Installation- and Operating Manual

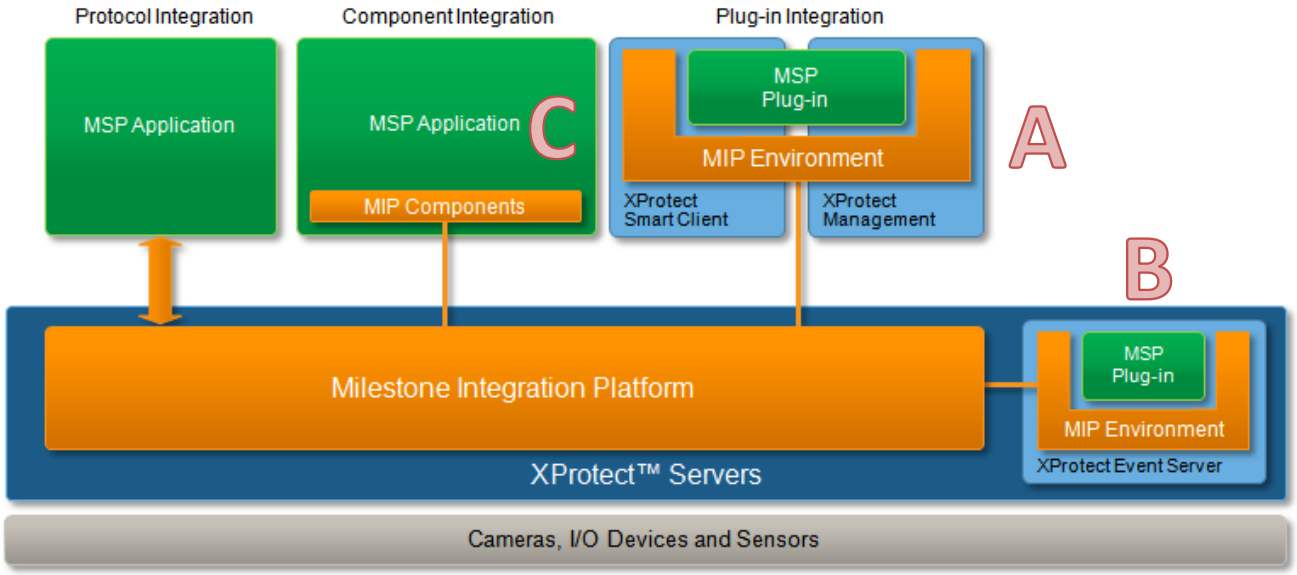
SICK Milestone MIP plug-in
Version 3.0

1 About this Document and the SICK MIP plug-in

This document is targeting the integrators and users of the SICK Milestone MIP plug-in and describes the installation and configuration of the Environment.

This plug-in is deeply integrated into the Milestone XProtect VMS Platform and don't need any additional Software. MIP (Milestone Integration Platform) plug-ins are dynamically loaded from the Milestone Applications and Services, which allows a simple installation and configuration. This document describes how to setup and configure your system to enable the Sick Sensors in your Milestone VMS.

The architecture of the MIP plug-in is as follows:



The SICK MIP Plug-in consists of a Server side plug-in which is installed on the server and loaded by the Management Application (A) and by the Event Server (B).

The Setup File includes all necessary Files and installers for both plug-in parts. It installs all components and restarts the Event Server automatically.

Furthermore there is an optional Video and Event Server Service for high scalability (C). This extension can be used as separated services which runs independently.

2 Safety

This chapter concerns your own safety and the safety of users of security systems with plug-ins.

▸ Please read this chapter carefully before you begin working with the plug-in.

2.1 Qualified safety personnel

The plug-in must only be planned and commissioned by adequately qualified personnel.

A qualified person

- has sufficient skills in the field of the respective equipment based on their technical training and experience and
- has been instructed by the manufacturer in system operation and all applicable safety guidelines and
- is familiar with all relevant country-specific occupational safety regulations, work safety regulations, guidelines, and generally accepted technical rules and standards (e.g., DIN standards, VDE regulations, country-specific rules) to such an extent that he/she is able to evaluate the safe condition of the power-operated equipment, and he/she
- has access to and has read the operating instructions.

2.2 Area of application of the plug-in

The SICK MIP plug-in is installed on a Milestone VMS System.
It is used for communication between SICK laser scanners of types LMSxxx and TiM3xx.
With the plug-in, the Milestone VMS understand the switching signals of laser scanners transmitted via Ethernet connection.
The VMS can then execute defined actions based on the switching signals. This makes it possible for pan-tilt-zoom cameras (PTZ cameras) to, for example, move to a preset position if the associated monitoring field of the laser scanner is violated. Depending on the Milestone VMS version there are a lot of different more actions available.
The SICK MIP plugin-in can furthermore create and deliver a mjpeg stream of the actual scanner data. This stream can then be recorded or viewed in live mode.

2.3 Intended use

The plug-in may only be used as described in section 2.2 Applications of the system.
It may only be used by qualified personnel in the environment in which it was mounted and initially commissioned by qualified safety personnel in accordance with these instructions.
If the plug-in is used for any other purpose or modified in any way, any warranty claim against SICK AG shall become void.

3 SICK Milestone MIP Plug-In for the XProtect Server

The following Chapter describes the installation and configuration of the MIP plug-in on the Server.

3.1 Installation of the plug-ins on the XProtect Event Server

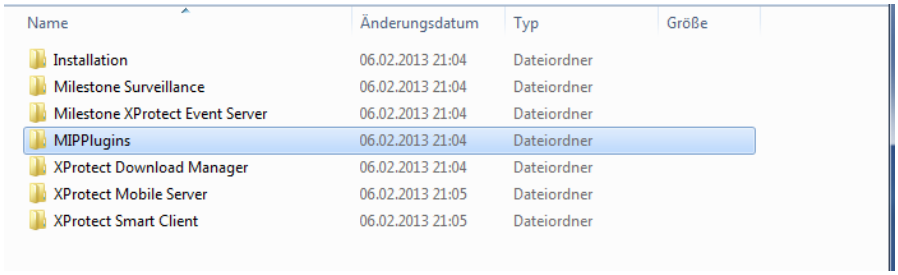
The installation of the Plug-in is packed into a Setup Wizard, which will setup everything needed in your Environment. Before you start with the installation, make sure that the Milestone Management Client Application is closed. The Setup Wizard will do the following job:

- It installs the Plug-in directly on the Master Server when you are using XProtect Express, Professional or Enterprise.
- If you are using XProtect Corporate, then the installer must been run on the XProtect Corporate Management Client PC and on the XProtect Event Server.
- It will Stop and Restart the Event Server Service to activate the Plug-in in the Event Server

The installer will copy the Plug-in files into the following Directory:

%ProgramFiles%\Milestone\MIPPlug-ins\ER.EventServer.Sick

- %ProgramFiles (x86)%\Milestone\MIPPlug-ins\ER.EventServer.Sick



The MIP plug-in is dynamically loaded and used by the following XProtect Applications:

XProtect Application:	Description:	XProtect Version:
Event Server	The Event Server will load the plug-in and will execute the whole Logic in relation to the configuration. It opens the connection to the Sensor device, reads the data and creates a MJPEG Stream if required. It also triggers the events in relation of the configuration.	All
Management Application	The Management Application loads the plug-in to provide the configuration GUI.	Express, Professional, Enterprise
Management Client	The Management Application loads the plug-in to provide the configuration GUI.	Corporate, Expert

