

## Comrex Switchboard for Audio Codecs

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### Introduction

Comrex **Switchboard** for audio (formerly known as BRIC Traversal Server) is a feature that allows presence notification, status, and connection help (i.e., NAT Traversal) via a cloud-based service. **Switchboard** is delivered as a standard feature with ACCESS codecs, and can be purchased as an upgrade to BRIC-Link codecs. The **Switchboard** within the codec hardware provides the following functions:

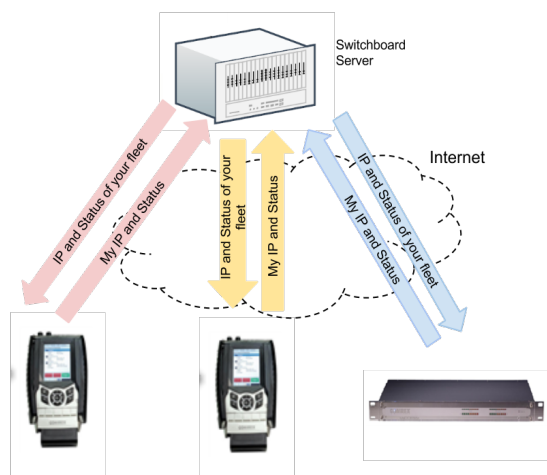
- The ability for Comrex audio codecs to sync with a cloud based server and deliver status information
- The ability for Comrex audio codecs to determine their public IP address and the type of any NAT-style router that the codec may be behind, and display that information to the user
- The ability of Comrex audio codecs to display the presence (i.e., if a codec is *attached to the Internet*), status (i.e., if it's *actively connected to another codec*), NAT info, and IP addresses of other codecs within the same fleet
- The ability to share this information with codecs outside the fleet (**Shares**)
- The ability to take instruction from the server on how best to traverse NATs when placing a call between two codecs

Besides the functions contained within the **Switchboard** driver inside the hardware codec, the server itself is the other key element to the system. This server will contain a **Switchboard** account, and the user will be required to enter information about their codec fleet into this account via the web.

It's important to understand the distinction between these two pieces. The **Switchboard** driver within the codec is the portion that has been licensed and warranted by Comrex. The cloud server itself can be one that you deploy, or the one provided for free use by Comrex at [switchboard.comrex.com](http://switchboard.comrex.com). In the case of mission critical networks, it's important to understand that [switchboard.comrex.com](http://switchboard.comrex.com) is provided free of charge and at will. As such, Comrex offers no warranty as to availability of this server or of its function. The specific disclaimer about [switchboard.comrex.com](http://switchboard.comrex.com) will be sent along with your account credentials.

If you have a network that requires absolute 100% availability of this server, the software that runs the Comrex **Switchboard** is available from Comrex in an executable format free of charge, with basic instructions on how to set it up. The address of the server used for these functions is configurable in the codec firmware.

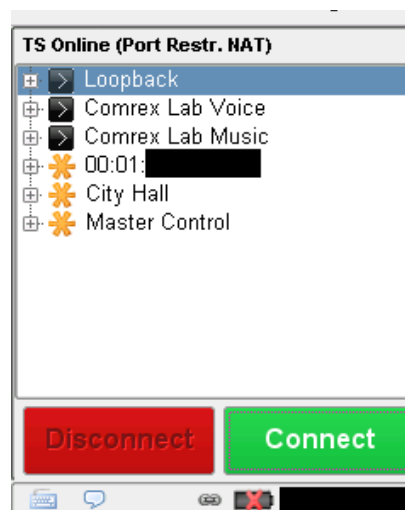
Contact Comrex for details on obtaining this software.



This figure shows a typical small codec fleet (3 units) that is configured to work with **Switchboard**. Each codec opens a channel to the **switchboard.comrex.com** server and provides the server information including the current public IP address, connection status, firmware version, and the type of router (if any) that exists in the link. (This IP and router information is identified by the codec via a protocol called STUN. The **Switchboard** server doubles as a STUN server, helping the codec figure this all out.)

