VISuite – Milestone Proxy Integration

Integrating VISuite with the Milestone XProtect 2020 R2 Corporate via Ipsotek Proxy Service

Document Version 1.2

office +44 [0] 208 971 8300
fax +44 [0] 208 879 6031
e-mail info@ipsotek.com
web www.ipsotek.com

IPSOTEK ltd, PO Box 54055, London, SW19 4WE, United Kingdom
Company Registered in England and Wales, Number 4272419
Registered Office Address: Acre House, 11-15 William Road, London, NW1 3ER, United Kingdom

Security Warning

Approvals

Role	Name	Title	Date
Reviewer	James Black	Head of QA	September 2020

Document Version History

Version	Date	Author	Details
0.1	June 2017	**Moe Abbas**	Initial Version
0.2	July 2017	**Joao Reis**	Revision
0.3	July 2017	**Fares Djenandji**	Revision
0.4	August 2018	**Harry Chu**	Revision
0.5	August 2018	**Alexander Salter**	Review and Update
0.6	September 2020	**James Black**	Updated for V11
0.7	September 2020	**Tanbir Ahmed**	Document revised, formatted and updated.
0.8	August 2021	**Scarlett Neville**	Document update
0.9	May 2022	**Scarlett Neville**	Update to Section 5
1.0	October 2022	**Patrycja Słaby**	Minor updates
1.1	January 2023	**Patrycja Słaby**	Section 7 updated
1.2	May 2023	**Patrycja Słaby**	Logo updated, Section 1.4 added (port references)

Definitions and Abbreviations

Acronym	Description
AI	Artificial Intelligence
AIVA	Artificial Intelligence Video Analytics
MDDB	Meta-Data Data-Base
GUI	Graphical User Interface
VMS	Video Management System
SDK	Software Development Kit
VIS	Visual Intelligence Server
ONVIF	Open Network Video Interface Forum
VCA	Video Content Analysis

Associated Documents

Ref.	Title	Identity
1	VIConfigure Manual	*ITM_VIConfig _V11.7*

You can send your comments, corrections, and suggestions about this guide to support@ipsotek.com

Table of Contents

1. Introduction

This document provides a step-by-step guide to the process of the **VISuite** – **Milestone** integration.

The document is categorized into the following three sections:

a) **Camera Configuration & Video Streaming** – Video from **Milestone XProtect** server or directly from the camera will be analysed by **Ipsotek's** hardware & software.

b) **Alarm Configuration & Alarm Linking** – One of the integration's aims is to notify alarms in Milestone Management client interface. To achieve these alarms in both systems, **Milestone** and **VISuite** must be linked.

c) **Plugins** – Software components developed by Ipsotek which can be hosted in Milestone's Management client interface.

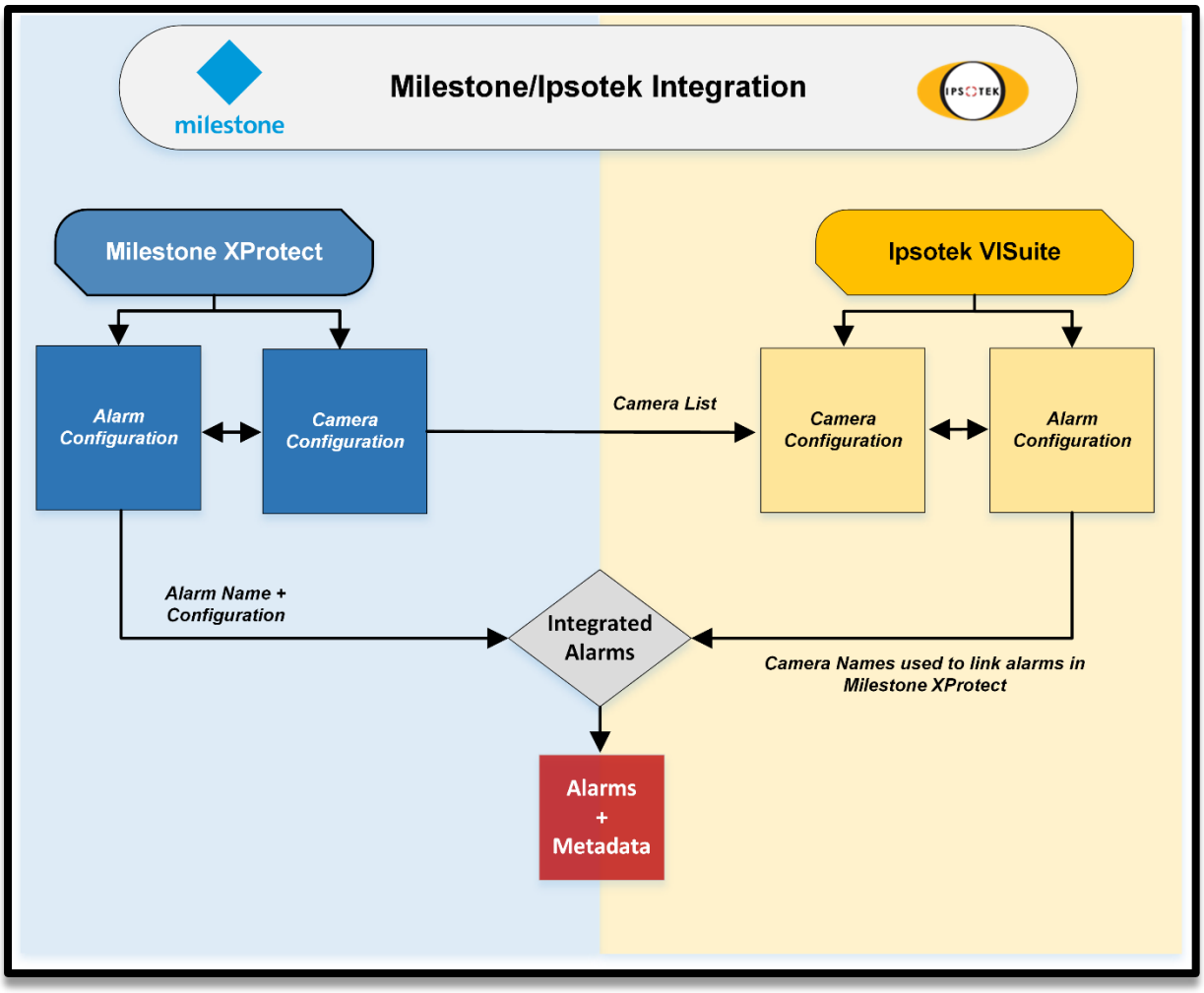


Figure 1: Block Diagram Describing Integration

1.1 Integration Features

Integration with **Milestone XProtect** supports the following functionality:

- Decode and analyse the IP Video in real-time.
- Raise alarms in XProtect viewing client.
- Display real time tracking and event metadata in viewing client.

1.2 Prerequisites

This integration requires the following components from both systems:

- [1]**Milestone XProtect Corporate** 2019/2020 Server.
- [1]**Milestone XProtect Management Client** 2019/2020.
- [1]**Milestone XProtect Smart Client** 2019/2020.
- **AIVA** server. **Ipsotek's** AIVA hardware server.
- **Ipsotek VISuite** AIVA 11.4 software, or above.
- **Milestone Proxy IpsotekMilestoneProxy11.0.0.2.**
- **Milestone** device pack 8.4 or later
- **Administrator privileged windows account**

1.3 Video Streaming

It is assumed that both **Milestone** server, **AIVA** server and IP cameras are on the same network.
It is recommended that the network guarantees a consistent frame rate without any packet drops.

1.4 Port References

Source	Destination	TCP / UDP	Port Number	Direction
Ipsotek Management Node	Milestone Management Server	TCP	80, 443	Outbound
Ipsotek Management Node	Milestone Management Server	TCP	22331, 22333	Outbound
Ipsotek Processing Node	Milestone Management Server	TCP	80, 443	Outbound
Ipsotek Processing Node	Milestone Recording Server	TCP	443, 7563	Outbound

1.5 Feature Compatibility

The table below depicts the supported Ipsotek features on the various Milestone editions.

Integration Features	XProtect Corporate	XProtect Expert	XProtect Enterprise	XProtect Smart Client (32-bit)	XProtect Smart Client (64-bit)
VMS Video Streaming	✓	✓	✓	✓	✓
Raise XProtect Alarms	✓	✓	✓	✓	✓
Display Metadata	✓	✓		✓	✓

[1] Versions tested within QA test environment. Earlier versions may work but have not been fully validated.

2. Milestone Licensing

2.1 Required Licences

There is a simple method of integration supported by the Ipsotek platform as described below. The **Milestone** licencing model requires the procurement of device license keys (DLK) to support individual devices. The required licenses are as follows:

Method: AIVA (Ipsotek) server to receive video streams from Milestone.
Licences Required: **One Milestone DLK per metadata channel**

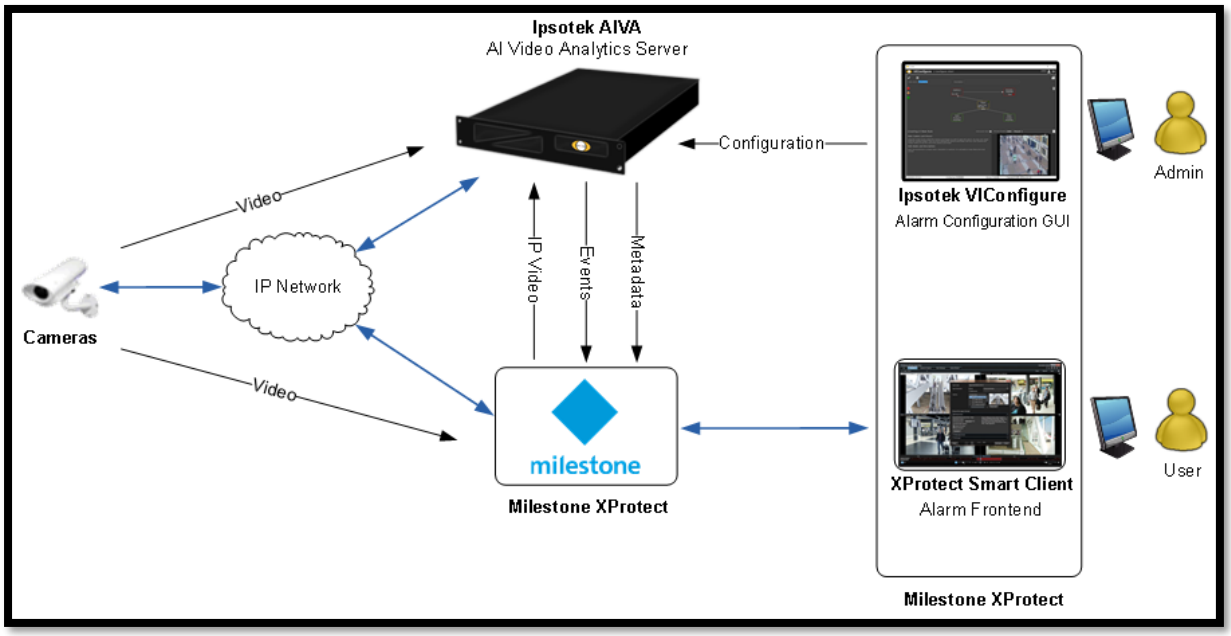


Figure 2: Milestone Metadata Integration System Diagram

2.2 Checking Milestone Licensing

The correct licenses should be acquired prior to any installation/configuration. Licenses and their quantities can be checked in the **Milestone XProtect** management client by navigating to the **License Information** under **Basics** on the left hand side tree menu and clicking on the **License Overview** button as shown below:

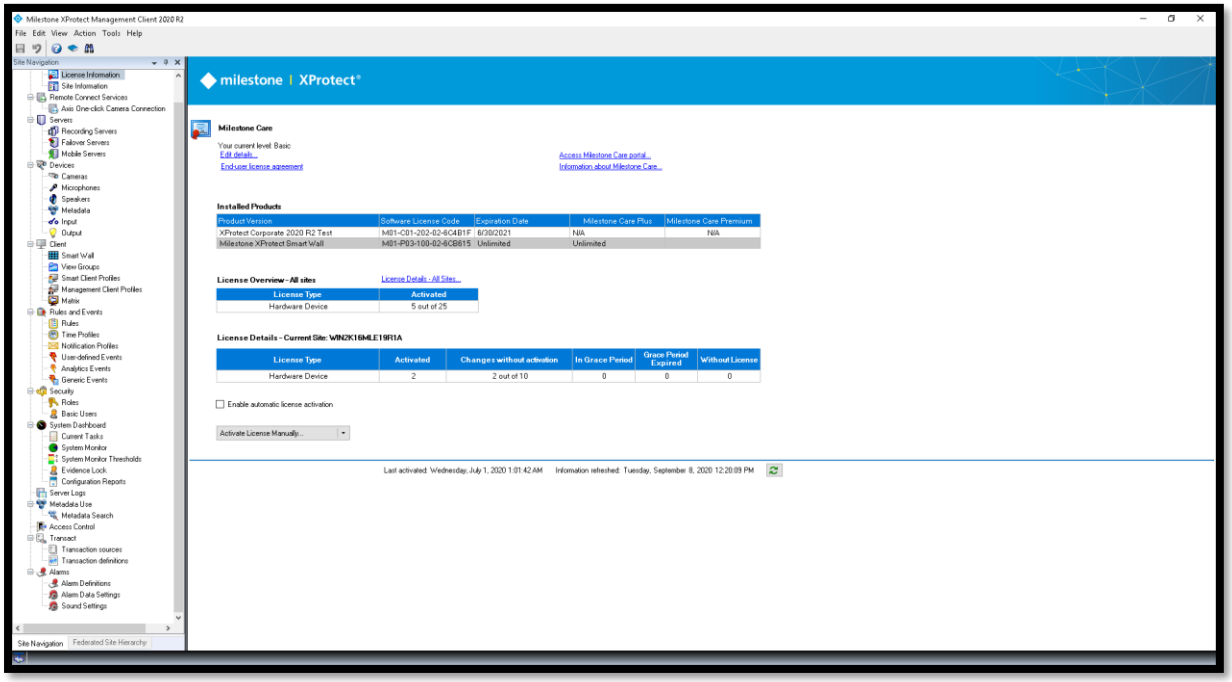


Figure 3: Milestone Licensing

3. Milestone Cameras

In order to perform event detection and overlay metadata, it is assumed that both the Milestone server and VIS server are on the same network. It is recommended that the network guarantees a consistent frame rate without any packet drops.

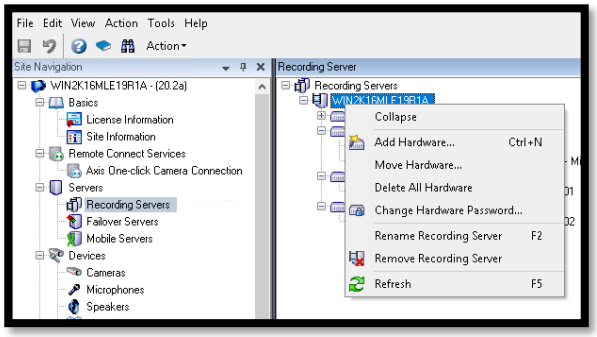
3.1 Camera Name Limitations

Character Limit (Ipsotek Limitation)	250
Allowed Characters	0123456789 abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ !#$%()*+,-.:;=>?@[]^_{|}~

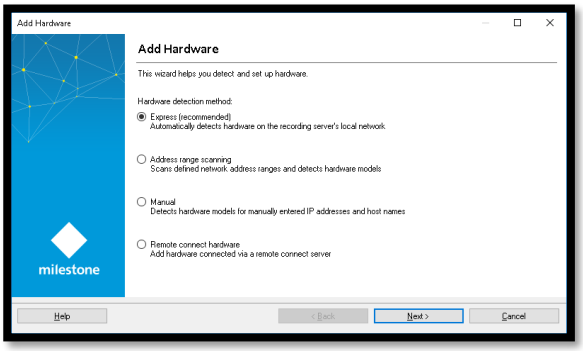
3.2 Camera Setup

This section provides a step-by-step guide to setting up a camera in the Milestone XProtect Corporate/Enterprise Management Client. Cameras should be added to the **Milestone** platform before seeking to create connections to the **Ipsotek AIVA** server. Follow the steps below:

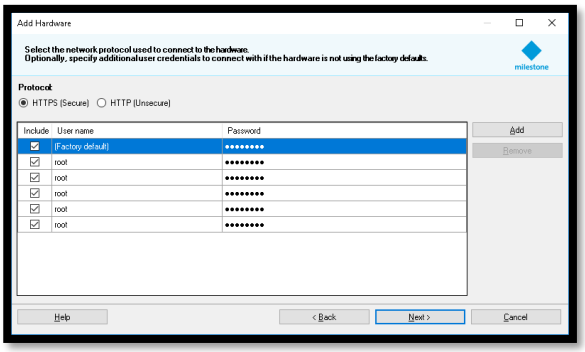
Step 1:
Add the camera by selecting **Recording Servers** from the left-hand tree. Right click on the required/displayed server and select **Add Hardware** from the drop-down menu.



Step 2:
Select **Manual** on the wizard.

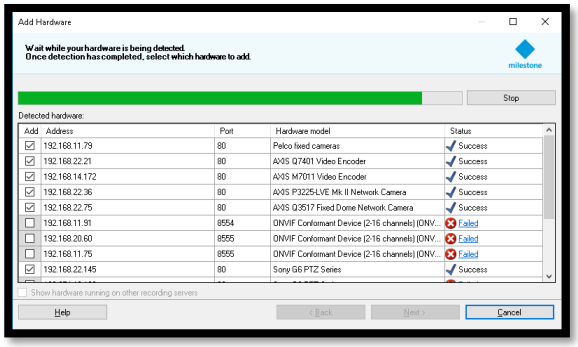


Step 3:
Add the camera authentication credentials and enable by checking the box.



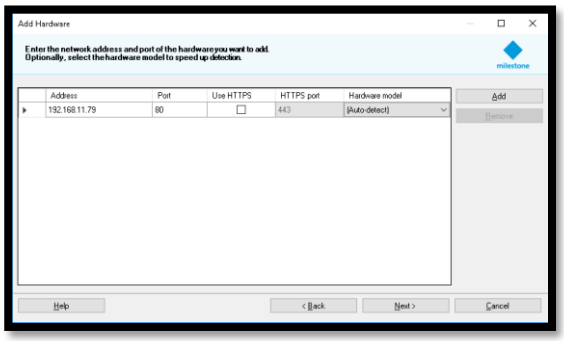
Step 4:
Select the camera manufacturer and model.

NOTE: *Selecting a manufacturer will select all subsequent models. You can select the specific model number if known.*

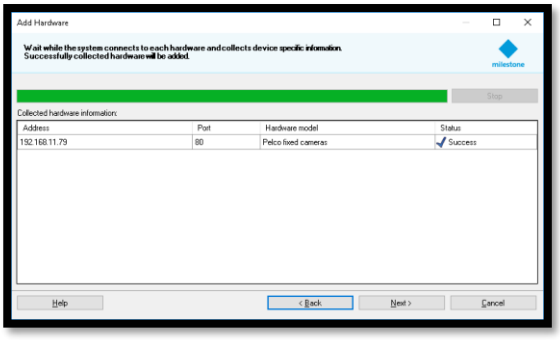


Step 5:
Input the IP address of the camera.

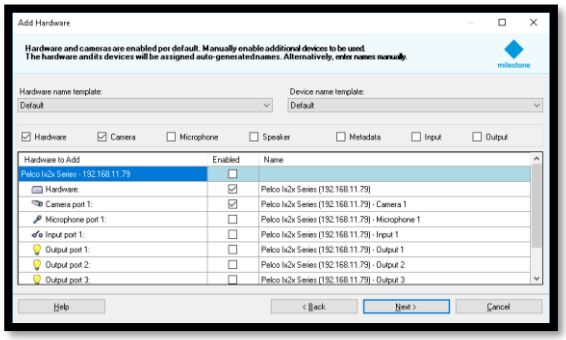
NOTE: *You can add multiple device IP's by clicking on* ***Add****.*



Step 6:
Acknowledge the addition of the camera to the system.

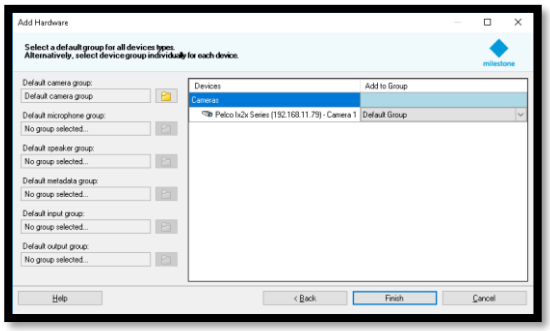


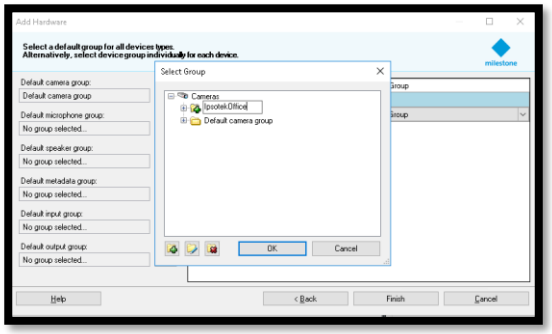
Step 7A:
Select any additional hardware functions required.



