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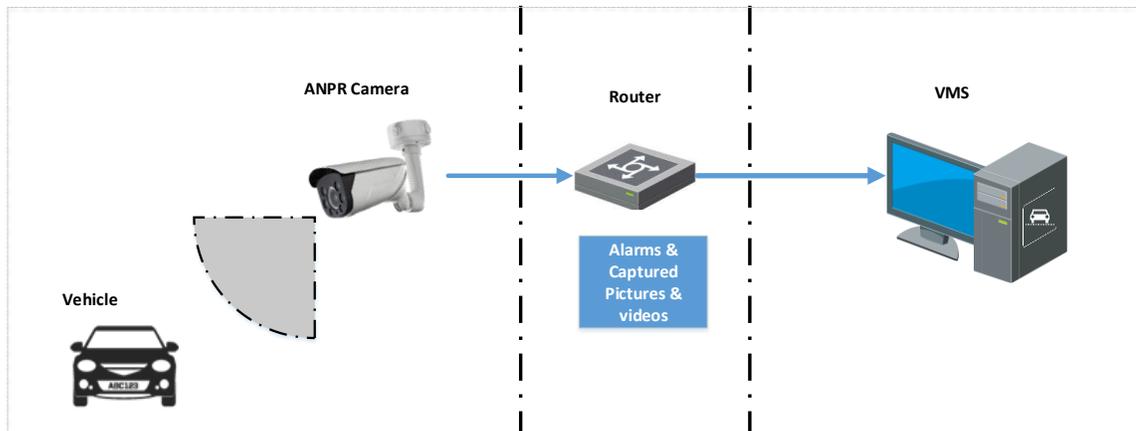
7xxx ANPR Installation & Configuration Guidance

Chapter 1 Solution Combinations

1.1 ANRP Camera + NVR

In this solution, we can use the ANPR camera to capture & save the license plate pictures, and use the NVR to save both the license plate pictures & videos.

1.1.1 Topology



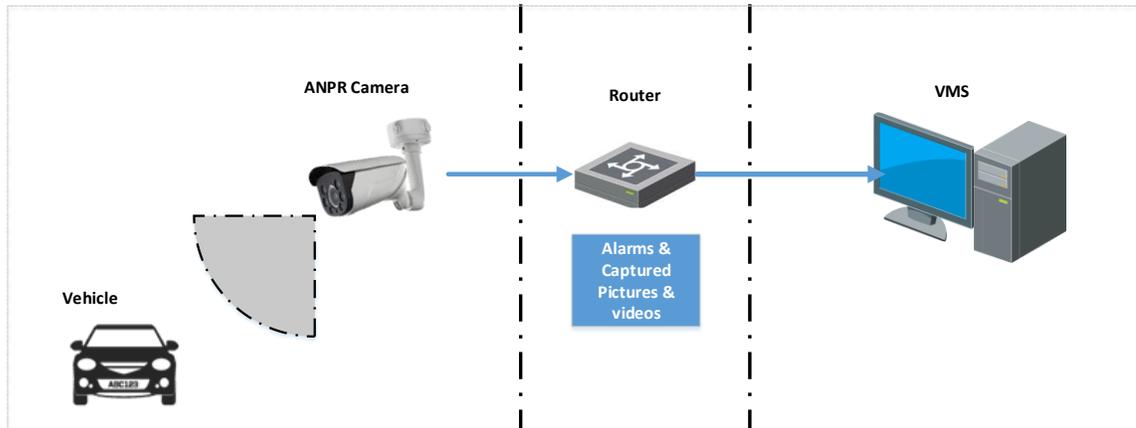
1.1.2 Models and software version requirement:

	Model	Version
CAMERA	DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S	Latest baseline version
NVR	-E/-K/-I series	Latest baseline version
AI NVR	All series	Latest baseline version

1.2 ANPR Camera + VMS

In this solution, we can use the ANPR camera to capture & save the license plate pictures, and use the VMS to save both the license plate pictures & videos.

1.2.1 Topology



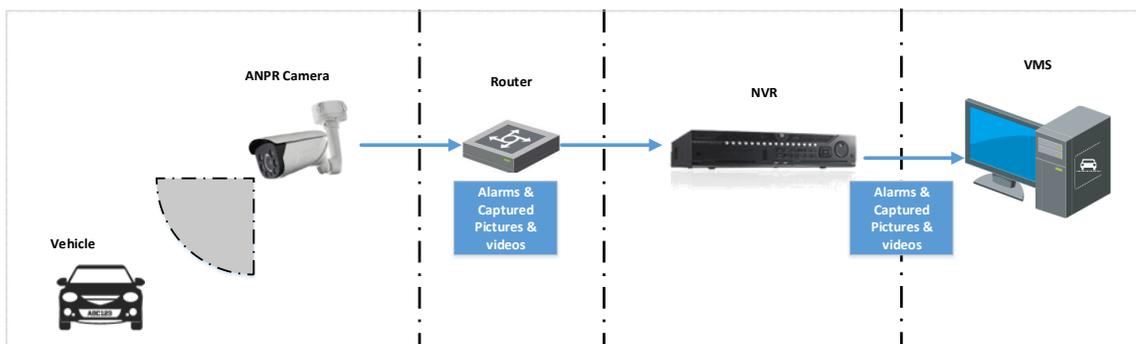
1.2.2 Models and software version requirement:

	Model	Version
Camera	DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S	Latest baseline version
VMS	iVMS-4200	Latest baseline version

1.3 ANPR Camera + NVR + VMS

In this solution, we can use the ANPR camera to capture & save the license plate pictures, and use either the NVR or VMS to save both the license plate pictures & videos.

1.3.1 Topology



1.3.2 Models and software version requirement:

	Model	Version
Camera	DS-2CD7A26G0/P-IZ(H)S DS-2CD7026G0/P-IZ(H)S	Latest baseline version
NVR	-E/-K/-I series	Latest baseline version

AI NVR	All series	Latest baseline version
VMS	iVMS-4200	Latest baseline version

Chapter 2 7xxx ANPR Camera Installation Specifications

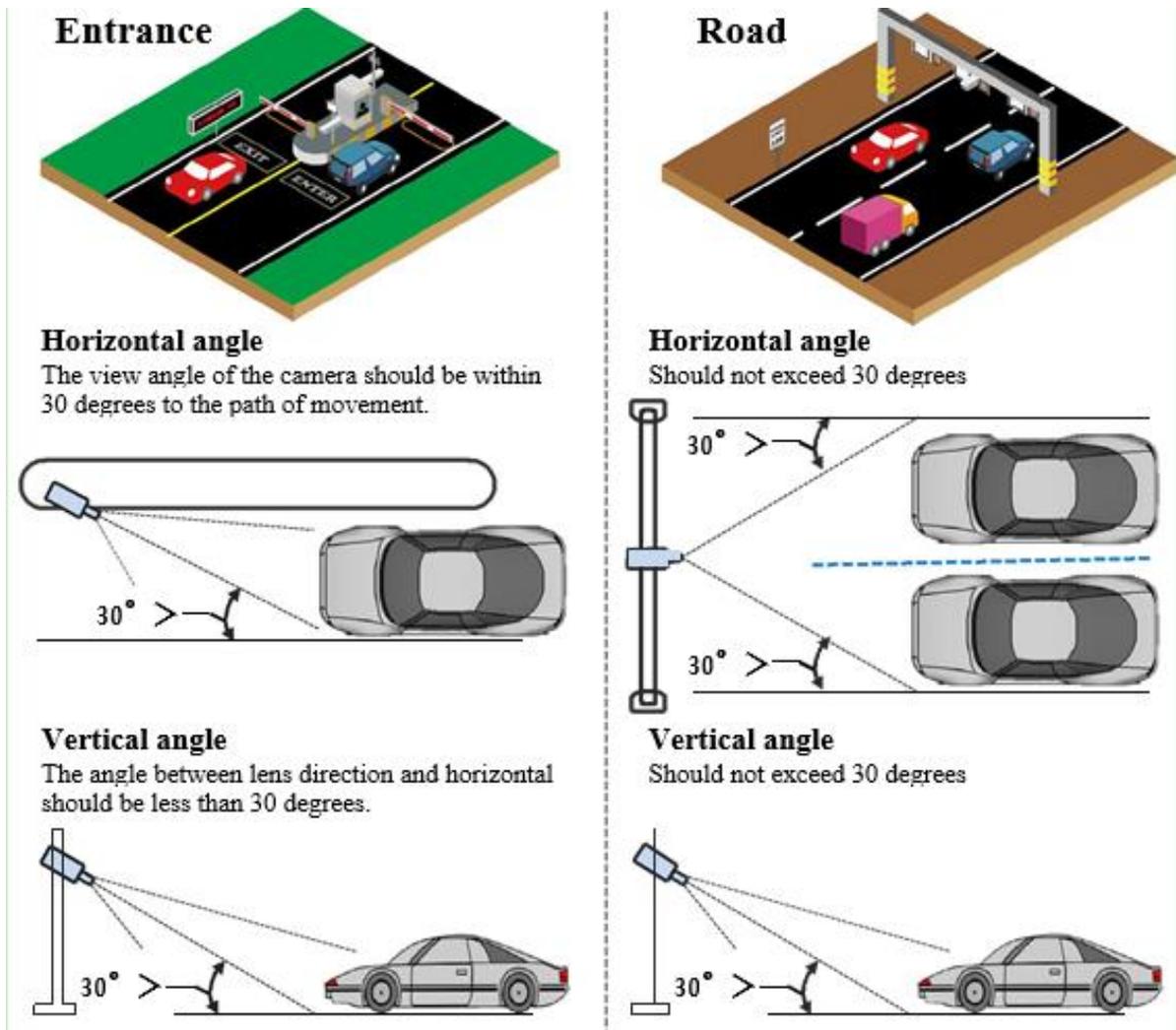
In order to have a better ANPR performance, please refer to this chapter for camera installation.

Note:

- It's recommended to cover one lane for each 2MP camera;
- It's recommended the min height of a license plate should be 20 to 30 pixels in the image captured by a 2 megapixel resolution camera.

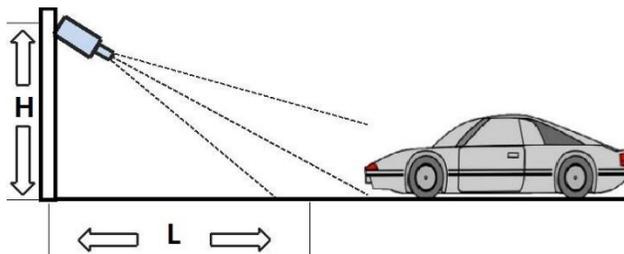
2.1 Camera Installation Angle

Hikvision Automatic Number Plate Recognition cameras help users detect passing vehicles and capture the license plates. To obtain the maximum license plate recognition accuracy, you need to install the ANPR camera in a proper way to get a clear image.



2.2 Camera Installation Height

The installation height (H) needs to be fixed firstly, and then the detection range (L) could be calculated by a simple equation $L = \cot 30^\circ * H$.



