Importer

Operations and Maintenance Manual

Document: IMPORTER-OPS-MAINT

Issue: 2.02 2007-07-04

Status: Preliminary

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The comparisons and other information provided in this document have been prepared in good faith based on publicly available information. The reader is encouraged to consult the respective manufacturer's most recent published data for verification.

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ABOUT THIS MANUAL

This manual provides technical information needed when operating, maintaining and troubleshooting an Importer. This manual is intended for use by transmitter operators and field technicians.

USING THIS MANUAL

If you are responsible for configuring or operating an Importer, see Section 1, "Operating the Importer" on page 1-1.

If you are performing troubleshooting, see Section 2, "Troubleshooting" on page 2-1.

If you are performing scheduled maintenance, or planning your maintenance schedule, see Section 2, "Routine maintenance" on page 2-1.

PERFORMING PROCEDURES

When using procedures in this manual, perform each step in sequence.

- If you are asked to **see** another section of this manual, or another document, refer to that section or document for additional information, and continue the procedure.
- If you are asked to **go** to another step within the procedure, jump directly to that step without performing the intervening steps.
- If you are asked to **go** to another section or document, stop the procedure and perform the tasks described in the section or document.

CAUTION: FAILURE TO COMPLY WITH RECOMMENDATIONS MAY VOID YOUR MANUFACTURER'S WARRANTY. FOR MORE INFORMATION, REVIEW YOUR WARRANTY DOCUMENTS.

Note: When you have completed a task or a step, put a checkmark beside the step number.

Importer manuals

The Importer documentation suite includes the following documents:

Importer Pre-installation Manual, Importer-PREINST. The Pre-installation Manual provides instructions and reference information needed when planning and preparing for the installation of an Importer .

Importer Installation Manual, Importer-INST. The Installation Manual provides instructions and reference information needed when installing an Importer .

Importer Operating and Maintenance Manual, Importer-OPS-MAINT. The Operating and Maintenance Manual provides instructions for operating, maintaining and troubleshooting an Importer . It also provides reference information needed when performing diagnostic procedures.

HD Radio™ Importer User's Guide. The HD Radio™ Importer User's Guide provides detailed instructions for operating an Importer. It is provided as a supplement to the Operating and Maintenance Manual.

Nautel website / Online resources

The Nautel website provides useful resources to keep you up to date on your Importer.

Nautel User Group (NUG)

The website includes a special section that customers can log into in order to access the Nautel customer newsletter, product manuals, frequently asked questions (FAQ), information sheets, and information about field upgrades.

Documentation: online and printed

The website's NUG section provides online access to all the documentation for your Importer. Documentation is provided in Acrobat (PDF) format. You can use the documentation online or print the sections that you need.

When using online documents:

- Click on blue text (hyperlinks) to jump to a related section, or to get additional information (e.g., view a term's definition).
- To search a document to find keywords, use Find in Acrobat Reader's Edit menu.

- To quickly find a specific section, click the section in the PDF file's Bookmarks list.

When using printed documents:

- To find keywords, go to the *Index* section at the end of the manual.
- To find a specific term, go to the *List of Terms* section near the end of the manual.

SECTION 1: OPERATING THE IMPORTER

This section provides information about operating the importer:

- License key - see page 1-1
- Control panel- see page 1-4
- SPS processor - see page 1-7
- WebAdmin client- see page 1-9
- Backing up the configuration database - see page 1-18

Note: *The procedures in this section allow you to quickly configure the importer for standard operation. For detailed procedural and reference information, refer to* Section 8, Operating Procedures *of the* HD Radio™ Importer User's Guide *provided with this documentation.*

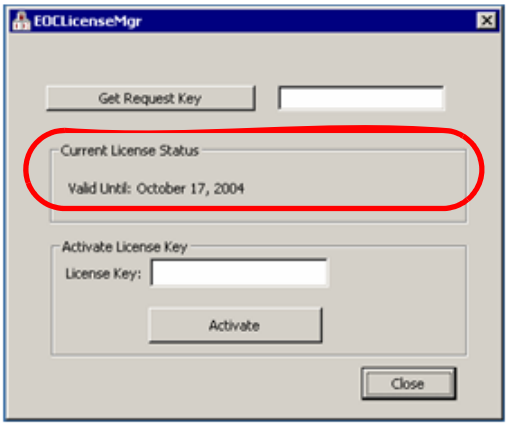
LICENSE KEY

The importer will not function without a valid license key issued by iBiquity Digital. The following steps describe how to check and renew your license key.

1. You can check the expiry date of the Importer license by opening the LicenseMgr application from either the desktop or the Start menu (on the Task Bar):

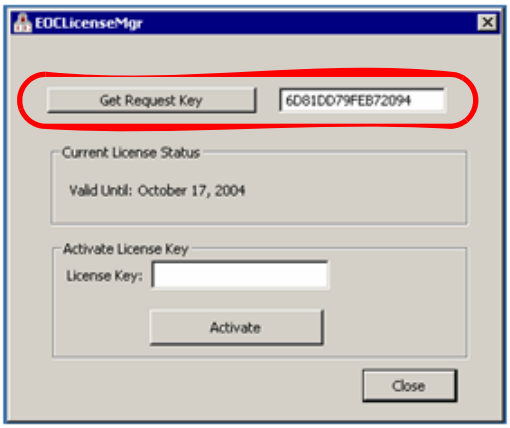
   - From the desktop: Click on the LicenseMgr icon.
   - From the Start menu:
     Click on Start > Programs > iBiquity Digital > Importer > LicenseMgr.

Figure 1.1: License Manager: Expiry Date



2. If your license is about to expire, click on the **Get Request Key** button. A 16-character code – the **Request Key** – will appear in the box to the right of the button.

Figure 1.2: License Manager: Get Request



3. Email the **Request Key** to importerkey@ibiquity.com. A 16-character activation code – the **License Key** – will be provided via return email.

4. Enter the **License Key** in the **License Key** box, then click on the **Activate** button.

Note: *The code for the* **Request Key** *is based on a number of parameters inside the Importer, one of which is the date. Therefore, the* **License Key** *is only valid from midnight to midnight on the day that the* **Request Key** *is emailed to Ibiquity.*

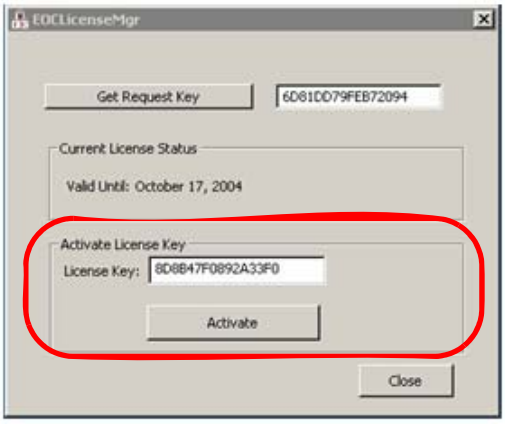
- If the **License Manager** application **is closed** after the **Request Key** is emailed to Ibiquity:

The License Key must be received and entered on the same day that the Request Key is sent to Ibiquity, or else the License Key will not work.

- If the License Manager application **is left open** after the Request Key is emailed to Ibiquity:

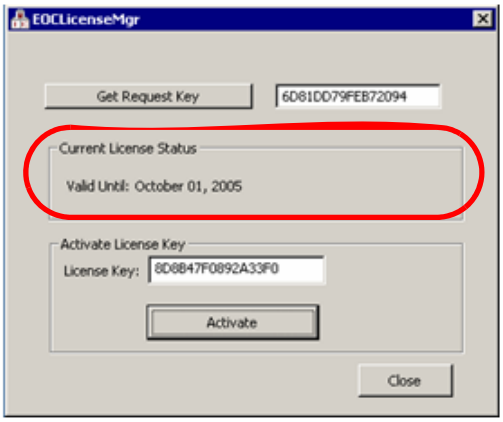
  The License Key will be valid, regardless of when it is entered.

Figure 1.3: License Manager: Activate License Key



5. Verify that the date in the Current License Status box has advanced by approximately one year (Figure 1.4 on page 1-3).

Figure 1.4: License Manager: Current License Status



CONTROL PANEL

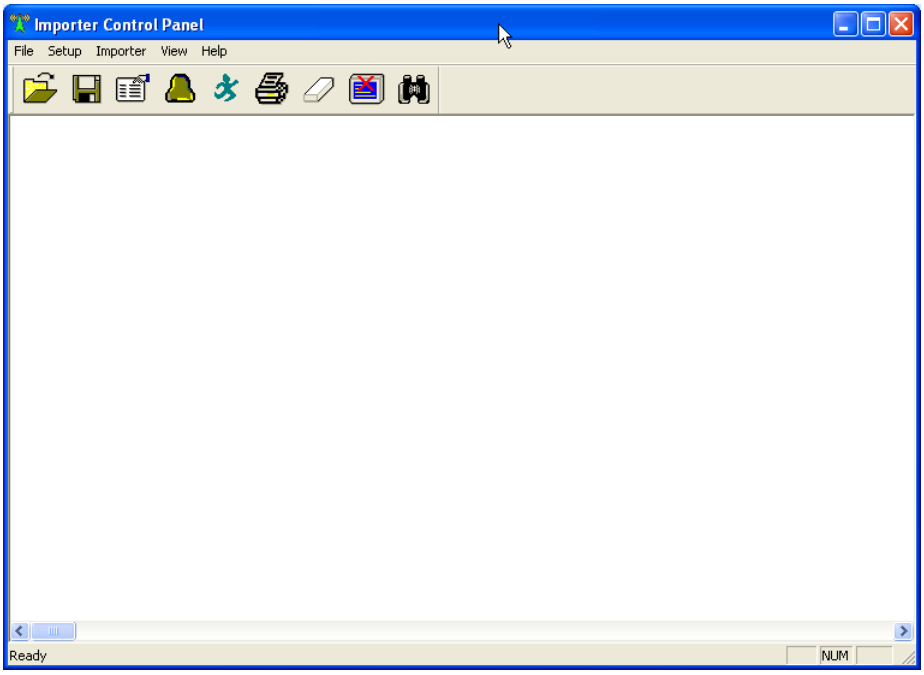
The importer software consists of a number of modules. These modules may be started and run individually or they may all be run through the Importer Control Panel. This manual contains information on running the importer software through the Importer Control Panel. For detailed information on the individual modules, see the *HD Radio Importer User's Manual*.

