ISS LPR and Container Recognition App-note

3 March 2022

Contents

1. Introduction

This document details the integration of the ISS SecurOS LPR/CR with CathexisVision. The ISS SecurOS LPR/Container Recognition is the video analytics module which provides License Plate Recognition and recognises ISO codes from cargo containers at port entrances or exits.

The module is capable of capturing license plate information at 155 mph (250 km/h) and in all kinds of weather conditions, including fog, rain, and snow. It also captures codes printed horizontally or vertically from above, the back, and either side of a container. The information captured by the ISS SecurOS LPR/CR is then sent to the CathexisVision system.

Note:

1. For information regarding the regular operation of ISS SecurOS LPR/Container Recognition services, please consult the relevant documentation.

2. There is a General Integration section in the main *CathexisVision Setup Manual*. It has vital information about creating an integration database, as well as a general introduction to the Integration Panel. **Read over this section**.

1.1 Requirements

1.1.1 General Requirements

- CathexisVision 2019 Service Pack 3 and later.

Note: The ISS SecurOS LPR/CR system posts data to the configured port on the CathexisVision NVR. Cameras are configured in CathexisVision and read-only streams (typically H.264 800x600), and are pulled into ISS SecurOS.

1.1.2 Licensing Requirements

The Cathexis ISS SecurOS LPR integration license requirements are as follows:

License	Name	Description
CISS-2000	ISS Device	This license is the "base" license to integrate with an LPR/container recognition system. It is applied to the server to which the LPR/container recognition device is connected. It will allow for the connection of a single ISS LPR/container recognition controller.
CISS-1001	ISS Lane	These licenses apply to the lanes in an LPR/container recognition system. The **CISS-1001** will license a single lane and may be added on a lane-by-lane basis.
CISS-3000	ISS Bundle	This license includes the **CISS-2000 ISS** LPR/container recognition device license, and also provides support for unlimited **CISS-1001** reader licenses.

Note: In this integration, individual devices will require a license for each device.

1.2 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 an integration is added to the CathexisVision system, a device is added. The messages received from the device are called Device Events.
Objects	Objects are the individual pieces of hardware that comprise the integration. There may be 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.

1.3 Features and Abilities

- The ISS SecurOS system is capable of detecting number plates, as well as shipping container IDs on trucks, and it sends this information to CathexisVision via an IP address and Port number.
- CathexisVision receives event messages from the ISS LPR device.
- System and device event messages can be used to trigger a CathexisVision system event.

1.3.1 Device Objects

Objects are populated automatically as soon as communication between the ISS LPR device and CathexisVision is established.

Object Type		Abilities
General		- This integration has Container Detection, Lane, and Communication Channel objects. - Objects are automatically created as soon as communication between the CathexisVision unit and device is established. - Device objects can be commanded as an action of a CathexisVision system event. - Container Detection, Lane, and Communication events on the device can be used to trigger CathexisVision system events. - Lane and Container Detection objects support overlays. - Objects may be linked to cameras to associate device events with video footage.
Container Detection	**Object Properties**	- IDs. - Name.
Lane	**Object Properties**	IDs.

Communication Channel	Object Properties	• Name. • Licensed.
		• IDs. • Name. • Channel status. • Details. • Creation type. • Creation time. • Idle time.

1.3.2 Device Events

The CathexisVision ISS integration generates Detection Events, which are triggered on the device and reflected in CathexisVision.

Event Element		Features/Abilities
General		• Events triggered on the device are sent to CathexisVision. • Device event types are …
Device Event Types	Detection	• ID. • Start time. • End time. • Lane. • License plate. • Container 1. • Container 2. • Container 3. • Container valid 1. • Container valid 2. • Container valid 3.
CathexisVision Event Actions		• Events generated by the device are reflected in CathexisVision, and can be used to create CathexisVision system events. • The device and device objects *cannot* be controlled as part of the system events.

1.3.3 Metadatabase

A unique metadatabase is created on the CathexisVision server for this integration. It is fully searchable, with configurable filters based on device event information (as above), and time stamping. The filtered event/s, and the associated video, will then be available for review in a new window from which an archive can be created and exported.

