Yearbook
Jan - Dec 2018

CALREC

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Rush Media Touchdown with Brio

Calrec's Brio was the console of choice for Rush Media's recently completed six strong new OB fleet. Primarily used for sports broadcast, the mobile unit provider was looking for a high-quality audio console with a small footprint.

Each of Rush Media's new mobile units are custom built, 40 ft. straight trucks with expanding sides. Each truck includes eight camera control units, two 8-channel replay servers, two graphics generators, a 36-input switcher, a 48-port communication frame and a main truck router with full audio capabilities. "The Brio is the perfect fit to bring all of the equipment elements together, in a limited space, with no other console at this price point coming close," says Rusty Cummins, Senior Engineer, Rush Media.

The Brio provides 36 dual layer faders and by using its Hydra2 expansion port, Rush Media was able to double the size of the console's I/O. Utilizing MADI in and out of the truck router, provided the company with more than enough paths and fit perfectly in the space available.

"The Brio has many functions that I've used in the past with larger Calrec consoles," adds Cummins. "With high frame rate cameras being a standard complement on our trucks, delay on every input and output is a must. Also, the Hydra2 network has made it easy to expand the I/O and network multiple desks together."

Rush Media's newest Calrec Brio equipped mobile unit is being used for all home and away broadcasts for a major league soccer team.

Home broadcasts require multiple transmission feeds with unique audio assignments, as well as providing the visiting team with separate field FX microphones

to be used for their broadcasts. According to Cummins, the combination of extra I/O provided by the Br.IO wallbox and MADI to the truck router makes it easy for the operator to provide these feeds.

"Our job became a lot easier once we made the switch to Calrec, with both integration and implementation," adds Cummins. "With various engineers using the console from show to show, ease of use is really important. The Brio, as with all Calrec consoles, is built for broadcast. With the Brio, the user is up and running a few minutes after sitting down. We are planning to add more mobile units to our fleet next year and additional Calrec audio consoles will be included in this expansion."

Rush Media offers a smaller, cost-effective alternative to the full budget, larger footprint mobile units that have been a staple for regional and national sports networks and is a producer of live sports broadcasts as both a packager and truck provider for numerous networks, including Fox, CBS, NBCSN and ATTSN.

"Rush Media chose Calrec consoles to outfit its fleet due to the reliability and industry user familiarity with our products," says Helen Carr, regional sales manager for Calrec. "We are happy to be incorporated in this new expansion and look forward to continuing to work with Rush Media in 2019 as the company adds more mobile units to its fleet."

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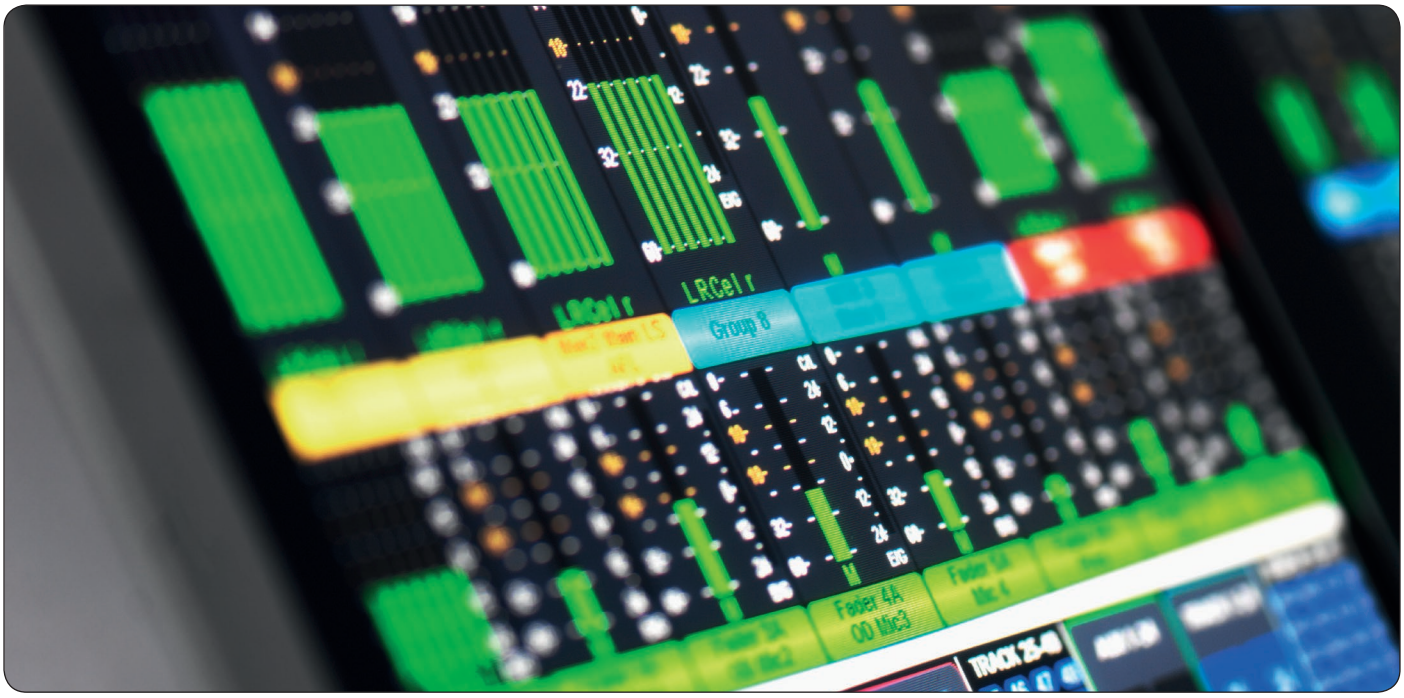
Artemis Lights the way at Northwestern University



An Artemis Light console and Hydra2 network are powering a state-of-the-art video production facility at Northwestern University in Qatar (NU-Q). The Artemis Light brings robust audio processing capabilities to the fully automated operation, the first of its kind completely dedicated to broadcast education.

NU-Q wanted to create a teaching environment based on the latest technologies and workflows for the benefit of its students. Its broadcast studios are sound stages that can also double as recording studios, so they had to be built to very high specs. The Artemis desk and the Hydra2 network devices give students the best possible learning experience on equipment they're most likely to encounter in their future broadcasting careers.

The NU-Q facility features six studio spaces, four control rooms, more than 25 postproduction suites, and two computer editing labs.

The recently completed newsroom is the first in Qatar — even among commercial broadcast facilities — to be fully automated, with robotic systems that enable a single operator to run an entire show. The Artemis, together with a Grass Valley switcher and a ChyronHego graphics system, is controlled by a Grass Valley Ignite automated production solution. This tight integration means operators can access the full audio capabilities of the Artemis and run the desk seamlessly from the fader wings on the Ignite automation panel.

The Hydra2 system provides the audio networking infrastructure for the NU-Q facility and integrates virtually every key system. Hydra2 links the studios with the 7.1 mixing suites, connecting mixing consoles via MADI interfaces. The Evertz MAGNUM control system is also connected over Hydra2 and routes audio signals from the Artemis. And for monitoring and control, the Artemis transmits data from SNMP traps via Hydra2 to an Evertz VistaLINK system.

The Hydra2 system enables full and seamless integration of multiple vendors' solutions — a critical requirement for NU-Q — and it delivers the flexibility for any control room to control any studio or multiple studios. NU-Q can locate Hydra2 I/O boxes wherever they're needed to reduce cabling between studios.

Anthony Harrison, Calrec's international sales manager, commented, "The NU-Q production centre is the kind of facility that many broadcasters dream of, a true showcase of the cutting edge in robotics, automation, and integration. It's so advanced that it has received acclaim from some of the biggest names in the industry, including Al Jazeera and Pinewood Studios.

"And yet, the NU-Q facility has no broadcast output and is completely dedicated to student education. This lack of output makes the NU-Q facility truly unique, a tremendous role model for other universities dedicated to preparing their broadcast and media students for future professional careers."

Brios score goal after goal with Bleacher Report

Popular online sports publisher Bleacher Report has recruited two Brio compact audio consoles as part of a comprehensive studio upgrade. The Brios bring new levels of power, versatility, and ease of use to Bleacher Report's live and live-to-tape productions, which range from pro and college football, soccer, and basketball broadcasts to fantasy football and panel shows.

"The Brios are our first Calrec desks, and they're a great addition to our team," said Mark Steinmetz, studio operator/audio engineer, Bleacher Report. "Of course, we were aware of Calrec's reputation as the premier mixing console for television and sports. We chose the Brio because of its user-friendly layout and powerful features, which really set it apart from the other boards we saw at trade shows.

"Brio can accommodate any skill level, which makes it really ideal for our crew. Our audio operators love the console's ease of contribution and mix-minus features, with a layout that's easy to grasp at first glance and displays the data in a very intuitive and natural manner."

Bleacher Report streams its content through its own app and also through online platforms such as Facebook, Instagram, and Snapchat. The online broadcaster produces its own shows in both its 600-square-foot and 1,400-square-foot studios, which may be occupied with up to 15 Facebook Live streams every week during peak season.

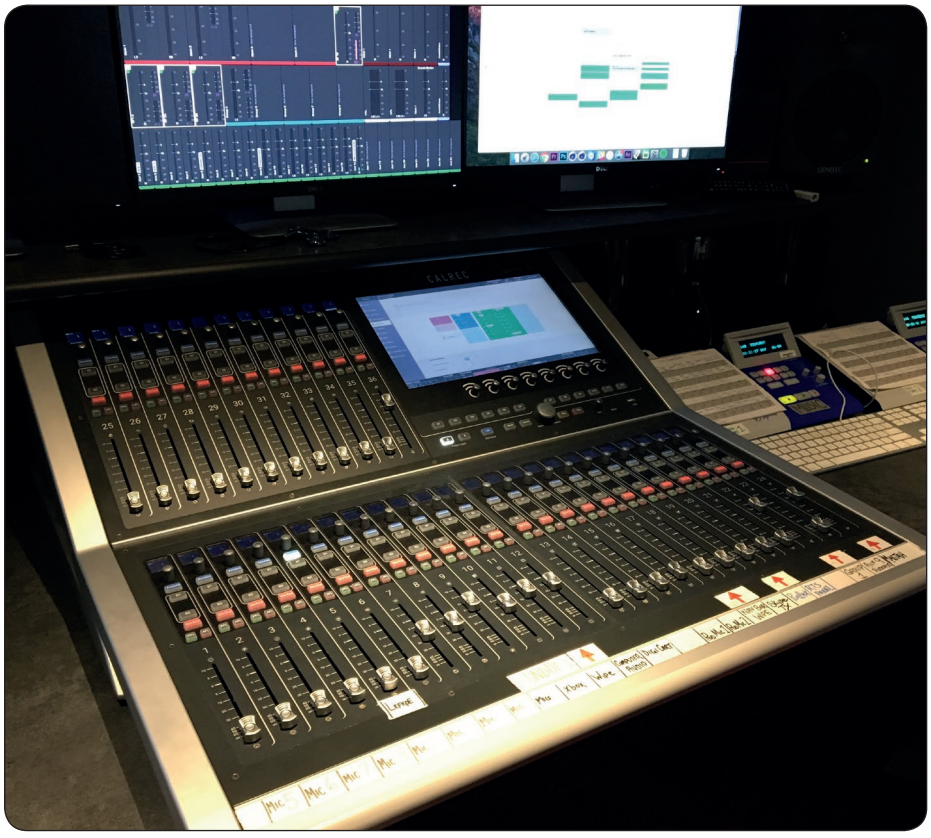
The new Brios are a significant upgrade for Bleacher Report, whose previous audio console only offered limited routing via AES and Dante. One of the Brios is now in production handling audio mixing for both studios, and the second Brio is being readied for mobile shoots.

The Brio handles all of the productions' audio sources with ease, including Dante, AES, SDI, and analog. The desk handles routing between the different formats seamlessly and it also offers effortless mixing for live talk shows that might include up to eight panel guests.

Steinmetz added, "Not only were our previous console's mix settings cumbersome and hard to use, but the desk just wasn't up to the task of managing all of the audio I/O in our facility. The Brio's automixing makes our panel discussion shows much simpler to mix, and we're able to dial in settings that make the most sense for our facility and workflow.

"The Brio has improved our workflow by giving us the ability to route anything anywhere in and out of the facility — we can send audio wherever it needs to go, and it's fast and easy."

"As the No. 1 sports destination for millennials, Bleacher Report is a great showcase for our Brio and the robust functionality it offers in a compact form factor and at an affordable price," said Helen Carr, regional sales manager, Calrec Audio. "It's a pleasure to begin our partnership with Bleacher Report. We look forward to seeing how the Brios will support them as they continue to grow, and as they add upcoming mobile capabilities."



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Fox Sports Australia doubles down on Calrec

FOX SPORTS Australia has added a second Calrec Artemis digital audio console at its Sydney headquarters, replacing a Calrec Zeta console that has delivered audio output since 2008. The Artemis went live on 30 November last year with a prerecorded UFC preview show followed by "Just for Kicks," a live-audience football entertainment show on FOX SPORTS 501.

