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2016

Foreword



For Calrec, 2016 was a year of big announcements and even bigger products launches.

2016 saw the introduction of a number of new technologies which keep Calrec connected to its customers. These products provide routes into new markets, and provide solutions for broadcasters looking at integrating remote production into their workflow.

First came Brio, the most powerful and compact digital broadcast audio console in its class. Brio has a comprehensive broadcast feature set to support a wider breadth of broadcasters, and the same market-leading levels of quality and customer support for which Calrec is renowned.

Secondly, Calrec's RP1 unit is a way for broadcasters to integrate Remote Production into their production schedules. Remote production offers the ability to capture a broader range of live events, such as sports, news or regional music festivals, and mix them in a remote facility hundreds or thousands of miles away.

The RP1 has already won a Resolution industry award for Best Digital Mixer/Controller 2016.

Finally, Calrec unveiled a suite of AoIP networking interfaces, including an AES67/Ravenna interface, an AVB interface, a modular I/O Dante card and a SMPTE 2022-6 video interface.

This range of interfaces reinforces Calrec's stance in the future of audio transport protocols. Having a suite of solutions to choose from means broadcasters can be confident that they'll have Calrec's support no matter which combination of formats they use.

All these products are covered in these pages, alongside customer user stories and interviews with key customers about the state of the industry.

You will also find slogans created by Calrec customers using the Calrec Periodic Table of Broadcast Consoles, a campaign which won a Pro Sound Marketing Innovation award in September.

This year Calrec also produced a number of pocket-sized guidebooks to help ease broadcast customers into the crowded and confusing era of IP, which are also referenced in these pages.

We've got big plans for 2017 with more developments to come. Stay tuned for more details!

[Dave Letson](#)
Vice President of Sales

A keyboard made of bananas

U.K.-based rental company Presteigne Broadcast Hire has added a Calrec Artemis audio console to its rental line-up. The console's first customer, One-Ten Productions, rented studio and production facilities for the revived "TFI Friday" programme. One-Ten used the Artemis to manage audio for the most recent run of the lively and dynamic weekly show, which is anchored by live music and guest interviews.

"I've mixed many live shows before, such as 'The Voice' and the BBC's 2014 Brazil World Cup coverage, but 'TFI Friday' is unlike any other show I've done to date," said Howard Nock, sound supervisor on the show. "It is very challenging and chaotic, and you have to be ready to change direction at a moment's notice using the kit at your disposal. The dimensions of the bar area aren't ideal, and with a lot of omni lav mics faded up next to a rowdy crowd, it can make balancing the sound in this area a bit tricky to control at times.

"The Calrec Artemis was specified from the outset, as it is the console I am very comfortable with, particularly for this kind of dynamic programme. The Artemis has a nice saturated, analogue sound, and

unlike other digital desks, it has lots of headroom, a huge benefit in this environment. I can't think of another desk I would want to go into that room with."

Known for its anarchic energy, "TFI Friday" was broadcast from the Cochrane Theatre in Holborn, London, where the set was rebuilt from the original programme's last broadcast in 2000. Most of the presentation was set in the bar area, a small, crowded room with a low ceiling and loud air conditioning. The sound can go from a whisper to a cheering crowd, which required a great deal of headroom to manage, and the Artemis' Automixer was a critical tool in ensuring a tight, clean mix.

"The Automixer feature on the Artemis console was a lifesaver on this show, particularly given the acoustics of the room and how loud the air-con was," Nock added. "It played a big part in reducing that noise to a more acceptable level, and I also used it to give the PA mixer in the bar a premixed, cleaned-up feed of the 14 guest mics."

Nock also appreciated the visual layout of the control surface and the fact that the controls are close together on the fader pitch. The metering was easy to set up and customize, and the

feedback from the Automixer was especially helpful.

Presteigne worked with One-Ten on the initial setup, and Nock could easily change the routing configuration to meet the show's requirements. The mics were allocated differently from week to week, so the routing was never static. In fact, even after the desk was set up, the mics and routing changed by the minute — often live on air. One minute a radio mic might be on someone's lapel, and the next it could be on the end of a trumpet.

