CathexisVision POS App-note

Contents

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1. Introduction

The Cathexis Point of Sale (POS) driver sends and receives UTF-8 encoded XML messages over UDP and can be used to integrate third-party POS systems. A POS simulator is included with the POS device to assist third-party POS developers with API implementation. This document will detail the configuration of both the Cathexis POS device and the POS simulator.

Note:

1. For information regarding the regular operation of a POS device, please consult the relevant POS manufacturer documentation.
2. The connection is via UDP, and the port number needs to be the same on the POS system as on CathexisVision.

1.1 Requirements

1.1.1 General Requirements

- Windows 7, 64-bit and later, Windows Server 2008 R2 and later.
- Ubuntu 12 and Ubuntu 16.
- CathexisVision 2019.1 and later.

1.1.2 License Requirements

The Cathexis POS integration license requirements are as follows:

License	Name	Description
CCPS-2000	Cathexis POS device license	This license is the “base” license to integrate with the point-of-sale system. It is applied to the server to which the point-of-sale device is connected. This licence will allow for the connection of a single integration device.
CCPS-1001	Cathexis POS till license	These licenses apply to the tills in a point-of-sale system. The **CCPS-1001** will license a single till, and may be added on a till-by-till basis.
CCPS-3000	Cathexis POS bundle	This license includes one **CCPS-2000** point-of-sale device license, and also provides support for unlimited **CCPS-1001** till 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

1.3.1 General Device Features

- The Cathexis POS device can be used to integrate third-party POS systems that comply with the CathexisVision Point of Sale Integration API Guidelines as detailed in Section7.3 of this document. This separate protocol document can also be requested from support@cat.co.za.
- A POS simulator is included with the POS device to assist third-party POS developers with API implementation.
- The Cathexis Point of Sale (POS) driver sends and receives UTF-8 encoded XML messages over UDP.
- CathexisVision receives event messages from the POS device.
- System and Till device event messages can be used to trigger a CathexisVision system event.
- Till objects support camera overlays.

1.3.2 Device Objects

Object Type		Abilities
General		• This integration has System, till, and communication channel objects. • Objects are automatically created as soon as communication between the CathexisVision unit and device is established. • Objects may be linked to cameras to associate device events with video footage.
System	**General**	• Displays information about the connected POS system. • Heartbeat sent to CathexisVision every 10 seconds to determine online/offline status. • State changes can be used to trigger CathexisVision system and map events.

	Object Properties	• ID and name of System object • Manufacturer • Model number • Version number • Online/offline state (determined by receipt of heartbeat at ten-second intervals).
Till	**General**	• Relevant till objects populate when CathexisVision receives device event messages. • Displays information about the associated till. • Till events on the device can be used to trigger CathexisVision system and map events. • Supports camera overlays.
	Object Properties	• ID and Name of till • Cashier ID • Cashier Name • Version number • License (yes/no)
Communication Channel	**General**	• Represents the UDP channel used by the integration device. • Channel will not go down when communication with POS system is lost. ○ If system event triggered on connection state is required, use system object.
	Object Properties	• ID and Name of communication channel, • Channel status (will not change if communication lost) • Details • Creation type • Creation time • Idle time (min)

1.3.3 Device Events

Event Element	Features/Abilities
General	• Events triggered on the device are sent to CathexisVision. • These device event messages can be used to trigger system events.
Device Event Types	The following device event messages are received from the POS device and displayed in the CathexisVision device events tab and integration metadatabase: • All events • End transaction • Start transaction • System • Tender

	• Till • Total • Item
CathexisVision Event Actions	• Events generated by the device are reflected in CathexisVision, and can be used to create CathexisVision system events. • The device objects cannot be controlled as part of the system events.

1.3.4 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	• Transactions • Transaction all • Till Status • System Status • Items
Sort Options	• Time • Till ID • Till Name • Cashier ID • Cashier Name • Transaction ID • Item Description
Easy Search	• Till ID • Till Name • Cashier ID • Cashier Name • System State • Item Code • Item Description

Filter	• Start Time • End Time • Till ID • Till Name • Cashier ID • Cashier Name • Time • Transaction ID • Item Code • Quantity • Item Value • Total Value
Export	Database entries may be exported in CSV and PDF format.

1.3.5 Maps

The CathexisVision GUI provides for configurable site maps that feature multi-layered, hierarchical, interactive interfaces providing representation and control of a site and its resources.

Map Element	Features/Abilities

General	• Device objects can be embedded in a site map which offers multiple action options when:
	  ○ Messages are received from the device,
	  ○ The device triggers an event,
	  ○ The user manually initiates a map action.
	System and till objects support map functionality.

Map Action Triggers	• All device objects may be set to trigger a map action if the user left-clicks on map. • System object may be set to trigger a map action if a state change message is received from the device. • Till object may be set to trigger a map action if a device event message generated by the device is received. • All device objects may be set to perform a map action if any event occurs on the device. • Device objects which can be configured to trigger CathexisVision events, may also be set to perform a map action when specific CathexisVision events are triggered.
Map Actions Options	When triggered (see above), objects may perform the following map actions (where applicable): • Connect to a site. • Perform an animation. • Go to a camera preset.

	• Load a map. • Set a PTZ relay output. • Show a popup menu. • Set a relay output. • Show an HTML block. • Show a block of text. • Show a device popup menu. • Show a device event notification.

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

This section will detail the procedure for adding the Cathexis POS device to CathexisVision.

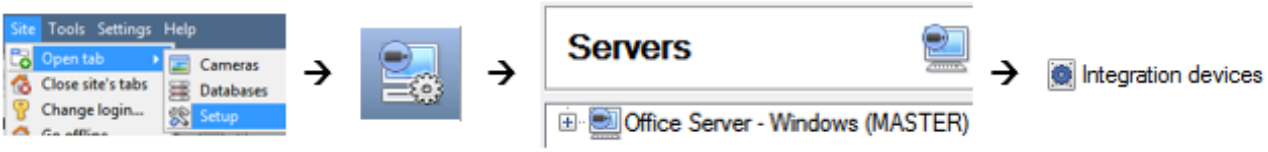
2.1 Cathexis POS Specific Setup

There is no specific setup to be done from the POS system side, but ensure that the UDP port numbers are the same for the POS system as well as CathexisVision.

Note: Ensure that the UDP port is not blocked by the firewall.

2.2 The Integration Devices Panel

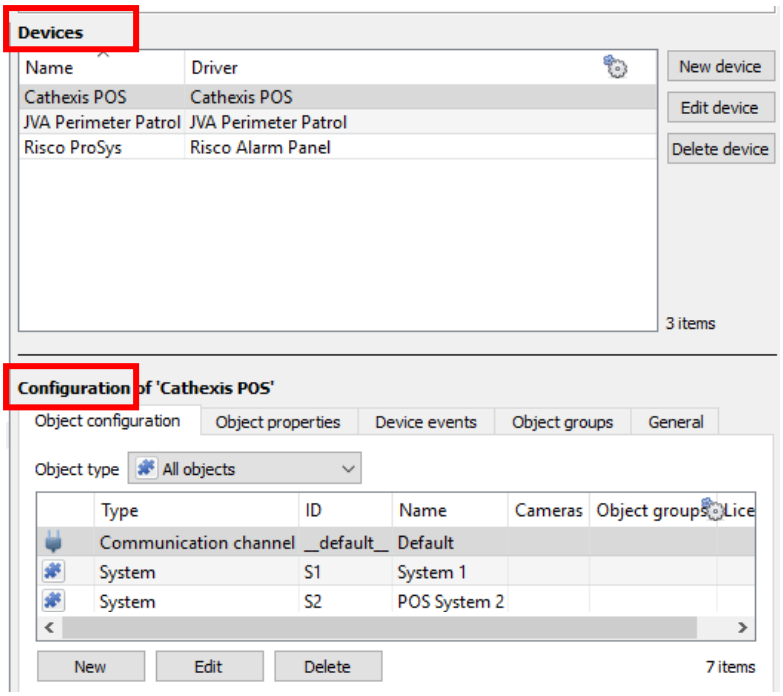
To get to the Integration Panel, follow this path: S**ite / Open tab / Setup / Configuration icon / Server / Integration devices.**



There are two sections in the Integration Panel:

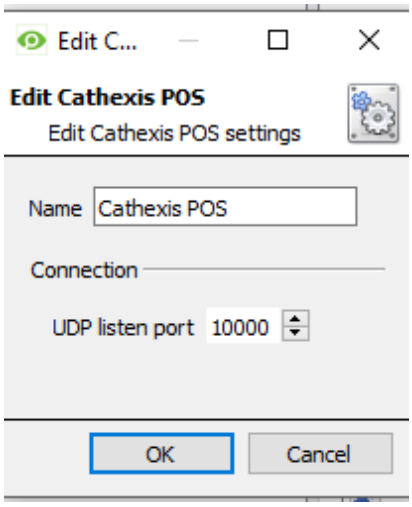
1. The **Devices** list shows the integration devices attached to the integration database.

