Voip PBX & Doorcom

Every Thinknx server embeds a software VOIP telephony PBX. It is optimized for the VOIP functionalities between clients and for door communication. This object allows to configure the PBX (extensions, ring groups and door stations).

- **PBX port** This property allows to specify the PBX port if different from the default one (5060).
- **Accounts PBX** This property represents the list of extensions (clients) to be registered in the PBX.
- **Ring groups** This property represents the list of ring groups to be registered in the PBX. Ring groups allow to call more than one extension using a single number. The outdoor station can forward the call to several clients using a single number.
- **Intercom devices** This property represents the list of intercom devices to be registered in the PBX.

Adding PBX accounts

Click on the button displayed on the right to open the PBX users editor window, then click on ”Add” and adjust the properties in the grid:

- **Extension** This property allows to specify the extension number used by the client to join the PBX.
- **Password** This property allows to specify the password associated to the extension number.

Adding ring groups

Click on the button displayed on the right to open the ring groups editor window, then click on ”Add” and adjust the properties in the grid:

- **Ring Group Number** Number associated to this group in PBX. Group Numbers start from 9000
- **Accounts PBX** PBX accounts associated to this ring group

Adding intercom devices

Click on the button displayed on the right to open the intercom devices editor, click on ”Add” and adjust the properties in the grid:

- **Device type** It can be selected from the following list:
  - *2N Elios IP*
  - *Mobotix M24*

    - *TCS gateway*
    - *TCS Native*
    - *Generic IP doorstation*
2. **Username web** This property corresponds to on of the login parameters of intercom management web page.
3. **Password web** This property corresponds to on of the login parameters of intercom management web page.
4. **Username PBX** This property corresponds to the extension used by the intercom to register in the PBX; it is automatically generated and it cannot be edited. For devices the numeration starts from 901.
5. **IP address** Outdoor station address.
6. **Port** Outdoor station port.
7. **Intercom buttons** This property allows to configure the intercom button panel, associating to each button the extension or ring group to be called. Click on the button displayed on the right to open the intercom buttons editor, click on ”Add” and adjust the properties in the grid:
    - Label: Label associated to the button in the configurator.
    - Button number: This property represents the button number on the panel.
    - Call single user: If enabled, the call is sent to a single user when the button is pressed. If disabled, the call is sent to a ring group.
    - Ring Group PBX: Ring group associated to this button.

Integration example: 2N Helios IP

The Helios IP Verso SIP Door Station is an SIP Door Station solution with an integrated video camera for monitoring door activity. Here follows settings to apply to the 2N Helios door station to work properly with Thinknx PBX. It applies to 2N firmware version 2.10.0 (2015). The following features are supported:

- Paging: When the call button is pressed on the door station, it will call all appropriate clients based on the settings of the ring group called.
- 2Way audio call: the user at the client station can converse with the person outside the door
- Video monitoring: the camera in the door station can be accessed by the client to view the caller and the outside area
- Relay/Door strike actuation from the server: the internal relays can be actuated from Thinknx client/server provided that the needed license inside the 2N (http API) is enabled

Preliminary Requirements

The 2N Helio IP door station has to be connected to the ethernet using a CAT5 cable and it has to be in the same network to which Thinknx server is attached. Also the clients have to be connected to the same network. Special network configuration is possible using the needed routing/firewalling devices.

Voip PBX setup

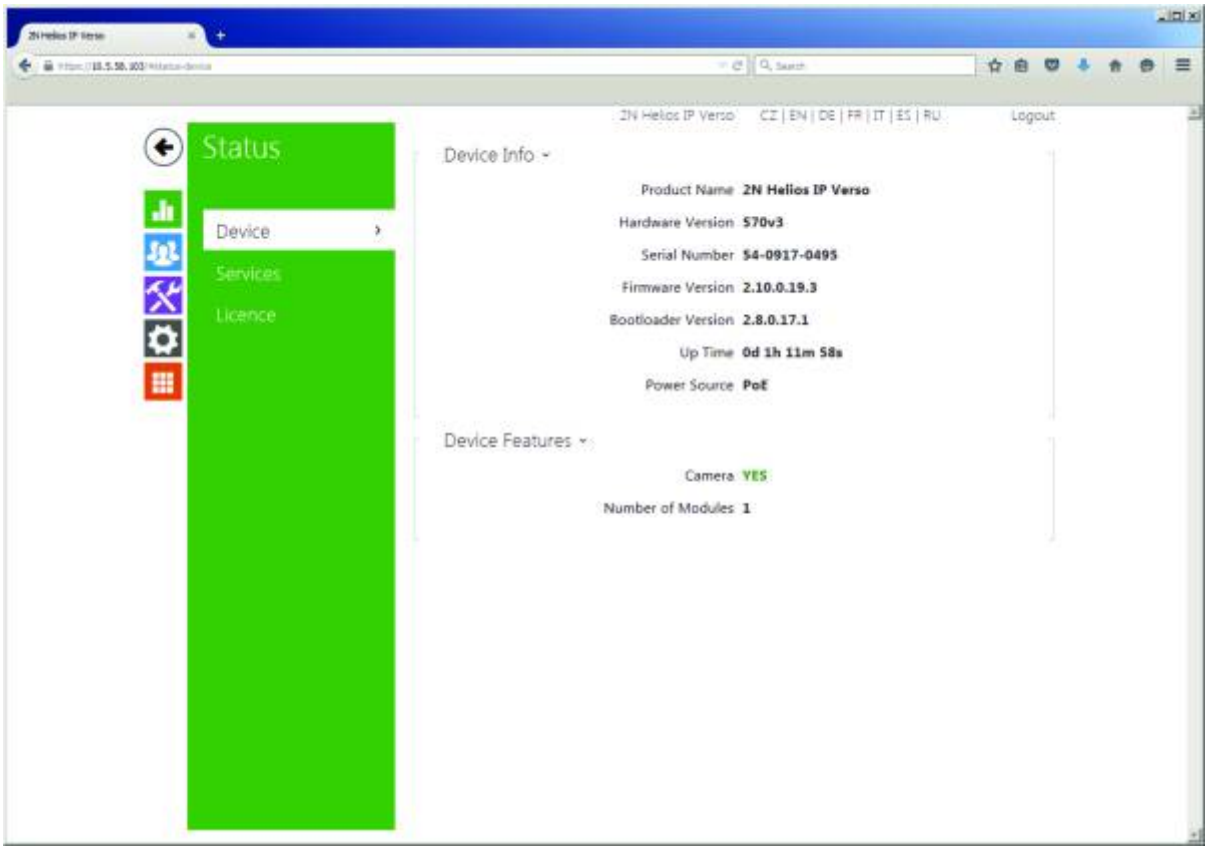
Add the Voip PBX object and configure as follow:

- Add several users into the “Accounts PBX” tab

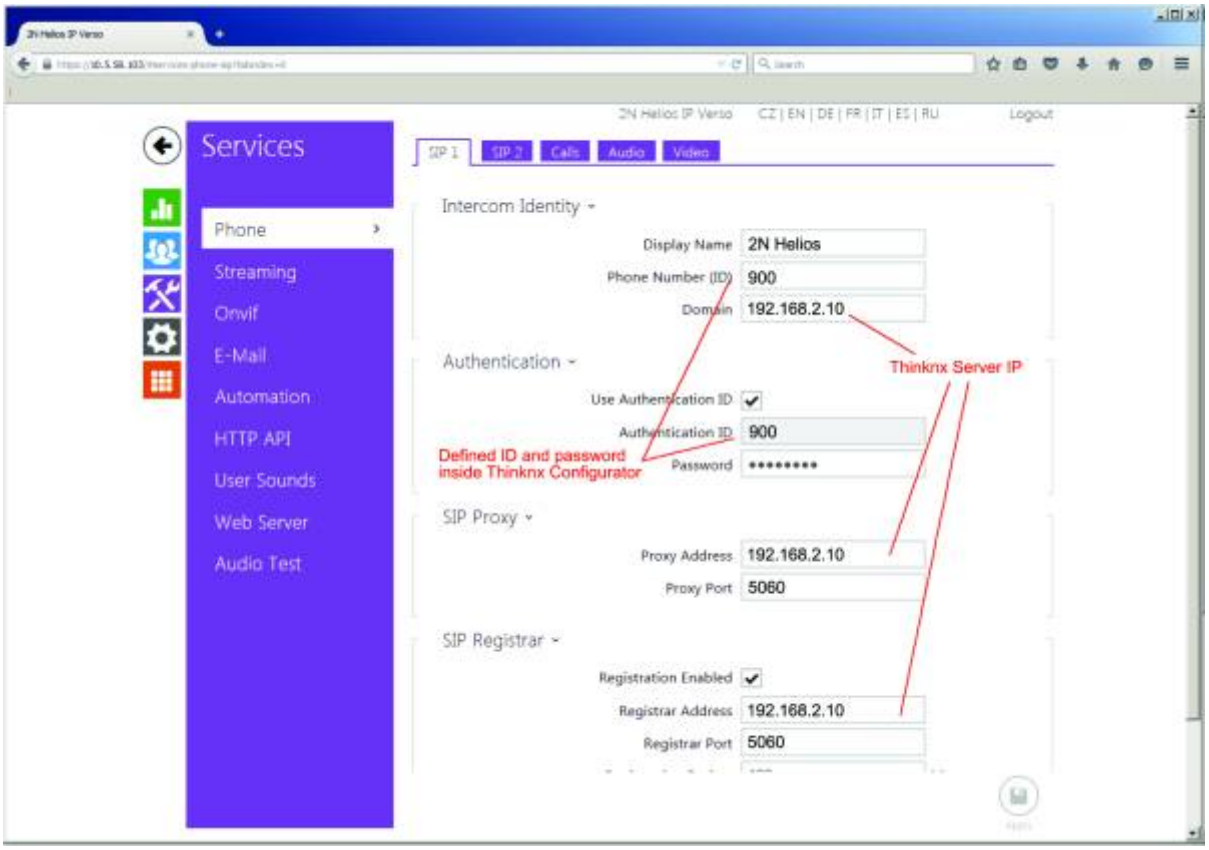
- Add an intercom into the “Intercom devices” and set it as generic intercom. A number will be shown. That is the ID of the intercom (extension number). The password for the registration to the PBX is identical to that number (user 901/pass 901)
- Add a ring group and select the users you want to call with that ring group. A number will be shown. That number is the extension associated to that ring group (9001). Calling that number will canuse all the associated users to ring.

2N Helios IP setup

Enter the IP Address of the door station into a Web Browser. You will be taken to the login page for the Door Station. Log in to the Door Station. By default, the user name is **Admin** and the password is **2n**. You will be taken to the Configuration Utility:



Select the “Services” Icon on the left to access the Services screen. Then select the Phone option:



On the SIP 1 Tab→ Intercom Identity

1. Set the Phone Number. This is actually the “ID” with which the device will populate in the Thinknx SIP server (901)
2. Set the Domain to the IP Address of Thinknx server

On the SIP 1 Tab→ Authentication

1. Check the Use Authentication ID box
2. Set the Authentication ID to the ID of the device inside the Thinknx SIP server (901)
3. Set the Password with the same number of the ID (901)

On the SIP 1 Tab→ SIP Proxy

1. Set the Proxy Address to the IP Address of Thinknx server
2. Ensure the Proxy Port is set to 5060

On the SIP 1 Tab→ SIP Registrar

1. Check the Registration Enabled box
2. Set the Registrar Address to the IP Address of Thinknx server
3. Ensure the Registrar Port is set to 5060
4. Leave the Registration Expires time set to default

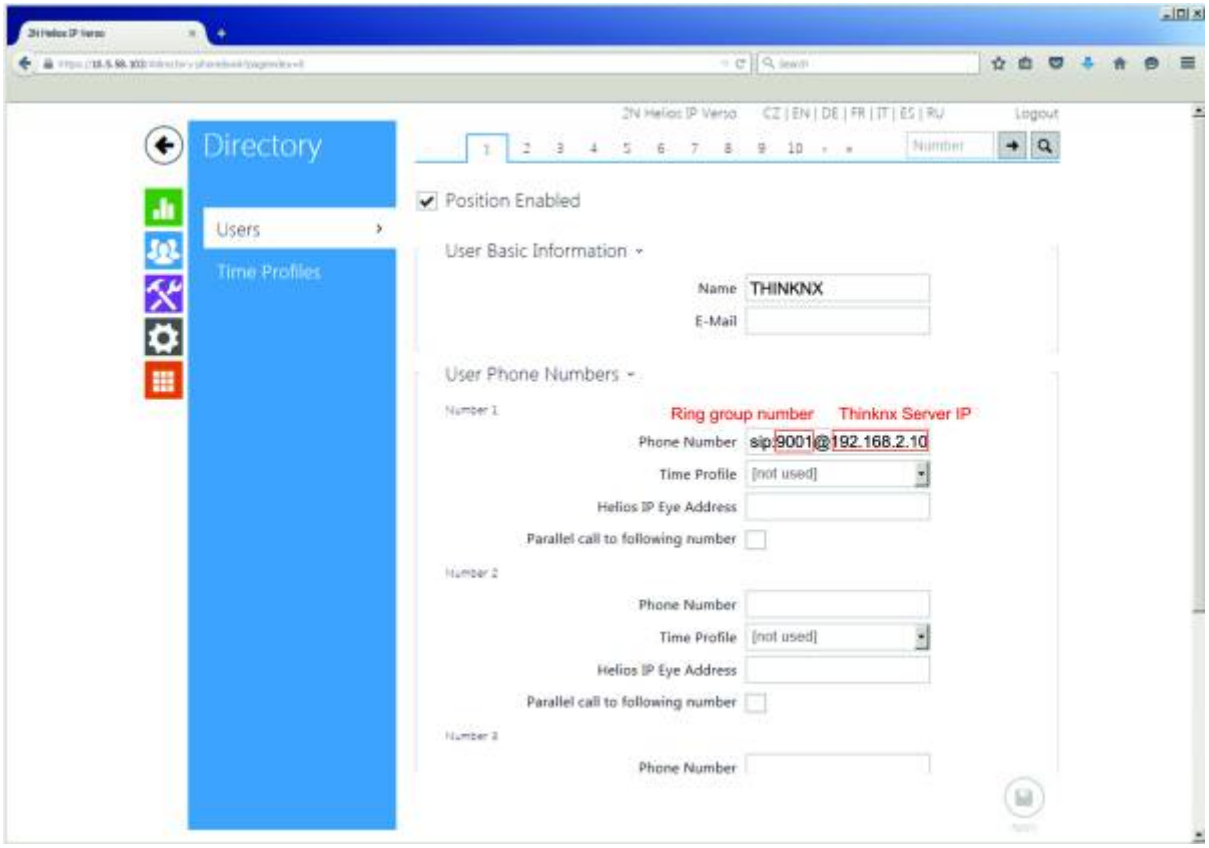
On the Audio Tab

1. Uncheck G.722
2. Make G.711 (PCMU) the first choice

On the HTTP API option:

1. Select “No authentication” for the camera image service

Select the “Directory” Icon on the left to access the Users screen



On the User 1 (button 1) tab:

1. Check the “Position Enabled” box
2. Under User Basic Information→ Name, type any name you like. The E-Mail field may be left blank
3. Under User Phone Numbers→ Number 1→ Phone Number type sip:9001@x.x.x.x, where “x.x.x.x” is the IP Address of the Thinknx Server and 9001 is the extension number to call (ring group in this case).
4. All other fields on this screen may be left blank

To be able to see the images coming from the device you need to add a Camera inside Thinknx UI and configure to grab images using the following parameters:

1. Type: Generic Camera
2. Use RTSP : Disabled
3. Image Path : api/camera/snapshot?width=640&height=480
4. Fill the other fields like IP addresses and credentials as for any other normal camera.

