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1. Version History

		Revision	History
Version	Date	Author	Reason for revision
V0.1	30 September 2013	Darren Silcock	Outline draft for initial consideration
V0.3	09 November 2013	Darren Silcock	Updated for: Version history page General formatting
V0.4	10 December 2013	Darren Silcock	Updated for: Contingency and recovery options Making consoles a Master
V0.5	07 October 2014	Darren Silcock	Added updated graphic for backup utility
V0.6	10 February 2015	Darren Silcock	General amends
V0.7	06 January 2016	Darren Silcock	 Updated for: Addition of AutoPromote feature Additional items for network contingency and recovery. Additional information regarding editing csv files General amends
V0.8	28 December 2018	Darren Silcock	Updated for: • Connecting Brio consoles



2. Introduction

This procedure will detail how to connect two or more consoles together to achieve a Hydra audio network. This will allow audio to be shared across the network by all consoles part of that network. The document details the basic outline for two or more consoles, it does not cover large CTA networks. Connecting consoles together is a relatively quick and simple process, there are however a things to consider before doing this:

• All consoles connected as part of a network MUST be running a minimum of v1.10 s/w and ALL be the same software release.

• Which console will be the master?

The reason this is important is because this will be where all Hydra information is stored such as network port labels, reference settings. This is also where access rights and user restrictions are configured for all consoles on the network. A master console/core is always required and there can only ever be one. All other consoles/cores on a network will be a slave and will retrieve all of their Hydra2 information from the master.

• Console reference

Consoles to be connected MUST be referenced from the same sync source. Each console can be set-up to run from a different sync, i.e AES, Video PAL but all must be derived from the same source.

• How are the consoles port labels entered currently.

If the consoles **user** ports labels are entered in the 'Local Port Label' field in the main PC application then these labels will be visible by that console only. If port labelling is completed within H2O making them 'Network Labels', then these labels will be visible to all consoles on the network, slave console 'Network Labels' will be visible once they have been exported to the master console on that network – see exporting labels

• Number of audio routes likely to be transferred between consoles.

Each individual fibre/cat5 link allows 512 inputs and 512 output channels of audio. When connecting consoles together this needs to be taken into consideration. Router-to-Router connections between consoles can be a number of either 1, 2, 3 or 4 cable links (known as trunk links) allowing a total of 2048 audio routes to be passed between consoles. A single cable (512 inputs and 512 outputs) does not require any additional set-up within the console but additional links (trunk links) need to be defined. This is something that requires consideration before networking the consoles, a single cable link (one on the Primary Router and one on the Secondary Router) is normally enough to cover most peoples needs. For higher network audio routes please contact Calrec Customer support for assistance in defining router trunk links.

• Hydra HID addresses

It is important that any console with Hydra2 IO connected to it does not have the same HID (Hardware Identification) address allocated to another Hydra IO connected to a different console. **ALL Hydra2 IO MUST be identified with a unique address with no duplications on a network.**

• Port protection and Access Rights - IMPORTANT

Version 1.14 software onwards allows access rights and port protection to be granted/restricted to Hydra2 IO.. These two protection schemes are very different features.

Protection allows individual Hydra ports to be protected from inadvertent parameter changes. Once more than one user/console has use of an input, port protection is applied to avoid potential changes which may affect other users of the port(s). This still allows other consoles to use this port but they do not have direct control over functions such as 48v, Mic pre gain, SRC. An additional step of validation is required to allow the changes of such parameters. This is only active when there is more that one user of an input port. Output port protection provides protection from accidental over-patching or patch removal by other users on the network. For further information on port protection please refer to the current Apollo and Artemis operational manuals (926-137 and 926-150).

