Voisus Client User Guide

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Product Name: Voisus

Voisus Client User Guide

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Revision history

Date	Revision	Version	Comments
03/23/2017	B	0	(5.29) Updated "TRANSMIT tab," "STARTUP tab," and "Add a radio;" comprehensively edited the document for grammar, organization, and accuracy.
04/28/2017	B	1	(5.30) Documented user interface changes in "Add a radio," "Add a role," "Autotune Original Desktop Client radios," "DIS,""TRANSMIT tab;" updated Voisus Client for Tablets & Desktops to reflect new tab icons in settings.
07/21/2017	C	0	(5.31) Documented jamming capability in Original Desktop Client; created "Add a jammer," "Add a playsound," and "Add a sound file." Edited "Add radio effects" and "Add a radio" to include net sorting and background audio mixing. Updated screenshot in "Add nets to a netgroup."
10/03/2017	C	1	(5.32) Changed link to *Voisus Quick Start Guide* on Voisus Support site.
02/26/2018	D	0	(5.33) Updated all Voisus Client for Tablets & Desktops **CONNECTION** tab screen shots. Added "Enable dual radio skins" and Updated browser compatibility in "Voisus web interface" and "Voisus Web Client."
06/11/2018	E	0	(5.34) Made description in "RTP Endpoints" more generic and documented ability to assign a net group as the bridge net on an RTP audio endpoint in updated terminology for style guide consistency; updated "Voisus VBS Add-in" and removed content pertaining to the Voisus Prepar3D add-in. Expanded "Add a software client" and added "Set default options for unlisted clients." Documented ability to enable or disable radio effect settings in "Add radio effects;" updated all screenshots of the **Downloads** page.
09/28/2018	F	0	(7.0.1) Added description of client conference call behavior in "Calling." Documented “receive only” mode in "RTP Endpoints." Updated screenshots in "(Optional) Edit ASTi keyboard shortcuts" and documented **Select HUD position** setting; added export to network scenarios note to "Set up VBS missions for Voisus." Added named destination to "Add a scenario."

Date	Revision	Version	Comments
11/12/2018	F	1	(7.1.0) Updated licensing screenshots; documented **PTT Priority** and updated **Default Rx** and **Default Tx** screenshots in "Set up PTT devices." Documented the Voisus VBS Manager's new **Simscribe** tab in "Set Simscribe network options."
01/09/2019	F	2	Fixed broken hyperlink in "Introduction."
03/01/2019	F	3	(7.2.0) Documented **Hardware Input Devices** and **PTT Group Priority** in "Set up PTT devices." Updated old Comm Plan and DIS screenshots.
06/25/2019	G	0	(7.3.0) Added "Add nets to a netgroup" and "Delete a netgroup." Documented **Description** and updated screenshots in "Add a software client" and "Assign clients to separate DIS exercises." Merged "Radio communications" with "Comm Plan." Updated screenshot in "Manage audio in the Original Desktop Client." Edited for consistency, grammar, and style.
09/11/2019	H	0	(7.4.0) Documented net scan plan functionality and how to add a net to the Comm Plan. Combined "RTP Endpoints" and "Add an RTP endpoint." Made minor changes to grammar and style throughout. Updated table styles.
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07/01/2020	L	0	Documented ASTi's simulated MCAP client in "ASTi Medium Control Audio Panel."
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Date	Revision	Version	Comments
12/20/2020	N	0	(7.9.0) Updated screenshots and workflow of in-game connected status display in "Voisus VBS Add-in." Added screenshots of the PRC-355 and PRC-119 SIP (SINCGARS) radio skins.
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01/12/2022	P	0	Merged Flex Client documentation into the *Voisus Client User Guide*, which includes "Flex Contacts," "Flex Layouts," "FXO Gateways," "Configure the Flex Client in a role," and "Flex Client." Documented **Hot Spare Failover** in "Add backup servers to a cloud." Added Voisus Client documentation and removed the old Original Desktop Client documentation. Fixed minor issues related to grammar, formatting, and style.
01/22/2022	Q	0	Made widespread minor changes to grammar, formatting, and style across the *Voisus Client User Guide*.
01/31/2022	R	0	Added the Original Desktop Client documentation back to the client user guide.
03/30.2022	S	0	Documented the Voisus Client's chat capabilities. Added the ICOM IC-M330GE to "Radio skins."
06/07/2022	T	0	Added a registered trademark symbol to TOCNET CAU on first mention. Documented log warning messages in "Monitor cloud health." Documented **Auto-Answer Calls** in "Add a role." Updated all screenshots of the **Radio Monitor** toggle switch in a role.
10/7/2022	U	0	Replaced "license" references from the Red Hat Enterprise Linux export statement in the front matter. Removed VBS version numbers from "Simscribe VBS Add-in" and "Voisus VBS Add-in." Added a screenshot of Voisus options to "Modify Voisus client options in VBS." Added "ASTi Server Diagnostics Report."

Date	Revision	Version	Comments
12/13/2022	V	0	Added "Voisus Client Host Control." Documented **Local Only** in "Add a radio."
3/9/2023	W	0	(8.0.0) Removed deprecated Original Desktop Client documentation. Documented changes to "Network Configuration" and updated a screenshot in "Add backup servers to a cloud." Added RHEL 8.X requirements to "Software client system requirements." Updated **Downloads** screenshot in "Download a Voisus software client or application."
12/14/2023	X	0	(8.2.0) Changed **Hardware PTT Only** setting name to **Hardware Only** in "Add a software client," "Set up PTT devices," "Set up a single PTT device," and "Set up a four-channel PTT device." Updated screenshot of the **Downloads** page in "Download a Voisus software client or application." Documented **Speakers** in "Configure the Voisus Client's Audio & Headset options" and **Speakers Audio**, **Speakers Audio Balance**, **Radio Effects**, and **Background Sounds** in "Voisus Client." Added port numbers to "Software clients." Removed "Software client system requirements."
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3/13/2024	Y	1	Updated screenshot of the **Cloud Monitor** page in "Monitor cloud health."

Date	Revision	Version	Comments
4/3/2024	Y	2	(8.3.0) Removed "Set the Voisus Client's default size and position." Reverted screenshots of the **Features** page and added **Multi-Server (Cloud)** back to "Monitor cloud health." Removed **PTT Test** from "Set up the Voisus Client's Transmit options." Added **Share Radio** back to "Add a radio." Reverted all screenshots of the **Panel** tab on the **Hardware Devices** page.
06/10/2024	Y	3	(8.4.0) Documented the **Edit** button in "Modify the Voisus Client's local DIS options." Updated **Radio Monitor** screenshots and documented **Search** in "Tune network assets to preset channels." Updated screenshots of the Voisus Client's chat text formatting bar and send message button in "Voisus Client chat" and its corresponding subsections. Combined "Default Delcom switch setup" and "Custom Delcom switch setup" into "Configure the Delcom switch." Clarified that the **delcom4btn.inidelcom4btn.ini** file is required and changed the compatible operating system to Linux. Removed inaccurate "hardware" reference from "Observers."
9/26/2024	Z	0	(8.5.0) Split "Tune network assets to preset channels" into another section called "View network radios on Monitor." Updated screenshots and added jammers to "Tune network assets to preset channels." Added "Set the Voisus Client's default size and position." Documented "Session Initiation Protocol (SIP) Bridges."
11/15/2024	Z	1	Added #HostControl anchor to "Voisus Client Host Control" for in-product help text link.
11/18/2024	Z	2	Changed a reference to "big endian byte order" to "little endian byte order" in "Host packet fields for Voisus Client Host Control."
1/21/2025	Z	3	Documented Subscribe/Publish Host Control interface in "Voisus Client Host Control" and configuring Host Control of a Hardware Only client in " Host control for Hardware Only clients." Updated screenshots of **Features** and **Hardware Devices** pages.

Date	Revision	Version	Comments
3/14/2025	AA	0	(8.7.0) Updated "netgroup" references and screenshots in "Comm Plan" and its subsections. Updated a screenshot of the **Hardware Devices** > **AI-Delta Update Firmware** button in "Add an AI-Delta to the Voisus cloud." Made minor edits to " Host control for Hardware Only clients," "Report Client Status packet definition," "Subscribe packet definition," and "Unsubscribe packet definition," for grammar and style.
4/24/2025	AA	1	Updated two "netgroup" references in "RTP Endpoints" and "Delete a netgroup." Documented **Use RTSP?** feature in "RTP Endpoints."
6/6/2025	AA	2	In "AUDIO tab," documented **Headphones** and updated the **AUDIO** tab screenshot.
6/11/2025	AA	3	Added #Transmit anchor to "Set up the Voisus Client's Transmit options" for a support site link.

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1.0 Introduction

Voisus clients are voice-over-IP (VoIP) communication tools featuring simulated radio and intercom channels, conference and private calling, and text chat, radio patching, and live radio integration. Voisus clients are interoperable with the following:

- Previous versions of ASTi products, including DACS version 3.12 and later, PC'ver, and the Telestra product lines
- Third-party virtual radios compliant with Distributed Interactive Simulation (DIS) and high-level architecture (HLA) standards
- DIS-compliant computer generated forces (CGF)
  - VR-Forces
  - Joint Conflict and Tactical Simulation (JCATS)
  - Joint Semi-Automated Forces (JSAF)
  - One Semi-Automated Forces (OneSAF)
- Virtual Battlespace (VBS) tactical training game
- Live tactical radios via Voisus Radio Bridge
- Current and legacy ASTi systems

Voisus clients are compatible with multiple user interfaces:

- *Software clients:* Windows and Linux, desktop computers and tablets, and military radio skins
- *Add-ins for serious games:* VBS and Simscribe VBS Add-in
- *Hardware-based clients:* no computer required; add headsets, press-to-talk (PTT) devices, speakers, and control devices for specific applications

The clients application in the Voisus web interface contains resources for client communications. Clients connect to the Voisus server over the network and gain access to these resources.

Intended for maintenance technicians and/or users, the *Voisus Client User Guide* describes how to set up and manage the Voisus web interface. Additionally, it identifies and describes types of Voisus software and hardware clients, providing installation and configuration instructions. Finally, this user guide describes the Voisus VBS Add-in and Simscribe VBS Add-in.

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2.0 Voisus web interface

Any computer sharing a network with a Voisus server can remotely access the Voisus web interface. It remotely manages Voisus server resources and networked devices, such as communication clients and live radios. This interface is compatible with the latest versions of Google Chrome, Firefox, and Microsoft Edge.

This chapter discusses the following topics:

- Scenarios
- Comm Plan
- DIS
- Roles/Radios
- Manage Clients
- Playsounds
- Observers
- RTP Endpoints
- Vehicles

2.1 Scenarios

Each scenario contains customized communications and audio resources for Voisus clients, including the following:

- ***Comm Plan**:* a collection of virtual communications nets with customizable parameters, such as frequency, waveform modulation type, crypto, and frequency-hopping. Nets fill simulated radios with communication channels.
- ***Roles/Radios**:* each role is a collection of simulated radios, and each radio consists of one or more virtual nets from the Comm Plan. Roles are assigned to clients.
- ***Clients**:* **Manage Clients** maps each client to a role, DIS exercise, and other resources in the scenario. To learn more about client management, go to Section 2.5, "Manage Clients" on page 25.
- ***DIS Settings**:* set DIS options for a specific exercise. For more information about DIS, go to Section 2.3.1, "DIS Networking" on page 14.

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The Voisus server runs one scenario at a time, but you can dynamically edit scenarios while they are running. This section discusses how to:

- Add a scenario
- Import or export scenarios

2.1.1 Add a scenario

Before Voisus clients can communicate with each other, you must build and run a new scenario in the Voisus web interface. To build and run a scenario, follow these steps:

1. Open a web browser on a computer or tablet sharing a network with the Voisus server.
2. In the address bar, enter the Voisus server's IP address.
3. Log into the Voisus server using the following default credentials:

Username	Password
admin	astirules

4. From the top navigation bar, go to Select a Scenario.

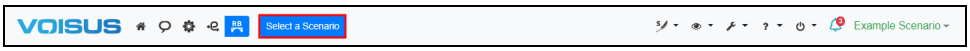

Figure 1: Select a Scenario

5. Under **Create New Scenario**, select **Start with**, and choose a scenario template.

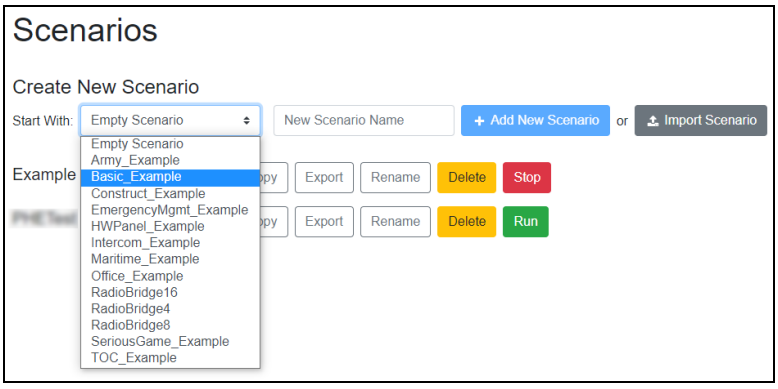

Figure 2: New scenarios

The example scenarios come with a Comm Plan, roles, and radios that you can modify as needed.

6. In **New Scenario Name**, enter a unique name for the scenario.

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7. Select + Add New Scenario.

8. Select Run to run the scenario and Open to view/edit its resources. You can dynamically edit scenarios while they are running.

2.1.2 Import or export scenarios

The Import Scenario and Export buttons transfer scenarios between the Voisus server and your computer's hard drive. As a result, you can easily share a scenario between servers using email or another file-transfer method.

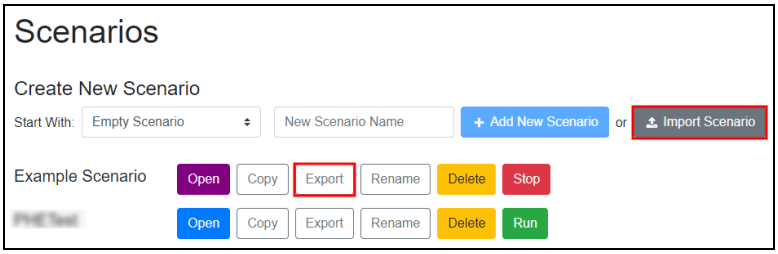

Figure 3: Scenario Import and Export

***Note**: Scenario import/export is only available for Voisus 5.15 and later.*

Scenarios receive a unique ID during an export. If Scenario A already exists on the destination system, and the destination system imports another copy of Scenario A, the system contains two separate instances of Scenario A, each with a unique scenario ID.

2.2 Comm Plan

The **Comm Plan** is a collection of virtual communication nets with customizable parameters, such as frequency, waveform modulation type, crypto, and frequency hopping. Use nets to fill simulated radios on **Roles/Radios**.

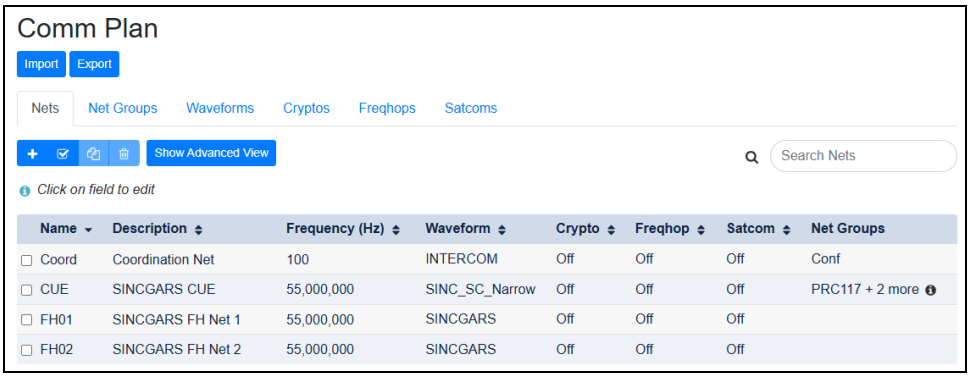

Figure 4: Comm Plan

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Radio nets connected to Voisus clients must share key net settings to intercommunicate:

- Frequency
- Waveform modulation type
- Bandwidth
- Crypto settings

Clients can communicate by tuning to the same net or using different nets with the same settings:

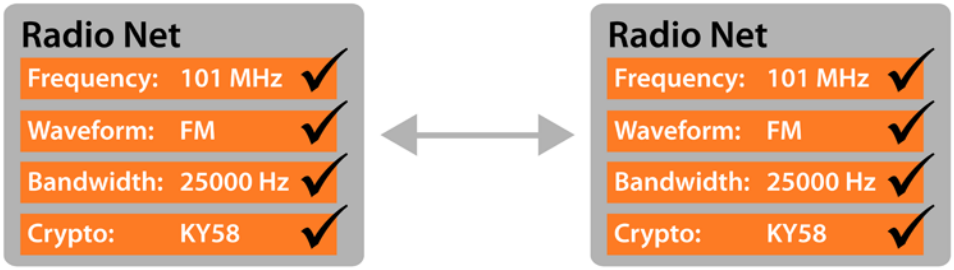

Figure 5: Radio net match

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2.2.1 Add a net

To add a net in the Comm Plan, follow these steps:

1. *(Optional)* To access a net's advanced frequency settings, on **Nets**, select Show Advanced View.

2. Select **Add** (+).

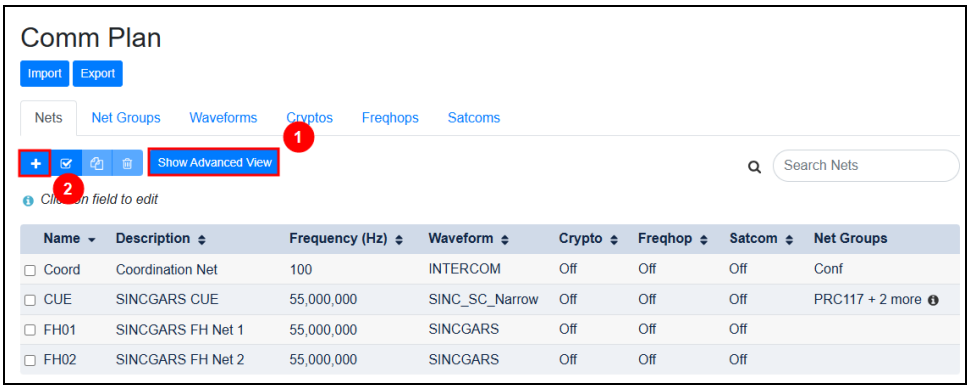

Figure 6: Add a net

3. In **Name**, enter a unique name for the net.

4. *(Optional)* In **Description**, enter a brief description of the net.

5. **Frequency** determines the net's simulated frequency (i.e., channel) on which to receive radio communications. To enable communications, enter a nonzero value in Hertz (Hz).

6. *(Optional)* In **TX Frequency**, enter the frequency in Hertz on which the net will transmit. A value of **0** automatically updates to match the net's receive frequency.

> ***Important: TX Frequency** is only visible in advanced view. In normal view, **Frequency** determines both the transmit and receive frequency.*

7. Select **Waveform**, and choose a waveform modulation type.

> ***Important**: Nets require waveforms to operate. To add or edit waveforms, go to **Waveforms**.*

8. *(Optional)* Select **Crypto**, and choose a radio encryption parameter. You can add or edit cryptography parameters on **Cryptos**.

9. *(Optional)* Select **Freqhop**, and choose a frequency-hopping parameter. You can add or edit frequency-hopping parameters on **Freqhops**.

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10. *(Optional)* Select **Satcom**, and choose a satellite communications (SATCOM) signal. You can add or edit SATCOM signals on **Satcoms**.

11. *(Optional)* In **Net Groups**, assign the net to a netgroup. To add or edit netgroups, go to Section 2.2.2, "Add nets to a netgroup" on the next page.

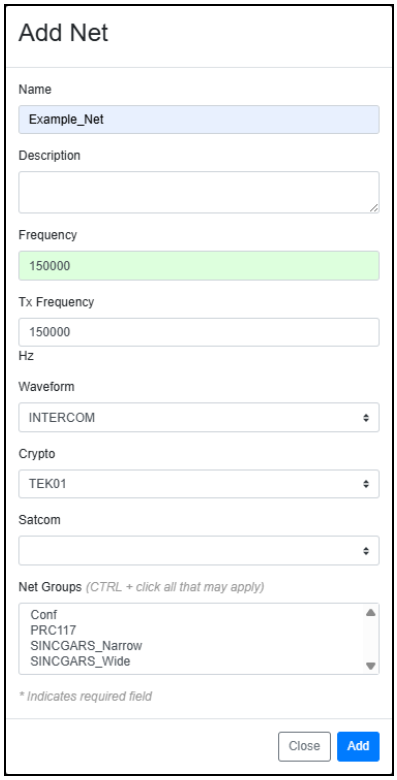

Figure 7: Net settings

12. Select Add, and the new net appears in the list:

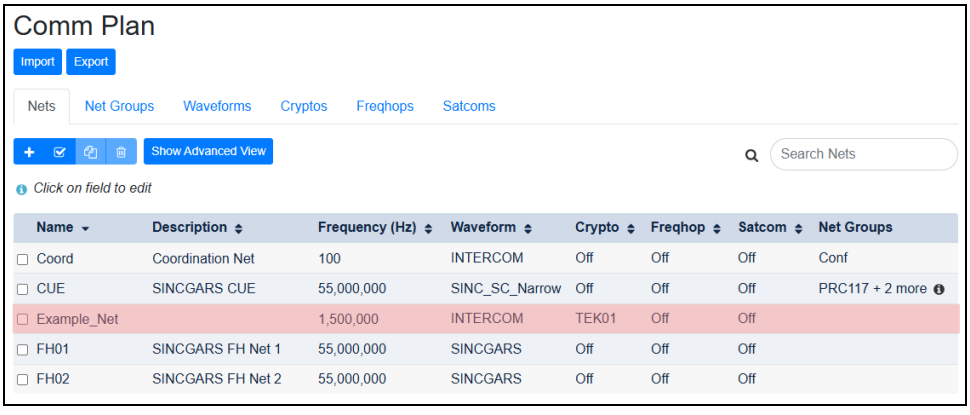

Figure 8: New net

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2.2.2 Add nets to a netgroup

The Comm Plan allows you to group nets together in a netgroup. You can add a netgroup on both **Nets** and **Net Groups**. To assign these groups to roles on **Roles**, go to Section 2.8.2, "Add a radio" on page 41.

To add a netgroup on **Nets**, follow these steps:

1. On **Comm Plan**, choose the nets you want to group together.
2. Select **Net Groups**, and then select **Add Net Group**.

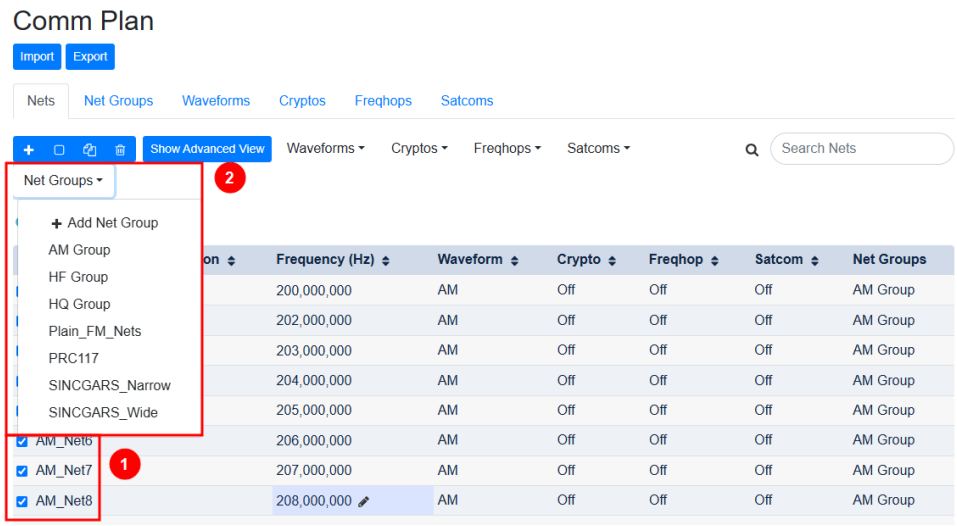

Figure 9: Add Net Group on Nets

3. In **Name**, enter a unique name for the netgroup.

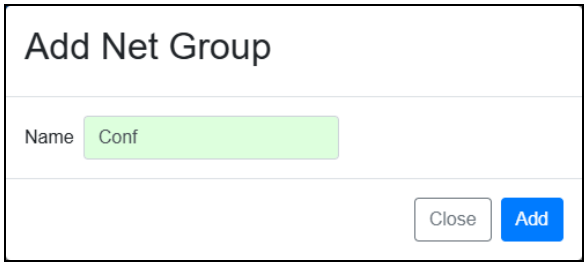

Figure 10: Netgroup name

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4. Select Add. Under **Net Groups**, selected nets show the new netgroup:

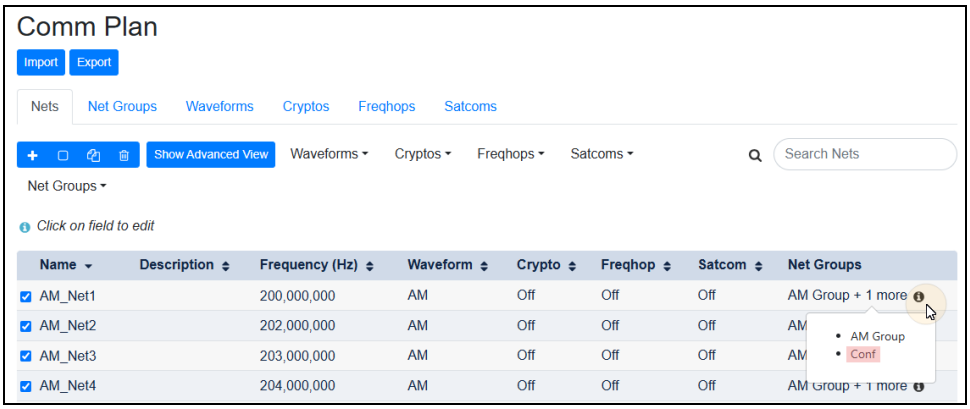

Figure 11: Netgroup assignment

To add a netgroup on **Net Groups**, follow these steps:

1. Go to **Net Groups**.
2. Select **Add** (+).

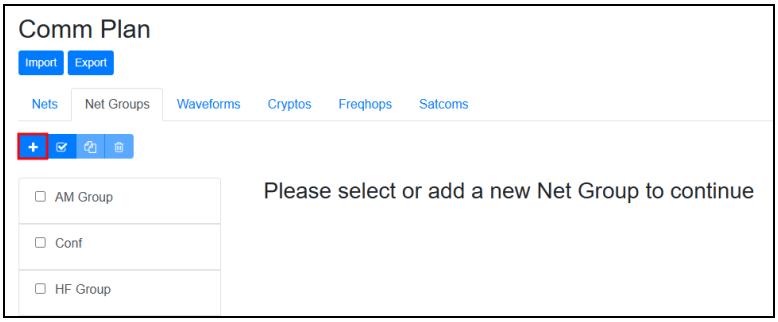

Figure 12: Add a netgroup on Net Groups

3. In **Name**, enter a unique name for the netgroup. The default netgroup name is **Fill-***N*, where *N* is the fill number.
4. *(Optional)* In **Description**, enter a brief description of the netgroup.

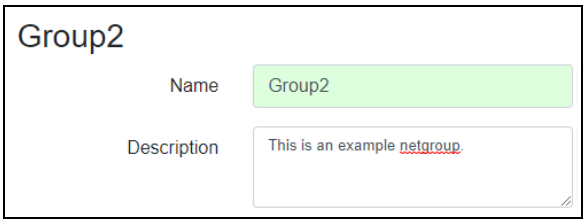

Figure 13: Net Group Name and Description

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5. Under **Available Nets**, choose nets to assign to the netgroup. Find specific nets in the search box.

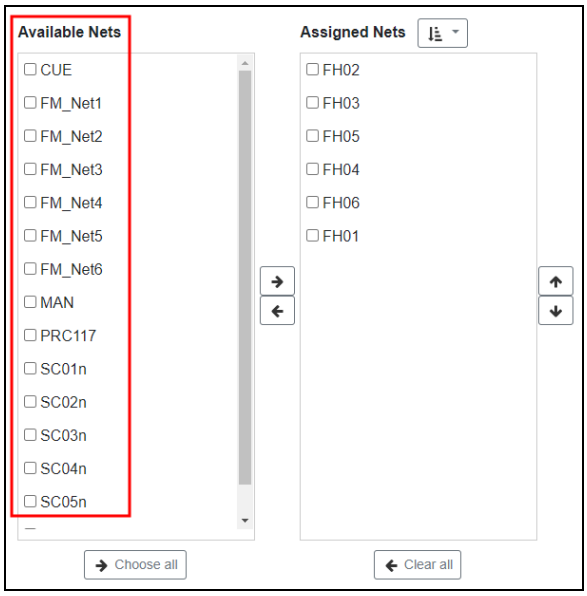

Figure 14: Available Nets

6. Select [→]. The selected nets move to **Assigned Nets**.

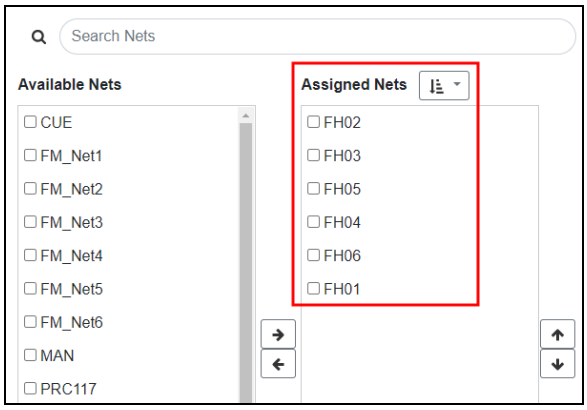

Figure 15: Nets assigned to netgroup

Alternatively, to assign all available nets, select **Choose all**.

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7. To sort assigned nets by name or frequency, select **Sort** (), and choose **Name** or **Frequency**.

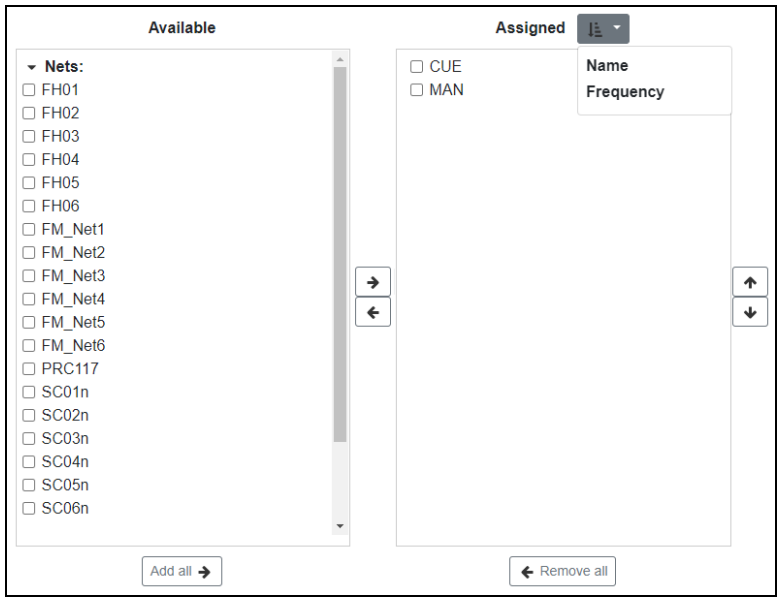

Figure 16: Sort assigned nets

***Note**: **Frequency** does not display the net's frequency. To view a net's frequency, go to **Nets**.*

8. On **Nets**, in **Net Groups**, hover over ℹ to view multiple netgroup assignments.

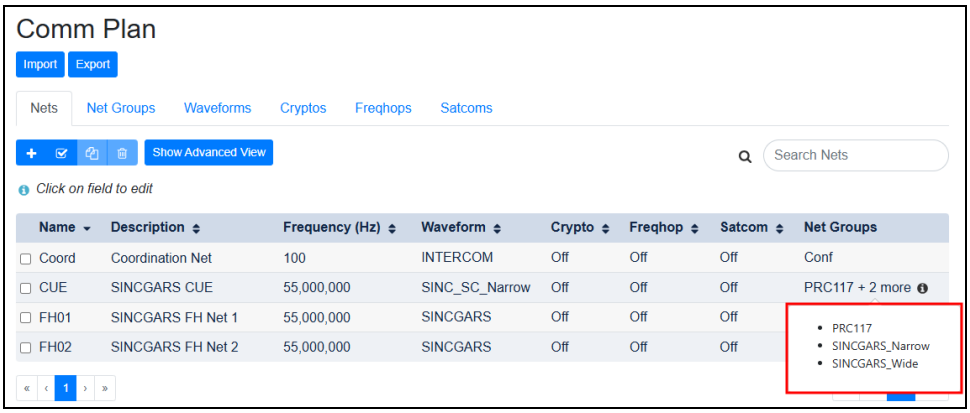

Figure 17: Multiple netgroup assignments

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2.2.3 Delete a netgroup

To delete a netgroup, follow these steps:

1. From the **Comm Plan**, go to **Net Groups**.
2. Choose a netgroup to delete.
3. Select **Delete Selected** ( ).

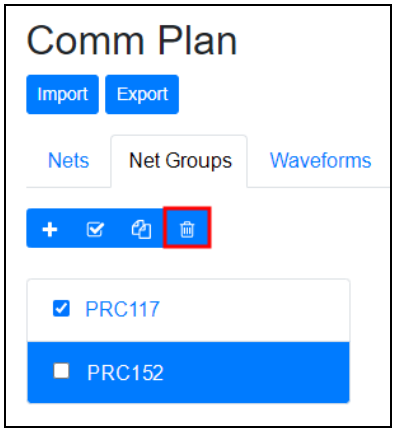

Figure 18: Delete a netgroup

Important: *Deleting a netgroup does not impact associated nets.*

4. At the confirmation message, select Delete.

2.2.4 Import or export a Comm Plan

The **Comm Plan Import** and **Export** buttons download the Comm Plan from the Voisus server to your computer's hard drive, distributing your Comm Plans among different Voisus systems. These buttons only capture Comm Plan-specific items (e.g., nets, net groups, waveforms, cryptos, freqhops, satcoms).

To export an entire scenario, go to Section 2.1.2, "Import or export scenarios" on page 4.

To export a **Comm Plan**, follow these steps:

1. Select Export.
2. In **Name**, enter a unique name for the export file.
3. To save the Comm Plan in a comma-separated values (.csv) format, select **Generate CSV File**.

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4. Download and save the file to your desktop. Optionally, edit the Comm Plan in .csv format.
5. Using email or another file-transfer method of your choice, send the .csv file to another Voisus server.

To import a Comm Plan, follow these steps:

1. Select Import.
2. In **Import CommPlan**, under **From file**, find the exported .csv file on your computer.

   To import a Comm Plan from an existing scenario, under **From existing Scenario**, click **Select Scenario**, and choose a scenario.

2.3 DIS

Distributed Interactive Simulation (DIS) is a standard for exchanging entity state information over the network, enabling entities controlled by different hosts to interact in a common virtual training exercise. The entity state information is contained in a Protocol Data Unit (PDU), which is sent to other hosts in User Datagram Protocol (UDP) packets over the network. ASTi DIS radio entities consist of Transmitter PDUs, Signal PDUs, and Receiver PDUs.

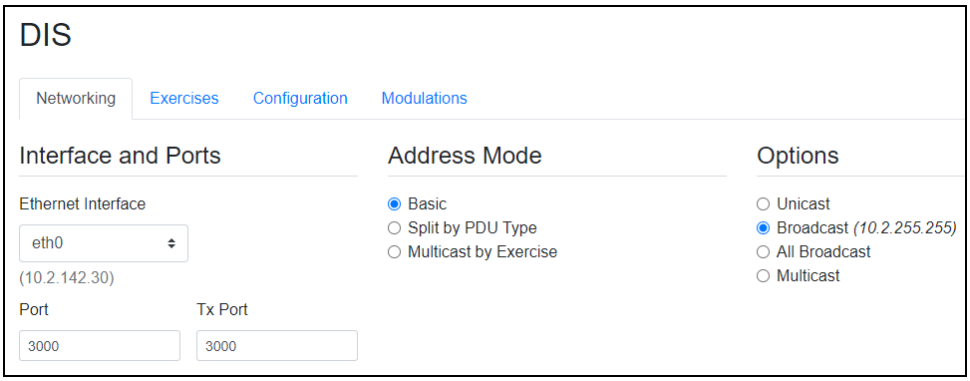

Figure 19: DIS settings

This section discusses the following topics:

- DIS Networking
- DIS Exercises
- DIS Configuration
- DIS Modulations

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2.3.1 DIS Networking

To set up DIS networking, follow these steps:

1. From the top-left navigation bar, go to **Voisus Home** > **DIS**.

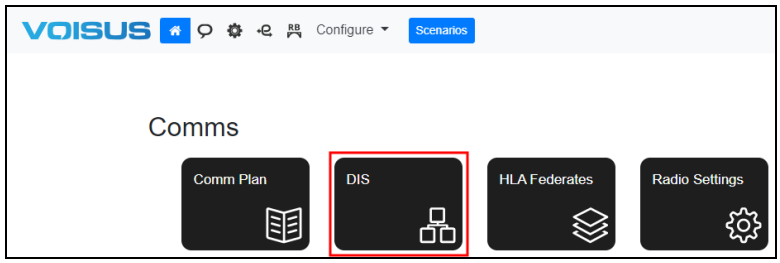

Figure 20: DIS navigation

2. Choose an Ethernet Interface; eth0 is the default.
3. Add a UDP port number. The default port number is 3000.

   Software versions 5.23 and later include both Rx and Tx Ports. When you adjust the Rx port number, the Tx Port number adjusts to match. However, the ports can function separately if you adjust the Tx number to a number different from the Rx port.

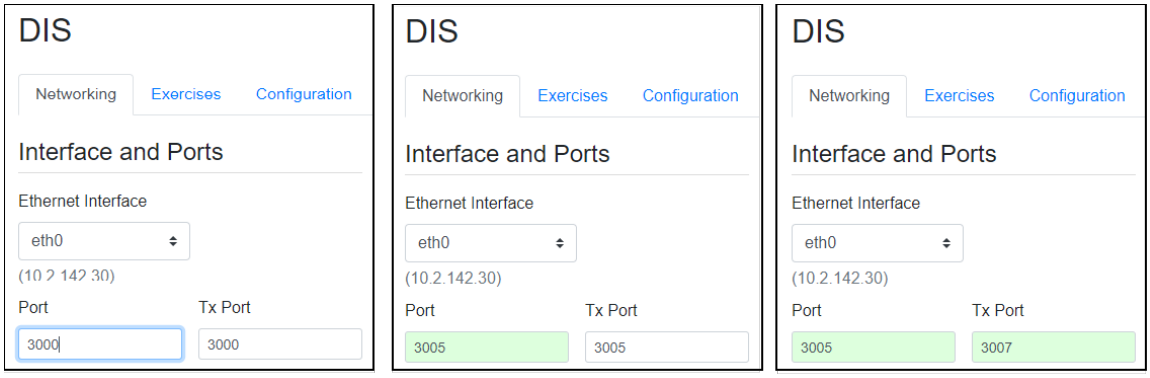

Figure 21: UDP ports

4. Choose and set up a **Network Mode**.

***Note**: All communication systems on the DIS network must share a common DIS UDP port number.*

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2.3.2 DIS Exercises

Use **Exercises** to link your scenario to a DIS exercise. To determine the proper DIS parameters, contact your exercise administrator.

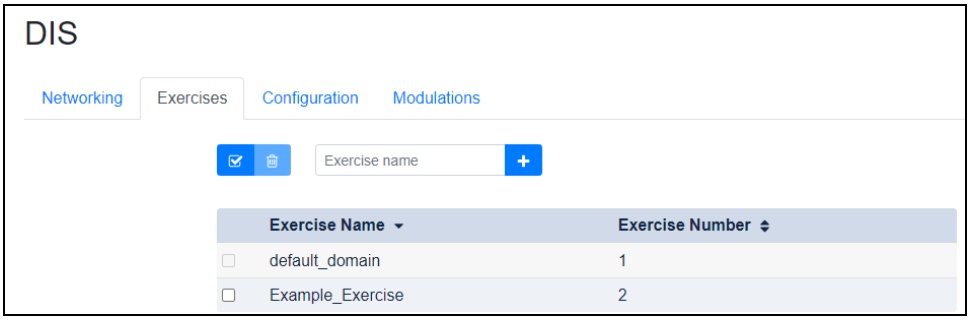

Figure 22: DIS Exercises

2.3.3 DIS Configuration

To set up DIS, follow these steps:

1. On **Configuration**, select **DIS Version**, and choose a DIS version.
2. Under **Site/App ID Mode**, decide how to determine the DIS site and application ID:
   - ***Derive from IP address***: derives the DIS site and application IDs from your IP address
   - ***Manually configure***: enter the desired values in **Site ID** and **Application ID** below.
3. To add a new exercise, under **DIS Exercises**, in **New Exercise**, enter an exercise name, and select the plus sign (+).

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New exercises appear under **Exercise Name**. You can create up to 254 new DIS exercises but cannot delete or edit **default_domain**. To set up a DIS exercise with multiple servers, set each server to the same UDP **Port** and **Exercise ID**.

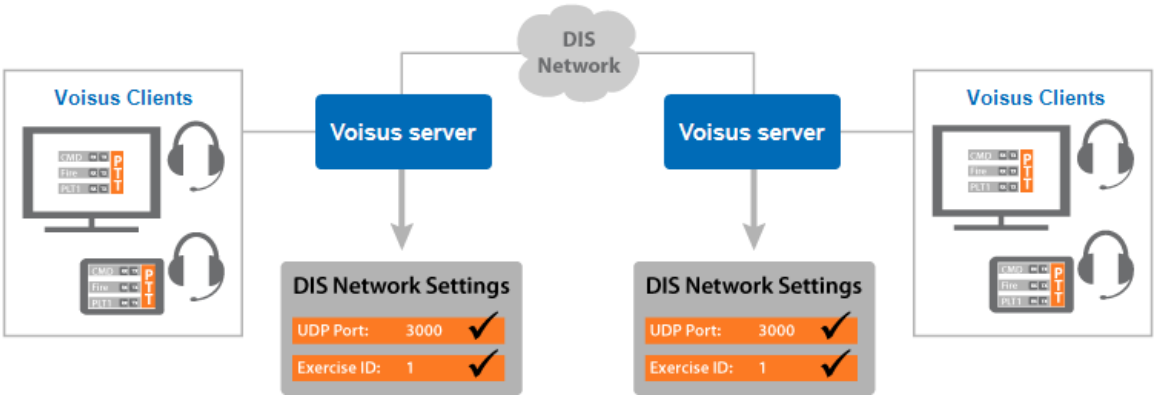

Figure 23: DIS compatibility

4. Under **Transmitter Heartbeats**, enter values for **Normal Heartbeat**, **Moving Heartbeat**, and **Moving Threshold**.

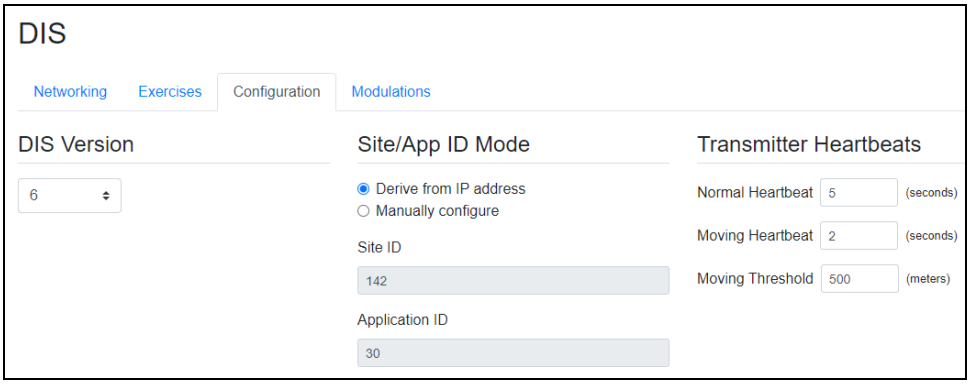

Figure 24: DIS Configuration

***Important**: You can only edit **Normal Heartbeat**, **Moving Heartbeat**, and **Moving Threshold** if **Manually Configure** is selected.*

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2.3.4 DIS Modulations

Modulations overrides the default Voisus DIS Transmitter PDU Modulation Type Record and manually sets signal parameters for a particular waveform. In accordance with the *IEEE 1278.1 Standard for Distributed Interactive Simulation (DIS)*, transmitter protocol data units (PDUs) incorporate a modulation type record that uniquely identifies the various sets of signal parameters determining whether two radios can communicate. The modulation type record characterizes radio modulation through four enumeration boxes:

- Major modulation
- Detail
- Radio system
- Spread spectrum

Figure 25, "DIS Modulations" below shows the **Modulations** tab:

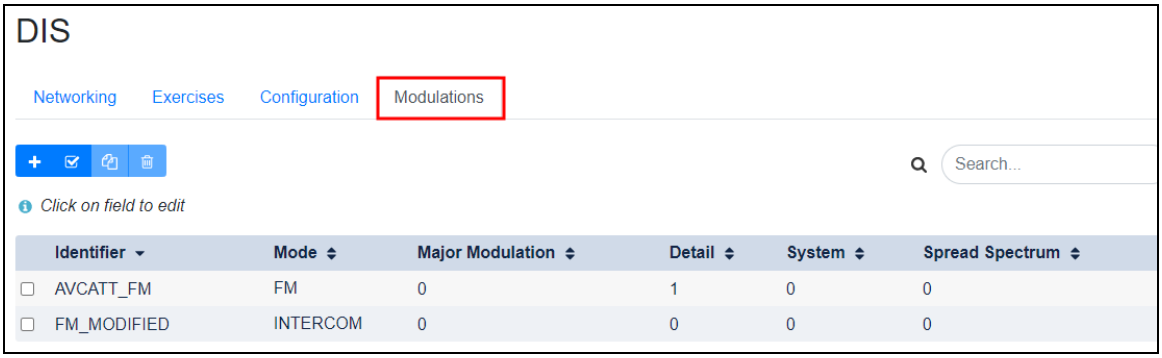

Figure 25: DIS Modulations

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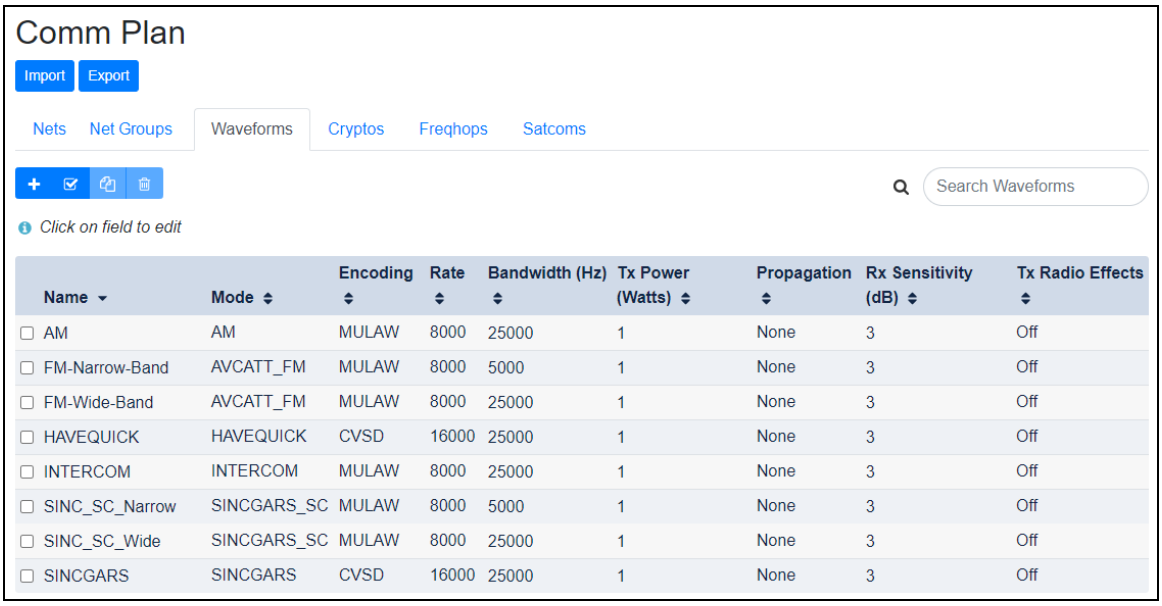
Voisus supports a variety of modulation types, including AM, FM, single sideband, and intercom. In a scenario's Comm Plan, the modulation type is assigned to a waveform in **Mode**.



Name	Mode	Encoding	Rate	Bandwidth (Hz)	Tx Power (Watts)	Propagation	Rx Sensitivity (dB)	Tx Radio Effects
AM	AM	MULAW	8000	25000	1	None	3	Off
FM-Narrow-Band	AVCATT_FM	MULAW	8000	5000	1	None	3	Off
FM-Wide-Band	AVCATT_FM	MULAW	8000	25000	1	None	3	Off
HAVEQUICK	HAVEQUICK	CVSD	16000	25000	1	None	3	Off
INTERCOM	INTERCOM	MULAW	8000	25000	1	None	3	Off
SINC_SC_Narrow	SINCGARS_SC	MULAW	8000	5000	1	None	3	Off
SINC_SC_Wide	SINCGARS_SC	MULAW	8000	25000	1	None	3	Off
SINCGARS	SINCGARS	CVSD	16000	25000	1	None	3	Off

Figure 26: Waveform mode

The Voisus DIS Gateway maps each Voisus waveform mode to a default DIS modulation type record. This mapping occurs when the Voisus DIS Gateway encodes a DIS Transmitter PDU during transmission or decodes a Transmitter PDU during reception.

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Table 1, "Default DIS modulation type records" below shows default DIS modulation type records:

Waveform Mode	Modulation Type	Detail	Radio System	Spread Spectrum
AM	1	2	1	0
CW	1	3	1	0
FM	3	1	1	0
HFECCM	2	-1	7	1
HAVEQUICK	1	2	2	1
INTERCOM	0	0	0	0
LSB	1	6	1	0
SINCGARS	3	-1	6	1
SINCGARS_SC	3	1	5	0
SSBF	1	7	1	0
SATCOM	8	1	1	0
USB	1	9	1	0

Table 1: Default DIS modulation type records

For more information about DIS Transmitter PDUs and Modulation Type Records, go to the following documents:

- *IEEE Standard for Distributed Interactive Simulation—Application Protocols*
- *Simulation Interoperability Standards Organization (SISO) Enumerations for Simulation Interoperability*

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Based on the defaults in the table above, the Voisus DIS Gateway maps DIS transmitter PDU modulation types to Voisus waveform modes:

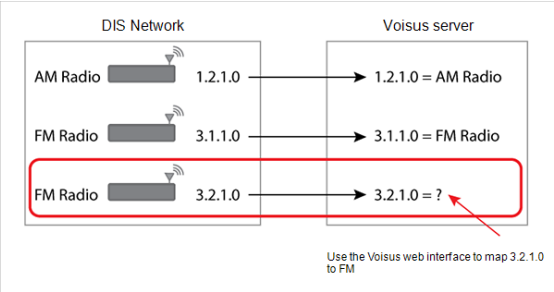

Figure 27: Waveform mapping

The first two transmitter PDUs contain default modulation type records, which Voisus maps to AM and FM modes. The last transmitter PDU contains a modulation type record that Voisus does not recognize. To accommodate this record, you can create a custom DIS modulation in Voisus with a modulation type record matching the DIS radio.

This section discusses the following topics:

- Custom DIS modulations
- Parameter wild cards

2.3.4.1 Custom DIS modulations

To create a custom DIS modulation in the Voisus web interface, follow these steps:

1. From the top-left navigation bar, go to **Voisus Home** > **DIS**.

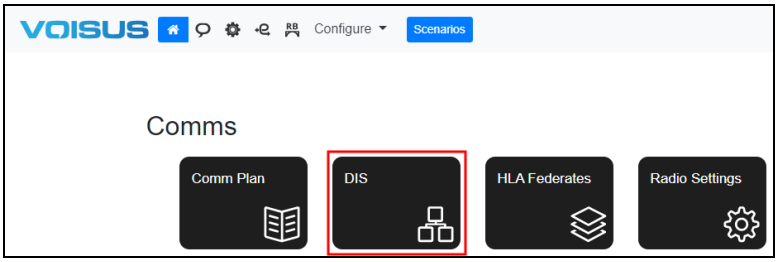

Figure 28: DIS navigation

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2. Go to **Modulations**.

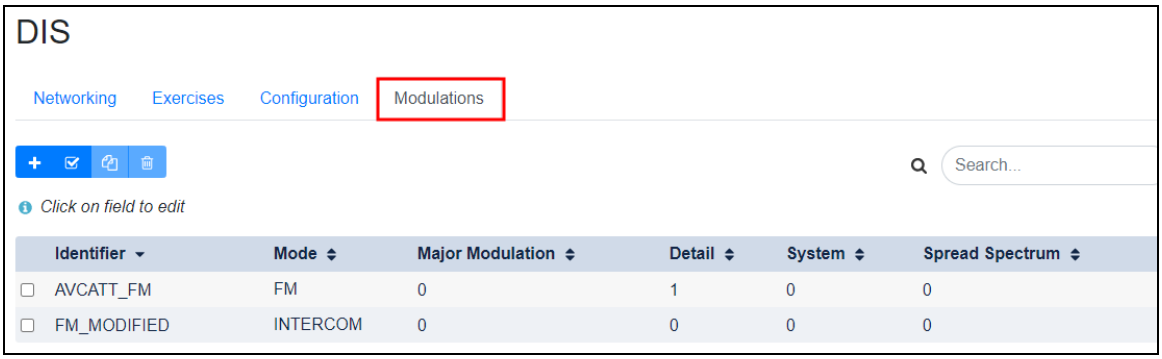

Figure 29: DIS Modulations

3. To add a custom DIS modulation, select the plus sign (+).

4. In **Identifier**, enter the new mode's identifier name. In the **Comm Plan**, on **Waveform**, this identifier name appears in **Mode**.

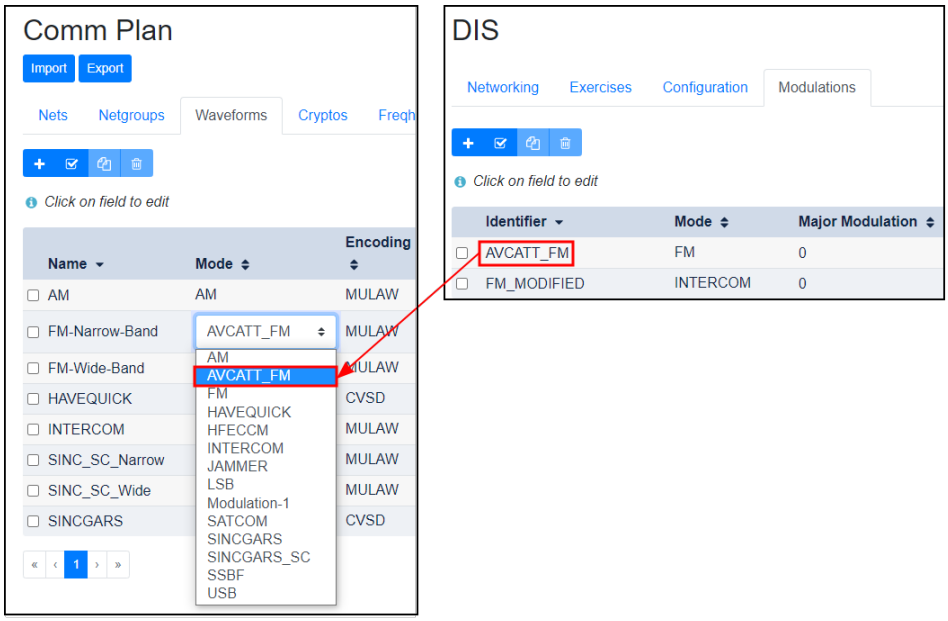

Figure 30: Mode identifier name

5. Select **Mode**, and choose a mode to edit.

6. Enter new values for **Major Modulation**, **Detail**, **System**, and **Spread Spectrum**.

7. On **Comm Plan**, go to **Waveforms**, and assign the mode to a waveform.

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2.3.4.2 Parameter wild cards

To create a wild card for a parameter in the DIS modulation type record, enter a negative number. The wild card applies to protocol data unit (PDU)-to-waveform (Rx) mapping, while the number following the minus sign (-) applies to waveform-to-PDU (Tx) mapping, as shown in Figure 31, "DIS wild card" below:

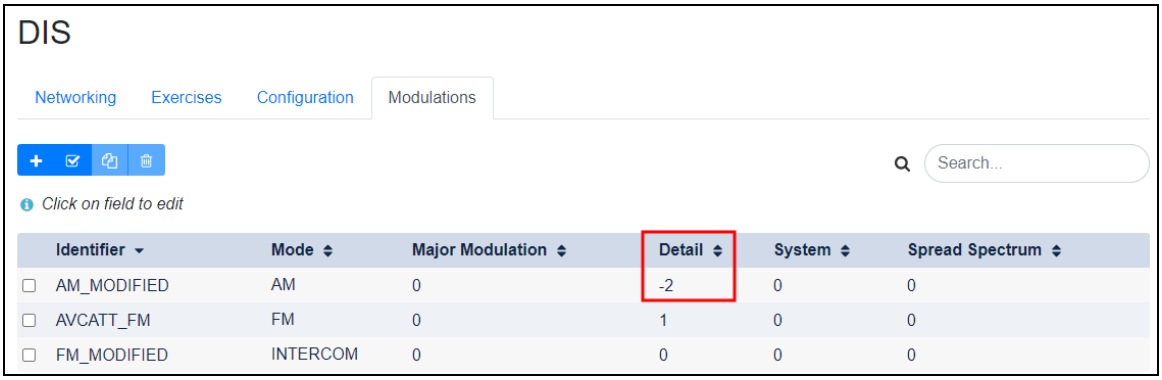

Figure 31: DIS wild card

During PDU-to-waveform mapping, the Voisus DIS gateway receives any value in **Detail**. During waveform-to-PDU mapping, the Voisus DIS gateway transmits the **Detail** parameter as 2.

2.4 Advanced Radio Settings

To access advanced DIS radio settings, go to **Voisus Home** ( )> **Radio Settings**.

Figure 32: Radio Settings navigation

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Radio Settings allows you to adjust buffering values for incoming audio, enable HLA gateway operation, and set up automatic gain control (AGC) options.

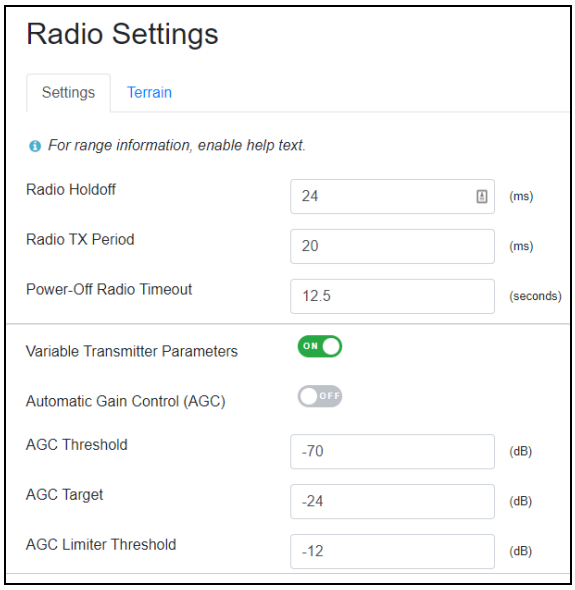

Figure 33: Settings tab

***Important**: For best results, use the default value for all advanced radio settings.*

This tab contains the following settings:

- ***Radio Holdoff**:* the number of milliseconds (ms) that the first Rx packet of audio in a received radio transmission is delayed before being processed. Acceptable values range from 24 ms–96 ms.
- ***Radio TX Period**:* the number of milliseconds of radio transmission audio that is accumulated into a Tx packet before the packet is sent. Acceptable values range from 4 – 100 ms. The default value is 20 ms.
- ***Power-Off Radio Timeout**:* the number of seconds before a remote transmitter is assumed to be powered off.
- ***HLA Gateway Mode**:* enables high-level architecture (HLA) Gateway operation, a protocol translator providing interoperability among different types of simulation architectures.
- ***Variable Transmitter Parameters**:* allows you to enable or disable attached Variable Transmitter Parameters (VTPs) from DIS v7 PDUs.
- ***Automatic Gain Control (AGC)**:* normalizes volumes on incoming radio transmissions to adjust very quiet or very loud receptions. Selecting this check box affects all incoming DIS audio. AGC is measured in decibels (dBs).

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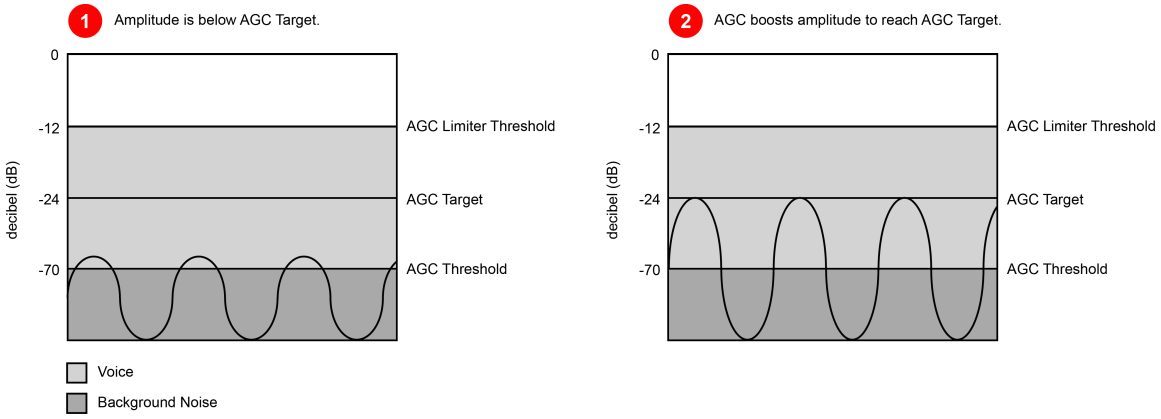
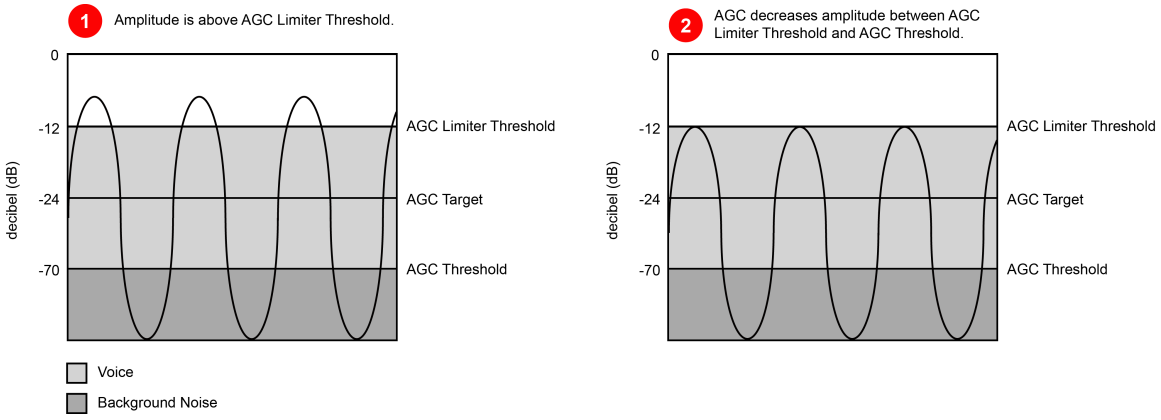
- ***AGC Threshold**:* the decibel level above which AGC activates on a radio reception; a typical value is approximately -70 dB.
- ***AGC Target**:* the ideal volume for radio receptions in decibels; a typical value is approximately -24 dB.
- ***AGC Limiter Threshold**:* when AGC is active, the **AGC Limiter Threshold** prevents high peaks in adjusted receptions. A value of approximately -12 dB is typical.

AGC values cannot exceed 0 dB. Voices typically fall between the default values of -12 dB and -70 dB. Background noises fall below the **AGC Threshold** of -70 dB. If the amplitude falls below the **AGC Target**, then AGC boosts the amplitude to reach the target of -24 dB:



If the amplitude is above the **AGC Limiter Threshold** of -12 dB, then AGC decreases the amplitude so that it falls between the voice range of -12 and -70 dB:



2.4.1 Terrain Interface

Terrain Interface applies occulting and degradation effects to communication paths in the radio environment. On this page, you can turn the Terrain Interface on or off. When enabled, you may define values for the **Ethernet Interface** and UDP **Port**, setting the network to **Unicast**, **Broadcast**, or **All Broadcast**.

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The **Terrain Interface** requires these settings to talk to an external terrain server; hence, the settings must match those of the terrain server.

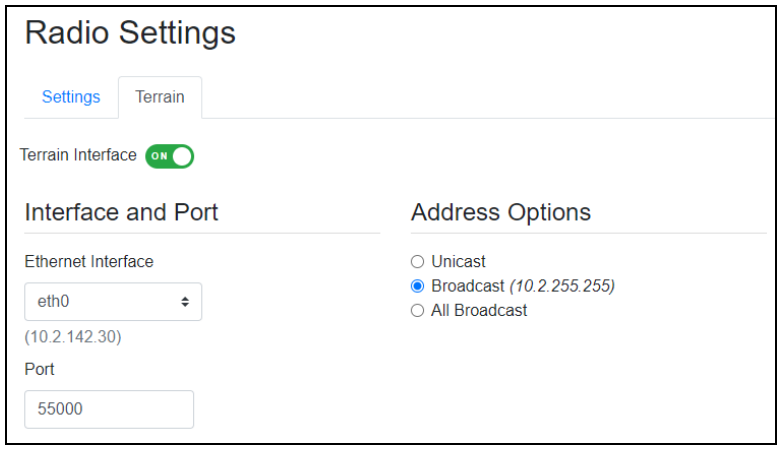

Figure 34: Terrain Interface

2.5 Manage Clients

Manage Clients manages the relationship among hardware and software client interfaces and the Voisus server. Set up clients in one of two ways:

- Allow unlisted clients to connect to the Voisus server, and set a default role, DIS exercise, and vehicle for all clients in the scenario. For more information about unlisted client settings, go to Section 2.5.1, "Set default options for unlisted clients" on the next page.
- Map each client to the Voisus server, and assign it scenario resources. Individual clients can have differing roles, exercises, and vehicles. To add a new client, go to Section 2.5.2, "Add a software client" on page 28.

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Figure 35, "Manage Clients" below shows **Manage Clients**:

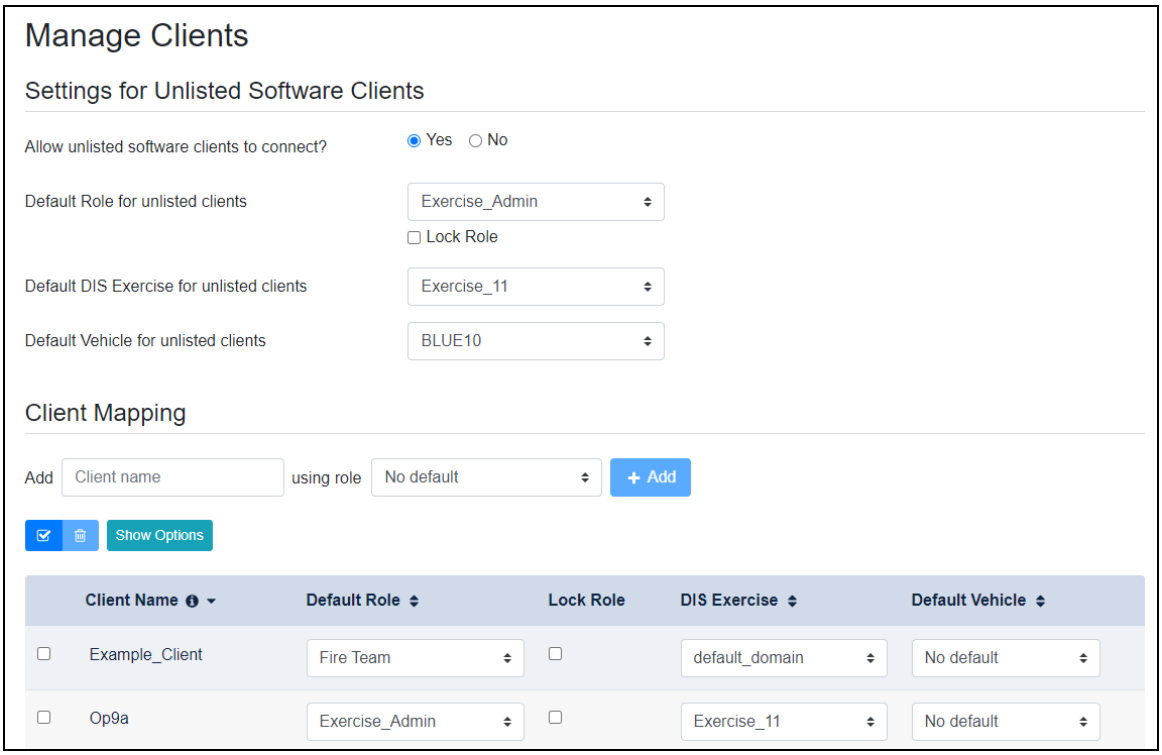

Figure 35: Manage Clients

This chapter discusses how to:

- Set default options for unlisted clients
- Add a software client
- Assign clients to separate DIS exercises

2.5.1 Set default options for unlisted clients

On **Manage Clients**, you can assign a default role, DIS exercise, or vehicle to unlisted software clients. As a result, all unlisted software clients in a scenario share the same role, DIS exercise, and vehicle.