Database Element	Features/Abilities
General	• All device events are databased. • Database entries include the footage from cameras linked to device objects. • Multiple cameras may be linked to multiple objects. • Device event metadata is displayed where applicable. • Databased device events may be viewed in the embedded video player, which includes the usual CathexisVision video review tools.
View Options	• Detection.
Sort Options	• Time.
Easy Search	• License plate • Container • Lane
Filter	• Start time. • End time. • License plate. • Container. • Lane
Export	Database entries may be exported in CSV and PDF format.

A NOTE ON CAMERA CHANNELS

The CathexisVision software packages have **limits on camera channels**. A multi-sensor camera is physically a single device (camera) but it requires a camera channel for each one of the internal cameras. The same applies to an encoder: a 16-channel encoder will account for 16 camera channels on the CathexisVision software, even though it is a single device. Even when a camera or device only uses a single IP license, the camera channel limit will still apply.

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*

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2. Device Addition and Configuration

This section will detail the procedure for setting up CathexisVision and ISS SecurOS to effectively communicate with each other. CathexisVision uses the TCP listening port set up on ISS SecurOS LPR to receive the events.

2.1 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:
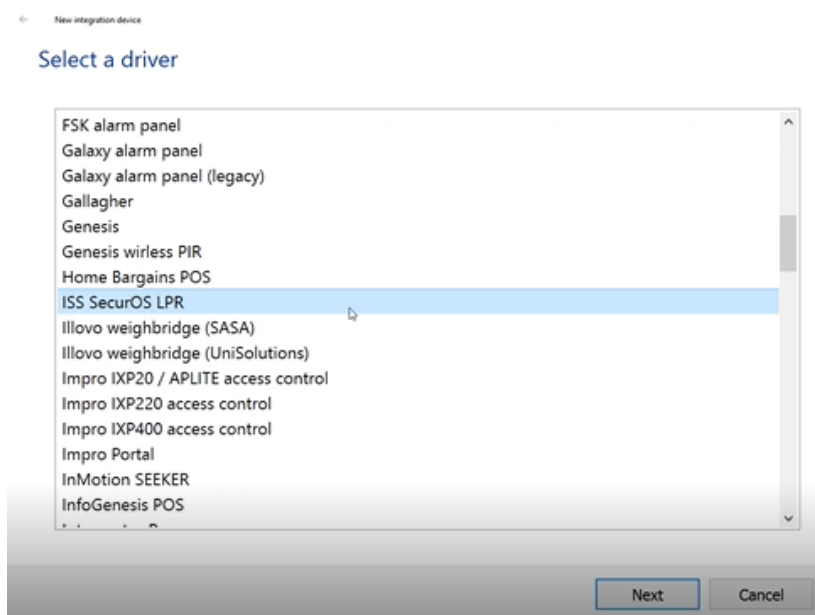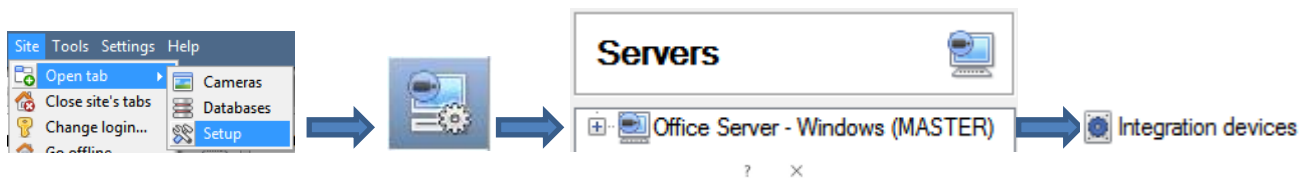
There are two sections in the Integration Panel:

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

The **Configuration** section enables editing/reviewing, the device selected in the **Devices** section.

2.1.1 Device Addition

1. Once in the Integration Panel, click on the **New device** button, in the Devices section. This will open the addition dialogue.

2. Select **ISS SecurOS LPR** driver from the list.

← New integration device

Configure the device

Name ISS Integration

Connection

TCP listen port 2621

Give the device a descriptive **name.**

Enter the **port number**.

