

# **SoundCode For Dolby Digital 2**

## **Plug-In Users Guide**

**Version 2.0 for Pro Tools Systems on Windows and  
Macintosh**

**Created By Neyrinck**  
San Francisco, CA USA  
[www.neyrinck.com](http://www.neyrinck.com)  
[info@neyrinck.com](mailto:info@neyrinck.com)

**Technical Support**  
[neyrinck.com/support](http://neyrinck.com/support)  
[support@neyrinck.com](mailto:support@neyrinck.com)

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# Chapter 1 - Introduction

## Welcome To SoundCode For Dolby Digital 2

SoundCode For Dolby Digital 2 is a mastering quality set of plug-ins for previewing, encoding, and decoding Dolby Digital audio in Pro Tools systems. Version 2.0 adds a new realtime preview plug-in that makes it easy to play a mix through an encoder/decoder to hear exactly what a consumer hears from their home theater/set-top box system. Dolby Digital, also known as AC3, is a digital audio compression technology developed by Dolby Laboratories. It is used to encode mono, stereo, and surround audio for digital television, Blu-ray, DVD, and cinema.

### *The SoundCode Dolby Digital Encoder Plug-In Features:*

- Faster than real time encoding.
- Writes all AC3 file formats including time code.
- Punch In/Out feature re-encodes a portion or appends to an existing Dolby Digital file.
- Writes WAV files formatted for stereo PCM digital systems.
- Supports extensive metadata settings including Dolby Surround EX flag.
- Imports decoded audio or raw data stream into Pro Tools timeline.
- Writes log file of all metadata and preprocessor settings.

### *The SoundCode Dolby Digital Decoder Plug-In Features:*

- AAX Native surround decoder
- AudioSuite non-real time decoder
- Extensive metadata indication
- Dynamic range compression metering with text value display
- Output level metering
- Import data stream into Pro Tools (AudioSuite)

*The SoundCode Dolby Digital Preview Plug-In Features:*

- AAX Native 5.1 Encoder and Decoder
- Metadata editing
- Extensive metadata indication
- Dynamic range control metering
- Level metering
- Downmixing options

## System Requirements

To use SoundCode For Dolby Digital, you need the following system:

- A Digidesign-qualified Pro Tools HD system running Pro Tools 10.3.7 or later. It operates as a 32-bit AAX plug-in for Pro Tools 10 and as a 64-bit AAX plug-in for Pro Tools 11.

### Important Non-Dithered And Dithered Mixer Information

SoundCode For Dolby Digital allows you to place a Dolby Digital data stream in the Pro Tools timeline and route it to an AES/SPDIF output. However, this requires you use the non-dithered mixer plug-in. This is because the Dolby Digital data stream cannot be altered. The dithered mixer sums a dither signal with the data stream and thus, alters it which makes the data stream unusable. The rule is that if using the dithered mixer, you cannot mix a Dolby Digital data stream to any bus. It is OK to place a data stream on a track and place a SoundCode Dolby Digital Decoder on an insert on that track.

### Important Sample Rate Information

SoundCode For Dolby Digital operates in 44.1 kHz and 48 kHz sample rate sessions. It is not compatible with higher sample rates. If the source audio is at a higher sample rate, you need to sample rate convert it by exporting it from Pro Tools, open it in another session at the lower sample rate, and then use

SoundCode For Dolby Digital. Also, the Encoder Punch In/Out feature is only available in 48 kHz sample rate sessions. Punch In/Out is not supported at 44.1 kHz.

## Chapter 2 - Installation

### Installing SoundCode For Dolby Digital

Installers can be downloaded from the Neyrinck website ([www.neyrinck.com](http://www.neyrinck.com)).

Installation steps are essentially the same, regardless of the bundle, package, or system you purchase.

#### Installation

To install SoundCode For Dolby Digital:

1. if Pro Tools is running, Quit Pro Tools.
2. Locate and open (double-click) the plug-in installer.
3. Follow the instructions presented by the installation software.
4. When installation is complete, click Quit.

When you open Pro Tools, you will be prompted to authorize your new plug-in.

