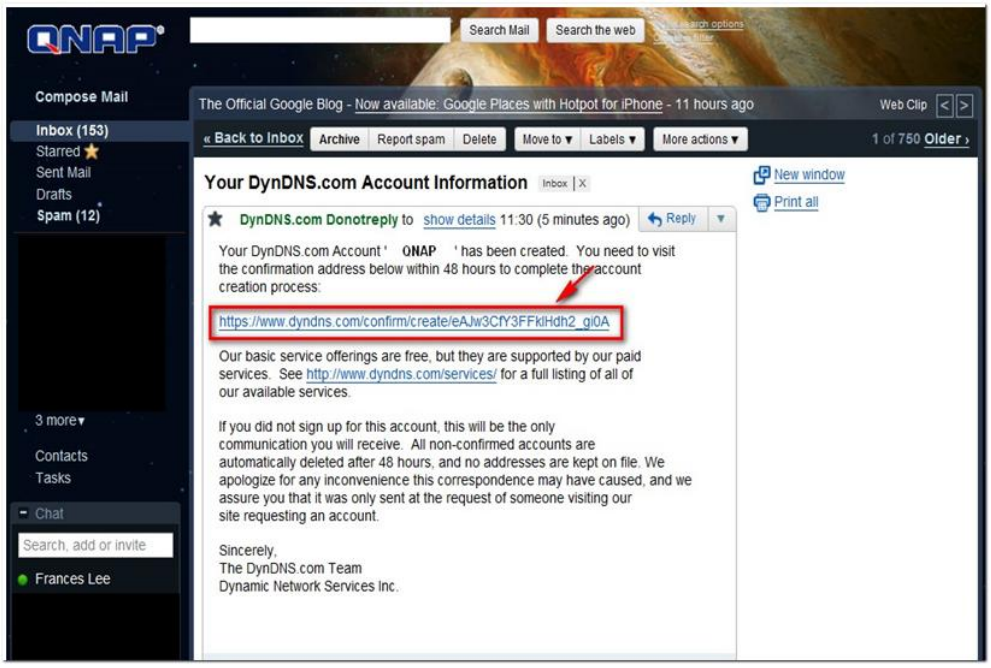
2. Enter the information required. Then click 'Create Account'.



3. A confirmation email will be sent to the registered email address.



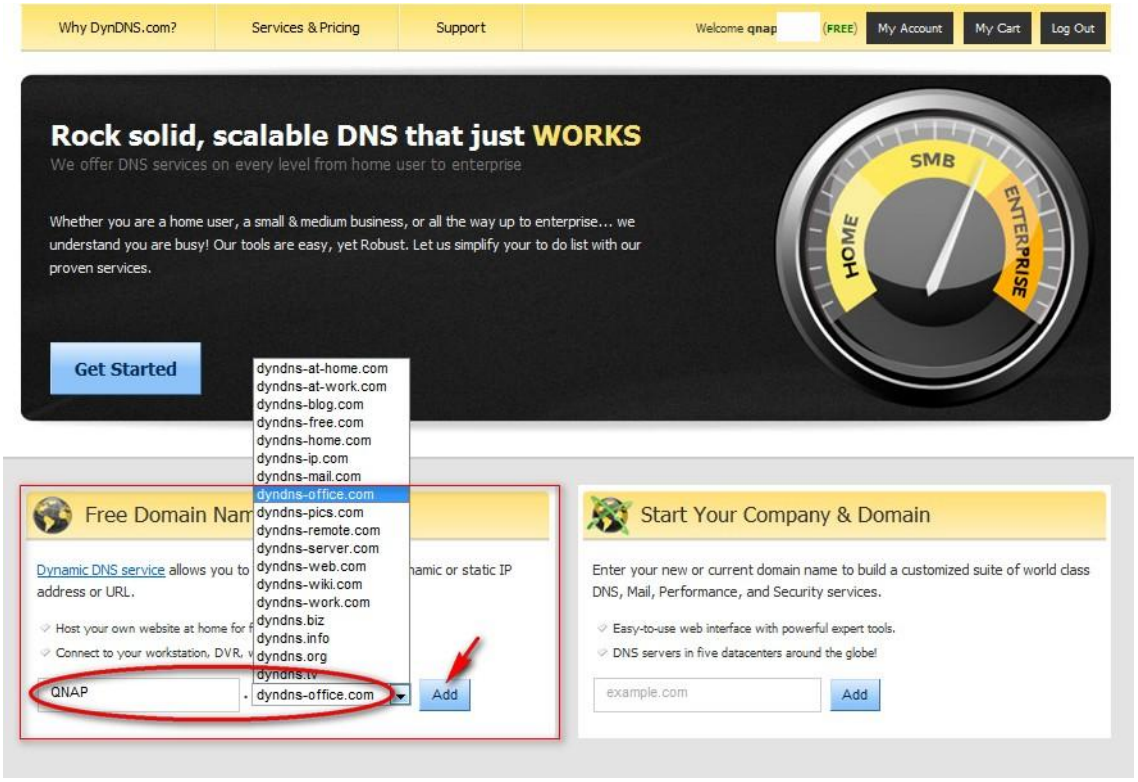
4. Click the link in the email to confirm the registration.