Mixing the sound for "TFI Friday" was a partnership between Nock and Kevin Duff, who have worked well together on other shows. Nock dealt with the bar area, which included mixing everything from presenter and guest mics, EVS play-ins, and Skype™ calls, to a mariachi band and a keyboard made from bananas. Duff mixed the downstairs stage area, which featured several live performances per show by some of the biggest names in music.

"Howard regularly works with Calrec audio desks and is very comfortable with them, so it made sense to ensure he was on solid ground," said David O'Carroll, Presteigne's head of



technology. "The Artemis provides a huge amount of resources to account for rapid production changes, but in a relatively compact size." Now that the current run of "TFI Friday" has ended, Presteigne will make the Artemis available for other customers to rent.

"David O'Carroll from Presteigne is not only a trusted expert in broadcast technology, but his first job in broadcast was on 'TFI Friday' when it first aired in 1996. Through

Presteigne, we're excited to be a part of that iconic programme," said Jim Green, international sales manager for Calrec. "Our partnership with O'Carroll and the Presteigne team ensures that rental customers in the U.K. will have access not only to Calrec technology, but to a vast store of expertise for audio planning and product support."

"The Automixer feature on the Artemis console was a lifesaver on this show."

Howard Nock

Telefonica Broadcast Services raise the bar with Calrec

Spain's Telefonica Broadcast Services has upgraded its HD OB truck with a Calrec Summa console, making it one of the only companies in the Spanish OB market to offer a broadcast-specific audio console.

"We produce events for almost all major broadcasters in Spain, as well as foreign companies. Today it's a soccer game. Tomorrow it will be basketball. After that we might broadcast an opera. We have to be able to manage any setup our clients require and guarantee their big productions will go to air with no problems," said Luis Garcia Colombo, Telefonica OB audio engineer.

"The Summa ensures we can do it in a way that only a broadcast-grade desk can. We don't even have to think about whether we'll be able to handle the setup; we simply know that we can. It's easy to see that it's not just an audio console, but a TV audio console, and that gives us an edge in the market."

The Summa's technology and functionality make it possible for Telefonica to handle larger TV productions than ever before and put the company in a better competitive position.

Summa's feature list — such as 128 channels, four mains, 32 tracks, an oscillator, the number and variety of inputs and outputs, and the Hydra2 networking infrastructure — boosts the quality of Telefonica's HD OB truck and reduces setup time between productions.

Telefonica primarily covers sports and Champions League football in Spain. Calrec's Soccer Assist® iPad® app, an assistive mixing tool that simplifies the job of tracking on-pitch audio during a football game, is especially useful. The operator uses the app to help calculate the optimal mic/fader configuration at any given moment, which makes it possible to capture important on-pitch events while minimizing the amount of crowd and venue noise.

"There are not many broadcast-specific desks in the Spanish OB market, so installing a Summa is a big step forward," said Jim Green, Calrec's international sales manager. "Telefonica is making a bold statement to the broadcast marketplace about its commitment to improving quality and output."

"The Summa ensures we can do it in a way that only a broadcast-grade desk can. We don't even have to think about whether we'll be able to handle the setup; we simply know that we can."

Luis Garcia Colombo



Jose Maria Hernandez, Telefonica OB audio engineer.

MLB Network knocks it out of the park

In order to handle its ever-increasing live coverage of Major League Baseball and the National Hockey League, MLB Network recently needed to add a new studio and control room to its headquarters in Secaucus, New Jersey. To maximise functionality, it added a second Calrec Apollo console and linked both to a new router core to create a powerful and flexible Hydra2 network. MLB Network also upgraded the processors in its first Apollo to Concord, Calrec's latest processor, to match the power and functionality of the new desk.

"When we added the router core coupled with the Concord upgrade, it opened up greater access to everything in our studios and control rooms. The Concord upgrade allows us to add more production to our day's schedule and makes it possible to switch at a moment's notice; we can swing between setups thanks to lightning-fast memory and file-load execution," said Mike Curry, senior audio engineer, MLB Network. "Having Hydra2 and the Concord functionality allows me to say 'yes' to the production team when they have great ideas and need to execute them quickly."

