FlexGate User Guide

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Table of Contents

1 Initial Setup

1.1 Package Contents

- One FlexGate Enterprise System (47800A-FLXG)
- One Power Cable and Power Adapter
- Two Flanges and Mounting Screws

1.2 Connecting the FlexGate Enterprise System

To configure the FlexGate system for first use, access the FlexGate using a PC and the supplied Ethernet cable. This direct-connection procedure only needs to be done once. After this procedure, accessing the FlexGate will be done through the network and over any network port.

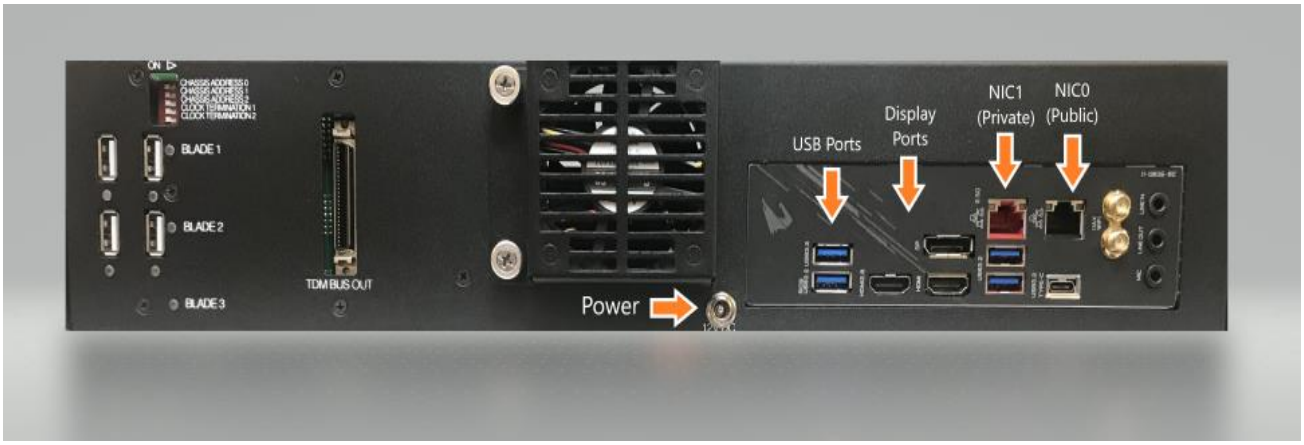

Figure 1-1: FlexGate Back Plane Diagram

1. Refer to Figure 1-1 to connect the power jack to the rear DC 12V power port and plug-in the FlexGate.
2. Press the power button on the front of the FlexGate to start the unit. Wait at least three minutes to ensure the machine has completed booting.
3. Connect a CAT 5 Ethernet cable to the NIC0 port. Connect the other end to a Windows PC. When plugged into NIC0, there should be a solid green LED and a blinking yellow LED.
4. On the PC used to configure to the FlexGate system, navigate to **Control Panel > Network and Internet > Network Connections**. Choose the Ethernet adapter that you plugged into the machine and go to **Properties > Internet Protocol Version 4 (TCP/IPv4) > Properties**.
5. Configure your network adapter with the following parameters. **Please take note of your current settings so that you can revert them after FlexGate provisioning is finished.**

   IPv4 Address: `192.168.100.10`

   Subnet mask: `255.255.255.0`

   Default Gateway: `[Leave Blank]`

   Preferred DNS server: `[Leave Blank]`

   Secondary DNS server: `[Leave Blank]`

6. Open a web browser and type http://192.168.100.1 in the Address bar to access the FlexGate Web Configuration.

> *Note: If you are unable to access the web page, verify that the Ethernet cable is plugged into the NIC0 port on the FlexGate and/or attempt to access the FlexGate at address http://192.168.100.2*

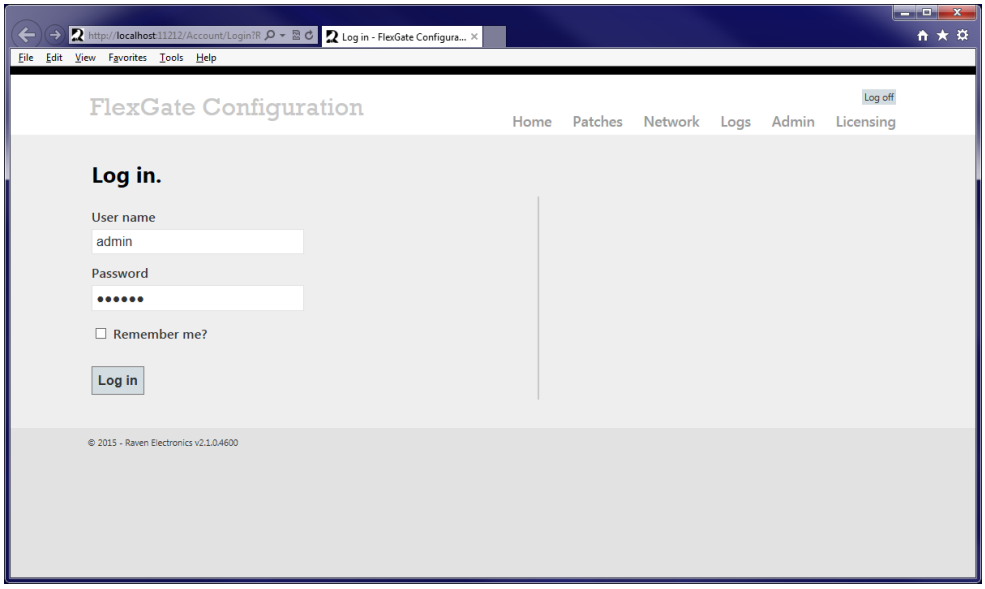

Figure 1-2: Log in Screen

7. Figure 1- shows the log in screen for the FlexGate Configuration webpage. Use the default username **Admin** and password **123456** to login.
8. Click the **Network** link at the top right of the page**.**

> *Note: It is possible to reconfigure the default login credentials. You can do so by clicking on the admin tab shown in the top right of the web interface after login.*

9. **Enter the IP addressing for FlexGate in the form provided (Figure 1-).**

   a. **IP Address**
   Enter an IP address for NIC0 and NIC1.

   This address is used to access the FlexGate administrative interface. Once **Commit Changes** is clicked**,** the old address no longer accessible. Store this address for reference in the future. Contact Raven Electronics if the IP Address has been lost (775-858-2400).

   b. **Subnet Mask**
   Enter a Subnet address for NIC0 and NIC1. By default, this address is 255.255.255.0.

   c. **Default Gateway**
   Enter a Default Gateway address for NIC0 and NIC1

   d. **Primary DNS**
   Enter a primary DNS address for NIC0 and NIC1.

   e. **Secondary DNS**
   (Optional) Enter a Secondary DNS address for NIC0 and NIC1.

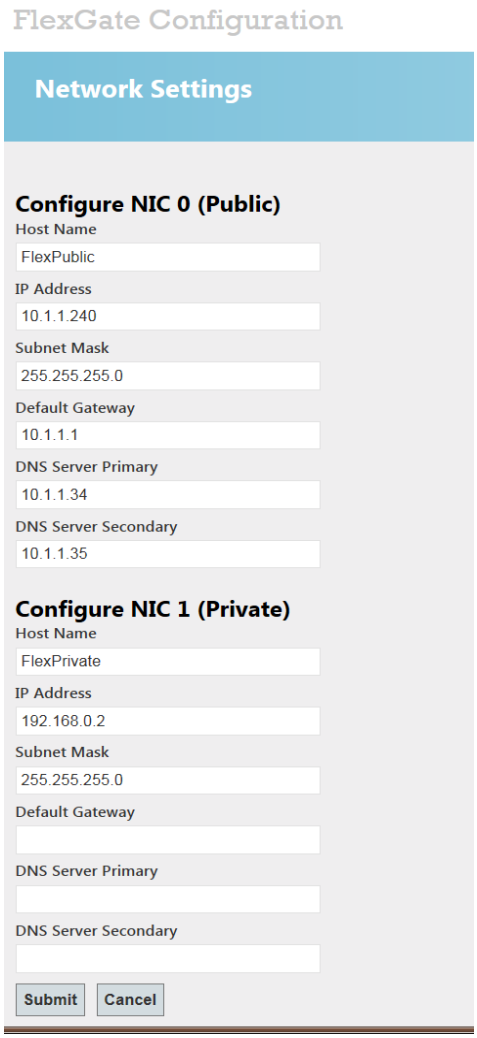

Figure 1-3: Network Settings Webpage

10. Click the **Submit** button. Disconnect the FlexGate from your PC and connect the FlexGate unit to a local switch or router using the NIC1 port. You should now be able to access the FlexGate unit from any computer on the same network by using a browser to navigate to the IP address you supplied for NIC1.

11. Use another Ethernet cable to connect NIC0 to the Internet.

12. If you need to access the FlexGate from outside of a firewall, ensure that the necessary ports are opened and/or forwarded to allow the FlexGate through. Refer to Figure 1- for the list of ports to forward.

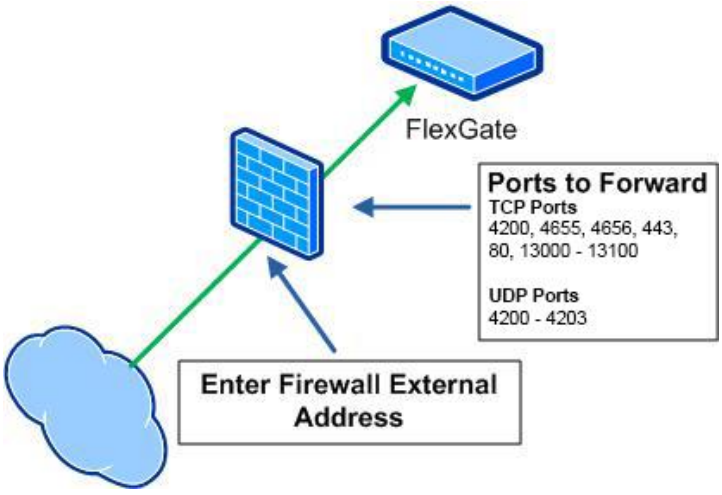

Figure 1-4: The ports that must be forwarded to the FlexGate box for proper functionality.

2 Creating Interfaces

2.1 How to add a new interface

You will be able to configure a variety of interfaces depending on the license you have purchased. You can see the interfaces allotted to your system by examining the left-hand panel, as illustrated in Figure 2-1. You can create a new interface by clicking on the name of it in the left-hand panel. Each interface represents a single endpoint to which audio can be streamed to and from. Depending on the type of interface, this endpoint could, in turn, relay this audio to and from numerous device (e.g. a SpectraLinkPtt interface relays to and from a multicast address).

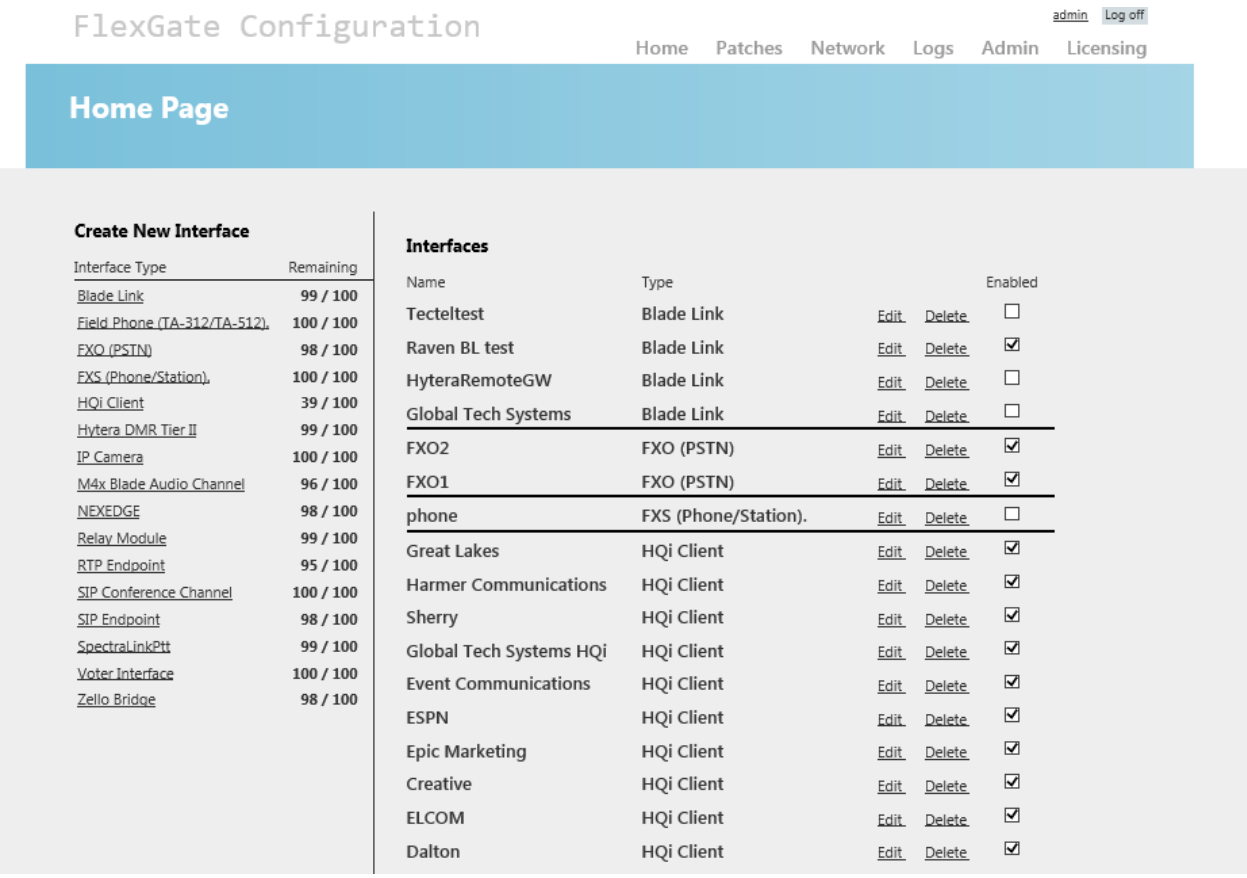

Figure 2-1: Home screen for the FlexGate web configuration tool. The left side displays the different interfaces that are available. The right side of the screen displays the interfaces that have already been created.

