Guide to Powering Agent Vi Analytics on Milestone's XProtect

Contents

1 Overview

Integration of Milestone's XProtect with Agent Vi's savVi offers:

■ Real-Time Detections and Alerts. Events of interest are detected through real-time analysis of multiple video sources and sent to XProtect Smart Client.

■ Video Search. Recorded video is queried and events of interest are located and extracted from the XProtect recording server.

■ Business Intelligence. Statistical information related to the behavior of people and vehicles is generated from the surveillance video, including traffic volumes, traffic trends and motion patterns. Generation of such data uses live video from XProtect connected cameras and recorded video from XProtect recording server.

These capabilities are available for IP cameras and encoders powered by embedded Vi-Agent ("Optimized Deployment", for greater scalability) and for cameras managed by XProtect but not powered by Vi-Agent ("Flexible Deployment" using Vi-Agent Proxy to pull live video from XProtect).

1.1 About this Guide

This guide shows how to deploy and configure savVi and Milestone's XProtect for video analytics.

1.2 Version Compliance

■ savVi 5.4

■ Check Agent Vi's website for supported VMS versions

Note:

■ All configuration details in this document referring to XPCO apply also to XProtect Expert.

■ All configuration details in this document that refer to XPE apply also to XProtect Professional and Express editions.

1.3 Enabling Procedure

To enable analytics with XProtect:

1. Install savVi. For additional information, please refer to the Agent Vi online Certification Program, Installer course, Installation and Configuration lesson

2. Use savVi-Manager to configure the connection with Milestone server and to add cameras. For additional information, please refer to the Agent Vi online Certification Program, Installer course, VMS Integration lesson.

   When adding the Milestone VMS to savVi select the Milestone VMS version in savVi according to the following table:

Milestone version	Select in savVi
Essential+	Not supported
Express	Enterprise
Express+	Corporate
Professional	Enterprise
Professional+	Corporate
Expert	Corporate
Corporate	Corporate

3. When deploying savVi with Milestone XProtect Corporate, Express+ 2017 and Professional+ 2017 editions, and when savVi and XProtect are installed on separate servers, you must implement one of the following options:
   - When adding the VMS to savVi, specify the VMS using its hostname and not the IP address
   - Add the savVi server's IP address and hostname to the Windows 'hosts' file (Windows\System32\drivers\etc\hosts) residing on the XProtect Management Server.

4. When deploying real-time detection and alerts, configure XProtect to receive analytics events (see Event Integration Using).

5. Ensure that all Agent Vi's client/server machines as well as all XProtect's client/server machines are continuously time-synchronized by a single NTP server.

Note: Refer also to the section below for aspects specific to savVi – XProtect integration.

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2 Specific Installation and Configuration Aspects

2.1 savVi's Prerequisites

You'll require:

- Milestone XProtect installed and configured.
- When deploying on **Windows Server** (2008 or 2012) operating systems, enable Desktop Experience using Windows Server Manager.
- For Milestone 2017verify that .NET 3.5 is installed

2.2 All-In-One Installation with Milestone XProtect

An All-In-One installation is aimed for deployments in which Milestone XProtect and savVi can be installed and run on a single server. Note that in addition to the standard installation steps:

- savVi must be installed on the server *only after* Milestone XProtect is installed.
- During installation of savVi, you may be prompted that port **8080** is being used by another program. If so, provide an alternative port number, e.g., **8082**.
- Contact Agent Vi Support for information on the required server resources.

2.3 Required Credentials Settings for XProtect Corporate

For **XProtect Corporate** compatibility, apply these settings:

1. In the Properties screen of the VAP and VMS Manager services, click tab **Log On** and check the radio button. **This account** (the machine user's account) instead of the default **Local System** account.

Figure 2-1: VAP/VMS Manager Service Properties
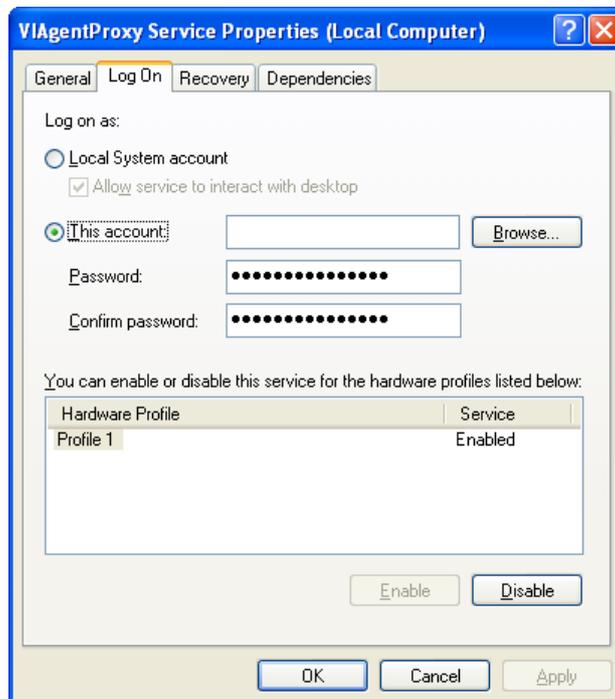
2. Click **Browse** and navigate to the user privileged to log in to the Milestone PC and to Milestone XProtect Corporate.
3. Click **OK** and restart the service.
4. Edit the Recorder Server configuration file:
   a. On the PC/s running Milestone's XProtect Corporate recording server, find the *RecorderConfig.xml* file usually located in path:

C:\Documents and Settings\All Users\Application Data\Milestone\XProtect Corporate Recording Server
       -OR-
C:\program files\milestone\xprotect corporate recording server
       -OR-
C:\ProgramData\Milestone\XProtect Corporate Recording Server

   b. In the file's **<webserver>** section, find the element **<host>**. Set to the IP of the PC running the recording server, e.g., change from **<host/>** (empty by default) to **<host>192.168.2.100</host>**
   c. Save the file and restart Milestone's XProtect Corporate recording server and XProtect Corporate management server.

Note: With Milestone XProtect Corporate and Workgroup environment, a local Windows user should be used. The user must be identical to the user defined in Milestone XProtect.

2.4   Optimizing savVi-Analyst and savVi-Manager Performance

You can configure Milestone's recording settings for optimal savVi-Analyst and savVi-Manager performance.

➢ **To optimize savVi-Analyst performance:**

■ Make sure that Milestone's recording retention time and savVi-Analyst metadata retention time are aligned, i.e., how long recordings and metadata are saved until deleted. savVi-Analyst metadata retention time must not exceed Milestone's recording retention time.

■ When Milestone's recording settings are configured as triggered by motion detection, savVi-Analyst's ability to present results thumbnails and playback can be compromised if motion detection is not sensitive enough. Optimize savVi-Analyst performance by adjusting the following parameters in XProtect:

- Increase the motion sensitivity and/or-

- Increase the time before/after motion is detected and triggers recording start/stop:

  ♦ Create a new 'Rule' in Milestone's Management Client that is a copy of the default rule 'Default Record on Motion Rule'.

  ♦ Set the time before/after to +-10 seconds (Default = 3 seconds).

  ♦ Disable the default rule after the new rule is created.

- Alternatively, i.e., *instead of* the two options above, configure Milestone to constantly record, i.e., independently of motion detection:

  Create a new rule with 'Action' set to **Start Recording** and 'Time Interval' set to **Always**.