Access Rights are configured via H2O and allow consoles/hydra frames or individual ports to be completely restricted from use from other consoles on the network. For further information on configuring Access Rights please refer to the current H2O User Guide (926-166)



2.1 Items Required

Before attempting a connection the following will be required:

- Copper or fibre SFP's for the router-to-router connections. For a single cable a total of 4 SFP's will be required, 2 for the primary connection and 2 for the secondary connection. Remembering that the correct SFP's type (wavelength) must match at both ends of the cable. If you are using bi-directional SFP's then halve the amount of fibre will be required but care must be taken to fit the A and B SFP's in the correct locations. For additional SFP's applicable to your configuration please contact Calrec Audio.
- Cat 5 or fibre cable for the router-to-router cable links. It is strongly advised that additional care and checks are taken with these cables as they provide the link for console master router connection.
- A copy of the latest software version of the CustomerDataBackup utility. Version 8.0.0 is the current release for the backup utility. This can be found either on the CalrecAudioAdmin desktop or within C:\Calrec\Utils. To check the version of the utility run the CustomerDataBackupUtility and click the About button. If you have an earlier version, the latest version can be sourced by contacting Calrec Customer Support at <u>support@calrec.com</u>
- The I.P address of all consoles only the first two Octets are required I.e. 192.178.###.###. See Identifying the console IP address
- A H2O csv port label export of all Slave consoles being used. See **4. Exporting Console port labels**

3. Networking summary

NETWORKING SUMMARY

A brief summary of the networking process is as follows:-

- 1. Make a backup of console data from all consoles being networked.
- 2. Export port labels from current stand-alone consoles if required
- 3. Add new slave consoles (Clients) to the Master console
- 4. Demote required consoles to be a Slave
- 5. Connect router interconnecting cables
- 6. Set sync sources for all consoles
- 7. Import port labels from slave consoles if required.

Items in bold need only be completed when connecting a console to a network for the first time.



4. Identifying the console IP address.

It is necessary to know the IP address of the consoles to configure the master accordingly. This can easily be achieved by.

- 1. Clicking Start
- 2. Then type cmd and click OK (In Windows XP you are required to click 'Run' first.
- 3. A terminal session will then open, at the prompt type ipconfig following by [ENT].



4. You will then see a network adaptor called **CalrecDeskConnection**. Below this you will see an IP address listed, only the first two octets are required i.e 10.211

5. Making console data backups

If this is the first time a network connection has been attempted it is strongly recommended that a complete backup of all the console data is taken. Should anything go wrong the system can then easily be restored. Taking a data backup is straight forward and completed using the **CustomerDataBackupUtility**. v1.14.1 or greater is used to complete this. This version number of the Customer Data Backup Utility can be found by running the program and clicking "About" at the bottom left. If you have an earlier version the latest version can be sourced by contacting Calrec customer support at <u>support@calrec.com</u>.

5.1. Backup process

- 1. On the console in question log in as CalrecAudioAdmin with the password as calrec
- 2. Navigate to C:\Calrec\Utils and run the program "CustomerDataBackupUtility"
- 3. Input the IP address for the console

Customer Data Backup/Restore Utility	🛚 Customer Data Backup/Restore Utility
Connect Options Primary & Secondary - Use for normal operation Primary Only - Use for Primary Redundant Core Secondary only - Use for Secondary Redundant core Connect to Rack ID (The first two IP address components)	Operations JP Address: 192.42.1.0 Software Version: 1.12.22250 Pack Type: Apollo Badsup ake a snapshot of all your data, and save it to a specified location Yesting Badsup Active MCS Badsup ake a snapshot of all your data, and save it to a specified location Yesting Backup Active MCS Restore Restore your data from a specified file Yestore Restore Active MCS Yestore Inactive MCS Only restore Hydra2 database Only restore Hydra2 database Promote Router Promotes a slave router to be a master Demote Router Demotes a master router to a slave Router Status View the router(s) current master/slave status(es) Update Trunk List Update the router's trunk list file Detailed information output Decompart
Connect About	Exit

4. Click **Connect**



- 5. At the top you will then see a selection of buttons, make sure 'Backup Active MCS' is ticked and click **Backup** (unless you specifically want to backup from the Secondary)
- 6. This will then prompt you for backup location, choose a location. This can be a USB or HD, keeping in mind backup files can be quite large in size when selecting a USB destination.

6. Exporting Console port labels

In order for all consoles on a network to correctly address all Hydra2 IO port labels, each of the slave consoles have to have it's own port labels exported and then imported onto the master console. This is a process that needs only to be done once. If the two or more consoles have been networked before, the same master is being used and port labels have not changed there is no need to do this process again. Important points for this are:

- The export of labels from salve consoles must be completed before any consoles are demoted to a slave and networked together.
- The import onto the master **must be done after the consoles have been connected together**.