> *Note: If you don't have any interfaces listed or they mistakenly show an incorrect number of interfaces allotted, please refer to the troubleshooting section.*

When traversing through interface configuration screens you will be provided with some descriptions of each individual setup field as you click on them. Once an interface is configured, you will be able to enable or disable it at will from the home page. Disabling an interface frees up a license for another interface of the same type, but also makes the interface unable to transmit or receive audio.

The following sections illustrate the process for configuring specific interface types.

2.2 Properties Common to all Interfaces

Each interface has a set of fields that the user fills in to configure them. There are certain fields that are common to many interfaces, which will be discussed in this section.

- Name
  - The label assigned to this interface.
- Transmit Gain
  - The amount of gain (volume) in dB to add to the audio that is going to the interface.
  - Appropriate values are -20dB to +10dB.
  - The default value is 0.0dB.
- Receive Gain
  - The amount of gain (volume) in dB to add to the audio that is coming from the interface.
  - Appropriate values are -20dB to +10dB.
  - The default value is 0.0dB.
- TX Audio Delay
  - The amount of time in milliseconds to buffer before sending the audio to the transmitter. This allows the radio time to key up before transmitting.
  - The appropriate values are 0ms to 1000ms.
- Talk Group ID
  - A numeric value associated to talk group number. If this interface is linked to a NEXEDGE TRS, the value needs to be the same as the NEXEDGE TRS Interface, otherwise it can be any numeric value to identify a talk group.

2.3 The Action Plan Interface

Uses

The Action Plan interface allows FlexGate to perform various actions when the interface is triggered by other interfaces, such as the CAP Alert Handler interface.

Currently supported actions include:

- Generating and transmitting a synthesized voice message to any other interface within FlexGate
- Setting a pin on an IO module to high (5v or 12v), to activate external devices

For more information on the Action Plan interface, see Chapter 6: Creating and Using Action Plans.

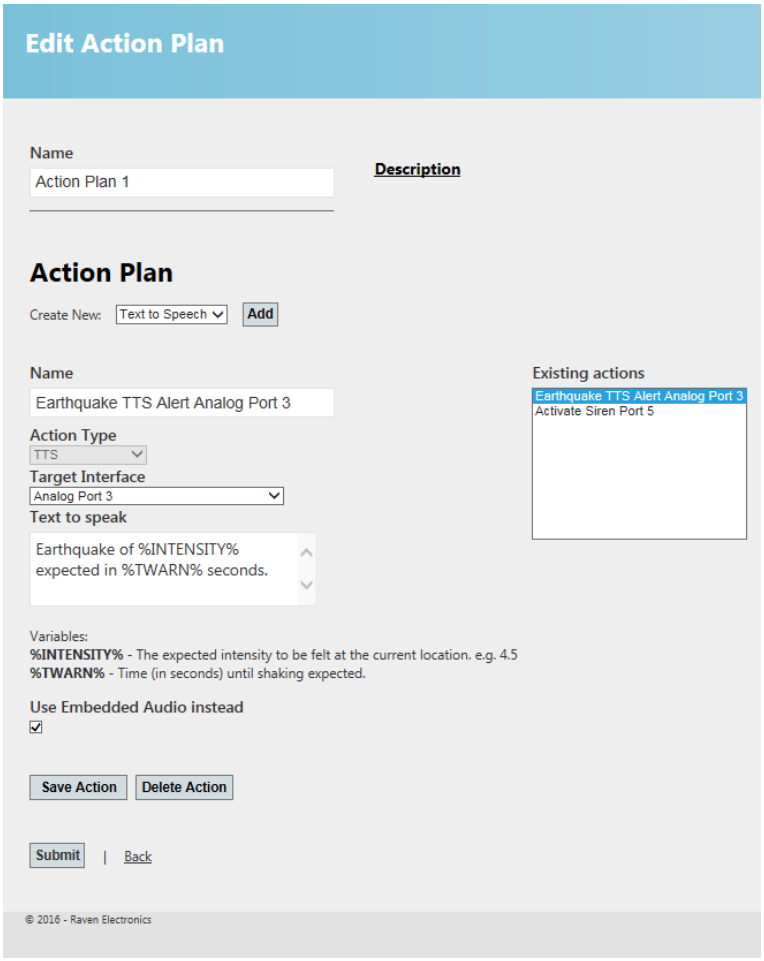

Figure 2-1: The configuration screen for the Action Plan interface.

2.4 The CAP Alert Handler Interface

Uses

The CAP Alert Handler interface listens for traffic from GSS and processes the Common Alert Protocol (CAP) messages that it receives. Each box must be manually configured to receive these messages from GSS—Creating a CAP Alert Handler interface won't ensure that the FlexGate receives alerts. Each handler can be customized to trigger only when certain conditions are met. The currently implemented handler only handles Earthquake messages. If a CAP alert is received that matches the conditions set, the specified Action Plan will be triggered. (See Chapter 6: Creating and Using Action Plans for more information.)

Depending on the Alert Type selected, different fields will be provided for the user to specify the conditions for activation.

For Earthquake Alerts, the box's latitude and longitude must be entered in the Admin page of the webconfig. These values are used to determine the expected intensity and time until impact (see Figure 2-3).

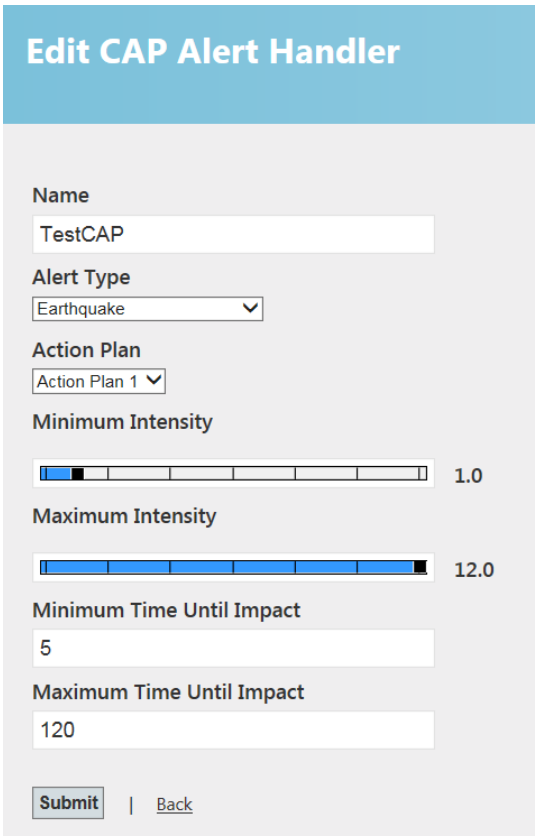

Figure 2-2: The configuration screen for a CAP Alert Handler interface.

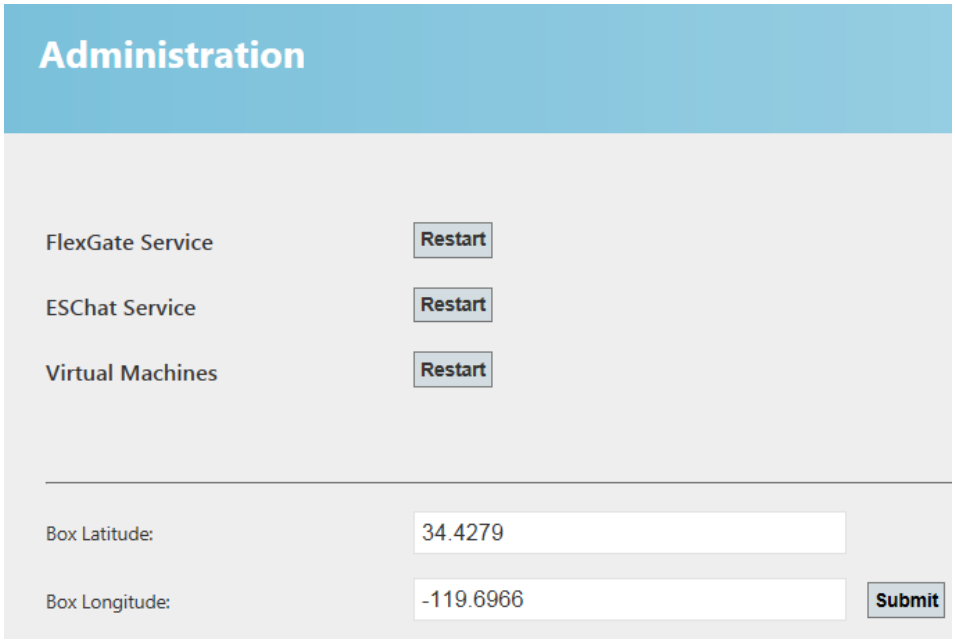

Figure 2-3: The latitude and longitude of the box setting in the admin page.

2.5 The FXO (PSTN) Interface

Uses

The FXO interface represents a traditional hardline phone. Provided you have the correct module installed within your FlexGate Blade, you can connect the phone into the blade and use it to communicate with your other interfaces.

Explanation of Fields

- Blade Number
  - The number of the blade that this interface is associated with. Blades are numbered from 1 to 11, starting with the top blade in a FlexGate system.
  - Note: If the blade is connected via USB to a PC, use a blade number of 32.
- Channel
  - Which physical port on the blade the phone line is connected to.
  - Possible values are 1-8.

The remaining settings are for a SIP Account assigned to the FXO. For information regarding the SIP settings, please refer to Section 2.13.

Paging from a POTS Line

DTMF paging from a telephone system to a radio can be accomplished by using the FXO module. First the paging tones must be created in the admin page of the FlexGate web configuration pages. A DTMF pattern must also be assigned to each individual tone created. Now you will need to patch together the FXO interface with the interface intended to receive the page. This can be done using either HQi or in the tab labeled patches on the FlexGate web configuration pages. Once this is done dial the extension of the phoneline connected to FlexGate. Then dial the DTMF pattern and the star key to initiate the tone sequence.

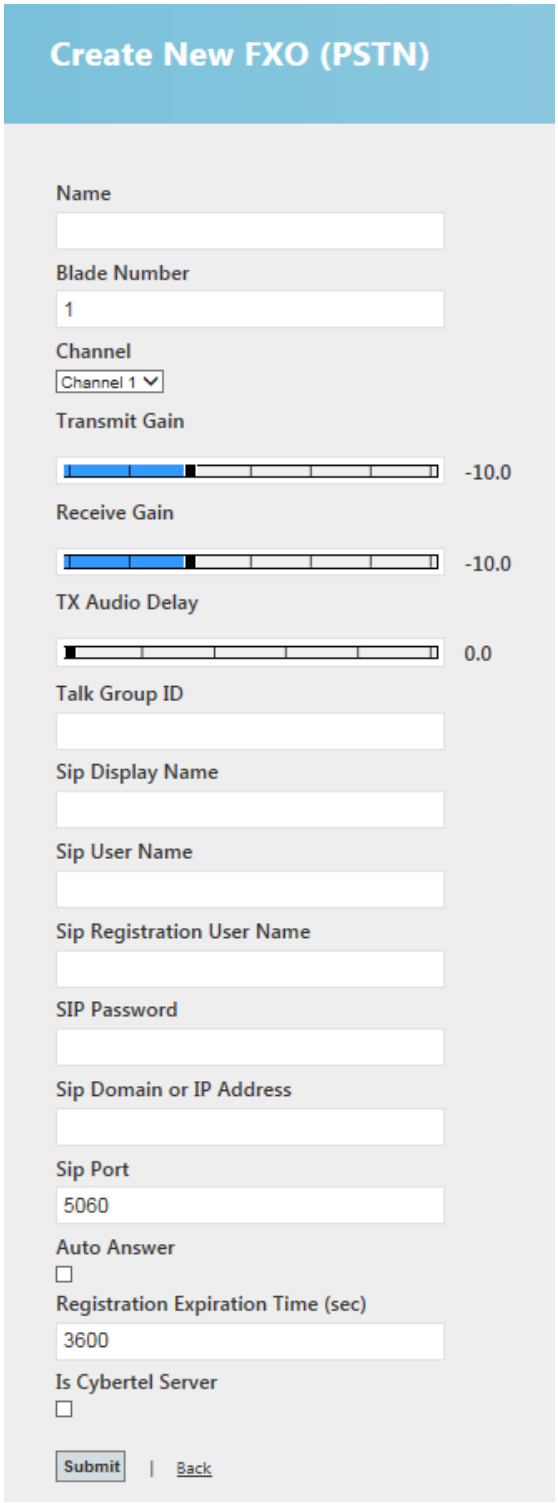

Figure 2-4: The configuration screen for a FXO interface.

2.6 The FXS (Phone/Station) Interface

Uses

The FXS interface represents a traditional phone line. Provided you have the correct module installed within your FlexGate Blade, you can connect the blade to the phone line. You will need to use an HQi client to control the phone line.

Explanation of Fields

- Blade Number
  - The number of the blade that this interface is associated with. Blades are numbered from 1 to 11, starting with the top blade in a FlexGate system.
  - Note: If the blade is connected via USB to a PC, use a blade number of 32.
- Channel
  - Which physical port on the blade the phone line is connected to.
  - Possible values are 1-8.
- Switch Access DTMF Code
  - The dial code for accessing the switch

The remaining settings are for a SIP Account assigned to the FXS. For information regarding the SIP settings, please refer to Section 2.13.

