VIVOTEK ANPR software
User Manual
V1.0

Index

History:

Date	Version	Author	Details	Remarks
2020/07/15	V1.0	Aaron	• Shorter version based on user manual v1.7	Based on v3.0.2.0

1. Overview

VIVOTEK Stop-and-go LPR camera is a standalone LPR camera system, which has built-in license plate recognition system and white list, black list and wish list for license plate verification. It also offers various APIs for integration with 3rd party systems such as parking management system, toll collection system, weighbridge system…etc. The ideals applications are parking access control and stop-and-go toll system.

2. Installation Requirements

2.1 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 to 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.
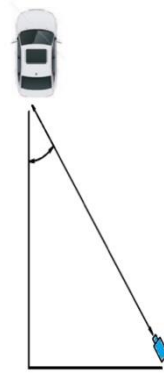

2.2 Camera Positioning

The recommended vertical angles are approximately 20°. The maximum recommended value is 35°.

The recommended horizontal angles are approximately 20°. The maximum recommended value is 35°.

The angle between the plates and the X axis of the scene must be less than 25°.


Recommended Camera Settings:

The default camera image settings on Stop and Go LPR camera are ideal for most parking access control applications, stop-and-go toll collection systems and the other use scenarios where the car is stopped or almost stopped. However, users can modify camera settings to reach the optional LPR performance according to the camera deployment in that environment. Please be noted that license plate must be seen in camera image. If no, this LPR camera won't be able to read the license plate number. Also, higher camera resolution doesn't mean higher LPR accuracy. 720P or VGA is good for these stop-and-go scenarios.
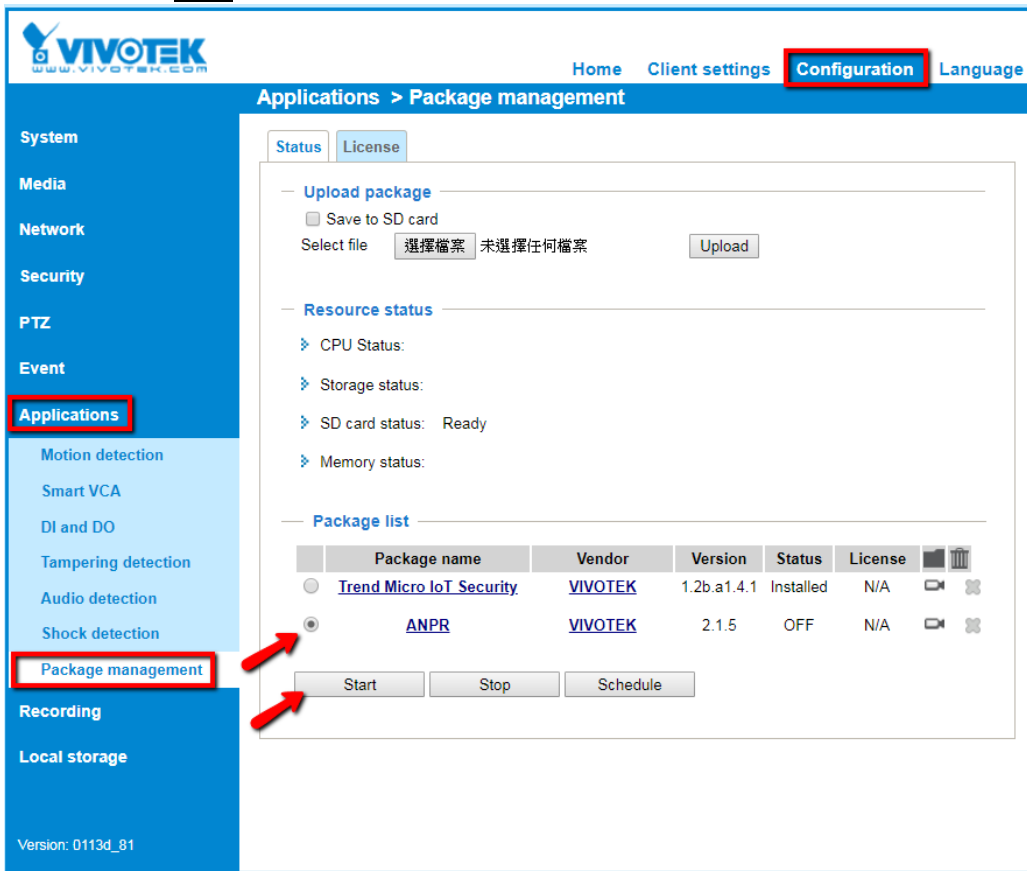
Common Scenario:

      Common scenario: 1 lane

      Sensor size: 1280x960
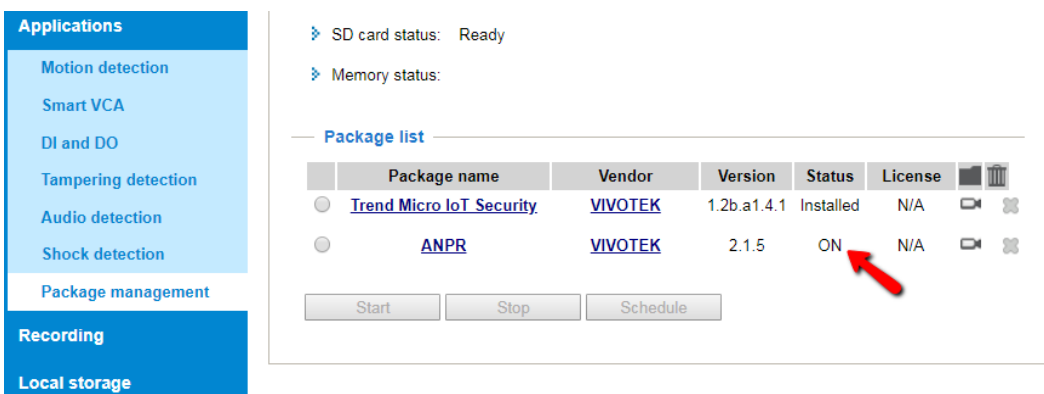
      Height of camera on pole: 0.5 – 3 meters
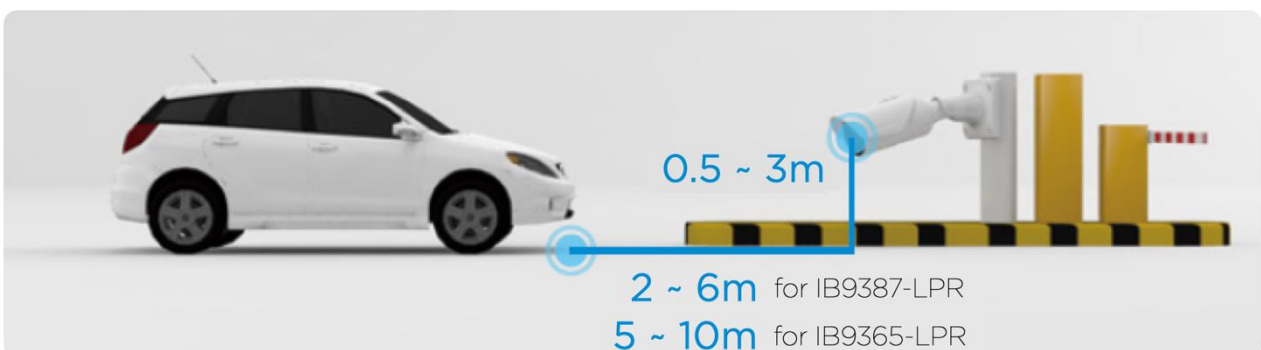
3. LPR Configuration

3.1. Starting Service ANPR

To start a service, go to *Configuration*, *Applications*, click on *Package Management*, select the *ANPR* and then click on "*Start*".

The status of this ANPR service must be ON as the picture below.

3.2. VIVOTEK ANPR Management Browser

Open a web browser and connect to this IP camera through its IP address. Go to "*Applications*", click on "*Package management*" and double click on "*ANPR*" service.
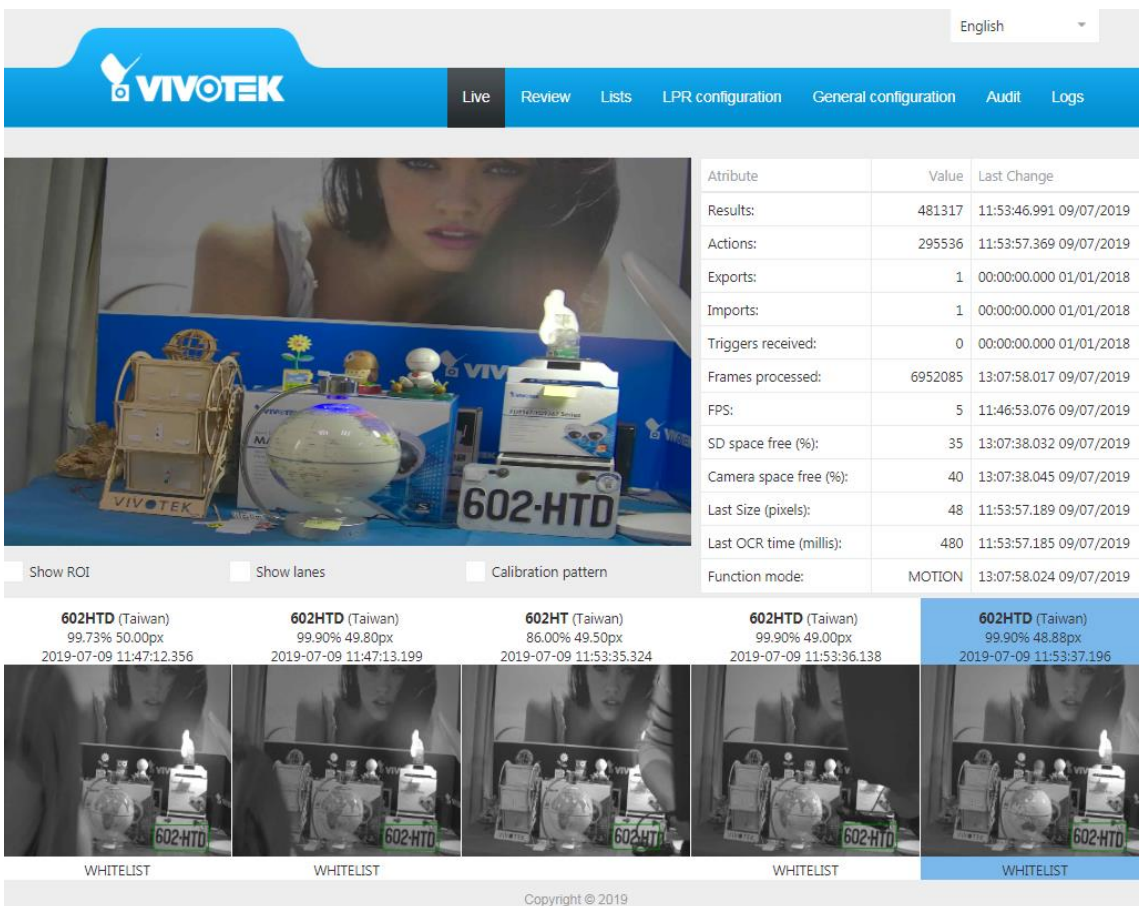
After this, you will access to VIVOTEK ANPR Browser.

3.3.   First access (selection country)

When users access to this ANPR application for the first time, selecting _region_ and _country_ is necessary. First select the _Region_:

Now select the *Countries* in the region. Multiple selections in Country are allowed such as a) Singapore and Malaysia, b) Texas, Oklahoma, Louisiana and other neighboring states.
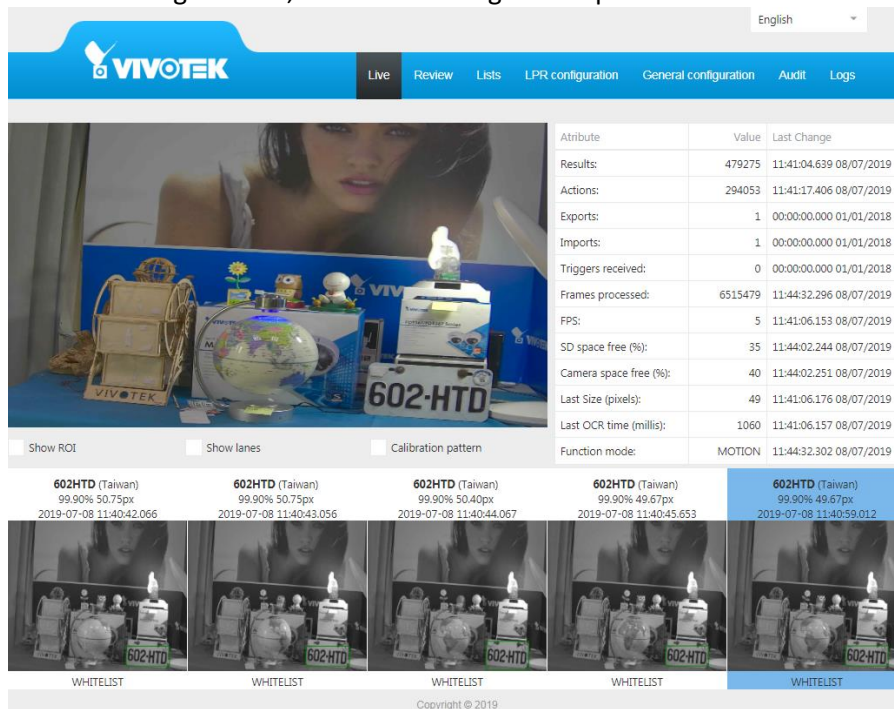
4. Web Portal

4.1. User Interface

The following image is the user interface of VIVOTEK ANPR System. There are "Live", "Review", "Lists", "LPR configuration", "General configuration", "Audit" and "Logs" on top tab.