3.2 Preparing the System / General Functionality

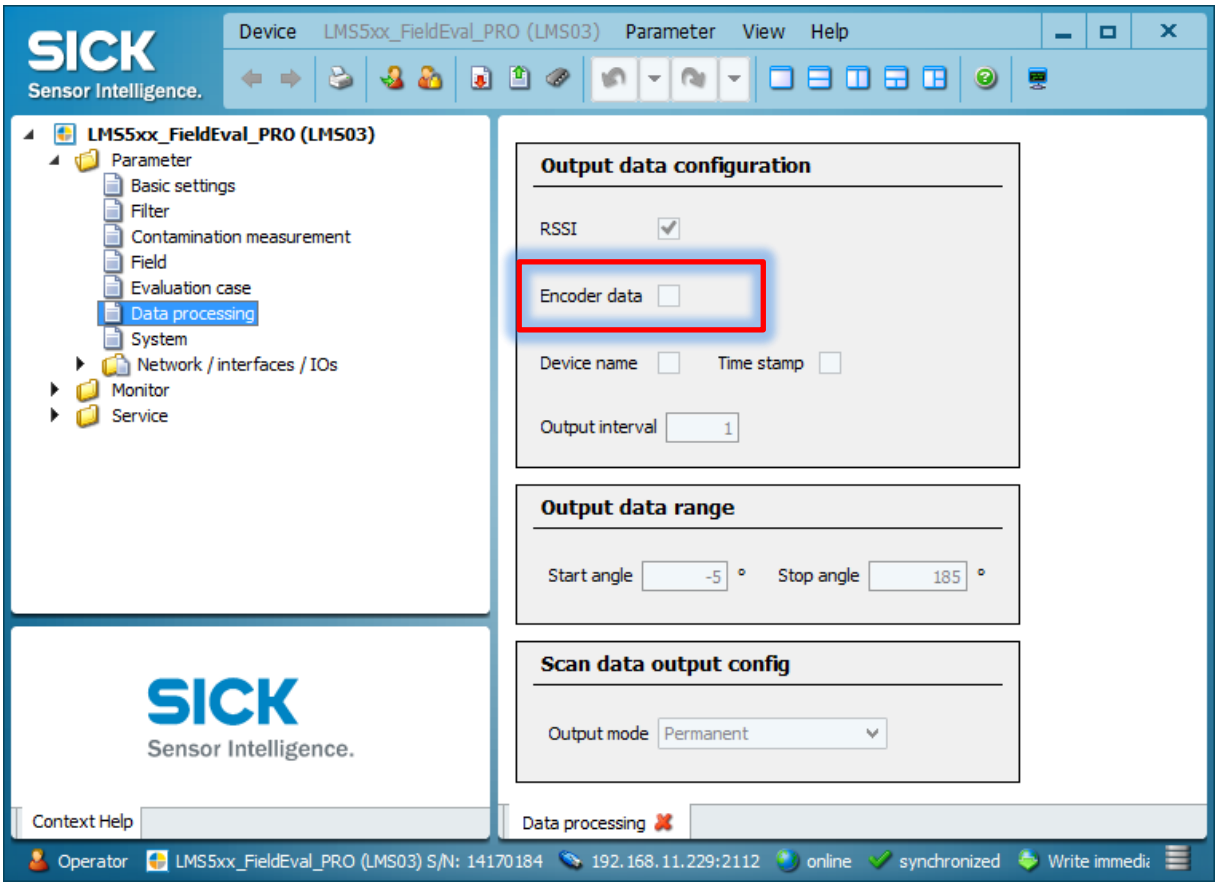
If you plan to use several Sick scanners you should use the Optional Processing Server Architecture. Please read more in Chapter 4 “Optional Processing Server Service” to get the Processing Server settled up, before you start adding Scanners to the Event Server Service.

In case of a detected Alarm the System triggers automatically a user defined Event. This Event can further on be used to trigger any activity inside the Milestone VMS through the rule system or the Alarm definitions.

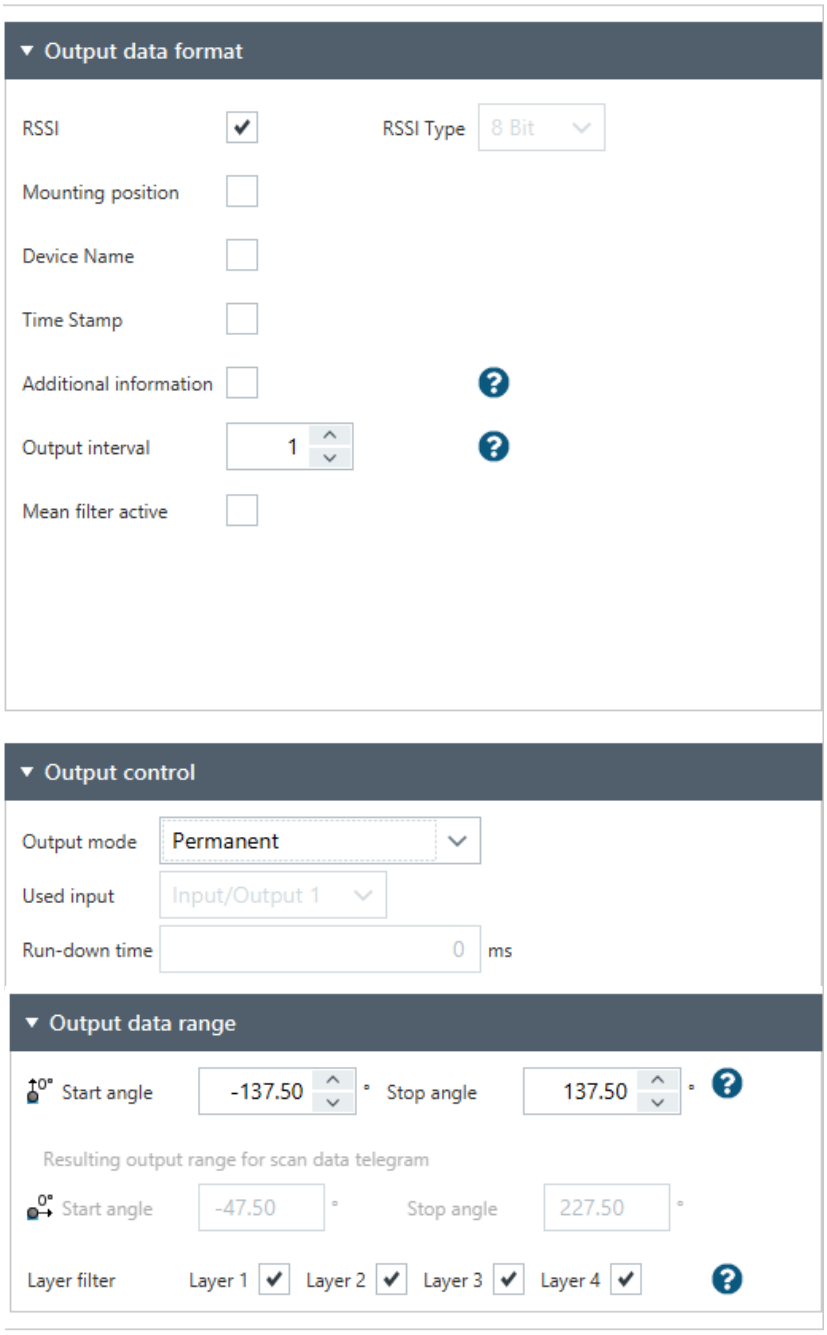
This Event must be previously created in the Management Application. Please have a look into your Milestone VMS user manual for further information.

As there are several models support by the Plugin which have different Configuration and Setup Interfaces, the SICK Scanner must be configured as described in the model specific manual using the SOPAS Engineering Tool.