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



2.3 Add a New Device

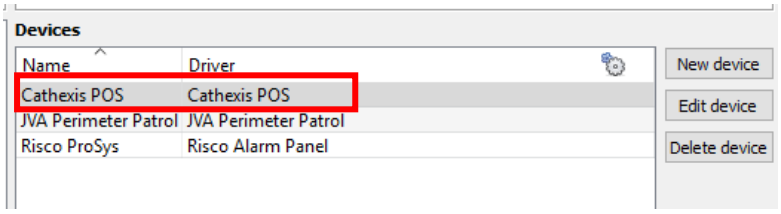
1. In the Integration Panel, navigate to the **Devices section.**
2. Click on the **New device** button on the right-hand side. This will open the addition dialogue.
3. Select **Cathexis POS** driver from the list.



4. Give the device a descriptive **name.**
5. Enter the UDP listen port number. This must match the UDP port number for both CathexisVision and the POS system.
6. Click **OK** to complete.

2.4 Select the Device

The newly added device will show in the Devices section.



Click on the device name to select it.

3. Configuration Section (Tabs)

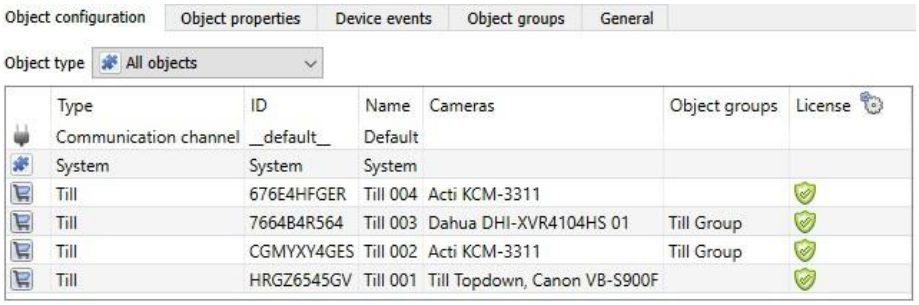
The configuration section is divided up into a number of tabs. These tabs are: **Object configuration, Object properties, Device events, Groups,** and **General.**

The System device object (representing the connected POS system) will populate once communication is established with the system. The Till objects will populate once device events are received.

3.1 Object Configuration Tab

The object configuration tab is where all the individual objects that comprise the integration may be viewed. If necessary, objects may be added manually.

The Cathexis POS has two object types: **System** and **Till**.



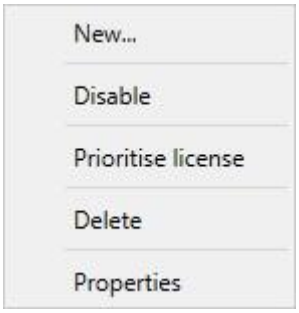
3.1.1 Object Configuration Buttons

Click **New** to add a new object.

Click **Edit** to change an existing object.

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

3.1.2 Object Configuration Right-Click Options



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

Disable/Enable allows objects to be enabled/disabled manually.

Prioritise license allows the user to give specific objects priority, when licenses are applied. (This is useful if there are currently less licenses than objects.)

Delete will permanently remove this object from the list.

Properties will open up the object editing window.

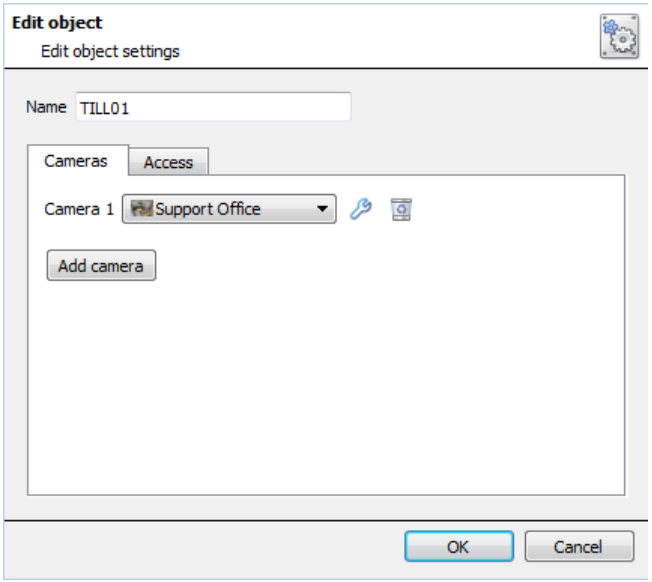
3.1.3 Edit Object

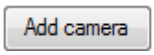
Use the Object configuration tab to make changes. Open the object editing window by selecting an object from the list, and clicking the **Edit button**, or **right-click Properties**.

This window is where cameras are added to objects, overlays are configured, and access rights to the integration are added. These are dealt with in two tabs: **Cameras** and **Access**.

3.1.3.1 Properties: Camera

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 the trash icon.

To **configure overlays** for this specific object, click the spanner icon.

Note:

1. Up to four cameras can be added to Till objects and will be linked in the integration database.

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

3.1.3.2 Properties: Access

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

Under **View**, access levels can be set.

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

3.1.4 Configure Overlays

Overlays may be configured globally for all objects, or individually for selected objects (**Device objects**). Overlays are supported for **Till** objects only.

The path to follow for opening the configuration window for global or individual overlays is different, however the overlay configuration process is the same.

3.1.4.1 Configure Global Overlays

Global overlays may be configured for the object type called "Till." This global configuration will then apply to *all* till objects.

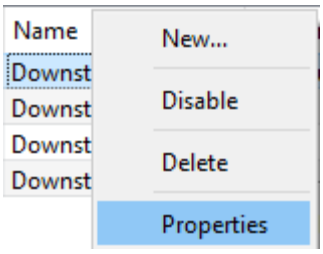
1. Navigate to the global overlays setup by first opening the **Object configuration tab**.

2. Select the Till object from the **Object type** drop-down menu.

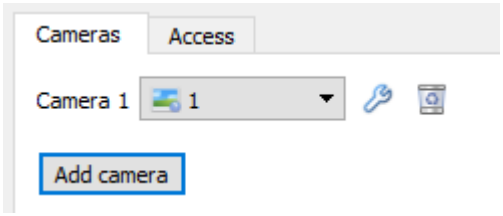
3. Then click the Default Settings icon.

3.1.4.2 Configure Individual Overlays

Configure settings for an individual till.



1. Right-click object and select **Properties** to edit the object.

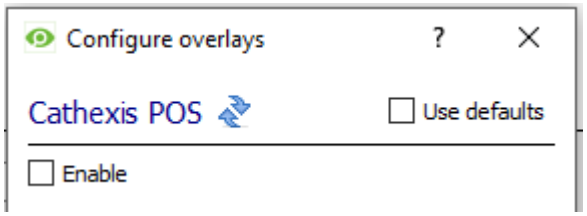


2. **Add a camera** to the object.

3. Then click the **settings icon** that appears next to the camera name.

Note: This option only appears for Till objects.

3.1.4.3 Global/Individual Options



Use Defaults: This option only available when editing individual overlays.

4. Check the "Use defaults" box to use the global configurations.

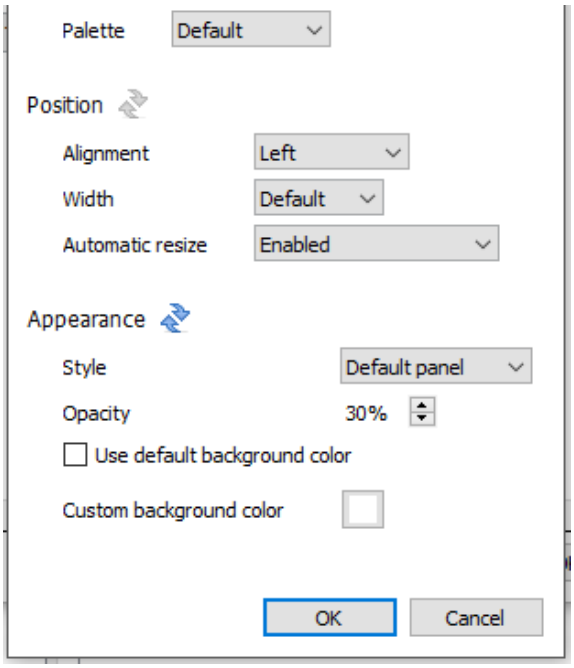
5. Uncheck the "Use defaults" box to edit overlays for the specific object.

Enable: This option available in global and individual overlay configuration.

6. Check the box to enable overlay configuration.

Click refresh to reset values.

3.1.4.4 Overlay Configuration for Individual and Global



1. Select **Palette** options from the drop-down menu.
2. Define the **Position** of the overlay panel, including its alignment, width, and whether the overlay should automatically resize based on the size of the viewing screen/camera panel.
3. Define the **Appearance** of the overlay stream: Set the panel appearance to default; remove the border or remove the panel entirely (so that only the overlay text appears). Adjust the opacity as required.
4. To set a custom panel colour, uncheck **Use Default background colour.**

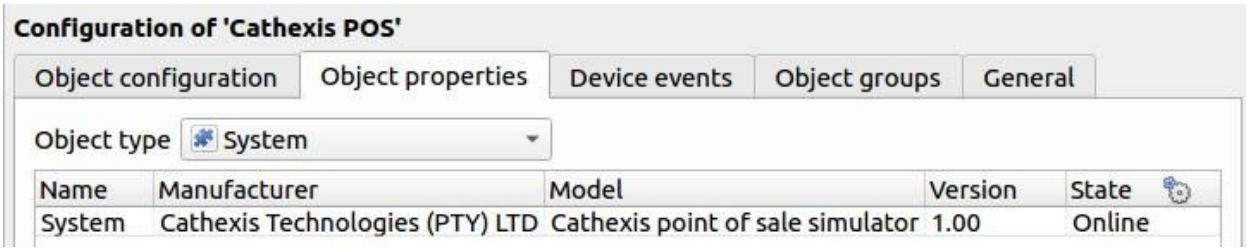
5. Click the box to bring up a colour chart.

