

SGSE

Soluciones Globales de Seguridad Electrónica

IP PBX GRANDSTREAM UCM6510 PLUGIN

Installation and user guide

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1. Versiones del documento

Version	Date	Author	Version changes
1.0	11/2021	DBL	First version
2.0	12/2021	DBL	Incorporation of new functionalities: Users, areas, trees and switchboard events.
2.1	03/2023	IDP	Intercom configuration

2. Introduction

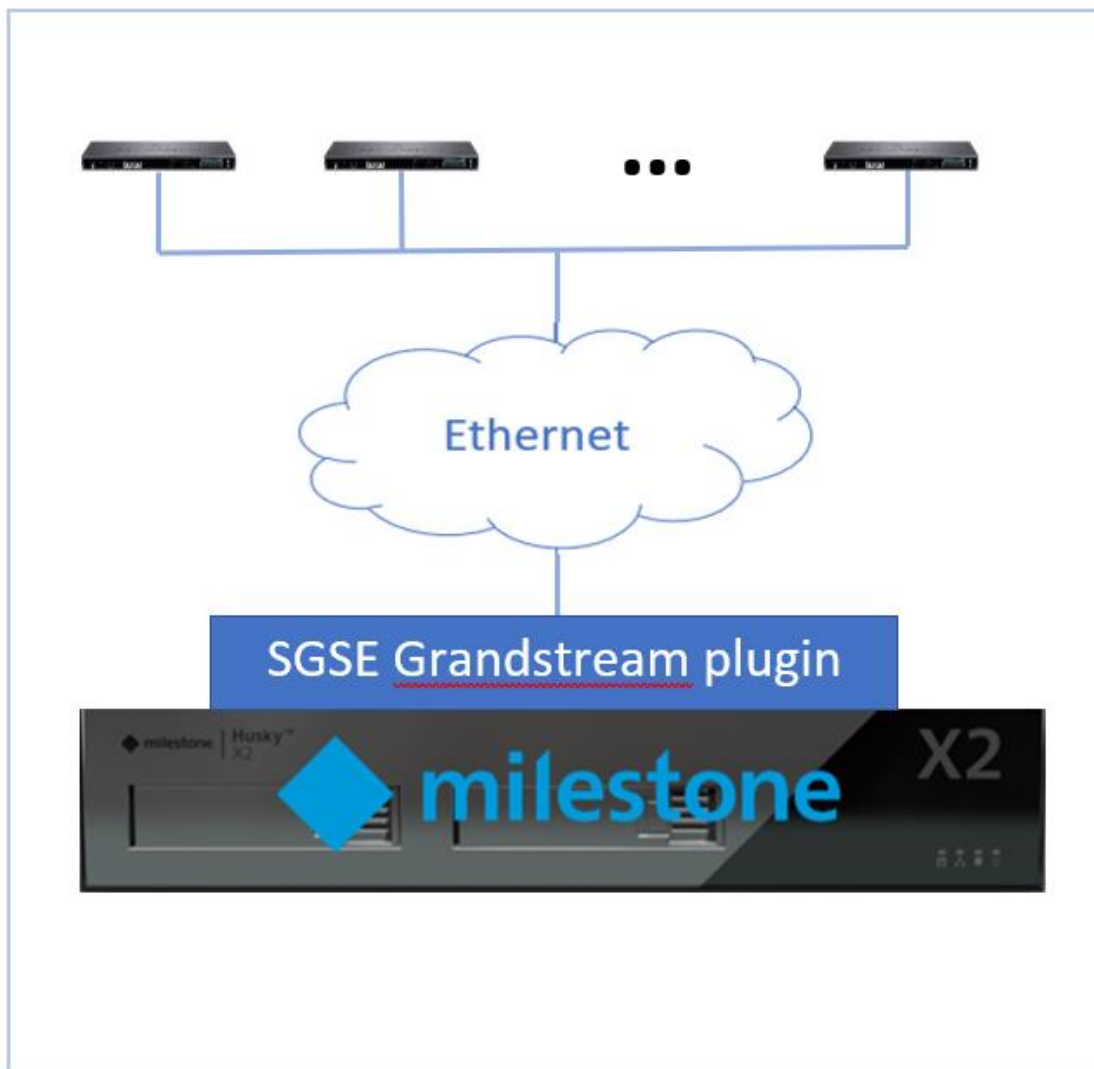
The objective of this document is to explain the installation, operation and use of the software solution called "GrandStream IP PBX Plugin".

This solution consists of a plugin that allows you to monitor and interact with the physical intercom/public address devices through the Grandstream UCM6510 IP PBX, from the user interface and the work environment of the [Milestone](#) platform.

In this way, the monitoring of the intercom/public address system is available together with the advantages of the VMS XProtect® for the automatic import of paging groups and extensions configured in the Grandstream central, allowing the reproduction of pre-recorded messages, the making of live speeches or calls between extensions, as well as the monitoring of events and alarms related to the playback of pre-recorded messages and live speeches, SIP device status monitoring, all from a single interface.

3. Solution architecture

The architecture of the solution is described in the following scheme:



Through the Ethernet network, the plugin connects with the switchboard to automatically import the paging groups and the extensions that are configured in the IP PBX Grandstream UCM6510. The Grandstream panel must be configured so that communication between the Grandstream switchboard and the plugin is possible, and it is possible to make status requests from the different extensions. The basic configuration required to work with the plugin will be described later in this document.

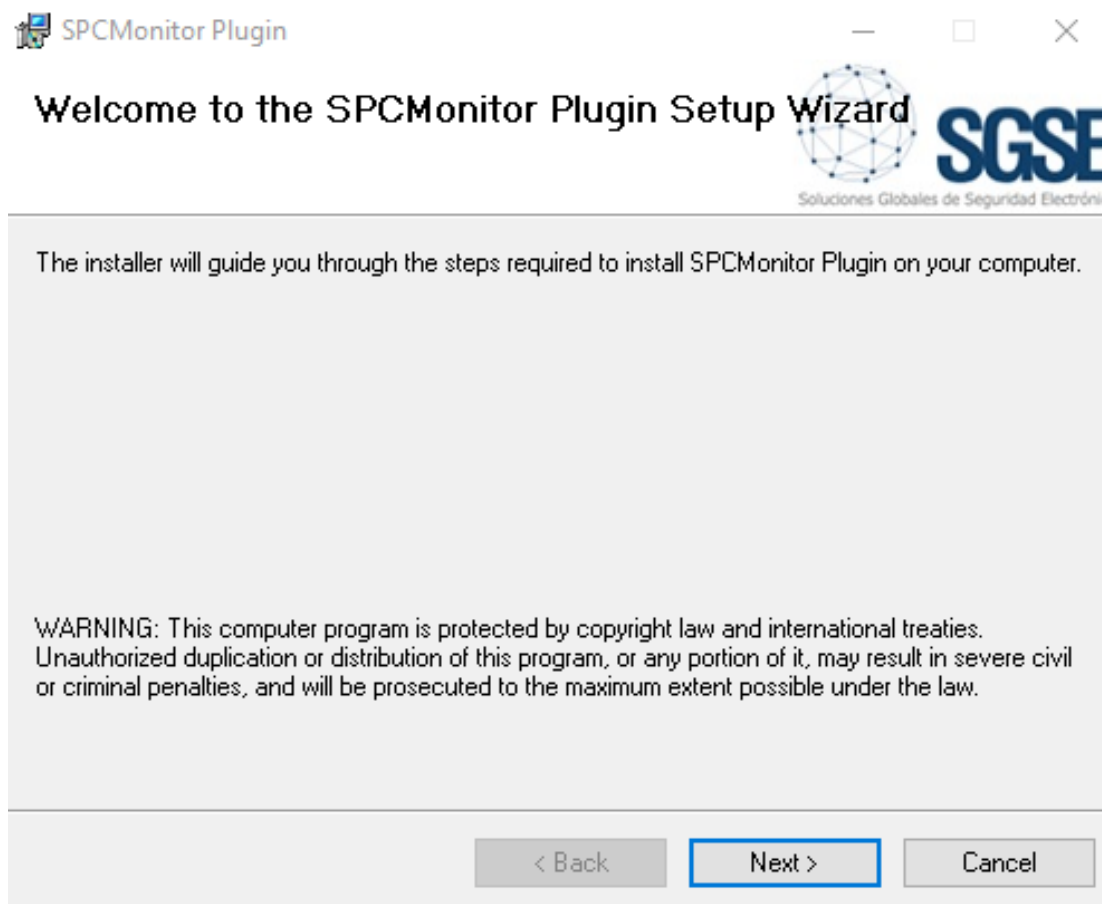
Once the communication has been established, the plugin imports the settings related to paging groups and extensions. The plugin can initiate communication with the switchboard to:

- Consult the existing paging groups and create the equivalent items in Milestone.
- Consult the existing extensions and create the equivalent items in Milestone.