### Authorizing SoundCode For Dolby Digital

SoundCode For Dolby Digital requires an authorized iLok USB Key to be connected to your computer when using Pro Tools. The iLok authorization needs to be obtained online and downloaded onto your iLok USB Key. The Activation Postcard included in your purchase contains your Activation Code and instructions on how to obtain your plug-in license online. You will need an iLok.com account to complete the process. If you do not yet have an iLok.com account, visit [www.ilok.com](http://www.ilok.com) to set up an account for free.

*The iLok USB Smart Key is not supplied with your plug-in or software option. You can use the one included with certain Pro Tools systems (such as Pro Tools|HD-series systems), or purchase one separately.*

## **Removing Expired Plug-Ins**

If you let a demo version of a plug-in expire, you should remove it from your system. Otherwise, each time you open Pro Tools you will be prompted with a message that the plug-in has expired.

To remove an expired plug-in:

Open the Plug-Ins folder on your Startup drive (Library/Application Support/Avid/Audio/PlugIns on OS X or c:\ProgramFiles\Common\Avid/Audio/PlugIns on Windows).

Drag the expired plug-in to the Trash.

# **Chapter 3 - Dolby Digital Encoder Plug-In**

## **Overview**

The encoder is implemented as an AudioSuite plug-in. Open the plug-in window by selecting it from the AudioSuite menu in Pro Tools. The plug-in is located in the Sound Field category.



## How To Encode

1. Select some audio in the timeline
2. Open SoundCode Dolby Digital Encoder
3. Set the Dolby Digital encoding parameters.
4. Set the output file name.
5. Select AC3 and/or WAV file output types to encode to.
6. Click on the “Encode” button.

## Description and Use Of Controls

The user interface is divided into two sections. The ENCODE section controls the metadata and preprocessing settings used by the encoder. These settings can be saved as presets using the Pro Tools plug-in preset features. The OUTPUT section controls how and where the encoded data will be written.



These control settings cannot be saved as presets. Instead, these control settings are persistent and are saved in a preferences file that is read when the plug-in window is opened. When the window is closed, the current settings are saved to the preferences file. The preferences file is associated with the currently logged in user of the computer. Each user account has a separate preferences file.

### **ENCODE Controls – Default Settings**

When the encoder plug-in is opened, the controls default to settings recommended by Dolby. You can change the default settings by using Pro Tools ability to save a user preset and set it as the default setting. Please consult the Pro Tools Plug-Ins User Guide for more information.

### **ENCODE Controls - Encoder**

Dolby Digital encoding has many features and options. Please see the separate document titled [Dolby Encoding Guidelines.pdf](#) for a thorough explanation of Dolby Digital. The following is a simple explanation of the controls.

#### **Coding Mode**

This popup menu control selects the channel configuration of the primary audio channels and does not include the LFE channel.

#### **Data Rate**

This popup control selects the data rate of the Dolby Digital data stream. A lower setting uses less space on a DVD, but will have lower audio quality. A higher setting uses more space on a DVD, but has higher audio quality

#### **Bitstream Mode**

This popup control selects the type of audio that is being encoded. Complete Main is the most common setting.

#### **Dialog Norm**

This popup control selects the level of the dialog in the source material relative to 0 dbFS. Its purpose is to allow the decoder to adjust playback level so that dialog loudness will be consistent. When set to -31, a decoder will not change the playback level. When set to 0, the decoder will reduce the level by 31 dB.

#### **LFE Enable**

This button sets whether or not you are encoding an LFE channel.

### **Center Mix**

This popup menu selects the gain applied to the center channel when downmixing to stereo. This control is only available when a center channel is being encoded.

### **Surround Mix**

This popup menu selects the gain applied to the rear channels when downmixing to stereo. This control is only available when a rear channels are being encoded.

### **Dolby Surround Mode**

This popup menu selects whether a stereo mix has been Dolby Surround encoded, or not, or is not known. This control is only available when encoding stereo program material.

### **Copyright**

This button turns off or on a flag that indicates the audio is copyright protected or not..

### **Original**

This button turns off or on a flag that indicates the audio being encoded is the original audio or is a copy of the original audio.

### **Room Type**

This popup menu selects the type of room used when mixing the audio that is being encoded.

