Application Note

IP horn loudspeaker & IP amplifier module – Milestone XProtect integration – v1.1

This Application Note describes how to integrate the IP horn loudspeakers or the IP amplifier module into Milestone Video Management Software XProtect.

Related Products:
LHN-UC15L-SIP | LHN-UC15W-SIP | AMN-P15-SIP

Severity:
☐ Immediate action required
☐ Action strongly recommended
☒ Informative

Table of Contents

1. Introduction

This Application Note describes how the IP horn loudspeaker, and the IP amplifier module can be integrated into XProtect Video Management software (VMS). On the example of the wide-angle IP horn loudspeaker, it will be described how to do the configuration. The long throw horn loudspeaker and the amplifier module can be configured in almost the same way.

Products:

LHN-UC15L-SIP = IP horn loudspeaker 15W, long throw

LHN-UC15W-SIP = IP horn loudspeaker 15W, wide angle

AMN-P15-SIP = IP amplifier module 15W

The IP horn loudspeakers and the IP amplifier module can be used in Video Management Systems (VMS) which are based on the ONVIF standard. Main use is the audio support (live & trigger) from the VMS towards the IP horn loudspeakers and IP amplifier module, see below table for more details.

Audio Use cases / Features	**IP Horn**	**IP Amp Module**
1-way live audio from VMS	✔	✔
2-way live audio from and to VMS	✔	**X** (no microphone)
Start pre-recorded massage stored in the IP horn/amp without scripting (using ONVIF output)	✔	✔

Although ONVIF is a standard, there are differences on the actual support based upon the specific VMS. The VMS version tested together with the IP horn loudspeaker/amp module is Milestone XProtect 2023 R3.

2. Abbreviations

VMS	Video Management Software
ONVIF	ONVIF stands for Open Network Video Interface Forum and it is a standard for the communication between different IP-based security systems.
ONVIF Output	The ONVIF Output is a virtual control output in the Video Management System. It can be used to control the state of a virtual control input of the IP horn/amp via ONVIF.
ONVIF Streaming	Audio stream from the device (IP horn) to the VMS.
ONVIF Backchannel	ONVIF offers the option to send media back from the VMS to the client (IP horn loudspeaker/amp module).
XProtect Management Client	Milestone VMS configuration software
XProtect Smart Client	Milestone VMS operator software

3. Preparing the IP horn/amp

This chapter describes how to prepare the IP horn/amp when using it in combination with Milestone XProtect Video Management Software.

3.1. Firmware

The firmware of the IP horn/amp needs to be updated to the firmware v2.0 (2.0.800) or later, to support ONVIF. It is recommended to use the latest firmware version. Please check the firmware release notes for more details about firmware compatibility.

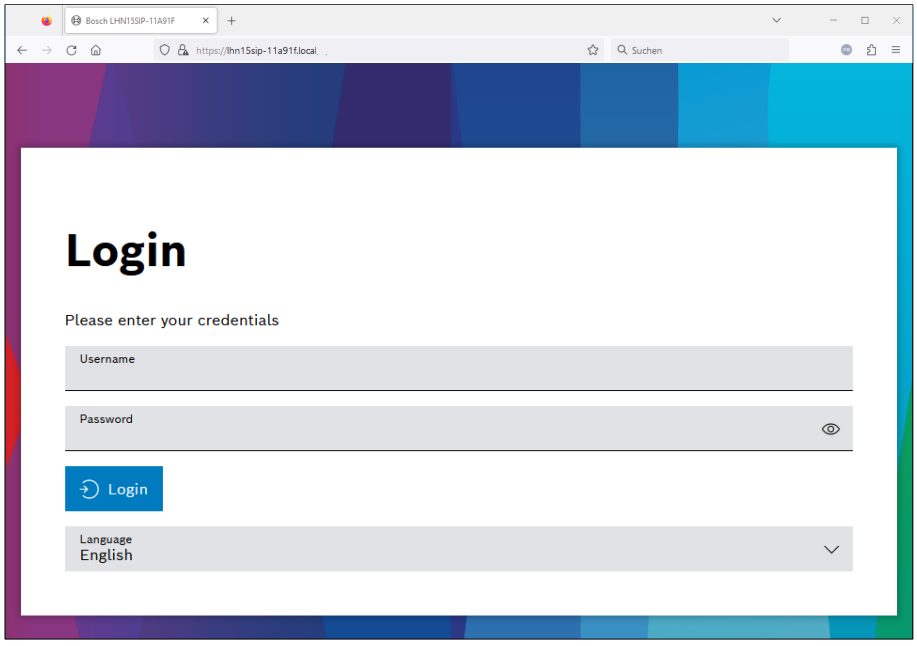
You can get the latest firmware from the product page at www.boschsecurity.com.

Notice!
More details about the firmware update can be found in the application note “IP horn loudspeaker & IP amplifier module – Getting started”.

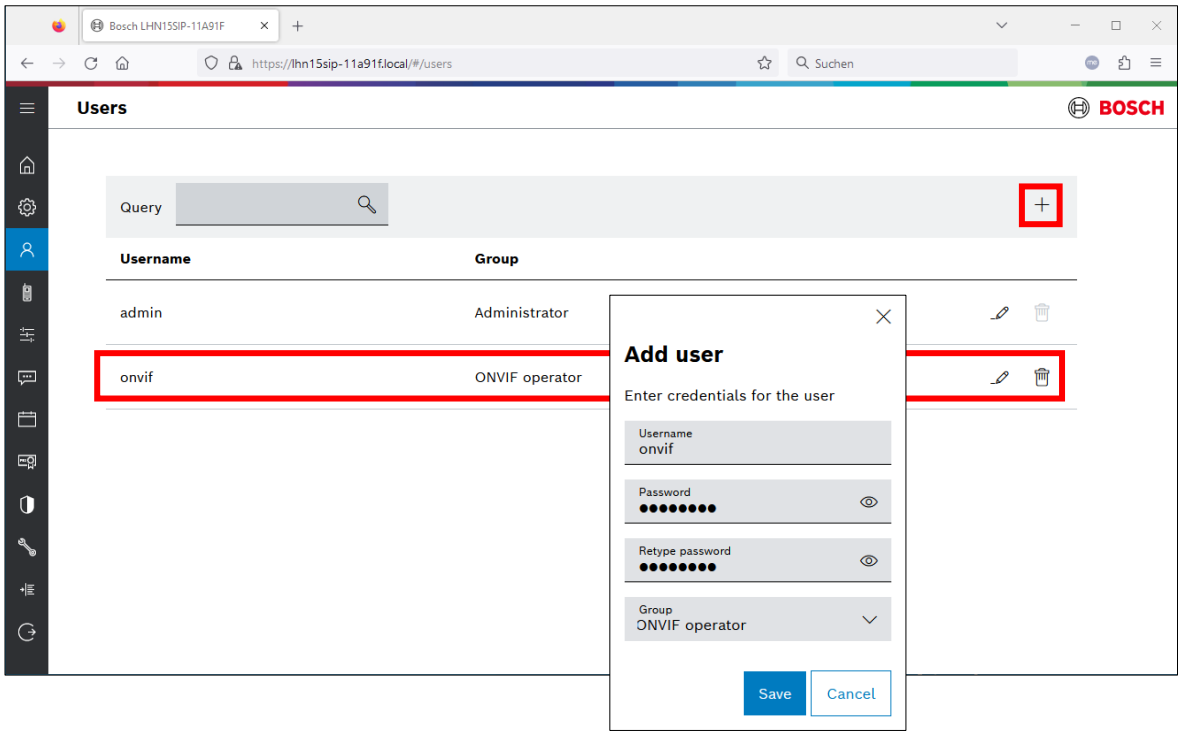
3.2. General Configuration

By default (factory reset) the speaker is not addable to the Milestone XProtect software. Below is described what needs to be prepared on the IP horn/amp side. The screenshots were made with the firmware v2.1 (2.1.869).

1. Connect to the speaker:
   Open a browser and enter the IP address (https://IPaddress) or the host name (https://HOSTNAME.local) of the IP horn/amp and login with Username and Password of the administrative account.

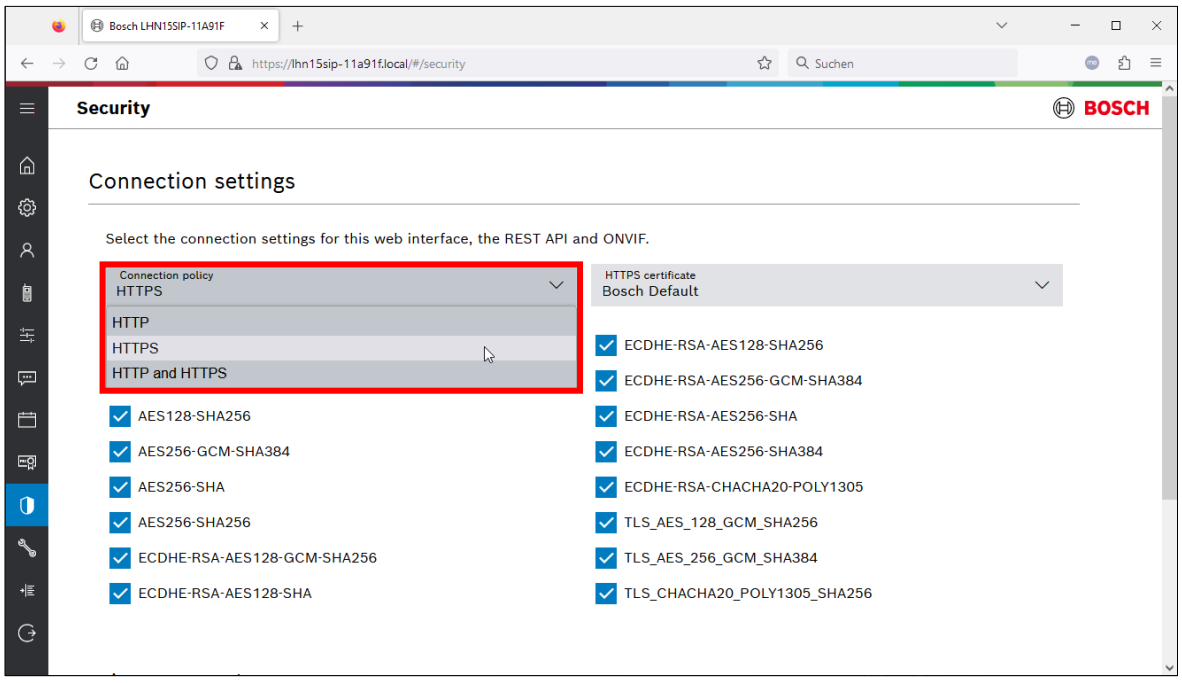


2. Adding a user:
   To activate the ONVIF interface, an ONVIF user needs to be added. Go to *Users* and create a *ONVIF operator* account dedicated for Milestone XProtect.



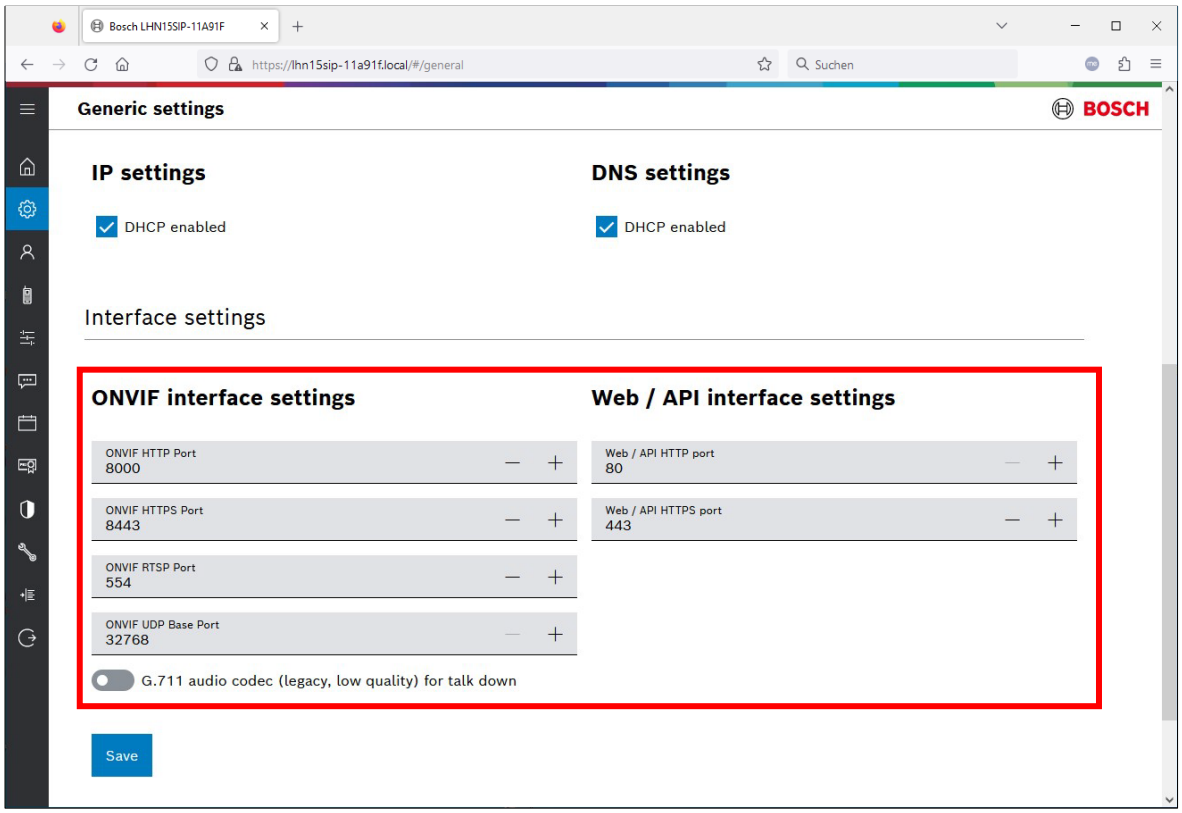
Notice!
These credentials will be needed for authentication on VMS side.

3. Connection Policy:
   Both, Milestone XProtect and the IP horn/amp, support HTTP and HTTPS. By default, the IP horn/amp comes with HTTPS only enabled.
   The Connection protocol can be changed under *Security*.



4. ONVIF Interface settings:
   The ONVIF interface settings on the *Generic settings* page encompasses crucial fields including HTTP Port, HTTPS Port, RTSP Port, and UDP Base Port. Users have the authority to change these ports in case needed.
   Any alterations to these ports require the user to click the *Save* button, prompting a restart of the ONVIF process and the reopening of the designated ports.

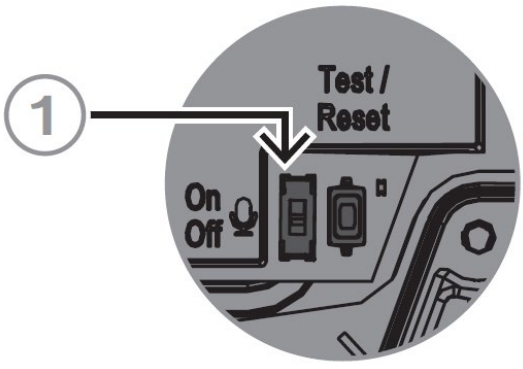
   By default, the ONVIF interface and the Web / API interface use the same HTTP and HTTPS ports. In this example different ports for the ONVIF interface are used:



   Notice!
   G.711 is by default deactivated for talk down on the side of the IP horn/amp due to its lower audio quality compared to AAC. Using AAC is recommended. If you want to use G.711 you need to activate it on the *Generic settings* page.

5. Microphone:
   If you want to use the microphone of the IP horn/amp, make sure that the microphone is switched on. If switched off, the microphone function will not be added in Genetec Security Center.

