Journey to the New World – Part 2

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In the second of two articles, Tom Swan, Sales and Marketing Director at leading systems integrator dB Broadcast considers the challenges of the transition to a digital, data-driven world and reflects on how ready the industry is to embrace it.

Vision Systems

The broadcast industry is in a transition period of emerging video standards which are being rolled out by many of the established technology vendors. We are seeing a proliferation of formats at a rate of change not seen before. This generates many initial conceptual product ideas ultimately coming through as deliverable product developments in new technology areas, and therefore many potential benefits for broadcasters. However, broadcasters have invested heavily in current technology and in tried and tested infrastructure. New video production technology has the potential to create more cost efficient, faster and simpler workflows, but there is a significant concern around reliability and the capital investment in adapting core infrastructure to allow this technology to be utilised properly.

New production techniques are being explored at a greater rate than ever before by end users and vendors are pushing the boundaries of viable technology for production use. IP production has become a real talking point in the past couple of years, heightened by trade events/exhibitions such as IBC, BVE and IP Connect. There are arguments for a full IP studio production or a hybrid mix of SDI and IP, both of which provoke much debate and deliberation.

Stagebox (originally developed by BBC R&D, licensed by L2tek), allows a fully IP workflow from the point of acquisition. This would enable the use of low cost commodity switches instead of high cost SDI routers; Stagebox can achieve full studio grade camera connectivity down a single Cat6 cable. This means that outside broadcast production transmission can be sent down secure IP links such as MPLS networks to the fixed studio, and integrated within the studio IP production seamlessly.

The IT industry has been ahead of the broadcast industry for the past decade. While SMPTE 424M-2006 (3Gb/s over a single SDI link) was ratified for broadcast, 10Gb/s Ethernet capable infrastructure in the IT domain was becoming common. We can apply this technology maturity shift to the present day. The broadcast industry is pushing for 6Gb/s & 12Gb/s SDI while the IT industry is deploying networks with bandwidths in excess of 40Gb/s. Technology standards

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such as AVB (IEEE 802.1BA) may help the broadcast industry merge technologies with the IT industry and keep up with bandwidth demands. Current IP over Ethernet connection is based on 'best effort delivery' and is non-deterministic. For broadcasters, sending their media and assets using a non-synchronous 'fire and forget' strategy is very risky. AVB allows constant bandwidth allocation for single or multiple streams over time. This allows for consistent, anticipated file delivery via a low latency medium. Ethernet does not have its own timing and sync mechanism; in AVB signals are time stamped on dispatch to ensure the signal is synchronous on entering the broadcast system. AVB compliant systems are supported by the AVnu Alliance (Axon, Cisco, Intel and Shure to name a few).

Signal routing is being pushed in various directions by the major vendors, while collaborations between broadcast and IT manufacturers are becoming more common during this emerging standards transition period. Snell and Cisco have partnered to deliver the next generation of IP based routing and infrastructure. This partnership is highly valuable to the broadcast industry as Snell understand the issues broadcasters face today and Cisco are an industry leader in IT product development. Through a migration path of a hybrid IP/SDI system, both companies can collaborate in building understanding of the broadcast market needs to provide IP based routing and infrastructure based on existing network topology and standards.

The ever increasing demand for higher resolutions at faster frame rates really pushes the infrastructure the industry has become accustomed to. As a leading SI, dB has found within the video production side that in the past few years HD-SDI (with a 3G capability) has been the norm, and only recently are we seeing a fibre infrastructure becoming more common. As video production becomes more demanding on the existing infrastructure, we will start to reach the limits of what we currently have.

Audio Systems

Audio system manufacturers are actively pursuing a number of open standards such as AVB and Ravenna. Whilst there are clear and obvious benefits to an open, interoperable networking standard, there is still work to be done to provide truly interoperable control interfaces, allowing simple set-up and configuration. Calrec point to the impressive performance of their proprietary audio networking platform. Hydra2 has negligible latency, very high bandwidth, solid redundancy etc., and offers features including integrated control, sophisticated protection and sharing and error detection and warning. They see this as the core backbone for routing of audio in and out of DSP processors and around a facility for a number of years to come.

Calrec offer a range of interfaces to bridge the Hydra2 platform with popular standards such as Dante, Ravenna & AVB, it will provide users with a powerful, flexible and scalable solution, leveraging the power of Hydra2 and existing infrastructure, whilst opening up the benefits of interoperable networking, and easing the transition whilst newer standards mature.

An open standard allowing for the interconnection of separate Hydra2 networks and standalone IO units via IP over WAN, as though they are all on the same local network, would be extremely advantageous when considering centralising the audio processing element of a regional operation.

Summary

In times of change, organisations need to embrace the new technologies and view them as an opportunity. Given the lack of standards, it will be large vendors who are able to provide a complete IP production ecosystem and drive IP production.
We can reasonably expect to see a range of hybrid products emerging by NAB 2015. In reality, multi-vendor, standards based IP production solutions may be some five years away.

dB Broadcast strongly believes that to be a successful SI in the broadcast industry it is essential to understand the operational and commercial needs of clients, and that can only be achieved through partnerships and working closely with broadcasters and equipment manufacturers.

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About dB Broadcast

dB Broadcast (dB) is one of the UK's largest and most successful independent systems integrators. dB is expert in broadcast system design and installation from studio through to transmission. With purpose-built headquarters in Cambridgeshire, UK, dB has 22,000 square feet of space for prefabrication and test of customer systems.

dB also designs and manufactures products for the broadcast industry including: Hawkeye for switching and monitoring all types of broadcast signals, MERlin DVB-T2 and DVB-T monitoring receivers, Showman multi-standard analogue TV receiver/demodulator and the Cardinal range of mains distribution units (MDUs).

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