This process assumes that all port labelling on consoles to be used has been previously done using H2O and not the Main Application "Local Labels". Exports do not need to be done on the Master console and imports are only to the Master console.

- 1. Run H2O on a console which is to be configured as a slave (currently still a master). This can be run as either Calrec Audio or CalrecAudioAdmin.
- 2. Login as admin with the password as admin1 and navigate to the I/O Box & Port Labels tab.
- 3. At the very bottom left click the **Tools** button and click **Export**.

	Boxes						Box and Port	Labels			
Native Label	User Label	Туре	Label	s & Descriptio	ns SW-P-081	Mapping		_			
064	1064	AES		Вох Туре	MADI 128/12	28			A A MARCH	1	-
063	1063	Mic/Line	Nat	we Box Label	101						
062	1062	Mic/Line	Us	er Box label	101						
061	1061	MICILINE		Address	1						
260	1060	AES									
258	1055	Micil ino									
)55	1055	Mic/Line	Lo.	Out Port	Native p	ort label	User port labe		ser port descript	ion	
54	1054	AES	Oute	1-1	01-1-01		01-1-01		and part deacrips	-	
53	1053	AES									
52	1052	Mic/Line	Outp	ut 1-2	01-1-02		01-1-02			_	
51	1051	Mic/Line	Outp	ut 1-3	01-1-03		01-1-03				
50	1050	MADI	Outp	ut 1-4	01-1-04		01-1-04				
3	103	Mic/Line	Chatte	1.5	01-1-05	- 1	01.1.05				
2	102	AES		1-5	01-1-03		01-1-05				
188	IO188	AES	Outp	ut 1-6	01-1-06		01-1-06				
104	IO104	Mic/Line	Outp	ut 1-7	01-1-07		01-1-07				
102	IO102	Mic/Line	Outp	ut 1-8	01-1-08		01-1-08				
101	I0101	AES		4.0	01.1.00		01.1.00				
100	I0100	MADI	Coup	u 1-9	01-1-09		01-1-09				
	101	MADI	Outp	ut 1-10	01-1-10		01-1-10				
			Outp	ut 1-11	01-1-11		01-1-11				
			Outp	ul 1-12	01-1-12		01-1-12				
			Outp	ut 1-13	01-1-13		01-1-13				
			Outp	ut 1-14	01-1-14		01-1-14				
			Outp	ut 1-15	01-1-15	- li	01-1-15				
			Outp	ut 1-16	01-1-16		01-1-16				
			Outp	ut 1-17	01-1-17		01-1-17				

 Native Label
 User Label
 Type
 Expo
 Select all

 2
 StageBox 1
 StageBox
 2

 3
 Big Analog
 MicLine
 2

 7
 AES
 AES
 2

 11
 Madi
 MADI
 2

 159
 159
 StageBox
 2

- If all Hydra2 IO is to be used click Select All and then Export. This will then export a csv file to a chosen destination, or will be saved to My Documents as default – depending on how the Google Chrome browser is configured.
- 5. This should be completed on all consoles that are to be configured as a 'Slave'.



7. Networking the consoles

At this point the following should have been completed:

- Backup of all console data see **Making console data backups**.
- Export of all slave console port labels and Hydra patch bays.
- All interconnecting cabling should be in place and ready to connect.
- Additional cabling required (if needed) for Sync sources should be in place and connected.

7.1 Adding consoles to the master

Within the master console a database holds a list of all consoles (Clients) that can be part of the network if connected. As default only the one exits which is itself. To add a console (Client) to the list perform the following:-

- 1. Run H2O on the Master console. This can be run as either Calrec Audio or CalrecAudioAdmin.
- 2. Login as admin with the password as admin1 and navigate to the Manage Clients tab.
- 3. If this is a first time connection you should see only one client which will be itself. Click the + icon to add a Client.

	Desks	
Client Type	Client Label	Desk num
APOLLO	Apollo 48	199.1
	Slave CTA	199.50
ARTEMIS SHINE	Artemis 40	199.100
	Slave/Master CTA	199.60

- 4. Enter the name of the console followed by it's IP address and click the appropriate console from the given selection.
- 5. Once complete click OK.