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To set default options for unlisted clients, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

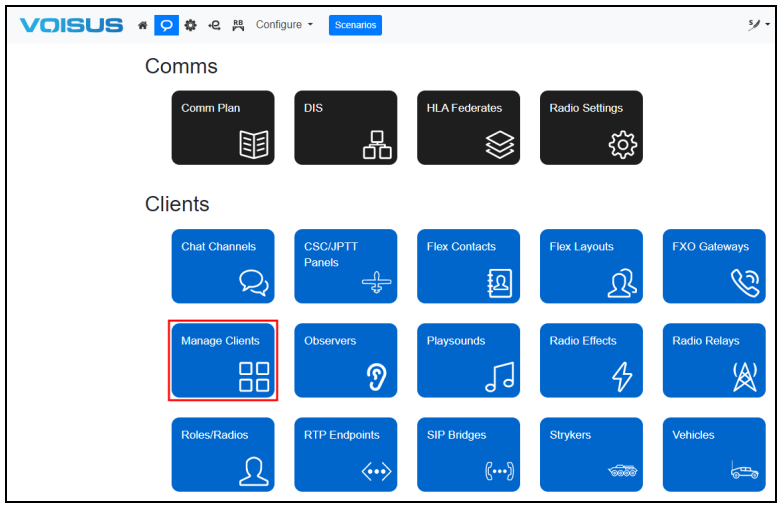

Figure 36: Manage Clients navigation

2. Under **Settings for Unlisted Software Clients**, next to **Allow unlisted software clients to connect?**, choose one of the following:

   - ***Yes***: any software client can connect to the server; you do not need to set up clients under **Client Mapping**.
   - ***No***: only clients set under **Client Mapping** can connect to the Voisus server.

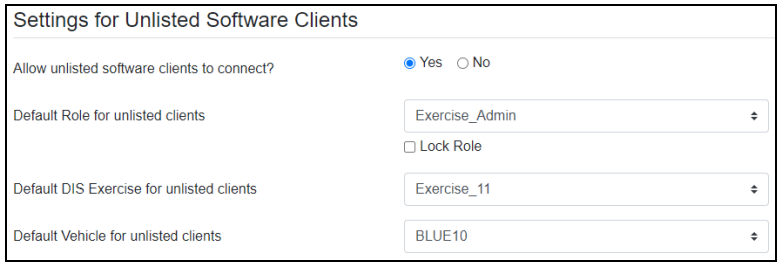

Figure 37: Settings for Unlisted Software Clients

3. Select **Default Role for unlisted clients**, and choose a role. Roles are set on **Roles/Radios**. For more information about role configuration, go to Section 2.8, "Roles/Radios" on page 39.

4. To prevent individual clients from changing roles, select **Lock Role**.

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5. Select **Default DIS exercise for unlisted clients**, and choose an exercise. DIS exercises are set on the **DIS** page. For more information about DIS exercises, go to Section 2.3.3, "DIS Configuration" on page 15.

6. Select **Default Vehicle for unlisted clients:**, and choose a vehicle. Vehicles are set on **Vehicles**. For more information about vehicles, go to Section 2.14, "Vehicles" on page 93.

2.5.2 Add a software client

Client Mapping links client interfaces to scenario resources. This mapping process is required for all clients except unlisted software clients connected via **Settings for Unlisted Software Clients**. This capability also allows you to create preset software client definitions and map clients to static roles and DIS exercises.

To add a new client, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

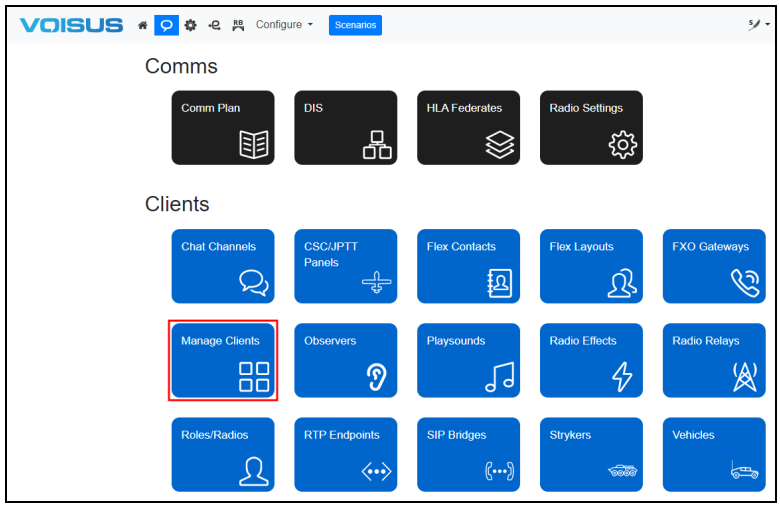

Figure 38: Manage Clients navigation

2. Under **Client Mapping**, in **Add**, enter a unique client name (e.g., Op9b).

3. Select **using role**, choose a role for the client, and select + Add. Roles contain the intercom and radio assets that each client uses to communicate. For more information about roles, go to Section 2.8, "Roles/Radios" on page 39.

4. Under **Client Name**, find the new client in the list.

5. *(Optional)* Under **Description**, enter identifying information about the client.

6. To prevent client operators from changing the settings assigned on this page, select **Lock Role**.

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7. Select **DIS Exercise**, and assign a DIS exercise to the client. Each client must use the same DIS exercise to communicate with one another. You can assign clients in a scenario to separate DIS exercises. To assign clients to separate exercises, go to Section 2.5.3, "Assign clients to separate DIS exercises" on the next page. To set DIS options, go to Section 2.3.3, "DIS Configuration" on page 15.

8. If your configuration uses vehicle groupings, select **Default Vehicle**, and assign a vehicle to the client. For more information about vehicles, go to Section 2.14, "Vehicles" on page 93.

9. Select Show Options.

10. *(Optional)* Select **Hardware Only** if the client operator's only control input is a hardware device, such as a hand-held press-to-talk (PTT) device, four-channel PTT device, or foot switch. If the client uses any other mechanism, such as a handheld terminal (HHT) or software GUI, this setting does not apply. To manage a **Hardware Only** client through a host control interface, go to " Host control for Hardware Only clients" on page 253.

11. *(Optional)* If the client is an ASTi PRC-119 SIP SINCGARS hardware panel, select **SINCGARS Hardware Panel**.

12. *(Optional)* In **HHT Display Name**, enter a name that will display on the HHT device's main screen. This setting only applies to HHT devices.

***Note**: The SINCGARS and HHT features are disabled by default. To enable either, go to **Manage** > **Features** and turn **SINCGARS Panel** or **Hand-Held Terminal ON**.*

13. **Crew Intercom** enhances the calling feature in the Voisus Client for Tablets & Desktops by adding calling groups that can act as crew intercoms. To assign the client to a crew intercom group, enter the group's name. For more information, go to Section 3.3.3.1, "Crew intercoms" on page 184.

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14. Launch the software client on the operator desktop or tablet. In the client's settings, enter the client name exactly as it appears in **Client Mapping**. When the client connects to the server, it automatically assumes the default resources assigned in the Voisus web interface.

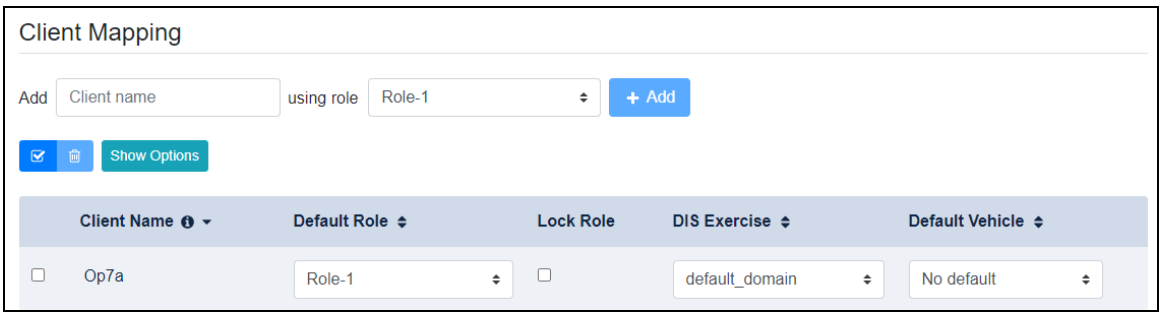

Figure 39: Client Mapping

2.5.3 Assign clients to separate DIS exercises

A scenario can support multiple DIS exercises simultaneously. You can assign a client name to a DIS exercise using one of two methods:

- Set the client's default DIS exercise on **Manage Clients** in the Voisus web interface. This capability allows you to assign groups of clients to separate DIS exercises, as shown in Figure 40, "Multiple exercises in scenario" below:

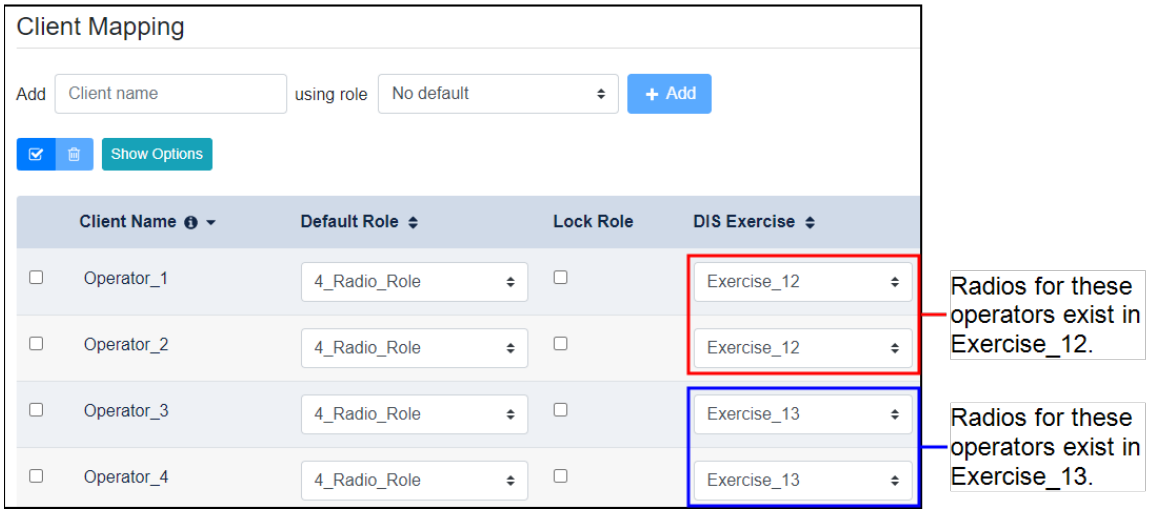

Figure 40: Multiple exercises in scenario

For more information about DIS settings, go to Section 2.3, "DIS" on page 13.

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- Dynamically modify the DIS exercise within the Voisus Client. For example, if you want to temporarily assign one or more clients to different exercises, use **Exercise Number** on **DIS**.

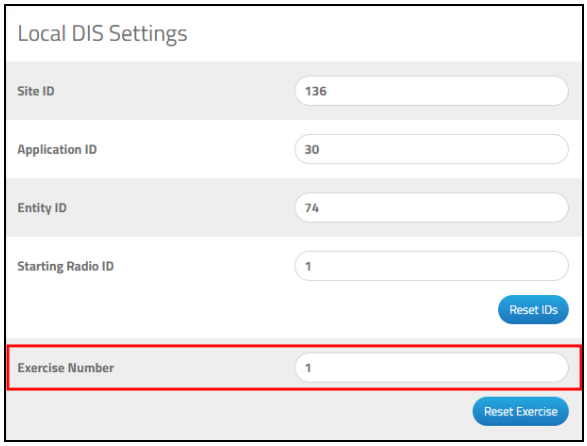

Figure 41: Exercise Number in Voisus Client

For more information about DIS settings in the Voisus Client, go to Section 3.2.1.4, "Modify the Voisus Client's local DIS options" on page 124.

2.6 Observers

An observer is a hardware client that monitors other clients' audio, both received and transmitted. Figure 42, "Observers diagram" below shows an observer client named **Op7Obs** that consists of a speaker connected to an ACE-RIU. This observer monitors audio from a hardware client connected to the same ACE-RIU (i.e., **Op7a** in the example below).

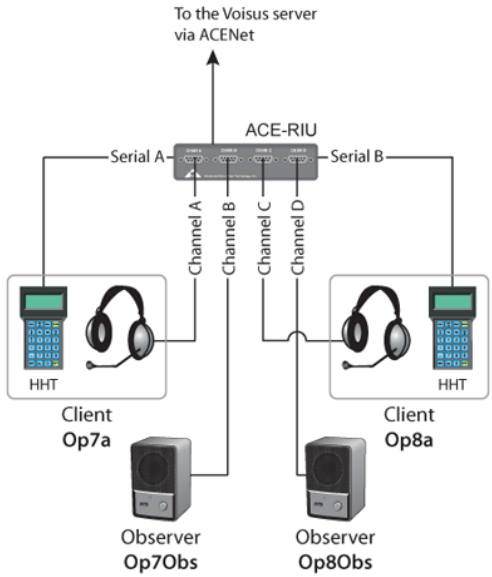

Figure 42: Observers diagram

This section discusses how to:

- Set up hardware devices for an observer
- Add an observer

2.6.1 Set up hardware devices for an observer

To set up hardware devices for an observer, follow these steps:

1. In the top-right corner, go to the scenario.
2. Point to **Start**, and choose a scenario.

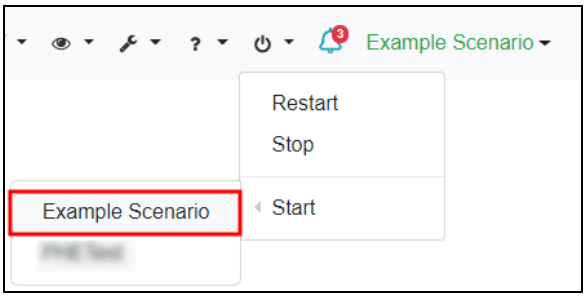

Figure 43: Start scenario

3. From the top right, go to **Manage** ( ) > **Hardware Devices**.

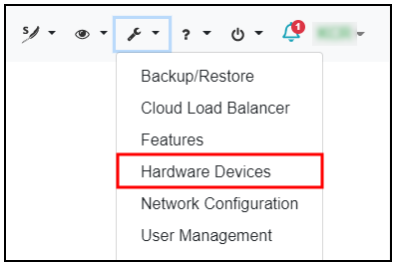

Figure 44: Hardware Devices navigation

4. On **Hardware Devices**, find the ACE-RIU connected to the hardware client and observer.

***Note**: ACU2s and ACE-RIUs have a label on the underside of the unit that displays the device's MAC address.*

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5. In **Chan B**, enter a name for the channel identifier associated with the observer (e.g., **Op7Obs**). **Chan A + Serial A** displays the hardware client's channel identifier (e.g., **Op7a**).

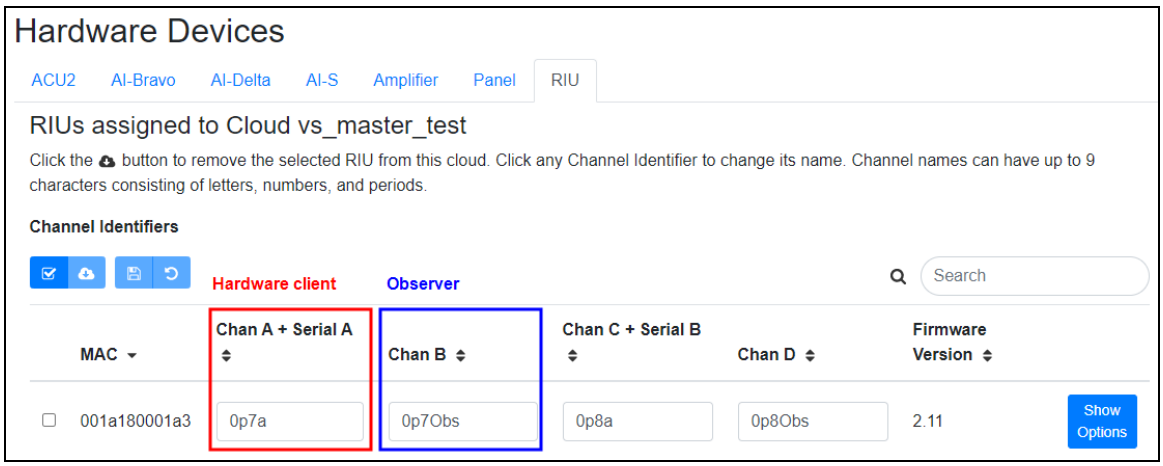

Figure 45: Observer channel identifier

2.6.2 Add an observer

To add an observer in Voisus, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Observers**.

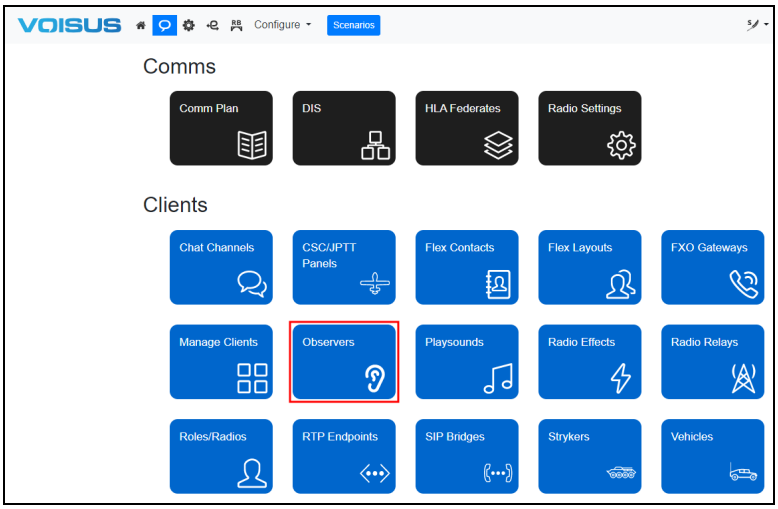

Figure 46: Observers navigation

2. To add a new observer, under **Observers**, select the plus sign ( ).
3. In **Observer Client Name**, enter the observer client name. The observer client name must match the corresponding ACE-RIU's **Chan B** entry on **Hardware Devices**.

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4. Under **Clients to Observe**, in **Name**, enter the hardware client's name (e.g., **Op7a**), and select + Add. The hardware client's name must match the **Chan A + Serial 1** entry on **Hardware Devices**.

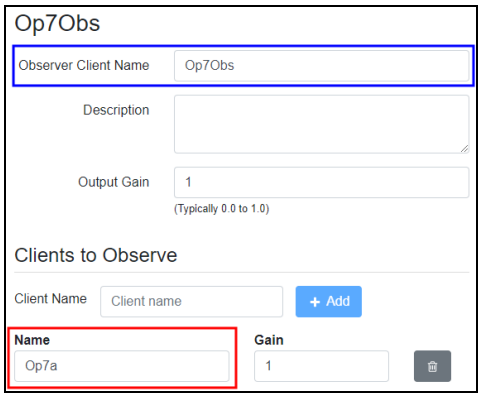

Figure 47: Observer client and hardware client name

The observer speaker now plays all of the observed client's audio, both transmitted and received.

2.7 Playsounds

Playsounds are a collection of audio settings that you can apply to an uploaded sound file. Use these settings to add sound effects to jammers (e.g., white noise) and client radios (e.g., cockpit sounds). They also function as Flex Client alert tones for incoming intercom/phone line calls and outgoing calls.

This section discusses how to:

- Add a sound file
- Add a playsound

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2.7.1 Add a sound file

Sound Files is as a library of alphabetically organized sound files that allows you to upload and preview sound files. This page also provides pertinent information for each file, such as its sample rate, duration, and total sample numbers. To upload a sound file in the Voisus web interface, follow these steps:

1. From the top right, go to **Manage** ( ) > **Sound Files**.

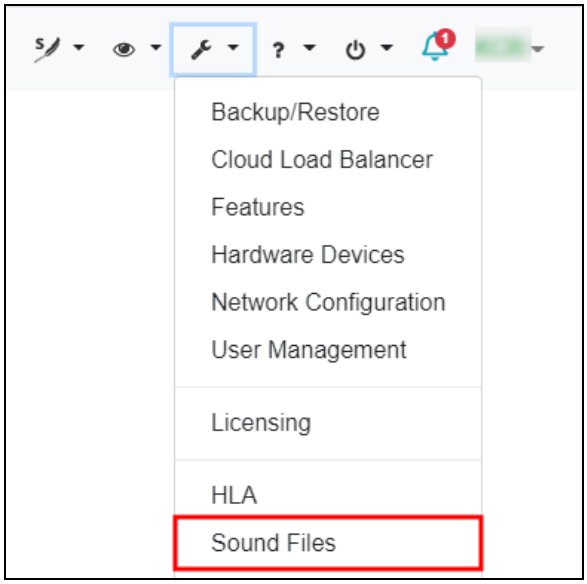

Figure 48: Sound Files navigation

2. On **Sound Files**, under **Upload**, select **Browse**, and find the sound file's location on your local computer. Voisus supports the following audio file formats:

   - Waveform (i.e., .wav)
   - Ogg Vorbis (i.e., ogg)
   - Audio Interchange File Format (i.e., .aiff)
   - Sparc-audio or u-law (i.e., .au)
   - Core Audio Format (i.e., .caf)

***Important**: Voisus does not support MPEG-2 (i.e., .mp2), MPEG-3 (i.e., .mp3), or Free Lossless Audio Codec (i.e., .flac) formats.*

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Once uploaded, the new file appears under **Installed Sound Files**, in **Filename**. Next to the section title, a number in parentheses shows the number of installed sound files.

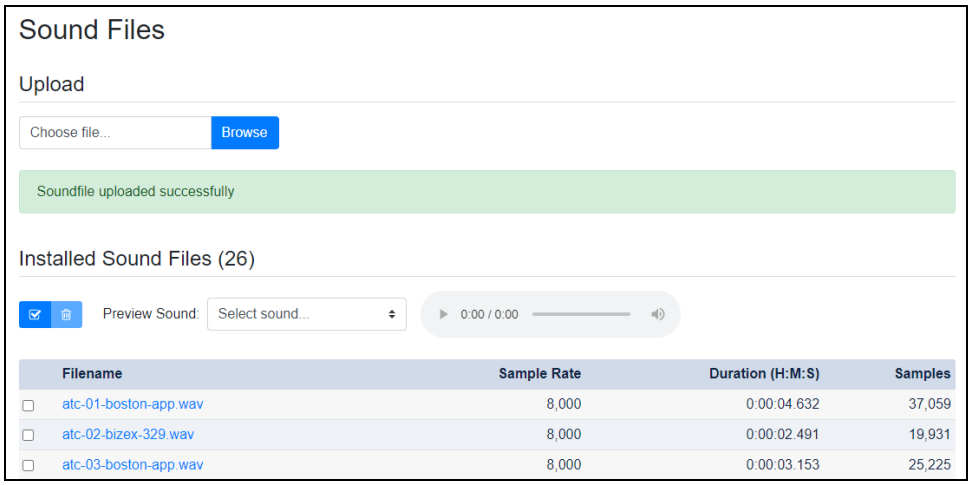

Figure 49: Installed Sound Files

3. To listen to a sound file, select **Preview Sound**, and choose a file. The preview automatically starts playing.

   a. To pause the preview, select pause (⏸).

   b. To mute the preview, select volume (🔊).

   c. To increase or decrease the volume, move the blue slide bar to the right of the timeline.

   d. To download the audio file, select download (⬇⬇).

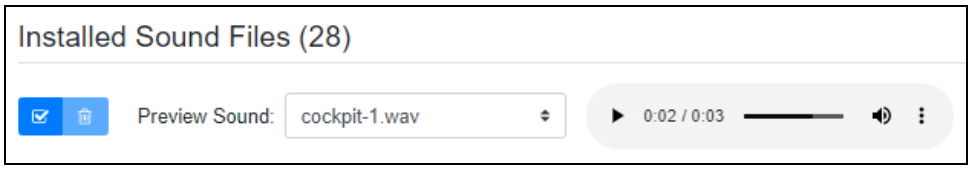

Figure 50: Preview Sound

***Important**: Firefox web browsers do not support download capabilities.*

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2.7.2 Add a playsound

To add a playsound to a Voisus scenario, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Playsounds**.

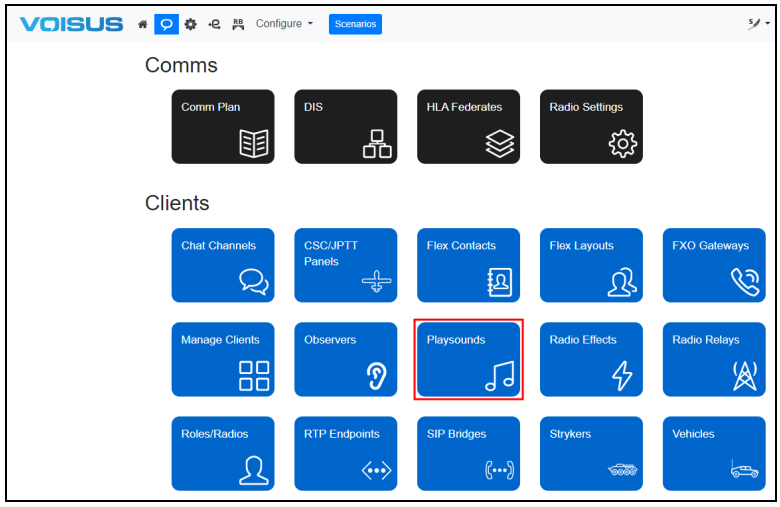

Figure 51: Playsounds navigation

2. To add a new playsound, on **Playsounds**, select **Create Sound** ( ).
3. In **Name**, enter a unique name for the playsound.
4. In **Gain**, enter a value for the gain applied to the sound during playback. The default value of 1 results in no volume change, while 0 silences the sound.

Figure 52: Playsound Name and Gain

5. Under **Sound File**, select **File**, and choose a sound file. To upload new sound files, go to Section 2.7.1, "Add a sound file" on page 35.
6. In **Offset**, enter a value representing a location in the sound file to start playback. The default value of 0 starts playback at the beginning, while 16000 starts 16,000 samples into the file.

   To calculate a sample's length, divide a sound file's duration by its total sample size. You can find a sound file's sample rate on **Sound Files**. To learn more about sound files, go to Section 2.7.1, "Add a sound file" on page 35.

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7. In **Length**, enter a value representing the length in samples of the section to play. The default value of 0 plays to the end of the file.

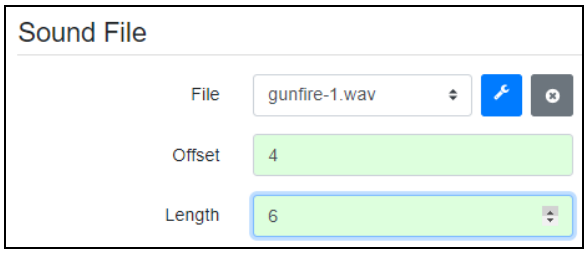

Figure 53: Playsound Sound File settings

8. Under **Loop**, select **Loop Forever** if the sound should continuously loop when triggered.

***Important**: For best results, enable **Loop Forever** for jammer playsounds.*

9. To determine how many times the playsound repeats, enter a value in **Play Count**.

***Note**: When **Loop Forever** is selected, **Play Count** does not display.*

10. To define where the loop starts in the audio file, in **Loop Start**, enter a decimal value between 0 and 1.
11. To define where the loop ends in the audio file, in **Loop End**, enter a value between 0 and 1.
12. In **Delay**, enter a value representing the delay between sound loops in seconds.
13. To start playback at a random location in the audio file, select **Randomize**. This setting adds variety to the sound environment.

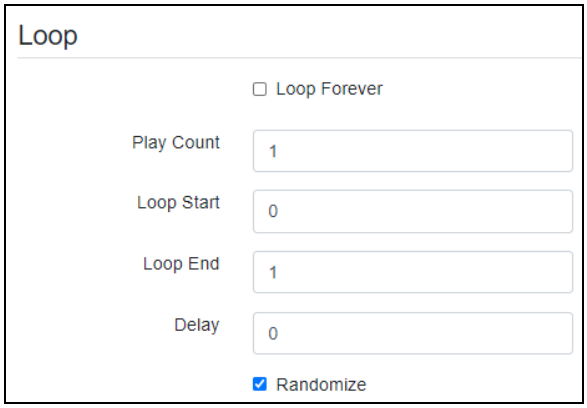

Figure 54: Playsound Loop settings

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2.8 Roles/Radios

Roles are collections of radios, and radios are filled with virtual nets from the Comm Plan. Each Voisus client operator uses a role to gain access to its associated radios.

This section discusses how to:

- Add a role
- Add a radio
- Set up a scan plan
- Add a phone line to a role
- Add radio effects
- Define radio effects for waveforms
- Add a jammer

2.8.1 Add a role

To add a role, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Roles/Radios**.

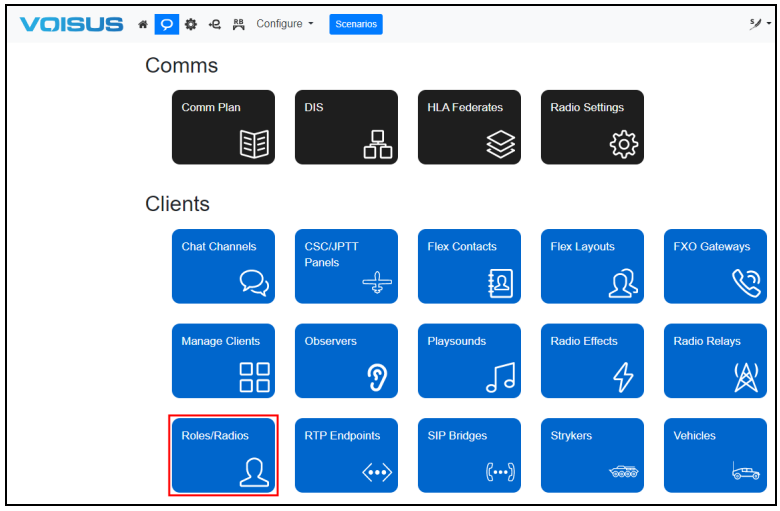

Figure 55: Roles/Radios navigation

2. On **Roles**, select **Create Role** ( ).
3. Open the new role.
4. *(Optional)* In **Name**, enter a unique name for the role.

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5. *(Optional)* In **Description**, enter a description of the role.

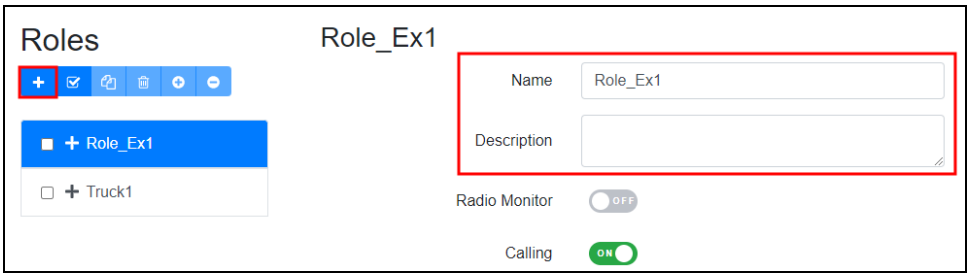

Figure 56: Add a role

6. To provide private intercom communication among multiple clients without disrupting the exercise, turn on **Calling**. RADIO TX mode is disabled during a call, but RADIO RX mode remains active so the client can hear radio and intercom communication. This feature applies to the Voisus Client and Voisus Client for Tablets & Desktops.

***Note**: When **Calling** is disabled, the Voisus Client replaces the **CALLING** panel with **NAME** (i.e., the client's name). To learn more about the **CALLING** panel, go to Section 3.2.2, "Voisus Client CALLING panel" on page 143.*

   a. To require operators to press the press-to-talk (PTT) button during calls, next to **Mic Mode while on Call**, select **PTT required**. In the Voisus Client for Tablets & Desktops, the radio GUI displays "ON CALL / USE PTT," cueing operators to talk using the PTT button. During transmissions, the edges of the screen flash yellow.

   b. To enable hot mic capabilities, select **Hot mic**. When this setting is enabled, the screen displays “ON CALL / CALL: HOT MIC / RADIO: PTT,” indicating that operators can transmit on a call by speaking but must PTT to transmit on a radio. When the Voisus client is on a call, the PTT button at the bottom of the GUI displays “Call PTT.”

7. Turn on **Auto-Answer Calls** for clients using this role to automatically join calls. These clients automatically leave the call when the initiating client hangs up. As a result, operators can participate in private, point-to-point calls without taking action.

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2.8.2 Add a radio

To add a new radio to the Voisus web interface, follow these steps:

1. Under **Radios**, select + Radio, and choose a radio.

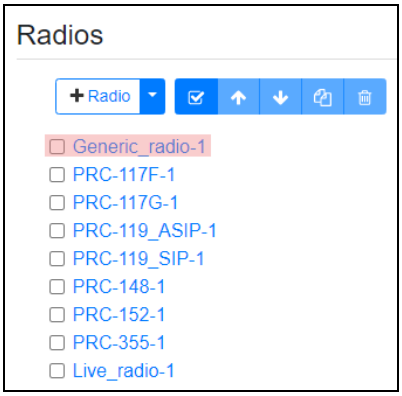

Figure 57: Add a radio

The default radio is compatible with the Voisus Client, Voisus Client for Tablets & Desktops, and most hardware clients, except for the PRC-117 panel and the Single Channel Ground and Airborne Radio System (SINCGARS) panel.

PRC-117F–PRC-355 radio skins are currently unavailable in the Flex Client.

***Important**: Certain radios may be unavailable due to export restrictions. Contact support@asti-usa.com for more information.*

2. Select the radio to open it.
3. *(Optional)* In **Name**, enter a unique name for the radio.
4. *(Optional)* In **Description**, enter a description of the radio.

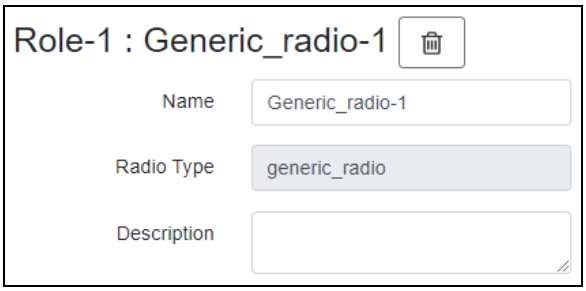

Figure 58: Radio Name and Description

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5. Next to **Cipher Mode**, enable Plain Text (**PT**) or Cipher Text (**CT**). The Voisus Client for Tablets & Desktops and the simulated radio panels provide controls that allow client operators to switch between PT and CT as needed. In the Flex Client, when a radio in PT mode receives encrypted transmissions, the operator only hears static.

   The Voisus Client and Virtual Battlespace (VBS) add-in do not have CT controls. The client operator cannot change this setting. When this radio receives on a CT net, a default PT mode set here could result in a "cannot receive" condition.

6. To limit this radio's transmissions to local radios on the same server, turn on **Local Only**. As a result, this radio can receive but not transmit to network radios. You might use this setting to isolate audio to a specific simulator or create a local intercom channel for instructors.

7. To group every operator sharing this role onto a single, shared radio, turn on **Share Radio**. If you select **Off**, each operator using the role has his or her own instance of this radio that only he or she can control. This feature only enables radio sharing for operators using handheld terminals (HHTs).

8. To include the burst of noise after a received transmission, next to **Radio Squelch Tail**, select **On**.

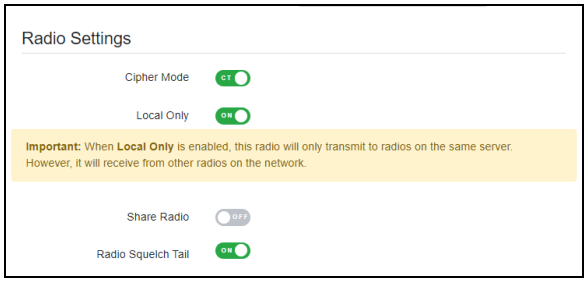

Figure 59: Role settings

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9. Under **Nets**, in the **Available** column, choose the net(s) you want to assign, and select the right arrow ( ). A radio with only one net is fixed (i.e., not tunable), whereas client operators can tune radios with multiple nets.

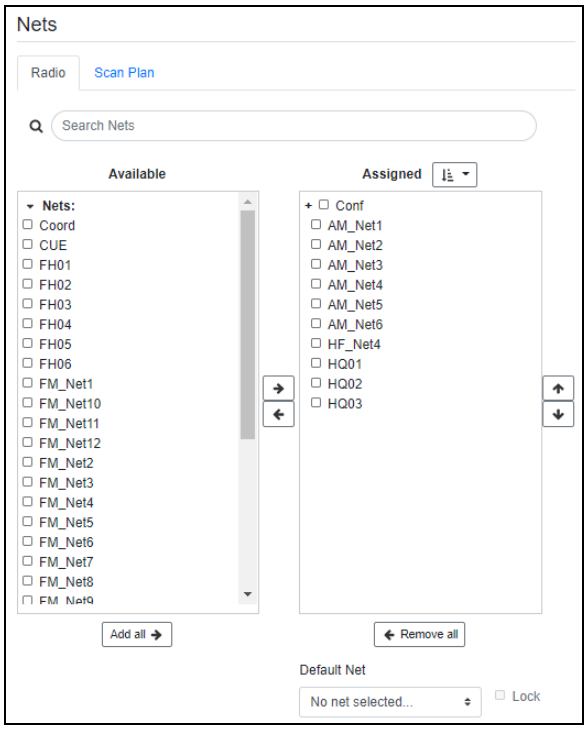

Figure 60: Assign nets to radio

10. *(Optional)* Sort assigned nets by their names or frequencies defined in the Comm Plan. Next to **Assigned**, select **Sort** ( ), and choose **Name** or **Frequency**.

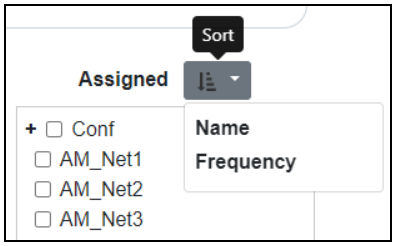

Figure 61: Sort assigned nets

11. *(Optional)* Select **Default Net**, and choose a default net. To lock the default net, select **Lock**. As a result, client operators cannot tune radios with multiple nets.

12. To enable the radio to receive by default, on **Audio**, next to **Default Rx**, select **Rx**. To prevent client operators from disabling the radio's Rx mode, select**Lock**. If **Rx** is cleared, **Lock** is disabled by default.

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13. To enable the radio to transmit by default, next to **Default Tx**, select **Tx**. To prevent client operators from changing the radio's Tx mode, select **Lock**.

***Important**: Radios cannot transmit when **Rx** is disabled.*

14. Next to **Balance (Headphones)**, select **Left**, **Center**, **Right**, or **None**. Select **Lock** to prevent client operators from changing this setting.

15. Next to **Balance (Speakers)**, select **Left**, **Center**, **Right**, or **None**. Select **Lock** to prevent client operators from changing this setting.

***Important**: **Balance (Headphones)** and **Balance (Speakers)** are only compatible with the Voisus Client for Tablets & Desktops and Flex Client. The Voisus Client does not yet support these settings.*

16. To assign this radio to a hardware press-to-talk (PTT) button, select **PTT Group**, and choose an option.

    Most clients only use the primary PTT button. The Voisus Client for Tablets & Desktops can support four USB PTT devices, while the Flex Client can support two software PTT buttons. The Delcom USB HID Programmable Quad Button Switch supports four PTT buttons in one device. For more information about this switch, go to Appendix A, "Delcom USB HID Programmable Quad Button Switch" on page 250.

17. To assign an effect to the client radio, select **Radio Effects**, and choose an effect. To lock the radio effect, preventing client operators from changing it, select **Lock**.

    To add or modify an effect, next to **Radio Effects**, select the wrench ( ). For more information about radio effects, go to Section 2.8.4, "Add radio effects" on page 52.

18. To add a background sound to the client radio, select **Background Sound**, and choose a playsound. To lock the background sound, preventing client operators from changing it, select **Lock**.

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To add or modify a playsound, next to **Background Sound**, select . For more information about playsounds, go to Section 2.7.2, "Add a playsound" on page 37.

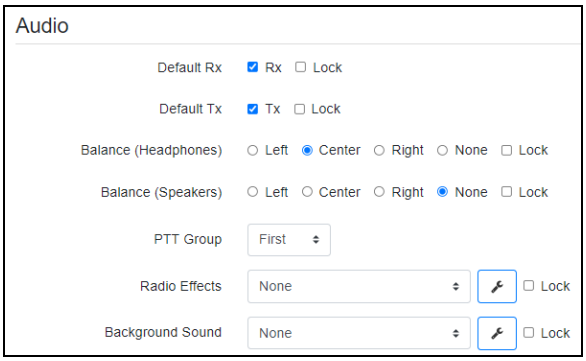

Figure 62: Audio settings

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2.8.3 Set up a scan plan

In the Voisus web interface, you can set up a scan plan for individual radios in a role. Scan plan functionality is available for PRC-117G, PRC-152, PRC-148, and generic radios.

A scan plan cycles through a list of nets, searching for activity. When the radio detects activity, it pauses on that net. Set a **Priority Tx Net** for transmission when there's no activity, or choose a **Priority Rx Net** to scan a net more frequently. In **Scan Settings**, you can also decide how long the scanner monitors each net or hangs on a net after it senses activity. Finally, you can decide the maximum amount of time the radio holds on a constantly receiving net.

This section discusses how to:

- Add scan plan nets
- Remove scan plan nets
- Set scan plan priority nets
- Edit dwell, hang, and hold times

2.8.3.1 Add scan plan nets

To add scan plan net(s), follow these steps:

1. In a radio's settings, under **Nets**, go to **Scan Plan**.

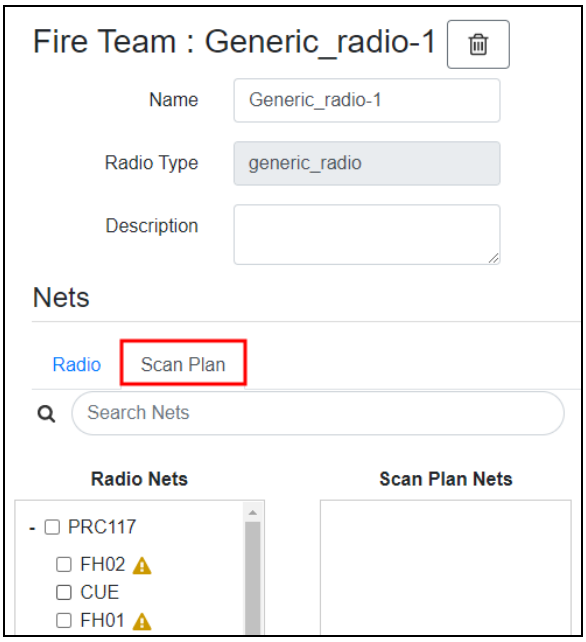

Figure 63: Scan Plan navigation

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2. **Radio Nets** displays nets assigned to your radio. To add one or more net(s), under **Radio Nets**, choose the net(s) you want to add to the scan plan, and select **Add Nets to Plan** (→).

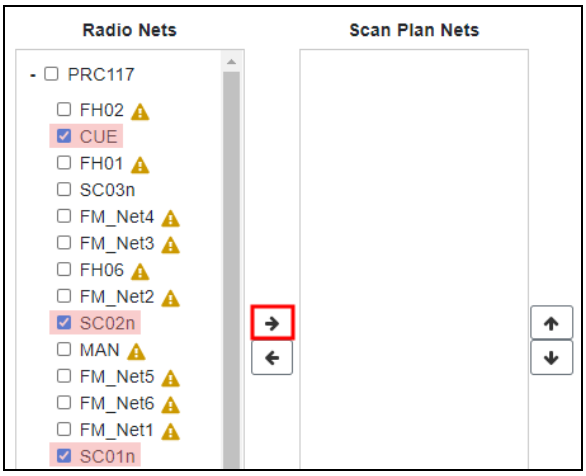

Figure 64: Add nets to scan plan

The selected nets move to **Scan Plan Nets**:

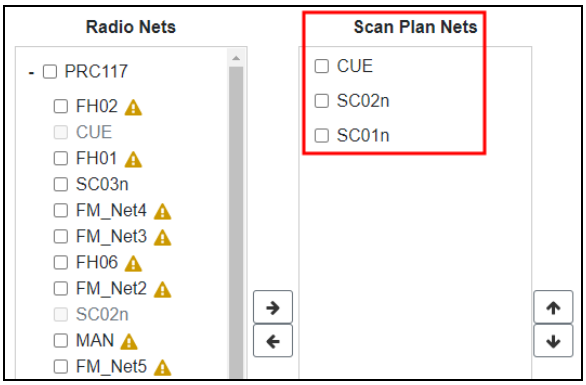

Figure 65: Scan Plan Nets

The scan plan cannot monitor nets with frequency-hopping waveforms:

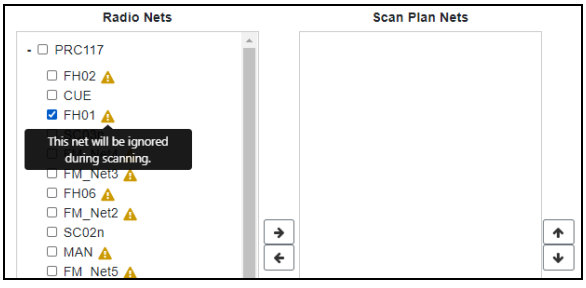

Figure 66: Ignored nets

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3. *(Optional)* To add all nets to the scan plan, under **Radio Nets**, select Add all →.

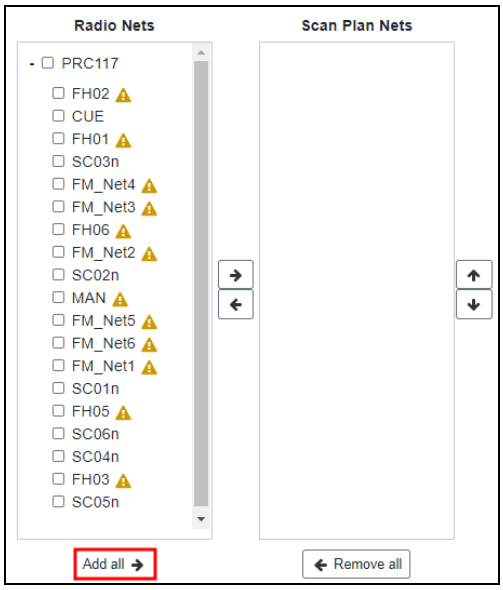

Figure 67: Add all nets to scan plan

4. *(Optional)* To add a netgroup to the scan plan, choose a netgroup, and select **Add Nets to Plan** (→).

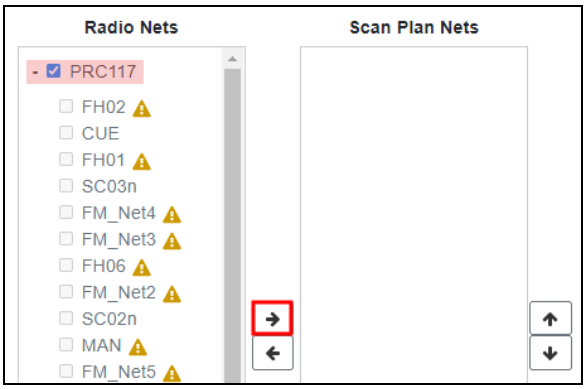

Figure 68: Add netgroup to scan plan

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To add individual nets from a netgroup, do the following:

a. Expand the netgroup.

b. Choose the nets you want to add.

c. Select **Add Nets to Plan** ( ).

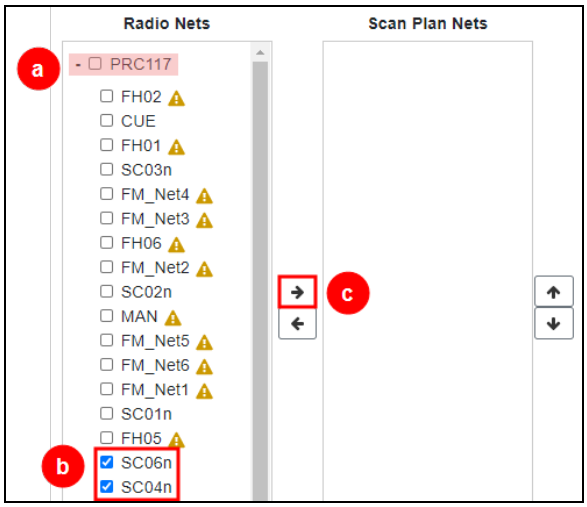

Figure 69: Add specific netgroup nets to scan plan

Under **Radio Nets**, assigned nets in a netgroup are grayed out.

2.8.3.2 Remove scan plan nets

To remove a specific net, under **Scan Plan Nets**, choose a net, and select **Remove Nets from Plan** ( ).

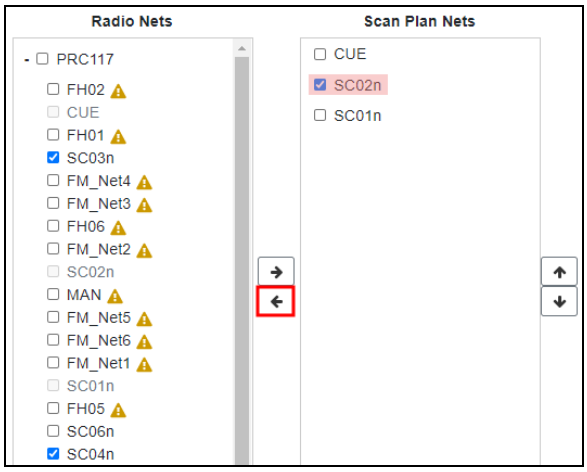

Figure 70: Remove a scan plan net

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To remove all nets, select Remove all.

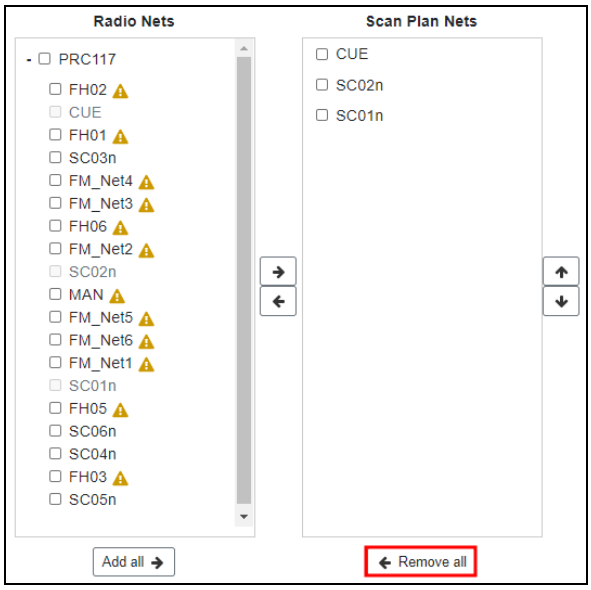

Figure 71: Remove all scan plan nets

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2.8.3.3 Set scan plan priority nets

To set scan plan priority nets, follow these steps:

1. On a radio's **Scan Plan**, **Priority Tx Net** sets a default net for transmission if/when the radio does not detect any activity. Select **Priority Tx Net**, and choose a net.
2. **Priority Rx Net** allows you to scan a net more frequently, regardless of its activity. This setting prioritizes scanning a certain net, alternating it in between each net in the scan plan. Select **Priority Rx Net**, and choose a net.

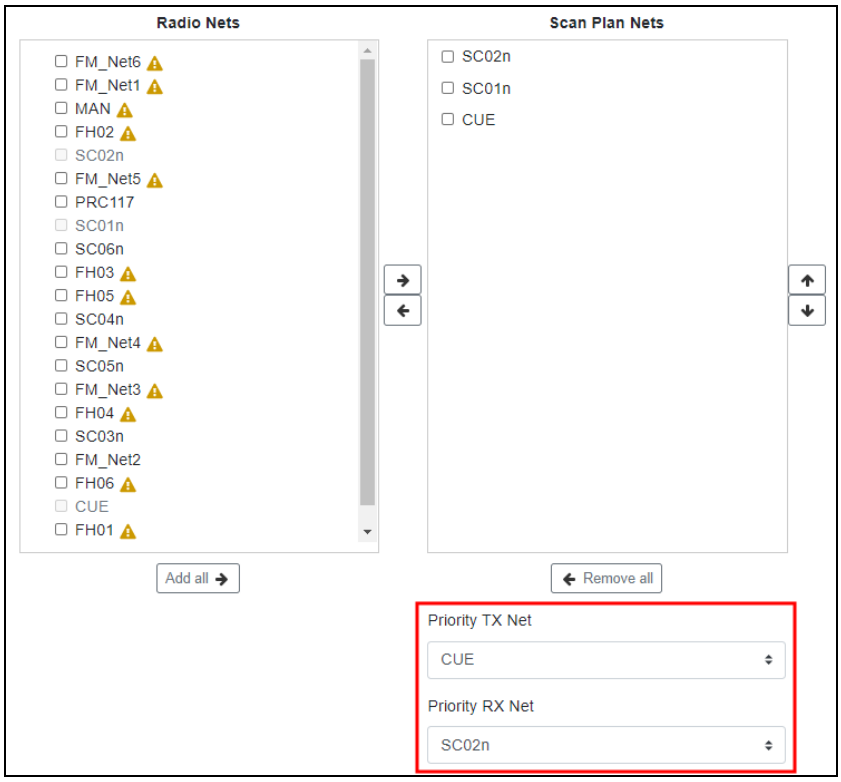

Figure 72: Priority scan plan nets

2.8.3.4 Edit dwell, hang, and hold times

To edit a scan plan's dwell, hang, and hold times, follow these steps:

1. To set how long the scanner spends on each net, under **Scan Settings**, in **Dwell Time**, enter a value in seconds.
2. To set how long the scanner hangs on a net after a transmission or reception ends, in **Hang Time**, enter a value in seconds, where the minimum value is 1 second. If the operator responds within the defined **Hang Time**, then he or she transmits on the active net.

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3. *(Optional)* **Hold Time** limits the time a scanner spends on a net, regardless of activity. To set the maximum amount of time on a net, select **Enabled**, and enter a value in seconds. The minimum value is 1 second.

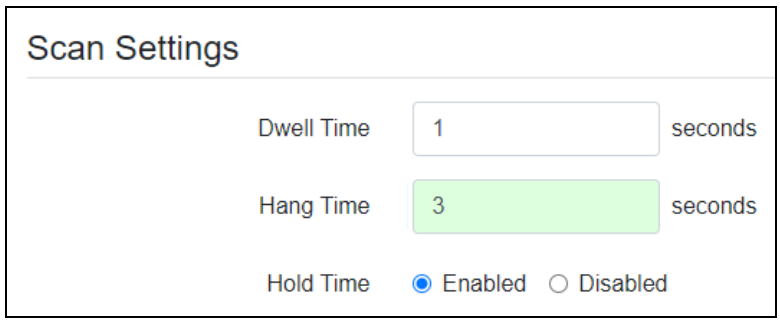

Figure 73: Scan Settings

4. To apply your changes, restart the scenario and any applicable software clients.

2.8.4 Add radio effects

To add a new radio effect in Voisus, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Radio Effects**.

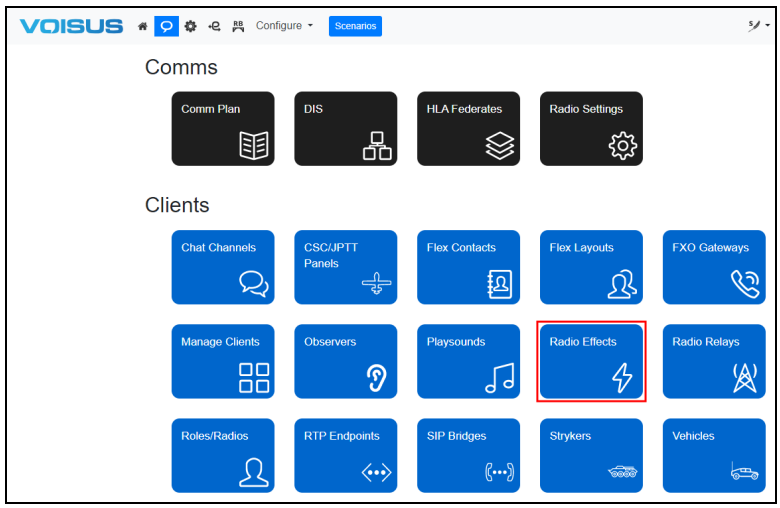

Figure 74: Radio Effects navigation

2. Under **Radio Effects**, select **Create Effect** ( ). The new effect appears in the list, named *Radio_effect-N* by default, where *N* represents the next unused radio effect number.

3. On the right-hand side, in **Name**, enter a unique name for the radio effect.

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4. Under **Bandlimiting**, select **Filter Mode**, and choose one of the following:

   - ***Off***: bandlimiting is disabled.
   - ***High-pass***: set the high-pass filter.
   - ***Low-pass***: set the low-pass filter.
   - ***Band-pass***: set both high-pass and low-pass filters.

   In **High-pass Freq** and/or **Low-pass Freq**, enter the high-pass frequency and/or low-pass frequency values in Hertz (Hz). Alternatively, adjust the defaults using the up or down arrows.

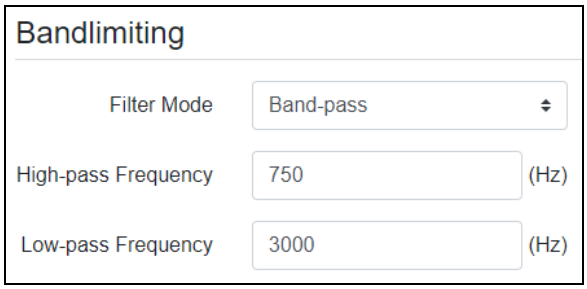

Figure 75: Bandlimiting settings

   High-pass frequency values range from 0–2,000 Hz, while low-pass frequency values range from 1,000–16,000 Hz.

***Important**: Do not set **Low-pass Frequency** lower than **High-pass Frequency**.*

5. Under **Noise**, select **Color**, and choose **Off**, **White**, **Pink**, or **Brown**. Pink and especially brown noise have more prominent low-frequency content than white noise.

   a. In **Gain**, enter a gain value for the noise. Alternately, adjust the gain using the up or down arrows. The noise gain applies to the noise before it applies to radio transmissions.

Figure 76: Noise settings

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6. Under **Distortion**, select **Mode**, and choose a mode:
   - ***Off***: adds no signal distortion.
   - ***Overdrive***: adds light to medium signal distortion.
   - ***Distortion***: adds high signal distortion.

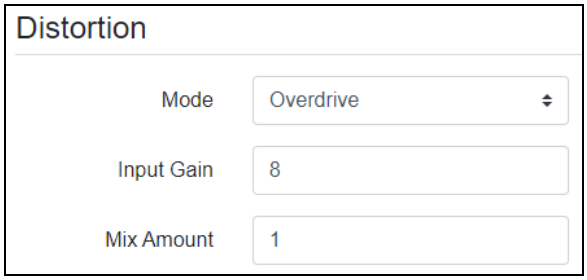

Figure 77: Distortion settings

   a. In **Input Gain**, enter a distortion input gain value(i.e., the gain applied to the audio before it enters the distortion stage). Larger values increase the distortion's effect. In **Overdrive** mode, this value may be as high as 40 to significantly alter the signal.

   b. In **Mix Amount**, enter the desired percentage of "clean" versus "dirty" audio present in the output. A value of 0 passes only clean audio, while 0.5 yields an even mix of clean and distorted.

7. Next to **Transmit Volume**, choose **On** or **Off**.

   a. If **Transmit Volume** is **On**, in **Limiter Threshold**, enter a threshold. A limiter threshold prevents audio from exceeding a specified intensity. Adjust this threshold to set the maximum output volume. Negative values decrease the sound.

      The limiter threshold is measured in decibels. Typical values include -6, -12, or -18. Do not set the limiter threshold higher than 0.

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b. In **Makeup Gain**, enter a makeup gain value.

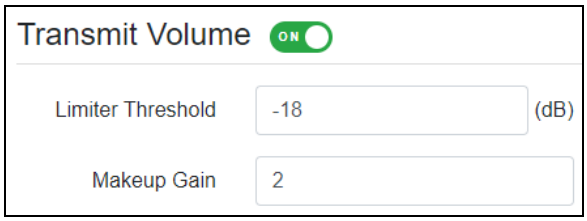

Figure 78: Transmit Volume settings

If the audio is too quiet after limiter threshold processing, the makeup gain increases the volume of the processed signal. This gain is applied as the very last stage of radio effects processing, typically with a value of 2. To limit the sound, decrease the limiter threshold, and apply a makeup gain until you reach the desired sound.

2.8.5 Define radio effects for waveforms

Voisus allows you to apply sound effects to nets via waveform definitions. Applying a radio effect to a specific waveform more realistically simulates net conditions, ensuring that all users experience the same effect. To apply radio effects to a waveform, follow these steps:

1. From the top-left navigation bar, go to **Voisus Home** ( ) > **Comm Plan**.

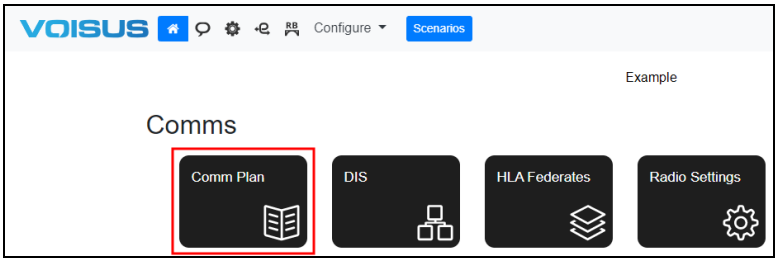

Figure 79: Comm Plan navigation

2. On **Comm Plan**, go to **Waveforms**.

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3. Under **Tx Radio Effects**, choose a radio effect.

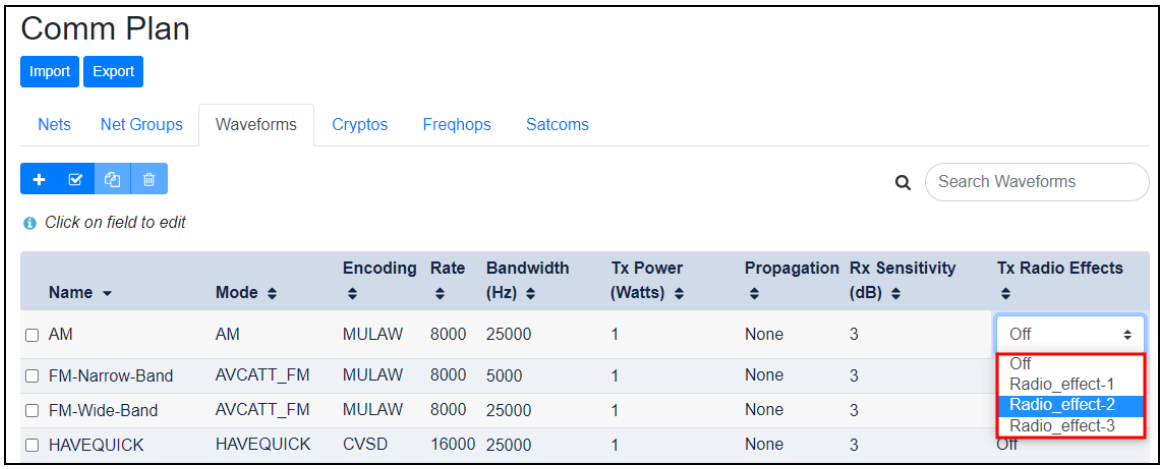

Figure 80: Tx Radio Effects

***Note**: If you apply effects to both the waveform and radio, the effect applies twice.*

2.8.6 Add a jammer

To add a new jammer and assign a playsound to it, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Roles/Radios**.

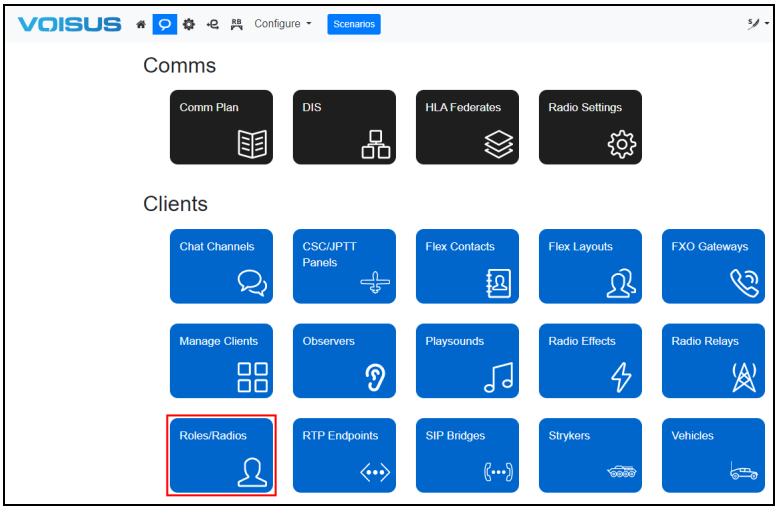

Figure 81: Roles/Radios navigation

2. On **Roles**, choose a client role.

3. Under **Jammers**, select + Jammer, and then select the new jammer.

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4. Under **Nets**, under **Available**, choose the net(s) on which the jammer will play, and select **Add Nets to Jammer** ( ). The selected net(s) appear under **Assigned**.

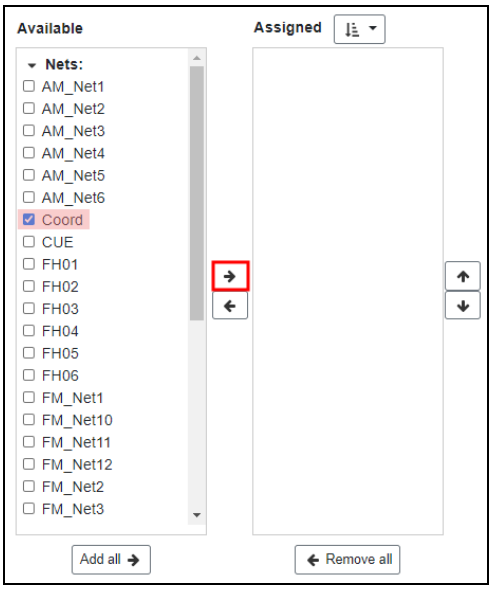

Figure 82: Assign nets to jammer

5. Select **Default Net**, and then choose a default net.
6. Under **Jammer Settings**, select **Playsound**, and choose a playsound.
7. If **Loop Forever** is disabled, the playsound only repeats a limited number of times. The following notification appears:

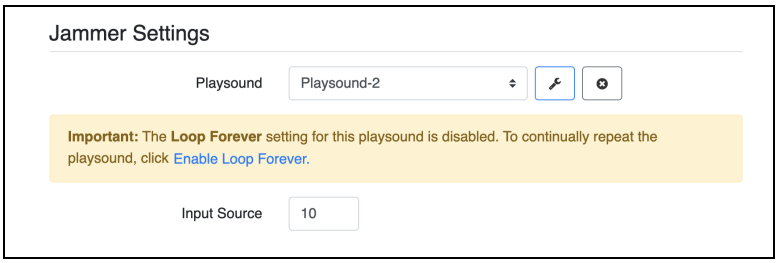

Figure 83: Enable Loop Forever

To continuously repeat the jammer, select **Enable Loop Forever**.

***Important**: **Enable Loop Forever** is linked to **Loop Forever** on **Playsounds**. Enabling **Loop Forever** on this page also impacts other features using the associated playsound. To create a unique playsound for the jammer, go to Section 2.7.2, "Add a playsound" on page 37.*

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8. The input source defines the type of transmitter protocol data unit (PDU) associated with the jammer (e.g., audio jammer, data jammer). In **Input Source**, enter a value for the input source.