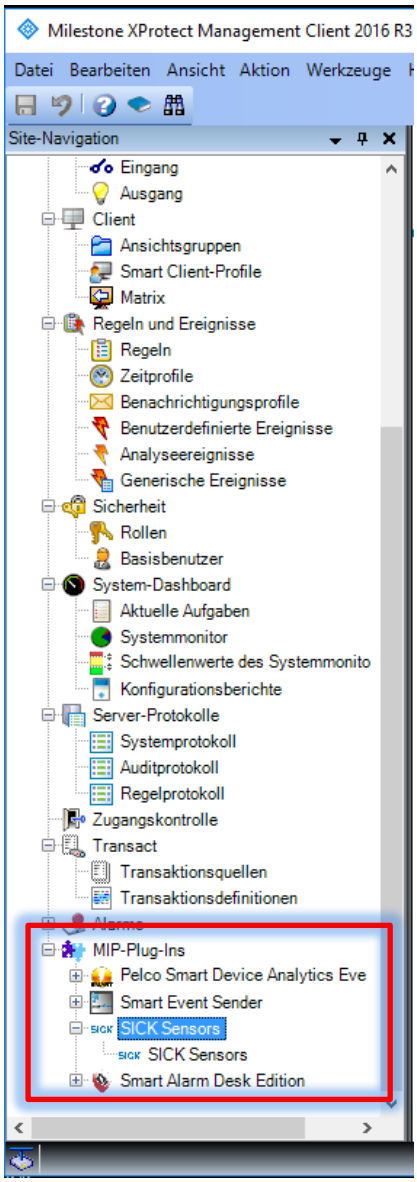
One thing you need to make sure, is that on some devices you need to disable the “Encoder data” under the “Data processing” settings:



For the MRS Devices you need to make sure the Output Control Properties in the Ranging Menu is set to Permanent Output and all Layers are ticket. The Output interval will also have effect on the received Data:



3.3 Configuration of the Plug-in in the Management Application

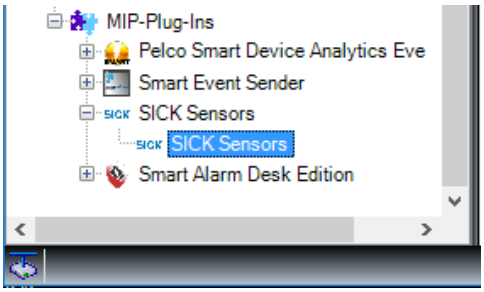


After a successful installation, the Management Application can be started. The configuration interface of the SICK MIP plug-in appears on the left bottom side under the MIP-Plug-Ins entry.

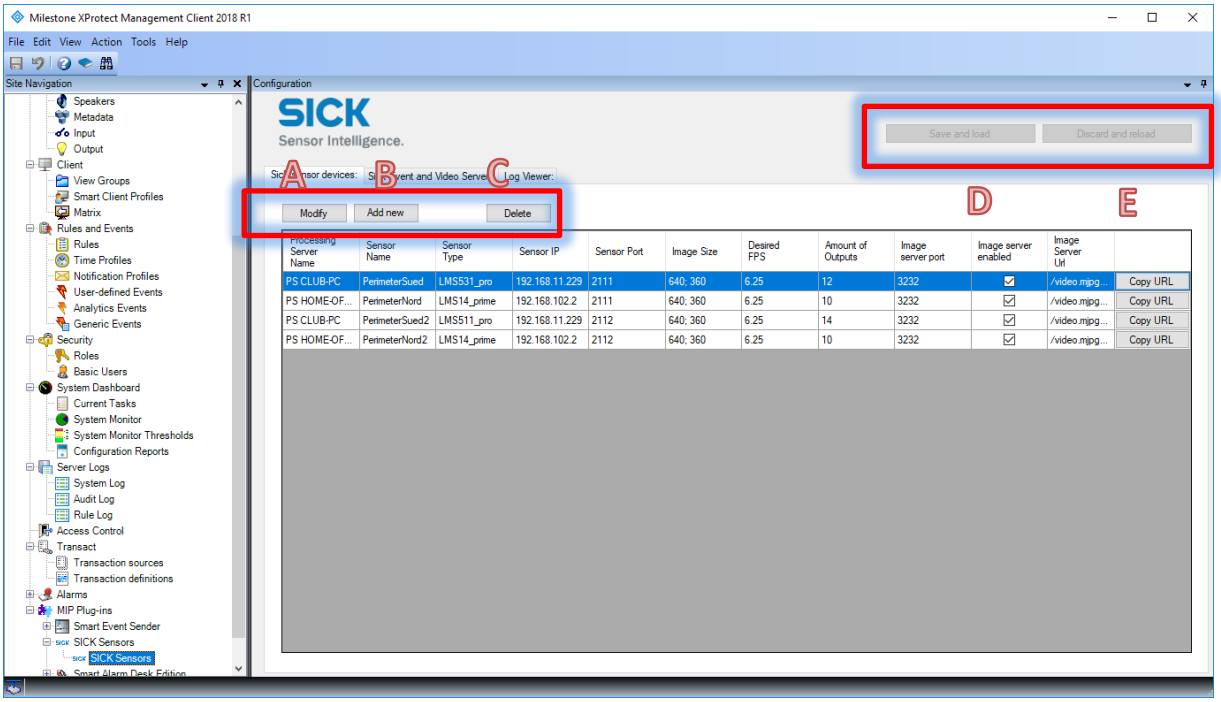
By selecting this entry you will have access to the user manual and the application version.

3.3.1 Adding SICK Sensor Devices

After you have created the necessary user defined events for your SICK Scanner Outputs, you can add the devices.



Choose the Entry Sick Sensors, to switch to the Device Configuration tab:



➔ Add new (B): Open the configuration Window to create a new SICK Sensor Device.

➔ Modify (A): Opens the configuration Window of the selected device to change settings.

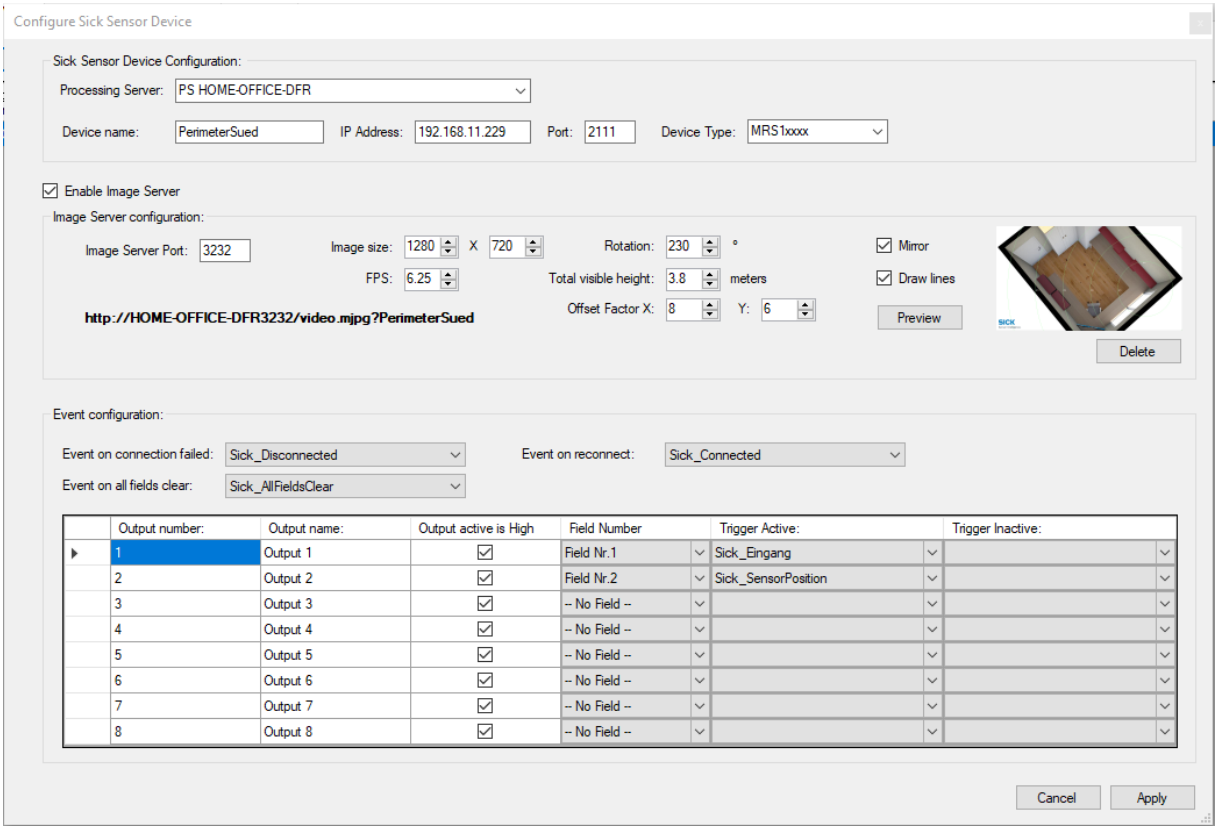
➔ Delete (C): Deletes the selected Devices.