The decommissioning of the Zeta and then installation and commissioning of the Artemis took less than 48 hours by a team assembled by FOX SPORTS Australia Broadcast Projects Engineer Mick Gergos. The show files were prepped and checked beforehand, so when show time arrived, the operators pushed up the faders and were off without a hitch into very familiar territory.

"When it came time to upgrade to a new console in our main broadcast facility, the Artemis was an easy choice. Since we already work with the same desk in our other studio, adding a new Artemis guaranteed a smooth transition for our crew," said FOX SPORTS Australia Network Head of Audio Antony Koveos. "We effectively mirrored and networked the facilities by adding Dante cards in both studios and the intercom system. This has given us a high-capacity intercom interface that extends to the outside world and is now available on our outside broadcast network.

"Through our years of experience with the Zeta consoles and previous Calrec compacts, we've become accustomed to the core feature set, outstanding reliability, and quality of Calrec products — especially the sound quality. In a world of many look-alike, me-too products, it is very easy for the uninitiated to be swept away by marketing promises and sales hype, and it's become even more difficult to find the essential operational functions and features.

"Simple things like the quality of faders, switches, and knobs, as well as logical, instinctive, and comprehensive monitoring and metering, are other requisite areas many fail to appreciate, but that really stand out on Calrec desks."

The new 48-fader Artemis console is installed in Studio B. Key drivers for FOX SPORTS to add the second Artemis were the ability to link it via Calrec's Hydra2 network to the existing Artemis in Studio A for a seamless exchange of audio signals, and the ability to add Calrec's RP1 remote production unit to remotely control signals in the field from an Artemis surface in a studio control room.

Koveos added, "The opportunity to call up any function on any panel, replicate them on multiple panels, split the surface for multiple users, and set up alternate monitoring quickly and easily are just some of the benefits that make Calrec consoles user-friendly and highly functional in an ever-changing production environment.

Add to this the on-board automix, fader / function control from GPI, or external automation control, and you have a very powerful and versatile system. But we don't just value Calrec's advanced feature set — we also know we can count on outstanding customer support from both Calrec and our local distributor, Syncrotech Systems."

Calrec International Sales Manager Anthony Harrison commented, "Like many other high-profile broadcasters around the world, FOX SPORTS knows it can count on Calrec consoles to deliver not only the industry's most robust, flexible, and easy-to-use feature set, but also the highest-quality sound output.

"It's a privilege to continue our long-time collaboration with FOX SPORTS. They know from experience that our solutions will take them forward as they expand into emerging paradigms, such as remote production, that open up new possibilities for efficiency and cost savings."

NBC Olympics selects Calrec for 2018 Winter Games

NBC Olympics, a division of the NBC Sports Group, has selected Calrec Audio's Summa, Artemis Ray, and Brio digital audio consoles to provide seamless audio mixing for its production of the XXIII Olympic Winter Games, which take place in PyeongChang, South Korea, 8-25 February. The announcement was made today by Karl Malone, Director, Sound Design, NBC Olympics, and Dave Letson, Vice President of Sales, Calrec Audio.

Calrec Audio will supply a Summa console for the prime-time audio control room in NBC's production compound at the International Broadcast Centre in PyeongChang. In addition, NBC will use a 56-fader Artemis Ray as its primary console at the sliding venues in the mountain resort of Alpensia for coverage of bobsled and luge events.

A 72-fader Artemis Ray will serve as the primary console at the speed-skating venue and indoor venues at the coastal city of Gangneung. In addition, a Calrec RP1 remote production system and a compact Brio console will support operations at the coastal studio, giving NBC Olympics the ability to control the production remotely from multiple control rooms in its headquarters in Stamford, Connecticut.

"We are very happy to once again have Calrec support our production of the Winter Games, this time in PyeongChang," said Malone. "We continue to take full advantage of the new Calrec technologies, having used Calrec AoIP modular cards in Brazil, and now Calrec 'Waves' modular cards in South Korea. We are very fortunate to also have Calrec's latest Brio and RP1 systems to facilitate NBC's production."

"It's an honour to continue working with NBC Olympics for its award-winning coverage. With each Olympic Winter Games, NBC continues to push the boundaries of sports audio, and PyeongChang is no exception," said Letson. "As we did with the Rio Games in 2016, we'll offer an innovative and fully networked audio operation connected with Dante on a Hydra2 network and supported by our team."

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Making the most of Remote Production
BBC Sport's Dave Lee at the Commonwealth Games

With Dave Lee
Lead Sound Supervisor, BBC Sport

The BBC has a long and respected tradition of covering large sporting events and has constantly refined and improved its coverage over the decades. Having worked for them for 35 years, Lead Sound Supervisor Dave Lee has gained a wealth of experience planning and delivering the sound and communications of a wide range of TV programmes.

Today, remote production is increasingly used to help deliver more content, to more screens, across more devices; and it is proving a key challenge for modern broadcasters.

The case for remote production is compelling. Remote production reduces our carbon footprint, it maximises utilisation of existing studio equipment at the home location, it keeps quality high and keeps costs low; and the staff can work in a well-established and familiar production environment that's close to home.

Since the start, sports broadcasting has been central to the growth of remote production. Manufacturers and broadcasters have had to work together to overcome some fundamental challenges. In the broadcast audio world, the biggest challenge is how to combat latency; not of the overall transmission signal, but the live on-air conversations between reporters, presenters and experts at the remote venue(s), as well as in any remote studio.

These are relatively new problems for broadcast workflows. The traditional way to cover large international events is by driving an outside broadcast truck to the event, setting up flypacks, or building a transmission suite on site and mixing the entire event locally. As broadcasters begin to embrace the concept of remote broadcasting, they are finding that with careful planning they can maintain quality levels while at the same time save money.

Remote broadcasting cuts travel budgets, saves on shipping and equipment, and gives more time to staff. It maximises a broadcaster's investment in existing studio architecture, increases content across a variety of delivery methods and allows broadcasters to be more creative with content.

But such things come at a cost and the challenges are something that broadcasters haven't had to deal with before. BBC Sport's Dave Lee has been central to the development of remote production for the organisation.

"Latency is absolutely key to any live sports production – the main consideration being the talent hearing what they need to hear to do their job properly. They need to hear a combination of things: mainly instructional talkback information from the production team plus the programme into which they are contributing – a mix minus themselves. They must be able to talk to one another – presenter to commentator to reporter and so on. This involves a lot of bi-directional audio traffic."

It may surprise many that BBC Sport has been embracing remote production for many years: for example, the Vancouver 2010 Winter Olympics and again in Sochi 2014. Lee explains, "We had a very small team on location in Sochi with all video and audio sent via International connectivity back to the UK for transmission. The majority of the production and technical team members were located at BBC Sport in Salford, where we have our state-of-the-art transmission suites."

When audio engineers mix live TV content, they combine local content at base where the transmission occurs, such as video from servers, audio play-ins and studio content; with a number of outside sources. The OS remote contribution from the venues generally includes Commentary, Presentation and Reporters; and often

involves physical studios at the remote venue too.

These outside sources must hear the programme into which they're contributing. To achieve this, broadcasters use a mix minus feed for every outside source. Some ground-based staff also need specific programme mixes that includes their own voices, for example, when Presentation is stationed in a noisy environment such as amid an enthusiastic and vocal crowd.

The various mixes can all be adversely affected when working remotely.

Traditional mix minus working is forgiving and successful when dealing with small latencies, because people at the venue are not hearing (echoes of) themselves. If this latency doesn't affect the flow of conversations between contributors, then everything is good.

But as soon as you move into remote production, with its inherent higher latencies, the conversations start to suffer. This was exactly the challenge that BBC Sport encountered in Sochi – as have other broadcasters working in remote production environments.

Lee explains, "In Sochi we did use remote production successfully. However, whenever any onsite talent needed to talk to any other onsite talent, that traffic came over our international links, through the UK sound desk and back out on the mix minus to the other talent.

"They replied and then that came back to the UK, through the sound desk and back out again to the other talent. This torturous signal path introduced a considerable amount of latency, a combination of multiple international round trips plus video encoding/decoding (with the embedded audio). It all adds up to a significant delay."

This results in slow hand-overs, laboured conversations and interruptions, which can be particularly confusing and frustrating for viewers when presenters and reporters who appear at the same venue exhibit a significant delay.

"They are all within metres of one another, but there's a delay because they hear each other via this international latency. We had to find a way of making this better," says Lee.

Calrec and BBC Sport have a longstanding relationship, most recently from using Calrec consoles and Hydra2 networking technology at Salford. After Sochi, meetings were held to exchange ideas about how to eradicate remote site latency.

It was concluded that the talent on the ground inevitably needed to hear the UK talkback and UK programme content via the international link – mix minus all OS contributors – but also be connected locally to one another to negate the international latency. That was the technical nut to be cracked.

Traditionally, this could be achieved by having a physical mixer onsite at the event. The Eureka moment came when it became clear that this system works – why change

more...

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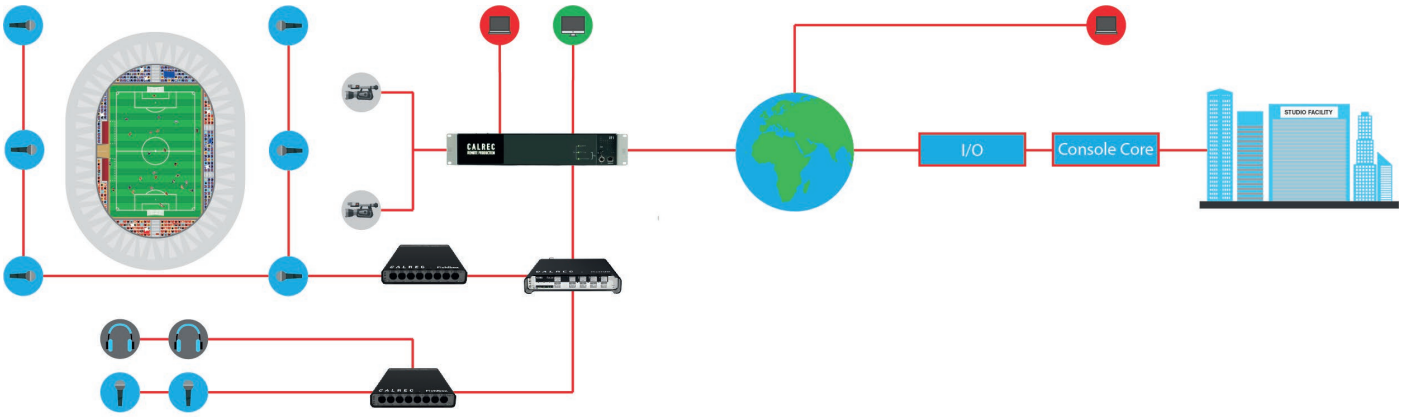
Making the most of Remote Production
BBC Sport's Dave Lee at the Commonwealth Games



it? What's required is the ability to achieve a local mix of dialogue, but control this remotely.

This collaborative working resulted in Calrec's RP1 remote production unit, which sits at the remote venue. The latency challenge is simply solved by providing local DSP channels for mixing the venue audios locally, along with switched talkbacks and mix-minus-all-venues added to each contributor's mix. The nature of the remote control aspect is fundamental, with fader data generated by the transmission sound console in the UK sent via an international IP link.

At a big event like the Commonwealth Games, broadcasters will have technicians at the venue during set up, before they connect with the team back home. This is an aspect which needs careful consideration. Configuration and basic operation should be possible 'offline' to test the system; and also to provide a redundant back up should there be technical connectivity issues later on.

For this reason, control of the RP1 can be local (via a web-based GUI), but once set up local control can be locked. The transmission audio engineer takes control and 'blocks' the use of fader and cut facilities of the GUI controlling the remote RP1. The same content that is put to air in Salford is also mixed within the RP1 so the talent hears precisely what's going on. The talent hear each other via local connectivity in real time when they are faded up. These faders mirror the host console faders in the home production facility, as the host console controls the RP1 onsite.

Lee explains, "We can now treat audio content generated in the UK, which is behind-time, separately from the instantaneous audio content generated locally. Anything that's available on the event side of the latency, the talent only hears through the RP1 remote mixer; it doesn't pass to the UK and back." Of course, this scenario applies to any production suffering from delays, not just international events.

Calrec's RP1 solution was successfully deployed at both the Winter Olympics in Pyeongchang and the Commonwealth Games in the Gold Coast, Australia.

But then consider a studio at the remote venue; remote talent might want a full programme mix in their earpiece rather than a mix minus, so that the Presenters and Guests can hear each other clearly.

"When there's ambient noise, foldback and a lot of talkback traffic, the talent can't always hear what's going on around them – even people sat next to them!" Lee says, "You have to feed the studio mics into the contributors' ears. The latency must be zero to avoid echoes of themselves and the people they can half-hear sat next to them."

So how can zero remote studio latency be achieved?

Lee says, "There's nobody mixing the mics locally in the studio, but in remote production that's ideally what's required. We can liken these mix requirements to those of a foldback mixer at a concert enabling each performer to hear clearly. The requirement is for the mic mix generated at the studio to be controlled remotely by the host console back in Salford."

For every mic in the studio there's a fader on the remote mixer GUI – the RP1 – that's controlled by the equivalent fader back on the console in Salford. Whatever decision the broadcast audio engineer makes is mirrored within the remote RP1 mixer. However the audio content used in the RP1 is direct, not via any international link.