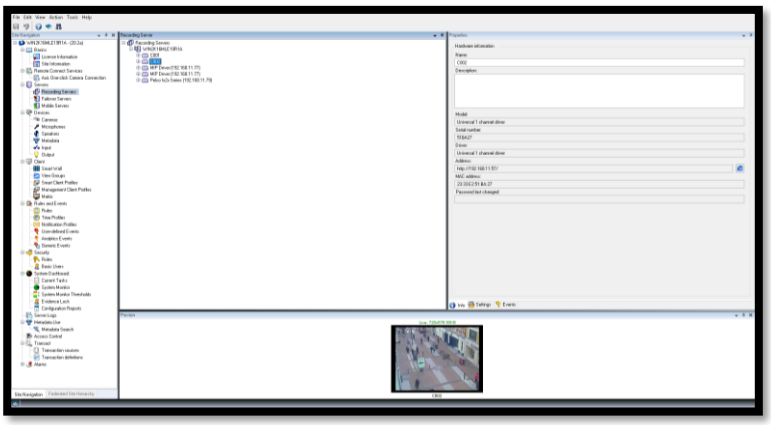
Step 7B:
Select the camera group by clicking on the highlighted folder. You can also create new groups through this dialogue.

***NOTE:** It is highly recommended that groups are used to keep cameras in a manageable order.*

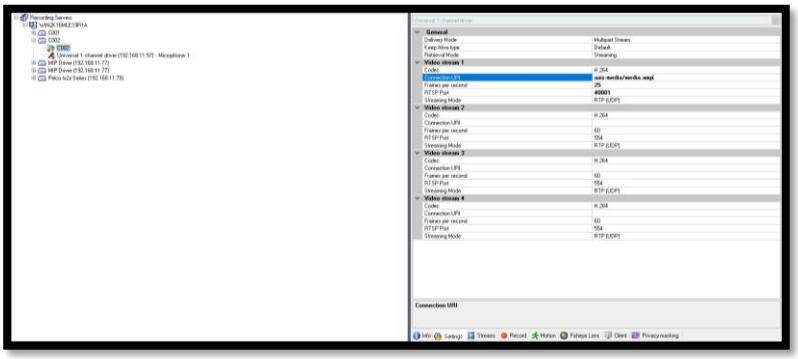




Step 8:
Confirm the camera feed via the preview pane as shown.



Step 9:
Select the supported camera stream from the options by expanding the camera tree and selecting the camera hardware. Navigate to the **Streams** tab and select the required stream from the dropdown menu.



Supported Streams:
H.263
H.264
MPEG

3.3 Ipsotek Camera Configuration

The final step in the camera configuration is to name the cameras in **VIConfigure** to match the camera names configured in **Milestone**. Refer to the **VIConfigure** user manual for configuration of rules setup in **VISuite**.

4. Milestone Users

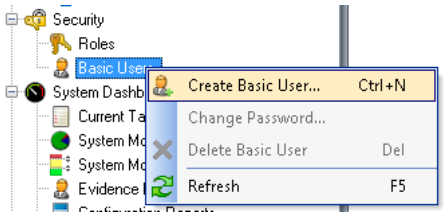
4.1 Create Basic User

In order for the integrated alarms to be viewed at the end of the integration, a basic user must be created and assigned to a corresponding group.

***NOTE**: This step can be skipped if a Windows based account is being used for authentication. The correct permissions are required for Windows based accounts.*

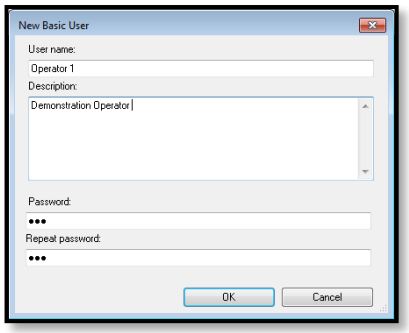
Step 1:

Create a new user by navigating to **Security** from the left hand menu tree. Right click on **Basic Users** and then click on **Create Basic Users** from the drop down menu.



Step 2:

Input the new user details on the **New Basic User** window. Click on **OK**.

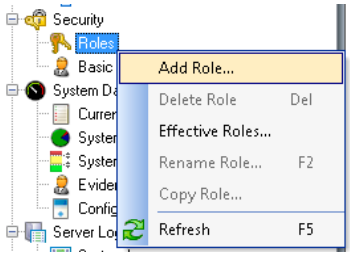


4.2 Create Basic User Roles

In order for the integrated alarms to be viewed at the end of the integration, roles must be created and assigned to a corresponding user.

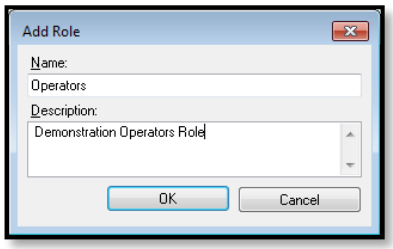
Step 1:

Create a new role by navigating to **Security** from the left hand menu tree. Right click on **Roles** item and then click on **Add Role** from the drop down menu.



Step 2:

Input the new role details on the **New Basic User** window. Click on **OK**.



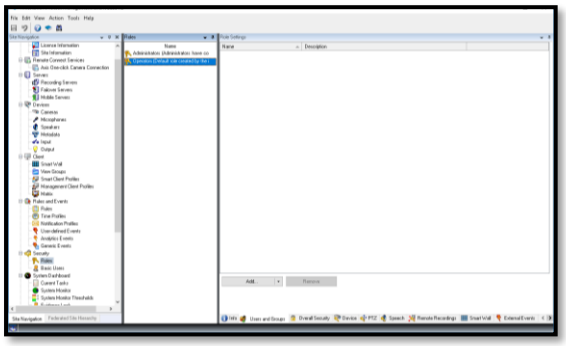
4.3 Assign Basic User to Role

Basic users must be assigned to a corresponding role.

Step 1:

Navigate to **Security** from the left hand menu tree. Select **Roles** and the corresponding role **Operators** from the list in the middle tree.

Navigate to **Users and Groups** from the bottom tabs, as shown in the diagram.

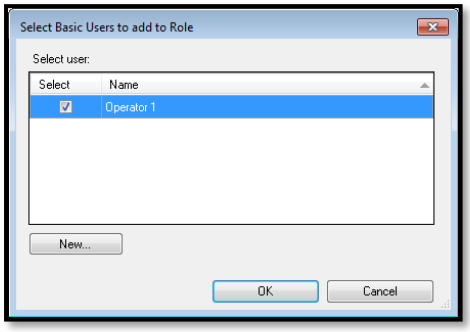


Step 2:

Click on **Add** and then click on **Basic User**.

Step 3:

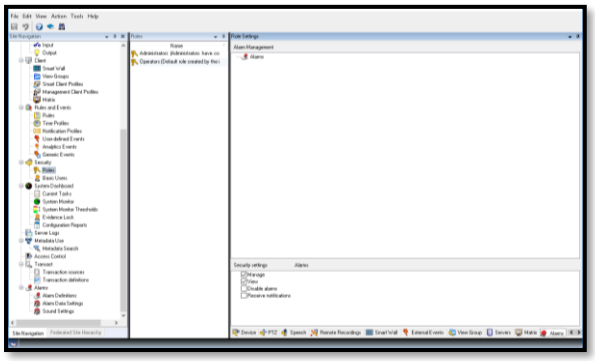
Select the newly-created basic user.



Step 4:

Navigate to the **Alarms** tab and select **Alarms.**

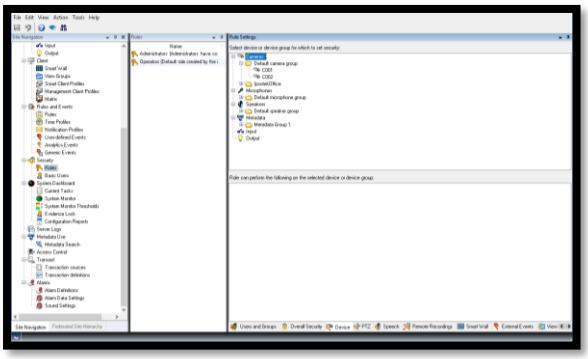
Select and tick **Manage** and **View.**



Step 5:

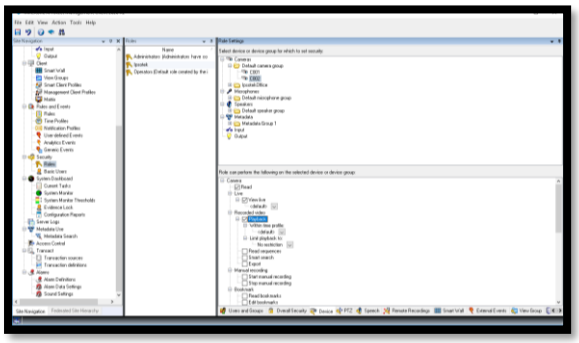
Navigate to the **Device** tab and select **Cameras**.

Select the associated cameras that will display analytic events.



Step 6:

Enable **Camera Read** on the corresponding cameras to receive analytic events.

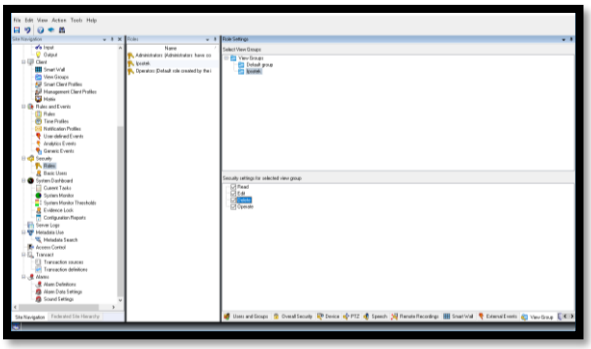


Step 7:

Navigate to the **View Group** tab.

Select the groups that the operators will be able to view the AIVA alarms in the **View Group** tab.

Set the security constraints for the groups as shown.



