

VaxALPR On Camera

Axis Software Developer's Guide

Version 2.0

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INDEX

1. Contents

2.	Intr	oduc	tion	. 3
3.	Vax	ALPR	On Camera – Reporting Options	. 3
	3.1	Con	figuring VaxALPR On Camera for Reporting	. 3
	3.2	Sen	ding VAPIX / ONVIF events	. 6
	3.2.	.1	Event declaration	. 7
	3.3	Vax	ALPR On Camera and Axis Video Overlay Settings	. 9
	3.4	Vax	ALPR On Camera – Writing results to an SD Card or a network share location	12
	3.4	.1	Writing to the SD card	13
	3.4	.2	Writing to the Axis Network Share Storage	14
	3.5	ТСР	Setup	16
	3.6	Gen	etec Integration	18
	3.6	.1	Configuring Genetec	18
	3.6	.2	Configuring VaxALPR On Camera	19
	3.7	Net	work Optix Integration	22
	3.7.	.1	Basic Setup	22
	3.7	.2	NX Vapix Integration – Blacklists, Whitelists & Alarms	24
	3.8	ТСР	SERVER Setup	24
	3.9	Sen	ding HTTP / HTTPS POST XML Events	24
	3.9.	.1	Connecting to Milestone	26
	3.9	.2	Well-Formed XML	27
	3.9	.3	Configuring Milestone	28
	3.10	Sen	ding HTTP or HTTPS POST JSON events	32
	3.11	Vax	tor Protocol - Sending proprietary events using TCP/IP	34
	3.1	1.1	Proprietary notification data package	36
	3.12	тср	Connector	38
	3.13	Dor	let Integration	40
	3.14	UTN	AC Integration	41
4.	Vax	ALPR	On Camera HTTP API	43
	4.1	List	Management	43
	4.2	Con	figuration File	44



4.3	Database	45
4.4	No Report Flag	
4.5	Images	47
5. Re	lated Documents	

2. Introduction

This guide is designed for those responsible for integrating the VaxALPR On Camera plate read results with third party software. The VaxALPR On Camera software is a real-time solution for Automatic License Plate Recognition (ALPR) that runs entirely within the Axis camera.

3. VaxALPR On Camera – Reporting Options

The VaxALPR On Camera software has a comprehensive list of outputs and protocols that can be configured by the user to allow the ALPR software to send results to third party applications, devices and Back Offices.

Once the Axis camera is installed and setup, and the basic configuration of the VaxALPR On Camera software is done, we can configure the appropriate reporting option. First start the App by selecting the Axis camera's Settings, click on the Apps Tab and select the VaxALPR On Camera App.

Use the Start Slider to start the ALPR App.

The Status should change to 'Running'.



3.1 Configuring VaxALPR On Camera for Reporting

Once the software is running you can configure the software by clicking on the blue Open button. This will open a new window with the VaxALPR On Camera main interface.

S VAXTOR	Va	axALPR On Camera 2.1-	19 [74]			[
		Plates				Plates
		Capture	Plate	Image	Country	Setting Reporting
		Thu Feb 20 11:06:39 2020	Y019UZK	YOI9 UZK	United Kingdom	Database
		Thu Feb 20 11:01:21 2020	EX02NZK	EXOLANZX	United Kingdom	Blacklist Whitelist
	and the second se	Thu Feb 20 11:00:09 2020	LN15BYT	LNIS BYT	United Kingdom	Region of Interest
(FIS AVM	Sector States	Thu Feb 20 10:59:15 2020	MK11HHW	- MKII HHW-	United Kingdom	Upload XML Config
	and the second second	Thu Feb 20 10:59:00 2020	DR100YD	DRID DYD	United Kingdom	Download XML Config

VaxALPR On Camera interface



The icon in the top right corner reveals the options menu. Click on Reporting to reveal the options:

S VAXTOR	VaxALPR On Camera 2.1-19 [68]	
eporting		Plates
oporting		Setting
A1001		Reporting
Helix-6		Database
Vaxtor protocol		Blacklist
Overlay		Whitelist
		Region of Interest
Dorlet		Show logfile
Write result		Upload XML Config
Vapix		Download XML Config
TCP		
Genetec		
TCP SERVER		
JSON		
XML		
FTP		
ACS		

VaxALPR On Camera has many different ways in which to send results to third party applications:

-	A1001	The Axis Network Door Controller

- Helix-6 Vaxtor proprietary protocol, sends reads to Helix using an API key
- Vaxtor Protocol Vaxtor proprietary protocol, sends reads to Helix or a server
- Overlay Dynamic text overlay onto the Axis video feed
- Dorlet The Dorlet AS/3 Controller
- Write Result Saves reads to the SD card or a network share
- Vapix VAPIX / ONVIF Events sent to the Axis Camera
- TCP Simple TCP/IP Connector sends a single string data type
- Genetec Sends data to the Genetec Security Center via the Web-based SDK
- Network Optix Sends data to the Network Optix n^x Witness VMS as an Event & Bookmark
- TCP SERVER TCP Server Setup. The Axis camera acts as a server.
- JSON HTTP / HTTPS POST messages in a JSON object
- XML Sends data in an XML packet via an HTTP /HTTPS POST
- FTP FTP / SFTP protocol setup
- ACS The Axis Camera Station
- Pushbullet Sends data to mobile devices
- UTMC Urban Traffic Management & Control interface
- NEDAP Access control interface
- RSP Custom Integration

Note that all Vaxtor VaxALPR: **On Camera Installation, Software Configuration** and **Integration** manuals are available from the Vaxtor Website: <u>https://www.vaxtor.com/vaxalpr-on-camera/</u>



IMPORTANT: Note that since version 2.0, there is a now an option in the Settings menu to enable a local database within the camera. This option requires an SD card mounted inside the camera. Mounting or unmounting the SD card whilst the software is running is not recommended.

When the database is active, VaxALPR is able to retry any notifications sent in cases where a notification fails for some reason such as a network problem. All retried events will have as a timestamp the original moment of plate capture.

More details of SD card and database configuration are available in the VaxALPR On Camera Software Configuration manual.

After configuring a notification, it is possible to simulate a read transmission. This feature can be used to confirm that the notification has been set up and is operating correctly.

To simulate a plate read notification:

- 1. Open the reporting option menu.
- 2. At the bottom of the page, insert a plate number on the "Plate to test" textbox.
- 3. Click "Test reporting"

S VAXTOR	VaxALPR On Camera	=
Reporting		
A1001		
Helix-6		
Vaxtor protocol		
Overlay		
Dorlet		
Write result		
Vapix		
TCP		
Genetec		
TCP SERVER		
JSON		
XML		
FTP		
ACS		
Pushbullet		
UTMC		
NEDAP protocol		
NEDAP protocol Submit Reporting	Plate to test	Test Re

Reporting Test Function

4. A confirmation message will be displayed when the simulation is sent.

Test reporting!	
Reporting tests has been invoked successfully!	
	Close

Confirmation message



3.2 Sending VAPIX / ONVIF events

The VaxALPR On Camera software can be integrated with Axis camera events. An Axis camera event is a set of conditions (action rules) that define how and when an action will be performed. If multiple conditions are defined, all of them must be met to carry out the action. An event can be triggered or scheduled.

When integrated, every time a license plate is read, VaxALPR On Camera sends a VAPIX / ONVIF event to the Axis Camera. Several different types of events can be sent:

- ALPR: This event is sent each time a license plate is recognized.
- Blacklist: This event is sent each time a license plate on the blacklist is recognized.
- Whitelist: This event is sent each time a license plate on the whitelist is recognized.
- NoList: This event is sent each time a license plate that is not on the whitelist nor on the blacklist is recognized.

NOTE: The Axis Camera firmware version should be 6.30 or above if you want to use it with the VaxALPR On Camera software. The VaxALPR On Camera software should be configured before Axis camera events.

To activate this option, do the following:

- 1. In the Reporting menu select Vapix to expand the Vapix integration menu.
- 2. Select the Active checkbox.
- 3. Enter an ID (Unique Identifier) for this camera, scroll down and save your changes

by clicking on the button.

The format of the message sent with each VAPIX / ONVIF event is detailed below. All events have the same fields, - only the topic2 item will change (ALPRv2, Blacklistv2, Whitelistv2 or No_listv2).