3 Event Integration Using AgentVi Event Monitoring Milestone Plugin

Read this section if you deployed savVi Real-Time Detection and Alerts and you want to view events in Milestone XProtect.

Integration of savVi based on Milestone Integration Platform (MIP) offers these benefits:

- Simple to configure. It takes just a few steps to be able to receive analytics events for any number of cameras, Multi-LBSs (savVi's server) and any number of analytics rules per camera.

- You can view analytics tracking (also referred to as 'Metadata Overlay' or 'OSD') in real-time from Milestone Smart Client.

- You can view past events, navigate to a video recording of a specific event and view analytics tracking for that event.

- you can view events retrieval up to one hour loss after recuperating from LBS disconnection

- Analytics events can be linked with specific XProtect actions.

3.1 Overview of the Integration Process

- Make sure you meet savVi's Prerequisites

- Install Agent Vi Event Monitoring Milestone Plugin

- Initialize Agent Vi's analytics integration in XProtect Management Client

- For the most common use-case of triggering analytics events and viewing alarms in Smart Client, refer to Configure Default Agent Vi Analytics Event & Alarm and Configuring and Viewing in Milestone Smart Client.

- For a more advanced setup of triggering specific actions in Milestone XProtect, refer to Triggering Specific Actions with XPCO and Triggering Specific Actions with EPE.

3.2 Installing the Agent Vi Event Monitoring Milestone Plugin

Install the Agent Vi Event Monitoring Milestone Plugin on *all* PCs hosting:

- Milestone XProtect Event Server

- Milestone Management Application

- Milestone XProtect Smart Client

If an earlier version of the MIP Plugin is already installed, install the new version on top of it (.ie., upgrade).

➢ **To install the Agent Vi Event Monitoring Milestone Plugin:**

1. Close all Milestone's client applications such as Smart Client and the Management Client.
2. Run the Agent Vi Event Monitoring Milestone Plugin installer file*.

> ➢ **After installing the Agent Vi Event Monitoring Milestone Plugin:**

1. On the Event Server PC, restart the **Milestone XProtect Event Server** Service (from Windows Services panel).
2. Start Milestone's client applications as required.

3.3 Initializing Agent Vi's Analytics Integration in Milestone Management Client

> ➢ **To initialize the integration:**

1. Open the **Milestone Management Client**
2. In the tree, expand **MIP Plug-ins → AgentViEventMonitoring**
3. Right-click **AgentViEventMonitoring** and choose **Add/Create New**:

Figure 3-1: Milestone Management Client – Create New
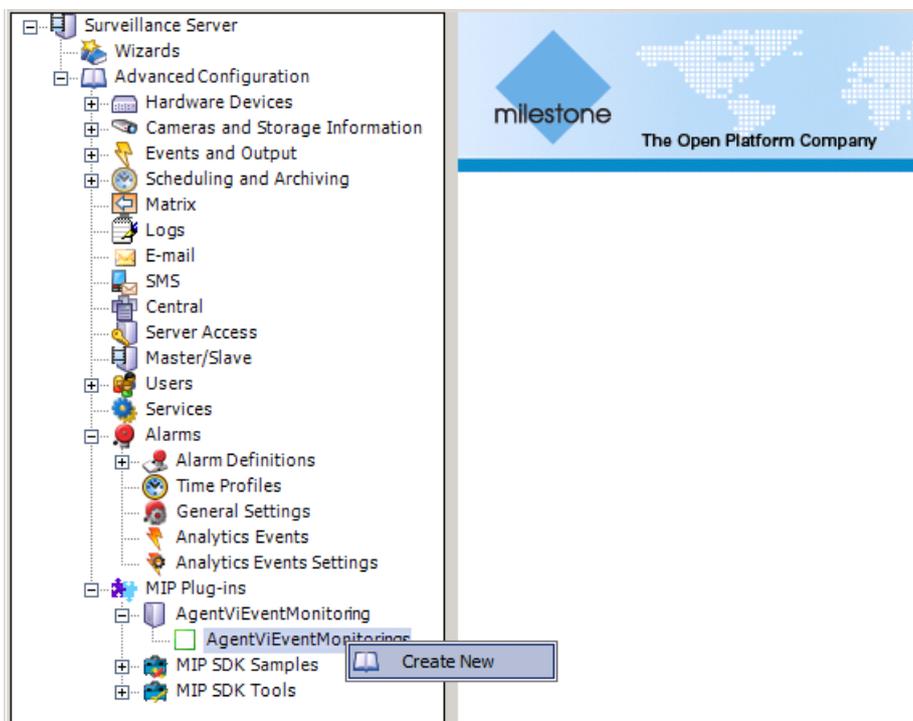
4. In the form that opens (see **Error! Reference source not found.**) specify:

    i. Valid savVi's user name and password

    ii. The host **Name** or IP **Address** of the **Vi-Server** that you are integrating with (i.e., the PC on which the Vi-LBS service is running) as well as the Web Service port number

    iii. Attributes of the **Secondary Vi-Server,** if deployed (otherwise leave blank)

    iv. The option "**Receive analytics events from this savVi server**" should be unselected only in **Master/Slave** deployment when setting up the savVi server connection to **XProtect Slave** server. In other cases, should be left selected.

Figure 3-2: Milestone Management Client - Specifying Vi-Server

Name:	Vi-Server 1
User Name:	admin
Password:	••••••
Vi-Server Address:	host1
Web Service Port:	8080
Secondary Vi-Server Address:	host2
Secondary Web Service Port:	8080

☑ Receive analytics events from this savVi server (*)

* Disable receiving events only when configuring a Slave server in case of Milestone XProtect in Master/Slave deployment

5. In case of several savVi systems connected to Milestone XProtect:

   a. Steps 3 and 4 are needed to be done for every savVi server

   b. In case of Master/Slave deployment, there is a need to define all savVi systems for XProtect Master Server. When configuring the Slave Server, define only the savVi system which is connected to the currently being configured Slave.

6. In case you want to work simultaneously with more than one savVi server, you can add a new Vi-Server as described in the screen below and configure in the same way as described above:

Figure 3-3: Milestone Management Client - Specifying Vi-Server
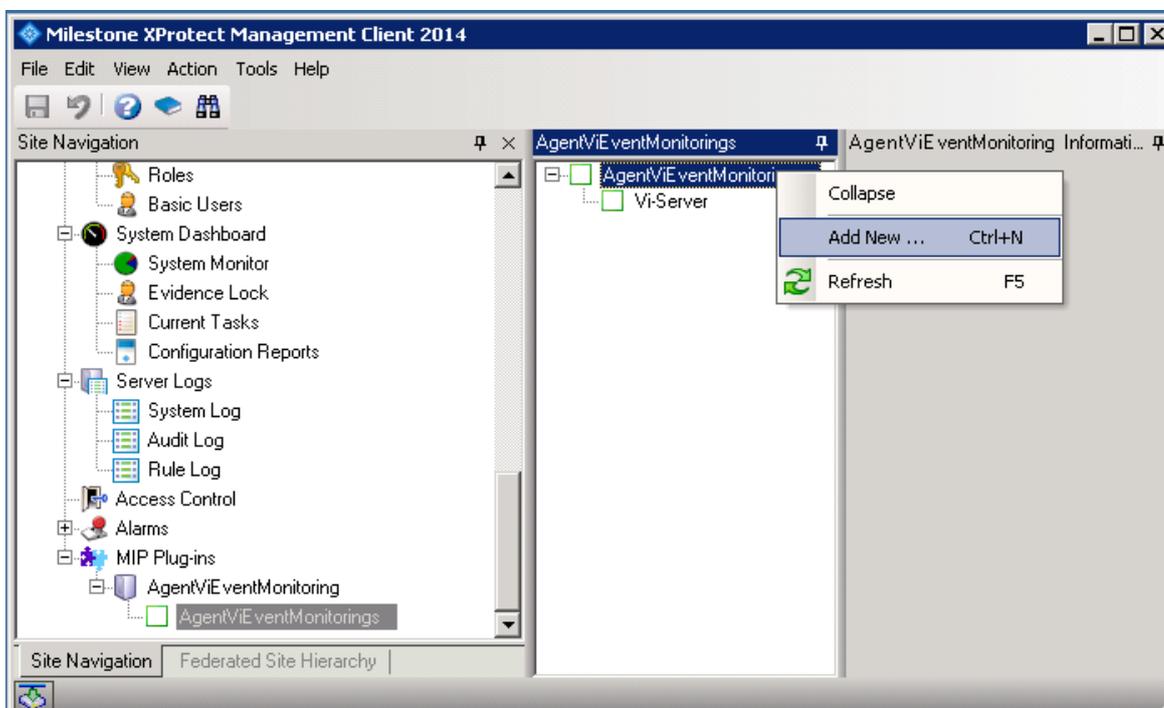
7. Verify that Analytics Events are enabled:

With XPCO:

a. Open the **Options** dialog from the **Tools** menu and click the **Analytics Events Settings** tab.

b. Check **Enabled** under **Analytics Events Settings**:

Figure 3-4: Milestone Management Client (XPCO) – Analytics Events – Enabled
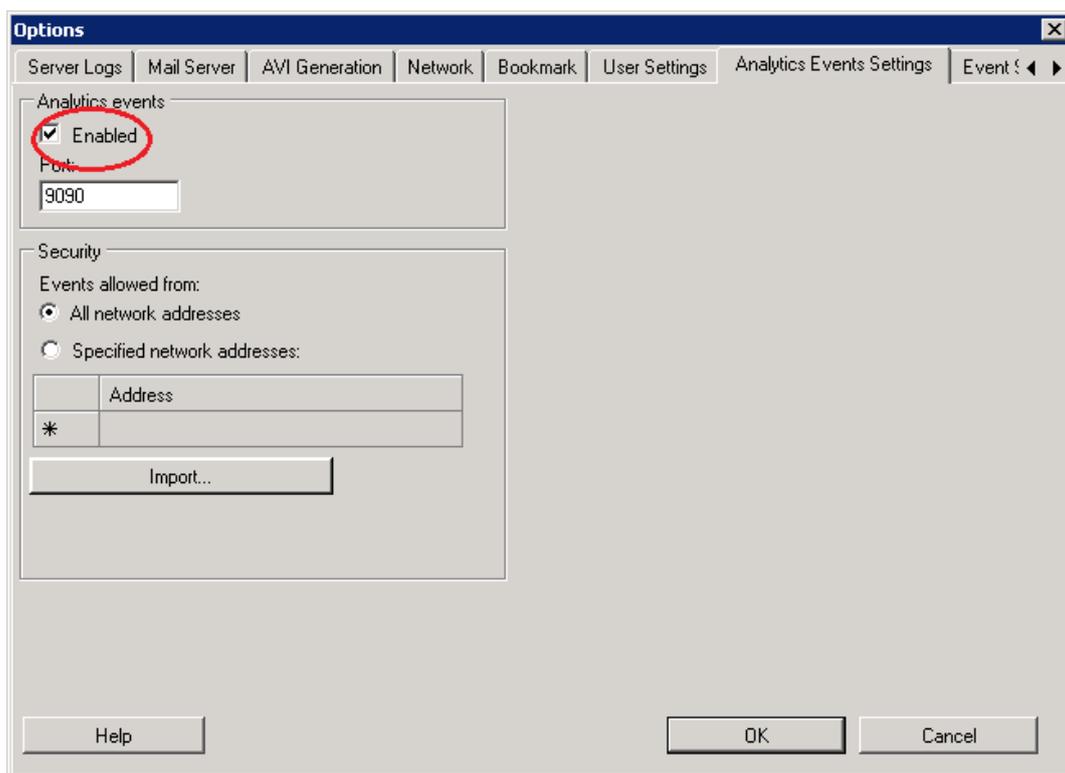
With XPE:

  a. Open **Application Settings** from the menu bar, choose **Application Behavior** and click the **Analytics Events Settings** tab.

  b. Check **Enabled** under **Analytics Events**:

Figure 3-5: Milestone Management Client (XPE) – Analytics Events – Enabled
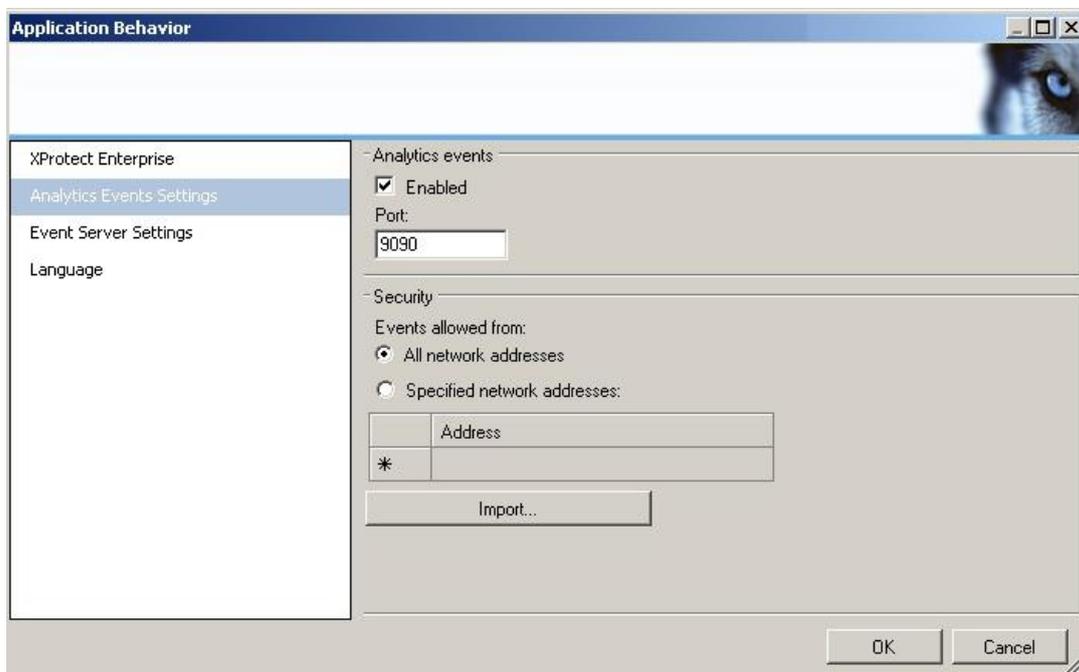
3.4   Configure Default Agent Vi Analytics Event & Alarm

The default configuration described in this section allows for every analytics event sent from savVi to be reported as an alarm in Milestone's Smart Client.

