



## TN134 M4x Blade COR Driven Bridge

### Application Note for M4x Blade in an E & M or COR Driven Bridge Configuration

A common requirement requested from many customers is to bridge audio to & from various audio sources under E & M conditions. Often, many bridging applications were done using passive or active audio bridges. While these work well in some applications, they both have limitations not suitable to many of today's more advanced applications. Passive bridges have inherent loss found to be unacceptable in many cases, so they are often not even considered. Active bridges have no loss and can be adjusted for gain or loss depending on the user's requirements. While active bridges fill a need that passive bridges can't, many customers are finding they need more than an active bridge can provide. Specifically, they want bridging that only activates with E & M signaling. The most commonly requested type of E & M Bridge at Raven is an E & M conference bridge. Put simply, this means that an E-Lead received on a bridge port will activate an audio bridge or path routing the inbound audio to the output of all other ports of the bridge and asserting an M-Lead (or PTT closure) on those output ports. When the E-Lead goes away on the input port, the audio bridging will cease and the M-Lead (PTT closure) will deactivate.

The Raven M4x Blade is ideally suited for this application. The Blade can be set up quickly and easily in an E & M bridge using the user application software. Bridges can be set with as few as two or as many as eight ports in a single blade. Higher capacity bridges, if needed, can be set up by daisy-chaining two or more Blades to one another. Adjustments can be made to each port for gain, audio delays to avoid speech clipping, and relay hold on timers to keep a transmitter keyed long enough to avoid truncating the end of a transmission.

Common uses for E & M bridges include:

- Simple radio interoperability where E & M keying is needed.
- Back to back repeater applications where inbound audio from one repeater is routed out another repeater with E & M.
- Paralleling of console audio to a base station radio or repeater with keying.

A user configurable option on this type of bridge could include tone keying on an output port instead of an M-Lead or PTT.

Configuring a COR driven bridge is simple using the Raven M4x user app software. The following steps will guide you through setting up a 3-way COR driven bridge.

To begin launch the software, connect, and from the system components menu select "Add Bridge Group."