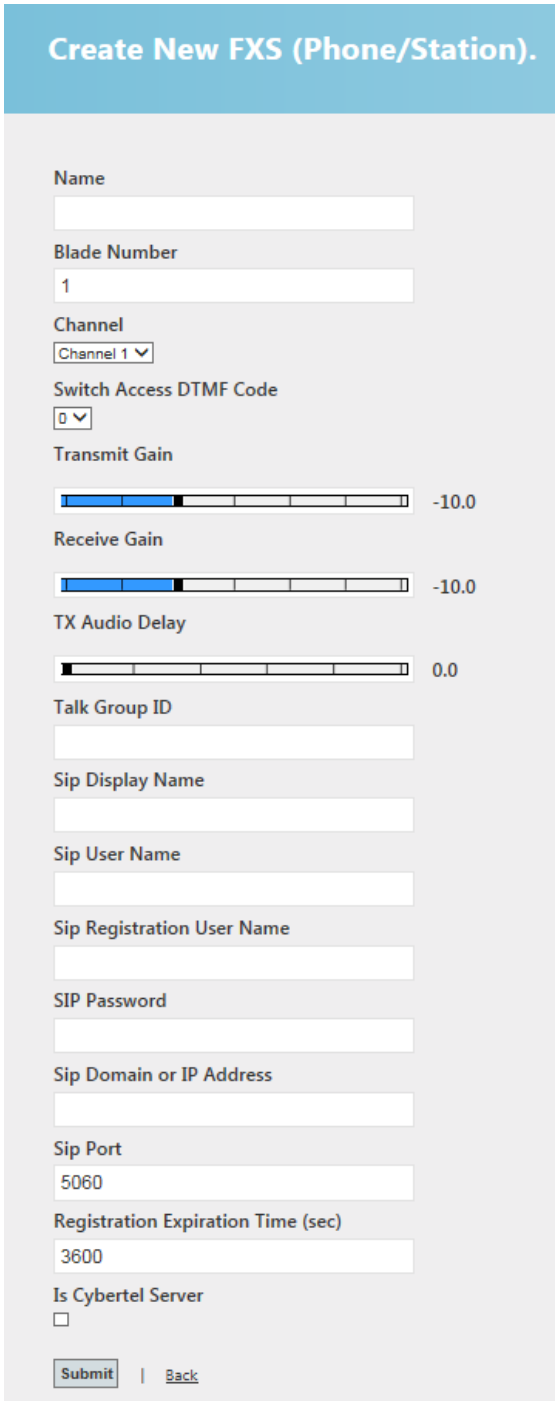

Figure 2-5: The configuration screen for a FXS interface.

2.7 The HQi Client Interface

Uses

The HQi Client provides dynamic control over the configuration and operation of the FlexGate system. While the configuration website provides offline configuration of the FlexGate system, HQi allows operators to log into FlexGate and modify patches, monitor traffic, or communicate directly with resources. Operators log into the FlexGate system through a standalone HQi application, provided by Raven Electronics. For more information, see Chapter 5: Using HQi.

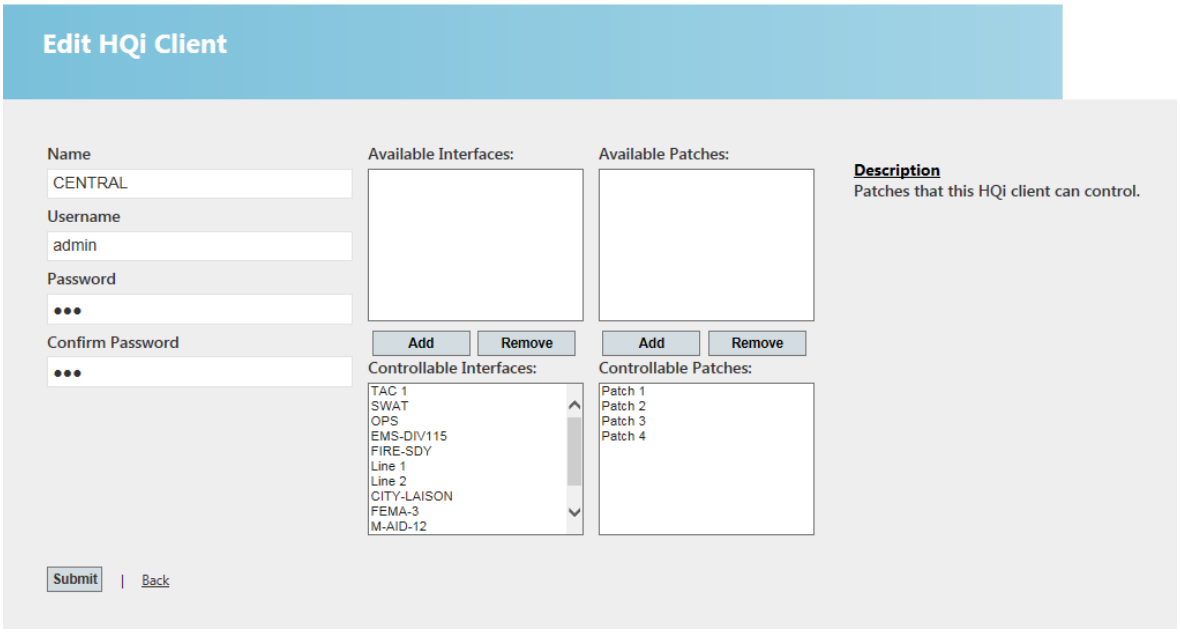

Figure 2-6: The Edit page of an HQi Client.

Explanation of Fields

- Username
  - The username that HQi operators will provide in order to log into the system to associate with this interface.
- Password
  - The password that this HQi operator will provide to log into this specific interface.
- Available Interfaces
  - In the top box you will see all interfaces that this HQi Client does not already have the ability to control. You can select multiple interfaces from the top box and then add them to the Controllable Interfaces list. Interfaces that are not controllable will not be sent to the client.
- Available Patches
  - The top box holds a list of all patches that this HQi Client does not already have the ability to control. If you want this HQi Client to be able to modify a patch, add it to the Controllable Patches box.

> *Note: If a controllable interface is in a non-controllable patch, the HQi client will still have the ability to remove the interface from the patch. Please configure your HQi Clients appropriately.*

2.8 The IP Camera Interface

Uses

The IP Camera interface is used to provide HQi operators with the ability to monitor local or remote IP cameras or other RTSP video streams.

You can configure multiple IP Camera interfaces and then give HQi clients the ability to view the streams. Clients will be able to view multiple cameras at a time, as seen in Figure 2-8.

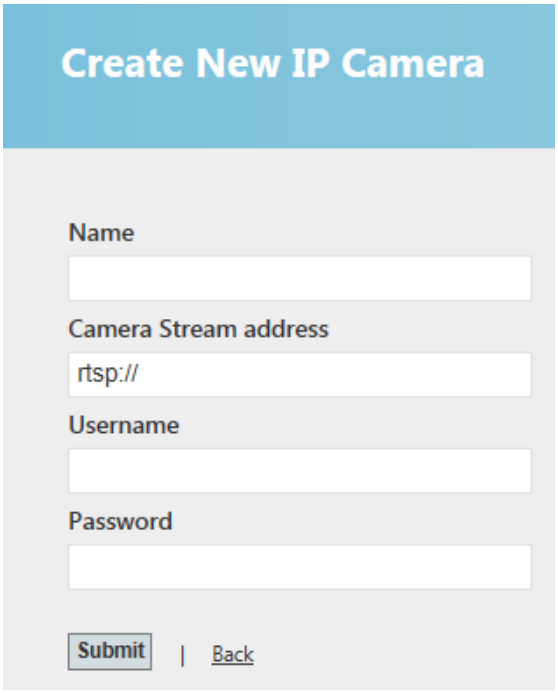

Figure 2-7: The configuration screen for an IP Camera interface.

Explanation of Fields

- Name
  - Something to identify the Camera stream by.
- Camera Stream Address
  - The link to the camera's RTSP or HTTP stream.
- Username and Password
  - If the stream requires credentials, you can enter them here or, if you know the proper format for providing them in the URL, you can provide it in the stream address.

Figure 2-8: Two IP Cameras as displayed in the HQi client interface.

2.9 The IO Module Interface

Uses

The IO Module interface is a simple interface that allows you to control an I/O module through Action Plans. These interfaces can't be controlled directly, but they are necessary when you wish to have an IO action within an Action Plan. (See Chapter 6: Creating and Using Action Plans for more information.)

Each pin can be configured for input or output mode. Output pins can be set to output either 5v or 12v in order to trigger external devices. Input pins can be configured to trigger Action Plans when their threshold voltage is received.

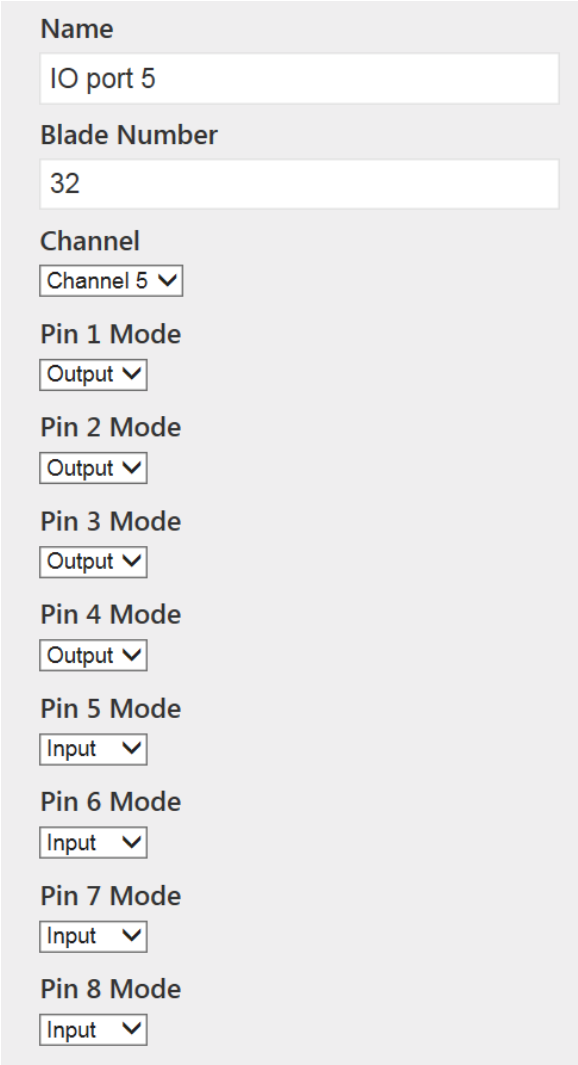

Figure 2-9: The configuration screen for an IO Module interface.

2.10 The M4x Blade Audio Channel Interface

Uses

An M4x Blade Audio Channel interface corresponds to a FlexGate Blade port that accepts 4-wire or 2-wire analog audio devices. The attached device can range from a radio, an intercom, a handset, or a custom device that matches the pinouts.

Explanation of Fields

- Blade Number
  - Blades are numbered in order from 1 to a maximum of 11, starting with the top blade in a FlexGate system. Enter the blade number of the audio resource you want to utilize in this interface.
  - Note: If using a blade that is connected to a PC via USB, you should enter 32 for the blade number.
- Channel
  - Channels are physical ports on the blade. Enter the channel (1-8) of the port you want to use in this interface.
- Trigger on COR
  - If the device attached to this channel provides a COR input, select this checkbox.
- Use Default Tone Key
  - This will send a default tone key of 2175 Hz instead of PTT
- Transmission Mechanism
  - Select whether the connected device uses a 2-wire or 4-wire transmission mechanism.
- Receive Impedance
  - This can be changed from the defaulted 600 Ohm to High Impedance
- Enable DTMF Detection
  - Makes it so the M4x channel can detect DTMF and use those numbers to dial out or patch interfaces together
- PTT Hold On
  - Amount of time PTT stays on after the call ended
- PTT Delay
  - Amount of time before PTT is asserted after a call is started
- High Pass Filter
  - Filters everything below 300Hz
- Allow Recording
  - This allows recording to occur with this channel. The recordings will automatically be sent to the Recording folder in the FlexGate directory.
- Is Voter Member
  - This indicates this channel is part of a voter and changes the way the FlexGate handles the dB adjustments (hardware vs software). Do not click unless it is a part of a voter.
- Green Light Trigger
  - Determines what triggers the green LED on this specific port
- Red Light Trigger
  - Determines what triggers the red LED on this specific port

The remaining fields in the red rectangle are for linking an interface with a SIP server. For more details on these fields, see Section 2.13 The SIP Endpoint.

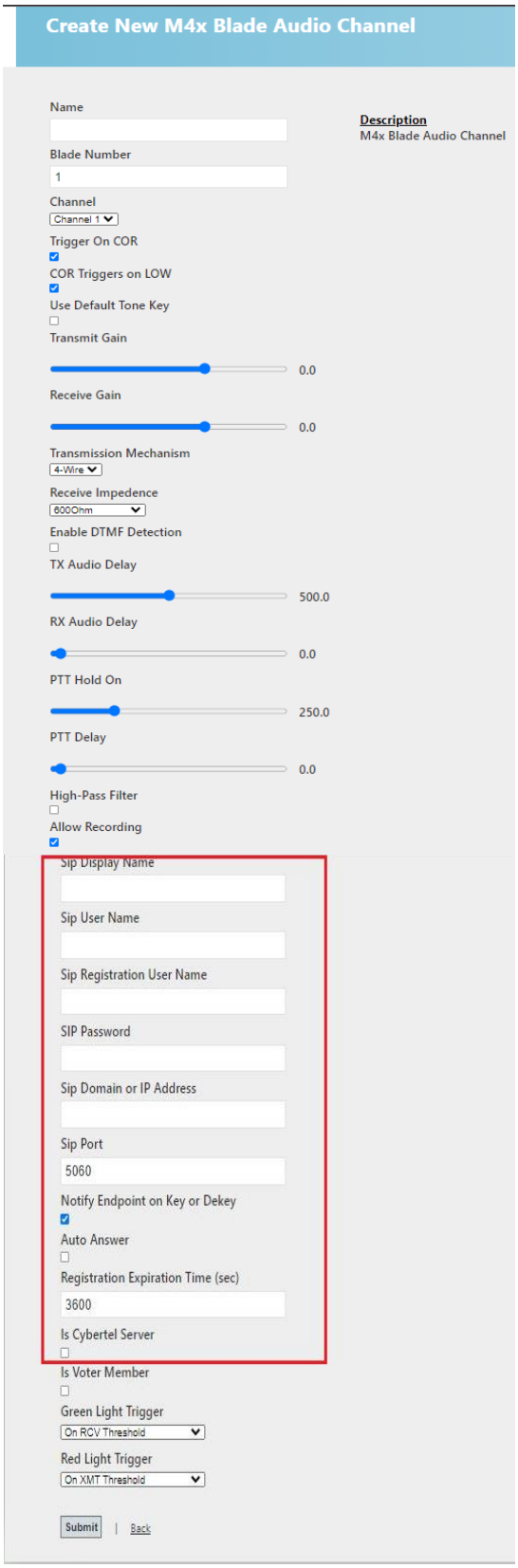

Figure 2-10: The configuration screen for the M4x 2-wire/4-wire Module interface.

