

**HIKVISION**

Hikvision NVR

Hikvision Certified Security Associate



First Choice for Security Professionals

# Contents

- Product Family
- Functions & Applications
- Troubleshooting

# Contents

- **Product Family**
  - Product Family
  - Naming Rules
  - Working Principle
- **Functions & Applications**
- **Troubleshooting**

# NVR Family

## General NVR Product Line

Value series

Pro series

Ultra series

DeepinMind series

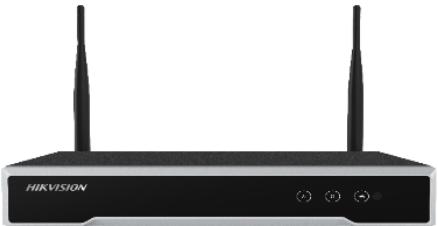
## Special NVR Product Line

X86--WorkStation

X86--Blazer

# NVR Family

## Value series



**WIFI series NVR**  
**DS-71/7600NI-K1**



**Value 7 series NVR**

## Pro series



**Easy IP 4.0 Series**  
**AcuSense NVR**



**Easy IP 3.0 Series**  
**DS-7600/7700-I/K/Q**

## Ultra series



**96 series NVR**  
**Super NVR I16/I24**  
**DS-96000**



**86(K)/96(I) series NVR**  
**DS-8600-K/9600-I**

## DeepinMind series



**DeepinMind**  
**96000 series NVR**



**DeepinMind**  
**77/9600 series NVR**

# NVR Family

Special	DS-WSEXX-T2	DS-WSEXX-T4	DS-WSPXX-T8	DS-9000AI-S16-D	
DeepinMind		iDS-7700NXI-I4	iDS-9600NXI-I8	iDS-96000NXI-I16	
Ultra			DS-9600NI-I8	DS-96000NI-I16	DS-96000NI-I24
			DS-8600NI-K8	DS-9600NI-I16	
Pro	DS-7600NI-K1(B)	DS-7600NI-I2 DS-7600NI-I2 DS-7600NI-K2	DS-7700NXI-I4 DS-7700NI-I4 DS-7700NI-K4	DS-7700NI-Q2 DS-7700NI-Q4	
Value	DS-7600NI-K1/W DS-7100NI-K1/W DS-7100NI-Q1				

1 HDD

2 HDD

4 HDD

8 HDD

16 HDD

24 HDD

# Naming Rules (NVR)

i<sup>①</sup>**DS** - <sup>②</sup>**77** <sup>③</sup>**16** <sup>④</sup>**NX** <sup>⑤</sup>**I** - <sup>⑥</sup>**I** <sup>⑦</sup>**4** / <sup>⑧</sup>**16P** / <sup>⑨</sup>**16S(B)** <sup>⑩</sup>

DS:  
iDS:

Hikvision products  
Hikvision intelligent products

71:  
76/77  
86/96/67:

71: Value Series  
76/77: Pro Series  
86/96/67: Ultra / DeepinMind Series

16:

Number of IP channels

N:  
NX:

NVR  
NVR with deep learning technology

I:

Stands for international

(B):

The second hardware revision

4/8/16S:  
4/8F:

Number of channels for false alarm filter  
Number of channels for facial recognition

16P:  
H:  
M:  
W:  
4G:

Number of PoE interfaces  
With decode board  
Metal case  
With Wi-Fi module  
With 4G module

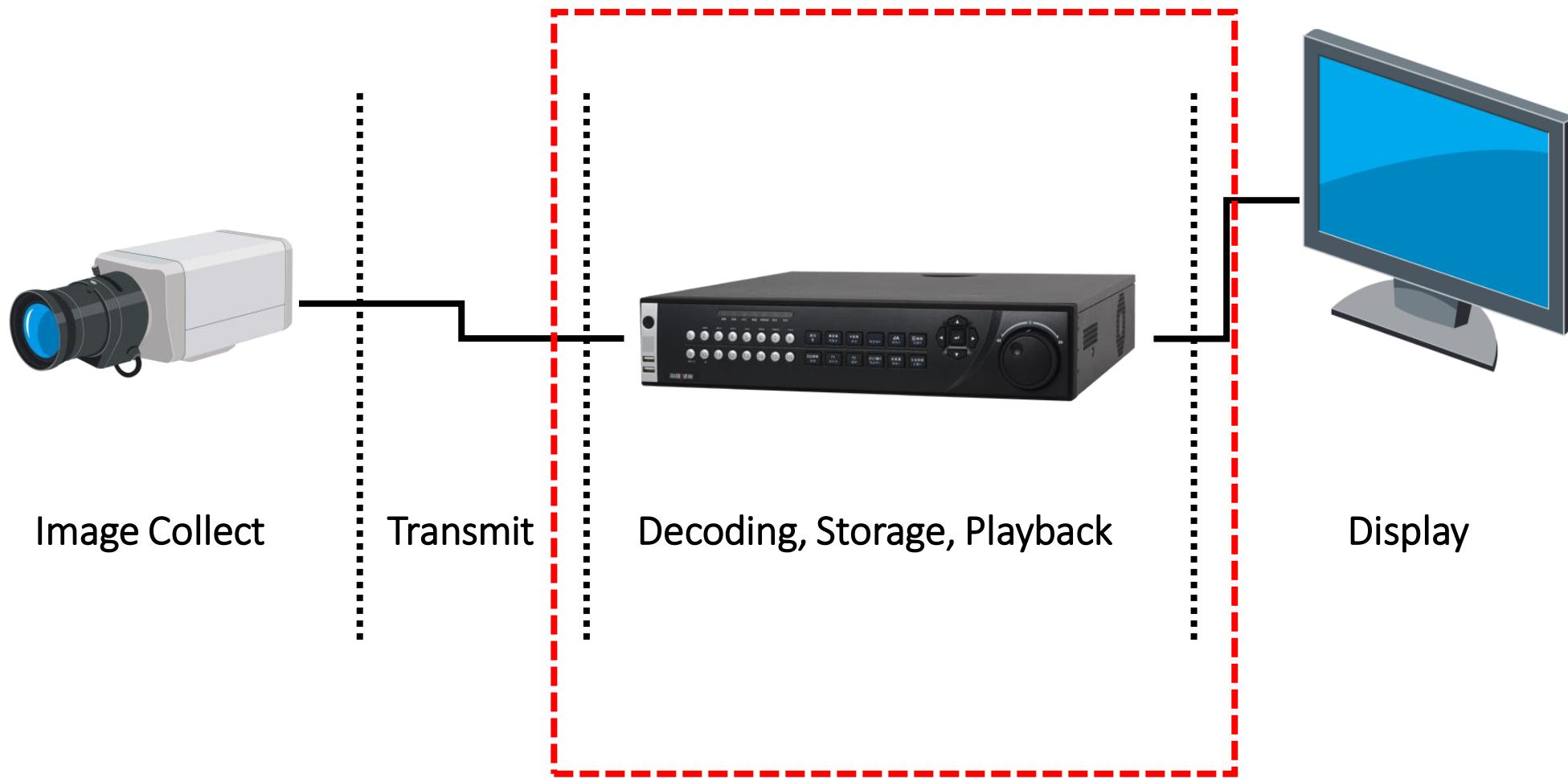
1/2/4/8/16/24:

Number of HDD slots

I/K/Q/E:

Hardware platform

# Working Process



# Contents

- Product Family
- Functions & Applications
  - IPC deployment
  - Secure Data Management
  - Bandwidth Control
  - Acusense Technology
  - Nonvideo Management
  - Alarm and Event
- Troubleshooting

# NVR/DVR Local Menu Operation

## 3. Start

### Activate the Device

- Create a new **strong** password in the local menu to activate the DVR/NVR.

The screenshot shows a configuration interface for activating a device. It includes fields for 'admin' and a password (represented by asterisks). Below the password field is a strength meter with three colored segments (red, orange, green) followed by the word 'Strong'. There is also a checked checkbox for 'Export GUID'. A note specifies a valid password range of 8-16 characters, combining numbers, lowercase, uppercase, and special characters. An 'OK' button is at the bottom right.

admin

\*\*\*\*\*

Strong

Export GUID

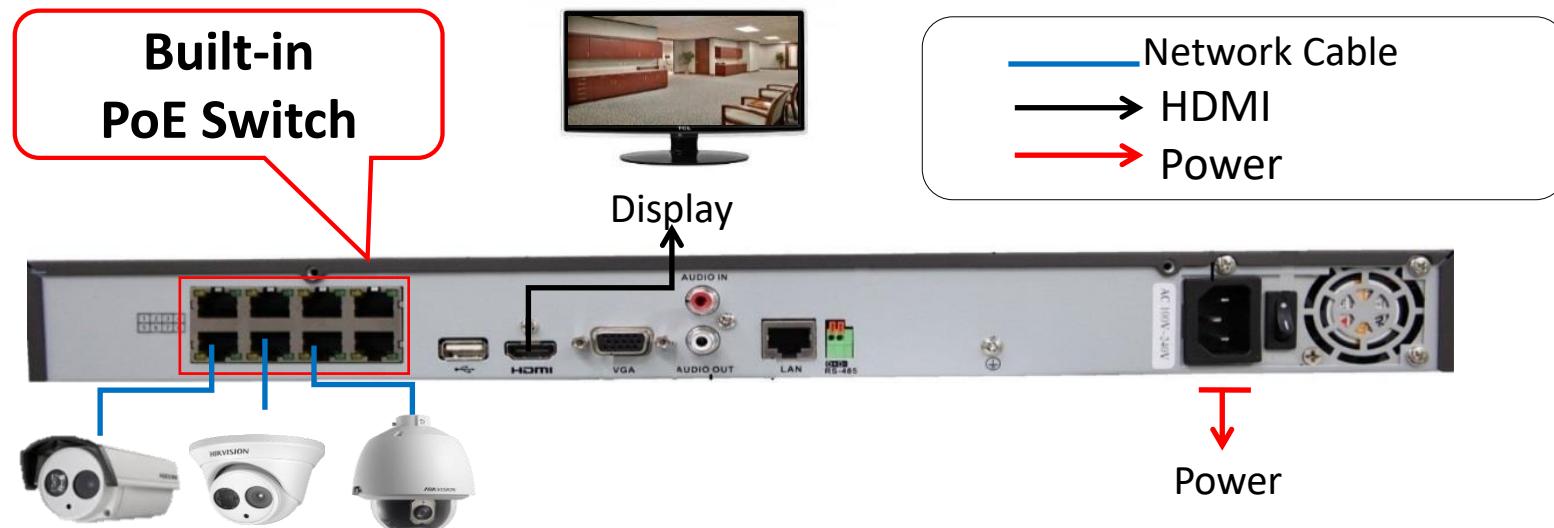
IP Camera Activation Password

Note:Valid password range [8-16]. You can use a combination of numbers, lowercase, uppercase and special character for your password with at least two kinds of them contained.

OK

# Add IP Camera- Plug and Play

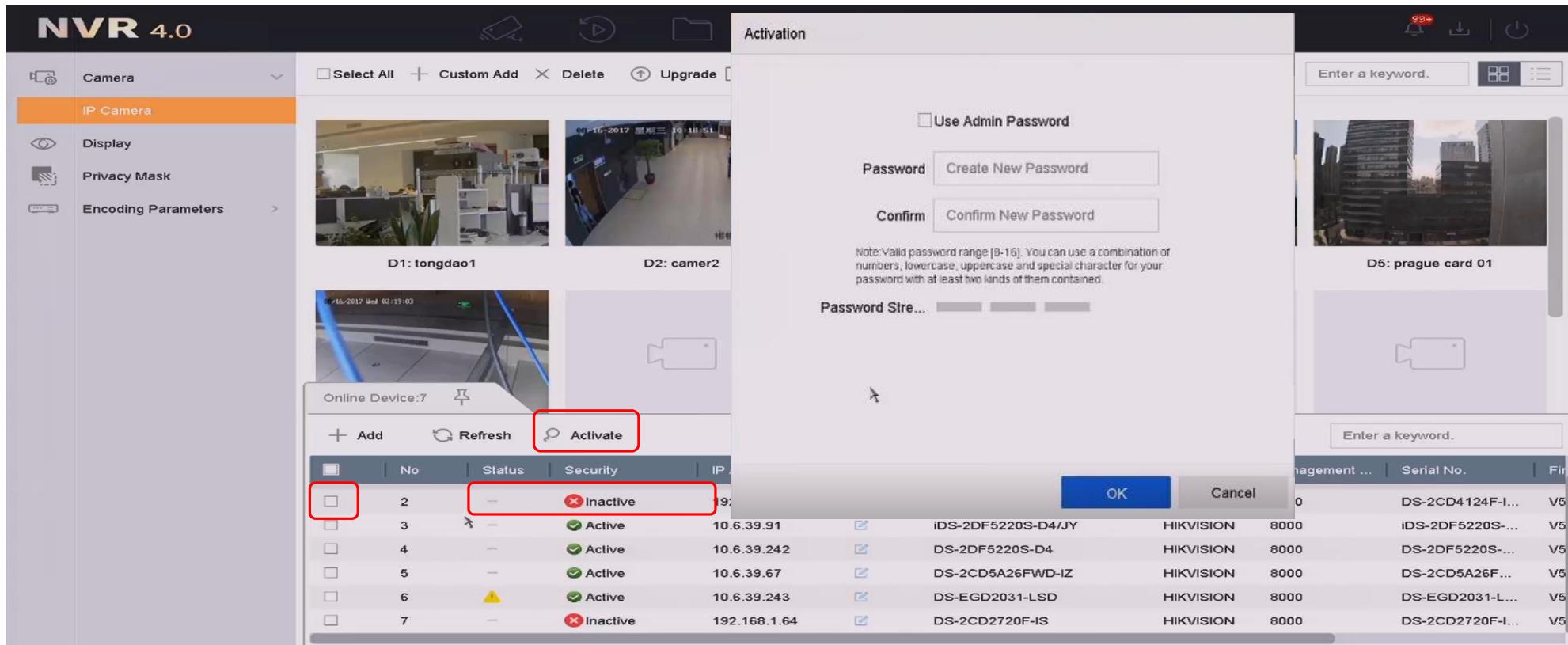
- PoE NVR has built-in PoE ports, compatible to 802.3af/at standard.
- PoE Cameras can be plugged into NVR PoE port for direct connect and display



Note: Before plug and play, the camera shall be inactive, or active with the same password as NVR.

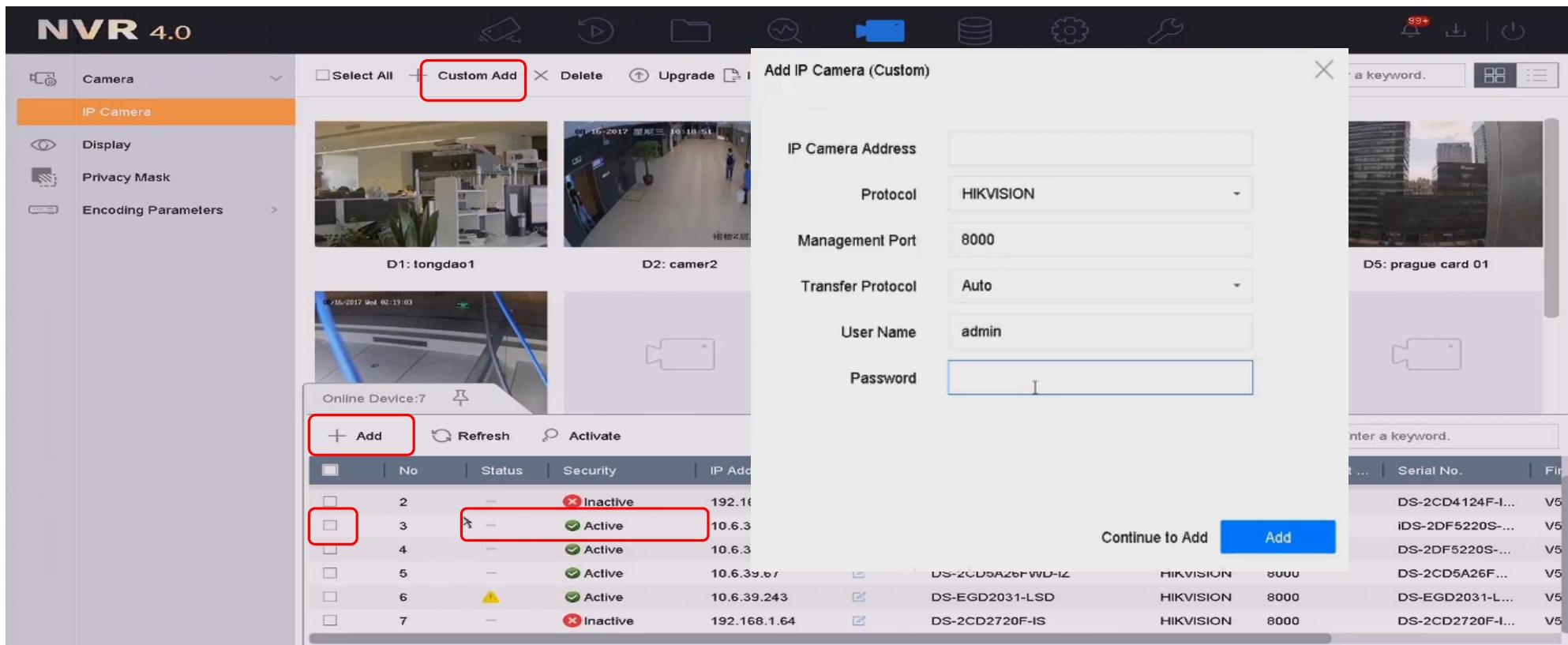
# Add IP Camera – Activate/Quick Add

- Online detection for IP cameras of the same subnet
  - Enter Menu->Camera Management->Camera
  - Click **Activate** to activate the camera then camera will add to NVR automatically.
  - Click **Add** to quickly add cameras that have same password with NVR



# Add IP Camera – Custom Add

- Online detection for IP cameras of the same subnet
  - Enter Menu->Camera Management->Camera
  - Click the Custom Add tab on the title bar or click enter the Add IP Camera interface.
  - Enter IP address, protocol, management port, login user name, password camera to add.



# NVR/DVR Local Menu Operation

## 4. Camera Management

### Configure the Customized Protocols

Go to **More Settings > Protocol** at the top taskbar to enter the protocol management interface.

Protocol Management

X

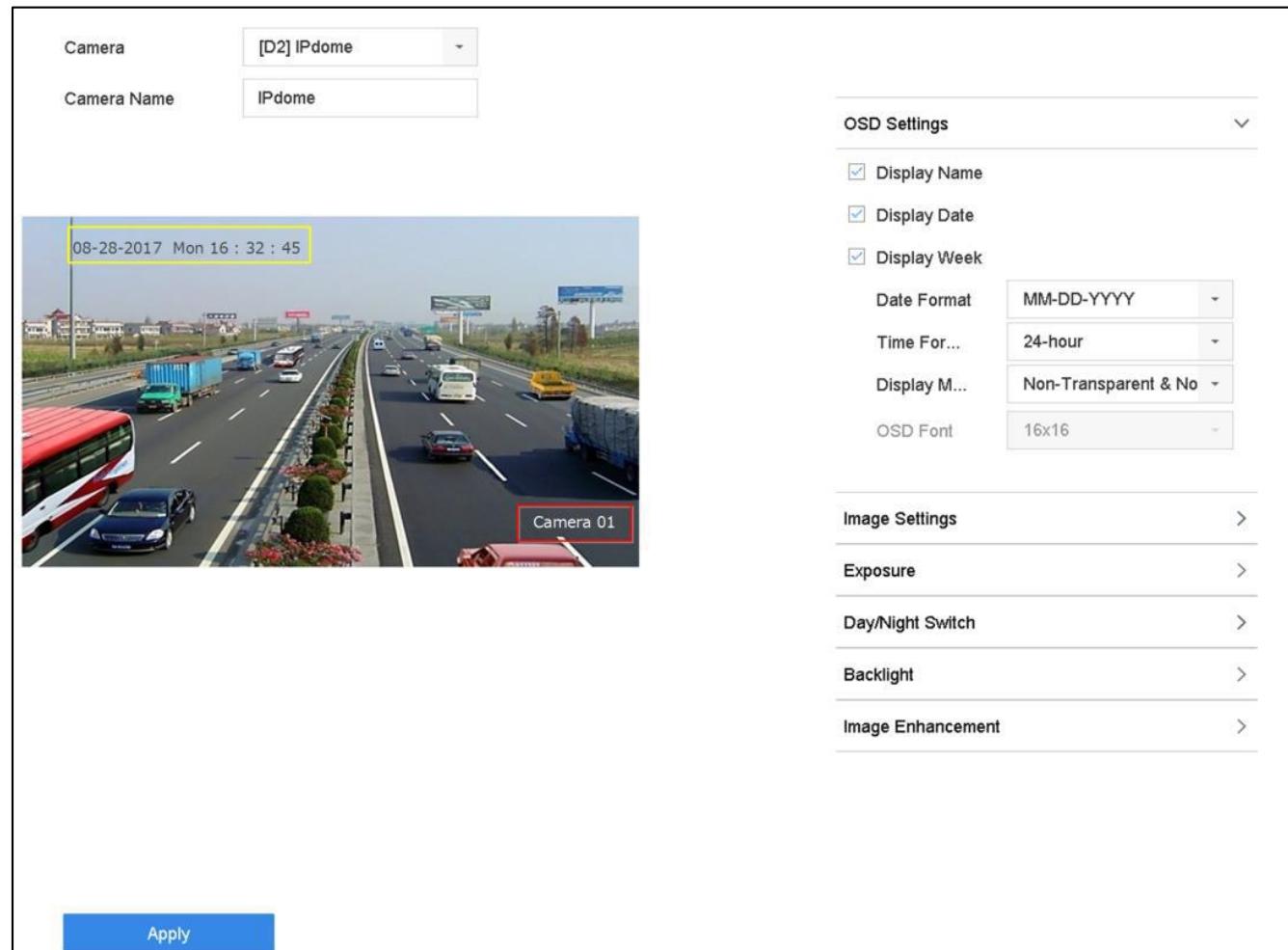
Custom Protocol	Custom Protocol 1	
Protocol Name	Custom 1	
Stream Type	<input checked="" type="checkbox"/> Main Stream <input checked="" type="checkbox"/> Sub Stream	
Type	RTSP	RTSP
Transfer Protocol	Auto	Auto
Port	554	554
Path		

Example: [Type]://[IP Address]:[Port]/[Path]  
rtsp://192.168.0.1:554/ch1/main/av\_stream

OK Cancel

# Camera OSD Settings

- Go to **Camera >Display**.
- Select the camera from the drop-down list.
- Edit the name in **Camera Name**.
- Check **Display Name**, **Display Date** and **Display Week** to show the information on the image.
- Set the date format, time format, and display mode.



