

Embedded Video Storage (EVS71 Dual Controller Series)

Quick Start Guide



Foreword

General

This manual introduces the quick start operations of the EVS (hereinafter referred to as "the Device").

Model






EVS7124D, EVS7148D



In the name EVS71XXD, XX refers to HDD number (24 or 48); D indicates that the device is has two controllers.

Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

Signal Words	Meaning
 DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result.
 TIPS	Provides methods to help you solve a problem or save you time.
 NOTE	Provides additional information as the emphasis and supplement to the text.

About the Manual

- The manual is for reference only. If there is inconsistency between the manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the manual.
- The manual would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary

documentation.

- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, see our final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and the company names in the manual are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.
- If there is any uncertainty or controversy, see our final explanation.

Important Safeguards and Warnings

Operation Requirement

- Do not place or install the Device in a place exposed to sunlight or near the heat source.
- Keep the Device away from dampness, dust or soot.
- Keep the Device installed horizontally on the stable place to prevent it from falling.
- Do not drop or splash liquid onto the Device, and make sure there is no object filled with liquid on the Device to prevent liquid from flowing into the Device.
- Install the Device in a well-ventilated place, and do not block the ventilation of the Device.
- Operate the device within the rated range of power input and output.
- Do not disassemble the Device.
- Transport, use and store the Device under the allowed humidity and temperature conditions.

Electrical Safety

- Improper battery use might result in fire, explosion, or inflammation.
- When replacing battery, make sure that the same model is used.
- Use the recommended power cables in the region and conform to the rated power specification.
- Use the power adapter provided with the Device; otherwise, it might result in people injury and device damage.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited power Source requirement according to IEC60950-1. Please note that the power supply requirement is subject to the device label.
- Connect the Device (I-type structure) to the power socket with protective earthing.
- The appliance coupler is a disconnection device. When using the coupler, keep the angle for easy operation.

Attention

Do not insert or take out the expansion drawer without powering off first.

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1 Overview

1.1 Introduction

The Device is designed for the management, storage and application of high-definition video data. It uses Linux operation system and professional customized hardware platform, and it is configured with multiple Hard Disk Drive (HDD) management system, front-end HD device management system, HD video analysis system and large capacity video storage system.

It adopts high-traffic data network transmission & forward technology and multi-channel video decoding & display technology, and realizes intelligent management, secure storage, fast forwarding and HD decoding of large capacity and multi-channel HD video data.

The Device provides standard network file sharing service and offers integrated IP SAN solution. It provides centralized storage solutions with large capacity, high scalability and high security for all kinds of video monitoring systems.

1.2 Front Panel

Figure 1-1 EVS7124D

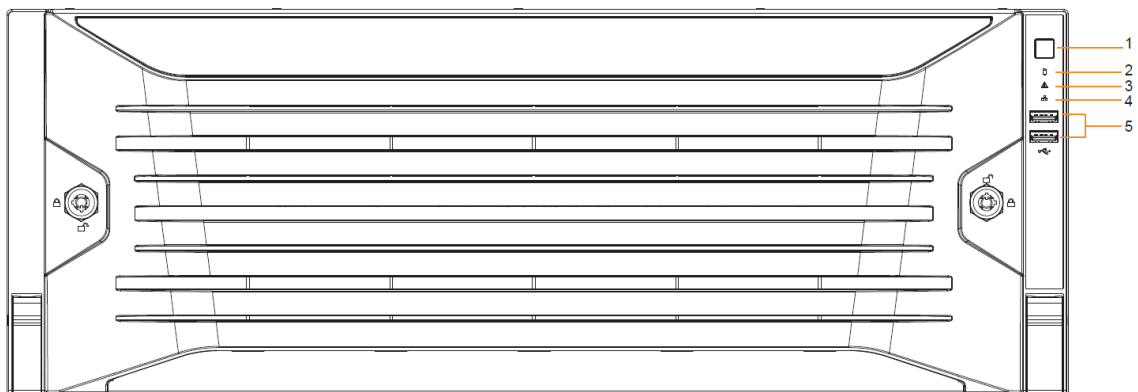


Figure 1-2 EVS7148D

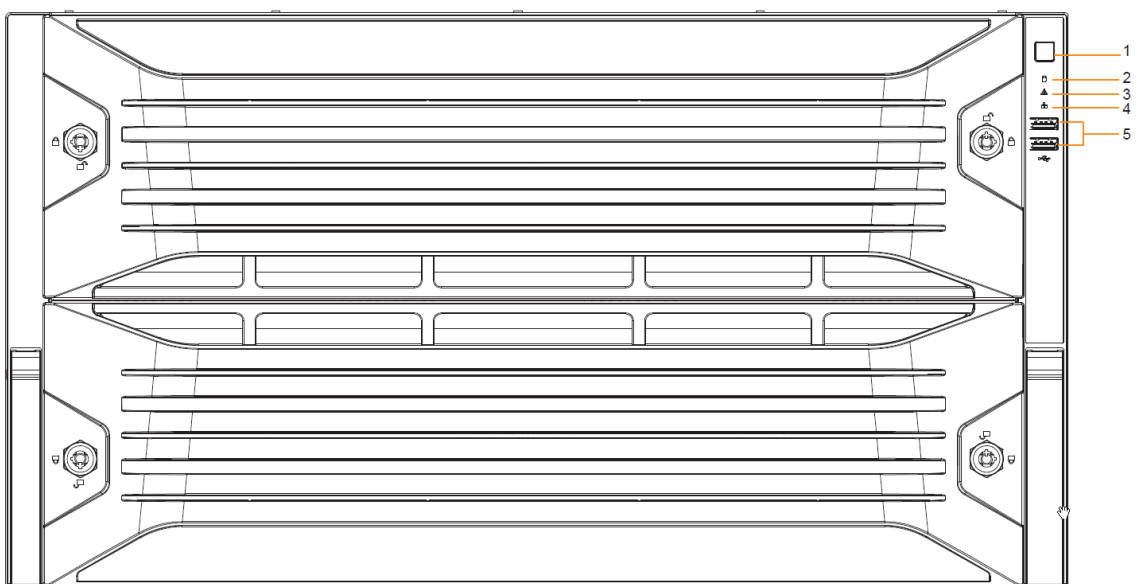


Table 1-1 Front panel ports

No.	Indicator/Button	Description
1	Power button	Turns on or off the Device. If the Device is off, press this button to turn the Device on. To turn off the Device, press and hold this button for five seconds.
2	HDD status indicator	The light is out when the HDD is in normal operation. The red light keeps on if no HDD, HDD error or insufficient HDD space.
3	Alarm status indicator	The light is out when the Device is running properly. The red light keeps on when the power, temperature or fan is abnormal.
4	Network status indicator	The red light keeps on if there is a network failure, IP conflict or MAC conflict.
5	USB Ports	Connects to external USB devices, such as flash drive.

1.3 Rear Panel

Figure 1-3 EVS7124D

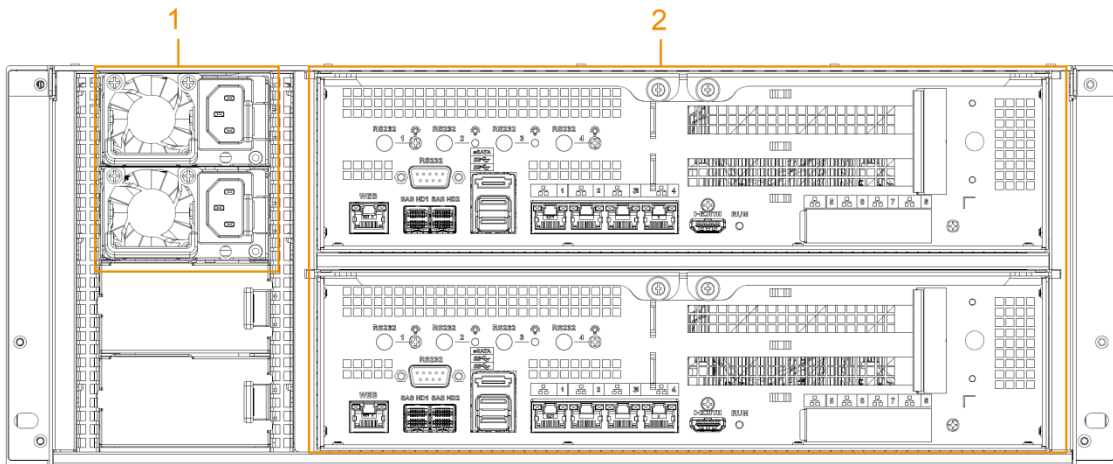


Figure 1-4 EVS7148D

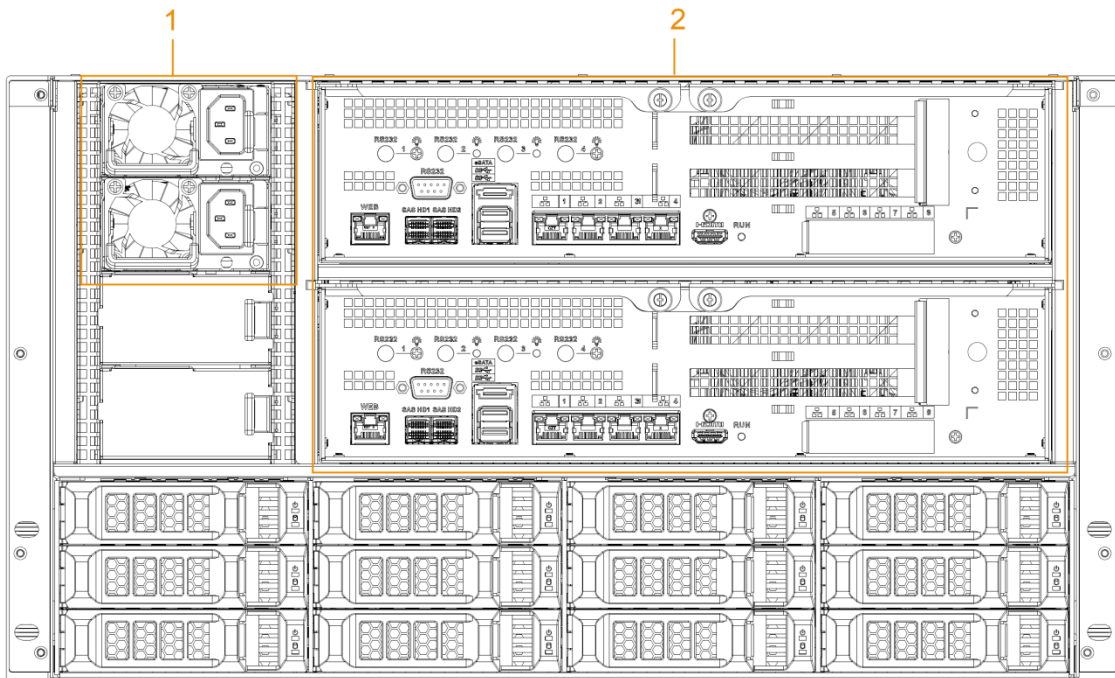


Table 1-2 Rear panel interfaces

No.	Interface	Description
1	Power module	AC power; with fan.
2	Main control module	For description of the interfaces and indicators, see Table 1-3.

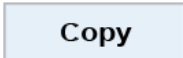
Table 1-3 EVS71XXD master control module interfaces


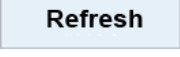

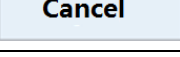



Port/Indicator	Description
RS-232	Connects to RS-232 port for debugging.
WEB	Gigabit management port. Can be used as data port.
SAS HD	Connects the IN interface of the expansion cabinet.
eSATA	Connects to external storage devices.
USB 3.0	Connects the mouse or other USB storage devices.
EX-1–EX-4/1–4	Gigabit Ethernet ports, can be used to transfer data.
HDMI	Outputs high definition video data and multi-channel audio data to external displays.
PCI-E X8	High-speed expansion port, connects to components with X8 plug.
PCI-E X4	High-speed expansion port, connects to components with X4 plug.

1.4 Menu Items

This section introduces the icons and buttons you will frequently meet when using the Device.

Table 1-4 Icons and buttons

Icon/Button	Description
	After setting a channel, click this icon and you can copy the configuration of the current channel to other channels.

Icon/Button	Description
 Default	Click this icon to restore default configuration. Click OK to save the default configuration.
 Refresh	Click this icon to get the latest configuration information.
 OK	Click this icon to save the modified configuration item.
 Cancel	Click this icon to cancel the modified configuration item and close the window.
	Check box. You can select multiple configuration items at the same time. <input checked="" type="checkbox"/> : Selected.
	Radio button. You can select a configuration item. <input checked="" type="radio"/> : Selected.
	Drop-down list. Click this icon to display the drop-down menu.

2 Installation and Powering Up

2.1 Installing HDD

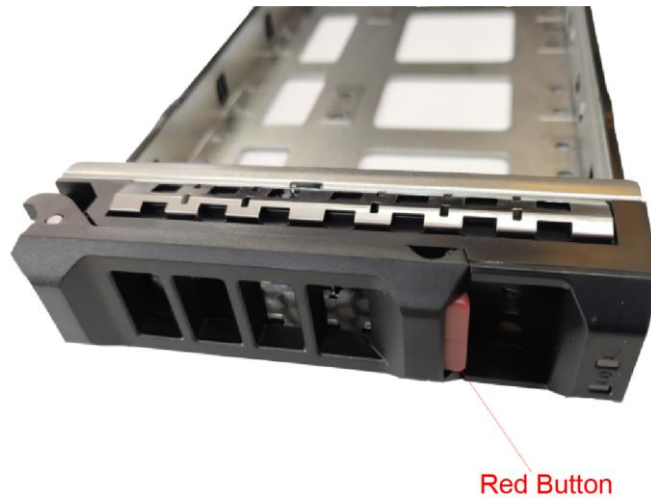
The HDD is not installed by default on factory delivery. You need to install it by yourself.



Some devices are heavy and shall be carried together by several people to avoid injury.

Step 1 Press the red button on the disk tray to unlock the handle. See Figure 2-1.

Figure 2-1 Opening the handle



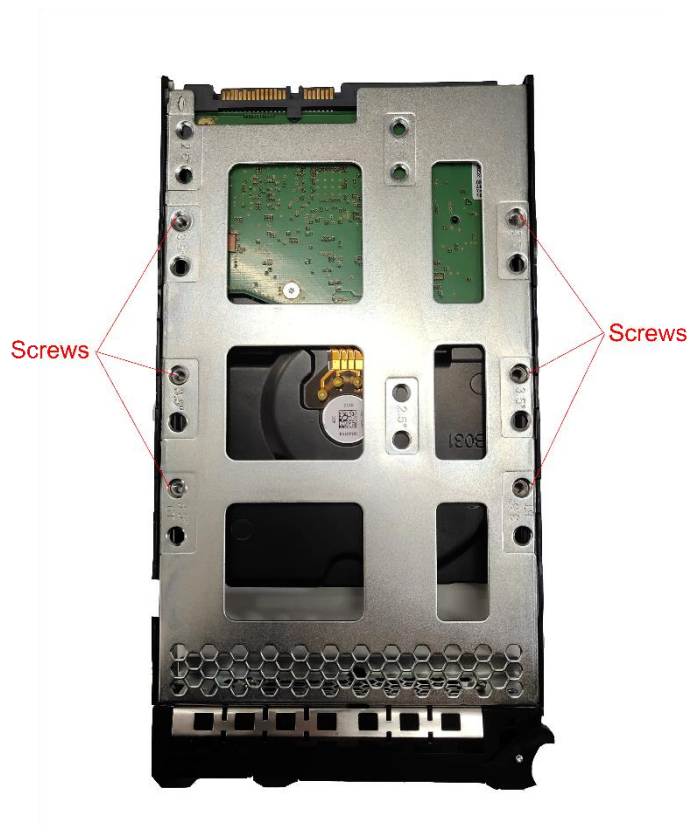
Step 2 Pull out the empty disk tray. See Figure 2-2.