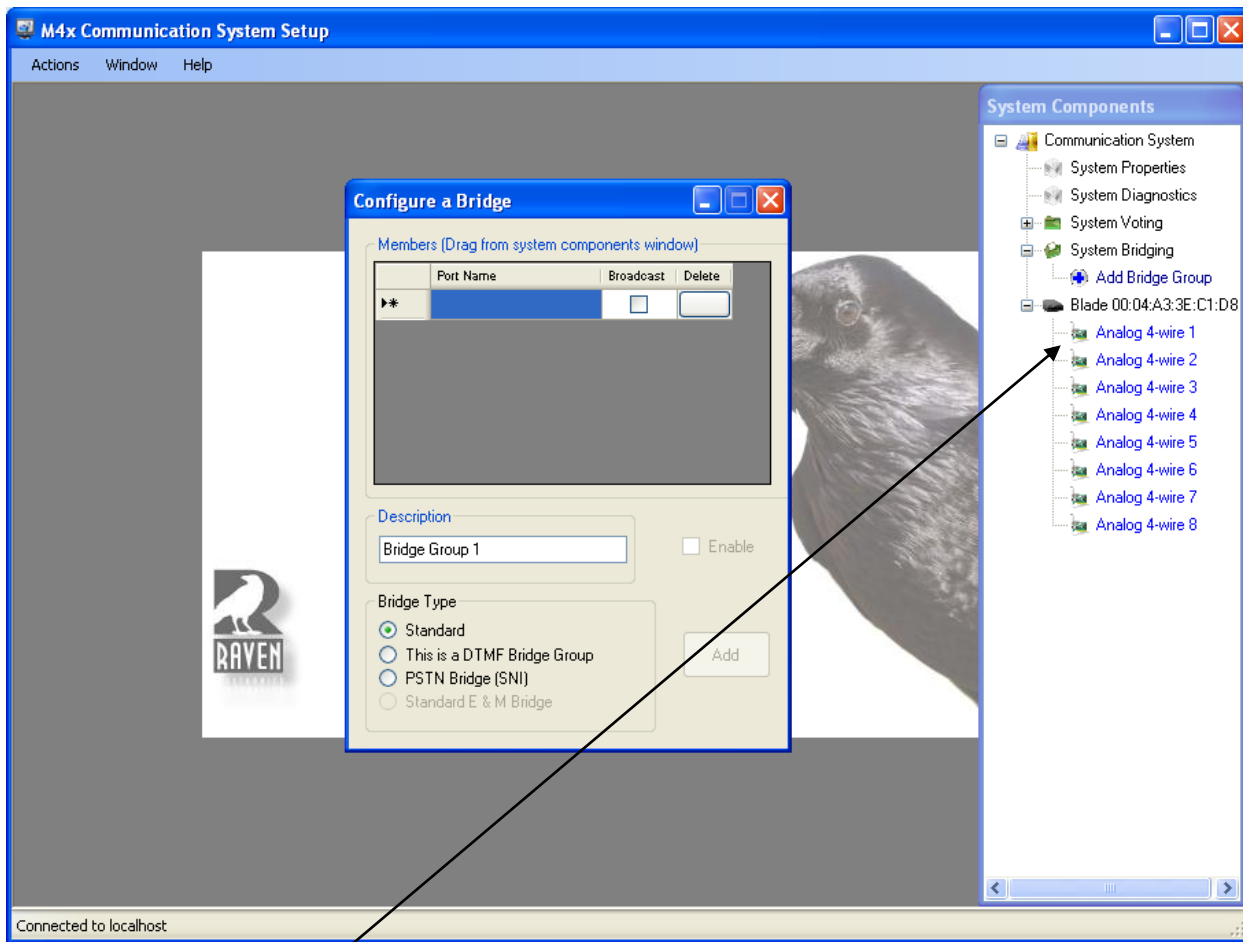
Click here to bring out the "Configure a Bridge" window shown below.



