

## **Busses, Auxiliary Sends, and SubMixes**

In mixing multitrack audio, the most important function is the mixing of several channels of audio into a single stereo mix. This is done simply by providing a volume control (and related controls like Pan and EQ) for each channel. The various channels are combined and sent to the Main Mix output.

But sometimes we want to move certain audio tracks along another path, to apply effects like echo and reverb. We need to be able to interrupt the sound before it reaches the Main output, so that we can apply our desired effect. Then we need to bring the effected sound back into the Main Mix.

In order to alter the path of the sound, (we can call it the audio signal), we have to give it a route to follow. We call this alternate route a '*buss*'. Although it's spelled differently, you can think of a public bus, which carries people to different destinations. In the same way, a buss can be used to carry the audio signal to different places, prior to its final appearance in the Main mix.

The most common bussing setup on audio mixers is called the *Auxiliary Buss*. More commonly called Aux Buss, this alternative signal path is commonly used to add effects like reverb to the mix.

Each channel of the mixer will have its own *Aux Send* control, much like a volume control. The sound from each channel can be sent out to the Auxiliary effect, perhaps a reverberation effects device, by turning up the Aux Send volume control. The higher it is turned up, the more that channel is played into the effects device.

All the sends from each channel are merged into one output on the mixer, a main Aux Send output. This is connected to the input of the effects device.

After the sound has been processed in the effects device (in this case, reverb), you need to bring the effect back into the Main Mix. So, the mixer will have an *Aux Return* control. A kind of volume control, the Aux Return determines how much of the effect is added back into the Main Mix.

Most commercial mixers have at least two Aux Sends per channel, and of course two corresponding Aux Returns in the Main Mix section. It is not uncommon to find four Aux Sends, or even six. ProTools offers five Aux Sends.

### **Pre Fader or Post Fader?**

In many cases, you can choose between pre-fader and post-fader routing when you're using an Aux Send. What's the difference?

Normally, the signal that is sent out on the Aux Send has already gone through the channel fader. In other words, if the main volume of the channel was turned down to nothing, then there would be no sound available for the Aux Send control, because the channel fader comes before the Aux Send in the signal path. This is called *Post Fader*. The word Post means 'after'. The Aux Send is placed 'after' the channel fader.

With a Post Fader Aux Send, you combine the channel sound, going directly to the Main Mix with a 'copy' of the sound channel, going to the effects device. When the effect comes back into the mix on the Aux Return, you have a volume control to set how much of the effect is added to the mix. More reverb? Less reverb? You decide.

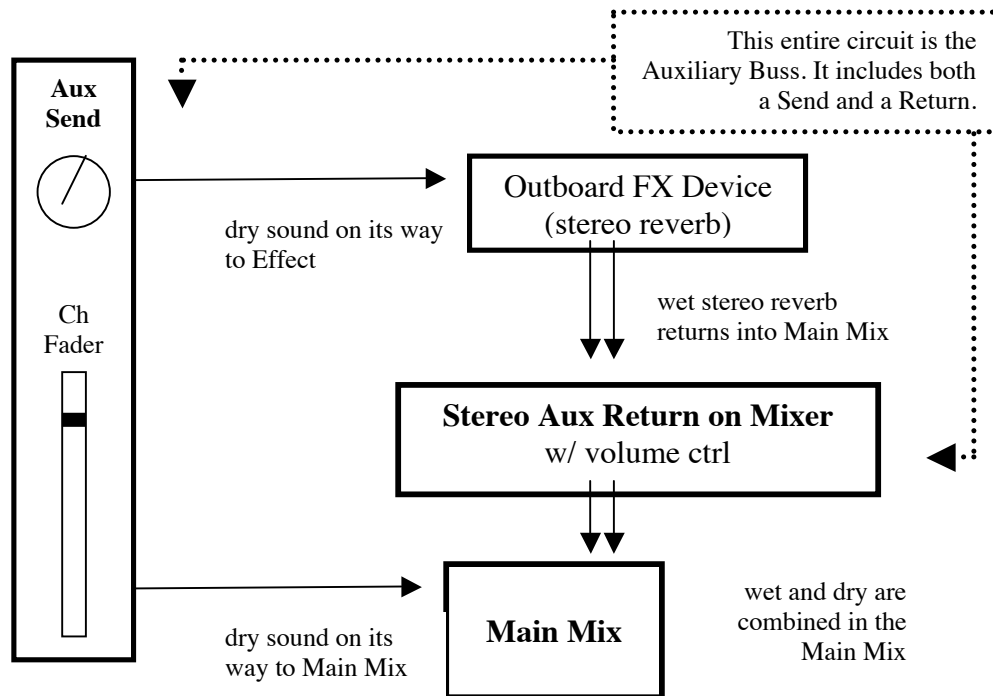
The other option is a *Pre Fader* Aux Send. In this situation, the Aux Send is positioned ‘before’ the channel fader. The term Pre means ‘before’. With a Pre Fader Aux Send, you can turn down the channel fader if you like, and the signal is still sent out to the effects unit. The amount of signal available for the Aux Send is not dependent on the position of the channel fader.

