

VaxALPR On Camera

Axis Camera Integration

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1. Introduction

This guide is designed for those responsible for integrating the VaxALPR On Camera software with the standard Axis Camera software.

The VaxALPR On Camera software is a real-time solution for Automatic License Plate Recognition (ALPR) that runs entirely within the Axis camera.

2. VaxALPR On Camera and Axis Camera 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.

2.1 Configure VaxALPR On Camera software: VAPIX / ONVIF events

Once the Axis camera is installed and setup, and the basic configuration of the VaxALPR On Camera software is done, we need to configure the send VAPIX / ONVIF events in the reporting options of the VaxALPR On Camera software.

2.1.1 Starting the VaxALPR App

To configure the send VAPIX / ONVIF events in the VaxALPR On Camera software, 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'.

art 💶 🗌	 Status: Running 	License
ersion: 2.1-0		Axis product serial number: ACCC8EBBF869
ndor: Vaxtor		
up log		Deactivate
ip log	Open	



2.1.2 Configuring VaxALPR On Camera

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

VAXTOR	VaxALPR On Cam	era			
A AND	Plates				Plates
	Capture	Plate	Image	Country	Setting Reporting
	Thu May 30 11:33:14 2019	WL11DYF	WLIIDYF	United Kingdom	Database
	Thu May 30 11:33:14 2019	PJ65HUH	PJ65 HUH	United Kingdom	Blacklist Whitelist
	Thu May 30 11:33:13 2019	YB11BGE	YBII BGE	United Kingdom	Region of Interest
C C C C C C C C C C C C C C C C C C C	Thu May 30 11:33:11 2019	TA04GMA	TAD4 GMA	United Kingdom	Download XML Config
	Thu May 30 11:33:00 2019	FJ17VFB	F JIT VFB	United Kingdom	Unknown

VaxALPR On Camera interface

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

VAXTOR	VaxALPR On Camera	,
eporting		Plates
teporting		Setting
A1001		Reporting
Vaxtor protocol		Database
Overlay		Blacklist
Dorlet		Whitelist
		Region of Interest
Write result		Upload XML Config
Vapix		Download XML Config
TCP		
TCP SERVER		
JSON		
XML		
FTP		
ACS		
Pushbullet		
UTMC		
NEDAP protocol		

In this case we are going to select Vapix to communicate with the Axis camera's own software:

F	Reporting	
	A1001	
	Vaxtor protocol	
	Overlay	
	Dorlet	
	Write result	
	Vapix	
	Active	
	TCP	

Tick the **Active** checkbox and the Vapix interface window will appear:



Vapix			
 Active 			
ID			
1			

Select an ID (Unique Identifier) for this camera, scroll down and save your changes by clicking

	Submit Reporting	
on the		button.

2.2 Adding Axis Camera Events

Once the Vapix reporting has been activated, we need to add the Axis camera events. There are several options when it comes to creating an event.

Access the Axis camera's setup and under the System Tab select the Events menu. Please refer

to the Axis Network Camera manual by clicking on the 🥝 button situated in the upper right corner.

In our case, we want to raise a barrier by triggering a relay output when the VaxALPR On Camera software recognizes a vehicle in the whitelist.

To do this, we need to follow the following steps:

- Go to the Axis camera's main Settings page and click the System Tab.
- From here select the Events icon.

Image	Stream	Overlay	PTZ	Audio	Privacy mask	Apps	System									
										38	*	Contr	SNIMP	۲	2	Ŷ
								Language	Date and time	Orientation	Users	ONVIF	SNMP	Detectors	Maintenance	Plain config
								۲	<u>(آ</u>	۲						
								ТСР/ІР	AVHS	Security	Storage	I/O ports	Events			

• Then click on the Rules Tab and click on the + button to add an initial event rule:





New rule	
Use this rule	
Name	
Vax Whitelist Event	
Wait between actions (ma	ax 23:59:59)
00:00:00	
Condition	^
Select a condition	
Use this condition as	a trigger
Action	^
Colort on action	v

- Give the rule a name, e.g. Vax Whitelist Event.
- Set the time to wait between actions (so they are not triggering too often if a car is parked for example)
- Select an initial Condition from the drop-down list to trigger the event. In this case from the Applications section select Whitelistv2. If you require a second Condition to also be met to trigger the event, then press the + icon at add more conditions.
- Conditions may be edited or removed using the Bin icon.
- Add an Action to make something happen when the condition is met. Actions can include toggling an i/o within the camera to sound an alarm or open a relay.