5. Video Streaming Options

The integration between **Milestone XProtect** and **Ipsotek VISuite** 11.4 operates as follows:

- The **AIVA** (**Ipsotek**) server will receive unicast or multicast video stream directly from IP cameras

- Upon the receipt of video, analysis in real time occurs and events will be raised into **Milestone XProtect Smart Client** as live analytics events.

- Metadata is provided by **Ipsotek** to **Milestone** via the proxy as a MIP's Stream. This can then be used as an overlay within **Milestone** that highlights the cause of the alarm via bounding boxes drawn on the image.

5.1 System Schematic

The proxy integration has been improved to only send metadata overlay information to **Milestone Management** server. The **Milestone Proxy** Server uses the concept of a centralized proxy where the **Ipsotek's** VIS servers will connect to **Milestone** VMS. **Milestone Proxy** will then be responsible for maintaining the communication to the **Milestone** VMS, triggering alarms and transmitting metadata through the MIP Message communication service.

It is assumed that both **Milestone**, the VIS server and cameras are on the same network. It is recommended that the network guarantees a consistent frame rate without any packet drops. It is also assumed that all servers and cameras are synchronised to the same NTP time source.

Events and metadata are handled by the **Ipsotek XProtect Proxy** service. The proxy provides the integration with the **Milestone** system through the **MIP Message Communication** driver.

This proxy is a centralised service that can receive analytic metadata from several Video Analytics servers and pass to the **Milestone Management** Server for event detections and metadata overlay to be consumed by **Milestone Smart Client**.

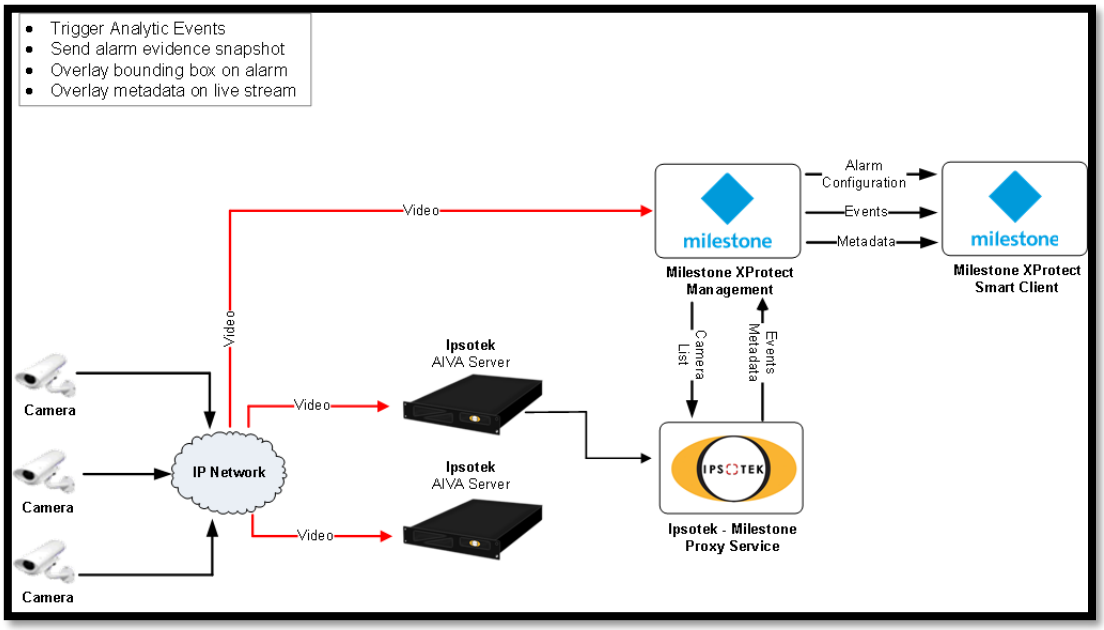


Figure 4: System Schematic

The initial Login into the Milestone MGMT server to obtain the IP and the port of Recording server is encrypted.

The encryption of the login and re-login requests to the Milestone server depends on the camera settings. If the port under **Camera Parameters** is blank or is set to 80, then these requests are HTTP requests and are not encrypted with SSL/TLS.

If any other port than 80 is used, the requests are encrypted with SSL/TLS.

Each (re-)login is performed through NTLM authentication over the unencrypted http connection if channel is not encrypted.

If basic authentication is requested (for example username: '[BASIC]\User1') then each (re-)login is performed through basic authentication over the encrypted https connection.

6. Ipsotek Server Configuration

6.1 Camera Setup

Before **VISuite** is configured, an entry to the windows **hosts** file must be added to send alarm data to the named **Milestone** server(s).

The file is located at: **C:\Windows\System32\drivers\etc**

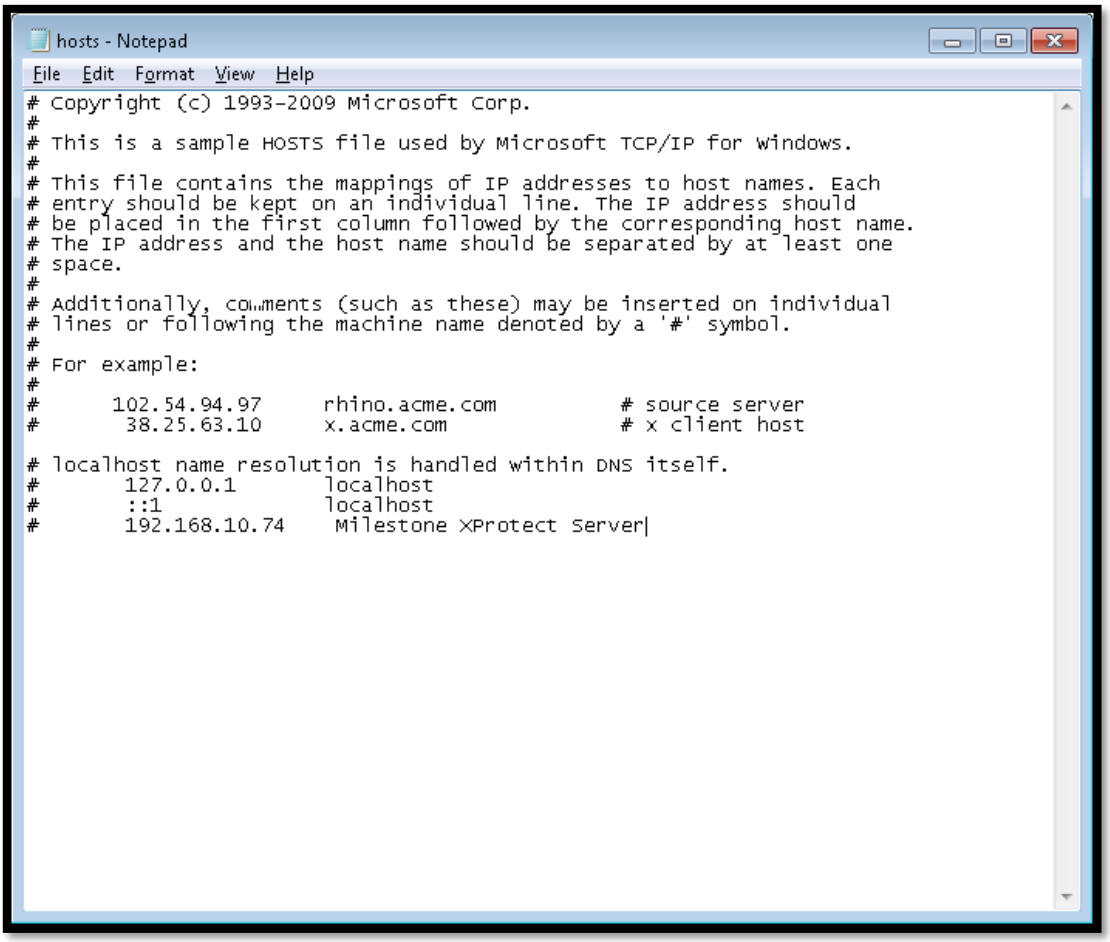


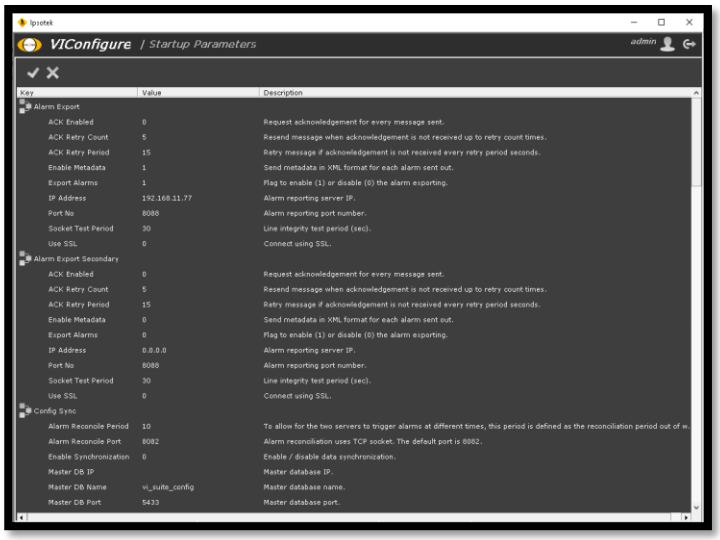
Figure 5: Addition of Milestone IP Address

6.2 Enabling XML Export

To establish a connection so that alarms are sent with metadata overlay to **Milestone Management**, an XML connection is required from the AIVA server to the **Milestone** proxy. To create the connection, complete the following steps:

Step 1:

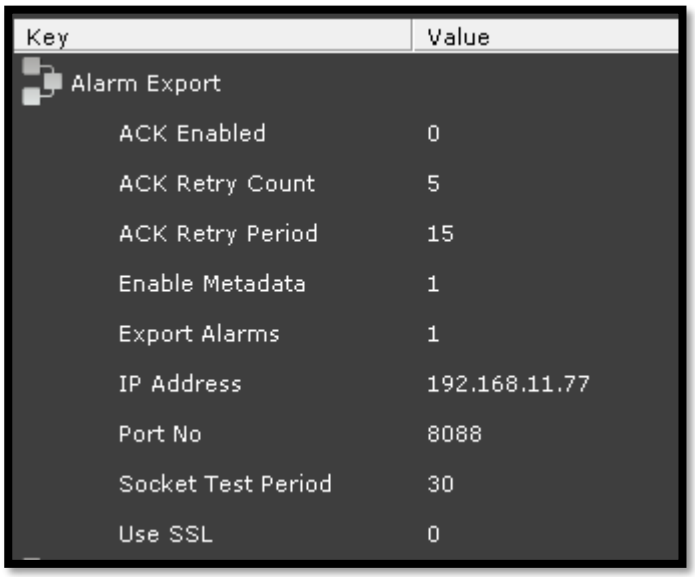
On **VIConfigure**, click on **Server Settings** and then on **Startup Parameters.** Navigate to **Alarm Export.**



Step 2:

Enter the relevant connection details in the **Alarm Export** settings.