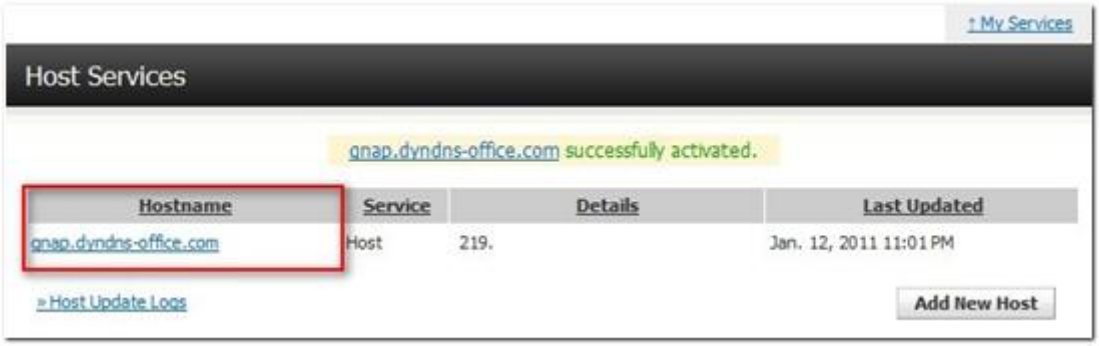
5. Click ‘Confirm Account’ and login DynDNS.