Select an action	v
Select an action	
Day-night mode	
Use day-night mode while the rule is active	
Guard tours	
Run guard tour while the rule is active	
Start guard tour	
I/O	
Toggle I/O once	
Toggle I/O while the rule is active	
Images	
Send images through FTP	
Send images through FTP while the rule is active	
Send images through HTTP	
Send images through HTTP while the rule is active	
Send images through HTTPS	
Send images through HTTPS while the rule is activ	/e
Send images through SFTP	
Send images through SFTP while the rule is active	
Send images to email	
Send images to email while the rule is active	



- In this case we are going to trigger a relay within the Axis camera.
 - From the drop-down list select Toggle I/O once.
 - Select an **Output Port** from the drop-down list.

NOTE: To configure I/O ports access the Axis camera's setup and click on the System Options > I/O ports icon.

Port 1	Port 2
Name	Name
Output 1 🗢 🔺	Input 2 🕒 🔺
Live view control	Current state: Circuit open
+	

- Define the **State** that the port should toggle to.
- Select the **Duration** in seconds of how long the relay should be toggled for. In this case 1 second which will be used to open a barrier.

ules Schedules Recipients N	lanual trigger
New rule	
Use this rule	
Vay Whitelist Event	
Weik behaves actions (may 22:50:50)	
vvait between actions (max 23.59.59)	
00.00:00	
Condition	^
Whitelistv2	
Use this condition as a trigger	
Action	^
Toggle I/O once	v
Port	
Output 1	
State	
Active	×.
Duration (hh:mm:ss)	



• Save the completed Rule and the Rule will appear in the list:



• If a Schedule for this trigger is needed, open the Schedules Tab and select one of the pre-set schedules or define a new one of your own. Note: if the Rule is to always be active (24/7) – then no schedule is needed.

Rules	Schedules	Recipients	Manual 1	riggers
After Sche	r Hours edule Daily			~
Offic Sche	ce Hours edule Daily			^
Name	e			
Offic	ce Hours			
Repe	eat			
Dail	у			
Start 08:0 End 1 18:0 Days Mo	time (hh:mm) 0 ime (hh:mm) 0 n Tue We	ed Thu F	ri Sat	Sun
Wee Sche	kdays edule Weekly		160	~

• Save the completed Rule and the Rule will appear in the list:



3. VaxALPR On Camera and the Axis A1001 Network Door Controller

The VaxALPR On Camera software can be integrated with the Axis A1001 Network Door Controller. This device is an IP-based access controller suitable for both small to mid-sized businesses and is compatible with Wiegand access control readers. The Axis A1001 comes with built in software for basic access management and is also open for third party software.

When integrated, the license plates recognized by VaxALPR On Camera are sent in real time to the Axis A1001 Network Door Controllers. The Axis A1001 grants or denies access depending on the user's credentials.

NOTE: The Axis Camera firmware version should be 6.30 or above and the Axis A1001 Network Door Controller should be 1.60.0 or above if you want to use them with the VaxALPR On Camera software.

IMPORTANT: The Axis A1001 Network Door Controller should be installed and setup before continuing. Please refer to the Installation guide at:

https://www.axis.com/global/en/products/axis-a1001/support-and-documentation.

3.1 Configuring Axis 1001 Network Door Controller

The Axis A1001 can be configured with the Axis Entry Manager or any third-party access management solution integrated with the Axis A1001. In this case, we are going to use the Axis Entry Manager which is pre-installed on Axis A1001 Network Controllers.

The Axis Entry Manager is an access management solution for small to mid-sized businesses. It consists of one or several Axis A1001 Network Door Controllers with access management software.

