

Installation- and Operating Manual

**Fearless Milestone
MIP plug-in
Version 1.5**



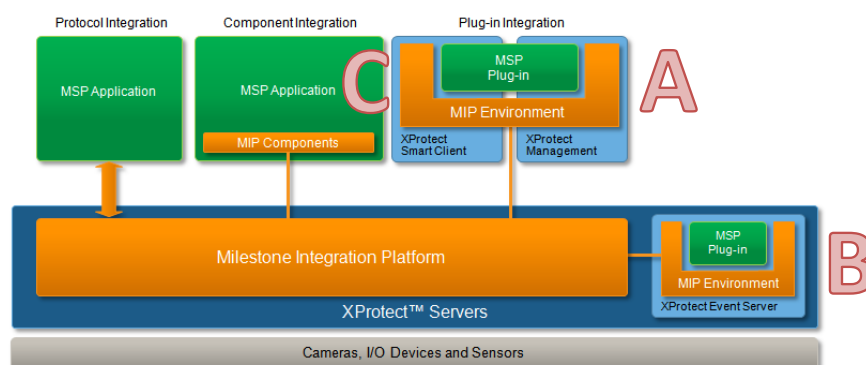
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1 About this Document and the Fearless MIP plug-in

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

This plug-in is deeply integrated into the Milestone XProtect VMS. 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 Fearless Sensors in your Milestone VMS.

The integration architecture of the MIP plug-ins will be as follows:

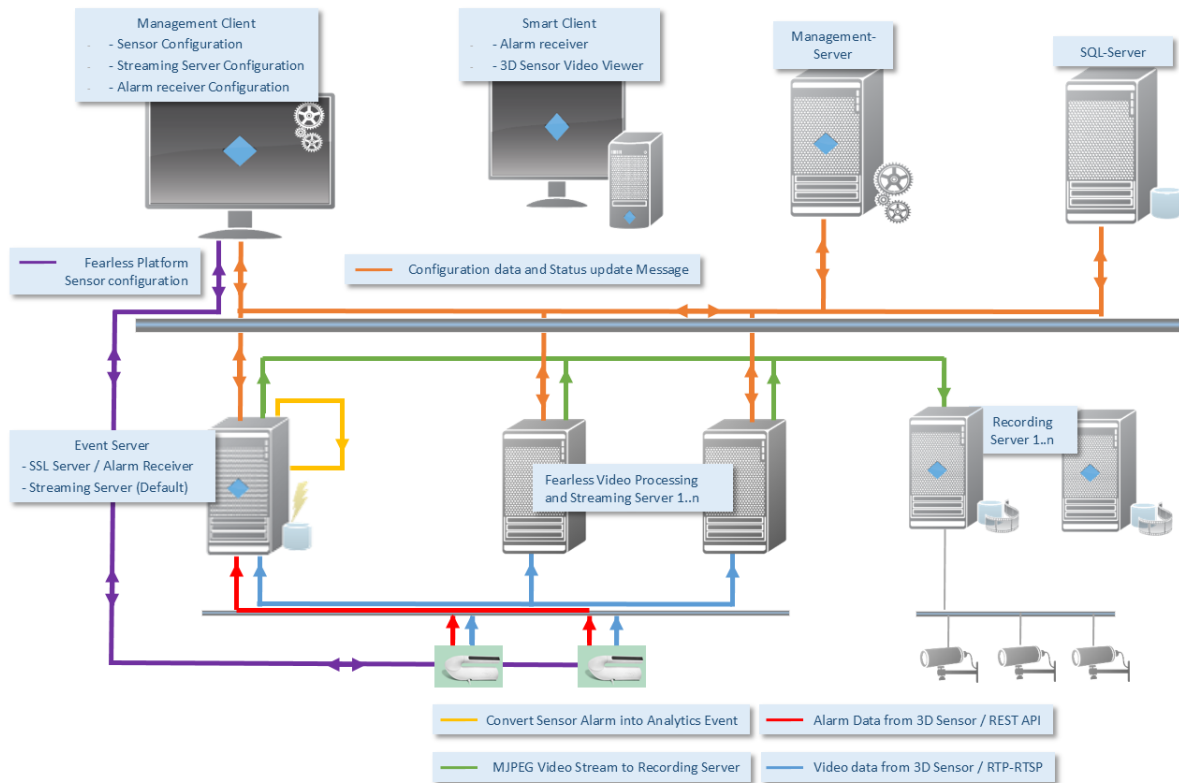


The Fearless MIP Plug-in consists of a Server side plug-in which is installed on the server and loaded by the Management Application (A) and by the Event Server (B).

Furthermore there will be an extended Video Streaming and Event Server for high scalability (C). This extension can be used as separated services which runs independently, but still controlled by the Event Server plug-in.

Application:	Description:	XProtect Version:
Event Server (A)	<i>The Event Server will load the plug-in and will execute the whole Logic in relation to the configuration. It provides an SSL Server Socket to receive all Events from the Sensors through the REST API and triggers the related Analytics Events. It will also receive the data from the sensors and convert them to a MJPEG Stream in case this is a single Server installation with just a few Sensors.</i>	<i>All advanced VMS (C-Code)</i>
Management Client (B)	<i>The Management Application loads the plug-in to provide the configuration GUI.</i>	<i>All advanced VMS (C-Code)</i>
Video Server Service (C)	<i>If required, the System can be expanded and scaled up by a number of external Video Server Services which then take over the load of creating and Streaming Video to the recording Server in to decrease the load on the Event Server itself.</i>	

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



The Event Server Plugin also contains a Processing Server instance which can be used in smaller systems up to a few Sensors.

2 Fearless Milestone MIP Plug-In for the XProtect Server

The following Chapter describes the installation and configuration of the MIP plug-in on the Server. You will find a detailed description about [Fearless Sensor Configuration](#) in Chapter 4.

