

IPMatrix Plugin Manual

Milestone | 30.2.0.0

Public/ External use

Document	PLG - IPM - Milestone.docx
Date	24/07/2023
Version	30.2.0.0



Plugin history

Version	Date	Comments
30.0.0.0	22/05/2014	SW compatible
30.0.1.0	26/02/2016	Optimisations in server connections
30.0.2.0	12/12/2016	Upgraded to SDK 2016 R2
30.0.3.0	07/02/2017	- Redesign and review of entire plugin. - several bugfixes
30.0.4.0	21/02/2017	- Bookmarks can be added to Milestone from Sky-Walker. - User-defined event are handled and can be triggered from Sky-Walker.
30.0.5.0	07/06/2017	Upgrade to SDK 2017R1
30.0.6.0	01/09/2017	- Use of bookmarks in playback - GUI upgrade - Possibility to configure open door command on live view - Tampering alarm on cameras
30.0.7.0	26/03/2018	Upgrade to SDK 2018R1
30.0.8.0	25/07/2019	- Added feature: Playback restrictions
30.0.8.1	19/08/2019	- Bugfix: Playback restrictions not loaded correctly when changed
30.0.8.2	29/08/2019	- Stream starts playing after Go To date
30.0.8.3	18/11/2019	- Layout playback and live view adjusted with new icons
30.0.8.5	11/03/2020	- Added PTZ control on mouse click
30.0.8.6	24/09/2020	- Bugfix: Zoomdirections were reversed -> Client control didn't function correctly - Bugfix: Arrow overlay for PTZ was always shown
30.0.9.0	25/01/2021	Upgrade to SDK 2020R3.
30.0.9.1	26/01/2021	- Enable digital zoom out by using the mouse third button (mouse wheel).
30.0.9.2	05/05/2021	- Bugfix : recording does not start playing after opening due to bug in playback restrictions (no video available)
30.0.9.3	31/05/2021	Try..catch added in VideoControl class
30.0.9.4	04/10/2021	* Milestone Smart Client commands added: - VideoWallSetCamerasCommand (drag/drop camera on a position on a video wall monitor) - VideoWallPresetActivateCommand (activate a smart wall preset) - VideoWallSetLayoutCommand (change the layout of a video wall monitor) - VideoWallShowTextCommand (show a text on a position on a video wall monitor) * bugfix: crash when right clicking in an empty bookmarks window * bugfix: Playbutton wasn't working in recording window * bugfix: PlaybackMinutes not always initialized
30.0.9.5	10/11/2021	* Address of remote monitor object changed: smart wall name added
30.0.9.6	25/01/2022	* TriggerUserEvent: SendMessage:NewEventCommand changed to PostMessage:TriggerCommand

Plugin based on SDK 2021

Version	Date	Comments
30.1.0.0	23/08/2021	Started from plugin 30.0.9.3 Now based on SDK 2021 R1
30.1.0.1	04/10/2021	* Milestone Smart Client commands added: - VideoWallSetCamerasCommand (drag/drop camera on a position on a video wall monitor) - VideoWallPresetActivateCommand (activate a smart wall preset) - VideoWallSetLayoutCommand (change the layout of a video wall monitor) - VideoWallShowTextCommand (show a text on a position on a video wall monitor) * Bugfix: crash when right clicking in an empty bookmarks window * Bugfix: Playbutton wasn't working in recording window * Bugfix: PlaybackMinutes not always initialized
30.1.0.2	10/11/2021	* Address of remote monitor object changed: smart wall name added
30.1.0.3	25/01/2022	* TriggerUserEvent: SendMessage: NewEventCommand changed to PostMessage:TriggerCommand
30.1.0.4	23/02/2022	Timestamp string on live was behind 'save position' button. Moved this string. Updated SDK 2021 R2 Enable Encryption streams between client & server.
30.1.0.5	30/08/2022	Added Extra Logging for mantis issue 3413
30.1.0.6	08/09/2022	Bugfix for mantis issue 3545: ServerFaultMIPException: crash after timeout

Plugin based on SDK 2022

Version	Date	Comments
30.2.0.0	14/10/2022	Started from plugin 30.1.0.6 * Now based on SDK 2022 R1 * Bugfix for mantis issue 3580: UnInitialize SDK on exit

Compatibility

Manufacturer: Milestone

Subsystem + version	Firmware version	Protocol/SDK + version
XProtect 2017 R1	N/A	Milestone Integration Platform SDK 2020 R3
XProtect Corporate 2021 R2	N/A	Milestone Integration Platform SDK 2021 R2
XProtect Corporate 2022 R1	N/A	Milestone Integration Platform SDK 2022 R1

Referenced documents

Reference	Title
#1	SW3-MEX-Installation Manual
#2	SW3-MEX-Configuration Manual
#3	PIF- <project name>

Index

1	Introduction	7
1.1	Scope	7
1.2	Driver installation	7
1.3	Installation files	7
1.4	Object types	7
1.5	Certificate	8
1.6	Configuration file error	11
1.7	Configuration file	12
1.8	Playback restrictions	14
1.9	Digital Zoom	15
1.10	Milestone server configuration	16
1.10.1	Encryption	16
1.10.2	XProtect	16
1.11	Encryption Media Stream from server to client	19
2	Object types	21
2.1	Management server address	21
2.1.1	General	21
2.1.1.1	Login using default windows credentials	21
2.1.1.2	Login using windows authentication	22
2.1.2	Events	22
2.2	Corporate recorder server address	22
2.2.1	General	22
2.2.2	Events	22
2.3	IPMatrix camera	23
2.3.1	General	23
2.3.1.1	Login using default windows credentials:	23
2.3.1.2	Login using windows authentication:	23
2.3.1.3	Login using basic authentication	23
2.3.2	Events	23
2.4	IPMatrix input	24
2.4.1	General	24
2.4.2	Events	24
2.5	IPMatrix remote monitor	25
2.5.1	General	25
2.5.2	Commands	25
2.6	Camera capabilities	25
2.6.1	Supported	25
2.6.2	Not supported	25
3	LiveView	26

4	Playback	28
5	Commands	29
5.1	Show bookmark window	29
5.2	Add bookmark	29
5.3	Trigger user-defined events	30
5.4	Videowall - activate smart wall preset (salvo)	30
5.5	Videowall – set layout	30
5.6	Videowall – send text	30

1 Introduction

1.1 Scope

This document describes the provided functionality for the integration of the Milestone XProtect platform in the IPMatrix. The plug-in can connect to the management server(s) of Milestone and display images of the connected cameras. It can also receive camera events like video loss and motion detection and keeps track of the status of the recording servers.

1.2 Driver installation

The installation files are added to the driver files of the IPMatrix driver. For adding a new driver to the Sky-Walker system and for updating an existing driver with a new version of the IPMatrix driver in the Sky-Walker system, the admin console is used. Please refer to referenced document [#1](#) for the installation instructions of this driver module.

1.3 Installation files

Use the admin console to extract a number of driver files from the installation file and import them into the database.