3.2.1 Event declaration

```
<!-- Vaxtor ALPR Event -->
<Declaration>
<ltem>
  <Key NameSpace="tnsaxis">topic0</Key>
  <String>CameraApplicationPlatform</String>
 </ltem>
 <ltem>
  <Key NameSpace="tnsaxis">topic1</Key>
  <String>Analysis</String>
 </ltem>
 <ltem>
  <!---Valid values are ALPRv2,Blacklistv2,Whitelistv2 or NoListv2 -->
  <Key NameSpace="tnsaxis">topic2</Key>
  <String>ALPRv2</String>
 </ltem>
 <ltem>
  <Key>id</Key>
  <String/>
  <Tag>onvif-data</Tag>
 </ltem>
 <ltem>
  <!-- The plate read -->
  <Key>plate</Key>
  <String/>
  <Tag>onvif-data</Tag>
 </ltem>
 <ltem>
  <!-- Video timestamp -->
  <Key>timestamp</Key>
  <String/>
  <Tag>onvif-data</Tag>
 </ltem>
 <ltem>
  <!-- Country / State -->
  <Key>country</Key>
  <String/>
  <Tag>onvif-data</Tag>
 </ltem>
 <ltem>
  <!-- Global confidence -->
  <Key>confidence</Key>
  <String/>
  <Tag>onvif-data</Tag>
 </ltem>
 <ltem>
  <!-- Characters confidence -->
  <Key>charconfidence</Key>
  <String/>
  <Tag>onvif-data</Tag>
 </Item>
```



<ltem> <!-- Average Char Height --> <Key>charheight</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!-- Process Time --> <Key>processtime</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!-- Plate location --> <Key>left</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!-- Plate location --> <Key>top</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!-- Plate location --> <Key>right</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!-- Plate location --> <Key>bottom</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <Key>roi</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!- Description (Only for blacklist and whitelist events) --> <Key>description</Key> <String/> <Tag>onvif-data</Tag> </ltem> <ltem> <!-- Direction of movement --> <Key>direction</Key> <String/> <Tag>onvif-data</Tag> </ltem>

</Declaration>



3.3 VaxALPR On Camera and Axis Video Overlay Settings

The VaxALPR On Camera software can display dynamic overlay text such as the most recent License Plate details onto the camera's live video stream – or can write the overlay text (a watermark) onto all the still images saved after a plate is recognised.

To set up the first option:

- 1. On the Axis Camera's internal webpage, click on the blue Open button to open a new window with the VaxALPR On Camera main interface.
- 2. The icon in the top right reveals the options:

VAXTOR	2	VaxALPR On Camera 2.1-	19 [74]			
		Plates				Plates
	8	Capture	Plate	Image	Country	Setting Reporting
- Sense		Thu Feb 20 11:06:39 2020	Y019UZK	YDI9 UZK	United Kingdom	Database
		Thu Feb 20 11:01:21 2020	EX02NZK	EXQ2NZK	United Kingdom	Blacklist Whitelist
	and the second second	Thu Feb 20 11:00:09 2020	LN15BYT	LNIS BYT	United Kingdom	Region of Interest
FIS AVM		Thu Feb 20 10:59:15 2020	MK11HHW	- MKII HHW-	United Kingdom	Upload XML Config
		Thu Feb 20 10:59:00 2020	DR100YD	DRID DYD	United Kingdom	Download XML Conf

- 3. Click on Reporting and select **Overlay** from the list
- 4. Click on Active and edit the Message to be displayed:

Reporting	
A1001	
Vaxtor protocol	
Overlay	
@ Active	
User	Message
root	\$date\$ - \$plate\$ (\$country\$) \$blacklist\$
Password	View
	0
Port	
80	

NOTE: You can use dynamic text replacement to match the current plate's information:

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$:** JPEG size in bytes.
- **\$date\$**: Timestamp in ISO8601 format
- **\$plate\$**: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- \$state\$: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.
- \$ifblacklist\$ \$ifblacklist\$: If the plate is on the blacklist, the text in the 'if clause' will be displayed.



- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- \$confidence\$: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- **\$left\$**: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- \$right\$: Right coordinate for the plate on the image (pixels).
- \$bottom\$: Bottom coordinate for the plate on the image (pixels).
- **\$absoluteleft\$**: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- **\$absoluteright\$**: Plate right position based on the total image width (0-1).
- \$absolutebottom\$: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- **\$height\$**: OCR image height.
- \$ip\$: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.
- \$speed\$: Vehicle speed (Km/h).
- \$multiplate\$: Amount of times that the plate has been read before reporting.
- \$signaled\$: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- \$directionstr\$: String with the vehicle direction.
- \$safedate\$: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- **\$localdate\$**: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- \$platejpegsize\$: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdate\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- \$etx\$: End transmission character (03)
- **\$stx\$**: Start transmission character (02)
- **\$sha1\$**: The 24 least significant bits of the SHA1 digest of the plate number.
- 5. Specify the **View** (the Axis camera view stream identifier). By default, set to 0).
- 6. Scroll down and save your changes by clicking on the

button.

Submit Reporting

7. Next, go to the Axis camera's main settings page and select the **Overlay** Tab and click on **Create Overlay**:



→ ES Create overlay Image list	Image	Stream	Overlay	PTZ	Audio	Privacy mask	Apps	System
Create overlay Image list								
Create overlay Image list								

8. Choose the **Text** option:

Enter **#D** for the data from the ALPR read.
 You can also use the pre-set modifiers if required and select fonts and the position of the overlay text:

Date Time A ▼ 48 ▼ Custom	
Top left	-

10. Back on the Live view you will be able to see the overlay. You can pick this up with the mouse and change its position more accurately:



This feature is useful when video is being sent to a VMS such as Milestone or Axis's own and the overlay text is written onto the video stream.

However, note that when still images are transmitted to Helix or some other device using one of the reporting options then the software has no knowledge of the video stream and so the second method should be used.

To setup this option, see the VaxALPR On Camera Software Setup and Configuration manual where you can define your overlay layout in the main App Settings.



3.4 VaxALPR On Camera – Writing results to an SD Card or a network share location

This is the most basic of outputs and saves all the ALPR reads to the camera's internal SD card if fitted, or a network share location.

Note that this is different to the Database option in the App's settings. The database option will write to the SD card obeying the maximum entries limit and will delete the oldest records to make way for the newer ones. It allows searching and export. This feature is in ADDITION to that and simply writes all reads and images in the format specified below to the SD card or network share location. When the SD card becomes full then no more data can be written. This feature is normally used by third parties for testing – or in applications where they transfer this data from the camera via FTP and delete the residual data themselves.

In Reporting select Write result and the following window appears:

Write result				
SD				
Network share				
Write images				
 Write plate images Line template 				
\$date\$ \$plate\$ \$country\$	Sconfidence\$ \$left\$ \$top\$	\$right\$ \$bottom\$ \$bl	acklist\$ \$whitelist\$	

Select either the SD card – or a network share location or both options.

In either case you can chose if the plate patch images and/or the full video images are saved along with a text file. You can modify the suggested fields:

\$date\$ \$plate\$ \$country\$ \$confidence\$ \$left\$ \$top\$ \$right\$ \$bottom\$ \$blacklist\$ \$whitelist\$

.. using any if the following reserved words:

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$:** JPEG size in bytes.
- **\$date\$**: Timestamp in ISO8601 format
- **\$plate\$**: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- \$state\$: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.



- \$ifblacklist\$ \$ifblacklist\$: If the plate is on the blacklist, the text in the 'if clause' will be displayed.
- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- **\$confidence\$**: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- \$left\$: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- **\$bottom\$**: Bottom coordinate for the plate on the image (pixels).
- \$absoluteleft\$: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- **\$absoluteright\$**: Plate right position based on the total image width (0-1).
- \$absolutebottom\$: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- **\$height\$**: OCR image height.
- **\$ip\$**: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.
- **\$speed\$**: Vehicle speed (Km/h).
- **\$multiplate\$**: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- \$localdate\$: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- **\$platejpegsize\$**: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdate\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- \$etx\$: End transmission character (03)
- **\$stx\$**: Start transmission character (02)
- **\$sha1\$**: The 24 least significant bits of the SHA1 digest of the plate number.

