Version 1.00 | 10/2026

Product photo for illustration only. Actual appearance may vary by hardware version and regional release.

User Manual

Network Video Recorders

Thank you for purchasing our product. Contact your local dealer if you have any questions or feedback. No part of this manual may be copied, reproduced, translated, or distributed in any form or by any means without prior consent in writing from our company.

Disclaimer

CAUTION!

The default password is intended only for your first login. We strongly recommend you set a strong password to ensure account security.

- Strong: contains at least 8 characters from at least three of the four types: upper-case letter, lower-case letter, special character, digit.
- Medium: contains at least 8 characters from two of the four types: upper-case letter, lower-case letter, special character, digit.
- Weak: contains less than 8 characters from only one of the four types: upper-case letter, lower-case letter, special character, digit.

- To the maximum extent permitted by applicable law, the product described, with its hardware, software, firmware and documents, is provided on an "as is" basis.
- Best effort has been made to verify the integrity and correctness of the contents in this manual, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical errors in this manual. The contents of this manual are subject to change without prior notice. Update will be added to the new version of this manual.
- Use of this manual and the product and the subsequent result shall be entirely on the user's own responsibility. In no event shall we be liable for any special, consequential, incidental, or indirect damages, including, among others, damages for loss of business profits, business interruption, or loss of data or documentation, or

product malfunction or information leakage caused by cyber attack, hacking or virus in connection with the use of this product.

- Video and audio surveillance can be regulated by laws that vary from country to country. Check the law in your local region before using this product for surveillance purposes. We shall not be held responsible for any consequences resulting from illegal operations of the device.
- The illustrations in this manual are for reference only and may vary depending on the version or model. The screenshots in this manual may have been customized to meet specific requirements and user preferences. As a result, some of the examples and functions featured may differ from those displayed on your monitor.
- This manual is a guide for multiple product models and so it is not intended for any specific product.
- Due to uncertainties such as physical environment, discrepancy may exist between the actual values and reference values provided in this manual. The ultimate right to interpretation resides in our company.

Safety Symbols

The symbols in the following table may be found in this manual. Carefully follow the instructions indicated by the symbols to avoid hazardous situations and use the product properly.

Symbol	Description
WARNING!	Indicates a hazardous situation which, if not avoided, could result in bodily injury or death.
CAUTION!	Indicates a situation which, if not avoided, could result in damage, data loss or malfunction to product.
NOTE!	Indicates useful or supplemental information about the use of product.

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Preface

This manual describes how to use your NVR locally or on the Web interface.

In this manual, the terms IP camera and IPC refer to the same thing: network camera, which requires a connection to the network. And the IP device mentioned in this manual refers to an IP camera (also known as network camera) or a Digital Video Server (DVS).

Part I Local Operations

An NVR supports two types of operations: local operations and web-based remote operations. With local operations you connect a monitor and a mouse to the NVR and use the mouse to operate. If your NVR has buttons on the front panel or is delivered with a remote control, you may also control your NVR by pressing the front panel buttons or using the remote control.

The NVR has an embedded web server and allows web-based operations. To do this, you need a PC that has a network connection to the NVR and is installed with a web browser. You just need to navigate to the NVR's IP address and log in to the Web interface like you log in to the system locally.

This section describes local operations.

1 Before You Begin

Please be aware that the parameters that are grayed out on the system user interface (UI) cannot be modified. The parameters and values displayed may vary with device model, and the figures in this manual are for illustration purpose only.

User Login

Use the default username **admin** and password **123456** for your first login.

CAUTION!

The default password is intended only for the first login and should be changed to a strong one containing at least eight characters including uppercase and lowercase letters, digits and symbols after your first login to ensure security.

1. Right-click anywhere in the window and then choose **Menu**. The login dialog box is displayed.
2. Select the username from the drop-down list, enter your password, and then click **Login**.

Local Operations

You can refer to Initial Configuration and complete a quick configuration.

NOTE!

Unless otherwise specified, all operations described in this manual are performed with a mouse by the right hand. See Mouse Operations for details.

Mouse Operations

Table 1-1 Mouse Operations

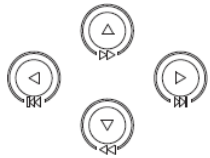
Name	Action	Description
Left button	Click	• Select or confirm an item. • Select to edit digits, symbols, upper-case or lower-case letters in a field.
	Double-click	Enter or exit full screen mode in live view.
	Drag	Draw or move a rectangle on the screen, for example, a motion detection area.

Name	Action	Description
Right button	Click	• Show the shortcut menu. • Exit zoom. • Exit the current window when **Cancel** or **Exit** is displayed.
Wheel	Scroll up or down	Scroll up or down a list or a window; or zoom in or out on a playback progress bar.
	Long press	Restore to lowest resolution

Front Panel Buttons

The front panel buttons may vary with NVR model.

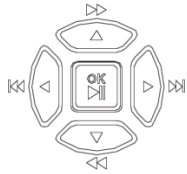
Table 1-2 Front Panel Buttons 1

Button	Description
	Display the main menu.
	Switch to the next tab on the screen or switch the input method.
	Auxiliary function button.
	Exit the current window.
	• △, ▽, ▷, ◁: Switch windows or menu items; or control rotation directions of a PTZ camera when the PTZ toolbar is closed. PTZ stands for pan, tilt, and zoom. • ⏮, ⏭: Rewind or forward 30 seconds in full screen. • ⏩, ⏪: Variable-speed forward or rewind in full screen.

Button	Description
	Confirm an operation, or start/pause the playback.
	Press this button to start up or shut down the NVR. To shut down, press this button and hold for at least 3 seconds till a message appears on your monitor. Click **Yes**. **Note:** This shutdown operation can be performed only when you have logged in to the system.

Table 1-3 Front Panel Buttons 2

Button	Description
	Press this button to start up or shut down the NVR. To shut down, press this button and hold for at least 3 seconds till a message appears on your monitor. Click **Yes**. **Note:** This shutdown operation can be performed only when you have logged in to the system.
	Enter 1; or display the main menu.
	Enter 2, A, B, or C; or start instant playback.
	Enter 3, D, E, or F; or start manual recording.
	Enter 4, G, H, or I; or enter the PTZ control interface.
	Enter 5, J, K, or L; or switch the screen layout in live view or playback mode.

Button	Description
	Enter 6, M, N, or O; or enable or disable arming.
	Enter 7, P, Q, R, or S; or take a snapshot.
	Enter 8, T, U, or V.
	Enter 9, W, X, Y, or Z.
	Enter 0 or a space.
	Delete
	Switch the input method.
	Auxiliary function button.
	Exit the current window.
	Switch to the next tab.
	• △, ▽, ▷, ◁: Switch windows or menu items; or control rotation directions of a PTZ camera when the PTZ toolbar is closed • ⏮, ⏭: Rewind or forward 30 seconds in full screen. • ⏩, ⏪: Variable-speed forward or rewind in full screen. • OK ⏯ : Confirm an operation; or start or pause playback.

Remote Control

Table 1-4 Functions of the Buttons on the Remote Control

Button	Function
Power	Press this button to start up or shut down the NVR. To shut down, press this button and hold for at least 3 seconds till a message appears on your monitor. Click **Yes**. **Note:** This shutdown operation can be performed only when you have logged in to the system.
DEV	This button is for reserved functions.
Toolbar	• In live view mode, press this button to show the toolbar for the currently selected window. • In playback mode, press this button to display windows according to the configured screen layout.
Menu	Press this button to display the main menu.
Iris+/Iris-	Adjust the iris, focus and zoom of the PTZ camera in PTZ control mode.
Focus+/Focus-	
Zoom+/Zoom-	

Button	Function
UP, DOWN, LEFT, RIGHT, ENTER	• Press UP, DOWN, LEFT and RIGHT to navigate between menu items or shift focus. • In PTZ control mode, press UP, DOWN, LEFT, and RIGHT buttons to select the corresponding buttons on the screen, and then press ENTER to activate the selection. • In live view mode, press UP to start sequence in full screen. Pressing UP again starts sequence with three windows on the screen. Press DOWN to open the playback window. • Press ENTER to confirm an operation or to display a selected drop-down list. In playback mode, press ENTER to play or pause in full screen mode. • UP and DOWN: Variable speed forward or rewind in full screen. • LEFT and RIGHT: Rewind or forward 30 seconds in full screen.
Fn	Press to navigate to the next window when multiple windows are displayed.
Esc	Exit.
Alphanumeric buttons	• Switch to the corresponding channel in live view mode. • Input numbers and characters in edit mode.
Shift	Switch menu items.
Del	Remove characters or spaces on the left of the cursor.

2 Initial Configuration

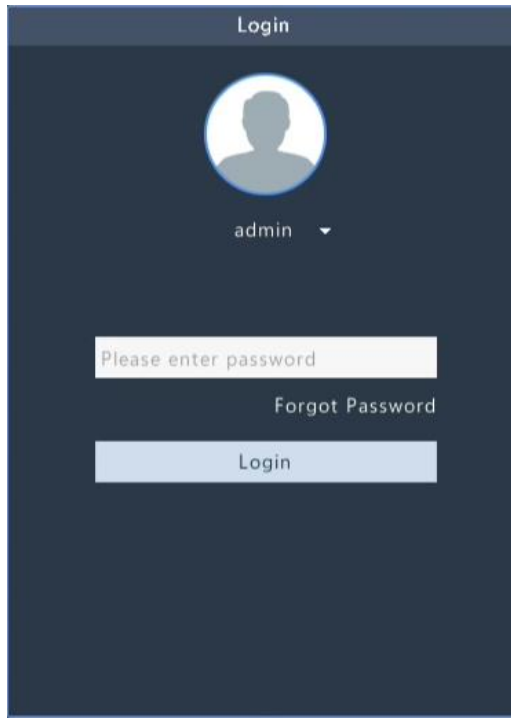
Preparation

- Make sure that at least one monitor is correctly connected to the VGA or HDMI interface on the rear panel of the NVR.

- Verify that the hard disk(s) are correctly installed. For detailed steps to install a hard disk, please refer to the quick guide shipped with your NVR.

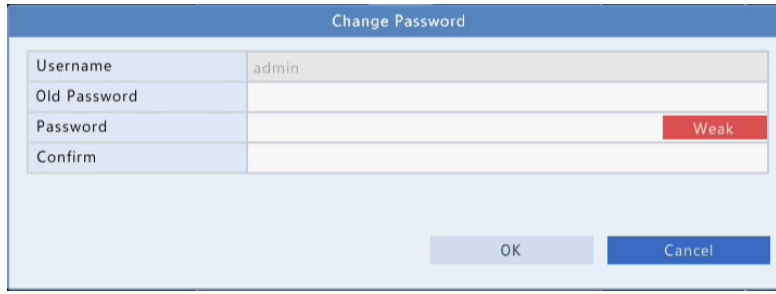
Device Login

The login page appears after the NVR starts up.

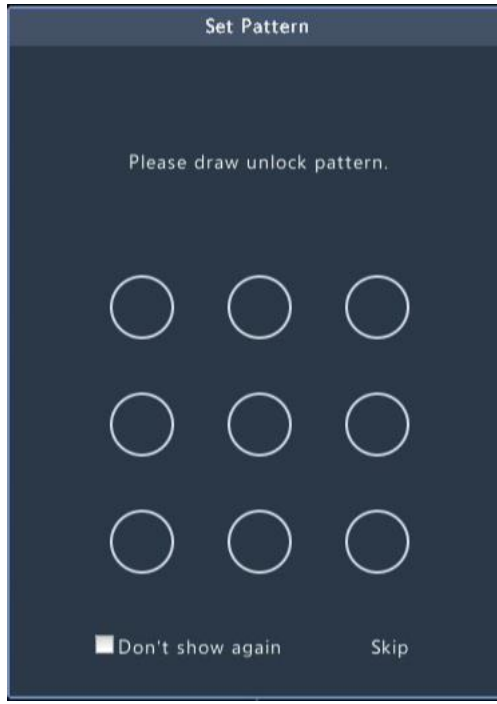


1. Enter the default admin password 123456, click **Login**, and then click **Yes** to change the password.

2. Change the password into a strong one, then click **OK**.



3. Set the unlock pattern.

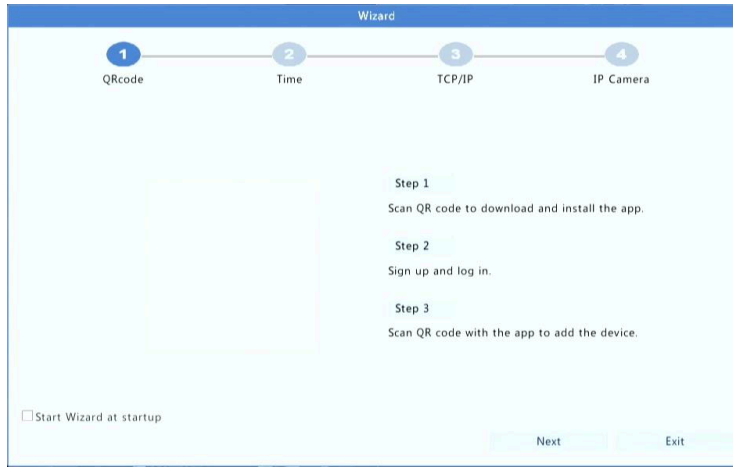


Note:

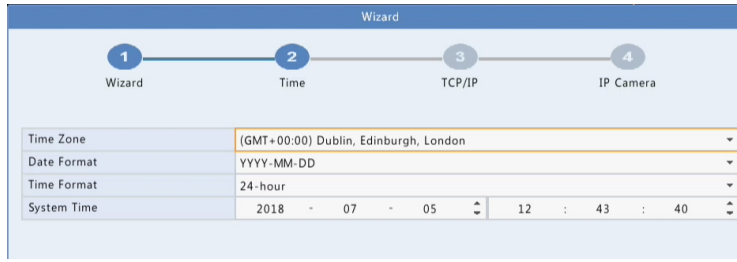
To disable unlock pattern, click **System** > **User**. See User Configuration for details**.**

Wizard

The wizard can guide you to complete the most basic setup. The following page appears after your login:



1. Enable or disable the wizard as needed and then click **Next**. You may also click 2.
2. Select the time zone, date and time format, set the system time, and then click **Next**.



3. Complete network configuration, and then click **Next**.

4. Select the devices to add in the discovered device list, click **Add**, and then click **Yes** to complete configuration.

Note:

- To add devices through PoE ports, see option 3 in Adding an IP Device for details.
- The devices added can get online and start live view only if the device password is default; if not, you need to modify the device password.
- If the desired device is not in the device list, you may add it in a preview window or under **Camera** > **Camera** > **Camera** (see Adding an IP Device).

3 Live View

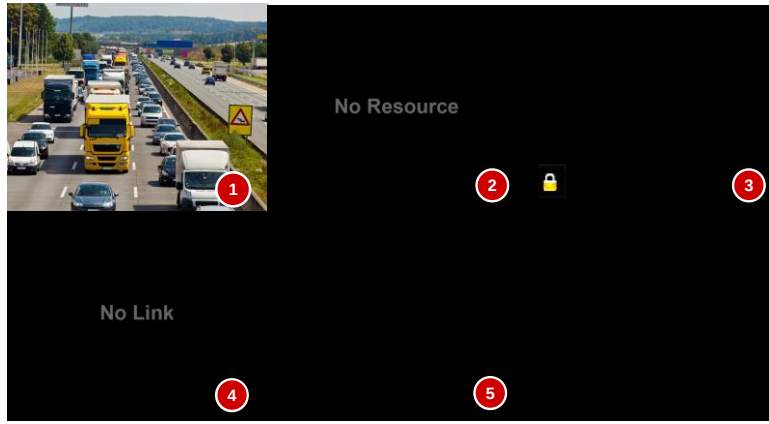
Live View Status

The following icons are used to indicate alarms, recording status, and audio status in a live view window.

Table 3-1 Live View Window Icons

Icon	Description
	Tampering alarm
	Motion detection alarm
	Recording
	Two-way audio
	Turn on audio

Normally, live video is displayed, but other situations are also possible.



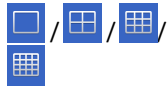
No.	Description
1	The IP device is online, and live video is displayed.
2	The IP device is online, but the NVR has insufficient capacity to decode streams from the IP device.
3	No permission to view live video from the IP device.
4	The IP device is offline.
5	No IP device is linked to the window.

Window Toolbar

Icon	Description
	Available for PTZ cameras only. Click to display the PTZ control window.
	Set mount mode and display mode for fisheye camera. This icon appears only for fisheye cameras.
	Record live video in the window to the hard disk. Clicking stops recording.
	Click to play video recorded during the past 5 minutes and 30 seconds.
	Zoom in on an area of interest.
	Click to edit image settings.
	Click to set OSD.
	Click to take a snapshot. The window borders will flash white. You may view and back up snapshots under **Backup** > **Image**.
	Rest your mouse pointer on the icon to view bitrate info; click this button to view the camera ID and IP address or to change the username and password used to connect the camera.
	Start two-way audio with the camera. Click to stop. The sound volume is adjustable. **Note**: Correct audio input and output connections are required.
	Click to turn on audio. Clicking turns off audio. The sound volume is adjustable. **Note**: When you turn on audio in the current window, audio of the previous window is turned off.
	Exit

Screen Toolbar

Icon	Description
	Click to access the main menu.

Icon	Description
	Select the screen layout.
	Previous or next screen.
	Start or stop sequence.
	Playback.
	Click to open the **USB Device** window and perform USB related operations. The window offers quick access to multiple windows, and it pops up automatically if a USB storage device is plugged in when the NVR is restarting or when the preview window is displayed. This button is effective only when a USB storage device is plugged in.
	Rest the mouse pointer on this icon to view encoding information including frame rate, bit rate, and resolution; or click to view camera status.
	Click to view device alarm status and camera status.
	Rest the mouse pointer on it to view NIC card information. Or click this icon to edit basic network settings.
	Rest the mouse pointer on it to view the date. Or click this icon to edit time settings.
	Available to certain NVR models. Click to display the cloud service window. You may Scan the QR code with the GuardViewer app to manage your NVR.
	Click to automatically hide the toolbar, or click to lock.

Shortcut Menu

A shortcut menu as shown below appears when you right-click in a window. Some menu items are described in Shortcut Menu Description.

