

VIVOTEK

ANPR Software User Manual

V4.0

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History

Date	Ver.	Author	Details	Remarks
2019/6/29	V1.0	Austen	Initial version	
2019/7/12	V1.1	Vito	2 nd version	
2019/7/17	V1.2	Austen	Modify title and bookmark link	Based on v2.4.7
2020/1/16	V1.3	Austen	LPR configuration page: <ul style="list-style-type: none"> • Modify Resolution options • Modify Free-flow/Motion options • Add the description for Minimum characters difference & motion queue General Configuration: <ul style="list-style-type: none"> • Add description for view type 	based on v2.7.17
2020/2/10	V1.4	Austen	Add notice for review search limit	Based on v2.7.17
2020/3/5	V1.5	Austen	<ul style="list-style-type: none"> • Add package upgrade flow • Add purge interval “MINUTES” description 	Based on v2.x.x.x
2020/4/1	V1.6	Austen	<ul style="list-style-type: none"> • Remove purge interval “MINUTES description” • Correct the typo of resolution description • Add figure for common scenario description • Add more List action: <ul style="list-style-type: none"> - VAST2/Trigger server/Wiegand VIVOTEK - FTP JPG MTT / Email 	Based on v3.0.2.0
2020/07/15	V1.7	Aaron	<ul style="list-style-type: none"> • Resolution options • Add Reset Database feature • Update Customized Options 	Based on v3.0.2.0
2020/11/23	V1.8	Aaron	<ul style="list-style-type: none"> • Remove old information 	Based on v3.0.2.0
2021/02/17	V1.9	Aaron	<ul style="list-style-type: none"> • Add Trigger mode API trigger period limitation, Maximum enabled actions and Maximum Master-slave camera connection 	Based on v3.0.2.0
2021/06/01	V2.0	Aaron	<ul style="list-style-type: none"> • Update Maintenance Options, remove change logo and background 	Based on v3.0.2.0
2021/07/23	V2.1	Aaron	<ul style="list-style-type: none"> • Update UM to v4.0 	Based on v4.0.1.0
2021/08/26	V2.2	Aaron.L	<ul style="list-style-type: none"> • Correction & Rearrangement 	Based on v4.0.1.0
2022/04/15	V3.0	Aaron.L	<ul style="list-style-type: none"> • Unified Stop&Go with Urban ANPR Package • Update “ANPR Supported Regions” 	Based on v4.1.1.18

			<ul style="list-style-type: none"> • Update the “Storage Space” • Remove “Cross Line Detection” • Update “Trigger Option” • Update “List Export” • Add “Action time explanation” • Add “ANPR Performance Index” chapter • Add “Evidence” • Add “Abnormal UI or UI reaction after ANPR upgrade” 	
2022/07/07	V3.1	Aaron.L	<ul style="list-style-type: none"> • Correct Chapter 4.1 	
2022/12/20	V4.0	Aaron.L	<p>New feature</p> <ol style="list-style-type: none"> 1. ANPR “Heartbeat” 2. Direction recognition 3. TWIN camera Capture 4. (Gen2 Model Only) Analytic Function <p>Add Gen2 Model – IP9165-LPR-v2</p>	

1. Overview

VIVOTEK ANPR software a powerful LPR application embedded in VIVOTEK cameras. VIVOTEK ANPR software is the all in one product to plug and play, ready to read plates just out of the box. It includes an interface web application that allows you to manage different scenarios, avoiding extra hardware and software installation.

1.1 LPR Analytics Supported Regions

Region	Countries
North America	Canada, USA*
South America & Central	Argentina, Bermuda, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela, Saint Lucia, Barbados, Jamaica
Europe	Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Gibraltar, Greece, Hungary, Ireland (ROI), Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom Great Britain, Albania, Lithuania Latvia, Malta, Serbia, Kosovo, Montenegro Macedonia, San Marino, Iceland
Asia* ²	Abu Dhabi, Azerbaijan, Bahrain, Dubai, Hong-Kong, India, Indonesia, Israel, Lebanon, Macau, Malaysia, Philippines, Russia, Singapore, Taiwan, Turkey, Vietnam, Oman, Kuwait, Qatar, Saudi Arabia, Uzbekistan
Africa	Angola, Burkina Faso, Kenya, Morocco, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda, Botswana, Ghana, Cameroon, Ethiopia, Djibouti, Mozambique
Oceania	Australia, New Zealand

*: Small stacked characters on license plate are not supported.

*²: Arabic alphabets are not supported.

1.2 Gen 2 Analytic Feature

Gen. 2 ANPR camera is with AI SoC chip. Advanced analytic like vehicle color, type, and direction classification is enabled.

For Europe and south America region, make (vehicle brand) recognition is release as beta feature for testing.

Gen. 2 - Official Feature	
Color	WHITE, GREY, BLACK, RED, ORANGE, YELLOW, GREEN, BLUE
Type	MOTORBIKE, CAR, VAN, TRUCK, BUS
Direction	Coming, Going, No direction
Note: Color recognition only works at day-time.	
Gen. 2 - Beta Feature	
Make (Vehicle Brand)	<p>Europe supported makes: Audi, BMW, Chevrolet, Citroen, Dacia, Fiat, Ford, Honda, Hyundai, Jeep, Kia, Landrover, Lexus, Mazda, Mercedes, Mini, Mitsubishi, Nissan, Opel, Peugeot, Renault, Seat, Skoda, Ssangyong, Subaru, Suzuki, Toyota, Volkswagen, Volvo.</p> <p>South America supported makes: Audi, BMW, Chery, Chevrolet, Citroen, DFM, Dodge, Fiat, Ford, GreatWall, Honda, Hyundai, JAC, Jeep, Kia, Landrover, Lexus, Mahindra, Mazda, Mercedes, MG, Mini, Mitsubishi, Nissan, Peugeot, Renault, Samsung, Ssangyong, Subaru, Suzuki, Toyota, Volkswagen, Volvo.</p>
Note:	
<ol style="list-style-type: none"> 1. Make analytic is available only for European and South American Region. 2. If you are out this regions, is highly recommended deactivate Make analytic to improve general performance. 	

2. Installation Requirement

2.1 Camera requirements


Compatible Camera

ANPR – Gen.1

Model	IB9387-LPR IB9387-LPR-W	IB9365-LPR IB9365-LPR-W	IP9165-LPR
Minimum Firmware Requirement	0125c	0125c	0119g

ANPR – Gen.2

Model	-	-	IP9165-LPR-v2
Minimum Firmware Requirement	-	-	2.2201.34.01I

	<p>Notice</p> <p>Gen. 2 camera is with AI SoC chip. Advanced analytic like vehicle color, type, and direction classification is enabled.</p>
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Storage Space

The ANPR recognition and action record will be saved in the micro SD card. The preset values suppose a 40% of JPEG compression (default system value). In the following table we can find storage consumption reference.

Model	IB9387-LPR(-W) IB9365-LPR(-W)	IP9165-LPR IP9165-LPR-v2
Micro SD Card Size	16 GB	32 GB
Notice: The micro SD should be formatted in <u>EXT4</u> format.		

Storage Requirement Table - ANPR Record


Size / Registers	1	1,000	5,000	10,000	100,000
1280 x 720	150 KB	146 MB	732 MB	1,464 MB	14.3 GB
1920 x 1080	300 KB	292 MB	1,464 MB	2,928 MB	28.6 GB
1280 x 960	200 KB	195 MB	977 MB	1,953 MB	19 GB
1920 x 1440	400 KB	390 MB	1,954 MB	3,906 MB	38 GB

	<p>Notice</p> <p>The image size varies with the scene complexity. Therefore, the table is only for reference.</p>
---	--

Storage Requirement - Action Record

There are 3 type of action for ANPR integration. There will lead to different micro SD storage consumption. For each action, it will be logged on camera. But if there are data transition included, the content will record on micro SD. It will lead to additional storage consumption for each action.

	Action Type	Action LOG on Camera	Data Log On micro SD	Example
1	Simple reaction without data transition	Yes	No	DO trigger
2	Action with ANPR metadata transition.	Yes	Yes About 2 KB	Onvif Event HTTP (XML / JSON)
3	Action with ANPR metadata & image record transition	Yes	Yes Image Size + 2 KB	VAST2 HTTP(XML_IMG/JSON_IMG)

 **Notice**

1. If you set 1 “action” with image transition for backend integration, the micro SD space consumption will doubled.
2. If your set 2 “action” with image transition, the micro SD space consumption will tripled.

16 GB Storage Consumption vs. Traffic Flow Level

This table is for the fundamental scenario like parking access control with only simple “DO” trigger for gate open action, no additional action record required.

16 GB / Traffic Flow	Traffic Level (Cars per Day)				
	100	500	1,000	5,000	10,000
1280 x 720	3.1 years	7.4 months	3.7 months	22 days	11days
1920 x 1080	1.5 years	3.7 months	1.8 months	11 days	6 days
1280 x 960	2.3 years	5.5 months	2.8 months	17 days	8 days
1920 x 1440	1.2 years	2.8 months	1.4 months	8 days	4 days

2.2 Camera Positioning

Suggest Installation

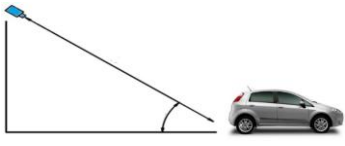
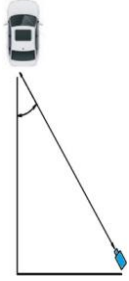

User should select the correct model fitting your site and application. Here's the suggest installation for all model as reference.

Model	Installation Reference	Distance (m)	Height (m)	Lane
IB9365-LPR-W (f = 4~9 mm)		2 ~ 6	1 ~ 3	Recommend: 1 Maximum: 2
IB9365-LPR (f = 12~40 mm) IB9365-LPR-W (f = 12~40 mm)		6 ~ 10	1 ~ 3	Recommend: 1 Maximum: 2
IB9387-LPR IB9387-LPR-W		2 ~ 6	1 ~ 3	Recommend: 1 Maximum: 2
IP9165-LPR Kit (Street)		10~20	6~8	2

Notice:

The recommendations are general and may vary depending on the selected camera and the site & country they are to be installed.

Installation Limitation

<p>Tilt Angle (Vertical)</p>		<ul style="list-style-type: none"> - Recommend: ~ Approximately 20° - Maximum: 35°.
<p>Pan Angle (Horizontal)</p>		<ul style="list-style-type: none"> - Recommend: ~ Approximately 20° - Maximum: 35°.
<p>Plate Angle (Rotation)</p>		<ul style="list-style-type: none"> - Recommend: 0° (Parallel to Ground) - Maximum: 25°

2.3 License Plate Character Size

Characters in license plates must have an average height between 20 to 80 pixels, being 25 pixels a good reference value. Less resolution may lead character confusion in some countries. In addition, camera sensitivity affects too. For countries in which there are different character sizes on their license plates, this fact must be kept in mind, so the small characters are included in the detection range.



Figure 1, License Plate Pixel Requirement

⚠ Notice

1. Characters height: 20 to 80 pixels
2. Recommend: 25 Pixels

2.4 Installation checkpoint for Analytic

There are several considerations to be taken into account for the correct performance of the analytic:

Vehicle Classification

1. Lighting

13

Lighting conditions must be good enough to assure that the vehicle can be seen properly in the image.

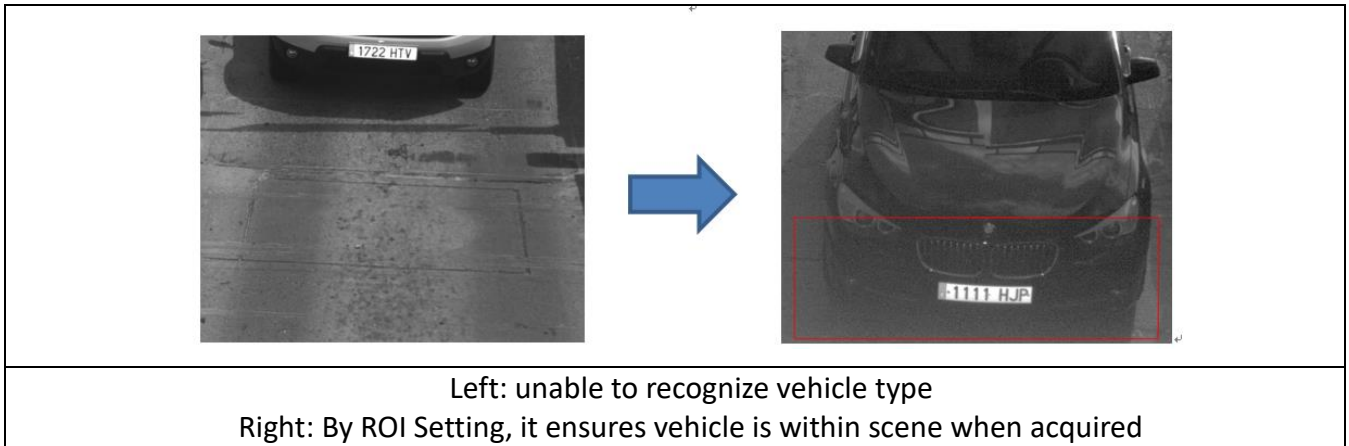


Incorrect image. Light is not good.

2. Vehicle Contour

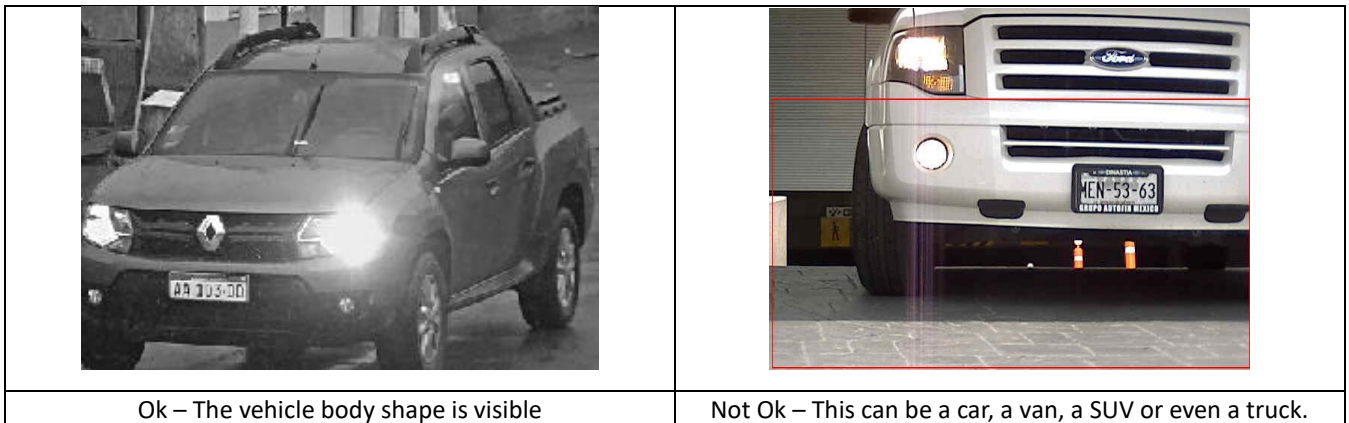
At least **75% of the vehicle** must be contained in the image for best results. If necessary, a Region of Interest can be configured in the software, to force the vehicle image acquisition within an area of the image where most of the vehicle is visible.





3. Camera Angle

A bit of vertical perspective is advisable (this means having the camera at a certain height) so that the body of the vehicle can be seen (not just the bumper). In this case, the analytic can distinguish between different vehicles that are indistinguishable if they were seen without perspective.



Color Recognition

This analysis has the following requirements:

- The vehicle must appear clearly in the image (at least 75% of the vehicle must be contained within the image).
- If the images do not show perfect whites (for example if they appear yellowish, pinkish, bluish, greenish, etc, performing a white balance on the camera will necessary).
- Moreover, it is necessary to choose the location well to avoid external elements to affect the color intensity of the image (e.g. shadows from trees or buildings, etc).

Here are some other consideration or limitations:

- Color analysis works better when combined with Classification analysis.
- The performance of the color analytic is better in frontal installations than in rear installations.

- The color analytic **will not work at night**, unless the lighting conditions are exceptionally good. The image setup required for performing LPR at night with low light is incompatible with the requirements for the color analytic.

Type & Make recognition at Night-time

Vehicle classification and make recognition need the vehicle to be seen properly to have a good performance at night. This means that they don't work when the illumination is not powerful enough. To get good results there are several considerations that must be taken into account:

- Camera iris must be fixed. If we work with auto iris, the vehicle lights will close the iris of the camera and the vehicle will not be seen properly.
- We can work with two illumination types:
 1. Diffused white lighting so that the vehicle is seen perfectly.
 2. IR Light not aligned with the camera so that we are able to see the plate and the vehicle at the same time. The power of the light will depend on the installation and the distance to the vehicle.

3. ANPR Function Management

3.1 Start ANPR Service

Access the network Camera

User can access the network camera main page through web browser. VIVOTEK provide a camera management tool, “Shepherd” for discovering the network camera. Please refer the camera manual for detail instruction.



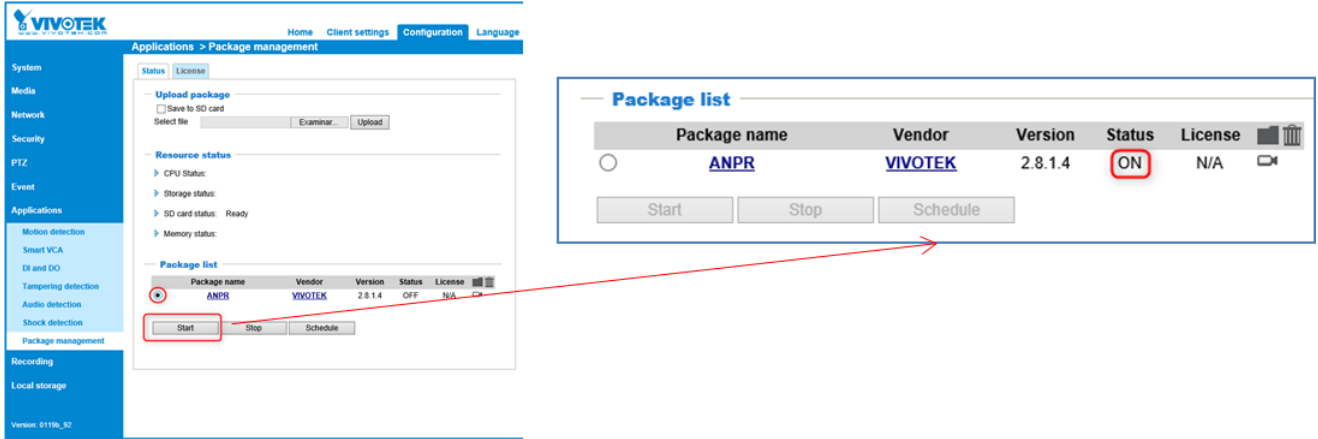
Figure 2, Camera Main Page



Figure 3, VIVOTEK Camera Management Tool

Start the Edge LPR Service

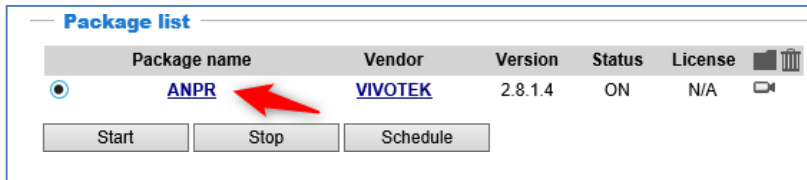
To start service, click on Package Management, select the ANPR and click on “START”. The service status should change from “OFF” to “ON”.



3.2 ANPR Software Management Page

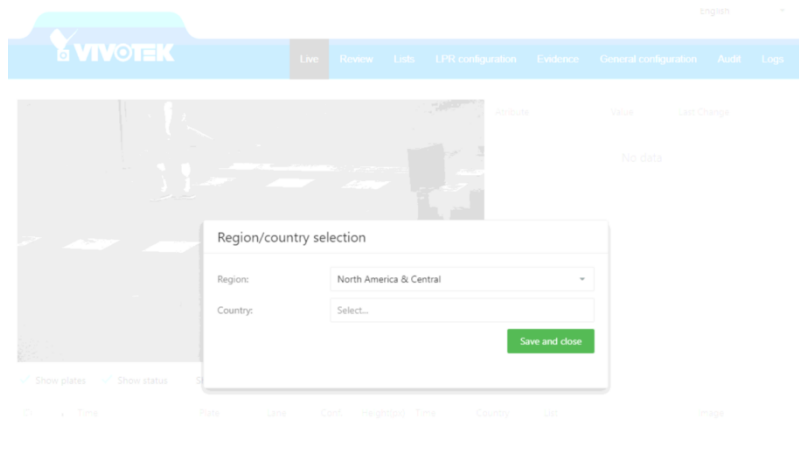
Enter the ANPR management page

Open the VIVOTEK camera main page through web browser. Go to “application”, click on “Package Management” and double click on ANPR service.

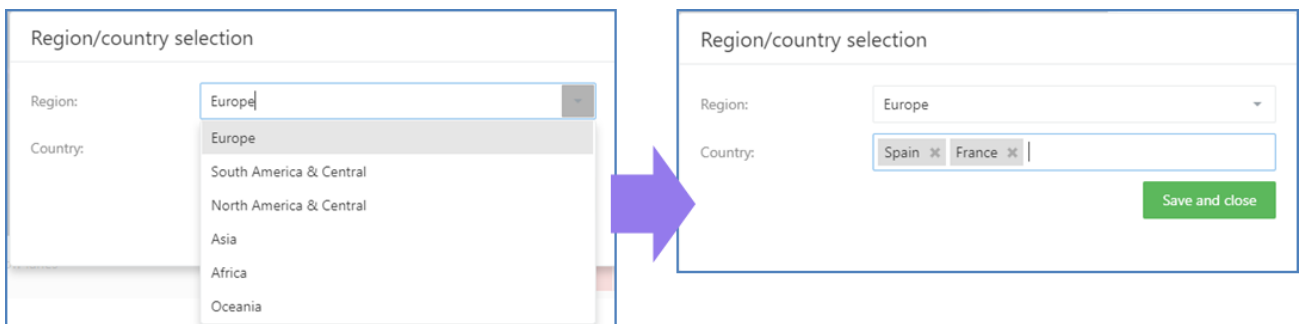



First Access

Upon the first access to the web Edge the system will ask us for the region and country. The country selection is mandatory to define the country(s) of license plate to read.