3.4.1 Writing to the SD card

All reads will be stored in the SD Card folder: /areas/Vaxreader/YYYYMM-DD/

If the plate is in a whitelist or blacklist, the images will be stored in:



/areas/Vaxreader/YYYY-MM-DD/WHITELIST/ or /areas/Vaxreader/YYYY-MM-DD/BLACKLIST/

Each image saved will be labelled as **HHMMSS-PLATE.jpg** with the timestamp in UTC/GMT.

Submit Reporting

Scroll down and save your changes by clicking on the changes.

button to save your

Next, go to the Axis camera's main settings page and select the System Tab and click on Storage:

Image :	Stream	Overlay	PTZ	Audio	Privacy mask	Apps	System										
										38	*	Cover	\$10MP	٢	4	9	
								Language	Date and time	Orientation	Users	ONVIF	SNMP	Detectors	Maintenance	Plain config	
								8	<u>ل</u>	0							
								тсрлр	AVHS	Security	Storage	I/O ports	Events				

Format the SD card if necessary and then set any other options as required:

Netw	vork storage	
	Set up	
Onbo	pard storage	
Form	at new cards to ext4	
	SD card (13.8 GB) Free: 94% Status: Okay	
	File system: ext4 Encrypted: No Write-protect	
	Keep recordings up to	
	2 days 🖤	
	Tools	
	Format (erase all) 🕷 🔧	
	Safely remove the storage	

Plate reads will now be written to this location using the format specified.

3.4.2 Writing to the Axis Network Share Storage

All reads will be stored on the network shore in the folder: axis<DeviceSerialNumber>/areas/Vaxreader/YYYYMM-DD/

If the plate is in a whitelist or blacklist, the images will be stored in:

axis<DeviceSerialNumber /areas/Vaxreader/YYYY-MM-DD/WHITELIST/ or axis<DeviceSerialNumber /areas/Vaxreader/YYYY-MM-DD/BLACKLIST/



Each image saved will be labelled as **HHMMSS-PLATE.jpg** with the timestamp in UTC/GMT.

Scroll down and save your changes by clicking on the button to save your changes.

Go to the Axis camera's main settings page and select the **System** Tab, click on **Storage**:

Image	Stream	Overlay	PTZ	Audio	Privacy mask	Apps	System										
								_						-			
								<u></u>		38	*	Conner	Shuhale	۲	4	9	
								Language	Date and time	Orientation	Users	ONVIF	SNMP	Detectors	Maintenance	Plain config	
								۲	<u>ت</u>	۲	5						
								TCP/IP	AVHS	Security	Storage	I/O ports	Events				

- 1. Ensure that you have already setup a public shared folder!
- 2. Click on Network storage Set up and enter the address of the shared folder:

	5	
Host		
\\192.168.0.180		
Share		
public		
The share requires Username	login 🕕	
The share requires Username root	s login 🕕	
The share requires Username root Password	s login 💶	
The share requires Username root Password	login 🕕	

Plate reads will now be written to this location using the format specified.

Note that this list of protocols is always being updated, contact Vaxtor for details.

See the separate manual: "VaxALPR On Camera Integration Guide" for more details of Vapix and how to communicate with Axis's own software.

See the separate manual: "VaxALPR On Camera Main Manual" for more details on other application features.



3.5 TCP Setup

The TCP reporting option will cause VaxALPR On Camera to connect to the configured server and send a configurable string data type. The connection will be closed after the data is sent.

To activate this option:

Click on the TCP header to expand the setup menu.

- 1. Enable the **Active** checkbox.
- 2. Enter target **URL (Host)** and Port. The URL should be a valid IP address or server domain such as: myserver.com or 192.168.1.5
- 3. Modify the message as needed.

NOTE: You can use dynamic text replacement to match the current plate's information:

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$:** JPEG size in bytes.
- \$date\$: Timestamp in ISO8601 format
- **\$plate\$**: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- \$state\$: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.
- **\$ifblacklist\$ \$ifblacklist\$**: If the plate is on the blacklist, the text in the 'if clause' will be displayed.
- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- \$confidence\$: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- **\$left\$**: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- **\$bottom\$**: Bottom coordinate for the plate on the image (pixels).
- \$absoluteleft\$: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- **\$absoluteright\$**: Plate right position based on the total image width (0-1).
- **\$absolutebottom\$**: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- \$height\$: OCR image height.
- \$ip\$: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.



- \$speed\$: Vehicle speed (Km/h).
- **\$multiplate\$**: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- **\$localdate\$**: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- **\$platejpegsize\$**: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdate\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- **\$etx\$**: End transmission character (03)
- **\$stx\$**: Start transmission character (02)
- **\$sha1\$**: The 24 least significant bits of the SHA1 digest of the plate number.

4. Scroll down and save your changes by clicking on the button.

VaxALPR On Camera Axis Software Developer's Guide



3.6 Genetec Integration

3.6.1 Configuring Genetec

First configure the Web SDK as follows:







			📑 🕂 🌀 🚺 lu. 10:58.	
1 Config Tool System	×			
General settings Roles	dules 🛛 Scheduled tasks 🏾 🖇 Macros	🔁 Output behaviors < > 📫 🎰	Web-based SDK	
Search 🗳		Identity Properties Resources		
Archiver	Port: 4590 \$			
ER Manager	Streaming port: 4591 🗘			
Media Gateway Media Router	Base URI: WebSdk			
Mobile Server Report Manager				
Web Server				
🔋 Zone Manager				

3.6.2 Configuring VaxALPR On Camera

The Vaxtor On Camera ALPR can send results to the Genetec Security Center via the Webbased SDK.

In the Reporting options select Genetec:

Genetec	
✓ Active	
Camera Logical Id	hU
3	http://192.168.0.238:4590/WebSdk/
Username	Password
Admin	
Message template	Application ID
[\$plate\$][\$country\$]/	KxsD11z743Hf5Gq9mv3+5exzemICiUXkTFY5ba1NOGcLCmGstt2n0zYE9NsNim
Custom Event ID	☑ Raise Custom Event?
8	Create bookmark?

Configuration values must be collected from the Genetec Security Center:

- Url: Genetec Security Center URL
- **Username & Password**: Genetec Security Center user with permissions to create Bookmarks and Raise Custom Events.
- **Camera Logical ID**: The Camera Logical ID must be the same as that configured in the Genetec Security Center.





Config Tool Area view	-01	
Search Y	Video Recording Video analytici	7 Color Hardware
	Type: Camera loss: • • Name: 192.168.0.227 - Camera - 01 Descriptor: Logical ID: 3 Relationship: • • 192.168.0.227 - meas - 01 • • • Part off • • • Controlled by • • • Role • • • Role	Thumbnail not available

- Application ID: Note that it is a Fixed value: KxsD11z743Hf5Gq9mv3+5ekxzemlCiUXkTFY5ba1NOGcLCmGstt2n0zYE9NsNimv Note: This value could be modified. Contact Vaxtor/Genetec for more information on linking it.
- **Custom Event ID**: The Custom Event ID must be the same as that configured in the Genetec Security Center.

			39 🔹 🔇 Admin@TEST-F	C 👖 ma. 9:30 📃 🔲 💌
✿ Config Tool § System	System status			
General settings 🎽 Roles 📓 Sch	edules 👼 Scheduled tasks 🚿 Macros 🚆 Output be	haviors <	> #4	
Custom fields	Cus	tom events Eve	rent colors	
Events	Custom event	Value	Role	
	Metadata event stream stopped unexpectedly		Local system	
	■/ Analysis: ALPRv2		Local system	
Actions	Analysis: Blacklistv2		Local system	
	Analysis: No_listv2	4	Local system	
Id Logical ID	Analysis: Whitelistv2		Local system	
	MotionRegionDetector: Motion Off		Local system	
luser password settings	MotionRegionDetector: Motion On		Local system	
Activity trails	Create custom event			
🎵 Audio	Name: Plate detection even			
🧵 Threat levels	Value: 8 3			
Incident categories		Cance	el Save	
Features				
😃 Updates				
+ Add an entity				



Submit Reporting

• **RaiseCustomEvent** | **Create Bookmarks:** Choose the action to be performed on the Genetec Security Center. Both can be selected.

After setting up, scroll down and save your changes by clicking on the button.

Note that there is a separate document available showing how On PC and Vaxtor Manager can also be configured.



