KEDACOM

User Manual for Mobile PoE NVRs

Version 01
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Contents

About This Document

Intended Audience

This document is intended for the personnel who:

- Work with the mobile Power over Ethernet (PoE) Network Video Recorders (NVRs)
- Know video surveillance basics

Document Versions

Version 01 (2019-02-26)

Compared with Version 00 (2019-01-28), Version 01 (2019-02-26) includes the changes described in the following table.

Change Type	Description
Feature change	-
Editorial change	Corrected the release month of Version 00 on the cover.

Version 00 (2019-01-28)

This is a draft.

Compatibility

The following table provides the products and NVR software version to which this document applies.

Product	SVR2420
NVR Software Version	NVR V7R2B2

Getting Started

In this document, the admin account is applied and the NVR indicates the mobile PoE NVR.

Procedure

Preparations

1. Connect a network cable to the network port on the front panel (default IP of **LAN1:** 192.168.1.100) of the NVR.

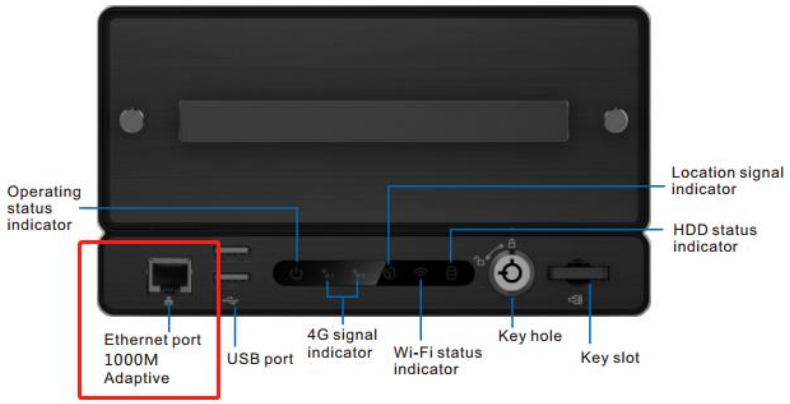
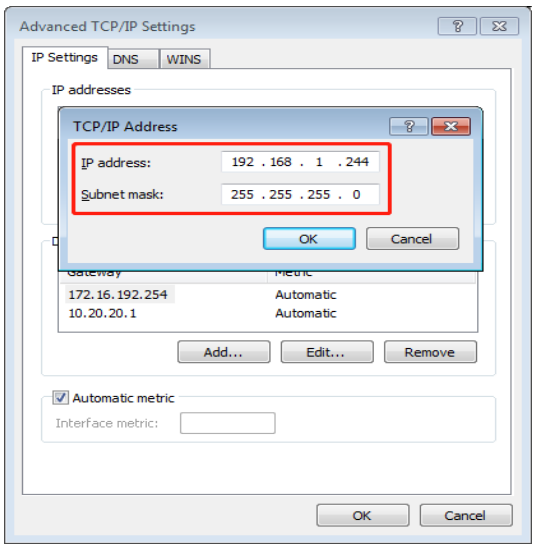
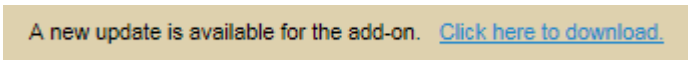


Figure 1 Front panel of the device

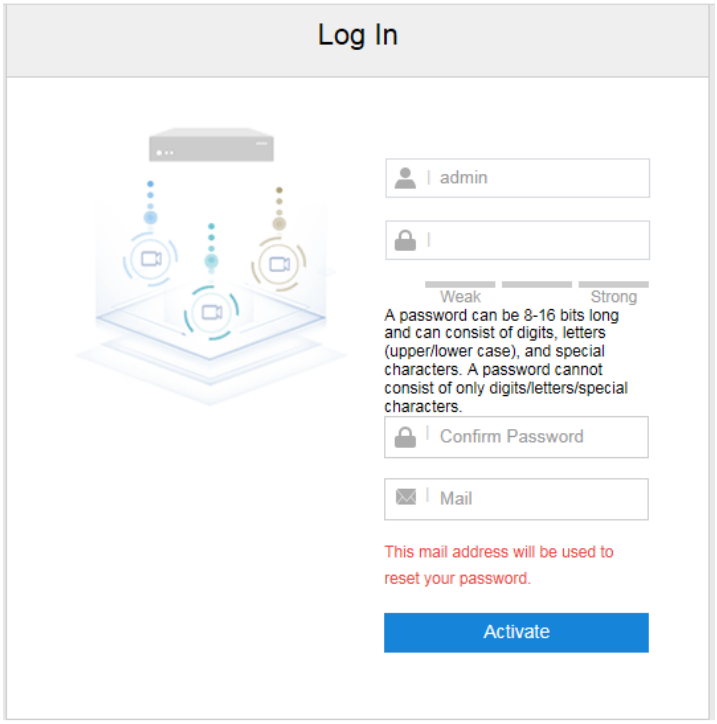
2. Add an IP address from the 192.168.1.*X* network segment with the subnet mask being 255.255.255.0 to your PC.
   The following is an example.



3. Enter the IP address (default: 192.168.1.100) of the NVR into the address bar of your web page browser.
4. In the displayed window, click **Click here to download** to install the NVR web add-on.



5. Close your web page browser.
6. Repeat step 2 after the add-on is installed.
7. In the **Log In** dialog box, create a strong password, confirm the password, and enter a mail address for password resetting.



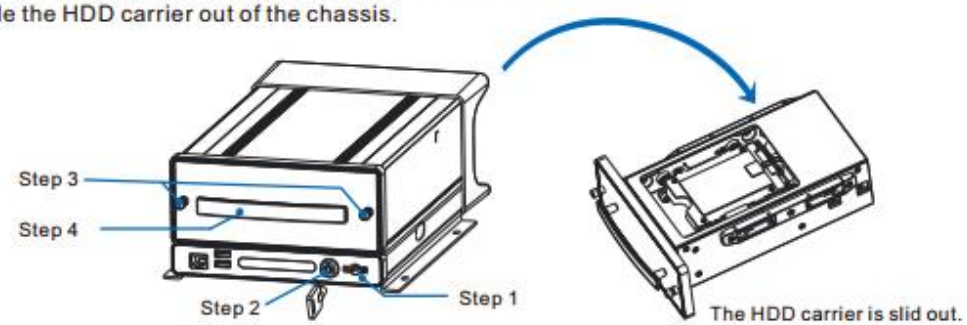
The more a password contains special characters, the stronger the password is. You are advised to use a strong password to ensure your data safety. Periodically changing your password at 3-month intervals would be appreciated. If your network environment is risky, you should change your password at weekly or monthly intervals. Additionally, do not leak your username and password.

Your mail box is the only access to resetting your password. Therefore, you must enter a valid and often used mail box address.

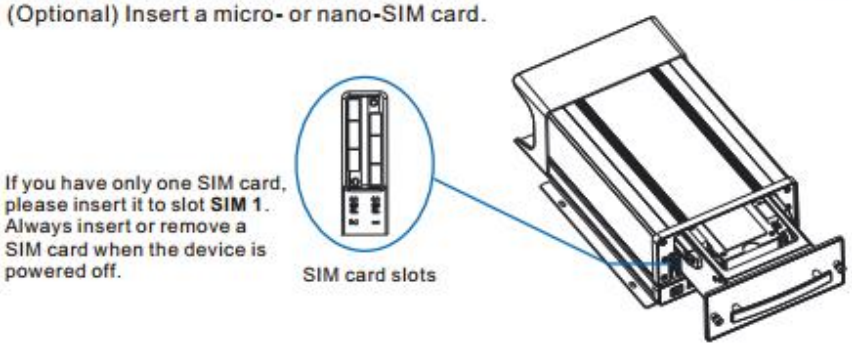
8. Click **Activate**.
9. Install an HDD.

   If the NVR comes with an HDD, this step can be skipped. Note that you must power off the NVR before installing an HDD.

1. Take out the key from the key slot.
2. Insert the key into the lock and turn the key counterclockwise to unlock the HDD carrier. After this step is performed, the beeper will go off.
3. Uninstall the two screws near the HDD carrier handle.
4. Slide the HDD carrier out of the chassis.



5. (Optional) Insert a micro- or nano-SIM card.

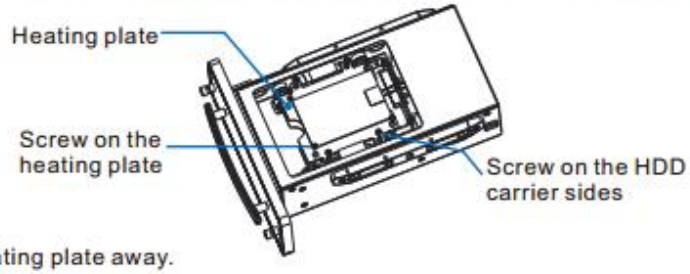


After the HDD carrier is slid out, you will find SIM card slots 1 and 2 on the left side of the chassis. You can now install a SIM card. If you do not install a SIM card, the device cannot access the mobile network.

To insert a SIM card:

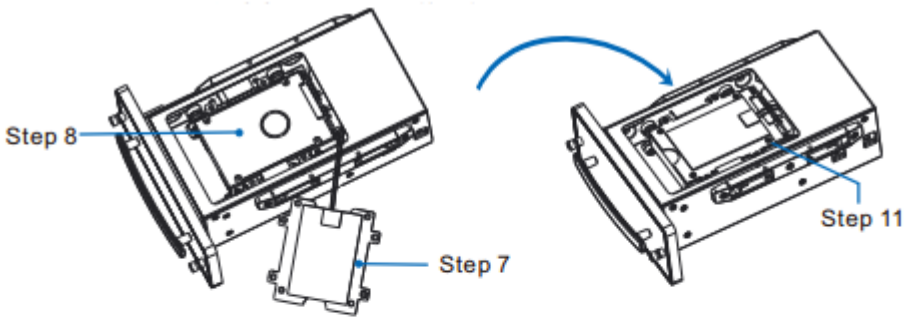
1) Insert the end of a SIM eject tool into the hole near the SIM card slot. If you do not have a SIM eject tool, you can use the end of a paper clip.
2) Press firmly and push the eject tool straight in until the SIM card tray pops out.
3) Pull out the tray and place the SIM card in it, following the shape of the tray.
4) Carefully push the tray containing the SIM card back into the SIM card slot, making the tray face the slot separation plate.

6. Uninstall the four screws on the HDD carrier sides and the four screws on the heating plate.



7. Take the heating plate away.
8. Put the HDD inside.
9. Take the heating plate back.
10. Align the eight holes on the heating plate with those on the HDD carrier sides.
11. Install the eight screws back to the HDD carrier sides and heating plate.

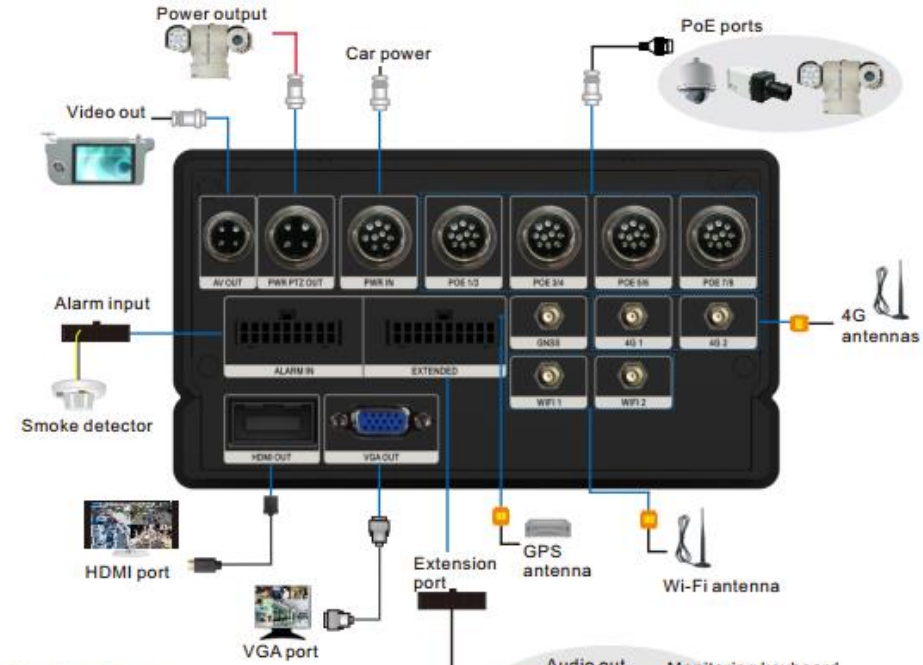
If you want to install a second HDD, turn the HDD carrier over and repeat steps 6 through 11.



12. Slide the HDD carrier back into the chassis.
13. Install the two screws near the HDD carrier handle back.
14. Turn the key clockwise to lock the HDD carrier.
15. Take the key back to the key slot.

Warning:
The device does not support hot swapping for HDDs, indicating that you must power off the device before you can install or uninstall HDDs.

10. Connect peripheral devices (such as an alarm input) to the NVR.
    If you already connect such devices to the NVR when installing it, this step can be skipped. Note that you must power off the NVR before installing a SIM card.



For alarm inputs:

- If you connect an ALARM IN cable to a GND cable, an alarm will be triggered.
- The device supports only alarm inputs requiring less than 12 V DC voltage.

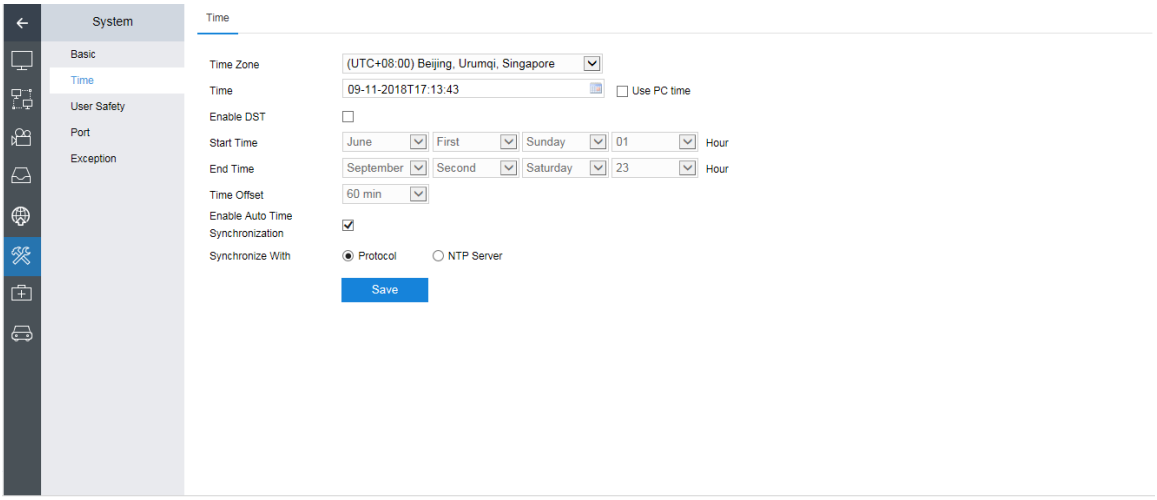
For alarm outputs, the device supports only alarm outputs requiring equal to or less than 1 A DC current.

Figure 2 Rear panel of the device

Configuring Time Settings

11. Configure the time settings.

1) Choose **Settings** > **System** > **Time**.



2) Specify parameters displayed.

The following table provides parameter descriptions.

Parameter	Description
Use PC time	If you check it, the NVR will use your PC time.
Enable DST	Whether to use the DST time. If you check it, configure the following. Enable DST Start Time: June / First / Sunday / 01 Hour End Time: September / Second / Saturday / 23 Hour Time Offset: 60 min
Enable Auto Time Synchronization	Whether to enable the automatic time synchronization function, which is enabled by default. For the **Synchronize With** parameter, the **Protocol** value indicates the time synchronization protocol applied on the platform to which the NVR registers.

3) Click **Save**.

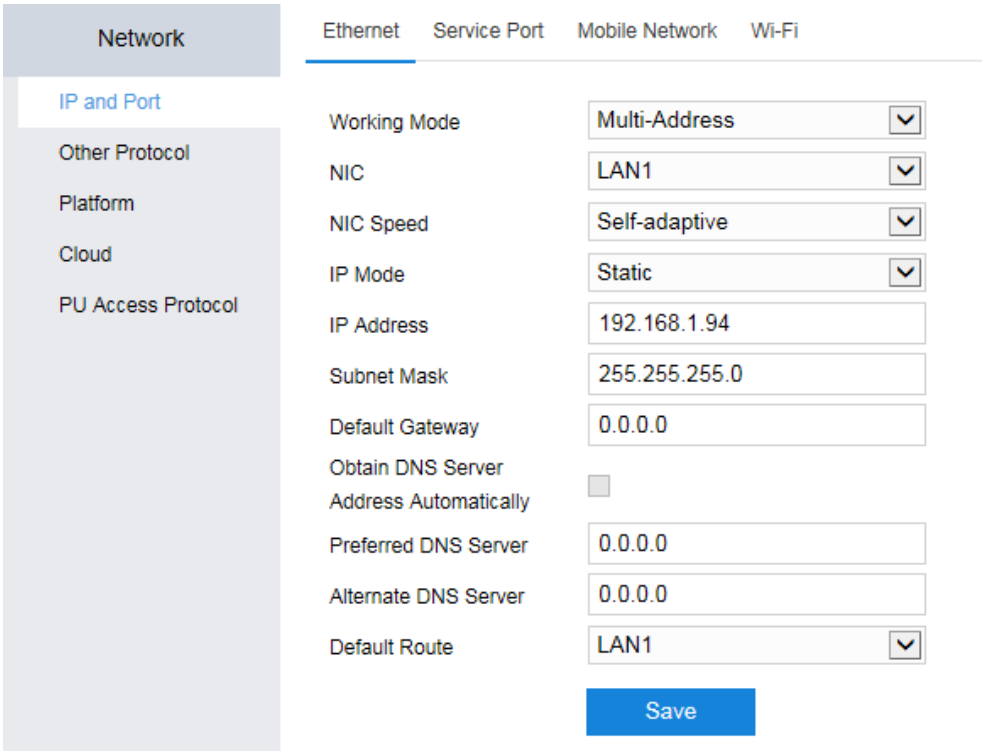
Configuring Network Settings

12. Configure the network settings.

Local Network

1) Choose **Settings** > **Network** > **IP and Port** > **Ethernet**.
2) Configure parameters displayed.

The following is an example.

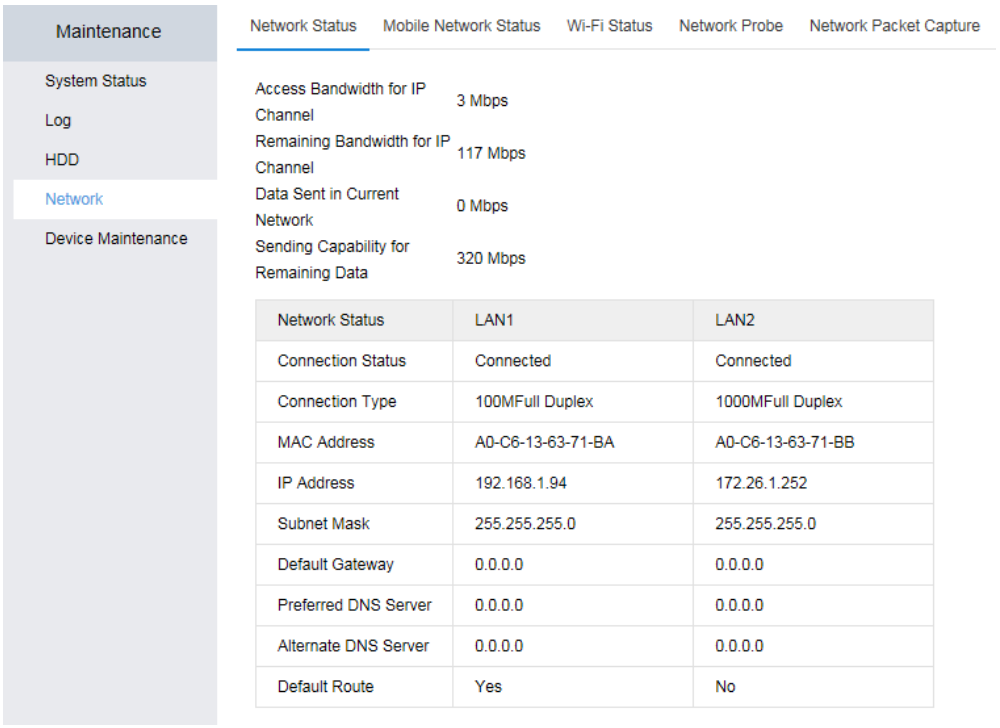


The **Obtain DNS Server Address Automatically** parameter is **unconfigurable**.

3) Click **Save**.

4) Log in again.

After the preceding steps are performed, you can choose **Settings** > **Maintenance** > **Network** > **Network Status** to query the network status.



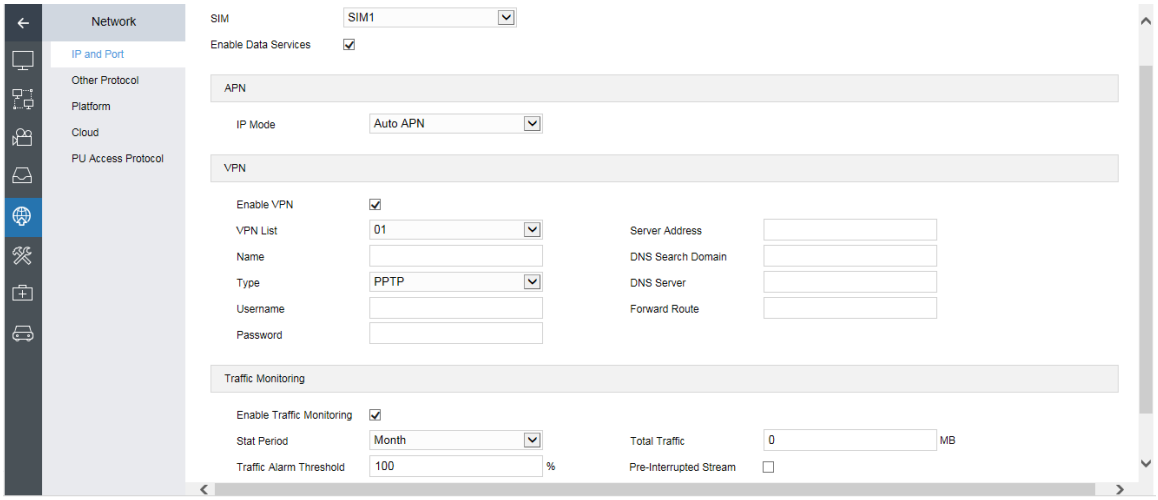
Network Status	LAN1	LAN2
Connection Status	Connected	Connected
Connection Type	100MFull Duplex	1000MFull Duplex
MAC Address	A0-C6-13-63-71-BA	A0-C6-13-63-71-BB
IP Address	192.168.1.94	172.26.1.252
Subnet Mask	255.255.255.0	255.255.255.0
Default Gateway	0.0.0.0	0.0.0.0
Preferred DNS Server	0.0.0.0	0.0.0.0
Alternate DNS Server	0.0.0.0	0.0.0.0
Default Route	Yes	No

Wireless Network

The NVR supports 3G and 4G (TDD LTE and FDD LTE) and two SIM cards can be inserted.

1) Choose **Settings** > **Network** > **IP and Port** > **Mobile Network**.

2) Configure parameters displayed.

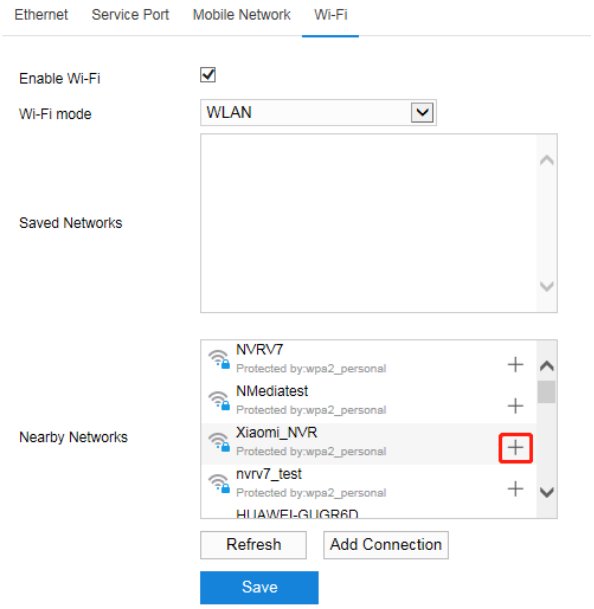


3) Click **Save**.

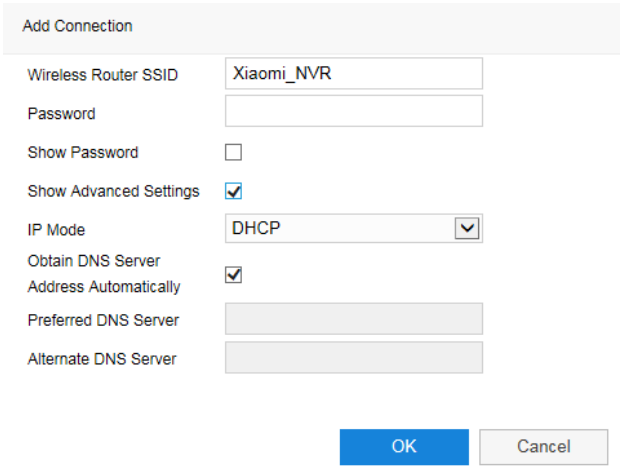
After the preceding steps are performed, you can choose **Settings** > **Maintenance** > **Network** > **Mobile Network Status** to query the SIM card status.

Wi-Fi WLAN

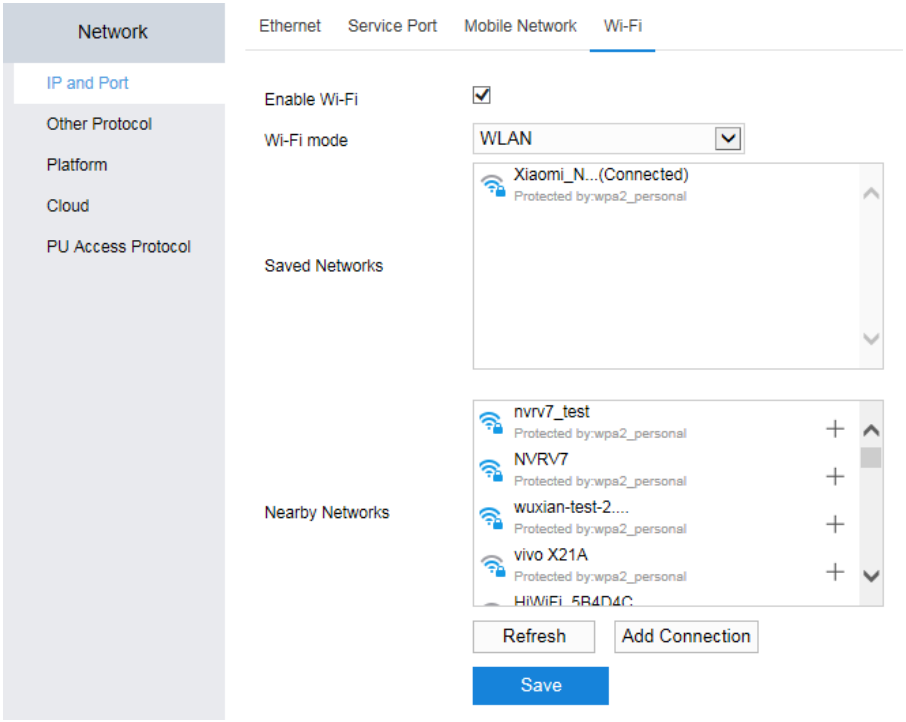
1) Choose **Settings** > **Network** > **IP and Port** > **Wi-Fi**.
2) Check **Enable Wi-Fi**.
3) Set **Wi-Fi mode** to **WLAN**.
4) Select a WLAN and click +.



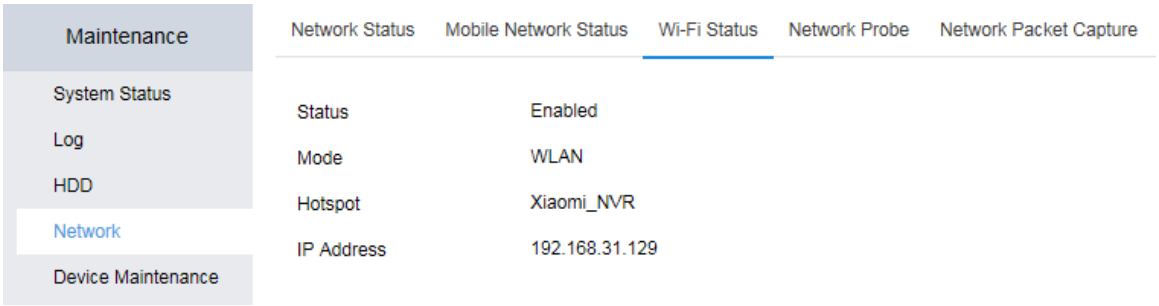
5) Enter the password and configure other parameters.



6) Click **OK**.
After this, you can find the following.



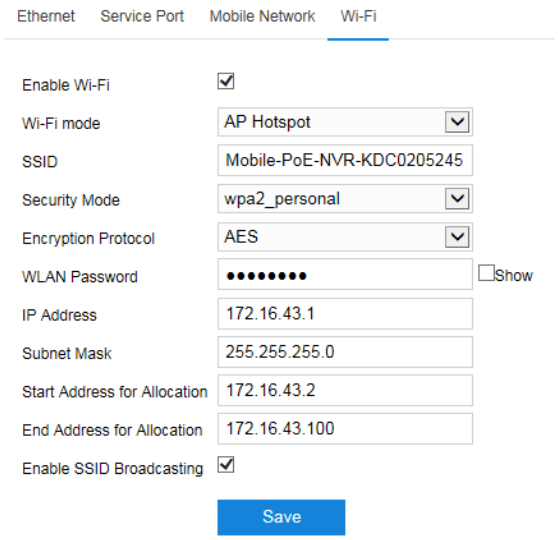
After the preceding steps are performed, you can choose **Settings** > **Maintenance** > **Network** > **Wi-Fi Status** to query the Wi-Fi WLAN status.



Wi-Fi AP

The NVR can work as a wireless router to which your mobile phone, PC, or tablet can connect. Wireless front-end devices, such as a Body Worn Camera (BWC), can also connect to the NVR through the Wi-Fi AP function.

1) Choose **Settings** > **Network** > **IP and Port** > **Wi-Fi**.
2) Check **Enable Wi-Fi**.
3) Set **Wi-Fi mode** to **AP Hotspot**.
4) Configure parameters displayed.
   The following is an example.



   The default value for **SSID** consists of the NVR model and the serial number, and that for **WLAN Password** is **888888**.
5) Click **Save**.

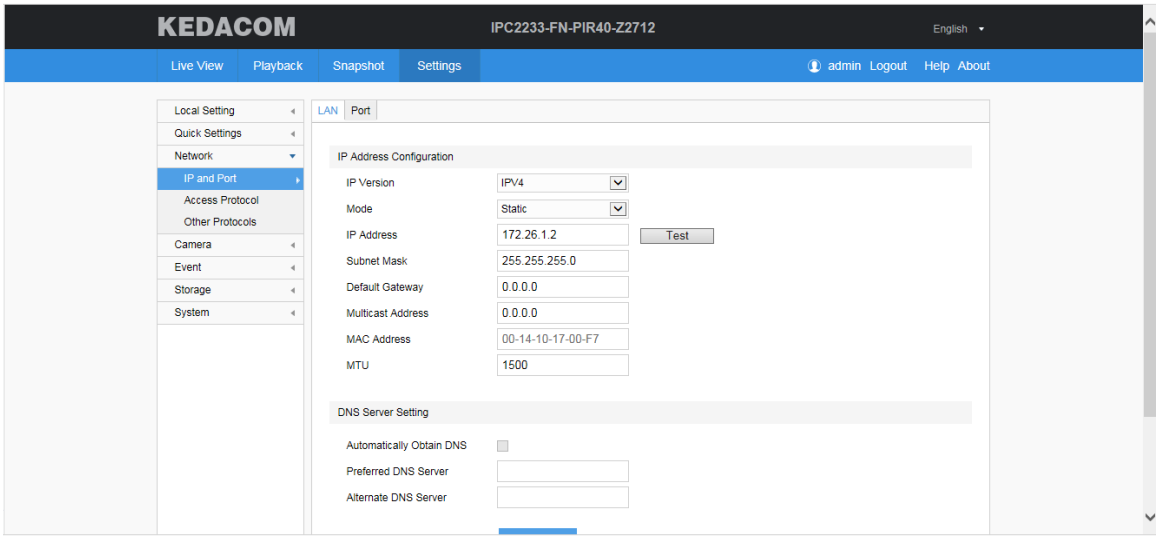
After the preceding steps are performed, you can choose **Settings** > **Maintenance** > **Network** > **Wi-Fi Status** to query the Wi-Fi AP status.

Adding Cameras

13. Add target cameras.

Method 1: PoE or ONVIF Cameras

1) Ensure that the target PoE camera is located on the same network segment (172.26.1.*X*) as the NVR (default IP of **LAN2:** 172.26.1.100) and that the target ONVIF camera is located on the same network segment (172.26.1.*X* or 192.168.1.*X*) as the NVR (default IP of **LAN1:** 192.168.1.94).
   If not, change its IP address on its web client. The following is an example.



Under **IP Address Configuration**, only the **Multicast Address** parameter is optional and the other parameters are mandatory.

2) Choose **Settings** > **Channel** > **Channel** > **Search**.

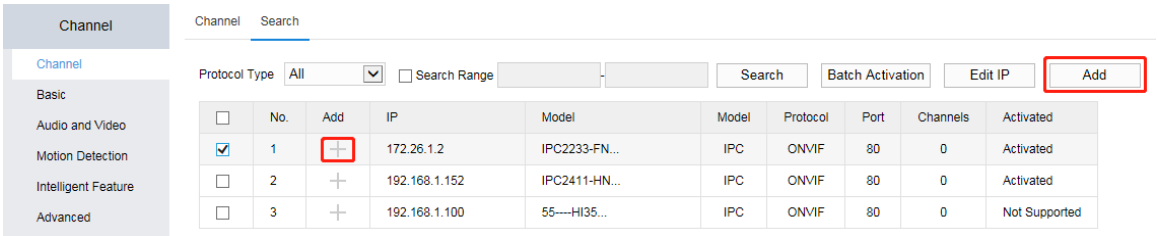
ONVIF Cameras located on the 172.26.1.*X* and 192.168.1.*X* network segments will be searched.

3) (Optional) Specify the search criteria.

The following is an example.

Note that two IP addresses entered in the two text boxes should be identical in the most significant eight bits. For example, 172.16.2.10 and 172.16.168.12.

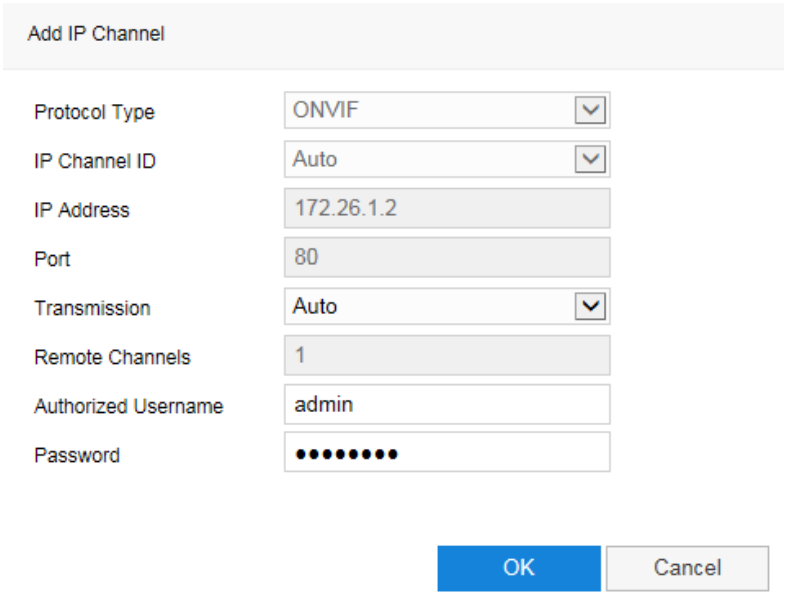
4) Select the target camera from the search results and click + or **Add**.



If you add multiple cameras at a time, you must click **Add**.

5) In the displayed dialog box, specify parameters displayed.

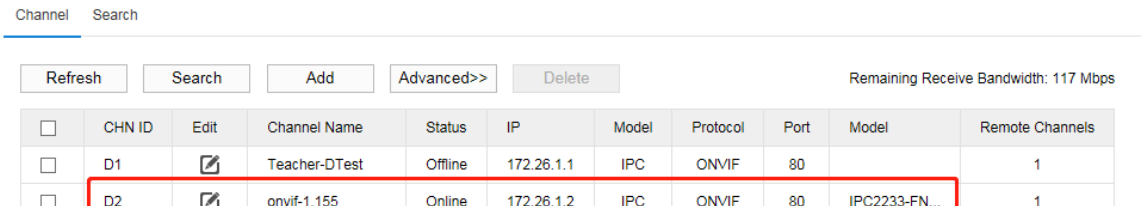
The following is an example for adding one target camera.



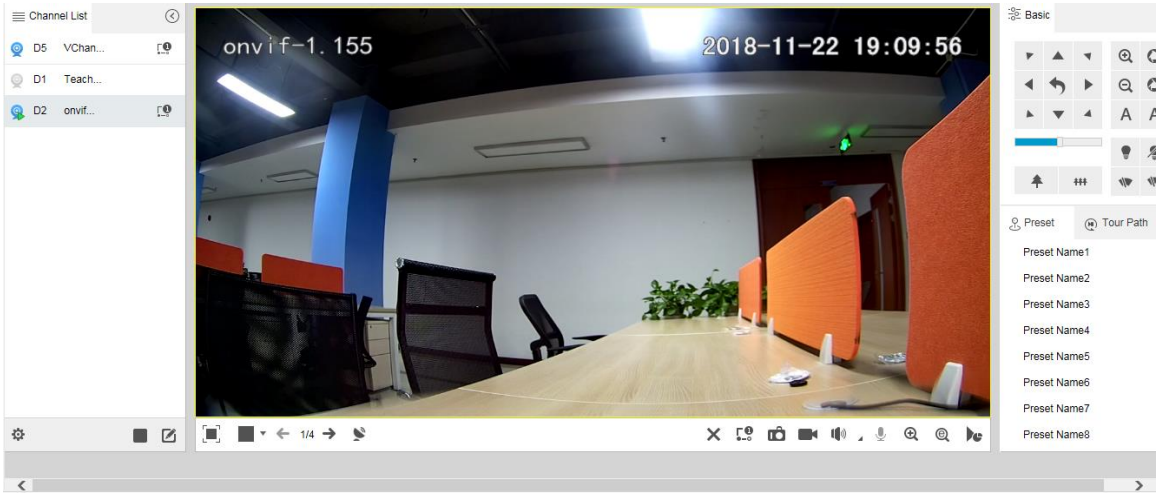
If you add multiple cameras, ensure that they use the same protocol, username, and password in advance. Otherwise, you cannot add them at a time.

6) Click **OK**.

After this, you can find the target PoE camera being online.



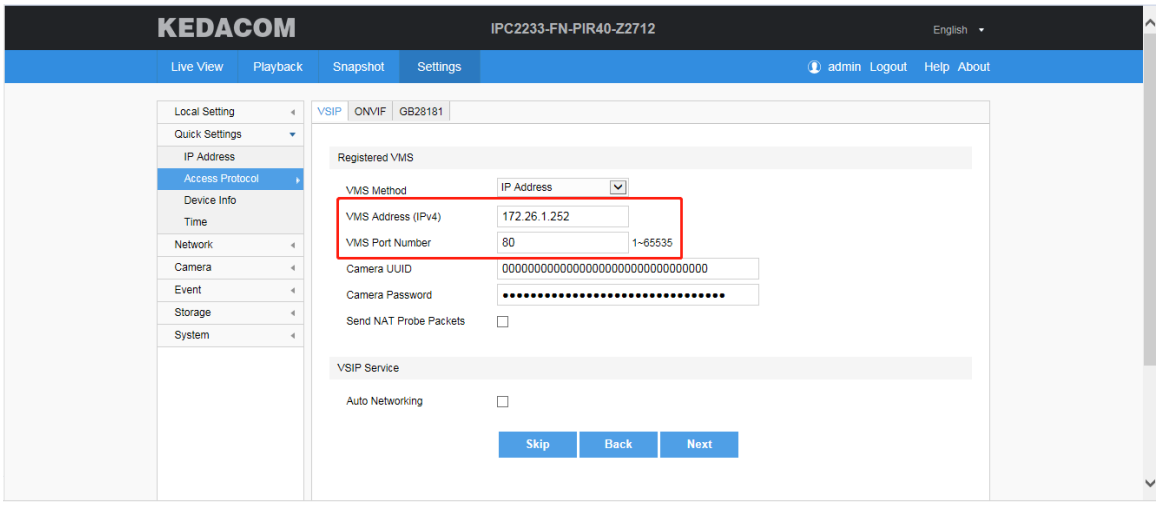
On the **Live** tab page, you can view its live videos.



Note that a wireless front-end device, such as a Body Worn Camera (BWC), is also an ONVIF camera.