The installation files are added to the IPMatrix driver script IPMatrix.xml. After installation of the IPMatrix driver, the system loader will download following plug-in files:

- Entelec.IPMatrix.MilestoneIntegrationPlatform.dll
- Entelec.IPMatrix.MilestoneIntegrationPlatform.dll.config
- <SDK files>

1.4 Object types

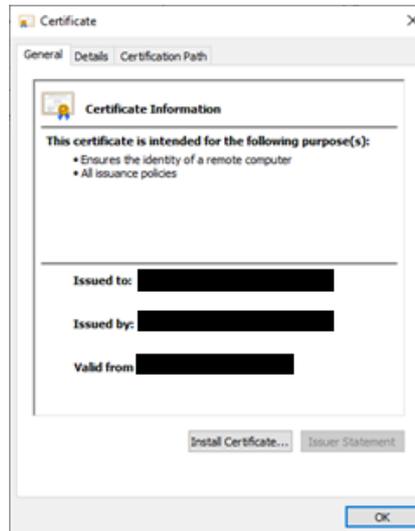
The project object types for the management server and the recorder server need to follow the rules below:

- Management server: the object type name must contain “**Corporate Management**”
- Recorder server: the object type name must contain “**Corporate Recording**”

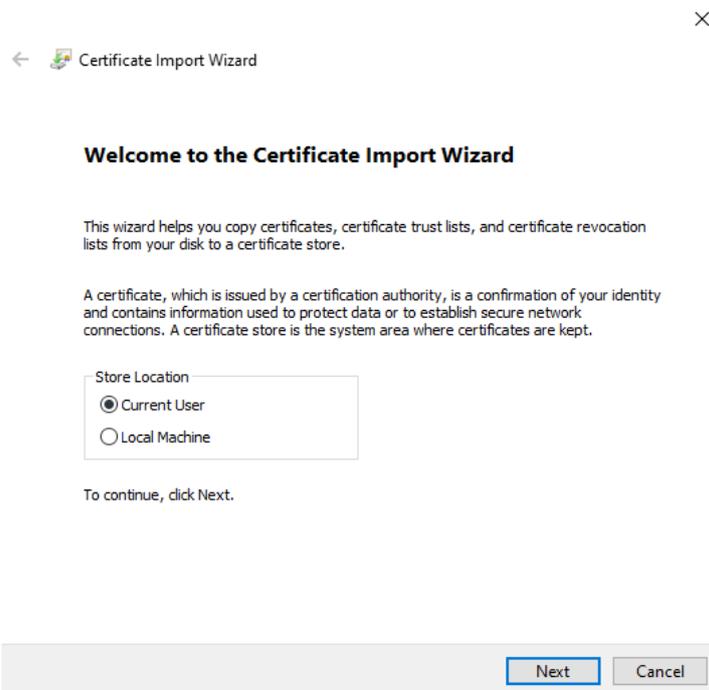
NOTE: This is very important to do, without the server it will not work, and it is case sensitive!

1.5 Certificate

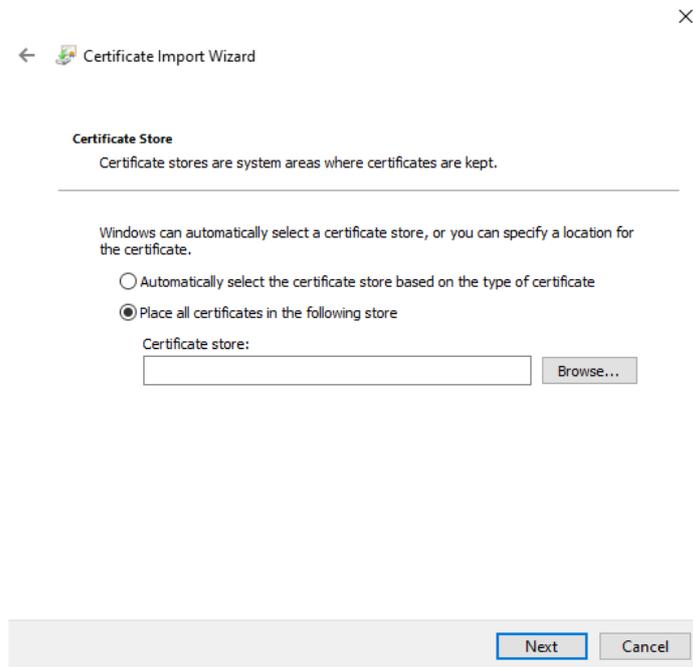
When you open the certificate document, this window will open.



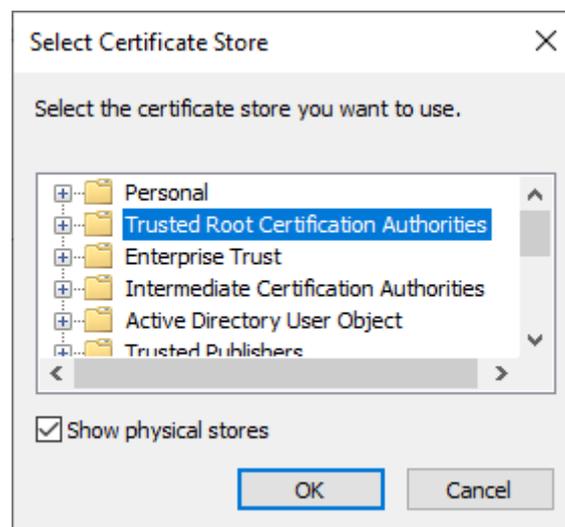
Click on **“Install Certificate”**.



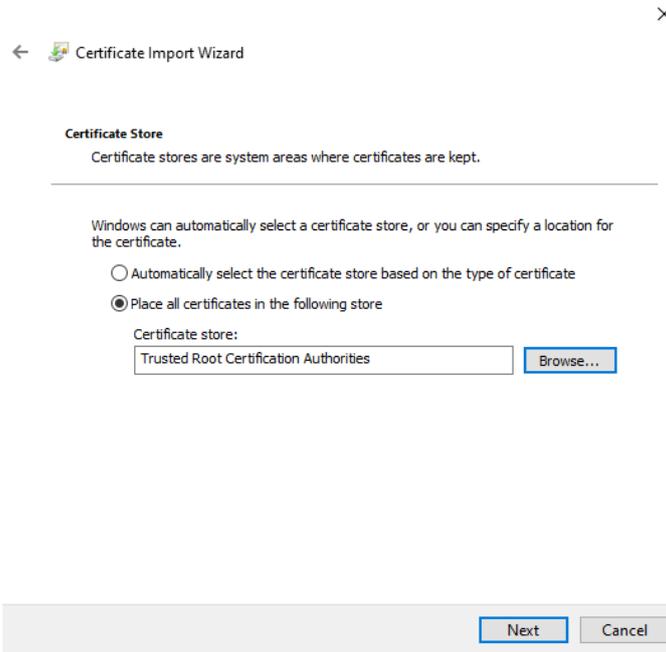
You can choose between “**Current User**” or “**Local Machine**”, click on “**Next**”.



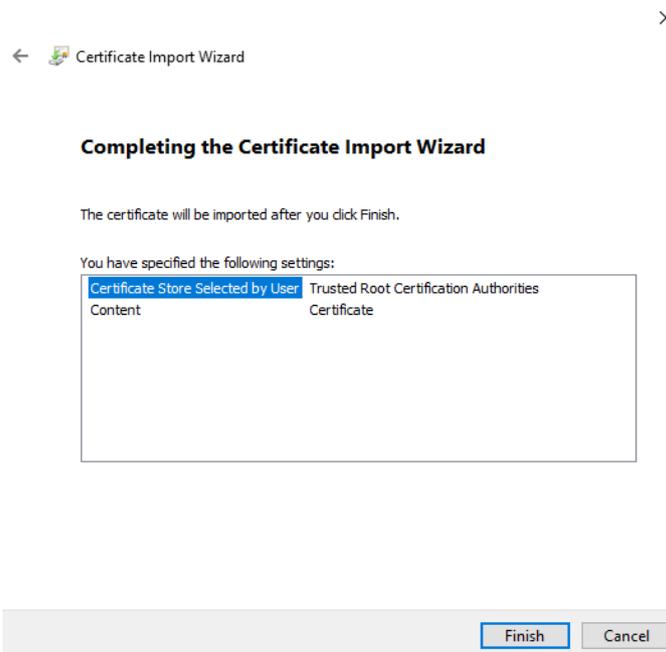
Choose the option “**Place all certificates in the following store**”. Click then on “**Browse**” to choose a path.



