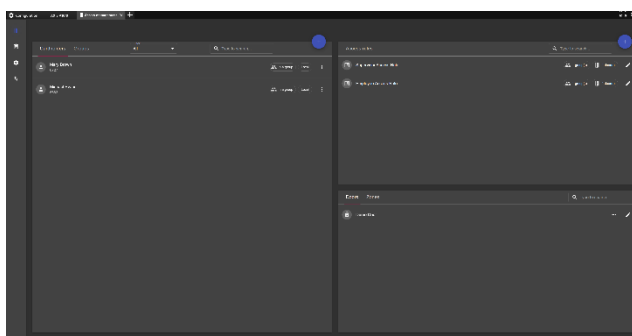
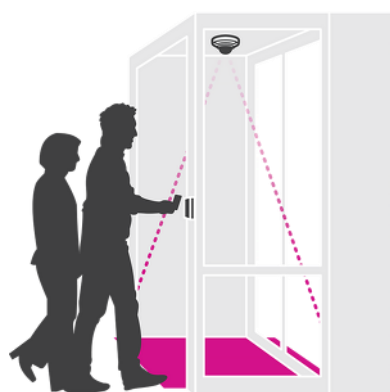


AXIS People Counting Application Tailgating Detector + Access Control

An integration guide



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1 Introduction

This document how to integrate an Axis camera running the AXIS People Counting analytic into an access control system to assist with Tailgating. The purpose of the integration is to enforce badge in/out at an entrance/exit.

Normally AXIS People Counter (APC) will trigger only if two or more people cross the boundary within a set amount of time. With the access control integration, a valid credential read will allow one person to pass the boundary during a set amount of time, if another person badges in, the system will allow two people to pass, and so on.

This guide will show to configure this behaviour in AXIS Secure Entry and with a third party access control system (using assumed IO signals from that system).

The below sequence diagram shows how the shunting works:

Second	Allowed counts	Counts	Person walking in	Alarm	Badge	Description	1st badge count down	2st badge count down	3st badge count down
1	0	0							
2	0	0							
3	1	0			1	1st badge, allowed count increases by one.	10		
4	1	0					9		
5	1	0					8		
6	0	1	passage			1st passage, allowed count used.	7		
7	0	1							
8	1	1			1	2nd badge, allowed count increases by one.		10	
9	1	1						9	
10	2	1			1	3rd badge, allowed count increases by one.		8	10
11	2	1						7	9
12	2	1						6	8
13	1	2	passage			2nd passage, one allowed count used.		5	7
14	1	2							6
15	1	2							5
16	1	2							4
17	1	2							3
18	1	2							2
19	1	2							1
20	0	2				Third badge timed out after 10 seconds.			0
21	0	2							
22	0	2							
23	0	2							
24	0	2							
25	0	3	passage	alarm		Passage when allowed counts = 0 (ALARM)			
26	0	3							
27	0	3							
28	0	3							
29	0	3							
30	0	3							

2 System Overview

Below is a list of components that were used for the example setup made when producing these instructions:

AXIS P3245-LV Camera (or any camera that can run APC)
 AXIS A1610 Door Controller with badge reader (for Secure Entry Solution)
 AXIS D3110 Connectivity Hub (for integration to third party access control)
 AXIS C1310-E Network Horn Speaker

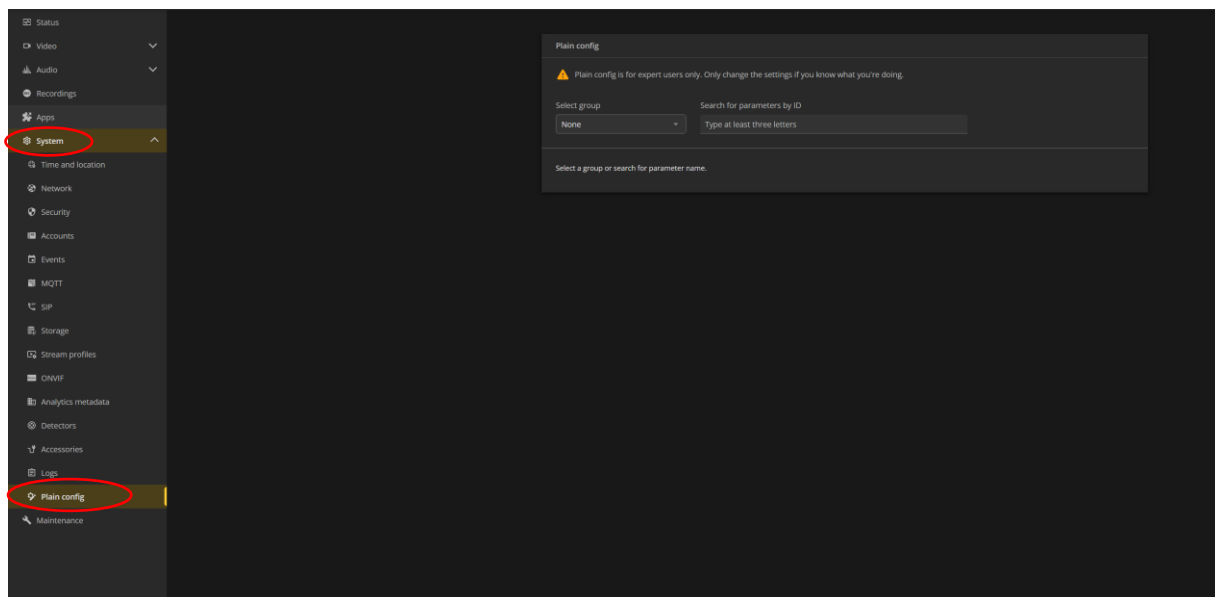
The P3245-LV camera is mounted above the entryway and triggers alarms when tailgating is detected. Alarm is displayed as an overlay message and an audible clip is played by the speaker device. The A1610 relays information on valid badge reads to the P3245 camera to allow for temporary shunting of the alarm. In case of a third party access control system, the D3110 process physical inputs from the alarm system indicating valid badge reads. The P3245 will also toggle an output on the D3110 in case an alarm needs to be sent to the third party system upon a detected tailgating event.

The D3110 solution with a third party system supports detection in both directions (in/out) provided that the access control system can send card read information for both the entrance and exit reader. The Secure Entry solution only supports one direction and also “hijacks” the Alarm Log functionality (rarely used).

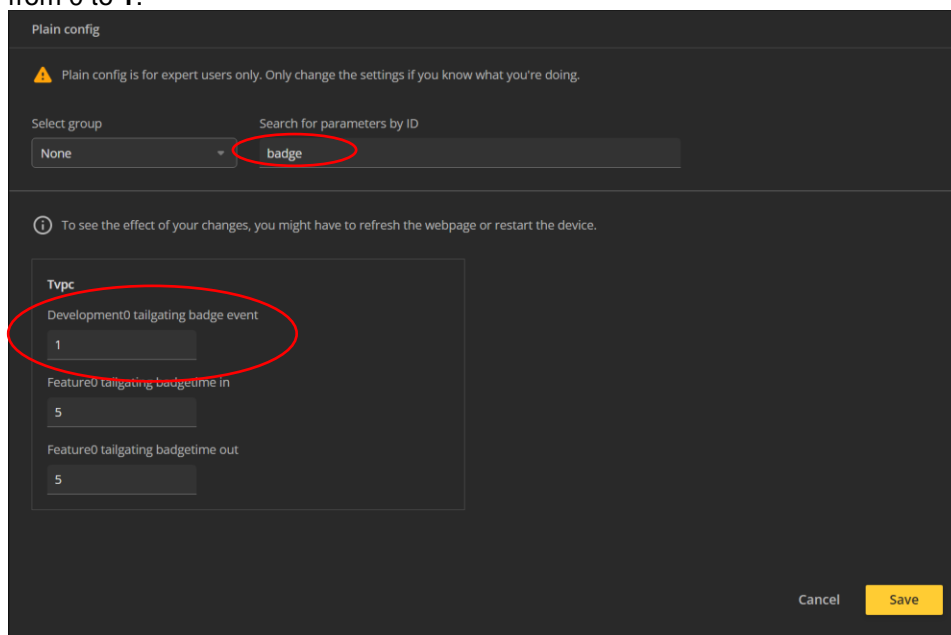
3 Enable Access Control integration in Camera

The very first step is to load APC on the camera and configure per best practices. This is out of the scope of this guide. Please refer to AXIS website for instructions on this.