3.7 Network Optix Integration

3.7.1 Basic Setup

This reporting options sends generic events and bookmark data to the **Network Optix n^x Witness VMS** system.

See separate guide: "VaxALPR on Camera - Network Optix & NX VMS Integration"

To setup this option, do the following:

1. In Reporting click on the Network Optix option to expand the integration menu.

Network Optix		
☑ Active		
Url	Source	
Url		
Username	Password	
Username	Password	
Caption template	Description template	
Splate\$ (\$country\$)	SplateS	
Camera ID		

- 2. Enable the **Active** checkbox.
- Enter the URL. The URL should be the address of the NX host server using port 7001: <u>http://nxserver:7001</u> e.g. <u>http://192.168.0.41:7001</u> Note that the latest Optix NX enforces https.

(ensure that the IP address of the camera is on the same subnet)

- 4. Enter your Username & Password.
- 5. Enter a "Source" parameter. This is used by the NX Server to reference the events received. E.g. 'LPR". This will mark all NX events as "LPR" events.
- 6. Enter the Caption and Description templates. This data will be saved with each event.

Modify the two messages as required. The message can use Dynamic text replacement such as in the Overlay reporting option.

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$:** JPEG size in bytes.
- **\$date\$**: Timestamp in ISO8601 format
- \$plate\$: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- **\$state\$**: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.
- **\$ifblacklist\$ \$ifblacklist\$**: If the plate is on the blacklist, the text in the 'if clause' will be displayed.



- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- **\$confidence\$**: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- **\$left\$**: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- **\$bottom\$**: Bottom coordinate for the plate on the image (pixels).
- **\$absoluteleft\$**: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- \$absoluteright\$: Plate right position based on the total image width (0-1).
- **\$absolutebottom\$**: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- **\$height\$**: OCR image height.
- **\$ip\$**: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.
- **\$speed\$**: Vehicle speed (Km/h).
- \$multiplate\$: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- **\$localdate\$**: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- \$platejpegsize\$: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdate\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- \$etx\$: End transmission character (03)
- **\$stx\$**: Start transmission character (02)
- \$sha1\$: The 24 least significant bits of the SHA1 digest of the plate number.

You can add your own parameters into the message, so if you want to add say a site ID, your message might look like this:

{ "plate":"\$plate\$", "date":"\$date\$", "ip":"\$ip\$", "country":"\$country\$", "sitecode": 12345}

- 7. Enter the Camera ID. This is the ID that has been setup in the NX VMS settings. This can be found in Camera Settings.
- 8. When finished click on **Submit Reporting** to store the configuration in the camera.



3.7.2 NX Vapix Integration – Blacklists, Whitelists & Alarms

Reads can be sent to the NX VMS as ONVIF Analytic Events and use the On-Camera's Blacklist and Whitelist functionality. These can then generate alarms within the NX VMS.

See the separate manual: "VaxALPR On Camera Axis Camera Integration"

- 1. To do this, setup Vapix reporting this is described in this manual in section 3.2.
- 2. When finished click on Submit Reporting to store the configuration in the camera.
- Next you need to setup events within the Axis camera.
 In the separate manual *VaxALPR On Camera Axis Camera Integration*, Sections 2.1 & 2.2 describe fully how to set up Vapix ONVIF events and how to add these to the Axis Camera Events.

3.8 TCP SERVER Setup

The Axis camera can be configured as a TCP Server.

Once set up, multiple clients can connect to the configured port in order to receive data. The camera will send a configurable string data type to all of the connected clients.

The connection will remain open until it is closed by the camera if there is a configuration change.

Setup this option in the same way as above. This time only the port and Message need be setup. The message can as before be modified as necessary using dynamic text replacement to match the current plate's information as in the previous example.

After setting up, scroll down and save your changes by clicking on the

button.

Submit Reporting

3.9 Sending HTTP / HTTPS POST XML Events

This reporting option will cause VaxALPR On Camera to send each plate event in an XML packet via an HTTP POST. This method can also be used to send events to Milestone.

To activate this option:

- 1. Click on the XML header to expand the HTTP Post XML integration menu.
- 2. Enable the **Active** checkbox.
- 3. Enter the target **URL**. The URL should be a 'well-formed' URL such as: <u>http://myserver.com/ or https://myserver.com:port/destination/mypage.php</u>

For Milestone connections the URL should be: <u>http://milestoneserver:9090/</u>

Both domain names or IP address can be used.



4. Modify the message as needed. By default, the message is a valid Analytic Event for Milestone.

NOTE: You can use dynamic text replacement to match the current plate's information:

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$:** JPEG size in bytes.
- \$date\$: Timestamp in ISO8601 format
- \$plate\$: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- **\$state\$**: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.
- **\$ifblacklist\$ \$ifblacklist\$**: If the plate is on the blacklist, the text in the 'if clause' will be displayed.
- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$**...**\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- **\$confidence\$**: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- **\$left\$**: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- **\$bottom\$**: Bottom coordinate for the plate on the image (pixels).
- **\$absoluteleft\$**: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- \$absoluteright\$: Plate right position based on the total image width (0-1).
- \$absolutebottom\$: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- \$height\$: OCR image height.
- **\$ip\$**: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.
- **\$speed\$**: Vehicle speed (Km/h).
- **\$multiplate\$**: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- \$localdate\$: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- \$platejpegsize\$: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.



- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- \$utcdate\$: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- **\$etx\$**: End transmission character (03)
- \$stx\$: Start transmission character (02)
- \$sha1\$: The 24 least significant bits of the SHA1 digest of the plate number.
- 5. Scroll down and save your changes by clicking on the

button.

Submit Reporting

XML	
Ч	Message
Un	c?mt version="10" encoding="ufi-8"?> <analyticsevent i="http://www.wd.org/2001/04LSchema-instance" xmms="" xmtns="mtimestione-systems"> xmtns="utimestone-systems"> Centrelistens=Systems Classification="10" encoding="utimestone-systems"> Classification="10" encoding="utimestone-systemstand="10" encoding="utimestone-systems"> Classification="10" encoding="utimestone-systemstand="10" encoding="10" encoding="1</analyticsevent>
FTP	
ACS	
Pushbullet	
UTMC	
NEDAP protocol	
Submit Reporting	ABC123 Test Reporting

3.9.1 Connecting to Milestone

You can find a copy of the XML Schema file (.xsd) for Milestone Analytic Events at Vaxtor's website in the developer zone: <u>https://www.vaxtor.com/developers-zone/</u>





3.9.2 Well-Formed XML

Below is an example of the default well-formed XML sent in an HTTP POST after the recognition of plate number M8016LS.

(A well-formed XML document is one which "adheres to the syntax rules specified by the XML 1.0 specification in that it must satisfy both physical and logical structures".)

NOTE: The bounding box information refers to the snapshot (image of the license plate patch encoded in base64 format) sent in the message.

```
<?xml version="1.0" encoding="utf-8"?>
<AnalyticsEvent xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="urn:milestone-systems">
<EventHeader>
        <ID>0000000-0000-0000-0000-000000000000</ID>
        <Timestamp>2016-05-23T08:39:36.135998Z</Timestamp>
        <Type>License Plate Recognition</Type>
        <Message>VaxALPR On Camera Event</Message>
        <CustomTag>M8016LS</CustomTag>
        <Source>
                 <Name>192.168.0.100</Name>
        </Source>
</EventHeader>
<Description>M8016LS</Description>
<ObjectList>
        <Object>
                 <Name>Plate</Name>
                 <Confidence>0.972857</Confidence>
                 <Value>M8016LS</Value>
                 <AlarmTrigger>true</AlarmTrigger>
                 <Size>46</Size>
                 <BoundingBox>
                 <Top>0.42</Top>
                 <Left>0.23</Left>
                 <Bottom>0.54</Bottom>
                 <Right>0.55</Right>
                 </BoundingBox>
        </Object>
</ObjectList>
<SnapshotList>
        <Snapshot>
                 <TimeOffset>0</TimeOffset>
                 <Width>1280</Width>
                 <Height>960</Height>
                 <SizeInBytes>193656</SizeInBytes>
                 <Image>BASE64ENCODEDJPEG</Image>
        </Snapshot>
</SnapshotList>
<Vendor>
        <Name>Vaxtor Systems</Name>
</Vendor>
</AnalyticsEvent>
```

Well-formed XML sent in an HTTP POST



3.9.3 Configuring Milestone

You can find a copy of the XML Schema file (.xsd) for Milestone Analytic Events at Vaxtor's website in the developer zone: <u>https://www.vaxtor.com/developers-zone/</u>

Once the reporting option HTTP POST is configured, we need to set up Milestone to receive and handle our events. To do this, we recommend the following steps:

1. Enable Milestone to receive VaxALPR events.

In the Milestone Management Application click on the Options menu and then select the Settings option. This opens a new window.