6. Register a host name for the NVR. A host name is a unique name that identifies the server. Then click ‘Add’.



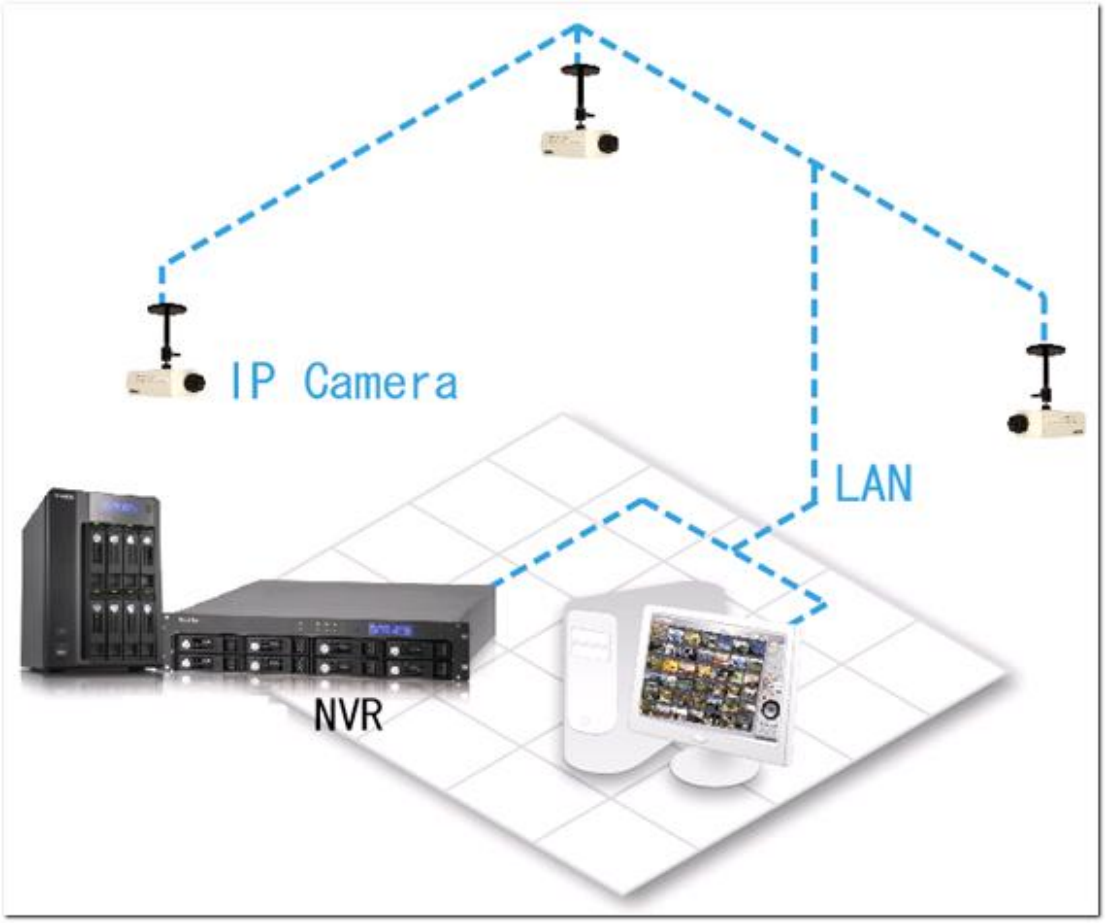
7. Activate the host name. The DDNS host name is ready for use.



You can now login the NVR and set up the DDNS service.

Appendix B Configuration Examples

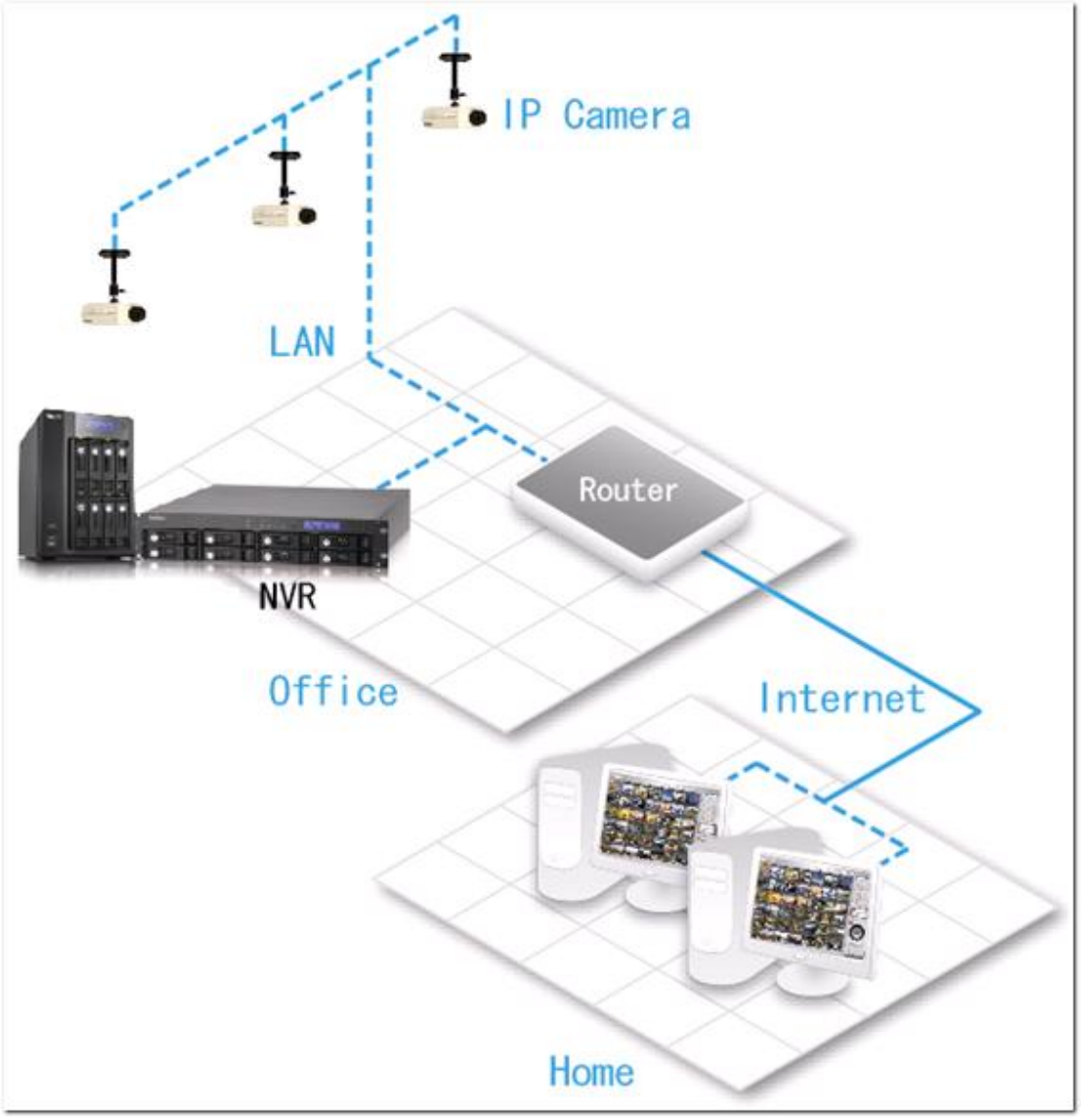
Environment 1: The NVR, the IP camera, and the monitoring PC are all on the same network