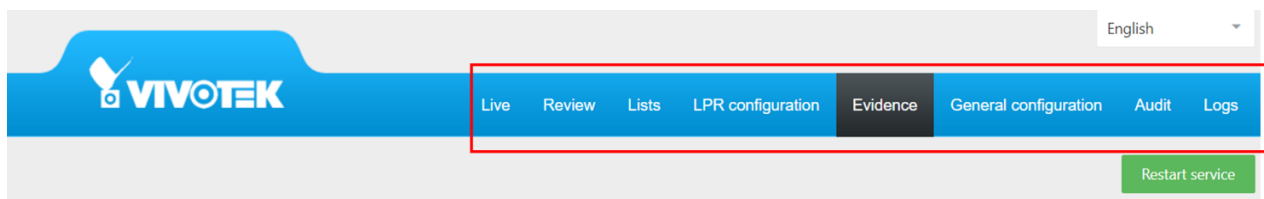
First, select the Region and select the countries in the region. Multi-selections is available. Please refer Chapter 3.4 for detail explanation.



 **Notice**

- Country order indicate the priority.
- Make sure to list country where the ANPR camera installed 1st.

3.3 ANPR Management Page - Tab

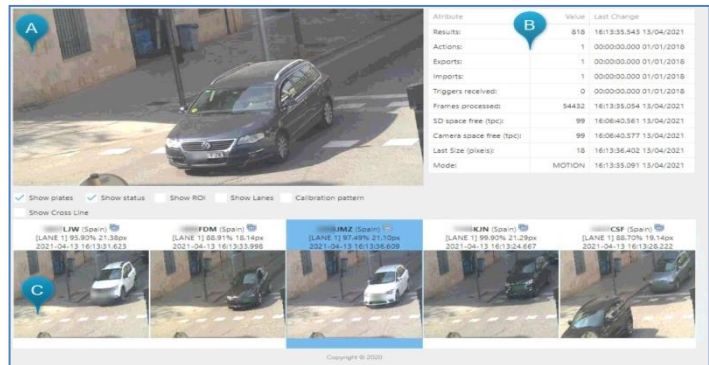


The top of the screen has a tab menu, it is marked with a red rectangle is the MENU toolbar with all the available options.

3.4 ANPR - Live Tab

The live tab shows the cameras live view. (this tab is divided into 3 different areas) We have divided it into 3 parts:

- A. Monitor Panel
- B. Info Panel
- C. Result Panel



ANPR - Live Tab - Monitor Panel

	<p>Show ROI</p> <p>The red square indicating the ROI (Region of Interest) defined in the parameters if set.</p> <p>This area is the only section of the image where engine will try to find plates.</p>
	<p>Show lanes</p> <p>The blue line defining the lanes line configured in the parameters if set.</p> <ul style="list-style-type: none"> ➤ The plates in the left side of the line are in "lane 1" ➤ The plates in the right side of the line are in "lane 2".
	<p>Calibration pattern</p> <p>These white lines indicating the <u>25 pixels</u> vertical space between lines.</p> <p>This function help user to identify whether the camera setting fulfill the minimum character size requirement.</p>

ANPR - Live Tab - Info Panel

Overall information on the system status and last change.

- Results: Number of license plates recognized.
- Actions: Number of actions executed.
- Exports: Number of automatic exports executed.
- Imports: Number of automatic imports executed.
- Triggers received: Number of triggers received.
- Frames processed: Number of total frames processed.
- SD space free (%): Free Space Percentage in the SD card.
- Camera free space (%): Free Space Percentage in the camera.
- Last Size (pixels): Pixel size in the last result license plate captured.
- Mode: Mode of functionality
 - A. NO LICENSE: There is no ANPR license in the system.
 - B. STOPPED: The service stopped.
 - C. MOTION: The service is working in Motion Detection mode.
 - D. FREEFLOW: The service is working in Free-flow mode.
 - E. TRIGGER: The service is working in Trigger mode.

ANPR - Live Tab - Result Panel

Show the latest results in the blue outline. These results will be included:

- Plate Number
- Country
- Confidence Level
- Character High
- Time
- Image

The image shows a screenshot of an ANPR (Automatic Number Plate Recognition) result panel. The panel is enclosed in a blue border and contains the following information:

- Plate Number / Country:** AH 76 (Taiwan) [icon]
- Confidence / Character height:** 99.90% 47.14px
- Time Stamp:** 2021-08-27 13:22:28.045
- Image:** A photograph of a silver sedan parked on a street, with a license plate that matches the text above.

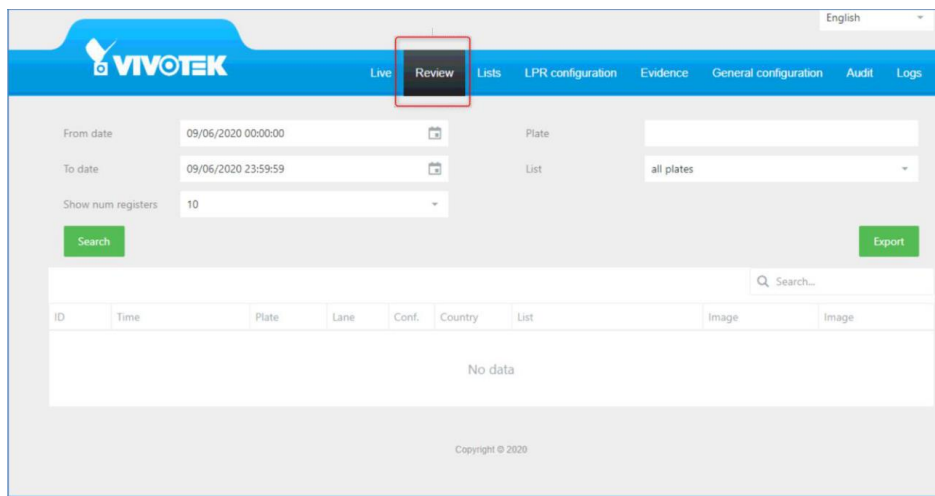
Red lines connect the text labels to their corresponding data points in the panel.

3.5 ANPR - Review Tab

The review tab allows us to search, filter and consult the results.

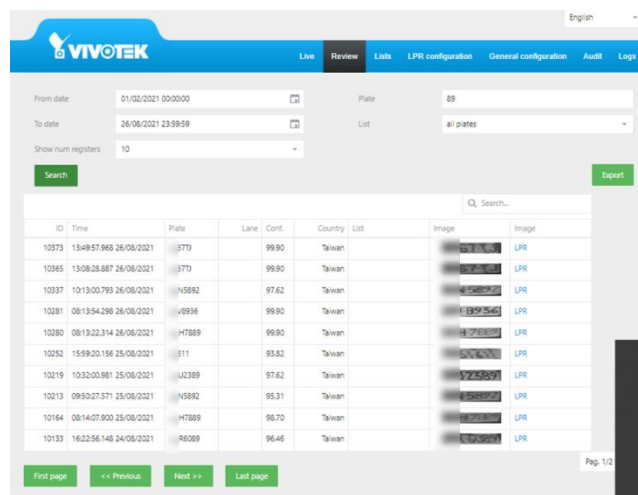
It provides following function to filter out the result in log.

From Date	Set the beginning of target time period
To Date	Set the end of target time period
Plate	Search plates containing these "characters" or "number".
List	Only show the all plates that belong to the list.

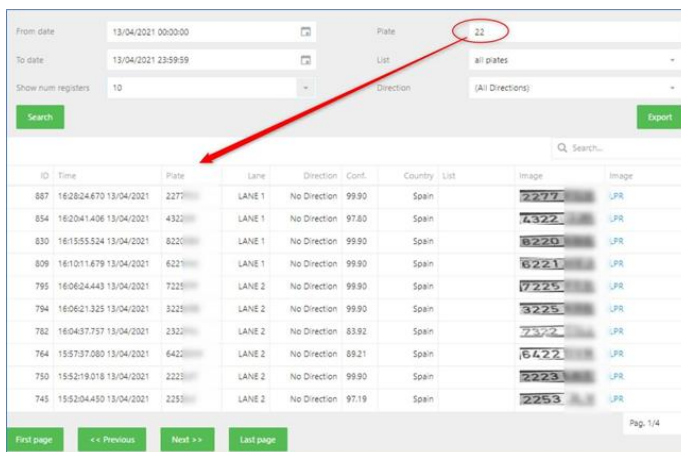


ANPR - Review Result

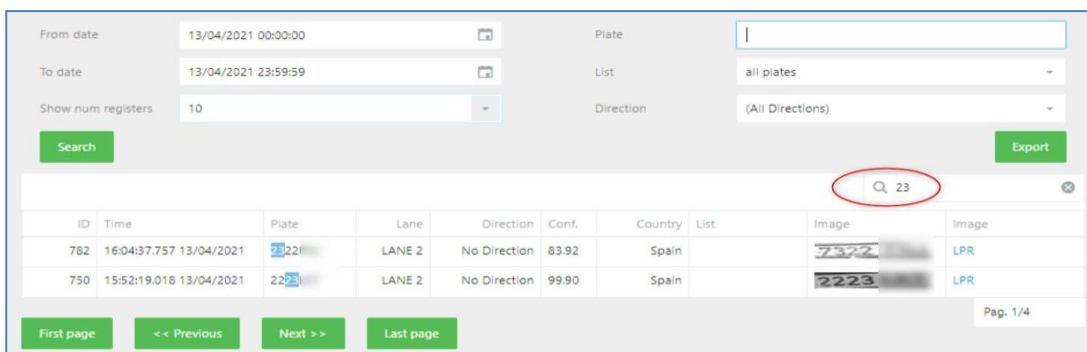
According to your condition, system will filter out the record in the table. If you move your cursor to plate snapshot, the larger image will show. User can clip the "LPR" link for downloading the image.



Example 1, Filter the License Plate with “22” in all result.

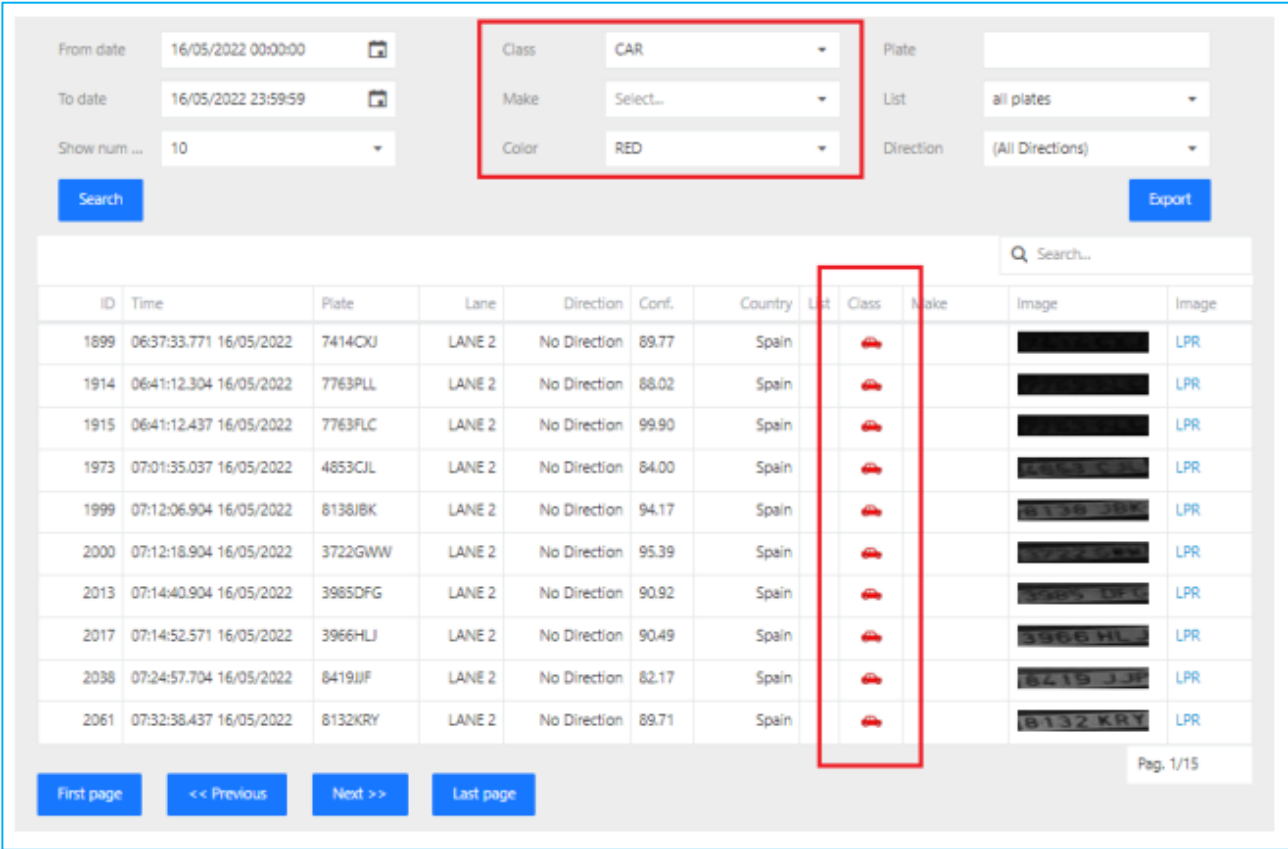


Example 2, Use the result “Search” to find the target inside the table



ANPR Review – analytic

Gen. 2 camera is with AI SoC chip. Advanced analytic like vehicle color, type, and direction classification is enabled. **You can also filter by one of this analytic, for example, if we want to search all the RED CARS that the LPR has read during some period you can do as shown below:**



3.6 ANPR-List Tab



VIVOTEK provide intuitive GUI for user to manage the access control. User can create & maintain the vehicle list and set reaction accordingly. According to user’s application, user can utilize the list function to fulfill functions like access control, suspect vehicle location, or VIP customer recognition.

By default, there are 4 lists already, “all plates”, “not in list”, “BLACKLIST, and “WHITELIST”. You can edit, delete, or add more lists.

List Tab Functions	
List	Show all the list created in table
Action	Response and action design for the vehicle in the specific list
Export	Export the selected list from this device by file with all the licenses plates that belong to that list. It supports direct CSV/XML file download or regular export arrangement through FTP.
Import	Import or sync a license plate list externally by file or network. It supports direct CSV/XML file import or regular update from FTP station or

	synchronization within VIVOTEK LPR camera.
--	--

ANPR- List Management

Function	Description
	Add a new list
	Export the lists table



Note

Levenshtein Distance (Character Difference)

This value establishes the comparison precision for the listed license matching.

Value = 0 (Default Setting): All character should be identical for matching.

Value = 1: Allow 1 character difference for the listed license matching

Value = N, Allow N character difference for the listed license matching

Example:

- "9059NWF" listed in WHITELIST.
- "9059NWP" will be regarded as "WHITELIST" license, too




ANPR Action Function Table

VIVOTEK provides following action: network action, device interaction, & VMS/CMS integration.

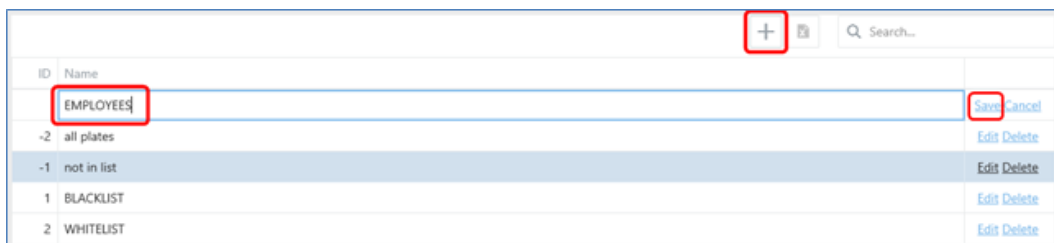
Type	Action	Description
Network	Socket Client	Enable a socket connection to send messages as XML or JSON
	Socket Server	Open a port in the camera to listen to hosts to send messages as XML or JSON
	FTP	Store the results in an FTP server
	HTTP	Send a request using this protocol to a server
	Trigger Server	Enable a port that sends the read response when a triggermessage arrives.
	EMAIL	Send an email.
	Twin Cameras	Filter results depending on the twin camera information.
Device	IO	Enable inbound and outbound digital signals in the camera.

	WIEGAND	Send a signal to Wiegand middleware board.
	WIEGAND VIVOTEK	Sends the full card ID of an RFID card associated with a license plate to a Wiegand converter.
VMS/CMS	Onvif Event	Enable the Onvif event to send the license plate information using this protocol.
	MILESTONE	Send an analytic event to Milestone VMS.
	VAST2	Capture from magnet data the XML.
	Meypar Server	Send a meypar protocol message.

	<p>Notice</p> <p>Recommend the actions number is <u>less than 4</u> for stable processing.</p>
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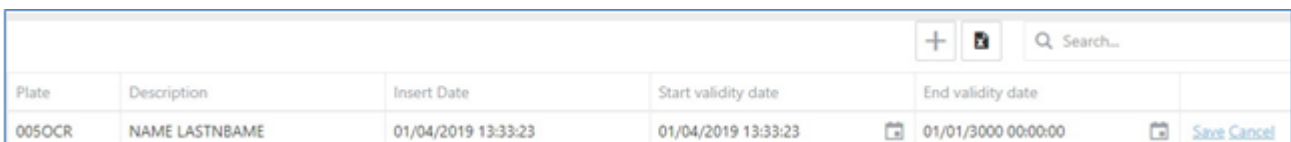
List& Action Example

Step 1, Create a “EMPLOYEE” List

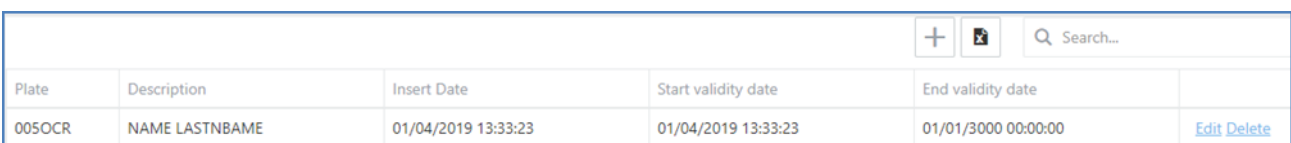


Step 2, Add and Manage License Plates to “EMPLOYEE” List

Expand “List” section and click on the “+” button to add a new plate.

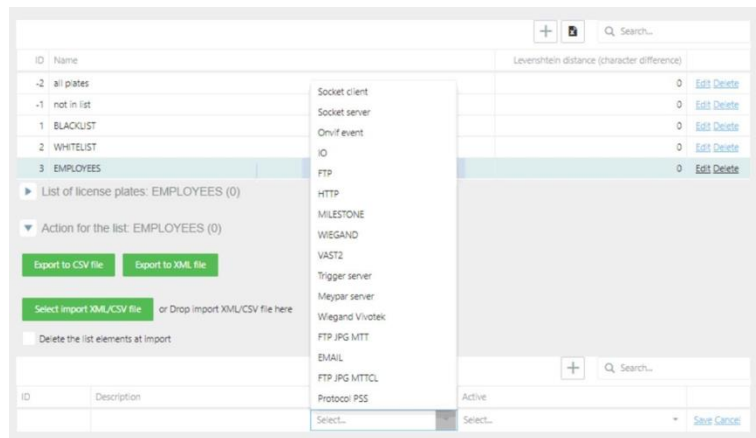


To edit or delete a license plate in that list, just click on the plate for management.



Step 3, Configure Action for vehicle in “EMPLOYEE” List

For example, user wants to send the license recognition info to another device through socket. Using the EMPLOYEES list, click on “Action for the list” and add anew action pressing “+” and then select in “Action type = Socket Client”.



User can set detail plan for this action.

💡
TIPS

If user want to set unique action to “no license plate” recognition in external trigger mode, user should add a unique list for the “no license plate” scenario.

HOW TO:

Create a list call “NO_Plate” containing only one item which the plate attribute is “NO_PLATE”.


3 NO_PLATE
0 Edit Delete

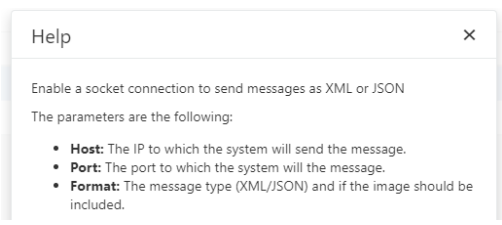
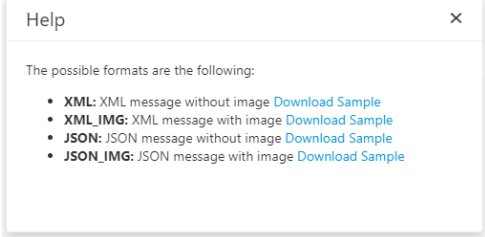
▼ List of license plates: NO_PLATE (1)
+ [icon] Search...

Plate	Description	Insert Date	Start validity date	End validity date	
NO_PLATE	Triggered to L...	26/08/2021 17:58:19	26/08/2021 17:58:19	01/01/3000 00:00:00	Edit Delete

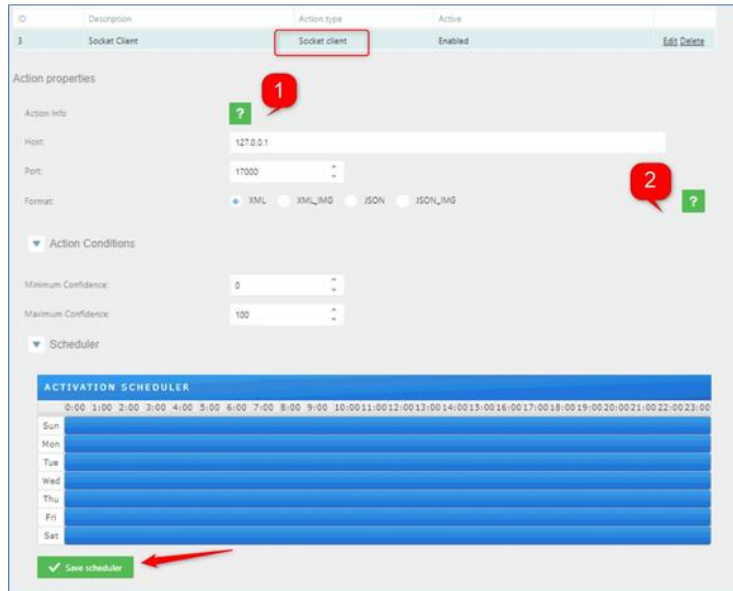
Result:

↓	ID	Time	Plate	Lane	Conf.	Height(px)	Country	List	Image
	611	17:58:45.482	26/08/2021	NO_PLATE		100.00	0.00	NO_PLATE	No image
	610	17:58:39.655	26/08/2021	359JXQ		96.99	85.67	Colorado	

- Action Property: Please utilize the “Action Info” help  for detail explanation on this action. For the network communication, user can access the formats sample in format help wizard.