The audio from mics that are fed into the RP1 are also sent to the host console over the international circuits. This allows the broadcast engineer to control the main output mix and the local venue mix at the same time. It is one, fully integrated solution. The RP1 studio faders are paired with and follow the transmission faders, so Presenters and Guest hear almost exactly what viewers hear.

Concord Upgrade Delivers Heavenly Results For CBN

Director of Audio Services Phil Peters, of the Christian Broadcast Network (CBN), is singing the praises of Calrec Audio's Concord processor upgrade, enhancing the capabilities of the Network's two Calrec Artemis Beam consoles used to produce approximately 25 shows a week.

"The Concord upgrade took already great Calrec Audio consoles and operating systems, and made them even better," says Peters.

"While the core application didn't change, every operator has commented that since the upgrade, day-to-day functions, usability and rhythm of the work has increased. The accelerated daily workflow and extra user-friendly presets were immediately apparent. Also, an updated graphics scheme makes sitting at the desk more enjoyable and the Wild layout is now user-definable, so sections can be set up in whichever way the operator prefers."

As part of the studio upgrade, CBN also integrated Waves servers and Dante networking. CBN is currently networking two Artemis Beam consoles via Hydra2, as well as digitally networking over MADI/Dante/SoundGrid across campus. Both Artemis consoles are 48-fader desks, with 340 processing paths across 12 layers.

"The Concord upgrade has made on-board Dante streams across consoles, and even across campus via fiber, possible," says Peters. "One really nice benefit of the OS upgrade is that it now offers users the ability to easily save and recall channel strip settings, which makes building a new session that much more streamlined."

Peters also noted Calrec's response to customers' wish lists when designing new products and software upgrades, saying that the company "has been fantastic with upgrades and finding ways to improve workflow.

"New features like an extra delay tap on part of the channel flow, or the redesign of console functions to have summary information immediately available, is what makes our jobs that much easier.

"We don't foresee having to move away from the Artemis consoles anytime soon. The Concord upgrade has added several years to our Artemis consoles, and we think that it will continue to meet our needs for many years to come."

About half of CBN's shows are recorded for post and aired later, while the other half are fully live to air. CBN's flagship show, The 700 Club, has been on the air for 57 years. CBN has four production studios as well as complete post facilities for video, audio and graphics.

Additionally, CBN hosts events on campus that employ traditional production and staging, many of which are tied via fiber across campus for recording within the broadcast studios.

"We have enjoyed a long and productive relationship with CBN and are happy that Peters and his team are enjoying the Concord upgrade and its benefits," says Helen Carr, Regional Sales Manager, Calrec.

"With its intuitive navigation, ease of use and new level of performance, we knew the Concord upgrade would improve our overall broadcast workflows and accelerate functionality. We are happy that customers have embraced the change and continue to evolve with Calrec."

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Artemis joins Taiwan's 4K Infinity OB truck

Infinity Multimedia Production has upgraded its state-of-the-art mobile broadcast unit — Taiwan's first and only 4K HDR OB van — with a new Calrec Artemis Light digital audio console. The Artemis brings the industry's highest-quality sound output to Infinity's ground-breaking 4K operations.

Infinity also had Taiwan's first-ever HD OB van in 2006. Based in Taipei, Infinity has been one of Taiwan's leading broadcast and media production companies for more than 30 years. Infinity was founded in 1986 and is a key player and pioneer in the Taiwanese market. The company invested in the latest broadcast and post technology with the primary purpose of aligning itself with ever-changing international industry standards to provide high-quality format options and industry-leading products to customers.

Infinity chose the Artemis on the recommendation of Hi-Pro Technology (Cinchy Corporation), Calrec's exclusive distributor and audio/video systems integrator in Taiwan, which provided equipment and installation for the truck upgrade.

"Our truck continues to raise the bar for 4K production in the Taiwanese broadcast market. To keep that momentum going, we must continually evaluate and upgrade the on-board systems," said Chia Wei Lin, vice president of Infinity Multimedia Production. "When the time came for a new audio mixing desk, we knew we had to work closely with Hi-Pro and Calrec from the beginning.

"Value-added support, training, and after-sales servicing were also large considerations before installing a reliable and fully redundant system to meet the range of production needs for local customers and international events.

We expect to capture new business opportunities with the brand and the desk's specifications. Many of our visiting overseas partners from Japan and Korea are already Calrec customers, so they are familiar with the operations and features of the desk.

"Artemis' compact surface is perfectly geared to our range of live-event OB operations, and its power and scalability give us the confidence we need to accommodate any production now and into the future. For us, achieving the highest standards in broadcast audio is as important as producing our 4K images. Artemis fulfils this and more."

The 4K ultra-high definition (UHD) Infinity truck was launched in 2016, in time for the first 4K production of 25 farewell concerts for a DVD film for Jody Chiang (Jiang Hui), and the press conference for Taiwan's first elected female president. Infinity has since continued to upgrade the truck's equipment to meet the broadcast recording and delivery requirements of numerous 4K UHD HDR concerts, sports, and live events.

With prior success, expertise, and experience with the Deaflympics and The World Games ceremonies, and sporting events for the 2017 Summer Universiade in Taipei last August, Infinity joined together the Chinese Television Station (CTS) and the majority of local TV stations as part of a 16-strong HD OB van fleet located across the different competition venues for seamless 4K coverage of the opening and closing ceremonies.

Anthony Harrison, Calrec's international sales manager, commented, "Infinity made history last year by introducing Taiwan's first 4K production capabilities and giving viewers throughout the country their first look at this next-generation format. As Infinity continues to be the UHD standard-bearer in Taiwan, it's thrilling to know that Artemis is playing a key role."

Brio on the road with New Zealand's WhitebaitMedia

After 36 years in a studio, the producers of New Zealand's long-running kids show What Now decided to go on the road in 2018 so the programme could reach out directly to far more children around the country and bring even more dynamism to the format. And they are using Calrec's high-performance Brio36 compact audio console to do so.

The show airs live at 8am each Sunday during a non-advertising time in New Zealand on TVNZ 2. It's also part of Television New Zealand's South Pacific Service that sees the show broadcast on a number of Pacific Islands. The two hours consist of "fun, mess, games, mess, skits and more mess" according to Tim Murdoch, Technical Manager at production company WhitebaitMedia, all in front of a live studio audience. The show regularly hosts celebrities and live performances of all types.

Murdoch said, "We've been producing 'What Now' for 14 years in Christchurch, Starting in TVNZ's studio and moving into our own studios in 2009. When we decided to take the show on the road, we needed to build an OB truck and find equipment that would fit inside a small space without compromising on quality."

WhitebaitMedia is a full-service production house, based in Christchurch, and it chose Calrec's Brio36 compact audio console for its new 26- foot mobile production unit. This is Whitebait's first purchase of a Brio and first Calrec purchase ever. The installation was managed by Australia-based Synchrotech Systems, which installs a range of broadcast equipment across the radio, TV, film and outside broadcast sectors.

Murdoch continued, "Due to its size, our current audio console was deemed too big, and it was starting to show its age. To replace it, I began the search for a new audio console. Like most people looking for a lower budget compact audio console, I looked at options from the live PA market. However, these lacked the power and flexibility that a show like 'What Now' requires, where no two shows are the same and the script is more of a guideline. The Calrec Brio was the logical choice because it was the only one to offer the power and flexibility of a larger broadcast console but at the budget and size of the smaller consoles normally fitted in small-to-medium OB trucks."

Murdoch added, "We were immediately taken with Brio's features; it has excellent built-in loudness meters and its detailed metering means we don't need to purchase extra meters.

"It also has an impressive number of faders, so our operators have access to everything, which is really useful for a show like 'What Now' that doesn't follow a dedicated script. The Brio also allows each of our operators to set up their own user file, as well as show template files, and this is a real bonus when using multiple freelance operators."

Anthony Harrison, International Sales Manager, Calrec said, "We've achieved considerable success over the years in the Antipodes and it's an important region for us. We're delighted that WhitebaitMedia is taking advantage of the powerful capabilities of our Brio36 console for its new OB truck. We designed Brio with versatility in mind and to work across a myriad of broadcast applications, with mobile trucks being a key example of where Brio really shines as a compact yet powerful console."

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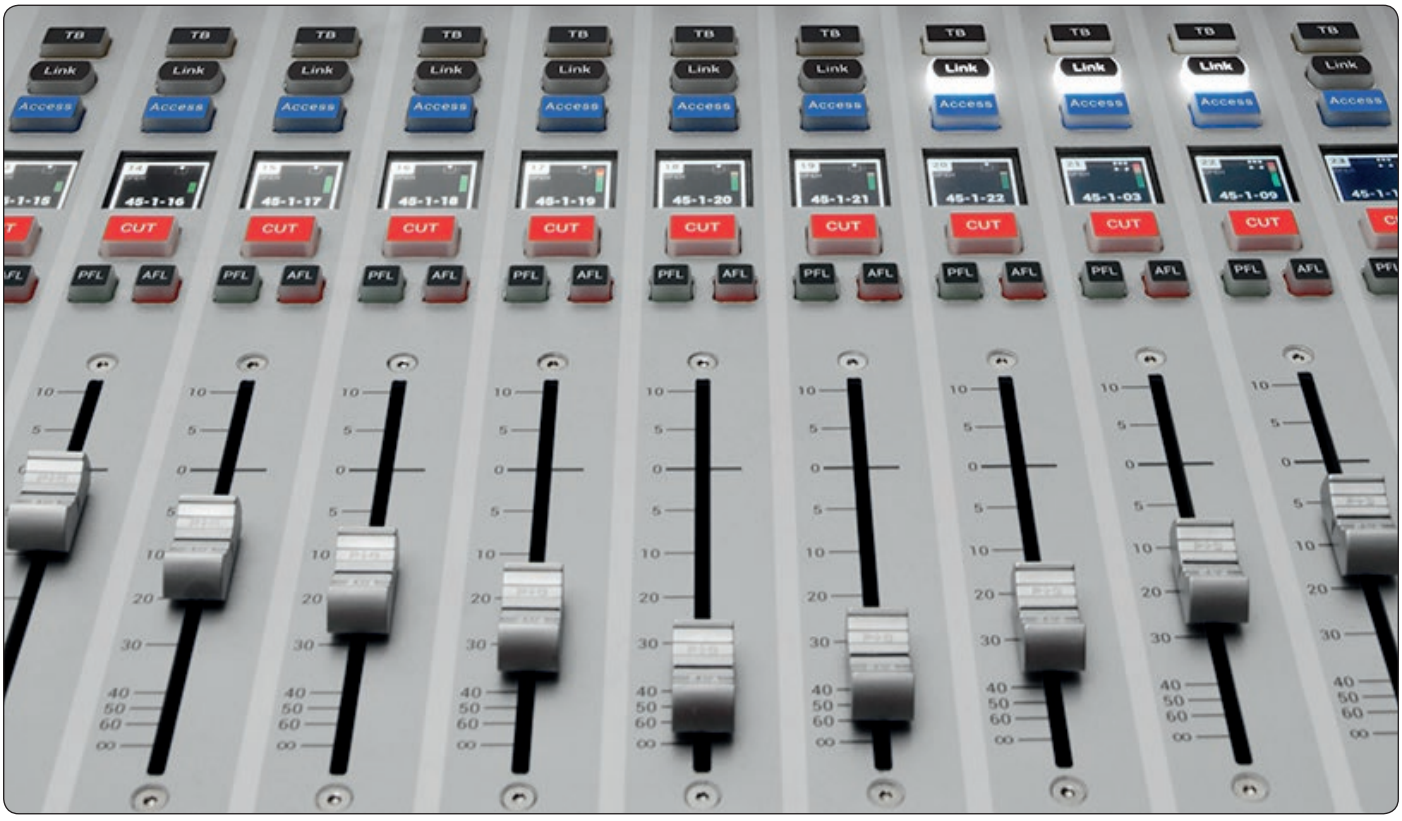
dock10 standardisation on Calrec with Summa install



With ten studios in its facility in Manchester, seven being TV-based, dock10 offers some of the most advanced and innovative television studio services for broadcasters, production companies and creative pros in the UK. The studios, which vary in size, are used by many high-profile clients to make popular TV shows, including The Voice, Match Of The Day and the iconic children's favourite Blue Peter.

Recently, dock10 purchased a Summa console in a 32-fader, 180-channel configuration from Calrec for its HQ6 studio that's used exclusively by BBC Children's Presentation, which works on content for the popular CBBC and CBeebies channels. This installation means that all seven TV studios are now standardised on Calrec consoles.

According to John O'Shaughnessy, Head of Technology Operations at dock10, the primary reason for the purchase was to replace an antiquated console and to continue to modernise its facility. He said, "When we realised we needed to upgrade this particular studio, it didn't take us long to decide on the Summa because Calrec equipment is well established across our operations. We use Calrec's Hydra2 audio networking capabilities and a mixture of Calrec's Apollo and Artemis consoles throughout our facility. This latest purchase of the Summa means that our seven main studios are now standardised on Calrec audio consoles."

dock 10 is taking advantage of Calrec's Hydra2 networking capabilities both internally and externally across its studios, allowing it to maximise the use of resources. Using Hydra2, dock10 can set up complex, multi-connected studio scenarios to provide clients with huge flexibility and audio control options, with large numbers of inputs and outputs able to be shared and controlled irrespective of location. O'Shaughnessy highlights the fact that this helps it gain repeat business as well as new clients.