2.1 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 be 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\MIPPlugins\ER.EventServer.Fearless

- %ProgramFiles%\Milestone\MIPPlugins\ER.EventServer.Fearless

Name	Änderungsdatum	Typ	Größe
Installation	06.02.2013 21:04	Dateiordner	
Milestone Surveillance	06.02.2013 21:04	Dateiordner	
Milestone XProtect Event Server	06.02.2013 21:04	Dateiordner	
MIPPlugins	06.02.2013 21:04	Dateiordner	
XProtect Download Manager	06.02.2013 21:04	Dateiordner	
XProtect Mobile Server	06.02.2013 21:05	Dateiordner	
XProtect Smart Client	06.02.2013 21:05	Dateiordner	

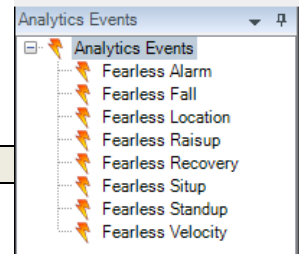
The MIP plug-in is dynamically loaded and used by the following XProtect Applications:

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 an SSL Server Socket to allow connection from the Sensor devices, reads the data and creates a MJPEG Stream if required. It also triggers the events in relation of the configuration.	All
Management Client	The Management Application loads the plug-in to provide the configuration GUI.	Advanced VMS (C-Code)

2.2 Preparing the System / General Functionality

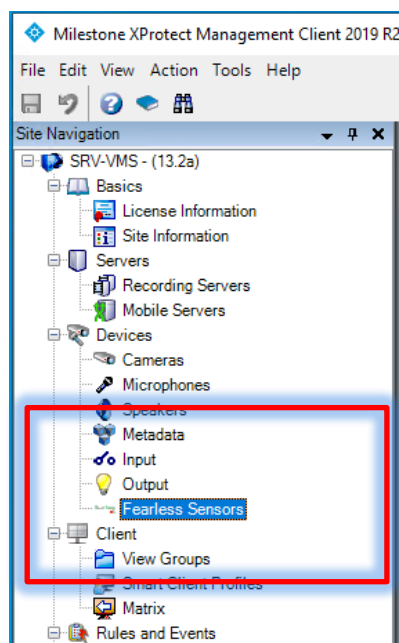
In case of a detected Alarm from a Sensor the System triggers automatically a predefined Analytics Event with the Sensor Camera as Source. This Event is further used to trigger any activity inside the Milestone VMS through the rule system or the Alarm definitions.

This Events are automatically created when you create / Update Camera devices out of the Plugins Sensor configuration:



Analytics Event:	Description:
<i>Fearless Alarm</i>	Unknown or new types of alarm from the sensor. This Event is usually not triggered!
<i>Fearless Fall</i>	A person is lying or sitting on the floor.
<i>Fearless Recovery</i>	A person got back up after a fall event (reserved for future use; actually not triggered!).
<i>Fearless Situp</i>	A person has sat up on a bed.
<i>Fearless Standup</i>	A person has stood up from a bed.
<i>Fearless Raisup</i>	A person is sitting up from a bed.
<i>Fearless Location</i>	A person was detected at a monitored location.
<i>Fearless Velocity</i>	A person was detected moving too fast.

2.3 Configuration of the Plug-in in the Management Application



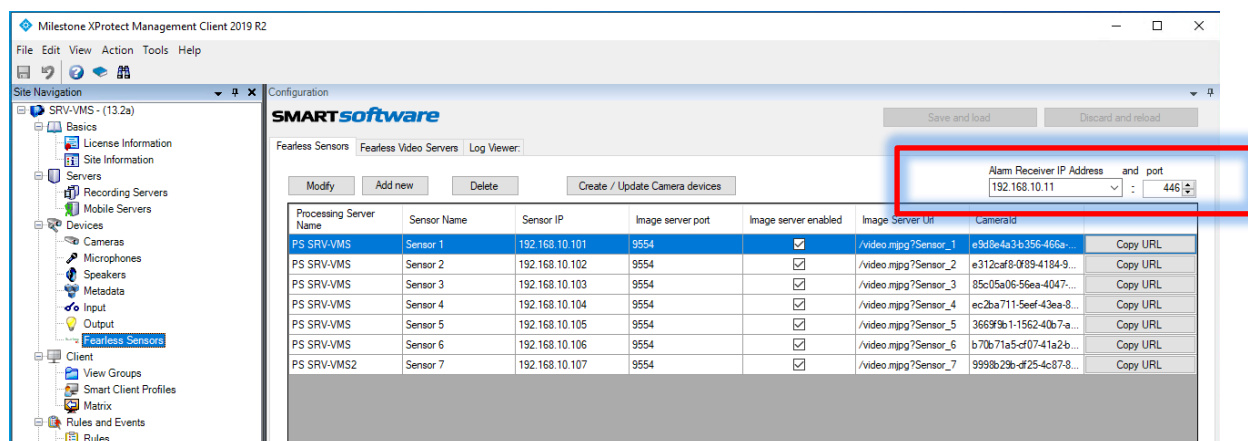
After a successful installation, the Management Application can be started. The configuration interface of the Fearless MIP plug-in appears on the left side under the Devices entry.

By selecting this entry you will have access to Configuration User Interface.

2.3.1 Configuring the Alarm Receiver

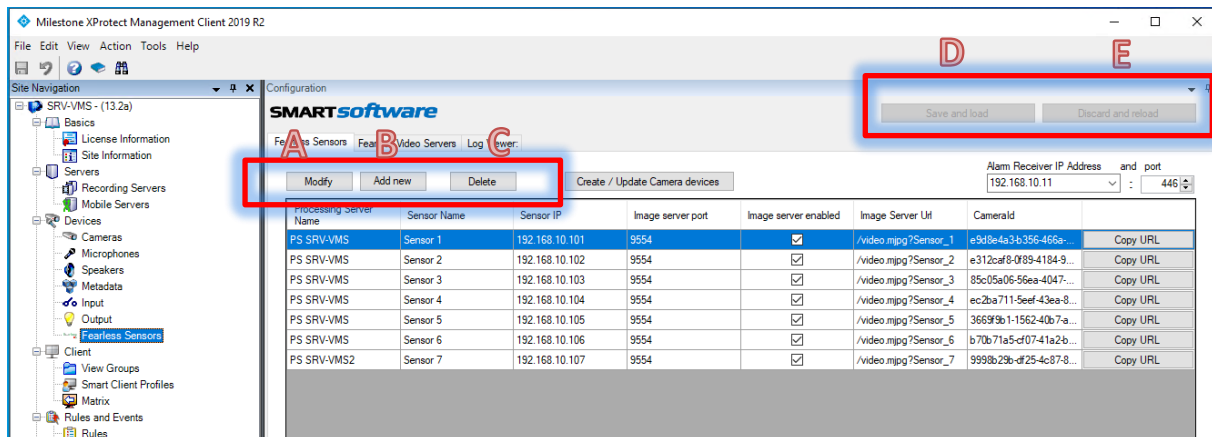
The Fearless Sensors are sending all Alarms to a REST Server which is integrated in the Fearless Event Server Plugin component.