“Action Info” of Socket Client Action	“Format” info of Socket Client Action
	

- Action Conditions: Set the min and Max confidence threshold for the action trigger.
- Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.





Note

Please utilize the “Action Info” wizard  for detail explanation on this action. Here’s the info for “socket client” action Property.

Help
✕

Enable a socket connection to send messages as XML or JSON

The parameters are the following

- **Host:**The IP for the device that will listen to
- **Port:**The port that will listen to
- **Format:**The message type (XML/JSON) and if need to send the image too



List Management Tips, Add extra label for plate

For access control, vehicle license plate number is often bounded with specific person. In order to provide sufficient information in, ANPR list management provide a specific grammar to set the CardID label for each license plate.

HOW TO USE

In the “description” column, use the “#” to define the label info for the plate.

EXAMPLE

Description : The text “Austen #1234567#”

Plate	Description
ABC1234	Austen #1234567#

Result

```
36 <PlateDescription>Austen</PlateDescription>  
37 <CardID>1234567</CardID>
```

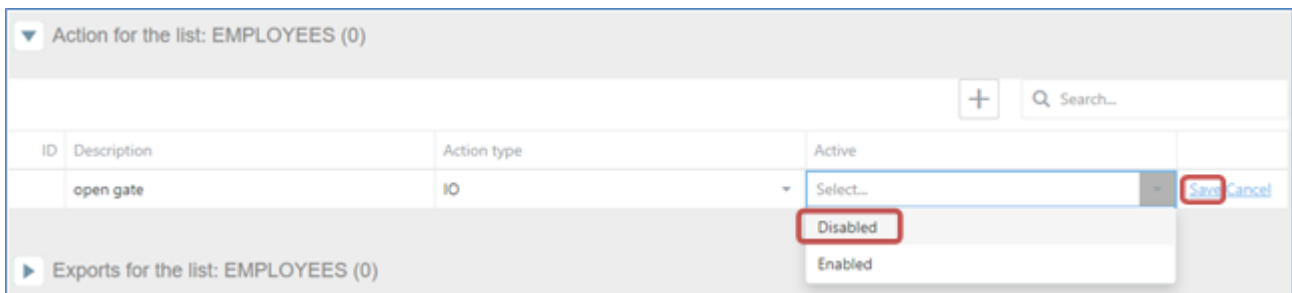
The ANPR metadata will separate the description into two items, “PlateDescription” & “CardID”.

Action Management

In case, you do not want to continue using an action in a list you can modify able to disable or delete the action.

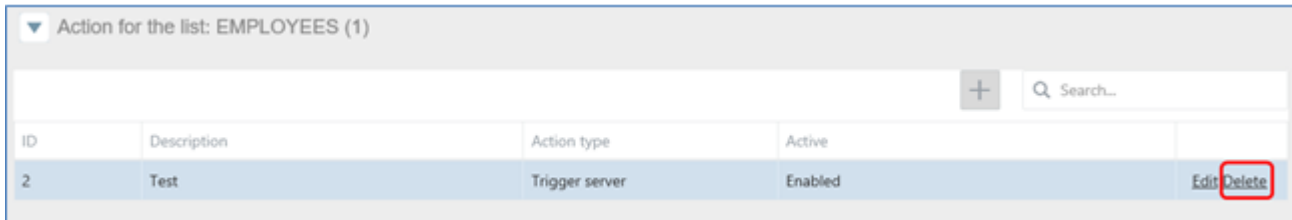
Enable / Disable Action

To disable click on the list, select the action, and then click on edit option. In Active change to Disabled and then click on Save.



Delete Action

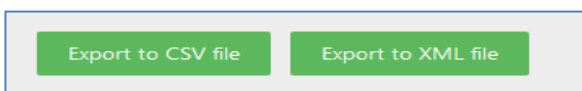
To delete an action, click on the action and click on the DELETE button and then YES.



List Export

Manual Export

You can also download the selected list pressing the button “Export to XML file” or “Export to CSV file”



Auto Export

Exports for the list: Here are all the automatic exports we can configure for each list.

- FTP matches: Exports the matches of the to an FTP server
- FTP list: Export the list to an FTP server

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A list can perform several exports, depending on the scenario and needs.

Having the Employees list selected, click on “Exports for the list” and then click on the + button and define the type and interval. The interval can be set as:

- Minute: Will execute the task every minute.
- Hour: Will execute the task every hour.
- Day: Will execute the task once a day at 23:59:59.
- Week: Will execute the task once a week, every Monday at 00:00:00.
- Month: Will execute the task once a month, the first day of the month at 23:59:59.

ID	Description	Export type	Interval	Active	
2	Export FTP	FTP matches	Minute	Enabled	Save Cancel

Export properties

Export Info

Host:

Port:

Format: XML XML_IMK CSV

Folder name:

User:

Password:

Confirmation file: .FLAG

Type: FTP FTPS

Interval time

FTP matches

1. Configuring the export FTP matches to export the results to an ftp result, using theEMPLOYEEES list, click on “Export for the list” and add a new export pressing “+” and then select in “Export type = FTP matches”.

The screenshot shows a configuration window for an export named 'FTP matches'. The window has a table at the top with columns: ID, Description, Export type, Interval, and Active. Below the table is the 'Export properties' section. It includes fields for Host (127.0.0.1), Port (21), Format (XML, XML_IMG, JSON, JSON_IMG, CSV), Folder name, User, Password, Confirmation file (.FLAG), and Type (FTP, FTPS). There are two red callout boxes: '1' points to a green question mark icon next to the Host field, and '2' points to a green question mark icon next to the Format field.

Click on  for more information about how to configure.

Help

Export the results to an FTP server

The parameters are the following:

- **Host:** Ftp server IP
- **Port:** Ftp server port
- **Format:** The message type (XML/JSON/CSV), and if the image should be included
- **Folder:** Ftp folder in which to save the messages
- **User:** Ftp user
- **Password:** Ftp password
- **Confirmation file:** In order to track if all images have been sent to the FTP server a single file with .flag extension will be generated for each correct export to FTP.
- **Type:**The FTP type to be used

Click on  for more information about format type.

Help

The possible formats are following

- **XML:**XML results without image [Download Sample](#)
- **XML_IMG:**XML results with image [Download Sample](#)
- **JSON:**JSON results without image [Download Sample](#)
- **JSON_IMG:**JSON results with image [Download Sample](#)
- **CSV:**CSV results [Download Sample](#)

FTP

Configuring the export FTP lists to export the list locally, using the EMPLOYEES list, click

ID	Description	Export type	Interval	Active	
2	Export FTP	FTP list	Minute	Enabled	Edit Delete

Export properties

Export Info

Host:

Port:

Format: XML CSV

Folder name:

User:

Password:

Confirmation file: .FLAG

Type: FTP FTPS

on “Export for the list” and add a new export pressing “+” and then selectin “Export type = FTP list”.

Click on  for more information about how to configure.

Help

Export the lists in an FTP server

The parameters are the following:

- **Host:** Ftp server IP
- **Port:** Ftp server port
- **Format:** The message type (XML/CSV)
- **Folder:** Ftp folder in which to save the lists
- **User:** Ftp user
- **Password:** Ftp password
- **Confirmation file:** In order to track if all files have been sent to the FTP server, a single, empty file will be generated and sent for each correct export.
- **Type:**The FTP type to be used

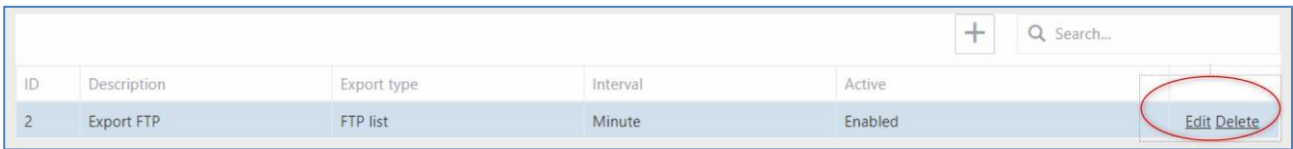
Click on  for more information about format type

Help

The possible formats are following

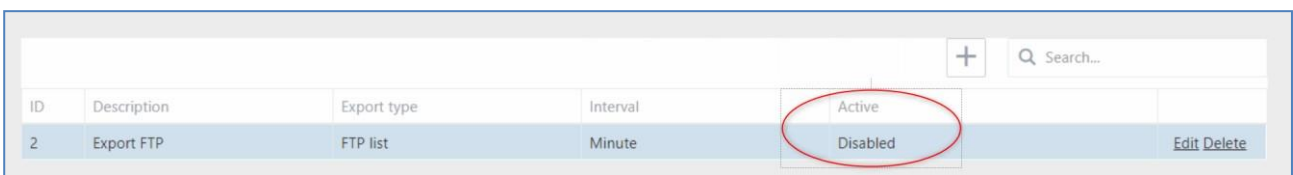
- **XML:**XML list [Download Sample](#)
- **CSV:**CSV list [Download Sample](#)

In case, you don't want to continue to use export in a list you are able to disable or delete the action. To delete click on the list, select the export and then click on delete option.



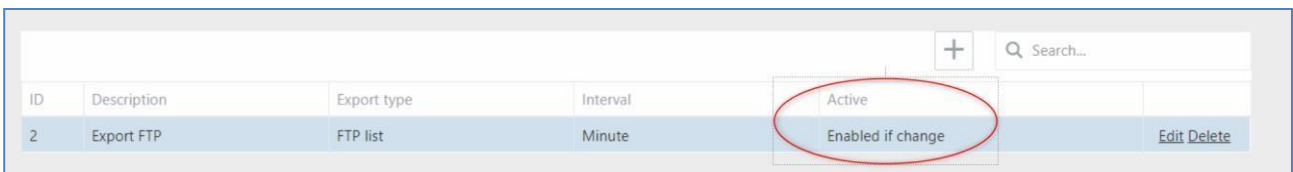
ID	Description	Export type	Interval	Active	Edit Delete
2	Export FTP	FTP list	Minute	Enabled	Edit Delete

To disable click on the list, select the action, and then click on edit option. In Active change to Disabled and then click on Save.



ID	Description	Export type	Interval	Active	Edit Delete
2	Export FTP	FTP list	Minute	Disabled	Edit Delete

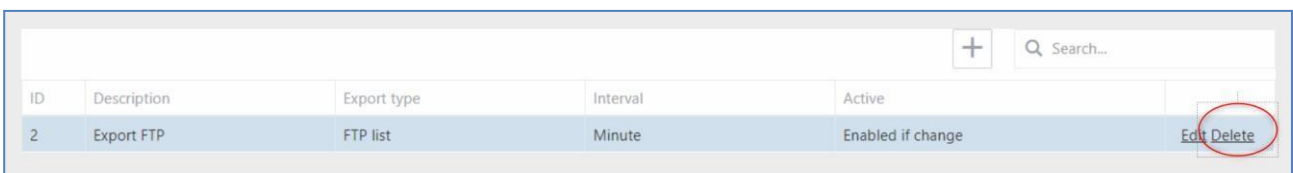
After this change, the action disabled in case you need to use it later.



ID	Description	Export type	Interval	Active	Edit Delete
2	Export FTP	FTP list	Minute	Enabled if change	Edit Delete

The "Enable if change" state, only do the export if the export type is "Local list" or "FTPlist" and export the list only if exits any change.

To delete an action, click on the action and click on the DELETE button and then YES.

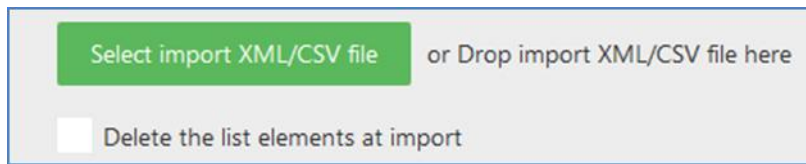


ID	Description	Export type	Interval	Active	Edit Delete
2	Export FTP	FTP list	Minute	Enabled if change	Edit Delete

Import for the list: Here are all the automatic imports we can configure for each list.

- FTP list: Import the list to an FTP server
- SINCRO camera: Import the list from another camera

You can also import the list manually uploading an xml list file.



The format of the XML is the following:

```
<?xml version = "1.0" encoding = "utf-8" ?>
<grouplist>
<nllists>
  <nllist id="3" sendserver="0" dateserver="" reserve=""
description="EMPLOYEES"color=""/>
</nllists>
<nlelemlists>
<nlelemlist id="1" sendserver="0" dateserver="" reserve="" numberplate="AAA123"
listid="3" timestamp="" description="EMP 1" startvaliditydate="2000-01-
01T00:00:00.000" endvaliditydate="3000-01-01T00:00:00.000"/>

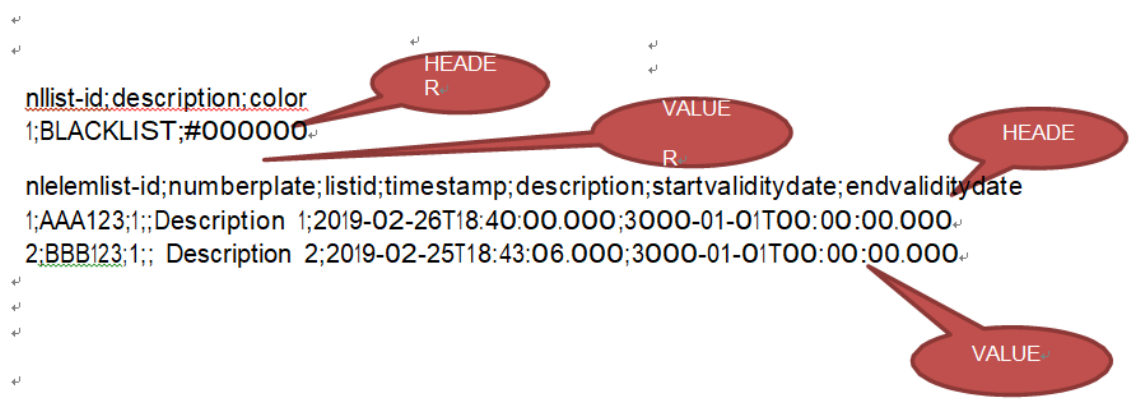
<nlelemlist id="2" sendserver="0" dateserver="" reserve=""
numberplate="BBB321" listid="3" timestamp="" description="EMP 2"
startvaliditydate="2000-01- 01T00:00:00.000" endvaliditydate="3000-01-
01T00:00:00.000"/>

</nlelemlists>
</grouplist>
```

Explanation

- Grouplist: the main element of the xml
- Nllists: The group of type of lists
- Nlist: The list type element, on:
 - Id= Id of the list
 - Sendserver = Always 0
 - Dateserver= Always ""
 - Reserve = Always ""
 - Description= The name of the list
 - Color = Always ""
- Nlemlists: the group of the elements of the list
- Nlemlist: the element in list, on:
 - Id= Id of the element
 - Sendserver = Always 0
 - Dateserver= Always ""
 - Reserve = Always ""
 - Numberplate= Plate number of the element
 - Listid= Id of the list
 - Timestamp= Always ""
 - Description= Description of the plate number
 - Startvaliditydate= Start date of validity period
 - Endvaliditydate=

End date of validity periodThe format of CSV is the following:



The first block of HEADER-VALUE is the type of list which values are:

- nllist-id: Id of the list
- description: Description of the list
- color: Color of the list (NOT IN USE)

The second block of HEADER-VALUE are the elements of list which values are:

- nlelemlist-id: Id of the list element
- numberplate: Plate number
- listid: Id of list type
- timestamp: Always ""
- description: Description of the number plate.
- Startvaliditydate: Start validity date of the number plate.
- Endvaliditydate End validity date of the number plate

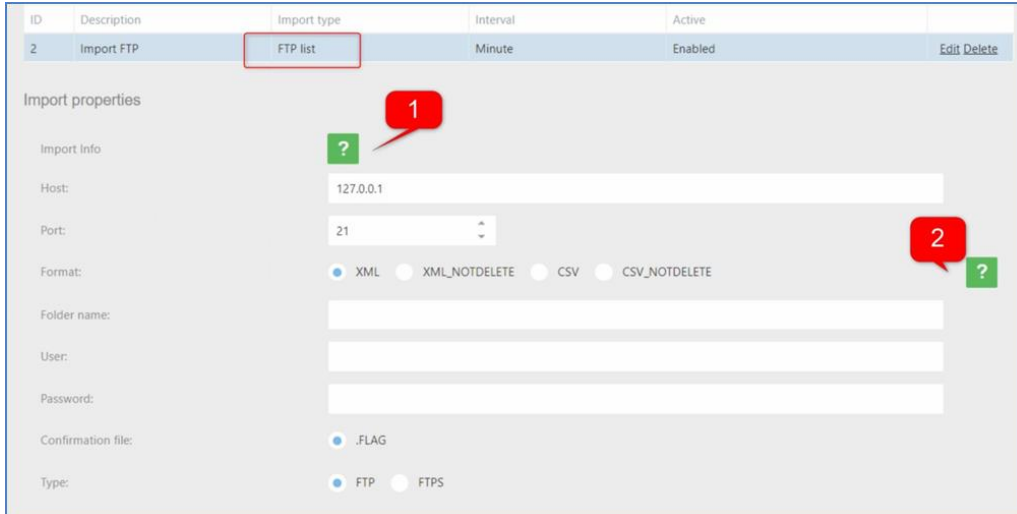
A list can perform several imports, depending on the scenario and needs.

Having the Employees list selected, click on “Imports for the list” and then click on the +button and define the type and interval. The interval can be set as:

- Minute: Will execute the task every minute.
- Hour: Will execute the task every hour.
- Day: Will execute the task once a day at 23:59:59.
- Week: Will execute the task once a week, every Monday at 00:00:00.
- Month: Will execute the task once a month, the first day of the month at 23:59:59.

Import FTP list

Configuring the import FTP list to import the list from an ftp result, using the EMPLOYEES list, click on “Import for the list” and add a new import pressing “+”and then select in “Import type = FTP list”.



Click on  for more information about how to configure.

Click on  for more information about format type.

Help

The possible formats are following


- **XML**:XML list [Download Sample](#)
- **XML_NOTDELETE**:XML list (Not delete the old elements)[Download Sample](#)
- **CSV**:XML list [Download Sample](#)
- **CSV_NOTDELETE**:XML list (Not delete the old elements)[Download Sample](#)

Import SINCRO camera

Configuring the import SINCRO camera to import the list from another camera,using the EMPLOYEES list, click on “Import for the list” and add a new import pressing “+” and then select in “Import type = SINCRO Camera”.

ID	Description	Import type	Interval	Active	
2	Import FTP	SINCRO camera	Minute	Enabled	Edit Delete

Import properties

Import Info 

Host: 127.0.0.1

User:

Password:

Click on  for more information about how to configure.

Help

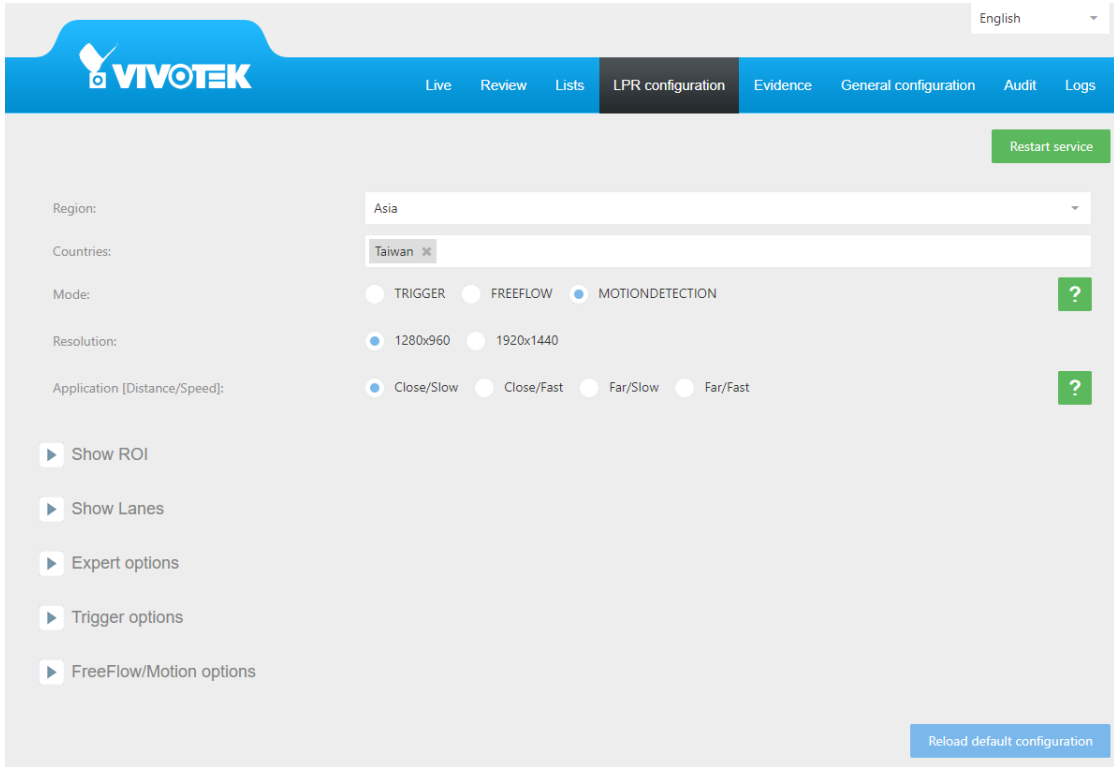
Import the lists from an FTP server


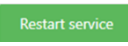
The parameters are the following:

- **Host**: Ftp server IP
- **Port**: Ftp server port
- **Format**: The message type (XML/CSV), and if existing elements should be deleted
- **Folder**: Ftp folder to save the lists
- **User**: Ftp user
- **Password**: Ftp password
- **Confirmation file**: In order to track if a list has been recieved from the FTP server.
- **Type**:FTP type to be used

3.7 ANPR - LPR Configuration Tab

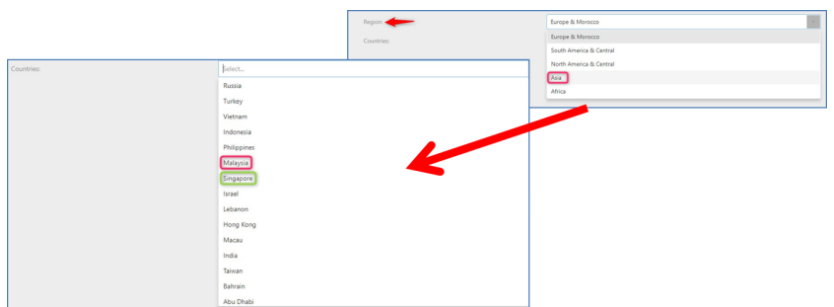
According to application and site environment, we will set the proper configuration for the camera depending on where will be located (indoor, outdoor) and the necessity (parking, control of access points, security, tolls, road offenses, etc.).