This allows an interesting effect to take place. Because you can turn down the channel fader, you can eliminate the dry (unaffected) sound from the Main Mix. But you can still have the wet (effected) sound because you are still allowed to send the channel out to the effects device using the Aux Send. When you Aux Return the effect back into the Main Mix, you will hear ONLY the effect. This can create, in our reverb example, a pure reverberated version of your sound, which can sound very distant and fuzzy. This can be a very beautiful effect.

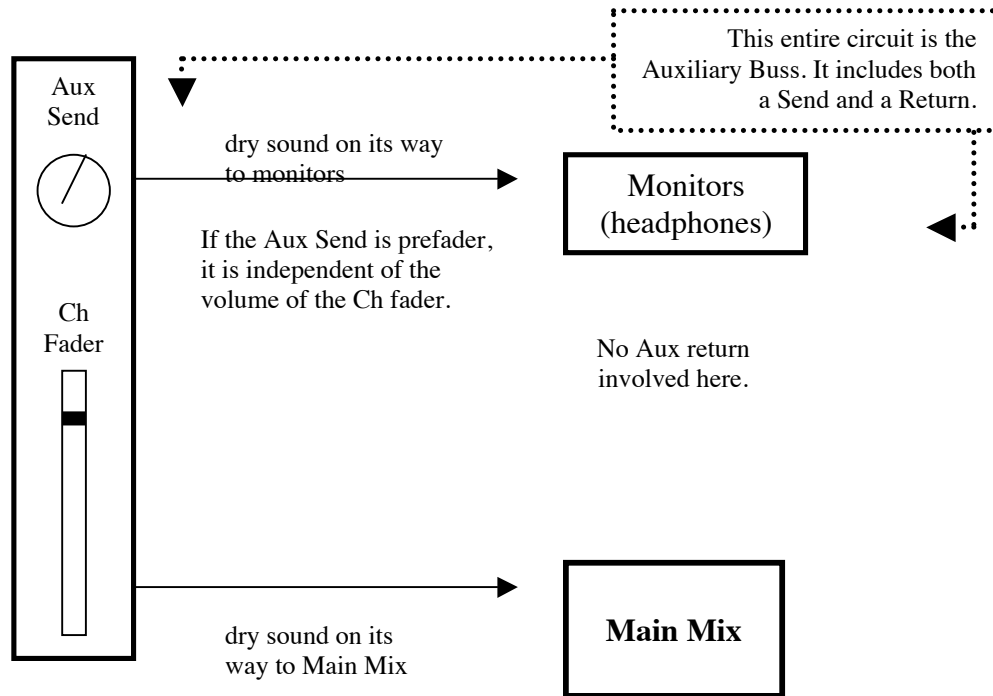
Prefader also lets you create monitor (headphone) mixes that are NOT dependent on the channel faders’ settings. This is a very useful option. The monitor mix is rarely the same as the mains mix. So by using pre-fader, you have two completely independent mixes. The more Aux Sends you have, the more different monitor mixes you can make.

## Four Uses for Auxes

### Aux Send and Return (sometimes called an effects loop)



## Monitor / Headphone Mixes

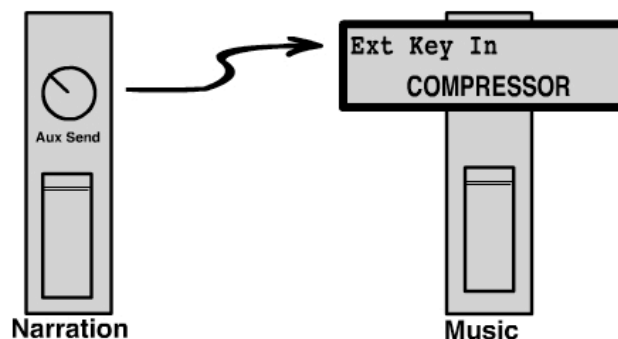


## Sidechains

Sidechains are used to create an interaction between two different tracks. For example, you have a track of music going, with a voiceover. Whenever the voice is speaking, you want the music turned down a little bit. You can use an Aux Send to send the voice to a special input on a Compressor, called a Sidechain input. The compressor will act on the music only when the voice is active.

