



Integration Manual

viisights WISE with Milestone XProtect VMS

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1 INTRODUCTION

This document describes the integration between viisights WISE with XProtect Video Management Systems (VMS) from Milestone, to provide operators with immediate alerts over potential safety and security incidents.

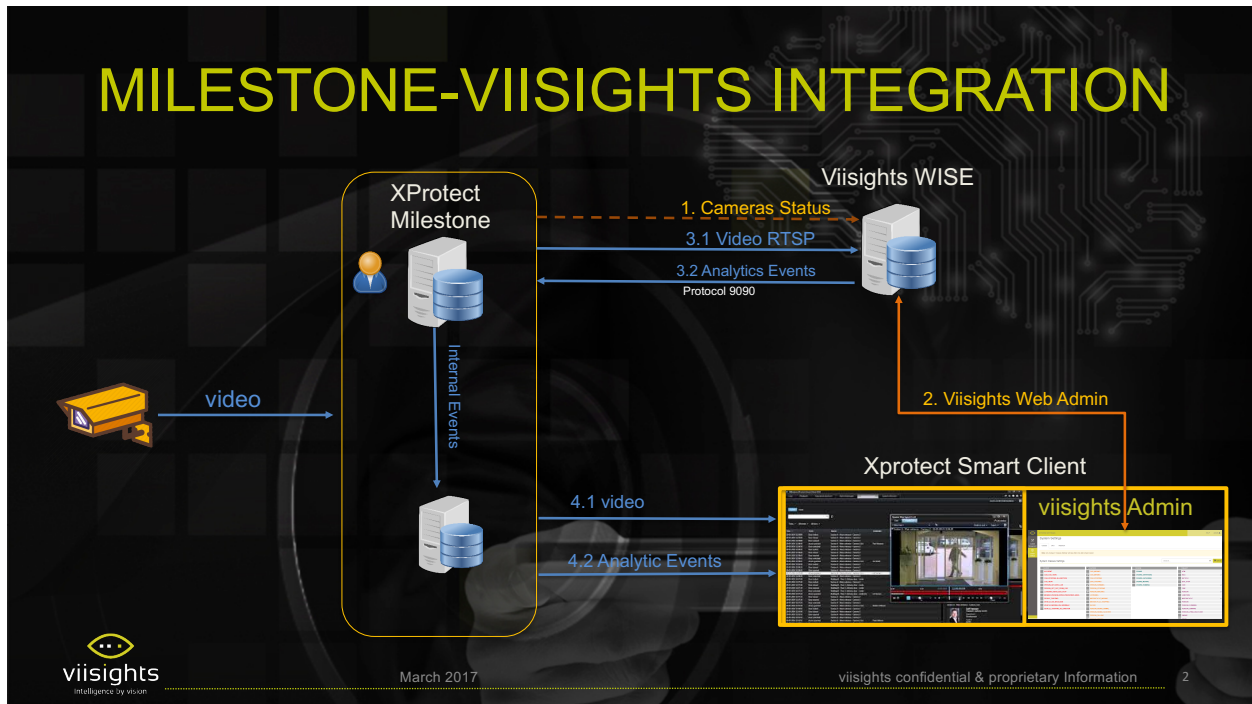
In this document, information is provided for integrating Milestone's XProtect Corporate VMS 2018.

Integration outcome:

- Triggering "Analytic Events" events when viisights WISE generates an alarm.
- Triggering an "Alarm Definition" on Milestone XProtect when an Analytic Event is received.
- A bookmark is inserted in the corresponding video sequence.
- Live metadata generated by viisights WISE on top of the corresponding video stream in Milestone XProtect Smart Client (a bounding box on an object).
- Metadata generated by viisights WISE is recorded with the corresponding video stream and displayed together when playing the video sequence in Alarm Manager view.

2 SYSTEM ARCHITECTURE AND PREREQUISITES

2.1 ARCHITECTURE



2.2 PREREQUISITES

The integration pack has the following prerequisites:

- Milestone XProtect Corporate 2018 or a later version
- viisights WISE system running on a dedicated server

2.3 WHAT THIS DOCUMENT COVERS

This document will cover the following:

- Step-by-step installation of Milestone ONVIF Bridge
- Step-by-step installation of ONVIF Device Manager (Open source application)
- Configuration of events and alarms on Milestone XProtect
- Installation of the video overlay plugin to Milestone XProtect Smart Client
- Configuration of "MilestoneGetCameras" web proxy
- Configuration of Alarm Classes in viisights WISE

This document is not an exhaustive installation manual and does not cover the installation of Milestone XProtect VMS and viisights WISE.

2.4 LICENSE

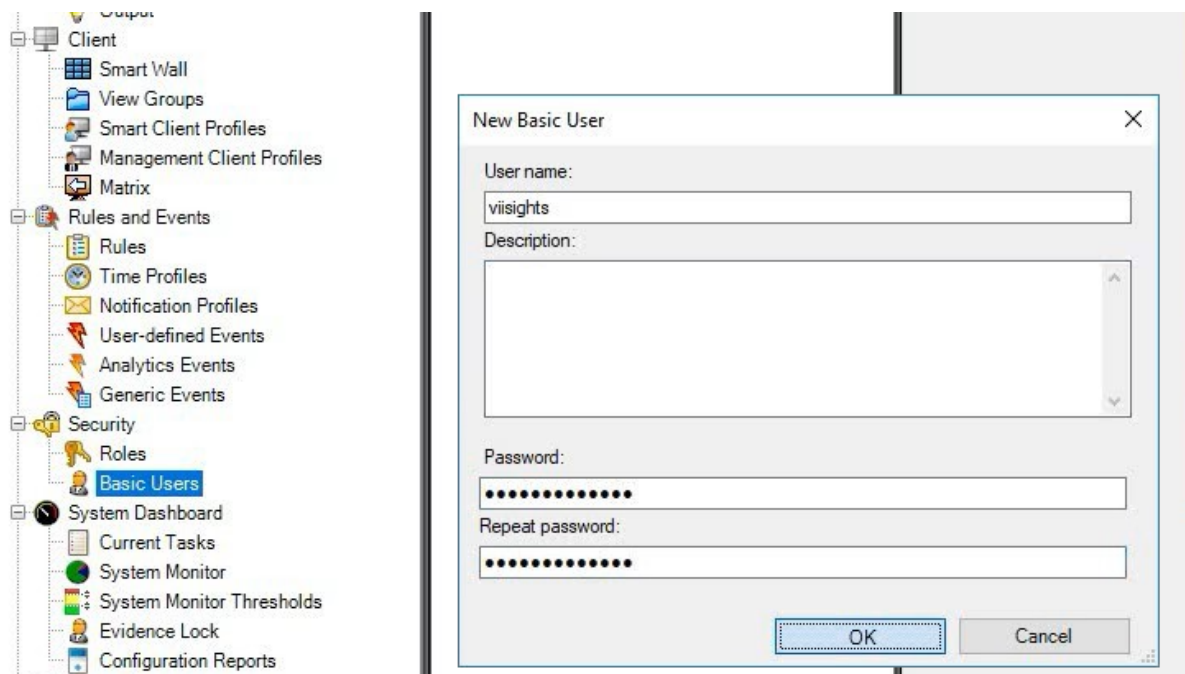
For Milestone licensing, please refer to the relevant Milestone distributor.

For viisights WISE license, please refer to sales@viisights.com.

3 INSTALLATION AND CONFIGURATION – MILESTONE SERVER SIDE

Install milestone on your computer, please follow the [Administrator Manual – Xprotect VMS 2018 R3](#):

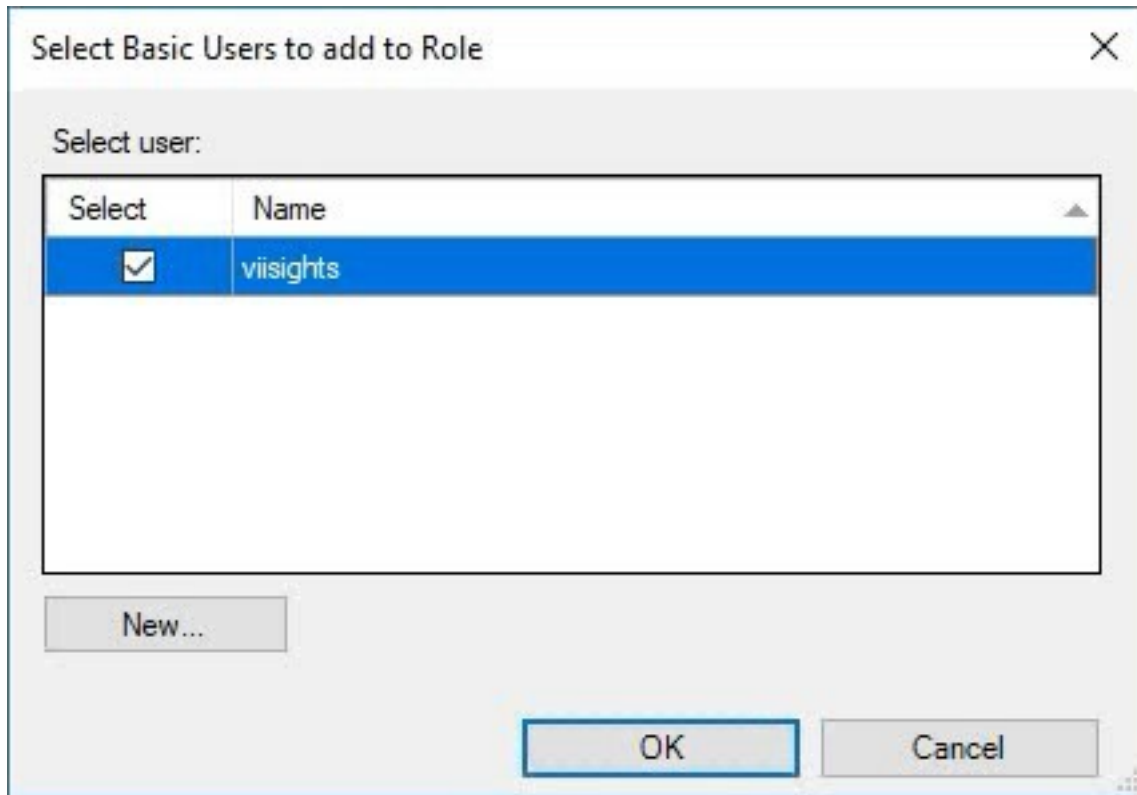
1. [Install Milestone corporate 2018 R3](#)
2. Use Milestone XProtect Management Client to add a new Basic User – Security -> Basic User -> Create New Basic User



3. Assign the new user with Administrator privileges - Roles -> Administrators -> Users and Groups -> Add... -> Basic user

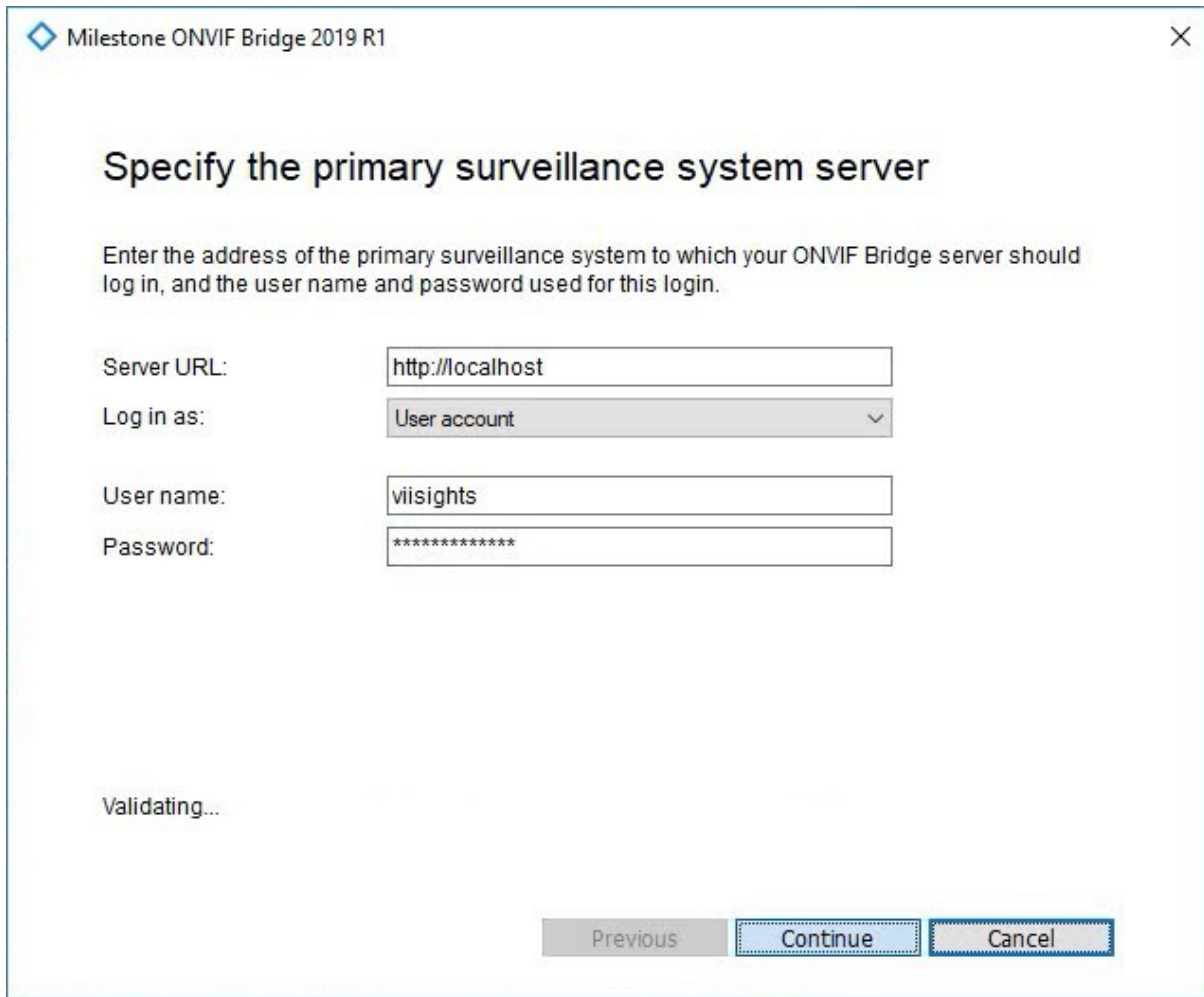
The screenshot displays the Viisights configuration interface. On the left, the 'Site Navigation' pane shows a tree structure with 'Roles' selected under the 'Security' category. The main 'Roles' pane shows a table with one role: 'Administrators (Administrators have co'. The 'Role Settings' pane on the right shows the configuration for this role, listing 'BUILTIN\Administrators' and 'NT AUTHORITY\NETWORK SER...'. At the bottom right, a dropdown menu is open, showing 'Add...' with 'Windows user' and 'Basic user' options. An arrow points from the 'Basic user' option to the 'Users and Groups' button at the bottom of the right pane.