$L = \cot 30^\circ * H = 1.7 * H$

Height(m)	Min L (m)
1.5	4
2	4
3	5.1
3.5	6
4	6.8

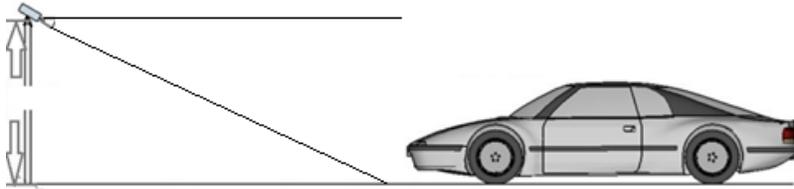
Note:

For entrance application, it's better to install the camera between the height 1.5m and 4m, and ensure the detection range is no longer than 4m.

For checkpoint application, it's better to install the camera with height 6 m.

2.3 Camera Lens Selection

The recognition distance is based on the camera focal length. You should select a proper lens in order to get enough pixels in the frame.



The table below is for your reference:

Camera	Lens(mm)	Min recognition distance (m)	Max recognition distance (m)
DS-2CD7A26G0/P-IZ(H)S	2.8~12	2.5	12
DS-2CD7026G0'P-(AP)	8~32	7.2	28.9

2.4 License plate tilt angle

The license plate should be as horizontal as possible and the recommended tilt angle is within +/-5 degrees.



Also, the vehicles in the detection area should go as straight as possible instead of turning left or right.

2.5 Bullet Camera Installation

2.5.1 Camera accessories

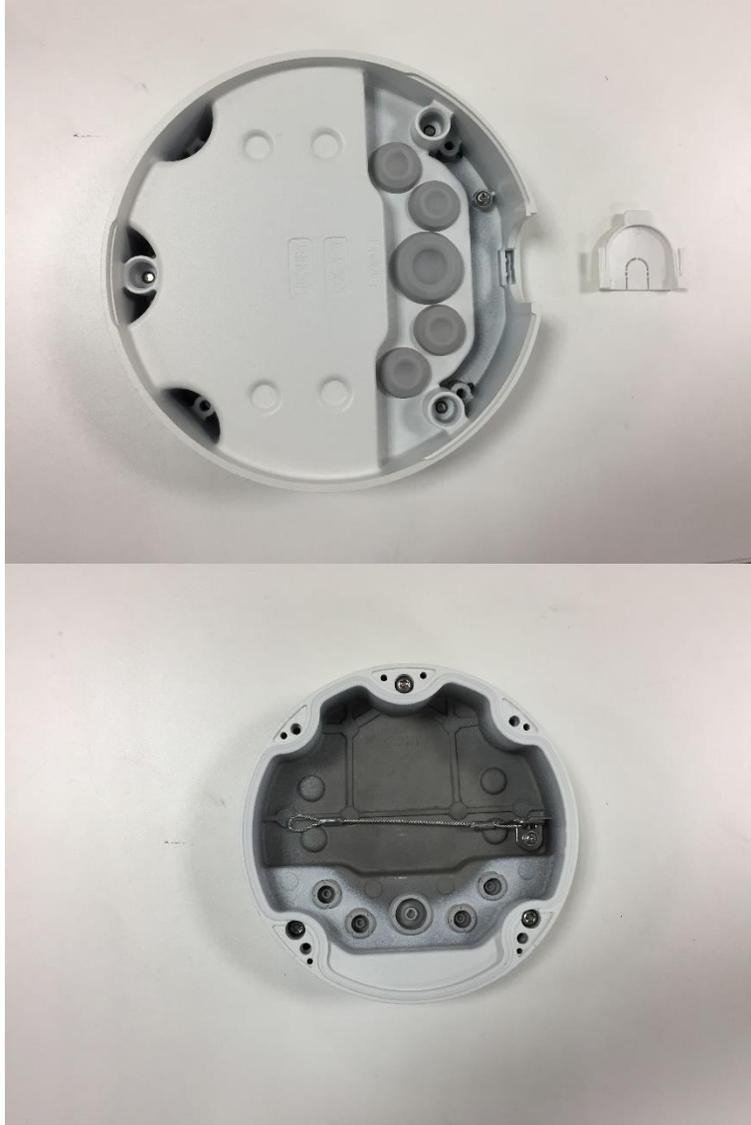
		Bullet Camera Body and Sun Shield
		Power Adaptor
		Mounting Base
		Junction Box
		One Wiring Clamp, One Bag of Screws, One Perforator One Inner Hexagon Spanner

2.5.2 Installation Steps

Step1: Use four expandable screws to fix the mounting base on the wall:



Step2: Tidy cables, including the power line of the camera, reticle as well as other cables and do the insulation of the power line. If the cables need to be connected from the side during the actual use, please remove the side outlet block first before connecting cables such as power line through this hole and fix them on the wall; If the cables are connected from the rear, please pass them through the circular hole in the mounting base. After arranging the cables, pierce the waterproof silica gel with a perforator, and then cross the reticle and power line from different holes to the junction box. Next, the FRONT end of the junction box is fixed forward to the mounting base. Finally, tighten the three screws.



Step3: fixed camera: Hook up the bullet camera' s cramp ring use anti stripping cable from junction box to prevent the camera from falling off during installation, after connecting the reticle and power line, use four screws to fix the camera to the junction box.



Step4: Unscrewing the screws to adjust the lens angle in order to adjust the image to the required monitoring site.



Chapter 3 Configurations

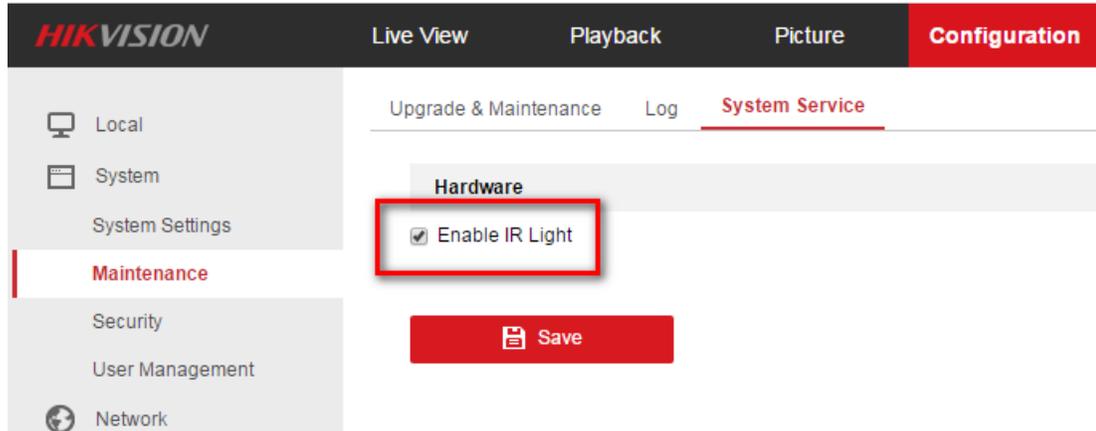
You can set the ANRP function via camera or NVR from web configuration interface, local configuration interface or iVMS client.

The steps are similar.

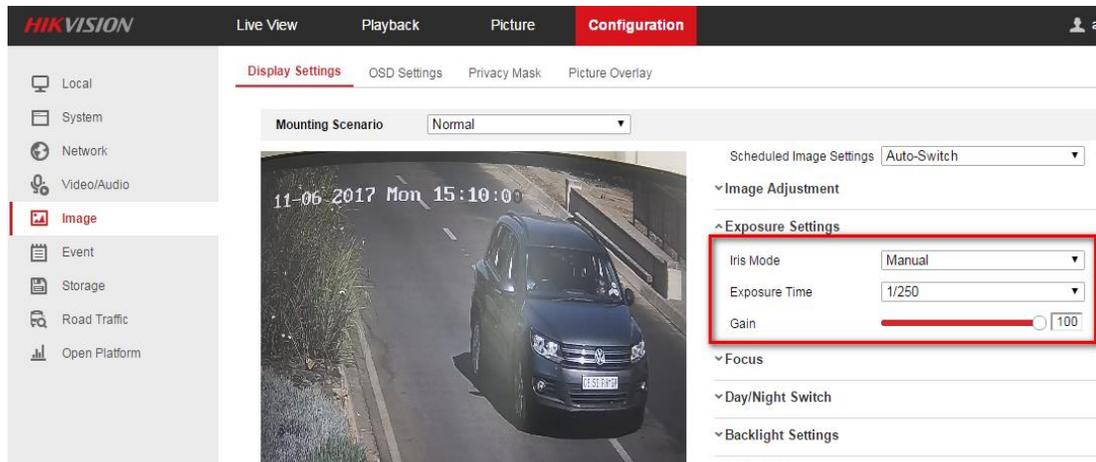
3.1 Set ANRP Function via Camera Web Configuration Interface

Steps:

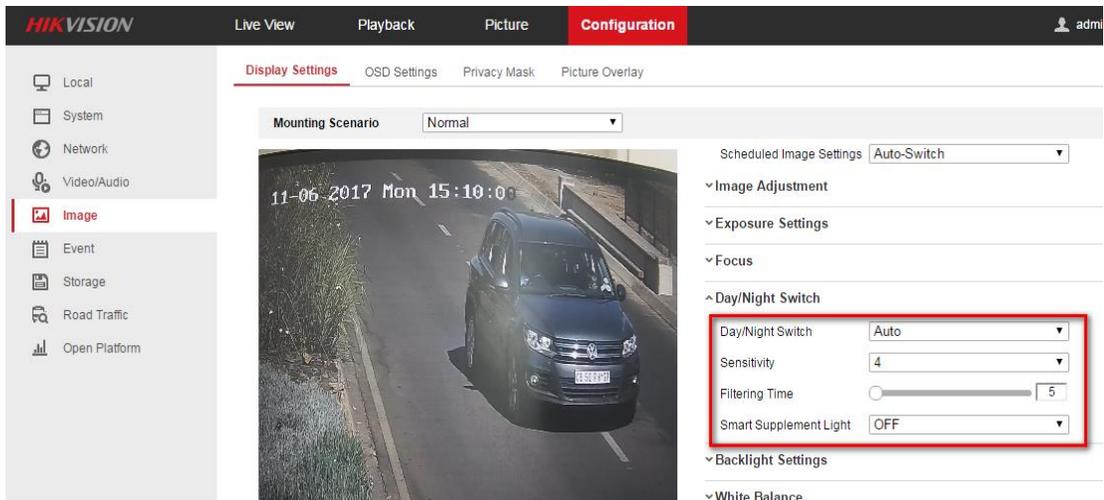
1. Go to **System>Maintenance>System Service** to enable the IR light;