"The Summa is an invaluable addition to our studio, helping us to standardise our workflow and giving us more flexibility so we can focus on creativity and time management. On top of this, Calrec's service and support is excellent," O'Shaughnessy commented.

"dock10 is one of the most well-established TV studios in the UK, with high-profile clients who produce large volumes of work, so they need to stay competitive and work in the most efficient way possible. We're delighted that dock10 has chosen Calrec to round out its audio infrastructure with this latest purchase," said Jim Green, International Sales Manager at Calrec.

Brio Makes the Grade at Full Sail University

A pair of Brio consoles recently joined the facilities at Full Sail University, providing valuable hands-on training and experience in audio mixing for students in the Film bachelor's degree program, as well as being utilized in the university's on-campus performance venue.

Full Sail University offers both campus and online degree programs in entertainment, media, arts and technology. In the Show Production Department, an existing Calrec Summa console was previously purchased to bring a broadcast-specific feature set to the Show Production bachelor's degree program. Its students use the console to mix a broad range of live video and broadcast events.

"We really like the Summa's layout and features, but one of the main features that really appealed to us is the Hydra2 modular rack," says Vince Lepore, Course Director, Show Production, Full Sail University.

"We were able to load it with a mix of analog I/O and Dante® cards. Our entire production facility uses Dante to transport audio between the different rooms, so having the Summa on the Dante network as well was a bonus. The modular rack also gives us the ability to be flexible in the future with our I/O, and of course it allows us to teach the Hydra2 network to our students."

In the Film Department, a new Brio console has been added to the workflow, as an upgrade of the previous audio mixing boards.

Duane Moore, Course Director of Broadcast Production at Full Sail University states, "The students are using the Calrec Brio to learn live production audio and to mix sound for their live shows in the broadcast studio. We chose the Brio because Calrec consoles are high-quality, they have the features needed to teach audio for live broadcast and are likely what students will use in the industry after graduating."

One of the new Brio consoles was installed as part of the broadcast production curriculum, while the other was installed for use within the university's state-of-the-art performance venue, Full Sail Live.

"The Brio console is a big upgrade for our students from the analog board they were using before," says Jeff Planck, Program Director of Film at Full Sail University. "With the touch of a few buttons, they can now create and use preset 'shows' and 'memories' that customize the Brio for their specific show. The Brio also provides convenient network interoperability with the other studios on campus featuring Calrec consoles. " A cornerstone of the university's curriculum is providing industry standard equipment to facilitate a hands-on approach to learning.

At Full Sail, the university places a large emphasis on giving their students' real-world industry experience and creative problem-solving opportunities.

"The new Brio's deliver the core functionality that students need to learn in a broadcast audio console, but at a price point that made sense for us," says Scott Dansby, Director, Industry Relations at Full Sail University. "We chose to purchase all of our units based on Calrec's reputation of making high-quality, live-broadcast audio consoles. Since these systems are used throughout the industry, we knew we'd be giving our students experience on a board they'll likely be using in the future and throughout their careers."

CALREC

Mind the Gap: Transitioning to IP Workflows

By Henry Goodman
Director of Product Management

For many years our industry has been defining what an IP-based workflow should entail. It has been forming alliances, think-tanks, societies and technology partnerships in order to define user cases, build protocols, test connectivity and promote solutions.

By now everyone appears to be in agreement as to where the industry is heading; but there's still some uncertainty surrounding how to get there.

The ultimate destination is one of total IP integration within broadcast workflows, but there are many different ways to get there, the route depends very much on the specific demands of each broadcaster.

Many broadcasters have made large investments and committed themselves heavily to incumbent workflows based on the technologies that have been developed over the past 10-15 years. A lot of these technologies remain current, powerful and more than able to perform the task they were installed for. A wholesale move away from these proprietary systems may not make financial sense at this juncture.

With the exception of greenfield developments that can commit to IP-based workflows from the outset, another direction will have to be proposed if facilities currently operating with non-IP-based systems are to make the switch.

One of the major benefits outlined in the argument to switch to IP is utilising IP infrastructures that already exist, thus saving money. On the surface that appears to be a non-starter when faced with the initial outlay required to change to facility wide IP-compatible equipment.

So, is there an alternative route that will help with a smoother transition into IP workflows? Happily, there is, in the form of gateway technologies.

Why Transition?

Before considering the benefits of gateway products, it's important to understand why a move to IP will be necessary in the coming years. IP-compatible technologies are undeniably becoming more prevalent.

One of the major motivations is utilising existing network infrastructures. These may already exist in a broadcasting facility as part of the IT network. The initial outlay for any additional cabling and terminals would be vastly less compared to that of a full installation.

Another appeal is using "Commercial Off-The-Shelf" (COTS) hardware. This could already be in use in existing systems and can be easily sourced if more is required. Again, using standard equipment that's readily available, instead of proprietary alternatives, is a driving factor in the move to IP.

The primary focus of the switch is simply to use common transport protocols, with equipment made by different manufacturers speaking the same language over a standard network. This allows interconnectivity without "translation" devices and the ability to organise and control numerous streams from a central application. This streamlines workflows, ensures compatibility and – that age-old motivator – saves money.

Gateway Technology

Most broadcast manufacturers already offer IP Gateways that allow their equipment to be connected to an IP Network. These effectively act as an IP input/output interface giving the equipment access to receive streams on the IP Network and to generate streams and send them out onto the IP network. Gateways can connect directly to equipment or via existing IO interfaces like MADI. Broadcasters can begin to leverage the benefits now using these gateway technologies, allowing them to quickly and simply augment their current workflow.

Moving to a completely new system is not only financially draining it also has a learning curve. This curve will initially be steep as there is much to learn within the broadcast facility. By using a gateway technology, the curve can be flattened as not everyone will need to be across the technology from the outset. In the long run this can make the transition a smoother journey.

By not swapping out all the equipment simultaneously, current systems can continue to be used, keeping everything on air and allowing the transfer to be non-disruptive to the programming schedule. It also allows the broadcaster to get the full value out of their investment.

Once a gateway has been introduced and an IP network established, it will be relatively easy to start introducing other equipment onto the network, either with native IP equipment or via gateways. This method will allow for equipment to be replaced when the time is right.

Some proprietary solutions are currently more powerful than their IP counterparts. Having a system that includes elements from both proprietary and IP systems allows the broadcaster to leverage the best of both worlds. This can include larger channel counts over single cables with a deterministic nature and lower latency.

The standards for audio and video transport are now clearly established and documented within the ST2110 suite of protocols. Industry bodies and manufacturers are working hard together to test and finalise the NMOS discovery and registration mechanisms as outlined in ANWA IS-04 and ANWA IS-05 NMOS connection management.

This means that although IP has a little way to go to be on a par with some established proprietary systems, it promises greater interoperability. Some manufacturers are already implementing NMOS connection management mechanisms and are releasing equipment that is already NMOS (IS04 or IS05) compatible.

However, more established systems already include automatic discovery and registration together with a control layer that's inherent in their network solution and these are proven and being relied upon by large broadcasters globally. Utilising a gateway solution allows the broadcaster to continue to benefit from these as the industry irons out the final creases in its standards.

What's Next?

Migration to IP is already underway. Manufacturers that currently produce proprietary systems are also bringing IP-based products to market. As this becomes more prevalent, broadcasters who have established relationships with manufacturers will look to their new IP products when upgrading their systems. Relationships like these are built on trust and support; not only in the kit but also how companies can support their customers through this significant transition.

During the migration there will be a growth in hybrid systems utilising gateway products to link IP systems with their legacy equipment. Manufacturers may also produce in-field upgrades to convert current hardware to be IP compliant. Ironically, there will have to be a greater level of interoperability as there'll be multiple transport and networking technologies that need to work in tandem. This will end only when legacy equipment is fully superseded by its IP counterpart.

As with the move from analogue to digital or SD to HD, this process won't happen overnight, so the requirement to make the transition as painless as possible is a necessity. The onus is on the manufacturers to provide the appropriate tools.

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NEP Ireland Standardises OB trucks with Artemis

NEP Ireland has standardised its five main OB vans on Calrec technology. The company has acquired an Artemis Light and Artemis Beam for its Emerald and HD1 mobile production units, respectively. NEP Ireland is a leading provider of outside broadcast services across Ireland.

According to Rick Poster, senior audio engineer at OBSTV/NEP Ireland, outfitting the company's OB fleet with Calrec consoles was a decision that made sense from several perspectives. "About four years ago we purchased an Artemis for one of our UK-based trucks, and since then we haven't looked back.

Calrec has a very large market share in the UK, and many of the freelancers we work with really weren't familiar with our older consoles, but they knew Calrec.

"Plus, the company has moved forward quite strongly with the development of its Artemis console, and because we began using that product at the beginning of its lifecycle, we've been able to develop along with it and take advantage of better monitoring, including loudness monitoring, which is excellent. The I/O frames are easily configurable as well, and overall the Artemis is a great package for its size and price," he said.

NEP Ireland is also taking advantage of Calrec's sophisticated Hydra2 networking capabilities, which connect all the OB units seamlessly. With Hydra2, NEP has the ability to send audio signals over long distances using fibre and share those signals between trucks. This reduces setup time and the amount of temporary infrastructure that NEP needs to install within venues.

"From the day a desk arrives and throughout the service process, their technical support has been excellent. This obviously had a huge influence on our purchasing decision," adds Poster

Plus 4 Audio amps up its rental selection

As a highly active rental company in the UK broadcast and pro audio space, Plus 4 Audio needs to ensure that it's offering its clients best-in-breed technology. To satisfy this, the company recently purchased two 44-fader Summa consoles from Calrec Audio.

Plus 4 Audio works with many prominent broadcasters including ITV, BBC, Channel 4, and Sky, as well as independent production companies, OB providers and major record labels. Projects include high value and complex shows like Strictly Come Dancing, The Royal Variety Performance, The Mercury Music Prize and Dancing on Ice. This is the company's first purchase of a Calrec console.

"We work with a lot of high profile clients on many different projects, so it's important for us to deliver the most relevant and dynamic audio solutions no matter the application; whether it's for a sporting event, live music, or a weekly television entertainment show," commented Stewart Chaney, Managing Director at Plus 4 Audio.

"We decided to add the Calrec Summa consoles to our product line-up because they offer us the perfect mix of great audio quality, an excellent, easy to use interface and a reasonable price tag. This is a combination that's hard to find with a lot of today's consoles, as bigger doesn't always mean better. What also makes the Summa a perfect choice for us is Calrec's strong footprint here in the UK market.

"Many of the freelancers we work with are familiar with the Summa's easy-to-use layout and design. Our OB clients, for example, like the networking capabilities of the Hydra2 system because it gives them instant connectivity over fibre with other mobile units, saving time and cutting costs."

Jim Green, International Sales Manager at Calrec said, "The rental market is of huge importance to Calrec, and we're so glad that Plus 4 Audio is taking full advantage of the benefits that the Summa has to offer. We understand that production requirements evolve and the technology has to keep pace whilst keeping within budget. The Summa console has a high level of sophistication and features that represent real value."

CALREC

Capturing the sound of summer at Wimbledon 2018

By: Jimmy Parkin,
Sound Engineer, NEP UK Broadcast Services

Even those with only a passing interest in tennis understand the scale of the achievement that is winning Wimbledon. But there's also the very significant scale of the broadcast operation that brings coverage to the world.

There's been quite a lot written about the Wimbledon Tennis Championships this year from a broadcast infrastructure perspective, but no real detail about the audio side of things. Here we'll explore how the audio works, the challenges and how they were overcome.

For those not familiar with the changes, let's recap. This year's event marks the debut of Wimbledon Broadcast Services (WBS), which has taken over from the BBC as the new host broadcast operation of the All England Lawn Tennis Club (AELTC). NEP UK has been working with Wimbledon for 35 years, and this year delivered IP technical facilities for its in-house production as part of Wimbledon Broadcast Services.

Since 2014, NEP UK has provided both host and domestic coverage of the event. This summer, it created 11 (de-rig) control rooms for the host broadcaster plus three for the Wimbledon Channel to serve the world feed and archive. To support the broadcast, NEP employed 118+ camera positions and 41+ EVS servers, plus three major OB units and a large, fly-pack core to broadcast the event.

On the video side, the facility was IP-based, using SMPTE ST2110-compliant technology. Content within the facility was distributed directly to rights holder MCRs, the World Feed, the Wimbledon Channel, the Central Content Store and a transmission/QC area.

The central aim was to reduce the physical infrastructure that had to be installed while providing as much audio I/O as possible across courts 3 to 18. Centre Court, Court 1 and Court 2 were standalone islands that were serviced by an OB unit each. Centre Court and Court 1 benefitted from our new, NEP UK IP-based trucks called Venus and Ceres.

For Court 2 we used a slightly older OB unit. All three trucks have Calrec consoles.

