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# Chapter 3: I/O

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Pro Tools

App 2

Week 3

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## Overview

By the end of this chapter you should be familiar with some of Pro Tools' more advanced windows as well as how to import from various sources including video and midi.

## Playback Engine

The playback engine is an essential window that often goes overlooked. Open the playback engine by Selecting the Settings > Playback Engine... from the drop down menu.

The first dropdown box at the top of the dialog box is where you can select which hardware you would like to use with Pro Tools. Ever since Pro Tools version 9 Avid has allowed the use of a wide range of audio interfaces including the built in hardware within a mac.

**H/W Buffer Size:** The hardware buffer size tells the computer how large of a buffer to use to process audio. The larger the buffer size the more delay you will notice in playback. When recording it is ideal to have a lower buffer size so that the musicians do not notice the latency. A larger hardware buffer size is ideal for mixing and heavy processing situations.

**Host Processors:** Allocates the number of processors to allocate to Pro Tools. It is important to keep in mind that the more processors you allocate to pro tools the less you will have available for the operating system and other software. Many software instruments do not run within Pro Tools but rather run as a rewire application that links to Pro Tools. If you allocate too many processors to Pro Tools you may choke other applications and cause crashes. If you don't allocate enough Pro Tools itself may lock up. The number of processors you need for each session may vary.

**CPU Usage Limit:** Sets the peak percentage for CPU Usage. 85% seems to be the magic number for most sessions but feel free to lower or increase if you feel like you can get more out of your system.

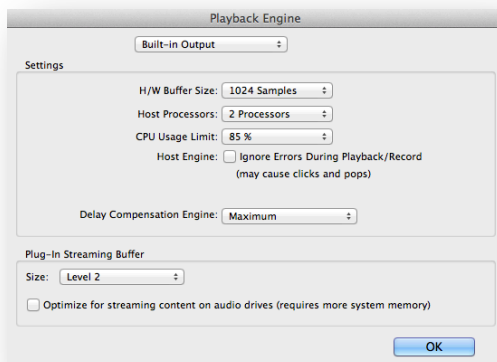
**Host Engine:** Enabling the Host Engine option will ignore playback/recording allowing Pro Tools to continue playback even when errors occur. When unchecked Pro Tools will immediately stop upon any errors. I do not recommend enabling this option as you can end up with errors and distortions in your audio.

**Delay Compensation:** Everything within a DAW takes time to process. Every plugin adds a little bit more of a time delay. In a larger mix session with a high plugin count the delay can become very audible. Delay compensation will automatically compensate for plugin and processing delay within the session up to a point. It is important to be aware of overloading delay compensation when mixing.

## Key Terms

**Latency:** is a time interval between the stimulation and response, or, from a more general point of view, as a time delay between the cause and the effect of some physical change in the system being observed.

**Buffer:** Preloading data into a reserved area of memory.

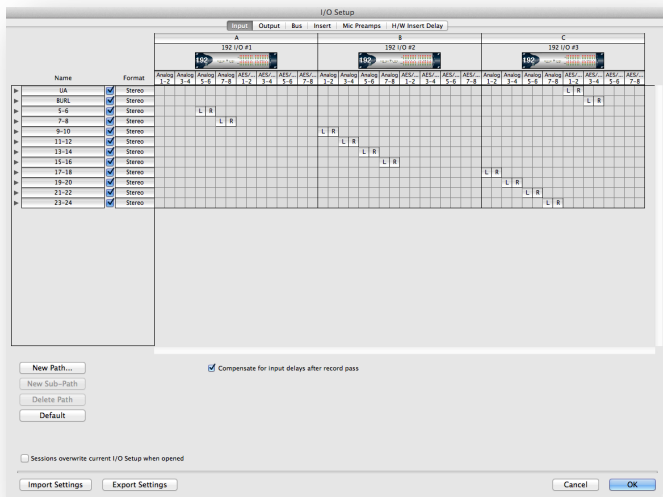


## I/O Window

The I/O Window in Pro Tools handles all of your inputs, outputs and internal routing within the software. Here is where you can build and name your inputs and outputs, set up custom inserts and create specialized busses. Open the I/O window from the Setup > IO... dropdown menu.

The Session I/O window is divided into six tabs. Input, Output, Bus, Insert, Mic Preamps and H/W Insert Delay. At the bottom of the window you can find options to import or export your I/O settings. You can save certain I/O settings as a file that can later be selected when creating a new session or re-imported into this window.

## Inputs



Along the top of the inputs window you will see all of the connected hardware. Whatever hardware you previously selected in the playback engine should appear here.