3.2 Object Properties Tab

The Object properties tab allows the device objects properties to be viewed and sorted by type.

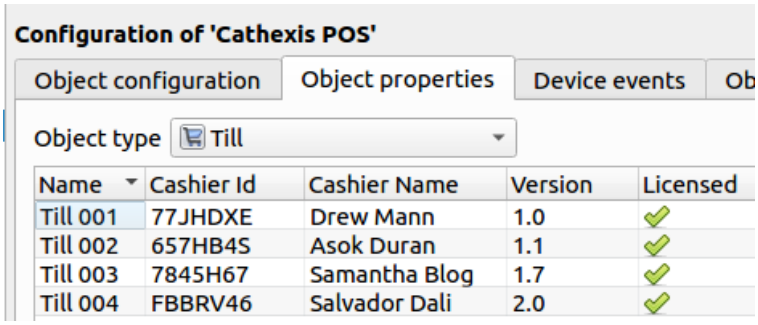
3.2.1 System Objects

The System object populates once communication is established with the POS system. The System object displays information about the connected POS system. The state of this object (Online/Offline) is determined by a heartbeat from the POS system: if a heartbeat is not received at ten-second intervals, the state will change to **Offline**. This object can be used to trigger system events based on its online/offline state.



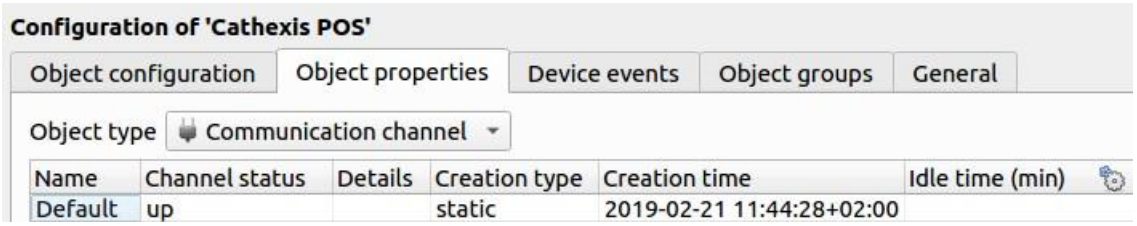
3.2.2 Till Objects

Till objects will populate once device events are received from the relevant Tills:



3.2.3 Communication Channel

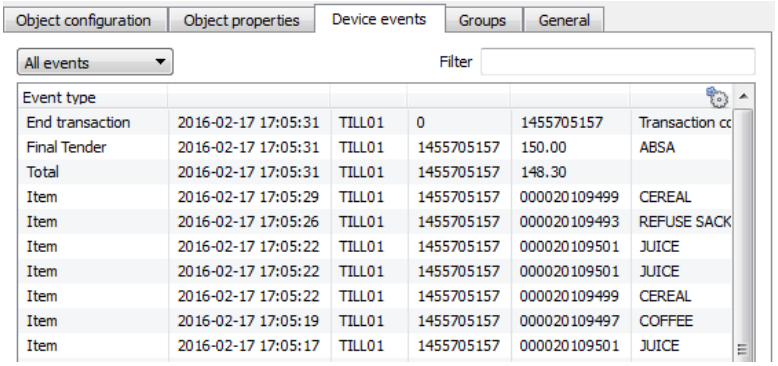
The communication channel object represents the UDP channel used by the integration device.



Note: Due to the nature of UDP network communication, this channel will not go down when communication with the POS system has been lost. If system events triggered on connection state are required, use the System object.

3.3 Device Events Tab

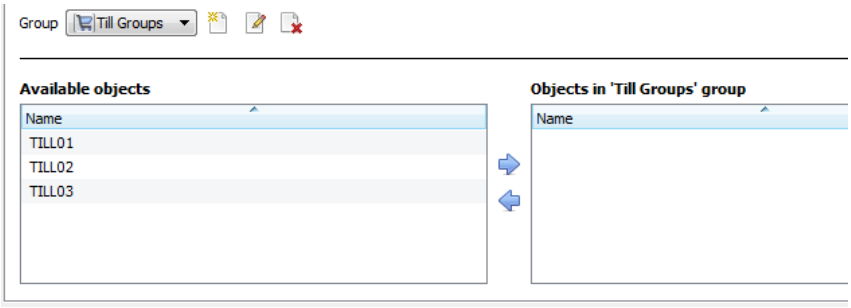
The Device events tab lists real-time events happening on this device. Installers can ensure that the integration is functioning, and monitor the Events happening on site.



Once device events are received, the relevant Till objects will also populate (Object Configuration and Object Properties tabs).

3.4 Groups Tab

Groups of *the same type of object* can be created.



Tip: This is useful when setting up events, because events can be triggered by an object group. (E.g. a group will trigger an event if any of the doors in that group are triggered.)

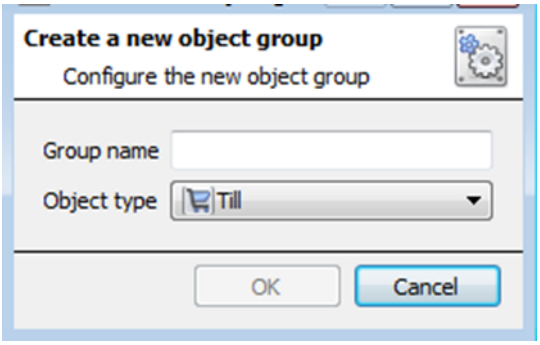
3.4.1 Create a Group

To **create** a group, click on this icon.

To **edit** a group, click on this icon.

To **delete** a group, click on this icon.

A new dialogue box will pop up.



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

2. Click on the drop-down menu to select the **Object type**. Only objects of this type can be added to the group.

Note: Once a group has been created, the object type of the group cannot be edited.

3.4.2 Add or Remove Objects

After creating a group, a list of all the available objects for that group will be displayed in the Available objects panel, on the left-hand side.

To **add** these objects to the group, select them from the list, and **click on the right arrow**.
To **remove** these objects from the group, select them and **click on the left arrow**.

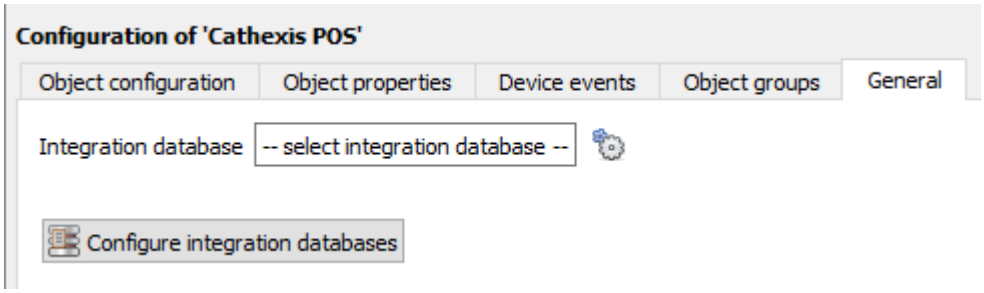
Note: Multiple objects may be selected at a time.

3.5 General Tab

The General tab of the Configuration section (Integration panel) deals with the integration database. Setup must be completed here, before the Databases tab can be used to search events and view associated footage.

From the General tab, the user must:

- *Select* an existing database, or
- Configure a *new* database.



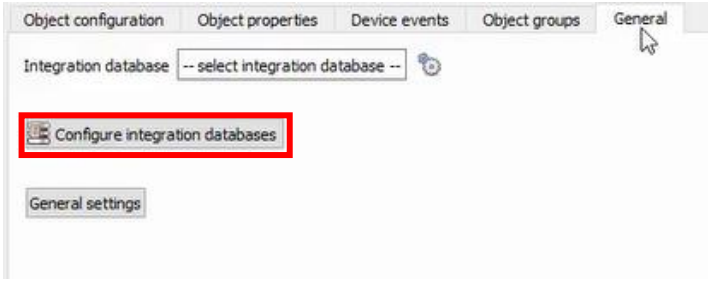
Note: Each integrated device needs to be attached to an Integration database. Without setting up/adding a database, the integration will not function properly within the CathexisVision system.

3.5.1 Configure a New Database

- The first time an integration database is added, the general integration database will need to be *initialised*.
- Once the general integration database has been initialised, then a database for a *specific integration* can be created.