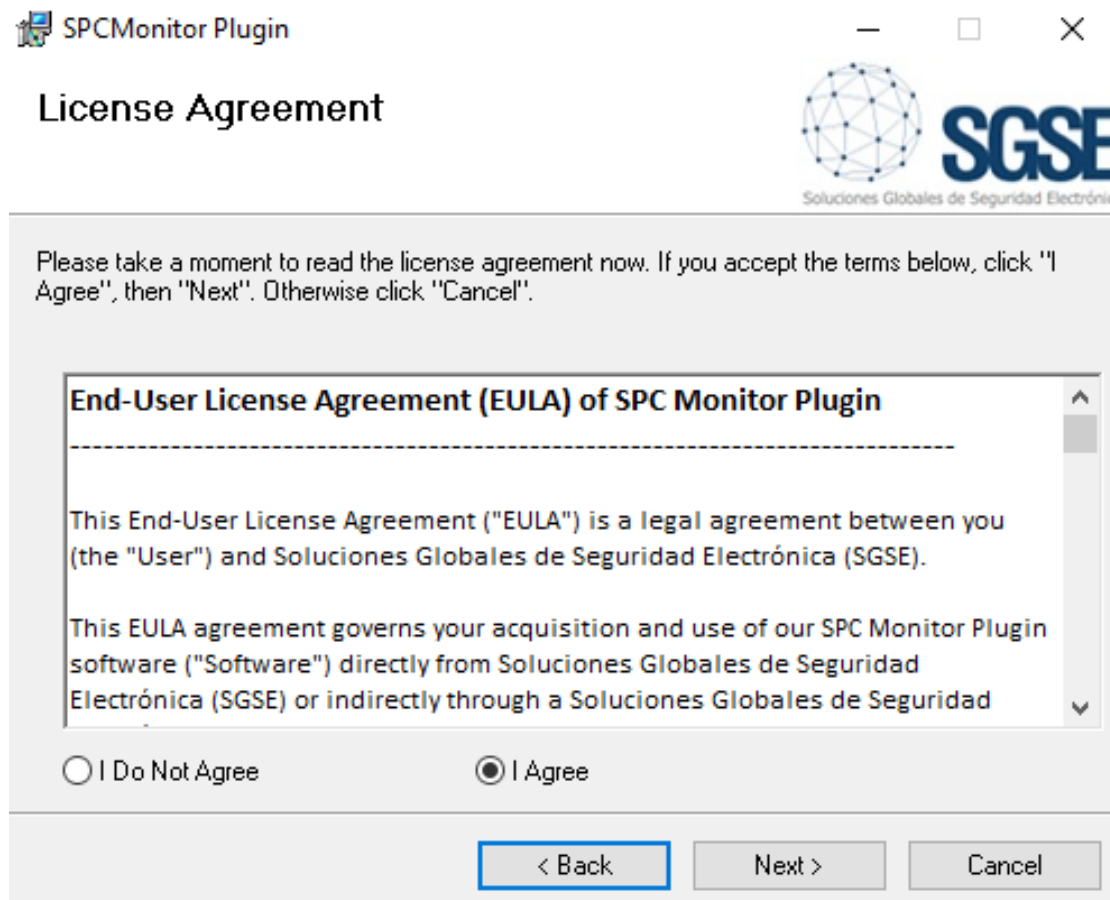
- Eliminate items in Milestone whose paging group and/or extensions do not exist in the intercom/public address center.
- Send pre-recorded message playback commands
- Send commands to start live speeches
- Send call making commands between two extensions
- Request the status of elements (extensions)
- Generate events related to extensions whose status is “Available” or “Unavailable”
- Generate events related to the switchboard whose status is “Available” or “Unavailable”
- Import, create and delete locations or areas for extensions
- Import, create and delete extensions per user
- Associate extensions with locations or áreas
- Associate extensions with Milestone users
- Configure the type of SIP client of each extensión
- View switchboard states and extensions on the map
- Monitoring extension states grouped by:
 - Paging group
 - Location or area

4. Installation

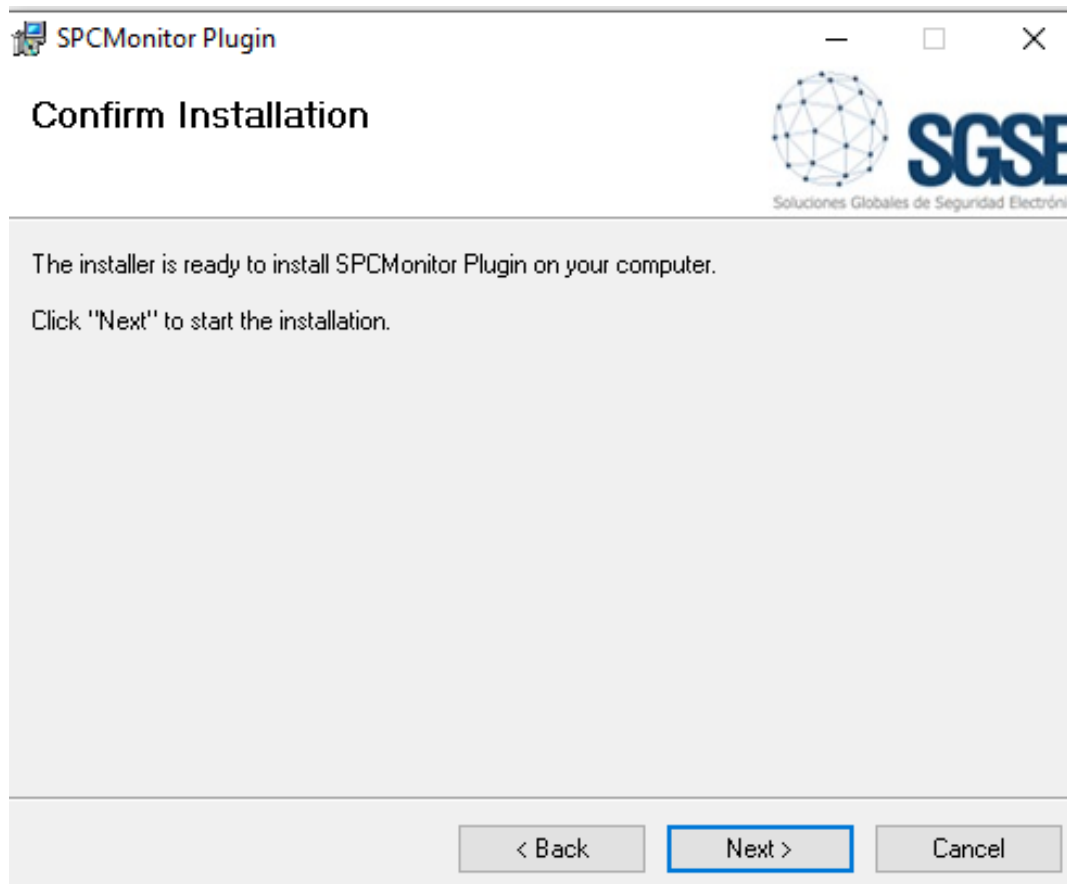
To install the plugin, simply run the "Grandstream Installer.msi" installer provided by SGSE or downloaded from the Milestone Marketplace with administrator permissions. The process is automatic. Through the different screens of the installer, we will only have to accept the End User License Agreement, a necessary condition to be able to use the plugin.



Click "Next >" to start the installation process.

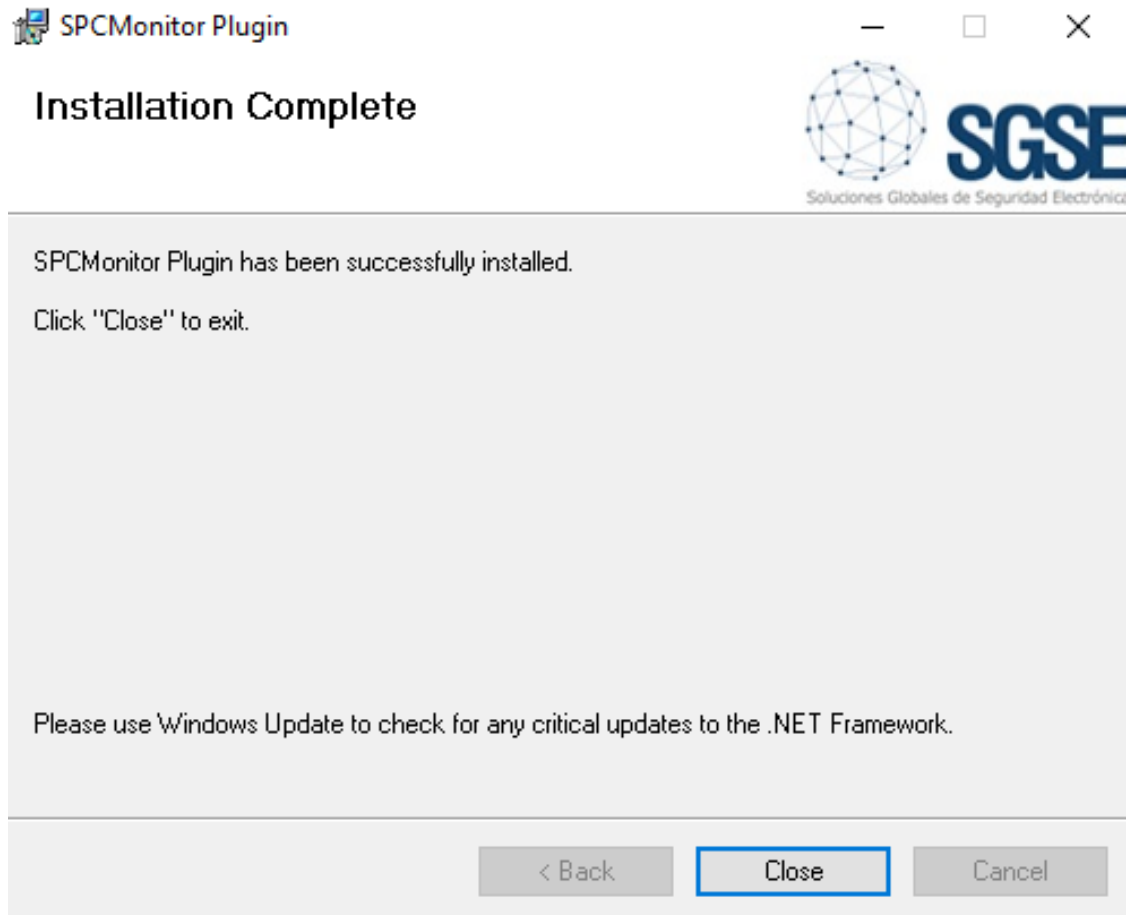


Please read and accept the End User License Agreement to install the plugin.