➔ Save and load (D): Saves the configuration in the System and provides the new configuration to the Event Server plug-in. The Service will take about 10 Seconds to reload the new configuration.

➔ Discard and reload (E): The configuration is discarded and the previous configuration is loaded.

3.3.2 Add or Modify a SICK Sensor Device

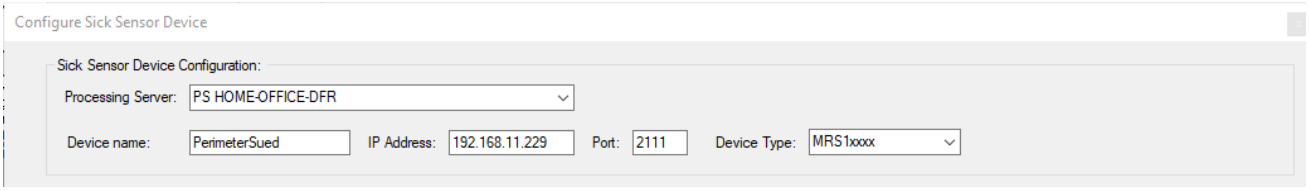
By clicking on “Add new” or “Modify” the following Window shows up to configure an individual SICK sensor device:



The following chapters show the 3 main parts of the configuration and its function in detail.

3.3.2.1 General device configuration

At the upper part of the configuration window are the device type and connection setting:



➔ Processing Server: Select the Processing Server for this device from the list. Optional, please refer to Chapter 4 for more information about Processing Servers

➔ Device name: The name of the device. This name shows up on different parts inside the application and is used for identification.

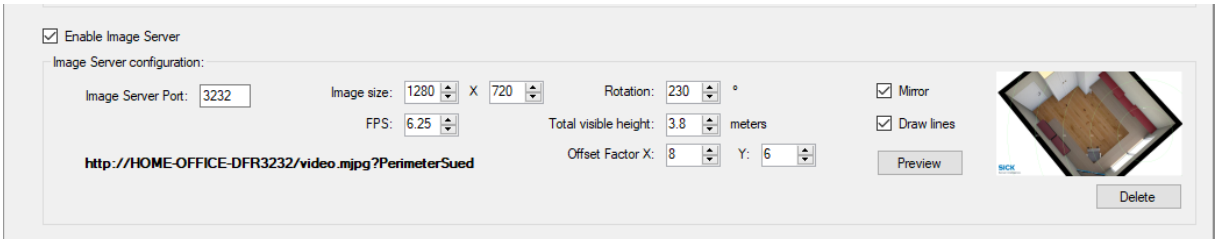
➔ IP Address: The IP Address of your Ethernet connected device.

➔ Port: The Port of your Ethernet connected device.

➔ Device Type: Select the Device Type of your SICK Sensor. This step is very important, as it changes the output Register according to the device capabilities.

3.3.2.2 Image Server configuration MJPEG Stream

The middle part of the configuration window is used for the Image Server configuration. The SICK MIP plug-in can create images from the scanner data and provide them as an Image stream.



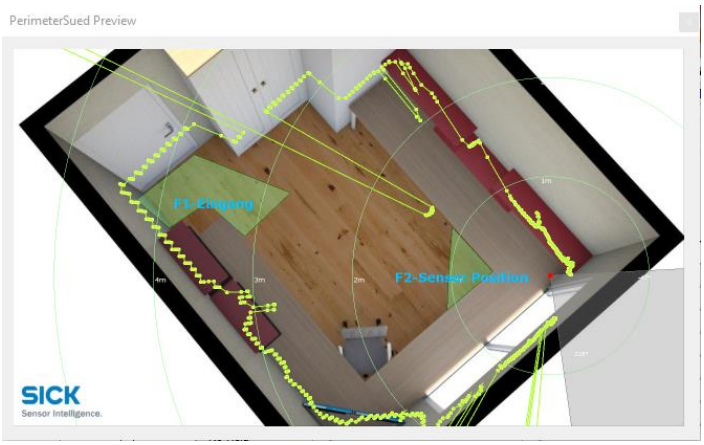
Technical wise, the MIP Plug-in loaded by the Event Server is providing a Webserver on which the MJPEG Stream can later be acquired by the Milestone Universal Driver.
The Universal Driver is available as a one Channel, 16 Channel or 64 Channel device. Each Universal Driver Device is connecting to one Webserver, which means that we can have up to 64 SICK Sensors on one Image Server Port.

➔ Enable Image Server: Enables or disables the Image Server for this device. Disable it, if you don't need the Sensor as an Image channel in Milestone!

➔ Image Server Port: The port on which the MJPEG Stream can be retrieved. Each Universal Driver Hardware needs its own port.
E.g. if you have a 64 Channel Universal Driver Hardware you can use the same port for 64 different SICK Sensors, before you need to add a new Webserver and port.

➔ Background Image: Click on the Background Image to change the appearance from the "Radar" based Image to another Background. Adjust the Position of the Scanned Data by using the Rotate, Mirror and Offset Parameters.

➔ Preview:



By using the Preview Button located on the right, bottom corner, a Window showing the live stream will show up. This is helpful for the image setup, because you can directly see the impact of each parameter when it is changed:

➔ Image Size: Sets the Image Size and aspect ratio.
- Choose this wisely, as it do have an impact on the CPU usage of the System.

➔ FPS: Sets the Frame per Second the MJPEG Stream will create and provide an Image.
- Choose this wisely, as it do have an impact on the CPU usage of the System.

➔ Rotation: The rotation of the Image in degrees. E.g. 180° for an Image flip.

➔ Mirror: This will mirror the Image vertically. Used when the Sensor is mounted upside down.