Select the Analytic Events option and tick the **Enabled** checkbox. Save the changes using the **Ok** button.

File	Services	Wizards	Options	Help
a 6	0		Rese	t Application Layout
± IJ	Surveillance	e Server	Setti	ngs

Milestone Management Application > Options menu > Settings option

			Milestone XProtect Professional 2016 R3 Ma	nagem
File Services Wizards Options	Help			
° 🔚 🙂 🚒 📾 🕗 🚱				
File Services Wards Options	Hep General Connecting hardware devices User Interface Oraluf File Paths Audio recording Access Control Settings Analytics Events Event Server	Settings		×
			OK Cance	el _{sti}

Milestone Management Application > Options > Settings > Analytic Events: Enabled

2. Create the VaxALPR On Camera Event in Milestone.

Click on the Surveillance Server drop down menu and click on the 'Advanced Configuration' drop down menu and on the 'Events and Output' drop down menu. Click on the 'Analytics Events' option and right-click to access the Create New button. Click on the '**Create New'** button to set up the event:



• Enter a **Name** for the Analytics Event (VaxALPR On Camera Event). Finally click on the **Ok** button to save the changes.

File Services Wizards Options Help
Te 🗧 🙂 🚌 🚛 🧭 🍘
Surveillance Server
Getting started
Advanced Configuration
Cameras and Storage Information
Events and Output
Analytics Events
🖌 🖌 Hardware Input 🛄 Create New
🕀 🐜 Manual Events
Generic Events
🚬 💕 Output Control on Event
Scheduling and Archiving
Matrix
Notifications
Central
Access Control
Server Access
Master/Slave
🕀 🙀 Users
Services
E Servers
H Alarms

Surveillance Server > Advanced Configuration > Events and Output >Analytic Events: Create New

	Milestone XProtect Professiona	I 2016 R3 Management Application
Services Wizards Options Help		
Surveillance Server		
Detting started	Analytics Events	- 0
Advanced Configuration		
Cameras and Storage Information		
Events and Output		
VaxALPR On Camera Event	Name:	
do Hardware Input Events	VaxALPR On Camera Event	
Hardware Output		Test Event
Generic Events	Description	
🚽 🚰 Output Control on Event		
Matrix		
- Dogs		
Notifications		
Access Control		
Master/Slave		
Services		
Servers		
Alarms		
B- C Transact		
		OK Creat

Surveillance Server > Advanced Configuration > Events and Output >Analytic Events: VaxALPR On Camera Event



3. Create the alarm that will trigger when Milestone receives the VaxALPR On Camera Event:

Click on the Surveillance Server drop down menu and then select the 'Advanced Configuration' drop-down menu and then the 'Alarms' drop down menu. Click on the 'Alarm Definitions' option and on right-click to access the 'Create New' button. Click on the **Create New** button to set up the alarm:

- Select the **Enable** checkbox to activate the alarm.
- Enter a **Name** of the alarm (Plate Detected).
- Select a **Triggering event** from the drop-down list. The Triggering event should be the **Analytics Event**. A second drop-down list will appear.
- Select the VaxALPR On Camera Event from the second drop-down list.
- Select a Source (the camera with the installed VaxALPR On Camera software).

Finally click on the **Ok** button to save the changes.



Surveillance Server > Advanced Configuration > Alarms >Alarm Definitions option: Create New



0 🗑 🖬 🖉 🚱			
Surveillance Server		Alarm Definition	
Advanced Configuration			
Cameras and Storage 1			
Events and Output Alarm Definition	Alarm definition		
Matrix	Enable:		
Notifications	Name:	Plate Detected	
- Re Access Control	Instructions:		
Server Access			
B- Users	Tringer		
Bervices	Transition event:	Analysis Frank	
Alarms Alarm Definitions			
Plate Detected		VaxALPR On Camera Event	
Sound Setting	Sources:	Cámara 1	Select
Time Profiles	Activation period		
⊕- 🖳 Transact	Time profile:	Always	
	O Event based:	Start:	Select
		Stop:	Select
	Operator action required		
	Time limit:	1 minute	
	Events triggered:		Select
	Other		
	Related cameras:		Select
	Related map:		
	Initial alarm owner:		
	Initial alarm priority:	High	
	Initial alarm category:		
	Events triggered by alarm:		Select
	Auto-close alarm:		

Surveillance Server > Advanced Configuration > Alarms >Alarm Definitions: Plate Detected

4. Modify the Alarm Data Settings.

Click on the Surveillance Server drop down menu. Next click on the Advanced Configuration drop down menu and then on the Alarms drop-down menu. Next click on the Alarm Data Settings option and select the 'Alarm List Configuration' Tab and move the **Object** column from the Available columns to the Selected columns. This column will then indicate the plate number in Milestone.



Surveillance Server > Advanced Configuration > Alarms >Alarm Data Settings: Alarm List Configuration



3.10 Sending HTTP or HTTPS POST JSON events

Choose this reporting option if you want VaxALPR On Camera to send the plate event in a JSON object over an HTTP POST.

To setup this option, do the following:

- 9. Click on the JSON header to expand the HTTP Post JSON integration menu.
- 10. Enable the **Active** checkbox.
- Enter the URL. The URL should be a 'well-formed' URL such as: <u>http://myserver.com/</u> or <u>https://myserver.com:port/destination/mypage.php</u>. Both domain names or IP address can be used.

IMPORTANT: If you are using a URL rather than an IP address, make sure that you have setup a DNS server in the main Axis settings menu.

Go to the main Axis setting menu and select System and TCP/IP. Select a DNS server such as: 8.8.8.8 with a secondary server of say 8.8.4.4. These are free Google DNS servers which will map your URL names.

Domain name	
Domain name	
+	
Primary DNS server	Secondary DNS server
8.8.8.8	8.8.4.4
	Save
	Save

12. Modify the message as needed. The message can use Dynamic text such as in the Overlay reporting option.

NOTE: You can use dynamic text replacement to match the current plate information:

- **\$image\$**: Full JPEG image encoded in base64.
- **\$jpegsize\$:** JPEG size in bytes.
- \$date\$: Timestamp in ISO8601 format
- **\$plate\$**: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- \$state\$: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.



- \$ifblacklist\$ \$ifblacklist\$: If the plate is on the blacklist, the text in the 'if clause' will be displayed.
- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- **\$confidence\$**: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- \$left\$: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- **\$bottom\$**: Bottom coordinate for the plate on the image (pixels).
- \$absoluteleft\$: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- **\$absoluteright\$**: Plate right position based on the total image width (0-1).
- \$absolutebottom\$: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- **\$height\$**: OCR image height.
- **\$ip\$**: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.
- **\$speed\$**: Vehicle speed (Km/h).
- **\$multiplate\$**: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- \$localdate\$: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- **\$platejpegsize\$**: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdate\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- \$etx\$: End transmission character (03)
- **\$stx\$**: Start transmission character (02)
- **\$sha1\$**: The 24 least significant bits of the SHA1 digest of the plate number.

You can add your own parameters into the message, so if you want to add say a site ID, your message might look like this:

{ "plate":"\$plate\$", "date":"\$date\$", "ip":"\$ip\$", "country":"\$country\$", "sitecode": 12345}



13. Click Submit reporting to store the configuration in the camera.

JSON	
Ø Active Uri Uri	Message ("plate":*Splate\$", "date":"\$date\$", "country":"\$country\$", "confidence".\$confidence\$, "teft":Sleft\$, "top":Stop\$, "right":\$right\$, "bottom".\$bottom\$, "charheight".\$charheight\$, "processingtime".\$processingtime\$ }
XML	
FTP	
ACS	
Pushbullet	
UTMC	
NEDAP protocol	
Submit Reporting	ABC123 Test Reporting

VaxALPR On Camera HTTP Post JSON configuration

3.11 Vaxtor Protocol - Sending proprietary events using TCP/IP

Choose this reporting option if you want VaxALPR On Camera to send a predefined data stream to a server after each plate recognition. This is not encrypted.