Click "Next >" to continue and install the plugin files.

If Windows *User Account Control* is enabled, allow the installer to continue with the installation.



Once the process is finished, you can press "Close". The plugin is already installed.

5. Licensing

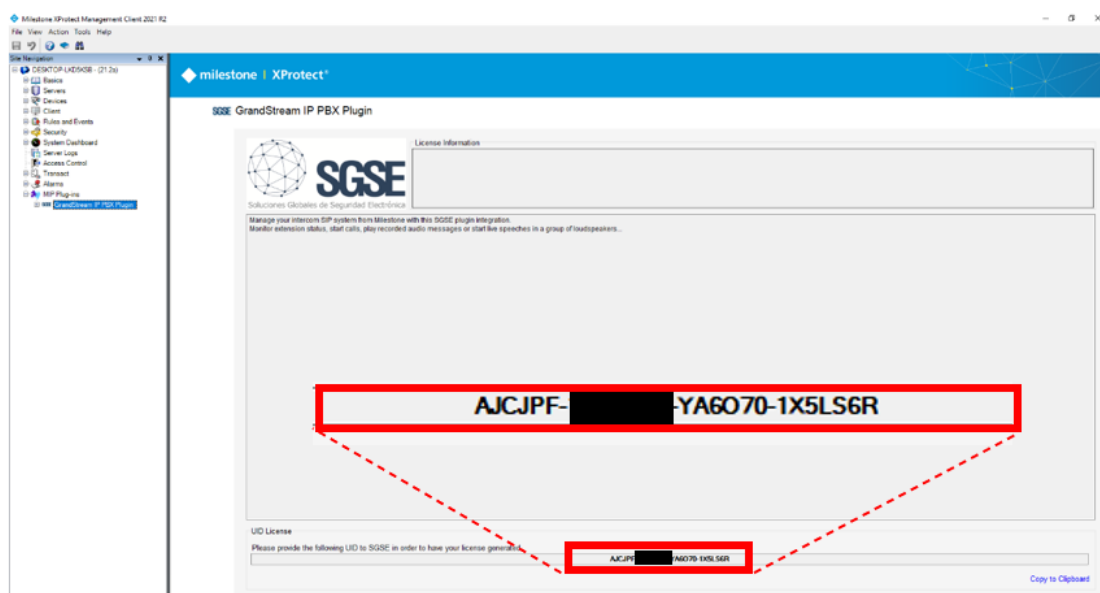
The plugin needs a license to run. Each switchboard and number of extensions must be licensed. These licenses are generated by SGSE. The procedure to obtain the license file corresponding to the purchased license is described below.

A. Get the UID

In order to generate the license file, you will need to provide SGSE with the corresponding UID. This UID is a unique identifier that the license is associated with.

To get this Code, run the XProtect® Management Client after installing the plugin and go to the plugin options in the side menu (*MIP Plugins > GrandStream IP PBX Plugin*).

On this screen, when the plugin is not licensed, the corresponding UID will appear.



Please provide this UID to SGSE so they can generate your license.

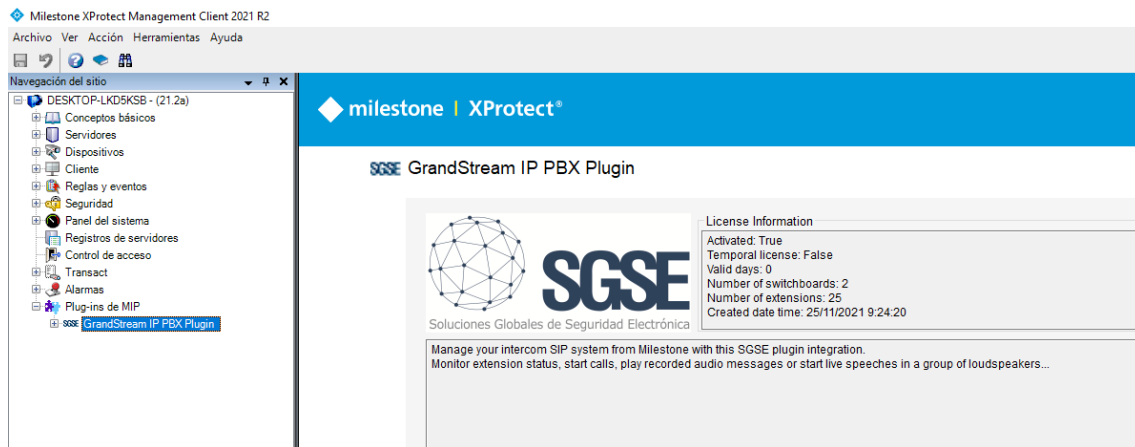
B. Licence application

Copy the license file "*Licencia.lic*" to the plugin directory. The default path is:

C:\Program Files\Milestone\MIPPlugins\GrandStreamMonitor\

After the license is applied, the Event Server needs to be restarted for the changes to take effect and you can use the plugin.

Once the license is applied, the Management Client interface will display the license information:



C. Client stations (Smart Client only)

To obtain the UID on a machine where the XProtect® Management Client configuration application is not found and only the Smart Client is available, it will be necessary to use the SGSE “UID Generator” tool.

Consult with SGSE to obtain that tool.

6. Configuration

The plugin has been designed to simplify the configuration process as much as possible, so that commissioning is as easy as possible for the installer.

6.1 Plugin configuration

Register a switchboard

The procedure to register a switchboard in Milestone is very simple.

All you have to do is assign a name to the switchboard, to identify it in the system, and configure the necessary parameters to allow the plugin to connect to the switchboard via Ethernet. The connection is established by the plugin with the Grandstream switchboard through some necessary parameters that allow communication to be established; these must coincide with the configuration made in the control unit. They are the following:

- Local IP address / WAN IP address / domain name of the PBX to which the plugin has to establish the connection.
- Local or WAN TCP port of the PBX to which the plugin establishes the connection.
- Username that allows to use the functionality of the switchboard through the API.
- The password of the user that allows to use the functionality of the switchboard through the API.
- Default calling extension. When a Milestone user does not have a configured extension, this value will be used as the calling extension.

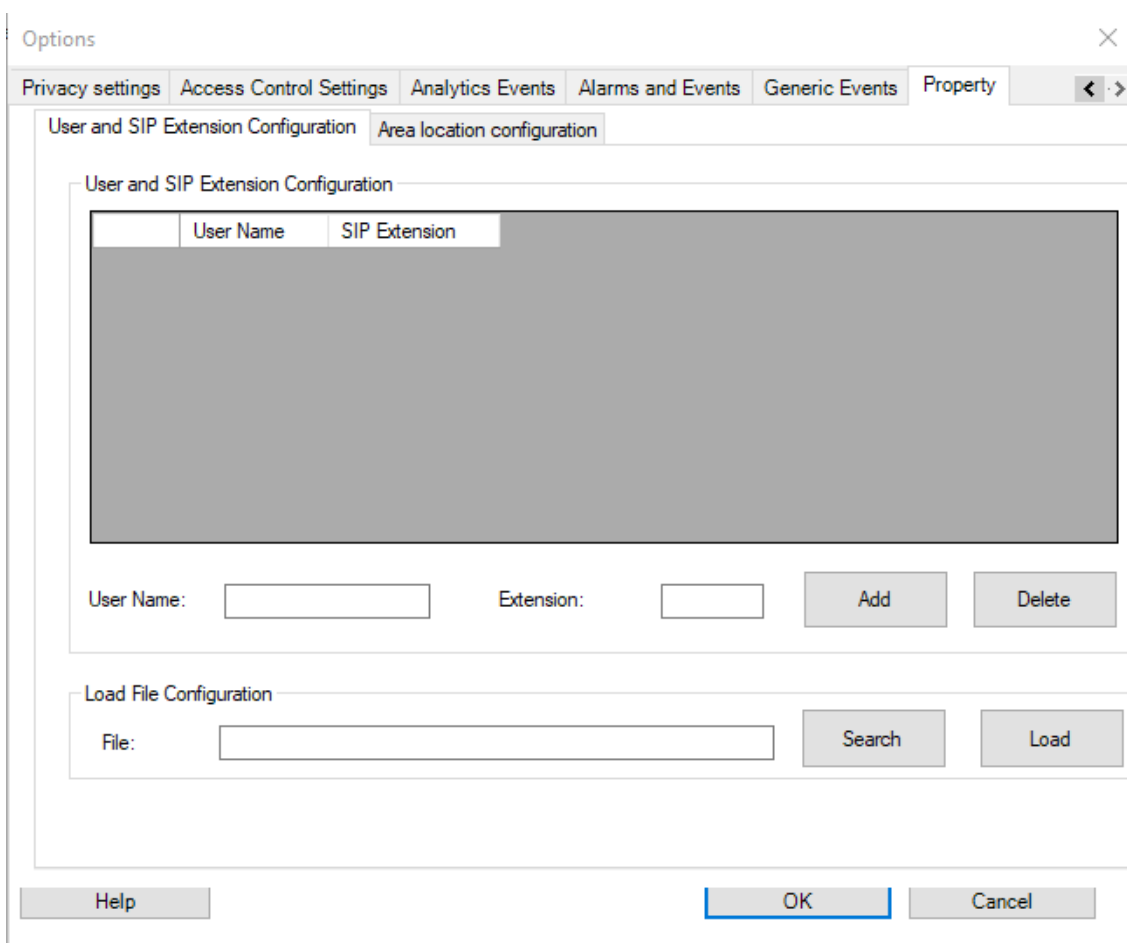
The plugin will automatically create in Milestone the items corresponding to the switchboard, the paging groups and all the existing extensions in the IP PBX Grandstream UCM6510. These items will be accessible from the Management Client interface and from the plans in the Smart Client.