The presence and status of each member of a fleet is reflected on the user interface of each codec. Each unit is displayed by a familiar name rather than by its IP address. If the IP address of any member unit changes, it is then updated in the background of the system automatically.

As shown below, units connected to a codec via **Switchboard** are displayed differently than units that have been connected to a codec in the traditional way (i.e., by “dialing” an IP address directly): usually with a colored gear icon.



When a **Switchboard** member is dialed by a codec, a different sequence of events occurs. The system may make the call in one of several ways depending on the NAT status on each end of the call, including by instructing the called party to initiate the connection. This process is all transparent to the user.

### Switchboard Configuration and Operation on the Codec Side

There is very little to do to make **Switchboard** work on your codec. As long as the “Traversal Server” function on your device is enabled then your codec is ready to be synced with **Switchboard**. (This function is enabled in ACCESS units by default but disabled on BRIC-Link units. Consult your codec manual for more information.)

## Switchboard Configuration on the Server Side

When **Switchboard** was purchased, you should have been given account credentials on [switchboard.comrex.com](http://switchboard.comrex.com). You will key that address into a web browser and access your server configuration page on the Internet. It is here that you will add the codecs in your fleet to your **Switchboard** account.

### Adding codecs

In order for **Switchboard** to function properly, you'll need to let it know which codecs are yours. This is done in the "Add New Units" section. Codecs are identified on Switchboard by the primary Ethernet MAC ID of the unit. (Please note: while other modem devices attached to ACCESS may have their own MAC addresses, **Switchboard** only uses the Ethernet MAC.) Ethernet MACs are in the form of six two-digit hexadecimal numbers and are unique.

Comrex | Switchboard

Audio Codecs

Contact Lists

Sharing

## Add New Unit

[Back to all Audio Codecs](#)

Unit MAC Address

MAC Address

[Add New Unit](#)

Because it's not intuitive for codecs to be identified by their Ethernet MAC address long-term, however, Comrex recommends that customers change the unit name to something more easily recognizable using

the system settings on the codec itself, *not* using **Switchboard**, because you *cannot* rename units in **Switchboard**. (Consult your codec manual for renaming instructions.) Once this is done, the change will be reflected in **Switchboard** and on any other codecs that had already been connected to yours (directly or via **Switchboard**).






After you have entered the details for your codec, you will be given the option to choose a **Contact List** for that codec (which is covered below). For now, choose "default" so that all codecs in your fleet will be visible to each other.

Note: Once you've added a codec to your account you should break its network connection so that the device will sync with the **Switchboard** server properly. You can do this by either powering the unit down and restarting it or disconnecting and reconnecting its wireless modem or ethernet cable.

Once added and properly synced, your **Switchboard** list will show all the codecs in your account, including the connection status and firmware version for each unit.

### Audio Codecs

[+Add New Unit](#)

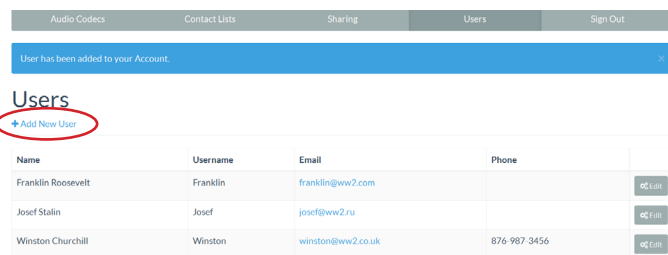
	Unit Name   MAC	Connection Status	Firmware	
 ACCESS Rack Audio Codec	City Hall 00:40: [REDACTED]	Online Last seen 2012-06-13 14:28:44	2.8-p11-test1	<a href="#">Details</a>
 ACCESS Rack Audio Codec	Master Control 00:70: [REDACTED]	Offline Last seen 2013-11-04 23:00:14	devel	<a href="#">Details</a>
 ACCESS Portable Audio Codec	00:01: [REDACTED]	Online Last seen 2013-10-21 13:45:17	2.8-p23	<a href="#">Details</a>
 ACCESS Portable Audio Codec	Weather C 00:01: [REDACTED]	Offline Last seen 2013-05-16 04:08:56	2.8-p10	<a href="#">Details</a>
 ACCESS Portable	Kabul office	Offline	2.7.1-p3	<a href="#">Details</a>

For the simplest and most common configurations (where all the codecs in an account are able to see each other and there is *only one account administrator*) the Switchboard server setup process is now complete.