	Notice
All modification in LPR configuration requires a <u>service restart</u>  to take effect.	

Region/Country Setting

Choose region and the countries for license plate recognition. The order of supported countries indicates the recognition priority. After country selection, click the “restart service” to enable.





Notice

- The maximum countries number is 25, a software limitation. But VIVOTEK recommends users only add the site location and major close counties in order to secure the ANPR performance. Please refer the TIPS below for detail.



TIPS, Country Priority / Number Control

VIVOTEK ANPR supports multi-country license plate recognition, but the length of country list will affect the recognition accuracy and speed. Here are two tips to balance the support area and performance.

1. Priority: Select your location country 1st and add the adjacent countries.
2. Only add countries in your major traffic sources.

- **Rule of Thumb:** Only add countries in one-day driving range.

Let's use a site in California (US) as example.



- Select "California" 1st and add the nearby states, Nevada, Arizona, and Oregon.

Region: North America & Central

Countries: California x Nevada x Arizona x Oregon x

- Add extra countries in "1-day driving range", New Mexico, Utah, Idaho, & Oregon.

Region: North America & Central

Countries: California x Nevada x Arizona x New Mexico x Utah x Idaho x

- To minimize performance impact, avoid selecting all states in USA for LPR.

ANPR Function Mode

Mode	Description
Trigger	External ANPR Recognition trigger by device like induction loop or software trigger by http command.
Freeflow	The camera is continuously processing all the images.
Motion Detection (Default Setting)	The camera will read if detect any change in the image.



Notice

VIVOTEK does not recommend user use “freeflow” mode as daily operation setting. Freeflow mode is for function test & debugging. **VIVOTEK does not recommend user use this mode as daily operation setting.** Since the continuous ANPR recognition process on scene without vehicle will keep system full-loading and low recognition rate.

Resolution Setting

Region: Asia

Countries: Taiwan ✕

Mode: TRIGGER FREEFLOW MOTIONDETECTION ?

Resolution: 1280x960 1920x1440

Application [Distance/Speed]: Close/Slow Close/Fast Far/Slow Far/Fast ?

User can select the camera resolution for ANPR recognition. VIVOTEK recommend user use the default setting 1st. If user needs to recognize motorcycle (motorbike), please select high resolution option.

Application [Distance/Speed]

There are 4 types of setting for different application or scenario

- Close/Slow: The camera is close to the vehicles and they are moving at slow speed. This installation is suitable for Stop&Go scenarios like parking entrance.
- Close/Fast: The camera is close to the vehicles and they are moving at fast speed. This installation is suitable for entrances to locations where vehicles have to enter without complete stopping.
- Far/Slow: The camera is installed on the gantry or roadside for entrance monitoring. The setting is for scenario like border checkpoints that camera is far from the vehicles moving at slow speed.
- Far/Fast: The camera is installed on the gantry or roadside for traffic monitoring. The setting is for scenario like toll collection that camera is far from the vehicles moving normally on the street.

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TIPS, Reference index for selection the correct application mode

FAST or SLOW ?

- Fast: Most traffic flow is over 15 km/h speed.

Far or Close ?

- Close: Character height of License character change significantly with car entering and leaving the view.
- Character px size change is over 2.5 times.
 - Example:
 - Coming: 15 px in the beginning and 40 px before leaving.
 - Going : 40 px in the beginning and 15 px before leaving.

Show ROI

User can define the region of interest (ROI) for license plate recognition for focus the computing on most possible area. Click the “Show ROI” and the wizard will demonstrate how you can define the ROI in live view with two diagonal corners. If user wants to dismiss the ROI or redraw, press the “RESET ROI” button. Once ROI set, please click on the “Restart service”

Restart service

button to take effect.

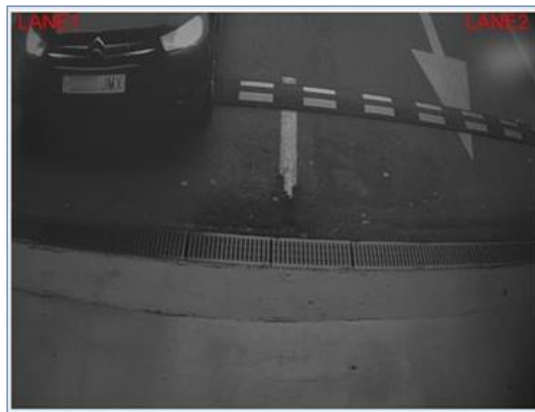


Show Lanes



User can configure two lanes for license plate recognition and ANPR software will the “Lane” attribute to each recognition. Click the “Show Lane” and the wizard will demonstrate how you can define the ROI in live view with two end potins. If user wants to

dismiss the setting or redraw, press the “RESET ROI” button. Once set, please click on the “Restart service” **Restart service** button to take effect. ANPR software will read the license plate and indicate on which lane they were detected.



Expert Options

▼ Expert options

Info: **?**

Minimum character height:	20	▲▼
Maximum character height:	80	▲▼
Minimum confidence (tpc):	90	▲▼
Minimum plate characters:	4	▲▼
Minimum characters difference:	1	▲▼
Enable Angle Filter	<input type="checkbox"/>	
Angle Filter Minimum:	0	▲▼
Angle Filter Maximum:	0	▲▼
Number of LPR processors:	1	▲▼

The configuration is for best performance tuning of “Motion Detection” (default configuration) mode. Once set, please click on the “Restart service” button to take effect.

Parameter	Description
Minimum character height	Minimum character size in the reading of a license plate to consider it valid.
Maximum character height	Maximum character size in the reading of a license plate to consider it valid.
Minimum confidence (tpc)	<ul style="list-style-type: none"> Minimum reliability in the reading of a license plate to consider it valid. Reliability is a parameter returned by the engine for recognizing license plates (value of 1-100, where 100 is the most reliable). Default / Recommend Threshold Setting : 80
Minimum plate characters	Minimum number of characters in the reading of a license plate to consider it valid.
Minimum characters difference:	The number of different characters to consider two plates different. ➤ Example: AAAA to AAAB is 1 different character.
Enable Angle Filter	Turn on or off result filtering by angle.
Angle Filter Minimum	The minimum number plate angle to be considered a valid result (-90/+90).
Angle Filter Maximum	The maximum number plate angle to be considered a valid result (-90/+90).

Trigger Options

▼ Trigger options

Info: ?


Trigger captures:

Trigger timeout (millis):


Trigger IO device: VIVOTEK


Trigger IO port: 0 1

If the camera is set as “TRIGGER”, ANPR software is normally in an idle state. When a trigger command is received, it performs a variable number of captures, depending on configuration, and returns a result. Results from different triggering events are independent of one another, that is, if the same vehicle, is still present on a

second trigger command, the same license plate will be returned a second time. On every trigger, it performs captures until the number exceeds N Captures, or the time exceeds Timeout. Once set, please click on the “Restart service”  button to take effect.

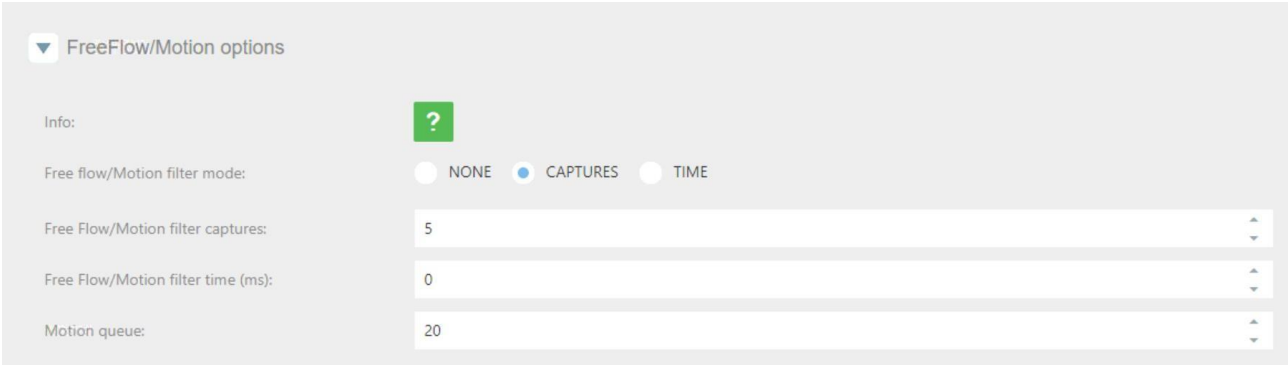
Parameter	Description
Trigger Captures	The number images that you want to process and read license plates before stop. ※ Note: If set, the trigger timeout must be “0”.
Trigger Timeout	The number second that you want to process and read license plates before stop. ※ Note: If set, the trigger capture must be “50”.
Trigger IO Device	If selected, the Digital Input ports will activate.
Trigger IO Port	Choose which digital input port you will use.

	Notice
If you are using socket Trigger API, the trigger period shall no less 4 seconds.	

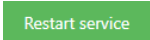
	Notice
Increasing the “Captures Number” or “Timeout” might lead to better or more reliable recognition accuracy since ANPR can select the result with best confidence. As a cost, the process time will delay the following action. But it will only deliver 1 ANPR result for each trigger.	

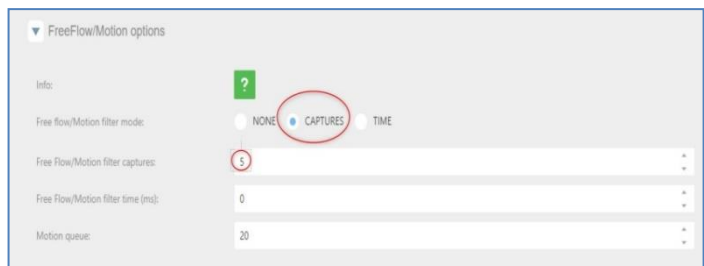
FreeFlow/Motion Option

In the FreeFlow/Motion option you can define repetition filters.



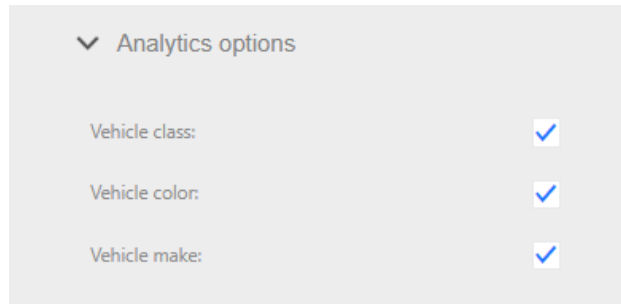
Parameter	Description
Freeflow/Motion filter captures	For a result to be considered valid, the last license plate read must not be among the last N recognized as valid. This filter is useful for traffic jams, where the cameras may be reading N license plates continually in a closed cycle.
Freeflow/Motion filter time (ms)	Minimum time elapsed from the detection of the same license plate to it being accepted again in the system.
Motion queue	Is the number of images stored in a queue to process in MOTION mode . Increasing the motion queue might increasing the vehicle detection rate.


For example, you have the camera in a Parking and there is a traffic jam, you don't want to read the same license plate over and over, in that case, the best filter is for captures, With this configuration, once a license plate is read, won't be read again until another 5 different license plates have been read. Once set, please click on the "Restart service"  button to take effect.



Analytics options

In Gen.2 camera model with AI SoC Chip, user can enable the available analytics to classify - Vehicle Class and Color.



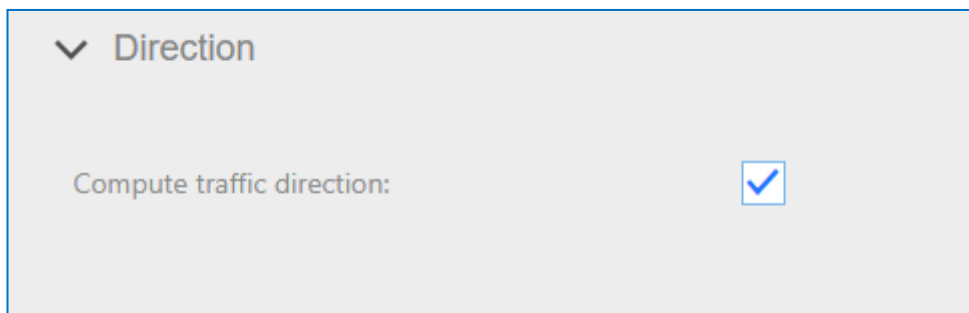
 Notice
Make analytic is available only for European and South American Region. If you are out this regions, is highly recommended deactivate Make analytic to improve general performance.

After all, changes are done, remember always to restart service, [Restart service](#) clicking on button.

If you need to restart all configuration for this section, click [Restart default configuration](#) on button.

Direction

In Gen.2 camera model with AI SoC Chip, user can enable the "Direction" option to classify directions of vehicles, approaching or leaving.



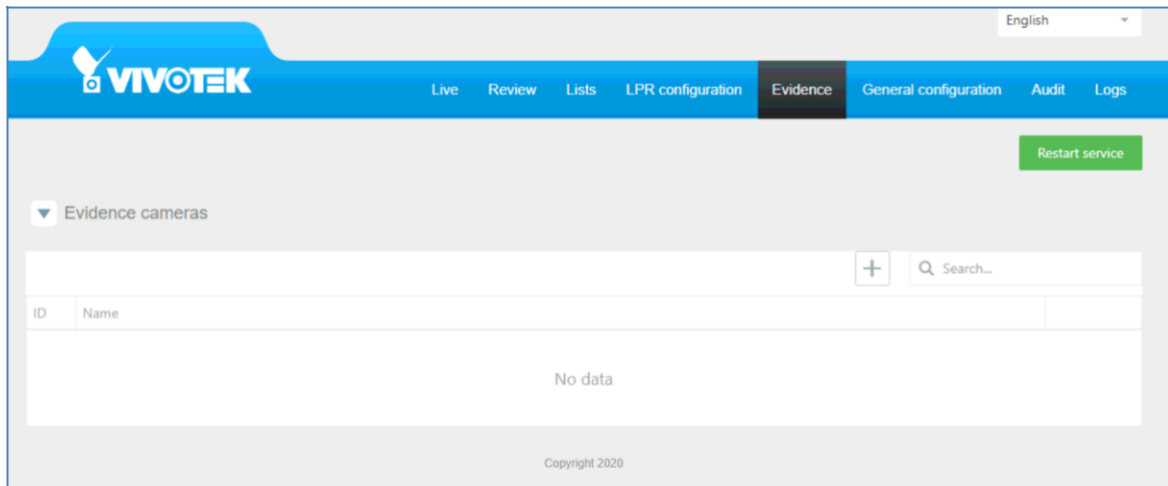
3.8 Evidence Tab

 Notice

For ANPR version before 4.1.1.18, the “evidence” function only exists on the urban ANPR package. After 4.1.1.18, it become a general ANPR function.

This feature allows the user to capture evidence images in addition to the LPR image. There is no limit in the number of evidence cameras that the user can setup. So, the camera will capture 1 synchronized evidence snapshot for each evidence camera when a license plate is captured.

In this tab, configure the Evidence Camera:



How it works

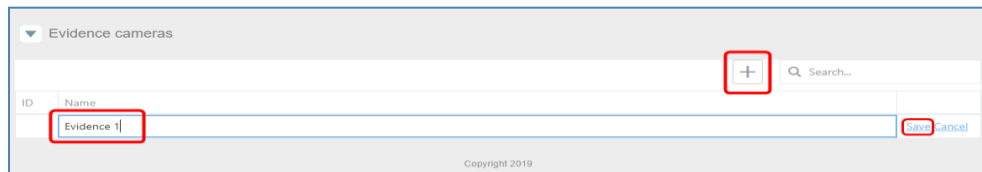
The LPR camera keeps capturing snapshots from the evidence camera. When the LPR camera reads a license plate, it will log the latest captured image from each evidence camera. Then, this evidence images are synchronized with the LPR image.

Real scenarios

1. Access control
 - Capture the state of a car when entering a car park to avoid fraud. By adding several evidence cameras in both sides of the entrance.
 - Capture the face of the driver for security reasons.
 - Capture the number of wheels in tooling for auditing.
2. Traffic
 - Evidence Snapshot for Red-light Violation
 - Capture color image of the full car to record the color, make, etc .

Add a new evidence camera

Click on the “+” button, text the evidence camera name and click on “Save”.



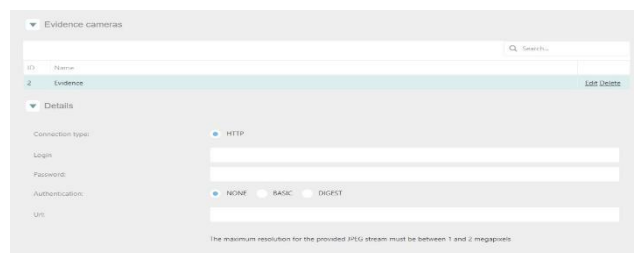
Setting

Detail Setting	Description
Connection type	only support HTTP connection
Login / Password	Camera login setting
Authentication	None, basic Digest <div style="border: 1px solid black; padding: 5px;"> <p>! INFO</p> <p>Depending on your network security requirements, the Network Camera provides two types of security settings for an HTTP transaction: basic and digest. If basic authentication is selected, the password is sent in plain text format and there can be potential risks of being intercepted. If digest authentication is selected, user credentials are encrypted using MD5 algorithm and thus provide better protection against unauthorized accesses.</p> </div>
URL	URL in jpg format of the camera.

SETUP

The user may evidence cameras by typing:

- 1) URL of the snapshot CGI of a reachable camera.
 - Any camera support JPG snapshot URL protocol.
- 2) User with permissions on the evidence camera to capture a snapshot
- 3) Password of this user
- 4) Click on the “RESTART SERVICE” button to take effect.



! Notice

1. Recommend: reduce “Evidence jpeg stream” to 1 megapixel.
2. Limit the size of the snapshot image in the evidence camera setup. NOT in the URL with parameters.
3. Maximum Evidence cameras: 1

3.9 ANPR-General Configure Tab

Expert option

Parameter	Description
View type	The type of display for detected vehicles.
Save the image	If selected, will store in the complete image.
Save the plate image	If selected, will store only the license plate image.
Image quality	Will store the image with the configured compression.
Store image on	Will store data on an SD or in the camera (it is strongly recommended to add an SD card to the camera).
Trigger Socket Port	Will enter the port to be used for receiving trigger messages.
Action time	<p>“IMMEDIATE”:</p> <ul style="list-style-type: none">● Suitable Application: Parking & Access Control● Execute the Action immediately. The retry mechanism is based on the communication protocol. <p>“PERSISTNE”:</p> <ul style="list-style-type: none">● Suitable Application: City Surveillance & Toll Collection● ANPR database will set a “Flag” on each action to indicate whether it success or not. If not, ANPR system will try the action in presetting period until success. It’s designed for securing the record on backend system even when the network is unstable.
Retry period for failed actions (hours)	The period of time in hours to retry the execution of a failed action.

Log Option

Parameter	Description
Log Level	Let you determine the log level of the service. By default it is set to 3. Level 4 and 5 are for experts and the debugging team.

Enable Engine Log	Select only if debugging mode is necessary, only for expert technicians.
Log Level CGI	Let you determine the log level of the CGI. By default is set to 3. Level 4 and 5 are for experts and the debugging team.

Purge options

▼ Purge options

Purge Interval: HOUR DAY WEEK MONTH

Type of purge: DISABLED DAYS FREESPACE

Days to preserve in storage:

Minimum percentage of free space on SD:

Minimum percentage of free space on CAMERA:

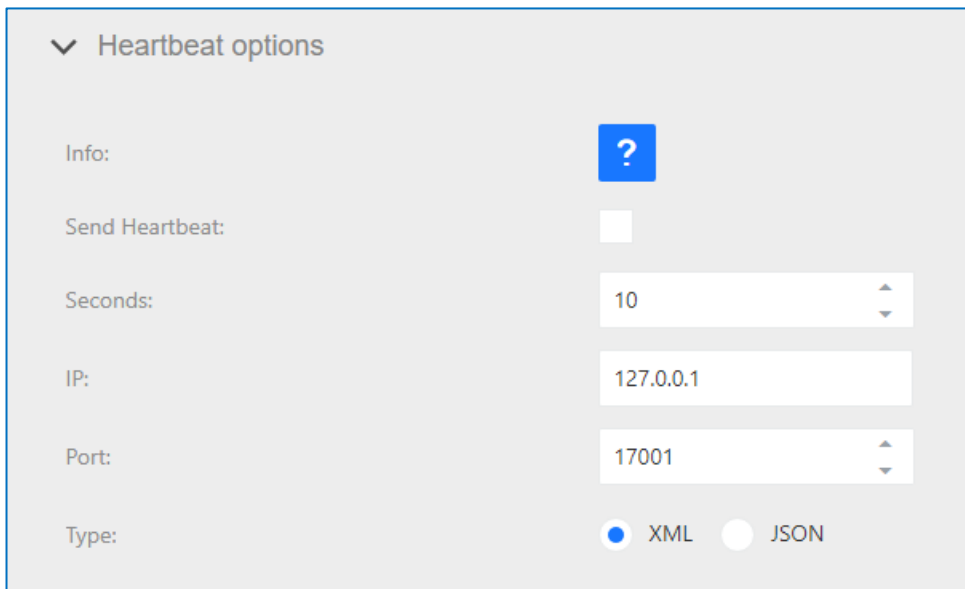
Parameter	Description
Purge Interval	<p>Schedule when you want to execute the purge.</p> <ul style="list-style-type: none"> ⌘ Hour: execute the task every hour. ⌘ Day: execute the task once a day at 23:59:59. ⌘ Week: execute the task once a week, every Monday at 00:00:00. ⌘ Month: execute the task once a month, the first day of the month at 23:59:59.
Type of Purge	<ul style="list-style-type: none"> ■ Disabled: Won't execute any purge. ■ Days: Will purge by days, keeping data for the last days. ■ Freespace: Will purge depending on the free space in the SD or in the camera.
Day to preserve in storage	<p>Parameter of "Purge by Days" Mode</p> <ul style="list-style-type: none"> ■ Delete database & files before (days): Will keep data of the last (XX) days and purge therest.