In October 2015, MLB Network became responsible for all production for NHL Network, including live studio shows, taped content, intermission programming, and updates. This meant being responsible for producing content concurrently for two major sports networks. The combination of the second Apollo, the router core, and the Concord upgrade allows MLB Network to share resources quickly and easily via Hydra2 rather than the added expense and complexity of MADI. This keeps everything simple for operators and provides greater control not available via MADI transport.

The router core serves as the hub of MLB Network's Calrec Hydra2 network, giving control and access to all networked audio resources. It allows MLB Network to scale up when necessary simply by adding more I/O or consoles to the Hydra2 network.

Meanwhile, upgrading to the Concord processor allows MLB Network's existing Apollo to sit on the network and provides a number of features that MLB Network had previously requested.

"The new processing window, with all its features, was a welcome development," Curry said. "So were additional options like being able to put delay on a group, the ability to split stereo and surround pan features out onto desk faders, and the addition of a 'move from/move to' function in the main application."

"Having Hydra2 and the Concord functionality allows me to say 'yes' to the production team when they have great ideas and need to execute them quickly"

Mike Curry



MLB Network also finds that the closer interface between the operator and the network allows mixers to adapt quickly to changes that happen with the network's live, news-like sports-highlight programming. "The interface between the operator and the console/network is logical. This eliminates confusion that can cause on-air mistakes and allows mixers to adapt to changes that happen with our live, news-like sports-highlight

programming," said Mark Haden, vice president of engineering and IT, MLB Network. "Calrec is also the most widely used console for news and sports production. This means training time for new operators and freelancers is literally cut in half because most of them are already familiar with Calrec desks."

"MLB Network is a long-time Calrec client with a sophisticated production

operation," said Helen Carr, regional sales manager for Calrec. "Now that it has added a router core and is running Concord processors on both Apollos, it has the versatility, functionality, and expandability needed to handle not only today's new production requirements, but whatever might come its way in the future."

Get up and go with Brio

At the 2016 NAB Show Calrec unveiled Brio, the most powerful and compact digital broadcast audio console in its class. Brio's comprehensive broadcast feature set supports a wider breadth of broadcasters, while retaining the same market-leading levels of quality and customer support for which Calrec is renowned.

The smallest in Calrec's Bluefin2 family, Brio's control surface is unlike any other console. At only 892mm wide, the 36 dual-layer fader surface provides more faders in a given footprint than any other audio console.

Based on Calrec's 20 years of digital development, Brio's uncluttered, compact, and configurable surface gives instant access to a large number of audio paths, whilst an intuitive 15.6-inch HD touch-screen UI provides quick access to more in-depth control. A bank of illuminating hardware rotary controls gives fast and precise control over parameters displayed in the touchscreen UI.

"Brio provides something unique at this price-point — a mixing console completely focused on the needs of broadcasters and broadcast infrastructures," said Calrec Vice President of Sales

Dave Letson. "This amount of scalable and managed I/O, comprehensive monitoring, surround sound, and high bus quantities provides a degree of dedicated broadcast functionality that has never been available at this level.

"As the market calls for more and more audio mixes to support online content, smaller consoles that possess pure live-broadcast features are increasingly desirable. Products in this sector have traditionally had basic capabilities and are not ideally suited to broadcast environments. Brio is the first application-specific alternative for broadcasters who operate in this environment and provides dedicated broadcast features at a very aggressive price point.

"Brio's compact size means it is extremely portable and quick to install, making it ideal as a general-purpose workhorse that users can deploy as and when needed and its connectivity with other Hydra2-compatible equipment makes it even more versatile."

Brio is entirely self-contained, with analogue and digital I/O and GPIO built into the surface. Additional expansion I/O slots allow for further I/O integration, while fitting an available

Hydra2 module makes it possible to connect to and share audio over Calrec's Hydra2 network.