On/Off switch of the microphone



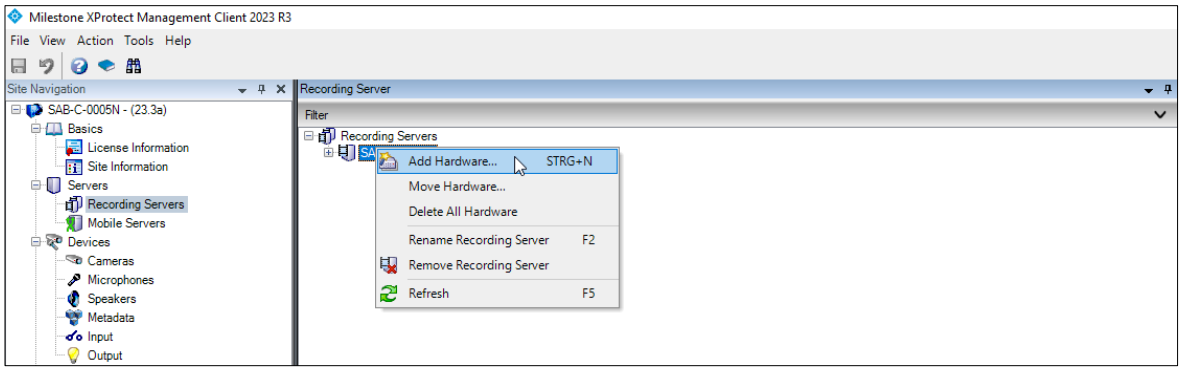
4. Integration into Milestone XProtect

4.1. Adding a loudspeaker to XProtect Management Client

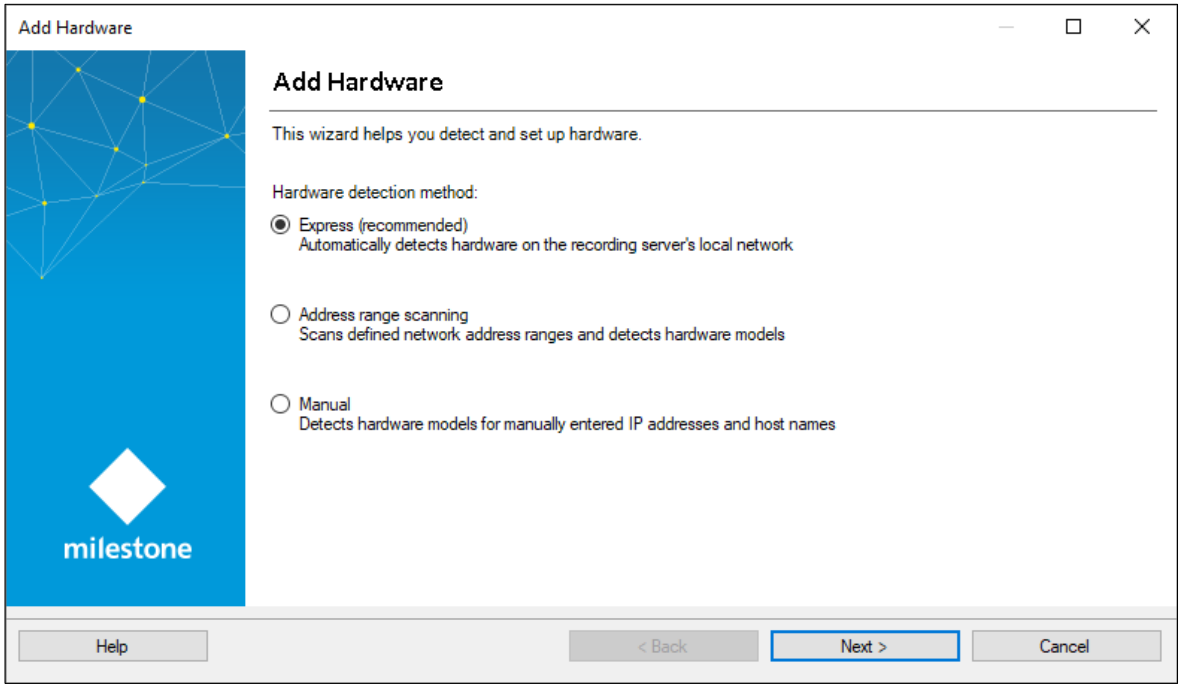
This chapter describes how to add the IP horn/amp to Milestone XProtect 2023 R3.

Open Milestone XProtect Management Client:

1. Go to Servers -> Recording Servers -> Right-Click on your Recording Server and click on *Add Hardware…*

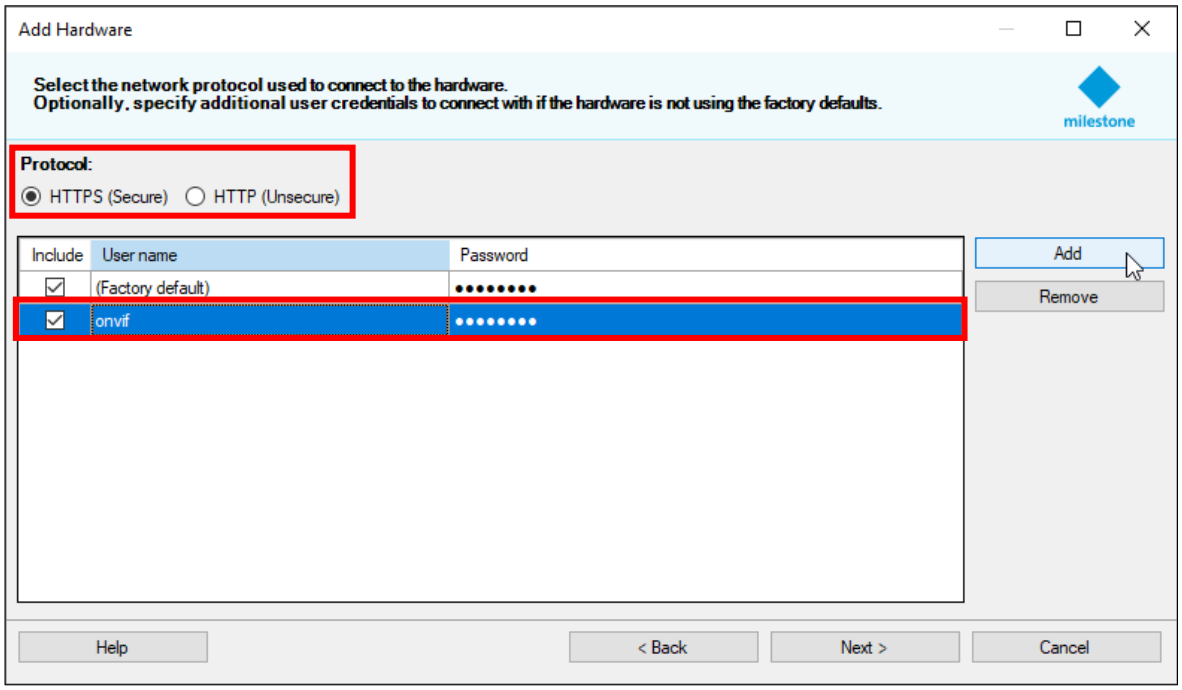


2. Select a Hardware detection method. This example will continue with the Express method.

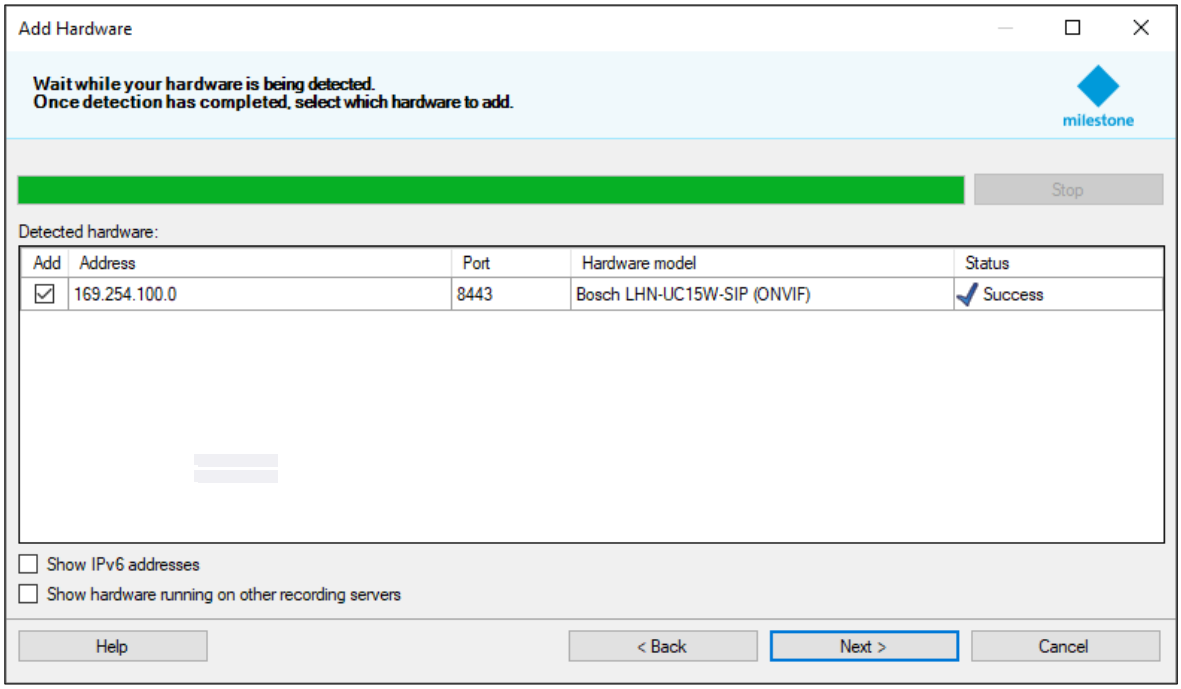


Notice!
For the other two methods, ONVIF needs to be selected when scanning for hardware.

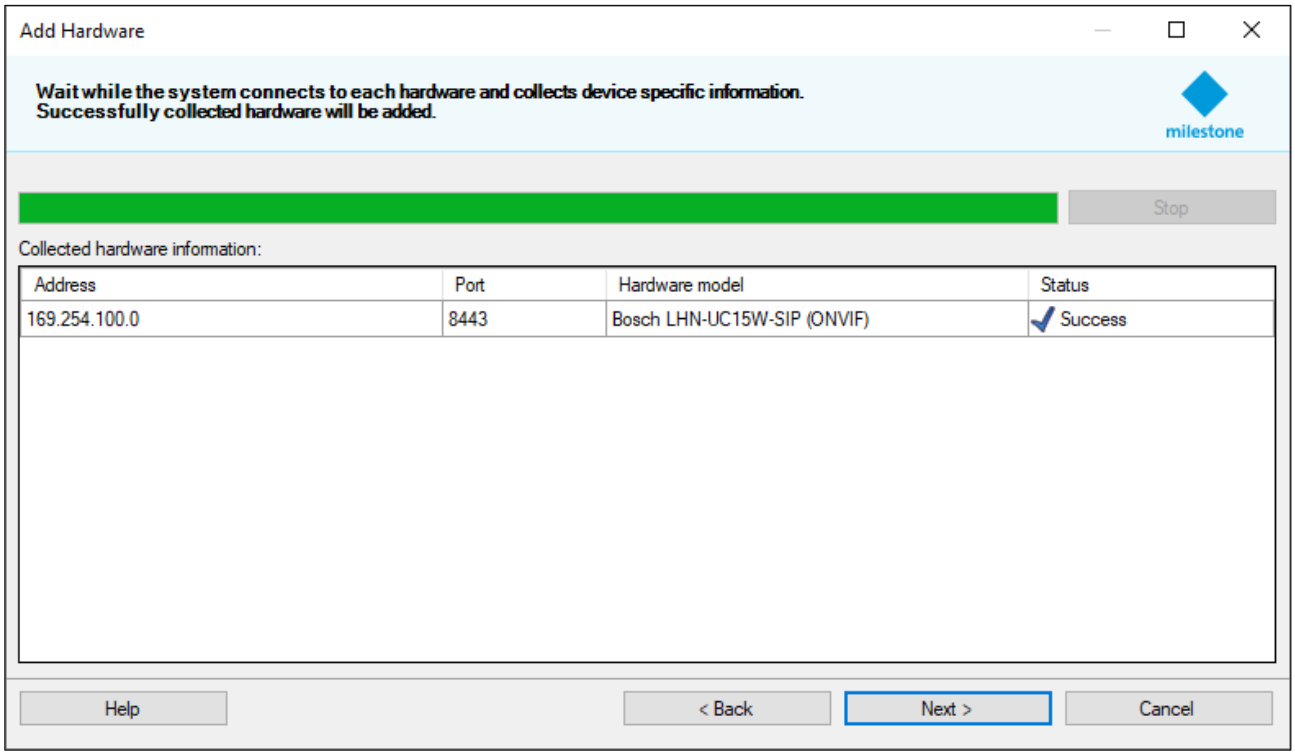
3. Click *Add* and type in the ONVIF user credentials of the user created in the IP horn/amp and select the connection protocol. By default, the IP horn/amp comes with HTTPS only enabled. Then Click *Next >*.



4. The discovery tool tries to find now ONVIF Hardware. Select the IP horn/amp and click *Next >*.

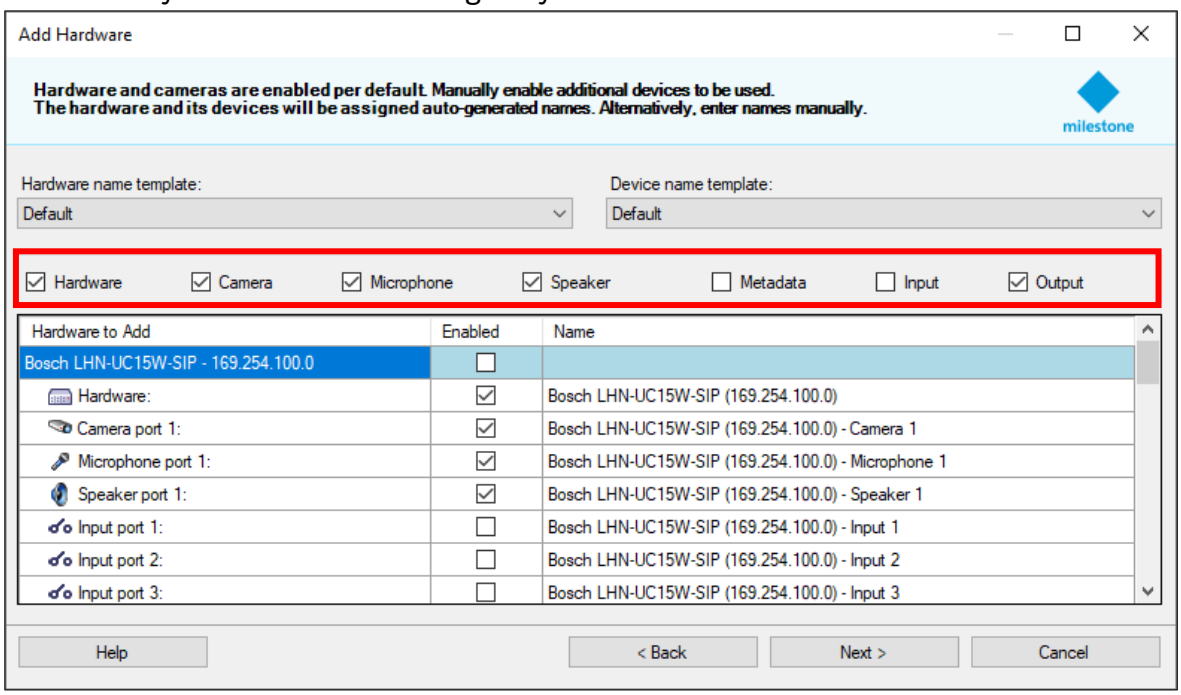


5. It tries now to retrieve some basic information about the speaker. When the Status shows Success, click *Next >*.



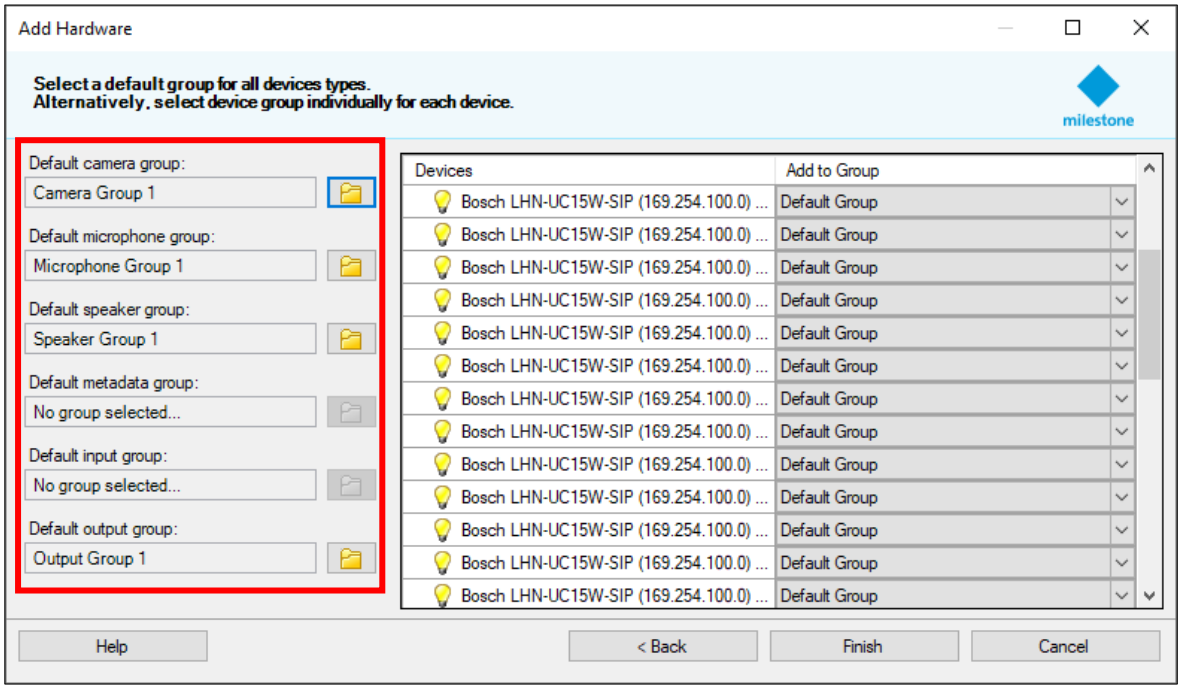
6. Now the functions of the IP horn/amp are shown as selectable list:
   - Hardware: Basic device info
   - Camera Stream: Displaying an icon of the speaker
   - Microphone port (only available for the IP horn): For receiving the microphone stream
   - Speaker port: For sending audio to the IP horn/amp
   - Input ports: Will always appear but will not work with the IP horn/amp.
   - Output ports: Control outputs (1-32 are virtual and the 33rd is the physical GPO of the IP horn/amp)

   Select what you want to have managed by the VMS and then click *Next >*.