# TECHNICAL NOTES

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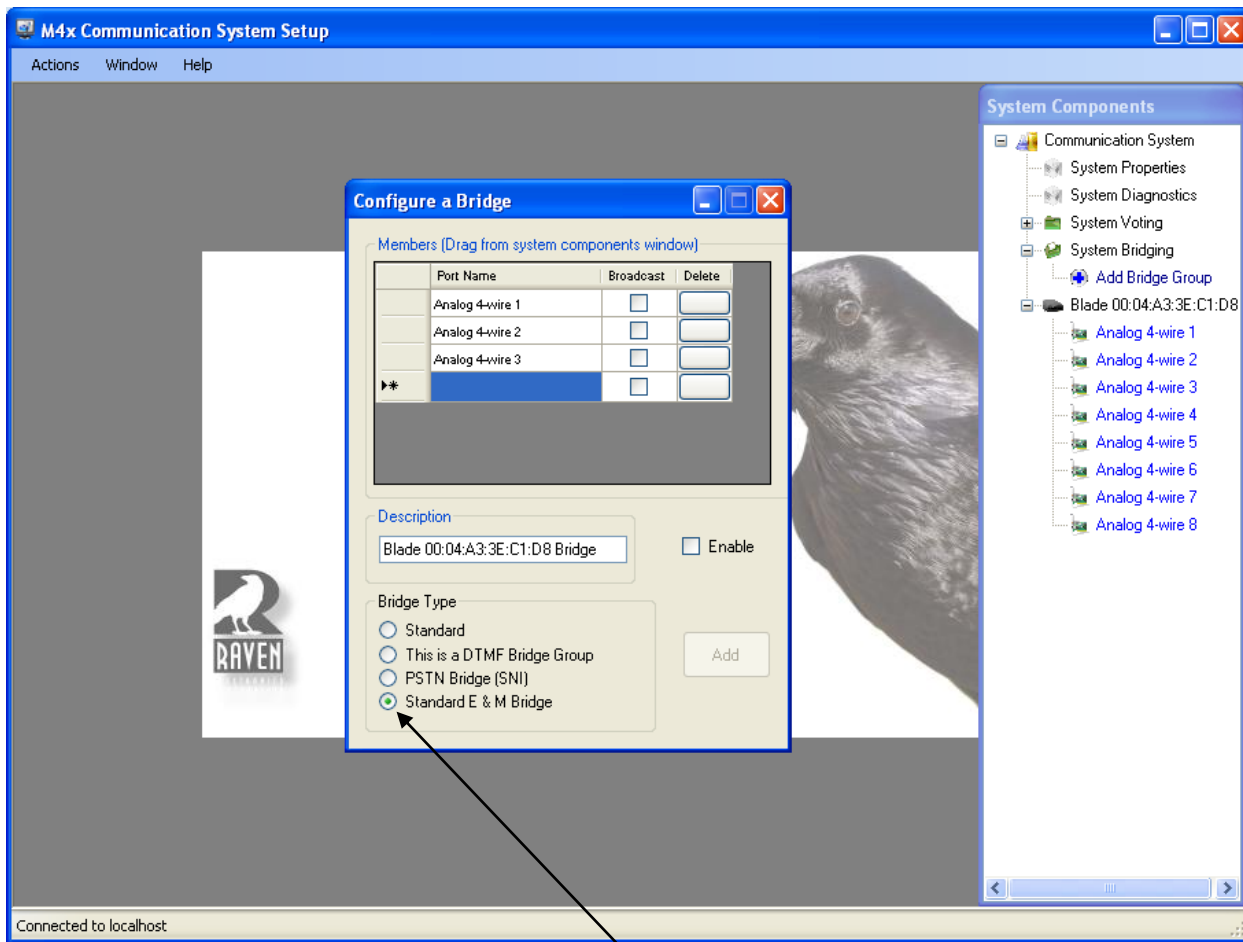
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Click, hold and drag the ports you want in your bridge group in the box.



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When done dragging the ports in to the box, check this item. This option will remain grayed out until you drag ports in to the box. When done, select the “Enable” and “Add” buttons. After selecting “Add” follow the prompts to save and then clear the bridge box from the desk top.

Next bring out the port settings tabs for each of the ports in your bridge group by clicking on their icon at the right of the screen.

