Axis P8221 Input/Output App-note

Contents

1. Introduction

This document will detail the integration of the Axis P8221 I/O device, with CathexisVision's software. Functionally this integration will entail the triggering of standard CathexisVision Events, based on the triggers from the device.

1.2 Requirements

- CathexisVision 2021.1 and later
- Windows 7 – 64-bit and later, Windows Server 2008 R2 and later.

Notes:

1. If information is required regarding the regular operation of an Axis device, please consult the relevant Axis documentation.
2. The Axis IO requires an ethernet connection ONLY.
3. This integration does not support RS232 or RS connection, and can only connect via network cable.
4. This integration does not support audio for this device.
5. The IO states are polled every 0.1ms.
6. Axis Product Information:
   - Model Number: P8221.
   - Firmware as tested: 5.10.2.

1.3 License requirements

The Cathexis Axis integration license requirements are as follows:

License Name	License Description
CAIO-2000	Axis I/O Device

Note: This is a per device license.

1.4 Integration Components

All CathexisVision integrations have two component levels: **Device** and **Object**.

Device The device is CathexisVision software's interface, which handles all the interaction between CathexisVision and the integrated hardware. When you add an integration to the CathexisVision system, you add a device. The messages received from the device are called Device Events.

Objects Objects are the individual pieces of hardware that comprise the integration. You may have multiple "object types" under the objects group. For example, the main controller and door nodes, of an access control system, are both objects. They are different types of objects

1.5 Axis Integration Features

Objects and messages for

- Input (**Note**: The external input voltage must exceed 5VDC for a trigger to be created).
- Output.

Commands

- Set Output.
- Clear output.
- Pulse Output.

USEFUL LINKS

*To view **tutorial videos** on CathexisVision setup, visit https://cathexisvideo.com/resources/videos*

*Find answers to Cathexis **Frequently Asked Questions**: https://cathexis.crisp.help/en/?1557129162258*

2. Device Addition and Configuration

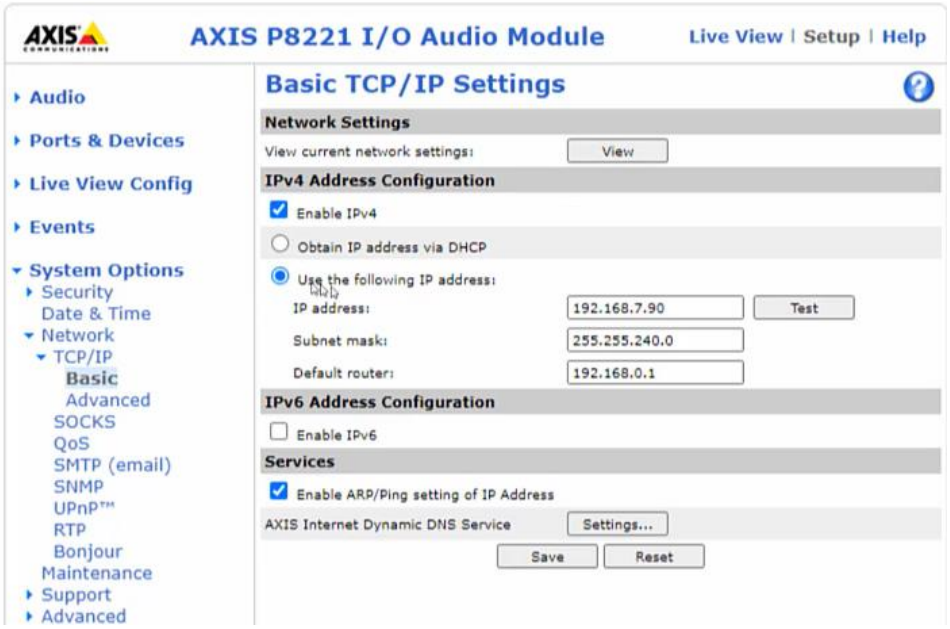
2.1 Introduction

This section will detail the procedure for setting up the two systems to effectively communicate with each other.

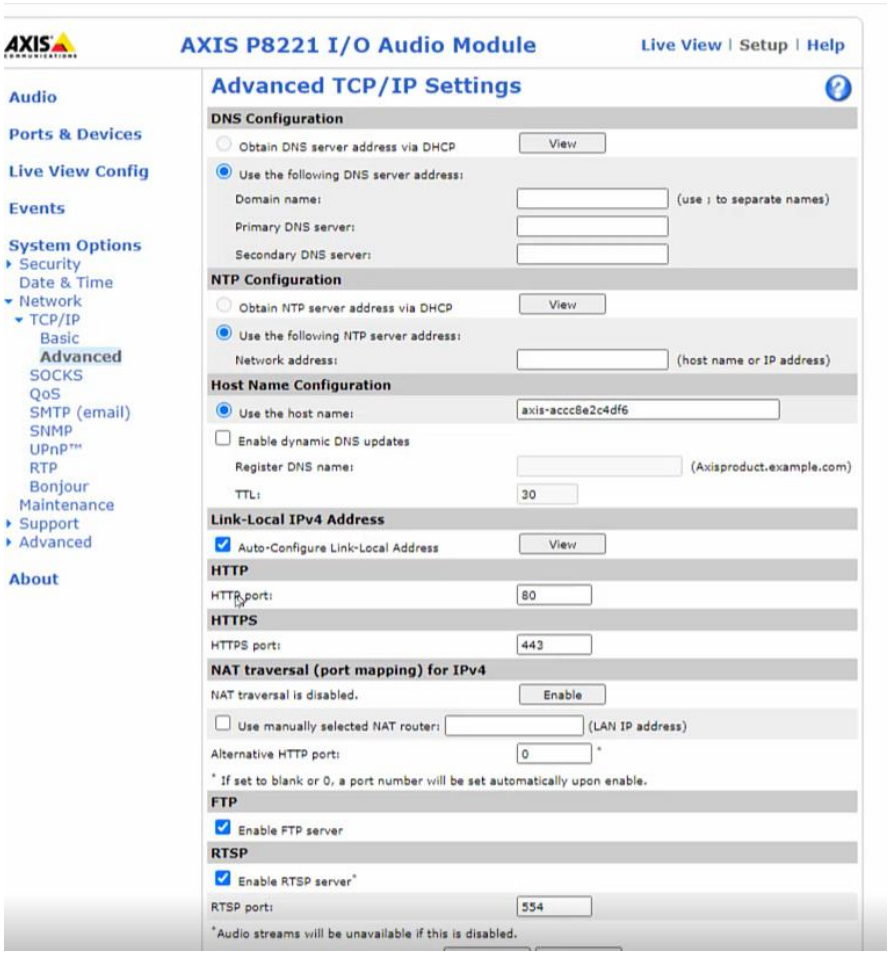
2.2 CathexisVision Specific Axis Setup (Set up the Axis device)

There are some steps to take, in the Axis device setup, before successfully adding the device to CathexisVision.

2.2.1. Setting up the Axis Device



1. Log into the Axis device through the web interface using the device IP address.
2. The user will need to set an IP address to configure the Axis device.

