

Applications Note 22-1: Using the ION2.0 & ION0.2 to breakout 8 channel Bundles for use with 3rd Party DSP

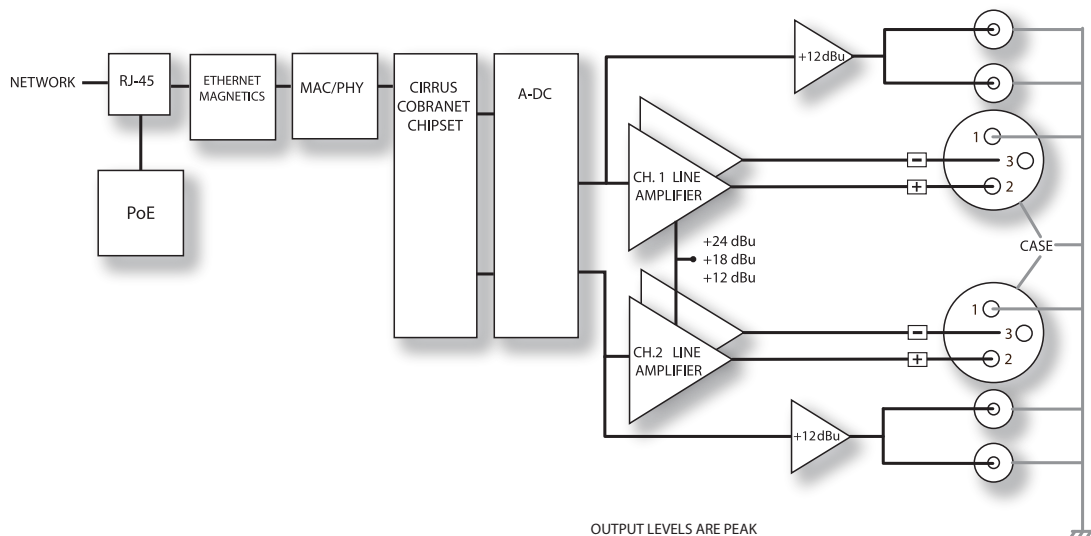
The Media Technology Systems ION2.0 and ION0.2 are wall mount CobraNet™ interfaces. The ION2.0 converts 2 analog Mic/line input channels into digital audio streams that are passed to the network using the CobraNet™ protocol. Similarly, the ION0.2 converts 2 CobraNet™ audio streams into 2 analog line level output channels.

It is expected that the 3rd party DSP processor transmitting to/receiving from the ION2.0/ION0.2 will be set up to handle 2 channel bundles. However, some products are optimized for 8 channel bundles. Also, network bandwidth needs may dictate the use of 8 channel bundles external to the local edge switch.

In that situation, there are two solutions one for the ION0.2 and one for the ION2.0...

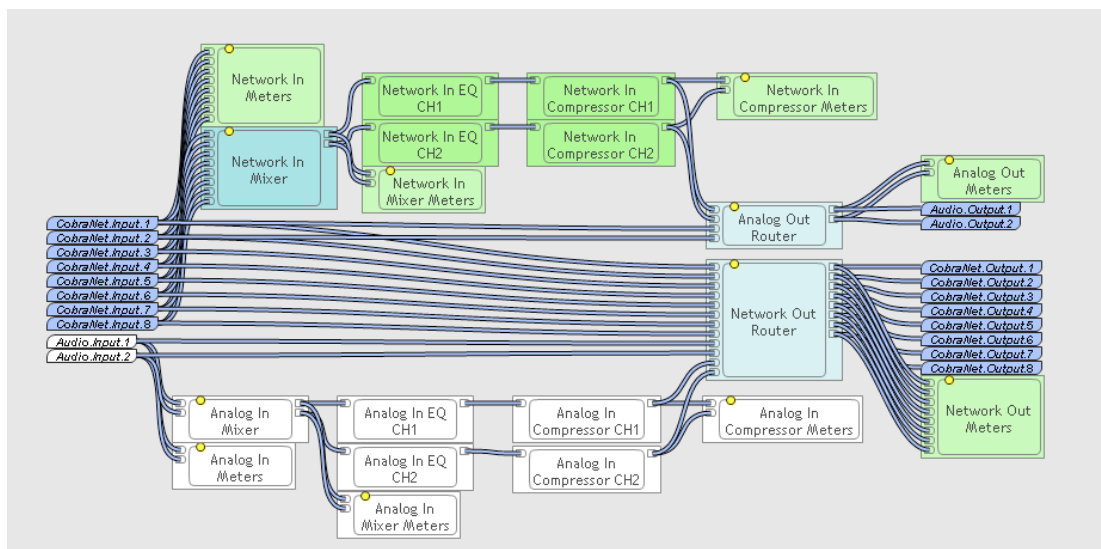
1. DSP processor transmitting an 8 channel bundle