In HD systems multiple input options are available by right clicking on each individual input.

Down the left side of the input window is where you can create your customized inputs. Here you can create mono or stereo inputs that will show up within Pro Tools. You can customize the naming scheme to suit your needs.

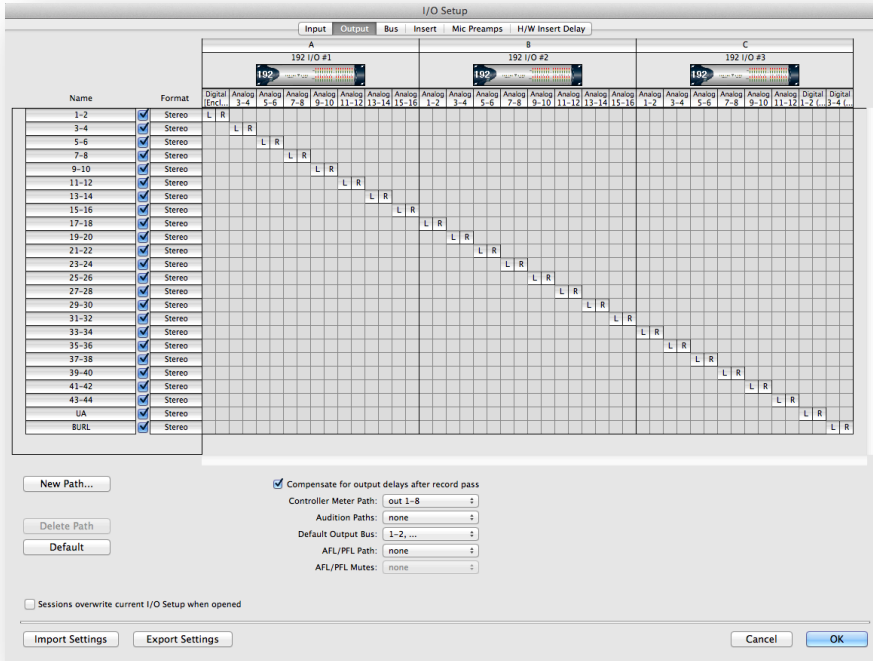
**New Path:** Creates a new path that you can map within the matrix to a hardware input.

**New Sub Path:** Pro Tools allows you to create sub paths for customized routing. The most common sub path is to create two mono tracks for each stereo pair.

**Delete Path:** Removes the selected path from the I/O

**Default:** This button will automatically build a simple input matrix based on what hardware is currently attached.

# Outputs



The matrix in the output tab operates exactly like the input tab only it correlates to the hardware outputs of each device. You will also see familiar buttons like New Path, Delete Path and Default that all function identically to the input window.

The two key new things to identify in this window are:

**Audition Path:** Selects the output you would like to use to audition audio. It is essential to have this set in order to hear audio playback in the import audio window or in the workspace window.

**Default Output Bus:** Selects the default output that each new track will be set to.

## Busses

The bus window is the most important tab in the I/O window. All audio moving around within pro tools has to move through busses. Outputs will automatically show up in your bus window as well for additional routing options.

Below you will see all the same options you saw before in the input and output windows. The one important addition is a differentiation selection on the default button. You can set defaults for just internal busses, just output busses or all of them simultaneously.

## Inserts

### Quick Keys:

Open Session Window:  
Command + Number Pad 2

Pro Tools allows you to setup external hardware inserts by mapping an input and an output. Once mapped you can now drop the hardware insert in the same way you would a plugin. You will find all the same routing options here as you found in the input, output and bus tab.

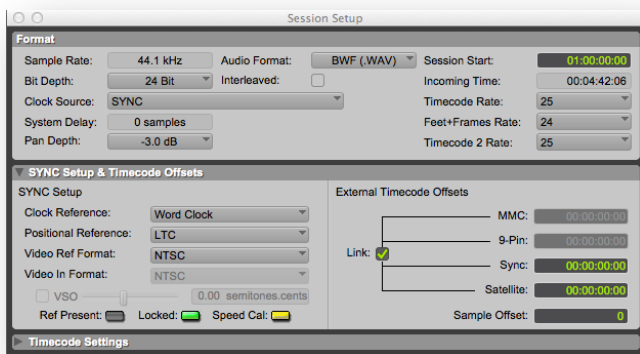
## Mic Preamps

The mic preamps tab allows you to set up digitally controlled preamps within Pro Tools.

