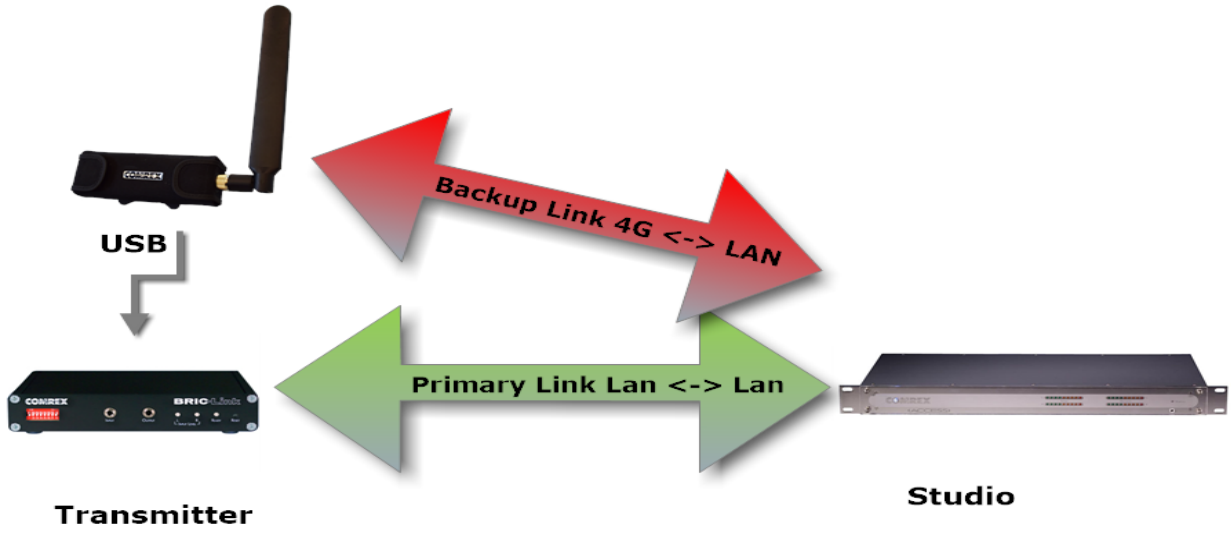
How to use the HotSwap function on ACCESS and BRIC-Link II

Introduction

Comrex has released new firmware for ACCESS and BRIC-Link II codecs that implements a new function called **HotSwap**. The purpose of HotSwap is to allow customers using **CrossLock** in "Bonding" mode to designate one network as primary and the other network as secondary. The secondary network (e.g., wireless 4G) then backs up the primary network in case of failure.

A typical usage scenario would be a codec that is attached 24/7 providing an STL link. Because it's often impractical (and expensive) to run audio over a 4G wireless network full time, HotSwap ensures that the CrossLock connection falls over to this backup network only when needed. HotSwap provides an indication of this fallover state with a contact closure on the opposite (studio) end of the link. When the primary network is restored, HotSwap will revert to it and continue to hold the secondary network in backup state, waiting for the next failure.



Things to know

HotSwap is supported in firmware 4.3 and higher for ACCESS and BRIC-Link II. **Please note: Codecs on both ends of the link must carry this firmware update.**

For ACCESSS, any network supported (Ethernet, Wi-Fi, 4G wireless) can be designated the primary or backup network.

In the case of BRIC-Link II, drivers are included to support only Comrex Connect 4G modems, and these wireless modems can only be used in conjunction with the backup function (i.e. Comrex Connect modems cannot be designated as the primary network). BRIC-Link II can also support Ethernet as a backup using a USB-Ethernet adapter. Wi-Fi is not supported in BRIC-Link II. (Because it has only one network port, BRIC-Link Classic – an older version without XLR audio I/O – is not supported, except that a BRIC-Link Classic can be connected to a codec with HotSwap dual-network connections on the other end of the link.)

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HotSwap is an alternate mode of the Comrex CrossLock reliability layer. This means connections between the codecs must always be made via CrossLock. For CrossLock connections, the codecs must either:

a) Find each other and connect via the Switchboard Server function (which is an optional upgrade for BRIC-Link and BRIC-Link II), or
b) Each codec must be aware of the other's unit ID (Ethernet MAC address)

More information on connecting via CrossLock (with and without Switchboard) is available in the ACCESS/BRIC-Link 4.x manual.

Data Usage

It's important to know that even when a network is in a backup state, a small amount of data is sent and received on it. For 24/7 operation, this data will total less than 0.5GB for a typical month of usage, assuming no HotSwap activity occurs. Of course, more data will be used if the HotSwap function engages.

Regardless of how HotSwap is used or set up, Comrex assumes no liability for data overage charges, even in the event of software bugs or any other failure of hardware or software. It is entirely the responsibility of the user to monitor any metered data usage.

Setup

Setup for HotSwap is done entirely on the end of the link that has the dual networks connected. Setup is handled via the Toolbox configuration page, accessible from the codec via a web browser at the address <ip_address>/cfg. HotSwap setup is not yet supported in the "console" (KVM) interface available on ACCESS Rack or the touchscreen interface on ACCESS portable or NX.