To activate this option, do the following:

- 1. Click on the Vaxtor protocol header to expand the Proprietary events integration menu.
- 2. Enable the **Active** checkbox.
- 3. Enter the **Host** address. Domain names or IP address can be used.
- 4. Enter the **Port** (destination port). The default port for Helix is 9100.
- 5. Enter a **Camera Id** (unique identifier for each camera).
- 6. Tick **Duplicate Image** if required.

Send duplicate images is used in cases where a vehicle is stationary for some time in the field of view. Note that the user can set 'Same plate delay' (seconds) to specify a time to wait before attempting to read the same plate again (see main manual). However, here the user can instruct the reporting software to never send duplicate images of the same plate by unticking the box - or it may be that the user wants to see how long the vehicle is present in the field of view for and so DOES want duplicate images of the vehicle sent every n seconds.

7. Click on the **Submit reporting** button to store the information in the camera.



S VAXTOR	VaxALPR On Camera	=
Reporting		
A1001		
Helix-6		
Vaxtor protocol		
Host	ID.	
10.0.0.58	3	
Port		
Connect		

Vaxtor Protocol reporting option

You can download a full code sample from the developer's zone within the Vaxtor website: https://www.vaxtor.com/developers-zone/

This sample code allows you to capture, parse, and display the results obtained from the camera in your computer. It is programmed in .NET and contains two projects:

- <u>VaxAlprRemotePlateParser.dll</u>: The library used to capture and parse incoming data packages from the VaxALPR On Camera software
- <u>VaxAlprOnCameraViewer</u>: The application that displays the license plate readings on your computer

If you wish to use the source code, do the following:

- 1. Listen to a socket and capture the data package sent by the VaxALPR On Camera software (see description of the data package below).
- Send the data package to the DLL parser and receive the license plate information. NOTE: Some of the functions that appear in the parser are "GetPlateNumber()", "GetOCRImage()", "GetCountry()", etc.
- 3. Display the license plate reading on your computer.



Vaxtor website > Developer's zone



3.11.1 Proprietary notification data package

Each time a license plate is recognized, VaxALPR On Camera opens a TCP/IP communication, sends a predefined data stream and then closes the communication. The format of the message sent is detailed below:

	Message	Message	Fixed	Description
	length	type	message	
	4 bytes	int32	0xCAFEBABE	Header message
	4 bytes	int32	0xBABE10	Result message
	4 bytes	int32	-	VaxALPR ID (Instance ID in VaxALPR configuration file)
	8 bytes	int64	-	Time Stamp (date in milliseconds)
	4 bytes	int32	-	NC1: Number of ASCII characters in the plate
	NC1 bytes	byte	-	ASCII bytes array
	4 bytes	int32	-	NC2: Number of ASCII characters of the plate origin
	NC2 bytes	byte	-	ASCII bytes array
Not used	4 bytes	int32	-	ROI ID containing the license plate (1n) If 0, license plate is situated out of ROI.
	8 bytes	double	-	Global Confidence of the plate (0 – 100)
	8 bytes	double	-	Plate characters' height (pixels)

NC1 bytes	float	-	Character confidence of the plate (0100)
8 bytes	double	-	Time the OCR takes to process the reading (milliseconds)
4 bytes	int32	-	x0 coordinate of the plate (pixel coordinates of the top left corner of the license plate image)
4 bytes	int32	-	y0 coordinate of the plate (pixel coordinates of the top left corner of the license plate image)
4 bytes	int32	-	x1 coordinate of the plate (pixel coordinates of the bottom right corner of the license plate image)



	4 bytes	int32	-	y1 coordinate of the plate (pixel coordinates of the bottom right corner of the license plate image)
	8 bytes	int64	-	OCR image timestamp (milliseconds)
	4 bytes	int32	-	SF: Size of the OCR image (bytes)
	SF bytes	byte	-	OCR image data (JPG format)
	4 bytes	int32	-	R1: Size of image reserved data (bytes)
	R1 bytes	byte	-	Reserved data (R1 bytes)
Not used	8 bytes	int64	-	Environment image timestamp (milliseconds)
Not used	4 bytes	int32	-	SF: Size of the environment image (bytes)
Not used	SF bytes	byte	-	Environment image data (JPG format)
Not used	4 bytes	int32	-	R2: Size of image reserved data (bytes)
Not used	R2 bytes	byte	-	Reserved data (R2 bytes)
Not used	4 bytes	int32	-	Vehicle direction (0=>unknown, 1=>getting closer, 2=>getting farther)
Not used	4 bytes	int32	-	ALPR multi-plate rate
	4 bytes	int32	-	OCR mode (1: Triggered mode, 0: Free-flow mode)
	4 bytes	int32	0x42F83988	Header of optional data
Optional	4 bytes	int32	0x50000001	Plate number in wide string format section
	1			<u></u>
	4 bytes	int32	-	Number of characters in the plate
	4 bytes	int32	-	NC3: Number of bytes the full plate string occupies
	NC3 bytes	byte	-	Array of bytes representing the string in UTF8 or UNICODE format

Optional	4 bytes	int32	0x50000002	Hot-List section
				NOTE: This section can appear twice, once per list.
	4 bytes	int32	-	List type (1:white list, 2: black list)
	4 bytes	int32	-	NC4: Number of ASCII characters in the message
	NC4 bytes	byte	-	ASCII bytes array containing the message



Optional	4 bytes	int32	0x50000003	String code section (**)
				<i>NOTE</i> : This section can appear more than once, but only once per string code.
	4 bytes	int32	-	String code (1:plate country region, 2: vehicle color, 3: vehicle brand, 4: vehicle model)
	4 bytes	int32	-	NC5: Number of ASCII characters of the string
	NC5 bytes	byte	-	ASCII bytes array containing the characters
Optional	4 bytes	int32	0x50000004	GPS section
	8 bytes	double	-	Latitude (decimal format)
	8 bytes 4 bytes	double int32	-	Latitude (decimal format) Latitude direction (1:North, 2:South)
	8 bytes 4 bytes 8 bytes	double int32 double		Latitude (decimal format) Latitude direction (1:North, 2:South) Longitude (decimal format)
	8 bytes 4 bytes 8 bytes 4 bytes	double int32 double int32	- - -	Latitude (decimal format)Latitude direction (1:North, 2:South)Longitude (decimal format)Longitude direction (1:West, 2:East)
	8 bytes 4 bytes 8 bytes 4 bytes	double int32 double int32	- - -	Latitude (decimal format) Latitude direction (1:North, 2:South) Longitude (decimal format) Longitude direction (1:West, 2:East)

Proprietary event format

3.12 TCP Connector

Choose this reporting option if you want VaxALPR On Camera to send a string data type to a server on each plate recognition.

To activate this option, do the following:

- 1. Click on the TCP header to expand the TCP Connector integration menu.
- 2. Enable the **Active** checkbox.
- 3. Enter the Host (IP address or hostname of the destination server).
- 4. Enter the **Port** (destination port).
- 5. Enter the required **Text**.
- 6. Note: You can use dynamic text replacement to match the current plate's information:
- **\$image\$**: Full JPEG image encoded in base64.