# Enhanced POE

Enable or disable long network cable mode by selecting **Long Distance** or **Short Distance** radio.

ⓘ **Long Distance:** Long-distance (100 to 300 meters) network transmissions via PoE interface.

ⓘ **Short Distance:** Short-distance (< 100 meters) network transmission via PoE interface.

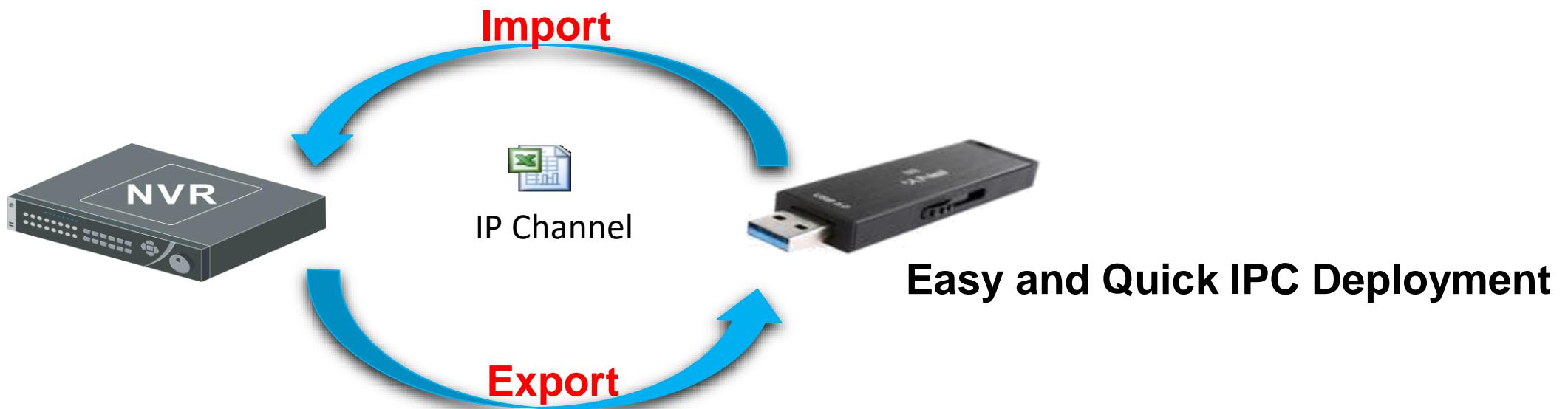
Channel	<input type="radio"/> Long Distance	<input type="radio"/> Short Distance	Channel Status	Actual Power
D1	<input checked="" type="radio"/>	<input type="radio"/>	Disconnected	0.0W
D2	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D3	<input type="radio"/>	<input type="radio"/>	Connected	200.0W
D4	<input type="radio"/>	<input type="radio"/>	Connected	200.0W
D5	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D6	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D7	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D8	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D9	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D10	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D11	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D12	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D13	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D14	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D15	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D16	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W

Actual power: 0.0W. Remaining power: 200.0W. 0% (i)

**Apply**

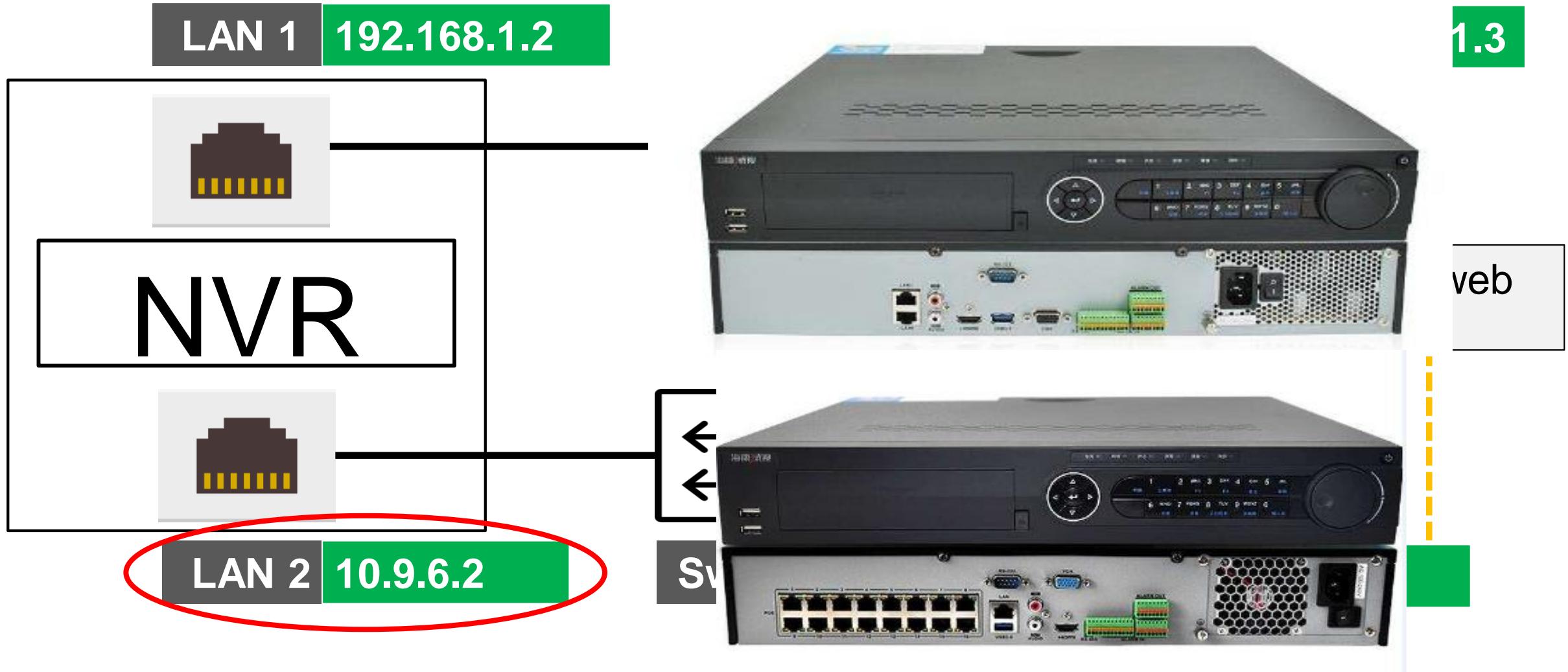
# IP Channel Import/Export

- Hikvision NVR can import/export IP channel as an editable excel file. This makes it fast and convenient to deploy IP cameras over NVR.
  - Menu – Camera – IP Camera import/Export



# Virtual Host

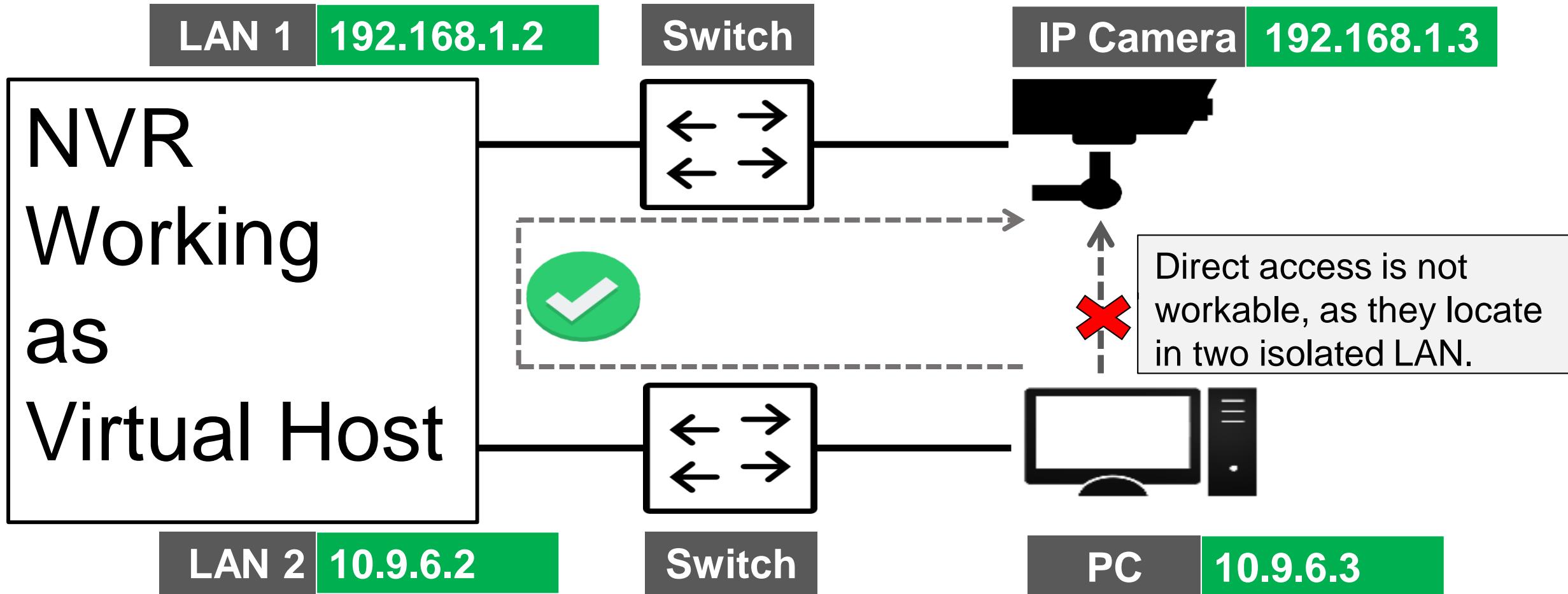
**Scene** NVR has two LAN ports of different IP address, isolated from each other.



# Virtual Host

## Scene

NVR has two LAN ports of different IP address, isolated from each other.



# Virtual Host Configuration

- Enable the virtual host on the web page of NVR  
(Configuration->Network->Advanced Settings->Other)

The screenshot shows the NVR configuration interface. On the left, a sidebar menu includes Local, System, System Settings, Maintenance, Security, Camera Management (which is selected and highlighted in red), and User Management. In the main area, a sub-menu for IP Camera is open, showing a table of cameras. The table has columns for Channel No., IP Address, Management Port, Security, Status, Protocol, and Connect. The rows show cameras D01, D02, D03, and D04. Camera D04 is currently selected, indicated by a gray background. A mouse cursor is clicking on the 'Connect' link for camera D04. An arrow points from this click to a larger view of the NVR login screen at the bottom right.

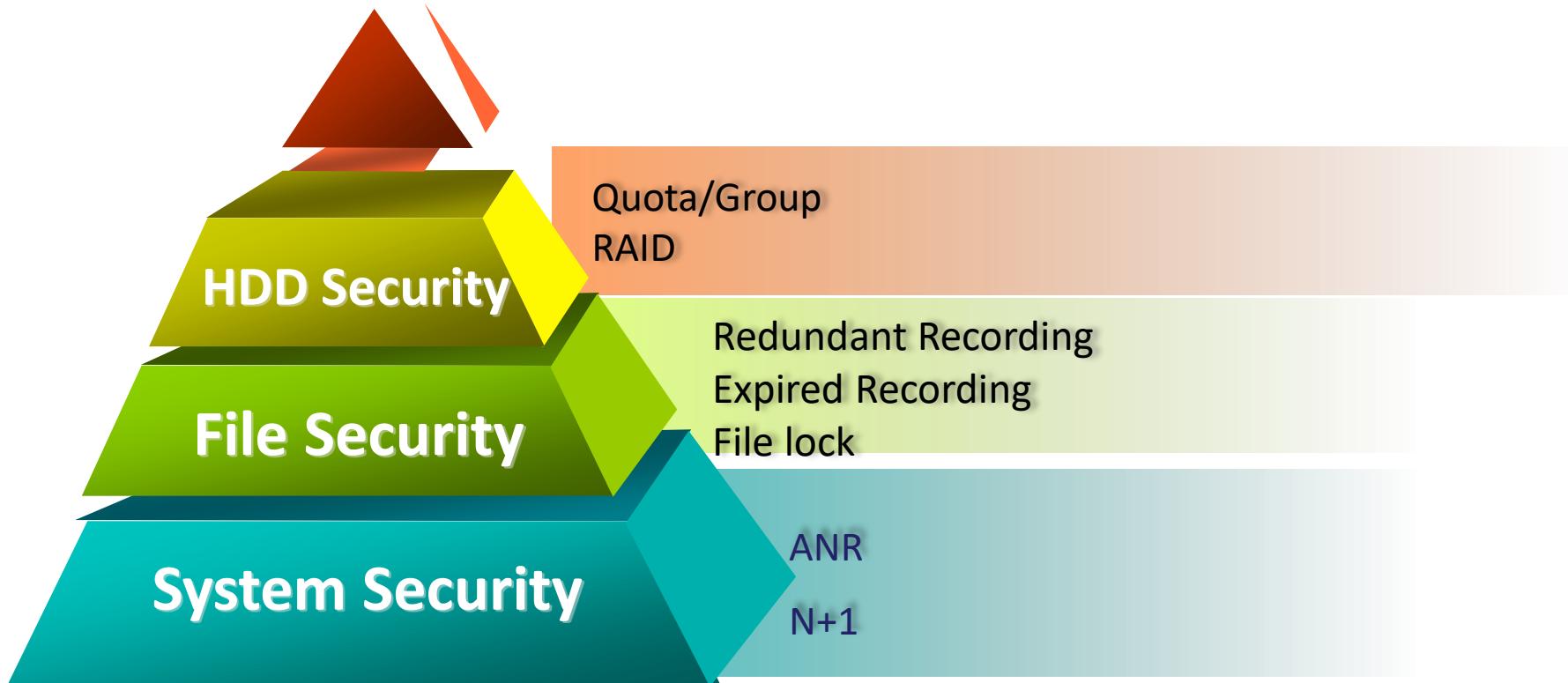
	Channel No.	IP Address	Management Port	Security	Status	Protocol	Connect
<input type="checkbox"/>	D01	192.168.254.3	1	8000	Weak	Offline(Network A...)	HIKVISION <a href="http://10.">http://10....</a>
<input type="checkbox"/>	D02	192.168.254.4	1	8000	N/A	Offline(IP camera...)	HIKVISION <a href="http://10.">http://10....</a>
<input type="checkbox"/>	D03	192.168.254.5	1	8000	Weak	Offline(Network A...)	HIKVISION <a href="http://10.">http://10....</a>
<input type="checkbox"/>	D04	192.168.254.10	1	8000	N/A	Online	HIKVISION <a href="http://10.">http://10....</a>

The bottom right corner shows a preview window of the NVR interface. It features a large camera lens graphic over a city skyline background. To the right is a login form with fields for 'User' and 'Password', and a red 'Login' button.

# Contents

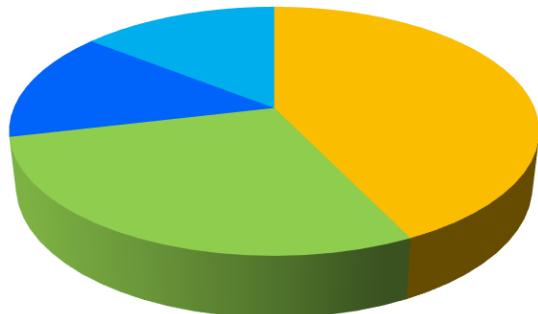
- Product Family
  - Functions & Applications
    - IPC deployment
    - **Secure Data Management**
    - Bandwidth Control
    - Acusense Technology
    - Nonvideo Management
    - Alarm and Event
  - Troubleshooting
- 
- **HDD Quota/Group**
  - RAID
  - eSATA
  - Recording/File Management
  - ANR/N+1

# Data Security



# HDD Quota

- In HDD quota mode, each camera can be allocated with quota for the storage of record file and capture picture.
- It helps manage the storage space in a more organized way.



Installed Hard Drive

- Quota 1
- Quota 2
- Quota 3
- Quota 4

**Example:** 5TB hard drive is installed in the NVR, different HDD capacity can be assigned to each camera according to required recording time.

Quota No.	Surveillance Zone	Camera Resolution/Bitrates	Recording Cycle
Quota 1, 1.85TB	Key Zone A	3MP/6144Kbps	1 Month
Quota 2, 1.23TB	Key Zone B	2MP/4096Kbps	1 Month
Quota 3, 0.62TB	General Zone C	2MP/4096Kbps	2 Weeks
Quota 4, 0.62TB	General Zone D	720P/2048Kbps	1 Month

# HDD Quota Configuration

In HDD quota mode, each camera can be allocated with quota for the storage of record file and capture picture.

- Enter the Storage Mode interface: Menu > HDD > Advanced
- Set the Mode to Quota (The NVR must reboot to effect the changes of HDD mode)
- Select a camera for which you want to configure quota, and configure the quota capacity

Mode  Quota  Group

Camera: [D1] IPCamera 01

Used Record Capacity: 18.00GB

Used Picture Capacity: 2048.00MB

HDD Capacity (GB): 1863

Max. Record Capacity (GB): 1500

Max. Picture Capacity (GB): 50 ×

⚠ Free Quota Space 313 GB

Copy to Apply

# HDD Group

## *Configure HDD Group*

**Local HDD Settings**

---

HDD No.	5
HDD Property	<input checked="" type="radio"/> R/W <input type="radio"/> Read-only <input type="radio"/> Redundan...
Group	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12 <input type="radio"/> 13 <input type="radio"/> 14 <input type="radio"/> 15 <input type="radio"/> 16
HDD Capacity	931.52GB

Mode	<input type="radio"/> Quota	<input checked="" type="radio"/> Group						
Record on HDD Group	<input type="text" value="2"/> <span style="float: right;">▼</span>							
<input type="checkbox"/> IP Camera	<input checked="" type="checkbox"/> D1	<input type="checkbox"/> D2	<input checked="" type="checkbox"/> D3	<input checked="" type="checkbox"/> D4	<input checked="" type="checkbox"/> D5	<input checked="" type="checkbox"/> D6	<input checked="" type="checkbox"/> D7	<input checked="" type="checkbox"/> D8
	<input type="checkbox"/> D9	<input type="checkbox"/> D10	<input checked="" type="checkbox"/> D11	<input checked="" type="checkbox"/> D12	<input type="checkbox"/> D13	<input type="checkbox"/> D14	<input type="checkbox"/> D15	<input type="checkbox"/> D16
	<input type="checkbox"/> D17	<input type="checkbox"/> D18	<input type="checkbox"/> D19	<input type="checkbox"/> D20	<input type="checkbox"/> D21	<input type="checkbox"/> D22	<input type="checkbox"/> D23	<input type="checkbox"/> D24
	<input type="checkbox"/> D25	<input type="checkbox"/> D26	<input type="checkbox"/> D27	<input type="checkbox"/> D28	<input type="checkbox"/> D29	<input type="checkbox"/> D30	<input type="checkbox"/> D31	<input type="checkbox"/> D32
	<input type="checkbox"/> D33	<input type="checkbox"/> D34	<input type="checkbox"/> D35	<input type="checkbox"/> D36	<input type="checkbox"/> D37	<input type="checkbox"/> D38	<input type="checkbox"/> D39	<input type="checkbox"/> D40
	<input type="checkbox"/> D41	<input type="checkbox"/> D42	<input type="checkbox"/> D43	<input type="checkbox"/> D44	<input type="checkbox"/> D45	<input type="checkbox"/> D46	<input type="checkbox"/> D47	<input type="checkbox"/> D48
	<input type="checkbox"/> D49	<input type="checkbox"/> D50	<input type="checkbox"/> D51	<input type="checkbox"/> D52	<input type="checkbox"/> D53	<input type="checkbox"/> D54	<input type="checkbox"/> D55	<input type="checkbox"/> D56

In HDD group mode, different HDDs can be configured to different groups; different cameras can be assigned to record in different groups.