2.11 The NEXEDGE TRS Interface

This interface allows you to connect to a NEXEDGE repeater via IP.

Explanation of Fields

- Name
  - The name of the channel on FlexGate.
- Console ID
  - The console ID as configured in the NEXEDGE Trunked System.
- System Code
  - The system code as configured in the NEXEDGE Trunked System. This is a unique ID assigned to each system (1 to 131070.
- Site Code
  - The site code, or “Home Site Number” as configured in the NEXEDGE Trunked System.
- Station Type
  - This is used to distinguish between registering to a talk group or an individual.
- Station Name
  - Specific name given to the station.
- Station ID
  - Specific Station ID number.
- Network Category
  - The network category as configured in the NEXEDGE System.
- Is Ultra Narrow
  - When checked, the NEXEDGE system is configured for ultra-narrow channel spacing. Otherwise, it is narrow band only.
- Radio System Address
  - The IP address of the home site and is usually associated with the smallest channel number at a home site.
- Bind To Address
  - The IP address of the network adapter that is associated with the NEXEDGE Trunked System.
- Jitter Buffer Depth
  - For advanced use only. Default value is 60.
- Reregister Time (min)
  - The reregister time prevents the NEXEDGE System from deregistering for being idle.
- Emergency alert Relay
  - This will be the relay module that will associate with the radio when the emergency alert is triggered.
- Emergency Alert Relay #
  - This will be the relay number associated with the relay when the emergency alert is triggered.
- Emergency Alert Time to Hold
  - This is an adjustable amount of time from 1 second to 5 minutes to have the relay active during an emergency alert.
- Encryption Type
  - If encryption is enabled in the NXDN system change to scramble.
- Key ID
  - Key ID must be set to the Key ID programmed in the NXDN system.
- Key Data
  - Key data must be set to the same Key Data value as in the NXDN system.

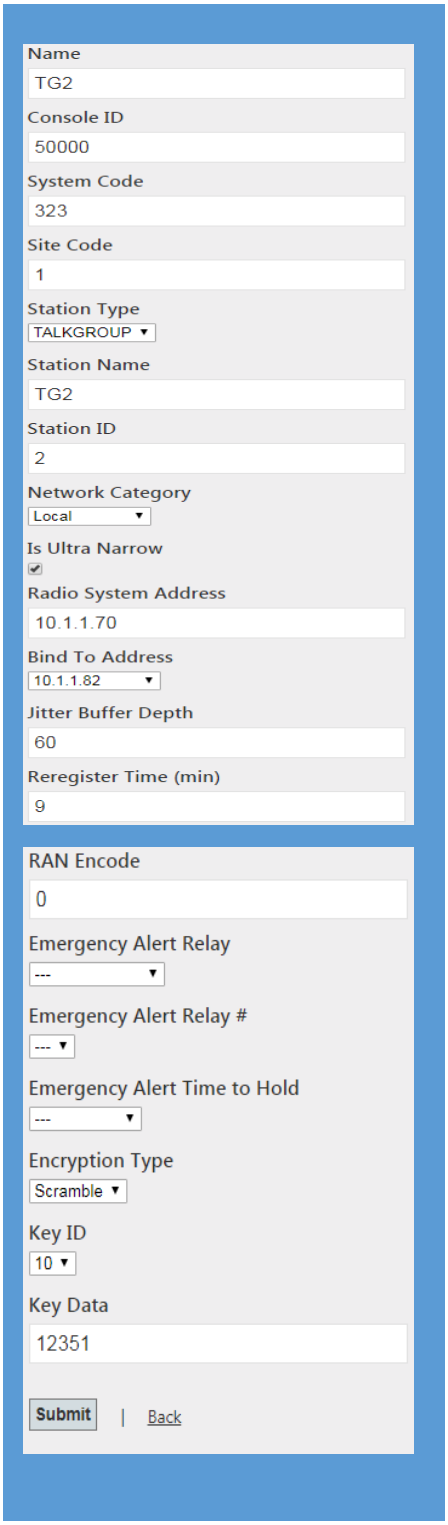

Figure 2-11: The configuration screen for the NEXEDGE Module interface.

2.12 The Relay Module Interface

The Relay Module Interface can be controlled directly either from HQi or can be manipulated through the Action Plan interface in order to trigger external devices. Each Relay Module Interface corresponds to one port on the two-port Relay module. Each port typically has 4 available relays. When relay 1 is open, pins 1 and 2 are bridged.

See Chapter 6: Creating and Using Action Plans for more information on interfacing with the Relay Module interface.

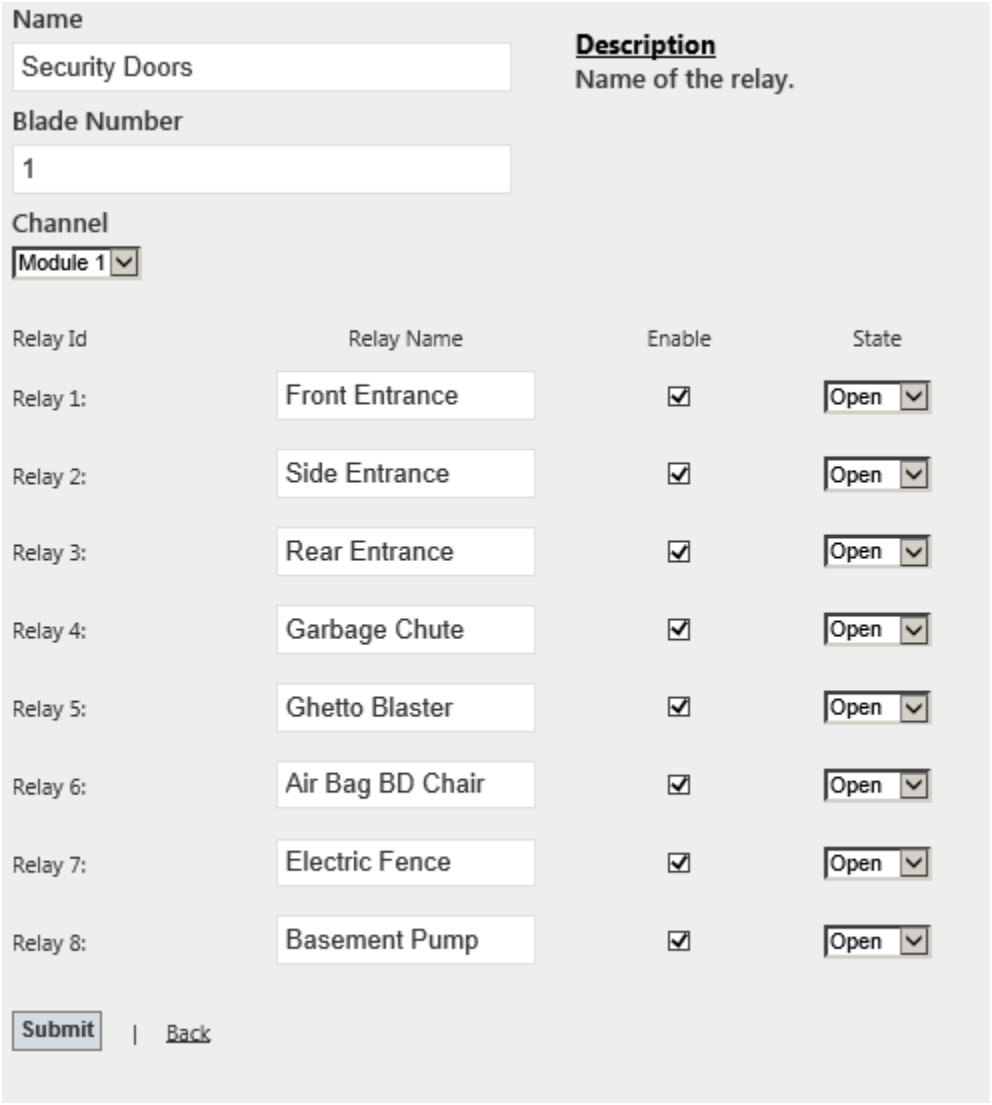

Figure 2-12: The configuration screen for the Relay Module interface.

2.13 The SIP Endpoint

Uses

This interface acts as a bridge between SIP endpoints and other interfaces to transmit and receive audio. All audios sent to the SIP Conference Channel is rebroadcasted to all interfaces that are patched with the channel, as well as all SIP devices that are in a call with the channel's associated SIP account.

Explanation of Fields

- Name
  - The name of the SIP endpoint. This is the name that will show up under the webpage, HQi, and the patch fields
- Bind To Address
  - This is the bind to address if your FlexGate has more than one IP address
- Talk Group ID
  - A numeric value associated to talk group number. If this interface is linked to a NEXEDGE TRS, the value needs to be the same as the NEXEDGE TRS Interface, else it can be any numeric value to identify a talk group Sip Display Name
- SIP Display Name
  - This is the name that will be displayed on the SIP devices connected with this endpoint
- Sip Registration User Name
  - This needs to match the username under your SIP server.
- Sip Password
  - This needs to match the password under your SIP server.
- Sip Domain or IP Address
  - The domain or IP Address of the SIP server. Your binding IP address needs to be able to reach this address
- Sip Port
  - TCP port for the SIP signaling. This is usually left at the default 5060.
- Notify Endpoint on Key or Dekey
  - Flexgate will respond with a voice message on confirmation of keying or dekeying of the radio while in a SIP call.
- Auto Answer
  - This makes it so this SIP endpoint will automatically connect when called
- Registration Expiration Time (sec)
  - The amount of time the SIP account will try to connect to the SIP server before expiring
- Call Timeout (sec)
  - This is the amount of time the call will end if there is no audio between calls
- Is Cybertel Server
  - Check this box if the SIP server is a Cybertel server. This is needed because Cybertel servers have a slightly different protocol.

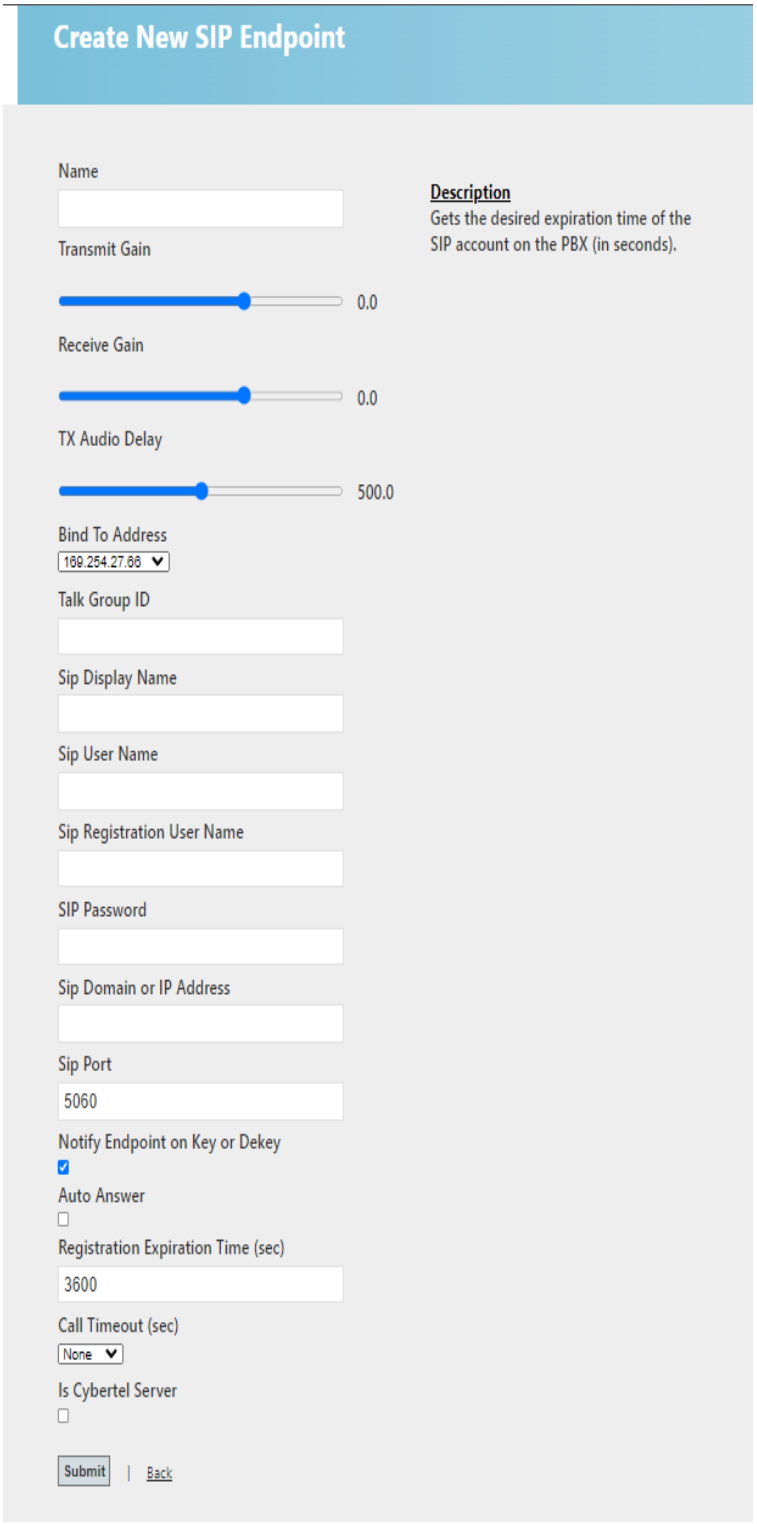

Figure 2-13: The configuration screen for a SIP interface.

