



ImproNet IXP400 Access Control Integration

Contents

1	Introduction	2
a.	License Requirements.....	2
b.	Integration components	2
c.	CathexisVision specific Impro setup	3
2	Device Addition and Configuration	6
a.	Add a new Device	6
b.	Tabs.....	7
3	Database.....	11
a.	Navigate to the database	11
b.	The database interface	12
4	Events Setup.....	15
a.	Introduction.....	15
b.	Triggers	15
c.	Trigger types	16
d.	Actions	18
e.	Examples.....	18
APPENDIX 1	Examples.....	19
a.	Example using “Any Device Event”	19
b.	Add an Action	21
c.	General Tab	21
d.	Conclusion	22

1 Introduction

This document will serve to explain the integration of the ImproNet IXP400 Access Control device with CathexisVision. Its focus will be how the device is integrated with the CathexisVision GUI, and Events Setup.

Note:

1. If you need information regarding the regular operation of an ImproNet IXP400 device, or controller, please consult the relevant Impro documentation.
2. There is an Integration Devices General Settings section in the main CathexisVision manual. It has vital information about creating an integration database, as well as a general introduction to the Integration Panel. **Read over this section.**

Requirements/Restrictions

Requirements:

1. The ImproNet IXP400 integration requires CathexisVision 2014.2, and later, using a Firebird database.
 - a. **Note:** The integration with Microsoft MySQL requires CathexisVision 2016.2 and later.
2. Win 7 64bit and later, Win Server 2008 R2 and later.
3. Ubuntu 12.04.
4. Minimum of 4 GB of RAM required.

Restrictions:

1. No NetBSD support. The IXP400's database is not supported on NetBSD. The IXP400 integration will therefore not work on CathexisVision's NetBSD systems.

a. License Requirements

Access control "device" license (CACC – 2000)

This license is the "base" license to integrate with an access control system. It is applied to the server to which the access control device is connected.

Access control "door" license (CACC – 1001 and 1008)

These licenses apply to the readers or nodes in an access control system. The CACC-1001 is for each reader, and the CACC – 1008 is a discounted license for 8 readers.

Access control "bundle" license (CACC – 3000)

This license includes the device license (CACC-2000) and enables an unlimited number of doors to be added to the system.

b. 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 terminals, of an access control system, are both objects. They are different types of object.

Messages and Object Types

The following device event messages, and objects/object types, will be represented in the CathexisVision integration of the IXP400 hardware.

Device Events There are three device event types: Event , Informational , and Problems . These separate events have the following fields:	Events: Site name, Time, Sequence number, Event type, Unit super LA, Terminal name, User, Employee code, Tag code, Tag type, Terminal, Impro time.
	Informational: Type, Description
	Problems: Type, Description
Object Property The IXP400 integration presents three object types: controller , database , terminal , communication channel . Their fields are as follows.	Controller: Name, IP, and Is connected. Further options may be accessed by right-clicking on the column-name header: Source address, Firmware, Stock code, Serial number, and ID.
	Database: Name, IP address, Server version, Last cache successful, Last successful retrieval, Is connected. Note: further options may be accessed by right-clicking on the column-name header: ID and Is service connected.
	Terminal: Name, State, Fixed address, Is enabled, Licensed. Note: further actions may be accessed by right-clicking on the column-name header: ID, Controller, Zone, Location, DOS state, Open mode, Emergency unlock and Lockdown.
	Communication channel: Name, Channel status, Details, Creation type, Creation time, Idle time (min)

- ***A Note on Controller States:***

1. Controllers are polled for their states at 30 second intervals.
2. The heartbeat timeout is set to 40 seconds. This means that if a controller goes offline it will reflect this state between 2 and 40 seconds.

c. CathexisVision specific Impro setup

There are a few steps that you will need to take, in order to get the IXP400 integration functioning with CathexisVision. You will need to modify the **UDP broadcast settings**, and make some editions to your Impro site, via the **Impro Access Application**.

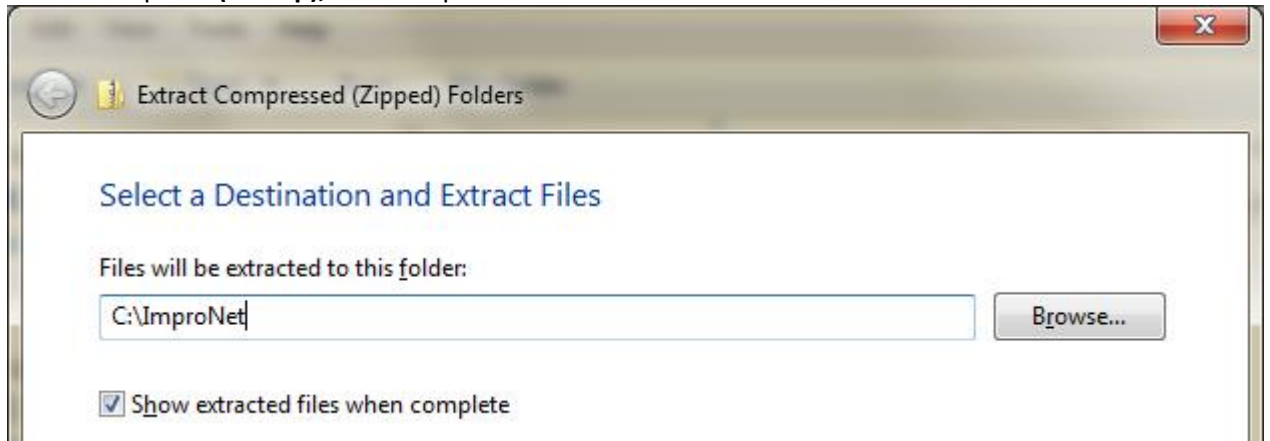
Operating System (Win 8)

Drivers must be obtained from Impro, if the ImproNet software and the USB Registration Reader Interface are to be installed on a **Windows 8** unit.