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4.2. Live Tab

The "Live" tab shows three parts, including 1) the live video stream of this camera, 2) LPR results and current status, 3) LPR images.

Monitor Panel: It shows the current live video streaming.

Below live video streaming window, there are 3 options to show different information on video.

Show ROI: After checking "Show ROI", you will see a red square that indicates the ROI (Region of interest) defined in the LPR configuration. This ROI is the only region of the image where the LPR engine finds and reads the license plates.

The default setting doesn't have a ROI region.

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Atribute	Value	Last Change
Results:	4068	13:41:50.569 09/07/2019
Actions:	14	16:20:58.036 08/07/2019
Exports:	22209	18:48:00.283 19/06/2019
Imports:	1	00:00:00.000 01/01/2018
Triggers received:	0	00:00:00.000 01/01/2018
Frames processed:	12361477	13:41:47.182 09/07/2019
FPS:	3	13:41:47.311 09/07/2019
SD space free (%):	23	13:41:22.280 09/07/2019
Camera space free (%):	82	13:41:22.287 09/07/2019
Last Size (pixels):	40	13:35:42.217 09/07/2019
Last OCR time (millis):	1528	13:35:42.180 09/07/2019
Function mode:	MOTION	13:41:47.469 09/07/2019

Show lanes: After checking "show lanes", you will see a blue line that defines the lanes you have configured in the LPR configuration. The plates in the left side of the screen are plates captured in lane 1, the plates in the right side of the screen in lane 2.

The default setting doesn't have any lanes configured.
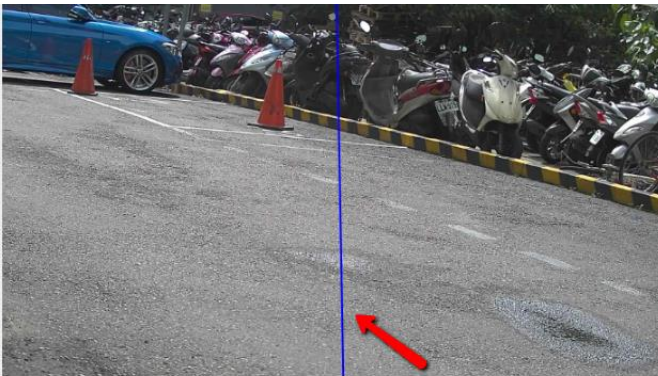
Atribute	Value	Last Change
Results:	4075	14:18:50.563 09/07/2019
Actions:	14	16:20:58.036 08/07/2019
Exports:	22209	18:48:00.283 19/06/2019
Imports:	1	00:00:00.000 01/01/2018
Triggers received:	0	00:00:00.000 01/01/2018
Frames processed:	12370320	14:29:22.255 09/07/2019
FPS:	5	14:29:22.283 09/07/2019
SD space free (%):	23	14:28:22.068 09/07/2019
Camera space free (%):	82	14:28:22.076 09/07/2019
Last Size (pixels):	47	14:18:52.592 09/07/2019
Last OCR time (millis):	562	14:18:52.580 09/07/2019
Function mode:	MOTION	14:29:22.301 09/07/2019

Calibration pattern: After checking "calibration pattern", you will see white lines indicating the minimum character size. The vertical space between three lines is 25~40 pixels, and the height of plate number must be higher than this space.
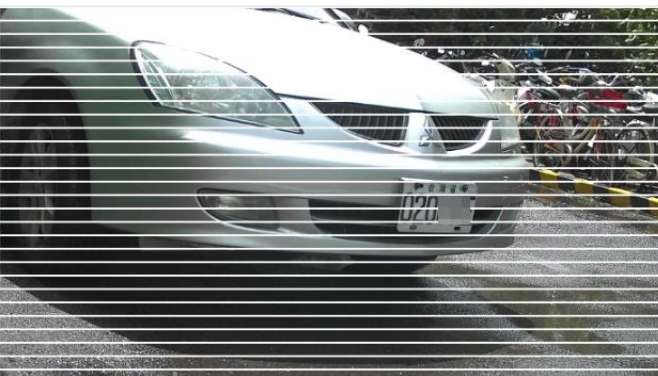
Atribute	Value	Last Change
Results:	4068	13:41:50.569 09/07/2019
Actions:	14	16:20:58.036 08/07/2019
Exports:	22209	18:48:00.283 19/06/2019
Imports:	1	00:00:00.000 01/01/2018
Triggers received:	0	00:00:00.000 01/01/2018
Frames processed:	12361502	13:42:12.030 09/07/2019
FPS:	1	13:41:52.096 09/07/2019
SD space free (%):	23	13:41:22.280 09/07/2019
Camera space free (%):	82	13:41:22.287 09/07/2019
Last Size (pixels):	44	13:41:52.154 09/07/2019
Last OCR time (millis):	667	13:41:52.111 09/07/2019
Function mode:	MOTION	13:42:12.299 09/07/2019

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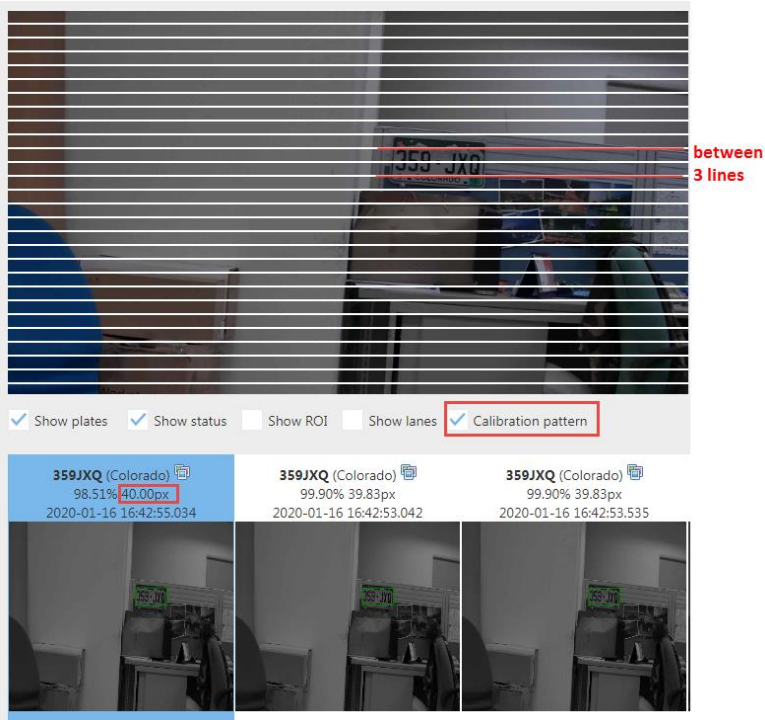
LPR Image Panel: It shows the latest results, including the LPR image, number plate, confidence level, country/ state information, pixel size of character or number height, date and time of this LPR reading, list information such as white list or blacklist.

Info Panel: Information on the system status. The columns with the last change are with the last updated value.

Results: Number of license plates recognized.

Actions: Number of actions executed.

Exports: Number of automatic exports executed.

Imports: Number of automatic imports executed.

Trigger received: Number of triggers received.

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Frames processed: Number of total frames processed.

FPS: Frames per second processed in the register.

SD space free (%): Percent of free space in the SD card.

Camera free space (%): Percentage of free space in the camera.

Last Size (pixels): Pixel size in the last result license plate captured.
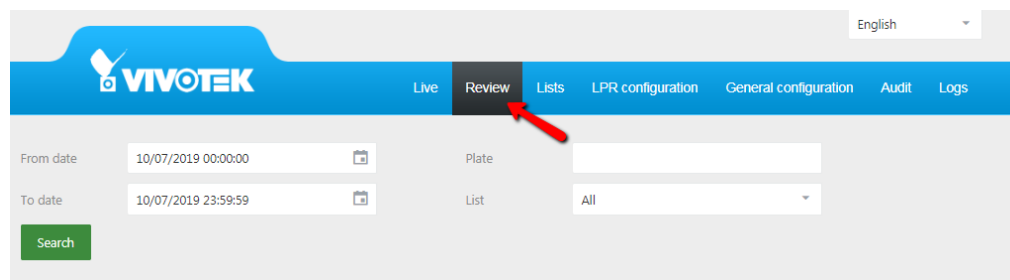
Last OCR time (milliseconds): Engine time spent on the last result plate processed.

Mode: It shows the current LPR processing mode.

1) **TRIGGER**: The LPR processing mode is based on Trigger. LPR engine will detect and read number plate only when receiving a trigger signal from 3rd party system such as inductive loop system, or any digital input devices.

2) **MOTION:** The LPR processing mode is based on Motion Detection. LPR engine will detect and read number plate only when a motion is being detected.

3) **FREEFLOW:** The LPR processing mode is based on Free flow, which means LPR engine always detects number plate and read its number plate.

4) **NO LICENSE**: No LPR license in current system.

5) **STOPPED**: LPR service is stopped.

4.3.   Review Tab

The review tab allows us to search, filter and consult the results.
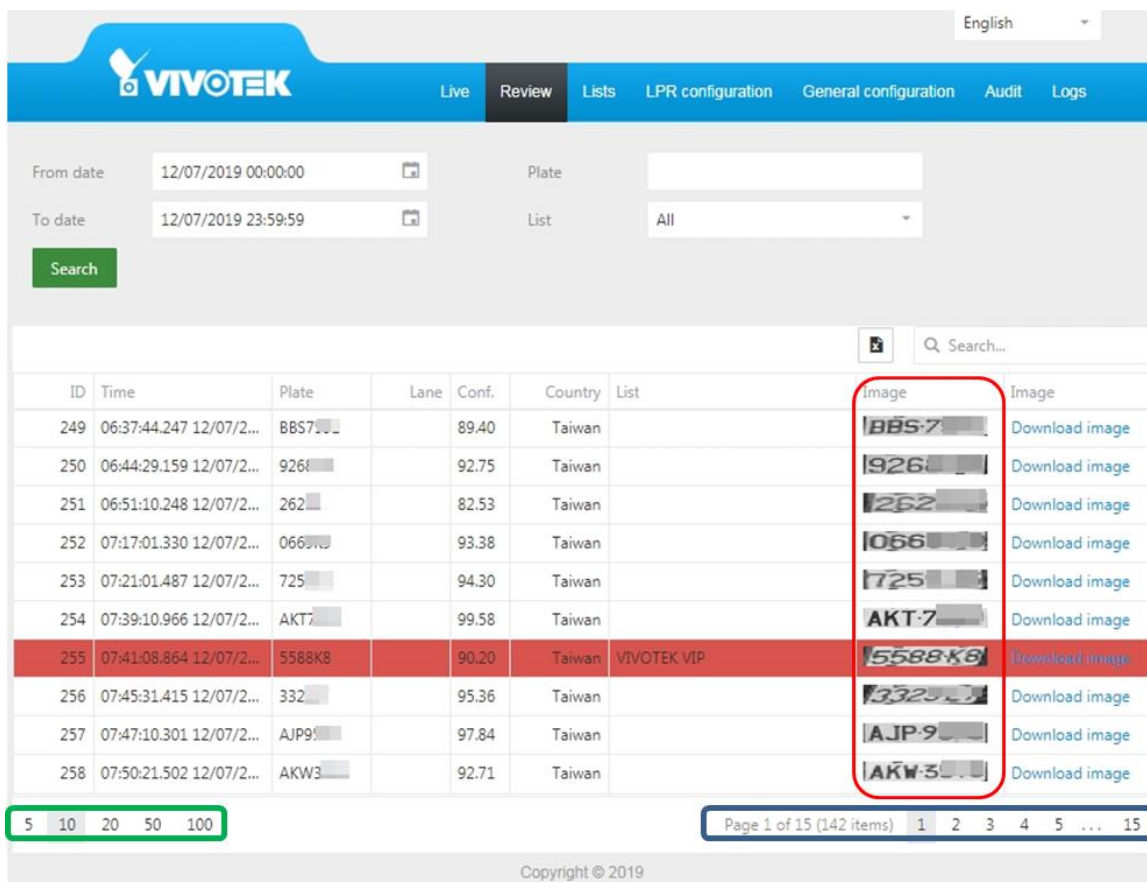
From Date: Select the starting date from which you want to initiate the search

To Date: Select the end date of your search span.