Minimum percentage of free space on SD	Will delete data in database and files stored until free space on the SD is lower than configured.
Minimum percentage of free space on Camera	Will delete data in database and files stored until free space in the camera is lower than configured.


Heartbeat options:

ANPR can create a socket connection (socket client) to send signal continuously as indicator that ANPR is alive and answering requests

- Send Heartbeat: This option will toggle if the camera is sending heartbeats or not.
- Seconds: Interval of second between heartbeats.
- IP: Destination of message sent.
- Port: Port destination (this port needs to be open on the destination computer).
- Type: With this option you can select sending an XML or JSON message.



Heartbeat options

Info: 

Send Heartbeat:

Seconds: 10

IP: 127.0.0.1

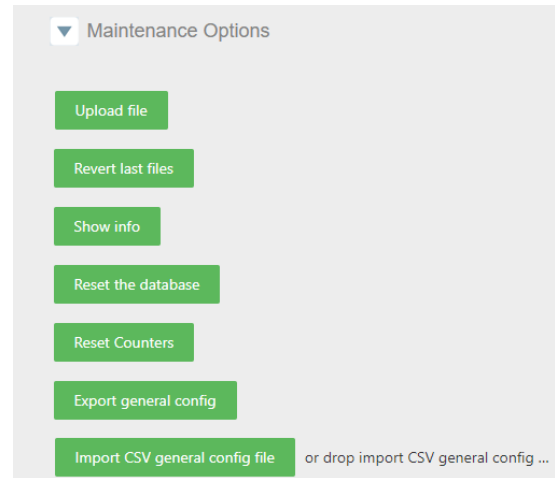
Port: 17001

Type: XML JSON

Maintenance Option

In this section you can upload files for camera configuration, licensing, update VIVOTEK ANPR software version for the path option showed in the Camera Configuration tab.

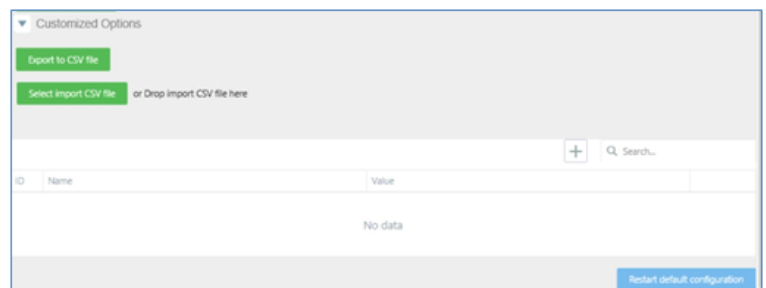
- Upload File: Let you upload a file.
- Revert last files: If after applying changes with the uploaded files, it doesn't work correctly, you can revert changes.
- Show Info: Show you information about the version and camera MAC ADDRESS.
- Reset the database: If you want to delete and clear all ANPR results including number plate readings, actions, exports, imports from the camera.
- Reset Counters: Resets the counters on the "Live" screen.
- Export general configuration: Export in a CSV file configuration.
- Import CSV general configuration file: Import in a CSV file configuration.



In case you want to revert all changes and want to get back to the default configuration, click [Restart default configuration](#) for restore default.

Customized Option

In this section you can add new fields, export and import lists (The maximum fields it is 10). You can search by date information the field you want. In case you want to revert all changes and



want to get back to the default configuration, click [Restart default configuration](#) for restore default.

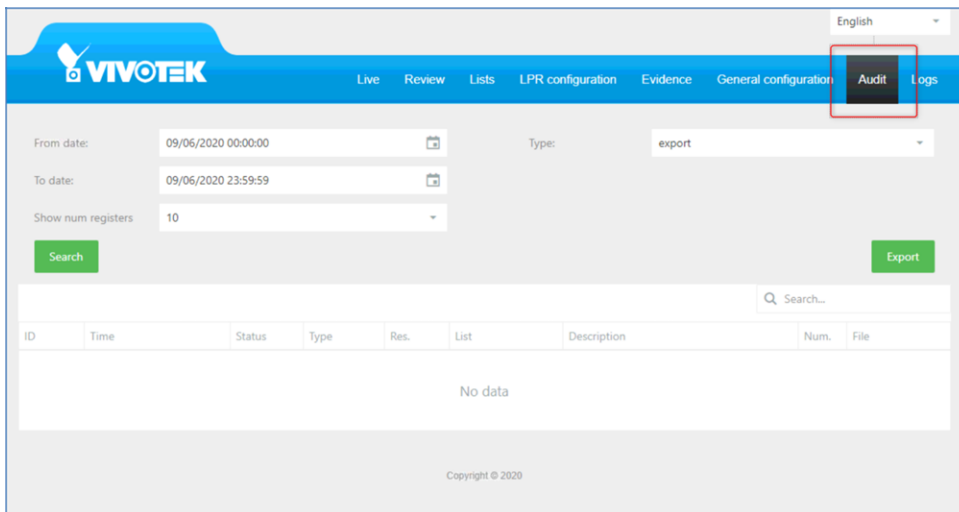
❖ Note:

1. Cannot add only number as name.

2. Cannot add field with space as character.

3.10 ANPR - Audit Tab

The camera registers actions like export and import lists and actions executed depending on the list configurations. In the Audit tab, you can search by dates information related to these actions.






You can search in the stored actions by dates and by type of action.

- Export: show you automatic exports done
- Import: show you automatic imports done.
- Action: show you automatic actions triggered on the lists.

The result of the search can be exported and downloaded.

Exports example:

From date: 28/02/2019 00:00:00  Type: export 



To date: 28/02/2019 23:59:59 


[Search](#)

ID	Time	Status	Type	List	Description	Num.	File
4	12:27:00.010 28/02/2019	DONE	Local list	all plates	Export [223232] time [from:20000101T000...	10	Get file
5	12:28:00.172 28/02/2019	DONE	Local list	all plates	Export [223232] time [from:20000101T000...	9	Get file
6	12:29:00.127 28/02/2019	DONE	Local list	all plates	Export [223232] time [from:20000101T000...	11	Get file
7	12:30:00.259 28/02/2019	DONE	Local list	all plates	Export [223232] time [from:20000101T000...	12	Get file

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Import Example:

From date: 28/02/2019 14:00:00  Type: import 



To date: 28/02/2019 23:59:59 


[Search](#)

ID	Time	Status	Type	List	Description	Num.	File
3	14:00:00.218 28/02/2019	DONE		all plates	Import [23232] time [from:200	12	Get file
4	14:01:00.228 28/02/2019	DONE		all plates	Import [23232] time [from:200	7	Get file

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Action Example

From date: 28/02/2019 00:00:00  Type: action 

To date: 28/02/2019 23:59:59 

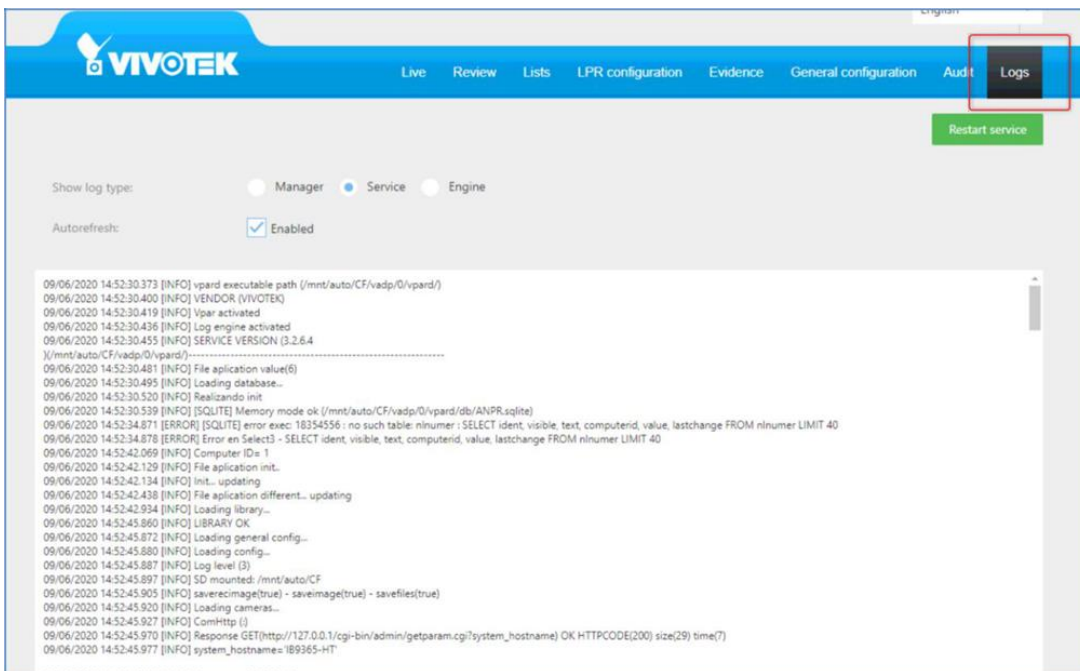
[Search](#)

ID	Time	Status	Type	Res.	List	Description	File
1284	12:26:53.370 28/02/2019	DONE	FTP	1289	all plates	Action [121221] plate [0715GY	Get file
1285	12:26:53.492 28/02/2019	DONE	FTP	1290	all plates	Action [121221] plate [0715GY	Get file
1286	12:26:53.615 28/02/2019	DONE	FTP	1291	all plates	Action [121221] plate [0715GY	Get file
1287	12:26:53.733 28/02/2019	DONE	FTP	1292	all plates	Action [121221] plate [0715GY	Get file
1288	12:26:53.852 28/02/2019	DONE	FTP	1293	all plates	Action [121221] plate [0715GY	Get file
1289	12:26:53.975 28/02/2019	DONE	FTP	1294	all plates	Action [121221] plate [0715GY	Get file
1290	12:26:54.097 28/02/2019	DONE	FTP	1295	all plates	Action [121221] plate [0715GY	Get file
1291	12:26:54.217 28/02/2019	DONE	FTP	1296	all plates	Action [121221] plate [0715GY	Get file
1292	12:26:54.334 28/02/2019	DONE	FTP	1297	all plates	Action [121221] plate [0715GY	Get file
1293	12:26:54.450 28/02/2019	DONE	FTP	1298	all plates	Action [121221] plate [0715GY	Get file

5 10 20 50 100 Page 1 of 100 (1000 items) 1 2 3 4 5 ... 100

3.11 ANPR - Logs Tab

In this TAB the user can see /download different logs. Logs are activated and setup in General Configuration TAB. These logs can be useful to help our technical team to diagnose and solve application problems.



The type of the log that the user wants to see must be selected by either manager, Service or Engine. Checking auto update the application will refresh the selected log type. Sending logs to technical support may be needed. To do that, click [Download logs](#) in the bottom of the page.

Selected logs will be downloaded in compressed txt format.

4. Camera list synchronization

The VIVOTEK ANPR software system allows a list system synchronized. One of the cameras works like a master and the other cameras works like a slave. The master camera uploads the file with the list content and the slave cameras download the file. All the list and elements must be modified in the master camera, the changes will be updated automatically in the slave following the next instructions to configure the master and the slaves.

We recommend <10 slave cameras connect to master camera at the same time; The maximum number of connections is depending on the FTP server (master camera). Can be synchronized all the lists or only one list.

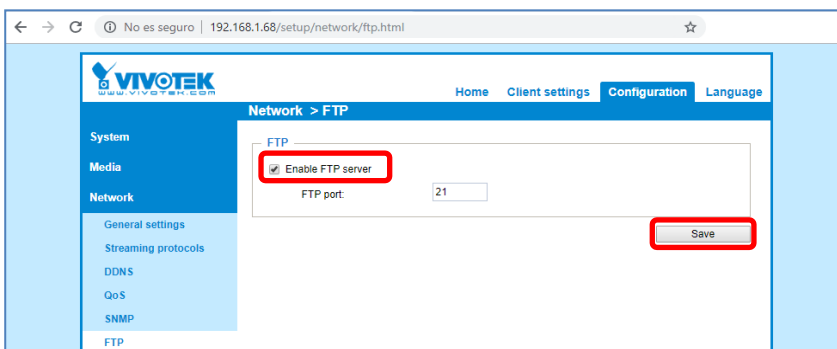
4.1 Architecture 1

The camera is the FTP server. Must be activated (by default is disable the FTP server)



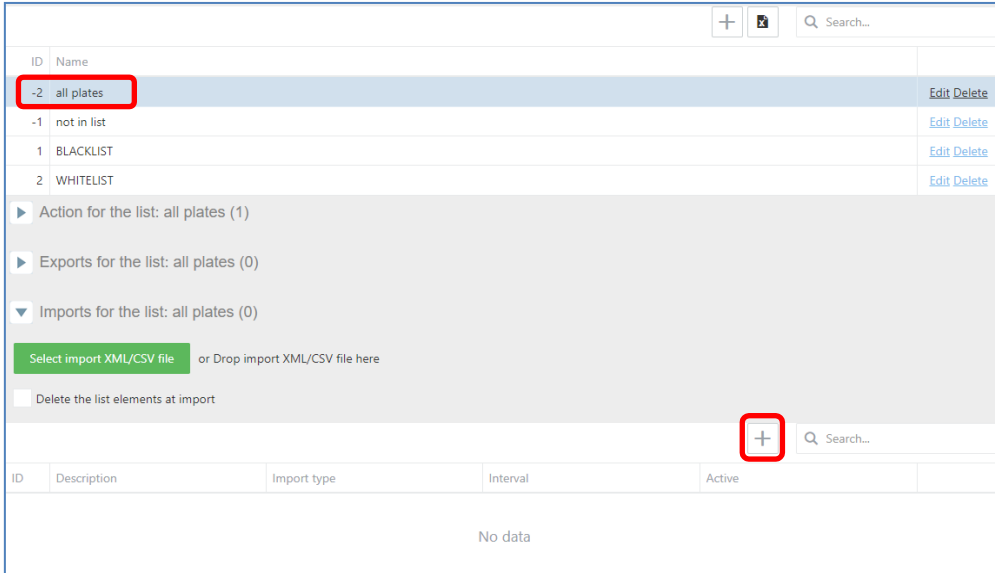
Master configuration

- Step1, Activate the FTP server.
- Step 2, Access to the camera web interface: Configuration/Network/FTP
- Step 3, Check “Enable FTP server” and click Save.



Slave configuration

- Step 1, Access to the List Tab. To configure only one list selects the list and make the import in the list. To configure all the list selects all plates.



ID	Name	
-2	all plates	Edit Delete
-1	not in list	Edit Delete
1	BLACKLIST	Edit Delete
2	WHITELIST	Edit Delete

▶ Action for the list: all plates (1)

▶ Exports for the list: all plates (0)

▼ Imports for the list: all plates (0)

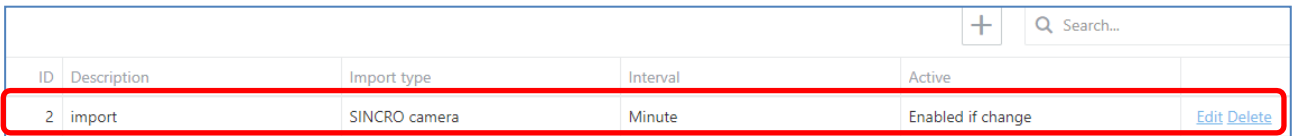
Select import XML/CSV file or Drop import XML/CSV file here

Delete the list elements at import

+

ID	Description	Import type	Interval	Active
No data				

- Step2, Create an import each minute (or desirable time) the time enabled if change with the type SINCRO Camera and click Save.



ID	Description	Import type	Interval	Active	
2	import	SINCRO camera	Minute	Enabled if change	Edit Delete

Step 3, configure the master camera credentials.

ID	Description	Import type	Interval	Active	
2	import	SINCRO camera	Minute	Enabled if change	Edit Delete

Import properties

Import Info ?

Host:

User:

Password:

- Host: Camera master IP
- User: Camera master user
- Password: Camera master password can be checked in the Audit Tab.

The import setting can be verified in the "Audit Tab".

From date:

To date:

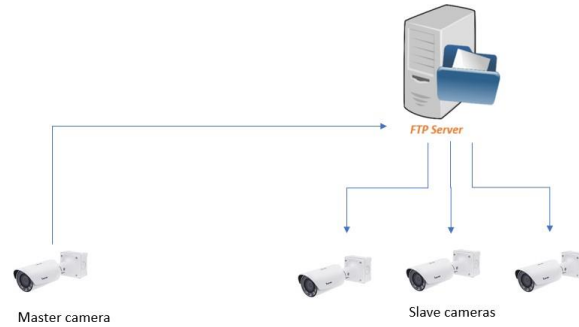
Type: ▼

ID	Time	Status	Type	List	Description	Num.	File
21	13:25:00.136 08/04/2019	DONE			Import [import slave] time [f	1	Get file

|

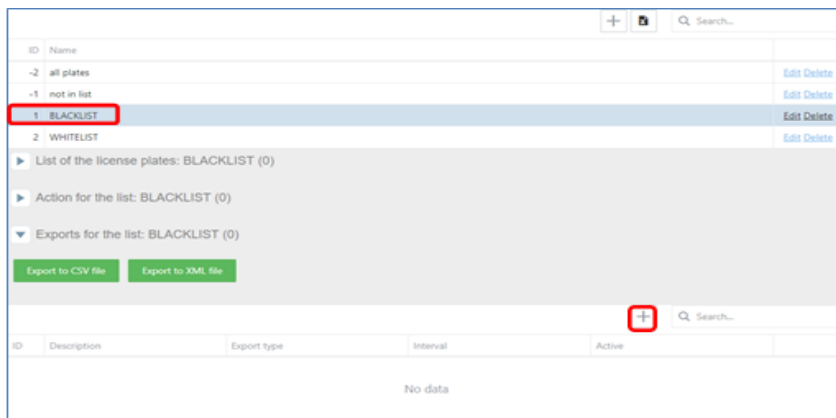
4.2 Architecture 2

Using FTP server where store the list.

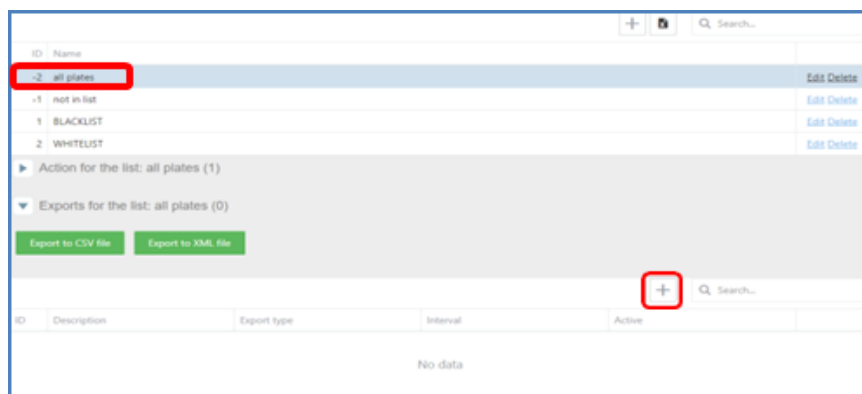


Master configuration

- Step1, Access to the List Tab.
 - To configure only one list, selects the list and make the export in the list.



- To configure all the list, selects all plates.



- Step 2, Create an export each minute enabled if change with the type FTP list and click Save.

ID	Description	Export type	Interval	Active	
1	export master	FTP list	Minute	Enabled if change	Save Cancel

- Step 3, Configure the credentials of the FTP server and the format CSV or XML, can be the both but must be the same in the slaves. Just configured the camera master is sending the file to the FTP server.

ID	Description	Export type	Interval	Active	
1	export master	FTP list	Minute	Enabled if change	Edit Delete

Export properties

Export Info

Host: 192.168.1.21

Port: 21

Format: XML CSV

Folder name: EXPORT

User: user

Password: password

Confirmation file: .FLAG

- Step 4, Check: These actions can be checked in the Audit Tab.

From date: 08/04/2019 00:00:00

To date: 08/04/2019 23:59:59

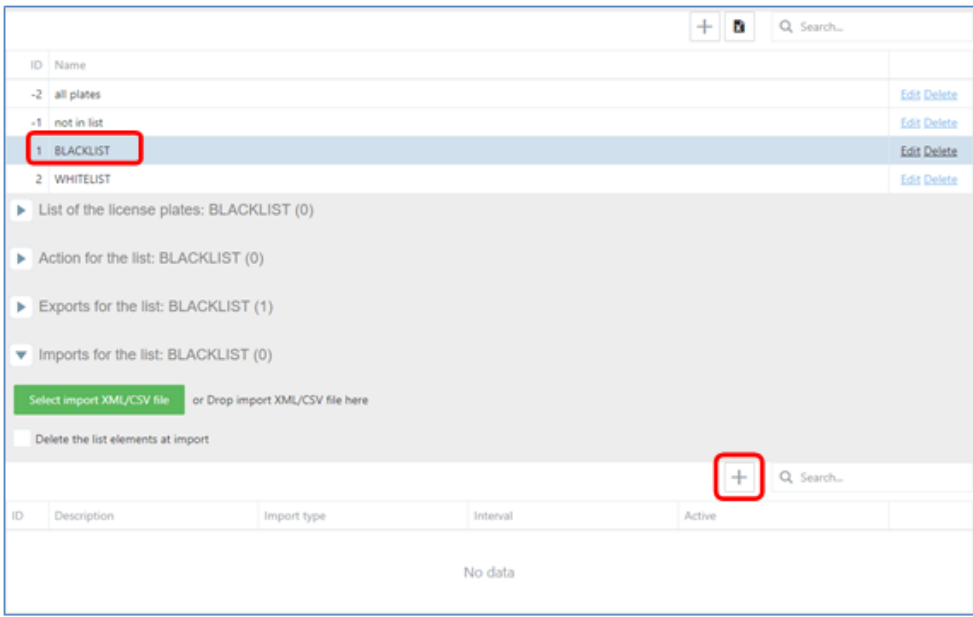
Type: export

Search

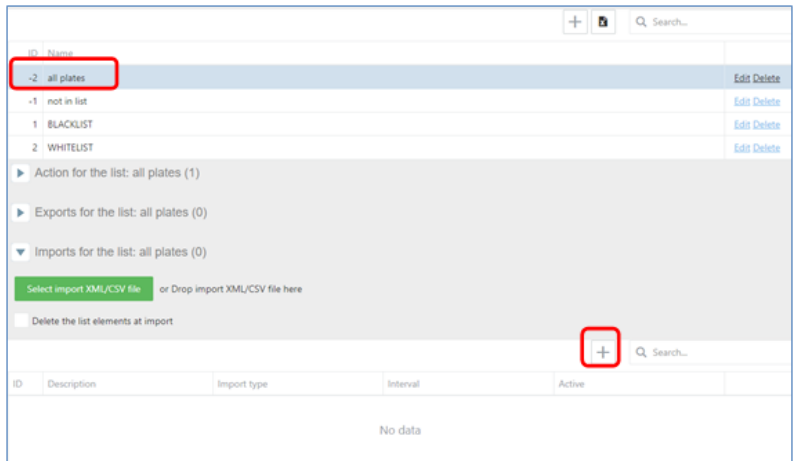
ID	Time	Status	Type	List	Description	Num.	File
1	12:55:00.010 08/04/2019	DONE	FTP list	BLACKLIST	Export [export master] time [from:2000010...	1	Get file

Slave configuration

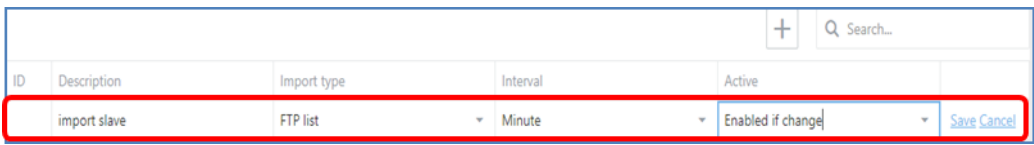
- Step 1, Access to the List Tab.
- Step 2, To configure only one list selects the list and make the import in the list.