UDP broadcast patch, for ImproNet v7.68

There is a minor issue in the UDP broadcast, which needs to be resolved, using a patch to the Impro installation directory.

1. Contact support@cat.co.za to get this patch.
2. Extract the patch (**net.zip**), to the ImproNet installation folder.



3. Click **Extract**.
4. Overwrite the existing files "Y"
5. Close the Impro Engine and run it again for the changes to take effect.

UDP broadcast settings

Changing the UDP broadcast settings will require editing the Engine.Properties file. Close the Impro Engine before you do this. In order to make, and save, changes to this document you will first need to **STOP**, and **EXIT** the Engine app.

The engine properties file is found in the Impro Installation folder under **ImproNet/Engine.Properties**.

1. Open the file using a text editor, and add or edit the following string:

```
engine.broadcast.udp.ip=NVR_IP_Address:Your_port_number
```

E.g. `engine.broadcast.udp.ip=192.168.6.45:10010`

The IP address must be the IP address of the NVR unit that you have added the integration device to, via CathexisVision. The UDP port selected **must** be different to that used for IXP controller and Access interface as configured in the Impro Firmware Upgrade utility.
2. Save the changes to the file and exit.
3. Reopen the Impro Engine. Click **Full Upload**, and **Start**.

Note:

1. In order for the UDP messages to go through to CathexisVision, the Impro Engine *must be running at all times*.
2. Close the Impro Engine before you make changes to the Engine.Properties file. Make sure to save your changes after you do so, by clicking **Stop**, **Full Upload**, and **Start** when you start the Impro Engine again.
3. The CathexisVision integration device only populates when a transaction is received for the first time. So, once you have added the IXP400 to CathexisVision, scan a card to start getting info from the Impro Database.

Access Application

Open Impro's Access Application, and navigate to the relevant Impro Site's tree. This should be under `/System/Sites/Your_Sites_Name`

Once in your site (select with mouse right button) you need to make a number of changes:

1. Disable the **Socket Authentication**.
2. Enable **UDP Comms**.
3. Take note of the:

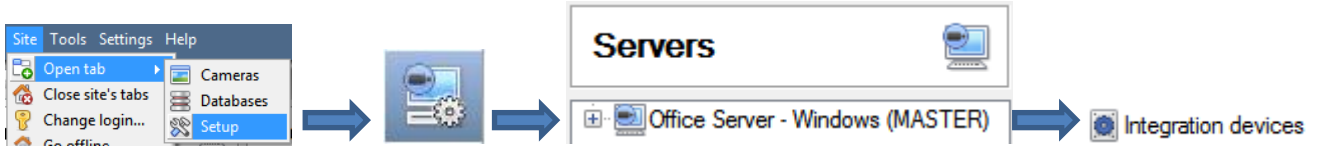
- a. **Messaging port.** This will be the number that you enter into the TCP field, when adding the integration device in CathexisVision, later. Default port is 26665.
 - b. **Site number.** This will be the number you input under **Site ID**, when adding the integration device in CathexisVision under **Configure the device**.
4. **APPLY** to save the changes.

2 Device Addition and Configuration

Integration devices are added, and managed, in the Integration Panel of Configure Servers.

The Integration Panel

To get to the Integration Panel follow this path:




You will notice two sections in the Integration Panel:

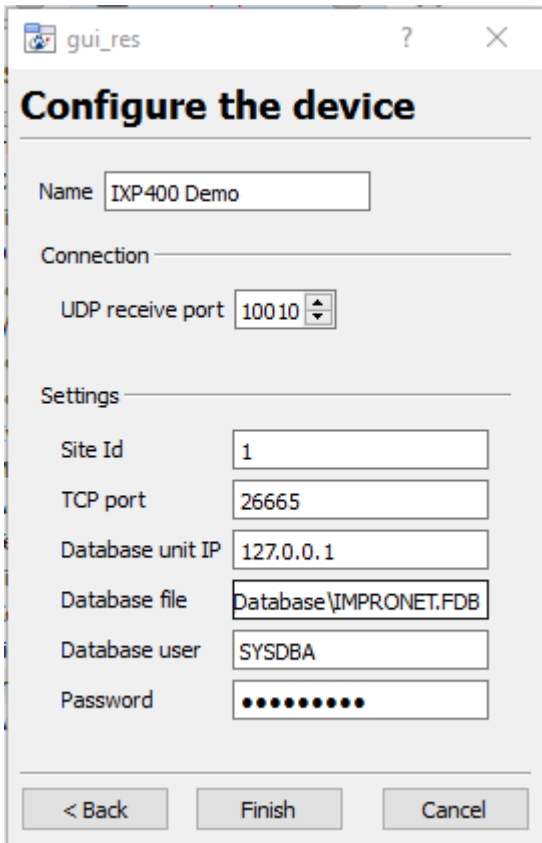
1. The **devices** list, which will list the integration devices attached to your integration database.
2. The **Configuration** section which enables you to edit/review, the device which you have selected in the **devices** section.

Name	Driver
cctv	Design International CCTV
IXP20.4	Impro IXP20 access control
IXP20.5	Impro IXP20 access control
IXP220	Impro IXP220 access control

Type	ID	Name	Cameras	Groups	License
Communication channel	udp_channel	udp_channel			

a. Add a new Device

1. Once in the Integration Panel, click on , in the devices section. This will open the addition window.
2. Select **Impro IXP400 Access Control** from the list. (This is only available on CathexisVision 2014 and later.)



Give your device a descriptive **name**.

When setting up the **connection**, make sure that the **UDP receive port** is the same as the UDP port that the IXP400 device will be broadcasting on. (Not the same as the Controller/Access port as per Impro FU.)