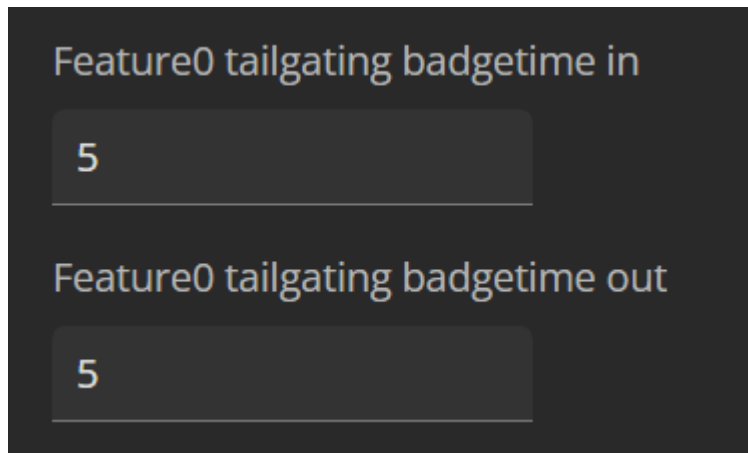
Install the ACAP and then navigate to **System** → **Plain Config** per below image:



Once in the settings page. Find the field “**Development0 people counter badge event**” and change it from 0 to 1.



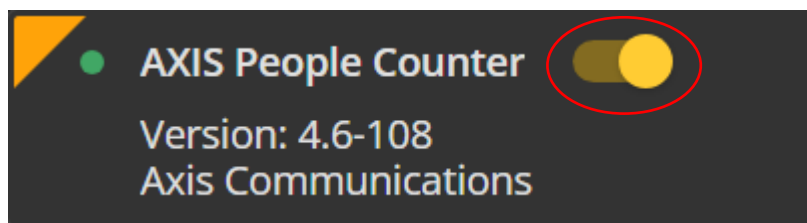
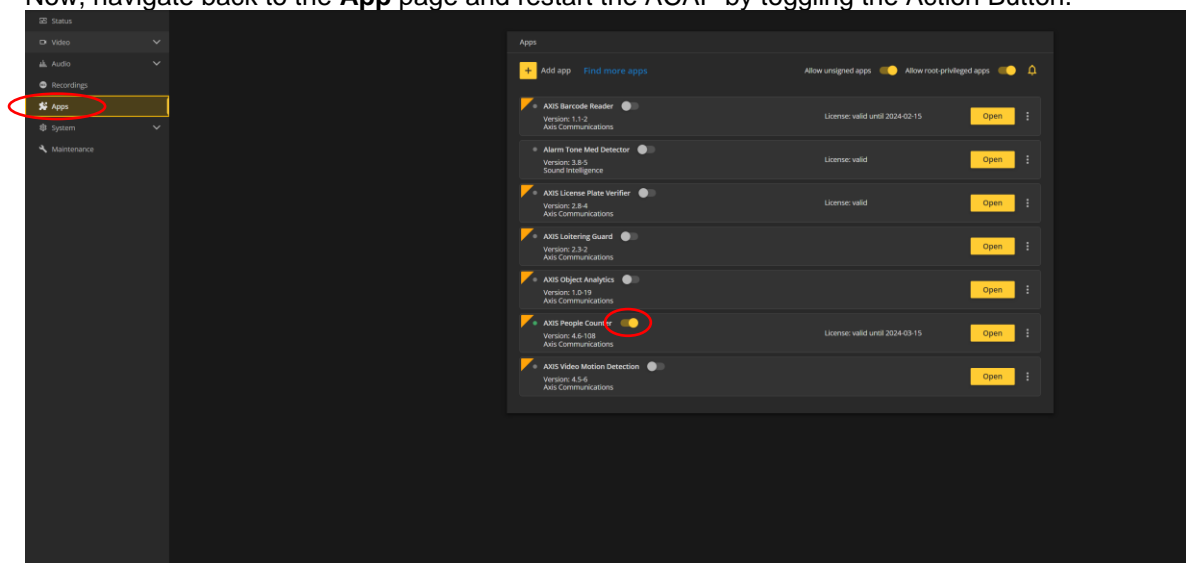
At this point, also locate the **Feature0 tailgating badgetime in/out** timer settings (see below). This is the time that each person that scans their badge will have to pass the boundary. If the time expires and the person passes the boundary, the alarm will trigger.



This value should be determined by observing the flow of people at the entrance.

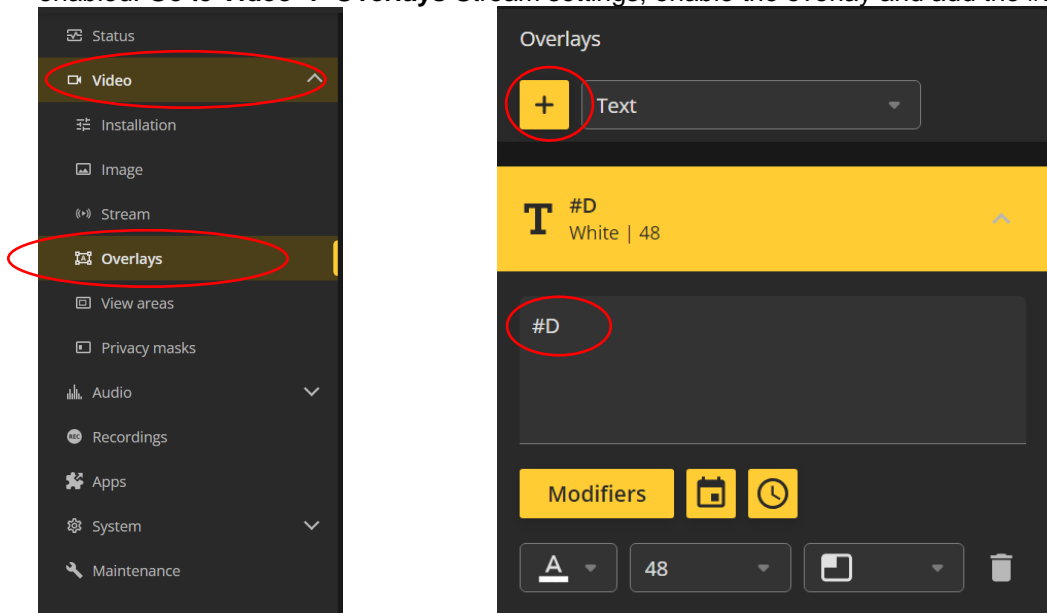
After these settings have been changed, scroll down to the bottom of the page and hit "Save".

Now, navigate back to the **App** page and restart the ACAP by toggling the Action Button.