**OK** **Cancel**

Apply

# Contents

- Product Family

- Functions & Applications

- IPC deployment
- **Secure Data Management**
- Bandwidth Control
- Acusense Technology
- Nonvideo Management
- Alarm and Event

- Troubleshooting

- HDD Quota/Group
- RAID
- eSATA
- Recording/File Management
- ANR/N+1

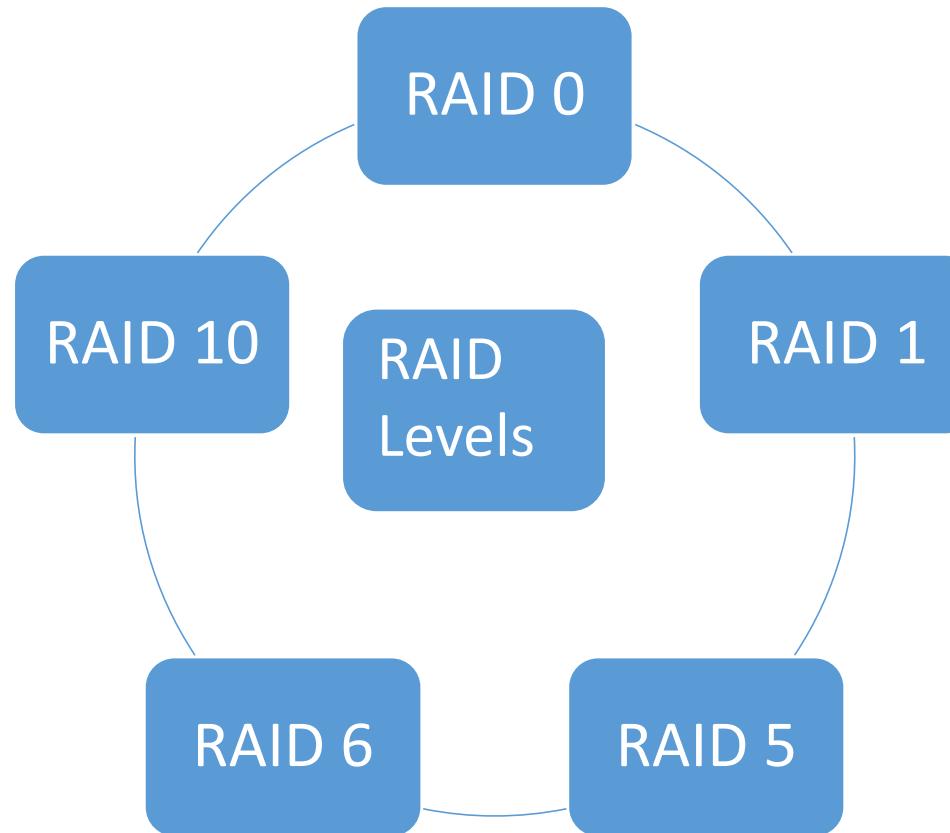
# RAID

- RAID(Redundant Array of Independent Disk), is a storage technology that combines multiple Hard Disk Drives into a logical unit; single storage space.
- Each level of RAID provides a different balance between the key goals:



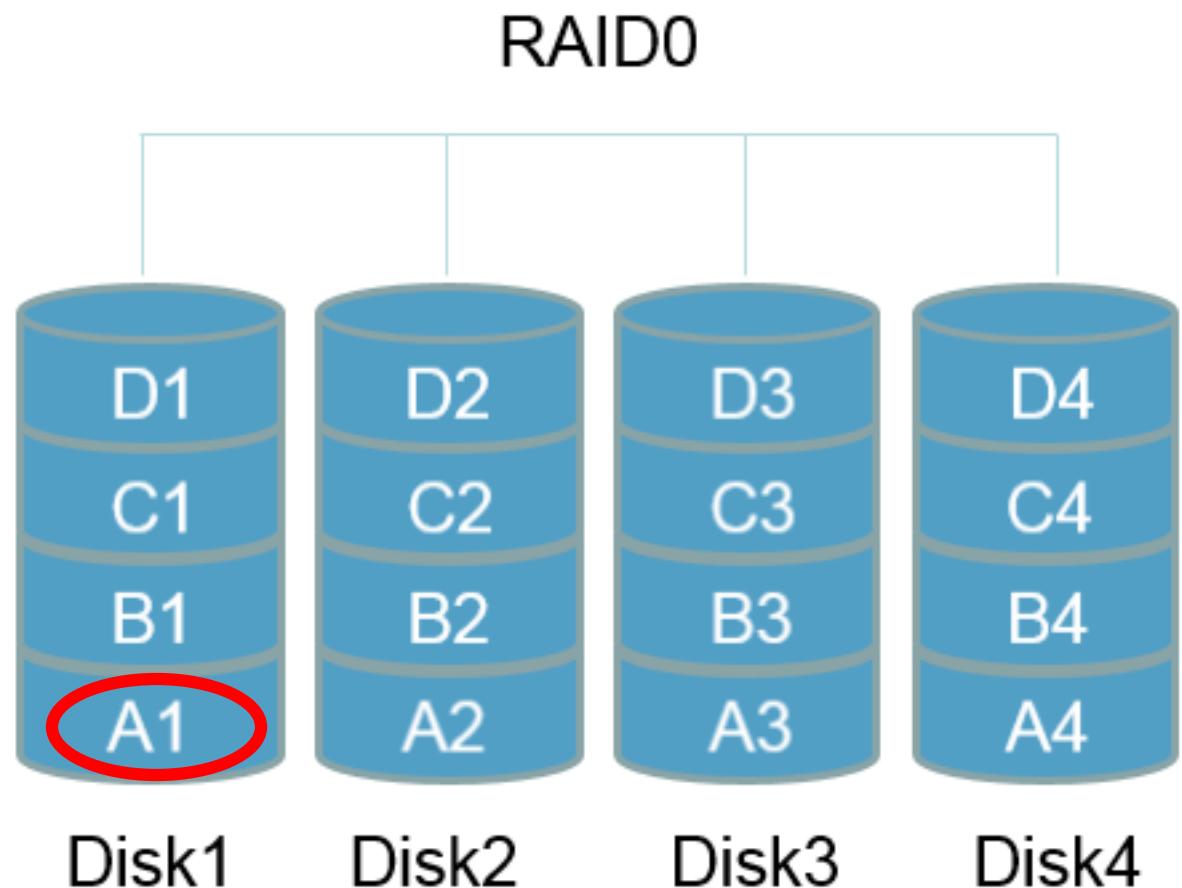
# RAID Levels

- Hikvision Raid DVR/NVR support Raid 0/1/5/6/10.



# Raid 0 - Stripped

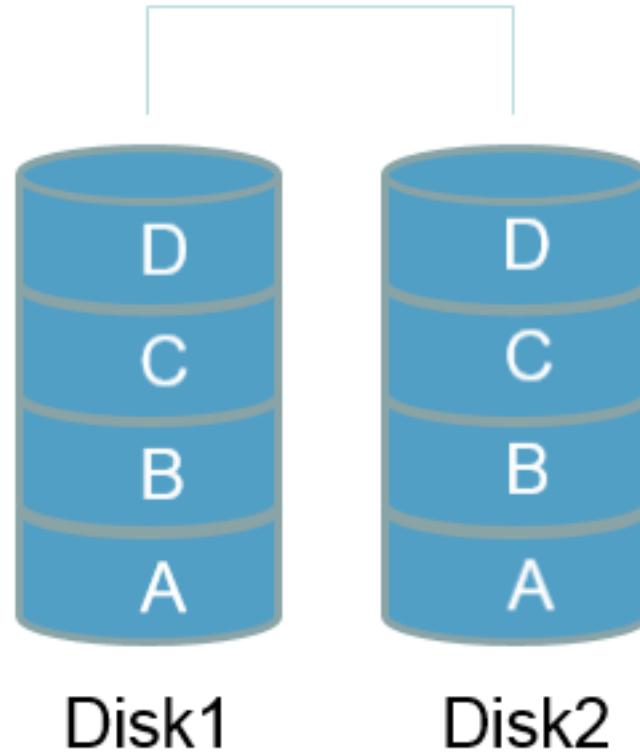
- Minimum of 2 disks
- Excellent performance
- NO redundancy
- This should not be used for mission critical type applications.
- One HDD failure and the whole array is damaged



# RAID 1 - Mirrored

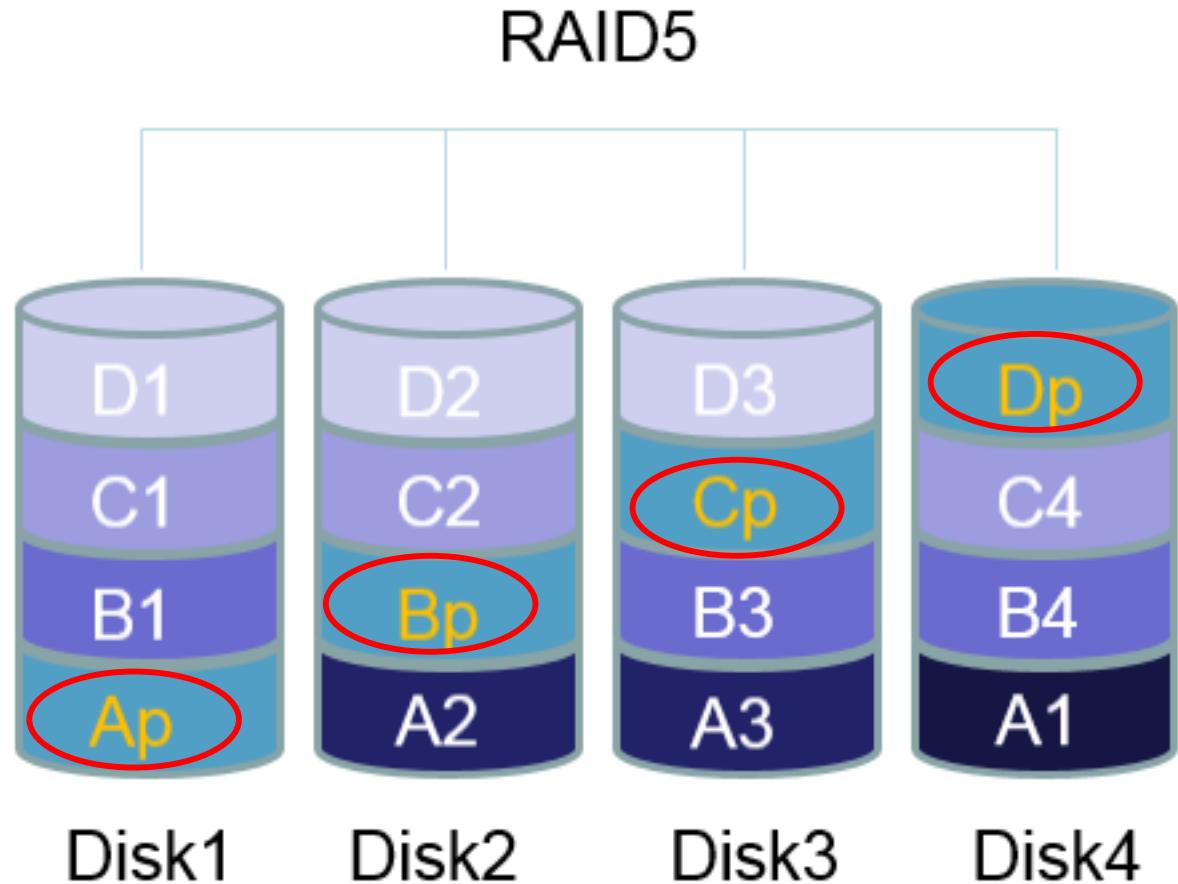
- Minimum of 2 Disks
- Good performance with no parity and no striping
- Excellent redundancy
- Still functional with one drive

RAID1



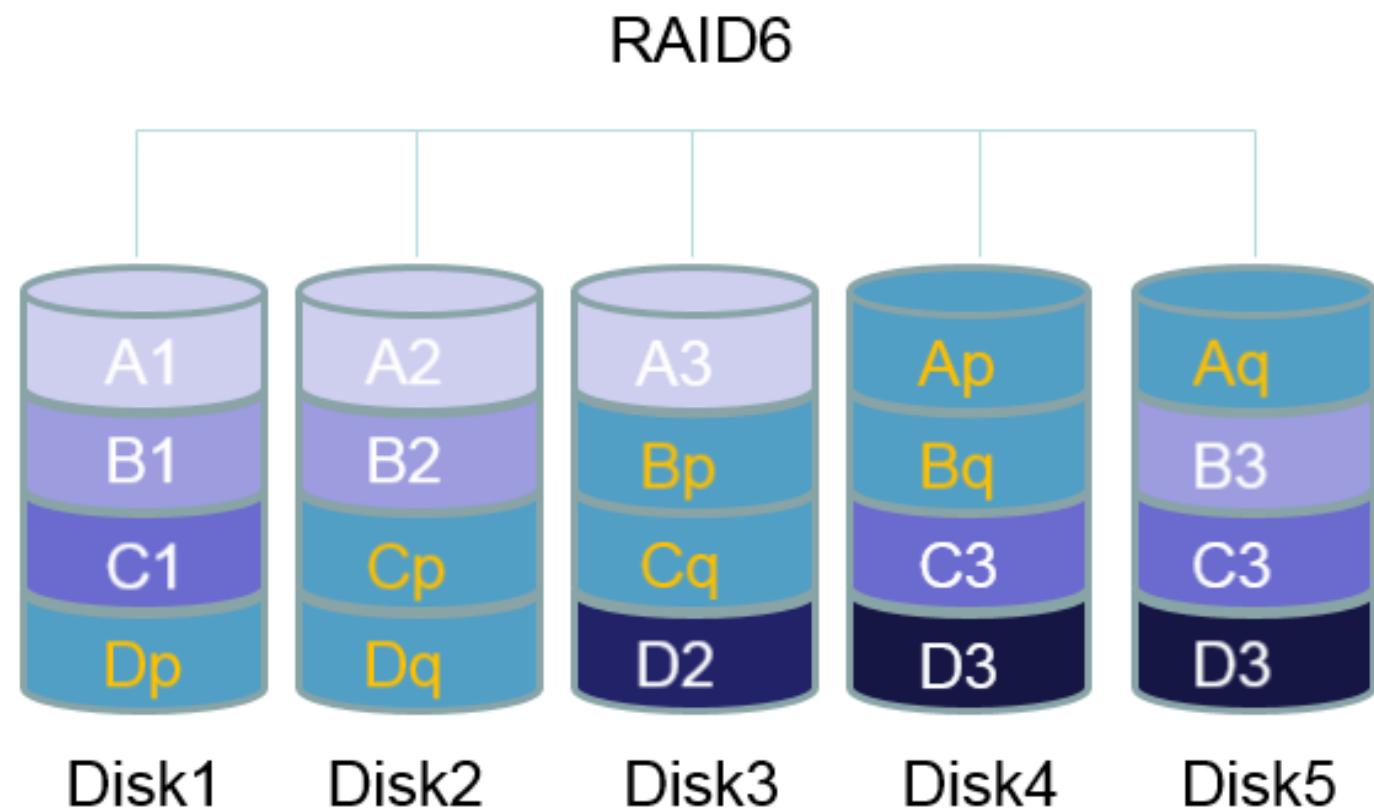
# RAID 5 –Striped with Distributed Parity

- Minimum of 3 disks
- Good Performance
- Good Redundancy
- Best cost effective option providing both performance and redundancy



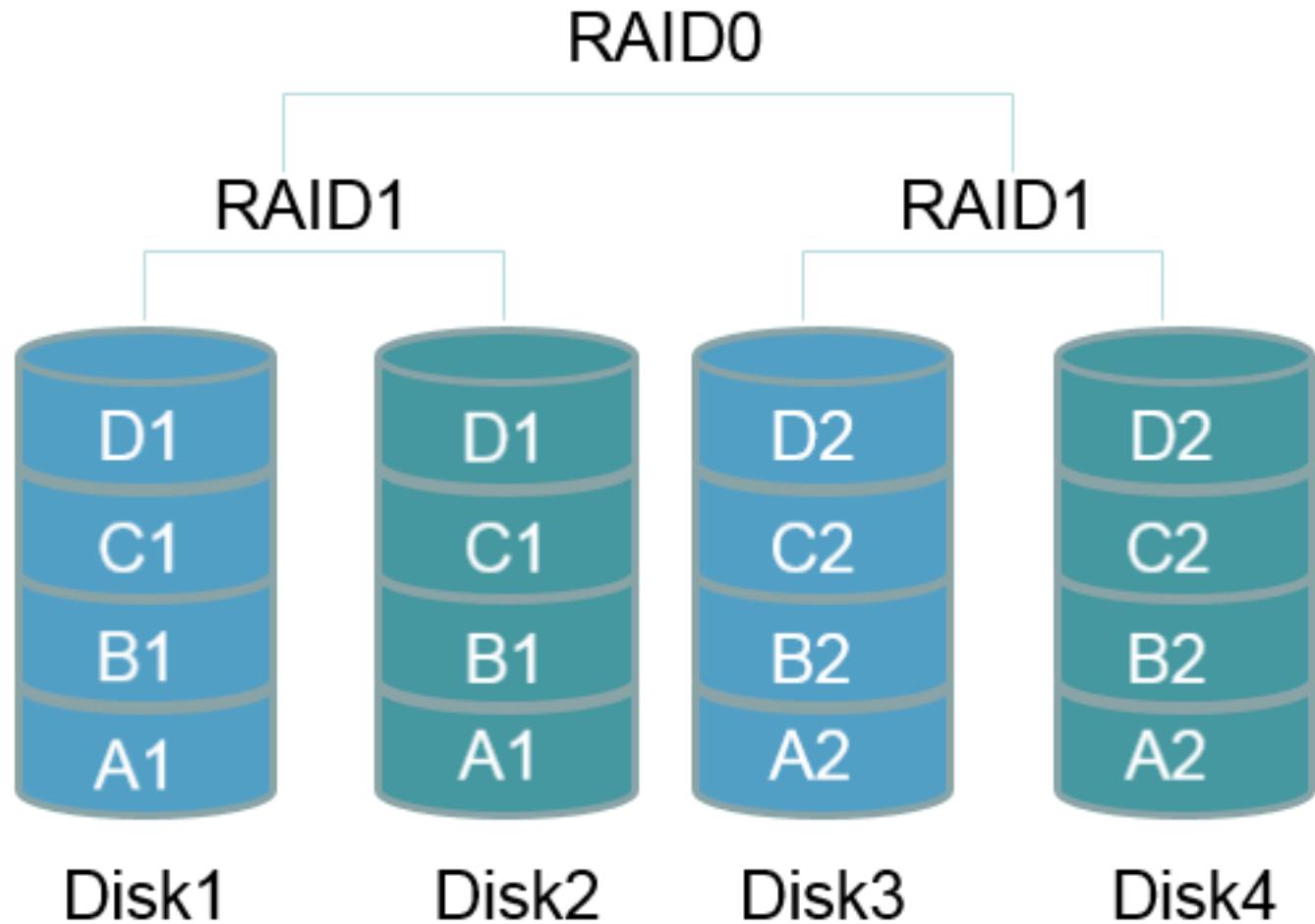
# RAID 6 –Striped with Distributed Parity

- Minimum of 4 disks
- High reliability , at most 2disks can break down
- Suitable for the situation which has a high request for the accuracy and integrity of data



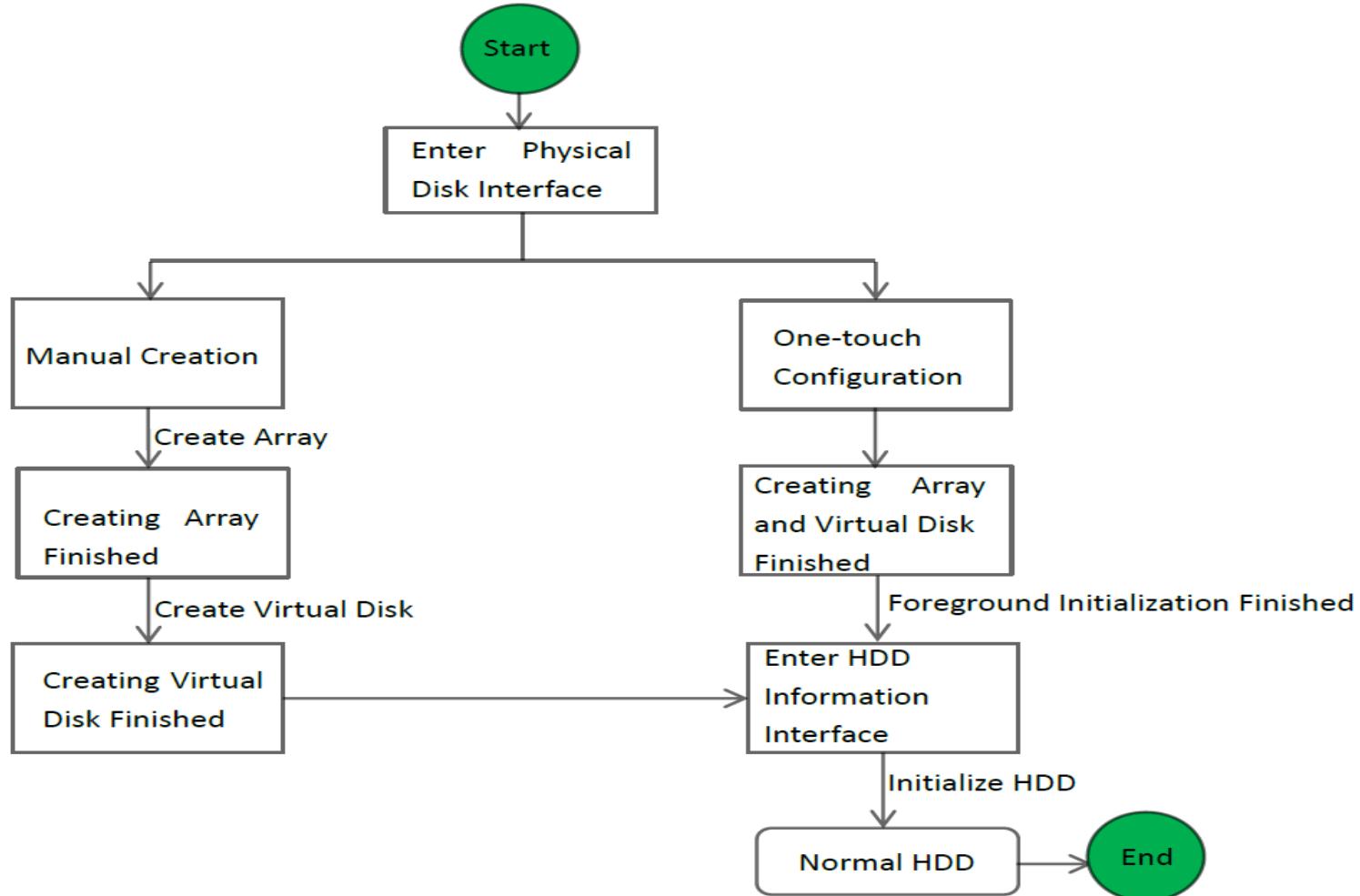
# RAID 10 – Stripe of Mirrors

- RAID 1 + RAID 0 = RAID 10
- Minimum of 4 disks
- Great Performance
- Great Redundancy



# Creating Raid in Hikvision Recorders

- One-touch configuration and manual creation are included.



# One-touch Raid Configuration

Through one-touch configuration, you can quickly create by default the Raid disk array and virtual disk.

Step 1 Go to **Storage > Advanced**.

Step 2 Check **Enable RAID**.

Step 3 Click **Apply**.

Step 4 Reboot the device to have settings take effect.

The screenshot shows a configuration interface for storage settings. It includes fields for Overwrite (checked), eSATA (set to eSATA1), Usage (set to Record/Capture), Enable HDD Sleeping (checked), and Enable RAID (checked). A note below states 'Use the enterprise-class HDD.' At the bottom is a blue 'Apply' button.

Overwrite	<input checked="" type="checkbox"/>
eSATA	eSATA1
Usage	Record/Capture
Enable HDD Sleeping	<input checked="" type="checkbox"/>
Enable RAID	<input checked="" type="checkbox"/>
Use the enterprise-class HDD.	