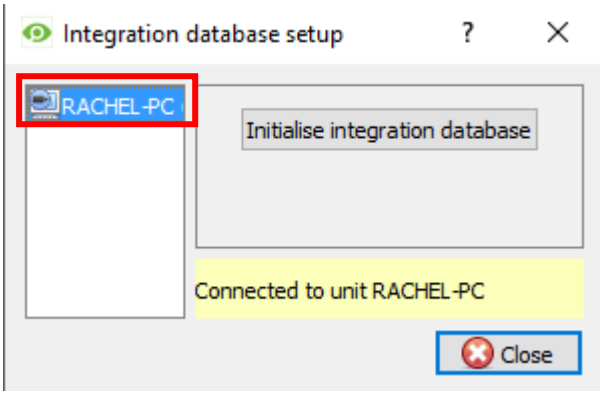
3.5.1.1 Initialise the General Integration Database

If an integration database has not yet been created, follow the steps below.



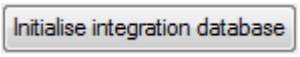
1. Click the **Configure integration databases button** from the General tab.

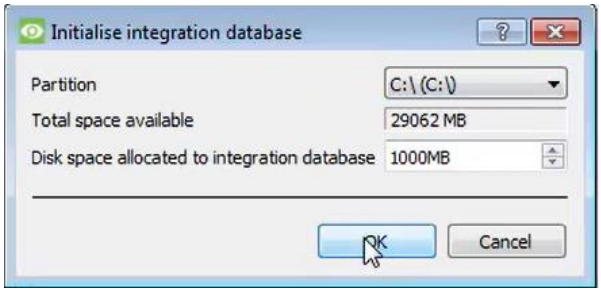
This opens the Integration database setup window.



2. **Select the unit** to which the database will be added, from the list on the left.

3. Then, click **Initialise integration database**.





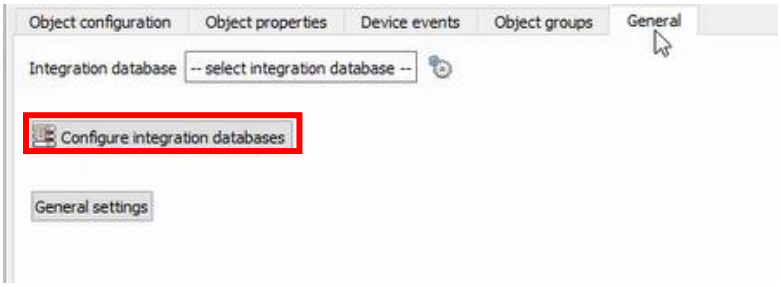
4. Choose the **partition** on which the database will be created.

5. Select **disk space** allocation.

6. Click **OK**.

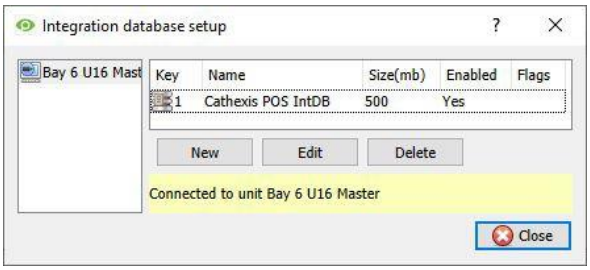
3.5.1.2 Add a New Device Database

After initialisation, the database can be added to the integration.



1. To add a new device database, click the **Configure integration databases button** from the General tab.

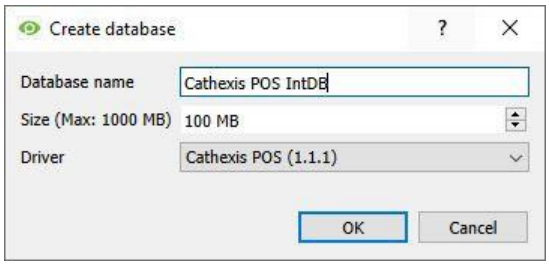
This opens the integration database setup window.



2. Select the unit that the database should be added to from the list on the **left**.

3. Click the **New** button.

A dialogue will appear for creating the integration database.



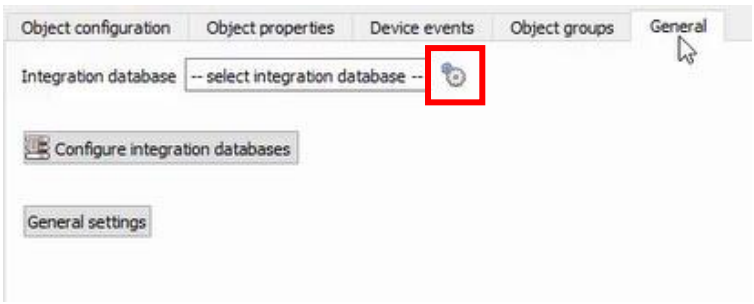
4. Give the database a **name.**

5. Set the database **Size.**

6. Select the **Cathexis POS** driver from the drop-down menu.

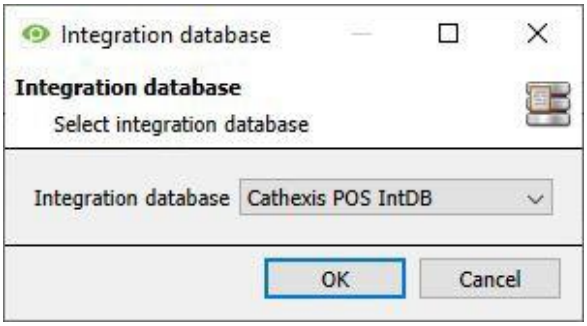
3.5.2 Select the Integration Database

Once the POS database has been created, it must be selected.



1. Return to the General tab and click the settings icon.

A dialogue will appear. Only databases which relate to the device being added should appear.

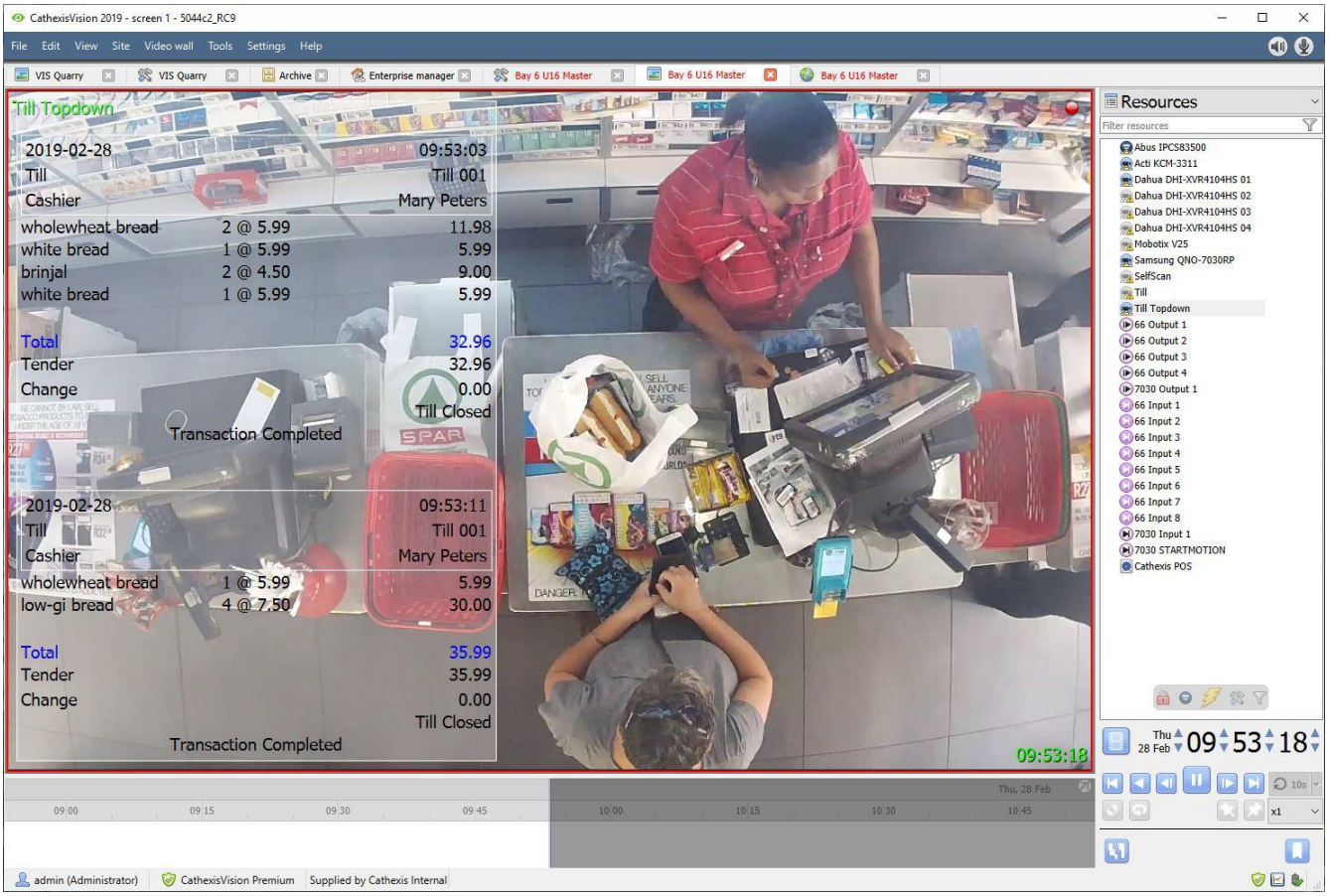


2. Select the POS database from the drop-down menu.

3. Click OK.

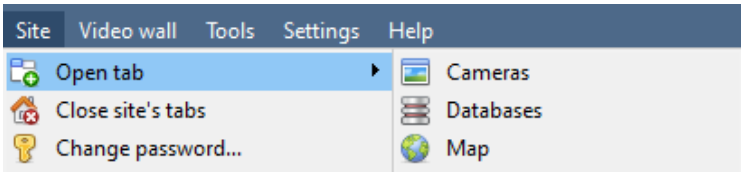
4. Camera Tab Overlay Setup

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



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

4.1 Navigate to the Cameras Tab



To see the camera feeds, go to the Cameras tab by following this path.