Select “**Trusted Root Certification Authorities**” then click on “**OK**”.



Click on **“Next”**



Click on **“Finish”**

1.6 Configuration file error

error connecting: The type initializer for 'System.IdentityModel.Tokens.Jwt.JwtSecurityTokenHandler' threw an exception.

If you get this error and you use the 6.8.0.0 version of "System.IdentityModel.Tokens.Jwt". Change the "Newtonsoft.Json" version from 11.0.0.0 to 12.0.3.2. Remember that you need the file "Newtonsoft.json" in your OperationalClient/Systems folder.

REMARK: the publicKeyToken may differ. The correct token can be found in the error message.

```
<dependentAssembly>
  <assemblyIdentity name="Newtonsoft.Json" publicKeyToken="58kjezenksds"
    culture="neutral" />
  <bindingRedirect oldVersion="0.0.0.0-12.0.3.2" newVersion="12.0.3.2" />
</dependentAssembly>
<dependentAssembly>
  <assemblyIdentity name="System.IdentityModel.Tokens.Jwt"
    publicKeyToken="63ezkezepepe" culture="neutral" />
  <bindingRedirect oldVersion="0.0.0.0-6.8.0.0" newVersion="6.8.0.0" />
</dependentAssembly>
```

If you use the 5.6.0.0 version of "System.IdentityModel.Tokens.Jwt". You don't have to put the "Newtonsoft.Json" information in your config file.

```
<dependentAssembly>
  <assemblyIdentity name="System.IdentityModel.Tokens.Jwt"
    publicKeyToken="36ezezezodpsopds" culture="neutral" />
  <bindingRedirect oldVersion="0.0.0.0-5.6.0.0" newVersion="5.6.0.0" />
</dependentAssembly>
```

1.7 Configuration file

The configuration file `Entelec.IPMatrix.MilestoneIntegrationPlatform.dll.config` contains:

- A value indicating whether a header with the camera description is show in a view on a mux. The possible values are True and False. Note that the header is already always shown during playback and when not in a mux.

This will be read client-side.

- The analytic events the plugin will handle coming from the Milestone server. Each event contains the event header which will be sent by Milestone and the state it will be shown as in Sky-Walker. The state numbers must be between 500 and 599. These states must also be configured in the driver script for the camera.

- The user defined events the plugin will handle coming from the Milestone server. Each event contains the event header (user-defined event name) which will be sent by Milestone and the state it will be shown as in Sky-Walker. The state numbers must be between 500 and 599. These states must also be configured in the driver script for the event server.

- `CommandSettings`: when setting the active attribute to true, an extra button will become visible in the overlay of the liveview window. When clicking this button, the configured command will be sent to IPMatrix. When one wants to send a command to another system, relations need to be configured in Sky-Walker and the `DoorCommand` must look as follows:

```
<DoorCommand active="true" address=" <alias aliasname>#CAMERA_ADDRESS#" data="related command"/>
```

where

- 'aliasname' is the actual alias name used to configure the relation between the camera and another system point.
- #CAMERA_ADDRESS# is a place holder that will be replaced by the actual camera address
- 'related command' is the actual command that needs to be send to the related system point

The tag is called `DoorCommand` but obviously it can be used to send commands to any system.