2.2 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.**

2.2.1 Object Configuration Tab

Configuration of 'ISS Integration'

Object configuration	Object properties	Device events	Object groups	General			

Object type All objects

	Type	ID	Name	Cameras	Object groups	License
	Communication channel	_default_	Default			
	Container detection	container detection lane 1 cam 1	container detection lane 1 cam 1	Dahua		
	Container detection	container detection lane 1 cam 2	container detection lane 1 cam 2			
	Container detection	container detection lane 1 cam 3	container detection lane 1 cam 3			
	Lane	0	0			✓
	Lane	lane 1	lane 1	Dahua, Dahua Cam Rac		✓
	Lane	lane ID 1	lane ID 1	Dahua, Dahua Cam Rac		✓

The object configuration tab is the tab where all the individual objects that comprise the integration may be viewed. The ISS integration device has four object types **Container detection, Lane, and Communication channel.**

2.2.1.1 Object Configuration Buttons

New
Edit
Delete
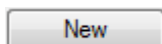
Add a new object by clicking on **New**.
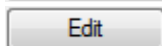
Click **Edit** to change an existing object.

Click **Delete** to remove an existing object from the CathexisVision configuration.

## 2.2.1.2 Object Configuration Right-click Options
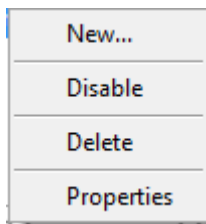
New will open up the dialogue box to add a new object.

Disable/Enable allows manually enabling/disabling individual objects.

Delete will permanently remove this object from the list.

Properties will open up the object properties. Edit the object from here: assign cameras and define user access levels.

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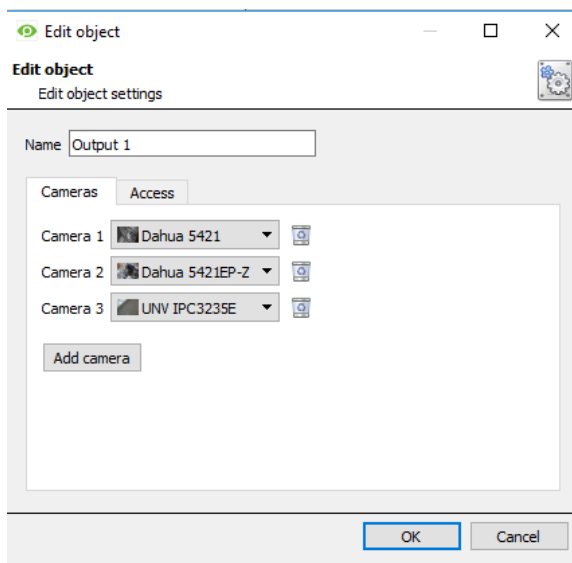
Adding a camera to an object will mean that, whenever there is an event on that object, the recording from that camera will be related to the time and date of the object event, in the Integration database.

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

To delete a camera, click on the trash icon.

Note:

1. The cameras used by ISS SecurOS for LPR and Container detection are configured in CathexisVision. ISS SecurOS pulls a read-only stream – typically H.264 800x600 from these cameras.

2. If **continuous recording** is not set up, on associated cameras, there is the risk of device objects triggering while the cameras are not recording. In order to only record cameras when an object triggers, set up **Events** that trigger a recording, when one of these objects is activated.

Properties: Access

Access protects sensitive objects, by only allowing certain user levels access to them.

Under **View**, 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.

Container Detection

Right-clicking on a container gives the user the option to **Disable** the Container detection object.

Lane

Right-clicking on a Lane gives the user the option to **Disable Lane** notifications. The license for the Lane can also be prioritised.

Communication Channel

Right-clicking on a **Communication channel** gives the user the option to **Disable** notifications.
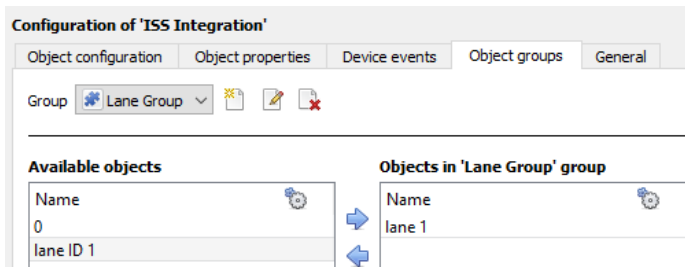
2.2.2 Device Events Tab

This lists all Events sent from the device. Installers can ensure that the integration is functioning, and monitor the Events happening on site.

2.2.3 Groups Tab

Create groups of the same type of object.

Tip: This is 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.)