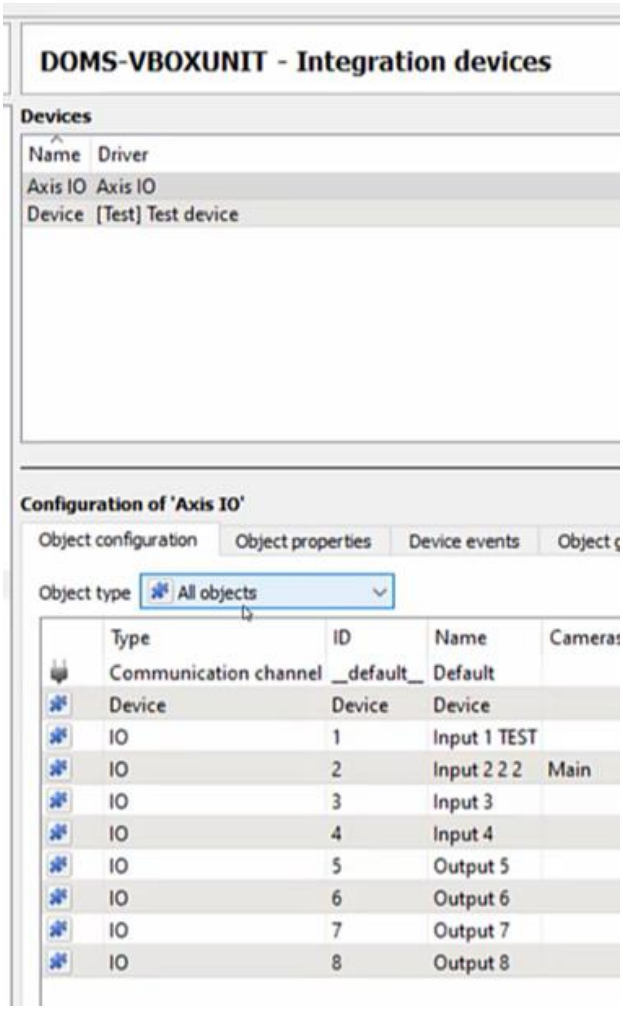


3. The port will be the same as the HTTP port (80, as above).

2.3 Devices Section (Add a New Device in CathexisVision)

Integrations are added on a server-by-server basis. They are managed in the Integration Devices panel, under the Setup Tab of the servers to which they are added. To get to the Integration Panel follow this path:

2.3.1 The Integrations Panel



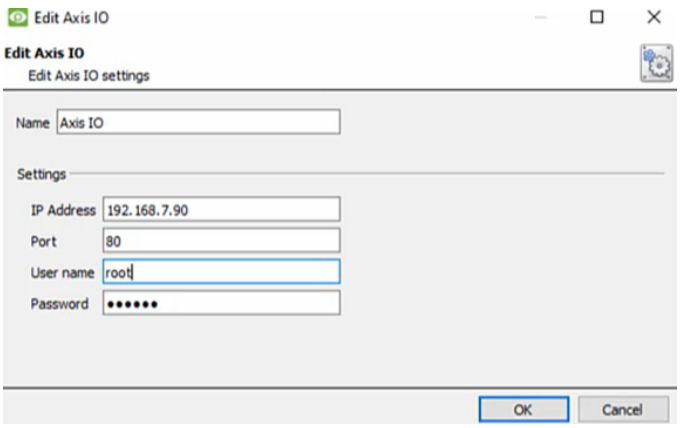
There will be two sections in the Integration Panel:

The **Devices** list will list the integration devices that are attached to the server.

The **Configuration** section enables edit/review, of the device selected in the **Devices** section.

2.3.2 Device Addition

1. Once in the Integration Panel, click on New device., in the Devices section. This will open the addition dialogue.
2. Select **Axis I/O device** driver from the list.



Give the device a descriptive **name.**

Enter the **IP address** of the Axis unit (located on the web interface, as per section 2.2.1.).

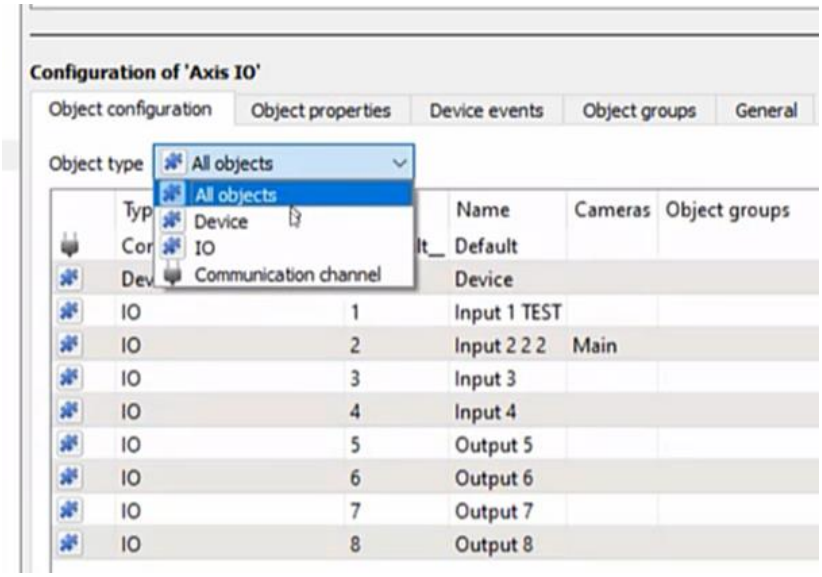
Enter in the **listening port** defined in the Axis settings, above (defaulted to 80, as per section 2.2.1.).

Enter in the admin **user name** and **Password** for the Axis device.

2.4 Configuration Section (Tabs)

The configuration section is divided up into a number of tabs. These tabs are: **Object configuration, Object properties, Device events, Groups,** and **General.**

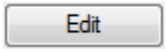
2.4.1 Object Configuration Tab



The object configuration tab is the tab where the user may view all the individual objects that comprise the integration. The **Axis** device has **Input, Output** and **Communication Channel** options.

2.4.1.1 Object Configuration Buttons

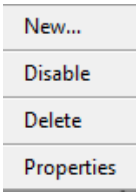
Add a new object by clicking on New.



Will open up an existing object for edition.

Is used to delete an existing object from the CathexisVision configuration.

2.4.1.2 Object Configuration Right-click Options



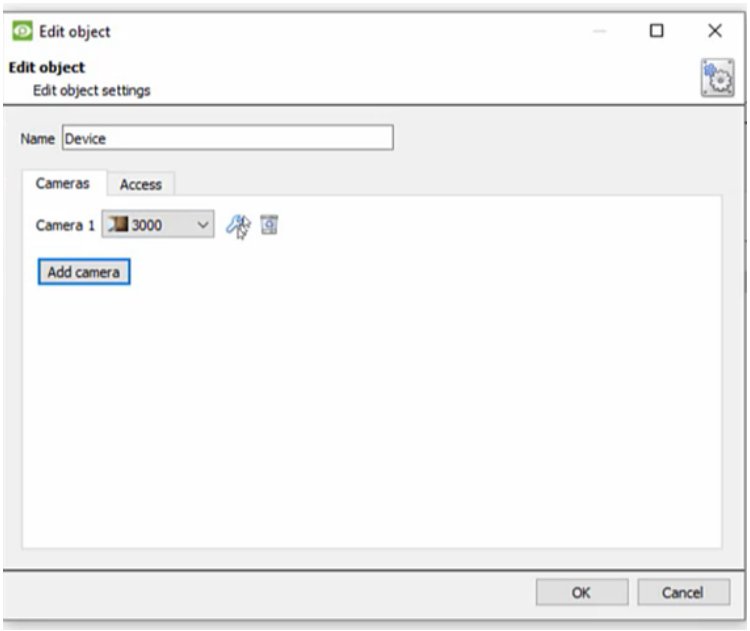
New will open up the dialogue to add a new object.