Plate: Users can either search the complete license plate number or just a partial number plate

List: Users can filter the LPR readings by lists such as white list, black list or any other pre-defined lists, and it will show all plates that belong to this list.

For example, if you wish to search for a specific plate by date, from 12/07/2019 00:00:00 to 12/07/2019 23:59:59.

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The green box corresponds to the amount of results you want to view per page.

The blue box indicates the numbers of pages available that contain the results.

The red box shows the license plate number images. If you move the mouse cursor over any image, you will obtain the LPR image with a larger image. Click on "Download image" to download this LPR image.

● Search by a partial license plate number

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● Search by list.

● Use the "Search filter" to find a value inside the table:

Notice:

Considering the search time, the limit number per search is 1000, if you cannot find the number plate what you want, you need to narrow down your search criterion.

● Export the search results into a Excel file
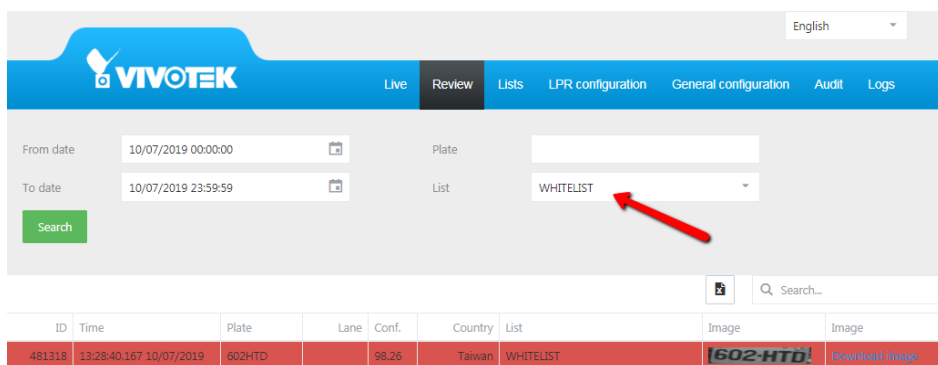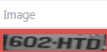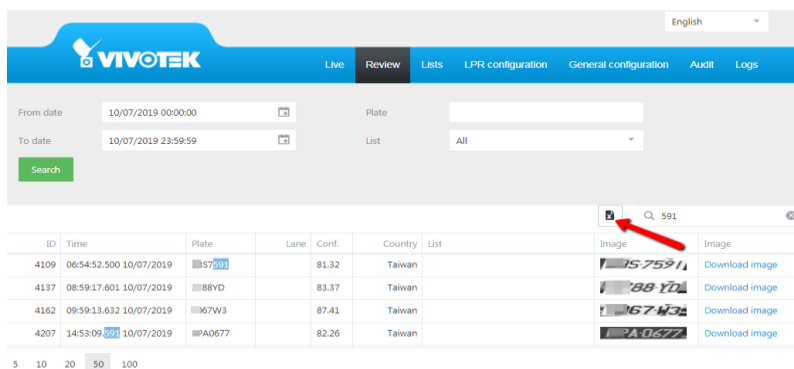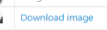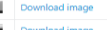
	A	B	C	D	E	F	G
1	ID	Time	Plate	Lane	Conf.	Country	List
2	4109	06:54:52.52 10/07/2019			81.32	Taiwan	
3	4137	08:59:17.17 10/07/2019			83.37	Taiwan	
4	4162	09:59:13.13 10/07/2019			87.41	Taiwan	
5	4207	14:53:09.09 10/07/2019			82.26	Taiwan	

4.4. List Tab

In this tab users can create lists for license plate verification. This list is a group of license plates that can be the event source, and VIVOTEK ANPR enables users to trigger different actions based on this list, e.g. when any license plate number in black list is detected, it triggers the siren to warn the security guard by sending a signal to the digital output device on this camera.

There are 4 lists by default, including all plates, not in list, blacklist and whitelist. Users can edit, delete or add more lists.
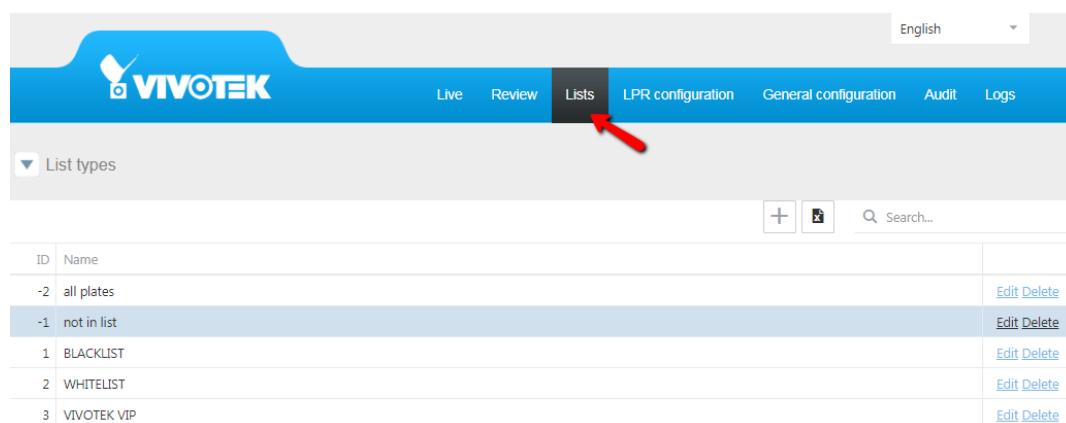
In the lists tab, the following options: are available,

List: Will show all the lists created

Action: Will show all the actions created by list.

Export: Allow users to export a single list or if all plates are selected it will create a unique file with all the licenses plates that belong to that list.

Import: Allow users to import a single list or if all plates are selected it will create a unique file with all the licenses plates that belong to that list.

Let's create a new list and name it "VIVOTEK VIP"

Click on the "+" button, fill in the list name and click on "Save".

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Users can have an action for this list, which means when a license plate is recognized and matched the list, the stop-and-go LPR camera triggers an event response.

Click on "VIVOTEK VIP" list to see the options.
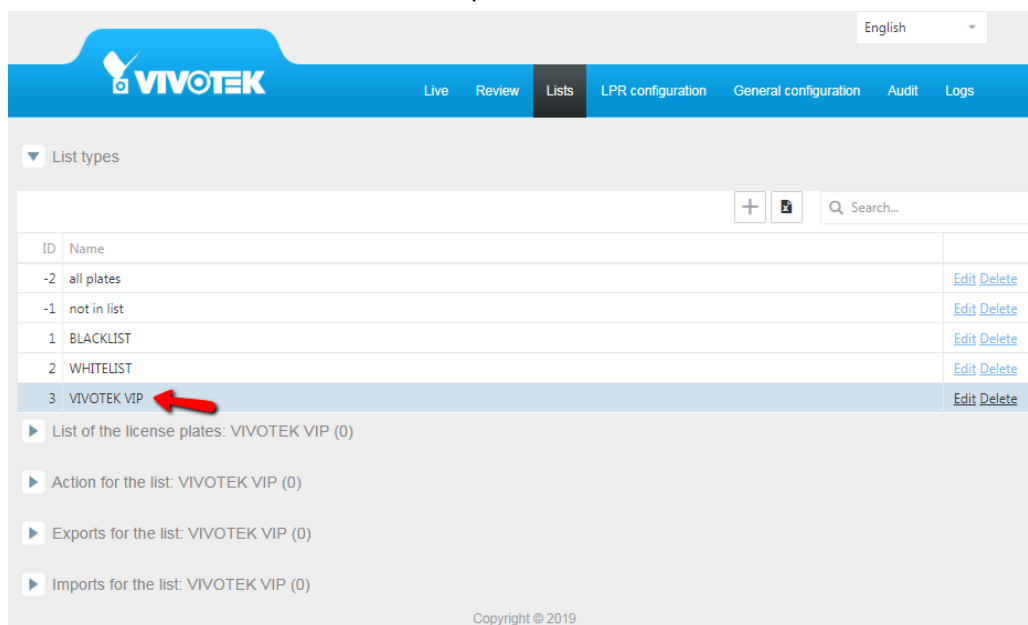
List of the license plates: EMPLOYEES

Click on the "+" button, fill in the data to add a new license plate. Click on "Save" to save this license plate information.
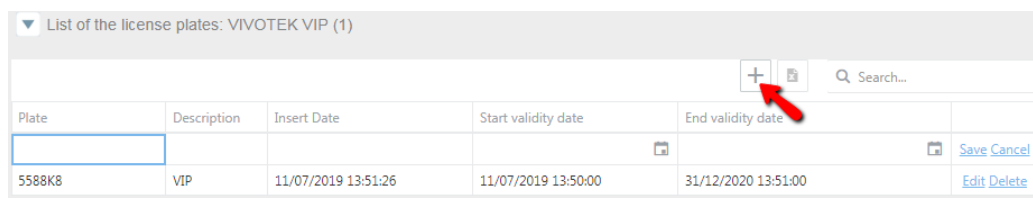
To edit or delete a license plate in that list, just click on the plate and then click on "Edit" or "Delete".
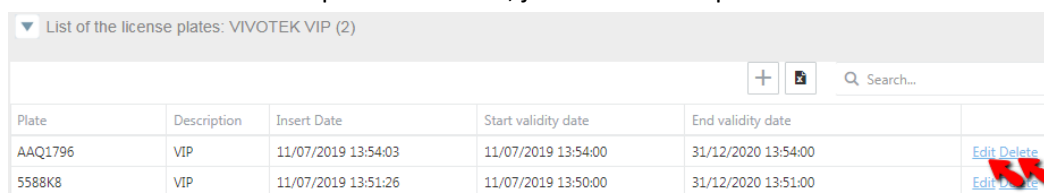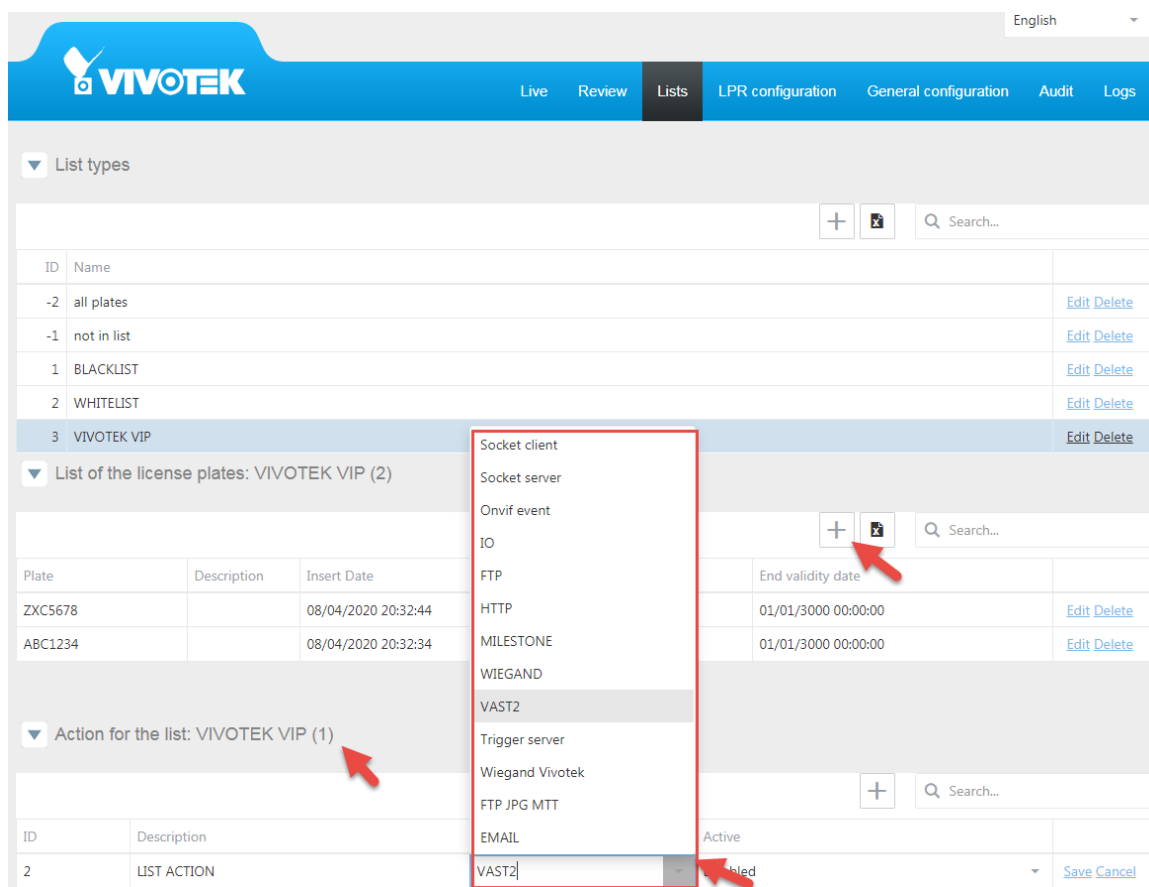
Action for the list: Here are the actions users can select for each list.