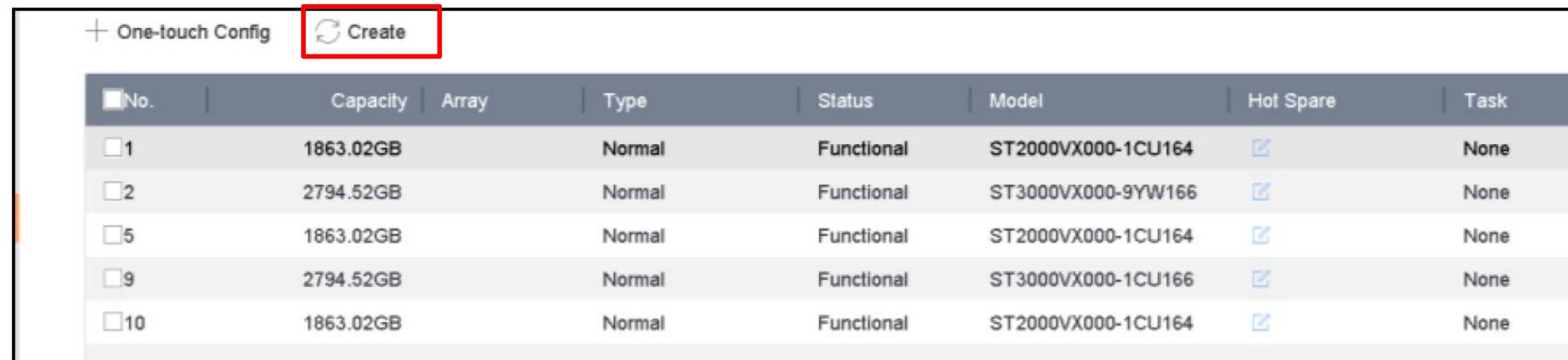
**Apply**

# One-touch Raid Configuration

Go to **Storage > RAID Setup > Physical Disk**.

Click **One-touch Configuration**, enter the array name then click on ok button to start.

Go to **Storage > RAID Setup > Array** to view the information of the created array.



The screenshot shows a user interface for 'One-touch Config'. At the top, there are two buttons: '+ One-touch Config' and 'Create', with 'Create' being highlighted by a red box. Below this is a table with the following data:

No.	Capacity	Array	Type	Status	Model	Hot Spare	Task
1	1863.02GB		Normal	Functional	ST2000VX000-1CU164	<input checked="" type="checkbox"/>	None
2	2794.52GB		Normal	Functional	ST3000VX000-9YW166	<input checked="" type="checkbox"/>	None
5	1863.02GB		Normal	Functional	ST2000VX000-1CU164	<input checked="" type="checkbox"/>	None
9	2794.52GB		Normal	Functional	ST3000VX000-1CU166	<input checked="" type="checkbox"/>	None
10	1863.02GB		Normal	Functional	ST2000VX000-1CU164	<input checked="" type="checkbox"/>	None

If you install 4 HDDs or above for one-touch configuration, a hot spare disk will be set by default. It is recommended to set hot spare disk for automatically rebuilding the array when the array is abnormal.

# Manual Raid Configuration

Go to Storage > RAID Setup > Physical Disk; Click Create.

Select **RAID Level** as **RAID 0, RAID 1, RAID 5, RAID 6, or RAID 10** as required.

Select the specific **physical disks** to constitute the array.

Click **OK**.

The screenshot illustrates the process of creating a RAID array. At the top left, a main window displays a table of physical disks (No., Capacity, Array, Type, Status) with entries for disks 1, 2, 5, 9, and 10. A red box highlights the 'Create' button in the top right corner of this window. To the right, a modal dialog titled 'Create Array' is open, containing fields for 'Array Name' (empty), 'RAID Level' (set to 'RAID 5'), 'Initialization Type' (set to 'Initialize (Fast)'), and a 'Physical Disk' selection section where checkboxes for disks 1, 2, 5, 9, and 10 are shown. Below the dialog, a message indicates 'Array Capacity (Estimated): 0GB'. At the bottom right of the dialog are 'OK' and 'Cancel' buttons. A large black box at the bottom encloses the entire main window area, indicating the scope of the configuration.

No.	Capacity	Array	Type	Status
1	1863.02GB		Normal	Functional
2	2794.52GB		Normal	Functional
5	1863.02GB		Normal	Functional
9	2794.52GB		Normal	Functional
10	1863.02GB		Normal	Functional

Create Array

Array Name:

RAID Level: RAID 5

Initialization Type: Initialize (Fast)

Physical Disk:  1  2  5  9  10

Array Capacity (Estimated): 0GB

OK Cancel

# Manual Raid Configuration

Go to Storage > RAID Setup > Physical Disk; Click Create.

Select **RAID Level** as **RAID 0, RAID 1, RAID 5, RAID 6, or RAID 10** as required.

Select the specific **physical disks** to constitute the array.

Click **OK**.

The image shows a two-step process for creating a RAID array.

**Step 1: Create Array Dialog**

This dialog box is titled "Create Array". It contains the following fields:

- Array Name:** An empty text input field.
- RAID Level:** A dropdown menu set to "RAID 5".
- Initialization Type:** A dropdown menu set to "Initialize (Fast)".
- Physical Disk:** A row of checkboxes for physical disks 1 through 10. The checkboxes for disks 1, 5, 9, and 10 are checked.

At the bottom of the dialog is the text "Array Capacity (Estimated): 0GB".

**Step 2: Main Interface**

The main interface shows a table of existing arrays. One array, "Array01", is highlighted. The table has the following columns:

No	Name	Free Space	Physical Disk	Hot S...	Status	Level	Rebuild	Delete	Task
1	Array01	3725/3725G	1 5 10		Functional	RAID 5			Initialize (Fast)(Running) 43%

At the bottom right of the main interface are "OK" and "Cancel" buttons.

# Array Monitoring

After the process is finished, you will see the created array and disks in the Raid interface.

Go to **Storage > RAID Setup > Physical Disk**.

?

**Functional:** No disk loss in the array.

?

**Offline:** The number of lost disks has exceeded the limit.

?

**Degraded:** If any HDD fails in the array, the array degrades.

Restore it to functional status by rebuilding the array.

No.	Capacity	Array	Type	Status	Model	Hot Spare	Task
1	1863.02GB	Array01	Array	Functional	ST2000VX000-1CU164	-	None
2	2794.52GB		Normal	Functional	ST3000VX000-9YW166		None
5	1863.02GB	Array01	Array	Functional	ST2000VX000-1CU164	-	None
9	2794.52GB		Normal	Functional	ST3000VX000-1CU166		None
10	1863.02GB	Array01	Array	Functional	ST2000VX000-1CU164	-	None

# Contents

- Product Family

- Functions & Applications

- IPC deployment
- **Secure Data Management**
- Bandwidth Control
- Acusense Technology
- Nonvideo Management
- Alarm and Event

- HDD Quota/Group
- RAID
- **eSATA**
- Recording/File Management
- ANR/N+1

- Troubleshooting

# eSATA

- When there is an eSATA device connected to NVR, you can configure eSATA for the use of Record/Capture or Export, and you can manage the eSATA in the NVR.
  - Enter the Advanced Record Settings interface: Click **Storage>Advanced**
  - Select the eSATA type to Export or Record/Capture from the dropdown list of **eSATA**.
  - When the eSATA type is selected to Record/Capture, enter the HDD Information interface: Menu > **HDD>General**
  - Edit the property of the selected eSATA, or **initialize** it is required.



# Contents

- Product Family
  - Functions & Applications
    - IPC deployment
    - **Secure Data Management**
    - Bandwidth Control
    - Acusense Technology
    - Nonvideo Management
    - Alarm and Event
  - Troubleshooting
- 
- HDD Quota/Group
  - RAID
  - eSATA
  - **Recording/File Management**
  - ANR/N+1

# Cycle Recording

- Check the overwrite checkbox to enable cycle recording
  - Storage -> Advanced

The screenshot shows the NVR 4.0 software interface. At the top, there is a dark header bar with the text "NVR 4.0" and several icons: a camera, a circular arrow, a folder, a magnifying glass, a clipboard, and a stack of three cylinders. Below the header, on the left, is a sidebar with four options: "Recording Schedule", "Storage Device", "Storage Mode", and "Advanced". The "Advanced" option is highlighted with an orange background. The main content area has the following settings:

- Overwrite:** A checked checkbox.
- eSATA:** A dropdown menu set to "eSATA1".
- Usage:** A dropdown menu set to "Record/Capture".
- Enable HDD Sleeping:** A checked checkbox.
- Enable RAID:** An unchecked checkbox.
- Use the enterprise-class HDD.**: A descriptive text below the checkboxes.

At the bottom of the main content area is a blue "Apply" button.

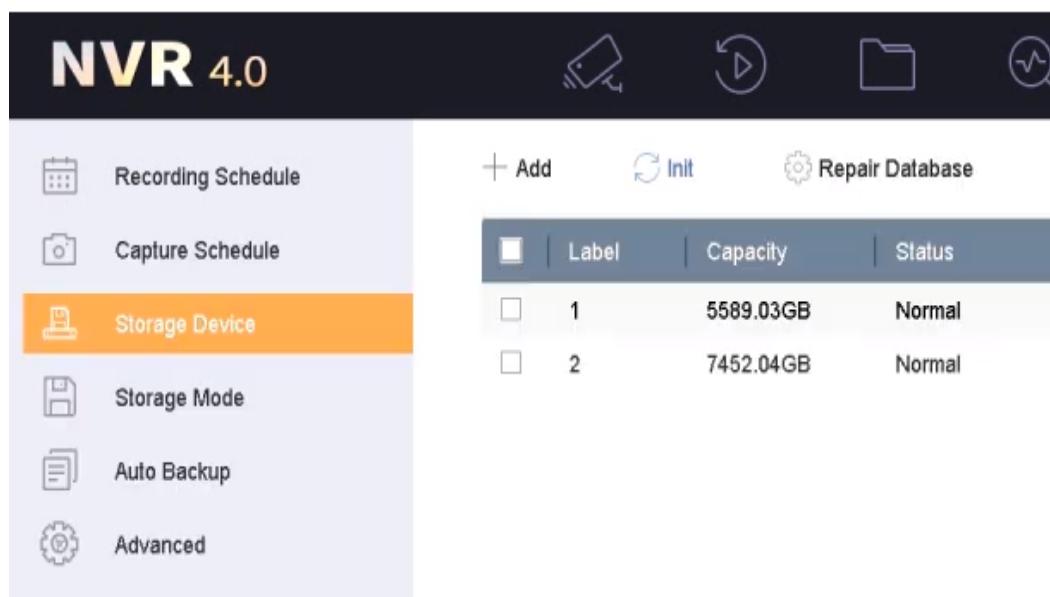
# Redundant Recording

Enabling redundant recording and capture, which means saving the record files and captured pictures not only in the R/W HDD but also in the redundant HDD.

Go to **Storage > Storage Device**.

Select a **HDD** from the list and Click  to enter the Local HDD Settings interface.

Step 3 Set the HDD property to **Redundancy**.



The screenshot shows the NVR 4.0 interface. The left sidebar has the following menu items:

- Recording Schedule
- Capture Schedule
- Storage Device** (highlighted in orange)
- Storage Mode
- Auto Backup
- Advanced

The main content area displays the following information:

- Buttons: Add, Init, Repair Database
- Table:

	Label	Capacity	Status
1	5589.03GB	Normal	
2	7452.04GB	Normal	
- Text: HDD Capacity 931.52GB

Local HDD Settings

HDD No.	5
HDD Property	<input type="radio"/> R/W <input type="radio"/> Read-only <input checked="" type="radio"/> Redundan...
Group	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12 <input type="radio"/> 13 <input type="radio"/> 14 <input type="radio"/> 15 <input type="radio"/> 16
HDD Capacity	931.52GB

OK Cancel

# Redundant Recording

Go to **Storage > Schedule Settings > Record Schedule/Capture Schedule.**

Click **Advanced** to set the camera recording parameters.

Click **Redundant Record/Capture**

The screenshot shows the 'Recording Schedule' configuration interface for Camera No. [D1] Camera 01. The left sidebar includes options for Recording Schedule, Capture Schedule, Storage Device, Storage Mode, Auto Backup, and Advanced. The main area displays a weekly schedule from Monday to Sunday, with each day having a blue bar representing a recording period. An 'Advanced' button is visible at the top right of the schedule grid. On the right, the 'Advanced Parameters' panel is open, containing fields for Record Audio (unchecked), Pre-Record (5s), Post-Record (5s), Stream Type (Main Stream), Video/Picture Expiry Time (0), and a checked checkbox for 'Redundant Record/Capture'. The 'Redundant Record/Capture' checkbox is highlighted with a red border.

Recording Schedule

Camera No. [D1] Camera 01

Enable Schedule

Advanced

Continuous Event Motion Alarm M | A M & A POS Event None Edit

Day	Recording Period	Index
Mon	00:00 - 23:59	1
Tue	00:00 - 23:59	2
Wed	00:00 - 23:59	3
Thu	00:00 - 23:59	4
Fri	00:00 - 23:59	5
Sat	00:00 - 23:59	6
Sun	00:00 - 23:59	7

Advanced Parameters

Record Audio:

Pre-Record: 5s

Post-Record: 5s

Stream Type: Main Stream

Video/Picture Expiry Time... 0

Redundant Record/Capture

OK Cancel

# Expired Recording

The record file expires after it reaches the configured expired time.

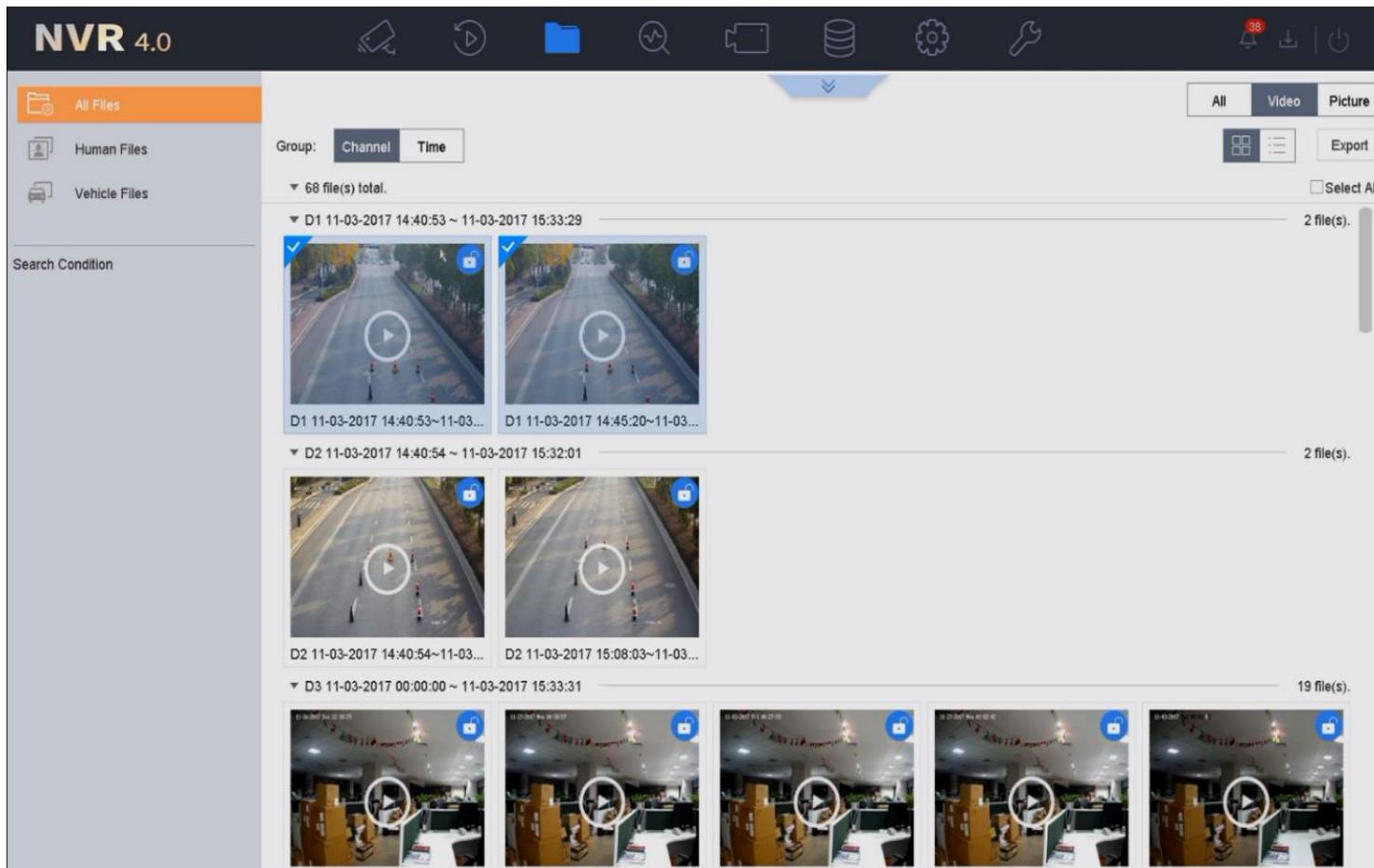
Go to **Storage > Schedule Settings > Record Schedule/Capture Schedule**.

Click **Advanced** to set the camera recording parameters.

The screenshot shows the 'Recording Schedule' settings for Camera No. [D1] Camera 01. The left sidebar includes options for Capture Schedule, Storage Device, Storage Mode, Auto Backup, and Advanced. The main area displays a weekly schedule grid where each day's row is highlighted in blue. A legend at the top of the grid indicates recording modes: Continuous (blue), Event (purple), Motion (green), Alarm (red), M | A (orange), M & A (light blue), POS Event (cyan), and None (white). An 'Edit' button is located in the top right corner of the grid. To the right, an 'Advanced Parameters' panel is open, containing fields for Record Audio (unchecked), Pre-Record (5s), Post-Record (5s), Stream Type (Main Stream), and Video/Picture Expiry Time... (set to 0). A checkbox for Redundant Record/Capture is also present. The 'OK' and 'Cancel' buttons are at the bottom right of the panel.

# File Lock

- Click on the lock icon to lock and unlock the record file; locked file won't be overwritten in cycle recording.



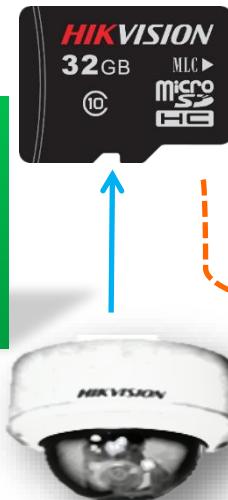
# Contents

- Product Family
  - Functions & Applications
    - IPC deployment
    - **Secure Data Management**
    - Bandwidth Control
    - Acusense Technology
    - Nonvideo Management
    - Alarm and Event
  - Troubleshooting
- 
- HDD Quota/Group
  - RAID
  - eSATA
  - Recording/File Management
  - **ANR/N+1**

# ANR

ANR

2.Start recording video in IPC SD card.



1.Network breaks down.

3.After network recovery, recorded video retransfers back to NVR.