Figure 2-2 Disk tray



Step 3 Put the disk into the disk tray and fasten the screws at the bottom of the tray. See Figure 2-3.

Figure 2-3 Fastening the screws





To avoid any damage to the slot, do not lock the handle until the disk tray has been pushed to the bottom.

Step 4 Insert the disk tray into the HDD slot, push it to the bottom and lock the handle.

2.2 Powering Up

2.2.1 Preparation

Properly connect the cables before powering up the Device and check against the following items:

- Make sure that all power lines are connected correctly.
- Check whether the supplied power voltage complies with device requirements.
- Check whether the network cables and SAS cables are connected correctly.

2.2.2 Powering Up the Device

Press the power button on the front panel, and then check whether the indicators are normally displayed.

- When the indicators are normal, the Device is powered up successfully.
- If the indicators are abnormal, remove the abnormalities according to the corresponding notes and power up the Device again.

3 Initial Settings

When using EVS for the first time, initialize the Device, and set basic information and functions first.

3.1 Initializing Device

If it is your first time to use the Device after purchasing or after restoring factory defaults, set a login password of admin (system default user). At the same time, you can set proper password protection method.



Take web remote initialization for example.

Step 1 Open the browser, enter IP address, and then press Enter.



Default IP address of network port 1 to network port 4 are 192.168.1.108 to 192.168.4.108. Enter the corresponding IP address of the actually connected network port.

Step 2 On the **Language Set** interface, select a country or region, a language, and a language standard. Click **Next**. The language setting step is only available on the local interface of the Device.

The **Time** interface is displayed. See Figure 3-1.

Figure 3-1 Time setting

Device Initialization

1 Time 2 Input Password 3 Password Protection

Date
2019-11-04

Time
10:52:52

Time Zone

Time

Manual Setting

Date/Time 2019 - 11 - 04 10 : 51 : 35

Sync with Internet Time Server

Server clock.isc.org

Auto Sync Time Interval 1 hours

Next

Step 3 On the **Time** interface, set time parameters. For details, see Table 3-1.

Table 3-1 Time parameters description

Parameters	Description
Time Zone	The time zone of the Device.
Time	Set system date and time manually or by synchronizing with NTP server time. <ul style="list-style-type: none"> Manual Setting: Select date and time from the calendar. Sync with Internet Time Server: Select Sync with Internet Time Server, enter NTP server IP address or domain, and then set the automatic synchronization interval.

Step 4 Click **Next**.

The **Input Password** interface is displayed. See Figure 3-2.

Figure 3-2 Set password

Step 5 Set admin login password. See Table 3-2.

Table 3-2 Description of password parameters

Parameters	Description
Username	The default user name is admin.
Password	Set admin login password, and confirm the password. The new password should consist of 8 to 32 non-blank characters and contain at least two types of characters among number, letter and special characters (excluding ' " ; : & and space). Enter a strong password according to the password strength indication.
Confirm Password	

Step 6 Click **Next**.

The **Password Protection** interface is displayed. See Figure 3-3.

Figure 3-3 Password protection

Device Initialization

Time Input Password 3 Password Protection

Email (To reset password)

Email

Back Finish

Step 7 Set password protection information.

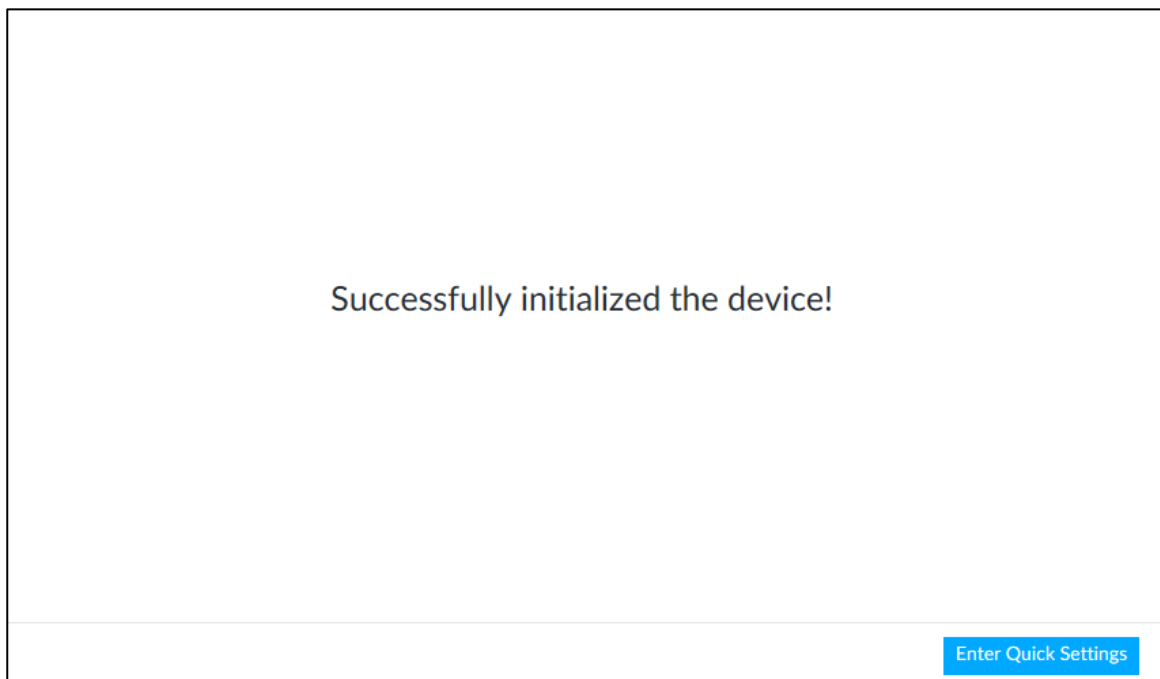
You can use the email you set here to reset admin password. For details, see *User's Manual*.

- 1) Click to enable email.
- 2) Enter an email address in the **Email** box.

Step 8 Click **Finish** to complete device initialization.

The device initialization success interface is displayed. See Figure 3-4. Click **Enter Quick Settings** button to go to the quick settings interface, and then set device basic information. See "3.2 Quick Settings" for details.

Figure 3-4 Initialization completed



3.2 Quick Settings


After initializing the Device, the system goes to quick settings interface. You can quickly configure system time, and network settings.



The Device has 5 Ethernet ports by default. Make sure that at least one Ethernet port has connected to the network before you set IP address.

Step 1 On the completion interface of initialization, click **Enter Quick Setting**.

Step 2 Enable virtual IP.

- 1) Click  to enable virtual IP.
- 2) Configure virtual IP address, subnet mask and gateway.



Virtual IP: Provides a static device IP address for user to access the device however the main controller and the standby controller switch.

- Make sure that the virtual IP is in the same network segment with the default NIC IP.
- Virtual IP is bound to the NIC that corresponds to the default route.

Step 3 Configure IP address.



- 1) Click  of the corresponding NIC.
- 2) Set parameters.

Table 3-3 TCP/IP parameters description

Parameters	Description
Speed	Current NIC max network transmission speed.
IP Type	Select IPv4 or IPv6.
Use Dynamic IP Address	When there is a DHCP server on the network, check Use Dynamic IP Address , system can allocate a dynamic IP address to the Device. There is no need to set IP address manually.
Use Static IP Address	Check Use Static IP Address , and then set static IP address, subnet mask and gateway to set a static IP address for the Device.
MTU	<p>Set NIC MTU value. The default setup is 1500 Byte. We recommend you to check the MTU value of the gateway first and then set the device MTU value equal to or smaller than the gateway value. It is to reduce the packets slightly and enhance network transmission efficiency.</p>  <p>Changing MTU value might result in NIC reboot, network offline and affect current running operation. Please be careful!</p>

- 3) Click **OK**.

The Device goes back to **IP Set** interface.

Step 4 Set DNS server information.

You can select to get DNS server manually or enter DNS server information.



This step is compulsive if you want to use domain service.

- 1) Select an IP type for DNS server. You can select IPv4 or IPv6.
- 2) Select the way of setting DNS IP address.
 - ◇ Select **Obtain DNS server address automatically**, and then the Device can automatically get the DNS server IP address on the network.
 - ◇ Select **Use the following DNS server address**, and then enter the preferred DNS IP address and the alternate DNS IP address.

Step 5 Set default NIC.

Select default NIC from the drop-down list.



Make sure that the default NIC is online.

Step 6 Click **Next** to save settings.

3.3 Login



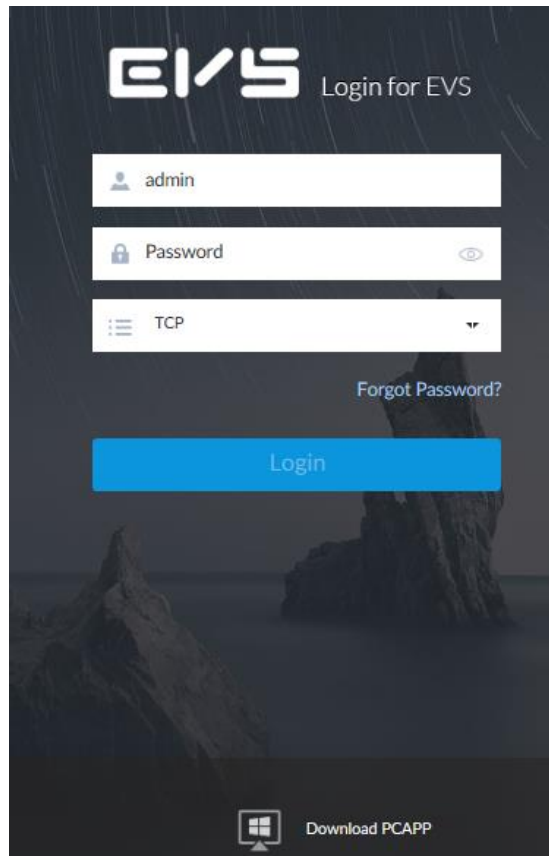
- The system is logged in by default after you initialize the Device.
- This section takes logging in to the PCAPP client for example.

Step 1 Download PCAPP.

Open the browser, enter IP address, and press Enter.

The web login interface is displayed. See Figure 3-5.

Figure 3-5 Web login interface



Step 2 Click **Download PCAPP** to download PCAPP installation package, and then follow the onscreen instructions to install the software.

On completion of installation, the following interface is displayed. See Figure 3-6.

Figure 3-6 Installation completed



Step 3 Click **Run**.

The login interface is displayed.




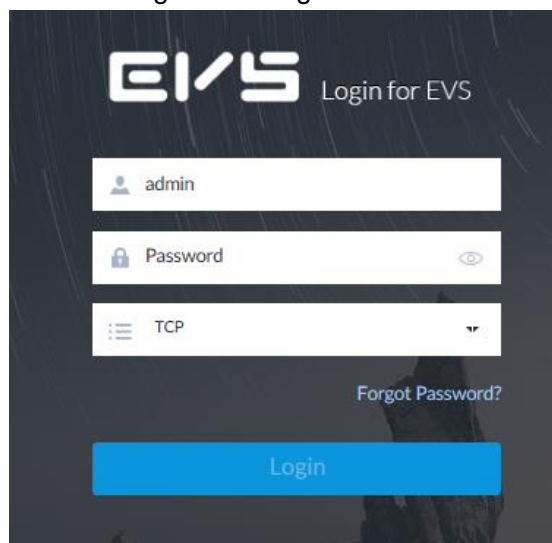
Click  to display the task column. Enter IP address of the Device, and then press Enter to log in.

Figure 3-7 Login





Step 4 Enter device user name and password.

Step 5 Click **Login**.

3.4 Initializing Remote Device

After you initialize the remote device, you can change remote device login password and IP address. Remote devices can be connected to the Device only after being initialized.

Step 1 Click , or click  on the configuration interface, and then select **DEVICE**.

Step 2 On the **Device List** interface, click **Add**.

Step 3 On the **Smart Add** interface, click **Smart Search**.

Step 4 Select the uninitialized remote device and then click **Initialize** button.



Click **Initialization status** and then select **Uninitialized**, you can quickly filter the uninitialized remote device.

Figure 3-8 Initializing the device

Step 5 Set remote device password and password protection.



Using current device password and password protection information is enabled by default. Keep it enabled so as to automatically use current device admin password and email information without manual configuration. Go to Step 6 if you keep it enabled.


- 1) To manually configure password, click  to disable Using current device password and password protection information.

Figure 3-9 Password setting

- 2) Set parameters.

Table 3-4 Description of password parameters

Parameters	Description
Username	The default user name is admin.
Password	In the New Password box, enter the new password and enter it again in the Confirm Password box.
Confirm Password	The password should consist of 8 to 32 non-blank characters and contain at least two types of characters among uppercase, lowercase, number, and special character (excluding ' " ; : &). Enter a strong password according to the password strength indication.

3) Click **Next**.

4) Set an email address.

Enter an email address. You can use the email address here to reset password in case you forgot password in the future.

Step 6 Click **Next**.

Figure 3-10 Modify IP

Step 7 Set camera IP address.

- When there is DHCP server in the network, select DHCP, and the remote device gets dynamic IP address automatically. It is unnecessary to enter IP address, subnet mask and gateway.
- Select **Static**, and then enter static IP address, subnet mask, default gateway and incremental value.



- After you enter incremental value, system can add the fourth address of the IP address one by one to automatically allocate the IP addresses.
- If you want to change several devices IP addresses at the same time, system allocates IP address of the same network segment.
- If there is IP conflict when changing static IP address, device pops up IP conflict dialogue box. If batch change IP address, device automatically skips the conflicted IP and begins the allocation according to the incremental value.

Step 8 Click **Next**.

Step 9 Click **Confirm and Add**, or click **OK**.


3.5 Adding Remote Devices

After you initialize remote device, you can view the live video from the remote device, and change remote device settings.



- Uninitialized device cannot be added. For details, see *User's Manual*.
- This section takes **Smart Add** for example.

Step 1 Click , or click  on **Setting** interface, and then select **DEVICE**.

Step 2 Click  or **Add**, and then select **Smart Add**.

Step 3 Click **Start Search**.




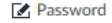

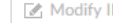









Click  to set search criteria.

Figure 3-11 Remote device

Add Device
✕

Smart Add
Manual Add
RTSP
Batch Import

▶ Start Search
 Password
 Initialize
 Modify IP


<input checked="" type="checkbox"/> (1)	Initialization State	Address	Product Model	Manufacturer	Port	Product Type	Sn	Operate
<input checked="" type="checkbox"/>	✓ Initialized	192.168.1.101	ONVIF148S	Onvif	80	--	--	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.102	ONVIF	Onvif	80	--	--	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.103	ONVIFSR_2	Onvif	80	--	--	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.104	ONVIFSR_2	Onvif	80	--	--	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.105	ONVIF136S	Private	37777	IPCAM	4M04994YA...	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.106	ONVIF136S	Private	37777	IPCAM	4M04994YA...	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.107	ONVIF136S	Private	37777	IPCAM	4M04994YA...	 LIVE
<input type="checkbox"/>	✓ Initialized	192.168.1.108	ONVIF116	Private	37777	IPCAM	1.000.0000.0.R	 LIVE

Total 8 Item(s) Show up to 50

<<
<
1/1
>
>>
GO

Remaining Bandwidth/Total: 1024.00 Mbps/ 1024 Mbps

Add
Cancel

Step 4 Set device username and password.

Select a remote device, click **Password**, and then enter the username and password of the selected device. Click **OK**.



If you do not enter device username and password, the system will try to add the device by using the username and password of the current EVS.

Step 5 Click **Add**.

To add a multiple-channel remote device, select the channels that you want to add.



Step 6 Click **Continue to add** or **Finish**.




4 System Configuration

This chapter introduces system configuration functions such as setting HDD, RAID and IPSAN.

4.1 Local Hard Disk

The local hard disk refers to the HDD installed on the system. On this interface, you can view HDD space (free space/total space), temperature (centigrade/Fahrenheit), HDD information and so on.