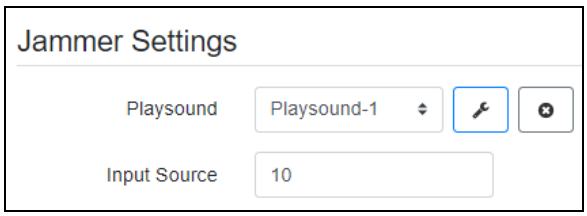

Figure 84: Jammer Settings

Commonly used Distributed Interactive Simulation (DIS) values include the following:

DIS Value	Description
10	Audio Jammer
11	Data Jammer
12	GPS Jammer
13	GPS Meaconer

Table 2: Common input source values

9. *(Optional)* If you want to designate this jammer as a spoofing jammer, turn **Spoofing Jammer** ON. To learn more about spoofing jammers, go to Section 3.2.4, "Voisus Client JAMMERS panel" on page 149.

2.8.7 Configure the Flex Client in a role

To use calling in the Flex Client, you must first make certain configurations in the role connected to the client (e.g., assigning a **Speed List** and **Flex Layout** or adding phone lines).

This section discusses how to:

- Assign a Speed List, Flex Layout, and ring tones to a role
- Add a phone line to a role
- (Optional) Add a radio to a Simulcast group

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2.8.7.1 Assign a **Speed List**, **Flex Layout**, and ring tones to a role

To assign a **Speed List**, **Flex Layout**, and ring tones to a role, follow these steps:

1. From your role, under **Flex Client**, choose a **Speed List**. This setting determines which predefined contacts group displays on the calling tiles. To add or edit a speed list, go to Section 2.11.2, "Group contacts into speed lists" on page 73.
2. To assign a predefined layout to the Flex Client, choose a **Flex Layout**. To learn more about **Flex Layouts**, go to Section 2.12, "Flex Layouts" on page 75.
3. Choose a playsound to act as an alert for an **Incoming Intercom Ringtone**, **Incoming Phoneline Ringtone**, or **Outgoing Ringtone**. To upload your own playsound, go to Section 2.7, "Playsounds" on page 34.

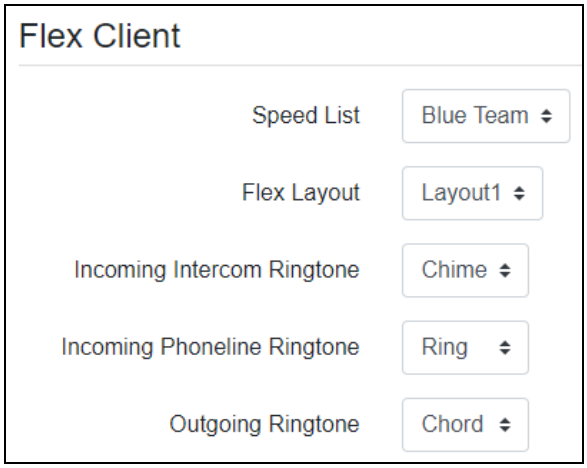

Figure 85: Flex Client role settings

2.8.7.2 Add a phone line to a role

To add a phone line to a role, follow these steps:

1. On **Roles**, under **Phone Lines**, select + Phone Line.
2. Open the new line.

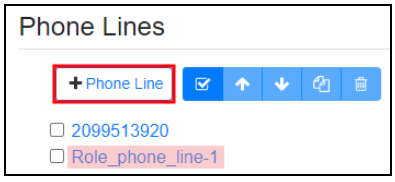

Figure 86: Add a phone line

3. In **Name**, enter a unique name for the line. By default, the line is called **Role_phone_line-***N*, where *N* is the line number.
4. *(Optional)* In **Description**, enter a description of the phone line.

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5. To make incoming calls play a chime, under **Default Settings**, turn **Chime Enable** ON.

6. To prevent client operators' from changing the chime sound effect, turn **Chime Lock** ON.

7. Select **FXO Gateway**, and choose the Foreign Exchange Office (FXO) gateway device that connects to the phone line.

8. Select **FXO Gateway Port**, and connect a port to the phone line.

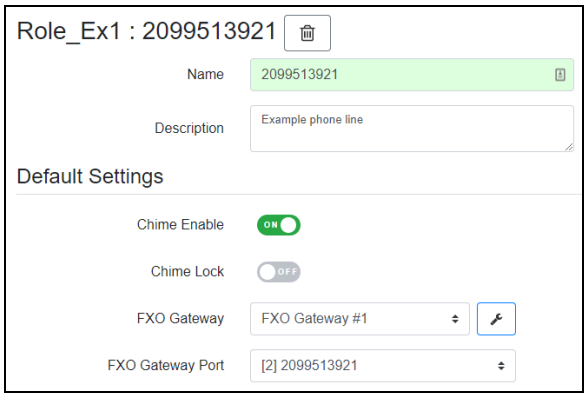

Figure 87: Default phone line settings

In a **Flex Layout**, the **PHONE** tile's **Index** number determines the phone's position in the Flex Client. For example, an **Index** of **0** references the first phone line listed in the role, whereas an **Index** of **1** references the second phone line.

Figure 88: PHONE tiles in the Flex Client

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If the **PHONE** tile's **Name** does not match a **Line Number/Name**, it becomes unavailable:

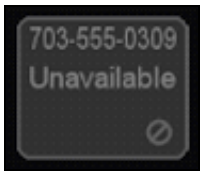

Figure 89: Disconnected phone

To add tiles to a **Flex Layout**, go to Section 2.12.2, "Add tiles to a Flex Layout" on page 79. For more information about Flex Client operation, go to Section 3.4, "Flex Client" on page 186.

2.8.7.3 *(Optional)* Add a radio to a **Simulcast** group

In the Flex Client, the **Simulcast** tile triggers a group of radios to transmit simultaneously. To add a radio to this group, follow these steps:

1. Under **Radios**, choose an existing radio. To add a new radio, go to Section 2.8.2, "Add a radio" on page 41.

2. Under **Audio**, turn **Simulcast** ON.

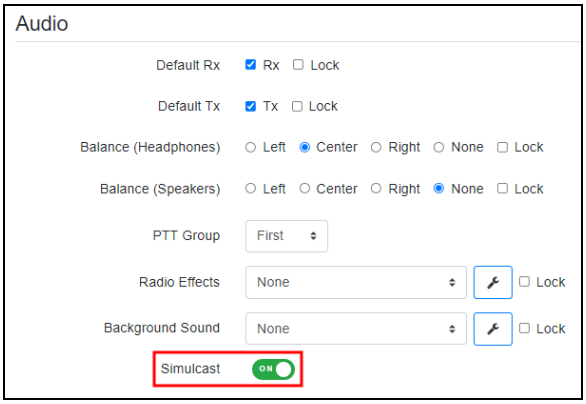

Figure 90: Add a radio to a Simulcast group

2.9 Session Initiation Protocol (SIP) Bridges

Voisus SIP Bridges integrate Voice over Internet Protocol (VoIP) calls with simulated radio networks using protocols like Distributed Interactive Simulation (DIS) and high-level architecture (HLA). This feature enables users to connect VoIP devices (e.g., soft phones or physical telephones) to radio communications in a simulation environment. The SIP Bridge automatically answers any call that it receives. They also make it possible for another system (e.g., a phone) to place point-to-point calls via direct-dial extension, similar to how a Voisus Radio Bridge operates. To learn more about Radio Bridges, go to the *Radio Bridge User Guide*.

In this section, you'll learn how to configure a SIP Bridge in the Voisus web interface, track DIS entities during calls, and verify the SIP Bridge's status. Before you begin, make sure to configure an account with a third-party call manager (e.g., Cisco Unified Communications Manager), set up a phone, and configure a dedicated net for the SIP Bridge in the **Comm Plan**. For more information about the **Comm Plan**, go to Section 2.2, "Comm Plan" on page 4. To add a **Comm Plan** net, go to Section 2.2.1, "Add a net" on page 6.

Once you've set up and verified the SIP Bridge, you'll be able to connect VoIP calls directly to simulated radios through a Voisus client, such as the desktop Voisus Client, Voisus Client for Tablets & Desktops, and Flex Client.

This section discusses how to:

- Add a SIP Bridge
- (Optional) Track DIS entities during SIP bridge calls
- Verify the SIP Bridge's status

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2.9.1 Add a SIP Bridge

To add a SIP Bridge to the Voisus server, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **SIP Bridges**.

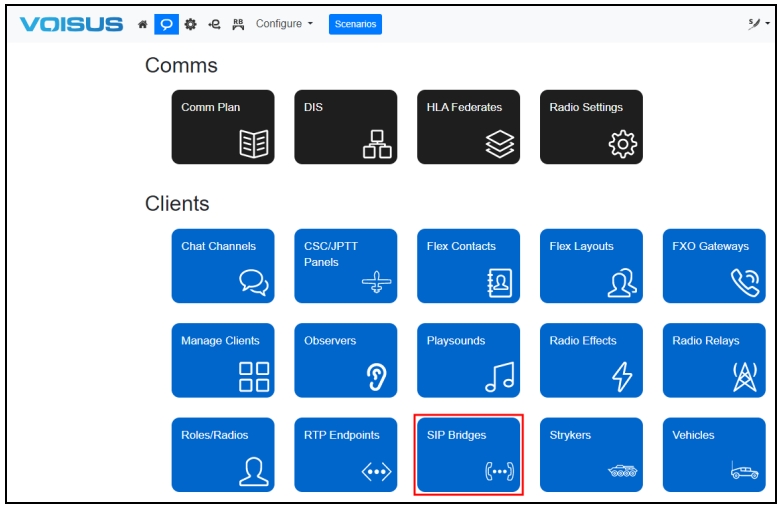

Figure 91: SIP Bridges navigation

2. On **SIP Bridges**, select **Create SIP Bridges** ( ). A new bridge appears on the left. The default name is "Sip_bridge-*N*", where *N* is the bridge's number.

3. *(Optional)* In **Name**, enter a unique name for the bridge (e.g., **SIP Bridge 1**).

4. Select **DIS Exercise**, and assign an exercise to the bridge. To learn more about DIS exercises, go to Section 2.3.2, "DIS Exercises" on page 15. To configure a DIS exercise, go to Section 2.3.3, "DIS Configuration" on page 15.

5. Select **SIP Bridge Net**, and assign the **Comm Plan** net dedicated to the SIP Bridge. To add a **Comm Plan** net, go to Section 2.2.1, "Add a net" on page 6. To learn more about **Comm Plans**, go to Section 2.2, "Comm Plan" on page 4.

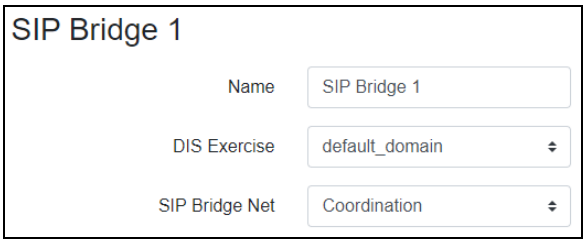

Figure 92: SIP Bridge Name, DIS Exercise, and SIP Bridge Net

6. Under **SIP Settings**, turn **Use SIP Server** ON. This setting enables another system (e.g., server, phone) to place point-to-point calls via direct-dial extension.

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7. In **Server IP Address**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the SIP server's IP address.

8. In **Local SIP Port**, enter the port number that Voisus will use to transmit SIP network traffic. If your configuration uses multiple SIP Bridges, assign a unique port number to each bridge. The default port number is 5060.

9. To configure Voisus to communicate with a third-party call manager (e.g., Cisco Unified Communications Manager), enter the credentials of an account in the call manager:

   a. In **User Account**, enter the account's name or number (e.g., **3007**).

   b. In **User Password**, enter the account's password (e.g., **sip3007**).

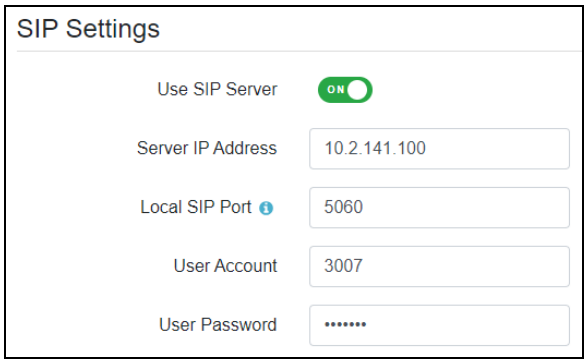

Figure 93: SIP server network and account settings

10. *(Optional)* To mute or activate SIP audio via dual-tone multifrequency (DTMF) dialing, turn **Use SIP Press-to-Talk** ON. When enabled, the pound (#) key mutes SIP audio, while the asterisk (*) key turns SIP audio on.

11. *(Optional)* **Use Auto Call** configures Voisus to automatically place a call when the SIP Bridge initializes. You might use this feature if your configuration requires the SIP Bridge (rather than an endpoint) to initiate a call. To configure **Use Auto Call**, do the following:

    a. Turn **Use Auto Call** ON.

    b. In **Extension**, enter the four-digit direct dial extension for Voisus to dial.

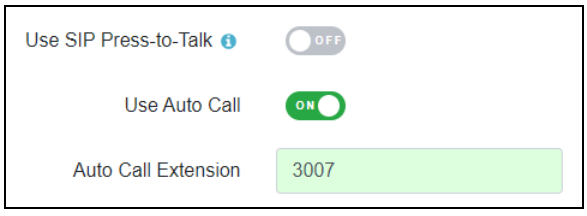

Figure 94: SIP PTT and auto-call settings

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2.9.2 *(Optional)* Track DIS entities during SIP bridge calls

Voisus SIP Bridges can associate simulated radios with moving DIS entities, such as vehicles or personnel in a virtual training environment. By tracking these entities, Voisus can simulate realistic communication scenarios, where radios move dynamically within the space. This capability is especially useful for training exercises that involve multiple trainers, terrain interference, or a combination of live and virtual communication. Although this feature isn't commonly used, it provides a valuable tool for scenarios requiring accurate representation of radio positioning and movement in complex simulations, such as military exercises with virtual tanks.

To track DIS entities during SIP Bridge calls, follow these steps:

1. On **SIP Bridges**, choose a bridge. To add a bridge, go to Section 2.9.1, "Add a SIP Bridge" on page 63.
2. Voisus creates mappings using a DIS entity's name or ID, which consists of a combination of seven numbers identifying the entity's unique features (i.e., kind, domain, country, category, subcategory, specific, extra). When Voisus locates an entity matching one of these values, it plays the associated audio.

   Under **Entity Attach**, choose one of the following attachment methods:

   - ***DIS Entity Name**:* attach to a DIS entity name.
   - ***DIS Entity ID**:* attach to a DIS entity ID.
3. If you selected **DIS Entity Name**, in **Name**, enter the name of the DIS entity you wish to track (e.g., **SimTank_01**).

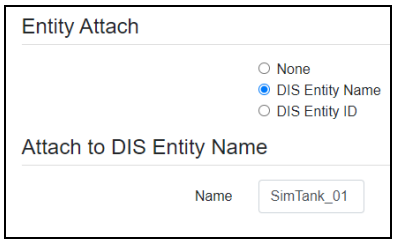

Figure 95: DIS Entity Name

Alternatively, if you selected **DIS Entity ID**, enter the corresponding **Site**, **Entity**, and **App** IDs of the entity you wish to track (e.g., 1.1.1).

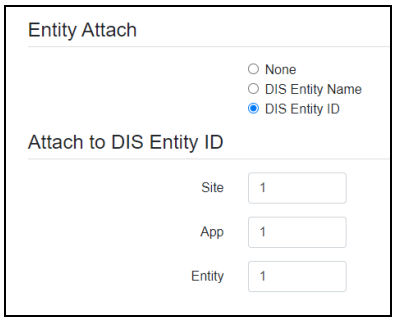

Figure 96: DIS Entity ID

2.9.3 Verify the SIP Bridge's status

After you add a SIP Bridge, it's a good idea to verify that it's properly configured with both the Voisus server and third-party call manager (e.g., Cisco Unified Communications Manager). To check the SIP Bridge's status on **Monitor SIP Bridges**, follow these steps:

1. From the top right, go to **Monitor** ( ) > **SIP Bridges**.

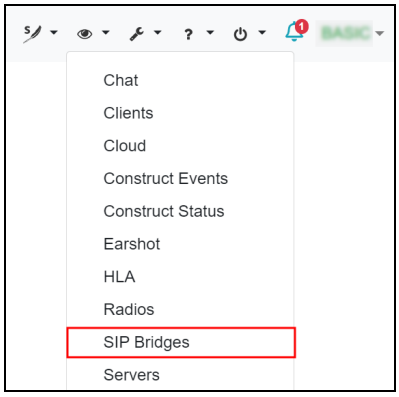

Figure 97: Monitor SIP Bridges navigation

2. On **Monitor SIP Bridges**, under **Name**, find the SIP Bridge that you configured in Section 2.9.1, "Add a SIP Bridge" on page 63.

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3. Bridges in the **Monitor SIP Bridges** table may display the following states:

Table Row Color	Current State
Green	Virtual radio transmitting
Blue	Virtual radio receiving
Red	Error (i.e., "× Login failed," "× Unlicensed," "No Net Selected")
Gray	Other (i.e., not transmitting, receiving, or in an error state)

Table 3: SIP Bridge row colors and states

Under **Status**, confirm that your bridge displays "Ready / No Call" or "On Call:"

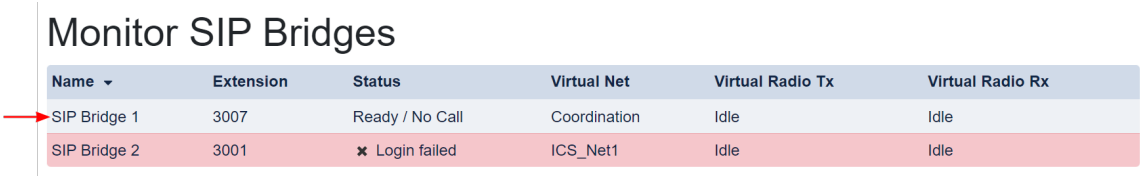

Figure 98: Monitor SIP Bridges

If the bridge's **Status** displays "× Unlicensed," verify that the **SIP Bridge** option is enabled on **Licensing**. To learn more about Voisus licensing options, go to "View licensing information" in the *Voisus Quick Start Guide*. If the bridge's **Status** displays "× Login failed," verify that the **User Account** and **User Password** credentials on **Clients** > **SIP Bridges** match the credentials you configured in your third-party call manager.

If the bridge's **Virtual Net** displays "No Net Selected," go to **Clients** > **SIP Bridges**, and verify that you assigned a dedicated Comm Plan net to **SIP Bridge Net**. To learn more about SIP Bridge configuration, go to Section 2.9.1, "Add a SIP Bridge" on page 63.

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2.10 FXO Gateways

To add and set up Foreign Exchange Office (FXO) gateways in the Voisus web interface, follow these steps:

1. From the top right, go to **Manage** ( ) > **Hardware Devices**.

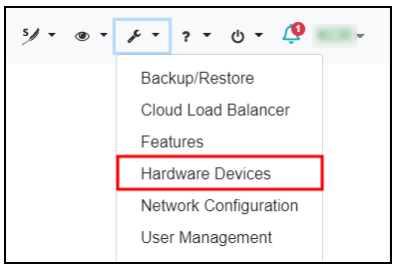

Figure 99: Hardware Devices navigation

2. To view the list of detected gateways, on **Hardware Devices**, go to **FXO**.

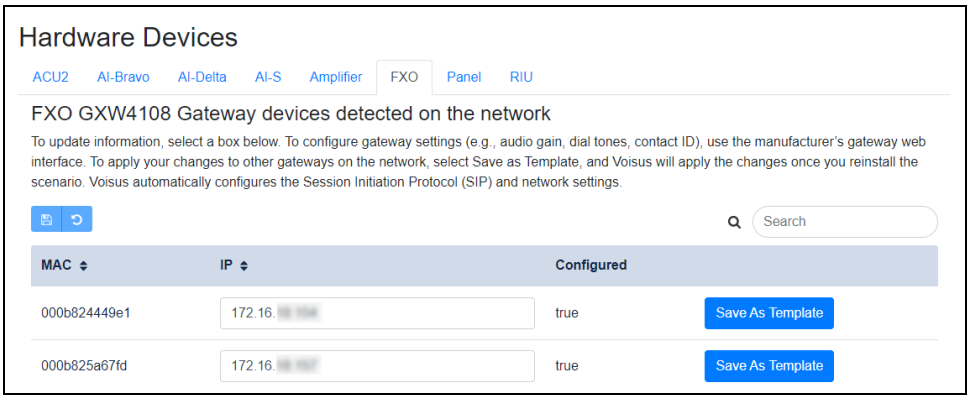

Figure 100: Detected gateways

3. Under **IP**, find a gateway device, and write down its IP address for future reference.

4. To store a gateway's settings on the Voisus server, select Save As Template. The Voisus server updates as soon as it detects a new gateway on the network. Only select Save As Template for operational FXO gateways.

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5. From the top-left navigation bar, go to **Voisus Clients** ( ) > **FXO Gateways**.

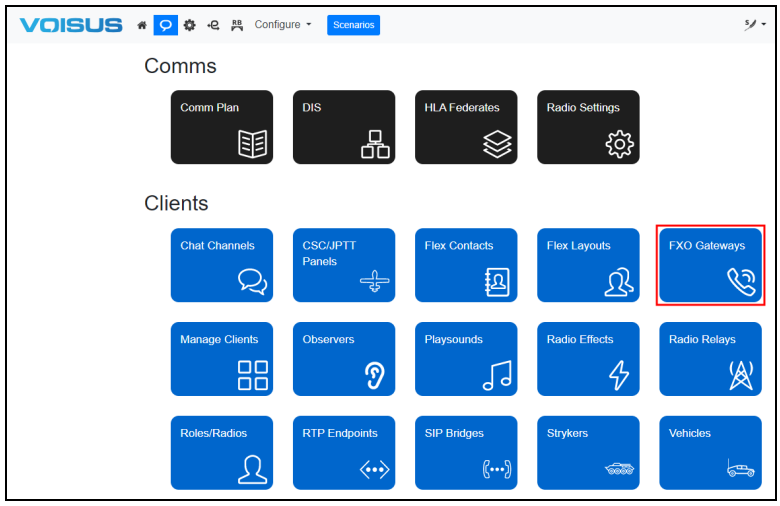

Figure 101: FXO Gateways navigation

6. To add a new gateway, select **Create FXO Gateway** ( ). By default, the gateway's name is **Sipgw–***N*, where *N* is the gateway number.

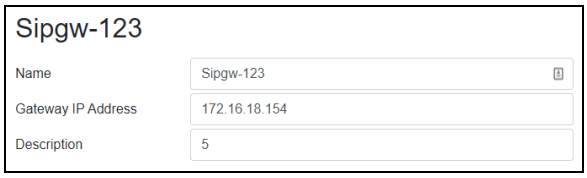

Figure 102: Gateway settings

7. In **Name**, enter a unique name for the gateway.

8. In **Gateway IP Address**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the gateway IP address you noted in Step 3.

9. Under **Analog Lines**, in **Line Number/Name** enter *NNN-NNN-NNNN*, where *NNN-NNN-NNNN* is the actual telephone number of the physical phone line's FXO gateway.

Figure 103: Settings for Analog Lines

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10. **In Gain** applies an effect on audio coming from the gateway to the Voisus server. Enter a minimum value of 0.0.
11. **Out Gain** applies an effect on audio going from the Voisus server to the gateway. Enter a minimum value of 0.0.
12. To allow the tile to receive incoming calls, select **Enable Phone Line**.
13. *(Optional)* To prevent the line from transmitting, select **Disable Outgoing Calls**. In the Flex Client, the **PHONE** tile still receives incoming calls by default:

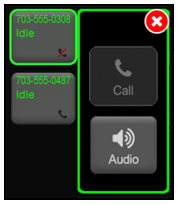

Figure 104: Disabled line

2.11 Flex Contacts

Use the **Flex Contacts** page to create an address book of contacts and organize those contacts into speed lists. This section discusses how to:

- Add contacts to the Flex Client
- Group contacts into speed lists

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2.11.1 Add contacts to the Flex Client

To add contacts to the Flex Client, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Flex Contacts**.

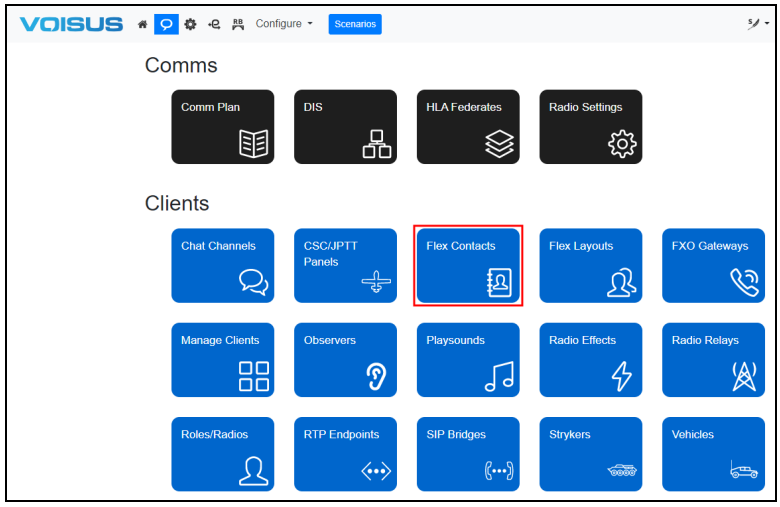

Figure 105: Flex Contacts navigation

On **Info**, you can create an address book of names, phone numbers, or Voice-over-IP extensions for an entire scenario. Contacts must exist here before you can assign them to a speed list.

2. To create a new contact, select **Add** ( ). By default, the contact's name is **Contact-info-1**, and its **Number** is 0. To edit the contact, select a name from the table.

3. If the contact's **Number** remains 0, Voisus assumes that the corresponding name is that of a Voisus client that will participate in the scenario. For example, if **Fire** is 0, this contact's calls connect to the **Fire** client.

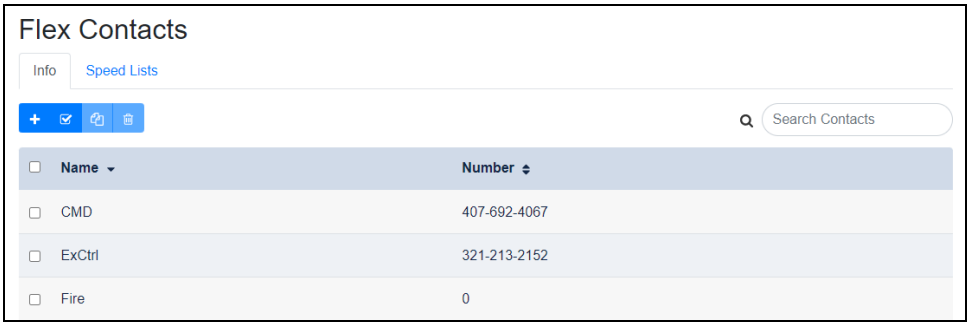

Figure 106: Contacts list

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4. To display the contact list in the Flex Client, tap an unlocked call tile, and select **Contacts**.

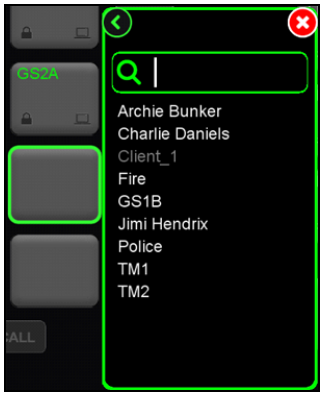

Figure 107: Flex Client contacts

***Note**: Client contacts disconnected from the Voisus server are grayed out.*

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2.11.2 Group contacts into speed lists

Speed lists allow you to create groups of contacts defined in **Info**. While contacts are scenario-wide, you can assign speed lists to specific roles, providing a shorter list to reference inside the Flex Client.

To create speed list groups, follow these steps:

1. From **Flex Contacts**, go to **Speed Lists**.

2. To add a new speed list, select **Create Speed List** ( ). By default, the speed list is named **speed_list-***N*, where *N* is the list number.

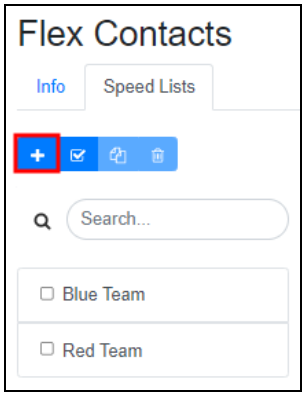

Figure 108: Speed list default name

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3. To assign a contact to a speed list, under **Available Contacts**, choose one or more contact(s), and select **Add Contact to List** ( ).

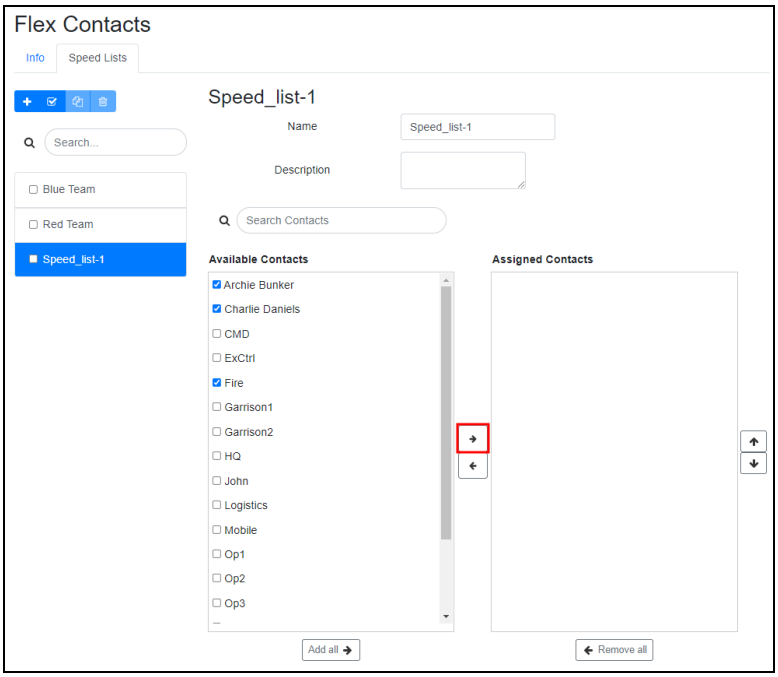

Figure 109: Speed list

4. To change the order of the **Assigned Contacts**, choose one or more contacts, and select **Increment Selected** ( ) or **Decrement Selected** ( ). The Flex Client displays speed dials in the order they appear on this page.

5. Set the speed list in the role, as described in Section 2.8.7.1, "Assign a Speed List, Flex Layout, and ring tones to a role" on page 59.

6. In the Flex Client, tap and hold an unlocked call tile. Select **Speed List** to display the speed list for the current role.

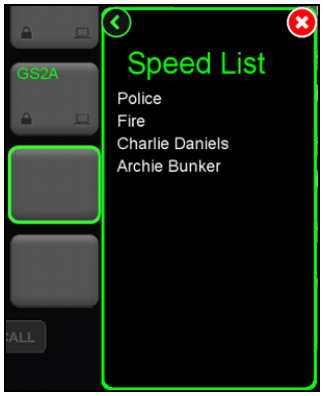

Figure 110: Flex Client Speed List

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2.12 Flex Layouts

With Flex Layouts, you can design custom graphical user interfaces (GUIs) for the Flex Client. Add and arrange tiles to represent radios, calling contacts, phone lines, and more.

This section discusses how to:

- Add and set up a Flex Layout
- Add tiles to a Flex Layout
- Add Flex tile groups
- Reposition tiles on a Flex Layout
- Resize tiles in a Flex Layout
- Paginate RADIO, CALLING, and PHONE tiles

2.12.1 Add and set up a Flex Layout

To add a **Flex Layout** to the Flex Client, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Flex Layouts**.

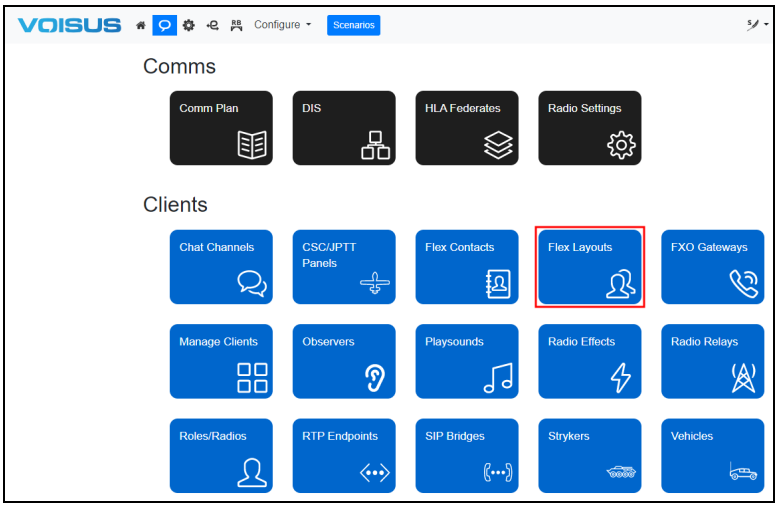

Figure 111: Flex Layout navigation

2. On **Flex Layouts**, select **Create Flex Layout** ( ). By default, layouts are named **Flex_layout-***N*, where *N* is the layout number.

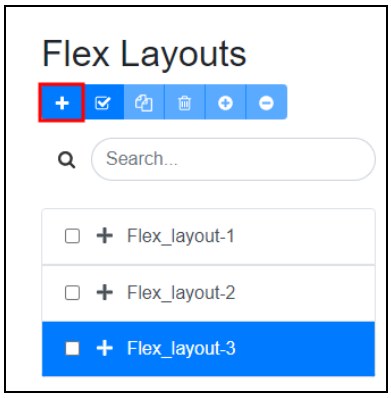

Figure 112: Add a layout

3. To edit a layout's settings, on **Flex Layouts**, select Config.

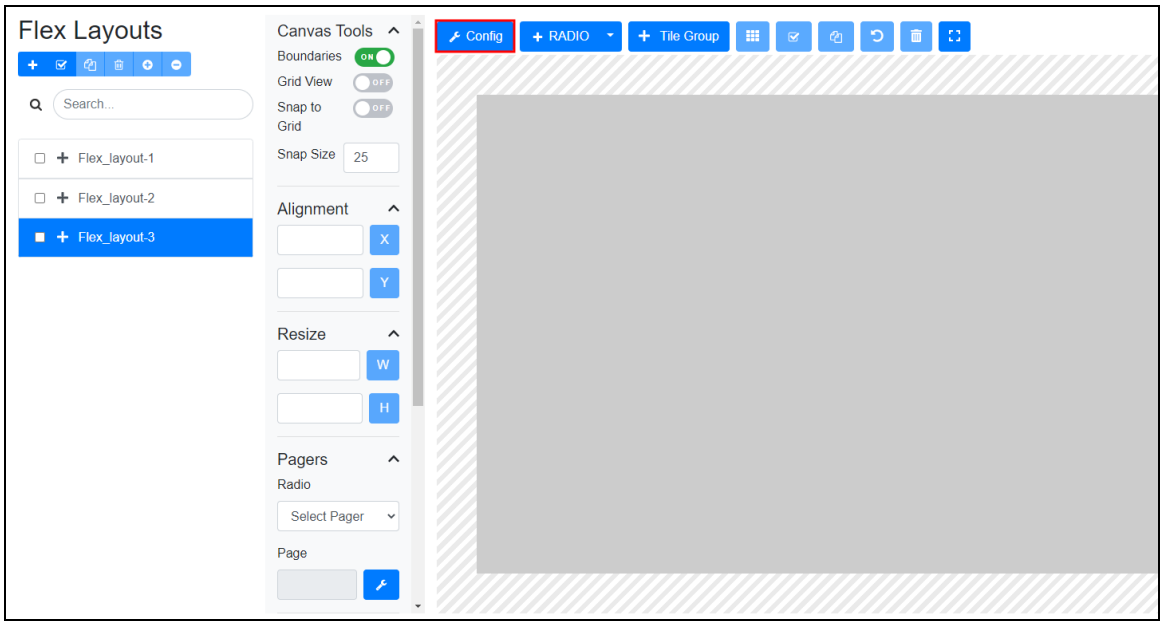

Figure 113: Configure the layout

4. In **Name**, enter a unique name for the layout.

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5. *(Optional)* In **Description**, enter a brief description of the layout.

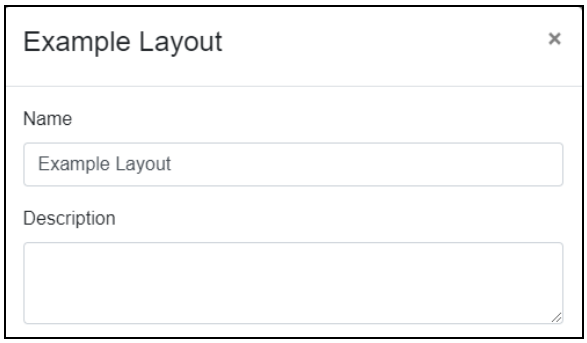

Figure 114: Layout Name and Description

6. Select **Set Canvas to Common Screen Sizes**, and choose a screen resolution for the device running the Flex Client (e.g., 1280×800 for a 10" tablet).
7. Enter the layout's **Width** and **Height** in pixels. The minimum size is 200×200 pixels.

***Note**: **Width** and **Height** depend on the screen resolution and whether the Flex Client is running in full-screen mode.*

8. *(Optional)* To add padding around the edge of the **Flex Layout**, in **Boundary (Edge buffer)**, enter a number in pixels. This visual aid does not impact tiles in the Flex Client GUI.
9. In **Font Size**, enter a font size for the tile text.

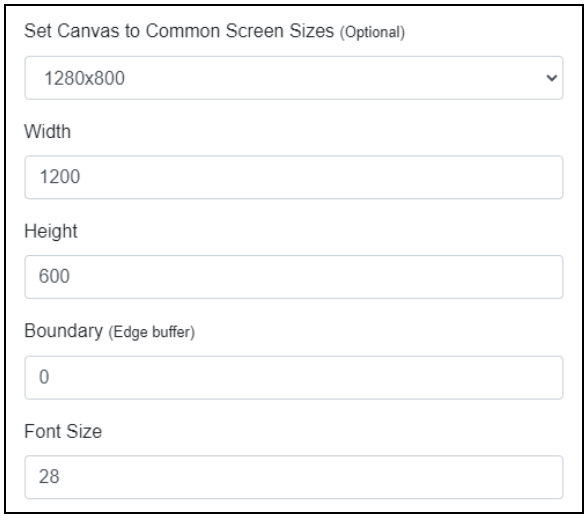

Figure 115: Screen resolution, width, height, padding, and font size

***Important**: **Font Size** only impacts text in the Flex Client, not the **Flex Layout**.*

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10. Under **Preset Colors**, click Select a Preset, and choose a color scheme for the tile text, tile background, and canvas background. To create a custom color scheme, enter a hexadecimal color value (e.g., #ff0000 for red) in **Text Tile Color**, **Tile Background Color**, and **Canvas Background Color**.

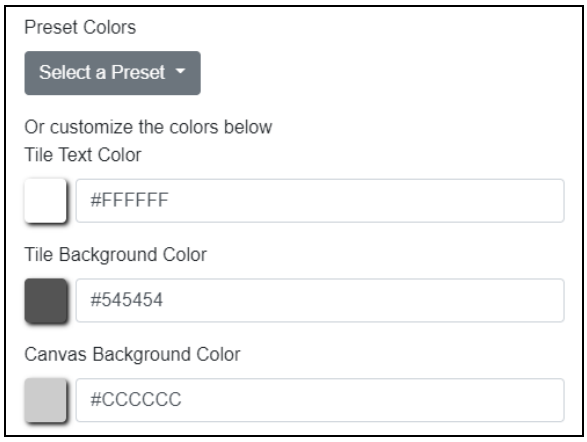

Figure 116: Tile text, tile background, canvas background, and preset colors

11. Select **Tx Color** to choose the color of a transmitting tile. The default color is orange.

12. Select **Rx Color** to choose the color of a receiving tile. The default color is blue.

13. To access radio tile settings in the Flex Client, select **Enable Radio Control**. If enabled, operators can change the frequency and other radio settings directly from the client. If disabled, operators can only change the volume.

14. To automatically terminate a call when you answer an incoming call, select **Auto End Call**. When this setting is disabled, the Flex Client places current calls on hold.

15. By default, the Flex Client clears the previous caller's name and number from an unlocked calling tile. To preserve this information on the tile, select **Sticky Tile**. As a result, operators can tap the tile to call the previous caller back.

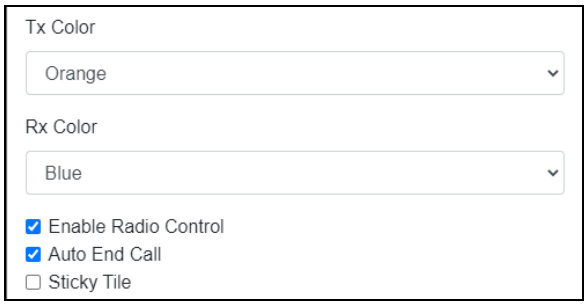

Figure 117: Layout radio settings

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16. Under **Tiles**, select , and choose a tile type. To learn more about tiles, go to Section 2.12.2, "Add tiles to a Flex Layout" below.

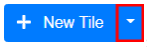
Figure 118: Add tiles to a layout

17. *(Optional)* Enter unique names for the tiles.

18. Select .

2.12.2 Add tiles to a Flex Layout

To add tiles to a **Flex Layout**, follow these steps:

1. To add a tile to the layout, select  , and choose a tile type. The tile displays on the layout:

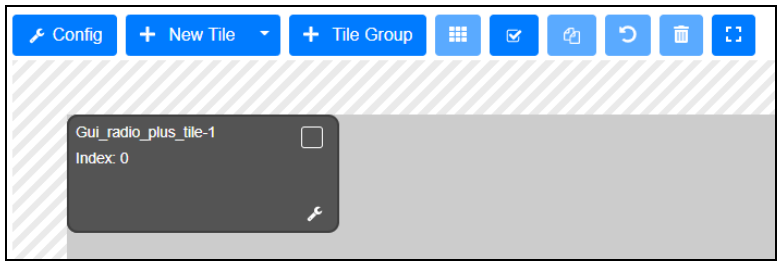


Figure 119: Add a tile to the layout

2. To edit a tile's settings, select the wrench icon (🔧) in the bottom right of the tile. A pop-up window appears.

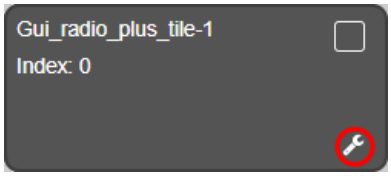


Figure 120: Tile wrench

3. In **Name**, enter a name for the tile.

4. *(Optional)* Assign the tile to a **Pager**, and add it to a specific **Page Number**. To learn more about pagers, go to Section 2.12.4, "Paginate RADIO, CALLING, and PHONE tiles" on page 82.

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5. In **Height**, enter the tile's height in pixels.
6. In **Width**, enter the tile's width in pixels.
7. In **X Position**, enter the tile's position in pixels on the GUI's horizontal axis.
8. In **Y Position**, enter the tile's position in pixels on the GUI's vertical axis.

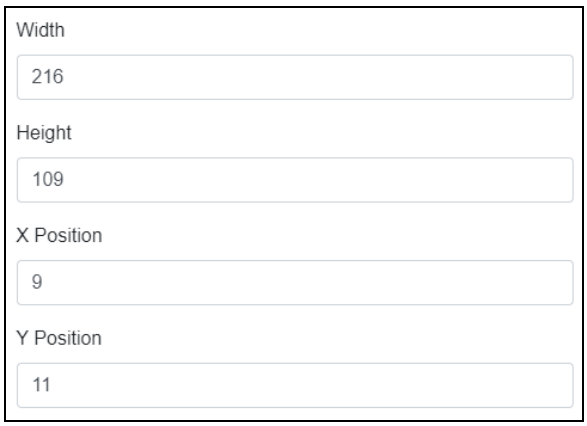

Figure 121: Tile size and position

***Note**: The top left of the layout is the origin of the X and Y positions.*

9. *(Optional)* In **Description**, enter a brief description of the tile.
10. Select Close.

2.12.3 Add Flex tile groups

To add groups of tiles to the **Flex Layout**, follow these steps:

1. From the layout, select + Tile Group. A pop-up window appears.

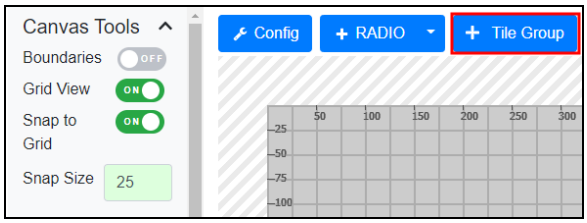

Figure 122: Add a tile group

2. In **Group Insert Tiles**, select **Tile Type**, and choose a type of tile (e.g., RADIO).
3. In **Number of Tiles**, enter the number of tiles you want to add.
4. In **Columns**, enter the number of columns in the group.

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5. *(Optional)* In **Rows per Page**, enter the number of rows per page in the group.

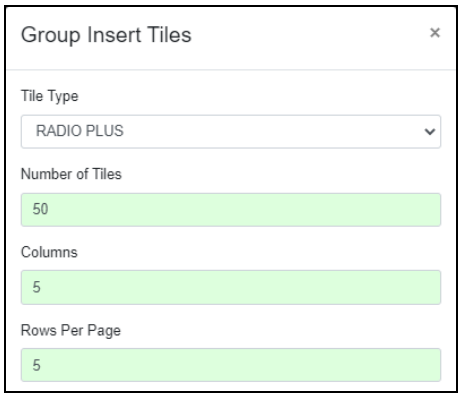

Figure 123: Group Insert Tiles

A 50-tile group with five columns and five rows per page creates a pager with two pages, each containing 25 tiles.

***Important**: This setting only applies to pagers. If no pagers exist, all tiles appear on the first page. To learn more about pagers, go to Section 2.12.4, "Paginate RADIO, CALLING, and PHONE tiles" on the next page.*

6. In **Tile Width**, enter the desired width of the tiles in pixels.
7. In **Tile Height**, enter the desired height of the tiles in pixels.

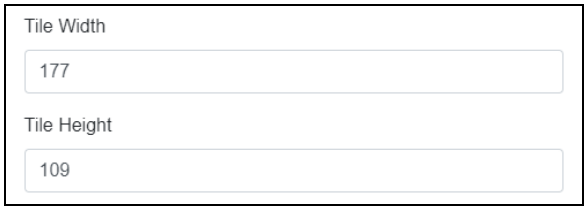

Figure 124: Tile width and height

8. Under **Alignment**, in **X Axis Align**, enter a value on the X axis where the group will horizontally align. The default value is 0.
9. In **Y Axis Align**, enter a value on the Y axis where the group will vertically align. The default value is 0.

***Important**: The **X Axis Align** and **Y Axis Align** maximum values change depending on the resolution that you set in **Config** > **Set Canvas to Common Screen Sizes (Optional)**.*

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10. Under **Spacing**, enter a value in pixels that determines the distance between tiles.

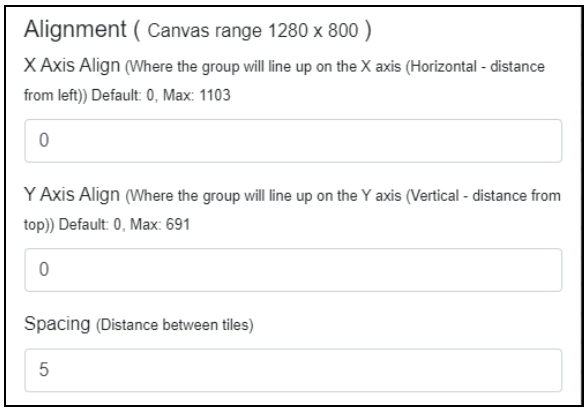

Figure 125: Tile alignment

11. Select Add Group, and a group of tiles appears on the canvas:

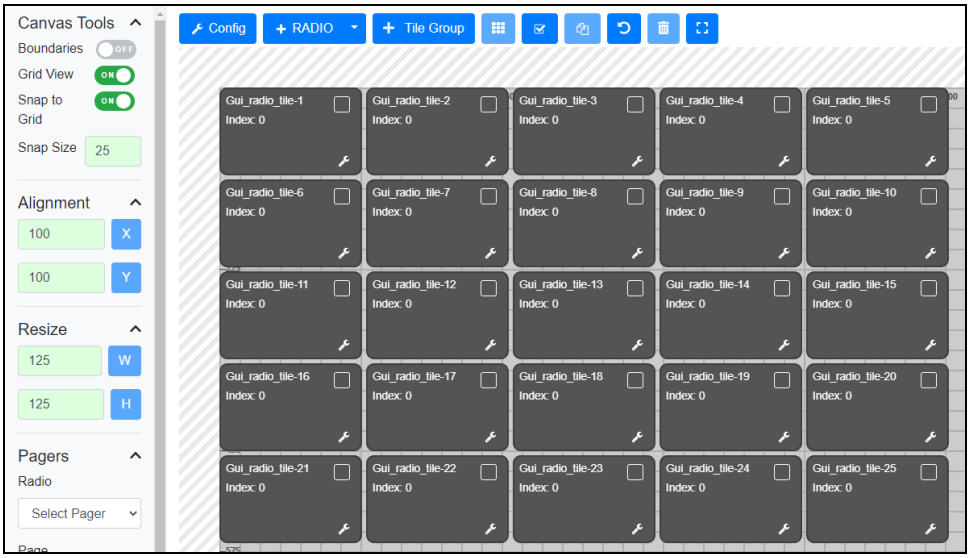

Figure 126: Tile group

2.12.4 Paginate RADIO, CALLING, and PHONE tiles

Pager tiles organize **PHONE**, **CALLING**, and **RADIO PLUS** tiles into paginated groups on the Flex Client. You can automatically generate pagers when creating a tile group, add pagers to existing tile groups, or assign individual tiles to pagers, as described in Section 2.12.2, "Add tiles to a Flex Layout" on page 79.

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To create a **PHONE**, **CALLING**, or **RADIO PLUS** pager and tile group, follow these steps:

1. From the layout, select + Tile Group.
2. On **Group Insert Tiles**, select one of the three tile types compatible with pagers: **PHONE**, **CALLING**, or **RADIO PLUS**.
3. In **Number of Tiles**, enter the total number of tiles in the group (e.g., 100).
4. In **Columns**, enter the number of columns per page (e.g., 5).
5. In **Rows per Page**, enter the number of rows that will appear on each page (e.g., 2).

> ***Important**: **Number of Tiles** must exceed the number of **Columns** × **Rows per Page** (e.g., 25 tiles with three columns and two rows yields four pages with six tiles and a fifth page with one tile).*

6. Finish configuring the group according to Section 2.12.3, "Add Flex tile groups" on page 80.
7. Select Add Group. A pager and group of tiles appears on the canvas, tabulated into pages:

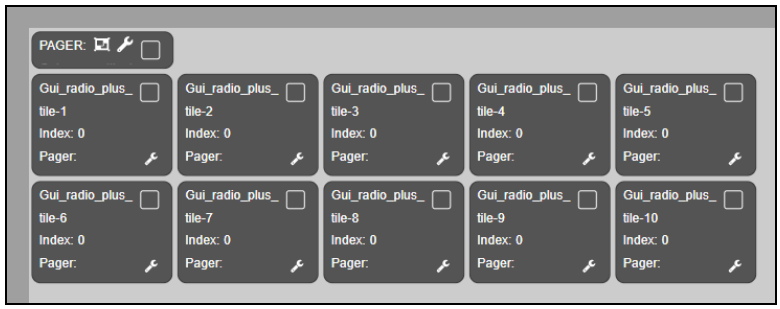

Figure 127: Pager and tile group

8. To view other pages, under **Pagers**, select **Radio**, **Calling**, or **Phone**, and enter a page number.

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9. To edit the pager's settings, select **Edit Pages** ( ).

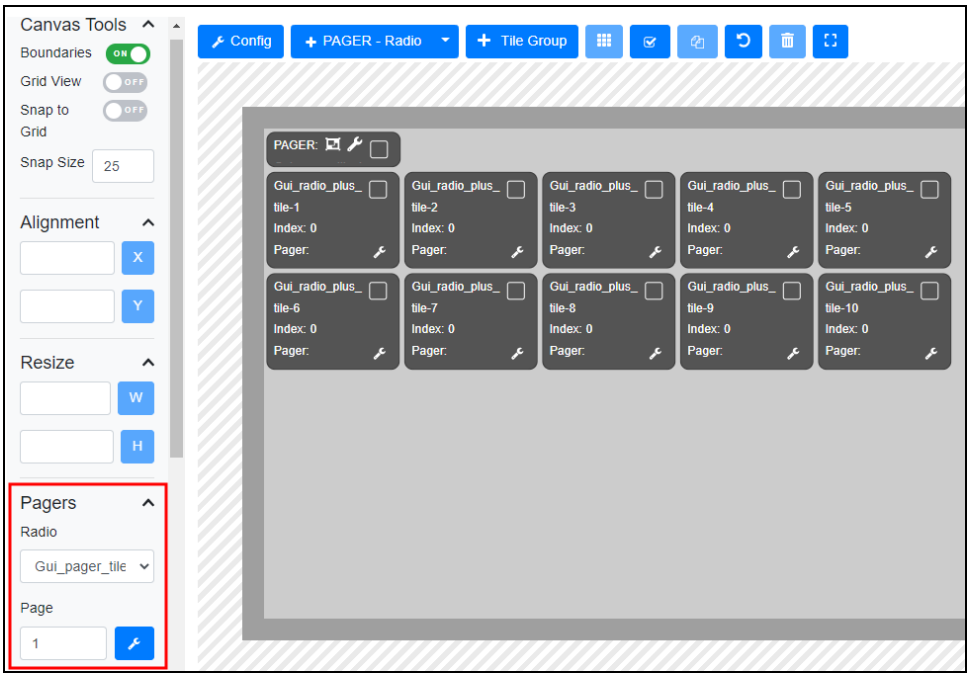

Figure 128: Pager settings

10. *(Optional)* In **Tile Name**, enter unique names for the tiles.

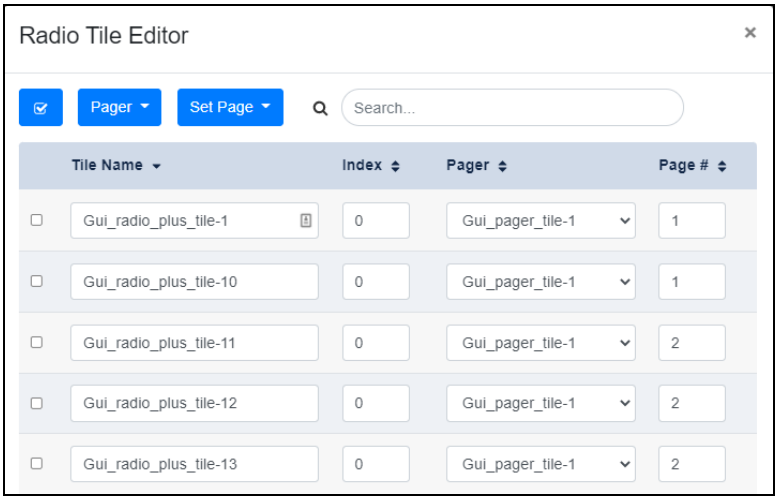

Figure 129: Tile Editor

11. To reassign multiple tiles to a different pager, choose the tile(s) you want to assign, select Pager, and choose a pager.

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12. To reassign multiple tiles to a specific page, choose the tile(s) you want to assign, select Set Page, and choose a page number.

13. Select Close.

2.12.5 Reposition tiles on a Flex Layout

Hover over a tile to reposition it. When **Move Object** (✥) appears, select and drag the tile to a new location.

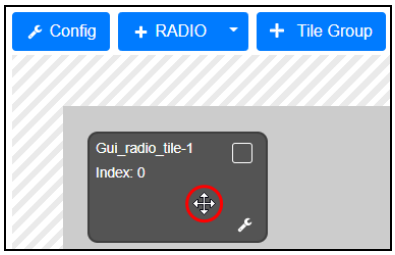

Figure 130: Move a tile

Alternatively, adjust **X Position** and **Y Position** in the tile's settings (🔧).

To add a boundary around the edge of the layout, under **Canvas Tools**, turn **Boundaries** ON. Padding appears around the canvas's edge:

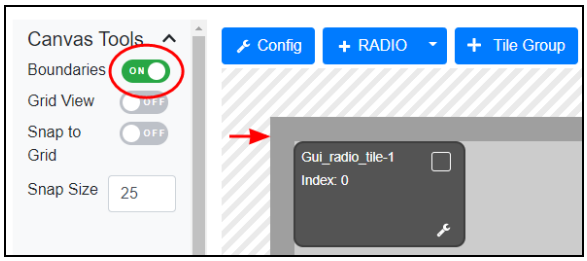

Figure 131: Turn on Boundaries

To edit the boundary size, go to Section 2.12.2, "Add tiles to a Flex Layout" on page 79.

To place a grid on the canvas, turn **Grid View** ON. A grid appears on the canvas:

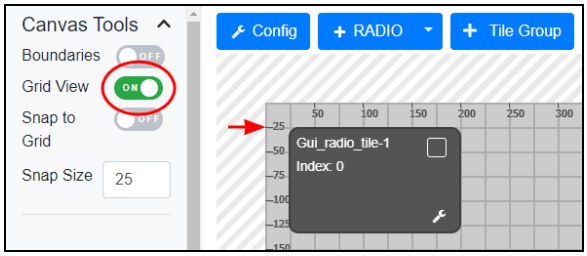

Figure 132: Turn on Grid View

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To snap the tile to the grid, turn **Snap to Grid** ON. When the tile moves, it automatically snaps to the nearest grid line. To move the tile in larger or smaller increments, enter a new pixel value in **Snap Size**. The default **Snap Size** is 25 pixels, the equivalent of one grid box.

To align multiple tiles on the canvas, follow these steps:

1. Select the tiles you want to align using one of the following methods:

   - Select and drag a bounding box over the tiles. This approach only selects visible tiles, not out-of-view, paginated tiles.

   - To select all tiles, click **Select All** ( ). Alternatively, press Ctrl+A or Cmd+A. This approach selects visible tiles and out-of-view, paginated tiles.

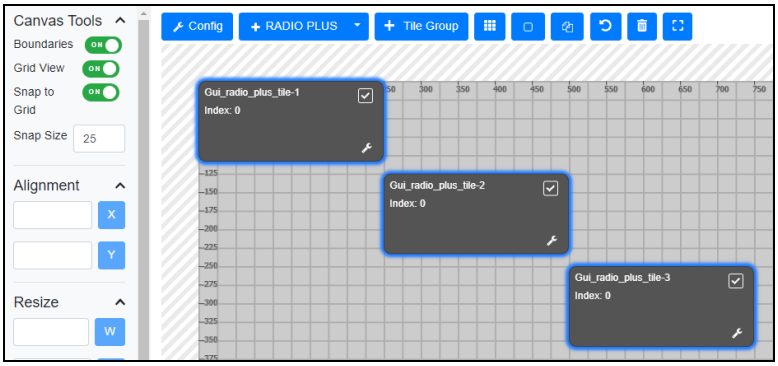

Figure 133: Select all tiles

Note: To simultaneously clear all tile selections, double-click the canvas. This functionality is not available in Firefox web browsers.

2. To vertically align tiles, under **Alignment**, next to **Align X** ( ), enter a value on the X axis, and select X. In Figure 134, "Vertically align tiles" below, a value of **100** moves all three tiles to the 100 grid line on the X axis:

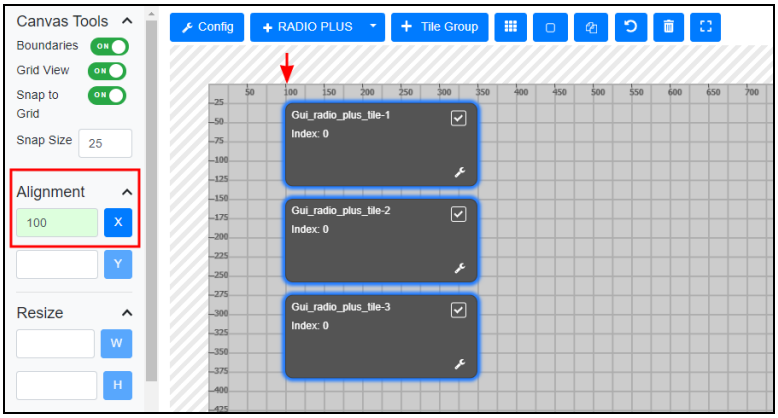

Figure 134: Vertically align tiles

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3. To horizontally align tiles, next to **Align Y** (Y), enter a value on the Y axis, and select Y. In Figure 135, "Horizontally align tiles" below, a value of **100** moves all three tiles to the 100 grid line on the Y axis:

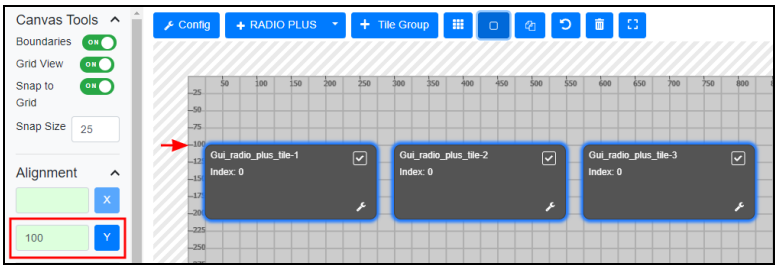

Figure 135: Horizontally align tiles

2.12.6 Resize tiles in a Flex Layout

To adjust the size of a tile, hover over the tile's edge. When a bidirectional arrow (⟺) appears, select and drag the tile to the desired size.

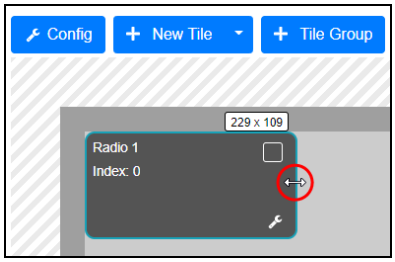

Figure 136: Adjust the tile's size

To adjust the tile's height, select and drag the arrow on the bottom of the tile. To simultaneously resize the tile's height and width, select and drag the arrow in the tile's corner. Alternatively, adjust **Width** and **Height** in the tile's settings (). To learn more about tile settings, go to Section 2.12.2, "Add tiles to a Flex Layout" on page 79.

***Note**: You can only resize from the right or the bottom of the tile.*

To simultaneously resize multiple tiles, follow these steps:

1. Select the tiles you want to resize. To select all tiles, click **Select All** ().
2. Under **Resize**, in the box next to **Set Width** (W), enter a value in pixels. Select W.

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3. In the box next to **Set Height** (H), enter a value in pixels. Select H.

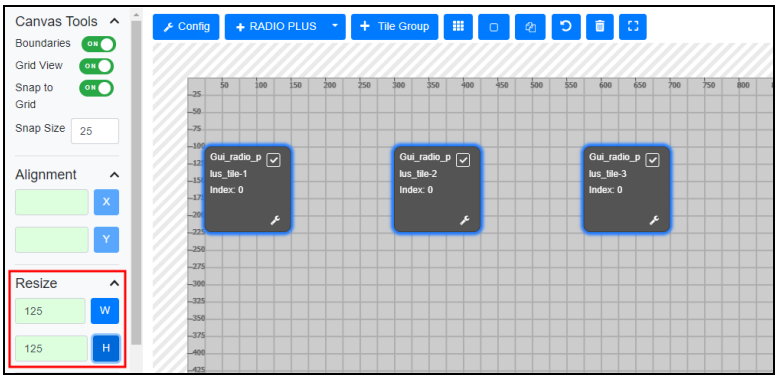

Figure 137: Set the width and height of multiple tiles

Alternatively, select multiple tiles, and drag the bottom or right of one tile to resize them all.

2.12.7 Undo changes to the Flex Layout

To undo the last change you made, select **Undo last change** (). Alternatively, press Ctrl+Z (Windows) or Cmd+Z (Mac OS X).

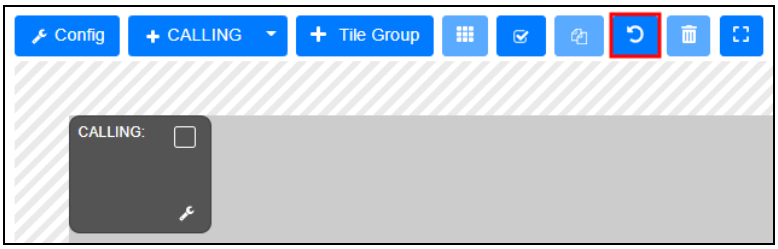

Figure 138: Undo last change

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2.12.8 Copy tiles in a Flex Layout

To copy and paste one or more tile(s) in a **Flex Layout**, follow these steps:

1. From the layout, select the tile(s) you want to copy.
2. Select **Copy Selected Tiles** ( ).

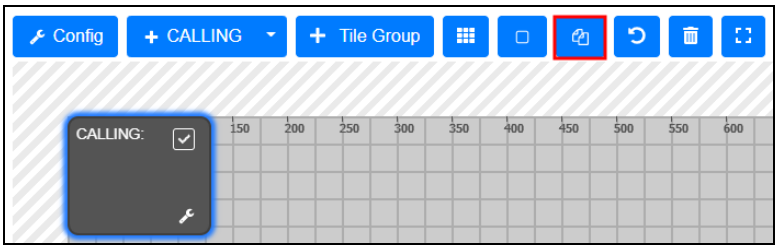

Figure 139: Copy a tile

3. The duplicated tile(s) appear on top of the originals. Select and move the duplicate(s) to a new location:

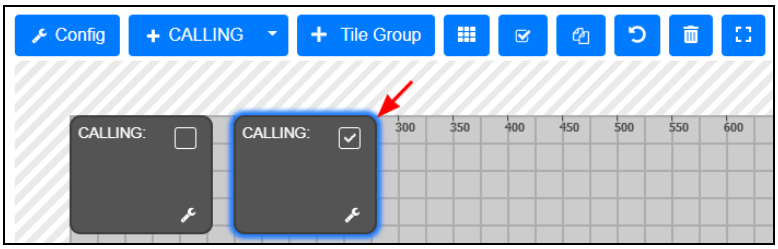

Figure 140: Duplicate tile

2.12.9 Delete tiles from a Flex Layout

To delete one or more tile(s) from a **Flex Layout**, follow these steps:

1. From the layout, select the tile(s) you want to delete.
2. Select **Delete Selected Tiles** ( ).

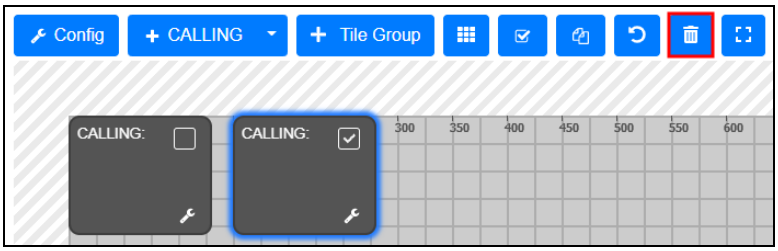

Figure 141: Delete a tile

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3. From the confirmation message, select Delete, and the tile(s) disappear from the layout:

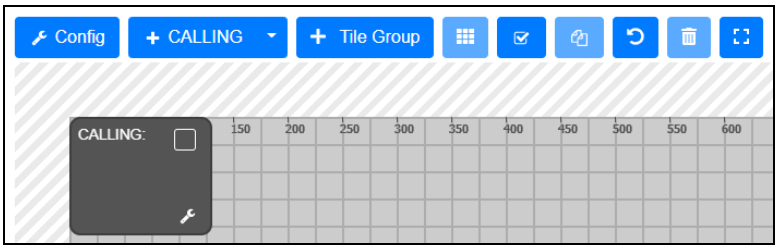

Figure 142: Deleted tile

Alternatively, drag the tiles to the trash can on the right side of the canvas:

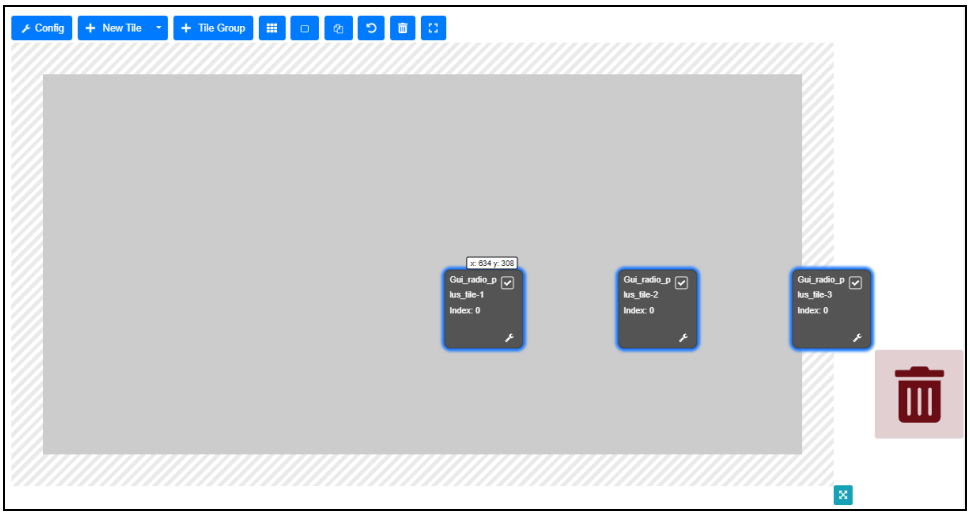

Figure 143: Drag tiles to the trash

2.13 RTP Endpoints

Real-Time Transport Protocol (RTP) provides end-to-end network transport functions suitable for applications transmitting real-time data (e.g., audio, video, or simulation data) over multicast or unicast network services. RTP endpoints send audio over the network to the Voisus server, which then retransmits the audio on designated net(s). This technology extends Voisus's interoperability using an open audio standard.