Before you start with adding Fearless Sensors to your System, you need to configure the Alarm Receiver. This data will then automatically be passed to the Sensors you will add in order to enable the alarm receiver.



The Alarm Receiver IP Address is the IP Address of your Event Server. If you have more than one IP's configured on your Server, you should choose the one which is in Range with the Sensors. Otherwise the REST Server is unreachable from the Sensors point of view and they can't send the alarms.

2.3.2 Adding Fearless Sensor Devices

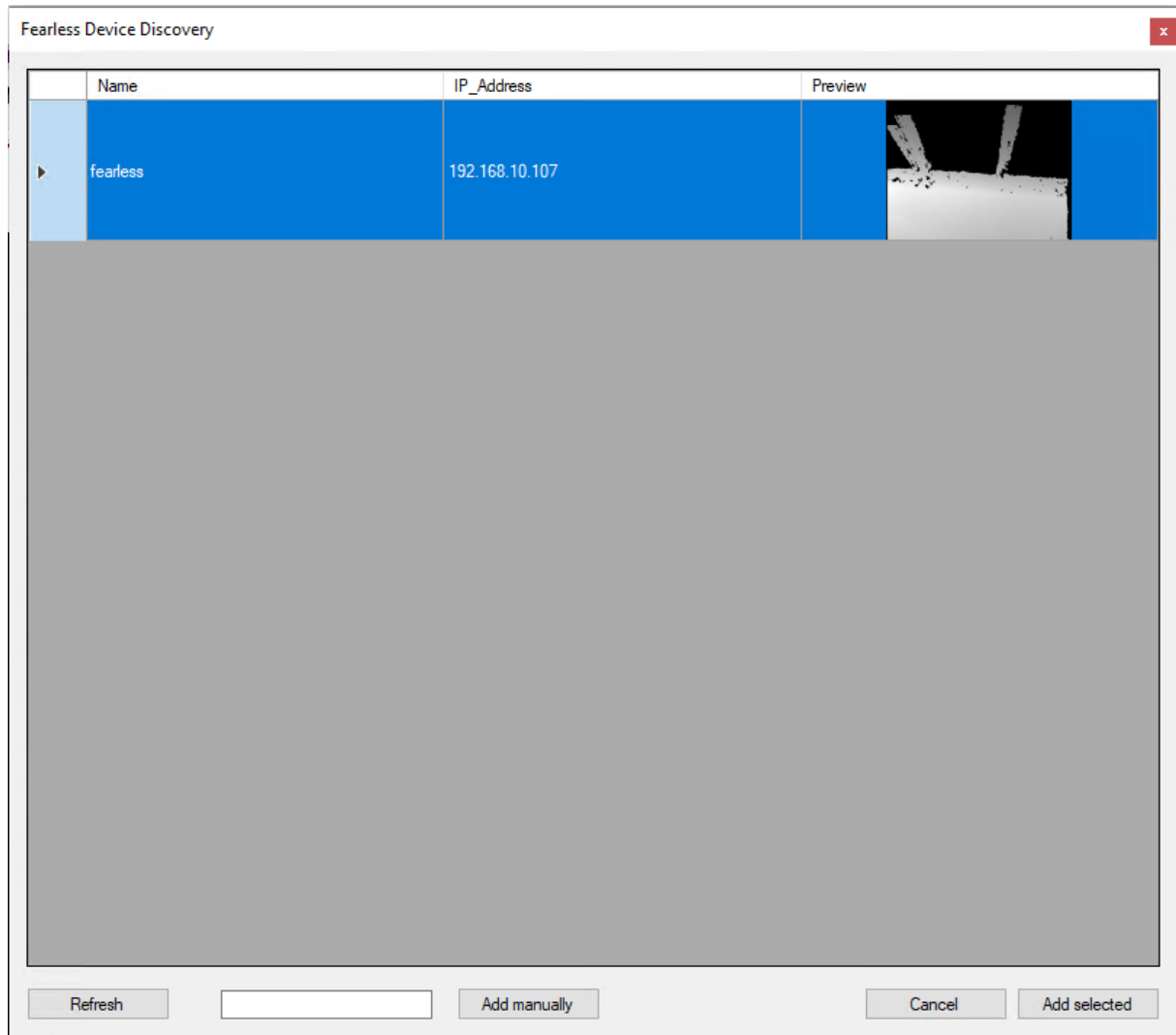


Choose the Entry Fearless Sensors, to switch to the Device Configuration tab:

- ➔ Add new (B): Open the configuration Window to create a new Fearless 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 and Processing Servers. 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.

2.3.3 Add a new Fearless Sensor Device

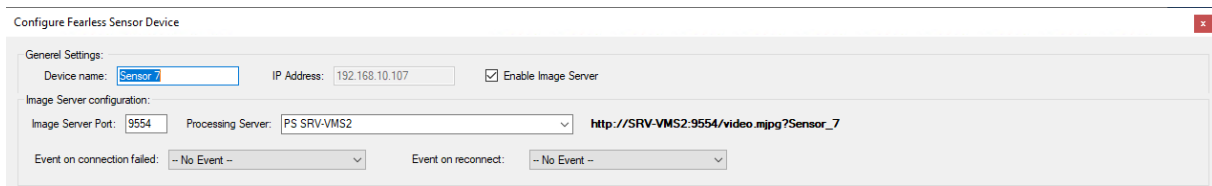
By clicking on “Add new” the following Window shows up with all detected Sensors in the Network:



All Sensors are sending upnp Discovery Packets which enables the System to detect them. If the desired Sensor is not in the List, you can try to “refresh” or if you know the IP Address of the Sensor you can add it manually.