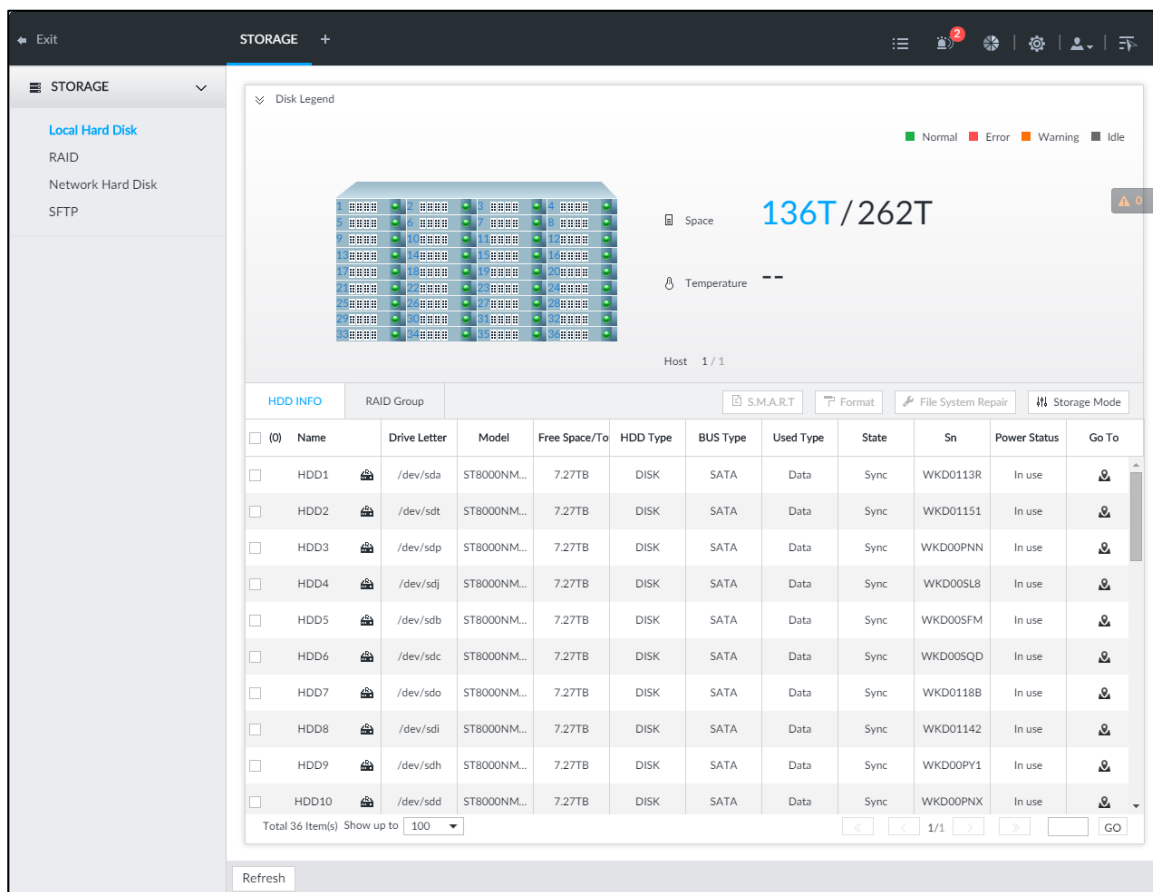
Click , or click  on the configuration interface, and then select **STORAGE > Local Hard Disk**. The **Local Hard Disk** interface is displayed. There is a corresponding icon near the HDD name after you create the RAID and hot spare HDD.

-  : RAID HDD.
-  : Global hot spare HDD.
-  : Invalid HDD of RAID group.



Slight difference might be found on the user interface. The actual interface shall prevail.

Figure 4-1 HDD



4.1.1 Viewing S.M.A.R.T

S.M.A.R.T is so called Self-Monitoring Analysis and Reporting Technology. It is a technical standard to check HDD drive status and report potential problems. System monitors the HDD running status and compares with the specified safety value. Once the monitor status is higher than the specified value, system displays alarm information to guarantee HDD data security.



Check one HDD to view S.M.A.R.T information at one time.

On the **Local Hard Disk** interface, select a HDD, and then click **S.M.A.R.T**. The **S.M.A.R.T** interface is displayed. Check whether the HDD status is **OK** or not. If there is any problem, fix it in time.

Figure 4-2 S.M.A.R.T

Sn	Note	Value	Worst	Boundary	Original Data	State
1	Read Error Rate	117	99	6	135185072	Better
3	Spin Up Time	97	97	0	0	Better
4	Start/Stop Co...	100	100	20	780	Better
5	Reallocated S...	100	100	36	0	Better
7	Seek Error Rate	67	60	30	17203264542	Better
9	Power On Ho...	98	98	0	2426	Better
10	Spin-up Retry...	100	100	97	0	Better
12	Power On/Of...	100	100	20	752	Better
184	End-to-End F...	100	100	99	0	Better

4.1.2 Formatting HDD



- Formatting HDD will clear all data on the HDD. Be careful!
- Hot spare HDD cannot be formatted.

Enter the **Local Hard Disk** interface, select one or more HDD(s), and click **Format** to format the selected HDD.



4.1.3 File System Repair

Once you cannot mount the HDD or you cannot properly use the HDD, you can try to use the **File System Repair** function to fix the problem.

Enter the **Local Hard Disk** interface, select one or more HDD(s) you cannot mount, and click **File System Repair**, you can repair the selected file system of the corresponding HDD(s). The repaired HDD can work properly or to be mounted.

4.1.4 Setting Storage Strategy

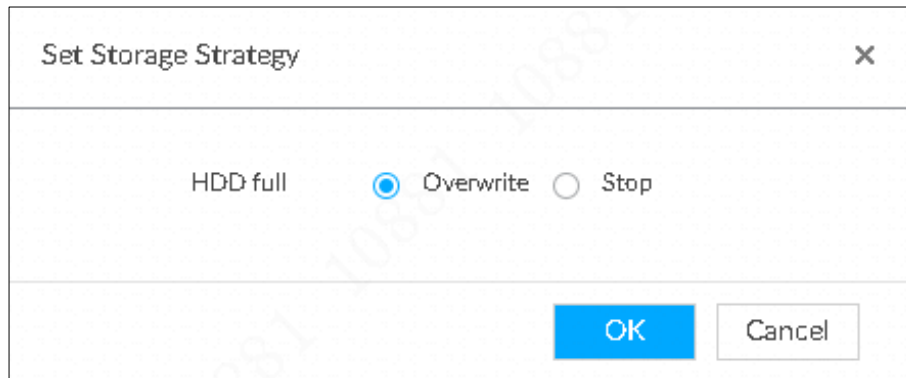
Set storage strategy when HDD space is full.

Step 1 Click , or click  on the configuration interface, and then select **STORAGE > Local Hard Disk**.

The **Local Hard Disk** interface is displayed.

Step 2 Click **Storage Strategy**.

Figure 4-3 Set storage strategy



Step 3 Set storage strategy.

- **Overwrite:** When HDD free space is less than 150G or 4% of the total space (the larger of the two values prevails), system continues to record and begins overwriting the oldest record file.
- **Stop:** When HDD free space is less than 150G or 4% of the total space (the larger of the two values prevails), system stops recording. Stop recording will trigger an alarm.

Step 4 Click **OK** to save the configuration.

4.1.5 Viewing RAID Group



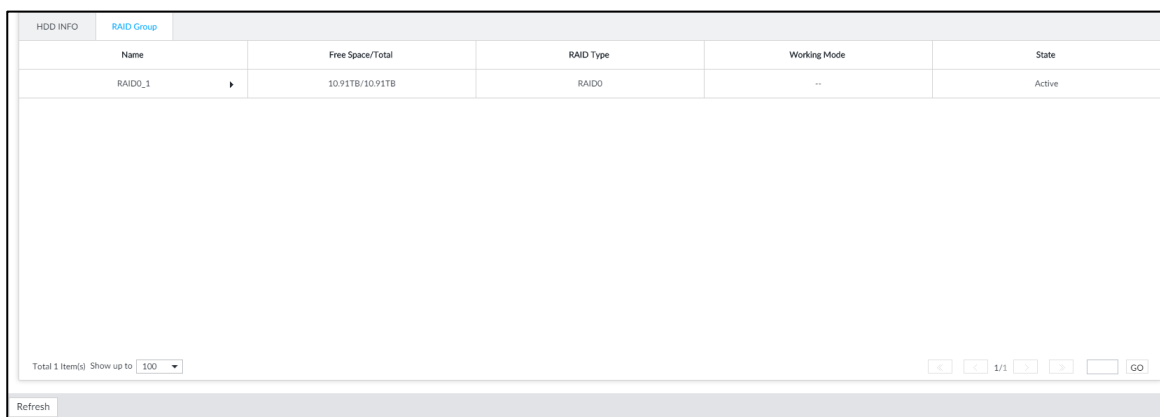


Click , or click  on the configuration interface, and then select **STORAGE > Local Hard Disk > RAID Group**. The **RAID Group** interface is displayed. You can view free space, RAID type, working mode and status of RAID group.

Figure 4-4 RAID group



Name	Free Space/Total	RAID Type	Working Mode	State
RAID0_1	10.91TB/10.91TB	RAID0	--	Active

- Click  next to the RAID name to display the RAID member list, and then you can view RAID member details.
- Point to the **Status** column, and then click  to display the **Details** interface to view RAID group details.

4.2 RAID

RAID (Redundant Array of Independent Disks) is a data storage virtualization technology that combines multiple physical HDD components into a single logical unit for the purposes of data redundancy, performance improvement, or both.



- The Device supports RAID 0, RAID 1, RAID5, RAID6, RAID10, RAID50 and RAID60.
- You are recommended to use enterprise HDD when you are creating RAID.

4.2.1 Creating RAID

RAID has different levels such as RAID5, RAID6 and so on. Different RAID levels have different data protection, data availability and performance levels. Create RAID according to your actual requirements.



Creating RAID operation is going to clear all data on these HDD. Be careful!

Strategy of automatic creation

With the auto creation strategy, system creates RAID 5 by the following principle.



In the following table, among the numbers in the creation strategy, the number without () represents the disk number of the RAID group. The number with () represents the number of hot spare disks. For example, for 24 HDDs, the creation strategy is 7+7+9+(1). It means three RAID5 and one hot spare, and each RAID5 respectively contains 7 disks, 7 disks and 9 disks.

Table 4-1 Automatic creation strategy

HDD No.	Creation Strategy
24	7+7+9+(1)
36	9+9+5+6+6+(1)
48	9+9+9+6+7+7+(1)

Create RAID



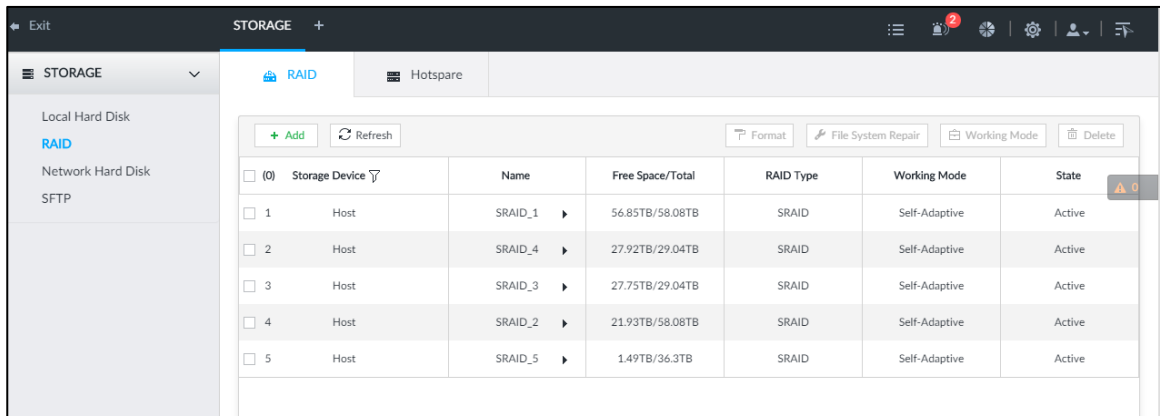
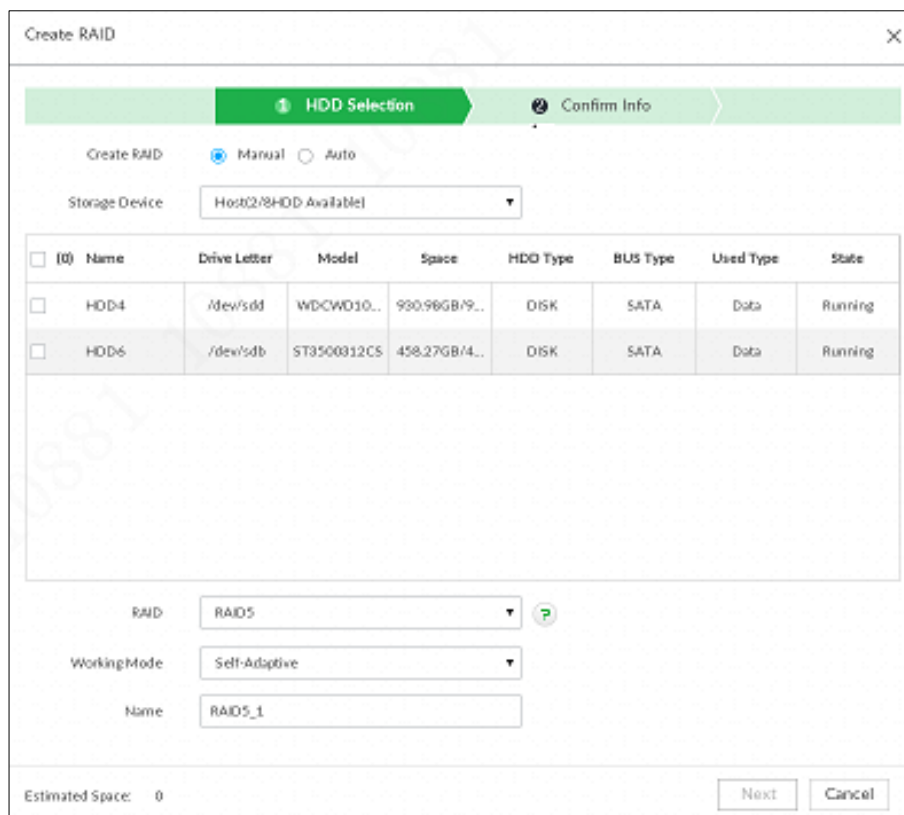
Step 1 Click , or click  on the configuration interface, and then select **STORAGE > RAID > RAID**.

Figure 4-5 RAID



Step 2 Click **Add**.

Figure 4-6 Create RAID (1)




Step 3 Set RAID parameters.

Select RAID creation type according to actual situation. It includes **Manual RAID** and **Auto RAID**.

- Manual RAID: System creates a specified RAID type according to the selected HDD amount.
 - 1) Select Manual RAID.
 - 2) Select HDD you want to use.
 - 3) Set parameters.