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To add an RTP endpoint, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **RTP Endpoints**.

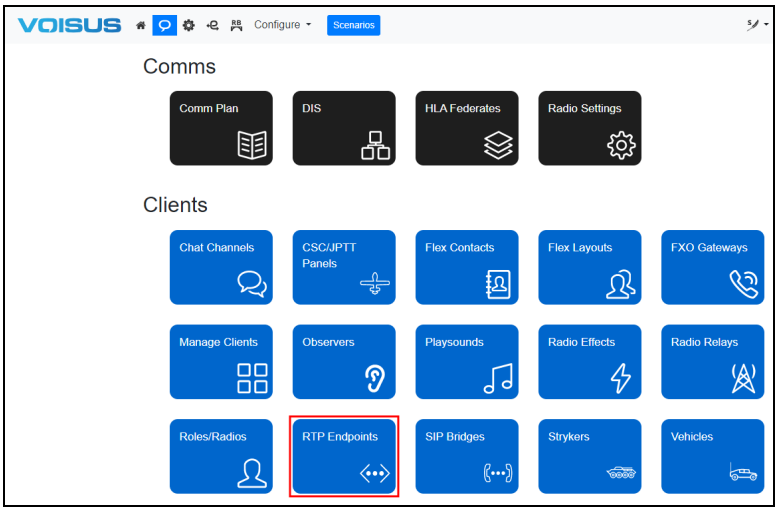

Figure 144: RTP Endpoints navigation

2. On **RTP Endpoints**, select **Add RTP Endpoint** ( ).
3. To view all of the endpoint's settings, select Show Options.
4. In **Name**, enter a unique name for the endpoint.
5. In **IP Address**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the IPv4 address of an endpoint on the network. In a typical configuration, this serves as the destination for outgoing streams and the source for incoming streams.
6. *(Optional)* In **Remote Source IP Address**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the IPv4 address of an alternative RTP source. If this setting is blank, Voisus receives a stream from the endpoint specified in **IP Address**.
7. To enable the Real-Time Streaming Protocol (RTSP) server to use RTSP, turn **Use RTSP?** ON.
8. In **Local Port**, enter the port number that the endpoint will use to listen for incoming streams.
9. In **Remote Port**, enter the remote endpoint's designated RTP port number.

   To set the Voisus server to “receive only” mode, enter **0**. This value disables the endpoint from transmitting.

***Note**: Voisus automatically sets the Real-Time Transport Control Protocol (RTCP) port one value higher than the RTP port.*

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10. Under **Payload Settings**, select **Packet Length**, and choose the packet length in milliseconds (ms).

11. **Payload Type** determines the sample rate and encoding process for outgoing audio. Choose one of the following supported payloads:

Payload Type	Description
8k Mu-law	Produces the lowest-quality audio and is the default setting for standard AM and FM communications, including the ED-137 radio.
16k PCM16	The default encoding for Voisus.
48k PCM16	Produces high-quality communications but increases network traffic, which may cause delays.
48k Float32	

Table 4: RTP audio payload types

12. Under **Gains**, in **Input Gain**, enter a gain multiplier that Voisus will apply to received audio. A larger value causes network operators to receive audio at a higher volume. Acceptable values range from 0–100. The default value of 1 applies no gain, and a value of 0 silences the audio.

13. In **Output Gain**, enter a gain multiplier for Voisus to apply to transmitted audio. A larger value causes radio operators to receive transmissions from network operators at a higher volume. Acceptable values range from 0–100. The default value of 1 applies no gain, and a value of 0 silences the audio.

14. Under **Bridge Net(s)**, select **Net or Net Group**, and choose the net or netgroup you will use to communicate with virtual radios on the network. These nets are set in the Comm Plan. For more information about Comm Plan nets, go to Section 2.2, "Comm Plan" on page 4 and Section 2.2.2, "Add nets to a netgroup" on page 8.

15. *(Optional)* Choose a **DIS Exercise** to assign an exercise to an endpoint. To learn more about DIS exercises, go to Section 2.3.2, "DIS Exercises" on page 15.

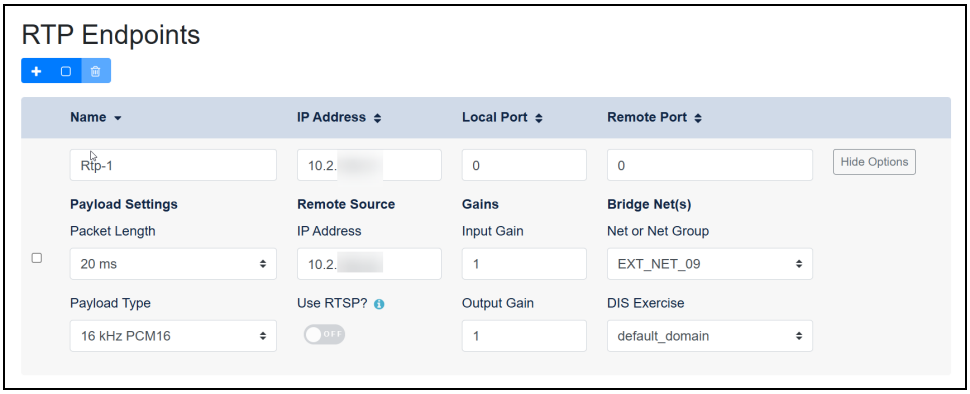

Figure 145: RTP Endpoints

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2.14 Vehicles

Create vehicles for use with the Flex Client, Voisus Virtual Battlespace (VBS) Add-in and other games for training. Use this page to assign radios, a role, and a DIS exercise to the vehicle. Users in the game vehicle collectively access and control these radios.

To create a vehicle, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Vehicles**.

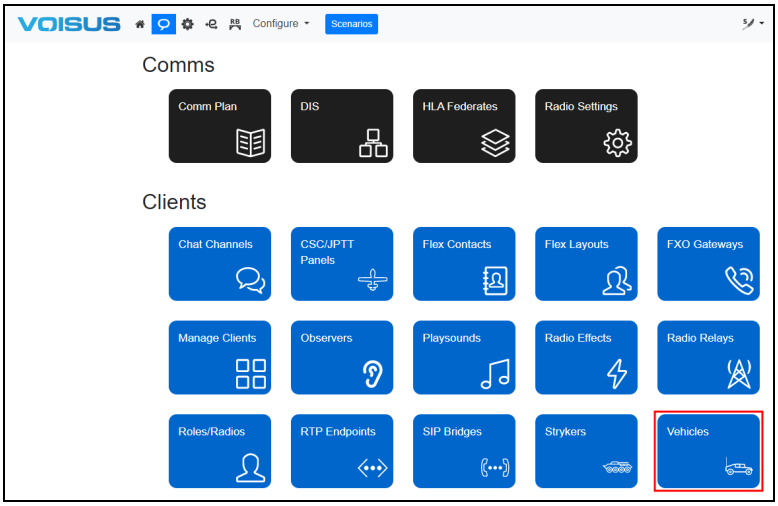

Figure 146: Vehicles navigation

2. On **Vehicles**, in **Add quantity**, enter the number of vehicles.
3. In **of role**, choose a role, and then select + Add.
4. Under **Vehicle**, choose a vehicle, and enter a new name.
5. Under **Role**, select the list, and choose a role.
6. Under **DIS Exercise**, select the list, and choose an exercise.

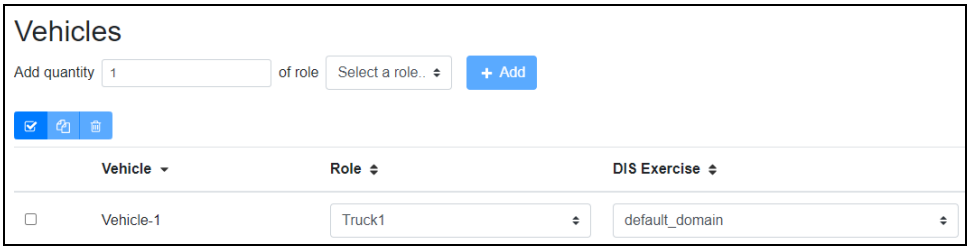

Figure 147: Vehicles

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2.15 Clouds

Voisus groups servers into clouds via matching **Cloud IDs** on **Manage** > **Network Configuration**. Servers in a cloud share configurations (e.g., scenarios, hardware names, client names). To set a server's **Cloud ID**, go to "Connect software clients to the cloud" in the *Voisus Quick Start Guide*.

This section discusses how to:

- Assign a client to a server
- Add backup servers to a cloud
- Monitor cloud health

2.15.1 Assign a client to a server

Voisus includes a capability called cloud load balancing, which distributes clients among servers in a cloud. For example, if 10 clients connect to Server1 using 10.2.100.57, Voisus may redirect five of those clients to Server2. As a result, if a client disconnects from its designated server, it can automatically connect to another server in the cloud, minimizing disruptions. Use this page to customize the load balance by assigning certain client names to specific servers.

To assign a client to a server, follow these steps:

1. From the top right, go to **Manage** ( ) > **Cloud Load Balancer**.

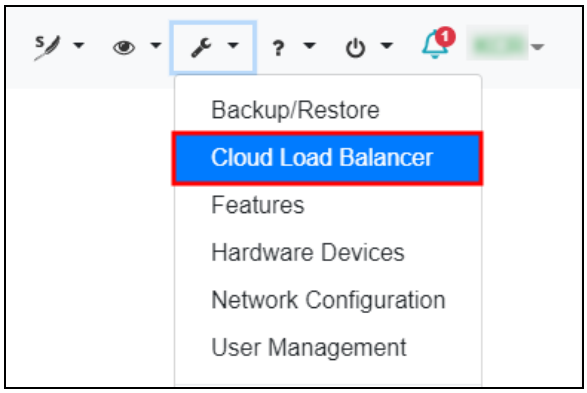

Figure 148: Cloud Load Balancer navigation

2. On **Cloud Load Balancer**, in **Client Name**, enter the name of an existing client on the network (e.g., **AI-DT-7391-A**), or choose from the drop-down list.

   To add or delete software clients, go to Section 2.5, "Manage Clients" on page 25. To add or delete hardware clients, go to Section 5.2, "Map clients to hardware devices" on page 241.

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3. In **Server**, enter the IP address (e.g., **10.2.100.57**) or hostname of a Voisus server in the cloud (e.g., **vs-0007b8dc5199**).

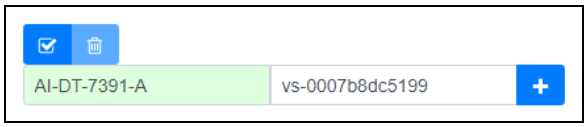

Figure 149: Enter a Client Name and Server

4. To map the client or device to the server, select **Add** (+). The page displays a new mapping between the server and client:

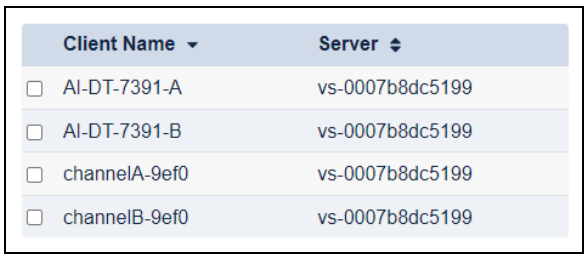

Figure 150: List of client/server mappings

***Note**: To prevent Voisus from reassigning software clients to other server(s), turn off **Software Client – Load Balancing** on **Monitor** > **Features**.*

5. *(Optional)* To map multiple clients, repeat Steps 2–4.

6. *(Optional)* To delete a mapping, choose a client, and select **Delete Selected** (🗑).

7. *(Optional)* If the client was previously mapped to a different server, restart the scenario for changes to take effect.

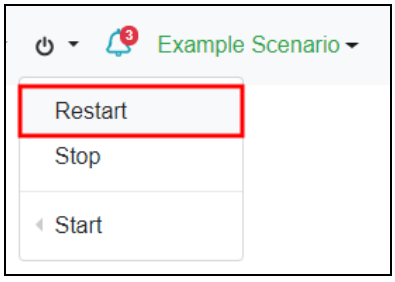

Figure 151: Restart scenario

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2.15.2 Add backup servers to a cloud

Hot Spare Failover enables one or more backup servers to resume operations if the main server fails. In this configuration, Voisus routes all traffic to a primary Voisus server. If this server disconnects from the network, Voisus sends all traffic to the secondary server, reducing or eliminating downtime.

Voisus determines a server's priority by its length of time in the cloud. In other words, the server that is online and in the cloud the longest is the primary. When a server reboots, its cloud time resets. For example, let's say there are three servers in a cloud. If Server1 (i.e., the primary) reboots, it moves to the end of the queue, and Server2 becomes the primary.

To add one or more backup servers to a cloud, follow these steps:

1. From the top right, go to **Manage** ( ) > **Features**.

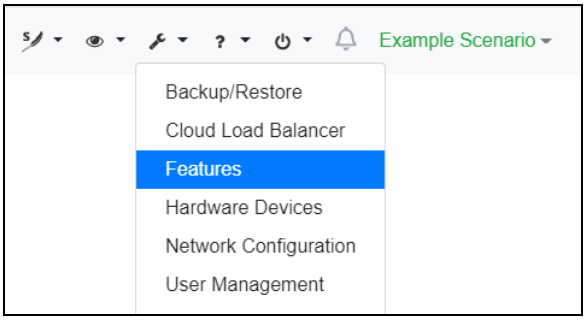

Figure 152: Features navigation

2. On **System Features**, turn **Hot Spare Failover** ON.

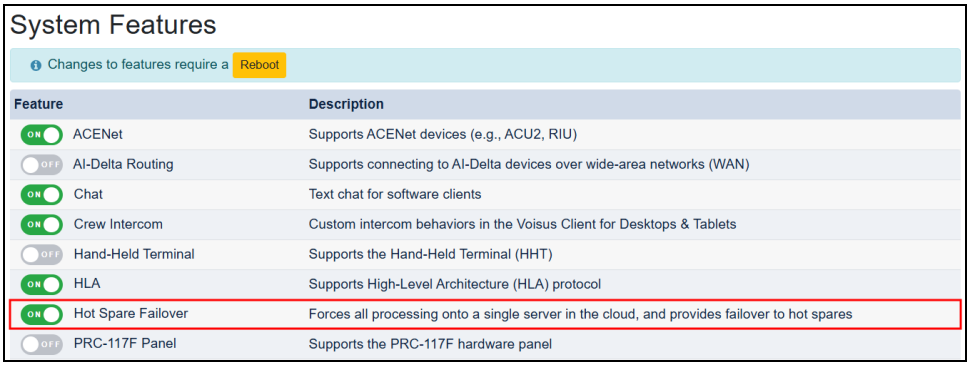

Figure 153: Turn on Hot Spare Failover

3. To activate changes, select Reboot.

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4. From the top right, go to **Manage** ( ) > **Network Configuration**.

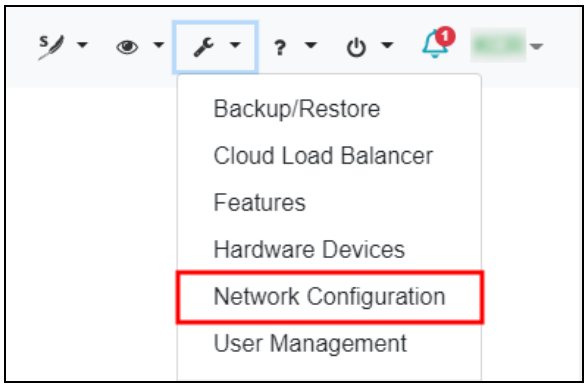

Figure 154: Network Configuration navigation

5. Go to **Settings**.
6. In **Cloud ID**, enter the primary server's cloud ID. Accepted values range from 2–16 characters and may include lowercase letters, numbers, and underscores.

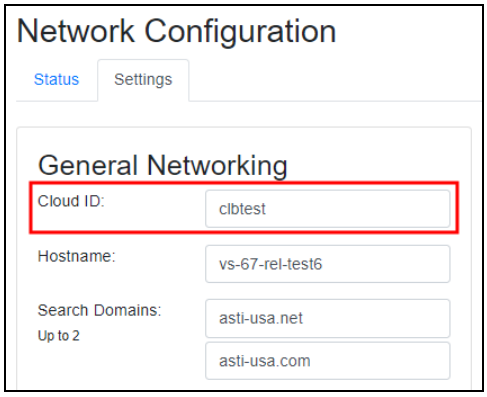

Figure 155: Matching Cloud ID to the primary server

You may connect an unlimited number of servers to the cloud.

7. Under **Pending Changes**, select Save Changes.
8. To add additional backups to the cloud, repeat Steps 1–7.

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2.15.3 Monitor cloud health

Cloud Monitor displays all of the Voisus servers connected to your current server's cloud. If you experience an issue (e.g., a disconnected server), use this page to check the health status of servers that aren't responding and troubleshoot accordingly.

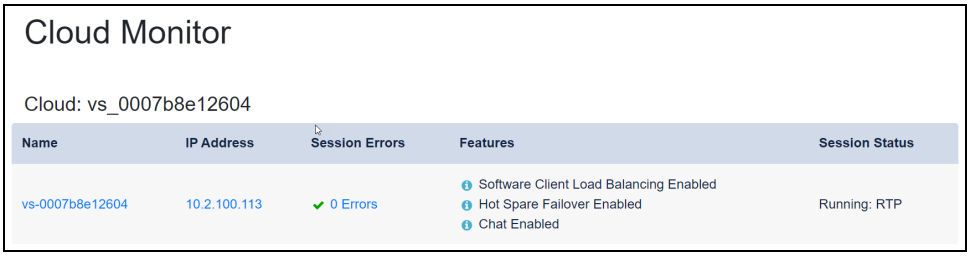

Figure 156: Cloud Monitor page

To view all servers connected to the cloud, go to **Monitor** ( ) > **Cloud**.

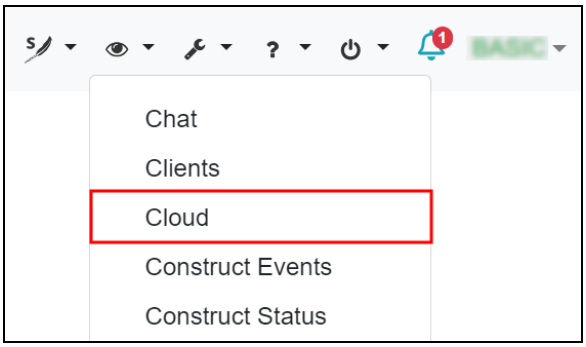

Figure 157: Cloud navigation

Cloud Monitor shows all available Voisus servers connected to the cloud:

- **Name:** the server's hostname. To edit a server's **Hostname**, go to "Network Configuration" in the *Voisus Quick Start Guide*.
- **IP Address:** the IP address of a Voisus server connected to this cloud.
- **Synchronization Status:** Voisus automatically synchronizes this server with other servers in the same cloud, sharing information about scenarios and connected clients. A ✔ means the server is synchronizing or has synchronized to the cloud, whereas an ✖ means the server failed to synchronize. Contact support@asti-usa.com if you experience this issue.

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- **Session Errors:** shows if other servers on the cloud are experiencing problems (e.g., the scenario failed to load, the server's license expired). To learn about the error(s), select the link to view the server's error page.

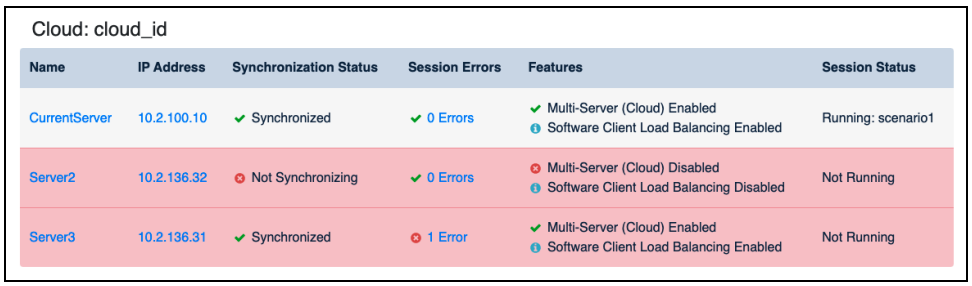

Figure 158: Cloud Monitor errors

- **Features:** shows whether the following features are enabled on this server:
  - **Multi-Server (Cloud)** allows servers in the same cloud to share information.
  - **Software Client Load Balancing** allows you to assign a hardware device or software client to a cloud.
  - **Hot Spare Failure** enables one or more backup servers to resume operations if the main server fails. To learn more about **Hot Spare Failover**, go to Section 2.15.2, "Add backup servers to a cloud" on page 96.
  - A warning indicates when the system's log storage has reached 60 percent or more (e.g., "⚠ System log partition is 60% full."). To view troubleshooting suggestions and identify the largest log files, go to **Notifications** (🔔) in the top-right navigation bar:

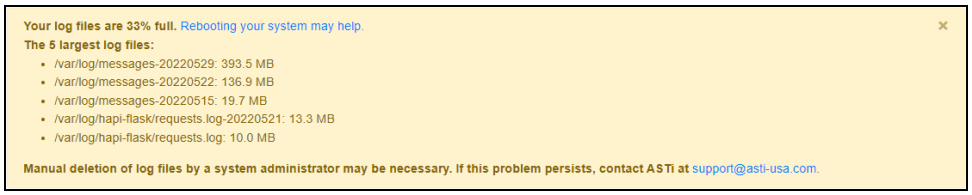

Figure 159: Log storage warning message

- **Session Status:** shows the server's running scenario.

2.16 Monitor Radios

The Voisus web interface includes a built-in radio monitor that displays all of the radios the Voisus server can detect on the network. **Monitor Radios** lets you filter or search by radio type, the radio's alias and DIS identifier string, the source server's IP address or alias, and more. It also includes helpful debugging information that you can use for troubleshooting purposes.

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This section discusses how to:

- View a radio's status and activity
- Add a radio alias
- Add an alias for an IP address

2.16.1 View a radio's status and activity

To view a radio's status and activity, follow these steps:

1. From the top right, go to **Monitor** ( ) > **Radios**.

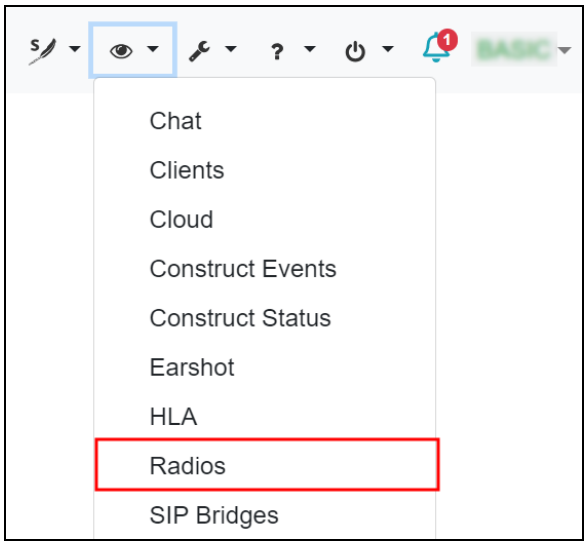

Figure 160: Monitor Radios navigation

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2. On **Monitor Radios**, the **Radios** tab shows all of the radios present to the Voisus server's network. To filter by radio group, at the top of the page, choose one of the following:

   - Intercom (**ICOM**)
   - Low frequency (**LF**)
   - Medium frequency (**MF**)
   - High frequency (**HF**)
   - Very high frequency (**VHF**)
   - Ultra high frequency (**UHF**)
   - Super high frequency (**SHF**)
   - Extremely high frequency (**EHF**)

   (*N*) shows the number of radios in a group:

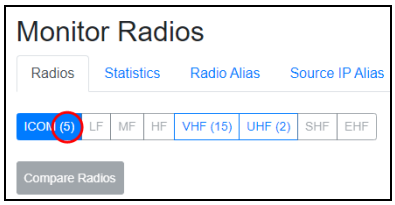

Figure 161: Filter by radio type

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Monitor Radios displays the following information for each radio:

- ***Radio**:* shows the radio's DIS identifier string. To assign an alias to the radio, go to Section 2.16.2, "Add a radio alias" on the facing page.
- ***Source IP**:* shows the IP address of the server or entity from which the radio originates. To assign an alias to the server, go to Section 2.16.3, "Add an alias for an IP address" on page 105.
- ***Exercise**:* shows the radio's DIS exercise. To assign a radio to a different exercise for local radios, go to Section 2.5.2, "Add a software client" on page 28.
- ***Frequency**:* shows the radio's frequency. To change a radio's frequency, go to Section 2.2, "Comm Plan" on page 4.
- ***Modulation**:* shows the radio's waveform (e.g., AM, FM) or spread-spectrum type.
- ***Net Id**:* shows the radio's frequency-hopping network identity.
- ***Status**:* shows the radio's status. Actively transmitting radios are highlighted green and show “Tx.” Radios that are idle display “Stdby,” and radios that are no longer present display “Timeout.”

Figure 162, "Monitor Radios" below shows radios that are transmitting, idle, and timed out:

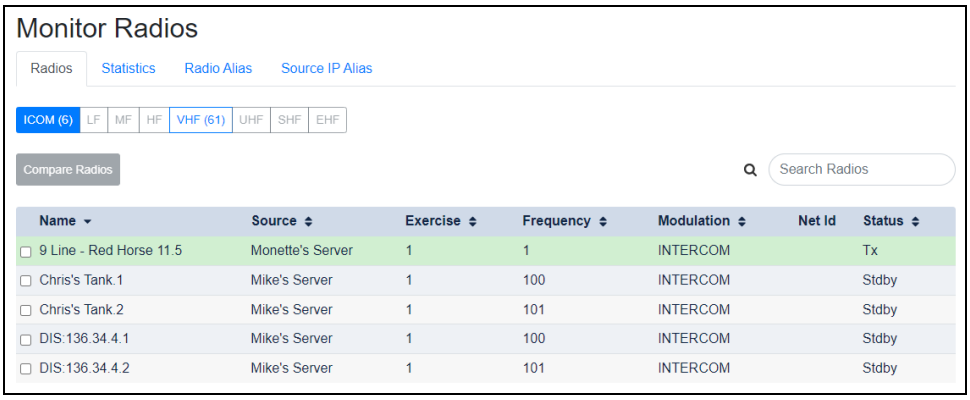

Figure 162: Monitor Radios

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3. To quickly find or filter radios, enter any of the above parameters in **Search**.

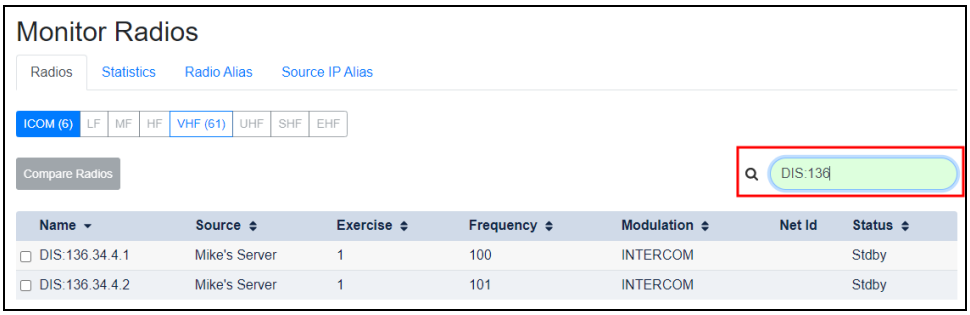

Figure 163: Search for radios

2.16.2 Add a radio alias

In **Monitor Radios**, create aliases (i.e., nicknames) for radios to organize and keep track of your assets. When Voisus creates an alias, the radio's Distributed Interactive Simulation (DIS) identifier string on the **Radios** tab must match the **Site**, **App**, and **Entity** values on the **Radio Alias** tab.

To add an alias for a radio, follow these steps:

1. On **Radios**, in the **Radio** column, choose a radio, and write down the first three numbers of its DIS identifier string (e.g., 112, 112, 1).

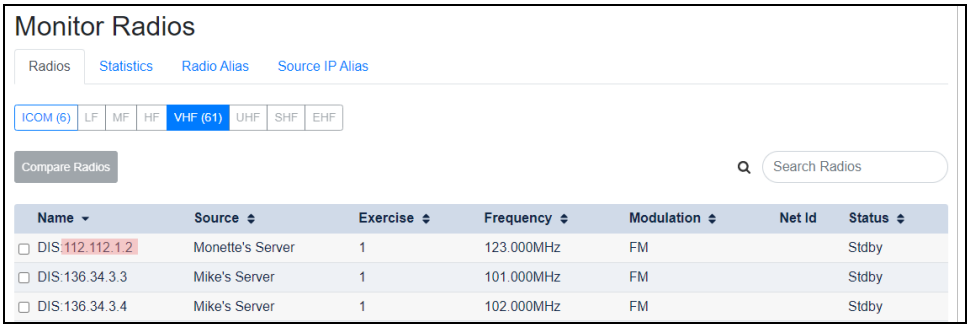

Figure 164: DIS identifier string

2. Go to **Radio Alias**.
3. Select **Add** (+).
4. When **Add Sim Alias** opens, in **Site**, enter the radio's DIS site ID (e.g., 112). Values range from 1–65536.
5. In **App**, enter the radio's DIS application ID (e.g., 112). Values range from 1–65,536.
6. In **Entity**, enter the radio's DIS entity ID (e.g., 1). Values range from 0–65535. To create an alias that only includes **Site** and **App**, enter **0** in **Entity**.

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7. In **Alias**, enter an alternate name for the application server or entity (e.g., **John's Truck**).

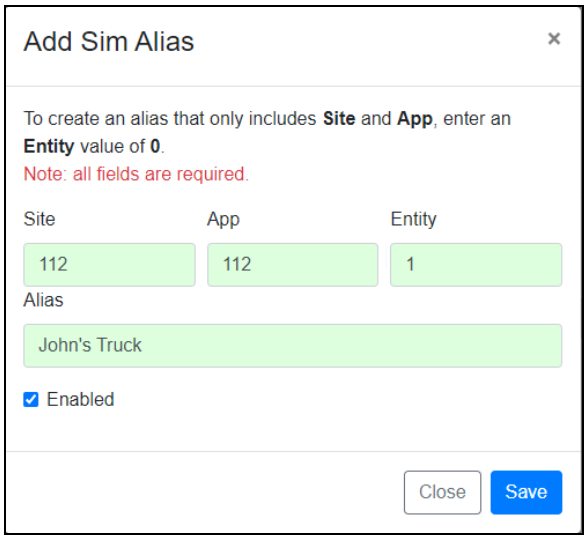

Figure 165: Add Sim Alias

8. To turn on the alias, select **Enabled**.
9. Select Save.
10. A new alias appears among the listed options:

Figure 166: New radio alias

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11. Go to the **Radios** tab, and verify that the alias appears in the **Radio** column.

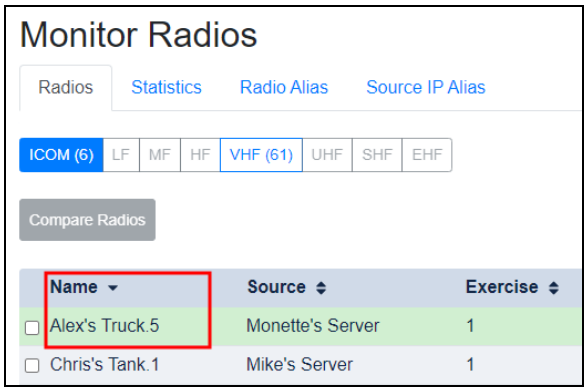

Figure 167: Confirm the radio alias

2.16.3 Add an alias for an IP address

In **Monitor Radios**, create aliases (i.e., nicknames) for IP addresses to organize and track your network assets. To add an alias for an IP address, follow these steps:

1. On **Radios**, under **Source IP**, choose a server or entity, and write down its IP address (e.g., 10.2.136.34).
2. Go to **Source IP Alias**.
3. Select **Add** (+).
4. When **Add Source Alias** opens, in **IP Address**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the IP address you noted in Step 1.
5. In **IP Alias**, enter a unique name for the IP address (e.g., **Mike's Server**).
6. To turn on the alias, select **Enabled**.

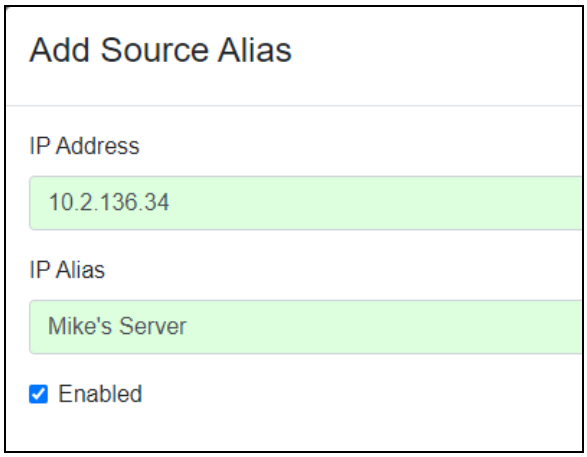

Figure 168: Add Source Alias

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7. The new alias appears among the listed options:

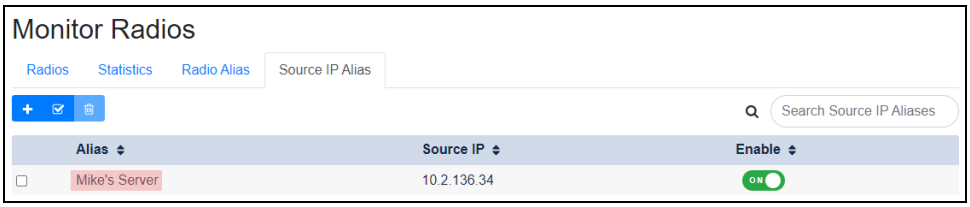

Figure 169: New Source IP alias

8. Go to the **Radios** tab, and confirm the alias appears under **Source IP**:

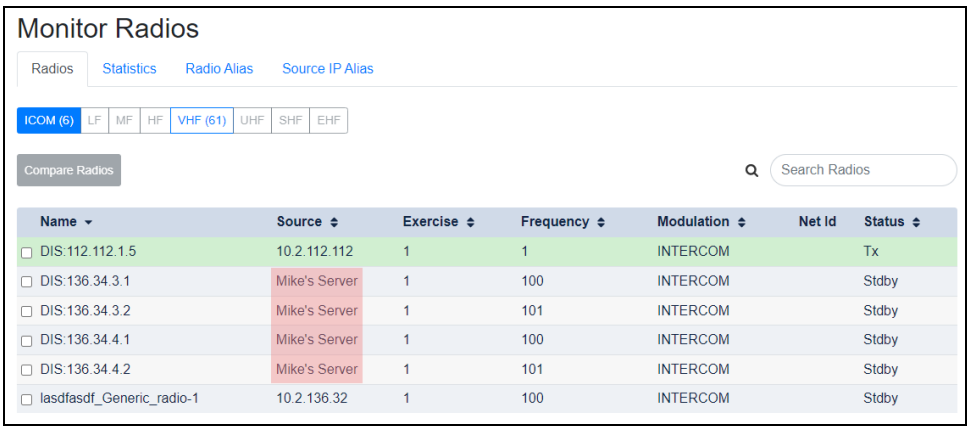

Figure 170: Confirm Source IP alias

2.17 Transmission Logs

To enable transmission logging, follow these steps:

1. From the top right, go to **Monitor** ( ) > **Transmission Logs**.

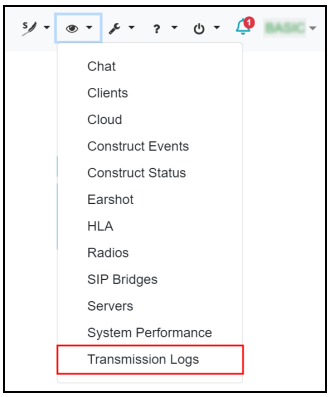

Figure 171: Transmission Logs navigation

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2. On **Transmission Logs**, under **Settings**, enable **Logging**. The page reads, "Logging is currently **Enabled**."

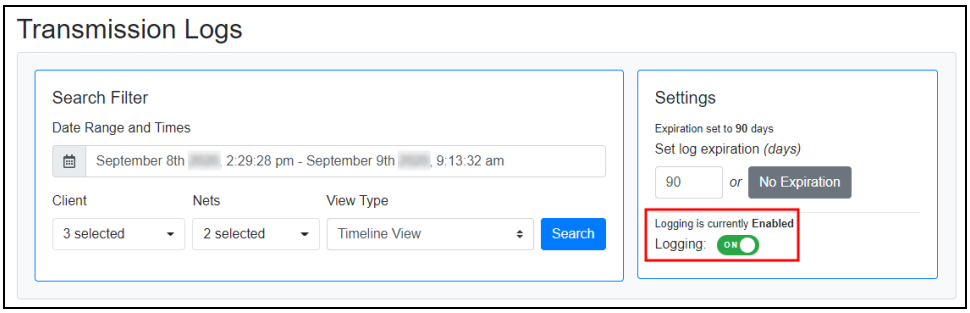

Figure 172: Logging and expiration settings

***Important**: Voisus only logs transmissions that occur when logging is enabled. **Transmission Logs** does not display transmissions that occurred while logging was disabled.*

To view transmission logs for hardware and software clients, follow these steps:

1. Under **Search Filter**, select **Date Range and Times**, and choose a date and time from which to start viewing activity.
2. Select **Client**, and choose one or more clients to view their transmissions. Only clients with logged activity display.
3. Select **Nets**, and choose one or more net(s) from the **Comm Plan** to view their transmissions.
4. By default, **View Type** is set to **Transmission View**, which displays transmission start and stop times together on a single line. To split start and stop times onto separate lines, select **Timeline View**.

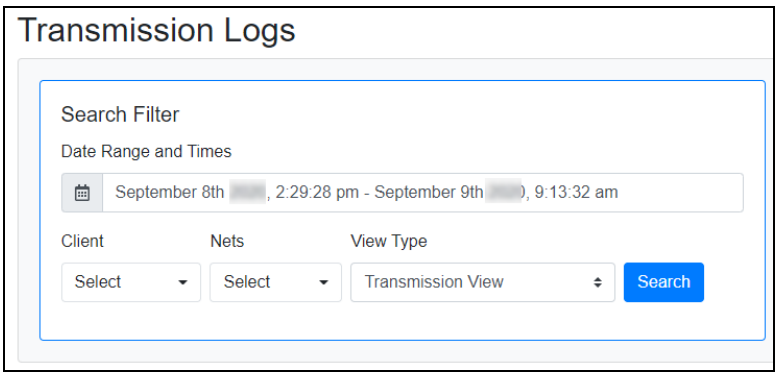

Figure 173: Search Filter settings

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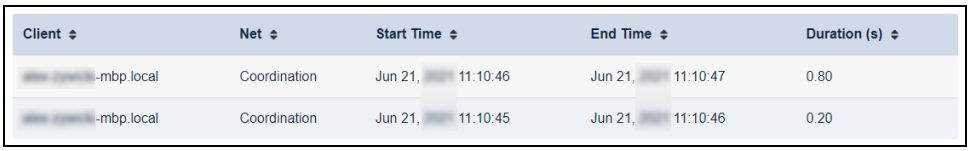
5. Select Search. **Transmission View** results display the **Client**, **Net**, **Start Time**, **End Time**, and **Duration** of each transmission in seconds.



Client	Net	Start Time	End Time	Duration (s)
[redacted]-mbp.local	Coordination	Jun 21, [redacted] 11:10:46	Jun 21, [redacted] 11:10:47	0.80
[redacted]-mbp.local	Coordination	Jun 21, [redacted] 11:10:45	Jun 21, [redacted] 11:10:46	0.20

Figure 174: Transmission View results

Timeline View shows the **Client**, **Net**, **Event** type (i.e., whether the event is the beginning or end of the transmission), **Time** and date, and **Duration** of the transmission.

Client	Net	Event	Time	Duration (s)
[redacted]mbp.local	Coordination	Begin	Jun 21, [redacted] 11:10:45	0.20
[redacted]mbp.local	Coordination	End	Jun 21, [redacted] 11:10:46	0.20
[redacted]mbp.local	Coordination	Begin	Jun 21, [redacted] 11:10:46	0.80
[redacted]mbp.local	Coordination	End	Jun 21, [redacted] 11:10:47	0.80

Figure 175: Timeline View results

6. To download the transmission log as a comma-separated values (CSV) file, select Download.

7. Under **Settings**, enter the number of days the Voisus server will store transmission logs. For example, if the current date is June 1, and the time range is set to 90 days, the Voisus server discards transmissions that occurred before March 3.

   To store logs indefinitely, select **No Expiration**.

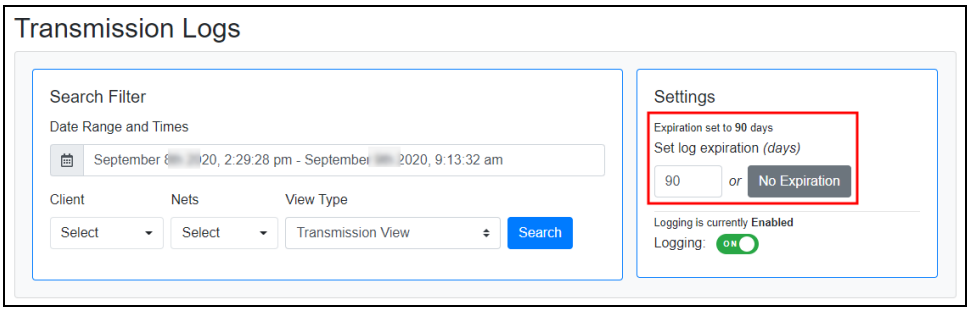


Figure 176: Log expiration

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2.18 ASTi Server Diagnostics Report

To generate an **ASTi Server Diagnostics Report**, follow these steps:

1. From the top right navigation bar, go to **Help** (?) > **ASTi Server Diagnostics Report**.

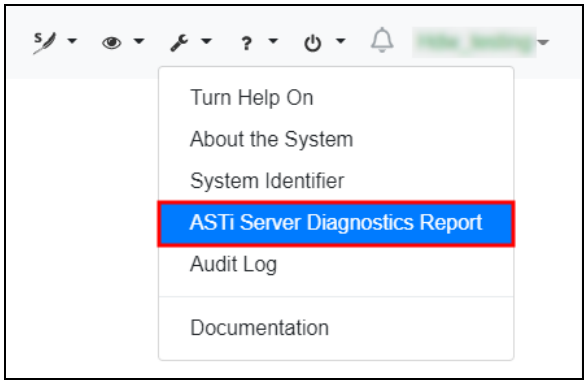

Figure 177: ASTi Server Diagnostics Report navigation

2. On **ASTi Server Diagnostics Report**, select **Create Report** (+), and a new item appears in the table:

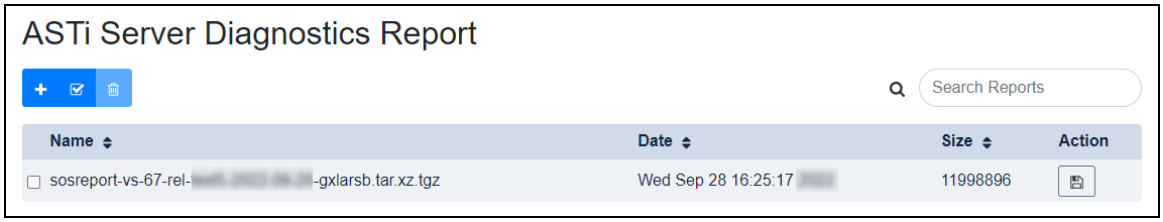

Figure 178: Generate an ASTi Server Diagnostics Report

3. To download the diagnostic report, under **Action**, select **Download Report** ( ). Once the TAR Archive (.tgz) file saves to your local system, email this file to support@asti-usa.com.

4. *(Optional)* To delete a diagnostic report, choose one or more report(s), and select **Delete Report** ( ). In the confirmation message, select Delete, and the report disappears from the table.

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3.0 Software clients

Voisus software clients leverage existing computers and network infrastructure, eliminating the need for dedicated audio distribution and operator panel hardware. Voisus software offers a rich feature set:

- Simulated radios and intercoms
- Customized radio skins
- IRC chat

***Note**: For more information about IRC chat, go to Section 3.3.3.2, "Text chat" on page 185.*

- Voice-over-IP (VoIP) calling
- Interaction with live radio over IP
- Radio patching
- Standard telephone (PSTN) operation

Voisus clients use the following ports:

Client	Feature	Required	Protocol	Port
All Voisus clients	Audio	✔	UDP	31929
All Voisus clients	Control (i.e., data)	✔	TCP	31929
All Voisus clients	SAPI	✔	TCP	51111
All Voisus clients	HTTPS API	✔	TCP	443
Voisus Client (desktop)	Chat	✖	TCP	6697
Voisus Client (desktop)	Radio Monitor (i.e., QuickTune)	✖	TCP	8886

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The following diagram demonstrates how Voisus clients send data to and from data control, Radio Monitor, and audio ports on the Voisus server:

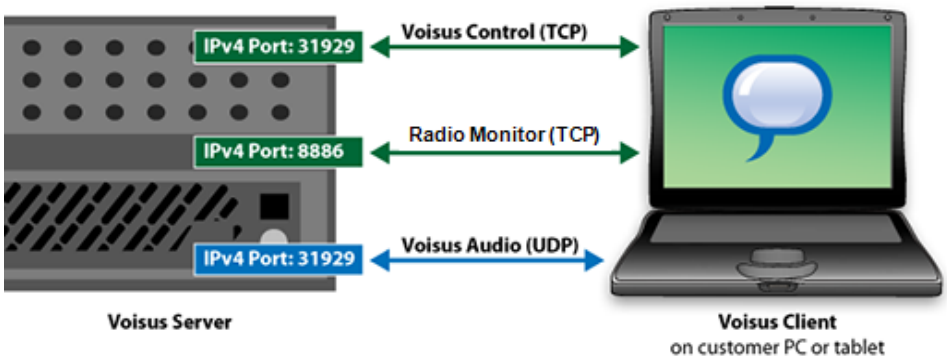

Figure 179: Voisus server/Voisus client communication

This chapter discusses the following topics:

- Software client initial setup
- Voisus Client
- Voisus Client for Tablets & Desktops
- ASTi TOCNET CAU®

3.1 Software client initial setup

This section explains how to download Voisus software clients and set the default audio device on a Windows or Linux operating system. Additionally, this section identifies USB devices compatible with Voisus software clients and explores the setting and setup instructions for the Voisus Client, Voisus Client for Tablets & Desktops, and ASTi TOCNET CAU client.

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3.1.1 Download a Voisus software client or application

To download a software client or application from the Voisus web interface, follow these steps:

1. From the top right, go to **Manage** ( ) > **Downloads**.

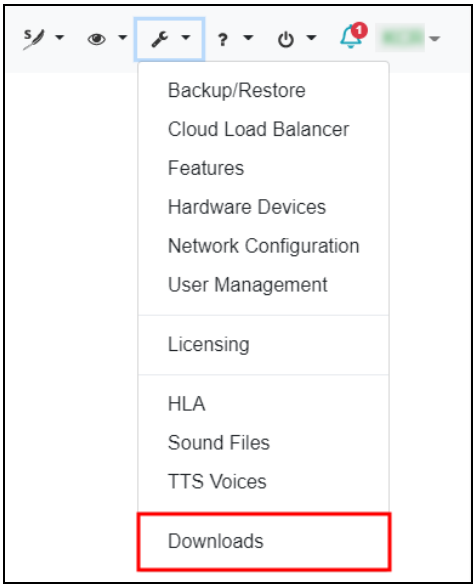

Figure 180: Downloads navigation

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2. Choose a client, and follow the on-screen installation instructions:

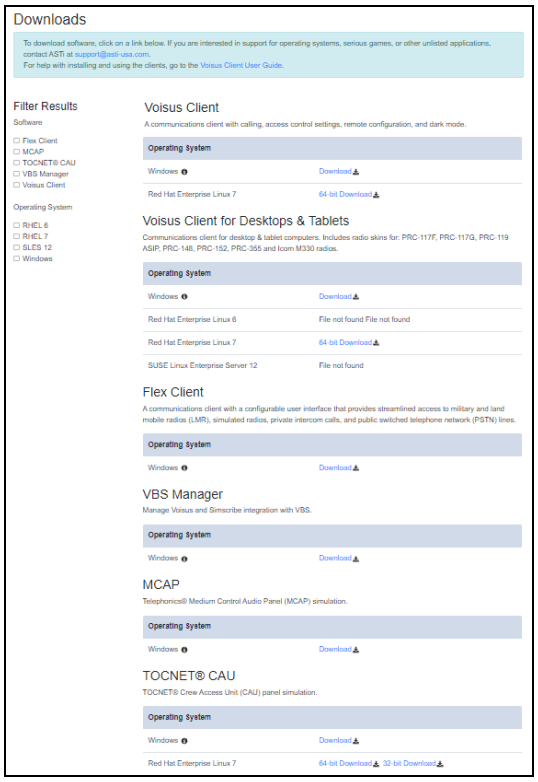

Figure 181: Downloads

For installation instructions, go to the following:

- *Windows installation:* follow the on-screen installation wizard for installation instructions.
- *Linux installation:* follow the on-screen installation wizard for installation instructions. To open the Linux client, go to **Applications** > **Internet**.

3.1.2 Set the computer or tablet's default audio device

On the computer or tablet running the Voisus client, you must set the default audio device that Voisus will use. Device names will vary depending on the operating system. Plantronics devices are listed as **DA40 Adapter** and the Radius device as **ASTi Radius**.

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3.1.2.1 Compatible USB devices

Voisus clients are compatible with the following USB devices:

ASTi Part Number	Manufacturer	Stereo	Built-in PTT	Compatible Headsets
USB-RADIUS-010	ASTi	Yes	Yes	Specific Telex (go to the list below)
USB-P-DA40	Plantronics	No	No	All Plantronics H-Series (go to the note below)
USB-P-SHS2355	Plantronics	No	Yes	All Plantronics H-Series (go to the note below)

Table 5: USB adapters

***Note**: Plantronics sales literature states that Plantronics USB adapters are compatible with all Plantronics H-Series headsets. ASTi has tested and validated Voisus clients using the Plantronics headsets listed above.*

All of the listed USB adapters provide built-in sidetone. Sidetone is a critical feature that provides the client operator with an audible indication that they are actively transmitting.

Voisus clients are compatible with the following headsets:

ASTi Part Number	Manufacturer	Stereo/Mono	Ear Cups
HS-TX-PH-44R5	Telex	Stereo	Dual, light weight
HS-TX-HR-2R5	Telex	Stereo	Dual, noise isolation, medium weight
HS-P-HW251	Plantronics	Mono	Single, light weight
HS-P-HW261	Plantronics	Mono	Dual, light weight
HS-P-SHR2083-01	Plantronics	Mono	Dual, noise isolation, medium weight

Table 6: Headsets

***Note**: ASTi recommends stereo headsets for use with the Voisus VBS Add-in.*

For additional headset support, contact ASTi at support@asti-usa.com.

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ASTi offers one USB adapter and headset combination:

ASTi Part Number	Manufacturer	Stereo	Sidetone	Ear Cups
HS-LG-G35	Logitech	Stereo	Yes	Dual, medium weight

Table 7: USB adapter & headset combined

***Note**: Stereo headsets are recommended for use with the Voisus VBS Add-in.*

Voisus clients work with a variety of USB speakerphones. For questions regarding specific makes and models, contact ASTi at support@asti-usa.com.

ASTi Part Number	Manufacturer	Description
USB-P-P420	Plantronics	Microphone mute and volume controls, active echo cancellation, auxiliary headphone jack

Table 8: USB speakerphone

Flex Clients are also compatible with the Delcom USB HID Programmable Quad Button Switch:

ASTi Part Number	Product	Description
HS-LG-G35	USB HID Programmable Quad Button Switch	Four press-to-talk (PTT) buttons, each with a different color

Table 9: USB HID Programmable Quad Button Switch

3.1.2.2 Set Windows default audio device

To set the default audio device in Windows 7 and Windows 10, follow these steps:

1. From the taskbar, open Control Panel.
2. Go to **Hardware and Sound** > **Sound**.
3. On **Playback** and **Recording**, choose a default device, and select **Set Default**.

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4. Open the default device, and go to **Levels**. Ensure the device is not muted.

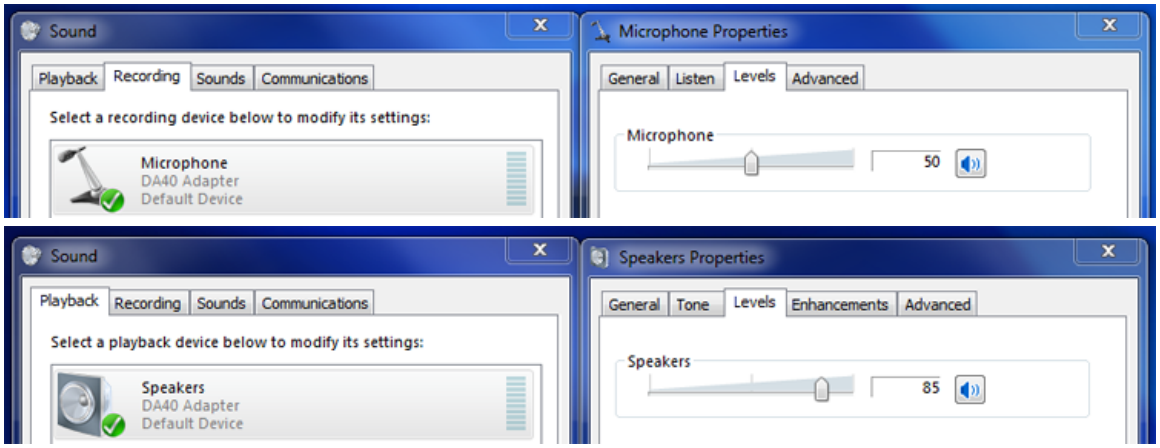

Figure 182: Audio Playback & Recording settings

To set the default audio device in Windows XP, follow these steps:

1. Open Control Panel > **Sounds and Audio Devices**.
2. Choose an audio device for default **Sound Playback** and **Sound Recording**.

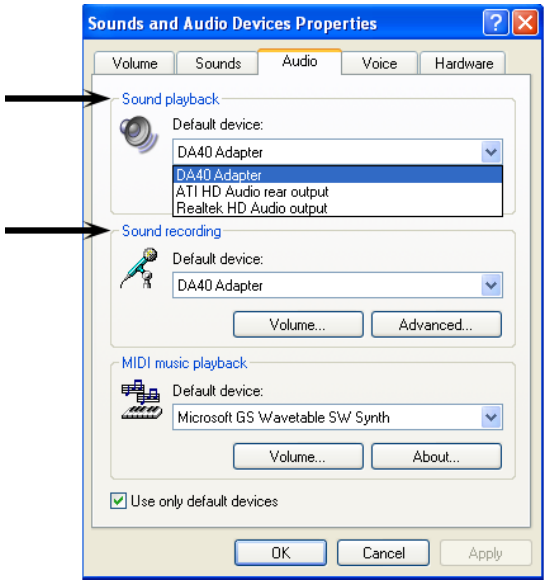

Figure 183: Sounds and Audio Devices Properties

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3.1.2.3 Set Linux default audio device

To set the default audio device in Linux, follow these steps:

1. From the taskbar, go to **System** > **Administration** > **Sound Card Detection**.
2. Under **Default audio devices**, select **Default audio card**, and choose a card.

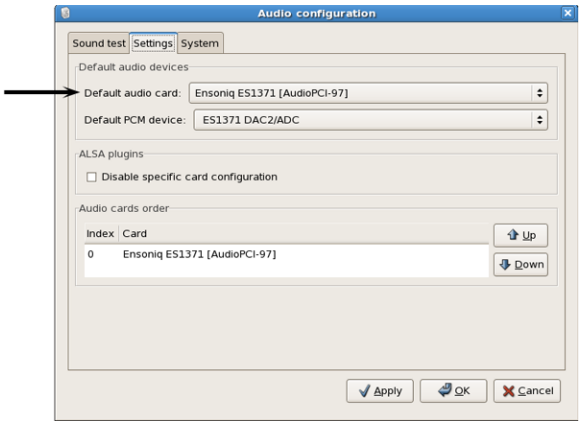

Figure 184: Audio configuration

3.2 Voisus Client

The Voisus Client is compatible with Windows operating systems on desktop computers. The interface provides the run-time communications control settings (i.e., receive and transmit access) for each radio in the client's assigned role.

The Voisus Client contains the following features:

- *Radios:* tunes radios to Comm Plan nets; up to 64 radios are available.
- *RX/TX:* relays each radio's Rx/Tx status.
- *Calling:* offers a private intercom communications between two or more clients.
- *QuickTune:* shows a real-time list of active radios on the network that you can tune to and communicate with instantly.
- *Volume:* controls the client's volume level.
- *Jammers:* simulates radio jammers that interfere with other radios in the DIS exercise

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To collapse the Voisus Client, select **Collapse Radio Panel** (). To expand the client, select **Expand Radio Panel** ().

Figure 185: Expand or collapse radio panel

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To view a radio's specific settings, next to the radio, select **More Options** ( ):

- ***Headphones Audio*** *or* ***Speakers Audio****:* turn on one or both of these settings to play the radio's audio from the client's speaker or the operator's headphones.
- ***Balance****:* positions audio on the left, right, or center of the client operator's headset or speaker.

  *Note: **Speakers Audio** and **Speakers Audio Balance** do not display if **Settings** > **Audio & Headset** > **Speakers** is set to **<None>**.*

- ***Rx Volume****:* shows the audio's volume percentage in the client operator's headset.
- ***Crypto Mode****:* sets the client to plain text (PT) or cipher text (CT) mode.
- ***Tx Frequency****:* shows the client radio's transmit (Tx) frequency in channel numbers for INTERCOM mode and MHz for AM and FM mode; defined in the Comm Plan.
- ***Radio Effects****:* sets a radio effect for the client radio. You can add or modify radio effects on the **Radio Effects** page in the Voisus web interface. To learn more about Voisus radio effects, go to Section 2.8.4, "Add radio effects" on page 52.
- ***Background Sounds****:* sets the client radio's background sound (i.e., playsound defined on the **Playsounds** page). To add or modify background sounds, go to Section 2.7.2, "Add a playsound" on page 37.

Figure 186, "Individual radio settings" below shows an example of radio settings in the Voisus Client:

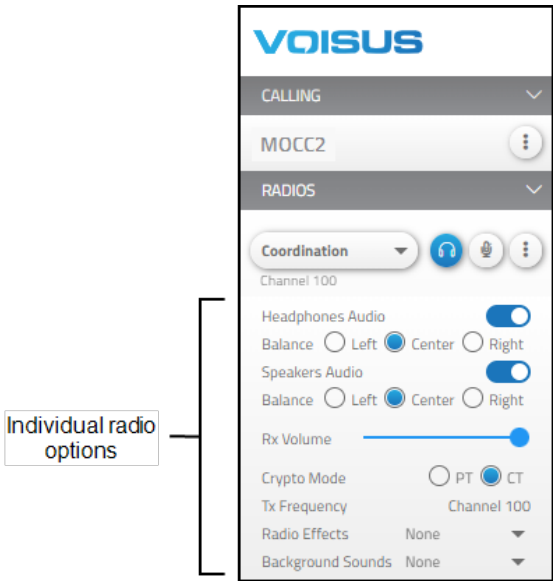

Figure 186: Individual radio settings

3.2.1 Voisus Client settings

Before you can use the Voisus Client in an exercise, you must connect the client to a Voisus server and configure other important settings, such as **Audio & Headset** and **Transmit**.

This section discusses how to:

- Connect the Voisus Client to the Voisus server or cloud
- Configure the Voisus Client's Audio & Headset options
- Set up the Voisus Client's Transmit options
- Modify the Voisus Client's local DIS options
- Tune network assets to preset channels
- Manage Voisus Client Access settings
- Configure the Voisus Client's Remote Setup options
- Set the Voisus Client's theme to dark mode
- Access Voisus Client system information and logs

3.2.1.1 Connect the Voisus Client to the Voisus server or cloud

To connect the Voisus Client to the Voisus server or cloud, follow these steps:

1. In the top right, go to **Open settings** ().

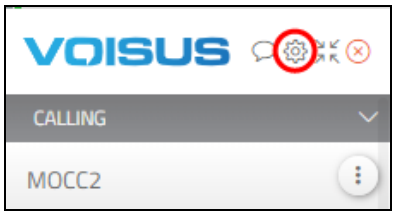

Figure 187: Open settings () navigation

2. On **Connection & Setup**, select **Client Mode**, and choose **Server**, **Cloud**, or **Solo**, depending on your configuration.

> ***Note**: **Solo** only appears as an option if the client is connected to a Solo instance. To learn more about Solo configuration, go to the Solo Quick Start Guide.*

3. If you chose **Server**, enter the Voisus server's IP address (e.g., *xxx.xxx.xxx.xxx*) in **Voisus Server Address**.

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If you chose **Cloud**, select **Voisus Cloud Name**, and choose a cloud ID. If your client cannot detect any cloud IDs, go to "Windows Firewall" in the *Voisus Quick Start Guide*.

4. In **Client Name**, enter a client name from the client mappings you created in the Voisus web interface. If your **Manage Clients** settings allow unlisted clients to connect, you can enter a new client name here. To learn more about unlisted software clients, go to Section 2.5.1, "Set default options for unlisted clients" on page 26.

5. Select Connect.

6. Select **Operator Role**, and choose a role. To add and set up roles in the Voisus web interface, go to Section 2.8, "Roles/Radios" on page 39.

   Once you choose a role, the client automatically connects, and **Status** displays ✔ **Connected**:

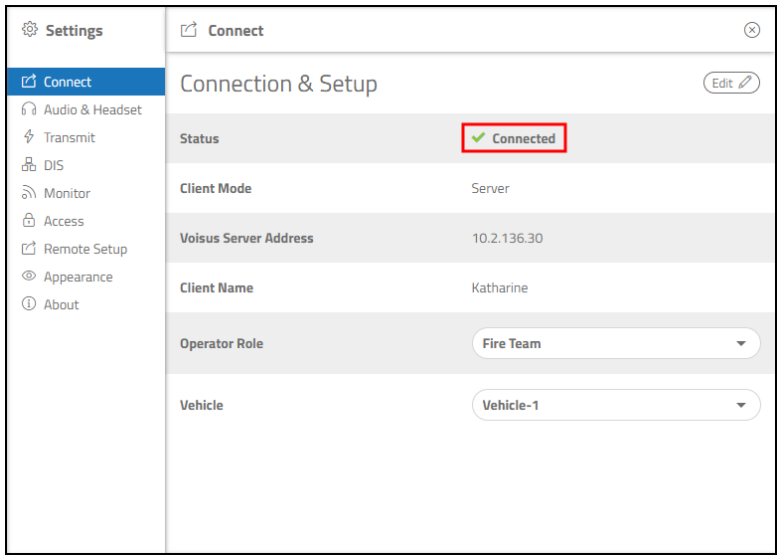

Figure 188: Client connected to server

7. *(Optional)* Select **Vehicle**, and choose a vehicle. To add and set up vehicles in the Voisus web interface, go to Section 2.14, "Vehicles" on page 93.

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3.2.1.2 Configure the Voisus Client's **Audio & Headset** options

Embedded functionality in the Voisus Client allows operators to adjust radio settings such as volume, sidetone, and voice-operated exchange (VOX) levels. To configure audio and headset settings, follow these steps:

1. From ⚙ **Settings**, go to 🎧 **Audio & Headset**.

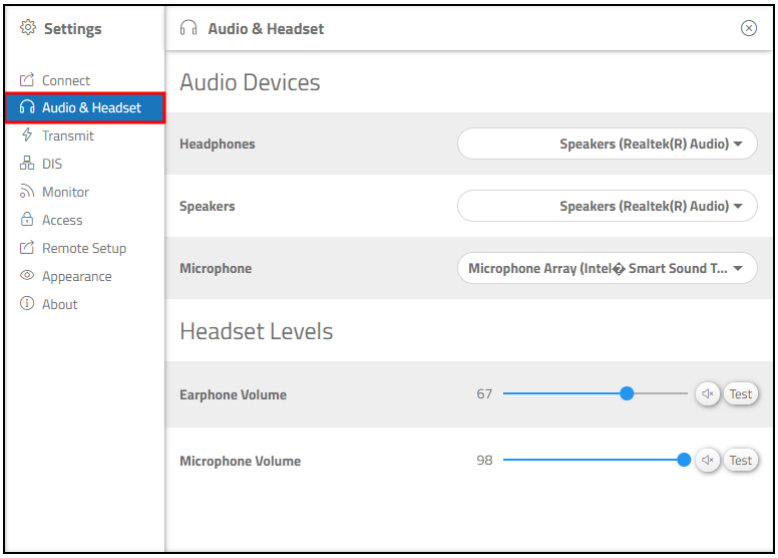

Figure 189: 🎧 Audio & Headset navigation

2. To configure the client to use a specific headset, under **Audio Devices**, select **Headphones**, and choose a device. The default selection is **<Use System Default>**.

3. To configure the client to use a specific speaker system, select **Speakers**, and choose a device. The default selection is **<None>**.

4. To configure the client to use a specific microphone, select **Microphone**, and choose a device. The default selection is **<Use System Default>**.

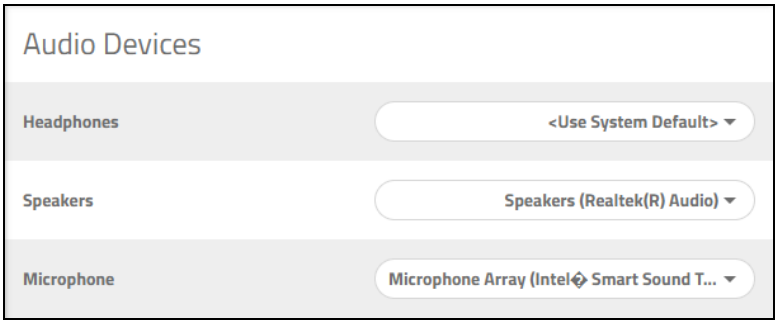

Figure 190: Audio Devices

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5. Under **Headset Levels**, adjust **Earphone Volume**, **Microphone Volume**, and **Sidetone Volume**.

   Note: ***Sidetone Volume*** *only displays if a headset is connected to your computer.*

6. *(Optional)* To test **Earphone Volume** or **Sidetone Volume**, select Test, and the headset plays a tone to check the sound device.

7. *(Optional)* To test **Microphone Volume**, select and hold Test, and speak into the microphone.

8. *(Optional)* To disable **Earphone Volume**, **Microphone Volume**, or **Sidetone Volume** and set the level to 0, select **Mute** ().

3.2.1.3 Set up the Voisus Client's **Transmit** options

To set up the Voisus Client's transmit options, follow these steps:

1. From **Settings**, go to **Transmit**.

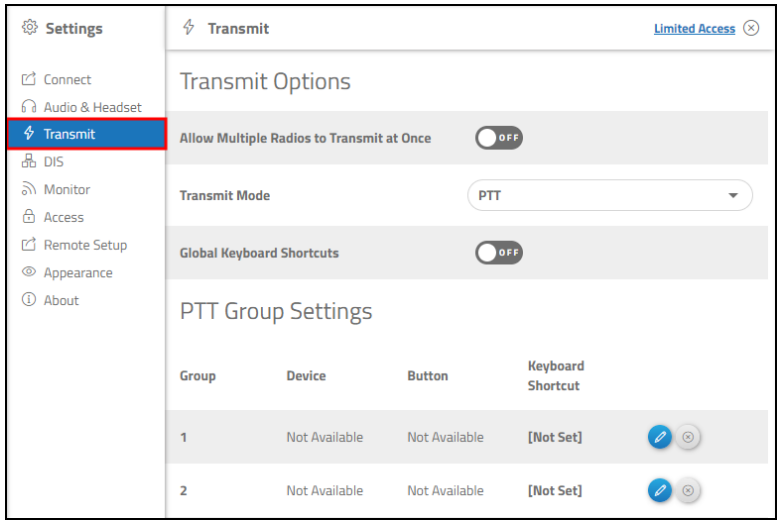

Figure 191: Transmit navigation

2. *(Optional)* On **Transmit Options**, turn **Allow Multiple Radios to Transmit at Once** ON.