Site ID is the ID number given to the device/s in the Impro software. CathexisVision will only accept communication from the site with the ID specified. This prevents reception of information from multiple sites, which would confuse the database.

TCP Port: as per the controller messaging port (default 26665).

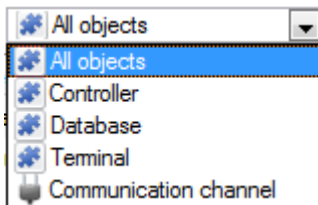
Database Unit IP is the IP address of the unit running the IXP400 Engine, and database. The default is 127.0.0.1 (localhost).

Database file this is the database file on the above unit. **Note:** The database extension when using a Firebird database will be .FDB; when using the updated MySQL database it should be .MDF

b. Tabs

The available tabs are: **Object configuration, Object properties, Device events, Groups, General.**

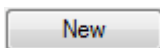
Object Configuration Tab



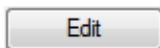
Object Configuration is where you may view all the individual objects that comprise the integration.

You can filter based on **All Objects, Controller, Database, Terminal, and Communication Channels.**

- **Object configuration buttons**



You may add a new object by clicking on New.

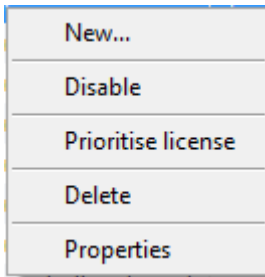


Will open up an existing object for edition.



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

- **Object configuration right-click options**

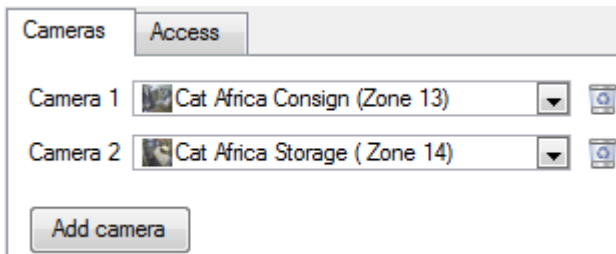


New will open up the dialogue to add a new object.
Disable/Enable allows you to manually enable/disable individual objects.
Prioritise license will allow you to prioritise certain doors, such that they are licensed first, since you may have more doors than licenses. This is only an option if valid.
Delete will permanently remove this object from the list.
Properties will open up the object properties. You may edit the object from here. Specifically you will be able to assign cameras to this object, as well as defining access levels for it.

Note:

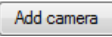
The CathexisVision integration device only populates when a transaction is received for the first time. So, once you have added the IXP400 to CathexisVision, scan a card, to start getting info from the Impro Database. If this does not work, check that the Engine is running and there are no port conflicts.

Properties: Cameras



To access an Object’s properties, right click on the **Object** and select **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.

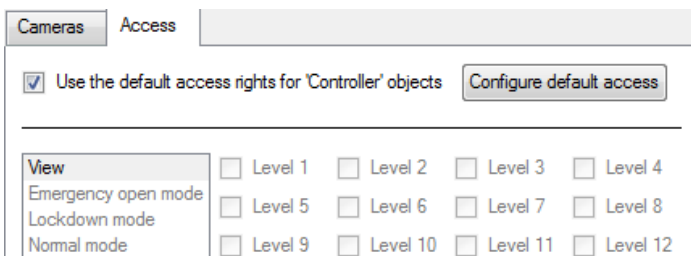
To add a camera click on , and select the relevant camera from the drop-down menu.

To delete a camera click on .

Only the first camera specified will be associated in the Integration Database, the other cameras will be used as “trigger Cameras” in the Events setup.

Note: If you do not have continuous recording setup on associated cameras you will run the risk of doors triggering while the cameras are not recording. To record whenever doors trigger, in a non-continuous recording setup, you will need to setup **Events** that trigger a recording, whenever one of these objects is activated.

Properties: Access



Access allows you to protect sensitive objects, by only allowing certain levels of users access to them.

You will see a list of objects, whose access level you may set.

Note: If you have “Use default access rights” checked, you must make sure that those default rights have been defined. Click on **Configure default access** to see this.

Object Properties Tab

The Object properties tab allows you to view the objects, sorted by type. In the case of the IXP400 you will have the options of viewing by **Controller, Database, Terminal, and Communication Channels**.

- **A Note on Controller States:**

1. Controllers are polled for their states at 30 second intervals.
2. The heartbeat timeout is set to 40 seconds: If a controller goes offline it will reflect this state between 2 and 40 seconds.

Device Events Tab



This will list real time events happening on this device. It is an excellent way for installers to monitor the live events happening on site, and to make sure that the CathexisVision device is receiving information from the IXP unit.

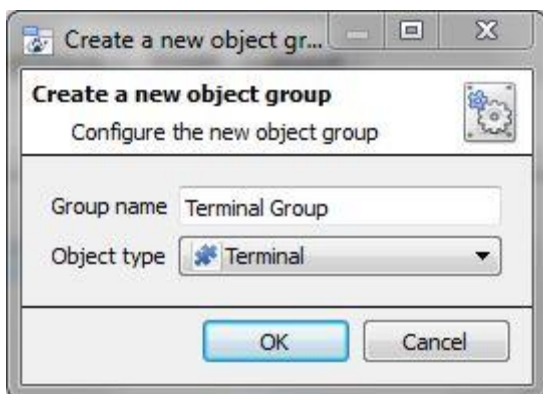
Groups Tab



You can create groups of the same type of object. This is very useful when setting up Events, because you may trigger an event using a group. (E.G. a group will trigger, if any of the doors in that group is opened.)

