Reaching New Levels of AV Interoperability:
Wait - Why *Are* We Doing This

The audio industry in 2011 was abuzz yet again with a recurring theme I like to refer to as the "Can't we all just get along?" conversation. As in years past, the topic of unifying standards between different manufacturers' equipment to make exchange of information easier and more seamless was everywhere. This has been going on for some time, and has lived under different names and terms: "interconnectivity", "convergence" and this year-"interoperability".

This is a conversation that has been going on for years.

However, this year marked a rather interesting turn of events. People finally seem to all agree that this is not just a good idea, but serious conversations are being had about just how to go about getting it done. Customers are asking for it, manufacturers are honestly and openly talking about it, and huge levels of cooperation are emerging from the sturm and drang that frequently hinders real progress in this area. Finally, progress is being made.

Industry standards and initiatives such as AVB and X192 are not only starting the conversation about transport and content interoperability, but are backing it up with real work to promote the topic, bringing people to the table and making it happen.

However, in the majority of conversations that were had, the topic of interoperability was focused mainly on media content and transport. Those are critical and highly valuable conversations, to be sure; however, something was missing. An element that every system designer is acutely aware of, and struggles with daily, was conspicuously absent from these discussions.

That element is system control. While the ability to exchange media freely between devices provides an obvious benefit to system designers and operators, there is still a huge issue of how to you tell these devices what to actually do with it once they have it. How do you control, configure, monitor, reconfigure, operate, adjust, modify, edit and generally manage these devices?

To tackle this issue, a new organization has been formed -The OCA Alliance. The Alliance is a group of nine companies who share the vision of an open, flexible, powerful system control solution for professional media networks. To this end, the group is collaborating closely to develop a system control network protocol suite known as the Open Control Architecture, or OCA. It is the goal of the Alliance to transfer OCA into the public standards domain as soon as possible, so anybody may use it.

After the announcement of the OCA Alliance went public, I had numerous conversations with people from highly divergent areas of the AV industry about this, and a lot of those conversations went pretty much like this:

"You guys are working on an open control standard, huh? Cool!"

(Quick pause for a moment of thought)

"So that means that anybody would potentially be able to implement and use this in their products? Neat!"

(Slightly longer pause for another moment of thought)

"Wait-why would anybody actually want to do that?"

That's a valid question. Upon first hearing about a unifying control technology, people are generally filled with joy and visions of how the AV industry might finally have the benefit of control interoperability that MIDI, DMX512 and others have provided to different technologies and markets. However, as one begins to think about the practical ramifications and implementations of a technology like OCA, doubts begin to creep in and one may wonder why exactly this is something that any sane manufacturer would actually want to adopt.

I assure you; the members of the OCA Alliance are very sane and have a very clear vision of what a technology like this means for our industry. But to see that vision, we need to look beyond how we are used to working within our industry and take a longer view of how we would *like* to work.

So for the moment, let's set aside the hows, bits, bytes and technical details of OCA and focus on the *whys*.

What exactly do we mean when we say "Control"?

Before we can get into discussing why all of this is important, we need to first get a handle on what we are talking about, and-equally important-what we are *not* talking about.

The very word "control" can mean a lot of different things to different people.

On the one end of the spectrum, there are low-level details that need to be addressed within a media network. Functions such as configuring the network switches and routers and discovering all the networked devices are critical elements. These details are being addressed by the transport and infrastructure standards groups that are creating technologies such as AVB, and are not what we are talking about here.

On the other end of the spectrum are the definitions of how network devices actually function and operate. Details such as what kind of DSP features and functions are available in a given device, the parameters that are available within those functions and how those algorithms are actually coded.

This kind of control approaches dangerous territory, since it may touch on aspects of products that make them unique (for better or for worse).

For example, a frequent topic of discussion in regards to DSPs and filters is how the function of Q is defined within an equalizer algorithm. This is certainly a valid discussion, but is not part of the OCA conversation or concept. Another example might be a Compressor function available in a certain product that, alongside the more standard parameters of Threshold, Ratio, Attack and Release, might contain some additional parameters that are unique to that device or implementation.

OCA avoids these issues by confining itself to *interacting* with parameters and functions, but not defining the functions themselves. Details such as unifying or standardizing algorithms, parameters, and device functionality are soundly outside of OCA's scope. OCA can set the Q parameter of an equalizer - but exactly what the equalizer does with that Q value is up to the equalizer, and is not standardized by OCA.