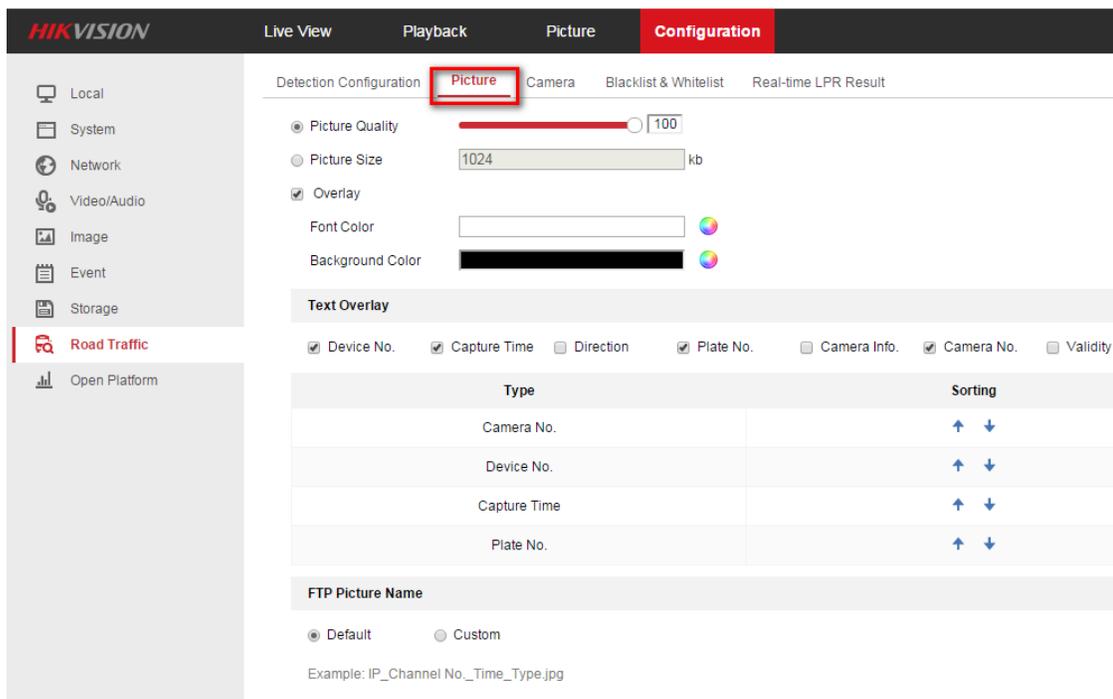
2. Go to **Image Display Settings** to change **Exposure Time** to 1/250 -1/500;



3. Set the **Day/Night Switch** mode, for the environment with unstable illumination, we suggest to set scheduled switch.



4. Go to **Picture** to choose the text overlay on the picture;



5. Go to **Road Traffic** to select detection type;

Detection type can be set as Vehicle detection or Mixed-traffic Detection.

Vehicle detection: the passed vehicle can be detected and the picture of its license plate can be captured.

Mixed-traffic Detection: motor vehicle and non-motor vehicle can be detected, and the picture of the object or license plate can be captured

Note: Only one lane support at mixed-traffic detection type.

6. Go to **Road Traffic** to select lane numbers (1~4) and traffic mode;

The screenshot displays the Hikvision web interface for configuring road traffic detection. The 'Configuration' tab is active, and the 'Detection Configuration' sub-tab is selected. The 'Detection Type' is set to 'Vehicle Detection', and the 'Enable' checkbox is checked. The 'Area Settings' sub-tab is highlighted, showing a video feed of a road with two detection areas and two lane lines. A blue detection line is also visible. Below the video feed, there are dropdown menus for 'Total Number of Lanes' (set to 2), 'Plate Mode' (set to Large), and 'Select Mode' (set to Entrance/Exit).

Note:

- **Blue Detection Line:** Mainly used for Entrance/Exit with a purpose of improving the capture efficiency. The line is generated automatically, please keep it in the detection area and close to the vehicle license plate.
- **Small:** It means the height of a license plate should be 20 to 30 pixels in the image captured by a 2 megapixel resolution camera.
- **Large:** It means the height of a license plate should be 30 to 40 pixels in the image captured by a 2 megapixel resolution camera.
- **City Street:** It means the license plate information of the detected vehicle will be uploaded when the vehicle passes the detection area and triggers the detection.

- **Alarm Input:** It means the input alarm will trigger a license plate capture and recognition action.
7. Go to **Arming Schedule** and **Linkage Method** to continue; here you can set the arming schedule and linkage action independently for white list, black list and other list;

The screenshot displays the configuration interface for the 'Arming Schedule and Linkage Method'. On the left, a sidebar lists various system settings, with 'Road Traffic' highlighted. The main panel shows the 'Arming Schedule' configuration. At the top, there is a checkbox for 'Enable' which is checked. Below it, the 'Area Settings' dropdown is set to 'Arming Schedule and Linkage Method'. There are three tabs: 'White List', 'Black List', and 'Other List'. The 'Arming Schedule' section includes 'Delete' and 'Delete All' buttons. A 24-hour grid is shown for each day of the week (Mon-Sun), with blue bars indicating the arming schedule for each hour.

7. Select a direction here. The **Forward** means vehicle moves toward the camera; **Reverse** means vehicle moves away from the camera. Only the vehicles moving as the selected direction can trigger selected linkage methods;

The screenshot shows the 'Linkage Method' configuration page. The 'Direction' section has three radio buttons: 'All' (selected), 'Forward', and 'Reverse'. Below this, there are four checked checkboxes: 'Normal Linkage', 'Trigger Alarm Output', 'Notify Surveillance Center', and 'Upload to FTP/Memory Card/...'. The 'Trigger Alarm Output' checkbox is accompanied by the text 'A->1'.

8. Remember to enable **Notify Surveillance Center** and Upload to FTP/xxxx;

Linkage Method

Direction All Forward Reverse

<input checked="" type="checkbox"/> Normal Linkage	<input checked="" type="checkbox"/> Trigger Alarm Output
<input checked="" type="checkbox"/> Notify Surveillance Center	<input checked="" type="checkbox"/> A->1
<input checked="" type="checkbox"/> Upload to FTP/Memory Card/...	

9. The last part is to import the **Blacklist & Whitelist**. If you don't have such a list in advance, export the template first to make one;

The screenshot shows the Hikvision web interface with the 'Configuration' tab selected. Under 'Configuration', the 'Blacklist & Whitelist' sub-tab is active. The interface includes:

- Import Blacklist & Whitelist:** A text input field for 'Blacklist & Whitelist File', a 'Browse' button, and an 'Import' button.
- Status:** A note stating 'Note: You can set at most 2048 license plates in whitelist and blacklist in total.'
- Export Blacklist & Whitelist:** An 'Export' button.
- Blacklist & Whitelist Content:** A table with the following structure:

No.	Plate No.	Type	Creation Time

The template looks like this:

(when inputting the plate number, input several consecutive numbers/letters with no blank included.)

	A	B	C
1	No.	Plate Num	Group(0 black list, 1 white list)
2			
3			
4			
5			

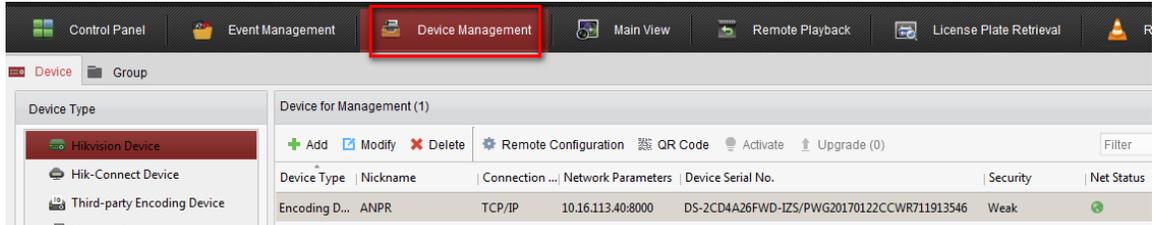
3.2 Set ANRP Function via NVR Web Configuration Interface

Please refer to Chapter 3.1;

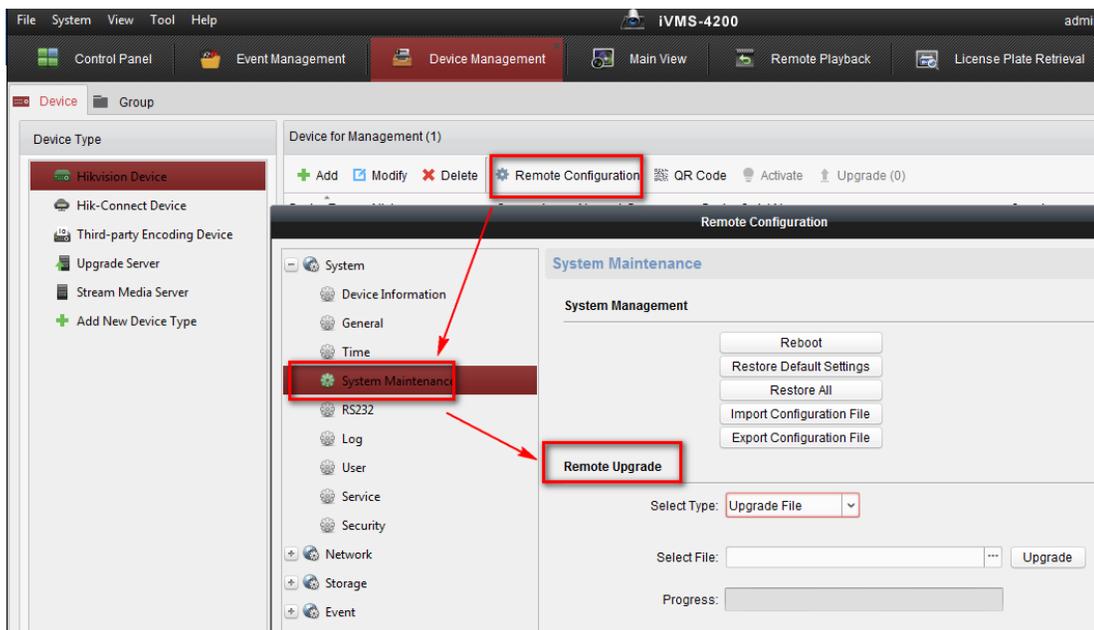
3.3 Set ANRP Function via iVMS-4200

Steps:

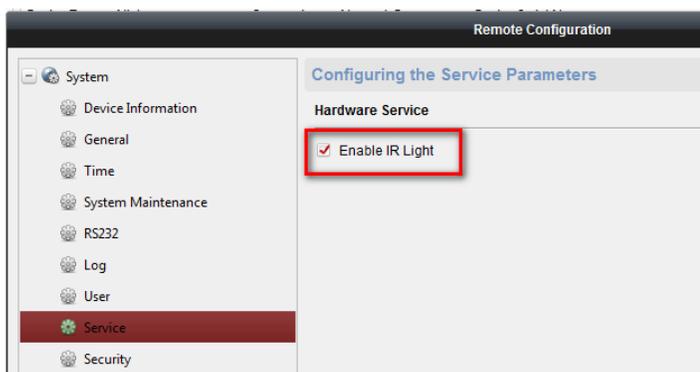
1. Add the ANRP camera to 4200 client in **Device Management** interface;



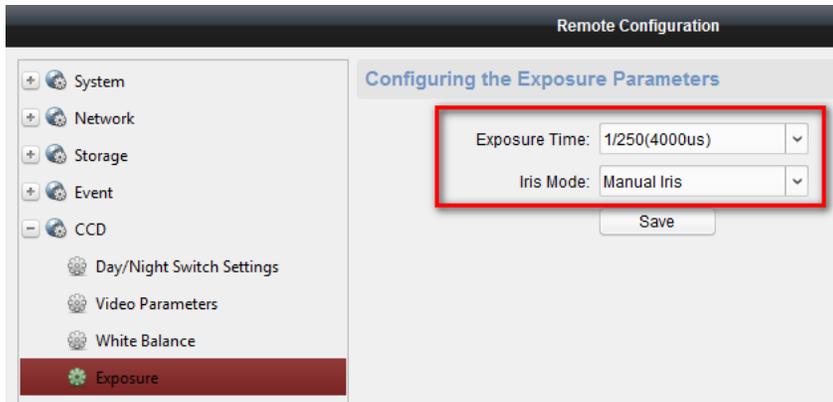
2. Go to **Remote Configuration-> System Maintenance** to upgrade the device to the latest version;