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

2.3.3.1 General device configuration



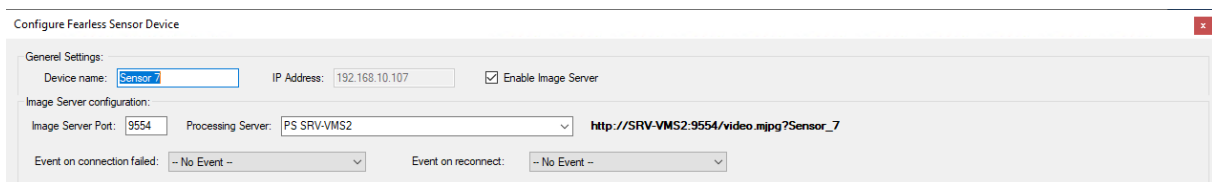
At the upper part of the configuration window are the base settings:

- ➔ **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. This is controlled by the Settings on the Sensor itself.

2.3.3.2 Image Server configuration MJPEG Stream

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

Technical wise, the MIP Plug-in loaded by the Event Server or the Processing Servers 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 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 Fearless Sensors, before you need to add a new Webserver and port.
- ➔ **Processing Server:** Select the Processing Server for this device from the list. Optional, please refer to Chapter 4 for more information about Processing Servers

2.3.3.3 Event configuration for Device Connection

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 Fearless device connection is lost and/or reestablished.

2.3.3.4 Configuration of the Sensor Parameters

Having the right IP Address of the Sensor will enable the Application to login into the Sensors Configuration Page.

Please change the Sensor device from DHCP to static and provide a valid IP Address, Subnet Mask and Gateway before you add the device.

It might be necessary to restart the device in order to apply the new Network settings.

Scroll down and configure the sensors Parameters accordingly. More information about Sensor Configuration in

2.4 Add the configured Sensors as Camera devices to the Milestone Recording Server

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.

This process is fully automated by clicking on the Create / Update Camera devices

Configuration

Save

Fearless Sensors

Fearless Video Servers

Log Viewer:

Modify

Add new

Delete

Create / Update Camera devices

Processing Server Name	Sensor Name	Sensor IP	Image server port	Image server enabled	Image Server Url
PS SRV-VMS	Sensor 1	192.168.10.101	9554	<input checked="" type="checkbox"/>	/video.mjpg?Sensor_
PS SRV-VMS	Sensor 2	192.168.10.102	9554	<input checked="" type="checkbox"/>	/video.mjpg?Sensor_
PS SRV-VMS	Sensor 3	192.168.10.103	9554	<input checked="" type="checkbox"/>	/video.mjpg?Sensor_
PS SRV-VMS	Sensor 4	192.168.10.104	9554	<input checked="" type="checkbox"/>	/video.mjpg?Sensor_

This Process will do the following tasks:

- ➔ Check and add/update all necessary Analytics Events
- ➔ Check and add/update all Processing Servers as a new Universal Driver Hardware
- ➔ Check and add/update all Sensors to that Hardware
- ➔ Configure all Camera Parameters for the Sensors
 - URL, Framerate etc.
- ➔ Add the Cameras to a Camera Group called Fearless Sensors
- ➔ Finalize and save the new Configuration

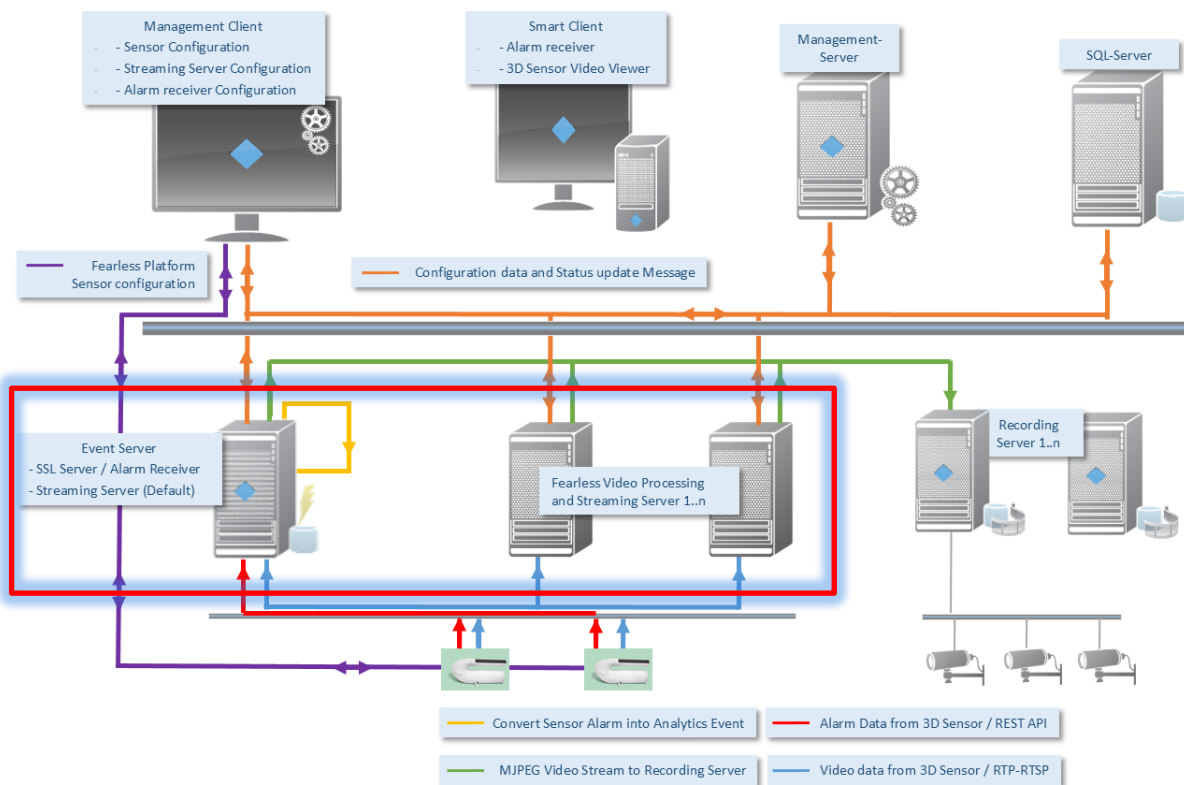
3 Optional Processing Server Service

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.