- **\$jpegsize\$:** JPEG size in bytes.
- **\$date\$**: Timestamp in ISO8601 format
- \$plate\$: Plate number
- **\$tag\$**: Unique hash for this plate number. Same plate number will always give the same \$tag\$. Format based on UTMC algorithm.
- **\$plateutf8\$**: Plate number in utf8 format.
- **\$country\$**: Full country of origin name.
- **\$countrycode\$**: 3 letter country code.
- **\$state\$**: Plate State for USA.
- **\$category\$**: Plate category for countries that support it.
- **\$blacklist\$**: Description on the blacklist linked to the plate number.
- **\$whitelist\$**: Description on the whitelist linked to the plate number.
- **\$ifblacklist\$ \$ifblacklist\$**: If the plate is on the blacklist, the text in the 'if clause' will be displayed.
- **\$ifwhitelist\$ \$ifwhitelist\$**: If the plate is on the whitelist, the text in the 'if clause' will be displayed.
- **\$ifnolist\$...\$ifnolist\$:** If the plate in not on a list, the test in the 'if clause' will be displayed.
- **\$confidence\$**: Global confidence (0-100).
- **\$charheight\$**: Average charheight (pixels).
- **\$processingtime\$**: Processing time in milliseconds.
- **\$left\$**: Left coordinate for the plate on the image (pixels).
- **\$top\$**: Top coordinate for the plate on the image (pixels).
- **\$right\$**: Right coordinate for the plate on the image (pixels).
- \$bottom\$: Bottom coordinate for the plate on the image (pixels).
- \$absoluteleft\$: Plate left position based on the total image width (0-1).
- **\$absolutetop\$**: Plate top position based on the total image height (0-1).
- \$absoluteright\$: Plate right position based on the total image width (0-1).
- \$absolutebottom\$: Plate bottom position based on the total image height (0-1).
- **\$width\$**: OCR image width.
- **\$height\$**: OCR image height.
- **\$ip\$**: Camera IP address.
- **\$roiid\$**: Roi ID where the plate number is found.
- **\$speed\$**: Vehicle speed (Km/h).
- \$multiplate\$: Amount of times that the plate has been read before reporting.
- **\$signaled\$**: True if the read has been done due to a trigger.
- **\$id\$**: Database ID for this read.
- **\$direction\$**: Enumerate with the vehicle direction (0: Unknown, 1: Towards, 2: Away, 3: Stopped)
- **\$directionstr\$**: String with the vehicle direction.
- **\$safedate\$**: Date in format %Y%m%d_%H%M%S in the camera time zone (Useful for filenames).
- **\$localdate\$**: Date in format %d/%m/%Y in the camera time zone
- **\$localtime\$**: Date in format %H:%M:%S in the camera time zone.
- **\$imageid\$**: Signal ID in case of a trigger read.
- **\$plateimage\$**: Plate crop JPEG image encoded in base64.
- \$platejpegsize\$: JPEG size in bytes.
- **\$overviewimage\$**: Overview JPEG image encoded in base64.
- **\$overviewjpegsize\$**: JPEG size in bytes.
- **\$epoch\$**: Unix epoch (seconds).
- **\$utcdate\$**: Will report the date at ISO8601 format but always in UTC. (2020-12-31T16:11:30.000Z)
- **\$etx\$**: End transmission character (03)
- \$stx\$: Start transmission character (02)



- **\$sha1\$**: The 24 least significant bits of the SHA1 digest of the plate number.
- 7. Finally, scroll down and save your changes by clicking on the store the configuration to the camera.

тср		
Active		
Host	Message	
Host	\$date\$,\$plate\$,\$country\$,\$blacklist\$,\$whitelist\$	
Port		
20000		
JSON		
XML		
ACS		
		_
Cubmit Deporting	Plate to test	Test Reporting

VaxALPR Configuration: Reporting options > TCP Connector

3.13 **Dorlet Integration**

Choose this reporting option if you want VaxALPR On Camera to send a notification to a Dorlet AS/3 controller on each plate read.

To activate this option, do the following:

- 1. Click on the Dorlet header to expand the Dorlet integration menu.
- 2. Enter the AS/3 Host (IP address or hostname of the destination server).
- 3. Enter the **AS/3 Port** (destination port).
- 4. Enter the **AS/3 LAM** (LAM identifier).
- 5. Enter the **AS/3 Vial Id** (Vial identifier).
- 8. Finally, scroll down and save your changes by clicking on the store the configuration to the camera.

button to



Dorlet		
Active		
Host	Vial ID	
Host	1	
Port	LAM	
9090	0	
TCB		
TCP		
JSON		
XML		
468		
ACS		

VaxALPR Configuration: Reporting options > Dorlet integration

3.14 UTMC Integration

Choose this reporting option if you want VaxALPR On Camera to send plate reads using UTMC protocol. The Urban Traffic Management & Control programme is a UK initiative for a more open method of communication in the ITS industry, especially in urban areas.

Note that the default is UTMC version 1.2 but 1.1. is available on request

To activate this option, do the following:

- 1. Click on the UTMC protocol header to expand the UTMC setup menu.
- 2. Enable the **Active** checkbox.
- 3. Enter the **URL** of the receiving server.
- 4. Enter the **Heartbeat and Diagnostics** intervals to monitor the connection.
- 5. Enter a **Camera ID** (unique identifier for each camera).
- 6. All other fields are self-explanatory and define what data is transmitted to the UTMC BOF.
- 7. Click on the Submit reporting button to store the information in the camera.



MC	
Active	
d	ID
Url	1
eartbeat (seconds)	Send plate in real time
0	 Send images
NPR Diagnostics (seconds)	Send plate images
0	Send tags
end plates in batch (seconds)	
0	
aximum amount of plates in batch	
20	
anes	
ID	Direction type
	0
Lane Number	Normal vehicle direction



4. VaxALPR On Camera HTTP API

VaxALPR On Camera now supports an HTTP API that allows third parties to:

- Modify the whitelist and blacklists on the camera.
- Upload and download the configuration file.
- Query information from the local plate database (if the database is enabled).
- Recover the image associated with a record in the database (if the database and image recording are enabled)

4.1 List Management

1. Add a vehicle to the blacklist:

<u>http://cameraip/local/Vaxreader/blacklist.cgi?action=add&plate=1234ABC&descriptio</u> <u>n=My_description</u> Response: <result status="ok"/>

2. Add a vehicle to the whitelist:

http://cameraip/local/Vaxreader/whitelist.cqi?action=add&plate=1234ABC&descriptio n=Mi_description Response: <result status="ok"/>

3. Delete a vehicle from the blacklist:

<u>http://cameraip/local/Vaxreader/blacklist.cgi?action=del&plate=1234ABC</u> Response: <result status="ok"/>

4. Delete a vehicle from the whitelist: <u>http://cameraip/local/Vaxreader/whitelist.cgi?action=del&plate=1234ABC</u> Response: <result status="ok"/>

5. Get all the plates on the blacklist: <u>http://cameraip/local/Vaxreader/blacklist.cgi?action=get-all&format=xml</u>

<blacklist clean="true"> <plate plate="1234ABC" description="My_description"/> </blacklist>

6. Get all the plates on the whitelist: <u>http://cameraip/local/Vaxreader/whitelist.cgi?action=get-all&format=xml</u>

<whitelist clean="true"> <plate plate="1234ABC" description="My_description"/> </whitelist>

7. Get a single plate from the blacklist: <u>http://cameraip/local/Vaxreader/blacklist.cgi?action=get&plate=1234ABC</u> <blacklist>



<plate plate="1234ABC" description="My_description"/>
</blacklist>

8. Get a single plate from the whitelist: <u>http://cameraip/local/Vaxreader/whitelist.cgi?action=get&plate=1234ABC</u> <whitelist> <plate plate="1234ABC" description="My_description"/> </whitelist>

4.2 Configuration File

1. Download the current configuration file:

http://mycameraip/local/Vaxreader/alpr.cgi

Response Example (content may vary depending on the camera model):

```
<configuration>
        <resolutions>
                 <resolution id="0" width="1280" height="720"/>
                 <resolution id="1" width="1024" height="768"/>
                 <resolution id="2" width="1024" height="640"/>
                 <resolution id="3" width="640" height="480" selected="1"/>
                 <resolution id="4" width="640" height="400"/>
                 <resolution id="5" width="320" height="240"/>
                 <resolution id="6" width="176" height="144"/>
        </resolutions>
        <views>
                 <view id="0" description="View Area 1"/>
                 <view id="1" description="Área de visualización 2" selected="1"/>
                <view id="2" description="View area 3"/>
        </wiews>
        <mode working mode="0" is virtual port="true" virtual port="1" generate database=
"true" store database images="true" retry notifications="false" check whitelist="false"
check blacklist="false"/>
<ocr same_plate_delay="60" same_plate_max_chars_distance="2" min_char_height="17" max_ch
ar_height="40" min_global_confidence="70" min_character_confidence="50" grammar_strict="</pre>
true" report times="false"min num plate characters="5" max num plate characters="9" max
slop angle="20" background mode="1" read double line plates="true" algorithm complexity=
"2" plate depth="1" reserved="1002" state="0">
        <countries>
                 <country id="1195"/>
        </countries>
        <rois>
                <roi id="1" width="629" height="482" type="2">
                         <points>
                                <point x="96" y="470"/>
                                <point x="64" y="379"/>
                                <point x="73" y="303"/>
<point x="98" y="258"/>
                                <point x="121" y="237"/>
                                <point x="413" y="182"/>
                                int x="496" y="125"/>
                                int x="623" y="67"/>
y="0"/>int x="602" y="0"/>
                                <point x="0" y="2"/>
                                <point x="1" y="471"/>
                         </points>
                 </roj>
                 <roi id="4" width="454" height="351" type="2">
                         <points>
                                <point x="449" y="238"/>
                                <point x="401" y="280"/>
                                <point x="394" y="328"/>
                                <point x="404" y="346"/>
<point x="451" y="347"/>
                <po
</points>
</roi>
```

