

E119 Digital Audio About DAWs

A Digital Audio Workstation (DAW) is the generic name for a hardware/software combination that's used to record and mix audio. Several years ago, the first DAWs were dedicated pieces of hardware with hard drive or digital tape recording capabilities, and digital audio mixing all wrapped up in one box, the size of a small mixer. Now, because computers are so popular, the 'front end' (the 'mixer') is usually a computer program for Mac or Windows. This allows the computer to behave as a DAW, because you can easily attach a high quality audio interface to it, using Firewire or USB.

Many audio programs could be considered as front ends to a DAW. Programs such as ProTools, Cubase, Logic, Nuendo, Vegas, and CoolEdit Pro are well-known.

Audio interfaces are common and come in a wide range of price and features. Manufacturers include Digidesign, M-Audio, Steinberg, Lexicon, and others. You can even use your built-in audio card (Mac or Windows) to record and playback using some audio programs.

Some features you should pay attention to are:

1. # of Inputs/Outputs (this includes both analog AND digital)
2. # of simultaneous tracks (recording and playback) (This one is important to know in BOTH software and hardware)
3. compatible software (ProTools, Logic, Cubase, Reason, etc)
4. DSP capabilities / plug-in formats (VST, AU, RTAS, DirectX?)
5. platform compatibility (Mac, Windows?)
6. compatible file formats
7. sampling rate/bit depth capabilities
8. synchronization capabilities/wordclock
9. balanced or unbalanced I/O?
10. digital I/O format (SPDIF, AES-EBU?)

Here is a sample description of a typical audio interface.

Features

- * **Four simultaneous inputs and outputs with analog and digital I/O***
 - * **Two analog inputs (XLR, 1/4" line, and 1/4" DI jacks) and two analog outputs (1/4" jacks)**
 - * **Two channels of S/PDIF digital I/O (RCA)**
 - * **48V phantom power for condenser microphones**
 - * **24-bit/48 kHz audio**
 - * **MIDI in/out**
 - * **Zero-latency monitoring**
 - * **100% USB powered**
- * **Four simultaneous inputs require two channels of digital input plus two analog channels.**

Here is a sample description of a typical software front-end.

- * **Import MIDI, REX, ACID, WAV, AIFF, AAC, MP3, and CD audio files**
- * **Beat Detective LE automatic groove analysis and correction tool**
- * **Fully non-destructive editing**
- * **Powerful, intuitive MIDI sequencing**
- * **Real-time audio and MIDI processing**
- * **Advanced virtual instrument integration**
- * **Wide-range of compatible third-party software options (Audiosuite, RTAS and TDM plug-ins, ReWire-compatible)**

- * **Record up to 24-bit/96 kHz**
- * **Low-latency monitoring while recording**
- * **Powerful loop recording options**

- * **RTAS real-time effects processing**
- * **Advanced automation features**
- * **Wide-range of professional third-party processing options**
- * **Control surface options for hands-on mixing**