7.2 Making a console a Slave - Demoting

To make a console run as a slave the following should be completed:

- 1. Log on to the CalrecAudioAdmin using the password *calrec*.
- 2. Run the CustomerDataBackupUtility
- 3. Enter the first two IP address octets of the console. See identifying console IP address. Section 3
- 4. Once connected you will then be presented with the following screen.

💶 Customer Data Backı	up/Restore Utility
Operations IP Address: 192.42.1.0 Software Version: 1.12.22 Pack Type: Apollo	250
Backup	Take a snapshot of all your data, and save it to a specified location
	Backup Active MCS 🗌 Backup Inactive MCS
Restore	Restore your data from a specified file
	Restore Active MCS 🔽 Restore Inactive MCS
	Only restore Hydra2 database
Promote Router	Promotes a slave router to be a master
Demote Router	emotes a master router to a slave
Router Status	View the router(s) current master/slave status(es)
Update Trunk List	Update the router's trunk list file
	Detailed information output
Disconnect	
Exit	

- 5. Click Demote Router.
- 6. Once this is complete the routers within the DSP rack will be reset, Hydra2 IO in the Main Application **Online** list for this console will then clear.
- 7. The above procedure should be completed on all consoles which are to be slaves and part of the network.



7.3 Making a console a Master - Promoting

To make a console run as a Master the following should be completed. **Ensure that no other consoles are configured as a master and are connected to this console.**

- 1. Log on the CalrecAudioAdmin using the password *calrec*.
- 2. Run the CustomerDataBackupUtility
- 3. Enter the first two IP address octets of the console. See identifying console IP address. See section 3
- 4. Once connected you will then be presented with the following screen.

💶 Customer Data Backu	p/Restore Utility
Operations IP Address: 192.42.1.0 Software Version: 1.12.222 Pack Type: Apollo Backup Kestore	Z50 Take a snapshot of all your data, and save it to a specified location Backup Active MCS Backup Active MCS Restore your data from a specified file Restore Active MCS Restore Active MCS
	Only restore Hydra2 database
Promote Router	romotes a slave router to be a master
Demote Router	Demotes a master router to a slave
Router Status	View the router(s) current master/slave status(es)
Update Trunk List	Update the router's trunk list file
	Detailed information output
Disconnect	
Exit	

- 5. Click Promote Router.
- 6. Once this is complete the routers within the DSP rack will be reset, Hydra2 IO in the **Online** list for this console will then return.



7.4 Connecting consoles

1. In terms of cable interconnects between routers these cable links are made between routers, and connect Console1_Primary Router to Console2_Primary Router. An example:

Example Star configuration



Example daisy chain console network





Secondary cable connections Primary cable connections

- 2. The examples shown in 6.4 show that connections between routers use like-for-like port numbers, it doesn't matter which port numbers are used but it terms of cable tracing and good practice it is best to keep an order to the connection of these.
- 3. For the first time only make sure the sync source on each console is selected using the console Main Application, from here on the sync source can be controlled and monitored via H2O
- 4. Once a slave console is connected to a master console within a short space of time you should see the slave console local IO return within the Main Application **Online** list.
- 5. Once all consoles are connected to the master, ensure that all consoles show **all** available Hydra2 in the **Online** list within the Main Application and not just their own.



Items to bare in mind.

- The same SFP type is used at source and destination (unless you are using bi-directional SFP's) and the fibre cable type used matches
- If using Cat5e to connect routers the cable length does not exceed the maximum permitted for Cat5e.
- Ensure primary and secondary cable links are the correct orientation.
- System Status is clear with no cable failures being reported.
- Ensure ALL consoles are referenced to the same source see below.
- When daisy-chaining consoles up-to two additional consoles are currently supported. For further consoles the system should be configured as a star network.