To configure the Axis A1001 to use the Axis Entry Manager:

1. Once the Axis A1001 is setup, click on the Access Management Tab.

	Log Event Log	Reports Setup		C English
Access Management				•
I Users	+ Add new user	Information	Groups	+ Add new group
Eller users		A -> A Drag user to group	Acceso Completo	
🔲 🖀 Claudine Cuenca, 15	▶ *	to join group	Acceso Principal	Þ
🗐 👔 Enrique Gracia, 12		The set of	Rack	•
🗐 👔 JM Alberdi, 2	- F	group to give access		
🖂 🔝 José María Gómez, 13	F	(⑦) 、 (副) Drag schedule to		
📄 🔝 Julia Vidal, 5	•	group to decide when group is		
🖂 🔝 MA Caraballo, 8		active		
🔲 🖀 Mujer limpleza, 10	P			
🖂 🖀 Nacho García, 3	•			
🔲 🔝 Oscar Garate, 14	► _			
Denne 19 Finner			Character and and and and	
Access Principal			Abways	+ Add new schedus
Reck			Office Hours	
	-		(C) Weekeeds	
			(C) Heekends	



2. Go to the Doors / Floors and click on the option you want to configure. This will display the characteristics of the door or floor.

Acceso Principal	•
loor name: Acceso Principal	Ø
Froups with access to door:	
Acceso Completo	0
Acceso Principal	0
Entering through Acceso Principal	
Using readers:	
Lector Entrada - Principal	Ø
Using: Card number only	0
During:	-
O Always	0 .

3. Scroll down and select: + Add Identification type:

Acceso Completo	0
Acceso Principal	٢
Entering through Acceso Principal	
Using readers:	
Lector Entrada - Principal	Ø
Using: Card number only	0
During:	
Ø Always	0

4. This opens a new window. Select the credential type needed from the drop-down list. In this case, select the option **License plate only** and click on the <u>OK</u> button.

ent Alarm Log Ev	ent Log Reports Setup	
Add identificatio	n type	
Select credential type	for entering door Acceso Prin	cipal connected to controller Vaxtor
Credentials needed	Facility code only Facility code only Card raw only PIN only	Cancel
	Facility code and PIN	Rack

IMPORTANT: The Axis Entry Manager supports multiple identification types at the same time. This means you can also use other identification types alongside the 'License plate only' type such as 'Pin only' or 'Card raw only'.

5. Add a schedule to the new identification type by dragging and dropping one of the Access schedules already created.



Users + Add new user		Information	Groups	+ Add new group
E Pitter users			Acceso Completo	•
II 11	► 1		Acceso Principal	Þ
🗉 🛋 6	- F		Rack	Þ
🗉 🔝 Claudine Cuenca, 15	- F			
Enrique Gracia, 12	F			
JM Alberdi, 2				
🗊 👔 José María Gómez, 13				
🗐 👔 Julia Vidal, 5	*			
MA Caraballo, 8	*			
🗉 👔 Mujer limpieza, 10	*			
Doors 🔛 Ficors			Access schedules	+ Add new schedule
	0 *		Always	Þ
Using: Card number only				E .
Using: Card number only During: (2) Aways	0	_	Office Hours	
Using: Card number only During: Ø Always Using: Card raw only	0	Always	Office Hours Weekends	
Using: Card number only During: (2) Akarys Using: Card raw only During: (2) Akarys	0 0	Ahvays	Office Hours Weekends	*

- 6. Add the License Plate credential to a new or existing user.
 - To add a new user click on the + Add new user button, enter the new user's details and Save.
 - Select a user and open it for editing using the pencil icon.
 - Click on the Add credential button. Select License plate from the drop-down list and then click on the Add credential button once more:

Edit üser		
First name	Claudine	
Last name	Cuenca	
Credential:	Card/PIN	×
Cancel	License plate	

This opens a new menu:

irst name	Claudine	
ast name	Cuenca	
Credential: Card	/PIN	Þ
Credential: Licer	nse plate	
License plate	9 0150JGC	Θ
Valid from	9 04/03/2017	
Valid until	9 04/04/2027	
Suspend credenti	al \varTheta 🗍	
Long access time		

- Complete the credential by entering the License plate number for the user's vehicle along with the Valid from and Valid until fields.
- When the Suspend credential checkbox is selected, the user cannot access any doors in the system using this credential. Suspension is intended to be temporary. If the user needs to be permanently denied access, it is better to delete the user's profile.



- Select the Long access time checkbox to override any existing access control schedules and allow the door to remain unlocked after access has been granted.
- Click on the <u>Save</u> button.

3.2 Configure the VaxALPR On Camera Software to use the Axis 1001 Network Door Controller

Once the Axis A1001 Network Door Controller is installed and configured, we need to configure the A1001 Network Door Controller in the reporting options of the VaxALPR On Camera software.