Table 3-2 Shortcut Menu

Table 3-3 Shortcut Menu Description

Menu	Description
Menu	Access the main menu. Most of operations described in this manual are performed start from the main menu; for example, click **Camera** > **Camera** (with **Menu >** omitted).
Corridor	Choose a corridor mode. Corridor mode can also be set in the **Default Layout** drop-down list under **System** > **Preview**. To display images in corridor mode, the camera must be installed correctly (rotated 90° clockwise or counterclockwise), and then use the **Image Rotation** parameter under **Camera** > **Image** to rotate images accordingly.
Main/Aux Monitor	Switch live video from different video output.
Fisheye Mode	Set mount mode and display mode for fisheye camera.
PTZ Control	Display the PTZ control window for the first PTZ camera in live view.
Playback	Play the current day's recording for the camera linked to the current window.
Output Mode	Choose a video output mode, including standard, soft, bright, and vivid.

Sequence Operation

The sequence operation requires you to configure the screen layout, windows, linked cameras, and the sequence interval.

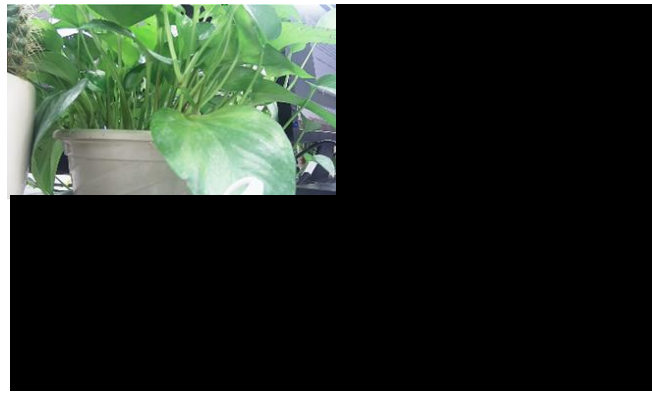
This example describes how to configure sequence for five cameras based on a 4-window screen layout.

1. Click **4 Windows** on the screen toolbar.

NOTE!

The number of windows that can be displayed may vary with NVR model.

2. Click **Start Sequence** on the screen toolbar. Sequence starts by displaying four windows on the first screen and then the fifth on the second at the set interval.



NOTE!

- The default sequence interval is eight seconds and can be set under **System** > **Preview**.
- You may drag video to the desired window on the screen.

Zoom

Zoom in on an area of images in a window for details.

1. Click the window and then click on the window toolbar.
2. In the small window in the lower right corner, click and drag your mouse to specify the area to zoom in on. The image in the main window zooms in. The following shows an example.

NOTE!

The system adjusts the area automatically according to the window size and its aspect ratio. Also, the system has specified a minimum size to ensure zoom effects.

Image Configuration

Adjust image settings to get optimal images from a camera.

1. Click the window and then click on the window toolbar.
2. Select a mode from the drop-down list according to the surveillance scenario, and then adjust contrast, hue, saturation and brightness as needed. The settings available may vary with device model.
3. Click **OK** to save the settings and exit.

Preview Configuration

Normally, live view (video) is available after you complete the basic setup by following the wizard. You can click **System** > **Preview** and edit preview setting as needed, including video output, image resolution, default layout, and sequence interval. The video output and the number of windows supported may vary with NVR model.

NOTE!

Pressing and holding the scroll wheel for at least 3 seconds will restore the default resolution.

Preview Configuration

Each preview window (window for short) links to a camera. By default, window 1 links to camera D1, window 2 links to camera D2, and so on. You may want to change the link to display live video from a camera in another specified window. The following example describes how to link window 1 to camera D2 and link window 2 to camera D1.

Step 1: Click window 1 on the right, and then click **D2** under **Camera** on the left. Now **D2** appears in window 1, and **None** appears in window 2. Meanwhile, ○ is cleared for camera D1, meaning D1 is not linked to any window.

Step 2: Click window 2 on the right, and then click **D1** under **Camera** on the left. Now **D1** appears in window 2. Click **Apply** to save the settings.

Advanced Configuration

Click the **Advanced** tab and then select **Sub Stream First** so the NVR uses the sub stream to establish live video from multiple cameras simultaneously. This function is disabled by default.

4 Channel Configuration

Channel Management

This chapter describes how to add and manage IP devices in your NVR. The IP devices mentioned in this manual mainly refer to IP camera (or network camera); sometimes they can also be Digital Video Server (DVS). Before you start, make sure the IP devices are connected to your NVR via network.

CAUTION!

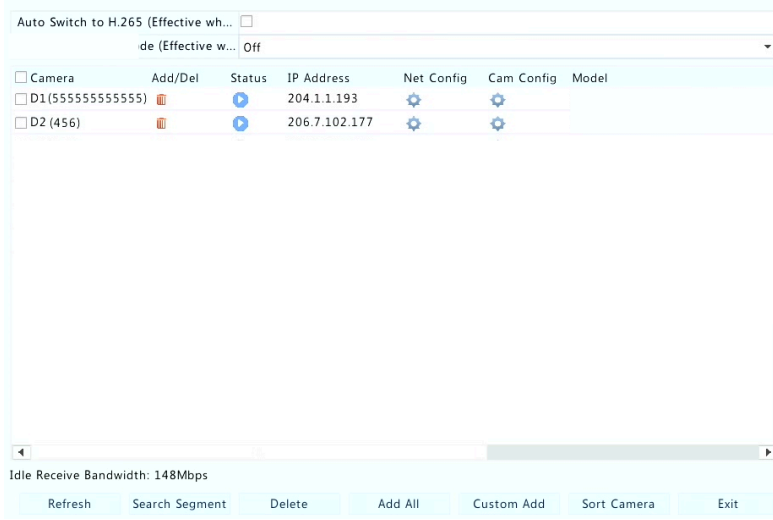
An IP device should be connected to one NVR only. An IP device managed by multiple NVRs may cause unwanted issues.

Adding an IP Device

This section provides multiple options to add an IP device. Some options are only applicable to certain NVR models. Choose one as appropriate.

Option 1

1. Click **Camera** > **Camera** > **Camera**. The system automatically searches for IP devices and lists the discovered.



NOTE!

- under **Status** means an IP device is added successfully, and you may click to view live video from the IP device. means the IP device is offline, and you may view the cause by resting the mouse pointer on the .
- The idle bandwidth is displayed to indicate current bandwidth available for receiving streams. For more details, see Network Statistics.

2. (Optional) To search a specified network segment, click **Search** and then set the address range.
3. Click + for the IP device to add. Or, you may also

- Click **One-click Add** to add all the discovered IP devices allowed (depending on channels supported by the NVR).
- Click **Custom Add**. In the window displayed, enter the IP address and complete other settings, and then click **Add**. You may also click **Search** and add discovered cameras in the list.

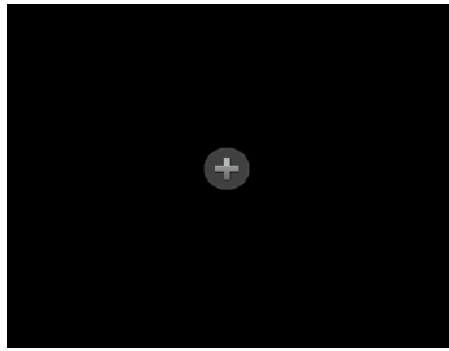
NOTE!

For a Digital Video Server (DVS), a window appears when you click **Add**, and you need to select channels to add the connected cameras.

Option 2

This option is not applicable to NVRs with PoE ports or switching ports.

1. Click in a window.



2. Select the desired IP device and then click **Add**.

Option 3

This option is only applicable to NVRs with PoE ports or switching ports. Connect an IP camera to a PoE port or a switching port with a network cable. The connected camera will be added to the NVR automatically. Check status under **Camera** > **Camera** > **Camera**. means live video from the camera is available. Click to view live video.

If the camera is connected via a network switch, click under **Edit**. In the window displayed, set **Add Mode** to **Manual** and then complete the settings correctly.

NOTE!

appears under **Status** if the power output from a PoE port is below or above the rated power of the connected camera.

Option 4

Use this option to add an IP device that is connected to a different router, for example, when the NVR and the IP device are connected across the Internet.

NOTE!

First you need to enable port mapping at **Setup** > **Port** > **Port Mapping** on the IP device's Web interface.

1. Click **Camera** > **Camera**, click **Custom Add**.
2. Choose an option:

- By IP

  a. On the IP device's Web interface, go to **Setup** > **Port** > **Port Mapping**, find the external IP (public IP) and external port number.

  b. On the NVR: Select a protocol, enter the above-mentioned IP address and port number, enter the username and password.

  c. Click **OK**.

- By DDNS service

  d. On the IP device's Web interface, go to **Setup** > **Network** > **DDNS**, enable **DDNS**, set a domain name and get the server address.

NOTE!

- After setting the domain name, check that you can use the device address to access the IP device's Web interface.
- Make sure the DDNS server and the NVR are connected (ping the DDNS server from the NVR).

e. On the NVR: Select a protocol, enter the above-mentioned server address, domain name, username and password.

f. Click **OK**.

- By a domain name

a. On the IP device's Web interface, go to **Setup** > **Network** > **DDNS**, enable DDNS, select **DynDNS** or **NO-IP**, enter the domain name that you have signed up on the DNS website, enter the username and password, and then click **Save**.

b. On the NVR: Select a protocol, enter the domain name mentioned above, enter the username and password. The port is the external port of the IP device.

c. Click **OK**.

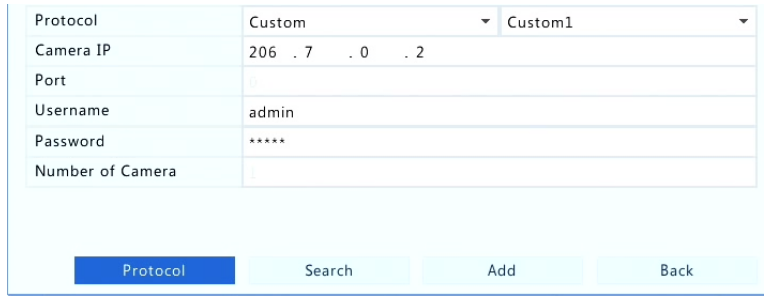
NOTE!

- If **Custom** is selected for **Protocol**, the port is the mapped external RTSP port of the IP device.
- Do not add an IP device to an NVR using different methods (e.g., IP and DDNS) at the same time.
- When an IP device is added by DDNS, domain name (NO-IP or DynDNS), or IP (public IP+public port) and it is not connected to the same router as the NVR, alarm is configurable, but alarm push is not available.

Option 5

Use this option only when the IP device to add supports the standard RTSP, and all you need from the IP device are just view live and playback. IP devices added in this way cannot be configured from the NVR.

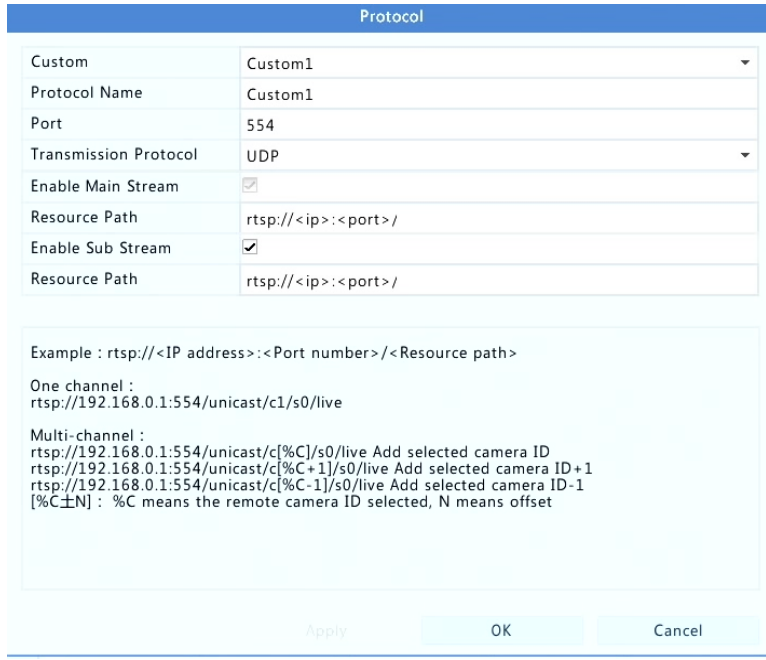
1. Click **Camera** > **Camera**.
2. Click **Custom Add**.
3. Click to select a camera in the list, select **Custom** from the **Protocol** drop-down list, and then click the **Protocol** button.



4. In the **Protocol** window, name the protocol, enter the RTSP port number, select a transmission protocol, input the resource paths, and then click **Apply**.

NOTE!

Contact the camera manufacturer for resource paths.



5. Edit settings in the **Add/Modify** window as needed, including the IP address, username and password, and then click **Add**. Check status in the camera list.

Managing an IP Device

Manage IP devices under **Camera** > **Camera** > **Camera**.

- Click to edit settings including the protocol, IP address, port number, username and password. The **Camera IP** field displays the IP address that the current channel links to, and you may change the address so the channel links to another device. The username and password must be consistent with that of the IP camera.
- Click to delete an IP device, or select multiple IP devices and then click **Delete**. Channels corresponding to PoE ports or switching ports cannot be deleted.

- Click ⚙ to change the IP address of an IP camera and the default gateway. A DVS' IP address cannot be editted from the NVR. — means this function is not available.

Sort Cameras

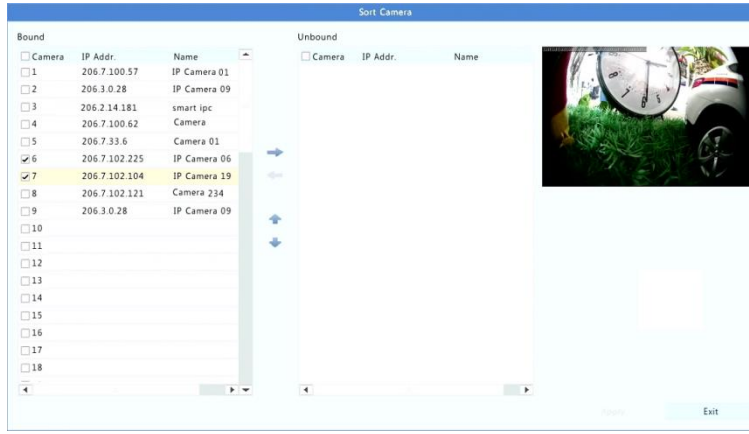
Sort cameras to display in the desired order.

NOTE!

- This function is unavailable to NVRs with PoE ports or switching ports.
- This chapter describes how to sort cameras on an NVR with more than 32 channels. For NVRs with 32 channels or less, you can sort cameras by dragging the mouse.

For example, to switch channel 1 with channel 4, click **Sort Camera**, and then follow the steps below:

1. In the left list, select the check box for channel 1, and then click . Channel 1 now appears in the right list. Perform the same operations to channel 4.
2. In the right list, select channel 4 and then click . Now channel 4 appears at the previous line of channel 1 in the list. Perform the same operations to channel 1, so channel 1 appears at the previous line of channel 4 in the list.
3. Click **Apply** to save the setting, and then click **Yes**.



NOTE!

- To move a channel left or right, select the check box first; otherwise, the buttons are grayed.
- To move a channel up or down, click the channel first; otherwise, the buttons are grayed.
- A channel will be inserted to the first blank line in the left list unless you have specified another line in the list by selecting the corresponding check box.
- **Save** cannot be clicked when the right list is not empty. You need to clear the list first.

Fisheye Configuration

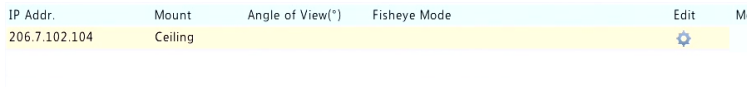
Only certain NVR models can dewarp images from fisheye cameras.

NOTE!

Fisheye configuration is supported only by certain fisheye cameras.

Configuration

1. Click **Camera** > **Camera** > **Fisheye**.



2. Click ⚙ under **Edit**. The **Fisheye** window appears.
3. Select a correct mounting mode and complete other settings accordingly.
4. Click **OK**.

Dewarping

NOTE!

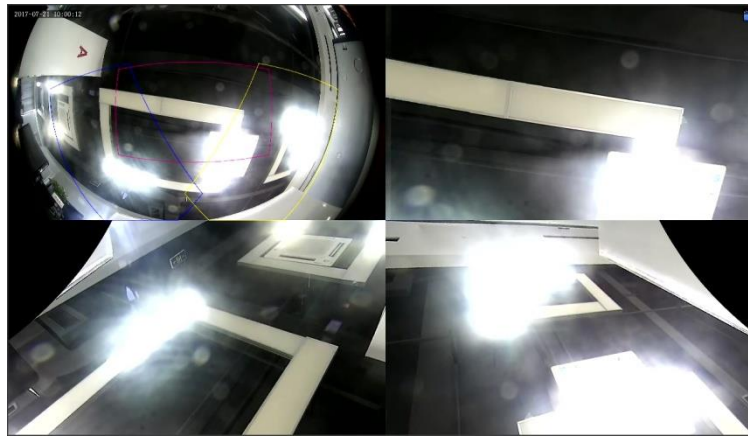
Dewarping is available in live view and playback (in normal and corridor playback modes). The operations are similar. The following describes dewarping in live view.

Right-click a fisheye camera and then select **Fisheye Mode** from the shortcut menu. The figure below appears. Set mounting mode and display mode.

Three mounting modes are available: ceiling, wall, desktop. Ceiling and desktop mounting modes use the same dewarping method.

Mounting Mode	Display Mode	Description
Ceiling mount Desktop mount		Original Image
		360°Panoramic+1PTZ
		180°Panoramic
		Fisheye+3PTZ
		Fisheye+4PTZ
		360°Panoramic+6PTZ
		Fisheye+8PTZ
Wall mount		Original Image
		Panoramic
		Panoramic+3PTZ
		Panoramic+4PTZ
		Panoramic+8PTZ

Operations: Take Ceiling Mount and Fisheye+3PTZ as an example:



On a PTZ image, drag the mouse to rotate the image or use the scroll wheel to zoom in or out. A box appears on the fisheye image as the image rotates, and as you drag the box or move the scroll wheel on the fisheye image, the corresponding PTZ image rotates or zooms in or out as well.

Advanced Functions

Upgrade connected IP cameras or restore factory default settings for cameras under **Camera** > **Camera** > **Advanced**.

Click **Check** to see if the version of the connected IP camera is up to date. You may upgrade cameras by cloud ( ) or by disk ( ) one by one, or select multiple cameras and then click **Upgrade by Cloud** or **By Disk** to upgrade cameras in batches.