You can see the status of the process in the Milestone MIP logs.

Default configuration of users and extensions

The plugin allows the configuration of the association between the users that connect to the Smart Client and their extensions to make calls.

From the Management Client, go to the Tools → Options menu and locate the Property tab, then select the User Configuration and SIP Extension tab.



Below the listing, it is possible to manually create new mappings between usernames and extensions. To do this, you need to enter the values and press the Add button.

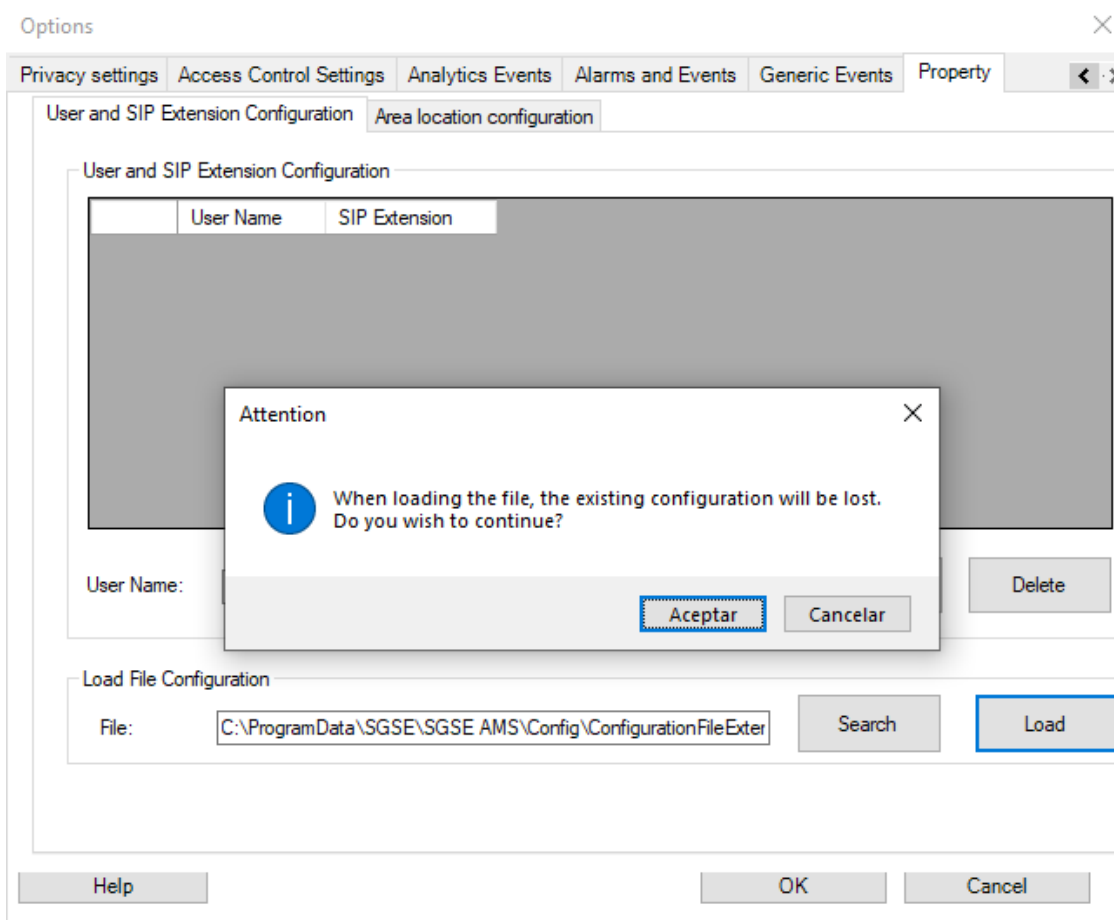
However, there is a faster option and it consists of loading the data through a text file. The content of the file must always comply with a configuration pattern that must meet the following characteristics:

- Each line correspond to a user.
- Username and extension must be separated by the colon character (":").
- Each line must end with the semicolon character (";").

So the appearance of each definition line of the user-extension pair will be:

`<username>:<extension number>;`

To do this, in the "Load configuration file" section, we will press the Search button and locate the configuration file, select it and finally press the Load button. A data update confirmation notice will be displayed:



Pressing the OK button will load the data from the file.

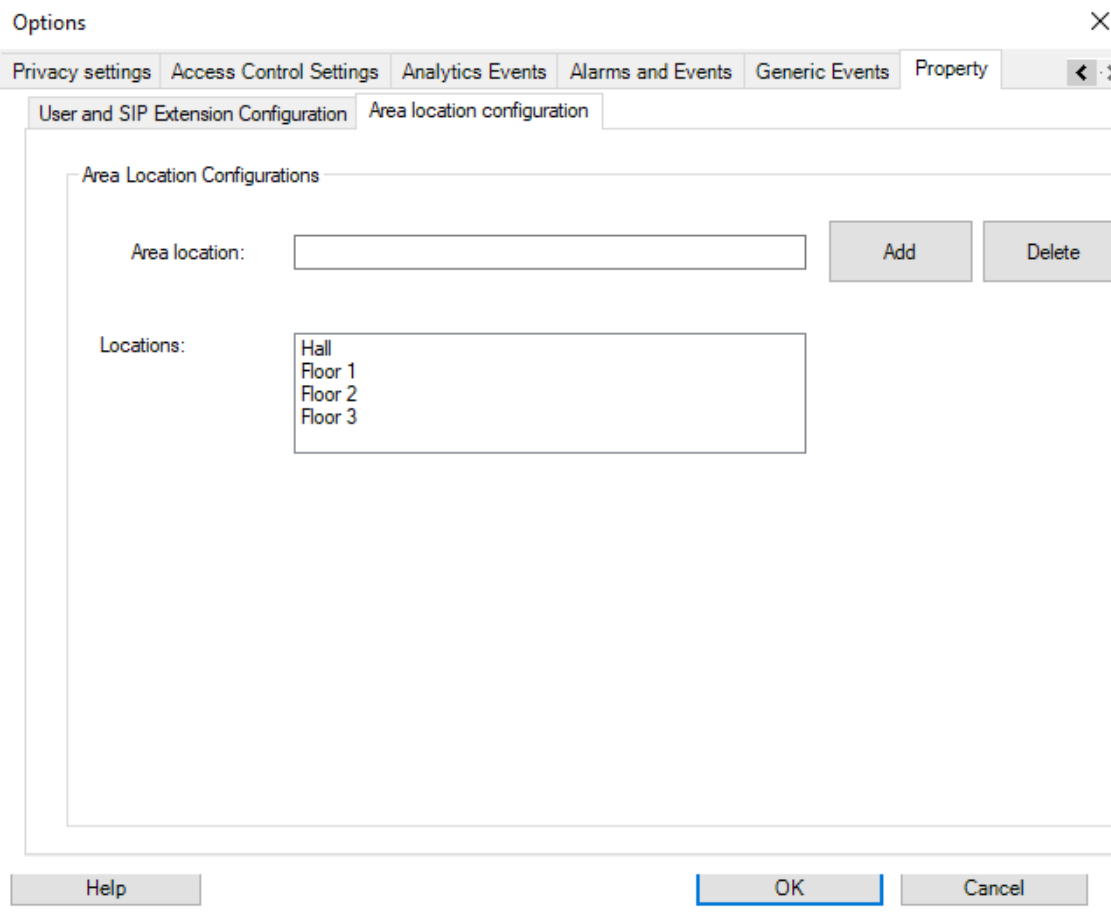
NOTE: When loading a file, all previous configurations will be lost and will be overwritten by the contents of the file.