Start up the Importer Control Panel as follows:

1. Ensure the importer is connected to the NE IBOC or Exporter via Ethernet.

2. From the Windows desktop, double click the Importer Control Panel icon. The control panel application will start. See Figure 1.5

Figure 1.5: Importer Control Panel

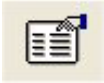


CONTROL PANEL FUNCTIONS

The Importer Control Panel allows the user to start and stop the importer, set various importer configuration options and control the importer's logging functions..

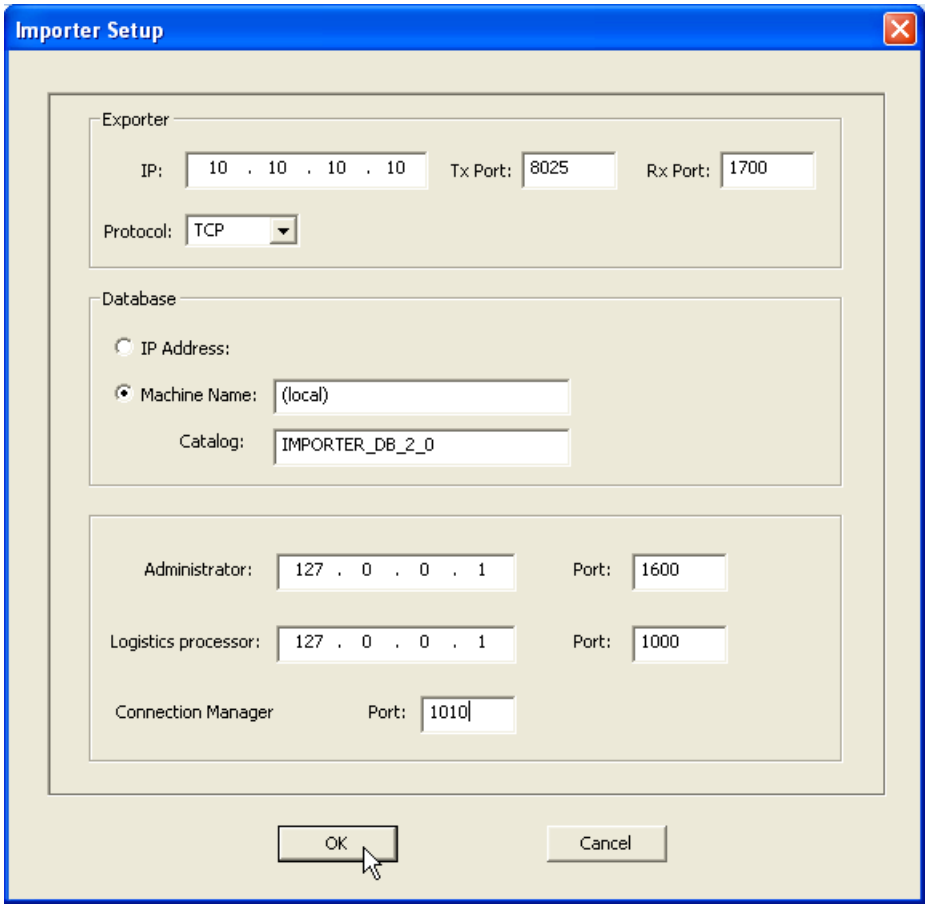
Starting the importer: Click the start icon to start the importer. A properly configured and connected importer will display a number of log messages indicating that the various modules have started successfully.

Stopping the importer: Click the stop icon to stop the importer. The icon appears in place of the start icon once he importer is started.



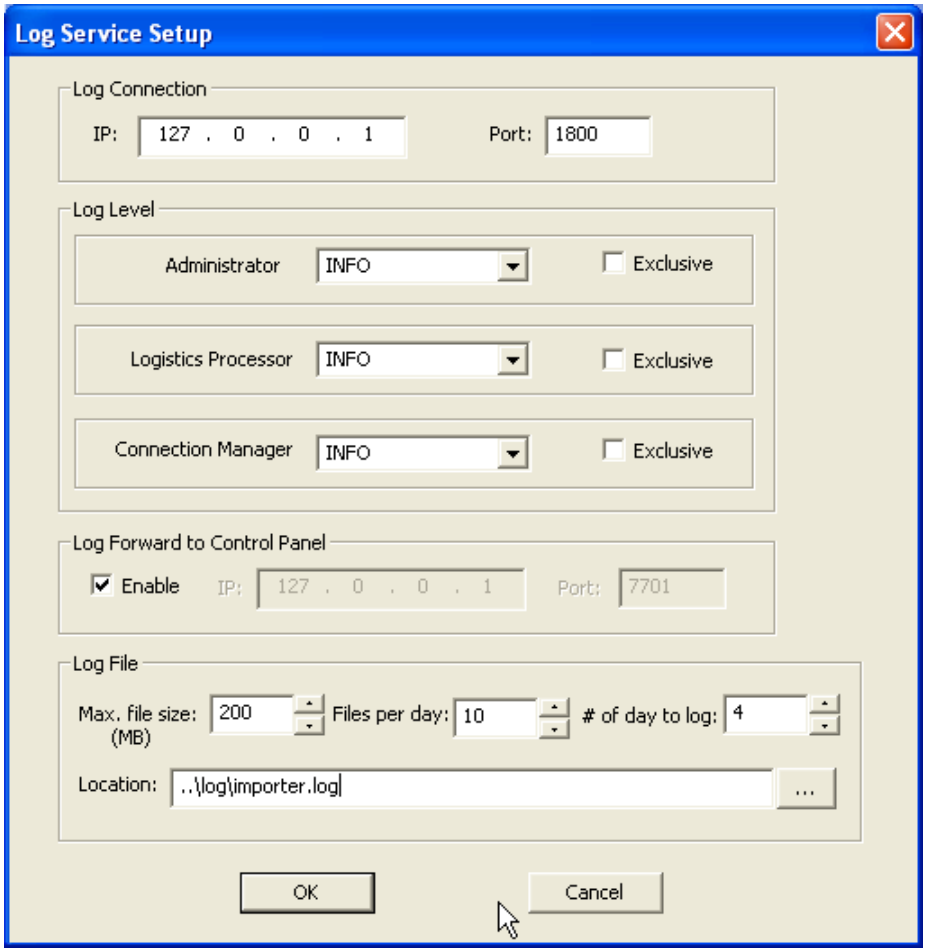
Importer Setup: Click the setup icon to enter the Importer Setup screen. See Figure 1.6. Typically the only setting which may be altered on this screen is the Exporter IP address. The TCP Protocol is preferred to UDP, but TCP only functions with v2.2.5 or later Exporters. Port numbers and software module IP addresses should not be changed.

Figure 1.6: Importer Setup Screen



Log Service Setup: Click the log service icon to set up the event logging parameters of the importer. The screen shown in Figure 1.7 should appear. Log levels, log file sizes and log file locations can be specified from this screen.

Figure 1.7: Log Service Setup Screenl



Disable Log Message Display: Click the print log icon to enable or disable the printing of log messages on the **Importer Control Panel**. When enabled, normal log messages are displayed in blue text. Error messages are displayed in red text. Warning messages are displayed in yellow text. Debug messages are dispalyed in black text.

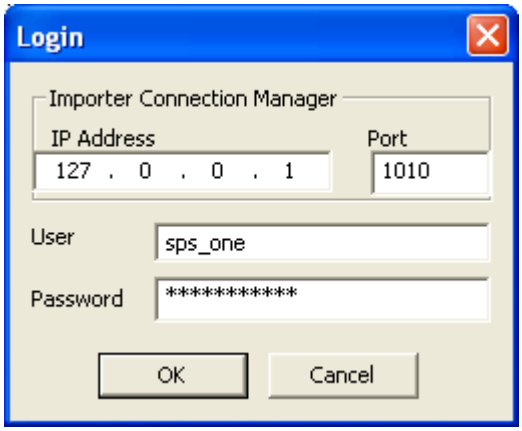
Other functions: Additional icons exist which allow for saving, printing, erasing and searching log files.

SPS PROCESSOR

Use the **SPS Processor** application as follows:

1. From the importer's desktop, double click on the **SPS1** icon. The **SPS Capture** application will start and the screen shown in Figure 1.8 will appear.

