Comrex Switchboard for Liveshot Video Codecs

Introduction

Comrex **Switchboard** for LiveShot is a feature that allows presence notification, status and connection help (NAT Traversal) via a cloud-based service.

In addition, **Switchboard** for LiveShot can allow users to access the user interface of any device in their fleet, as long as it's connected to a network. The use of **Switchboard** is a standard feature built into LiveShot and also provides the following functions:

- The ability for Comrex LiveShots to sync with a cloud-based server and deliver status information

- The ability for Comrex LiveShots to determine their public IP address and the type of any NAT-style router ahead of the codec, and display that information to the user via the web or app-based control interface

- The ability of Comrex LiveShots to display presence, status, NAT info and IP addresses to users logged into the cloud account

- The ability to limit LiveShot connectivity to units on the same Switchboard account

- The ability to share this information with LiveShots outside the fleet (Shares)

- The ability to take instruction from the server on how best to traverse NATs when placing a call between two LiveShots

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 the 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 sold and is under warranty 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**.

In the case of mission critical networks, it's important to understand that **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** 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.

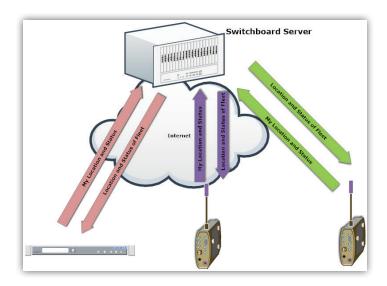Contact Comrex for details on obtaining this software.

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Figure 1

Figure 2

Figure 1 shows a typical small LiveShot fleet (3 units) that are configured to work with **Switchboard**. Each LiveShot opens a channel to the **switchboard.comrex.com** server, and provides the server information including the current public IP address, connection status, firmware revision, and the type of router (if any) that exists in the link.

Note: This IP and router information is found by the codec via a protocol called STUN. The **Switchboard** server doubles as a STUN server, helping the codec figure this all out.

The familiar name (if programmed into each LiveShot) of each unit is delivered to every other LiveShot in the fleet, where it is made available as a destination for outgoing connections. If the location (IP address) of any member changes, it is updated in the background of the system automatically.

As shown in Figure 2, **Switchboard** members are displayed in the "**Remote Unit**" field when creating a new outgoing connection on LiveShot. The LiveShot can still make connections without the use of **Switchboard** by adding a peer manually (as explained in the manual).

Switchboard Configuration and Operation on the LiveShot Side

There is very little to do to make **Switchboard** work on your LiveShot. As long as the **Switchboard** option is enabled in the user interface, and the **lsc.comrex.com** address is present (these are the defaults) then your LiveShot is ready to be synced with **Switchboard**.

Switchboard Configuration on the Server Side

When LiveShot was purchased, you should have been given account credentials on **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 LiveShots that are in your fleet.

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Adding LiveShots

In order for **Switchboard** to be useful, you'll need to let it know which LiveShots are yours. This is done in the "**Add New Unit**" section. LiveShots are identified on **Switchboard** by the Ethernet MAC ID of the unit. Note that other modem devices attached to LiveShot may have their own MAC addresses - **Switchboard** uses only the Ethernet MAC. Ethernet MACs are in the form of six two-digit hexadecimal numbers and are unique.
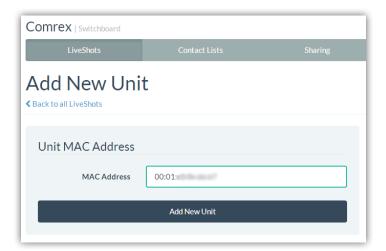
One important fact: Once applied to a **Switchboard** account, a LiveShot can only connect to other LiveShots in their **Contact List** (actually, there are work-arounds, but by default this is true). For now, choose "**default**"so all codecs in your fleet can CrossLock to each other.