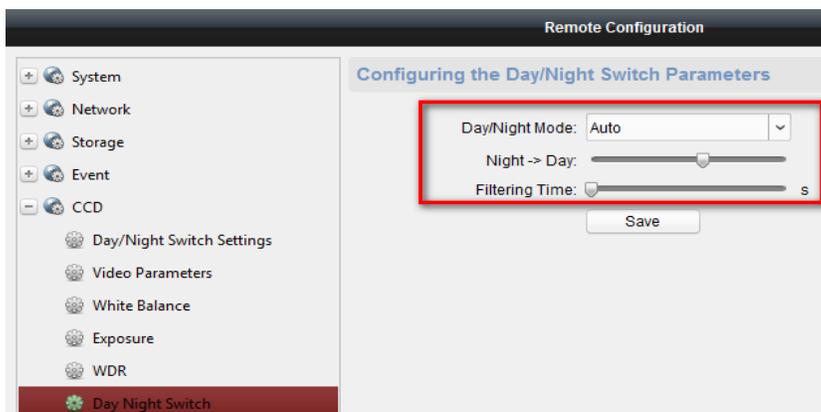
3. Enable IR Light in **System -> Service**;



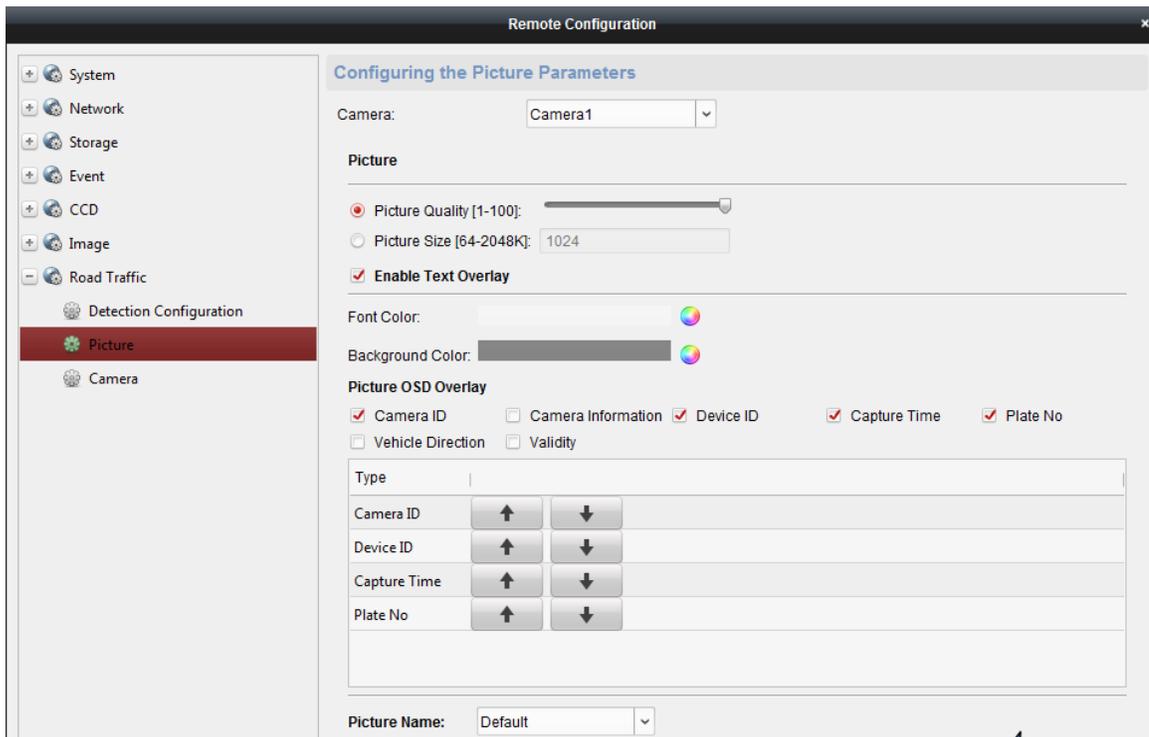
4. Go to CCD to set **Exposure Time** to 1/250 -1/500 & **Iris Mode** to Manual;



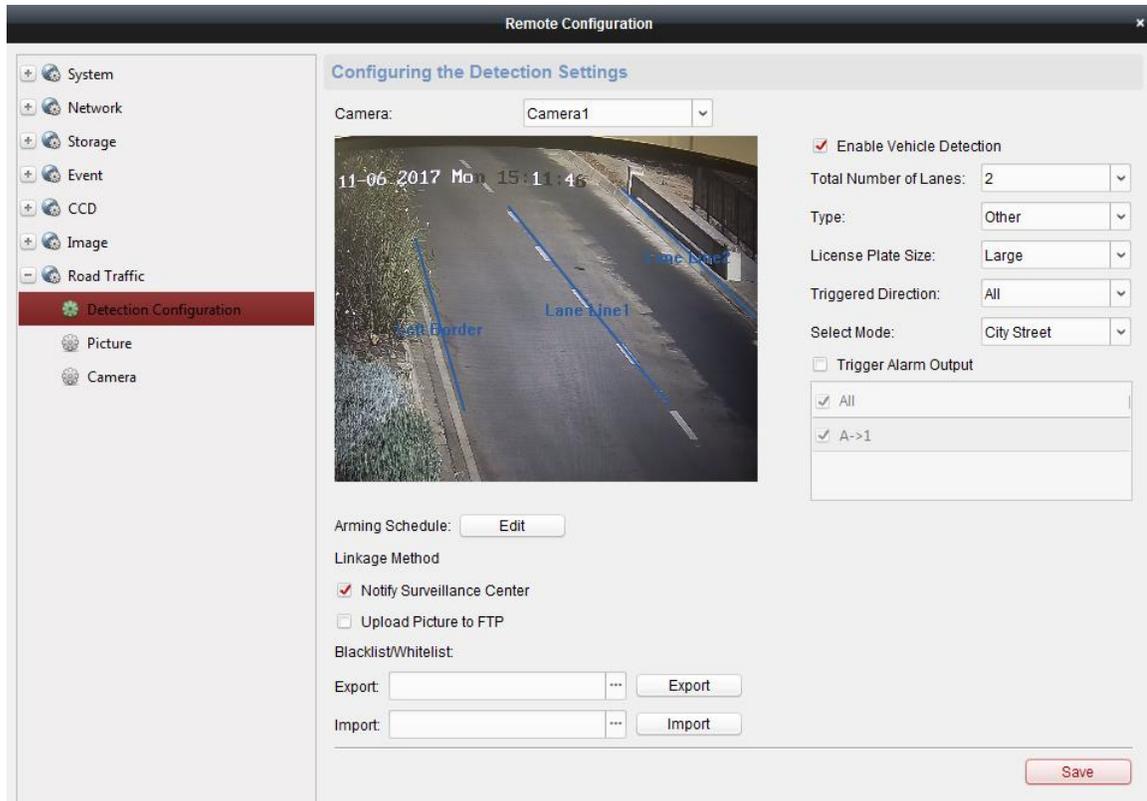
5. Set the **Day/Night Switch** to Auto;



6. Go to **Picture** to choose the text overlay on the capture;



7. Go to **Road Traffic** to set detailed configurations which are similar to those configured in device web configuration interface (please refer to chapter 3.1);



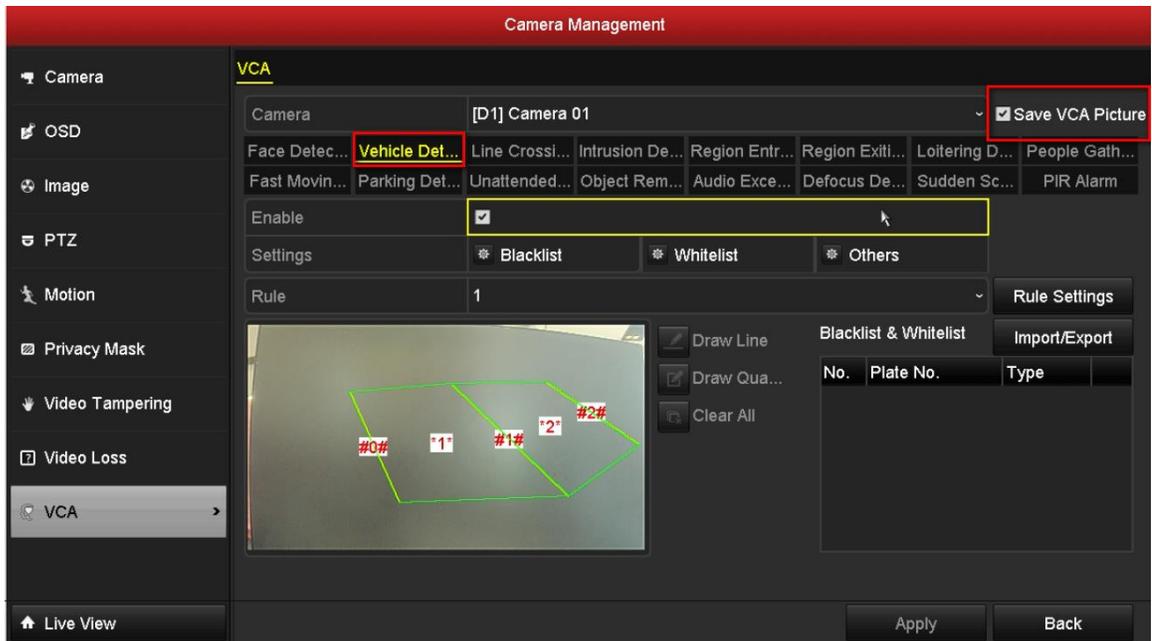
3.4 Set ANPR Function via NVR Local Configuration Interface with GUI 3.0

Preparations:

Please refer to chapter 3.1 & chapter 3.3;

Steps:

1. Go to **Menu->Camera Management->VCA->** select the camera channel->Vehicle Detection to enable ANPR function. Remember to check Save VCA Picture.
2. For detailed steps, please refer to chapter 3.1 & chapter 3.3;