The signal path of the ION0.2 is given below.



The ION0.2 can route incoming CobraNet™ streams to one of 2 analog line level output channels. If the ION0.2 is being used with an 8 channel bundle, then the ION0.2 can be used to 'breakout' any pair of CobraNet™ channels from the bundle. For example, each of four ION0.2 could be individually configured to breakout bundle channels 1-2, 3-4, 5-6 and 7-8 respectively.

Equally, an ION0.2 could be configured to breakout channels 1 & 6, or 3 & 8, etc. The internal routing is flexible and is set up using the internal router inside the ION0.2. The block diagram below shows the internal routing common to both the ION2.0 and ION0.2, with the ION0.2 section highlighted in color.

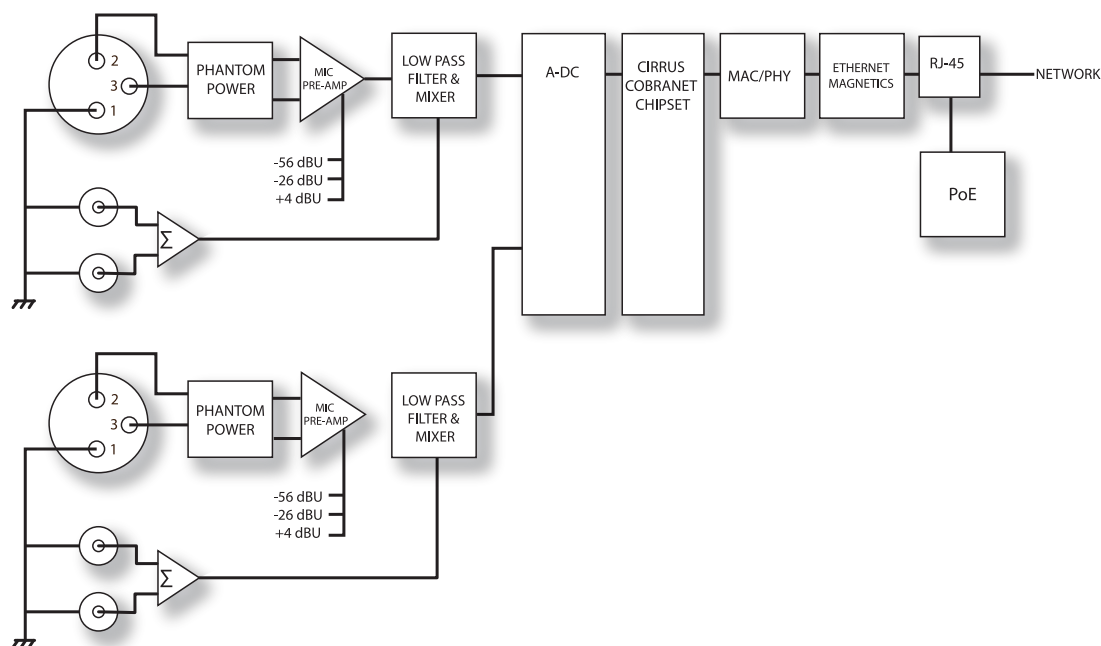


The block diagram shows the 8 incoming channels in the CobraNet™ bundle. Any of the 8 channels can be routed through the “Analog Out Router” to any of the ION0.2 analog output channels.