Disable/Enable allows the user to manually enable/disable individual objects.

Delete will permanently remove this object from the list.

Properties will open up the object properties. The user may edit the object from here. (Specifically the user will be able to assign cameras to this object, as well as define user access levels for it.)

Properties: Cameras



Adding a camera to an object will mean that, whenever there is an event on that object, the recording from that camera will be related to the time and date of the object event, in the Integration database.

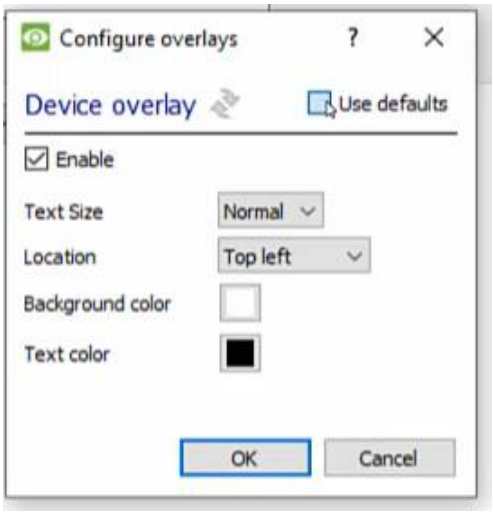
To add a camera click on "Add Camera, and select the relevant camera from the drop-down menu.

To delete a camera, click on 

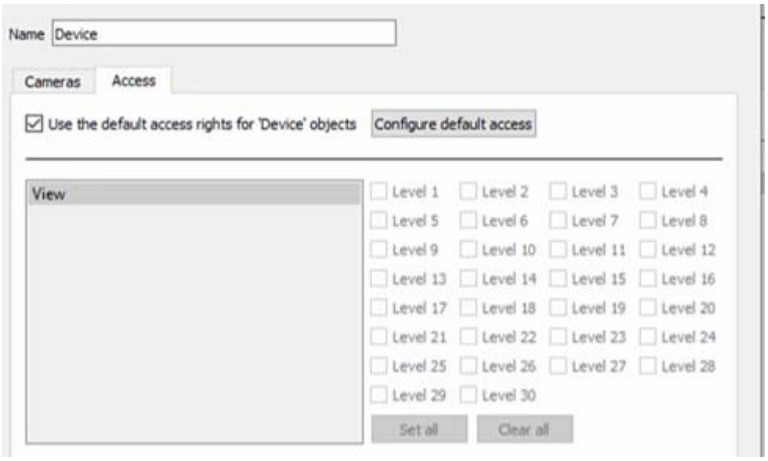
Note: Without ***continuous recording*** set up, on associated cameras, the user will run the risk of Axis objects triggering while the cameras are not recording. To only record cameras, when an object triggers, the user will need to set up **Events** that trigger a recording, when one of these objects is activated.

To configure device overlays, click  .

De-select **use defaults** and then select a location for the overlay to display from the drop-down menu.



Properties: Access

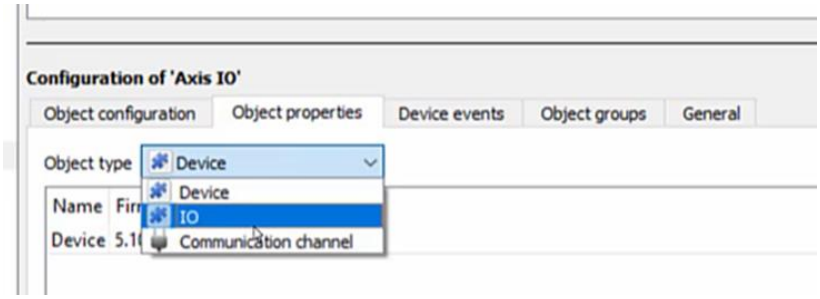


Access allows the user to protect sensitive objects, by only allowing certain user levels access to them.

Under **View** the user will be able to set the access levels.

Note: If *Use default access rights* is checked, make sure that those default rights have been correctly defined. Click on **Configure default access** to do this.

2.4.2. Objects Properties Tab



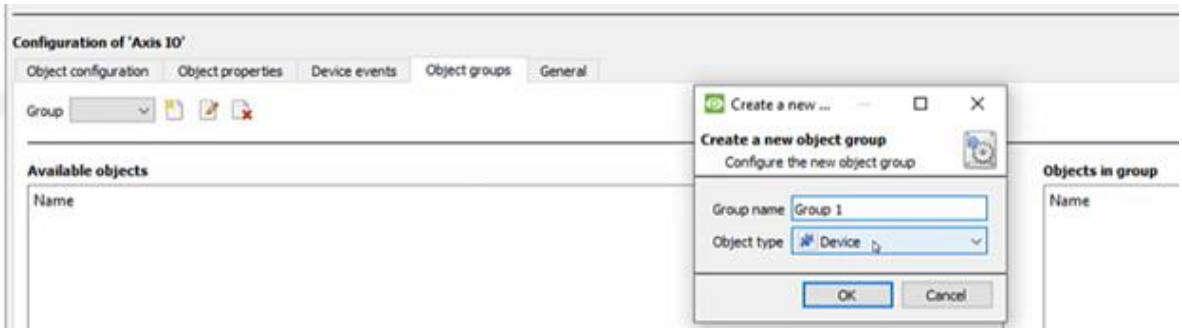
The Object properties tab allows the user to view the objects, sorted by type. In the case of the **Axis** device, the user will have the options of viewing by **Input, Output** and **Communication Channel.**

The user may *pulse* and *set* **Outputs** via the right click menu here.

2.4.3 Device Events Tab

This will list all events sent from this device. It is an excellent way for installers to see that the integration is functioning, and to monitor the events happening on site.

2.4.4 Groups Tab



The user can create groups of the same type of object.

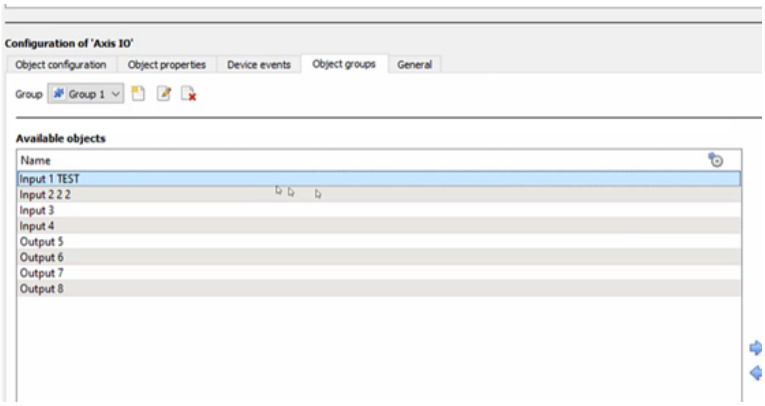
Tip: This is very useful when setting up Events, because events can be triggered by an object group. (e.g. a group will trigger, if any of the devices in that group is triggered.)