	IP address
NVR	192.168.1.1
PC	192.168.1.100
Camera 1	192.168.1.101
Camera 2	192.168.1.102
Camera 3	192.168.1.103

In the example, add the IP cameras to the NVR by entering the IP addresses of the IP cameras.

Environment 2: The NVR and the IP camera are installed behind the router, while the monitoring PC is located remotely



	IP address	**Mapped port on the router**
NVR	192.168.1.1	8000
Camera 1	192.168.1.101	8001
Camera 2	192.168.1.102	8002
Camera 3	192.168.1.103	8003
Router public IP	219.87.144.205	
PC	10.8.10.100	

To allow a remote PC to connect to the NVR and the IP cameras, do the following:

Step 1. Set up the port mapping (virtual server) on the router.

From	Forward to
219.87.144.205:8000	192.168.1.1:80
219.87.144.205:8001	192.168.1.101:80
219.87.144.205:8002	192.168.1.102:80
219.87.144.205:8003	192.168.1.103:80

Step 2. Add the IP camera to the NVR by entering the IP address of the IP camera in the 'IP Address' settings. Enter the public IP address of the router and the mapped ports of the IP camera in the 'WAN IP Address' settings.

Note: When configuring the IP camera, the WAN IP and LAN IP must be entered.

To open FTP (port 21) and SMB (port 445) of the NVR on WAN, configure the following port mapping settings:

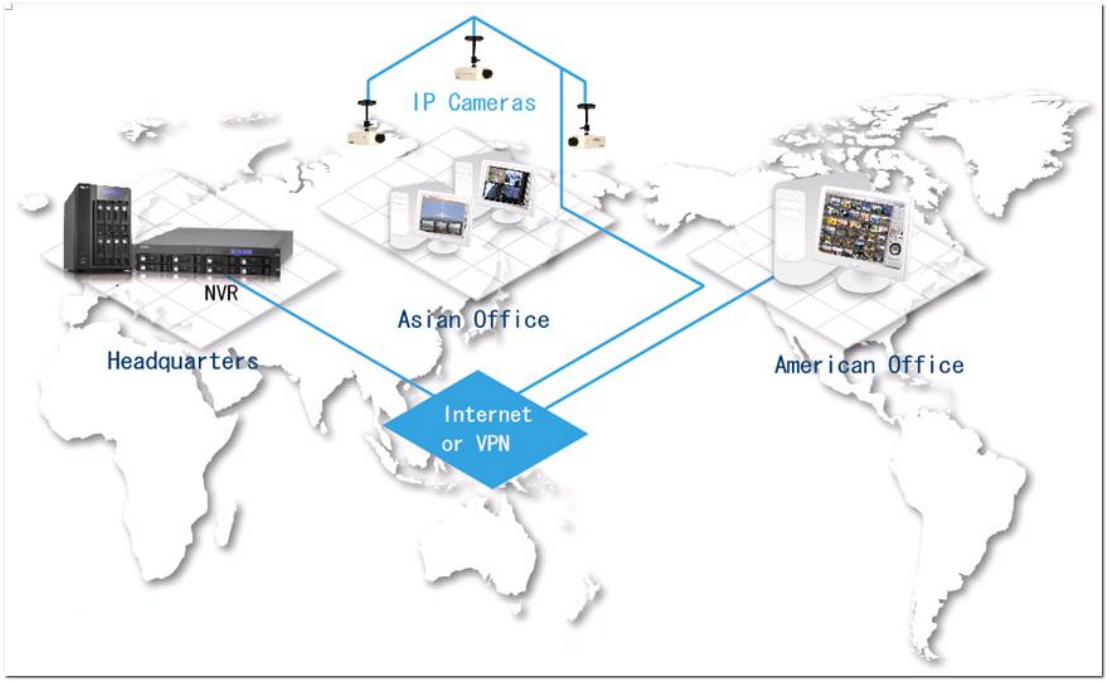
From	Forward to
219.87.144.205:21	192.168.1.1:21
219.87.144.205:139	192.168.1.1:139
219.87.144.205:445	192.168.1.1:445

After finishing the above two steps, connect to the NVR on WAN by entering the IP address http://219.87.144.205:8000 in the IE browser. Then login the NVR with the correct user name and password.

If the port specified to the NVR is 80, enter http://219.87.144.205 to connect to the NVR.

Note: If the router does not use a fixed IP, configure the DDNS settings on the router. Other configurations are the same as above.

Environment 3: The NVR and the IP camera are all located remotely



	IP address
NVR	219.87.144.205
Camera 1	61.62.100.101
Camera 2	61.62.100.102
Camera 3	61.62.100.103

In this example, add the IP camera to the NVR by adding its IP address to the 'IP Address' settings.

Note: If a particular port is assigned to connect to the IP camera, specify the port in the system configuration.

Environment 4: The NVR and the IP camera are installed behind the router

	IP address
NVR 1	192.168.1.101
NVR 2	192.168.1.102
NVR 3	192.168.1.103
Router public IP	219.87.145.205

In the example, to allow a remote PC to connect to each NVR by FTP, do the following:

Step 1. Set up the port mapping (virtual server) on the router

	From	**Forward to**
NVR 1	219.87.145.205:2001	192.168.1.101:21
NVR 2	219.87.145.205:2002	192.168.1.102:21
NVR 3	219.87.145.205:2003	192.168.1.103:21

Connect to NVR 1 by ftp://219.87.145.205:2001

Connect to NVR 2 by ftp://219.87.145.205:2002

Connect to NVR 3 by ftp://219.87.145.205:2003

Step 2. Enable FTP port mapping on the NVR

To connect to each NVR via FTP by clicking 'FTP' on the playback page of each NVR, enable FTP port mapping in 'Network Settings' > 'File Services' on the system administration page and set the mapped port number.

	Mapped port
NVR 1	2001
NVR 2	2002
NVR 3	2003

After finishing the above two steps, connect to the NVR via FTP by entering the IP address in the IE browser or clicking 'FTP' on the playback page. Then login the NVR by the correct user name and password.

Technical Support

QNAP provides dedicated online support and customer service via instant messenger.

Online Support: http://www.qnapsecurity.com/onlinesupport.asp
MSN: q.support@hotmail.com
Skype: qnapskype
Facebook: http://www.facebook.com/pages/QNAP-Security/195448000471677
Forum: http://forum.qnapsecurity.com

Technical Support in the USA and Canada:
Email: q_supportus@qnap.com
TEL: +1-909-595-2782
Address: 168 University Parkway, Pomona CA 91768
Service Hours: 08:00-17:00 (GMT- 08:00 Pacific Time, Monday to Friday)

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Version 3, 29 June 2007

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a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.
e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.
A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object

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