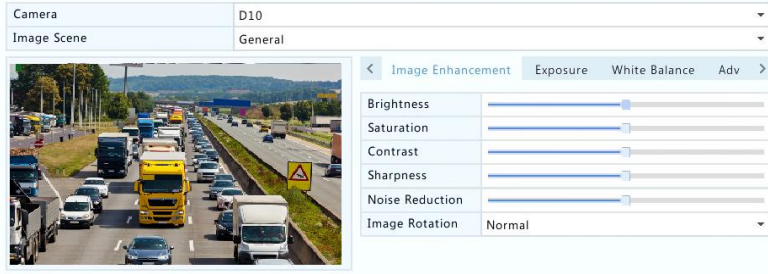
OSD Configuration

On Screen Display (OSD) are characters displayed with video images on the screen, for example, camera name, date and time.

1. Click **Camera** > **OSD**; or click OSD on the preview window toolbar.
2. Select the desired camera and then enter a camera name you want to display on the screen.
3. Select date and time formats. Choose to display time and camera name as needed.
4. Set font size and color as needed.
5. Drag the OSD to the desired position in the preview window on the left.
6. (Optional) Click **Copy** to apply the same settings to other cameras.
7. Click **Apply** to save the settings.

Image Configuration

1. Click **Camera** > **Image**.
2. Select the desired camera and scene.



3. Adjust settings on the tabs as needed to achieve optimal images. See the following sections for detailed information.

NOTE!

- A scene can be selected only when supported by the IP camera.
- To restore default image settings, click **Default** in the lower right corner. This function is available only when the camera is connected to the NVR via the private protocol.
- Image settings apply to both live and recorded videos.

Image enhancement

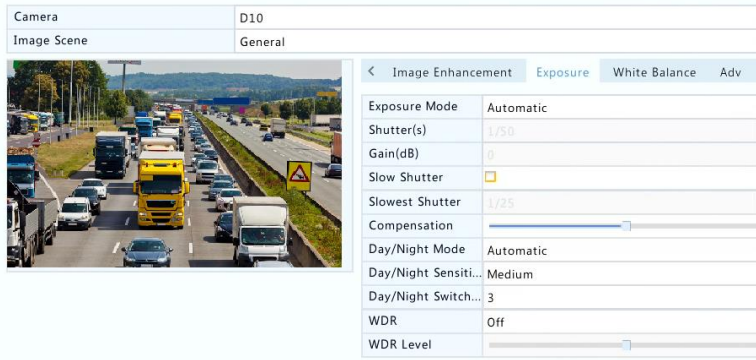
1. Click the Image Enhancement tab.
2. Adjust the settings as needed. Some important parameters are described in the table below.

Parameter	Description
Brightness	The greater the value, the brighter the images appear.
Saturation	The amount of color in a specified hue.
Contrast	The degree of difference between the lightest (white) and darkest (black) parts of an image. Setting a greater

Parameter	Description
	value increases contrast.
Hue	Purity of colors in an image.
Sharpness	Contrast of boundaries of objects in an image.
Noise Reduction	Reduce noises in images to improve image quality.
Image Rotation	• Normal: Displays images without rotation. • Flip Vertical: Displays images flipped vertically. • Flip Horizontal: Displays images flipped horizontally. • 180°: Displays images flipped vertically and horizontally. • 90° CW and 90° CCW: Display images in corridor format. The camera must be installed correctly (rotated 90° clockwise or counterclockwise).

Exposure

1. Click the **Exposure** tab.



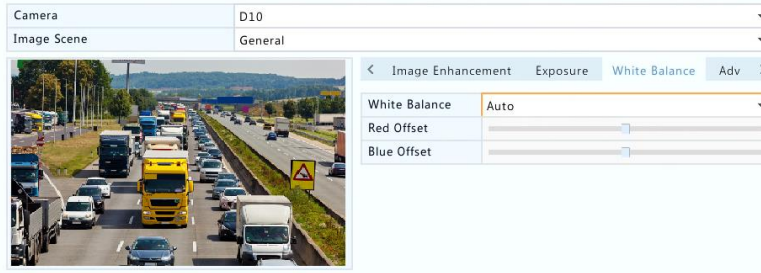
2. Adjust the settings as needed. Some important parameters are described in the table below.

Parameter	Description
Exposure Mode	Select the correct exposure mode to achieve the desired exposure effect.
Shutter(s)	Shutter is used to control the light that comes into the lens. A fast shutter speed is ideal for scenes in quick motion. A slow shutter speed is ideal for scenes that change slowly.
Gain(dB)	Control image signals so that the camera can output standard video signals in different light conditions.
Iris	Adjust iris opening of the lens to control the amount of incoming light.
Slow Shutter	Improves image brightness in low light conditions.
Slowest Shutter	Set the slowest shutter speed for the camera during exposure.
Compensation	Adjust the compensation value as required to achieve the desired image effects.
Day/Night Mode	• Automatic: In this mode, the camera can automatically switch between night mode and day mode according to the ambient lighting condition to output optimum images. • Night: The camera outputs high-quality black and white images according to the ambient lighting condition. • Day: The camera outputs high-quality color images according to the ambient lighting condition.
Day/Night Sensitivity	Light threshold for switching between day mode and night mode. A higher sensitivity value means that the camera is more sensitive to the change of light and is therefore more easily to switch between day mode and night mode.
Day/Night Switching(s)	Set the length of time before the camera switches between day mode and night mode after the switching conditions are met.
WDR	Enable WDR to ensure clear images in high contrast conditions.

Parameter	Description
WDR Level	After enabling WDR, you can improve image quality by adjusting the WDR level.

White balance

1. Click the **White Balance** tab.

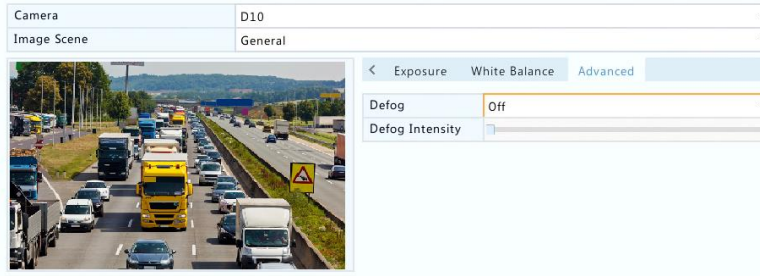


2. Adjust the settings on this tab. Some important parameters are described in the table below.

Parameter	Description
White Balance	Adjust the red or blue offset of the image: • Auto: The camera adjusts the red or blue offset automatically according to the lighting condition (the color tends to be blue). • Finetune: Allow you to adjust the red or blue offset manually.
Red Offset	Adjust the red offset manually.
Blue Offset	Adjust the blue offset manually.

Advanced settings

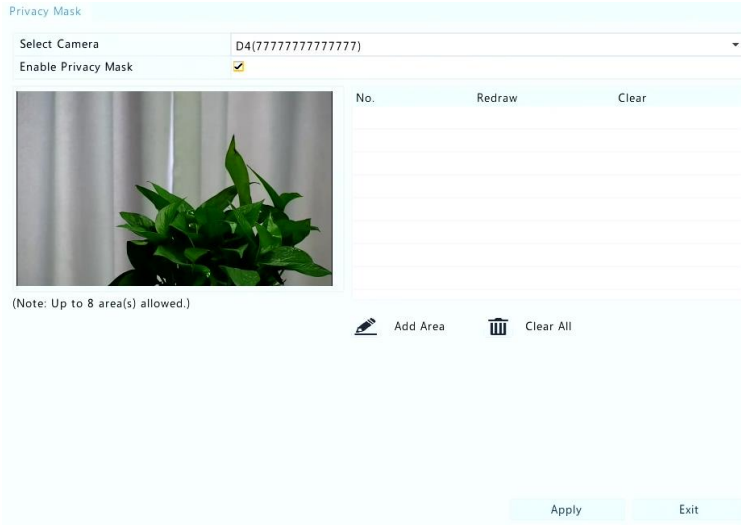
1. Click the **Advanced** tab.
2. Use defog to improve image quality in foggy days.



Privacy Mask Configuration

A privacy mask is an area of solid color covering certain parts of the monitored area. Privacy mask protects specified areas of images from being viewed and recorded. Multiple mask areas are allowed.

1. Click **Camera** > **Privacy Mask**.
2. Select the desired camera, select **Enable Privacy Mask**, click **Add Area** and then use the mouse to specify areas to mask. Up to four areas are allowed. The areas are differentiated by different colors.



3. (Optional) To clear a mask area, click .
4. Click **Apply** to save the settings.

5 PTZ Control

PTZ (pan, tilt and zoom) control is applicable to PTZ cameras only and may vary depending on the functions and protocols supported by the PTZ cameras. Refer to PTZ camera specifications for more details.

PTZ Control Window and PTZ Management Window

1. Click on the window toolbar. The **PTZ Control** window appears. See PTZ Control Window Buttons for detailed descriptions.
2. Click the **Set** button. The **PTZ Management** window appears (can also be opened by clicking **Camera** > **PTZ**).

Table 5-1 PTZ Control Window Buttons

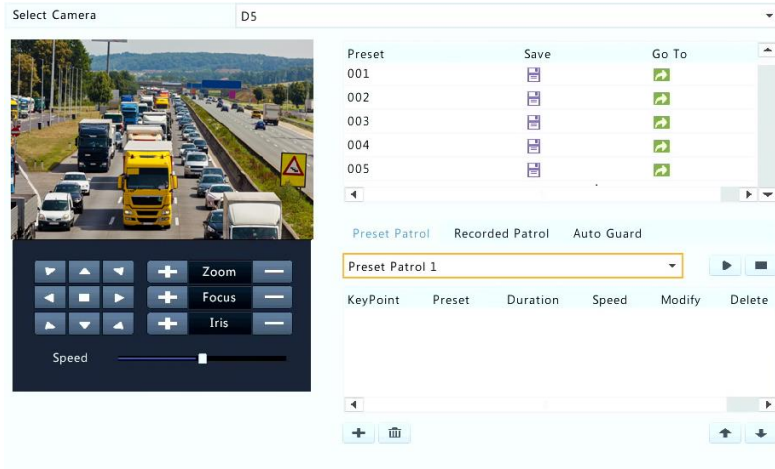
Button	Description
	Control the rotation direction of the PTZ camera or stop rotation.
	Adjust the zoom, focus, and iris of the PTZ camera. **Note**: You can also zoom in or out using the scroll wheel on your mouse.
	Control the rotation speed of the camera. 1 means the slowest, and 9 means the fastest.
	Click to display the **PTZ Management** window.

Button	Description
	• Turn on/off the light. • Turn on/off the wiper. • Use 3D positioning. • Turn on/off the heater. • Turn on/off the function to remove snow. • Turn on/off PTZ shortcut operations. **Note:** • Check that the 3D positioning, heater and snow removal functions are supported by the camera before using. • Use 3D positioning to zoom in or out. Dragging from top down zooms in. Dragging the other way zooms out.
	Preset button.
	• Save the current position and status of the camera as a preset. • Call a preset so the PTZ camera goes to the preset position. • Delete a preset **Note:** and are displayed for saved presets only.
	Preset patrol, recorded patrol and auto guard. For detailed information, see Setting a Preset Patrol, Setting a Recorded Patrol, and Setting Auto Guard.
	Start or stop.

Setting and Calling a Preset

A preset position (preset for short), is a saved view used to quickly steer the PTZ camera to a specific position. A preset consists of the following settings: pan and tilt positions, zoom, focus, and iris.

1. Access the **PTZ Management** window. For the detailed steps, see PTZ Control Window and PTZ Management Window.



2. Add presets.

   a. Click the directional buttons to steer the PTZ camera to the desired position.

   b. Adjust the zoom, focus, and iris as needed.

   c. Select a preset number not in use, and then click under **Save**.

   d. Repeat the above steps to add all the presets.

3. To call a preset, click for the corresponding number. The camera rotates to the preset position.

NOTE!

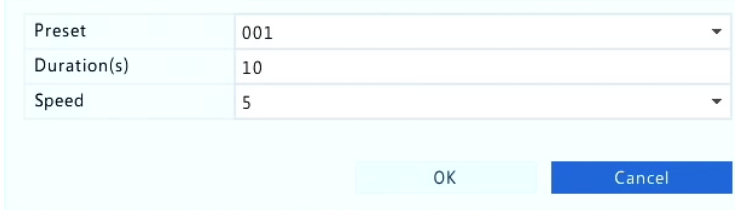
Presets can also be triggered by alarms. See Alarm-Triggered Actions for details.

Setting a Preset Patrol

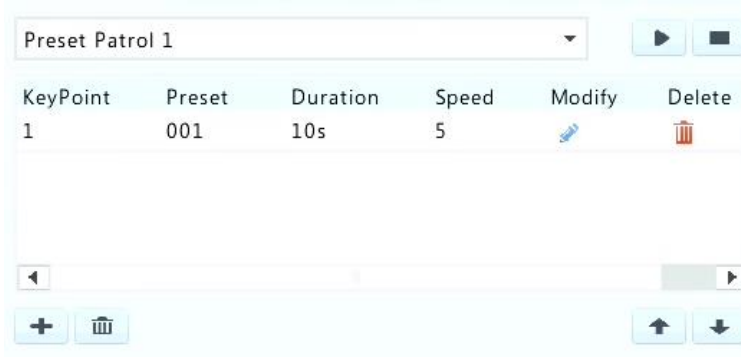
Set the PTZ camera to patrol by presets (go from one preset to the next in specified order). You need to set presets first and then select some as

keypoints. Up to four patrol routes (Preset Patrol 1, 2, 3 and 4) are allowed for each PTZ camera, and each patrol route can have up to eight presets (keypoints). After setting presets, follow the steps to set a preset patrol. The following takes preset patrol 1 as an example.

1. In the **PTZ Management** window, click . A window is displayed as follows.



2. Select a preset from the drop-down list, set the duration (time the camera stays at the preset, unit: second), and then set the rotation speed (1: slowest, 9: fastest). Click **OK** to save the settings. The preset is added as a keypoint, as shown in the figure below.



3. Repeat the above steps to add all presets (keypoints), and adjust the sequence of these presets by clicking or . Modify or delete a preset by clicking or . Clicking will delete all the added keypoints.

4. After completing the configuration, click **Apply** to save the settings. Now keypoints for preset patrol 1 is complete.
5. Click right to the drop-down list to start preset patrol 1. To stop, click .

NOTE!

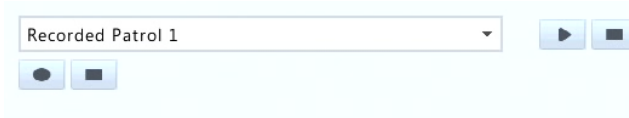
The duration ranges from 0 to 1800 seconds (default: 10). The rotation speed ranges from 1 to 9 levels (default: 5).

Setting a Recorded Patrol

This function requires the camera's support. The drop-down list and the buttons on the right are hidden if this function is not supported by the camera. Currently only one recorded patrol route is allowed.

Record a patrol, including the patrol route, the time that the camera stays at a certain direction, rotation speed, zoom, focus and focus.

1. Click to start recording. Steer the camera to the desired directions, adjust the zoom, focus, iris as needed during the process.



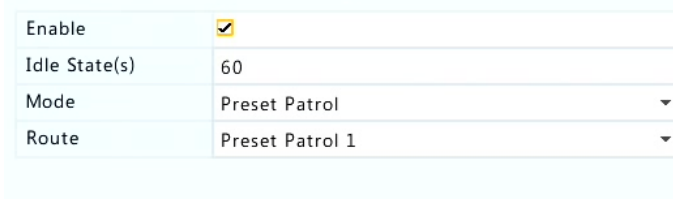
2. Click to stop recording. All the patrol actions have been recorded.
3. To start the recorded patrol, click . Click to stop.

Setting Auto Guard

Use auto guard so the PTZ camera automatically operates as configured if no operation is performed by any user during a certain time period. Auto guard avoids situations where the camera is left to monitor incorrect scenes by user's negligence.

This function requires the camera's support. The **Auto Guard** tab is hidden if it is not supported.

1. Click **Auto Guard** and then select **Enable**.
2. Select the desired mode from the drop-down list and then complete other settings accordingly. Click **Apply** to save the settings.



6 Recording and Snapshot

Video recording has different levels of priority, which from high to low is: event recording, manual recording, and scheduled recording.

Encoding Settings

Recording

The parameters and options displayed may vary with camera model and version. Some functions may be unavailable if the camera version is too low. In this case, you need to upgrade the camera first.

1. Click **Camera** > **Encoding**.

2. Select the camera and then edit settings as needed. Some parameters are described in the table below.

Table 6-1 Encoding Settings

Parameter	Description
Storage Mode	• Main Stream • Sub Stream By default, the main stream is used for storage.
Capture Mode	Combinations of resolutions and frame rates. **Note:** This parameter is effective only when the camera is connected to the NVR via the private protocol.
Stream Type	• Normal: main stream that is intended for scheduled recording. • Event: main stream that is intended for recording triggered by events such as alarm inputs or motion detection alarms. • Sub Stream: low resolution video that is intended for local or remote real-time monitoring.

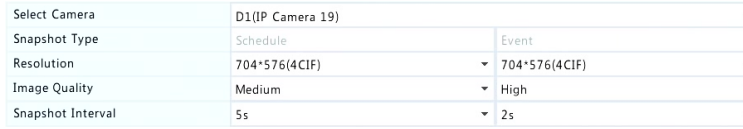
Parameter	Description
Video Compression	Video compression standard, for example, H.264, H.265. The listed options depend on the standards supported by the camera.
Resolution	Image resolution.
Bitrate Type	• CBR: Constant Bit Rate (CBR) is used to maintain a specific bit rate by varying the quality of video streams. CBR is preferred when limited bandwidth is available. The disadvantage is that video quality will vary and may decrease significantly with increased motion in the scene. • VBR: When using Variable Bit Rate (VBR), video quality is kept as constant as possible, at the cost of a varying bit rate, and regardless of whether or not there is motion in the image. VBR is ideal when high quality is a requirement, especially when there is motion in the picture.
Bit Rate(Kbps)	Number of bits transferred per second. Select a value or select **Custom** and then set a value as needed.
Range	Bit rate range. Currently the range is fixed.
Frame Rate(fps)	Number of frames per second.
Image Quality	This parameter is effective only when **Bitrate Type** is set to **VBR**. 9 levels are provided.
I Frame Interval	Number of frames between two adjacent I frames.
I Frame Range	Range of I frames. Currently the range is fixed.
Smoothing	Use the slider to control the sudden increase of bit rate.
Audio Stream	Enable or disable audio stream.
Smart Codec	The advanced mode achieves higher compression ratios.

3. (Optional) Click **Copy** to apply some current settings such as bit rate and frame rate to other cameras.
4. Click **Apply** to save the settings.