2.14 The SIP Conference Channel Interface

Uses

This interface acts as a bridge between SIP endpoints and other interfaces to transmit and receive audio. All audios sent to the SIP Conference Channel is rebroadcasted to all interfaces that are patched with the channel, as well as all SIP devices that are in a call with the channel's associated SIP account.

Explanation of Fields

The fields for this interface are typical SIP settings. For more information, see Section 2.13 The SIP Endpoint.

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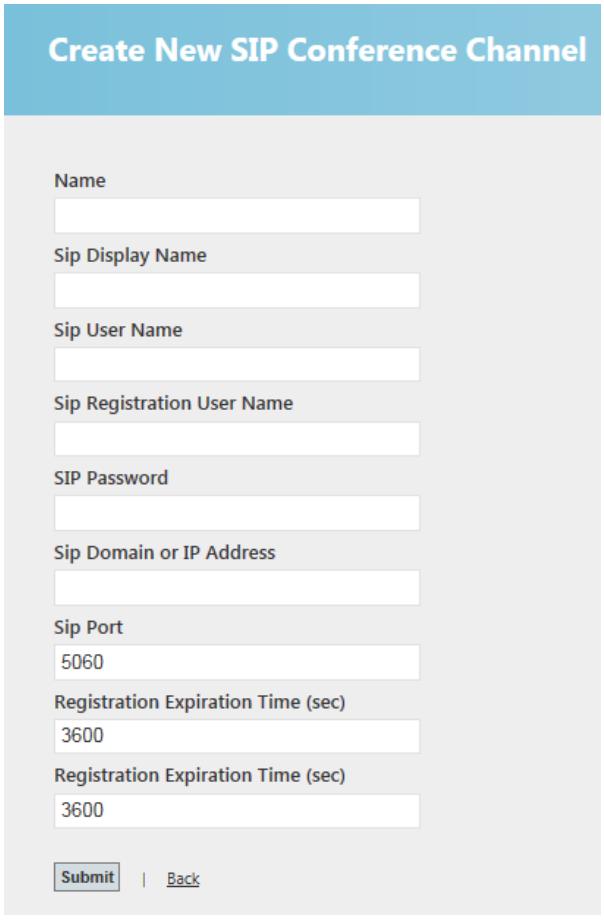


Figure 2-14: The configuration screen for the SIP Conference Channel interface.

2.15 The RTP Unicast Interface

Uses

An RTP Unicast Interface is a point-to-point link between the FlexGate and a distant VoIP/RoIP gateway over IP. It is most often used to link Raven VoIP/RoIP devices that are connected to remote radios or audio endpoints.

RTP stands for "Realtime Transfer Protocol" and is used to transfer digital speech packets over a computer network or the Internet.

Explanation of Fields

- Data Transfer Mechanism
  - Unicast: one-to-one transmission from one point in the network to another point
  - Multicast: group communication where data transmission is addressed to a group of destination computers simultaneously. Multicast can be one-to-many or many-to-many distribution.
- Data Transfer Codec
  - This can be chosen as PCM, G7.11, Opus, CCAES67
- Remote IP Address
  - The IP address of the remote RTP Endpoint.
- Remote Port
  - The remote port for the FlexGate to receive RTP packets on.
- Local IP Address
  - The address of the local network interface card that will send/receive traffic on. This will be the NIC port setting on the FlexGate.
- Local Port
  - Local port for the FlexGate application to receive RTP packets on.
- Zone Call Link
  - Start/Stop patches, such as an all call, when multiple FlexGate are on the same network
- Receive Jitter Buffer Depth
  - This is how many packets of audio you receive before audio starts playing
- Call Start Buffer Depth
  - This is how ow many packets are in queue before a call is started
- Transmit Jitter Buffer Depth
  - This is how many packets of audio are queued before audio starts transmitting
- AES67 Recording Timeout (minutes)
  - This is only used if you are using the FlexGate as an AES67 Recording Solution. You can leave this as the default 15 if you are not using the AES67 feature.

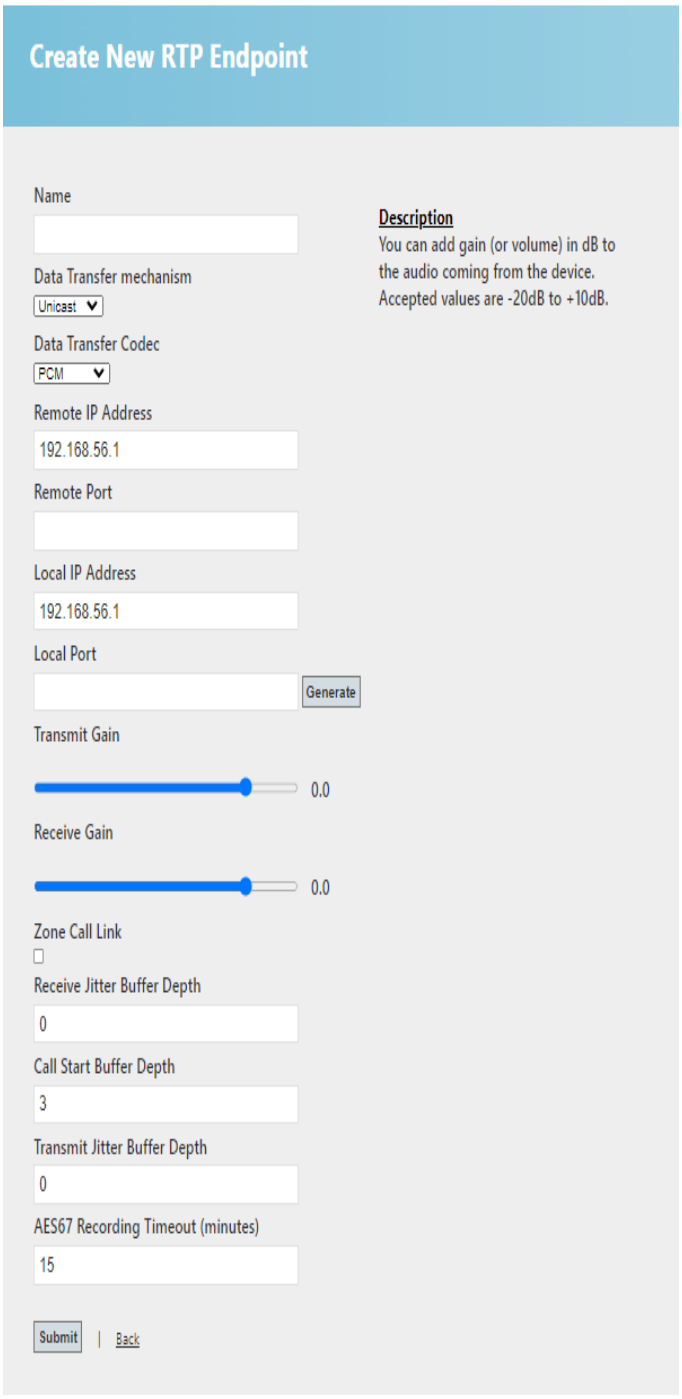


Figure 2-15: The configuration screen for an RTP Endpoint interface.

2.16 The Voter Interface

Uses

This interface represents a voter. Ports 1 through 7 of the blade is configured as repeater and port 8 is set as console.

Explanation of Fields

- Blade Number
  - The blade that is configured as voter.
- Vote dB Difference
  - Number of dB's needed to override this port if it's actually voted (0 - 40).
- Vote Hold Off
  - This allows time for all vote receivers to unsquelch before an initial vote occurs (0 - 255 ms).
- Free Vote
  - After the vote hold off expires, a free vote period can be designated in which any vote receiver can be voted (the vote period is ignored). This allows an initially voted noisy receiver to be unvoted more quickly (0 - 255ms).
- Vote Lock Time
  - This locks the vote on the currently voted receiver (0 - 65534 ms).
- Data Mute
  - True: Don't mute data during vote lock
  - False: Mute data during vote lock
- Sub Comparator
  - Check this box if there will be more than one blade used for voting. **In this case port 8 of blade 1 will need to be cascaded to port 1 of the next blade.**
- Auto Transmitter Steering
  - This check box is used to give the voter the ability to auto steer to last receiver.
- Channel Types
  - Repeater: This is used for a port to have the ability to receive audio, but also transmits out if a console with priority has been established
  - Receiver: This makes the port only able to receive, not transmit out
  - Transmitter: This port is only to transmit the audio out, but does nothing if audio is received
  - Console: This port will go out the transmitter and all the repeaters (except when Auto Transmitter Steering is checked) when it keys up, but not have priority over audio being voted
  - Console with Priority: This port will go out the transmitter and all the repeaters (except when Auto Transmitter Steering is checked) when it keys up, but **DOES** have priority over audio being voted
  - None: This deactivates the port completely

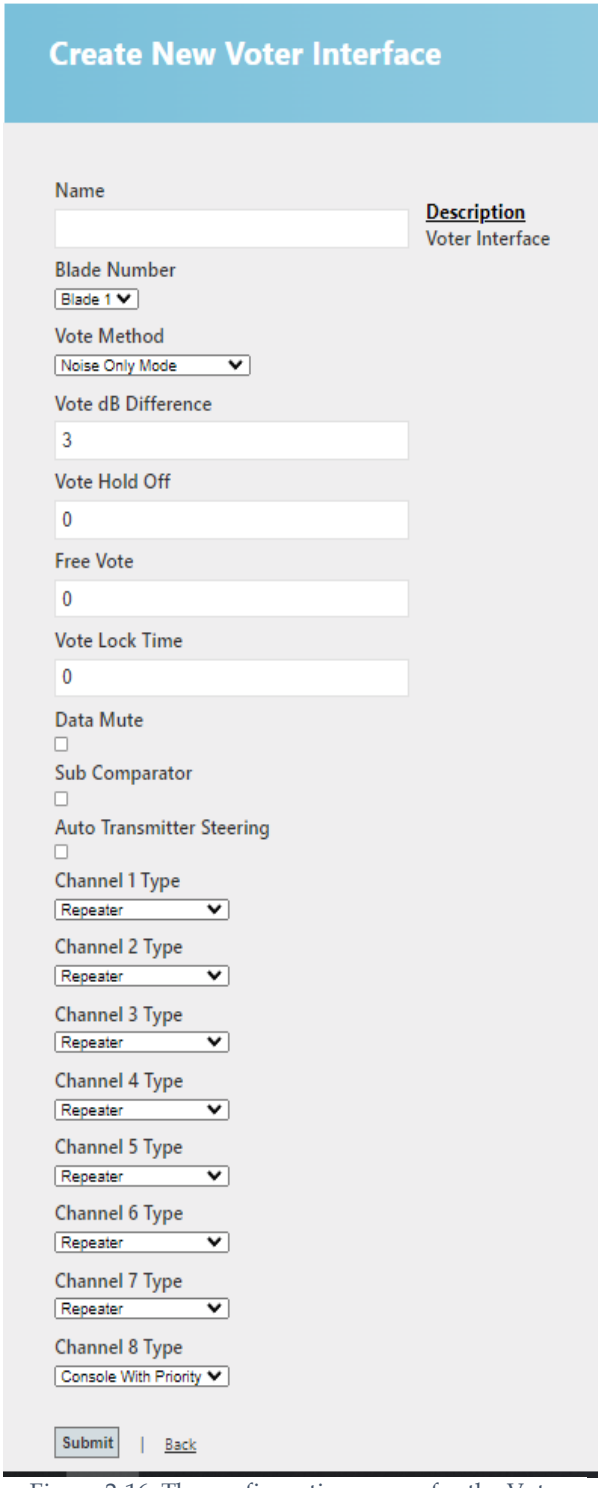


Figure 2-16: The configuration screen for the Voter interface.

2.17 The Zello Interface

Uses

Zello is PTT app that allows users on various devices to communicate instantly no matter where they are. The Zello Interface creates an audio bridge between the FlexGate server and a Zello Work server, allowing you to patch together audio from any of your other FlexGate interfaces to your smartphone.