### **Mix Level**

This popup menu selects the audio playback levels used when mixing the audio being encoded.

### **Info Exists**

This button turns off or on a flag whether the datastream indicates the Room Type and Mix Level controls.

### **LoRo Cntr Mix**

This popup menu selects how the center channel will be downmixed for a normal, stereo downmix.

### **LoRo Surr Mix**

This popup menu selects how the rear channels will be downmixed for a normal, stereo downmix.

### **LtRt Cntr Mix**

This popup menu selects how the center channel will be downmixed for a DolbySurround compatible stereo downmix.

### **Dolby Surround EX Mode**

This popup menu selects whether the data stream is indicated to be Dolby Surround EX encoded.

### **Stereo Downmix Preference**

This popup menu selects what downmix type is preferred when decoded.

### **BSI Extension Enable**

This button enables/disables whether the bitstream info extensions are used in the datastream.

### **Dynamic Range Compression**

This popup menu selects the “profile” used to encode a dynamic range compression sidechain signal into the data stream.

### **Surr 3 dB Attenuation**

When this button is ON, the encoder will attenuate the rear channels by 3 dB. This is necessary for mixes that were made for cinema and are being encoded for DVD.

### **Surr Phase Shift**

When this button is ON, the encoder will apply a 90 degree phase shift to the rear channels. This control should always be enabled unless the material will never be downmixed. If not used, an LtRt downmix might sound unbalanced to the right side.

### **Lowpass Filter**

When this button is ON, the encoder will apply a lowpass filter to all the audio channels.

### **LFE Filter**

When this button is ON, the encoder will apply a lowpass filter to the LFE channel.

### **DC Filter**

When this button is ON, the encoder will apply a highpass filter to all the audio channels.

## **OUTPUT Controls - Encoder**

The output controls are divided into three pages: File, Punch In/Out, and Import

## **File Page**

### **File Name**

This control sets the name of the file that will be written by the encoder. It is not used to set the file name extension. Click on it and use the keyboard to set the name and press Enter/Return when finished. The file name will have an extension of AC3 or WAV appended to it depending upon the settings of the AC3 Enable and WAV Enable controls.

### **AC3 Enable**

This selects if an AC3 file is to be written by the encoder.

### **AC3 Type**

This popup control selects the type of AC3 file the encoder will export to. The choices are Normal, Normal+Timecode, and PC(Little Endian).

Normal - This is the default setting and is most compatible with DVD authoring applications.

Normal+Timecode - This adds time code information and can be useful for locating the audio properly in related applications.

PC (Little Endian) - This format is not used often but is available in case you need it.

### **WAV Enable**

This selects if a WAV file is to be written by the encoder.

### **WAV Type**

This popup control selects the type of WAV file the encoder will export to. You can select a 16-bit or 24-bit stereo interleaved file.

### **Browse**

This control launches a Choose Folder dialog. You use it to select a location to add to the list of locations managed by the “Location” control.

### **Location**

This is a popup menu control that manages a list of locations to choose from. The location is where the AC3 and/or WAV file(s) will be written. If the list is empty, then you must select a location with the “Browse” control. Once you have one or more locations in the list, you can use this popup control to select the one you want to use. The last two entries in the popup allow you to remove the current entry or all entries.

## **Punch In/Out Page**

### **Punch Enable**

This enables punch mode of the encoder. Please see the Punch In/Out section of this user guide for information about using the punch feature.

### **Punch Start, End, Length**

These values indicate the time code location and length of how a punch-enabled encode process will be performed.

For more information about the Punch In/Out feature, see the section titled Encoding Using Punch In/Out.

## **Prefs Page**

### **Alert Sound -**

This control selects whether or not the computer’s audio system will play an alert sound when an encoding process has finished.

### **Pro Tools Controls At Bottom Of Window - Encoder**

There will be one or two buttons at the bottom of the window. Both start the encoding process and will write AC3 and/or WAV files containing the Dolby Digital data stream. But the two buttons differ with respect to importing data back into Pro Tools when encoding.

### **Ignore Button-**

Do not use this button.

### **Encode -**

This control only encodes to an external file and does not modify the audio in the region list or timeline.