Note: To configure all the list selects all plates.



- Step 3, Create an import each minute (or desirable time) the time enabled if change with the type FTP list and click Save.



- Step 4, Configure the same credentials of the FTP server and the same format CSV or XML than the master configuration.

ID	Description	Import type	Interval	Active	
1	import slave	FTP list	Minute	Enabled if change	Edit Delete

Import properties

Import Info ?

Host:

Port:

Format: XML XML_NOTDELETE CSV CSV_NOTDELETE ?

Folder name:

User:

Password:

Confirmation file: .FLAG

If the master selection type format is XML can be selected XML or XML_NOTDELETE, if your selection is XML all the elements not included in each file downloaded will be deleted. Just configured the camera master is downloading the file from the FTP server.

- Step 5, Check, The action can be checked in the Audit Tab.

From date:

To date:

Type:

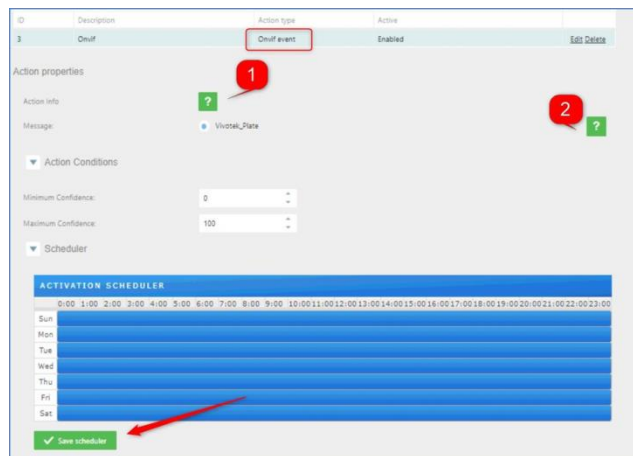
ID	Time	Status	Type	List	Description	Num.	File
21	13:25:00.136 08/04/2019	DONE			Import [import slave] time [f	1	Get file

5. List and Action Examples

A list can perform several actions, depending on the scenario and needs. Having the a list selected, click on “Action for the list” and then click on the “+” button.

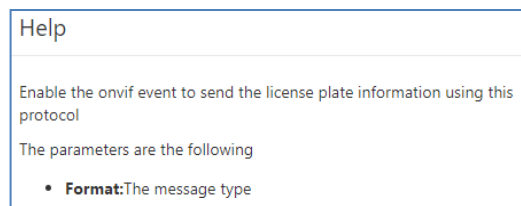
5.1 Onvif Eve


Configuring the action Onvif Event to send the license plate using this protocol.

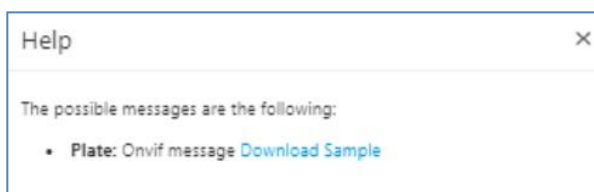


- Action Conditions: Set the minimum and maximum confidence filter to do the action Onvif.
- Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information.



Click on  for more information.



5.2 IO

Configuring the action IO to open a gate for those plates that belong to the list EMPLOYEES.

Step 1, Click on “Action for the list” and add a new action pressing “+” and then select in “Action type = IO”

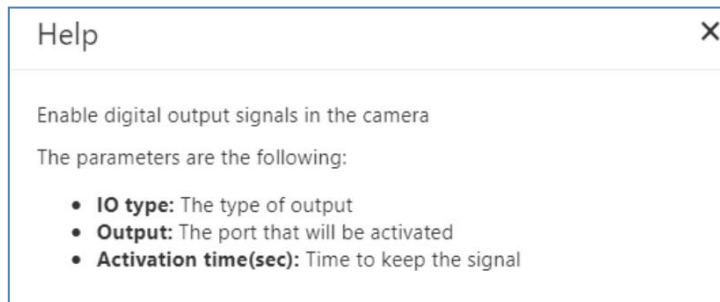
The screenshot displays the configuration page for an IO action. At the top, a header bar shows the action name 'IO', its status 'Enabled', and options for 'Edit' and 'Delete'. The main area is titled 'Action properties' and contains several sections:

- Action Info:** A green question mark icon is highlighted with a red circle containing the number '1'.
- IO type:** A radio button is selected for 'VIVOTEK'.
- Output:** A dropdown menu is set to '0'.
- Activation time (sec):** A dropdown menu is set to '1'.
- Output Delay (sec):** A dropdown menu is set to '0'.
- Action Conditions:** A dropdown menu is expanded, showing 'Minimum Confidence' set to '0' and 'Maximum Confidence' set to '100'.
- Scheduler:** A dropdown menu is expanded, showing a grid for scheduling. The grid has columns for hours from 0:00 to 23:00 and rows for days of the week (Sun, Mon, Tue, Wed, Thu, Fri, Sat). The entire grid is currently blue, indicating the action is active for all times and days.
- Save scheduler:** A green button with a checkmark and the text 'Save scheduler' is located at the bottom left, with a red arrow pointing to it.

Action Conditions: Set the minimum and maximum confidence filter to do the action IO.

Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information.

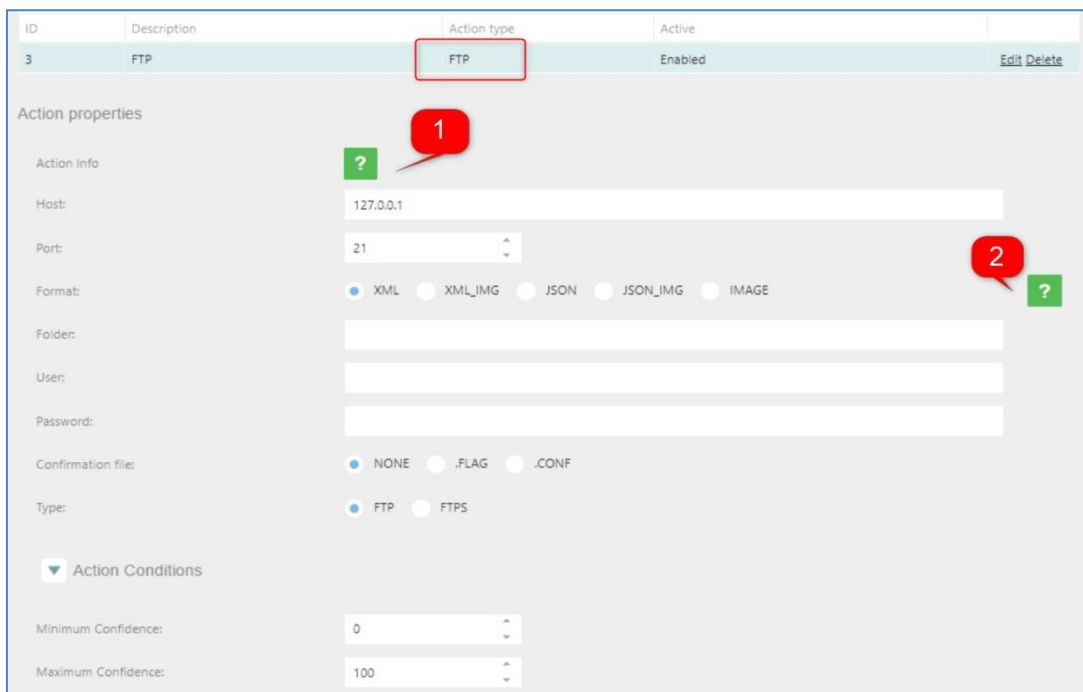


In this case, every time we read a license plate that is in the EMPLOYEES list, we send a signal to the camera I/O to open the gate.

5.3 FTP

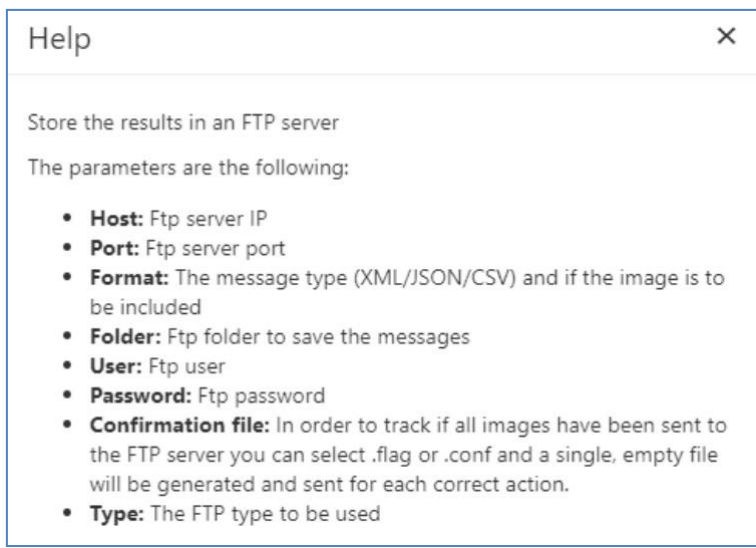
Configuring the action FTP to send an XML, JSON or image to an FTP server.

Using the EMPLOYEES list, click on "Action for the list" and add a new action pressing "+" and then select in "Action type = FTP"



Action Conditions: Set the minimum and maximum confidence filter to do the action FTP.

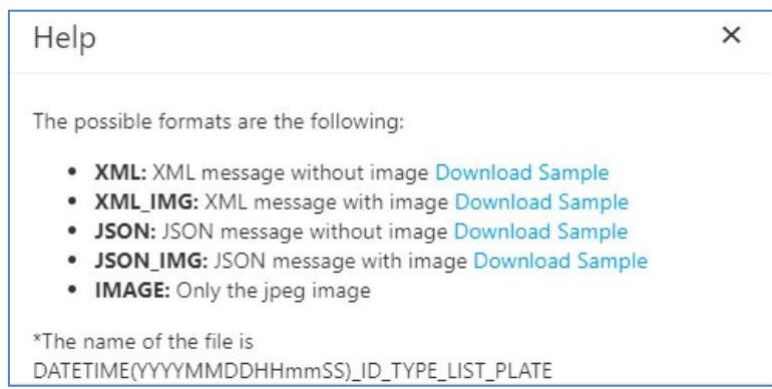
Schedule: Set the scheduler as needed and click on "SAVE SCHEDULER".



Click on  for more information about how to configure.

Select which message format you will use to send the information.

Click on  for more information about format type.



5.4 HTTP

Configuring the action HTTP to send analytic events to a VMS.

Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = HTTP”

You can use wildcards in the “Url” param to include some information in the http petition:

#DTE# Time stamp of the image captured.

#IDCAM# Camera identifier

#PLT# Plate number

#CNF# Global confidence

#IDLAN# Lane identifier (1 or 2)

#IDLIST# List of list identifiers separated by []. [-1] not in list

Examples:

http://192.168.1.23:80?plate=#PLT#&time=#DTE#


<http://192.168.1.23:80?plate=0715GYC&time=2019-09-27T18:49:19.912>

http://192.168.1.34:8090?plate=#PLT#&cam=#IDCAM#&time=#DTE#&conf=#CNF#&lane=#IDLAN#&list=#IDLIST#

http://192.168.1.34:8090?plate=0715GYC&cam=1&time=2019-09-27T18:52:49.929&conf=99.90&lane=2&list=[-1]

ID	Description	Action type	Active	
3	HTTP	HTTP	Enabled	Edit Delete

Action properties

Action info 

Output format: XML JSON

Authentication: NONE BASIC DIGEST

Format: GET POST POST_IMG POST_PARAM

Uri:

Post message:

User:

Password:

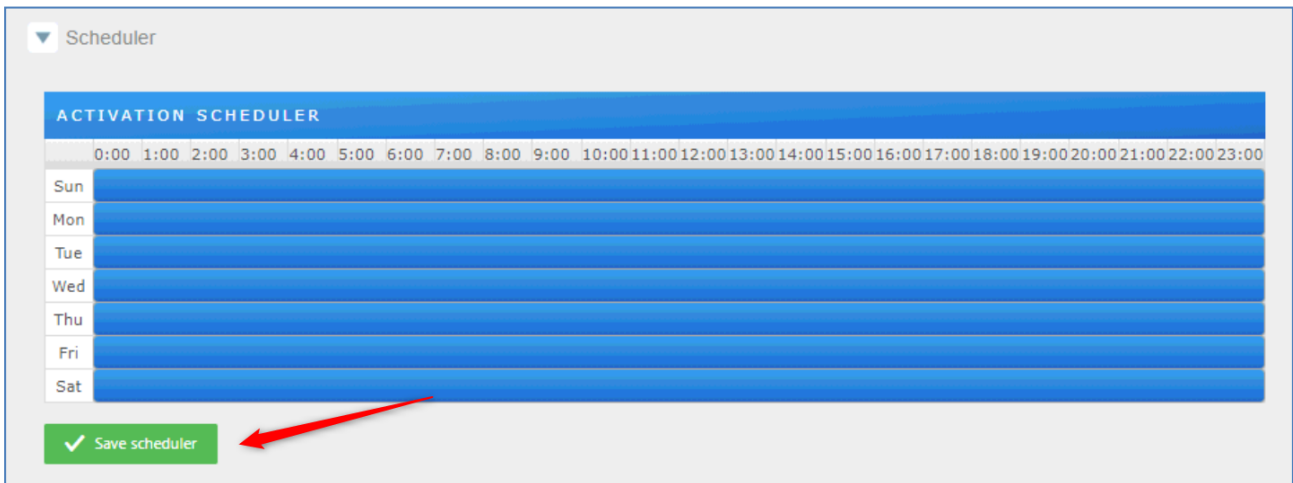
Action Conditions

Minimum Confidence:

Maximum Confidence:

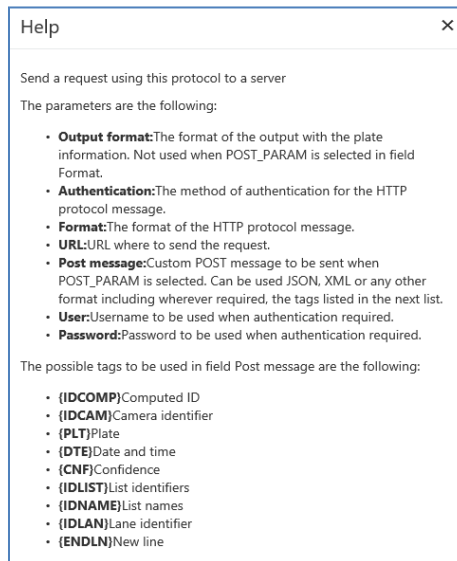
1

2



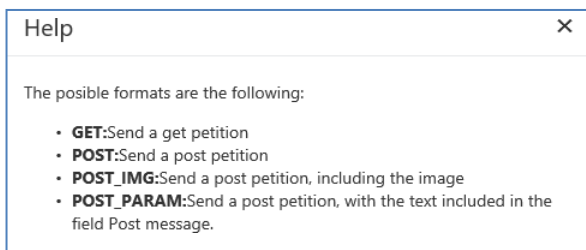
Action Conditions: Set the minimum and maximum confidence filter to do the action HTTP.

Schedule: Set the scheduler as needed and click on "SAVE SCHEDULER".



Click on  for more information about how to configure.

Click on  for more information about format type.



5.5 MILESTONE

Configuring the action MILESTONE to send analytic events to a Milestone VMS.

Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = MILESTONE”

ID	Description	Action type	Active	
3	MIL	MILESTONE	Enabled	Edit Delete

Action properties

Action Info ? 1

Host: 127.0.0.1

Port: 9090

Format: ANALYTIC_EVENT ? 2

UrL:

Event Type:

Action Conditions

Minimum Confidence: 0

Maximum Confidence: 100

Scheduler

ACTIVATION SCHEDULER

0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

Sun

Mon

Tue

Wed

Thu

Fri

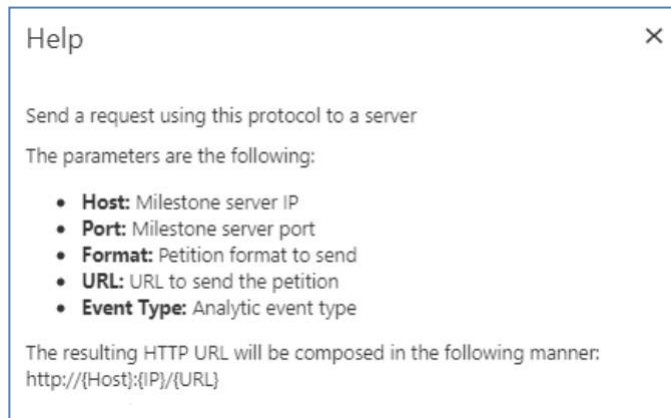
Sat

✓ Save scheduler

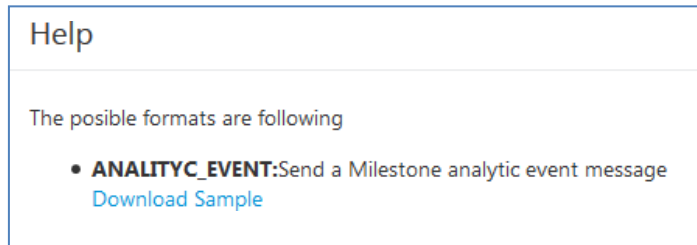
Action Conditions: Set the minimum and maximum confidence filter to do the action Milestone.

Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on ? 1 for more information about how to configure.



Click on  for more information about format type.



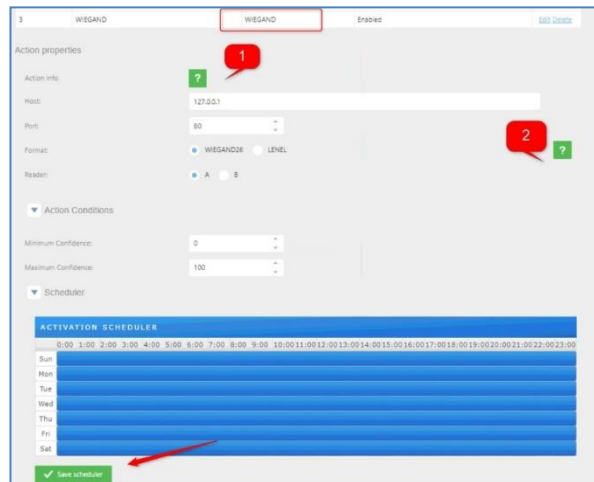
See chapter 4.4.1 to know more information to how configure Milestone.

5.6 WIEGAND

Configuring the action WIEGAND to send analytic events to a Wiegand middleware board.

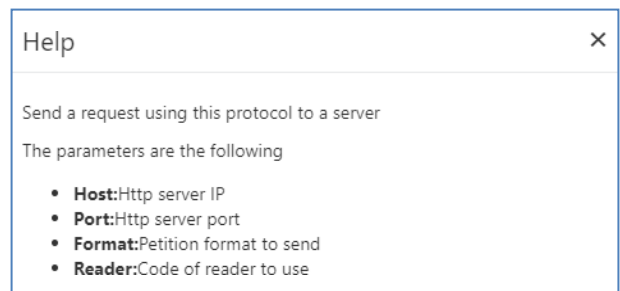
Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = WIEGAND”.

76



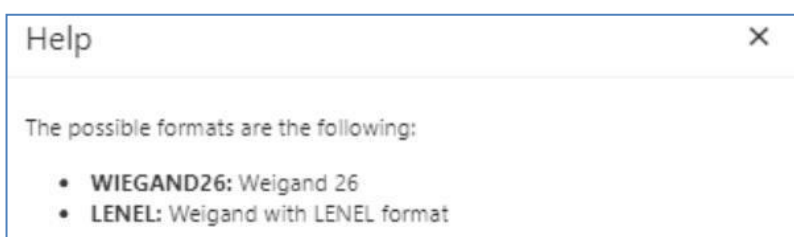
Action Conditions: Set the minimum and maximum confidence filter to do the action Wiegand.

Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.



Click on  for more information about how to configure.

Click on  for more information about format type.



5.7 VAST2

Configuring the action VAST2 to send analytic events to the software VAST2. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = Vast2”.

