

NEWS  
IN BRIEF**Swedish HD OB**

Swedish outside broadcast services provider Prisma has selected Pro-Bel routing technology to sit at the heart of a new HD vehicle. The primary contractor is Sony Professional Services with the order placed through Pro-Bel's Swedish dealer Taurus. The brand new HD truck – HD-1 – has 34 operator seats with a maximum of 30 cameras. It is double expandable and occupies 75sqm, benefiting from two separate production control rooms with a true 5:1 mixing area for audio with room for two audio engineers. The monitor wall is fitted with 46-inch HD LCD screens with a multiview system for flexibility. At the heart of the truck sits a Pro-Bel Sirius Gold router, equipped 304 x 512, with a mixture of HD and SD. The OB unit has been designed and specified by a Prisma project team headed by Technical Manager Robert Elfstrand. [www.pro-bel.com](http://www.pro-bel.com)

**Digi for Mac Pro**

Digidesign's ICON, Pro Tools|HD, Pro Tools LE and Pro Tools M-Powered systems will soon be compatible with the new Mac Pro computer introduced at Apple's Worldwide Developers Conference. Digidesign will release an Intel-based Mac-compatible update to its Pro Tools HD 7.2 software this month. This free update for all owners of Pro Tools HD 7.2 software will allow ICON and Pro Tools|HD users to build their Digidesign system around the new Mac Pro. Within a similar timeframe, the company expects to release compatible versions of its range of Digidesign and Digidesign-distributed TDM plug-ins, while working very closely with third-party manufacturers to help them port their plug-ins and compatible applications to the Intel Mac platform. [www.digidesign.com](http://www.digidesign.com)



TSL's new AMU2-8HD Dolby audio monitoring unit: 'Among the problems that broadcasters perceive when using Dolby E is that video delay is introduced when you encode and a further delay when you decode; whatever you do with the audio you have to do with the video'

# Learning to love Dolby E

## HD Audio Opinion

By Russell Grute and Martin Dyster, TSL

There was a famous quote made by Brian Sullivan of BSKyB a few years ago where he stated that, "HD is the picture quality that Dolby Digital surround sound has been waiting for". This may not be an opinion shared by all but it's true to say that the consumer market has been used to surround sound using high quality systems like Dolby D for a long time. Broadcasters are being driven by both the consumer and the movie studios to provide higher quality sound. So, what are the challenges for broadcasters and systems designers when shipping Dolby Digital signals around?

Firstly, the widespread migration to Dolby Digital coincides with the transition to HD. This may also require hybrid working in SD and so, some corresponding video issues such as aspect ratio and additional video processing delays occur throughout the programme chain, particularly in presentation and transmission. Dolby Digital requires more audio channels (six or more) to transport it. The emergence of

Dolby E as a possible solution in turn creates a new set of challenges.

To discover some of the issues we first must examine how surround sound really works end to end. Dolby Digital relies on specific metadata about the encoded audio, which tells the consumer's receiving equipment how to decode the signal and reproduce it as it was intended to be heard. Whether listening through a state-of-the-art 5.1 AV system or in mono, the set-top box (STB) must present the correct audio mix from its RF, Scart, HDMI, stereo phono or digital output connectors. In the various successive stages of monitoring in a typical broadcast chain, such as production, post production, quality control and ingest for play-out it is also necessary to easily and consistently check the audio — but now there are many more permutations than there were with stereo.

If using Dolby E as a transport stream then this source metadata is further embedded within the Dolby E bitstream and as such, can remain constant throughout a carefully-designed transmission process. Whether transmitting live or recorded content this metadata is produced during the Dolby E encoding

process using a compatible processor. Prior to final transmission encoding, Dolby E is decoded back into Dolby Digital and the metadata carried onto the consumer.

### On the Pres Mixer

Among the problems that broadcasters perceive when using Dolby E is that video delay is introduced when you encode and a further delay when you decode; whatever you do with the audio you have to do with the video. Although you can carry out basic cut editing or splicing with Dolby E, you can't easily affect levels once audio is encoded so you have to make sure that what you're encoding and/or embedding is good for transmission. To do anything creative with it you may have to decode back to baseband and then re-encode whilst keeping video synchronised: you may also have to replace or reinsert the metadata synchronously.

If for example, an HD OB is transmitting live sports remotely, they will produce a transmittable 5.1 mix (with specific metadata values) before uplinking it to the broadcaster. The broadcaster can then monitor the audio quality, ensure metadata values are correct

and communicate any technical problems back to the Sound Supervisor in the truck to make the necessary adjustments.

Dolby E audio should be kept frame-accurate with its associated video source when embedding the Dolby E stream within the HD/SDI, which can make this job easier. Manufacturers of useful Dolby E compatible mux/demux interfaces have integrated synchronisers into their products.

Two Dolby E streams can be 'cut' on a Presentation Mixer (whether embedded or not), the resultant transition will produce a basic cross fade so that any major differences in metadata values will be minimised. If a broadcaster uses live voiceover during transmission to accompany trails or over end credits where the transmitted material is a Dolby E source then some careful thought is required.

A few Dolby E processors on the market allow the insertion or mixing of an external audio source into the bitstream but the functionality doesn't integrate into a system in the usual way that manual voice over using a fader channel on the Pres Mixer has allowed with conventional stereo broadcasts. To perform this trick you have to decode back down to AES or analogue and present multiple audio channels to the mixer.

You are then faced with the decision of whether to mix a voiceover across left/right, centre or all three channels and then ensure that your mix level and metadata values are compatible so that the viewer isn't reaching for the remote control every time the continuity announcer has something to say, just before or after the commercials (which are always so loud, but that's another story)

There are a few other pitfalls. Most video frame synchronisers repeat or drop video frames in sync mode. When this happens, a downstream Dolby E decoder or STB may 'pop'. To counter this problem a system designer can either de-embed/decode the Dolby E, retime it and then re-encode or be very careful when choosing video processing equipment to ensure that devices are fully Dolby E compliant.

Dolby E is relatively new but it is already being adopted worldwide as the production and transport standard for multichannel and surround sound audio.

[www.tsl.co.uk](http://www.tsl.co.uk)