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IDI 20 Data Importer Quick Installation Guide

Software Version 3.0.5

597-2010-004, Revision I
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IDI 20 Data Importer

Quick Installation Guide

Software Version 3.0.5

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1. IDi 20 System Overview

IDi 20 Data Importers are computers that allow broadcasters to send Supplemental Program Streams (**SPS**) to an HD Radio™ Exciter. The IDi encodes SPS Audio and multiplexes it with SPS Program Associated Data (**PAD**). The resulting bitstream is then delivered as IP packets via Ethernet to a Broadcast Electronics' **FSi 10 HD Signal Generator** or an **XPi 10 Exporter** (depending upon the system architecture – see Figures 1 & 2). This bitstream is then combined with encoded HD Radio Main Program Stream (**MPS**) for transport to the HD Radio Exciter and Transmitter.

The **IDi 20** Data Importer offers unlimited flexibility in managing the HD Radio system throughput for multiple SPS by provisioning the HD Radio system bandwidth.

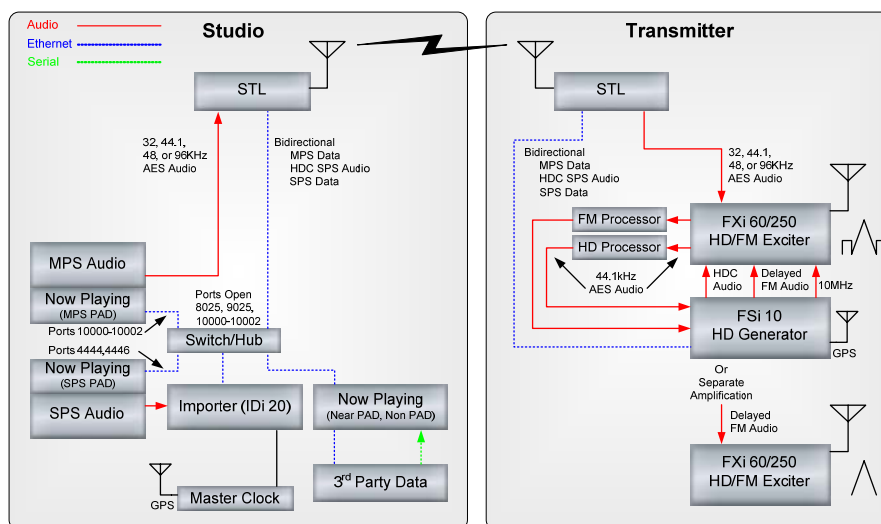


Figure 1 – 1st Generation HD Radio™ System Architecture

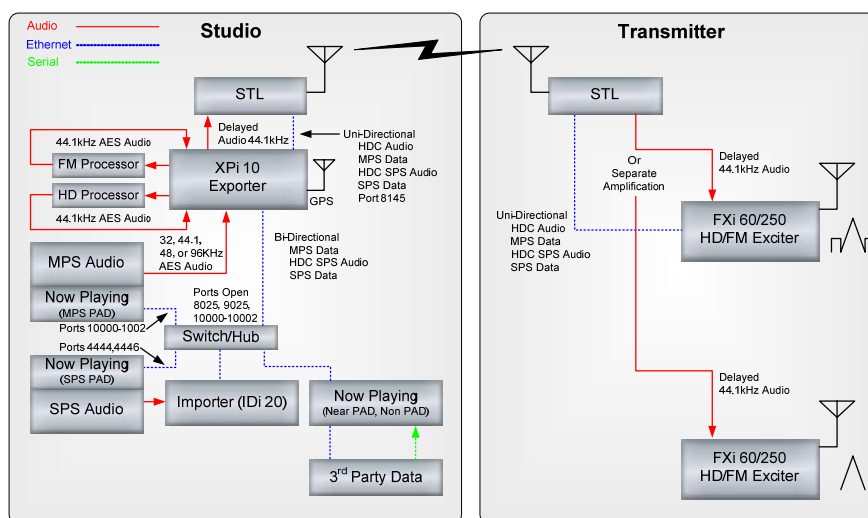


Figure 2 – 2nd Generation HD Radio™ System Architecture

The **IDi** is capable of managing more than one secondary audio stream (currently a maximum of 2 is supported). If this is the case, the **IDi** must be equipped with either two single-channel audio cards or a multi-channel card. The **IDi** requires the Windows XP operating system, Internet Explorer 6.0 or above, and the IIS (Internet Information Services) component that is included with Windows. DirectX 9.0 and Microsoft SQL Server are installed with the **IDi** software.

Broadcast Electronics' IDi Data Importers are equipped with the **B.E. Dashboard**. The Dashboard is an interface that allows users to setup and monitor the IDi Importer from an intuitive menu screen.

2. Prepare for IDi Data Importer Installation

2.1. Items Needed For Installation

- ☐ Nut Driver set (English and Metric)
- ☐ Screwdrivers (both Philips and Flat)
- ☐ Rack Screws

2.2. Verify Shipping Package Contents

- ☐ IDi Data Importer Unit
- ☐ Audio Cables
 - i. Digital Audio Cable Set Only (if Multi-Channel Audio card)
 - ii. Digital and Analog Audio Cable Set (if Single Channel Audio card)
- ☐ AC Power Cord
- ☐ Mouse
- ☐ Monitor
- ☐ Keyboard
- ☐ Front Panel Keys
- ☐ Slide Rail Mounting Kit
- ☐ Intel Resource CD
- ☐ MS Windows XP Professional CD
- ☐ Broadcast Electronics' IDi 20 Data Importer Quick Installation Guide
- ☐ iBiquity HD Radio Importer's User Guide



2.3. Upgrade the FSi 10 HD Signal Generator or XPi 10 Exporter

Before the IDi 20 Data Importer will communicate properly with the **FSi 10 HD Signal Generator (or XPi 10 Exporter)**, the **FSi (or XPi)** should be upgraded to at least **Software Version 2.3.3**.



v2.4.2 is the first version of Exporter software that has full support for the Service Information Messages that Navteq is requiring be scheduled on SIS.



You need both v3.0.5 of the Importer and v2.4.2 of the Exporter to support MPA down to 32 kbps. v3.0.5 of the Importer will allow you to make configurations with MPA below 48 kbps, but when the Importer goes to synchronize, the Exporter will reject the changes.

2.4. Upgrade Datacasting Software

IDi 20 Software Version 3.0.5 uses a different data protocol than previous versions. You may want to verify that your current datacasting software can support this new protocol before upgrading to this version of the Importer. If you are using B.E.'s The Radio Experience Software, you will need to be running TRE 2.5.0 or higher.