The default behavior for CrossLock is to use all networks available, and apportion data as it sees fit based on capacity and delay calculations. You will need to change this behavior in the Toolbox menu.

Before entering the setup menu, the secondary network should be attached to the codec via USB (or, in the case of ACCESS, via Ethernet or USB).

In Toolbox, navigate to the Network/Admin/CrossLock menu and select "Set up Ethernet and Wireless". You'll see a list of all networks attached to the codec and their status, as shown in fig 2:

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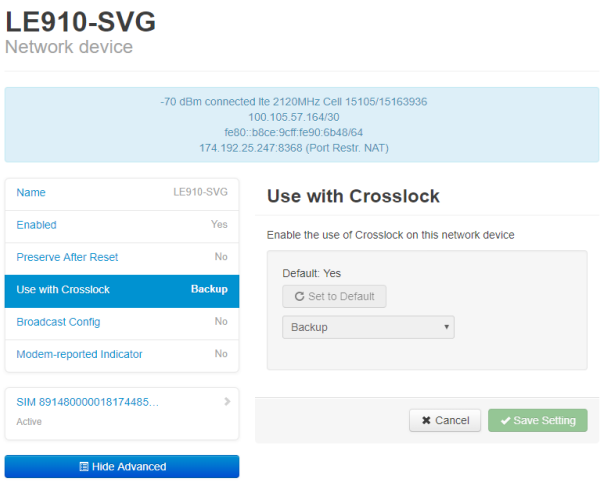
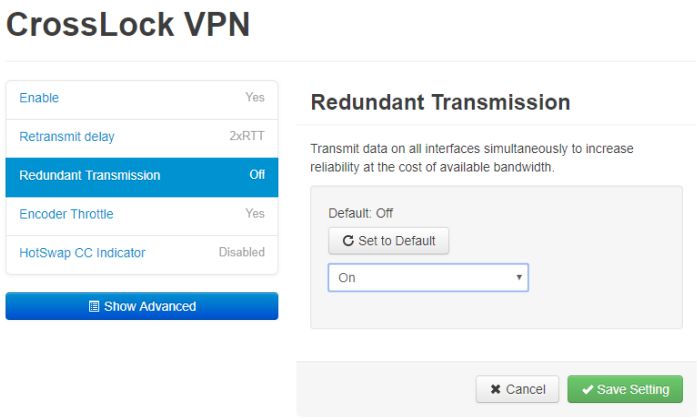
Here you will choose the backup network and expand its options using the “Show Advanced” button as shown in fig 3:



Find the option labeled “Use with CrossLock” and change the default “yes” to “backup”.

Click “Save Settings”, then click “Back” until you get to the main “Network/Admin/CrossLock” menu.

Next choose “CrossLock VPN” and locate the entry labeled “Redundant Transmission” as shown in fig 4:



Change this from the default “Off” to “On”. Choose “Save Settings”.

Finally, you’ll want to set one of the contact closures to alarm you when the HotSwap function is engaged.

Still in the CrossLock settings, choose “HotSwap CC unit”. First choose whether you want the contact closure output to trigger on the local, remote, or both codecs. Select “Save Settings” then click “back”.

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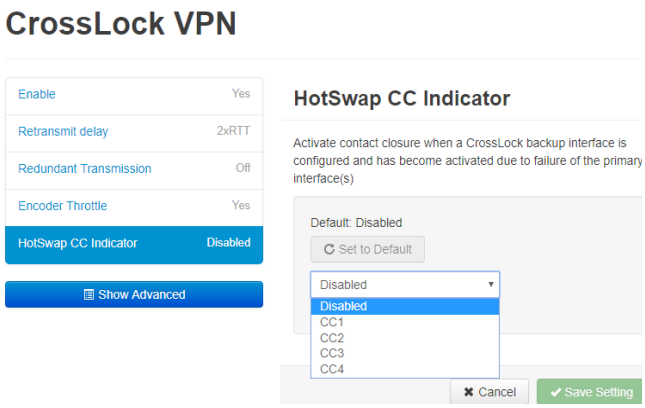
Next choose "HotSwap CC Indicator" and select which contact closure to trigger. This will override any previous settings you've made in the main configuration web page regarding contact closures.



Choose "Save Setting" and exit the Toolbox page.

Making and breaking connections

Connections are made and broken via the web-based user interface. This is accessed via web browser at the IP address of the codec. Connections can be made manually, with or without Switchboard, and can be set to "always connect" in the case of 24/7 operation. For 24/7 operation, we recommend making manual connections, and not relying on Switchboard, as it unnecessarily introduces another point of possible failure.

Which end do I connect from?

As long as an incoming CrossLock call is possible on the primary network attached to a codec, the call be be initiated from the other end. As an example, at a transmitter site the primary network is a DSL line and port 9001 UDP is open from the public Internet. The backup network is a 4G modem, which on its own would not accept and incoming connect request. Even without using Switchboard, the connection can be initiated from the studio side, and the 4G modem will be automatically added to the CrossLock channel.

More information on making CrossLock connections can be found in the 4.x user manual.