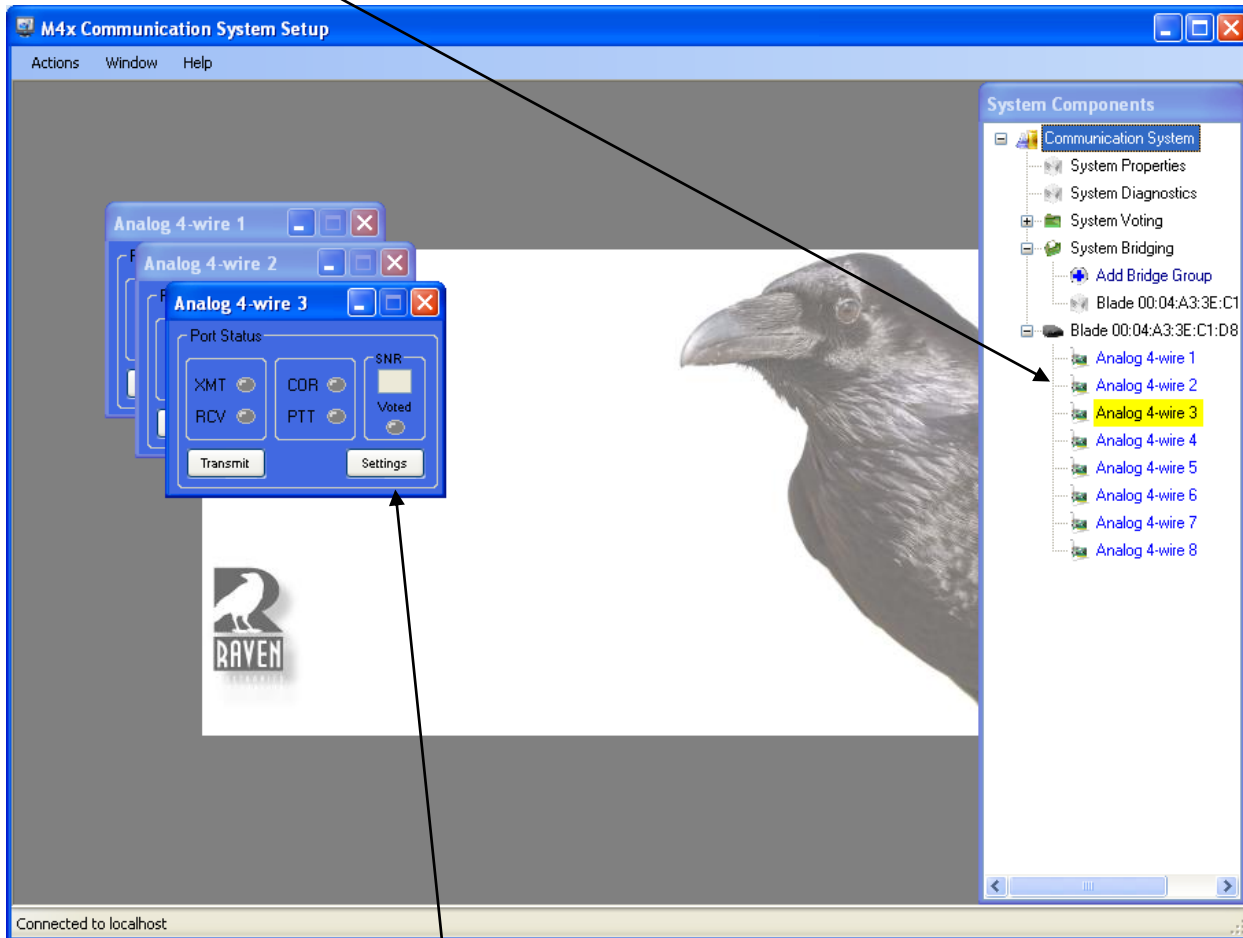


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Clicking once on each of these ports will bring the port settings tabs out to the desk top as shown below.



Expand a port settings tab by clicking here.