For more information about Zello, visit https://zellowork.com/

Explanation of Fields

- Network Name
  - The name of the ZelloWork account that this interface will connect to. If your login server address for your ZelloWork account is '**CompanyName**.zellowork.com' then the Network Name is just '**CompanyName'**.
- Login Server
  - This field is used to connect to the server associated with you Zello account. If using the Zello cloud server this network will auto populate. Most people do not have to change this
- TLS
  - This is the Transport Layer Security. If using a Zello cloud account this will auto populate. Most people do not change this
- Username
  - The name of the user account that this interface will log in to. This account will serve as a bridge between the FlexGate and Zello, so **this account must not be logged in to by another Zello user**.
- Password
  - The password for the above username.
- Default Contact
  - The Zello contact that this interface will attempt an outbound call to when it receives audio from the FlexGate side. This can be a user or a channel name that the account has access to.
- Mapping API Key
  - This key is provided by Zello. If entered and GPS tracking is enabled on the Zello webpage, then a person can see this users location within HQi

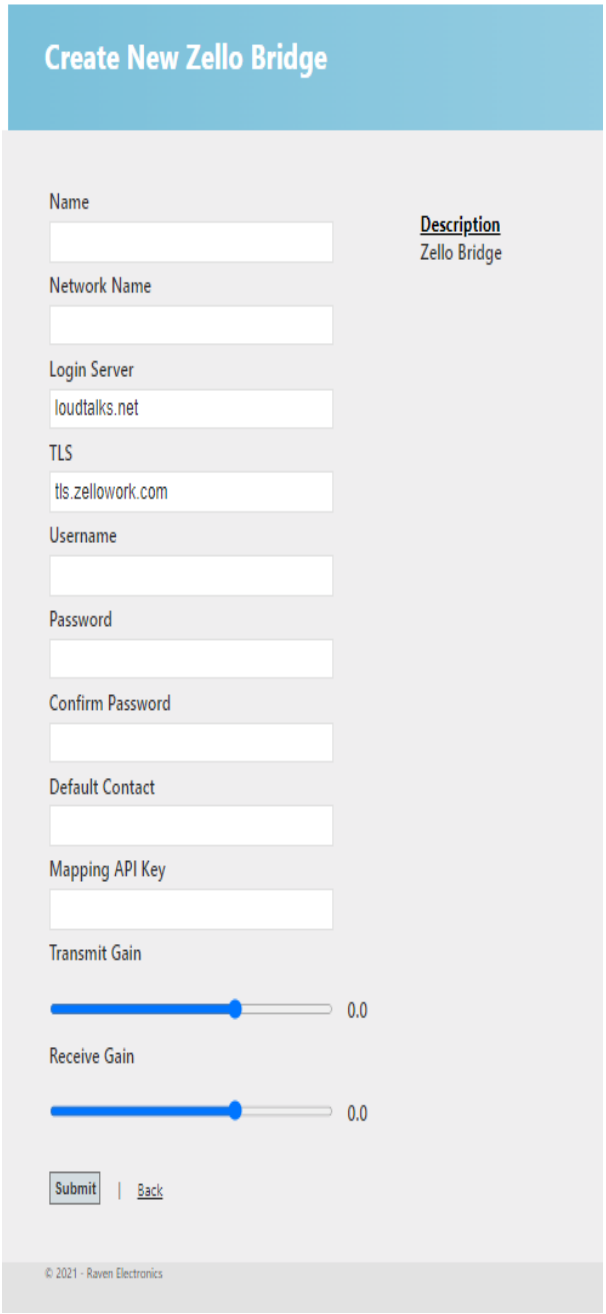


Figure 2-16: The configuration screen for the Zello interface.

3 Creating Communication Patches

A patch in FlexGate represents a group of interfaces that are linked together in full-duplex communication. In other words, when one interface receives audio, it will be transmitted to all other interfaces that it shares a patch with. You can create patches on the configuration website, under the Patches tab. By default, you will have four empty patches, labeled Patch 1 through Patch 4. You can have an unlimited number of patches, and you can name them however you want. These names are for your reference, and they are only visible on the website or to HQi clients that have access to them (see Chapter 5: Using HQi).

To avoid confusion, interfaces can only be associated with one patch. Interfaces that are not within any patches will be listed in the “Available” section on the left. The “In Patch” section on the right will list which interfaces are located in the patch selected from the dropdown box. There is no limit to the number of interfaces that can be in a patch.

To add interfaces to a patch, first select the patch you wish to add them to from the dropdown box. Then, select the interfaces you wish to add from the “Available” box. Finally, click on the “Add to Patch” button. Similarly, you can remove interfaces from patches by selecting them and clicking on the “Remove from Patch” button.

> *Note: You can select multiple interfaces at a time by dragging your mouse while holding the left mouse button, or holding the CTRL button and clicking each interface separately.*

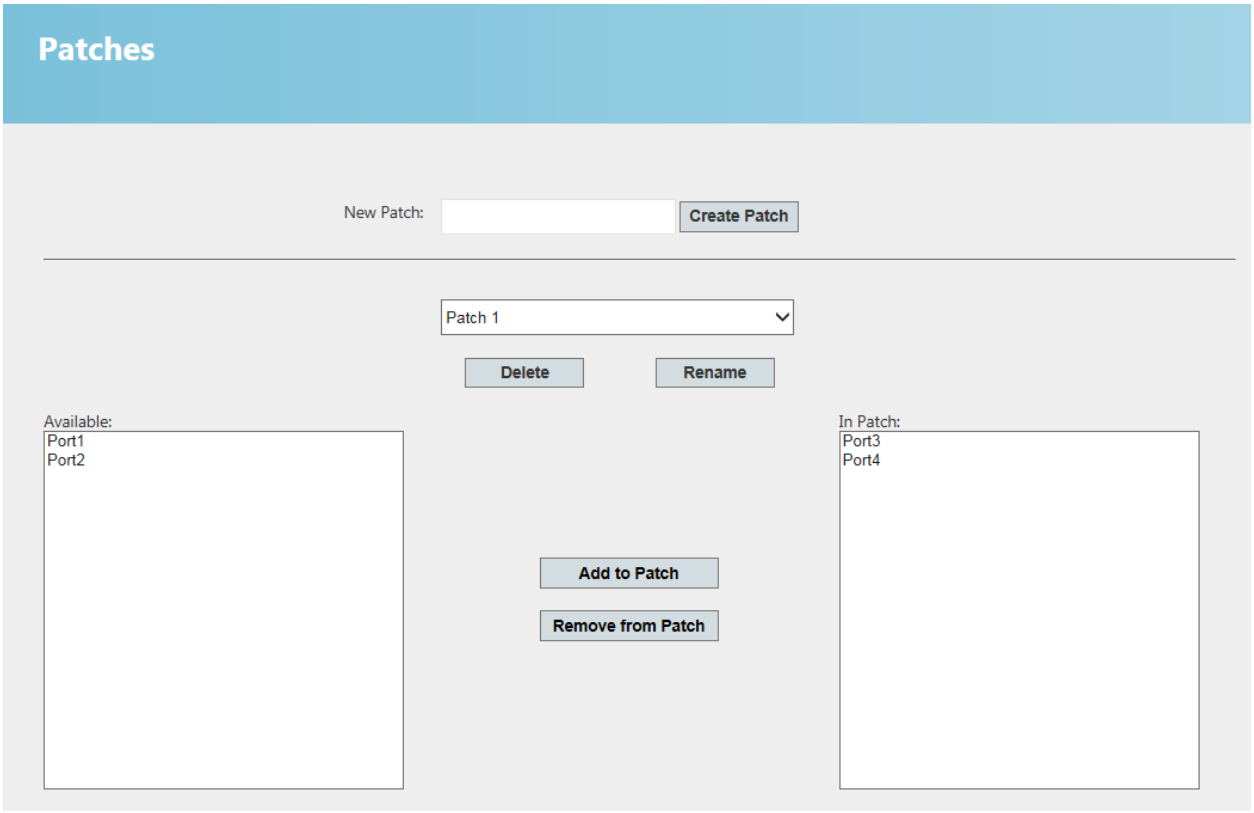


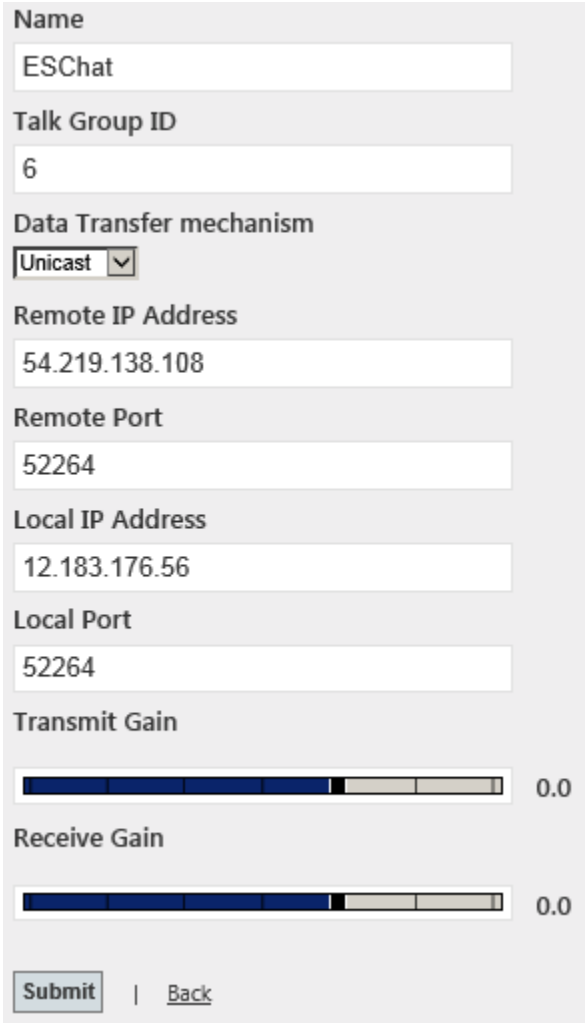
Figure 3-1: The Patches page from the configuration website. Here you can create, delete, and reconfigure your FlexGate communication patches.

4 Configuring ESChat

ESChat is a third-party LTE Push-to-Talk application that is often used with FlexGate to communicate with radio systems. The following outlines the step-by step procedure to create a link to an ESChat endpoint.

1. Contact Raven Electronics to get an account created for you in the ESChat portal.
2. Create an RTP Session in the FlexGate web configuration portal.
3. Enter the name of the ESChat channel.
4. Entering a Talk Group ID is for organizational purposes only and considered an option.
5. Enter the remote IP address that Raven gave you.
6. Using the ports assigned from the ESChat portal enter them in the proper areas.
7. Then select the submit button.
8. Now using the patch tab or HQi patch the ESChat interface with the appropriate radio channel.

ESChat®
Enterprise Secure Chat



5 Using HQi

5.1 HQi Introduction

HQi is an IP Dispatch application that connects to a FlexGate server. The HQi operator has the ability to create or absolve communication patches, remotely disable select interfaces, or communicate directly with interfaces or patches. It does this by authenticating with a FlexGate server via username and password credentials that have been pre-configured through the FlexGate web interface. Once logged in, the operator has the ability to control a variety of functions through the UI.

For assistance in configuring an HQi client, please refer to section 2.7 The HQi Client Interface (page 12).

5.2 The User Interface

When the HQi Client is launched, you will be prompted to enter the IP address of the FlexGate server, as well as the username and password that was configured on the configuration website. Once logged in, you will see a screen similar to the one in Figure 5-1. Each individual HQi client's screen will vary based on the configuration provided on the website.

Figure 5-1: A screenshot of an HQI user interface.

5.2.1 Interfaces

The center of the screen holds all of the radio interfaces available to the HQi Operator. Each interface is represented by the UI element shown in Figure 5-2. If you click on an interface, it will become selected, and you will begin receiving audio from that interface. You can use the volume slider to locally adjust the volume of this audio. If you have a microphone attached to your system, you can click the microphone button to transmit audio to this interface.

Figure 5-2: Screenshot of a user interface button.

If you click on the power button in the top right, this interface will be disabled. While disabled, it will not transmit or receive any audio, despite its patch configuration.

The phone icon on the left represents the SIP status of the interface. If it is missing, this interface has not been configured for SIP. If it is red, SIP configuration details were provided but an error was encountered while registering with the SIP server. If the icon is green, this interface is successfully registered with a SIP server. Its registered name will appear next to the phone icon in this case. Clicking a green phone icon allows the HQi Operator to control SIP calls for the interface.

5.2.2 Patches and Multiselects

On the left side of the interface are the Patches and Multiselect tabs. Each HQi Operator will only be able to view patches that they have been configured to control in the configuration website. Clicking on a patch will select it, enabling the operator to receive audio from that patch. The operator can also click on the microphone to transmit audio to the patch.

Each interface in a patch is linked full-duplex to all other interfaces in the patch, i.e. whenever one interface transmits audio, all other interfaces will receive that audio.

A Multiselect is similar to a patch, but it does not provide a full-duplex connection between each interface in the patch. Instead, a Multiselect is used to transmit audio to or receive audio from a predefined group of interfaces. Patches are global to the FlexGate system and are saved on the server side, while Multiselects are specific to the HQi machine.

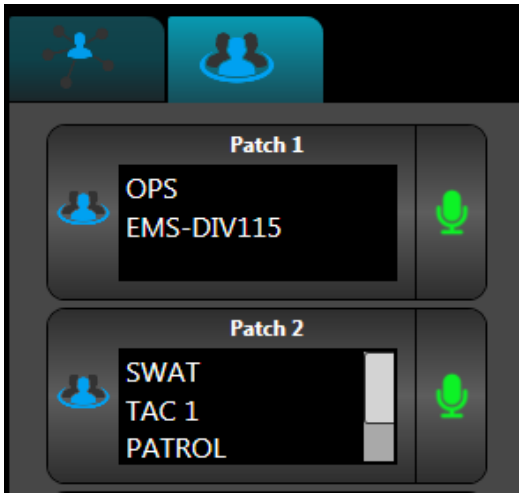


Figure 5-3: The Patches and Multiselect tabs.

Note: If the patches tab is empty, the HQi client was not configured in the website to control any interfaces. Patches can be created on the website's Patches tab and then each HQi must be given access to the patches through their Edit page. For more information, see Chapter 3: Creating Communication Patches.

5.2.3 SIP Controls

On the right side of the user interface is the SIP dial pad. This is used to make and control SIP calls for both interfaces and the HQi client itself, assuming it has a SIP account. You can configure the HQi client's SIP account settings in the options menu.

To make an outgoing SIP call, dial the SIP extension and click the green call button. In order to control a SIP enabled interface, click on the green phone icon in the interface's control. The green outline should move from the dial pad to the interface to signal the shift in control.

While the selected device is in a call, additional controls are enabled on the dial pad. In addition to the green call button, a red end call button is present. There is also a PTT button, hold button, a mute button, and a transfer button.

The PTT button is displayed during CyberTel SIP calls and is represented by the microphone icon. CyberTel calls require the user to key their phone when they wish to speak, so you must press this button when you wish to speak. This button can be toggled between a push-to-hold and a toggle button by checking the 'PTT Toggle' option in the Options Menu.

The hold button is represented by the two vertical bars. This places the other line on hold through the SIP server. If the server is configured for it, hold music will be played to the other line.

The mute button is represented by a microphone with a line through it. This button prevents audio from being transmitted to the other party while it is toggled.