Once added and synchronized, your **Switchboard** list will show all the LiveShots in your account, including their connection status and firmware revision.
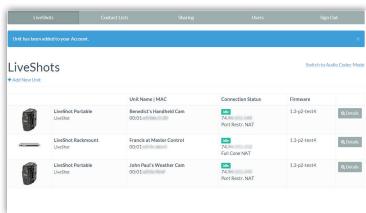

Figure 3

Figure 4

It's not intuitive for LiveShots to be identified by their Ethernet MAC address long term. On the LiveShot itself, a system settings entry exists in the user interface allowing you to change the LiveShot name from the default MAC (located under **Configuration->Admin Settings**). Once an easily recognizable name is entered, it will be reflected on the server (and other LiveShots) using that name.

After you have entered the details for your LiveShot, you will be given the option to choose a **Contact List** for that unit. **Contact Lists** are covered in the section below. For now, choose "**default**" so all LiveShots in your fleet are visible to each other. Once a LiveShot is added to your account, you should break the network connection on the LiveShot (power down, remove modem or network cable) in order for the device to properly sync with the **Switchboard** server.

For the simplest configurations, where it's desired for the entire account to be visible to all LiveShots, and only one administrator, **Switchboard** server setup is now complete. LiveShots registered on the server will be available in the "**connect to**" list on all other LiveShots in the same account.

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Creating Additional Switchboard Users

In some situations, you may wish to create additional **Switchboard** users who can access the server web interface or control LiveShots remotely. You can do this via the "**Users**" tab at the top of the main codec list. This allows you to create accounts for users that can later be deleted if no longer desired. As shown, several user accounts can be created with unique passwords.
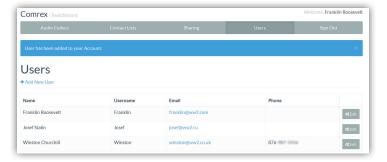

Figure 5

Filtering the LiveShot Lists

In some situations, it might not be desirable for every LiveShot in your fleet to have access to calling every other LiveShot. To help filter what's displayed on a LiveShot's peer list, **Switchboard** has implemented the concept of "**Contact Lists**". **Contact Lists** contain a subset of your fleet on your account. You can create multiple **Contact Lists** that consist of different subsets. With the exception of **Shares** (discussed later), only units within your **Switchboard** account may be assigned to **Contact Lists**.

Figure 6

By default, a master **Contact List** is created that contains all LiveShots on your account. And by default, every LiveShot in your fleet uses the master list. So if you're not interested in segregating LiveShots on your account, the default configuration will work fine. You can create multiple **Contact Lists**, each with a subset of your LiveShots, and save them on the **Switchboard** server. You then have the ability to assign these lists to your LiveShots. This will reduce the number of devices available as destinations on that unit to the ones on the **Contact List**.

This is an important point. Assigning a **Contact List** to a LiveShot determines what gets displayed as connect options on *its own list*. It does not have any impact on whether that LiveShot is offered as a contact on other devices.

By default, LiveShots can only make calls to other LiveShots that are in their **Contact Lists**.
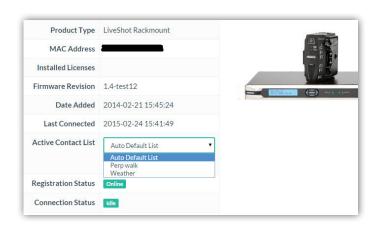

Figure 7

As shown, in the **Switchboard** web interface you can select one of your individual LiveShots and change the "**Active Contact List**" from default. This will change the list of LiveShots displayed as connection candidates on that unit.

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Switchboard Shares

In the case where you'd like to allow users outside your account see the status of some devices in your fleet, **Switchboard** has implemented **Shares**. **Shares** are subsets of your LiveShot fleet that you define. Once defined, you can invite other **Switchboard** accounts to add your **Shares**, and your LiveShots become visible to them.