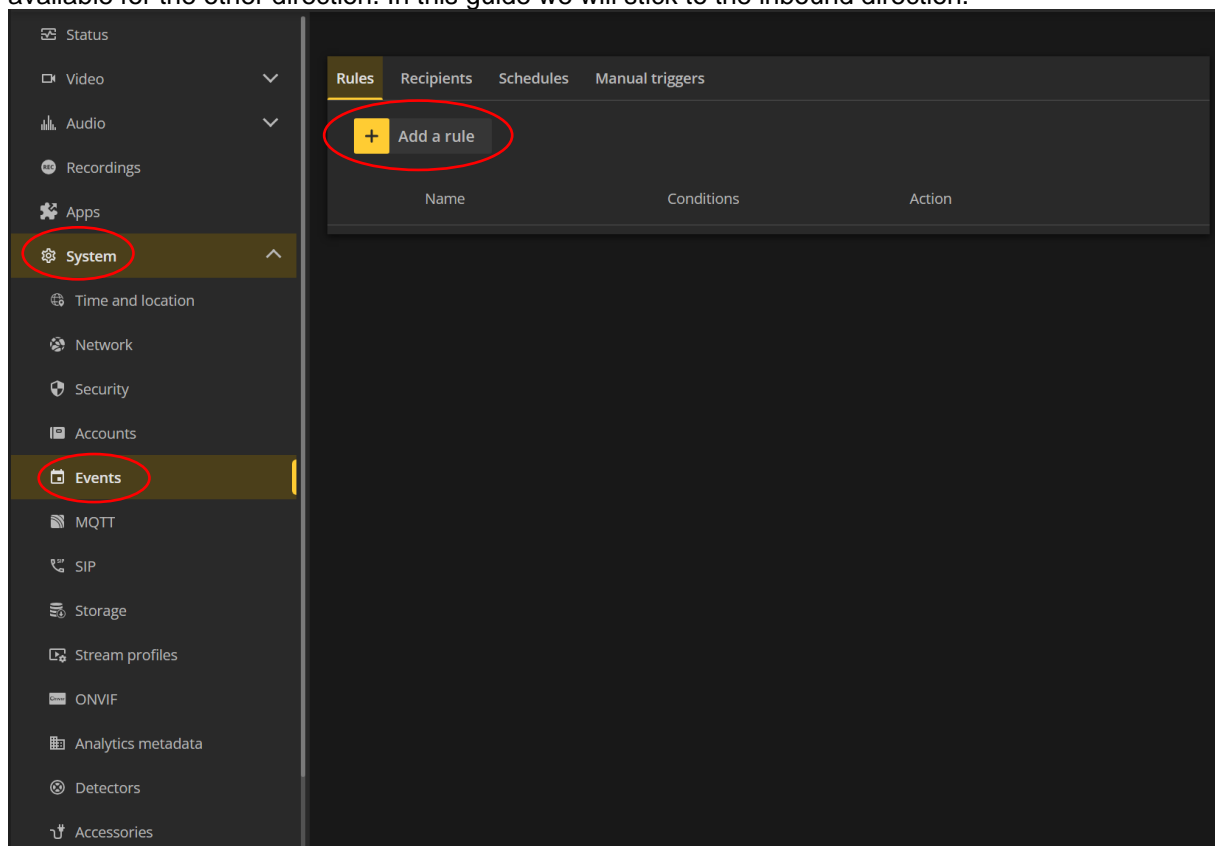


This will cause the settings to take effect.

Now it is time to configure the alarms. For the overlay display, dynamic overlay text needs to be enabled. Go to **Video** → **Overlays** Stream settings, enable the overlay and add the #D modifier.



Next, go to **System** → **Events** tab and configure the overlay event per the below screenshot. Note that the event “NoBadgelIn” “TailgatingDetector-In” is used in this case. There is also a similar event available for the other direction. In this guide we will stick to the inbound direction.



Edit rule

☒ Use this rule

Name
Tailgating Overlay

Wait between actions (hh:mm:ss)
00:00:00

Condition
☒ Use this condition as a trigger
TailgatingDetector-In

[+ Add a condition](#)

Action
Use overlay text

Video channels
View Area 1 x

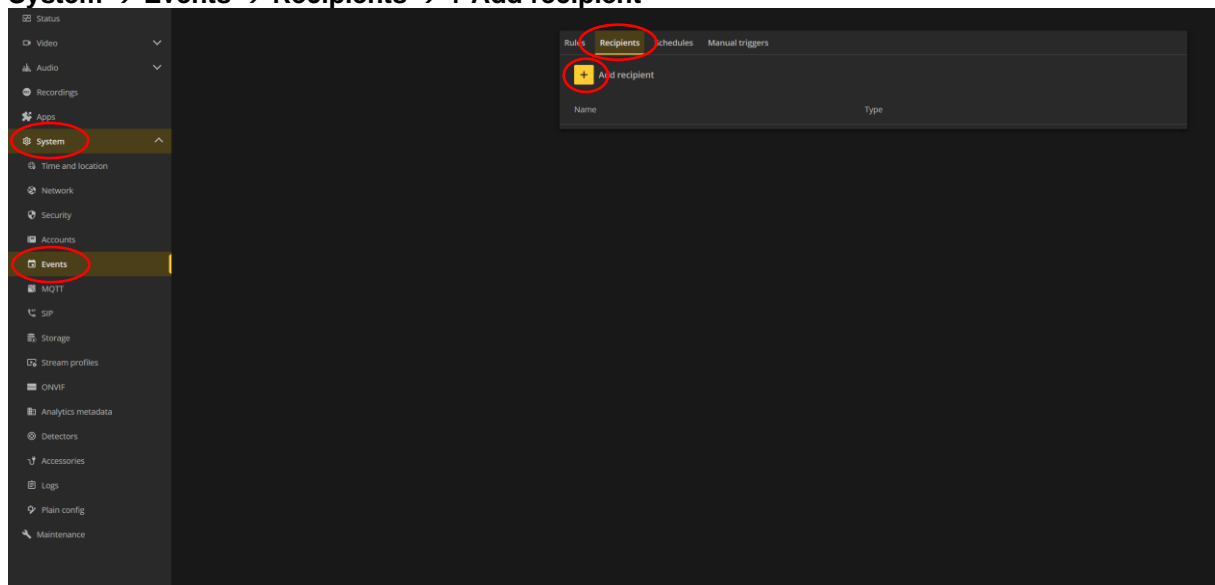
Text
Tailgating

Duration
00:00:05 HH:MM:SS

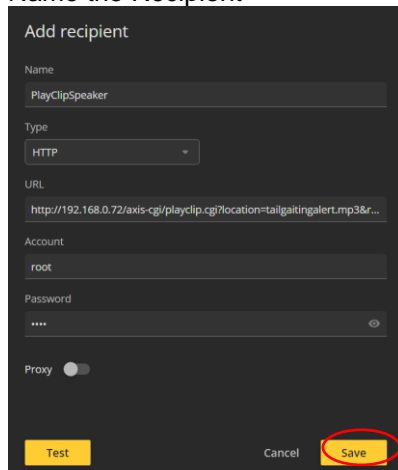
[Cancel](#) [Save](#)

We also want to get an audible alert on the C1310-E speaker when a tailgating event occurs. First an HTTP recipient needs to be created:

System → Events → Recipients → + Add recipient



Name the Recipient



Here is the HTTP Command we used:

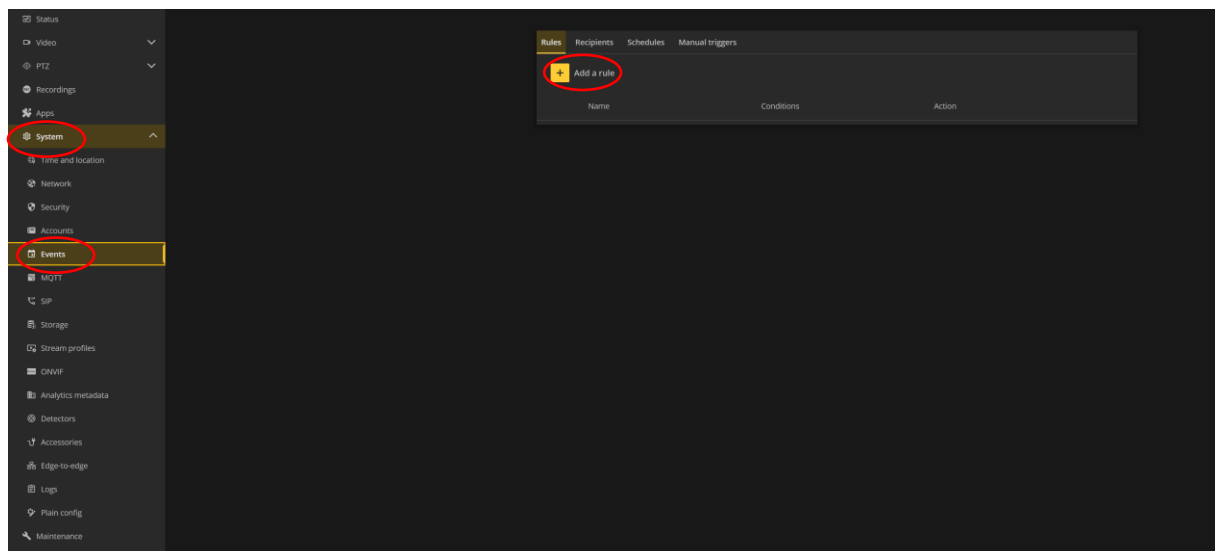
http://192.168.0.105/axis-cgi/playclip.cgi?location=ringtone_1.mp3&repeat=0&volume=65&audiodeviceid=0&audiooutputid=0