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <configSections>
    <section name="EventSettings
type="Entelec.VideoMatrix.MilestoneIntegrationPlatform.Plugin.
Configuration.PluginEventsSection,
Entelec.IPMatrix.MilestoneIntegrationPlatform"/>
  </configSections>
  <appSettings>
    <add key="showHeader" value="False"/>
    <add key="logSeverity" value="Exception"/>
  </appSettings>
  <EventSettings>
    <AnalyticEvents>
      <add eventHeader="ANALYTIC1" state="501"/>
      <add eventHeader="ANALYTIC2" state="502"/>
    </AnalyticEvents>
    <UserDefinedEvents>
      <add eventHeader="USER1" state="551"/>
      <add eventHeader="USER2" state="552"/>
    </UserDefinedEvents>
  </EventSettings>
  <CommandSettings>
    <!-- #CAMERA_ADDRESS# can be used for the camera address playing in the live window
-->
    <DoorCommand active="false" address="#CAMERA_ADDRESS#" data="" />
  </CommandSettings>
  <startup> <supportedRuntime version="v4.0"
sku=".NETFramework,Version=v4.5.2"/> </startup> </configuration>
```

1.8 Playback restrictions

The configuration file that enables restrictions for recording playback must be copied into the following folder:

%SKYWALKER_REFERENCEPATH%\Configuration data\IPMatrix\PlaybackLimitations.xml

A template for this file can be found in the plugin files folder. (PlaybackLimitations.xml)

It is possible to limit playback to a certain number of minutes for each host. (See example below).

The 'timelimit' value can be:

- > 0: Limits playback to given number of minutes
- = 0: No playback allowed
- - 1: Unlimited playback is allowed (default value)

When a hostname is not found in the config file, or the config file does not exist, playback will not be restricted. When a hostname appears multiple times in the xml, only the first entry will be read.

It is recommended to restart the operational client on the hosts where the 'timelimit' value is changed.

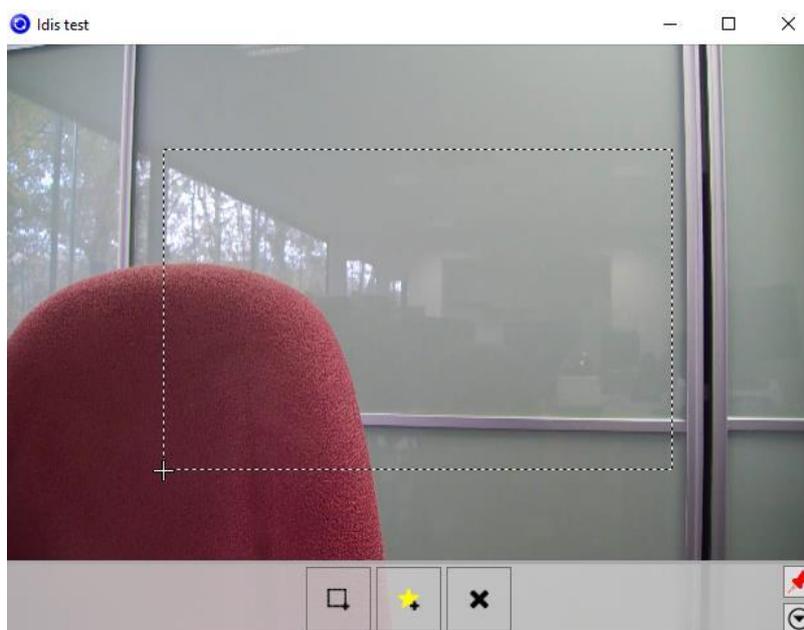
```
<?xml version="1.0" encoding="utf-16"?>
<PlaybackLimitations>
  <PlaybackLimits>
    <Limitation hostname="host 1" timelimit="3" />
    <Limitation hostname="host 3" timelimit="0" />
    <Limitation hostname="host 2" timelimit="5" />
    <Limitation hostname="host 4" timelimit="-1" />
  </PlaybackLimits>
</PlaybackLimitations>
```

1.9 Digital Zoom

When a camera is not configured as a PTZ camera on the milestone server, it is possible to draw a rectangle on the screen to select the area to zoom in, **to zoom out click on the third mouse button (mouse wheel)**. When the checkbox 'Enable PTZ' is active, this digital zoom function will not be available.



Device	Enable PTZ	PTZ Device ID	COM Port	PTZ Protocol
IDIS DC-S1263...	<input type="checkbox"/>	1	COM 1	Relative



1.10 Milestone server configuration

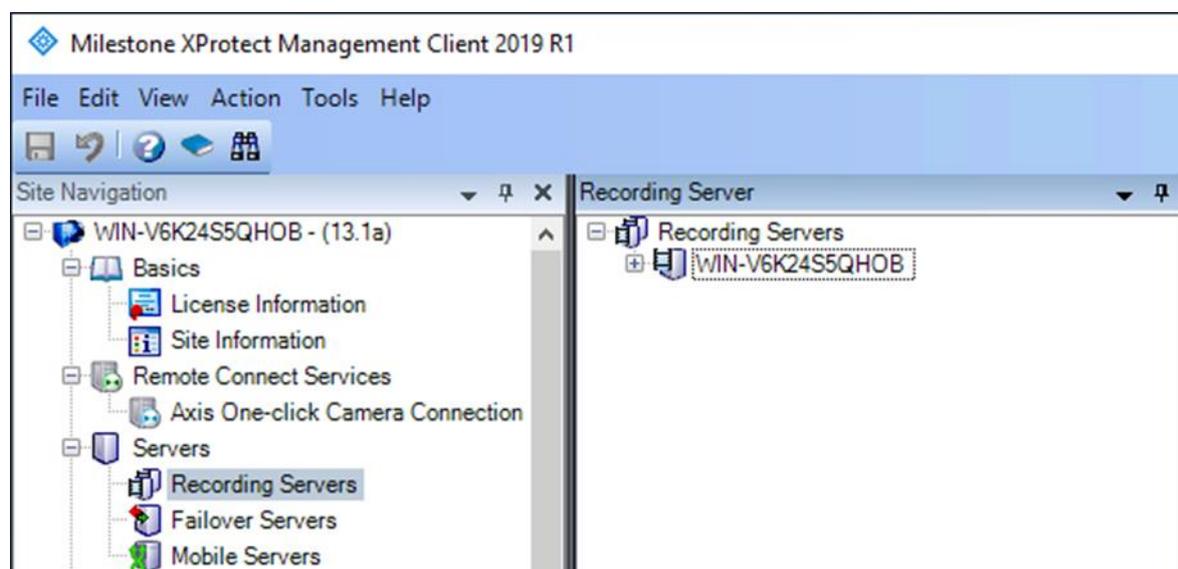
1.10.1 Encryption