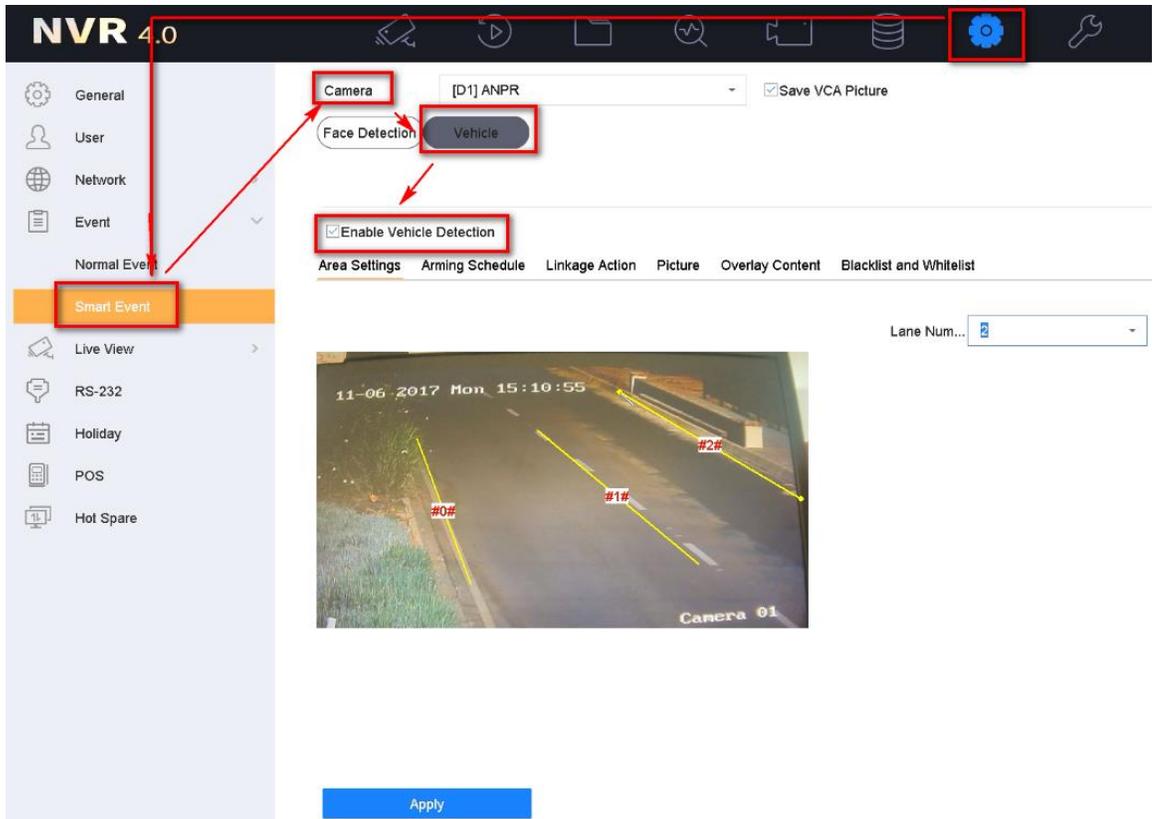
3.5 Set ANRP Function via NVR Local Configuration Interface with GUI 4.0

Preparations:

Please refer to chapter 3.1 & chapter 3.3;

Steps:

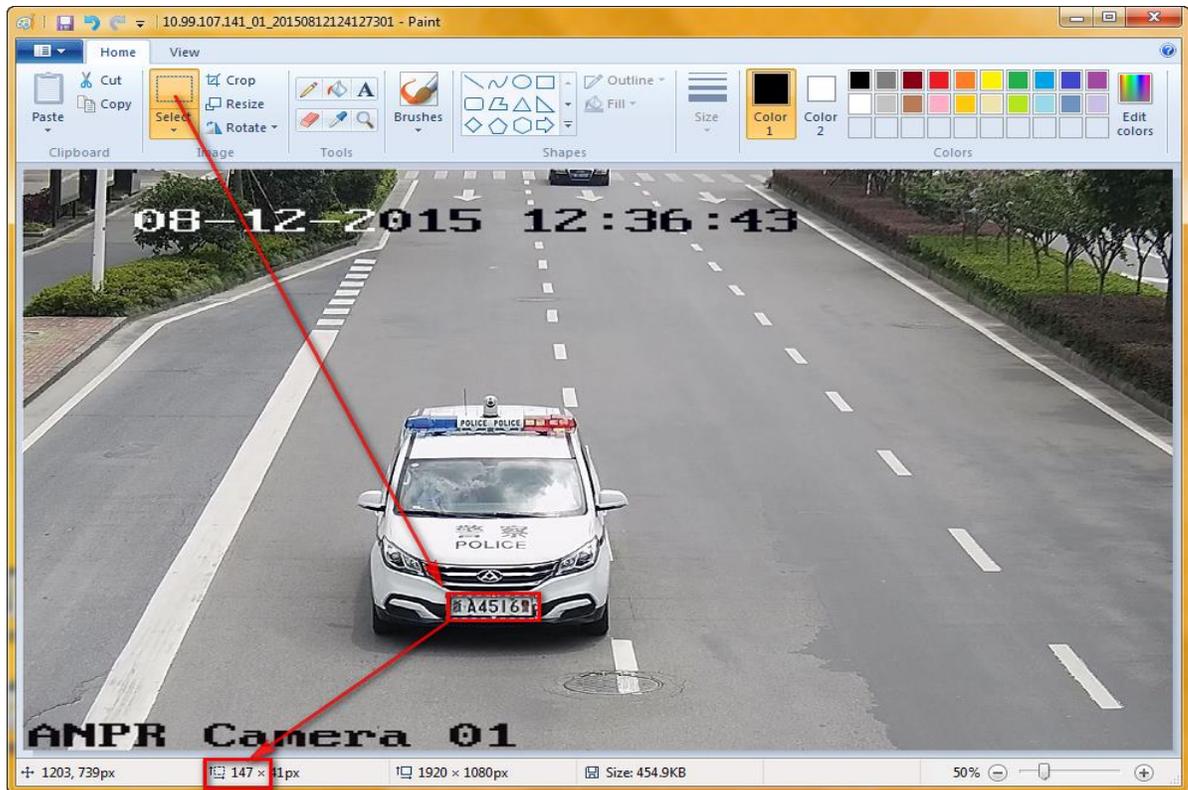
1. Go to **System->Event->Smart Event->** select the camera channel->Vehicle to enable ANPR function. Remember to check Save VCA Picture;
2. For detailed steps, please refer to chapter 3.1 & chapter 3.3.



3.6 Method to check ANPR picture pixels

Steps:

1. Save a picture with vehicle license plate information to PC, then open it with paint tool;
2. Click Select, draw a rectangle to cover the vehicle license plate;
3. Check the pixel at the bottom of the picture.



Chapter 4 Performance

4.1 Search ANRP pictures & videos via Camera Web Configuration Interface

Steps:

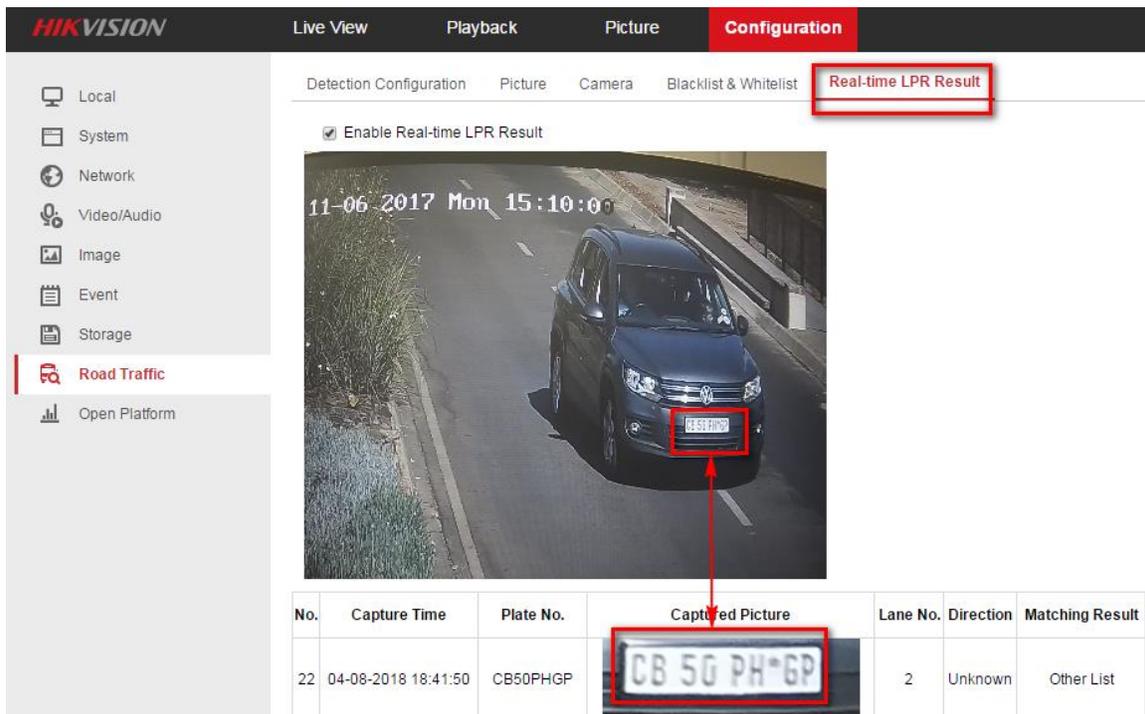
1. You can search or download the pictures in Picture interface by selecting the File Type as Vehicle Detection.

Note:

Make sure the SD card in camera is working.

No.	File Name	Time	File Size	Progress
1	20180409095913_TFTPUP4T	2018-04-09 09:59:13	364 KB	
2	20180409095922_C6HFGX8	2018-04-09 09:59:22	404 KB	
3	20180409095925_VYS420S69	2018-04-09 09:59:25	504 KB	
4	20180409095926_TFTPUPi8	2018-04-09 09:59:26	491 KB	
5	20180409095927_1617	2018-04-09 09:59:27	504 KB	
6	20180409095927_VMS4200	2018-04-09 09:59:27	509 KB	
7	20180409095931_1617	2018-04-09 09:59:31	483 KB	
8	20180409095950_H1617	2018-04-09 09:59:50	463 KB	
9	20180409101422_1617	2018-04-09 10:14:22	482 KB	
10	20180409101441_HG4400	2018-04-09 10:14:41	468 KB	
11	20180409101441_VMS4200VNS	2018-04-09 10:14:41	469 KB	

- You can also check the real-time captured license plate in **Real-time LPR Result** interface;



No.	Capture Time	Plate No.	Captured Picture	Lane No.	Direction	Matching Result
22	04-08-2018 18:41:50	CB50PHGP		2	Unknown	Other List

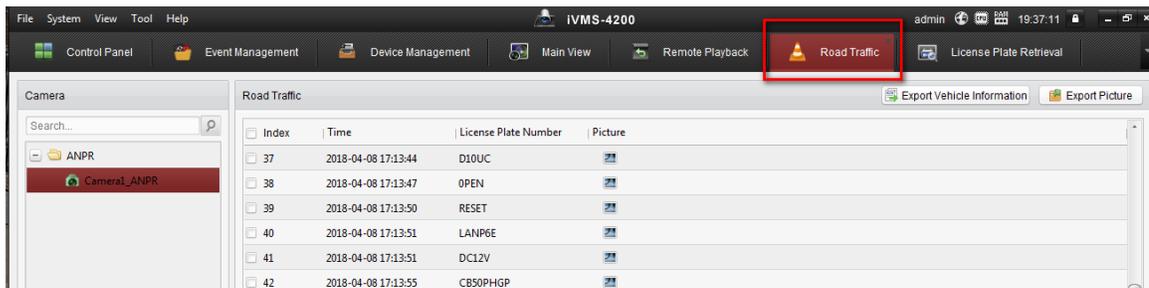
4.2 Search ANRP pictures & videos via iVMS-4200