2.4.4.1 Create a Group

To create/edit an Axis group click on / . (**Note**: Once a group has been created, the user may not edit the object type of the group.)

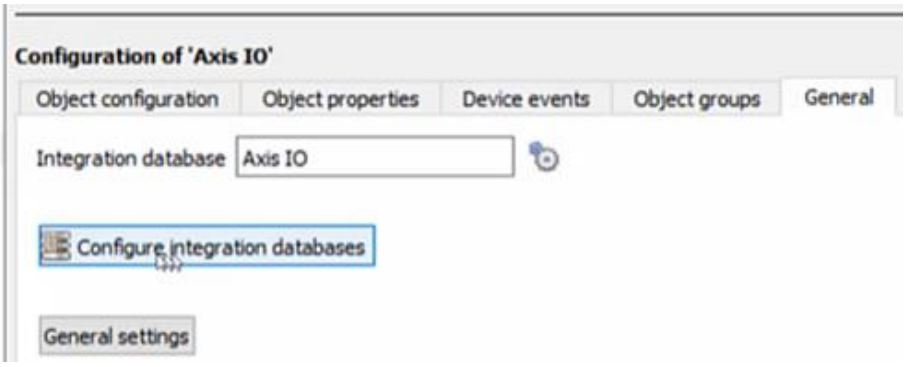
Give the group a descriptive **Group name.**

Click on the drop-down menu to select the **Object type** that must be grouped.



Then a list of Available Objects will appear. To add/remove these objects to the group select them (it is possible to select multiple at a time), and click on / .

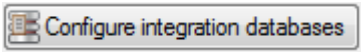
2.4.5 General tab



Currently the general tab deals with the **Integration database**. Here the user will be able to select an existing database, or will be able to configure a new database for the integration.

Important Note: Each integrated device needs to be attached to an Integration database. Without setting up/adding a database here the integration will not function properly within the CathexisVision system.

2.4.5.1 Configure a new database

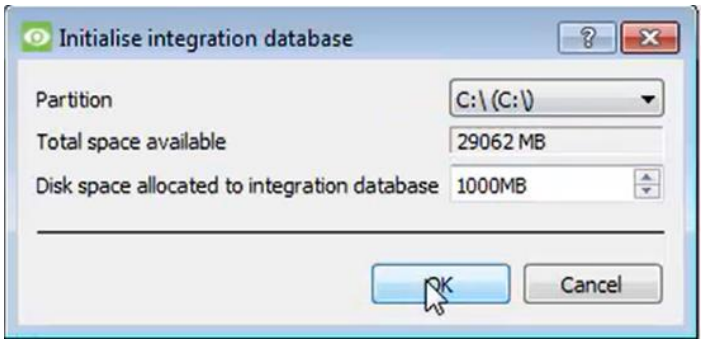


If there is no database created yet, clicking on this button will take the user to the integration database setup.

Initialise the Integration Database

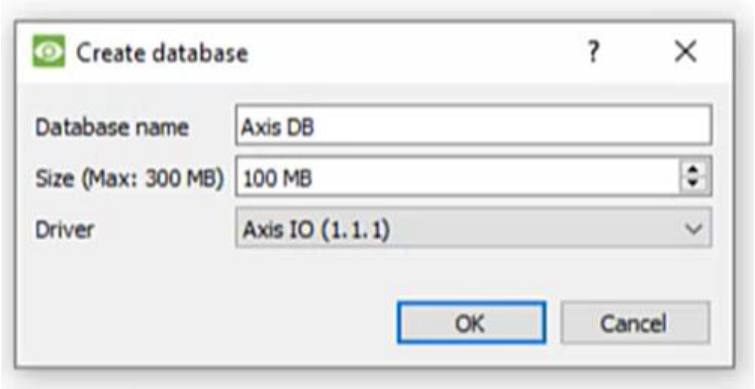
The first time that the user adds an integration database he/she will have to initialise this feature on the unit. This will add a broad database, within which the user will be adding all of their integrated device's databases.

Select the unit to be added the database to, from the list on the left, and click Initialise integration database. Choose which partition the database will be formed on, and select how much space it will take up.



Add a New Devices Database

After initialisation, the user will be able to add the database for the integration that they are working with. Click on the New button, at the bottom of the Create database window.

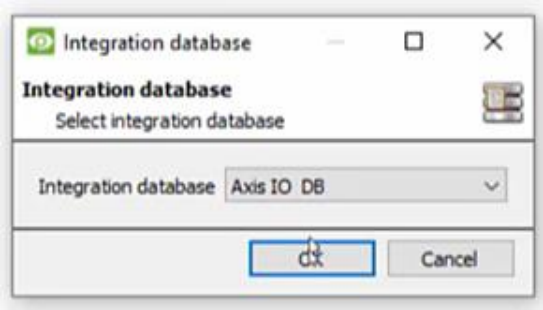


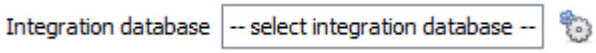
Give the Integration database a descriptive **Database Name**. e.g. Axis.

Allocate a **Size** to the new device database.

Choose the device **Driver** that the device will be using, and click on OK to create the database.

Select the Axis Integration database





Once a database has been created the user may select it by clicking on the icon, and selecting it in the dialogue that appears. Only databases which relate to the device which the user is adding should appear.

3. Camera Tab Overlay Setup

Once all the relevant settings have been configured, the input controller overlay can be pulled through over the appropriate camera feed.

Note: Cameras must have already been added to objects, and overlays must have already been configured.

3.1 Video Feed Options Panel

To bring up the overlay, click the arrow to the left of the screen, to pop out the Video feed options panel. The Video feed options panel will present options specific to the settings configured for that video feed.

3.2 Select the Overlay

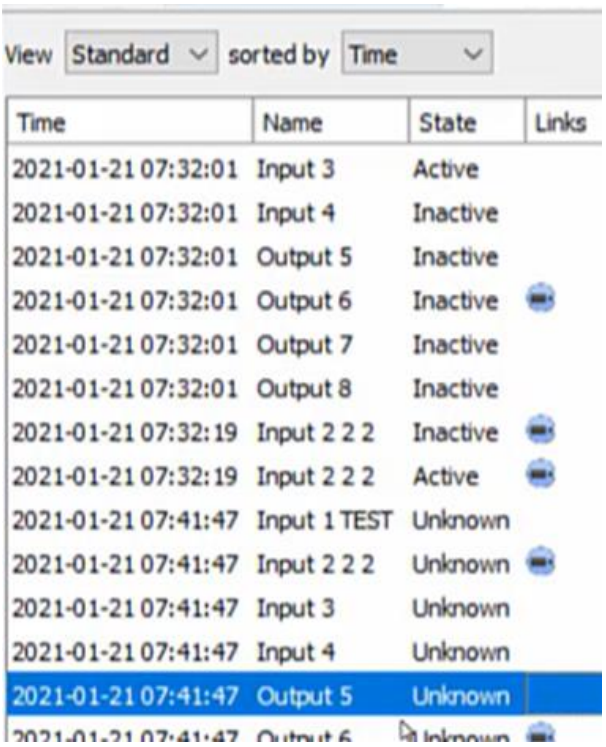
Clicking the  icon will bring up the overlay options for this video feed.

