



## Preparing Your Mixes For Pro Audio Mastering

To get the most out of the *pro audio mastering* process, you must understand how to prepare your mixes in a proper way. By giving the mastering engineer what he or she needs, you will increase the efficiency and quality of the work they do. The following guidelines will help to make your mixes sound better and the mastering process go smoothly, which will also save you money at the end.

Some of the steps may seem complicated at first but once you understand and implement them they will give you the greatest amount of flexibility in preparing your mixes for the mastering process. These steps follow basic engineering principles that have been used for decades and will help you understand the mixing and mastering process more fully.

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### Organizing Your Mix Down Session

Organizing the mixing session for *pro audio mastering* should start from the very beginning of the mix before you get balances and sounds. However, if your multitrack mix is already done, your session can still be reorganized to help maximize results. Do a "**Save-As**" and try to reorganize your session using the following basic guidelines. You'll be amazed at the difference it makes in the quality and control you have with your mix.

To start, we will need to break down your mix into 3 basic levels of processing. This organizational design will set the stage for the final mix to be printed. Following these steps will yield the best results from the pro audio mastering process. The following outlines each level, its purpose, and how it leads to the final mix bounce and is most common used at pro recording studios.

#### Level 1: Individual Tracks

The 1st level of a mix starts with the individual tracks. Organize your tracks such that like *instruments* are placed side-by-side. For example, all *drum* and *percussion* tracks should be next to each other. The next groups of tracks should be the basic rhythm section instruments like *bass*, *guitars*, *keyboards* etc...

Organize all of your *background vocals*, if you have any, after the rhythm section instruments. Finally, place your lead vocal along with any doubles for harmony parts next to each other. If you have other instruments that don't fit into these categories such as *woodwinds*, *brass* and *reed instruments*, you can organize these between the rhythm section instruments and the vocals.

It is not necessary that you follow this exact order of instruments. The point is that you organize instruments that are very similar in nature so that they will be easier to work with during the mix down. This will help to prepare the individual tracks for the next level of processing.

## Level 2: Mix Stems

Create a series of Auxiliary Tracks (Pro Tools) or Groups (Cubase e.g.) that will be organized in conjunction with the individual groupings of instruments you just laid out with the individual tracks. I usually place these mix stem tracks at the very end of my mix session next to the master fader.

These individual mix stems allow you to process individual groupings of instruments independent of the individual processing on the audio tracks. This extra level of processing serves a variety of very valuable purposes for your final mix and its preparation for the pro audio mastering process.

Assign the input of each of these mix stems to a series of consecutive stereo busses. Name each auxiliary track / group to match the groupings and track organization. Typical mix stem names are *Drums, Instruments, Background Vocals, Lead Vocals and so on*. You can even give them different colors for easier identification or put in same color group as your tracks, e.g. drum section in purple.

Additional groupings may be added to suit your needs depending upon the musical style and instrumentation involved in mix. A classical mix may contain groupings of *Strings, Woodwinds, Brass, Percussion, etc...*

Next, assign the output of the individual tracks to match the corresponding busses of the mix stem auxiliary tracks. I typically reserve the first 4 or 5 stereo busses specifically for these auxiliary mix stems. The output of these mix stems will then feed the stereo master fader for the final level of processing.

## Level 3: Stereo Master Fader

The stereo master fader maintains the overall level of your final mix. Its an unwritten rule to leave this fader always at 0 and never touch its level except for the final fade-out or a fade in if necessary. The stereo master track allows one last level of processing if necessary to strengthen the overall mix.

Be very careful about the level of processing that you perform at this level. If you find that you are applying dramatic amounts of equalization or compression to get the sound you are looking for, you should go back to the earlier levels of processing in your mix or even re-record specific tracks if it's needed to sound better to avoid artifacts or even phase shift due to dramatic EQ etc..

The idea of having these 3 levels of processing in your mix allows for the most flexibility in terms of work with your audio. Each level serves a very specific individual purpose. Individual processing is to shape each instrument's unique sound. Mix stem processing pulls each grouping of instruments together to make them more powerful as a group and glue them together after adding compression. The final stereo master fader pulls the overall mix together and sets the stage for the pro audio mastering process.

The 3 levels of processing also allows for the mix stems to be printed individually with great ease. This will serve you very well if your song will be repurposed for remixes, movies and television work. Instrumental, TV mixes and A Capella or Minus One versions can be created with ease...

## Check For Distortion At Every Level

It is very important that there is no distortion at any stage of the mixing process from the individual tracks all the way through the mix stems and master fader. Most DAWs allow you to view the audio levels of each individual track pre or post the fader. If you find that most of your fader levels are below the 0 gain stage mark then you should meter pre-fader to make sure that you are not adjusting your levels against an overload of plug-in processing.