- *__Socket Client__*: Enable a socket connection to send messages in "*XML*", "*XML with LPR image*", "*JSON*" or "*JSON with LPR image*".

- *__Socket Server__*: Open a port in the camera to listen to hosts to send messages in "*XML*", "*XML with LPR image*", "*JSON*" or "*JSON with LPR image*".

- *__Onvif Event__*: Enable the Onvif event to send the license plate information using this protocol.

- *__IO__*: Enable inbound and outbound digital signals in the camera.

- *__FTP__*: store the results in a FTP server.

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- _**HTTP**_: send a request using this protocol to a server.
- _**MILESTONE**_: send an analytic event to Milestone VMS.
- _**VAST2**_: Enable the connection to send lpr results and images to VAST2 VMS.
- _**Trigger server**_: Enable a port that sends the read response when a trigger message arrives.
- _**Wiegand VIVOTEK:**_ send a signal to VIVOTEK Wiegand convertor.
- _**FTP JPG MTT**_: the functionality it's the same one realized with FTP, with a few differences because with this one you can create a structure of subfolders, contains information like camera, year, month and day.
- _**EMAIL:**_ send an email.

A list can perform several actions, depending on the scenario and demands.

Selecting "Action for the list: VIVOTEK VIP", click on "+" and then select an event response.

1. Configuring the action **Socket Client** if you want to send the results to another device, using the VIVOTEK VIP list, click on "Action for the list" and add a new action pressing "+" and then select in "Action type = Socket Client"

ID	Description	Action type	Active	
2	SEND XML MSG	Socket client	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   ❶ ?

Host: 127.0.0.1

Port: 17000

Format: ● XML   ○ XML_IMG   ○ JSON   ○ JSON_IMG   ❷ ?

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

Action Info: Click on ❶ ? for more information.

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

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

Click on ❷ ? for more information.

Help   ✕

The posible formats are following

- **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

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2. Setting up "**Socket Server"** as an event response, this LPR camera will receive messages from other devices.

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

Action Info: Click on [?] for more information.

Click on [?] for more information.

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3. Configuring "**Onvif Event"** as an event response, this LPR camera will send the license plate using this protocol.

ID	Description	Action type	Active	
3	Onvif Events	Onvif event	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   1 ?

Message: ● Vivotek_Plate   2 ?

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

Click on ? for more information.

Help

Enable the onvif event to send the license plate information using this protocol

The parameters are the following

- **Format:**The message type

Click on ? for more information.

Help

The posible formats are following

- **Vivotek_plate:**Onvif vivotek message Download Sample

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4. Configuring "**IO"** as an event response, the LPR camera will trigger the digital output device that is attached to this camera. This device can be a gate, a siren or other devices, e.g. when a license plate in "VIVOTEK VIP" list is detected, this LPR camera can open the gate barrier automatically.

Click on "Action for the list" and add a new action pressing "+" and then select in "Action type = IO"

Set the scheduler as needed and click on "SAVE SCHEDULER".
Click on ? for more information.

5. Configuring the action **FTP** to send an XML, JSON or image to an FTP server. Using the "VIVOTEK VIP" list, click on "Action for the list" and add a new action pressing "+" and then select in "Action type = FTP"

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ID	Description	Action type	Active	
4	send image to FTP	FTP	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: 192.168.10.250

Port: 21

Format: XML   XML_IMG   JSON   JSON_IMG   ● IMAGE

Folder: LPR Images

User: root

Password: N3ur4L3Dg3

Confirmation file: ● NONE   .FLAG   .CONF

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

Click on [?] for more information about how to configure.

Help   ✕

Store the results in 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 need to send the image too
- **Folder:** Ftp folder 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 you can select .flag or .conf that will generate a single file per each correct action to FTP.

Click on [?] for more information about format type.
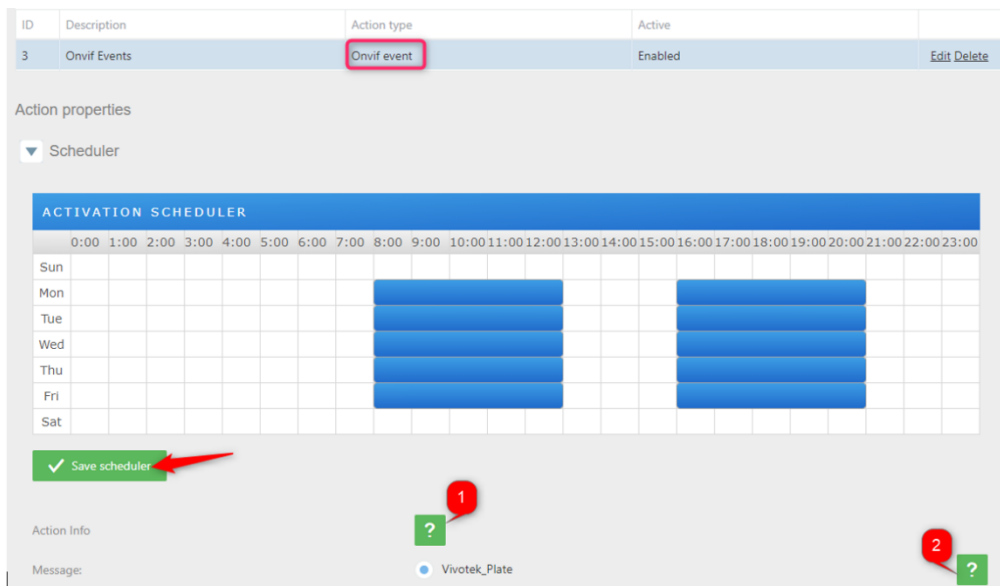
Help   ✕

The posible formats are following

- **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

*The name of the file is
DATETIME(YYYYMMDDHHmmSS)_ID_TYPE_LIST_PLATE

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6. Configuring "**HTTP**" as an event response, this LPR camera will send analytic events to a VMS. Using the "VIVOTEK VIP" list, click on "Action for the list" and add a new action pressing "+" and then select in "Action type = HTTP"

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.

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Help ×

The posible formats are following

- **GET:**Send a get petition
- **POST:**Send a post petition

7. Configuring "***MILESTONE"*** as an event response, this LPR camera will send analytic events to the Milestone VMS. Using the "VIVOTEK VIP" 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	
1	action	MILESTONE	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	? 1
Host:	127.0.0.1
Port:	9090
Format:	● ANALYTIC_EVENT ? 2
Url:	http://127.0.0.1:9090

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

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

Help

Send a request using this protocol to a server

The parameters are the following

- **Host:**Milestone server IP
- **Port:**Milestone server port
- **Format:**Petition format to send
- **URL:**URL to send the petition
- **Event Type:**Analytic event type

Click on [? 2] for more information about format type.

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Help

The posible formats are following

- **ANALITYC_EVENT:**Send a Milestone analytic event message
  Download Sample

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

8. 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 tin the "Trigger mode", received this message (another message is discarded) make a trigger to the camera an 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

ID	Description	Action type	Active	
2	1	Trigger server	Disabled	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

Port: 8060

Format response: ● SIMPLE   ○ XML   ○ XML_IMG   ○ JSON   ○ JSON_IMG

Trigger message: $

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

Click on   for more information about how to configure.

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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 posible 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)

9. 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".

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

Click on ![?] for more information about how to configure.

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Help   ✕

Send a request using this protocol to a server

The parameters are the following:

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

Click on [2 ?] for more information about format type.
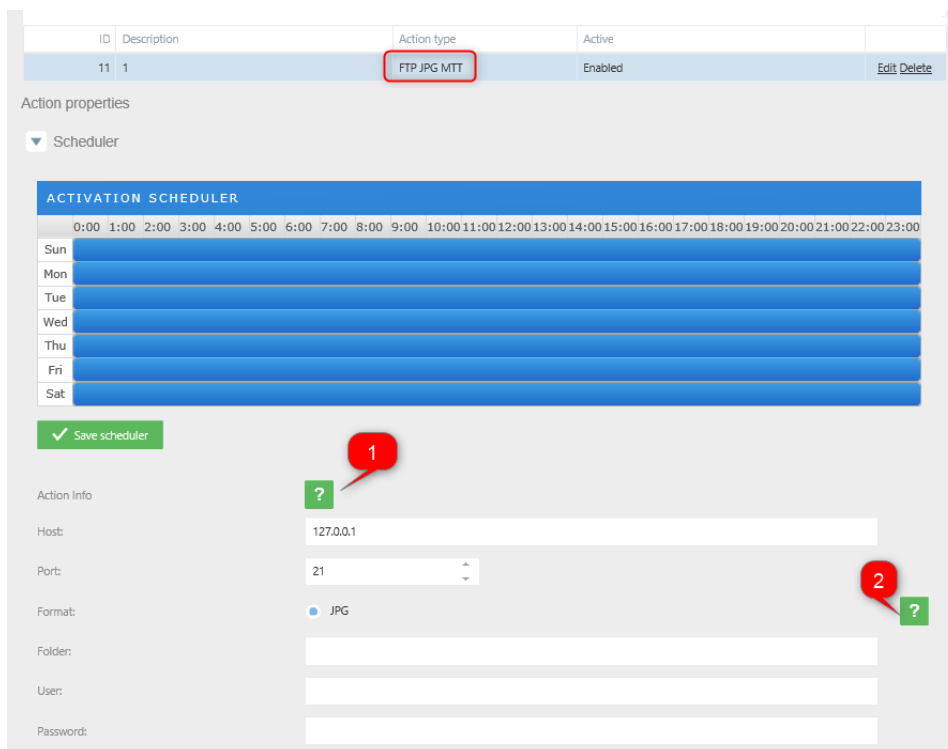
Help   ✕

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

10. Configuring the action FTP JPG MTT using the EMPLOYEES list, click on "Action for the list" and add a new action pressing "+" and then select in "Action type = FTP JPG MTT".

ID	Description	Action type	Active	
11	1	FTP JPG MTT	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   [1] [?]

Host: 127.0.0.1

Port: 21

Format: ● JPG   [2] [?]

Folder:

User:

Password:

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

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

Help   ×

Store the JPG image of the result in a FTP server by camera ID, year, month and day

The parameters are the following

- **Host:**Ftp server IP
- **Port:**Ftp server port
- **Format:**The image format (JPG)
- **Folder:**Ftp folder where to save the image files
- **User:**Ftp user
- **Password:**Ftp password

Click on [2][?]for more information about format type.

Help   ×

The only supported format is JPG

The image files will be stored in the following folders structure:
cameraID/year/month/day

The image file name will follow the layout: YYYYMMDD-hhmmss_cameraID_plate.jpg

11. 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".

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

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

Help   ✕

Send an email

The parameters are the following:

- **Server:** Email Server
- **Port:** Email port
- **Server type and format:** Type of email server
- **From:** From email adress
- **User:** Email user
- **Password:** Email password
- **To:** To email adress
- **Subject:** Email subject
- **Message:** Email message
  *The possible tags to use in Subject/Message are {PLT}:Plate,
  {DTE}:Date, {CNF}:Confidence,{IDNAME}:List name,{IDLIST}:List id,
  {IDLAN}:Lane,{ENDLN}: New line

Click on [image] for more information about format type.

Help   ✕
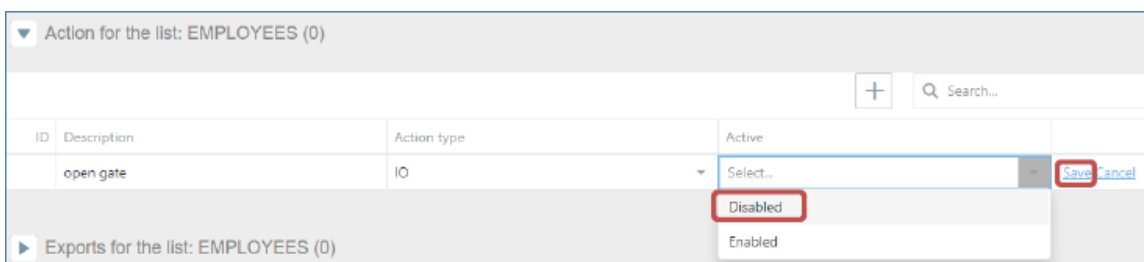
The posible formats are following:

- **SMTP/SSL:** SMTP server over SSL
- **SMTP:** SMTP Server

In case, you don't 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.

▼ Action for the list: EMPLOYEES (1)				
				+ 🔍 Search...
ID	Description	Action type	Active	
2	Test	Trigger server	Enabled	Edit Delete

Are you sure to delete the action from list?