Figure 1.8: SPS Capture screen

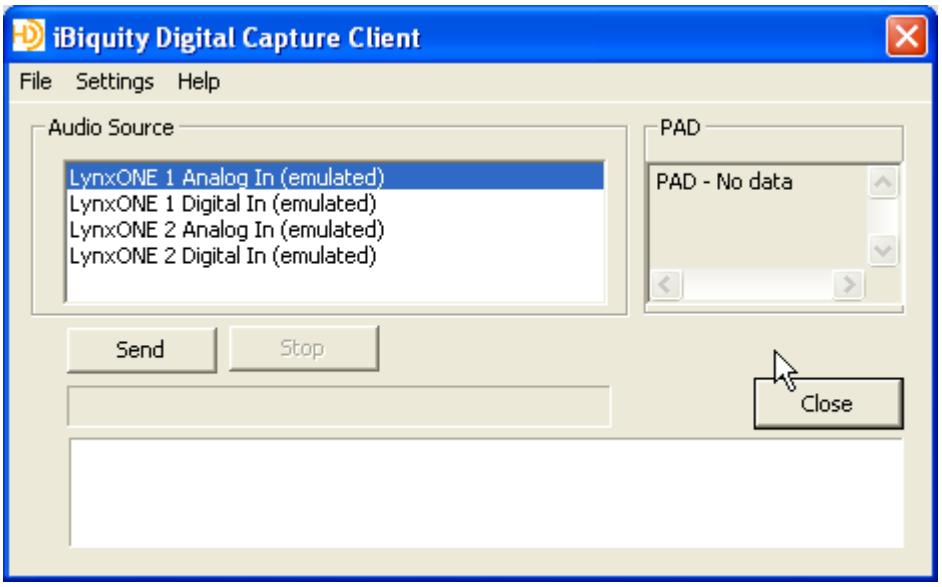


2. Enter the **User name** and **Password** and click **OK**. The screen shown in Figure 1.9 will appear. The **User name** and **Password** are non-volatile and will not need to be entered every time the SPS processor is started up. The default **User names** and **Passwords** for the two secondary channels are shown in Table 1.1.

Table 1.1: Default User Names and Passwords

Channel	User Name	Password
SPS1	sps_one	sps_one_pwd
SPS2	sps_two	sps_two_pwd

Figure 1.9: SPS Configuration screen



3. Depending on whether the input is AES/EBU (digital) or analog, select the appropriate **LynxONE Input**. Normally **LynxONE 1** is used for SPS1.

4. If a second audio card is installed, SPS2 must be run from its desktop icon. SPS2 would normally be mapped to one of the **LynxONE 2** inputs.

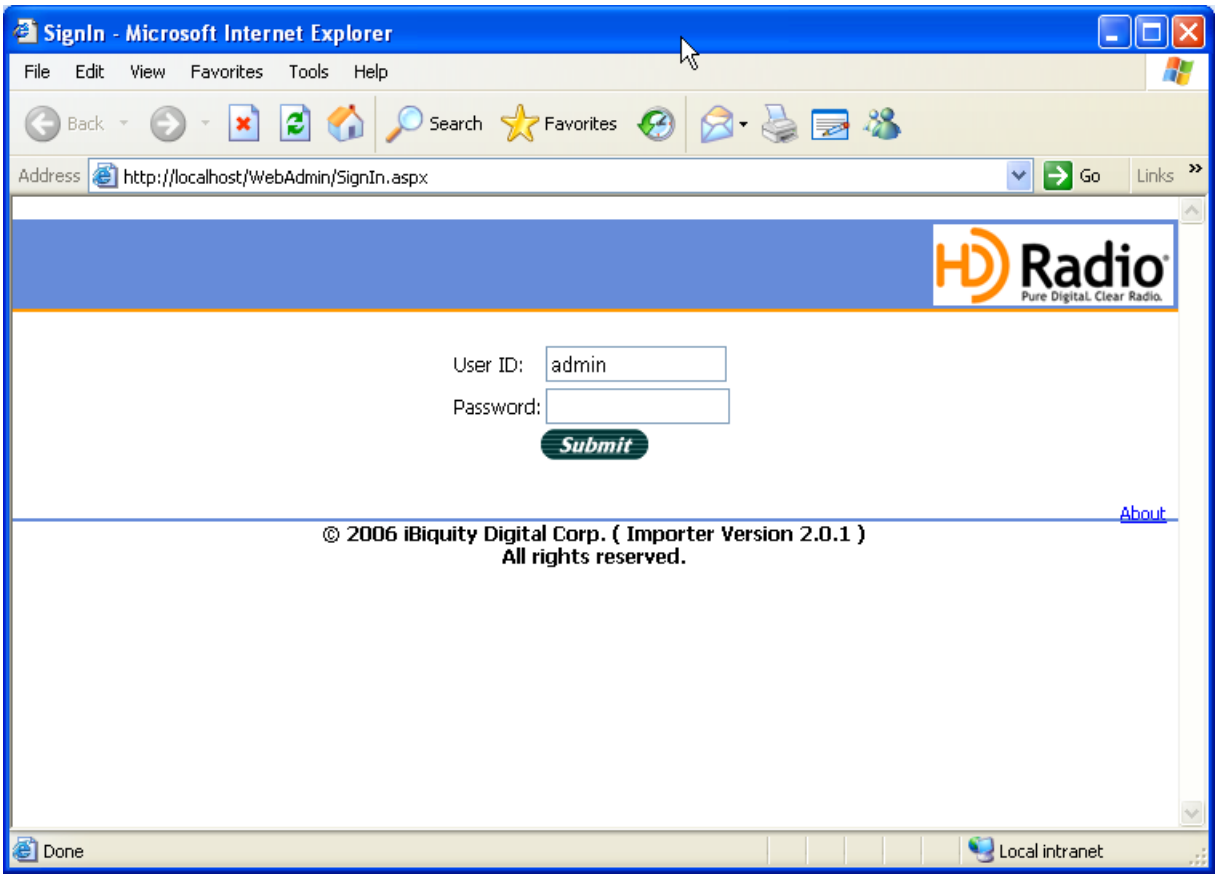
5. Click on the **Send** button to start the process.

WEBADMIN CLIENT

The importer WebAdmin client is an application used to perform administration functions - such as service provider registration, service definition and configuration management - on the importer.

Figure 1.10 shows the SignIn screen for the WebAdmin client. The importer is shipped with a default User ID ("admin") and a Password ("admin"). You can change the password from within the WebAdmin client.

Figure 1.10: WebAdmin SigIn screen



Once you enter the WebAdmin User ID and Password, the page shown in Figure 1.11 will appear. There are five tabs at the top, each of which opens a different WebAdmin page.

EXPORTER PAGE

The **Exporter** page (see Figure 1.11) displays the current exporter configuration including present service mode as well as the channel configuration. It will also indicate if the importer and exporter are not synchronized.

Take care to ensure that the exporter is synchronized whenever a change is made to an importer configuration. Do this before attempting to broadcast any AAS sevices. If the importer and exporter need synchronization, a message indicating the reason, as well as a **Synchronize** button, will also appear (see Figure 1.12).