Site / **Open tab** / **Cameras**

4.2 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 a number of options specific to the settings configured for that video feed.

4.2.1 Select the Overlay

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

Select the **device** and **enable** the overlay.

The overlay will appear over the video feed, as below.

5. CathexisVision System Events

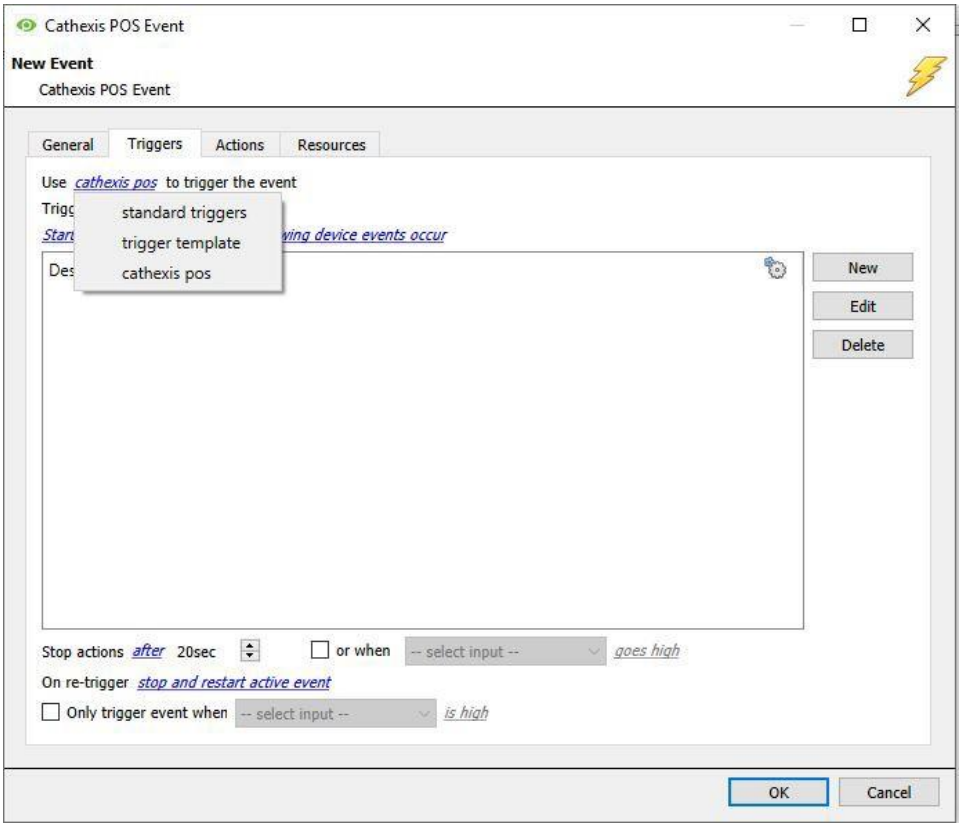
A CathexisVision event has a trigger, which causes an action. Set integrated devices to act as triggers, or as actions. This document will detail the Cathexis POS specific aspects of events. There is a comprehensive guide to CathexisVision events in the main Setup Manual.

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 an event trigger, or action.

5.1 Event Window

Events in CathexisVision are set up via the Event Window, which 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 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

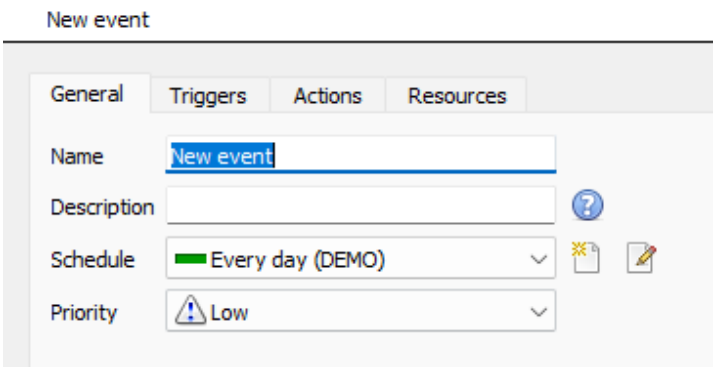
To create an event using the Cathexis POS device, navigate to the Events management area by following the sequence: **Open Tab** / **Setup** / **Servers** / **Master Server** / **Events**. This is shown below.

Click the **New** icon at the bottom of the screen. This will open up the **New Event window**. Alternatively, right-click and select **New**.

The new event window has four tabs which can be used to set up the event: General, Triggers, Actions, and Resources.

5.3 General Tab

Create a new event under the General tab by filling in the fields.



1. Give the event a descriptive **Name**.

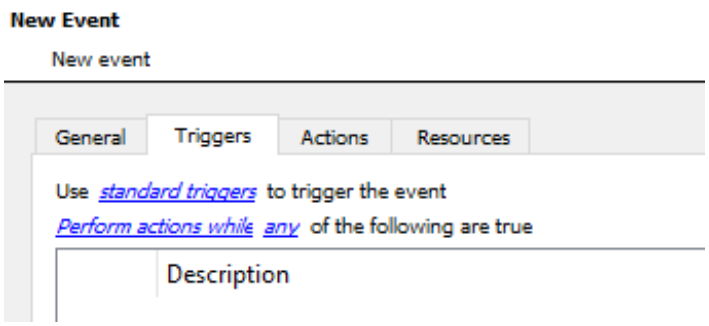
2. Set up a Schedule if desired by clicking the icon.

3. Select a **Priority**.

4. A description may be entered. Or, modify the **Description** if relevant according to the instructions below.

5.4 Triggers Tab

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).



The user will need to click on the hyperlinks (depicted alongside) to set up the trigger.

The subsections below provide instructions.

5.4.1 Set the Device as the Trigger

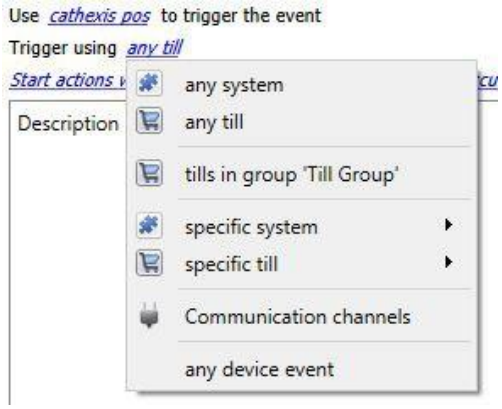
For a new event, the trigger type will default to “standard triggers”. The user will need to change this to Cathexis POS.

1. To change the event trigger, **click on “standard triggers”** (the hyperlink after the word “Use”).

This will open a drop-down menu with more options.

2. Select the relevant device name (Cathexis POS).

5.4.2 Trigger Types



3. **Click on the hyperlink** after the words “Trigger using”.

This will open a drop-down menu.

4. **Click an option** from the menu to select.

See the table on the following page.

MENU OPTION	DESCRIPTION OF TRIGGER TYPE
Any system	will trigger when any of the system objects sends the selected trigger.
Any Till	will trigger when any of these objects sends the selected trigger.
Tills in group ‘Till groups’...	If a Group is set up, it will appear in this list.
Specific system/Till…	will trigger an event from the specific 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 which device events will trigger the event.

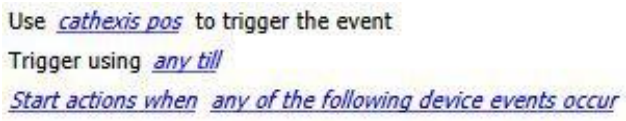
Note for group triggers: For this event to be databased under the name of a specific object, and not the name of the triggering group, modify the Description field in the **General tab** of the Event setup.

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

5.4.3 While/When and Any/All

The third row of hyperlinks further specifies when the event triggers. The user will choose to trigger either based on a *device event* occurring, or based on an *object property*.

Additionally, the user will also be able to select multiple triggers, and define whether **all or any** of the triggers need to be active to start an event.



To change these settings, click on the blue hyperlinks in the *third* row as shown in the image on the left.

The user can choose the option to:

- **start actions when** any of the properties meet user-configured *criteria*, or any user-configured *device events* occur, or
- **perform actions while** any/all of the properties meet user-configured *criteria*.