2.2.3.1 Create a Group
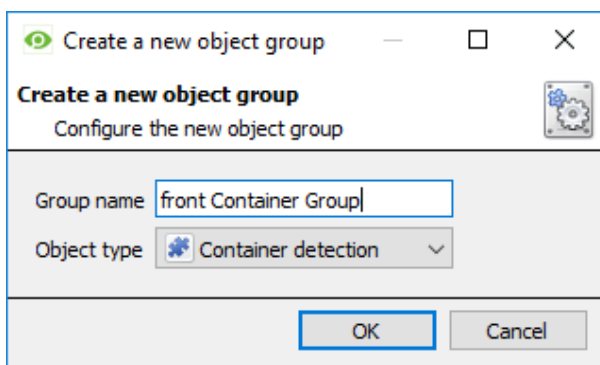
To create/edit an object group click on ⬜ / ✏️.
Note: Once a group has been created, the object type of the group may not be edited.)

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

Click on the drop-down menu to select the **Object type** to group.
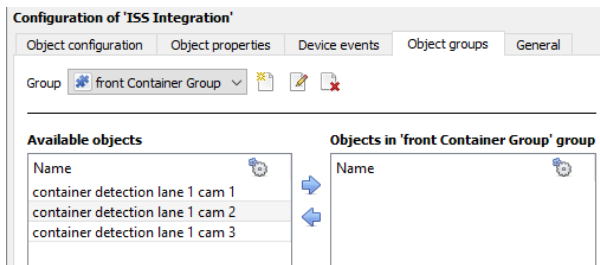
A list of Available Objects will appear. To add/remove these objects to, or from, the group, select them (multiple objects may be selected at a time), and click ➡️ / ⬅️.

2.2.4 General Tab
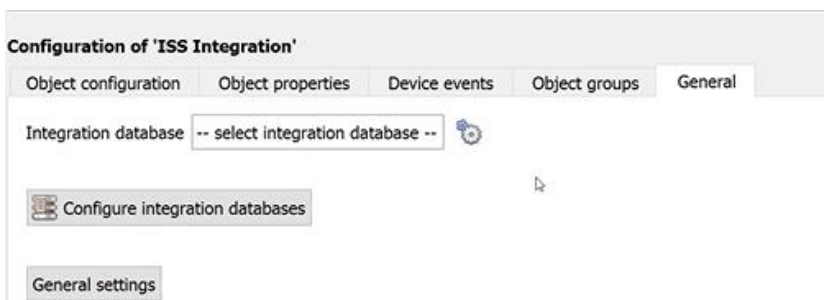
Currently the General tab deals with the **Integration database**. Here, select an existing database, or configure a new database for the integration.

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.

2.2.4.1 Configure a New Database
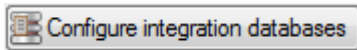
 If a database is not yet created, clicking on this button will navigate to the integration database setup.
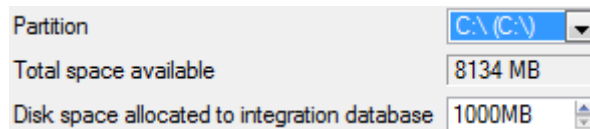
Initialise the Integration Database
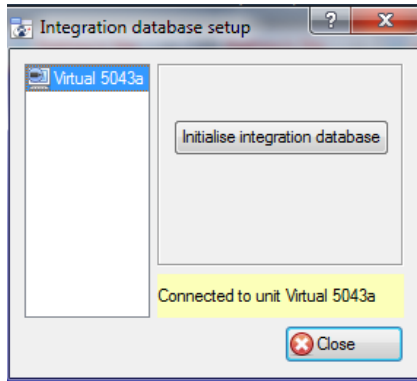
 The first time an integration database is added, initialise this feature on the unit. This will add a broad database, within which all of the integrated device's databases will be added.

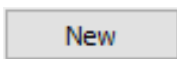Select the unit to which the database will be added from the list on the left.
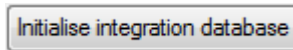
 Then click the initialise database button.

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, add the database for the integration being worked with.

 Click the New button at the bottom of the **Create database** window.
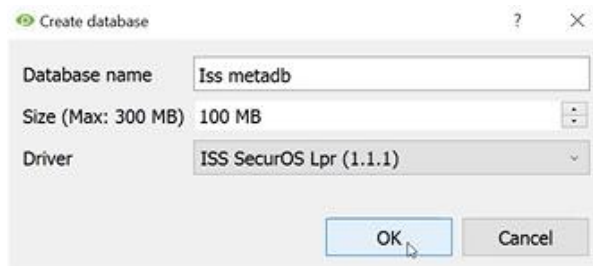
 Give the Integration database a descriptive **Database Name**. E.g. ISS MetaDb.