The Event/Alarm triggering flows like this:

savVi Analytics Rule → savVi Analytics Event → XProtect Analytics Event → XProtect Alarm

3.4.1   Define Agent Vi's Analytics Event

➢ **To define Agent Vi's analytics event:**

  1. From the Management Client tree, navigate to **Rules and Events** (XPCO) or **Events and Output** → **Analytics Events** (XPE)

  2. Right-click it and choose **Add/Create New** as shown below:

Figure 3-6: Milestone Management Client – Analytics Events – Create New
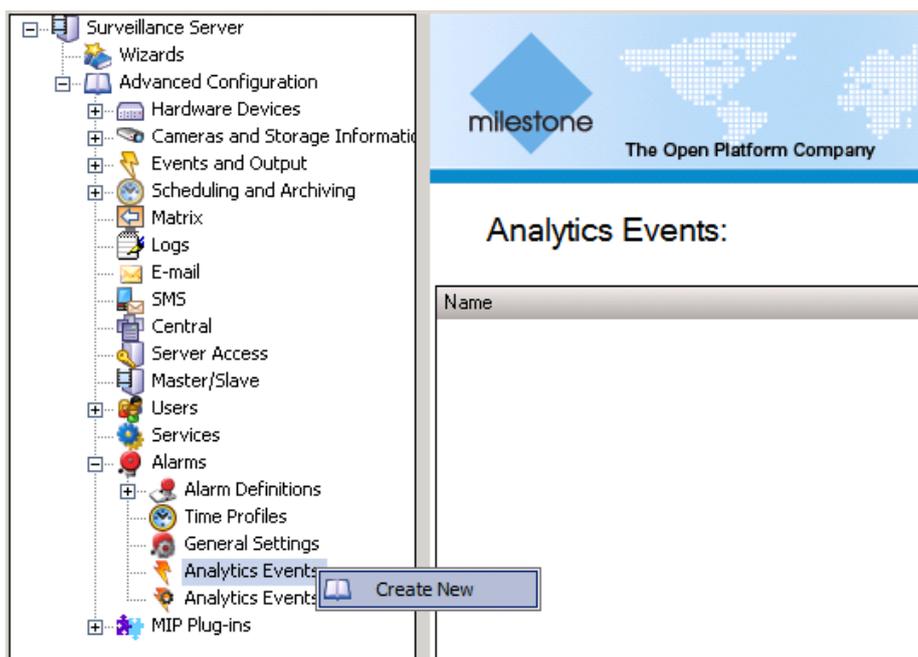
3. In the form that opens (shown below) specify the event **Name** as **Agent Vi Event**.

Figure 3-7: Milestone Management Client – Name - Agent Vi Event

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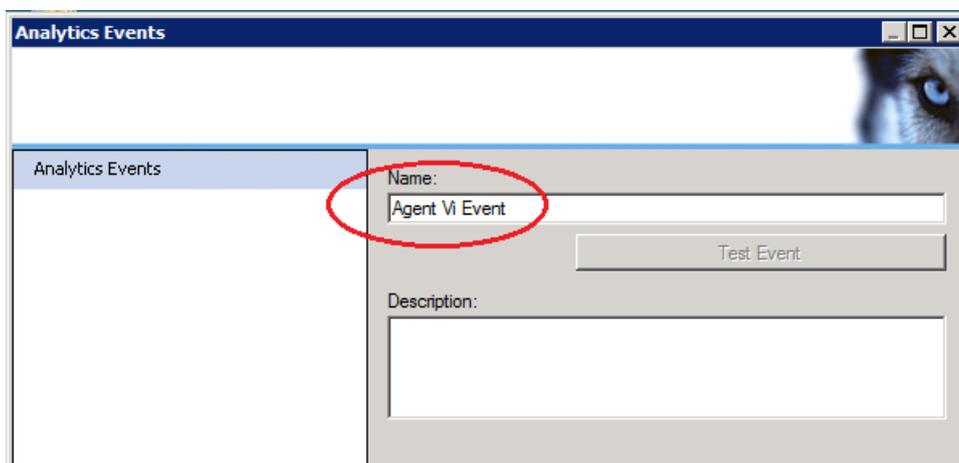
Important:

In Step 3 above, name the new entry *exactly* as specified: **Agent Vi Event**

3.4.2 Define an Associated Alarm

With XPE:

1. Right-click **Alarm Definitions** under **Alarms** and click **Create New**; the form below opens.

2. In the **Triggering event** field, choose **Agent Vi Event** as shown below.

3. In the **Sources** field, click **Select**; in the Select Sources screen that opens, open the Servers tab, choose **All cameras** and **Add** it to the Selected list.

4. Save the **Alarm Definition** by clicking **OK**.

Figure 3-8: Milestone Management Client – Alarm Definition
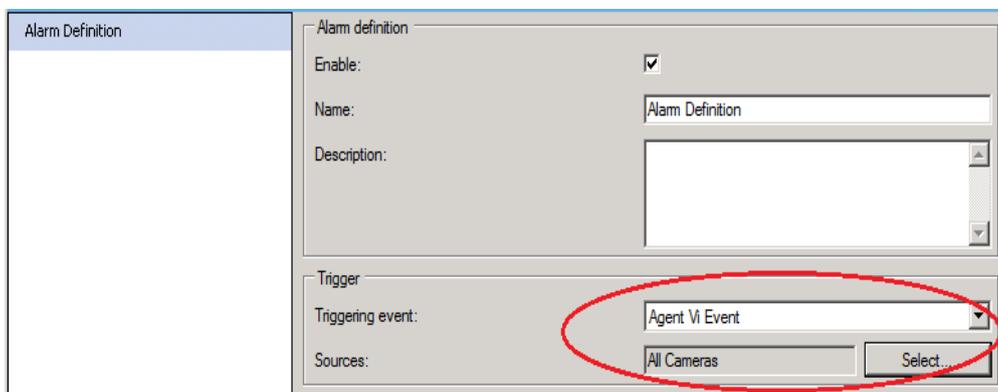
With XPCO:

1. Choose the **Alarm Data Settings** node (under the **Alarms** tree) and switch to the **Alarm List Configuration** tab

2. Verify that the recommended attributes are included: **Time**, **Source**, **Tag** and **Message**. Add any of the attributes if missing.

3. Right-click **Alarm Definitions** under **Alarms** and click **Add New**.

4. In the **Triggering event** field, choose **Analytics Events** in the upper list and **Agent Vi Event** in the lower list as shown below.

5. In the **Sources** field, click **Select**; in the Select Sources screen that opens, open the **Servers** tab, choose **All cameras** and **Add** it to the Selected list.