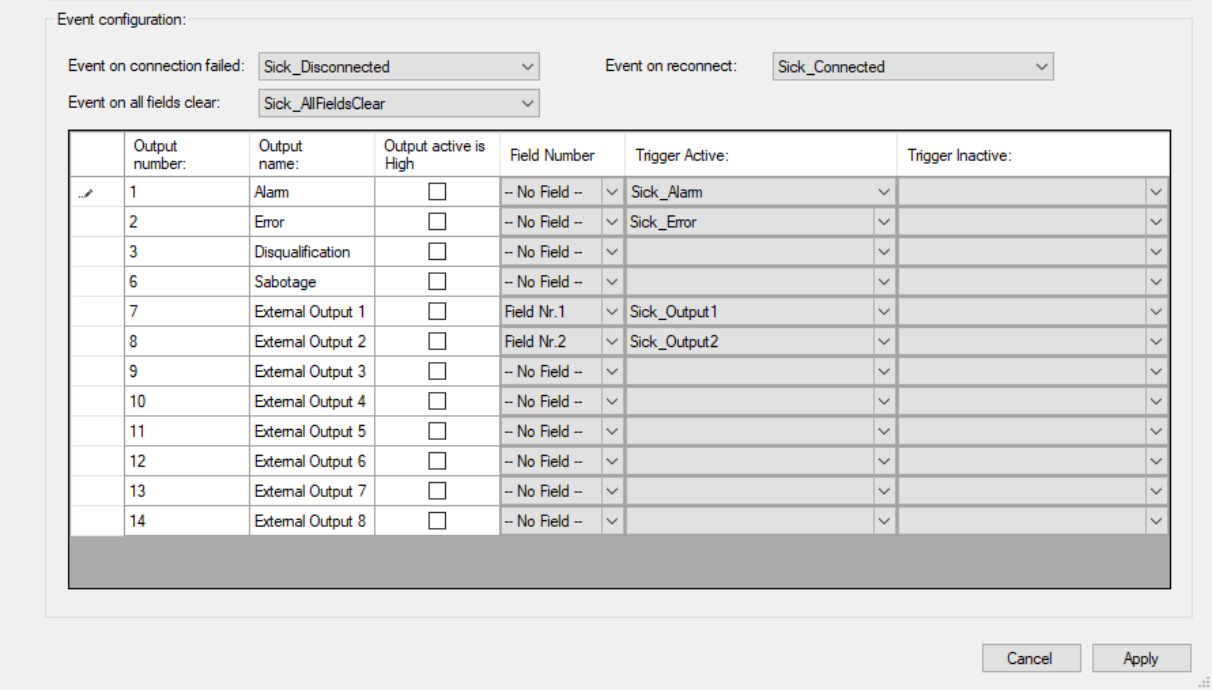
➔ Total visible height: The visible height in meters of the scanner data.

➔ Offset Factors X and Y: Shift the midpoint of the scanner in vertical direction (Y value).
There are 10 steps available where 0 is the up point, 5 is midpoint and 10 the bottom point.
The same applies for the X value in horizontal direction where 0 is the rightest point.

➔ Draw lines: Enables/disables the lines between the measured points.

3.3.2.3 Event configuration and assignment

As described in the previous Chapter 3.2 all used Milestone “User specified Events” must be preconfigured. If they are available you can just select them from the related drop down List.



➔ Event on connection failed / on reconnected

- (Optional) Select the Milestone events, which should be triggered if the SICK device connection is lost and/or reestablished.

➔ Event on all fields clear: (Optional) Select the Milestone event which should be triggered when all fields are gone to status clear

- ➔ Output number (FIX): The given Number of the SICK scanner Output
- ➔ Output name (FIX): The default Name used for this Output inside the SICK SOPAS Software.
- ➔ Output active is high: Activate if also activated in the SICK SOPAS Application
- ➔ Field Number: The Field number, which corresponds to this Output
- ➔ Trigger Active: The Milestone user defined event triggered when Output is active.
- ➔ Trigger Inactive: The Milestone user defined event triggered when Output is back inactive.

REMARK:
If using a newer MRS-1000 Scanner Device, the Evaluation is triggering the Output. You can select one of the Fields of the Evaluation. All related Fields to this evaluation will be connected to the selection.

3.4 Add the configured SICK Sensor as Camera device in Milestone

If the configuration of the Image Server in Chapter 3.3.2.2 is done, the plug-in is providing a MJPEG Stream which can be added as a camera device in Milestone.

First of all you need to add a Universal Driver Hardware. There are three different Milestone drivers available which provide a different amount of Channels. The following example shows how to do this on Milestone Advanced VMS. Please have a look into the Milestone Manual on how to add Hardware for other Milestone Versions.

➔ Select add Hardware → Manual

➔ Use the default credentials

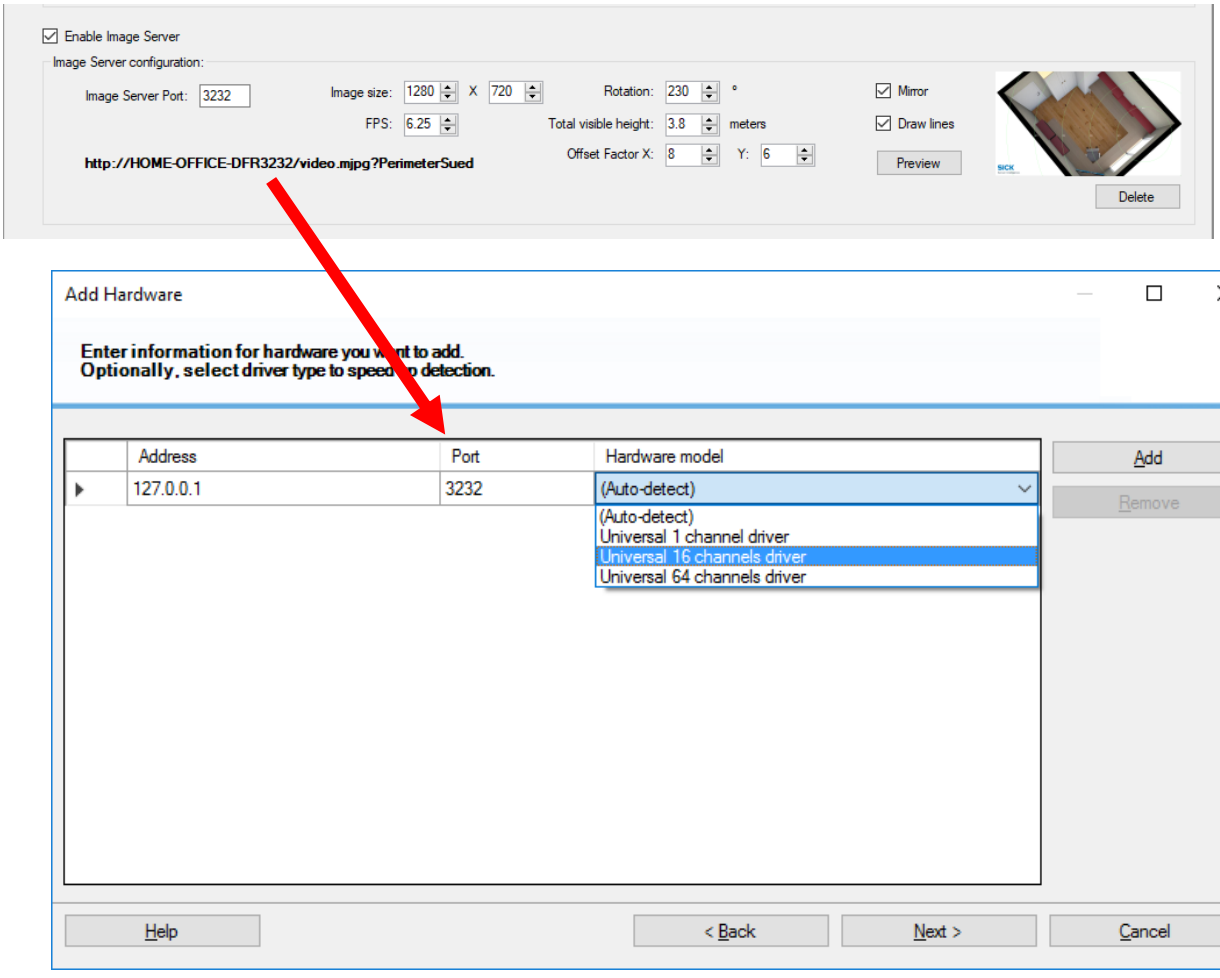
➔ Select the Universal driver with the amount of channels you need and enter the Address and Port.