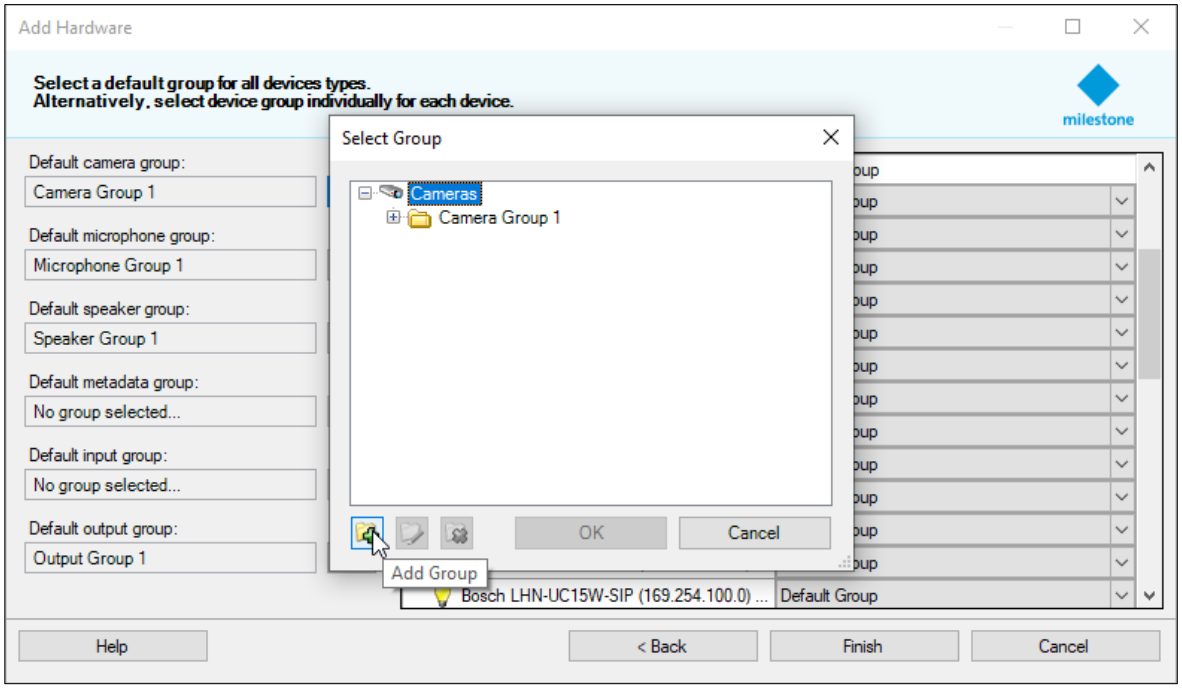


Notice!
If you have an IP amp or the microphone is disabled via the hardware switch, the microphone will not be part of this list.

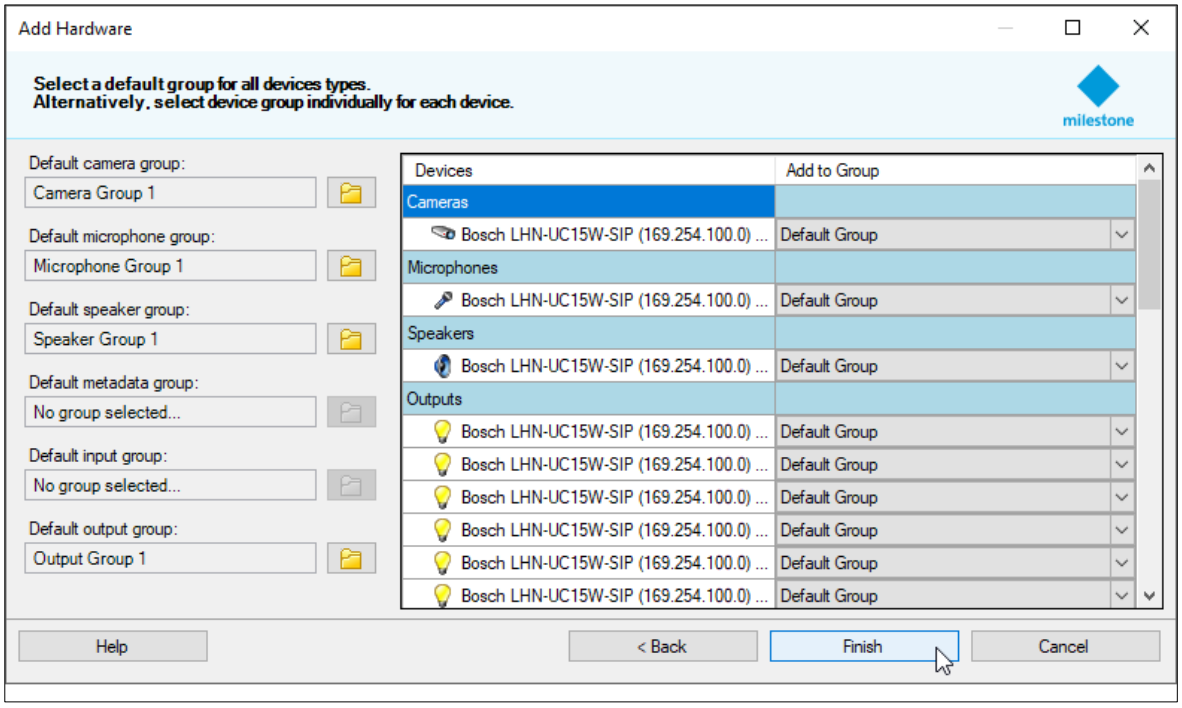
7. All devices need to be assigned to a device group (like shown below). If devices are not assigned to a device group, you need to click on the folder icon to select a group.



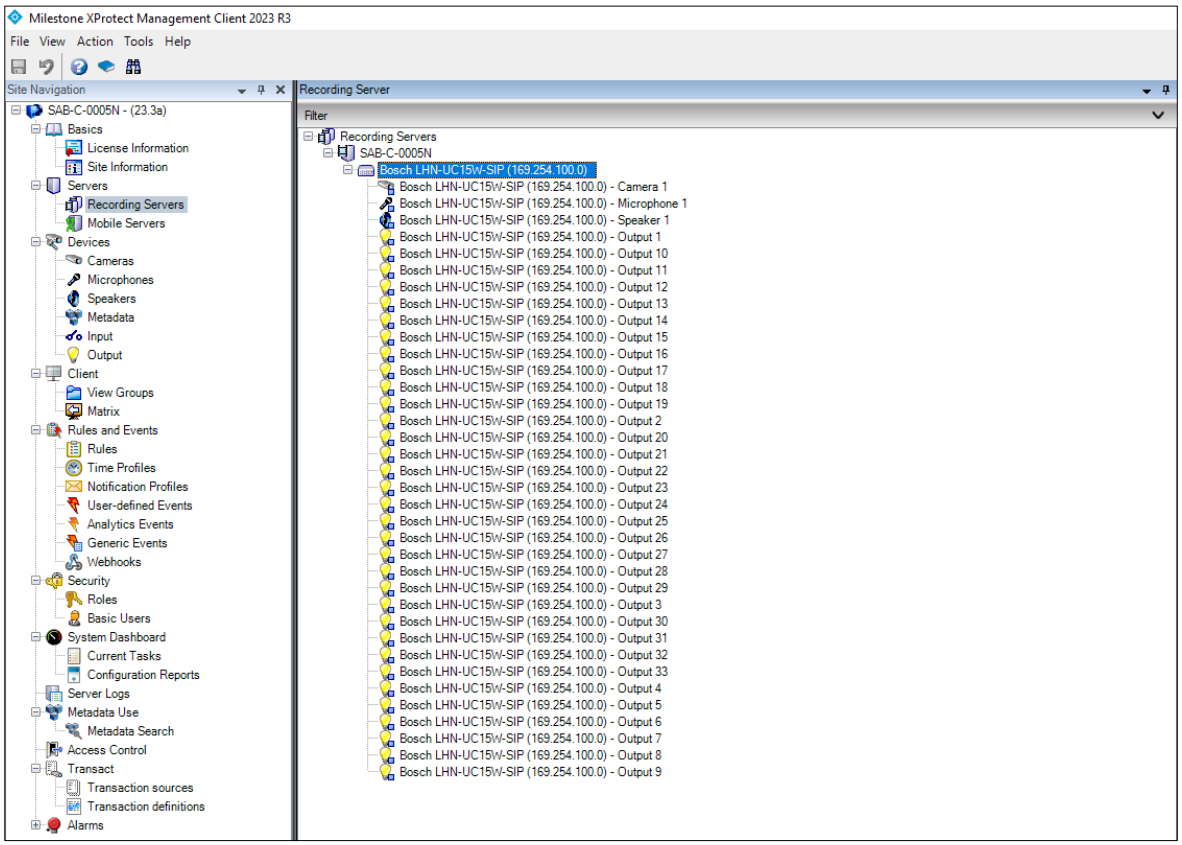
If there is no group available, create one by clicking on the + icon. You can use the proposed names for the groups.



Now you can click *Finish* to add the IP horn/amp to the VMS.



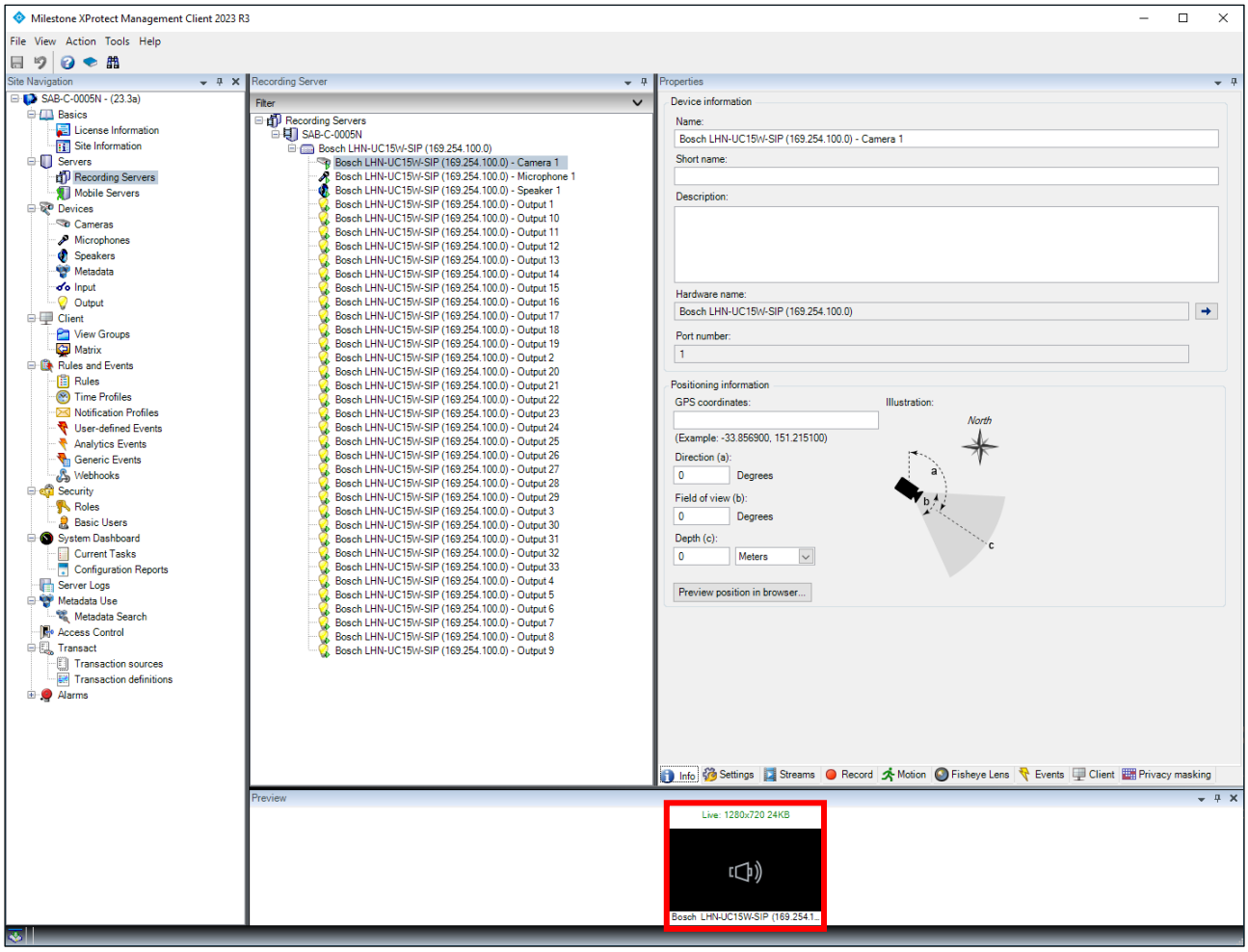
8. This is how the IP horn/amp should appear in the VMS (1 Camera, 1 Microphone (only for the IP horn), 1 Speaker, 33 Outputs).



Notice!
If you have an IP amp or the microphone is disabled via the hardware switch, the microphone will not be part of this list.

4.2. Video Stream of the IP horn/amp

The ONVIF standard does not have a device type specifically for audio only. Therefore, it is added as a camera. However, the icon displayed in the “Live Stream” clarifies that it is a speaker.