4. Select the new user from the list to assign administrator privileges



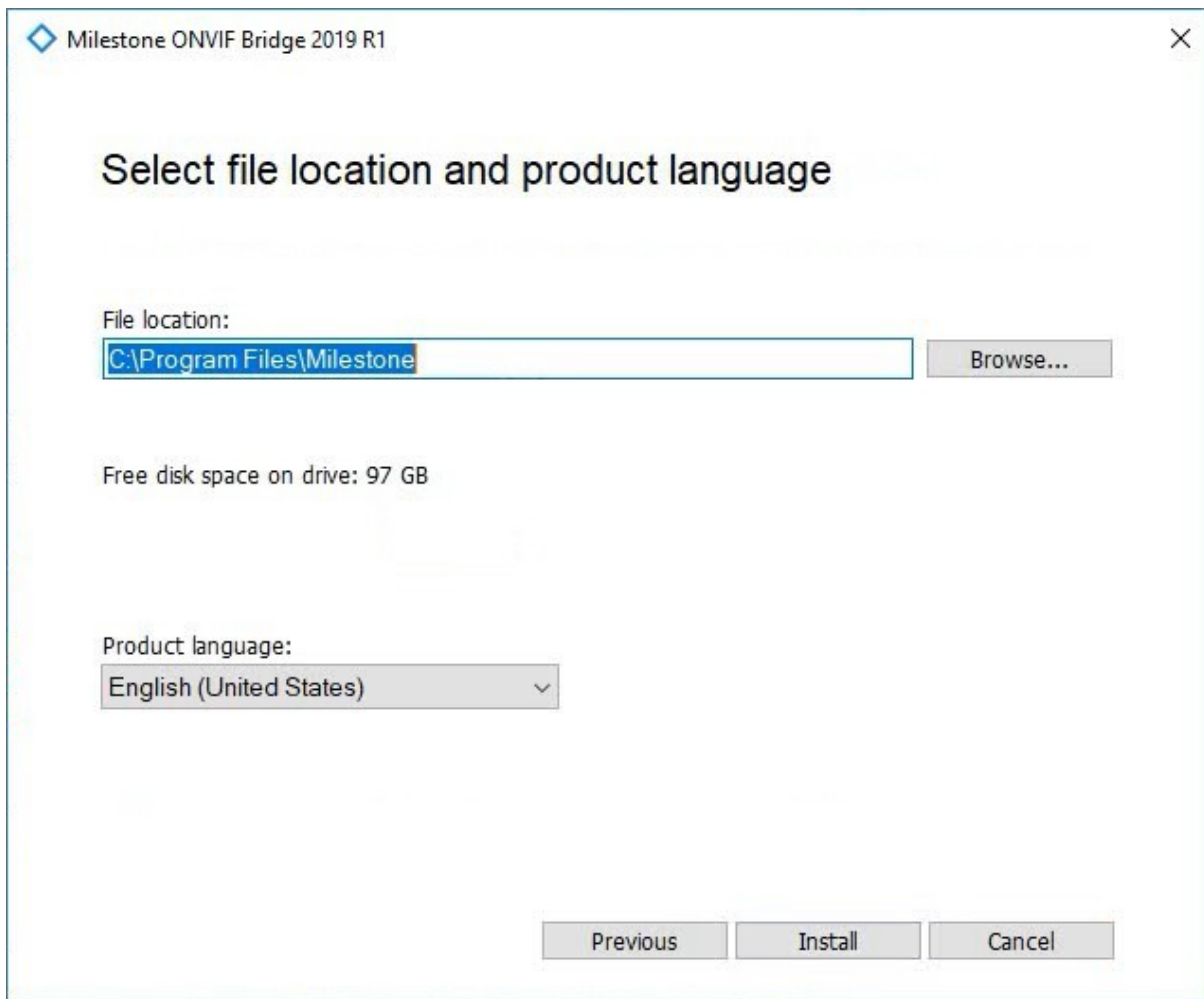
5. Install ONVIF bridge 2018 R3

- 5.1. Choose language, read and accept the license agreement, select typical installation. Fill the fields with the credentials of the admin-level basic user created in the previous step and click Continue.

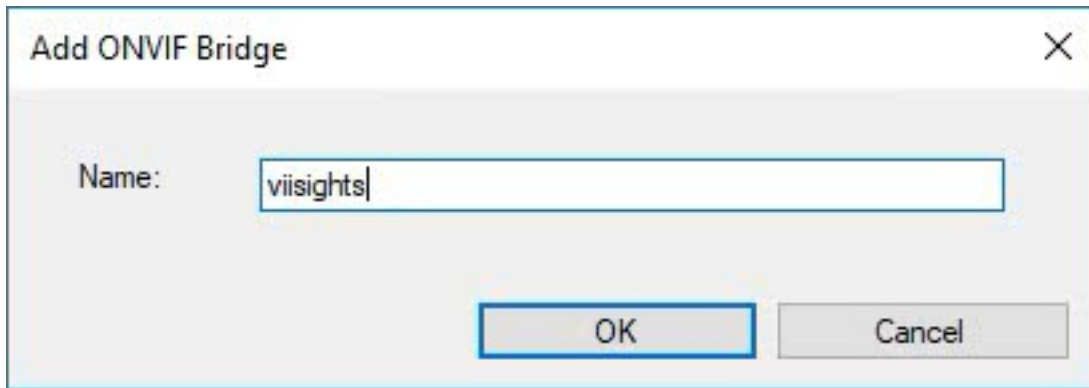
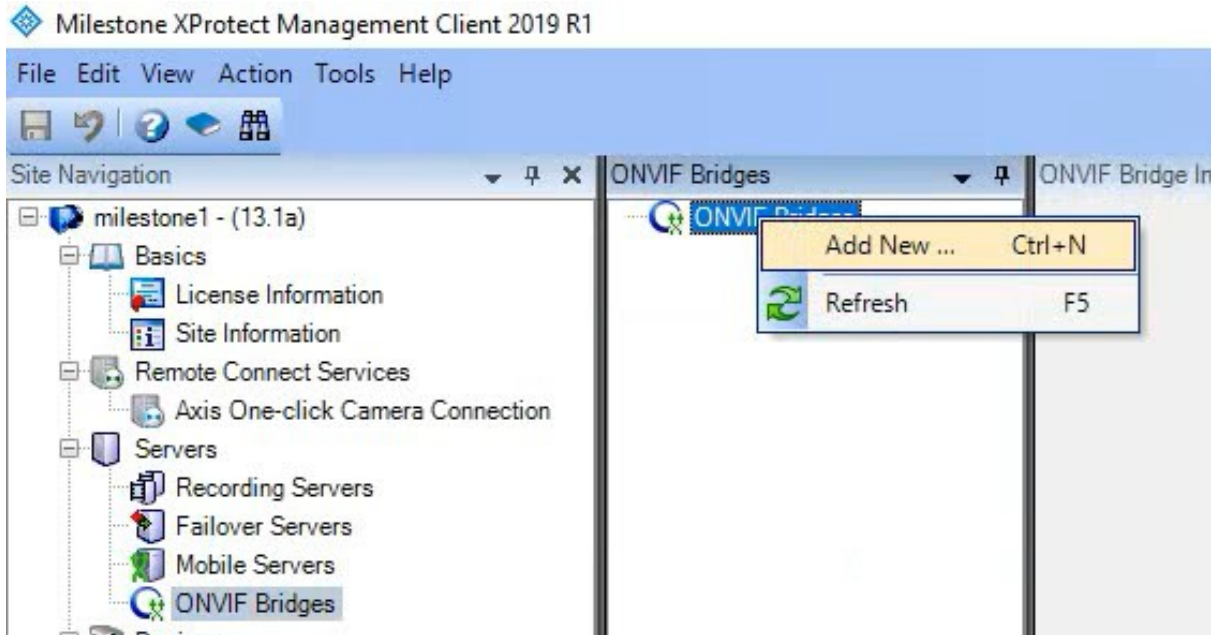


The screenshot shows a window titled "Milestone ONVIF Bridge 2019 R1" with a close button in the top right corner. The main heading is "Specify the primary surveillance system server". Below this, there is a paragraph: "Enter the address of the primary surveillance system to which your ONVIF Bridge server should log in, and the user name and password used for this login." The form contains four input fields: "Server URL" with the value "http://localhost", "Log in as:" with a dropdown menu showing "User account", "User name:" with the value "viisights", and "Password:" with a masked value of "*****". At the bottom left, it says "Validating...". At the bottom right, there are three buttons: "Previous" (disabled), "Continue" (active), and "Cancel".

5.2. Specify installation folder and proceed with installation.



6. In milestone management: Servers - ONVIF Bridges – Add new – Add user



ONVIF Bridges

ONVIF Bridge Information

ONVIF Bridge settings (milestone1)

ONVIF port:

RTSP port:

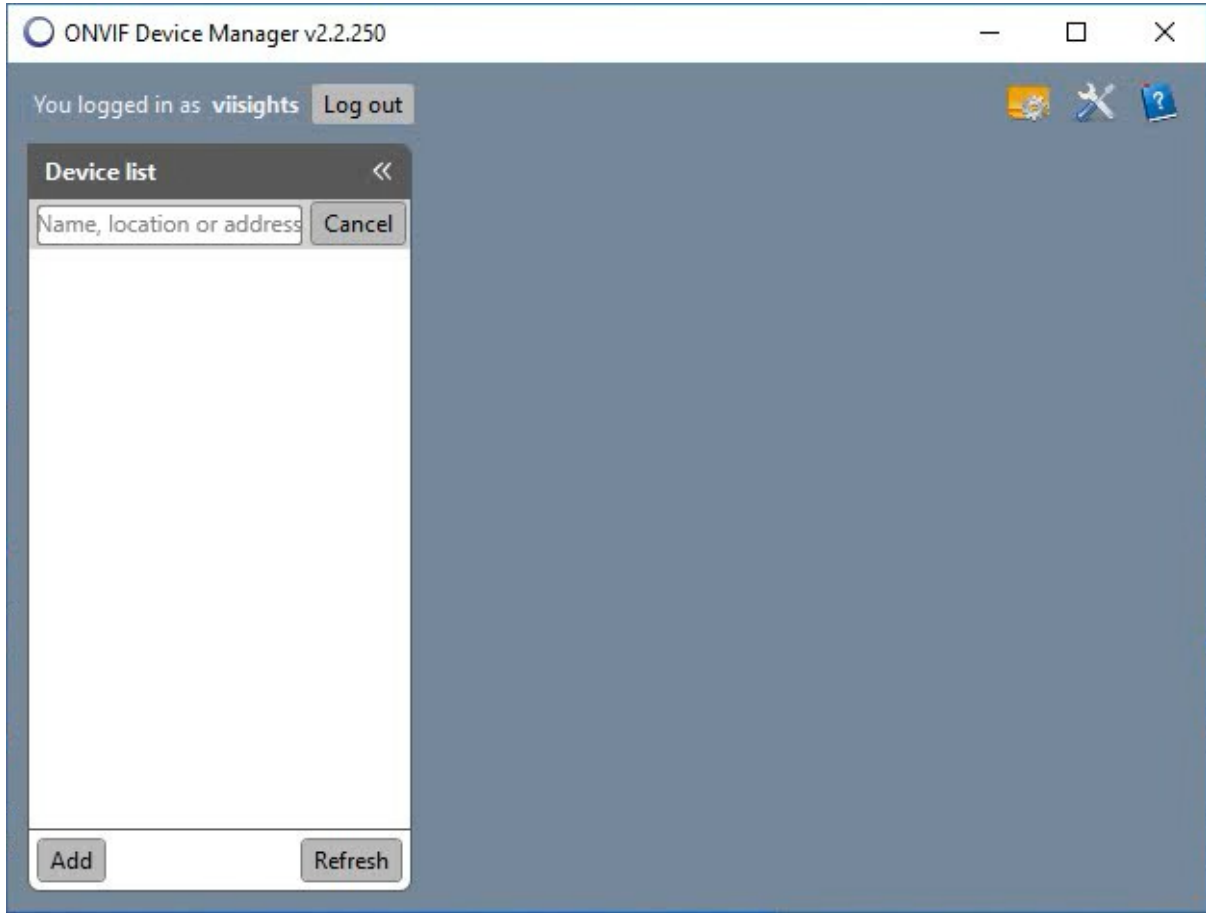
ONVIF user credentials:

User name:

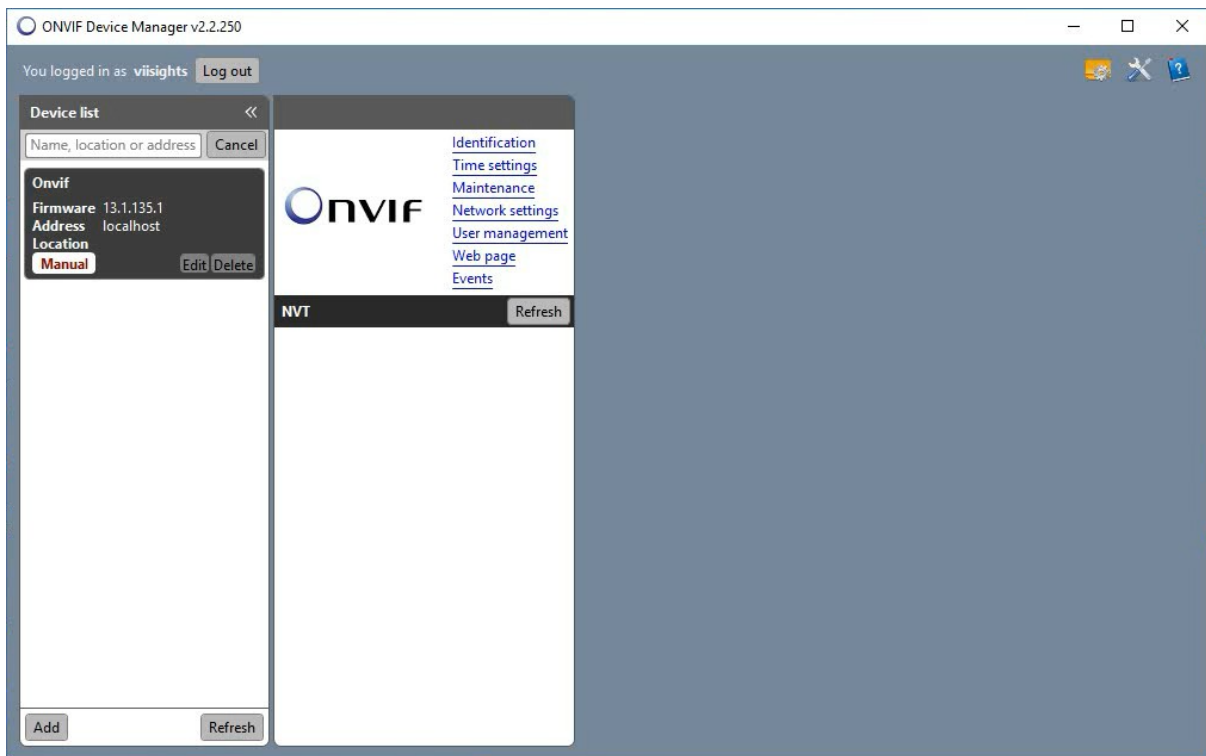
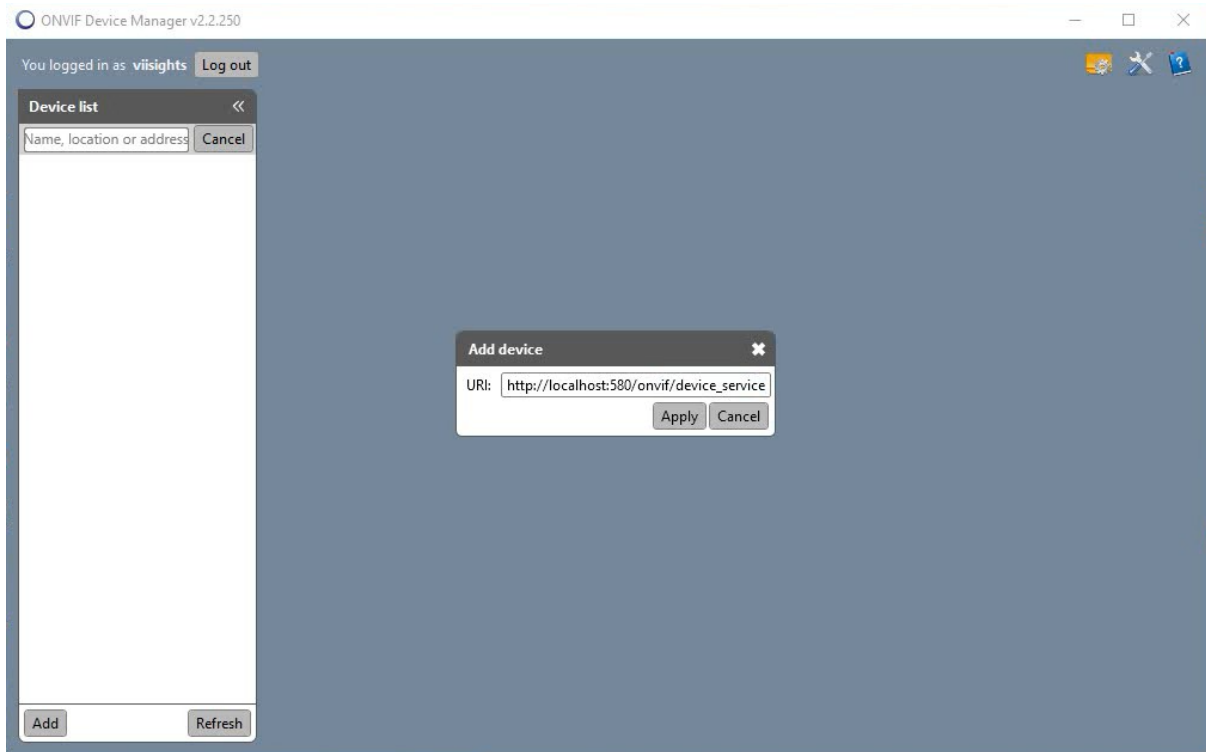
Password:

7. Install ONVIF Device Manager

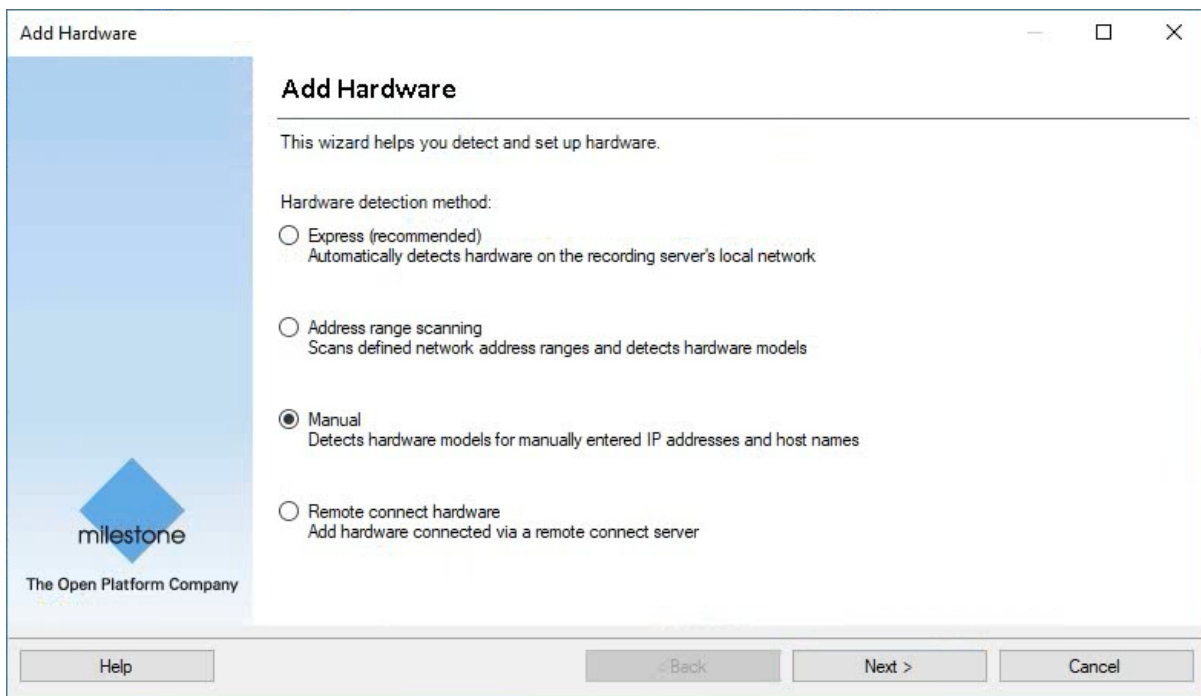
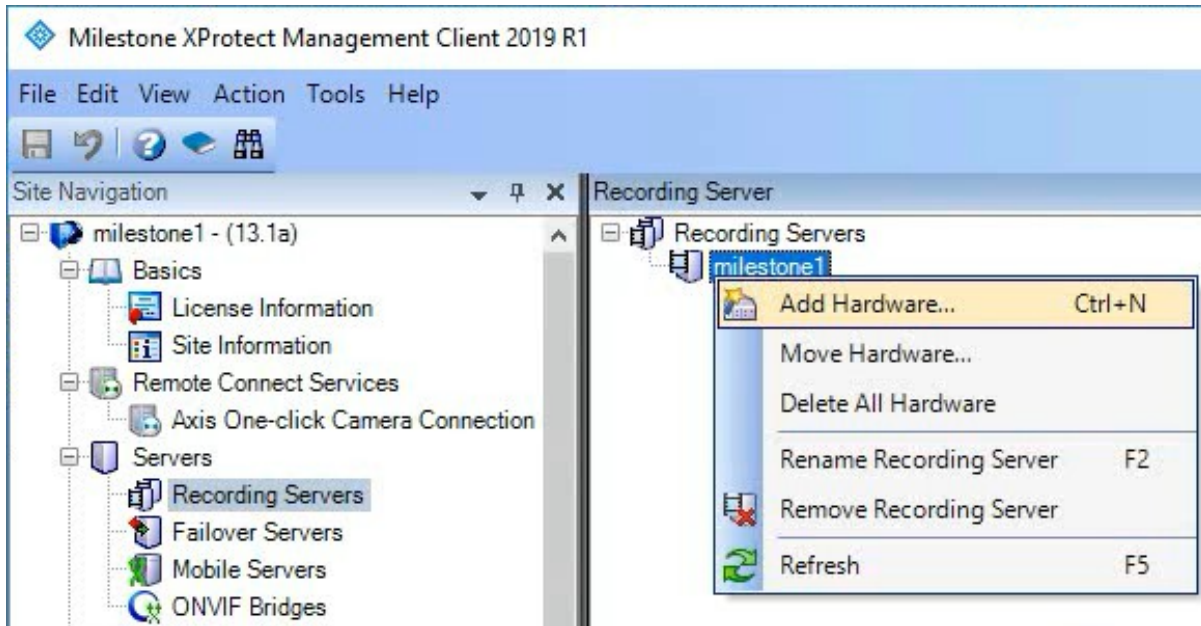
7.1. Log in with basic user



7.2. Add new device - http://localhost:580/onvif/device_service



8. **Optional** - Add RTSP Stream for running predefined clips. This step can be useful for example for the purpose of observing detections by using a video streamed from viisights WISE server.



Add Hardware

Specify user name and password if devices are not using the default ones.

Include	User Name	Password
<input checked="" type="checkbox"/>	(Factory Default)

Buttons: Add, Remove, Help, < Back, Next >, Cancel

Add Hardware

Select which drivers to use when scanning for hardware.
The more drivers selected, the slower the scanning.

- HikVision
- Infinova
- IQEye
- JVC
- LG Electronics
- Milestone
- Mobotix
- ONVIF
- Panasonic
- Pelco
- Samsung
- Sony
- Universal
 - Universal 1 channel driver
 - Universal 16 channels driver
 - Universal 64 channels driver
- Vivotek
- Other

Buttons: Select All, Clear All, Help, < Back, Next >, Cancel

Add Hardware

Enter information for hardware you want to add.
Optionally, select driver type to speed up detection.

	Address	Port	Hardware model
▶	40.114.80.116	80	Universal 1 channel driver

Buttons: Add, Remove

Buttons: Help, < Back, Next >, Cancel

Add Hardware

Wait while your hardware is being detected.
Once detection has completed, select which hardware to add.