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.

4 VAXTOR	VaxALPR On Cam	era			≡
	Plates				Plates
	Capture	Plate	Image	Country	Setting Reporting
	Thu May 30 11:33:14 2019	WL11DYF	WLII DYF	United Kingdom	Database
	Thu May 30 11:33:14 2019	PJ65HUH	PJ65 HUH	United Kingdom	Blacklist Whitelist
	Thu May 30 11:33:13 2019	YB11BGE	YBII BGE	United Kingdom	Region of Interest
	Thu May 30 11:33:11 2019	TA04GMA	TAD4 GMA	United Kingdom	Download XML Config
	Thu May 30 11:33:00 2019	FJ17VFB	F JIT VFB	United Kingdom	Unknown

The icon in the top right corner reveals the options menu.

2. Click on Reporting and select A1001 from the top of the list:



3. Click Active and complete the IP address, user name and password of the device to send license plates recognised by the VaxALPR software to the Axis A1001 door controllers:



✓ Active		
fost		
192.168.0.20		
Jser		
root		
Password		

4. Use the blue Test button to check that everything is working. If successful a message will be shown:

e Activo	A1001 test!	
fost	Test data has been retrieved successfully!	
192.168.0.20		
Jaar	Close	
root	Vaxtor	
assword		

- 5. After acknowledging this message, you will see a window showing returned **ID Point** token and Controller Token messages.
- 6. Select the **ID Point token** and select the reader identification required from the drop-down list. (This corresponds with the one in the Entry Manager setup earlier that will receive the plate information).



7. Next select the **Controller Token and** choose the appropriate option from the drop-down list that corresponds with the Axis A1001 Network Door Controller you wish to use.



8. Finally, scroll down and save your changes by clicking on the store the configuration to the camera.

button to



3.3 Related Documents

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

- Axis Entry Manager: <u>https://www.axis.com/en-gb/products/entry-manager</u>
- Axis A1001 Network Door Controller: https://www.axis.com/products/axis-a1001/support-and-documentation
- Vaxtor VaxALPR On Camera Installation and Configuration manuals are available from the Vaxtor Website: <u>https://www.vaxtor.com/vaxalpr-on-camera/</u>



4. 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 video stream.

To set up this 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 corner reveals the options:

A 4 1 4 2 4 1	Plates				Plates
	Capture	Plate	Image	Country	Setting Reporting
	Thu May 30 11:33:14 2019	WL11DYF	WLII DYF	United Kingdom	Database
	Thu May 30 11:33:14 2019	PJ65HUH	PJ65 HUH	United Kingdom	Blacklist Whitelist
	Thu May 30 11:33:13 2019	YB11BGE	YBII BGE	United Kingdom	Region of Interest
	Thu May 30 11:33:11 2019	TA04GMA	TAD4 GMA	United Kingdom	Download XML Config
A THE THE ST	Thu May 30 11:33:00	FJ17VFB	FJI7 VFB	United Kingdom	Unknown

- 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	
User	Message
root	Sdate\$ - Splate\$ (Scountry\$) Sblacklist\$
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)
- 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**:





8. Choose the **Text** option:

Select m	odifiers fror	n the list c	r type in this i	field	
Date	Time	A	7 48 ▼	Custom	v
Date	Time .	🔺 '	48 🖤	Custom	v

9. 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:

+D		
Data Tara	A T I I T Outlan	
Date Time		× .
	Top left	
	Top right	

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:

2019-06-08T13:13:30.18	5000+01:00	- HA54ETR	(United	Kingdom)	
HA54 ETR					
TIAOTERICE					



5. VaxALPR On Camera – Using an internal SD Card

The VaxALPR On Camera software can save all plate reads as JPEG images to an SD card that has been fitted inside the Axis camera.

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.

To setup this option, do the following:

- 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 corner reveals the options:



3. Click on reporting and select Write result from the list of options and check SD.

5. 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											
									i	38		*	Cover	SNMP	۲	2	9	
								Language	Date and time	Orientation		Users	ONVIF	SNMP	Detectors	Maintenance	Plain config	
								8	<u>و</u>	۲				Ō				
								тсрлр	AVHS	Security	s	torage	I/O ports	Events				

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



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

Plate reads will now be written to this location.



6. VaxALPR On Camera – Using Axis Network Share Storage

The VaxALPR On Camera software can save all plate reads as JPEG images to a network share which is a folder created on the local network.