Codecs registered on the **Switchboard** server will display the presence and status of all other units in the same account.

## Creating Additional Switchboard Users

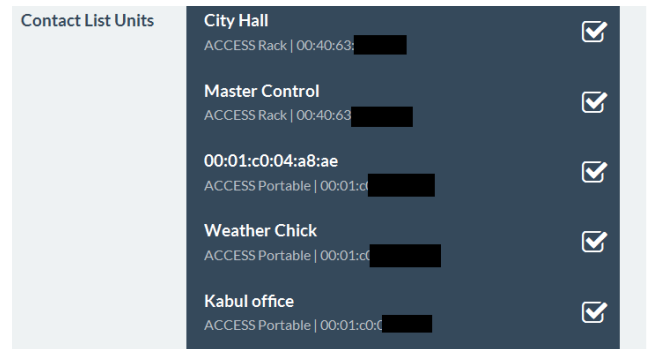
In some situations, you may wish to create additional **Switchboard** users who can access the server’s web interface. You can do this by selecting “Add New User” in the upper left of the “Users” tab, you can create multiple accounts that each have a unique password. (Any new user accounts you create can be deleted later if you no longer desire them.)



## Contact Lists

In some situations, it may not be desirable for every codec in your fleet to see the status or presence of every other codec. To help filter what’s displayed on a codec’s user interface, **Switchboard** has implemented the “**Contact Lists**”, which can contain a subset of the units in your account.

With the exception of **Shares** (discussed in the Advanced Topics section on page 6), only units within your **Switchboard** account can be added to **Contact Lists**.

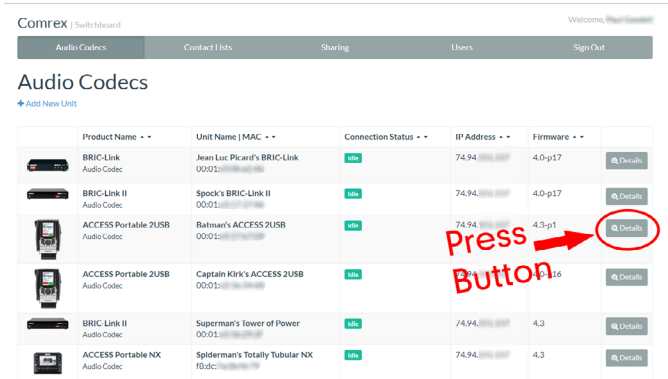


By default, **Switchboard** creates a master **Contact List** that contains all codecs on your account and which every codec in your fleet uses. If you’re not interested in segregating codecs on your account, this default **Contact List** should be sufficient.

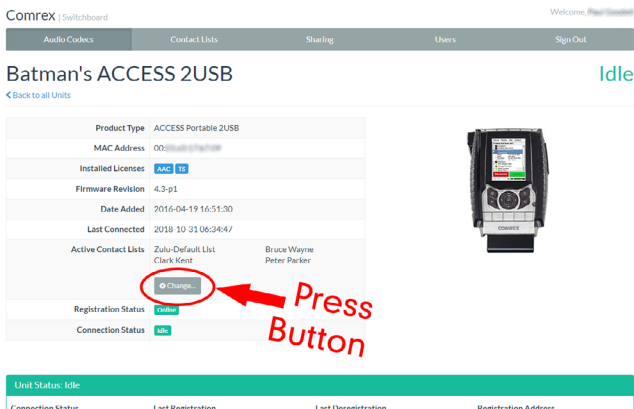


Each unit also has the ability to “**Follow**” a **Contact List**: a view-only function that allows a codec to see the status and presence of units in a **Contact List**. All units are set to **Follow** the master **Contact List** by default.

