



Calrec White Paper for SVG

Abstract:

The media landscape is evolving as viewing habits change. Broadcasters and content owners are having to prioritise efficient, agile, and sustainable workflows while continuing to deliver premium content at scale.

Hybrid production environments are becoming essential, allowing producers to balance economics, business models and quality requirements. By decoupling audio and video from hardware, broadcasters can scale production dynamically, orchestrate thousands of audio channels across distributed DSP environments and virtualise entire workflows.

Remote, distributed and hybrid production models are nothing new, but they are advancing. Truck operators are shifting their resources into new-build hybrid trucks that can work autonomously or be completely remote-controlled, while smaller units that pair powerful processing cores with more compact, yet flexible control surfaces are also emerging. Remote Operation Centres are commonplace, and the move to agile, virtualised infrastructures allows broadcasters to add processing resources for specific productions when needed.

Calrec's True Control 2.0 foreshadowed this shift, enabling distributed DSP and control across multiple locations and products. This white paper explores how True Control 2.0 provides the flexibility broadcasters need to maximise resources and embrace adaptable workflows.

Looking ahead, the key for broadcasters is selecting the appropriate acquisition model to suit the commercial realities for any production.

Whitepaper:

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Title: More of everything: How broadcasters are changing their approach to meet rises in consumer demand

Broadcast workflows are not what they were. And that's a good thing.

Modern broadcast workflows can be tailored to be what they need to be. The old one-size-fits-all model is no longer relied on by broadcasters because the development of interoperable technologies and accessible connectivity has given them the ability to adopt more flexible, automated, virtualised, and distributed production models that can be scaled to the demands of the production.

By decoupling audio and video from traditional rigid hardware constraints, broadcasters can scale production dynamically, orchestrate thousands of audio channels across distributed DSP environments and virtualise entire workflows. Although remote and distributed production is not a recent development, its adoption since Covid has been aggressive with broadcasters and manufacturers scrambling to ensure that their businesses are flexible enough to be able to withstand future disruption. As a result, confidence in remote and distributed technologies has rocketed.

The interconnected nature of live broadcast production workflows has always meant a close interoperability between the different production elements and ultimately, any overarching control system. The ability to provide this level of interdependency without traditional geographical constraints is liberating our workflows. For broadcast technologies like the audio console this means audio DSP cores and control surfaces can be located anywhere allowing IP processing cores to be located on site, on edge, on prem or virtualised from any location to supplement the needs of any production; and that means that personnel can also be located anywhere too.

Having control from any location gives users ultimate flexibility, and the growth in the number of ROCs are a perfect illustration of how committed broadcasters are to this new paradigm.

More breadth, more scope

In recent years, the 2024 Summer Games has been one of the biggest use cases for distributed production, and NBC Sports' adoption of these hybrid infrastructures are a perfect example of how they can pay dividends.

[Employing both traditional and remote production workflows](#) at the Paris Games, the broadcaster used 12 Calrec RP1 units connected to mixing consoles in its US headquarters in Stamford, Connecticut. Using a Calrec Brio in an Insert Studio at the IBC to create monitor mixes for both producers and talent, NBC forwarded everything to Stamford for the final output mix. It also had RP1 remote production units providing full remote production capabilities at multiple locations, also controlled on Calrec Artemis consoles in Stamford.

But it also had more traditional onsite coverage for the bigger venues like the Stade de France and Trocadéro, utilising NEP UK trucks to cover big-ticket events like the opening and closing ceremonies and the athletics.

These hybrid workflows are not only more agile, but they enable broadcasters to do more than they ever could have done previously. According to Calrec support engineer Toby Spiller who was on site in Paris throughout the tournament, the 2024 Games “illustrated the huge shift, widespread acceptance, and integration of distributed technologies across the board, a shift that has happened in a relatively short space of time. It reflects a broader trend in the broadcasting industry; one that prioritises flexibility, efficiency, and the ability to deliver high-quality content regardless of physical location.”

Driving change

It is no surprise that such a huge shift is not only having an effect on how broadcasters and content providers are approaching their facility infrastructures, but also how they are approaching the design of their outside broadcast trucks. The existential threat of remote production has not affected the investment in new broadcast trucks; if anything, they are covering even more events at even more venues. The ability to tap into a truck's full potential from a remote location means that they are no longer solely responsible for the success or failure of a live broadcast and they no longer have to be fully staffed. As described above, trucks are simply additional resources on a broadcaster's extended network.

In the UK, NEP has streamlined its English Football League coverage for Sky Sports with its compact NEO hybrid remote unit, which is designed around two headless Calrec ImPulse1 cores, an RP1 and a Calrec Type R mixing panel for disaster recovery. This kind of lightweight mobile unit delivers reliable remote IP connectivity and routing and not only reduces the cost and weight of a traditional remote unit but minimises power consumption to the point that it is also capable of running on batteries as a backup.

The ImPulse1 cores are used purely for audio routing and distribution, processing incoming audio streams, gain matching, routing to and from the RP1, managing outputs for local onsite

distribution, and handing everything off to an ROC. Meanwhile, the POE-powered Type R panel can provide a disaster recovery mix in the event of any issues. The build keeps power consumption to a minimum without sacrificing any processing capacity.