To be able to open the Lock connected to the 2N device you have two options: to send **DTMF** tones during conversation or to send html **GET** messages to the device. If you want to use DTMF tones, it will be enough to create a Generic Buttom into the UI and select as action the generation of DTMF tone as in the following picture. DTMF code must be the same inserted into the 2N configuration page followed by **#** (in the example 1234#).

If you prefer to use html GET solution, you need to use the Thinknx Ethernet Gateway plugin

and configure a Generic Button to perform an action with the following parameters:

1. Command: Make http GET call to a specified url with username and password
2. URL : **http://IP_of_2N_DEVICE/api/switch/ctrl?switch=1&action=on**
3. Username : username used to authenticate with 2N station
4. Password : password used to authenticate with 2N station

This method require additional licenses from 2N to enable the Switch API. The API should be available on HTTP also (Not HTTPS only).

Integration example: Doorbird D10x, D20x

The DoorBird D10x and D20x Door Stations are SIP Door Station solution with an integrated video camera for monitoring door activity.
For proper connection between Doorbird door stations and Thinknx PBX, refer to the step-by-step user guide created by Doorbird wich can be found on their website, or follow the instructions below.

The following features are supported:

- Paging: When the call button is pressed on the door station, it will call all appropriate clients based on the settings of the ring group called.
- 2Way audio call: the user at the client station can converse with the person outside the door
- Video monitoring: the camera in the door station can be accessed by the client to view the caller and the outside area
- Relay/Door strike actuation from the server: the internal relays can be actuated from Thinknx client/server or from KNX

Preliminary Requirements

The DoorBird door station has to be connected in the same network to which Thinknx server is attached. Also the clients have to be connected to the same network. Special network configuration is possible using the needed routing/firewalling devices.

Voip PBX setup

Add the Voip PBX object and configure as follow:

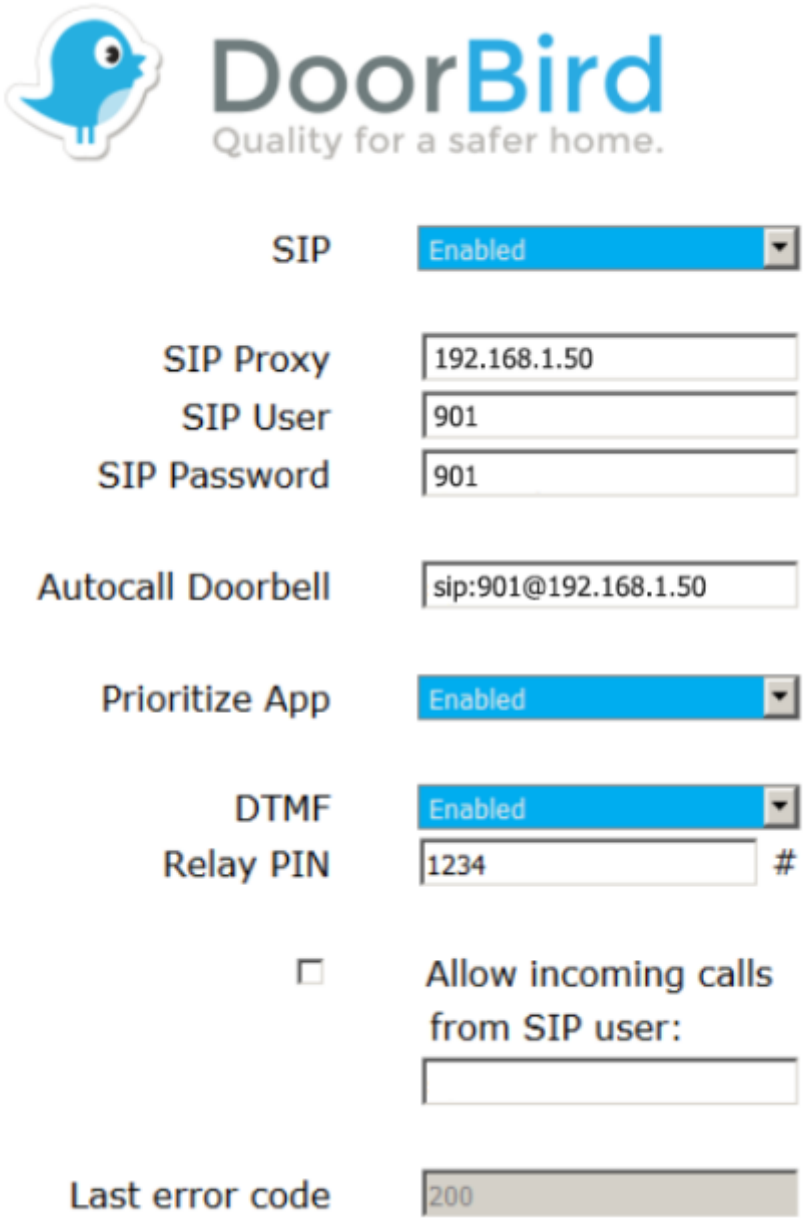
- Add several users into the “Accounts PBX” tab
- Add an intercom into the “Intercom devices” and set it as generic intercom. A number will be shown. That is the ID of the intercom (extension number). The password for the registration to the PBX is identical to that number (user 901/pass 901)
- Add a ring group and select the users you want to call with that ring group. A number will be shown. That number is the extension associated to that ring group (9001). Calling that number will canuse all the associated users to ring.

Doorbird setup

Enter the following url into a web browser to configure the SIP part of the doorbird device:

http://x.x.x.x/bha-api/sip.html

where x.x.x.x is the local ip of the Doorbird doorstation. To get the ip address, in case you don't know it, you can use the utility reachable from the following address: http://www.doorbird.com/checkonline and inserting the required data.



Referring to the image:

1. Set SIP to enabled
2. Set SIP Proxe to the IP Address of Thinknx server
3. Set the SIP User to the ID of the device inside the Thinknx SIP server (901)
4. Set the SIP Password with the same number of the ID (901)
5. Set the Autocall doorbell as sip:9001@x.x.x.x, where “x.x.x.x” is the IP Address of the

Thinknx Server and 9001 is the extension number to call (ring group in this case).