2.5. IDi Data Importer Hardware Features

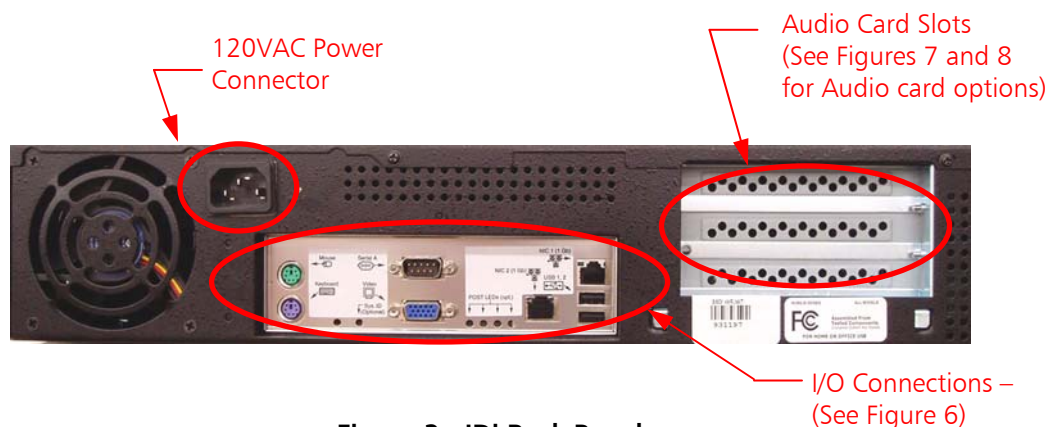


Figure 3 - IDi Back Panel

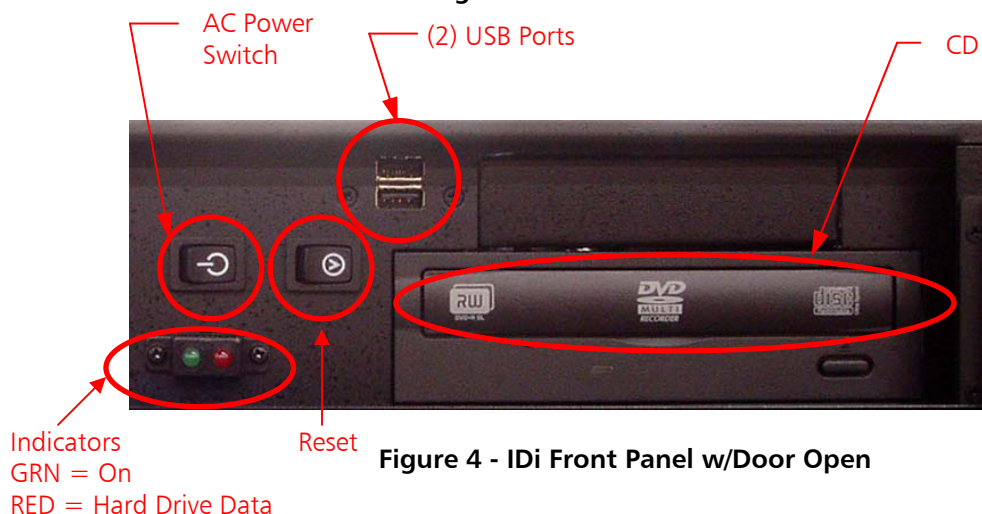


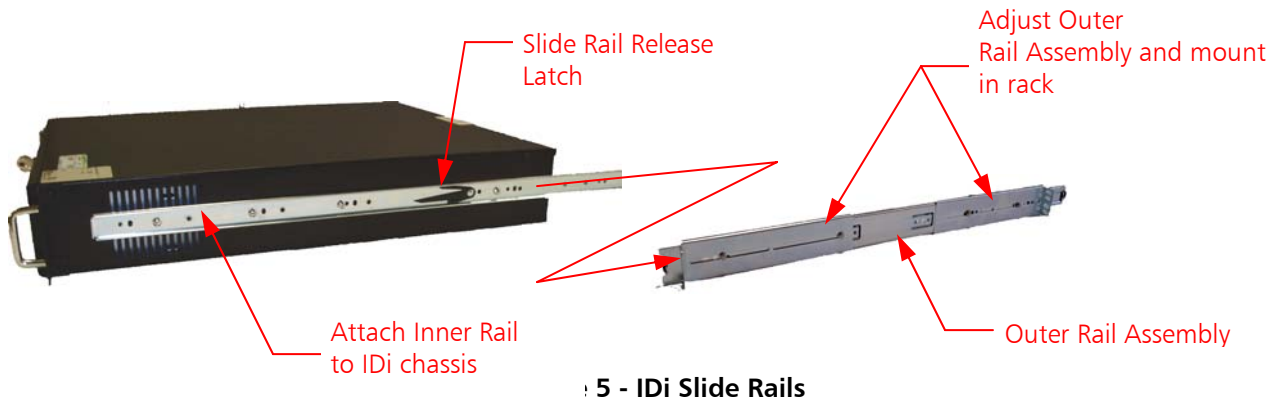
Figure 4 - IDi Front Panel w/Door Open

3. Installation and Setup

3.1. Slide Rail Mounting

Do **NOT** install the IDi unit into a rack using only the front mounting ears of the IDi! The IDi **MUST** be supported front and rear to prevent mechanical damage of the unit. The Slide Rail Mounting Kit that is provided is adjustable to fit 21.0" - 26.5" vertical post spacing. See the Slide Rail Mounting Assembly Procedure enclosed in the Slide Rail Mounting Kit package for additional installation information.

The standard rack rails provided with the IDi 20 can be adjusted, but are fixed at 26" in length. If a shorter rail kit is needed, contact Broadcast Electronics Customer Service.



3.2. Peripheral Connections

Connect the mouse, keyboard, and monitor to the IDi back panel I/O connections.

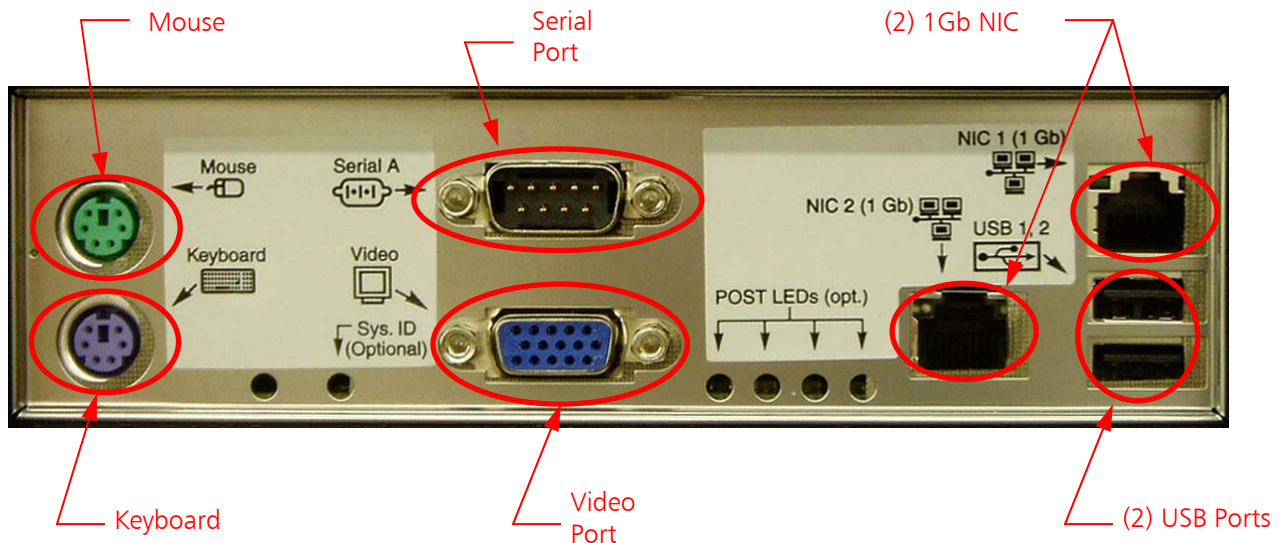


Figure 6 - IDi Back Panel I/O Connections



3.3. Audio Connection

Connect the Audio source to the sound card on the rear of the IDi chassis. Broadcast Electronics IDi Importers are equipped with hi-quality audio cards from Audio Science, either the ASI5111, ASI5041, or ASI6622, depending on the number of anticipated secondary audio channels. Both audio cards break out to standard XLR connectors for easy integration.

The ASI5111 is a single channel card capable of either analog or digital input (although digital is the most common). Cable sets are included for both input types. Digital input is by default set for AES/EBU but can be changed via software to accept S/PDIF.