NOTE: *Ensure that the IP address is pointing towards where the proxy is installed and not to the VMS.*



6.2.1 Alarm export parameters

Export Alarms via a primary and/or secondary XML source to a third party system.

Parameter	Description
ExportAlarms	Export alarms via TCP. **Set to 1** to enable exporting of alarms to export via specified IP address and port number. Alarm will be sent with XML data.
IPAddress	Defines export IP address, this is to be set to the IP of the server running the Milestone Proxy. It is recommended to use absolute addresses.
PortNo	Defines export port number. **Default 8088.**
UseSSL	Force SSL connection if required. **Default 0.**
SocketTestPeriod	Interval period (seconds) used to send test message to every socket to guarantee a stable connection to the server. **Default 30.**
ACK Enabled	Enable XML acknowledgment feedback. **Default 0.**
ACK Retry Count	XML acknowledgment feedback message retry count. **Default 5.**
ACK Retry Period	XML acknowledgment feedback message retry interval period. **Default 15.**
Enable Metadata	Include metadata information with XML export message. **Set to 1** to **enable metadata export**.

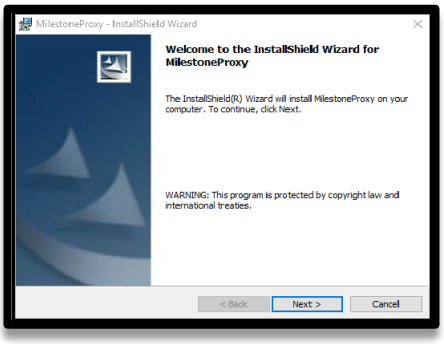
6.3 Milestone Proxy Installation

Step 1:

Install **MilestoneProxy.exe**.

The installer will install to

C:\Program Files\Ipsotek\MilestoneProxy



Step 2:

Open the **MilestoneProxy** file in **Notepad** as Administrator. Navigate to my computer and click on the **alt** key.

A toolbar will open at the top of the window. Click on **Tools** and then **Folder options.**

A new window will open. Navigate to the **View** tab and ensure **Show hidden files, folders and drives** is selected.

Then open the

C:\ProgramData\Ipsotek\MilestoneProxy\MilestoneProxy.ini file for editing.

Under **[Server]** input the **IP address of the VMS server** with the relevant login details.

6.3.1 MilestoneProxy.ini parameters

The following settings are available in the **ini file**, only the one highlighted green are required.

Parameter	Description
[Proxy]	
ServerPort	The server port opened by the proxy. The alarm export port configured in VIConfig should match this port number.
LogPath	Log storage path, if left blank defaults to *"C:\ProgramData\Ipsotek\MilestoneProxy"*
EnableDebugMode	1 = Debug mode for verbose logging 0 = Normal mode for error logging
EnableAlarms	1 = Alarm Handling Enabled 0 = Alarm Handling Disabled
EnableMetadata	1 = Metadata Handling Enabled 0 = Metadata Handling Disabled
[Server]	
Ip	IP Address of the Milestone server

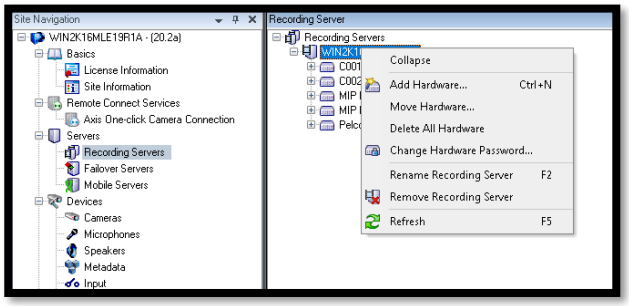
Port	Control port of the Milestone server, default 80.
User	Milestone username
Password	Milestone password (***Note:*** *Password will be automatically encrypted after first successful connection)*
Trigger Mode	0 for Analytics event by default; 1 for Alarm event.
MIP Port 1	MIP port used
MIP Port 2	MIP port used

7. Metadata Integration

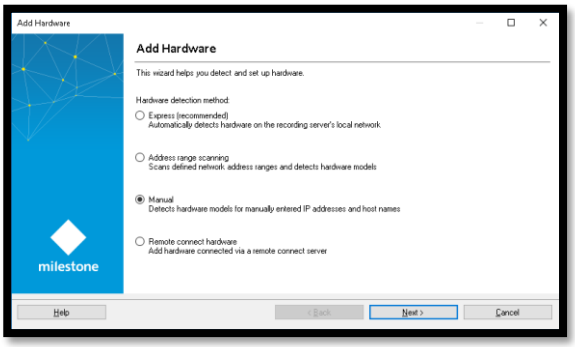
7.1 Milestone Metadata Streaming Setup

Metadata streams must be configured to display metadata on live camera streams and record alarm footage. Complete the steps below:

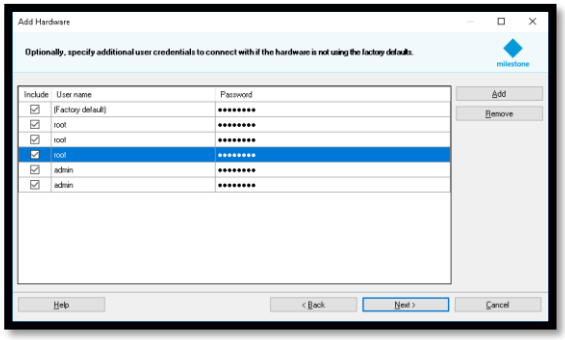
Step 1:
Add a metadata stream by right clicking on the server and clicking on **Add Hardware.**



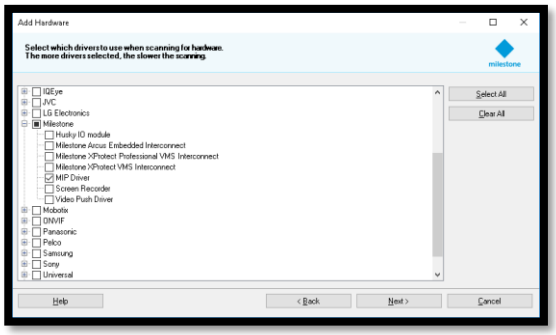
Step 2:
Select **Manual** from the wizard.



Step 3:
Add server authentication credentials and enable via the check box.
Username: **root**
Password: **password**

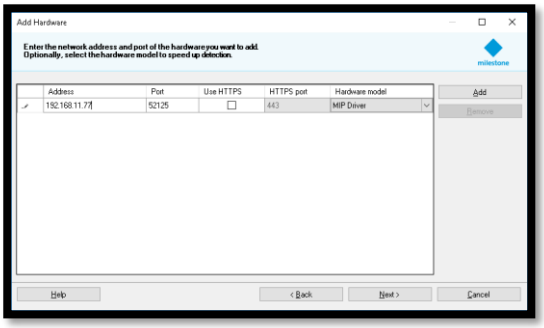


Step 4:
Under the **Milestone** category, select **MIP Driver.**

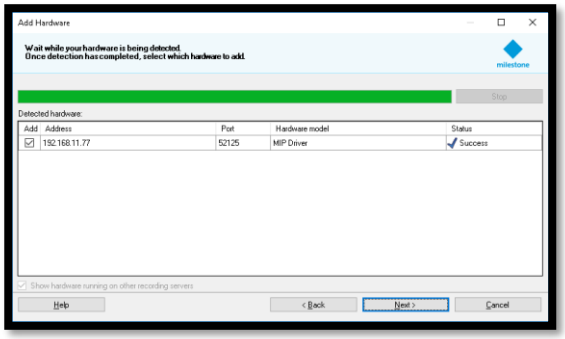


Step 5:
Input the IP address of the server and specify the port number. Select **MIP Driver** from the drop-down list.

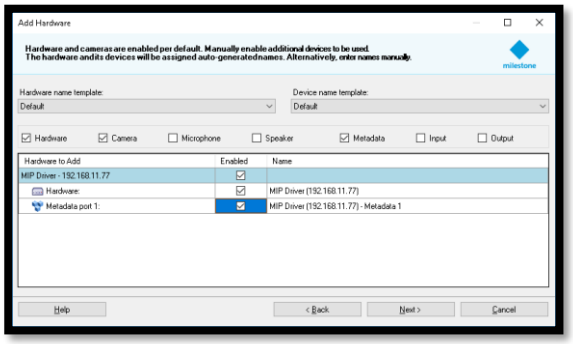
***NOTE:** The port must to match specified number set in **VIConfigure**. Each camera will require its own port number.*



Step 6:
Acknowledge the addition of the metadata stream.

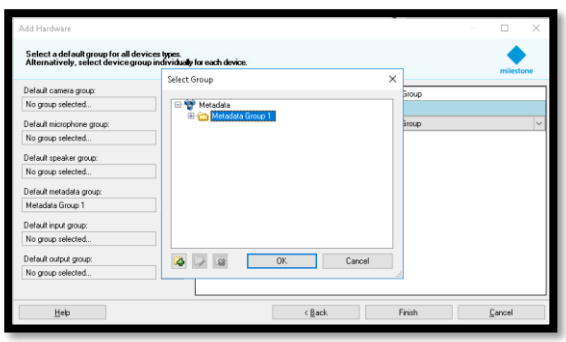


Step 7:
Select the additional metadata port as shown.

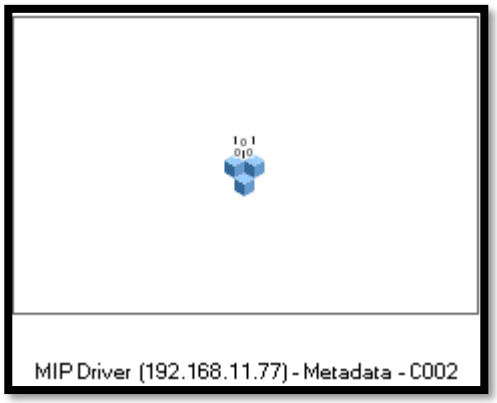


Step 8:
Select the metadata group by clicking on the highlighted folder. You can also create new groups through this dialogue.