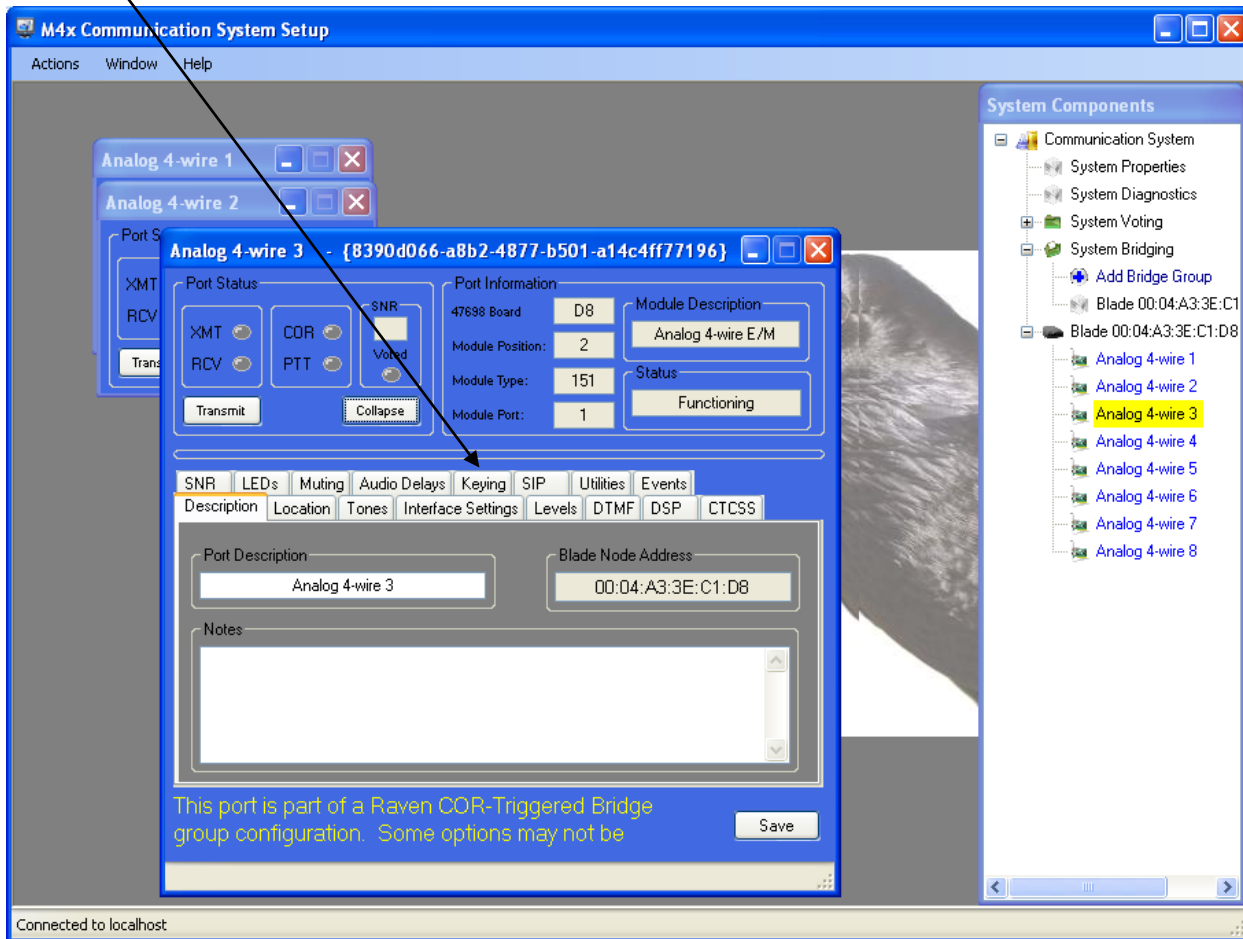


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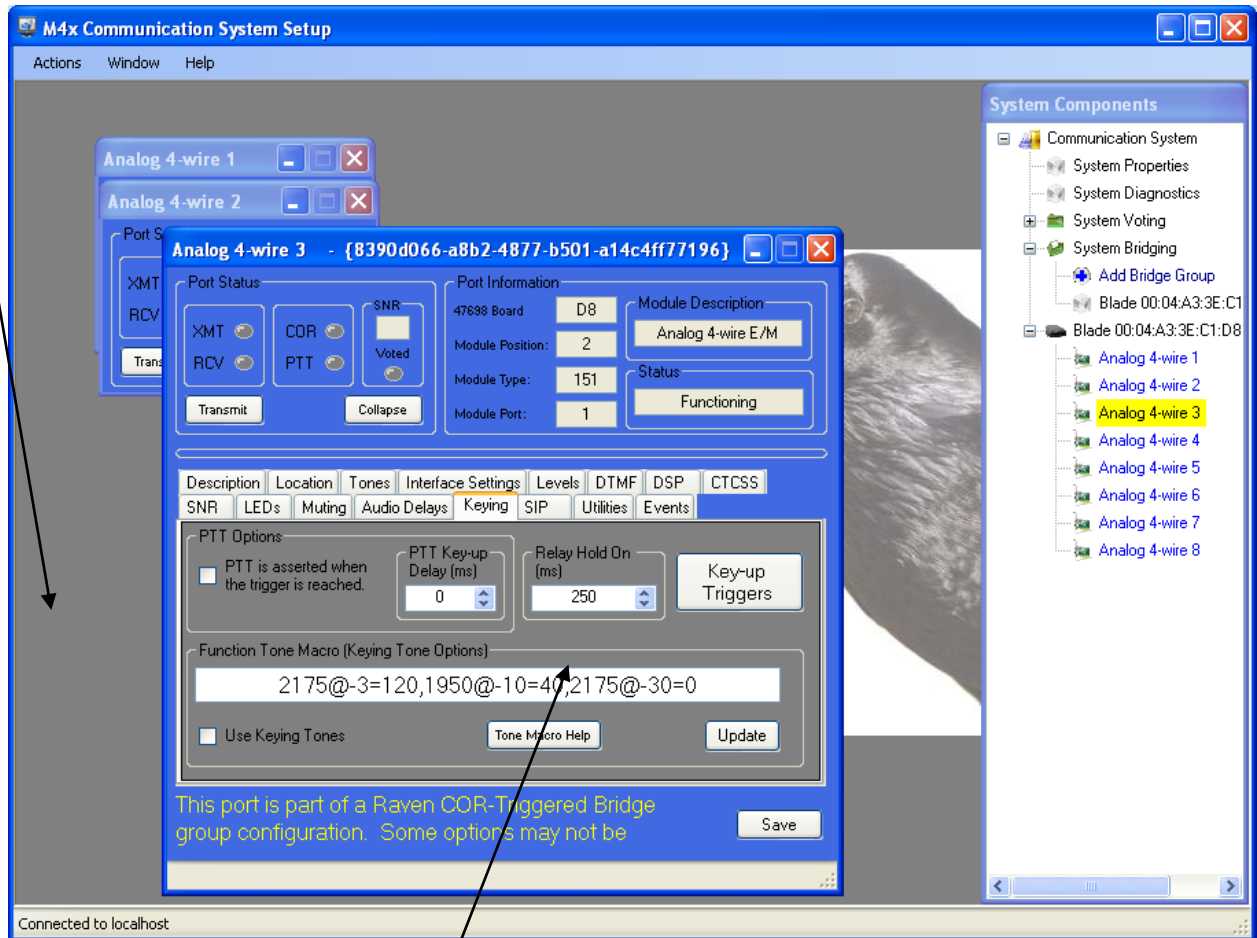
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Select the Keying tab.



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After selecting the Keying Tab, decide how this port will be keyed. For example, you want port 3 to assert a PTT when triggered. The trigger in this case is a COR input on port 1 or port 2. Check the box for "PTT is asserted when the trigger



is reached.”

**Caution!** DO NOT make any changes to the Key-up Triggers menu. Making changes will cause the bridge to not key or function properly.