Progress bar (green) with Stop button

Detected hardware:

Add	Address	Port	Hardware model	Status
<input checked="" type="checkbox"/>	40.114.80.116	80	Universal 1 channel driver	✓ Success

Show hardware running on other recording servers

Buttons: Help, < Back, Next >, Cancel

Add Hardware

Hardware and cameras are enabled per default. Manually enable additional devices to be used. The hardware and its devices will be assigned auto-generated names. Alternatively, enter names manually.

Hardware name template: Default Device name template: Default

Hardware:
 Camera
 Microphone
 Speaker
 Metadata
 Input
 Output

Hardware to Add	Enabled	Name
Universal 1 channel driver - 40.114.80.116	<input type="checkbox"/>	
Hardware:	<input checked="" type="checkbox"/>	Universal 1 channel driver (40.114.80.116)
Camera port 1:	<input checked="" type="checkbox"/>	Universal 1 channel driver (40.114.80.116) - Camera 1
Microphone port 1:	<input type="checkbox"/>	Universal 1 channel driver (40.114.80.116) - Microphone 1

Add Hardware

Select a default group for all devices types. Alternatively, select device group individually for each device.

Default camera group: No group selected...

Default microphone group: No group selected...

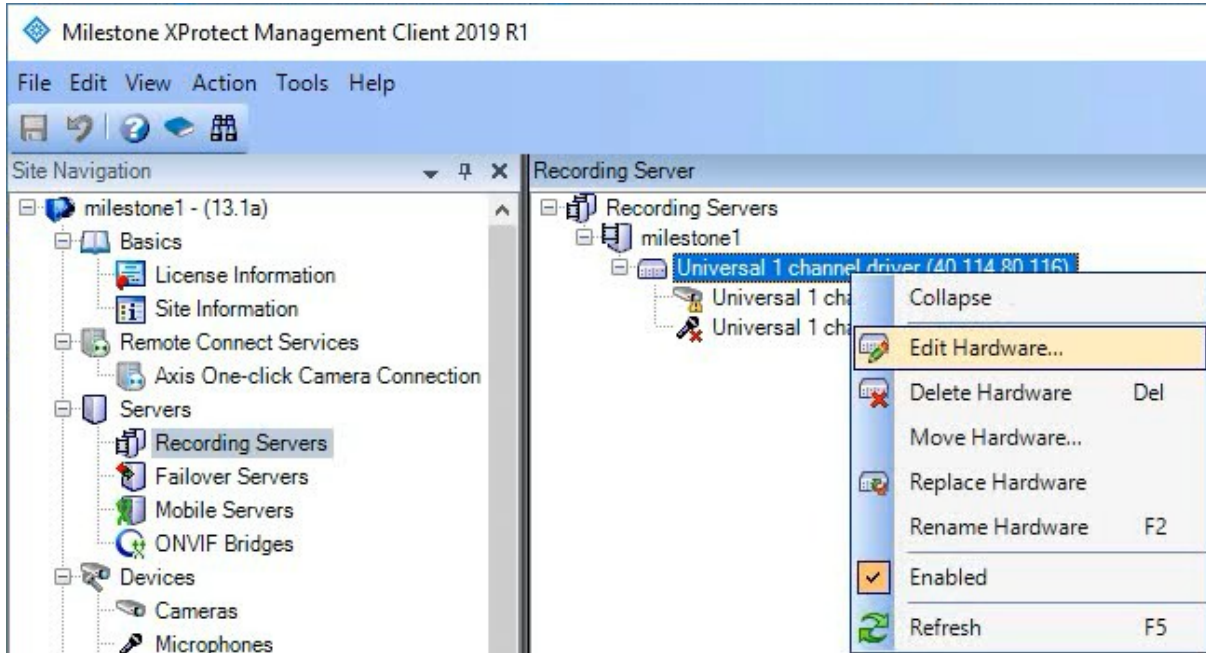
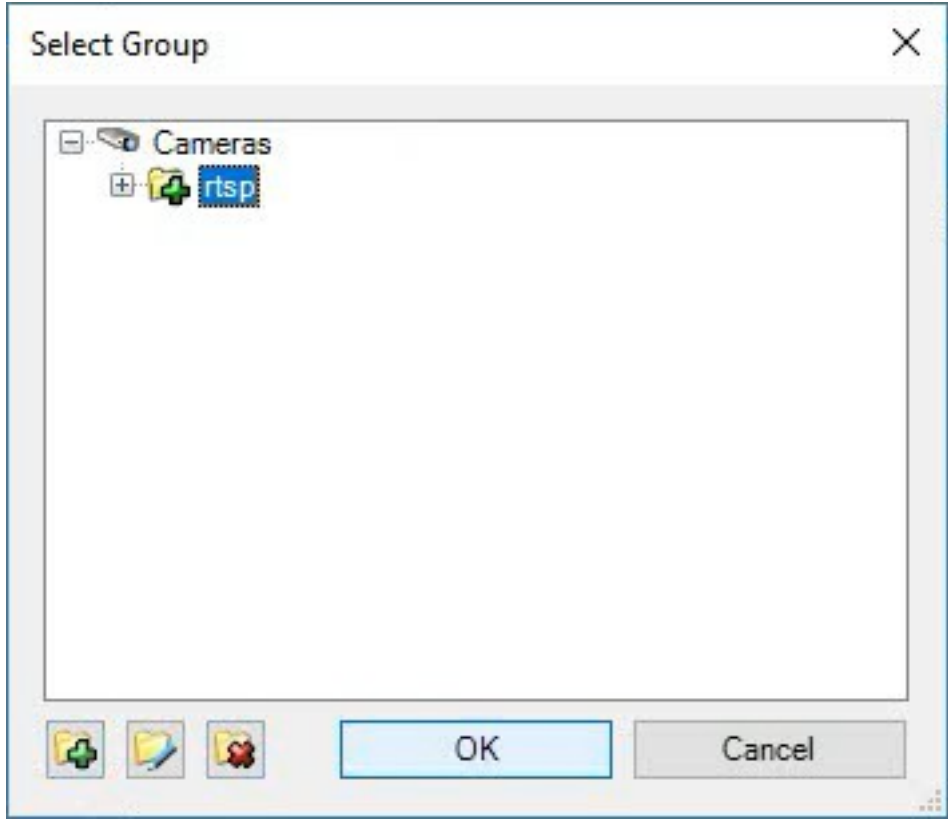
Default speaker group: No group selected...

Default metadata group: No group selected...

Default input group: No group selected...

Default output group: No group selected...

Devices	Add to Group
Cameras	
Universal 1 channel driver (40.114.80.116) ...	Default Group ▼



Edit Hardware ✕

Identification

Name:

Address

Hardware URL:

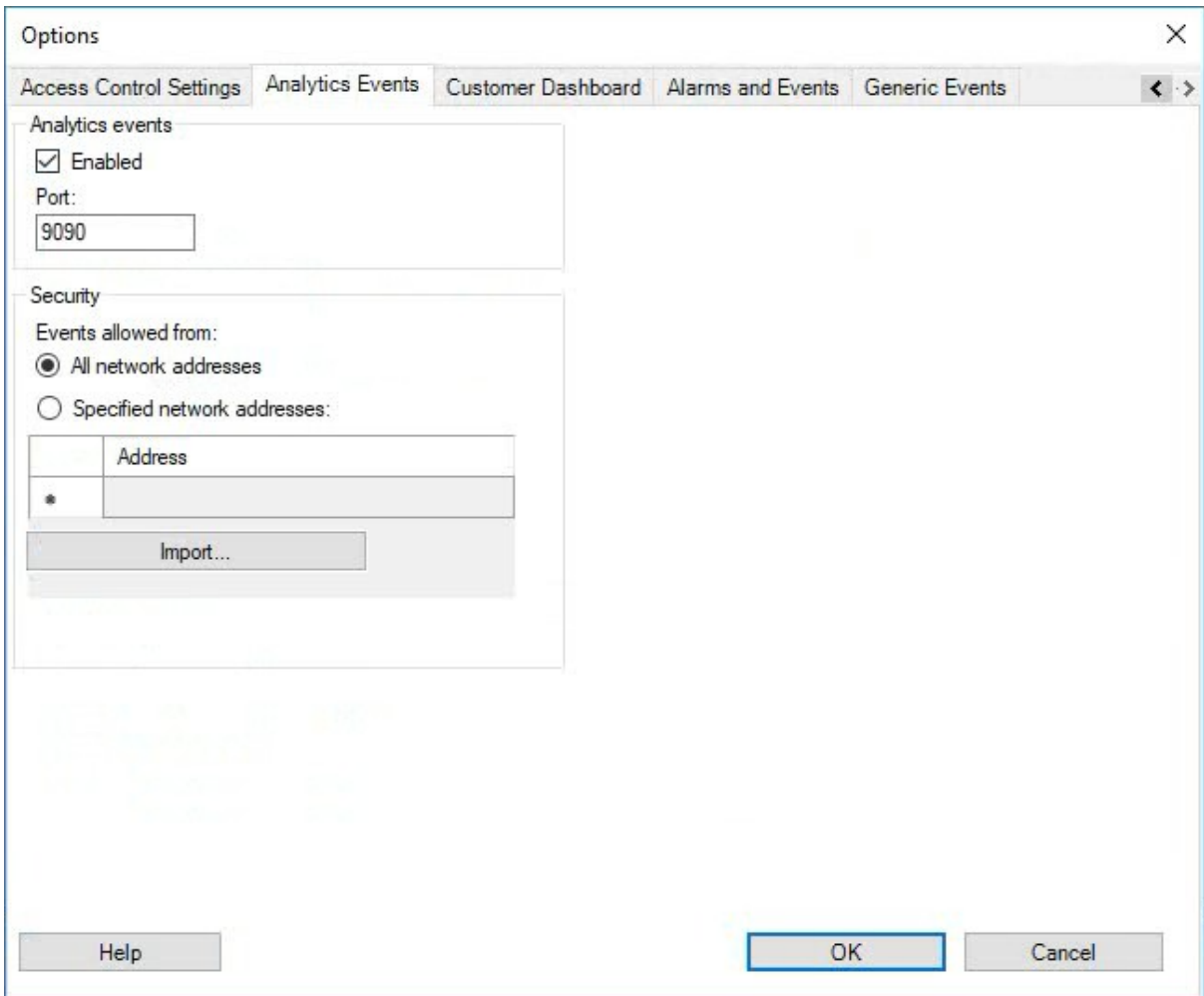
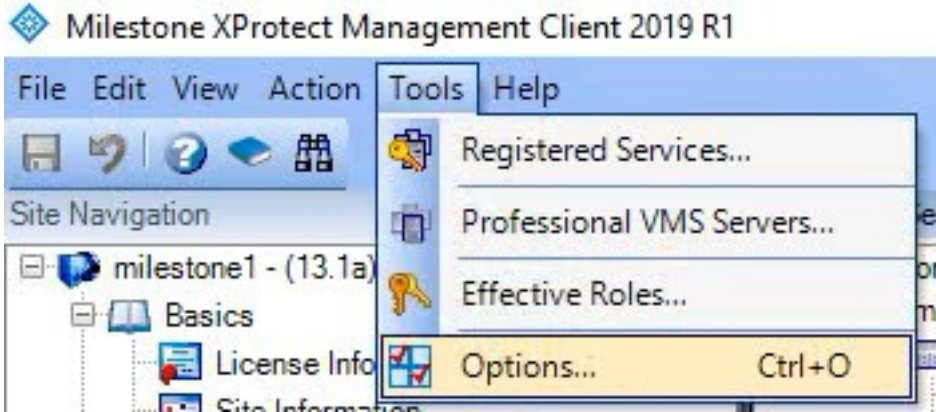
Authentication

User name:

Password:

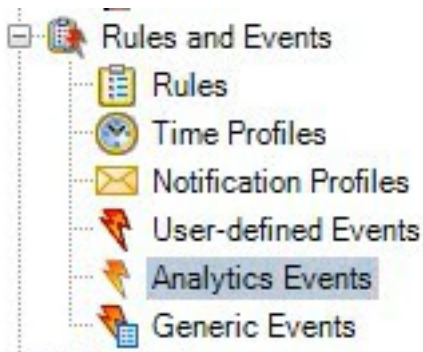
9. Enable Analytic events in XProtect Management Client