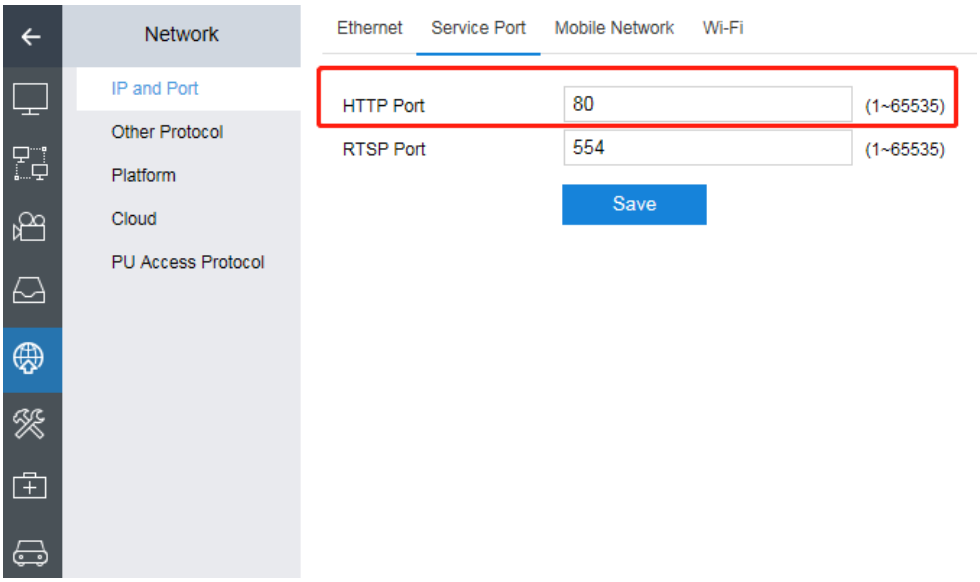
Method 2: VSIP Cameras

1) Ensure that the target VSIP camera is located on the same network segment (172.26.1.X or 192.168.1.X) as the NVR.
2) On the camera web client, choose **Settings** > **Quick Settings** > **Access Protocol** > **VISP** and configure **VMS Address (IPv4)** and **VMS Port Number**.

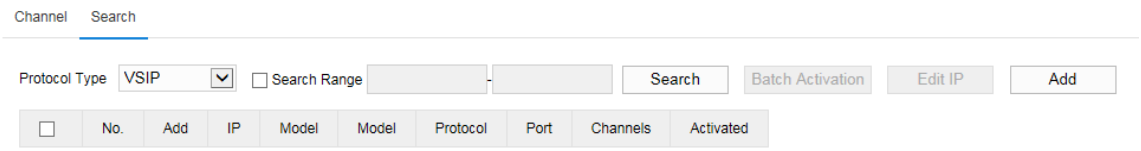


VMS Address (IPv4): NVR IP

VMS Port Number: NVR port number, which is specified by **HTTP Port**.



3) Choose **Settings** > **Channel** > **Channel** > **Search** and set **Protocol Type** to **VSIP**.



4) Click **Search**.

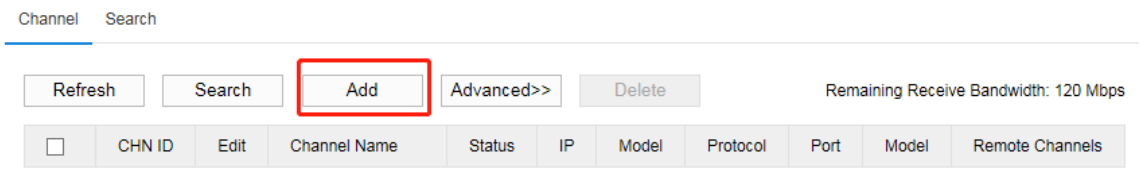
5) Select the target camera from the search results and click + (single camera) or **Add** (single or multiple cameras).

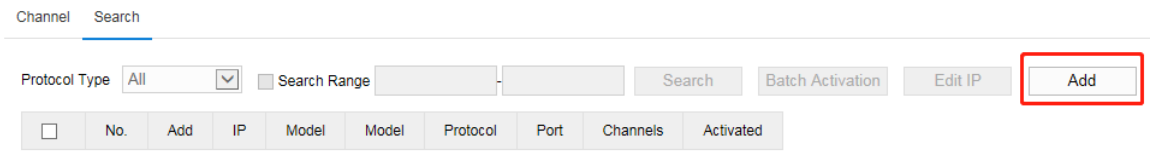
6) Click **OK**.

Method 3: RTSP Cameras

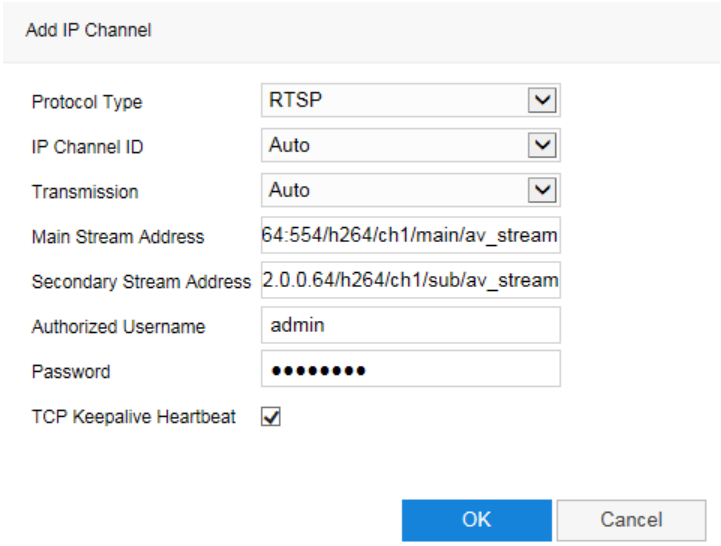
1) Ensure that the target RTSP camera is located on the same network segment (172.26.1.X or 192.168.1.X) as the NVR.

2) On the **Channel** or **Search** tab page, click **Add**.





3) In the displayed dialog box, specify parameters displayed.
The following is an example.

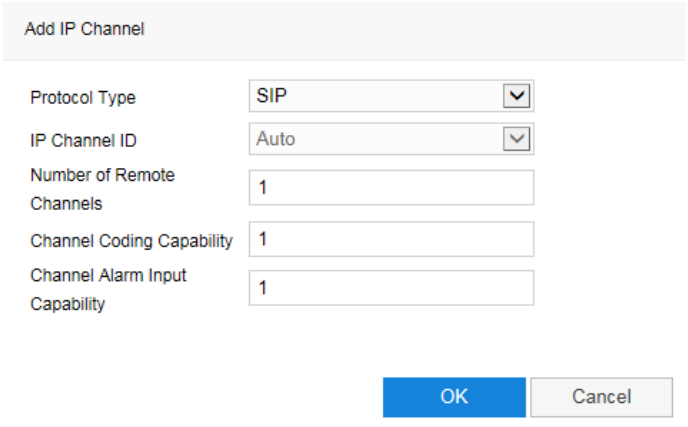


Note that the RTSP addresses (main and secondary streams) of cameras from different vendors differ.

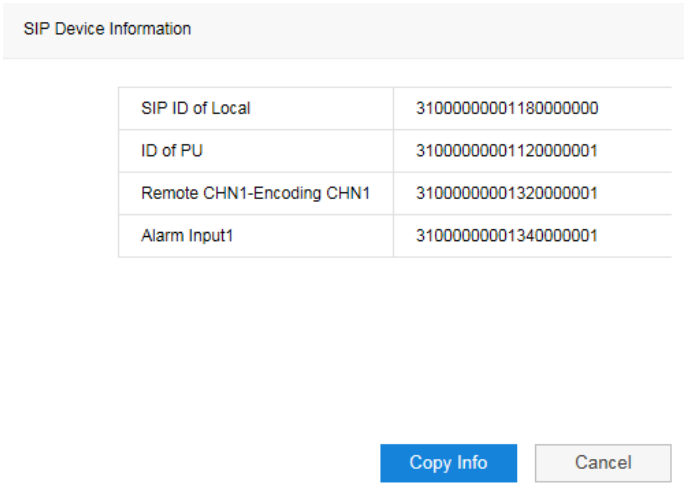
4) Click **OK**.

Method 4: SIP Cameras

1) Ensure that the target SIP camera is located on the same network segment (172.26.1.X or 192.168.1.X) as the NVR.
2) On the **Channel** or **Search** tab page, click **Add**.
3) In the displayed dialog box, set **Protocol Type** to **SIP** and specify **Number of Remote Channels**, **Channel Coding Capability**, and **Channel Alarm Input Capability**.



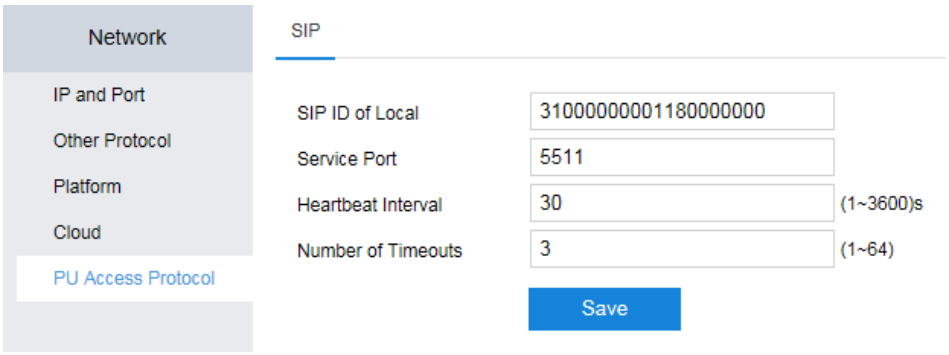
4) Click **OK**.
5) Click **Copy Info**.



After this, the following information is copied.

- SIP ID of Local 31000000001180000000
- ID of PU 31000000001120000001
- Remote CHN1-Encoding CHN1 31000000001320000001
- Alarm Input1 31000000001340000001

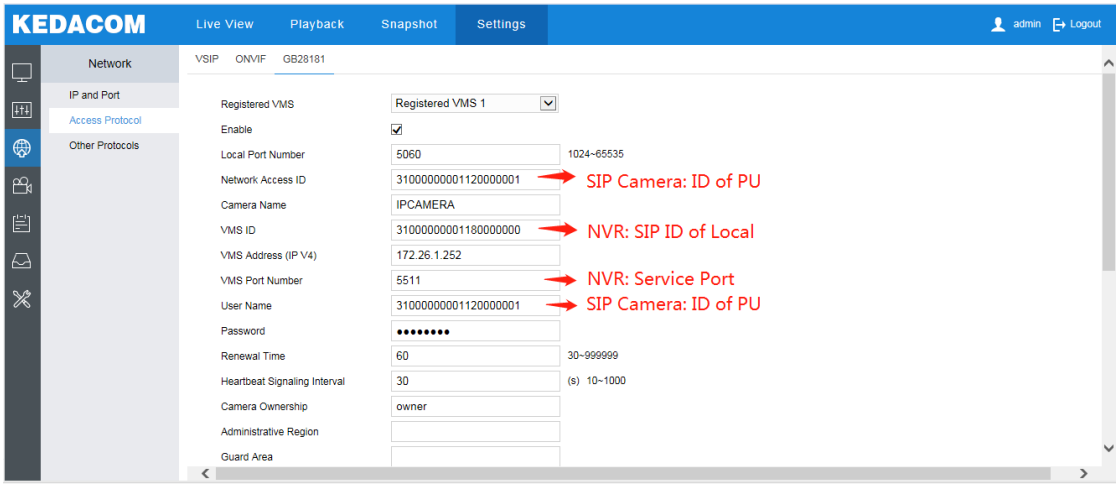
6) Choose **Settings** > **Network** > **PU Access Protocol** > **SIP** and copy the NVR SIP information.



The **Heartbeat Interval** value must be consistent with the **Heartbeat Signaling Interval** value shown in the figure in step 8).

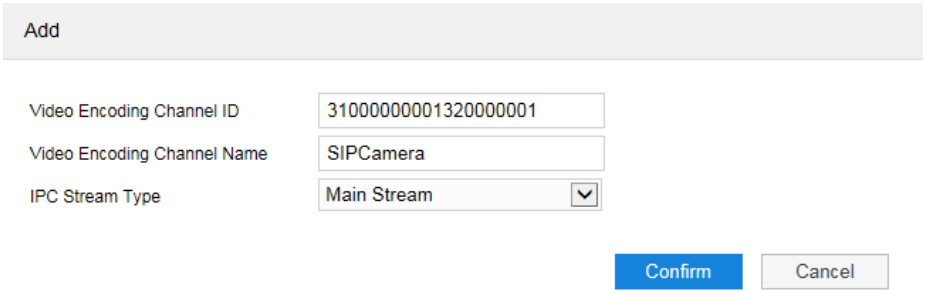
7) On the web client of the target SIP camera, choose **Settings** > **Network** > **Access Protocol** > **GB28181**.

8) Specify **Network Access ID**, **VMS ID**, **VMS Port Number** and **User Name** as follows.



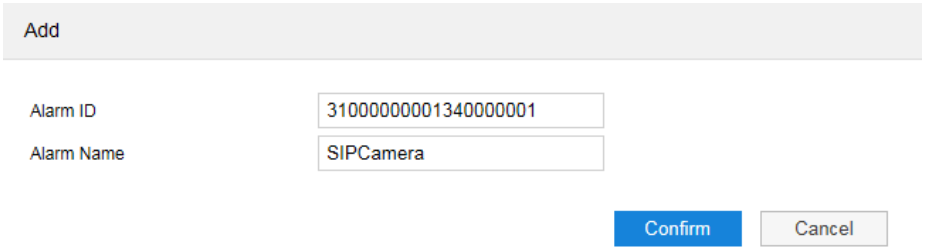
9) Click **Add** above **Video Encoding Channel ID** and enter the value for **Remote CHN1-Encoding CHN1** into the **Video Encoding Channel ID** text box. Additionally, specify

other parameters.



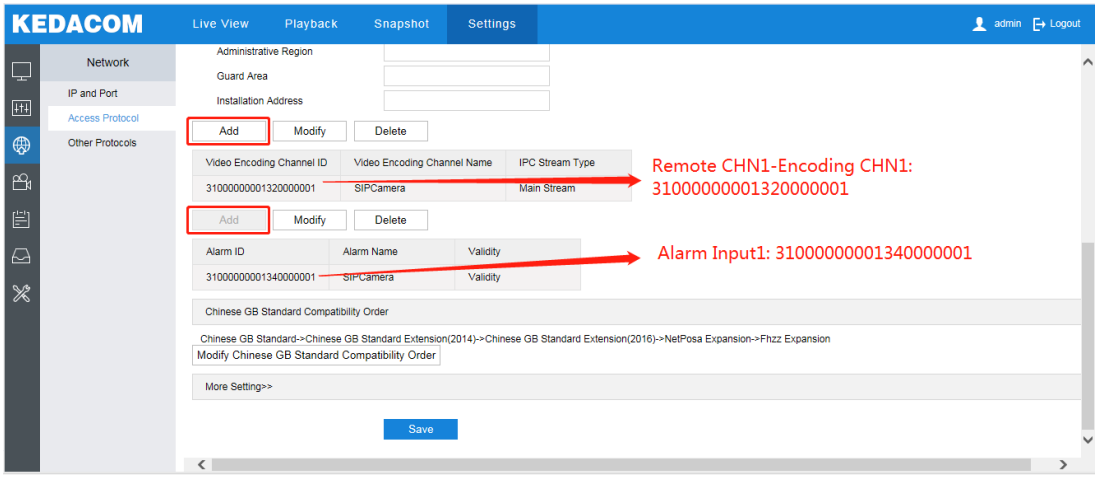
10) Click **Confirm**.

11) Click **Add** above **Alarm ID** and enter the value for **Alarm Input1** into the **Video Encoding Channel ID** text box. Additionally, specify other parameters.



12) Click **Confirm**.

After this, you can find the following.



13) Click **Save**.

14) Click **OK**.

If the camera status is "Authentication Failed", check whether the entered password is correct.

When a SIP camera is just added, its status is "Unregistered". When the camera communicates with the NVR, the status turns "Registered".

Note that a wireless front-end device, such as a BWC, is also a SIP camera.

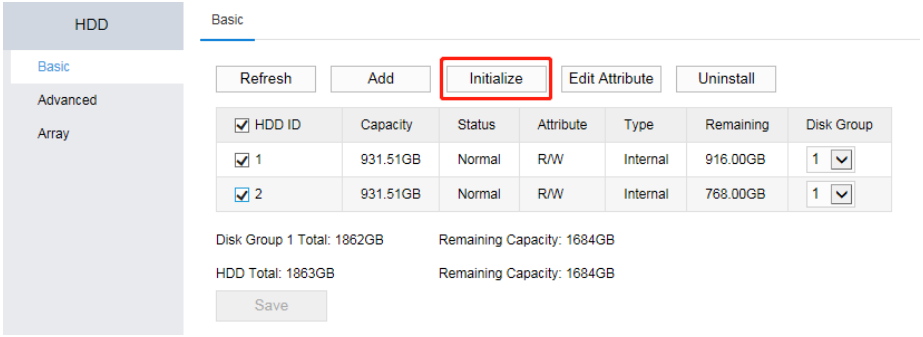
In this step, you can activate and change IP addresses for KEDACOM V7 cameras (ONVIF and VSIP) with the **Batch Activation** and **Edit IP** buttons.

Initializing HDDs

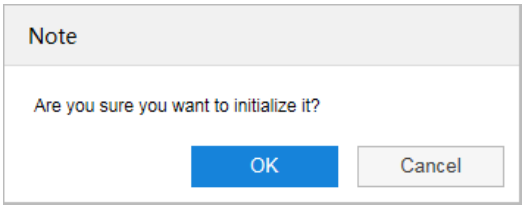
14. Initialize HDDs.

IF YOU DO NOT INITIALIZE HDDS, NO RECORDING CAN BE STARTED.

1) Choose **Settings** > **HDD** > **Basic**.
2) Select the target HDDs and click **Initialize**.



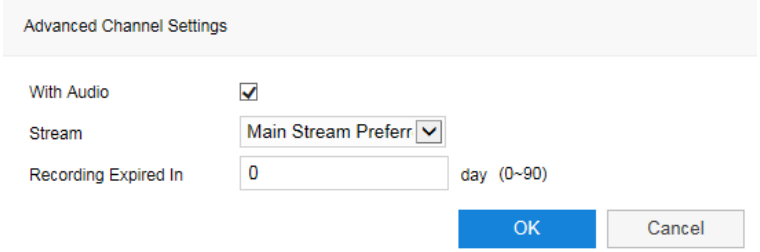
3) Confirm your operation.



Scheduling Recordings

15. Schedule recordings.
    1) Choose **Settings** > **Recording** > **Recording Schedule**.
    2) Select a channel.
    3) Specify a recording mode.

       Scheduled and Event Triggered: indicates that a recording will be started:
       - At a scheduled time, which can be configured at step 6)
       - Upon the occurrence of an event/alarm (Motion Detection and Intelligent Feature Alarms) (assuming alarm linkage settings of the channel already include the recording action; for details about the alarm linkage settings, see sections "Motion Detection" and "Intelligent Feature Alarms")
    4) Click **Advanced Channel Settings** to configure advanced channel settings.



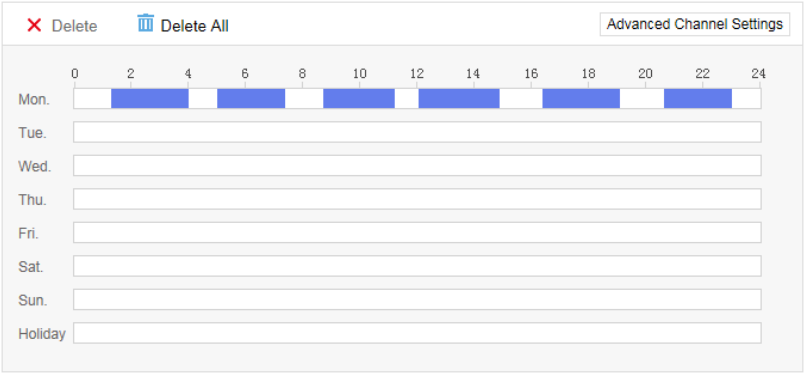
The following table provides parameter descriptions.

Parameter	Description
With Audio	Whether to include audio in a record
Stream	Stream preferentially recorded
Recording Expired In	Number of days after which a record (unless locked) will be deleted. The NVR deletes records at 00:00 of each day. • When recording space is sufficient:

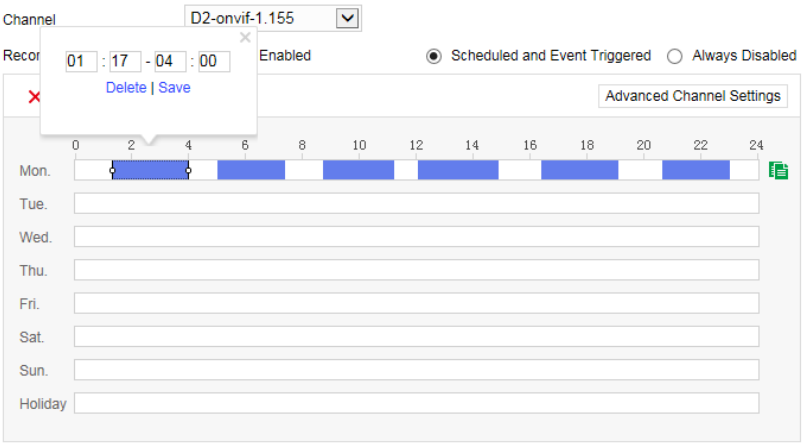
Parameter	Description
	✓ If you set it to 3, involved records (except locked ones) will be saved only for 3 days. ✓ If you set it to 0, involved records will not be deleted. • When recording space is full: Either the involved records (except locked ones) will be overwritten or recordings will be stopped, depending on the policy described in section "Setting the Recording Policy". **NOTE:** The locked records will be deleted only when you format related HDDs.

5) Click **OK**.

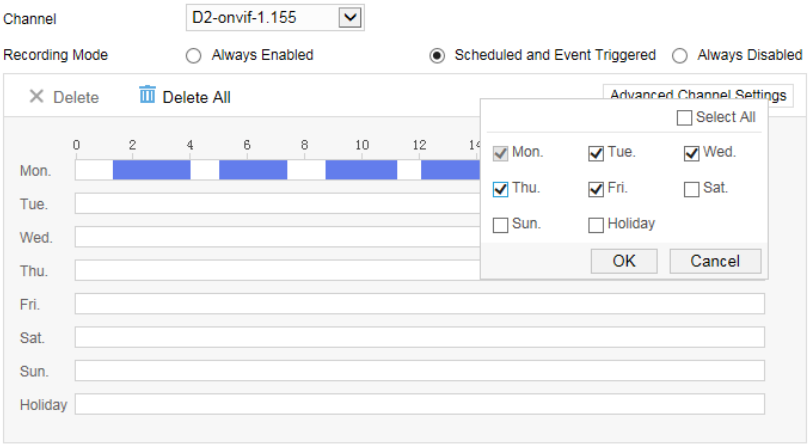
6) Press and hold the left mouse button and draw one or multiple lines on the timeline (accurate to the minute) of a day.
The following is an example.



After this, a recording will be enabled during the preceding six periods. A maximum of eight periods can be created in a day and those periods cannot overlap.
If you click a period, you can edit its start and end times.

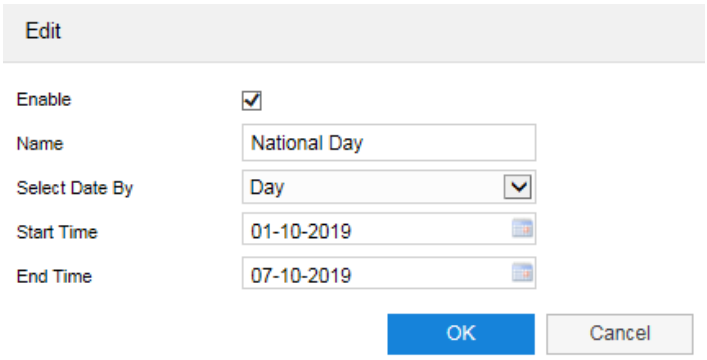


7) Copy the period settings of a day to other target days by clicking  and selecting the target days.
The following is an example.

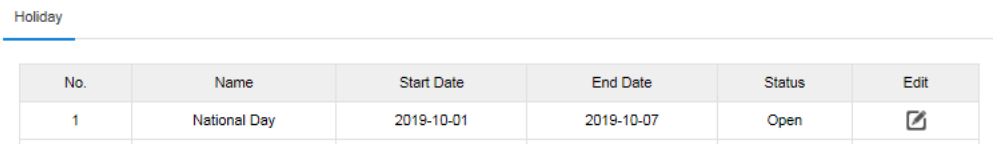


If you want to copy the settings to the other six days in a week and holidays, check **Select All**.

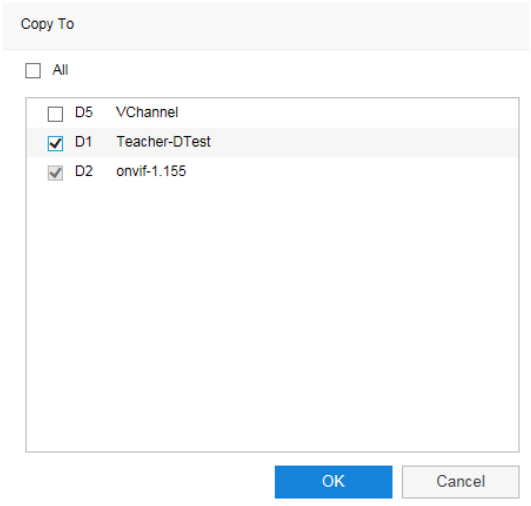
You can define holidays by choosing **Holiday** > and specifying parameters displayed. The following is an example.



After this, you can find the following.



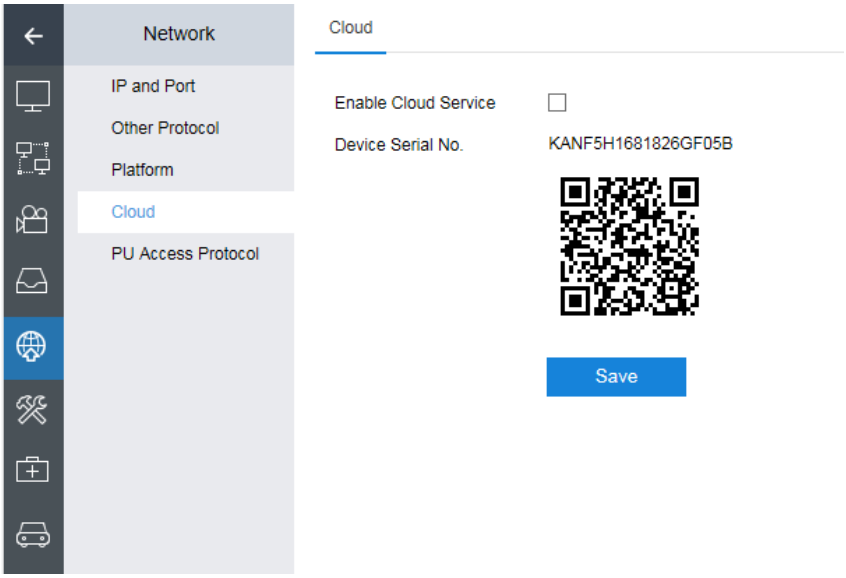
8) Click **OK**.
9) Copy the recording schedule settings of the channel to other target channels by clicking **Copy To** and selecting the target channels.



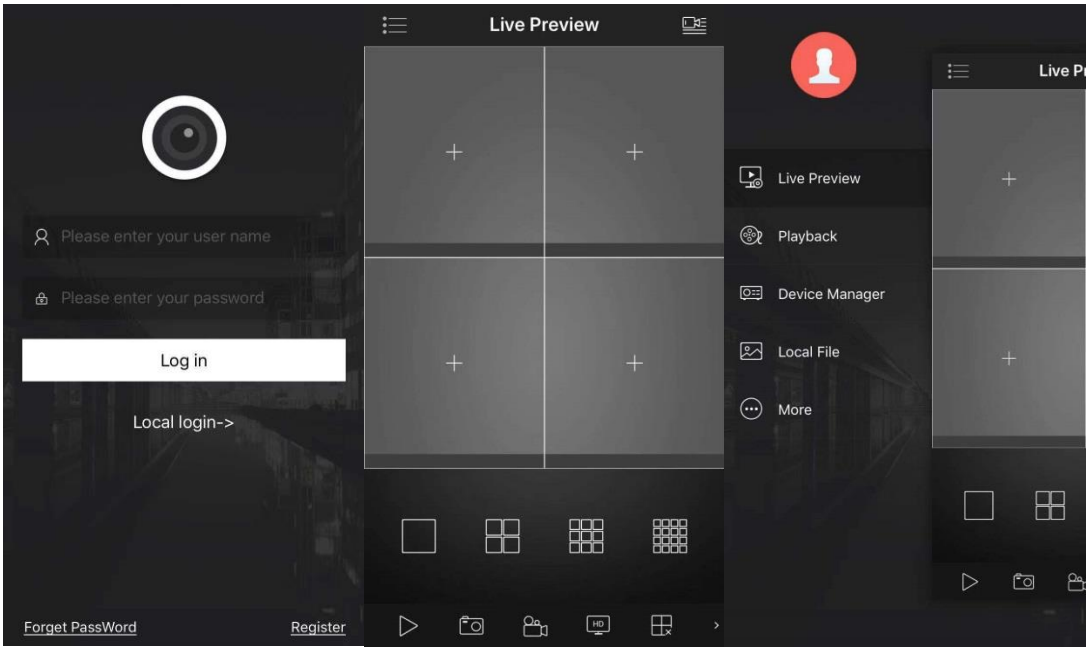
10) Click **OK**.
11) Click **Save**.

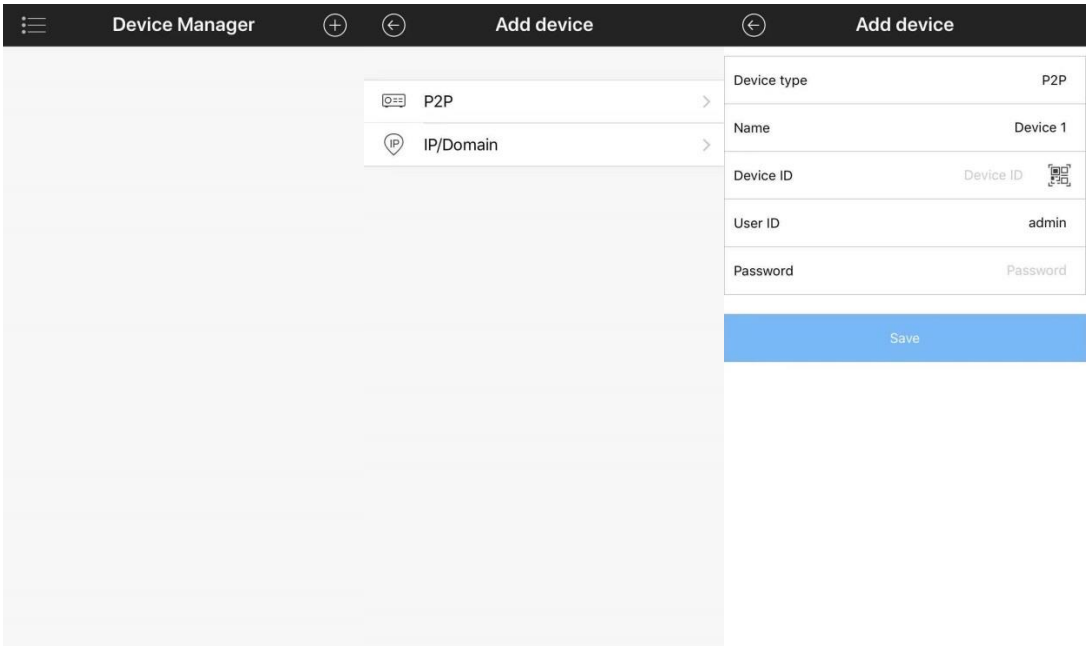
Enabling the Cloud Service

16. Enable the Cloud service, which allows you to view camera videos of the NVR on your mobile phone.
    1) Choose **Settings** > **Network** > **Cloud**.

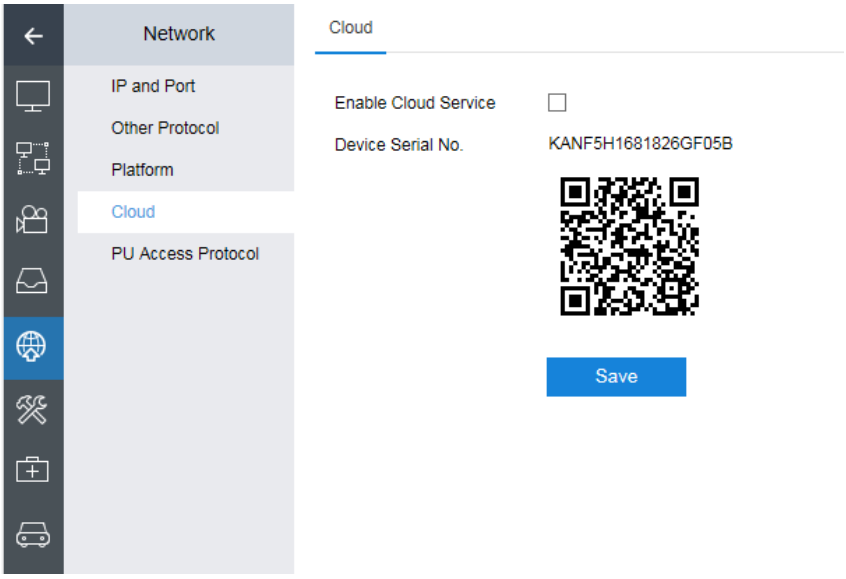


    2) Check **Enable Cloud Service**.
    3) Download vSee Pro (iOS) or vSee (Android) from the mobile phone application market.
    4) Open vSee Pro.
       The following operations are performed on vSee Pro (iOS) and operations on vSee (Android) will not be detailed here since operations are similar.
    5) Choose **Local login->** >  > **Device Manager** >  > **P2P** > **Device ID**.

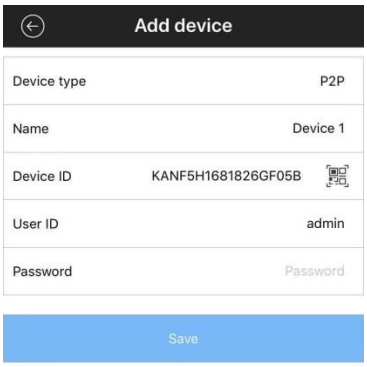




6) Scan the QR code.



After this, the device serial number of the NVR is read.

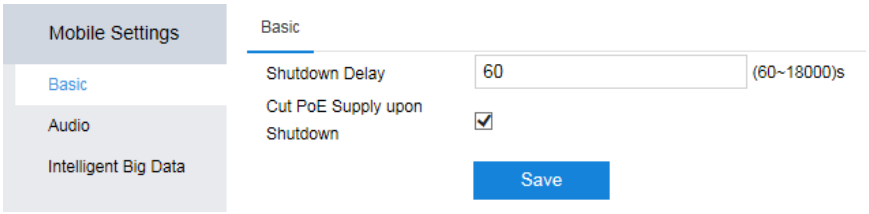


7) Enter the password of the admin account.
8) Click **Save**.

After the preceding steps are performed, the NVR is added to the device list and you can view camera videos on your mobile phone.

Configuring Mobile Settings

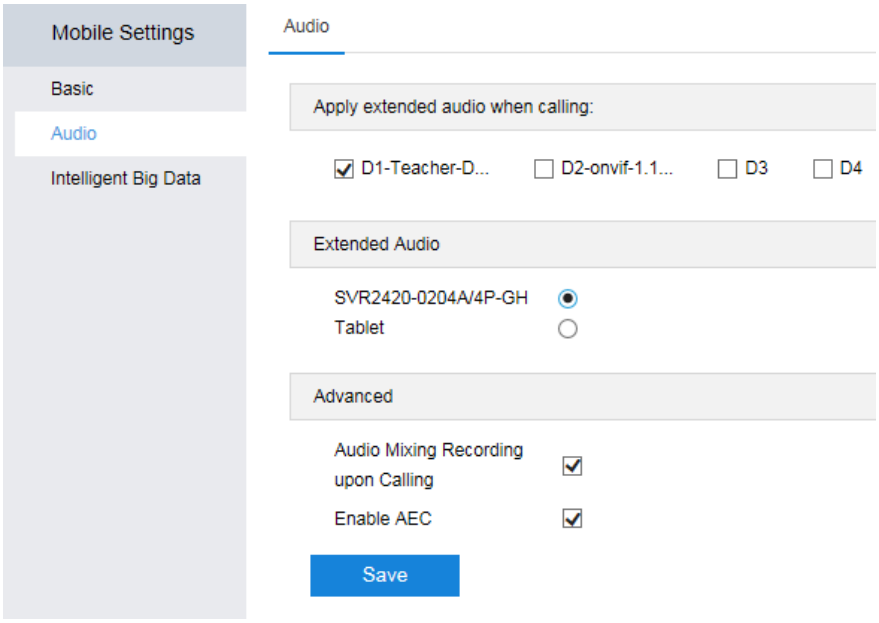
17. Configure mobile settings of the NVR.
    1) Choose **Settings** > **Mobile Settings**.
    2) On the **Basic** tab page, configure parameters displayed.



Shutdown Delay: delay for the NVR shutdown. When power supply from the accessory (ACC) wire is detected, the shutdown delay function is automatically enabled. The default value is **60**. This delay takes effect only when the voltage is normal.

Cut PoE Supply upon Shutdown: Whether to cut the PoE supply upon the car engine shutdown.

    3) Click **Save**.
    4) On the **Audio** tab page, configure parameters displayed.
    The following is an example.

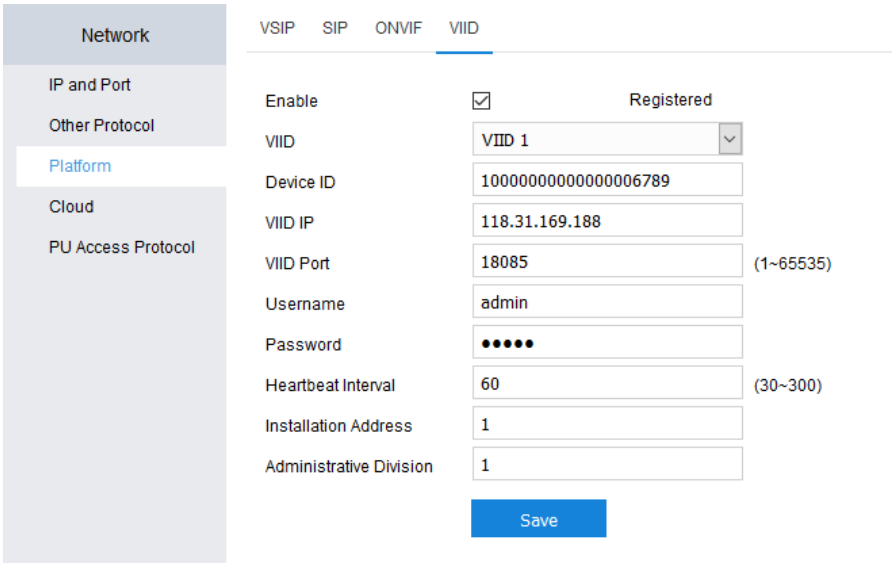


Usually, a platform (for example, the VMS) calls cameras directly and bypasses conventional NVRs. However, the mobile PoE NVR offers an alternative that the platform can call either the mobile PoE NVR or cameras.

Parameter	Description
Apply extended audio when calling	For a selected camera, a platform will call the mobile PoE NVR instead of the PU. For an unselected camera, the platform will call it and bypass the NVR.
Extended Audio	Receive end of calls from a platform
NOTE For example (assuming the parameter settings shown in the preceding figure are applied): For the camera (channel ID: D1), if a platform calls the camera, the call will be redirected to the SVR2420.	
Audio Mixing Recording upon Calling	Whether to enable audio mixing recording during calls from a platform. When this option is checked, two-way audio during calls will be recorded.
Enable AEC	Whether to enable the acoustic echo cancelling (AEC) function.

5) Click **Save**.

6) Choose **Settings** > **Network** > **Platform** > **VIID** and configure parameters displayed.
VIID stands for Video&Image Information Database.
The following is an example.

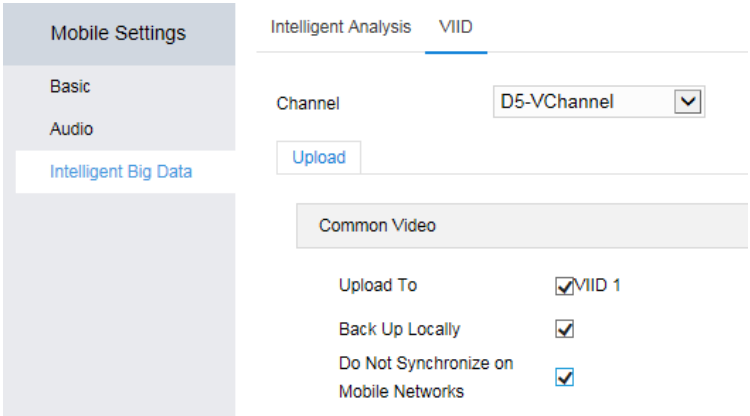


Configuration example:

a) Check **Enable**.
b) Select a VIID server.
c) Enter a unique device ID for the NVR.
d) Enter the IP address of the VIID server.
e) Enter the port number of the VIID server.
f) Keep the default values for the other parameters.