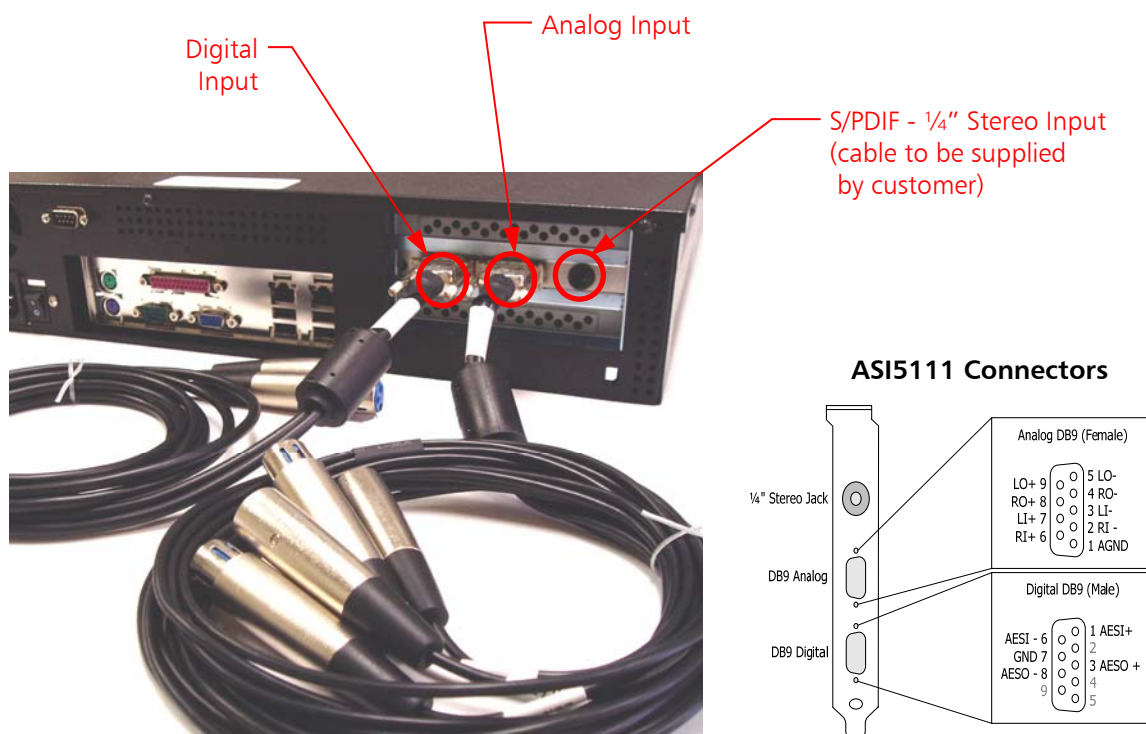


Figure 7 - ASI5111 Single Channel Sound Card Connections

For stations running multiple secondary streams, IDi's will include a multi channel ASI5041 Audio Card. The ASI5041 is a four channel Digital Input card. The Digital Input cable set that is shown is included with the IDi. The ASI5041 is equipped with an internal sample rate clock (capable of 16, 22.05, 24, 32, 44.1, 48, 64, 88.2, 96 and 192kHz), or can sync to an external source including an AES/EBU input or an external word clock.

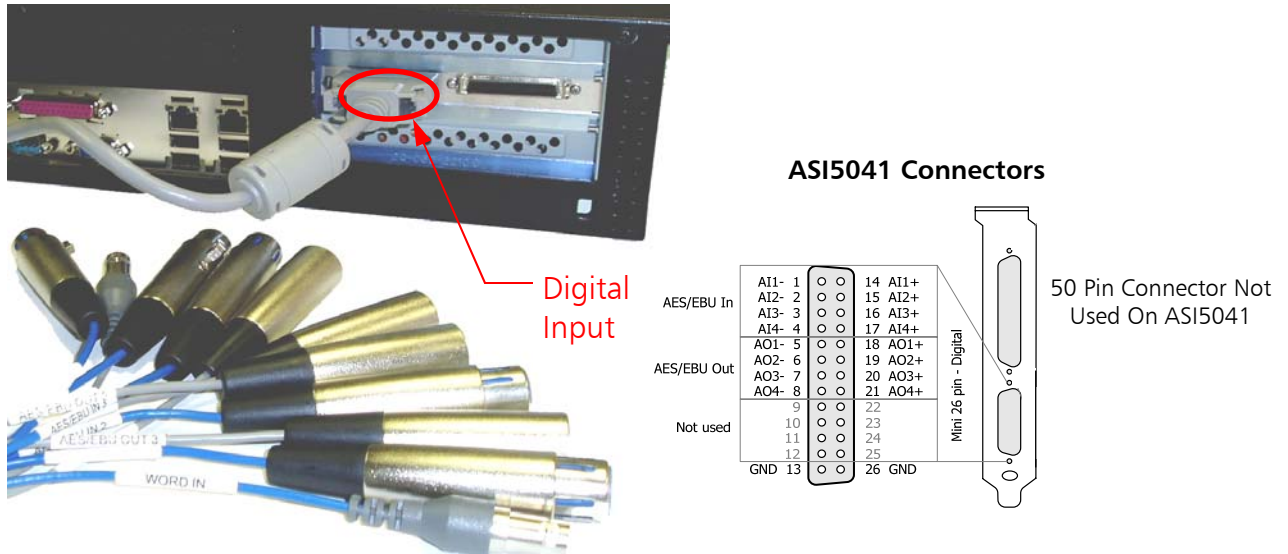


Figure 8 - ASI5041 Multi-Channel Sound Card Connections

The IDi may also be configured with the ASI6622 which is a two channel Digital or Analog Input card. The Digital Input cable set that is shown is included with the IDi. The ASI6622 is equipped with an internal sample rate clock (capable of 32, 44.1, 48, 88.2, and 96 kHz).

3.4. Network Connection

The IDi is equipped with two Gigabit Ethernet network connection ports as shown in **Figure 6**. The IDi **MUST** be able to connect to the system providing the SPS data and the FSi 10 HD Signal Generator, or XPi 10 Exporter (depending upon the system architecture) over an IP connection. The SPS PAD to the IDi communicates via Ethernet Ports 4444 for SPS channel 1, and 4446 for SPS channel 2. The IDi to the FSi 10, or XPi 10, communicates via Ports 8025 and 9025. The MPS PAD to the FSi 10, or XPi 10, communicates via Ports 10000 - 10002.

3.5. AC Power

Power the system on using the switch located on the Front Panel of the IDi.

4. Setting the IP Address of the IDi 20

Step 1 – Go to **Start -> Settings -> Network Connections**. Next, right click on the "Connected" **Local Area Connection**, and select **Properties**.

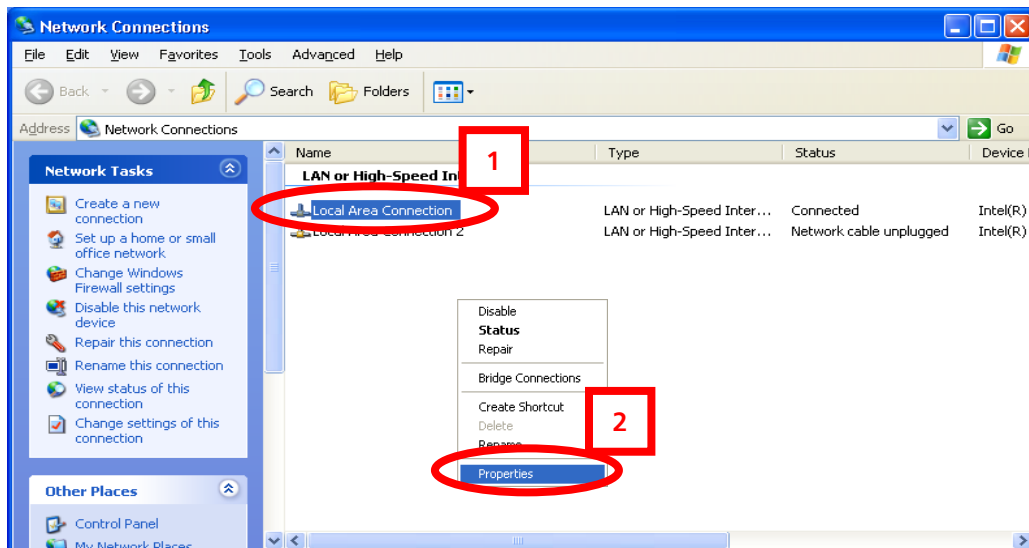


Figure 9 - Network Connection

Step 2 – Select the **Internet Protocol (TCP/IP)** connection, then click **Properties**.

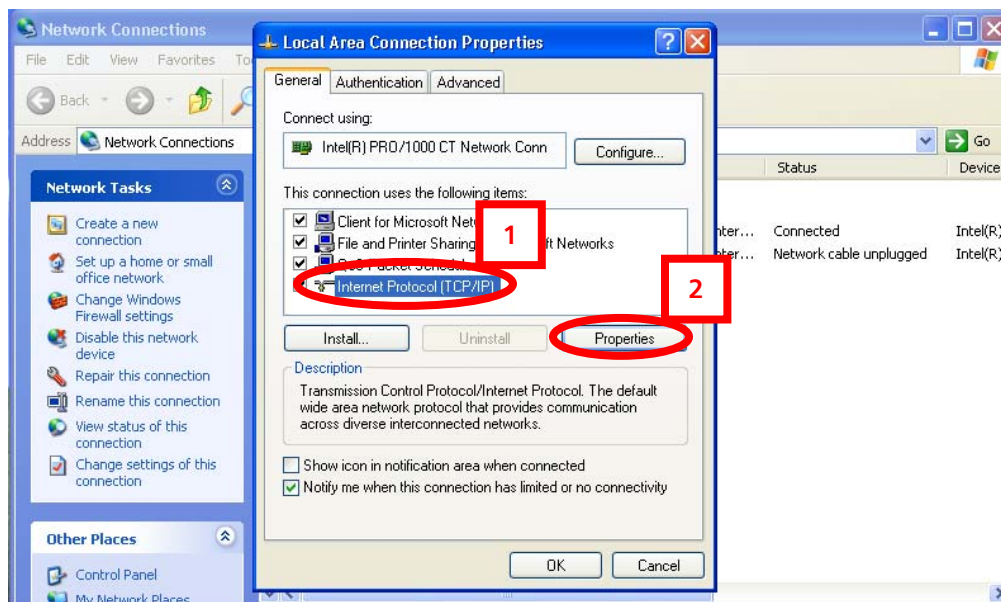


Figure 10 - Local Area Network Properties

Step 3 – Select **Use the following IP Address**, then enter the **IP address** and the **Subnet mask** of the **IDI Data Importer**. The Subnet mask **MUST** be the same as the FSi 10 HD Signal Generator, or XPi 10 Exporter.