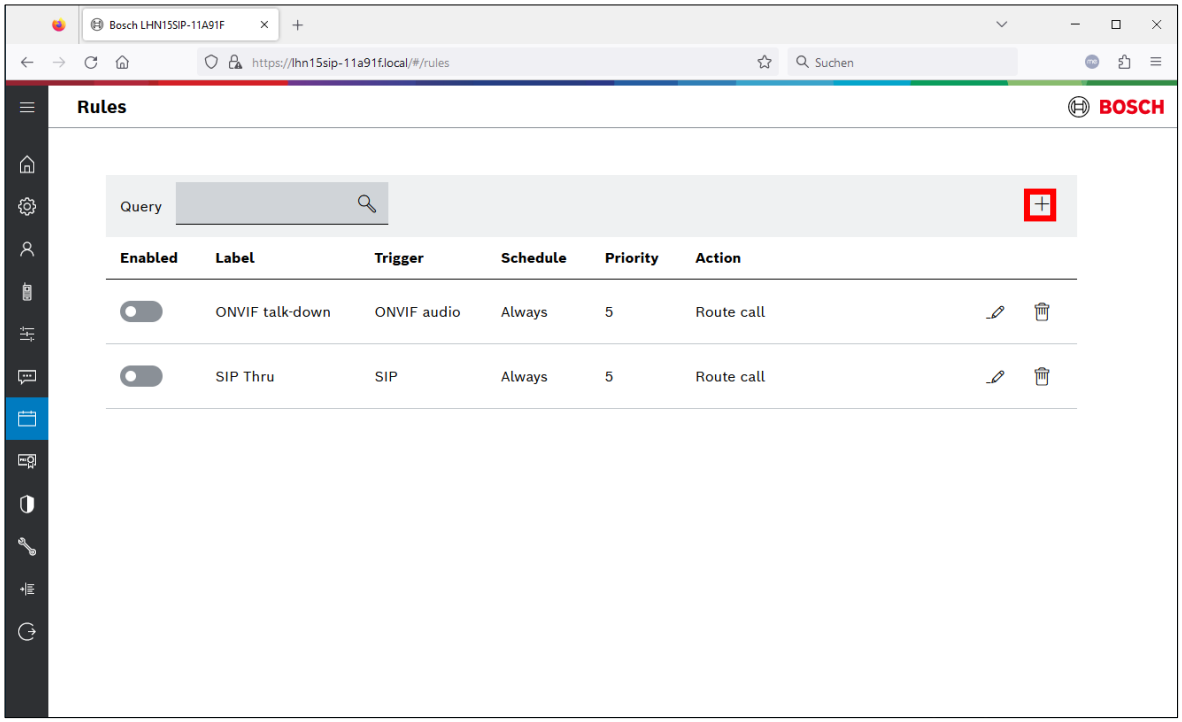


4.3. Start pre-recorded messages of the IP horn/amp via ONVIF Output

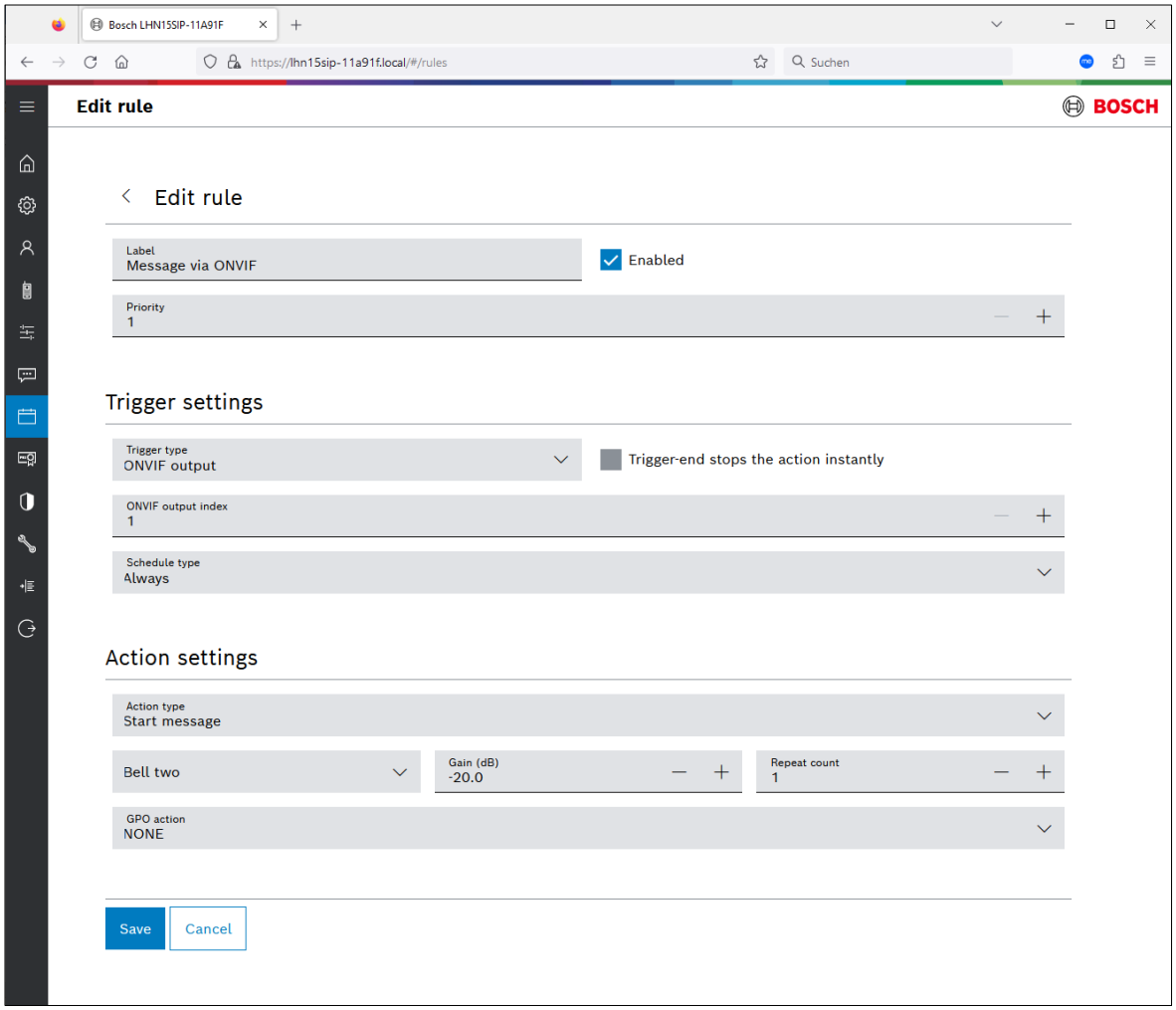
In XProtect there are 33 ONVIF outputs displayed. The first 32 outputs are virtual outputs and can be configured to trigger rules on the IP horn/amp. The 33rd output is the physical GPO of the IP horn/amp.

In this example ONVIF output 1 will trigger an audio file stored on the IP horn/amp.

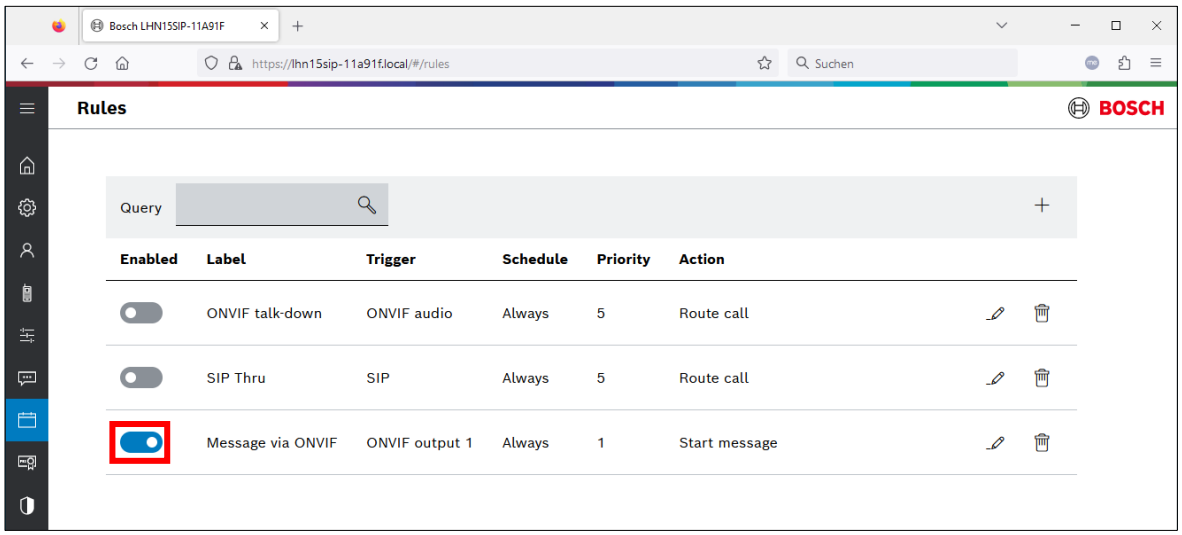
1. Adding a rule for starting a message:
   Log into the IP horn/amp, go to *Rules* and click on *+* to add a rule.



2. Rule details
   - Trigger type: ONVIF output
   - Trigger-end stops the action instantly: If the message shall be played once to its end, let the checkbox unchecked and make the contact closure shorter than the message.
   - Action type: Start message
   - Repeat count: 1

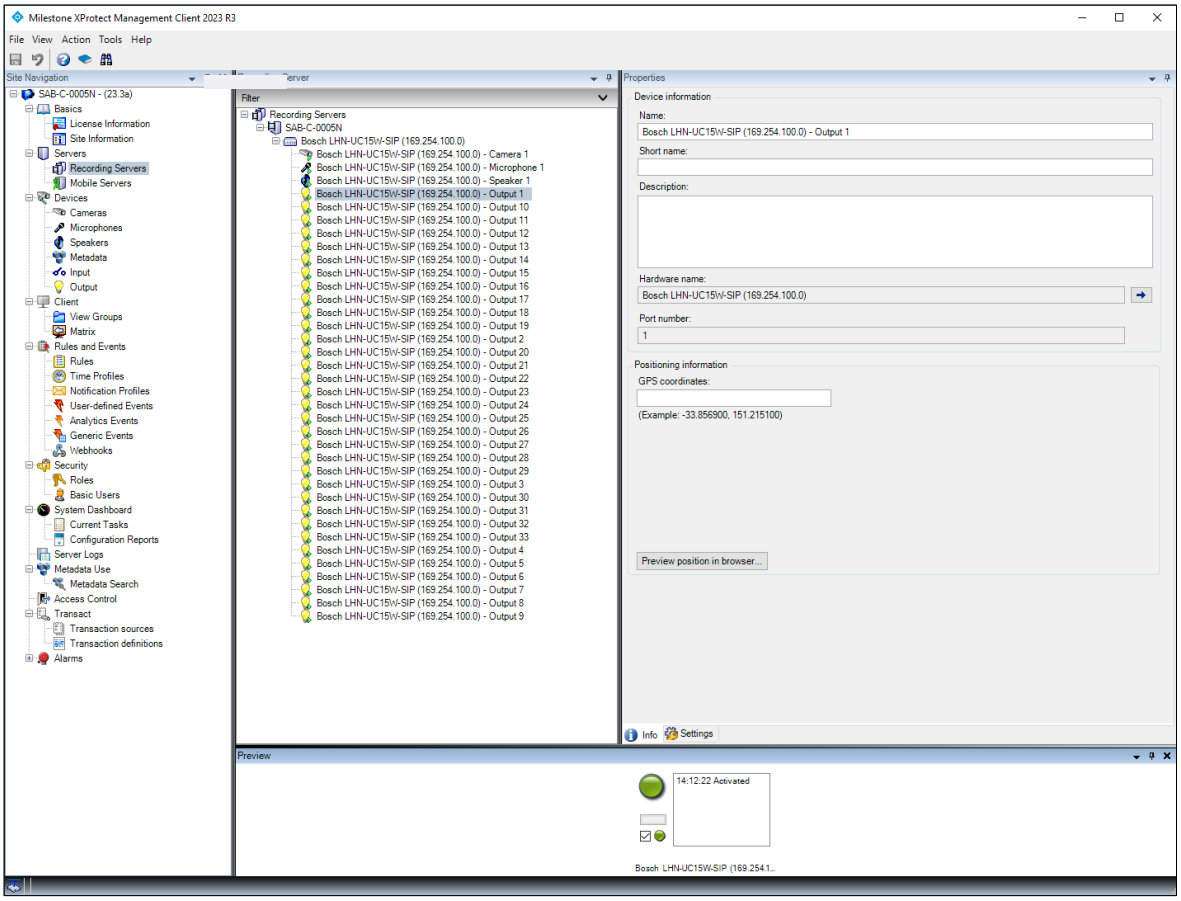


Rule overview:
Make sure, that the rule is enabled.

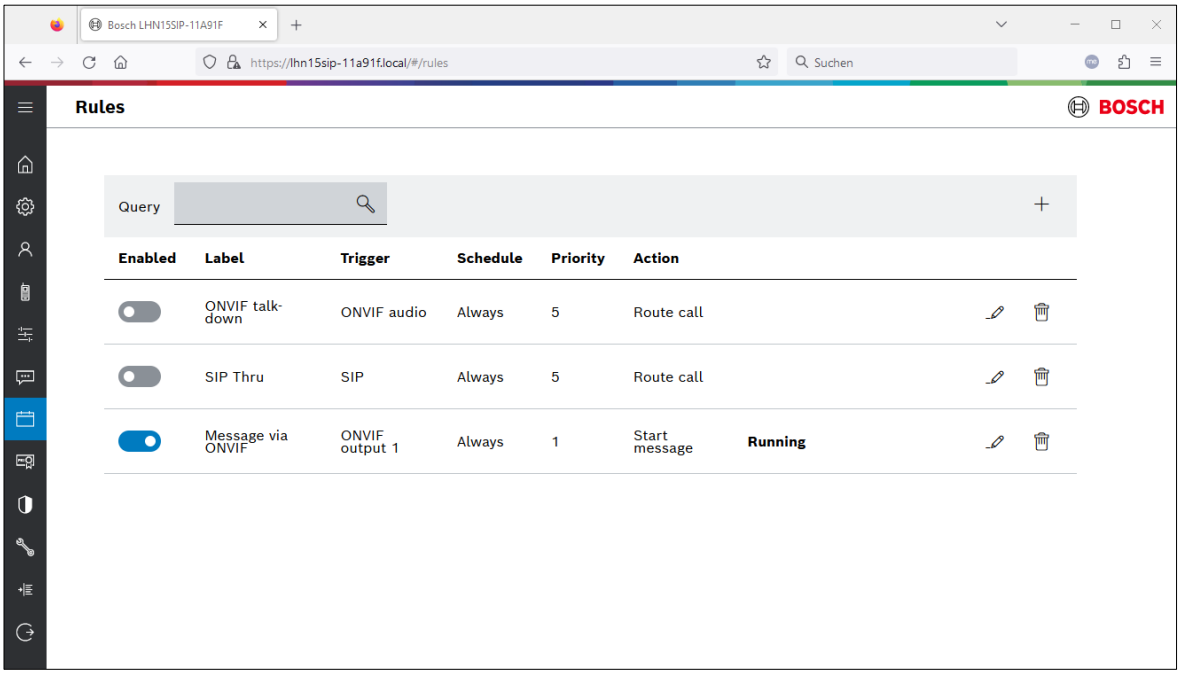


How to test Output 1-32:
ONVIF Output 1-32 can only be used for triggering rules on the IP horn/amp. The IP horn/amp is configured with ONFIV output 1 starting a message (bell) in the IP horn/amp.