7) Click **Save**.
8) On the **Intelligent Big Data > VIID** tab page, configure parameters displayed

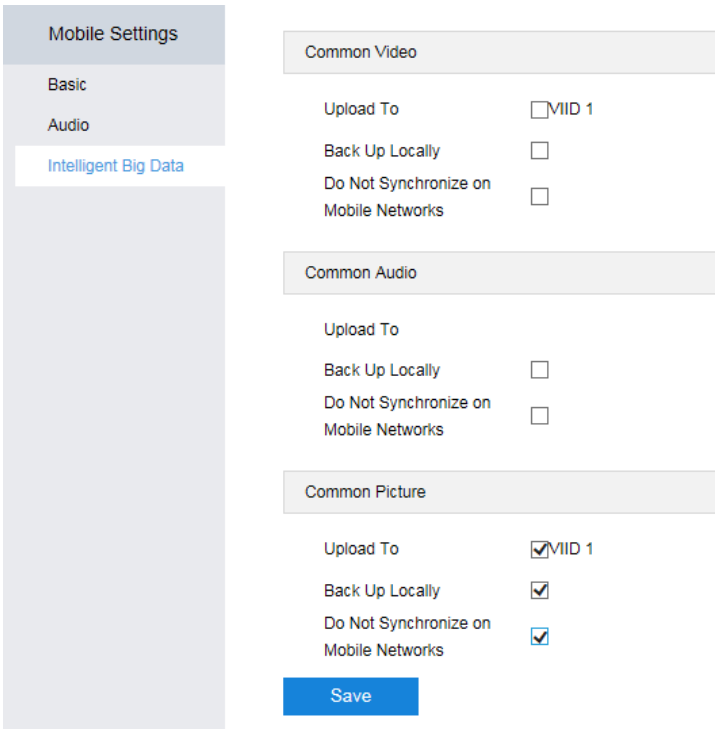
For the virtual channel (VChannel), you can upload only common videos (unstructured).



Back Up Locally: Unstructured videos from the NVR will be converted to the MP4 format before they are uploaded to a VIID server. After uploads are completed, the videos of the MP4 format are deleted by default. However, if you check **Back Up Locally**, such videos will be retained.

Do Not Synchronize on Mobile Networks: If you check it, data synchronization to VIID servers will not be performed on mobile networks.

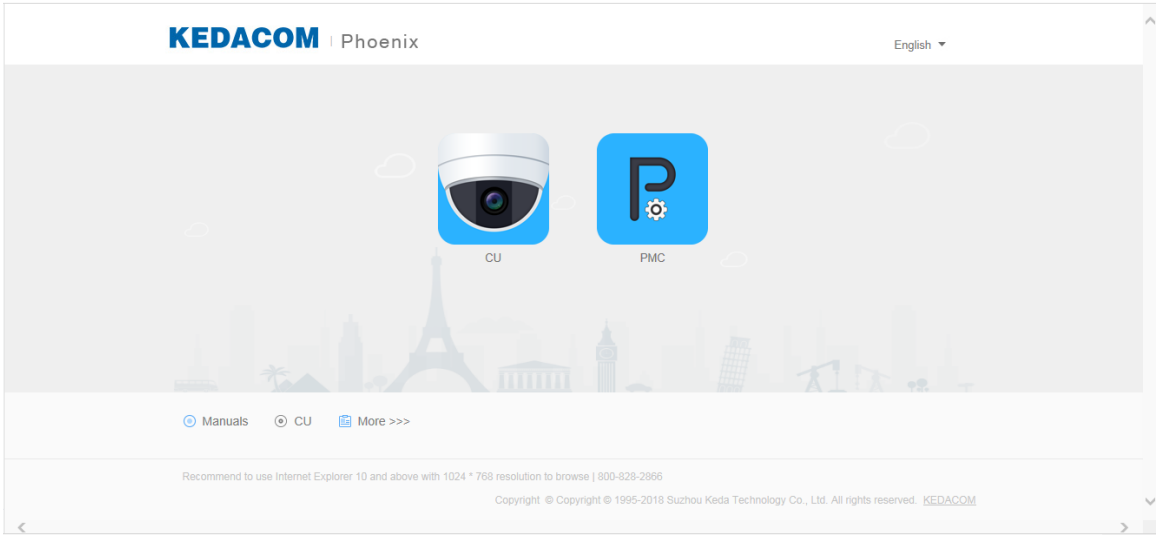
For a camera, you can upload only common pictures (unstructured).



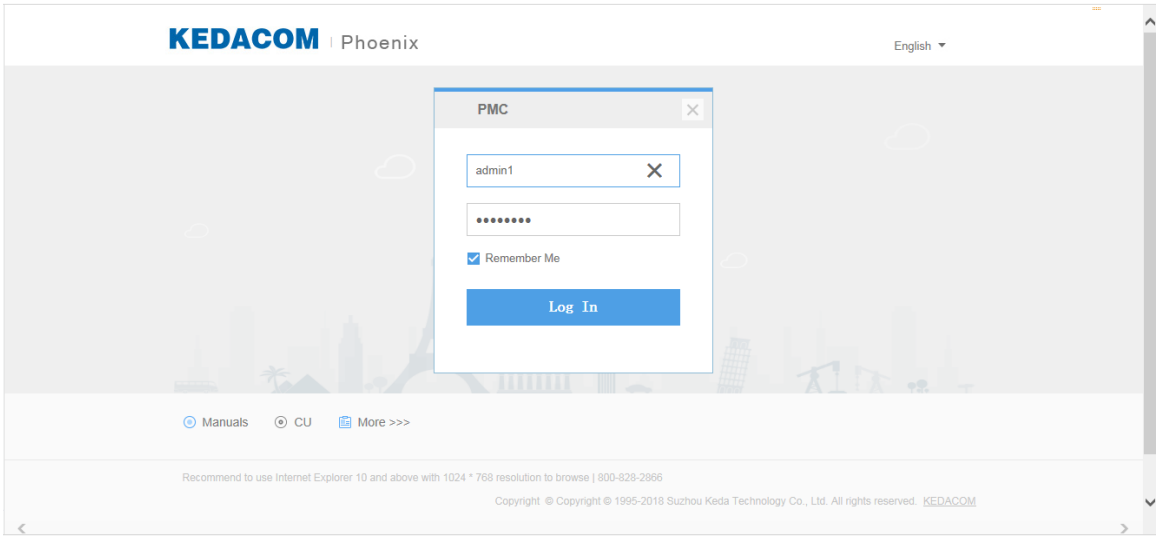
9) Click **Save**.

Registering with a SIP Platform

18. Configure SIP settings for the NVR to register with a SIP platform (for example, the VMS).
    1) Enter the VMS IP address into the address bar of your web page browser and click PMC in the displayed window.



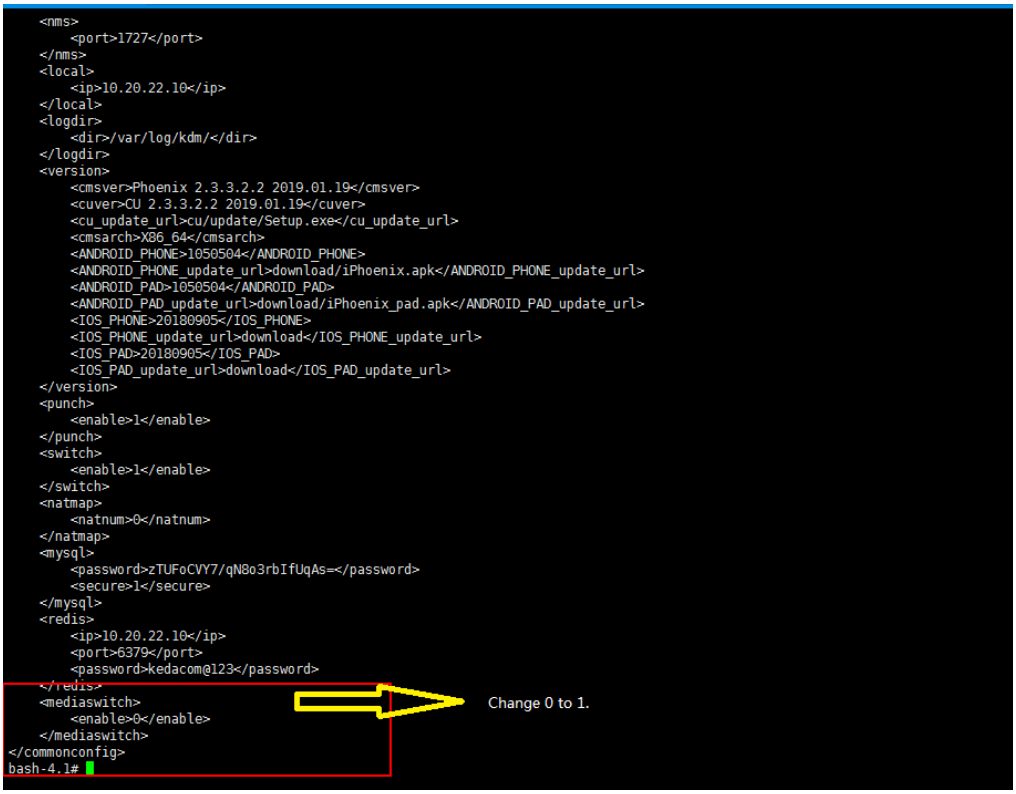
    2) Enter a username and a password.



3) Click **Log In**.

4) Enable the mediaswitch of the VTDU and that of the CU.

To enable the mediaswitch of the VTDU, go to the **/det/kdm/commonconfig.ini** directory and set **mediaswitch** to **1**.




```
    <nms>
        <port>1727</port>
    </nms>
    <local>
        <ip>10.20.22.10</ip>
    </local>
    <logdir>
        <dir>/var/log/kdm/</dir>
    </logdir>
    <version>
        <cmsver>Phoenix 2.3.3.2.2 2019.01.19</cmsver>
        <cuver>CU 2.3.3.2.2 2019.01.19</cuver>
        <cu_update_url>cu/update/Setup.exe</cu_update_url>
        <cmsarch>X86_64</cmsarch>
        <ANDROID_PHONE>1050504</ANDROID_PHONE>
        <ANDROID_PHONE_update_url>download/iPhoenix.apk</ANDROID_PHONE_update_url>
        <ANDROID_PAD>1050504</ANDROID_PAD>
        <ANDROID_PAD_update_url>download/iPhoenix_pad.apk</ANDROID_PAD_update_url>
        <IOS_PHONE>20180905</IOS_PHONE>
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        <IOS_PAD_update_url>download</IOS_PAD_update_url>
    </version>
    <punch>
        <enable>1</enable>
    </punch>
    <switch>
        <enable>1</enable>
    </switch>
    <natmap>
        <natnum>0</natnum>
    </natmap>
    <mysql>
        <password>zTUFoCVY7/qN8o3rbIfUqAs=</password>
        <secure>1</secure>
    </mysql>
    <redis>
        <ip>10.20.22.10</ip>
        <port>6379</port>
        <password>kedacom@123</password>
    </redis>
    <mediaswitch>
        <enable>0</enable>
    </mediaswitch>
</commonconfig>
bash-4.1#
```
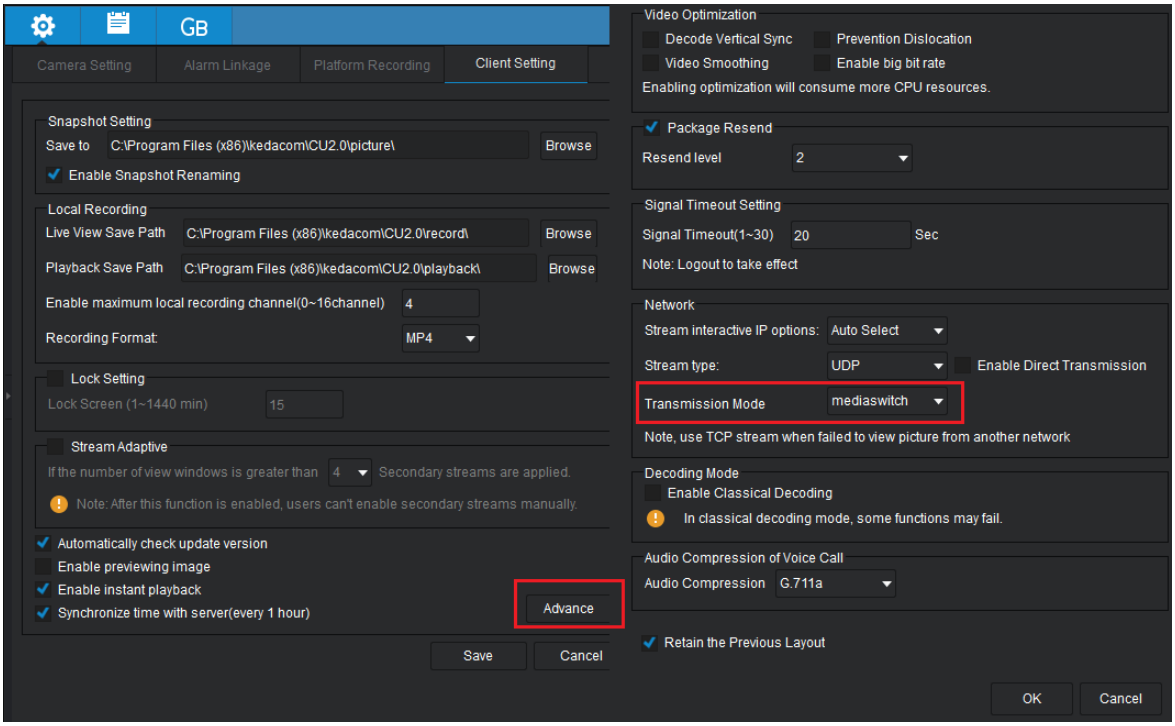
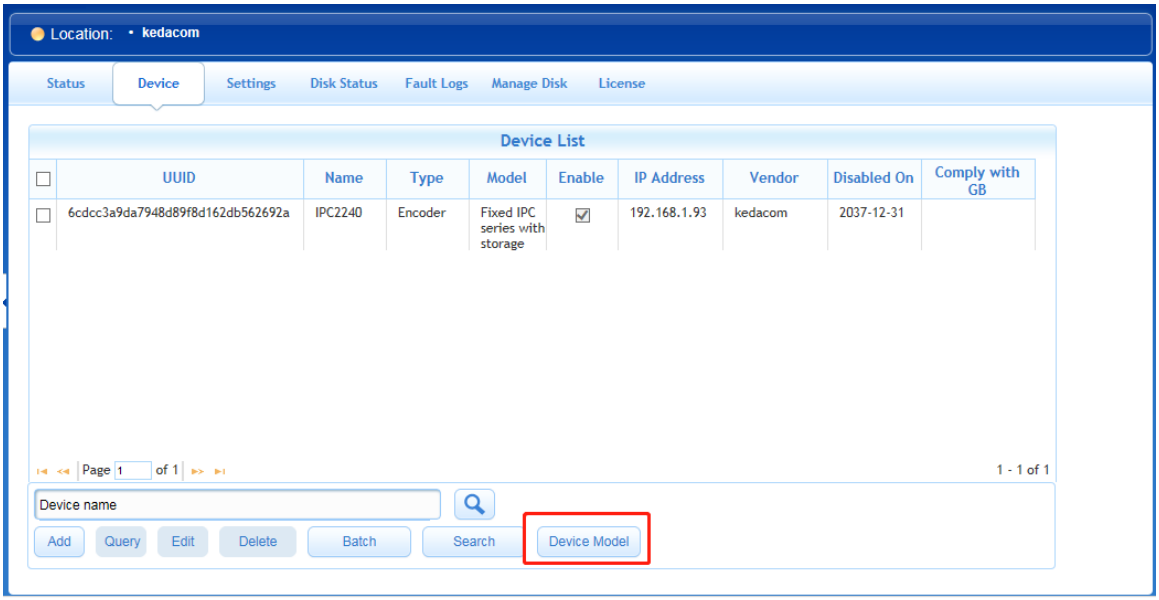
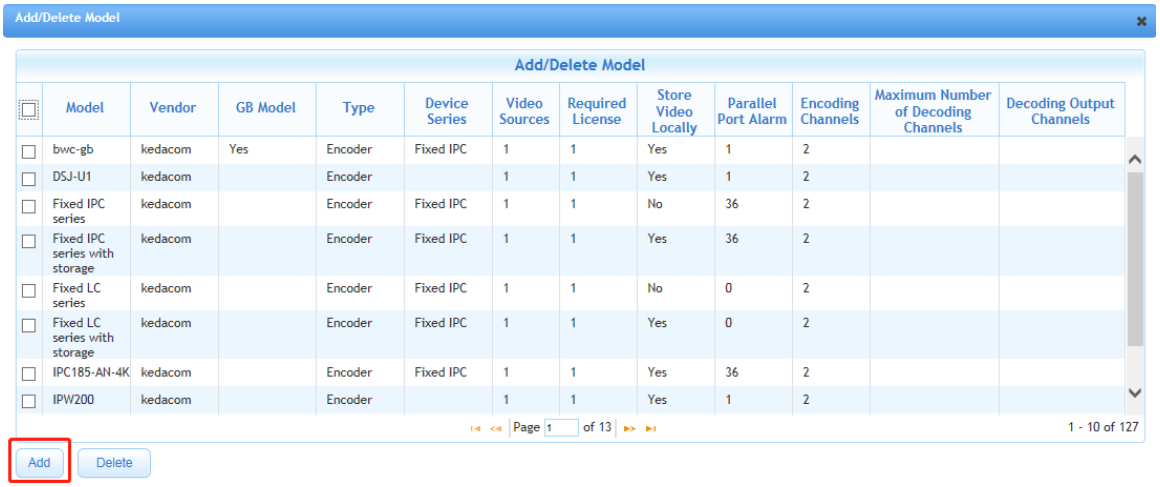

To enable the mediaswitch of the CU, choose **System** > **Client Setting** > **Advance** > **Transmission Mode** > **mediaswitch**.



5) Choose **Device** > **Device Model**.

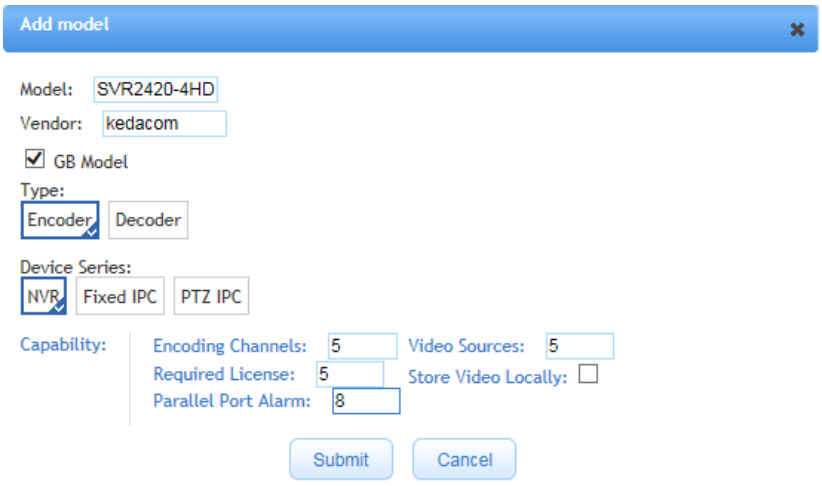


6) Click **Add**.



7) In the displayed dialog box, specify parameters displayed.

The following is an example.



In this step:

a) Specify **Model** and **Vendor**.

b) Check **GB Model**.

The NVR communicates with the VMS using the SIP. Therefore, you must check **GB Model**.

c) Set **Type** to **Encoder** and **Device Series** to **NVR**.

d) Configure the NVR capability settings.

When configuring the NVR capability settings, you can refer to the following table.

Table 1 Sub-models of SVR2420 series mobile PoE NVRs

Standard	SVR2420-0204A/4P-S SVR2420-0208A/8P-S SVR2420-0212A/8P-S	-	-
Single 4G Module	SVR2420-0204A/4P-G SVR2420-0208A/8P-G SVR2420-0212A/8P-G	Dual 4G Modules	SVR2420-0204A/4P-G2 SVR2420-0208A/8P-G2 SVR2420-0212A/8P-G2
Single 4G Module and High Configuration	SVR2420-0204A/4P-GH SVR2420-0208A/8P-GH SVR2420-0212A/8P-GH	Dual 4G Modules and High Configuration	SVR2420-0204A/4P-G2H SVR2420-0208A/8P-G2H SVR2420-0212A/8P-G2H

For example, for the SVR2420-**02**04A/**4P**-G:

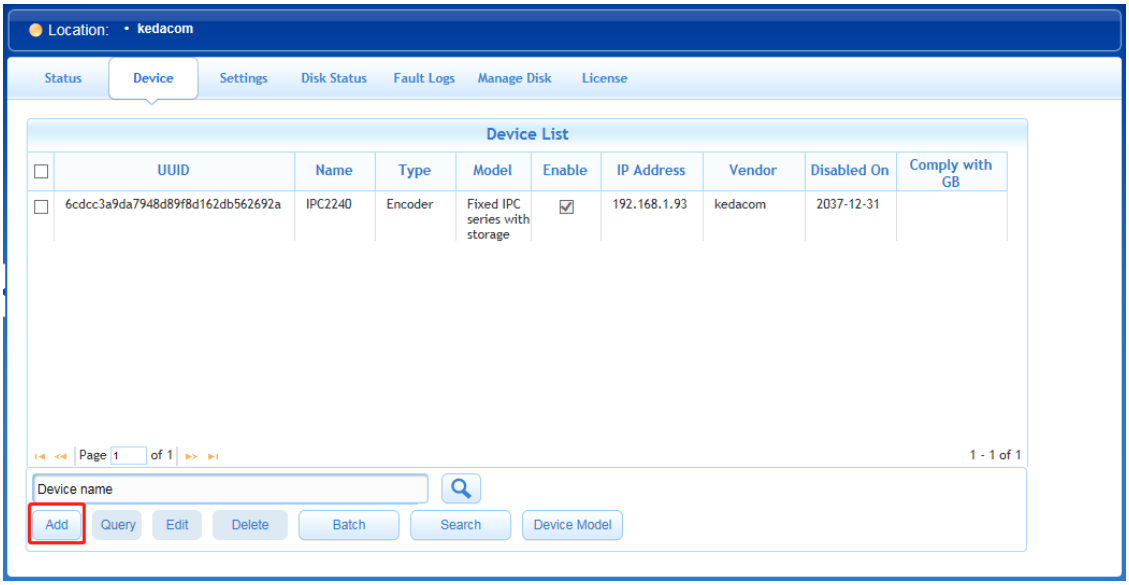
- It can accommodate **2** HDDs and **4** cameras (including **4 PoE** cameras).
- Its software version is **V7**.
- It has only **1** 4G module (indicating that only **1** SIM card can be inserted).

Therefore, for the SVR2420-**02**04A/**4P**-G, you can use the following settings:

Parameter	Value
Encoding Channels	5 Reason: The SVR2420-**02**04A/**4P**-G can accommodate 4 cameras and the VChannel is also an encoding channel. Note that you can configure this parameter according to onsite conditions. For example, if your SVR2420 is configured with only 2 cameras, you can set this parameter to **3**.
Video Sources	5 Reason: Same as the above.
Required License	5 Reason: Same as the above.
Parallel Port Alarm	8 Reason: The SVR2420 has 8 parallel port alarm inputs.

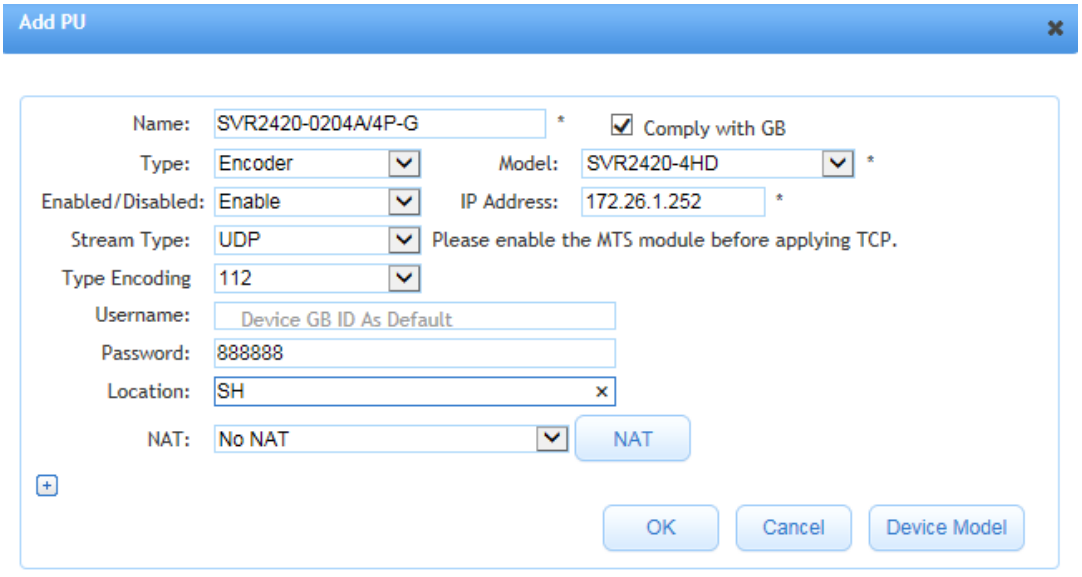
e) Click **Submit**.

f) On the **Device** tab page, click **Add**.



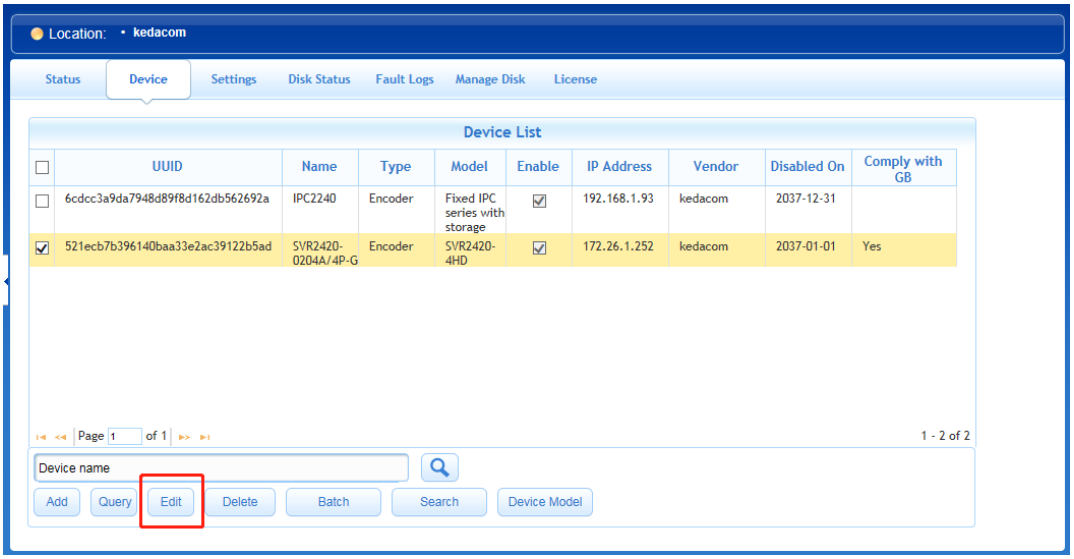
g) In the **Add PU** dialog box, specify parameters displayed.

The following is an example.

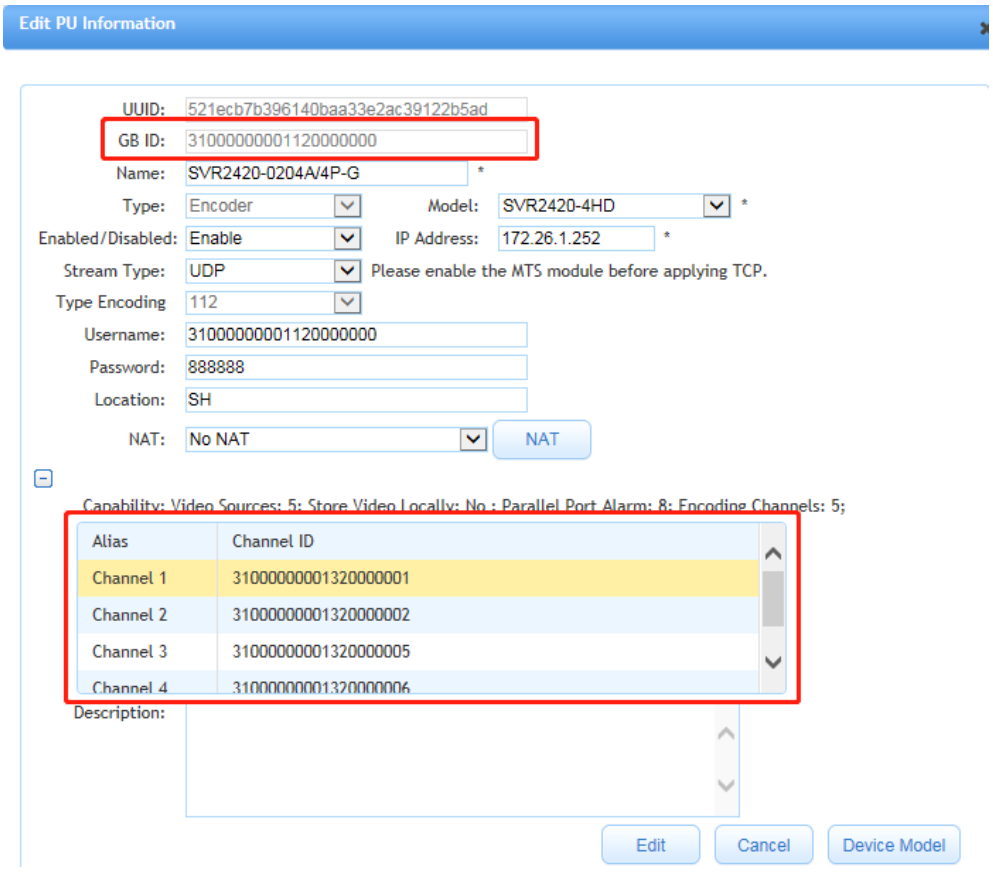


h) Click **OK**.

i) Select the newly added NVR and click **Edit**.

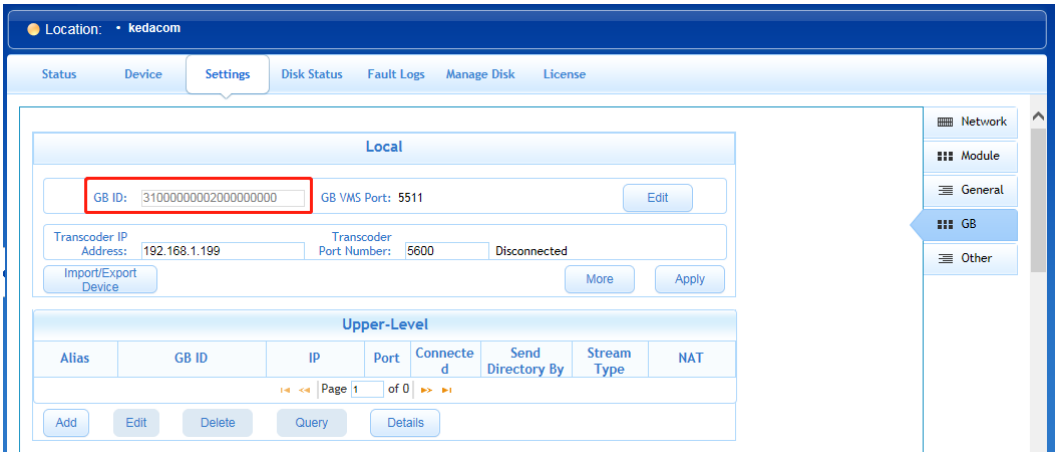


j) Copy the GB ID of the NVR and the channel IDs of its five encoding channels.



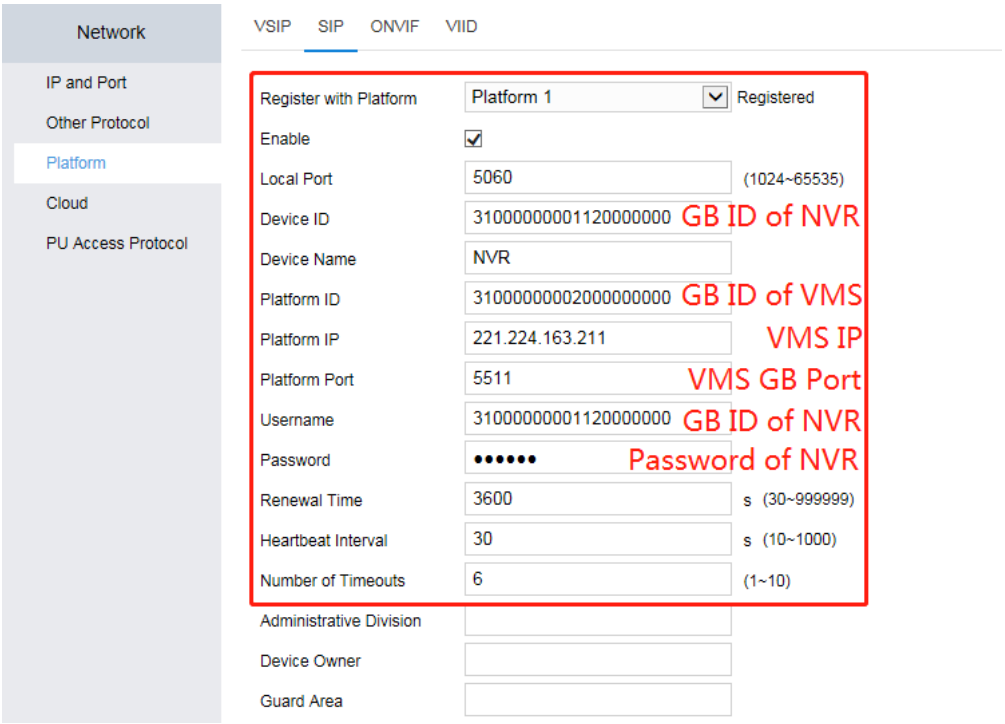
- GB ID 31000000001120000000
- Channel 1 31000000001320000001
- Channel 2 31000000001320000002
- Channel 3 31000000001320000005
- Channel 4 31000000001320000006
- Channel 5 31000000001320000007

k) Choose **Settings** > **GB** > **Local** and copy the GB ID of the VMS.

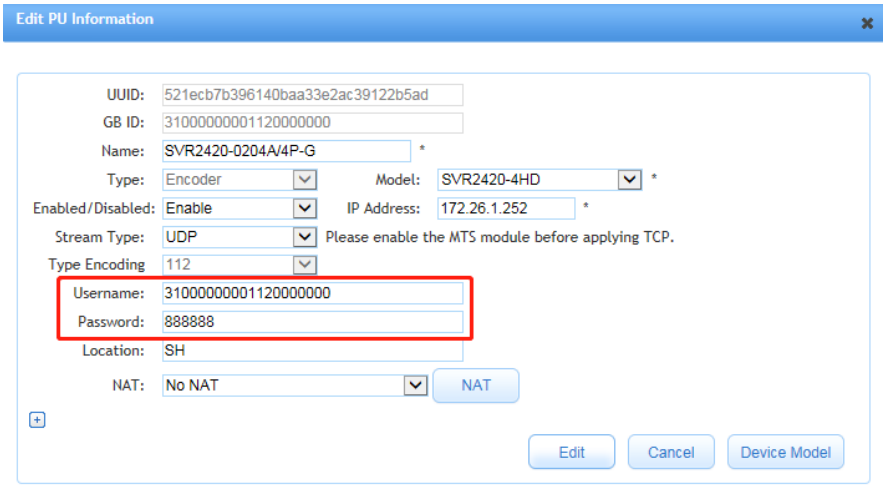


l) On the NVR Web, choose **Settings** > **Network** > **Platform** > **SIP**.

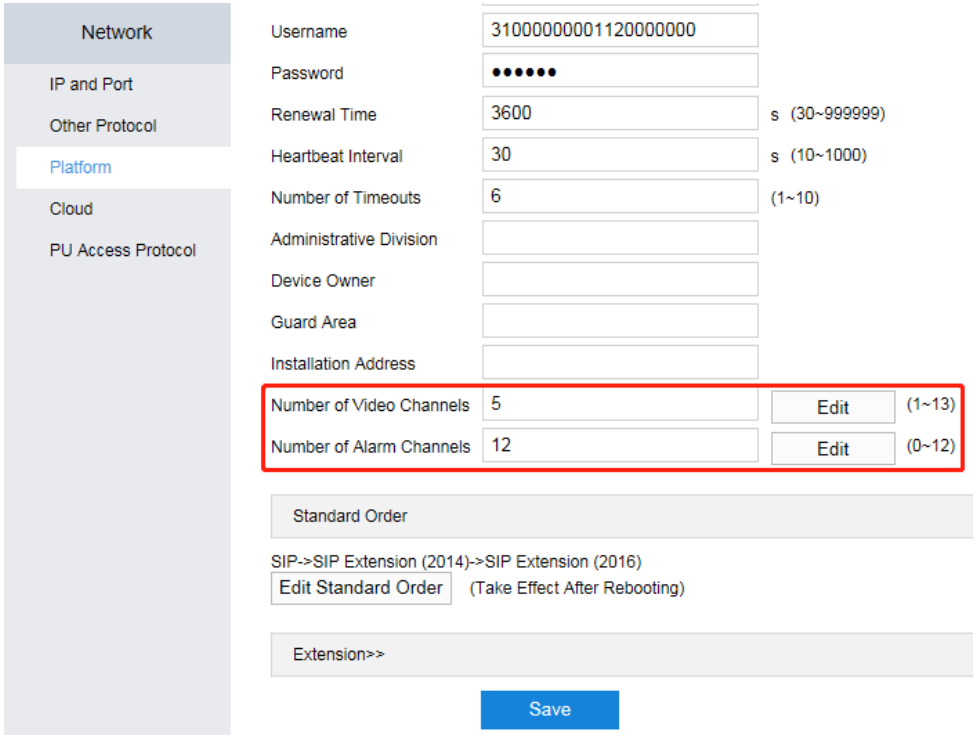
i. Firstly, configure the following mandatory parameters included in the red square. The following is an example.



The **Username** and **Password** values must be consistent with those shown in the following figure.

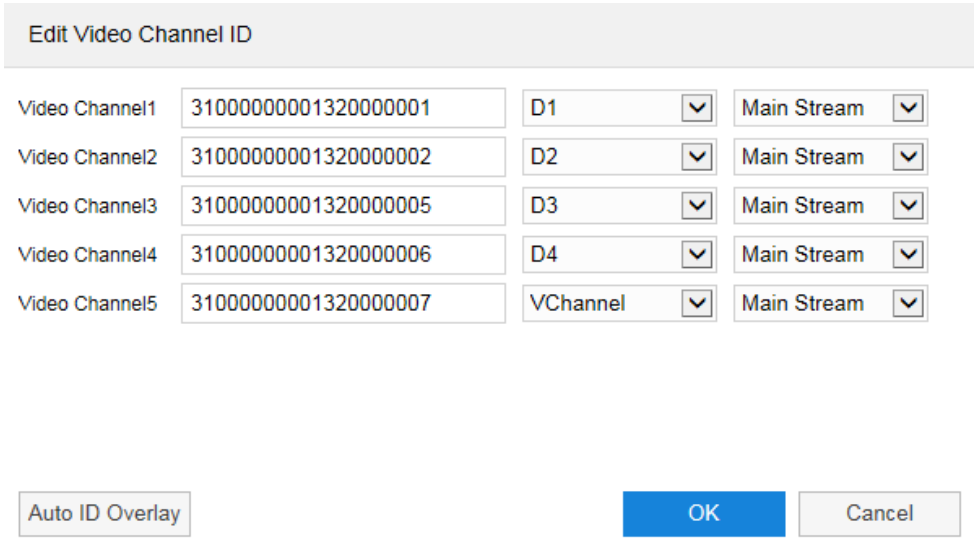


ii. Configure video and alarm channels of the NVR. The following is an example (SVR2420-**02**04A/**4P**-G).



Number of Alarm Channels: The 12 NVR alarm channels include its own 8 alarm inputs and 4 alarm inputs from its accommodated 4 cameras.

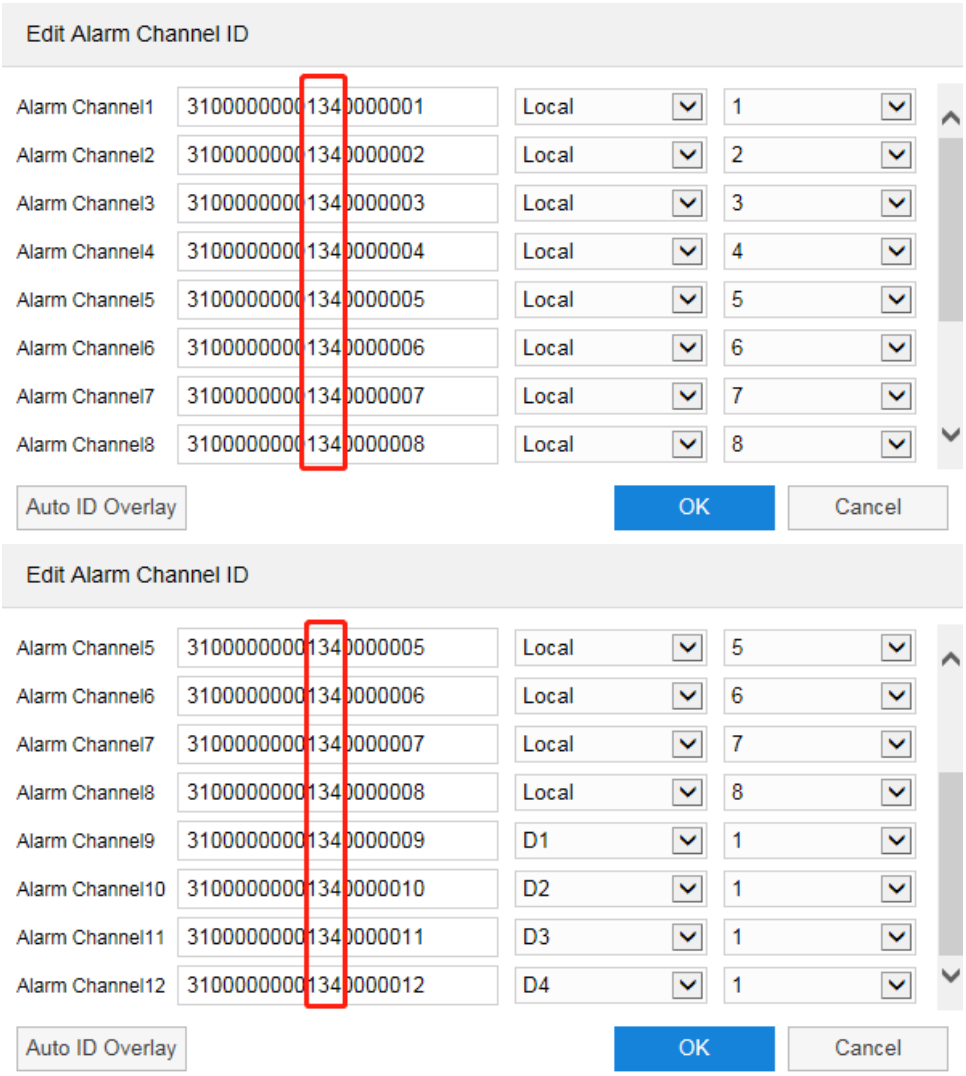
iii. Click **Edit** located at the end of **Number of Video Channels** and paste the assigned channel IDs of the NVR's five encoding channels to the text fields behind **Video Channel1/2/3/4/5** in sequence.