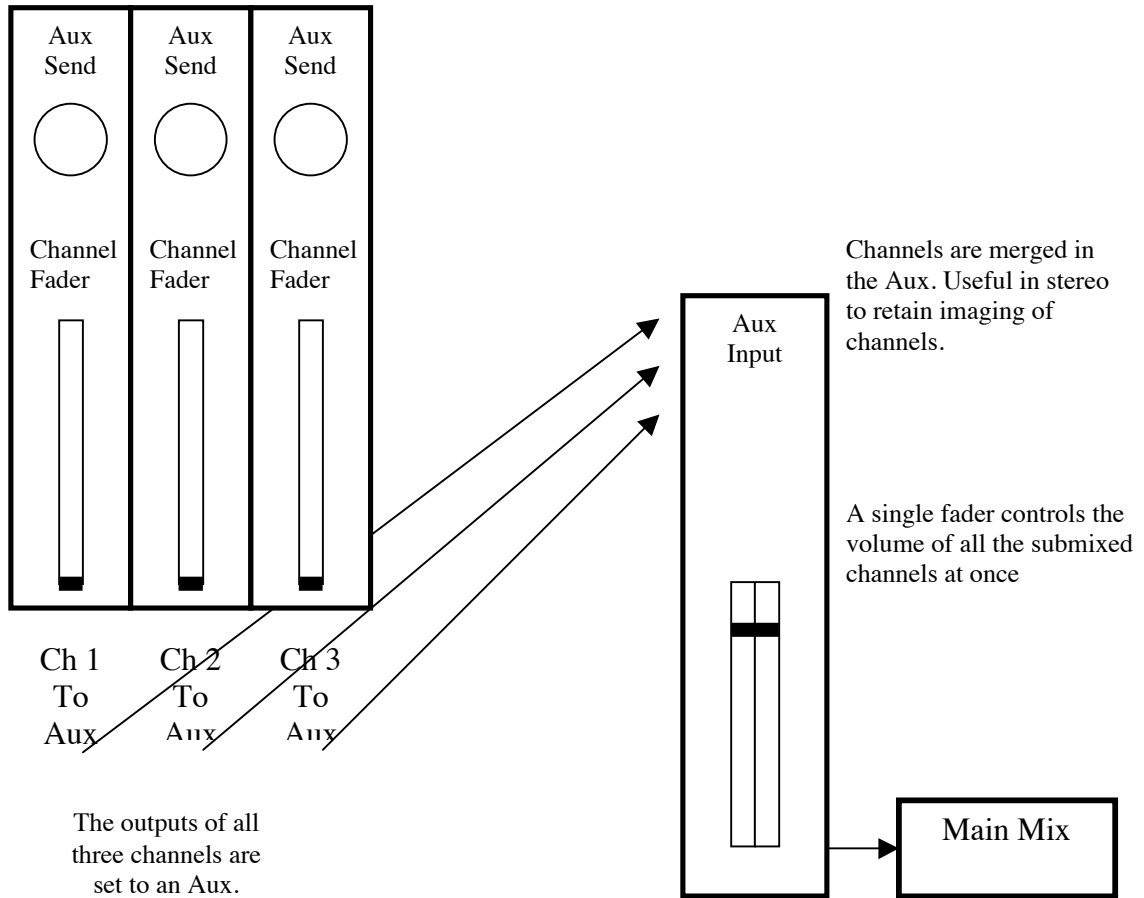
the Send determines how much Narration is sent out to trigger the Compressor. This can help control the sensitivity of the Compressor.

the Compressor is not activated by how loud the Music is, but instead by the presence of Narration. When the voice speaks, the Music is compressed.



## Submixes (stems)

Auxiliary Busses can also be used for Submixes. By routing the output of several channels to an Aux Buss instead of to the Main Mix, you can create a mini mix with the Channel Faders, and control their grouped volume level with a single Aux Return Fader. The output of the Aux Fader is added to the Main Mix.



end