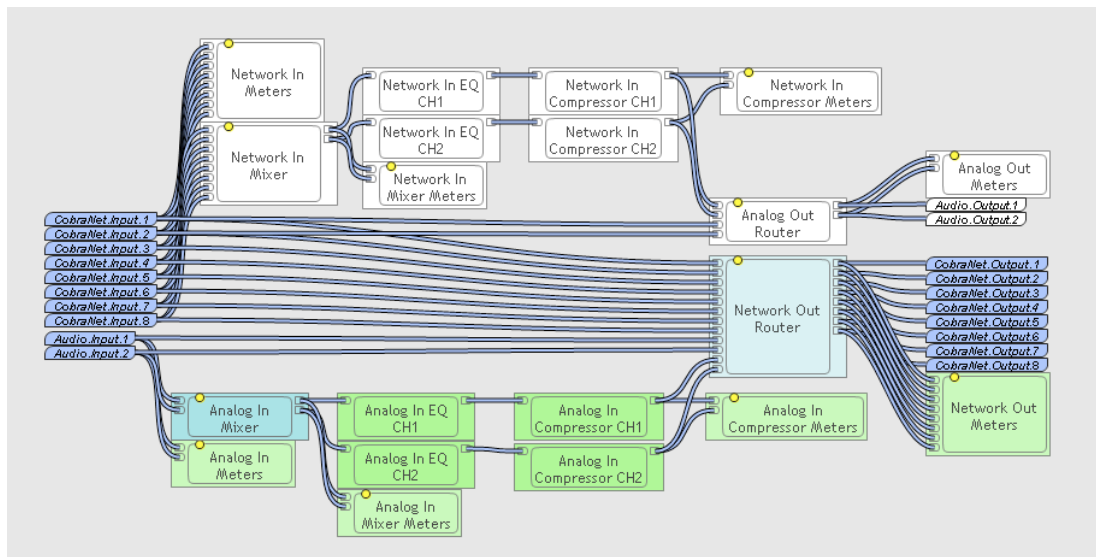
Additionally, the chosen pair of CobraNet™ channels can be routed through a simple DSP processing side chain, providing an 8 band parametric EQ, HighPass, LowPass and Compressor devices. The intention is to take some of the processing load off the 3rd party Control Room DSP by providing simple loudspeaker management processing.

2. DSP processor receiving an 8 channel bundle

The signal path of the ION2.0 is given below.



There are 2 analog and 8 CobraNet™ input channels available to the ION2.0 and these can be connected to any of 8 CobraNet™ output channels – see block diagram below



Access to the CobraNet™ inputs allows ION2.0 to import CobraNet™ streams from other ION2.0's, combine them with the local analog inputs and then transmit a single 8 channel CobraNet™ bundle.

It is possible for one ION2.0 to receive three 2 channel CobraNet™ bundles from three other ION2.0's and use the internal router to combine the 6 CobraNet™ channels with the local analog inputs to make one 8 channel CobraNet™ Bundle. The 3rd party DSP processor will receive an 8 channel bundle with ION2.0-#1 on channels 1-2, ION2.0-#2 on channels 3-4, ION2.0-#3 on channels 5-6 and ION2.0-#4 on channels 7-8.

As well as simple Input/Output routing, there are 2 DSP side chains available for the analog inputs on each ION2.0. The side chains connect to the analog inputs via a simple 2x2 input mixer. Each side chain contains a 5 band parametric equalizer, high pass, low pass and low shelf filters (to compensate for proximity effect on microphones) and finally a compressor.