We unveiled these two new SMPTE ST2110-compliant trucks earlier this year. We took the opportunity to invest in future-resistant IP-capable trucks. The ST 2110 system infrastructure is identical in both vehicles. Each system is built around Grass Valley (formerly SAM) IQ UCP 25GbE Gateway cards, which provide two-way links between the all-new robust and resilient IP-based equipment and the existing baseband technology that is still needed to accommodate clients using SDI feeds. The trucks can also offer dual level UHD and HDI-SDI simultaneously.

Venus and Ceres are also equipped with PHABRIX's HDR and IP-enabled test and measurement solutions. This includes three Qx 12G signal generation, analysis and monitoring solutions, to accommodate clients regardless of whether they are using SDI or IP feeds. NEP also invested in four Rx2000 units, with each Rx providing up to 4 channels of 2K/3G/HD/SD-SDI video/audio analysis and monitoring (dual inputs per analyser).

The other major differentiator for these vehicles is the significant reduction in cabling; the system requires far less fibre optic cable compared to the miles of coaxial cable previously required, which proves quicker to integrate and is much lighter. The new equipment requires greater cooling; therefore, the truck design takes into account the ability to provide greater air conditioning and all equipment can be cooled separately in operational areas.

Venus and Ceres can also expand their capacity and facilities exponentially via modular connection with multiple IP flypacks.

Venus is equipped with a Calrec Apollo and Ceres with a Calrec Artemis working alongside Axon Glue (embedders and Dolby E creation), RTS Telex Comms System with KP5032 and KP4016 comms panels and TAIT Radio Talkback base stations.

Both are Dolby Atmos-ready, using Genelec 8351APM and 8331APM for main monitoring. Other audio monitoring includes TSL PAM-2, TSL Solo Dante and Wholer AMP-16. Audio glue includes TSL X-1 for up and down mixing and TSL Soundfield decoders with reverb from Bricasti and Yamaha.

In terms of planning the audio for WBS, this was based on information from the NEP UK Technical Manager on this project who worked closely with WBS on requirements. While not specified in those requirements, years of experience and onsite expertise lead us down the path of a highly advanced networked audio solution.

I know these words tend towards cliché these days, but easy scalability and network flexibility were key to the success of this project. Audio operators had to be able to get whatever source they needed from whichever court without having to physically move or plug anything in. It's why we opted for Calrec and its (non-IP) Hydra2 networking capabilities. It's Hydra2 – and Calrec's H2O GUI – that underpinned all of this. The key point is that any console can "talk" to any other console on this network.

In terms of preparation, Calrec's H20 (Hydra2 Organiser) meant that port labels and naming could be carried out offsite before hardware was connected and this could then be imported onto the live network. This allowed for some pre-configuration work to be achieved before all the network was built. It was obviously impossible to build the entire network offsite during prep time, so this helped massively.

Heavy use of Hydra Patch bays - virtual patch points within the Calrec Network - meant that hardware IDs and card layouts of modular IO frames were also not needed to be known before arriving onsite, which was a major help when hiring in extra Calrec IOs.

External to that, we connected to the overall host broadcaster infrastructure using MADI. We believe that it's the greatest number of Calrec consoles that the company has seen on a de-rig network, with 11 across it in total. At this point we need to separate out the BBC as although it was no longer the host broadcaster (rather a rights holder), it did have some understandable special privileges. It also used Calrec consoles via its OB supplier.

Our OB trucks were connected to the Hydra2 network via MADI – they didn't need the backbone interconnectivity. Both Centre Court and Court One are separate buildings, which obviously isn't the case with the outside courts. In addition, a Calrec Brio was used for the media facilities; press conferences etc.

As well as the flexibility to access whatever audio was required, the other core benefit of this network architecture was its inherent redundancy and that was, of course, vital. Everything has both primary and secondary connections. Once it was on the Hydra2 network, it was dual-pathed, where MADI suffers from single points of failure.

There was also the ability to share the inputs of I/O boxes. For example, Number Three Court Commentary had I/Ps shared amongst many users (Number Three Court, Wimbledon Radio, Centre Court and some beauty mics). In a usual setup, the amount

more...

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Capturing the sound of summer at Wimbledon 2018

of differing I/O boxes in that area would be at least four, whereas now only one I/O box was needed.

As mentioned, the video was IP-based (SMPTE ST2110). We interfaced with the IP video network via 32 Grass Valley MADI inputs (four of their cards). We co-existed as two separate routing infrastructures, joined via MADI.

The console surfaces were in Grass Valley production control rooms, very close to the MCR, where the heart of the Hydra2 routing sat. There were 37 I/O boxes on the de-rig side (18 court side for mic inputs and the rest in the MCR for monitoring/interfacing) with a total of over 200 mics. All courts were 5.1 surround.

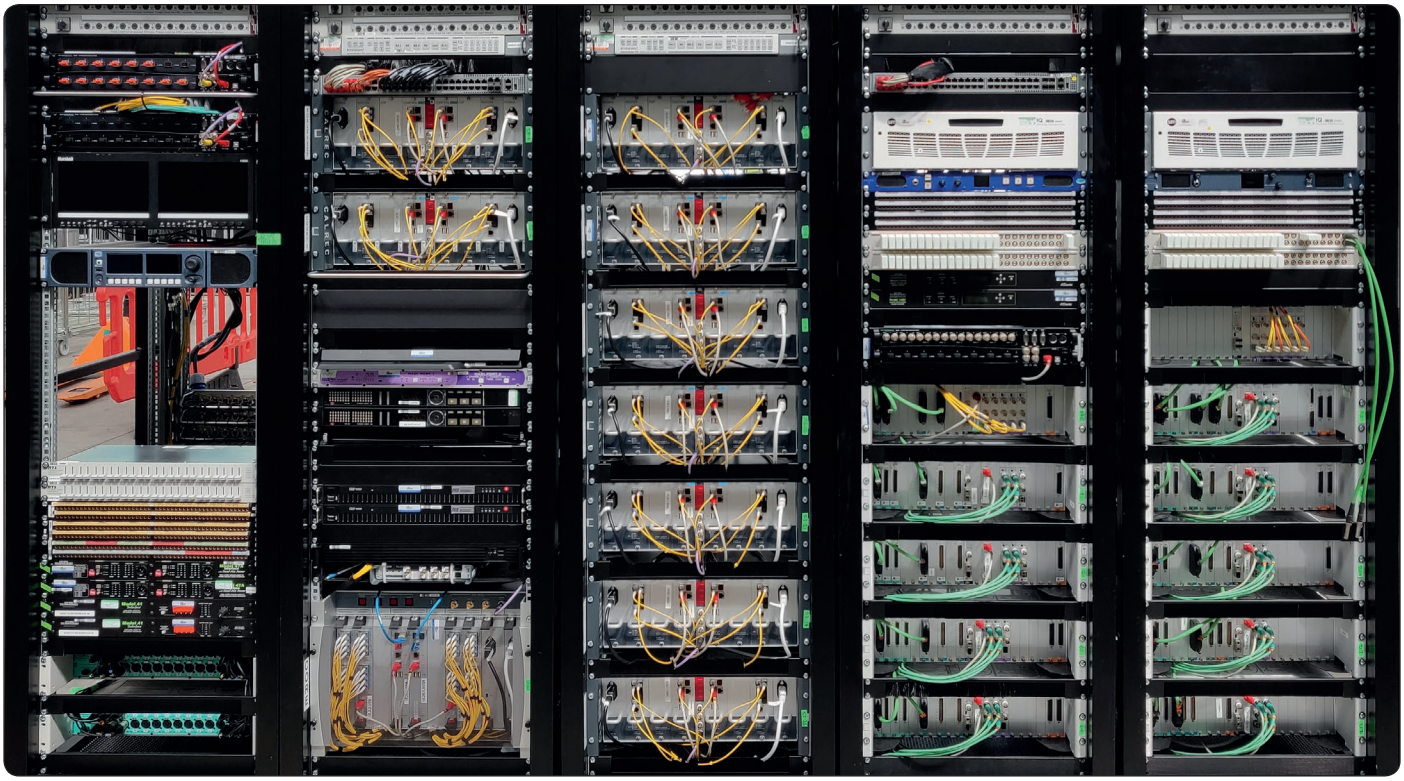
The big pressure for us came in the first week where all the courts were covered with a minimum of three cameras. Centre Court and Courts 1, 2 and 3 all had dedicated consoles. From court 4 onwards, two courts were mixed per console. In the second week, the number of courts being used was reduced for obvious reasons.

The Wimbledon Channel, from an audio perspective, was another Calrec desk that was attached to the Hydra2 network. It enabled Wimbledon Channel to get all the court feeds directly as well as all the effects mics; whatever they wanted. The way we thought about it was that it was simply another production facility sat on our network.

In terms of commentators, Centre, 1, 2 and 3 had dedicated boxes overlooking play. There are another three commentator boxes looking over courts 12, 14 and 18 respectively and then we had an additional four off-tubes, which were switched as required between the remaining courts. We didn't offer commentary on every game all the time; it was decided on merit, both in terms of which games needed to be live and/or archived with commentary.

The biggest challenge was the sheer number of feeds and productions running. Because of the way that we designed the network, adding I/O boxes and other additional infrastructure was really easy. That's the beauty of what Calrec has designed and what we implemented. It was so scalable; the way resources appeared on the network and how easy it was to move them across the network was a dream. In terms of planning, it was about making sure there was enough capacity and flexibility.

On a single fibre with Calrec's Hydra2 network we could get 512 mono channels, which is fantastic compared to MADI. We weren't restricted by cable infrastructure. The media facilities were quite a distance



away in another building but the way this was architected meant that was easily accommodated, which was brilliant.

Lastly, we used IP (Dante) to make the commentary work because this prevented cabling issues and allowed us to use one-person comm boxes (Glensound Inferno). This is preferable for sports broadcasting, especially on Centre Court and Court 1, where there were three commentary positions; a box-per-commentator is easier and more manageable in the room, where table space is at a premium and a large, multi-person comm box would have been too big and unwieldy. The ease of the way Calrec's cards handled this interfacing and the fact that they were so resilient, meant this was a plug-and-play operation to connect all the commentary feeds. It was a big Dante network but it really was a very easy integration.

Again, without wishing to stray into cliché, very little went wrong at all. This was helped by the fact we retained ongoing knowledge of the job as a whole and we have a great deal of experience using Calrec networking on other large jobs in the lead up to this event.

While this was very complex project, we achieved everything that we set out to, following a clear design brief and using technology that did exactly what it was claimed to do.

Calrec consoles used at Wimbledon 2018:

- Centre Court: Apollo
- Court 1: Artemis
- Court 2: Omega
- Court 3: Summa
- Court 8 & 5: Summa
- Court 12 & 6: Summa
- Court 14 & 9: Summa
- Court 15 & 4: Summa
- Court 16 & 7: Summa
- Court 17 & 10: Summa
- Court 18 & 11: Summa

"Adding I/O boxes was really easy...that's the beauty of what Calrec has designed. It was so scalable; the way resources appeared on the network and how easy it was to move them across the network was a dream."

Jimmy Parkin, NEP

CALREC

Tilt outfits its mobile production unit with an Artemis

Madrid-based Tilt, a bespoke audio and video broadcast service provider, is reaping the benefits of a 48-fader Artemis Light console from Calrec for its UM003HD mobile production unit. Tilt's business has grown considerably in the past year as it works with a variety of customers in live production across sports, music events, commercials and documentaries.

The Artemis Light, which is the company's first Calrec console, replaced an older console inside the expandable 16-camera, 12-metre rigid truck. It was installed by Tilt and supplied by Calrec's Spanish distributor COEL Audio Solutions.

Jaume Bordoy, Manager at Tilt said he has always been aware of Calrec's excellent reputation in the industry, with its consoles providing stellar sound quality and technically elegant and comprehensive functionality like multi-format audio and loudness management.

Bordoy said, "We have a modest budget, so price point measured against performance was very important to us. In evaluating the market, we found that the Artemis Light provided the best value for the money and since using it we can confirm the sheer audio quality and the networking functionality.

"We only had a small space to work with inside the truck, and the Artemis desk had the highest number of faders in that footprint. We also didn't want to have to worry about channel count and to know that we always have all the capacity that we need; we have more than satisfied that requirement with this Calrec install."

Tilt has to be ready for any kind of content, from the Copa Del Ray and the Champions League to swimming and horse racing, political debates to music festivals. Therefore it needed something with good cross-point remote control to reduce cabling and rigging. Calrec's Hydra2 networking capabilities take care of this and also allow signals to be transported over Riedel's MediorNet real-time media network.

The Artemis can work across formats – MADI, DANTE, AES67 and more – vital to the company given the huge variety of its work. Tilt uses AES67 to interface with its Riedel Artist intercom system.

Jim Green, International Sales Manager at Calrec said, "Though Tilt's truck is a smaller footprint, it offers the power and capabilities of a larger size truck, and this is why the Artemis is such a good fit — because it has enormous routing and processing capacity in a compact body.

"We're delighted to be working with Tilt on this very important upgrade to their truck."

Brio gets a boost with new expansion packs

Calrec Audio as given its widely used Brio audio console a boost in channel count. Expansion packs increase the Brio12 DSP count from 48 to 64 input channels and the Brio36 from 64 to 96 input channels.