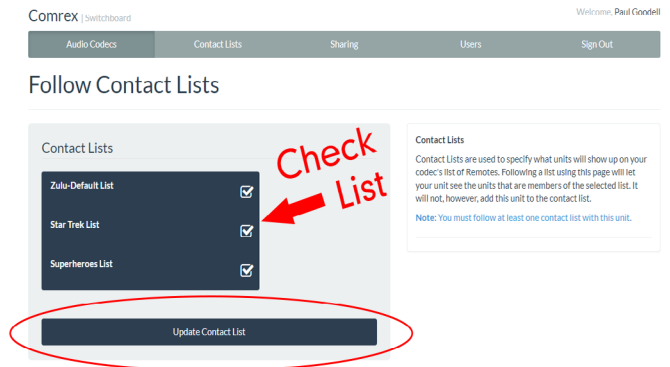
To **Follow** a **Contact List** on a codec, first click on the “Details” button for that codec on the main screen in **Switchboard**.



Next, press the “Change” button near the middle of the following screen.



On the next screen, check the **Contact List(s)** that you want this codec to **Follow** and press “Update Contact List”.



One important point to remember: Following a Contact List on a codec only determines which units get displayed on that codec's own list. It has no impact on how that codec itself is displayed on other devices.

## Advanced Topics

The following section contains advanced material. Feel free to ignore the information in this section if you use Switchboard's default settings, as they provide good performance for the majority of users.

### Switchboard Shares

In some situations, you may want to allow a user *outside* of your account to see the status of a device in your fleet. **Switchboard** enables you to do this by **Sharing** your unit with them. A **Share** is a subset of your codec fleet that you define. Once it's defined, you can invite other **Switchboard** users to add it to their accounts so that your codecs will be visible to them.

To create a **Share**, click the **"Sharing"** tab and then select **"Add New Share"**.

Comrex | Switchboard Welcome, [User Name]

Audio Codes | Contact Lists | **Sharing** | Users | Sign Out

### Unit Sharing

[+ Add New Share](#)

Share	Units in Share	Shared With Accounts	
NX with P-1 <small>Enabled</small>	Spiderman's Totally Tubular NX ACCESS Portable NX	pointolo	<span>Recently Enabled</span> <span>Edit</span> <span>Accounts</span>

Shares from other Accounts

Share Name	Units Being Shared With Your Account	
PaulG pct01010 <small>Enabled</small>	00:40:00 ACCESS Rack	<span>Disable</span> <span>Delete</span>

The following screen then allows you to choose which codec(s) you want to include in this **Share**.

Share Information

Share Name: Little Radio stringers

Units to Share:

- City Hall  
ACCESS Rack | 00:40:00
- Master Control  
ACCESS Rack | 00:40:00
- 00:01:c0: [redacted]  
ACCESS Portable | 00:01:c0: [redacted]

After you make your selection, you'll need to enter one of the following to identify the account you wish to **Share** your unit(s) with: the official name of that account as it's listed in **Switchboard** or the email address for the account's administrator (which must match the email **Switchboard** has for that user).

00:01:c0: [redacted]  
ACCESS Portable | 00:01:c0: [redacted]

Account to Share With: Share With Email / Account Name

Activate this Share?

Add New Share

An email will then be sent from the server asking the user to confirm your **Share**. Once they've confirmed the **Share**, your **Shared** devices will appear as options in their contact list menu.

Please note: **Shares** are a one-way transaction. If you want a **Share** to be two-way -- i.e., one where the person you're **Sharing** a unit with (a.k.a. the "external user") also allows you see their own unit(s) -- you both must first *send* each other a **Share** invitation and then each *accept* the other's invitation.





