

With the current proliferation of digital transport protocols and standards, interoperability seems to have made its way back onto the agenda. Chris Fitzsimmons asks if this time around the manufacturing community is finally ready to play nice.

It was easier with analogue



If the space-time continuum ran in accordance with IEEE 802.1AS then the audio fraternity probably wouldn't be experiencing the sense of *deja vu* that it currently is. However because the laws of physics committee hasn't ratified the standard yet, history appears to be repeating itself.

When Peak Audio cooked up CobraNet, Rich Zwiebel drew an awful lot of strange looks from audio companies when he came to them with the idea of sending audio signals down an Ethernet connection. "Why would you want to do that?" they asked him. Fifteen years later it's looking like less of a dumb idea, but unfortunately since then, we've invented about as many other ways of achieving the same thing.

A bit of reading and research reveals a bewildering array of methods of moving audio from A to B using digital signals. The problem is of course getting them to talk to each other, and as Zwiebel himself remarked during a panel discussion at the recent InfoComm Future trends summit at ISE 2012: "It was a heck of a lot easier with analog [sic]."

In the January edition of InAVate, eminent audio consultants Roland Hemming and Richard Northwood put forth the suggestion that audio systems should do just that. So there's clearly a demand from the consulting market. Ask any audio systems designer if

“ Signal interoperability is really important for designers, consultants and end customers. It clearly adds value to our products. ”

– John McMahon, Meyer Sound

he'd like all his different bits of kit to fit together and talk nicely with each other and he's unlikely to say no.

Which of course brings us to interoperability. This is defined by the IEEE as "the ability of two or more systems or components to exchange information and to use the information that has been exchanged."

Audio networks carry two different sorts of information. The first relates to the media itself, the ones and zeros that make up the audio signal. The second relates to control signals between audio devices.

And here's the crux of the matter, whilst most vendors are interested in the former – they recognise the need to share audio signals with other parts of the audio chain that they don't provide, they are less keen on exposing the control parameters of their devices to the same level.

Aidan Williams, CTO of Audinate, the company behind Dante, elaborates on the demand from the market: "Customers want to be able to buy equipment

from different vendors and plug it in and make it work. They want the kind of interoperability they get from an XLR connector."

There is hope at last arising from the fact that the manufacturers are beginning to coalesce around particular standards. For example, the AVNu Alliance now boasts a relatively impressive membership list all of whom who are committed to the AVB suite of standards.

Biamp are one of the key members of the group. EVP of operations, Matt Czyzewski outlined the company's position on interoperability.

"For us interoperability has meant, and continues to mean at this point, more on the media side than the control side."

"We definitely see importance to the audio side otherwise we'd just do our own thing. We recognise that we don't make microphones, and we don't make speakers or high-power amplifiers."

< "The control side of things is a tricky one because everyone has to agree to use a particular set of attributes. Each company brings some of its advantage into how the product is controlled. Sometimes that's how it is tied into their own software, and other times it's how nicely it plays with AMX and Crestron vs someone else's pieces."

"If you suddenly say nope, we're all going to have the same attributes, some folks will look at that and say that some of their advantage or clever ideas are taken away."

Also, Czyzewski questions how much of a deal breaker control interoperability really is for systems integrators.

"When we bring it up with integrators, there are plenty of them that say yes, that would be really nice. But I never get the sense from them that that's the ultimate priority."

Speaking for another member of the AVnu Alliance, Meyer Sound. John McMahon is the company's executive director of digital products.

"Signal interoperability is really important for designers, consultants and end customers. It clearly adds value to our products. I would say I get an enquiry about interoperability every week. Not having to jump between audio formats is of benefit to everyone."

McMahon also points out that interoperability is easier to achieve via some form of third party certification. AVnu Alliance member's equipment must all be checked for compliance with the relevant standards to ensure it works together.