The transfer button is represented by a curved arrow. This will have the SIP server transfer the other party to the number in the text box, ending our connection with them.

Figure 5-4: The SIP phone control. This dial pad is used to manage SIP and traditional phone line calls.

5.2.4 The Lower Display Panel

At the bottom of the user interface, you can find more controls with SIP functionality. The five tabs here each contain useful displays for monitoring and controlling functionalities within HQi.

The first tab is the Instant recall recorder tab, which provides you with information about all prior calls incoming and outgoing. The amount of time these calls are saved for is adjustable within the admin tab of the FlexGate web configuration page. It can be set for as little 1 hour to as long as 2 weeks. The recordings may also be saved to the local computer. To save recordings just highlight either the call or calls to be saved and select the save button. To playback a call, highlight the call and select the play button. Sometimes there might be a situation when many calls are coming in and the operator will need to select a call to playback. The list of call is set to automatically update. If the operator needs to stop the auto update just uncheck the box in the lower left labeled auto update.

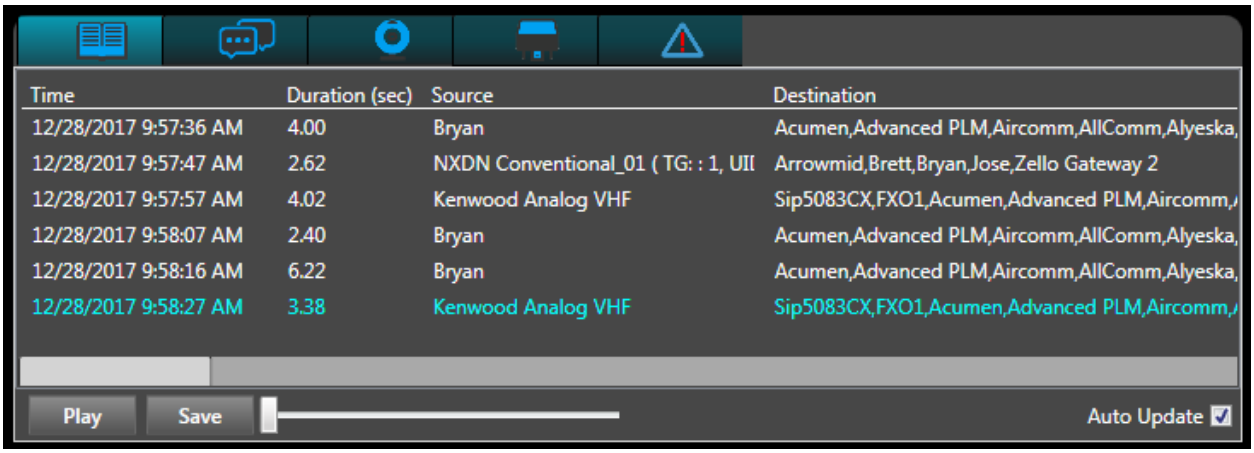


Figure 5-5: Instant Recall Recordings.

The second tab is the Kenwood NXDN Messaging Tab. This tab allows the user to send text messages to other devices on a Kenwood NXDN system. To use this tab, type the talk ID number of the device in the 'To' box and then the type of message. Now type your message and hit send. Any messages sent to you will also be shown in this tab.

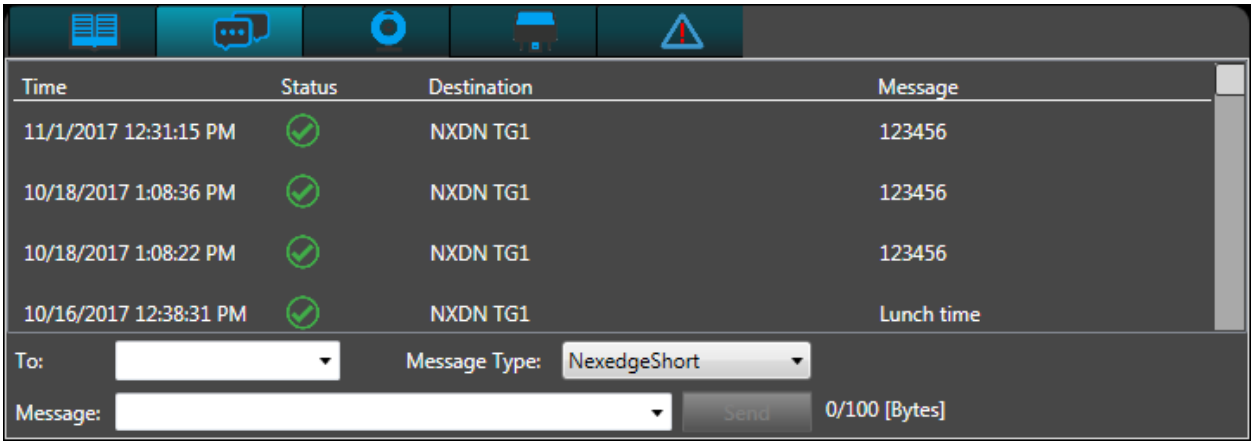


Figure 5-6: Kenwood NXDN Text Messaging.

Note: It is not currently possible to know whether your message recipient has received your message.

The third tab provides access to the webcam functionality of our SIP engine. If you have a webcam and you use the dial pad to call another SIP device that has video functionality, you will both be able to see each other's webcam. There are various options on the left-hand side of the tab to control the quality of your stream.

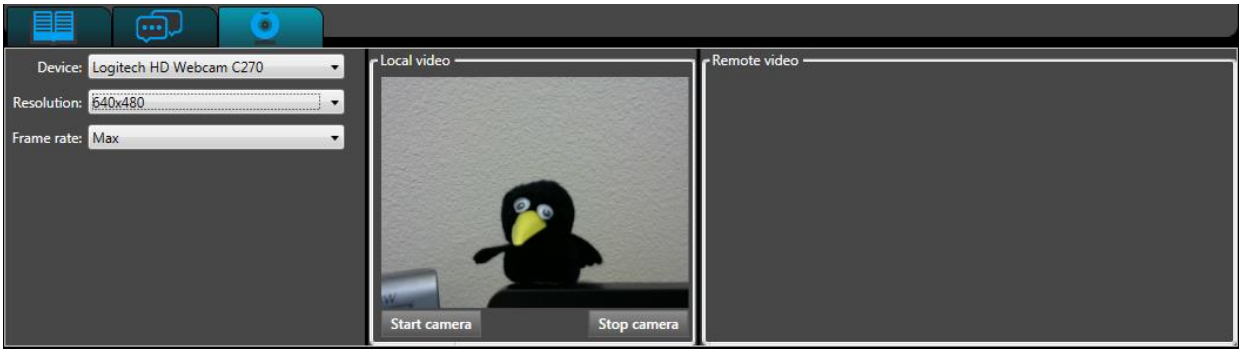


Figure 5-7: The SIP Webcam Tab. This tab can be used to add video to your SIP calls.

This tab is used to either activate or deactivate any relays that are associated with FlexGate.

Figure 5-8: Screenshot of the relay tab.

This tab is used exclusively for the emergency button feature on a Kenwood NXDN radio. Once a user has activated the emergency feature on the radio the interface tab will flash red, and it will also give an audible alert until the dispatcher has resolved the issue by responding to the emergency.

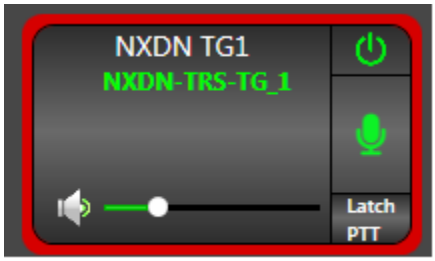


Figure 5-9: Emergency alert on interface.

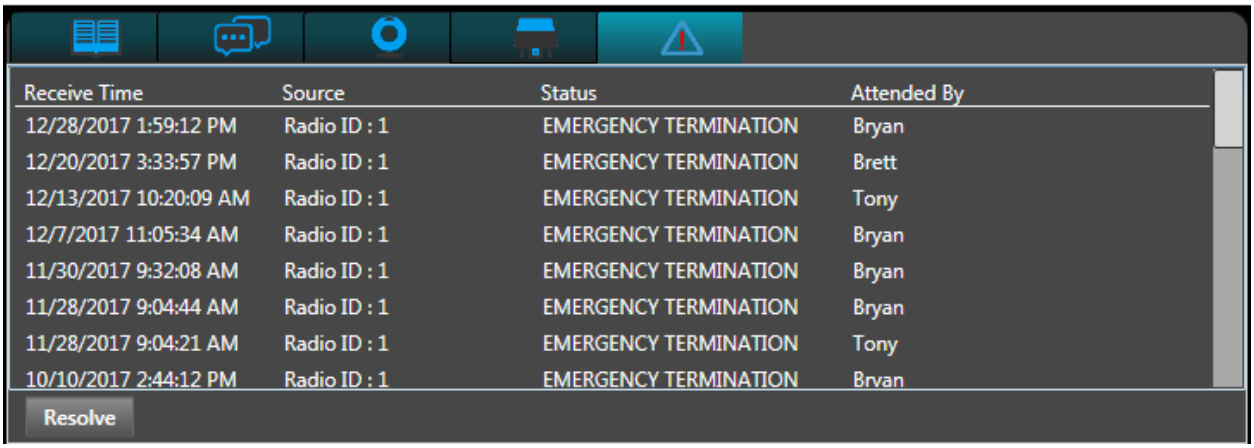


Figure 5-10: Emergency alert tab.

5.2.5 The Options Menu

The options menu can be accessed by clicking on the gear and wrench icon located in the top right of the application. Here, you can make all changes to the individual HQi account.

In the event that the system your HQi client is installed on has multiple NICs, you can select which one you wish to bind to in the Network Settings.

Figure 5-11: The options menu icon.

5.2.6 HQi System Settings Tab

- Server Address
  - The server address will auto populate with the FlexGate IP address you are connected to.
- Local Binding Address
  - This will be the address of the local computer that is use.
- Screen Mode
  - Fullscreen is more likely used when the monitor is dedicated to HQI.
  - Windowed is used when the screen is being used for multiple purposes so one can move the UI around.
- Military Time
  - Military time is used to change from a 12 hour clock.
- PTT Toggle
  - This is primarily used for monitors that are being used as touchscreens. When you key a resource one click will key and the next dekey. Instead of using a click and hold.
- PTT Keybind
  - This is used to define another type of button or foot pedal for keying.
- Monitor Dispatch Traffic
  - This feature is used for monitoring other dispatcher traffic when checked.
- Microphone
  - This is used to select which microphone device to use that is detected by the computer.
- Selected Audio
  - Selected audio is the audio that will be heard from a device that is highlighted Blue
- Unselected Audio
  - This is audio that is not highlighted

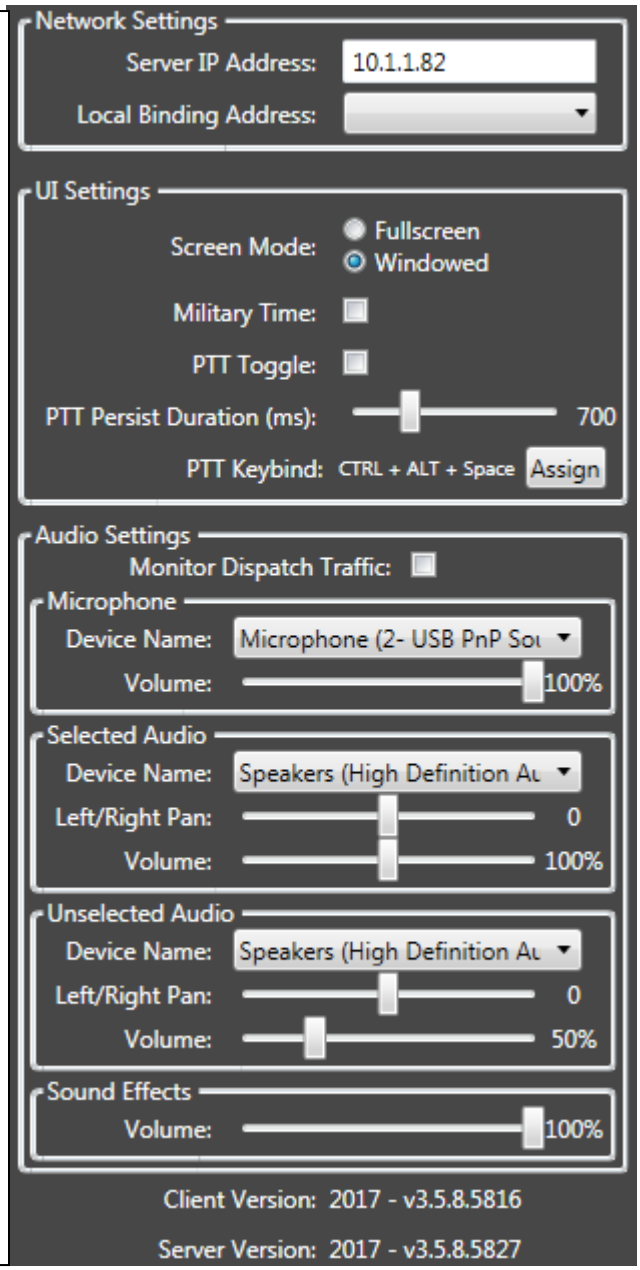


Figure 5-12: HQi settings menu.

5.3 SIP Functionality

Each HQi client once logged in will register to the FlexGate as a SIP account and automatically be assigned a SIP extension number.

5.3.1 Making Operator to Operator SIP Calls

Once logged into an HQi account a SIP account will automatically be assigned to the HQi client. A SIP extension number will also be assigned to the HQi client. To make a SIP call to another HQi operator just select an online user from the contact list as seen I figure 5-1. Once a contact has been selected the extension number for that contact will automatically populate in the dialing box. Now select the green phone icon and the call will be placed.

