

Using Plug-ins

After completing this lesson, you should be familiar with the following concepts:

- Plug-ins are software versions of hardware effects processors, but they are much more flexible than their hardware counterparts.
- DAWs have mixer windows which mimic hardware mixers very closely. They have many of the same exact controls that hardware mixers have.
- DAW mixers have inserts which can be used to connect plug-ins as well as aux sends.
- Although all plug-ins look and behave a little differently, all plug-ins have a bypass button which allows you to momentarily disable them, and some method for saving your current settings and recalling them later on.
- Busses are data pathways in a DAW program that allow you to route audio from one place in the program to another. (For instance you could use a bus to route signals from aux sends to an aux track.)
- Aux tracks are tracks which do not contain data, but can have busses as their inputs, and can use plug-ins.
- Plug-ins use up part of the processing power of a DAW. Not all plug-ins use the same amount of power, but there is a very finite number of plug-ins which can be used at once.
- Plug-in software is written in a variety of different formats to support different DAW software.

Glossary for this Lesson:

Aux Track- An Aux track is a track which doesn't contain recorded sound, but instead is typically used as the destination of a bus. Several tracks or aux sends can be sent to an aux track so that they can all share the aux track's plug-ins and settings.

Bus- A data pathway that audio can follow within a DAW program. Busses are used to route audio between channels, from aux sends, and to submix different channels together.

Bypass- A button found on most plug-ins which allows you to temporarily disable them to compare the wet signal with the dry signal.

Control Surface - A device which provides the user with specially designed controls which allow the user to interact with the DAW software more easily.

DirectX- A plug-in format used only on PC-based DAWs. It is a lower-quality format, which lacks the controllability of better plug-ins, and is usually used for low-level consumer applications.

Format- A plug-in's format determines which DAWs it will work with. Each DAW supports only one format, and thus only plug-ins in that format.

MAS- MOTU Audio System. A plug-in format which is used solely by Digital Performer.

Mixer Window- A window found in DAW programs which contains the DAW's mixer. This window has many parts which represent the parts of a hardware mixer.

Plug-in- A piece of software which adds extra ability to a DAW. Many software plug-ins simulate hardware effects units such as EQ, reverb, chorus, and delay units. There are other functions that plug-ins serve as well as effects.

RTAS- Real-time Audio Suite. A plug-in format used by versions of Pro Tools which do not require expensive hardware processor cards.

TDM- Time Dimension Multiplexing. A plug-in format used by Pro Tools systems which have expensive hardware processor cards. These plug-ins are among the most expensive.

VST- A plug-in format used by many different sequencers including Cubase, Cakewalk, Logic, and Digital Performer.

Experiments:

1. Open a project in a DAW which uses several tracks. Take a look at the mixer and see if you can identify all of the parts of each channel. Create a few new audio tracks and notice what happens to the mixer window.
2. Start the DAW playing and try adjusting some of the mixer's controls to hear their effect on the sound.
3. Click and hold on one channel's inserts. Notice the list of plug-ins which come up. Try selecting different plug-ins from the list. How many do you already know about?
4. Apply a simple plug such as EQ or delay to a track, and experiment with its controls. Try out the bypass button and see if you can figure out how to save a couple of different setups and then recall them.
5. Set up an aux send on one channel and bus it to an aux track. Put a plug-in on the aux track and see if you can hear the plug-in's effect on the sound. Be sure that you have set your bussing correctly, and that you have set the inputs and outputs for the aux track correctly.
6. Watch the DAW's performance meter carefully as you add and remove plug-ins from your project. Which plug-ins seem to use the most power? Which use the least?

Using Plug-ins

In Basic Music Technology I, you learned about several different kinds of effects, and how to make use of them in the studio. At that time, we talked about how these effects processors could be a hardware device, or they could also be a piece of software running on a computer. Today, we will learn about the software versions of these effects processors which are called plug-ins. A **plug-in** is a separate software program which runs within your DAW program. It gives your DAW program extra features. For instance, DAWs can't create reverb on their own. You must use a reverb plug-in to add this functionality to your DAW. While not all plug-ins take the place of effects processors, for the purposes of this lesson, we will only learn about plug-ins which act like effects boxes.

MIXING IT UP

Before we dig into using plug-ins, it is important to understand a few things about the DAW's mixer. Like a complete production environment, almost all DAWs have a mixer window. The mixer window acts just like a hardware mixer, but its inputs and outputs are the DAW's tracks and the inputs and outputs on the audio interface.