DSP expansion packs can be purchased from Calrec's new online shop – shop.calrec.com – or through Calrec's extensive distributor network. All new Brio consoles can be purchased with the bigger DSP pack already installed.

"Calrec's range of Brio consoles has proved to be very popular," said Dave Letson, VP of Sales for Calrec.

"With its small form factor, broadcast-focused feature set and affordable price point, Brio is incredibly versatile and the consoles are now suitable for applications requiring a larger channel count. We've made the range more powerful to accommodate the expanding needs of broadcasters."

Expansion packs are available for all Brio consoles on v1.1.6 version software or above; software versions are available for free following Brio registration at **calrec.com/brioregistration**

"Artemis Light provided the best value for the money and since using it we can confirm the sheer audio quality and the networking functionality."

Jaume Bordoy, Manager at Tilt

Calrec Opens the Gate to a World of IP

Calrec Audio revealed two new IP products at IBC 2018 (stand 8.C61): the H2-IP Gateway and the AoIP Modular I/O controller card. Both products are SMPTE 2110/AES67-compatible and expand the range of AoIP solutions Calrec now offers.

These two new solutions build on Calrec's new Impulse core, a native-IP core for use with Apollo and Artemis surfaces.

The H2-IP Gateway provides an interface between a Hydra2 network and an AoIP network. It also awards an extra control level that allows audio labels to be passed in both directions between the two networks along with control data. This gives Hydra2 users the ability to control gain of Calrec AoIP mic inputs, and AoIP users can control gain of Hydra2 mic inputs.

The 1U gateway can pass either 256 or 512 channels of audio in each direction and multiple gateways can be used to increase capacity or to connect with multiple networks. For full hardware redundancy additional units can be deployed as backups.

Also being launched is a new Modular I/O Controller card that can operate in either Hydra2 or AoIP mode. The mode is selected via a simple switch on the card making it dual purpose, allowing for it to be used on either network. Not only will this make a tailorable AoIP I/O solution for the new Impulse core, it also fits into existing Modular I/O frames so units can be upgraded in the field

The card provides two redundant pairs of 1G SFPs to allow 512 audio channels to pass without over-using bandwidth in AoIP mode.

"As the industry is converging on IP workflows it has become increasingly apparent that an upgrade plan must be defined," said Henry Goodman, Calrec's Director of Product Development. "Moving to an IP infrastructure is not something that can be achieved overnight and not without significant financial outlay.

"It is Calrec's aim to lessen the cost and make the transition a smoother experience. These new products allow Calrec's customers to benefit from getting continued value from their existing Calrec consoles whilst taking steps into the emerging world of IP workflows."

CALREC

TV Tokyo upgrades its flagship studio Tennozu studio

Japanese network TV Tokyo, well known for its extensive lineup of anime, has brought on a broadcasting big gun — an all-new, 80-fader Apollo console from Calrec.

Provided by Calrec's exclusive distributor, Hibino Intersound, as part of a major upgrade of TV Tokyo's flagship Tennozu studio, the Apollo has been a significant improvement over the broadcaster's legacy analogue desk.

"TV Tokyo has received many years of service and great sound out of its old desk, but it was time to trade up and bring the Tennozu studio's audio mixing into the digital world," said Mr. Yosuke Maruyama, Hibino Corporation.

"Their challenge was to source a desk that could match the old console in sound quality. The Apollo more than exceeds TV Tokyo's expectations for pristine sound, and its impressive feature set is also a huge improvement.

"The new desk brings industry-standard reliability, ease of use, and unmatched power to Tennozu, with the ability to squeeze in more faders than any other comparable console on the market."

The Apollo joins other Calrec desks in the broader TV Tokyo operation, including another 80-fader Apollo, a 48-fader Artemis Light that's installed in the broadcaster's OB van, a 56-fader Artemis Beam, and a 48-fader Artemis Beam.

"It's a pleasure to continue our relationship with TV Tokyo, one of Japan's most popular television networks," said Anthony Harrison, Calrec's international sales manager.

"They are big supporters of our products, as evidenced by their Calrec lineup. The addition of the Apollo console has modernised the Tennozu facility by offering unsurpassed processing power. We're excited to continue our relationship as TV Tokyo goes from analogue to digital."

Calrec on advanced audio standards for live production

Exploring the finer points of the broadcast industry's transition to IP, Calrec Product Manager Pete Walker (pictured) recently opened a sports production symposium to discuss industry trends and emerging audio technologies.

At the DTV Audio Group and SVG symposium in Detroit, Walker discussed changing industry standards during a presentation on AES67, SMPTE ST-2110 and NMOS. His presentation highlighted the growing requirement for shared networks for live broadcasts, as well as Calrec's Hydra2 network benefits.

Along with representatives from ESPN, PAC-12 Networks and Turner Sports, Walker also participated in a panel on leveraging virtuali sation, automation and artificial intelligence. The main focus of the panel was about what broadcasters can do to relieve the burden that is put on A1s, so they can focus more on the craft and making a good mix.

The symposium was an invitation only event for the DTV Audio Group's members and was designed to share information and observations amongst industry peers.

During his presentation Walker covered SMPTE ST-2110 and how it defines standardised, real-time transport of uncompressed video and audio, as well as metadata, over a common IP local area network. He explained how SMPTE ST-2110 (-30) requires the use of AES67 for transporting audio, which is good news for those who have spent time and money working towards AES67 compatible transports.

Walker also discussed how AES67 outlines the parameters that allow networked audio to be exchanged between different manufacturers' equipment. In addition, he addressed the future of NMOS, the highly anticipated broadcast-focused standard aiming to create a more centralised control mechanism within the network.

"The majority of attendees were hands-on operational users, so this was a great opportunity to cut through the technical jargon and marketing sheen that often surrounds IP, to explain the benefits and remove any mystery," says Walker.

"It was a great privilege to be in the same room as so many of the most talented A1s in the business.

"At Calrec, we're focused on providing powerful, flexible, easy to use tools for broadcast audio, and maintaining relationships with the people that use them is vital for us to continue making world-leading products."

CALREC

The Radio Revolution
Why radio is ready for Type R

By Henry Goodman
Director of Product Management

The rise of streaming services and increased competition for the attention of listeners is forcing the radio market to look for innovative ways to engage with their audiences. Modern radio stations are finding that they need to operate in a multitude of ways to connect with different target audiences. The flexibility to dynamically interact with listeners' presents opportunities for both radio stations, their advertisers and stakeholders.

For both traditional and streaming stations to effectively compete in this evolving marketplace a product is needed that allows not only the broadcaster, but the individual presenter to present the show how they want to. With over 50 years of broadcast experience, that's where Calrec Audio comes into play. Calrec has always worked closely with customers and end-users to define their exact needs. During the development of Type R in 2016, we visited various radio stations and spoke to many engineers and radio specialists to study their workflows.

The result of our research and development is a new range of customizable, expandable and flexible radio systems. The desk marks our return to the radio market, which has not been addressed since the late 1990s, most notably with the X series and X2 consoles that were designed for the BBC English regions.

With Type R, we're entering the market with a fully developed product designed for any radio station, anywhere across the globe. The conditions are perfect to re-enter the radio market as technology is catching up with prevailing market demands. Calrec is ideally positioned to use its knowledge of broadcasting infrastructures to design a console that meets these demands.

This is especially true with the market push towards IP-based systems as radio has embraced IP quicker than other broadcast sectors. This shifting technological landscape is very exciting to us and we feel it is the perfect time to re-emerge into the radio market. The widespread acceptance of open IP standards provides the opportunity to create a very stable and flexible backbone that can be used across multiple radio sites.

This industry shift has been instrumental in the design of Type R, which is based entirely on this ethos, with AES67 compatible audio transport and panel connectivity utilizing power over COTS POE+ switches. Type R is equipped to meet the future demands of the AoIP environment, including industry standard NMOS discovery and control as well as utilizing a facility's existing IP infrastructure to accelerate the move towards interoperability.

The main challenge was to create a product that could be moulded into a solution that would work for many workflows – from small simple solutions to large complex networks. It became apparent that in radio, like television, every station works in a different way. On top of that, things can be very different from show to show. We wanted to design something that could work in a variety of hugely complex environments yet be simple and easy to use.

We overcame that by designing a product that is highly configurable and modular, so it can be tailored to the requirements of the station and the talent. Once the soft panels and user-definable elements have

been configured and locked down by the technical engineer, the simple GUI means that operating Type R is very easy. Different set-ups can be loaded quickly between shows, so everyone can feel comfortable operating it. This is a key difference between Type R and its competitors. The soft panels can be laid out to present just what the operator wants to see down to the individual control level.

Type R is capable of presenting the operators with a very simple user interface or for complex applications all the controls needed for a full production console. This radio system is a modern and customer focused radio broadcast console that adapts to a station's needs as its requirements evolve, and provides simple customization across networks, control protocols and surface personalization. Type R guarantees stations are not only able to keep pace with changing demands but provides the opportunity to ignite their audiences with new and innovative programming.

The key challenge for radio stations is to connect in a more personalized way with their audiences. Dynamic interaction with their listeners through social media, call-ins and visual radio are enabling radio stations to compete with the growth of streaming services. Radio presenters are a big attraction for audiences and the ability to configure and tailor the workplace environment to allow them to focus on what makes their show unique is becoming more valuable.

Type R has been designed to be adaptable and expandable for both hardware and software elements, and development will continue in the future. Type R begins shipping in Fall 2018, but the initial response from the industry has been extremely positive. It has reinvigorated Calrec's current network of distributors and has attracted new prospective customers and distributors. We are very excited about entering the radio market again, and based on the feedback we have received so far, Type R is going to be a highly competitive radio solution.

CALREC

Jimmy Swaggart spreads the word with Calrec

Reverend Jimmy Swaggart, well-known Pentecostal evangelist, has invested in two Calrec consoles to ensure his message is always clear. Swaggart's SonLife Broadcasting Network (SBN) now relies on Summa and Brio consoles for all its live broadcasts.

"Being able to network the Calrec consoles using Hydra2, having complete redundancy and eliminating the analogue infrastructure were extremely important to us and the biggest advantages we saw over using other consoles," says Dave Cooper, director at SonLife Broadcasting Network, a division of Jimmy Swaggart Ministries.

"SBN produces approximately six hours of live studio production daily, including Message of the Cross, Insight, Frances and Friends, and three live services per week from Family Worship Center, the home church of Jimmy Swaggart Ministries. We needed consoles that were reliable and broadcast-ready at all times to meet the demands of our production schedules."

SBN is currently using one Summa console, one Brio console and two DiGiCo S21 consoles with MADI cards to all interface on the Hydra2 network.

At SBN studios, there are main video control rooms and two live translation rooms. Having over 45 years of experience in the remote television industry, Cooper was very familiar with the reputation and quality of Calrec products and so was his audio team.

"There was a very noticeable clarity improvement as soon as we put the Summa and Brio consoles online," says Cooper. "Both consoles improved the quality of the signal and processing, increased reliability and were cost efficient for our live telecasts. We are extremely pleased with the performance level of these mixing consoles."

Reverend Jimmy Swaggart first started his television ministry in 1975 and has broadcast on television continuously since that time. In 2009, Swaggart launched the

SonLife Broadcasting Network. SBN is a 24/7 faith-based television network that operates four different program streams in three languages around the world. SBN currently reaches 85 million homes in the United States and 163 million homes worldwide.

"The power and flexibility provided by the networked Summa and Brio consoles has opened up many possibilities for them by allowing them to take advantage of the benefits provided by a digital workflow," says Dave Lewty, regional sales manager for Calrec.

Calrec generate momentum in Korea

The past year has seen Calrec Audio generate serious momentum in the Korean broadcasting market with the sale of its audio consoles and AoIP interfaces to several Korean broadcasters. This includes the first Brio36 sale in Korea, which was purchased by the Hyundai Home Shopping Network.

The Hyundai Home Shopping Network, a T-commerce channel, needed a console that provides premium quality audio but in a small form factor, which is precisely what Brio achieves. Indeed, the audio performance of its newly installed unit has come in for particular praise from the broadcaster.

MBC TV, a terrestrial TV channel owned by Munhwa Broadcasting Corporation, has also installed a Brio console, with its low-cost and high-performance ideal for its news operation. MBC already has 14 Calrec consoles installed so was very familiar with the company's capabilities.

Meanwhile, Korean Broadcasting System (KBS), a long-time Calrec customer that uses the company's consoles in its TV and radio studios and regional sites, is currently installing two new Artemis desks for live radio. It also recently purchased two Summa consoles, one being used by KBS ChunCheon for live news and entertainment programming. The second Summa was used for the FIFA World Cup and is now being installed at KBS Mokpo.

In a separate project, KBS also installed Calrec AES67 interfaces at its main facility as they need to connect their range of existing consoles to an AoIP network, easily and cost-effectively.

The installations were handled by Calrec's official Korean distributor, Ingang Audio.