To complete this section, we will press the OK button to close the window.

Configuration of location areas

The plugin allows the configuration of areas to visually organize the elements.

From the Management Client it is necessary to go to the *Tools* menu → *Options* and locate the *Property* tab → *Location Areas Configuration*.



On the list, it is possible to manually create new locations. To do this, you need to enter the name and click the Add button.


To complete this section, we will press the OK button to close the window.


Paging group types on the map and in the tree

There are two types of paging group, one for playing pre-recorded messages and the other for making live speeches; each of them will be shown with a representative icon on the map and in the tree so that the action that the operator can perform from each of them through the Smart Client map or from a tree is as clear as possible.

The available paging group types are as follows:



- Play pre-recorded messages
- Give live speeches

Icon	Description
	Play. Represents the paging group that allows the playback of pre-recorded messages.

	<p>Voice. Represents the paging group that allows live speeches to be made.</p>
---	--

From the tree, through a button, the playback of pre-recorded messages and/or live speeches is allowed. In both cases, an event will be generated, and the icons of the extensions involved will be updated both in the tree and on the map.

The following table shows the type of icon associated with each button depending on the paging group:

Icon	Description
	<p>Play. Represents the paging group that performs the playback of prerecorded messages.</p>
	<p>Microphone. Represents the paging group that makes the speech live.</p>

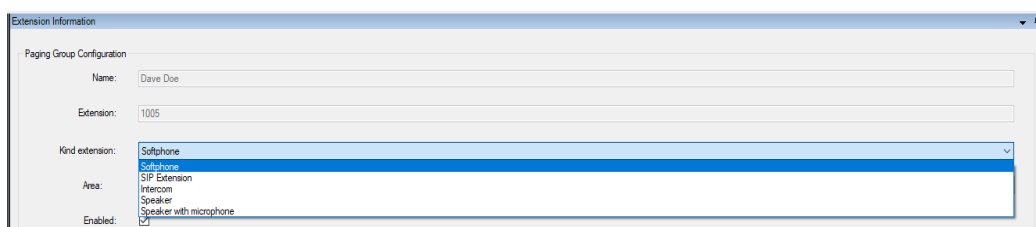
Map and tree extension types

The plugin allows you to select the type of extension used to play pre-recorded messages, make live speeches and make calls between extensions. This will cause the icon of the extension to change, however, the action that the operator can perform from each of them through the Smart Client map does not change.


The available extension types are as follows:





- SIP Phone (by default)
- Softphone
- Intercom
- Speaker
- Speaker with microphone

Once an extension is selected, the plugin allows the extension type to be assigned using a drop-down list:

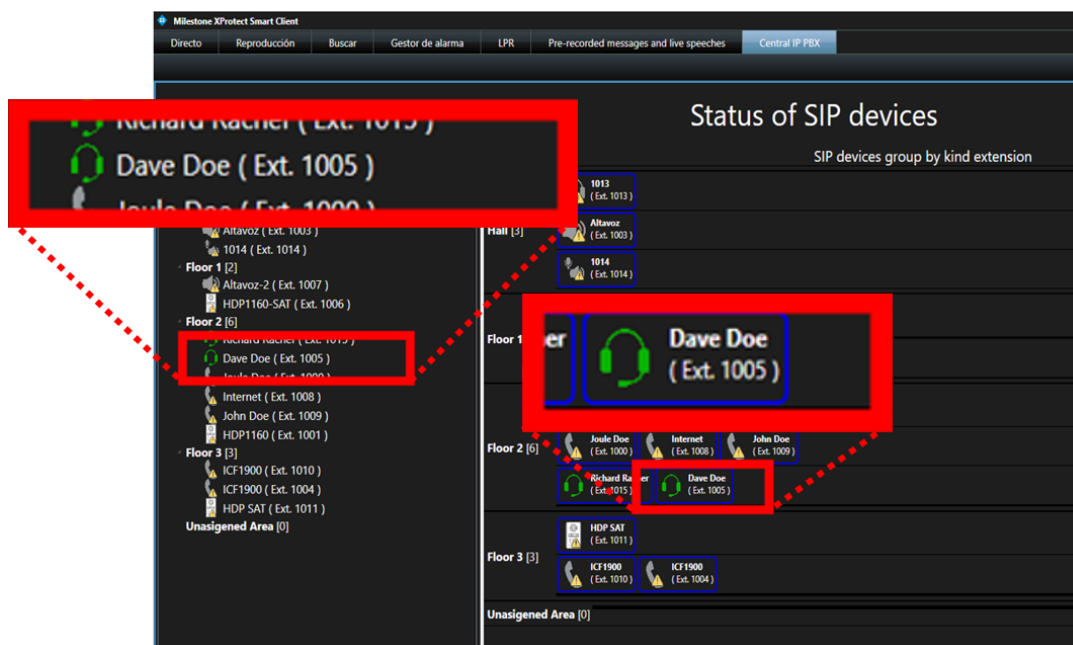
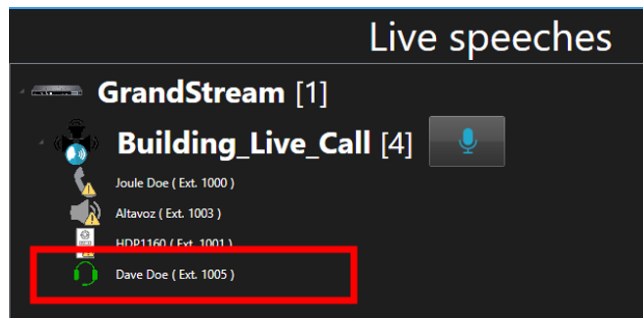
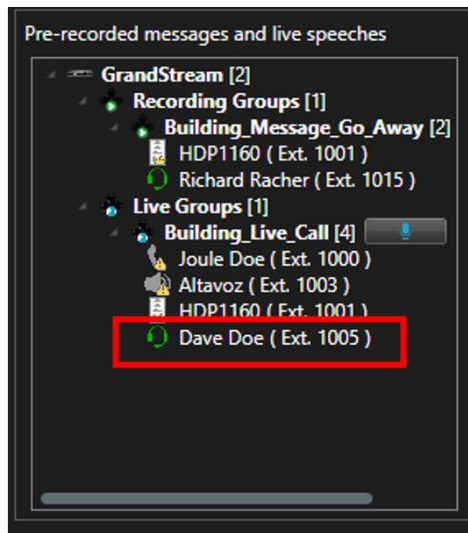


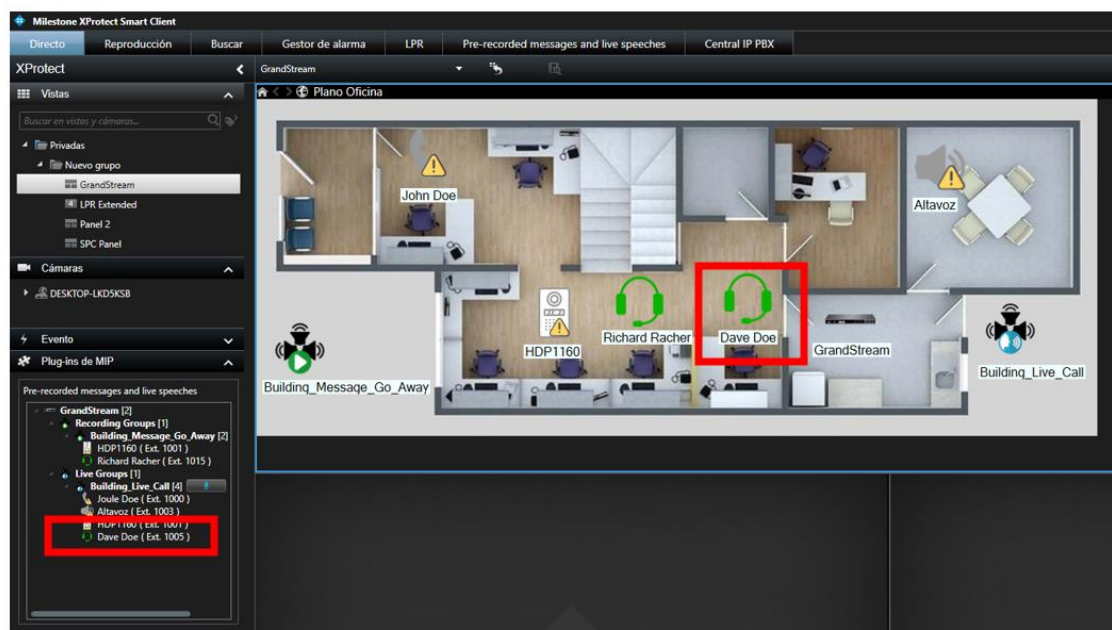
Below is the legend with the icon types corresponding to each type of extension:

Icon	Description
	<p>SIP Phone. Represents the SIP phone extension type.</p>

	Softphone. Represents the softphone extension type.
	Intercom. Represents the intercom extension type.
	Speaker. Represents the speaker extension type.
	Speaker with microphone. Represents the speaker with microphone extension type.