That said, QSC definitely wants to see true interoperability between products from a majority of the professional audio manufacturers. That is good for the industry, and all of us at QSC have a real passion for this industry. But in reality, each company has already invested in what they are currently doing. This is why QSC supports X192. Most of the current GB Ethernet based audio networking technologies have a lot in

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– Graham Hammell, Harman International

common. With X192, manufacturers can still keep on our existing paths, but adapt to the standard and either entirely go with it, or just offer an interoperability mode. X192 is not a commercial endeavour so it does not have any marketing around it, it is an AES working group. But if enough manufacturers support it, we can have true audio interoperability for ALL of these companies, not just a particular subset. And THAT would be great for our industry."

A third member of AVnu, which probably has more experience of building interoperability than any other, is Harman. The company has spent years ensuring that the equipment built by the various brands under its aegis inter-operate both in terms of control and audio.

But as Graham Hammell, director of the system

development and integration group, explains that's a far from simple undertaking even within one organisation.

Interestingly, Hammell believes that the whole issue of interoperability is a bit of a red herring. "In the future we don't think people should need to know what protocol is being used, we want to abstract the complexity out of the problem and present a much simpler GUI to the engineer using software to do the heavy lifting."

One company not using AVB is QSC Audio whose VP of systems strategy is, Rich Zwiebel.

"Part of our thing back when I was running Peak Audio was that every product had to be interoperable," he told me during our video Skype call. "Every product was submitted to us and we tested it. For us, it was >

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< important to say that every product that used CobraNet was interoperable.

"While a lot of manufacturers say, 'oh yeah, interoperability' they are all competitors so it doesn't directly benefit any individual vendor.

"However, it does benefit the industry as a whole. For that reason I've always supported the idea, and so does QSC most definitely."

But whatever the good intentions of QSC and other companies, the reality has always been somewhat different according to Zwiebel.

"If you look at Ravenna now, those products are interoperable. If you look at Dante, those products are interoperable, AVB is talking about heading to interoperability. People complain that Q-Sys isn't interoperable with anything else, and neither are the Telos products. I think it's a good thing in general, but the reality is that it takes a lot of work for any company to do interoperability, and it doesn't directly improve their bottom line.

The X192 effort that Zwiebel refers to, is an AES project headed by Kevin Gross the founder of AVA Networks, and co-creator of CobraNet.

"I approached the AES about a year and-a-half ago to start a project on this. The reason was that I saw multiple audio networking protocols that had a lot of the same technology in common, and yet they don't talk to each other.

"The project focuses specifically on media transport, and the technologies involved are AVB + 1733, QLAN, Livewire from Telos, Ravenna from ALA Networks, Dante from Audinate and an EBU standard called N/ACIP.

"The control interoperability is a different story, and I don't think that it's as important as the audio interoperability. There are two reasons I say that. One is that there have been numerous attempts to do

control interoperability and none have been successful.

"The other reason is that there are other ways to achieve it. AMX and Crestron to name but two, have shown that you can put a third party device in there that can speak all the different languages and provide the functionality that you want in an interoperable system.

Key adopters of Dante networking technology include the TC Group, and Peavey, as well as Bosch,

everything and is interoperable with the largest number of AVB systems out there so that the customer doesn't have to pick and choose between the layer 2 and layer 3 stuff.

"To summarise - Dante delivers a complete solution on top of the transport. We see the AVB standards for Layer 2 and 3 as where the momentum is at the moment, and we want to support those so that we are compatible with as many systems as possible on the market." Here's what Peavey's James Kennedy

“ If you eliminate the communication barriers it opens up a whole new world of freedom. ”

- Ethan Wetzell, Bosch Security Systems

which uses Dante as the transport part of its Omneo networking framework. Aidan Williams outlines his company's position in the interoperability debate: "For Audinate, because we're not a hardware manufacturer we care a lot about interoperability. We are putting in significant engineering efforts to implement the stuff that we have now, as well as AVB 1722 and the AVB layer 3 RTP-based transport protocols. We believe that AVB1722 Layer 2 transport is going to have a number of adopters and we want to inter-operate with them, but we also believe that the Layer 3 transport protocols are really required for a number of our major customers like Bosch, and I guess for the long term future. We see the layer 3 stuff as really being the future of AV networking and scalable AV systems.