## H/W Insert Delay

Some outboard equipment may take time to process audio passing through it. In this window you can set up delay times for external hardware so that the delay compensation engine can handle it appropriately

## Session Window



The session window is accessed from the Setup > Session dropdown menu. The session window gives you an overview of all the technical details of your session. Sample rate, clock source, whether or not your session is clocked properly. If you're working with video this is where you can set your Timecode and Feet + Frame Rate. When using an HD system with a sync I/O for video and timecode sync this window contains all of your sync I/O controls.

## Workspace

The workspace window is an excellent tool for navigating the computer file system. Here you can set which hard drives are Record, Playback or Transfer Volumes. Each hard drive can be set to handle audio or video separately. You will see two columns headed by A for audio and V for video.

A record volume allows files currently being created to be stored on that device.

A playback volume allows only playback any attempt to record will not be allowed or deferred to an available record volume.

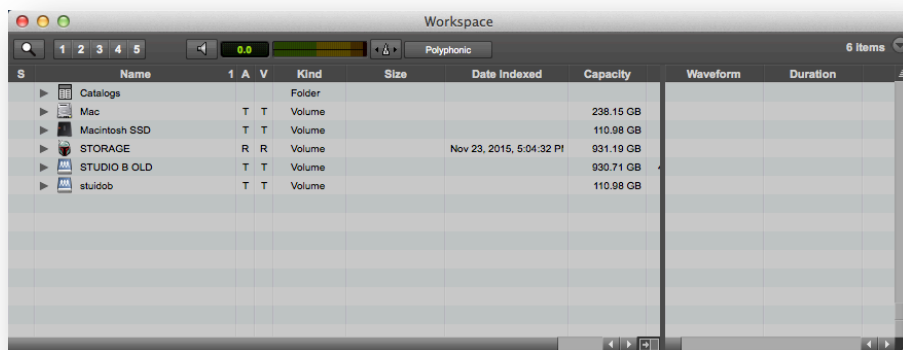
### Quick Keys:

Open Workspace Window:  
Option + ;  
Open Task Manager:  
Option + ‘

A Transfer volume will deny record or playback and for pro tools to copy all audio to an available record volume.

In order to avoid linking errors and lost audio it is recommended to only have your current work drive set to record. Every other drive should be set to transfer. In the event you have a large session that causes playback errors you can separate your audio amongst multiple hard drives and use multiple playback or record volumes. This occasion is very rare and generally unnecessary.

In the following diagram you can see I have all the drives set to transfer with the exception of my Storage drive which is set to Record.



Clicking the magnifying glass icon in the top right hand corner enables the search function within the workspace. Searching within the workspace is an extremely effective way to find sound effects and audition them immediately.

## Elastic Audio In Workspace

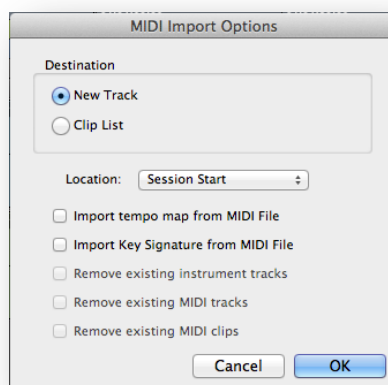
Clicking the metronome icon at the top center of the workspace enables automatic tempo mapping to the current session tempo via elastic audio. When glowing green any audio auditioned in the workspace will be played back at the session master tempo.

## Task Manager

The task manager is a simple window where you can view processes currently underway in pro tools. If any tasks ever fail to complete you can cancel them or re-attempt them in this window.

## Importing Midi

To import a midi file select File > Import >



## Key Terms

**MIDI:** short for Musical Instrument Digital Interface is a technical standard that describes a protocol, digital interface and connectors and allows a wide variety of electronic musical instruments, computers and other

Midi... from the dropdown menu or use the quick key! After selecting the midi file you want within finder and selecting open pro tools will offer you some basic options. Just as with audio you have the option to import directly to a track in the session or just to the clip list to be used later. Pro Tools also gives you the option to set the location to the session start, current selection or spot where you can manually input time code. The other main feature in this window to be aware of is the Import tempo map from MIDI file check box. When enabled Pro Tools will erase its current tempo map and replace it with the one from the midi file. Pulling the tempo from midi can be a useful tool when building a new session from a midi file, but if you have already existing midi or tempo changes within the session they may be erased. Proceed with caution!

## Quick Keys:

Open Session Window:  
Command + Number Pad 2

Open Workspace Window:  
Option + ;

Open Task Manager:  
Option + ‘

Import Midi:  
Command + Option + i

Import Video:  
Command + Option + Shift + i

related devices to connect and communicate with one another.

## Quick Keys:

Import Midi:  
Command + Option + i  
Import Video:  
Command + Opt + Shift + i