Start actions when	any of the properties meet the following criteria any of the following device events occur
Perform actions while	any of the properties meet the following criteria all of the properties meet the following criteria

5.4.4 Define the Trigger ("Any Device Event" Option)

After using the hyperlinks to set up how the trigger will be defined, the user may proceed to creating a new *device* event.

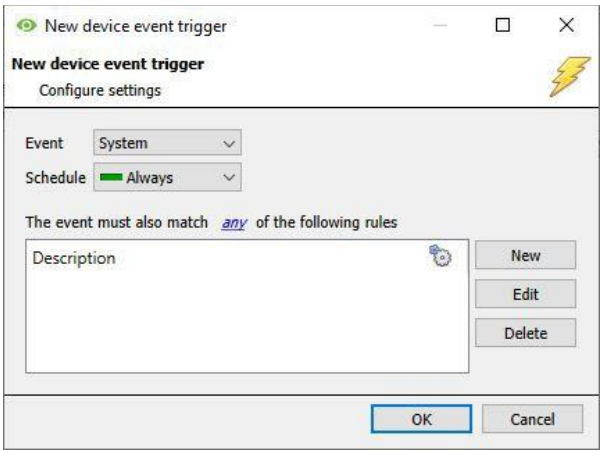
One of these options is to select *any of the following device events occur*.

Click on **New** in the Triggers tab.

Clicking on New will bring up the **New device event trigger** dialogue box.

5.4.4.1 New Device Event Trigger

The user will then need to configure the new device event trigger.



1. Select the **type of Event** where applicable.
2. Choose a **schedule**.
3. Choose whether any, or all constraints need to be fulfilled to set off a trigger.
4. Use the **new** button on the right-hand side to add a device event rule (a constraint). Follow the instructions below.

5.4.4.2 New Device Event Rule

Note: From within the **New device event trigger** window (above), it is necessary to set further constraints. Multiple constraints can be set. If constraints are not defined, every device event will trigger this event.

To configure a New device event rule, **click on New** in the New device event trigger window.

This will bring up a further window.

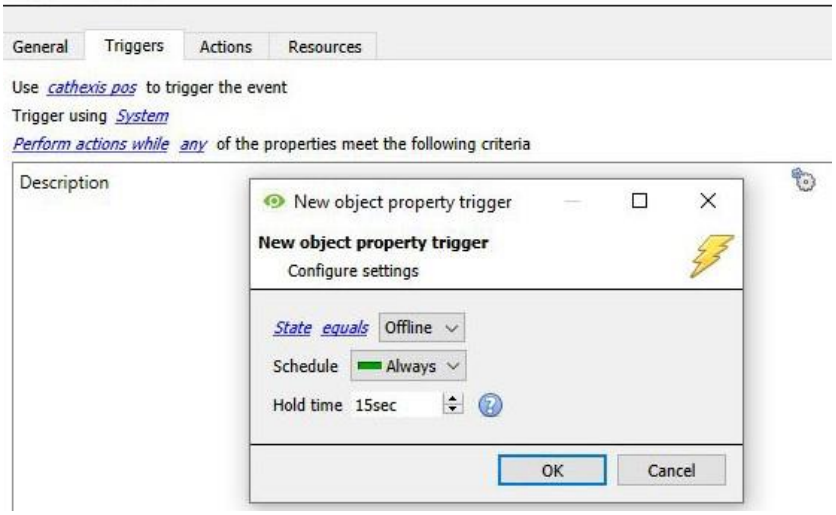
To change the constraint, click the hyperlinks and/or use the drop-down menus.

5.4.5 Define the Trigger ("Properties Meeting Criteria" Option)

If the user has defined the trigger by choosing according to *properties meeting criteria*, the **New object property trigger** dialogue box will open.

- In these instances, further constraints do not need be set, since they are being added one at a time.
- This option is better if a few triggers have been selected.
- This is also true for groups, since a group may only be made up of one object type.

5.4.5.1 New Object Property Trigger: Configure Settings



1. To change the constraint, **click on the first hyperlink**.

This will bring up the full list of available rules.

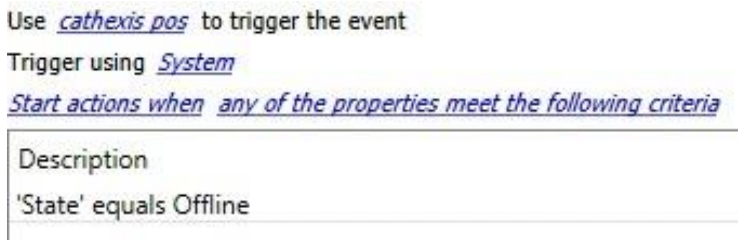
2. To modify the way this rule will be treated click on the **second hyperlink** (equal in the example).

3. Then, either **fill in the text field**, or, use the **drop-down menu** where relevant.

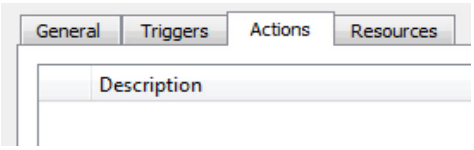
Note: When all available options are known to CathexisVision, there will be a drop-down menu. When these variables are not pre-defined, fill them in. The information pulled through to the events is information sent to CathexisVision from the Cathexis POS device, see the POS settings for the strings needed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

5.4.5.2 Event Example

In this example, an event is configured which will trigger when the state of the POS system equals 'Offline' i.e., when the system goes offline:



5.4 Actions

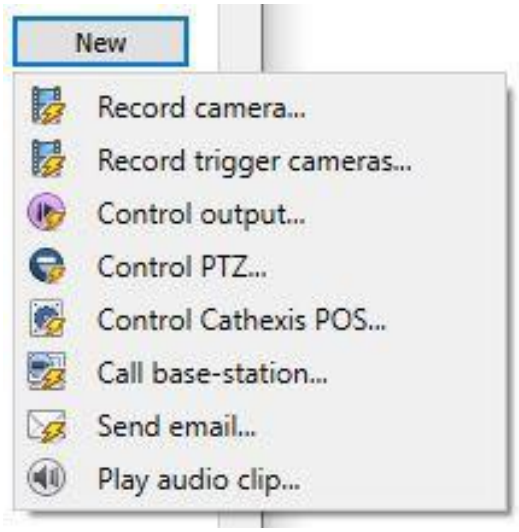


Having defined the triggers that will initiate an event, the user will need to define Actions.

Select the **Actions tab** from the **New event** window.

5.4.1 Adding an Action

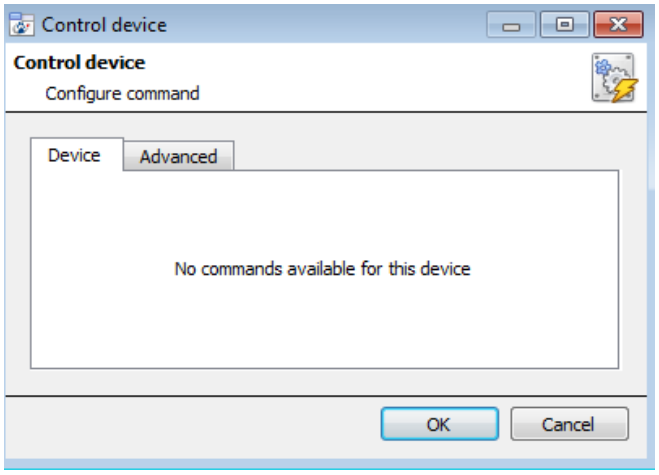
1. To add an action, click New in the Actions tab.



A list of **available actions** will appear. The drop-down contains all the available **action types**.

2**. Select an option**, for example, Record Camera.

Note: With many integrations there will be the option to control the integrated device, as one of the actions. This is not the case with the Cathexis POS device. Although the option is presented in the menu, it is **not possible** to control the Cathexis POS device as a system action.



6. Maps

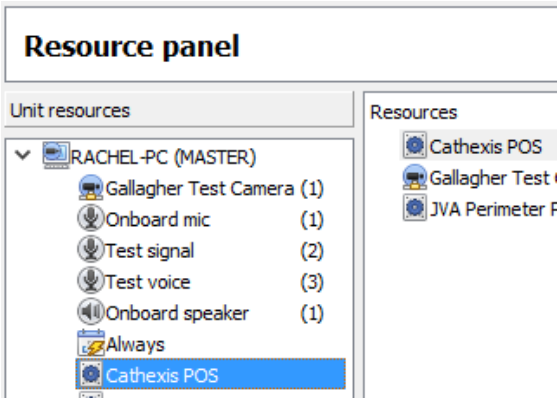
It is possible to add the Cathexis POS device to a site map, which will allow for a number of action options when objects are triggered. The following objects and associated messages may be used to trigger map actions:

System Object:	• Online/Offline state changes, • CathexisVision system event triggers.
Till Object:	• CathexisVision system event triggers.

Note: This section will only deal with the specifics of adding the Cathexis POS 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.