3. Select **Transmit Mode**, and choose **PTT**, **Hot-Mic**, **Vox**, or **Off**.

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4. By default, PTT keyboard shortcuts only transmit when the client window is active and at the forefront of the computer screen. When **Global Keyboard Shortcuts** is enabled, the client transmits every time an operator presses a PTT key, even if the client window is minimized or in the background. To enable this functionality, turn **Global Keyboard Shortcuts** ON.
5. To assign hardware devices to PTT priority groups, do the following:
   a. Under **PTT Group Settings**, select **Device**, and choose a hardware device. Hardware PTT devices connected to the computer appear in this list.
   b. Select **Button**, and choose which device button the operator will use to transmit.
6. To set a keyboard shortcut to transmit, do the following:
   a. Select the PTT group's corresponding blue pencil button ( ).
   b. In **Set a Keyboard Shortcut for PTT***N*, where *N* is the group number, press a key combination on your keyboard:

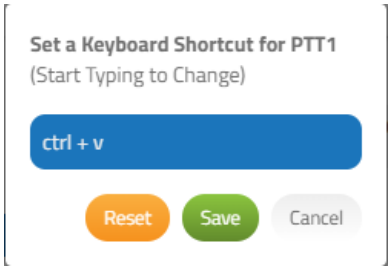

Figure 192: Set a keyboard shortcut

   c. Select Save, and the designated keyboard shortcut appears in the client:

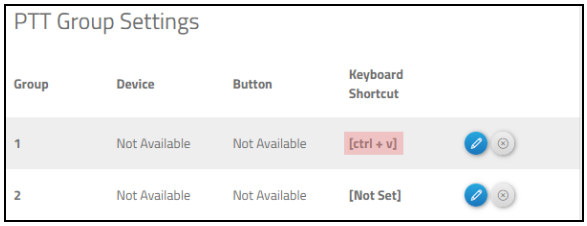

Figure 193: New keyboard shortcut

7. *(Optional)* Repeat Steps 4–6 for each desired PTT group.

3.2.1.4 Modify the Voisus Client's local DIS options

DIS locally modifies the Voisus Client's Distributed Interactive Simulation (DIS) settings. These settings override the defaults set on **Manage Clients** and **DIS** in the Voisus web interface. For more information about DIS exercise and client setup in Voisus, go to Section 2.5, "Manage Clients" on page 25.

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To modify local DIS settings in the Voisus Client, follow these steps:

1. From ⚙ **Settings**, go to 品 **DIS**.

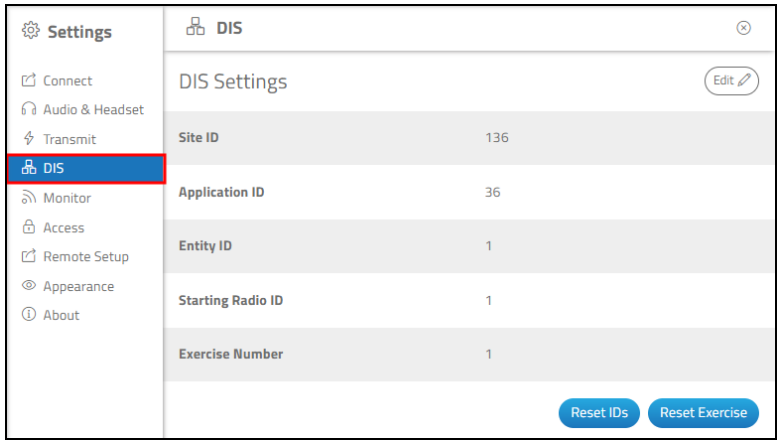

Figure 194: 品 DIS navigation

2. **Site ID**, **Application ID**, and **Entity ID** represent the first three octets of the associated radio's DIS identifier string. The Voisus Client automatically generates these values when it first connects to the Voisus server.

   To edit the **Site ID**, **Application ID**, and **Entity ID**, select Edit in the top right, and enter the desired values into the fields. Use the combination of these numbers to filter, identify, or analyze client activity during debriefing or extract positioning data from the DIS exercise's entity state protocol data unit (PDU).

   When set locally in the Voisus Client, these values override the defaults set in the Voisus web interface. In the web interface, **Site ID** and **Application ID** are located on **DIS** under **DIS Configuration**:

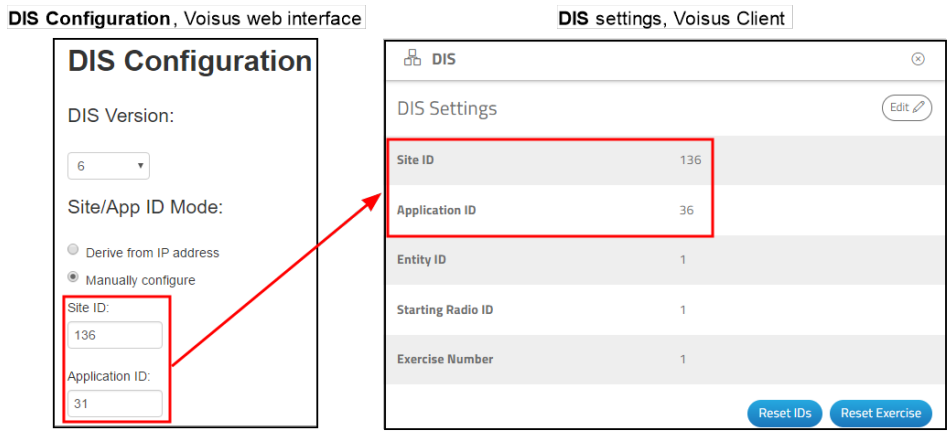

Figure 195: Default Site and Application ID settings

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3. **Starting Radio ID** represents the last part of the unique identifier string for the DIS radio associated with this operator. As shown in Table 10, "Starting Radio ID incremental increase" below, **Starting Radio ID** incrementally increases for each radio connected to a role:

Radio	Site ID	Application ID	Entity ID	Starting Radio ID
1	136	31	4	**100**
2	136	31	4	**101**
3	136	31	4	**102**
4	136	31	4	**103**

Table 10: Starting Radio ID incremental increase

In **Starting Radio ID**, enter a value representing the first incremental radio ID.

4. To override the **DIS** > **Exercises** > **Exercise Number** setting in the Voisus web interface, enter a value in **Exercise Number**.

5. To save your changes, select Save.

6. *(Optional)* To reset the **Site ID**, **Application ID**, **Entity ID**, and **Starting Radio ID** to the default values in the Voisus scenario, select Reset IDs.

7. *(Optional)* To revert the client's local **Exercise Number**, select Reset Exercise, or reinstall the scenario in the Voisus web interface.

3.2.1.5 View network radios on Monitor

The **Monitor** page displays a list of active radios in your DIS exercise. To change your DIS exercise, go to Section 3.2.1.4, "Modify the Voisus Client's local DIS options" on page 124."On this page, you can find information about radios' frequencies, modulations, and transmit and receive statuses. This page also includes the **QuickTune** feature, which enables you to quickly tune to a radio or jammer in the assets panels. To learn more about **QuickTune**, go to "Tune network assets to preset channels.".

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To turn on **Radio Monitor** in your role, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Roles/Radios**.

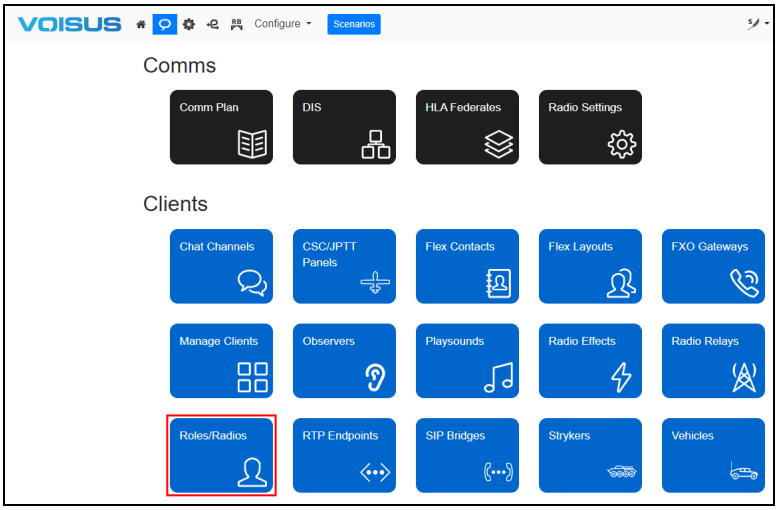

Figure 196: Roles/Radios navigation

2. Under **Roles**, choose the role connected to your client.
3. Turn **Radio Monitor** ON.

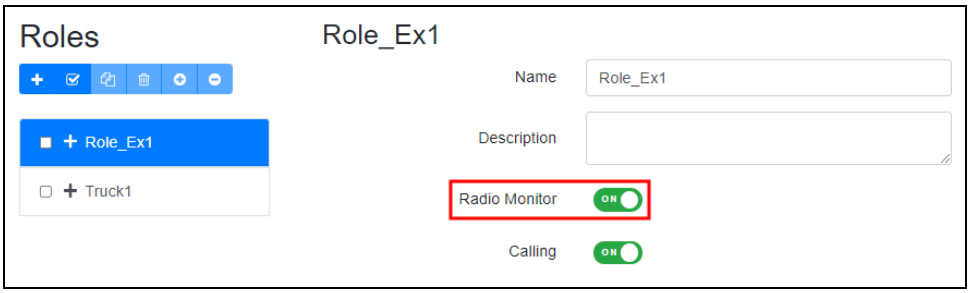

Figure 197: Turn on Radio Monitor

4. From your desktop, open the Voisus Client ( ).
5. In the top right, go to **Open settings** ( ).

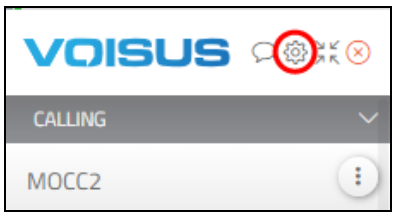

Figure 198: Open settings ( ) navigation

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6. From ⚙ **Settings**, go to 📡 **Monitor**.

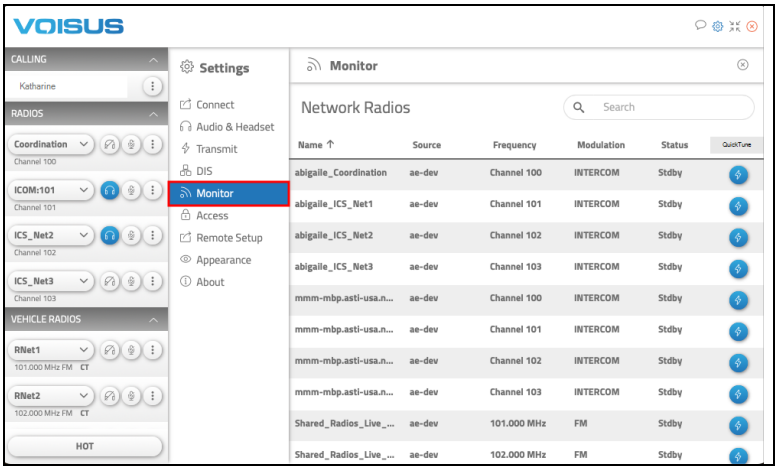

Figure 199: 📡 Monitor navigation

On 📡 **Monitor**, transmitting radios light up orange, and **Status** displays “Tx.”

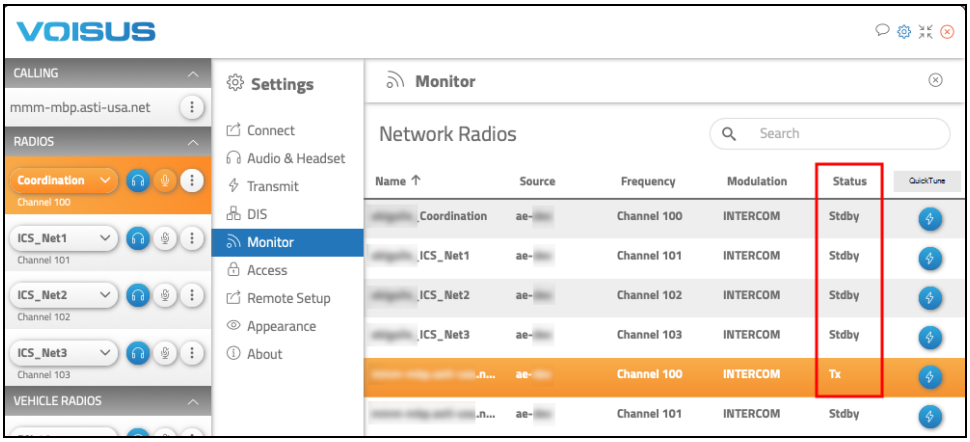

Figure 200: Transmitting radios

7. *(Optional)* To filter radios in the list, in **Search**, enter the name of a radio.

3.2.1.6 Tune network assets to preset channels

On 📡 **Monitor**, **QuickTune** allows client operators to instantly establish communications with other radios or jammers on the network. This feature loads radios and jammers with pre-planned, coordinated settings, eliminating the need to preset these assets. It also simplifies manual tuning, enabling you to tune a radio or jammer without recalling details like frequency, channel, crypto, or frequency-hop fills.

Before using **QuickTune**, you must first go to the Voisus web interface and turn on **Radio Monitor** in your client's role. To set up **Radio Monitor** and learn more about 📡 **Monitor** in the Voisus Client, go to Section 3.2.1.5, "View network radios on Monitor" on page 126.

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To tune to a radio or jammer in the Voisus Client, follow these steps:

1. From your desktop, open the Voisus Client ( ).
2. In the top right, go to **Open settings** ( ).

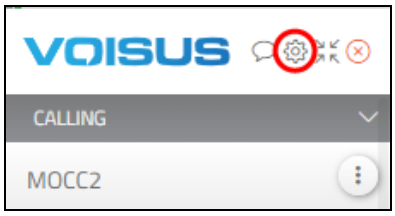

Figure 201: Open settings ( ) navigation

3. From **Settings**, go to **Monitor**.

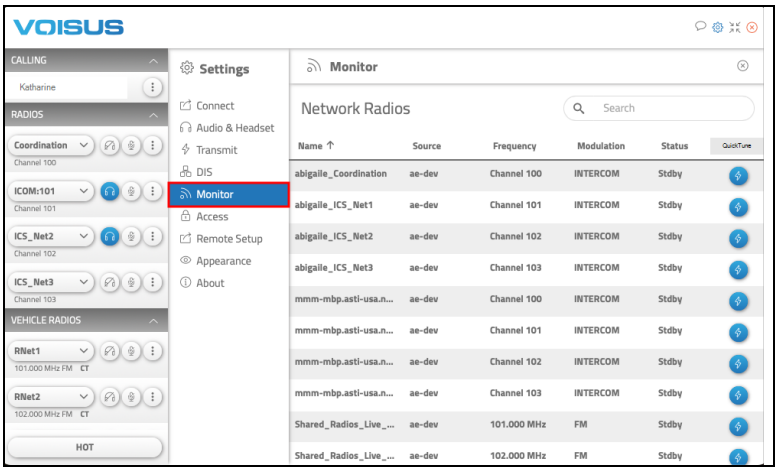

Figure 202: Monitor navigation

4. On **Monitor**, choose a network radio, and select **QuickTune** ( ).

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5. Choose a radio or jammer from the **RADIOS**, **VEHICLE RADIOS**, or **JAMMERS** panels:

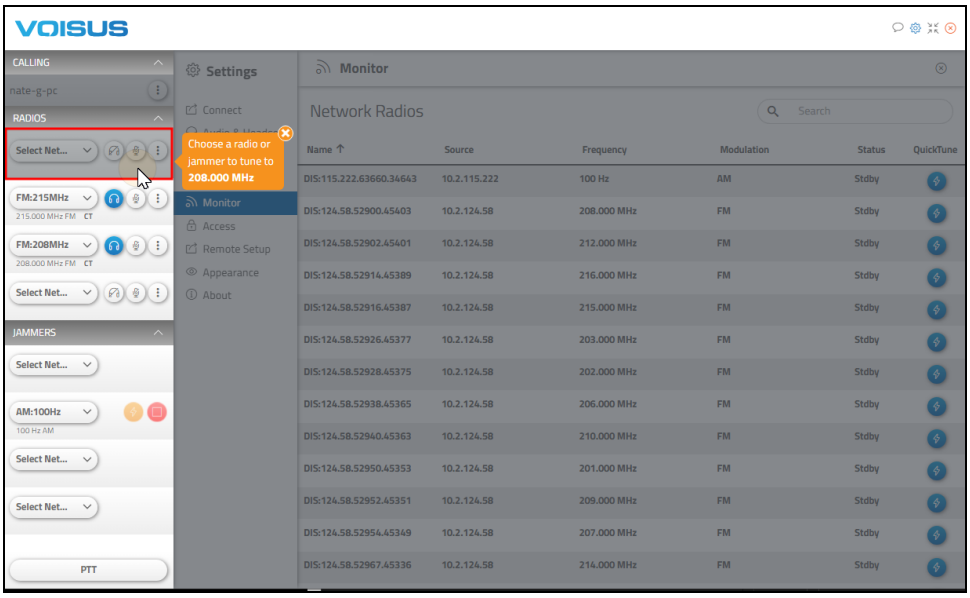

Figure 203: "Quick tune" to a client radio or jammer

The tuned radio or jammer displays the new channel (i.e., frequency):

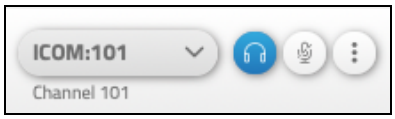

Figure 204: New radio frequency

3.2.1.7 Manage Voisus Client **Access** settings

The Voisus Client offers password protection for ⚙ **Settings**, preventing students or other unauthorized users from viewing or modifying configurations. Use these options to lock operators out of all settings or apply individual restriction levels per page.

This chapter discusses how to:

- Password-protect Voisus Client settings
- Set individual page restrictions in the Voisus Client
- Temporarily unlock password restrictions in the Voisus Client
- Change the Voisus Client's administrator password

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3.2.1.7.1 Password-protect Voisus Client settings

To password-protect Voisus Client settings, follow these steps:

1. From ⚙ **Settings**, go to 🔒 **Access**.

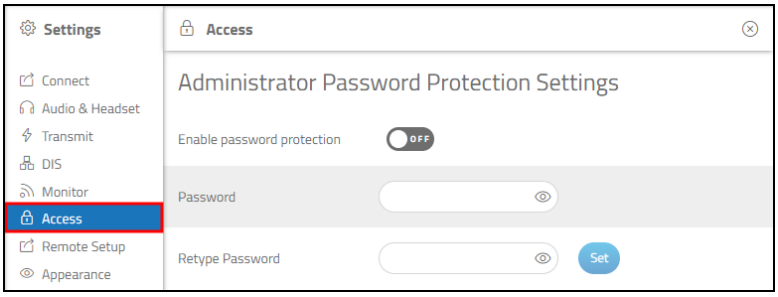

Figure 205: 🔒 Access navigation

2. On **Administrator password-protection settings**, select **Enable password protection**.
3. In **Password**, enter a unique password.
4. In **Retype Password**, enter the value again.
5. *(Optional)* Select **Show Password** (👁) and **Hide Password** (🚫) to confirm the password is correct.

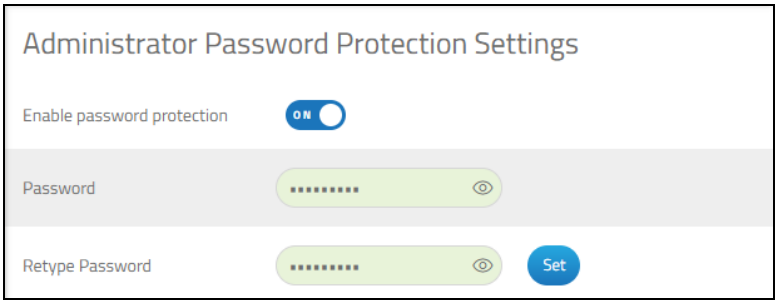

Figure 206: Administrator password protection settings

6. Select Set.
7. Once you set a password, the Voisus Client grants you temporary **Full Access** administrator rights. With full access, you can view and modify any of the ⚙ **Settings**.

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Once you exit ⚙ **Settings**, the client triggers password protection, setting each page to a **No Access** restriction level by default. To close the client, select **Close Settings** (⊗), or select the link in the blue banner message.

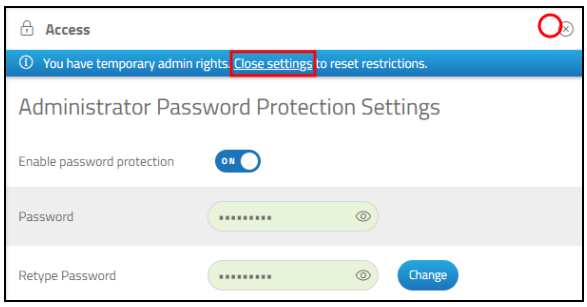

Figure 207: Reset password restrictions

3.2.1.7.2 Change the Voisus Client's administrator password

To change the administrator password for ⚙ **Settings**, follow these steps:

1. On 🔒 **Access**, enter the administrator **Password**, and select Unlock.

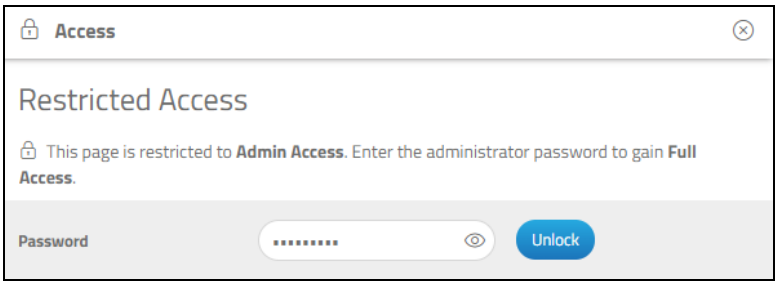

Figure 208: Unlock Restricted Access

2. On **Administrator Password-Protection Settings**, in **Password**, enter the current password.
3. In **Retype Password**, confirm the value.

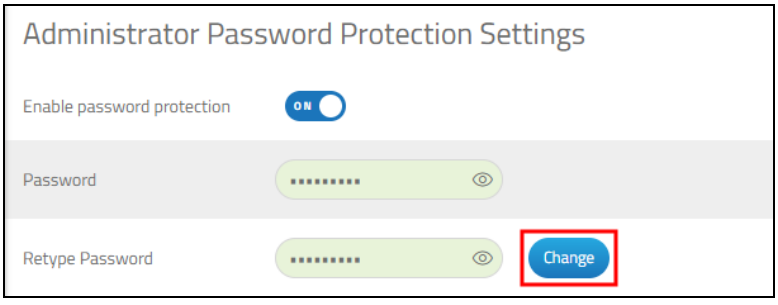

Figure 209: Change the password

4. Select Change.

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3.2.1.7.3 Set individual page restrictions in the Voisus Client

To customize ⚙ **Settings** restrictions by page, follow these steps:

1. On 🔒 **Access**, log into ⚙ **Settings** as an administrator, if applicable.
2. **Setting Restrictions** lists each individual ⚙ **Settings** page and its associated restriction level. By default, each page is set to **No Access**.

   Select the drop-down box next to each page, and choose one of the following:

   - ***Full Access****:* view/edit all settings with no restrictions.
   - ***Read Only****:* all settings are grayed out, but you can still view settings and their values.
   - ***No Access****:* settings are locked, and the page is not visible.

   Figure 210, "Setting Restrictions" below shows various access levels on the **Setting Restrictions** page:

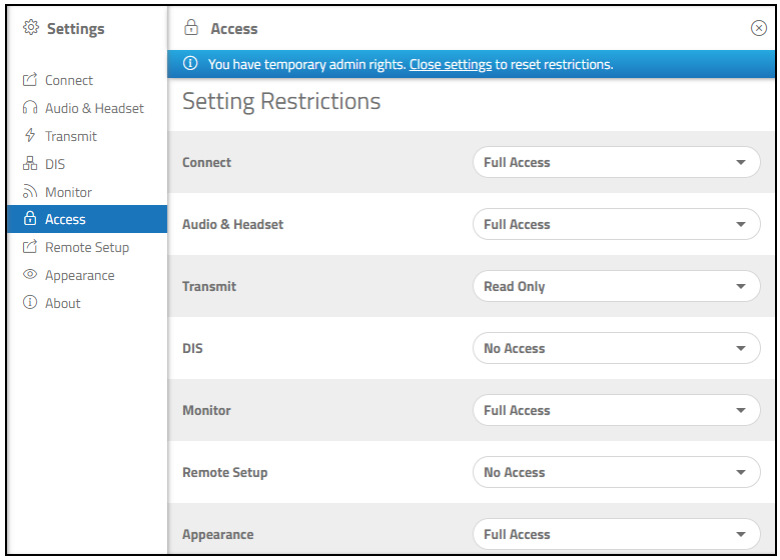

Figure 210: Setting Restrictions

Note*: No drop-down box exists for* ***Access****, which is always restricted when you turn on* ***Enable Password Protection****.*

3. To apply these changes, close and reopen ⚙ **Settings**.

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3.2.1.7.4 Temporarily unlock password restrictions in the Voisus Client

To temporarily unlock password restrictions, follow these steps:

1. Go to a ⚙ **Settings** page to view its restrictions. The **Read Only** restriction level displays in the top right:

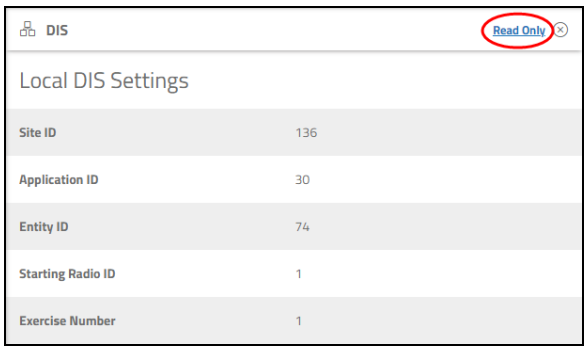

Figure 211: Restriction level

2. Select the link to regain full administrator privileges.
3. On **Restricted Access**, in **Password**, enter the administrator password, and select Unlock.

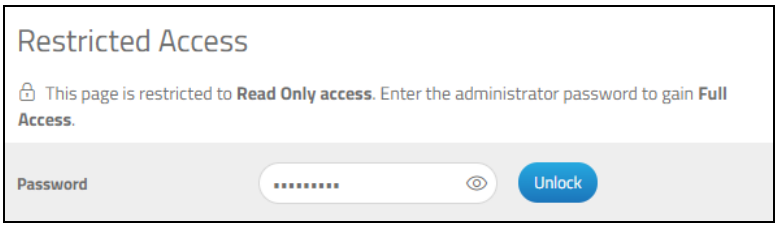

Figure 212: Regain Full Access

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You now have administrator access to all ⚙ **Settings** pages:

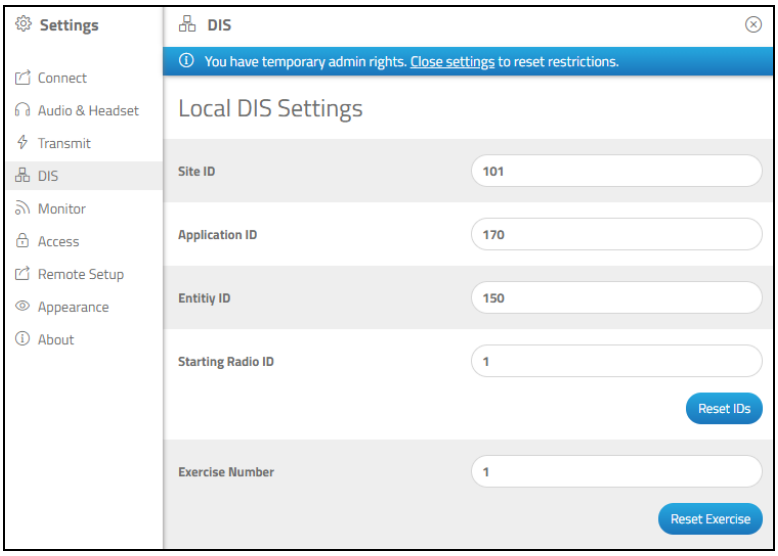

Figure 213: Unlocked ⚙ Settings page

4. Close and reopen ⚙ **Settings** to reset restrictions.

3.2.1.8 Configure the Voisus Client's **Remote Setup** options

Remote Setup allows you to push a client's access restrictions, Voisus server IP address, role, and vehicle to multiple clients sharing a network. As a result, you only need to configure one client instead of multiple clients at individual workstations.

This section discusses how to:

- Set the Voisus Client's Remote Setup mode
- Remotely configure other network clients

*3.2.1.8.1 Set the Voisus Client's **Remote Setup** mode*

In this configuration, one global client acts as the administrator pushing updates to other clients connected to the Voisus network. You must designate each client either as the administrator or a recipient of updates. Alternatively, you can set the client to block other clients from changing its settings.

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To set a client's **Remote Setup** mode, follow these steps:

1. From **Settings**, go to **Remote Setup**.

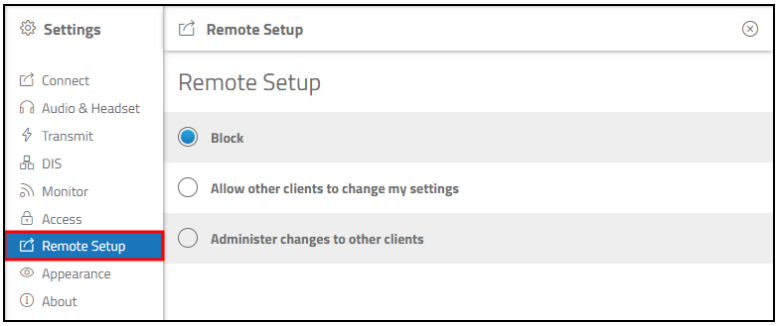

Figure 214: Remote Setup navigation

2. Choose one of the following options:

   - ***Block****:* other clients connected to Voisus cannot modify this client's settings.
   - ***Allow other clients to change my settings****:* other clients connected to Voisus may modify this client's settings. You might apply this setting to clients installed on trainees' computers in a classroom.
   - ***Administer changes to other clients****:* this client can change other clients' settings, as long as they are connected to Voisus and are not set to **Block**. Apply this setting to the administrator client. For best results, only configure one client to be the administrator.

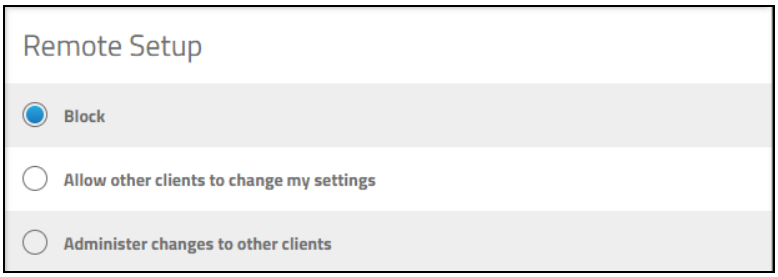

Figure 215: Remote Setup client mode

3.2.1.8.2 Remotely configure other network clients

Once you're finished configuring client settings, push your client's access restrictions, IP address, role, and vehicle to multiple clients sharing a network. Before starting, make sure all the clients you want to modify are set to **Allow other clients to change my network settings** on **Remote Setup**, as described in Section 3.2.1.8.1, "Set the Voisus Client's Remote Setup mode" on the previous page.

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To push a configuration to other clients, follow these steps:

1. On **Remote Setup**, under **Choose Settings to Copy**, choose the settings you want to apply:
   - ***Access**:* applies page-specific password restrictions from the **Access** page. To learn more about **Access**, go to Section 3.2.1.7, "Manage Voisus Client Access settings" on page 130.
   - ***Server Address**:* applies the Voisus server's IP address on the **Connect** page. To learn more about **Connect**, go to Section 3.2.1.1, "Connect the Voisus Client to the Voisus server or cloud" on page 120.
   - ***Role**:* applies the client's **Role** on **Connect**.
   - ***Vehicle**:* applies the client's **Vehicle** on **Connect**.
2. *(Optional)* Next to **Network Clients**, use the search bar to find a specific client.
3. Choose the clients you want to configure. To select all available clients, select the checkbox on the left side of the table header.

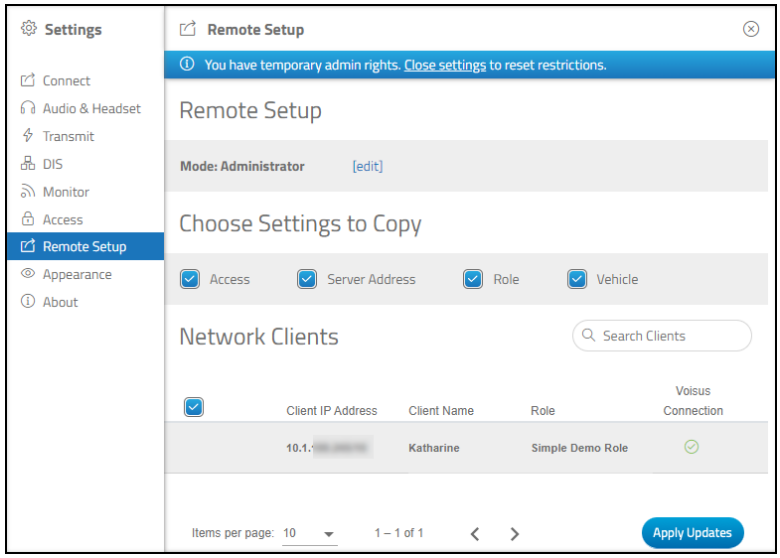

Figure 216: Network Clients

4. Select Apply Updates.

3.2.1.9 Set the Voisus Client's theme to dark mode

By default, the Voisus Client's theme is set to light mode. To change the client's theme to dark mode, follow these steps:

1. From ⚙ **Settings**, go to 👁 **Appearance**.

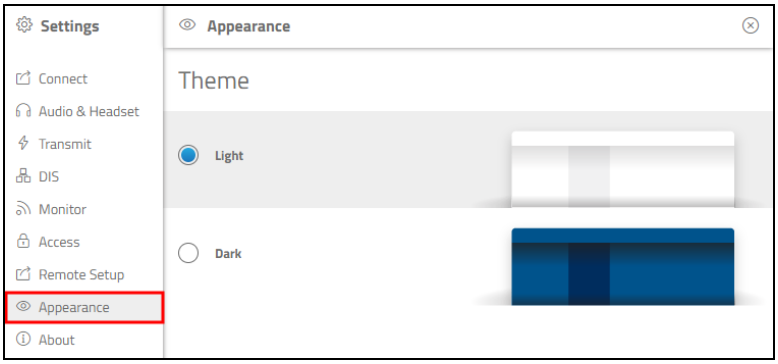

Figure 217: 👁 Appearance navigation

2. On **Theme**, select **Dark**.

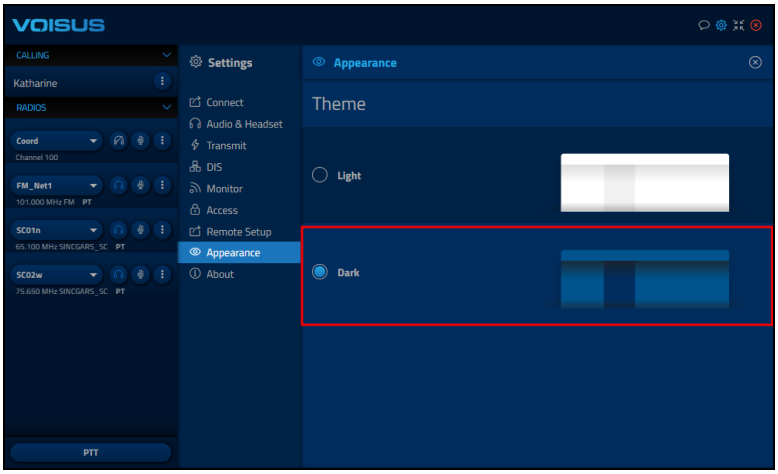

Figure 218: Dark theme

3.2.1.10 Set the Voisus Client's default size and position

The Voisus Client lets you configure its **Startup Settings**, so it always opens in the same size and place on your screen. This convenient feature saves time, ensuring students in a classroom don't need to readjust the client every time they open it. When enabled, the client always opens to its default size and position, even if you temporarily move or resize it. When disabled, it opens to the last used size and position. You can also configure the client to always appear active at the forefront of the screen, preventing unnecessary distractions.

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To set the Voisus Client's default size and position, follow these steps:

1. From ⚙ **Settings**, go to 👁 **Appearance**.

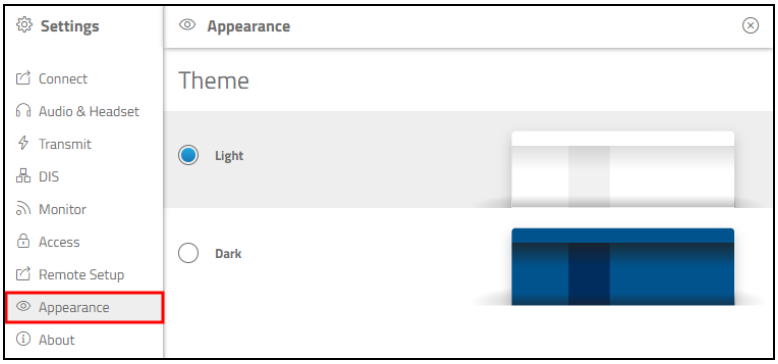

Figure 219: 👁 Appearance navigation

2. *(Optional)* To ensure the window is always active in the forefront, under **Window Position**, turn **Always on Top** ON. Administrators might use this setting to keep students from focusing on other programs.

3. To change the client's default size and position, do the following:

   a. Turn **Startup Settings** ON.

   b. Next to **Startup View**, select the drop-down box, and choose which assets to display by default:

   - ***Settings****:* shows the **CALLING**, **RADIOS**, and **JAMMERS** panels on the left and the settings interface on the right.
   - ***Chat****:* shows the **CALLING**, **RADIOS**, and **JAMMERS** panels on the left and the chat interface on the right.
   - ***Radio****:* shows only the **CALLING**, **RADIOS**, and **JAMMERS** panels on the left.
   - ***Compact****:* shows the collapsed **CALLING**, **RADIOS**, and **JAMMERS** panels. For more information about the collapsed view, go to Section 3.2, "Voisus Client" on page 117.

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(Optional) To manually change the client's position and/or size, select Change.

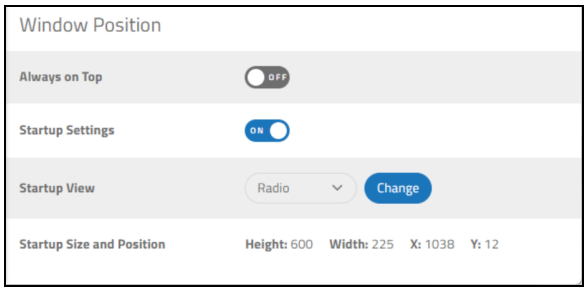

Figure 220: Window Position settings

c. Depending on your selection above, the client window may automatically resize. A dotted border appears, the window darkens, and white cross arrows display with the message "Adjust the client's default height, width, and/or window position."

   To reposition the client, select the header, and move the client to the desired location.

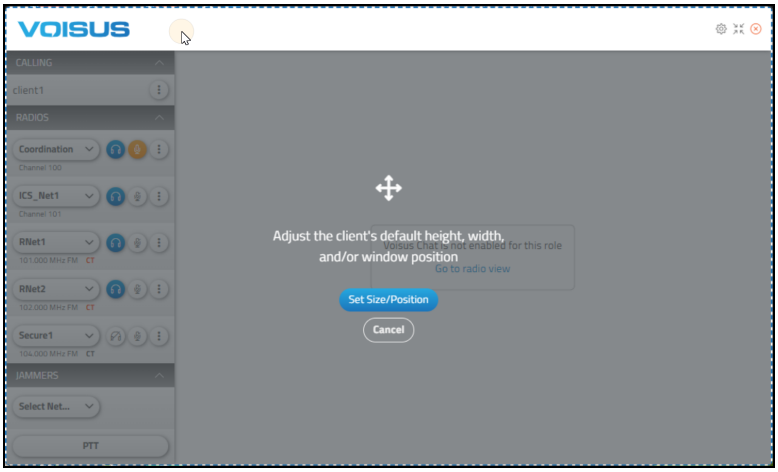

Figure 221: Set the Voisus Client's default size and position

d. To manually resize the client, hover over the edge of the client window until bidirectional arrows appear. Select and move the client to adjust its width and height to your preference.

e. Select Set Size/Position.

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3.2.1.11 Access Voisus Client system information and logs

If you're experiencing issues with the Voisus Client, you may wish to view system information about the client, view or download the client's logs, and send them to ASTi Support for troubleshooting.

This section discusses how to:

- View Voisus Client system information
- View logs in the Voisus Client
- Send ASTi an SOS report

3.2.1.11.1 View Voisus Client system information

To view system information about the Voisus Client, follow these steps:

1. From ⚙ **Settings**, go to ⓘ **About**.

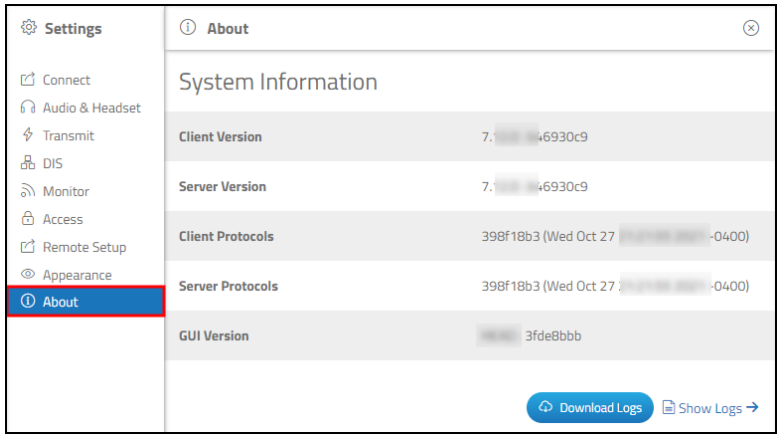

Figure 222: ⓘ About navigation

The ⓘ **About** page displays a variety of information, including the **Client version**, **Server version**, **Client protocols**, **Server protocols**, and **GUI version**.

3.2.1.11.2 View logs in the Voisus Client

To view or download Voisus Client logs, follow these steps:

1. To view logs within the client GUI, select **Show Logs** ➔.

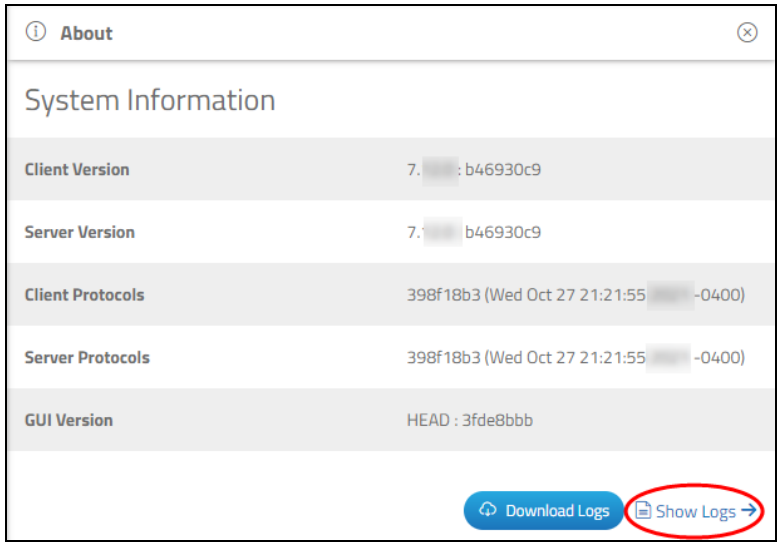

Figure 223: Show Logs

2. Scroll down to view all of the client's logs:

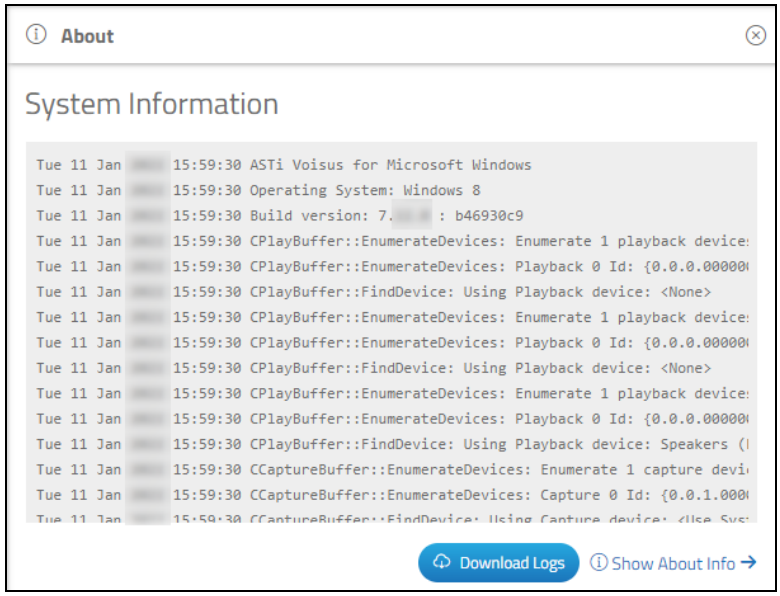

Figure 224: View Voisus Client logs

3. To download the client's logs, select

.
4. Save the text (.txt) file to your local computer, a CD or DVD, or a removable drive.

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3.2.1.11.3 Send ASTi an SOS report

To download the Voisus Client's system logs, follow these steps:

1. On **System Information**, select Download Logs.

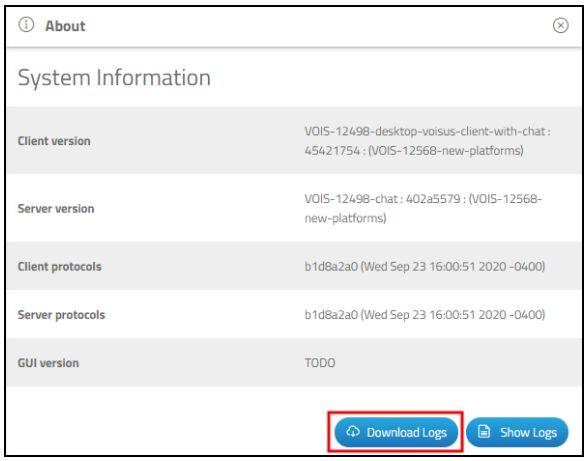

Figure 225: Download Logs

2. Save the client logs to your local system as a text (.txt) file.
3. Email the logs to support@asti-usa.com.

3.2.2 Voisus Client CALLING panel

The Voisus Client provides private intercom communications between two or more clients in the same training exercise. To disable or enable calling, go to **Roles** in the Voisus web interface. To learn more about roles, go to Section 2.8, "Roles/Radios" on page 39.

***Note**: If **Calling** is disabled in the role, the Voisus Client replaces the **CALLING** panel with **NAME** (i.e., the client's name). To learn more about the **Calling** feature in the role, go to Section 2.8.1, "Add a role" on page 39.*

CALLING is located at the top of the audio assets:

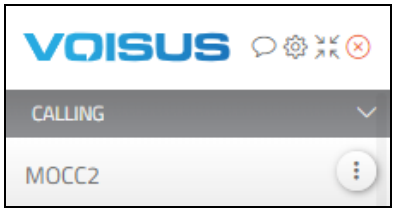

Figure 226: CALLING in the audio panel

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Incoming calls light up blue, showing the client's name. Select **Accept call** ( ) or **Decline call** ( ).

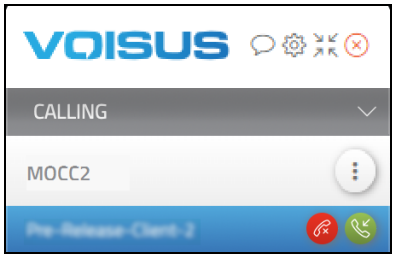

Figure 227: Incoming call

To start a private call with one or more clients, follow these steps:

1. Under **CALLING**, select the vertical, stacked-dot button ( ). Clients with a green status icon ( ) are available, while clients with an orange icon ( ) are busy.

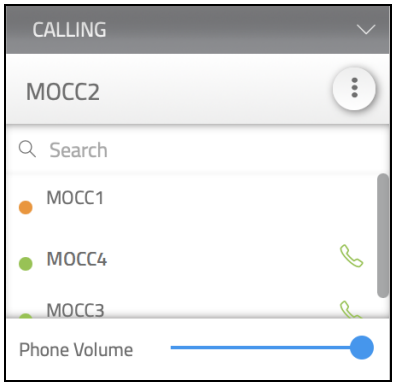

Figure 228: Available clients

2. *(Optional)* Use the **Search** bar to filter clients.
3. Select **Start call** ( ) for each client you want to add to the call.
4. To cancel a pending invite, select **Cancel invite** ( ).
5. Once the client(s) accept, communicate in real time by speaking into your microphone. Clients on an active call can also invite other clients to join.

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Transmitting clients light up orange:

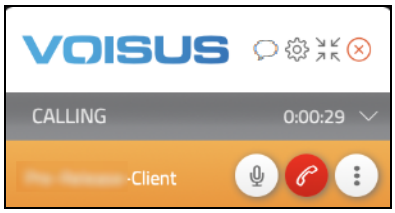

Figure 229: Transmitting client

***Important**: Radios cannot transmit while you are on a call; however, the client can still hear other radios and intercoms.*

6. To mute your microphone, select **Mute mic** ( ).
7. To adjust your client's volume, move the **Phone Volume** slider.

Figure 230: Adjust client's volume

8. To end the call, select **End call** ( ).

3.2.3 Voisus Client RADIOS panel

The Voisus Client **RADIOS** panel is located in the audio assets, under **CALLING:**

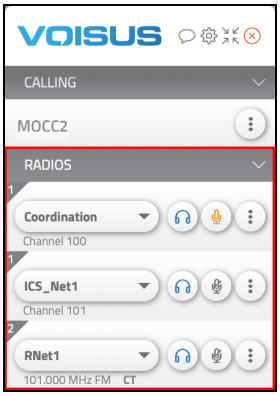

Figure 231: RADIOS panel

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Radio controls allow you to transmit and receive audio, change the radio's net, and modify local radio options:

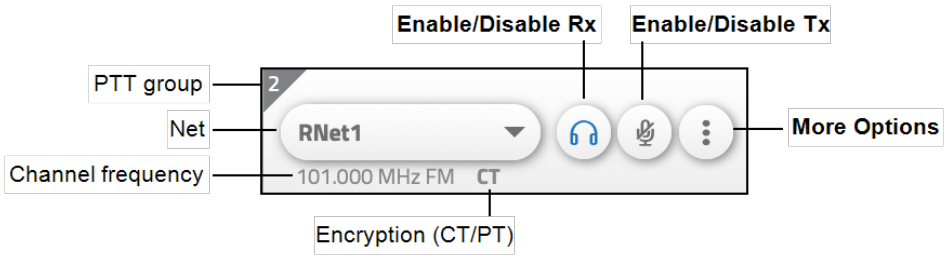

Figure 232: Radio controls

3.2.3.1 Enable radios to receive audio

To enable the radio to receive audio from other network radios, select **Enable Rx** (), and the button turns blue (). Radios flash blue when receiving audio:

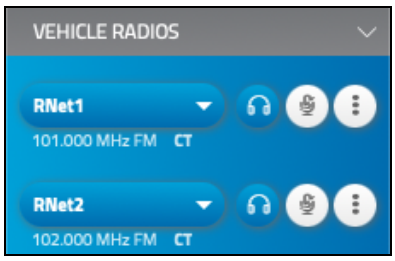

Figure 233: Receiving radios

To prevent the radio from receiving audio, select **Disable Rx** ().

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3.2.3.2 Transmit on one or more radios

***Important**: By default, only one radio can transmit at once. To allow multiple radios to transmit simultaneously, go to **Open settings** > **Transmit**, and turn on **Allow Multiple Radios to Transmit at Once**. For more information about **Transmit** settings, go to Section 3.2.1.3, "Set up the Voisus Client's Transmit options" on page 123.*

To enable the radio to transmit audio from other network radios, select **Enable Tx** (), and the button turns orange (). To transmit on enabled radios, select the **PTT** button at the bottom of the client, and speak into your microphone. Enabled radios flash orange:

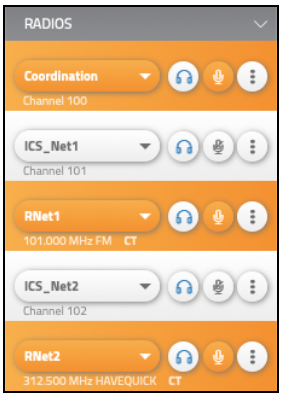

Figure 234: Transmitting radios

3.2.3.3 Transmit or receive audio with PTT groups

Press-to-talk (PTT) groups allow you to transmit with or receive audio from a group of predefined radios. To assign a radio to a group in the Voisus web interface, go to Section 2.8.2, "Add a radio" on page 41. The radio's PTT group displays in the top left of the radio:

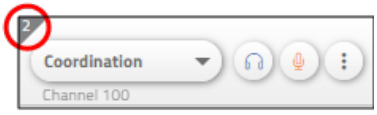

Figure 235: PTT group

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To transmit audio with a PTT group, choose one of the PTT buttons at the bottom of the client, and speak into your microphone. During transmission, enabled radios in that group light up orange:

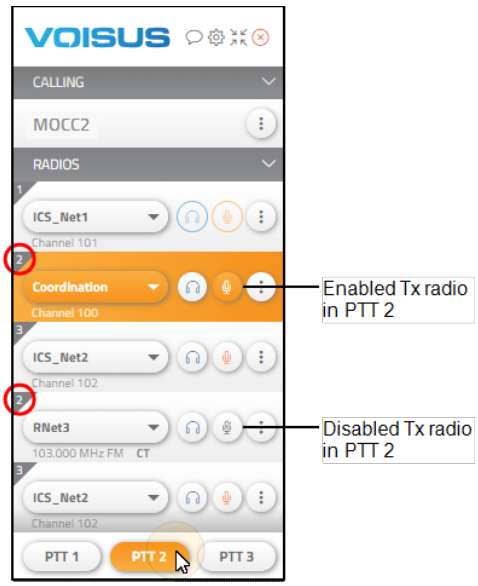

Figure 236: Transmitting PTT group

In Figure 236, "Transmitting PTT group" above, selecting PTT 2 lights up the second radio; however, the fourth radio remains idle because Tx is disabled.

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3.2.4 Voisus Client JAMMERS panel

In the Voisus Client, you can simulate radio jammers that interfere with other radios in the DIS exercise. In order to use jammers, first set up and enable a jammer in the Voisus web interface. For more information, go to Section 2.8.6, "Add a jammer" on page 56. When jammers are enabled, a **JAMMERS** panel appears at the bottom of the client, as shown in Figure 237, "JAMMERS panel" below:

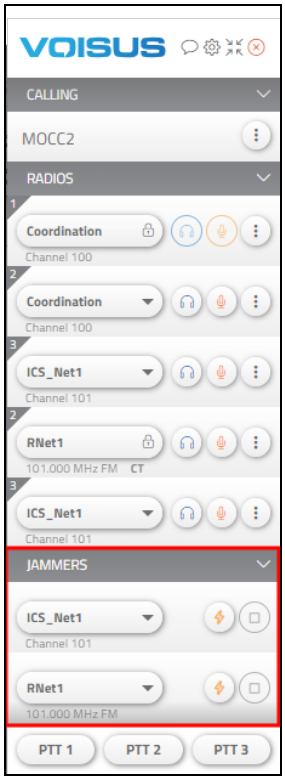

Figure 237: JAMMERS panel

The Voisus Client uses two types of jammers:

- Basic jammer
- Spoofing jammer

The following sections explain how to use each type of jammer.

3.2.4.1 Play a basic jammer

When active, basic jammers can play a playsound from your role in the Voisus web interface. For more information about playsounds, go to Section 2.7.2, "Add a playsound" on page 37. Alternatively, you can set the jamming net to use the JAMMER waveform mode in the Comm Plan.

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To use a basic jammer, follow these steps:

1. In the **JAMMERS** panel, select the net drop-down box, and choose a net to jam.

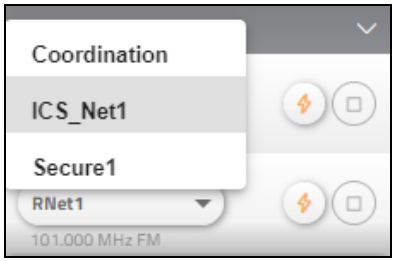

Figure 238: Select a net for a radio client

2. To enable the jammer, select **Enable jammer** (). The jammer's net lights up orange. Radios set to the same net as the jammer receive the transmission, lighting up blue:

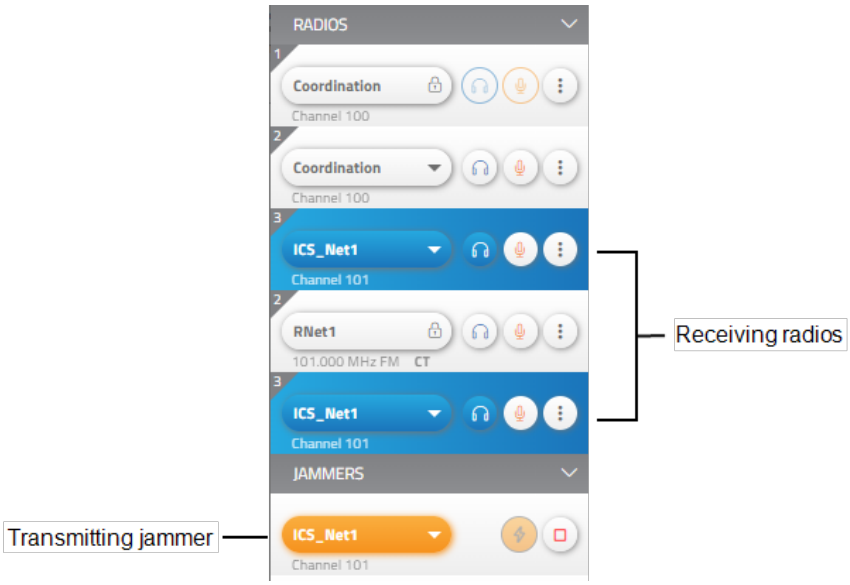

Figure 239: Basic jammer transmitting to receiving radios

3. To disable the jammer, select **Disable jammer** ().

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3.2.4.2 Play a spoofing jammer

A spoofing jammer records and replays audio on the net to confuse other radio operators. To use a spoofing jammer, follow these steps:

1. Add a jammer to the connected role, and turn on **Spoofing Jammer**, as described in Section 2.8.6, "Add a jammer" on page 56.

   The Voisus Client's **JAMMERS** panel now displays a spoofing jammer:

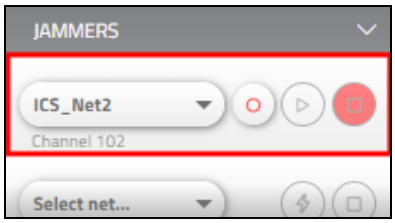

Figure 240: Spoofing jammer

2. Select the net drop-down box, and choose a net for the jammer to record and spoof.
3. Select **Start recording** (). The button turns red (), and the net selection button turns striped (). The recording begins when the jammer first receives audio.

Figure 241: Record progress bar

4. To stop the recording, select **Stop** ().

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5. To replay the recording, select **Replay** ( ). The **Replay** button turns green ( ), and the net drop-down box glows orange ( ) while the jammer is actively transmitting. At the bottom, a progress bar indicates the playback's current position.

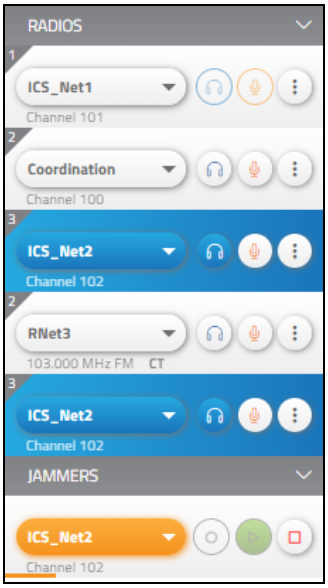

Figure 242: Replay progress bar

6. Select **Stop** ( ) to stop replaying the looped audio.

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3.2.5 Voisus Client chat

The Voisus Client includes a text chat capability featuring multiple chat channels, formatted text (e.g., bold, italic, bulleted/numbered lists), and emojis. Create a chat channel for all clients to join or assign clients to channels via their roles.

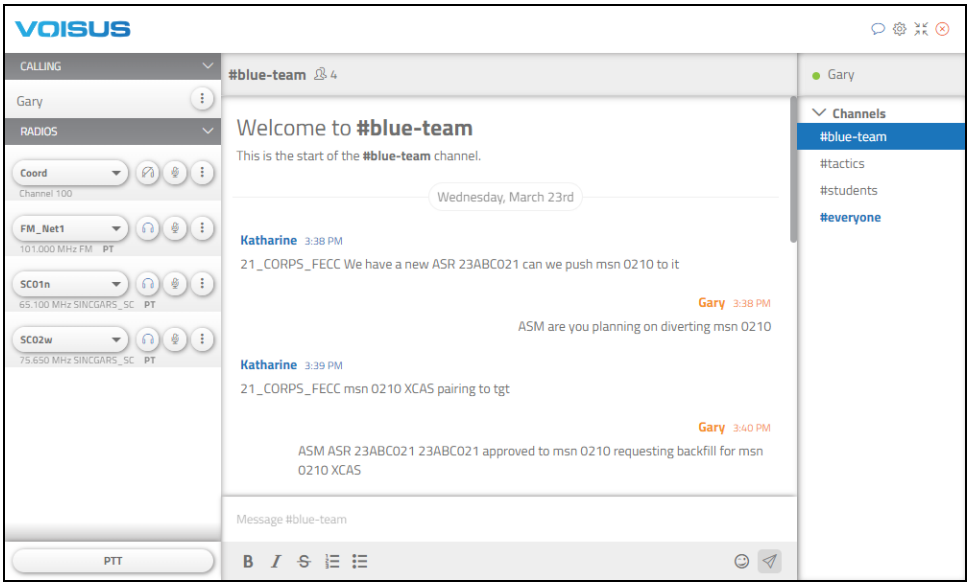

Figure 243: Voisus Client chat

To use chat, you must first enable chat in the Voisus web interface, as described in Section 3.2.5.1, "Enable chat for the Voisus Client" below. From there, you can add and edit chat channels and view chat logs after an exercise, as described in Section 3.2.5.2, "Manage chat channels" on page 155 and Section 3.2.5.6, "View chat logs" on page 161.

3.2.5.1 Enable chat for the Voisus Client

To enable Voisus Client chat in the Voisus web interface, follow these steps:

1. From the top right, go to **Manage** ( ) > **Features**.

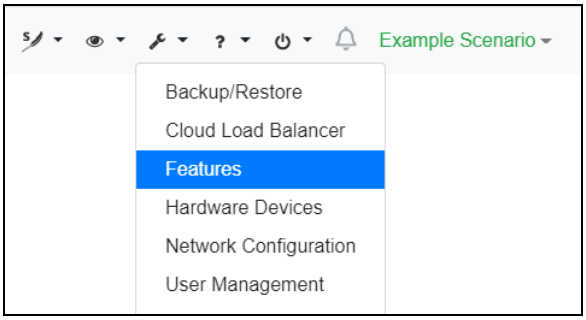

Figure 244: Features navigation

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2. On **System Features**, turn **Chat** ON.

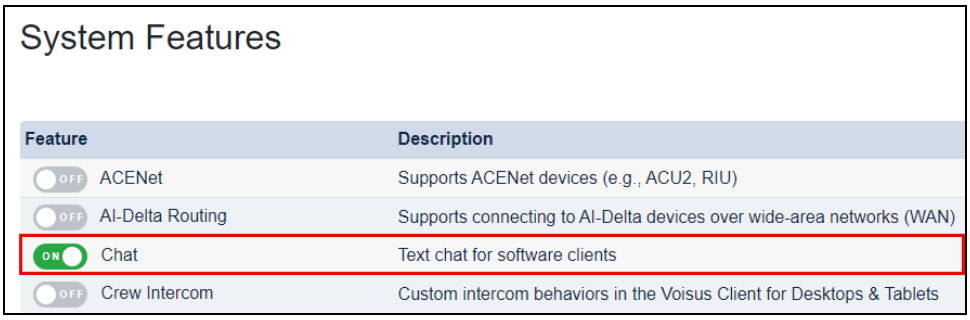

Figure 245: Enable chat on System Features

3. To activate changes, select Reboot.

4. From the top-left navigation bar, go to **Voisus Clients** (🗨) > **Roles/Radios**.

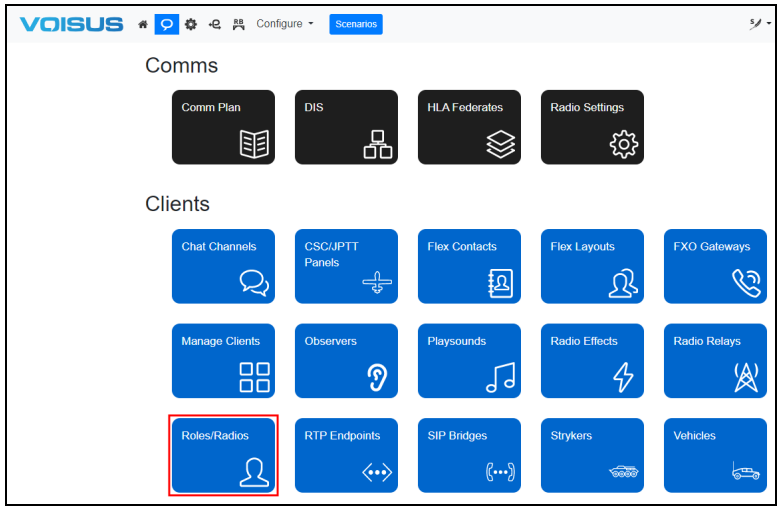

Figure 246: Roles/Radios navigation

5. On **Roles**, choose a role.

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6. Turn **Text Chat** ON.

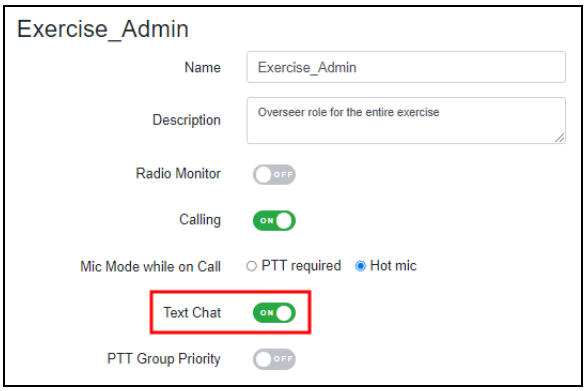

Figure 247: Enable Text Chat in the role

3.2.5.2 Manage chat channels

To add chat channels to the Voisus web interface, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Chat Channels**.

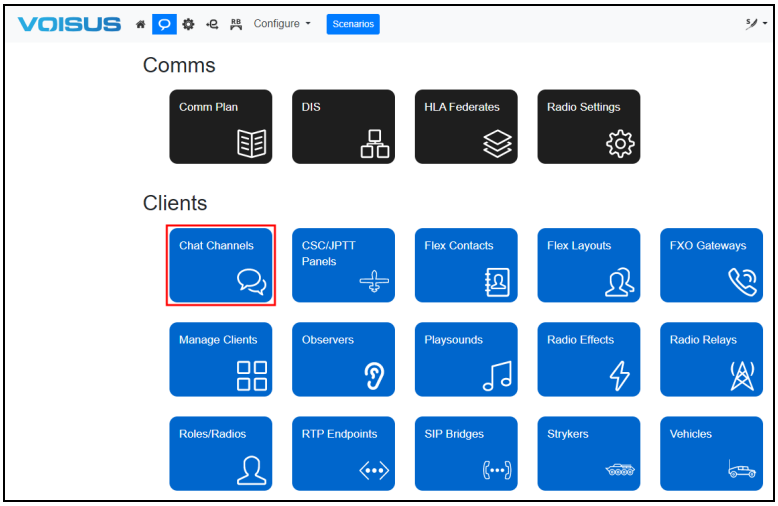

Figure 248: Chat Channels navigation

2. On **Channels**, select **Create Channels** ( ). A new channel appears on the page. The default channel names are **Chat_Channel-***N*, where *N* is the channel number.
3. From the left, select the new channel.
4. In **Name**, enter a unique name for the channel (e.g., **Blue Team**).