Figure 1.11: Exporter page

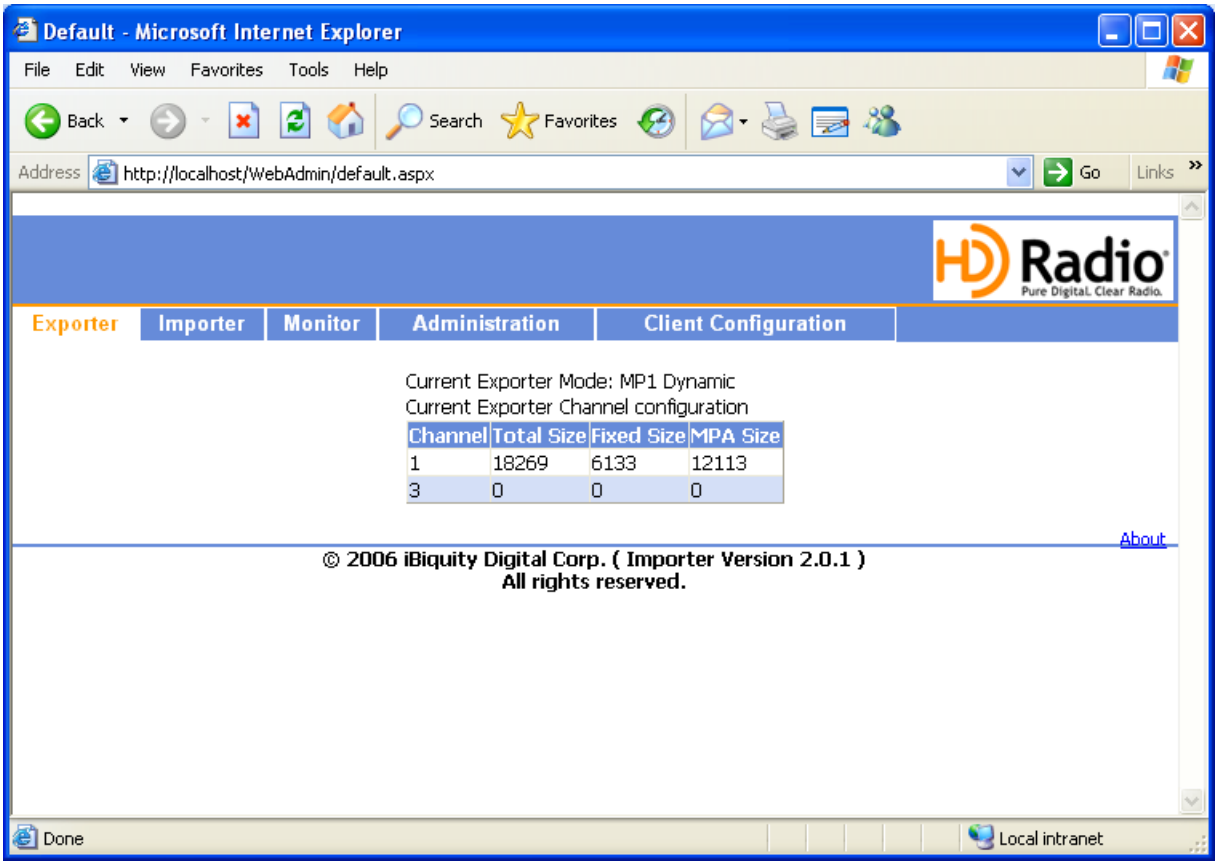
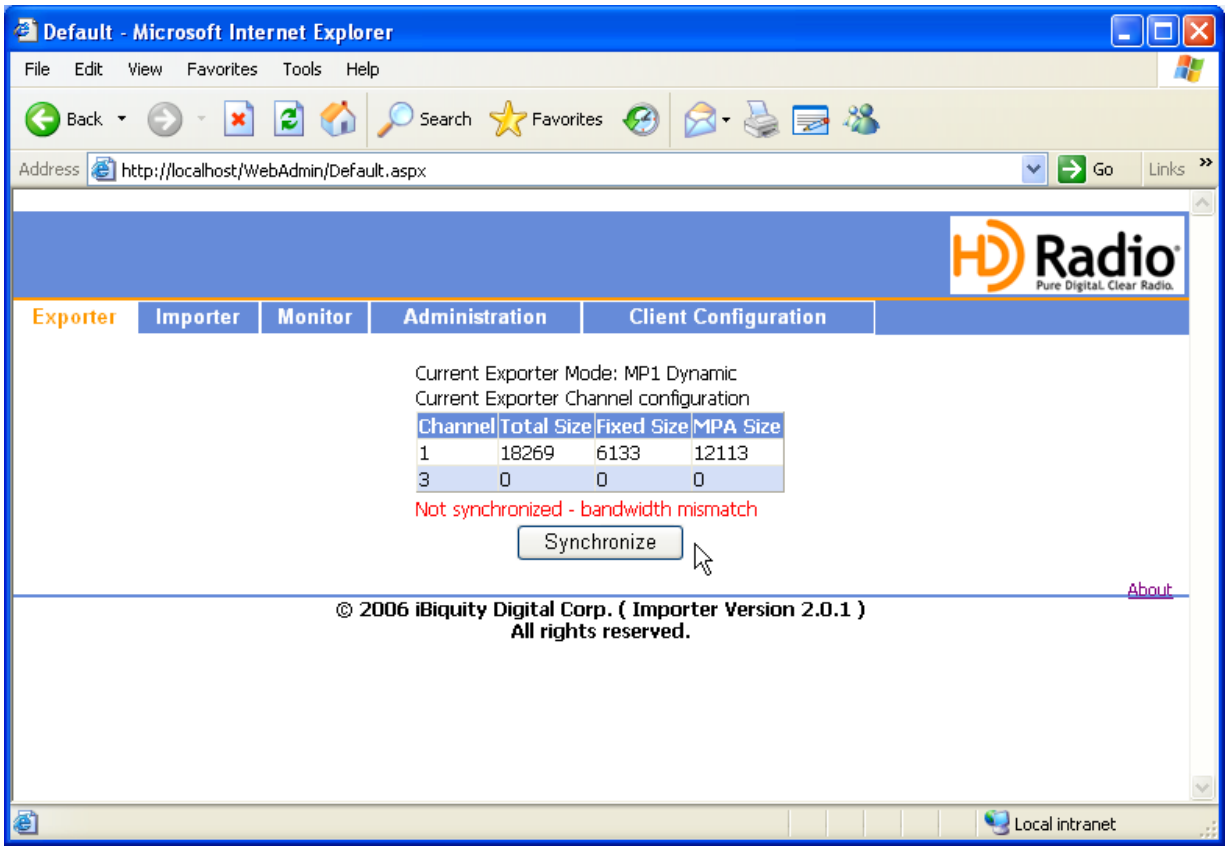


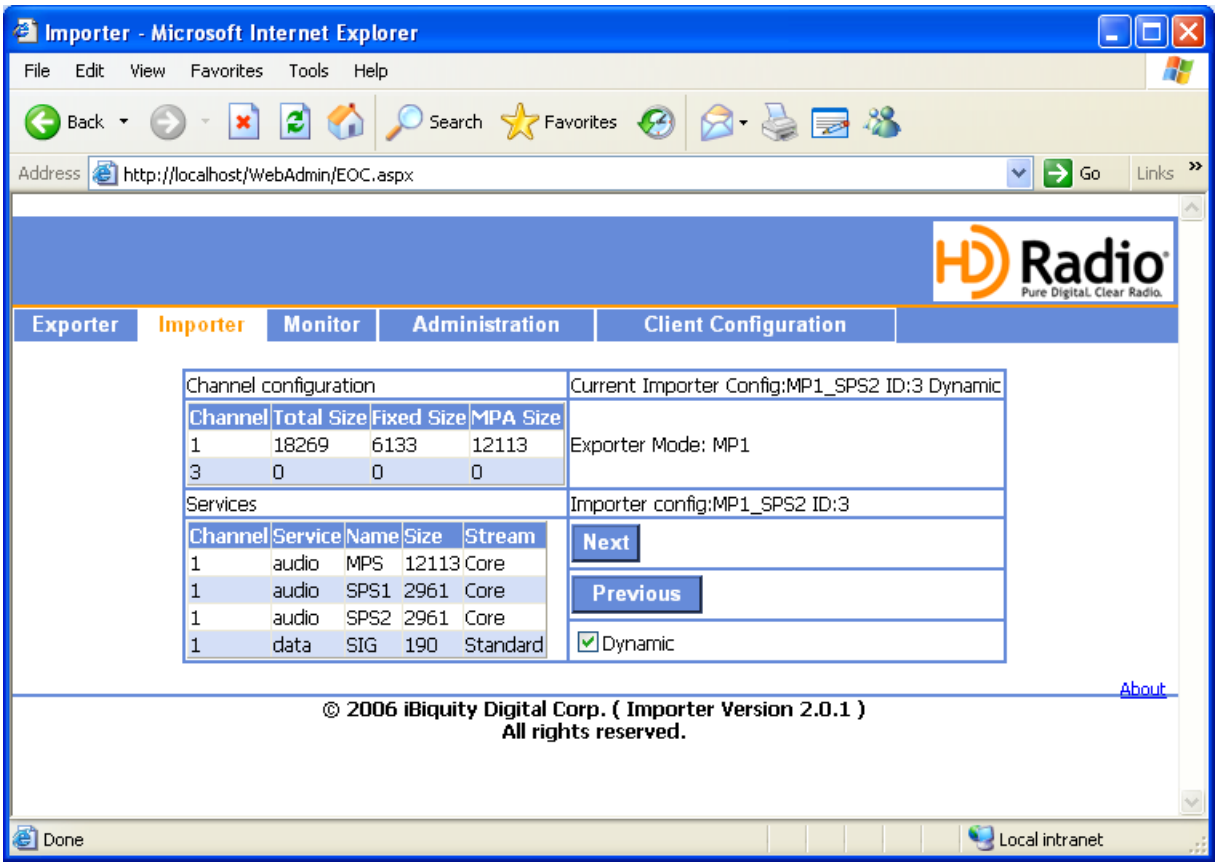
Figure 1.12: Synchronize page



IMPORTER PAGE

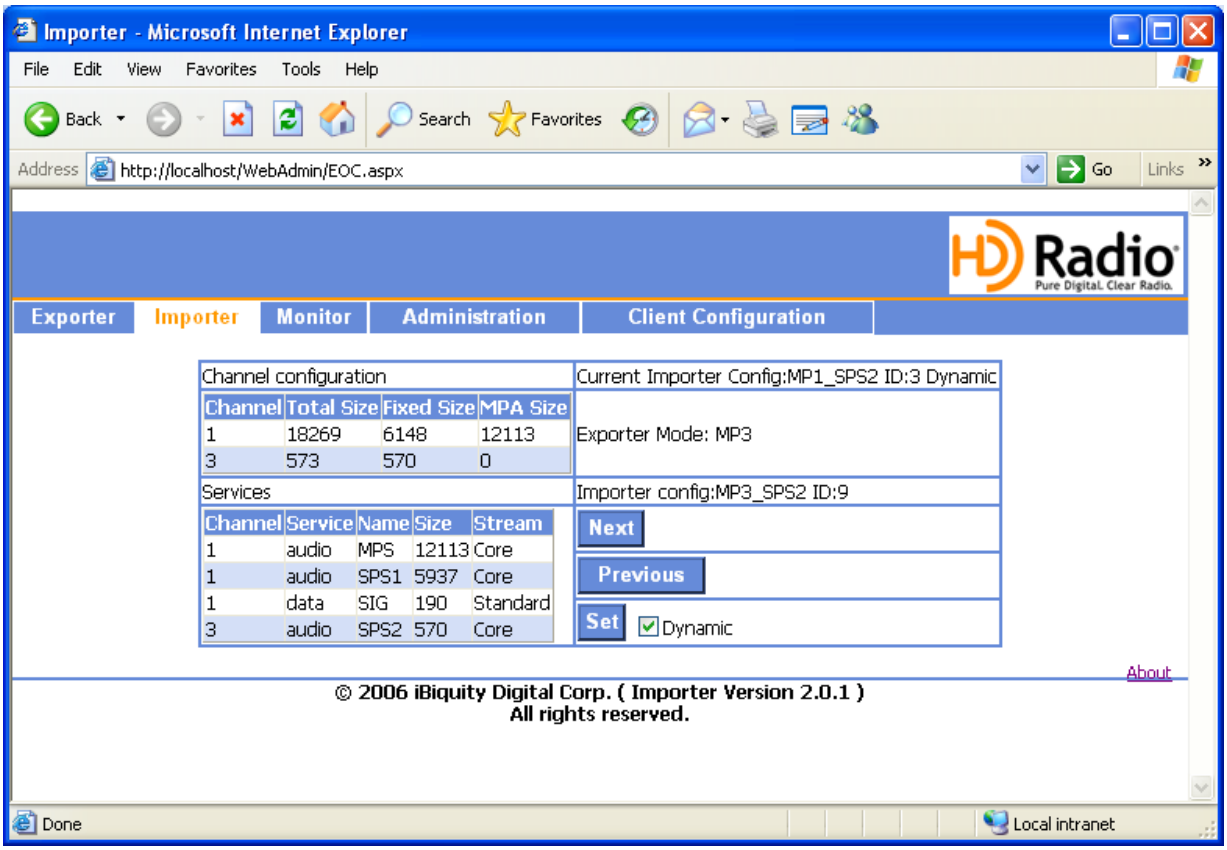
The **Importer** page (see Figure 1.13) displays current configuration and allows the user to change the active configuration.