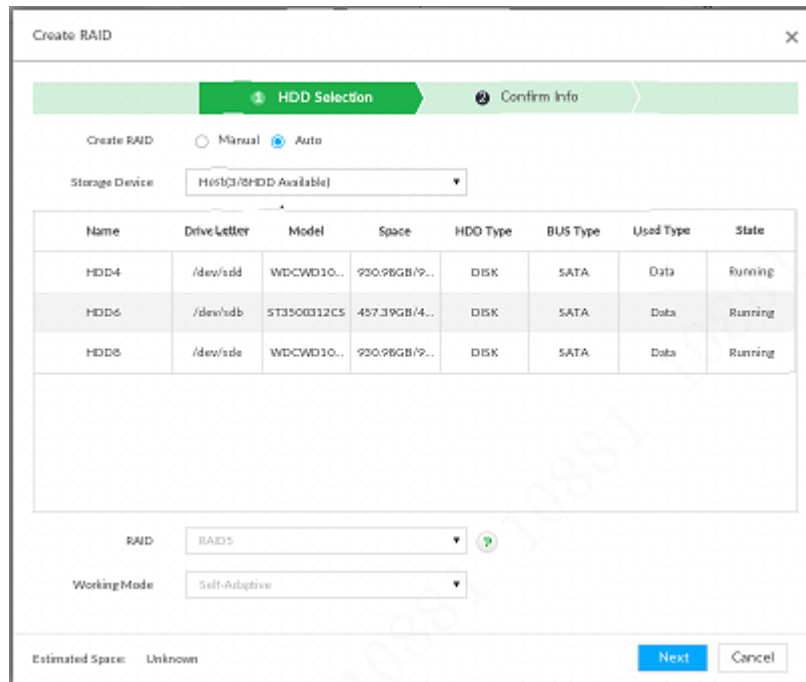
Table 4-2 Manual creation parameters description

Parameters	Description
Storage Device	Select the HDD you want to add to the RAID.  Different RAID types need different HDD amounts, and the actual situation shall prevail.
RAID	Select a RAID type you want to create.
Working mode	Set RAID resources allocation mode. The default setup is self-adaptive. <ul style="list-style-type: none"> Self-adaptive means the system can automatically adjust RAID synchronization speed according to current business load. When there is no external business, the synchronization speed is at high speed. When there is external business, the synchronization speed is at low speed. Sync first: Allocate resources to RAID synchronization first. Business first: Allocate resources to business first. Load-Balance: Allocate resources to business and RAID synchronization equally.
Name	Set RAID name.

- Auto: System creates RAID5 according to the HDD amount.

1) Select **Auto**.

Figure 4-7 Create RAID (2)



2) Set parameters.

Table 4-3 Auto parameters description

Parameters	Description
Storage Device	Select the storage device of the HDD.

Parameters	Description
Working mode	<p>Set RAID resources allocation mode. The default setup is self-adaptive.</p> <ul style="list-style-type: none"> Self-adaptive means the system can automatically adjust RAID synchronization speed according to current business load. When there is no external business, the synchronization speed is at high speed. When there is external business, the synchronization speed is at low speed. Sync first: Allocate resources to RAID synchronization first. Business first: Allocate resources to business first. Load-Balance: Allocate resources to business and RAID synchronization equally.

Step 4 Click **Next**.

Figure 4-8 Confirm info (manual)

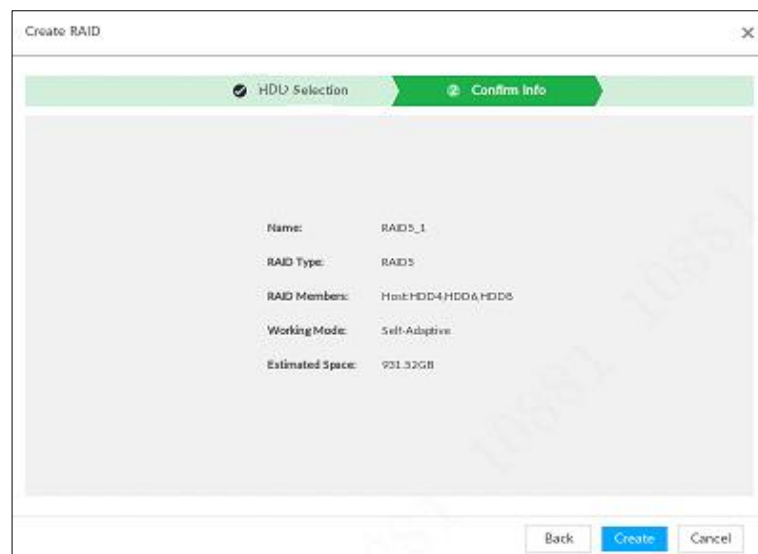
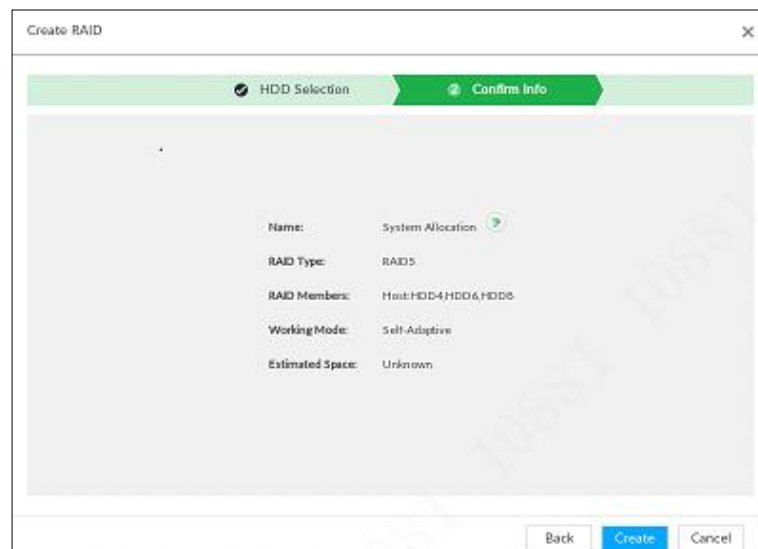


Figure 4-9 Confirm info (Auto)



Step 5 Confirm info.

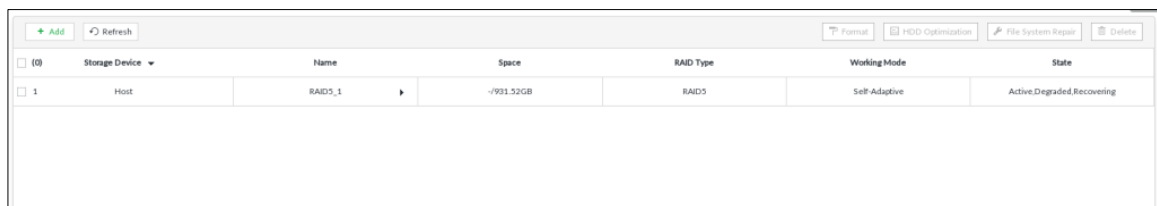


If the entered information is wrong, click **Back** to set RAID parameters again.

Step 6 Click **Create**.

System begins to create RAID. It displays RAID information after creation.

Figure 4-10 RAID (2)



Operation

After creating RAID, view RAID disk status and details, clear up RAID, and repair file system. For details, see Table 4-4.

Table 4-4 RAID operation





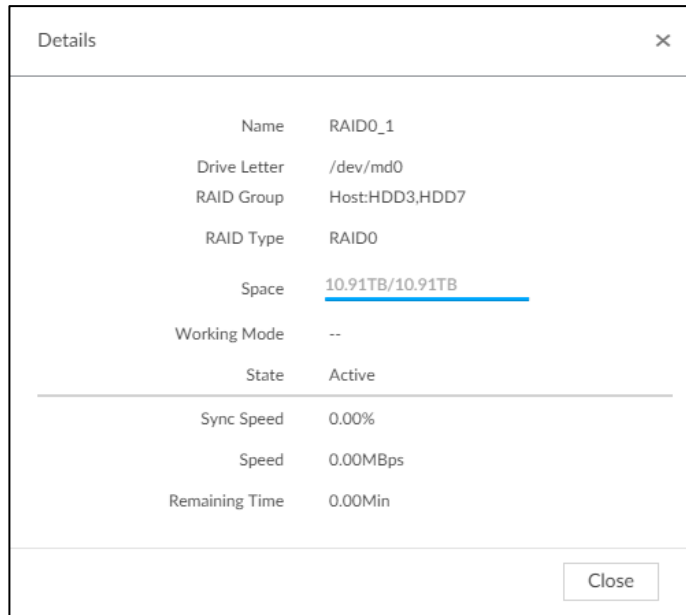
Name	Operation
View RAID HDD status	Click  at the right side of the RAID name to open the RAID HDD list. View RAID HDD space, status and so on.
View RAID details	Click  . It displays detailed information. See Figure 4-11. View RAID detailed information.
File System Repair	Once you cannot mount the RAID or you cannot properly use the RAID, you can try to use repair file system function to fix. Enter RAID interface, select one or more RAID(s) you cannot mount, click File System Repair , you can repair the selected file system of the corresponding RAID(s). The repaired RAID can work properly or to be mounted.
Modify Working Mode	Select one or more RAID(s), and then click Working Mode to modify the working mode.
Format RAID	 Formatting RAID is to clear all data on the RAID and cancel the RAID group. Please be careful. Enter RAID interface, select one and more RAID groups. Click Format to format the selected RAID.
Delete RAID	 Deleting RAID is to clear all data on the RAID and cancel the RAID group. Please be careful. Enter RAID interface, select one and more RAID groups. Click Delete to delete the selected RAID.

Figure 4-11 RAID details



4.2.2 Creating Hot Spare HDD

When a HDD of the RAID group is malfunctioning or has a problem, the hot spare HDD can replace the malfunctioning HDD. There is no risk of data loss and it can guarantee storage system reliability.



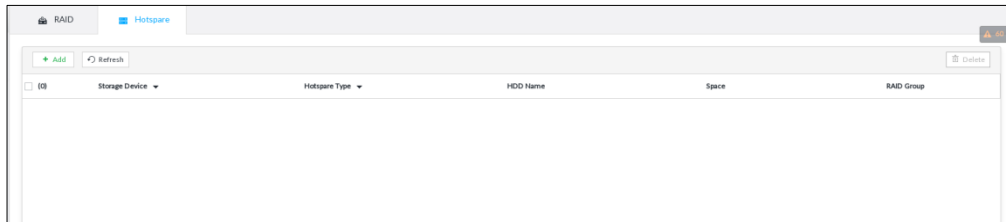
Step 1 Click , or click  on the configuration interface, and then select **STORAGE > RAID > Hot spare**.

Figure 4-12 Hot spare (1)



Step 2 Click **Add**.

Figure 4-13 Global hot spare

Creation Type: Global Hotspare Private Hotspare

Storage Device: Host3/8HDD Available

<input type="checkbox"/>	(0) Name	Drive Letter	Model	Space	HDD Type	BUS Type	Used Type	State
<input type="checkbox"/>	HDD4	/dev/sdd	WDCWD10...	990.98GB/9...	DISK	SATA	Data	Running
<input type="checkbox"/>	HDD6	/dev/sdb	ST3500312CS	465.51GB/4...	DISK	SATA	Data	Running
<input type="checkbox"/>	HDD8	/dev/sde	WDCWD10...	990.98GB/9...	DISK	SATA	Data	Running

Next Cancel

Figure 4-14 Private hot spare

Creation Type: Global Hotspare Private Hotspare

Add: [Empty dropdown]

<input type="checkbox"/>	(0) Name	Drive Letter	Model	Space	HDD Type	BUS Type	Used Type	State
<input type="checkbox"/>	HDD4	/dev/sdd	WDCWD10...	990.98GB/9...	DISK	SATA	Data	Running
<input type="checkbox"/>	HDD6	/dev/sdb	ST3500312CS	465.51GB/4...	DISK	SATA	Data	Running
<input type="checkbox"/>	HDD8	/dev/sde	WDCWD10...	990.98GB/9...	DISK	SATA	Data	Running

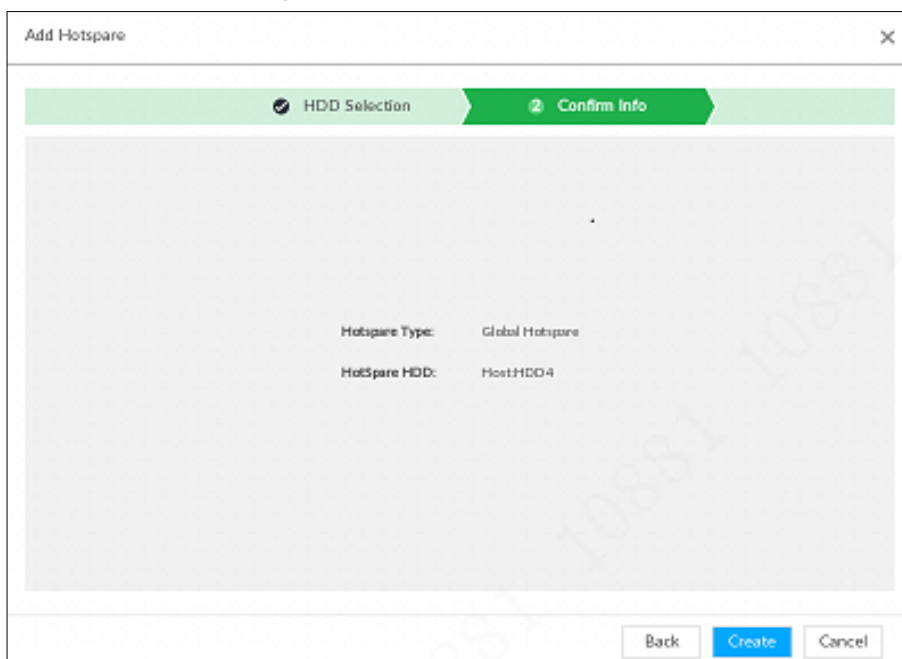
Next Cancel

Step 3 Select hot spare creation type.

- Global hot spare: Create hot spare for all RAID. It is not a hot spare HDD for a specified RAID group.
- Private hot spare: Select **Private Hot spare** and **Add** it to a RAID group. The private hot spare HDD is for a specified RAID group.

Step 4 Select one or more HDD(s) and then click **Next**.

Figure 4-15 Confirm info



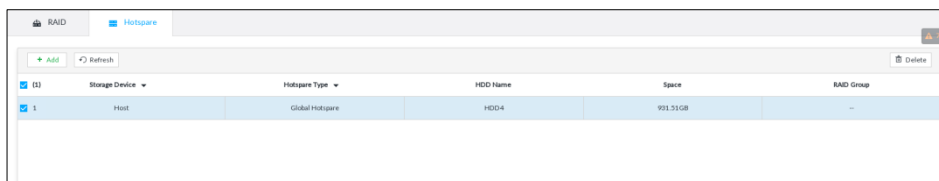
Step 5 Confirm info.



Click **Back** to select hot spare HDD(s) again if you want to change settings.

Step 6 Click **Create** to save settings.

Figure 4-16 Hot spare (2)

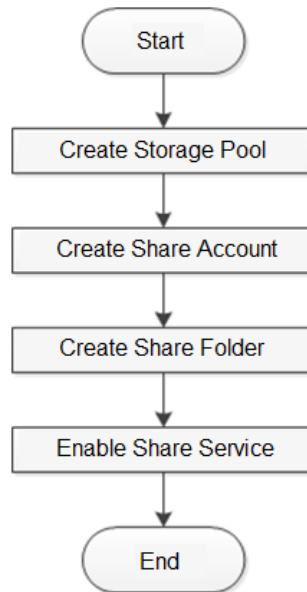


Select a hot spare HDD and then click **Delete** to delete hot spare HDD.

4.3 IPSAN

IPSAN is a storage technology based on IP network. After you create a storage pool, you can share your storage directory with other devices through iSCSI.

Figure 4-17 Configuring IPSAN



4.3.1 Creating Storage Pool

Storage pool is a logical storage space after the storage device is virtualized. It is managed by the system, and can be composed of multiple actual disks or RAID. IPSAN is one of the major means to realize storage virtualization.



Creating storage pool will format the disk. Be careful!