Snapshot

Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

1. Click **Camera** > **Snapshot**.
2. Set the parameters as needed.



NOTE!

- Scheduled snapshot uses the Normal type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. Settings effective to event-triggered snapshot also apply to manual snapshot.
- Snapshot interval is the length of time between two snapshots.

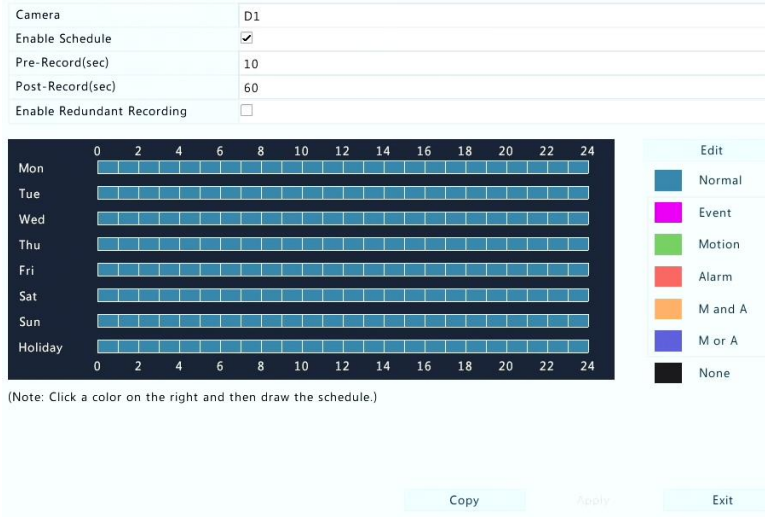
3. Click **Apply** to save the settings.

Draw or Edit a Schedule

Make a recording or snapshot schedule by drawing (pressing and dragging) or by editing (using the **Edit** button). The operations for recording and snapshot are similar, so this section only describes how to make a recording schedule.

1. Click **Storage** > **Recording**.
2. Select the camera from the list. Schedule is enabled by default. If it is disabled, select to enable it.

3. Set **Pre-Record** and **Post-Record** as needed.
4. (Applicable to some NVR models) To save a redundant copy of recordings, select **Enable Redundant Recording** and configure a redundant hard disk (see Disk Management for details).



5. Click a color icon on the right under the **Edit** button and then draw a schedule on the left. You may also click **Edit** and set schedule details in the **Edit Schedule** window.

NOTE!

When editing a schedule, you may clear the **All Day** check box and set up to eight different periods for each day. To apply the settings to other day(s), select the day(s) right to **Copy To**.

6. Click **Apply**.
7. (Optional) Click **Copy** to apply the same settings to other cameras.

Scheduled Recording and Snapshot

Scheduled Recording

Scheduled recording records video according to the set schedule and it is different from manual recording and alarm-triggered recording. A 24×7 recording schedule is enabled by default and may be edited as needed to record video in specified periods only.

See Draw or Edit a Schedule for the detailed steps. Make sure the schedule type is **Normal**. The set schedule appears in blue, which stands for scheduled recording.

Scheduled Snapshot

Configure scheduled snapshot under **Storage** > **Snapshot**. Scheduled snapshot is similar to scheduled recording (see Scheduled Recording for details). Make sure the schedule type is **Normal**.

Motion Detection Recording and Snapshot

When enabled, a motion detection alarm occurs if an object inside the detection area moves to a certain extent (see Motion Detection for more details). Motion detection alarms can trigger actions including recording and snapshot.

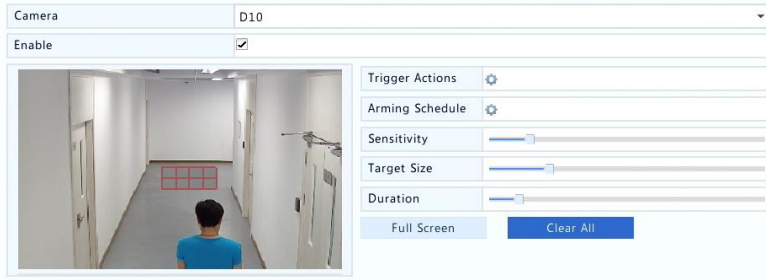
Motion Detection Recording

1. Click **Alarm** > **Motion**.
2. Select the camera from the list, and then select the check box to enable motion detection.

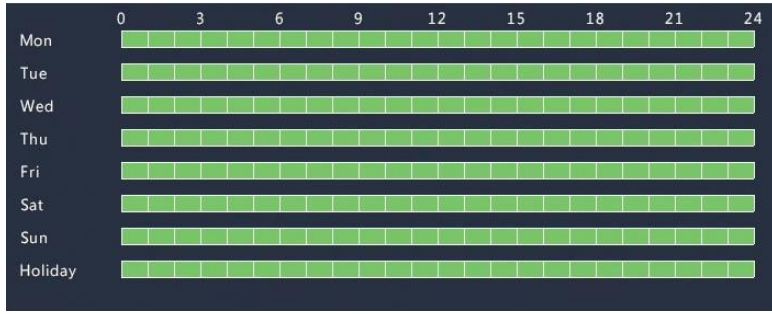
NOTE!

- Motion detection is enabled on the NVR by default. Unless modified, the detection area covers the full screen, and recording is triggered only for the current camera. The settings remain if you disable motion detection and then enable it.
- An alarm icon appears in the upper right corner when motion is detected.

3. In the preview window on the left side, click and drag your mouse to specify a motion detection area (red grid). Use the sliders to adjust detection sensitivity, target object size, and duration.



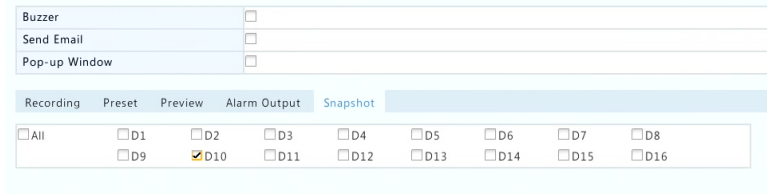
4. Configure motion detection recording: click right to **Trigger Actions**, click the **Recording** tab, select the desired camera, and then click **OK**.
5. (Optional) Configure an arming schedule (time when actions will be triggered): click right to **Arming Schedule** and then set time periods as needed.
6. Set a recording schedule under **Storage** > **Recording**. For the detailed steps, see Draw or Edit a Schedule. Make sure the schedule type is **Motion**. The set schedule appears in green, which stands for motion detection recording. The following figure shows an example.



Motion Detection Snapshot

Motion detection snapshot is similar to motion detection recording. You need to enable and configure motion detection alarm first (see steps 1 to 3 in Motion Detection Recording for details), and then proceed with the following steps.

1. Set motion detection snapshot under **Alarm** > **Motion**: click right to **Trigger Actions**. In the window displayed, click the **Snapshot** tab, select the desired camera, and then click **OK**.



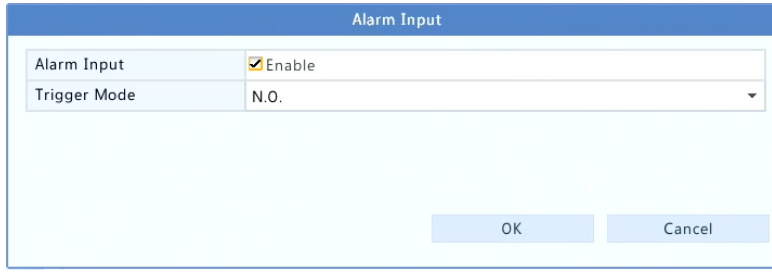
2. Set a snapshot schedule under **Storage** > **Snapshot**. For the detailed steps, see Draw or Edit a Schedule. Make sure the schedule type is **Motion**.

Alarm Triggered Recording and Snapshot

Set input alarms to trigger recording and snapshot. See Alarm Input and Output for more details.

Alarm Triggered Recording

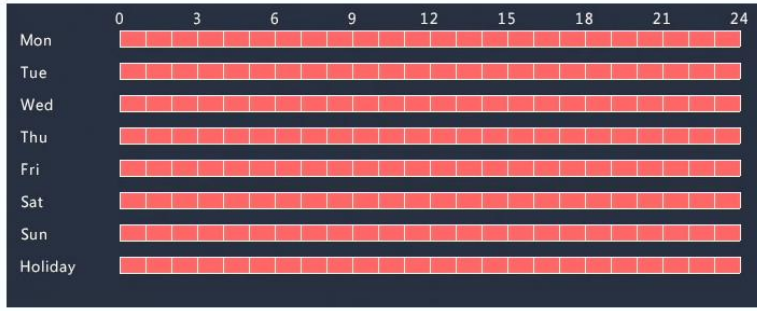
1. Click **Alarm > Input/Output** > **Alarm Input**.
2. Set alarm input: click for the desired camera. In the window displayed, select **Enable**, select N.O. (normally open) or N.C. (normally closed) trigger mode, and then click **OK**.



NOTE!

To apply the same settings to other camera(s), click **Copy** and then select the desired camera(s).

3. Set alarm triggered recording: click under **Trigger Actions**. In the window displayed, click the **Recording** tab, select the desired camera, and then click **OK**.
4. Set a schedule under **Storage** > **Recording.** For the detailed steps, see Draw or Edit a Schedule. Make sure the schedule type is **Alarm**. The set schedule appears in red, which stands for alarm-triggered recording. The following shows an example.



Alarm Triggered Snapshot

Alarm triggered snapshot is similar to alarm triggered recording. You need to enable and configure alarm input first (see steps 1 to 2 in Alarm Triggered Recording for details) and then proceed with the following steps.

1. Set alarm triggered snapshot: Click ⚙ under **Trigger Actions**. In the window displayed, click the **Snapshot** tab, select the desired camera, and then click **OK**.
2. Set a snapshot schedule under **Storage** > **Snapshot.** For the detailed steps, see Draw or Edit a Schedule. Make sure the schedule type is **Alarm**.

Manual Recording and Snapshot

Manual Recording

Record video manually by clicking on the window toolbar. Alternatively, click **Manual** > **Recording**, select the desired camera and then click **Start**. To stop manual recording, click on the window toolbar, or select the camera and then click **Stop** under **Manual** > **Recording**.

Manual Snapshot

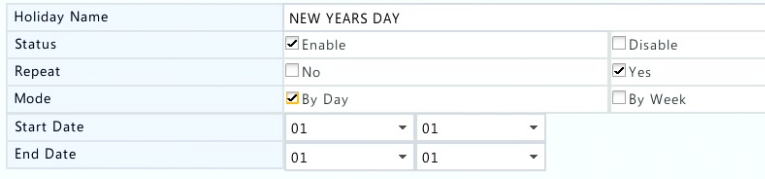
Manual snapshot is similar to manual recording. Click **Manual** > **Snapshot**, select the desired camera, and then click **Start**. Click **Stop** to stop.

Holiday Recording and Snapshot

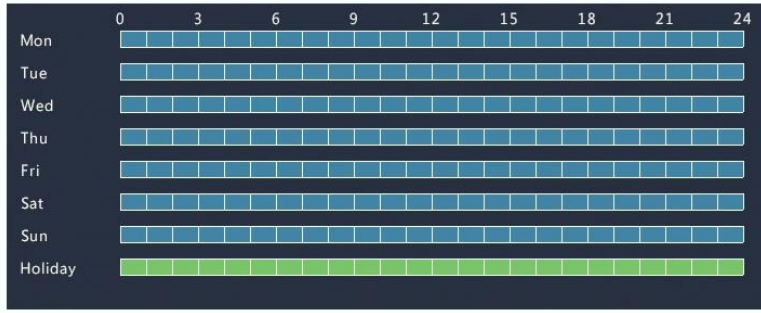
Holiday recording and snapshot allows you to specify certain time periods as holidays for scheduled recording and snapshot. First you specify certain date(s) as holidays, and then configure recording or snapshot schedules on these days.

Holiday Recording

1. Click **System** > **Holiday**.
2. Click the **Add** button in the lower right corner. The **Holiday** window is displayed. Complete the settings including the holiday name, start and end dates. By default a holiday is enabled when added and does not repeat.



3. Click **OK**. The holiday appears in the list.
4. Click **Storage** > **Recording** and then set a recording schedule as described in Draw or Edit a Schedule. Make sure **Holiday** is selected in the **Select Day** drop-down list. In the following example, motion detection recording is enabled on the set holiday.



Holiday Snapshot

Holiday snapshot is similar to holiday recording. First you set holidays under **System** > **Holiday**, and then configure a snapshot schedule under **Storage** > **Snapshot**. Set a snapshot schedule as described in Scheduled Recording. Make sure **Holiday** is selected from the **Select Day** drop-down list.

Other Recording and Snapshot Types

Other recording and snapshot types:

- Event: Including the types below. Any of these types will trigger event recording/snapshot.
- Motion detection AND alarm triggered (M and A for short): recording or snapshot is triggered only when a motion detection alarm AND an input alarm occur simultaneously.
- Motion detection OR alarm triggered (M or A for short): recording or snapshot is triggered when a motion detection alarm OR an input alarm occurs.

When you choose an Event type of recording or snapshot, make sure you have enabled the corresponding alarm function and configured alarm-triggered recording/snapshot. The configuration steps are similar. See Motion Detection Recording and Snapshot for more details.

7 Playback

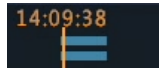
Instant Playback

Instant playback plays the video recorded during the last 5 minutes and 60 seconds. If no recording is found, it means there is no recording during this period.

1. Click the desired window, and then click on the toolbar to start instant playback.
2. You may drag the slider to control the progress. Pause and resume as needed.

Playback Toolbar

Table 7-1 Playback Toolbar Buttons

Button	Description
	Show playback progress. **Note**: • A small window displaying video of the selected window is displayed as you drag the slider, helping locate the part of the video you want to view. • The first progress bar indicates playback progress of the video playing in the highlighted window. The second indicates the overall playback progress for all the selected cameras.
	Timeline.
	Zoom in or out on the timeline. **Note**: Alternatively, scroll your mouse wheel.
	Play, pause, stop, and reverse.
	Rewind or forward 30 seconds.
	Slow down or speed up. **Note**: Click to restore the normal playback speed after clicking , and vice versa.
	Forward by frame.
	Start or stop clipping video.
	Take a snapshot. The window borders will flash white.
	Lock.
	Add a default or custom tag.
	Manage files (clips, snapshots, locked files, tags).
	Zoom in on images. For more details, see Zoom.

Button	Description
	Enable/disable POS (available to certain NVR models). When enabled, POS OSD appears on the screen, and some toolbar buttons are deactivated. These buttons only appear in two playback modes: playback by camera and data and playback by POS. POS OSD duration (how long POS OSD appears on screen) varies with playback mode. For playback by camera and date, the duration is fixed to 5 seconds. For playback by POS, the duration is configurable. See Playback by Camera and Date and Playback by POS for more details.
	Turn off/on audio.
	Adjust sound volume for the current window.

Playback by Camera and Date

Use this method to play recordings found by camera and date.

1. Right-click the mouse and then choose **Playback**.
2. Select the desired camera. By clicking **Max. Cameras** in the upper right corner you will select the maximum number of cameras allowed.

NOTE!

You can select multiple cameras for synchronous playback. Clicking **Max. Camera** selects the maximum number of cameras allowed, and clicking **Close All** stops playback for all cameras. The performance varies with NVR model.

3. Select the desired date on the calendar and then click to start playback. Double-clicking the date will start playback directly.

NOTE!

- The calendar uses different flags to indicate different recording types. No flag means no recording. The blue flag means normal recording. The red flag means event-triggered recording.
- In the drop-down list right to playback mode: **High Definition** means video recorded with the main or sub stream; **Standard Definition** means video recorded with the third stream.

Playback in Corridor Mode

Play recordings in corridor mode in multiple windows.

1. In the playback window, select **Corridor** from the drop-down list in the upper left corner.
2. Select cameras and then double-click the desired date to start playback.

Playback by Tag

Add tags named with keywords such as event name and location to a recording and use tags to quickly locate the part of the video you need during playback.

Adding a Tag

1. Right-click and then click choose **Playback**.
2. Click to add a default tag named TAG. To add a custom tag, click and then set the tag name, for example, tag1.
3. To manage the added tags, click , and then rename or delete tags as needed.

Camera	Name	Time	Edit	Delete
D14	TAG	2016-04-15 00:01:16		
D14	TAG	2016-04-15 04:57:29		
D14	Tag1	2016-04-15 05:49:38		

Playback by Tag

1. In the playback window, select **Tag** from the drop-down list in the upper left corner.
2. Select cameras, set the time period, enter keywords, and then click **Search**. Search results, if there are any, are displayed with names of cameras and tags.
3. Click for the desired tag to start playback. You may use the **Start Before** and **Stop After** drop-down lists to set when the tagged video starts and ends.

Playback by Event

Specify an event type and search for and play videos recorded for one or more cameras during a specified time period.

1. In the playback window, select **Event** from the drop-down list in the upper left corner.
2. Select the desired event type, for example, motion.
3. Select the desired camera, set the time period, and then click **Search**.
4. Click for the desired recording to start playback.

Playback by External File

Use this function to play recordings stored in an external storage device, for example, a USB drive or a portable USB hard drive.

1. In the playback window, select **External File** from the drop-down list in the upper left corner.
2. Click **Refresh** and then wait for the NVR to read the external storage device.
3. Select the desired recording file and then click to start playback.

Playback by Image

Specify an image type (for example, Normal or Motion) to search for and play images from one or more cameras during a specified time period.

1. In the playback window, select **Image** from the drop-down list in the upper left corner.
2. Select a type from the **Type** drop-down list in the upper right corner.
3. Select the desired camera(s), set the desired time period, and then click **Search**.
4. Click the desired file to start playback.

Playback by POS

Use this function to play recordings of a POS machine.

1. In the playback window, select **POS** from the drop-down list in the upper left corner.
2. Select the desired camera, set the time period, enter keywords and then click **Search**.

NOTE!

Keywords allow special characters & (means AND) and | (means OR).

3. Click to display overlay content.
4. Click to start playback.

File Management

File management allows you to manage video clips, tags, snapshots taken during playback, and lock or unlock files.

1. Take snapshot during playback.

   a. Click in the playback window to take a snapshot of the desired image.

b. Click and then click the **Playback Image** tab to view the snapshot.

c. Select the desired image file(s) and then click **Backup** to save them to the storage device.

NOTE!

The image resolution depends on the resolution from the output interface and the number of windows displayed when the snapshot is taken.