Note that the VChannel is always located at the bottom of the channel list and **Main Stream** must be selected for the VChannel. For the other encoding channels, you can select the main or secondary stream.

iv. Click **OK**.

v. Click **Edit** located at the end of **Number of Alarm Channels**, enter **31000000001340000001** (assuming that this alarm channel ID is unique) in the text field behind **Alarm Channel1**, and click **Auto ID Overlay**.



The SIP specifies that an alarm channel ID must be **3100000000134*XXXXXXX***. In this step, you must ensure that all alarm channels IDs are unique.

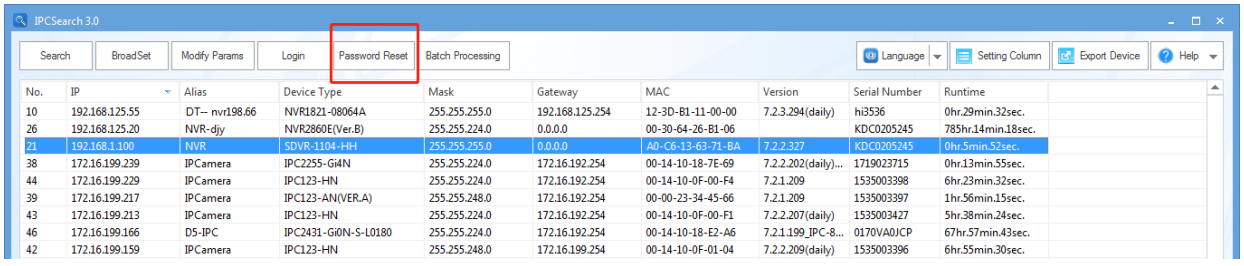
vi. Click **OK**.

Resetting the Password of the admin Account

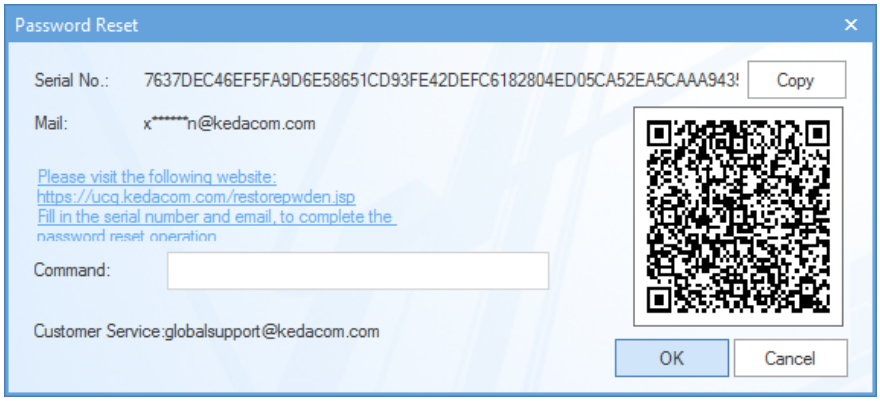
If you forget the password of the admin account, you can reset the password using IPCSearch3.0, which can be downloaded from https://en.kedacom.com/en/r/cms/www/kedacom/downloads/IPCSearch%203.0%20Setup.zip.

To reset your password:

1. Find your device from the device list and click **Password Reset**.

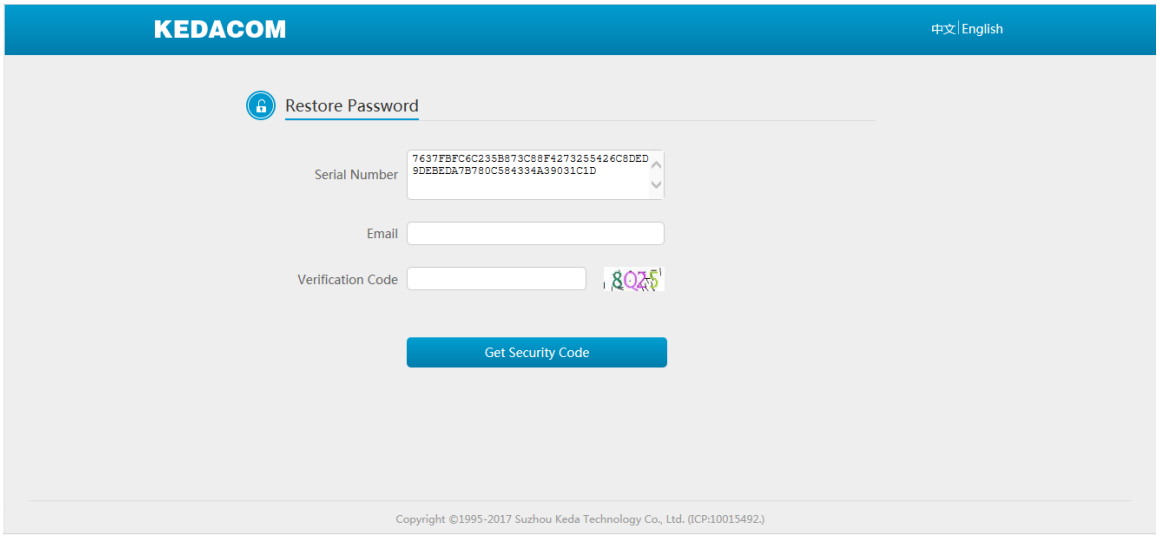


2. In the displayed **Password Reset** dialog box, click the URL or scan the QR code.



If you click the URL:

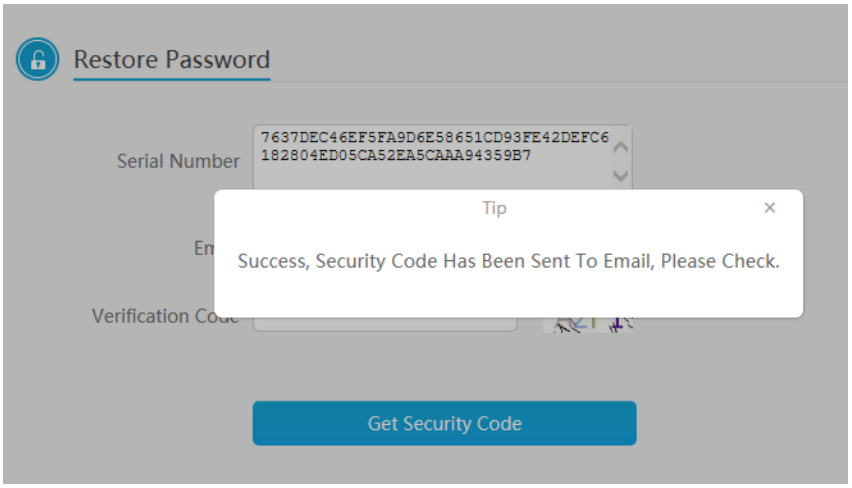
1) Enter the mail address specified when activating the NVR.



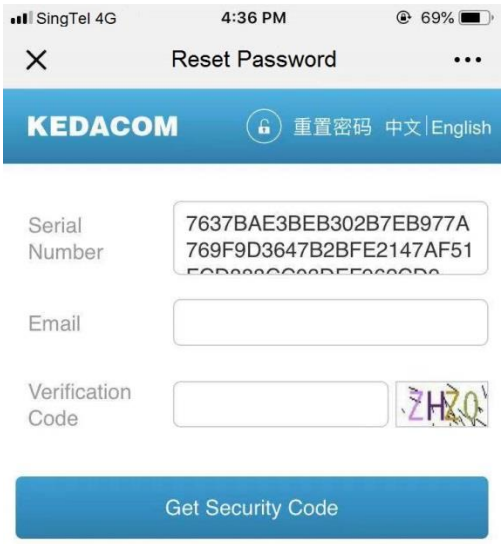
2) Enter the verification code.

3) Click **Get Security Code**.

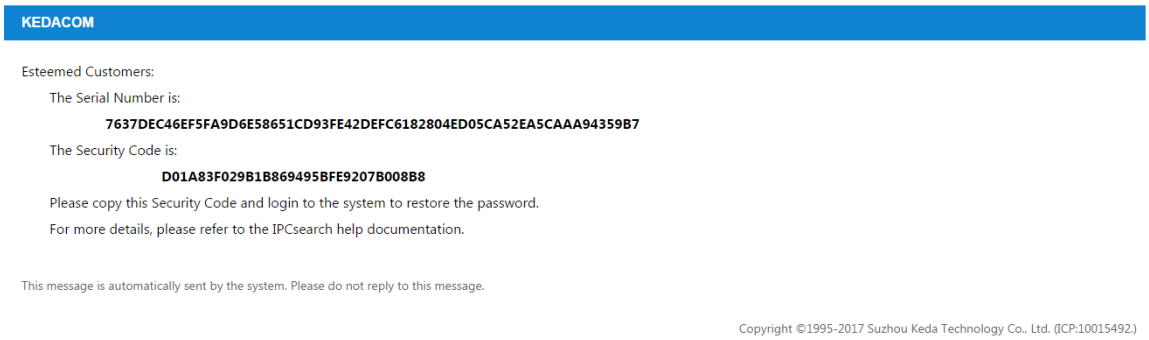
After this, you will find the following.



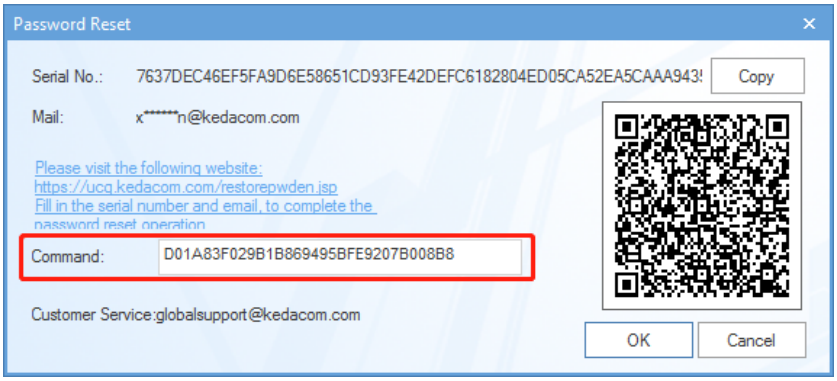
If you scan the QR code, you will see the following. The following steps are similar to the preceding ones.



3. Find and copy the security code from your mail box.

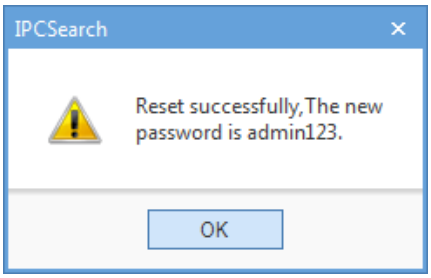


4. Paste the security code to the **Command** text field.

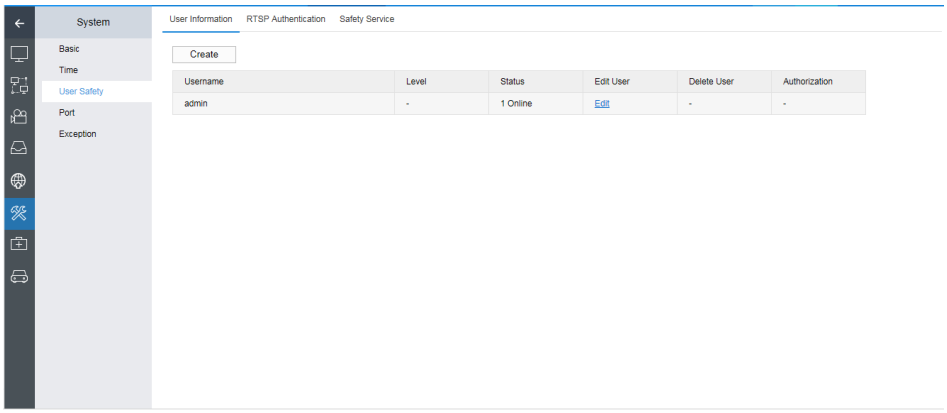


5. Click **OK**.

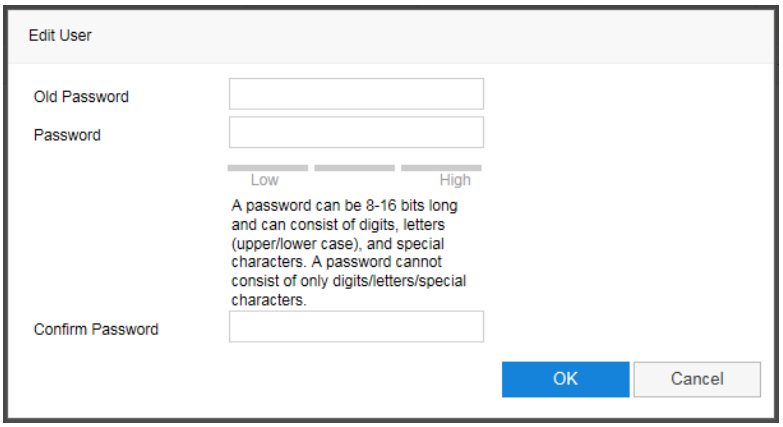
6. Click **OK**.



7. Log in to the NVR with the default password.
8. Create your own strong password again.
   1) Choose **Settings** > **System** > **User Safety** > **User Information**.
   2) Select the admin account and click **Edit**.



   3) In the **Edit User** dialog box, enter the old password and a new strong password and confirm the new password.

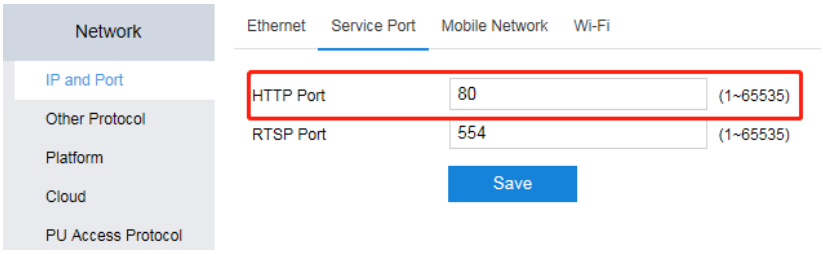


   4) Click **OK**.
9. Log in to the NVR again.

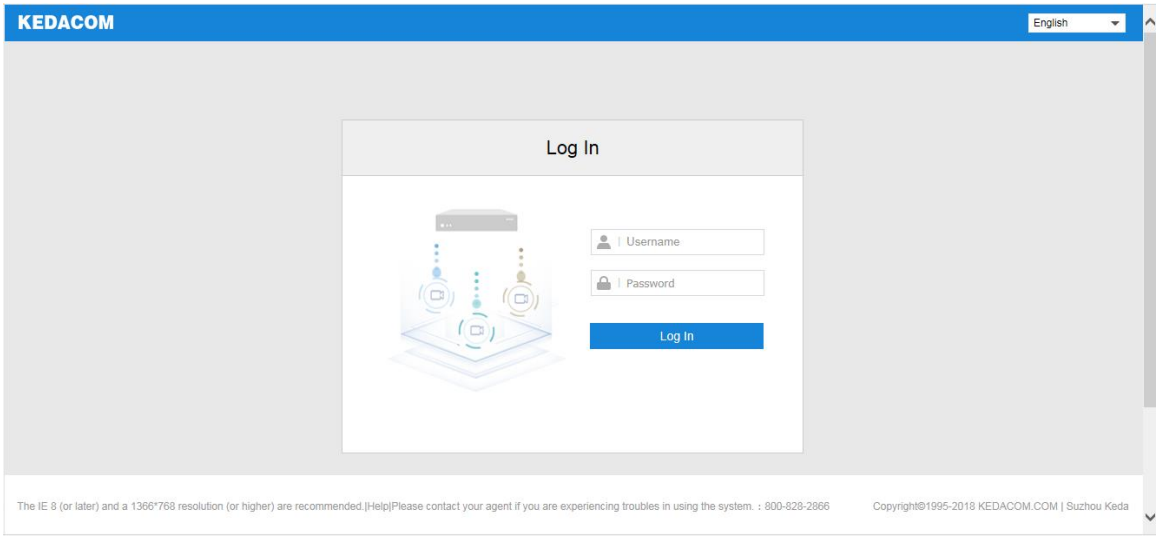
Logging In to the NVR

To log in to the NVR:

1. Enter the IP address of the NVR into the address bar of your web page browser.
   If the **HTTP Port** parameter uses its default value **80**, you can enter the NVR IP address into the address bar.



   If the default value is not used, you should add the port number to the end of the NVR IP address, for example, http://192.168.1.100:81.
2. Press **Enter**.
3. In the displayed **Log In** dialog box, enter a username and a password.



   In this step, you can select a display language.
4. Click **Log In**.

If you enter an incorrect password three times in succession, your IP will be locked for 10 minutes.

If you forget your password, reset your password (see section "Resetting the Password of the admin Account") or contact your system administrator to retrieve the default password of your account (specific to standard users).

NOTE

The graphical user interface (GUI) of the NVR is continuously changed. Therefore, do not be alarmed when you find the screenshots in this document are different from actual ones. We greatly appreciate your understanding.

All the screenshots in this document are taken from the SVR2420. If you find some options are missing, contact the NVR system administrator to check whether your NVR supports these options. If so, contact the local authorized KEDACOM agent.

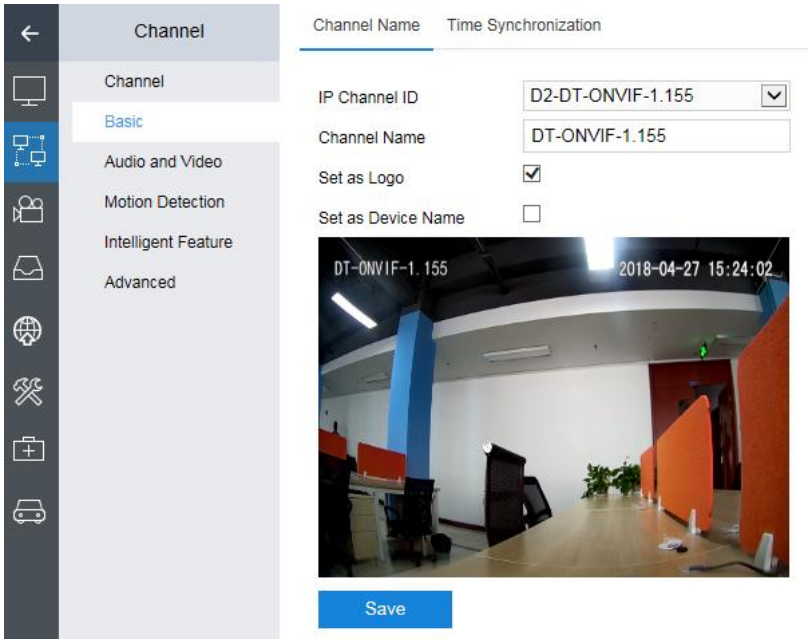
Configuring Cameras

Basic Information

Channel Name

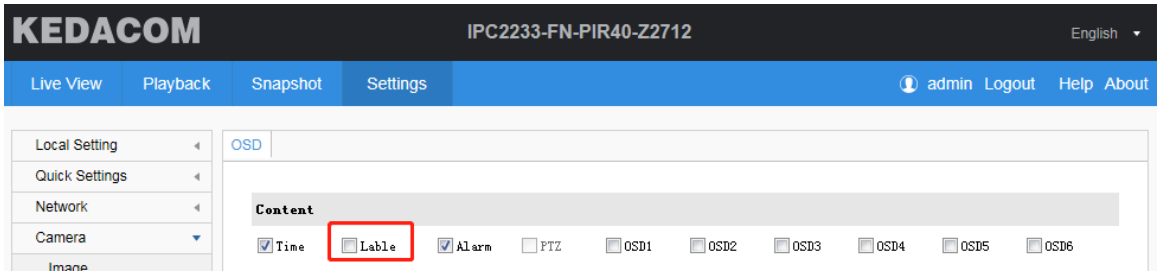
To change the channel name of a camera:

1. Choose **Settings** > **Channel** > **Basic**.
2. Select the camera from the **IP Channel ID** drop-down list.
3. Enter a channel name.
   The following is an example.



4. (Optional) Check **Set as Logo** to set the channel name of the camera as the camera logo.
   After this, you can find the channel name is displayed on the top left corner of the viewing window.

If you do not want to show the logo, please go to the IPC Web and uncheck **Lable** (**Settings** > **Camera** > **OSD**).

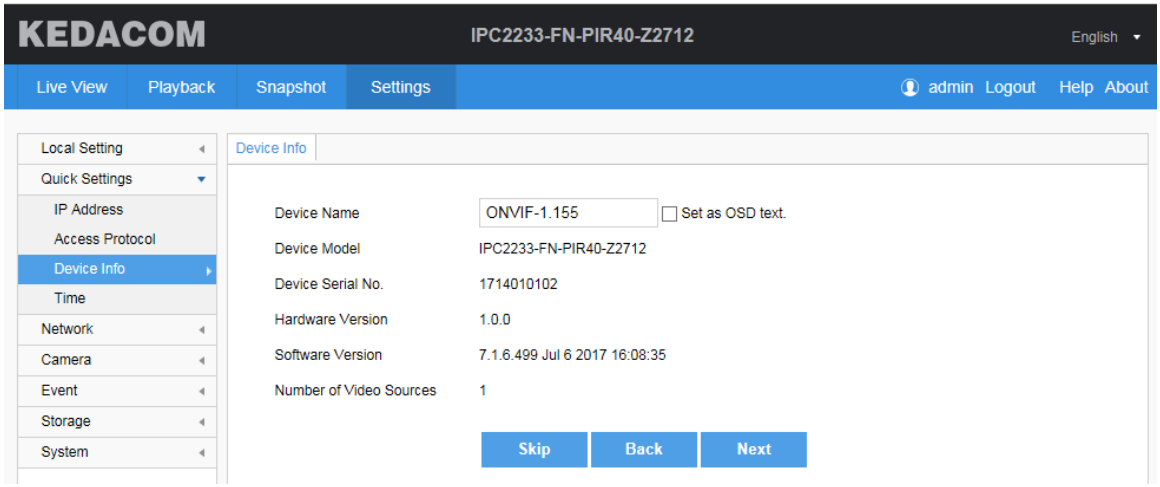


NOTE:

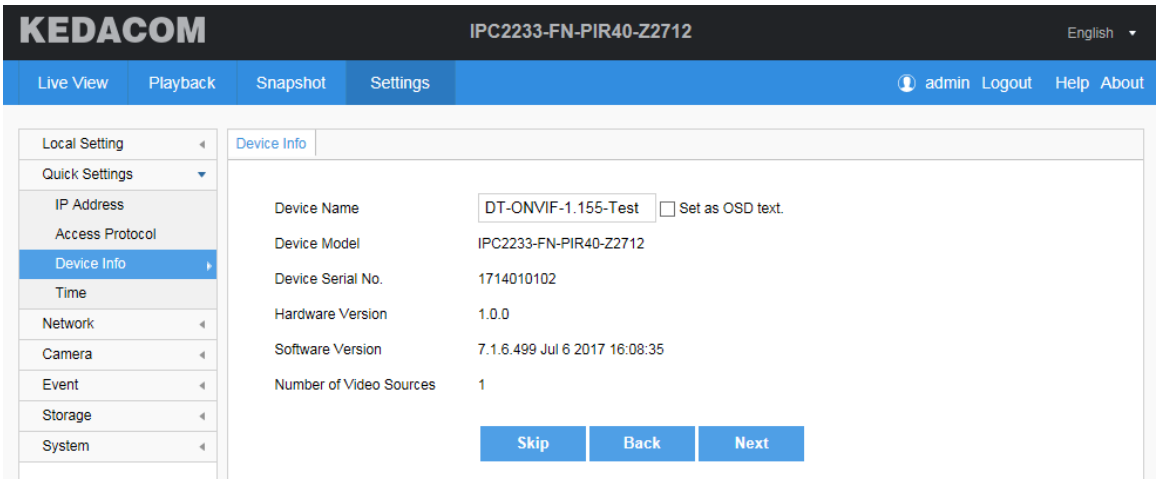
This option does not apply to VSIP and offline channels.

5. (Optional) Check **Set as Device Name** to set the channel name of the camera as its device name. After this, you can find the device name of the camera is changed on its web client.

Before:



After:



NOTE:

This option does not apply to VSIP and offline channels.

6. Click **Save**.

Time

To change the time settings of a camera:

1. On the **Time Synchronization** tab page, select the camera from the **Channel** drop-down list.
2. Select a value from the **Synchronization With** drop-down list.
   The following table provides an example.

If	Then

The NVR uses the UTC +08 time zone and the current time is 10:00 (24-hour).
The IPC uses the UTC +02 time zone.
	When **Time Zone and Time** is selected, **the IPC time is 4:00**.
	`(Formula: 10-8+2=4)`
	When **Time Zone and Time** is selected and **Use Time Zone of NVR** is checked, **the IPC time is 10:00**.
	`(Formula: 10-8+8=10)`
	When **Local Time** is selected, **the IPC time is 12:00**.
	`(Formula: 10+2=12)`
	When **UTC Time** is selected, **the IPC time is 4:00**.
	`(Formula: 10-8+2=4)`

3. Click **Save**.

Audio and Video

NOTE:

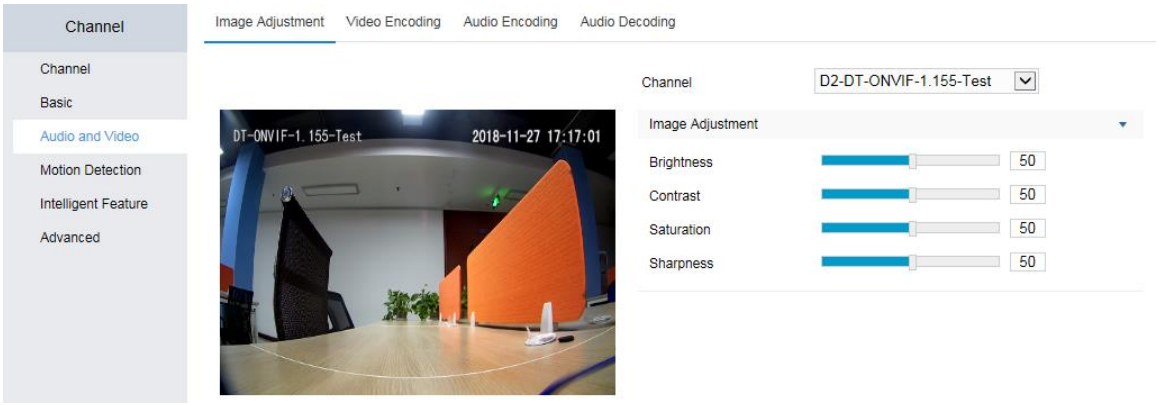
Parameters displayed under **Audio and Video** vary according to the camera type.

Image Adjustment

To adjust the image settings of a camera:

1. Choose **Channel** > **Audio and Video** > **Image Adjustment**.

2. Select the camera from the **Channel** drop-down list.
3. Adjust the brightness, contrast, saturation, and sharpness for the camera.
   The following is an example.



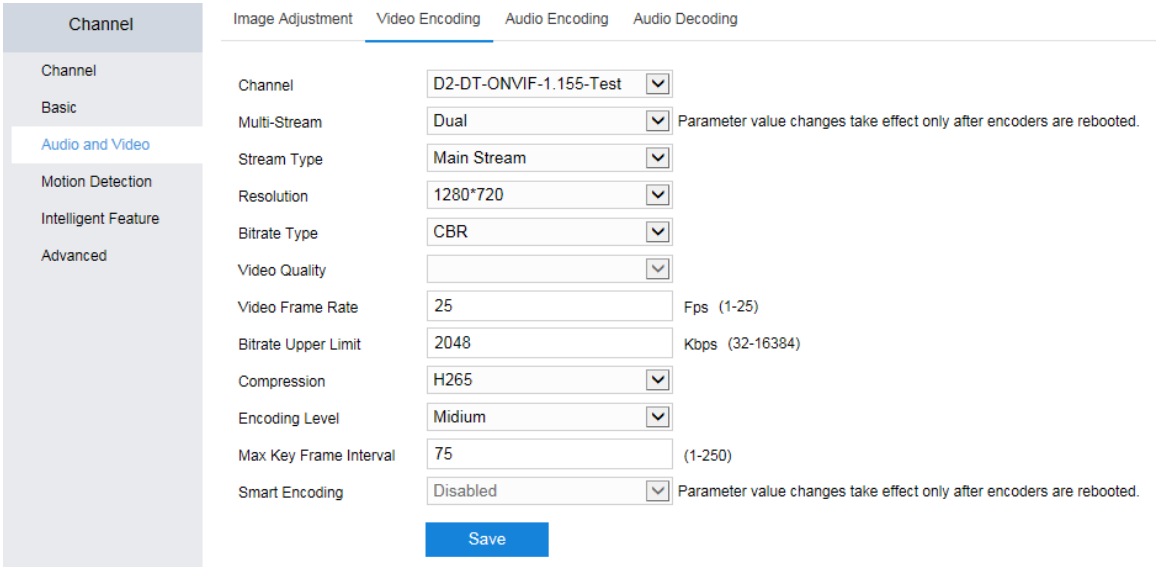
NOTE:

Changes made to the image settings can take effect immediately.

Video Encoding

To configure the video encoding settings of a camera:

1. Click **Video Encoding**.
2. Configure parameters displayed.
   The following is an example.



Smart Encoding: Whether to enable the smart encoding function. If this function is enabled when IP mode is static, it helps reduce the video frame rate. If it is enabled when the bitrate is low, it helps improve the image quality.

Not all cameras support the **Video Quality** and **Smart Encoding** parameters.

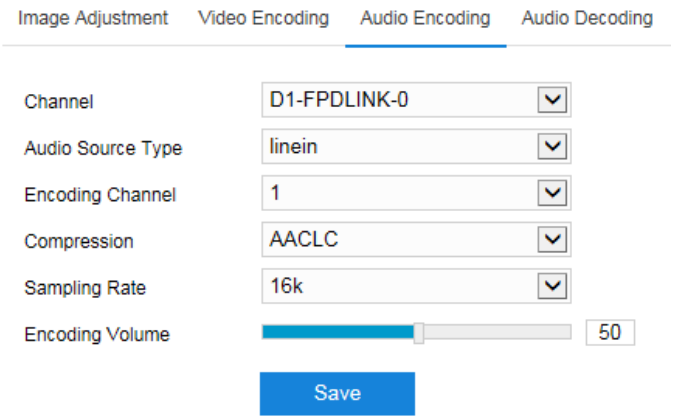
Changing the values of the **Resolution** and **Compression** parameters for ONVIF cameras will cause them to go offline and then online.

3. Click **Save**.

Audio Encoding

To configure the audio encoding settings of a camera:

1. Click **Audio Encoding**.
2. Configure parameters displayed.
   The following is an example.

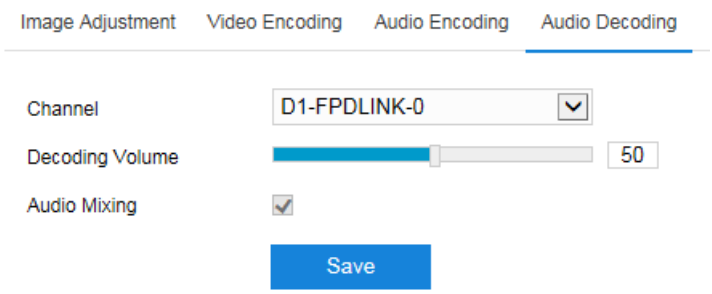


   Encoding Volume: indicates the audio input volume.
   Changing the values of the **Compression** and **Sampling Rate** parameters for ONVIF cameras will cause them to go offline and then online.
3. Click **Save**.

Audio Decoding

To configure the audio decoding settings of a camera:

1. Click **Audio Decoding**.
2. Configure parameters displayed.



   Decoding Volume: indicates the audio output volume.
   Audio Mixing: Whether to enable the audio mixing function. When this function is enabled, you can hear the sound from two-way audio (listening and calling). VSIP cameras do not support this function.
3. Click **Save**.

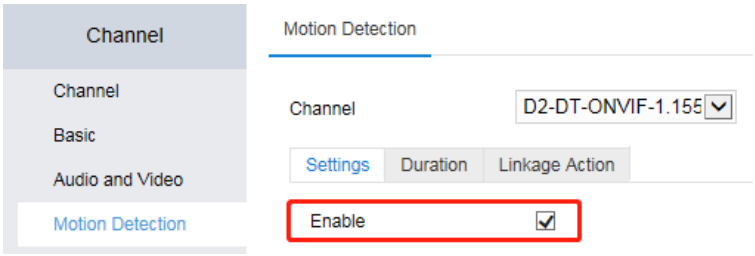
Motion Detection

The motion detection feature can detect suspicious motions in guarding areas of cameras. When a

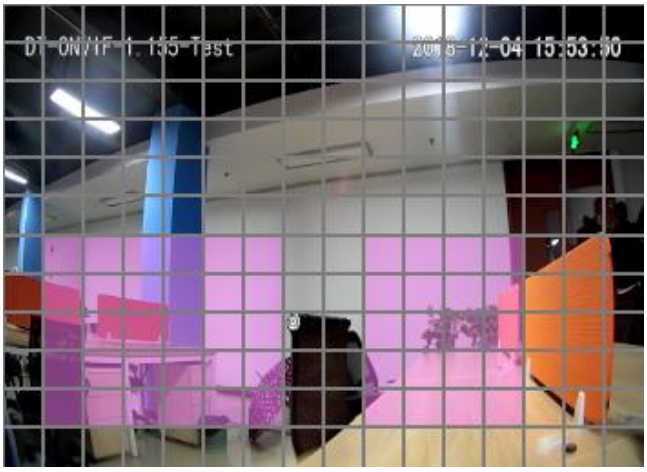
motion is detected, the " Alarm:Moving " text is displayed on the viewing window of the related camera and multiple linkage actions (if configured) will be triggered.

To enable this feature for a camera:

1. Click **Motion Detection**.
2. Select the camera from the **Channel** drop-down list.
3. Under **Settings**, check **Enable**.



4. Specify the detection sensitivity.
5. Click **Start Drawing**.
6. Draw detection areas (displayed in purple red).



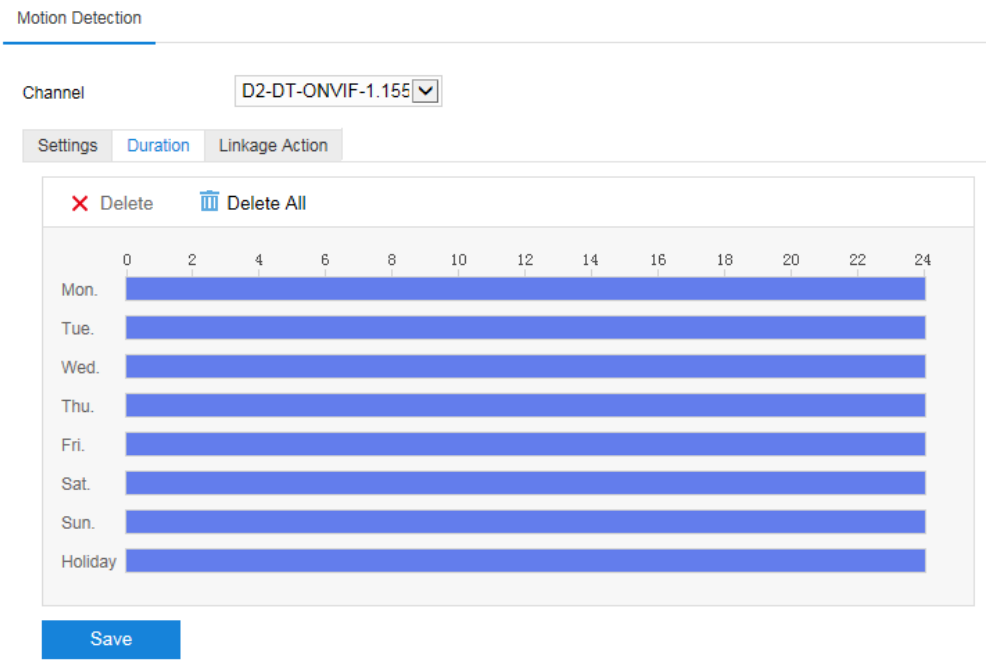
As shown in the preceding figure, the entire guarding area is divided into 16*12 cells. You can draw at most four detection areas (rectangles) for the camera.

You can draw in the bottom right direction to select areas and in the top left direction to unselect areas.

7. Click **Stop Drawing**.

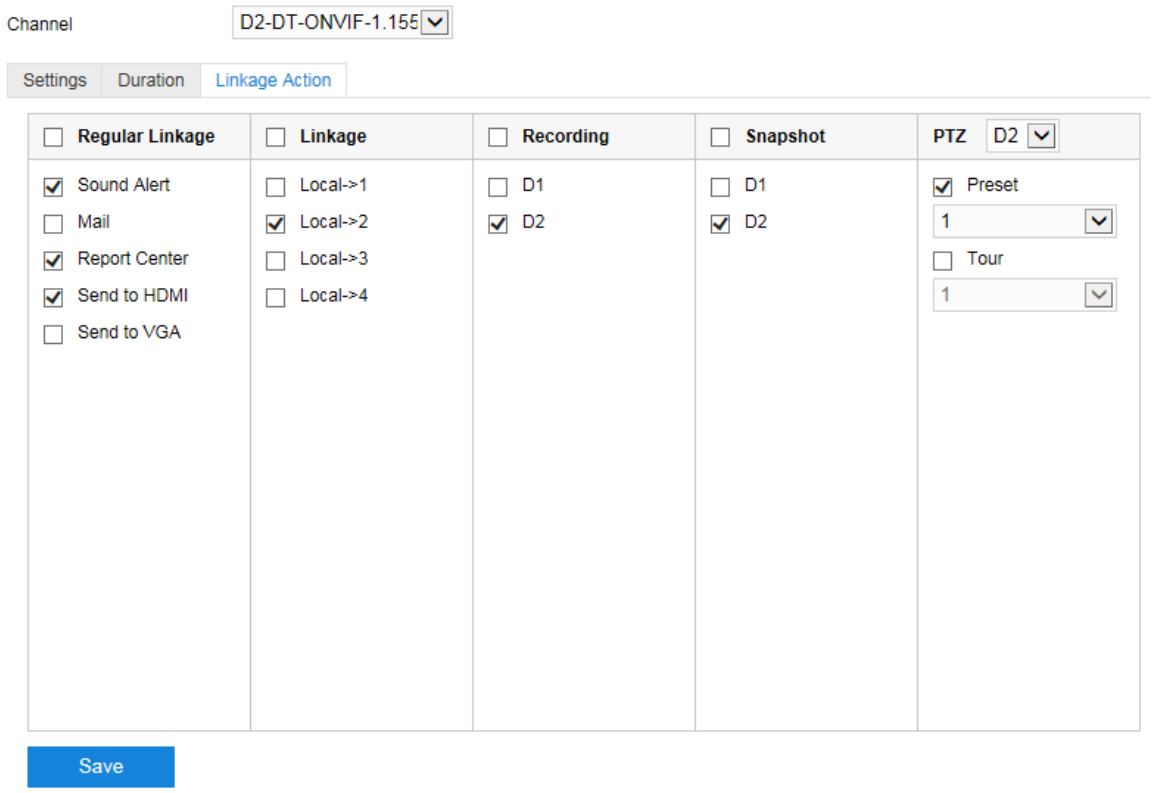
After this, you can find the following.

8. (Optional) Click **Clear All** to clear all detection areas.
9. Click **Save**.
10. Under **Duration**, select the durations when the Motion Detection is enabled.

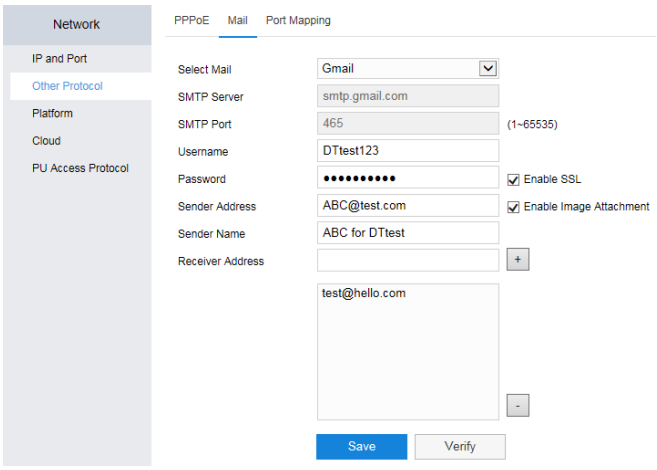


In this step, operations are similar with those described in section "Scheduling Recordings".