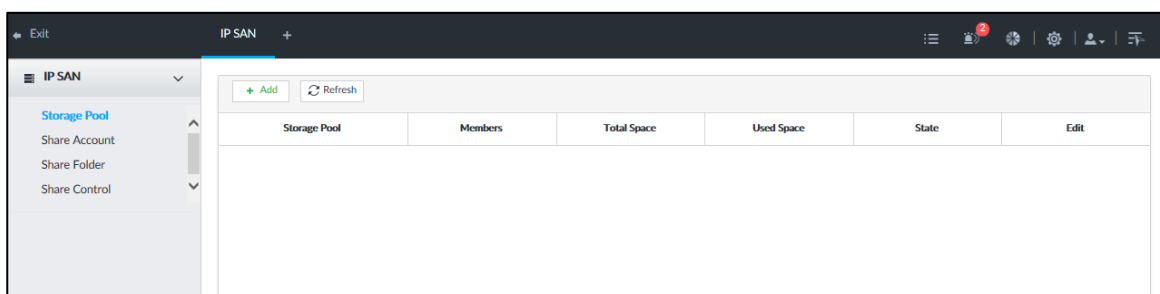
Step 1 Click , or click  on the configuration interface, and then select **IPSAN > Storage Pool**.

Figure 4-18 Storage pool



Step 2 Click **Add**.

Figure 4-19 Create storage pool

Create Storage Pool
✕

Pool Name

Device Name	Total Space	State	Type	Health Status
/dev/md0	58.08TB	Normal	RaidVolume	-
/dev/md1	29.04TB	Normal	RaidVolume	-
/dev/md2	29.04TB	Normal	RaidVolume	-
/dev/md3	58.08TB	Normal	RaidVolume	-
/dev/md4	36.3TB	Normal	RaidVolume	-

OK
Cancel

Step 3 Name the pool, and then select a disk or RAID group.



By default, in the **Device Name** column, "sdx" (x ranges from a to z) is a disk, such as /dev/sda, and "mdx" (x is number) is a RAID group, such as /dev/md0.

Step 4 Click **OK**.

The confirmation dialogue box is displayed.

Step 5 Click **OK**.

The system starts to create storage pool.



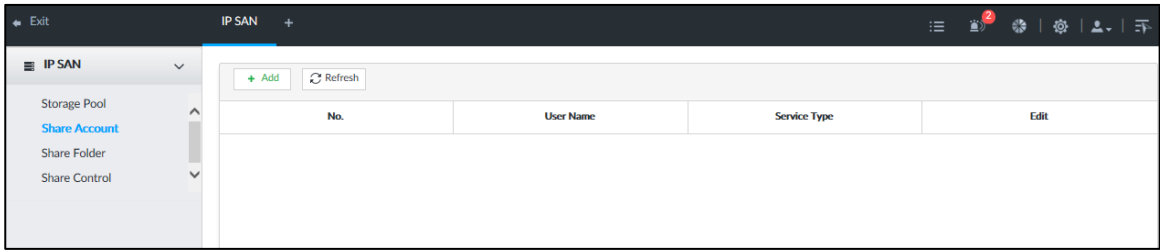
To delete a pool, click . To refresh the storage pool list, click **Refresh**.

4.3.2 Managing Share Account

Use share account to access the shared folder.

Step 1 Click , or click on the configuration interface, and then select **IPSAN > Share Account**.

Figure 4-20 Share account




Step 2 Click **Add**.

Figure 4-21 Add user

Step 3 Set parameters.

Table 4-5 Parameters description

Parameters	Description
User Name	Name the user.
Service Type	You can add an iSCSI share user.
Password	Set a password for the user.
Confirm password	 The password shall be 12-digit if the service type is iSCSI.
Remark	Set the remark information for identifying the user.

Step 4 Click **OK**.

4.3.3 Configuring Share Folder

Configure the share folders that other users can access remotely.



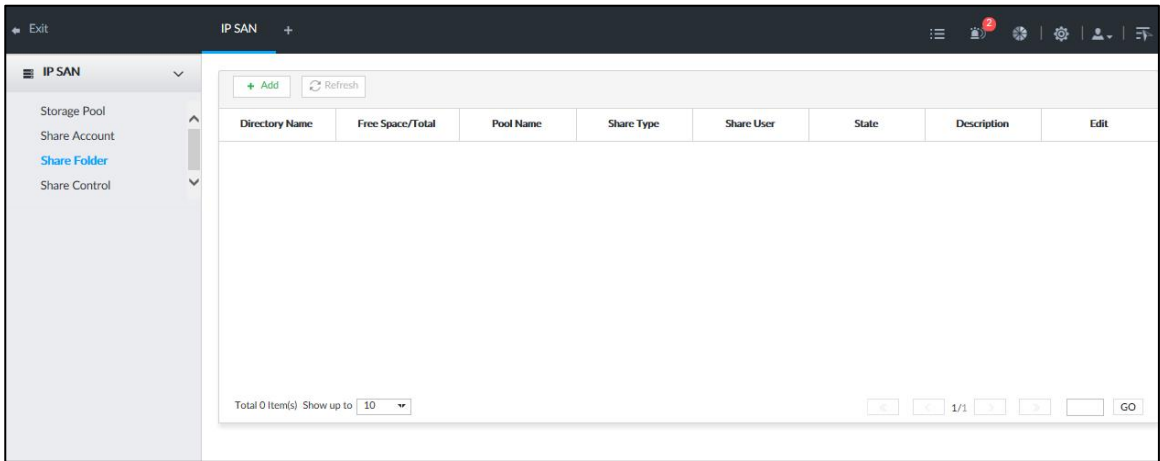
Step 1 Click , or click  on the configuration interface, and then select **IP SAN > Share Folder**.

Figure 4-22 Share folder






Step 2 Click **Add**.

Figure 4-23 Add (iSCSI)

Step 3 Set parameters.



Table 4-6 Parameters description

Parameters	Description
Directory Name	Name the folder.
Pool Name	Select a pool.  The available free space of the selected pool is displayed beside the pool name.

Parameters	Description
Share Capacity	Set the space of the folder.
Block Size	Set the block size of the folder, such as 512 Byte, 1024 Byte, 2048 Byte and 4096 Byte.  You need to set block size when the service type is iSCSI.
Descriptipon	(Optional) Describe the folder for the ease of identifying it.
Share Type	You can only select iSCSI.
Cache Type	Set the cache strategy of the share folder, including Write-back and Direct-write . <ul style="list-style-type: none"> Direct-write: Write data directly into be disk and refresh the cache data. You are recommended to select direct-write when you have less data to store and have a high requirement for data integrity. Write-back: Write data into the cache, and then store it into the disk when the cache is full or system is available. You are recommended to select write-back when you have much more data to store and have a low requirement for data integrity.  You need to select the cache type when the service type is iSCSI.

Step 4 Click **OK**.



- The system forces to disable automatic maintenance the first time you create a share folder, or when you create a folder when automatic maintenance is enabled automatically. Once you have configured IPSAN, you can manually enable automatic maintenance.
- Click  to delete a share folder; click  to edit a share folder; click **Refresh** to refresh the current configuration.
- Modifying cache type takes effect after the Device restarts.

4.3.4 Share Control

Users can access the share folders only when the share service is enabled.



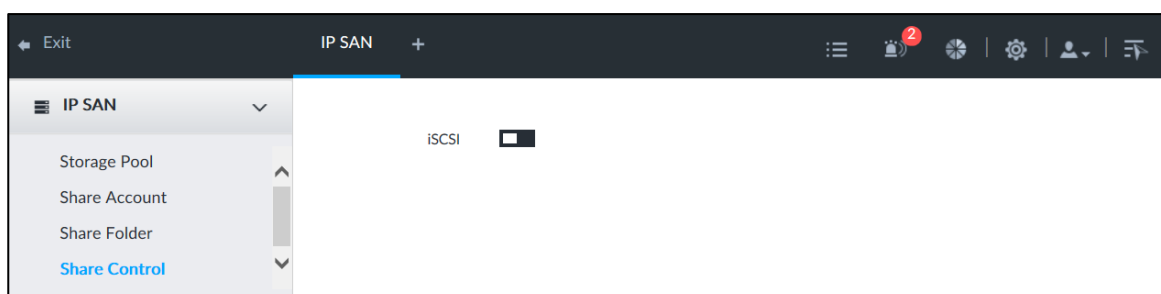


Step 1 Click , or click  on the configuration interface, and then select **IPSAN > Share Control**.

Figure 4-24 Share control



Step 2 Click  to enable share service; click  to disable share service.

Step 3 Click **OK**.

5 AI Operations

In addition to the basic video monitoring functions, the Device can also provide a number of AI functions including face recognition, people counting, video metadata, vehicle recognition, and IVS (behavior detections such as fence-crossing, intrusion, loitering, crowd gathering, parking and more.).


This chapter introduces how to configure the AI functions respectively.



- The AI functions might vary depending on the device function capability. The actual interface shall prevail.
- Some AI features are conflicting. Do not enable conflicting AI features at the same time.

5.1 Overview

View the usage status of the AI functions of all remote devices.

Click  at the upper-right corner of the homepage to open the **Event** interface. The **Overview** interface is displayed by default, which shows the usage status of the AI functions of all remote devices.



 indicates that the AI function is enabled.

5.2 Face Detection

System triggers alarms when human faces are detected within the detection zone.

5.2.1 Enabling AI Plan

You need to enable AI plan first.



- AI plan is available on select models.
- You need first enable the corresponding AI plan; otherwise the AI function does not work.
- The Device automatically shows the AI functions available on the connected cameras.

Step 1 Click , or click  on the configuration interface, and then select **EVENT**.

Step 2 Select a camera in the device tree on the left.

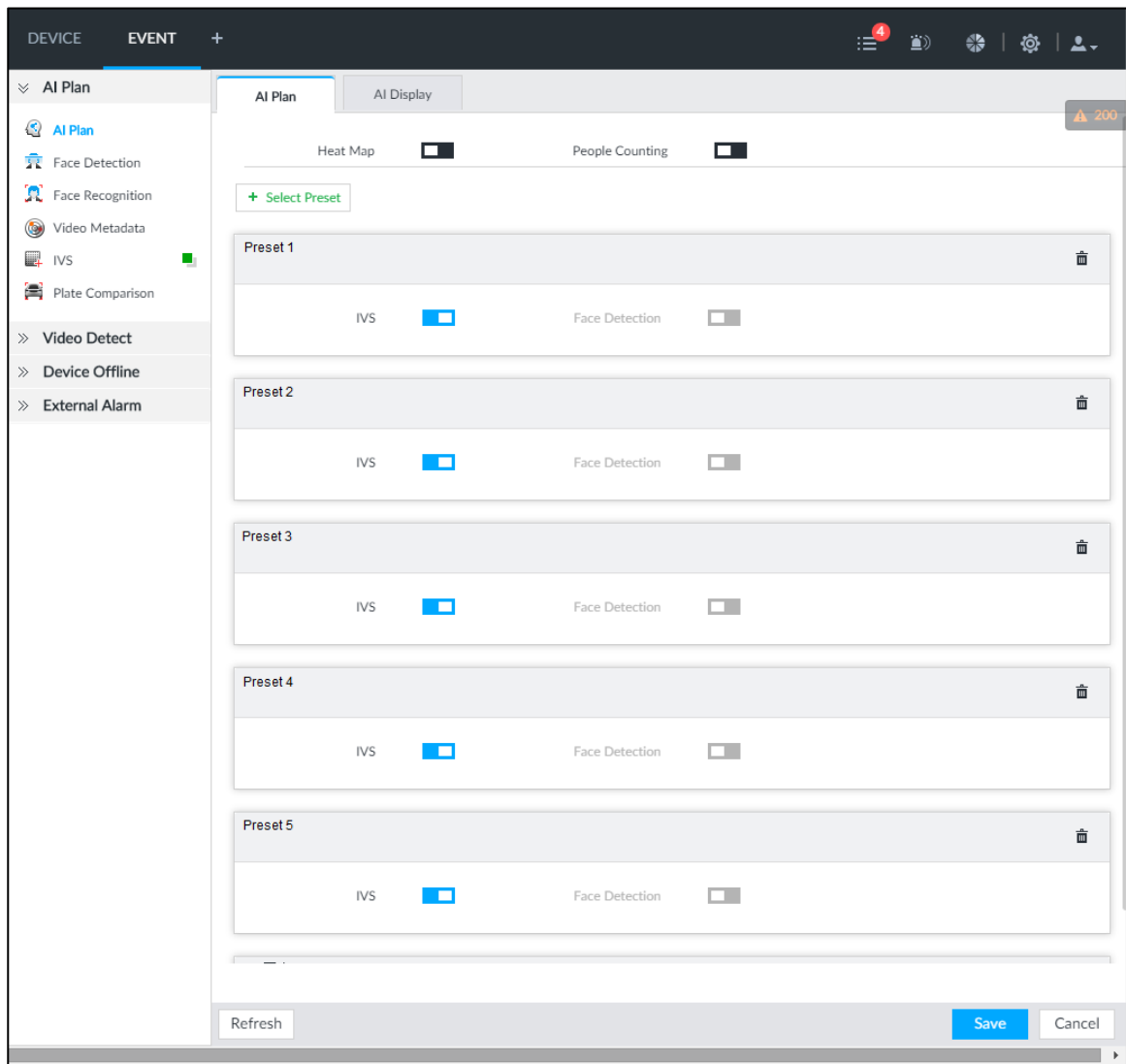
Step 3 Select **AI Plan > AI Plan > AI Plan**.



- The interface might vary depending on the function capabilities of cameras. The actual interface shall prevail.

- If the camera is a PTZ camera, configure presets on the camera system first, and then you can set AI features for each preset of the PTZ camera. See Figure 5-1.

Figure 5-1 AI plan (with preset)



Step 4 Click to enable AI detection plan. The icon becomes .

When there is a conflict between the to-be-enabled AI plan and an enabled plan, disable the enabled plan first.

Step 5 Click **Save**.

5.2.2 Configuring Face Detection

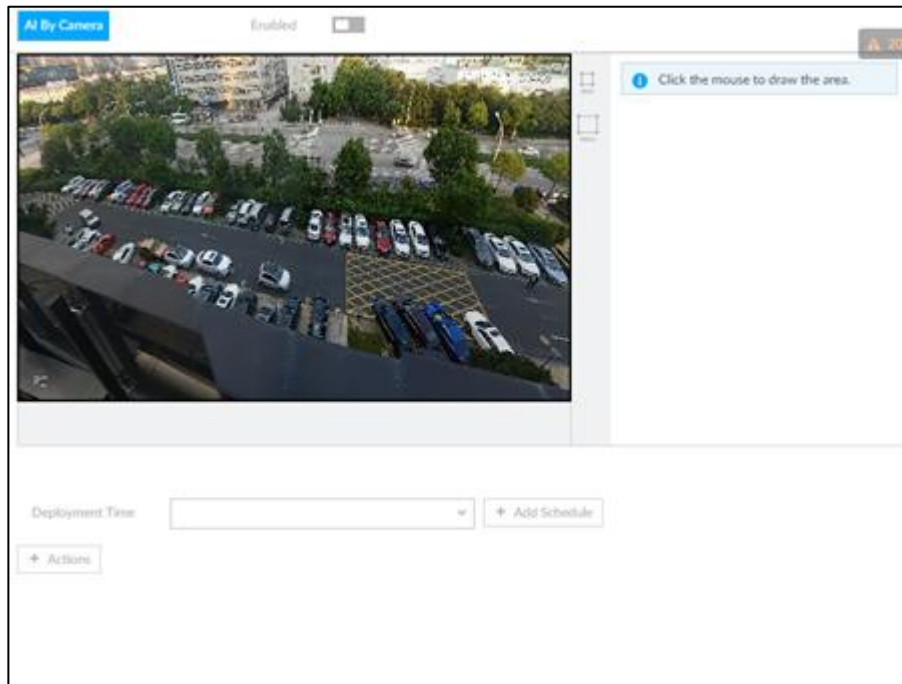
Configure alarm rule of face detection.


Step 1 Click  or click  on the configuration interface, and then select **EVENT**.

Step 2 Select a remote device in the device tree on the left.

Step 3 Select **AI Plan > Face Detection**.

Figure 5-2 Face detection



Step 4 Click  to enable face detection.






Support the **Face Rol** function. After enabling **Face Rol** function, system displays enhanced human face zone on the surveillance window.