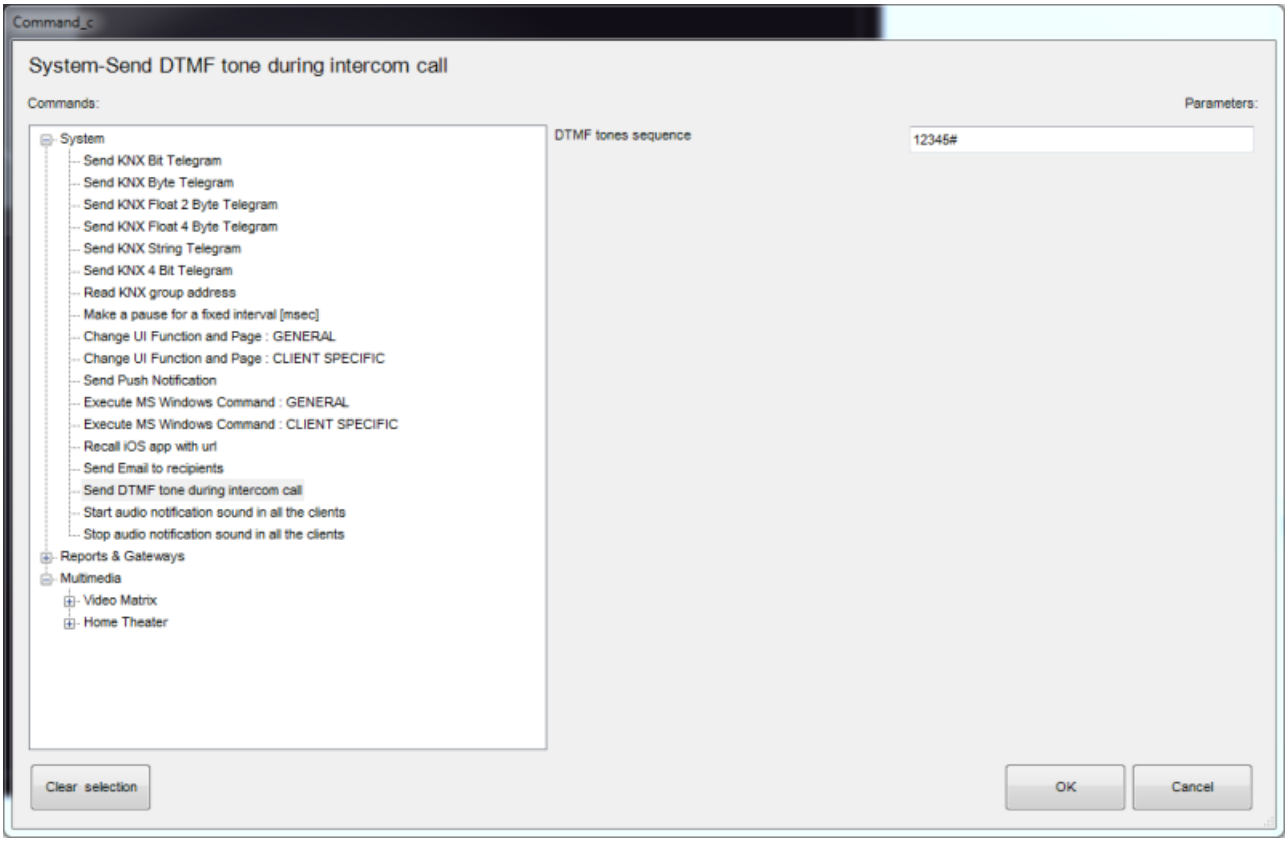
6. Set DTMF to enabled to be able to open the lock using DTMF codes

The same procedure can be done using the DoorBird app into the dedicated SIP configuration section.

To be able to see the images coming from the device you need to add a Camera inside Thinknx UI and configure to grab images using the following parameters:

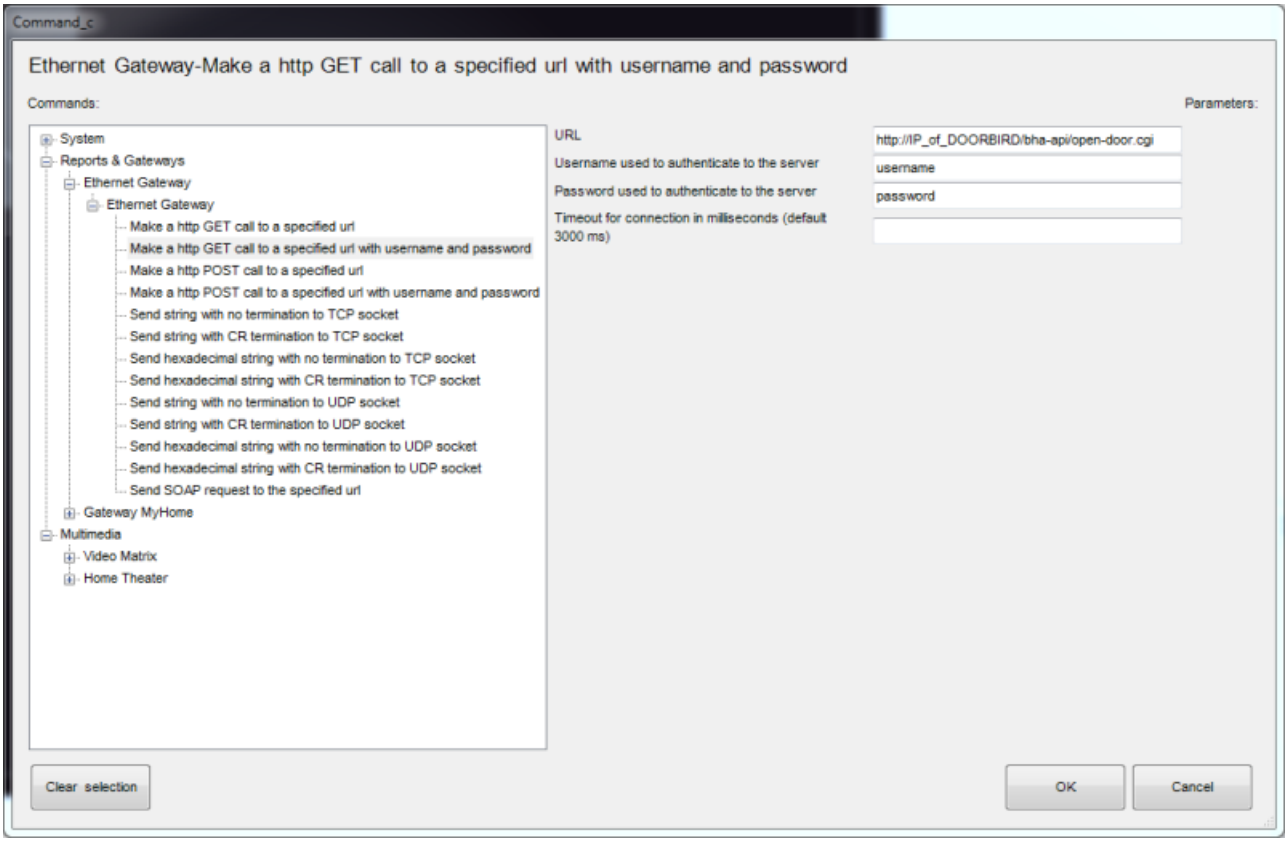
1. Type: Generic Camera
2. Use RTSP : Disabled
3. Image Path : bha-api/image.cgi
4. Fill the other fields like IP addresses and credentials as for any other normal camera.

To be able to open the Lock connected to the Doorbird device you have two options: to send **DTMF** tones during conversation or to send html **GET** messages to the device. If you wnat to use DTMF tones, it will be enough to create a Generic Buttom into the UI and select as action the generation of DTMF tone as in the following picture. DTMF code must be the same inserted into the Doorbird configuration page followed by **#** (in the example 1234#).



If you prefer to use html GET solution, you need to use the Thinknx Ethernet Gateway plugin and configure a Generic Button to perform an action with the following parameters:

1. Command: Make http GET call to a specified url with username and password
2. URL : **http://IP_of_DOORBIRD/bha-api/open-door.cgi**
3. Username : username used to authenticate with Doorbird station
4. Password : password used to authenticate with Doorbird station



Integration example: Mobotix T25 doorstation

The Mobotix T25 is a SIP door station solution with an integrated video camera for monitoring door activity. Below are the settings to apply to the Mobotix T25 to work properly with Thinknx PBX. The following features are supported:

- Paging: When the call button is pressed on the door station, it will call all appropriate clients based on the settings of the ring group called.
- 2Way audio call: the user at the client station can converse with the person outside the door
- Video monitoring: the camera in the door station can be accessed by the client to view the caller and the outside area
- Relay/Door strike actuation from the server: the internal relays can be actuated from Thinknx client/server.

Preliminary Requirements

The Mobotix T25 has to be connected to the ethernet using a CAT5 cable and it has to be in the same network to which Thinknx server is connected. Also, the clients have to be connected to the same network. Special network configuration is possible using the needed routing/firewalling devices.