Set your meters to show post fader if you find that most of your fader levels are riding above the 0 gain stage mark. This will tell you if your fader levels are creating a distortion before arriving at the mix stem level of processing. If you find that your overall levels are distorting due to this additional gain use mix grouping to trim the individual tracks levels down equally while preserving their relative balances.

Check the audio levels at each of the three levels of the mix. Make sure that each level is free of any overloads both pre and post fader. Finally, make sure that the combined output of each level of processing does not overload the next level of processing. Make adjustments as necessary. Clearing any and every level of distortion in the mix, no matter how minute, will make big differences in the pro audio mastering stage.

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## Printing The Final Mix

After you have mixed the song to your satisfaction, it is time to print the final mix so that it is ready for the pro audio mastering process. Here are some basic procedures you should follow to ensure that the final mix meet the expectations of the mastering engineer.

**1. Make sure the highest output level of your final mix does not exceed -3 dB FS. (FS stands for Full Scale where 0 dB is the highest possible level before distortion.)**

Setting the audio output level to a maximum of -3 dB FS leaves enough headroom for the mastering engineer to do any processing work that is necessary. It also helps to ensure that the output levels of the mix do not exceed the 0 dB FS. It is important to note that I am talking about the audio levels not the master fader which controls that output level.

Set the *metering preferences* of your **DAW** to "**hold**" the peak value so you can determine any adjustments to the overall output level. If the peak level occurs at a single point in the mix that is dramatically different from the average level, you may want to make adjustments to the individual tracks that are causing this peak so that the overall level is more even throughout the song. This is a production dependent decision of course...

Additionally, the standard metering that is included in most DAWs is not necessarily as accurate as you might think. The metering used in the pro audio mastering process is much more sophisticated and accurate. If the mix level shows 0 dB FS as a peak value, you may still have clipping even though it is not indicated by the meter. By setting the maximum level of your mix to -3 dB FS you can be assured you are not clipping.

## **2. Make sure that the mix starts a second or so before the start of mix.**

Leaving extra space before the start of the mix allows the mastering engineer to add a short fade-in that can make the transition from digital black to audio feel more natural. If the final mix is bounced from the exact start of audio there is the potential for the start of the song to sound clipped. The extra space is quickly and easily edited by the mastering engineer and is a standard part of the pro audio mastering process.

## **3. Make sure the mix ends an extra second or so after your fade-out or last audible sound.**

Leaving extra space of at least 1-2 seconds at the end of the mix ensures that the end of the song will not be clipped and have to be faded out unnaturally in mastering. If this happens, the mastering engineer may be forced to add in a reverb to smooth out the ending and make it sound natural. This will add extra time to the pro audio mastering process that could be better spent working on the sonic quality of your mix.

The mastering engineer will most likely chase your fade-out to give it a smooth transition leading it to the next song. Leaving the extra space will allow flexibility in the pro audio mastering process to deal with this transition more naturally.

## **4. Make sure that MIDI files are bounced into AUDIO files**

It's important, that you bounce or export any MIDI file into AUDIO file. External studios and sound engineers don't know which particular software/plugins or Midi equipment and their equivalent settings you have used, therefore any MIDI file has to be bounced / exported into Audio file which will replace your MIDI tracks in your song.

Make also sure, that each single track or stem starts at 0, even there is no sound and it will play somewhere later in your track. As a mastering engineer, we don't know when and where an instrument will start to play in your song, so it's essential that all your tracks are bounced at 0!

## **5. Set the sample rate and bit depth to be the same as your multitrack session.**

The final mix should always be bounced at the same sample rate and bit depth of the multitrack session. If your song was recorded at 96K - 24 bit resolution, then bounce the final mix at 96K - 24 bit. There is no benefit to printing the mix at a higher sample rate or bit depth than the original session. If your multitrack session is set to 44.1K - 16 bit resolution then print the mix at 44.1K - 16 bit.

For best sound quality and mastering results, it is highly recommended to keep your mix at least at 48 K and 24 bit or higher. Do not apply any form of *dithering* to your final mix.

Dithering is a low level noise added into a recording or final mix bounce to help make it sound more natural. Dithering is typically applied whenever bouncing a mix to a lower bit depth or sample frequency than the current session.

Since you will be bouncing your mix at the same sample rate and bit depth of the multitrack session, dithering is unnecessary. The noise created for the dithering process can accumulate if applied too often. Leave dithering to the mastering engineer who should have a more sophisticated ear and knowledge of how to apply it properly. Dithering is a vital part of the pro audio mastering process.

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## **Conclusion:**

Following the guidelines listed above will help to make the pro audio mastering process go as smoothly as possible. The objective here is to make the technical aspects of the mastering job as easy as is possible so that the mastering engineer can focus on making your final mix sound great.

Ignoring these guidelines will make the pro audio mastering process more difficult and thus take that time away from what is most vital to you, the sonic quality of your mix. Take the time to understand each of these guidelines and practice them. Not only will your mixes sound better, you will get better results from the mastering work as well.

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