Optional Processing Server Services can easily be attached later by installing a new Processing Server. The configured Fearless Sensors can be moved to any other instance with the “Move to Hardware” feature.

3.1 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 Fearless Video Processing and Streaming Servers. The Event Server Plugin also contains a Processing Server instance which can be used in smaller systems up to a few Sensors.

3.2 Installation and configuration of the Processing Servers

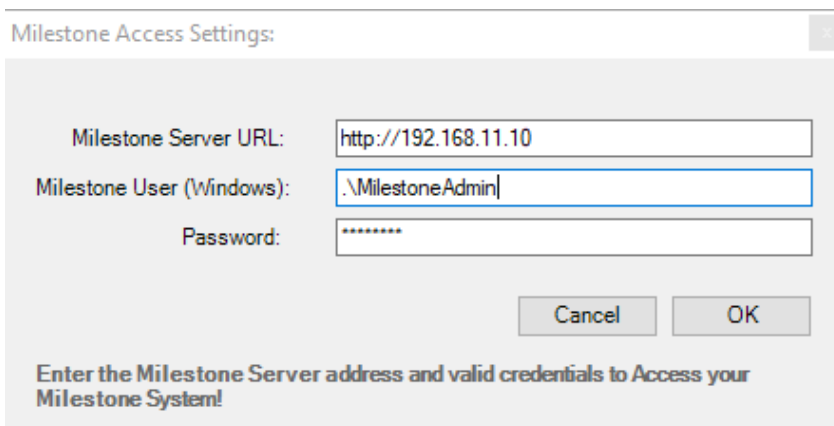
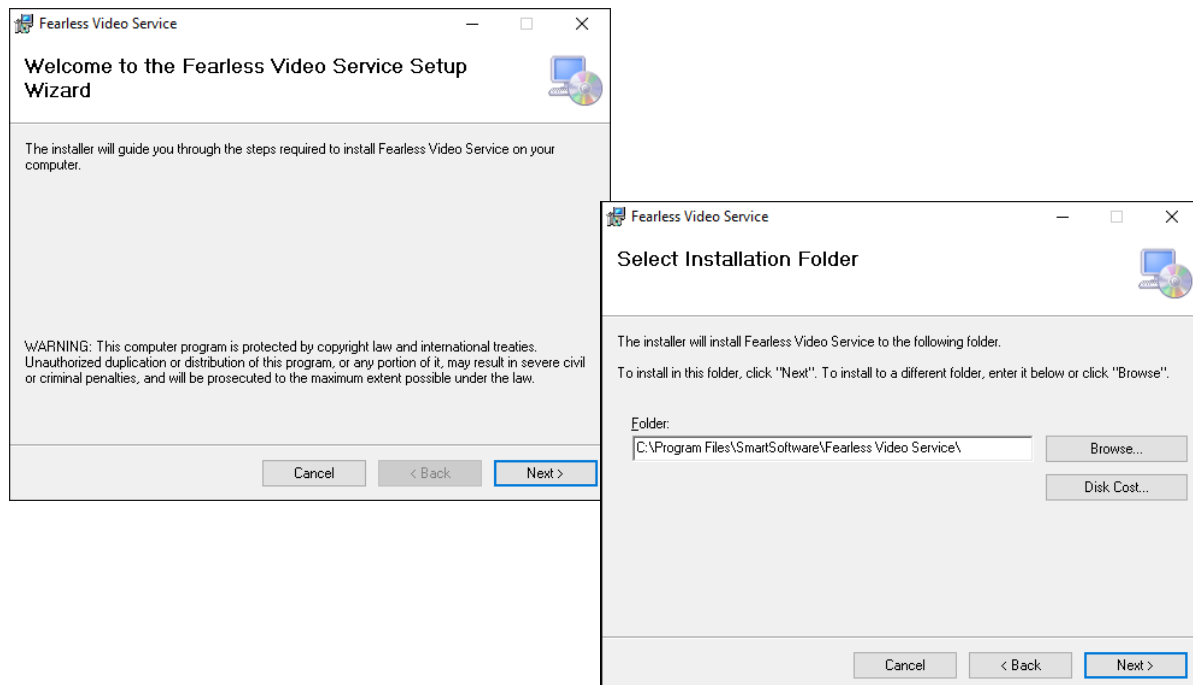
3.2.1 Installation

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 Fearless MIP Plugin inside the Management Client.

The main Fearless MIP Plugin System installer will add the Installation Package to the internal Milestone download Page which is available under:

http://my_milestoneserver_address/Installation

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.

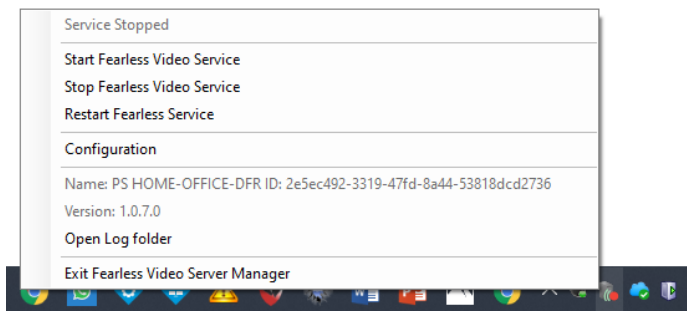
NOTE:

It might be necessary to add “.” as domain to the user field as seen in the screen shot.