Once the extension is configured, the icon associated with the type of extension will be displayed on the map and in the tree:





Intercom configuration

For intercom extensions, you can define the connection parameters to enable the option of opening the intercom from the map.

On the Door System Settings > Basic Settings screen of the intercom configuration website, the following parameters must be configured:

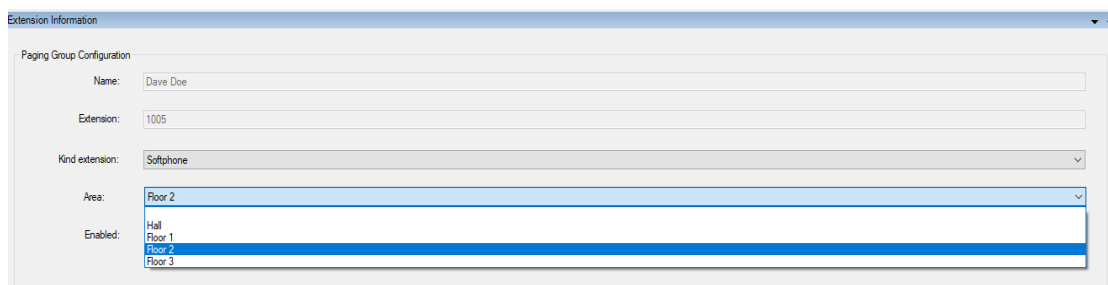
- **Enable HTTP API Remote Open Door** with value “Challenge+Response Authentication”
- **Remote PIN to Open Door** with a numeric pin to open the door.

In Milestone, the parameters to be filled are the following:

- Name of the intercom
- Extension of type *Intercom* that corresponds to this configuration.
- Url address of the intercom, this address is the same one used to configure the intercom.
- Username
- Password
- Remote pin, the pin that was specified in the *Remote PIN to Open Door* option.

Location configuration

Once the location areas or zones have been created, the plugin allows their assignment to each of the existing extensions through a drop-down menu. If none of the available options is selected, the value “**Unassigned area**” will be assigned:



Extension Information

Paging Group Configuration

Name: Dave Doe

Extension: 1005

Kind extension: Softphone

Area: Floor 2

Enabled: Floor 2, Floor 1, Floor 3

Alarm definition

This plugin adds some event definitions to Milestone, corresponding to the events that are sent from the paging groups for playing pre-recorded messages and from the paging groups for live speeches.

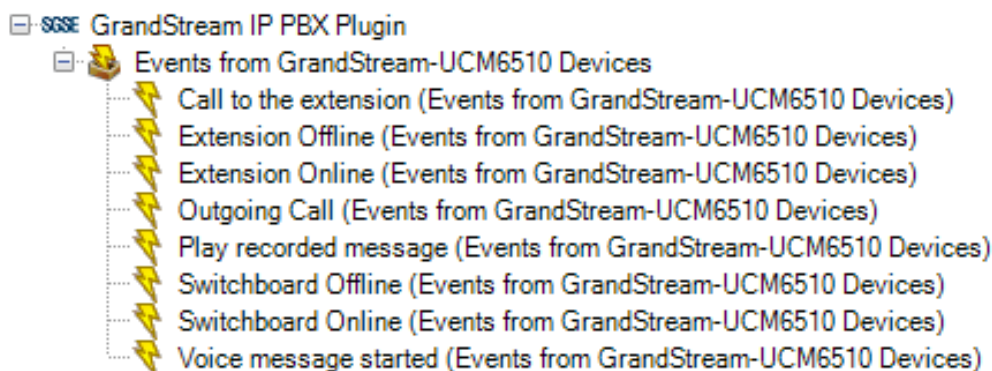
Each event can be defined in Milestone as an alarm. Simply go to the “*Alarm Definitions*” section in the Management Client, create a new alarm whose trigger event is an event from the “*Grandstream-UCM6510 Events*” group, and define the items for which you want this event to be considered an alarm.

Rules: trigger event

These events can also be used to trigger Milestone rules. To do this, simply create a new rule and select one of the events added by the plugin as the trigger event.

The events currently supported by the GrandStream IP PBX plugin are:

- Playback of pre-recorded message
- Live speech
- Call to Extension (making calls between extensions)
- Outgoing call from an intercom (pressing an intercom button)
- Connectivity loss detection with the switchboard
- Connectivity recovery detection with the switchboard
- Connectivity loss detection in extensions
- Connectivity recovery detection in extensions

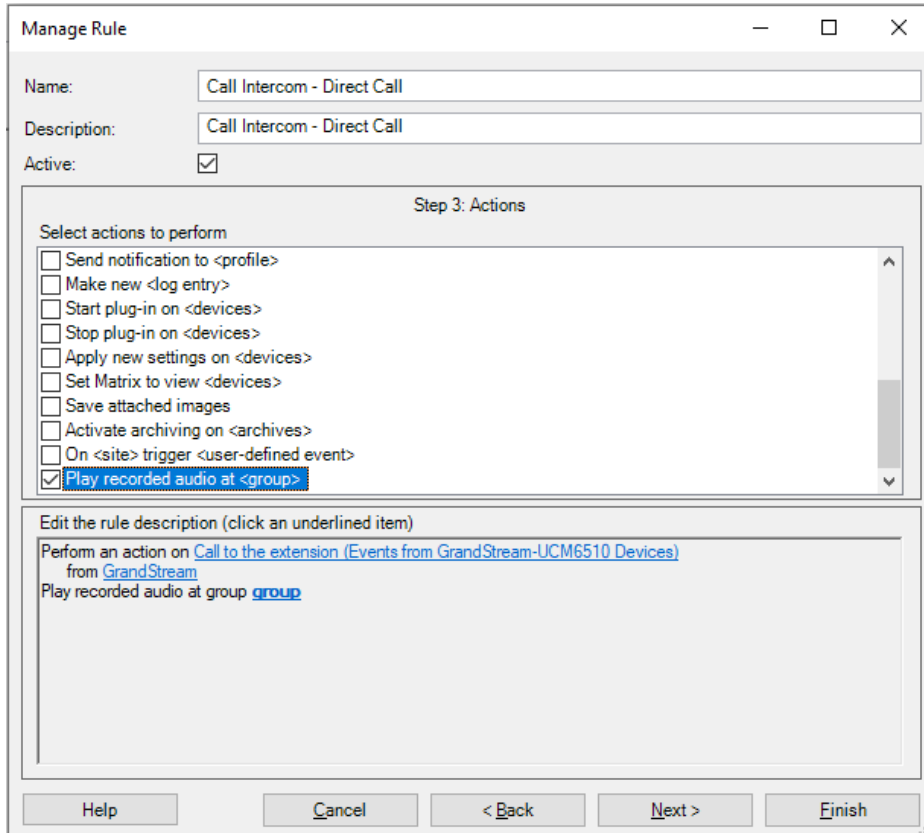


Rules: actions

With the actions defined by the plugin, Milestone can interact with the paging groups when a certain rule is triggered.

Rules can trigger the following actions on paging groups:

- Play Audio for playback of a pre-recorded message.
- Play Audio for a live speech.



Manage Rule

Name:

Description:

Active:

Step 3: Actions

Select actions to perform

- Send notification to <profile>
- Make new <log entry>
- Start plug-in on <devices>
- Stop plug-in on <devices>
- Apply new settings on <devices>
- Set Matrix to view <devices>
- Save attached images
- Activate archiving on <archives>
- On <site> trigger <user-defined event>
- Play recorded audio at <group>

Edit the rule description (click an underlined item)

Perform an action on [Call to the extension \(Events from GrandStream-UCM6510 Devices\)](#)
from [GrandStream](#)
Play recorded audio at group [group](#)

Buttons: Help, Cancel, < Back, Next >, Finish

7. Functionality

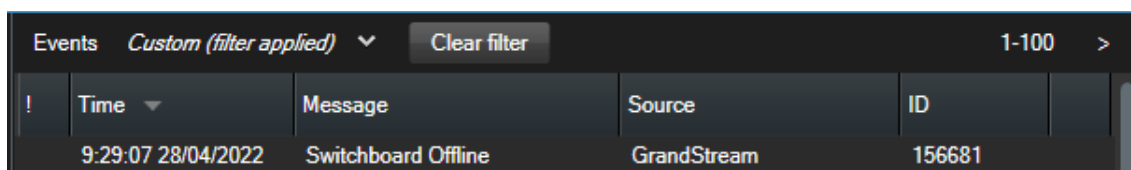
The “GrandStreamMonitor” plugin allows you to monitor and interact with the physical intercom/public address devices (SIP phones, intercoms, softphone, speakers, or speakers with microphone) through the Grandstream UCM6510 IP PBX. All interaction is done through the standard XProtect® user interface, the Smart Client.

The operator can send commands to:

- a) Playback groups of pre-recorded messages
- b) Groups of live speeches
- c) Calls between extensions

A. Event and alarm viewer

From Milestone's generic alarm and event viewer, you can see and manage the alarms and events that arrive from the playback groups and/or live speeches, as well as from those extensions that are disconnected from the switchboard.

