

The Basic Process of Recording Tracks on a Computer

Keep your tracks in the digital domain and get a better mix for less money

by Tweak

The home studio **now has the** ability to create music totally in the digital domain, thanks to the emergence of affordable digital gear, the evolution of midi/audio sequencers and the availability of powerful desktop computers. This article gives you a **step by step method** of writing and recording music totally in the digital domain. As an added bonus, we will discover that in addition to the higher quality of the finished product, doing digital allows for a much more inexpensive studio.

The only analog phase in the recording technique below is the *actual recording* of the tracks in the sequencer from their analog sources. Once recorded, the tracks will not go through a digital/analog converter till you listen to the final product on CD, DAT, MP3 or WAV--whatever you are using. To get the full benefit of this enhanced sound quality *you must minimize your passes through converters*. Remember how we used to minimize bounces in the old analog tape decks? Today we minimize the number of passes we make from the digital world to the analog world and back.

Once digitized, only do go back to analog when there is no other way. Every time you pass through a converter you add errors, noise, artifacts, and stuff you don't want in your mix. The critical component for doing an all digital production is an **excellent analog/digital converter**. The converters reside on your soundcard or audio interface, or if you have one, a digital mixer (not required).

If you have both a digital mixer and an audio interface, you want to make sure the mixer connects to the interface/card through a digital connection, i.e., s/pdif, ADAT lightpipe, TDIF (Tascam) or AES/EBU (a professional digital output format). Don't let these names scare you off, just make sure that if you interface has s/pdif i/o that your digital mixer does too, and again, you don't need a digital mixer to do a digital mix. Why is that? Because all the top sequencers can function admirably as a digital mixer. It's built right into the software.

Lets Get Started.

Step 1.

Sequence with MIDI till you get what you want. If you are emulating a band, you know, ensembles with drums, bass, guitars, keys, etc., then make sure you a) record each instrument to its own MIDI channel and track. b) record each drum group to **its own MIDI track**. That is, make sure your kick drum is on a separate midi track. Ditto for the snare. Group the hats together if you want and group the percussion together if you want, depending on the song. (However, if you have a percussion instrument that at any point "carries" the song, like a tambourine or cowbell, then it too earns a dedicated track. Of course your solo synth, lead guitar, bass, all get their own tracks. Why we are doing this comes clear in #2. Make sure you are happy with your midi sequence before we go on.

Step 2.

Record each sequenced track as a wave file. In your sequencer, **solo** the track you want to record to digital audio. Or if you are using an analog mixer, you can route the instrument to bus which goes to the audio interfaces recording input. Or, if your synth has a digital output, you can connect that to the digital input of the audio interface. Just make sure only the intended instrument is being recorded. If you had a 14 track MIDI sequence you might go for 14 audio tracks--or--if you want to group some instruments together, like all the background horns, that's cool too. But do be careful in your decisions at this point as it is a bit of a pain to go backwards later (though certainly possible). OK! So now you have an audio track of just kiks, another with just snares, another with just bass. You're doing great, and you are hopefully noticing that the digital tracks sound nearly as good as the real time output of the synth. If they don't, take a look at your recording levels and make sure they are optimum--every track has a strong level, but there's no clipping from bursting through the roof. Its OK if the output sounds just a little worse than the real time midi track did--no converter is perfect--, because we are about to restore a sheen and luster to each track that should surpass the midi track.

Step 3.

With each track set the EQ, compression and other plugins as appropriate. Yep, make sure every audio track has its own dedicated EQ and software compressor. Now we're ready to rock, so pay attention. First, get the kick a kickin'. In the compressor plugin,

adjust the ratio, threshold and release till the kick does what the song requires. If it needs more balls, toy with the eq, kill the mud at 200–400 kHz and bring up the bottom at 80–100 hZ. Put a little top on at 12kHz or so, so everyone knows it's there. Now go to the snares and eq then so they fit exactly where you want it. Want it bigger? Stick a room reverb plugin on it. Hey! There's no rules. If you are as wacky as I you'll try stuff like vocoders and junk, just to see what they sound like.

You never know what's doing to tickle the modern consumer's taste buds (or your own). Hehe, you should be smiling. With the realization that what you are doing, plugging in and experimenting would have cost you about \$80,000 ten years ago. But I digress. So, you do this with all your tracks. Make sure you have the bass working with the drums and set your levels and pan your positions so everybody is heard and nobody is crowding someone else. Imagine each instrument is an ego-maniacal vanity-motivated typical musician who'll get mad if you steal their limelight. Alright! Now it should be sounding better than the midi mix--lots better!