## **Encoding With Punch In/Out**

SoundCode For Dolby Digital is able to re-encode a portion of an existing Dolby Digital data stream file or append additional encoded audio to the end. This can save you enormous amounts of time. If, for example, you have already encoded a two-hour film soundtrack for a DVD, but a last-minute change is made to replace one line of dialog, you can re-encode just the line of dialog. Other software-based systems require you to re-encode the entire two-hour soundtrack.

For Punch In/Out to operate properly, you must follow these rules:

1. Only 48 kHz sample rate audio can be used. Punch In/Out will not operate in 44.1 kHz sessions.
2. The audio being encoded must be located properly in the Pro Tools timeline. If the existing AC3 file is type Normal or PC(Little Endian), the Punch In/Out start and end points are relative to the start of the Pro Tools session. If the existing AC3 file is type Normal+Timecode, the Punch In/Out start and end points are relative to the AC3 file time code.
3. You must have 3072 samples (64 milliseconds) of audio pre-roll before the start point. The pre-roll audio is necessary to "prime" the encoder so that the re-encoded data will seamlessly punch in without a glitch.
4. You must encode using the same metadata and preprocessing settings used when originally encoded.

5. The existing AC3 file must have consistent metadata in the entire file. The encoder checks the first frame of the existing file to make sure it matches.
6. The punch start location can not be before the start location of the existing AC3 file or after the end location of the existing AC3 file.

### **How To Re-Encode With Punch In/Out**

1. Make sure the audio is located in the timeline properly.
2. Select the audio in the timeline.
3. Open SoundCode Dolby Digital Encoder
4. Set the Dolby Digital encoding parameters to match what was used in the original encoded file.
5. Set the output file name to the name of the existing AC3 or WAV file.
6. Select AC3 and/or WAV file output types.
7. Click the Punch In/Out Enable button in the Punch In/Out page of the OUTPUT section.
8. Click on the “Encode” or “Encode and Import” button.

### **Encoding Log File**

SoundCode For Dolby Digital writes a log file when encoding. The log file has the same name as the AC3/WAV file created except that the extension is .LOG. It is located at the same folder/directory where the AC3/WAV file is created. The file is appended with log information each time it encodes. This allows you of keep track of multiple encode operations on the same AC3/WAV file.

# **Chapter 4 - Dolby Digital Decoder Plug-In**

## **Overview**

The decoder plug-in operates as a real time AAXNative plug-in or as a non-real time AudioSuite plug-in. The plug-in types are located in the Sound Field category of Pro Tools lists of plug-ins. Open the AudioSuite plug-in window by selecting it from the AudioSuite menu in Pro Tools. Pro Tools has these real

time Native types: stereo-to-mono, stereo-to-stereo, and stereo-to-5.1. Open them by clicking a Pro Tools channel insert and navigating the Native multi-channel popup menu.

## **AAX Native Window**

The AAX Native user interface is similar to the Audiosuite window shown below. It is divided into two sections. The DECODE section controls how the decoder operates and allows you to emulate different decoding environments. The STATUS section displays information about the Dolby Digital data stream as well as output meters.

## **AAX AudioSuite Window**

The AudioSuite user interface has the same DECODE and STATUS sections as the Native user interface. It also has an INPUT section to select AC3 files and control how audio is imported.





## Description and Use Of Controls

### Integrated Help

SoundCode features integrated help that describes the functionality of controls. To see information about a control, click on the text label in the user interface.

### INPUT Controls (Audio Suite Only) – Decoder

The AudioSuite INPUT section controls the source Dolby Digital data stream used by the decoder. These settings cannot be saved as presets using the Pro Tools plug-in preset features. Instead, these control settings are persistent and are saved in a preferences file that is read when the plug-in window is opened.

## **Source**

This control selects the Dolby Digital source used by the decoder. If set to “.ac3 file,” the AC3 file specified by the “ac3 file” control is used. If set to “track stream,” the audio highlighted in the Pro Tools timeline is used. Note that the audio must contain AC3 data properly formatted as PCM digital audio.