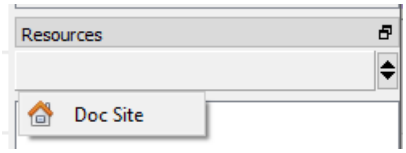
Navigate to the **Resource Panel** by following **Site / Open Tab / Setup**

Click the icon to open the Resource Panel.

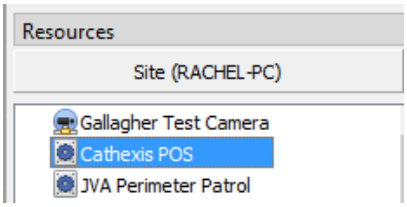
6.2 Add the Device to the Map

Once the Cathexis POS 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

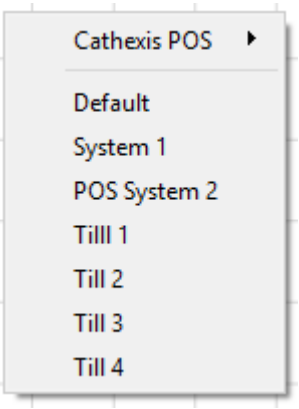


At the bottom right-hand of the Map Editor screen, click the drop-down menu to select the site to connect to.



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

6.2.2 Adding Device Objects



Drag the Cathexis POS device from the Site Resources list onto the map area.

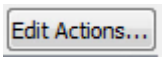
All of the device objects will appear in a list.

Select an object.

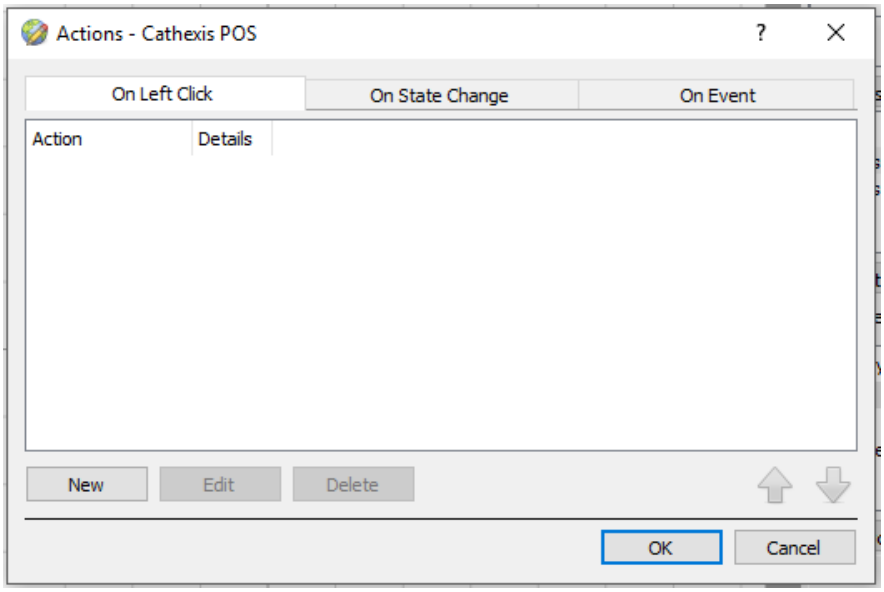
Note:

- To add multiple objects, repeatedly drag-and-drop the device onto the map area and select the desired objects individually.
- Communication objects do not support Map functionality. Only system and Till objects function on maps.

6.2.3 Adding Device Actions



To add actions to the device objects, select the object on the map and click Edit Actions.



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 

.

6.2.4 Map Object Device Action Tabs

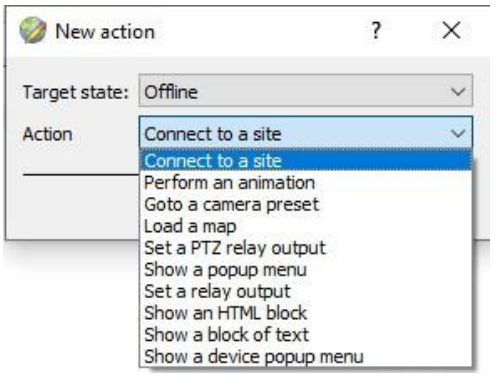
Map actions may be set to trigger on **Left-Clicks**, **State Changes** and **Events.** The table below illustrates the triggers that may be used to generate a map action.

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 selected object. **Note**: State change 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 supported for System objects **(any event)** and Till objects (**start/end transaction, tender, Till, total, item, and any event**)

6.2.5 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.

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

6.3 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. Cathexis POS Simulator

The Cathexis POS Simulator is included with the CathexisVision software, and is intended to assist third-party POS developers with API implementation.

7.1 Run Simulator

7.1.1 Windows

Locate the CathexisVision installation folder and run the POS simulator application: **cathexis_pos_simulator.exe**

7.1.2 Ubuntu

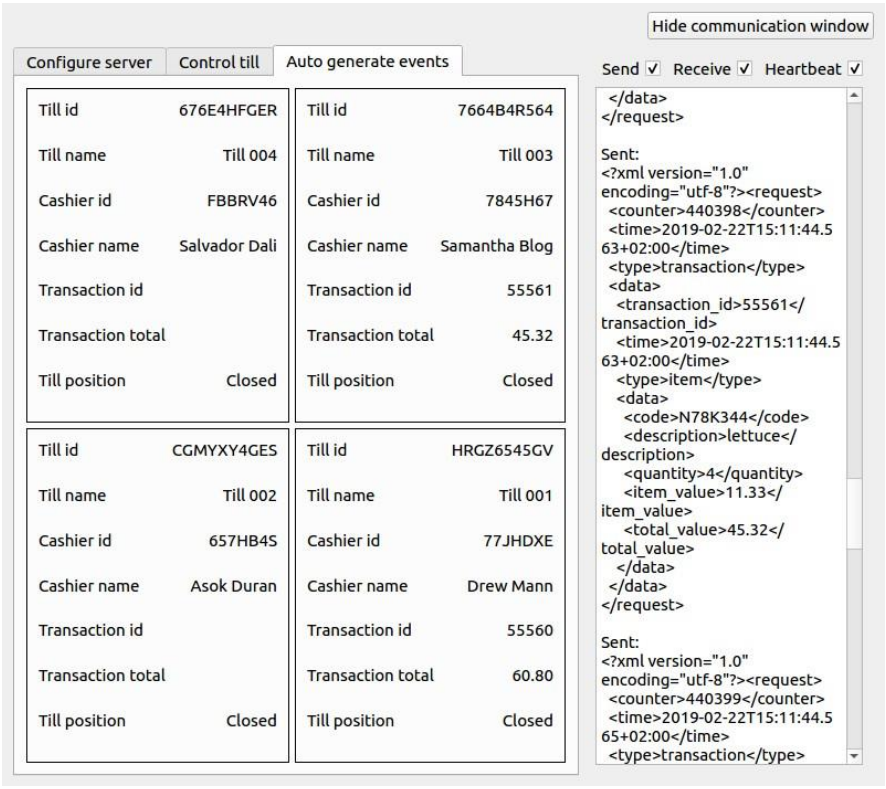
Open the Terminal and enter the following commands:

cd/usr/nvr/

./launch.sh ./cathexis_pos_simulator

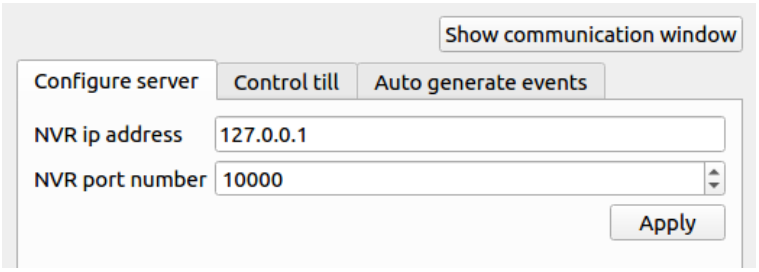
7.1.3 Simulator Window

The Simulator window is the same for both Windows and Ubuntu systems:



7.2 Configure Simulator

7.2.1 Configure Server Tab

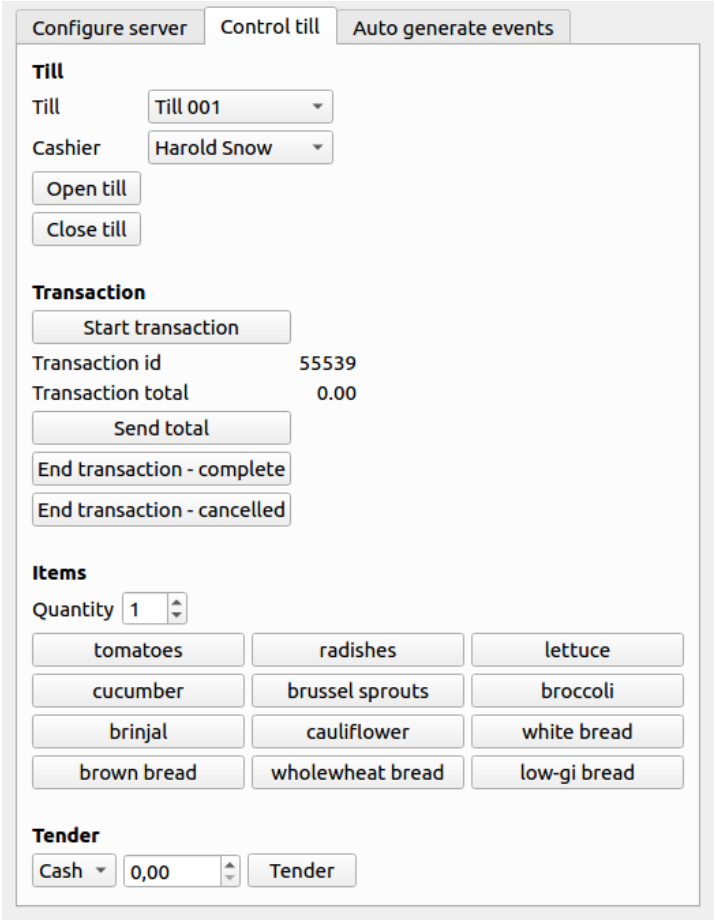


Click **Apply** when done

Enter the IP address of the NVR to which POS messages will be sent.