Figure 1.13: Importer page (view configurations)



The **Next** and **Previous** buttons are used to cycle through all of the available configurations. The **Set** button (see Figure 1.14) is used to change the configuration.

Figure 1.14: Importer page (change configurations)



MONITOR PAGE

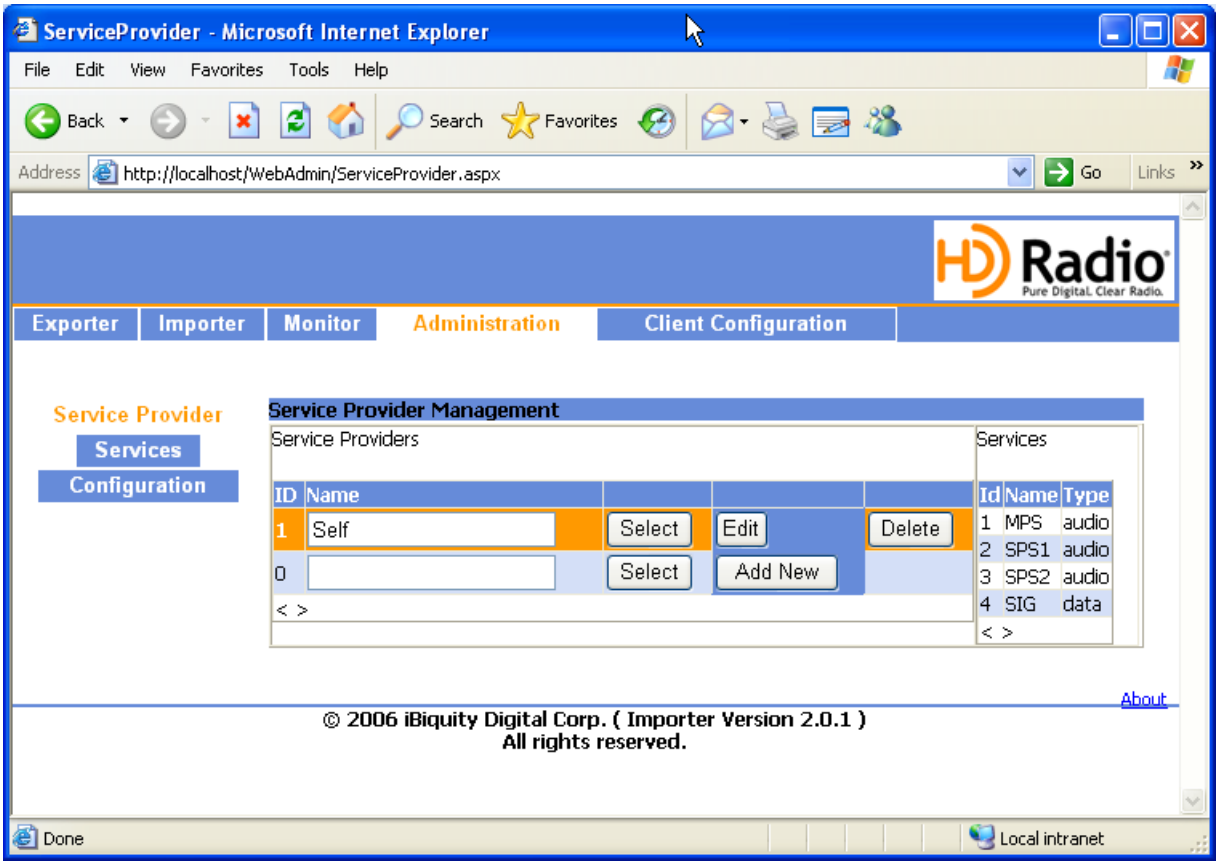
The **Monitor** page is simply a placeholder for future features.

ADMINISTRATION PAGE

The **Administration** page (see Figure 1.15) provides access to multiple pages - Service Providers, Services and Configuration.

The following section describes how to change audio bandwidth allocation in a configuration. Refer to the *Importer HD User's Guide* to change other parameters such as modifying service provider or services.

Figure 1.15: Administration page



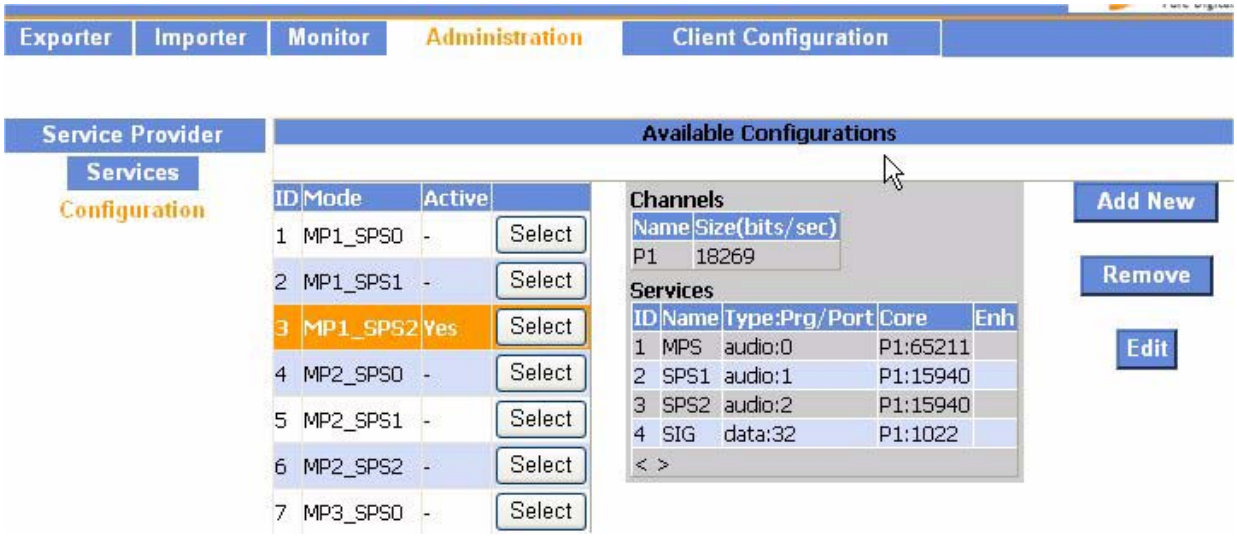
CHANGING SERVICE BANDWIDTH ALLOCATION

One of the primary functions which can be performed from the **Administration** page (see Figure 1.15) is the allocation of bandwidths for the various services.

Change your bandwidth allocation as follows:

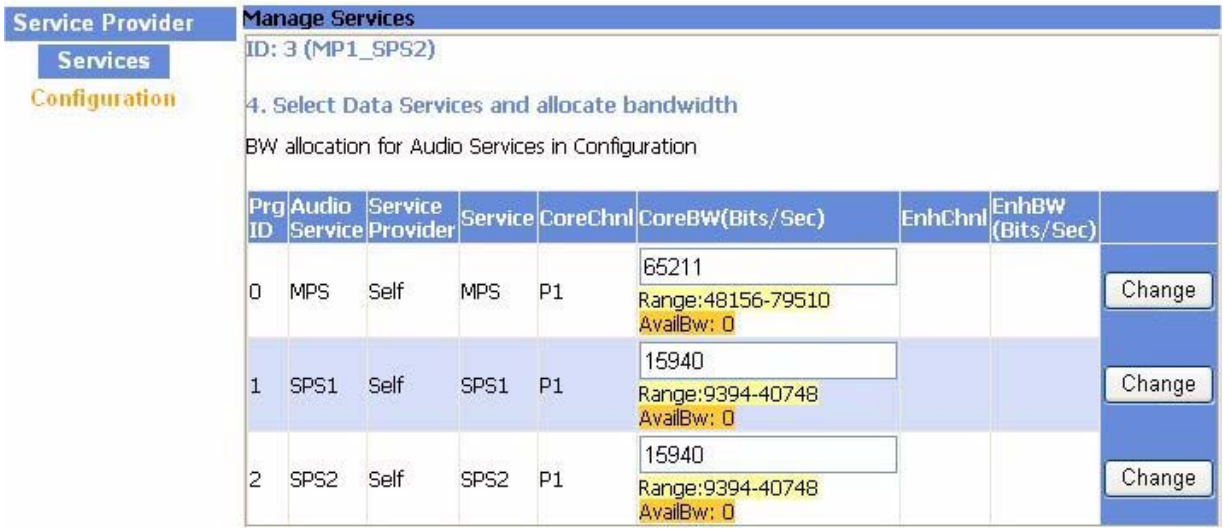
1. From the **Administration** page select a **Configuration**. It will be highlighted orange. The currently active configuration will also be highlighted in orange (see Figure 1.16).