## **Browse**

Clicking this button launches a dialog that is used to browse the file system and choose an AC3 file to add to the “ac3 file” list control to the right of it. On OS X you can select multiple files.

## **AC3 File**

This popup control selects the AC3 file used by the decoder. If the list is empty, then you must select a file with the “Browse” control. Once you have one or more files in the list, you can use this popup control to select the one you want to use. The last two entries in the popup allow you to remove the current entry or all entries.

## **Spot To**

This popup controls how the decoded audio will be located in the Pro Tools timeline. When “Selection” is chosen, the audio will be located to the start of the selection in the timeline. If the AC3 file has embedded time code, the other choice is Timecode. When Timecode is chosen, the audio will be located at the time code start of the AC3 file. If the AC3 file does not have embedded time code, the other choice is “Session Start.” If “Session Start” is chosen, the audio will be located to the start of the timeline.

## **Length**

This popup control selects how much of the AC3 file will be decoded. When set to Entire, the entire AC3 file will be decoded no matter what length is selected in the timeline. When set to Partial, the length of the timeline selection is used to determine how much of the file will be decoded.

## **Start and End**

These are not adjustable controls. They display the time code start and end locations where decoded audio will be placed.

## **DECODE Controls- Decoder (Native/AudioSuite)**

### **Decoding Mode**

This control selects the Dolby Digital decoder mode.

Line Mode – This is the default consumer decoder mode.

Custom Mode – This mode is available in more expensive consumer decoders and allows the dynamic range compression to be adjusted.

RF Mode – This mode is used by decoders to feed a television RF input and uses the maximum amount of dynamic range compression.

Data Stream – This passes the Dolby Digital data stream and formats it for transmission in a stereo PCM digital audio system.

### **Compression Lo**

This popup control selects the percentage of dynamic range expansion control signal used by the decoder.

### **Compression Hi**

This popup control selects the percentage of dynamic range compression control signal used by the decoder.

### **Stereo Downmix**

This popup control selects how the decoder will downmix multichannel audio to stereo. When set to None, no stereo downmixing is performed.

When set to LtRt, it is downmixed to Dolby Surround compatible stereo. When set to LoRo, it is downmixed to stereo. When set to Auto Detect, it attempts to determine whether a LoRo or LtRt downmix should be used. Typical consumer decoders implement LtRt downmixing,

### **Listening Mode**

This popup control allows you to simulate different Dolby Digital listening environments. When set to Full, all channels are enabled.

When set to Front Only, the rear surround channels are disabled and mixed to the front channels.

When set to Phantom Center, the center channel is disabled and mixed to the left and right channels.

### **Mono**

This mixes all channels to a single center channel.

### Output Stem Format (Audio Suite Only)

This sets the output stem format used by the decoder when decoding an AC3 file. When set to 'File Chan Mode' it will automatically detect the channel mode of the AC3 file. All other settings are standard stem formats. Use them to override the file channel mode and decode to the specified stem format.

## **STATUS Controls- Decoder**

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This control selects between two different sets of metadata information for display.

## **Page 1 STATUS Items**

### **Data Rate**

This displays the Dolby Digital data rate.

### **Chan Mode**

This displays the Dolby Digital channel mode.

### **Length (AudioSuite Only)**

This displays the length of the selected AC3 file. It is displayed as time code using the Pro Tools session frame rate. The frame rate is displayed at the end of the value where ND indicates non-drop frame and DF indicates drop frame.

### **Timecode (AudioSuite Only)**

This displays the start time code of the selected AC3 file. It is displayed as time code using the AC3 file session frame rate. The frame rate is displayed at the end of the value where ND indicates non-drop frame and DF indicates drop frame. If the file does not contain time code, "No Timecode" is displayed.

### **Dialog Level**

This displays the dialog normalization value. The decoder applies a gain to the audio based on this value. The gain applied follows these equations:

#### **Line Mode**

Gain = -31 – DIALNORM (dB)

#### **RF Mode**

Gain = 11 -31 – DIALNORM (dB)

### **CRC Errors**

This displays detection of Cyclic Redundancy Checking errors that indicate the data stream is corrupted. Each time an error is detected, the value will increase. If you click on the numeric value, it will be cleared.