ATTENTION:

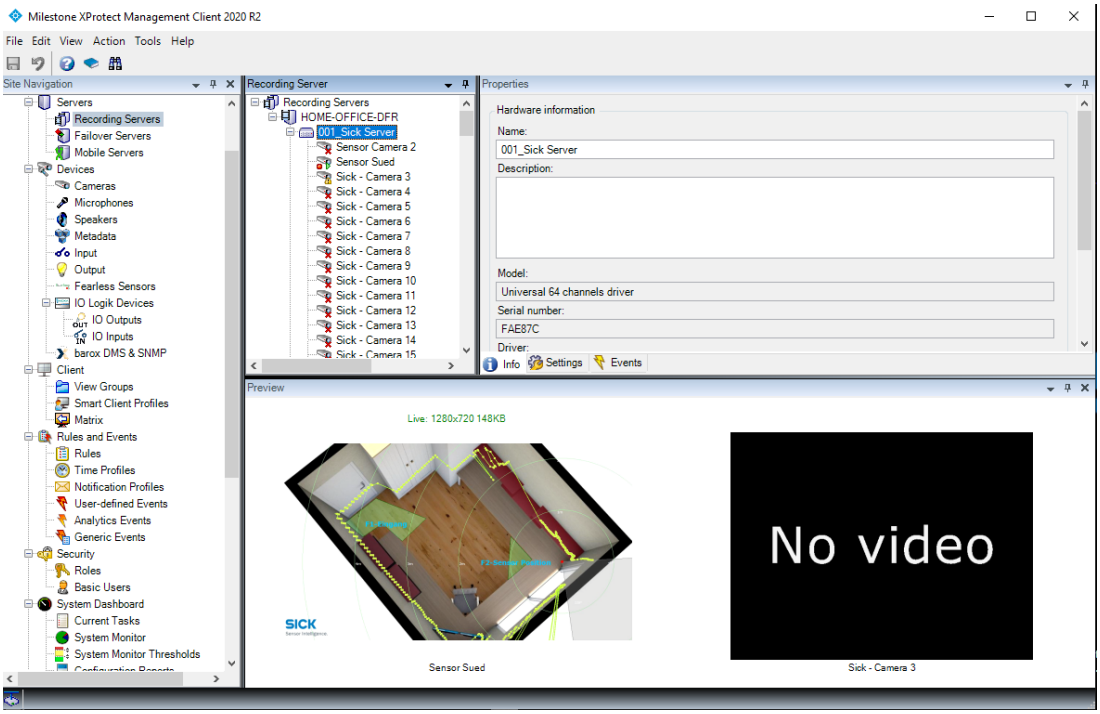
The **IP Address** is the Address **of the Milestone Event Server (or optional Processing Server)** and the **port** is the one you configured **as Image Server Port**. Please keep in mind that you configure the new device from the perspective of your Recording Server.

→ 127.0.0.1 Targets your Recording Server and not the Event Server!

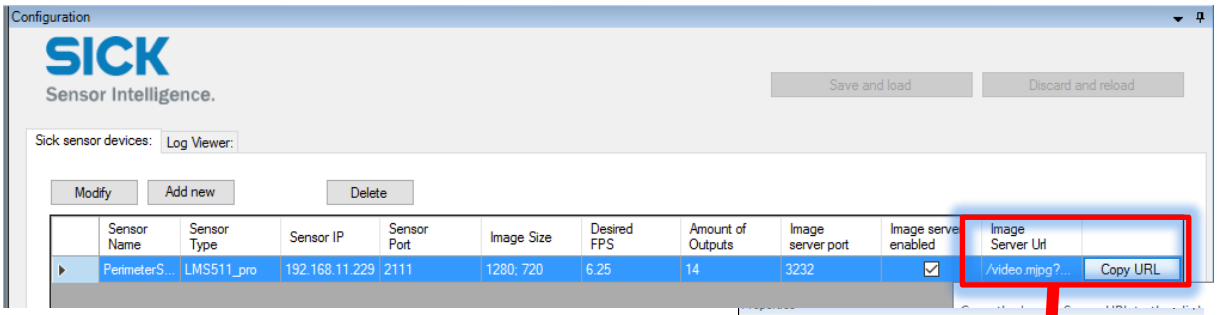
Also don't forget to create a dedicated Firewall rule if this is running on an external Server

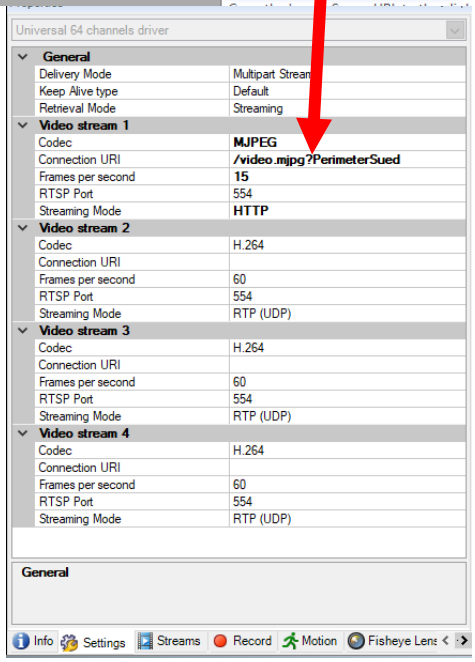


➔ Press Next and Add your Hardware to the Recording Server:



➔ After adding the Hardware, you need to configure the Camera itself. Go to the plug-in configuration page and Copy the Url.





➔ Go back to your Hardware and select the channel for which you want to configure your SICK device and paste the URL into the Connection URI under the settings page.

➔ Set the Streaming Mode to HTTP

➔ Select JPEG in the Streams settings page and save your device.

➔ After the Camera is retrieving images and you can start configuring the recording mode and all other camera settings as usual.