Select the overlay and it will appear over the video feed, as shown above.

4. Database

4.1 Introduction

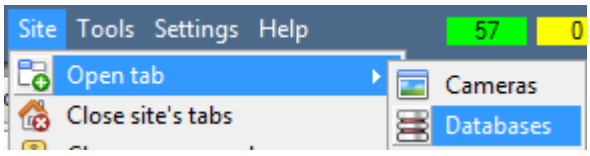
The database tab will allow the user to navigate the databased entries, for each individual database. In the database tab each database is presented as a table. It has built in filters, and the ability to navigate by timestamp. If a database entry has an associated recording the user will also be able to launch this recording, from within the database tab.

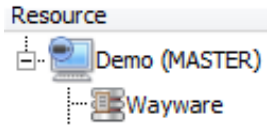


Most integrations will have a different database presentation, and unique filters, due to the different parameters sent to CathexisVision by the integrated device.

The Axis database is information rich. This is an example of some of the information that is included.

4.2 Navigate to the Database

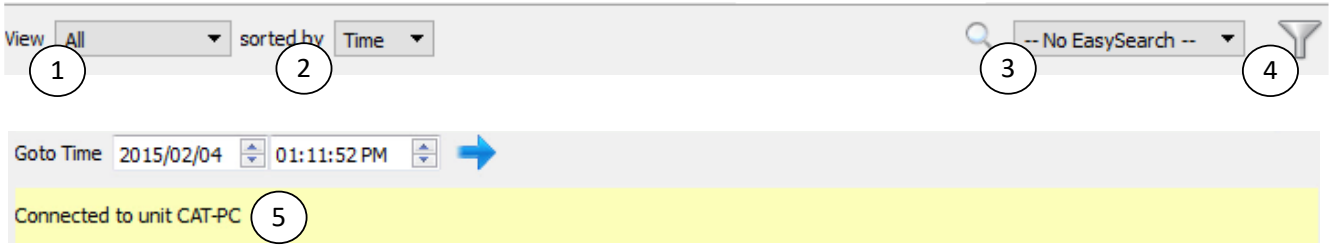




The user may view the information stored in the Integration database, by following the path they see to the left.

This will take the user to the Database Tab.
Once in the databases tab select the relevant integration database. The databases are ordered under the NVRs that they are attached to.

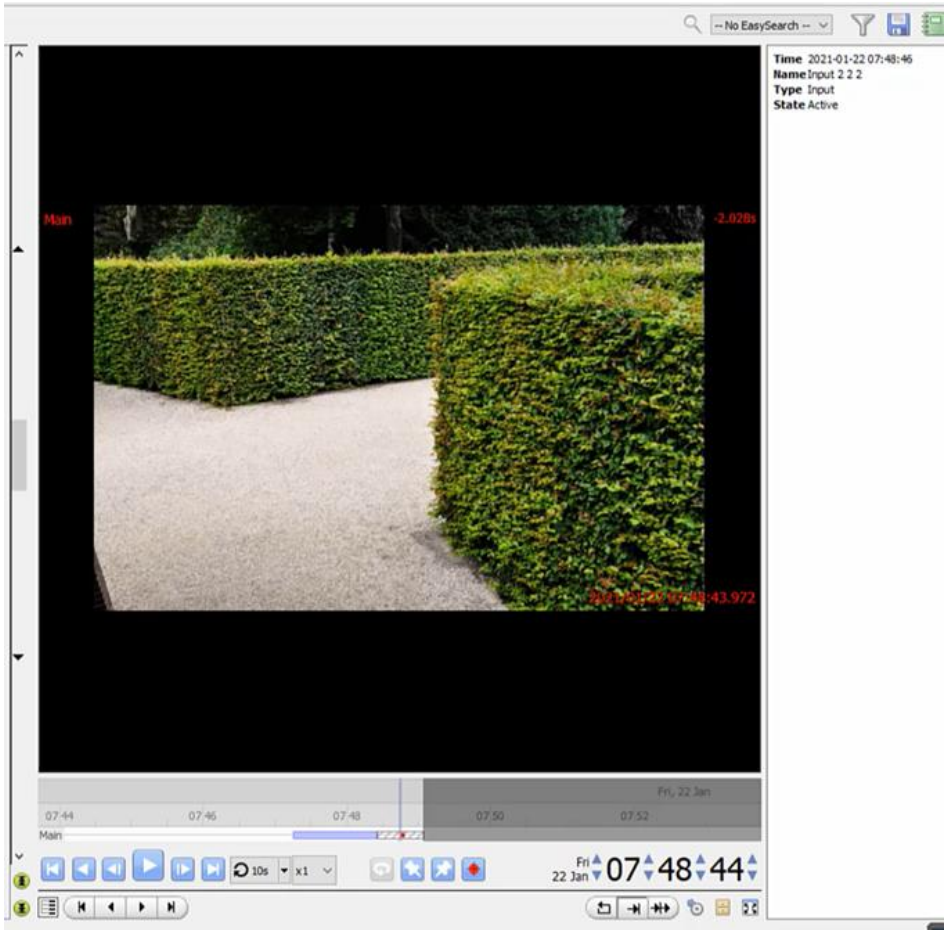
4.3 Database Interface



① **View**	The user may change the way that the database is presented. Some integration databases have multiple view options. The **Axis** database has **standard** and **all** options.
② **Sorted By**	The user may sort the Events based on the following parameters: **Time.**
③ **Easy Search**	The easy search option allows the user to quickly search the database within one of the following options: **Name, State** and **Name and State.**
④ **Filter**	Filter offers a more advanced manner of sorting information in the Integration Database table. Once the filters dialogue is open there are the following options: 1. To **enable** filters check this box: Enable filters 2. To **add** a new filter click on . The filter icon will change to when filters are active. 3. To **delete** an added filter click on . The options in this integration are **Time, Name**, and **State.** **Note**: 1. Multiple filters may be run simultaneously. And the user may even filter using the same parameter more than once. 2. To change a filter click on the blue hyperlinked text. (For example, click on *Timestamp* to change the filter from Timestamp, to any of the other available options.)
⑤ Go to Time	This will allow the user to go to a specific point in time, down to the second. To navigate to a timestamp set the time using the time and date boxes, and then click on the icon.

4.3.1 Viewing an Entry's Associated Recording

If the user has attached cameras to device objects in the Integration setup and if there are available recordings for those cameras, then each integration database entry will have a corresponding recording. To view a databased event's recording, double-click it. A floating replay window will appear, from which the user may review and archive video content.