To give an example from the familiar MIDI world, one connects a keyboard controller to a MIDI tone module and presses a key, a message is transmitted to the tone module telling it execute a certain function (make a sound) within certain parameters (at the velocity of the key press, at this specific note, etc). This standard control message behaves exactly the same way regardless of the manufacturer of the tone module, and the desired function occurs. However, that control message has absolutely nothing to do with the inner workings of the tone module itself. Details such as polyphony, synthesis method, or subjective quality of the sound that is generated, have absolutely nothing to do with the control message itself and are unique to the device that is carrying out the function.

The goal of a public control standard is to create a standard method to interact with devices and their functions, not to standardize the devices and functions themselves. We want to have products all speak the same language, but allow them to retain their unique personalities.

"You can have any color as long as it's black."

Different groups have different views of what proprietary control protocols bring to the party. Traditionally, proprietary control protocols have provided closed ecosystems of equipment that work well within their specific environment . However, anybody who has ever had to integrate equipment form different manufacturers or expand existing systems has quickly found the other side of that coin-if a product not part of the club; it's going to be difficult to get it to play along.

The reality of our industry is that different equipment from different manufacturers is frequently used together to create a complete system, and the components of that system need to operate as a unified entity to get the job done.

"Great, everything is going to be the same"

One concern about standardizing things like control is that this will result in a homogenization of products from the different manufacturers. As mentioned earlier, it's important to understand that standardizing control is *in no way* the same as standardizing features or functionality-elements of a product that are unique and exciting will remain that way, but the industry will now have a whole host of new options for how they interact with those features.

From the customer's perspective, this means that products can be examined and specified on the merits of their performance, features and unique properties, rather than concerns about it being able to function in a given system under a certain set of proprietary rules. Customers can really pick the best tools for the job without dealing with artificial restrictions.

From a manufacturer's perspective, the same holds true. It is easier for customers to specify and purchase equipment for use in situations or systems where they previously couldn't. The reality of a manufacturer's proprietary systems is not that they lock people in; far more often they lock people out.

"Won't *somebody* think about the integrators!?!"

There is a whole segment of the AV industry that is devoted to solving the problems of getting two or more pieces of equipment to communicate even though they were never intended to. Whether you are talking about an integrator or a manufacturer who makes equipment for this purpose, there is sometimes a concern that standardization of control protocols will damage these businesses.

It won't.

This area of the business is *always* going to exist, because at the end of the day, customers are not purchasing a pile of random boxes-they are purchasing a solution to a problem. Sometimes the problem is simple, but sometimes it's very complex and requires special expertise to really deliver a superior experience.

It's a cold, hard fact, but the customer really doesn't care about the clever script or hack that an integrator came up with to *finally* get those two pieces of gear to communicate. What they *do* care about is how many billable hours went into creating that hack, and when they push button x does function y happen consistently and reliably.

An open public standard for control will allow integrators to become more creative and efficient in how they create solutions, this will add value to their services, and this section of the industry will prosper and thrive.

"A rising tide lifts all ships"

Now let's think about manufacturers for a moment. I work for a manufacturer, and I want to sell equipment. I want that equipment to be valuable and desirable, and I want to run a profitable business.

Our industry is made up of a lot of entities, applications and needs. Innovation and competition are important to drive both the products that are available to the market as well as methods, techniques and solutions that we provide to end users.

So, let's take a look at a couple of challenges that may exist for manufactures and purchasers alike.

Creating and industrializing a great product isn't free. If a company's only option is to develop all of their technology from the ground up, it may be cost prohibitive (particularly for smaller companies), or the final version of the product may have been diluted to hit a certain development cost.

Alternately, to recover those development costs, the product might be priced out of its market. By being able to implement and adopt an open public standard for some of this development, the cost of entry is lower, and we can expect to see new and innovative ideas flourish in the market.

To illustrate another challenge, let's say a new company has developed the coolest wall controller for a DSP that you have ever seen, but…

In today's environment connecting that device to other manufacturers' equipment can require some pretty complex and time consuming methods and programming, and this can still lead to limitations or compromises in actual functionality.

This increases the real cost of the product for everybody-the installer must spend more time programming and configuring, the end-user must pay for those additional billable hours, and the manufacturer might have a higher support load.

But, if that product could hit the market ready to talk to anybody's hardware, this suddenly becomes much easier, more attractive and economical for all parties.

Building an Open Ecosystem

So now, let's come back around to the original question-why *are* we doing this. In reality, it's simple; this is something that is good for the industry. Manufacturers benefit from lower development costs, new sales channels and happier customers while customers benefit from more competition, new innovation, greater flexibility and reduced integration time.

The time is right for open public media networking standards. There is simply too much potential to continue ignoring them. Open public standards will provide a way to make

our entire industry more agile and more profitable. This conversation will continue for years to come, but for the first time, we can begin to see some of the fruits of our labor. I believe in a matter of years, we will look back and the question will not be "Why?" but rather, "What took us so long?"