Yes	No

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

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

Users can also download the selected list by choosing "Export to XML file" or "Export to CSV file".

Export to CSV file	Export to XML file
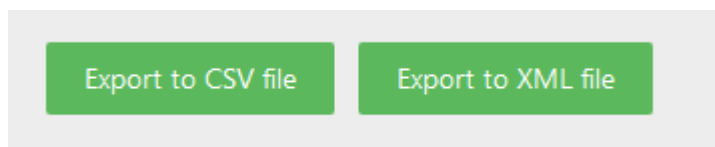
A list can perform several exports, depending on the scenarios and needs.
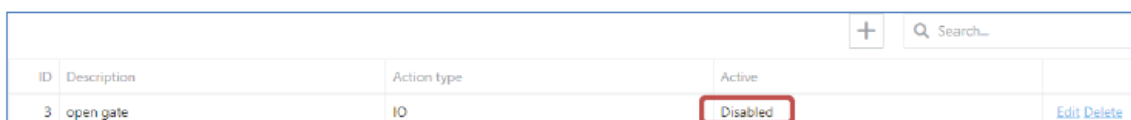
Having the Employees list selected, click on "Exports for the list" and then click on the + button and define the type and interval.   The interval can be set as:

- *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.

▼ Exports for the list: EMPLOYEES (0)					
Export to CSV file	Export to XML file		Minute Hour Day **Interval time** Week Month	+ 🔍 Search...	
ID	Description ↓	Export type		Active	
	local result	FTP matches	Select...	Enabled	Save Cancel

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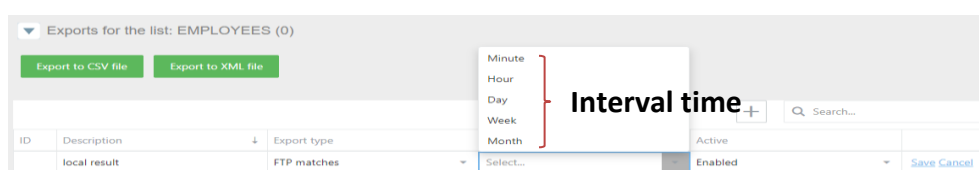
1. Configuring the export **FTP matches** to export the results to an ftp result, using "VIVOTEK VIP" list, click on "Export for the list" and add a new export by clicking on "+" and then select in "Export type = FTP matches".

ID	Description	↓	Export type	Interval	Active	
1	local result		FTP matches	Hour	Enabled	Edit Delete

Export properties

Export Info

Host: 127.0.0.1

Port: 21

Format: ● XML   ○ XML_IMG   ○ JSON   ○ JSON_IMG   ○ CSV

Folder name:

User:

Password:

Confirmation file: ● NONE   ○ .FLAG   ○ .CONF

Click on [?] for more information about how to configure.

Help   ✕

Export the results in an FTP server

The parameters are the following

- **Host:** Ftp server IP
- **Port:** Ftp server port
- **Format:** The message type (XML/JSON)
- **Folder:** Ftp folder 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 you can select .flag or .conf that will generate a single file per each correct action to FTP.

Click on [?] for more information about format type.

Help   ✕

The posible 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

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2. Configuring the export *FTP lists* to export the list locally, using the "VIVOTEK VIP" list, click on "Export for the list" and add a new export pressing "+" and then select in "Export type = FTP list".

ID	Description	↓	Export type	Interval	Active	
1	local result		FTP list	Hour	Enabled	Edit Delete

Export properties

Export Info	
Host:	127.0.0.1
Port:	21
Format:	⦿ XML ○ CSV
Folder name:	
User:	
Password:	
Confirmation file:	○ .FLAG

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)
- **Folder:**Ftp folder 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, it will generate a single file per each correct action to FTP.

Click on [?] for more information about format type.

Help   ×

The posible formats are following

- **XML:**XML list Download Sample
- **CSV:**CSV list Download Sample

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If users don't want to continue to use export in a list, users can disable or delete the action.

To delete, click on the list. Select the export and then click on the delete option.

ID	Description	Export type	Interval	Active	
2	11111	FTP list	Minute	Enabled	Edit Delete

To disable, click on the list. Select the action, and then click on "Edit".

The *Active* status will be changed to "*Disabled".*   Click on "Save" to save this new configuration.

ID	Description	Export type		Interval		Active		
2	11111	FTP list	▾	Minute	▾	Disabled	▾	Save Cancel

After this change, the action is temporarily disabled in case users need to use it later.

The "Enable if change" status, only do the export if the export type is "Local list" or "FTP list" and export the list only if there is any change.

ID	Description	Export type		Interval		Active		
2	11111	FTP list	▾	Minute	▾	Enabled if change	▾	Save Cancel

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

ID	Description	Export type	Interval	Active	
2	11111	FTP list	Minute	Enabled	Edit Delete

Import for the list: Here are all the automatic imports users can configure on 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 by manually uploading an xml list file.

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

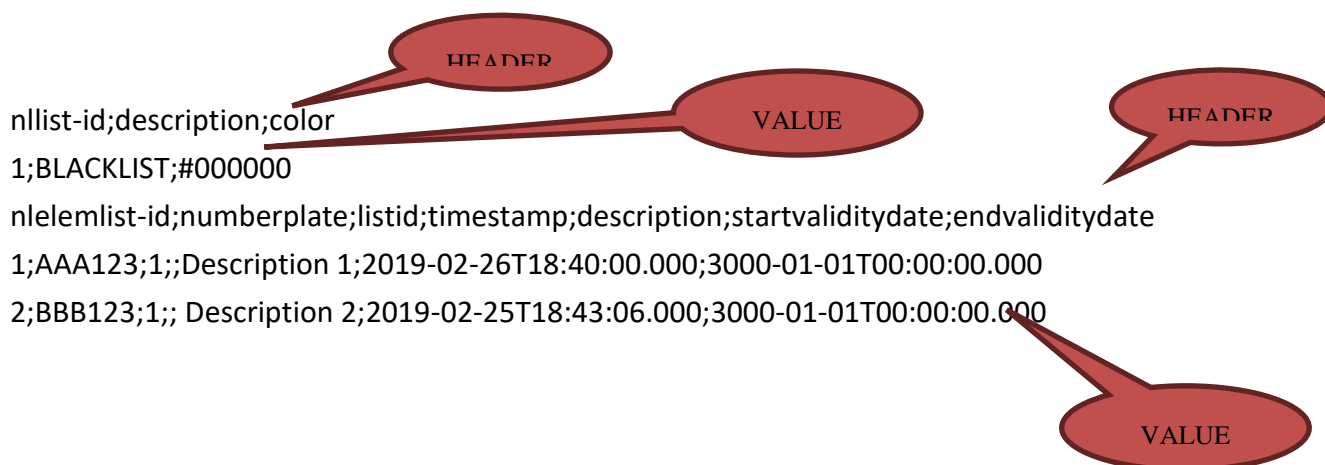☐ Delete the list elements at import

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The format of the XML is as follows:

```
<?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>
```

- 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 ""
- Nlelemlists: the group of the elements of the list
- Nlelemlist: 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 period

The format of CSV is the following:

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HEADER

VALUE

HEADER

nllist-id;description;color
1;BLACKLIST;#000000
nlelemlist-id;numberplate;listid;timestamp;description;startvaliditydate;endvaliditydate
1;AAA123;1;;Description 1;2019-02-26T18:40:00.000;3000-01-01T00:00:00.000
2;BBB123;1;; Description 2;2019-02-25T18:43:06.000;3000-01-01T00:00:00.000

VALUE

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.

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1. 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".

ID	Description	Import type	Interval	Active	
1	import	FTP list	Day	Enabled	Edit Delete

Import properties

Import Info	[?] **1**
Host:	127.0.0.1
Port:	21
Format:	● XML ○ XML_NOTDELETE ○ CSV ○ CSV_NOTDELETE **2** [?]
Folder name:	
User:	
Password:	
Confirmation file:	● .FLAG

Click on [? **1**] 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)
- **Folder:**Ftp folder to save the lists
- **User:**Ftp user
- **Password:**Ftp password
- **Confirmation file:**In order to track if list have been recieve from the FTP server.

Click on [**2** ?] for more information about format type.

Help   ✕

The posible 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

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2. 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	
5	23232	SINCRO camera	Minute	Enabled	Edit Delete

Import properties

Import Info   ?①

Host: 192.168.1.78

User: root

Password:

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

Help   ✕

Import the lists from a Camera

The parameters are the following

- **Host:** Camera master IP
- **User:** Camera master user
- **Password:** Camera master password

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4.4.1 Configure Milestone

After the Milestone action is configured, users will need to set up Milestone VMS server to process this action. Please follow the next steps,

1- Enable analytic events.
   a. Click on "Tool" -> "Options" and select the "Analytics Event" tab. At this tab users will activate the Analytics events.
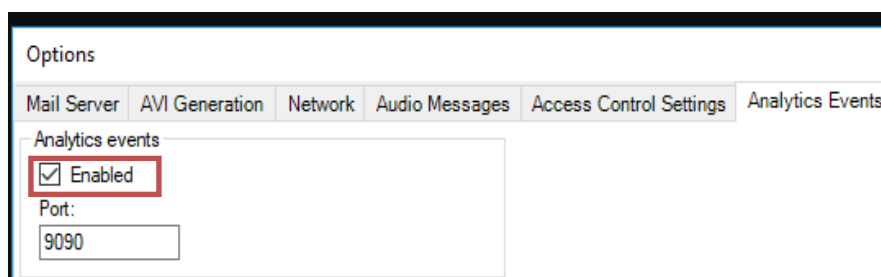
2- Create the analytic event.
   a. Click on "Rules and Events" -> "Analytics Events". And then right-click to create a new analytic event. The name must be the same as that defined at Event type of action.
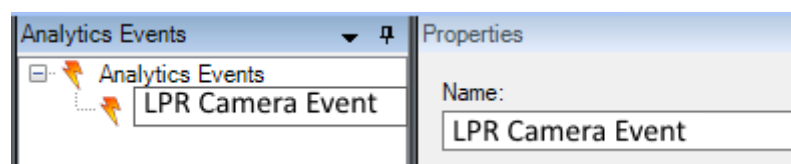
3- Create an alarm definition.
   a. Right click on alarm definition and we create a new alarm definition on:
      i. Enable: This alarm is enabled at system
      ii. Name: The alarm name
      iii. Triggering event: selecting Analytic Events is required
      iv. Triggering event source: Selecting the source before creating an analytic event
      v. Source: Selecting the camera at milestone system is required

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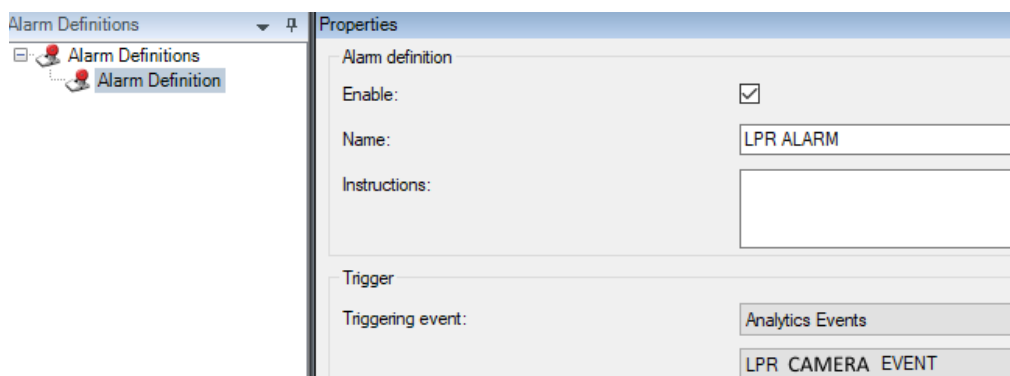
4.5. LPR Configuration Tab

In this tab, users will set the proper configuration for the LPR camera depending on the scenario where will be located (indoor, outdoor) and the necessity (parking, control of access points, security, tolls, road offenses, etc.).

"Restart service" is required every time when users modify a setting in LPR Configuration Tab.

First step is selecting a region and a country. For example, let's configure VIVOTEK ANPR to read plates from Malaysia and Singapore.

In Region, select Asia.
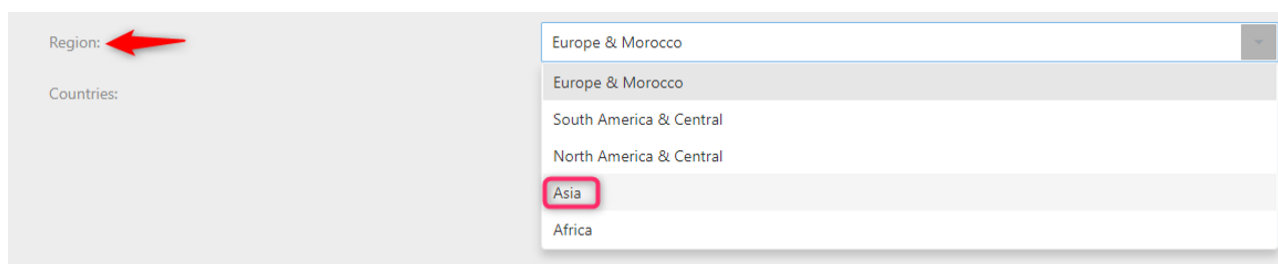
In countries, search and select one or multiple countries.