Steps:

- You can search or download the captured pictures in Road Traffic interface. Vehicle Information could also be exported here;

Note:

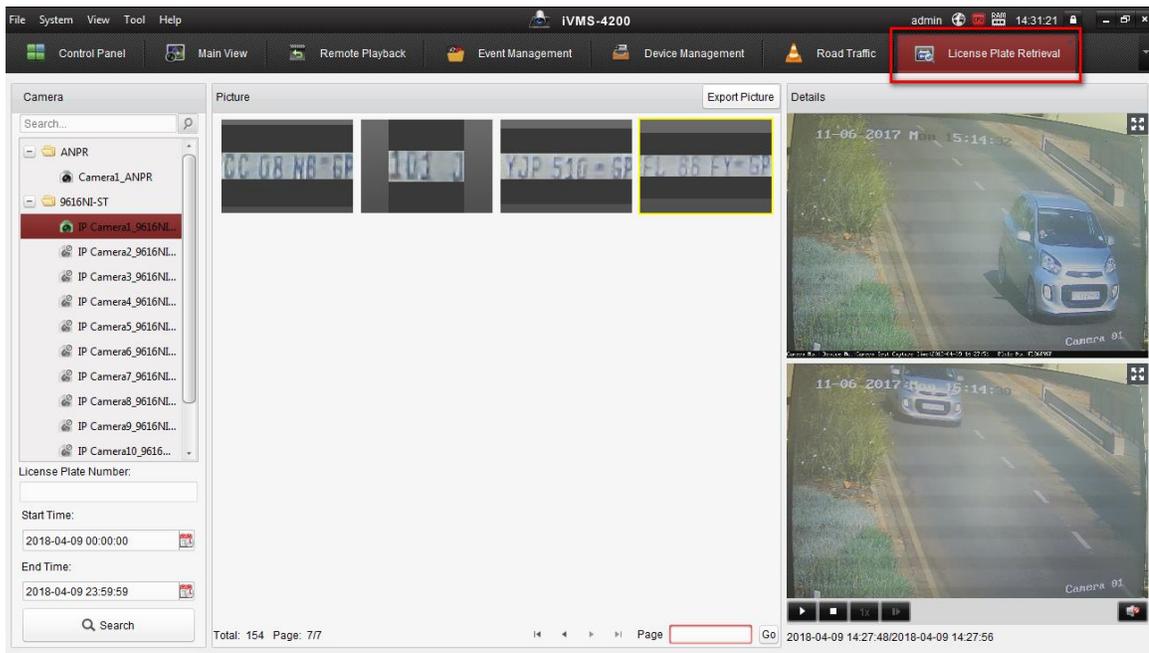
Make sure the SD card in camera is working, or you have set up storage server for iVMS-4200;



Index	Time	License Plate Number	Picture
37	2018-04-08 17:13:44	D10UC	
38	2018-04-08 17:13:47	OPEN	
39	2018-04-08 17:13:50	RESET	
40	2018-04-08 17:13:51	LANPGE	
41	2018-04-08 17:13:51	DC12V	
42	2018-04-08 17:13:55	CB50PHGP	

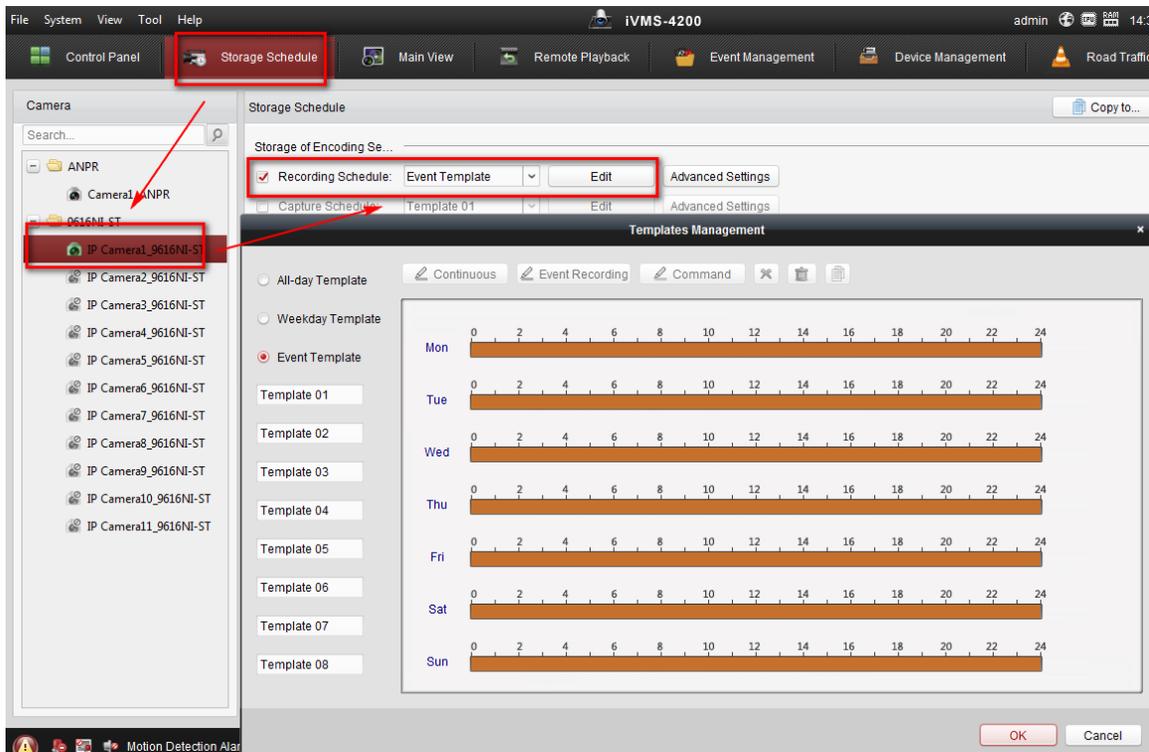
- If the camera is also added into NVR, you can search or download the

captured pictures in **License Plate Retrieval** interface;



3. You need to set an **EVENT** recording schedule in NVR in advance.

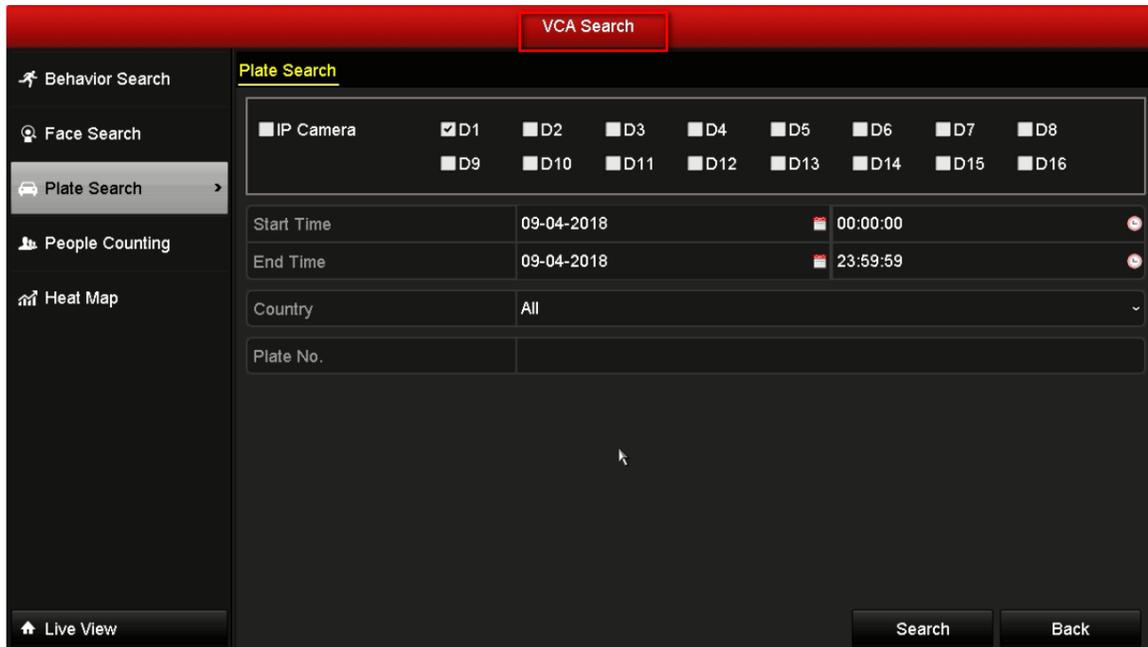
Otherwise there will be only pictures;



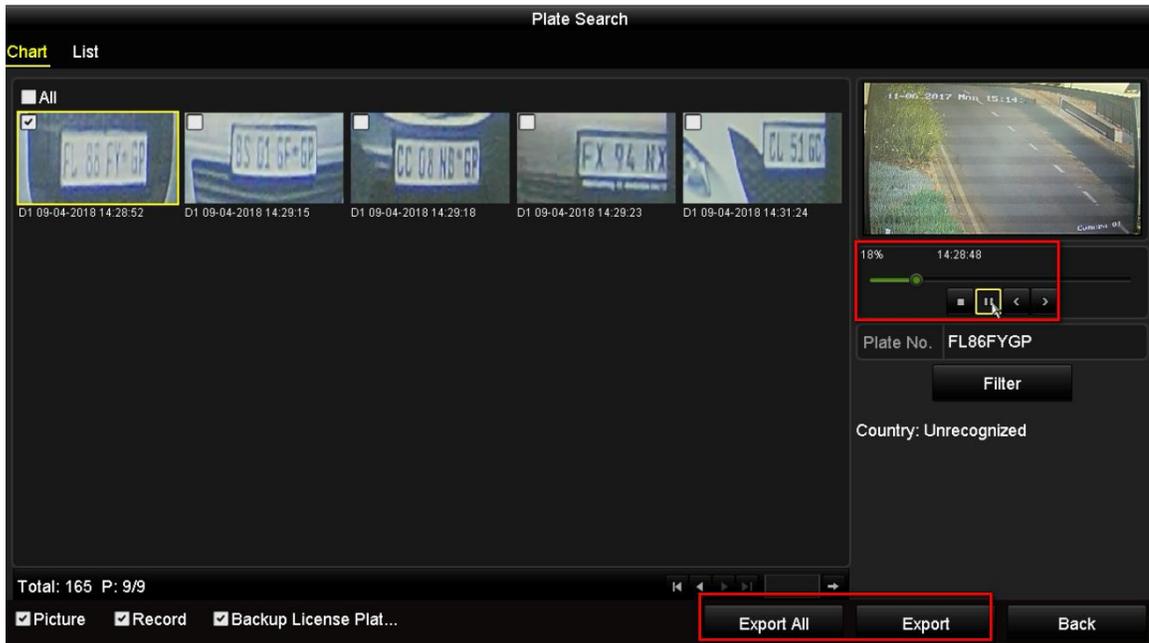
4.3 Search ANRP pictures & videos via NVR Local Configuration Interface with GUI 3.0

Steps:

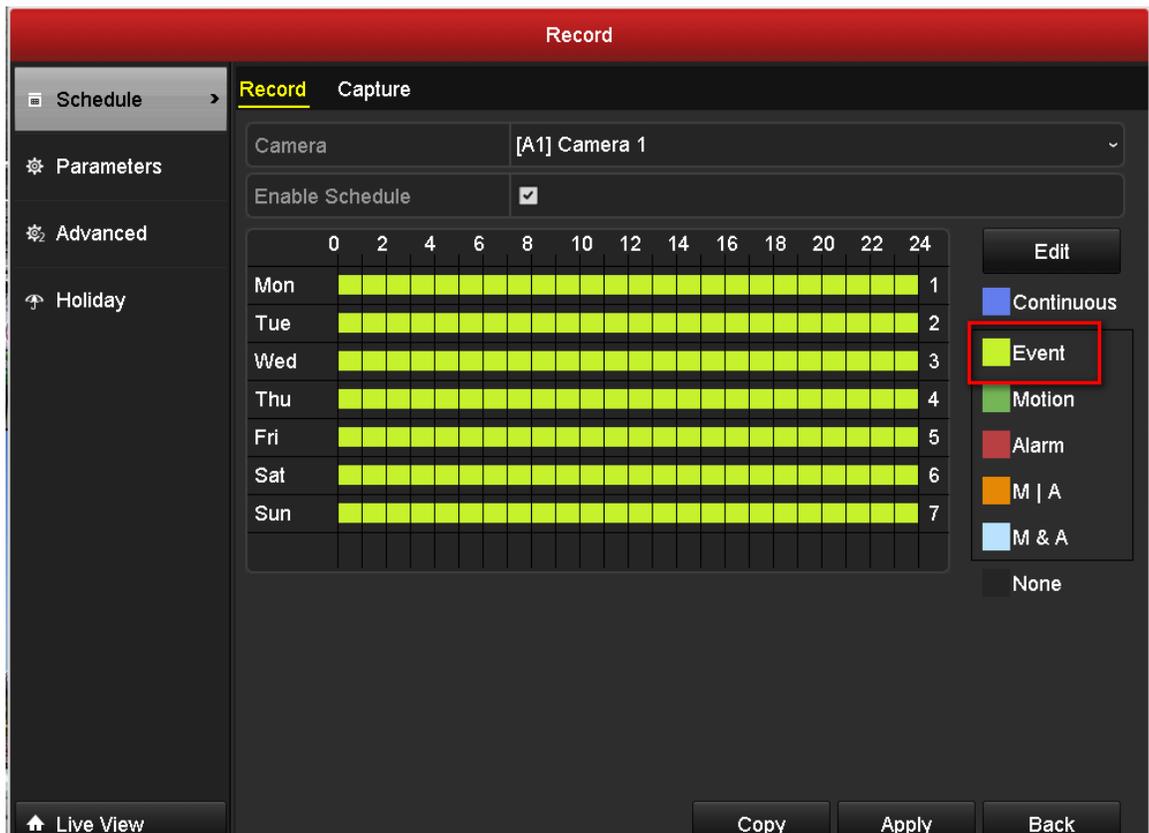
1. Go to **Menu->VCA Search->Plate Search** to search & export the captured license plate pictures & videos;



2. After clicking Search button, all the captured license plate pictures & videos would be displayed;



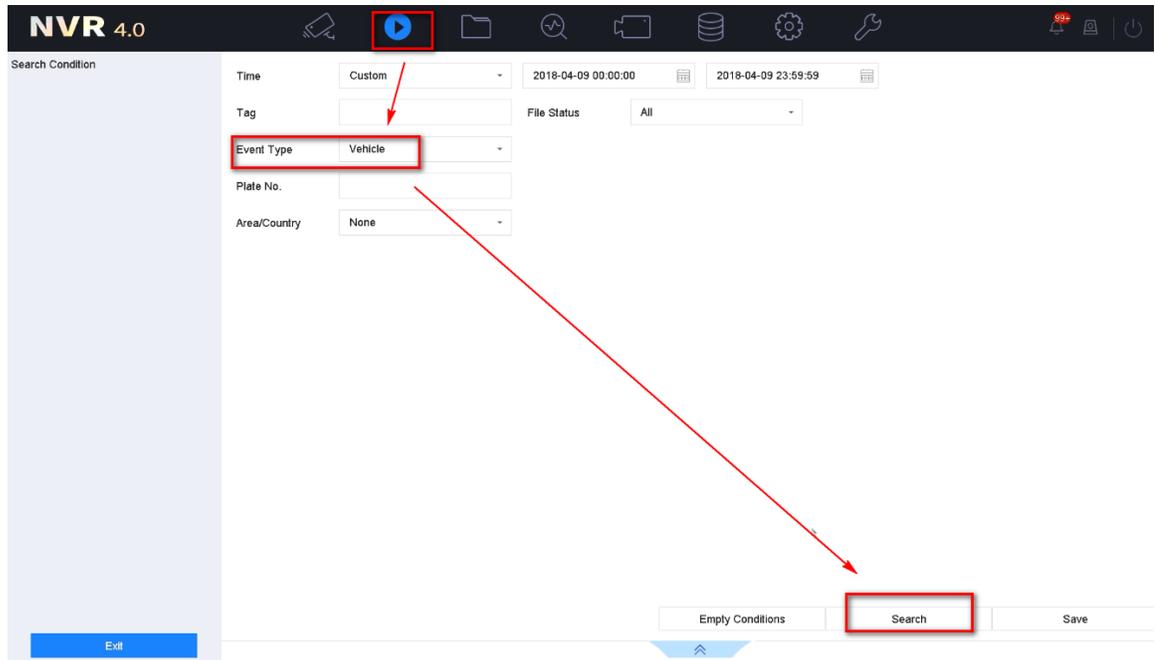
3. You need to set an **EVENT** recording schedule in NVR in advance. Otherwise there will be only pictures;



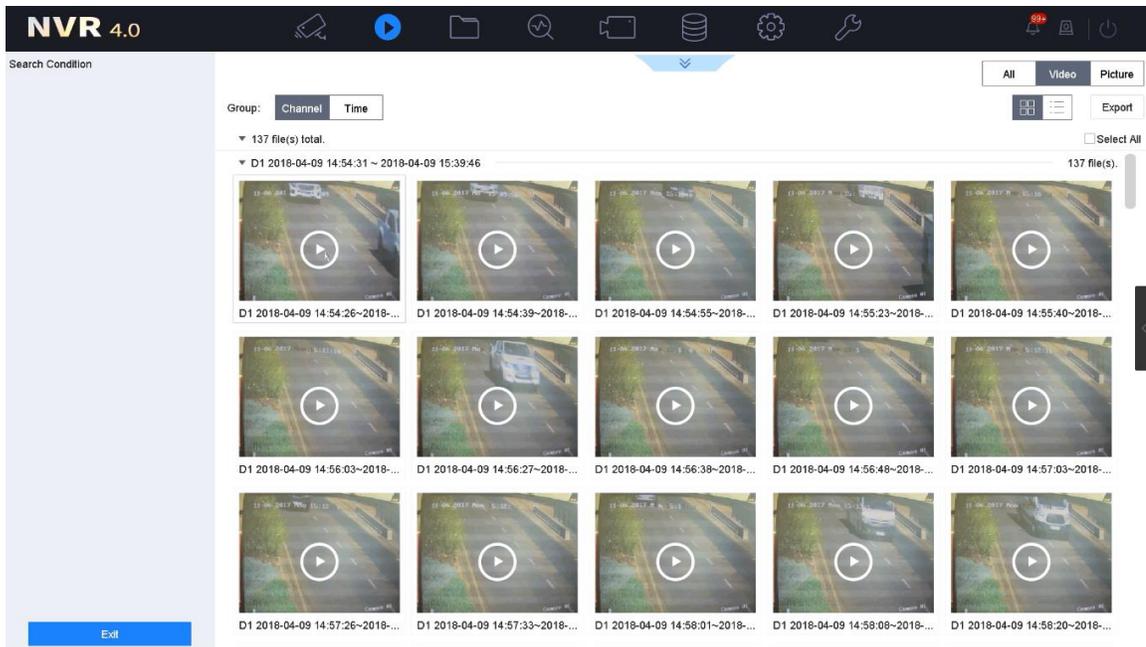
4.4 Search ANRP pictures & videos via NVR Local Configuration Interface with GUI 4.0

Steps:

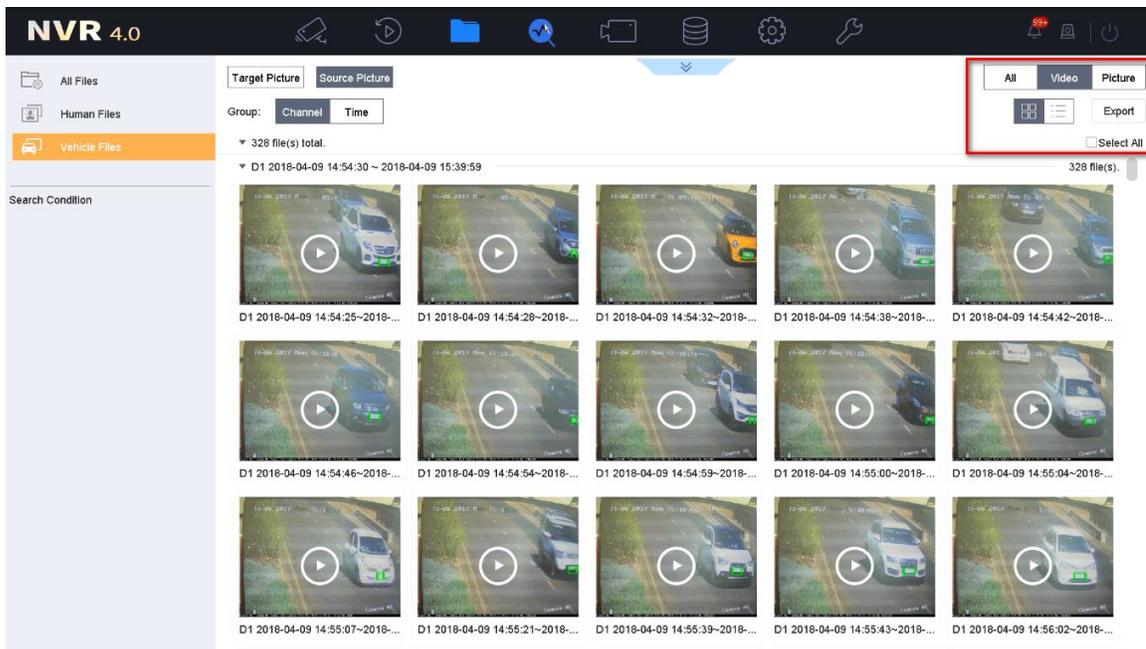
1. You can go to **Playback-> Custom Search->** select the Event Type as Vehicle to search & export the captured license plate pictures & videos;