Similarly, Gravity Media's investment in Calrec's IP-native technologies means it is already looking at how it can deliver even more control with a brand-new generation of compact outside broadcast units primed to deliver more efficiencies and even more robust redundancy.

"The combination of the Argo mixers and the truck builds that are currently going on with Gravity Media means we now have the opportunity to do a true remote control of a surface onsite," says Gravity Media's Senior Audio Engineer Neil Ottley. "It means we can use an Argo at our facility to control a console at a venue and access the full range of control. Having that ability really expands what we could do in the future."

Taking the strain

In addition to all this, virtualised processing engines can be employed to pick up the strain of bigger broadcast workflows. Managing data and automating processes in virtual environments is nothing new; broadcast giants like Sinclair and NEP have both been using server-based technologies for things like asset management and playout for many years. In these environments audio workflows have always played very nicely, but more recent technology advances like Calrec's ImpulseV virtual processing engine have enabled broadcasters and manufacturers to be much bolder.

Processing audio and video content independently of any external timing processes and resynchronising them relative to each other further down the chain, is something that is now second nature to broadcasters who are used to aligning the timing of independent audio, video, and data flows.

This approach opens the door to more virtual models, which in turn enable broadcasters to scale up and down with production demands to meet the requirements of a single production. The ability to lean into temporary, virtualised processing resources instead of investing heavily up front in CapEx DSP hardware is an easy sell for broadcasters, especially for one-off productions that need more processing power. It has led to an increase in more ambitious large-scale orchestration systems and virtualising of productions, and distributed DSP that enables large mixers with thousands of channels of audio to be replaced or supplemented by lots of DSP in lots of different places.

All in all, the ability to access a mix engine in a virtual environment makes traditional systems look terribly inefficient.

While they are seldom used exclusively in live broadcast scenarios, many broadcasters and content providers are choosing to augment hybrid environments to deliver more capacity. For total flexibility, this combination of hardware, software, and virtual support is compelling.

True Control 2.0

The expansion of these production ecosystems is where the real value is for broadcasters, and the key to making it all work is management and control.

Calrec's True Control 2.0 exploits this trend, giving the ability to control any Calrec processing cores from any control surface in the world. It provides access to more cores and more surfaces, physical or virtual, and with the ability for each controller console to access up to five other consoles simultaneously, it gives broadcasters freedom without the limitations of mirroring or parallel control.

True Control 2.0 works with the full range of Argo consoles, Type R and the Apollo+ and Artemis+ consoles, as well as the virtual Calrec Assist application which runs in a web browser on Mac, Windows, and Linux devices.

It provides control over ImPulse, ImPulse1, ImPulseV, and Type R processing cores to create endless combinations of control and processing components.

More than cost

There are many advantages to working in this way.

The big advantage is the flexibility to locate both equipment and personnel resources where they can be used most efficiently. This could be as simple as allowing an audio operator to mix from home or as complex as a distributed facilities hub where studio-based facilities are used to produce multiple events from various locations. Both have significant benefits in terms of cost, time, and travel, but the upsides are not all about saving money.

Mix engineers working in larger, acoustically treated production hubs are more likely to have access to better monitoring for immersive and personalised mixing. They no longer have to spend days or weeks on the road to get to a venue and are able to spend more time at home. They can make the most of existing equipment in familiar working environments.

Remote workflows can also provide more robust disaster recovery, with multiple control surfaces able to control the mix, including those located at the venue, minimising the threat of potential technical downtime and prolonging the life of the equipment.

And in addition to delivering big-ticket presentations, flexible distributed infrastructures are extending broadcaster's breadth of coverage and incorporating second and third tier sports and content that can be distributed via streaming, social and OTT channels. Reducing costs while maintaining quality democratises content to reach a much wider audience. Raycom Sports in North Carolina, who upgraded its flagship RHD1 mobile production unit with a 60-fader Calrec Argo S console and ImPulse1 core, is doing exactly this with a multitude of output configurations for OTA, Digital, OTT and FAST platforms. For Raycom, driving fan engagement is a key motivation.

"We'll take eight or 16 channels of audio on our program records, and our social and digital teams will remix it to allow clients to tell a different story on their social posts," says Raycom's Vice President of Engineering and Technology Operations, Bill Stafford. "We also run a couple of FAST channels, so on our Origin Sports Network, ACC Digital Network and Big 12 Networks we're taking this content and we're re-airing a cutdown or a highlight. We want different audio for all these channels."

Making a match

The rise of OTT streaming channels vying with traditional OTA stations means that broadcast clients are facing greater competition for eyeballs, which in turn impacts subscriptions and ad revenue. The answer is for content providers to produce more compelling content, more efficiently, and deliver more value to retain eyeballs and underpin those subscriptions and ad costs.

Utilising remote technologies can create endless combinations of control and processing components that can adapt to any size of production, matching the resources required to meet the any creation needs.