11. Click **Save**.
12. Under **Linkage Action**, specify linkage actions.
    The following is an example.



The following table provides action descriptions.

Type	Action	Description
Regular Linkage	Sound Alert	Trigger the sound alert on the NVR.
	Mail	Email an alarm notification to specific users. When a mail address is configured, the NVR can notify users of alarms and exceptions. The mail addresses can be configured in the following path.  To configure mail addresses: 1. Select a mail type. If you select an existing mail type (for example, 126/163 mail), you do not need to specify SMPT Server and SMTP Port. Instead, they will be configured by the NVR itself. If you select Other Mail, they are mandatory. 2. Specify **Username** and **Password**.

Type	Action	Description
		3. (Optional) Enable the SSL. If you enable the SSL, mails will be encrypted by the SSL and the SMTP port will be automatically updated to **465**. 4. Specify **Sender Address** and **Sender Name**. 5. (Optional) Enable image attachment. If you enable image attachment, real-time snapshots will be attached to alarm/exception notification mails. 6. Specify **Receiver Address**. A maximum of eight receiver addresses can be added. 7. Click **Save**. 8. Click **Verify** to verify the mail settings.
	Report Center	Report an alarm to the management system (for example, the VMS).
	Send to HDMI	Send the live video of the alarming camera to the display connecting to the HDMI port of the NVR.
	Send to VGA	Send the live video of the alarming camera to the display connecting to the VGA port of the NVR.
Linkage	Local->1/2/3/4	Trigger the going off of the NVR alarm outputs. The number of alarm outputs varies according to the NVR model.
Recording	D1/D2…	Trigger a recording on the linked camera.
Snapshot	D1/D2…	Trigger a capture on the linked camera.
PTZ	Preset	Enable the linked camera to go to a specific preset.
	Tour	Enable the linked camera to start a specific path tour.

13. Click **Save**.

Intelligent Feature Alarms

Introduction

The NVR supports the following intelligent feature alarms of cameras:

Intelligent Feature Alarm	This Alarm Is Triggered When
Tampering	The video of the camera is blocked.
Guard Line	A person crosses the preconfigured guard line.
Enter Guard Area	A person enters the guarding area.
Entry Guard Area	A person loiters around the guarding area.
Exit Guard Area	A person leaves the guarding area.
Object Removal	A person takes away an object from the guarding area.
Object Left	A person leaves an object in the guarding area.
Defocus	The video image gets blurred.
Gathering	People gather in an area (for example, emergency exit) where people are not supposed to do so.

Scene Change	The guarding area changes.
Audio Surge	An audio surge occurs.
Face Detection	A target face is detected.

Configuring

To configure an intelligent feature alarm for a camera:

1. Click **Intelligent Feature**.
2. Select the camera from the **Channel** drop-down list.
3. Specify **Detection Type**.
4. Under **Duration**, select the durations when the alarm is enabled.
   In this step, operations are similar with those described in section "Scheduling Recordings".
5. Click **Save**.
6. Under **Linkage Action**, specify linkage actions.
   In this step, operations are similar with those described in section "Motion Detection".
7. Click **Save**.

Upgrade

To upgrade a camera:

1. Choose **Advanced** > **Upgrade**.
2. Select the camera model from the **Model** drop-down list and the camera from the channel list.
3. Click **Upgrade**.

Configuring Storage Settings

NOTE:

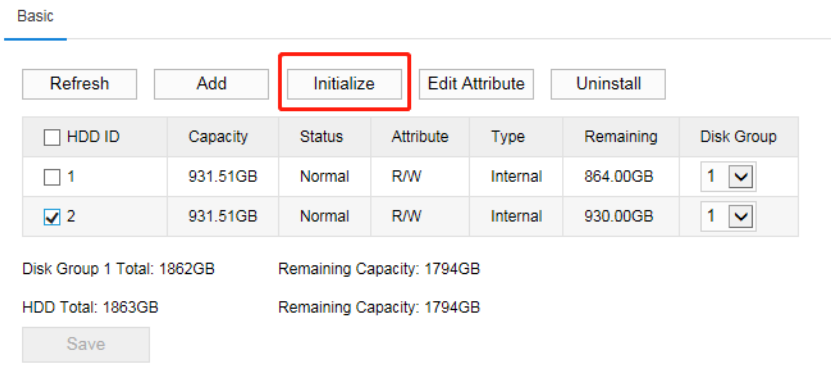
The SVR2420 does not support network storage units.

Editing an HDD

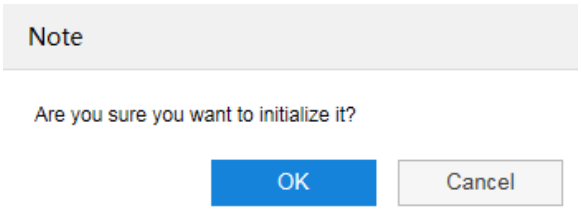
Initializing an HDD

To initialize an HDD:

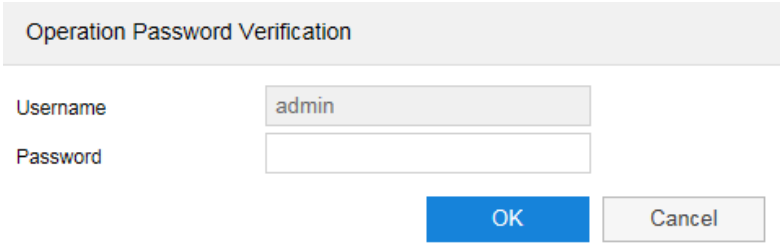
1. Stop all playbacks.
2. Select the HDD from the HDD list.
3. Click **Initialize**.



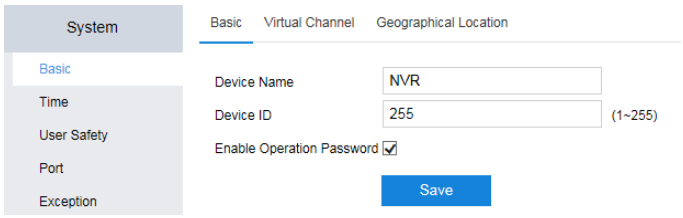
4. Confirm your operation.



5. Enter the password of the admin account.



If **Enable Operation Password** is unchecked, this step can be skipped. For details about this option, see section "NVR Name and ID".



6. Click **OK**.

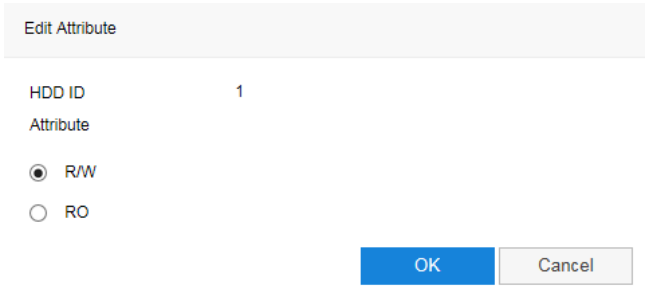
NOTE:

You cannot initialize a USB flash drive.

Editing the Attribute of an HDD

To edit the attribute of an HDD:

1. Select the HDD from the HDD list.
2. Click **Edit Attribute**.
3. Select an attribute.



4. Click **OK**.

NOTE:

You cannot edit the attribute of a USB flash drive.

Changing the Storage Mode

The NVR supports the following storage modes:

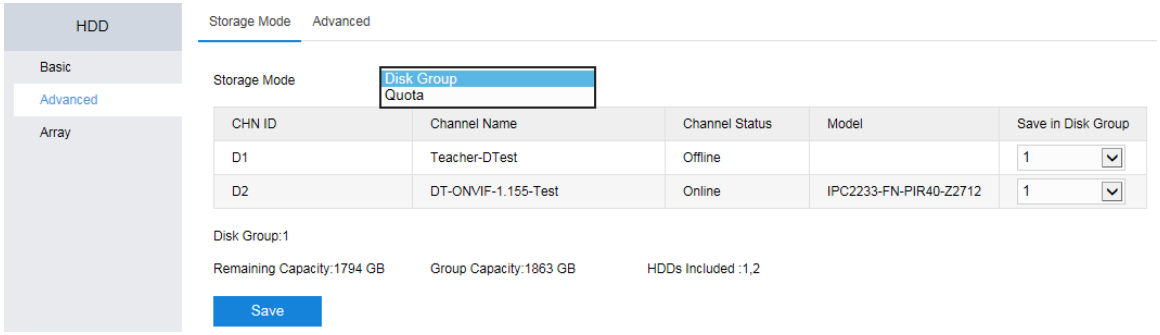
- **Disk Group**: When a camera is assigned a group, records and pictures of the camera will be saved in HDDs of this group. An HDD can belong to only one disk group, which can include multiple HDDs.
- **Quota**: A camera is assigned a specific amount of recording/capturing/synopsis space quota. The synopsis quota is available only to cameras supporting the record synopsis function. A quota must be a multiple of 2. You can click **Copy To** to copy the quota settings of a camera to other cameras. In quota mode, when the data size of a camera exceeds the specified quota, the excess will be saved temporarily. If the storage space becomes insufficient, the excess will be overwritten preferentially.

Please note the following before changing the storage mode:

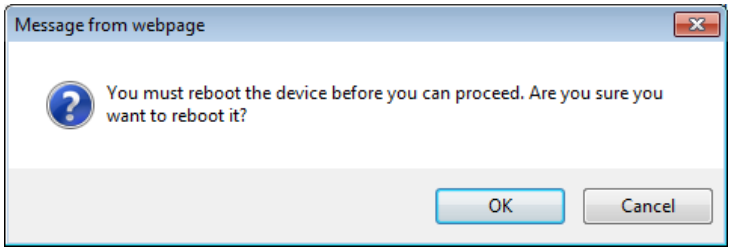
- Switching between the disk group and quota modes will cause the NVR to reboot.
- USB flash drives and NAS/IPSAN storage units do not support the disk group mode.

To change the storage mode of the NVR from **Disk Group** to **Quota**:

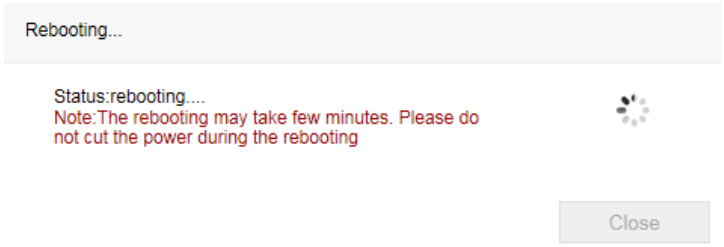
1. Choose **Advanced** > **Storage Mode**.
2. Select **Quota** from the **Storage Mode** drop-down list.



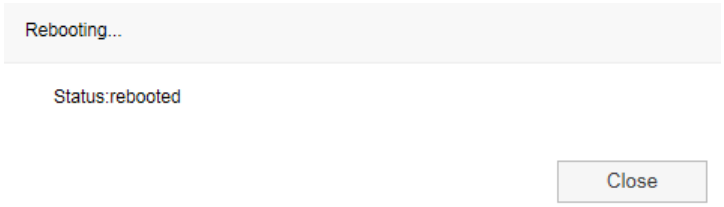
3. Click **OK**.



4. Wait while the storage mode is being changed.

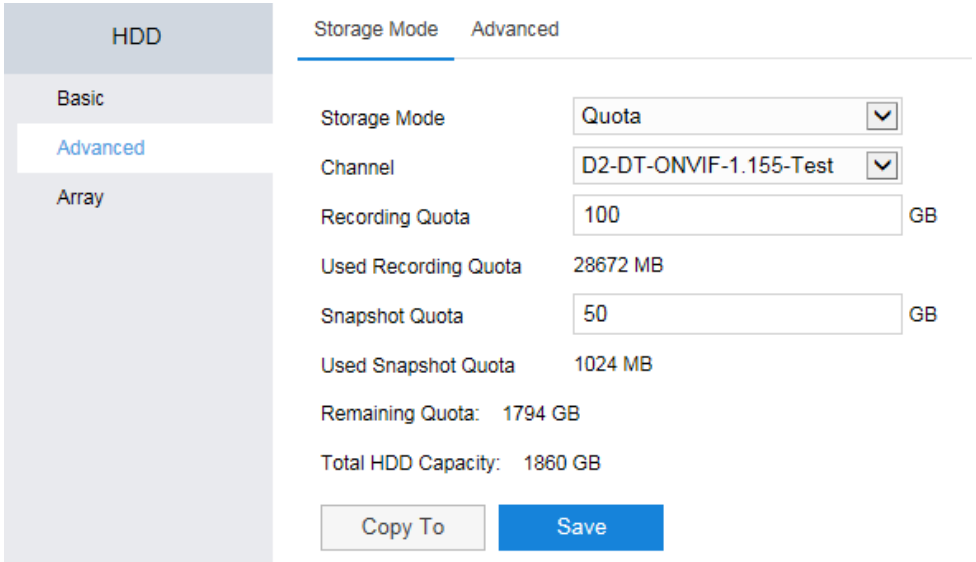


5. Click **Close**.



6. Log in to the NVR again.

After the preceding steps are performed, you can find the following.



You can then assign a specific amount of recording/snapshot quota to a camera. If you set **Recording Quota** to **0**, the NVR will still try to save the records of the camera to a space-sufficient HDD. If you set

Snapshot Quota to **0**, snapshots of the camera will be not saved.

Uninstalling an HDD

To uninstall an HDD, select the HDD from the HDD list and click **Uninstall**.

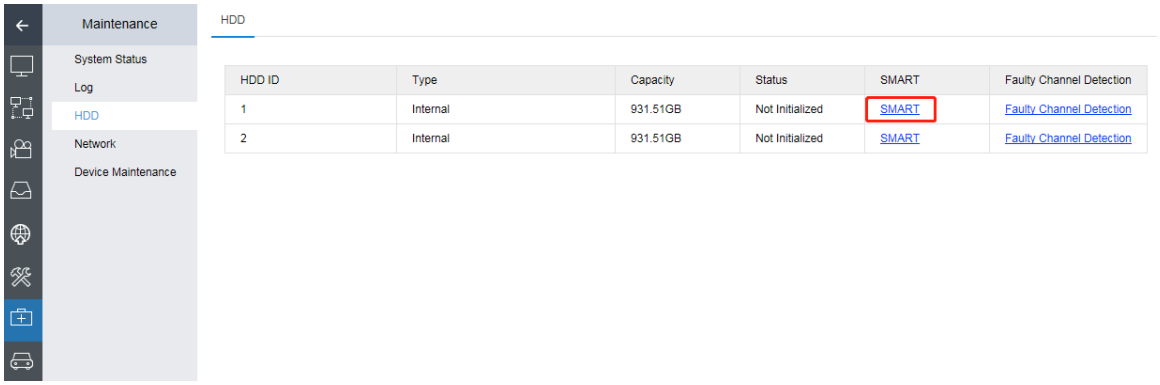
NOTE:

You cannot uninstall an HDD involved in an ongoing playback.

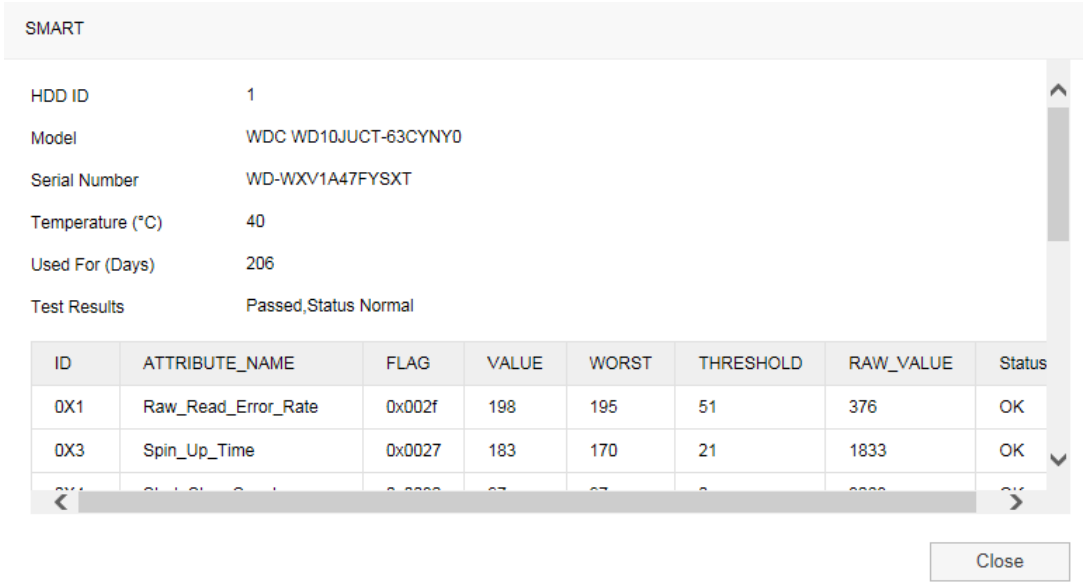
Testing an HDD

SMART Test

To conduct a Self-Monitoring Analysis and Reporting Technology (SMART) test, choose **Maintenance** > **HDD** > **SMART**.



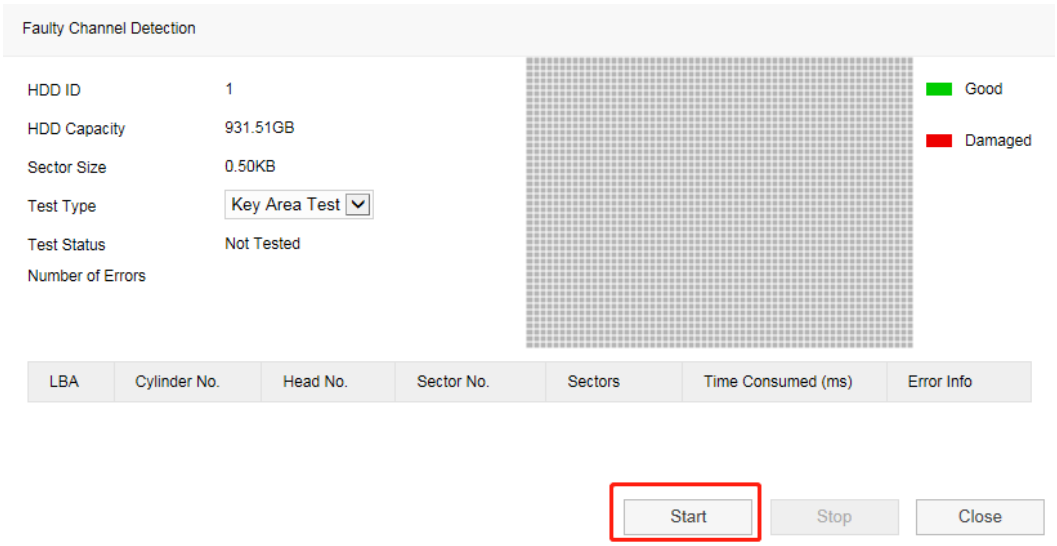
The following is an example for test results.



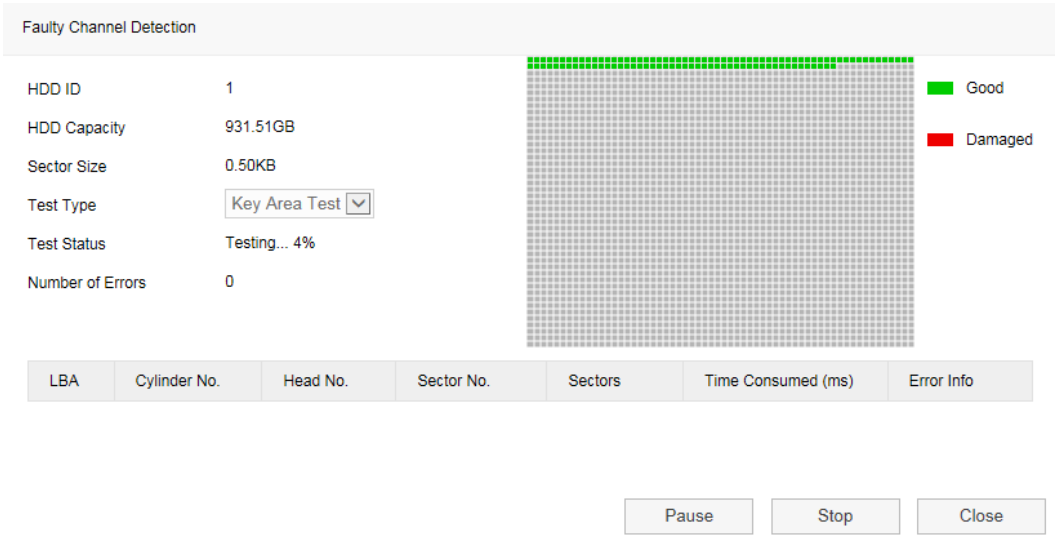
Faulty Channel Detection

To conduct a faulty channel detection:

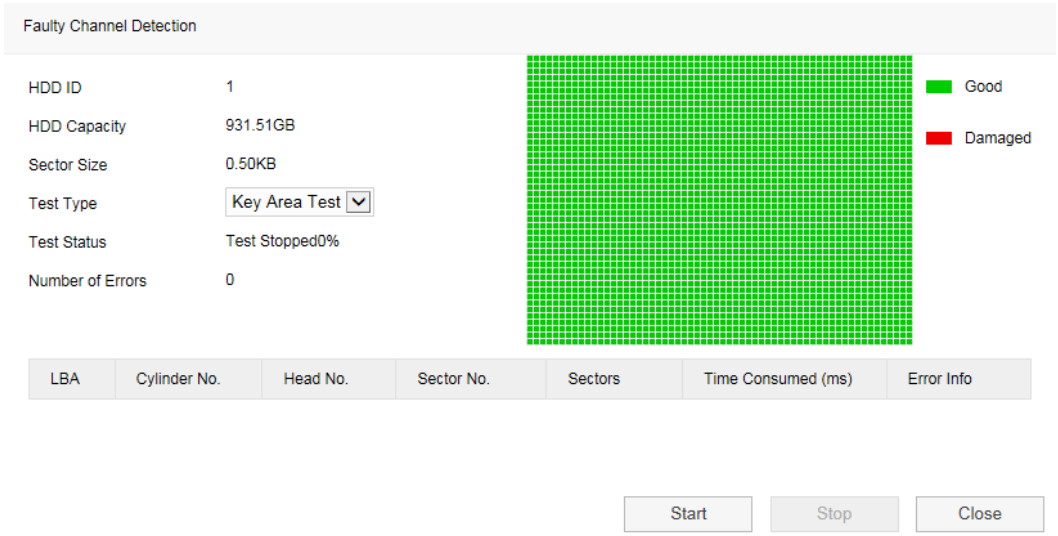
1. Choose **Faulty Channel Detection**.
2. Specify **Test Type**.
   Both the two test types will take an hour. However, the accuracy of the complete test type is higher than that of the key area test type.
3. Click **Start**.



4. Wait while the detection is going on.

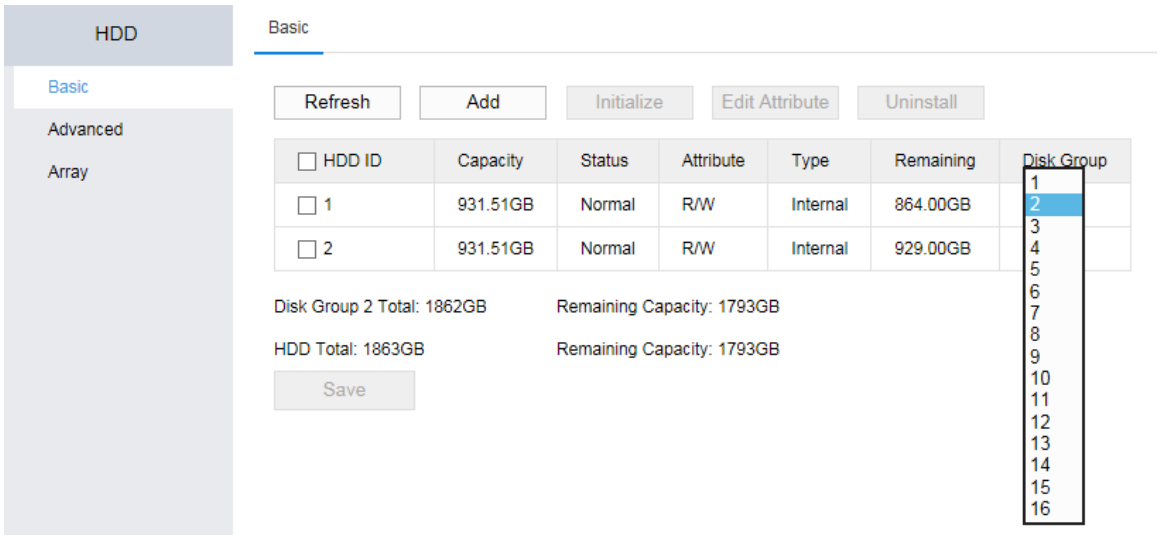


5. Click **Close** when the detection is completed.



Regrouping a Camera

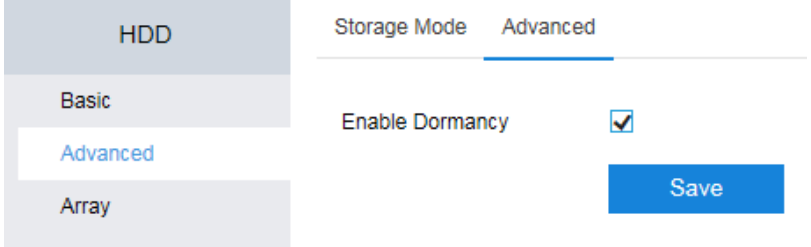
To regroup a camera, select a new group ID from the **Disk Group** drop-down list and click **Save**.



Enabling HDD Dormancy

The HDD Dormancy function enables an HDD to become dormant if it is idle for over 15 minutes. When an HDD becomes dormant, it stops reading and writing. It may take 5-15 seconds to wake up a dormant HDD, depending on the HDD model. This function takes effect only when HDDs support this function and no RAID array is created.

To enable this function, choose **Advanced** > **Advanced**, check **Enable Dormancy**, and click **Save**.



Creating/Deleting/Recovering/Transferring a RAID Array

Redundant array of independent disks (RAID) is a data storage virtualization technique that combines multiple disk drive components into a logical unit for the purposes of data redundancy or performance improvement.

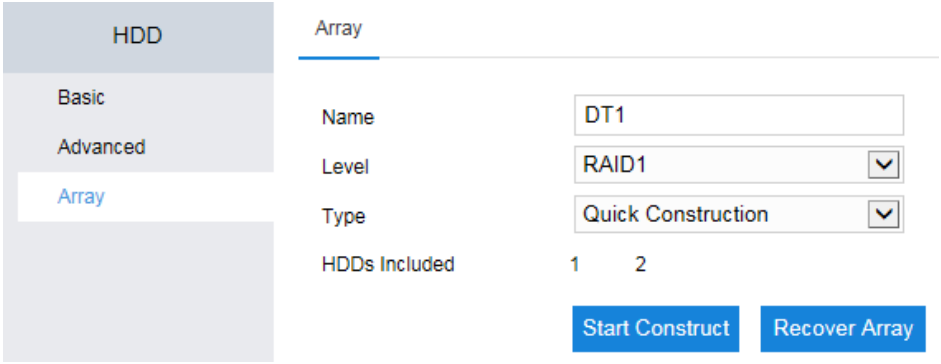
Creating a RAID array

To create a RAID array:

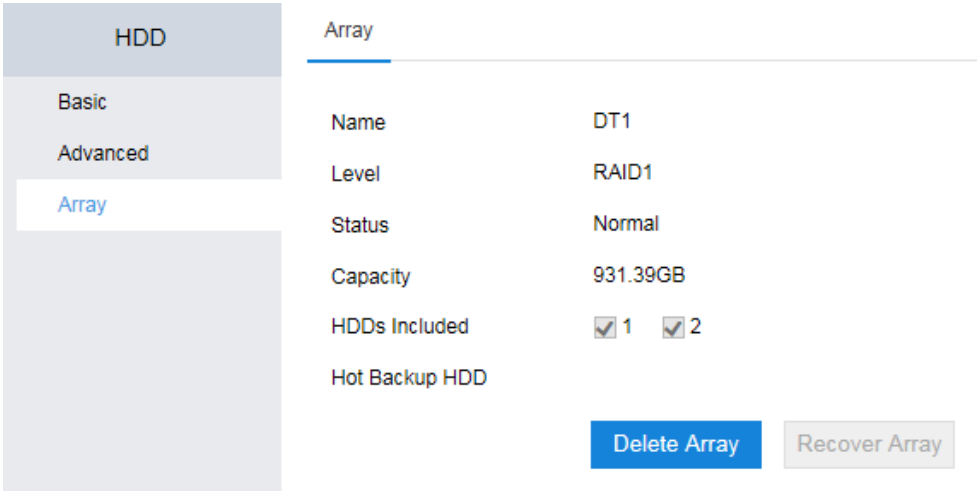
1. Click **Array**.
2. Enter a name.
3. Specify a level.
   Different RAID levels require different numbers of HDDs.
   - RAID 0: at least 2 HDDs
   - RAID 1: 2 HDDs (Note: The number of included HDDs must be even.)
   - RAID 5: at least 3 HDDs
   - RAID 6: at least 4 HDDs
   - RAID 10: at least 4 HDDs (Note: The number of included HDDs must be even.)

   NOTE:
   - RAID 5 and RAID 6 support hot backup. When an HDD in a RAID 5/6 array becomes faulty, the system can reconstruct the RAID array automatically.
   - For RAID 5/6 arrays, you can set newly installed HDDs as hot backup HDDs.
4. Determine a construction type.
   - **Complete Construction**: All the HDDs involved will be initialized before a RAID array is created. This value is recommended.
   - **Quick Construction**: A RAID array will be created without initializing all the HDDs involved. If one of them is faulty, data loss may occur during recordings due to the faulty HDD. Therefore, this value is recommended only when you are sure all the involved HDDs are functional.

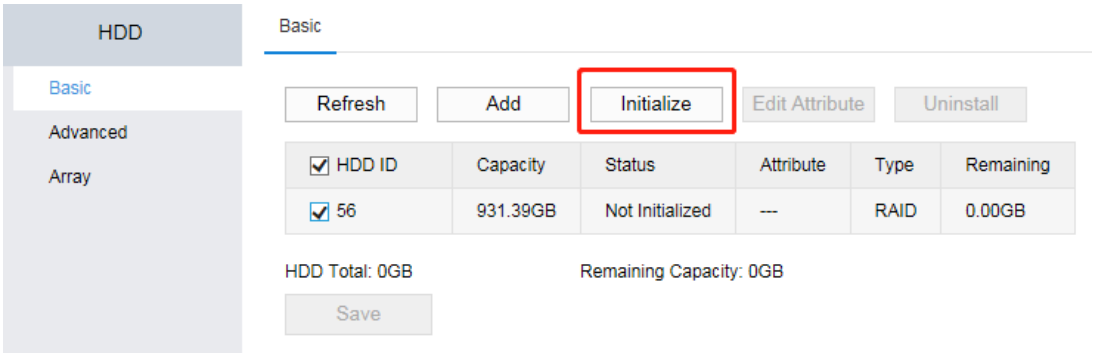
   The following is an example.



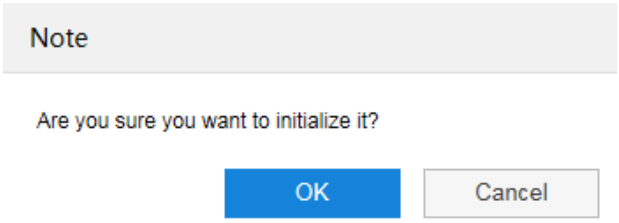
5. Click **Start Construct**.
   After the RAID array is created, you can find the following.



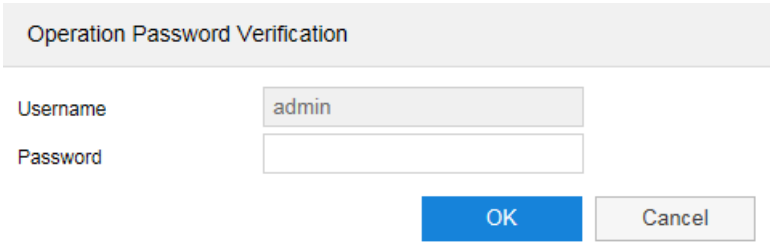
6. Click **Basic**.
7. Select the RAID array and click **Initialize**.



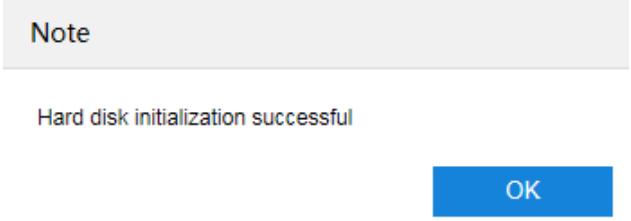
8. Confirm your operation.



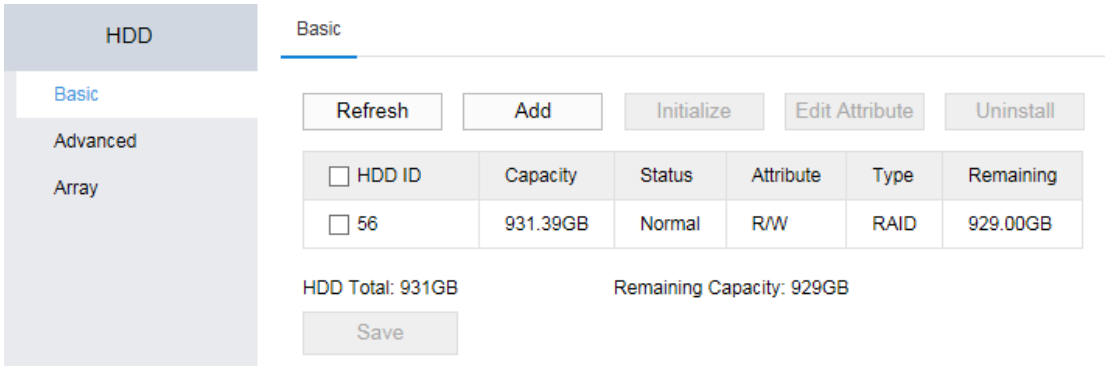
9. Enter the password of the admin account.



10. Click **OK**.
11. Wait while the RAID array is being initialized.
12. Click **OK**.

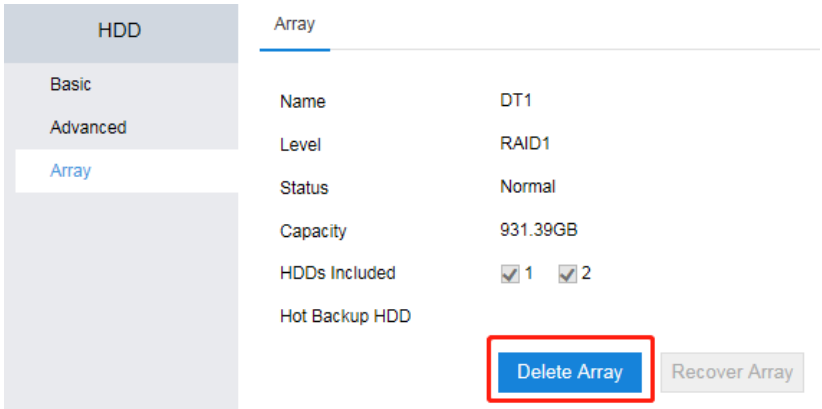


After the preceding steps are performed, you can find the following.



Deleting a RAID array

To delete a RAID array, click **Delete Array** and confirm your operation.



Recovering a RAID array

Clicking **Recover Array** may help you recover a RAID array in any of the following conditions:

- The RAID array does not exist after a power failure.
- The RAID array unexpectedly disappears when the NVR is operating properly.

If the RAID array fails to be recovered, contact the local authorized agent.

NOTE:

A RAID array can be recovered but the level of the recovered RAID array is degraded by one. A RAID array of level 0 cannot be recovered since the level cannot be degraded further.

Clicking **Recover Array** cannot help you recover a RAID array in any of the following conditions:

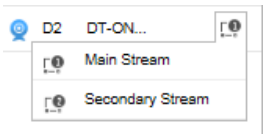
- No RAID array was created.
- A RAID array was created but it was deleted later.
- Disks related to the RAID array become faulty.

Live View

Main Interface

The following is the main interface of the **Live** tab page.

The four main areas are described as follows:

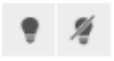
Area A	Camera list. You can click to switch between the main (**1**) and secondary (**2**) streams. 	 Online	 Alarm generated	 Alarm generated and being viewed
		 Offline or not registered	 Being viewed	
Area B	Screen layout with viewing windows. You can click to change the screen layout.  To view videos of a camera, select a viewing window and double-click the camera.			
Area C	PTZ controls, which will be detailed in section "PTZ Controls".			
Area D	Presets and tour paths, which will be detailed in section "Presets and Paths".			
Area E	Control bar, which will be detailed in section "Control Bar".			

PTZ Controls

NOTE:

PTZ controls take effect on only PTZ cameras.

PTZ controls are described as follows.

	Direction buttons. You can click  to reset the camera to the factory position.		Increase or decrease the focus. Alternatively, use the automatic focus. Increase or decrease the aperture. Alternatively, use the automatic aperture.
	Adjust the PTZ speed.		Enable or disable the backlight.
	Zoom in or out.		Enable or disable the wiper.

Presets and Paths

Creating a Preset

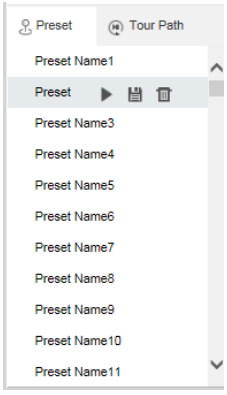
NOTE:

Only ONVIF/VSIP cameras support this operation.

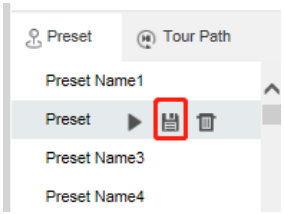
To create a preset for a camera:

1. Move the camera in operation to a position using arrow buttons.

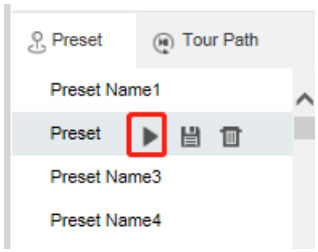
2. Select a preset from the preset list.



3. Click  .



After the preceding steps are performed, a preset is saved. Clicking ▶ will enable the camera to go to the preset.

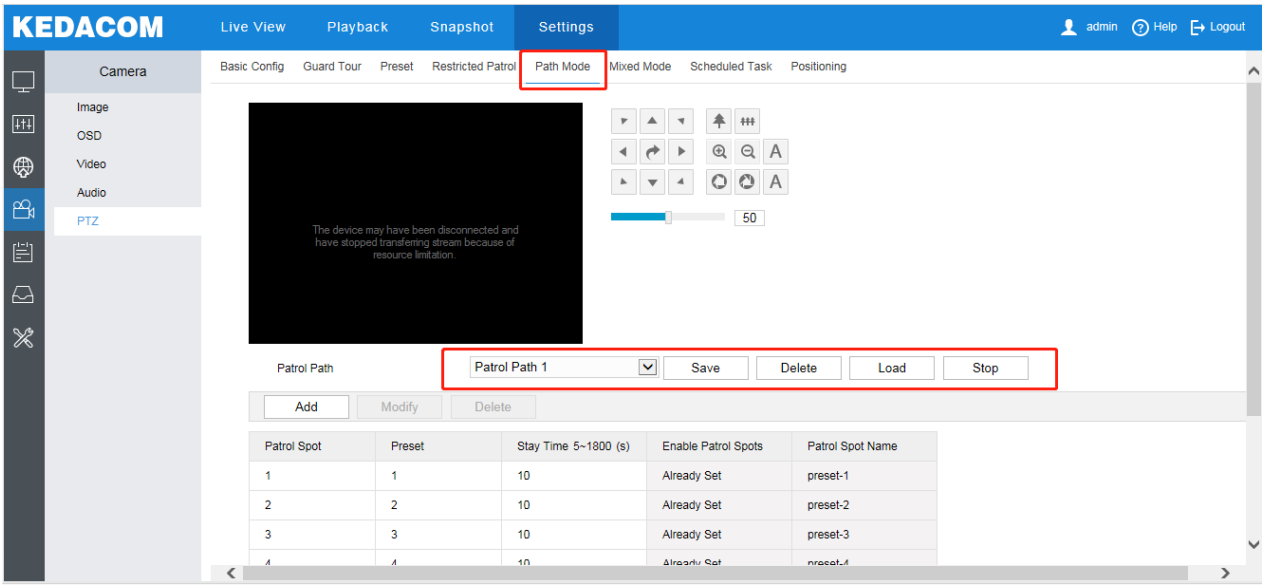


Touring Presets

Go to the IPC Web of the camera in operation to tour its presets. For details, see the camera user manual.

Touring Paths

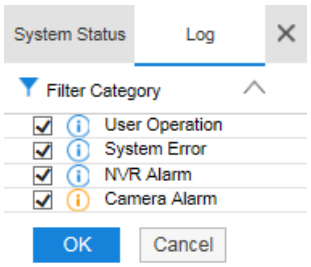
On the NVR Web, you can only tour paths and these paths can be configured only on the IPC Web of the camera in operation.

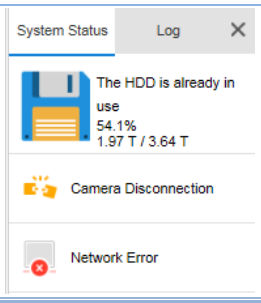


Control Bar

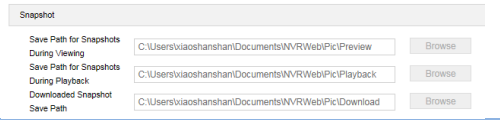
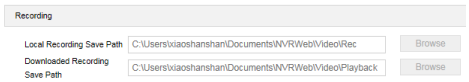
Icons, options, or buttons on the screen top are described as follows.

