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Networked Audio Products 2022

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About RH Consulting

RH Consulting is an independent professional audio and AV consultancy. We help end-clients and AV integrators deliver audio projects. We provide system design, modelling, engineering, dsp & network programming and project management services.

We have worked on some of Europe's most challenging projects. We've a track record of innovation and delivery.

We are also experts on voice alarm systems and EN 54. We sit on a number of international standards committees. We help manufacturers get their products tested to EN 54 compliance and help ensure audio projects are safe and compliant.

We also assist manufacturers on the development of audio products focussing on audio networking, EN 54 and user experience.

We've been using networked audio since the late 1990's and this has taken us to lead the debate on where the industry is going.

This report is available online: https://rhconsulting.uk/blog/networked-audio-products-2022
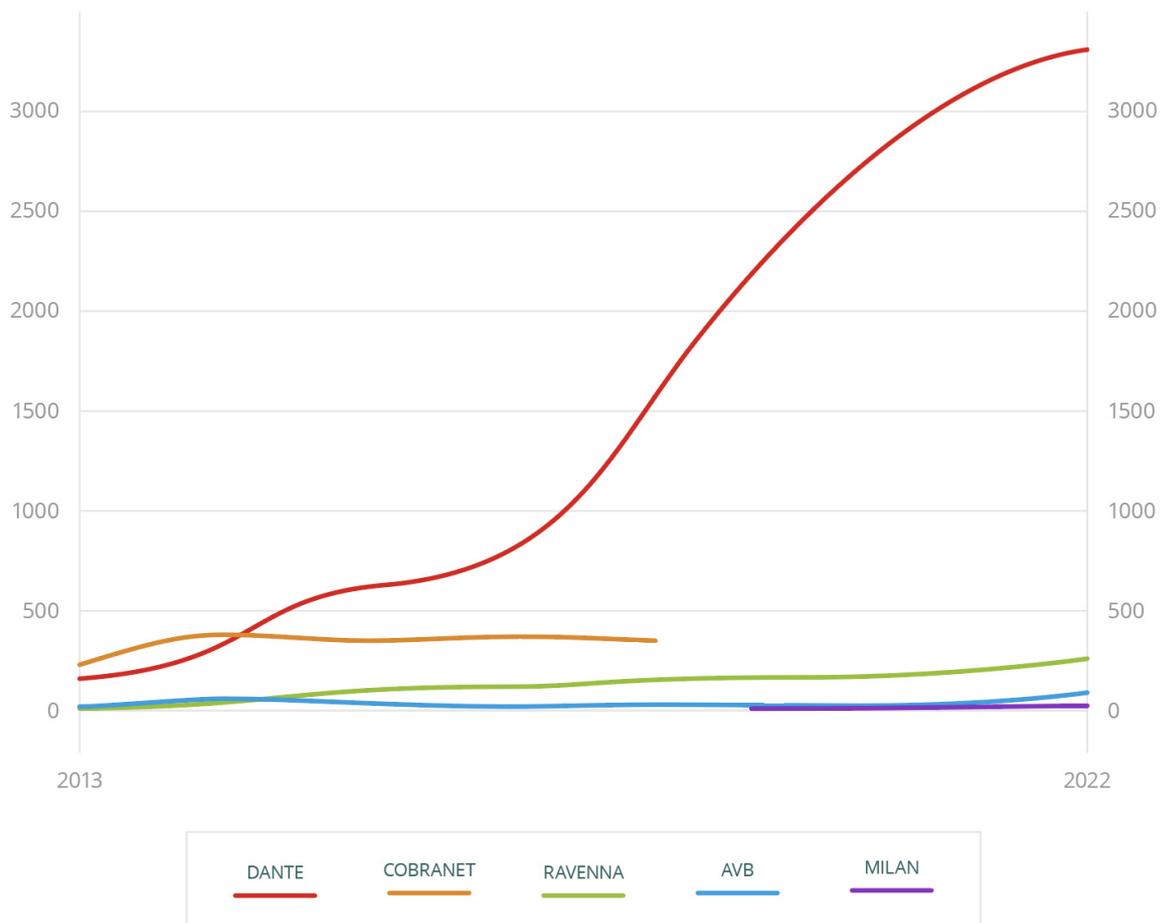
The Most Comprehensive Networked AV Research Ever

We've had a busy year and completely rebuilt our research. This year's report into AV networked products is the most comprehensive to date. We have more accurate data on product totals and supported protocols. New for this year is a look at networked video and also some control protocols.

In addition to data on audio-over-IP protocols, we are reporting products that support AES67, AES70, Ember+, NMOS, SDVoE and ST 2110. We will add other protocols and technologies in the future.

There are a total of 4,142 networked AV products currently shipping from 444 brands.