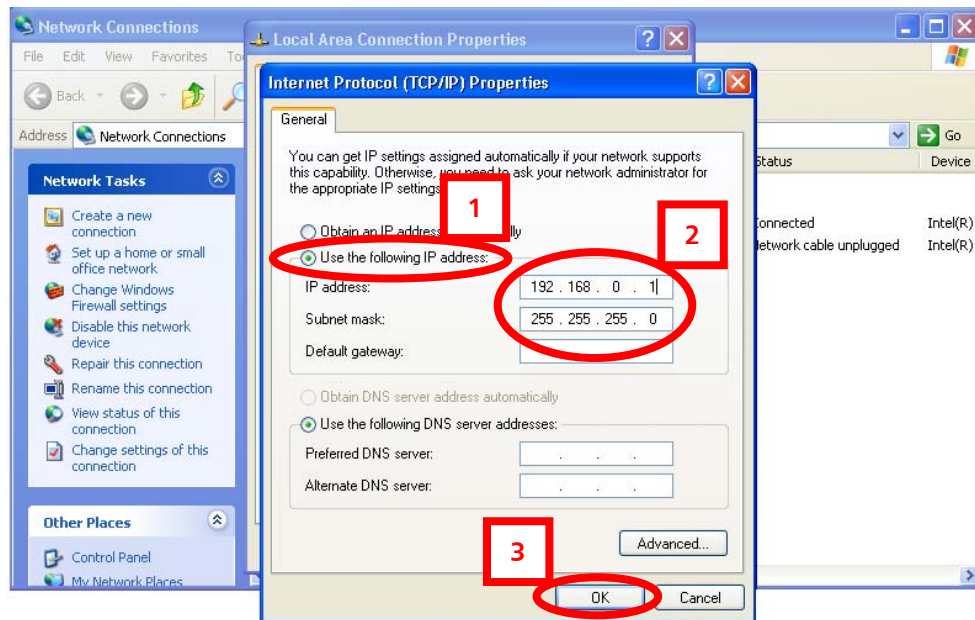


Figure 11 – Internet Protocol TCP/IP Properties

5. Configure the IDi Software

Step 1 – Launch the IDi Dashboard by clicking the icon on the desktop. The Options Menu will appear the first time you launch the program.

Step 2 – Enter a Caption if desired.

Step 3 – Enter the **I.P. Address** of the XPi 10 (or FSi 10) and the communication protocol your system is using (TCP or UDP).

Step 4 – Select the **Sound Cards** for the **HD Channels** (see **Section 14** for channel descriptions).

Step 5 – Set the **Audio Buffers** as desired (default setting is 5 seconds).

Step 6 – Set the **Debug Level** to **Info** and the **Dashboard Size**.

Step 7 – Select **Ping** to ensure that the IDi can communicate with the XPi 10 (or FSi 10)

Step 8 – Select **OK**.



Figure 12 – Options Menu

Step 9 – If this menu pops up, select **OK**.

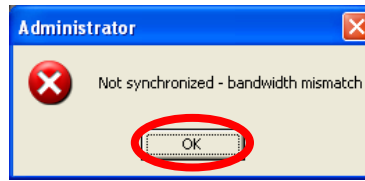


Figure 13 – Bandwidth Mismatch Menu

6. Important Notes on Switching Configurations via the IDi 20

6.1. If you have an XPi 10 in Your System

For systems running version 3.0.5 of IDi and version 2.3.3 of XPi software please note that upon switching configurations via the IDi 20, the XPi 10 may be re-booted and lose its Exciter Link address information! Prior to switching configurations from the IDi, it is recommended that you record the Exciter Link Config settings of the XPi 10 (see Section 6.3 below). If the XPi is re-booted after switching configurations via the IDi, you will have to re-enter the Exciter Link Config settings back into the XPi 10 (see Section 8). Please note that HD operation will be off of the air during this process. Proceed to Section 7 to change configurations via the IDi in an XPi System.

6.2. If you have an FSi 10 in Your System

For systems running version 3.0.5 of IDi and version 2.3.3 of FSi software please note that upon switching configurations via the IDi 20, the FSi 10 may be rebooted. As a result, HD Operation will be off of the air during this process. Proceed to Section 7 to change configurations via the IDi in an FSi System.

6.3. Record Exciter Link Config Information in the XPi 10



Figure 14 – XPi 10 Main Gui Menu

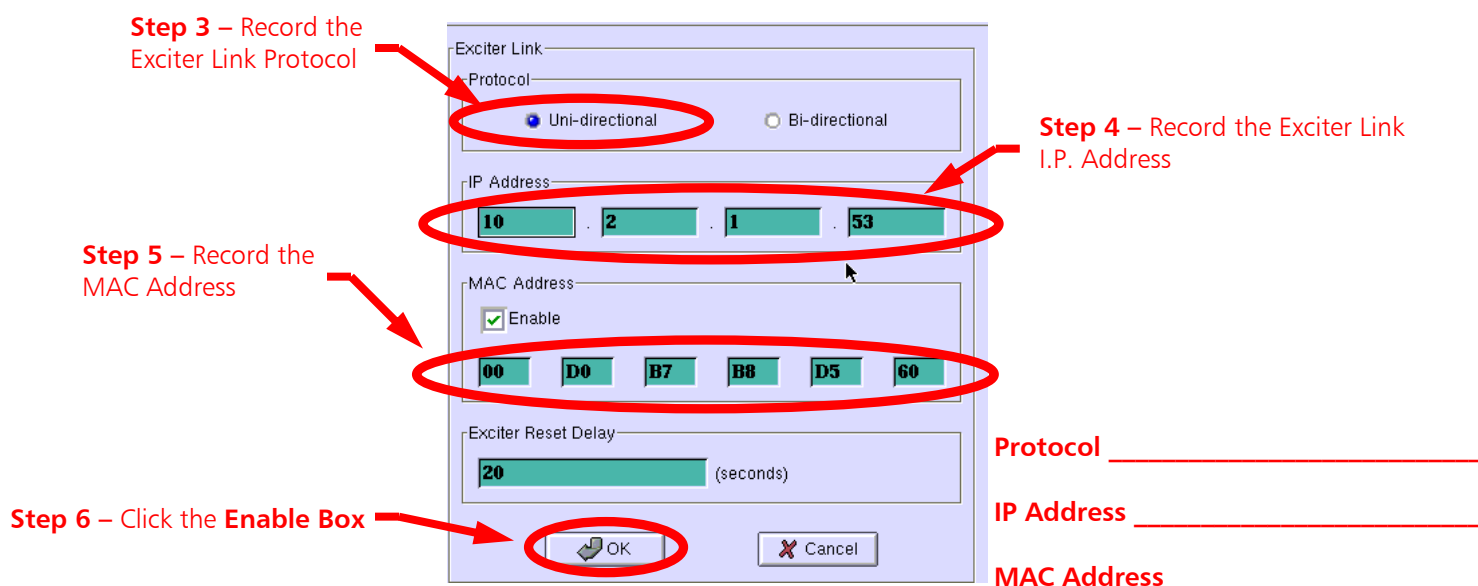


Figure 15 – XPi 10 Main Gui Menu

7. Selecting a Preset Configuration

Step 1 – Select the **Button** on the **Top Radio** to unhide the underlying iBiquity Applications.

Step 2 – Next, select **Administrator**.



Figure 16 – Administrator Menu

Fig

Step 3 – Select the **Administrator** tab.

Step 4 – Use the **Next** / **Previous** buttons to toggle through the Preset configurations.