- **Create a Group**

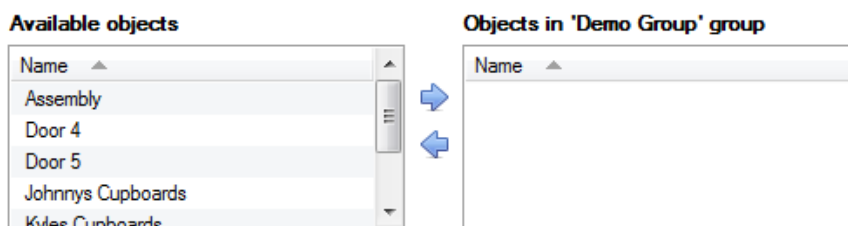
To create/edit a group click on  / . (**Note:** Once a group has been created, you may not edit the object type of the group.)





When creating a group you will select what object type you want to include in the group. Once the group is created the available objects panel will fill up with all available objects of that type. From this list you will choose which objects you want to use in your Group.

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

Click on the drop-down menu to select the **object type** that you would like to group.





You will then see a list of Available Objects.

To add/remove these objects to the group, select them (you may select multiple at a time), and click on  / .

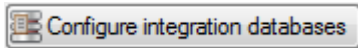
General

The general tab deals with the integration database. Here you will be able to select a pre-created database, or you will be able to configure a new database.

- **Select an Integration database**

Integration database  To select a database click on , and select the relevant database.

- **Configure a new database**



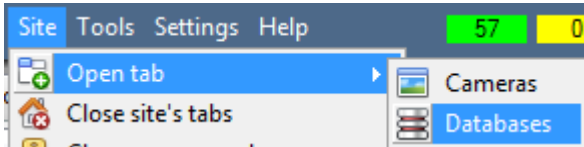
If there is no database created yet, clicking on this button will take you to the integration database setup. Select the IXP400 driver when creating a new database.

Note: The information on setting up an integration database may be found in the Integration Devices General Settings section of section 15, under **Setup Tab: Configure Servers**.

3 Database

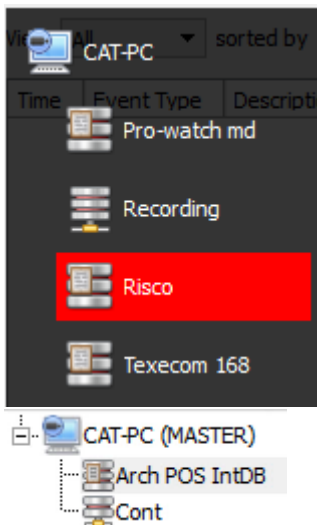
Note: CathexisVision 2016.2 and onwards feature a slightly different database interface, in which the video review feed is embedded in the database panel, and features the same time-line control panel that is present throughout the rest of CathexisVision.

a. Navigate to the database



You may view the information stored in the Integration database, by following the path you see to the left.

This will open the Database Tab.



From 2016.2 onwards, when the database tab opens you will have to 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:



Pre 2016.2 databases will have a permanently visible tree of databases.

b. The database interface

Time	Site name	Event type	Terminal	Tagholder	Links
2015-10-29 11:36:30	Site: 01000000	Comms Diagnostics	TTR:0054102F		
2015-10-29 16:01:06	Site: 01000000	Denied Unknown Tag In	TTR:0054102F		
2015-10-29 16:01:52	Site: 01000000	Denied Unknown Tag In	TTR:0054102F		
2015-11-02 09:07:25	Site: 01000000	Controller Timeout	6E00A759		
2015-11-02 12:58:07	Site: 01000000	Controller Timeout	6E00A759		
2015-11-02 13:01:02	Site: 01000000	Controller Timeout	6E00A759		
2015-11-02 13:10:07	Site: 01000000	Controller Timeout	6E00A759		
2015-11-02 13:23:32	Site: 01000000	Controller Timeout	6E00A759		
2015-11-02 13:47:50	Site: 01000000	Denied Unknown Tag In	TTR:0054102F		
2015-11-02 13:47:50	Site: 01000000	Comms Diagnostics	TTR:0054102F		
2015-11-02 14:03:54	Site: 01000000	Denied Unknown Tag In	TTR:0054102F	Jan Alleman	
2015-11-02 14:04:14	Site: 01000000	Denied Unknown Tag In	TTR:0054102F	Jan Alleman	
2015-11-02 14:04:29	Site: 01000000	Denied Unknown Tag In	TTR:0054102F	Jan Alleman	
2015-11-02 14:05:13	Site: 01000000	Denied Unknown Tag In	TTR:0054102F	Jan Alleman	
2015-11-02 14:05:51	Site: 01000000	Comms Diagnostics	TTR:0054102F		
2015-11-02 14:18:38	Site: 01000000	Denied Unknown Tag In	TTR:0054102F	Jan Alleman	
2015-11-02 14:34:44	Site: 01000000	Controller Timeout	6E00A759		
2015-11-02 15:13:24	Site: 01000000	Denied Unknown Tag In	TTR:0054102F	Jan Alleman	

Goto Time 2016/03/03 15:50:52

Connected to unit TEST_33.1 Unit

The table, below, will go into detail about the numbered items in the above image.

View You may change the way that your database is presented. Some integration databases have multiple view options. The IXP400 has two options: **Standard**, and **Full**. Selecting the **Full view** adds the columns: Transaction, Employee Code, Tag code, Tag type, Impro time, Unit Super LA.

Sorted By You may sort the Access Events based on the following parameters:
Time, Event type, Unit Super LA, Terminal, Tag Code and Tagholder.

Easy Search The easy search option allows you to quickly search the database within one of the following options: Tagholder, Terminal, Tagholder & Terminal, Event type, Tag type, Tag code. (**Tag type, tag code** are added to the Easy Search options if you are using the **full view**.)



In the example on the left you are searching for all access events where Jan Alleman has been involved.