1. Select the first output and activate it in the bottom using the checkbox. The LED will turn green.

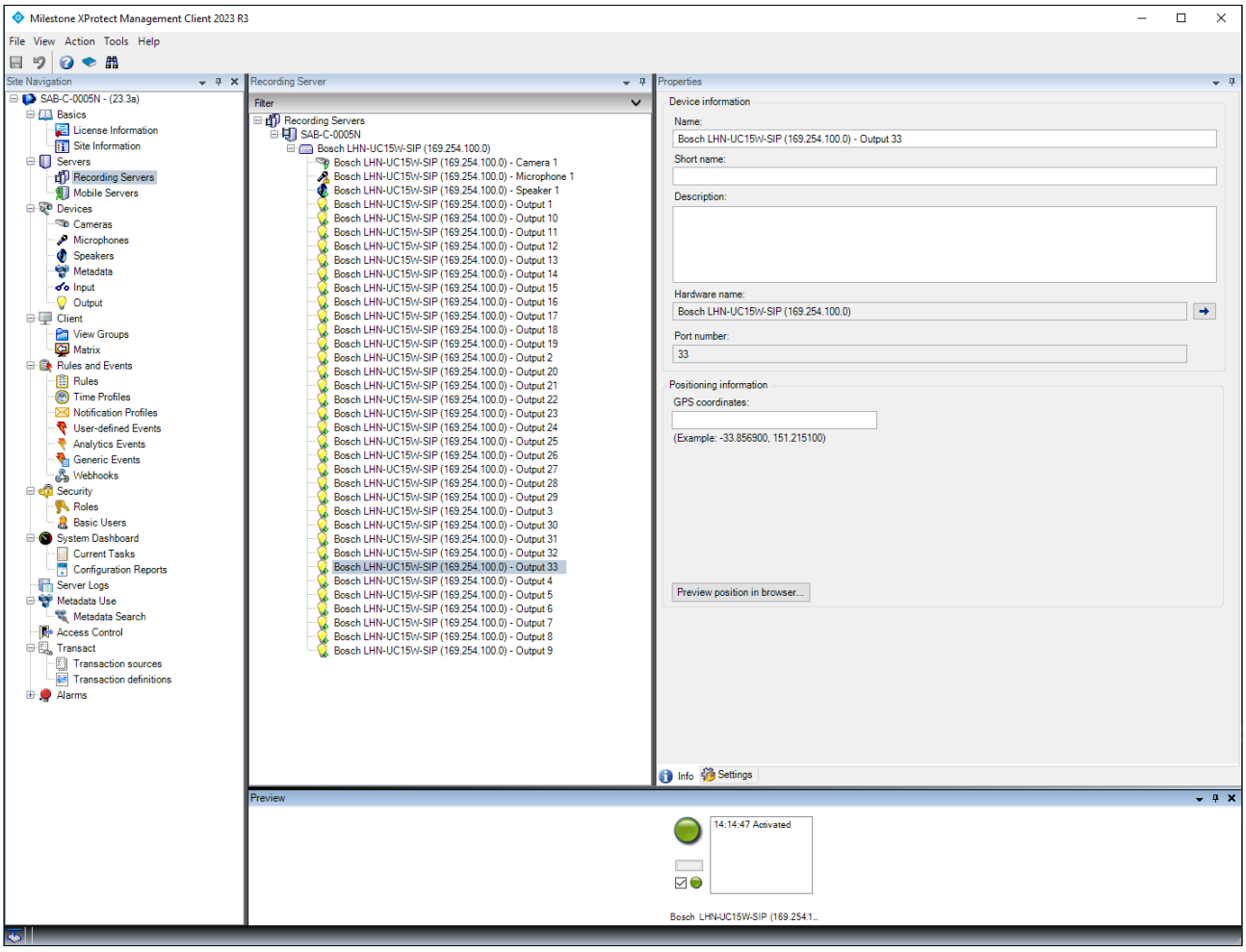


2. Go to the *Rules* page of the IP horn/amp. Here you can see that the rule is *Running*, and the message is playing.

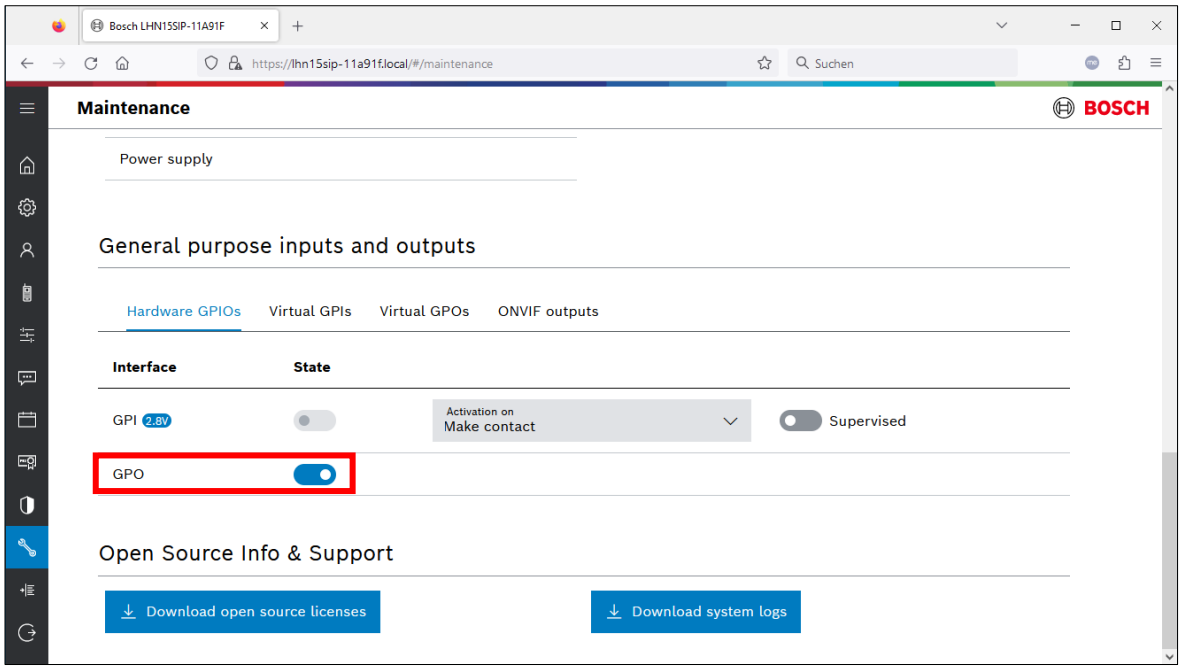


How to test the 33rd output:

1. Select the 33rd output and activate it in the bottom using the checkbox. The LED will turn green.



2. Go to the *Maintenance* page of the IP horn/amp. Here you can see that the GPO has turned active.



4.4. Audio from the IP horn to the VMS via ONVIF Streaming

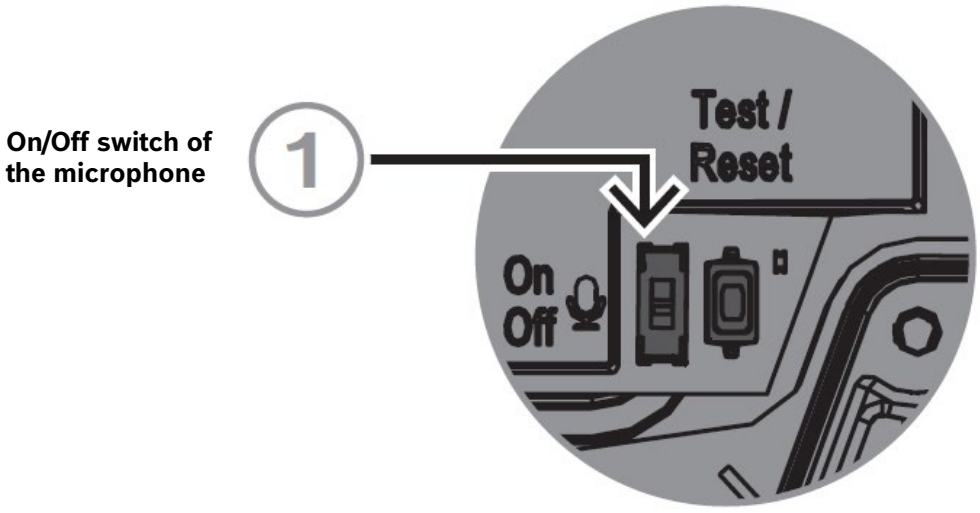
This part describes how to configure and test the audio from the IP horn to the VMS.

Notice!
This function is only available for the IP horn.

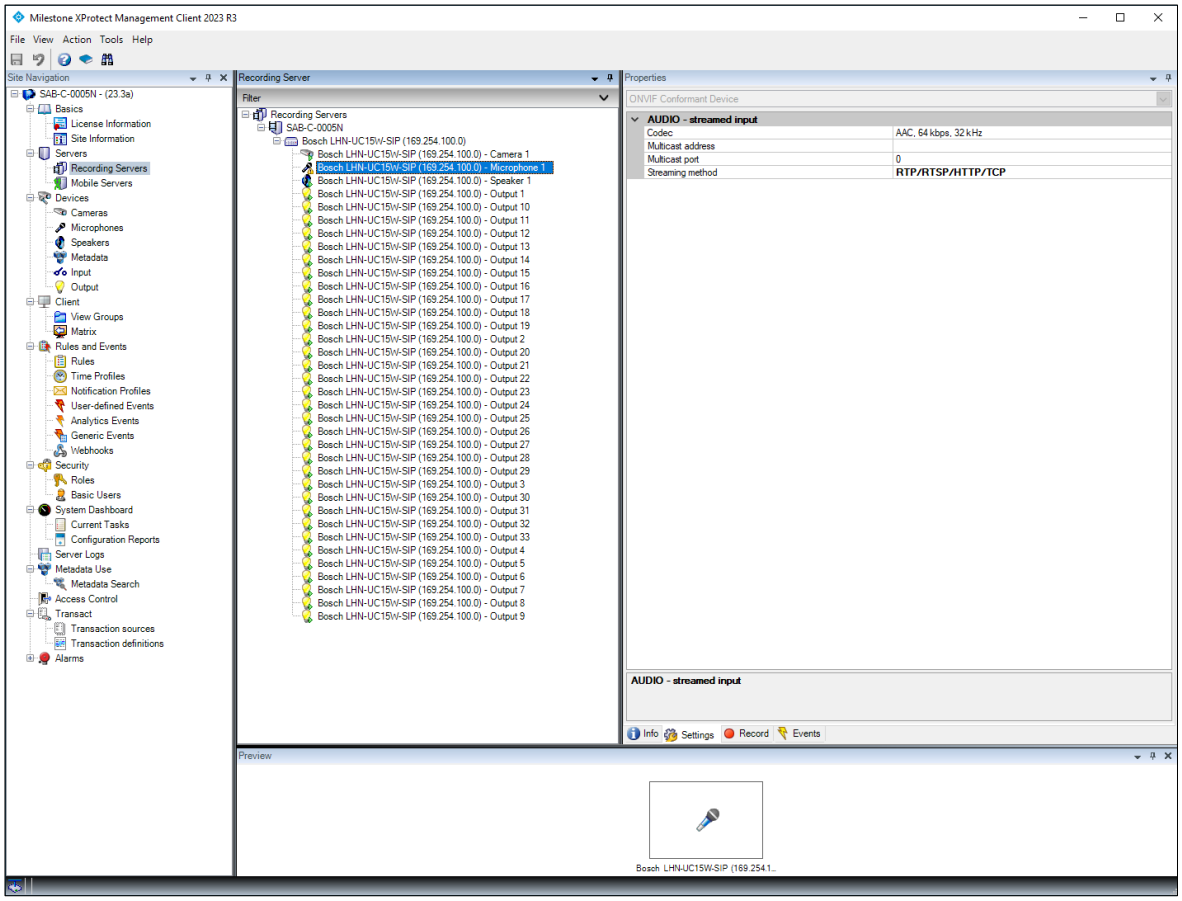
Setting up the Microphone in XProtect Management Client and testing the Microphone Stream in XProtect Smart Client:

The microphone is not bound to the rule engine. There is no need to activate the ONVIF Stream via the rules page. Thus, recording without interruption by a rule is possible. As soon as the credentials for the ONVIF operator are set, the microphone stream can be opened via the VMS, and you can retrieve and listen to it.

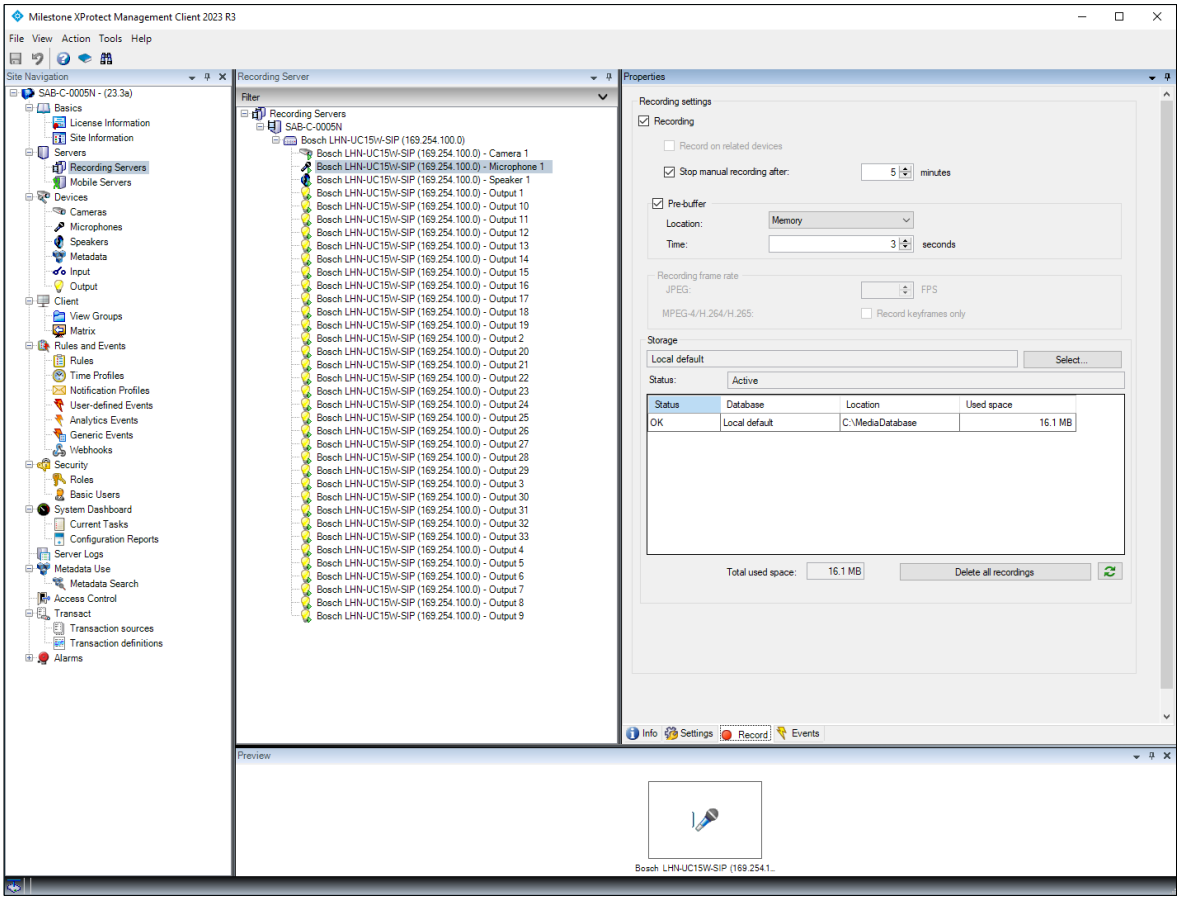
Make sure that the microphone of the IP horn is activated.



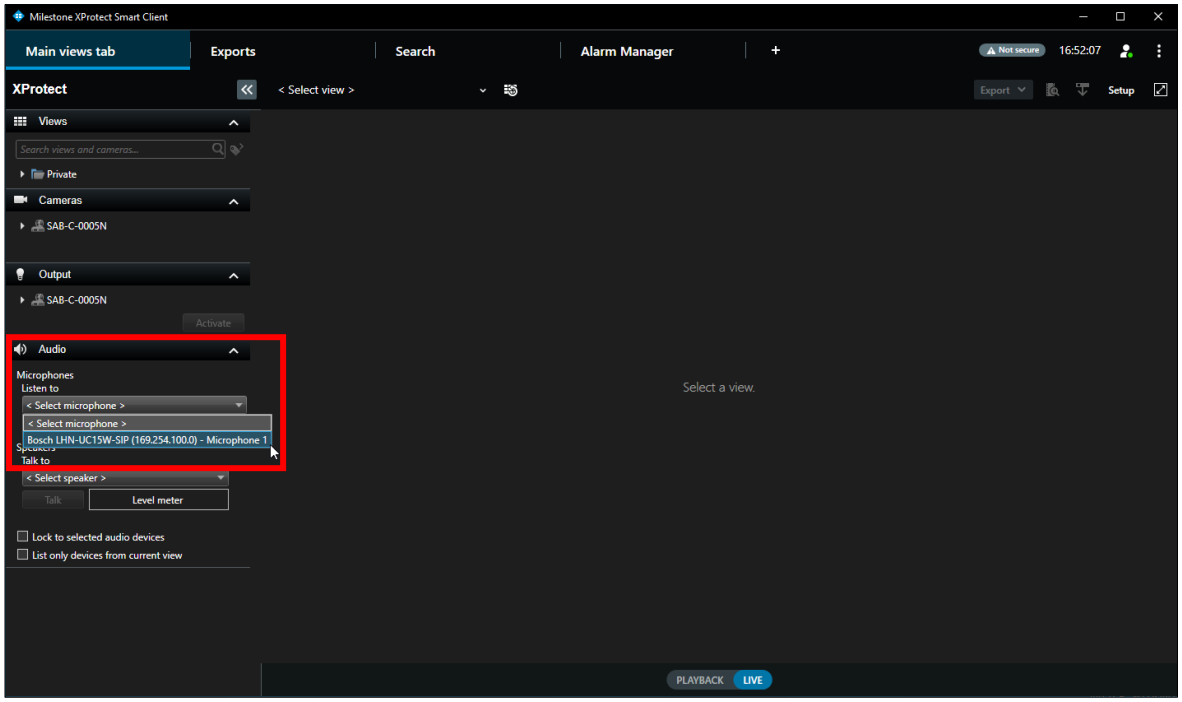
1. Select the microphone in XProtect Management Client and go to *Settings*:
   - Codec: Several codecs like AAC (preferred) and G.711(legacy, low audio quality) are supported. Select one of them.
   - Multicast address: Not supported
   - Multicast port: Not supported
   - Streaming method: Select the desired streaming method.



2. Recording tab of the microphone:
   Here you can set the details for the recording of the microphone stream. There is no need to activate the microphone stream on the IP horn side. Thus, recording without interruption by another rule is possible. As soon as the credentials for the ONVIF operator are set, the microphone stream can be opened via the VMS, and you can retrieve and listen to it.



