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Producing and Recording in the Home Studio

Lesson 1: Studio Setup

This lesson is excerpted from an online course. While the navigation links on each page are not active, all of the multimedia interactions are. Have fun!

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Maybe you're like me... when you get a new toy for your studio, you just want to plug it in and use it right away. You don't want to think about how the signal from the new toy gets from one place to another; you just want it to work. Well, as engineers in our own studios, we don't have that luxury. We need to understand the ins, outs, and throughs of our studio gear.

Understanding how every signal flows through each piece of equipment in your studio is crucial to achieving professional sounding recordings. That's why we're going to cover signal flow, gain stages, and studio setups for both audio and MIDI here in this first lesson. If your gear is not set up for optimal results, then you won't get optimal results

In this first animation, you see the basics of signal flow in and out of your recording device. Refer to the discussion in the book about signal levels (microphone vs. instrument vs. line) in chapter 2, and be sure you understand why each piece of gear needs to be where it is in these animations. If you have any questions, please feel free to post them on the Discussion Board.

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Comprehending the signal flow is only half the battle. The next step is to understand the gain stages along the signal path.

A gain stage is any device that boosts or cuts the level of an audio signal. Getting the best sounds from your gear involves optimizing the output volume levels (gain) at each stage in your signal path. Usually, studio equipment will have the best **headroom** and **signal-to-noise ratio** at “unity” gain. Unity is the level where what goes in is what comes out... such as when the volume fader on an analog mixer is set to 0.

However, the main purpose of any gain stage is to increase or decrease the gain, which raises or lowers the input signal level to achieve the best recorded sound. So, how should you adjust the gain? A good idea is to spread out the gain adjustments among the gain stages. Also, you may find that some gear is noisier than other gear. In that case, try to keep the noisy gear close to unity gain and use other “cleaner” sounding equipment to adjust the gain. In other cases, you may find you like the sound of some piece of gear that’s overdriven with gain (such as a tube compressor). In those cases, you might be able to add more gain at that stage than at some other stages.

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Signal Flow and Gain Stage Quiz

Notice that all the devices in the signal path below have at least one gain stage. Spreading out the gain between these devices can often lead to cleaner, more pristine, or even intentionally “dirty” sounds that will improve the quality of your final recording.

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Use the following studio setup diagrams as a guide for connecting your gear, as well as for examining your signal path and gain stages. If you have any questions about your particular studio setup, post them to the Discussion Board.

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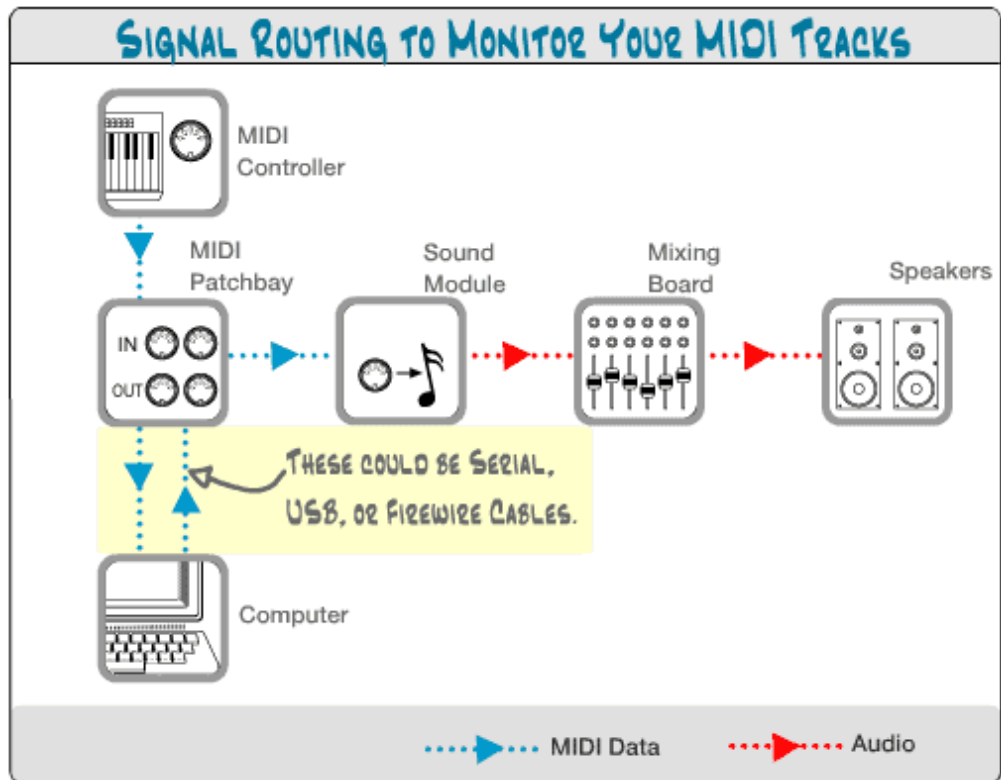


MIDI Setup

MIDI signal flow is a little different than audio signal flow. As you read in chapter 2, MIDI performance data travels from a MIDI controller to a MIDI interface that routes the signal to a MIDI sequencer. The sequencer sends that MIDI data back out to the interface, where it is routed to the proper MIDI sound module. In the sound module, the MIDI data is converted into audio. The audio is then sent out of the MIDI sound module for monitoring or recording. Understanding this signal flow is key to getting the most out of your MIDI studio gear.

If you have any questions about your particular MIDI setup, post them to the Discussion Board.

Here's a diagram that shows the signal path of MIDI and the audio generated with MIDI data.



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Just as we are individuals with our own styles, we all have our own unique studio setup and gear list. Let's share our setups and gear lists here. This will help me better understand the environment you'll be working in during this course. Also, it will enable me to evaluate potential strengths and weaknesses in your studio equipment.

I've included a 360-degree view of my main studio room here.

Visit www.undergroundsun.com to see more pics of my studio and to see my gear list.



Now it's your turn. In the Discussion Board below, please list your gear and, if possible, post a digital picture of your studio setup. If you've got a Web site, post a link to it as well so we can all give you some Web traffic.

Discussion Thread

Post your response to this discussion activity in this thread:

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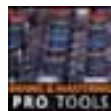
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