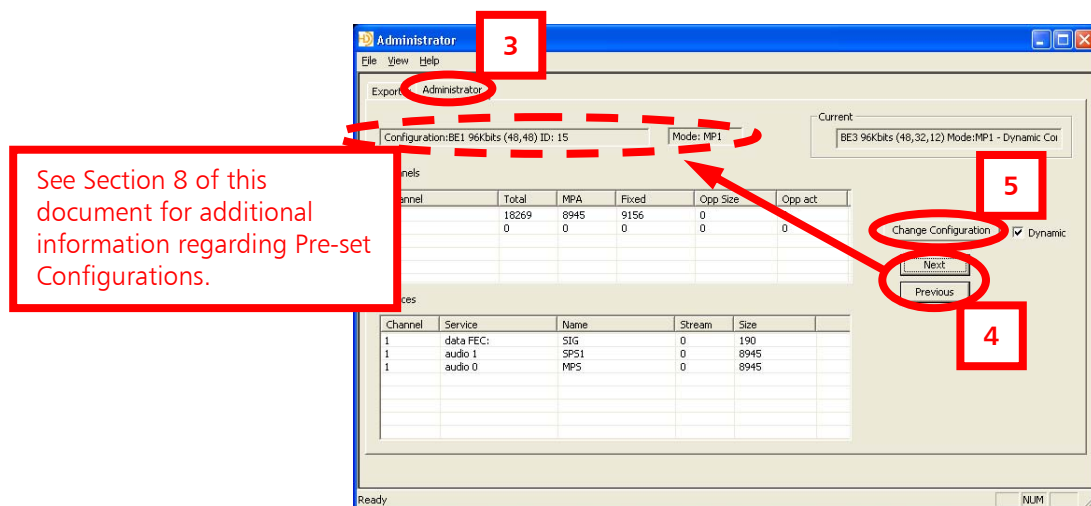


Figure 17 – Administrator Menu



Step 5 – Once you have toggled to the desired configuration, select **Change Configuration**.

Step 6 – Select **OK**.

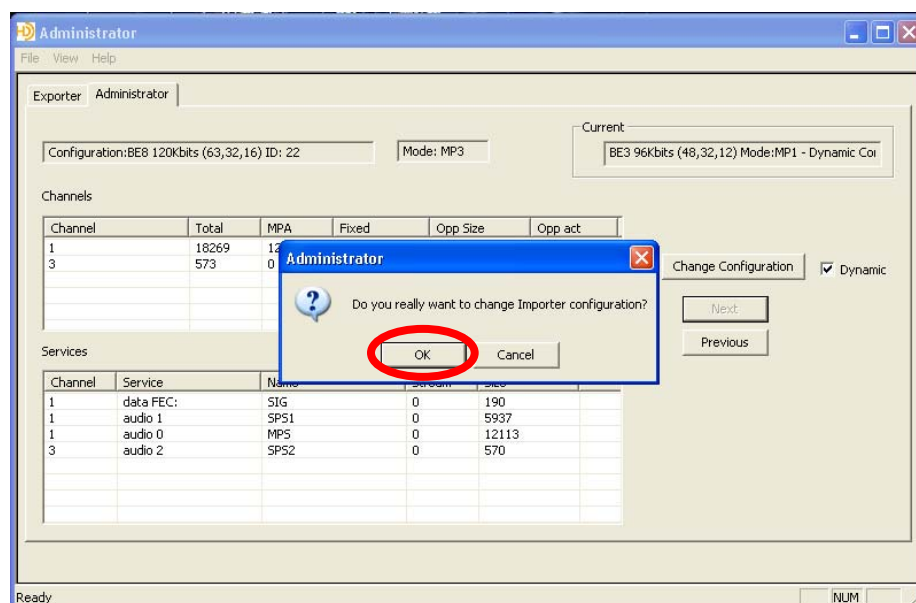


Figure 18 – Administrator Menu

Step 7 – Select **OK**.

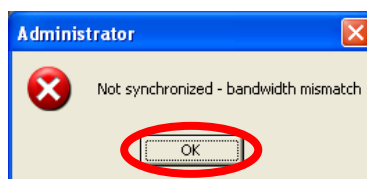


Figure 19 – Not Synchronized Menu

Step 8 – If this menu appears, the XPi will be re-booted and the Exciter Link Config information will need to be re-entered (see Section 8).

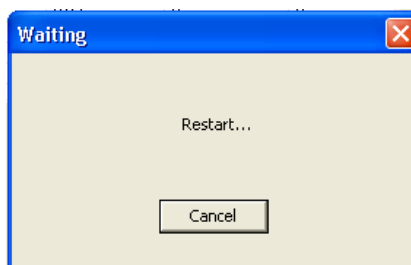


Figure 20 – Restarting the XPi

8. Re-configure the Exciter Link of the XPi 10

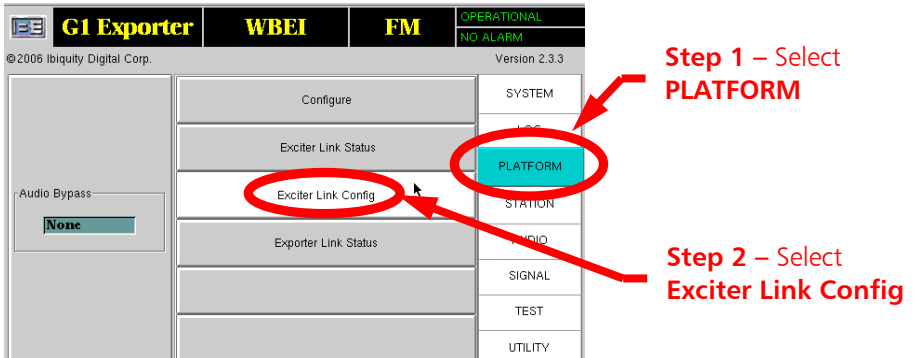


Figure 21 – XPi 10 Main Gui Menu

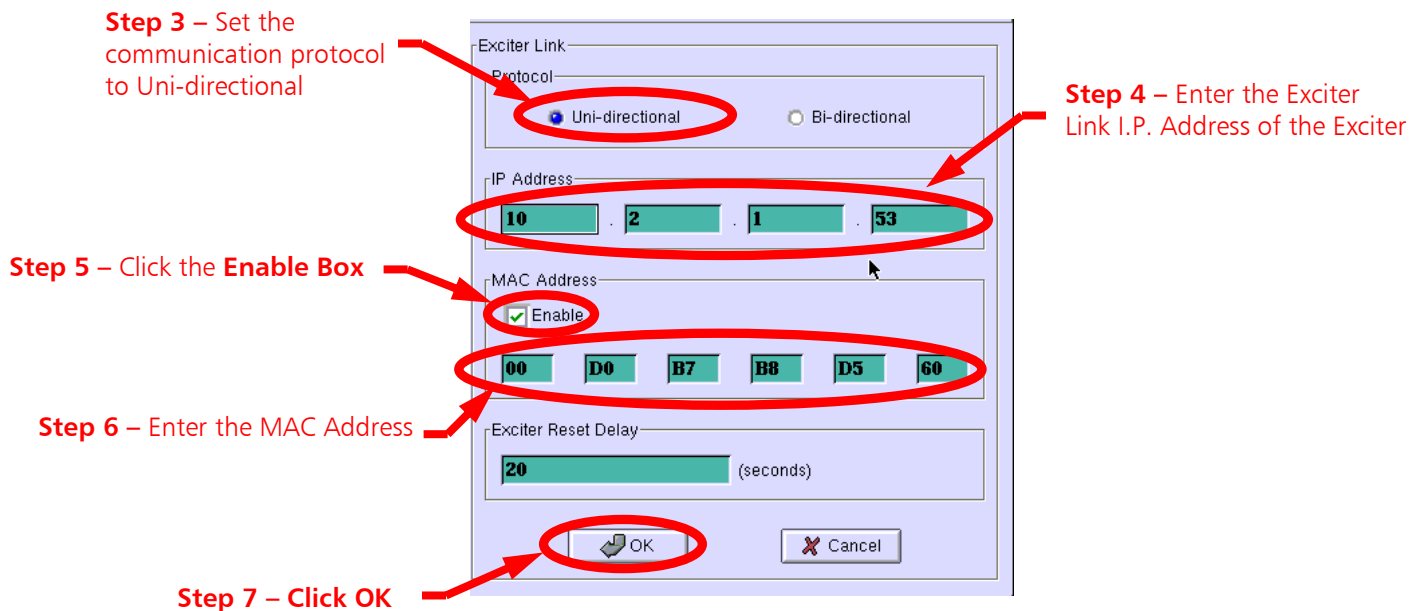


Figure 22 – XPi 10 Main Gui Menu

9. Re-Start the IDi Dashboard

Shut the IDi Dashboard down and then restart it.

10. Re-Start PAD Generation Software

Restart the software providing PAD data to the system.