Key Points from HTTP String:

- ringtone_1.mp3 : Audio Clip from C1310-E that will Play
- repeat=0 : How many times the clip will repeat
- volume=65 : Volume Level that Speaker will play desired clip

With the recipient created, an action rule can now be created to play a specific clip on the speaker:

System → Events → Recipients → + Add a rule



Condition: **TailgatingDetector-In**
 Action: **Send notification through HTTP**
 Method: **Get**

Add rule

☒ Use this rule

Name

Tailgating Audible Alarm | C1310-E

Wait between actions (hh:mm:ss)

00:00:00

Condition

☒ Use this condition as a trigger

TailgatingDetector-In

+ Add a condition



Action

Send notification through HTTP

Recipient

Tailgating Play Clip

Message (will be encoded)

Query string suffix

Full recipient URL

http://192.168.0.105/axis-cgi/playclip.cgi?location=ringtone_1.mp3&repeat=0&volume=100&audiodeviceid=0&audiooutputid=0

Method

GET

HTTP headers

+ Add header

Body

Cancel Save

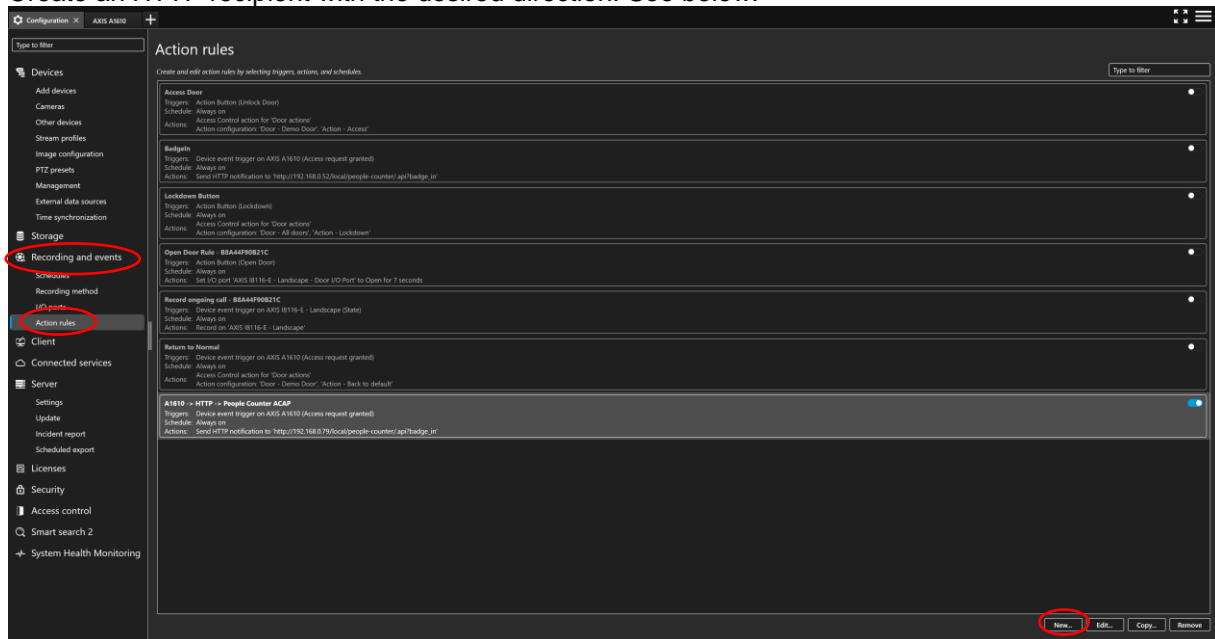
Now the camera setup is complete. The missing component is that the camera needs to receive information from the access control system about valid card reads. The setup is similar for the Secure Entry and third party integration. This is described in the following sections.

4 Access Control API recipient

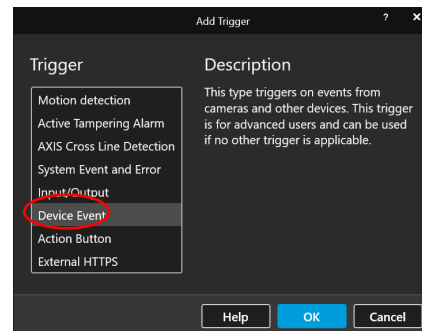
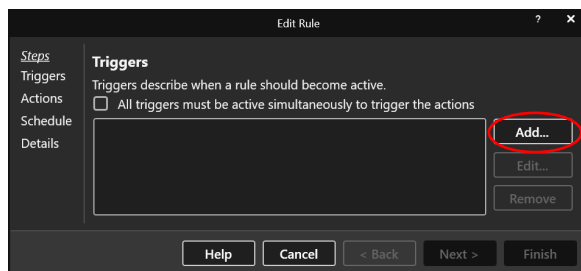
Regardless of solution, the API to talk to People Counters Tailgating Detector is the same. These are the [URL:s](http://>IP>/local/people-counter/.api?badge_in) required for shunting the alarm in either direction:

http://>IP>/local/people-counter/.api?badge_in
http://>IP>/local/people-counter/.api?badge_out

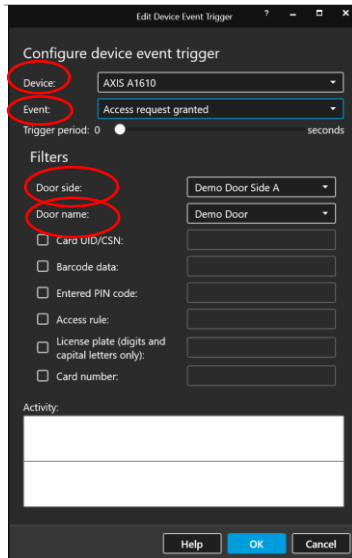
Create an HTTP recipient with the desired direction. See below.



Select: **Add**
 Trigger: **Device Event**



Device: **Axis A1610 (Door Controller)**
 Event: **Access granted**
 Select appropriate **Door Side & Door Name**



Configure device event trigger

Device: **AXIS A1610**

Event: **Access request granted**

Trigger period: 0 seconds

Filters

Door side: **Demo Door Side A**

Door name: **Demo Door**

☐ Card UID/CSN:

☐ Barcode data:

☐ Entered PIN code:

☐ Access rule:

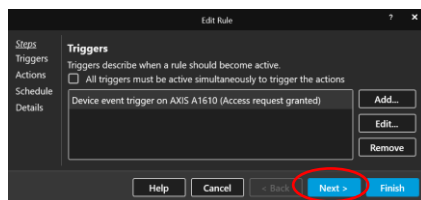
☐ License plate (digits and capital letters only):

☐ Card number:

Activity:

Help OK Cancel

Select: **Next**



Edit Rule

Steps

Triggers

Triggers describe when a rule should become active.

☐ All triggers must be active simultaneously to trigger the actions

Device event trigger on AXIS A1610 (Access request granted)

Add...

Edit...

Remove

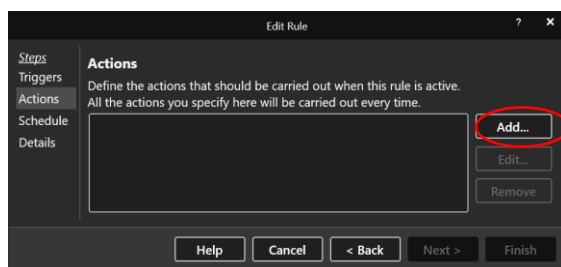
Help Cancel < Back **Next >** Finish

This Trigger will send a notification from the Door Controller to the People Counter Application to shunt the alarm.

Next we'll create the **Action** to **Send the HTTP Notification** to People Counting ACAP

Action: **Add → Send HTTP Notification**

URL: http://>IP>/local/people-counter/.api?badge_in



Edit Rule

Steps

Triggers

Actions

Define the actions that should be carried out when this rule is active.