"We want to be in the position where a Dante solution, that incorporates AVB, basically does

has to say.

"From the point of view of the consultant or integrator, full interoperability would be nice for them and certainly give them less work to do. In terms of control I actually think it's going to detract from the piece in terms of the fact that manufacturers are going to have less of a USP."

I wondered if we run the risk of creating lowest common denominator products in an attempt to achieve interoperability.

"I think the X192 project is more interesting than the OCA to be honest. That's not trying to define a new protocol, it's taking existing ones and binding them together."

Another Dante licensee, AVNu alliance member and also a founder member of the OCA is the TC Group. Klas Dalbjorn is the group's product research manager. He >

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< tackled one of the issues cited as an objection to interoperability. Namely whose fault it is when a multi-vendor system goes wrong, and who supports it.

"No one wants to get stuck between two manufacturers refusing to take responsibility; this is a good argument for a one stop shop, no matter if the technology used is proprietary or standardized.

"Many of the branded proprietary solutions are still to a great extent built on top of established standards. This is true for Dante, Q-Sys, Ravenna etc, and there is a project called X192 in which the vision is to unite around the commonalities and make these interoperable.

"I prefer the standardized path with a third party providing compliance testing. This will aid competition and promote new innovation and technology as the contractor/customer can pick the best or most optimal product in each category as long as they are certified towards the same compliance testing criteria. In the future I hope that this exists both for Layer-2 and Layer-3 transport solutions."

And so to the OCA or Open Control Architecture. Evangelists will tell you it's the last great hope for peace, an alliance of competitors coming together to slay the evil alien invader that is proprietary control. Detractors, as we have already seen, tell us it's doomed

because the industry has failed repeatedly for two decades to agree a common way forward, or that it will stifle competition and innovation.

The case for the defence is given by Ethan Wetzell, platform strategist for Bosch Security Systems, one of nine founding members of the OCA Alliance.

"What the OCA is really trying to do is not define products or operations or unique functions, but rather to define a more efficient or universal way to use those functions.

"We have no desire to go into any product and dictate how that's going to operate or what it's going to do. Let's say that company X has a DSP product with the most amazing compressor object inside. We want to have a universal way of allowing people to communicate with that compressor, to configure and interact with that object, not define how it works.

"The powerful thing about that in my opinion is that if you eliminate the communication barriers it opens up a whole new world of freedom for integrators and designers to choose products based on what they do, not on the language it speaks."

It's hard not to be inspired by those sentiments, especially when expressed by someone who comes across so plausibly and enthusiastically as Wetzell. But there is a suspicion out there that there is another agenda behind the OCA. I asked Ethan what Bosch's motivations were.

"Well, of course the OCA allows the Bosch products to inter-operate more effectively as part of our OMNEO platform. We won't deny that there's a business incentive there. But additionally, interoperability in general is in our interests and those of the wider market. Bosch is a huge company, as are others such as Harman and Yamaha, but no one company supplies absolutely everything nobody needs to exclude themselves. A successful initiative like OCA ensures no one needs to exclude themselves from potential business in large interoperable installations."

The success or failure of the latest efforts to converge the various parts of the audio system will depend largely on the willingness of the manufacturers to let go of some traditional hang-ups, and preconceptions about what is possible and what is good for their businesses.

There is genuine evidence that this is now happening. The very existence of the OCA and the AVNu alliance proves that vendors are waking and smelling the interoperability coffee. Let's hope that progress continues and that I don't have to write the same editorial that leads this magazine again in five years' time.

It might well have been easier with analogue, but it could be so much better with digital. ☺

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