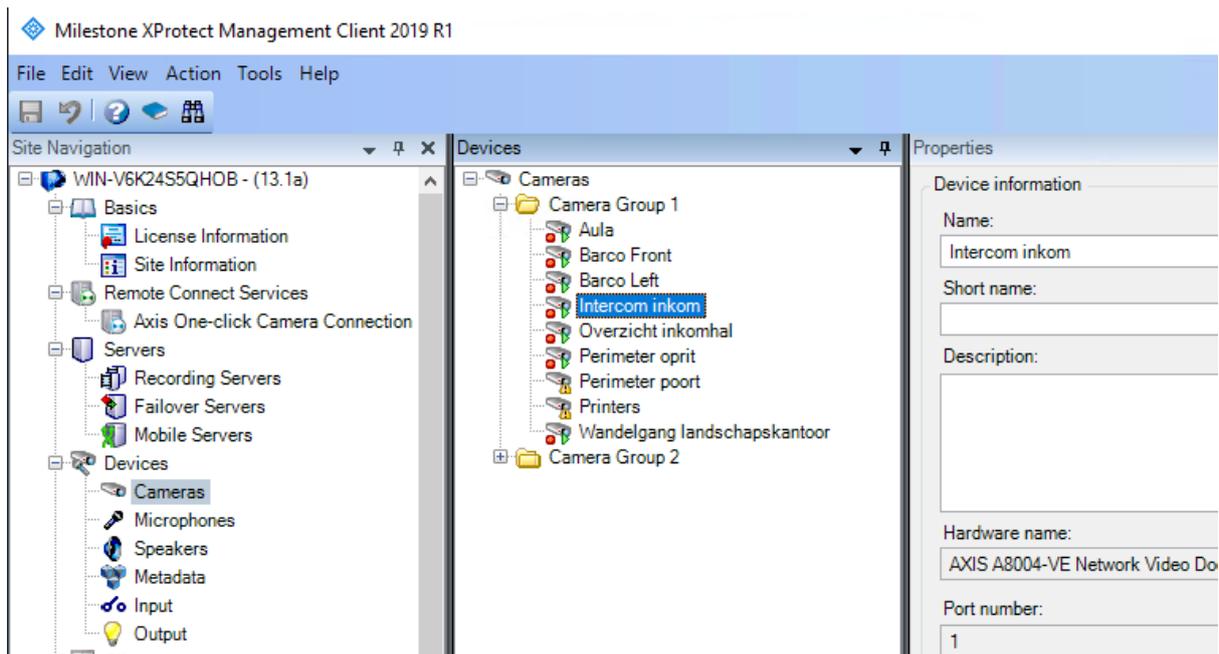
This step is very important to let **LiveView** and **Events** work. Go to the **"Encryption"** tab and select the certificate for the 2 options.



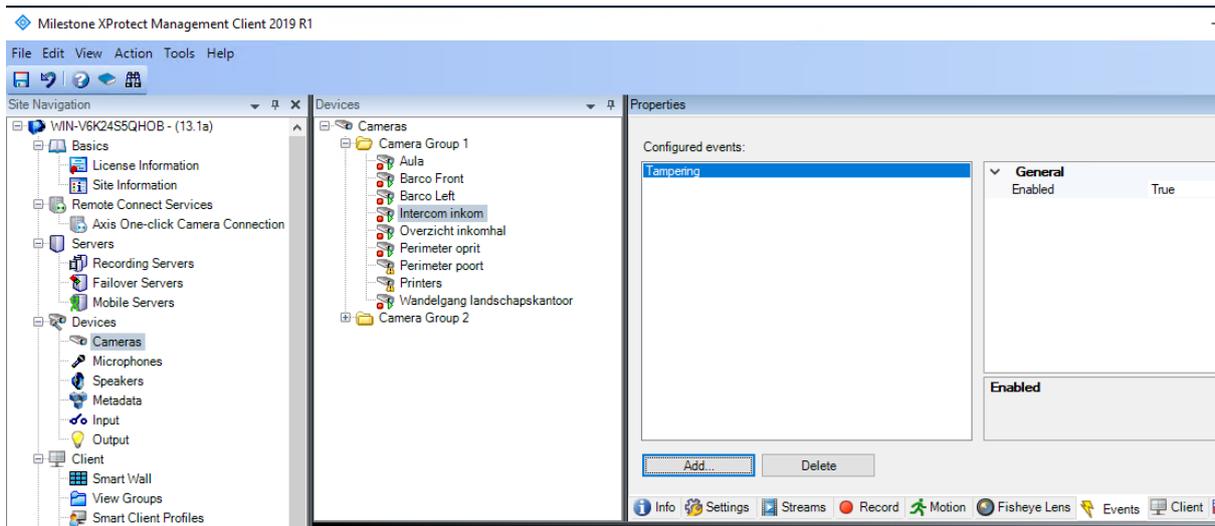
1.10.2 XProtect

The camera names, used in the camera object address, can be found here, as well as the names of the recording servers:

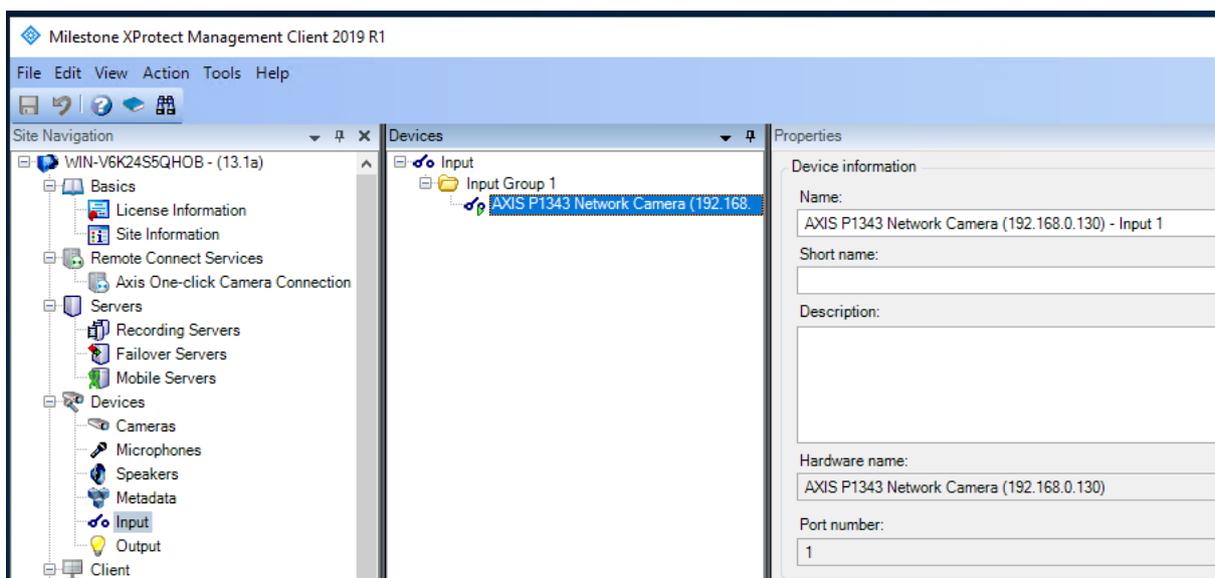




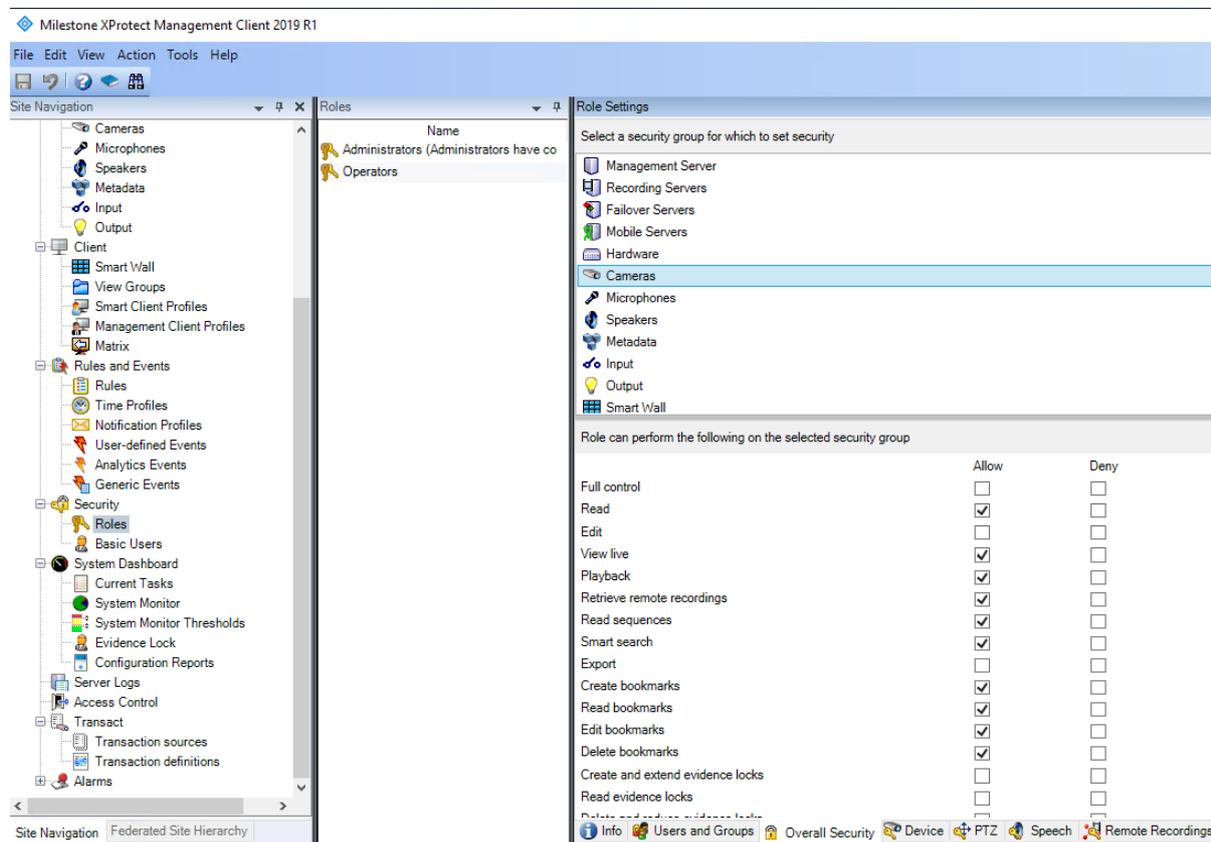
Tamper alarms are received from the camera in Milestone. Therefore, they needed to be added to the Camera events in the camera configuration, otherwise they cannot be received in Sky-Walker.



Input names can be found under the Input branch in the management client. They must be added to an input group before they can be handled by Sky-Walker.



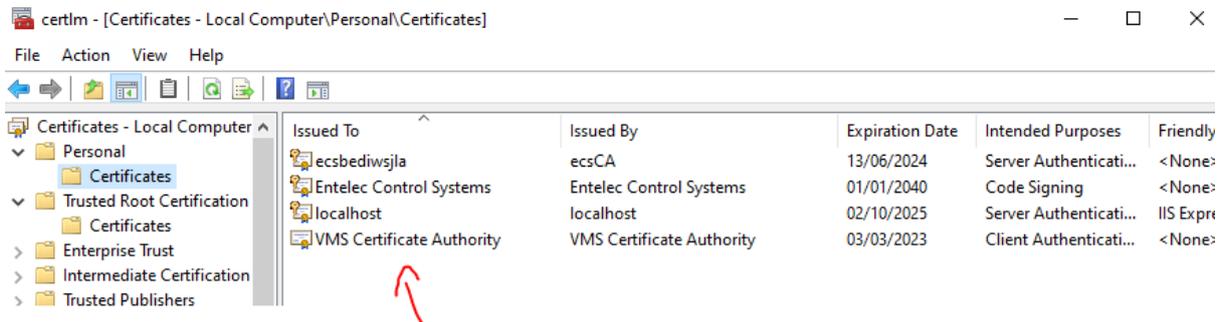
Make sure the user used by Sky-Walker has the correct user rights:



1.11 Encryption Media Stream from server to client

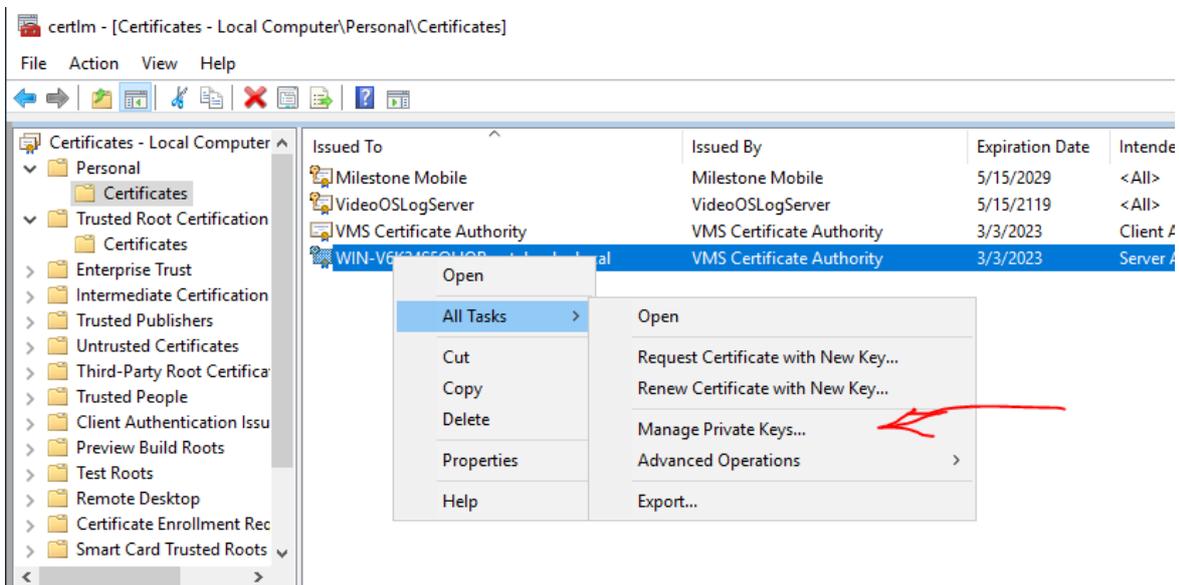
In the folder is the “[CertificatesGuide](#)” manual on how the encryption works, how to install and what must be noticed. The option itself is enabled on the server running the Recording server service. Inside the Certificates folder is a server & client certificate. Install the server certificate on the server with the manual steps starting p20 for clients & p29 for server. Enabling the encryption is explained p38 of the manual.

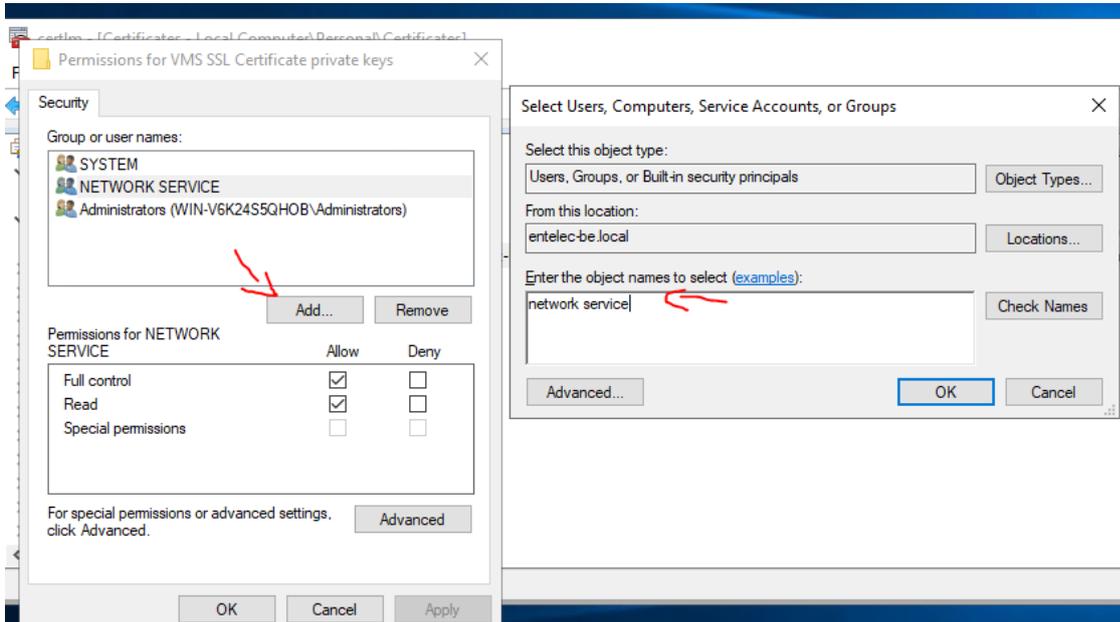
For the test installation the client certificates have both been **installed under personal & Trusted root**.



This has also been done with the server certificate on both certificate stores (Personal & Trusted root).

What is also very important is to add the network service group under the private keys of the server certificate. This is done through the certificate manager -> right click the server certificate -> 'Manage Private Keys':





(With a first install this group won't be there)

2 Object types

2.1 Management server address

2.1.1 General

General	
Address	<p>MIP@<server host[:port]>@<login settings></p> <ul style="list-style-type: none"> - <server host[:port]>: the host/ip the management server is running on and the port number it accepts client connections on. If the default port 80 is used it can be omitted. - <login settings>: see below

2.1.1.1 Login using default windows credentials

The logging in is done with the username of the current windows user.

Layout: MIP@<server host[:port]>@**WD**

Example: MIP@ECSBEDIWSWRU05@WD

2.1.1.2 Login using windows authentication

Layout: MIP@<server host[:port]>@W@<user name>@<password>

Example: MIP@ECSBEDIWSWRU05@W@MyUserName@MyPassword

2.1.2 Events

Event code	Description
1	Online
2	Offline
<5xx>	User defined events as configured in the configuration file (see Error! Reference source not found.)