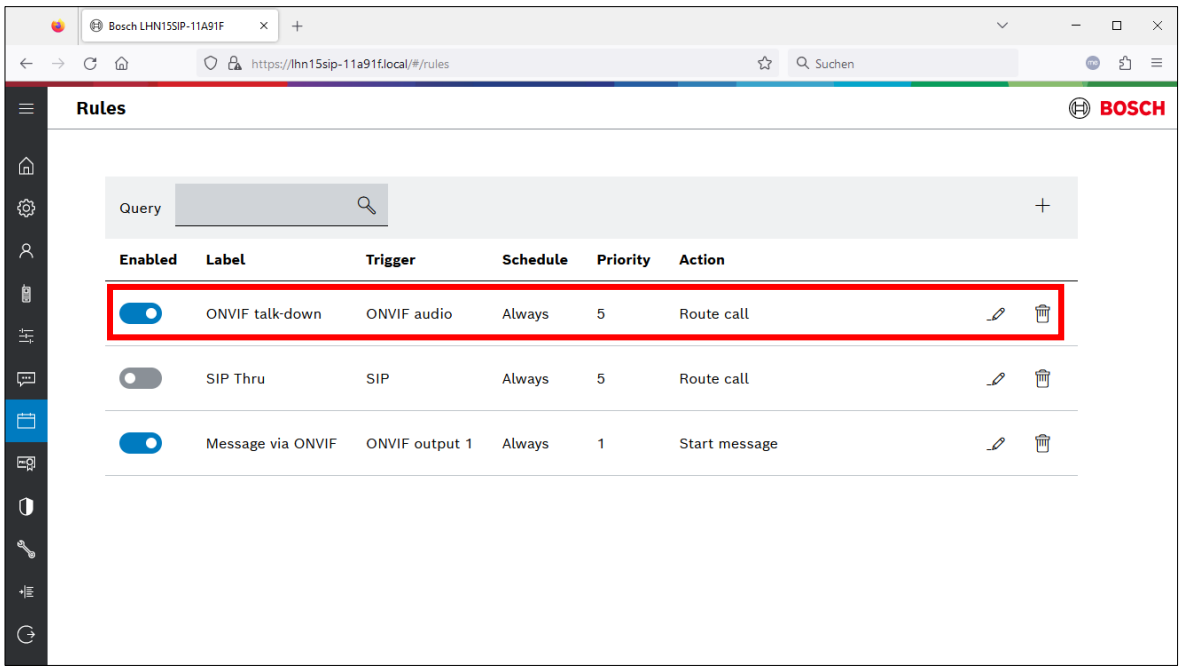
3. Testing the microphone stream:
   - Open XProtect Smart Client
   - To listen to the microphone stream, select the IP horn under *Microphones -> Listen to*
   - As soon as you select the according microphone, you should be able to listen to the microphone stream



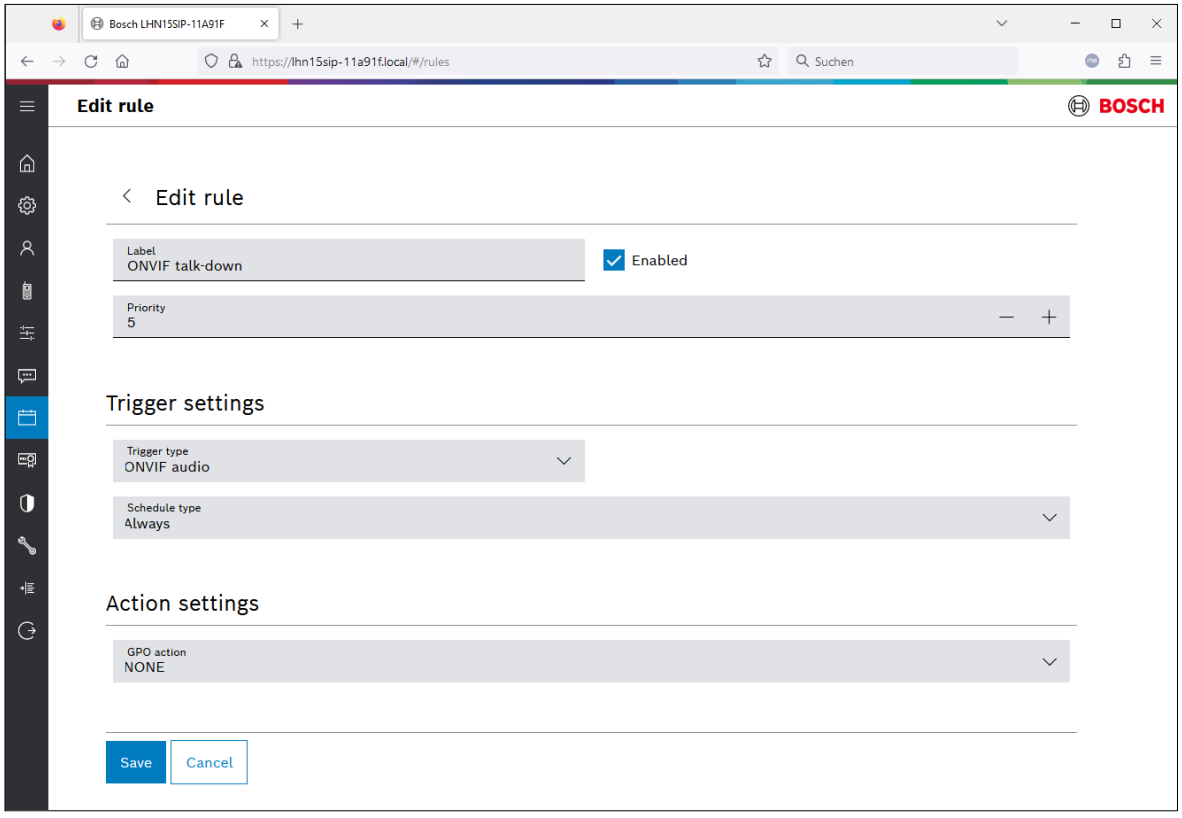
4.5. Audio from the VMS to the IP horn/amp via ONVIF Backchannel

This part describes how to configure and test the audio from the VMS to the IP horn/amp. To send audio to the IP horn/amp an ONVIF operator and a rule need to be configured.

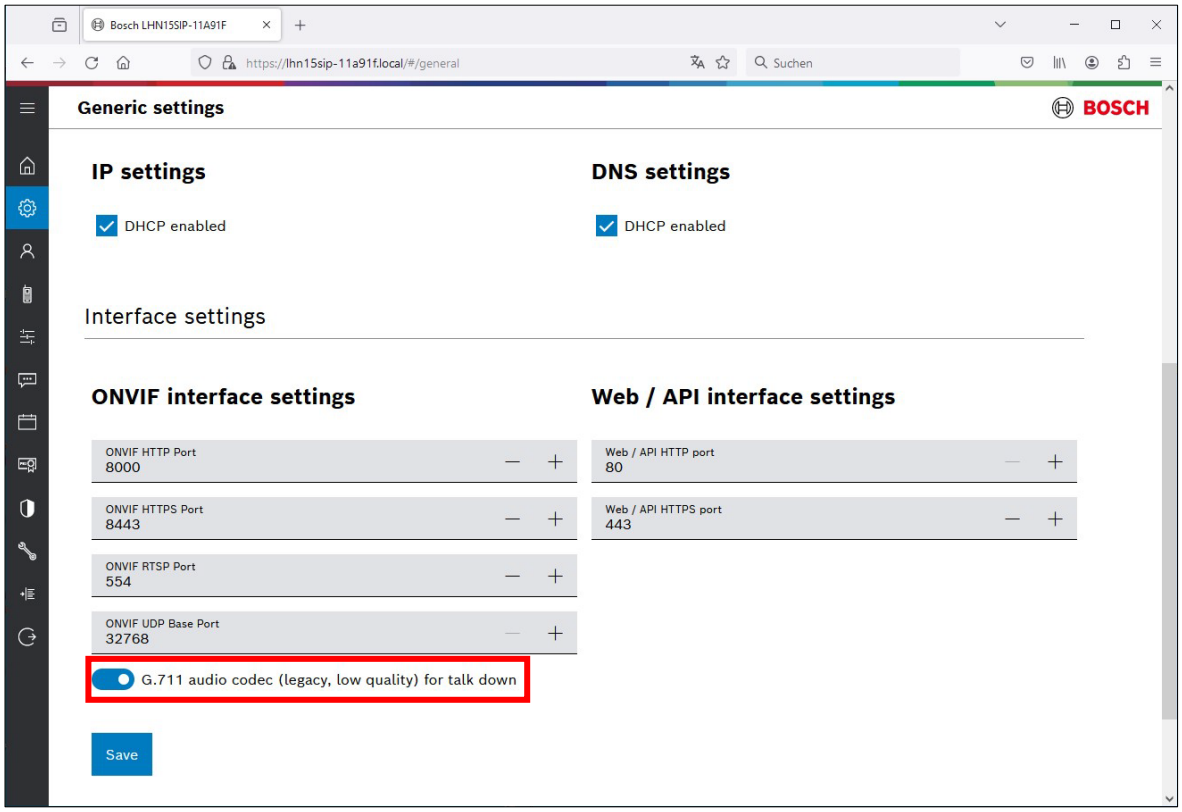
1. Adding a rule for ONVIF talk-down (audio from the VMS to the IP horn/amp via ONVIF backchannel):
   By default there is the “ONVIF talk-down” rule available, which needs to be activated to be able to route audio from and to the IP horn/amp through the VMS. The pre-defined rule is just there for quick and easy configuration. But depending on the project needs either this rule or another rule can be used.



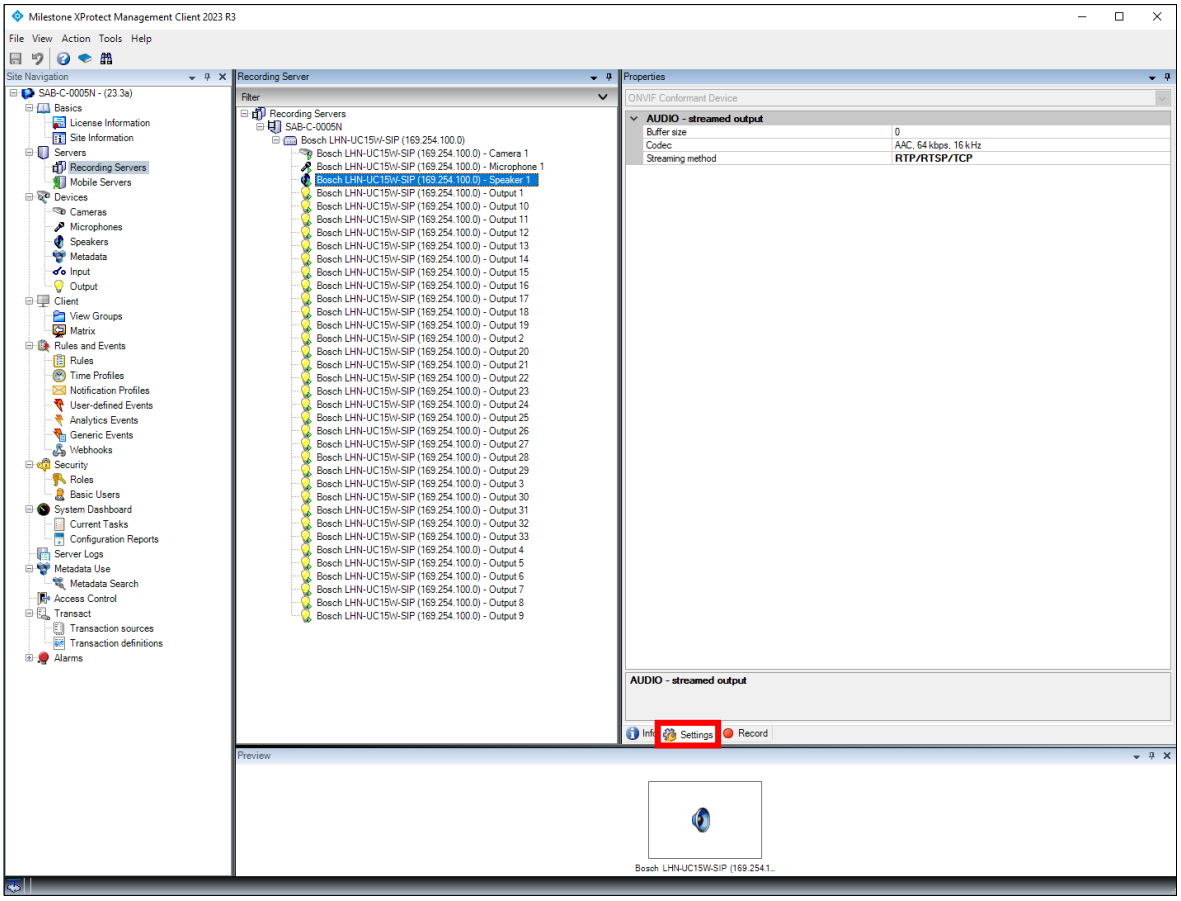
Details of the default rule:



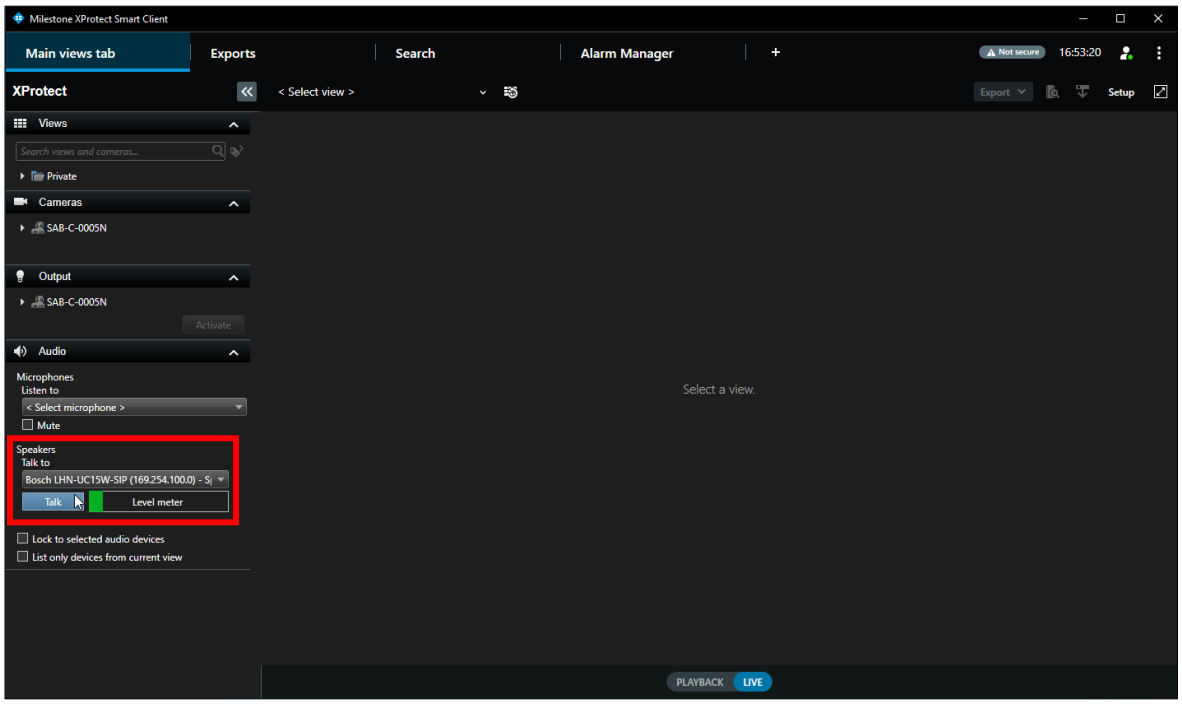
Notice!
G.711 is by default deactivated on the side of the IP horn/amp due to its lower audio quality compared to AAC. Using AAC is recommended. If you want to use G.711 you must activate this on the *Generic settings* page.



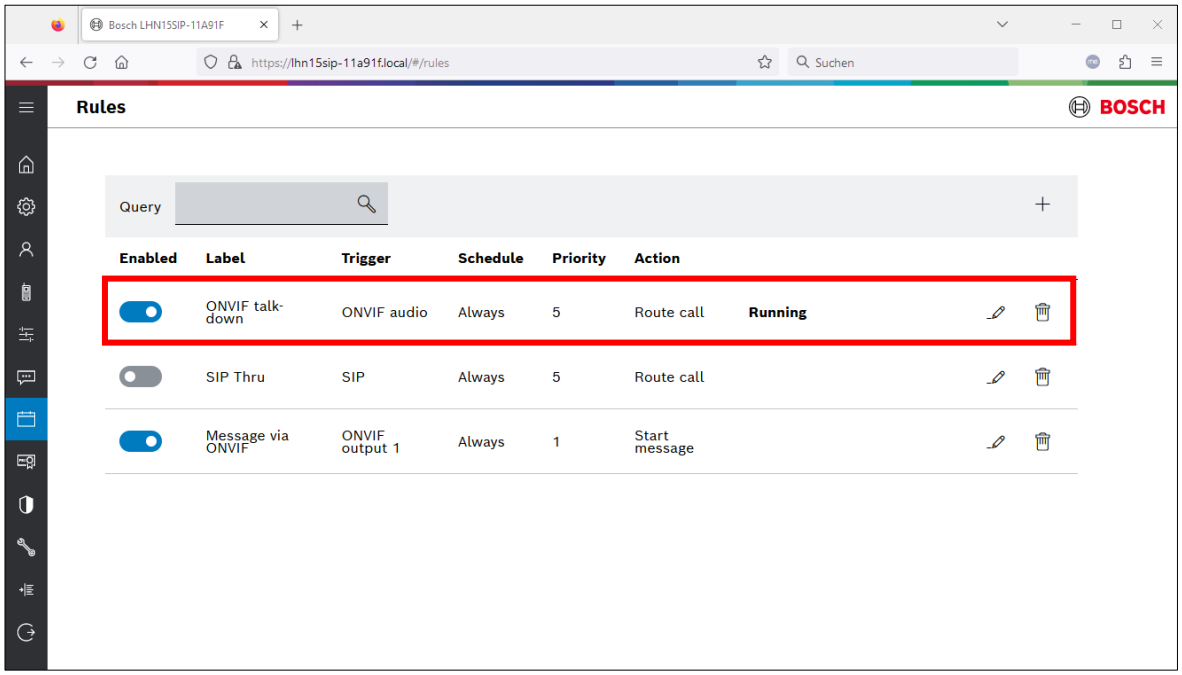
2. Open XProtect Management Client:
   - Select the loudspeaker and go to *Settings*.
   - Codec: Several codecs like AAC (preferred) and G.711(legacy, lower quality) are supported. Select one of them.
   - Streaming method: Select the desired streaming method.