7.5. Connecting Brio consoles

Brio console can be added to a Hydra2 network so long as:

- The Brio is running software v1.1 or later
- The Brio is fitted with a Hydra 2 module (Calrec part No. US6249-2)
- The Hydra2 network is v8.0 or later
- The Brio System ID is not 192.1

The Brio Maintenance Manual details how to check for the Hydra2 module. With this module fitted the two Hydra2 ports on the rear of the case become active and can be used for:

- Connection Hydra2 IO
- Connecting the Brio to a Hydra2 network





8. Separating consoles from a network

Consoles which are part of an OB truck installation will normally run as a stand-alone master and therefore their connection as a slave to a network would be on job-by-job basis, making there a requirement to promote them back to a stand-alone master.

This process though simple also requires consideration.

- Have Hydra2 IO port labels been updated/entered via H2O and if so do these labels need to remain with the console being made stand-alone?
- Does the console being made stand-alone use Hydra2 IO or HydraPatchBays from one of the other networked consoles?
- Networked Hydra that was part of the slave console 'Required List' and no longer being used should be removed from the 'Required List'
- If trunk links have been defined between this console and it's connecting console/router this configuration setup now needs to be removed from the console being promoted back to the master and also from the original master. If this is not completed a System Status message will be generated warning of cable failures.
- Once a console is separated from the original master, the original master will then display a System Status message warning of the missing console. A Clear System Status should be performed via ProgramUpdater to clear this.
- The console should then be promoted back to a master to allow stand-alone running described in section 6.3

9. Sync sources

It is absolutely paramount that ALL consoles connected as part of a network are connected to the same sync source. Each console can be set-up to run from a different sync, i.e AES, Video PAL but all must be derived from the same source. Once consoles are connected as part of a network this can be controlled/monitored via H2O by clicking the **Sync sources** tab.

LREC	I/O Box & Port Labels	Access Rights	Manage Folders	Manage Clients	Port Patching	Sync Sources	Manage Metadata	Bluelink Patchbays	Co Pro	ontrol tocols		User: admin Connected to: 199.1.1.0
	_	CI	ients					Sync	hronia	zation Sour	ce Prio	rity
Тур	e La	bel Nu	mber	Current S	ource		Sourc	es		Current	Order	Source
**	2				2	AIL					1st	AES3 (48Khz)
APOL	Apolio 4	8 199.1	Video 1 F			Video	1	(5	Locked	2nd	Video 1 PAL
							2				3rd	Internal
	Slave C	TA 199.5	Video 1 F	PAL		Video 2	2	(4th	AES3 (48Khz)
APOL	LO					AES3 (48Khz)				5th	TTL Wordclock (48Khz)
									=		6th	Internal
ARTE	WIS ^{Artemis} IE	40 199.1	00 AES3 (48	3Khz)			ordclock (48k	hz)		Patch So	ource	Reset to 1st Source
APOL	Slave/M CTA	^{aster} 199.6	0 Video 1 F	PAL		Interna						

These can be patched and reset in the normal way as you would using the console Main Application program.



10. Importing Port Labels

With the consoles now part of the network the csv files previously exported from slave consoles can now be imported:

- 1. Run H2O from the master console. This can be run from the login CalrecAudio or CalrecAudioAdmin.
- 2. Login as admin with the password as admin1 and navigate to the I/O Box & Port Labels tab.