Filter

Filter offers a more advanced manner of sorting information in the Integration Database table.

You are able to filter based on the following parameters:

Time, Transaction, Event type, Unit Super LA, Terminal, Tag code, Tag type, Tagholder.

Once you have the filters dialogue open you will have 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 .

Note:

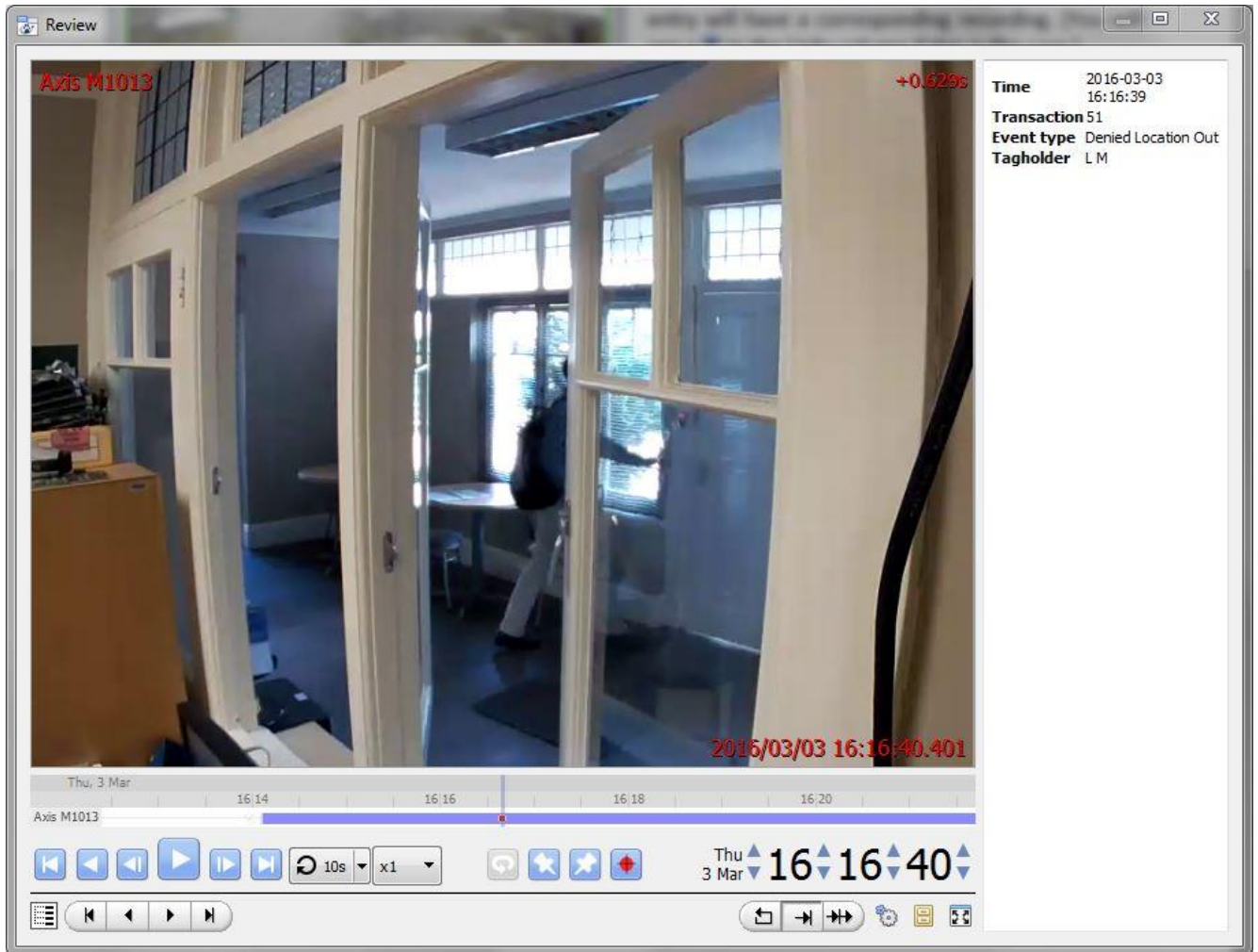
1. You may run multiple filters simultaneously. And you may even filter using the same parameter more than once.
2. To change a filter click on the blue hyperlinked text. (For example, click on [Transaction](#) to change the filter from Transaction, to any of the other available options.)

⑤ Go to timestamp

This will allow you 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.

Viewing an Entry's Associated Recording



If you have 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 you may review and archive video content.

4 Events Setup

a. Introduction

This section will detail the Impro specific aspects of Events. There is a comprehensive guide to CathexisVision Events in the main setup manual, as well as a section on general Integration setup.

Note: 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* for being used to trigger an event, or being used as an action.)




Events


To create an event using the IXP400, enter the Events management area:



New Event

New event

General	Triggers	Actions	Resources
Name	<input type="text" value="New event"/>		
Description	<input type="text"/>		
Schedule	Every day  		
Priority	Low 		

1. Once in Events management click on . This will open up the New Event window (seen to the left).

- ***While/When and Any/All***

When triggering using any options, other than “any device event”, you will have the option to start actions **while/when** certain trigger events occur. You will also be able to select multiple triggers, and define whether **all/any** of the triggers need to be active to set-off an event.