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Countries: | Select...

Russia
Turkey
Vietnam
Indonesia
Philippines
Malaysia
Singapore
Israel
Lebanon
Hong Kong
Macau
India
Taiwan
Bahrain
Abu Dhabi

After selecting the countries, restart service by clicking the button. **Restart service**
Now you are ready to read license plates for these two countries.

Restart service

Region: | Asia

Countries: | Singapore ✕ Malaysia ✕

Function Mode: This LPR camera supports 3 LPR processing modes.

● **Trigger:** The camera will read license plate number only when a trigger is activated such as an induction loop, laser… etc.

● **Free Flow:** The camera is continuously processing all the frames/images. It is not recommended unless there is a constant flow of vehicles.

● **Motion Detection (Set by default):** The camera will read license plate number only when the frame difference is over the motion threshold.

Resolution: The camera resolution by default for license plate recognition is 1280 x 960, you also can choose 1920 x 1440 to increase more pixel density of the license plate numbers, for example with 2 Lanes LPR readings.

Users can configure the camera resolution according to their installation, e.g. you might need to increase the camera resolution when the capture distance is far. Please be noted that the higher resolution doesn't mean higher LPR accuracy.

The camera resolution here is only for LPR processing, and it has nothing to do with the camera parameters in video recording. In other words, this VIVOTEK's stop-and-go LPR camera is not only a standalone LPR camera; it is also a video surveillance camera. The maximum camera resolution and frame rate per second for video surveillance purpose are 2560x1920 (5MP) at 30fps or 1920x1080 at 60fps.
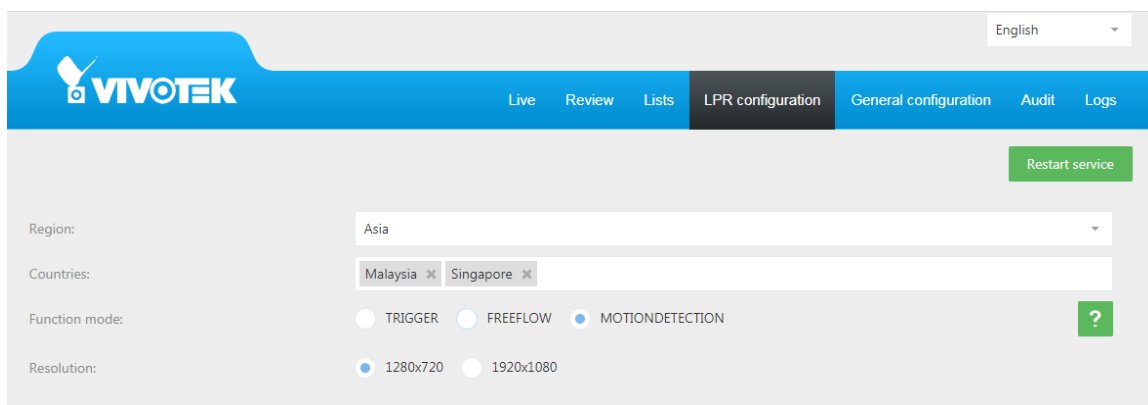
Show ROI: Users can draw a region of interest on the camera image. The LPR engine will only process and read the license plate in this region. Please be noted that license plate must be seen completely in this ROI.
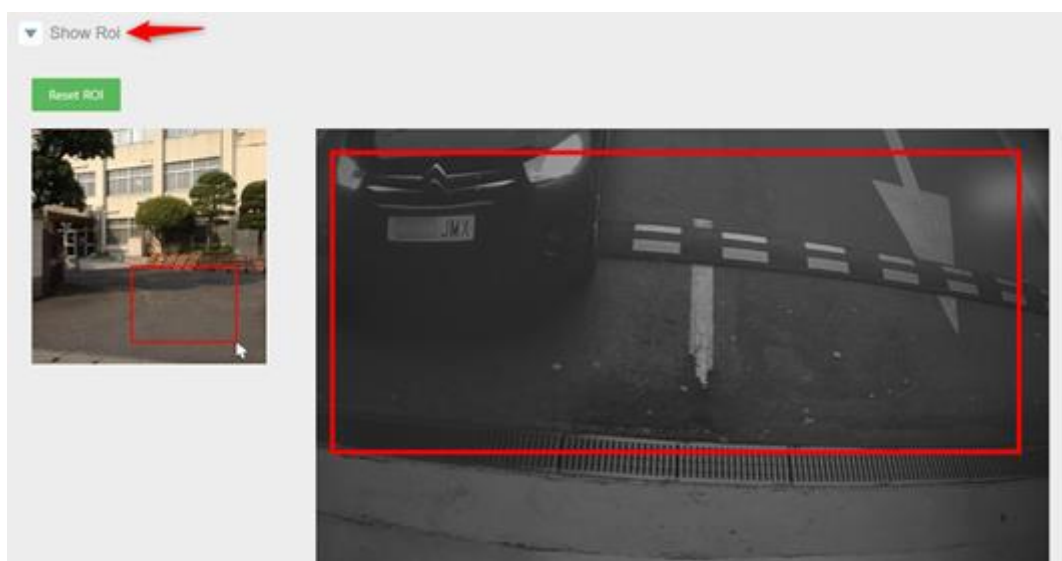
Click on "Show ROI", the wizard will guide you on how to draw it.

Draw 2 points into the road following the steps:

1. Draw top left point.

2. Draw bottom right point.

To reset ROI, click on "RESET ROI" button.

Click on the "**Restart Service**" ⬛Restart service button for the configuration to take effect.

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Show Lanes: Users can configure 2 lanes by drawing a line. The maximum number is 2.
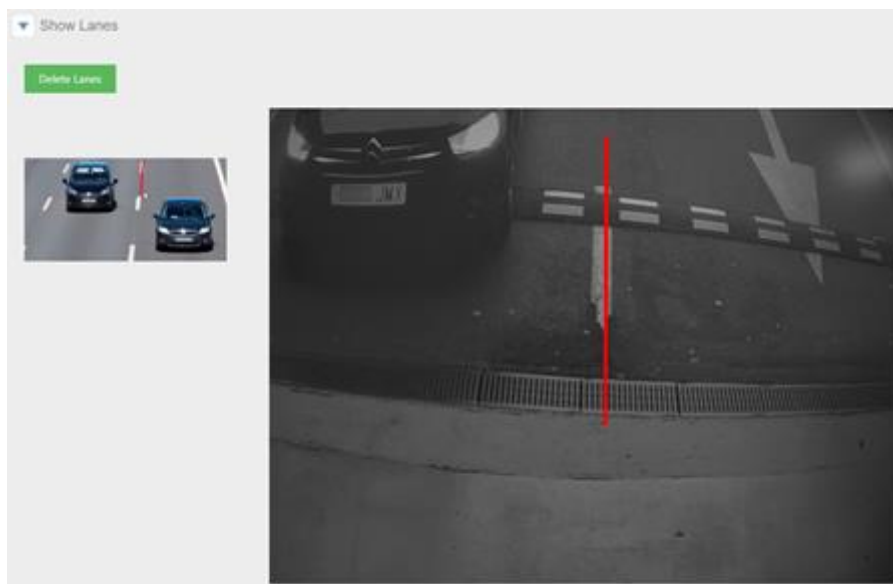
Click on "Show Lanes", the wizard will guide you on how to draw it.

Draw 2 points into the road following the steps:

1. Draw top point.

2. Draw bottom point.

To reset ROI, click on "Delete Lanes" button.

Click on the "**Restart Service**"   Restart service   button to take effect.

VIVOTEK ANPR will read the license plate and indicate on which lane the license plate was detected.

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Expert Options: Here is the recommended configuration for best performance if Motion Detection (default configuration) is selected.

Minimum character height: Minimum character size. Very useful for cases where users want to ensure a minimum character size. 25 being the recommendation

Maximum character height: Maximum character size. Very useful for cases where users want to ensure a maximum character size.

Minimum Confidence (%): 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). 80 being the recommendation

[TIPS]: if the confidence of LPR reading is lower than the confidence level, the LPR result won't show up and the engine will keep read the number plate and the result will be shown up when it reach the confidence level. If you found the LPR reading is slow for some specific plates, you can go to **log tab** to see if it filtered by the confidence level.

1. Go to Logs → check log type: Service → searches the number plates to see the reading process.
2. And you can see the reading process even the confidence lower than the level.
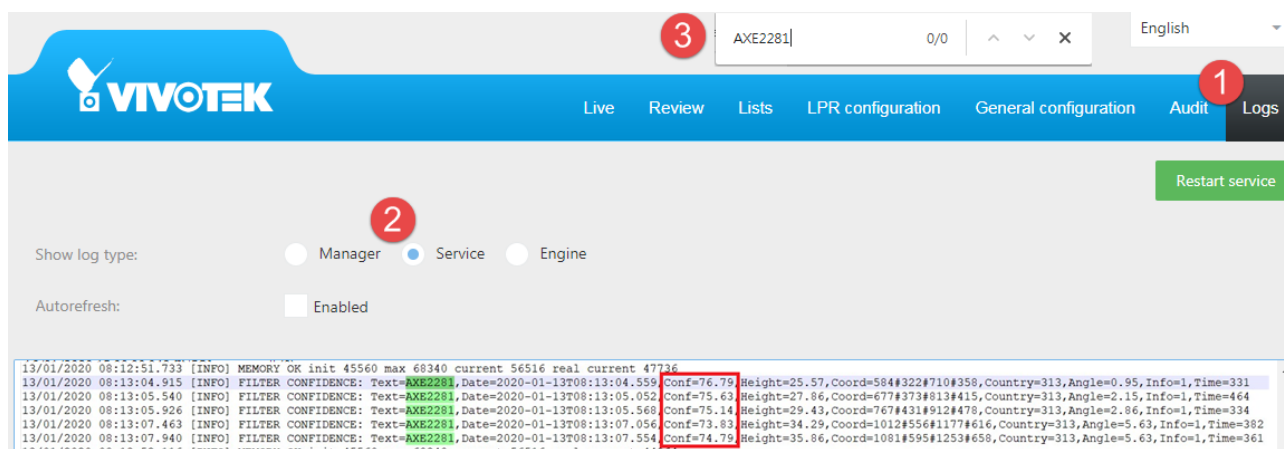
FPS: Maximum frames per second to process. 5 being the recommendation

Connection Type: You need to select the option, how user will get the image to process

VIVOTEK: Camera streaming.

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Click on the "**Restart Service**" [Restart service] button to take effect.

Trigger Mode: VIVOTEK ANPR 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 NCaptures, or the time exceeds Timeout.

Trigger Captures: How many images do users want to process from reading license plates to stop.
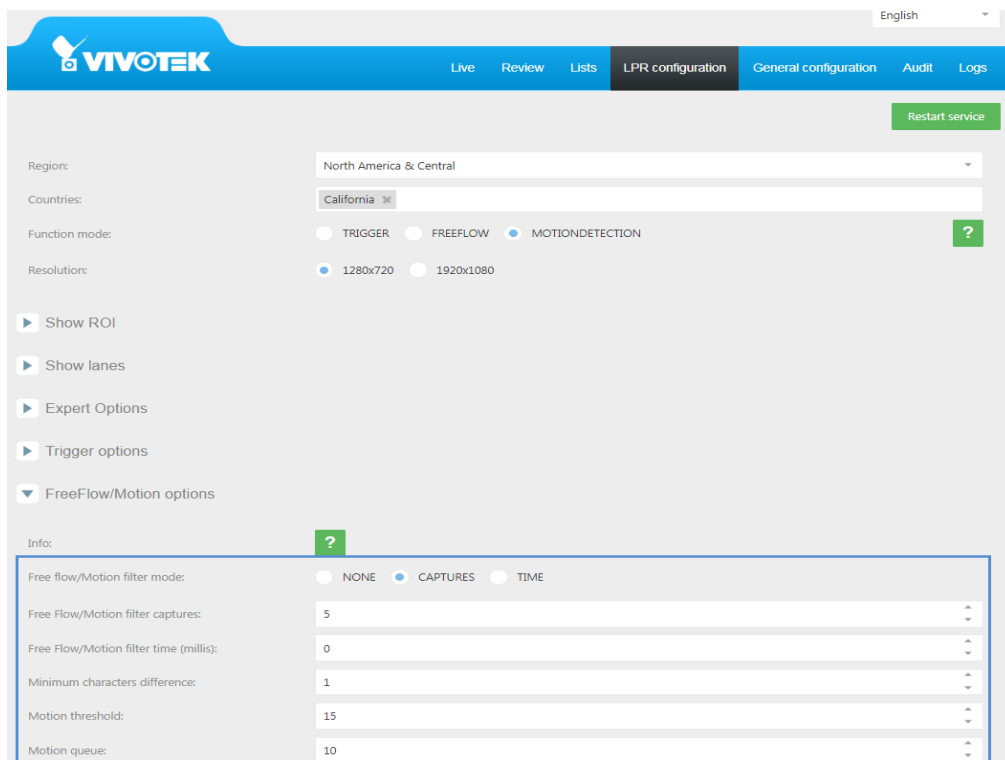
Trigger Timeout: How many seconds do users want to process from reading license plates to stop.