Figure 1.16: Edit Configuration



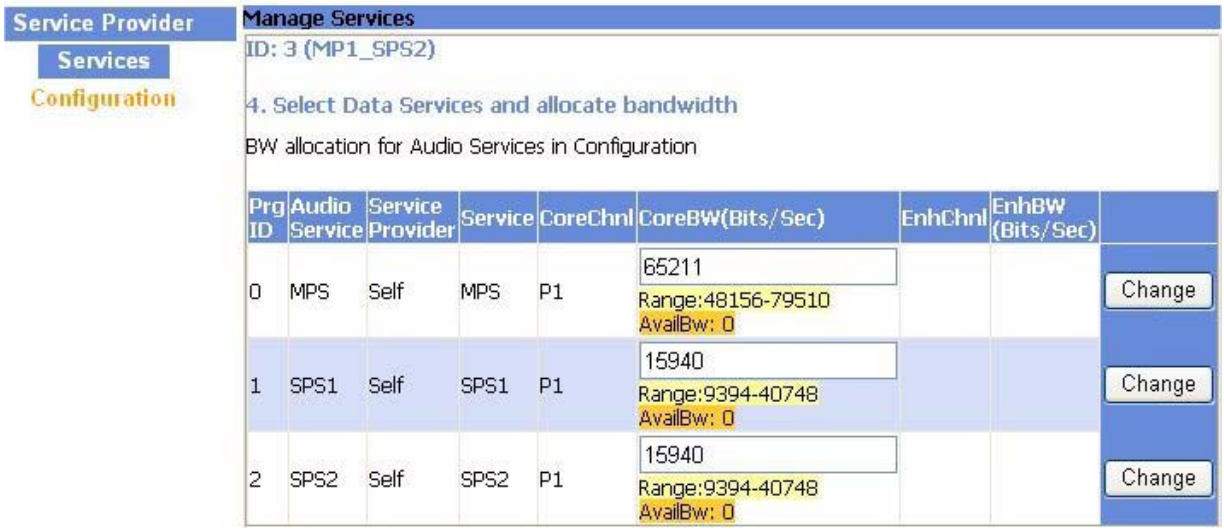
2. Select the blue **Edit** button to move to the next dialog. Each of the audio services is displayed as shown in Figure 1.17. The additional available bandwidth is also indicated.

Figure 1.17: Bandwidth Allocation for Audio Services



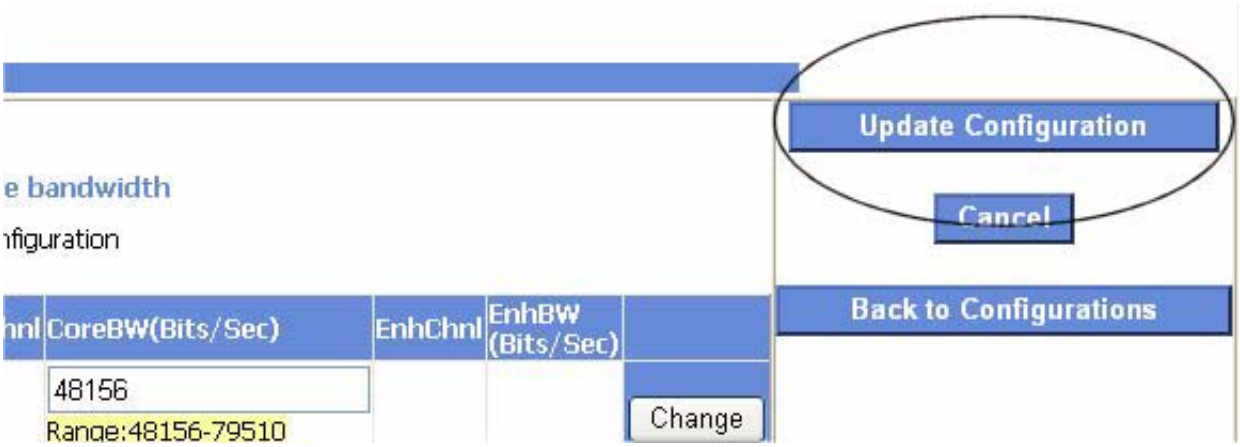
3. Select the **Change** button associated with the service to be changed. Change the bandwidth by editing the value in the **CoreBW (Bits/Sec)** column. Once a new value has been entered, select the **OK** button. The available bandwidth (**AvailBw**) numbers for the various channels will update (see Figure 1.18)

Figure 1.18: Available Bandwidth after Change



4. Select the **Update Configuration** button in the upper right portion of the page (see Figure 1.19).

Figure 1.19: Update Configuration



5. To implement this changed configuration, return to the Importer page (see Figure 1.13).

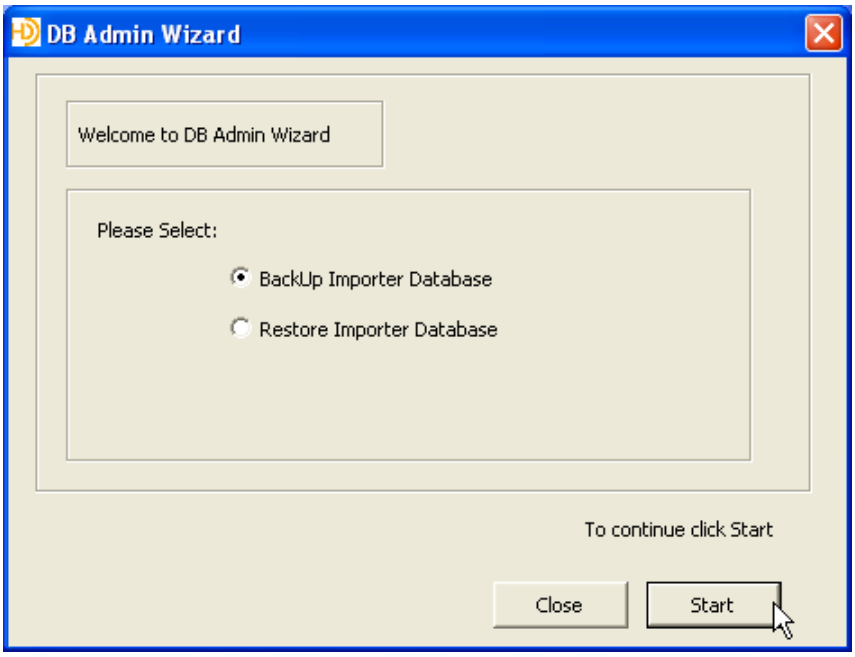
BACKING UP THE CONFIGURATION DATABASE

It is important that any changes made in the importer configuration (service providers, service bandwidths, contracts, etc.) are saved in a safe location. This will allow system restoration if a hardware failure occurs, or a mistake is made while modifying the configuration.

The importer includes an application, the DB (database) Administration Wizard, for backing up or restoring the database.

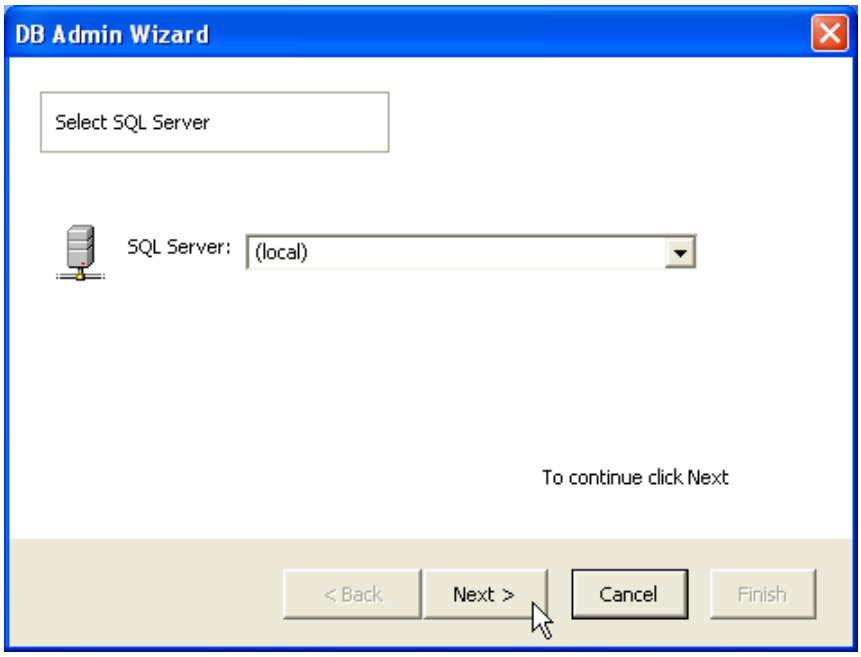
1. Run the application by double clicking the DBAdmin icon on the importer desktop. The screen shown in Figure 1.20 will appear.