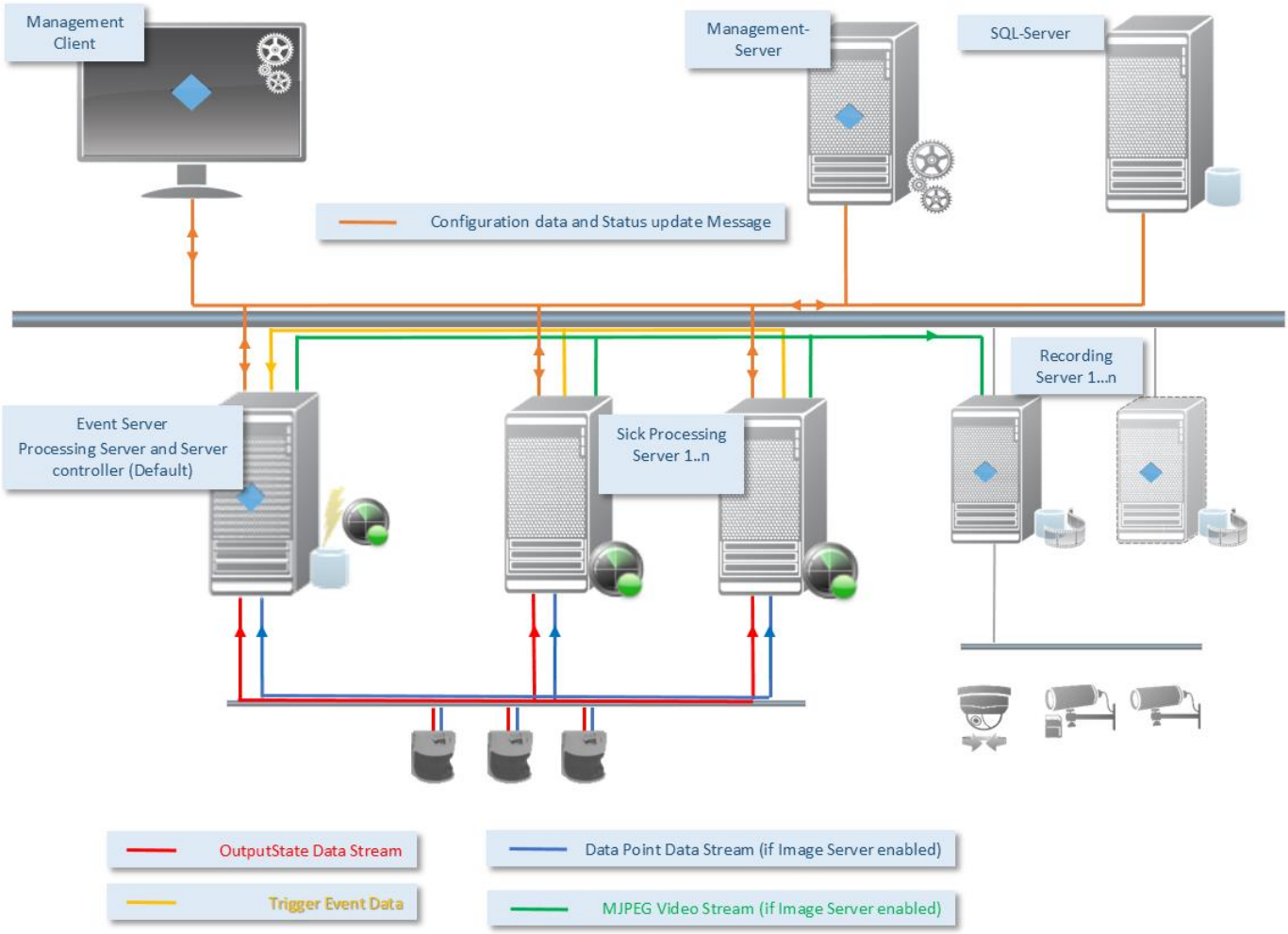
4 Optional Processing Server Service

In order to have a more scalable Solution when adding a lot of Sensor devices, we recommend to use the optional Processing Server Service available from the Plug-in version 2.0.

Optional Processing Server Services can easily been attached later by installing a new Processing Server. The Configuration of previous Plug-in Versions are compatible and the already configured Sick Sensors can be moved to any other instance with the “Move to Hardware” feature.

4.1 Architecture of an extended Processing Server Environment

The following Diagram shows the Architecture of a Multi-Processing Server Environment and its data flow:



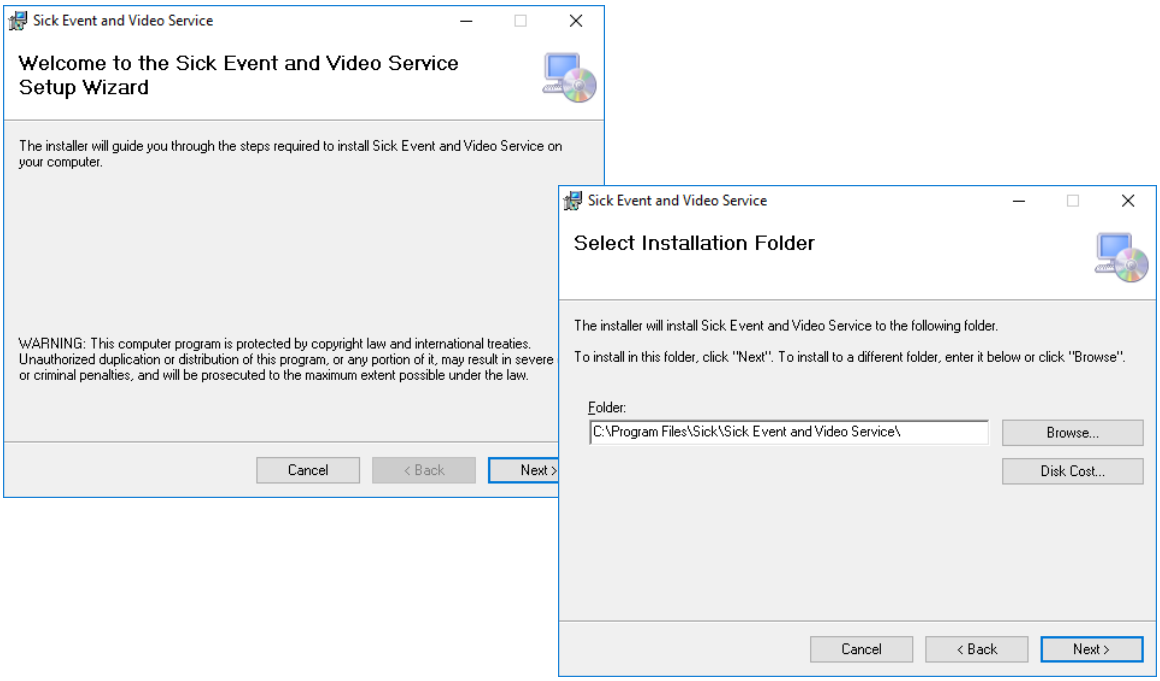
As you can see, the difference between a single server and an extended Processing Server Environment are just the additional Sick Processing Servers. The Event Server Plugin also contains a Processing Server instance which can be used in smaller systems up to a few Sensors.

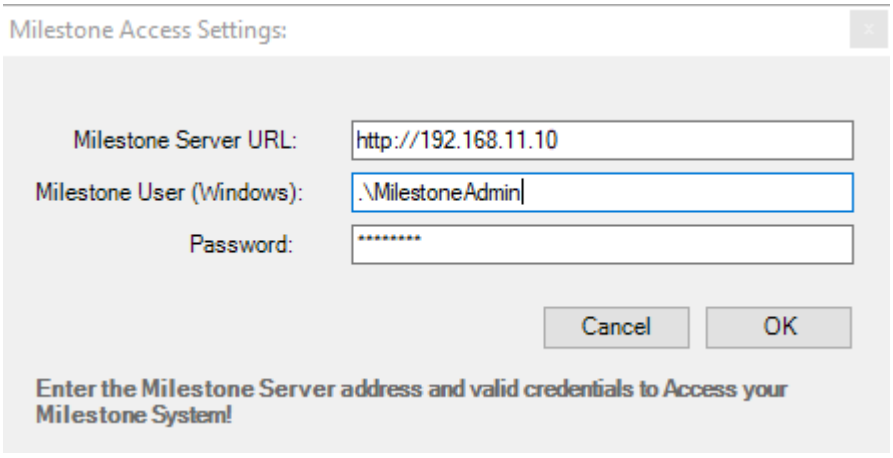
4.2 Installation and configuration of the Processing Servers

4.2.1 Installation

The Processing Server is installed as an independent Windows Service which then connects to the Milestone VMS System. After its first start, it will be initialized and automatically registered and available in the Sick MIP Plugin inside the Management Client.

The Installer will guide you through the installation including the Connection parameters for the Milestone VMS:





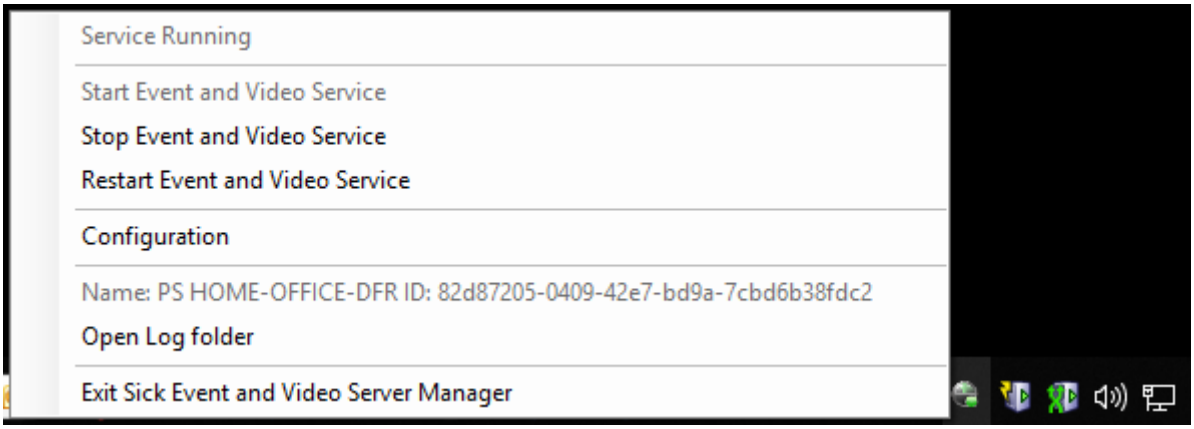
Enter the Milestone connection Parameters to access the VMS. The installer will proceed, when the address and credentials are valid.