Live video



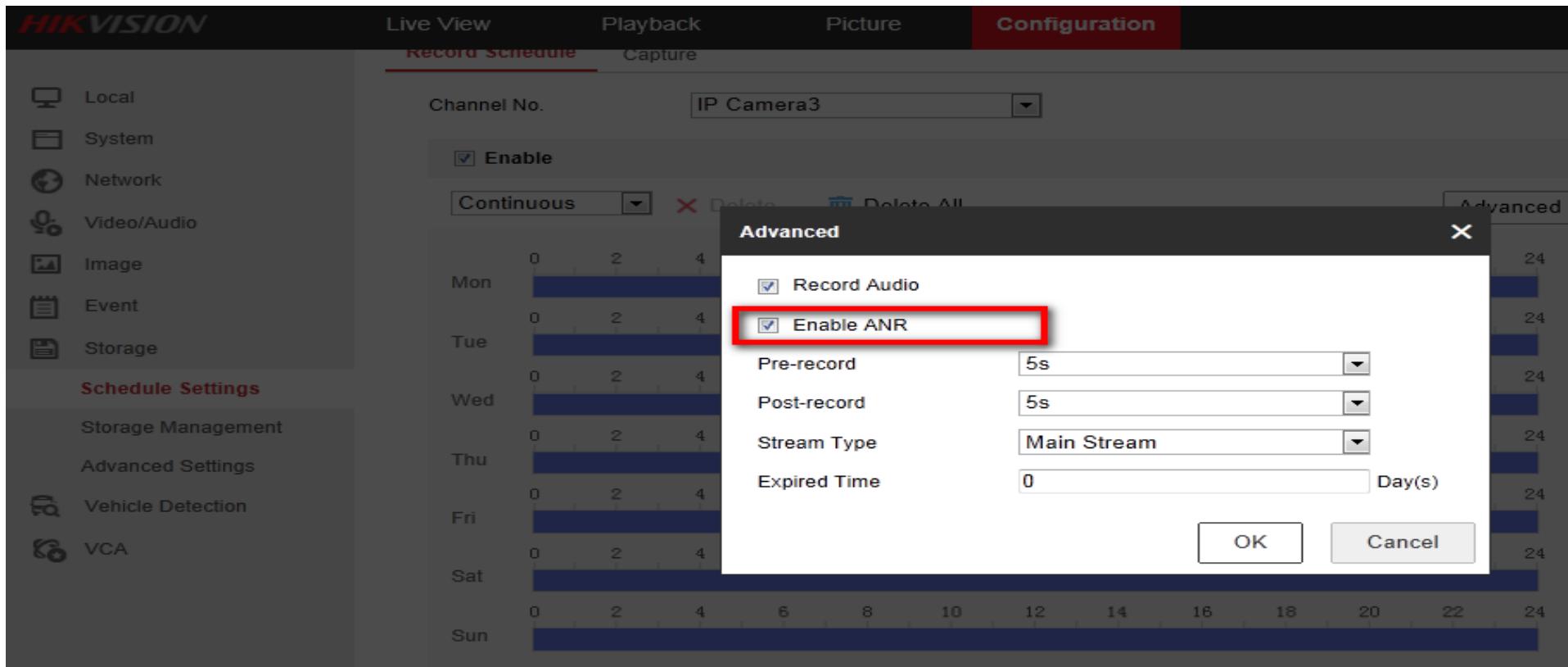
Recorded video

# ANR---How to Configure

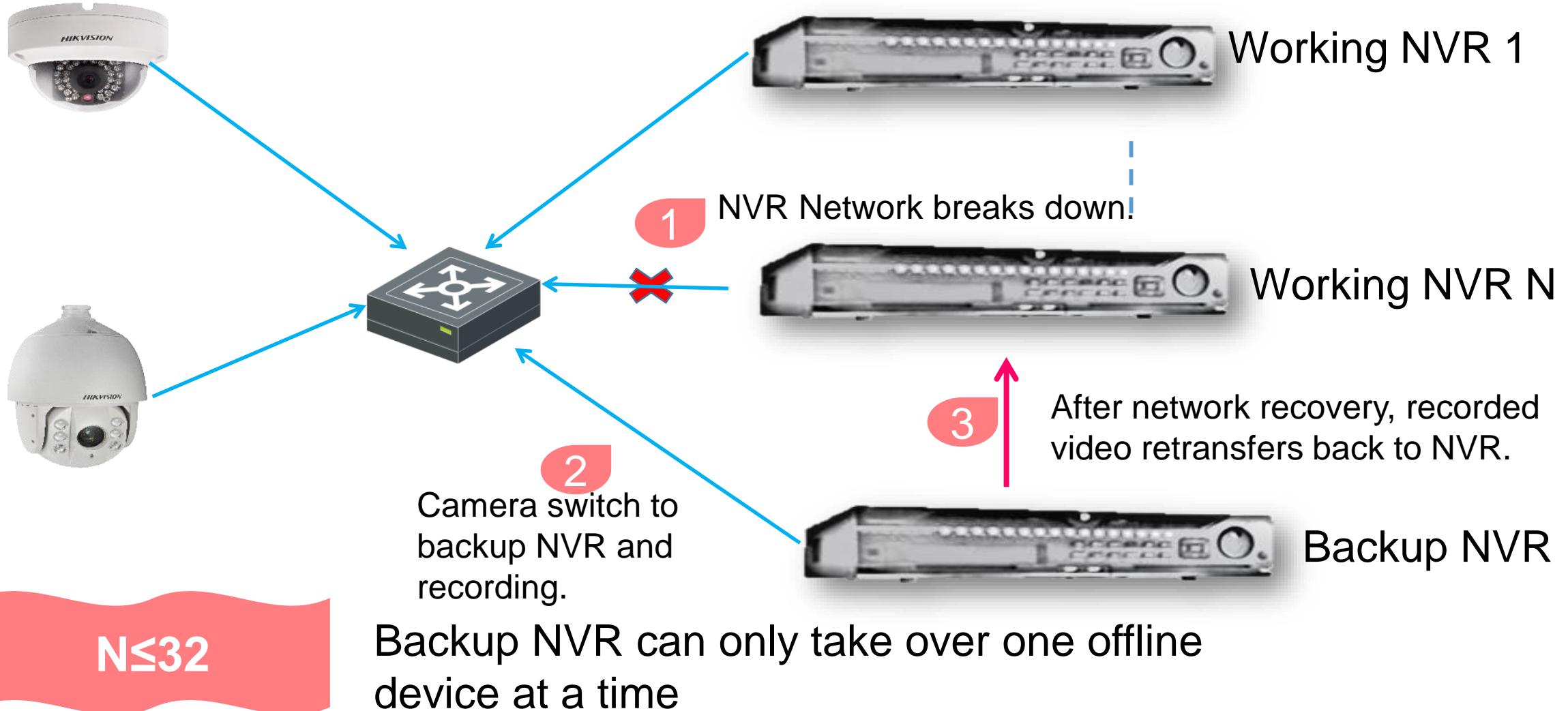
Make sure IPC is installed with SD card(pre-allocated).

Enable the ANR on the web page of NVR

**Web Configuration -> Storage -> Schedule Settings -> Advanced**



N+1



# N+1---System Logic

## Before you start

- **At least 2 devices** are needed to configure the N+1 working system: one NVR as hot spare unit, and other units as working units
- Configuration workflow:



# N+1---How to Configure (Set working NVR)

## Set working units and add them to the hot spare unit

- Go to **System > Hot Spare**.
- Set the **Work Mode** to **Normal Mode**.
- Check **Enable**.
- Enter the **IP address**, **user name**, and **admin password** of the hot spare device.
- Click **Apply**.

Work Mode      **Normal Mode**

Enable     

IPv4 address of the hot spare device      10 . 15 . 1 . 106

User Name of Hot Spare Device      admin

Password of the hot spare device      \*\*\*\*\*

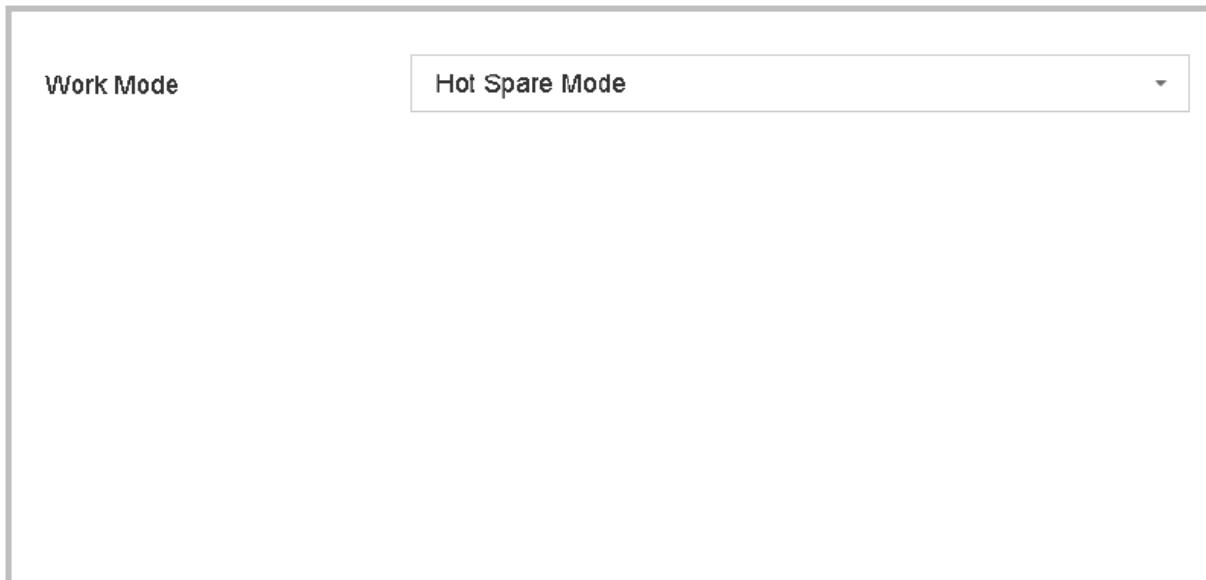
Working Status      Connected

\*Notice: After the hot spare is enabled, you must link the working device to the hot spare device, otherwise, this function is not available.

# N+1---How to Configure (Set Hot Spare NVR)

## **Set working units and add them to the hot spare unit**

- Step 1 Go to **System > Hot Spare**.
- Step 2 Set the **Work Mode** to **Hot Spare Mode**.
- Step 3 Click **Apply**.
- Step 4 Click **Yes** in the popup attention box to reboot the device.



# N+1---How to Configure (Working status)

After Reboot, Go to **System > Hot Spare** in the hot spare device.

Add working NVR's IP address to the Hot Spare NVR

Working Status	Description
No record	The working device works properly.
Backing up	If the working device goes offline, the hot spare device will record the video of the IP camera connected to the working device for backup The record back up functions for 1 working device at a time.
Synchronizing	When the working device comes back online, the lost video files will be restored by the record synchronization function. The record synchronization function can be enabled for 1 working device at a time.


The screenshot shows a software interface with a table of working statuses. The columns are labeled: No., IP Address, Connection Status, Working Status, Delete, and an empty column. The 'Working Status' column header is highlighted with a red box. The table contains four rows, each corresponding to one of the entries in the table above. At the bottom of the interface, there is a blue 'Apply' button.

# Contents

- Product Family

- Functions & Applications

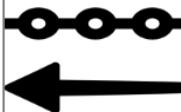
- IPC deployment
- Secure Data Management
- **Bandwidth Control**
- Acusense Technology
- Nonvideo Management
- Alarm and Event

- **Incoming/Outgoing Bandwidth**
- Transcoded Stream
- Channel Zero
- Playbacks

- Troubleshooting

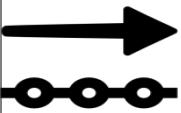
# Data Incoming/Outgoing

**Data  
Incoming**



Streams come into the NVR from IPC/Encoder

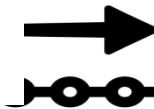
**Data  
Outgoing**



Streams go out from NVR for remote usage

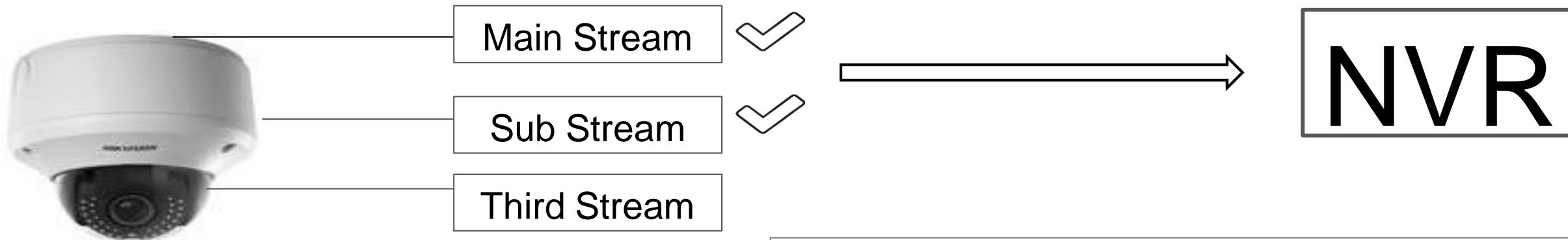


Add Camera/Encoder to NVR for local live view/recording



Remote live view/playback NVR stream on client software

# Incoming Bandwidth Calculation



Hikvision IPC has three streams

While adding an IPC to NVR, only main stream and sub stream are connected to NVR

Example

IPC DS-2CD4332FWD-I

Main Stream: 25fps@1080P, 4Mbps

Sub Stream: 25fps@4CIF, 1Mbps

NVR DS-7716NI-E4

Incoming Bandwidth: 160Mbps

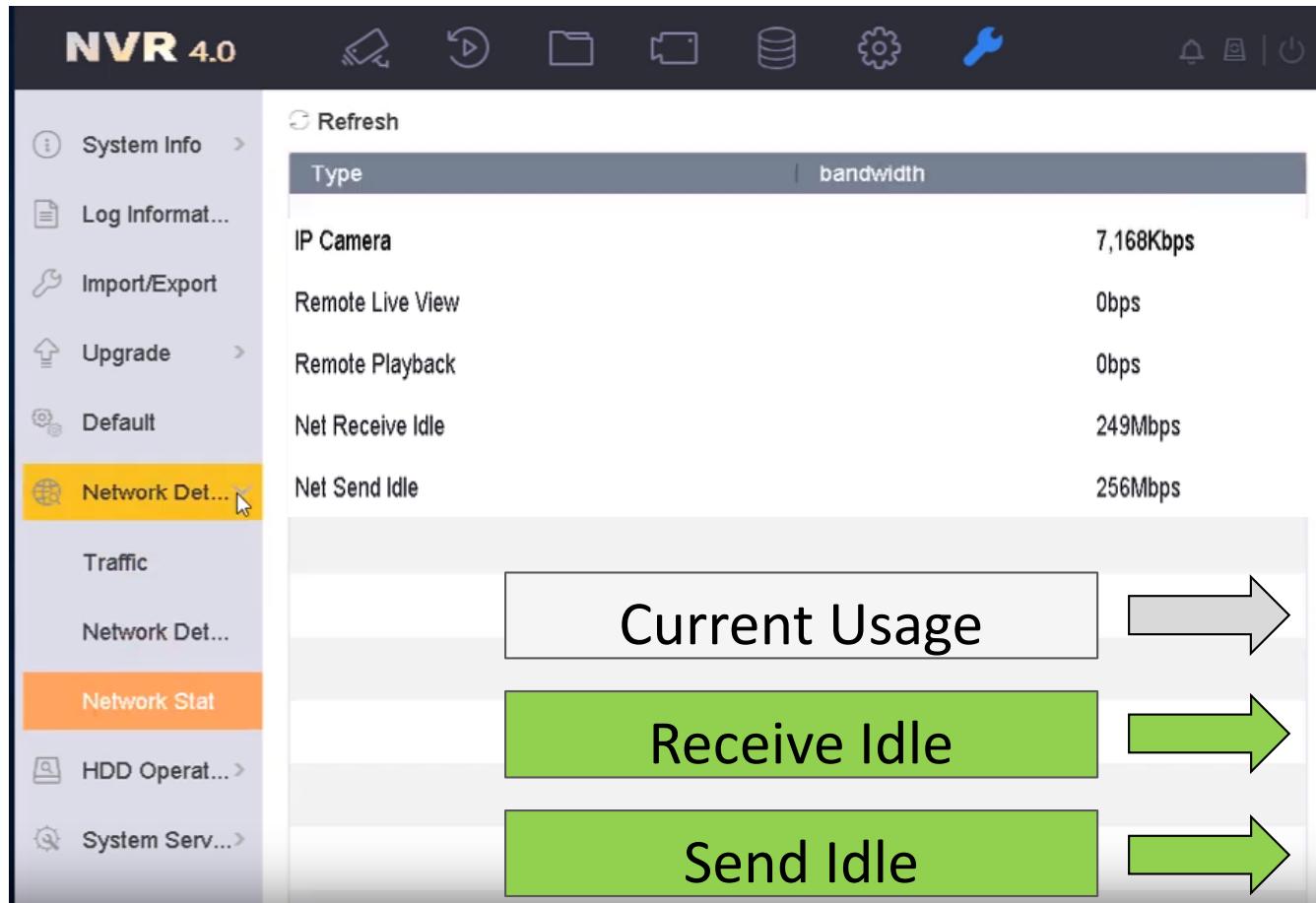
Up to 16 pcs of DS-2CD4332FWD-I can be added to NVR DS-7716NI-E4

**NOTE**

While adding a third-party IP camera to NVR, it may have main stream only;  
In this case, only main stream bitrates are taken into calculation.

# Bandwidth Usage Monitor

NVR offers an user interface to monitor real-time incoming/outgoing bandwidth usage, net receive idle, net send idle, etc.



The screenshot shows the NVR 4.0 software interface. The left sidebar has a yellow highlight on 'Network Stat'. The main area shows a table with the following data:

Type	bandwidth
IP Camera	7,168Kbps
Remote Live View	0bps
Remote Playback	0bps
Net Receive Idle	249Mbps
Net Send Idle	256Mbps

Below the table, three green boxes with arrows point to the right, labeled 'Current Usage', 'Receive Idle', and 'Send Idle'.



Current incoming and outgoing usage

for adding more IP cameras

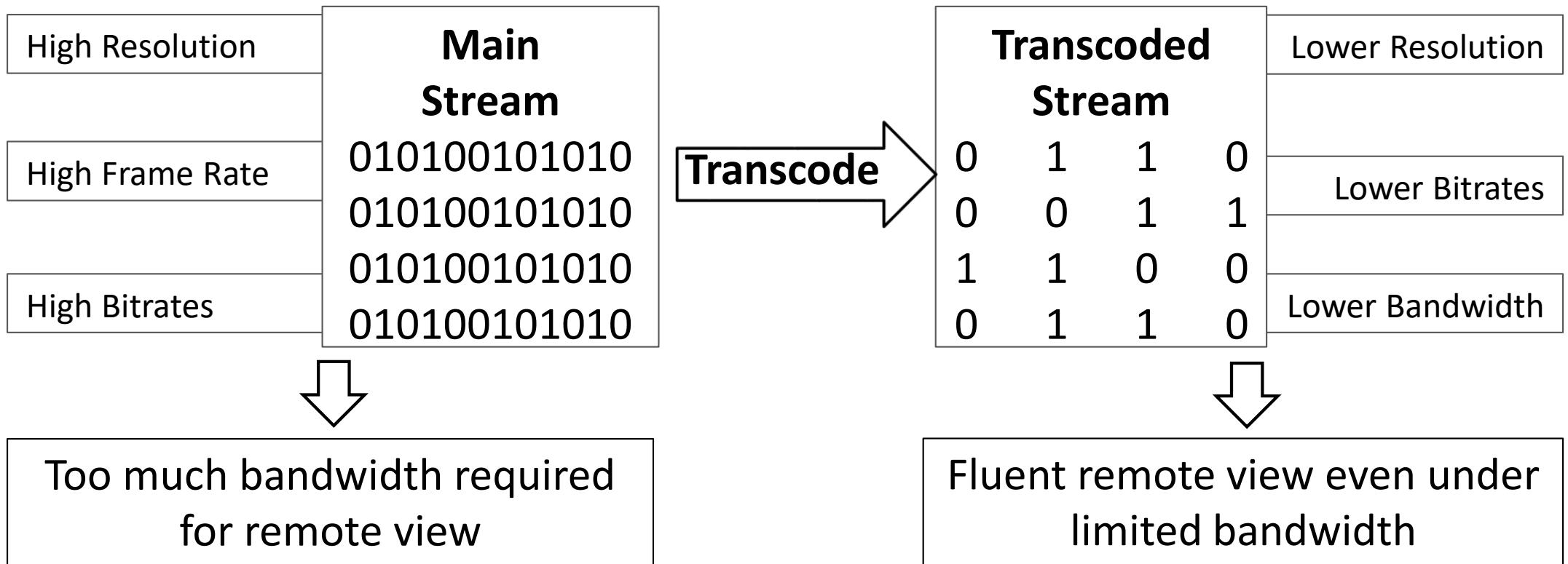
for launching more remote connections

# Contents

- Product Family
  - Functions & Applications
    - IPC deployment
    - Secure Data Management
    - **Bandwidth Control**
    - Acusense Technology
    - Nonvideo Management
    - Alarm and Event
  - Troubleshooting
- 
- Incoming/Outgoing Bandwidth
  - **Transcoded Stream**
  - Channel Zero
  - Playbacks

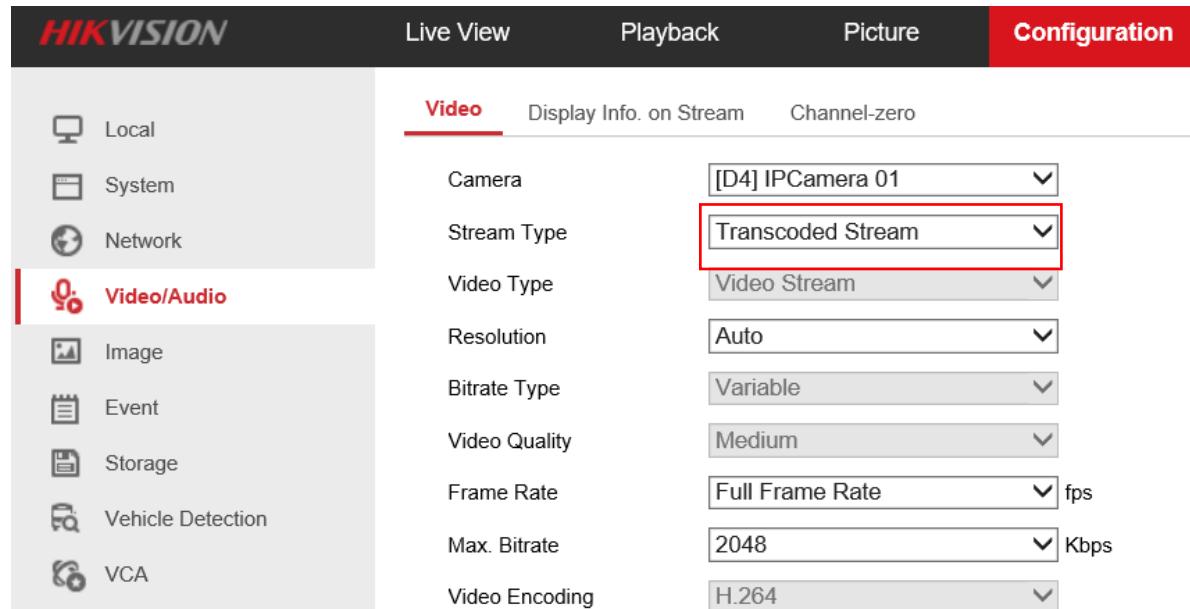
# Transcoded Stream

- NVR can transcode the original streams into new streams of lower resolution, frame rate, bitrates for remote use of live view and playback.



# Transcoded Stream-Live View

- Configure the parameter of transcoded stream for live view
  - Go to NVR web page->remote configuration->Video/Audio
  - Select the IP camera and configure the transcoded stream resolution, frame rate, and bitrates



- Select transcoded stream and start live view
  - Go to NVR web page->live view
  - Select the transcoded stream and start live view



# Transcoded Stream-Playback

- Go to NVR web page->playback
- Select the IP camera and configure the playback resolution, frame rate, and bitrates of transcoded stream
- Select the transcoded playback option (the icon  turns red after selected), then start playback.