2. Lock files.

Use this function to lock a recording file so it will not be overwritten.

a. Click for the recording you want to lock in the playback window.

b. Click and then click the **Locked File** tab to view the locked file. To unlock a file, click , and the icon changes to . To back up a file, select the file and then click **Backup**.

8 Backup

Recording Backup

Backup, also known as recording backup, is the process of querying video stored on a hard disk of the NVR and then saving to a USB storage device or a DVD-R disc as a file.

Recording backup has the following conditions:

- Back up using a USB storage device: format the partition in FAT32 or NTFS format; connect the storage device correctly to the NVR.
- Back up using a disc: use a GP65NB60 DVD burner. Make sure the DVD-R disc is empty, and the burner is correctly connected to the NVR.
- Permission is required.

- The recording to back up is stored on a hard disk of the NVR.

NOTE!

- The default file format is .mp4 when you back up recordings to a USB storage device.
- When backing up using a disc, recordings are saved as .TS files only.

Normal Backup

1. Click **Backup** > **Recording**. All cameras are selected by default.
2. Set search conditions and then click **Search**. Search results are displayed.

NOTE!

You can lock/unlock and play recording files in this window.

3. Select the desired recording(s) and then click **Backup**.
4. Select a partition.

- Back up to USB storage device

Set the destination in the USB storage device and then click **Backup**. The recording(s) will be saved to the specified directory.

NOTE!

- You may want to create a new folder for the recording(s) by clicking **New Folder**.
- If the connected storage device has a capacity that is greater than 2T, clicking **Format** will format the device to NTFS file system; if the capacity is 2T or less, the device will be formatted to FAT32 or NTFS. Only certain devices can format a storage device that has a greater capacity than 2T.
- A progress bar (e.g., **Exporting** *X*/*Y*) is displayed to indicate the progress, where *X* indicates the current number being backed up, and *Y* indicates the total number of recordings. To cancel the operation, click **Cancel**.
- A backup file is named in this format: *camera name-recording start time*.file extension. For example, Ch9-20150630183546.mp4.

- Back up to a DVD-R disc

Set the destination and then click **Backup**. The recording(s) will be saved to the specified directory.

NOTE!

- Before you start burning, check that the video to back up was not compressed using Smart Codec.
- Clicking **Cancel** before burning is finished will cause the disc unusable.
- When burning is finished, wait for the drive to eject itself. Do not eject the drive manually.
- The NVR does not support playback of recordings saved on a disc.

Video Clip Backup

A recording can be clipped and saved to a USB storage device.

1. Open the playback window. For the detailed steps, see Playback.
2. After playback starts, click and on the playback toolbar to clip videos.
3. Click and then click the **Video Clip** tab to view video clips.

4. Select the desired video clip(s) and then click **Backup**.
5. Select a destination in the USB storage device and then click **Backup**. The selected video clips are saved to the specified directory.

Image Backup

The default format of image backup is JPG.

1. Click **Backup** > **Image**.
2. Set search conditions and then click **Search**. Search results are displayed.

NOTE!

The image resolution depends on the resolution from the output interface and the number of windows displayed when the snapshot is taken.

3. Select the desired file(s) and then click **Backup**.
4. Select a destination in the USB storage device and then click **Backup**. The selected files are saved to the specified directory.

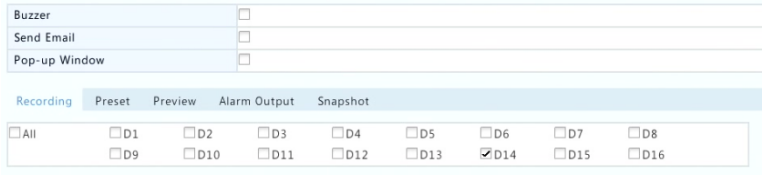
9 Alarm

Alarm Input and Output

Alarm Input

1. Click **Alarm** > **Input/Output** > **Alarm Input**.
2. Click for the desired camera. In the **Alarm Input** window, select **Enable** to enable alarm input.
3. Select the normally open (N.O.) or normally closed (N.C.) trigger mode, and then click **OK**.

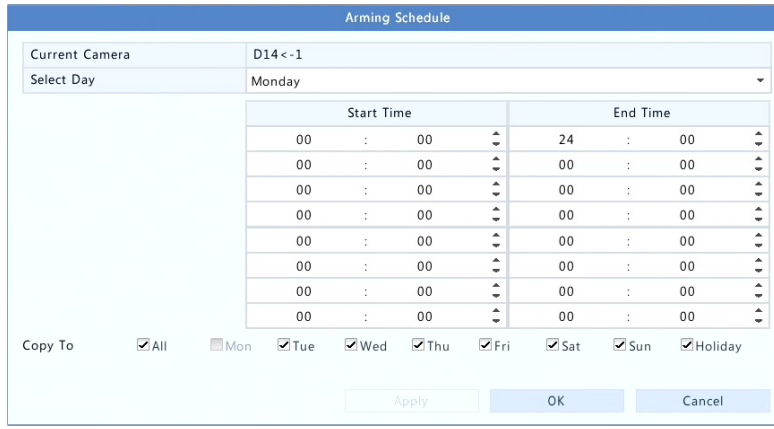
4. Click ⚙ under **Trigger Actions** and then set action(s) to trigger. For more details, see Alarm-Triggered Actions.



NOTE!

- The number of cameras that can be connected may vary with NVR model.
- Actions that can be triggered may vary with alarm type.

5. Click ⚙ under **Arming Schedule** and then set the time when actions will be triggered.



NOTE!

- The default schedule is 24×7. You may change it as needed and set up to eight different periods for each day. Time periods cannot overlap.
- To apply the same arming schedule to other days, select the intended days right to **Copy To**.
- To apply the same settings to other cameras, click **Copy**, select cameras, and then click **OK**.

Alarm Output

1. Click **Alarm** > **Input/Output** > **Alarm Output**.
2. Click under **Edit** for the desired camera, and then set the default status and duration. After you have completed the settings, click **OK**.
3. Click under **Arming Schedule** and then set the time when actions will be triggered.

NOTE!

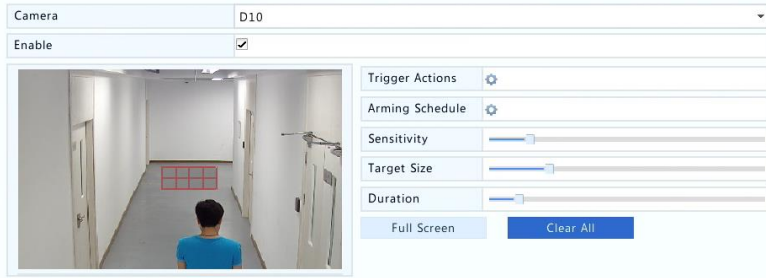
To apply the same settings to other cameras, click **Copy**, select cameras, and then click **OK**.

Motion Detection

When enabled, a motion detection alarm occurs if an object inside the detection area moves to certain extent, and an alarm icon appears in the upper right corner.

Motion detection is enabled on the NVR by default. Unless modified, the detection area covers the full screen, and recording is triggered only for the current camera. The settings remain if you disable motion detection and then enable it.

1. Click **Alarm** > **Motion**.
2. Select the desired camera and then select **Enable** to enable motion detection.
3. Use the mouse to draw a detection area, and drag the slider to set detection sensitivity, target object size, and duration. The higher the sensitivity, the more likely a moving object will be detected.



4. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

NOTE!

- The number of cameras that can be connected may vary with NVR model.
- Actions that can be triggered may vary with alarm type.

5. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

NOTE!

- The default schedule is 24×7. You may change it as needed and set up to eight different periods for each day. Time periods cannot overlap.
- To apply the same arming schedule to other days, select the intended days right to **Copy To**.

6. Click **Apply** to save the settings.

7. (Optional) Click **Copy** to apply the same settings to other cameras.

Tampering Detection

A tampering detection alarm occurs when the camera lens is covered.

1. Click **Alarm** > **Tampering**.
2. Select the desired camera and then select **Enable** to enable tampering detection.

3. Click right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.
4. (Optional) Click right to **Arming Schedule** and then set the time when actions will be triggered.
5. (Optional) Click **Copy** to apply the same settings to other cameras.
6. Click **Apply** to save the settings.

Video Loss

A video loss alarm occurs when the NVR loses video signals from a camera. Video loss alarm is enabled by default.

1. Click **Alarm** > **Video Loss**. To disable video loss alarm for a channel, click , which then changes to .
2. Click under **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

NOTE!

Video loss alarm cannot trigger recording, preset, preview (live view) and snapshot actions for the current camera.

3. Click under **Arming Schedule** and then set the time when actions will be triggered.
4. (Optional) Click **Copy** to apply the same settings to other cameras.

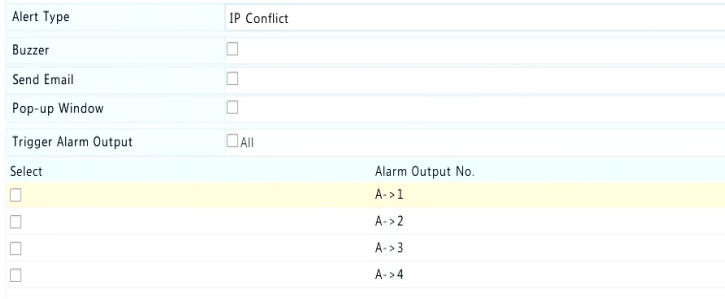
Alert

The NVR reports an alert when an event occurs in the system. The following are some alerts and their definitions in the system.

- **Running Out of Space**: Less than 10% of disk space remains.
- **Space Used Up**: No disk space.
- **Disk Offline**: A disk is not properly connected or is damaged.
- **Disk Abnormal**: A disk can be detected but cannot be accessed.
- **Illegal Access**: A failed login attempt for a username that does not exist or a password that is incorrect.
- **Network Disconnected**: Network connection is lost.
- **IP Conflict**: Devices on the network use the same IP address.
- **Recording/Snapshot Abnormal**: Storage resource cannot be found, for example, when all hard disks are removed, or when there is no disk in disk group 1 (see Disk Group for more information).

Perform the following steps to configure an alert:

1. Click **Alarm** > **Alert**.
2. Select an alert type, select the desired actions, and then select the camera(s) for which you want to enable alarm output.

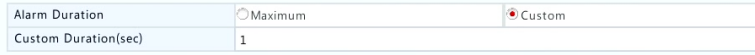


3. Click **Apply** to save the settings.

Buzzer

The buzzer can be triggered by alarms to alert the user. Follow the steps to set how long the buzzer will buzz after it is triggered.

1. Click **Alarm** > **Buzzer**.



2. Set the duration as needed. The range is from 1 to 600 seconds.
3. Click **Apply** to save the settings.

Alarm-Triggered Actions

An alarm can trigger actions, for example, buzzer, recording, and preview. The supported actions may vary with NVR model.

Alarm-Triggered Buzzer

The NVR makes a buzzing sound when an alarm occurs.

Alarm-Triggered E-mail

The NVR e-mails an alarm message to a specified email address when an alarm occurs.

Alarm-Triggered Pop-up Window

A window pops up when an alarm occurs.

Alarm-Triggered Recording

The NVR records video from a specified camera when an alarm occurs.

Alarm-Triggered Snapshot

The NVR takes a snapshot when an alarm occurs.

Alarm-Triggered Preset

A PTZ camera rotates to a preset position when an alarm occurs.

Alarm-Triggered Preview

The NVR plays live video in full screen when an alarm occurs.

Alarm-Triggered Alarm Output

The NVR outputs an alarm to trigger actions by a third-party device when an alarm occurs.

Manual Alarm

Manual Alarm Output

Follow the steps to trigger or clear an alarm output manually.

1. Click **Manual** > **Alarm** > **Manual Alarm**.
2. To trigger an alarm output manually, select the desired channel and then click **Trigger**. To clear an alarm output manually, select the desired channel and then click **Clear**.

Manual Buzzer

Follow the steps to stop the buzzer manually.

1. Click **Manual** > **Alarm** > **Buzzer**.
2. Select the buzzer (in Started status) and then click **Stop**.

10 Network Configuration

Network configuration is required if your NVR operates in a network.

NOTE!

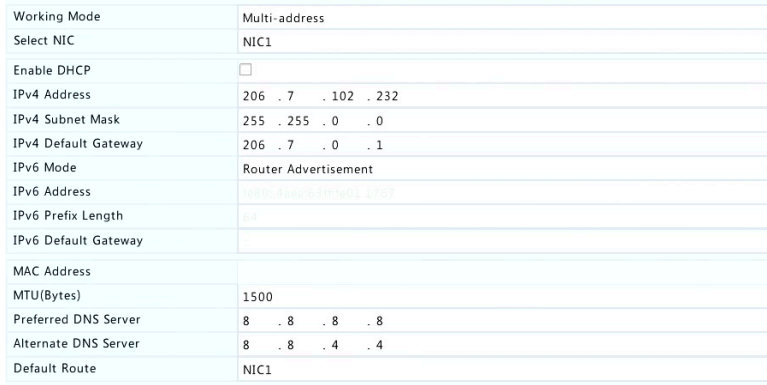
The default IP address is 192.168.1.30 for NIC 1 and 192.168.2.30 for NIC 2, and likewise.

TCP/IP

1. Click **System** > **Network > Basic**.
2. Set the network parameters as needed. DHCP is enabled by default.

You can choose a working mode if your NVR has two NICs:

- Multi-address mode: The two NICs work independently and can be configured separately. Either NIC can be chosen as the default route, and data will be forwarded through this NIC when the NVR connects to the extranet.
- Load balance mode: The two NICs are bound to the same IP address and work together to share network traffic.
- Net fault-tolerance mode: The two NICs are bound to the same IP address. In cases where one NIC fails, the other takes over service seamlessly from the faulty one to ensure network connectivity.



3. Click **Apply** to save the settings.

NOTE!

- For an NVR with multiple NICs, you can configure the NICs and choose a default route (currently NIC1).
- If your NVR has a PoE port or a switching port, you can configure an internal NIC IPv4 address.

CAUTION!

- If you switch the working mode, the enabled 802.1x and ARP protection will be disabled automatically.
- The valid MTU ranges from 576 to 1500 (1280-1500 for IPv6). To use IPv6, make sure the NVR and PC can connect to each other using IPv6 addresses. To view live or recorded videos, make sure the IPv4 addresses are also connectable.

PPPoE

The NVR allows access through Point-to-Point over Ethernet (PPPoE).

1. Click **System** > **Network** > **PPPoE**.
2. Enable PPPoE by selecting the check box.

3. Enter the username and password provided by your Internet Service Provider (ISP). Network information including IP address appears when dial-up succeeds.

NOTE!

If your NVR has multiple NICs, PPPoE dial-up will be implemented through the NIC specified as the default route.

4. Click **Apply** to save the settings.

DDNS

If your NVR is connected to the Internet through PPPoE, the IP address of the network changes every time it connects to the ISP server without your awareness. This is inconvenient when you remotely access your NVR with an IP address. To avoid this issue, you can register with an DDNS server to obtain a domain name for your NVR and then access your NVR by visiting the domain name instead of an IP address (http://*DDNS server address*/*NVR's domain name*) using a web browser.

1. Click **System** > **Network** > **DDNS**.
2. Enable DDNS, select a DDNS type, and then complete other settings.

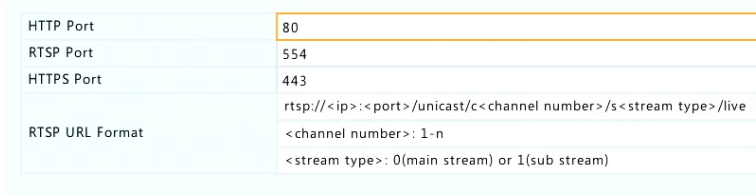
- If the DDNS type is **DynDNS** or **No-IP**, enter the domain name, username and password. The domain name is the one that you have successfully registered at a domain name registration website (e.g., DynDNS). The username and password are those of the account you have registered at the domain name registration website (e.g., DynDNS).

3. Click **Apply** to save the settings.

Port

Normally the default port numbers need no modification. This function is mainly used together with the port mapping function. See Port Mapping for more details.

1. Click **System** > **Network** > **Port**.
2. Configure ports as planned. Each port number must be unique.



NOTE!

- A valid port number ranges from 1 to 65535, among which 21, 23, 2000, 3702 and 60000 are reserved.
- An RTSP URL can be used to view live video of a channel of the current NVR from another NVR. See Option 5 in Adding an IP Device for more information.

3. Click **Apply** to save the settings.

Port Mapping

Two port mapping methods are available:

- Universal Plug and Play (UPnP)
- Internal and external mapping

UPnP

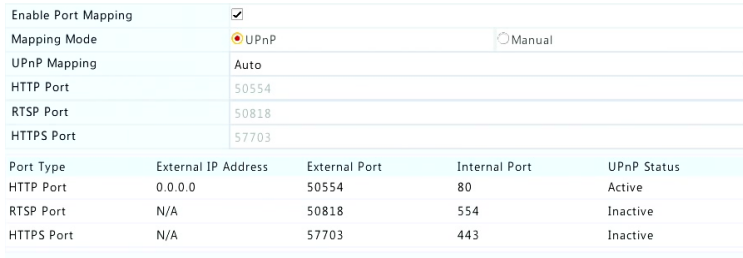
UPnP enables the NVR to discover other devices on the network and establish network services such as data sharing and communication.

To use UPnP in your NVR, you must enable UPnP in the connected router. With UPnP enabled for Network Address Translation (NAT), the ports on the NVR can be mapped automatically to the router, and computers can access your NVR from outside the LAN.

1. Click **System** > **Network** > **Port Mapping**.
2. UPnP is enabled by default. Select the desired mapping type from the drop-down list. To map ports manually, select **Manual** and then set external ports for the router.

NOTE!

- Automatic mapping (Auto) is recommended. Ports will conflict if not configured properly.
- For an NVR with multiple NICs, port mapping should be configured based on the NIC specified as the default route.



3. Click **Refresh** and check that **Active** is displayed for these ports under **UPnP Status**.
4. Click **Apply** to save the settings.

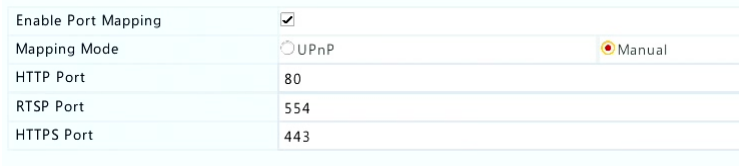
Manual Port Mapping

If your router does not support UPnP, then you need to configure internal and external ports manually.

NOTE!