3. Testing the audio from the VMS to the IP horn/amp:
   - Open XProtect Smart Client.
   - Select the IP horn/amp under *Speakers -> Talk to.*
   - By pressing the *Talk* button, the audio will be routed to the IP horn/amp.



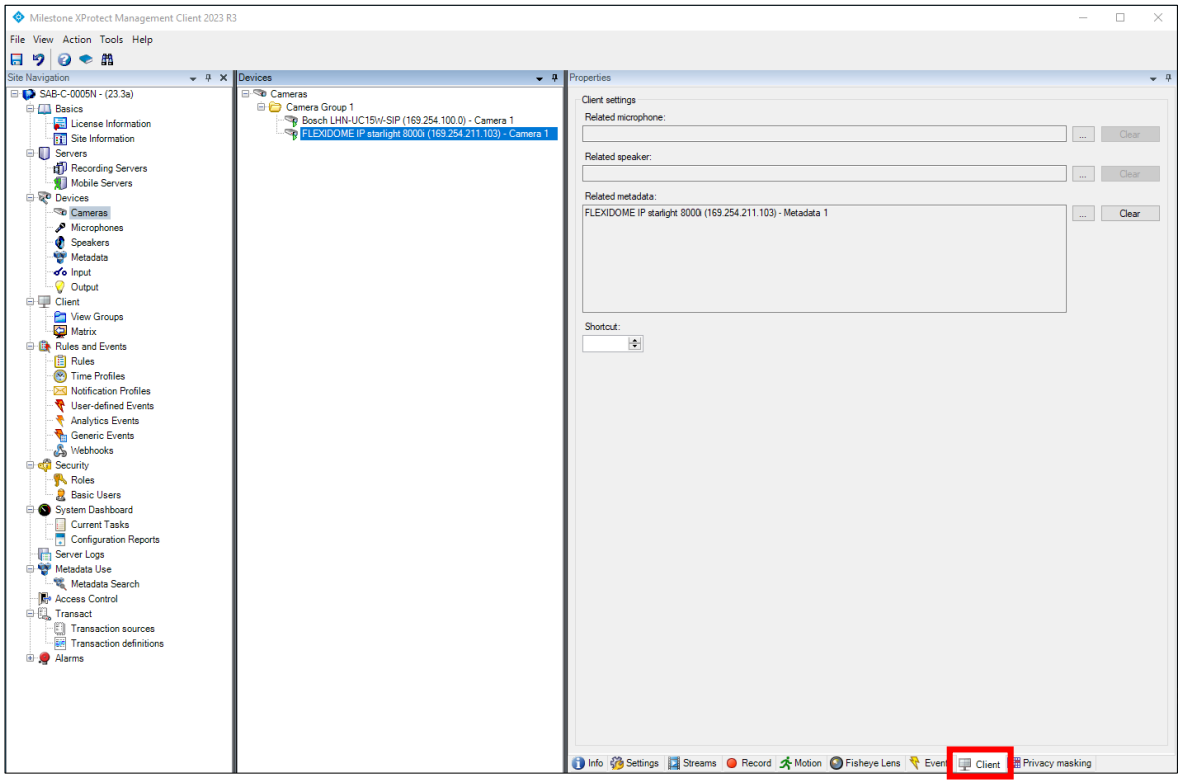
4. On the Rules page of the IP horn/amp you can check if the audio is routed:
   - Go to *Rules*.
   - The state of the *ONFIV talk-down* rule changes to **Running.**



4.6. Assign the IP horn/amp to a specific camera

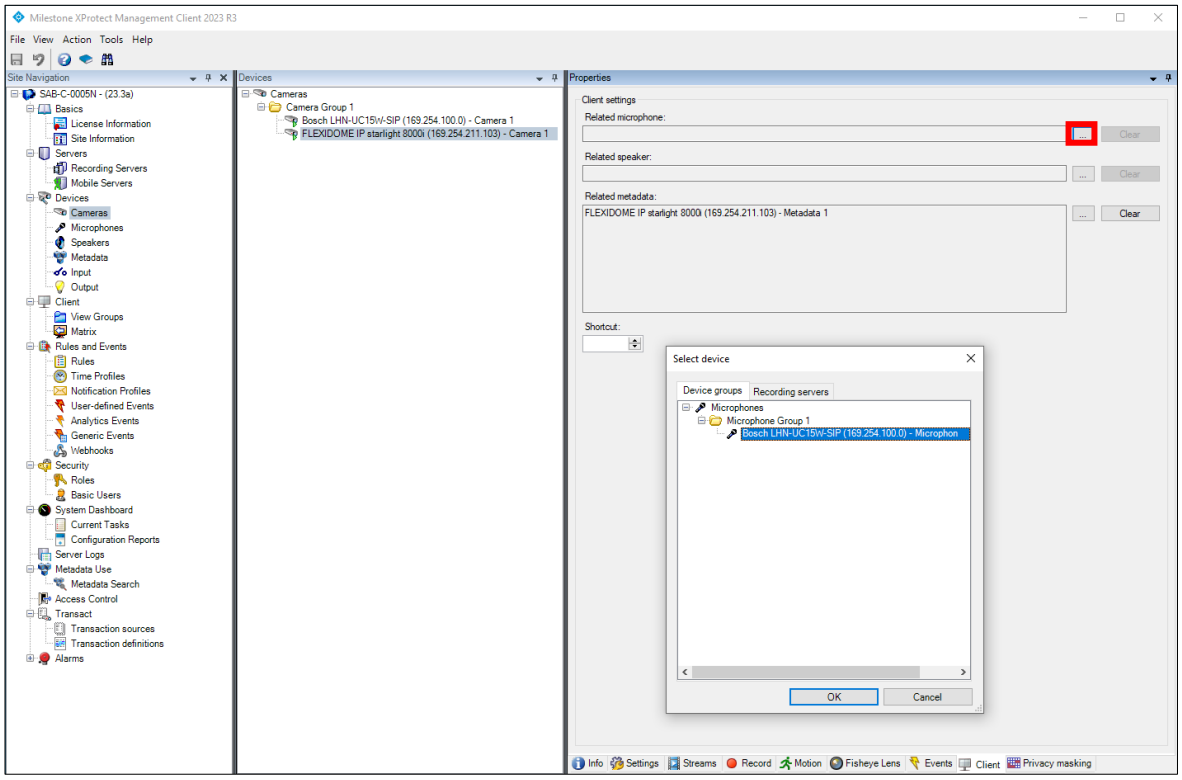
This chapter describes how to assign an IP horn/amp to a specific camera.

1. Go to *Devices -> Cameras* and click on the camera you want assign the loudspeaker. Go to the *Client* tab to do the assignment settings.

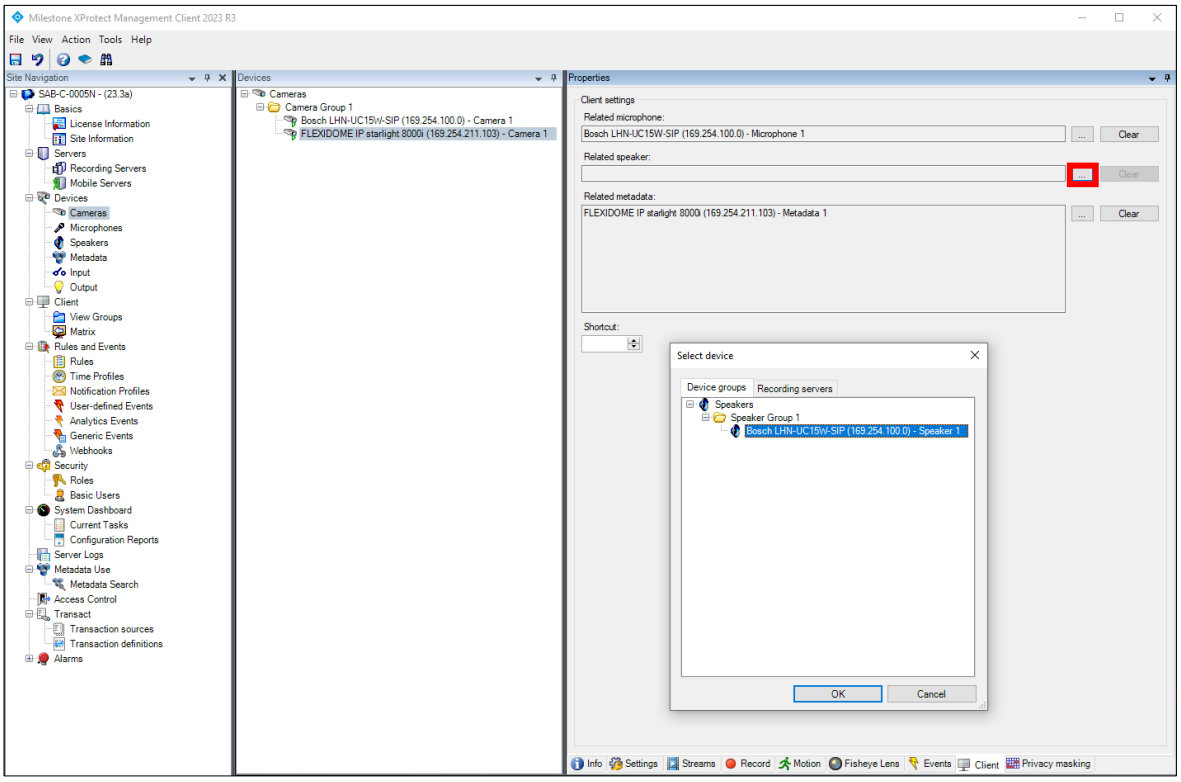


Notice!
The IP horn/amp is also displayed under cameras, as it is sending a video stream (speaker icon).

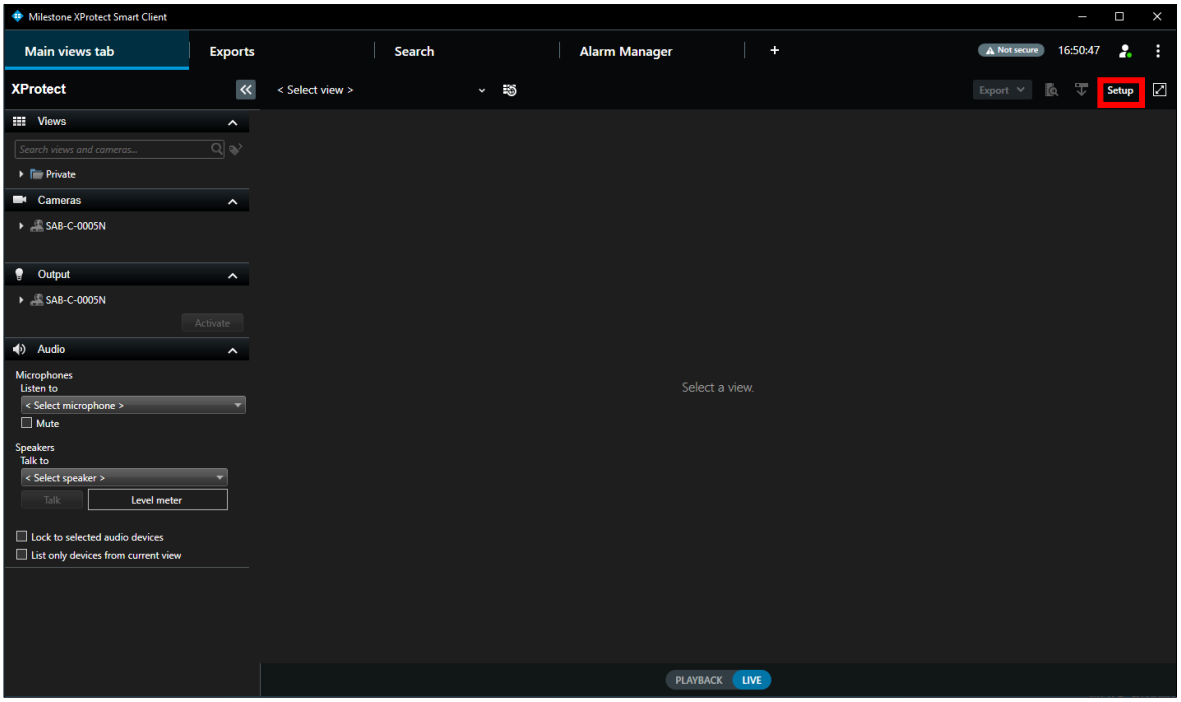
2. To assign a microphone to the camera go Click on the three dots next to *Related microphone*. A Pop-up window will open, and you need to select the microphone of the IP horn and click *OK*.



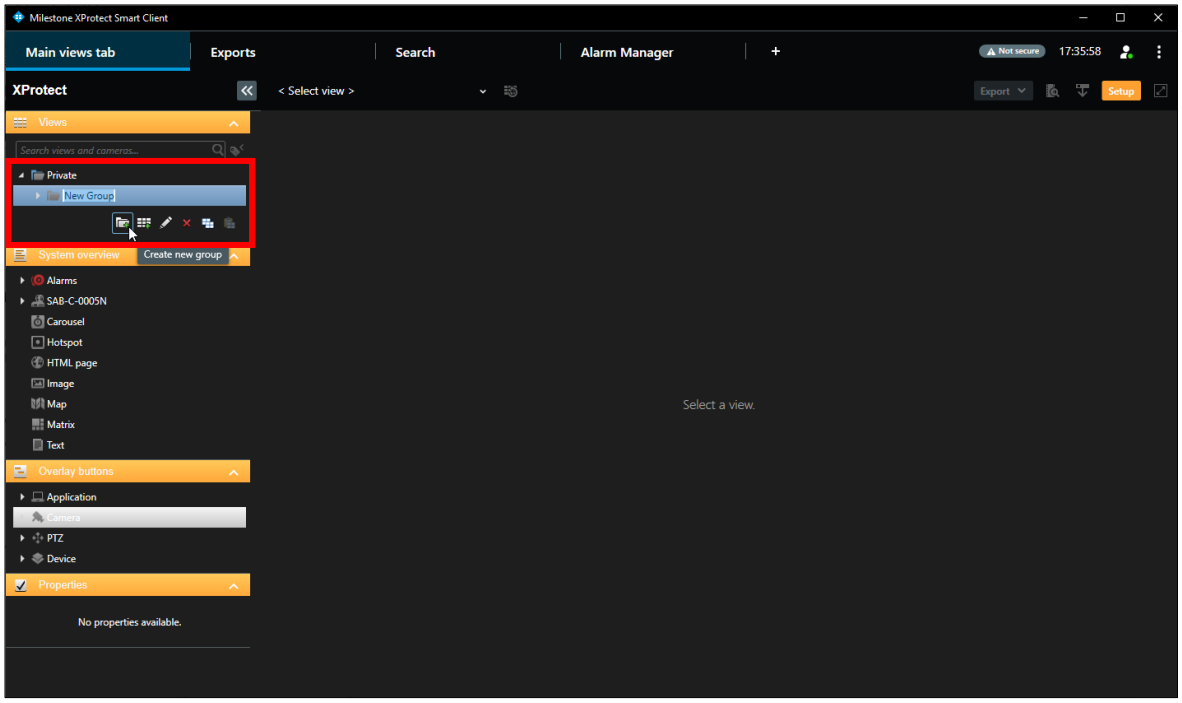
3. To assign a loudspeaker to the camera click on the three dots next to *Related speaker*. A Pop-up window will open, and you need to select the speaker of the IP horn/amp and click *OK*.