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

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

2.2.4.2 Select the Integration Database
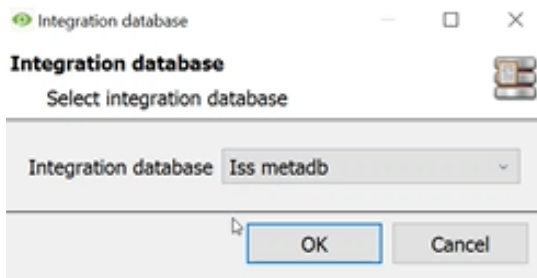
Integration database | -- select integration database --

Once a database has been created, the user may select it by clicking on the settings icon, and selecting it in the dialogue that appears.

Only databases which relate to the device being added should appear.
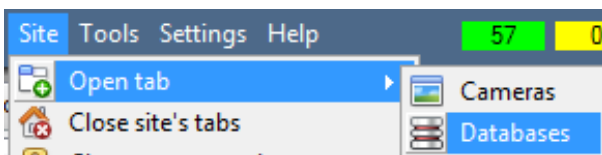
3. Database

The Databases tab allows one to navigate to the databased entries, for each individual database. In the Databases 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, it is possible to launch this recording, from within the Databases tab.

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

3.1 Navigate to the Database

View the information stored in the Integration database, by following the path seen to the left.
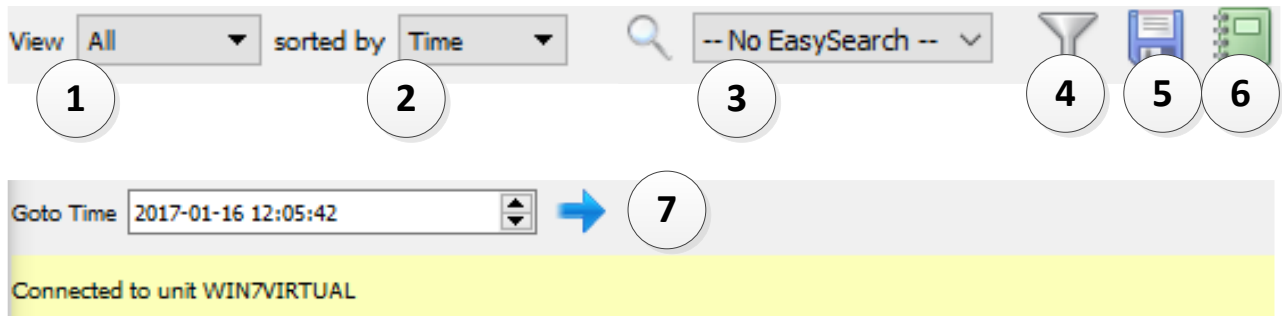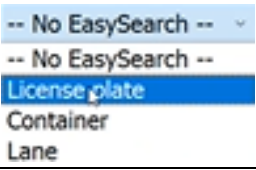
This navigates to the Databases Tab.

When the databases tab opens, select the relevant integration database from the database panel that opens on the left-hand side. The databases are ordered under the NVRs that they are attached to.

To open and close this list, click on the arrow in the centre of the list:

 and

3.2 Database Interface

① **View**	**View** changes the way the database is presented. Some integration databases have multiple view options.
② **Sorted By**	Events may only be sorted by **Time**.
③ **Easy Search**	The easy search option quickly searches the database. -- No EasySearch -- -- No EasySearch -- License plate Container Lane
④ **Filter**	Filter offers a more advanced manner of sorting information in the Integration Database table. Once the filters dialogue is open, these are the 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 . **Note**: 1. Multiple filters may be run simultanously. 2. The same perameter may be used more than once. 3. 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 **Export**	Generate metadatabase reports in **PDF** or **CSV** format. See below.
⑥ **Manage Reports**	Generate scheduled metadatabase reports. See below.
⑦ **Go to Time**	This navigates to a specific point in time, down to the second. To navigate to a timestamp set the time using the time and date boxes. Then click the arrow icon.

3.3 Viewing an Entry's Associated Recording

This integration uses the new video option where the video player is embedded in the database view. This player uses the same timeline features as the CathexisVision cameras tab.