9.1. Tools -> Options -> Analytic Events -> click on Enabled, port = 9090

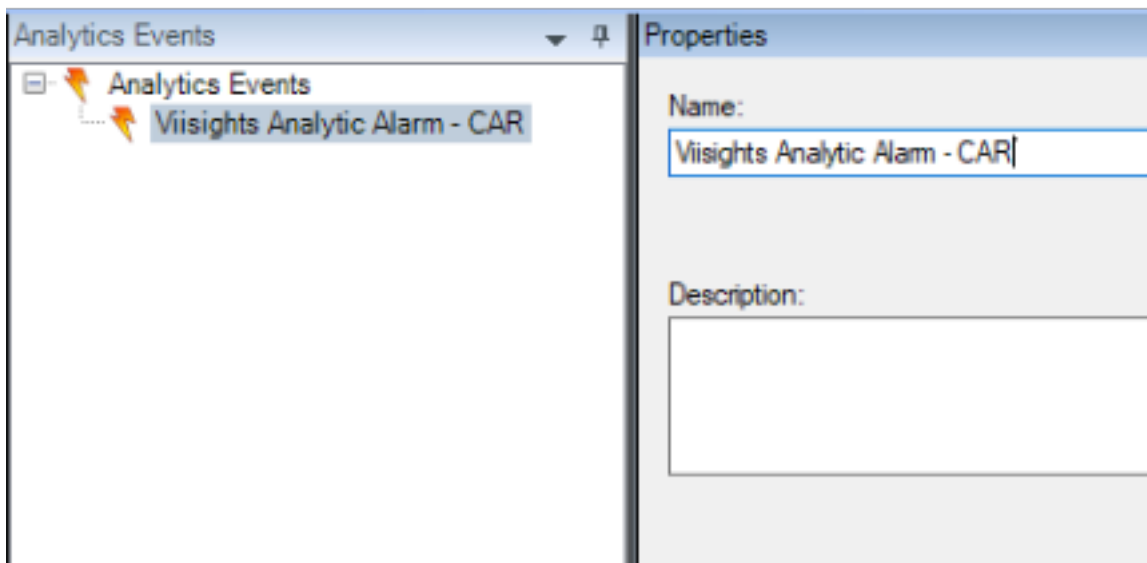


10. Add Events

10.1. Go to Rules and Events -> Analytics Events



10.2. Right-Click the Analytics Events root object, Add New..., name the new event **Viisights Analytic Alarm - <Class label>**

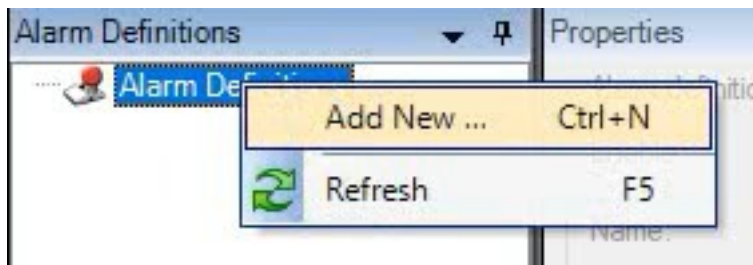


11. Add alarms –

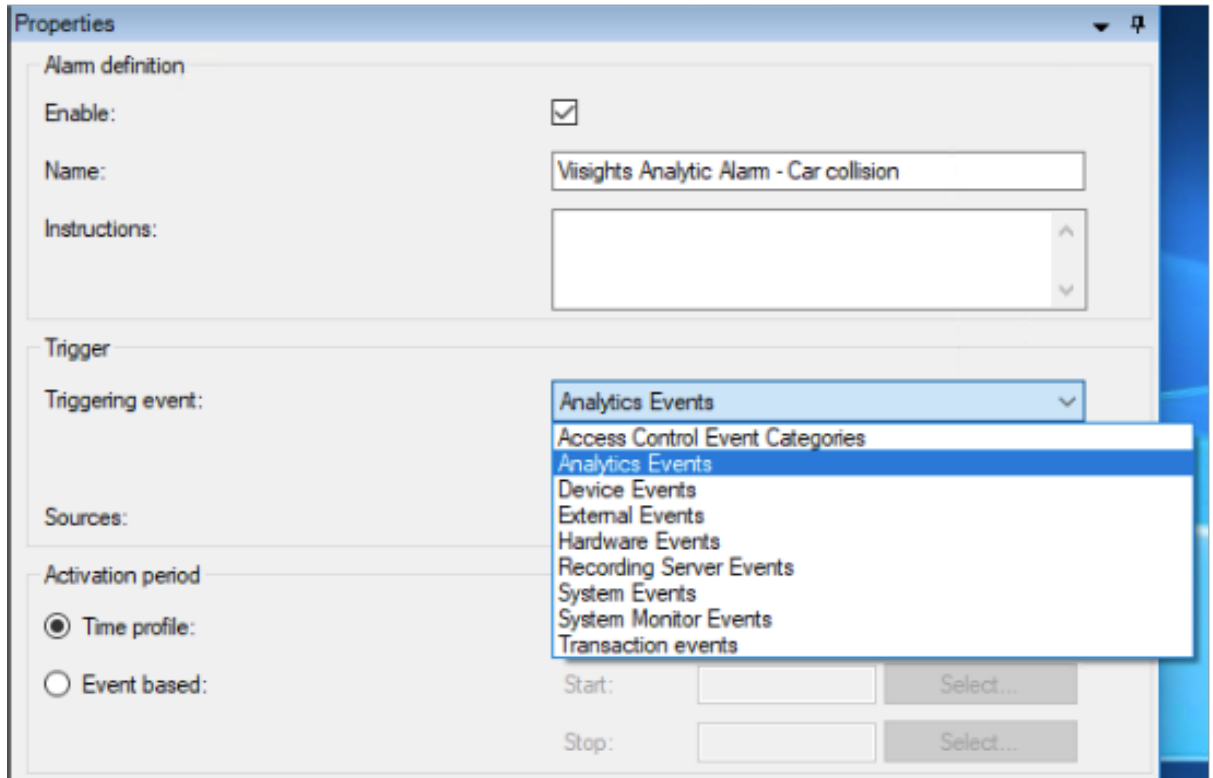
11.1. Go to



11.2. Right-Click the Alarms Definitions root object, Add New...



- 11.3. Give the new event a name, e.g. **Viisights Analytic Alarm – Car collision**, select the Triggering event as Analytics Events



Properties

Alarm definition

Enable:

Name:

Instructions:

Trigger

Triggering event: (Dropdown menu open showing: Analytics Events, Access Control Event Categories, Analytics Events, Device Events, External Events, Hardware Events, Recording Server Events, System Events, System Monitor Events, Transaction events)

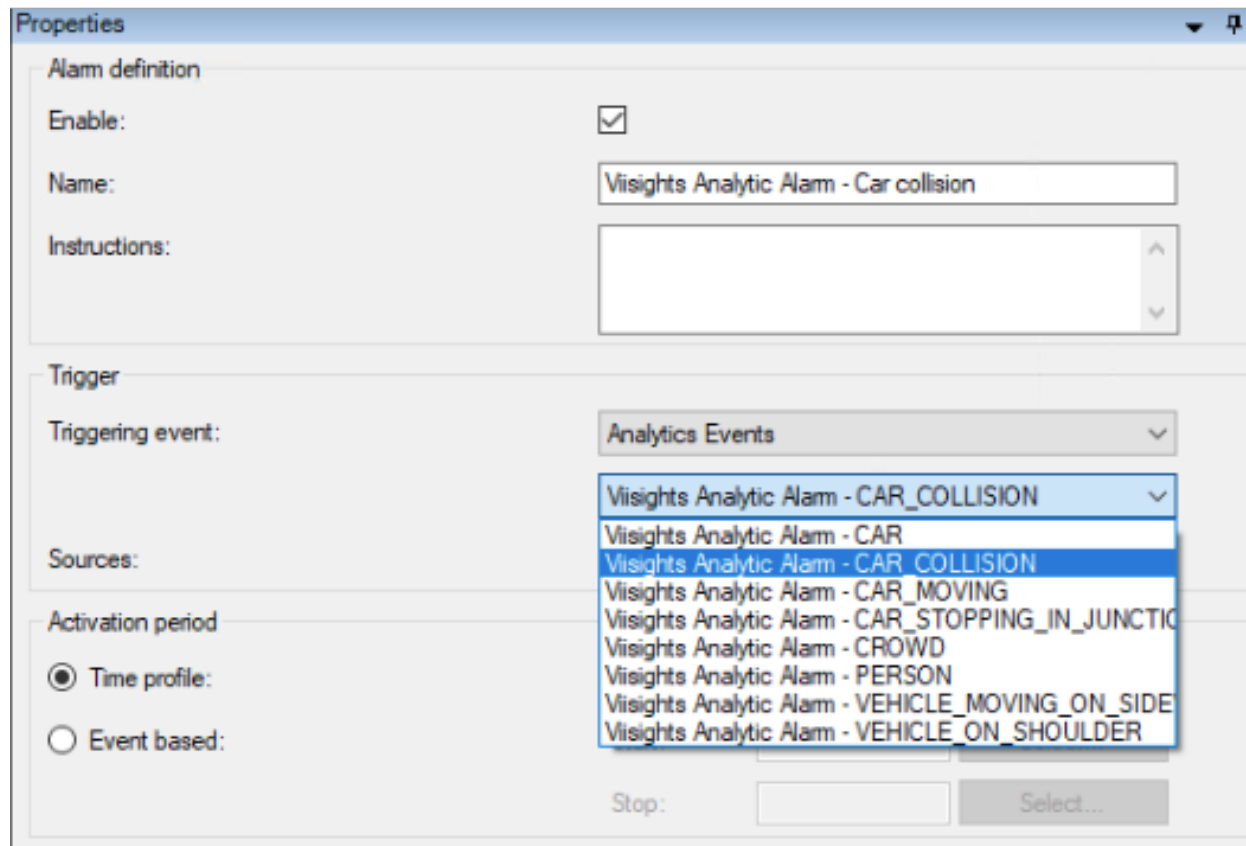
Sources:

Activation period

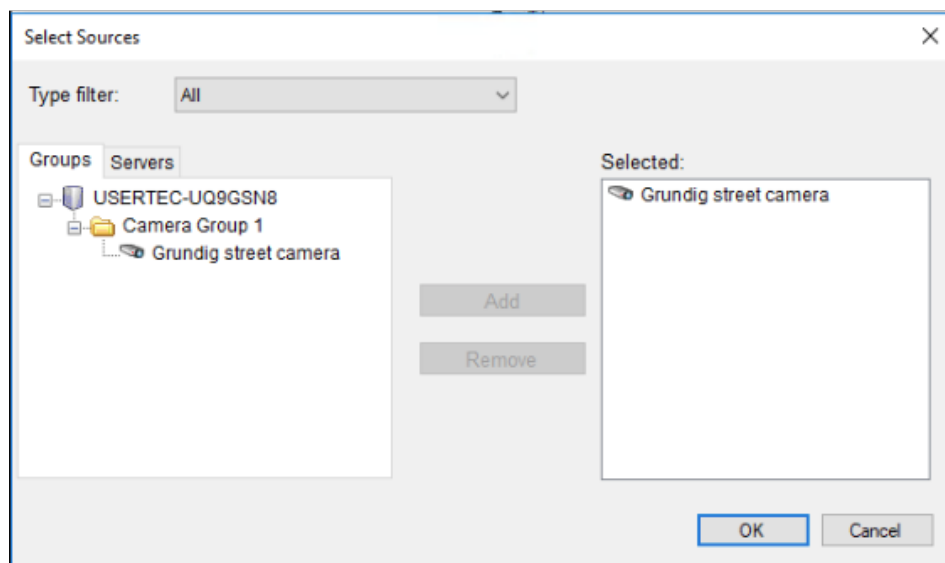
Time profile: Start: Select...

Event based: Stop: Select...

11.4. Choose 'Viisights Analytic Alarm – CAR_COLLISION' as the sub category

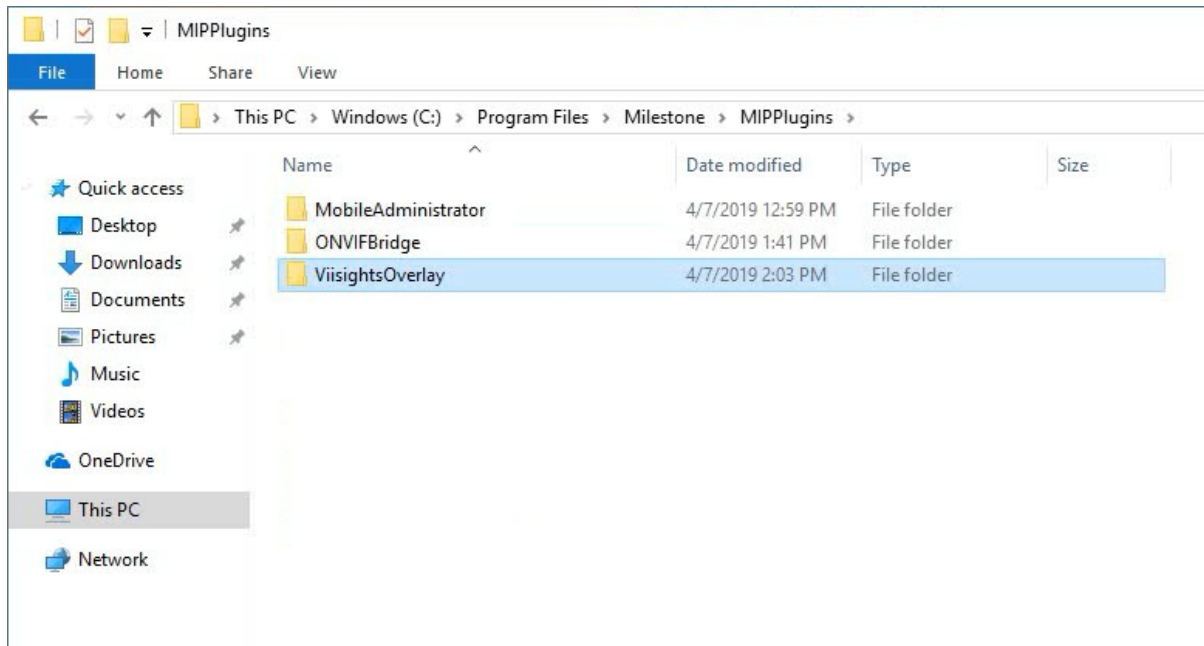


11.5. Under Sources: select the desired cameras and click Add



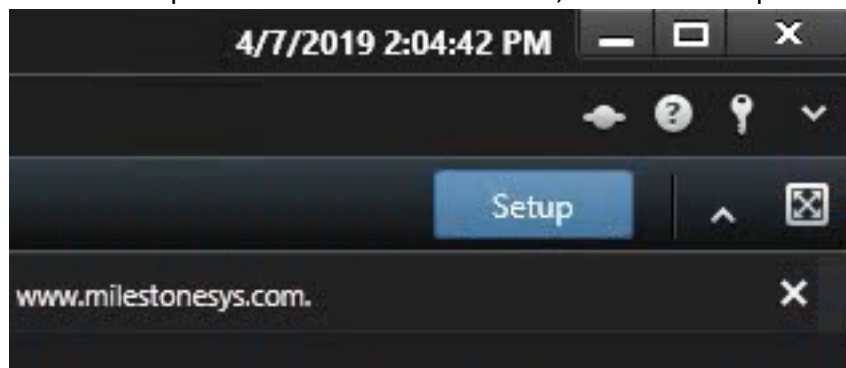
12. Add ViisightsOverlay plugin to milestone:

- 12.1. Download [SmartClient v0.1.zip](#)
- 12.2. Extract the archive and copy the folder “viisightsOverlay” into the Milestone installation folder under the subfolder **MIPPlugins**



13. Create Alarm Vide on XProtect Smart Client

- 13.1. Open the XProtect Smart Client, switch to Setup mode



- 13.2. In setup mode - Create new view
- 13.3. Add viisightsOverlay plugin to view
- 13.4. Click on view, click "select camera" (bottom left side of screen) and add the appropriate camera.
- 13.5. Settings – Analytic Overlay – choose appropriate camera.

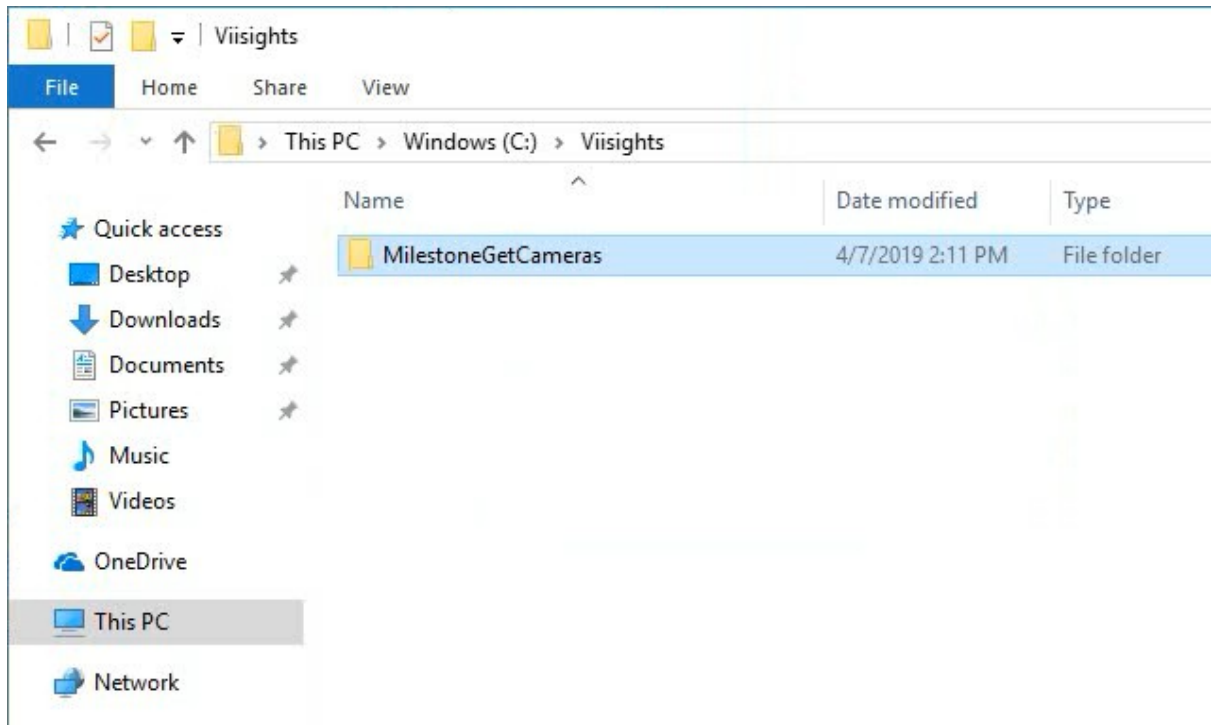
14. On the Milestone XProtect server, add a new Web Service:

14.1. Download [Proxy v2.0.zip](#)

14.2. Unzip the folder “MilestoneGetCameras” to a new folder such as

C:\Viisights

(The folder MilestoneGetCameras can't be placed in a secure folder, i.e. it cannot be placed in: C:\inetpub, System, etc.)

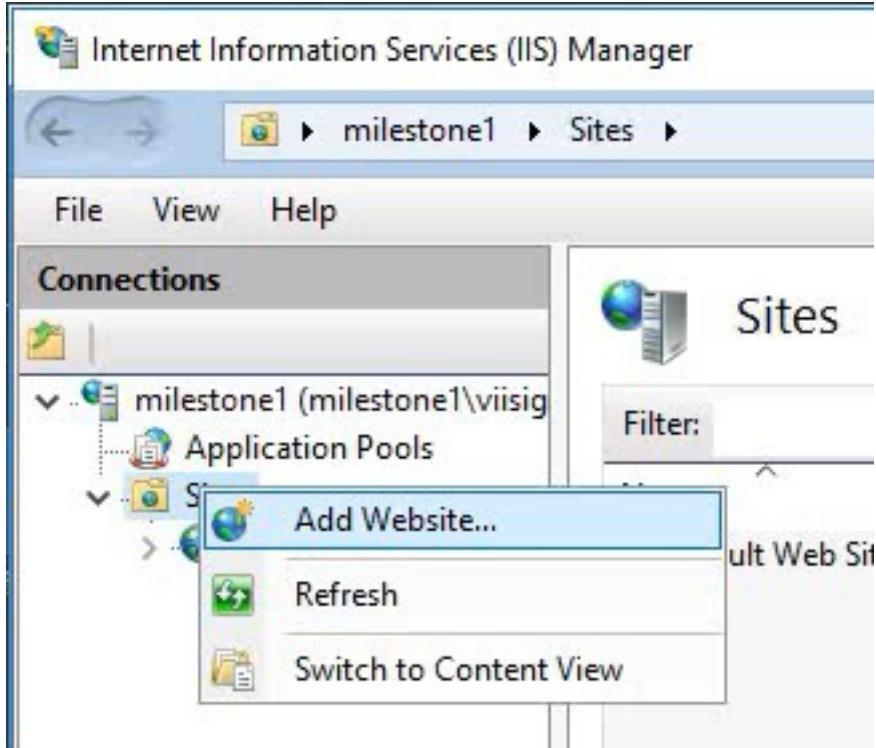


- 14.3. [Install and configure Web Deploy on Windows Server](#) – Windows Features
 - Enable IIS Management Scripts and Tools (tutorial - <https://www.youtube.com/watch?v=lwbKquNBNgQ>)

The screenshot shows the 'Windows Features' control panel window. The title bar reads 'Windows Features'. Below the title bar, the main heading is 'Turn Windows features on or off'. A sub-heading states: 'To turn a feature on, select its check box. To turn a feature off, clear its check box.' The list of features includes: .NET Framework 3.5 (includes .NET 2.0 and 3.0) [checked], .NET Framework 4.7 Advanced Services [checked], Active Directory Lightweight Directory Services [unchecked], Containers [unchecked], Data Center Bridging [unchecked], Device Lockdown [unchecked], Guarded Host [unchecked], Hyper-V [unchecked], Internet Explorer 11 [checked], Internet Information Services [checked]. Under 'Internet Information Services', there are sub-features: FTP Server [unchecked], Web Management Tools [checked]. Under 'Web Management Tools', there are: IIS 6 Management Compatibility [checked], IIS Management Console [checked], and IIS Management Scripts and Tools [checked]. A tooltip box is visible over 'IIS Management Scripts and Tools' with the text 'Manage a local Web server with IIS configuration scripts'. Other sub-features under 'Internet Information Services' include: World Wide Web Services [checked], Application Development Features [checked], Common HTTP Features [checked], Health and Diagnostics [checked], Performance Features [checked], Security [checked], Internet Information Services Hostable Web Core [unchecked], Legacy Components [unchecked], and Media Features [checked].

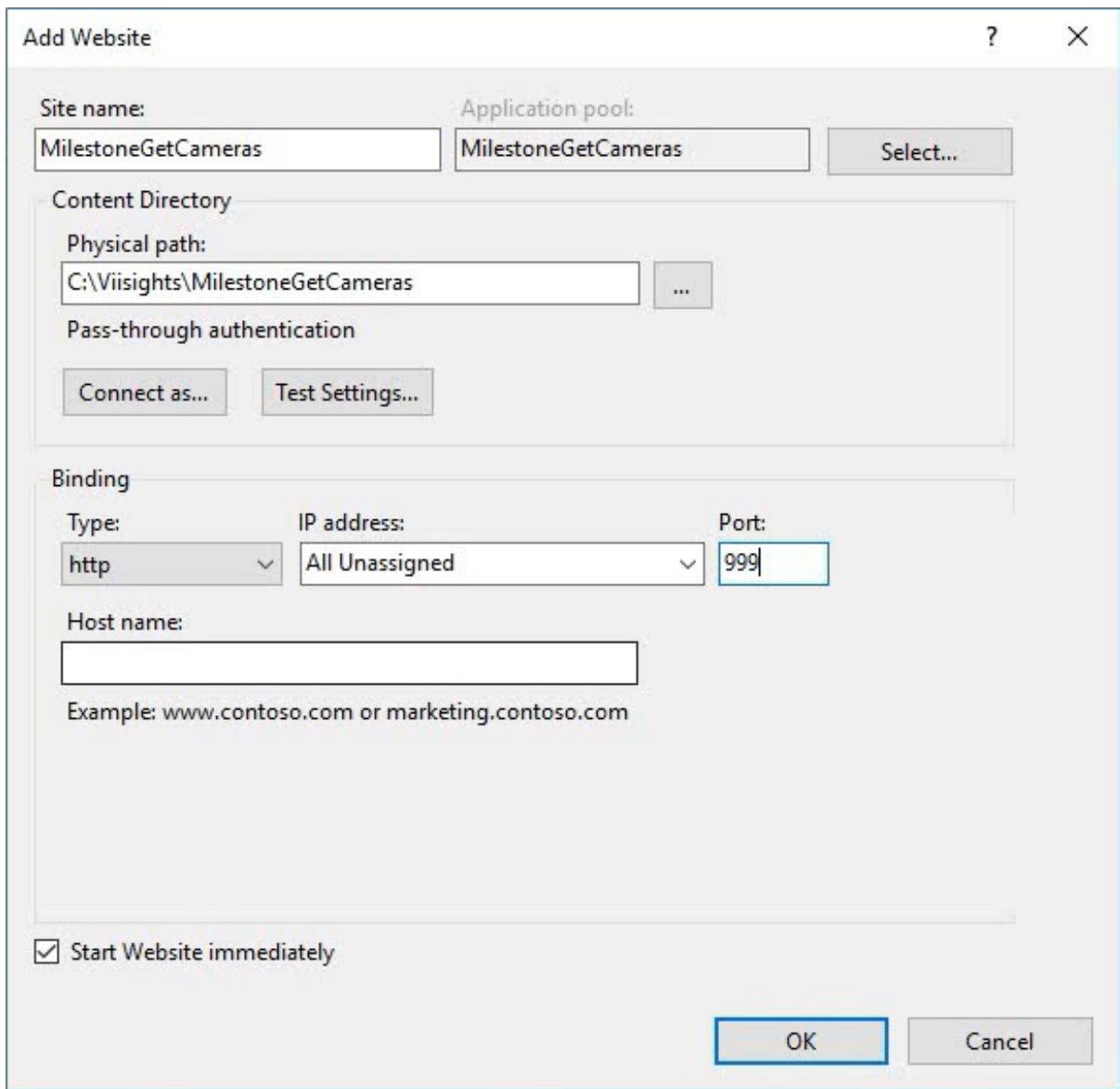
15. Configure the new Web Service on Internet Information Services (IIS) Manager
(MilestoneGetCameras proxy)

15.1. Sites -> Add Website



15.2. Enter parameters:

- Site name: MilestoneGetCameras
- Application pool: MilestoneGetCameras (Populated automatically)
- Physical path: click “...” and navigate to the folder “MilestoneGetCameras”.
- Binding Port: choose free port in your system (e.g: 999).
- Click “OK”



Add Website [?] [X]

Site name: Application pool:

Content Directory

Physical path:

Pass-through authentication

Binding

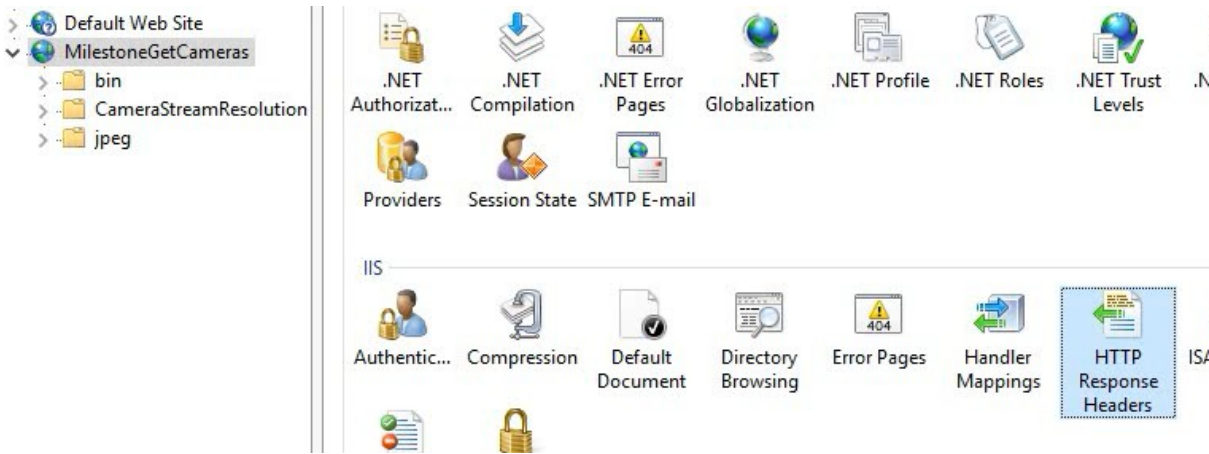
Type: IP address: Port:

Host name:

Example: www.contoso.com or marketing.contoso.com

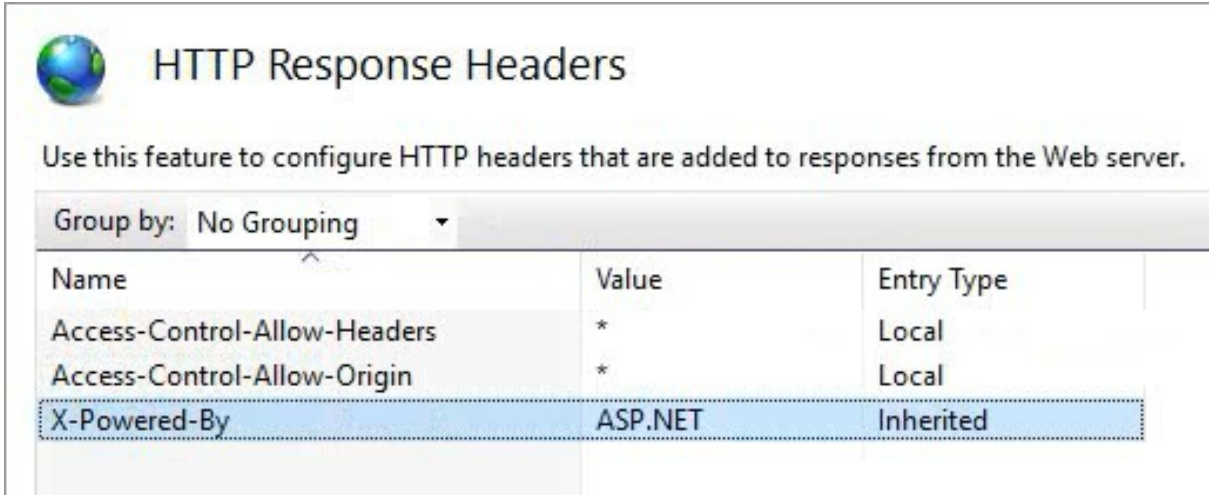
Start Website immediately

15.3. On the new website, navigate to HTTP Response Headers



15.4. Add the following entries:

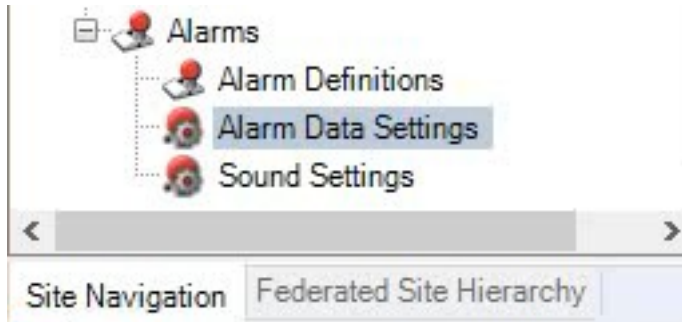
- name: Access-Control-Allow-Headers , value: *
- name: Access-Control-Allow-Origin , value: *



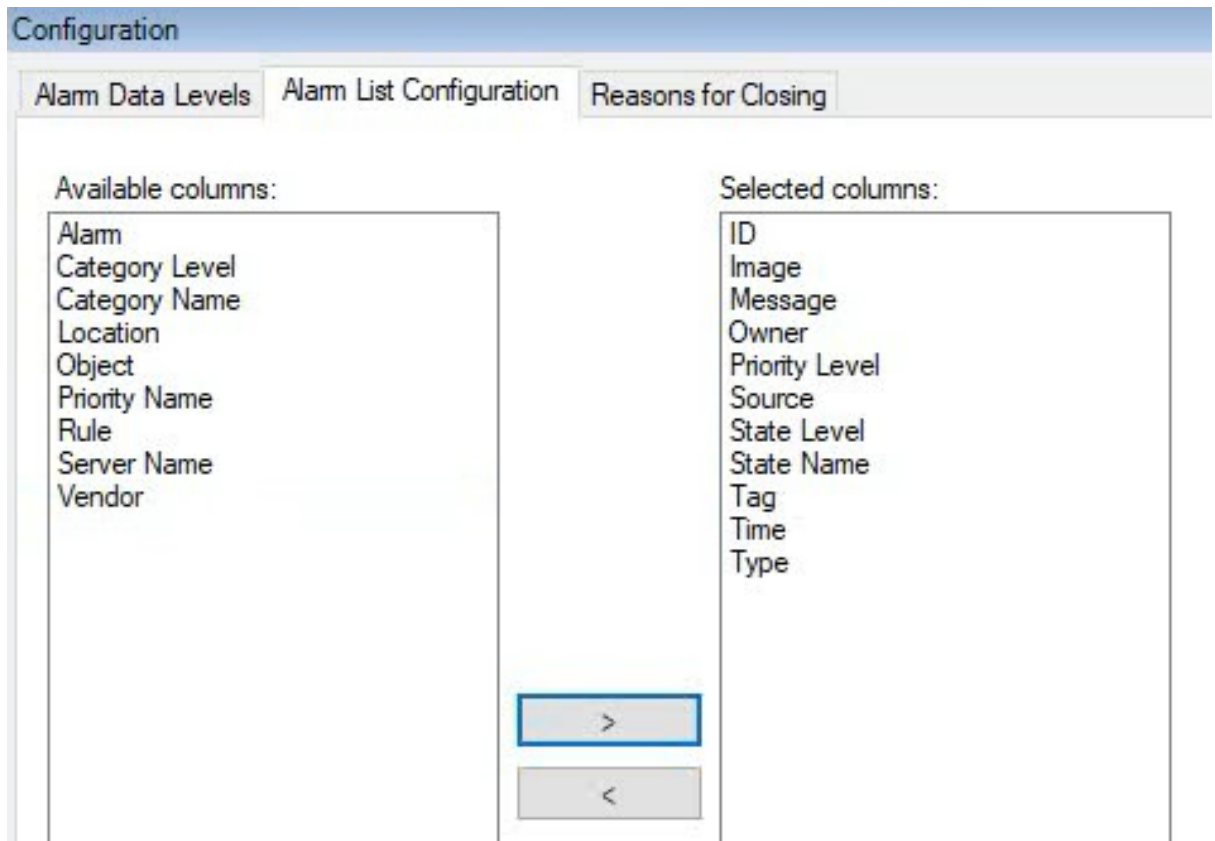
Important - Ensure the selected ports are open in the firewall (see [article](#))

16. Set up filters for alarms:

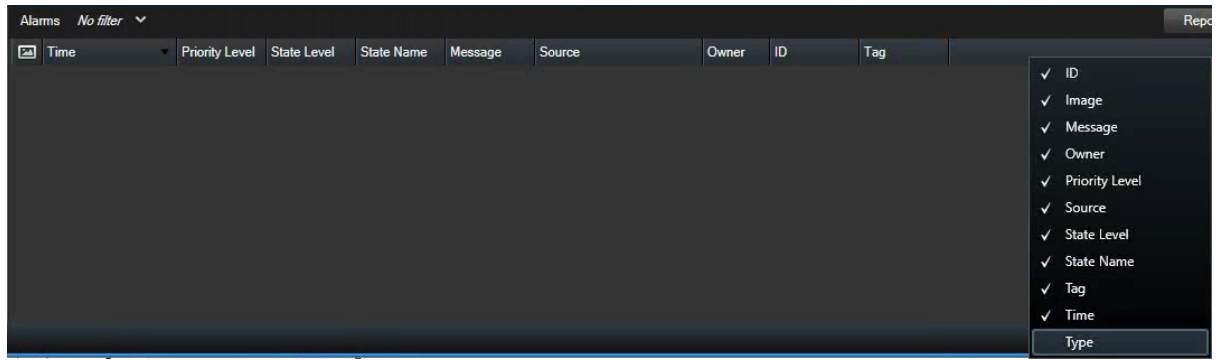
16.1. On XProtect Management Client, navigate to Alarms -> Alarms Data Settings. On the client



16.2. Alarms List Configuration: add Type, Tag.



16.3. On XProtect Smart Client, navigate to the Alarm Manager tab, Right-click the filters title and mark: **Type & Tag**



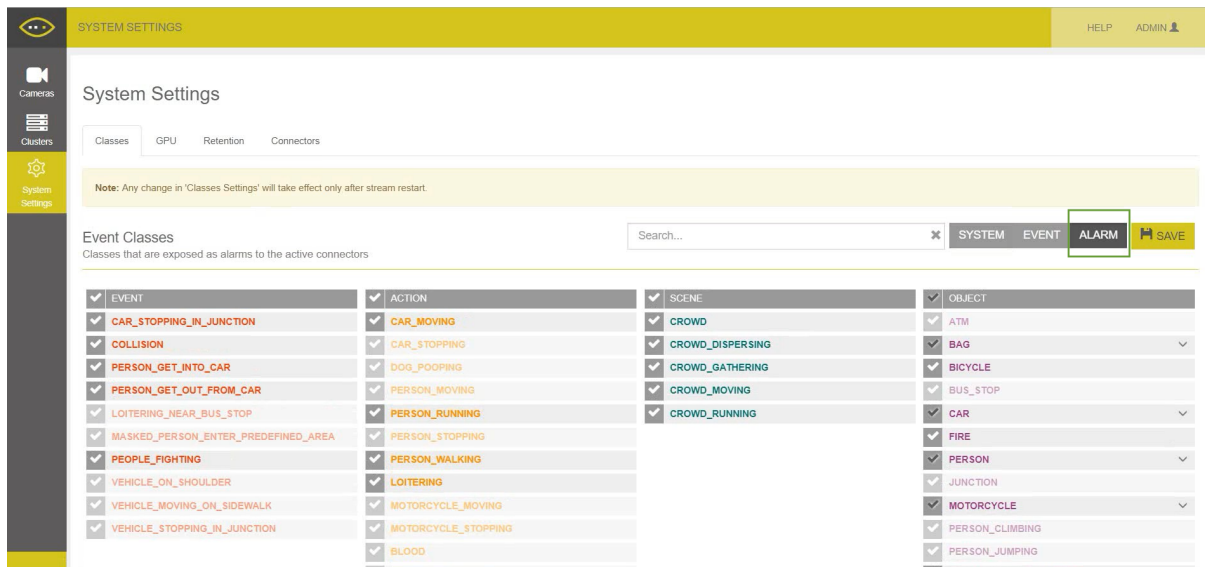
16.4. Ensure that the ports are open in the firewall:

- RTSP port 554.
- Port 9090 for analytic events (port 9090 as in this example)

4 CONFIGURATION – VIISIGHTS SERVER SIDE

1. Login to viisights cluster UI – <http://<server>/cluster>

- 1.1. Navigate to System Settings -> Classes -> Alarm, select which alarm classes to send to the Milestone connector –



SYSTEM SETTINGS

System Settings

Classes GPU Retention Connectors

Note: Any change in 'Classes Settings' will take effect only after stream restart.