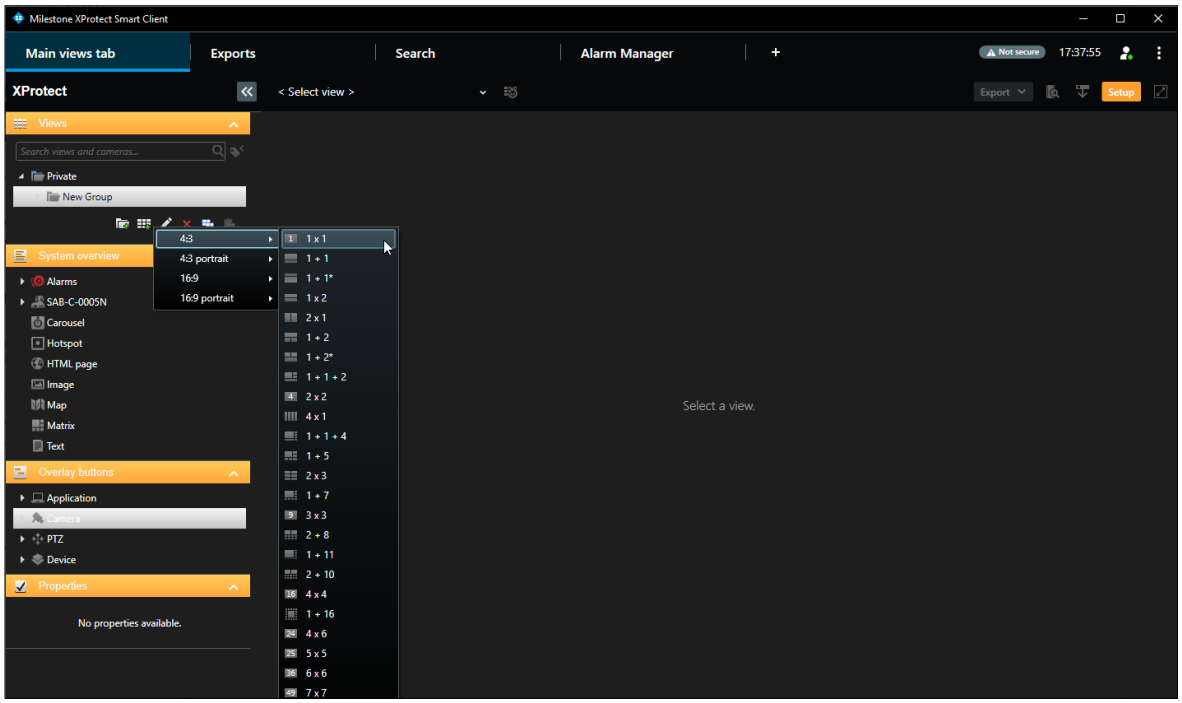
4. To test the assignment, open the XProtect Smart Client and click on *Setup*.



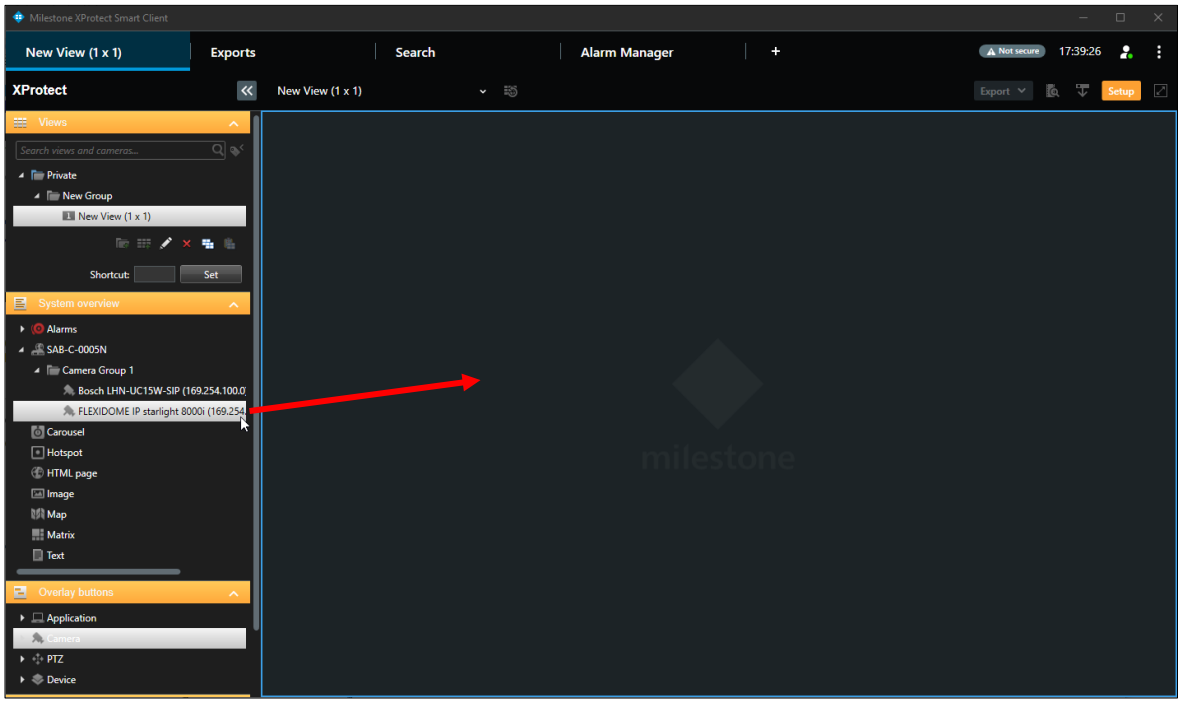
5. Create a new View group.

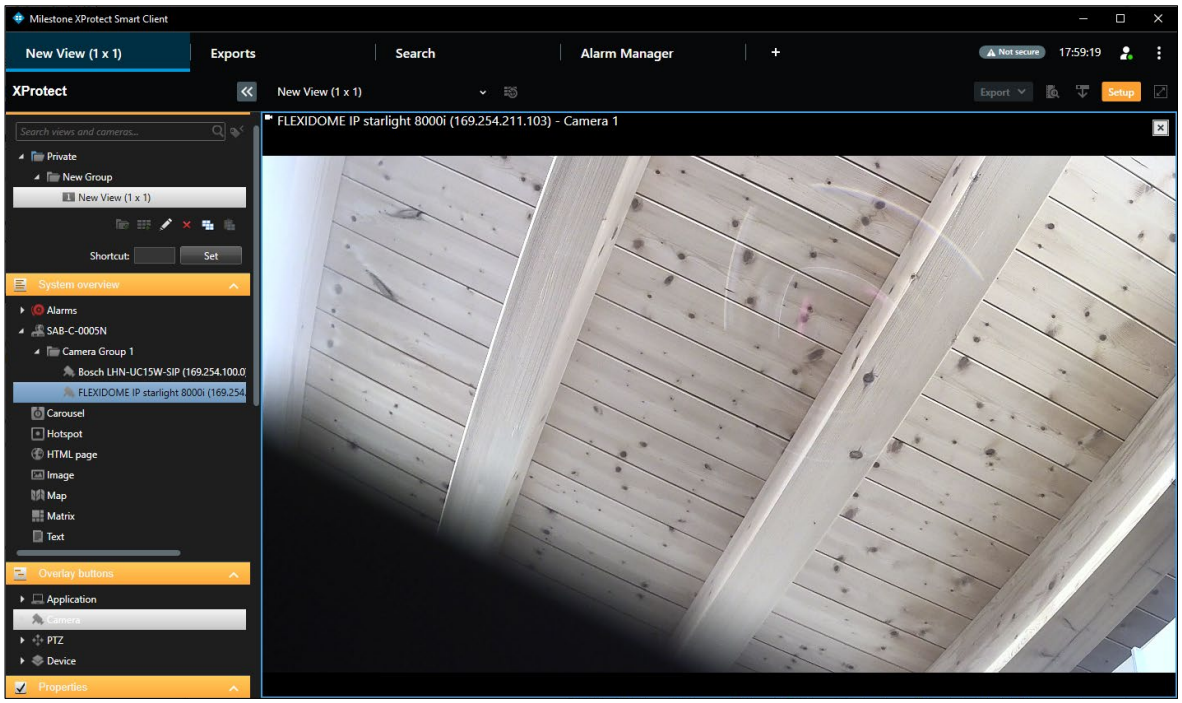


6. Create a new view

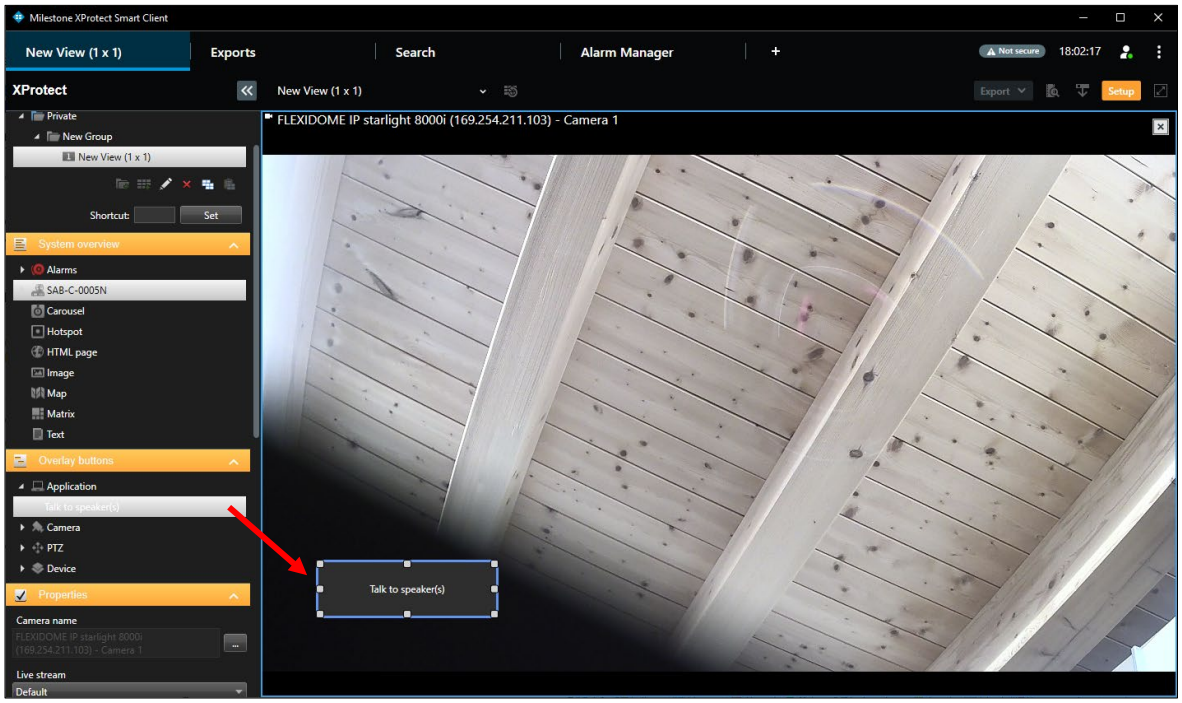


7. Go to *System overview -> Recording server -> Camera Group* and drag and drop the camera on the right-hand view.

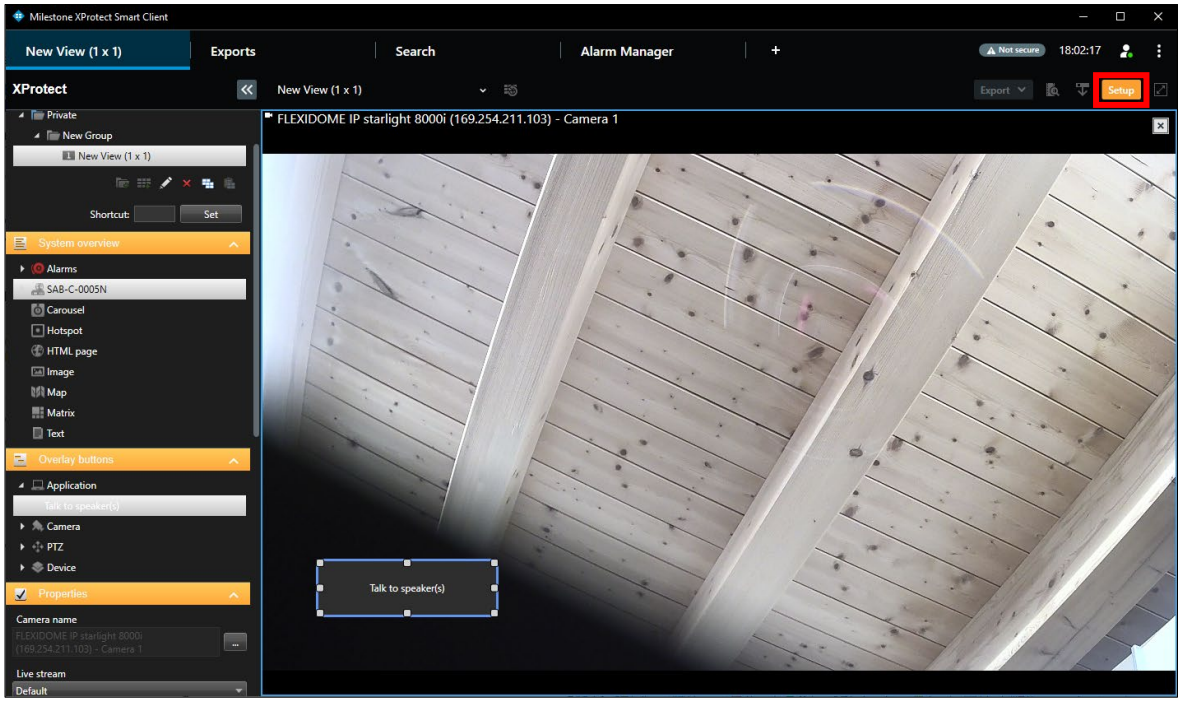




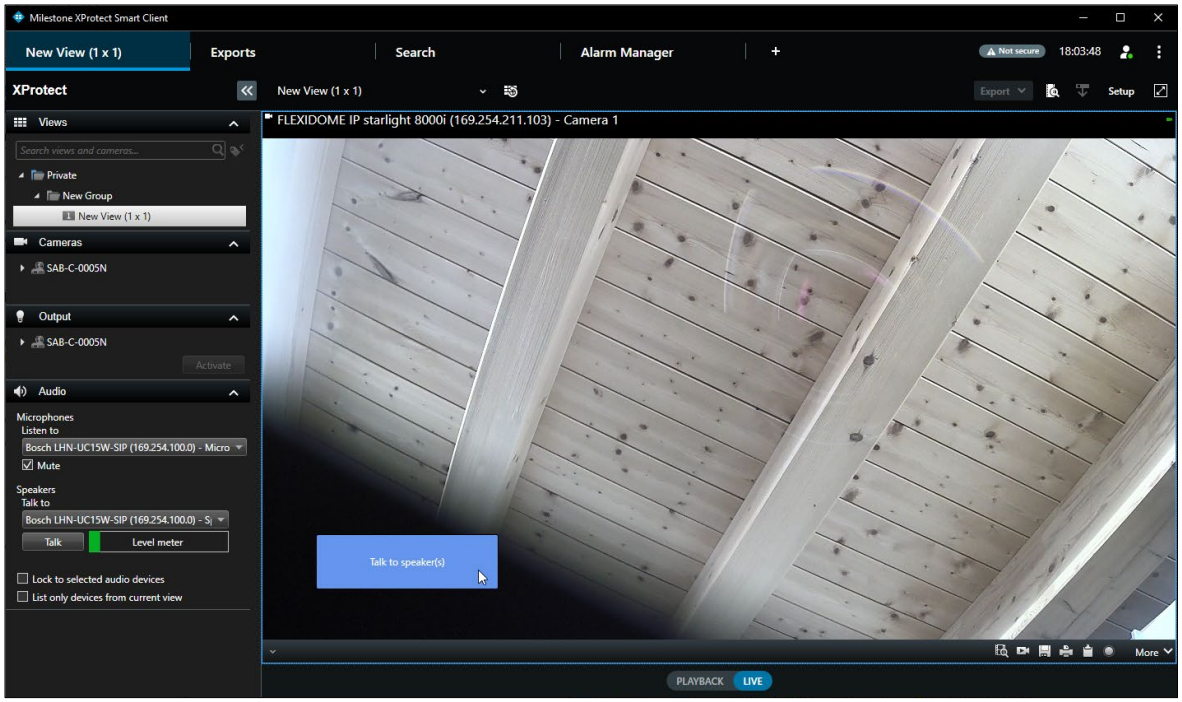
8. Go to *Overlay buttons -> Application* and drag and drop a *Talk to speaker(s)* button on the cameras view. If necessary, you can now change the text of the button by clicking on the button.



9. Exit the Setup mode by clicking again on the Setup button in the right top corner.



10. By pressing the button, you can talk now to the camera with the assigned IP horn/amp.



5. Document history

Release date	Documentation version	Reason
2024-02	v1.0	1st edition
2024-05	v1.1	Some screenshots have been updated to be compatible with IP horn/amp FW v2.1

6. Notice of liability

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