



Can I compress my audio?

Hey Dr.,

I've heard a lot of this before. [Very high audio sampling rates and large sample sizes]. But what about the storage problem? It seems ridiculous to satisfactorily compress video to fairly low data rates but have audio heading in the other direction. In fact in some machines the storage space required for audio far exceeds that required for the equivalent record time of the compressed video. This is simply not economical for very marginal benefit. Surely in the professional television studio/production environment compromises have to be made with the audio also. [16bits/48KHz and/or DolbyE type stuff].

Cheers,
RT

Yo RT,

You are so right! Higher sampling rates and/or larger samples equal more data. You can process the data to your hearts content, but eventually you have to transmit and store it somewhere. The video world has accepted compression as a way to reduce the data. This makes sending the stuff around and stashing it away MUCH easier. So why not compress the audio as well?

It's time for me to get onto my soapbox. Compression is OK, provided it is used in the right place. For final storage and transmission to the public compression is great. But use compression in original acquisition or post-production and you are in trouble. As a simple example editing an MPEG stream is not a happy thing to do. I remember tweaking everything just right so we could get to 13 generations using one-inch analog VTRs. Why return to the old days when with un-compressed video and audio we can practically reach production quality nirvana.

Here is a test for any video or audio compression system. Start with a good quality source [try this with several differing sources]. Use ANY compression system, and pass the signal through several encode/decode cycles. On each pass modify the signal

in some way such as to add a key, or do a fade, or add a border, or do some EQ. The modification does not have to be large. Count the number of cycles before the signal begins to degenerate to the point where it is longer acceptable. The breakup will depend on the content of the source and compression rate, with some being acceptable, while other producing garbage. For some uses this degradation is acceptable, but to my eye though, using compression is equivalent to using VHS tape at slow speed.

Of course the quality of the end product has a lot to do with the audience it's aimed at. A local cable is happy to fly video in its commercials with a video toaster. I don't think that a commercial for a soda company produced to run 1st period of the Super Bowl would be happy un-filtered DVE moves. If there is a lot of production to be done to a piece of material, keep it un-compressed while it is being munched. If the production is done, and you want to store or distribute a finished product, compress it as the last thing in the chain.

Audio is much the same as video, except that it is easier to fool the eye than it is to fool the ear. Distortions introduced by compression/expansion/modify/... cycles degrade the audio stream very quickly. In fact, Dolby Labs does not recommend using Dolby 5.1 compression in the production process and has developed DolbyE with much less compression for this purpose.

So now we get down to where I make my bread and butter, video and audio routers. My advice is not to lock yourself into ANY audio format when selecting an audio router. If the router is designed to transparently pass any digital stream from 300Khz to 15Mhz then this piece of plant infrastructure is guaranteed a long and productive life whether handling 28bit/192Khz audio, DolbyXYZ, or whatever other audio "standard" the future has in store for us.

Cheers,
The Dr.