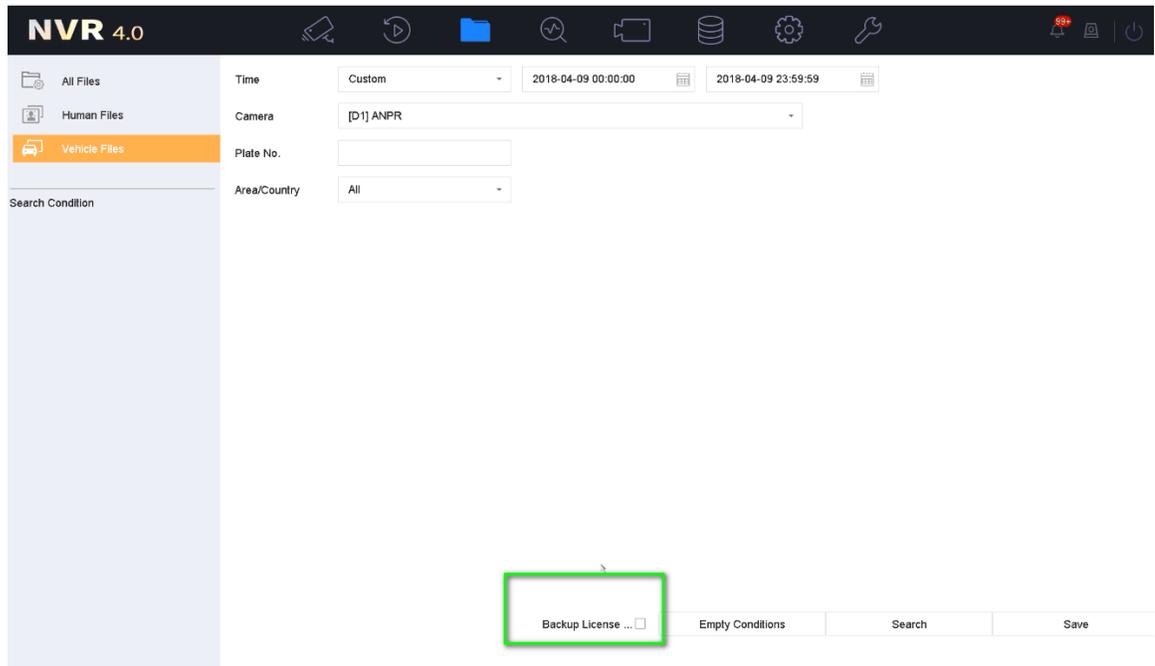
2. After clicking Search button, all the captured license plate pictures & videos would be displayed. You can click any of these to watch the video;



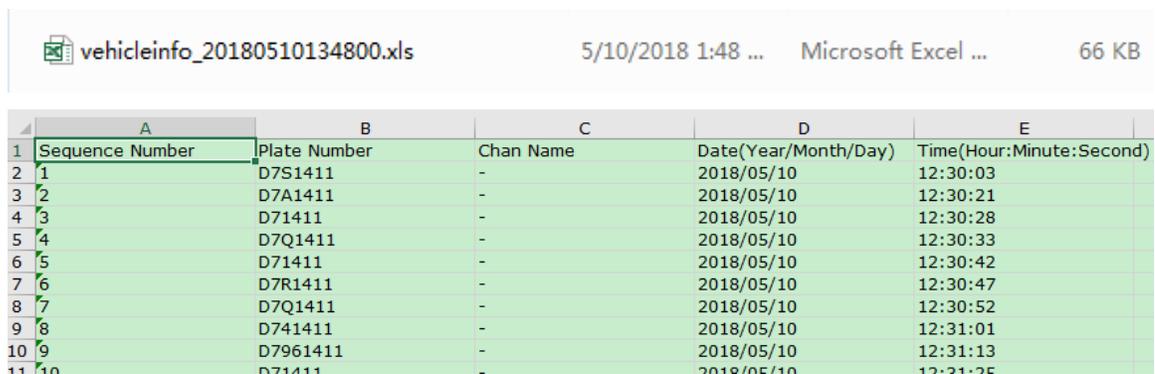
3. You can also go to **File Management->Vehicle Files** ->click Search button, then all the captured license plate pictures & videos would be displayed. You can click any of these to watch the video;



4. Vehicle detailed information could also be exported later if you enable the **Backup License Plate Statistics Info**, which would be included in an .excel file;



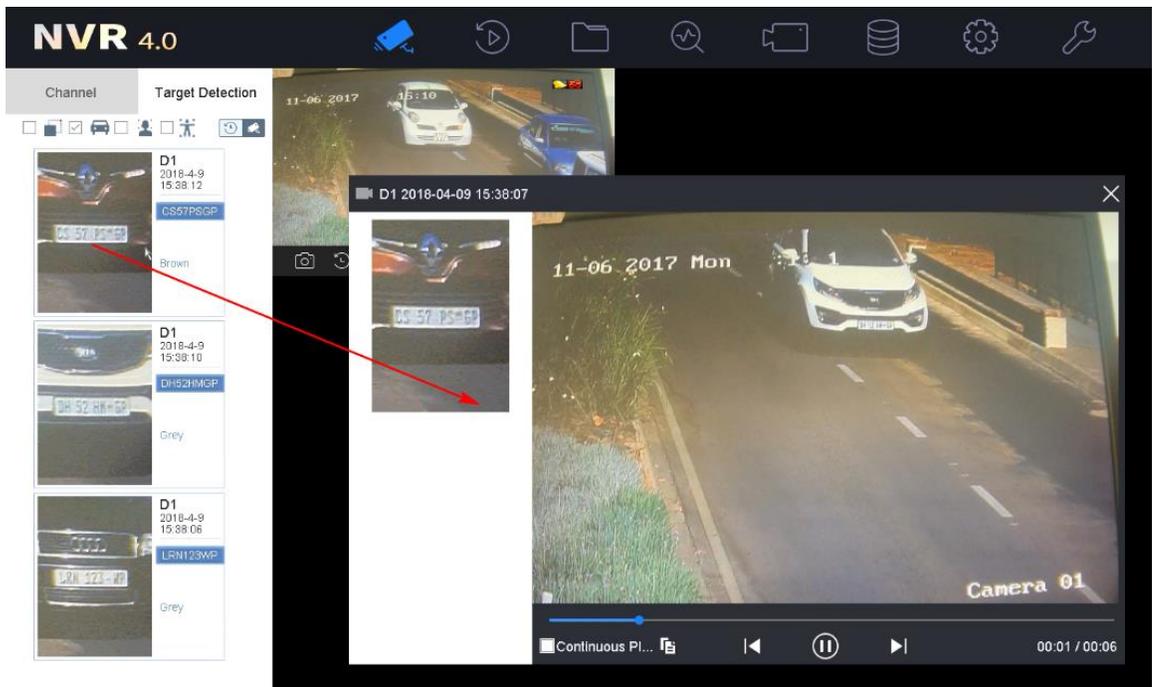
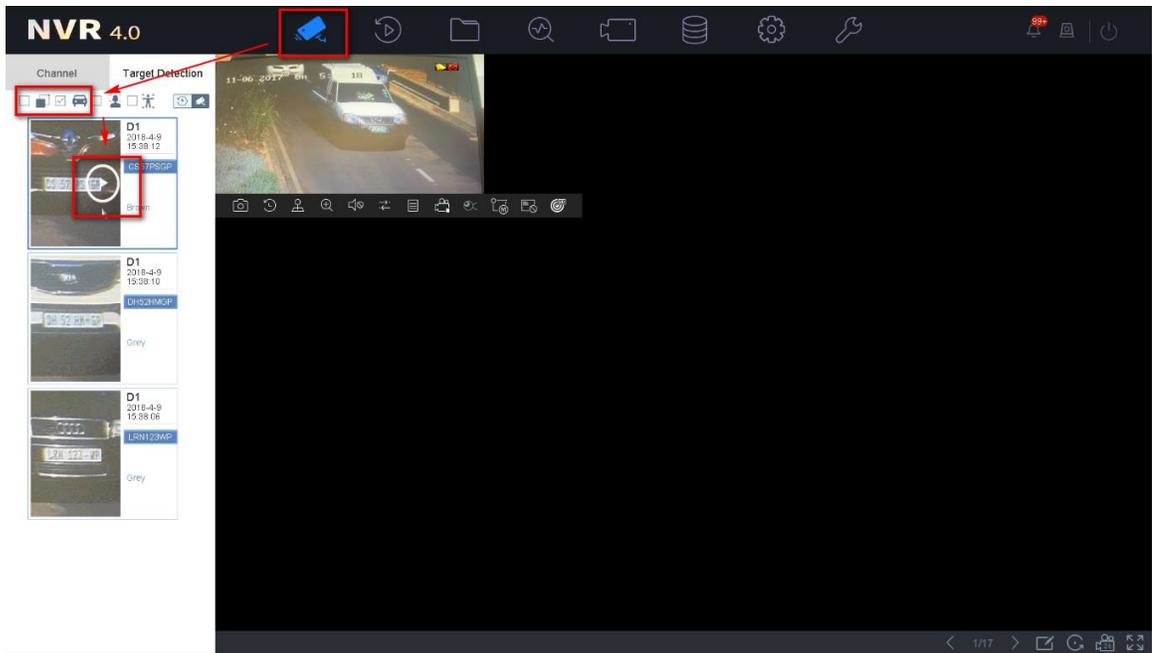
The screenshot shows the NVR 4.0 interface. On the left, there is a sidebar with 'All Files', 'Human Files', and 'Vehicle Files' (highlighted). Below the sidebar is a 'Search Condition' section. The main area contains search filters: 'Time' (Custom, 2018-04-09 00:00:00 to 2018-04-09 23:59:59), 'Camera' ([D1] ANPR), 'Plate No.' (empty field), and 'Area/Country' (All). At the bottom, there is a 'Backup License ...' button highlighted with a green box, and other buttons for 'Empty Conditions', 'Search', and 'Save'.



The screenshot shows an Excel spreadsheet titled 'vehicleinfo_20180510134800.xls'. The spreadsheet has the following data:

	A	B	C	D	E
1	Sequence Number	Plate Number	Chan Name	Date(Year/Month/Day)	Time(Hour:Minute:Second)
2	1	D7S1411	-	2018/05/10	12:30:03
3	2	D7A1411	-	2018/05/10	12:30:21
4	3	D71411	-	2018/05/10	12:30:28
5	4	D7Q1411	-	2018/05/10	12:30:33
6	5	D71411	-	2018/05/10	12:30:42
7	6	D7R1411	-	2018/05/10	12:30:47
8	7	D7Q1411	-	2018/05/10	12:30:52
9	8	D741411	-	2018/05/10	12:31:01
10	9	D7961411	-	2018/05/10	12:31:13
11	10	D71411	-	2018/05/10	12:31:25

5. Go to **Live view**->**Target Detection**-> Select Vehicle Detection to watch the real-time captured license plate pictures & videos;



6. You need to set an EVENT recording schedule in NVR->Storage->Recording Schedule in advance. Otherwise there will be only pictures.

The screenshot displays the NVR 4.0 Recording Schedule configuration page. On the left sidebar, the 'Recording Schedule' option is highlighted. The main configuration area includes a 'Camera No.' dropdown menu set to '[D1] ANPR', an 'Enable Schedule' checkbox, and a legend for recording modes: Continuous, Event, Motion, Alarm, M | A, M & A, POS Event, and None. Below the legend is a 24-hour event schedule grid for each day of the week (Mon-Sun). The 'Event' mode is selected, and the grid shows recording scheduled for all hours of every day.

Day	0	2	4	6	8	10	12	14	16	18	20	22	24
Mon	Event												
Tue	Event												
Wed	Event												
Thu	Event												
Fri	Event												
Sat	Event												
Sun	Event												

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