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.

To setup this option, do the following:

- 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 corner reveals the options:

4 VAXTOR	VaxALPR On Cam	era			
	Plates				Plates
	Capture	Plate	Image	Country	Setting Reporting
	Thu May 30 11:33:14 2019	WL11DYF	WLII DYF	United Kingdom	Database
	Thu May 30 11:33:14 2019	PJ65HUH	PJ65 HUH	United Kingdom	Blacklist Whitelist
	Thu May 30 11:33:13 2019	YB11BGE	YBII BGE	United Kingdom	Region of Interest
	Thu May 30 11:33:11 2019	TA04GMA	TAD4 GMA	United Kingdom	Download XML Config
	Thu May 30 11:33:00 2019	FJ17VFB	FJI7 VFB	United Kingdom	Unknown

3. Click on reporting and select **Write result** from the list of options and check **Network share**.



- Scroll down and save your changes by clicking on the button to save your changes.
- 5. 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	SNMP	۲	۹,	Ŷ
								Language	Date and time	Orientation	U	sers	ONVIF	SNMP	Detectors	Maintenance	Plain config
								۲	<u>و</u>	0		•					
								TCP/IP	AVHS	Security	St	rage	I/O ports	Events			



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

Network storage	
Host	
\\192.168.0.180	
Share	
public	
Security ^ The share requires login	
Username	
root	
Password	
••••	
SMB version Auto 💌	

Plate reads will now be written to this location.



7. VaxALPR On Camera and the Axis Camera Station

The VaxALPR On Camera software can be integrated with the Axis Camera Station. The Axis Camera Station is a video management system for both small to mid-sized installations which is optimized for Axis' network video products.

It is possible to integrate VaxALPR On Camera with Axis Camera Station in 2 different ways:

- 1. Capture VAPIX events to create different actions in the Axis Camera Station (sections 7.1 and 7.2)
- Create a bookmark in the recording of the LPR camera (sections 7.3 and 7.4). Note: It is essential that the date and time of the ACS and the camera are synchronized.

IMPORTANT: Axis recommends that no more than 10,000 bookmarks are added to the Axis Camera Station Software.

7.1 Configure VaxALPR On Camera software: VAPIX / ONVIF events

To setup this the ALPR software to send VAPIX / ONFIV events:

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.

4 VAXTOR	VaxALPR On Can	nera			
5 40 H 10 H 19 H 1	Plates				Plates
	Capture	Plate	Image	Country	Setting Reporting
	Thu May 30 11:33:14 2019	WL11DYF	WLII DYF	United Kingdom	Database
	Thu May 30 11:33:14 2019	PJ65HUH	PJ65 HUH	United Kingdom	Blacklist Whitelist
	Thu May 30 11:33:13 2019	YB11BGE	YBII BGE	United Kingdom	Region of Intere
	Thu May 30 11:33:11		TIOL CHI		Upload XML Col

2. The icon in the top right corner reveals the options:

3. Click on reporting and select Vapix from the list of options select Active:

Reporting	
A1001	
Vaxtor protocol	
Overlay	
Dorlet	
Write result	
Vapix	
Active	
TCP	

4. The Vapix interface window will appear:

Vapix	
✓ Active	
ID	
1	



5. Select an ID (Unique Identifier) for this camera, scroll down and save your changes

by clicking on the button.

7.2 Capture VAPIX events with the Axis Camera Station

Once VAPIX is configured, we need to setup the Axis Camera Station to receive and handle VAPIX / ONVIF events. Do this as follows:

1. On the Axis Camera Station interface, click on the **Configuration** Tab and then **Recordings and Events**:



2. Select Action Rules and New to create a new rule:



3. Create a new rule following the steps indicated.

First click on the **Add** button to create a new trigger and select the **Device Event** trigger type and click **OK**.

		Add Trigger	? ×	?
<u>Steps</u>	Trigger	Description		
Actions	Motion Detection	This type triggers on events fr cameras and auxiliary devices	om This	10
Schedule	AXIS Cross Line Detection	trigger is for advanced users a	and can	Add
Details	System Event and Error Input/Output	applicable.		Edit
	Device Event			Remove
	Action Button External HTTPS			
			1	Finish
		Help OK	Cancel	

- 4. Next create the device event trigger:
 - Select a **Device** from the drop-down list. *IMPORTANT*: The camera selected should already have the VaxALPR On Camera software installed and running.
 - Select an **Event** from the drop-down list. *NOTE*: In this case the event should be one of: **Analysis ALPRv2, Blacklistv2, Whitelistv2** or **No_listv2**.