Trigger IO Device: If selected, the Digital Input ports will activate.

Trigger IO Port: Choose which digital input port you will use.

Click on the "**Restart Service**" [Restart service] button for the configuration to take effect.

FreeFlow/Motion options: VIVOTEK ANPR continuously runs OCR on the receiving frames. Whenever a new vehicle enters the scene, a new result is sent through the notification socket.

In the blue square, users can define repetition filters.

Free flow/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.

Free flow/Motion filter (millis): Minimum time elapsed from the detection of the same license plate to it being accepted again in the system.

For example, if users have the camera in a parking garage and there is a traffic jam, users don't want to read the same license plate continuously, in that case, the best filter is for captures, please do the following.

Select "Free Flow mode" -> click on "Free Flow options" -> click on "Free Flow filter mode" and select the filter "captures"

With this configuration, once a license plate is read, it will not be read again until another 5 different license plates have been read.

Minimum characters difference: this faulty tolerance allows you to improve the vehicle passing flow especially for the parking usage. Some parking system will allow vehicle pass in first even with some LPR error readings, then user can choose the right one when they doing the payment.

Motion threshold: The motion threshold is the threshold to consider an image different from other image, for the motion mode. Value ranges from 0 to 100.

Motion queue: The motion queue is the number of images in an internal queue. Be careful because more images increase the LPR process memory. For the parking application, in order to open the barrier immediately after the LPR readings, the recommendation value is 1. (General reacting time from readings to action should be less than 3~5 sec.)

After all the changes are made, remember always to restart service. Click on the [Restart service] button.

If users need to restart all configurations for this section, click on [Restart default configuration] the button.

4.6. General Configuration Tab

In this tab, configure general parameters:
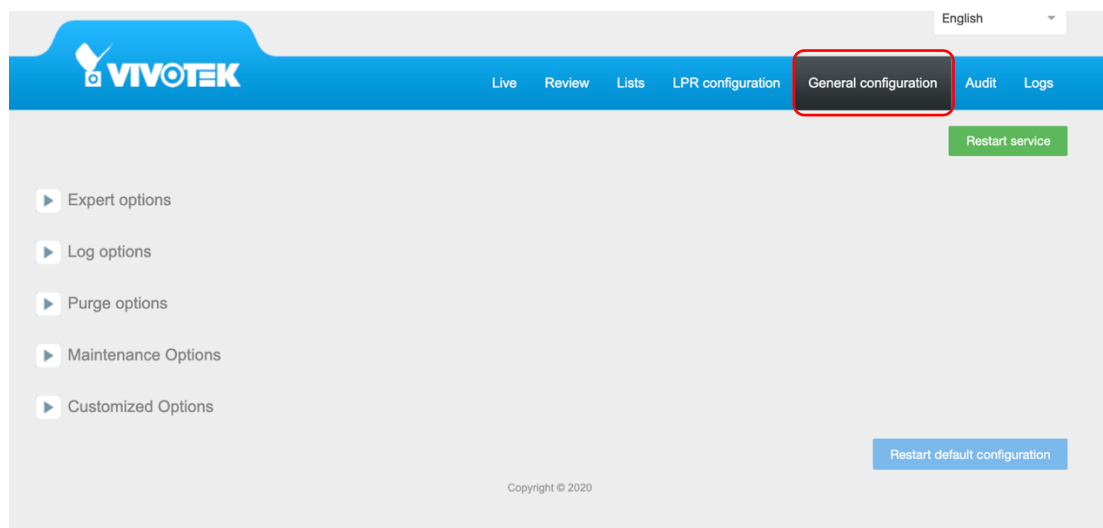
Expert Options:

   View type: user can choose the viewing type either LIST or SQUARE shown as below:

   LIST: SQUARE:

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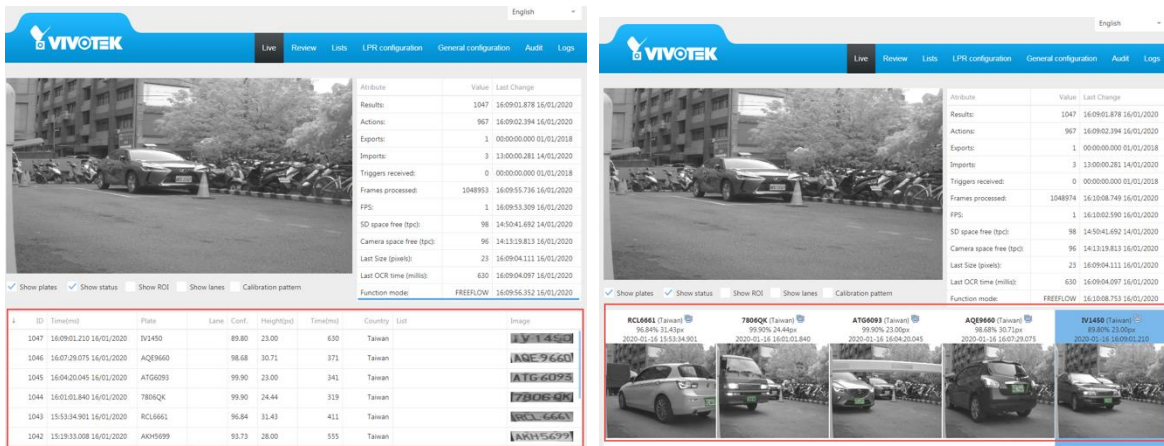
Save the image: will store the complete image in a folder.

Save the plate image: will only store the license plate image in a folder.

Image quality: will store the image with the compression configuration.

Store image on: will store data on an SD.

Trigger Socket Port: will enter the port we want to use for sending XML/JSON messages.
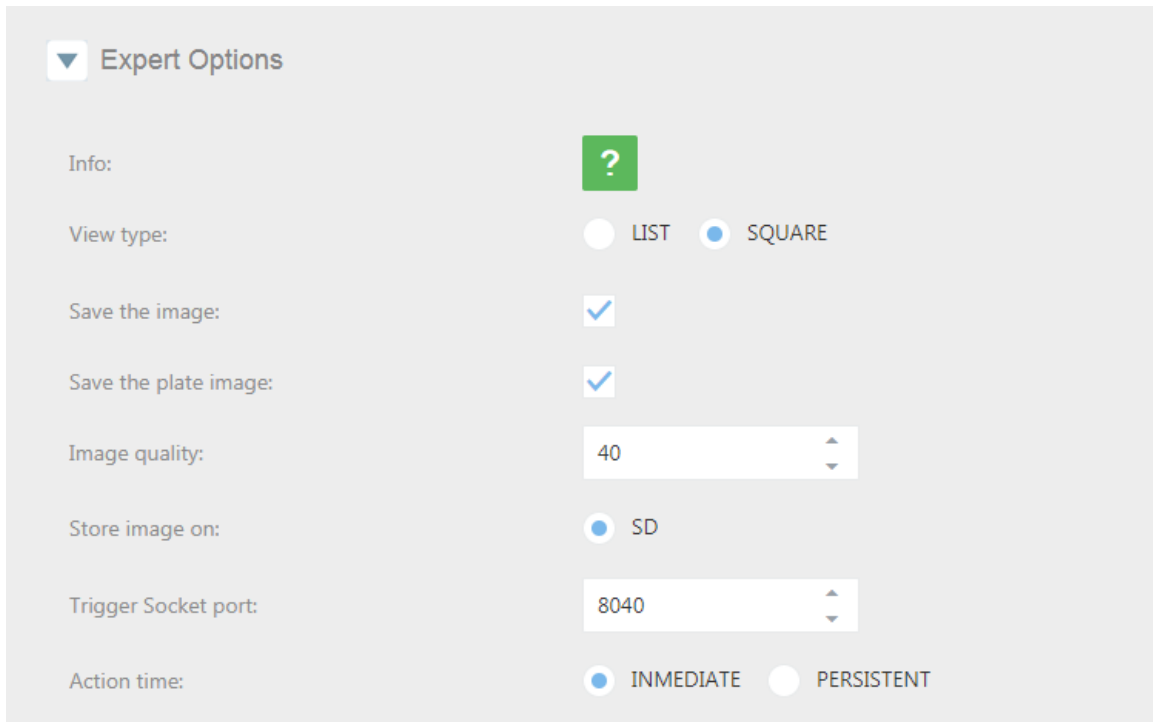
Log Options:

Log Level: User can determine the log level to register what is going on with VIVOTEK ANPR. By default, is set to 3. Level 4 and 5 are for experts and debugging team.

Activate log engine: Select only if debugging mode is necessary, only for expert technicians.

Log Level CGI (manager): User can determine the log level to register what is going on with the CGI. By default, is set to 3. Level 4 and 5 are for experts and debugging team.

Purge Options: Users can determine how many days or free spaces of data users need to keep.

Purge Interval: Schedule when do users want to execute the purge.

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.

Type of purge in database: Set how and what do users want to purge.

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.

Once users have defined when and what to purge, users need to set the variables to execute the task.

Purge by days:

- Days to preserve in storage: Will keep LPR dates and files of the last (XX) days and purge the rest.

Purge by Free Space:

- Minimum percentage of free space on SD:

    Will delete from the oldest images and files stored when the free space on the SD card is lower than configured.

- Minimum percentage of free space on CAMERA:

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Will delete from the oldest LPR results of database when the free space of the camera flash is lower than configured.

Maintenance Options:

In this section you can upload files for camera configuration, licensing, update VIVOTEK ANPR version, change the logo and upload images for the path option displayed in the Camera Configuration tab. Also you can revert the configuration file to last files and reset the database.
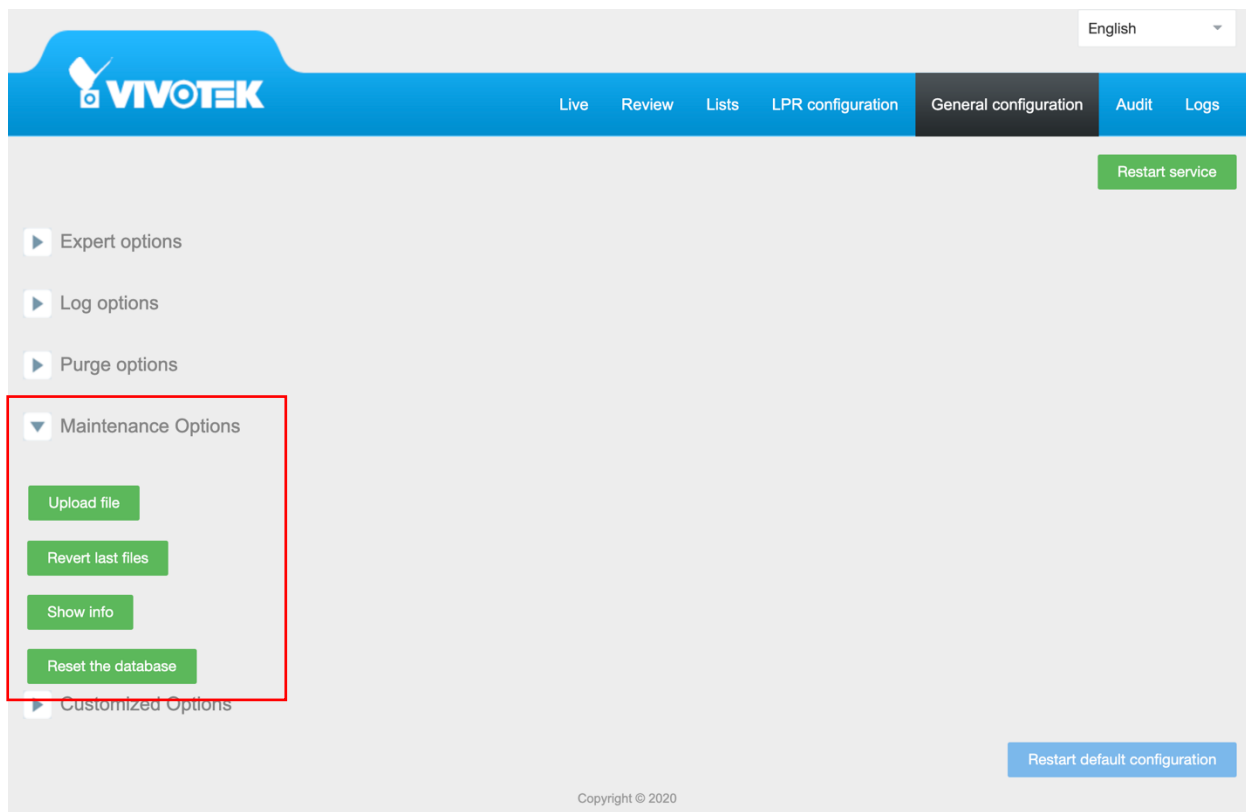
Upload File: Users can upload a file.