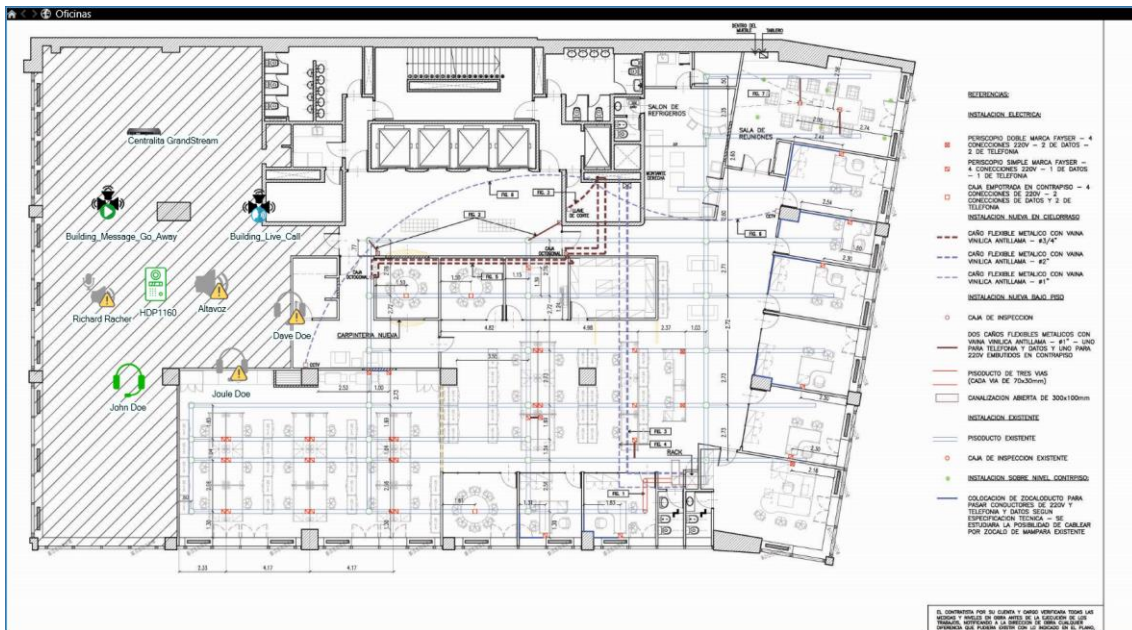


Events	Custom (filter applied) ▼	Clear filter	1-100 >	
!	Time ▼	Message	Source	ID
	9:29:07 28/04/2022	Switchboard Offline	GrandStream	156681




B. Maps



The icons corresponding to the switchboards, pre-recorded message playback groups, live speech groups and the different types of extensions (SIP phones, intercoms, softphones, speakers and speakers with microphone), all of them connected to the Grandstream UCM6510 IP PBX central can be added to XProtect® maps.


The icon of each paging group and each extension will show the status of the element according to the color legend shown below.








The legends corresponding to the different switchboard, paging group and extension icons shown on the map are detailed below:

Icon	Description
	Idle. Represents the switchboard when it is available (connected).
	Unavailable. Represents the switchboard when it has lost connection.
	Deactivated. Represents the switchboard when it is deactivated.

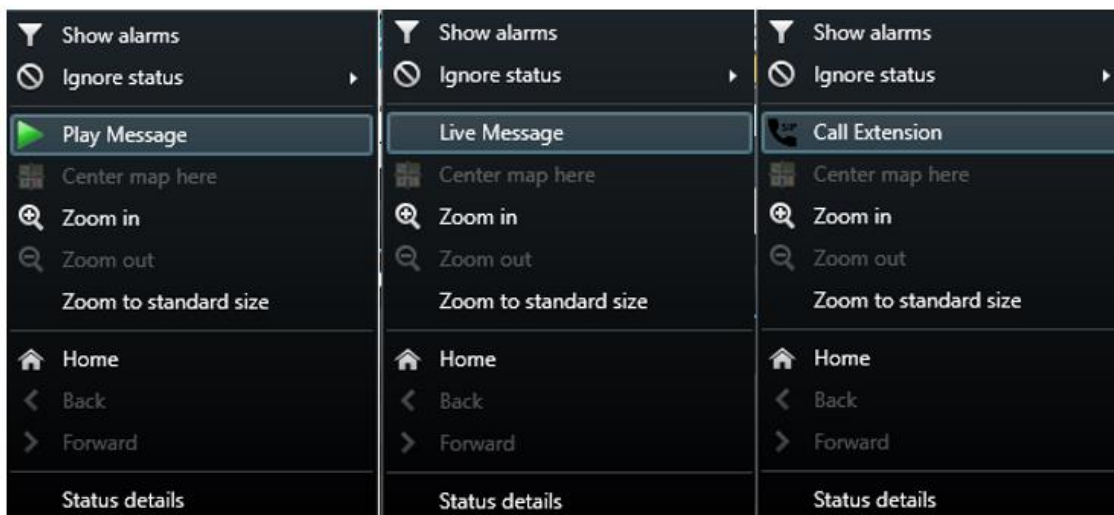
Icon	Description
	Play. Represents the paging group that allows the playback of pre-recorded messages.
	Voice. Represents the paging group that allows live speeches to be made.

Color	Icon	Description
Green		Available. The extension is available and there is no problem. DeviceOnline events will be triggered when the connection is recovered.

Orange		In use. The extension is in use.
Red		Busy. The extension is busy for some reason.
Blue		Ringin g. The extension is receiving a call.
Grey		Disconnected. The extension is disconnected from the exchange. DeviceOffline events will be fired.
Grey		Not available. The extension is not available.

* The same color logic applies to icons associated with other extension types.

In addition, it allows you to interact with paging groups and extensions through the context menu (secondary mouse button).



In this way, it is possible:

- Map
 - Play pre-recorded messages from a paging group.
 - Make speeches live from a paging group.
 - Make calls between extensions.

C. Connection status monitoring

Through Smart Client, the plugin allows monitoring the connectivity status of the Grandstream UCM6510 intercom/public address switchboard.

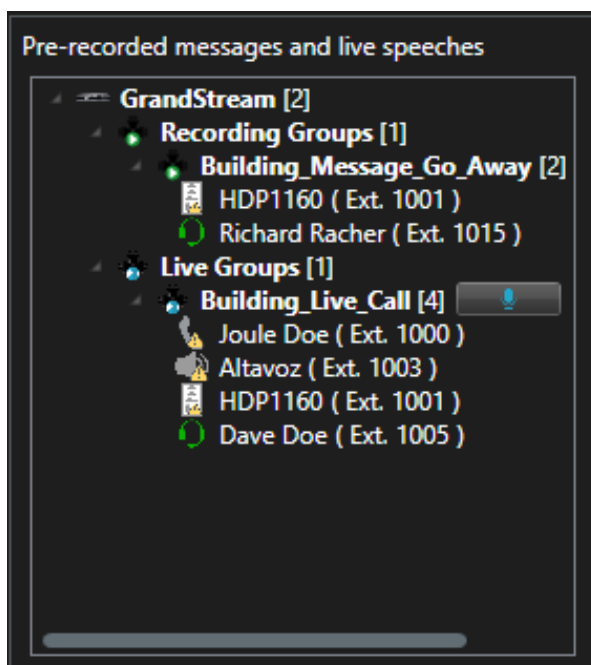
When the loss of the connection with the switchboard is detected, automatic reconnection attempts are made, in the event that connectivity cannot be recovered, an "Switchboard Offline" event occurs, the icons of the disconnected switchboard will be displayed on the map, the icons of all extensions will turn offline and an "Extension Offline" event will be

triggered for each of them. The same will happen with the states of the icons shown in the trees and in the list.

After the recovery of the connection with the switchboard, a "**Switchboard Online**" event will occur, the icons of the connected switchboard will be shown on the map, the icons of all the extensions will change to connected and an "**Extension online**" event will be triggered for each of them. The same will happen with the states of the icons shown in the trees and in the list.

D. Side tree "Pre-recorded messages and live speeches"

Through Smart Client and located at the bottom left of the screen there is a section with the title "**Pre-recorded messages and live speeches**", in it the plugin allows you to display the information of the different paging groups and the extensions that are configured in the switchboard:



Next to the name of the switchboard, a number is displayed that indicates the number of logical levels of grouping of paging groups that are configured in the plugin. In this case, between the switchboard and the paging groups there are two intermediate logical levels:

- **Recording Groups:** Groups the paging groups that allow the playback of pre-recorded messages.
- **Live Groups:** Groups the paging groups that allow live speeches to be made.

Next to the name of the paging group, a number is shown that corresponds to the number of extensions that are configured in the switchboard for each of these paging groups. In addition, a button is shown that, depending on the type of paging group, allows the playback of pre-recorded messages and/or live speeches.

Once the button associated with each paging group is pressed, the corresponding event is generated, the states of all the affected extensions are updated; these state changes will be reflected on the map, in all the trees and in the list.