Voip PBX setup

Add the Voip PBX object and configure as follow:

- Add several users into the “Accounts PBX” tab

- Add an intercom into the “Intercom devices” and set it as generic intercom. A number will be shown. That is the ID of the intercom (extension number). The password for the registration to the PBX is identical to that number (user 901/pass 901)
- Add a ring group and select the users you want to call with that ring group. A number will be shown. That number is the extension associated to that ring group (9001). Calling that number will cause all the associated users to ring.

Mobotix T25 setup

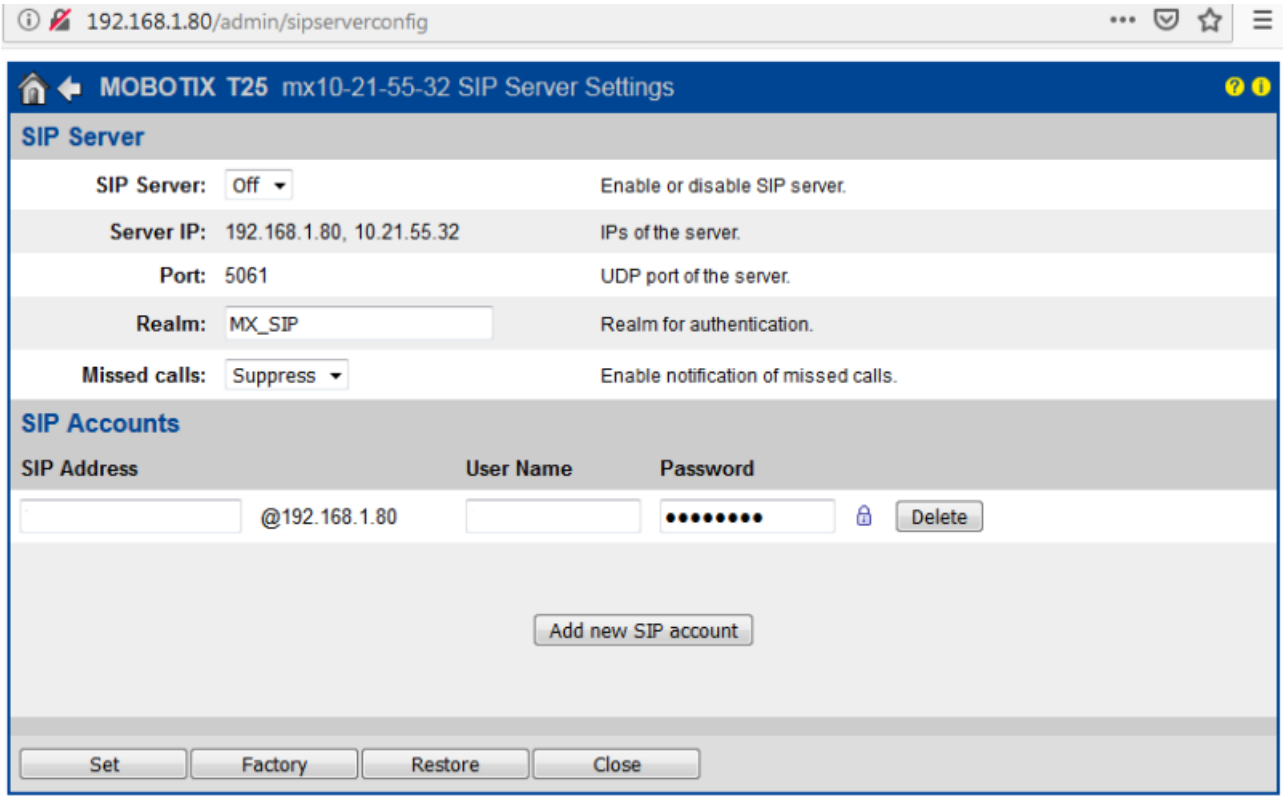
Enter the IP Address of the door station into your web browser and login using your admin username and password. You will be redirected to the live page of the camera with a main menu to the left.

Press the “Admin Menu” button to access the administration settings.

Scroll down through the list to reach the section called “Audio and VoIP Telephony.

SIP Server

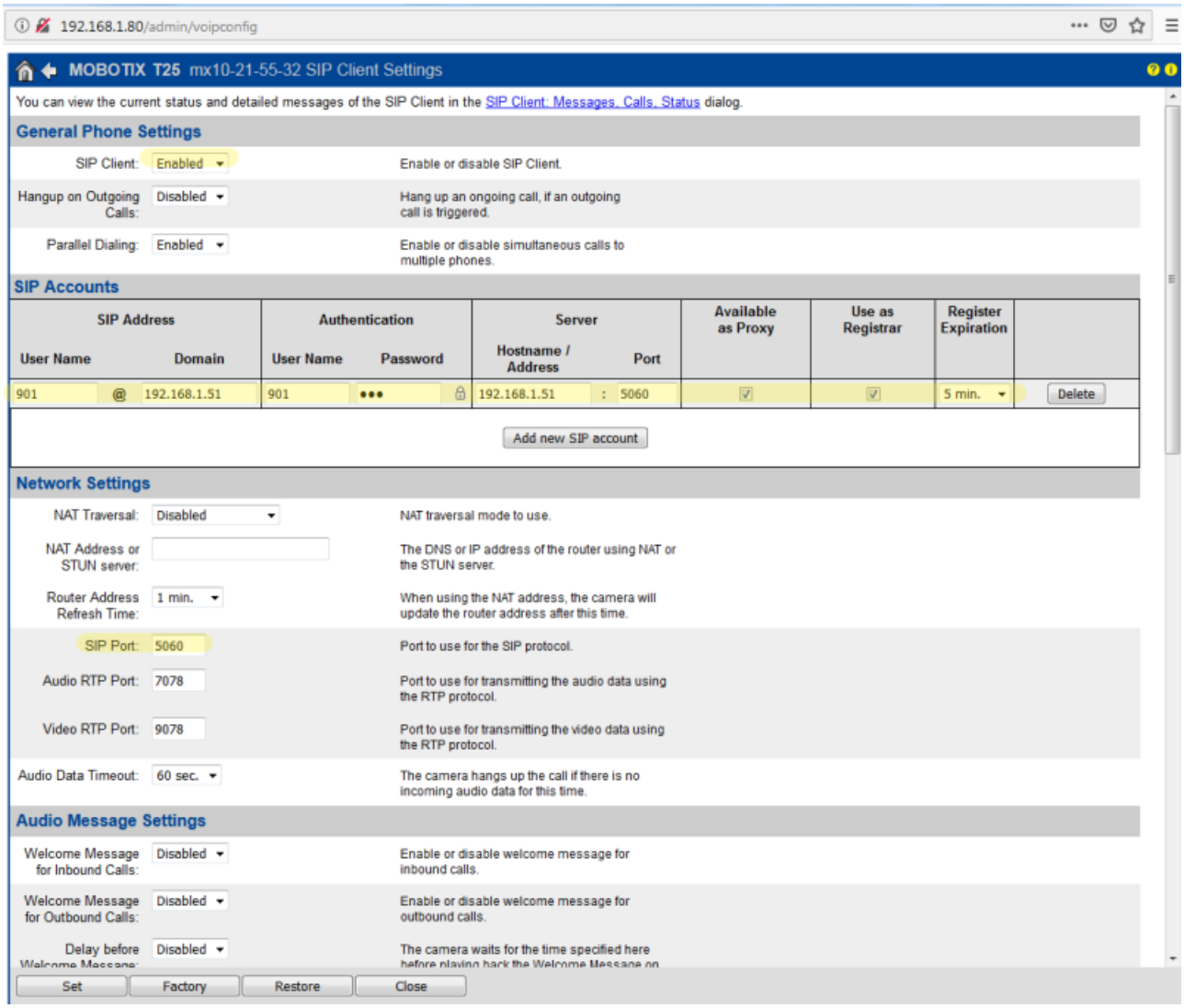
Click on “SIP Server Settings”. Once inside the page, make sure that the internal SIP Server of Mobotix is OFF. We will not need to activate this since the SIP server used will be the Thinknx server.