There hasn't been much of an increase in the number of brands from last year. This is partly due to a consolidation of some brand names and partly a result of errors made with some double-counting in previous years.

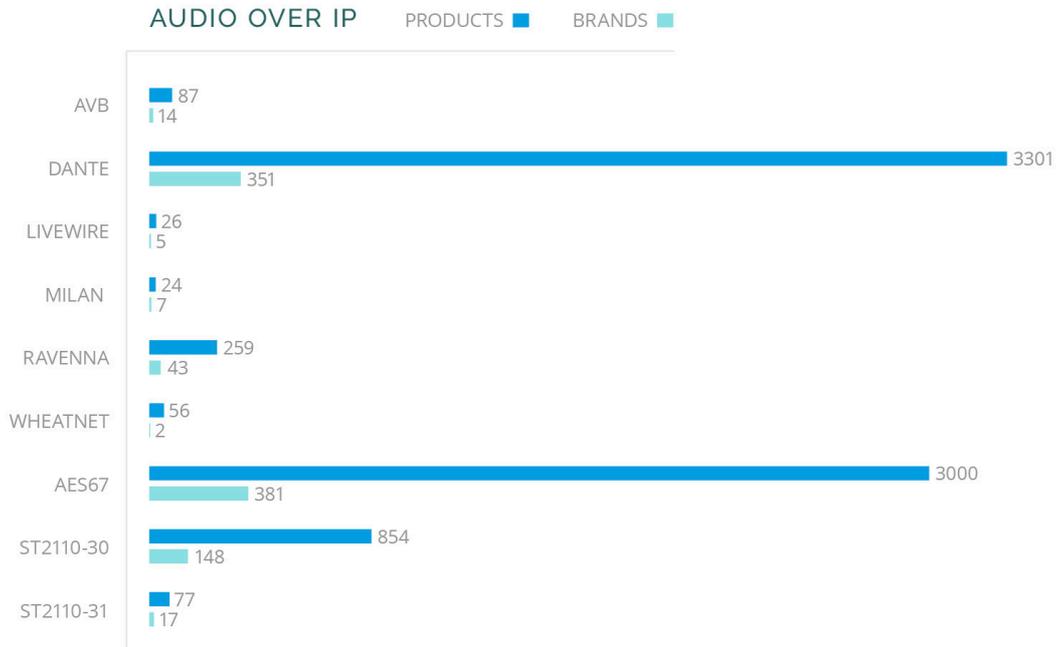*Products per protocol over the years*

What We Counted

We are strict about the things we count. People have claimed that all sorts of items are compliant with a protocol. However, we have not included network switches, remote controls, cables or accessories. We only count networked AV products.

Of the AVoIP transport protocols there are 109 products that support at least two of AVB, Dante, Livewire, Livewire+, RAVENNA, SDVoE or Wheatnet.

Top ten categories of networked audio product

Audio Over IP

AUDIO OVER IP   PRODUCTS ■   BRANDS ■

	PRODUCTS	BRANDS
AVB	87	14
DANTE	3301	351
LIVEWIRE	26	5
MILAN	24	7
RAVENNA	259	43
WHEATNET	56	2
AES67	3000	381
ST2110-30	854	148
ST2110-31	77	17

Audio product totals by protocol

Dante - audio – 3,301 products

Dante remains by far the dominant audio networking technology with an order of magnitude more products and more manufacturers using Audinate's technology than anyone else.

They added 472 new products in the past 12 months. That's two new products every working day. This is more growth than all other protocols combined.

The count of new products must mean that our figure for last year for Dante was wrong. We identified 82 'rogue' products from last year. We've also identified a total of 165 discontinued products of which 123 were from last year. This means our 2021 Dante count was 2,829 products. Overall Dante showed 17% growth this year.

AES67 – approx 3,000 compatible products

Our totals for AES67 compatible products work across Dante, RAVENNA, Livewire+, Wheatnet and a few that are 'raw' AES67 compatible. We can't be entirely confident of the AES67 total because not all Dante solutions support AES67 and we don't precisely know how Dante has been adopted into every product. We are working to get better information on that. However, the vast majority of AES67 products achieve that compatibility using Dante.

ST2110-30 (AES67*) - 854 compatible products
ST2110-31 - 77 compatible products
ST2110 is a standard of many parts, so we have started to break it down a little, see below for video. We have listed products that support either of the two supported audio payloads: ST 2110-30 and ST2110-31.

*Note: ST2110-30 and AES67 aren't exactly the same, there are some minor technical differences but we don't need to talk about that here.

RAVENNA - 259 products
RAVENNA shows the second highest increase in products. This count includes about 50 products that use standard RAVENNA but for their own reasons don't (currently) publicly state that it is a RAVENNA solution.