***NOTE:** It is highly recommended that groups are used to keep metadata feeds in a manageable order.*



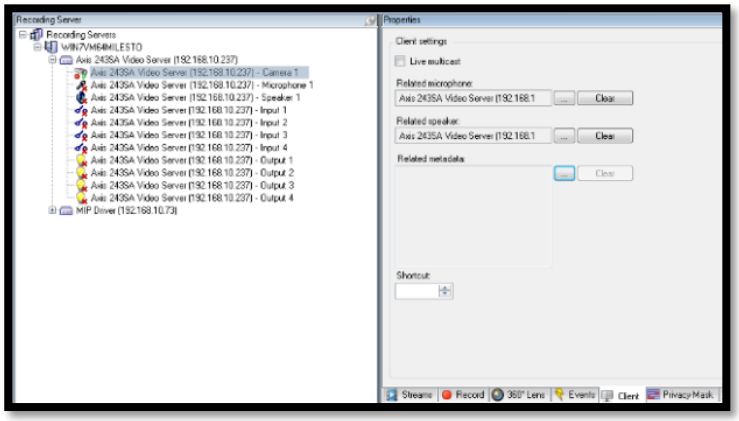
Step 9:
Check the metadata stream by observing the icon in the preview pane. The icon receive the 0s and 1s to confirm receipt of metadata information.



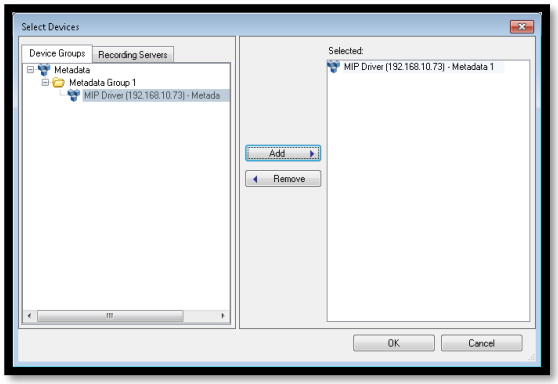
Step 10:
Assign the metadata channel to the camera.

Select the supported camera stream from the options by expanding the camera tree and selecting the camera hardware.

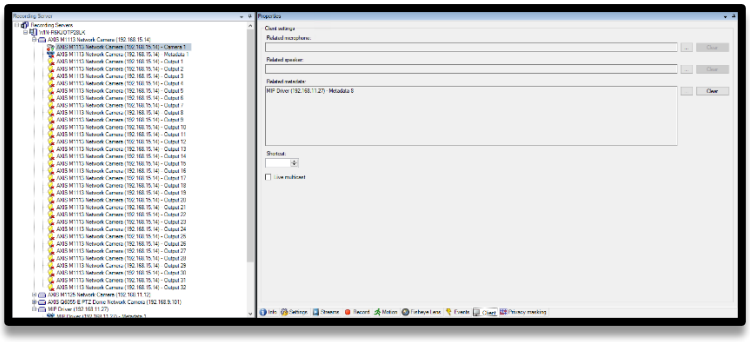
Navigate to the **Client** tab on the right hand pane and click on the highlighted button to reveal the allocation options.



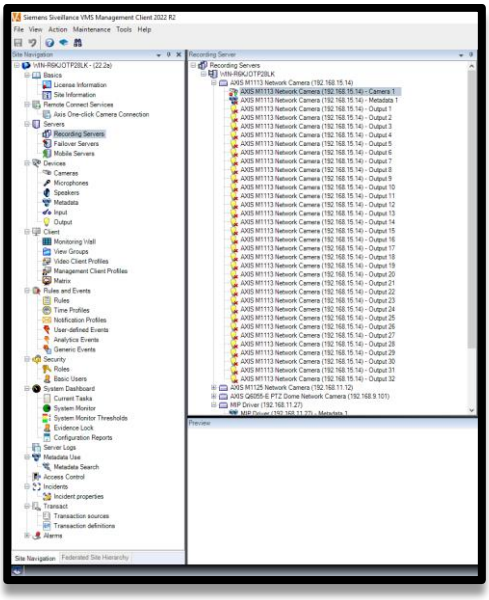
Save the settings by clicking on  or pressing Ctrl+S.



Step 11:
Configure individual channels for each camera.

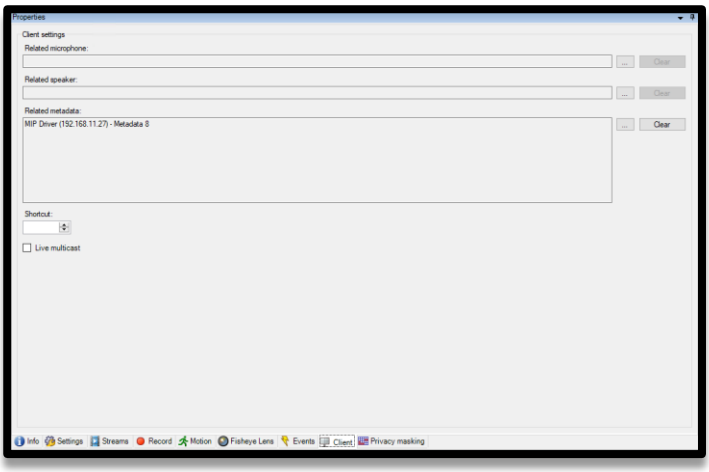


Under each camera being used, the user must select the relevant camera under the **Recording Server** tab.



Then in the **Properties** panel select the penultimate **Client** tab at the bottom of the window.

In the **Client Settings**, the **Related Metadata** must be populated by using the "**...**" button and selecting a relevant channel from the MIP Driver.



It is recommended to use the same Metadata channel number as the Camera ID in **VISuite** for simplification and to help ensure unique channels are used for each camera.

NOTE: *The number of Metadata channels available will be dynamic based on the number of camera channels configured in* ***VISuite****.*

The image below shows the completed **Ipsotek** metadata integration in **Milestone Smart Client**.

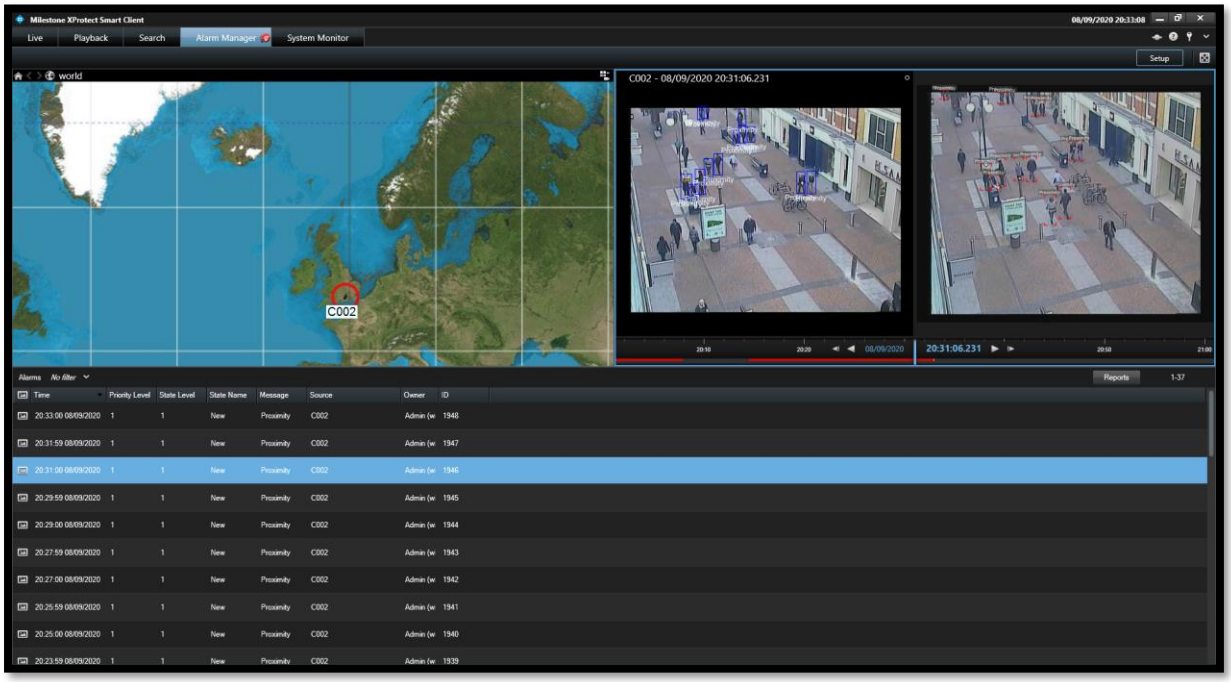


Figure 6: Metadata in Smart Client

8. Alarm Integration

Once the input video source has been set up, **VISuite** will analyse the video, generate alarms and trigger the corresponding alarms in the **Milestone** system. The following section provides a step-by-step guide to creating alarms on both platforms.

8.1 Alarm Name Limitations

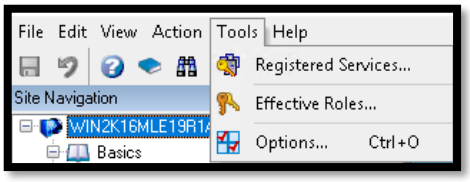
Character Limit (Milestone Limitation)	31
Allowed Characters	0123456789 abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ !#$%()*+,-.:;=>?@[]^_{|}~

8.2 Enable Analytic and Generic Alarms

Step 1:

Open **Milestone Management Server.**

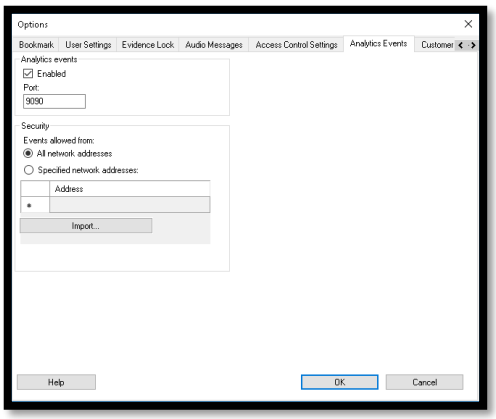
Navigate to the **Tools tab** and then click on **Options.**



Step 2:

Navigate to the **Analytics Events** tab.