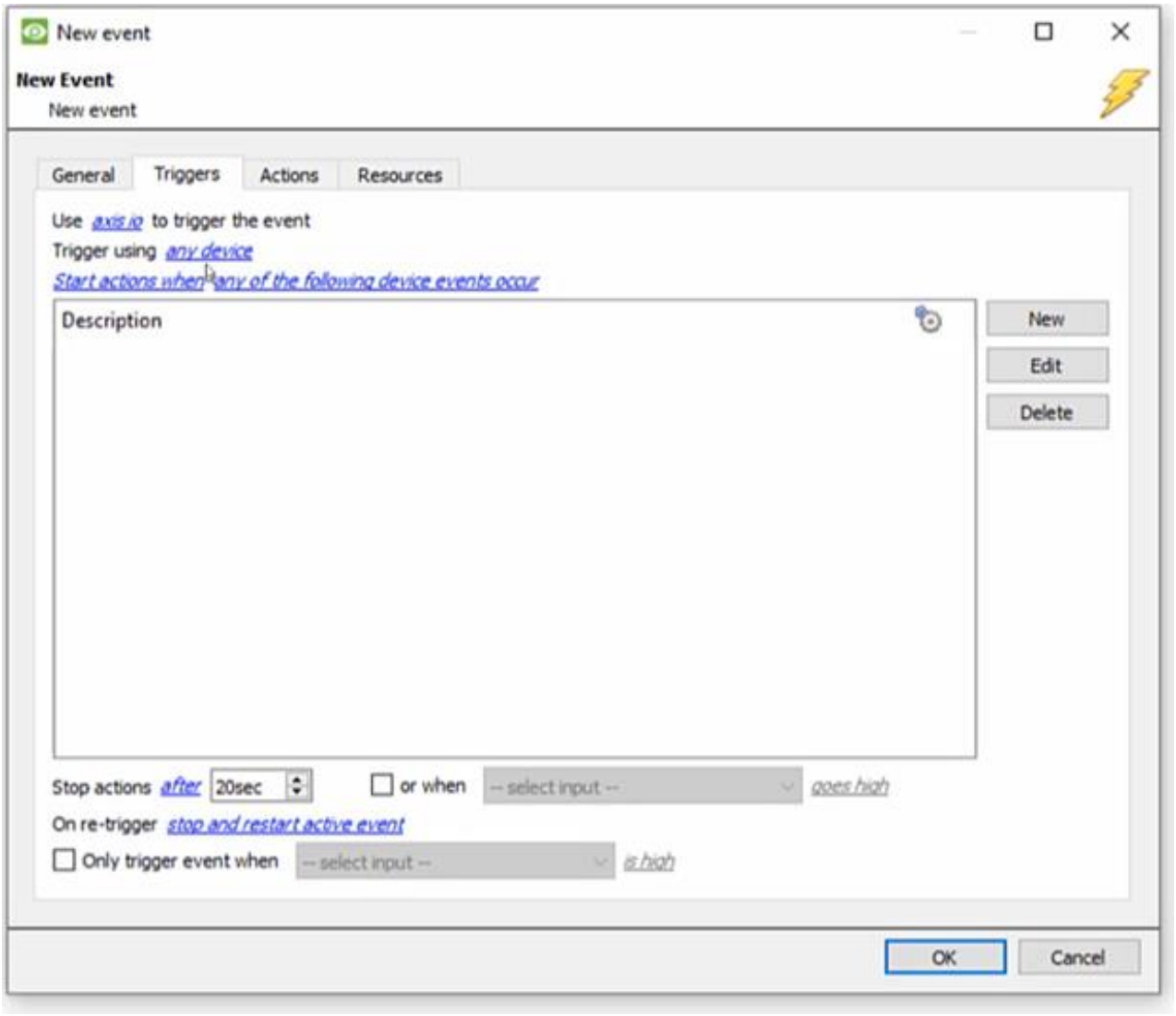
5. Events

5.1. Introduction

A CathexisVision Event has a trigger, which causes an action. The user may set integrated devices to act as triggers, or as actions. This document will detail the Axis specific aspects of Events. There is a comprehensive guide to CathexisVision Events in the main setup manual.

5.1.1. Event Window

Events in CathexisVision are setup via the Event Window. This has 4 tabs. In the **General Tab** an event is given a name, description, schedule and priority. In the **Triggers Tab** the trigger/s for the event is defined. In the **Actions Tab** the action/s which the event takes is defined. In the **Resources Tab** the various site resources which can be used as part of an event are defined.



5.2. Creating an Event

To create an event using the Axis device, enter the Events management area:

Once in Events management click on New. This will open up the New Event window.

5.2.1. While/When and Any/All

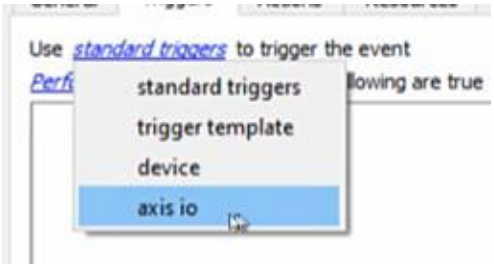
When triggering on an object there will be the option to trigger **while/when** a trigger is active. The user will also be able to select multiple triggers, and define whether **all/any** of the triggers need to be active to start an event.

As usual, to change these settings click on the related, blue, hyperlinks.

5.3. Triggers

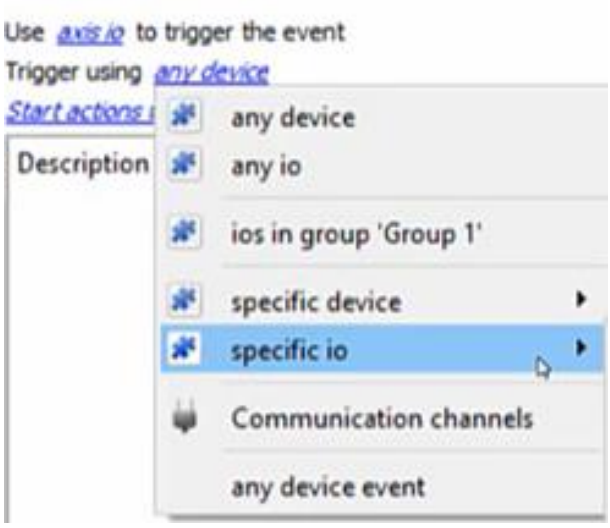
A trigger is the user defined input that tells the event to start. The trigger causes the subsequent action (which the user will also define).

5.3.1. Set the device as the trigger



If the user is creating a new event, the trigger type will default to: Use standard triggers. To define which device to trigger the event, click on the hyperlink after “use”. To set it as the Axis device, click on the hyperlink, and select the relevant device name from the dropdown menu.