Trigger using [Door 3](#)

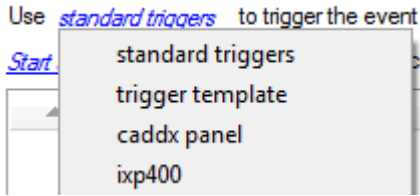
[Perform actions while](#) [any](#) of the properties meet the following criteria

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

b. Triggers

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

Set your device as the trigger

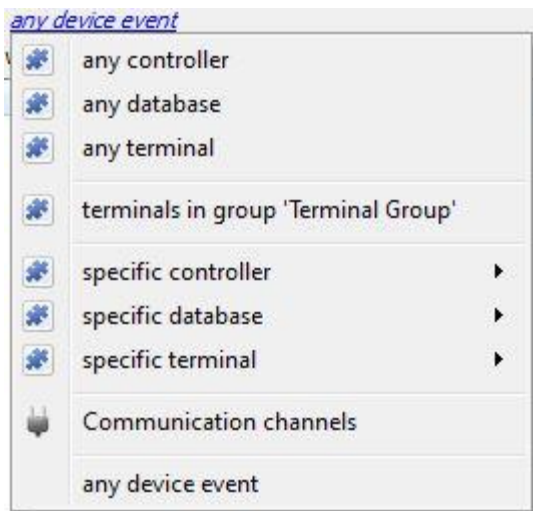


To define which device you want to trigger the event, click on the hyperlink after “use”. If you are creating a new event the trigger type will default to: [Use standard triggers](#). To set it as the Impro device, click on the hyperlink, and select the relevant device name from the dropdown menu.

• *Trigger types*

There are four trigger types. A **Device event** trigger, a **Controller**, **Terminal**, and a **Database** trigger.

Device Event	Represents CathexisVision’s software interface with the Impro controller.
Controller	Represents the Impro Controller.
Database	Refers to communication with the Impro Database.
Terminal	This refers to the individual Impro terminals



When setting up the trigger you will need to choose which IXP400 information you would like to trigger on.

The options beginning with “**any**” will trigger when any objects, from within the specified type (controller, database, or terminal) send the defined information.

You will also have a “**specific**” option, which allows you to pinpoint individual objects, from within the object types.

• *Event Names, based on Triggers*

If your event is to be databased under the name of a specific object, related to the trigger type you choose, you will need to modify the **Description** field in the General tab of the Event setup.

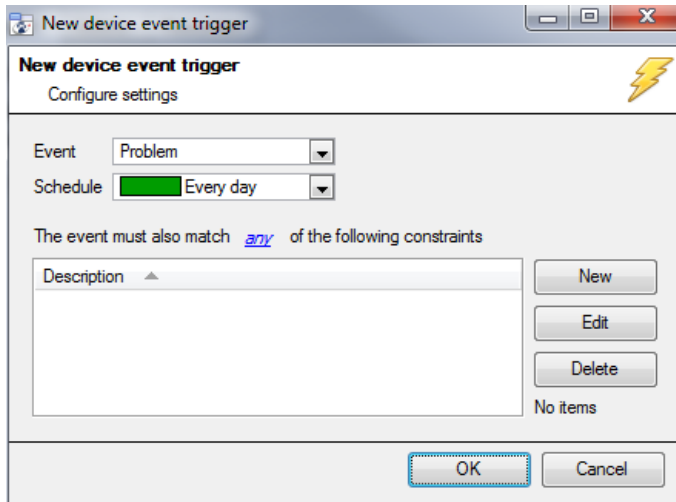
Click on the to see a list of available descriptions.

Note: if you leave the Description field empty the event will be databased under the Name every time.

c. Trigger types

There are two major trigger types. The **Device event**, and the **Object property** trigger.

Any device event



For the "Trigger using" option, selecting any device event, followed by creating a new device event trigger (clicking on the New button in the New Event window) will give you three Event options:

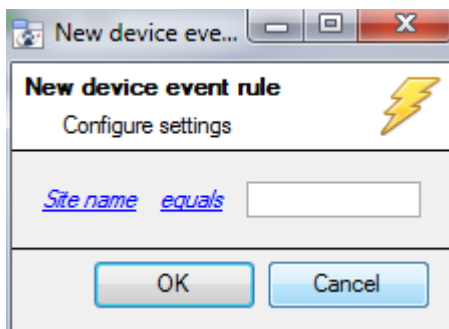
You may set multiple constraints, choosing to trigger on [any](#) of the selected rules, or set that [all](#) constraints need to be fulfilled to trigger.

To add/edit/delete a rule use the New, Edit, and Delete buttons on the right hand side.

Note: the Informational option is not useful for triggering events, but is pulled through, along with all the device events.

- **Event**

Once you have selected the type of device event that will be the trigger, you may add constraints. To do this, click on New. If you do not set any constraints, all Events will set off this trigger. Once you set constraints, only the constraints chosen will set off the trigger.



To change the constraint click on the hyperlink (in this case [Site name](#)), 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 you the rules options.

When all available options are known to CathexisVision you will see a drop-down menu. When these variables are not pre-defined you will need to fill them in yourself, in the text box provided. The information pulled through to the events is information sent to CathexisVision from the Impro device (see the Impro settings for the strings needed here).

- **Problem**

Problem will provide you with a list of major problems that you would want to be notified of. A good use of this would be to create an event, using the problems which are most relevant to the site as triggers. And have the accompanying action be to email the relevant person, or call a base station.

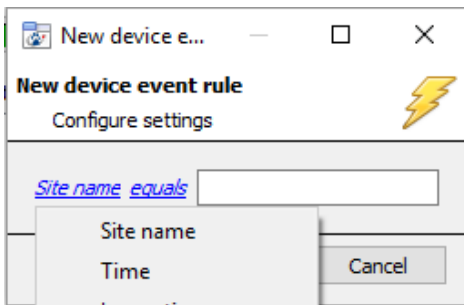
Note: When adding a new constraint here, only use the [Type](#) option. Type will give you a useful dropdown menu, with a set of pre-defined problems.

Object Triggers (Controller, Database, Terminal)

You may trigger using specific object types. To select which object type you will be using click on the hyperlink after “Trigger using”, as in the following image: [Trigger using any terminal](#) .