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5. *(Optional)* While everyone can access the channel by default, you can assign a user (i.e., client) to specific channel(s) via the Voisus Client's role. All users designated to that role appear in the channel. You can set a client's role on **Manage Clients**. To learn more about Voisus Client role assignments, go to Section 2.5, "Manage Clients" on page 25.

   To assign a role to the channel, do the following:

   a. Under **Channel Permissions**, select **Assigned: assign users to channels by Role**.

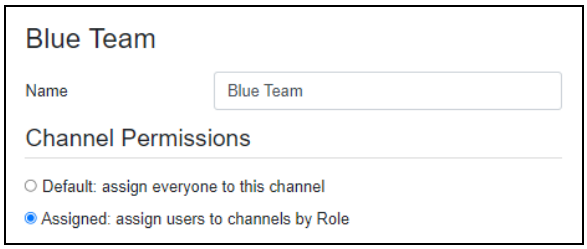

Figure 249: Name and Channel Permissions

   b. Under **Role Assignment**, choose one or more role(s) from **Available Roles**, and select **Add Roles to Channel** (→). To assign all available roles, select Add all →.

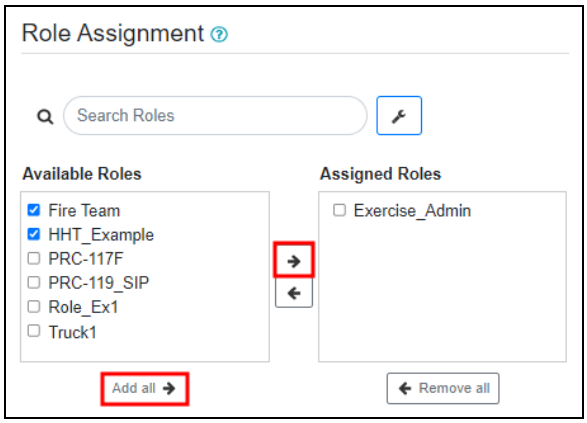

Figure 250: Assign role(s) to a channel

***Note**: You can also manage channel role assignments within the role itself. For more information about roles, go to Section 2.8, "Roles/Radios" on page 39.*

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c. *(Optional)* To delete the role assignment, select **Remove Roles from channel** ( ). To delete all role assignments, select Remove all.

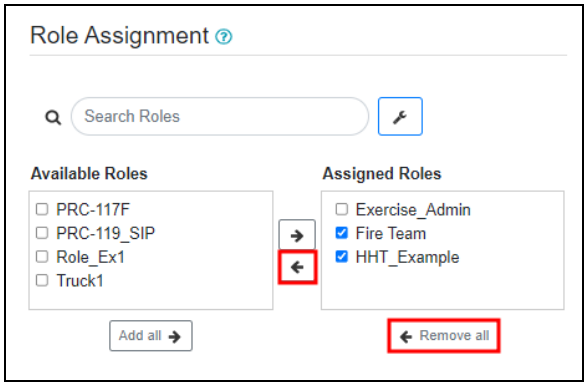

Figure 251: Remove role channel assignments

d. *(Optional)* To add or edit roles, select the wrench ( ). To learn more about roles, go to Section 2.8, "Roles/Radios" on page 39.

3.2.5.3 Open chat

To access the chat interface, go to **Open chat** ( ).

Figure 252: Open chat

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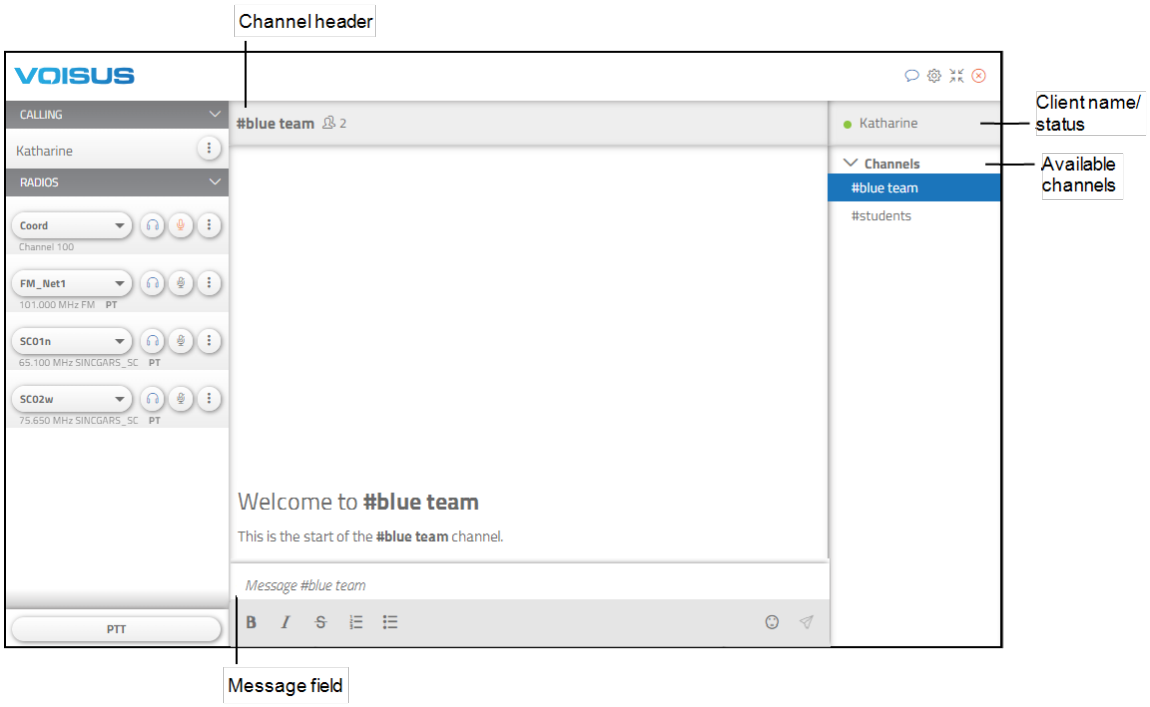
The Voisus Client chat interface displays:



This section discusses how to:

- View chat channels
- Send messages

3.2.5.4 View chat channels

Voisus organizes conversations into dedicated spaces called channels. You can create a channel for any project, topic, or team. With the right people and information in one place, teams can communicate and coordinate during an exercise. As a best practice, make sure the channels you create or maintain have a clear topic and description so that people understand what they're used for.

A client's connected role determines its channel assignment. To add a client (and its corresponding user) to a channel, set its **Role** on **Settings** (⚙) > **Connect**. To learn more about **Connection** settings, go to Section 3.2.1.1, "Connect the Voisus Client to the Voisus server or cloud" on page 120. To assign a role to a channel, go to Section 3.2.5.4, "View chat channels" above.

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When you first open the chat interface, you'll see the top channel in the **Channels** pane, which displays all of the channels available to your client:

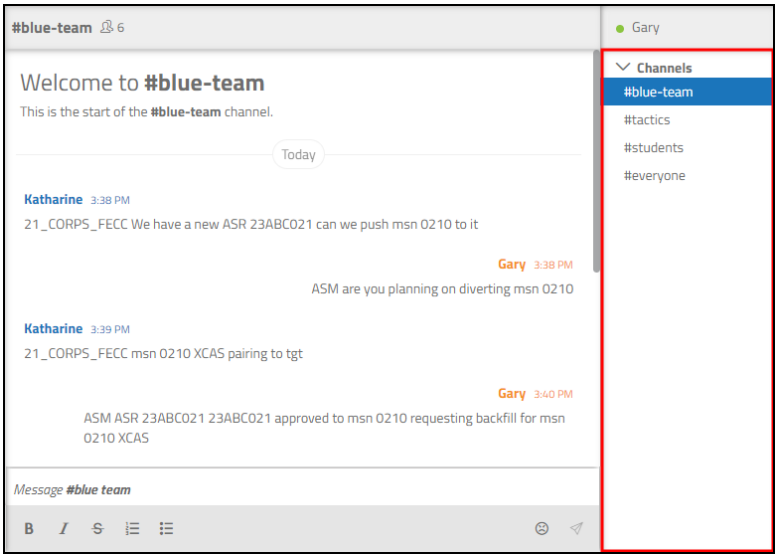

Figure 253: Channels pane

The header shows details like the channel name and online group members:

Figure 254: Channel header

Bold, blue channel names indicate unread messages in another channel:

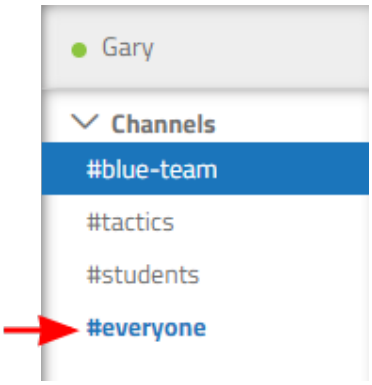

Figure 255: Channel activity

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3.2.5.5 Send messages

Enter a message in the message field. Formatting options display below the message field. Bold the most important items, break out thoughts with bullet points, and more:

Figure 256: Message formatting options

To browse emojis, select the emojis icon (☺). Choose one or more emojis from the panel:

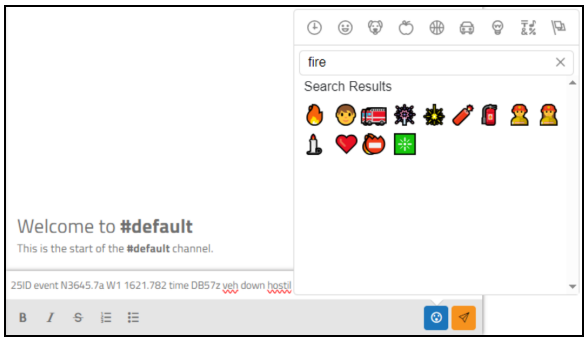

Figure 257: Emojis panel

To send a message, select the orange send button (), or press Enter. Your message appears in the conversation history:

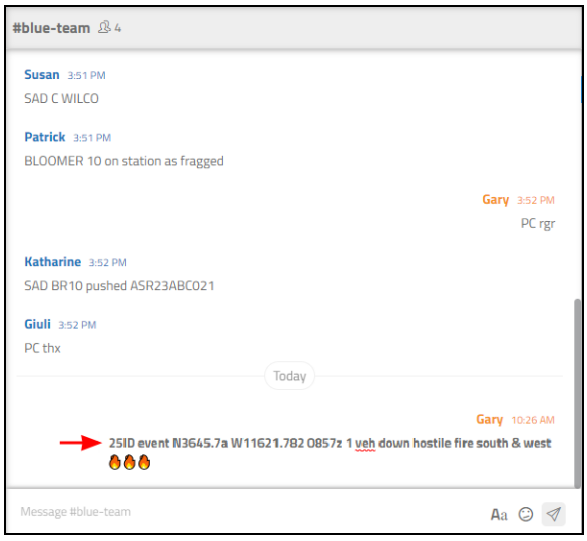

Figure 258: New message

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3.2.5.6 View chat logs

To view the Voisus Client's chat logs, follow these steps:

1. From the top right, go to **Monitor** ( ) > **Chat**.

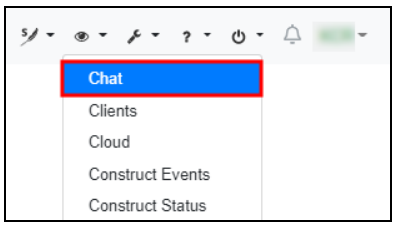

Figure 259: Chat Logs navigation

2. Under **Search Filter**, select **Date Range and Times**, and choose a date and time from which to start viewing activity.
3. *(Optional)* To filter by user, select **Username**, and then select the user you want to view.
4. *(Optional)* In **Search Text**, enter any relevant keywords from the messages.

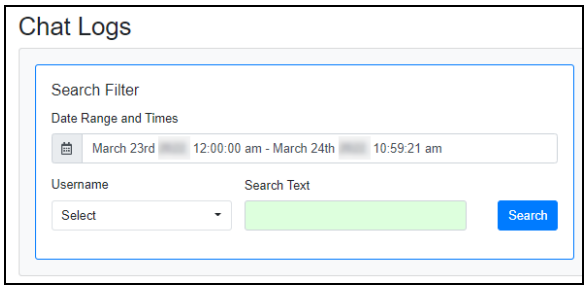

Figure 260: Chat Search Filter

5. Select .
6. From the left, choose a channel conversation to view.

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7. Above the chat logs, the header shows the number of participants and messages in the conversation. Messages are color-coded by username.

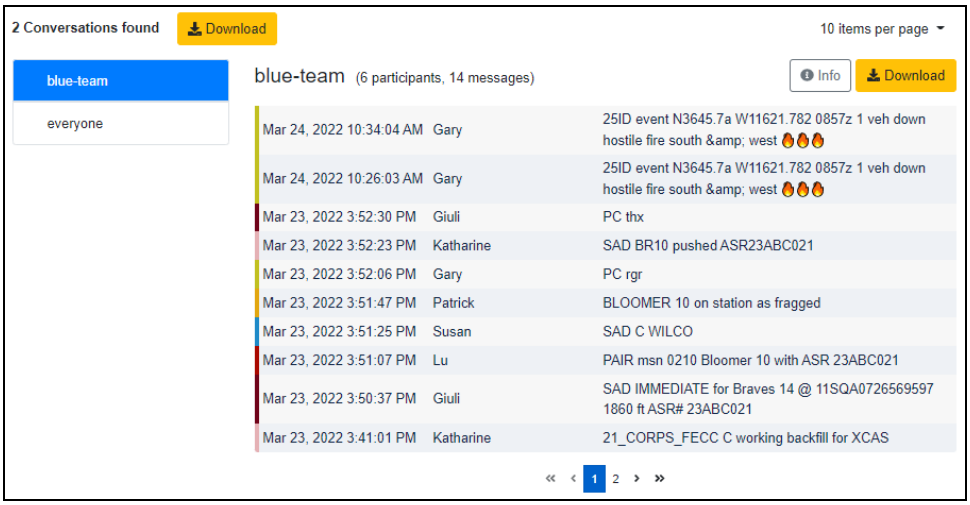

Figure 261: Chat history

To view the channel's scenario, participant names, and session ID, select **Channel Info** (Info).

Figure 262: Channel Info

8. Choose another page to view, or adjust the **items per page** drop-down box in the top right.

9. To download all conversations across all channels in comma-separated values (.csv) format, next to *N* **Conversations found**, select Download.

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10. To download the currently selected channel log, next to Info, select Download.

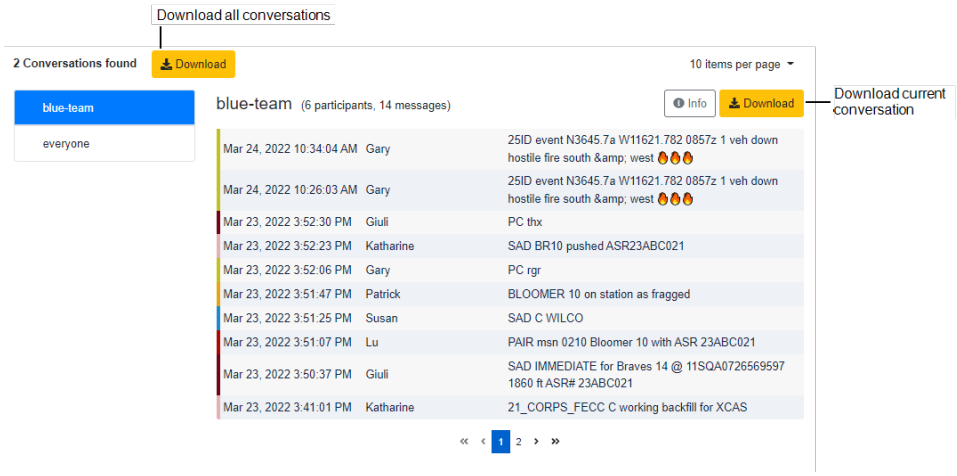

Figure 263: Download chat logs

11. To automatically purge chat logs after a specific amount of time, do the following:

    a. Under **Settings**, enter the number of days the Voisus server will store logs. For example, if the current date is June 1, and the time range is set to 90 days, the Voisus server discards messages that occurred before March 3.

    b. To turn on auto-delete, select ON.

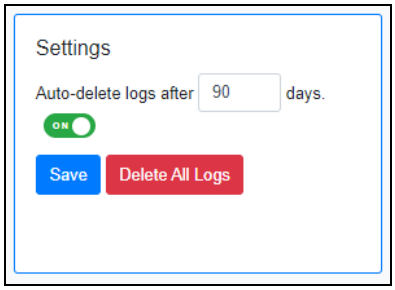

Figure 264: Autodelete chat logs

    c. Select Save.

12. To purge all logs now, select Delete All Logs.

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3.3 Voisus Client for Tablets & Desktops

The Voisus Client for Tablets & Desktops is optimized for Windows computers, Linux computers, and Windows tablets. It includes radio skins for the following:

- Generic radios
- PRC-117F
- PRC-117G
- PRC-119 ASIP
- PRC-148
- PRC-152
- PRC-355
- Live Radio Bridge and Remote Control

To use these radio skins, create radios of these types in the Roles and Radios section of the Voisus Client for Tablets & Desktops. Additional features include the following:

- Calling
- Crew intercom
- Text chat (via a built-in IRC client)
- User interface customization (Windows only)

3.3.1 Voisus Client for Tablets & Desktops settings

To access the settings menu, tap **SETTINGS**.

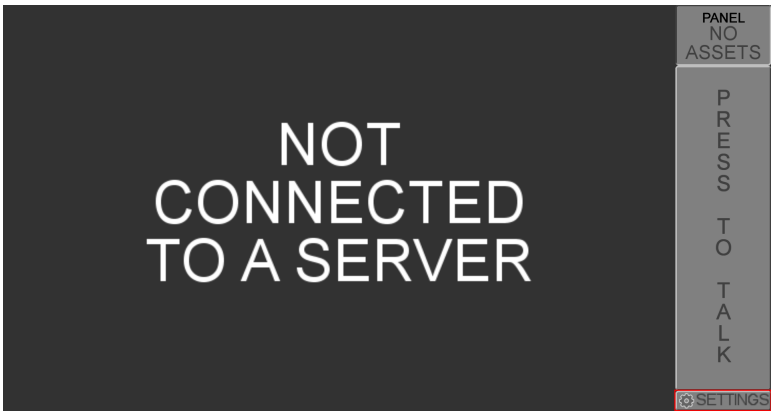

Figure 265: Voisus Client for Tablets & Desktops settings

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3.3.1.1 CONNECTION tab

The **CONNECTION** tab connects the Voisus Client for Tablets & Desktops to the Voisus server with the client's name, IPv4 address or cloud ID, and role.

To connect the Voisus Client for Tablets & Desktops to the Voisus server, follow these steps:

1. From your desktop, open the Voisus Client for Tablets & Desktops ( ).
2. In the bottom right, go to **SETTINGS**.
3. Go to **CONNECTION**.
4. In **Client Name**, enter the client name from the client mapping you created in the Voisus web interface. If your settings allow unlisted clients to connect, enter any client name.
5. Under **Connect to Server**, in **IPv4 Address** or **ASTi Cloud ID**, enter the Voisus server's IP address or cloud ID. If you cannot detect the cloud ID on a Windows computer, go to "Windows Firewall" in the *Voisus Quick Start Guide*.
6. To view the list of available roles on the Voisus server, tap CONNECT.
7. Tap **Role**, and choose an operator role.
8. *(Optional)* Tap **Vehicle**, and choose a vehicle.
9. Tap CONNECT again. The green status bar confirms the client's connection to the Voisus server and a role.

Figure 266: CONNECTION tab

3.3.1.2 DIS tab

DIS provides optional fields to adjust DIS settings for the client. Use this data to link the client to a DIS entity or prevent duplicate DIS IDs during playback.

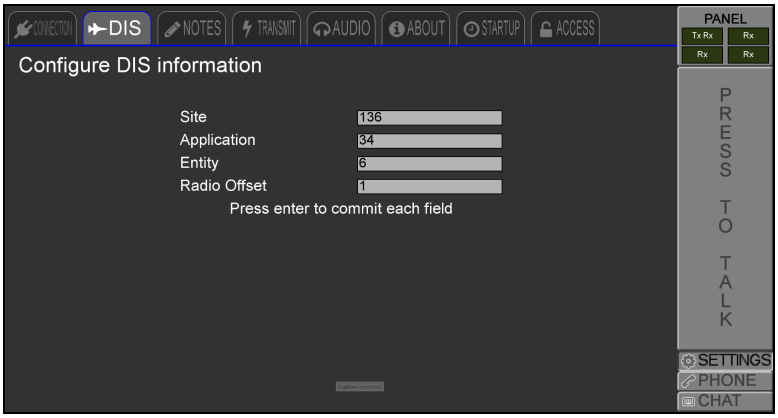

Figure 267: DIS tab

3.3.1.3 NOTES tab

NOTES provides fields to enter optional labels at the top of each asset in the comm panel. Notes are unique to that particular client and will not display to users. The client does not save notes when you close the GUI; however, they are retained when you reinstall a scenario or switch the client's role.

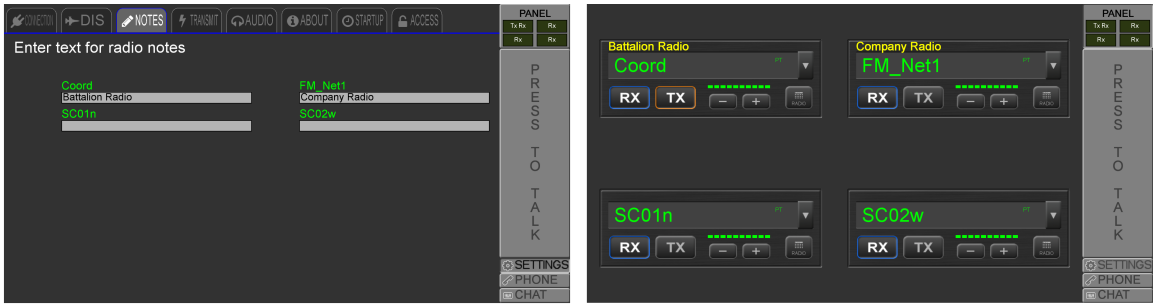

Figure 268: Comm panel Notes

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3.3.1.4 TRANSMIT tab

Use **TRANSMIT** to set up to four press-to-talk (PTT) devices. Primary PTT devices are set under **Primary PTT**. To set up a second, third, or fourth PTT device, tap **Alternate PTT** in the top right, and choose **Second**, **Third**, or **Fourth**. All four devices can be active simultaneously. The client automatically saves device settings.

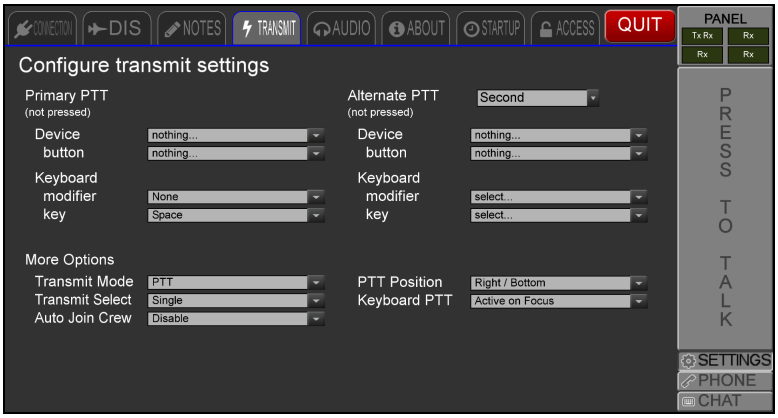

Figure 269: TRANSMIT tab

To set up a PTT device, follow these steps:

1. In **Primary PTT** or **Alternate PTT**, tap **Device**, and choose a device (e.g., ASTi Radius, Delcom switch).
2. Tap **button**, and choose a PTT button.
3. *(Optional)* Under **Keyboard**, tap **modifier**, and choose a key that will serve as the modifier keystroke for the PTT action (e.g., in a combination of Alt+F4, the Alt key is the modifier).
4. *(Optional)* Tap **key**, and choose a key that will trigger PTT functionality.
5. Under **More Options**, tap **Transmit Mode**, and choose one of the following:
   - ***PTT***: transmission triggered by a PTT key (required).
   - ***VOX***: transmission triggered by voice activity; this setting only applies to assets associated with the primary PTT device.
   - ***HOT***: the radio client always transmits.
   - ***OFF***: the radio client never transmits.

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6. Tap **Transmit Select**, and choose one of the following:
   - ***Single***: only one asset can transmit at a time.
   - ***Multiple***: one or more assets can transmit simultaneously.
   - ***Skin Active***: the active radio skin is always set to transmit; as a result, you don't need to tap **Tx** every time you change radio skins.
7. Tap **Keyboard PTT**, and choose one of the following:
   - ***Active on Focus***: only transmits when the client window is in front and in focus.
   - ***Always Active***: transmits when keyed, even if the operator is interacting with another window or program.
   - ***Disable***: never transmits.
8. Tap **PTT Position**, and choose the sidebar's desired location on the GUI. When this setting is turned off, the sidebar does not display.
9. Tap **Auto Join Crew**, and choose **Enable** or **Disable**. When enabled, the client automatically joins a crew after connecting to the Voisus server. This setting is disabled by default.
10. By default, all PTT devices are set to **Primary** in the Voisus web interface. To map the radio to an alternate PTT device, go to **Roles**, and tap the affiliated radio.

    Under **Audio**, tap **PTT**, and choose a PTT device. For more information about radio PTT settings, go to Step 11 of Section 2.8.2, "Add a radio" on page 41.

3.3.1.5 AUDIO tab

Under **Configure audio devices**, tap **Microphone**, **Headphones**, or **Speakers** to choose an audio device; otherwise, the client selects the system default. This feature is only operational on Windows operating systems.

Under **Configure audio levels**, tap an audio preset, and adjust the **Earphones**, **Microphone**, **Sidetone**, and **VOX Threshold** levels.

and

test the audio levels and sidetone.

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To return the selected preset to its factory settings, tap Apply. To save your changes, tap Save.

Figure 270: AUDIO tab

3.3.1.6 ABOUT tab

ABOUT displays the Voisus software version. To view details about the software's status, tap View Log.

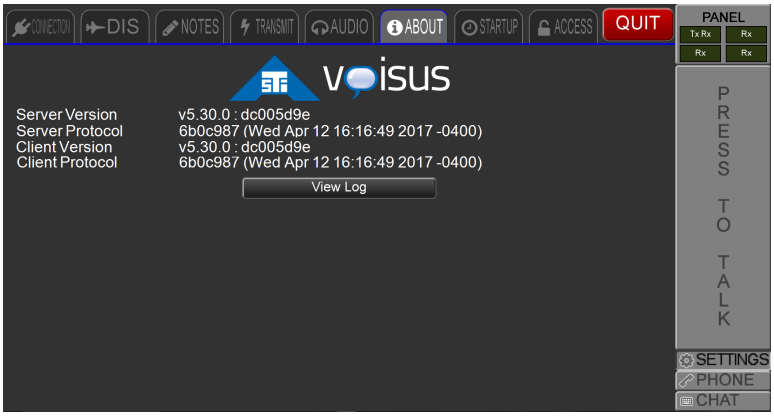

Figure 271: ABOUT tab

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3.3.1.7 **STARTUP** tab

STARTUP allows you to customize the appearance of the client on your screen. These settings are only available for Windows operating systems.

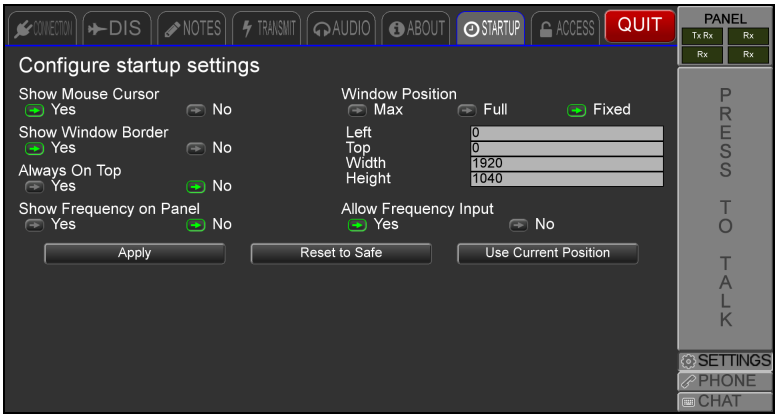

Figure 272: STARTUP settings

The following settings appear on **STARTUP**:

- ***Show Mouse Cursor***: the mouse cursor displays on the screen.
- ***Show Window Border***: when enabled, the title bar and resizing controls display at the top of the window, and a border displays. When disabled, the title bar, controls, and border disappear, and you cannot resize the client.
- ***Always on Top***: when enabled, the window is always active in the forefront; for example, administrators might use this setting to keep users from focusing on or opening other programs. To disable, quit and relaunch the client.
- ***Show Frequency on Panel***: choose if frequency and presets display on assets.
- ***Window Position***
  - ***Max***: when **Window Border** is disabled, enabling **Max** puts the client in full screen mode; you cannot view or access the taskbar.
  - ***Full***: when **Window Border** is disabled, enabling **Full** puts the client in full screen mode, but you can still view and access the taskbar.
  - ***Fixed***: when the client launches, the window automatically fixes to the **Left** and **Top** coordinates with specified **Width** and **Height** dimensions. To use the window's current position and dimensions, tap Use Current Position.
- ***Allow Frequency Input***: changes a radio's frequency on the **Generic** radio skin.

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3.3.1.8 ACCESS tab

ACCESS allows administrators to determine which GUI settings users can adjust when in Limited Access mode. To enable LIMITED ACCESS mode, follow these steps:

1. On **ACCESS**, tap Set Password.
2. The first time you select this tab, you are prompted for a password. Enter a password, and tap OK.

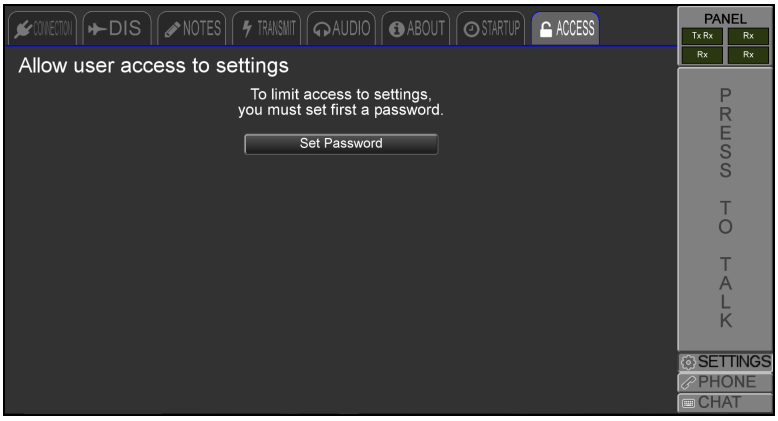

Figure 273: Set Password

When LIMITED ACCESS mode is enabled, **SETTINGS** does not appear unless you enter the correct password.

3. Tapping **Yes** gives you standard, unrestricted access to the settings on that page, while tapping **No** allows you to view but not adjust the settings on that tab. Figure 274, "Standard vs. restricted tabs" below compares a standard versus restricted tab:

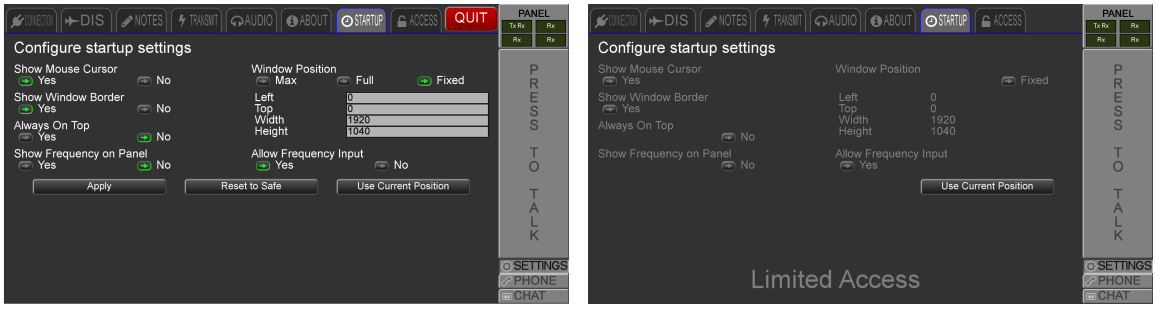

Figure 274: Standard vs. restricted tabs

LIMITED ACCESS mode locks the settings on most tabs, except for **CONNECTION** and **TRANSMIT**. **CONNECTION** switches between roles and vehicles.

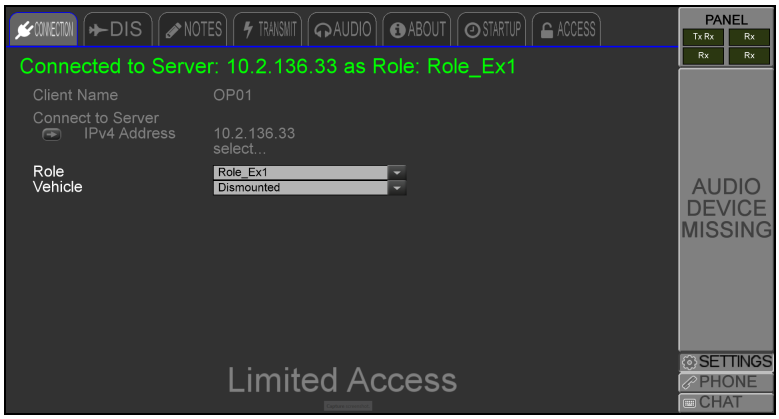

Figure 275: Limited CONNECTION tab

TRANSMIT switches second, third, and fourth press-to-talk (PTT) device for testing purposes.

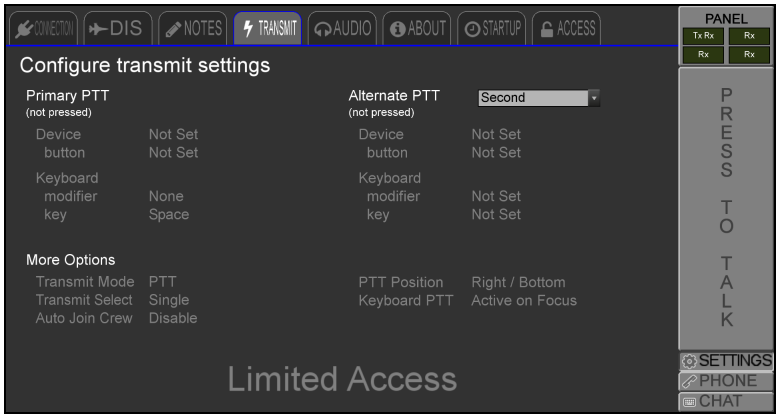

Figure 276: Limited TRANSMIT tab

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4. To save changes, tap Apply Access. To reset your changes, tap Reset Access.

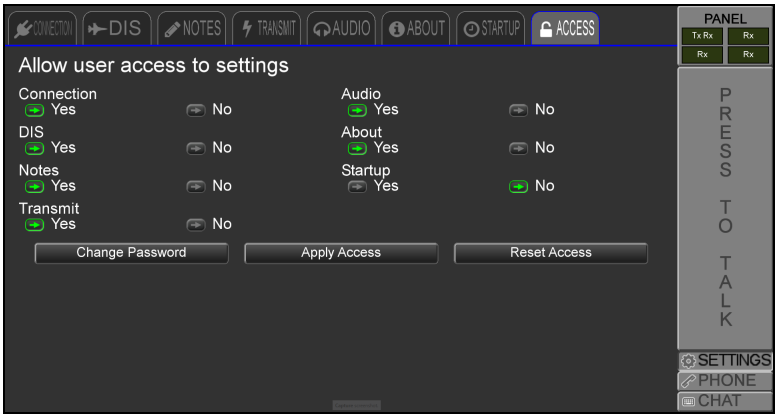

Figure 277: ACCESS tab

To disable LIMITED ACCESS mode, follow these steps:

1. Tap Change Password.
2. Leave the password blank, and tap Set Password. As a result, users have unlimited access to each tab and its respective settings.

3.3.2 Radio skins

Radio skins allow you to customize the look and feel of the radio GUI in the Voisus Client for Tablets & Desktops. ASTi offers the following predefined radio skins:

- Generic
- ICOM IC-M330GE
- PRC-117F
- PRC-117G
- PRC-119 ASIP
- PRC-119 SIP
- PRC-148
- PRC-152
- Live radios

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3.3.2.1 Radio GUI

The main radio GUI displays the following:

- *Radios*: up to eight radios available; the current net name of each radio is displayed. When multiple nets are available, tap the drop list to change nets.
- *RX/TX*: displays communication status for receive and transmit on each radio; when multiple nets are available, tap the drop list to change nets.
- *Volume*: provides volume control for each radio.
- *Radio skins*: to access each radio's skin and individual settings (e.g., Frequency, Presets, cipher mode (CT/PT), net selection, volume control), tap **Radio** (RADIO). The radio skin type is set when you create a new radio in the Voisus Client for Tablets & Desktops. To create a new client radio, go to Section 2.8.2, "Add a radio" on page 41.

Figure 278: Radio GUI main screen

Figure 279: Radio GUI frequencies

Channel denotes an intercom asset. SINCGARS, HaveQuick, or HFECCM indicates an antijam net is selected. A frequency value in MHz displays for a single-channel radio.

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3.3.2.2 Generic radio skin

The Generic radio skin provides basic radio functions such as net selection, frequency and preset selection, volume control, and cipher mode (PT/CT). Initial cipher mode is set when you create a new radio in the Voisus Client for Tablets & Desktops.

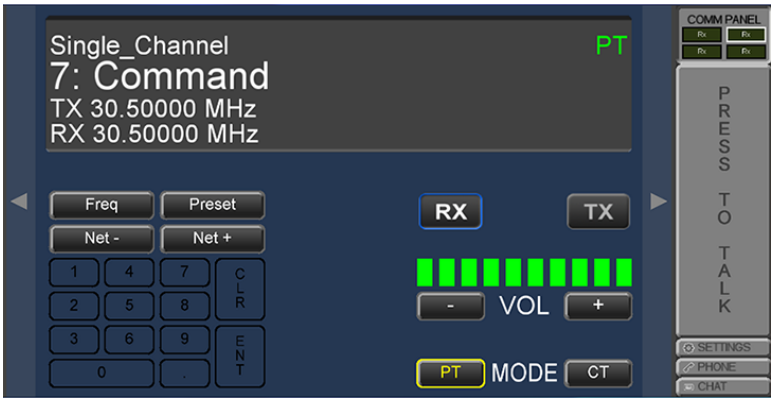

Figure 280: Generic radio skin

To manually input frequencies or change presets, tap **Radio** (), and choose **Freq** or **Preset**.

To set the Generic radio skin's frequency inputs, follow these steps:

1. To activate the numeric keypad, tap **Freq**.
2. Input a frequency value or intercom channel number, and tap **ENT**.

For single-channel radios, enter separate receive and transmit frequencies. All radio frequencies are in MHz. If the radio is in SINCGARS, HAVEQUICK, or HFECCM mode, frequency input is not permitted.

To modify Generic radio skin presets, follow these steps:

1. To activate the keypad, tap **Preset**.
2. Enter a value, and tap **ENT**. If the preset number does not exist, the asset remains on the current preset. When you enter a new value, a 10 second timeout occurs.
3. To move through the nets without accessing **Freq** or **Preset**, tap **Net -** or **Net +**.

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3.3.2.3 ICOM IC-M330GE

The ICOM IC-M330GE simulated radio skin supports channel selection, power on/off, and volume control functionality. To learn more about the physical ICOM IC-M330GE radio's functionality, go to the *ICOM IC-M330/IC-M330E/IC-M330G/IC-M330GE Instruction Manual*.

Figure 281: ICOM IC-M330GE radio skin

3.3.2.4 PRC-117F radio skin

The PRC-117F knob has three functional settings:

- ***OFF***: turns the simulated radio off.
- ***PT***: plain text (PT) mode; use this setting to simulate non-encrypted communication.
- ***CT***: cipher text (CT) mode; use this setting to send and receive encrypted communication. Crypto-capable nets are created in the **Comm Plan** found in the Voisus web interface.

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The **VOL** and **PRE** buttons on the faceplate are also functional. Use **PRE** to move through the available net list. Following procedures outlined in the operations manual, directly input transmit and receive frequencies when on a single channel preset.

Figure 282: PRC-117F faceplate

3.3.2.5 PRC-117G radio skin

The PRC-117G knob has three functional settings:

- ***OFF***: turns the simulated radio off.
- ***PT***: plain text (PT) mode; use this setting to simulate non-encrypted communication.
- ***CT***: cipher text (CT) mode; use this setting to send and receive encrypted communication. Crypto-capable nets are created in the **Comm Plan** found in the Voisus web interface.

The **VOL** and **PRE** buttons on the faceplate are also functional. Use **PRE** to move through the available net list.

Figure 283: PRC-117G faceplate

3.3.2.6 PRC-119 ASIP radio skin

Figure 284, "PRC-119 ASIP faceplate" below shows the PRC-119 ASIP radio skin:

Figure 284: PRC-119 ASIP faceplate

3.3.2.7 PRC-119 SIP radio skin

Figure 285, "PRC-119 SIP radio skin" below shows the PRC-119 SIP radio skin:

Figure 285: PRC-119 SIP radio skin

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3.3.2.8 PRC-148 radio skin

Figure 286, "PRC-148 faceplate" below shows the PRC-148 radio skin:

Figure 286: PRC-148 faceplate

3.3.2.9 PRC-152 radio skin

The PRC-152 knob navigates through available nets and turns the radio off. **PRE** can change nets. The 6 PQR and 9 YZ? arrows provide volume control.

Figure 287: PRC-152 faceplate

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3.3.2.10 PRC-355 radio skin

Figure 288, "PRC-355 radio skin" below shows the PRC-355 radio skin:

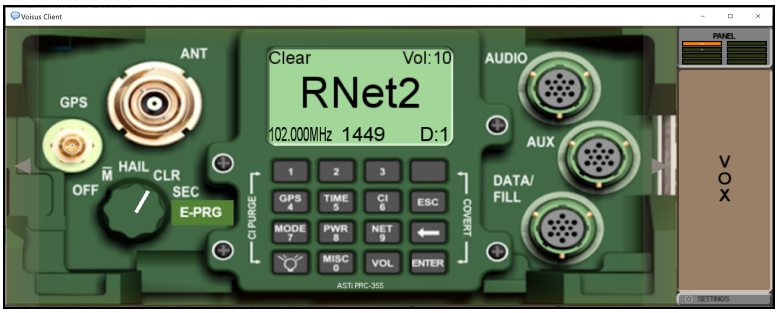

Figure 288: PRC-355 radio skin

3.3.2.11 Live radios

The client can interact with live radios using Voisus Radio Bridge. This capability allows you transmit through, receive from, and remotely control live radios from the client GUI.

Figure 289, "Live radio" below depicts a live radio screen:

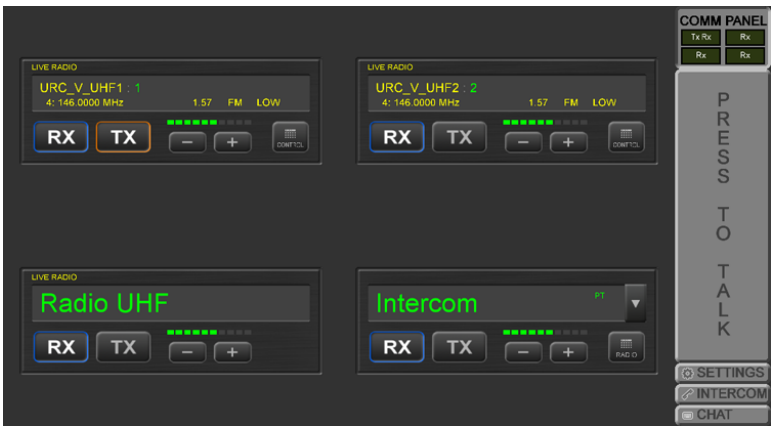

Figure 289: Live radio

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Figure 290, "Remote control radio" below depicts a remote control radio screen:

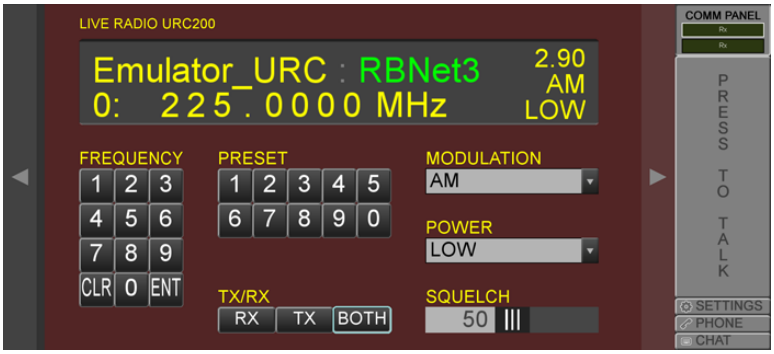

Figure 290: Remote control radio

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3.3.2.12 Enable dual radio skins

To enable dual radio skins in the Voisus Client for Tablets & Desktops, follow these steps:

1. On the desktop, hover over **Voisus Client for Tablets & Desktops**. Right-click, and select **Properties**.
2. In **Voisus Client Properties**, select **Target**. At the end of the file path, press the Space-bar, enter two dashes (--), and then enter **DUAL=1,2**.

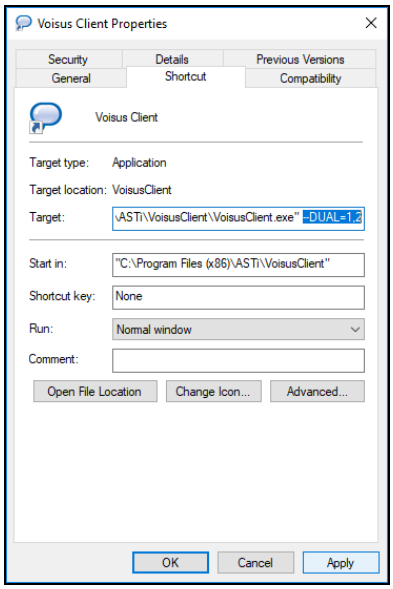

Figure 291: Dual radio skins in a client

3. Select **Apply**, and select **OK**.

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Radio skins in the Voisus Client for Tablets & Desktops now appear stacked:

Figure 292: Stacked radio skin

3.3.3 Voisus Client for Tablets & Desktops features

This section describes and provides installation instructions for the crew intercom and text chat features in the Voisus Client for Tablets & Desktops. Additionally, it explains how to start a call within the client.

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3.3.3.1 Crew intercoms

Crew intercom enhances the calling feature by functioning as a hot mic intercom among pre-defined groups. Operators communicate on a local audio channel rather than over the radio. For more information regarding this feature, contact ASTi.

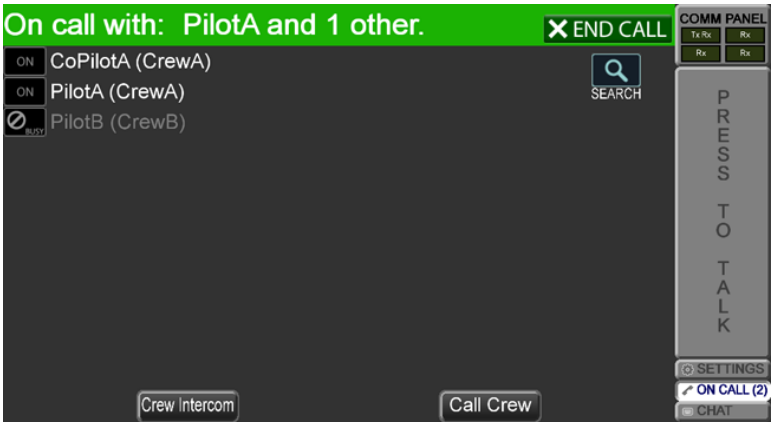

Figure 293: Crew intercom

To enable crew intercom, follow these steps:

1. From the top right, go to **Manage** ( ) > **Features**.

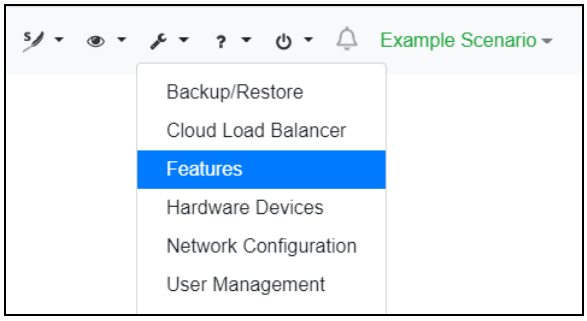

Figure 294: Features navigation

2. On **System Features**, turn **Crew Intercom** ON.

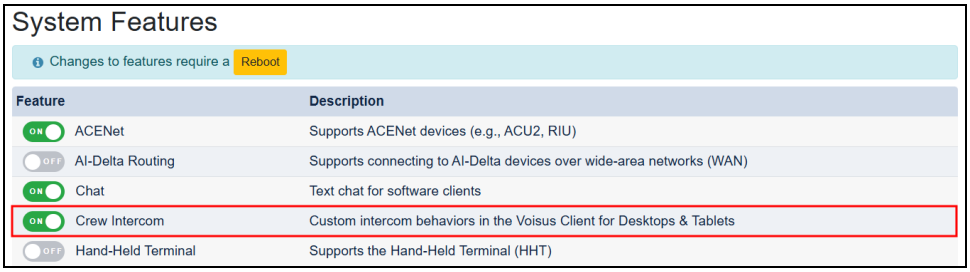

Figure 295: Turn on Crew Intercom

3. To activate changes, select Reboot.

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To assign clients to crew intercom groups, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

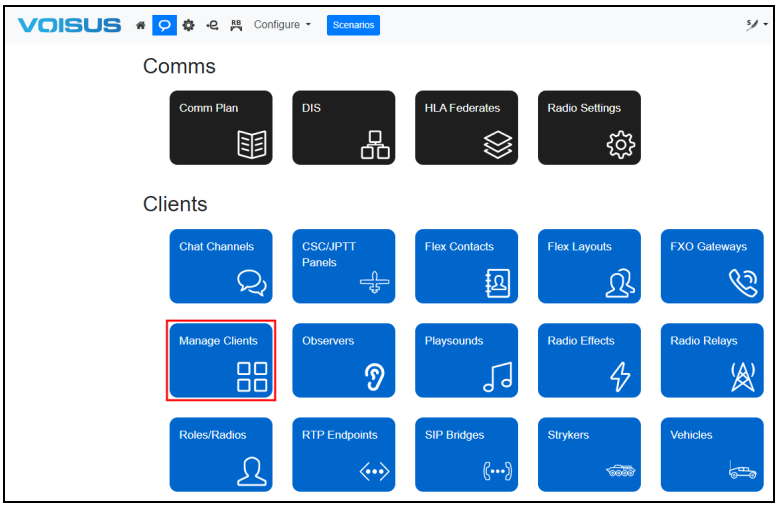

Figure 296: Manage Clients navigation

2. On **Manage Clients**, assign each client to a crew intercom group.

3.3.3.2 Text chat

The Voisus Client for Tablets & Desktops features an Internet Relay Chat (IRC) client. Chat is enabled by default for each new role created in the Voisus Client for Tablets & Desktops. On **Roles** in the Voisus web interface, you can disable text chat on a per-role basis.

By default, Voisus IRC chat operates in conference mode, with all users connecting to IRC channel **#voisus** on the Voisus server. If multiple servers are connected in a cloud, all clients in the cloud will connect to the same IRC channel. Third-party IRC clients can join IRC chats hosted on the Voisus server by connecting to the server's IP address and joining the **#voisus** channel.

In some cases, the Windows firewall disables text chat. The firewall settings can be adjusted to restore functionality. To enable text chat in the firewall settings, follow these steps:

1. On the Windows computer or tablet running the client, open Control Panel.
2. Go to **System and Security** > **Windows Firewall**. If Control Panel is set to icon view, open Windows Firewall.
3. From the left menu, go to **Allow a program or feature through Windows Firewall**.

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4. Go to **Allow another program...**
5. From the list of programs, select **Voisus Client App**, and then select **Add**.
6. Select **OK**, and close Control Panel.
7. Verify that text chat works in the client.

3.3.3.3 Calling

The Voisus calling feature provides private intercom communications between two or more clients in the same training exercise. Tap the green phone ( ) to view a list of clients on the network and invite a client to talk. If the client accepts, you can communicate in real time over the network. Clients on an active call can invite other clients to join as well. Clients added to a conference call automatically disconnect when the host client leaves.

A client's radio transmit mode is disabled while on a call. However, the client's receive mode remains enabled so the client can hear radios and intercoms. The calling feature can be enabled or disabled for each role in the Voisus web interface on **Roles**.

3.4 Flex Client

The Flex Client provides streamlined access to public-switched telephone networks (PSTN); voice-over-IP (VoIP) and mobile phone assets; live, land-mobile and military radios; and network-based simulated radios, intercoms, and conferencing capabilities. This robust product includes the following features:

- *Customizable:* create and manage custom Flex Client GUI templates for each role. Determine the number of assets displayed, where things are placed, and which features are available, including public address (PA), Simulcast, instant replay, press-to-talk (PTT), and more.
- *Fully integrated:* control and communicate using phone lines, radios, and intercoms.
- *Remote radio access & control:* remotely control frequency, modulation type, power level, and squelch, depending on the radio type. Patch a radio to another radio or a phone line from any connected client.
- *Scalable:* access as many radios, intercoms, and phone lines as your project requires.
- *Template-based:* make changes to communication assets (e.g., phone lines, radios) and GUI templates.
- *Phone access:* access calling among PSTN, cellular telephone networks, and commodity VoIP infrastructures.
- *Intercom functionality:* access point-to-point intercoms, conference calls, and public announcements among all types of client operators.

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The Flex Client requires the following equipment:

- Intel Pentium 4 1.3 GHz or better
- 1 GB RAM
- 10/100 Ethernet card
- USB 2.0 port (available for connection to USB adapters and headsets)
- A shared network connection with the Voisus server

3.4.1 Flex Client web setup

Before using the Flex Client, make the following configurations in the Voisus web interface:

1. *(Optional)* To set up phone lines, connect one or more FXO gateway devices to the Voisus server, and go to **Clients** ( ) > **FXO Gateways** and **Manage** ( ) > **Hardware Devices** > **FXO** to configure them. To learn more about FXO gateway setup, go to Section 2.10, "FXO Gateways" on page 68.
2. Make Flex Client-specific configurations in the role that you will connect to the client, as described in Section 2.8.7, "Configure the Flex Client in a role" on page 58.
3. *(Optional)* Set up your calling contacts and one or more speed lists, as described in Section 2.11.1, "Add contacts to the Flex Client" on page 71 and Section 2.11.2, "Group contacts into speed lists" on page 73.
4. Add and set up a **Flex Layout**, as described in Section 2.12, "Flex Layouts" on page 75.

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3.4.2 Flex Client interface elements

The Flex Client is highly customizable to ensure the widest range of use. The image below shows only one potential layout:

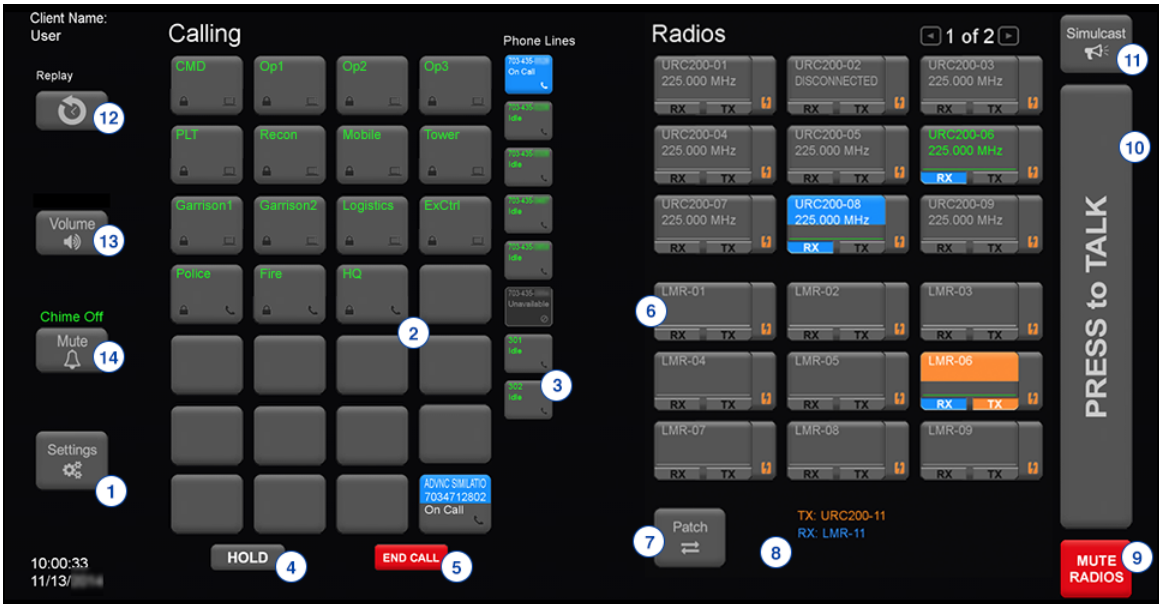

Figure 297: Flex Client GUI

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Table 11, " Flex Client interface elements" on the next page lists and describes interface elements in the Flex Client:

No.	Tile	Name	Description
1		**Settings**	Tap **Settings** to connect to a server and role or change client-specific options.
2		**CALLING**	A **CALLING** tile handles clients' incoming and outgoing calls, whether the call is client to client or client to phone. Blank tiles can handle any call, while named tiles only call a specific endpoint.
3		**PHONE**	**PHONE** tiles make external calls to phone lines. If a tile is idle, you can place and receive calls on that line. To learn more about **PHONE** tile setup in the Voisus web interface, go to Section 2.10, "FXO Gateways" on page 68.
4		**HOLD**	To place the call on hold, tap **HOLD**. Tap and hold **HOLD** to display **Calls on Hold**. To rejoin a call, tap the call name. To learn more about **HOLD**, go to Section 3.4.7, "Place a call on hold in the Flex Client" on page 198.
5		**END CALL**	Tap **END CALL** to terminate a call. If multiple operators are on the call, your line disconnects, but other operators continue uninterrupted.
6		**RADIO PLUS**	**RADIO PLUS** tiles represent live and virtual radios assigned to the current role with the addition of a direct press-to-talk (PTT) button. Tap and hold this button to transmit on the corresponding radio, regardless of its prior state. Release the tile to stop transmitting.
7		**Patch**	This tile links multiple radios together. To create a patch, tap **Patch**, then choose the **RADIO PLUS** tiles to link. Once linked, each **RADIO PLUS** tile displays a banner with the name of its respective patch. To unlink the radios, tap and hold **Patch** until **Remove Patch** displays, then tap the name or number of the patch to disable it. ***Note**: Radio patches are scenario-wide; a link created at one operator station displays on all other clients connected to the same scenario if they have access to the patched radios.*

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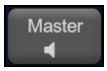
No.	Tile	Name	Description
8		**STATUS**	This area shows Rx/Tx activity of radios hidden from view. To view a radio's page, choose the name of any radio displayed here. In applications with multiple radio pages, this area displays the Rx/Tx activity of enabled radios on hidden pages. Tap the name of any radio displayed here to go to that radio's page.
9		**MUTE RADIOS**	Tap this tile to mute all receiving radios. Tap again to restore Rx audio.
10		**PRESS to TALK**	Tap and hold to transmit on all radios enabled to transmit. Multiple radio Tx capability is in **Client Settings**.
11		**Simulcast**	To actively transmit on all radios grouped together in the role, tap and hold **Simulcast**. Release **Simulcast** to return the client to its previous state. To add a radio to a **Simulcast** group, go to Section 2.8.7.3, "(Optional) Add a radio to a Simulcast group" on page 61,
12		**REPLAY**	To hear the last 20 seconds of audio (e.g., calls, radio transmissions), tap **REPLAY**. To adjust the replay time, open the tile's configuration dialog. In **Length**, enter a number in seconds.
13		**Master**	Multiple tiles can control **Master** volume (earphone), calling, sidetone, microphone, and VOX inputs. Earphone volume controls the overall volume of all the client station's assets. Individual radio/intercom volumes scale appropriately when you adjust the **Master** volume.
14		**Chime**	This tile turns the ringer for incoming calls on or off.

Table 11: Flex Client interface elements

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3.4.3 Adjust a radio tile's audio settings

To access a radio's audio settings, tap and hold its corresponding **RADIO** tile:

Figure 298: Radio tile's audio settings

Audio settings for a remote control radio allow you to view and modify additional settings, such as presets, Rx/Tx frequencies, Rx/Tx modulations, scan mode, power level, and squelch level. Configurable parameters vary depending on the type of radio.

Figure 299: Remote control radio tile's audio settings

3.4.4 Start a call in the Flex Client

To call the phone number or name on a **CALLING** tile, tap it once. If the tile does not show the desired name or number, tap a blank **CALLING** tile to access the calling dialog that shows the tile's available options:

- ***Contacts****:* a searchable list of the contacts defined on **Contacts**. To add more contacts, go to Section 2.11.1, "Add contacts to the Flex Client" on page 71.
- ***Speed List****:* the contacts mapped to the current role. To create and assign speed lists, go to Section 2.11.2, "Group contacts into speed lists" on page 73.
- ***Dial Pad****:* a standard, 10-digit dial pad that you can use to dial a telephone number or VoIP extension.
- ***History****:* the call history of the current client's session.

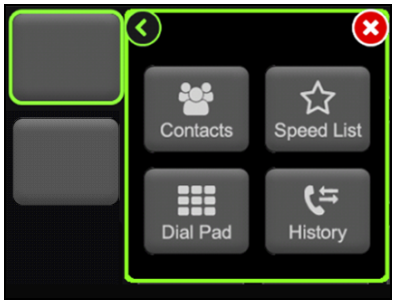

Figure 300: Flex Client calling menu

3.4.5 Accept a call in the Flex Client

To accept a call in the Flex Client, follow these steps:

1. Incoming calls light up and display "Incoming..." To answer, tap the highlighted tile.

Figure 301: Incoming call in the Flex Client

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2. If you aren't connected to a call, the pop-up box displays **Answer**, **Dismiss**, or **Silence**, which mutes the incoming call's chime.

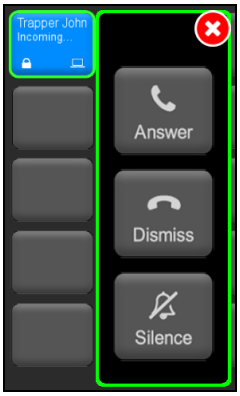

Figure 302: Incoming call menu options

If you're already on a call, the menu allows you to **Merge** it with your own:

Figure 303: Merge a call

When you accept or merge, the tile displays “On Call.” If multiple endpoints are connected, *+N* displays, where *N* is the number of endpoints:

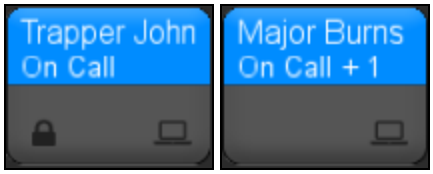

Figure 304: “On Call” tiles

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3. Tap and hold an on-call tile to view calling options:

   - ***Add**:* adds another endpoint to the call.
   - ***Hold**:* puts the current call on hold. To learn more about placing a call on hold, go to Section 3.4.7, "Place a call on hold in the Flex Client" on page 198.
   - ***Radios**:* adds a radio to the call. Tap the star (*) key to talk into the phone and transmit via the radio. To stop transmitting, tap the pound (#) key.
   - ***End**:* drops the current call.
   - ***Dial Pad**:* displays a standard, 10-digit dial pad that you can use to dial a telephone number or VoIP extension; only available for endpoints connected to a phone line.
   - ***Audio**:* controls the tile's volume.

Figure 305: On-call CALLING tile options

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3.4.6 Add to the Flex Client's current call

To add an endpoint listed on a **CALLING** tile to the call, follow these steps:

1. Tap and hold the active **CALLING** tile.
2. From the pop-up box, tap **Add**.

Figure 306: Add a listed endpoint to a current call

From the pop-up box, choose **Contacts**, **Speed Dial**, or **Dial Pad**. Choose a contact, or dial a number, as described in Section 3.4.4, "Start a call in the Flex Client" on page 192.

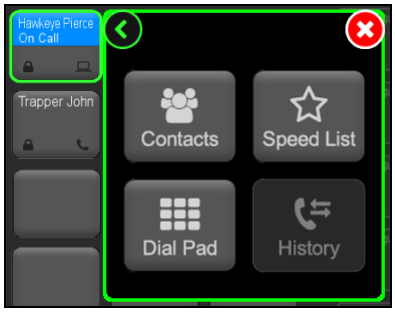

Figure 307: Choose an endpoint to add

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To add an unlisted endpoint to the current call, follow these steps:

1. Tap and hold a blank **CALLING** tile.
2. Tap **Add**.

Figure 308: Add blank tile to current call

3. From the pop-up box, choose **Contacts**, **Speed Dial**, or **Dial Pad**. Choose a contact, or dial a number.

To add a radio to the current call, follow these steps:

1. Tap and hold the active **CALLING** or **PHONE** tile.
2. Tap **Radios**.

Figure 309: Tap Radios

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3. From the pop-up box, tap **Add Radio**.

Figure 310: Tap Add Radio

4. Available radios display “Add to Call.” Tap a radio to add it to the current call.

Figure 311: Add to Call

The radio now displays “On Call:”

Figure 312: “On Call” radio

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3.4.7 Place a call on hold in the Flex Client

To place a call on hold, follow these steps:

1. Tap and hold an on-call tile, and then tap **Hold**.

   Alternatively, tap the HOLD tile to place all current endpoints on hold.

   The tile now displays “Busy:”

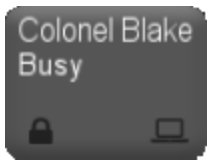

Figure 313: On-hold tile

2. To view call(s) on hold, tap and hold the HOLD tile.

Figure 314: Calls on Hold

3. To restore an on-hold call, tap the call name (e.g., **Captain Hunnicutt + 1**), and the Flex Client restores the call.

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3.4.8 End a call in the Flex Client

Terminate a call via one of the following methods:

- Tap END CALL.
- Tap the on-call tile.
- Tap and hold an on-call tile, and then tap **End**.
- Start another call. Tap and hold an on-call tile, and then tap **Contacts**, **Speed List**, or **Dial Pad**. To learn more about starting calls, go to Section 3.4.4, "Start a call in the Flex Client" on page 192.

3.5 ASTi Medium Control Audio Panel

ASTi provides a software client simulating the Medium Control Audio Panel (MCAP), a hardware communications panel containing ground control station components. The simulated client displays two adjacent interfaces. The left interface is intended for a pilot operator, while the right interface is intended for a supporting engineer. The client includes 30 simulated radios and/or intercom channels known as "assets." Each asset can monitor (i.e., receive) or transmit audio. Beneath each interface, a radio control unit (RCU) controls a ground radio associated with the MCAP. RCU #1 controls Radio 1, and RCU #2 controls Radio 2.

Figure 315, "MCAP/RCU interfaces" below identifies operational interface elements in the ASTi MCAP client:

Figure 315: MCAP/RCU interfaces

Table 12, "Operational interface elements in the ASTi MCAP client" below identifies operational interface elements in the ASTi MCAP client:

Number	Button	Interface Element Name
1		Up and Down arrow buttons
2		Radios 1–8 buttons
3		CLEAR/SECURE button
4		Intercom Control Station (ICS) button
5	--	RCU #1
6		MODE button
7	--	Transmit select switch (13 positions); **BKUP**, **PVT1**, and **PVT2** are not operational.
8	--	RCU #2

Table 12: Operational interface elements in the ASTi MCAP client

The MCAP is optimized for Windows computers and touchscreen tablets. The client works in conjunction with an ASTi AI-Delta device. To set up an AI-Delta in the Voisus web interface, go to Section 5.1.5, "Add an AI-Delta to the Voisus cloud" on page 232.

The simulated client's appearance and operation is identical to the original. For operation instructions, go to the manufacturer's documentation for the MCAP hardware panel. The MCAP's client settings are identical to the Voisus Client for Tablets & Desktops's settings. To learn more about connecting to a Voisus server and other common setup tasks, go to Section 3.3.1, "Voisus Client for Tablets & Desktops settings" on page 164.

3.6 ASTi TOCNET CAU

ASTi's TOCNET CAU is a software communication panel, much like the Voisus Client, which simulates the Army's TOCNET CAU interface. If TOCNET CAU qualifies as part of your ASTi solution, its documentation is included on the Docs CD that shipped with your system(s). If you cannot find the TOCNET CAU documentation, contact ASTi to receive a new CD or individual documents at your request.

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4.0 Serious game add-ins

ASTi offers serious game add-ins for Virtual Battlespace (VBS) software. This chapter discusses the following topics:

- Voisus VBS Add-in
- Simscribe VBS Add-in

4.1 Voisus VBS Add-in

With the Voisus VBS Add-in, you can employ ASTi's full-fidelity radio simulation and communication capabilities in the VBS training system. ASTi radios provide a realistic, simulated radio environment that complies with Distributed Interactive Simulation (DIS).