SIP Clients

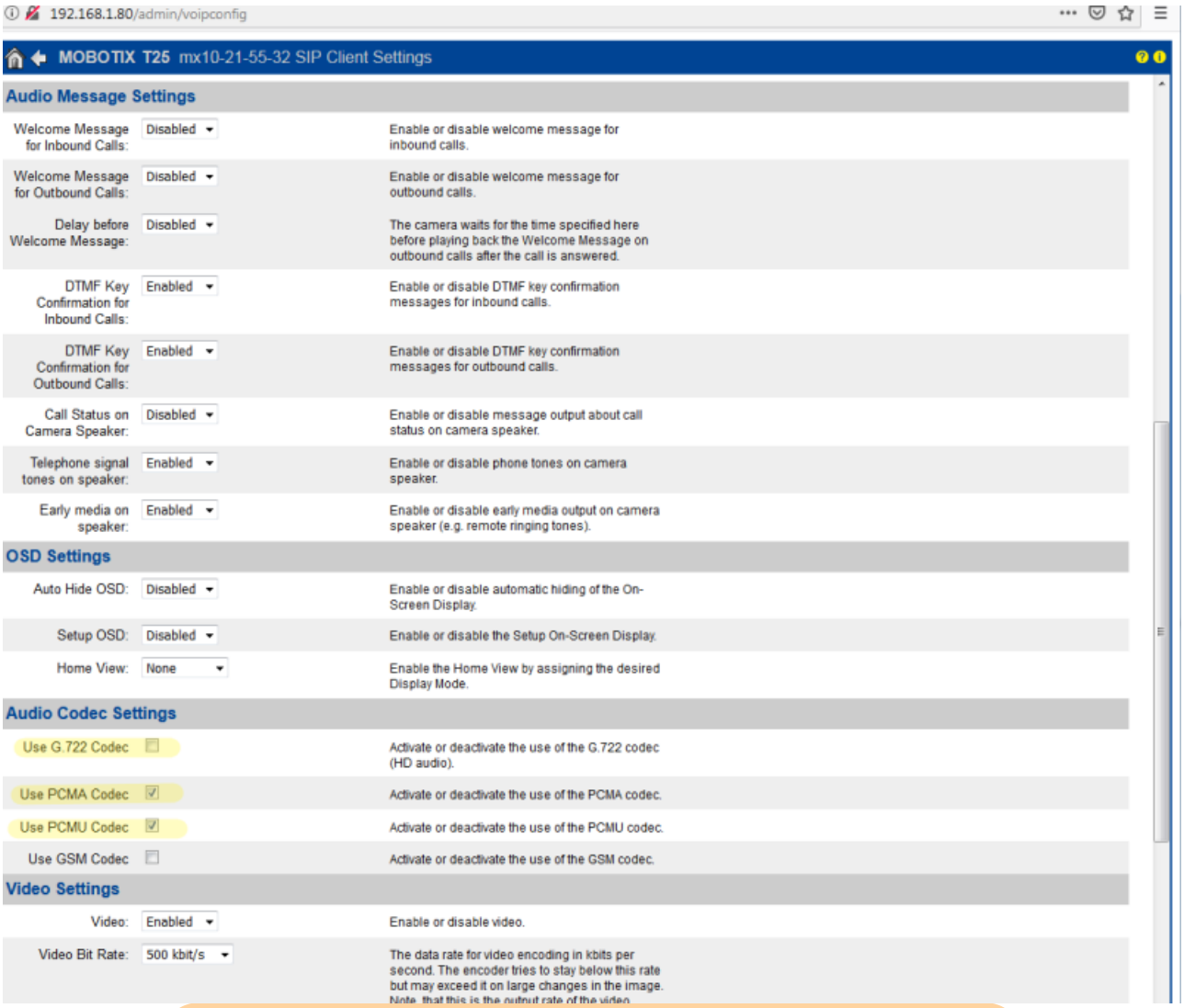
Go back to the Audio and VoIP Telephony, and click on the SIP Client Settings. Here we need to configure the Mobotix as a SIP client so it can communicate with Thinknx client devices.

- Make sure that SIP Client is Enabled.
- Click on “Add new SIP account” to create a new entry in the SIP Accounts table.
- Under SIP address, enter the extension 901 as username, and the IP address of your Thinknx server as Domain.
- Under Authentication, enter 901 as username and password.
- Under Server, enter the IP address of your Thinknx server as Hostname/Address, and 5060 as port.
- Enable “Available as Proxy” and “Use as Registrar”.
- Leave the Register Expiration as 5 min.

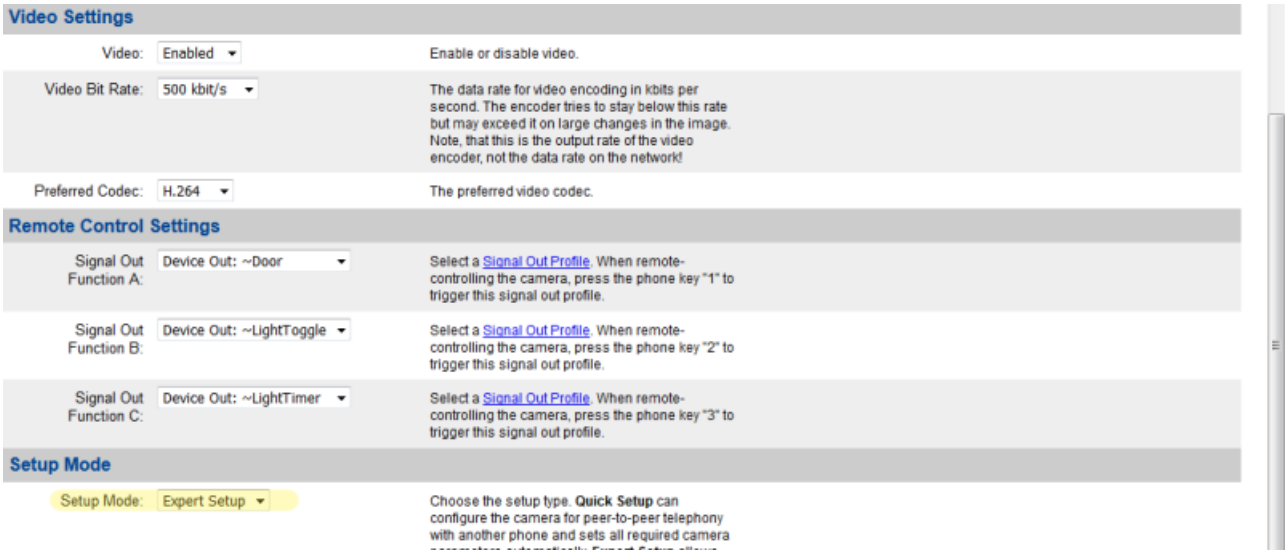


Scroll down through the settings till you reach the Audio Codec Settings.

Make sure that you enable “Use PCMA Codec” and “Use PCMU Codec”, and disable “Use G.722 Codec”.