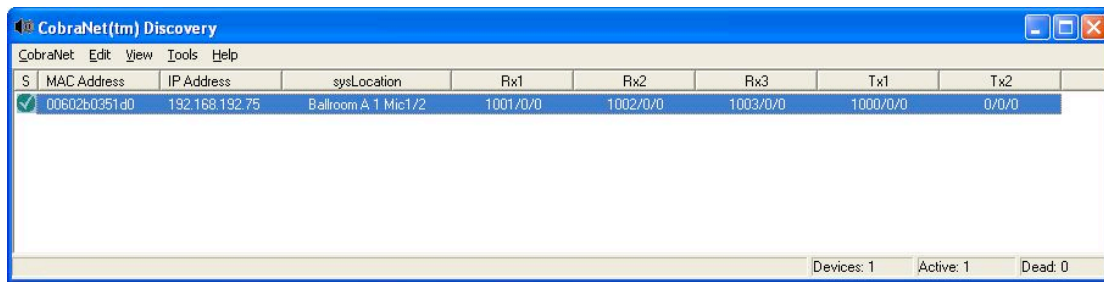
The intention is to take some of the processing load off the 3rd party Control Room DSP, by pre-conditioning the Microphone input signal before streaming to the network.

3. Configuration using Cobranet Discovery

Cobranet Discovery is a free utility from Cirrus logic and can be used to setup the ION2.0. Download 3.4.5 for Windows XP and 4.0.1 for Windows Vista. Simply run the executable and then open the application. Full instruction are available from Cirrus Logic...

<http://www.cobranet.info/downloads>

Cobranet discovery will open with the following screen

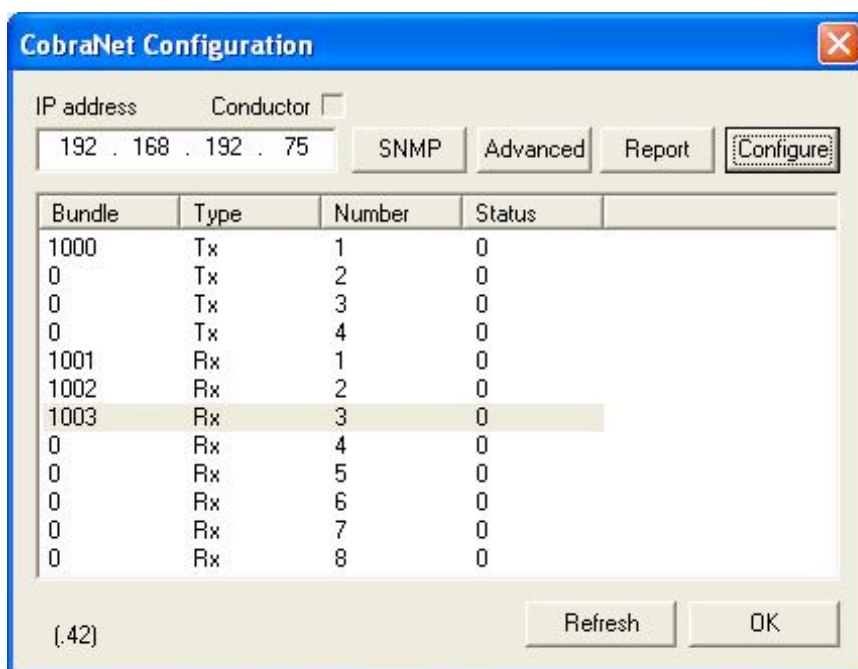


S	MAC Address	IP Address	sysLocation	Rx1	Rx2	Rx3	Tx1	Tx2
✓	00602b0351d0	192.168.192.75	Ballroom A 1 Mic1/2	1001/0/0	1002/0/0	1003/0/0	1000/0/0	0/0/0

Devices: 1 Active: 1 Dead: 0

The columns in view can be chosen from the “View” pull down menu.