The Voisus VBS Add-in integrates a Voisus software client directly into the VBS game environment. Each operator has one or more communication assets (e.g., radio, intercom). During a mission, operators view a head-up display (HUD) that shows information about their radios, including current net selections and the transmit or receive status. Operators can also assign vehicles to radios and use them in the game.

ASTi's vocal range feature makes the game more realistic, as only operators within acoustic range can communicate without radios using their voices. The acoustic model works automatically with geolocated maps in VBS. No configuration is required. Install and set up the add-in using the Voisus VBS Manager. This interface detects existing VBS installations and missions, allowing you to enable and customize the add-in.

This section discusses the following topics:

- VBS client setup
- VBS administrator setup
- Voisus options in VBS

4.1.1 VBS client setup

Before you can use Voisus radios with VBS, you must complete the following three setup tasks on each workstation with a VBS client, including the administrator workstation. You will need to complete these tasks every time you add a new VBS installation or apply Voisus software updates.

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This section discusses how to:

- Install the Voisus VBS Manager
- Enable VBS installations for Voisus
- Disable VBS keyboard shortcuts

4.1.1.1 Install the Voisus VBS Manager

The Voisus VBS Manager requires the following:

- Windows 7 or Windows 10 (64-bit)
- Bohemia Interactive Simulation's VBS

To install the Voisus VBS Manager, follow these steps:

1. Open a web browser on a device sharing a network with the Voisus server.
2. In the address bar, enter the Voisus server's IP address.
3. Select Downloads.

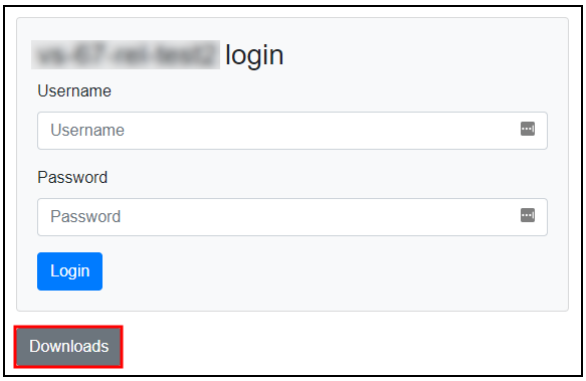

Figure 316: Downloads navigation

4. On **Downloads**, under **VBS Manager**, select **Download**.

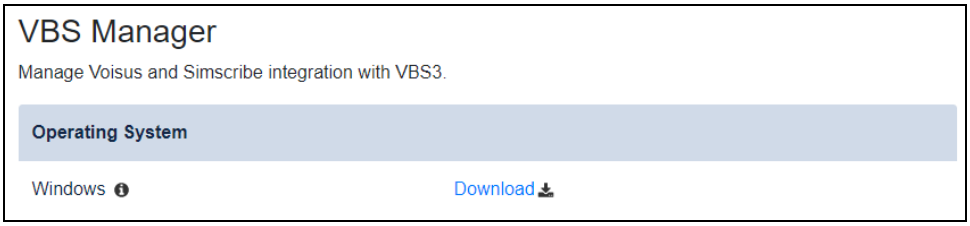

Figure 317: Download VBS Manager

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5. In **Downloads**, open the **VoisusVBSManagerSetup_v5.*X.Y.Z*.exe** file, where *X.Y.Z* represents Voisus's current software release (e.g., 8.6.0).
6. To install the **Voisus VBS Manager**, in **Setup – Voisus VBS Manager**, follow the on-screen prompts.
7. When the software is finished installing, select **Finish**.

4.1.1.2 Enable VBS installations for Voisus

To enable VBS installations for Voisus, follow these steps:

1. Log into the client workstation as a Windows administrator.
2. From the desktop, open **Voisus VBS Manager** ( ).
3. In the Voisus VBS Manager window, do one of the following:
   - To enable Voisus for all detected VBS installations, in the **Voisus VBS Manager** window, select **Enable Voisus for *N* installation(s)**, where *N* represents the number of installations.
   - To enable Voisus on individual, existing installations, select **Manage installations and missions**.

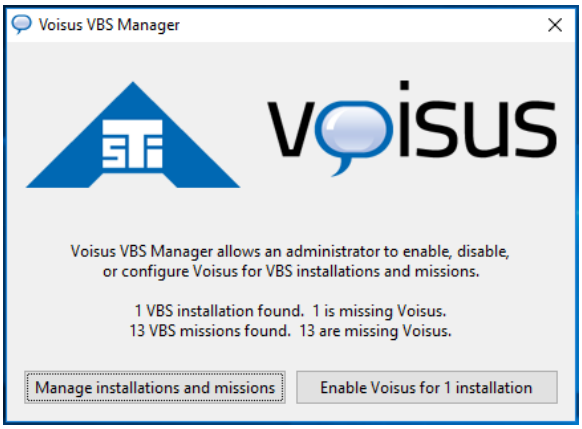

Figure 318: Enable Voisus for VBS

4. On the **Installations** tab, choose a file path.

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5. Next to **Configure Installations**, select **Enable**.

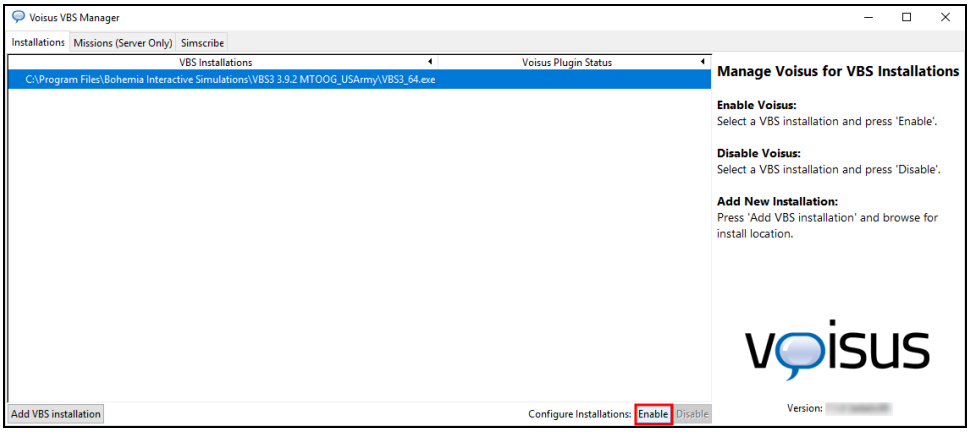

Figure 319: Enable Voisus installations

6. Confirm there is a green check mark next to the installation, indicating it is active.

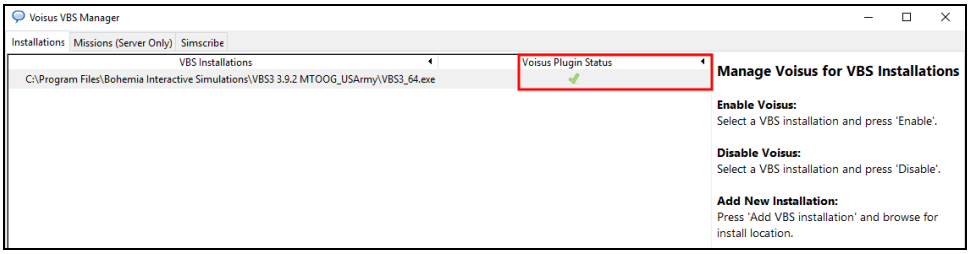

Figure 320: Installation status

4.1.1.3 Disable VBS keyboard shortcuts

VBS installs a number of default keyboard shortcuts that conflict with the keys that Voisus uses to provide radio and proximity-based speech operation. For Voisus to work properly, you must disable a small subset of these shortcuts.

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To disable default keyboard shortcuts, follow these steps for each VBS profile:

1. From the desktop, open **VBS Launcher** ( ).
2. In **VBS Launcher**, select **Launch modules**.

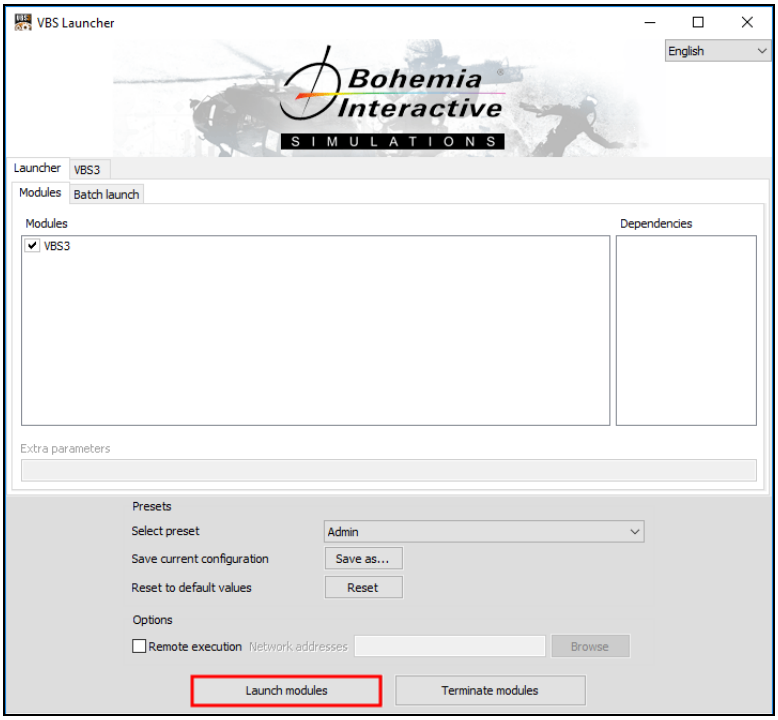

Figure 321: Launch modules

3. Go to **Options** > **Controls**.
4. Under **CONFIGURE CONTROLS**, delete the following keyboard shortcuts:

Setting	Default Key	Symbol
chat	Forward slash	/
next channel	Period	.
next target	Tab	N/A
previous channel	Comma	,
press-to-talk	Caps lock	N/A
voice-over-net	Caps lock	N/A

Table 13: Default VBS keyboard shortcuts

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a. Select the setting name to view its default shortcut.

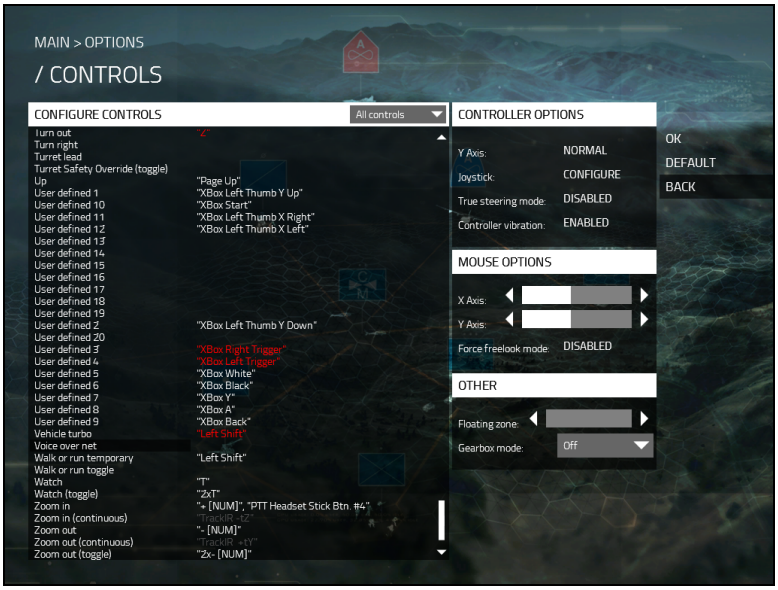

Figure 322: Default keyboard shortcuts

b. Under **KEYS**, select the shortcut.

c. At the bottom of the left pane, select **DELETE**.

***Important**: Do not press the Del key, or VBS will assign it to the action you are editing.*

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d. To return to the control list, in the top right, select **OK**.

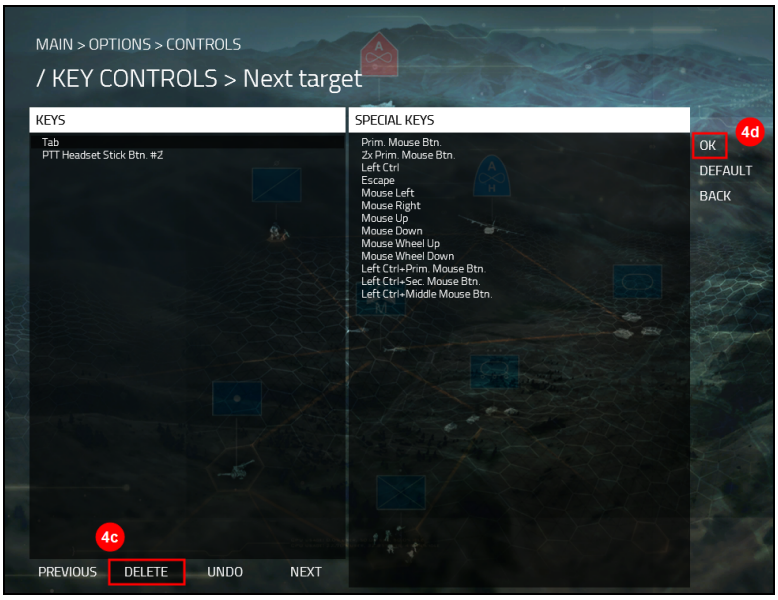

Figure 323: Delete default VBS keyboard shortcuts

***Note**: To use in-game, proximity-based voice communication, press Tab. In VBS2 and later, Del displays a **Signal/Weapon** actions menu on the screen. This menu does not interfere with the in-game speech feature.*

4.1.2 VBS administrator setup

After installing and configuring the Voisus VBS Manager, you must complete four tasks on the VBS administrator workstation. Before proceeding, make sure you've set up the administrator workstation as described in Section 4.1.1, "VBS client setup" on page 201.

This section discusses how to:

- (Optional) Edit ASTi keyboard shortcuts
- Remove VBS radio files
- Set up VBS missions for Voisus
- (Optional) Export missions to network scenarios

Editing ASTi keyboard shortcuts and removing VBS radio files are one-time configurations during initial setup. However, you must set up VBS missions and export them to network scenarios each time you add a mission to VBS.

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4.1.2.1 *(Optional)* Edit ASTi keyboard shortcuts

The Voisus VBS Add-in uses the following default keyboard shortcuts:

Name	Keyboard Shortcut	Description
Radio PTT	Caps lock	Transmit on a Voisus radio channel.
Vocal Range PTT	Tab	Speak to other avatars nearby.
Change Radio	Forward slash	Go down to the next radio.
	Shift+Forward slash	Go up to the previous radio.
Net +	Period	Go to the next net.
Net -	Comma	Go to the previous net.
Mute	K	Mute the current net.
Voisus Options	Alt+O	Open Voisus options.
Simscribe Options	Alt+Shift+H	Open Simscribe options.

Figure 324, "ASTi default keyboard shortcuts" below show ASTi's default keyboard shortcuts:

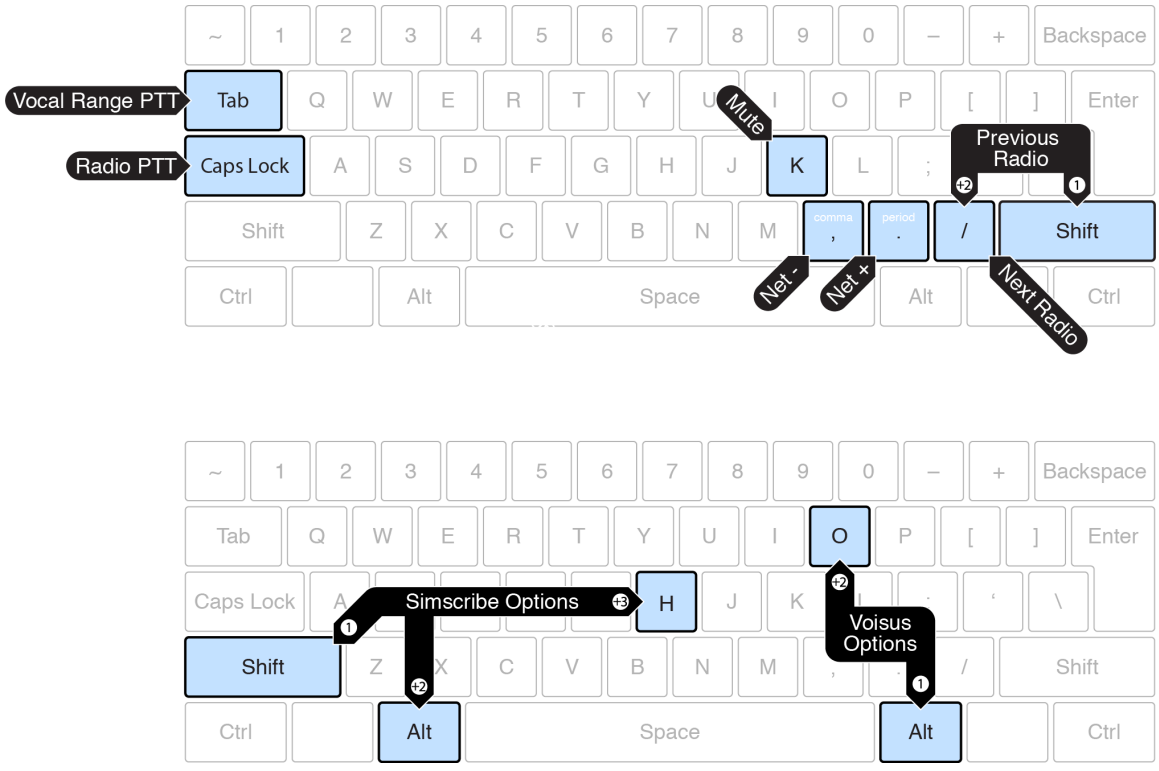

Figure 324: ASTi default keyboard shortcuts

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If desired, you can modify the default settings in the Voisus VBS Manager. To edit ASTi's default keyboard shortcuts, follow these steps:

1. From the Voisus VBS Manager, go to **Missions (Server Only)**.
2. Choose an individual mission or a group of missions.
3. Select **Advanced Settings**.

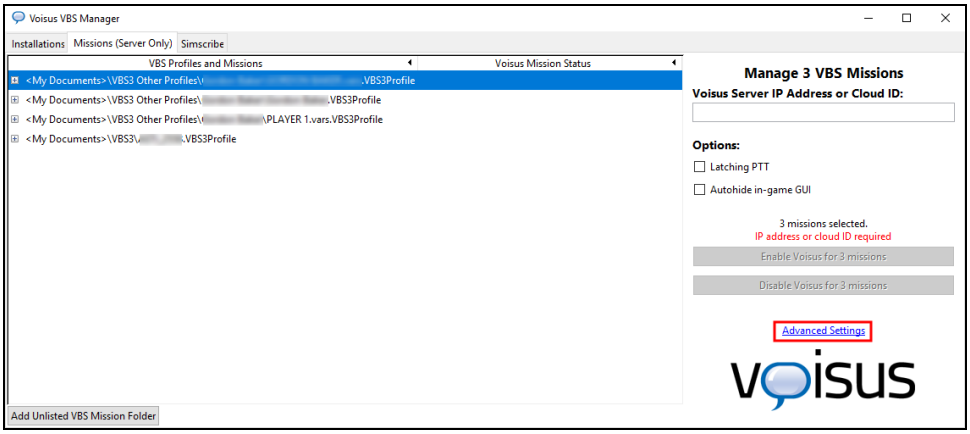

Figure 325: VBS Manager Advanced Settings

4. Under **Configure VBS Keybindings**, choose a keyboard shortcut, and select **Change**.

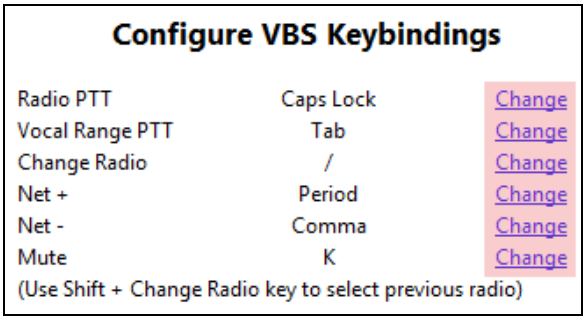

Figure 326: Configure VBS Keybindings

5. In **Keyboard Shortcut Selection**, press a keyboard shortcut (e.g., press the K key for **Mute**).

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6. By default, you can press Alt+O to open the Voisus client **Option Menu** in VBS. If you'd like to change this key combination, do the following:

   a. Under **Select Option Menu key and required modifier key(s)**, select **Option Menu**, and choose one of the following:

      - **NO_MODIFIER**: don't require a base key.
      - **REQUIRE_SHIFT**: set the Shift key as the base.
      - **REQUIRE_ALT**: set the Alt key as the base (default).
      - **REQUIRE_SHIFT_AND_ALT**: set Shift+Alt as the base.

   b. To set the Voisus options window's modifier key, select **Change**, and press the desired key. The current modifier displays between **Option Menu** and **Change**:

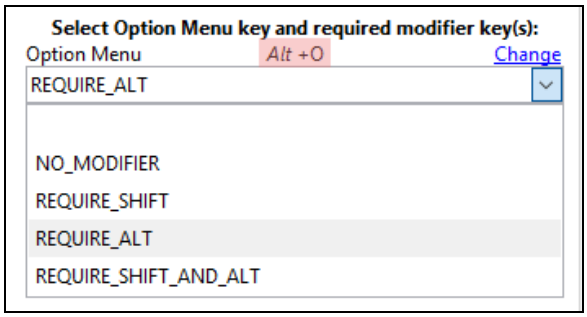

Figure 327: Option Menu and modifier key(s)

7. By default, killed players cannot transmit but may still listen to radio communications. To change this behavior, click **Select radio abilities for killed VBS players**, and choose one of the following:

   - ***NO_COMMS***: terminated players cannot receive or transmit.
   - ***RX_ONLY (Default)***: terminated players can only receive transmissions (default).
   - ***RX_AND_TX***: terminated players can both receive and transmit.

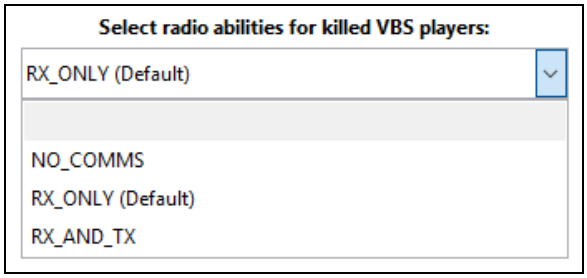

Figure 328: Select radio abilities for killed VBS players

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8. To set the radio display's screen position in VBS, choose a location from **Select HUD position**:

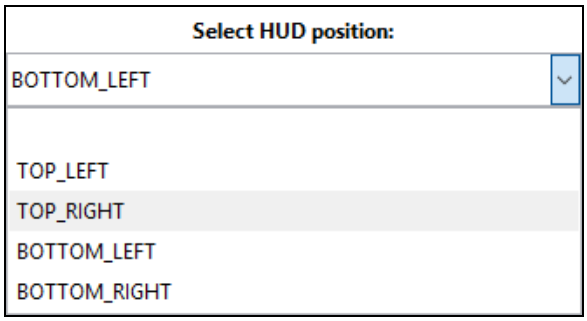

Figure 329: Select HUD position

9. Select **Close Advanced Settings**.
10. To save your changes, select **Update settings for** *N* **missions**, where *N* represents the number of missions you are updating.

4.1.2.2 Remove VBS radio files

VBS's built-in radios appear on the screen in the same place as the Voisus client radios. To view the Voisus radios, move the existing radio files out of the pluginsFusion64 folder. This is a one-time change that you must complete when the Voisus VBS Add-in is first installed.

To move VBS radio files, follow these steps:

1. Open File Explorer.
2. Go to **C:\ProgramFiles\Bohemia Interactive Solutions\VBS** *X.Y.Z* MTOOG_USArmy\pluginsFusion64, where *X.Y.Z* is the VBS software version (e.g., 3.9.2).
3. Move the following files:
   - radio-visuals.fusion
   - vbs_radio.fusion

4.1.2.3 Set up VBS missions for Voisus

The Voisus VBS Manager automatically detects existing missions in VBS. Every time you add a mission to VBS, you must enable it for Voisus in the Voisus VBS Manager. To set up VBS missions, follow these steps:

1. From the desktop, open **VBS Missions Manager** ( ).
2. Go to **Missions (Server Only)**, and choose the mission file(s) you want.

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3. In **Voisus Server IP Address or Cloud ID**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* represents the Voisus server's IPv4 address or cloud ID.

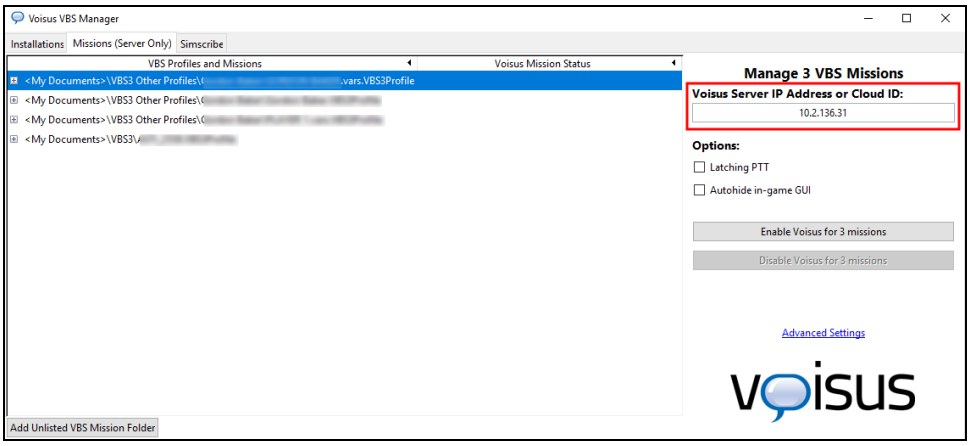

Figure 330: Voisus Server IP Address or Cloud ID

The Voisus server's IP address or cloud ID must match the corresponding setting in the Voisus web interface. Figure 331, "Matching cloud IDs" below shows matching cloud IDs:

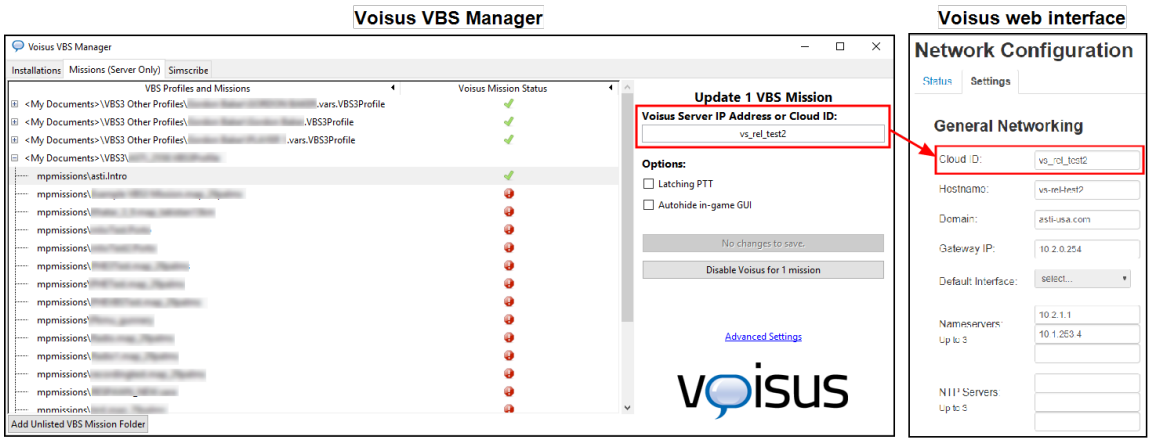

Figure 331: Matching cloud IDs

To view the Voisus server's current IP address or cloud ID, go to **Manage** ( ) > **Network Configuration** in the Voisus web interface. To learn more about Voisus network configuration, go to "Network Configuration" in the *Voisus Quick Start Guide*.

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4. For first-time configurations, select **Enable Voisus for** *N* **mission(s)**. For existing missions, select **Update Voisus for** *N* **mission(s)**.

***Note**: In Voisus software versions 7.0.1 and later, the Voisus VBS Manager automatically exports all missions to network scenarios for use with dedicated servers. As a result, you do not need to manually load and save missions using the VBS mission editor. For software versions 5.34 and earlier, go to Section 4.1.2.4, "(Optional) Export missions to network scenarios" below.*

5. Confirm that a green check mark displays next to the mission.

4.1.2.4 *(Optional)* Export missions to network scenarios

***Note**: This step is only required for Voisus software versions 5.34 and earlier.*

If your program uses a dedicated server configuration, you must export missions to network scenarios in VBS. Make this configuration every time you add a mission to VBS.

To add Voisus settings to packed .pbo missions, follow these steps:

1. From the desktop, open **VBS Launcher** ( ).
2. Go to **MISSION EDITOR**.
3. On **SELECT TERRAIN**, choose a terrain, and select **OK**.
4. On **File**, select **Load Mission**.
5. In **Load Mission**, select **Mission**, and choose a mission. Select **OK**.
6. On **File**, select **Save Mission**.
7. Name the mission, and enter an optional description.

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8. Select **Export**, and then select **Export to Network Scenarios**.

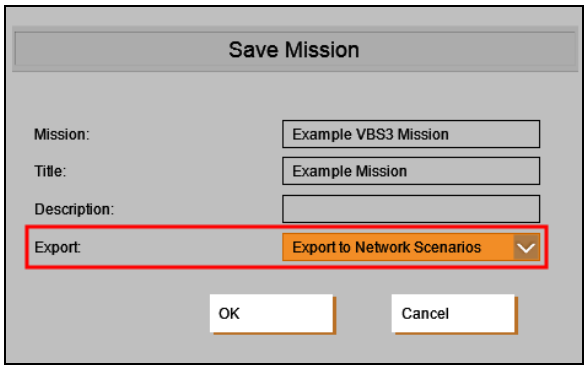

Figure 332: Export to Network Scenarios

9. Select **OK**.
10. Close **MISSION EDITOR**, and launch your mission normally.

4.1.3 Voisus options in VBS

In VBS, ASTi provides a Voisus options window that lets you modify Voisus client settings during play. Additionally, you can select and view the status of Voisus radios.

This section discusses how to:

- Modify Voisus client options in VBS
- Select a Voisus radio in VBS

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4.1.3.1 Modify Voisus client options in VBS

To modify Voisus client options in VBS, follow these steps:

1. Start a mission. The Voisus client automatically starts in conjunction with VBS.
2. To open Voisus options, press Alt+O. To edit keyboard shortcuts, go to Section 4.1.2.1, "(Optional) Edit ASTi keyboard shortcuts" on page 208.

Figure 333: Voisus options in VBS

3. In **Server ID or Cloud ID**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* represents the Voisus server's IP address or cloud ID.
4. *(Optional)* Next to **Latching PTT**, choose one of the following:
   - ***On***: when the operator presses the PTT key, the radio locks into transmit until he or she presses PTT again.
   - ***Off***: the operator holds the PTT key to transmit.
5. *(Optional)* To hide the options window during play, next to **Auto Hide**, select **On**.
6. Under **Volume**, move the slider to increase or decrease the radio's volume.
7. To locally set a role for the client, under **Available Roles**, choose a role from the list. This selection overrides roles set in the Voisus web interface.

   To globally map roles to operator positions, go to Section 2.5.1, "Set default options for unlisted clients" on page 26 or Section 2.5.2, "Add a software client" on page 28.
8. To apply changes, select **Ok**.

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4.1.3.2 Select a Voisus radio in VBS

In the bottom left, choose a Voisus client radio. Each radio's color represents the current operational state of that radio:

- *Orange*: an actively transmitting net.
- *Blue*: an actively receiving net.
- *White*: an idle net.

Figure 334, "VBS client radio states" below shows an idle Voisus radio state:

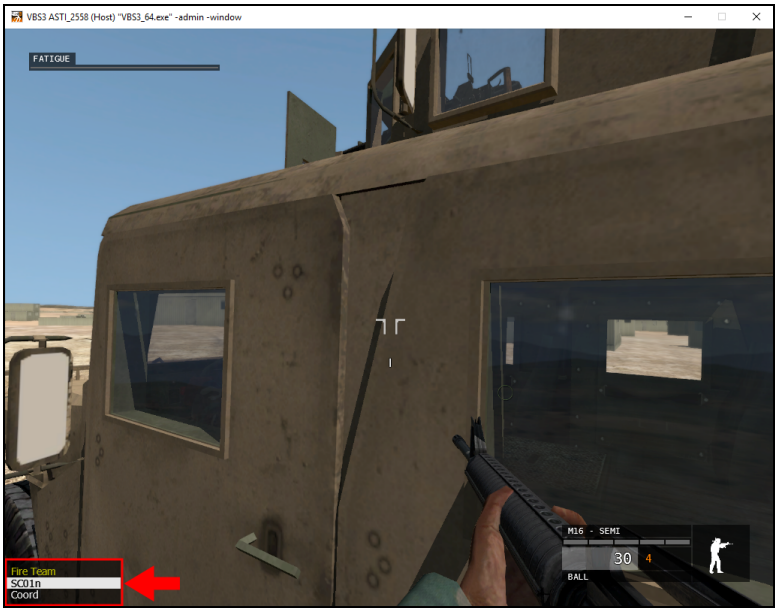

Figure 334: VBS client radio states

4.2 Simscribe VBS Add-in

Simscribe is a networked voice and radio capture-and-replay tool that the Voisus VBS Manager installs. To use the in-game controls, open VBS on the administrator workstation. The Simscribe VBS Add-in works in conjunction with the game's after-action review (AAR) record and playback. For more information about Simscribe, go to the *Simscribe User Guide*.

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This section discusses how to:

- Allow VBS control for Simscribe
- Set Simscribe network options
- Create a Simscribe recording in VBS
- Play back Simscribe recordings

4.2.1 Allow VBS control for Simscribe

To enable the VBS control for Simscribe, follow these steps:

1. Open a web browser on a computer or tablet sharing a network with the Voisus server.
2. In the address bar, enter the Voisus server's IP address.
3. Log into the Voisus server using the following default credentials:

Username	Password
admin	astirules

4. From the top-right navigation bar, go to **Simscribe** ( ) > **Preferences**.

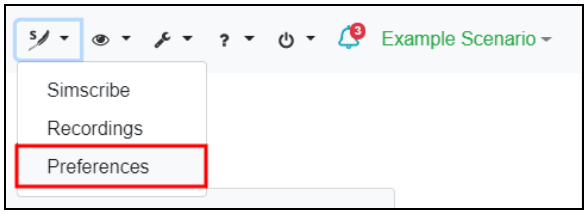

Figure 335: Preferences navigation

5. On **Preferences**, select **Allow VBS control**.
6. If your configuration transmits protocol data units (PDUs) over the Distributed Interactive Simulation (DIS) network, select **Enable Simscribe DIS replay**.

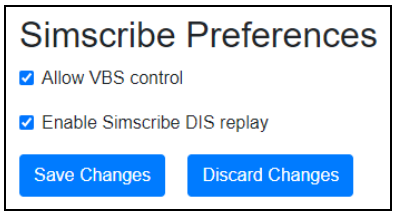

Figure 336: Simscribe Preferences

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7. Select Save Changes.
8. In **Save Changes**, select Confirm.
9. In **Reboot**, select Confirm. Wait for the system to reboot.

4.2.2 Set Simscribe network options

This section explains how to enable Simscribe in VBS and designate a Voisus server to store Simscribe recordings. You can set the Voisus server's IP address in two places:

- Voisus VBS Manager
- Simscribe VBS Add-in

You only need to set the Voisus server's IP address in one location. However, if you set the IP address in the Voisus VBS Manager, you must still enable Simscribe in the Simscribe VBS Add-in.

To set the Voisus server's IP address in the Voisus VBS Manager, follow these steps:

1. From the desktop, open **VBS Missions Manager** ( ).
2. Select **Manage installations and missions**.
3. Go to **Simscribe**.
4. In **Server**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the Voisus server's IP address.
5. Select **Update**.

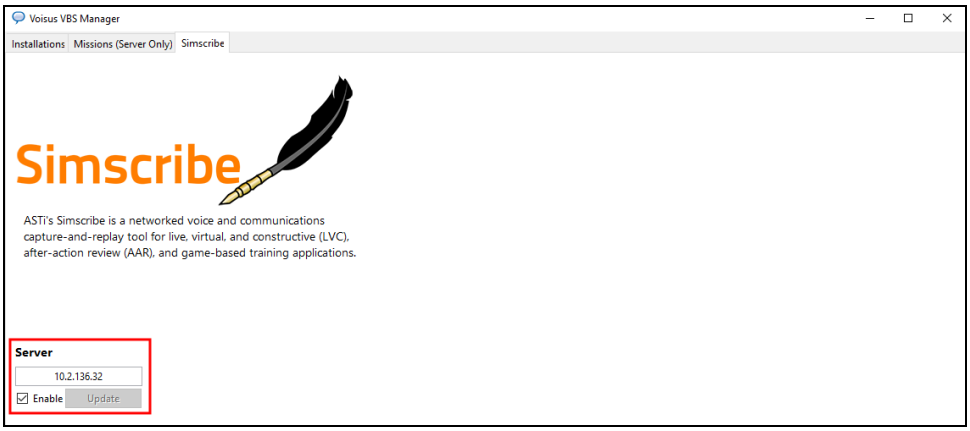

Figure 337: Set server's IP address

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To enable Simscribe and set up Simscribe network options in VBS, follow these steps:

1. Start a mission in VBS.

   ***Important**: Do not edit Simscribe options while recording a mission.*

2. To open Simscribe options, press Shift+Alt+H.
3. To enable recording, next to **Simscribe enabled**, select **On**.
4. If you have not already done so in the Voisus VBS Manager, in **Server IP**, enter *xxx.xxx.xxx.xxx*.

Figure 338: Simscribe enabled

5. Select **Ok**.
6. Confirm that Simscribe is “Connected.”

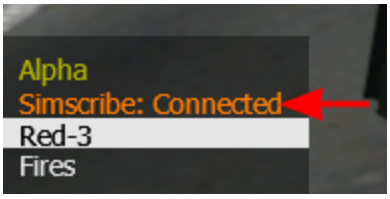

Figure 339: Simscribe “Connected” status

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4.2.3 Create a Simscribe recording in VBS

To create a Simscribe recording in VBS, follow these steps:

1. To open **VBS Realtime Editor**, press M.
2. From the top, select the record button ( ).

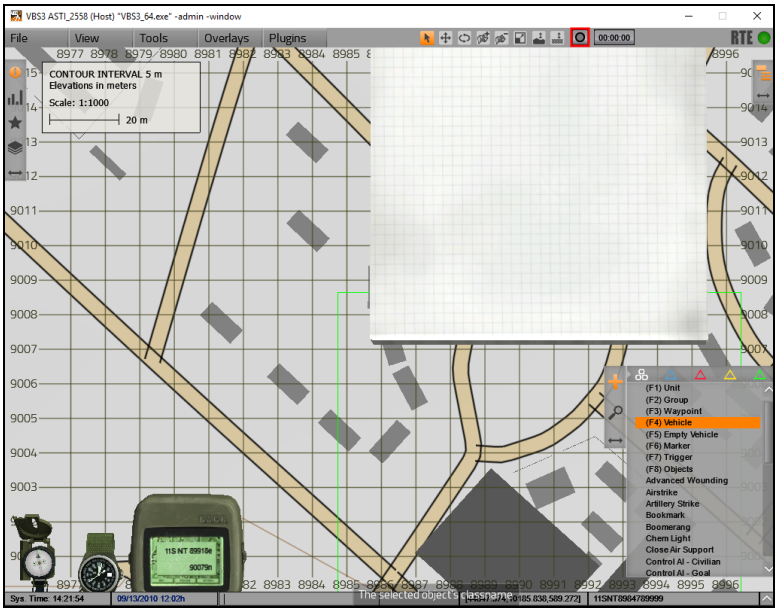

Figure 340: VBS Realtime Editor recording

3. After the mission is complete, select the stop button ( ).
4. In **AAR Name**, enter a name for the recording, and select **OK**.

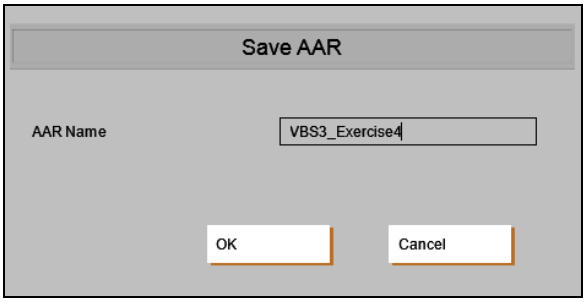

Figure 341: Save AAR

5. To close **VBS Realtime Editor** and abort the game, press Esc twice. In the confirmation window, select **OK**.

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4.2.4 Play back Simscribe recordings

To play back Simscribe recordings, follow these steps:

1. From the main menu, go to **AFTER ACTION REVIEW**.

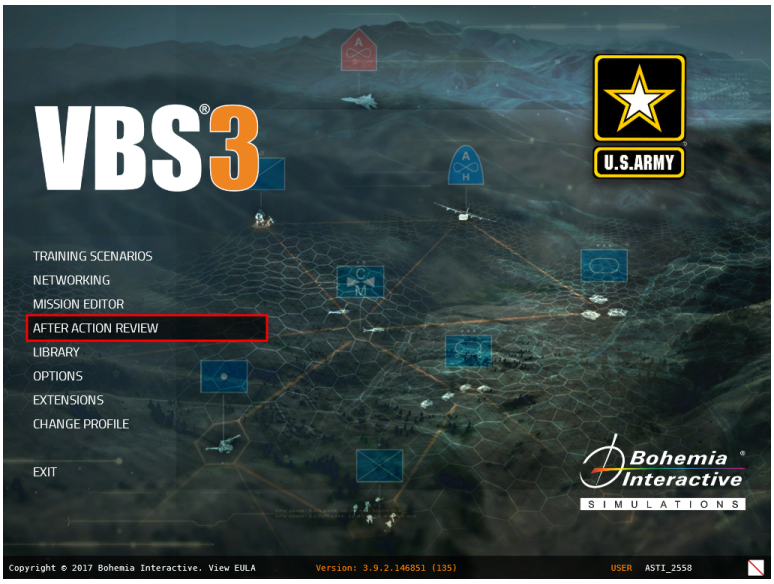

Figure 342: AFTER ACTION REVIEW

2. In **MISSION**, open a recording for playback.

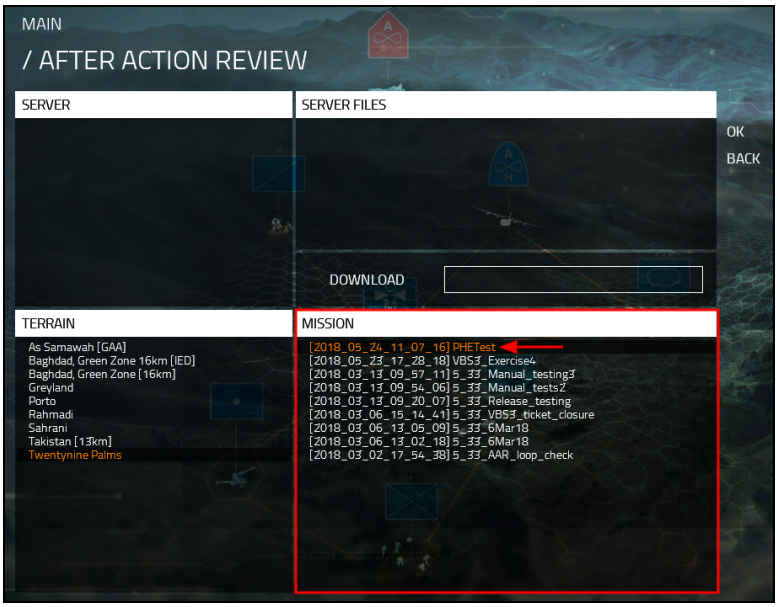

Figure 343: Choose an AAR recording

3. Use the in-game playback controls for AAR.

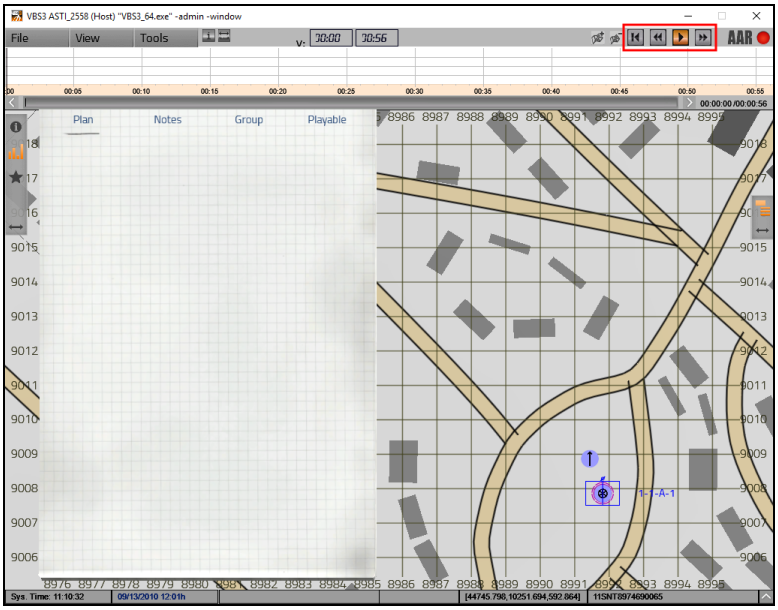

Figure 344: AAR playback controls

4. To listen to the playback, tune the Voisus client to the nets you wish to hear. To tune radios in the Voisus client, go to Section 3.2.1.6, "Tune network assets to preset channels" on page 128.

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5.0 Hardware clients

The hardware client system architecture consists of network audio and I/O distribution devices (e.g., ACE-RIU, ACU2, AI-S) connected to a variety of hardware user interfaces. Interface options range from simple headsets, press-to-talk (PTT) devices, and channel selectors to high-fidelity, simulated radio panels.

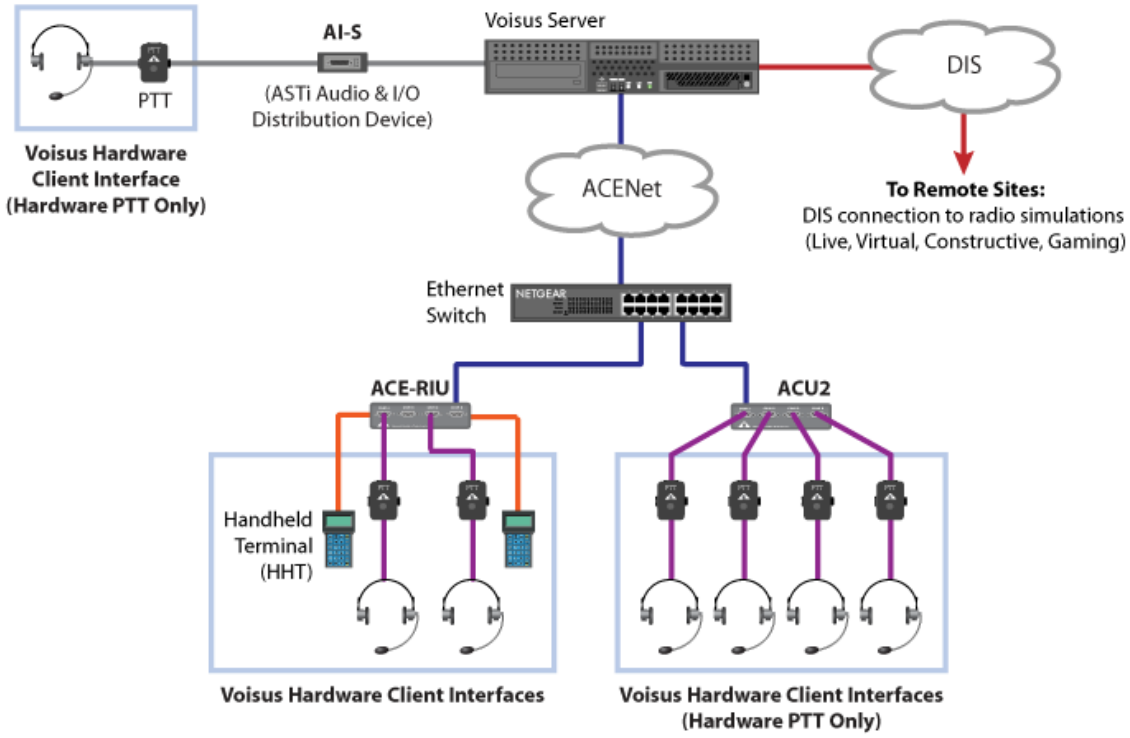

Figure 345: Voisus hardware connections

The Voisus system uses name matching to link the resources set in the Voisus web interface to the hardware interface.

The **Client Name** defined on **Manage Clients** must match the channel identifier name defined on **Hardware Devices**. The channel identifier is the name of the specific channel/serial port of the audio and I/O distribution device connected to the hardware client interface.

***Note**: If linking a live radio to the Voisus server with an AI-S, do not set up the AI-S in **Client Mapping**. To use an AI-S as a Radio Bridge or for remote radio control, go to the Radio Bridge User Guide.*

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In Figure 346, "Hardware Devices setup" below, the SINCGARS panel on the left is connected to **Channel A + Serial A** (i.e., port A) on an ACE-RIU. This channel/serial port pair has a channel identifier of **01c4xA** on **Hardware Devices**. When that channel identifier matches a client name on the client mapping list, a link is established between the hardware channel/serial port and the scenario resources on the server.

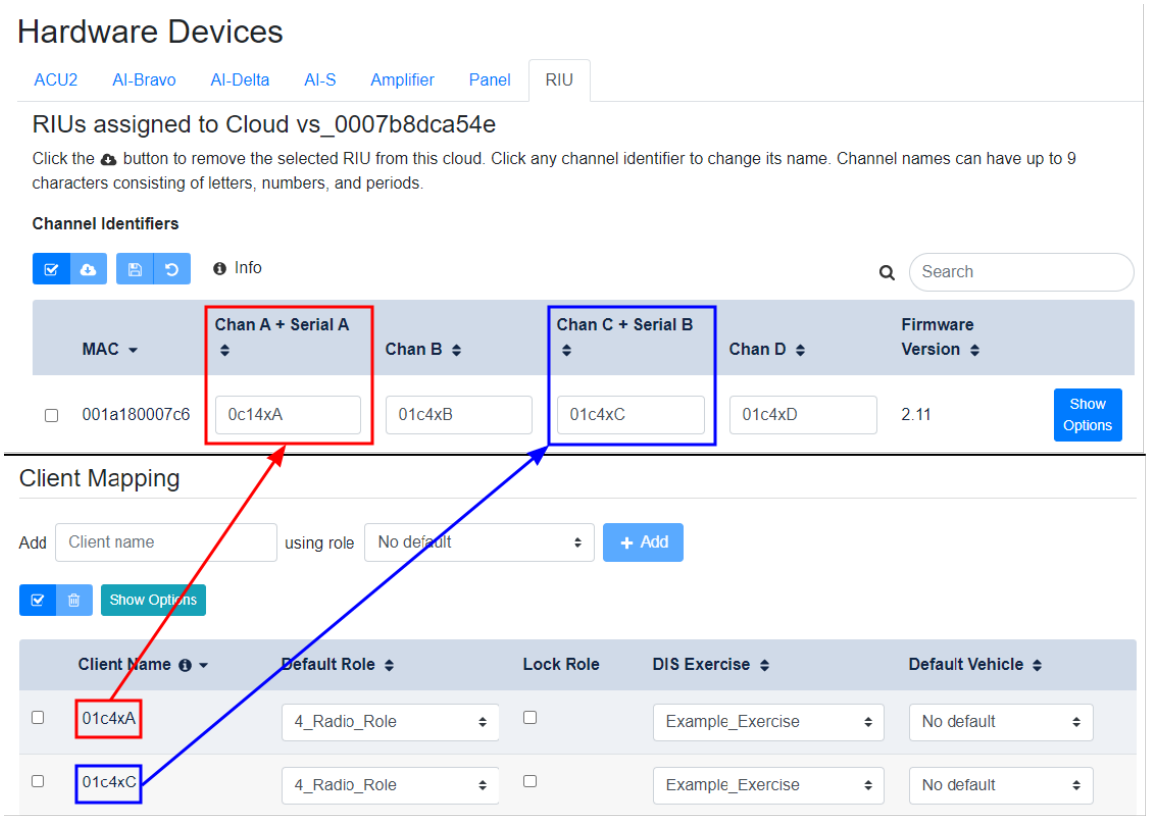

Figure 346: Hardware Devices setup

***Note**: Default hardware channel identifiers can be changed.*

This chapter discusses how to:

- Manage hardware devices
- Map clients to hardware devices
- Set up PTT devices

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5.1 Manage hardware devices

Hardware Devices displays all of the audio and the I/O distribution devices detected on your Voisus server's network. Before you can use an ACU2, AI-S, ACE-RIU, AI-Delta, AI-Bravo or other device in a scenario, add the device to your cloud, and give the hardware channel(s) unique names.

5.1.1 Enable ACENet devices

In the Voisus web interface, ACENet devices are disabled by default. If one or more ACENet device(s) are connected to your network, go to **Notifications** to view the following error message:

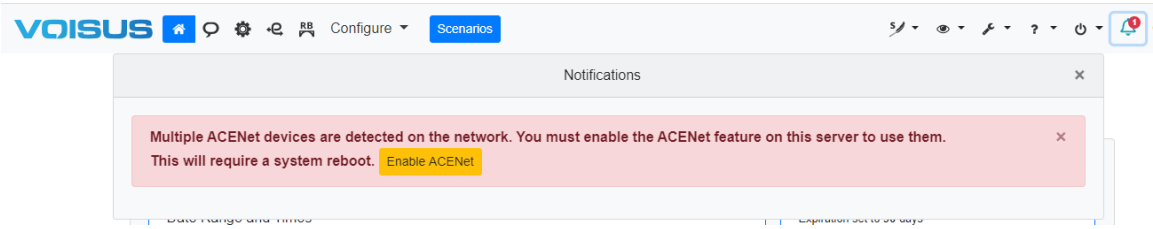

Figure 347: Enable ACENet error message

To enable ACENet devices in the Voisus web interface, follow these steps:

1. Select Enable ACENet.
2. In **Reboot Required**, select Reboot. Wait approximately two to three minutes for the Voisus server to reboot.

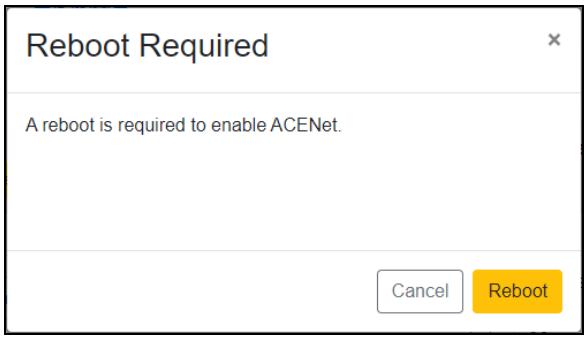

Figure 348: Reboot Required

3. From the top right, go to **Manage** ( ) > **Hardware Devices**.

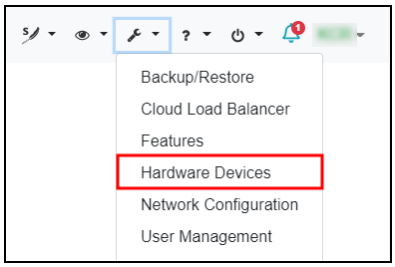

Figure 349: Hardware Devices navigation

4. Go to **ACU2**, **Amplifier**, or **RIU**, depending on the ACENet devices in your network configuration.

5. Confirm that available ACENet devices are visible on the page:

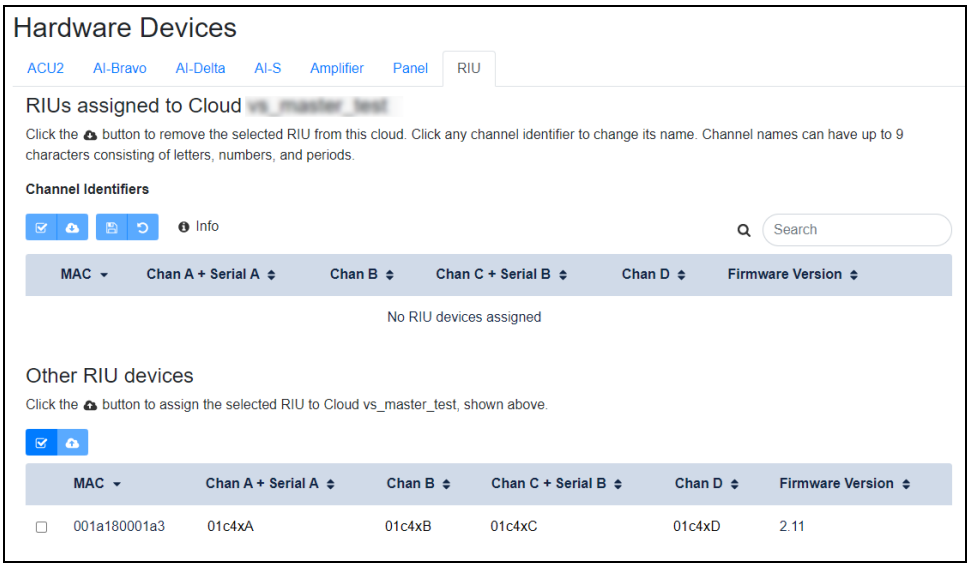

Figure 350: Available ACE-RIU devices

If Voisus failed to enable ACENet, the page says, “ACENet devices have been disabled!” Contact support@asti-usa.com for further troubleshooting steps.

5.1.2 *(Optional)* Enable wide-area network routing

AI-Deltas and AI-Bravos can communicate with Voisus via routers across wide area networks (WANs) and Network Address Translations (NATs) in addition to local area networks. This means that they don't require a Voisus server nearby, simplifying customer configurations. As long as these devices are connected to Voisus, they can operate normally, whether they're located in a faraway location, another building, or a backpack with an Internet connection.

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Open the following ports to use the WAN routing feature:

Name	Protocol	Port Numbers
VoisNet detect and monitor	UDP	10000
(AI-Delta WAN) Reverse Proxy Listener	TCP	7000
(AI-Delta WAN) Reverse Proxy Connection	TCP	16000–17000
VoisNet audio	UDP	31959
VoisNet input/output (I/O)	UDP	31960

To view all Voisus ports, contact support@asti-usa.com for the *ASTi Ports, Protocols, and Services* document.

To enable WAN routing on the Voisus server, follow these steps:

1. From the top right, go to **Manage** ( ) > **Features**.

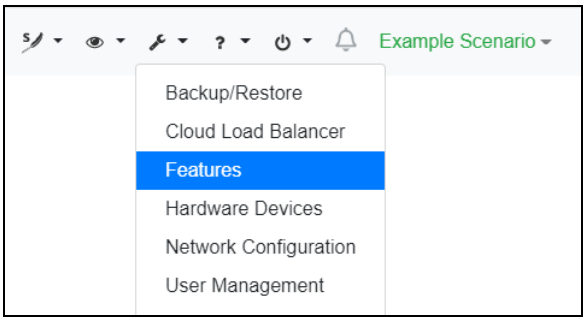

Figure 351: Features navigation

2. On **System Features**, turn on **AI-Delta Routing**.
3. Reboot the Voisus server to enact your changes. In the alert at the top of the page, select Reboot.

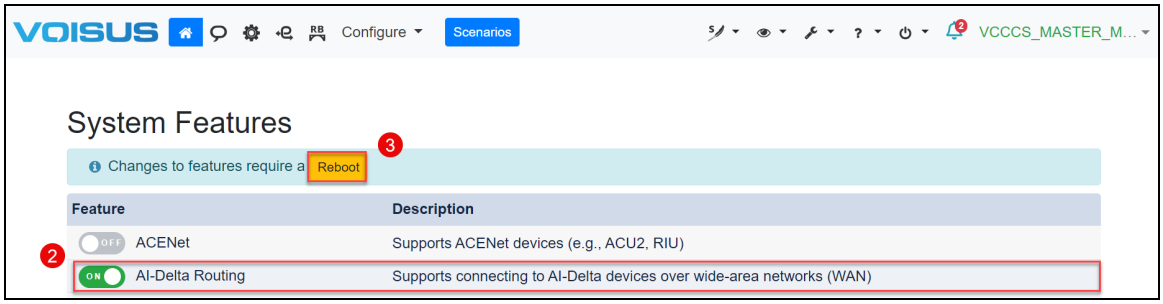

Figure 352: Turn on AI-Delta Routing

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4. In the confirmation window, select Reboot again, and wait for the server to reboot.
5. Use **Voisus Host IP Settings** to connect your AI-Delta or AI-Bravo to the same network as the Voisus server, as described in Section 5.1.5, "Add an AI-Delta to the Voisus cloud" on page 232 and Section 5.1.6, "Add an AI-Bravo to the Voisus cloud" on page 235.

5.1.3 Add an AI-S to the Voisus cloud

To set up AI-S clients for networked communication, follow these steps:

1. Connect each hardware client interface to an AI-S that is connected to your Voisus server.
2. From the top right, go to **Manage** ( ) > **Hardware Devices**.

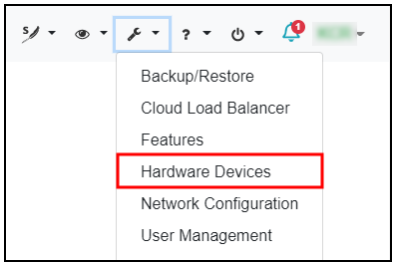

Figure 353: Hardware Devices navigation

Hardware Devices displays all of the audio and I/O distribution AI-Ss detected on your Voisus server's network.

3. Go to the **AI-S** tab.

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4. To assign a device to the cloud, under **Other devices**, choose a device, and select the cloud ( ).

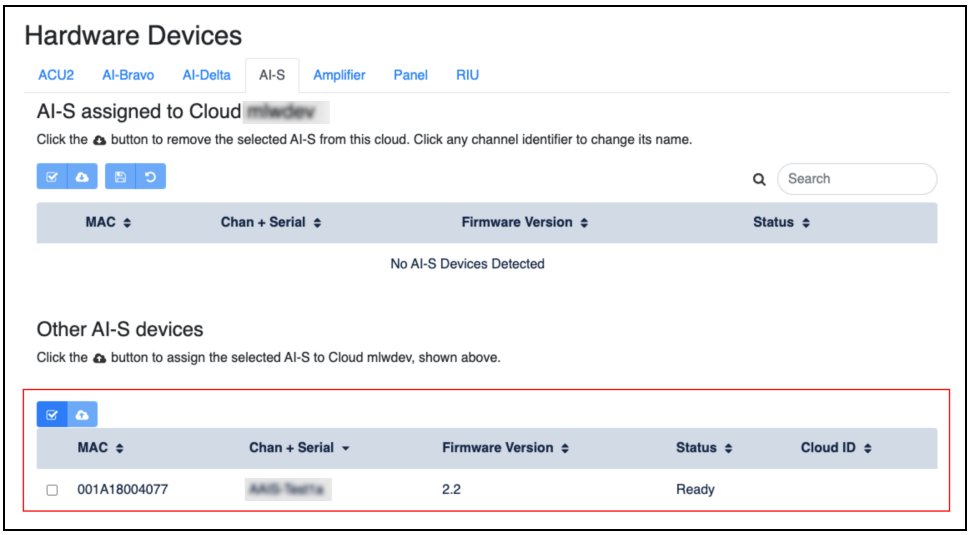

Figure 354: Other devices

The device moves up to *Device* **assigned to Cloud ID**, where *Device* represents an AI-S, and *cloud ID* represents the ID you set in "Add a cloud" in the *Voisus Quick Start Guide*.

5. In the channel name boxes, enter unique channel identifiers for each channel and/or serial port connected to a hardware client interface.

***Note**: Some customer configurations use the default channel identifier.*

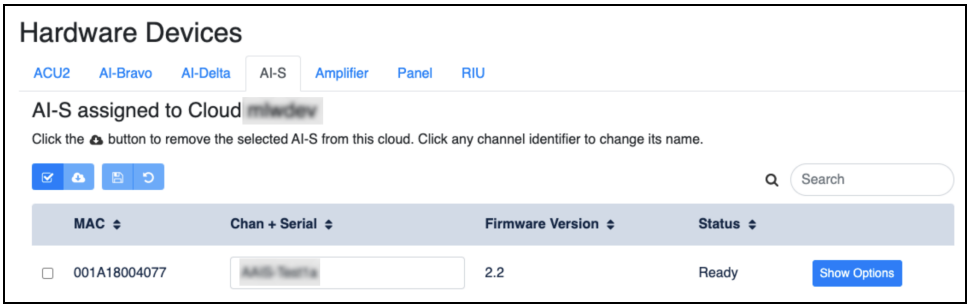

Figure 355: Device channel identifiers

The channel identifier links the physical channel or serial port to software resources on the Voisus server.

6. *(Optional)* For hardware configurations, note the serial port and channel pairings on the device. This pairing is important when you are attaching peripherals to both the channels and serial ports.

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5.1.4 Add an ACU2 to the Voisus cloud

To set up ACU2s for networked communication, follow these steps:

1. *(Optional)* For hardware devices, connect each hardware client interface to an ACU2 device that is connected to your Voisus server.

2. From the top right, go to **Manage** ( ) > **Hardware Devices**.

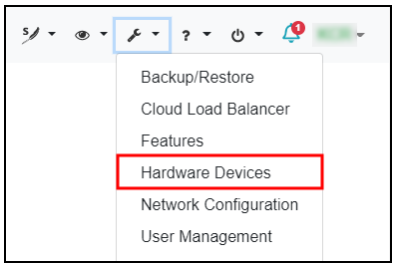

Figure 356: Hardware Devices navigation

Hardware Devices displays all of the ACU2s detected on your Voisus server's network.

3. Go to the **ACU2** tab.

4. To assign a device to the cloud, under **Other devices**, choose a device, and select the cloud ( ).

Figure 357: Other devices

The device moves up to *Device* **assigned to Cloud ID**, where *Device* represents an ACU2, and *cloud ID* represents the ID you set in "Add a cloud" in the *Voisus Quick Start Guide*.

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5. In the channel name boxes, enter unique channel identifiers for each channel and/or serial port connected to a hardware client interface.

***Note**: Some customer configurations use the default channel identifier.*

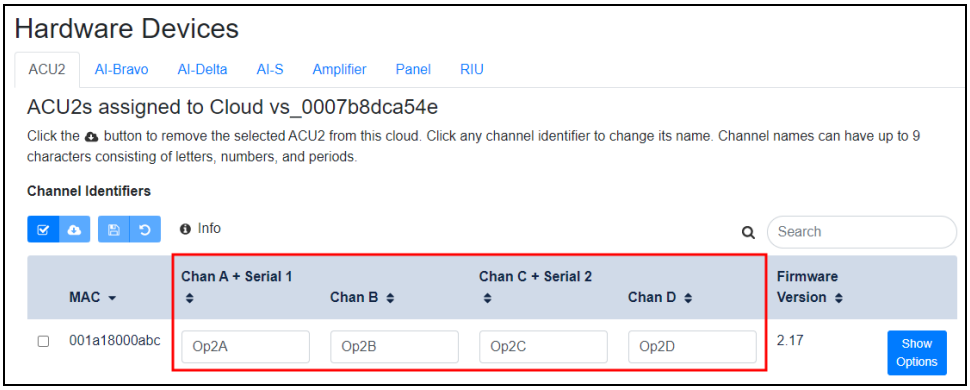

Figure 358: Device channel identifiers

The channel identifier links the physical channel or serial port to software resources on the Voisus server.

6. *(Optional)* For hardware configurations, note the serial port and channel pairings on the device. This pairing is important when you are attaching peripherals to both the channels and serial ports.

   Serial 1 corresponds with Channel A, and Serial 2 corresponds with Channel C:

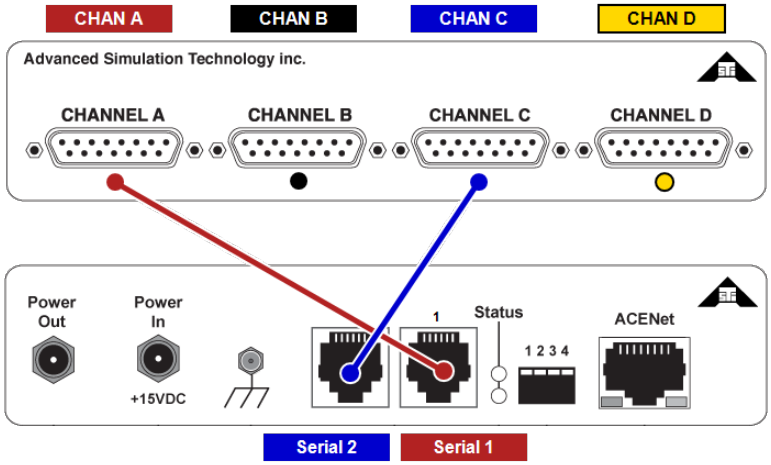

Figure 359: ACU2 channel pairings

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5.1.5 Add an AI-Delta to the Voisus cloud

To set up AI-Delta hardware clients for networked communication, follow these steps:

1. From the top right, go to **Manage** ( ) > **Hardware Devices**.

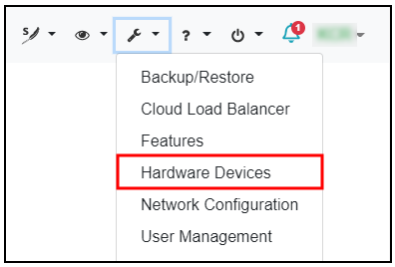

Figure 360: Hardware Devices navigation

Hardware Devices displays all of the audio and I/O distribution devices detected on your Voisus server's network.