11. IDi 20 Preset Broadcast Configurations

With Software Version 3.0.5, there are (8) preset configurations to choose from (BE1 thru BE8). These preset configurations allow users to change configurations easily on the fly. The preset configurations select the Service Mode (MP1, MP2, or MP3) and allocate bandwidth to the appropriate channels (MPS, SPS 1, and SPS 2).

Preset Configurations					
Configuration Number	Service Mode	Bit Rate Allocation (Kb)			Total Bit Rate (Kb)
		HD1 (MPS)	HD2 (SPS 1)	HD3 (SPS 2)	
BE1	MP1	48	48	n/a	96
BE2	MP1	64	32	n/a	96
BE3	MP1	48	32	16	96
BE4	MP1	64	16	16	96
BE5	MP2	48	48	12	108
BE6	MP2	64	32	12	108
BE7	MP3	48	48	24	120
BE8	MP3	64	32	24	120

Figure 23 – BE Preset Configurations

12. Synchronize the IDi 20 with the Exporter

From the **Administrator -> Exporter** menu, select **Synchronize** to ensure that the IDi 20 is properly synchronized with the Exporter.

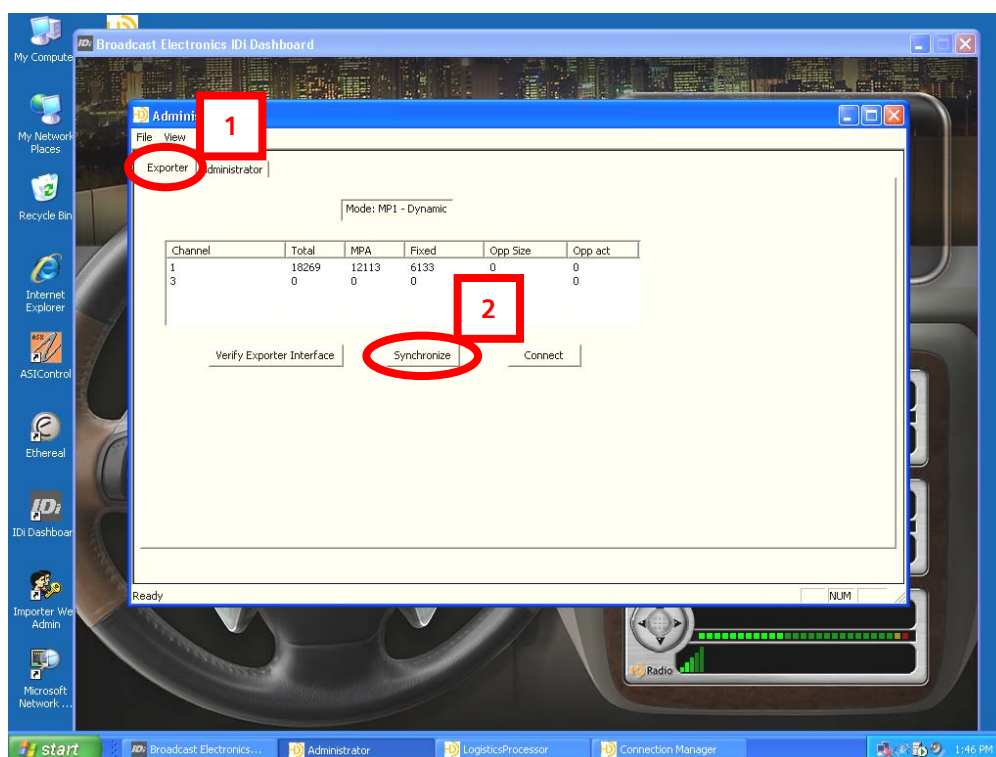


Figure 24 – Synchronization

13. HD1 Dashboard Gauge

If the active configuration is something other than 48Kb for HD1, you will need to change the **idi.ini** file for this gauge to read properly.



Figure 25 – HD1 Gauge

Step1 – Go to **Start -> Run**, type **idi.ini**, then select **OK**.

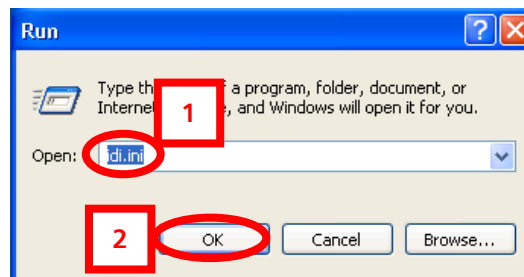


Figure 26 – Edit the idi.ini File

Step 2 – Change the [HD1] Gauge Value.

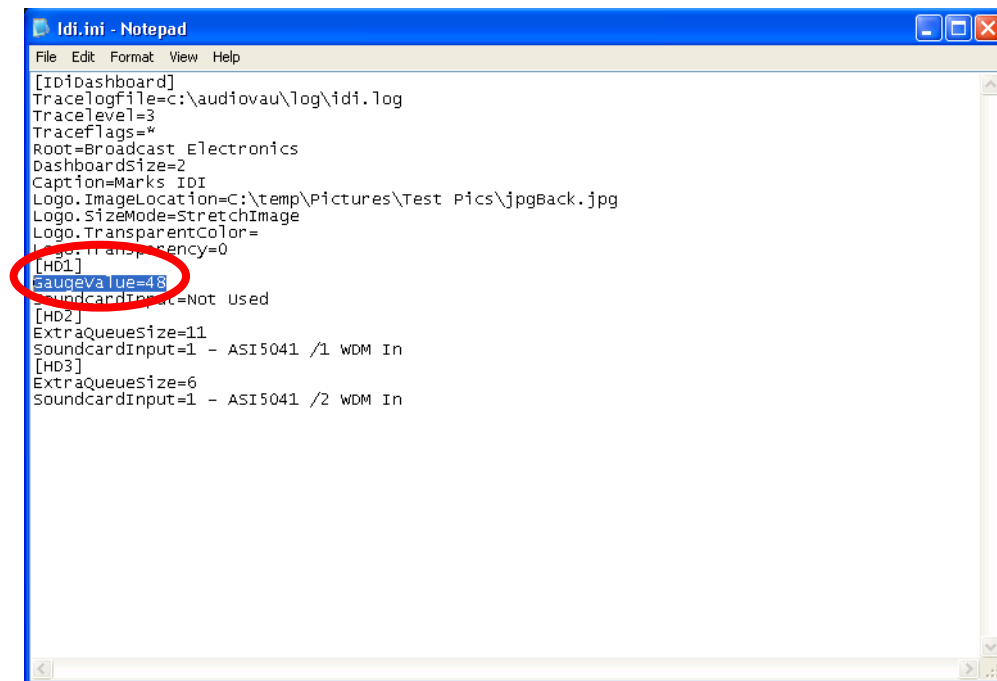


Figure 27 – Edit the idi.ini File

Step 3 – Save and close the **idi.ini** file.

Step 4 – Close and restart the IDi Dashboard. The gauge should now read the value entered in Step 2.

14. HD1, HD2, and HD3 B.E. Dashboard Displays

There are (3) displays on the B.E. Dashboard (HD1, HD2, and HD3) representing the data being passed through the entire HD Radio™ Broadcast System.



Figure 28 – B.E. Dashboard

14.1. HD1 Display

This display shows HD1 (MPS) Pad Data which is sent to the IDi 20 via Ethernet port 4442. The software providing HD1 (MPS) Pad Data must be configured with both the I.P. address of the IDi 20 and the XPi 10 (or FSi 10). Please note that HD1 (MPS) Pad Data and Audio are routed to the IDi 20 ONLY to provide PAD Data for scrolling and for the Audio Level meter to operate on the HD1 display. See the "Typical HD Radio System Connection Diagram" located in the back of this document.

14.2. HD2 Display

This display shows the HD2 (SPS 1) Pad Data which is sent to the IDi 20 via Ethernet port 4444. The software providing HD2 (SPS 1) Pad Data must be configured with the I.P. address of the IDi 20. HD2 (SPS 1) audio is routed from the studio source to the IDi 20. The IDi encodes the HD2 (SPS 1) Audio and multiplexes it with the HD2 (SPS 1) Pad Data. The resulting bitstream is then delivered to the XPi 10 Exporter (or FSi 10). See the "Typical HD Radio System Connection Diagram" located in the back of this document.