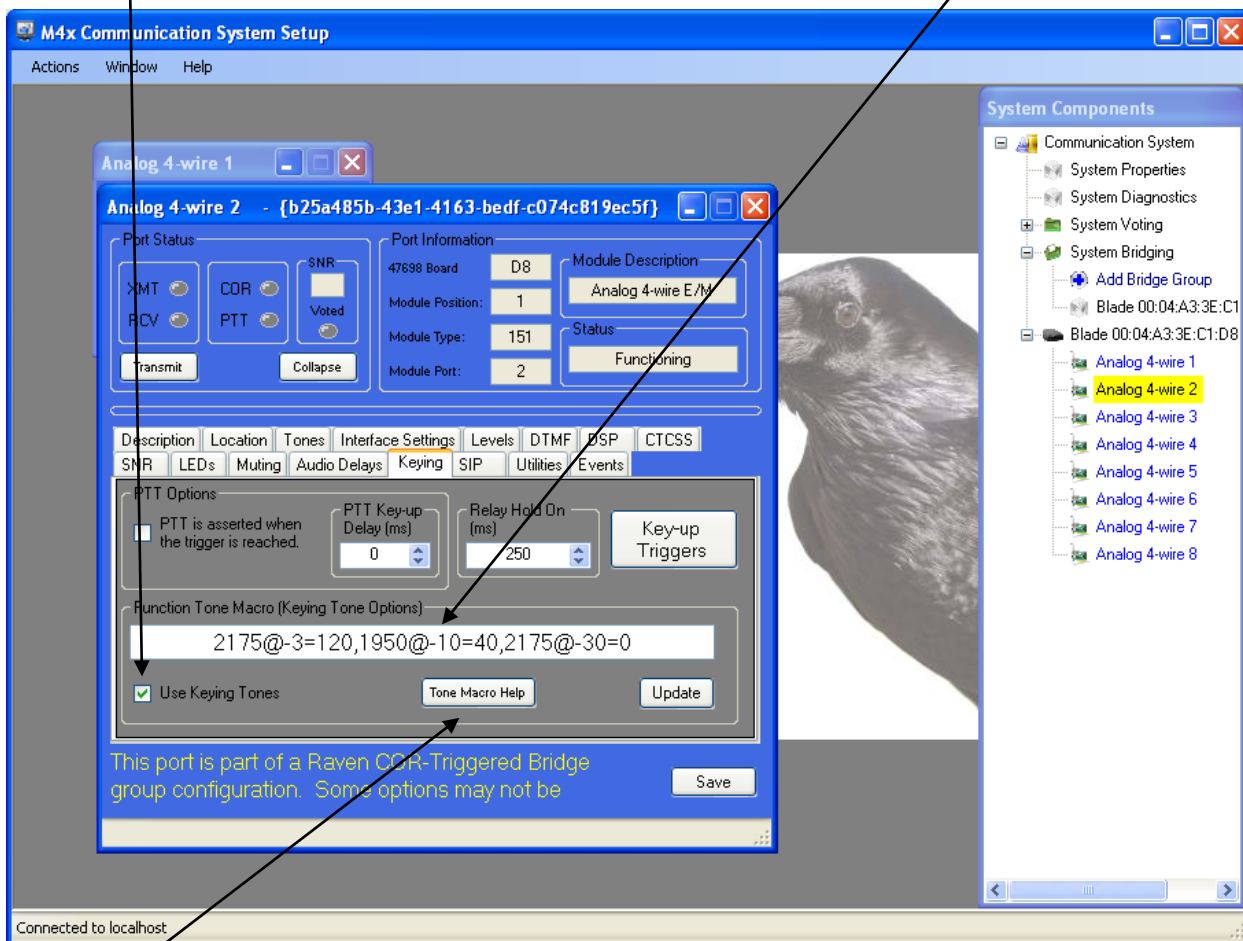
When done with this port, make your keying selections for your other ports. Keying does not have to be PTT. Port 2, for example, could be set to key off function tone. To select function tone, check the “Use Keying Tones” box at the bottom left. The default tone macro is shown above that box consisting of 2175 Hz HLGT, FT, and LLGT. For help changing the tone macro, click on the “Tone Macro Help” button. See screen shot below. You do not have to issue a keying command. For example, if one of your ports is a console port it might not require relay or tone keying. In this case, do not check the PTT or Tone boxes. Note however, that a COR input is required on another port before audio will bridge



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out the other ports of the bridge regardless of the type of keying selected. If you do not want the COR input condition on every port of your bridge but just of the some ports, contact Raven tech support for help. These types of “mixed” applications can generally be accomplished using Raven’s Synergy Action Rules software. A limited license copy of Synergy is included with every Blade.

Check this box to use tone keying. Make changes to the default tone macro in this area.



Click here for help with changing the tone macro. Box below will appear after selecting “Help.”



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### Tone Macro Help



Tone Macro is:  
[FREQ]@[LEVEL]=[TIME]

[FREQ] = frequency between 300Hz and 3000Hz.

[LEVEL] = a level between -60dB and 7dB.

[TIME] = a time in milliseconds between 0 and 8000.

A [TIME] of 0 indicates the tone will stay on until the transmission ends.

Tone sequences are separated by commas.