5.3.2. Trigger Types (Trigger Using)



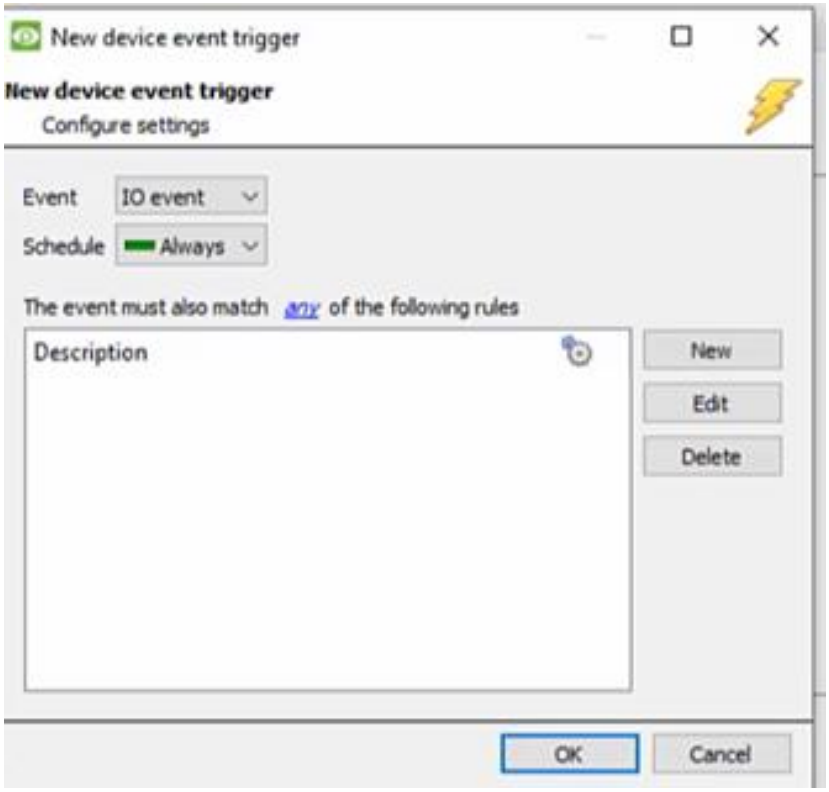
It is useful to think of this as a **master trigger type**.

Any input/output will trigger when any of the selected object type triggers.
Specific input/output will allow the user to choose specific counters to trigger an event.
Object in group... If the user has set up a group it will appear here in this list.
Communication channels will trigger only on the Communication channels.
Any device event will trigger on any event that occurs on the device. Within the "any device event" setup the user may set "device event rules" which will constrain which device events will trigger the event.

Note for group triggers: For this event to be databased under the name of a specific object, and not the name of the triggering group, simply modify the Description field in the **General tab** of the Event setup. Click on the  to see a list of available descriptions.

5.3.3. Define the Trigger

After selecting a master trigger type, the user will need to add a trigger to the event. Click on New in the Triggers tab. This will bring up the dialogue box below, for the various trigger types:

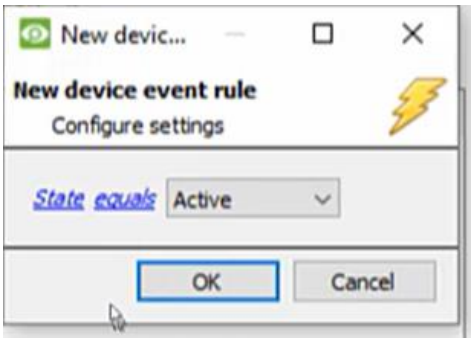


For example, within the *any device event* option the user may choose what type of device Event will be the trigger. Choose from the drop-down menu. The Axis integration offers **Input, Output** device events**.**

Note: the user may set multiple constraints (**Device Event Triggers**). If the user does not define a constraint, every single device event will trigger this event.

To add/edit/delete a **Device Event Trigger** (a constraint) use the **New, Edit,** and **Delete** buttons on the right-hand side.

Choose if *any*, or *all* constraints need to be fulfilled to set off a trigger.

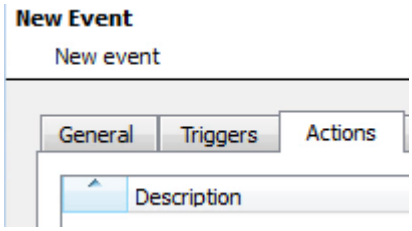


To change the constraint, click on the first hyperlink, this will bring up the full list of available rules.

To modify the way this rule will be treated click on the second hyperlink (*equals* in the example) this will show the rules options.

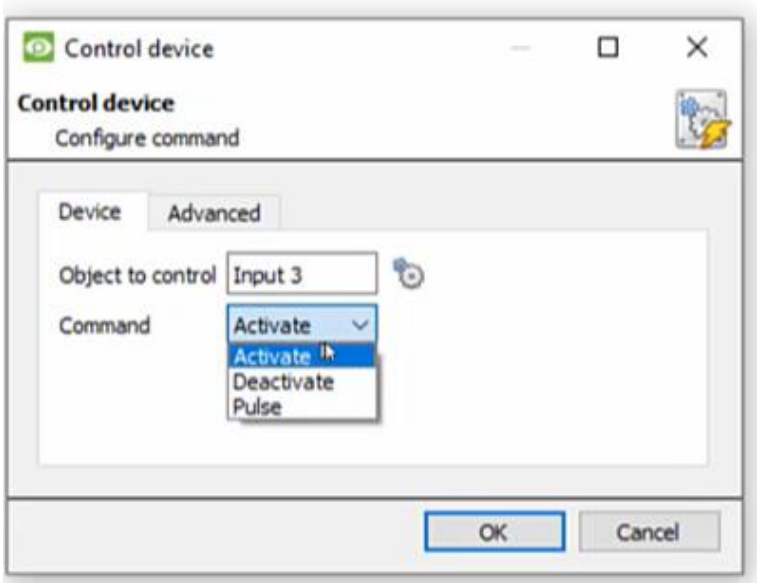
Note: When all available options are known to CathexisVision there will be a drop-down menu. When these variables are not pre-defined the user will need to fill them in. The information pulled through to the events is information sent to CathexisVision from the Axis device, see the Axis settings for the strings needed here.

5.4. Actions



Once the user has defined the triggers that are going to initiate the event, they will need to define some Actions. With many integrations there will be the option to control the integrated device, as one of the actions.

5.4.1. Adding an Action



Object to control will allow the user to select which object to send commands to. Click on the icon to select the object. Select the Object from the list.

Once the user has selected an object the command options (**Activate**, **Deactivate** or **Pulse**) for that object will populate the **Command** drop down menu.

6. Maps

It is possible to add the Axis device to a site map, which will allow for a number of action options when objects are triggered. The following objects and associated messages may be used to trigger map actions:

System Object:	Online/Offline state changes. CathexisVision system Event triggers.
Scale:	CathexisVision system Event triggers.