A user friendly name can be inserted into the “sysLocation” column by highlighting the device, right click and select “Configure”. The following screen will appear...



IP address: 192 . 168 . 192 . 75 Conductor

SNMP Advanced Report **Configure**

Bundle	Type	Number	Status
1000	Tx	1	0
0	Tx	2	0
0	Tx	3	0
0	Tx	4	0
1001	Rx	1	0
1002	Rx	2	0
1003	Rx	3	0
0	Rx	4	0
0	Rx	5	0
0	Rx	6	0
0	Rx	7	0
0	Rx	8	0

(.42) Refresh OK

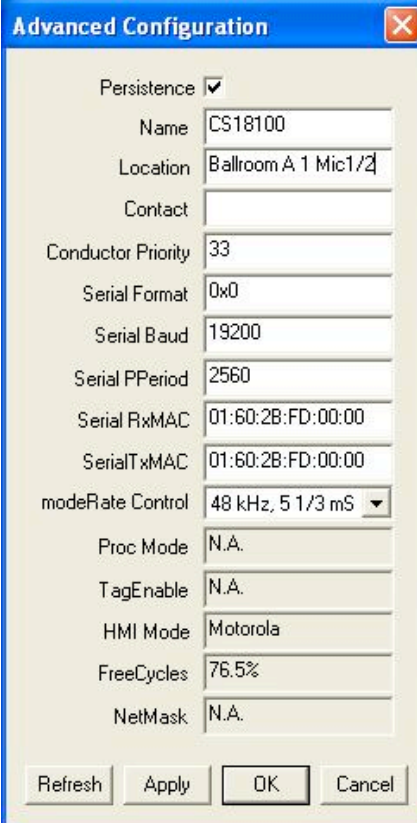
Then click on “Advanced” and a new screen (below) will appear. Up to 64 alphanumeric characters can be entered into the “Location” field. In the example above, the text “Ballroom A 1 Mic1/2” was entered to represent Section A of a 3-split ballroom, Panel 1 and Microphone inputs 1 & 2.

If needed, the “Contact” field can also be used for identifying information. Both “Location” and “Contact” are arbitrary fields and wholly open for the user to configure as appropriate.

Note: The Persistence tick box needs to be selected, so that all information and settings are stored to flash memory.

The remainder of the Configuration menu is for advanced users and beyond the scope of this applications note.

Once the fields have been set, click “OK” to return to the main configuration menu.



Advanced Configuration

Persistence

Name CS18100

Location Ballroom A 1 Mic1/2

Contact

Conductor Priority 33

Serial Format 0x0

Serial Baud 19200

Serial PPeriod 2560

Serial RxMAC 01:60:2B:FD:00:00

Serial TxMAC 01:60:2B:FD:00:00

modeRate Control 48 kHz, 5 1/3 mS

Proc Mode N.A.

TagEnable N.A.

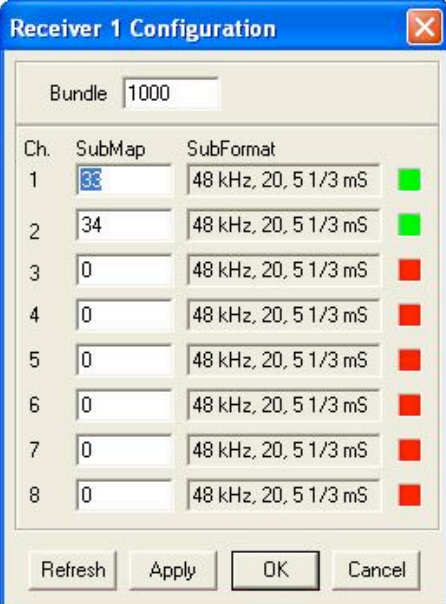
HMI Mode Motorola

FreeCycles 76.5%

NetMask N.A.