Figure 1.20: DB Administration Wizard Welcome screen



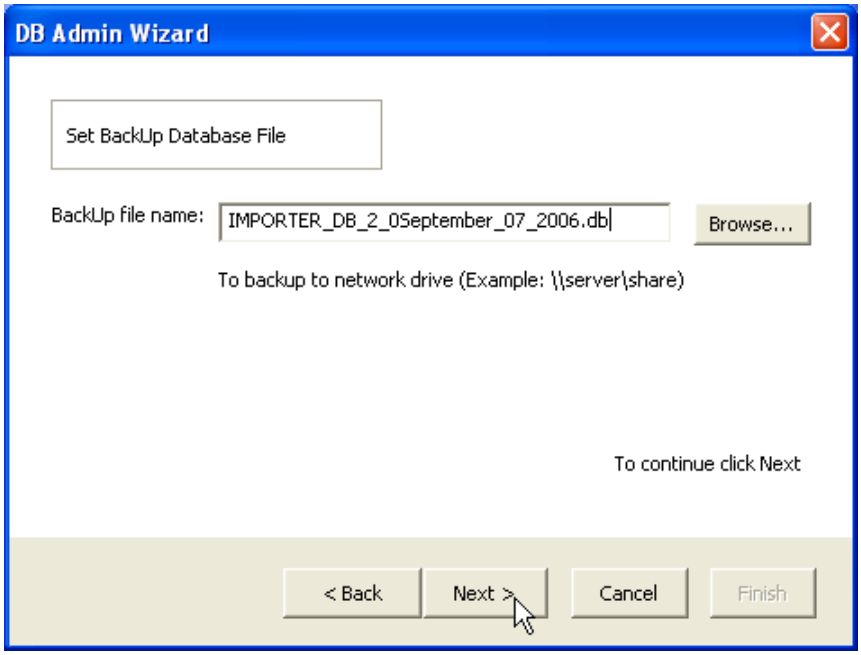
2. Select Backup Importer Database and click on Start. The screen in Figure 1.21 will appear.

Figure 1.21: DB Administration Wizard SQL Server screen



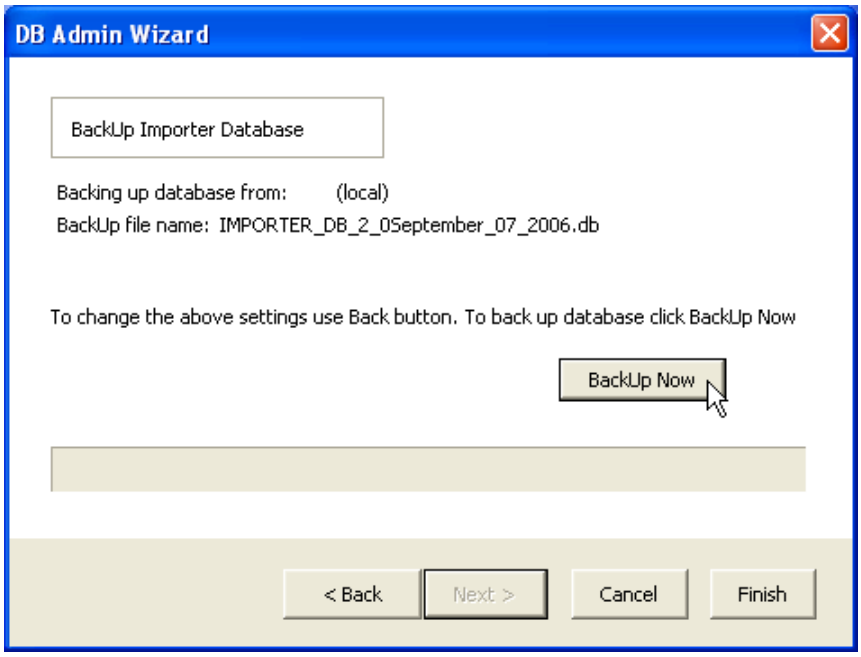
3. Select (local) to connect to the SQL server which is running on the importer. Click Next. The screen in Figure 1.22 will appear.

Figure 1.22: DB Administration Set Backup Database screen



4. Enter a path and name for the backup database. Click **Next**. The screen in Figure 1.23 will appear.

Figure 1.23: DB Administration Backup and Finish screen



5. Click the **Backup Now** button. When the backup process is complete, click **Finish** to exit.

SECTION 2: TROUBLESHOOTING

This section provides instructions you need when responding to an importer or system fault. This section includes the following topics:

- Checking audio - see page 2-1
- Checking cable connections - see page 2-3
- Parts information - see page 2-6

CHECKING AUDIO

Use the Windows XP software associated with the audio card to troubleshoot potential audio problems as follows:

1. Click on the icon at the bottom of the **Windows XP** taskbar that displays the **LynxONE Mixer** screen (see Figure 2.1).
2. If the audio card is receiving a proper AES/EBU signal, the channel will indicate a green **Lock** status. The blue **Pro** status indicates AES/EBU.
3. When the SPS application is running, the audio level bars will indicate the audio levels. Ensure that the **Levels** check box is set.
4. If there is more than one audio card, use the **Mixer** pull-down menu to select the desired audio card.
5. If the digital input is not connected, the **LynxONE Mixer** screen will appear as shown in Figure 2.2

Figure 2.1: LynxOne Mixer Screen

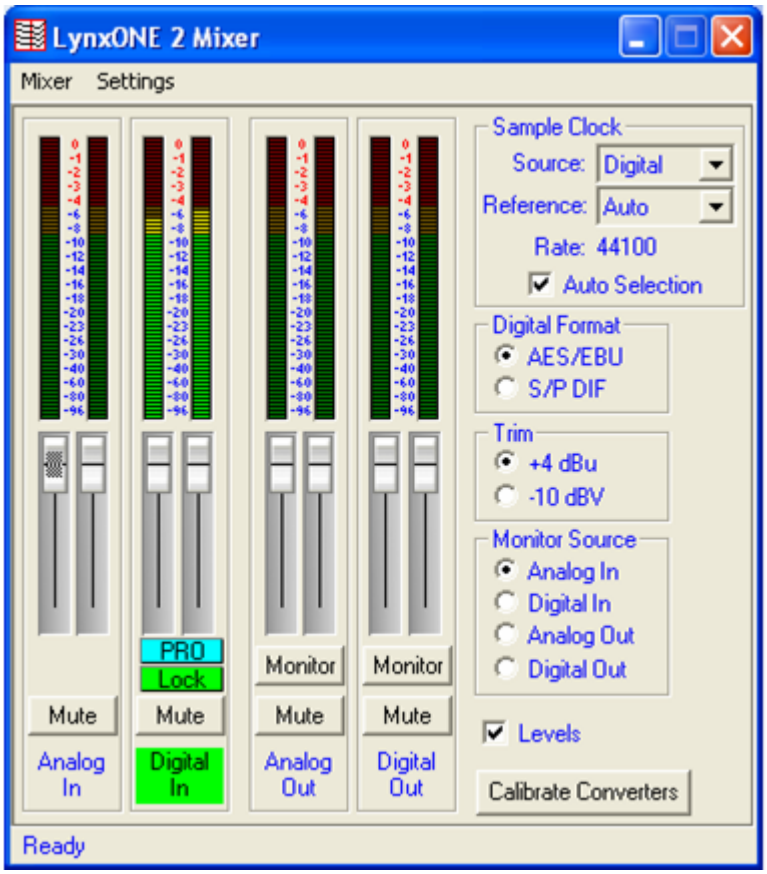
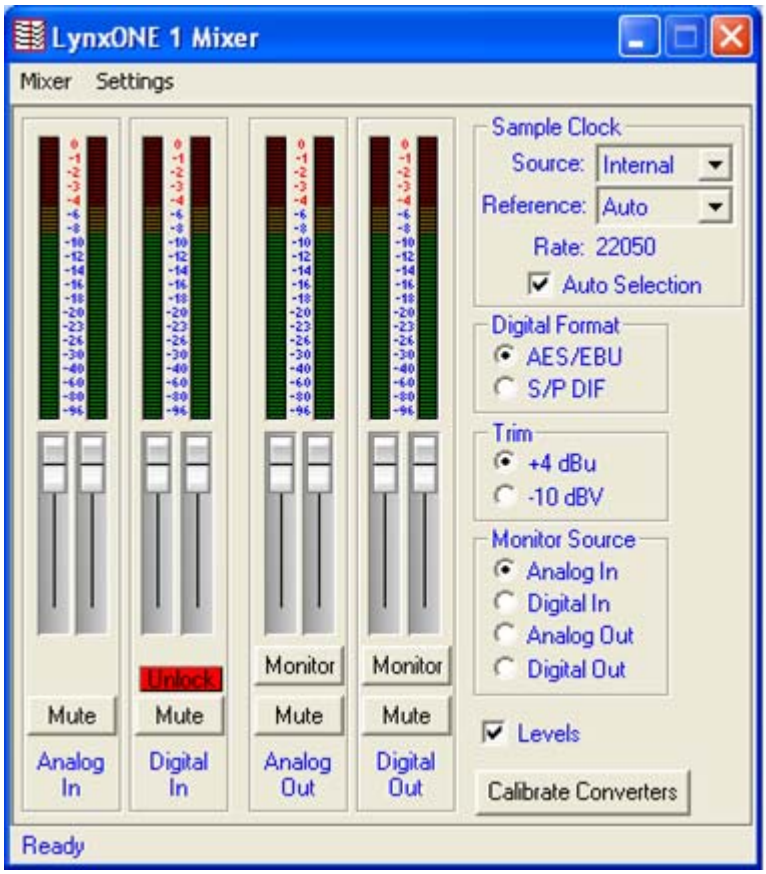


Figure 2.2: LynxOne Mixer Screen, Digital Input not Connected



Note:*Consult the audio card's* LynxOne Installation and Users Guide *for detailed instructions on using this application.*

