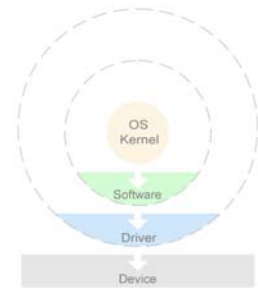


## Is there Light At The End Of The FireWire Audio Tunnel?

### CEntrance Develops the Universal FireWire ASIO Driver

By Michael Goodman



### What's wrong with FireWire Audio?

In 2004 CEntrance went to the AES show and saw that many customers were frustrated with FireWire audio. The big promise of FireWire was to make device interconnections easier, but all that people in the audio recording industry experienced were headaches and incompatibilities when trying to use FireWire products from different manufacturers on the same Windows computer - multiple units used together were incompatible, applications crashed, audio was noisy, installation required a PhD. Fortunately, CEntrance knew how to help and set out to make users' lives easier. The solution was to create a special piece of software that supported many manufacturers' audio interfaces: a really good audio driver -- an invisible component at the peripheral level of the OS, which tells it how to use hardware devices. CEntrance calls it the "Universal Driver™".

### Why make such a fuss about drivers?

Drivers have been neglected for too long. It's finally time for this little-known technology to come to the limelight. Here is why -- a driver is the glue that connects the hardware with the OS. A secondary component of the OS, drivers serve as translators between internal generic commands and the actual commands understood by the physical device. If the driver is broken, so is the hardware that is connected to the computer. Audio streaming is a very demanding task. You can't afford to have glitches or dropouts in your audio and the driver needs to be designed to never lose your precious program material. We simply can't afford to neglect the drivers.

### The weakest link in the signal chain

Unfortunately, very few people know how to create robust drivers; so finding good software engineers is hard. The problem is compounded by the fact that many manufacturers fail to invest in this important link in the chain. There is no business case to drivers - they are traditionally thrown in with the product for free and are not considered the real moneymaker. Worse yet, they are considered an impediment, a nuisance that no one wants to deal with. This state of affairs is rather dysfunctional, as arguably the most important link in the chain gets the least attention!

## Changing the game around for the benefit of the user

So, how does one company change this mindset? By changing the way our industry looks at drivers. CEntrance decided to make a very bold move - transform the driver from a neglected add-on technology into a reliable, professional tool. Fortunately, CEntrance is in a very unique position to make this happen. For years we've been working with top name brands in the audio industry, helping them bring new technology to market. We have what it takes to create a software product that is compatible with audio products from the most prominent manufacturers, and in the process are able to create a standard that would benefit all users.

## Trick Question: Are there any special requirements for audio drivers?

True Answer: Lowest latency.

If you are monitoring during recording, your audio comes from the microphone into the audio interface, is carried by the driver to the recording application, there it loops back and takes the same trip back to your headphones. The Processor in your computer runs all these software steps, devoting some time to each one before switching to the next. This is where delay creeps in. The more software steps that are running, the longer the latency becomes. Generally, if your audio returns to you in 10ms or less, you won't notice much delay. But in reality, it can take much longer for audio to travel the full route in and out of your computer. Since Windows is not a true multimedia OS, it is not designed to take care of low latency audio. Windows wants to make sure that no samples are lost, but in doing so, it can insert as much as 50ms of "safety margin" into its built-in driver. The downside is that you can't expect to do critical recording with built-in Windows audio drivers; that's why everyone has to write their own.

## How drivers work

Modern operating systems such as Windows XP™, Linux, or Mac OS X™ are expected to work with different hardware from a variety of manufacturers.

Because no one company can make its OS compatible with thousands of printers, video cards, sound cards, etc., a concept of abstraction is used in OS programming. An operating system contains layers, just like an onion, and different layers take different functions. This is done so programmers maintain sanity when designing the layers.



The OS kernel (inner layer) need not know anything about peripheral hardware. It worries about correct program execution and delegates handling of hardware to a driver. It issues generic (abstract) commands to a driver, which translates them into commands specific to the physical device -- division of labor makes everyone's life easier.

Drivers usually come from the device manufacturer. Every device has a different number of channels, controls, indicators, supported sampling rates, etc. As a manufacturer adds unique features to its product it also creates a unique driver, which will tell the OS how to use the product. This way the maker of the OS can concentrate on creating a reliable kernel, which would be independent of hardware and instantly compatible with devices released years from now.

## Want to test your audio driver for Latency?

CEntrance has developed a special software utility to check how many milliseconds it takes audio to make the round-trip in and out of the Windows computer and audio hardware. Visit our website and try a copy on your own set up: [www.CEntrance.com](http://www.CEntrance.com)

## How can I get the Universal Driver?

CEntrance plans to offer its Universal Driver for sale in Q1, 2006. The company is also in negotiations with several prominent Pro Audio manufacturers regarding licensing of this technology for their product lines.

## Which devices are supported?

The CEntrance Universal Driver was designed from day one to support all major FireWire audio chipsets from such companies as BridgeCo, Oxford and Wavefront, making it compatible with products from such companies as Apogee, Edirol, M-Audio, Mackie, Presonus, and many others.

## Is this technology available on the Mac?

Apple Corporation has a similar technology built into Mac OS X 10.4, called "Device Aggregation". It's likely that both technologies will be maturing together over the coming months, but the CEntrance driver for Windows includes professional features such as sample-accurate synch and flexible selection of a synch master on the network.

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CEntrance CEO, Michael Goodman, is a patent holder, co-author of an AES Standard, and when not developing innovative audio products, he can be found playing bass in his sample-accurate jazz trio in Chicago.

### Things you can do with the CEntrance Universal Driver

- Got a friend with the same type of audio interfaces as the one you have? Have him bring it over, plug it into your studio; get twice as many channels for recording or playback.
- Bought a premium interface with a killer mic pre for your critical vocal tracks? Don't throw away your old interface. Plug the new one in alongside your existing interface; get more channels with instant sample-accurate synch.
- Like mixing outside the [computer] box? Add more interfaces, get more output channels, route them all to an external mixer, mix like they used to in 1979!