Event Classes

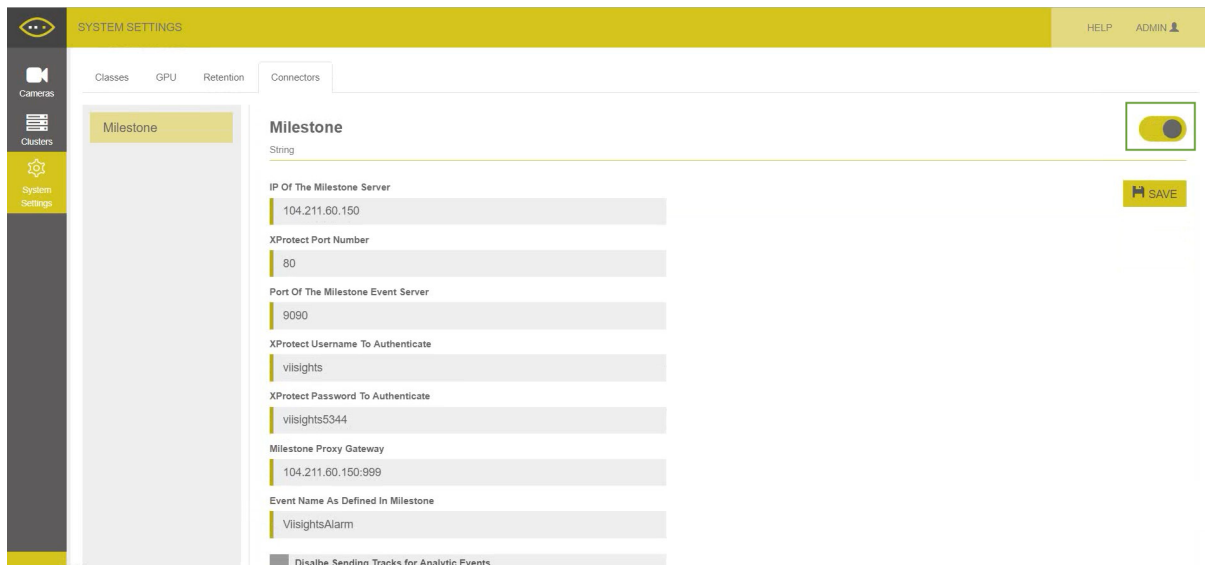
Classes that are exposed as alarms to the active connectors

Search...

SYSTEM EVENT **ALARM** SAVE

EVENT	ACTION	SCENE	OBJECT
<input checked="" type="checkbox"/> CAR_STOPPING_IN_JUNCTION	<input checked="" type="checkbox"/> CAR_MOVING	<input checked="" type="checkbox"/> CROWD	<input checked="" type="checkbox"/> ATM
<input checked="" type="checkbox"/> COLLISION	<input checked="" type="checkbox"/> CAR_STOPPING	<input checked="" type="checkbox"/> CROWD_DISPERSING	<input checked="" type="checkbox"/> BAG
<input checked="" type="checkbox"/> PERSON_GET_INTO_CAR	<input checked="" type="checkbox"/> DOG_POOPING	<input checked="" type="checkbox"/> CROWD_GATHERING	<input checked="" type="checkbox"/> BICYCLE
<input checked="" type="checkbox"/> PERSON_GET_OUT_FROM_CAR	<input checked="" type="checkbox"/> PERSON_MOVING	<input checked="" type="checkbox"/> CROWD_MOVING	<input checked="" type="checkbox"/> BUS_STOP
<input checked="" type="checkbox"/> LOITERING_NEAR_BUS_STOP	<input checked="" type="checkbox"/> PERSON_RUNNING	<input checked="" type="checkbox"/> CROWD_RUNNING	<input checked="" type="checkbox"/> CAR
<input checked="" type="checkbox"/> MASKED_PERSON_ENTER_PREDEFINED_AREA	<input checked="" type="checkbox"/> PERSON_STOPPING		<input checked="" type="checkbox"/> FIRE
<input checked="" type="checkbox"/> PEOPLE_FIGHTING	<input checked="" type="checkbox"/> PERSON_WALKING		<input checked="" type="checkbox"/> PERSON
<input checked="" type="checkbox"/> VEHICLE_ON_SHOULDER	<input checked="" type="checkbox"/> LOITERING		<input checked="" type="checkbox"/> JUNCTION
<input checked="" type="checkbox"/> VEHICLE_MOVING_ON_SIDEWALK	<input checked="" type="checkbox"/> MOTORCYCLE_MOVING		<input checked="" type="checkbox"/> MOTORCYCLE
<input checked="" type="checkbox"/> VEHICLE_STOPPING_IN_JUNCTION	<input checked="" type="checkbox"/> MOTORCYCLE_STOPPING		<input checked="" type="checkbox"/> PERSON_CLIMBING
	<input checked="" type="checkbox"/> BLOOD		<input checked="" type="checkbox"/> PERSON_JUMPING

- 1.2. Navigate to System Settings -> Connectors, Enable and configure the milestone connector



SYSTEM SETTINGS

Classes GPU Retention **Connectors**

Milestone

Milestone

String

IP Of The Milestone Server

104.211.60.150

XProtect Port Number

80

Port Of The Milestone Event Server

9090

XProtect Username To Authenticate

viisights

XProtect Password To Authenticate

viisights5344

Milestone Proxy Gateway

104.211.60.150:999

Event Name As Defined In Milestone

ViisightsAlarm

Disable Sending Tracks for Analytic Events

SAVE

- Enter the IP address of the Milestone XProtect server and port number

- Fill in the Username and Password of the Basic user defined in XProtect Management Client
- Enter the Milestone Proxy Gateway IP and port number (e.g: 999 as in this example)
- Type the event name defined in the XProtect Management Client

System Settings

Classes
GPU
Retention
Connectors

Milestone

TSG Connector

SMTP Alerts

Milestone

Milestone Connector

AdjustTimeSyncInMilliseconds

0

Adjust the time for the sent analytic event in case of boundary boxes of detected object is not placed on the same frame in the smart client

Set alarm msg to "viisights analytic event - (class-name)"

True triggers sending alarms with msg name containing their class

Defines Interval Between Two Analytic Events For The Same Event

250

A detected event can take place for long duration. This configuration is working only with disableAnalyticEventTracking=false

Disable Sending Tracks for Analytic Events

False triggers sending multiple track events.

Port Of The Milestone Event Server

9090

IP Of The Milestone Server

192.168.1.121

Merge alarms with similar events in close time proximity

False triggers send alarms with similar events in close time proximity

Merge Alarms With Similar Events In Time Proximity Less Than:

2000

Merge alarms with similar events that appear in time proximity of less than X to each other

Event Name As Defined In Milestone

ViisightsAlarm

XProtect Password To Authenticate

viisights5344

Milestone Proxy Gateway

192.168.1.121:999

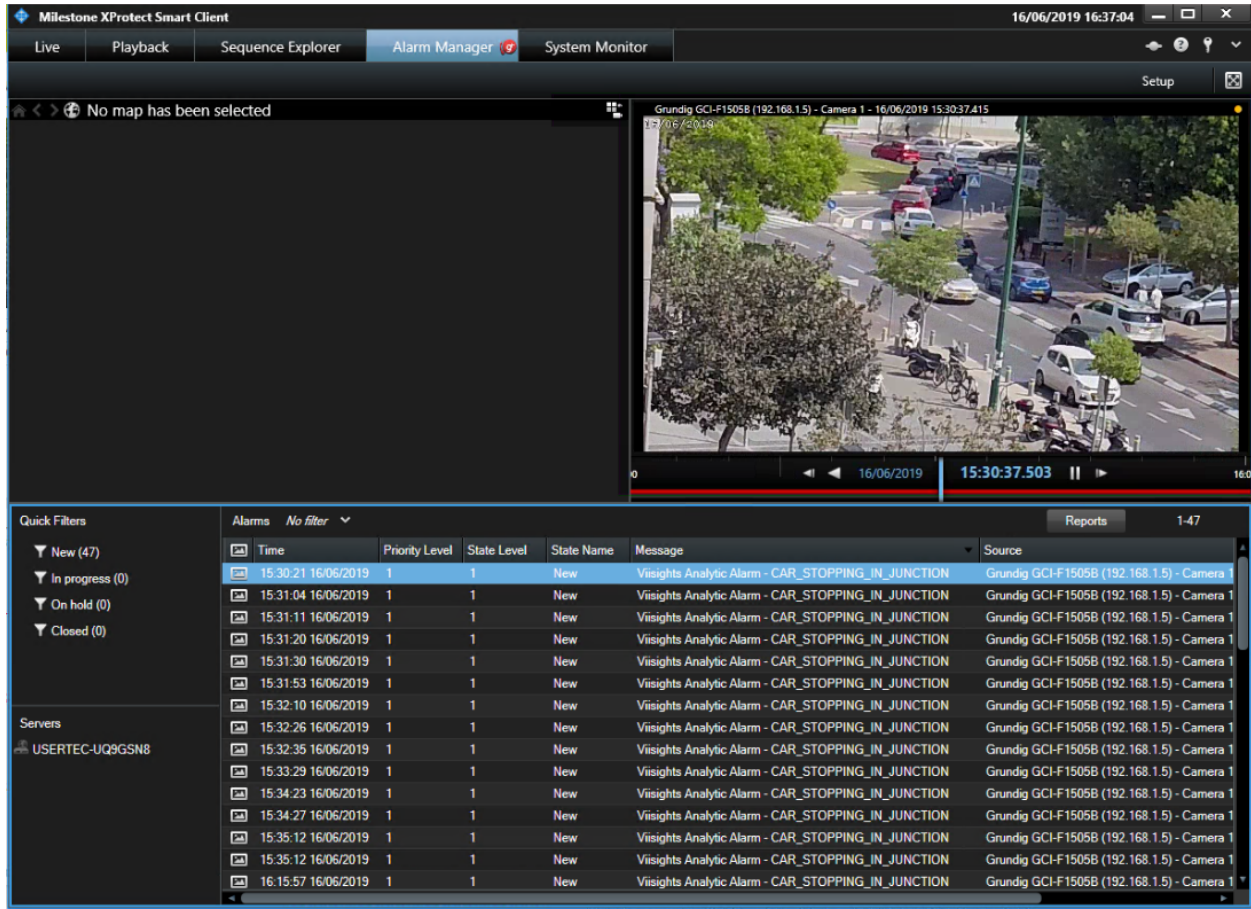
XProtect Username To Authenticate

viisights

XProtect Port Number

80

5 ALERT VIEW ON MILESTONE XPROTECT CLIENT



The screenshot shows the Milestone XProtect Smart Client interface. The top navigation bar includes 'Live', 'Playback', 'Sequence Explorer', 'Alarm Manager' (active), and 'System Monitor'. The main area is split into a map view on the left (showing 'No map has been selected') and a video feed on the right. The video feed shows a street scene with cars and motorcycles, with a timestamp of 15:30:37.415. Below the video feed is a playback control bar with a timestamp of 15:30:37.503. The bottom section is the 'Alarms' panel, which contains a list of alarms and a 'Quick Filters' sidebar.

Quick Filters

- New (47)
- In progress (0)
- On hold (0)
- Closed (0)

Servers

- USERTEC-UQ9GSN8

Alarms *No filter*

Time	Priority Level	State Level	State Name	Message	Source
15:30:21 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:31:04 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:31:11 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:31:20 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:31:30 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:31:53 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:32:10 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:32:26 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:32:35 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:33:29 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:34:23 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:34:27 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:35:12 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
15:35:12 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1
16:15:57 16/06/2019	1	1	New	Viisights Analytic Alarm - CAR_STOPPING_IN_JUNCTION	Grundig GCI-F15058 (192.168.1.5) - Camera 1

6 ALERT VIEW ON VIISIGHTS UI

The screenshot displays the Viisights Stream Analysis Dashboard. The main video player shows a street scene with a yellow bounding box around a car and the text "2409 CAR_STOPPING_IN_JUNCTION". The metadata panel on the left shows the following details:

- ID: 4771c276-30f7-4303-833e-8d9d3ea59001
- Title: Grundig GCI-F1505B (192.168.1.5) - Camera 1
- Description:

The filter selection panel on the right is titled "Filters" and includes three columns: EVENT, ACTION, and SCENE. The "EVENT" column has the following items checked:

- CAR_ON_SIDEWALK
- CAR_STOPPING_IN_JUNCTION
- CAR_COLLISION

The "ACTION" column has the following items checked:

- CAR_MOVING
- CAR_STOPPING
- PERSON_STOPPING
- PERSON_WALKING
- MOTORCYCLE_MOVING
- MOTORCYCLE_STOPPING
- PERSON_FALLING
- PERSON_RIDING_BICYCLE
- PERSON_THROWING_OBJECT

The "SCENE" column has the following items checked:

- CROWD
- CROWD_DISPERSING
- CROWD_GATHERING
- CROWD_MOVING
- CROWD_RUNNING

The timeline view at the bottom shows a vertical green line representing the current time. Three red dots are visible on the timeline, corresponding to the event classes: CAR_ON_SIDEWALK, CAR_STOPPING_IN_JUNCTION, and CAR_COLLISION.

Troubleshooting: Allow analytic events from external source:

if alarms don't reach the server then:

Management Client: at the top of the window go to **Tools** menu → "Registered services" , Select the "Event Server" and click on "Edit..." → "Add" and type <http://yourpublicip:22331> (where you state the previously re-directed **external** port, if different). Also check the "External" checkbox.

[-link to developer forum concerning this issue-](#)

List of ports to open: milestone (80), ONVIF (554), Analytic events (9090), Proxy (999)