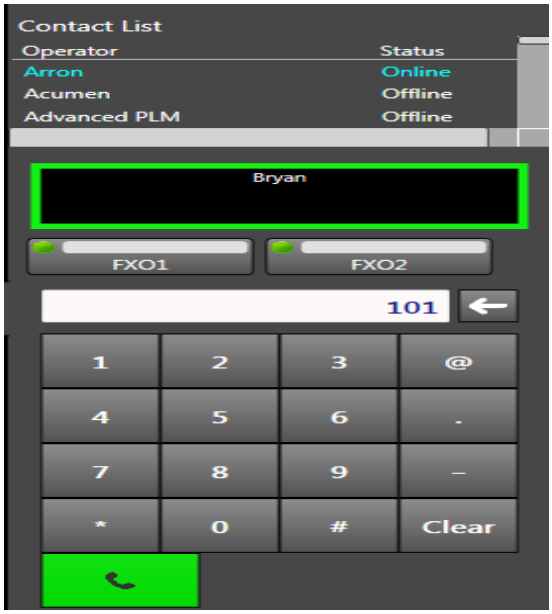


Figure 5-13: SIP control panel.

Making SIP Calls

Once your client is SIP registered, you should see a green bar around the caller ID box on the main menu, as shown in Figure 5-. To dial a SIP extension, follow the protocol dictated by your SIP server. For example, if connected to a Cybertel SIP server, you can directly dial group numbers, but you need to prepend private calls to extensions with an asterisk (*).

You can have multiple SIP calls active at any time, but you can only interact with one at a time. When you have multiple SIP calls active, you will see them listed below the dial pad. To change which SIP call you are controlling, simply click on the one you would like to control. While you are controlling one SIP call, all of your other SIP calls will not receive any audio. If your SIP server supports placing calls on hold, you can optionally place a call on hold before you switch to a new one by clicking on the hold button, indicated by the two vertical bars on the dial pad.

5.3.2 SIP Paging

Once a SIP account on FlexGate has been registered with a SIP server. The ability to page using a SIP phone can be achieved. First you will need to create your customized pages in the admin page on the FlexGate web configuration as shown in 5-14. Once the customized tone has been created select generate tone and it will be added to a selectable table of tones. To activate the page the SIP account in FlexGate will need to be patched together with the interface that is intended to receive the page. To send the page dial the SIP extension on the phone and once the call is connected dial the DTMF pattern and then the star key to activate the page.

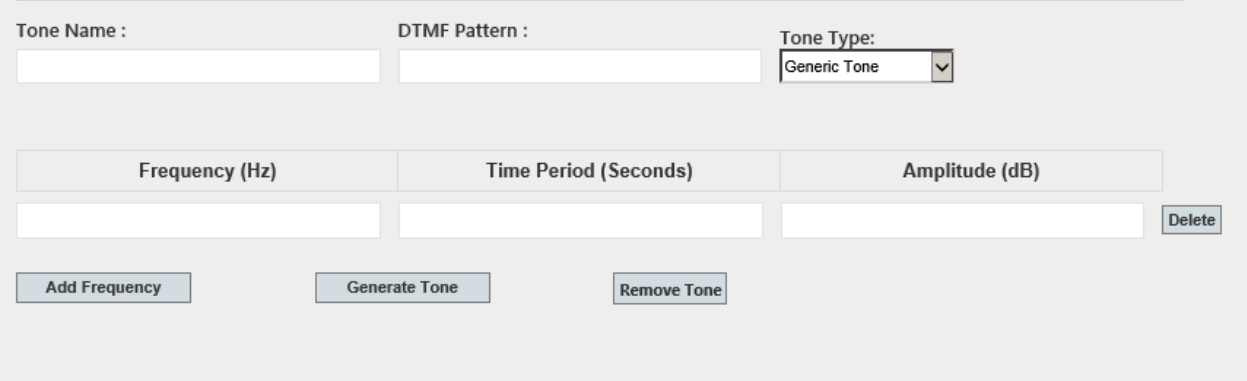


Figure 5-14: Creating customized SIP paging tones

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5.3.3 Controlling Interfaces with SIP Accounts

Certain interfaces can be linked to their own SIP extension. You can configure these settings in the configuration website under each interface's Edit page. If one of the interfaces an HQi client can control is SIP registered, a green phone pad and the SIP extension will be displayed on the interface. If the interface had SIP registration parameters provided, but was unable to register, the phone pad icon and provided SIP extension will show up as red on the interface. Finally, if no SIP registration information was provided, there will be no phone icon or extension on the interface. These three states can be seen in 5-15.

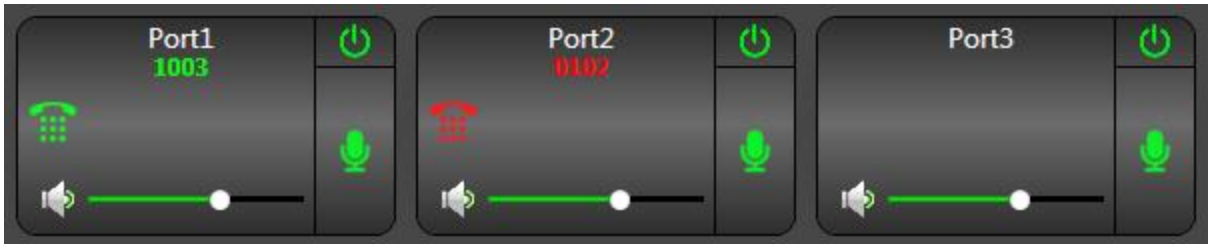

Figure 5-15: An interface that is successfully registered to a SIP account (left), one that has had incorrect registration credentials provided (middle), and one that is not associated with a SIP account (right).

6 Creating and Using Action Plans

6.1 What are Action Plans?

Action Plans contain a list of actions that the FlexGate can perform when called upon from another interface. Actions currently consist of generating synthesized voice alerts that can be sent to other audio interfaces or setting a pin to specific voltage on an IO module interface.

Currently, Action Plans can be triggered from CAP Handler interface. CAP Handler interfaces can be configured to trigger an Action Plan interface if a CAP alert is received that falls within user-defined thresholds.

Once triggered, Action Plans can either send a Text To Speech message to any other audio interface that is configured in FlexGate or it can set a specific pin on an IO module, allowing it to active various external devices.

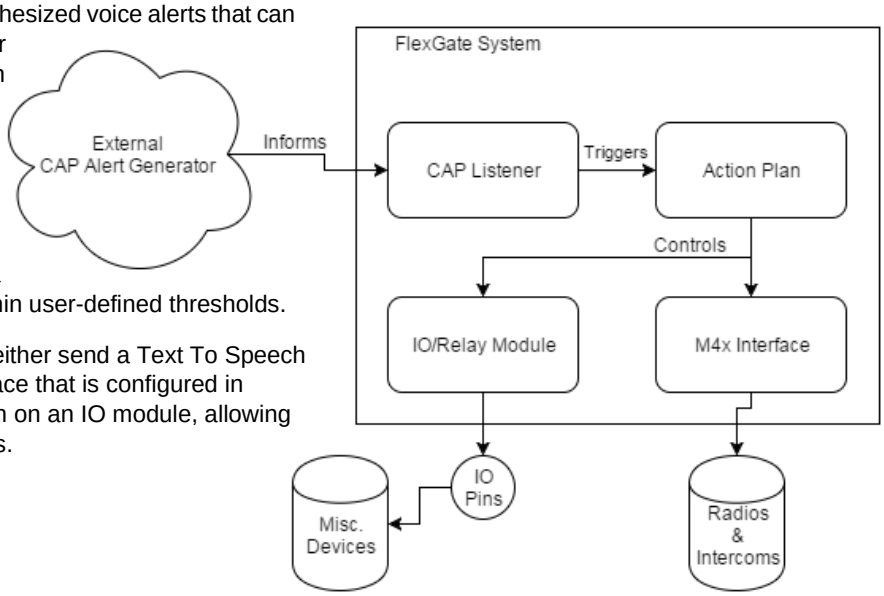

Figure 6-1: The architecture of the Action Plan workflow.

6.2 Creating an Action Plan

Before you can create an Action Plan, you'll want to make sure that you have any other pertinent interfaces configured already. For example, if your Action Plan will include a Text To Speech action, then you should have the destination interface created beforehand. Alternatively, if you want an action that sets an IO pin, an IO module interface should already be configured.

6.2.1 Adding Action Items

The first thing you'll want to do when configuring an Action Plan is to add some actions. You can do so by using the Create New Action dropdown, as shown in Figure 6-2. Currently, only two action types are supported, but more action types will be supported in the future. When you add an action item, they will appear in the Existing Actions list, shown in Figure 6-3.

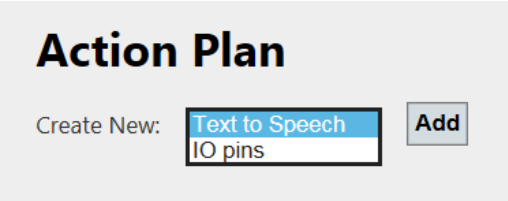

Figure 6-2: Adding actions to an Action Plan.

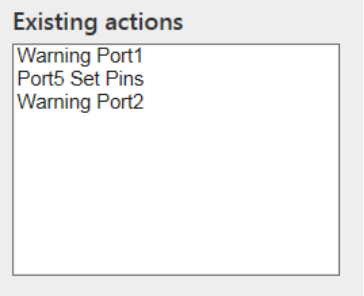

Figure 6-3: The list of actions that are currently part of the selected Action Plan.

6.2.2 The Text-To-Speech action item

The text to speech action item configuration currently consists of the ‘Target Interface’ and the ‘Text to speak’ fields.

The ‘Target Interface’ field specifies which other FlexGate Interface should receive the audio generated by this action item. You are able to send audio to any other FlexGate Interface that supports receiving audio.

The ‘Text to speak field’ specifies what the generated audio will say. Currently, only English text is supported but future languages can be supported in the future. There is also support for variables within the generated message, but only within the context of Earthquake CAP Alerts. The only two supported variables are shown in Figure 6-4. They are:

- %INTENSITY%
  - The expected intensity to be felt at the current location. The box’s current location is specified in the Admin page on the FlexGate’s Web Config.
- %TWARN%
  - The amount of time (in seconds) until shaking is expected to occur.

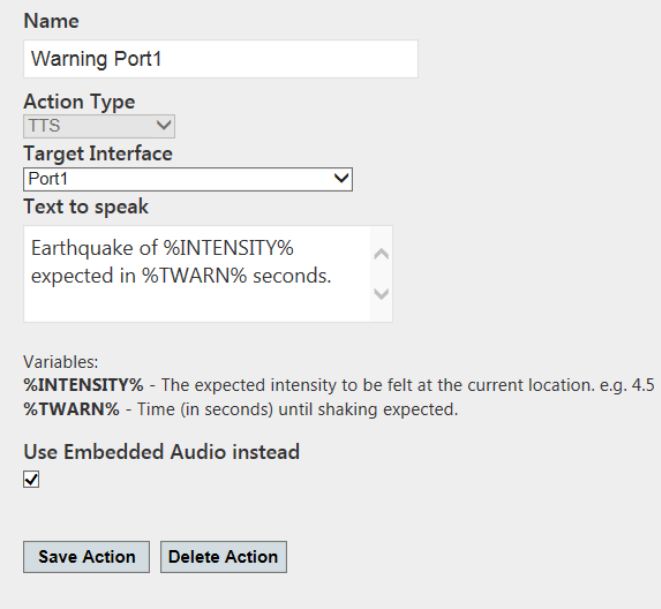

Figure 6-4: The Text-To-Speech action item configuration.

6.2.3 The IO action item

The IO action item configuration consists of the ‘Target Interface’ and ‘Pin States’ fields.

The ‘Target Interface’ field specifies which IO Relay interface should be used for this action item.

The ‘Pin States’ field allows the user to specify which pins should be ‘set’ when the action plan is executed. Currently, the checked pins will be set to 12V for 5 seconds, before being set back to ground. In the future, the user will be able to choose between 5V and 12V, and will be able to specify how long to hold the state before returning to ground.

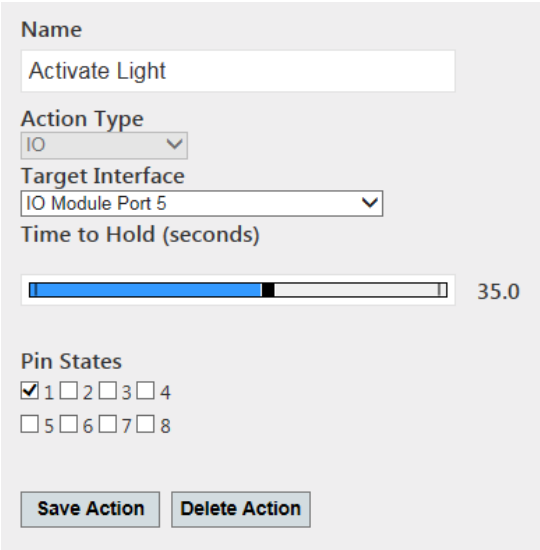

Figure 6-5: The IO action item configuration.

7 Troubleshooting

7.1 On the website, all of my interfaces are showing 0/0.

If your interfaces are showing 0/0, this means you either don't have a license file installed, or the license file has become corrupt. If you believe that there is an issue with your license file, please email Raven Electronics at FlexGateSupport@ravencomm.com. Please be sure to include your **License Key** that is located on the web page under the **Licensing** tab.

7.2 My HQi Client interface isn't displaying any interfaces or patches.

By default, HQi Clients don't have access to any interfaces or patches. You must grant access to both of these on the configuration website, under the Edit page for each particular HQi interface. It is recommended that you only give HQi clients access to interfaces that you want them to be able to modify. For more information, see Chapter 2.7: The HQi Client Interface.

7.3 I created a new interface, but it isn't displaying on my HQi Operator's screen.

HQi accounts are granted the ability to control interfaces through a whitelist system. If you make a new interface that you want an HQi operator to be able to control, you must explicitly grant this access by editing the HQi interface on the website. For more information, see Chapter 2.7: The HQi Client Interface.