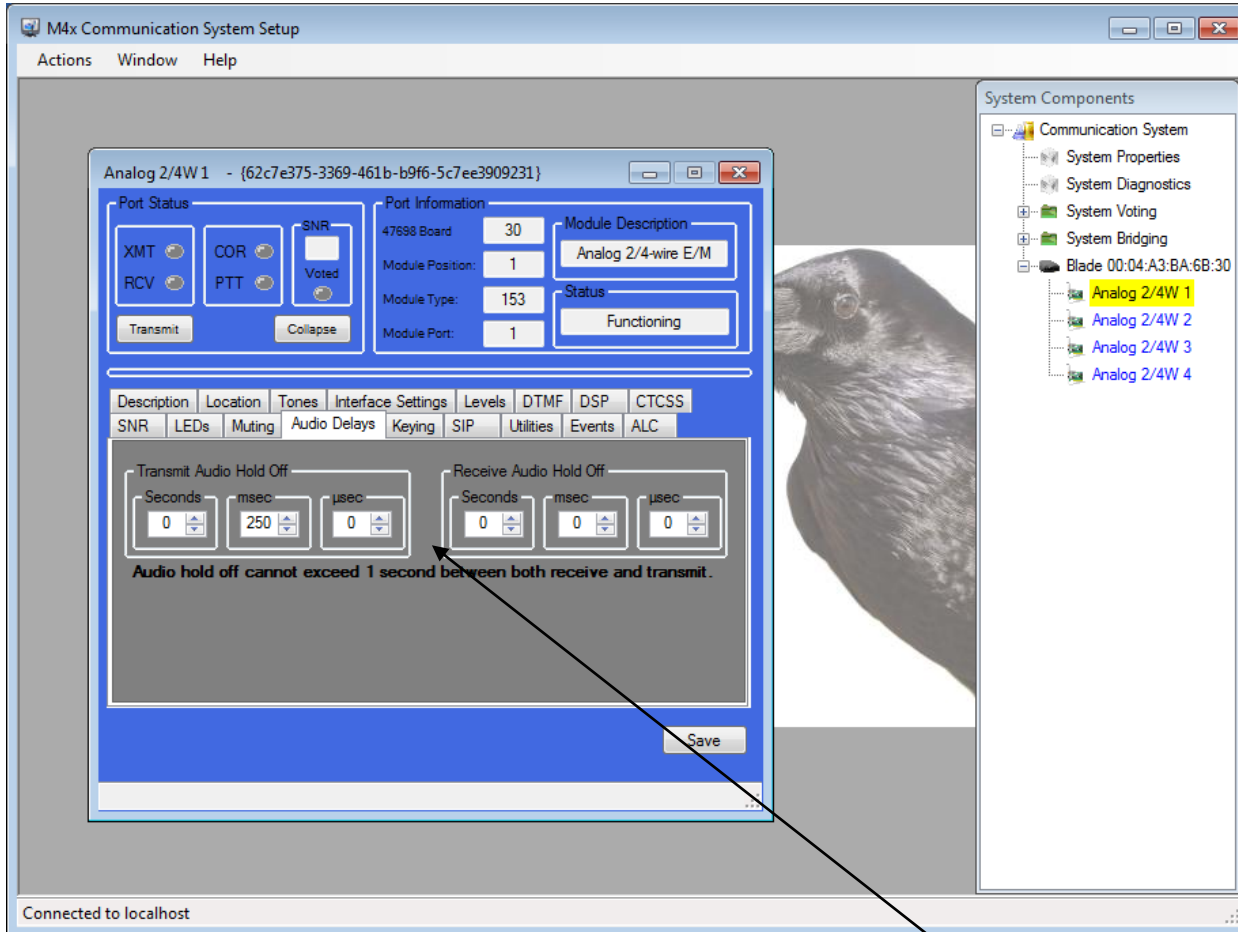
Up to five tone sequences are allowed.

Example: 2175@-3=120,1950@-10=40;2175@-30=0

Note: Default is set for -10 system level.

For telco setup adjust levels up 10dB.

OK







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Some applications require a delay in either the transmit or receive path. These delays are set in this menu on a per port basis. By default, a 250 MS transmit delay is set. Note that the total combined TX and RX delay on any port is 1 second.