AVB - 87 products of which 24 are MILAN compliant
The AVnu Alliance has stopped publishing AVB and MILAN products on their website. The increase in AVB this year is because we now count all AVB devices, whereas since 2016 we only counted certified products. With the advent of MILAN, they effectively have become the certified AVB products.

MILAN itself increases with some new products and some existing AVB products becoming MILAN-certified.

Note that whilst MILAN products are compatible with each other, this isn't the case with other AVB products. We count all MILAN products as AVB as well, because MILAN is a subset of AVB technology.

I've previously explained the difference between AVB and MILAN here as well as giving my personal opinion about the viability of this technology in the AV market.

Livewire+ and Wheatnet (& Gibraltar) 26 and 56 products respectively
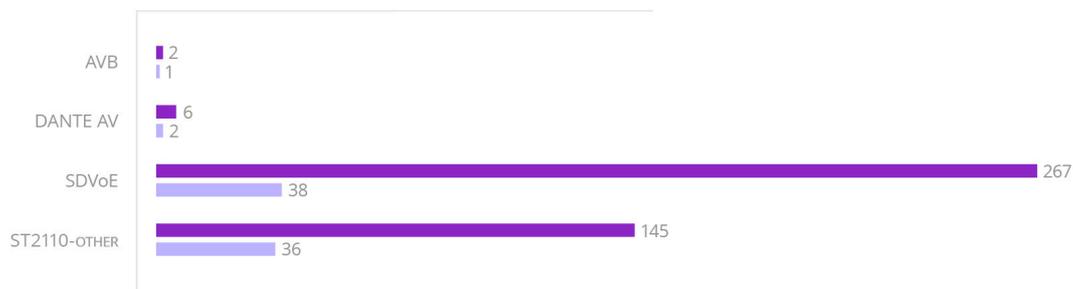These are protocols used only by their creators but both are AES67 compliant.

LiveWire - 22 products
The original non-AES67 version of Livewire is still in use.

Cobranet
We stopped counting Cobranet products two years ago. We've recently heard that Cirrus are taking orders to make one final batch of chips and then that will be that.

Video Over IP

Video product totals by protocol

Our research into IP video products is currently for AVB, Dante AV, SDVoE and ST2110 (partial). We'll consider adding others in the future.

The largest proportion of networked video products are simply getting other types video signal on and off the network. This means that most video networking is based on HDMI or SDI connections being coded into a networked stream and decoded again further down the line.

We show in brackets the number of products that are just video encoders, decoders and their associated control box. In the case of SDVoE, this is 91% of all products.

A further point on the SDVoE number is that there are over 75 encoders and decoders with tiny variations - such as USB, copper, single mode or multimode fibre options. According to how we choose to count products, each one of these counts as a different product but some would consider them the same product. We had the same issue years ago where one manufacturer made over 50 almost identical Cobranet loudspeakers.

The fact that encoders and decoders dominate the products reminds us of the early days of audio over IP when there were a lot of analogue-to-network input/output boxes, but this has since diminished significantly with thousands of products now integrating the technology directly. Most video equipment manufacturers are currently unwilling to take the leap and integrate networking directly into their products.

Overall, our research demonstrates that interoperable video over IP is still in its infancy, especially in the AV market. The exception is ST 2110 which is more widely used in the broadcast market where true integration is more developed, only 5% of products are network encoders and decoders.

SDVoE - 267 products (243 encoders/decoders)

SDVoE Alliance claims over 700 compatible products from over 50 manufacturers. We found this figure to be wildly inaccurate and worked with them to agree on 267 products from 38 manufacturers. SDVoE included items such as compatible network switches and cables, that we don't count. Some of the products we do count don't handle video over IP but are the related control device.

ST2110 'other' - 145 products (7 encoders/decoders)

This total includes products that don't just handle video over IP, some of these are related to clocking and timing.

We'll look at breaking down ST 2110 further in the future. Whilst we are more confident on numbers of products using ST 2110-30 and 31, our ST 2110 'other' is likely incomplete.

DanteAV - 6 products (4 encoders/decoders)

The first Dante AV over IP products were launched seven months ago. These six products are included within the Dante audio over IP total.

AVB video - 2 products (2 encoders/decoders)

Despite AVB supporting video, other than Biamp, whose AVB products only operate within the Biamp ecosystem, there do not appear to be any other AVB video products. These two products are included within the AVB Audio over IP total.

Control

AES 70 (OCA) - 66 products
Ember+ - 33 products*
NMOS - 69 products*

For the first time we have looked at adoption of control and discovery standards; we are confident of the AES70 figures but NMOS and Ember+ are likely less accurate and lower than reality. We will build on that in the next year. The vast majority of all these products also support an AV over IP networking protocol.