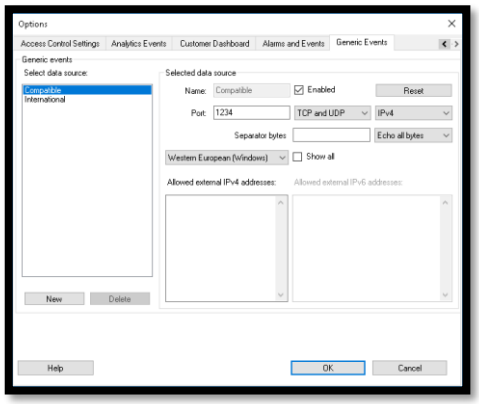
Check the **Enabled** box to enable Analytic events.



Step 3:

Navigate to the **Generic Events** tab.

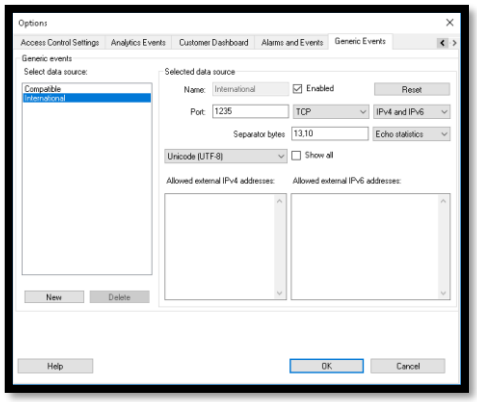
Enable **Generic Events.**



Step 4:

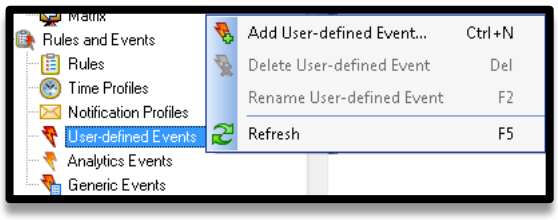
Select **International** under **Select data source**.

Check the **Enable** box to enable **International Events.**

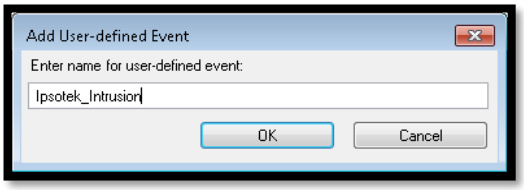


8.3 Milestone Alarm Configuration

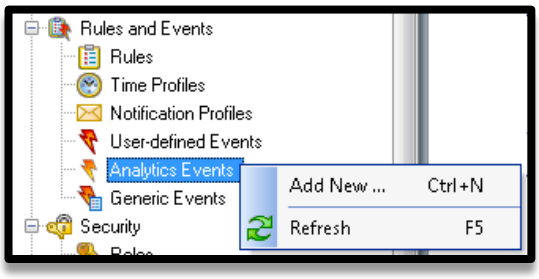
Step 1:
Right click on **User-defined Events** under the **Rules and Events** menu and click on **Add User-defined Event**.



Step 2:
Create the event by entering a name. Click on **OK.**

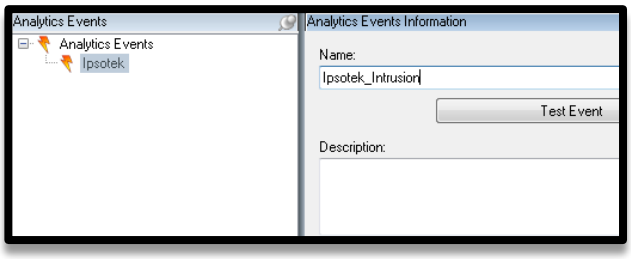


Step 3:
Right click on **Analytic Events** under the **Rules and Events** menu and click on **Add New**.

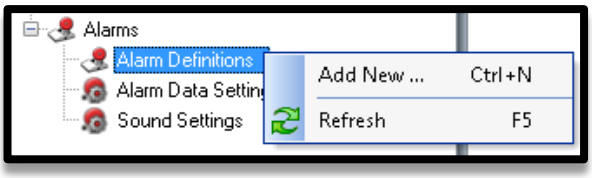


Step 4:
Create an event in the right hand pane.

Save the settings by clicking on  or pressing **ctrl+s.**

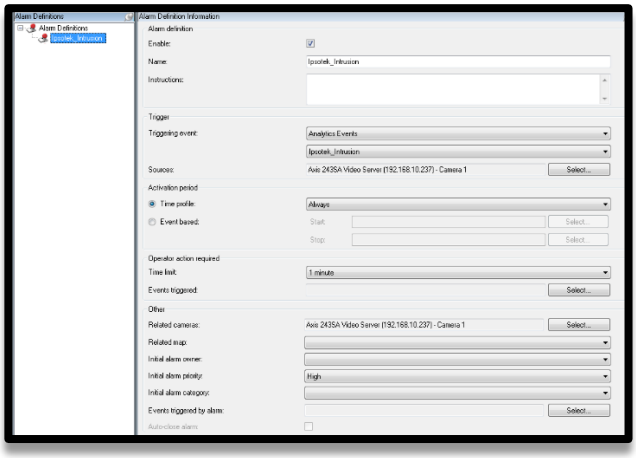


Step 5:
Right click on **Alarm Definitions** under the **Alarms menu** and click on **Add New**.



Step 6:
Input the alarm definition information.

NOTE: *Alarm definitions should be matched to their corresponding triggering event camera as previously set.*



8.3.1 Creating Milestone Alarm Events for Multiple Cameras

Previously, **Analytics Events**, **User-defined Events** and **Alarm Definition** were defined for each camera by a **unique name** to trigger alarms pushed from Ipsotek servers to the Milestone Smart Client.

Since **Milestone Management 2016**, the alarm type can be created once and linked to several cameras. This feature will be shown in the steps below.

But before entering to new integration features, the requirements recommended for the integration are:

- **Ipsotek VISuite 11.4.0** or later
- **Milestone Management Server 2020 R2**
- **Milestone Smart Client 2020 R2 (64-bit)**

8.3.1.1 *Milestone User Defined Events*

In the **User-defined Events**, an event can be created once rather than creating the same events multiple times for different cameras as shown in the **Figure 7** below:

- **Yellow highlight** - One Abandoned Object event has been created.
- **No highlight** – Abandoned Object events created for specific cameras.

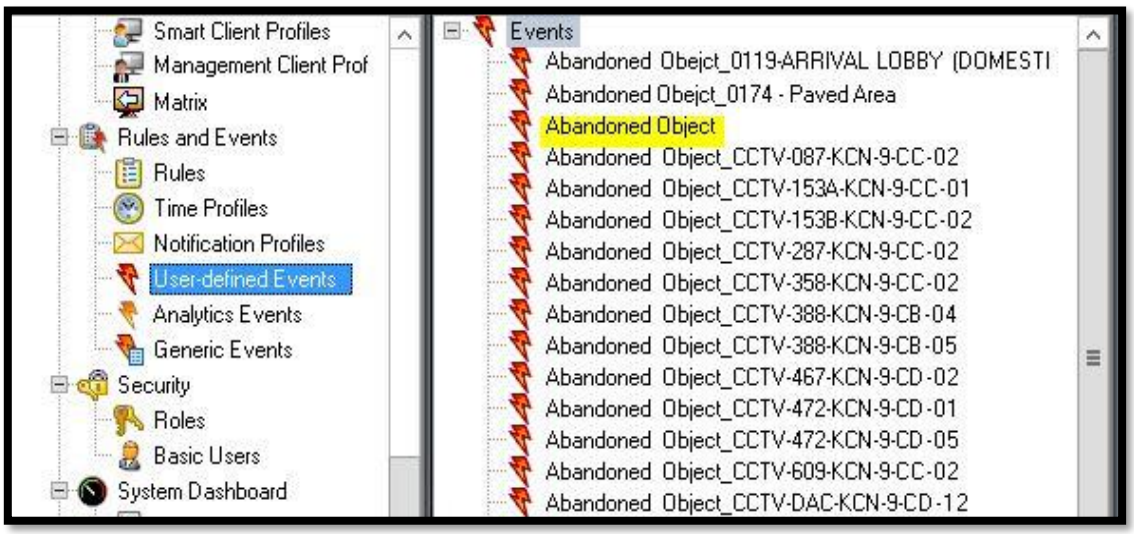


Figure 7: Milestone User Defined Event

8.3.1.2 *Milestone Analytic Events*

In the **Analytics Events**, an event can be created once rather than creating the same events multiple times for different cameras as shown in the **Figure 8** below:

- **Yellow highlight** - One Abandoned Object event has been created.
- **No highlight** – Abandoned Object event created for specific cameras.

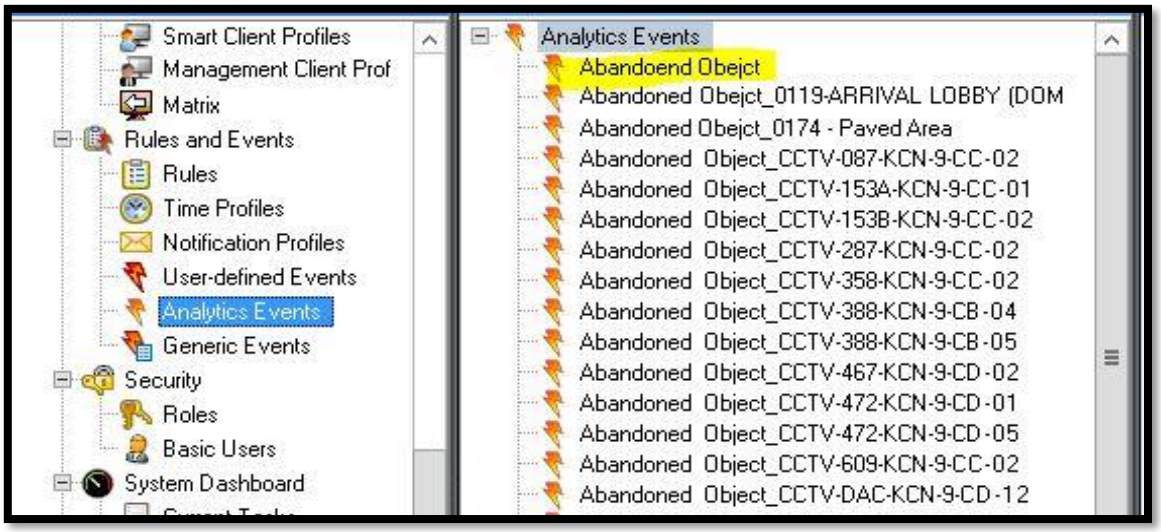


Figure 8: Milestone Analytic Events

8.3.1.3 *Milestone Alarm Definition*

In the **Alarm Definition**, an alarm can be created once rather than creating the same alarm 14 times for the 14 cameras as shown in the **Figure 9** below in **Yellow highlight**.