"We've been working with Calrec for many years, and we have complete faith in their brand. Our customers often come to us with a demanding wish list — one that requires audio consoles at a competitive price that can handle the job of desks twice their size. We repeatedly recommend Calrec because their consoles are stable and powerful, with a large number of inputs and outputs and great networking capabilities. Plus, Calrec offers great local support," said Joohong Chang, President of Ingang Audio.

Anthony Harrison, International Sales Manager for Calrec commented, "The market in Korea is of huge importance to us, and we're so pleased that the Brio is seeing such success there. But this isn't by accident, as we're continually working hard to innovate our consoles so that our customers always have the absolute best when it comes to audio technology. As an example, we recently boosted the channel count for our Brio consoles, adding even more versatility to the powerful Brio."

"We repeatedly recommend Calrec because their consoles are stable and powerful, with a large number of inputs and outputs and great networking capabilities."

Joohong Chang, Ingang Audio

CALREC

China's Shanghai Media Tech install Artemis consoles

Calrec's Artemis consoles are getting a workout in live sports this year in the wake of a deal with the China-based Shanghai Media Tech (SMT). SMT recently outfitted its HD9 OB van and Electronic Field Production (EFP) system with an Artemis Shine and Artemis Light audio console, respectively. Both the van and EFP system will be used for the 2018 Asian Games in Indonesia and the 2022 Winter Olympic Games in Beijing, China.

YuanYue, Supervisor of the Technical Department at SMT commented, "We're increasingly expanding our capabilities for 3D/4K capture and production, visual creativity, and product development — as evidenced by our newly upgraded OB van which is one of the first IP-based A/V broadcast systems in China.

"For this, we needed a console with rich IP protocol and interface support like the Artemis Shine. And for our EFP system, we needed a console natively designed to have a main and a sidecar surface, and the Artemis Light was the ideal fit."

Prior to the purchase, SMT already had some experience with the Artemis console. YuHai, Chief Engineer of the Audio Department said it left a great impression with its user-friendly interface and its iPad app, as well as with its immersive monitoring function. Reviewing the market more closely, SMT made its decision on the Artemis when it became aware of the console's enormous routing and processing capability and that it integrates flawlessly with other vendors' IP products.

The installation was handled by Calrec's official Chinese distributor Rightway Audio Consultants for SMT, part of the Shanghai Media Group (SMG). As a longstanding provider of equipment and solutions to the broadcast market, the company's core business covers television program broadcast, pre-production, post-packaging, transmission, station network operation and more.

"We're so delighted that Shanghai Media Tech is using our Artemis consoles for two very prominent sports events. This project with them underscores the true benefits of the Artemis product line, which includes impressive routing and processing capacity along with a modular design that lets the I/O boxes be easily swapped out during a production. It's this type of versatile combination that we want to continually offer our customers," said Dave Letson, VP of sales for Calrec.

Maryland Public TV Continues to Count on Calrec

Long-time Calrec Audio user and Emmy® award-winning station, Maryland Public TV (MPT), has once again turned to Calrec with the addition of a 56-fader Artemis console into its facility. Calrec's Hydra2 network was also integrated into the television network's workflow.

After 16 years of award-winning broadcasts with Calrec's Alpha consoles, MPT was ready for an upgrade. The Artemis features 240 full signal processing channels to keep up with the audio requirements of the wide variety of programs produced by the television network's six stations.

Calrec's Hydra2 network was implemented to work with MPT's new fibre infrastructure. This includes fibre drops throughout the building with additional I/O mounted in a portable SKB case that can be added when more I/O is needed. Hydra2 also incorporates Waves SoundGrid and Dante cards to take advantage of additional plug-in options, as well as networking and workflow options for even more flexibility.

MPT uses the Hydra2 network to help coordinate multi-location productions, where an interview can be in one studio and a live performance in another.

Streamlining the audio routing throughout the facility was an important factor to facilitate the fast setup of productions of different sizes. Simple and quick audio routing was especially important as the network continues to expand, with plans to develop Studio A in 2019 to accommodate a 235-person studio audience.

"We have a longstanding relationship with Maryland Public TV and they installed one of the first Alpha consoles in the U.S.," says Helen Carr, regional sales manager for Calrec.

"Over the years, MPT's engineering team and A1's have commented on the console's reliability and how responsive the support department has been when addressing any operational questions. We are honoured to have our products used on its award-winning shows and look forward to continuing to grow and expand with MPT in years to come."

CALREC

Calrec increases Asian reach in India

Calrec has increased its footprint in Asia with the sale of three Brio36 audio consoles in the Indian broadcast market.

Sun Broadcast Equipments New Delhi installed the consoles with a major international sports broadcaster for use across a variety of live sports events.

"In a country like India, where the broadcast market is rapidly evolving but cost is often a primary factor in purchasing decisions, it's important for us to offer economic solutions that allow media organisations to evolve their infrastructure.

"This is why we really like the Brio from Calrec. It delivers high-end audio processing and networking capabilities in a compact desk at an attainable price point. Brio is setting a trend of low-cost, high-quality consoles here, and we think other comparable territories will take note of this," commented Vinit Govil, CEO Sun Broadcast Equipments.

Calrec recently gave the Brio36 a boost in channel count. New expansion packs are available that increase its capacity from 64 to 96 input channels.

"We know our customers want to exceed expectations in terms of quality audio output without going over their budget, and we're so pleased that our Brio console is giving them the chance to do just that," said Anthony Harrison, International Sales Manager for Calrec.

"This project illustrates how the broadcast market in India is on the rapid upswing and how Calrec products are helping to carve a niche in that region to make high quality audio accessible."

Rental house shift up a gear

Gearhouse Broadcast has purchased two Brio36 audio consoles from Calrec for its rental house in Australia, significantly increasing its audio rental options.

The Brio consoles were initially used at the Asian Games in Jakarta, which marks the first time a Brio has been used for a live event in Indonesia. They now form part of Gearhouse Australia's rental options.

"By adding Calrec's Brio consoles to our equipment roster, we're giving our customers the ability to use a powerful, compact audio console that includes an impressive range of networking capabilities with Hydra2," commented Danny Riess, Broadcast Audio Supervisor at Gearhouse Broadcast in Australia.

"This feature lets our clients tap into things like multi-connected studio scenarios with a large number of inputs and outputs. Also, Brios are ideally suited to flypack and portable applications, which represents a good portion of our business in Australia Gearhouse Broadcast is a global rental house that specializes in equipment rental, outside broadcast and systems integration."

"Gearhouse is incredibly skilled and knowledgeable when it comes to the broadcast market, and we're delighted they've decided to increase their offerings with our Brio audio console. It further adds to Calrec's rapidly growing reputation in Southeast Asia," said Anthony Harrison, International Sales Manager for Calrec.

"This is why we really like the Brio from Calrec – it delivers high-end audio processing and networking capabilities in a compact desk at an attainable price point."

Vinit Govil,
CEO Sun Broadcast Equipments

TVB upgrade with Artemis trio

TVB, the largest broadcaster in Hong Kong, recently purchased two Artemis Beam and one Artemis Light consoles as part of its continuing audio technology upgrade. The latest installations bring the total of Artemis consoles at TVB to eight.

"We used Calrec Alpha consoles in our studios for many years and were very impressed and happy with them so upgrading to the Artemis was an easy choice for us given our legacy with Calrec products. What we love about the Artemis is that it gives us industry standards like multi-format audio and loudness for a truly modern workflow," said Mr. Law Yui Wah, Studio Production Department/Assistant Manager at TVB Hong Kong.

TVB Hong Kong is using the new Artemis consoles for a variety of programming including Miss Hong Kong, Hong Kong Rugby 7, and the International Chinese New Year Night Parade. This is in addition to 24-hour news and live sports use. The installations were handled by Calrec's official Hong Kong distributor, Jolly Pro Audio.

In addition to already upgrading to Artemis Light across several of its entertainment and 24-hour news studios, Studio 2, Studio 28, and OB van also benefit from using Artemis. Studio 2 and the audio OB van are now fitted with Artemis Beam consoles; Studio 28, designed for live sports events, is now using Artemis Light.

With the Artemis consoles, TVB Hong Kong can switch between an existing 56-fader Artemis Beam in their OB van and 48 faders in their larger studio to a compact, 24-fader Artemis Light for their smaller new studio. Staff members move between studios with exactly the same workflows.

"Broadcasters are increasingly looking to streamline their audio, particularly in Hong Kong. This is an important region for us, with TVB Hong Kong being a major player and a venerable customer of ours. We're delighted that our Artemis consoles are giving them the satisfaction and production value that they were looking for as they continue to make high-quality broadcasts," said Anthony Harrison, International Sales Manager, Calrec.

CALREC

Why the broadcast industry is primed for Impulse

By Pete Walker
Senior Product Manager

Increased competition in the broadcast market is forcing broadcasters to produce more and more original programming, and to enrich the viewer experience at the same time with immersive audio and OTT content. These changes are increasing broadcasters' processing overheads, while at the same time their budgets are being squeezed.

To meet these changing needs of modern production, processing equipment needs to be flexible, scalable, and most importantly, able to be deployed more efficiently.

Audio networking technologies like Calrec's Hydra2 helped to break the traditional hard ties between control room and studio. It allowed shows to be produced from any control room, regardless of which studio they are in, providing redundancy and more efficient utilisation of control room equipment.

Products like Calrec's RP1 Remote Production unit take this a step further by allowing remote locations to be virtualised within a broadcast facility, greatly reducing the quantity and complexity of equipment and staffing needed at event venues. These technologies allow for efficiency improvements by minimising the down-time of equipment between productions, and vastly speeding up setup time.

The next step is to break the hard ties between control room and equipment room, allowing the processing equipment to be deployed for any production, in any control room. By being able to have processing equipment switch between different production control rooms, down time is further minimised and the return on capital expenditure is maximised.

This can be taken a step further still, by having a remote equipment room where space is freed up in studio complexes (which are often located in areas of high property value) and broadcast trucks (where space also comes at a premium).

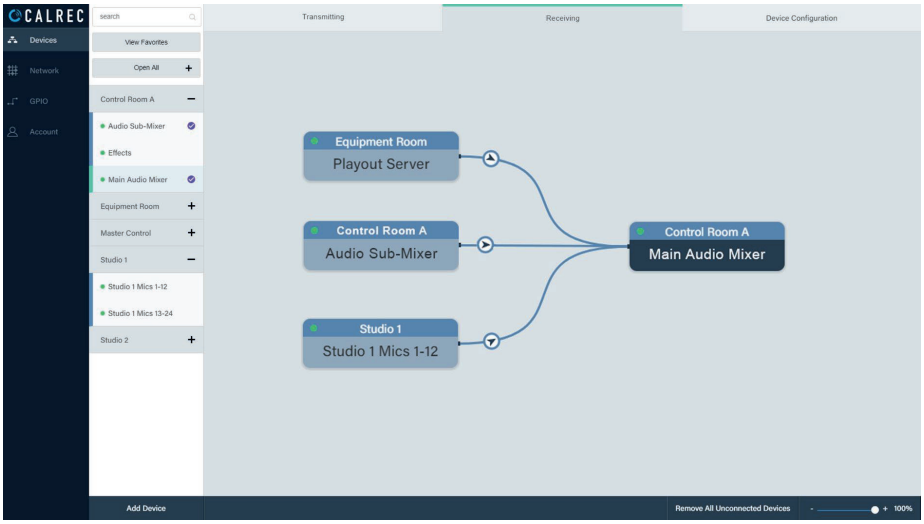
Processing equipment can be centralised and consolidated, which also allows for engineering skills to be focussed where they're needed. This server centre model allows processing equipment to be deployed for any production, regardless of its location, and for it to switch between different productions, minimising down-time and maximising the return on capital expenditure even further

At IBC 2018, as a response to these changing demands, Calrec unveiled the Impulse core, a next generation audio processing and routing platform. But what exactly is the Impulse core and how does it fit in broadcast workflows?

Calrec's Bluefin2 platform, in conjunction with Hydra2 audio networking, has served broadcasters all over the world incredibly well, and it will continue to do so for many more years to come. Bluefin2 and its predecessor, the original Bluefin, were truly ground-breaking in terms of audio signal processing capacity and reliability. Bluefin2 can provide over 1300 audio processing paths, including up to 1020 fully featured input channels, with a broadcast-focussed feature set including native surround and comprehensive monitoring and metering.

Over the years, new features have been added to meet changing demands, including the recent addition of support for 3D immersive monitoring for users that are creating content for delivery over Dolby Atmos and MPEG-H. However, it is time for Calrec to take the next step forward, with a new processing platform, that is more flexible, and that can be scaled up even further to support future demands.

Impulse contains the next iteration of DSP – "Bluefin3", which is modular, and hugely scalable, allowing users to expand as and when they need to, ensuring that broadcasters' ambitions of scale are not limited by processing capabilities, and providing more than enough headroom for the development of new features to support future demands.



The Impulse core can run multiple fully independent mix engines, providing efficiency savings by being able to consolidate the processing hardware for multiple productions. Impulse mixers can be controlled by existing Apollo or Artemis surfaces, or headless operation via a web UI and/or various forms of production automation systems.

Traditionally, a mixer needs to be purchased for each control room with a capacity large enough for the biggest show that is produced from that room. Such large shows may only come occasionally, which results in a lot of processing hardware being massively under-utilised.