- ***New object property trigger***

Once you have selected your object type, click on to define the **object property/properties** which will trigger the event:



Click on [Name](#) to modify which object property will be used to trigger the event.

Click on [equals](#) to modify the relationship, to the object, the event will have. (E.g. will it trigger when the controller information is *equal*, or *not equal* to the information set?)

Note: You will likely have to enter in a text string to define the information. The text information can be gained from the Object Configuration table, under Integration Devices.

d. Actions

Once you have defined the triggers, which are going to initiate your event, you will need to define some actions. In many integrations you will also be able to control the device via CathexisVision, in this integration there are no available actions that CathexisVision can take using the IXP400 device.

e. Examples

Please find an example Event case in the Appendix of this document

APPENDIX 1 Examples

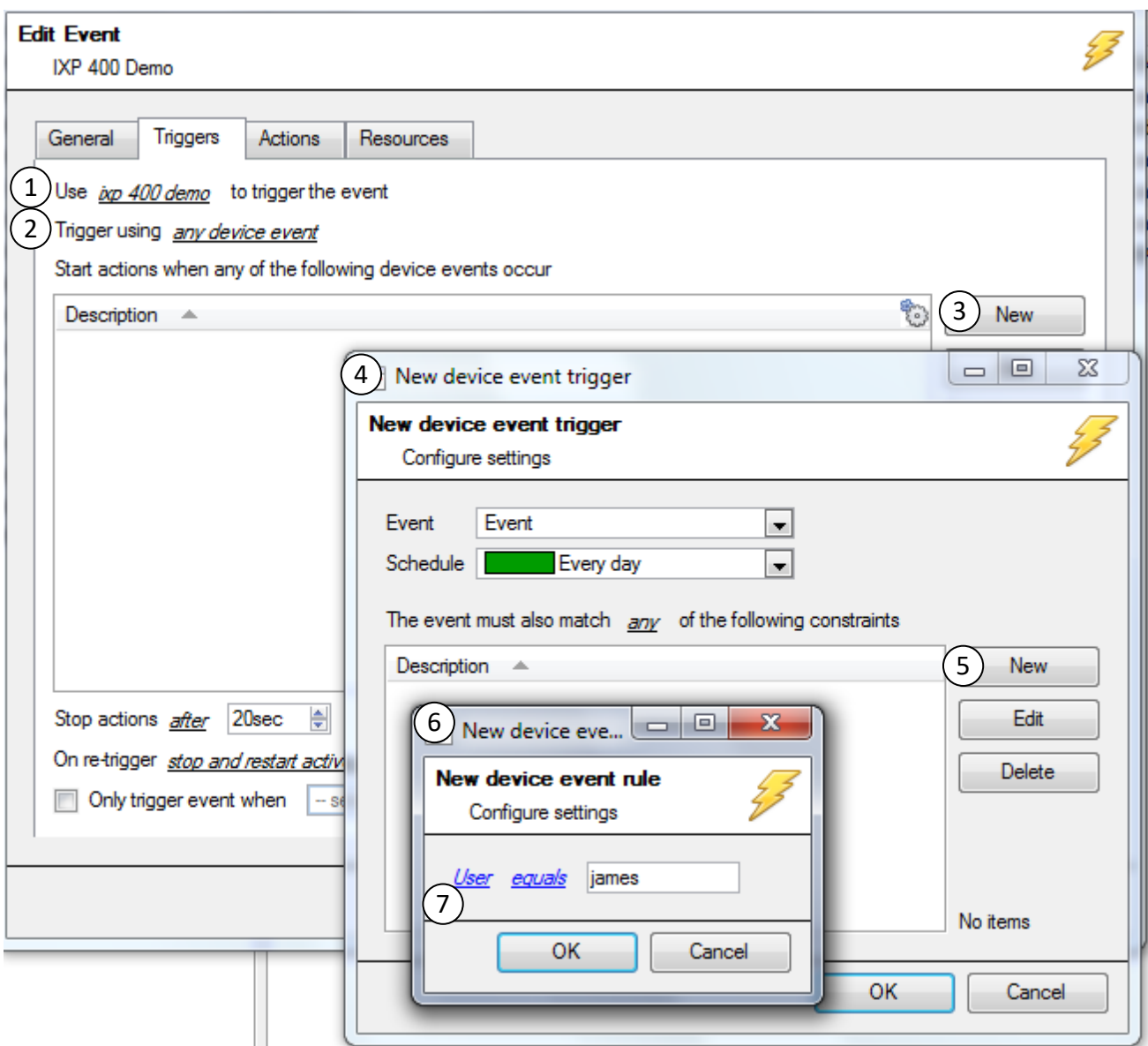
The purpose of following example is to give the user a practical idea, of the integration setup, using one specific application.

a. Example using “Any Device Event”

In the following example we will setup an event that will trigger a camera recording, every time there is an integration device event that involves the User “james”.

This is a purposefully simple example. You may increase the complexity of the event by adding multiple triggers (and trigger constraints), and multiple actions.


Triggers Tab



- **Set Device Event as the trigger**


Select IXP integration device as a trigger (1), using the hyperlink. This will set the trigger as an integration device message. Then select **Trigger using any device event** (2).

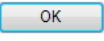
- **Add a new “device event”**

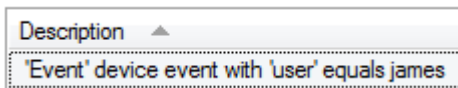
The next step is to define which device event will be used as a trigger. Click on  (3) in the Triggers tab.

This will bring up the **New device event trigger** (4) window. If you leave it as it is, it will trigger the event on any, and all, device event messages. Some constraints need to be added, as not all of these messages are relevant.

- **Add a constraint**

To add a constraint click on , to bring up the constraints dialogue (6). To add a constraint such that the event will only trigger on messages involving the user “james”, click on the blue hyperlink (7), that is currently titled [User](#) (**note:** By default it will be: [Site name](#)).