2.2 Corporate recorder server address

2.2.1 General

General	
Address	<p>MIP@<recorder server name>(@<management server host[:port]>)</p> <ul style="list-style-type: none"> < recorder server name]: the name of the recorder server in the management client. < management server host[:port]>: the host as configured in the management server address this recorder server is attached to. If only on management server is configured, this can be omitted. <p>e.g. MIP@ECSBEDIWSWRU05, MIP@ECSBEDIWSWRU05@ECSBEDIWSWRU05</p>

2.2.2 Events

Event code	Description
1	Online
2	Offline

2.3 IPMatrix camera

2.3.1 General

General	
Address	MIP@ <camera name> @ <server host[:port]> @ <login settings> <ul style="list-style-type: none"> - <camera name>: The name of the camera (see 1.10) - <server host[:port]>: the host/ip the management server is running on and the port number it accepts client connections on. If the default port 80 is used it can be omitted. - <login settings>: see below

2.3.1.1 Login using default windows credentials:

The log in is done with the username of the current windows user.

Layout: MIP@ <camera name> @ <server host[:port]> @ **WD**

Example: MIP @Inkom@ECSBEDIWSWRU05@WD

2.3.1.2 Login using windows authentication:

Layout: MIP@ <camera name> @ <serverhost[:port]> @ **W**@ <username> @ <password>

Example: MI@Inkom@ECSBEDIWSWRU05@W@MyUserName@MyPassword

2.3.1.3 Login using basic authentication

Layout: MI @ <camera name> @ <server host[:port]> @ **B**@ <user name> @ <password>

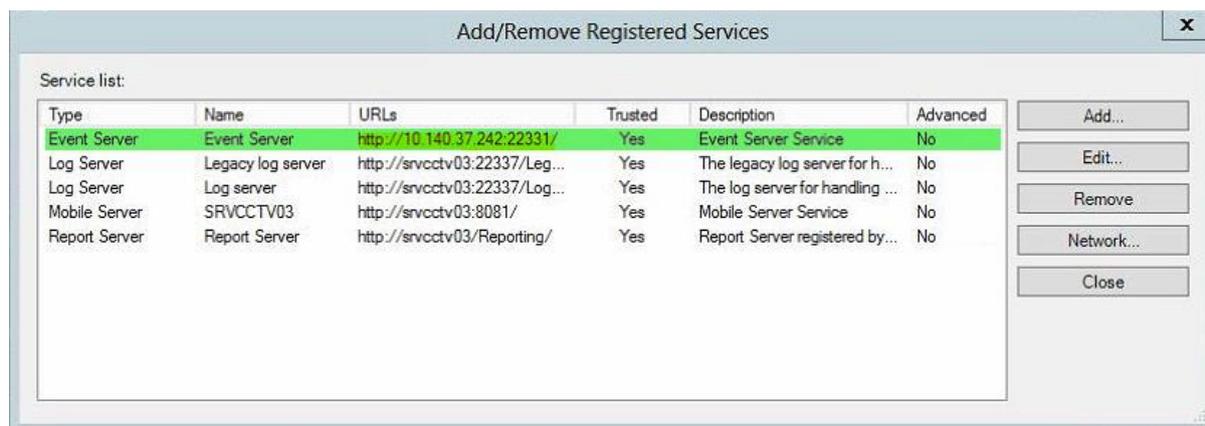
Example: MIP@Inkom@ECSBEDIWSWRU05@B@MyUserName@MyPassword

2.3.2 Events

Event code	Description
3	Video Loss
5	Motion detected
6	Motion stopped
7	Tampering
<5xx>	Analytic events as configured in the configuration file (see Error! Reference source not found.).

NOTE: For motion detection to work:

On the Milestone server under registered services the hostname is resolved to an IP address when no DNS is used. It may also work if you also put the Milestone server in its own host table. This is on the Milestone server and the names and IP address are from the Milestone server.



2.4 IPMatrix input

To receive input events, the management server system point for the input must be configured as well.

2.4.1 General

General	
Address	MIP@ <input name> @<server host[:port]> <ul style="list-style-type: none"> - <input name>: The name of the input (see 1.10) - <server host[:port]>: the host/ip the management server is running on and the port number it accepts client connections on. If the default port 80 is used it can be omitted. e.g. MIP@Input Axis 1@ECSBEDIWSWRU05

2.4.2 Events

Event code	Description
3001	On
3000	Off

2.5 IPMatrix remote monitor

2.5.1 General

General	