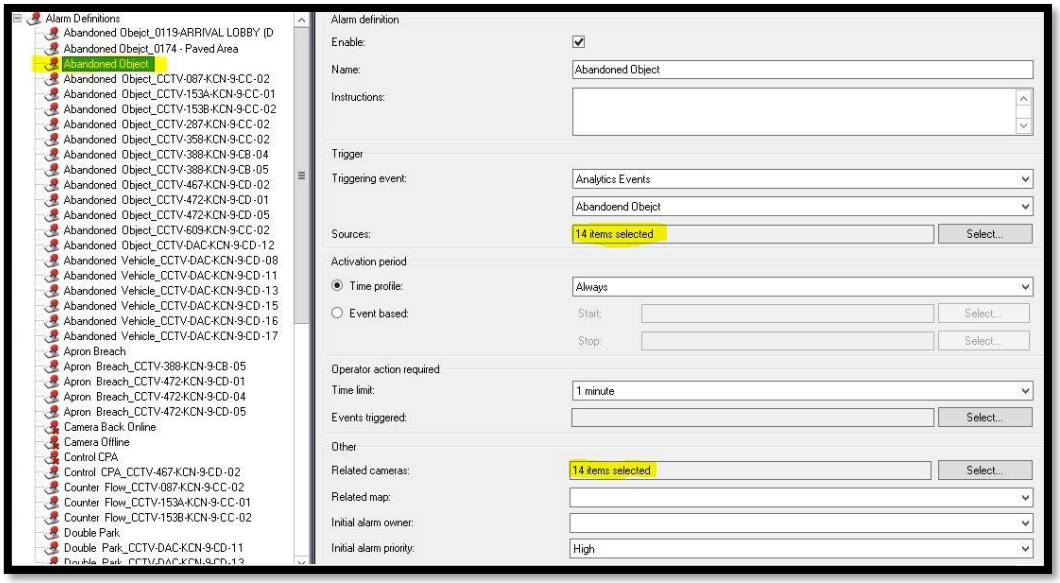


Figure 9: Milestone Alarm Definition

8.4 Ipsotek Alarm Configuration

The final step in the alarm configuration is to link the alarm in **VIConfigure** to the alarms configured in **Milestone XProtect Management Client**. For more information on the configuration of rules and actions in **VISuite,** see the **VIConfigure** user manual.

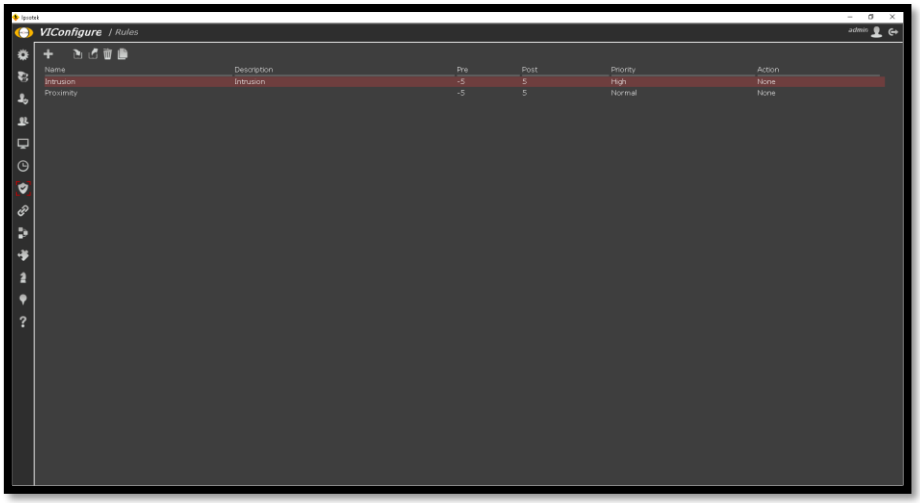


Figure 10: Rules page in VIConfigure with configured intrusion alarm

NOTE**: Cameras and Alarms must have the same name in both the **AIVA** Server and **Milestone** Server**.

*It is recommended that the Camera and Alarm names on the **AIVA** Server are reviewed to check consistency with the **Milestone** Server.*

9. Example Interface Screenshots

9.1 Ipsotek Video Content Analysis Alarm in Smart Client

The images below show an Ipostek Video Content Analysis alarm being raised in **Milesone XProtect Corporate Smart Client 2020 R2**.

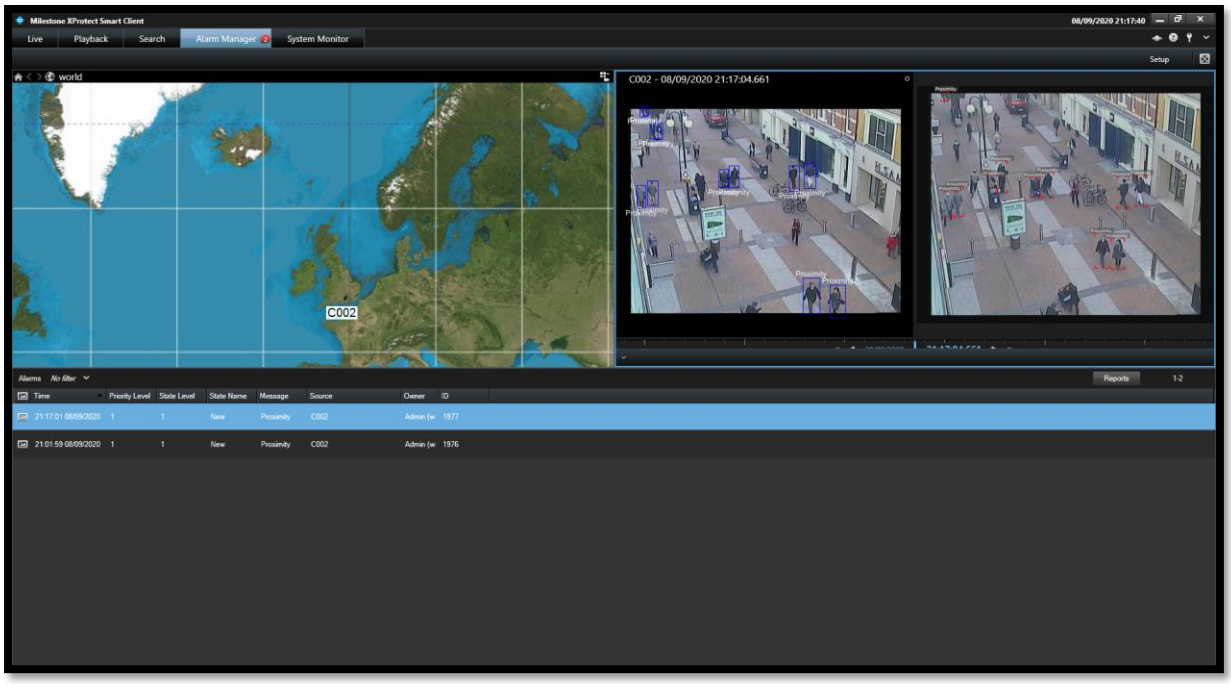


Figure 11: Ipsotek Alarm in Smart Client 2020 R2 with Metadata

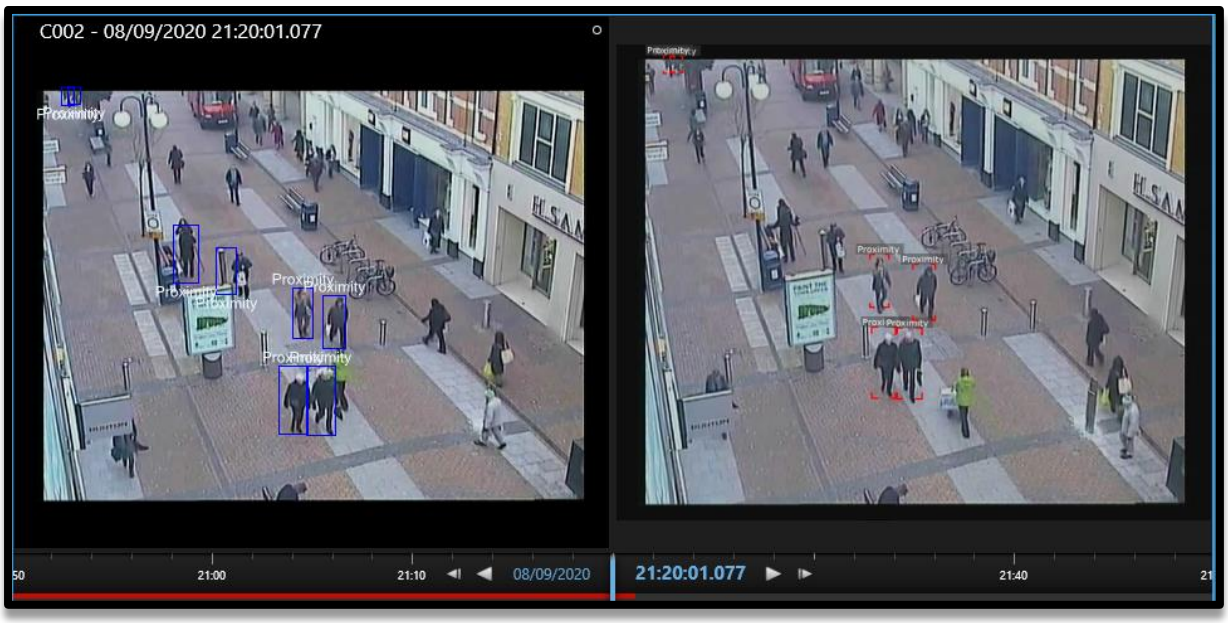


Figure 12: Close up of alarm video – left and snapshot – right.

10. Support

If you require technical support, please use the following details to contact us directly:

Support Telephone	+44 (0) 208 971 8301
Ipsotek Ltd Telephone	+44 (0) 208 971 8300
Support Email	support@ipsotek.com

11. General Information

If there are any questions non-specific to the VI software, please use the following details below to contact one of our representatives:

Ipsotek Ltd Telephone	+44 (0) 208 971 8300
Ipsotek Ltd Fax	+44 (0) 20 8879 6031
Email	sales@ipsotek.com
Address	Ipsotek ltd, PO Box 54055, London, SW19 4WE, United Kingdom
Registered Address	Acre House, 11-15 William Road, London, NW1 3ER, United Kingdom

Company registered in England and Wales.
Number 4272419.