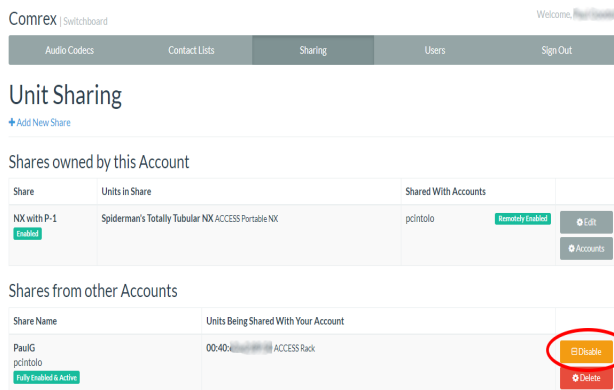
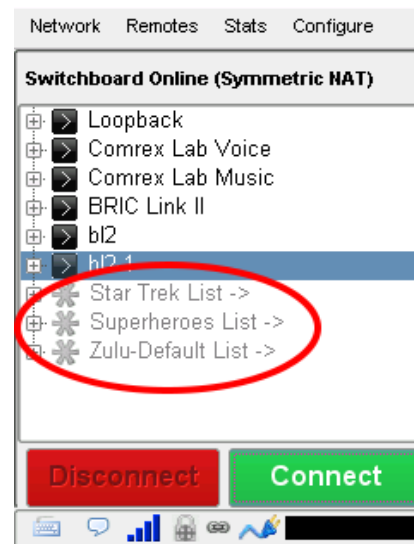
## Managing Multiple Contact Lists

While most people will only use the default **Contact List**, it is possible in Switchboard to create and **Follow** multiple **Contact Lists** as well as to manage them from a codec's user interface.

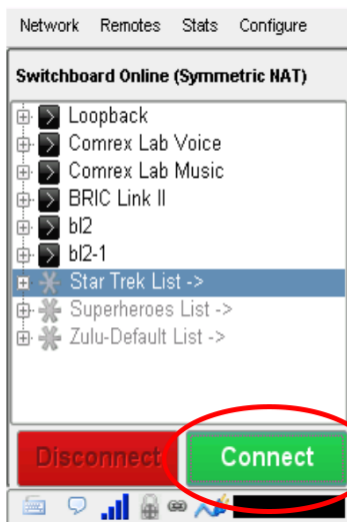
If multiple **Contact Lists** have been designated as "**Followed**" on a unit's **Switchboard** interface, each **Contact List** will appear at the bottom of the unit's Remotes tab (as shown below).

Just as with normal units within a **Switchboard** account, an external user must then *add* a **Shared** unit to a **Contact List** in order for it to be visible to other units in their fleet. (This is true even if they're only using the single default **Contact List**.)

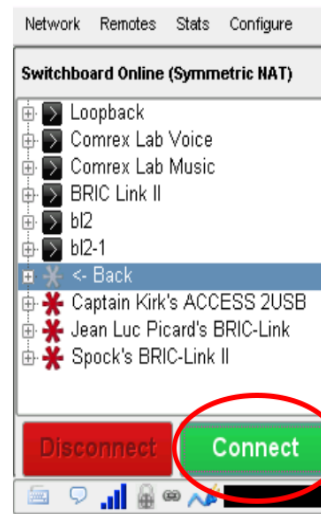
Finally, while it is possible to delete **Shares**, we recommend *disabling* them instead. This allows you to stop the **Share** but doesn't require you to do any work to recreate it if you later decide that you still want it. To disable a **Share**, simply click the orange "Disable" button on the bottom right of the **Share** edit page.



To view and/or connect to the unit(s) within a list, select the list and press "Connect" (as shown in the next figure).

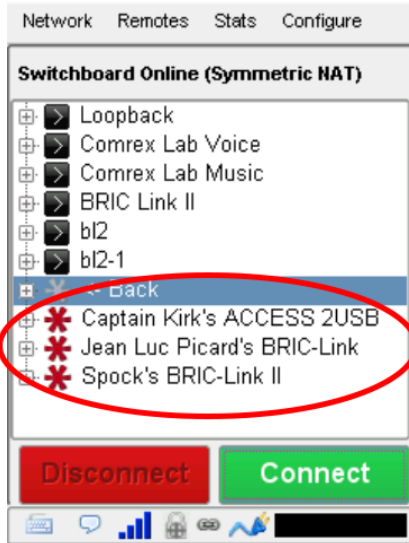


Select List



Select "Back"

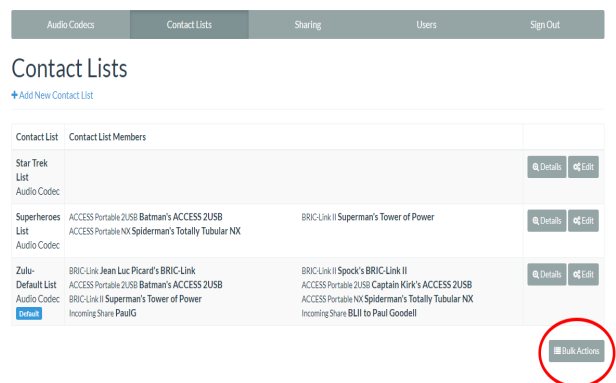
When you view the units within a list, the lists themselves will temporarily disappear from the screen (as shown below).