Address	<p>MIP@<smart wall name>@<monitor name>@<position>@<server host[:port]></p> <ul style="list-style-type: none"> - <smart wall name>: the name of the smart wall - <monitor name>: the name of the video wall monitor - <position>: the number of the position in the layout starting from 1. - <server host[:port]>: the host/ip the management server is running on and the port number it accepts client connections on. If the default port 80 is used it can be omitted. <p>e.g. MIP@Smart Wall 2@Monitor 2@3@WIN-V6K24S5QHOB</p>

2.5.2 Commands

Description
Drag/drop camera on the position on the monitor
Activate smart wall preset (salvo) (see 5.4)
Set layout (see 5.5)
Send text (see 5.6)

2.6 Camera capabilities

2.6.1 Supported

- Liveview
- Pan, Tilt & Zoom
- Playback
- Video export

2.6.2 Not supported

- Iris
- Focus

3 LiveView

Camera description

Overzicht Inkomhal

PTZ controls

Pin the position of the window

PTZ

Add and use presets

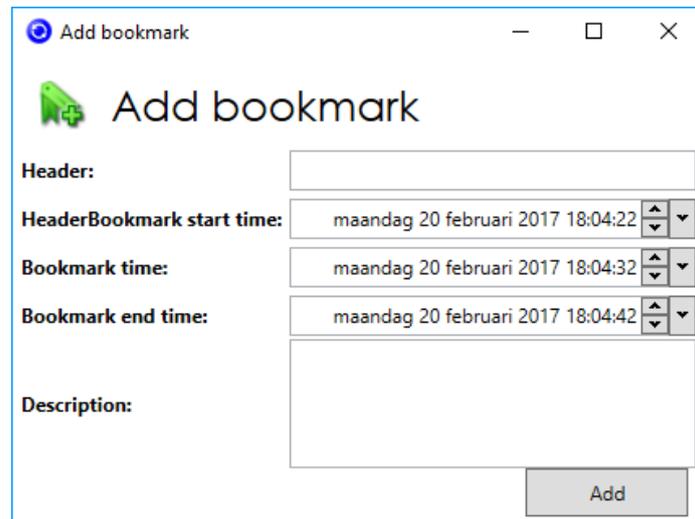
Make a snapshot

Add a bookmark for this

Hide/show the control buttons

The screenshot shows a live video feed of an indoor space with a large glass door leading outside. The interface includes a title bar with the text 'Overzicht Inkomhal' and standard window controls. A control bar at the bottom contains several icons: a 'PTZ' button, a camera icon, a square icon, a yellow star icon, and a close icon. A red pin icon is also visible in the bottom right corner. Blue callout boxes with lines pointing to these icons provide labels for their functions: 'Camera description' points to the top left; 'PTZ controls' points to the PTZ button; 'Pin the position of the window' points to the red pin icon; 'Add and use presets' points to the camera icon; 'Make a snapshot' points to the square icon; 'Add a bookmark for this' points to the yellow star icon; and 'Hide/show the control buttons' points to the close icon.

When the "add bookmark" button is clicked, the following window to add a bookmark is opened:

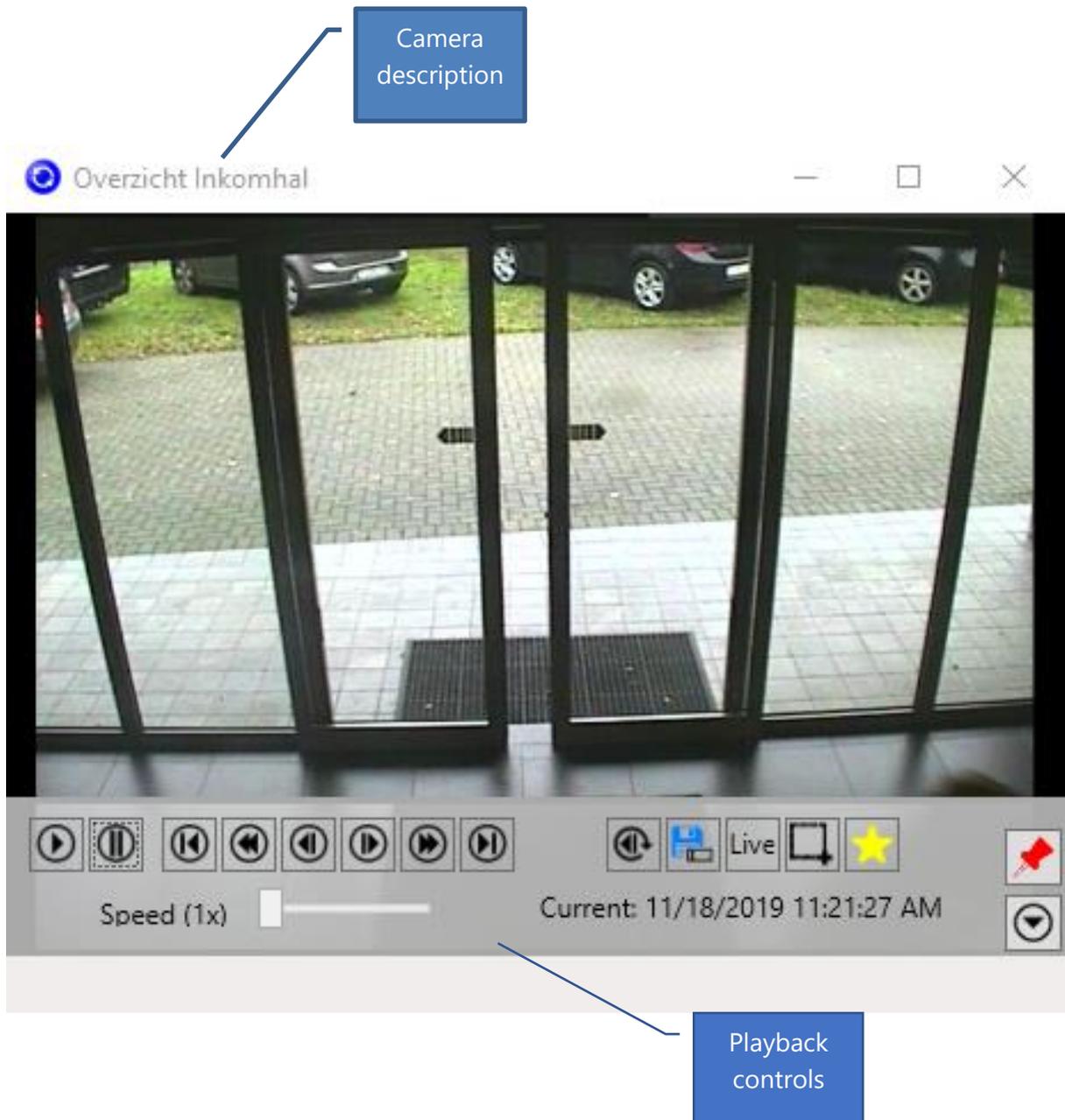


The screenshot shows a window titled "Add bookmark" with a green plus icon. It contains the following fields:

- Header:** A text input field.
- HeaderBookmark start time:** A time selection field showing "maandag 20 februari 2017 18:04:22".
- Bookmark time:** A time selection field showing "maandag 20 februari 2017 18:04:32".
- Bookmark end time:** A time selection field showing "maandag 20 februari 2017 18:04:42".
- Description:** A large text area.
- Add:** A button at the bottom right.

Here the header, description and time intervals of the bookmark can be set and added to the Milestone server.

4 Playback

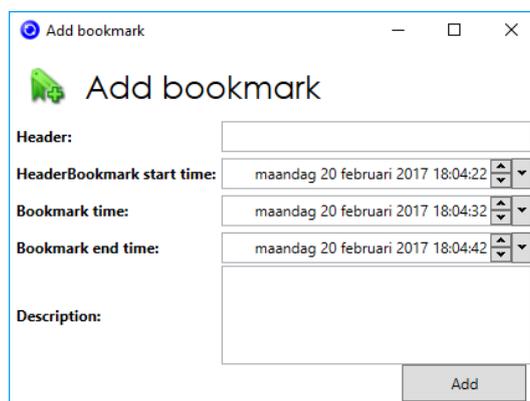