3 WIEGAND VAST2 Enabled Edit Delete

Action properties

Action Info ? 1

Host: 127.0.0.1

Port: 17000

▼ Action Conditions

Minimum Confidence: 0

Maximum Confidence: 100

▼ Scheduler

ACTIVATION SCHEDULER

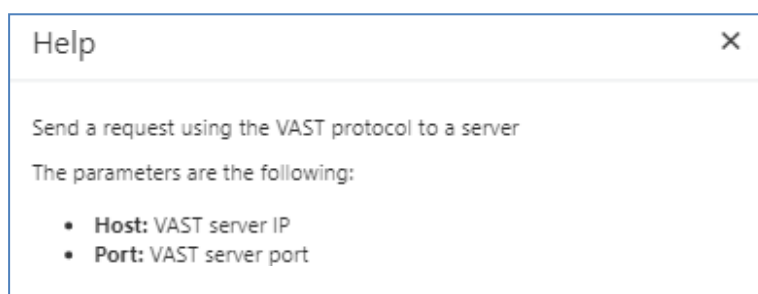
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Sun																								
Mon																								
Tue																								
Wed																								
Thu																								
Fri																								
Sat																								

✓ Save scheduler

Action Conditions: Set the minimum and maximum confidence filter to do the action Trigger Server.

Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.



5.8 Trigger Server

Configuring the action Trigger Server will use the camera to receive triggers from other devices and send a message. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = Trigger Server”.

This mode is designed to work with trigger mode, the client connect to the server socket and send the message specified in the “Trigger mode”, received this message (another message is discarded) make a trigger to the camera and take a picture to process the engine. After engine processed send a message with the format specified in the “Format response”

- SIMPLE: Just the plate number XML a message in format XML
- XML_IMG a message in XML format including the image in base64 format JSON a message in format JSON
- JSON_IMG a message in JSON format including the image in base64 format

The screenshot displays the configuration page for a 'TRIGGER SERVER' action. At the top, the action name 'Trigger server' is highlighted with a red box. Below it, the 'Action properties' section includes:

- Action Info:** A green question mark icon is circled in red with a '1' in a red speech bubble.
- Port:** A dropdown menu set to '8060'.
- Format response:** Radio buttons for 'SIMPLE' (selected), 'XML', 'XML_IMG', 'JSON', and 'JSON_IMG'.
- Trigger message:** A text input field containing '\$'.
- Simple response init/endi:** Empty text input fields.
- Action Conditions:** 'Minimum Confidence' and 'Maximum Confidence' both set to '0'.
- Scheduler:** A section titled 'ACTIVATION SCHEDULER' with a grid for days (Sun-Sat) and times (0:00-23:00). The grid is currently empty.

 At the bottom left, a green 'Save scheduler' button is highlighted with a red arrow.

- Action Conditions: Set the minimum and maximum confidence filter to do the action Trigger Server.
- Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.

Help ×

Enable a port that sends the read response when a trigger message arrives

The parameters are the following:

- **Port:** The port that will listen/respond to.
- **Format:** The message type and if need to send the image too.
The possible formats are following:
 - **SIMPLE:** Return only the number plate
 - **XML:** XML message without image [Download Sample](#)
 - **XML_IMG:** XML message with image [Download Sample](#)
 - **JSON:** JSON message without image [Download Sample](#)
 - **JSON_IMG:** JSON message with image [Download Sample](#)
- **Trigger message:** Activation message for trigger
- **Simple response init:**Message concatenated before plate (only for simple format)
- **Simple response init:**Message concatenated after plate (only for simple format)

5.9 WIEGAND VIVOTEK

Configuring the action WIEGAND VIVOTEK to send analytic events to a Wiegand middleware board. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = WIEGAND”.

ID	Description	Action type	Active	
2	WG	Wiegand Vivotek	Enabled	Edit Delete

Action properties

Scheduler

ACTIVATION SCHEDULER

0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

Sun
Mon
Tue
Wed
Thu
Fri
Sat

Save scheduler

Action Info

Host: 192.168.1.127

Port: 1601

Output format: Bypass data bits Even/Odd parity bits Odd/Even parity bits

Output bit length: 24 bits 32 bits

Action Conditions: Set the minimum and maximum confidence filter to do the action Wiegand.

Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.

Help

Send a request using this protocol to a server

The card number sent will be the one defined in the description column of the license plate set in the list. The card number will always be preceded and terminated with the # character. For example, #1234# or #12.457#

The types of formats accepted will be:

- **Full card number:** The code will be wrapped between # (#1234#)
- **Facility code + Card number:** The code will be composed of: # + facility code + . + card number + # (#12.457#)

The parameters are the following:

- **Host:** Wiegand server IP
- **Port:** Wiegand server port
- **Output format:** Parity bit configuration of the output
- **Output bit length:** Number of output bits without parity bits

Help

The possible output formats are the following:

- **Bypass data bits:** No parity bits are added to the output
- **Even/Odd parity bits:** The leading parity bit is even, and the ending parity bit is odd
- **Odd/Even parity bits:** The leading parity bit is odd, and the ending parity bit is even

The output bit length without parity bits can be 24 or 32 bits

Click on  for more information about format type

5.10 Email

Configuring the action EMAIL to send messages

Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = EMAIL”.

ID	Description	Action type	Active	
3	EMAIL	EMAIL	Enabled	Edit Delete

Action properties

Action Info ? **1**

Server:

Port: 587

Server type and format: SMTP/SSL SMTP ?

From:

User:

Password:

To:

Subject: plate {PLT} received

Message: Plate: {PLT}{ENDLN}Time: {DTE}{ENDLN}Global Confidence: {CNF}{ENDLN}List: {IDNAME}{ENDLN}Lane: {IDLAN}{EN

Action Conditions

Minimum Confidence: 0


Maximum Confidence: 100

Scheduler

ACTIVATION SCHEDULER

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
Sun																									
Mon																									
Tue																									
Wed																									
Thu																									
Fri																									
Sat																									

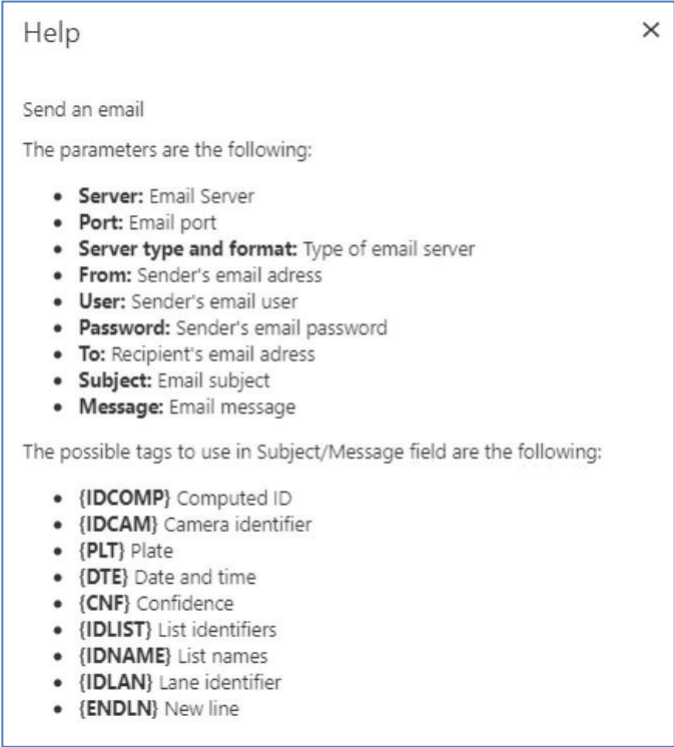
✓ Save scheduler



Action Conditions: Set the minimum and maximum confidence filter to do the action email.

Schedule: Set the scheduler as needed and click on "SAVE SCHEDULER".

Click on  for more information about how to configure.

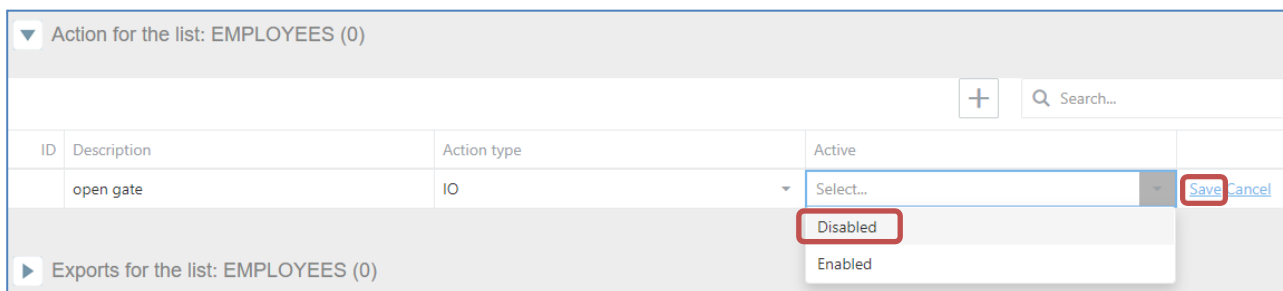


Click on  for more information about format type.

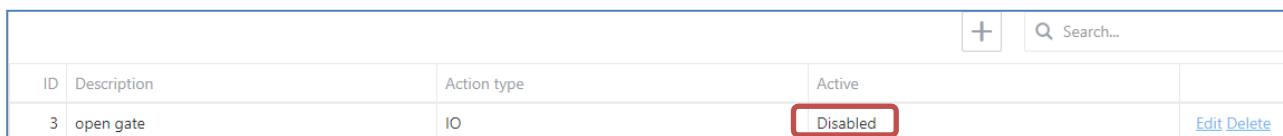


In case, you do not want to continue using an action in a list you can modify able to disable or delete the action.

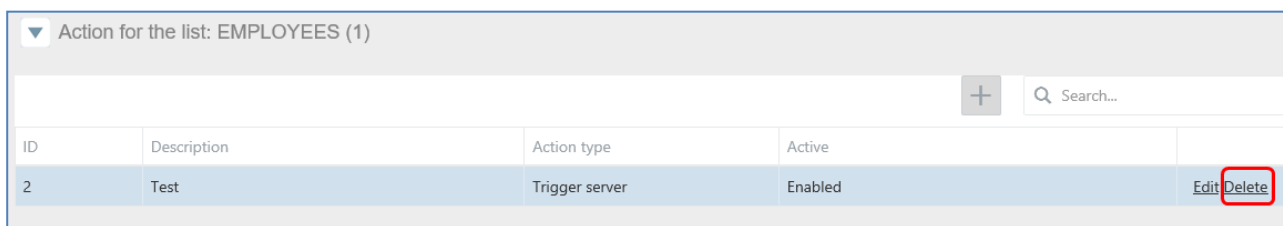
To disable click on the list, select the action, and then click on edit option. In Active change to Disabled and then click on Save.



After this change, you will have the action disabled in case you need to use it later.



To delete an action, click on the action and click on the DELETE button and then YES.



5.11 Meypar

1. Configuring the action Meypar Server: Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = Meypar Server”.

Port: UDP local camera port

Camera ID: Camera identifier

Remote IP: IP for the client UDP (If the IP remote is empty use the IP from the first message received)

Remote Port: Port for the client UDP (If the port is empty use the same UDP

lo

3 MEYPAR Meypar server Enabled Edit Delete

Action properties

Action Info ? 1

Port: 7050

Camera ID: 1

Remote IP:

Remote port: 7051

▼ Action Conditions

Minimum Confidence: 0

Maximum Confidence: 100

▼ Scheduler

ACTIVATION SCHEDULER

0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

Sun

Mon

Tue

Wed


Thu

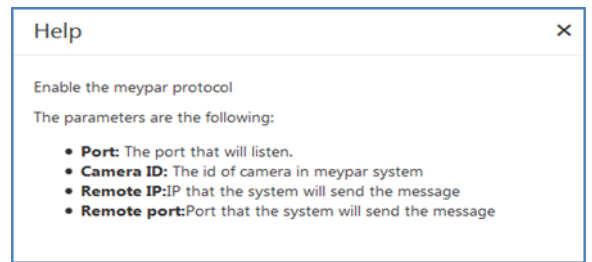
Fri

Sat

✓ Save scheduler

- Action Conditions: Set the minimum and maximum confidence filter to do the action Meypar Server.
- Schedule: Set the scheduler as needed and click on “SAVE SCHEDULER”.

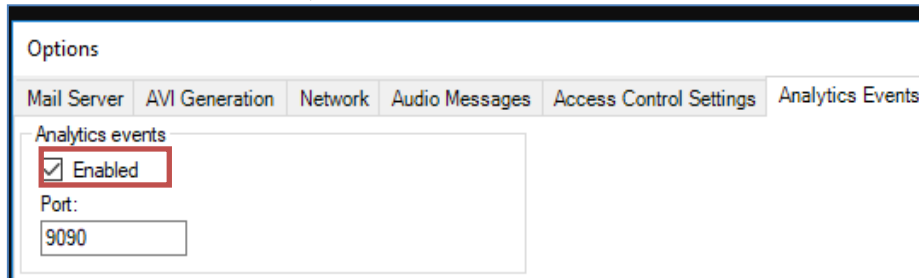
Click on  for more information about how to configure.



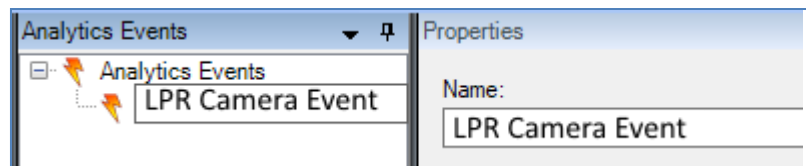
5.12 Milestone

Once the Milestone action is configured, we need set up Milestone server to process our action. To do this, we follow the next steps:

- 1- Enable analytic events.
 - a. We click to Tool -> Options and select the "Analytics Event" tab. At this tab we will active the Analytics events.



- 2- Create the analytic event.
 - a. We do a click at Rules and Events -> Analytics Events. And then right button to create a new analytic event. The name must be the same that defined at Event type of action.



Create an alarm definition.

- b. We do a right click at Alarm definition and we create a new alarm definition on:
 - i. Enable: This alarm is enabled at system
 - ii. Name: The alarm name
 - iii. Triggering event: We must select Analytic Events
 - iv. Triggering event source: We must select the before created analytic event
 - v. Source: We must select the camera at milestone system

Alarm Definitions

- Alarm Definitions
 - Alarm Definition

Properties

Alarm definition

Enable:

Name: LPR ALARM

Instructions:

Trigger

Triggering event: Analytics Events

LPR CAMERA EVENT

6. ANPR Performance Index

This performance standards apply for license plates that comply with correctly represented and readable plates in ANPR camera FOV. The suggested processes discussed here are intended for gathering data and analyzing performance.

6.1 ANPR performance measurements

The measurements used to describe the ANPR system performance are:

- Capture rate: the number of license plates detected and logged by an ANPR device in comparison with the total number of license plates passing through the field of view that are visible to a human. This is expressed as a percentage irrespective of whether they are correctly read or not.
- Read rate: the number of license plates captured by an ANPR device that are accurately read in comparison with the total number captured expressed as a percentage.

It is desirable for all of the capture and read rates to be as high as possible. Details for any license plate that is not captured or read correctly should be noted and reported. This may provide information to enable the performance of the device to be improved or define the countermeasures.

6.2 Minimum evaluation sample

The evaluation sample is no fewer than 250 consecutive vehicles displaying clear license plate within the field of view of an ANPR camera. This number of vehicles is suggested as the result gives a reasonable confidence and accurate representation.

If the traffic flow is too low to be impractical to collect 250 vehicle, measurement on all vehicles that pass the camera within a two-hour time span can take as alternative. However, it should be noted that the results will not be as robust.

6.3 Calculate the performance

Capture Rate

$$\text{Capture rate} = \frac{\text{number of LPs captured in the ANPR log}}{\text{number of LPs known to pass the ANPR camera}} \times 100$$

Read Rate

$$\text{Read rate} = \frac{\text{number of LPs correctly read}}{\text{number of LPs captured in the ANPR log}} \times 100$$

Accuracy Rate

$$\text{Accuracy rate} = \text{Capture Rate} \times \text{Read Rate}$$

Performance Calculation Example:






5 cars passing the LPR camera FoV with clear license plate images. 5 ANPR record in the log. But 5th car is not included in the ANPR record image. 3rd car shows twice in the record but 1st recognition is wrong.







	Number	Example																		
Number of LPs known to pass the ANPR	5	Five cars <table border="1" style="margin-left: 20px;"> <tr><td>1st Car</td><td>ABC1234</td></tr> <tr><td>2nd Car</td><td>BCD1234</td></tr> <tr><td>3rd Car</td><td>CDE1234</td></tr> <tr><td>4th Car</td><td>DEF1234</td></tr> <tr><td>5th Car</td><td>EFG1234</td></tr> </table>	1 st Car	ABC1234	2 nd Car	BCD1234	3 rd Car	CDE1234	4 th Car	DEF1234	5 th Car	EFG1234								
1 st Car	ABC1234																			
2 nd Car	BCD1234																			
3 rd Car	CDE1234																			
4 th Car	DEF1234																			
5 th Car	EFG1234																			
Number of LPs captured in the ANPR log	4	5 LPs record. One is wrong reading. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>License</th> <th>ANPR Reading</th> </tr> </thead> <tbody> <tr><td>1st Car</td><td>ABC1234</td><td>ABC1234</td></tr> <tr><td>2nd Car</td><td>BCD1234</td><td>BCD1234</td></tr> <tr><td>3rd Car</td><td>CDE1234</td><td>CDE1234 COE1234</td></tr> <tr><td>4th Car</td><td>DEF1234</td><td>DEF1234</td></tr> <tr><td>5th Car</td><td>EFG1234</td><td>-</td></tr> </tbody> </table>		License	ANPR Reading	1 st Car	ABC1234	ABC1234	2 nd Car	BCD1234	BCD1234	3 rd Car	CDE1234	CDE1234 COE1234	4 th Car	DEF1234	DEF1234	5 th Car	EFG1234	-
	License	ANPR Reading																		
1 st Car	ABC1234	ABC1234																		
2 nd Car	BCD1234	BCD1234																		
3 rd Car	CDE1234	CDE1234 COE1234																		
4 th Car	DEF1234	DEF1234																		
5 th Car	EFG1234	-																		
Capture Rate	= 4 / 5 = 80%																			
Read Rate	= 3 / 4 = 75 %																			
Accuracy Rate	= 80 % x 75 % = 60%																			

6.4 ANPR Accuracy Support Policy

As a basic ANPR support principle, accuracy fine-tune request should be based on the performance evaluation on real traffic flow with minimum evaluation sample size at least. This policy can secure the evaluation result is robust without small sample size bias and sufficient record to train.

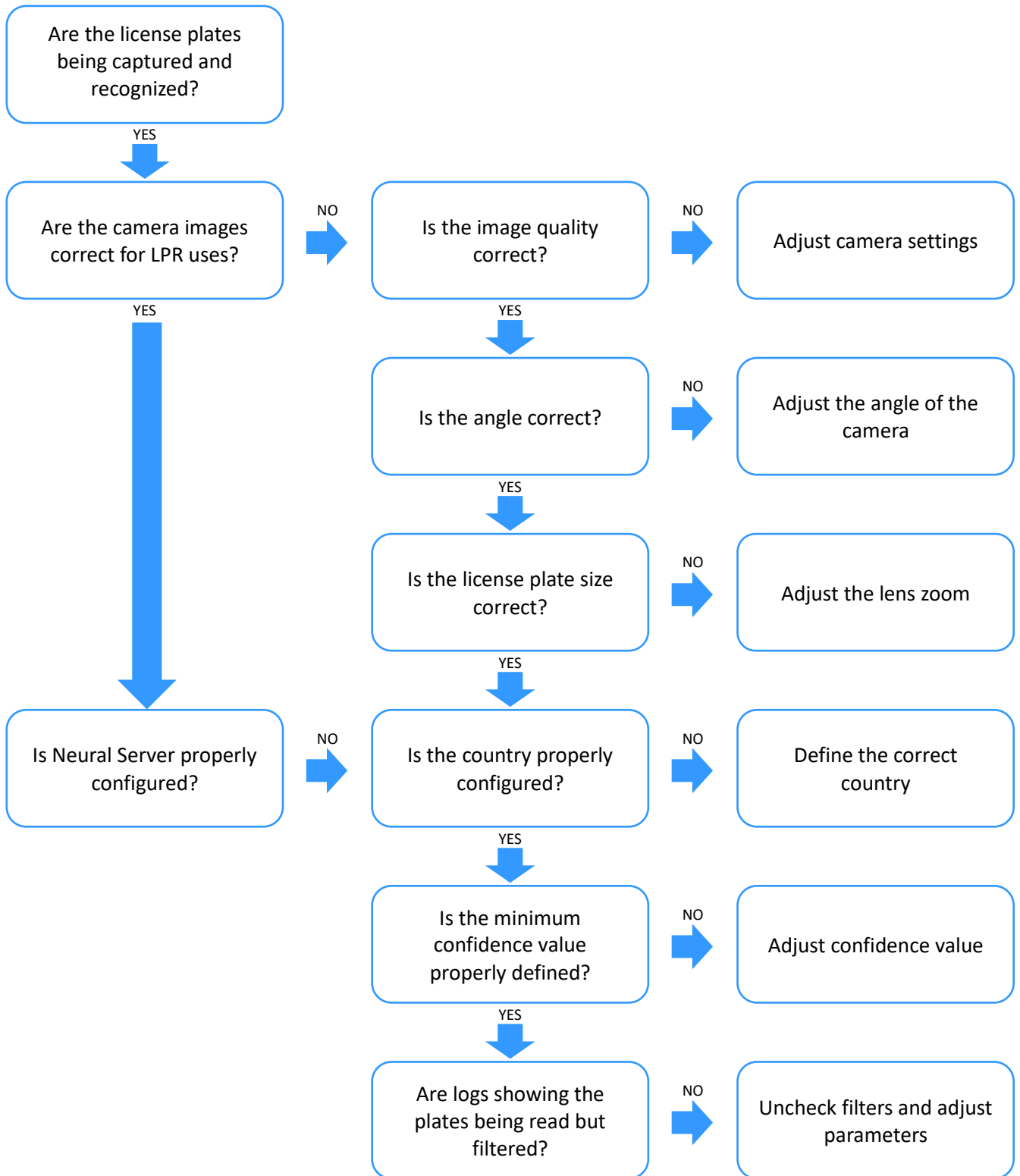
However, there are two specific cases that we recommend customer to contact the VIVOTEK support, new license plate grammar and special case for specific plate.

New License Plate Grammar				
Explanation	Authority add a new rule on license plate and the new license plate form or grammar is not recognizable for current ANPR engine.			
Example	The Europe license set 1 st section as city(region) code. User report that ANPR can not recognize these plates with "J" region code.			
	<table border="1"> <tr> <td>Recognizable</td> <td>Not Recognizable</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Recognizable	Not Recognizable	
Recognizable	Not Recognizable			
				
Support Policy	User provides at least 1 image for grammar confirmation.			