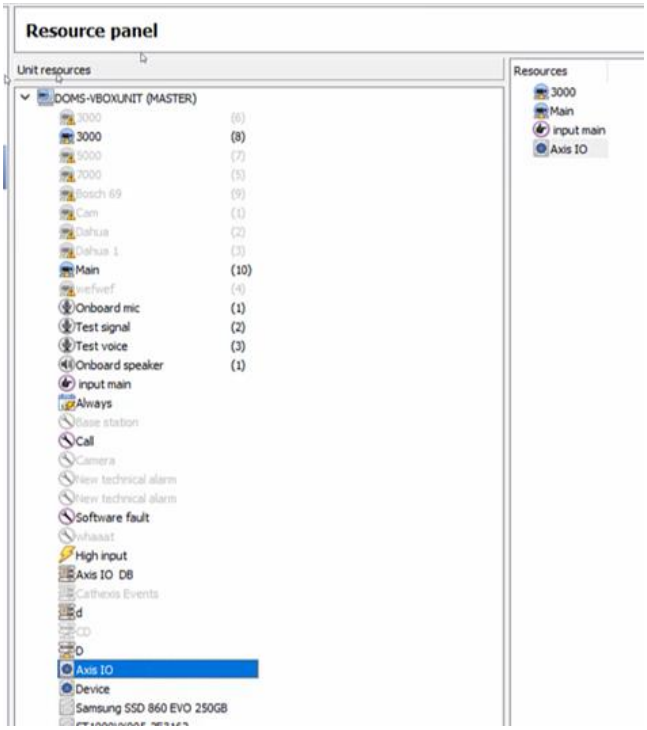
Note: This section will only deal with the specifics of adding the Axis device to the map and configuring supported map Events. For more information on using the CathexisVision Map Editor and Map Tab, please consult the dedicated and detailed **Map Editor Operation Manual**.

6.1. Add the Device as a Resource

If this has not already been done, the device must be added as a resource to be added to the map.

6.1.1. Resources Panel

Setup tab → Resources Panel 



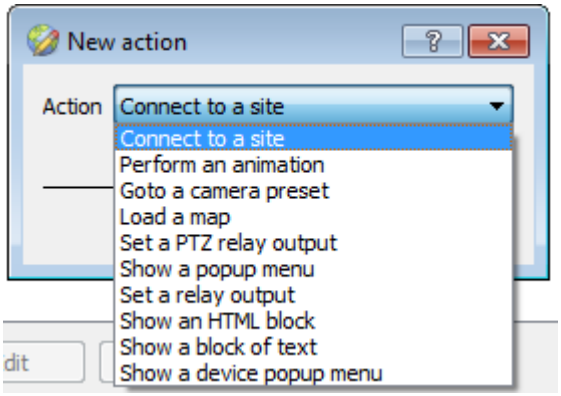
1. Navigate to the **Resource Panel** by following **Site → Open Tab → Setup → Resource Panel.**

2. Drag the Axis device from the **Unit Resources** list into the **Resources** list, on the right.

6.2. Add the Device to the Map

Once the Axis device has been added as a **Resource**, it will be available to drag onto the map area from the **Site Resources** list.

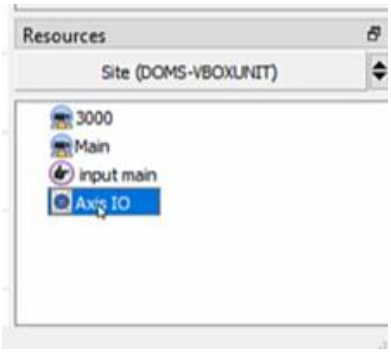
6.2.1. Connect to Site



At the bottom right-hand of the Map Editor screen, click the drop-down menu to select the site to connect to.

Once connected to site, all the resources available will populate the panel below.

6.2.2. Adding Device Objects

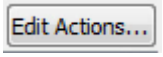


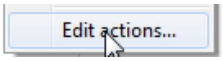
Drag the Axis device from the Site Resources list onto the map area. All of the device objects will appear in a list. Select an object.

Note: To add multiple objects, repeatedly drag-and-drop the device onto the map area and select the desired objects individually.

Note: Communication objects do not support Map functionality. Only system and objects function on maps.

6.3. Adding Device Actions

To add actions to the device objects, either select the object on the map and click 

or right-click the map object and select 

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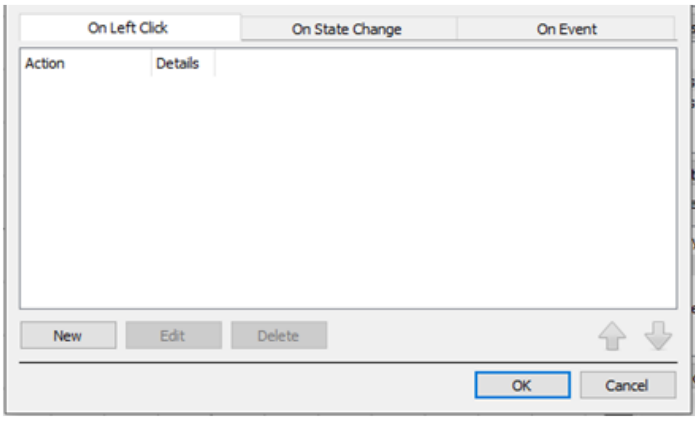


Actions may be set for **Left-Clicks**, **State Changes, and Events**. See descriptions below.

Once configured, the list of actions will populate the white space in the relevant tabs.

To create a new action, select New.

6.3.1. Map Object Device Action Tabs

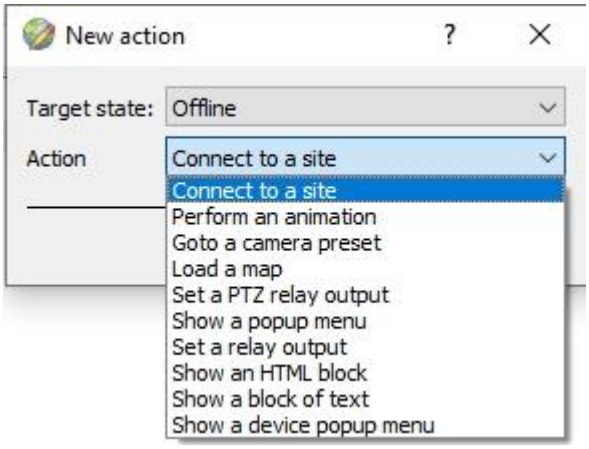
Map actions may be set to trigger on **Left-Clicks**, **State Changes, and Events.** The table below illustrates the triggers that may be used to generate a map action.

Tab	Map Action Trigger Detail
On Left Click	Left-clicking on the object in the map will trigger an associated map action. See below for actions.
On State Change	When the state of the selected object changes, the map action will occur. State change options will differ according to the selected object. Note: State change is only supported for System objects.
On Event	When a CathexisVision system Event occurs, that trigger can be used to trigger a map action. System Event triggers are supported for System objects (any Event) and scale objects.

6.3.2. Action Options

Click New in the relevant tab of the action window.

Note: Multiple actions may be added to the map objects.



Action options are the same for all tabs, except for the Event tab, which has the added option to **Show a Device Event Notification**.

Click **OK** in the Action window once all required actions have been set for the various map objects.

Once finished, save the map.

NB: The map **must not be saved** in the default folder or Work folder of the installation directory. Instead, create a new directory when saving; e.g. **C:\Maps.**

6.4. Map Tab

The saved map needs to be uploaded to CathexisVision. Once the map is open, all objects added to the map area in the Map Editor will be visible on the map, and all actions set will be available.

7. Conclusion

Please remember that this app-note was designed to deal specifically with this integration. For further information about the CathexisVision software please consult the main manual (http://cathexisvideo.com/).

For support, please contact support@cat.co.za