Before we dig into what is different about DAW mixers from hardware ones, we should talk about what is the same. As you can see in the picture in the middle of this page, the DAW's channels look very much like channels from a hardware mixer. You can probably name most of the parts right away. As you can see, DAW mixers have virtual faders which can be dragged up and down with a

mouse, or controlled from an external **control surface** (a box with a bunch of faders). Just to the right of each fader, you can see a level meter. This meter displays the track's current volume. The channel on the left is a mono channel, so it has just one level meter, but the channel on the right is a stereo channel, so it has two level meters. Below each fader is a numeric display which tells you how many decibels the volume is being boosted or cut by. You can use

the arrows to either side of the display to make fine adjustments, or you can type directly into the box. Alternatively, you can drag up or down on the numbers, and they will increase or decrease.

DAWs also have pan controls. The DAW pictured below uses a virtual knob meant to simulate a pan knob on a real mixer. Other DAWs sometimes use a horizontal fader, which makes a lot of sense. In addition to showing you how the knob is set, the DAW also gives you a numeric readout below the pan knob so that you can see exactly where the pan knob is set. You can type numbers into this box or drag up or down on the numbers to change them. There are also arrows to the left and right of the box which act like increment/decrement buttons.

You can also see the channel's mute and solo buttons. Just below the mute button, you can see a record button. Because the channels in



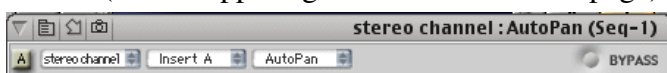
the DAW's mixer always represent tracks, you can arm or solo the track the channel belongs to right from the mixer window.

INSERT YOUR PLUG <<HERE>>

At the top of the channel strip, you can see five rectangles with tiny arrows on them. These rectangles represent the channel's inserts. Using inserts are the easiest way to use plug-ins on a channel. If you click and hold on one of these rectangles, you will get a pull down menu listing every plug-in currently installed on your DAW. Most DAWs come with some plug-ins, but these are typically not as useful and of lower quality than those which can be purchased from other manufacturers. Depending upon how many plug-ins you own, you may be confronted with a list of as few as 8-10 plug-ins, or as many as a few hundred! It is not possible to describe the function of every plug-in ever made or even to list them here, as the list alone would fill several pages. It is just important to know that these plug-ins can take the place of just about any effects processor you can imagine, and some that you wouldn't have imagined in your wildest dreams. As you look over the list of available plug-ins, be sure to look for familiar devices such as EQ, compressors, limiters, chorus, delay, and reverb.

When you select a plug-in from the list, the plug-in software will actually run and will open in its own window. The window will then show all of the plug-in's controls. There are a few controls common to all plug-ins on just about every DAW. You can **bypass** (momentarily turn off) any plug-in by clicking on the bypass button, which is usually found in the upper right hand corner of the plug-in window. (You can see it in the picture of the top of a plug-in window below.) Click the bypass button a second time, and the plug-in starts working again.

Many plug-ins also allow you to save your settings of their controls and call up old settings for later use. Some plug-ins have dedicated load and save buttons (see the upper right hand corner of this page)



while others have tiny little menus near the upper left hand corner of the plug-in window which holds commands for managing and saving your setups.

It is very important that you spend time experimenting with different plug-ins to discover what they can do, and how they operate. While plug-ins can be very expensive, many companies offer free demo versions of their plug-in software which beeps periodically, so it can't be used for serious DAW work, but you can certainly use these demo versions to learn how to use the software. Look in the "On the Web" window at the end of this lesson for more information.

GET ON THE BUS

Just above the Solo and Mute controls, you can see four knobs and four rectangular boxes. These are the DAW mixer's aux sends. Unlike most hardware mixers, a DAW's sends aren't connected to anything until you connect them. You have to connect them to an audio pathway within the program. This audio pathway is called a **bus**. A bus is basically like a cable which is just used to send audio signals from one place to another. Busses are usually just named bus 1, bus 2, etc, but you can name them anything you please.

After you choose a bus from the rectangular pop-up menus above and below the sends, they will behave just like the aux sends on most hardware mixers; they make a copy of the signal from the channel and send it somewhere else.

The aux send on a DAW doesn't come out of an aux send jack like it does on a hardware mixer. Instead, the aux sends go to wherever the bus goes. This means that if you want to use the aux sends as an effects send, you have to create a special track called an **Aux track**. An aux track is a track which doesn't hold any recorded sound, but just allows you to use one more channel on the mixer. Using the input and output controls in the track overview win-

dow, you can set the aux track's input to whichever bus the aux send was set to. When you turn up the aux send knob on the channel, it will send a copy of the audio to the aux track.