14.3. HD3 Display

This display shows the HD3 (SPS 2) Pad Data which is sent to the IDi 20 via Ethernet port 4446. The software providing HD3 (SPS 2) Pad Data must be configured with the I.P. address of the IDi 20. HD3 (SPS 2) audio is routed from the studio source to the IDi 20. The IDi encodes the HD3 (SPS 2) Audio and multiplexes it with the HD3 (SPS 2) Pad Data. The resulting bitstream is then delivered to the XPi 10 Exporter (or FSi 10). See the "Typical HD Radio System Connection Diagram" located in the back of this document.



15. System Information

Select the **Info** steering wheel switch to display system information such as software revision levels and license expiration date. Select **OK** to dismiss the information screen.



Figure 29 – System Information

16. Changing the Dashboard Logo

Step 1 – Right click anywhere in the Logo area and select **Logo Properties**.



Figure 30 – Changing the Dashboard Logo

Step 2 – Navigate to your logo file, use the remaining options to configure the logo as desired, then select **OK**. Virtually any type of graphics file may be used.

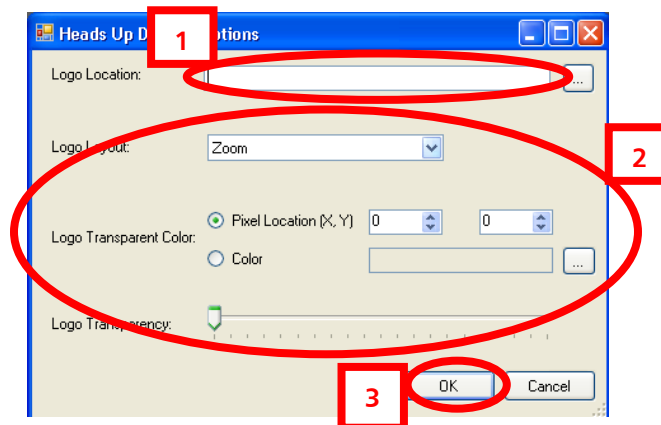


Figure 31 – Changing the Dashboard Logo



17. System Backup

After the IDi has been setup, it is recommended that a backup copy be created.

Step 1 – Select Admin -> Backup Database.



Figure 32 – Administrator Menu

Step 2 – Select Backup Importer Database.

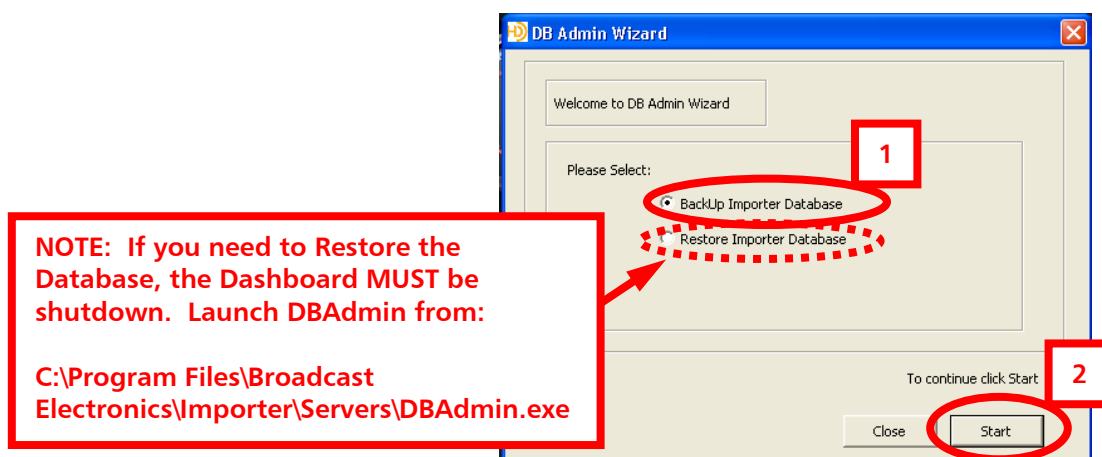


Figure 33 – DB Admin Wizard

Step 3 – Select the **SQL Server** location (typically **local**), then select **Next**.

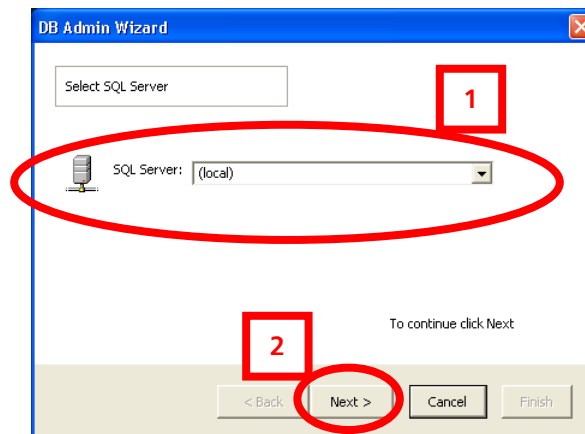


Figure 34 – DB Admin Wizard

Step 4 – Enter the BackUp file name and its' location.

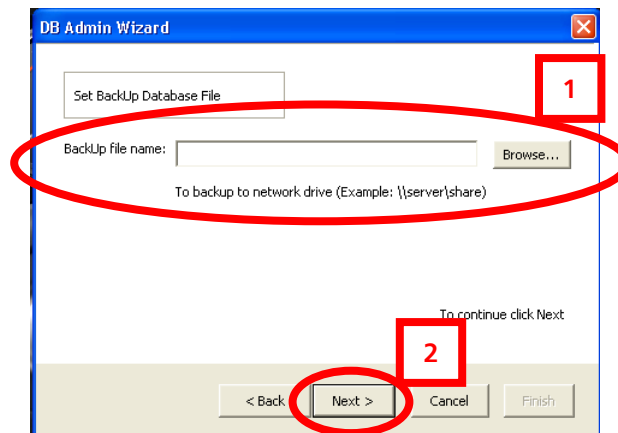


Figure 35 – DB Admin Wizard

Step 5 – Select **BackUp Now**.

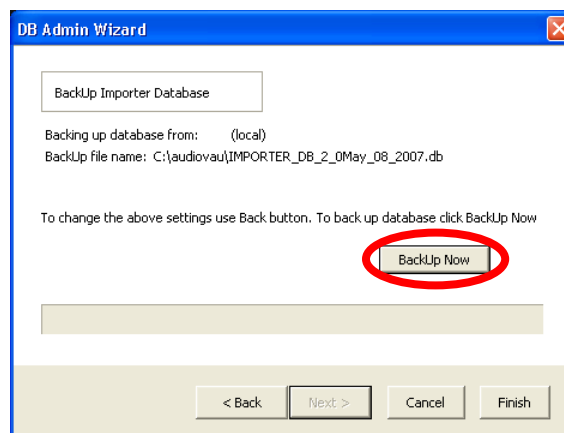


Figure 36 – DB Admin Wizard

Step 6 – Select OK.

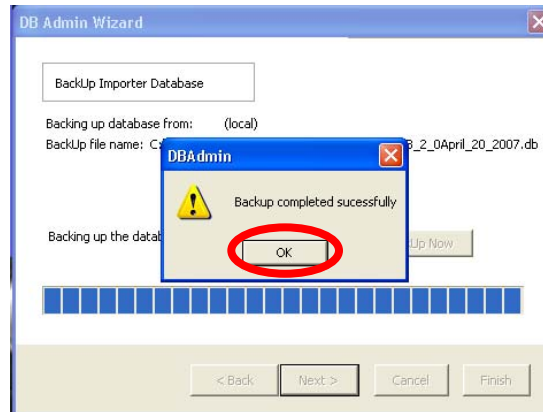


Figure 37 – DB Admin Wizard

Step 7 – Select OK.

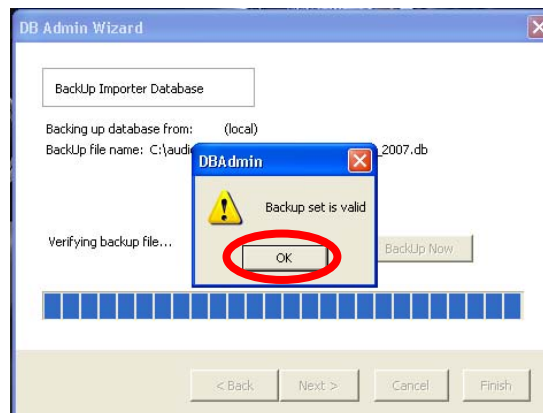


Figure 38 – DB Admin Wizard

Step 8 – Select Finish.