To view an associated recording, simply left-click on a database entry, which has the camera icon in the Links column.

Then click play in the video player.

4. Events

A CathexisVision Event has a trigger, which causes an action. Integrated devices may be set to act as triggers, or as actions. This document will detail the ISS LPR / Container specific aspects of Events. There is a comprehensive guide to CathexisVision Events in the main setup manual.

Most of the data that CathexisVision receives from a device is presented in the **Events interface**. This is done in order to give the user a full range of options. As a result, some of the options presented in the interface may be impractical as event triggers, or actions.
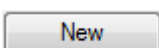
4.1 Event Window

Events in CathexisVision are set up via the Event Window. This has four 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/are defined; in the **Actions Tab** the action/s, which the event takes, is/are defined; in the **Resources Tab** the various site resources, which can be used as part of an event, are defined.
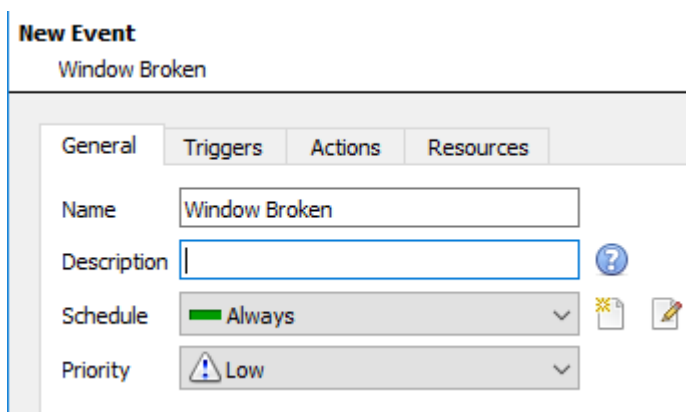

4.2 Creating an Event

To create an event using the ISS LPR / CR device, enter the **Events management area**:

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

4.2.1 While/When and Any/All

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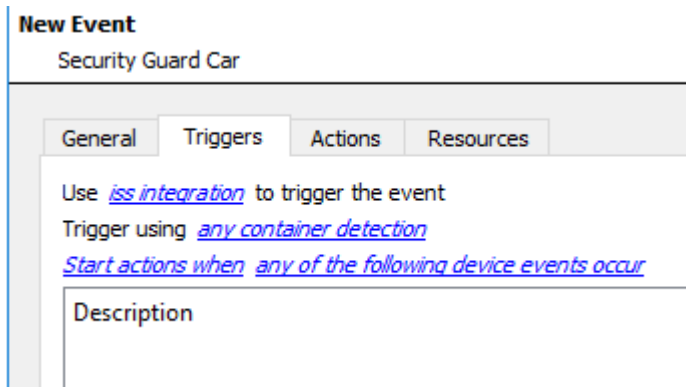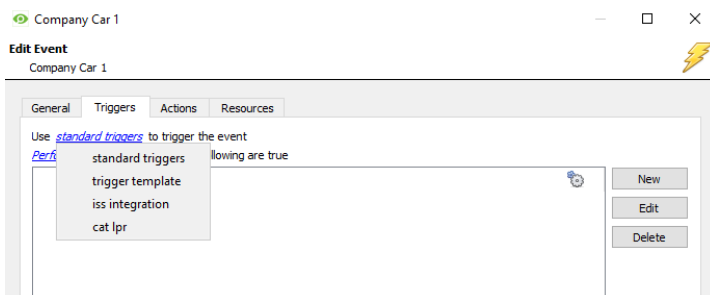

To change these settings, click on the related blue, hyperlinks.

4.3 Triggers

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

4.3.1 Set the Device as the Trigger

When creating a new event, the trigger type will default to: Use *standard triggers* .