### **Gain**

This displays one of two dynamic range compression signal embedded in the Dolby Digital data stream. If the decoder mode control is set to RF Mode, it displays RF Mode compression and the range is +- 48 dB. For all other decoder modes, it displays normal dynamic range compression and the range is +- 24 dB.

## Page 2 STATUS Items

This displays most metadata information. Please refer to the document “Dolby Encoding guidelines.pdf” for more information about these values.

### **Latency- Decoder**

The Native decoder has a latency of one Dolby Digital frame (1536 samples) plus delay introduced by Pro Tools buffers that will depend upon settings made in the Playback Engine dialog. Use Pro Tools ability to display plug-in latency to see the exact latency in your system.

The AudioSuite decoder has zero latency. It can do this because it is not a real time process.

# Chapter 5

## Dolby Digital Preview Plug-In

### **Overview**

The preview plug-in provides a realtime Dolby Digital encoder and decoder that lets you listen to how a mix will sound from consumer’s set-top box or media player. It operates as a real time AAX Native plug-in. The plug-in is located in the Sound Field category of Pro Tools lists of plug-ins. It is a 5.1-to-5.1 plug-in. Open it by clicking a Pro Tools channel insert on a 5.1 track and navigating the Native multi-channel popup menu.

### **AAX Native Window**

The AAX Native user interface is shown below. It is divided into two parts. The DECODE section controls how the decoder operates and allows you to emulate different decoding environments. The STATUS section displays information about the Dolby Digital data stream as well as output mete



## Description and Use Of Controls

Please refer to the previous chapters for a description of the encoder and decoder controls.

# Chapter 6 - Workflows

## Mix For DVD Video

In this scenario, you are mixing the audio soundtrack for a DVD and need to deliver a Dolby Digital AC3 file for a DVD.

1. Finish the mix by bouncing it to disk in Pro Tools.
2. Import the mix bounce into a Pro Tools track that matches the stem format of the mix. For example, if the mix is 5.1 channels, import the bounced mix into a 5.1 track.
3. Make sure the imported mix is positioned in the timeline at the correct location. Typically, it will be placed at the far left of the timeline.
4. Select the imported mix in the timeline.
5. Select the SoundCode Dolby Digital Encoder plug-in in the AudioSuite menu.
6. Set the encoding controls.
7. Click on the “Encode” button.

## Quality Assurance Test A Dolby Digital File

In this scenario, you would like to listen to an AC3 file synchronized to Pro Tools video playback.

1. Create a stereo track where the AC3 file data stream will be imported to.
2. Select the AudioSuite SoundCode Dolby Digital Decoder plug-in.
3. Click the browse control and select the AC3 file to be imported.
4. Place the timeline cursor where the AC3 file starts or if it is a timecode file, set the spot-to control to Timecode.
5. Set the Decode Mode control to Data Stream and set the Output Stem Format control to Stereo.
6. Click the Decode And Import button.

## Decoding Audio From A DVD Player

In this scenario, you would like to listen to a DVD decoded for playback in your Pro Tools system or monitor its metadata. For example, you are mixing the audio soundtrack for a DVD and you want to compare your mix to one on a popular DVD. Another example is that you have burned a DVD with a Dolby Digital soundtrack and you want to listen to it on your Pro Tools system. The SoundCode decoder makes it easy to decode and listen to a Dolby Digital DVD in your Pro Tools system. This is done by connecting the optical or SPDIF output of a consumer DVD player to a Pro Tools digital input. The stereo bitstream is then routed to a stereo Aux track. A SoundCode Dolby Digital Decoder is placed on the aux track and decodes the audio.

1. Connect the optical or SPDIF output of a consumer DVD player to a Pro Tools hardware digital input.
2. Set the Pro Tools system to sync to the digital input fed by the DVD player.
3. Create a stereo aux track in Pro Tools.
4. Set the aux track input to come from the digital input connected to the DVD player.
5. On the aux track instantiate a Native SoundCode Dolby Digital Decoder (stereo-5.1).
6. Now you can listen to the DVD and monitor its metadata.