3.2.2 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
	Fearless Server Service is running
	Fearless Server Service is starting or stopping
	Fearless Server Service is stopped

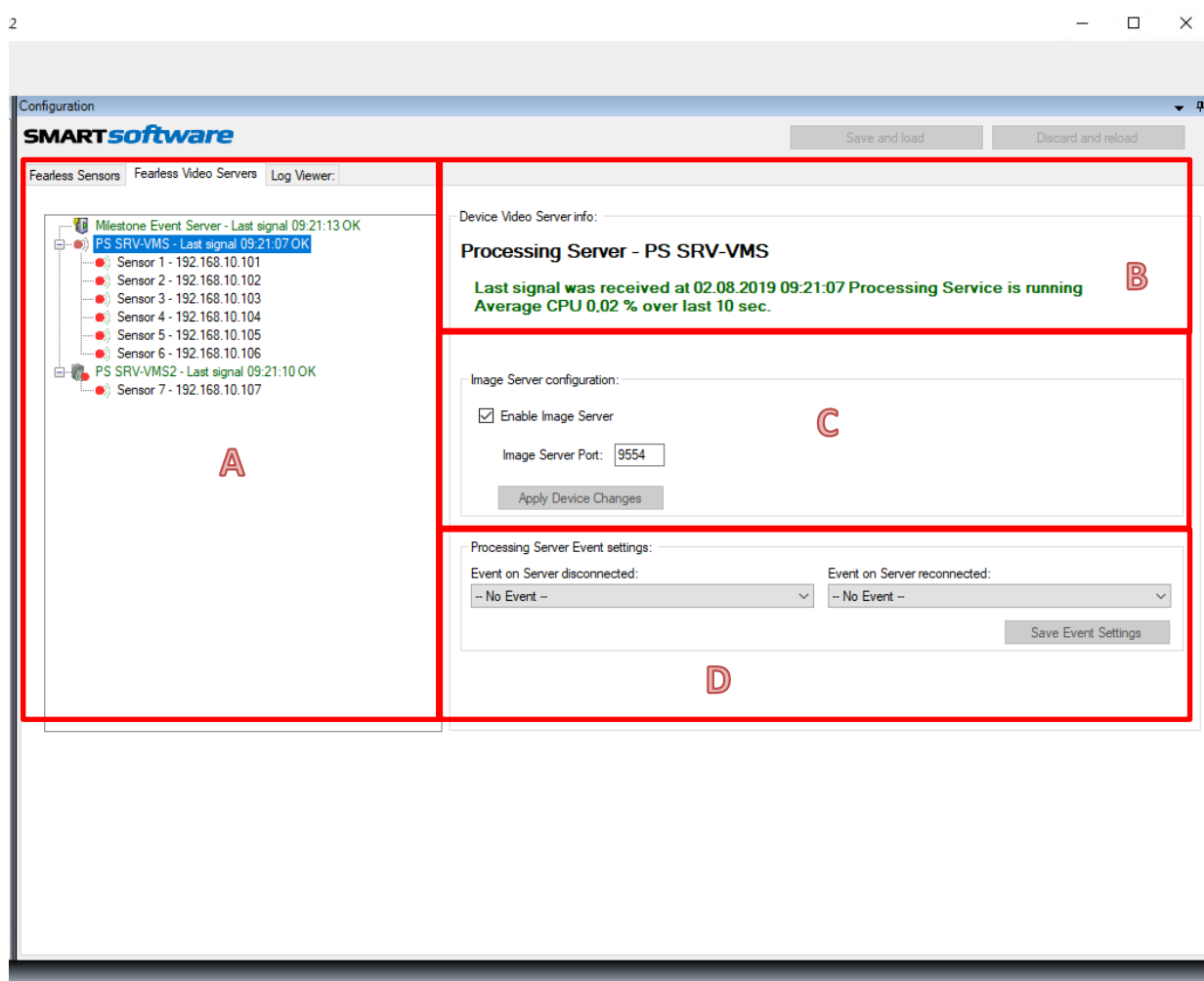


After the first start, the Service will create an ID and will provide its information to the System. You can see the Processing Server initialization data under the read only item *Name: PS...* entry in the context Menu.

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

3.2.3 Configuration of the Fearless Sensors using multiple Processing Servers

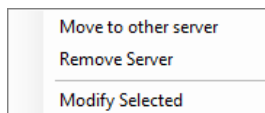
Select the Fearless Video Servers Tab to configure and see your Processing Servers and its status:



→ Processing Servers and Sensors Tree View (A)

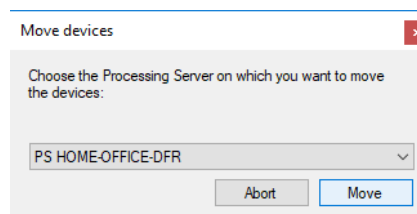
All the Processing servers are listed in the tree view including all associated Sensor devices. This gives full overview of the entire System.

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 device 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 Fearless sensor devices was moved to another Server before.

Modify Selected:

Opens the Fearless Sensor device configuration Window (see 2.3.3.1 General device configuration)

➔ 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.

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.

4 Fearless Sensor Configuration

4.1 Introduction

The configuration web site for the fearless on-premise sensor version is accessible via a standard web browser, latest version is recommended.

On the configuration web-page the following settings and infos are available:

- Restart, reboot and Test alerts
- Status
- Network
- Fall detection
- Get-up detection for beds
- Velocity detection
- Location detection
- REST interface and Time zone
- Submit settings

Access the web interface with the default IP address 192.168.0.254

Password: **Mx2u8v**

4.1.1 Set-up

After mounting the sensor and setting up the network make sure that the sensor view is not occluded. E.g. the sensor is not covered by objects (e.g. curtains, lampshades, boxes in front of the bed etc.) and has a maximum range of approx. 7 meters. If possible, the sensor should be placed on the opposite side of the windows.