Refresh Apply OK Cancel

The main configuration menu shows 3 receive bundles and 1 transmit bundle. Right click on the first receive (rx) bundle and the following menu will appear...



Receiver 1 Configuration

Bundle 1000

Ch.	SubMap	SubFormat	
1	33	48 kHz, 20, 5 1/3 mS	■
2	34	48 kHz, 20, 5 1/3 mS	■
3	0	48 kHz, 20, 5 1/3 mS	■
4	0	48 kHz, 20, 5 1/3 mS	■
5	0	48 kHz, 20, 5 1/3 mS	■
6	0	48 kHz, 20, 5 1/3 mS	■
7	0	48 kHz, 20, 5 1/3 mS	■
8	0	48 kHz, 20, 5 1/3 mS	■

Refresh Apply OK Cancel

This will allow the user to set the receive bundle address. This should match one of the 3 transmitting ION2.0's. In our main configuration page that would be 1001, 1002, 1003. Then set the sub map channels. The first 2 channel bundle will be set to 33 and 34, the second to 35, 36 and the third to 37, 38. This will import the 6 audio streams into the bottom 6 channel submap addresses.

In the screen above, it can be seen that the bundle is successfully receiving 2 audio channels from the remote ION2.0.

Click OK and return to the main configuration menu.

Then right click on the first transmitter. The following screen will appear...

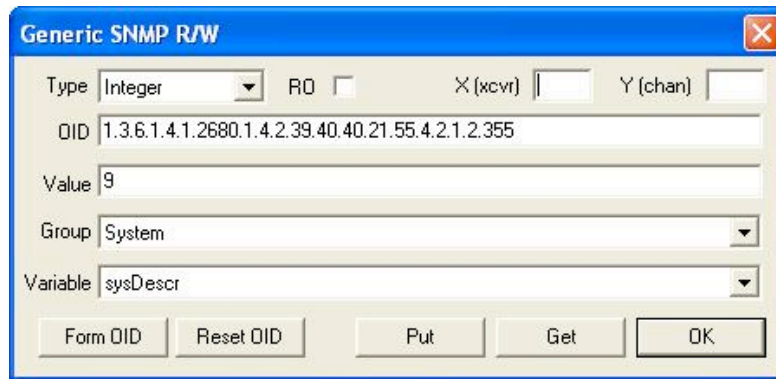
Ch.	SubMap	SubFormat
1	1	20
2	2	20
3	3	20
4	4	20
5	5	20
6	6	20
7	7	20
8	8	20

This will set the transmitter bundle. As we intend to combine 6 audio channels from 3 remote ION2.0, along with the 2 local ION2.0 channels, we will need to transmit an 8 channel bundle. So, the submap is set to channels 1,2...8 respectively. Click OK to return to the main configuration screen.

Select the SNMP button and the following menu will appear...

This will allow values to be poked directly into the DSP OID's. In the example above, address 1.3.6.1....349 is the "Network out router", channel 1 (see DSP block diagram at the beginning of this document). 350 is channel 2, 351 is

channel 3... 356 is channel 8. The value sent to the router address (click the “Put” button) sets which input channel is routed to the chosen output channel. In the screenshot above, input channel 1 was routed to output channel 1. Output channels 2-6 should be set to input channels 2-6, ie ...350 is set to 2, ...351 is set to 3 and so on until ...354 is set to 6. However, output 255 is set to 9 and 356 is set to 10, as these represent the local analog inputs to the local ION2.0 – see below.



At that point the local ION2.0 will successfully be creating an 8 channel bundle from 4 ION2.0's; 1 local and 3 remote.

Notes:

1. RO (read only) tickbox must be unchecked
2. Type must be Integer
3. Group and Variable do not matter, as the OID is being entered manually.
4. X and Y should be left blank.
5. Check the value has been entered by pressing the “Get” button after “Put”.