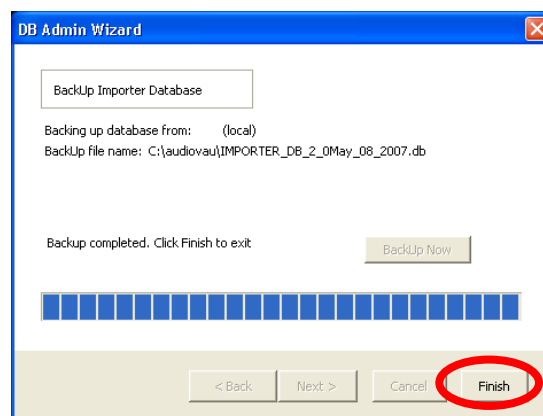


Figure 39 – DB Admin Wizard

18. Troubleshooting

How do I troubleshoot the IDi? There are several troubleshooting areas to discuss. Each will be discussed in turn.

18.1. Connection

To ensure that the IDi is capable of connecting to the FSi 10 HD Signal Generator, or XPi 10 Exporter, do the following:

1. Ping the IP address of the FSi 10 HD Signal Generator, or XPi 10 Exporter from the IDi Dashboard.
2. If the ping is unsuccessful, verify that the IP Address and subnet mask are properly setup for both the IDi and the FSi 10 HD Signal Generator, or XPi 10 Exporter.
3. Verify the physical network connections of both the IDi and FSi 10 HD Signal Generator, or XPi 10 Exporter.
4. Troubleshoot the same way that you would troubleshoot any network issue.

18.2. Sound Cards / Mixers

To troubleshoot the sound cards do the following:

18.2.1 Audio Science Cards

1. Open ASI Control mixer
2. Select Recorder_0 (single channel card); Recorder_0, Recorder_1, Recorder_3, Recorder_4 (multi-channel card)
3. Scroll down to the Multiplexer drop-down menu
4. Select the AES/EBU_In_0 from the drop-down
5. Confirm audio meters



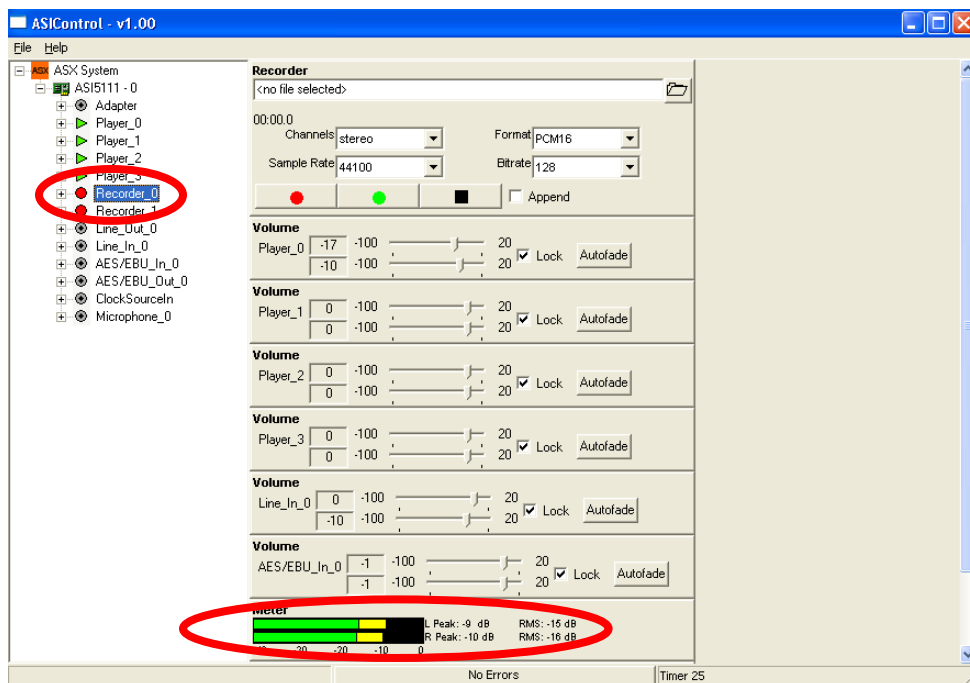


Figure 40 - ASI5111 Single Channel Audio Control Mixer

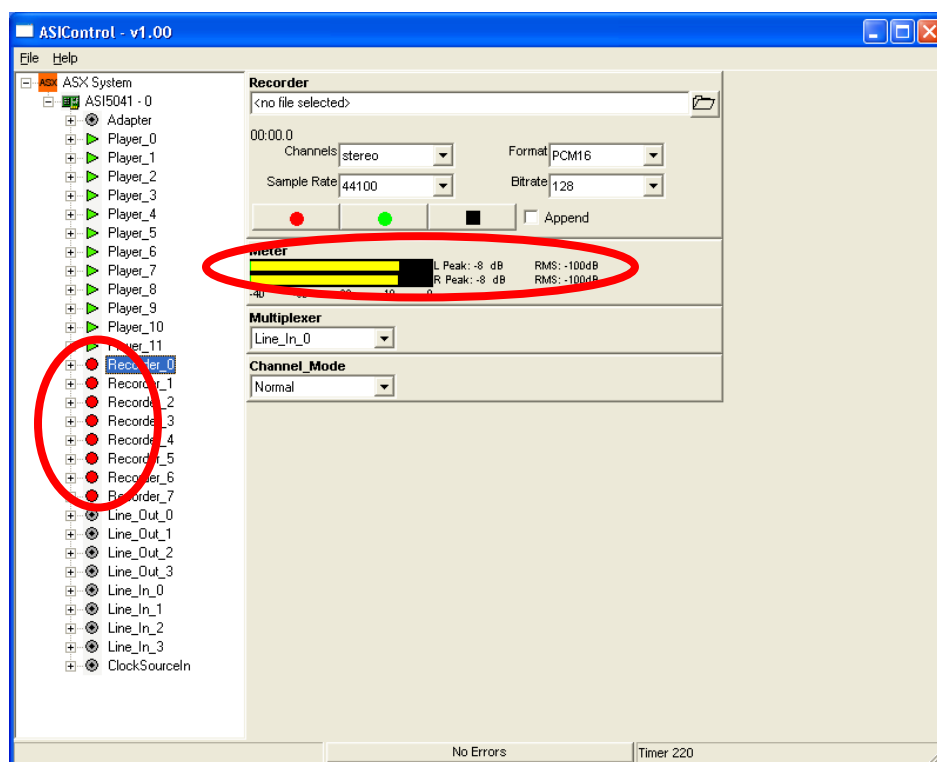


Figure 41 - ASI5041 Multi Channel Audio Control Mixer

18.2.2 Lynx One Cards

When using the Lynx card the following information may be useful. Checks to ensure it is properly installed and is functioning correctly:

1. Open the Lynx One mixer.
2. Audio Source Digital Out goes into LYNX Audio Card Digital In.
3. Word Clock should be connected (44100)
4. If correctly connected, the Digital In panel should show PRO and lock.
5. Sample Clock should show the following:
 - a) Source: Digital
 - b) Reference: Auto
 - c) Auto Selection should be checked.
 - d) Reference: Word
6. Digital Format: Out of the two options, AES/EBU should be selected.
7. Lynx One should show activity in meter.

18.3. Other Items to consider when Troubleshooting

1. The Firmware version of your HD Receiver may need to be upgraded - contact iBiquity for information.
2. Software version of the FSi 10 HD Signal Generator (or XPi 10 Exporter) is currently 2.3.3.

19. IDi 20 Software Upgrades

The latest **IDi 20** software and upgrade instructions are available on the Broadcast Electronics Customer Service website at www.bdcast.com in the registered user login area.

20. Digital Customer Service Contact Information

Digital Customer Service -

Telephone: (217) 224-4700

E-Mail: service@bdcast.com

Fax: (217) 224-6258



21. Terms and Definitions

AAS	Advanced Application Services
AES/EBU	Audio Engineers Society/European Broadcast Union
AM	Amplitude Modulation
EASU	Exciter Auxiliary Service Unit
EOC	Ensemble Operations Center
FM	Frequency modulation
IBOC	In-Band On-Channel
MF	Medium Frequency
MPA	Main Program Audio
MPS	Main Program Service
PAD	Program Associated Data
QoS	Quality of Service
SIS	Station Information Service
SPS	Supplemental Program Service
VHF	Very High Frequency
WAN	Wide Area Network
LAN	Local Area Network
CM	Connection Manager
LP	Logistics Processor
IDi	Broadcast Electronics' brand name for an Importer
FSi	Broadcast Electronics' IBOC Signal Generator
FXi	Broadcast Electronics' Digital Exciter

Figure 42 - Terms and Definitions