- The principle of port mapping is that the internal and external ports of the NVR are consistent with that of the router.
- Some routers may require the same internal and external ports for the NVR and the router.

1. Click **System** > **Network** > **Port Mapping**.
2. Select **Manual** for **Mapping Mode**, and then set external ports manually.



3. Click **Apply** to save the settings.

NOTE!

After port mapping is completed, you may access the Web client of your NVR by entering the following information in the address bar of your web browser: router's WAN port IP address:external HTTP port. For example, if 10.2.2.10 is the IP address and 82 is the HTTP port, then you enter http://10.2.2.10:82.

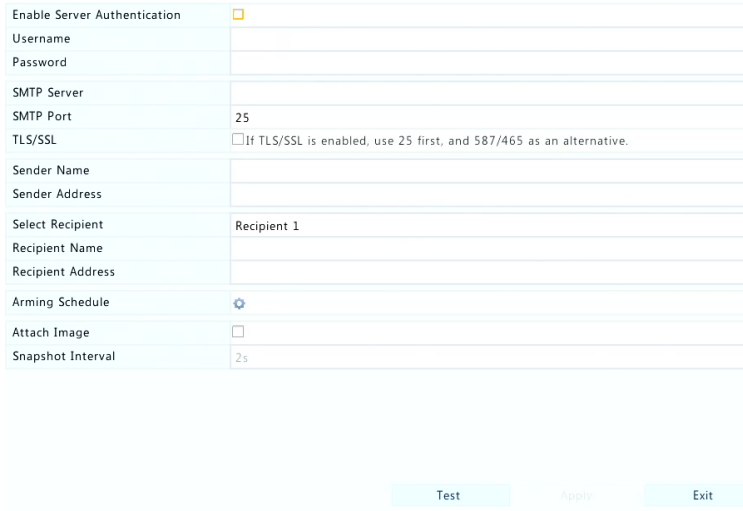
Email

After Email is enabled as a triggered action (in Trigger Actions windows) and configured properly, the NVR sends an email notification to specified email address(es) if an alarm occurs within the time period(s) set in the arming schedule. The email contains basic alarm information such as alarm type, alarm time, camera ID, and camera name, etc.

Before using this function, make sure the NVR has a functional connection to an SMTP server with which you have a valid email account. Depending on the intended recipients, a connection to the Internet may be required.

Only certain NVR models support this function.

1. Click **System** > **Network** > **Email**.
2. Configure the related parameters. If server authentication is required, you need to enter the correct username and password. Click **Test** to send a test email.



NOTE!

- Enter a valid SMTP server address and port number, and then select **Enable TLS/SSL** if required.
- Select **Attach Image** if you want snapshots to be sent via email. Make sure Email and snapshot have been enabled in the **Trigger Actions** window.
- Only certain NVR models support image attachment. You may click **Test** to check whether the email can be sent successfully.

3. Click **Apply** to save the settings.

FTP

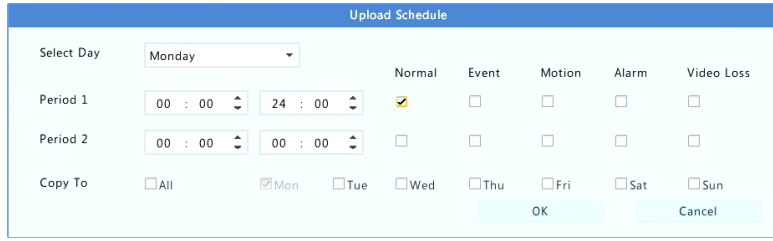
Use this function to automatically upload images to a preconfigured FTP server. Only certain NVR models support this function.

1. Click **System** > **Network** > **FTP**.
2. Select the check box to enable FTP.
3. Enter the IP address of the FTP server, username and password, remote directory, and upload interval.

NOTE!

- Click **Test** to verify whether an FTP connection can be established.
- If the remote directory is not specified, the system will create different folders directly by IP, time and camera. You may also specify a remote directly, for example, FTPtest/*xxx*/*xxx*, then the system will create the directory first and then create folders by IP, time and camera.

4. Select the desired camera and then click right to **Upload Schedule**. In the **Upload Schedule** window, select the desired image type and set time periods.



NOTE!

- If you select Event, Motion, Alarm or Video Loss, you also need to configure the corresponding alarm-triggered snapshot. For example, if you select Motion, you need to configure alarm-triggered snapshot (select Motion in the Edit Schedule window).
- To apply the same settings to other days in a week, select the desired days right to **Copy To**.

5. (Optional) Apply the same settings to other cameras by clicking right to **Copy** and then selecting desired cameras.
6. Click **Apply** to save the settings.

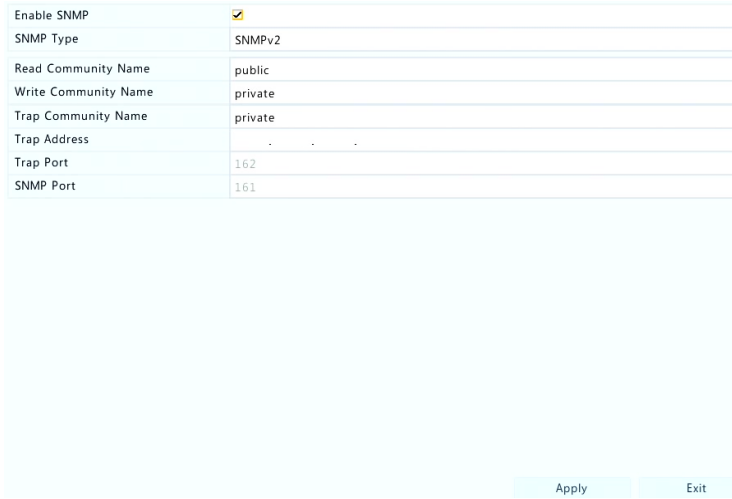
NOTE!

To apply the same settings to other cameras, click right to **Copy**, select cameras and then click **OK**.

SNMP

Use SNMP to connect to a platform and obtain system time.

1. Click **System** > **Platform**. Select **Enable SNMP**.



2. Select an SNMP type.

- Snmp V2

Set **Read Community Name** and **Write Community Name**, which are used by the platform to read data on NVR.

- Snmp V3

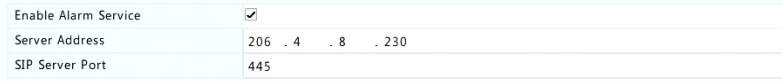
Set authentication password (for the platform to access the NVR) and encryption password (for encrypting data sent from the NVR to the platform).

3. Click **Apply**.

Alarm Service

Use this function to send alarm signals to an external alarm device (for example, alarm control panel) when an alarm or an alert occurs on the NVR.

1. Click **System** > **Platform** > **Alarm Service**.



2. Select **Enable Alarm Service**, and set the server address and SIP server port.

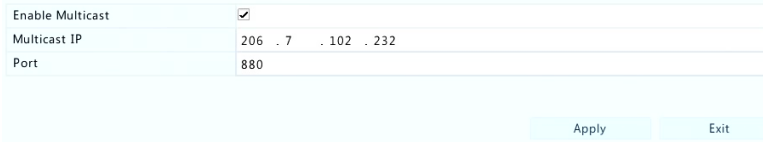
NOTE!

The NVR only sends alarm signals when an alarm or alert occurs; users need to implement alarm receiving and reporting for the external alarm device separately.

Multicast

Multicast can be used to realize live view when the number of connecting Web clients exceeds the limit the NVR can accommodate.

1. Click **System** > **Network** > **Multicast**.
2. Select the check box to enable multicast, and then enter the multicast IP and port number.



3. Click **Apply** to save the settings.
4. Log in to the Web client and set **Live View Protocol** to **Multicast** under **Setup** > **Client**.

NOTE!

Set the multicast IP correctly. Multicast address is class D address with the range 224.0.0.0 through 239.255.255.255; some are for special use:

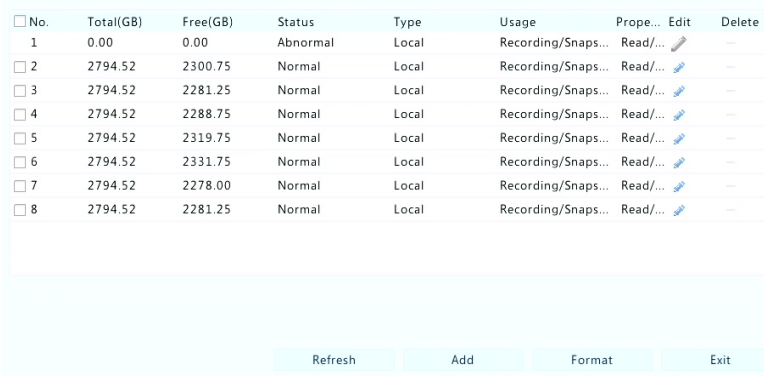
- 224.0.1.0--238.255.255.255 can be used on the Internet.
- 224.0.0.0-244.0.0.255: only for use on LAN.
- 224.0.0.1: all-hosts group address, which refers to all the multicast-capable hosts and routers on a physical network.
- 224.0.0.2: for all routers on this subnet.
- 224.0.0.5: for all OSPF routers.
- 224.0.0.13: for all PIMv2 routers.
- 239.0.0.0--239.255.255.255 are for private use like 192.168.x.x.

11 Disk Configuration

Disk Management

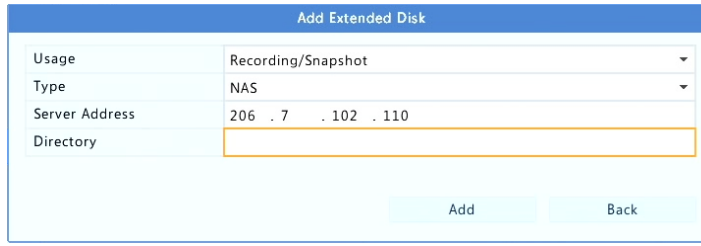
View disk information, including total and free disk space, disk status, disk type, disk usage, and disk property. Admin users can format disks and edit disk property.

1. Click **Storage** > **Hard Disk**.



2. To add a disk, click **Add**. In the dialog box displayed, select disk usage (recording/snapshot or backup) and disk type (currently NAS only),

enter the server address and directory, and then click **Add**. Up to eight NAS disks are allowed.



3. To edit disk property, click , and then modify disk usage (recording/snapshot or backup) and disk property (**Read/Write**, **Read Only** or **Redundant**) as needed.

NOTE!

- Disk property can be edited if the disk is used for recording/snapshot.
- The Redundant property is available to certain NVR models.
- You may use external eSATA disks for recording/snapshot or backup purpose and unmount them if necessary. eSATA disks and NAS disks cannot be used to create arrays.

4. To format a disk, select the disk and then click **Format**. A confirmation message appears. Click **Yes**.

NOTE!

- Local disks will be formatted automatically when installed. Extended disks will not.
- Format a disk with caution. All data will be removed.

Array Configuration

Only certain NVR models support RAID. The table below lists the supported RAID types and hard disks required.

RAID	HDD Qty
RAID 0	2-8
RAID 1	2
RAID 5	3-8
RAID 6	4-8
RAID 10	4-16 (Must be an integral multiple of 2, e.g., 4, 8, 10, etc).
RAID 50	6-16
RAID 60	8-16

Enabling RAID

You need to enable RAID first.

1. Click **Storage** > **Array**.
2. Select the check box to enable RAID. A confirmation message appears. Click **Yes**.

Creating an Array

It is recommended to configure a hot spare disk to ensure reliable system operation and successful rebuilding in case an array fails.

1. Click **Storage** > **Array**.
2. To create an array automatically, click **One-click Create**.

NOTE!

- There is no need to select disks when creating an array with **One-click Create**. The system identifies all usable disks. RAID 1 is created when two disks are available. When three or more disks are available, RAID 5 is created. If more than four disks are available, a global hot spare disk will be created.
- Arrays created in this way are named ARRAY*X*, for example, ARRAY1, ARRAY2.

3. To create an array manually, select the desired disks and then click **Create**. In the window displayed, enter the array name, select the array type, and select local disks. Click **OK** to complete the setup. Note that no hot spare disk will be created automatically. Make sure all disks are selected to create array(s); otherwise, disk space will be wasted (because disks that are not selected will not be used for storage).

Rebuilding an Array

By checking array status you can determine whether maintenance is necessary.

NOTE!

To be alerted when an array is degraded or damaged, you can configure alarm-triggered action at **Alarm** > **Alert**.

An array is in one of four statuses: normal, degraded, damaged, rebuild. The status is normal if no physical disk is lost. When the number of physical disks lost reaches the specified value, the array is considered damaged. The status between normal and damaged is degraded. A degraded array can be recovered to normal status through rebuilding.

NOTE!

Take RAID 5 that consists of 4 disks as an example. The array is degraded when one disk is lost. When two disks are lost, the array is damaged.

A degraded array can be automatically rebuilt in ten minutes if these conditions are met: a hot spare disk is available; the capacity of the hot spare disk is not less than that of any disk in the array. A degraded array without a hot spare disk can only be rebuilt manually under **Storage** > **Array > Array**. By default the first local disk that satisfies requirements is selected.

Deleting an Array

CAUTION!

Deleting an array will erase all data on it.

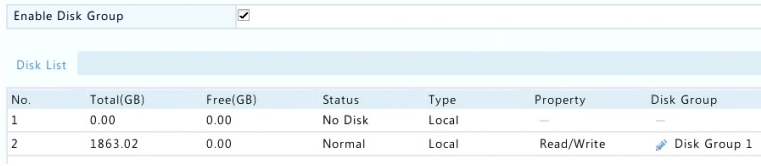
1. Click **Storage** > **Array** > **Array**.
2. Click for the array to delete. A confirmation message appears. Click **Yes**.

Disk Group

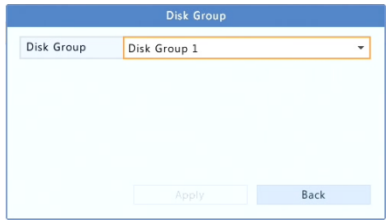
Assign hard disks to a disk group and use the disk group to store recordings and snapshots of specified cameras. Different arrays can be assigned to different disk groups.

Redundant disks cannot be assigned to any disk group. Disk group information will be initialized if any disk in the group is formatted.

1. Click **Storage** > **Disk Group**.



2. Select **Enable Disk Group**. By default all disks belong to Disk Group 1. Click for the disk to edit, and then select a group to which the disk will be assigned.

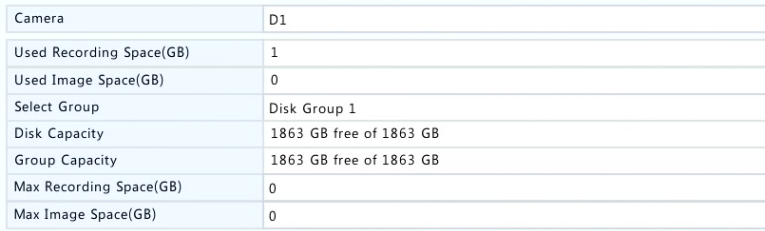


3. Click **Apply** to save the settings.

Space Allocation

Allocate space to store videos and snapshots of a specified camera.

1. Click **Storage** > **Allocate Space**.



2. Select the desired camera and then set the maximum recording space and maximum image space. You can select a disk group only when disk group is enabled under **Storage** > **Disk Group**. For more information, see Advanced Configuration.
3. Click **Apply** to save the settings.
4. (Optional) Click **Copy** to apply the same settings to other camera(s).

Advanced Configuration

Set whether to overwrite recordings or snapshots when storage is full.

1. Click **Storage** > **Advanced**.

2. Choose an option.

Option	Allocated Space	Description
Overwrite	0	The camera shares unallocated space, and its oldest recordings/snapshots will be overwritten when the space is used up.

Option	Allocated Space	Description
	Other values	The camera's oldest recordings/snapshots will be overwritten when its allocated space is used up.
Stop	0	The camera shares unallocated space, and its oldest recordings/snapshots will still be overwritten when the space is used up.
	Other values	The camera's new recordings/snapshots will not be saved when its allocated space is used up.

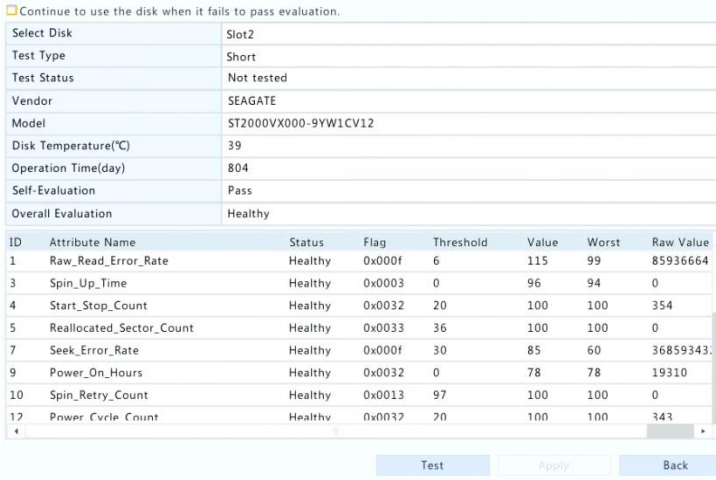
3. Click **Apply** to save the settings.

Hard Disk Detection

S.M.A.R.T. Test

Click **Maintain** > **HDD** > **S.M.A.R.T. Test** to do S.M.A.R.T. test.

S.M.A.R.T. (enabled by default) checks the head, platter, motor, and circuit of hard disks to evaluate their health status. The overall evaluation results include **Healthy**, **Failure**, and **Bad Sectors**. It is recommended to replace the disk immediately if the status is **Failure**.



NOTE!

- Some hard disks only support some of the test items.
- The system provides three test types: Short, Extended, and Conveyance. Extended tests detect more thoroughly and thus take longer time than Short tests. Conveyance tests mainly detect data transmission problems.

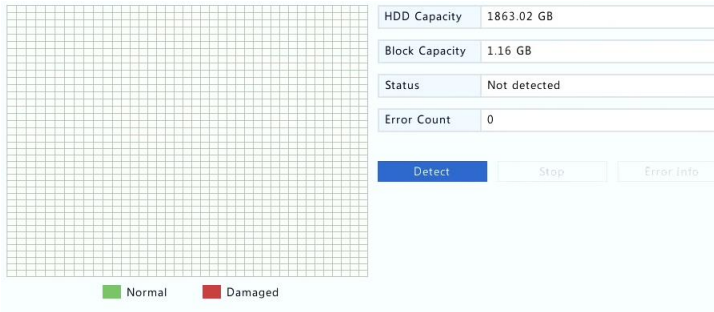
CAUTION!