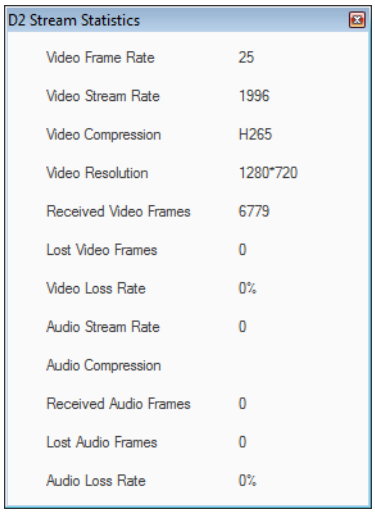
admin	User account	Help	Help guide
Log Out	Log out from the system.	-	-
	Logs. The following is an example.		System status and alarms. The following is an example.





Icons, options, or buttons on the screen bottom are described as follows.

	Shortcut to the channel settings.		Start viewing.
	Rename a channel.		View in full screen mode.
	Screen layout	1/1	Turn viewing pages.
	Start a broadcast where all online cameras will be called but they will not be heard.		Stop viewing.
	Stream type		Start a local capturing. The save path is configurable (**Settings** > **Local**). 
	Start a local recording. The save path is configurable (**Settings** > **Local**). 		Adjust the volume.
	Select an audio channel. The number of audio channels varies according to the camera model.		Call the camera.
	Digital zooming. Drawing in the top left direction will digitally zoom in a place of the guarding area and drawing in the reverse direction will cancel the digital zooming.		Electronic PTZ (e-PTZ) function.
	Display stream statistics. The following is an example.	-	-

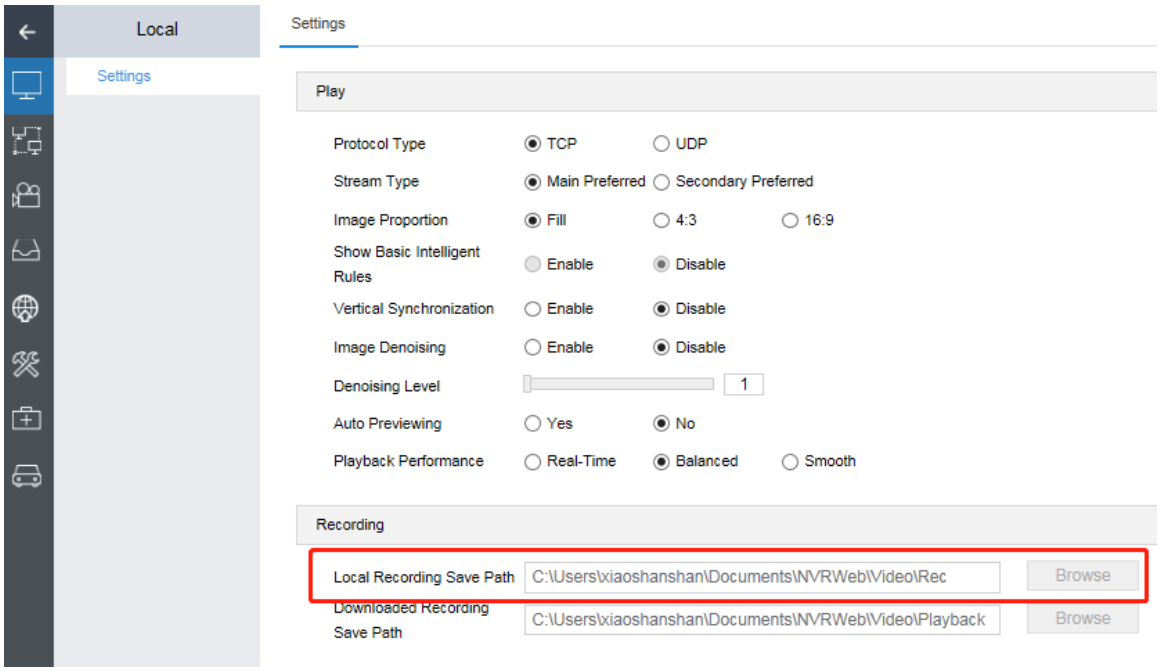

D2 Stream Statistics
Video Frame Rate 25
Video Stream Rate 1996
Video Compression H265
Video Resolution 1280*720
Received Video Frames 6779
Lost Video Frames 0
Video Loss Rate 0%
Audio Stream Rate 0
Audio Compression
Received Audio Frames 0
Lost Audio Frames 0
Audio Loss Rate 0%

Recording

Starting a Local Recording

To start a local recording, click **Enable Local Recording** on the bottom of the **Live** tab page.

The records will be saved in the following save path, which is configurable when you open the Internet Explorer as an administrator.



Scheduling a Recording

For details, see section "Scheduling Recordings".

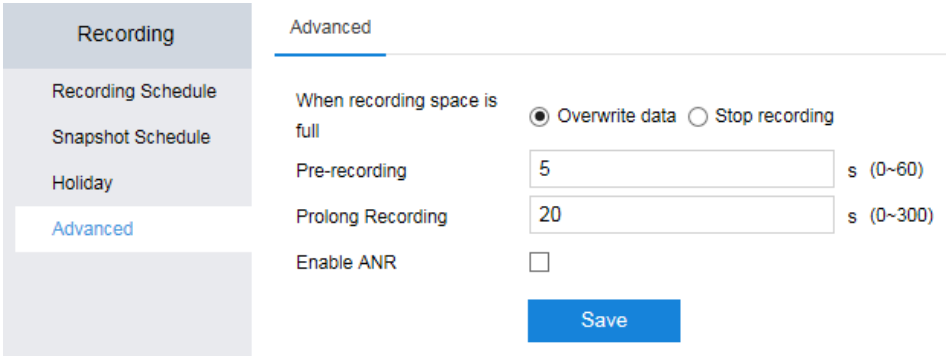
Setting the Recording Policy

The recording policy includes the following:

- What to do when storage space is insufficient
- How long a recording starts in advance, in other words, the pre-recording length, when an alarm is generated
- How long a recording prolongs when an alarm is generated
- Whether to allow cameras to store recordings when they are disconnected from the NVR and transfer these recordings to the NVR when they are connected to the NVR again. This is achieved using the Automatic Network Replenishment (ANR) technology.

To configure the recording policy:

1. Choose **Settings** > **Recording** > **Advanced**.
2. Specify parameters displayed.



If you select **Enable ANR**, the ANR technology is enabled. For cameras, the ANR technology can be configured only on the camera side using the IPC Web. For details, see the related user guide.

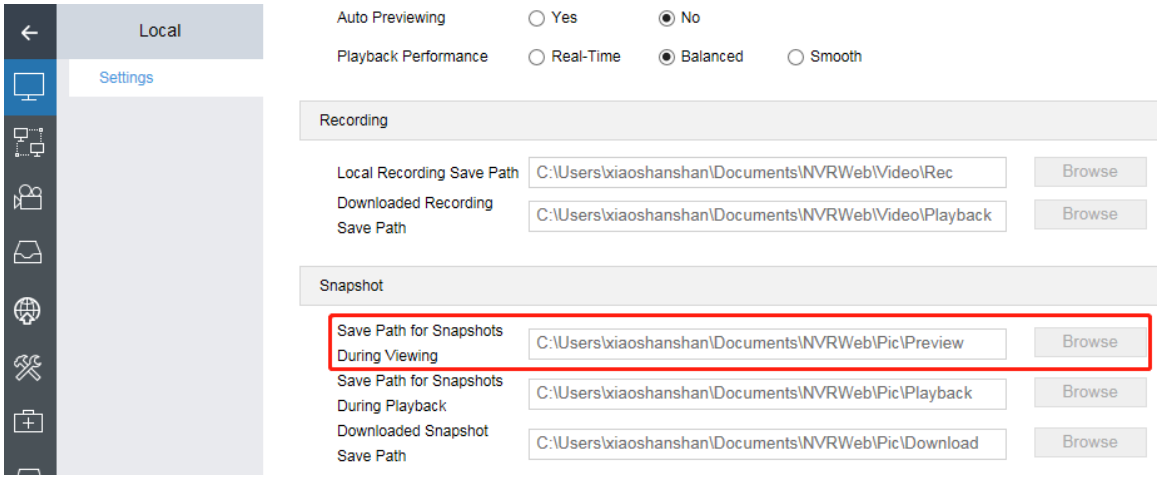
3. Click **Save**.

Capturing

Starting a Local Capturing

To start a local capturing, click **Local Capturing** on the bottom of the **Live** tab page.

The records will be saved in the following save path, which is configurable when you open the Internet Explorer as an administrator.

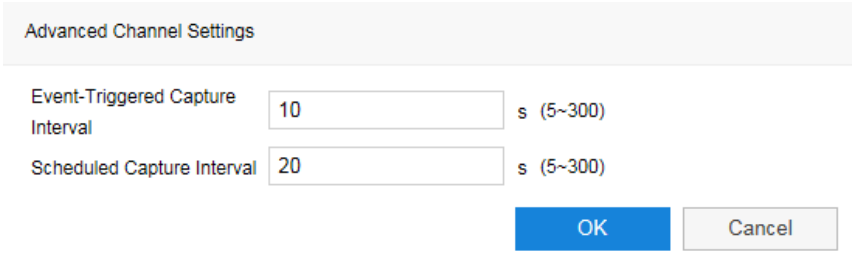


Scheduling a Capturing

For details, see section "Scheduling Recordings".

To schedule a capturing for a camera:

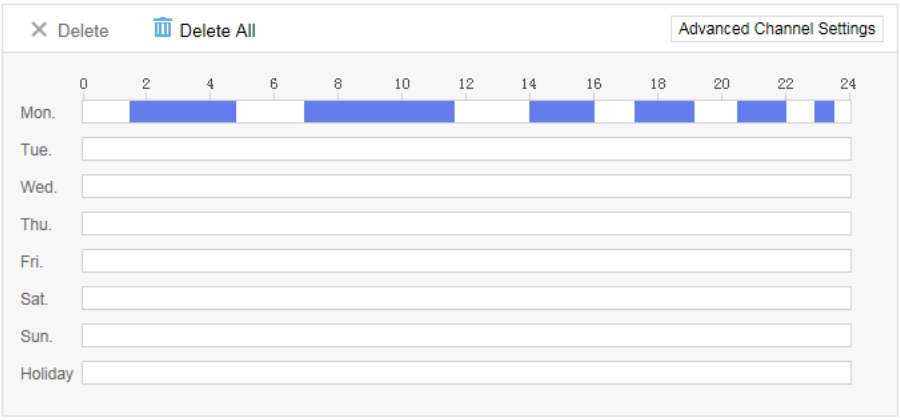
1. Choose **Settings** > **Recording** > **Snapshot Schedule**.
2. Select a channel.
3. Specify a capturing mode.
   Scheduled and Event Triggered: indicates that a capturing will be started:
   - At a scheduled time, which can be configured at step 6
   - Upon the occurrence of an event/alarm (Motion Detection and Intelligent Feature Alarms) (assuming alarm linkage settings of the channel already include the capturing action; for details about the alarm linkage settings, see sections "Motion Detection" and "Intelligent Feature Alarms")
4. Click **Advanced Channel Settings** to configure advanced channel settings.



The following table provides parameter descriptions.

Parameter	Description
Event-Triggered Capture Interval	Interval at which capturings triggered by an event/alarm are made
Scheduled Capture Interval	Interval at which scheduled capturings are made

5. Click **OK**.
6. Press and hold the left mouse button and draw one or multiple lines on the timeline (accurate to the minute) of a day.
   The following is an example.



   After this, capturings will be made during the preceding six periods at a specific interval (**Event-Triggered Capture Interval** or **Scheduled Capture Interval**). A maximum of eight periods can be created in a day and those periods cannot overlap.
   If you click a period, you can edit its start and end times.

7. Copy the period settings of a day to other target days by clicking  and selecting the target days.
   For details, see section "Scheduling Recordings".
8. Click **OK**.
9. Copy the capturing schedule settings of the channel to other target channels by clicking **Copy To** and selecting the target channels.
10. Click **OK**.
11. Click **Save**.

Playing Back

NOTE:

- If you click **Show All Channels**, existing and deleted channels will be displayed.
- When a record is played back for the first time, the playback will start from the very beginning.

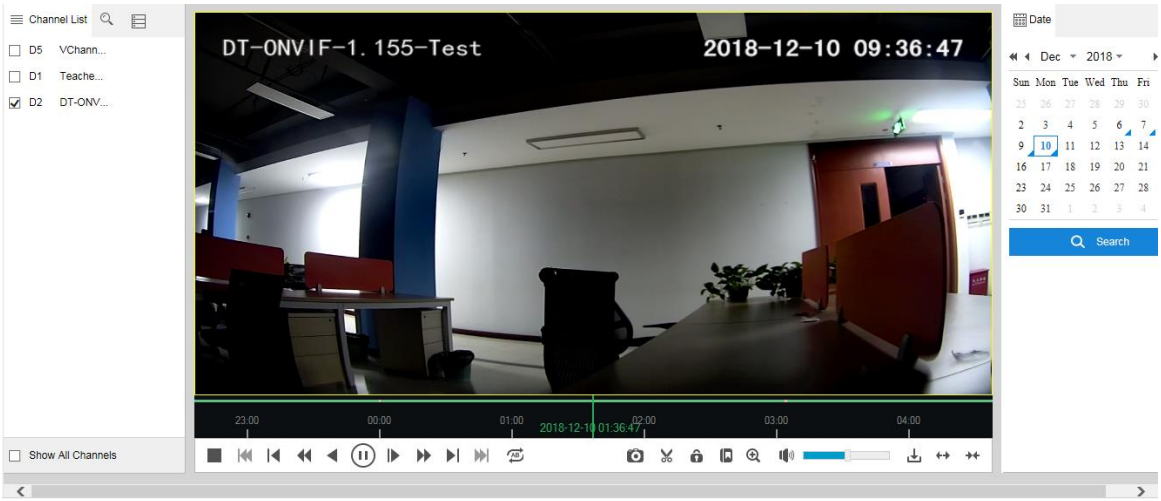
Starting a Playback by Channel

To start a playback by channel:

1. Choose **Playback**.
2. Select one or multiple cameras from the channel list.
   Note:
   The screen layout will automatically change according to the number of selected cameras. A maximum of 16 cameras can be played back at the same time.
   When multiple channels are selected, they are bound to view windows according to the channel ID in an ascending order and will be played back simultaneously from the start time of the first record-available date.
   Usually, channels have different record-available dates. For synchronous playbacks, all these dates are displayed with a blue bottom right corner, for example, 6. From the view of the set theory, the specially displayed dates are the union of the selected cameras' record-available dates. For example, records are available on March 1 for camera 1 and records are available on March 2 for camera 2. In such a case, the dates March 1 and 2 are specially displayed. Additionally, all these dates are specially displayed no matter which view window is currently selected.
3. Select a date with a blue bottom right corner.
   If you do not select a date, the playback will start from the very beginning of the first record-available date.
4. Click .

5. (Optional) Select a time point on the timeline by dragging it.

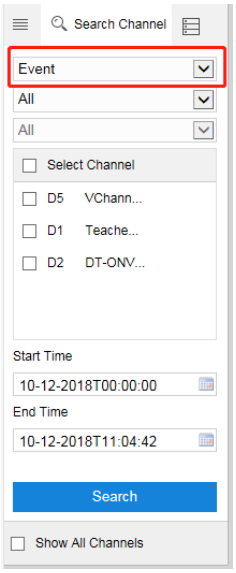
The following is an example.



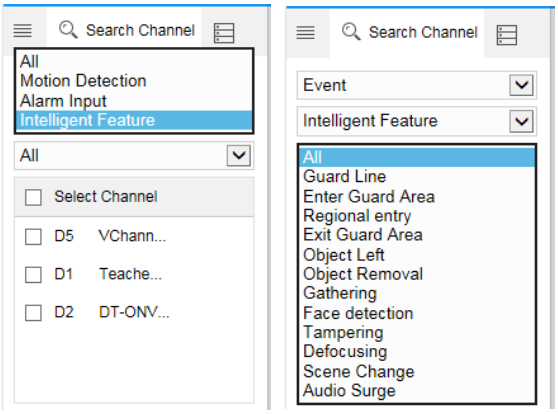
Starting a Playback by Event

To start a playback by event:

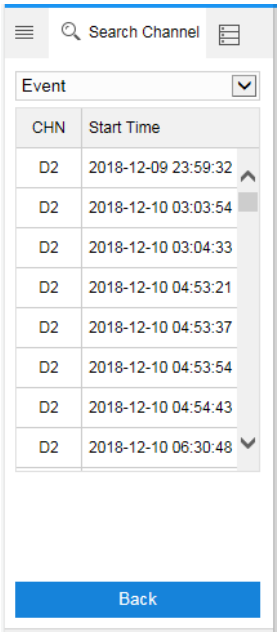
1. Click .
2. Select **Event** from the first drop-down list.



3. (Optional) Specify the event by selecting items in the second and third drop-down lists.



4. Select the target camera(s).
5. Specify the start and end times.
6. Click **Search**.
7. Double-click each searching result to play back records related to the event.
   The following is an example for searching results.



8. Click **Back**.

Starting a Playback by Locked Record

1. Click .
2. Select **Locked Record** from the drop-down list.
3. Select the target channel(s).
4. Specify the start and end times.
5. Click **Search**.
6. Double-click each search result to play back locked records.
   Note: In this step, you can unlock specific records. You can also lock them back later.

   For details on how to lock records, see the description about in section "Playback Controls".

Starting a Playback by Tag

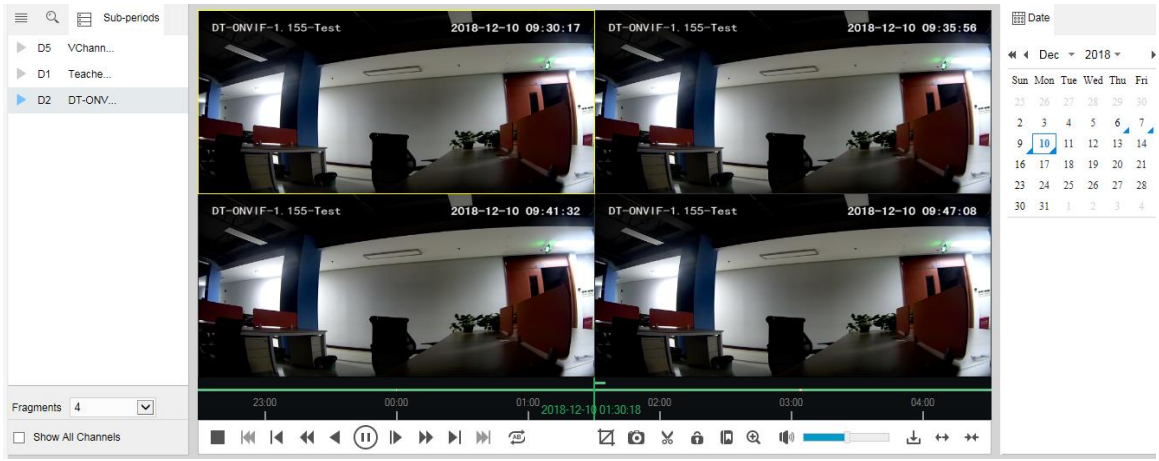
The steps are similar to those described in section "Starting a Playback by Locked Record".

Starting a Playback by Sub-Period

The sub-period playback is a playback where a record is equally divided into several sub-records with the same duration and these sub-records are played back simultaneously.
For example, a 12-hour record is equally divided into *4* (specified by **Fragments**) sub-records each of them lasting for 3 hours and these *4* sub-records are played back simultaneously.
To start a playback by sub-period:

1. Click .

2. Select the target channel.
3. Select a date with a blue bottom right corner.
4. Specify **Fragments**.
   The **Fragments** parameter indicates the number of sub-records.
5. Click .
6. (Optional) Further divide a sub-record into fragments by clicking **Recursive Fragment**.
   The following is an example.

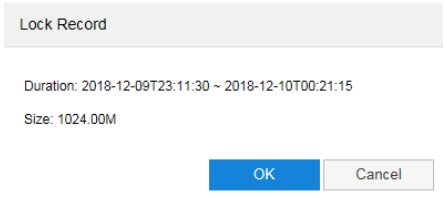


You can click as long as the sub-record/fragment duration is long enough. If a sub-record/fragment lasts for less than 2 minutes, you will find , indicating that the sub-record/fragment cannot be further divided.

Playback Controls

Playback controls are described as follows.

	Stop a playback.		Lock a certain section or the whole section of a record to prevent this section from being overwritten. To achieve this: 1. Click at the target start time. 2. Click again at the target end time. 3. Click **OK**.
	Skip to an earlier event.		
	Go backward 30 seconds.		
	Slow the playback down. Every click will slow down the speed from 1/2X to 1/4X and then 1/8X and finally 1/16X. When the speed is 1/16X, clicking it will make the speed normal again.		
	Play the record back reversely. Clicking it again will stop the reverse playback.		Add tags to a record.



/ Start/pause a playback.

Play back frame by frame. Every click will play a single frame. To go back to the normal playback, click .

Accelerate the playback. Every click will increase the speed from 2X to 4X and then 8X 16X 32X and finally 64X. When the speed is 64X, clicking it will make the speed normal again.

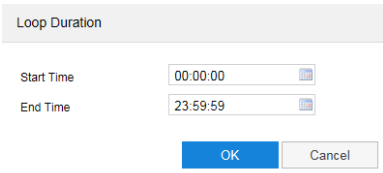
Go forward 30 seconds.

Skip to a later event.

Repeatedly play back a certain section of a record.

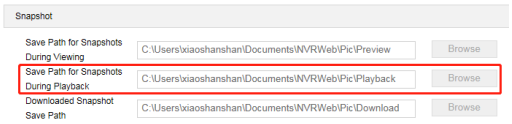
To start a loop playback:

1. Click .
2. Enter a start time and an end time.



3. Click **OK**.

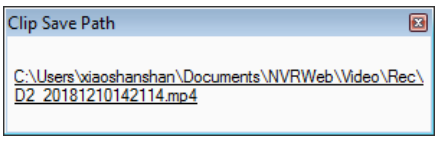
Take snapshots. Note that all snapshots are saved on the following path.



NOTE:

Run the Internet Explorer as an administrator to reconfigure the save path.

/ Start/stop a recording during a playback. The record is saved in the following path (for example).



Digitally zoom in or out. After this button is clicked, if you press and hold the left mouse button and select a place towards the bottom right corner, the place will be zoomed in and viewed in full screen. If you press and hold the left mouse button and select a place towards the top left corner, the view will be normal again.

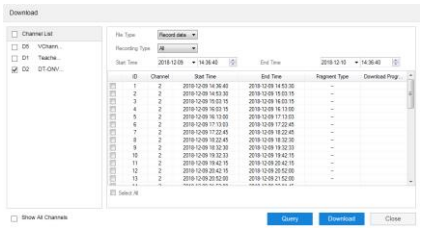
Adjust the volume.

Download records or pictures.

To download records or pictures:

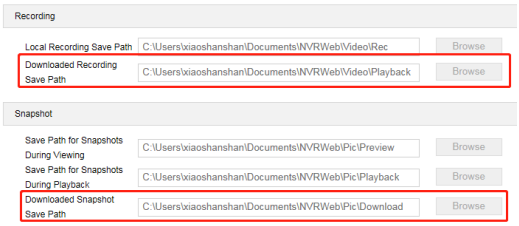
1. Click .
2. Select the target channel(s).
3. Specify **File Type**, **Recording Type**, **Start Time**, and **End Time**, and click **Query**.

   The following is an example.



4. Select target records/pictures.
5. Click **Download**.

The downloaded records or pictures are saved in the following save paths.



/ Zoom in or out the timeline to select a start time accurate to the minute. The timeline scale can be 5/10/30 minutes or 1/2 hours.

Alarming

Motion Detection

For details, see section "Motion Detection".

Intelligent Feature Alarms

For details, see section "Intelligent Feature Alarms".

Alarm Inputs of the NVR

For details, see section "Alarm Inputs".

Exceptions on the NVR

For details, see section "Exceptions".

Active Alarm

For details, see section "Active Alarms".

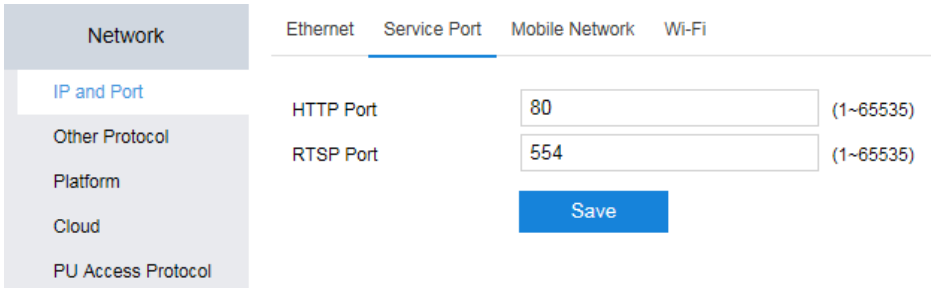
Configuring Network Settings

NICs

For details on how to configure NICs (**LAN1** and **LAN2**), see the **Local Network** description in section "Configuring Network Settings".

HTTP and RTSP Ports

The two ports can be configured in the following path.



HTTP Port: Port for web access. The default value is **80**. Users access an NVR Web by entering the IP address of an NVR into the address bar of a web page browser, for example, http://192.168.1.100:80.
RTSP Port: RTSP port for live viewing. The default value is **554**. If you want to view live videos on an NVR only, you can type "IP+this port" into a web page browser, for example, http://192.168.1.100:554.

Mobile Network

For details on how to configure a mobile network, see the **Wireless Network** description in section "Configuring Network Settings".

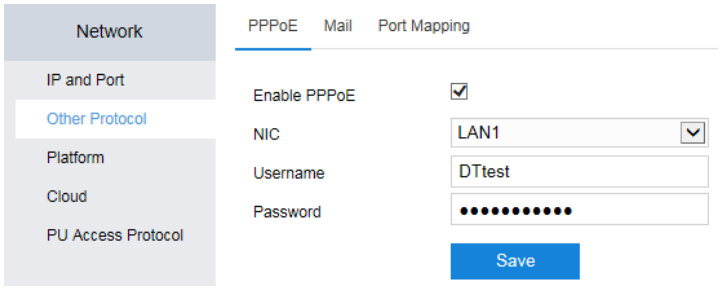
Wi-Fi

For details on how to configure a Wi-Fi WLAN/AP, see the **Wi-Fi WLAN** or **Wi-Fi AP** description in section "Configuring Network Settings".

PPPoE

The Point-to-Point Protocol (PPP) is a link layer protocol that encapsulates and transmits network layer packets over point-to-point links. It provides user authentication methods, supports synchronous and asynchronous communication, and is easy to extend.
As an enhancement of PPP, the PPP over Ethernet (PPPoE) provides point-to-point connections over the Ethernet, sets up PPP sessions, and provides a method to encapsulate PPP data packets.
To enable the PPPoE for an NIC:

1. Choose **Other Protocol** > **PPPoE**.
2. Check **Enable PPPoE**.



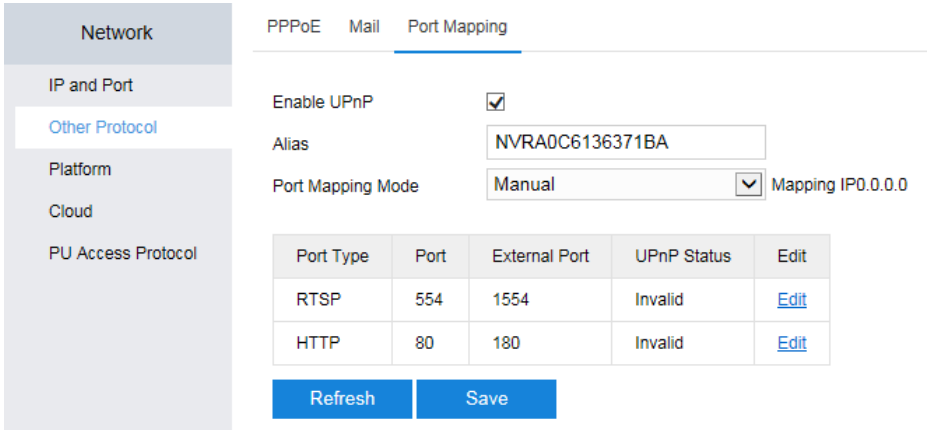
3. Select the NIC from the **NIC** drop-down list.
4. Specify **Username** and **Password**.
   Ask your network operator for the username and password.
5. Click **Save**.

UPnP

One solution for Network address translation (NAT) traversal, named the Internet Gateway Device Protocol (IGD Protocol), is implemented via the Universal Plug and Play (UPnP) technology. Many routers and firewalls expose themselves as Internet Gateway Devices (IGDs), allowing any local UPnP control point to perform a variety of actions, including retrieving the external IP address of the device, enumerating existing port mappings, and adding or removing port mappings. By adding a port mapping, a UPnP controller behind the IGD can enable traversal of the IGD from an external address to an internal client.

To enable the UPnP:

1. Check **Enable UPnP**.
2. Enter an alias.
   When an alias is configured, the NVR can be found if your PC is located on the same broadcast domain (in a LAN) as the NVR and UPnP is enabled on your PC. After you find the NVR, double-clicking the NVR icon will show you the current IP address of the NVR.
3. Select a port mapping mode.
   If you select the manual mode, you need to configure port mapping for each port by clicking **Edit** and then, in the displayed dialog box, enter an external port.
   The following is an example.



4. Click **Save**.

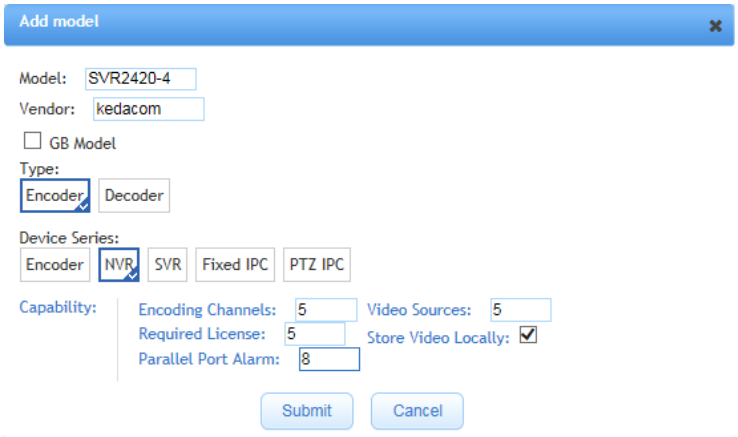
Registering with a Platform

VSIP Platform

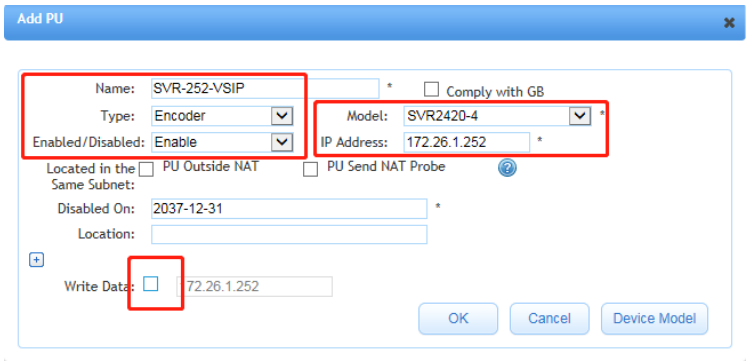
The VSIP protocol is a KEDACOM proprietary protocol and it allows for communication between VSIP devices.

To enable the NVR to register with a VSIP platform (for example, the VMS):

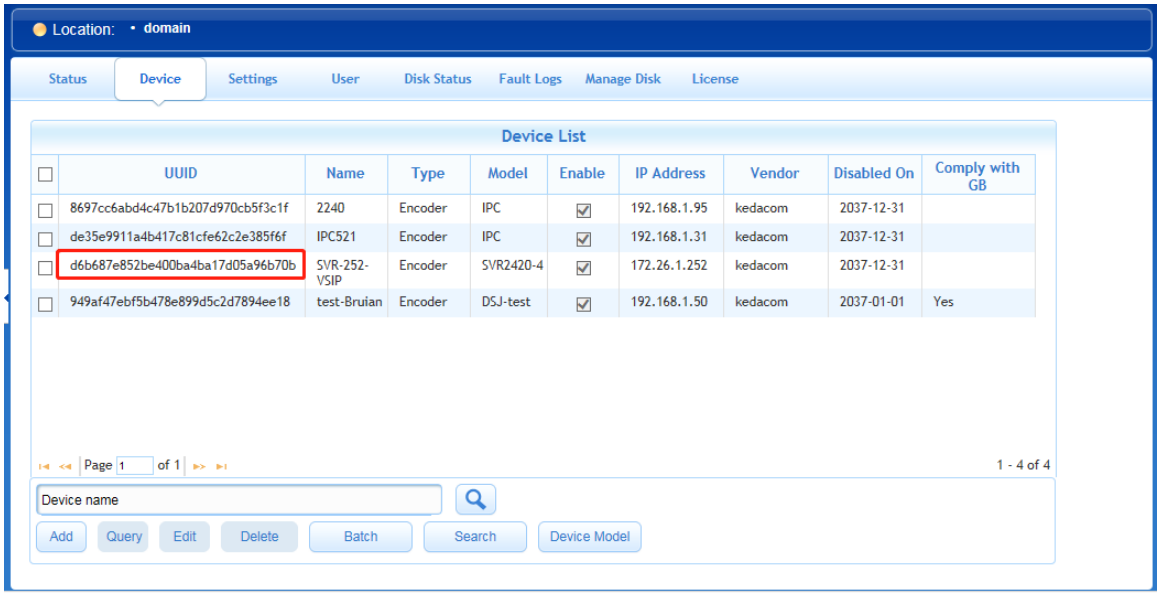
1. Access the PMC of the VMS.
2. Choose **Device** > **Device Model** > **Add**.
3. In the **Add model** dialog box, specify parameters displayed.
   The following is an example.



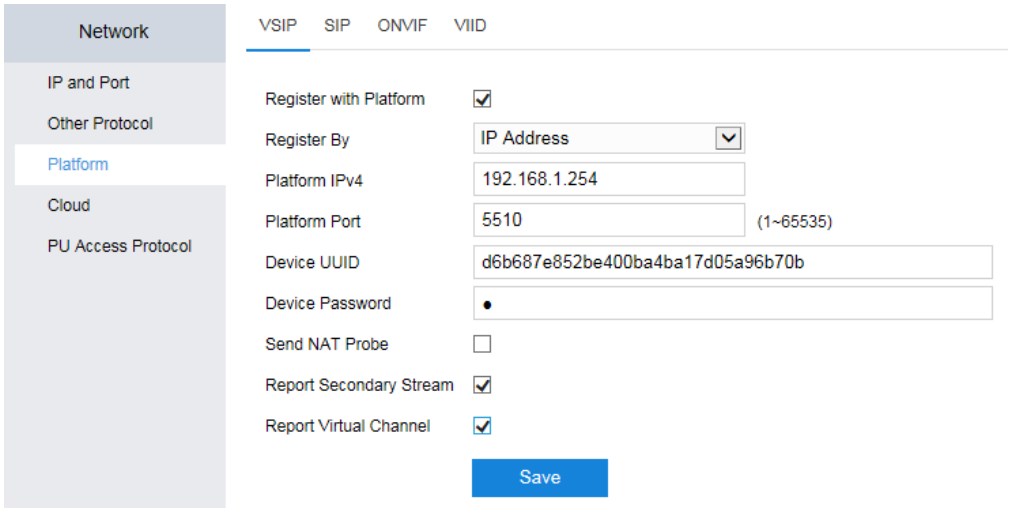
4. Click **Submit**.
5. Choose **Device** > **Add**.
6. In the **Add PU** dialog box, specify parameters displayed.
   The following is an example.



   Remember to uncheck **Write Data**.
7. Click **OK**.
8. Copy the UUID of the newly added NVR.



9. On the NVR Web, choose **Platform** > **VSIP** and configure parameters displayed. The following is an example.



Keep the default values of the **Device Password** and **Send NAT Probe** parameters.

10. Click **Save**.

NOTE:

VSIP settings apply only to the KEDACOM VMS or systems developed on the basis of the KEDACOM VMS SDK.

SIP Platform

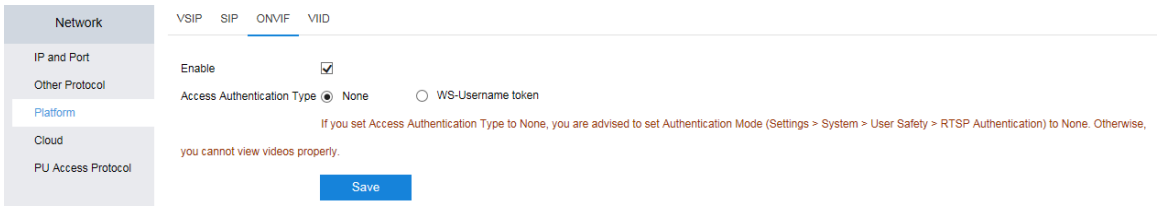
For details on how to enable the NVR to register with a SIP platform, see section "Registering with a SIP Platform".

ONVIF Platform

To enable the NVR to access an ONVIF platform:

1. Check **Enable**.
2. Specify **Access Authentication Type**.

For this parameter, you must keep the red note in mind. Otherwise, you may not view videos properly.



If you select **WS-Username token**, the NVR username and password are required.

3. Click **Save**.

VIID Platform

The KEDACOM Video and Image Information Database (VIID) is a platform to which devices can upload pictures and videos of cameras.

To enable the NVR to register with a VIID:

1. Check **Enable**.
2. Select a VIID from the VIID drop-down list.
   The NVR can access two VIIDs simultaneously.
3. Specify the parameters displayed.
4. Click **Save**.

NOTE:

The SVR2420 currently cannot access a VIID.

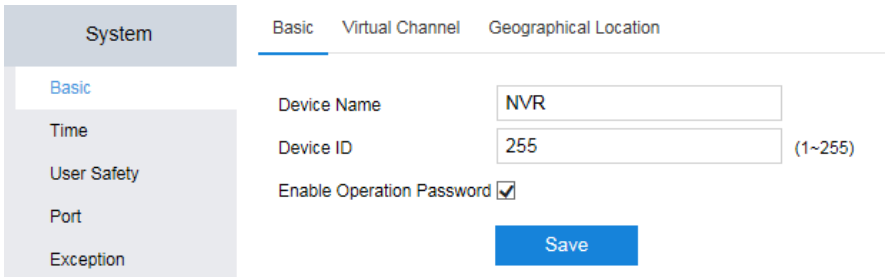
Cloud Service

For details, see section "Enabling the Cloud Service".

Configuring System Settings

NVR Name and ID

The NVR name and ID can be configured in the following path.



When **Enable Operation Password** is checked, users must enter the administrator's password before they can perform the following operations:

- Initializing HDDs
- Editing the administrator mail address
- Resetting the NVR to factory defaults
- Editing the downward SIP ID of the NVR
- Disabling/enabling the operation password

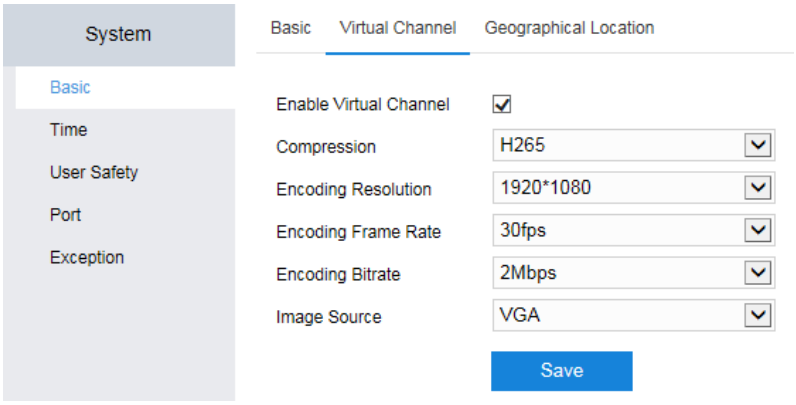
Virtual Channel

Introduction

The Virtual Channel feature allows you see a panoramic (or combined) view of active videos on the screen layout of a display (connecting to the VGA or HDMI port). This helps save bandwidth resources. When some cameras are removed, related videos cannot be retrieved if these videos are not backed up. With this feature, you can retrieve these videos even though the cameras are removed.

To configure this feature:

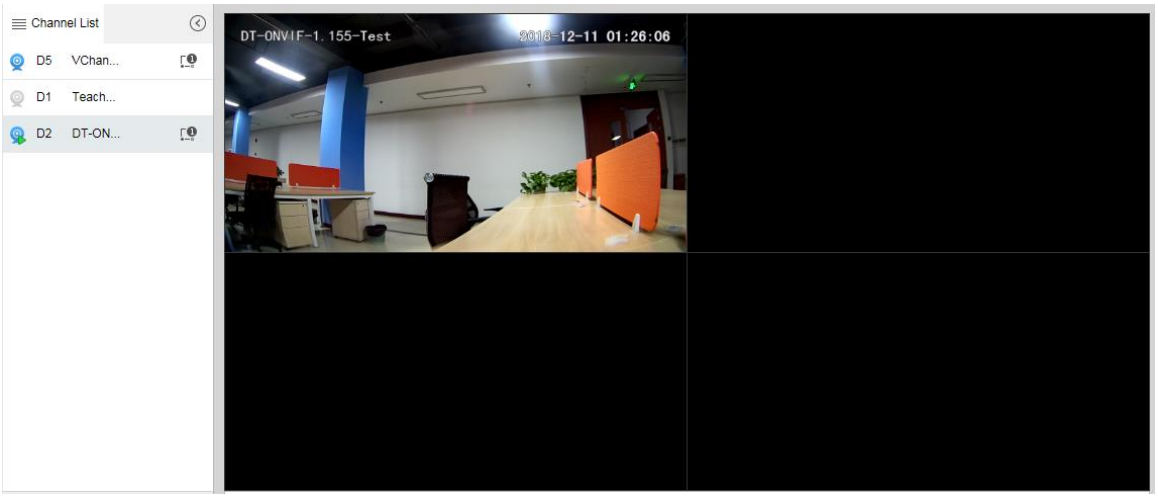
1. Check **Enable Virtual Channel**.
2. Configure parameters displayed.
   The following is an example.