The screenshot shows a video player interface. At the top left, there is a camera icon and the text "Overzicht Inkomhal". A blue box labeled "Camera description" has a line pointing to this text. The main area of the player is a video frame showing a view through a glass entrance door. Below the video frame is a control bar. On the left, there are playback controls: play, pause, stop, previous, and next buttons. A "Speed (1x)" slider is positioned below these buttons. On the right side of the control bar, there are icons for a circular arrow, a folder, a "Live" button, a square icon, a yellow star, a red pushpin, and a downward arrow. The text "Current: 11/18/2019 11:21:27 AM" is displayed in the bottom right of the control bar. A blue box labeled "Playback controls" has a line pointing to the control bar.

5 Commands

5.1 Show bookmark window

Description	This command will show the following window on the client configured for the <HOST NAME> parameter.
Address	<camera address>
Data	PLUGIN_COMMAND,MIP,SHOW_ADD_BOOKMARK_WINDOW,<HOST NAME>



Here the header, description and time intervals of the bookmark can be set and added to the Milestone server.

5.2 Add bookmark

Description	This command adds a bookmark for a camera without showing a window to configure the bookmark.
Address	<camera address> e.g. MIP@Inkom@ECSBEDIWSWRU05@WD
Data	PLUGIN_COMMAND,MIP,ADD_BOOKMARK,<BOOKMARK TIME>,<Number of seconds the bookmark starts before the bookmark time>,<Number of seconds the bookmark ends after the bookmark time>,<bookmark header> ,<bookmark description> e.g. PLUGIN_COMMAND,MIP,ADD_BOOKMARK,20/02/2017 17:40:00,5,10,headertest,a bookmark description

This example will add a bookmark for the camera 'Inkom' to the server 'ECSBEDIWSWRU05' at 20/02/2017 17:40:00. The bookmark starts at 20/02/2017 17:39:55 and ends at 20/02/2017 17:40:10. The header will be 'headertest' and the description "a bookmark description."

5.3 Trigger user-defined events

Description	N/A
Address	<management event server address> e.g. MIP@ECSBEDIWSWRU05@WD
Data	PLUGIN_COMMAND,MIP,TRIGGER_USER_EVENT,<user-defined name in Milestone> e.g. PLUGIN_COMMAND,MIP,TRIGGER_USER_EVENT,UserTest

5.4 Videowall - activate smart wall preset (salvo)

Description	A preset can be defined (in Milestone) to run over multiple smart walls and/or monitors.
Address	<any remote monitor object of the smart wall> e.g. MIP@Smart Wall 2@Monitor 1@1@WIN-V6K24S5QHOB@WD
Data	PLUGIN_COMMAND,MIP,MONITOR_ACTIVATE_PRESET,<preset name> e.g. PLUGIN_COMMAND,MIP,MONITOR_ACTIVATE_PRESET,Preset1

5.5 Videowall – set layout

Description	N/A
Address	<remote monitor object address> e.g. MIP@Smart Wall@Monitor 1@1@WIN-V6K24S5QHOB@WD
Data	PLUGIN_COMMAND,MIP,MONITOR_SET_LAYOUT,<layout name> e.g. PLUGIN_COMMAND,MIP,MONITOR_SET_LAYOUT,2 x 2

5.6 Videowall – send text

Description	N/A
Address	<remote monitor object address> e.g. MIP@Smart Wall@Monitor 1@1@WIN-V6K24S5QHOB@WD
Data	PLUGIN_COMMAND,MIP,MONITOR_SEND_TEXT,<text> e.g. PLUGIN_COMMAND,MIP,MONITOR_SEND_TEXT>Hello World!