	Create Dev	ice Event Trigge	r ?	-	• •
Configure	e device e	event trig	gger		
Device: Event:	AXIS P1445-LE				•
Trigger period:	Filter:				×
Filters Select an even	Analysis ALPRv2 Blacklistv2 No_listv2 Whitelistv2				Î
Activity:	Device status System Read GlobalSceneC ImagingServ	ly 'hange rice			9
	Hardware Fail Storage Failt Heater Status	lure ure			~
		Help	ОК	1	Cancel

- Define the **Trigger period** (the time the event will be active).
- Select the checkbox of any Filters you wish to apply. The filters will vary depending on the event type selected.
 IMPORTANT: The values of the filters must coincide with the values configured in the VaxALPR On Camera software.

	Device: AXIS P144	5-LE	-
	Event: Whitelistv	2	•
<u>Steps</u> Triggers	Filters	500	onus
Actions	charconfidence:		^ ve.
Schedule Details	☑ id:	1	
Details	Charheight:		
			1
	Activity:		

• Click the **OK** button to save the changes.

	New Kule	12
<u>Steps</u> Triggers Actions	Triggers Triggers describe when a rule should become active. The rule will be active as long as any of the triggers specified here are a	ctive.
Schedule	Device event trigger on AXIS P1445-LE (Whitelistv2)	Add
Details		Edit
		Remove



5. Click **Next** to define an action and then Add to define the rule's actions:

	New Rule	? X
<u>Steps</u> Triggers Actions	Actions Define the actions that should be carried out when this rule is active. All the actions you specify here will be carried out every time	
Schedule	The decisions you speeny here will be carried out every arres	Add
Details		Edit
		Remove
	Help Cancel < Back Next >	Finish

6. Select an action type and click on the **OK** button. *NOTE: Please refer to the Axis Camera Station manual to know more about the actions that can be taken.*

In this example, we want to raise an alarm when a vehicle in the whitelist is seen.

]		Add Action	?	×	?	×
<u>Steps</u> Triggers	Action	Description				
Actions	Record	Raise an alarm on the Server	that is			
Schedule	Raise Alarm	sent to all connected Clients.	nerato	rc	Add	
Details	Send E-mail Live view	to initiate appropriate action	5.		Edit	
	Set Output Send HTTP Notification				Remov	'e
		Help OK	Canc	el	Finis	h

- 7. Create the alarm message:
 - Enter the Title of the alarm message
 - Enter the **Description** of the alarm message
 - Click **OK** to save the changes

		Alarm r	nessage		?
<u>Steps</u> Triggers Actions	Actio Define All the	Title: Description:	Whitelist Alert A vehicle on the staff list has been detected on Camera 1	e.	
Schedule Details		Alarm p	procedure show alarm procedure:	1	Add Edit Remov
			Preview Upload	ext >	Finist



8. Add any additional triggers as required and Click **Next**:

	New Rule	? ×
<u>Steps</u> Triggers Actions	Triggers Triggers describe when a rule should become active. The rule will be active as long as any of the triggers specified here are ac	tive.
Schedule	Device event trigger on AXIS P1445-LE (Blacklistv2)	Add
Details		Edit
		Remove
	Help Cancel < Back Next >	Finish

9. Specify when the rule will be active by defining a schedule - then click **Next** button:

	New Rule	?	×
<u>Steps</u> Triggers Actions Schedule	Schedule If necessary, specify a schedule that defines when this rule should be active. Always Custom schedule:		
Details	Office Hours - Edit New		
	Help Cancel < Back Next >	Finis	h

10. Enter a name for the new rule and click **Finish**.

	New Rule	?	×
<u>Steps</u> Triggers Actions Schedule Details	Details Entering a name and click 'Finish' to create the rule. Name: Whitelist Alert Rule 1 Triggers: Device event trigger on AXIS P1445-LE (Whitelistv2) Schedule: Always on Actionary Baica clarm 'Whitelist Alert'		<
	Help Cancel < Back Next >	Finis	~ h



The rule will appear in the Camera Station list of rules.