CHECKING CABLE CONNECTIONS

Verify that the importer's internal cables are connected properly as follows:

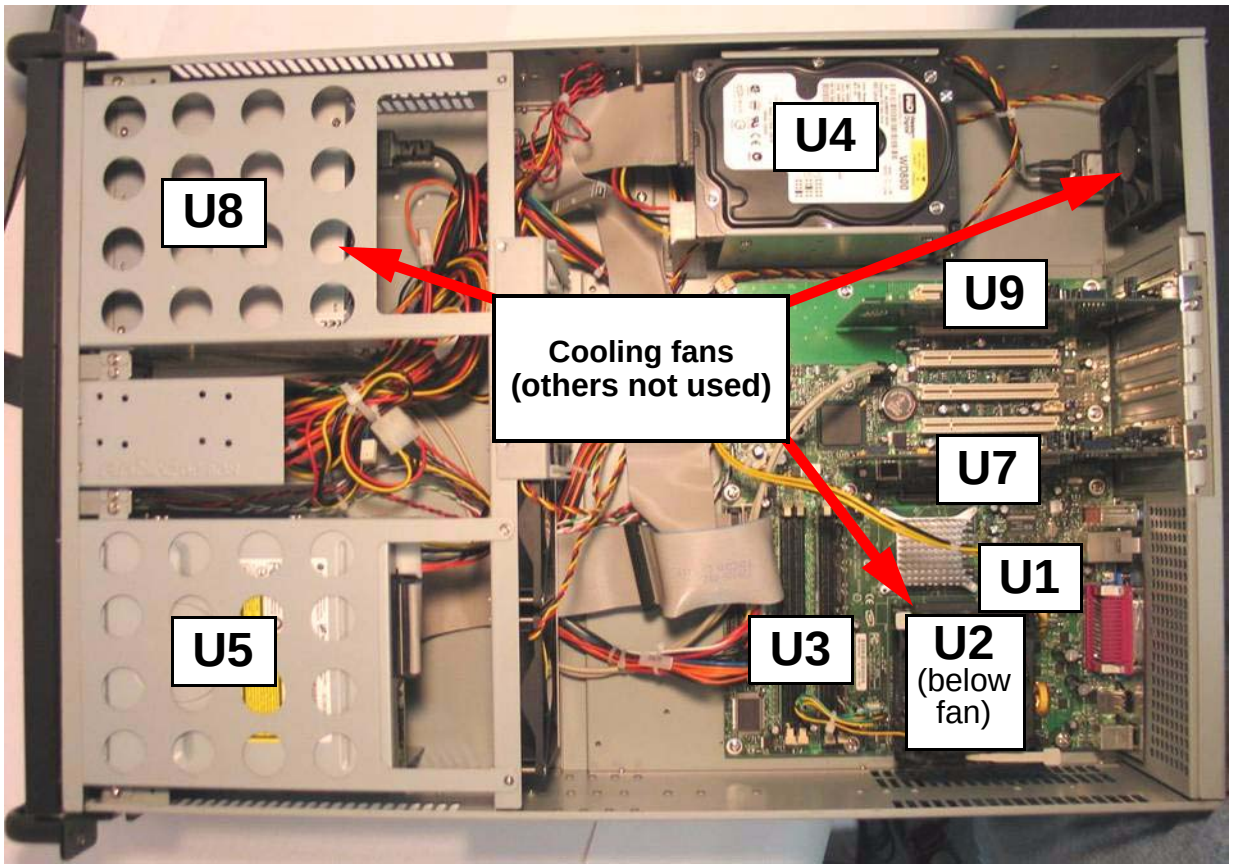
1. Remove the importer's top cover.

2. Inspect the cables and connections. If a connector is unseated or disconnected, ensure it is reconnected to its mate as identified in Table 2.1. If necessary, see Figure 2.3 on page 2-5 to identify the importer's sub-assemblies.

Table 2.1: Connector Mating Information

Connector	Mate	Notes
P1	U1J3J1	Power
P2	U1J5B1	+12 V
P3	U1J9F1	FP USB
P4	U1J6J1	Secondary IDE CD
P5	U1J6J2	Primary IDE HD
P6	U1J2F1	CPU Fan
P7A	U1J9J1	Orange 1, White 3
P7B	U1J9J1	Purple 5, White 7
P7C	U1J9J1	Red 6, Black 8
P8	U1J9J3	Green 1, White 3
P9	U1J7J3	Front Fan
P10	U1J7J3	Hard Drive
P11	U4J2	P/S
P12	U5J1	CD-ROM
P13	U5J2	P/S

Figure 2.3: Importer Sub-assemblies



PARTS INFORMATION

For the purposes of identifying and possibly ordering replacement parts, the importer's internal assemblies are identified in Table 2.2. The table provides the reference designation, a description, and the Nautel part number for each item.

Table 2.2: Importer Parts List

Reference Designation	Description	Nautel Part #
U1	Motherboard, desktop, OEM, LAN, P4, 865G	UA94
U2	IC, Pentium, 4.3 GHz, 800 MHz FSB, Retail	UR81
U3	Memory, 512 MB, 400 MHz, DDR, PC3200, DIMM, CL3	UX80
U4	Hard drive, WD Caviar SE, Enhanced IDE, 80 GB	UX79
U5	CD-ROM drive, 52x, Black	UX98
U6	Software, Microsoft XP Windows PRO	UW65
U7	Board, audio, 1 digital 2 analog I/O, PCI bus	UA93
U8	Case, computer, 19" rack, c/w 350 W P/S	UW62
U9**	Board, audio, 1 digital 2 analog I/O, PCI bus	UA93
** - Used only when a second SPS audio source is required.		

SECTION 3: ROUTINE MAINTENANCE

This section provides instructions for performing routine maintenance on the importer. This section includes the following topics:

- Checking the fans - see page 3-1
- Cleaning the fan filter - see page 3-2

CHECKING THE FANS

The importer contains three operational cooling fans (see Figure 2.4 on page 2-6). In order to maintain your importer warranty and prevent premature component failures, check the fans periodically.

INTERVAL

- Every six months in typical environments.
- Every three months in dusty, humid or harsh environments.

PROCEDURE

Take the following steps to check the fans:

1. Remove the importer's top cover. If possible, allow the importer to continue normal operation.
2. Verify that the three cooling fans are turning at an acceptable speed and that there are no visible obstructions.
3. If you need to closely inspect a fan, clear an obstruction, or replace a fan, you must turn off the importer. You should also remove the ac power connection at the back of the importer.

Cleaning the fan filter

In order to maintain your importer warranty and prevent premature component failures, clean your importer's fan filter periodically.

Interval

Every six months in typical environments. Every three months in dusty, humid or harsh environments.

Procedure

Take the following steps to clean the importer's fan filter:

1. Open the importer's front cover using the key provided.
2. Remove the four Philips screws from the back of the front cover and remove the fan filter.
3. Clean the fan filter using soap and warm water. If the fan filter is damaged, replace it immediately.
4. Reinstall the fan filter in the front cover.
5. Restore the locked cover to the front of the importer if desired.

SECTION 4: LIST OF TERMS

This section defines some of the terms that are used in Nautel documentation.

AAS. Advanced Application Services

AES-EBU. Audio Engineering Society/European Broadcasting Union (AES/EBU) is the name of a digital audio transfer standard. The AES/EBU digital interface is usually implemented using 3-pin XLR connectors (the same type of connector used in professional microphones). One cable carries both left- and right-channel audio data to the receiving device.

CAT-5. Short for Category 5. Network cabling that consists of four twisted pairs of copper wire terminated by RJ45 connectors.

EASU. The Exciter Auxiliary Services Unit accepts the studio feed audio in AES/EBU format and converts it to the 44.1 kHz sampling rate used throughout the system. The EASU also contains the GPS receiver that locks onto the Global Positioning System, and determines the site location and time. This information is then passed onto the NE IBOC to be transmitted as part of the station information. The GPS receiver also provides 10 MHz and 1 PPS signals that are used within the NE IBOC for synchronization purposes.

EOC. Ensemble Operations Center.

EXGINE. An HD™ Radio component which resides in the exciter. The Exgine decodes the Exciter link data and produces the appropriate I/Q modulation.

GPS. The Global Positioning System is a system of satellites and receiving devices used to compute positions on the Earth.

GUI. Graphical User Interface

HD™ RADIO. High definition (HD) Radio is another term for In Band On Channel (IBOC) technology. HD Radio is a trademark of the Ibiquity Digital Corporation.

IBOC. Nautel In-Band-On-Channel technology provides high quality digital audio over existing AM and FM radio channels.

LAN. Local Area Network.

MPS. Main Program Service

NE IBOC. Nautel's In-Band-On-Channel signal generator. See IBOC. Required for XR series IBOC installations.

PAD. Program-Associated Data.

SPS. Supplemental Program Service. Sometimes called SAC. In initial tests, NPR called this Tomorrow Radio.

STL. Studio-transmitter Link. A studio-transmitter link sends a radio station's audio signals from a broadcast studio to a transmitter located some distance away from the studio.

TSL. Transmitter-studio Link. A transmitter-studio link returns data (e.g., monitoring information) from a transmitter site to a broadcast studio located some distance away from the transmitter.

UDP. User Datagram Protocol. A core internet protocol whereby programs on networked computers can send short messages between one another.

VNC. Virtual Network Connection.

XLR. A 3-pin connector used for a balanced audio cable. Used in pro-audio equipment and AES/EBU digital audio.

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Importer

Operations and Maintenance Manual

Document: IMPORTER-OPS-MAINT

Issue: 2.02 2007-07-04

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