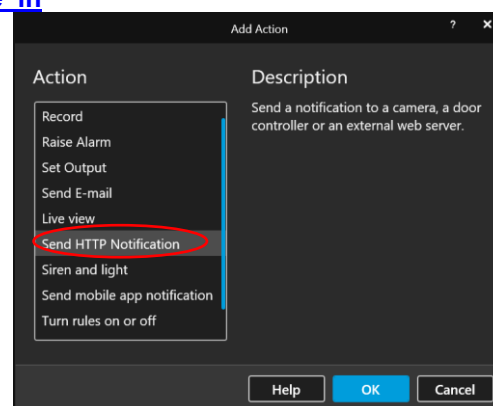
All the actions you specify here will be carried out every time.

Add...

Edit...

Remove

Help Cancel < Back Next > Finish

Add Action

Action

Record

Raise Alarm

Set Output

Send E-mail

Live view

Send HTTP Notification

Siren and light

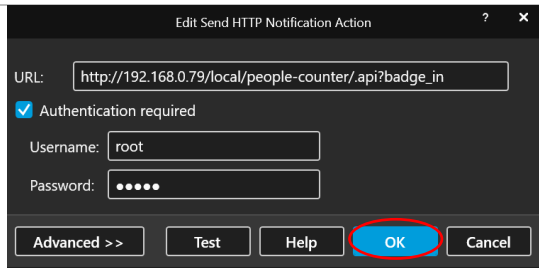
Send mobile app notification

Turn rules on or off

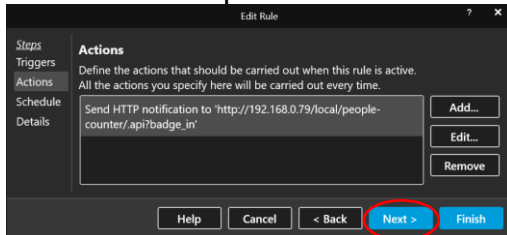
Description

Send a notification to a camera, a door controller or an external web server.

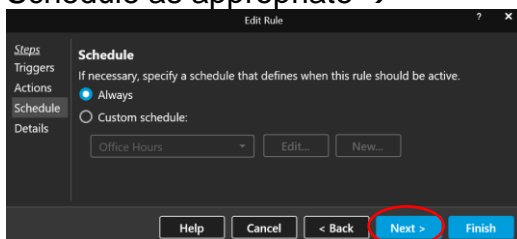
Help OK Cancel



Next once completed with Action

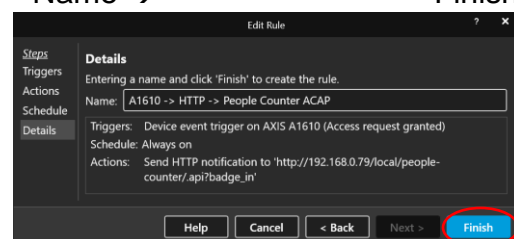


Schedule as appropriate →



Name →

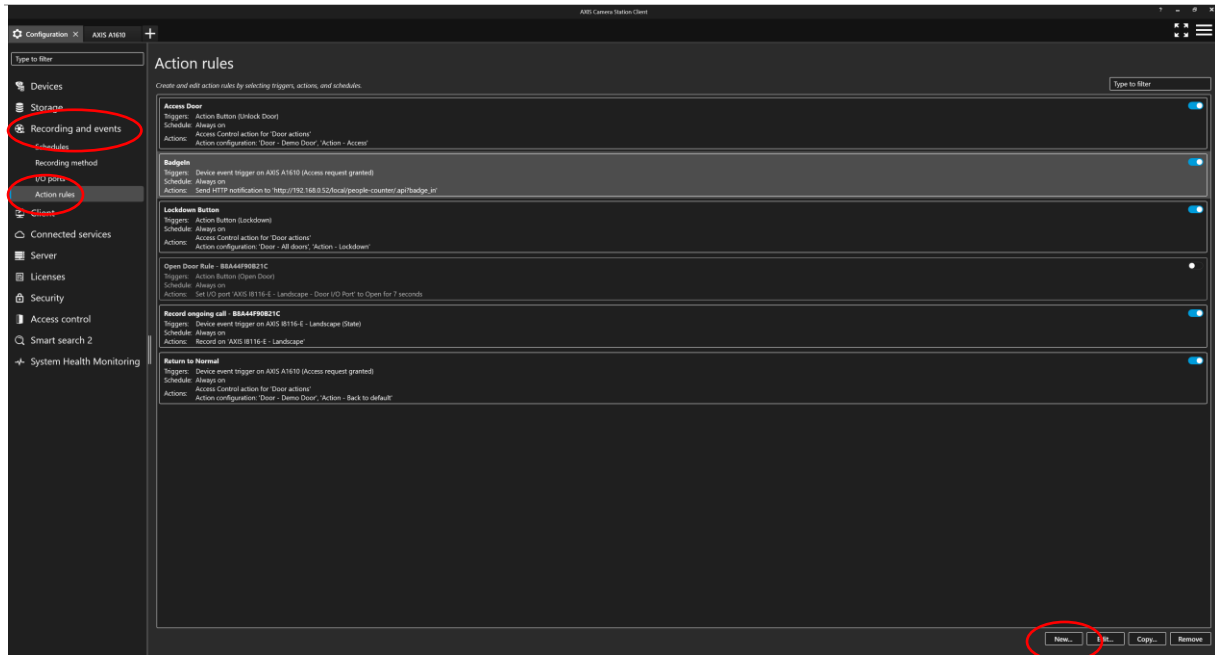
Finish



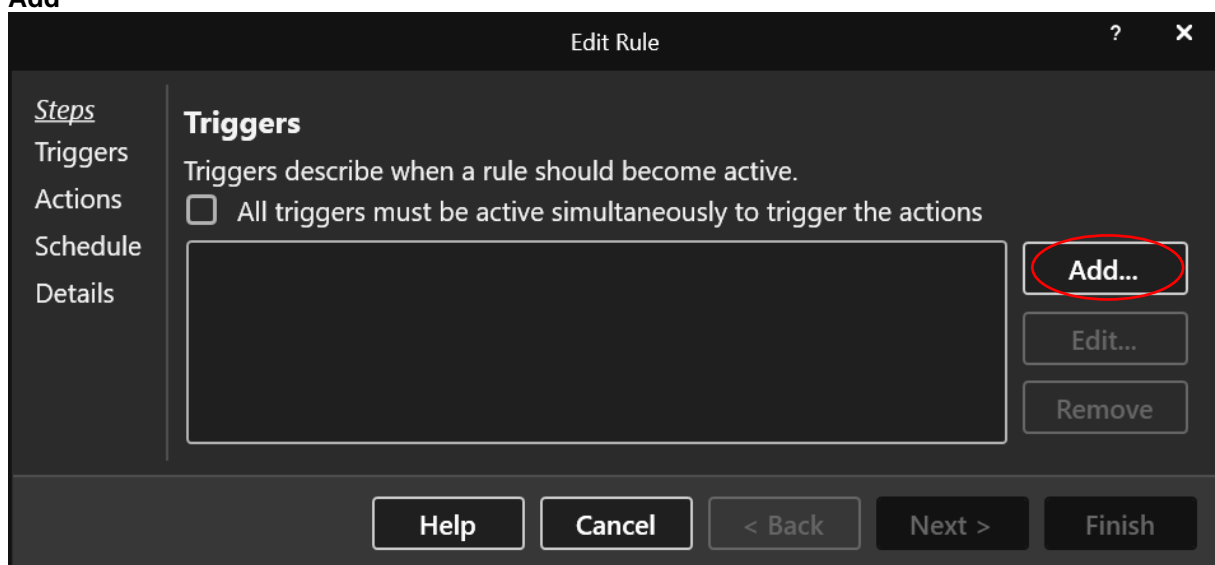
5 A1610 Integration

Next we'll create an Action Rule to send an HTTP Command that every time an 'Access Request Granted' event occurs, a notification will be sent to the camera to allow one person for that amount of time.

Navigate to **Recording and Events** (left menu bar) → **Action Rules** (Subsection) → **New** (bottom right corner)



Add



Select: **Device Event** → OK

Add Trigger
?
X

Trigger

Motion detection
Active Tampering Alarm
AXIS Cross Line Detection
System Event and Error
Input/Output
Device Event
Action Button
External HTTPS

Description

This type triggers on events from cameras and other devices. This trigger is for advanced users and can be used if no other trigger is applicable.