Action rules

Create and edit action rules by selecting triggers, actions, and schedules.

Whitelist Alert Rule 1

Triggers: Device event trigger on AXIS P1445-LE (Whitelistv2) Schedule: Always on Actions: Raise alarm 'Whitelist Alert'



7.3 Enable the developer API on the Axis Camera Station

To enable the bookmark integration in Axis Camera Station it is necessary to enable the developer API on the Axis Camera Station Service Control.

To open the Axis Camera Station Service Control window, right click on the Axis Camera Station Service tray icon and select "**Open Axis Camera Station Service Control**"

<u>p</u> arabuse	Developer API	Tools
	Bereicher Dri	Tools
ettings		
Enable developer API		
Developer API port:	50333	
Video port:	50334	
video pore	presentation	
Enable metadata ex	change	
Enable SSL		
rver status		

- 1. Select "Modify settings"
- 2. On the Developer API Tab select "Enable developer API"
- 3. Click on the "Save" button. This will restart the service.



7.4 Configure the Axis Camera Station reporting option

To configure the ACS reporting option in the VaxALPR On Camera software:

- 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 corner reveals the options:

WAXTOR	VaxALPR On Cam	era			
	Plates	Plates			
	Capture	Plate Image		Country	Setting Reporting
	Thu May 30 11:33:14 2019	WL11DYF	WLII DYF	United Kingdom	Database
	Thu May 30 11:33:14 2019	PJ65HUH	PJ65 HUH	United Kingdom	Blacklist Whitelist
	Thu May 30 11:33:13 2019	YB11BGE	YBII BGE	United Kingdom	Region of Interest
	Thu May 30 11:33:11 2019	TA04GMA	TAD4 GMA	United Kingdom	Download XML Config
	Thu May 30 11:33:00 2019	FJ17VFB	FJIT VFB	United Kingdom	Unknown

3. Click on reporting and select ACS from the list, - tick Active to open the interface:

ACS	
✓ Active	
Host	Use SSL
Host	Bookmark name
Port	Splate\$ - \$country\$
50333	Bookmark description
Username	Sifblacklist\$Blacklist: \$blacklist\$\$ifblacklist\$\$ifwhitelist\$Whitelist: \$whitelist\$Sifwhitelist\$
root	
Password	

- 4. In the Host box enter the IP address of the ACS server
- Enter the port number selected as "Axis Camera Station Service Control" default 50333
- 6. Enter the username and password for the ACS user. (*This is a Windows User name and password*)
- 7. Make any changes required to Bookmark name and Bookmark Description fields.
- 8.

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)

If the bookmark name after the dynamic replacement is an empty string then the bookmark will not be added.



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

button

Once the system is configured you can see the results of the LPR in the bookmark window inside the Axis Camera Station Client. Use the bookmark Tab and enter plate or partial plate in the search text.

				AKS Camera Station Client	
🖳 View 🌲	Live view alerts \times	Configuration	+		::]≡
		JAGULAR - United workster teasue Blacktic Jaguar - Shee JAGULAR - United workster teasue Blacktic Jaguar - Shee JAGULAR - United workster teasue Blacktic Jaguar - Shee Blacktic Jaguar - Shee JAGULAR - United workster teasue Blacktic Jaguar - Shee JAGULAR - United workster teasue Blacktic Jaguar - Shee	I Kingdom I Kingdom I Kingdom I Kingdom I Kingdom		
26/03/2020 T				144 II DOI 10 DI <mark>12 -</mark>	
AXIS P1445-LE	÷ +	10.25	10.30		11:00
ପ୍ ଡୁ				Vew AXIS P1465-LE	e +
Alarms T	lasks				v
Time	Categ	ory	Description		â ~
26/03/2020 10:46:49	Black	list Alarm	Vehicle of Interest approaching		
26/03/2020 10:45:48	B Black	list Alarm	Vehicle of Interest approaching		
26/03/2020 10:44:48 Connected to LIN-HOME	Black	sist Alarm	Vehicle of Interest approaching		v (*)

Please refer to the Axis Camera Station manual for further details on bookmarks management.



7.5 Related Documents

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

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

Vaxtor VaxALPR On Camera Installation and Configuration manuals are available from the Vaxtor Website:

https://www.vaxtor.com/vaxalpr-on-camera/

Ends.