6 A L R E C	VO Bex & Acce Port Labels Rigi	ess Manage hts Folders	Manage Clients	Port Patching	Sync Sources	Manage Metadata	Bluelink Patchbays	Control s Protocols		User: admin Connected to: 1	99.1.1.0	Logout
	Boxes	_		_	-10		Box an	d Port Labels		_	_	_
Native	Label User Lab	el Type	Lab	els & Descripti	ons SW-P-08	Mapping						
1064	1064	AES		Box Type	MADI 128/1	28		·	1.00	And real a		
1063	1063	Mic/Line	N	ative Box Labe	1 101			C C C C C C C C C C C C C C C C C C C				
1062	1062	Mic/Line	ι	Jser Box label	101							
1061	1061	Mic/Line		Address	1							
1060	1060	AES										
1059	1059	AES										
1056	1056	Mic/Line										
1055	1055	Mic/Line		n/Out Port	Native p	ort label	User po	rt label	Userp	ort description		
1054	1054	AES	Ou	tput 1-1	01-1-01		01-1-01				î	
1053	1053	AES	Ou	tput 1-2	01-1-02		01-1-02					
1052	1052	Mic/Line	0	1.2	01-1-02		01.1.02					
1051	1051	Mic/Line		1-5	01-1-03		01-1-05				-	
1050	1050	MADI	Ou	tput 1-4	01-1-04		01-1-04					
103	103	Mic/Line	Ou	tput 1-5	01-1-05		01-1-05					
102	102	AES	Ou	tout 1-6	01-1-06		01-1-06					
10188	10188	AES			04.4.07		01.1.07					
10104	10104	Mic/Line	OU	tput 1-7	01-1-07		01-1-0/					
10102	10102	Mic/Line	Ou	tput 1-8	01-1-08		01-1-08					
10101	10101	AES	Ou	tput 1-9	01-1-09		01-1-09					
101	101	MADI	Ou	tput 1-10	01-1-10		01-1-10					
			Qu	tput 1-11	01-1-11		01-1-11					
			Où	tput 1-12	01-1-12		01-1-12					
			0u	tput 1-13	01-1-13		01-1-13					
			Ou	tput 1-14	01-1-14		01-1-14					
			Ou	tput 1-15	01-1-15		01-1-15					
			Qu	tput 1-16	01-1-16		01-1-16					
			Qu	tput 1-17	01-1-17		01-1-17					
Boxes	+ - Tools	3	App	bly Changes	Cancel Cha	nges				,		

Box label	Select All
ort user label	De-select All
ort description	
SW-P-08 Mapping	

- 3. At the very bottom left click the **Tools** button and click **Import**.
- 4. Click 'Select All' if all fields are being imported from the salve console(s). NOTE: Duplications of SW-P-08 ID's are not allowed, it is important to check that SW-P-08 entries made on a console which was a master does not contain the same as anyother consoles.
- 5. Click 'Choose File' to select the csv file
- 6. Click 'Import'
- 7. Once this has been completed all port labels applied should be visible at each console for the relevant Hydra IO.

10.1 Editing exported files before importing

Exported csv files can be imported into Microsoft Excel or LibreOffice Calc for editing if required. Care should be taken when importing the file into either of these two programs and that the following options are selected/checked:

LibreOffice Calc – File->Open

Separator Options	= Seperated by Comma
Fields	= Make sure all columns are selected in the import window and select Column type 'Text'

Microsoft Excel – Data->From Text

Original data type	= Delimited
Delimiters	= Comma
Column data format	= Make sure all columns are selected in the import window and select 'Text'



11. Auto Promote

Auto-promotion provides contingency in the event that the entire master router, including both primary and secondary parts, are lost. Auto-promotion is a simple interface to enable Calrec engineers to set a router hierarchy within a customer's Hydra2 network. This hierarchy allows slave routers (and slave consoles) to automatically promote themselves to take over the 'master' status in the highly unlikely event of a connection issue with the original master router. Therefore removing the need for manual promote/demote. A system of priorities and time delays is used to select which routers can auto promote and in what order. This can be especially useful for an OB truck installation where the networking of two consoles can be ad hoc, it also provides additional benefits to fixed network installations.

When a master router is lost, other routers in the network become aware due to the lack of heartbeats. The router(s) with the shortest time delay then take over. Of course, any audio/gpio routes that passed through the original master router will be lost, but everything else will work as before. In another example, a network of two consoles, as sometimes found in OB trucks, gain a significant benefit from auto promotion. In the OB case there is no independent Router Core, and one of the console cores has to be designated the master. With auto-promotion, if either console suffers a major failure or is switched off, then the other console will still continue to work.

Once Auto Promotion is setup the two or more consoles can be connected/disconnected as and when required and will operate as per the hierarchy in the configuration file.



Example 1 – Four console fixed network installation



```
Example 1 – Four console fixed network Auto Promote configuration
```

The above xml file would allow all Studio 1-4 to continue with their own local audio should the master router fail or be switched off.