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.
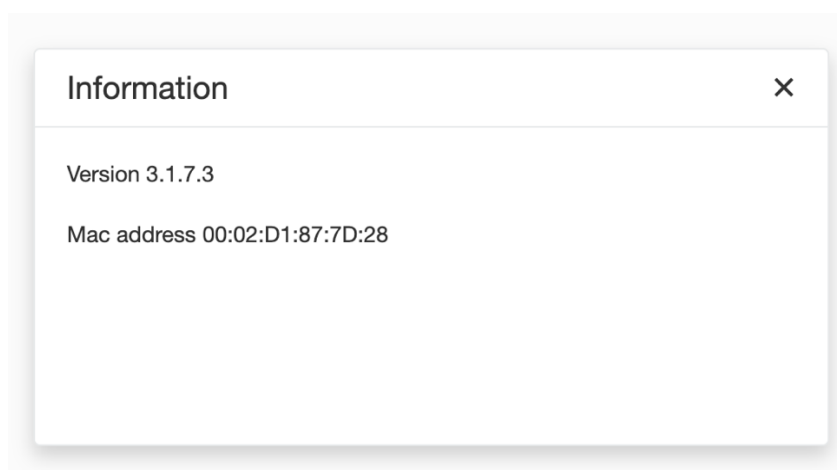
Reset the database: you can reset the database, and it would require password which is your full Mac address including colon symbols. Once you reset the database you need to go to camera configuration page on Applications -> Package management to stop and start the ANPR service.
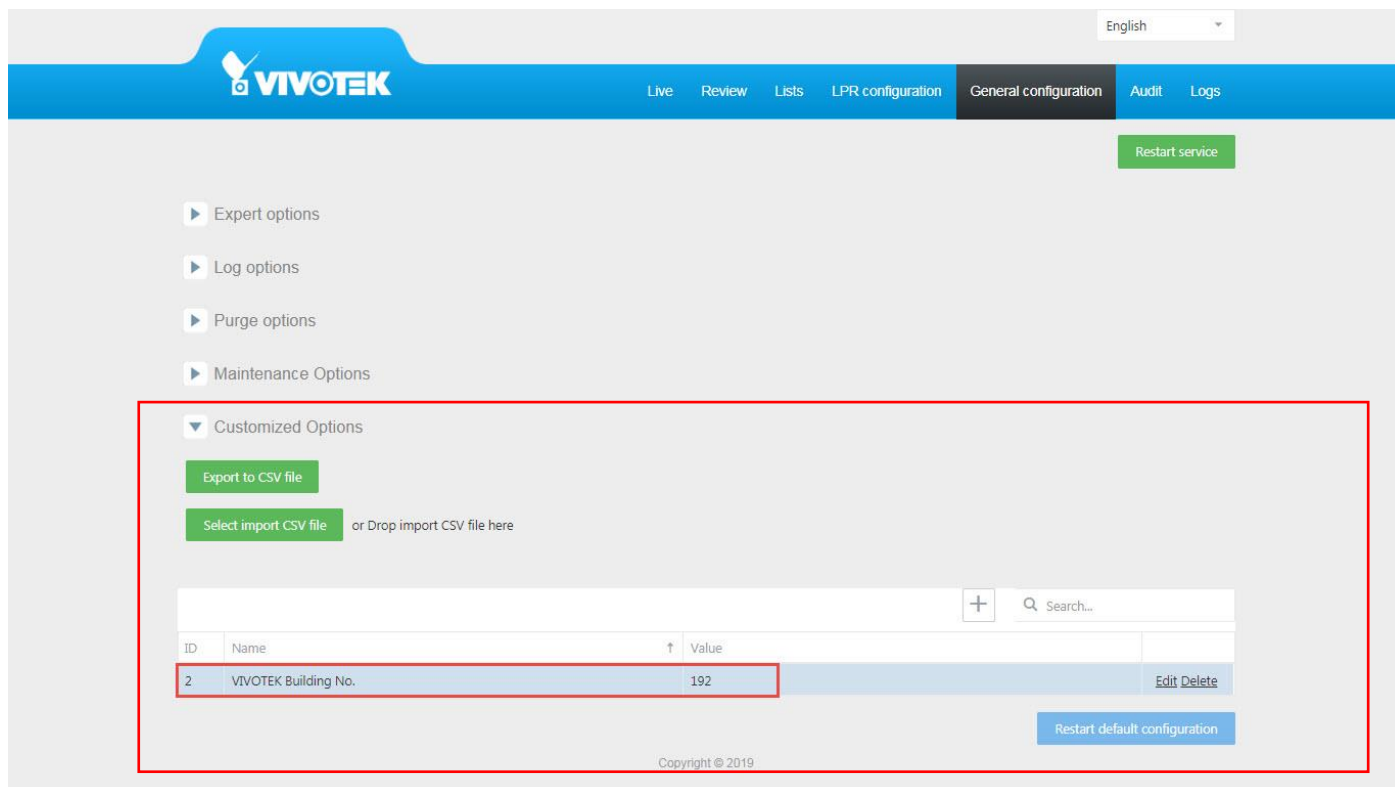
Customized Options:

In this section you export or import your ANPR configuration, also you can have customized columns (Name and Value) in export file.

The export XML file example:

<infoplate>

    <VIVOTEK Building No.>192</VIVOTEK Building No.>

</infoplate>

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In case users want to revert, all changes done, and want to get back to the default configuration, click on

Restart default configuration button.

4.7. Audit Tab

In the Audit tab, users can search by date interval and different event types such as import, export or action.
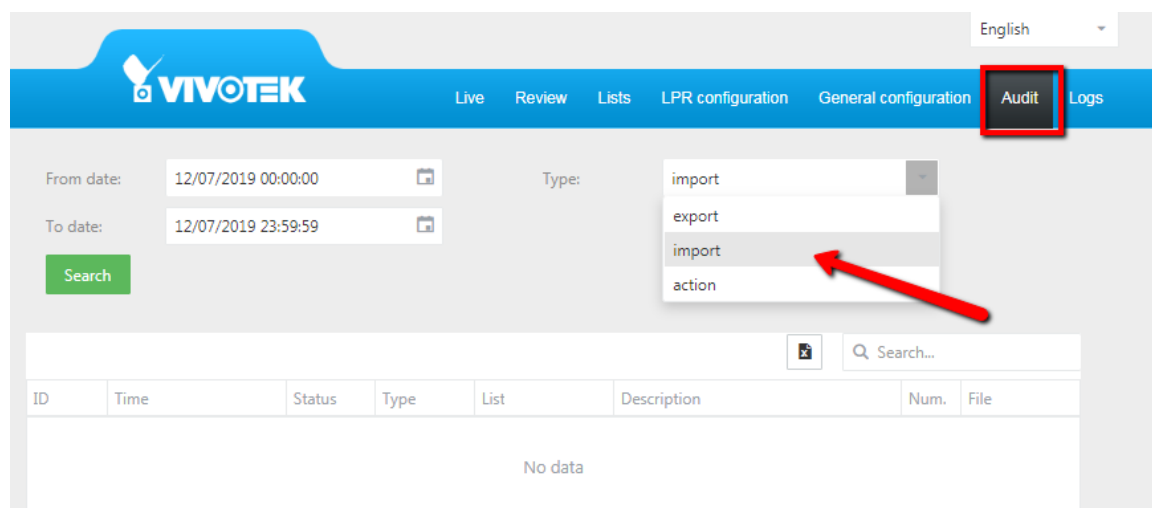
You can search in the stored actions by dates and by type of action.

Export: Will show users automatic exports done

Import: Will show users automatic imports done.
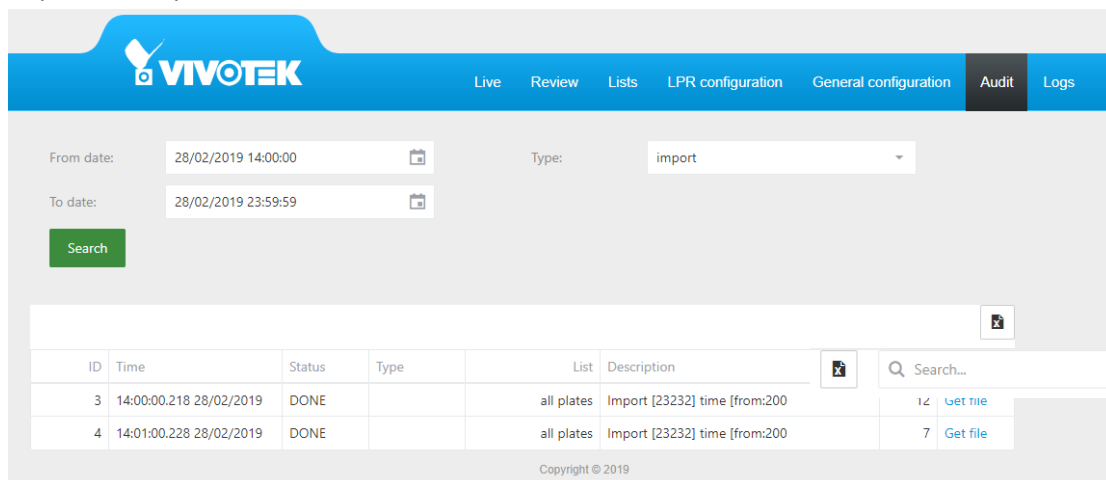
Action: Will show users automatic actions triggered on the lists.

The result of the search can be exported and downloaded.

Exports example:
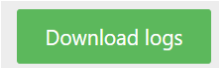
Imports example:

Actions example:

4.8. Logs Tab

In this TAB the user can see /download different logs. The configurations of "Logs" are available in "General configuration" -> "Log options".

These logs can be useful to diagnose and solve application problems.
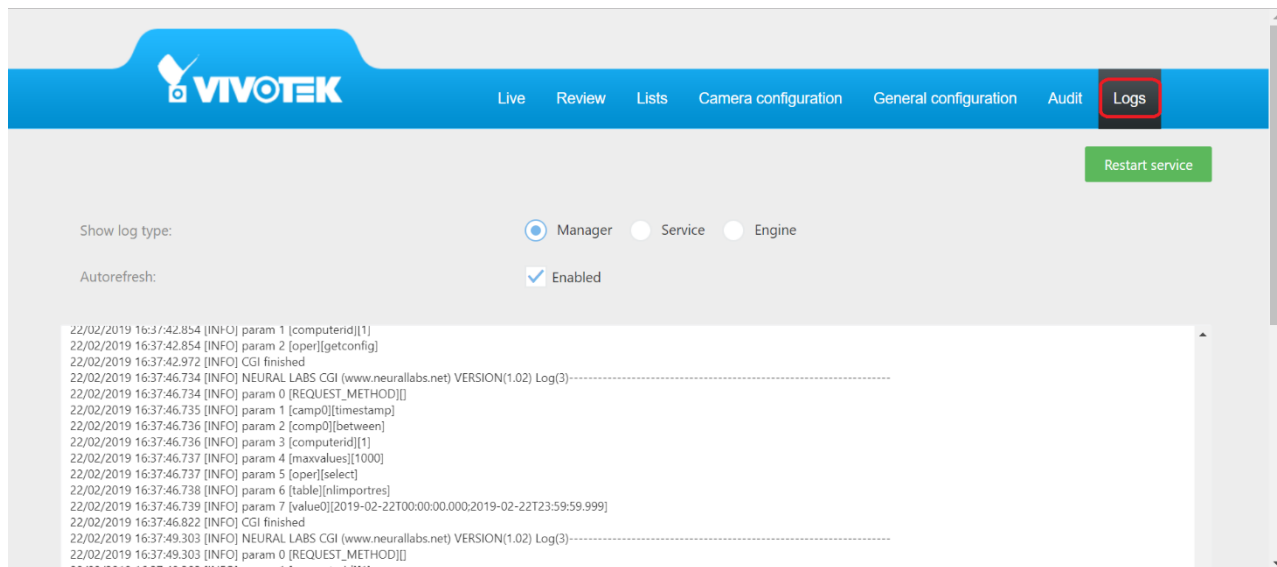
The type of the log that the user wants to see must be selected by either manager, Service or Engine.

Checking auto update the application will refresh the selected log type.

Sending logs to technical support may be needed. To do that, click on [Download logs] at the bottom of the page.

Selected logs will be downloaded in a compressed txt format.