Resolution	CIF
Bitrate	512K
Frame Rate	Full Frame Rate

Transcoded  
playback parameter

# Contents

- Product Family

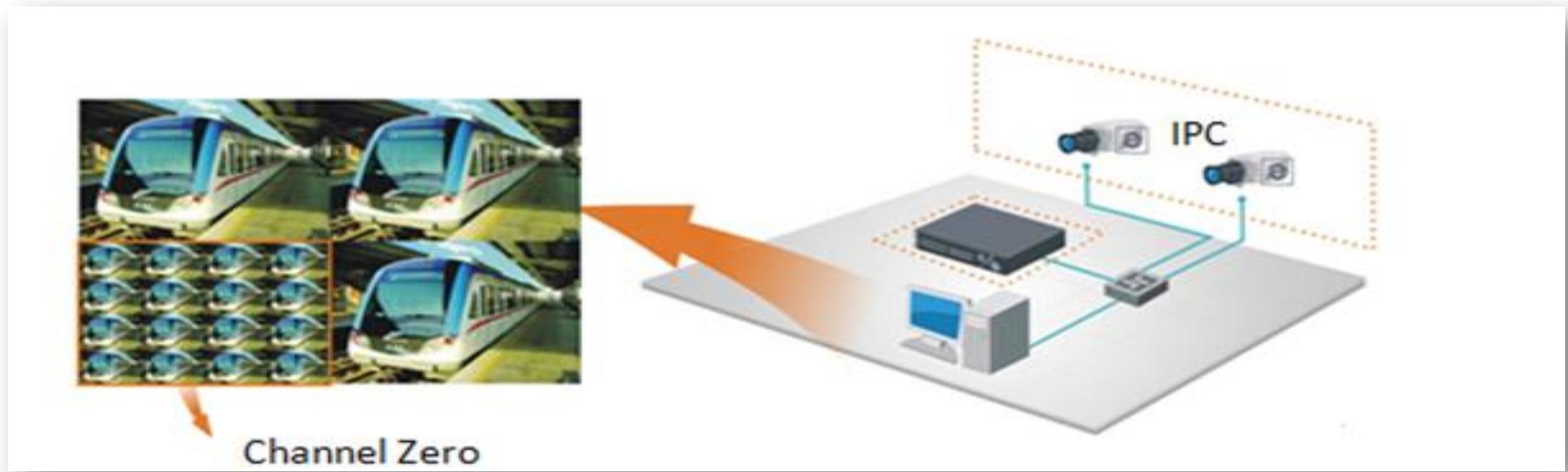
- Functions & Applications

- IPC deployment
  - Secure Data Management
  - **Bandwidth Control**
  - Acusense Technology
  - Nonvideo Management
  - Alarm and Event
- 
- Incoming/Outgoing Bandwidth
  - Transcoded Stream
  - **Channel Zero**
  - Playbacks

- Troubleshooting

# Channel Zero Live View

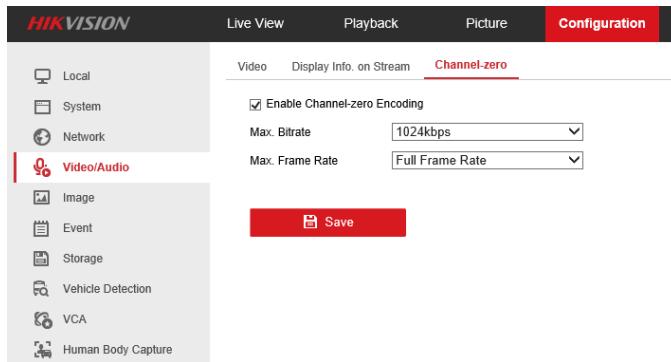
- Channel zero is a single channel combining more than one channel related cameras' images.



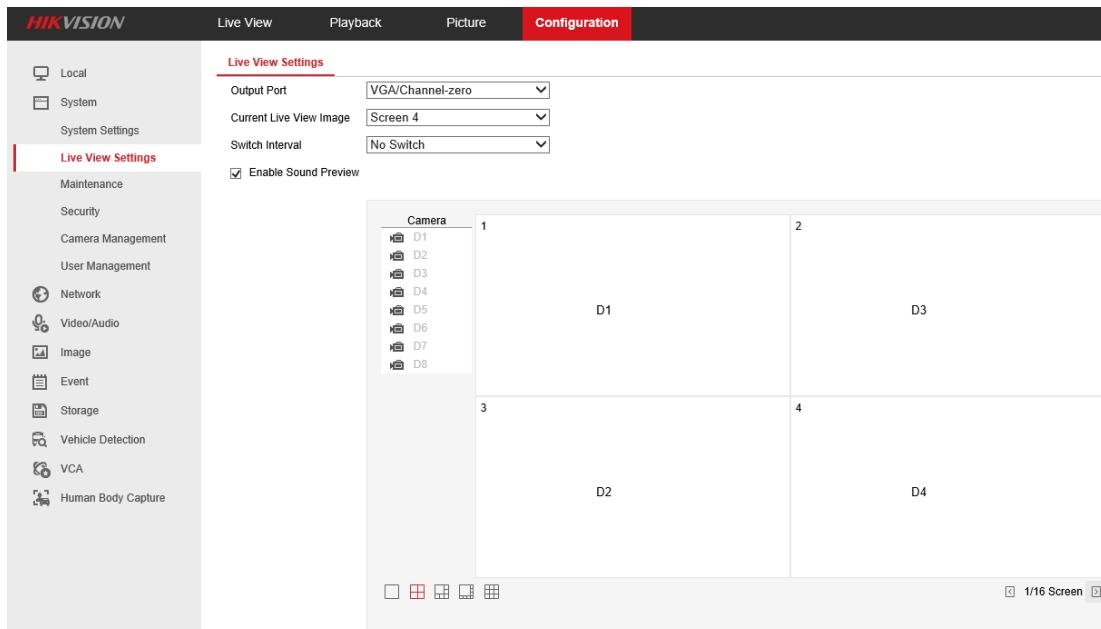
User can edit the camera order of channel zero by configuring the live view sequence of NVR's CVBS or VGA output.

# Channel Zero Configuration

- Enter the web interface of NVR



- Configure the split screen setting and save the changes



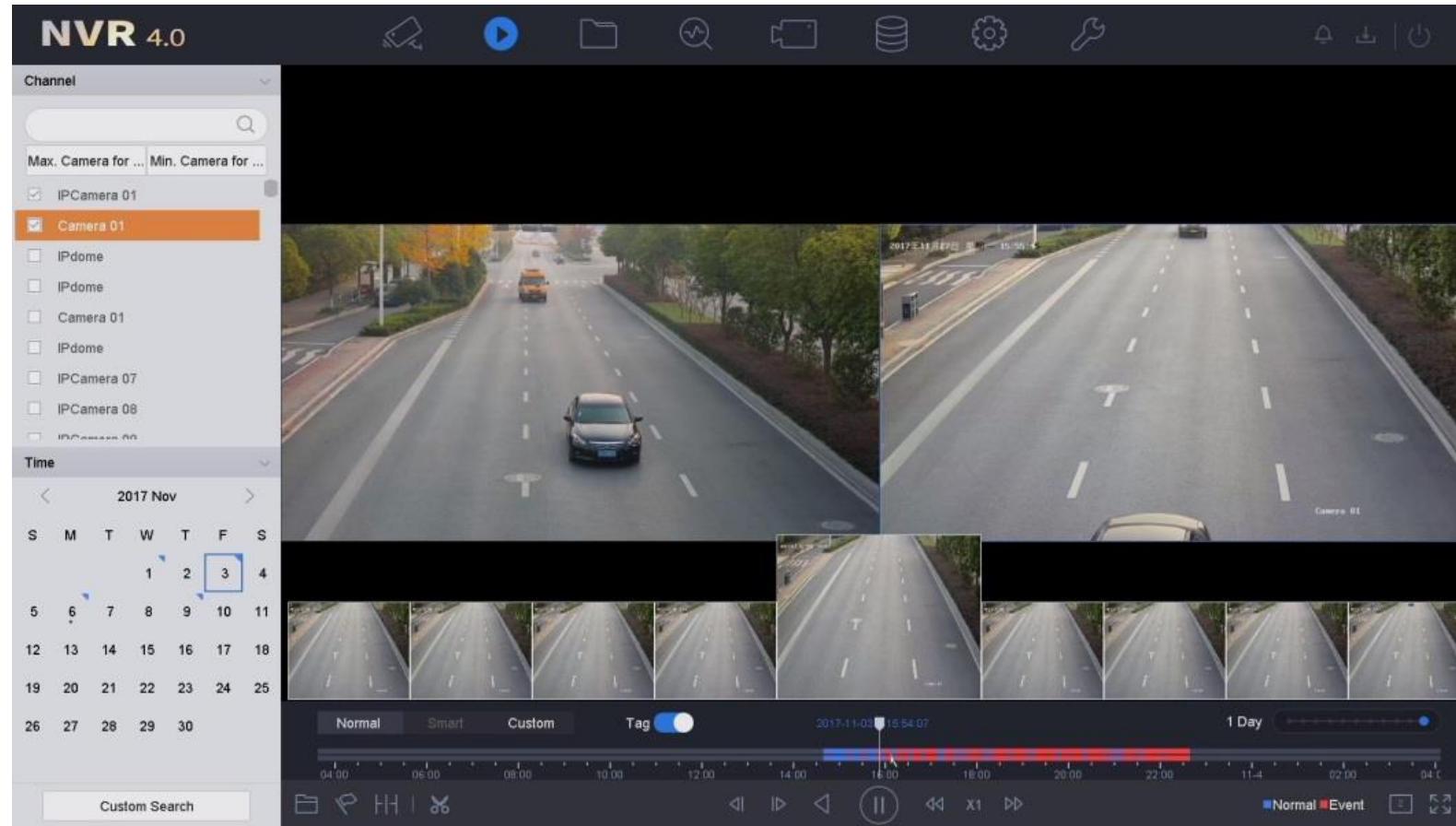
# Contents

- Product Family
  - Functions & Applications
    - IPC deployment
    - Secure Data Management
    - **Bandwidth Control**
    - Acusense Technology
    - Nonvideo Management
    - Alarm and Event
  - Troubleshooting
- 
- Incoming/Outgoing Bandwidth
  - Transcoded Stream
  - Channel Zero
  - **Playbacks**

# Playback of NVR 4.0

The search result of replay is displayed in a list view.

Support one-click playback( thumb nail).



# Playback of NVR 4.0

Support dual-progress bars in Playback interface.

The following one shows the progress of the selected screen and the other one is to show the progress of all the selected channels.



# NVR/DVR Local Menu Operation

## 11. Playback

*Play Custom Searched Files*

*Step 1 Go to Playback.*

*Step 2 Select a camera or cameras from the list.*

*Step 3 Click **Custom Search** on the left bottom to enter the Search Condition interface.*

*Step 4 Enter the search conditions for the files, e.g., time, file status, event type, etc.*

Time	Custom	2017-10-01 00:00:00	2017-10-23 23:59:59
Tag	A	File Status	All
Event Type	None		
Plate No.			
Area/Country	None		

Empty Conditions    Search    Save

# VCA Search

- NVR supports VCA search for picture and record results of behavior analysis, face capture, people counting and heat map results.
  - Search results can be easily exported from NVR.

## Face Search



# Behaviour Search



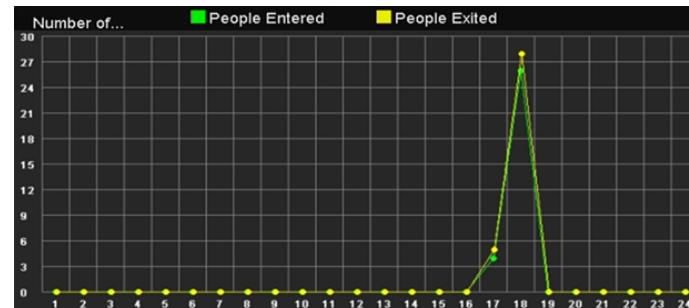
Plate Search



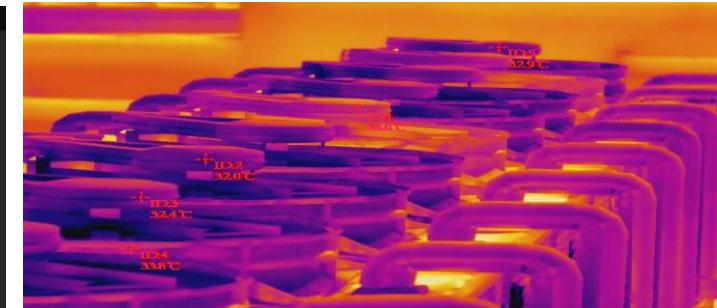
## Heat Mapping



# People Counting



Advanced



# Smart Search and Playback

- During normal playback mode, user can draw a line or an area for smart search of line crossing, motion/intrusion detection.
- Non-related video footage is filtered and skipped during smart playback.
- Related video is marked with red color and can be filtered again by face characteristics.

10:12 Motion Detection



11:18 Line Crossing Detection

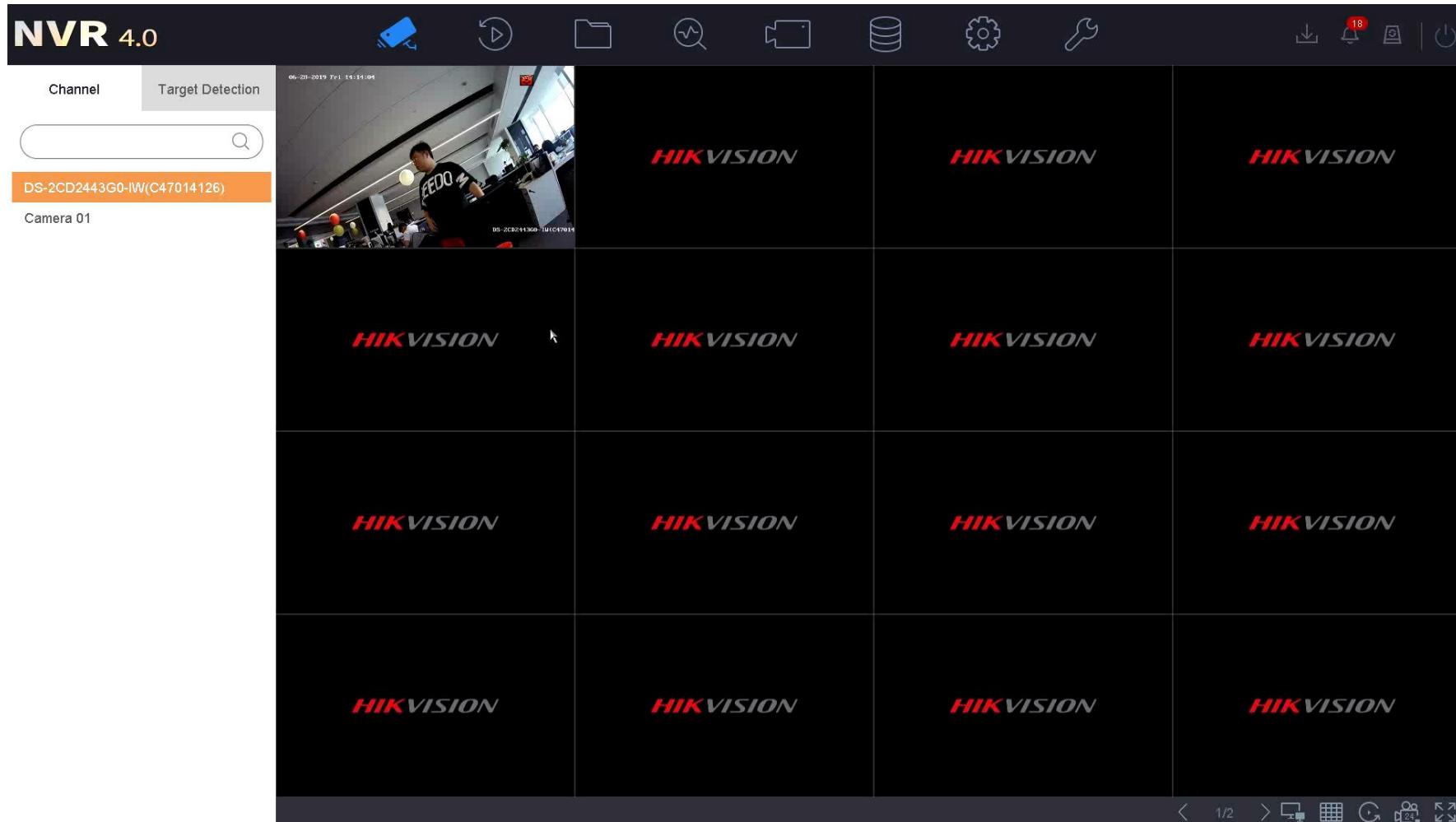


13:25 Intrusion Detection



# Smart Search/Playback Operation

Enter normal playback page>>select a camera and date



# Contents

- **Product Family**
- **Functions & Applications**
  - IPC deployment
  - Secure Data Management
  - Bandwidth Control
  - **Acusense Technology**
  - Nonvideo Management
  - Alarm and Event
- **Troubleshooting**

# Hikvision AcuSense Technology

In conventional perimeter security system, end-users usually meet following situation :



False Alarm by Animal



False Alarm by Light



False Alarm by Rain



False Alarm by Spiderwebs



False Alarm by Shaking Leaves

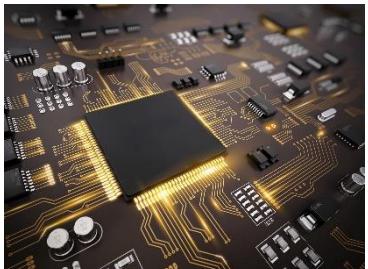
# Targets Classification

AcuSense Technology, one intelligent analysis technology based on deep learning algorithms

1. VCA rules are triggered by targets

2. Targets classification by AcuSense devices

## AcuSense Technology



One Stand-alone Module

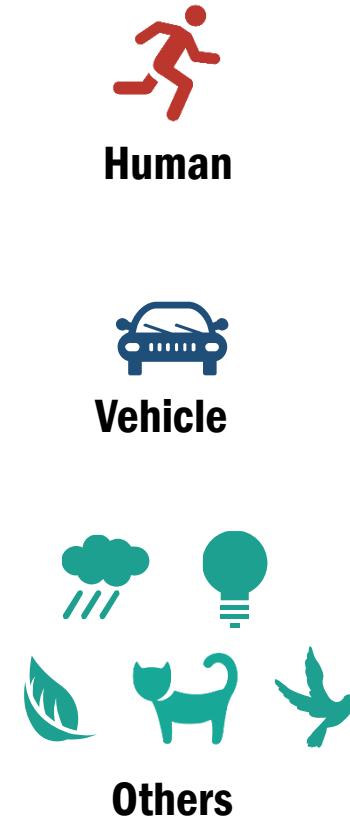
Hikvision  
Deep Learning Algorithm

Realize Targets Classification



Conventional  
IP Device

Targets  
Classifying



# AcuSense NVR



AcuSense NVR

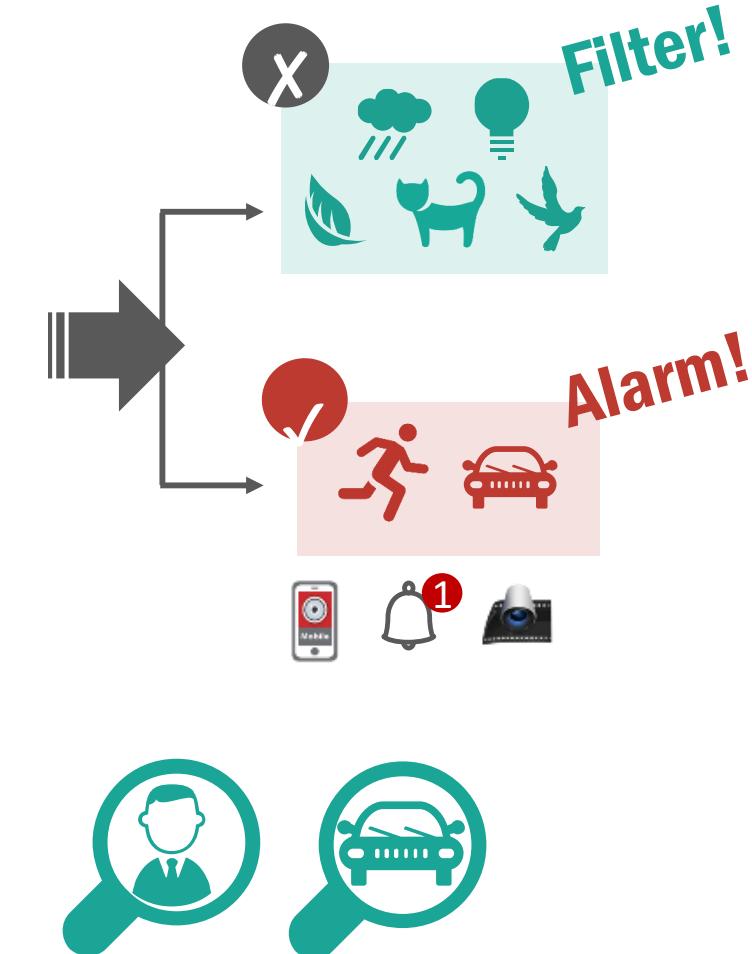
- **False Alarm Filter**

Human & vehicle targets detected efficiently.  
The interference caused by other  
objects(animal, leaf, light, rain, etc ) can be  
eliminated efficiently.