Step 5 Set detection region on the video (yellow area). See Figure 5-3.

Figure 5-3 Area



- Click  or white dot on detection region frame, and drag to adjust its size.
- Click  or  to set the minimum size or maximum size of the face detection area. System triggers an alarm once the size of detected target is between the maximum size and the minimum size.

Step 6 Click **Deployment Time** to select schedule from the drop-down list.

After setting arm period, system triggers corresponding operations when there is a motion detection alarm in the specified period.

Step 7 Click **Action** to set alarm action. For details, see *User's Manual*.

Step 8 Click **Save**.

5.2.3 Live View of Face Detection

You can view real-time face detection images and video.

5.2.3.1 Setting AI Display

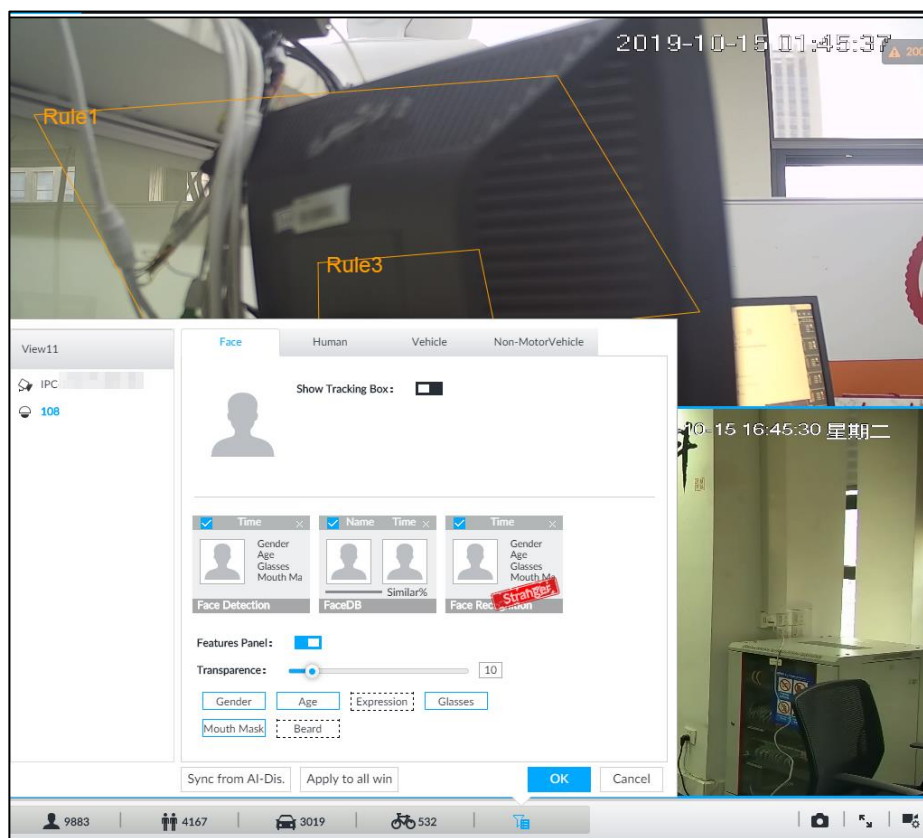
You can configure display rule of face detection results.



Before using this function, ensure that view has been created. For details, see *User's manual*.

Step 1 On the **LIVE** interface, click  and select the **Face** tab.

Figure 5-4 Face




Step 2 Enable **Show Tracking Box** by clicking .

After it is enabled, when the system detects face or human, the window will display corresponding rule box.

Step 3 Enable **Features Panel**, and select feature(s) you want to display.

- 1) Click next to **Features Panel** to enable the function. When the panel is enabled, the snapshots of detected faces are displayed on the live view.

- 2) Click to select **Face Detection** tab. indicates that the panel is selected.
- 3) (Optional) Drag  to adjust features panel transparency. The higher the value, the more transparent the features panel.
- 4) (Optional) Select the features you need to display.
 - System supports displaying 4 feature types.
 - System has checked four features by default. To select other features, cancel the selected features, and then select the ones you need.

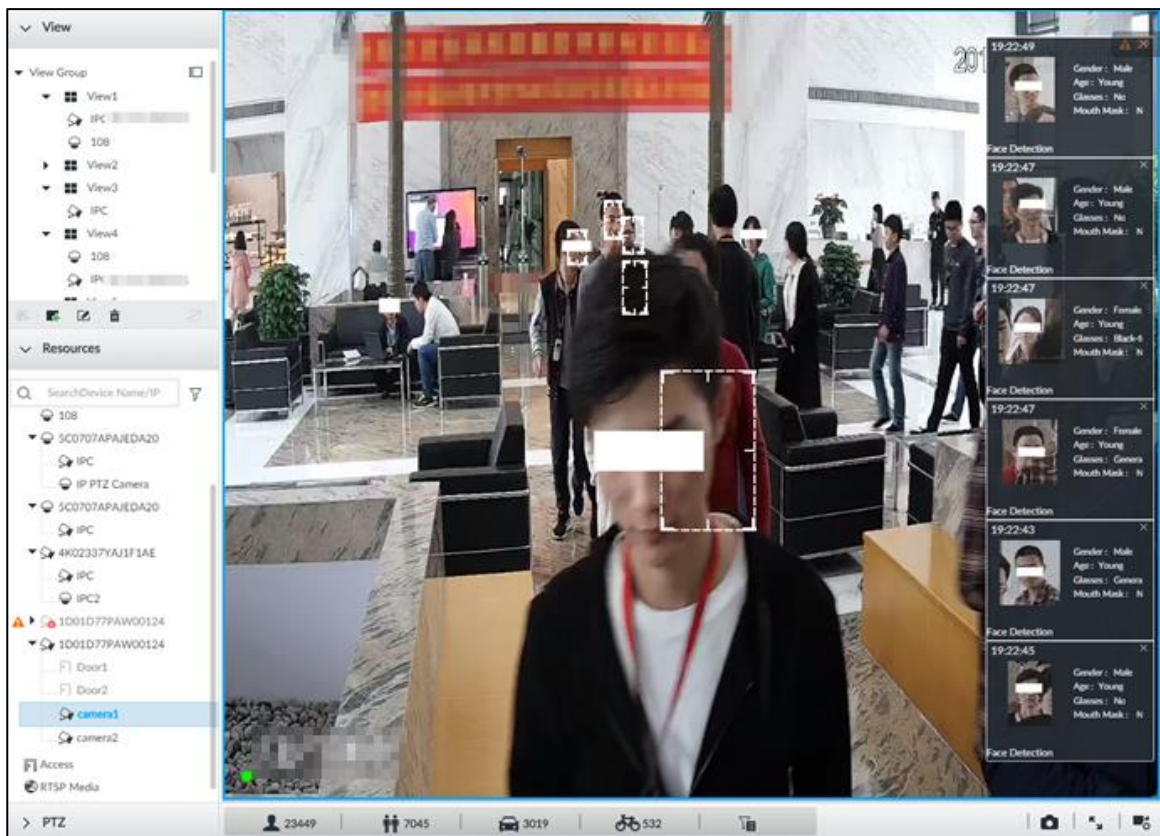
Step 4 Click **OK** to save the configuration.


5.2.3.2 Live View

Go to the **LIVE** interface, enable view, and then view videos.

- The view window displays currently detected face rule boxes.
- Features panels are displayed on the right side in real time.
The features panel displays detection time, face snapshot and face features details.

Figure 5-5 Live



Point to a features panel, and click  or double-click the detected image, so the system starts to play back the recorded videos (about 10 s) at the time of snapshot.



5.2.3.3 Face Records

On the **LIVE** interface, click . The **FACE TOTAL** interface is displayed. Click . And then select **Face Detection**. The latest face detection records are displayed. See Figure 5-6.

Figure 5-6 Detection image



In the **FACE TOTAL** interface, the following operations are available.

- Point to a piece of face record, click  or double-click the detected image, and then the system starts to play back the recorded videos (about 10 s) at the time of snapshot.
- Point to a piece of face record, click , and then you can save that record locally including the video and pictures.

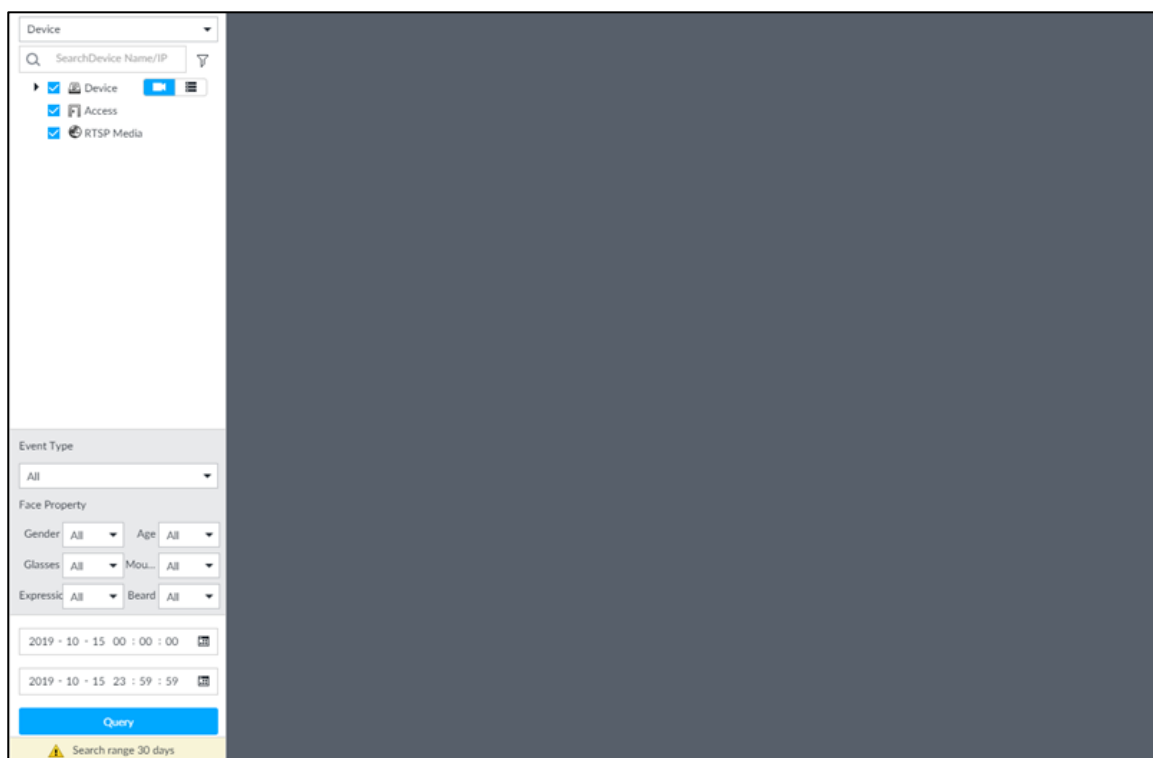
5.2.4 Face Search

Search for face detection information, including face detection image, record and features.

5.2.4.1 Searching by Property

Step 1 On the **MAINTAIN** interface, click , select **AI SEARCH > Search by Property**.

Figure 5-7 Search by property



Step 2 Select a remote device, and then set **Event Type** to be **Face Detection**.



In the **Event Type** drop-down list, if you select **All**, the search results will include both face detection records and face recognition records.

Step 3 Set face property and time.

Step 4 Click **Query**.

5.2.4.2 Exporting Face Records

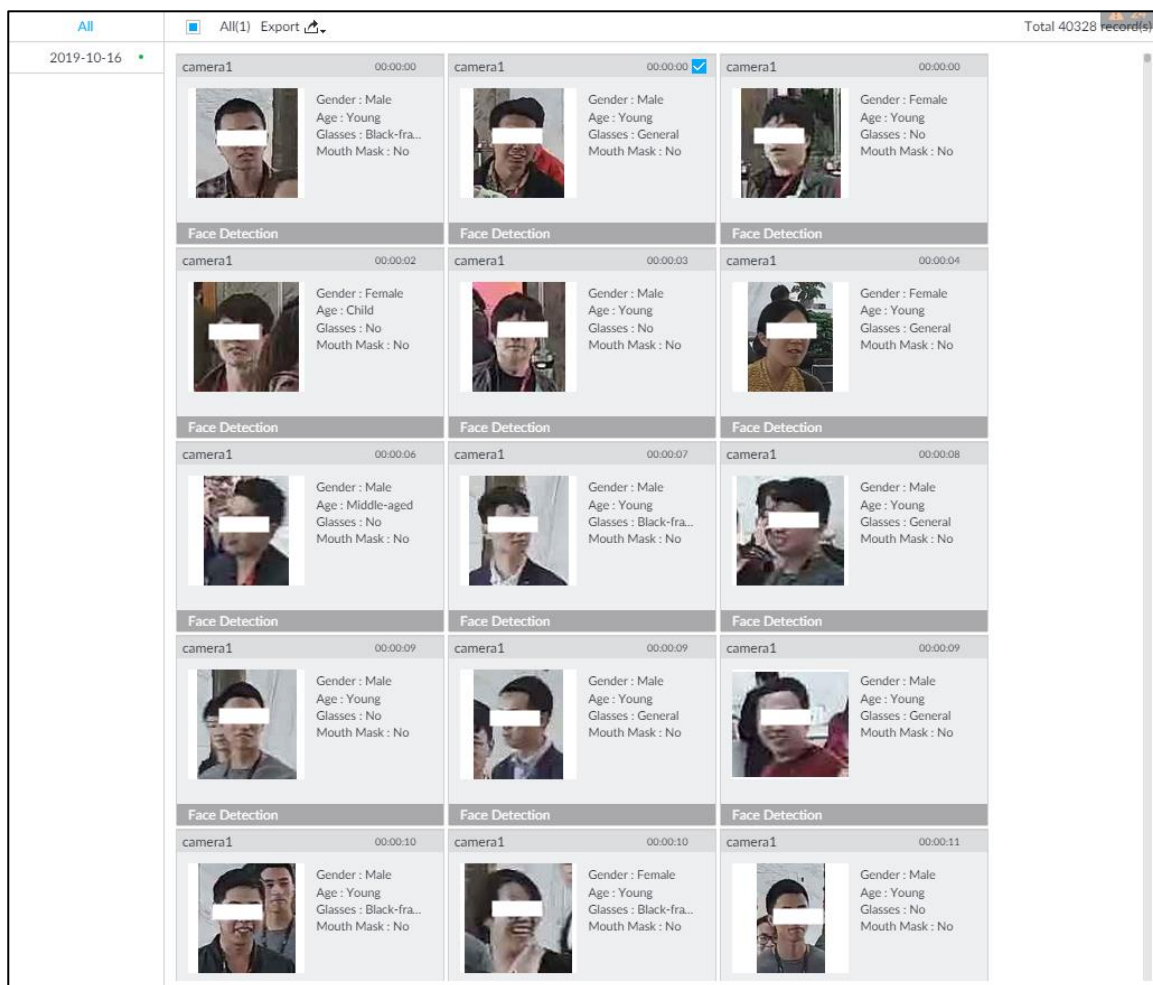
The search results of face records can be exported. You can select to export video, picture and excel.



- The exported alarm-linked snapshot contains the face snapshot and the background picture.
- To save the background picture, make sure that you have configured alarm-linked snapshot storage.

The search results are displayed as follows.

Figure 5-8 Search results of face records



- Export in batches

Export more than one record. Support specifying file formats.

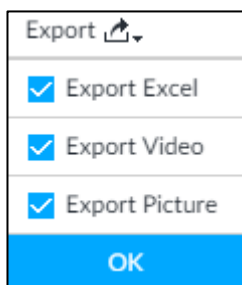
Step 1 Select more than one record.



To export all records, select the check box of **All**.

Step 2 Click , and then select file formats. See Figure 5-9.


Figure 5-9 File format



Step 3 Click **OK**, and then follow the onscreen instructions to finish exporting.

- Export one by one

Export one piece of record. The exported file contains excel, snapshot and video by default.