## Bulk Actions for Contact Lists

It is also possible within **Switchboard** to perform an action that impacts all of the codecs in a given **Contact List** in a single step called a **"Bulk Action"**.

To do this, press the **Bulk Action** button in the bottom right corner of the **Contact List** tab.



To view the lists again, select "Back" and press "Connect" (as shown in the next figure).

Please note: you can only view a **Contact List** on *your codec* if *your codec* is **Following** that list.

The three steps to create a **Bulk Action** are:

1. Choose the type of action you want to perform
2. Select the codecs you're targeting with this change
3. Identify the **Contact List** that will be impacted by the change



## Step 1: Choose the Action Type

First, you must select which of the four types of **Bulk Actions** you want to perform:

- **ADD** codecs to a **Contact List**
- **REMOVE** codecs from a **Contact List**
- **SUBSCRIBE** to a **Contact List** (i.e., have multiple codecs **Follow** that list)
- **UNSUBSCRIBE** from a **Contact List** (i.e., have multiple codecs *stop Following* that list)

### Bulk Contact List Assignment

Back to all Contact Lists

I want to:

Add Remove **Subscribe** Unsubscribe

...units that are:

Members of Star Trek List

Following

...to/from this contact list:

Star Trek List

Send Bulk Action

Add/Remove  
Adds units to, or Removes units from, Contact Lists.

Subscribe/Unsubscribe  
"Subscribe" allows a given unit to view all the units in a given Contact List. It makes the given unit follow the given Contact List, but doesn't add the unit to the list. "Unsubscribe" removes that permission.

Members of/Following  
"Members of" refers to all units that are in the selected Contact List. "Following" refers to units that are following the selected Contact List.

## Step 2: Select the Target Codecs

Next you must choose which list of codecs you're targeting with this **Bulk Action**.

### Bulk Contact List Assignment

Back to all Contact Lists

I want to:

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...units that are:

Members of Star Trek List

Following

...to/from this contact list:

Star Trek List

Send Bulk Action

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Adds units to, or Removes units from, Contact Lists.

Subscribe/Unsubscribe  
"Subscribe" allows a given unit to view all the units in a given Contact List. It makes the given unit follow the given Contact List, but doesn't add the unit to the list. "Unsubscribe" removes that permission.

Members of/Following  
"Members of" refers to all units that are in the selected Contact List. "Following" refers to units that are following the selected Contact List.

When you complete this step, remember to specify whether you want to target the

units that are part of a **Contact List** or the units that are **Following** that list. (The option in the yellow-outlined box on the middle-left of the above figure).

Note: **Bulk Actions** can ONLY be performed on ENTIRE Contact Lists. They CANNOT be performed on individual codecs or on a portion of a Contact List. This means that a **Bulk Action** will affect ALL of the codecs that are either part of a **Contact List** or are **Following** that list.

If you only want to change *a subset of the codecs in a list*, we recommend that you create a new **Contact List** with only those units in it and then perform the **Bulk Action** using that list.

## Step 3: Identify the List That Will Be Changed

Lastly, you must choose the **Contact List** that will be affected by this **Bulk Action**. This will be the list that will have codecs added to it or removed from it, or which will have codecs **Follow** it or stop **Following** it.

When you are finished, press the "Send Bulk Action" button.

### Bulk Contact List Assignment

Back to all Contact Lists

I want to:

Add Remove **Subscribe** Unsubscribe

...units that are:

Members of Star Trek List

Following

...to/from this contact list:

Star Trek List

Send Bulk Action

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