Help
OK
Cancel

Device: **AXIS A1610 (Door Controller)**
Event: **Access Request Granted**

Create Device Event Trigger

Configure device event trigger

Device:
AXIS A1610

Event:
Access request granted

Trigger period: 0 seconds

Filters

Door side: Demo Door Side A

Door name: Demo Door

☐ Card UID/CSN:

☐ Barcode data:

☐ Entered PIN code:

☐ Access rule:

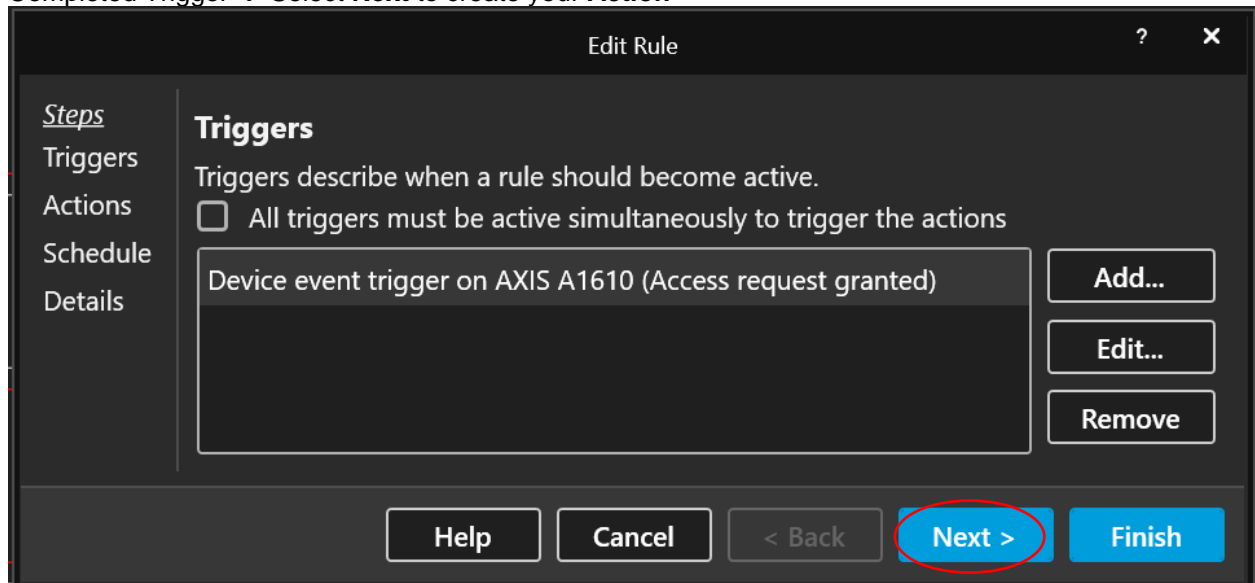
☐ License plate (digits and capital letters only):

☐ Card number:

Activity:

Help
OK
Cancel

Completed Trigger → Select **Next** to create your **Action**



Edit Rule

Steps
Triggers
Actions
Schedule
Details

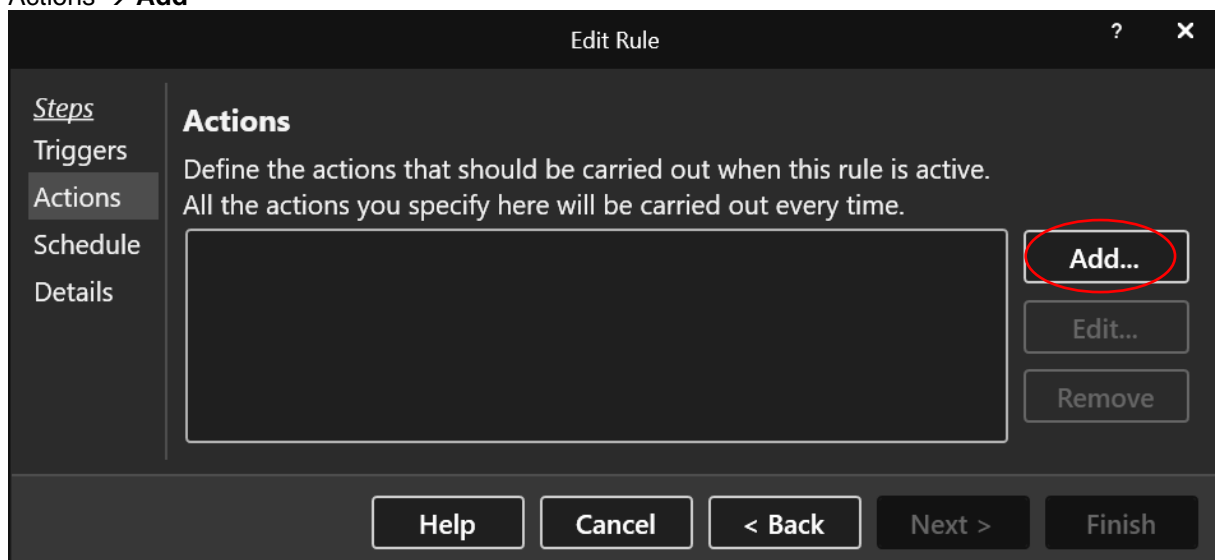
Triggers
Triggers describe when a rule should become active.
☐ All triggers must be active simultaneously to trigger the actions

Device event trigger on AXIS A1610 (Access request granted)

Add...
Edit...
Remove

Help Cancel < Back **Next >** Finish

Actions → **Add**



Edit Rule

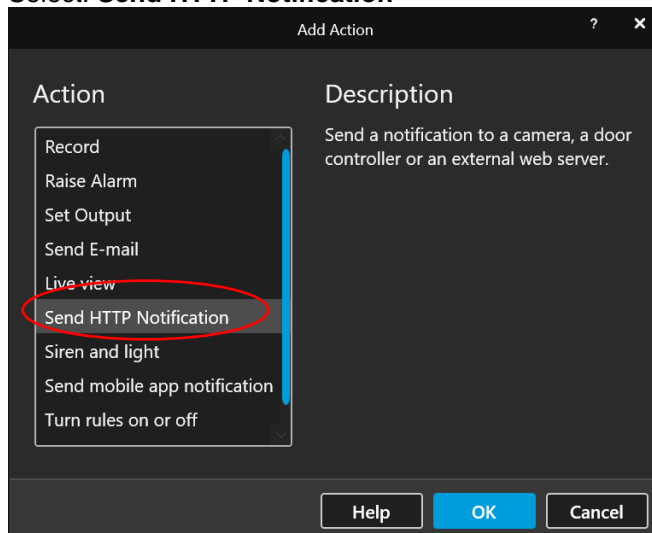
Steps
Triggers
Actions
Schedule
Details

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.

Add...
Edit...
Remove

Help Cancel < Back Next > Finish

Select: **Send HTTP Notification**

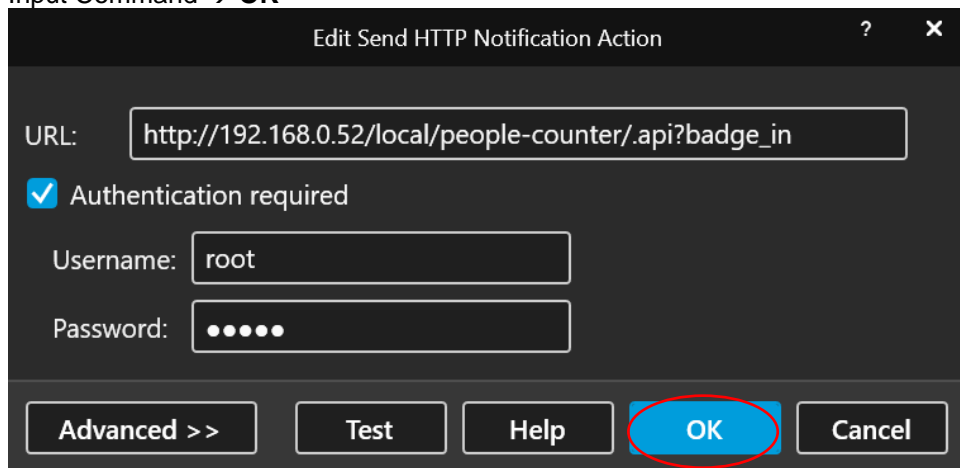


Add Action

Action	Description
Record	
Raise Alarm	
Set Output	
Send E-mail	
Live view	
Send HTTP Notification	Send a notification to a camera, a door controller or an external web server.
Siren and light	
Send mobile app notification	
Turn rules on or off	