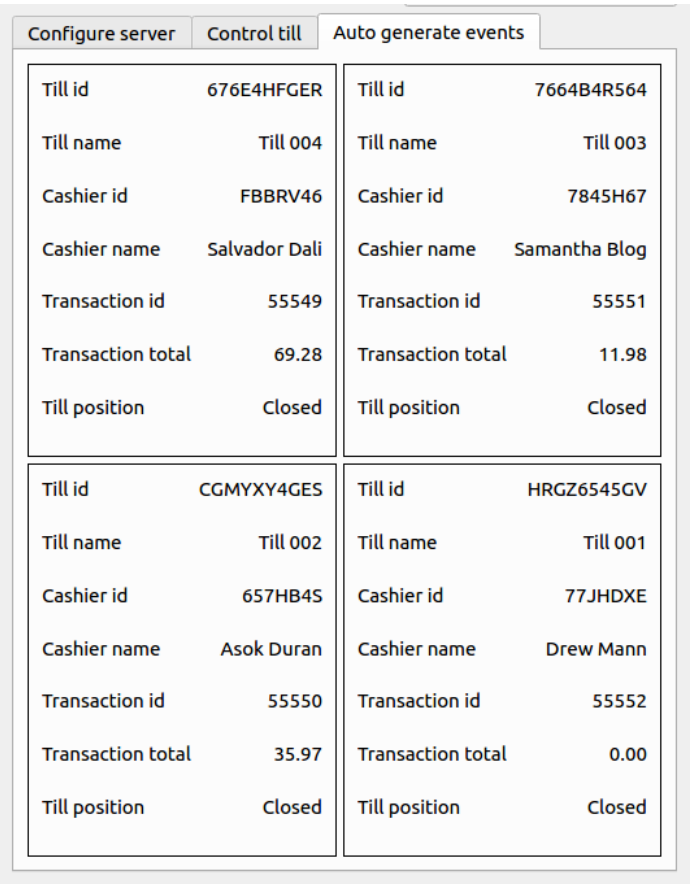
Enter the port number to use for the simulator and the Cathexis POS integration device setup.

7.2.2 Control Till Tab



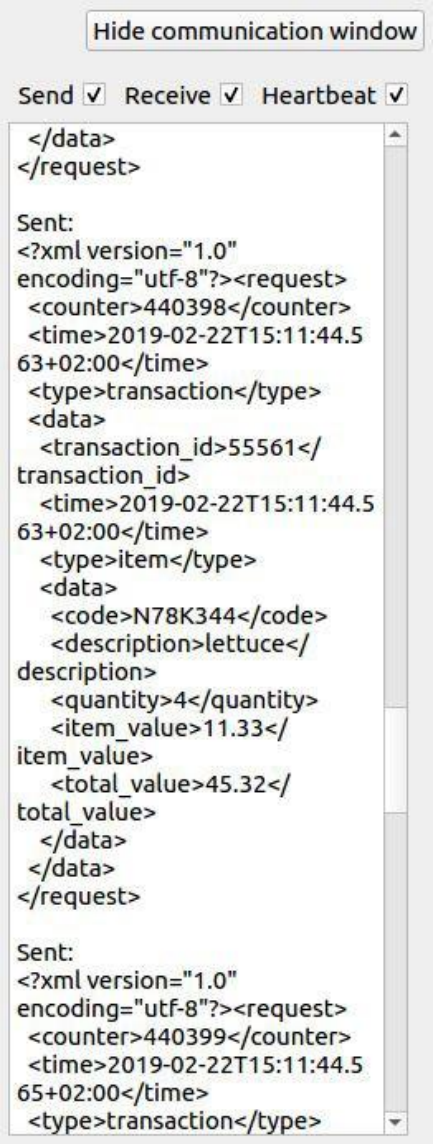
The **Control till tab** offers a manual mode allowing the user to trigger any message type available in the API.

7.2.3 Auto Generate Events Tab



The **auto generate events tab** shows examples of correctly rendered information using automatically generated random events for 4 Tills.

7.2.4 Hide/Show Communication Window



At the top of the **Simulator Setup** window is the Hide/Show Communication button which hides/shows the XML data being sent and received as specified by the API.

7.3 Development Details

The CathexisVision NVR listens on a fixed port, while the device uses an ephemeral port. The content of each message is UTF-8 encoded XML. The messaging is defined below:

7.3.1 Framing

```
<request>
<ack>id</ack>
<counter>...</counter>
<time>...</time>
<type>...</type>
<data>...</data>
</request>
```

<ack>	Optional field. If present, the receiver will send an acknowledgement returning the ID.

<time>	The time (on the device) at which the request was sent in ISO 8601 format. E.g.: 2017-04-11T11:06:55.154+02:00
<counter>	An incrementing counter that starts at 0 (zero) when the device starts.
<type>	The type of request being made, one of the following: <heartbeat> <transaction> <Till>
<data>	Determined by the type and does not need to be present if the request type has no data.

If <ack> is present, the receiver will acknowledge the request:

```
<ack>
<id>...</id>
<type>...</type>
<data>...</data>
</ack>
```

<id>	The ID from the request (in the <ack> field.
<type>	The type from request.
<data>	The data associated with the response to the request and may not be present if not required.

7.3.2 Device Requests

7.3.2.1 Heartbeat

The heartbeat should be sent every 10 seconds.

Request Data	Ack Data
None	None

7.3.2.2 Transaction

Request Data	Ack Data
<data> <transaction_id>...</transaction_id> <time>...</time> <type>...</t_id> <data>...</data> </data>	None

<transaction_id>	A unique ID across all Tills for the transaction.
<time>	The time of the transaction event.
<type>	The type of the transaction event.
<data>	The data relevant to the type of transaction event.

7.3.2.3 Transaction Types

Start

```
<data>
<Till_id>...</Till_id>
<cashier_id_or_name>...</cashier_id_or_name>
</data>
```

<Till_id>	ID of the Till. May only consist of alphanumeric characters and underscores (_)
<cashier id>	ID of the cashier performing the transaction.
<cashier_name>	Name of the cashier performing the transaction.

Note: Either <cashier_id> or <cashier_name> should be sent. If <cashier_id> is sent, the device should respond to a <list_cashiers> query.

7.3.2.4 Item

```
<data>
<code>...</code>
<description>...</description>
<quantity>...<quantity>
<item_value>...</item_value>
<total_value>...</total_value>
</data>
```

<total_value>	Negative if this is a refund.

Note: All monetary values are in the format xxx.cc. E.g., 105.67

7.3.2.5 Total

```
<data>
<value>...</value>
</data>
```

7.3.2.6 Tender

```
<data>
<type>...</type>
<value>...</value>
<change>...</change>
</data>
```

<type>	The payment type used (e.g., credit card, cash, etc.)
<value>	The amount tendered.
<change>	The amount of change given.

7.3.2.7 End

```
<data>
<type>...</type>
</data>
```

<type>	Resolution type: <complete> <cancelled>

7.3.2.8 Till

Request Data	Ack Data
<data> <time>...</time> <Till_id>...</Till_id> <cashier_id_or_name>...</cashier_id_or_name> <type>...</type> </data>	None

<time>	Time at which the Till opened.
<Till_id>	ID of the Till.
<cashier_id/name>	See Start Transaction - 8.3.2.2.1.1.
<type>	Type of Till event: <open> <close>

7.3.3 VMS Requests

7.3.3.1 list-tills

Request Data	Ack Data
None.	<data> <Till> <id>...</id> <name>...</name> <version>...</version> </Till> ... </data>

<id>	The unique Till ID.
<name>	The descriptive name for the Till.
<version>	The software/firmware version of the Till (optional).

7.3.3.2 list_cashiers

Request Data	Ack Data
None.	<data> <cashier> <id>...</id> <name>...</name> </cashier> ... </data>

<id>	The unique cashier ID.
<name>	The name of the cashier.

7.3.3.3 system_info

Request Data	Ack Data
None.	<data> <manufacturer>...</manufacturer> <model>...</model> <version>...</version> </data>

<manufacturer>	The manufacturer of the POS system.
<model>	The model of the POS system.
<version>	The software version of the POS system.

8. 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, contact support@cat.co.za.