You can put plug-ins on the aux track the same way you added them to the audio tracks. By pulling down in the aux track's inserts, you can add whichever plug-ins you want to use. The aux track's output is usually set to two of the outputs on the audio interface. So, when you move the aux channel's fader up and down, it acts like an aux return for whatever effects you added to the aux channel's inserts.

At first, all of this bussing and sending and returning might seem like a lot of unnecessary work to use plug-ins. After all, couldn't you just get the same result by adding whatever plug-ins you need to each channel's inserts? While you could do it this way, the problem with this method is that you will run out of processing power pretty quickly. Using aux sends, it is possible for many tracks to share the same plug-in, meaning that you only have to use one copy of the plug-in at once, and thus less power.

THE PRICE OF POWER

One of the coolest things about plug-ins is that you can run multiple copies of the same plug-in! This means that if you buy a really cool \$600 reverb plug-in, you can run three copies of it on three different tracks. That means it was really like getting three reverb boxes for the price of one. Likewise, this works with all other plugs, like EQ, chorus, etc. There is one catch to plug-ins, however. You can't use an infinite number of plug-ins at once. Each plug-in will use up part of your DAW's processing power. Playing tracks also uses processing power. The more tracks you have recorded, the fewer plug-ins you can use and vice-versa. Most DAWs provide a readout of the amount of processing power you have left to use. Above, you can see the meter marked "processor." Not all plug-ins use the same amount of processing power. The

plug-ins created by the DAW's manufacturer typically use less power, but aren't as cool. On the other hand, many third party companies make plugs which are undeniably cool, but are real processor hogs. As the DAW's operator, you have to make decisions about which plug-ins you want to use where.

When you are working with a DAW and it comes time to use plug-ins, your first step should be to listen to the raw track. What do you hear? Does the singer's voice rumble too much in the low end? Do the ess and tee sounds sound harsh and sibilant? Would a delay make the musical line more interesting? Stop and think about which plug or plugs can help you to shape your sound before you start blindly experimenting. Work slowly and methodically, and build your sonic picture step by step. Don't forget that the most important key to learning to use plug-ins effectively is to practice using them as much as you can.

PLUG-IN FORMATS

Not all plug-ins are the same. Because there are many different DAWs on the market, there are also many different formats of plug-ins available. The **format** is the specific way in which the plug-in software was created. DAW programs usually only allow you to use one format of plug-in. The five major formats of plug-ins which are used today are: **TDM** and **RTAS** (used only on Pro Tools systems), **MAS** (used only in Digital Performer), **VST** (used on most of the rest of DAW programs, but also in Digital Performer), and **DirectX** (used only in lower-level consumer PC programs). There are several other formats as well, but these are more specialized, and can only be run with very specific hardware. The format of the plug-in also determines its price. For instance, a TDM plug-in will usually cost twice what the same exact plug-in costs for MAS. Many times, the same plug-ins are available for different formats. Many of the most popular plug-ins are available in all formats.



Let's Review

1. What is similar between hardware and DAW mixers, and what is different?
2. What are some of the different ways you can change the settings of different controls on the DAW such as the gain and pan knobs?
3. How do you use a plug-in if you only want to use it on one track? If you want multiple tracks to use it?
4. What are busses and what is their purpose?
5. How many plug-ins can you run at the same time?

Words To know:

Aux Track	Format	
Bus	MAS	RTAS
Bypass	Mixer	TDM
Control Surface	Window	VST
DirectX	Plug-in	

Neat Trick

You can use aux tracks and bussing for more than plug-ins. Aux tracks can be a great way to submix several tracks together. Let's say you have 8-9 different tracks that all have drums sounds. You can apply EQ's and other plug-ins to the individual channels, but then you can set all of the drum channels's outputs to one of the busses. Then, you can create an aux track whose input is that same bus. Now you can control the volume and panning of all of the drum tracks at once. You can also apply plug-ins which will affect all of the drum tracks.

On the Web:

Check out the following sites for more information about plug-ins:

<http://www.motu.com/>
<http://www.digidesign.com/>
<http://www.emagic.de/>
<http://www.steinberg.net/>
<http://www.waves.com/>
<http://www.cycling74.com/>
<http://www.duy.com/>
<http://www.audioease.com/>
<http://www.antarestech.com/>
<http://www.bombfactory.com/>

DID YOU KNOW?

Audio plug-ins haven't been around very long, but the idea of using plug-in software is over 20 years old. For many years, people using all kinds of software from video editing to photo programs have used plug-ins to add extra functions to their software.