</rois>



```
</ocr>
<analytic recognition timeout="500" min num occurrences="1" max num occurrences="5" plat
e report="3"/> <reporting>
       <al001 active="false" host="al001ip" user="user" password="password" controller_t
oken="Controller@Axis-accc8888888 AccessController"
idpoint token="Reader@Axisaccc8888888:1453299458.759360000"/>
       -
<vaxtor_protocol active="true" host="192.168.0.88" port="9100" id="1"/>
<overlay active="true" user="root" password="pass" message="$date$ - $plate$</pre>
($country$) $blacklist$" view="0"/>
       <dorlet active="false" host="" port="9090" vial id="1" LAM="0"/>
       <write result sd="false" network share="false"/>
       <vapix active="true" id="1"/>
       <tcp active="false" host="" port="20000" message="$date$,$plate$,$country$,$black
list$,$whitelist$"/>
       <json active="false" url="http://192.168.0.221:30000" message="{</pre>
<AnalyticsEvent xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
00000000000</ID> <Timestamp>$date$</Timestamp> <Type>License Plate Recognition</Type>
<Message>VaxALPR On Camera Event</Message> <CustomTag>$plate$</CustomTag> <Source>
<Name>$ip$</Name> </Source> </EventHeader> <Description>$plate$</Description>
<ObjectList> <Object> <Name>Plate</Name> <Confidence>$confidence$</Confidence>
<Value>$plate$</Value> <AlarmTrigger>true</AlarmTrigger> <Size>$charheight$</Size>
<BoundingBox> <Top>$absolutetop$</Top> <Left>$absoluteleft$</Left>
<Bottom>$absolutebottom$</Bottom> <Right>$absoluteright$</Right> </BoundingBox>
</Object> </ObjectList> <SnapshotList> <Snapshot> <TimeOffset>0</TimeOffset>
<Width>$width$</Width> <Height>$height$</Height> <SizeInBytes>$jpegsize$</SizeInBytes>
<Image>$image$</Image> </Snapshot> </SnapshotList> <Vendor> <Name>Vaxtor Systems</Name>
</Vendor> </AnalyticsEvent>"/>
       <acs active="true" host="acshost" port="50333" username="user" password="password
" SSL="false" bookmark name="$plate$
$country$" bookmark description="$ifblacklist$Blacklist:
blacklistifblacklististifwhitelistWhitelist: whitelist<math>isifwhitelist < </reporting>
</configuration>
```

2. Upload a new configuration file.

In order to upload a configuration file, create an HTTP POST call to the URL: <u>http://cameraip/local/Vaxreader/alpr.cgi</u> where the body of the message is the configuration file.

The configuration file should have the same format of the configuration file downloaded from the camera.

Response:

- If the configuration file is correct, the response will be current camera configuration.
- If the configuration file is incorrect, an error XML with the wrong parameters will be returned. The HTTP result code will be 500.

<error message="Error setting configuration" reason="<reason>"/>

4.3 Database

It is possible to query the local database (if enabled) on the camera. The database queries can return an empty response if the database is locked, in that case wait a few milliseconds and retry the query.



All the queries are automatically paged (100 results per query). To request a different page, add the parameter "page=<page>" to the URL.

The total count of records for the query is returned as the count attribute of the resultset.

The record count in this page is returned as the results attribute in the resultset.

1. Query all the plates in the database (ordered from newer to lder): http://cameraip/local/Vaxreader/plates.cgi Response (example):

```
<resultset results="100" limit="100" count="28642">
<plate id="28642" plate_number="1234ABC" plate_origin="UNK" confidence="100"
taken_on="2017-11-23T18:11:25.264Z" is_blacklist="false"
blacklist_description="" is_whi telist="false"
whitelist_description=""character_height="21" character
_confidence="100.00;100.00;100.00;100.00;100.00;100.00" process
ing_time="100" multiplate_rate="1" signaled="false" roi_id="0" left="1 "
top="1" right="5" bottom="5"error="false" state="" num_rows="1" dire
ction="1"/>
...
</resultset>
```

2. Query all the plates since a given ID (ordered from older to newer).

```
http://cameraip/local/Vaxreader/plates.cgi?id=<id> Response
        (example):
<resultset results="100" limit="100" count="27956">
<plate id="687" plate_number="1234ABC" plate_origin="Spain" confidence ="100" taken_on="2017-10-
25T13:35:41.506Z" is_blacklist="false" blacklist_description="" is_whi telist="false"
whitelist_description=""character_height="29" character
_confidence="100.00;100.00;100.00;100.00;100.00;100.00;100.00" process
ing_time="69.04709005355835" multiplate_rate="3" signaled="false" roi id="-
1" left="240" top="411"right="405" bottom="475" error="false" state="U NKNOWN"
num rows="1" direction="1"/>
<plate id="688" plate number="1234ABC" plate origin="Spain" confidence</pre>
="78.857142857142861" taken on="2017-10-
25T13:35:50.733Z" is_blacklist="false" blacklist_description="" is_whi
telist="false"whitelist description="" character height="27" character
confidence="0.00;100.00;100.00;100.00;94.00;58.00" processing_
time="66.248625099658966" multiplate_rate="1" signaled="false" roi_id= "-
1"left="498" top="259" right="639" bottom="319" error="false" state="U NKNOWN"
num rows="1" direction="0"/>
```

</resultset>

3. Query by plate number from the (ordered from older to newer).

<u>http://cameraip/local/Vaxreader/plates.cgi?plate=<plate_number_urlscaped</u>> The query accepts wildcards. For example, to query all the plates that end in 89, the plate value will be %89.

IMPORTANT: The '%' character will need to be 'escaped' in the URL (%25), so the URL that you will need to use in a navigator will be:

http://cameraip/local/Vaxreader/plates.cgi?plate=%2589

```
Response (example):
```

```
<resultset results="1" limit="100" count="1">
```



<plate id="14219" plate_number="AAA89" plate_origin="UNKNOWN" confiden ce="100"
taken_on="2017-1108T16:32:59Z" is_blacklist="false" blacklist_description="" is_whiteli st="false"
whitelist_description=""character_height="25" character_con
fidence="100.00;100.00;100.00;100.00" processing_time="41.45051 121711731"
multiplate_rate="1" signaled="false" roi_id="1" left="477" top="275" right="631" bottom="355"error="false" state="U
NKNOWN" num_rows="1" direction="0"/>
</resultset>

4. Delete a given id from the database.

http://cameraip/local/Vaxreader/delplate.cgi?id=1

This will delete the plate with id 1 from the camera DB (and the linked images

4.4 No Report Flag

1. <u>http://cameraip/local/Vaxreader/trigger.cgi?id=ABC&report=false</u>

The trigger will be stored on the camera database. It will appear on the web but will not be sent to third parties. This is useful when testing and you do not want the test data sent to third party BOFS for example.

4.5 Images

1. Recover the image linked to a record in the database.

http://cameraip/local/Vaxreader/image.cgi?id=<id>
Response:

- If the image is available a JPEG will be returned.
- If the image is not available a XML will be returned with the information about the error. The HTTP result code will be 500.

<error message="Error reading file" reason="Failed to open file
'/var/spool/storage/areas/SD_DISK/Vaxreader/dbimages/1.jpg': No such file
or directory"/>



5. Related Documents

For more information about installation, setup and configuration of the ACS, we recommend you refer to the following guides:

- Axis Camera Station: https://www.axis.com/en-gb/products/axis-camera-station

Vaxtor VaxALPR On Camera Installation and Configuration manuals are available from the Vaxtor Website: https://www.vaxtor.com/vaxalpr-on-camera/

Ends.