Step 1 Point to a piece of record, and then click .

The **Save** interface is displayed.

Step 2 Select a file type between DAV and MP4, set the saving path, and then click **OK**.

5.3 Face Recognition

The system compares captured face with the face database and works out the similarity. When the similarity reaches the threshold as you have defined, an alarm will be triggered.




Make sure that the face database has been configured on the camera. For details, see user's manual of camera.

5.3.1 Enabling AI Plan

Enable the corresponding AI plan first. For details, see "5.2.1 Enabling AI Plan."

5.3.2 Configuring Face Recognition

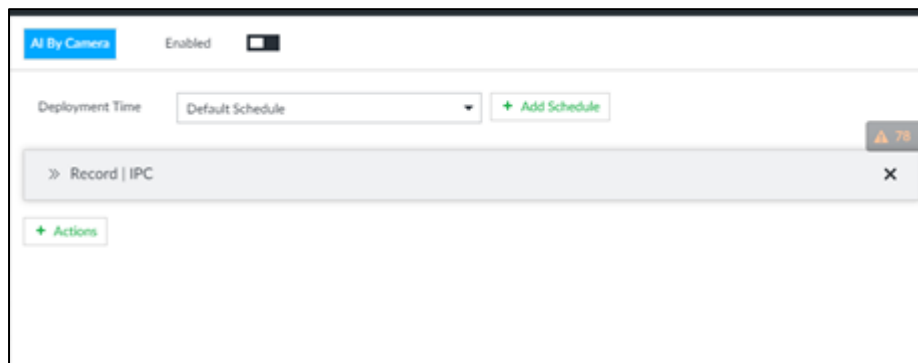
Configure face recognition rules.


Step 1 Click , or click  on the configuration interface, and then select **EVENT**.

Step 2 Select remote device in the device tree on the left.

Step 3 Select **AI Plan > Face Recognition**.

Figure 5-10 Face recognition



Step 4 Click  to enable face recognition.

Step 5 Click **Deployment Time** to select schedule from the drop-down list.

After setting arm period, system triggers actions when there is a motion detection alarm in the specified period.

Step 6 Click **Actions** to set alarm actions.

Step 7 Click **Save**.

5.3.3 Live View of Face Recognition

Smart panel display. You can view real-time face detection and human face recognition images.

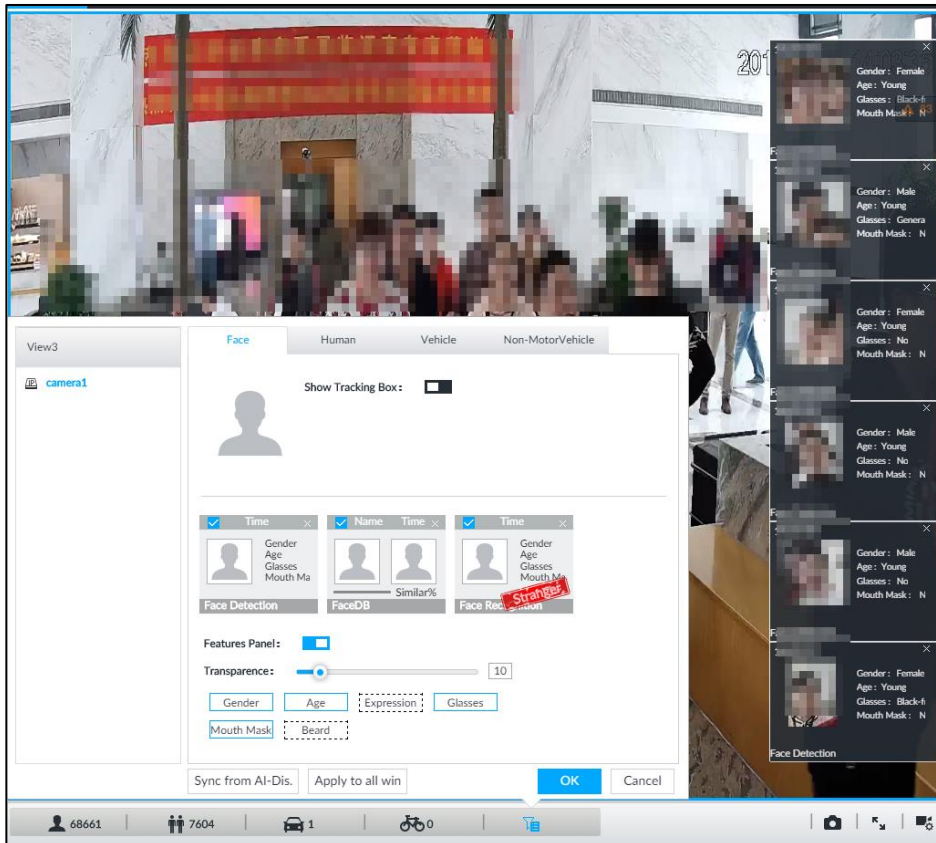
5.3.3.1 Setting AI Display

You can configure display rule of AI detection results.

Step 1 On the **LIVE** interface, open a view window.

Step 2 Click  and select the **Face** tab.


Figure 5-11 Face



Step 3 Click next to **Show Tracking Box**, to enable the function.

After it is enabled, when the system detects face or human, the window will display corresponding rule box.

Step 4 Enable features panel.

- 1) Click next to **Features Panel**, to enable the function. When the panel is enabled, the snapshots of detected faces are displayed on the live view.
- 2) Click to select **Face DB** tab and **Face Recognition** tab. indicates that the panel is selected.
 - If the **Face DB** panel is selected, it is displayed on the live video when the similarity between a detected face and one in the face database reaches the threshold.
 - If the **Face Recognition** panel is selected, it is displayed on the live video when the similarity between a detected face and one in the face database does not reach the threshold.
- 3) (Optional) Drag  to adjust features panel transparency. The higher the value, the more transparent the features panel.

- 4) (Optional) Select the features you need to display.
 - System supports displaying 4 feature types.
 - System has checked four features by default. To select other features, cancel the selected features, and then select the ones you need.

Step 5 Click **OK** to save the configuration.


5.3.3.2 Live View

Go to the **LIVE** interface, enable view, and then device displays view video.

- The view window displays currently detected face rule box.
- The right side displays features panel.
The features panel displays detection time, face snapshot and face features.

Figure 5-12 Live



Point to a features panel, and then click  or double-click the detected image, so the system starts to play back the recorded videos (about 10 s) at the time of snapshot.

5.3.3.3 Face Total

On the **LIVE** interface, click . Face detection panel is displayed.

Figure 5-13 Detection image



5.3.4 Face Search

Search for face detection information, including face detection image, record and features. Search according to record and image.

Step 1 Click , select **AI SEARCH > Search by Face**.

Step 2 Select a remote device, and then set **Event Type** to be **Face Detection**.

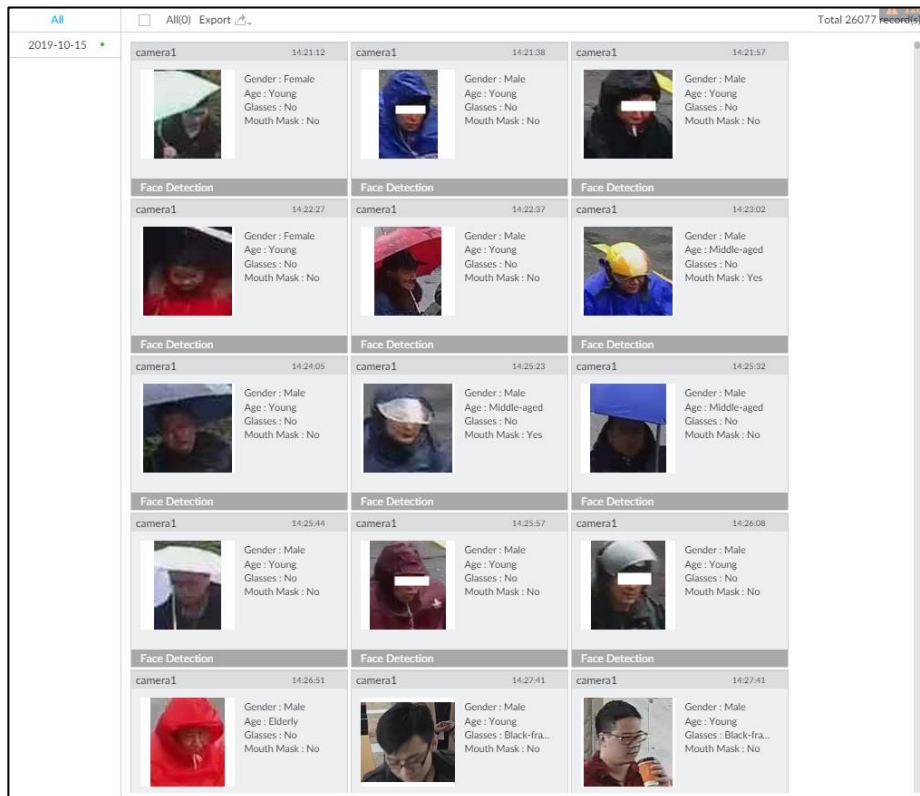


In the **Event Type** drop-down list, if you select **All**, the search results will include both face detection records and face recognition records.

Step 3 Set face property and time.

Step 4 Click **Query**.

Figure 5-14 Search results



Time	Gender	Age	Glasses	Mouth Mask
14:21:12	Female	Young	No	No
14:21:38	Male	Young	No	No
14:21:57	Male	Young	No	No
14:22:27	Female	Young	No	No
14:22:37	Male	Young	No	No
14:23:02	Male	Middle-aged	No	Yes
14:24:05	Male	Young	No	No
14:25:23	Male	Middle-aged	No	Yes
14:25:32	Male	Middle-aged	No	No
14:25:44	Male	Young	No	No
14:25:57	Male	Young	No	No
14:26:08	Male	Young	No	No
14:26:51	Male	Elderly	No	No
14:27:41	Male	Young	Black-fra...	No
14:27:41	Male	Young	Black-fra...	No

5.4 Video Metadata

The system analyzes real-time video stream to detect the existence of 4 target types: human, human face, motor vehicle, non-motor vehicle. Once a target is detected, the system can record video, take snapshots and trigger alarms.

5.4.1 Enabling AI Plan

Enable AI plan. See "5.2.1 Enabling AI Plan" to enable AI detect function.

5.4.2 Configuring Video Metadata

After enabling video metadata, EVS links the current remote device for taking snapshots when alarm is triggered.



Video metadata cannot be enabled at the same time with face detection and IVS, because it conflicts with the two functions.




Step 1 Click  or , and then select **EVENT**.

The **EVENT** interface is displayed.

Step 2 Select a device from the device tree at the left side.

Step 3 Select **AI Plan > Video Metadata**.

Step 4 Select the detection target.

- People: Click the corresponding  to enable people detection. Face detection can also be enabled at the same time.
- Vehicle: Click the corresponding  to enable vehicle detection.
- Non-Motor Vehicle: Click the corresponding  to enable non-motor vehicle detection.

Step 5 Click **Deployment Time** drop-down list to select schedule.

EVS links alarm event when an alarm is triggered within the schedule configured.

Step 6 Click **Save**.


5.4.3 Live View of Video Metadata

View the detection results of face, people, motor vehicle and non-motor vehicle on the **LIVE** interface.

5.4.3.1 Setting AI Display

Set the filtering conditions to display AI detection results.

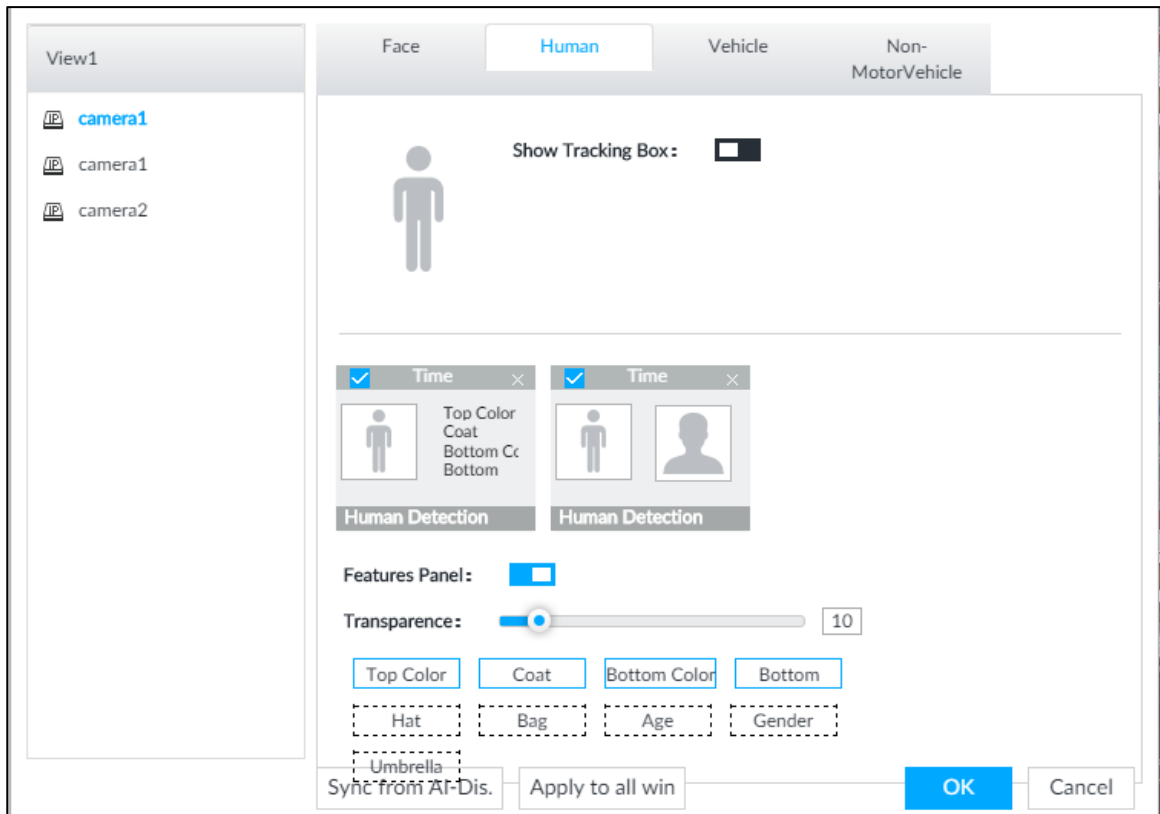
Step 1 Select a view from **LIVE > View > View Group**.

Step 2 Click  at the lower side of the **LIVE** interface, and then select **Face, Human, Vehicle** or **Non-Motor Vehicle**.




The figure takes **Human** for example. The interface is for reference only, and the actual interface shall prevail.

Figure 5-15 Human



Step 3 Click next to **Show Tracking Box**, and then a tracking box is displayed in the video when target that meets the filtering conditions is detected.

Step 4 Configure feature panel.

- 1) Click next to **Features Panel** to enable feature panel.
A features panel is displayed on the right side of the video when target that meets the conditions is detected.
- 2) Click to select the panel type, for example, the **Human Detection** tab.
- 3) (Optional) Drag  to adjust the transparency of panel. The higher the value, the more transparent the panel.
- 4) (Optional) Select the features to be displayed in the panel.
 - Up to 4 features can be displayed.
 - 4 features are selected by default. To select another feature, click the selected feature to cancel it, and then click the feature to be displayed.

Step 5 Click **OK**.