6. Save the **Alarm Definition** by clicking **OK**.

Figure 3-3: Milestone Management Client (XPCO) – Alarm Definition
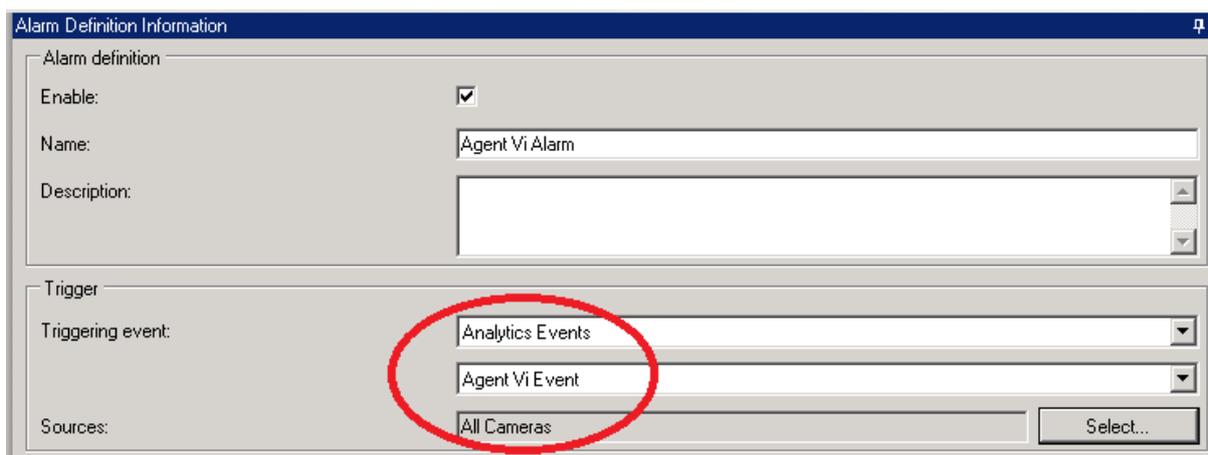
3.4.3 Restart the Milestone XProtect Event Server service

After completing the steps above, restart the Milestone XProtect Event Server service for the configuration to take effect.

3.5 Configuring and Viewing in Milestone Smart Client

1. Open the **Milestone Smart Client**
2. Define a view:
   a. Choose a **Live** view panel on the left-hand side of the application window.
   b. Click the **Setup** button on the right-hand side of the application window:

   c. Define a new **View**: first define a new group; right-click the newly created group name and define a new view, for example, (1 + 2*); it's unimportant which one is chosen so long as it's broad enough to contain the alarms list.
   d. From **System Overview** drag the **Alarm List** item to the broad part of your newly created view.
   e. Note that you can change the order of the **Alarm List** columns. It's recommended to move the **Tag** column to the right so that its value becomes visible, since it contains an event description.
   f. In **System Overview** expand the cameras list and drag the relevant cameras to the remaining views
3. When switching to the **Live View** tab:
   a. All generated events appear in the list.
   b. The metadata overlay appears in the camera view.
4. When switching to the **Playback** tab:
   a. The camera view switches to the relevant event time when you click on an event.
   b. The event plays back when you click the **Play** button in the Time Navigation window on the left.
   c. The metadata overlay appears in the camera view. It may take a few minutes for the metadata overlay to be available for display
5. In the Alarms list, note the **Tag** column containing the analytics event description (e.g., 'Vehicle motion detected'). If the **Tag** column is unavailable, right-click the table header bar to add it. If you're still unable to add it in conjunction to XPCO, refer to **Alarm Data Settings** in XProtect Management Client described above.

Figure 3-9: Milestone Smart Client (7.0) – Alarm List

3.6   Triggering Specific Actions with XPCO

This section shows how to handle more advanced scenarios for executing an action when an event occurs. The capability is available in **Milestone XProtect Corporate Edition** and is achieved by linking the analytics event to an XProtect user-defined event and user-defined rule.

The event/alarm triggering flows like this:

savVi Analytics Rule → savVi Analytics Event → XPCO Analytics Event → XPCO Alarm → XPCO User-Defined Event → XPCO User-Defined Rule → XPCO Action

➢   **To configure savVi and Milestone XPCO for triggering actions:**

1.   In savVi-Manager, navigate to **Sensor** > **Rules** > **Actions** for each rule that must trigger a specific analytics event in XProtect.

2.   Define an **External ID** for a rule; it will be used in the Milestone XProtect configuration as described below.

Figure 3-10: Vi-Setup – External Rule ID

3.   Add a new **Analytics Event** using the **Milestone XProtect Management Client**. The name must be identical to the **External Rule ID** defined using savVi-Manager in the previous step, for example, **Line Crossing #1**, as shown in the above screen.

4.   Define a new **User-Defined Event** using **Milestone XProtect Management Client** as shown in the figure below:

Figure 3-11: Milestone Management Client – User Defined Event
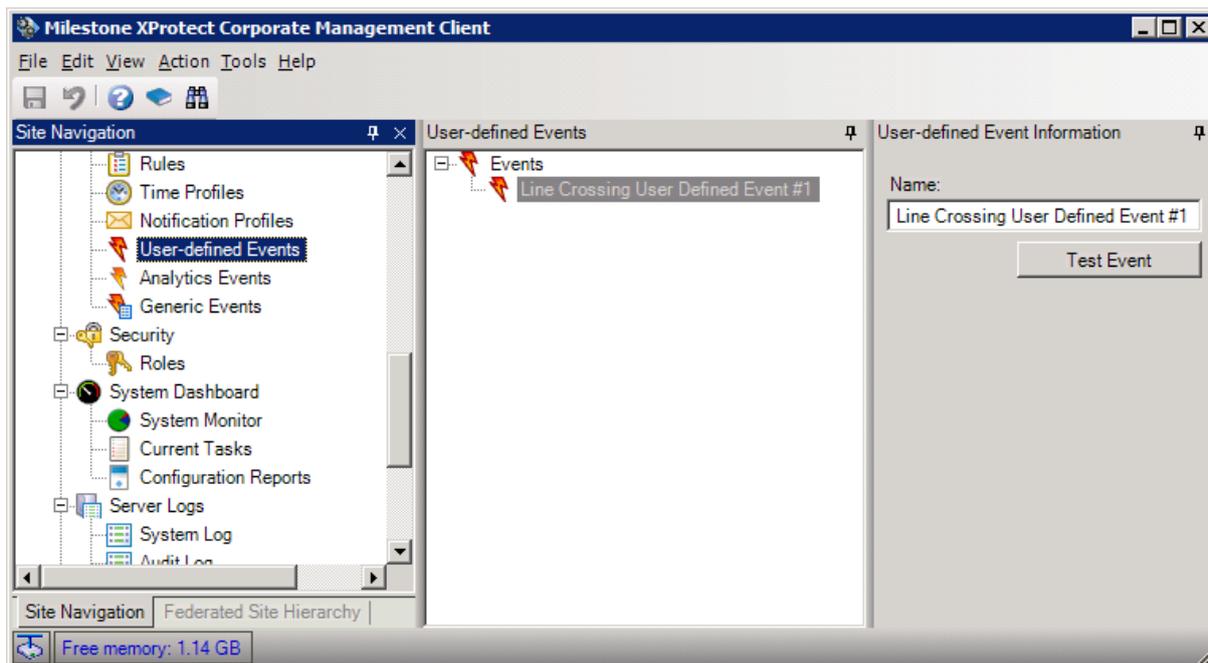
5. Add a new alarm that links between the Analytics Event and the User-Defined Event. Note the areas marked **red** in the screen capture below. For the **Triggering event** field, choose the analytics event defined in step 3 (**Line Crossing #1** in the example above). For the **Event triggered by alarm** field, choose the user-defined event created in step 4 (**Line Crossing User Define Event #1** in the example above).