## Deliver A Dolby Digital Bitstream Via an AES Out



In this scenario, you would like to output a Dolby Digital AC3 file to a Pro Tools AES, SPDIF, or Optical output. This is accomplished by importing an AC3 file into a stereo track, routing the track to a digital output using the non-dithered mixer, and pressing play on the Pro Tools transport.

1. Make certain you are using the Pro Tools non-dithered mixer.
2. Create a Pro Tools session with a sample rate of 48 kHz. It is OK to use a 16-bit or 24-bit session. 24-bit will not perform any better than 16-bit.
3. Open the SoundCode Dolby Digital Decoder from the AudioSuite menu.
4. Click the browse button and select the AC3 file you would like to play out of Pro Tools.
5. Create a stereo track in Pro Tools.
6. Place the cursor in the timeline in the stereo track.
7. In the Decoder window, set the input control to “AC3 File,” the length control to “Entire,” the Decode Mode control to “Data Stream,” the Channel Mode control “Stereo.”
8. Click the “Decode and Import” button at the bottom of the window. Now you should see strange looking audio in the timeline that is bursts of data every 1536 samples.
9. Set the track output to the interface output of an AES, SPDIF, or Optical digital output.
10. VERY IMPORTANT – Set the channel mix level to 0 dB. This will not work unless the gain is unity.
11. VERY IMPORTANT – Pan the channels hard left and right. This will not work unless the channels are panned hard left and right.
12. Press play on the Pro Tools transport.

## **Make A DVD Ref Disk**

In this scenario, you would like to make a DVD to watch and listen to it on various consumer playback systems. This is done by encoding an AC3 file and then using it with DVD authoring software to make a DVD.

1. Encode the mix to an AC3 file as outlined in the workflow named “Mix For DVD Video.”
2. Use a DVD authoring application to create a DVD. There are many solutions for this. Be certain to use one that can multiplex an AC3 file into the DVD. Most professional applications such as DVD Studio Pro and Sonic Scenarist can do this. Unfortunately, Apple’s iDVD does not do this. But there are various cheap shareware programs that can. I suggest you do a Google search for “DVD AC3 Mux” as a starting point.

## **Make A Surround Audio CD Ref Disk**

In this scenario, you would like to listen to a surround music mix on a consumer playback system that has a Dolby Digital decoder. This is done by encoding a WAV file, burning an audio CD with the WAV file on it, connecting a consumer CD/DVD player’s digital bitstream output to a Dolby Digital decoder, and playing the CD with CD/DVD player.

1. Finish the music mix by bouncing it to disk in Pro Tools.
2. Import the mix bounce into a Pro Tools track that matches the stem format of the mix. For example, if the mix is 5.1 channels, import the bounced mix into a 5.1 track.
3. Select the imported mix in the timeline.
4. Select the SoundCode Dolby Digital Encoder plug-in in the AudioSuite menu.
5. Set the encoding controls so that no preprocessing is used, the bit rate is as high as possible, dialog normalization = 31, the WAV output control is turned ON, and the WAV format is set to 16-bit interleaved.
6. Click on the “Encode” button. If you are using Pro Tools 6.7 or earlier, click the “Encode And Import” button.
7. Burn an audio CD with the WAV file on track 1.
8. Play the CD on an audio system with a CD/DVD player with the bitstream digital output connected to an external decoder.

## Chapter 7 - Troubleshooting

### **Error Message: Updated Tpkd Driver Required**

If you see this message when Pro Tools is launching on Windows XP, it means that your PACE iLok driver needs to be updated to a newer version. Go to PACE’s website at [www.paceap.com](http://www.paceap.com) to download a driver installer.

### **Decoder Display: MPEG Unaligned**

If you see this displayed in the decoder’s status area, it means that a Dolby Digital bitstream has been detected but the bitstream has been altered. A bitstream must pass into the plug-in without any alteration. For example, if the gain of the bitstream signal was altered, this message would be seen.

### **Decoder Won’t Decode Dolby Digital Data Stream**

If the decoder is not recognizing a Dolby Digital data stream, it suggests that the data stream has been altered. It is very important that a data stream not be altered. Sample rate conversion, gain change, dithering, EQ, compression, and any other type of audio signal processing will alter a data stream and make it unusable.