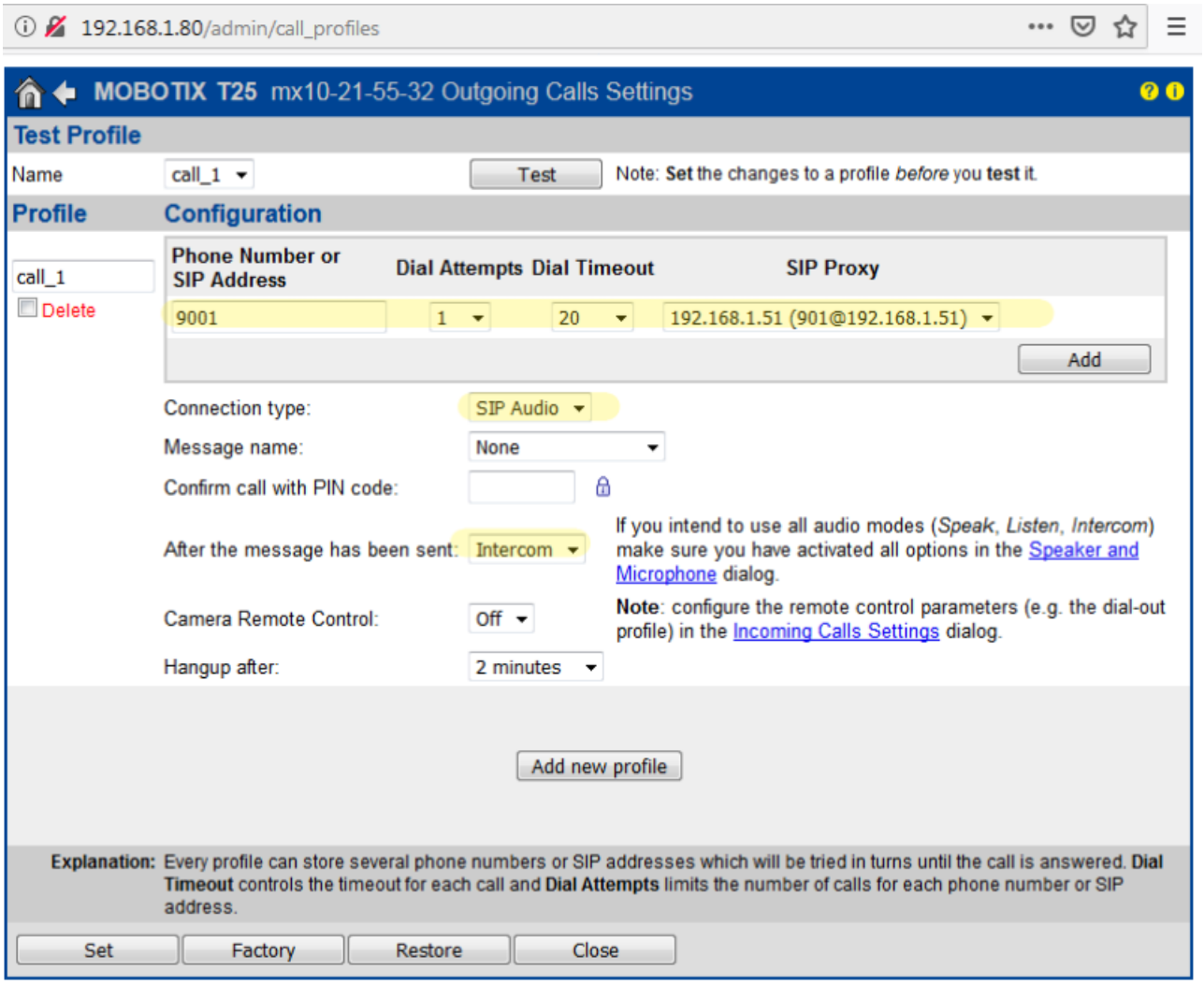
If you are unable to view the parameters above, make sure that you scroll down to the “Setup Mode” and select “Expert Mode”.



Configure Outgoing Calls

Access the “Outgoing Call Settings” from the Audio and VoIP Telephony menu. We will need to create the accounts that the Mobotix will try to call once the intercom button is pressed. Since our accounts have been added to a group call from inside the configurator, then we will only need to create an entry for extension 9001.

To create the profile, click on “Add new profile”.



Add the extension 9001 as Phone Number or SIP Address. Under “SIP Proxy”, select the option whith the following template “IP_Thinknx_Server(9001@IP_Thinknx_Server)”.

For “Connection type”, choose “SIP Audio”.

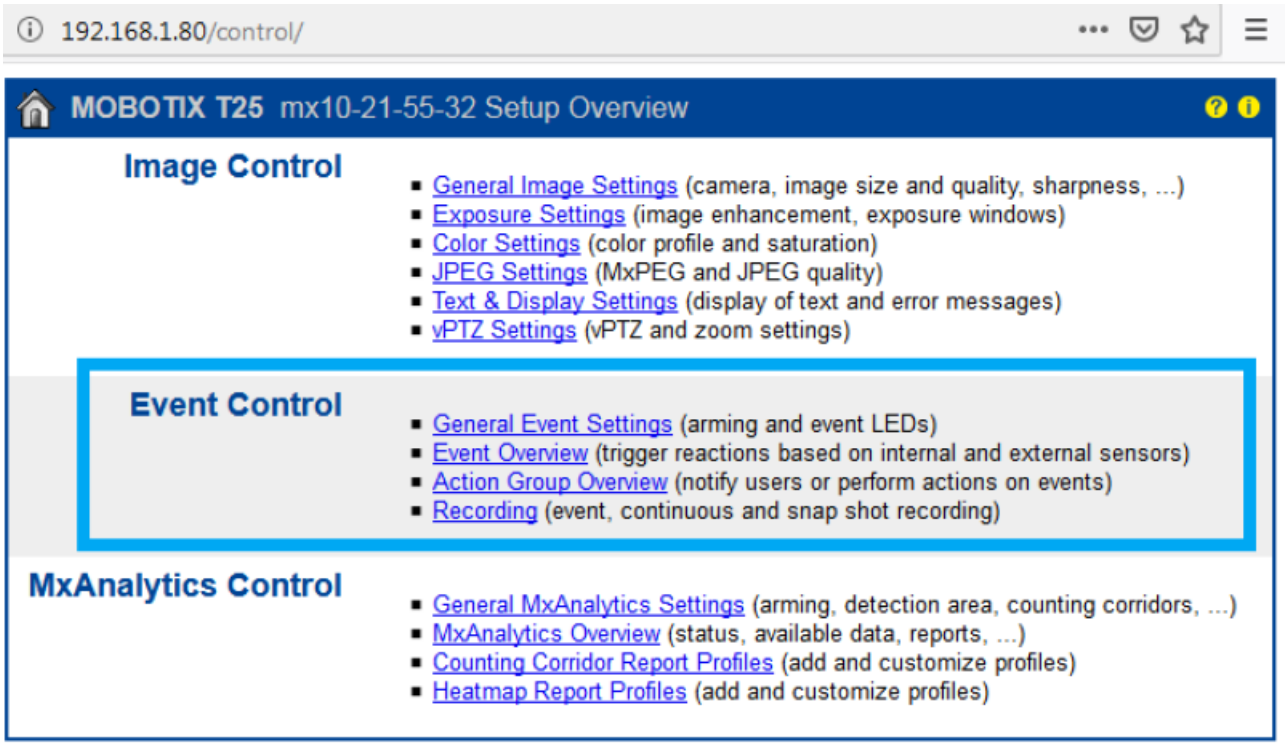
For the option “After the message has been sent” choose “intercom”.

Click on Set to save the settings.