The Impulse licensing model allows customers to easily increase DSP capacity as and when needed. In the future Calrec is looking to provide time-based licenses to allow customers to effectively rent DSP by the day.

Further, DSP can be freely allocated between the different mix-engines running in the core, allowing customers to change how much is available to each production based on day-to-day needs.

COTS IP connectivity is also a key part of the Impulse ethos, providing flexibility and more freedom in geographic location. It allows surface and web UI control from remote locations as well as switching which surface is controlling which mixer for more efficient utilisation of processing power.

Aimed at supporting the changing demands of broadcast moving forward, Impulse is hugely scalable and equally at home in the traditional studio complexes and broadcast trucks of today as well as the server centres of tomorrow.

Continuing the standardised IP theme, Calrec is fully committed to the JT-NM and AIMS roadmap for IP interoperability, so Impulse's audio connectivity is native AES67/ST-2110 to the highest conformance levels with 2022-7 hitless packet merging for reliable connectivity across hostile networks. Its AoIP routing capacity is scalable from 2048x2048, up to 16,384x16,384 audio channels in and out. As well as getting signals in and out of the DSP, it can be used for stream forwarding and channel shuffling, with SW-P-08 support for remote control over cross-point switching.

People love using Hydra2 audio networking for its truly plug-and-play nature; when an I/O box is plugged in it automatically comes up and is available straight away for users to patch audio to. Hydra2 networks are deterministic, allowing them to comfortably pass 512 channels of audio in each direction at very low latency with zero packet loss.

The drawback, however, is that to do this it can only pass over Calrec-specific hardware; it cannot be routed through COTS switches and its data paths cannot be shared by third parties. Calrec's H2Hub was developed to provide a cost-effective and portable solution to aggregating Hydra2 paths, reducing the number and length of cables/fibres that need to be run and freeing up more expensive Hydra2 router ports. Hydra2 data can also be consolidated and passed over shared fibres by using CWDM systems, and the H2-IP Link product allows Hydra2 audio and control data to be tunnelled through IP networks, to extend the geographic range of the network.

All this contributes to the continued success of Hydra2. However, in this era of IP and open standards, broadcasters want more. They want to be able to pass audio, video, control and other data of all sorts over the same common shared COTS IP networks, and they want to be able to more directly share video, audio and data between devices made by different manufacturers. Standardised IP connectivity eradicates

more...

CALREC

Why the broadcast industry is primed for Impulse

much of the cost, space, system complexity and cabling overhead of having a multitude of interface panels for analogue, AES3, MADI, SDI etc. This is the goal of both AES67 and ST-2110 (which is essentially the same as AES67 when relating to audio), and it's already here, with more and more vendors and broadcasters around the world adopting it.

While standardised audio over IP will see "direct" connectivity between equipment over an IP network, there's still going to be a place for I/O boxes for quite some time to come, and it's vital that vendors support users with their migration to IP. Purchasing IP-based equipment should not make pre-existing equipment redundant; existing systems should both interface and integrate with IP-based systems.

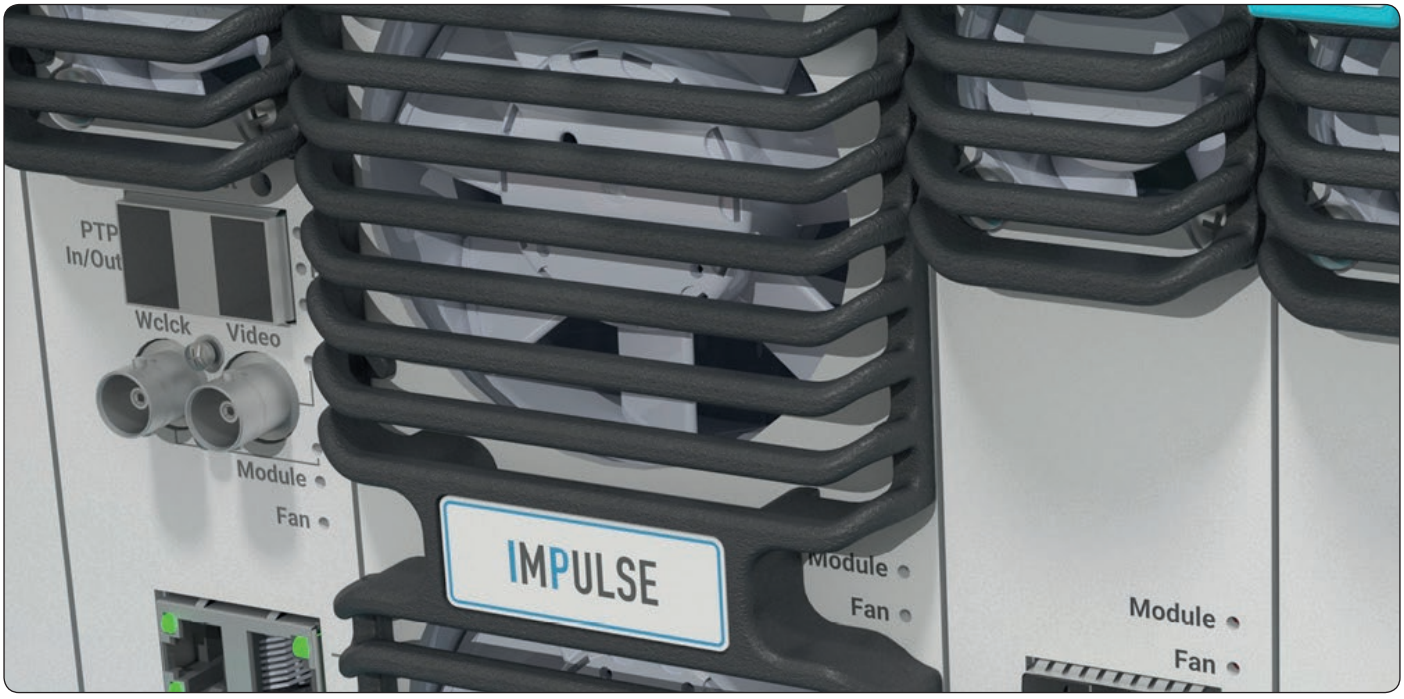
Calrec has developed a replacement for the Hydra2 modular I/O controller card that can operate in either Hydra2 or AES67/ ST-2110 mode, which can be retro-fitted into any existing modular I/O frames as a direct drop-in replacement. There's a similar retro-fit upgrade option for the Fixed Format Hydra2 I/O boxes. In addition, the new H2-IP Gateway product provides a bridge between the Hydra2 and AoIP worlds, passing channel labels and control such as mic pre-amp gain in both directions, allowing a user with an Impulse core access to audio and control from a Hydra2 network and vice-versa.

The upgrade path has always been important to Calrec, and these latest developments help broadcasters migrate to AoIP transport and ultimately the world of distributed and virtualised processing, without having to throw out their investment in existing equipment. Impulse is a scalable platform to build on, and users will benefit from future additions and innovations that utilise the power and flexibility of the architecture.

Another key development from Calrec is the "Connect" IP stream management tool. AES67 & ST-2110 only define the transport mechanism, they do not offer a standardised approach to the advertisement of streams or their connection management, and the challenge of connecting IP streams between devices is often overlooked.

This is a frustration as to date it often requires engineers with laptops moving between web-apps of each device, looking at complex parameter sets, sometimes having to resort to command line configuration and hacks to get devices from different manufacturers to see and connect with each other's streams. This is simply not good enough; to be successful IP needs to fit into more familiar and simpler operational workflows.

Connect provides a simple, visual and familiar workflow for very quickly creating and connecting IP streams between devices, with a centralised network-wide approach. More complex parameters and diagnostics are available, but these are abstracted from the normal operational view. Flexible multi-user management over functionality and individual streams and devices is also an important facet provided by Connect.



Calrec fully supports NMOS as the means to allow equipment from different manufacturers to advertise and connect streams in a standardised way and with a central viewpoint.

Like all Calrec's AoIP-based equipment, Connect and the Impulse core support NMOS, allowing connections between Calrec and other vendors to be managed as though all the equipment were from a single manufacturer.

With some hesitance in the uptake of NMOS by some vendors, Calrec AoIP products also support other discovery and connection methods to ensure widespread interoperability, such as mDNS/Bonjour for Ravenna-based devices, SAP for Audinate devices, and the potential to adopt others such as AES70 or more manufacturer-specific APIs.

The Impulse core is a hugely powerful, scalable and flexible next-generation audio processing and routing platform that will carry broadcasters forward with a clearly defined upgrade route both for existing surfaces and I/O, as well as for future functionality. It boasts enormously powerful Bluefin3 DSP capabilities, immersive NGA path widths with height and 3D panning, comprehensive and configurable up/downmixing between path widths, and native IP connectivity fully conforming to AES67 and SMPTE ST2110, with ST-2022-7 seamless packet merging.

Designed for use in the cloud, and the world of virtualised audio processing, Impulse provides a cost-effective and scalable solution for the next generation, supporting the increasing demands and ambitions of broadcasters around the world.

"Impulse contains the next iteration of DSP – "Bluefin3", which is modular, and hugely scalable, allowing users to expand as and when they need to, ensuring that broadcasters' ambitions of scale are not limited by processing capabilities"

Pete Walker, Calrec Audio

CALREC

Calrec added to Full Sail University's world-class performance venue

Full Sail University has expanded its world-class performance venue, Full Sail Live, with Calrec Audio's Artemis and Brio36 consoles. Already utilising a Summa console for its Show Production degree program and Brio console for its Film degree program, Full Sail knows Calrec's advanced audio solutions.

"The existing broadcast audio console in our performance venue was being maxed out, so an upgrade was in order," says Scott Dansby, Director, Industry Relations, Full Sail University. "We had an existing relationship with Calrec and knew its consoles had the right tools, functionality and features.

"Also, continuity was important to us as some of the students were already working with Calrec boards as part of their degree programs. By choosing Calrec's Artemis and Brio36 consoles for the venue, we now have the ability to grow the system and scale it towards the events in that space. Calrec is providing us with a lot more room to grow in terms of the number of busses, channels and networks."

Having two consoles in the same room is not a typical set-up. The 56 fader Artemis and the Brio36 combo give Full Sail Live different options of how to use the system. It also supports many different protocols including analogue, AES, MADI, Waves Soundgrid and Dante, which is important for Full Sail Live as the venue works in a mixed protocol environment. In addition, both consoles are connected to Calrec's Hydra2 network so either console can use any I/O resource on the network.

"It's a total game changer for us as far as being able to distribute I/O around the facility," says Vince Lepore, Director, Event Technical Operations, Full Sail University. "We have the new system connected to our video router through a number of different MADI ports, which is tremendously helpful for being able to embed and de-embed audio off of our router. That was something we were unable to do before and that's given us a lot more flexibility. We can also now have several consoles across campus connected over the Hydra2 network — not just within the performance venue, but over the entire campus."

When not in use, the consoles are available to students, as well as external clients that come into the space. Full Sail's diverse prospective means many students can use the audio equipment, which gives them relevant experience for after graduation.

The Full Sail Live Venue is an acoustically engineered multi-purpose facility with a moveable stage and world-class audio, video and lighting equipment. The venue hosts orientation and graduation ceremonies for the university, as well as serving as a multi-purpose production space for professional projects. Full Sail Live has hosted concerts, guest speakers, film screenings, gaming tournaments and live performances.

"As an award-winning educational leader for those pursuing careers in entertainment, media, arts and technology, we are thrilled to be able to continue our relationship with Full Sail University," says Helen Carr, Regional Sales Manager at Calrec. "The addition of the power packed Artemis and Brio consoles to the spectacular Full Sail Live venue will allow students to reach their full potential while maintaining a familiarity with Calrec equipment for post-graduation work opportunities."

PRO TV Romania extends Calrec relationship acquiring two Artemis consoles

PRO TV, the leading TV station in Romania, has strengthened its collaboration with Calrec following its latest acquisition of two Artemis Light audio consoles.

The new consoles are an upgrade from Calrec's Sigma and Omega legacy desks. This equipment will be used both for PRO TV's daytime show productions as well as for sport transmissions.

"Choosing the Artemis Light consoles was an easy decision for us given our 12 faultless years of experience with the Sigma and Omega consoles and our in-depth knowledge of Calrec's console architecture," commented Octavian Diac, Broadcast Manager at PRO TV Romania.

"Artemis Light is a powerful audio mixer with enough digital processing ability for our current and future projects and great support for several audio formats including Dante, AES67, and MADI.

"We also use Calrec's Hydra2 networking system, which lets us set up connections between our studios. This offers full redundancy and audio control options capable of handling a large number of I/Os that are shared and controlled, regardless of their location."

The two consoles are building on additional previous Calrec technology installations including the router core PRO TV purchased previously, which is used as a central point for sharing I/O resources and console router connections across its studios.

"Working with a broadcaster as prominent as PRO TV Romania is a testament to the versatility of our Artemis consoles," said Mike Reddick, International Sales Manager, Calrec.

"This is also illustrated by how they've leveraged the power of the Hydra2 network, which has given them great flexibility. We're so thrilled to continue our longstanding relationship with PRO TV Romania and to give them the audio tools they need to provide such high-quality broadcasts to millions of viewers."

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