2. Go to the **Audio Device** tab.
3. *(Optional)* To identify which AI-Delta you are configuring, under **Other AI-Delta devices**, choose a device, and select **Start Find Me**. The device's LED starts blinking purple.
4. Choose a device, and select **Add to cloud** ( ).

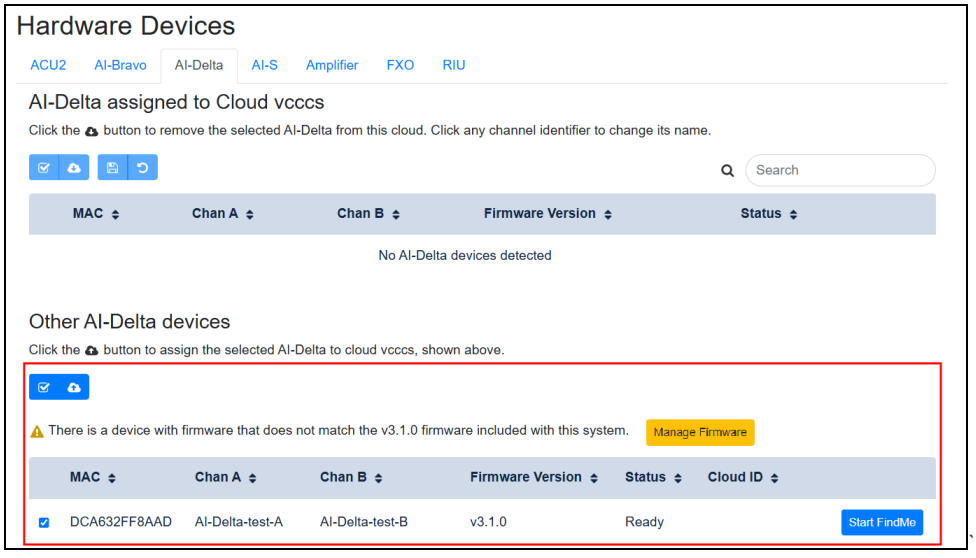

Figure 361: Other AI-Delta devices

The device moves up to **AI-Delta assigned to** *cloud ID*, where *cloud ID* is the ID you set in "Add a cloud" in the *Voisus Quick Start Guide*.

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5. In **Chan A** and **Chan B**, enter unique channel identifiers for each channel connected to an AI-Delta.

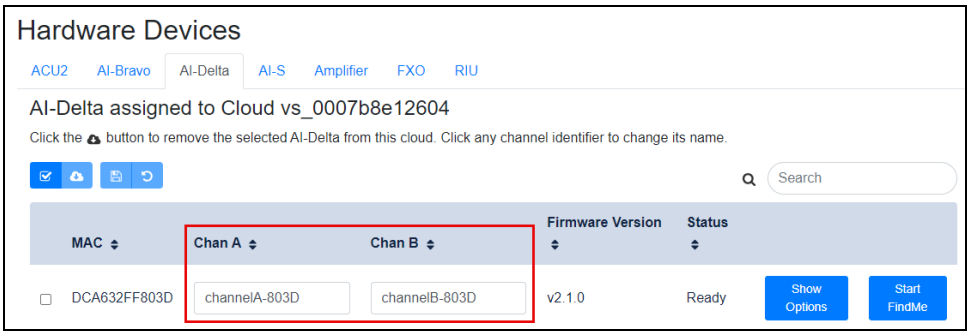

Figure 362: AI-Delta channel identifiers

The channel identifier links the physical channel to software resources on the Voisus server.

6. To view advanced settings, select **Show Options**.

7. If your microphone requires power, under **Channel Settings**, select **Mic Power**.

8. In **Preamp Gain (dB)**, enter the microphone's input gain, which is measured in decibels. Acceptable values include 0 dB and 10–65 dB.

9. In **Sidetone (%)**, enter the sidetone percentage (i.e., how much audible feedback you hear when you speak into the microphone). Acceptable values range from 0–100 percent.

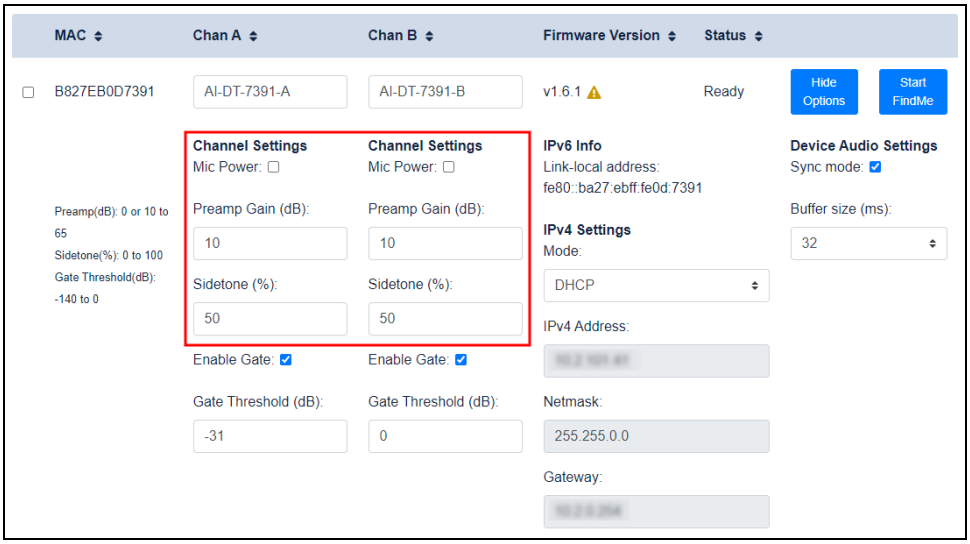

Figure 363: AI-Delta Channel Settings

10. Under **IPv4 Settings**, select **Mode**, and choose one of the following:

    - ***DHCP**:* automatically receive IPv4, subnet mask, and gateway information from another server on your network.
    - ***Static**:* manually set the AI-Delta's network information.

11. *(Optional)* If you chose **Static**, enter the following information:

    a. ***IPv4 Address**:*enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the AI-Delta's dedicated IP address.

    b. ***Netmask**:*enter the AI-Delta's assigned netmask (e.g., 255.255.255.0).

    c. ***Gateway**:*enter the AI-Delta's gateway IP address.

12. *(Optional)* To connect the AI-Delta to another Voisus server on a different network segment, in **Voisus Host IP Settings**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the alternate server's public IP address. You might use this setting to leverage the wide-area network (WAN) routing feature or if your network blocks multicast packets, preventing Voisus from detecting the AI-Delta.

***Note**: If the Voisus server can't detect the AI-Delta, try downloading the Discover application from **Downloads**, as described in Section 3.1.1, "Download a Voisus software client or application" on page 112.*

Figure 364, "AI-Delta and Voisus network settings" below shows AI-Delta and Voisus network settings:

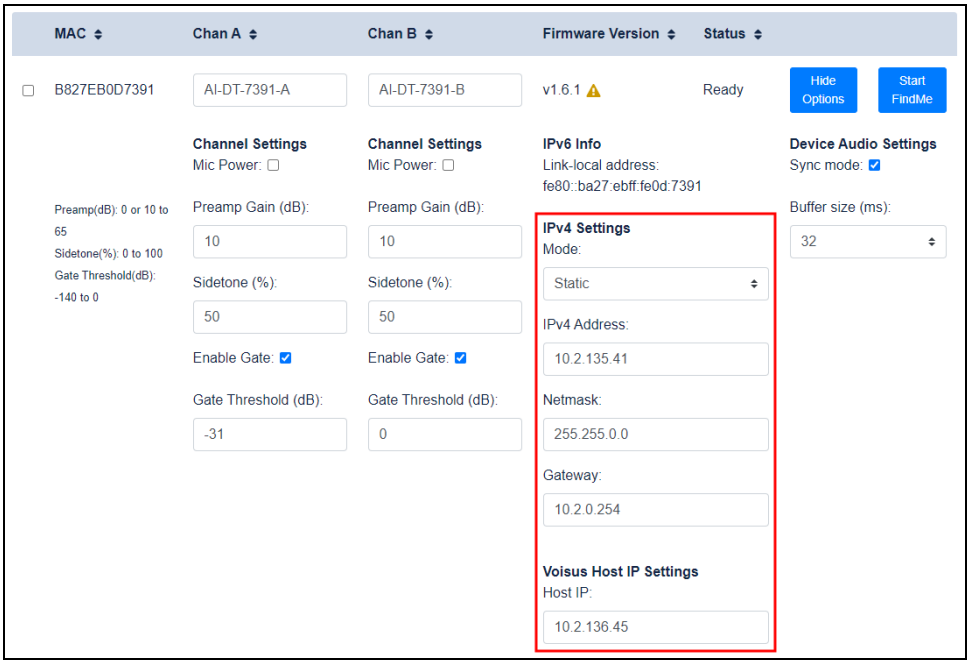

Figure 364: AI-Delta and Voisus network settings

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13. *(Optional)* To synchronize the audio and fix any timing disparities between the AI-Delta and the Voisus server, select **Sync mode**. You might need this setting if the Voisus server is running as a virtual machine. If the **Sync mode** check box is disabled, this feature is not available for this system.

14. *(Optional)* If you notice audio glitches, adjust the **Buffer Size**, which sets the size of the audio buffer on the device. **Buffer Size** is measured in milliseconds (ms). The default value is 8 ms.

15. To map AI-Delta hardware clients to software clients on **Manage Clients**, go to Section 5.2, "Map clients to hardware devices" on page 241.

5.1.6 Add an AI-Bravo to the Voisus cloud

To set up AI-Bravo clients for networked communication, follow these steps:

1. For hardware configurations, turn on the AI-Bravo, and connect it to your Voisus server's network.

2. Open a web browser on a computer or tablet sharing a network with the Voisus server.

3. In the address bar, enter the Voisus server's IP address.

4. Log into the Voisus web interface using the following default credentials:

Username	Password
admin	astirules

5. From the top right, go to **Manage** ( ) > **Hardware Devices**.

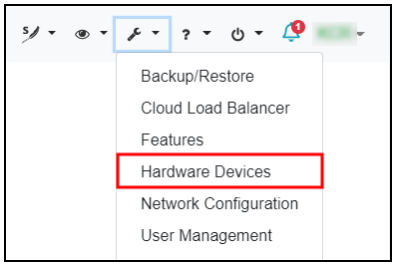

Figure 365: Hardware Devices navigation

Hardware Devices displays all of the audio and I/O distribution devices detected on your Voisus server's network.

6. Go to the **AI-Bravo** tab.

7. *(Optional)* To identify which AI-Bravo you are configuring, under **Other AI-Bravo devices**, choose a device, and select **Start Find Me**. The device's LED starts blinking purple.

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8. Choose a device, and select **Add to cloud** ( ).

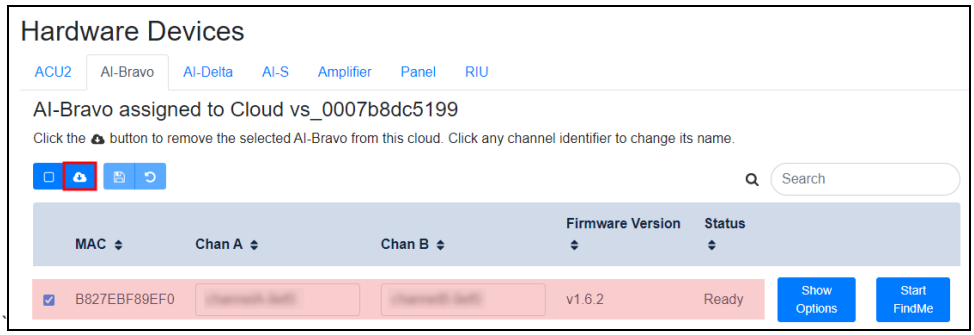

Figure 366: Other AI-Bravo devices

The device moves up to **AI-Bravo assigned to** *cloud ID*, where *cloud ID* is the ID you set in "Add a cloud" in the *Voisus Quick Start Guide*.

9. In **Chan A** and **Chan B**, enter unique channel identifiers for each channel connected to an AI-Bravo.

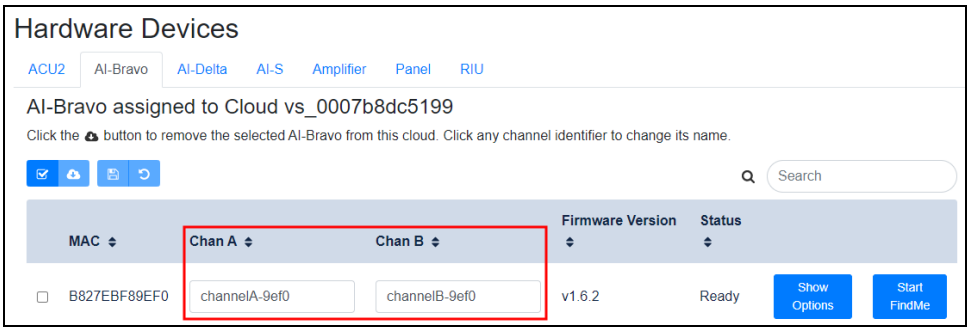

Figure 367: AI-Bravo channel identifiers

The channel identifier links the physical channel to software resources on the Voisus server.

10. To view advanced settings, select **Show Options**.

11. If your microphone requires power, under **Channel Settings**, select **Mic Power**.

12. In **Preamp Gain (dB)**, enter the microphone's input gain, which is measured in decibels. Acceptable values include 0 dB and 10–65 dB.

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13. In **Sidetone (%)**, enter the sidetone percentage (i.e., how much audible feedback you hear when you speak into the microphone). Acceptable values range from 0–100 percent.

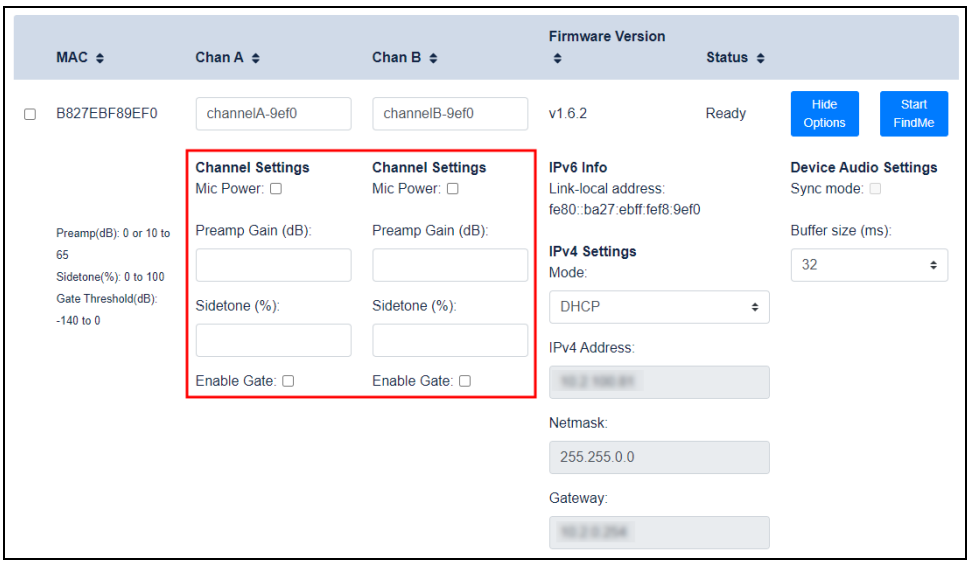

Figure 368: AI-Bravo Channel Settings

14. Under **IPv4 Settings**, select **Mode**, and choose one of the following:

    - ***DHCP**:* automatically receive IPv4, subnet mask, and gateway information from another server on your network.
    - ***Static**:* manually set the AI-Bravo's network information.

15. *(Optional)* If you chose **Static**, enter the following information:

    a. ***IPv4 Address**:*enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the AI-Bravo's dedicated IP address.

    b. ***Netmask**:*enter the AI-Bravo's assigned netmask (e.g., 255.255.255.0).

    c. ***Gateway**:*enter the AI-Bravo's gateway IP address.

16. *(Optional)* To connect the AI-Bravo to another Voisus server on a different network segment, in **Voisus Host IP Settings**, enter *xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the alternate server's public IP address. You might use this setting to leverage the wide-area network (WAN) routing feature or if your network blocks multicast packets, preventing Voisus from detecting the AI-Bravo.

***Note**: If the Voisus server can't detect the AI-Bravo, try downloading the Discover application from **Downloads**, as described in Section 3.1.1, "Download a Voisus software client or application" on page 112.*

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Figure 369, "AI-Bravo and Voisus network settings" below shows AI-Bravo and Voisus network settings:

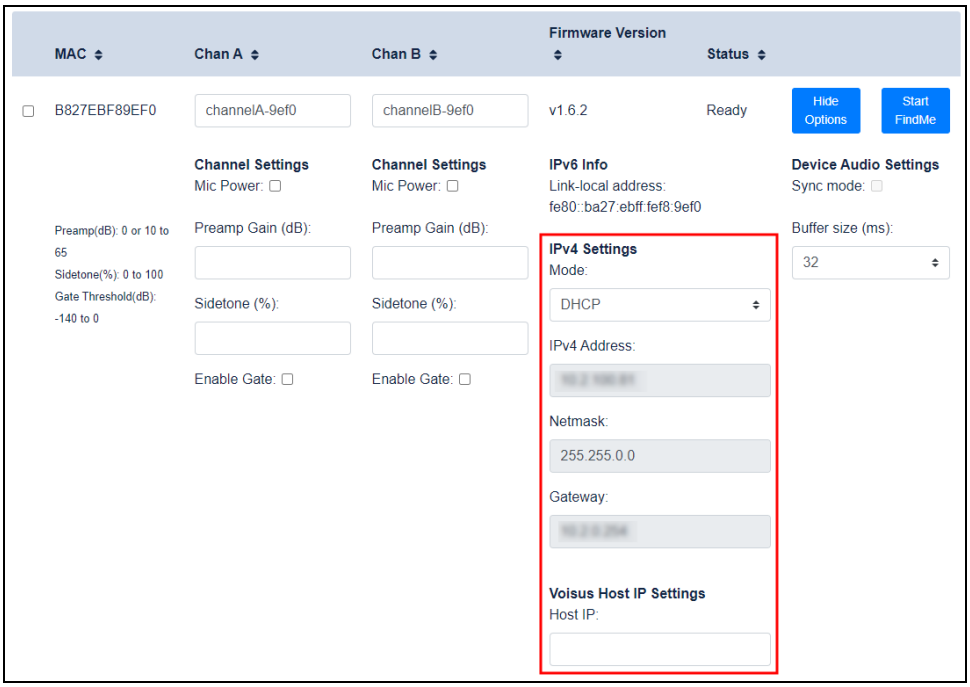

Figure 369: AI-Bravo and Voisus network settings

17. *(Optional)* To synchronize the audio and fix any timing disparities between the AI-Bravo and the Voisus server, select **Sync mode**. You might need this setting if the Voisus server is running as a virtual machine. If the **Sync mode** check box is disabled, this feature is not available for this system.

18. *(Optional)* If you notice audio glitches, adjust the **Buffer Size**, which sets the size of the audio buffer on the device. **Buffer Size** is measured in milliseconds (ms). The default value is 8 ms.

19. To map AI-Bravo hardware clients to software clients on **Manage Clients**, go to Section 5.2, "Map clients to hardware devices" on page 241.

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5.1.7 Add an ACE-RIU to the Voisus cloud

To set up clients for networked communication, follow these steps:

1. *(Optional)* For hardware devices, connect each hardware client interface to an audio and I/O distribution device that is connected to your Voisus server.

2. From the top right, go to **Manage** ( ) > **Hardware Devices**.

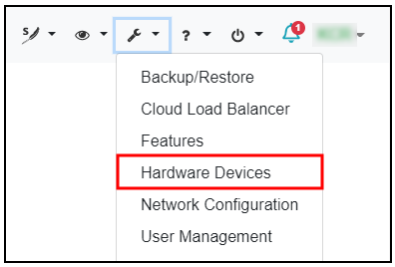

Figure 370: Hardware Devices navigation

Hardware Devices displays all of the audio and I/O distribution devices detected on your Voisus server's network.

3. Go to the **RIU** tab.

4. To assign a device to the cloud, under **Other devices**, choose a device, and select the cloud ( ).

Figure 371: Other devices

The device moves up to *Device* **assigned to Cloud ID**, where *Device* represents an ACE-RIU, and *cloud ID* represents the ID you set in "Add a cloud" in the *Voisus Quick Start Guide*.

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5. In the channel name boxes, enter unique channel identifiers for each channel and/or serial port connected to a hardware client interface.

***Note**: Some customer configurations use the default channel identifier.*

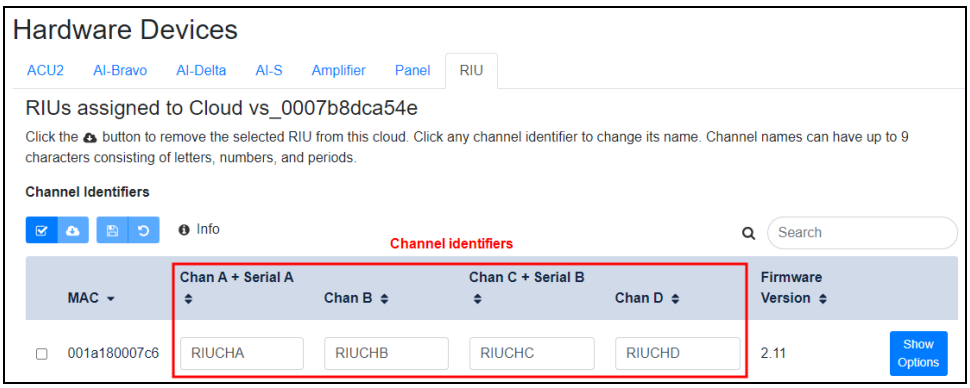

Figure 372: Device channel identifiers

The channel identifier links the physical channel or serial port to software resources on the Voisus server.

6. *(Optional)* For hardware configurations, note the serial port and channel pairings on the device. This pairing is important when you are attaching peripherals to both the channels and serial ports. Serial A corresponds with Channel A, and Serial B corresponds with Channel C:

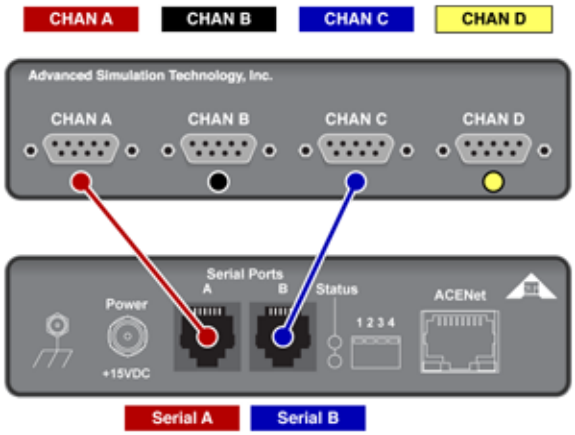

Figure 373: ACE-RIU channel pairings

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5.2 Map clients to hardware devices

To map clients to hardware devices on **Manage Clients**, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

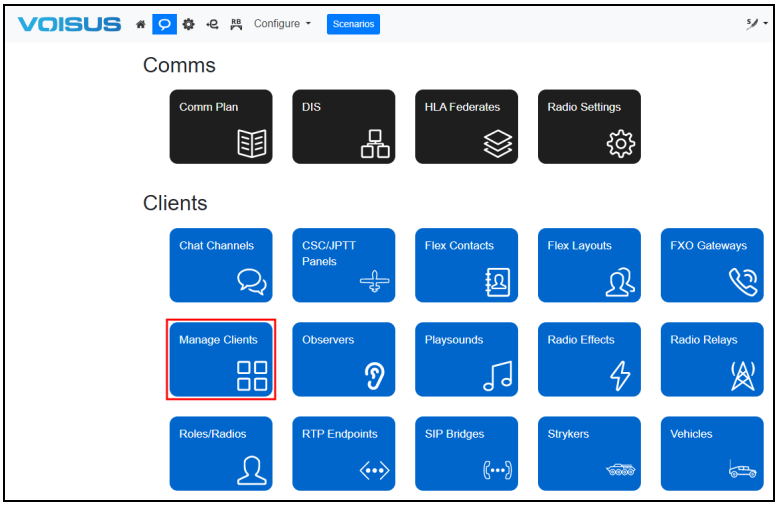

Figure 374: Manage Clients navigation

2. Under **Client Mapping**, enter the channel identifiers in **Client Name** exactly as they appear on **Hardware Devices**. Channel identifiers map the client settings to the channel and serial port.

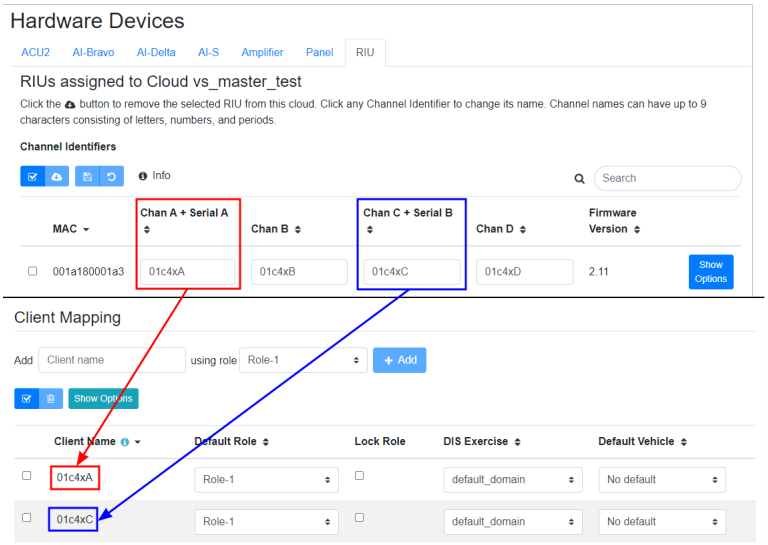

Figure 375: Hardware client mapping

5.3 Set up PTT devices

A basic hardware client consists of a headset with a microphone and a press-to-talk (PTT) device, such as a handheld PTT device, four-position selector PTT device, or foot switch PTT device.

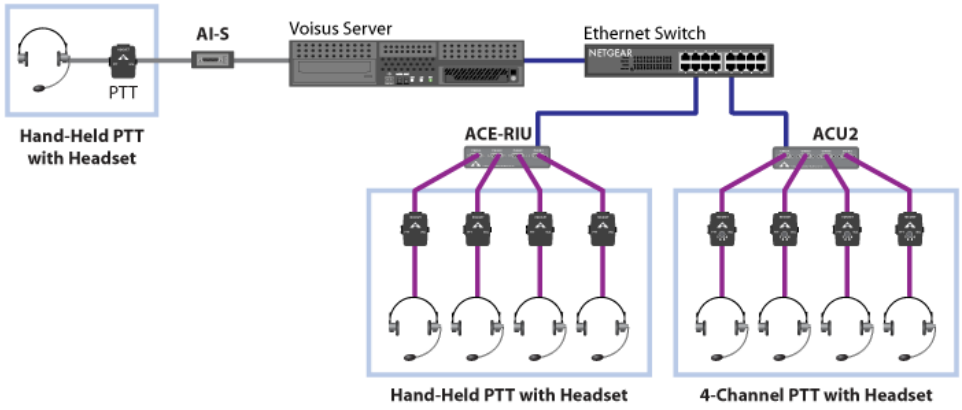

Figure 376: Hardware Only client configuration

When the client uses a single PTT device (e.g., handheld PTT, foot switch PTT) without another control device, the client can only transmit on one radio. Optionally, it can also monitor several other radios.

Simulated Radio	Rx/Tx
Simulated radio	Rx/Tx
Radio 1	Rx and Tx
Radio 2	Rx (monitor only)
Radio 3	Rx (monitor only)

Table 14: Single PTT role example

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5.3.1 Set up a single PTT device

To set up a single PTT device, follow these steps:

1. From the top right, go to **Manage** ( ) > **Hardware Devices**.

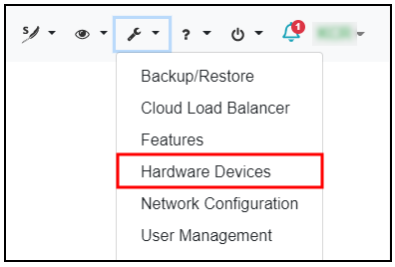

Figure 377: Hardware Devices navigation

2. On **Hardware Devices**, assign a channel identifier to each client.
3. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Roles/Radios**.

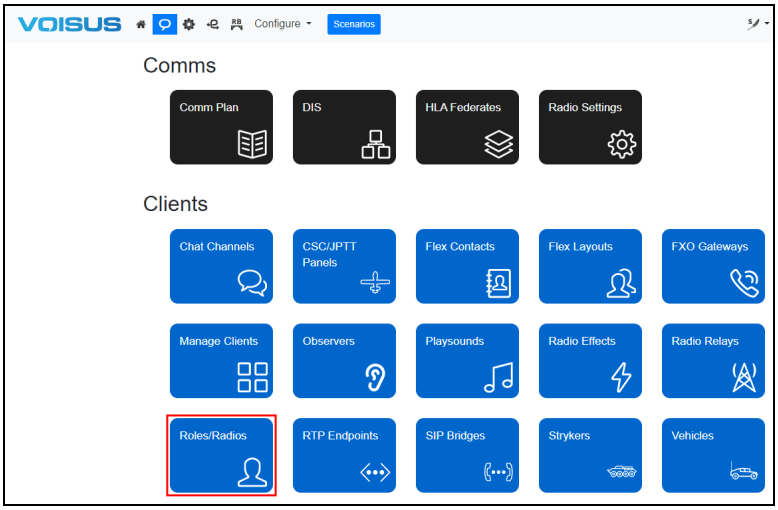

Figure 378: Roles/Radios navigation

4. Add a new role, and enter a name.
5. Add a new radio, and select it to open and edit it.

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6. Assign one net to this radio. From **Default Net**, select the same net.

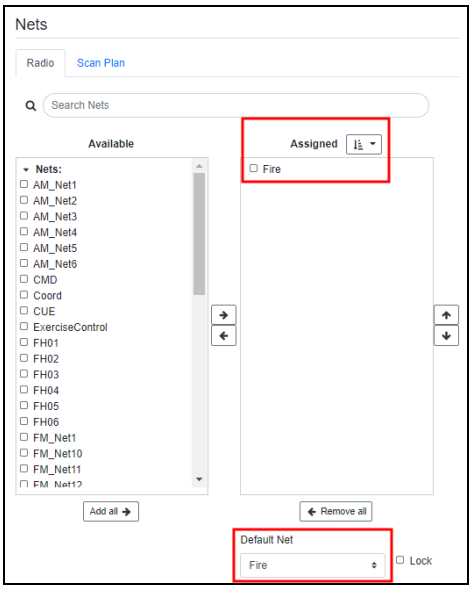

Figure 379: Single PTT net

7. Under **Audio**, next to **Default Rx**, select **Rx**.
8. Next to **Default Tx**, select **Tx**.

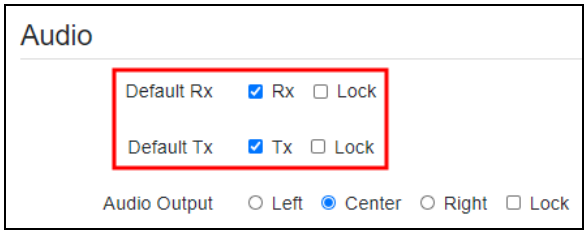

Figure 380: Default Rx and Default Tx

9. To add additional radios to the role for monitoring only, repeat Steps 5–7. Next to **Default Tx**, leave **Tx** blank.

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10. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

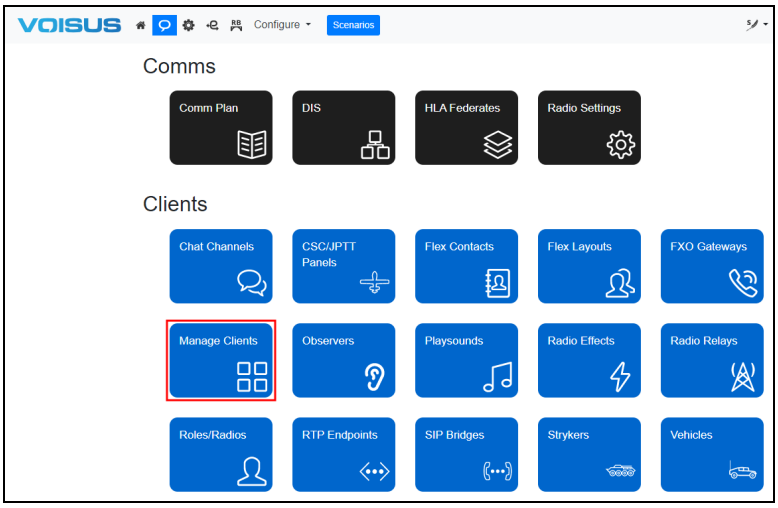

Figure 381: Manage Clients navigation

11. In **Client Mapping**, select the role you created, and add a new client. The client's name must match the channel identifier on **Hardware Devices**. Assign a DIS exercise, and select **Hardware Only**.

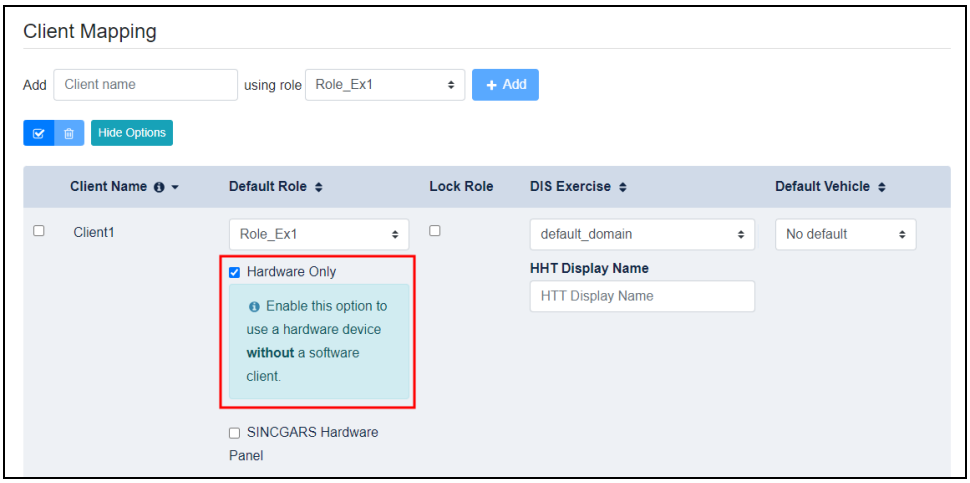

Figure 382: Hardware Only

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5.3.2 Set up a four-channel PTT device

ASTi's four-channel PTT device provides access to four radios:

Figure 383: Four-channel PTT device

To set up a four-channel PTT device, follow these steps:

1. From the top right, go to **Manage** ( ) > **Hardware Devices**.

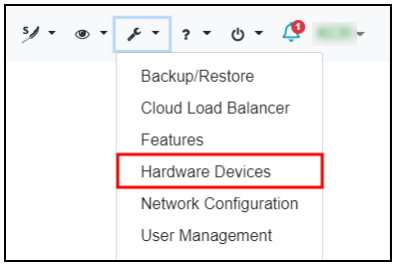

Figure 384: Hardware Devices navigation

2. On **Hardware Devices**, assign a channel identifier to each client. Note the name of each channel identifier for future reference.

3. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Roles/Radios**.

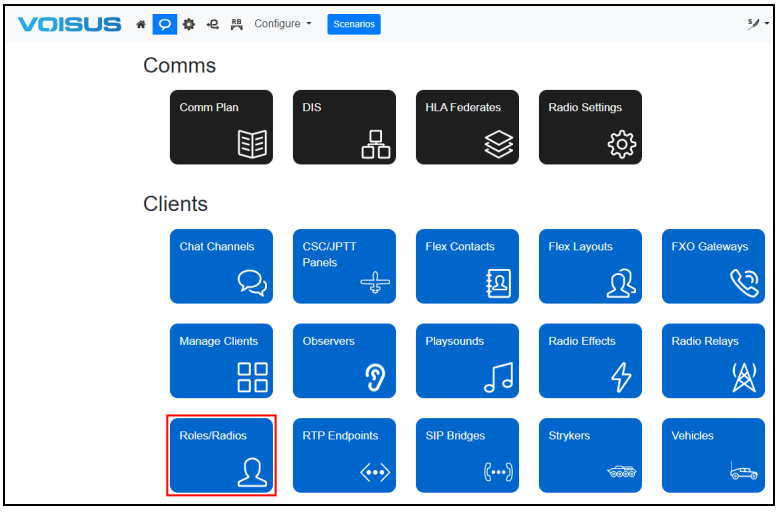

Figure 385: Roles/Radios navigation

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4. Add a new role, and enter a name.

5. **PTT Group Priority** ensures that only one PTT device transmits at a time for an operator. The PTT device's priority depends on its **PTT** assignment (e.g., first, second), where **First** has the highest priority. If all radios are set to **First**, this setting has no effect. To learn more about PTT assignments, go to Section 2.8.2, "Add a radio" on page 41.

   To enable PTT priority capabilities, next to **PTT Group Priority**, select ON.

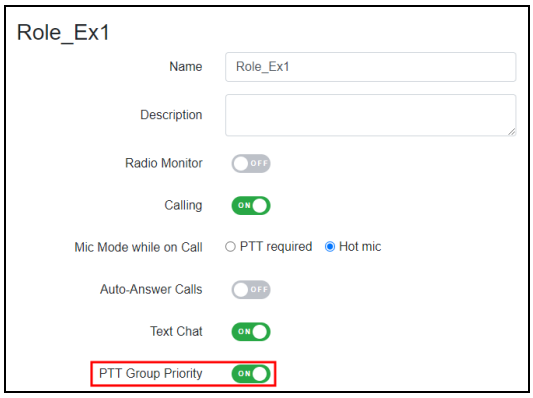

Figure 386: PTT Group Priority

6. *(Optional)* Under **Hardware Device Inputs**, select **Equipment Type**, and choose your equipment type.

7. For PTT devices, next to **PTT Switch**, select **Dual PTT** or **Single PTT**. Dual PTT switches require an ASTi PTT with the resistor option. For available configurations, go to PTT and Switch Part Numbers (#87).

8. To set the behavior of an ASTi PTT four-position selector, next to **4-Position Selector**, choose one of the following:

   - ***Tx on one radio, Rx on four****:* the selector position determines which of the first four radios in the role can transmit and receive; the remaining three radios can only receive.
   - ***Tx and Rx on selected radio only****:* only the selected radio can transmit and receive.

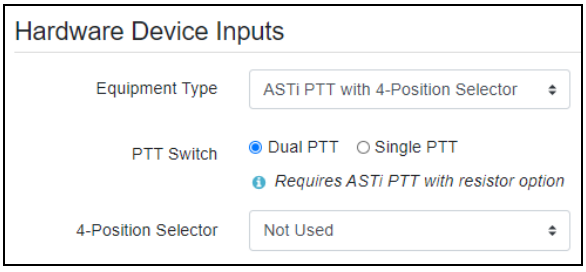

Figure 387: Hardware Device Inputs

9. Under **Radios**, add four radios.

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10. To open and edit each radio, select its name. Assign one net to each radio. In **Default Net**, select the same net.

11. Under **Audio**, set each radio's default **Rx** and **Tx** settings. If the four-position selector's behavior is set to Tx, set each radio to a default of Rx. The operator will transmit on the radio selected with the knob while all four radios receive audio.

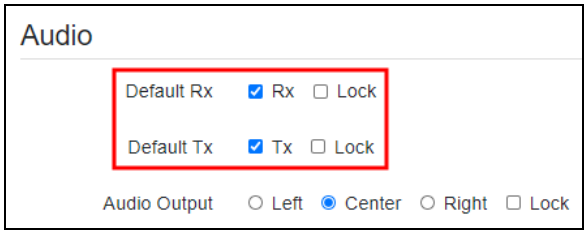

Figure 388: Four-channel PTT audio settings

If the four-position selector's behavior is set to Tx and Rx, leave **Default Rx** and **Default Tx** blank for all radios. The operator will transmit and receive on the radio selected with the knob while the other three radios remain in standby mode (neither receiving nor transmitting). Alternatively, constantly monitor one or more radios by setting the radio's default to Rx.

12. To assign this radio to a hardware press-to-talk (PTT) button, select **PTT**, and choose an option.

13. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

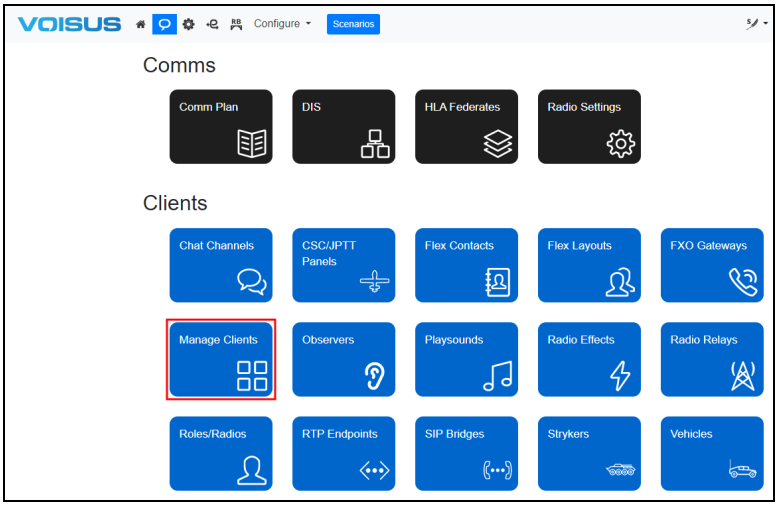

Figure 389: Manage Clients navigation

14. Under **Client Mapping**, select the new role, and add a client. The client's name must match the channel identifier, as defined on **Hardware Devices**.

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15. Assign a **DIS Exercise**, and select **Hardware Only**.

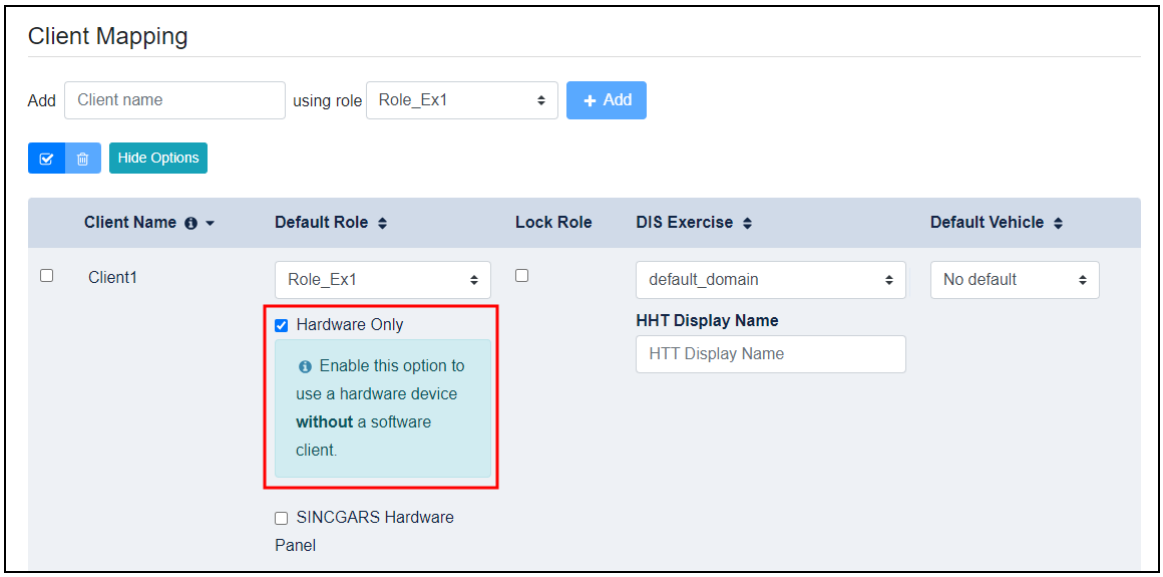

Figure 390: Client Mapping Hardware Only

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Appendix A: Delcom USB HID Programmable Quad Button Switch

The Delcom USB HID Programmable Quad Button Switch supports four press-to-talk (PTT) buttons in one USB device. In the Voisus web interface, on **Roles**, assign a virtual radio to each of the four PTT buttons. For more information about this switch, go to Delcom Product Details. The Delcom PTT button is compatible with Linux operating systems. For more information about the switch's operating system compatibility, contact ASTi.

When the associated virtual radio transmits audio, the PTT button illuminates solid. When the associated virtual receives audio, the PTT button blinks. When no radio traffic exists, the buttons do not light up. This chapter discusses how to create and configure the Delcom USB HID Programmable Quad Button Switch in A-1, "Configure the Delcom switch" below.

A-1 Configure the Delcom switch

To set up the Delcom USB HID Programmable Quad Button Switch, you must create a file named **delcom4btn.ini** in the Voisus client file (e.g., /home/*username*/**.voisus/delcom4btn.ini**, where *username* is your username). Use the following syntax:

```
[Button1]
brightness = 3
blink_rate = 6

[Button2]
brightness = 70
blink_rate = 6

[Button3]
brightness = 90
blink_rate = 6

[Button4]
brightness = 99
blink_rate = 6
```

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The Delcom switch uses the following default configuration to light up the buttons:

PTT Button	Color	Brightness	Blink Rate
Button 1	Blue	3	6
Button 2	Green	70	6
Button 3	Orange	90	6
Button 4	Red	99	6

Table 15: Delcom switch default setup

Table 16, "Delcom switch ranges" below shows valid blink rate and brightness values for the Delcom switch:

Field	Minimum Value	Maximum Value
Blink rate	0	6
Brightness	0	99

Table 16: Delcom switch ranges

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Appendix B: Voisus Client Host Control

The Voisus Client Host Control feature enables a host computer to remotely control Voisus client settings (e.g., presets, volume, frequency, receive/transmit), as well as subscribe to receive status reports from a client periodically and/or on change. A host sends packets to a Voisus client via unicast, broadcast, or multicast. The packets use User Datagram Protocol and Internet Protocol Version 4 (IPv4).

Instructors might use this feature to integrate a Voisus client into a simulator, remotely triggering its settings. This feature is compatible with all Voisus software clients, including the Voisus Client, the Voisus Client for Tablets & Desktops, the ASTi Medium Control Audio Panel (MCAP) client, and the Flex Client. To learn more about Voisus software clients, go to Section 3.0, "Software clients" on page 110.

This chapter discusses the following topics:

- Voisus client configuration for host control
- Host control for Hardware Only clients
- Host packet fields for Voisus Client Host Control
- Voisus Client Host Control packet definitions
- Subscribe packet definition
- Unsubscribe packet definition
- Report Client Status packet definition

B-1 Configure the Voisus client to receive host packets

Before the Voisus client and host can communicate, you must first configure the Voisus client to receive host packets. The following instructions explain how to make this configuration on a Windows operating system.

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To configure the Voisus client to receive host packets, follow these steps:

1. From the desktop, right-click the Voisus client icon, and go to **Properties**.
2. In **Target**, press the Right arrow key to go to the end of the line, and enter **--host-port**=*nnnnn*, where *nnnnn* is the host's port number.

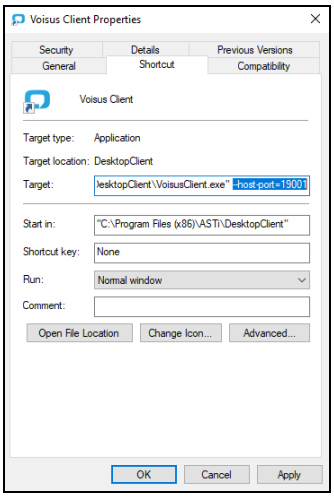

Figure 391: Voisus client host packet configuration

For multicast transmissions, enter **--host-port**=*nnnnn* **--host-mcast**=*xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the multicast address.

***Note**: The above command-line arguments are compatible with Windows and Linux operating systems.*

3. Select Apply and OK.
4. Close and reopen the client to enact changes. The Voisus client may now receive data from the host.

Host control for Hardware Only clients

Use a **Hardware Only** setup if a client operator's only control input is a hardware device, such as a press-to-talk (PTT) device, four-channel PTT device, or foot switch. If the client uses any other mechanism, such as a handheld terminal (HHT) or software GUI, this setting does not apply.

Before configuring host control of a **Hardware Only** client, you must add a new client. For step-by-step instructions, go to Section 2.5.2, "Add a software client" on page 28.

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To configure host control of a **Hardware Only** client, follow these steps:

1. From the top-left navigation bar, go to **Voisus Clients** ( ) > **Manage Clients**.

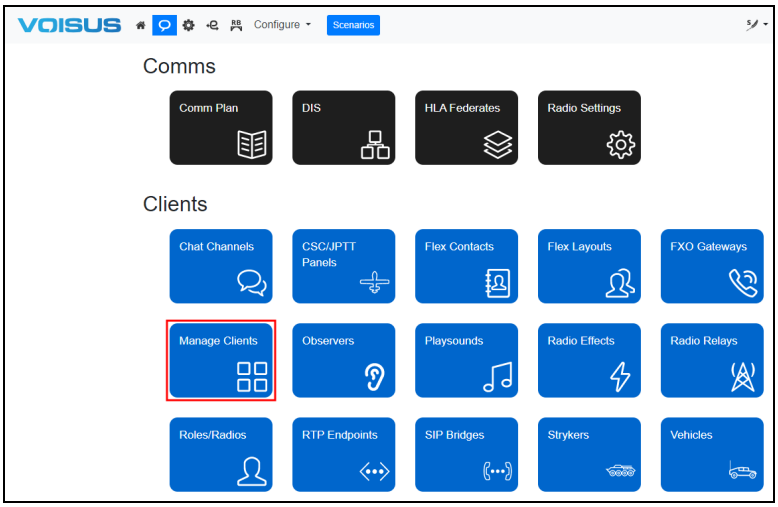

Figure 392: Manage Clients navigation

2. Select Show Options.
3. Choose a client to configure, and make sure **Hardware Only** is selected.
4. On **Hardware Only Settings**, turn **Host Interface** ON.

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5. On **UDP Port**, enter an available port in the range 1024–32767 on which the Voisus Client will listen.
6. On **Multicast Address (Optional)**, enter a multicast address in IPv4 format (e.g., *xxx.xxx.xxx.xxx*). The **Hardware Only** client will join this address and listen for packets from one or more hosts.

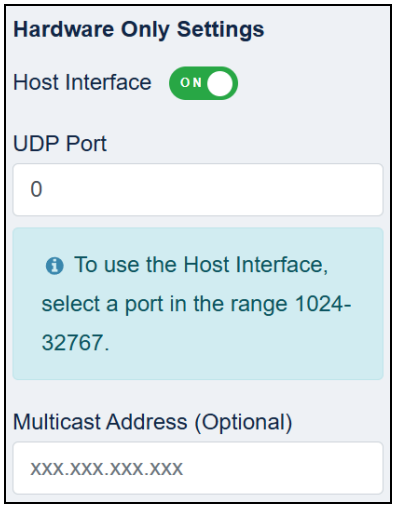

Figure 393: Hardware Only Settings

B-2 Host packet fields for Voisus Client Host Control

This section provides important host packet information enabling a Voisus client and the host system to communicate. If your application includes multiple operators, you must configure the host to work with each Voisus client.

The host must send all fields in the packets in little-endian byte order. Two fields are required: **Packet Type** and **Client Name**. The **Packet Type** field specifies how the client should interpret the packet's data and corresponds with one of the following:

- ***1**:* Radio Settings
- ***2**:* Client Settings
- ***3**:* Comprehensive Settings
- ***4**:* Subscribe
- ***5**:* Unsubscribe
- ***6**:* (Output) Report Client Status

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The **Client Name** field matches the Voisus client's name defined in the client settings. Clients only process packets with a matching **Client Name**. As a result, the host can broadcast or multicast packets to multiple clients, but only clients with matching **Client Names** will process them. This field must be null-terminated with a 0 byte after the name.

The remainder of each section uses the following format:

- A *{setting_name}* field that changes the value of a Voisus client setting (e.g., **Preset**), and
- A **Has** *{setting_name}***?** field that enables (**1**) or disables (**0**) the above client setting (e.g., **Has Preset?**). Use this flexible format to choose which settings the Voisus client will process.

For example, to change the Voisus client's preset to 5, enter **5** in the **Preset** field and **1** in the **Has Preset?** field. For a complete packet definition, go to B-3, "Voisus Client Host Control packet definitions" below.

B-3 Voisus Client Host Control packet definitions

The Voisus Client Host Control feature includes separate packet definitions for individual radio settings or overall client settings. Alternatively, combine multiple radios and client settings into one comprehensive packet that controls all Voisus client settings. A host may subscribe to a client to receive status reports from it or unsubscribe to stop publications.

This section discusses the following topics:

- Radio Settings packet definition
- Client Settings packet definition
- Comprehensive Settings packet definition
- Subscribe packet definition
- Unsubscribe packet definition
- Report Client Status packet definition

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Radio Settings packet definition

Table 17, "Radio Settings packet definitions" below defines the packet definition for one radio:

Byte Offset	Size	Type	Field	Description
0	1	uint8	**Packet Type**	(Required) Radio=**1**
1	32	string	**Client Name**	(Required) The name of the client the host will control, formatted as a null-padded string.
33	1	uint8	**Radio Number**	(Required) First radio=**1**
34	1	uint8	**Preset**	
35	1	Boolean	Has Preset?	
36	1	Boolean	**Tx Enable**	
37	1	Boolean	Has Tx Enable?	
38	1	Boolean	**Rx Enable**	
39	1	Boolean	Has Rx Enable?	
40	1	uint8	**Balance 0**	(Headphones) Left=**1**, Center=**128**, Right=**2**
41	1	Boolean	Has Balance 0?	
42	1	uint8	**Balance 1**	(Speakers) Left=**1**, Center=**128**, Right=**2**
43	1	Boolean	Has Balance 1?	
44	1	uint8	**Volume**	**0–100**
45	1	Boolean	Has Volume?	
46	1	Boolean	**Crypto Enabled?**	
47	1	Boolean	Has Crypto Enabled?	
48	1	uint8	**PTT Group**	**1**, **2**, **3**, **4**
49	1	Boolean	Has PTT Group?	
50	8	uint64	**Override Frequency**	(In Hz)
58	1	Boolean	Has Override Frequency?	

Table 17: Radio Settings packet definitions

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Byte Offset	Size	Type	Field	Description
59	1	uint8	**Override Modulation**	**1**=AM **2**=FM **3**=INTERCOM **4**=SINCGARS **5**=SINCGARS_SC **6**=HAVEQUICK **7**=SATCOM **8**=JAMMER **9**=PULSE **10**=USB **11**=LSB **12**=HFECCM **13**=SSBF **14**=CW
60	1	Boolean	Has Override Modulation?	
61	2	uint16	**Override FreqHop Net ID**	
63	2	uint16	**Override FreqHop TOD**	
65	2	uint16	**Override FreqHop WOD**	
67	2	uint16	**Override FreqHop Lockout Set**	
69	2	uint16	**Override FreqHop Transec Key**	
71	1	Boolean	Has Override FreqHop?	
72	2	uint16	**Override Crypto System**	
74	2	uint16	**Override Crypto Key**	
76	1	Boolean	Has Override Crypto?	

Table 17: Radio Settings packet definitions

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Client Settings packet definition

Table 18, "Client Settings packet definitions" below defines the packet definition for **Volume** and **PTT**:

Byte Offset	Size	Type	Field	Description
0	1	uint8	**Packet Type**	(Required) Client Settings=**2**
1	32	string	**Client Name**	(Required) The name of the client the host will control, formatted as a null-padded string.
33	1	uint8	**Volume**	**0–100**
34	1	Boolean	Has Volume?	
35	1	uint8	**PTT 1**	Not pressed=**0**, pressed=**1**
36	1	Boolean	Has PTT 1?	
37	1	uint8	**PTT 2**	Not pressed=**0**, pressed=**1**
38	1	Boolean	Has PTT 2?	
39	1	uint8	**PTT 3**	Not pressed=**0**, pressed=**1**
40	1	Boolean	Has PTT 3?	
41	1	uint8	**PTT 4**	Not pressed=**0**, pressed=**1**
42	1	Boolean	Has PTT 4?	

Table 18: Client Settings packet definitions

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Comprehensive Settings packet definition

The Comprehensive Settings packet definition combines Client Settings with 1–64 Radio Settings packet definitions. The packet length can be shorter than the maximum (i.e., a Comprehensive Settings packet does not require all 64 radios).

***Important**: The Voisus client cannot process incomplete sections; therefore, sections must include all bytes in a full definition.*

Table 19, "Comprehensive Settings packet definition" below shows an example of a comprehensive packet with three radios:

Byte Offset	Size	Type	Field	Description
Client Settings				
0	1	uint8	**Packet Type**	(Required) Comprehensive=**3**
1	32	string	**Client Name**	(Required) The name of the client the host will control, formatted as a null-padded string.
33	1	uint8	**Volume**	**0–100**
34	1	Boolean	Has Volume?	
35	1	uint8	**PTT 1**	Not pressed=**0**, pressed=**1**
36	1	Boolean	Has PTT 1?	
37	1	uint8	**PTT 2**	Not pressed=**0**, pressed=**1**
38	1	Boolean	Has PTT 2?	
39	1	uint8	**PTT 3**	Not pressed=**0**, pressed=**1**
40	1	Boolean	Has PTT 3?	
41	1	uint8	**PTT 4**	Not pressed=**0**, pressed=**1**
42	1	Boolean	Has PTT 4?	
Radio Settings 1				
43	1	uint8	**Preset**	
44	1	Boolean	Has Preset?	
45	1	Boolean	**Tx Enable**	
46	1	Boolean	Has Tx Enable?	
47	1	Boolean	**Rx Enable**	

Table 19: Comprehensive Settings packet definition

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Byte Offset	Size	Type	Field	Description
48	1	Boolean	Has Rx Enable?	
49	1	uint8	**Balance 0**	(Headphones) Left=**1**, Center=**128**, Right=**2**
50	1	Boolean	Has Balance 0?	
51	1	uint8	**Balance 1**	(Speakers) Left=**1**, Center=**128**, Right=**2**
52	1	Boolean	Has Balance 1?	
53	1	uint8	**Volume**	**0**–**100**
54	1	Boolean	Has Volume?	
55	1	Boolean	**Crypto Enabled?**	
56	1	Boolean	Has Crypto Enabled?	
57	1	uint8	**PTT Group**	**1**, **2**, **3**, **4**
58	1	Boolean	Has PTT Group?	
59	8	uint64	**Override Frequency**	(In Hz)
67	1	Boolean	Has Override Frequency?	
68	1	uint8	**Override Modulation**	**1**=AM **2**=FM **3**=INTERCOM **4**=SINCGARS **5**=SINCGARS_SC **6**=HAVEQUICK **7**=SATCOM **8**=JAMMER **9**=PULSE **10**=USB **11**=LSB **12**=HFECCM **13**=SSBF **14**=CW
69	1	Boolean	Has Override Modulation?	
70	2	uint16	**Override FreqHop Net ID**	
72	2	uint16	**Override FreqHop TOD**	

Table 19: Comprehensive Settings packet definition

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Byte Offset	Size	Type	Field	Description
74	2	uint16	**Override FreqHop WOD**	
76	2	uint16	**Override FreqHop Lockout Set**	
78	2	uint16	**Override FreqHop Transec Key**	
80	1	Boolean	Has Override FreqHop?	
81	2	uint16	**Override Crypto System**	
83	2	uint16	**Override Crypto Key**	
85	1	Boolean	Has Override Crypto?	
Radio Settings 2				
86	1	uint8	**Preset**	
87	1	Boolean	Has Preset?	
88	1	Boolean	**Tx Enable**	
89	1	Boolean	Has Tx Enable?	
90	1	Boolean	**Rx Enable**	
91	1	Boolean	Has Rx Enable?	
92	1	uint8	**Balance 0**	(Headphones) Left=**1**, Center=**128**, Right=**2**
93	1	Boolean	Has Balance 0?	
94	1	uint8	**Balance 1**	(Speakers) Left=**1**, Center=**128**, Right=**2**
95	1	Boolean	Has Balance 1?	
96	1	uint8	**Volume**	**0–100**
97	1	Boolean	Has Volume?	
98	1	Boolean	**Crypto Enabled?**	
99	1	Boolean	Has Crypto Enabled?	
100	1	uint8	**PTT Group**	**1**, **2**, **3**, **4**
101	1	Boolean	Has PTT Group?	
102	8	uint64	**Override Frequency**	(In Hz)
110	1	Boolean	Has Override Frequency?	

Table 19: Comprehensive Settings packet definition

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Byte Offset	Size	Type	Field	Description
111	1	uint8	**Override Modulation**	**1**=AM **2**=FM **3**=INTERCOM **4**=SINCGARS **5**=SINCGARS_SC **6**=HAVEQUICK **7**=SATCOM **8**=JAMMER **9**=PULSE **10**=USB **11**=LSB **12**=HFECCM **13**=SSBF **14**=CW
112	1	Boolean	Has Override Modulation?	
113	2	uint16	**Override FreqHop Net ID**	
115	2	uint16	**Override FreqHop TOD**	
117	2	uint16	**Override FreqHop WOD**	
119	2	uint16	**Override FreqHop Lockout Set**	
121	2	uint16	**Override FreqHop Transec Key**	
123	1	Boolean	Has Override FreqHop?	
124	2	uint16	**Override Crypto System**	
126	2	uint16	**Override Crypto Key**	
128	1	Boolean	Has Override Crypto?	
Radio Settings 3				
129	1	uint8	**Preset**	
130	1	Boolean	Has Preset?	
131	1	Boolean	**Tx Enable**	
132	1	Boolean	Has Tx Enable?	
133	1	Boolean	**Rx Enable**	

Table 19: Comprehensive Settings packet definition

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Byte Offset	Size	Type	Field	Description
134	1	Boolean	Has Rx Enable?	
135	1	uint8	**Balance 0**	(Headphones) Left=**1**, Center=**128**, Right=**2**
136	1	Boolean	Has Balance 0?	
137	1	uint8	**Balance 1**	(Speakers) Left=**1**, Center=**128**, Right=**2**
138	1	Boolean	Has Balance 1?	
139	1	uint8	**Volume**	**0**–**100**
140	1	Boolean	Has Volume?	
141	1	uint8	**Crypto Enabled?**	
142	1	Boolean	Has Crypto Enabled?	
143	1	uint8	**PTT Group**	**1**, **2**, **3**, **4**
144	1	Boolean	Has PTT Group?	
145	8	uint8	**Override Frequency**	(In Hz)
153	1	Boolean	Has Override Frequency?	
154	1	uint8	**Override Modulation**	**1**=AM **2**=FM **3**=INTERCOM **4**=SINCGARS **5**=SINCGARS_SC **6**=HAVEQUICK **7**=SATCOM **8**=JAMMER **9**=PULSE **10**=USB **11**=LSB **12**=HFECCM **13**=SSBF **14**=CW
155	1	Boolean	Has Override Modulation?	
156	2	uint16	**Override FreqHop Net ID**	
158	2	uint16	**Override FreqHop TOD**	

Table 19: Comprehensive Settings packet definition

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Byte Offset	Size	Type	Field	Description
160	2	uint16	**Override FreqHop WOD**	
162	2	uint16	**Override FreqHop Lockout Set**	
164	2	uint16	**Override FreqHop Transec Key**	
166	1	Boolean	Has Override FreqHop?	
167	2	uint16	**Override Crypto System**	
169	2	uint16	**Override Crypto Key**	
171	1	Boolean	Has Override Crypto?	
Radio Settings 4				
[...]	[...]	[...]	[...]	[...]
Radio Settings 64				
[...]	[...]	[...]	[...]	[...]

Table 19: Comprehensive Settings packet definition

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Subscribe packet definition

A host sends the Subscribe packet to request status report packets from a Voisus client. A client sends status reports for the duration specified in **Timeout**. A client can send reports periodically and on change. Voisus clients support multiple concurrent subscriptions. To view the status report packet's structure, go to "Report Client Status packet definition" on page 267.

Table 20, "Subscribe packet definition" below shows the contents of a Subscribe packet:

Byte Offset	Size	Type	Field	Description
0	1	uint8	**Packet Type**	(Required) Subscribe=**4**
1	32	string	**Client Name**	(Required) The name of the client the host will control, formatted as a null-padded string.
33	4	uint32	**Timeout**	Duration of the subscription (in ms), capped at 60,000 ms.
37	1	Boolean	Has Timeout?	N/A
38	1	Boolean	**Send on Change?**	The client will publish a status report when it detects any change.
39	1	Boolean	Has Send on Change?	N/A
43	4	uint32	**Publish Period**	Time between status reports (in ms), capped at 60,000 ms.
47	1	Boolean	Has Publish Period?	N/A

Table 20: Subscribe packet definition

Unsubscribe packet definition

To end an ongoing subscription to a client and stop further publications from it, send an Unsubscribe packet from the host to that client.

Table 21, "Unsubscribe packet definition" below shows the structure of an Unsubscribe packet:

Byte Offset	Size	Type	Field	Description
0	1	uint8	**Packet Type**	(Required) Unsubscribe=**5**
1	32	string	**Client Name**	(Required) The name of the client the host will control, formatted as a null-padded string.

Table 21: Unsubscribe packet definition

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Report Client Status packet definition

The Voisus client sends the current status of itself and its radios to the host though the Report Client Status packet. A Voisus client sends status report packets via unicast to the requesting host's address. This packet is similar to the Comprehensive Settings packet described in "Comprehensive Settings packet definition" on page 260. The packet length varies depending on the number of radios included (up to 64).

Table 22, "Report Client Status packet definition" below shows an example of a status report from a client with one radio:

Byte Offset	Size	Type	Field	Description
Client Status				
0	1	uint8	**Packet Type**	(Required) Report Client Status=**6**
1	32	string	**Client Name**	(Required) The name of the client the host will control, formatted as a null-padded string.
33	1	uint8	**Volume**	**0**–**100**
34	1	Boolean	**PTT 1**	Not pressed=**0**, pressed=**1**
35	1	Boolean	**PTT 2**	Not pressed=**0**, pressed=**1**
36	1	Boolean	**PTT 3**	Not pressed=**0**, pressed=**1**
37	1	Boolean	**PTT 4**	Not pressed=**0**, pressed=**1**
38	1	uint8	**Radio Count**	Number of radios reported
Radio 1 Status				
39	1	Boolean	**Transmitting?**	N/A
40	1	Boolean	**Receiving?**	N/A
41	1	Boolean	**Transmit Enable?**	N/A
42	1	Boolean	**Receive Enable?**	N/A
43	1	uint8	**Balance 0**	(Headphones) Left=**1**, Center=**128**, Right=**2**
44	1	uint8	**Balance 1**	(Speakers) Left=**1**, Center=**128**, Right=**2**
45	1	uint8	**Radio Volume**	**0**–**100**
46	1	Boolean	**Crypto Enabled?**	

Table 22: Report Client Status packet definition

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Byte Offset	Size	Type	Field	Description
47	1	uint8	**PTT Group**	**1**, **2**, **3**, **4**
48	8	uint64	**Frequency**	(In Hz)
56	16	string	**Modulation**	The modulation type, formatted as a null-padded string. Supports default modulations as well as JAMMER and PULSE. To view default modulations, go to Section 2.3.4, "DIS Modulations" on page 17.
72	2	uint16	**FreqHop Net ID**	N/A
74	2	uint16	**FreqHop TOD**	N/A
76	2	uint16	**FreqHop WOD**	N/A
78	2	uint16	**FreqHop Lock-out Set**	N/A
80	2	uint16	**FreqHop Tran-sec Key**	N/A
82	2	uint16	**Crypto System**	N/A
84	2	uint16	**Crypto Key**	N/A
Radio 2 Status				
[...]	[...]	[...]	[...]	[...]
Radio 64 Status				
[...]	[...]	[...]	[...]	[...]

Table 22: Report Client Status packet definition

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