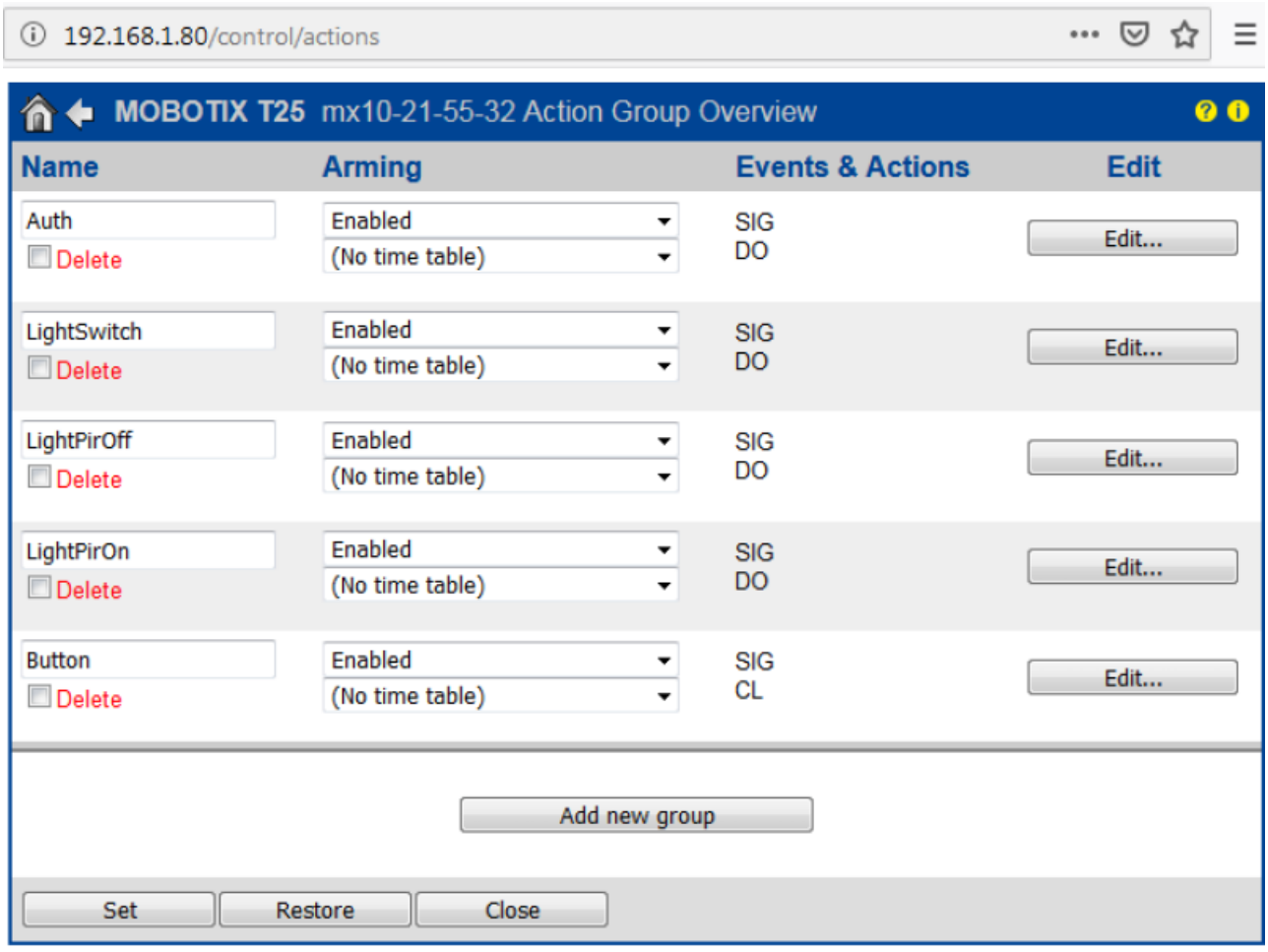
Configure Intercom Button

The final step to be able to make a call from the intercom would be to configure the button on the Mobotix. To do that, close the “Admin menu” and instead access the “Setup Menu” from the live interface.

Once inside, look for “Event Control” and click on “Action Group Overview”.



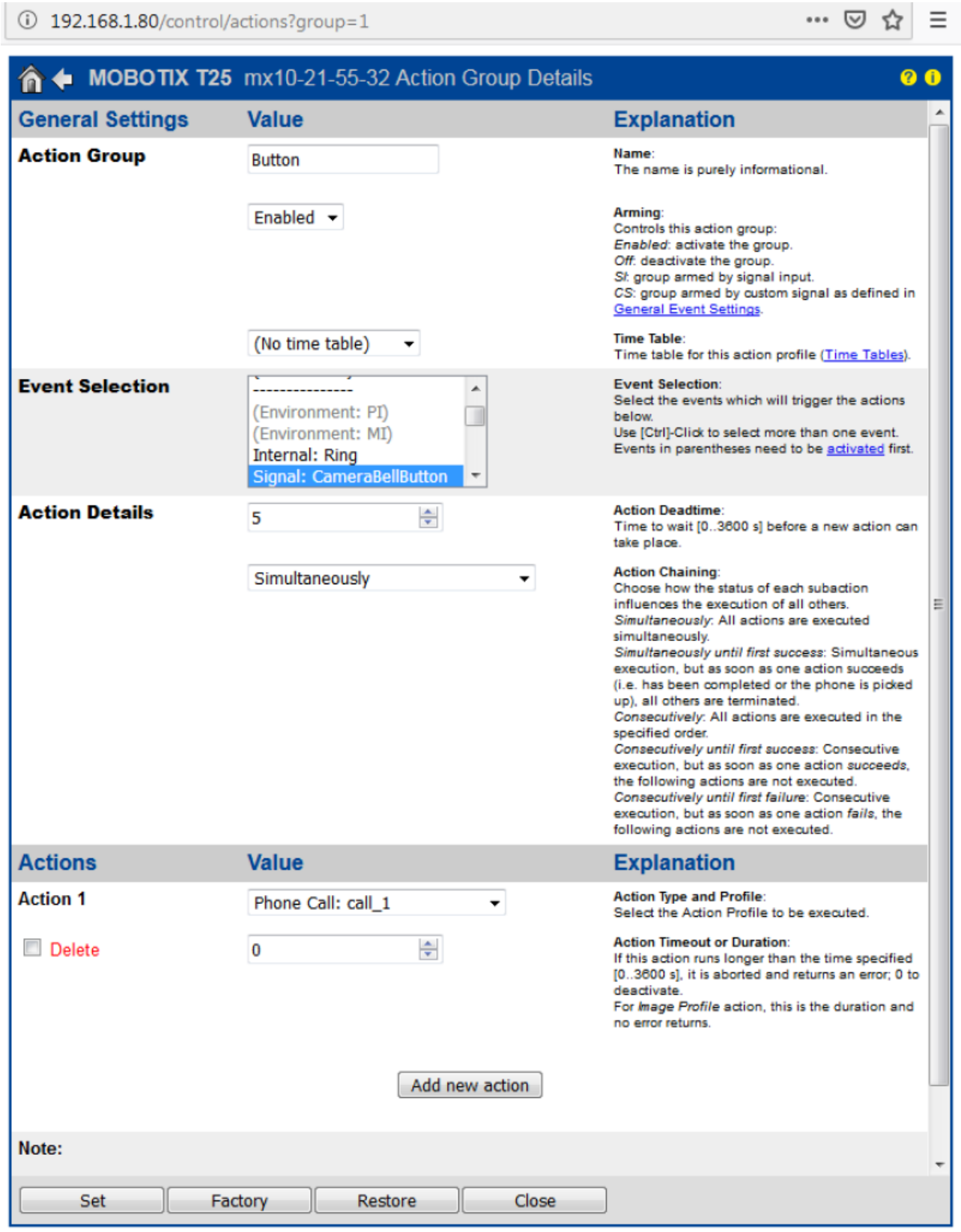
Click on “Add new group” to create a new entry and name it “Button” or “Bell Button”.



Click on Edit to configure the newly created entry.

Under “Event Selection”, select “Signal:CameraBellButton”. This will trigger the call when the Bell button on the intercom unit is pressed.

Under Actions, click on “Add new action” and select the action “Phone Call: call_1”. This will allow you to call the extension configured in the Outgoing Call.



Once the configuration is completed, do not forget to

store the settings on the Mobotix device. This can be done by going to the Admin Menu and scrolling down to the bottom where you will see the option “Store”. A reboot will need to take place after storing.