The delay (WaitSecs) can be a minimum of five seconds, in this case it is set to 65 secs. This does not mean there is a delay of 65 secs before audio returns. In fact local audio should continue without interruption. It is the control of that audio that is affected by the delay time. Another point to consider regarding the delay time is, it takes approximately 60 seconds for a core rack to reboot (if all cards are reset). An unwanted scenario would be if a master core was reset (purposefully) and for all of the slave consoles to then promote themselves. To avoid this a time delay of 65 seconds is entered to allow the master rack to reboot before the AutoPromote feature starts.

In example 1 if the master failed or was switched off, studios 1 to 4 would then after 65 seconds promote themselves to be stand-alone masters. All 'local' studio Hydra2 frames would then remain online. As said previously there would not be a 65sec drop in audio (normally less than a second) but the control of Mic pre. SRC etc would be delayed until the time delay had expired. All studio consoles can then continue operating until the fault with the master core is resolved.

11.1. Restoring the network with AutoPromote enabled

Once the fault with the master has been resolved and all cables are reconnected a reset of ALL console and router cores is then required to return normal operation.



12. Network contingency and recovery options without AutoPromote

With a networked system that does not utilise AutoPromote there are some considerations needed in the rare event of a complete master router failure. For such to happen it would mean that every primary and secondary processor, router, DSP card and power supply has failed or both primary and secondary power inlets to the rack have failed. The likelihood of this happening is extremely low but nevertheless is a possibility. With that in mind there are precautionary measures that can be put in place to ensure there is a recovery strategy in place.

12.1. Preparation for recovery situation.

To ensure that this transition goes smoothly it is recommended that:

- All port and frame labelling is done using H2O.
- As a precautionary measure an export of port labels to csv and HydraPatchBay information export is done via the master router. See section 5
- Local show and memory backups are done frequently
- Core MCS backups are done. The master router being the most important to have a recent backup.



Take the following small star network example:

The above shows three slave consoles connected via a master router core in a star formation. Although there are primary and secondary versions of all cards fitted to the master router core, should this fail for some reason the three slave consoles would no longer have a master to report to, resulting in Hydra frames dropping offline and the loss of audio.

There are a few options to recover the network in this event:

- Use a spare populated DSP rack which would require programming via an external PC/Laptop
- Promoting one of the existing slave consoles to be a master and re-routing inter-connecting cables.
- Promote all consoles to be masters and run stand-alone until the master issue is resolved

Option 1 is probably not an ideal option due to the need for storage, programming and cost. If the issue relating to the master router failure is power this option would resolve the issue unless power could be sourced from elsewhere.

Option 2 would require:

- Re-routing appropriate cables to spare SFP slots on the new Master in this case, assuming there are no trunk links it would be four cables in total.
- Copying a recent Hydra2 database backup from the master router to the new master control processor. The Hydra2 database is located on all master console and stores Hydra information such as, port labels, frame



labels, SWP-08 data, port patching information etc. For networked systems this database is used to store all information about all Hydra fames/consoles that have been or are connected to the network.

Promoting the two router cards within the slave DSP rack to be masters not slaves. See section 6.3

Any one of the slave consoles could be used to promote to a master, however should one of the slaves be an Artemis light rack it then the router capacity is 4096 not 8192. This configuration would also allow external hardware such as VSM to continue.

With the network changes the configuration would look like this:



Option 3 would require:

- All console inter-connecting cables disconnecting
- All console cores promoted to be masters and run as stand alone consoles. See section 6.3
- Copying a recent Hydra2 database backup from the master router to all master consoles. The Hydra2 database is located on all master console and stores Hydra information such as, port labels, frame labels, SWP-08 data, port patching information etc. For networked systems this database is used to store all information about all Hydra fames/consoles that have been or are connected to the network.

With the network changes the configuration would look like this:





12.2. Importing a master router core Hydra2 database

A recent backup from the original Core is required for this operation.

- 1. Using the Customer Data Backup utility connect to the console processor.
- 2. Click 'Only restore Hydra2 database'. It is important that this this option is clicked before the restore file is chosen.



- 3. Click 'Restore'
- 4. Choose the backup (.zip) file recently taken and click OK.
- 5. Once the restore of the database has completed a restart of the control processors will be required.

NOTE: If the option 'Only restore Hydra2 database' is not checked, the console settings such as surface panel layout, shows and memories will be over-written and the original settings will be lost.

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