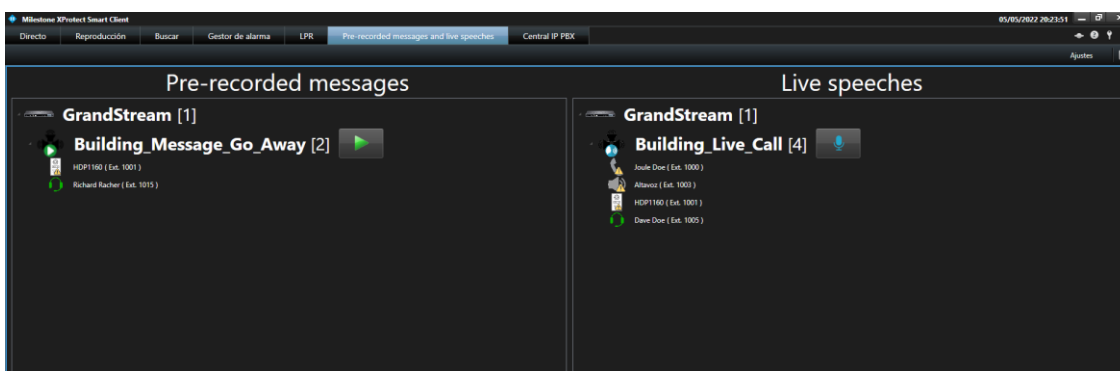
Once the playback of the pre-recorded message and/or the live speech is finished, the states of the icons of the affected extensions will be updated both on the map and in the different trees and in the list.

E. Tab “Pre-recorded messages and live speeches”

Through Smart Client and located in the "**Pre-recorded messages and live speeches**" tab, the plugin allows you to display the information of the different paging groups and the extensions that are configured in the switchboard.

This information is displayed by two trees. In each tree, the starting point will always be a switchboard type element. Next to the name of the switchboard, a number is displayed that informs the user of the number of paging groups that are configured in the switchboard. Next to the name of a paging group there is a number that indicates the number of extensions assigned to it, and next to it there is a button from which it is possible to play a pre-recorded message or a live speech. Under each paging group, the different extensions they have configured are shown.

The tree on the left “**Pre-recorded messages**” shows the hierarchical organization of the paging groups that allow the playback of pre-recorded messages. The tree on the right “**Live speeches**” shows the hierarchical organization of the paging groups that allow live speeches to be made:



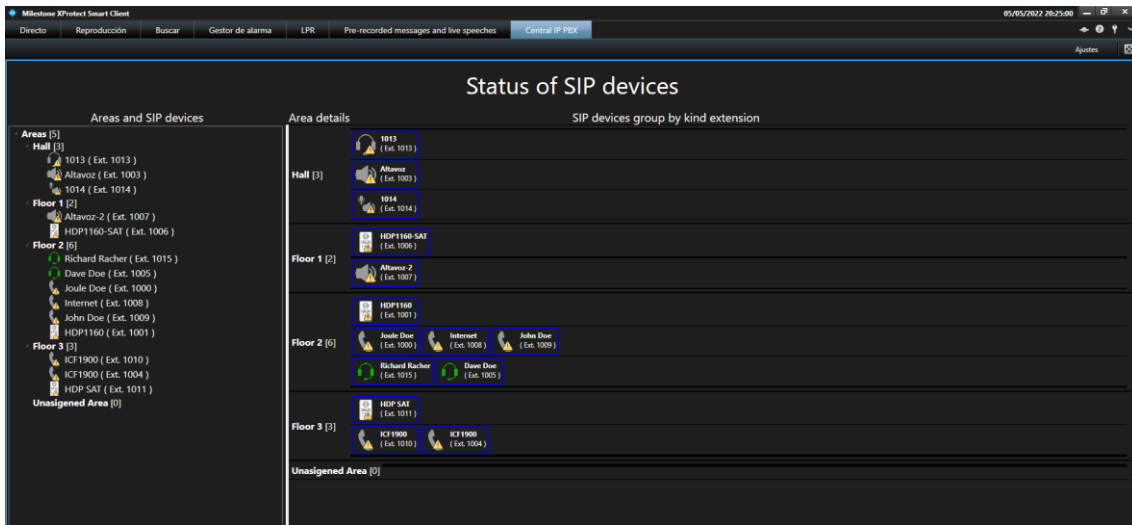
Once the button associated with each paging group is pressed, the corresponding event is generated, the states of all the affected extensions are updated; These state changes will be reflected on the map, in all the trees and in the list.

Once the playback of the pre-recorded message and/or the live speech is finished, the states of the icons of the affected extensions will be updated both on the map and in the different trees and in the list.

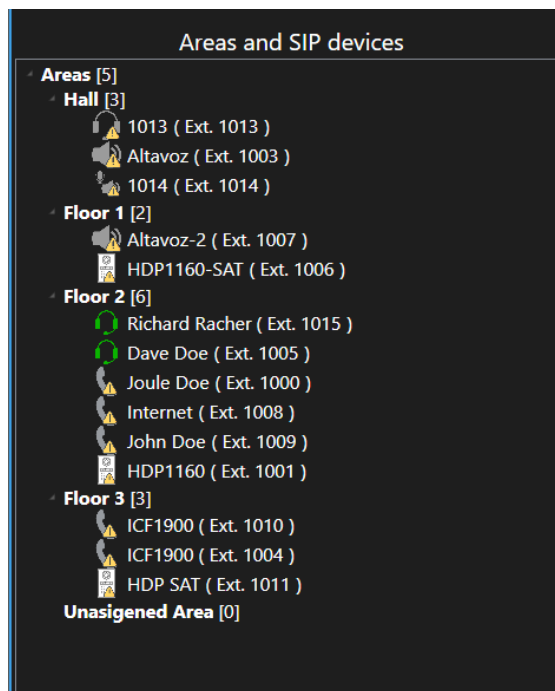
F. Device status monitoring

Through Smart Client and located in the "IP PBX Central" tab, the plugin shows the status of the different SIP devices, simultaneously informing the user of the logical distribution of existing SIP extensions within the areas location.

The information displayed in this tab can be divided into two sections, a tree structure is shown on the left and a list on the right.

















In the tree on the left, the different paging areas are shown and next to the name of the area, the number of configured extensions is shown. Under each of the location areas the associated extensions are shown:



In the list on the right, all the localization areas are shown and next to the name the number of extensions it has is shown. For each location area, the extensions grouped by each type of extension are shown. Each extension shows the information corresponding to the type of extension and state in which it is located, its name and its extension number:

Status of SIP devices

Area details	SIP devices group by kind extension
Hall [3]	 1013 (Ext. 1013)
	 Altavoz (Ext. 1003)
	 1014 (Ext. 1014)
Floor 1 [2]	 HDP1160-SAT (Ext. 1006)
	 Altavoz-2 (Ext. 1007)
Floor 2 [6]	 HDP1160 (Ext. 1001)
	 Joule Doe (Ext. 1000)
	 Internet (Ext. 1008)
	 John Doe (Ext. 1009)
	 Richard Racher (Ext. 1015)
 Dave Doe (Ext. 1005)	
Floor 3 [3]	 HDP SAT (Ext. 1011)
	 ICF1900 (Ext. 1010)
	 ICF1900 (Ext. 1004)
Unassigned Area [0]	

From the list itself, the plugin allows you to establish a call between extensions. This will be possible when both are available. To make the call with it will be necessary to press the icon of the extension to which you intend to call:



After pressing the button, an event will be generated, and the states of the extensions (caller and called) will be updated both on the map and in the different trees and in the list.

Once the call is finished, the states of the icons of both extensions (caller and called) will be updated both on the map and in the different trees and in the list.

G. WebClient y Milestone Mobile

These interfaces do not support custom controls or maps, so the interaction from the Web Client or the Milestone Mobile app with the Grandstream IP PBX Plugin is limited to receiving alarms defined with the plugin events, and to trigger actions with rules (play paging groups messages).

8. Troubleshooting

Integrated Systems

In case the integration does not work, please confirm that the Grandstream UCM6510 IP PBX Intercom/Paging System and its firmware version are compatible with the plugin. Based on the control unit manufacturer's documentation, the firmware version must be:

- FW 1.0.20.30 or later.

Older firmware versions of the Grandstream UCM6510 IP PBX, please consult your Grandstream provider and ask for more information about compatibility.

The plugin's compatibility has been tested with a Grandstream UCM6510 intercom/public address center whose firmware version is 1.0.20.30. Compatibility is not guaranteed with any older or later firmware version. Although later firmware versions should work correctly, compatibility will be subject to specific testing for each firmware version.

Necessary Equipment

The Grandstream UCM6510 IP PBX must have an Ethernet connection to be able to communicate with the physical devices and with the Milestone plugin. Check with your Grandstream provider for more information.

Others

- The extension does not establish communication.
 - Check the configuration on the switchboard website.
 - Check the imported settings in Milestone.
 - Check the connection with the physical device.
- The plugin does not import paging groups and extensions.
 - Check the IP, port, user and password data of the API on the Grandstream UCM6510 IP switchboard website.
 - Check the IP address or domain name, port, user and password configured in the switchboard.
- The map shows black circles with white crosses instead of the icons.
 - When the panel is created in Milestone, the items are new in the system, so the icons corresponding to the deleted items must be removed from the map and added again.
- Commands don't work.
 - The state of physical devices or their elements could prevent certain commands from being executed. Check the Milestone MIP log for a possible error code.
- In case of Communications failure, try restarting the XProtect® Event Server.

More information

For more information, visit the plugin's online information or contact SGSE at the email info@sgse.eu.