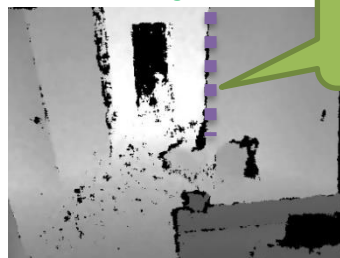
Align the sensor to the area in which events are to be detected and the bed is fully covered by the sensor field of view. Furthermore, the sensor has to be positioned and aligned horizontally and cover roughly 25% of floor space in order to enable the built in automatic calibration of the system.

Make sure that the sensor is aligned/mounted straight

Wrong



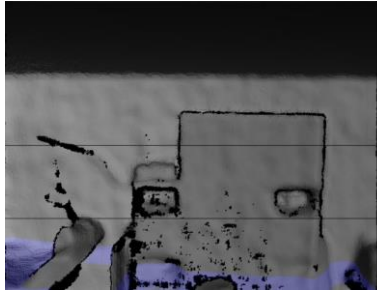
Right



Correct alignment

correctly aligned or too less present, in exceptional cases may still be successful, and the will not report an error. Note system may not function state.

Wrong



If the sensor is not floor space is the calibration fearless system that the fearless properly in this

If you have realigned the sensor, a restart is required in order to auto calibrate the sensor again.

Recalibration of the sensor will take 2-10 seconds, again make sure that the sensor is not occluded by persons or objects. Calibration was successful when the Status is marked “Active”. If calibration fails or any other issues arise the sensor displays the status “Inactive”. Start the setup process again, make sure the sensor is aligned properly and sufficient floor space is visible in the FoV.

Use the Restart Button in order to just restart the sensor software

Use the Reboot Button in order to restart the OS on the device.

The Test alert button is sending an alarm to the REST Interface in order for testing the interface to 3rd party systems.

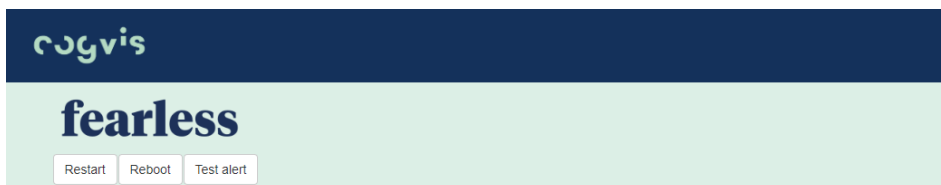


Figure 1: Boot and Test alert buttons

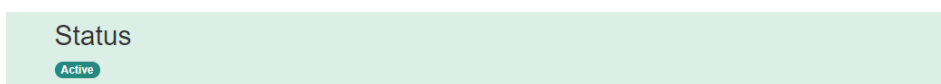


Figure 2: Status of Sensor "Active" - autocalibration successful and system is operating normally

4.2 Network settings

Default setting: DHCP enabled

The fallback IP address is 192.168.0.254

A NTP Server is recommended to be configured in order to guarantee correct and synchronized time stamps of alarms with 3rd party systems.



The screenshot shows a 'Configuration' window with a 'Network' section. It contains five settings, each with a label and a corresponding input field or checkbox:

Label	Value
Enable DHCP	<input type="checkbox"/>
IP Address	192.168.0.254
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
NTP Server	192.168.0.253

Figure 3: Network configuration

4.3 Configuration of alarm scenarios

Fearless on-premise has a built-in multiple person filter. In cases where more than one person is present in a room no alarms will be triggered.

4.3.1 Fall detection

Enable/disable fall detection on the sensor. The entire floor space is monitored for fallen down persons. Alarms are triggered as soon as a person is lying on the floor.

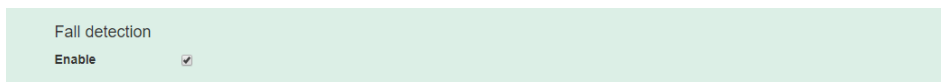


Figure 4: Enable fall detection

4.3.2 Getup detection

This feature allows the bed-out monitoring of a single bed in the sensor field-of-view.

There are 3 different ways to configure bed-out alarms:

- Stand up: receive alarms as soon as a person is out of bed and standing
- Sit up: receive alarms as soon as a person is sitting on the bed with feet outside of the bed
- Raise up: receive alarms as soon as a person is raising the upper body in the bed (note that certain sleeping habits can cause undesired alarms)



In order to define the alarm area, the bed has to be marked. Click “Set Location” and drag the red point roughly to the middle of the bed’s mattress. Fearless on-premise allows the configuration of one single bed per sensor. The x-y coordinates (unit is px, x=0/y=0 top left corner of the image in the web UI) are displayed in the web-UI as well for verification but cannot be edited manually.

Click the “submit” button at the end of the configuration page to save the new settings. Fearless on-premise will automatically configure the area of the bed (example see Figure 6: Example for marking the bed area no additional parametrization is required. Please note that in order to detect “Stand-ups” a small area surrounding the bed is also included in the getup alarm zone automatically.

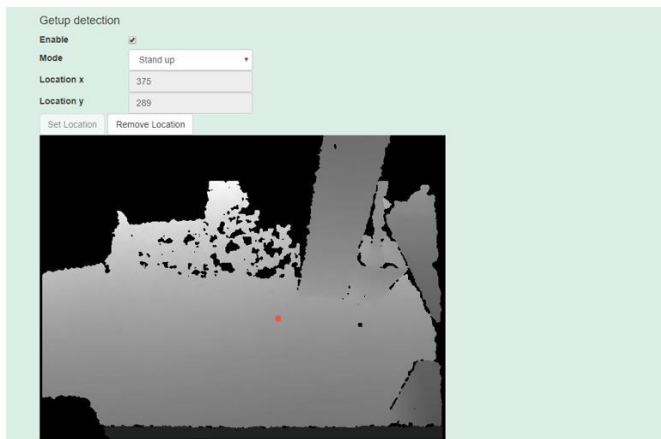


Figure 5: place the red dot center on the bed's mattress

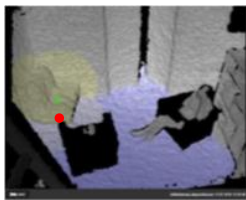


Figure 6: Example for marking the bed area

4.3.3 Velocity detection

Enable velocity detection in order to activate this feature covering the entire sensor field of view. Persons exceeding the maximum defined velocity (in m/s) over a predefined duration (in sec) will trigger alarms.