Figure 3-12: Milestone Management Client – Alarm Definition

6. Add a new rule to the **Milestone XProtect Management Client**. Choose the **User defined event** created in step 4 (**Line Crossing User Define Event #1** in the example above).

Figure 3-13: Milestone Management Client – Manage Rule
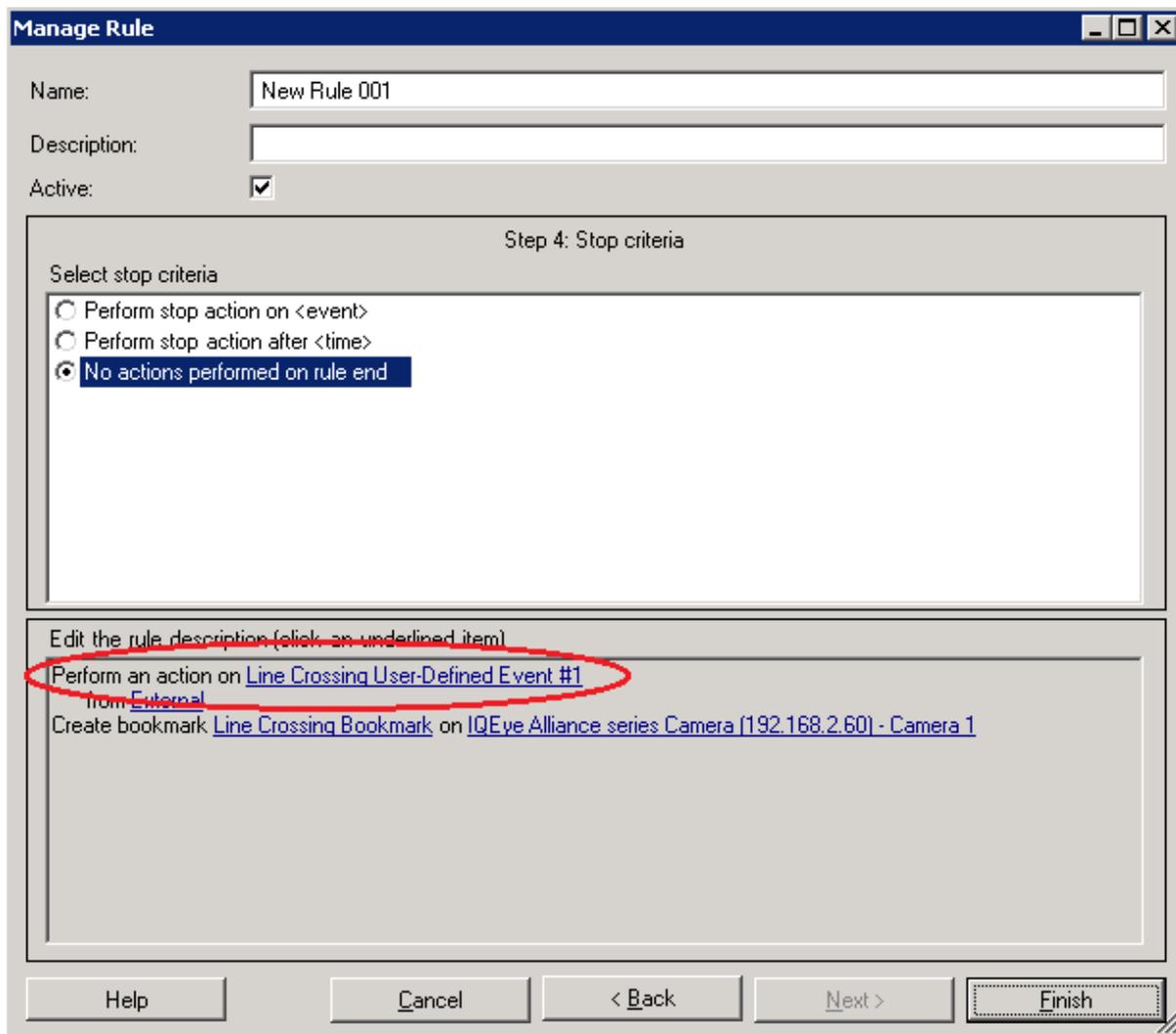
7. Click **Next** and choose conditions if necessary.

8. Click **Next** and choose an action (or several). Best practice: Define a bookmark using **Create bookmark on…** or move a camera to a predefined preset.

9. Finish the rule definition.

10. After completing the steps above, restart the Milestone XProtect Event Server service for the configuration to take effect.

3.7 Triggering Specific Actions with XPE

This section shows how to trigger actions based on analytics events when using Milestone XProtect Enterprise Edition to allow, for example, a savVi analytics rule defined on a fixed camera move a PTZ camera to a required preset.

The event/alarm triggering flows like this:

savVi Analytics Rule → savVi Analytics Event → XPE Analytics Event → XPE Alarm → XPE Manual Event → XPE Camera Action

> ➢ **To configure savVi and Milestone XPE for triggering actions:**

1. In savVi, define an analytics rule (on a static camera if you want to trigger a PTZ action after the target is detected). Define the rule's **External Rule ID** as the name of the Analytics Event you'll be defining in Milestone XPE.

2. In XPE Management Client create a new **Analytics Event** (under **Alarms** in the configuration tree). Give it exactly the same name as the **External Rule ID** in the above step.

3. Create a Manual Event from XPE:

    a. Go to **Events and Output → Manual Events**

    b. Right-click to **Add New Manual Event** as shown below.

Figure 3-14: Milestone Management Client – Manual Event
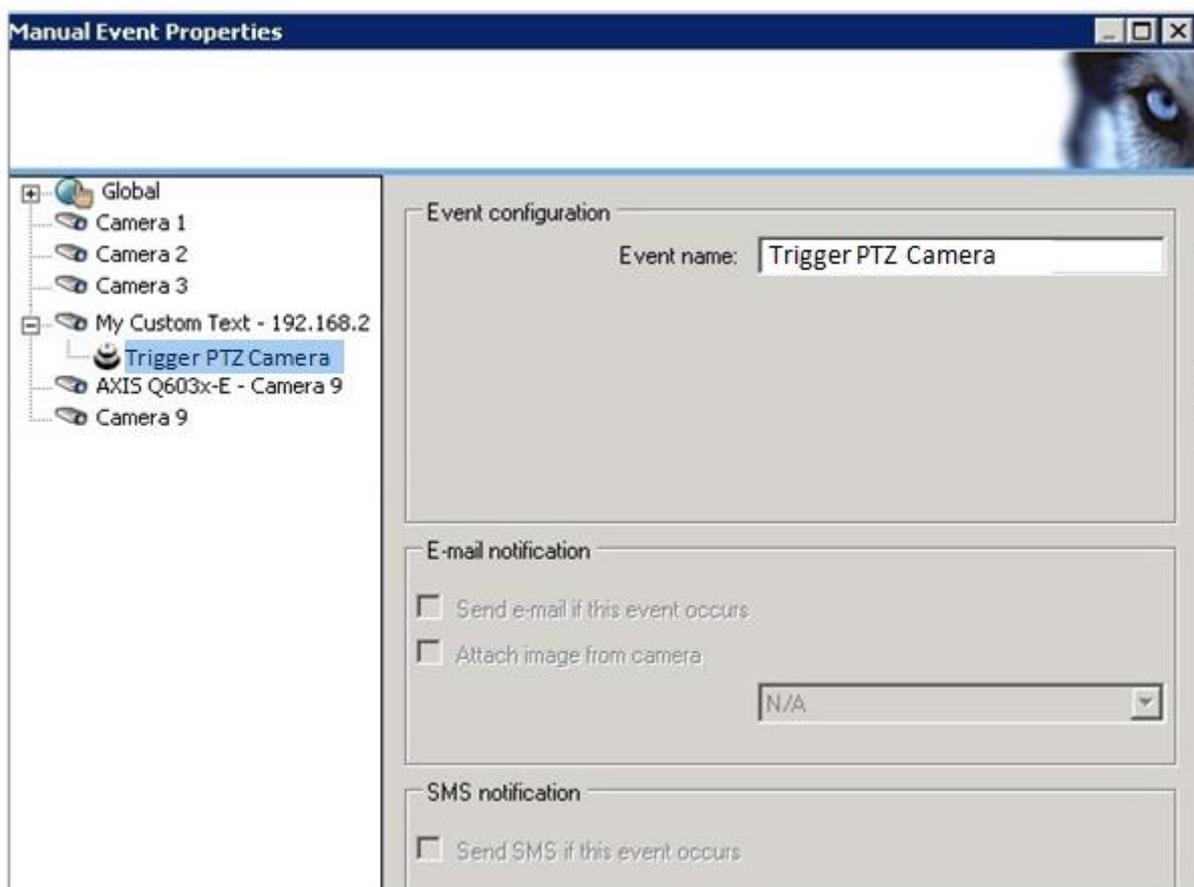
4. Create an **Alarm Definition** from XPE:

    a. Navigate to **Alarms → Alarms Definitions → Create New**

    b. Choose the new **Analytics Event** defined in step #2 as the **Triggering Event**.

    c. In the **Sources** field, click **Select**; in the Select Sources screen that opens, open the **Servers** tab, choose **All cameras** and **Add** it to the Selected list.

    d. Specify the **Manual Event** (defined in step #3) to be triggered when the alarm is received.

5. To trigger a PTZ action:

    a. Under **Cameras and Storage Information**, right-click the designated PTZ camera.

    b. Choose **Properties → PTZ on Event**.

c. Select the **Manual Event** (defined above) and the PTZ preset you want to jump to when the event occurs.

Figure 3-15: Milestone Management Client – PTZ on Event
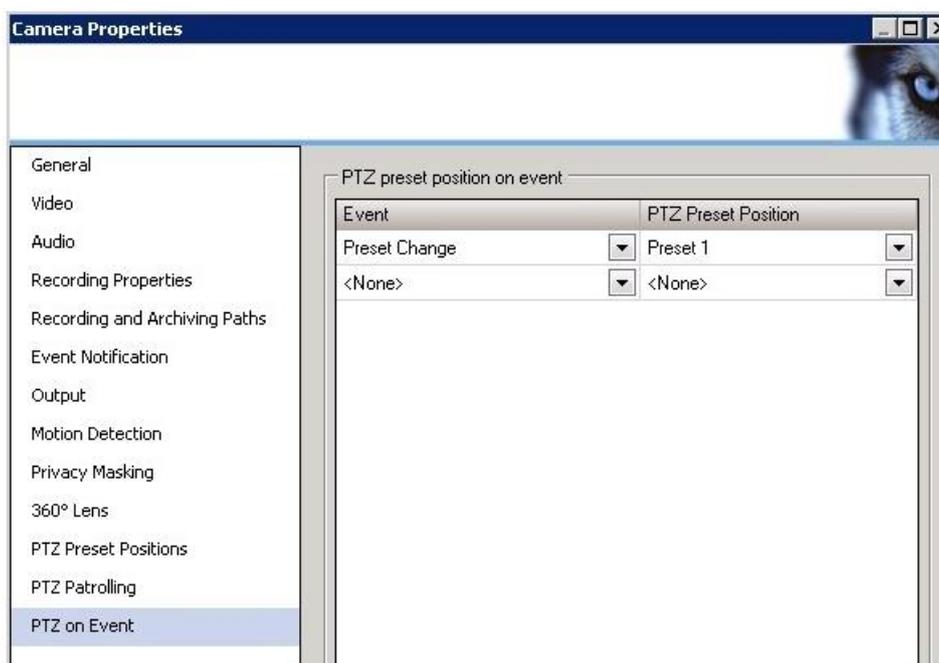
3.8 Troubleshooting Agent Vi Event Monitoring Milestone Plugin Integration

Table 3-16: Troubleshooting Agent Vi Event Monitoring Milestone Plugin Integration

Problem	Corrective Action
The user doesn't see **AgentViEventMonitoring** under the **MIP plugins** node in **Milestone XProtect Management Client**	Verify that the Agent **Vi Event Monitoring Milestone Plugin** is installed.
The user doesn't see **Alarm definitions** under the **Alarm** node in **Milestone XProtect Management Client**	Verify that the **service** of **Milestone Event Server** is running.
There are no analytics alarms in **Smart Client**	• Verify that the Vi-Server parameters in **XProtect Management Client** were defined correctly • Restart the **Milestone Event Server** if it was not restarted after defining Vi-Server properties • Verify that **Agent Vi Event** is defined. **Note that it is case sensitive**. It must be correctly connected to the alarm definition.

Problem	Corrective Action
In **Smart Client** there is no metadata (or the metadata is partial) when playing back recorded video	• Click the **Play** button again in case it wasn't clicked the first time. • Verify that 'Store to Event Metadata' is checked in the rule definition in savVi.
In **Smart Client** there are no alarms in **Alarm List**, the header is red, and it displays a message regarding user privileges. This is mostly relevant when operating with Milestone Enterprise or Professional. In this case, each new user defined in **Management Client** has limited privileges by default.	• Verify that the user connected to the **Smart Client** has sufficient user privileges: In **XProtect Management Client**, check the properties of the user under **Advanced Configuration > Users**
All the above actions did not help; you're still unable to view analytics events in Milestone. Follow the instructions under the **Corrective Action** column to the right, to obtain Milestone MIP log files.	• Enable viewing hidden files and folders on Milestone's machine • Open **Milestone XProtect Smart Client** installation directory. By default, it is installed at **C:\Program Files\Milestone\XProtect Smart Client** or at **C:\Program Files (x86)\Milestone\XProtect Smart Client** for 32 bit Smart Client versions • Open the **client.exe.config** file • Uncomment the commented elements in **<Logger name="MIPLogger">** (Delete " < ! -- " and " --> " at the beginning and the end of the line) • Reproduce the issue. • Copy the **C:\ProgramData\Milestone** directory into a *zip* archive and send it to your support team.
Smart Client: There's no possibility of adding a **Tag** column to the **Alarm List**.	• Open the **XProtect Management Client** • Choose the **Alarm Data Settings** on the right • Choose the **Alarm List Configuration** tab • Add **Tag** to the **Selected Columns** list • Save the new setting
Smart Client: An error occurs when opening the **Smart Client** on **Windows Server 2008**.	• May occur because the **Enhanced Security Configuration** for the current user is turned on. • To turn it off, open the **Security Information** in the **Server Manager** and set the **Enhanced Security Configuration** to be **Off** for the relevant user type.
The recorded video is not synchronized with object metadata overlays.	• Verify that clocks are synchronized on PCs running: ✓ Milestone XProtect Event Server ✓ savVi Vi-LBS Service ✓ savVi Vi-AS services

4 savVi-Analyst embedded in Milestone Smart Client

savVi provides an option to deploy Agent Vi's savVi-Analyst (Video Search and Business Intelligence application) within Milestone Smart Client.