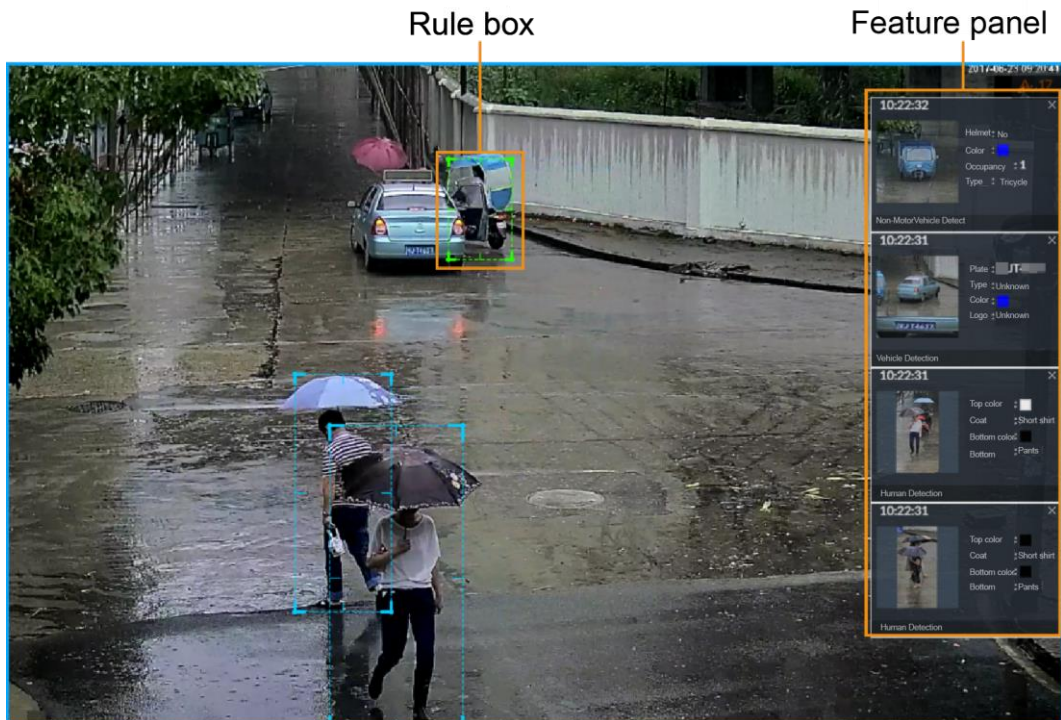
5.4.3.2 Live View


On the **LIVE** interface, select a view from **View Group**, and the video image of the view will be displayed.

- Rule box is displayed in real time in the video image. Different detection targets correspond to different colors of rule box, and the actual interface shall prevail.

- Features panels are displayed on the right side of the video image.

Figure 5-16 Live




Point to the features panel, and then click , or double-click the detected image to play back the video record (10 s before and after the snapshot).



5.4.3.3 Detection Statistics

View the detection statistics of human, motor vehicle and non-motor vehicle.

5.4.3.3.1 Human

On the **LIVE** interface, click . The **PEOPLE TOTAL** interface is displayed.

Click , and then select **Snap With Face** and **Snap Without Face**. The information of detected human and face is displayed.

- Point to the snapshot, and then click  or double-click a picture to play back the video record (10 s before and after the snapshot).
- Point to the snapshot, and then click  to export the video record.



5.4.3.3.2 Motor Vehicle

On the **LIVE** interface, click . The **VEHICLE TOTAL** interface is displayed.

Click , and then select **Vehicle Recognition**. The information of detected vehicles is displayed. See Figure 5-17.

Figure 5-17 Motor vehicle detection



- Move the mouse pointer to the panel, and then click , or double-click detected picture to play back the video record (10 s before and after the snapshot).
- Move the mouse pointer to the panel, and then click  to export the video record to specified saving path.

5.4.3.3 Non-motor Vehicle

On the **LIVE** interface, click . The **NONMOTOR TOTAL** interface is displayed.


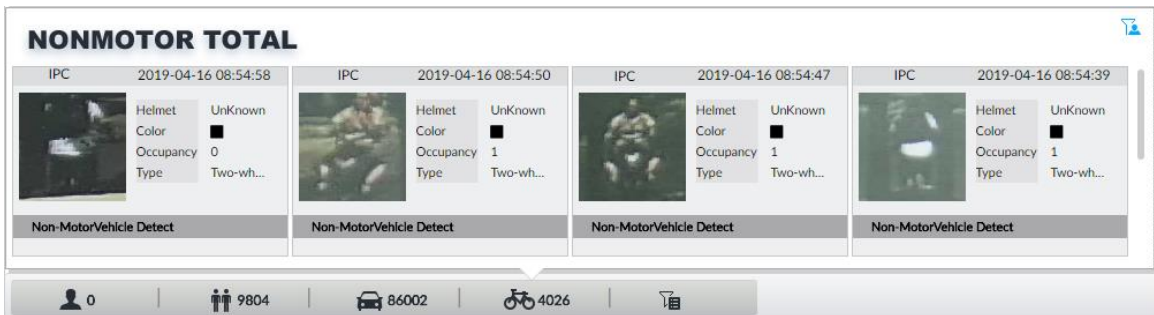


Click , and then select **Snap With Face** and **Snap Without Face**. The information of detected non-motor vehicles is displayed. See Figure 5-18.

Figure 5-18 Non-motor vehicle detection




- Move the mouse pointer to the detected information, and then click , or double-click detected picture to play back the video record (10 s before and after the snapshot).
- Move the mouse pointer to the detected information, and then click  to export the video record to specified saving path.

5.4.4 AI Search

Select device and set properties to search for detection results.

5.4.4.1 Human Search

Select device and set human properties to search human detection results.

Step 1 On the **MAINTAIN** interface, click , and then select **AI SEARCH > Search by Human**.

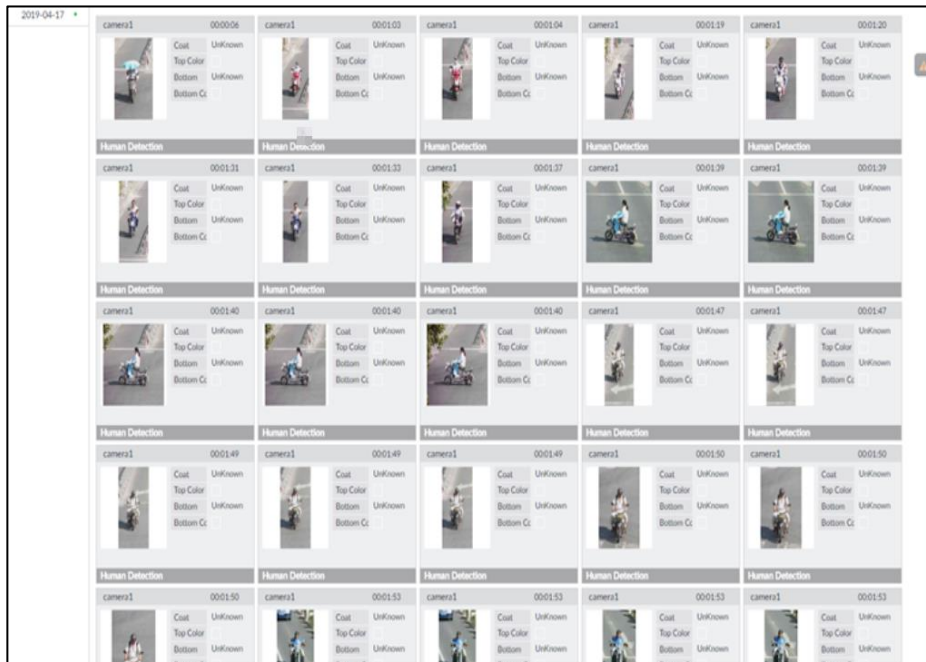
Step 2 Select a device, and then set human properties and time period.

Click  or  to set the color.  means more than one color.

Step 3 Click **Query**.

- If face is captured, the human and face snapshots are displayed.
- If no face is captured, the human snapshot and human properties are displayed.









Figure 5-19 Search result



Other Operations

Click one displayed panel, and the icons are displayed. For details, see Table 5-1.

Table 5-1 Operation

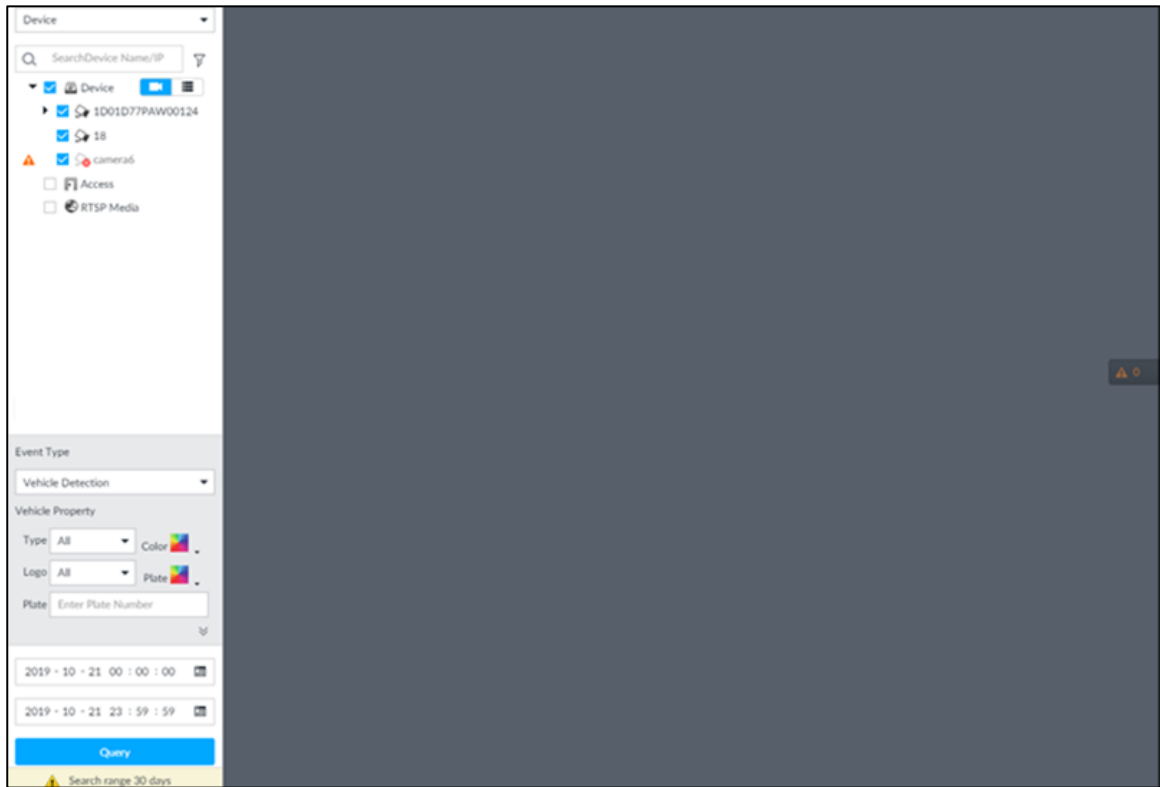
Icon	Operation
	<ul style="list-style-type: none"> • Select one by one: Click  to select the panel.  means the panel is selected. • Select in batches: Select All to select all the panels on the interface.
	Click  or double-click the panel to play back the video record (10 s before and after the snapshot).
	Click  , or select the panel and then click  to export picture, video, and excel file to specified saving path.

5.4.4.2 Vehicle Search

Set event type and vehicle properties to search vehicle detection results.

Step 1 On the **MAINTAIN** interface, click **+**, and then select **AI SEARCH > Search by Vehicle**.

Figure 5-20 Vehicle search



Step 2 Select **Vehicle Detection** as **Event Type**.

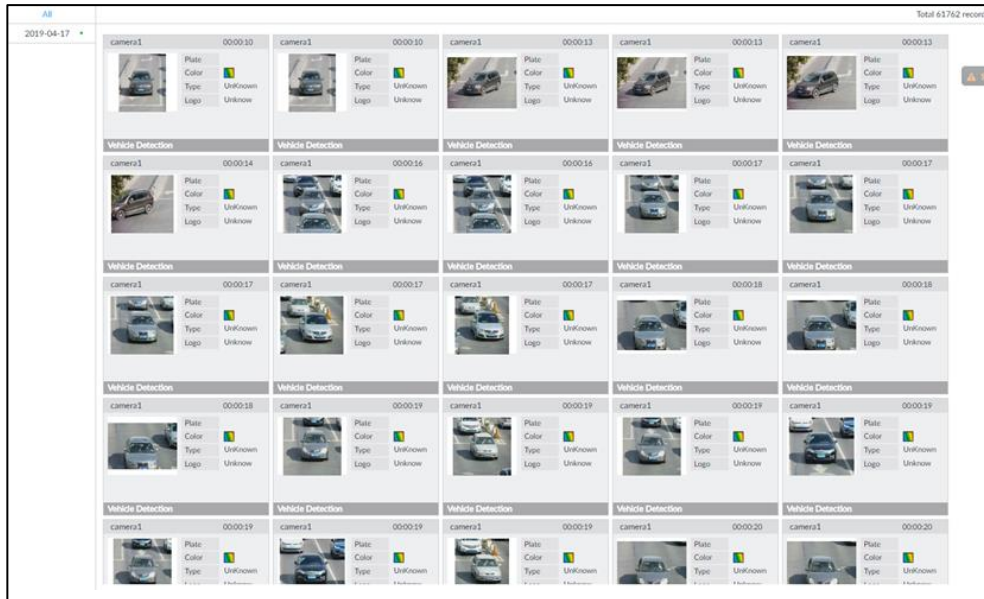
Step 3 Set vehicle properties and time period.

Click  or  to set the color.  means more than one color.

Step 4 Click **Query**.

If license plate is detected, both the scenario and the license plate will be displayed.

Figure 5-21 Search result



5.4.4.3 Non-motor Vehicle Search

Set event type and non-motor vehicle properties to search non-motor vehicle detection results.


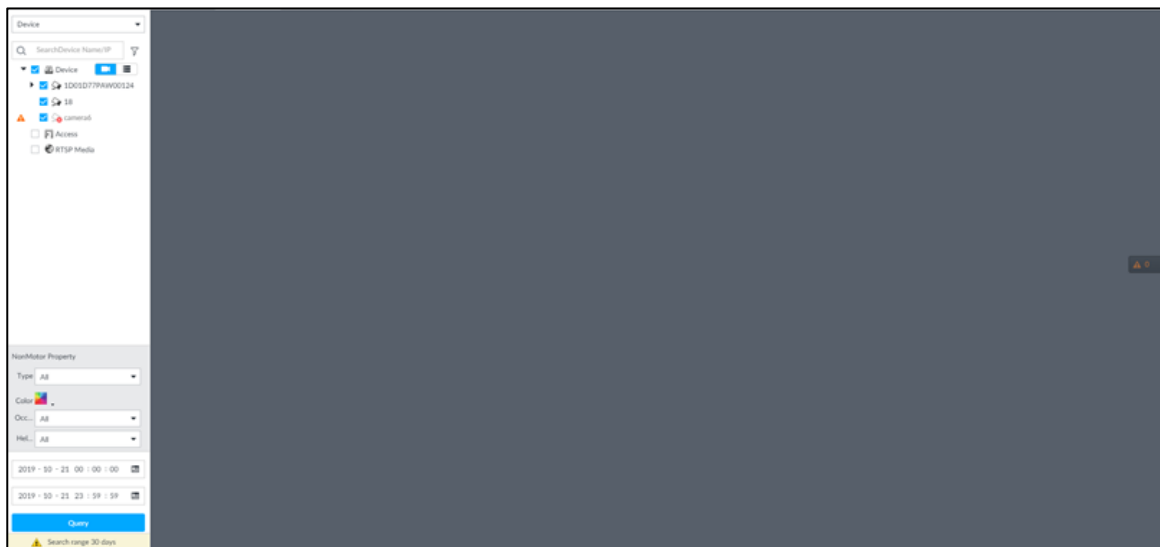
Step 1 On the **MAINTAIN** interface, click , and then select **AI SEARCH > Search by NonMotor**.

Figure 5-22 Search by non-motor vehicle



Step 2 Select the device you want to search.

Step 3 Set non-motor vehicle properties and time period.

Click  or  to set the color.  means more than one color.

Step 4 Click **Query**.