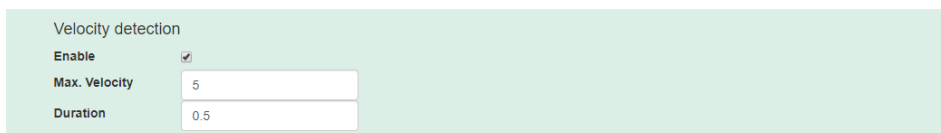


Figure 7: Configuration for velocity detection

4.3.4 Location detection

This feature allows to trigger alarms for 3 distinct areas in the sensor field of view. Each location is configured by defining the center position on the ground floor by dragging the corresponding dot in the image, the radius (in mm) and the duration (in sec) an object in the defined area has to occupy.

Various scenarios can be defined, e.g. leaving the room by positioning the detection area near the door and setting a short duration of 0,5 sec or longer occupancies in front of windows. Please note that any objects or persons will trigger alarms if the center (of the object) is within the defined area for the set duration.

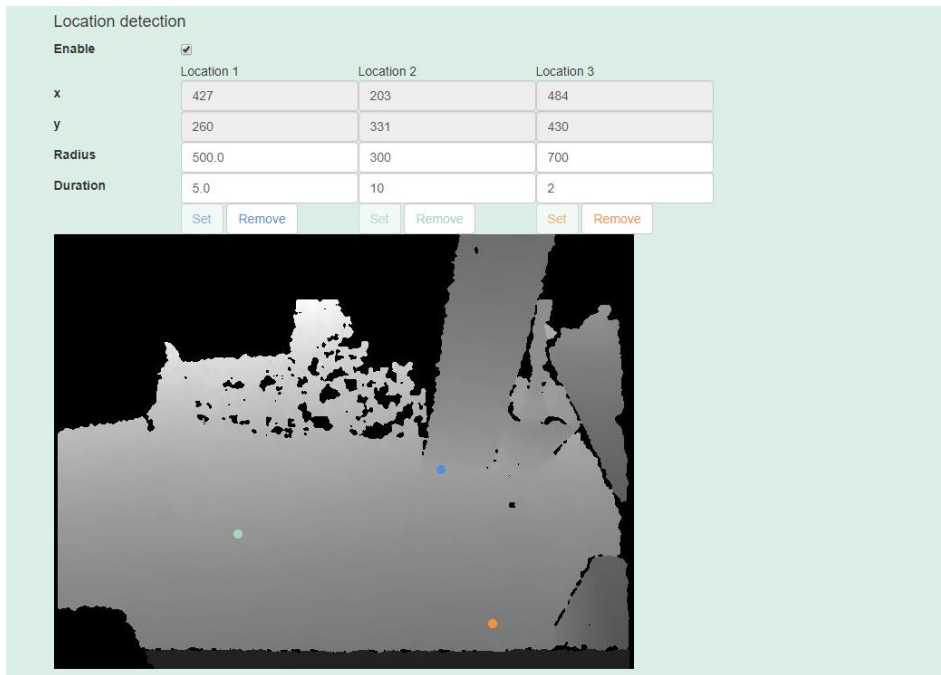


Figure 8: Definition of detection areas for location alarms

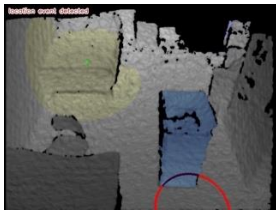
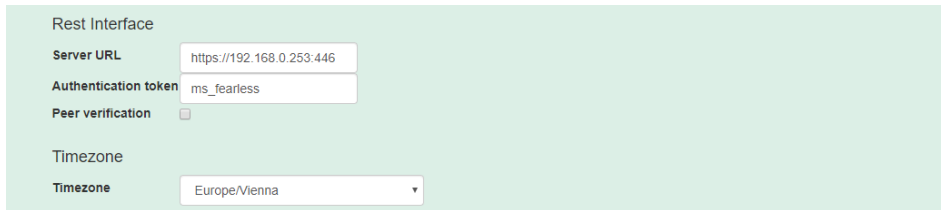


Figure 9: Example of a large object triggering a location alarm (red circle)

4.4 Other parameters

Define the IP address and token for the REST Interface in order to forward alarms to 3rd party systems. For more information please contact your reseller of fearless on-premise.



Rest Interface

Server URL

Authentication token

Peer verification ☐

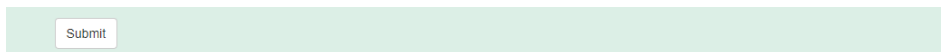
Timezone

Timezone

Figure 10: other settings

4.5 Saving your settings

In order to save any changes made in the configuration click the submit button at the end of the configuration web page.



4.6 FAQs

- What to do when moving the bed: with bed-out alarms activated please make sure that the bed configuration is still valid afterwards and the center of the mattress is still marked by the red dot. Moving the bed around with an active fearless system in the room can cause fall alarms.
- I don't have a bed but only a mattress on the floor: Mattresses on the floor can cause false fall alarms, particularly when not lying flat on the floor but partly propped at the wall.
- Nurses cause false alarms when working at the bed, e.g. changing bed sheets: When caregivers bend over residents or make the bed they can be detected as persons on the bed and report a stand-up or sit-up event. The system is not able to identify a person in any way and in certain instances (e.g. the resident is inactive or sleeping) the multiple person detection is not triggered thus causing this type of alarm.
- The velocity alarm is not triggered correctly: Please consider your settings (e.g. the duration the fast movement has to be maintained by the person) and that depending on the sensor field of view the person might be visible only for a very limited time span. Setting the duration too high might cause that the system cannot detect the incident.