Using a faulty disk is risky. Faulty disks should be replaced immediately. Contact your local dealer for information about hard disks.

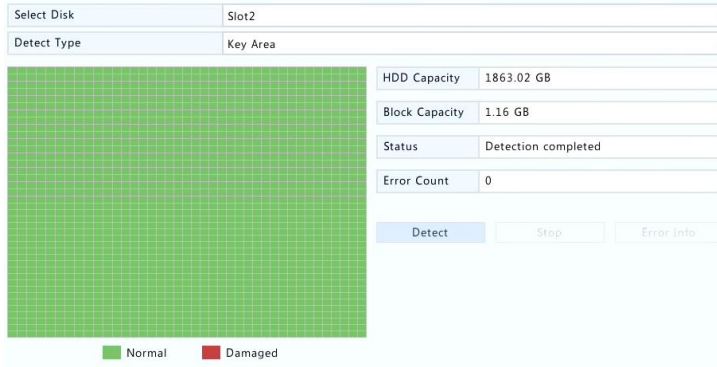
Bad Sector Detection

Bad sector detection checks for bad sectors in hard disks.

1. Click **Maintain** > **HDD** > **Bad Sector Detect**.



2. Select the desired disk and detection type, and then click **Detect** to start detection. Click **Stop** if you want to stop.



CAUTION!

The detection stops automatically when the error count reaches 100.

12 System Configuration

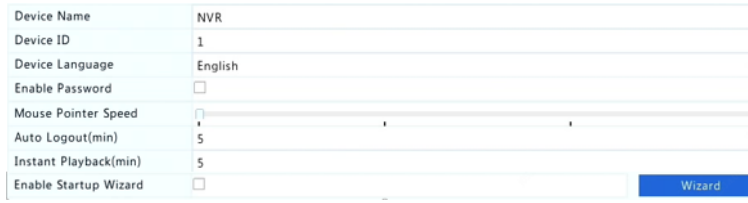
Basic Configuration

1. Click **System** > **Basic**.

2. Configure the parameters.

NOTE!

- Only admin can set **Enable Password**.
- If **Enable Password** is not selected, no password is required for local login at system startup. However, a username and password are still required when you log in after a logout.
- You may also set startup Wizard here by clicking **Wizard**.

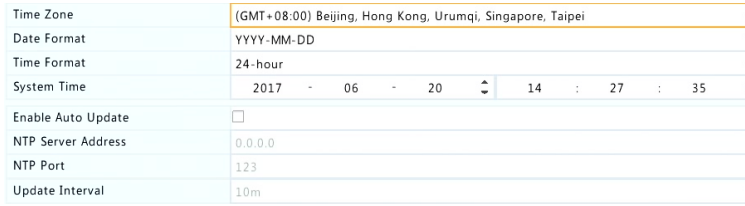


3. Click **Apply** to save the settings.

Time Configuration

Time

1. Click **System** > **Time** > **Time**.
2. Select the correct time zone, and then set date and time formats and the system time. The following shows an example.

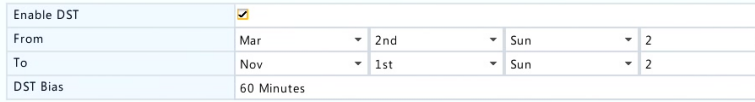


3. To use Network Time Protocol (NTP), enable auto update, set the address and port number of the NTP server, and the update interval.
4. Click **Apply** to save the settings.

DST

1. Click **System** > **Time** > **DST**.

2. Enable DST by selecting the check box, and then set the start time, end time, and DST bias correctly. The following shows an example.



3. Click **Apply** to save the settings.

Time Synchronization

Use this function to synchronize camera time with the NVR. Time sync is enabled by default, and cameras will synchronize time with the NVR after getting online, and then synchronize once every 30 minutes.

1. Click **System** > **Time** > **Time Sync**.
2. Select **Sync Camera Time** and then click **Apply**.

CAUTION!

Use this function with caution if you have more than one NVR on the network. An IP camera synchronizing time with multiple NVRs at the same time will cause chaotic recordings.

Transaction Configuration

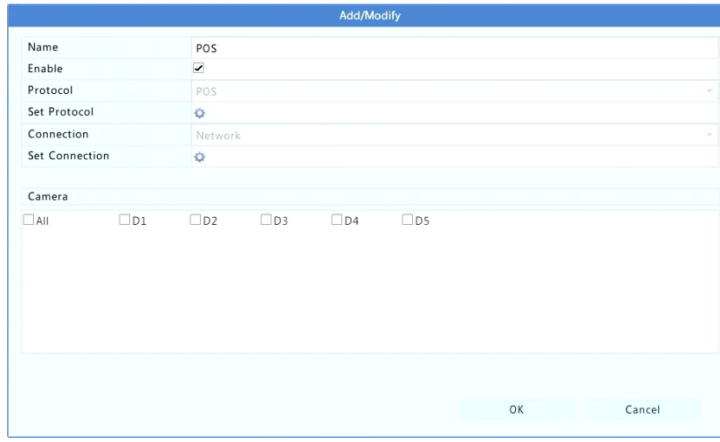
This function is intended for the scenario such as in a café or a supermarket where the NVR is connected to a POS machine. When configured properly, the NVR obtains data from the POS machine and displays information in form of text with video images on the monitor.

Only certain NVR models support this function.

1. Click **System** > **Transaction**.
2. Click **Add** and then complete settings in the window displayed.

NOTE!

- The name entered should be unique.
- The start identifier, end identifier, and line delimiter should be hexadecimal characters. The ignore characters are character strings that cannot be displayed.
- The source address is the IP address of the POS machine, and the destination address is that of a settlement center that receives POS data. An empty destination address means it is necessary for the NVR to forward POS data.



3. Set POS OSD under **System** > **Transaction**, including the position, font and color of POS information displayed on the screen.

Serial Port Configuration

Only certain NVR models support this function.

Serial port settings in the NVR should be consistent with those in the connected serial device. Serial port configuration is required for PTZ control.

1. Click **System** > **Serial**.
2. Configure the parameters for the serial port.

NOTE!

You may set **Port Usage** to **Keyboard** to control a PTZ camera with a specialized surveillance keyboard.

3. Click **Apply** to save the settings.

User Configuration

Add, delete users or edit user permissions. Only admin can perform these operations.

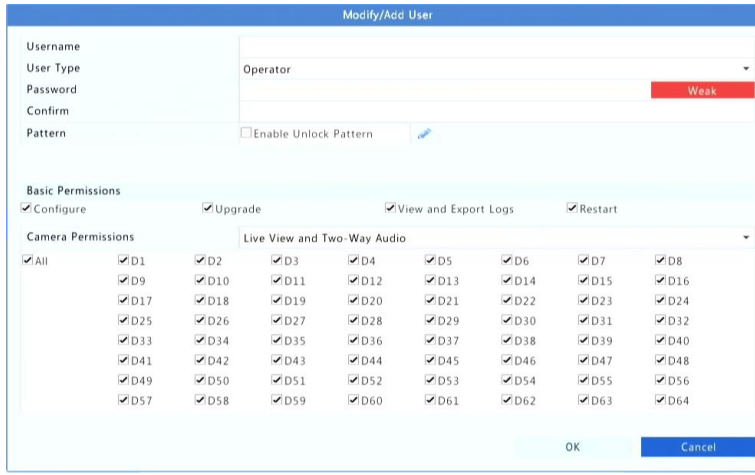
A user type is a set of permissions in the system. When a user type is assigned to a user, this user has all the permissions specified for the user type.

There are four user types in the system:

- Admin: Default super administrator in the system, has full system access. Its initial password is **123456**.
- Default: Default user reserved in the system, cannot be created or deleted, and only has access to live view and two-way audio. If the default user is denied access, the corresponding channel is locked when no user is logged in, and appears in the window.
- Operator: Has basic permissions and access to cameras.
- Guest: Only has access to cameras by default.

1. Click **System** > **User**.

2. To add a user, click **Add**, and then set the username and password, select user type, permissions and whether to enable unlock pattern as needed. Click **OK** to save the settings.



3. To edit or delete a user, click or as needed. If you change the password for a user, the new password takes effect at the user's next login.

Security Configuration

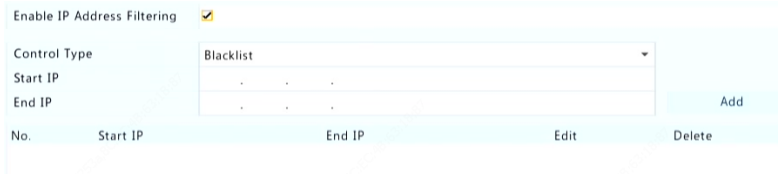
IP Address Filtering

Use this function to enhance security by allowing or forbidding access to the NVR from specified IP addresses.

1. Click **System** > **Security** > **IP Address Filtering**.
2. Select **Enable IP Address Filtering**, select **Blacklist** or **Whitelist** from the drop-down list, set the start and end IP addresses, and then click **Add**.

NOTE!

- If **Blacklist** is selected, the NVR denies remote access from the IP address(es) on the list.
- If **Whitelist** is selected, the NVR only allows remote access from the IP address(es) on the list. However, if **Whitelist** is selected with no IP address specified, remote access to the NVR will be denied.

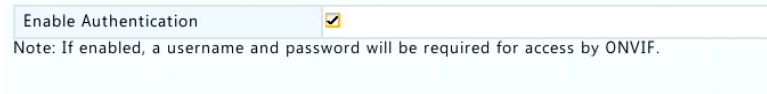


3. Click **Apply** to save the settings.

ONVIF Authentication

Enable ONVIF authentication under **System** > **Security** > **ONVIF Auth** so a username and password will be required for ONVIF-based device access.

Select the check box and then click **Apply**.

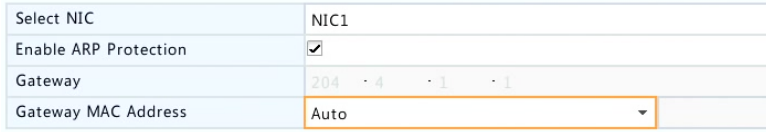


ARP Protection

ARP protocol is used to associate an IP address to a hardware MAC address. ARP attacks mainly occur on LAN, in which attackers use forged IP and MAC addresses. APR protection prevents this kind of attacks by verifying the gateway's MAC address in all access requests.

Note that changing the NIC working mode will disable ARP protection automatically.

1. Click **System** > **Security** > **ARP Protection**.



2. Select the desired NIC and then select **Enable ARP Protection**.
3. Obtain the gateway's MAC address automatically, or select **Custom** and input the MAC address.
4. Click **Apply** to save the settings.

802.1x

802.1x is a port-based network access control protocol mainly used to solve authentication and security issues on LAN.

Only certain NVR models support this function. Note that changing the NIC working mode will disable 802.1x automatically.

1. Click **System** > **Security** > **802.1x**.
2. Select the desired NIC and select the check box to enable 802.1x.
3. Select the EAPOL version, and then enter the username and password of the authentication server.
4. Click **Apply** to save the settings.

Video Watermark

Encrypt custom information in videos to prevent unauthorized alteration.

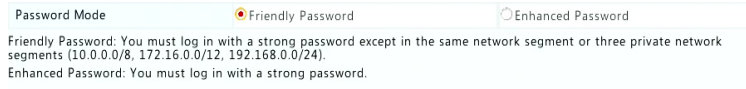
1. Click **System** > **Security**.

2. Select the desired camera and then select **Enable Watermark**.
3. Enter watermark content.
4. Click **Apply** to save the settings.

Secure Password

Secure password specifies the permission of strong or weak password in different modes: friendly password and enhanced password.

1. Click **System** > **Security**.



2. Friendly password is enabled by default. You may enable **Enhanced Password** as needed.

- Friendly Password

If this option is selected, a strong password must be used except when login from the same network segment or one of the three private network segments (10.0.0.0/8, 172.16.0.0/12, 192.168.0.0/24).

- Enhanced Password

If this option is selected, a prompt for a strong password will appear when a weak password is detected. Also, only strong passwords are allowed for new users.

NOTE!

Only admin can configure secure password.

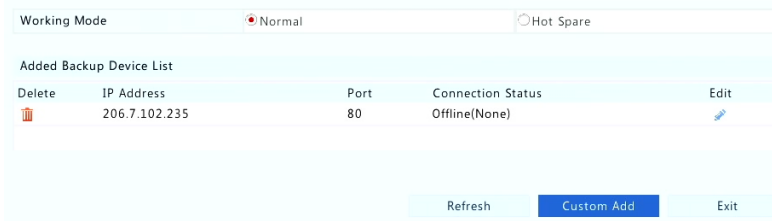
3. Click **Apply** to save the settings.

Hot Spare Configuration

Only certain NVR models support this function.

With hot spare configured, when the working device fails, the hot spare takes over service of the working data. When the working device restores normal status, it takes over service from the hot spare, and data saved to the hot spare during the period of failure is transferred back to the working device to ensure reliable and consistent data storage.

1. Click **System** > **Hot Spare**.
2. Select a working mode, **Normal** (default mode) for working device, or **Hot Spare** for hot spare device.



Normal

You must add a hot spare device after choosing this mode; otherwise, hot spare does not take effect. Click **Custom Add** and then enter device information, including IP address, port number and password. The username is fixed to admin. Click **Add**.

Hot Spare

Select **Hot Spare**, and the current device will be a hot spare for other working devices. All the working devices that the current hot spare serves are listed.

NOTE!

- After the working mode is changed, the NVR will restart with some parameters and settings changed.
- For a working device that switches to a hot spare, some of its functions will be unavailable, and some settings will be reset to defaults.
- If multiple working device fail at the same time with only one hot spare device available, one working device gets backup at a time.

13 System Maintenance

System Information

Click **Maintain** > **System Info** to view the basic NVR information for maintenance purpose.

System Info

View the basic information such as the device model, serial number, firmware version, build date and operation time.

Basic Info	
Product Model	NVR
Serial Number	
Firmware Version	
Build Date	2016-11-09
Operation Time	0 Day(s) 0 Hour(s) 48 Minute(s)

Camera status

Click the **Camera** tab to view camera status (online or offline with possible offline cause) and status of alarm functions such as motion detection, tampering and video loss. Off means disabled, and on means enabled.

Camera	Name	Status	Motion	Tampering
D1	IP Camera 01	Offline(Network Disconnected)	Off	Off
D2	IP Camera 02	Offline(Network Disconnected)	Off	Off
D3	IP Camera 03	Offline(Network Disconnected)	Off	Off
D4	IP Camera 04	Offline(Network Disconnected)	Off	Off
D5	IP Camera 05	Offline(Network Disconnected)	Off	Off
D6	IP Camera 06	Offline(Network Disconnected)	Off	Off

Recording status

Click the **Recording** tab to view recording status and stream settings.

Camera	Name	Type	Status	Diagnosis	Stream Type	fps
D1	IP Camera 01	None	No Recording	Camera Offline	None	0
D2	IP Camera 02	None	No Recording	Camera Offline	None	0
D3	IP Camera 03	None	No Recording	Camera Offline	None	0
D4	IP Camera 04	None	No Recording	Camera Offline	None	0
D5	IP Camera 05	None	No Recording	Camera Offline	None	0
D6	IP Camera 06	None	No Recording	Camera Offline	None	0
D7	IP Camera 07	None	No Recording	Camera Offline	None	0
D8	IP Camera 08	None	No Recording	Camera Offline	None	0
D9	IP Camera 09	None	No Recording	Camera Offline	None	0
D10	IP Camera 10	Normal	Ongoing	Normal	Main Stream	25

Online user

Click the **Online User** tab for information about users who are currently logged in.

No.	Username	IP Address	Login Time
1	admin	127.0.0.1	2016-04-13 23:03:55

Disk status

Click the **Disk** tab to view the hard disk status and disk properties.

Disk No.	Total(GB)	Free(GB)	Status	Vendor	Property
1	0.00	0.00	No Disk		
2	1863.02	0.00	Normal	SEAGATE	Read/Write

Total Capacity(GB)	1863.02
Free Space(GB)	0.00

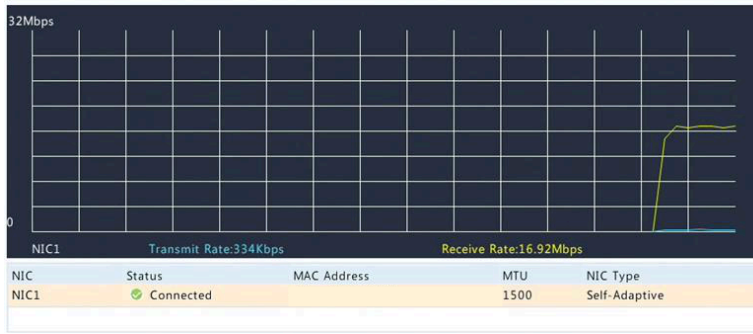
Decoding card status

Click the **Slot Status** tab to view the decoding card status. This function is available to certain NVR models only.

Network Information

Traffic

Click **Maintain** > **Network Info** > **Traffic** to view network traffic information.



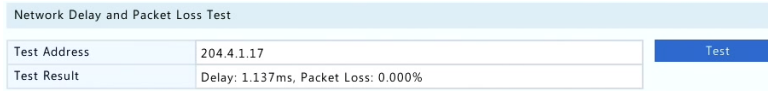
Network Detection

Click **Maintain** > **Network Info** > **Net Detect**.

To test network delay and packet loss rate, enter the test address and then click **Test**.

NOTE!

The test packet size is 3000 bytes by default and can be changed as needed.



To capture and save packets, select the USB storage device, specify the port number and IP address, and then click right to the desired NIC. The captured packets are saved as a backup file in the root directory of the USB storage device. You may click **Open** to view the file.

NOTE!

- The packet size is 1520 byes by default and can be changed as needed.
- The backup file of the captured packets is named in *NIC name_time*.pcap format.
- Packets cannot be captured if it is already started on the Web interface.
- If you use PPPoE, a virtual NIC will appear in the list after the dial-up succeeds, and you may capture packets sent to and from this NIC.

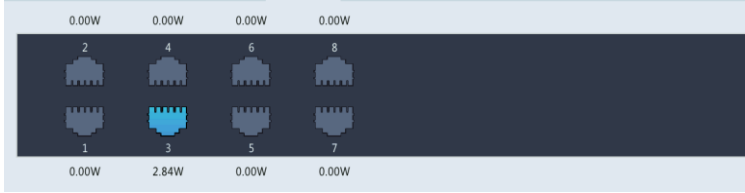
Network Settings

Click **Maintain** > **Network Info** > **Network** to view network settings.