Help OK Cancel

Input Command → **OK**



URL:

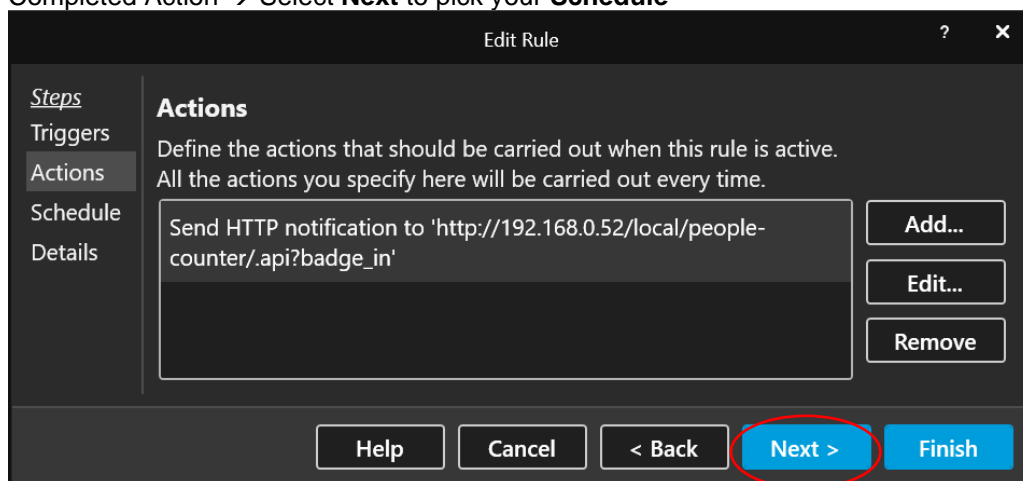
☒ Authentication required

Username:

Password:

Buttons: Advanced >> Test Help **OK** Cancel

Completed Action → Select **Next** to pick your **Schedule**



Steps

- Triggers
- Actions**
- Schedule
- Details

Actions

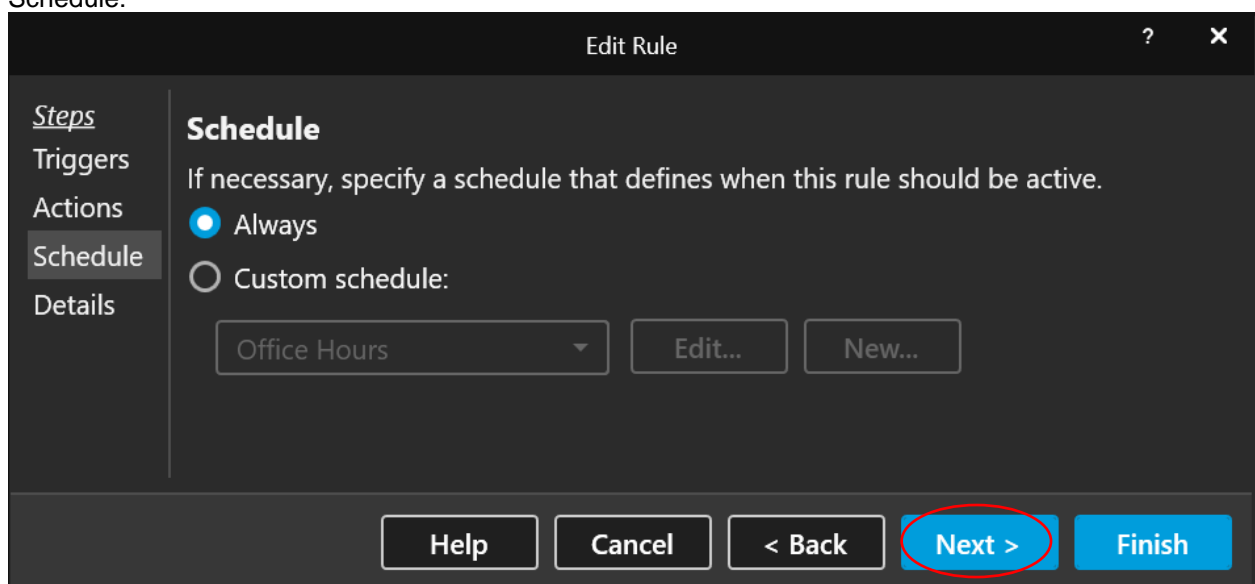
Define the actions that should be carried out when this rule is active. All the actions you specify here will be carried out every time.

Send HTTP notification to 'http://192.168.0.52/local/people-counter/.api?badge_in'

Buttons: Add... Edit... Remove

Buttons: Help Cancel < Back **Next >** Finish

Schedule:



Steps

- Triggers
- Actions
- Schedule**
- Details

Schedule

If necessary, specify a schedule that defines when this rule should be active.

☒ Always

☐ Custom schedule:

Office Hours Edit... New...

Buttons: Help Cancel < Back **Next >** Finish

Next Once you've picked your schedule

Name & Confirm Details → **Finish**

? ✕

Steps
Triggers
Actions
Schedule
Details

Details

Entering a name and click 'Finish' to create the rule.

Name:

Triggers: Device event trigger on AXIS A1610 (Access request granted)

Schedule: Always on

Actions: Send HTTP notification to 'http://192.168.0.52/local/people-counter/.api?badge_in'

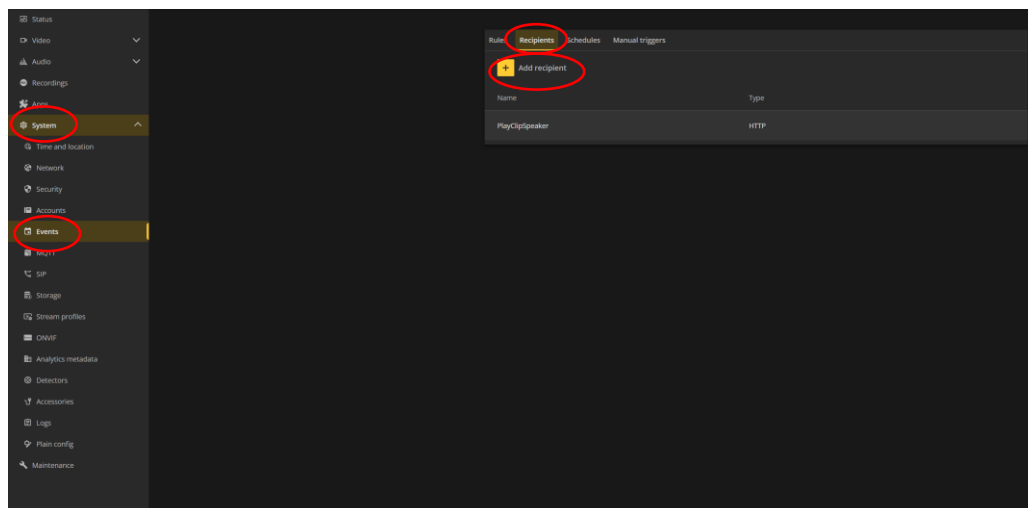
Help
Cancel
< Back
Next >
Finish

Now, every time a valid card request is granted the notification will be sent to the camera to allow one person for that amount of time.