NOTE:
It might be necessary to add **".\"** as domain to the user field as seen in the screen shot.

4.2.2 Initial Configuration of a Processing Server

After the installation you will have your System tray Icon in the Taskbar to control the Service or to change the configuration:

Tray Symbol	Meaning
	Sick Video and Event Server Service is running
	Sick Video and Event Server Service is starting or stopping
	Sick Video and Event Server Service is stopped

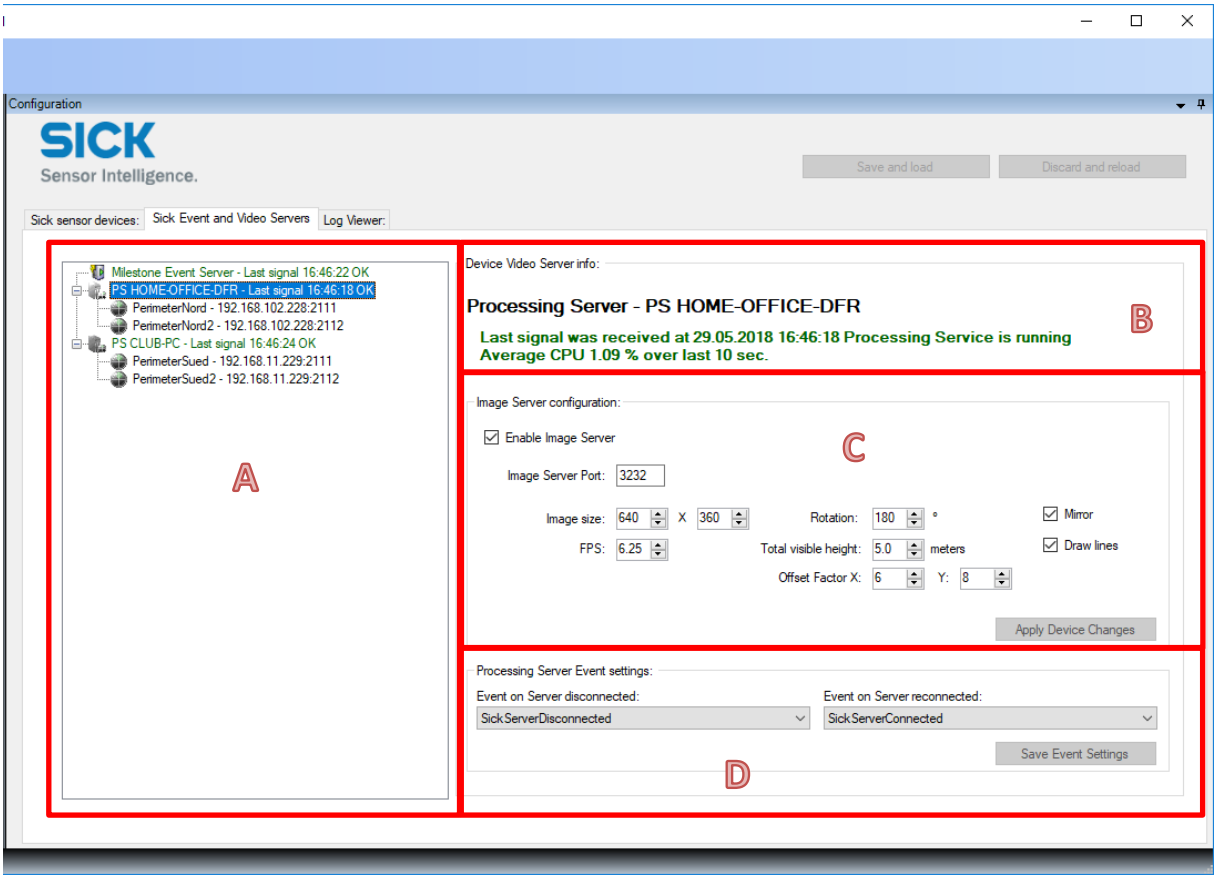


After the first start, the Service will create an ID and will provide its information to the System. You can see the Processing Server initialization data under the read only item *Name: PS…* entry in the context Menu.

After you have successfully installed and started your Sick Event and Video Server Service, you can start to use it directly from the Management Client.

4.2.3 Configuration of the Sick Sensors using Processing Servers

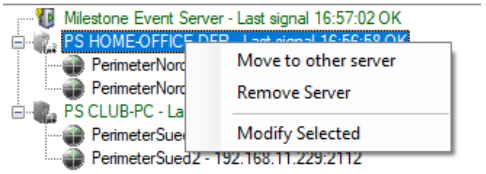
Select the Sick Event and Video Servers Tab to configure and see your Processing Servers and its status:



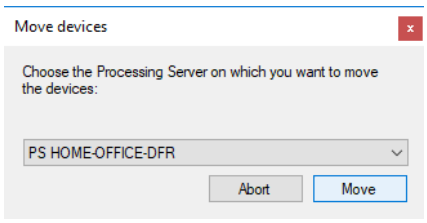
➔ Processing Servers and Sensors Tree View **(A)**

All the Processing servers are listed in the tree view including all associated Sensor devices. This gives full overview of the entire System.

Using the right mouse context menu, you will have the following functions:



Move to other server:
This function is used to move the selected sensor device to another server. If the Processing server is selected, all the attached sensor devise will be moved. This is useful when you start expanding to multiple Processing Servers or if you want to replace a Processing Server.



Remove Server:
This removes the server from the configuration. Please note, that the following rules must be given in order to remove a server:

- ➔ The Milestone Event Server Instance can't be removed, as it has the controller function of all other Processing Servers.
- ➔ The Processing Server must be empty and all Sick sensor devices was moved to another Server before.

Modify Selected:
Opens the Sick Sensor device configuration Window (see 3.3.2 Add or Modify a SICK Sensor Device)

➔ Processing Server Status **(B)**

This section shows some information about the Processing Server status. The Plugin is listening for the status update message from each server and updates the last signal received as well as the average CPU load used by the Processing Server Service over the last 10 seconds. This is useful to determine the server load when you have a lot of sensor devices rendering the image streams. Additionally, you can see how the parameters of the Image Server configuration (C) effects the CPU load of the Server.

➔ Processing Server Image Server configuration **(C)**

Using the Image server configuration gives you the possibility to adjust all rendering parameters for one device or all devices attached to the selected Processing Server.

- ➔ Please note, that the performance is directly dependent on those parameters, having the Image size as the most important. We recommend a resolution of 640x360 for a good mix between performance and quality.
- ➔ A Framerate between 3.0 and 6.25 should be sufficient

You can use the Apply Device Changes Button to save the configuration and the Save and load Button to transmit the Configuration changed message to all Processing Servers.

➔ Processing Server Event Settings **(D)**

Configure the Events triggered by a Server responding / not responding Status.
Please note, that the Event Server plugin is controlling the update status messages from all servers and triggering those events.

Use the Save Event Settings button to confirm the configuration.