PoE/Network Port Status

Only certain NVR models support this function.

Click **System** > **Network Info** to view port status. In the figure below, the blue port is in use. For PoE models, power information will be displayed.



Network Statistics

Click **Maintain** > **Network Info** > **Network Statistics**. Bandwidth usage statistics are displayed.

Type	Bandwidth
IP Camera	15Mbps
Remote Live View	0bps
Remote Playback	0bps
Idle Receive Bandwidth	145Mbps
Idle Send Bandwidth	96Mbps

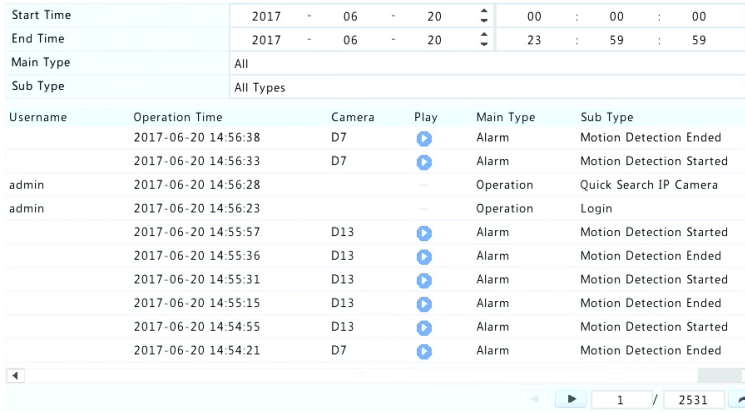
NOTE!

- Insufficient receiving bandwidth (**Idle Receive Bandwidth**) may cause the connected cameras to be offline.
- When the sending bandwidth (**Idle Send Bandwidth**) is insufficient, remote live view, playback or download may fail on the NVR.

Log Query

Logs contain information about user-performed operations and device status. By analyzing logs, you can keep track of device operation status and view detailed alarm information.

1. Click **Maintain** > **Log**.
2. Set query conditions, including the start and end times, main type and sub type.
3. Click **Query**.



4. If is displayed under **Play**, you may click to view the recording that started one minute before the alarm time and ended

ten minutes after the alarm time. — means this functions is not available.

5. To export logs to an external storage device, click **Export**, set the export destination and format, and then click **Backup**.

Import/Export

System Import/Export

Configurations and diagnosis information can be exported to a storage device and saved as files for backup. A configuration file can also be imported to the NVR to restore configurations. The configuration file of an NVR can be imported to multiple NVRs of the same model if you want them to have the same settings. If the imported configuration file contains camera information, the related camera will be added to all the NVRs.

Only admin can perform these operations.

1. Click **Maintain** > **Import/Export**.
2. To export device configurations, specify the destination directory and then click **Export**. A .xml file will be created in the specified directory when export is completed.
3. To import device configurations, double-click the target folder containing the .xml file, select the file, and then click **Import**.

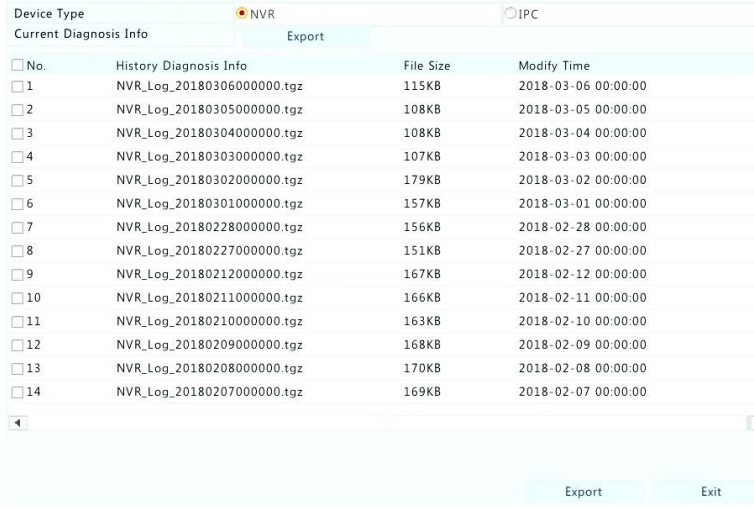
CAUTION!

Delete files with caution. Deleted files cannot be recovered.

Diagnosis Info

The device can save diagnosis info for 14 days and will overwrite the oldest when space is full.

1. Click **Maintain** > **History Diagnosis Info**.



2. Select a device type:

- NVR: For NVR, history diagnosis info is generated at 00:00 every day. To export history diagnosis info, click **Export** at the bottom. To export current diagnosis info, click **Export** right to **Current Diagnosis Info**.
- IPC: For IPC, history diagnosis info is generated at 00:05 every day. Select channels and then click **Export** at the bottom. To export current diagnosis info, click **Export** right to **Current Diagnosis Info**.

NOTE!

For IPC, diagnosis info is recorded based on channel, which means, if an IPC is added to multiple channels, all the channels will record diagnosis info for the IPC.

System Restoration

Use this function to restore some or all factory default settings. The NVR will restart automatically to complete this operation. Recordings and operation logs will not be deleted.

1. Click **Maintain** > **Restore**.
2. Click **Default** to restore factory default settings except network and user settings, or click **Factory Default** to restore all factory default settings.

Automatic Maintenance

Set the NVR to restart as scheduled and delete files (including recordings and snapshots) as needed. Only admin can perform this operation.

1. Click **Maintain** > **Auto-Function**.
2. Set an auto-restart time, and choose a way to delete files automatically.

CAUTION!

Files deleted automatically cannot be recovered.

System Upgrade

Upgrade the NVR under **Maintain** > **Upgrade** locally (using an upgrade file saved in a USB storage device) or by cloud (through a cloud server).

To upgrade by cloud, ensure that the NVR is connected to a fully functional DNS server (configured under **System** > **Network** > **Basic**), and click **Check** to see whether a newer version is available. The time that a cloud upgrade takes is affected by network connection status.

CAUTION!

- Make sure power is not interrupted during upgrade. A power failure during system upgrade may cause startup failure. Use an Uninterrupted Power Supply (UPS) if necessary.
- Ensure network connectivity for a cloud upgrade.

14 Shutdown

Click **Shutdown** to log out, restart or shut down as needed. To shut down the NVR, you may also long-press the power button on the front panel (if available) for around three seconds till an on-screen message appears, and then click **Yes**.

CAUTION!

Unsaved settings will be lost if the NVR is shut down unexpectedly, for example, due to a power failure. An incorrect shutdown during a system upgrade may cause startup failures.

Part II Web-Based Operations

1 Before You Begin

You may access and manage your NVR remotely using a web browser on a PC (through the Web interface). Check the following before you begin:

- Access will be authenticated during login, and operation permissions will be required.
- The PC is operating properly and has a network connection to the NVR.
- The PC uses the Windows XP, Windows 7 or Windows 8 operating system.
- A Web browser has been installed on the PC. Microsoft Internet Explorer 8.0 or higher is recommended. Firefox, Chrome and Opera browsers are also supported.
- A 32-bit Web browser is still required even if you are using a 64-bit operating system.

NOTE!

- The parameters that are grayed out on the Web GUI cannot be modified. The parameters and values displayed may vary with NVR model.
- The figures are for illustration purpose only and may vary with NVR model.

2 Login

1. Open a Web browser on your PC and browse to the login page by entering the IP address (**192.168.1.30** by default) of your NVR.

   You may need to install a plug-in as prompted at your first login. Close the Web browser when the installation starts.

2. In the login dialog box, enter the correct username and password (**123456** for admin) and then click **Login**.

CAUTION!

The default password is intended only for your first login. We strongly recommend you set a strong password to ensure account security.

- Strong: contains at least 8 characters from at least three of the four types: upper-case letter, lower-case letter, special character, digit.
- Medium: contains at least 8 characters from two of the four types: upper-case letter, lower-case letter, special character, digit.
- Weak: contains less than 8 characters from only one of the four types: upper-case letter, lower-case letter, special character, digit.

3 Live View

The **Live View** page is displayed when you are logged in. The following figure shows an example.

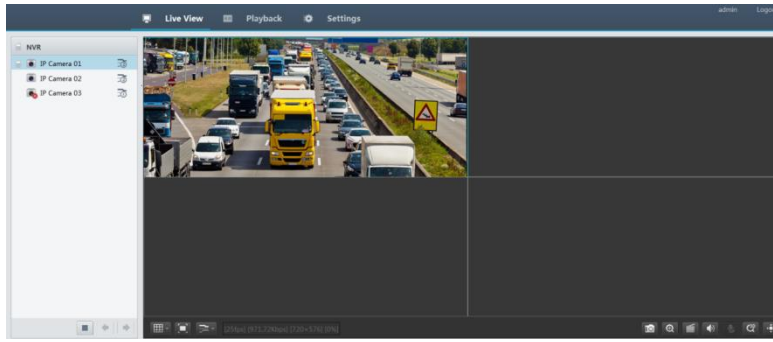
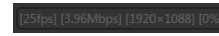


Table 3-1 Live View Window Control Buttons

Button	Description	Button	Description
	Two-way audio	/	Main/Sub stream
/	Start or stop live view in all windows	/	Previous and next screen

Button	Description	Button	Description
	Switch screen layout		Full screen
	Select stream type		Shows the current frame rate, bit rate, resolution, and packet loss rate
	Take a snapshot		Start zoom
	Local recording		Turn on or off audio; adjust sound volume.
	Adjust MIC volume		3D positioning
	Open or close the control panel	–	–

NOTE!

- The icon means two-way audio is available. Click to start two-way audio with the NVR or a camera (depending on where the icon is displayed).
- Only the main stream is displayed when the camera is offline or it supports only one stream.
- A snapshot file is named in this format: *IP_camera ID_snapshot time*. The snapshot time is in *YYYYMMDDHHMMSSMS* format.
- By default, snapshots are saved in this directory: C:\Users*username*\Surveillance\Snap*system date*. The system date is in *yyyy-mm-dd* format.
- A local recording is named in this format: *IP_camera ID_*S *recording start time* E *recording end time*. The recording start and end times are in *hh-mm-ss* format.
- By default, local recordings are saved in this directory: C:\Users*username*\Surveillance\Record*system date*. The system date is in *yyyy-mm-dd* format.

4 Playback

Click **Playback** on the top to show the **Playback** page. The following figure shows an example.

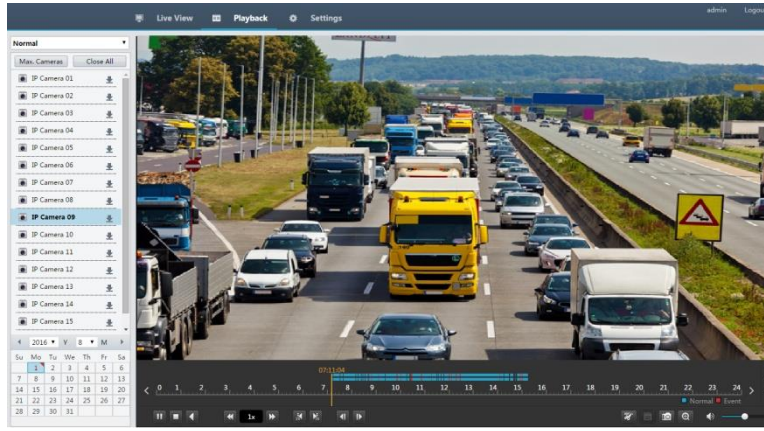


Table 4-1 Playback Control Buttons

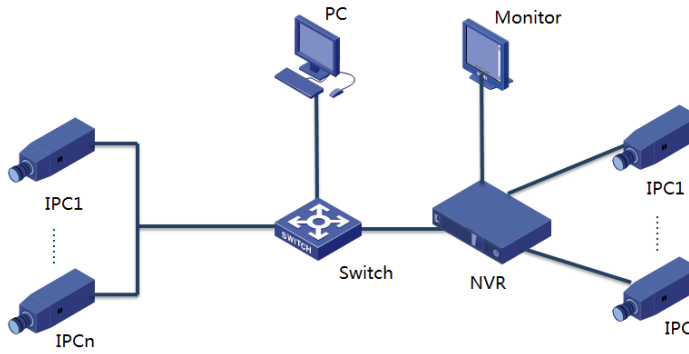
Button	Description	Button	Description
	Play/Pause		Stop
	Reverse		Slow down or speed up
	Rewind or forward 30 seconds		Rewind or forward by frame
	Previous or next period		Clip video/pause
	Save video clip		Take a snapshot
	Zoom		Adjust sound volume; turn on or off sound

5 Configuration

Click **Setup** on the top, and then click the menus on the left to configure parameters.

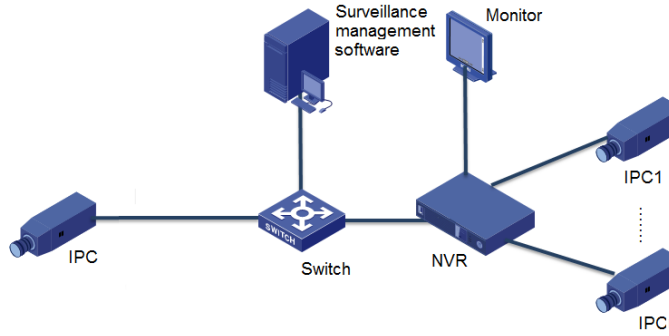
Appendix A Typical Applications

Typical Application 1



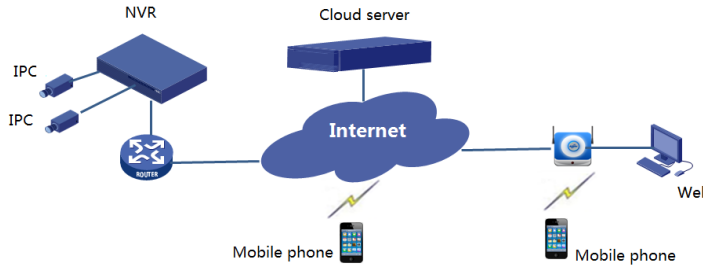
The NVR, IP cameras, and PC are connected on a private network (or LAN). The IP cameras can be connected to the NVR directly or via a switch. And you manage the NVR and the connected IP cameras through the monitor or using a web browser on the PC.

Typical Application 2



The NVR, IP cameras, and PC are connected on a private network (or LAN). The IP cameras can be connected to the NVR directly or via a switch. The PC is installed with surveillance management software. You can manage the NVR and the connected IP cameras using the surveillance software or through the monitor.

Typical Application 3



The NVR and the connected IP cameras are located on a private network (or LAN), and you manage these devices through the cloud server, a cloud solution for device management over Internet. After registering a cloud account and properly configuring your network devices (including router), you can manage your NVR and the connected IP cameras from a PC or a mobile phone using GuardViewer.

Appendix B Acronyms

Acronym	Description
CBR	Constant Bit Rate
DDNS	Dynamic Domain Name Service
DHCP	Dynamic Host Configuration Protocol
DST	Daylight Saving Time
DVS	Digital Video Server
FTP	File Transfer Protocol

Acronym	Description
HDMI	High Definition Multimedia Interface
HTTPS	Hypertext Transfer Protocol Over Secure Sockets Layer
IPC	IP Camera
JPEG	Joint Photographic Experts Group
MTU	Maximum Transfer Unit
NAT	Network Address Translation
NIC	Network Interface Card
NTP	Network Time Protocol
NVR	Network Video Recorder
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
PPPoE	Point-to-Point Protocol over Ethernet
PTZ	Pan, Tilt, Zoom
P2P	Peer-to-Peer
RAID	Redundant Arrays of Independent Disks
RTSP	Real-Time Streaming Protocol
SDK	Software Development Kit
S.M.A.R.T.	Self-Monitoring, Analysis and Reporting Technology
UPnP	Universal Plug-and-Play
USB	Universal Serial Bus
VGA	Video Graphics Array
VBR	Variable Bit Rate

Appendix C FAQs

Problem	Possible Cause and Solution
Forgot the login password	Double-click the lower left corner of the login dialog box as admin. A dialog box appears. • Note down the serial number and then contact your dealer for a temporary password. Log in with the temporary password and then reset your password. • Use the GuardViewer app to scan the QR code (**Settings** > **Forgot Device Password**).
The Web plugin (ActiveX) cannot be loaded.	• Close your web browser when the installation starts. • Disable the firewall and close the anti-virus program on your computer. • Enable your Internet Explorer (IE) to check for newer versions of the stored pages every time you visit the webpage (**Tools** > **Internet Options** > **General** > **Settings**). • Add your NVR's IP address to the trusted sites in your IE (**Tools** > **Internet Options** > **Security**). • Add your NVR's IP address to the Compatibility View list in your IE (**Tools** > **Compatibility View Settings**). • Clear your IE's cache.

Problem	Possible Cause and Solution
No images are displayed in live view on the Web interface.	Check if the bit rate is 0Mbps in the live view window. • If yes, check if the firewall has been disabled, and the anti-virus program has been stopped on your computer. • If not, maybe it is because the graphics card driver on your computer is not working properly. Try installing the driver again.
A camera is offline, and **No Link** is displayed.	Click **Maintain** > **System Info** > **Camera**. The cause is displayed under **Status**. Common causes include disconnected network, incorrect username or password, weak password, insufficient bandwidth. • Check network connection and network configurations. • If it indicates incorrect username or password, check that the camera password set in the NVR is the one used to access the camera's Web interface. • If it indicates denied access for weak password, log in to the camera's Web interface and set a strong password. • If it indicates insufficient bandwidth, delete other online IP devices in the NVR.
The NVR displays live video for some cameras and **No Resource** for others.	• Set the camera to encode the sub stream, and decrease its resolution to D1. • Set the NVR to use the sub stream first for live view.
A camera goes online and offline repeatedly.	• Check if network connection is stable. • Upgrade the firmware for the camera and the NVR. Contact your dealer for the latest versions.

Problem	Possible Cause and Solution
Live view is normal, but the recording cannot be found.	• Check that a recording schedule has been properly configured. • Check if the time and time zone configured in the NVR are correct. • Check if the hard disk storing the recording has been damaged. • Check if the desired recording has been overwritten.
Motion detection is not effective.	• Check that motion detection is enabled, and the motion detection area is properly configured. • Check that detection sensitivity is properly set. • Check that the arming schedule is properly configured.
A hard disk cannot be identified by the NVR.	• Use the power adapter delivered with your NVR. • Power down the NVR and then mount the hard disk again. • Try another disk slot. • The disk is not compatible with your NVR. Contact your dealer for a list of compatible disk models.
The mouse does not work.	• Use the mouse delivered with your NVR. • Make sure no cable is extended.