*we have a lower degree of confidence in these figures

Predicting the Growth of IP Video

Video over IP has taken longer to adopt than audio for a number of reasons. On a 1Gbit network we effectively have unlimited audio channels. For video, this bandwidth only allows very few or even just one video channel to pass. Furthermore, audio reached 'perfect' quality quite a few years ago, whilst video quality is still on a journey from HD to 4K to 8K with increasing bandwidth demands that most current IP infrastructure can't handle. Finally, the world of networked video continues to use many single manufacturer, walled garden solutions. We see this approach as unsustainable.

Looking back to our very first post on this topic in 2013 here, we didn't initially report product numbers; we looked at licensees. How many manufacturers were signed up to use each technology? This didn't tell us when they might release products or how many, but it gave us a very good indication of growth over time. Indeed, we were very able to very accurately predict growth in product numbers based on sign-ups. I did well in my 'beer bets' with Lee Ellison (then CEO of Audinate) for several years.

Using the same technique, we can start to do the same for video over IP. In 2022 we have found 14 licensees for Dante AV, meaning 12 of them aren't yet shipping.

SDVoE launched two years earlier than Dante AV and has 52 members with 38 of those shipping products.

In future years we'll compare growth. Once we add ST 2110 into the mix, we'll start to see how interoperable video over IP is developing.

When we started all this in 2013, we reported 428 networked audio products. Now in 2022 we have counted 420 networked video products. A very similar number and great opportunity to start comparing video over audio.

We don't think it will take as long as ten years for video to catch up with audio. These days we all understand the benefits of using networked technology that was a harder sell even ten years ago. We expect the rate of adoption to be much quicker.

The next few years will be very interesting to observe.

Our Methodology

Despite better research, we must allow for human error in our results and some manufacturers provide poor information. Furthermore, counting products is not the most entertaining of tasks! However, even allowing a few percent for human error, our results are still a very realistic indicator and no one else comes close to the work we put into this.

As we mention every time we do this, we set out some rules for counting devices as this proved to be less straightforward than we thought. When is a product a product? When is something a different product? The consensus has always been that we are fair, but we are always happy to discuss. Our perspective is always from the angle of "What can a user actually buy?".

Can you buy it?

We have investigated products that appear to be shipping. It's sometimes difficult to tell if products are discontinued or if they are yet on the market. We have done what we can to verify whether each product is available for actual purchase or, in these days of component shortages, is on the market and available to order. I recently blogged about component shortages which you can view here.

To be clear, we are NOT including discontinued products. We report what is available now, not a historical record of networked products.

Our research is a continuously moving target and was completed early February 2022.

Our rules for counting products

- We generally count every Stock Keeping Unit (SKU) of a product. If a company sells a 2x600W amplifier and an otherwise similar 2x1200W amplifier they are counted as two products, because they have a different use.

- Where the same product is available to purchase in a variety of card configurations, such as a processor that is 16-in/16-out, 8-in/24-out, 24-in/8-out etc., this is counted as one product as the overall channel count and chassis size is the same.

- Where a similar product is available in different models 8-in/8-out, 12-in/12-out, 16-in/16-out, or a mixer with different input channel counts or chassis sizes, then these are counted as separate products as they would have a different use case.

- Sometimes a product is sold by more than one brand name from the same owner. In other cases a product is made by one manufacturer and sold by another (OEM product). In either of these cases the products may have the same name or a completely different name. We count every different instance of the products because they are different SKUs.

- Interface cards are counted in these product totals. Where a manufacturer's network interface card fits into many audio products we have counted each shipping product, because that interface enables that product to become a networked AV device.

- Some manufacturers market products as a series or range of similar products, for example 'xyz' series microphones. We don't count the series name, just the individual products in that product line

- A software driver or program that enables a computer to support a particular network protocol is counted as one product. If there are several versions with different channel counts or capabilities then each one counts as a separate product.

- Where a loudspeaker or microphone is available in more than one colour, but is otherwise identical, we have counted that as one product

- Some products that do not have a media networking connection themselves but are very frequently used with a bridging device. This is true for some amplifiers. Also some mixing consoles are simply control surfaces with no connectivity themselves. For now we have only counted the items that have actual media connectivity; in the case of amplifiers, we count just the bridging device and in the case of mixers we count the stage boxes and/or mix engines.

Summary

The number of networked AV products on the market continues to grow despite the pandemic. Currently shipping devices may be a challenge due to world-wide component shortages but this is subject to constant change.

Dante continues to be the dominant force with RAVENNA a long way back in second place. The number of products for all other protocols is pretty inconsequential.

For video, it feels the same as audio did 10 years ago. We are at the start of a journey…

Roland Hemming February 2022

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Significantly more detailed data from this research is available on request.

Thanks to my team of advisors, technical experts and researchers: Richard, Valeriy, Will, Hannah, Sander, Julija, Nicoleta and Bojana along with our colleagues at Copper Leaf Media.