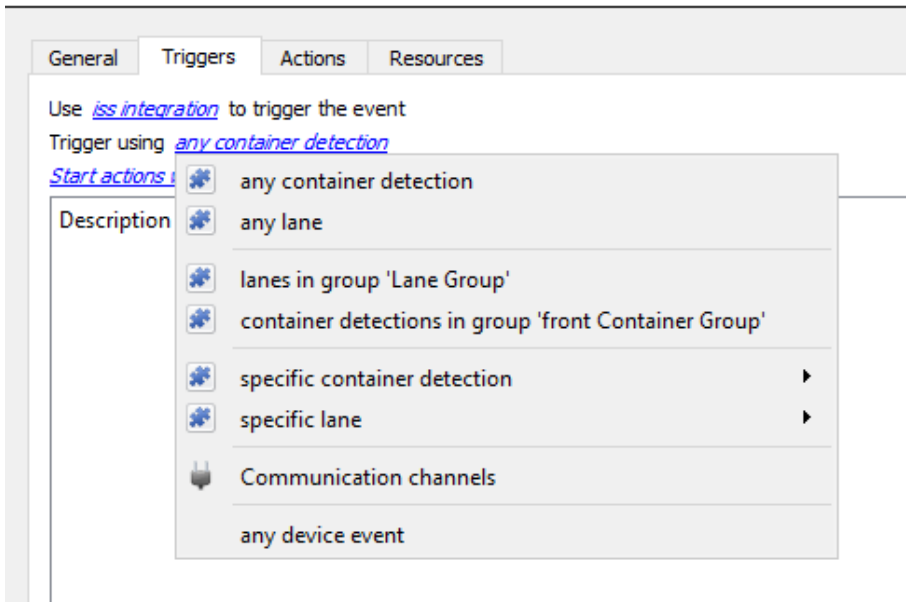To define which device will trigger the event, click on the hyperlink after "use".

To set it as the ISS device, click on the hyperlink, and select the relevant device name from the drop-down menu.

4.3.2 Trigger Types (Trigger Using)

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

Any container detection	will trigger when any container detection objects send the selected trigger.
Any lane	will trigger when any lane objects send the selected trigger.
Lanes in group...	If there is a lane group set up, it will appear in this list.
Container detections in group...	If there is a container detection group set up, it will appear in this list.
Specific container detection	will trigger on an event from the specific container detection object selected.
Specific lane	will trigger on an event from the specific lane object selected.
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, set "device event rules", which will constrain the device Events that trigger the event.

Note: For this event to be databased under the name of a specific object, and not the name of the triggering group, modify the Description field in the **General tab** of the Event setup.

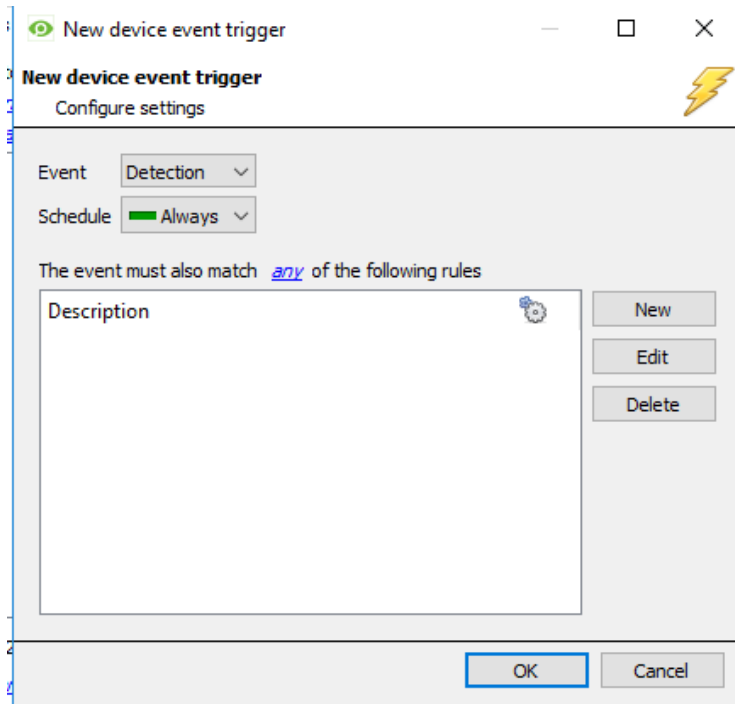Click on the question mark icon to see a list of available descriptions.

Here is an example:

4.3.2.1 Define the Trigger

After selecting a master trigger type, add a trigger to the event.

Click on New in the Triggers tab. This will bring up the dialogue box seen below:

For example, within the *any device event* option, choose the type of device Event to be the trigger. Choose an event type from the drop-down menu.