Special case for specific plate							
Explanation	Some specific character will be mistaken recognized often.						
Example	The last digit with number is easily being recognized as a letter, ex 2 become Z; 4 become A.						
	<table border="1"> <thead> <tr> <th>ANPR Result</th> <th>License Plate</th> </tr> </thead> <tbody> <tr> <td>339AGZ</td> <td></td> </tr> <tr> <td>778EAA</td> <td></td> </tr> </tbody> </table>	ANPR Result	License Plate	339AGZ		778EAA	
	ANPR Result	License Plate					
339AGZ							
778EAA							
Support Policy	User provides at least 10 image for training.						

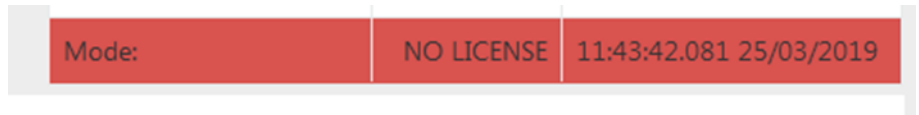
7. Troubleshooting

7.1 General Trouble Shooting Flow



7.2 Mode: NO LICENSE

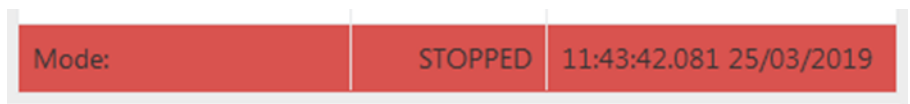
If the camera is not licensed, we find that the mode will be “NO LICENSE” in live page.



To solve this problem, please get in touch with support.

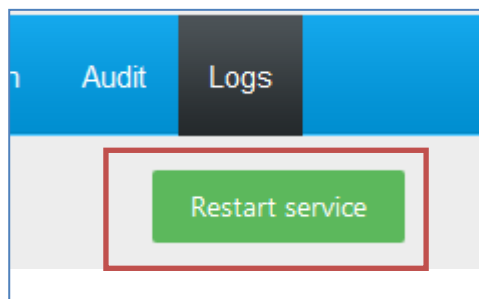
7.3 Mode: STOPPED

If the LPR service is stopped, we find that the mode will be “STOPPED” in live page.

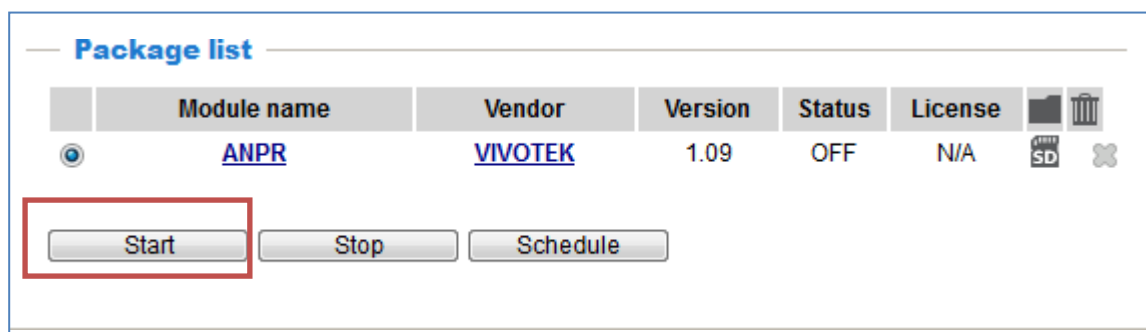


To solve this problem, we will have to reboot the service. You can reboot the service at:

- Logs page:



- Package management (http://CAMERA_IP/setup/application/vadp.html):



7.4 No enough space at Camera or SD

If the camera or SD card has not enough space, the system could fail.

SD space free (%):	0	00:00:00.000 01/01/2018
Camera space free (%):	0	00:00:00.000 01/01/2018

If the space is below 20%, please review the [purge option section](#)

7.5 The system does not recognize license plates

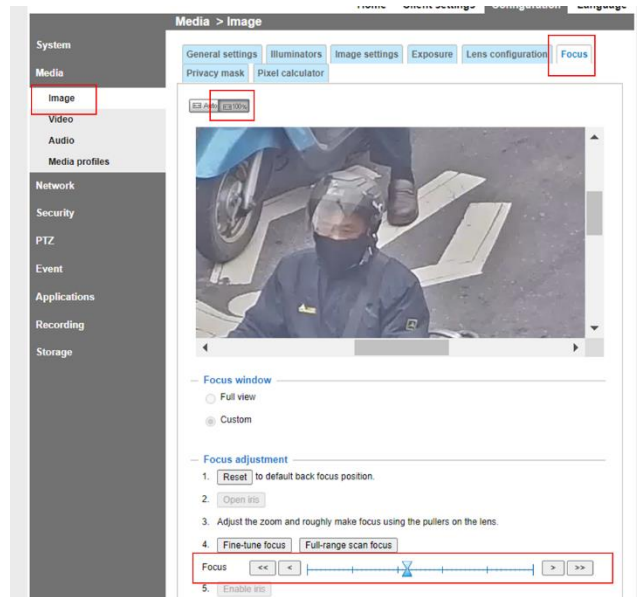
If the system does not recognize license plate, please verify the following steps:

1. The region and country are the right ones. You can check this configuration at [LPR configuration](#).
2. Check the camera Setting
 - a. Zoom, License Plate Character Height > 25 px

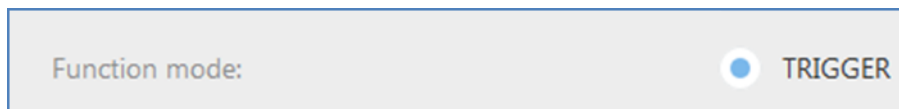
The license plate has a minimum size of 25 pixels. The user can use the [calibration pattern](#) at live page to adjust the size of the license plate. The licenseplate must be between 2 lines.

- b. Focus for clear image

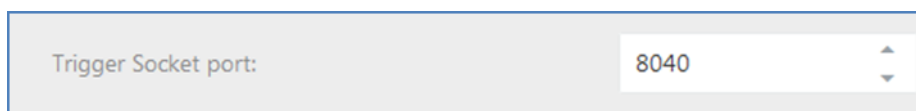
User must check the image in 100% view in focus tab instead of "Auto".



3. If you the system has a defined ROI, verify that license plate is inside [ROI area](#).
4. If the system is configured at motion detection mode, please be sure have a movement inside the image.
5. If the system has read a license plate and it do not read anymore, check [the filters](#).
6. If the system is configured at trigger mode, please check the following points:
 - a. Check the mode of in camera ([LPR CONFIGURATION](#)):



- b. Check the trigger socket port ([GENERAL CONFIGURATION](#)):



- c. Check that the sender device has connection TCP/IP to the camera at defined port. It can be checked via telnet.
 - d. If the message is received correctly, the system log must show the line:



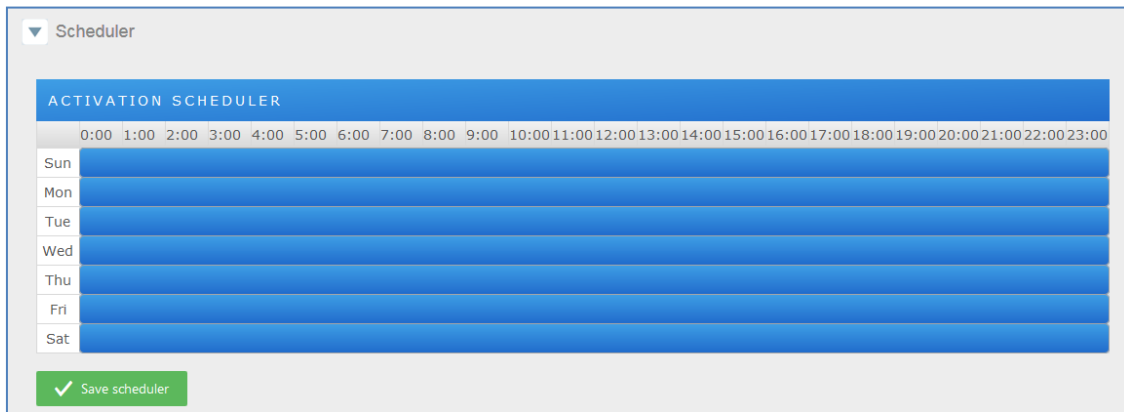
7.6 Problem with ACTIONS

If the action does not execute, verify the following points:

- 1) The action is enabled.

ID	Description	Action type	Active
1	Action 1	Socket client	Enabled

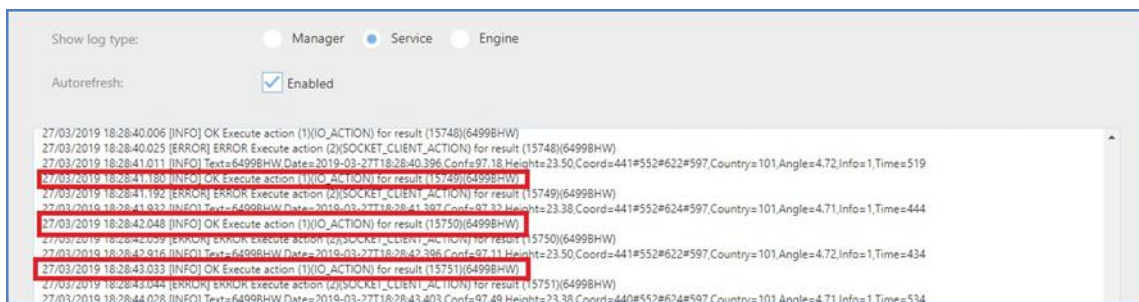
- 2) The detected plate is in the list that is defined the action.
- 3) There is a defined action to "all plate" list.
- 4) The detected plate is not in any list, there is an action defined in "not in list" list.
- 5) The date of the detection corresponds on a valid time defined in the scheduler.



6) Check in Tab Audit if the action has been executed. In red error sent.

ID	Time	Status	Type	Res.	List	Description	File
264	18:26:25.257 27/03/2019	FAILED	Socket client	15614	all plates	Action [1] plate [6499BHW]	Get file
263	18:26:25.217 27/03/2019	DONE	IO	15614	all plates	Action [1231231] plate [6499B]	
262	18:26:24.260 27/03/2019	FAILED	Socket client	15613	all plates	Action [1] plate [6499BHW]	Get file
261	18:26:24.235 27/03/2019	DONE	IO	15613	all plates	Action [1231231] plate [6499B]	
260	18:26:23.247 27/03/2019	FAILED	Socket client	15612	all plates	Action [1] plate [6499BHW]	Get file
259	18:26:23.222 27/03/2019	DONE	IO	15612	all plates	Action [1231231] plate [6499B]	
258	18:26:22.311 27/03/2019	FAILED	Socket client	15611	all plates	Action [1] plate [6499BHW]	Get file
257	18:26:22.281 27/03/2019	DONE	IO	15611	all plates	Action [1231231] plate [6499B]	
256	18:26:21.253 27/03/2019	FAILED	Socket client	15610	all plates	Action [1] plate [6499BHW]	Get file
255	18:26:21.228 27/03/2019	DONE	IO	15610	all plates	Action [1231231] plate [6499B]	

7) Check in the logs if the action has been executed. Active Service and Enabled.



8) Check the connection with the host with a ping command.

```
CA Administrador: Símbolo del sistema
Microsoft Windows [Versión 10.0.17134.648]
(c) 2018 Microsoft Corporation. Todos los derechos reservados.

C:\Users\Administrador>ping 192.168.1.1

Haciendo ping a 192.168.1.1 con 32 bytes de datos:
Respuesta desde 192.168.1.1: bytes=32 tiempo<1m TTL=64
Respuesta desde 192.168.1.1: bytes=32 tiempo<1m TTL=64
Respuesta desde 192.168.1.1: bytes=32 tiempo<1m TTL=64
Respuesta desde 192.168.1.1: bytes=32 tiempo<1m TTL=64

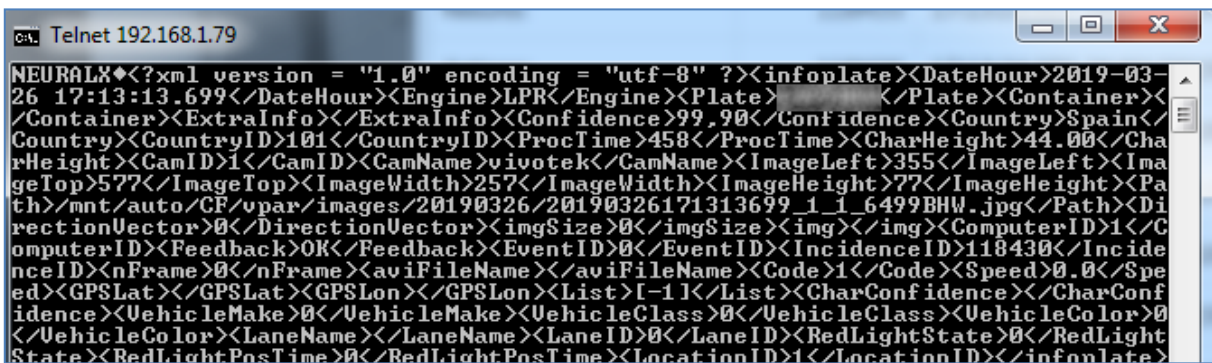
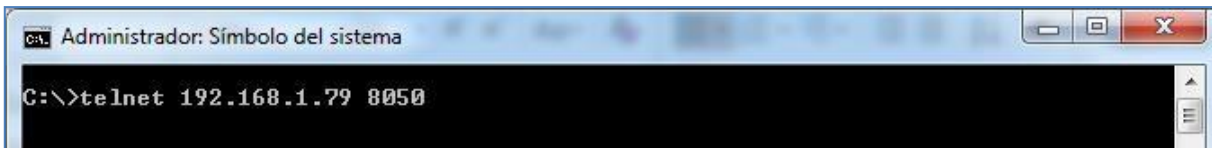
Estadísticas de ping para 192.168.1.1:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
              (0% perdidos),
    Tiempos aproximados de ida y vuelta en milisegundos:
              Mínimo = 0ms, Máximo = 0ms, Media = 0ms

C:\Users\Administrador>
```

Socket server / Trigger server

If the socket server action does not send the message, please check the following points:

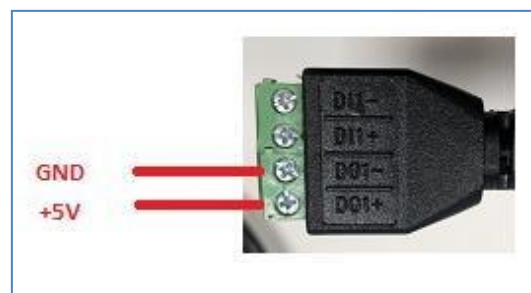
- 1) Check the defined port
- 2) Reboot the service if you have defined a new socket server action
- 3) Open a telnet client to Camera IP and defined port and check that the message is received.



IO

If the IO action does not send the message, please check the following points:

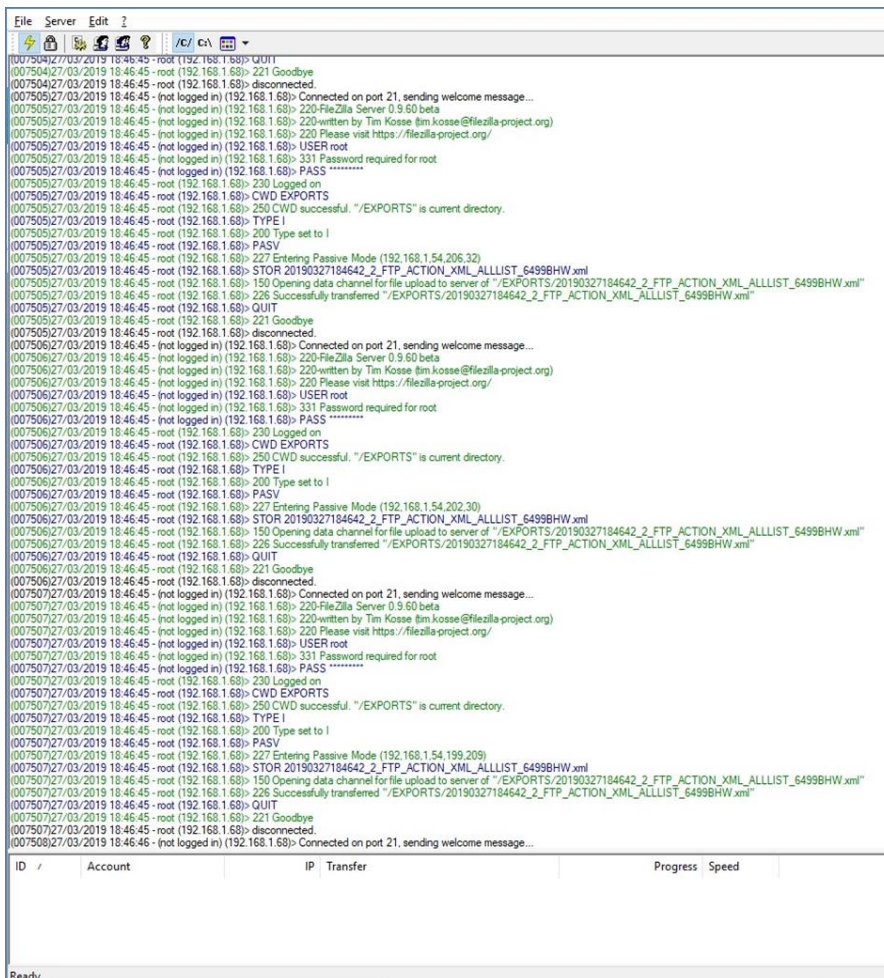
- 1) Check the defined port
- 2) Check the defined time
- 3) With a multimeter, connect to selected port and check that the voltage changes from 0 to 5 V.



FTP

If the FTP action does not send the message, please check the following points:

- 1) Check the defined parameter
- 2) Check the credentials and access with FTP client
 - o <https://filezilla-project.org/download.php?type=client>
- 3) Install FTP server like the FileZilla server and check the logs
 - o https://dl2.cdn.filezilla-project.org/server/FileZilla_Server-0_9_60_2.exe?h=Fjvi4wvZmA-MDcp3K9v0Q&x=1553712290

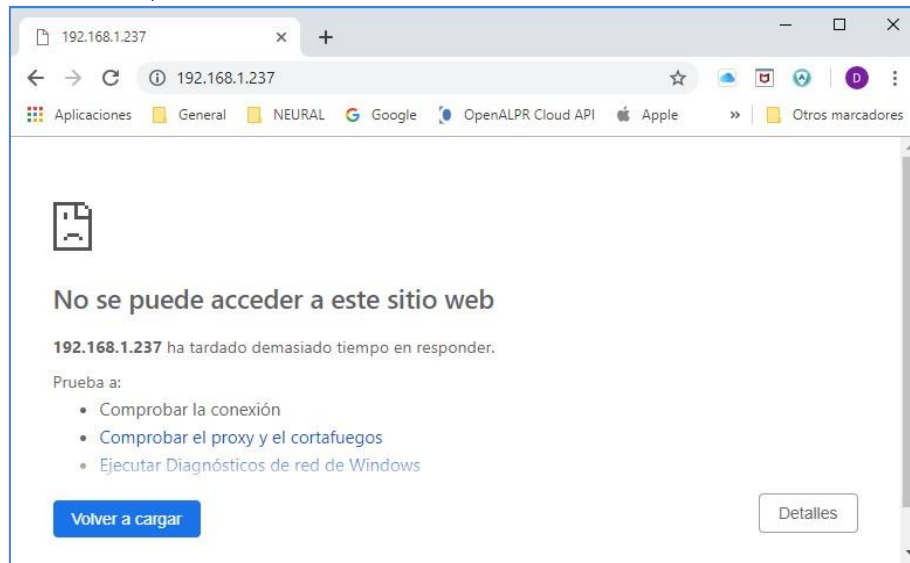


HTTP/MILESTONE/WIEGAND

If the HTTP action does not send the message, please check the following points:

- 1) Check the defined parameter
- 2) With an explorer (Internet explorer, Firefox, Chrome) do a request to defined URL and check that the URL responds.

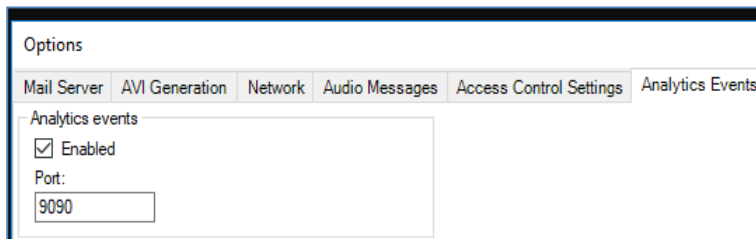
In this case not responds



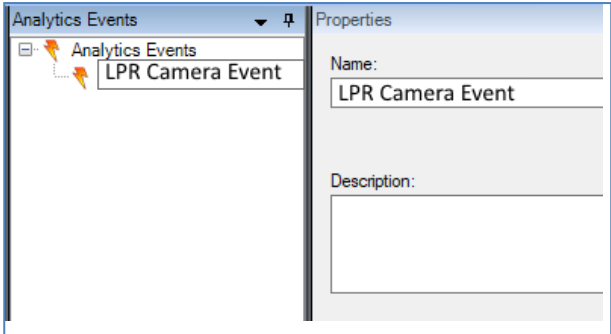
MILESTONE

If the MILESTONE action does not send the message, please check the following points:

- 1) Check the defined parameter
- 2) Check in Milestone system that the analytics events are enabled.



3) Check in Milestone system that the analytic event name is “LPR Camera Event”



4) Check in Milestone system that the created alarm uses the before analytic event and related camera.

7.7 Abnormal UI or UI reaction after ANPR upgrade.

Issue

1. Abnormal UI like empty row in "Live" tab
2. Unable to modify the list


Potential Cause:

Conflict on browsers cache

How to check

- Change a browser on whether same issue occurs.
 - If yes, it's a browser cache issue.

How to Fix

1. Hard Refresh on you browser. (EX: Chrome CLTR + F5 / CLTR +  ICON)
2. Manual Delete the browser cache & cookies

HOW to manual delete Chrome browsers cache

- I. On your computer, open "Chrome".
- II. At the top right, click "More".
- III. Click "More tools". Clear browsing data.
- IV. At the top, choose a time range. To delete everything, select All time.
- V. Next to "Cookies and other site data" and "Cached images and files," check the boxes.
- VI. Click Clear data.