6 Third Party System integration

With the D3110. The setup is very similar. The alarm is created like this (after configuring and wiring ports):

System → Events → Recipients → + Add Recipients



Input

View recipient

Name
D3110 -> Activate Virtual Input

Type
HTTP

URL
http://192.168.0.118/axis-cgi/virtualinput/activate.cgi

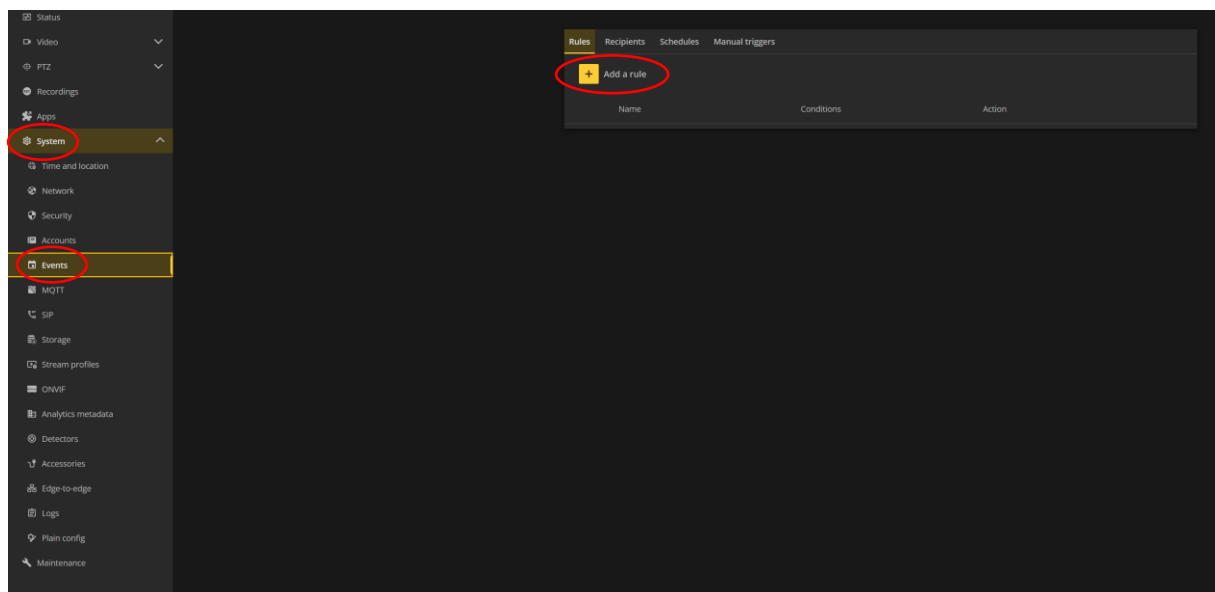
Account
root

Password

Proxy ☐

Test **Close**

In the event config, do the following:
System → Events → Recipients → + Add Rule



Condition: **TailgatingDetector – in**
 Action: **Send HTTP Notification**
 Recipient: **D3110 Activate Virtual Input**
 Method: **Get**

Add rule

☒ Use this rule

Name
 Tailgating -> D3110 HTTP Command

Wait between actions (hh:mm:ss)
 00:00:00

Condition

☒ Use this condition as a trigger

TailgatingDetector-In

+ Add a condition

Action

Send notification through HTTP

Recipient
 D3110 -> Activate Virtual Input

Message (will be encoded)

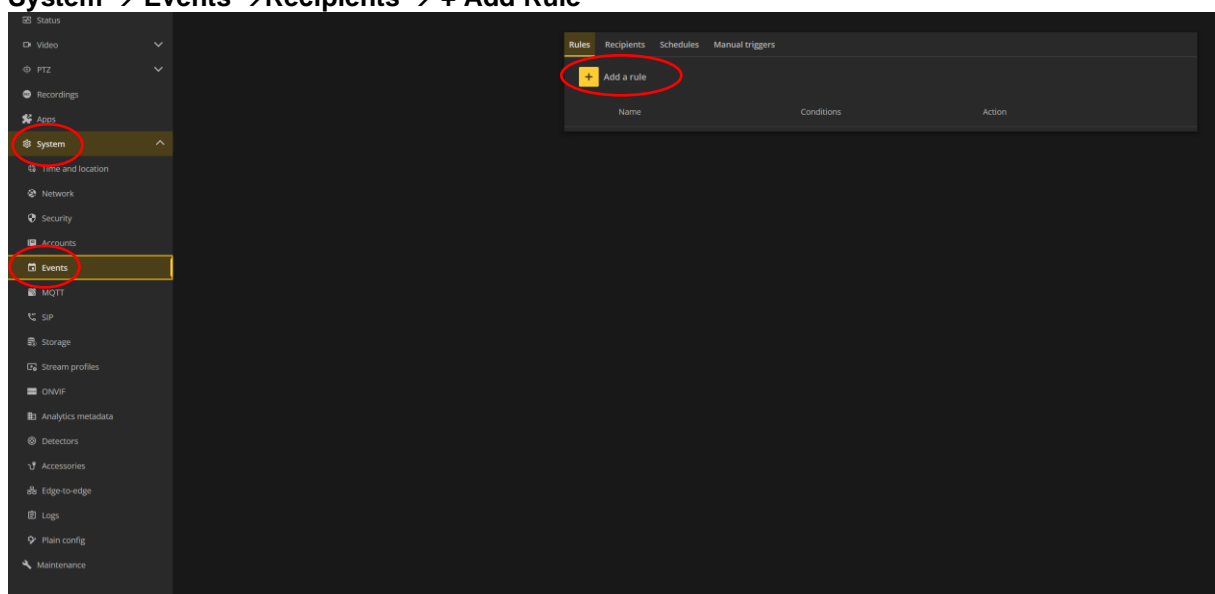
Query string suffix

Full recipient URL
 http://192.168.0.118/axis-cgi/virtualinput/activate.cgi

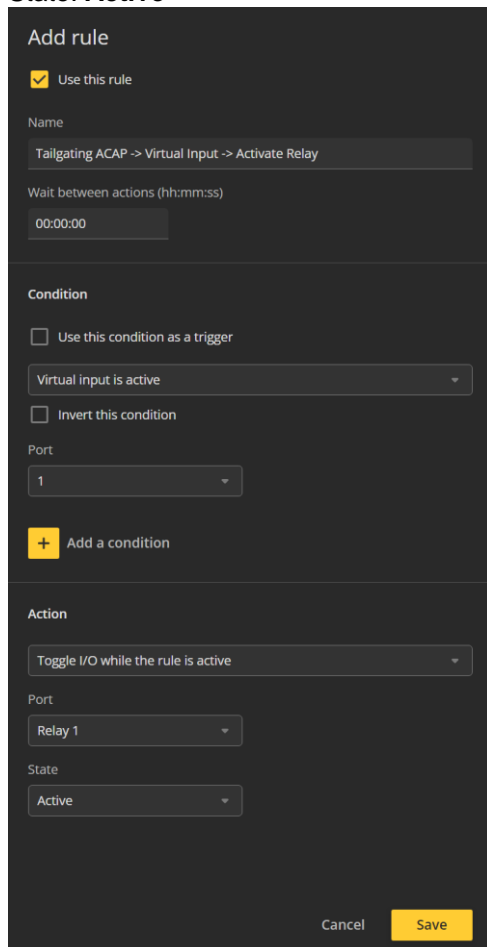
Method
 GET

Cancel Save

Next we'll create a rule when the D3110 Virtual Input is activated from the Tailgating Application, The D3110 will activate a Relay or I/O
System → Events → Recipients → + Add Rule



Condition: **Virtual input is Active**
Action: **Toggle I/O while rule is active**
Port: **Relay 1 or as wired**
State: **Active**



The screenshot shows the 'Add rule' configuration window. It includes a checkbox for 'Use this rule' which is checked. The 'Name' field contains 'Tailgating ACAP -> Virtual Input -> Activate Relay'. The 'Wait between actions (hh:mm:ss)' field is set to '00:00:00'. Under the 'Condition' section, the checkbox 'Use this condition as a trigger' is checked, the dropdown menu shows 'Virtual input is active', and the 'Invert this condition' checkbox is unchecked. The 'Port' dropdown menu is set to '1'. There is a '+ Add a condition' button. Under the 'Action' section, the dropdown menu shows 'Toggle I/O while the rule is active'. The 'Port' dropdown menu is set to 'Relay 1' and the 'State' dropdown menu is set to 'Active'. At the bottom right, there are 'Cancel' and 'Save' buttons.

If a physical alarm needs to be sent to the access control system on a tailgating event. An output port on the D3110 can be pulsed remotely by the camera using the below recipient config. The URL is:
<http://<IP>/axis-cgi/virtualinput/activate.cgi>