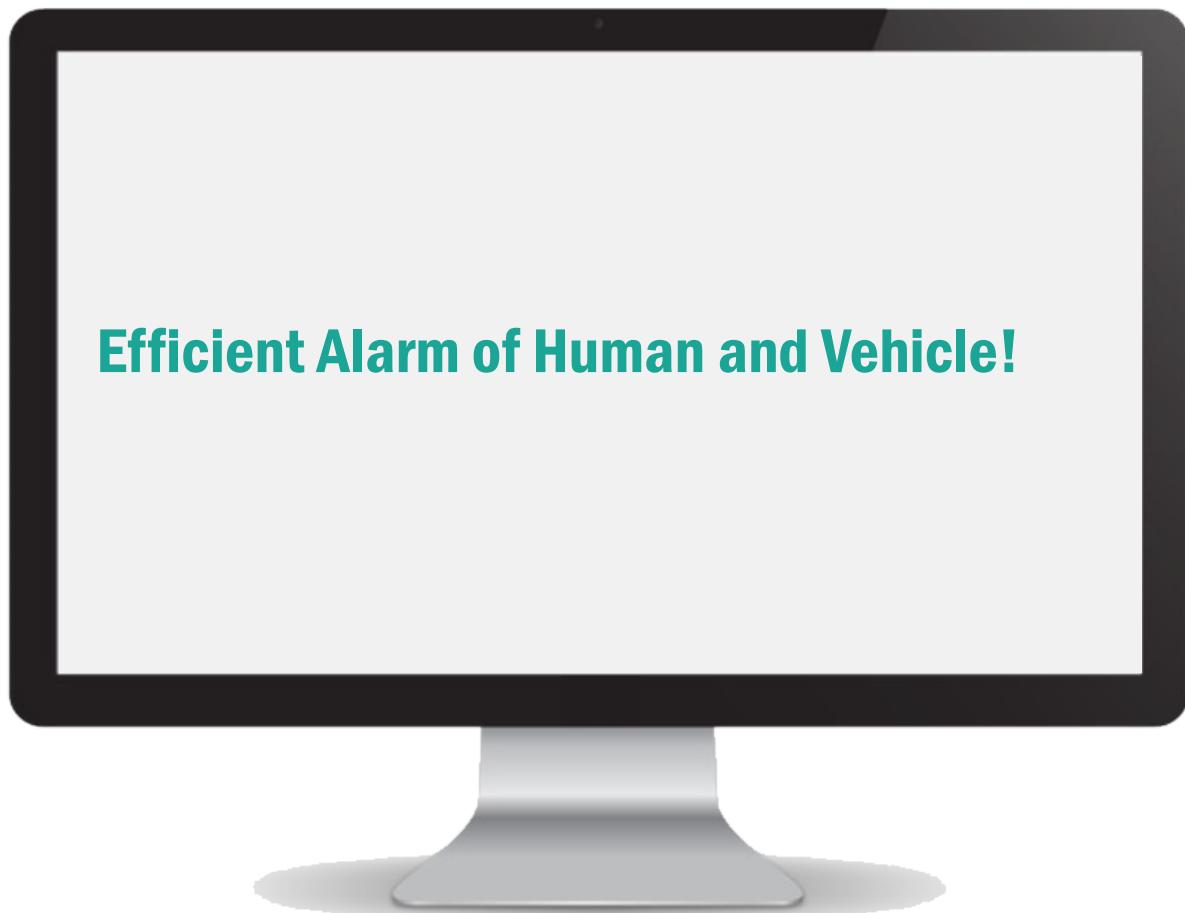
- **Quick Target Search**

Human Target Search & Vehicle Target  
Search  
**(supported by Hikvision AcuSense NVRs)**

Main Functions



# False Alarm Filter



Compared with conventional CCTV system,  
AcuSense system can **filter out nearly 80%-90% false alarm events.**



Cost-saving



Time-saving

# Quick Target Search



## Smart

**Human/Vehicle classification  
Efficient and valuable data searching**

**AcuSense NVRs, which are integrated with AcuSense technology, fast extract interested events triggered by Human/Vehicles from massive video data in a certain time.**

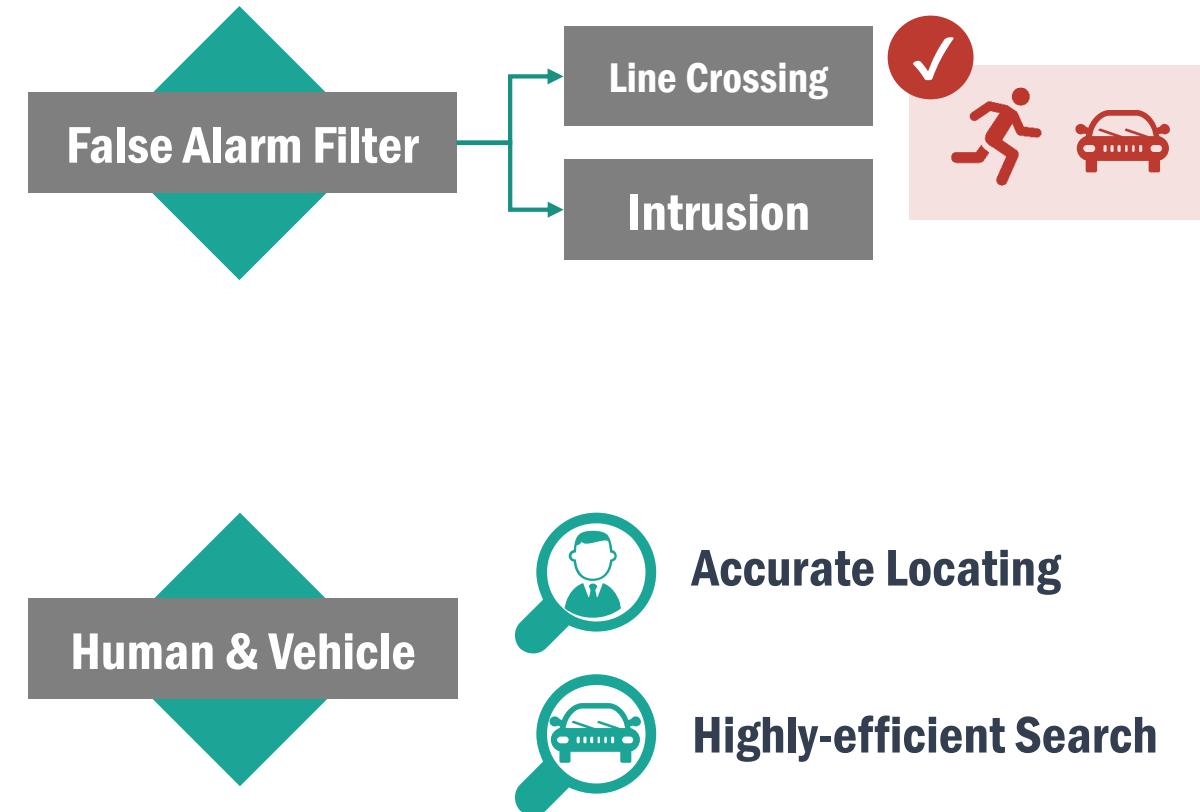
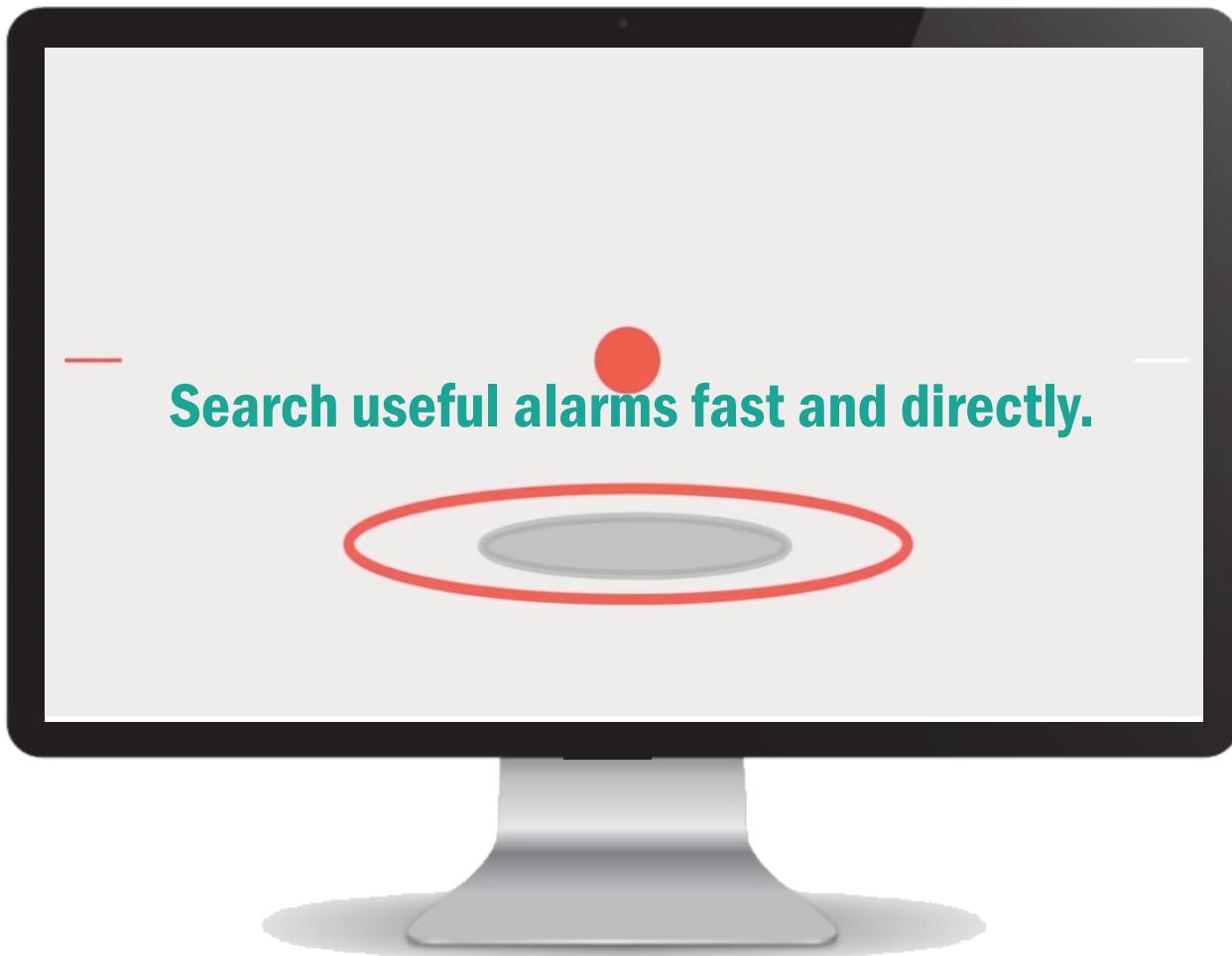


**Take a lot of time to search useful alarm information in the amount of video data.**



**Quick Target Search!**

# Quick Target Search



# Contents

- Product Family
  - Functions & Applications
    - IPC deployment
    - Secure Data Management
    - Bandwidth Control
    - Acusense Technology
    - **Nonvideo Management**
    - Alarm and Event
  - Troubleshooting
- 
- Access Control & Intercom**
- Alarm

# Nonvideo Management

NVR with firmware version later than 4.21.005 supports the access of **Nonvideo Devices** and **Alarm Devices**.



IoT Internet of Things



AI Artificial Intelligence



# Nonvideo Management

NVR with firmware version later than 4.21.005 supports the access of **Nonvideo Devices** and **Alarm Devices**.

The screenshot shows the 'Access Control' interface of an NVR. On the left, there are two tabs: 'Device Management' (highlighted with an orange background) and 'Card Swiping Record'. At the top, there are buttons for 'Add' (highlighted with a red box), 'Delete', 'Import', 'Export', and 'Refresh'. Below these are two rows of device information:

	Channel No.	Name	Device Type	IP Address	Protocol	Edit	Config	Status	Security
<input type="checkbox"/>	IoT01	P1 B1 U1 F1...	Hikvision Video Int...	10.9.96.19	Hikvision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Weak Pass.
<input type="checkbox"/>	IoT03	P1 B1 U1 F1...	Add IoT Device			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Weak Pass.

A modal window titled 'Add IoT Device' is displayed over the table. It contains fields for 'Protocol' (set to 'Hikvision'), 'Device IP' (10.9.96.67), 'Port' (8000), 'Transfer Protocol' (TCP), 'User Name' (admin), and 'Password' (REDACTED). The 'Protocol' field is also highlighted with a red box.

# Nonvideo Management

Support event rule configuration and OSD display configuration .

The screenshot shows the 'Config' page for a device named 'IOT01' (Channel: [IoT04] IOT01) under 'Device Management'. The 'Event Configuration' tab is active, while the 'OSD Display Configuration' tab is highlighted with a red box. The 'Event Type' dropdown is set to 'Authentication Passed'. The 'Enable' checkbox is checked. Below the tabs, there are two sections: 'Linkage Action' and 'Arming Schedule'. The 'Linkage Action' section contains several checkboxes for various actions like Normal Linkage, Full Screen Monitoring, Audible Warning, Notify Surveillance Center, Send Email, and OSD Display. The 'OSD Display' checkbox is checked. The 'Arming Schedule' section is partially visible. On the right side, there are sections for 'Trigger Alarm Output', 'Trigger Channel', and 'PTZ Linkage'. Under 'Trigger Channel', checkboxes for D1, D2, D3, D4, and D6 are shown, with D4 checked. Under 'PTZ Linkage', options for Preset No., Patrol No., and Pattern No. are available, each with a dropdown menu showing the value '1'.

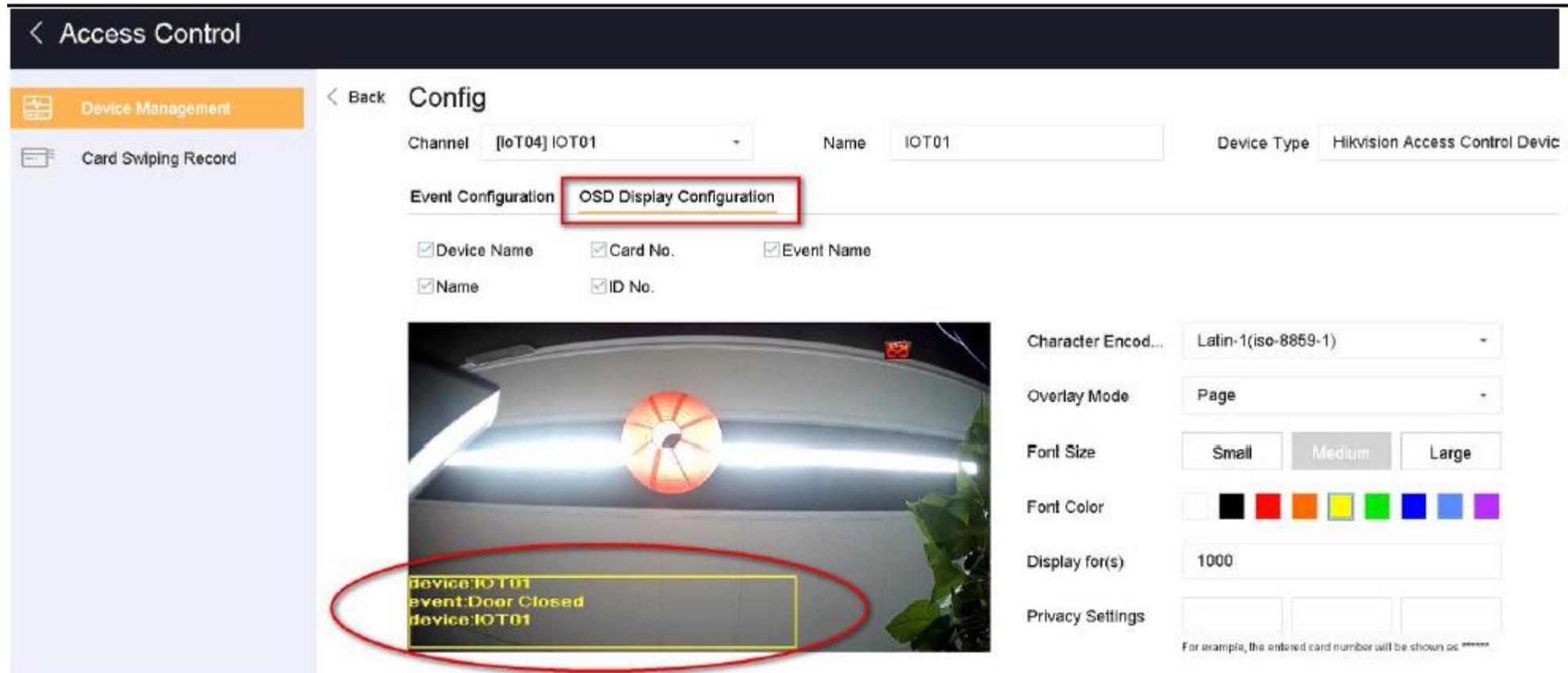
# Nonvideo Management

Support event rule configuration and OSD display configuration .

The screenshot shows the 'Config' page for a device named 'IOT01' (Channel: [IOT04] IOT01). The 'Event Configuration' tab is selected, and the 'OSD Display Configuration' tab is also visible. The 'Event Type' dropdown is set to 'Authentication Passed'. The 'Enable' checkbox is checked. Below the tabs, there are two sections: 'Linkage Action' and 'Arming Schedule'. Under 'Linkage Action', several checkboxes are available, including 'Normal Linkage', 'Trigger Alarm Output', 'Trigger Channel', 'PTZ Linkage', 'Full Screen Monitoring', 'Audible Warning', 'Notify Surveillance Center', 'Send Email', and 'OSD Display'. Under 'PTZ Linkage', options include 'PTZ Linkage' (set to [D1] 12345678 Frc), 'Preset No.' (set to 1), 'Patrol No.' (set to 1), and 'Pattern No.' (set to 1). The 'OSD Display' checkbox is checked under 'Linkage Action'.

# Nonvideo Management

The Access Control alarm information also can be overlapped on live view. Which IP channel will be overlapped with the OSD display depends on the trigger channel you select.



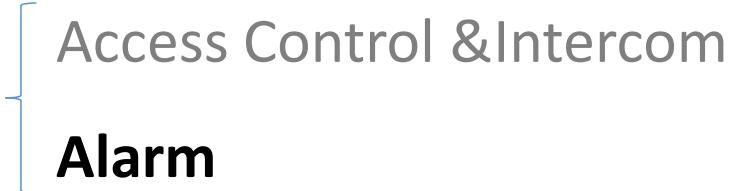
# Nonvideo Management

Support Access Control event log review.

The screenshot shows the NVR 4.0 interface with a dark header bar containing icons for camera, play, folder, search, video, database, settings, and a wrench. The main area has a left sidebar with 'System Info' (selected), 'Log Information' (highlighted in orange), 'Import/Export', 'Upgrade', 'Default', and 'Network'. The main content area shows a table of log entries:

No.	Major Type	Time	Minor Type	Parameter
1	Alarm	27-05-2019 09:14:56	Access Control Host Event	N/A
2	Alarm	27-05-2019 09:16:49	Access Control Host Event	N/A
3	Alarm	27-05-2019 09:16:49	Access Control Host Event	N/A
4	Alarm	27-05-2019 09:17:09	Access Control Host Event	N/A
5	Alarm	27-05-2019 09:19:56	Access Control Host Event	N/A

# Contents

- **Product Family**
  - **Functions & Applications**
    - IPC deployment
    - Secure Data Management
    - Bandwidth Control
    - Acusense Technology
    - **Nonvideo Management**
    - Alarm and Event
  - **Troubleshooting**
- 
- Access Control & Intercom  
Alarm

# Nonvideo Management

Support the access of HIKVISION Alarm Devices and **GJD, OPTEX** and **Luminite** alarm devices.



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IoT Internet of Things



Access Control  
Entrance and Exit Channel Control System



Alarm  
Alarm Event Linkage Management System

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AI Artificial Intelligence

Facial Attendance

# Nonvideo Management

Support the access of HIKVISION Alarm Devices and **GJD, OPTEX** and **Luminite** alarm devices.

The screenshot shows a software interface for managing alarm devices. At the top, there's a navigation bar with a back arrow, the title 'Alarm Device', and tabs for 'Device Management' and 'Alarm host'. Below the navigation bar is a toolbar with 'Add' (highlighted with a red box), 'Delete', and 'Refresh' buttons. The main area has a table with columns: Channel No., Name, Device Type, IP Address, Protocol, Edit, Config, Status, and Security. One row is selected, showing 'IOT02' as the Channel No., 'IOT02' as the Name, 'GJD Alarm Device' as the Device Type, '10.25.204.99' as the IP Address, and 'GJD' as the Protocol. To the right of the table are icons for Edit, Config, Status, and Security. Below the table is a search bar labeled 'Search Data'. A modal window titled 'Add IoT Device' is open in the foreground. It has fields for 'Protocol' (set to 'OPTEX'), 'Device IP', and 'Transfer Protocol'. A dropdown menu for 'Protocol' lists 'Hikvision', 'OPTEX', 'GJD', and 'Luminate', with 'Luminate' currently selected (highlighted with a red box). At the bottom of the modal are 'Add' and 'Cancel' buttons.

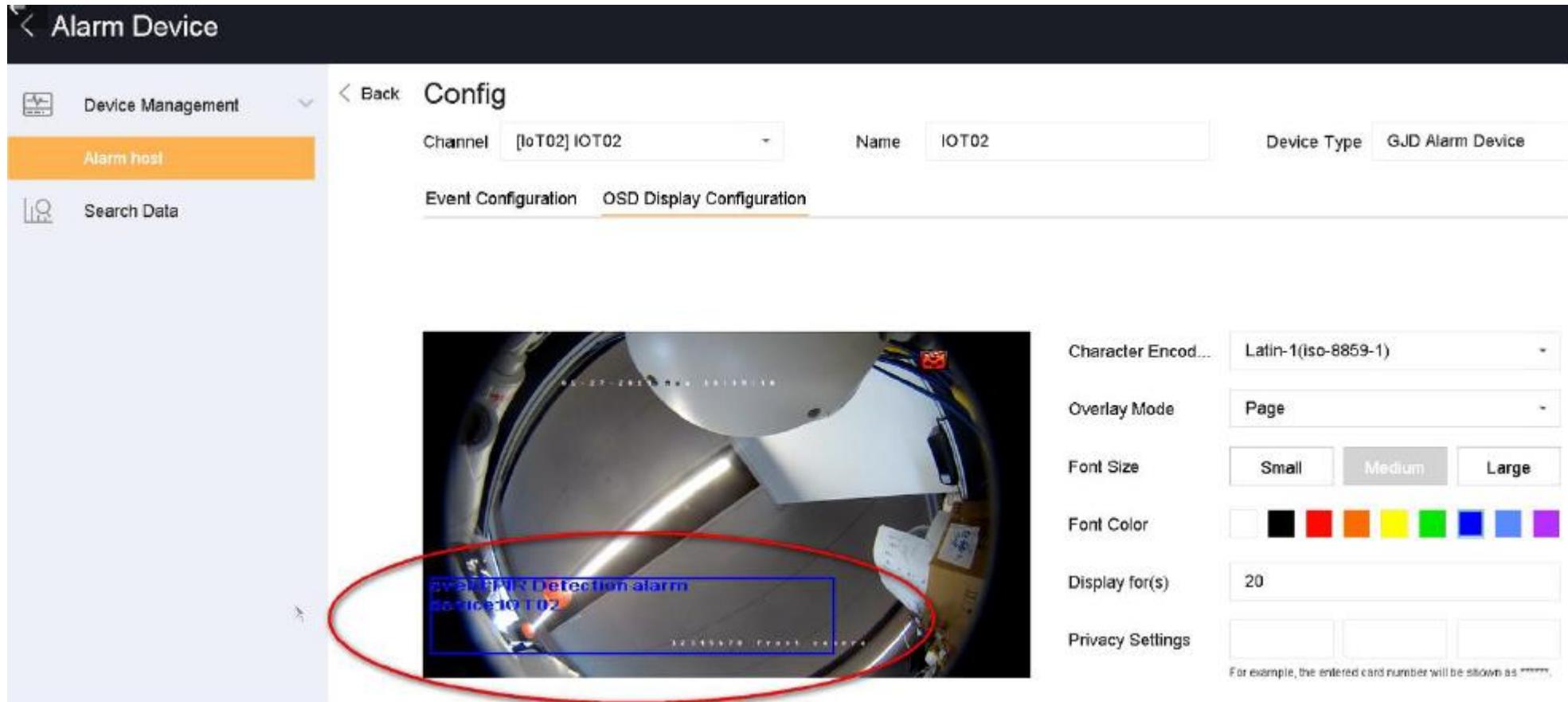
# Nonvideo Management

Support alarm rule configuration and OSD display configuration.