Enter in the name of the user who you want to trigger the event. (In this case it is “james”). Then click on all the  buttons, until only the Triggers tab is open.

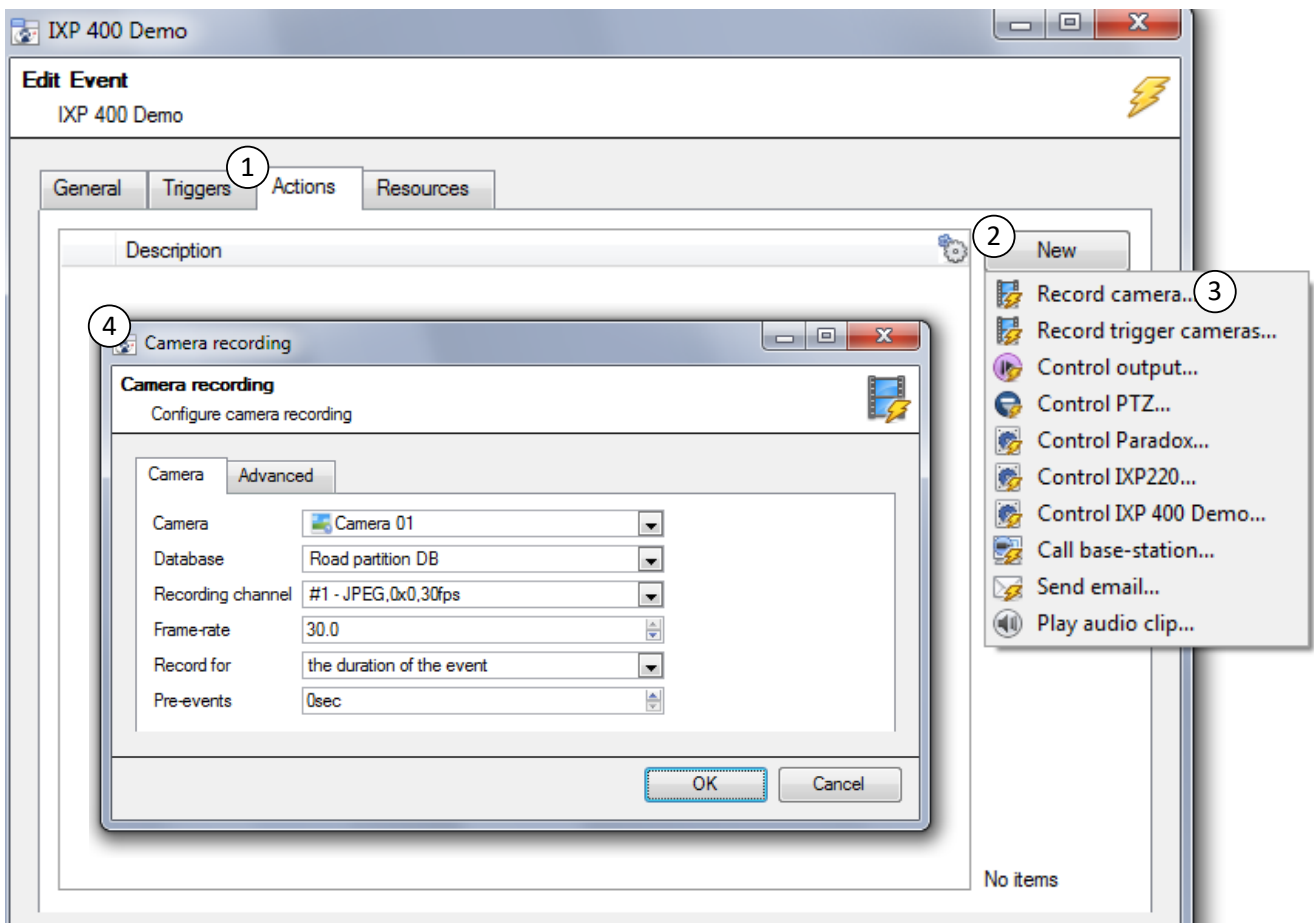


You should now see your trigger in the description field, as the image, to the left, shows.

Note: you may even add multiple constraints.

b. Add an Action

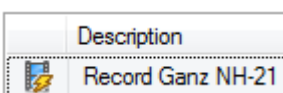
Now that the event has a trigger, it needs an action. The action we are going to add will be to record a specified camera, whenever the trigger is activated.



- **Add an action**

To add an action, click on the Actions Tab (1). Then click on button (2). This will open the drop down menu (3), which will list all the available actions. Select the relevant action (in this case it is "Record camera...").

The **Camera recording** dialogue will pop up. Once in this dialogue, select the relevant camera, and define the settings that you desire.







Once this is done click the buttons, until only the Actions tab is open. You should now see the added action in the "description" area of the Actions tab.

c. General Tab


The options in the Description field, change, based on the Trigger type that you choose, which is why we are dealing with this tab last.

Give your event a relevant Name, Description, Schedule, and Priority (this defines how it will appear in an Alarm Management Gateway table).

- **Description**

General	Triggers	Actions	Resources
Name	<input type="text" value="IXP 400 Demo"/>		
Description	<input type="text" value="\$user_name"/> 		
Schedule	<input type="text" value="Every day"/>  		
Priority	<input type="text" value="Low"/> 		

If you want to database your event under the name of a specific object, you will need to modify the **Description** field in the General tab of the Event setup.

Click on the  to see a list of available descriptions. In this case we will database using the name of the user, that triggers the event (“james”).

Note: If you leave the Description field empty the event will be databased under the event Name.

d. Conclusion

The event created will trigger, whenever the username “james” is sent in a device event (the trigger). It will then take the action of recording the specified camera.