Shares are a one-way transaction. If you invite an external user to share, and he accepts, you don't get any additional connection candidates on your LiveShots. The external users must create a share and invite you for the share to be two-way.
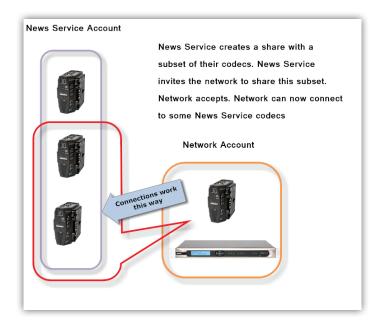

Figure 8

Shares are created by clicking the top tab entry labeled "**Shares**". A list of your current **Shares** appears and you can added more by clicking "**Add New Share**".
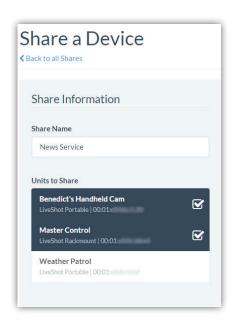

Figure 9

The share creation screen allows you to choose a subset of your fleet for this share.
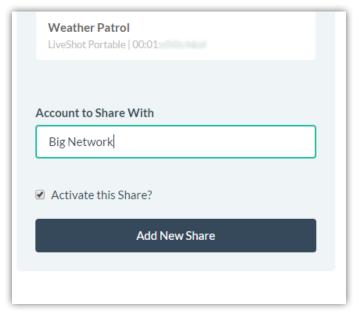

Figure 10

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After you make your selection, you'll need to enter either the name of the account you wish to share with, or the email address of the administrator of the account (it must be the one they used to create their **Switchboard** account). An email will be sent from the server asking the user to confirm your **Shares**.

Once the **Shares** are confirmed, your shared devices will appear as options in the external user's **Contact List** menu. This is important: **Shares** do nothing until the external user adds them to a **Contact List**. If the user has only a single (default) **Contact List** for his fleet, he must still manually add your LiveShots to that in order for them to appear as connect candidates to his fleet.

Finally, if you want to temporarily deactivate a **Share**, this can be done by editing the **Share** entry. A tick-box on the bottom allows activation/deactivation of a share without the need to delete it or re-invite users.

Figure 11

Remote Control of LiveShots via Switchboard

One of the main benefits of using **Switchboard** is the ability to control LiveShot units via mobile apps, regardless of the network arrangement and existence of routers in front of the LiveShot. As Long as the LiveShot can sync correctly with **Switchboard**, it can be controlled via the LiveShot app, available for iOS and Android operating systems. The interface reflected to the app is identical to the one you can see locally, so all network devices and other aspects of the LiveShot can be configured. Note this includes the possibility of taking LiveShot off the network entirely (or disabling its connection to **Switchboard**), which will prevent any further control until that situation is resolved locally.

When the LiveShot control app is booted, three options are presented. Each is a different way to control LiveShot—either directly via the Wi-Fi access point (portable only), locally on the current LAN/WAN, or via **Switchboard**.
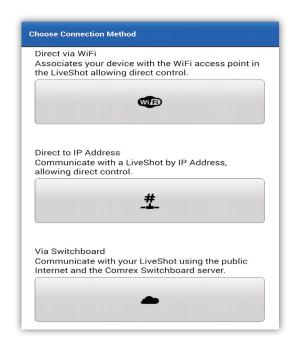
If you choose to connect via **Switchboard**, you'll be presented with a login prompt. You will use the same username and password that is used to access your **Switchboard** account on the web.
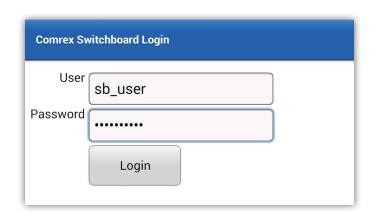

Figure 12

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Once logged in, you'll be presented with a list of units in your account.

Figure 13

Choose one and you'll be taken to the web interface of that unit, with all the tabs and control capability present in the direct web version.
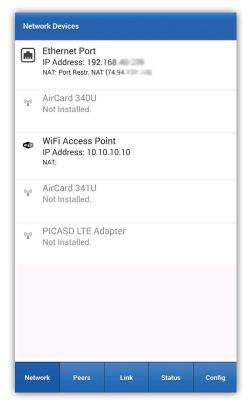

Figure 14

Log out by pressing the home key to end the app.