The screenshot shows the 'Config' page for an 'Alarm Device'. The top navigation bar includes 'Device Management' (selected), 'Alarm host' (highlighted in orange), and 'Search Data'. The main area displays configuration for 'Channel [IOT02] IOT02' with 'Name' set to 'IOT02' and 'Device Type' as 'GJD Alarm Device'. The 'Event Configuration' tab is active, showing 'Event Type' as 'PIR Detection alarm' and an 'Enable' checkbox checked. Below this are tabs for 'Linkage Action' and 'Arming Schedule'. The 'Linkage Action' section contains several checkboxes for linkage types: 'Normal Linkage', 'Trigger Alarm Output', 'Trigger Channel', and 'PTZ Linkage'. Under 'Normal Linkage', 'OSD Display' is checked. Under 'Trigger Channel', checkboxes for D1 through D5 are checked. Under 'PTZ Linkage', there are dropdown menus for 'PTZ Linkage' (set to [D1] 12345678 Frc), 'Preset No.' (set to 1), 'Patrol No.' (set to 1), and 'Pattern No.' (set to 1). A red box highlights the 'Event Configuration' and 'OSD Display Configuration' tabs.

# Nonvideo Management

The alarm information also can be overlapped on live view. Which IP channel will be overlapped with the OSD display depends on the trigger channel you select.



# Nonvideo Management

Support alarm event log review.

The screenshot shows the NVR 4.0 software interface. The top navigation bar includes icons for camera, play, folder, search, video, database, settings, and a grid. The main menu on the left is titled "System Info" and contains options: Log Information (highlighted in orange), Import/Export, Upgrade, Default, Network, HDD Operation, and System Service. The "Log Information" section displays a table of alarm events. The table has columns: No., Major Type, Time, Minor Type, Parameter, and Play. Events 1653 through 1657 are highlighted with a red box and labeled "GJD Alarm Host Event".

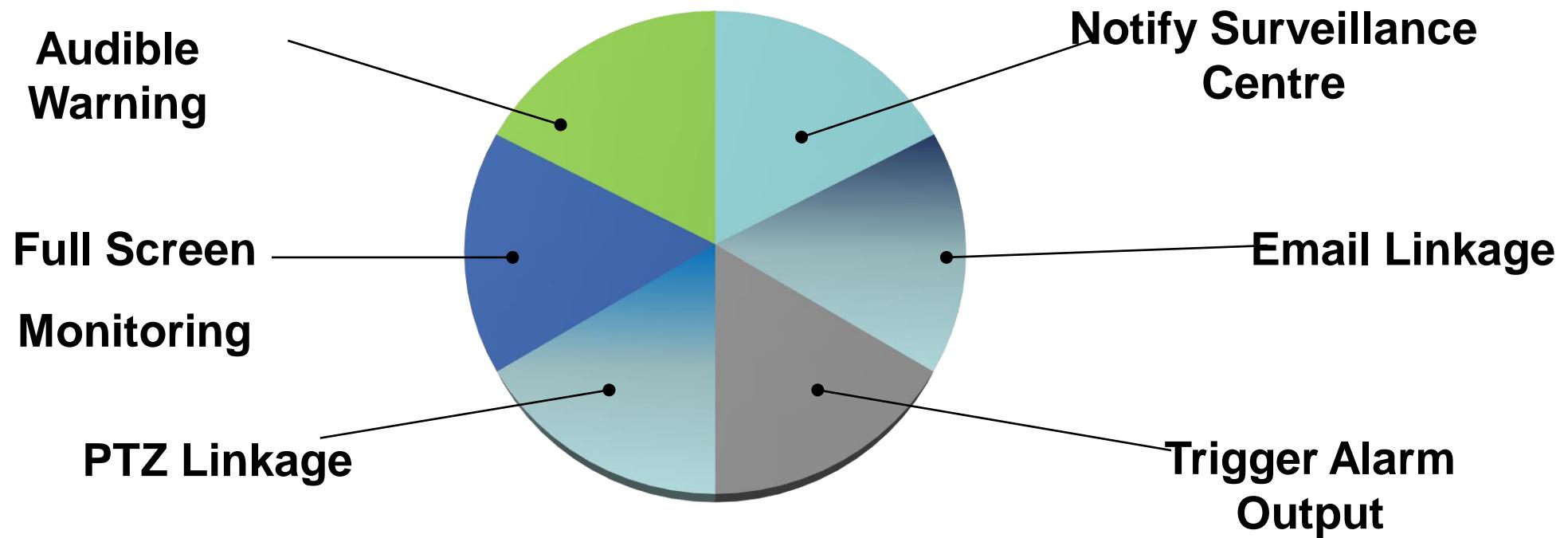
No.	Major Type	Time	Minor Type	Parameter	Play
1651	Alarm	27-05-2019 14:51:43	Motion Detection Started	N/A	▶
1652	Alarm	27-05-2019 14:51:57	Motion Detection Stopped	N/A	▶
1653	Alarm	27-05-2019 14:52:01	GJD Alarm Host Event	N/A	—
1654	Alarm	27-05-2019 14:52:03	GJD Alarm Host Event	N/A	—
1655	Alarm	27-05-2019 14:52:07	GJD Alarm Host Event	N/A	—
1656	Alarm	27-05-2019 14:52:08	GJD Alarm Host Event	N/A	—
1657	Alarm	27-05-2019 14:52:13	GJD Alarm Host Event	N/A	—
1658	Alarm	27-05-2019 14:52:16	GJD Alarm Host Event	N/A	—

# Contents

- **Product Family**
- **Functions & Applications**
  - IPC deployment
  - Secure Data Management
  - Bandwidth Control
  - Acusense Technology
  - Nonvideo Management
  - **Alarm and Event**
- **Troubleshooting**

# Alarm I/O Detection

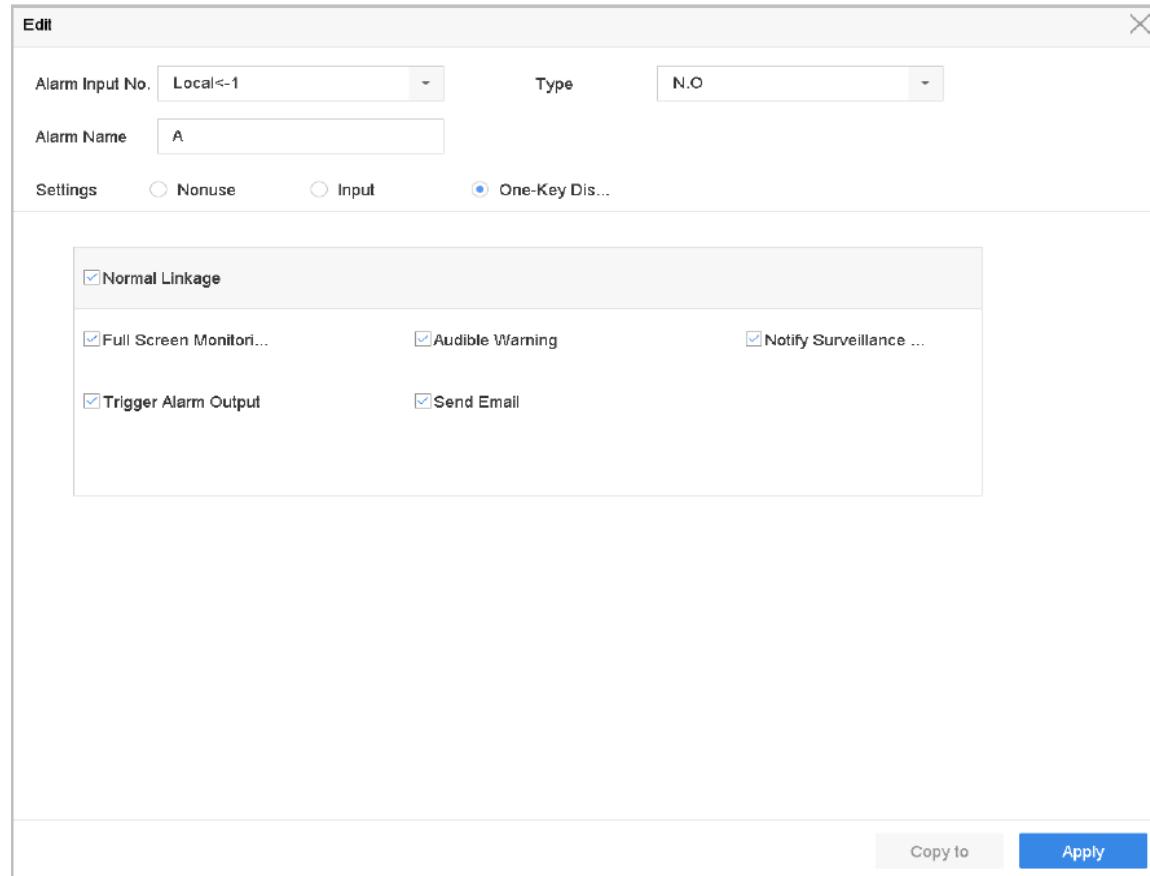
- Various notification ways can be configured to notify user once alarm event occurs.



# Alarm Input Setting

Go to System> Event>Normal Event>Alarm Input

Select an alarm input item from the list and click .



Select the alarm input type to N.C or N.O.

Edit the alarm name.

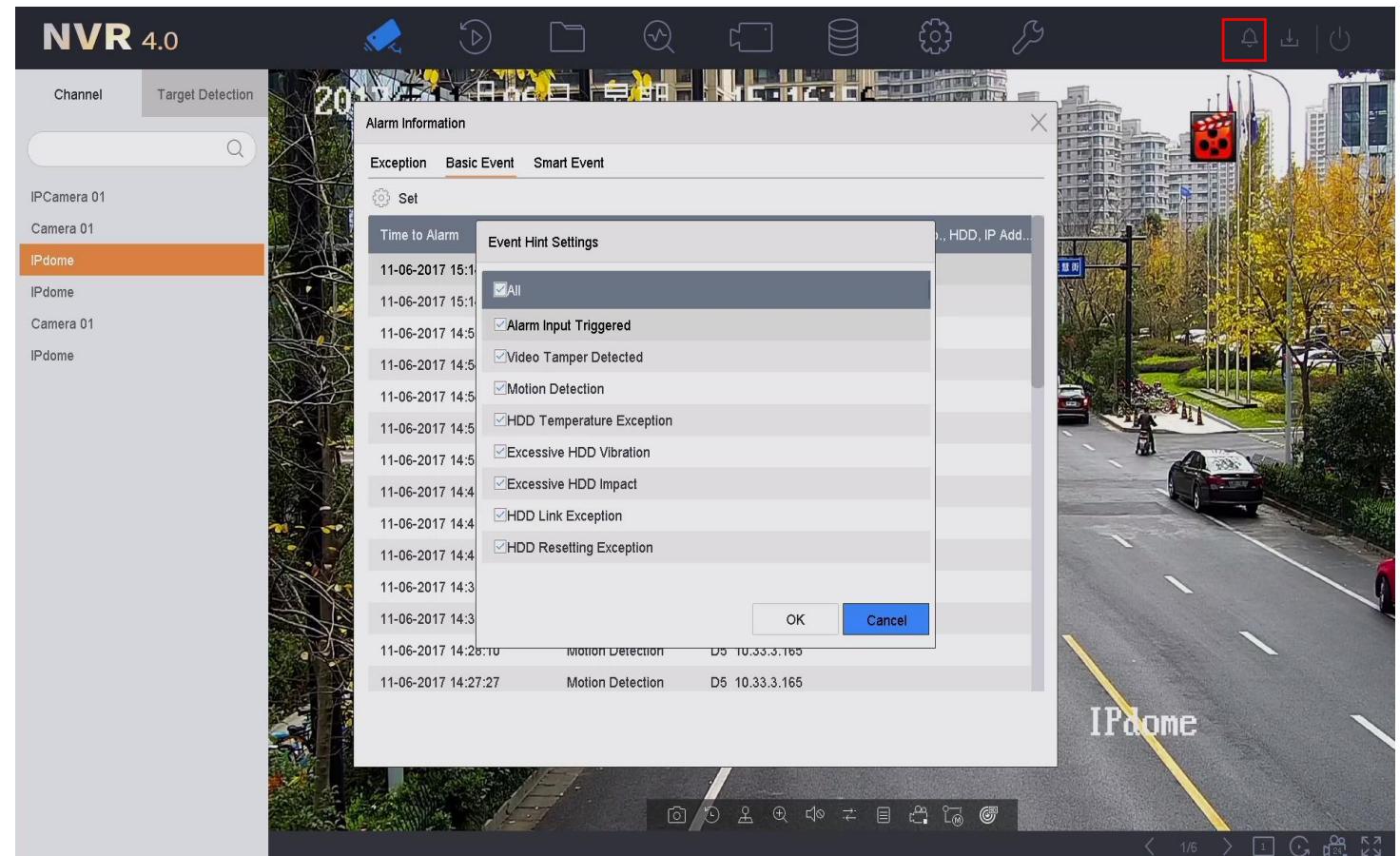
Check Input.

Set the arming schedule. Configure Arming Schedule.

Set the linkage actions.

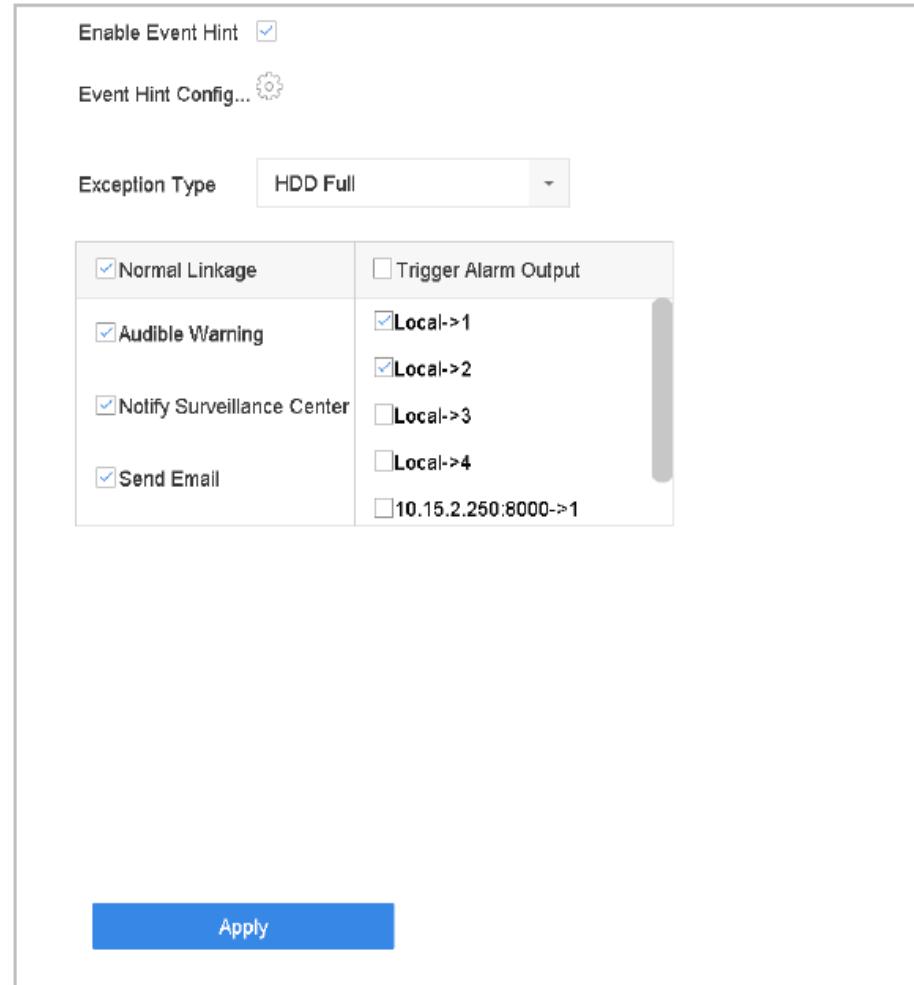
# Alarm Notification of NVR 4.0

- Contains alarm icon in the Main Menu.
- Classifies alarm messages by regular , exception and VCA.



# Device Exception Handling

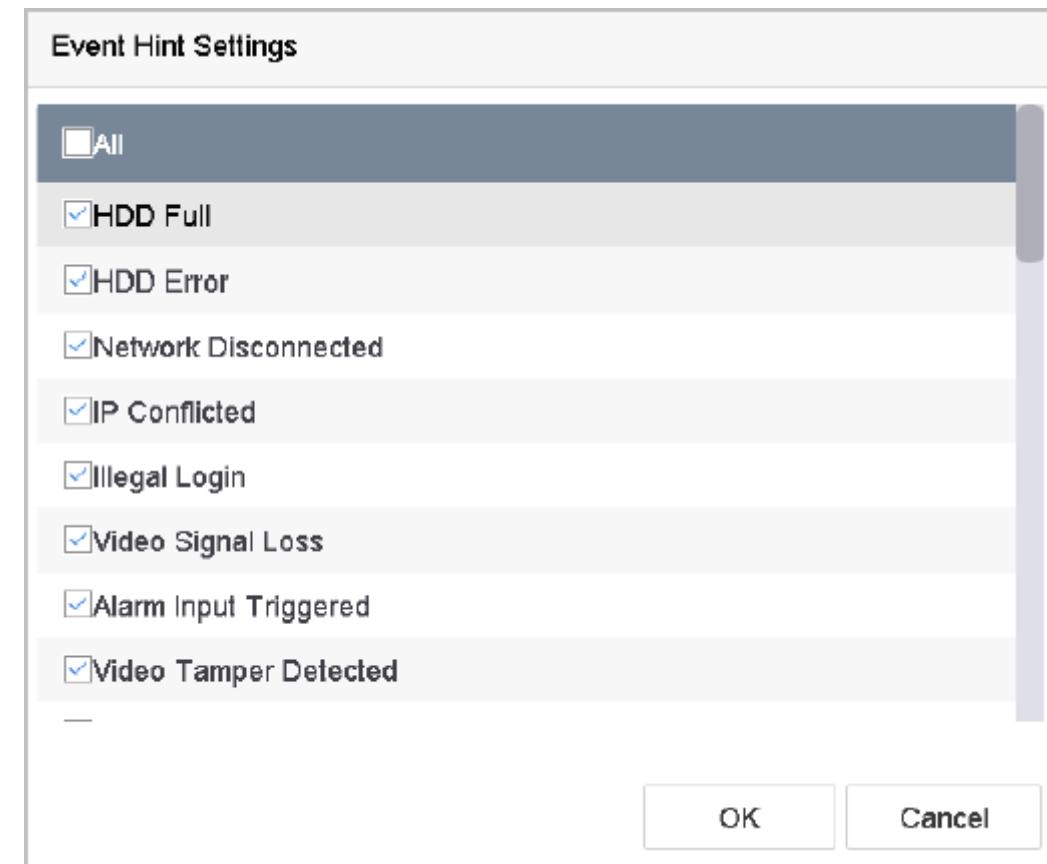
Go to System> Event>Normal Event>Exception.



Enable the event hint to display it in the live view window.

1) Check **Enable Event Hint**.

2) Click to select the exception type (s) to take the event hint.



# Contents

- Product Family
- Functions & Applications
- Troubleshooting

# Troubleshooting 1

## Question:

When installation is finished and users want to live view the channels, channels shows “**No Resource**”.

## Reasons:

“No Resource” refers to the **decoding resources of current device are not sufficient** to preview the current resolution of all channels, including Single screen and Multi- screen;

## Solutions:

- 1) Check the “No resource” channel to see if it is normal in single screen. If so, please go to **Menu >Camera >Video Parameters > Sub-stream Parameters** and set Resolution to 352\*288 and Bitrate to 512kbps;
- 2) If it prompts “No Resource” in Single Screen Preview, probably it’s because your NVR is not compatible with such high-definition cameras. Please go to **Main Menu >Record > Parameters >Record Parameters** and lower the limits of resolution and Bitrate.

## Troubleshooting 2

### Question:

In the playback page, it may take a **long time** to pop up the result after clicking the **playback search**.

### Reasons:

1. Too much event recordings, for example, motion recording is enabled. Event recording quantity seriously affects searching time.
2. “HDD Sleeping” function is enabled, and the target file locates in the sleeping HDD; and searching will be finished after the HDD woke up.
3. RAID function is working under degrade mode, the files are located in the failed HDD, where data need to be calculated before accessing.

### Solutions:

1. Disable the motion recording.
2. Disable the “HDD Sleeping” Mode
3. Reinsert a new Hard Drive, rebuild the array.

# Troubleshooting 3

## Question:

In NVR web portal, live viewing and playback all fail, and Switch TCP/UDP doesn't make any difference.

## Reasons:

1. The web plugin version may not match the working device.
2. NVR's out streaming may reach the upper limit.
3. Antivirus program blocks the stream from NVR.

## Solutions:

1. Uninstall the current plugin, then install the new plugin by restart the NVR's web portal.
2. Close some live viewing channels, or reduce remote user numbers in the same time period.
3. Check Antivirus logs and try disabling the Antivirus program to see if any difference happens.

**Thanks!**