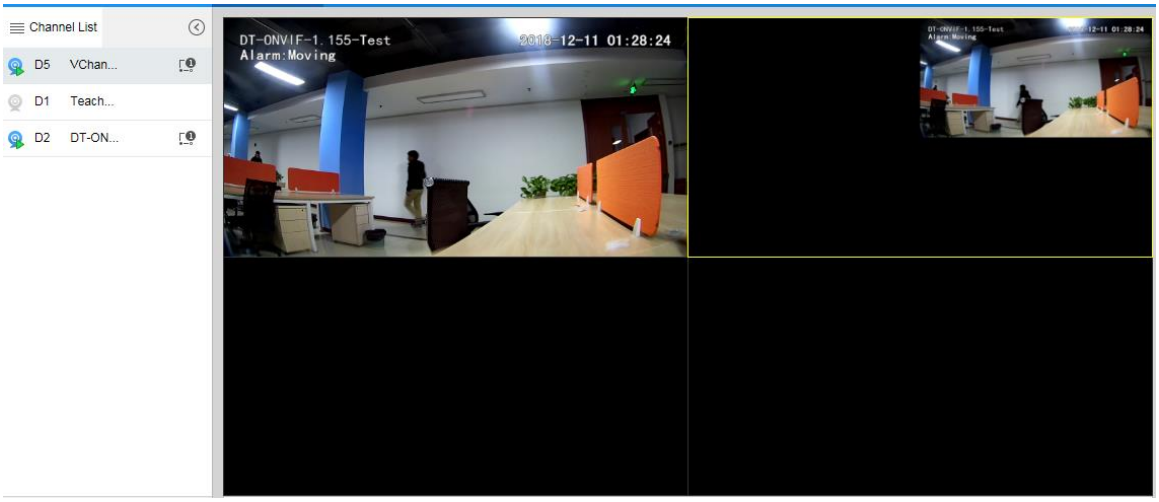
3. Click **Save**.

Example

When the 4-picture screen layout is applied and only one camera is online, you can find the following.



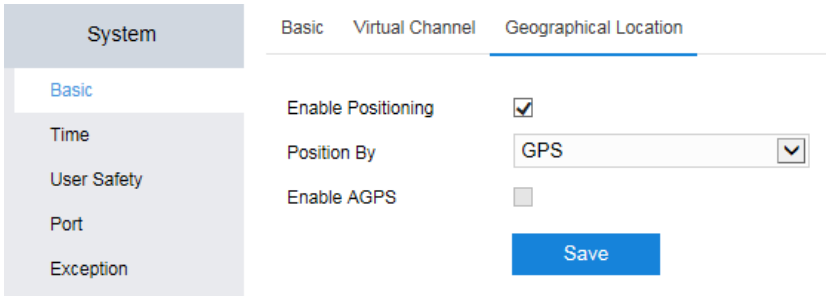
Double-clicking the virtual channel will show you the following, as shown in the second viewing window.



In the preceding figure, the video of D2 is displayed in the second sub-viewing window of the virtual channel due to its channel ID "D2".

Geographical Location

To enable the geographical location positioning function, check **Enable Positioning** and select a positioning server.



Currently, the following positioning systems are supported:

GPS	The Global Positioning System (GPS), originally Navstar GPS, is a satellite-based radionavigation system owned by the United States government and operated by the United States Air Force. It is a global navigation satellite system that provides geo-location and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.
BD	The BeiDou Navigation Satellite System (BDS) is a Chinese satellite navigation system. It consists of two separate satellite constellations.
GOLNASS	The Global Navigation Satellite System (GOLNASS) is a Russian space-based satellite navigation system operating in the radionavigation-satellite service. It provides an alternative to GPS and is the second navigational system in operation with global coverage and of comparable precision.

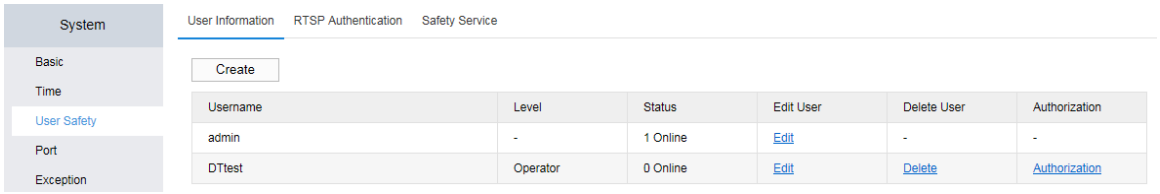
The SVR2420 currently does not support the Assisted GPS or Augmented GPS (AGPS).

Time

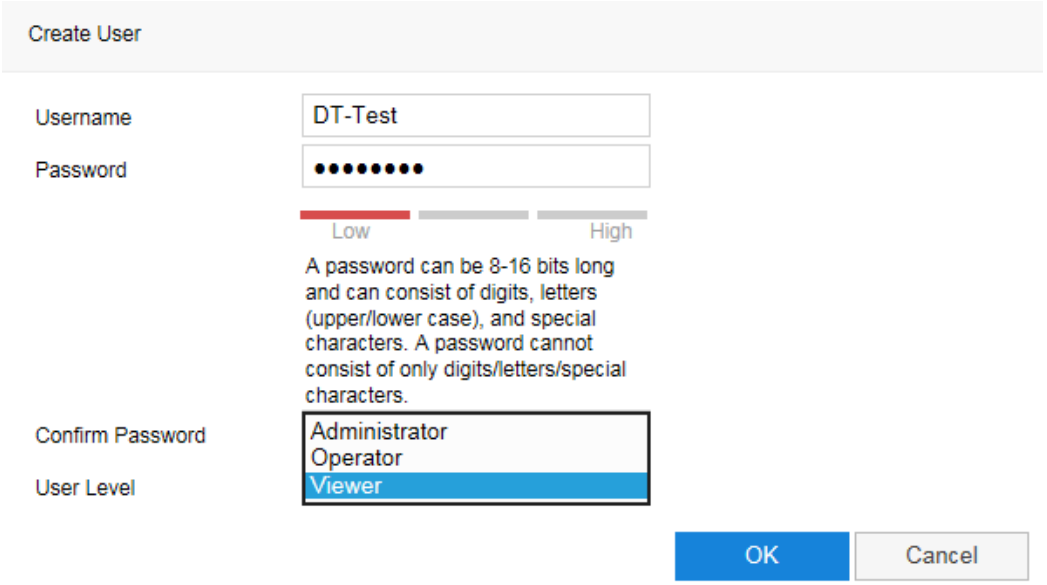
For details, see section "Configuring Time Settings".

Users

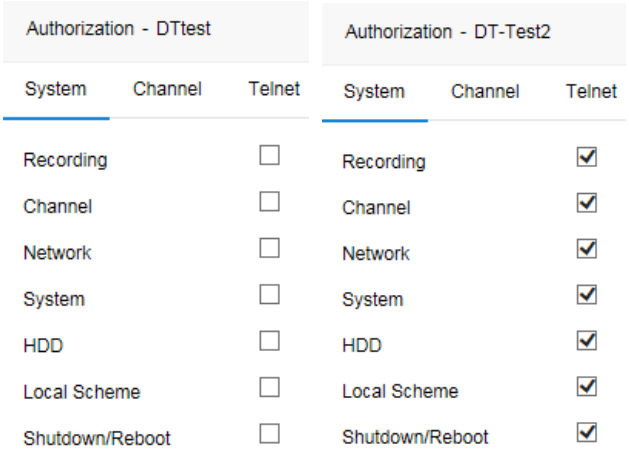
You can add/edit users on the **User Information** tab page.



When creating a user, you can select the user level.

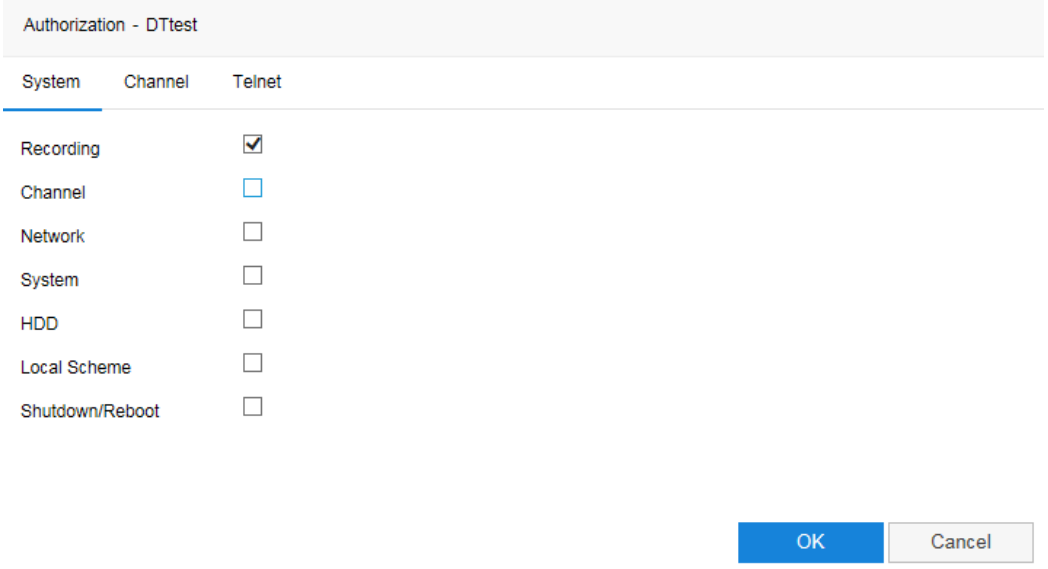


The difference between an operator and an administrator is that the former by default has no permission to perform any system-related operations while the latter has the permission to perform all those operations by default. However, the admin account can grant users permissions or retrieve permissions from them.

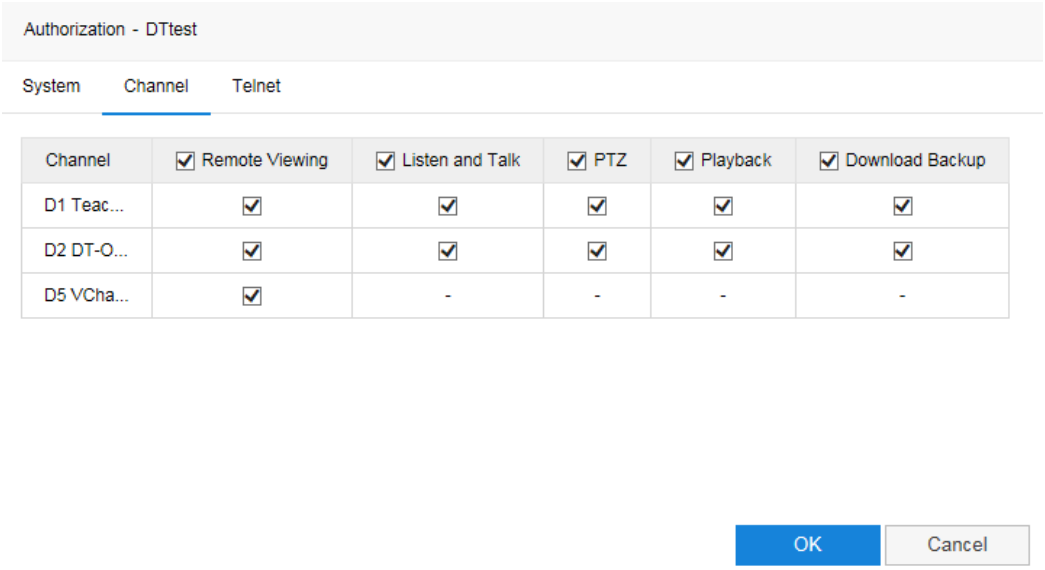


You click **Authorization** to edit the authorization settings of a user.

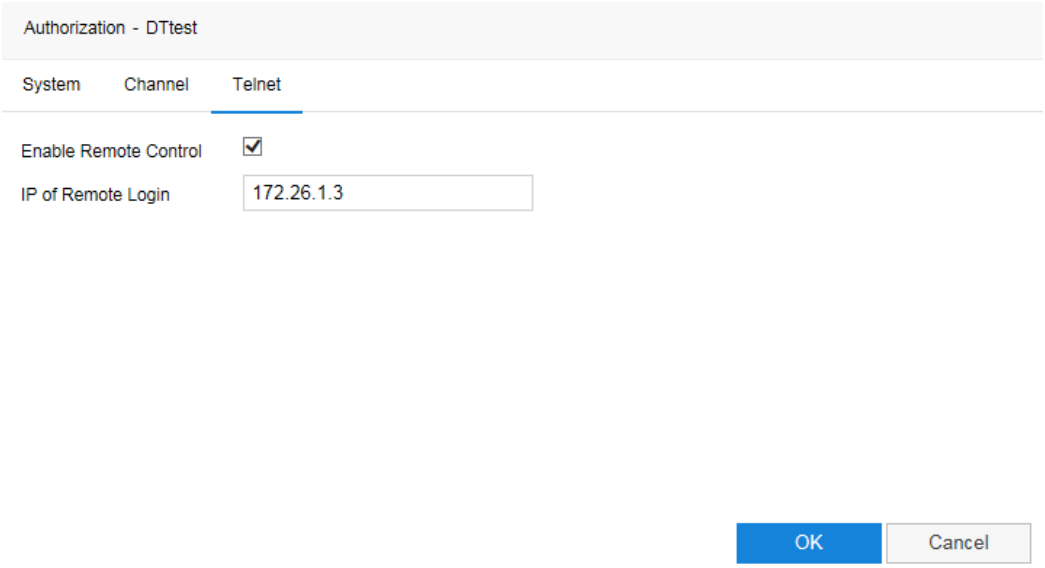
Under **System**, you can grant the user the permission to perform specific operations.



Under **Channel**, you can grant the user the permission to perform specific operations on a camera.



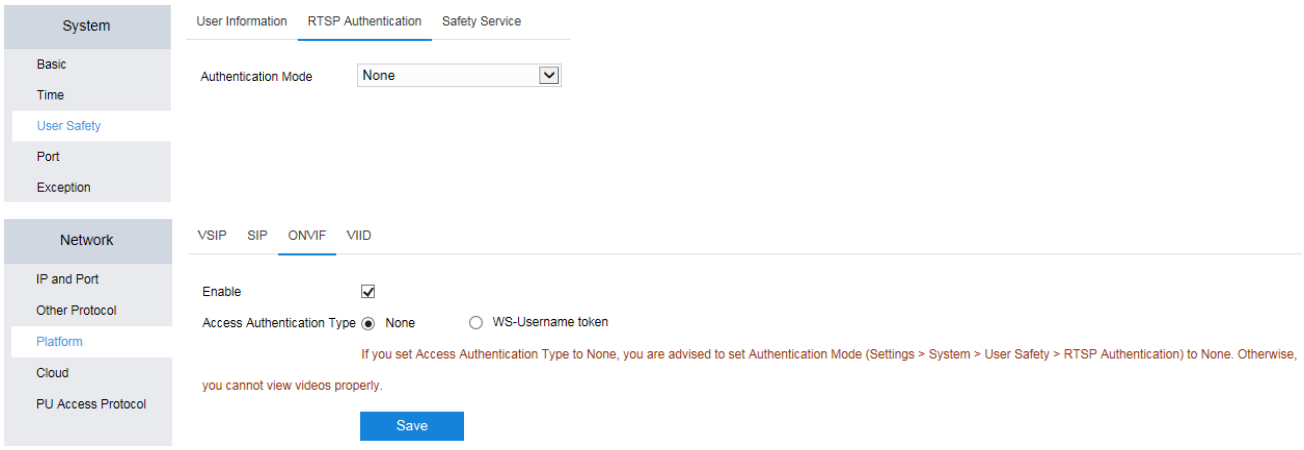
Under **Telnet**, you can restrict the user to access the NVR from the specific IP address. The following is an example.



RTSP Authentication

If you set **Authentication Mode** to **Basic** or **Digest**, the operation authorization of RTSP users is determined by that of the NVR accounts used by these RTSP users. For example, if the NVR account used by an RTSP user does not have the listening and talking authorization, then the RTSP user has no listening and talking authorization over the NVR.

If you set it to **None**, RTSP users can access the NVR without authentication. Note that when you set **Access Authentication Type** of ONVIF to **None**, you must set **RTSP Authentication** to **None**. Otherwise, users may no view videos properly.



The RTSP URL of the NVR is composed as follows:

`rtsp://IP:PORT/realtime?chnid=N;[vid=V;][aid=A1[,A2];][mode=M;]agent=cgi`

Where

- *IP*: an IP address of the NVR
- *PORT*: RTSP port of the NVR (**Network** > **IP and Port** > **Service Port** > **RTSP Port**)
- *N*: video channel ID (starting from 0 and including the virtual channel)
- *V*: stream type (0: main; 1: secondary)
- A1/A2: audio stream ID (starting from 0)
- *M*: URL mode (**videoonly**: video only; **audioonly**: audio only; if not specified: video and audio)
- The bracketed part (included in [ ]) is optional.

The following is an example.

rtsp://192.168.1.100:554/realtime?chnid=0;vid=0;aid=0;agent=cgi

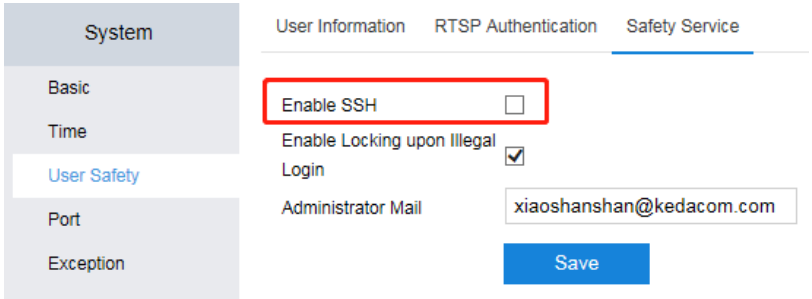
The preceding URL indicates that the main stream and the first audio stream of the camera with the channel ID being D1 that is registered with the NVR whose IP address is 192.168.1.100 are required.

Safety Service

SSH

The Secure Shell (SSH) is a cryptographic network protocol for operating network services securely over an unsecured network. Typical applications include remote command-line login and remote command execution, but any network service can be secured with SSH.

To enable the SSH, check **Enable SSH**.



Locking upon Illegal Login

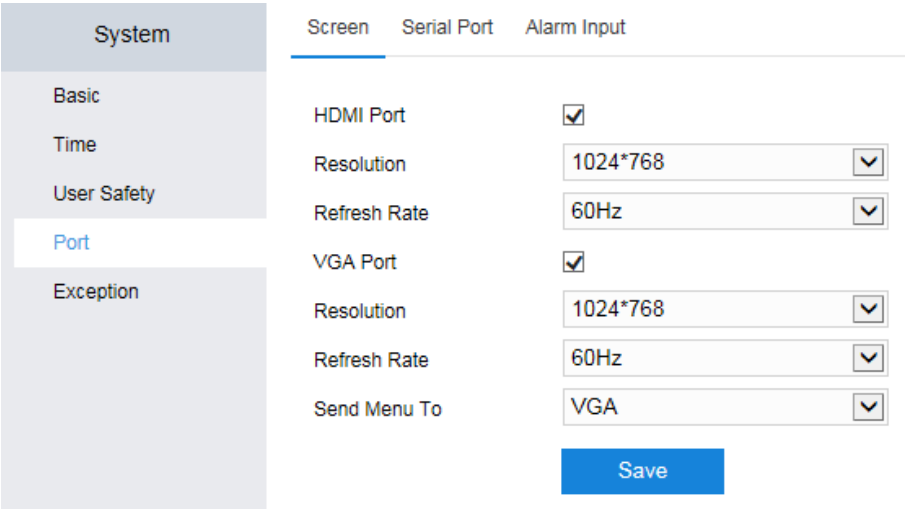
When **Enable Locking upon Illegal Login** is checked, problem IP addresses will be prohibited from being used to access the NVR for 10 minutes if users make 3 continuous login failures with them. When such a problem occurs, users either wait for 10 minutes or use other IP addresses.

Administrator Mail Address

The administrator mail address is required for password resetting for the admin account.

HDMI and VGA Ports

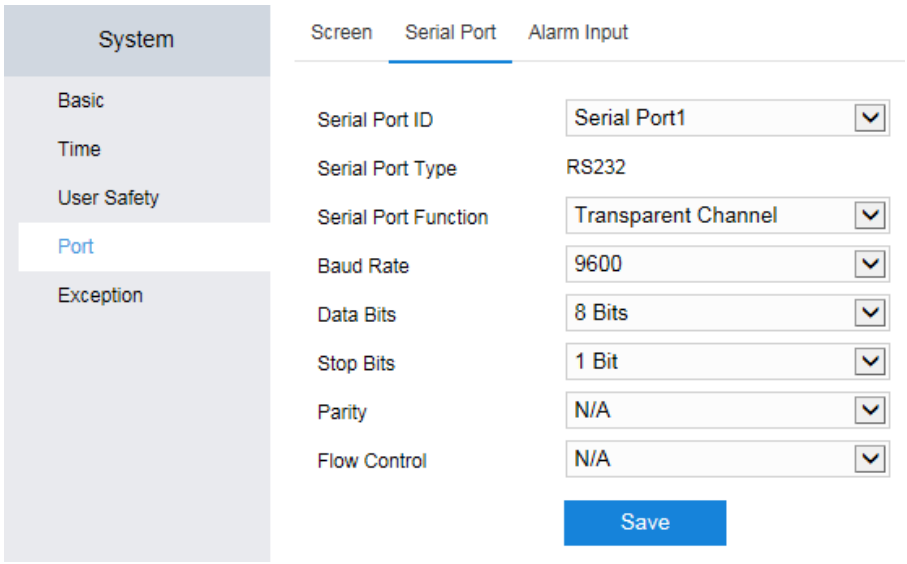
Under **Screen**, you can configure HDMI and VGA ports.



If you set **Send Menu To** to **HDMI**, users can perform operations on the display connected to the HDMI port of the NVR. On the display connected to the VGA port of the NVR, users can only view videos. And vice versa.

Serial Ports

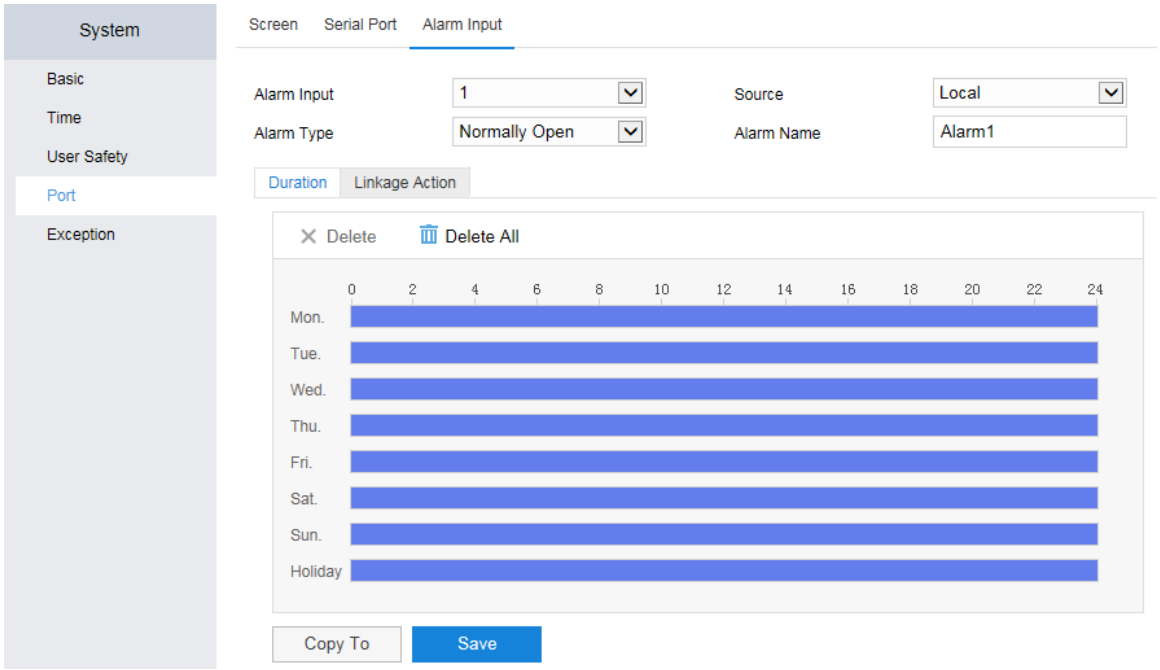
Under **Serial Port**, you can configure serial ports.



Only one serial port can function as an alarm extension port. The transparent channel function is currently not supported.

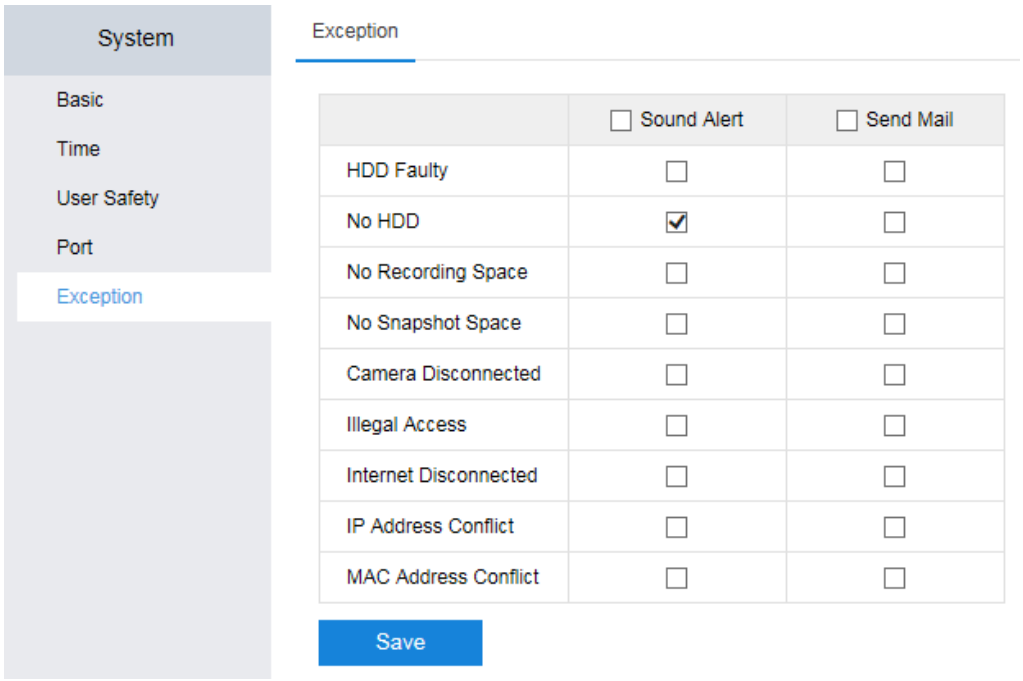
Alarm Inputs

Under **Alarm Input**, you can configure alarm inputs of the NVR.

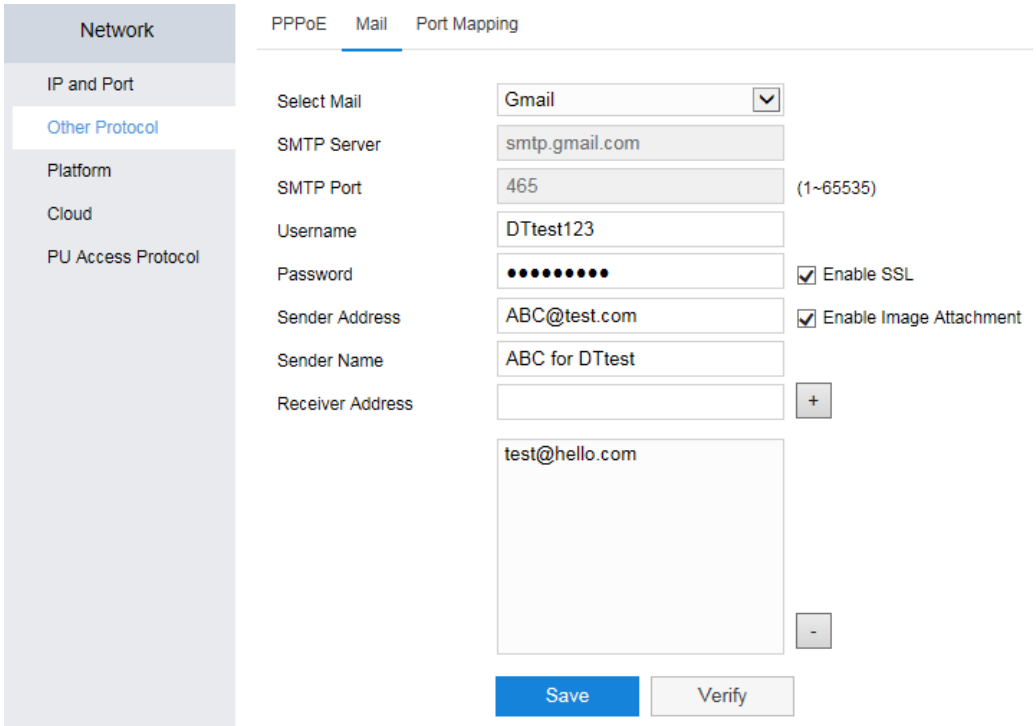


Exceptions

Under **Exception**, you can configure alarm linkage actions for NVR exceptions.



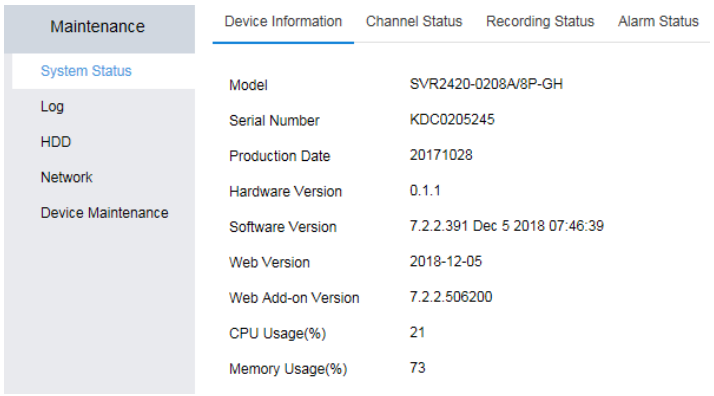
An alarm notification mail will be sent to mail addresses (receivers) added in the following.



Maintenance

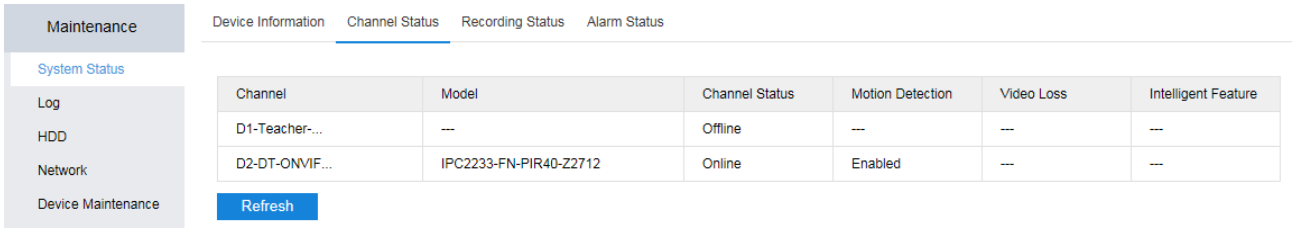
NVR Information

Under **Device Information**, you can query the NVR information.



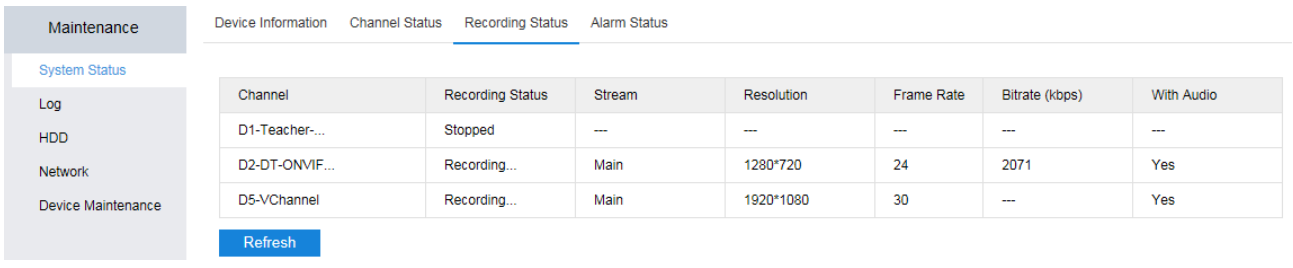
Camera Status

Under **Channel Status**, you can query the camera status.



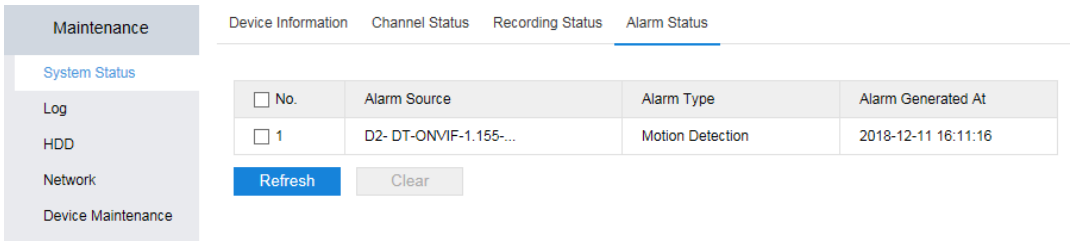
Recording Status

Under **Recording Status**, you can query the camera recording status.



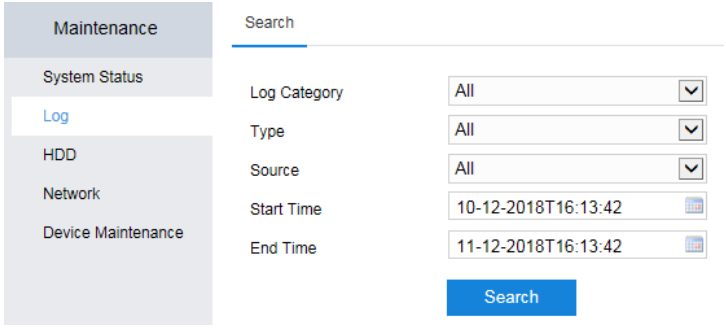
Active Alarms

Under **Alarm Status**, you can query the active alarms.

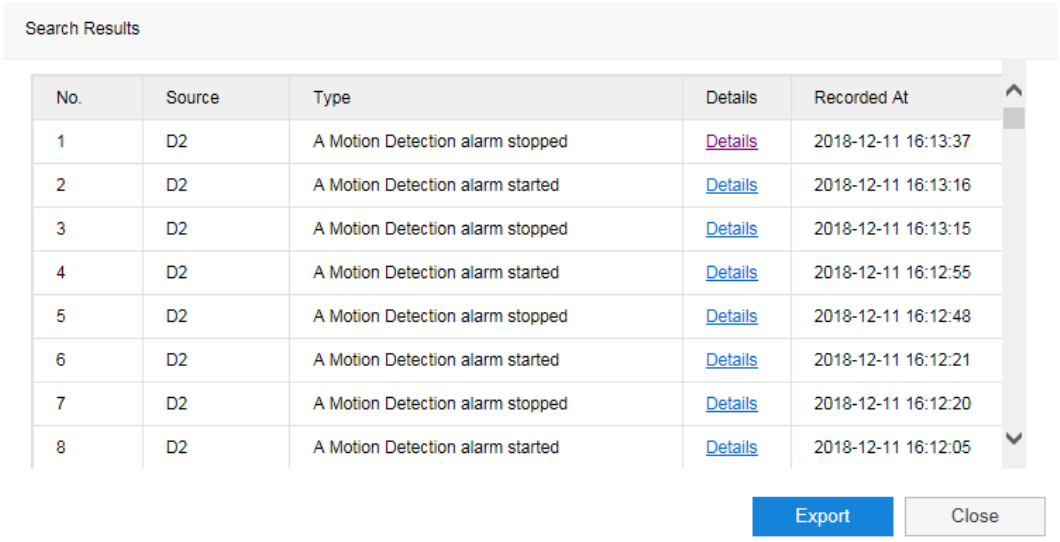


Logs

Under **Log**, you can query logs.



The following is an example for searching results.



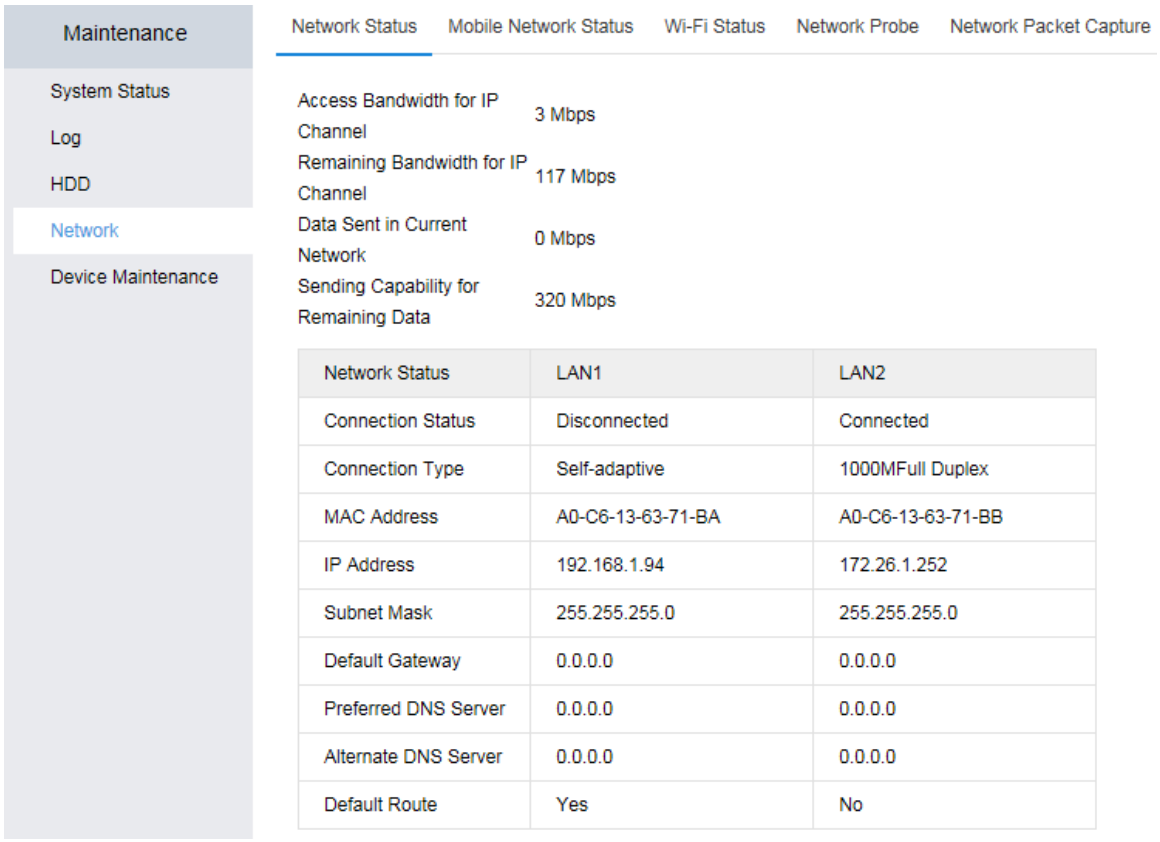
HDD Status

For details, see section "Testing an HDD".

Network Status

Local Network

Under **Network Status**, you can query the local network status.



Mobile Network

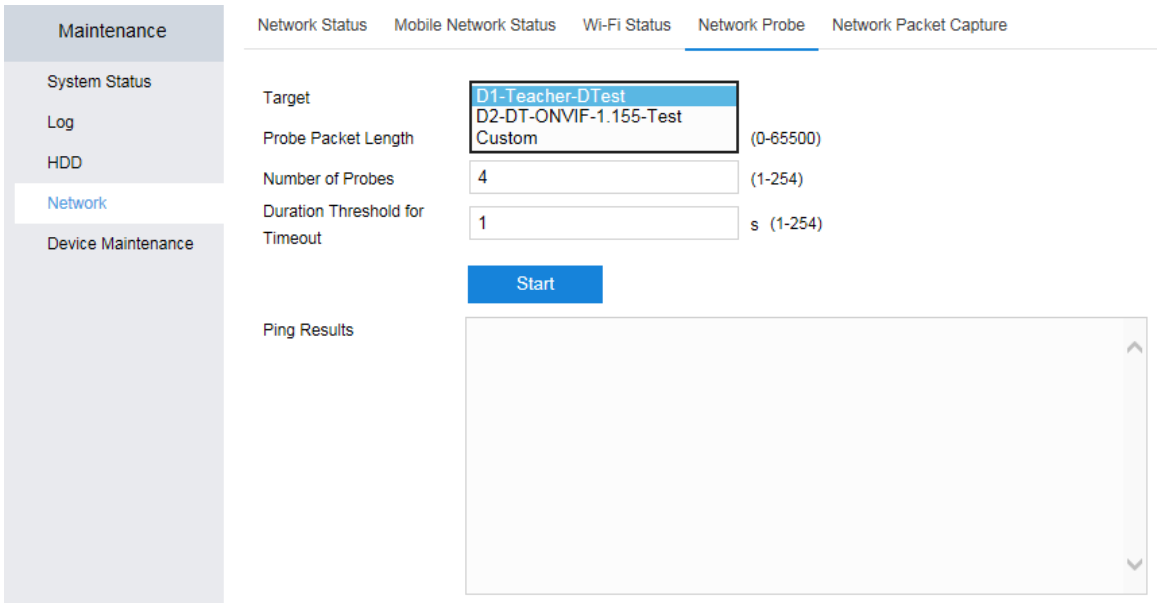
Under **Mobile Network Status**, you can query the mobile network status.