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

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

Note: Multiple constraints may be set (**Device Event Triggers**). If no constraint is defined, every single device event will trigger this event.
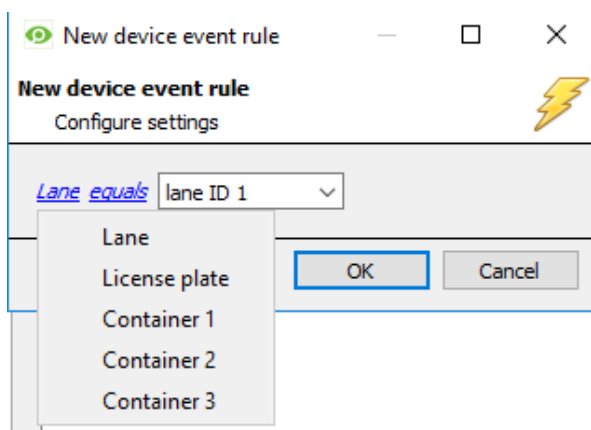
To change the constraint, click on the first hyperlink. This will bring up the full list of available rules.

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

Note: When all available options are known to CathexisVision, a drop-down menu will appear. When these variables are not pre-defined, fill them in. The information pulled through to the Events is information sent to CathexisVision from the ISS LPR / CR device.
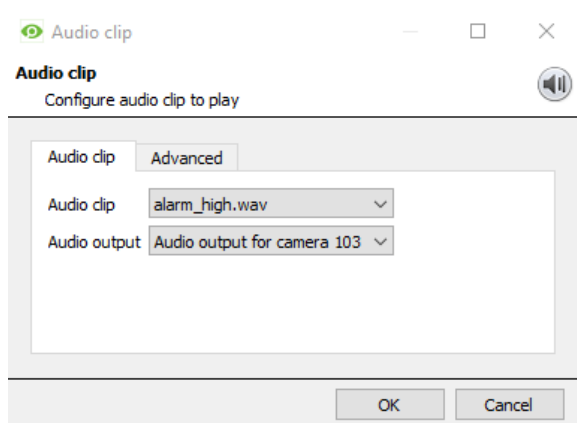
4.4 Actions
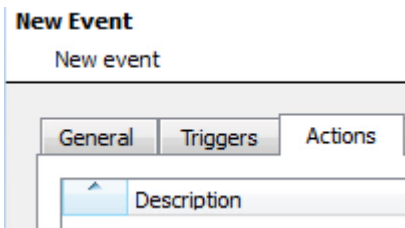
Once the triggers that are going to initiate the event are defined, define some Actions. With many integrations, there will be the option to control the integrated device, as one of the actions.

4.4.1 New Action
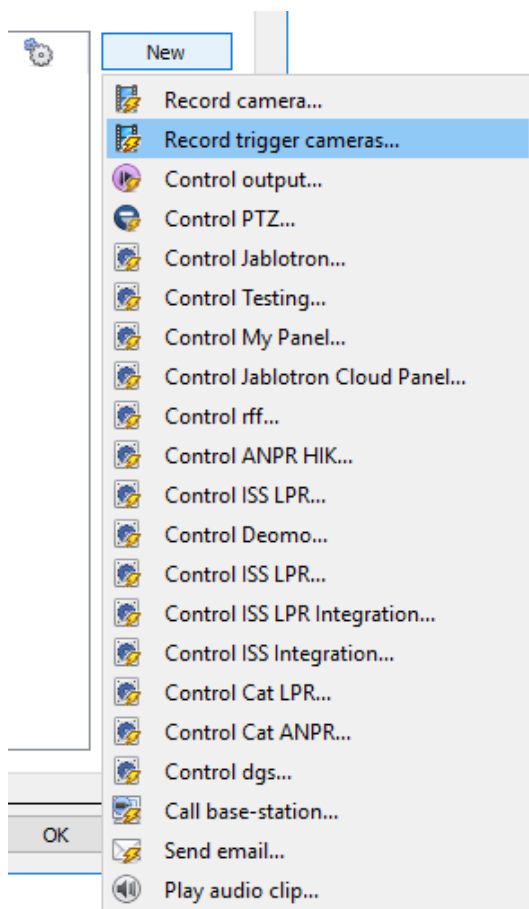
To create a **new Event Action** click New.

Select **Play audio clip** to control this device with the CathexisVision event.

Choose the audio clip to be played, for instance, an alarm, and click OK to confirm.

5. Conclusion

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

For support, email support@cat.co.za.