Step 4.

Adding Vocals and adding emphasis. Here's where having the excellent preamp pays for itself. As with the midi tracks, this is the only conversion to digital that you will do, so do it the best you can. Conventional wisdom says record the vocals in dry, then effect with plugins. Or be radical, record the left dry and the right going through some outboard reverb you have, and save yourself some CPU resources for another reverb. Sometimes it takes 2 reverbs to get the vocal as lushy as you want. Or one for just reflections and on for room, or hall or cave, where ever you are. For areas that need emphasis, you might copy sections of a track to a new track and add effects just to that section (very cool possibilities there). A boring example, but one that always works, is to copy the snares from the choruses only and paste them on another track and treat them with more, you guessed it, reverb. A more Tweakheadz-like approach, just take the reverb off the snares by itself and reverse it, so it does that backwards verb effect. Do weird stuff with vocals too. See dudez and dudettez, anything is possible digitally and there's no crawling behind the racks. You just tweak till something inside says "Yes!" (Substitute your most affectionately used profane word if you like)

Step 5.

You have set the levels on each audio track. All your midi tracks are safely muted. The piece is balanced. The left/right meters are looking good. You listen from your

monitors and the stereo image is the way you like it. When you are really happy **render it all to a wave file**. Are we done? Not so fast! Why quit now? You can if you want but you might miss some really important opportunities to make a cool song a totally kill song. But before you get started, save that wave file twice. I say the MIX is done. Time to move to the MASTER or REMIX or Post-Production phase.

Step 6.

Call up a new, empty song and load the mixed wave file. Yep, it's the only track in the song. You have a multitude of options. If your software has a multiband compressor, you might play with that and see if you can make the mix sound better. Take a look at the waveform for the song as you listen. Is there anyplace where the song loses intensity or gets boring? Put a volume envelope over the whole song and perhaps do a subtle rise of volume right before the climax. Do your final mastering edits. You can still cut or rearrange verses and choruses. Or go totally ape wild. For instance, add tiny gaps of silence at a deadspot, which registers with the listener but doesn't disrupt the flow. For an example, listen to "Ur My BayBe" I actually ran each verse through a different pitch shifter--weird stuff, I know, but someone has to try it.

Step 7.

OK, by now you are tired, the significant other is mad because you spent all weekend in the studio. Render the final result to Wave and burn to DAT or CD. You're toast. That's when you know you are **done**.

Summing Up

So you see, we just made a whole song entirely in the digital domain and only went through one analog to digital converter. Just one! You avoided all the hisses, hums, crackles of analog mix. If you used a software sampler as your source sounds or the digital output on your synths, the last converter it went through was at some pro studio far away. The advantages of working this way should be very clear. You don't need a roomful of synths. One good one will do. You don't need a monster mixing board. Or even a big amp. Just connect some active bi-amped speakers direct to your audio interface for monitoring. You don't need outboard gear for effects or compressors (though you may find them useful for preparing the track for digital recording). You don't need 1000 patch cables. You do need a good mic, a good preamp, and a good analog to digital converter on your audio interface, digital mixer, or soundcard.

You might be asking at this point, "*Is digital better than analog?*" I think the answer depends on how much gear you have and what quality it is. If you have a good analog board, good processors, more than one compressor, lots of synths and samplers, are using balanced cables to minimize noise, I think it's a relatively level playing field. An analog setup is more fun because you get to use your hands and real knobs to mix the monster. Doing the digital thing takes longer as you have all the conversions of each midi track to audio file, a step not needed doing an analog mix. This adds several hours to the process of making a 4 minute song. There is also a certain warmth to the way analog signals "blend" electrically together in a quality mixer. A digital "bounce" to stereo is sheer math and number crunching. The argument can't be settled here and I love both approaches. I will say that an all digital mix is cleaner and more "in your face" if done properly, while an analog mix might have a creamier, more subtle texture in the end. But the sheer amount of cash to do analog well is well over 20 grand for a basic-but-complete home studio. The cash outlay to do it all digitally might be from 6-7 grand for a nicely outfitted professional sounding digital setup. Of course you can spend less and get up to working speed for under a grand. And you don't have to choose one or the other, you can do both, even in the same song. There's no hard and fast rules for using modern music gear, just a million pathways for audio and midi to travel on their way to a finished song. The joy is the process of getting there. It's all up to you.

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