Wi-Fi Network

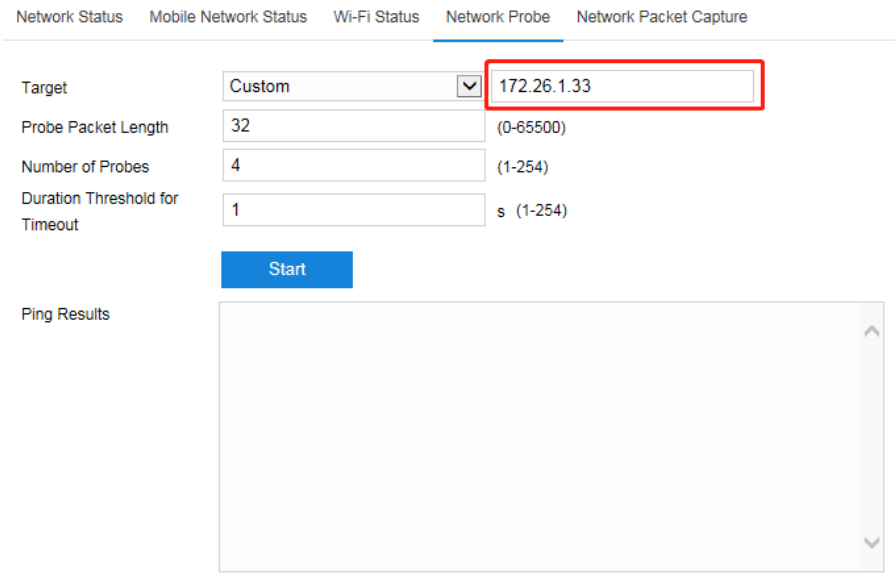
Under **Wi-Fi Status**, you can query the Wi-Fi network status.

Network Probe

Under **Network Probe**, you can query the connection between the NVR and the target device.
If the target device is a camera registered with the NVR, select the camera from the **Target** drop-down list.

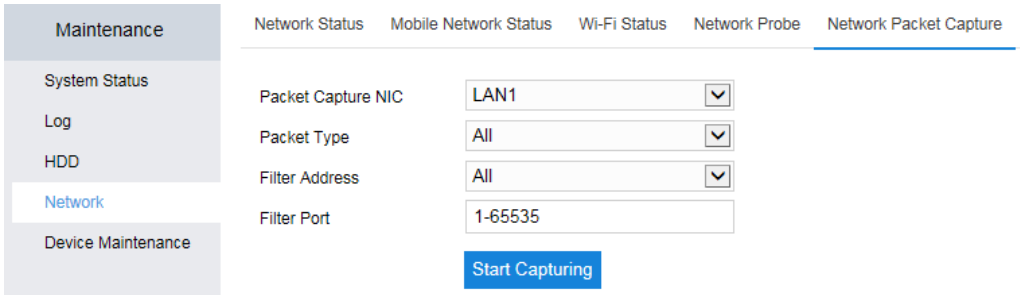


If not, select **Custom** and enter the IP address of the target device.

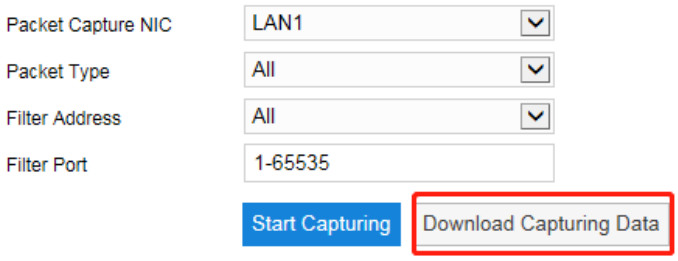


Capturing Network Packets Sent over NICs

Under **Network Packet Capture**, you can capture network packets sent over an NIC.



After a capturing is completed, you can download the capturing results by clicking **Download Capturing Data**.



NOTE:

A capturing is automatically stopped when the packet size exceeds 30 MB.

Upgrading the NVR

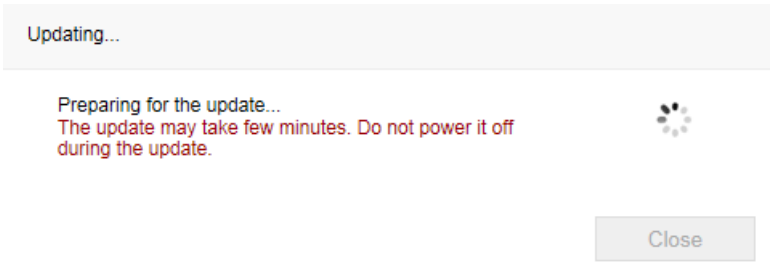
NOTE:

During an upgrade, do not cut the power to the NVR or perform any operation.

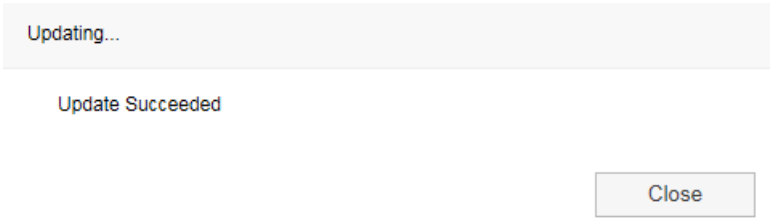
USB Flash Drive

To upgrade the NVR using a local USB flash drive:

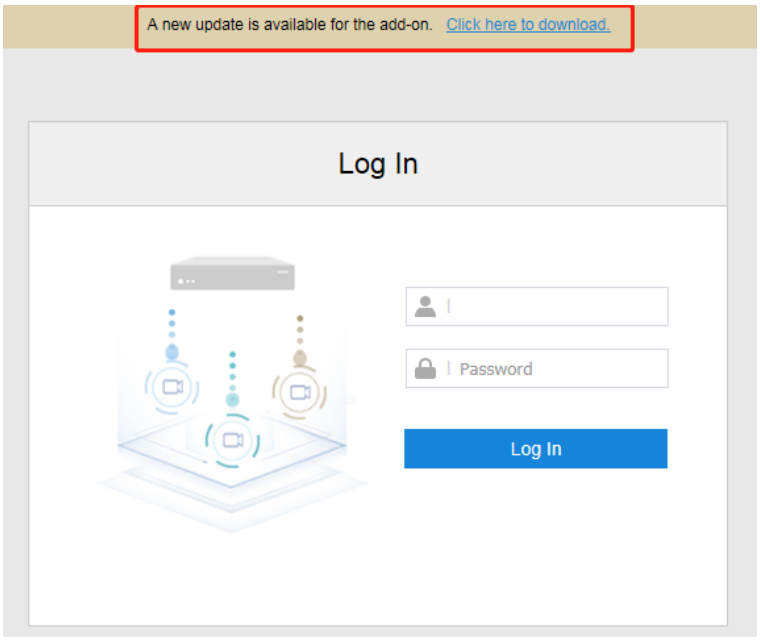
1. Insert the USB flash drive to your PC.
2. Choose **Maintenance** > **Device Maintenance** > **Upgrade** > **Browse**.
3. Select the upgrade package.
4. Wait while the NVR is being upgraded.



5. Click **Close**.



6. On the **Log In** dialog box, install the NVR Web add-on update by clicking **Click here to download**.



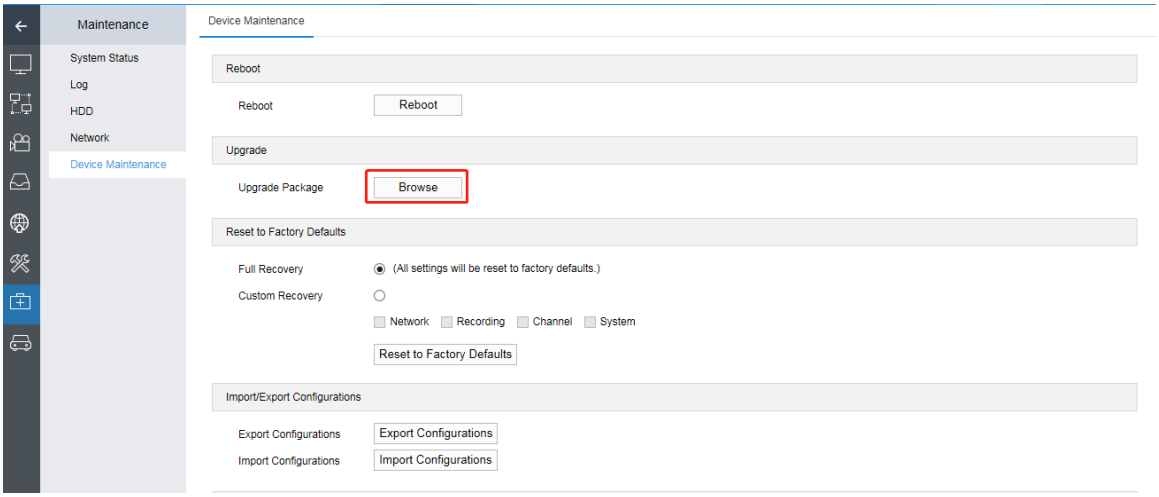
7. Close your web page browser.
8. Click **Finish**.

9. Re-open your web page browser and log in again.

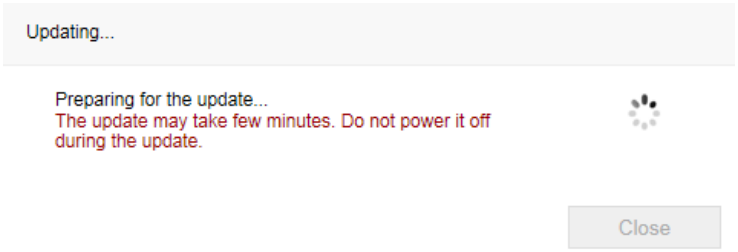
Local Upgrade Package

To upgrade the system through a local upgrade package:

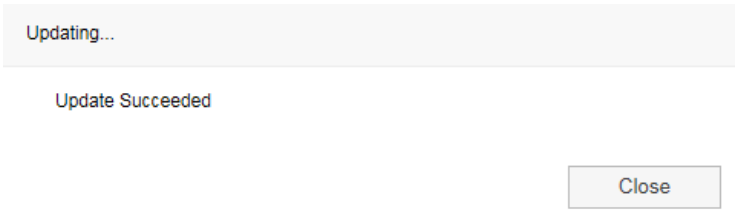
1. Choose **Settings** > **Maintenance** > **Device Maintenance** > **Upgrade**.
2. Click **Browse**.



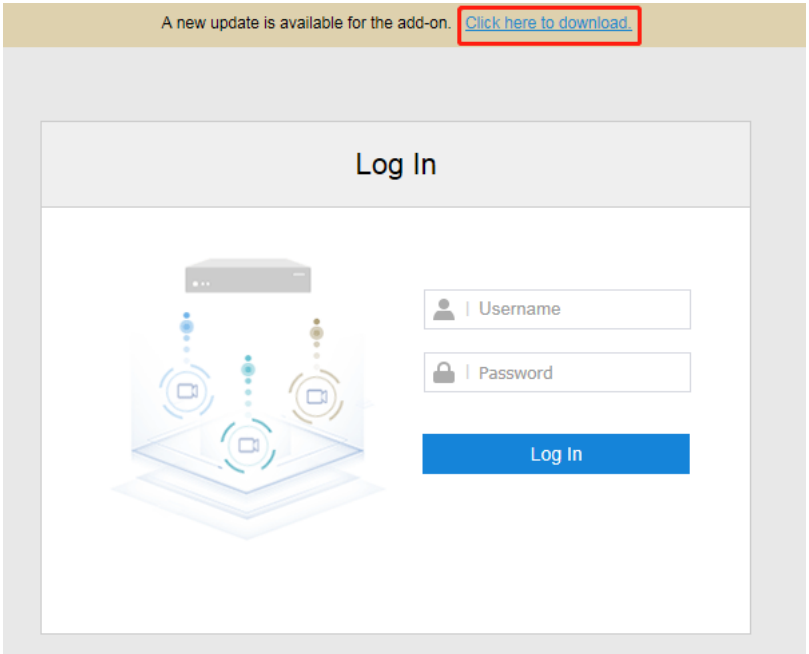
3. Upload the upgrade package and wait.



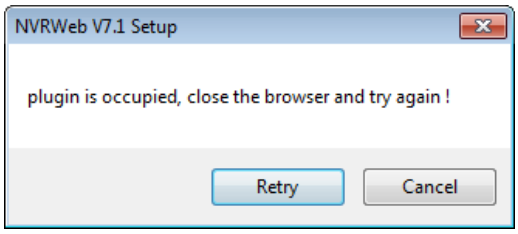
4. Click **Close** when the update is completed.



5. Download the add-on update by clicking **Click here to download**.



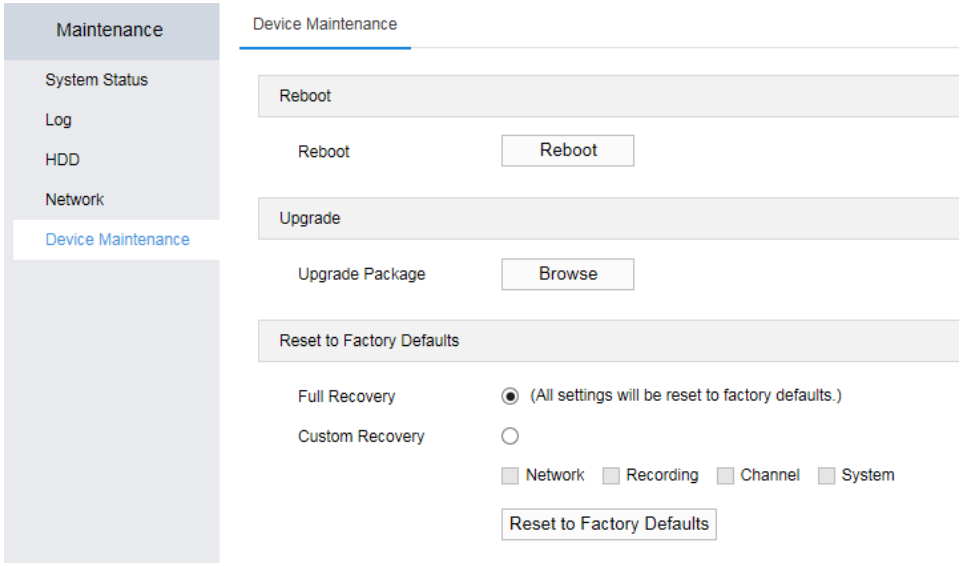
6. Install the add-on update.
7. Close your web page browser and click **Retry**.



8. Open your web page browser and log in again.

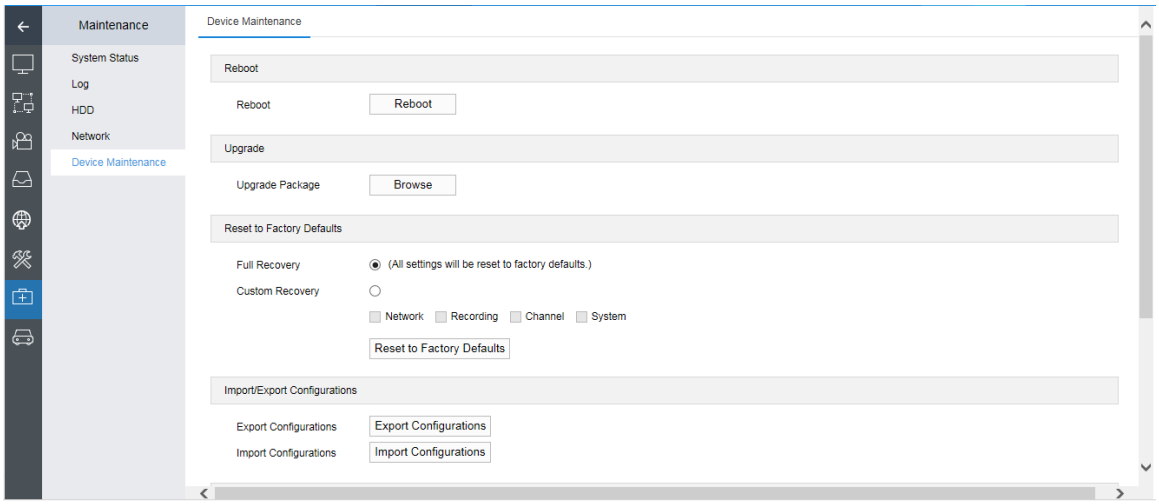
Resetting the NVR to Factory Defaults

Under **Reset to Factory Defaults**, you can reset the NVR to factory defaults. You can choose to reset all or partial settings of the NVR.

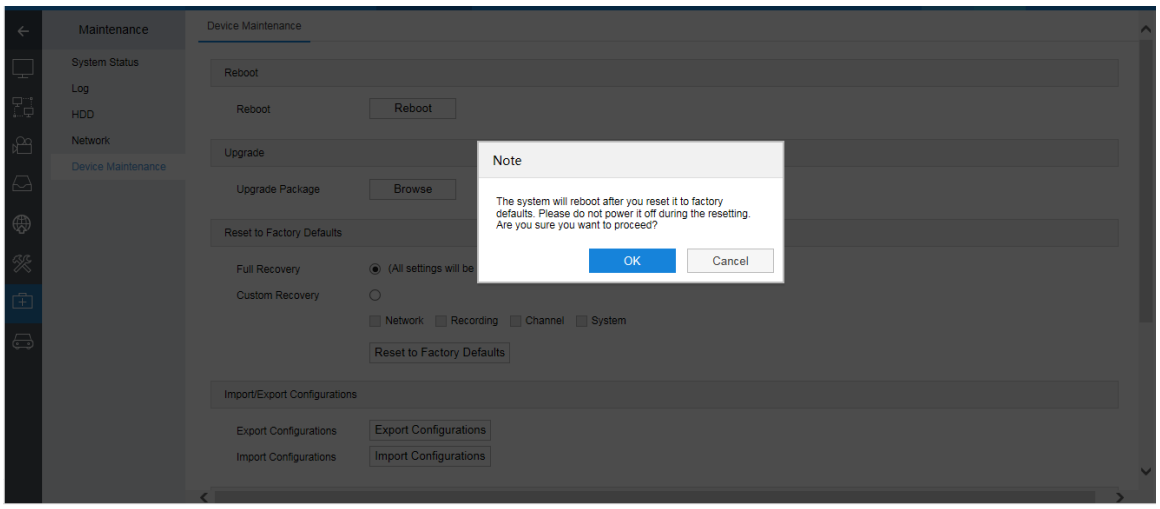


To reset the system to factory defaults:

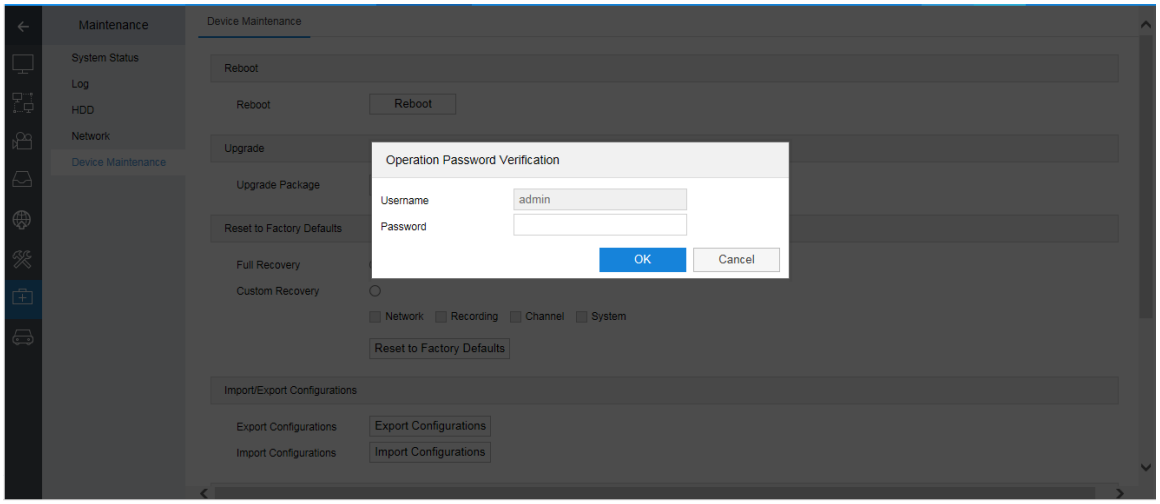
1. Chose **Settings** > **Maintenance** > **Device Maintenance** > **Reset to Factory Defaults**.



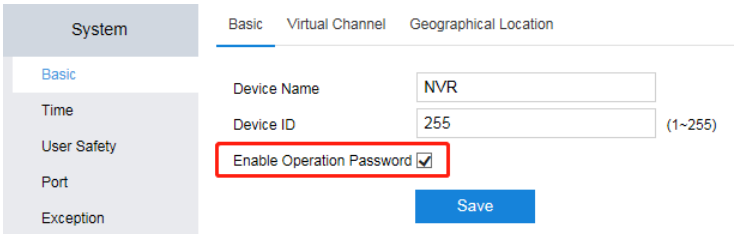
2. Select **Full Recovery** or **Custom Recovery**.
3. Click **Reset to Factory Defaults**.
4. Confirm your operation.



5. (Optional) Enter the password of the admin account.



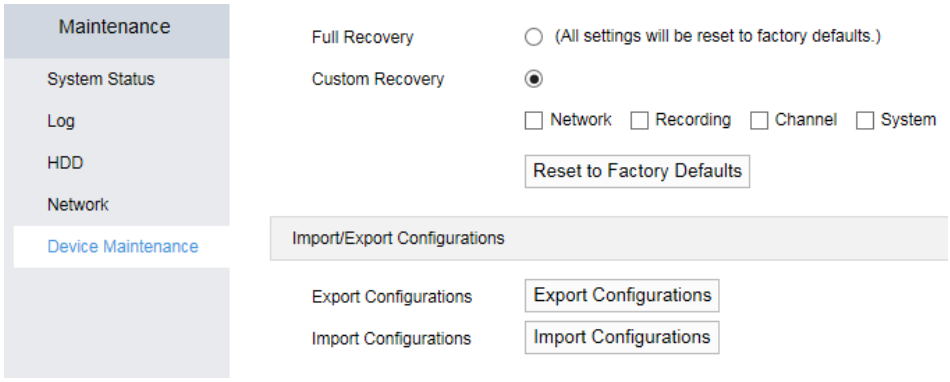
This step is mandatory if **Enable Operation Password** is checked.



6. Click **OK**.
7. Log in again.

Importing/Export NVR Configurations

Under **Import/Export Configurations**, you can import configurations to the NVR or export the NVR configurations.



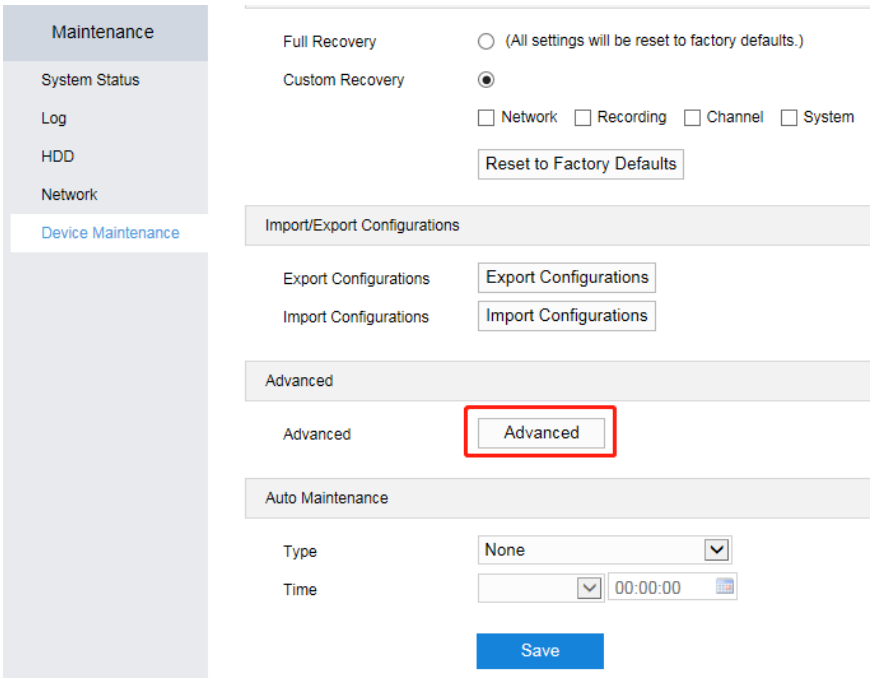
Advanced NVR Settings

NOTE:

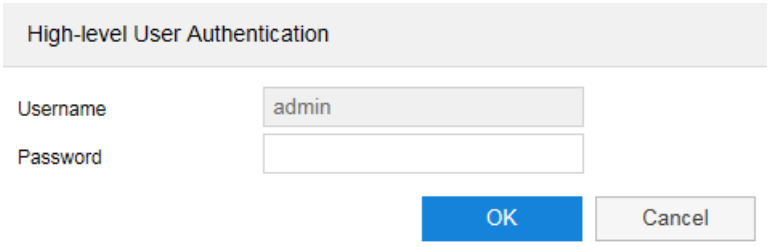
Only the admin account is allowed to configure these settings.

To configure the advanced NVR settings:

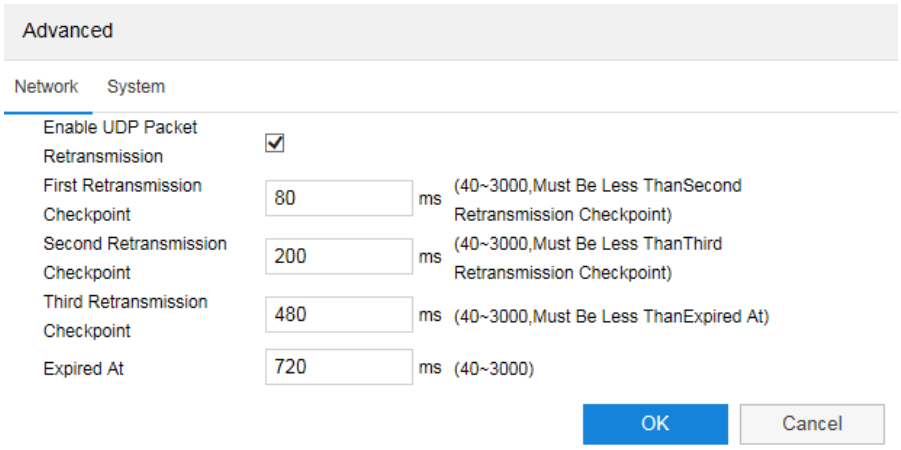
1. Click **Advanced**.



2. Enter the password of the admin account.

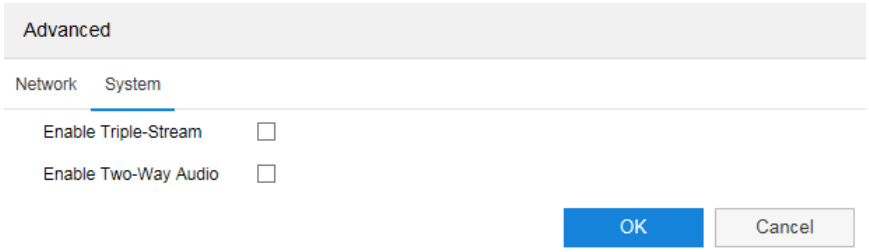


3. Click **OK**.
4. Configure parameters under **Network**.



Under normal circumstances, you are advised to keep the default values (as displayed in the preceding figure).

5. Click **OK**.
6. Configure parameters under **System**.

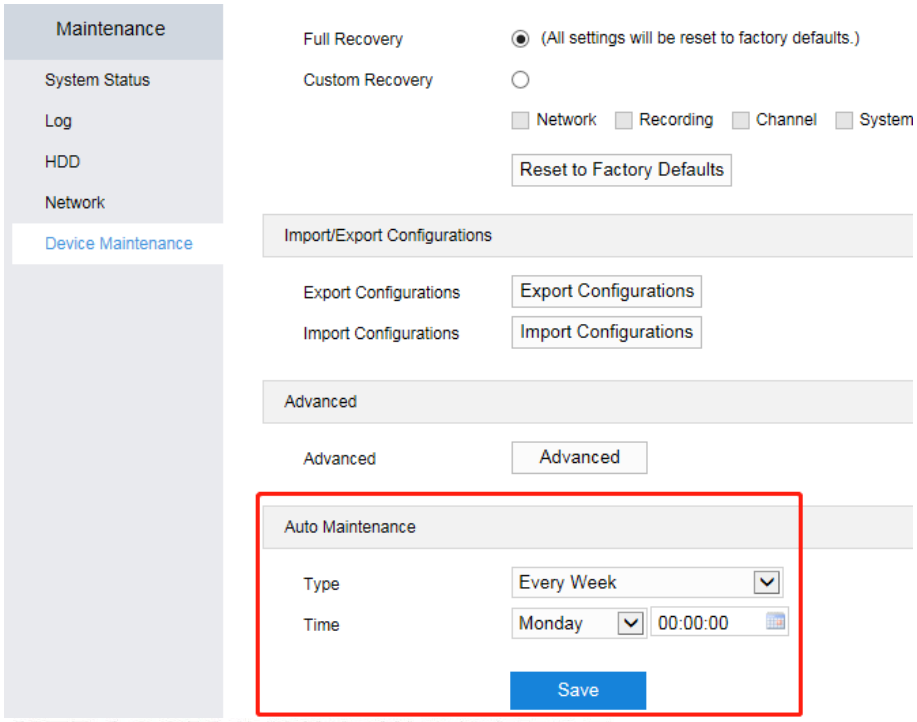


Under normal circumstances, you are advised to keep the default values (as displayed in the preceding figure).

7. Click **OK**.

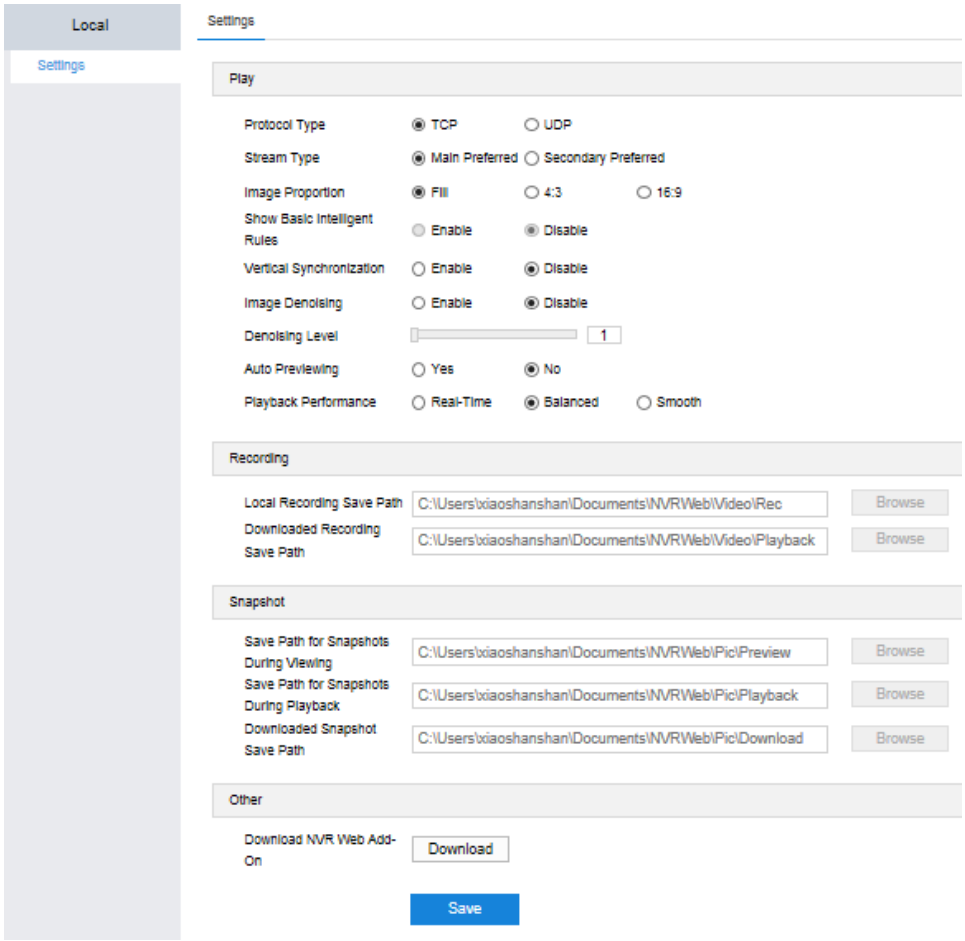
Automatic Rebooting

Under **Auto Maintenance**, you can schedule the automatic rebooting of the NVR.



Configuring Play Settings of the NVR

Under **Play**, you can configure the play settings of the NVR. All the changes made to the parameters under **Local** take effect immediately after you click **Save**.



The following table provides the parameter descriptions.

Play	Protocol Type	Type of the transmission protocol applied
	Stream Type	Type of the stream preferentially viewed. The default value is **Main Preferred**.
	Image Proportion	Aspect ratio for video displaying
	Show Basic Intelligent Rules	Whether to show the rules of the basic intelligent features. If you select **Enable**, the rules will be displayed on viewing windows.
	Vertical Synchronization	Whether to enable the vertical synchronization function, which can prevent screen tearing. **NOTE:** Enabling this function will increase the CPU usage. You are not advised to enable it under normal circumstances.
	Image Denoising	Whether to enable the image denoising function. When this function is enabled, it takes effect only on the decoding end and it will improve user viewing experience. By default, this function is disabled.

	Denoising Level	Denoising level. The level increases when you drag the level bar rightwards. **NOTE:** A high denoising level will cause moving object trailing. You are not advised to apply a high denoising level.
	Auto Previewing	Whether to enable auto previewing when you enter the **Live** page
	Playback Performance	Play performance. When network conditions are poor, the Smooth value is recommended.
Recording	Local Recording Save Path	Save path for records that are made after enabling local recording
	Downloaded Recording Save Path	Save path for records downloaded by clicking Download on the **Playback** page
Snapshot	Save Path for Snapshots During Viewing	Save path for records downloaded by clicking **Download** on the **Playback** page
	Save Path for Snapshots During Playback	Save path for snapshots captured during record playback
	Downloaded Snapshot Save Path	Save path for snapshots captured after clicking **Local Capturing** on the **Live** page
Other	Download NVR Web Add-On	Whether to download the NVR Web add-on

NOTE:

If you cannot edit the preceding save paths, you should open your web page browser as an administrator.

Specifications

The following table provides the specifications of the SVR2420.

	SVR2420-0204A/4P	SVR2420-0208A/8P	SVR2420-0212A/8P
Video/Audio Input			
Camera Input	4 channel	8 channel	12 channel
Resolution	8MP(4K), 1080p, UXGA, 960p, 720p, XGA, SVGA, D1, CIF, QCIF		
Compression	H.264 / H.265		
Protocols	Onvif, RTSP, KEDACOM		
Bitrate	64kbps ~ 16384kbps		
Incoming Bandwidth	20Mbps	40Mbps	60Mbps
Live Viewing			
Local Display	1 x HDMI, 1 x VGA, 2 x CVBS, simultaneously output same content		
Layout	1, 4, 9,16		
Function	E-PTZ / Scheme / Polling		
Recording			
Resolution	8MP(4K), 1080p, UXGA, 960p, 720p, XGA, SVGA, D1, CIF, QCIF		
Mode	Manual / Continuous / Schedule / Event (Pre / Post)		
Event Trigger	Supported		
Tag	Supported		
Search & Playback			
Search Mode	Date and time (Calendar) / Event		
Resolution	8MP (4K), 1080p, UXGA, 960p, 720p, XGA, SVGA, D1, CIF, QCIF		
Playback (Local Monitor)	1 x 4K@30fps / 4 x 1080p@30fps		
Playback (Client)	up to 16 x 4K@30fps		
Synchronize Playback (Local Monitor)	1 x 4K@30fps / 4 x 1080p@30fps		
Synchronize Playback (Client)	4 x 4K@30fps		
Function	Slow forward / Fast forward / Loop / Single frame / E-PTZ		
Storage			
Max. Internal HDDs	2 x 2.5'' HDD		
	Max. 8TB (up to 4TB / each)		
Built-in Storage	-GH: 1 x 1TB HDD		
Audio			
Compression	G.711a / G.711u / ADPCM / G.722 / G.722.1c / AAC-LC / G.726		
Bit rate	32kbps ~ 64kbps		
Audio Function	Bi-directional audio / Dumb / Mute / Broadcasting		

Alarm			
Service Alarm Triggers	Alarm input / Video lost / Motion detection / Tampering / Guard line / Defocus / Scene change / Enter guard area / Exit guard area / Object left / Object removal / Gathering / Audio surge		
System Alarm Triggers	Device disconnected / No disk / Disk error / IP Address conflict /Network fault / Insufficient recording space / MAC address conflict / Insufficient snapshot space / Unauthorized access		
Alarm Events	Snapshot / Recording / PTZ preset / Buzzer / Email / Link to Client / Alarm caption / Live view in first window / Link to TV Wall / Full screen viewing		
System			
Operating System	Embedded Linux		
User Management	Admin / User		
Log Management	User login / User operation / Alarm / Backup / Update		
Application Programming	CGI		
Network			
Network Protocols	TCP / IP, UDP, HTTP, DHCP, DNS / DDNS, RTP / RTCP, RTSP, PPPoE, FTP, SNTP, VSIP, UPNP, SMTP, IPv4, IPv6 (optional)		
Viewer Software	Web		
Max. User Access	16 Users		
Function	NAT / Socks5 / Multiple network access / Packet loss recovery		
Network Test	Supported		
Wireless	-S: Wi-Fi -G / -GH: Wi-Fi, 3G / 4G		
Number of Simcard Slots	-S: 0 -G / -GH: default 1, up to 2		
3G / 4G Frequency Band	FDD-LTE: B1 / B2 / B3 / B5 / B7 / B8 / B20 TDD-LTE: B38 / B39 / B40 / B41 HSPA / UMTS: 850 / 900 / 1800 / 1900 / 2100MHz GSM / GPRS / EDGE: 850 / 900 / 1800 / 1900MHz TD-SCDMA: B34 / B39 EVDO/CDMA: BC0 / BC1 Customizable network spectrum		
Wi-Fi	802.11 b/g/n/a/ac 2.4G / 5G , Wi-Fi AP		
Location Technology	GPS, GLONASS		
Application Programming	Onvif (Profile S, Profile G), API, CGI		
Interfaces			
Ethernet	1 x 10 / 100M, RJ45 interface		
Audio In / Out	1 x Line in / 1 x Mic in / 1 x Line out		
Aviation Plug	2 x 10 pin: 4 x PoE input 1 x 4 pin: 2 x CVBS output 1 x 4 pin: Power supply for PTZ camera 1 x 9 pin: Power input 9 ~ 36V DC	4 x 10 pin: 4 x PoE input 1 x 4 pin: 2 x CVBS output 1 x 4 pin: Power supply for PTZ camera 1 x 9 pin: Power input 9 ~ 36V DC	4 x 10 pin: 4 x PoE input 1 x 4 pin: 2 x CVBS output 1 x 4 pin: Power supply for PTZ camera 1 x 9 pin: Power input 9 ~ 36V DC
Video Out	1 x HDMI (up to 4K@30Hz)		

	1 x VGA (up to 1920 x 1080@60Hz)		
	2 x CVBS (PAL 720*576, NTSC 720*480)		
PoE Camera Input	4 channel	8 channel	8 channel
Alarm In / Out	8 x Input / 4 x Output		
Antenna	2 x Wi-Fi Antenna interface, 1 x GNSS Antenna interface, 1 x 4G Antenna interface (up to 2)		
Control	1 x RS485, 1 x RS232		
Environmental			
Operating Temperature	-40°C ~ 70°C / -40°F ~ 158°F		
Operating Humidity	10% ~ 90%		
Electrical			
Power	DC 9 ~ 36V		
Power Consumption	max. 96W		
Mechanical			
Weight	5.6kg / 12.35lb		
Dimensions	280 × 180 × 98mm / 11.02'' x 7.09'' x 3.86''		
Accessories			
Standard	1 x Cable Housing 1 x 18 pin Wire Harness Connector 1 x 20 pin Harness Connector 5 x Aviation plug connector cable 2 x Wi-Fi Antenna 1 x GNSS Antenna -G / GH: 1 x 4G Antenna (up to 2)	1 x Cable Housing 1 x 18 pin Wire Harness Connector 1 x 20 pin Harness Connector 7 x Aviation plug connector cable 2 x Wi-Fi Antenna 1 x GNSS Antenna -G / GH: 1 x 4G Antenna (up to 2)	1 x Cable Housing 1 x 18 pin Wire Harness Connector 1 x 20 pin Harness Connector 7 x Aviation plug connector cable 2 x Wi-Fi Antenna 1 x GNSS Antenna -G / GH: 1 x 4G Antenna (up to 2)

Abbreviations and Acronyms

BOOTP	Bootstrap Protocol
CU	Client Unit
DDNS	Dynamic Domain Name System
DHCP	Dynamic Host Configuration Protocol
e-PTZ	electronic PTZ
NAT	network address translation
NVR	Network Video Recorder
ONVIF	Open Network Video Interface Forum
OSD	on-screen display
PC	personal computer
PMC	Platform Management Client
RTSP	Real Time Streaming Protocol
UUID	Universally Unique Identifier
VMS	Video Management Server
WDR	wide dynamic range