This option can be used in parallel with Agent Vi Event Monitoring Milestone Plugin.

Figure 4-1: Milestone Smart client – savVi-Analyst
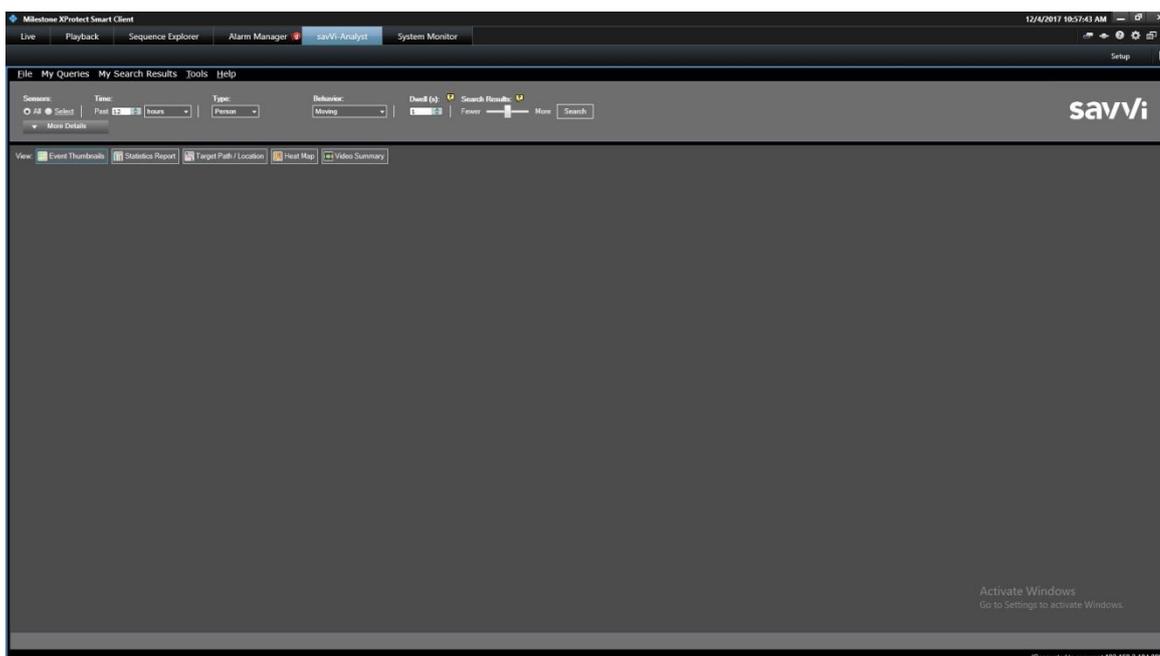
To deploy savVi-Analyst embedded in Milestone Smart Client please follow the steps below:

1. Verify Milestone 2017 R3 Management Client and 32-bit Smart Client are installed
2. Install savVi
3. Update VMS Manager service and VAP services logon user to the correct Windows user to connect the Milestone Server (as explained in section 2.3)
4. Install AgentVi Analyst Milestone Plugin
5. In savVi-Manager client, add the Milestone VMS (Administrator Resources -> VMS Servers)
6. Add Milestone cameras to savVi (through "VMS Cameras" screen)
7. Calibrate the Milestone sensors in savVi
8. Verify that the savVi-Analyst option is enabled (through "savVi-Analyst" tab for each sensor or via "More Settings" to configure in bulk)
6. In the Milestone Management Client, configure AgentVi Analyst plugin:
   - Under MIP Plugins -> AgentVi Analyst, select AgentVi Analyst
   - Right Click and select Add New
   - Configure the Analyst Server with the savVi server details as shown in the following picture:

Figure 4-2: Milestone Management Client - Analyst configuration
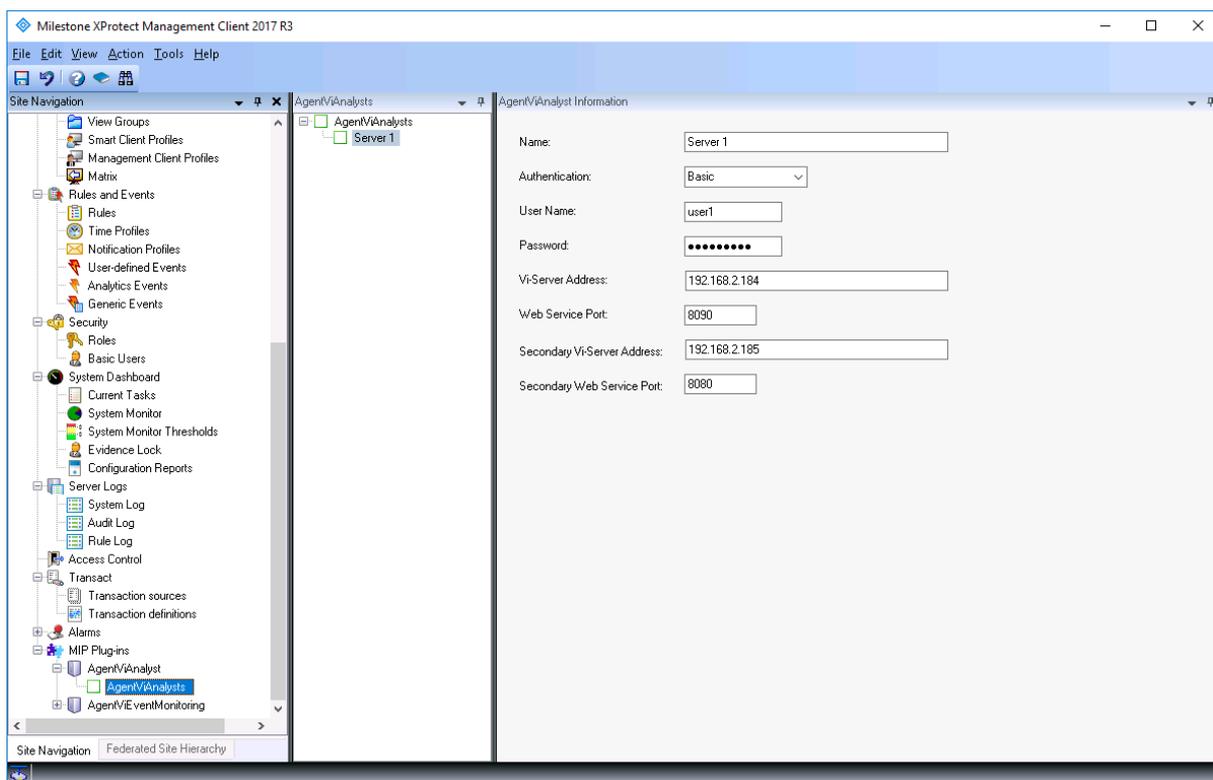
7. Run Milestone Client as administrator
8. Open the savVi-Analyst tab and operate it in the same way as you would operate the standalone savVi-Analyst client

Figure 4-3: Milestone Smart client – savVi-Analyst results

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