Connecting to Hydra2 allows broadcasters to take advantage of Hydra2's sophisticated management facilities for network-wide control, including interfacing with multiple video- and audio-over-IP networks such as SMPTE 2022, Dante, AES67, Ravenna, and SoundGrid. Multiformat support protects the system against any future formats that emerge and allows the console to sit on multiple networks simultaneously if desired. Brio is broadcast-ready with no compromise or workarounds.

Brio provides something unique at this price-point – a mixing console completely focused on the needs of broadcasters



Brio is powerful, too, with the ability to freely change path assignment and width on the fly.

- 64 mono-equivalent legs that can be assigned as mono, stereo, or 5.1 input channels
- 36 mono-equivalent legs that can be assigned as mono, stereo, or 5.1 mains or groups (maximum of 4 mains and 8 groups)
- 24 mono-equivalent legs that can be assigned as mono or stereo auxes (maximum of 24 auxes)
- 64 direct or mix-minus outputs, with AutoMinus and Off-Air Conference
- Comprehensive surround and downmixing facilities
- Complete integrated loudness metering
- AutoFaders and AutoMixers
- Integration with remote control and production automation systems via CSCP, SW-P-08, EMBER, and GPIO remote control functionality
- EQ and dynamics on every channel, group, and main
- Plenty of delay resources, dynamics, integrated talkback, and multiple monitor outputs

Installations



Artemis Console at Al Jazeera Balkans, in Sarajevo, Bosnia and Herzegovina.

“When we decided to expand our facility, we chose Calrec because they offer very powerful, rock-solid consoles built with broadcasters in mind. That’s why Calrec is at the heart of our audio infrastructure.

Mirad Isakovic, manager of the broadcast technology department at Al Jazeera Balkans.



Apollo Console in NEP Visions' Pacific truck, based in the UK.

“The launch of Pacific marks a new chapter for NEP UK and we look forward to getting the other trucks on the road by the end of the year.”

Steven Jenkins, president of NEP UK and Ireland.

33 Calrec consoles at Russia's largest TV production facility



Television Technical Centre Ostankino (TTC) has installed five more Calrec digital audio consoles as part of its continued effort to upgrade studios in its Moscow facility. The studios are used by Russian broadcast companies such as Channel One, Technostyle, and NTV Plus on a wide variety of programs, including the May 9th "Victory Day" parade in Red Square.

"We recommended that TTC install Calrec consoles because Calrec is known for its operational reliability and system redundancy," said Roman Katrovsky, sound specialist for OKNO-TV, the Russian system integrator that supplied and installed the consoles. "These consoles give TTC the flexibility to accommodate any number of broadcasters and their various requirements — for both studio recordings and live production — all in 5.1."

TTC has installed Apollo consoles in eight of its studios, each with a companion Artemis console that can be used on the studio floor for tasks such as mixing a band or a live audience.

Katrovsky added: "It is important to TTC that the Apollo and Artemis both sit on



the Hydra2 network, as mixed audio can be sent between the consoles via Calrec's Hydra Patchbay system. This enables TTC to share signal paths without having to use any physical I/O boxes."

The latest Apollo installation in Studio 27 is used to produce programmes such as Channel One's "The Field of Wonders." The Studio 27 installation brings the total number of Calrec consoles in the Ostankino complex to 33.

"TTC Ostankino houses more than 40 studios and is the largest broadcast production

"These consoles give TTC the flexibility to accommodate any number of broadcasters and their various requirements – for both studio recordings and live production – all in 5.1."

Roman Katrovsky

company in Eastern Europe," said Michael Reddick, European sales manager, Calrec Audio.

"Among the studios now equipped with Calrec technology is Studio 1, which is the largest studio within the TTC complex at 1,000 square

metres.

This repeat order is a vote of confidence from TTC and confirms it made the right choice in deciding to standardise on Calrec. I'm happy to say that Calrec consoles will play a major role in Russian television for years to come."

More ways to connect

At the 2016 NAB Show, Calrec Audio unveiled a number of technologies that enable broadcasters to interface with multiple protocols at the same time. These technologies offer unique and comprehensive flexibility across various audio and video standards.

Calrec's four new networking interfaces, included an AES67/Ravenna interface, an AVB interface, and a modular I/O Dante card that also has AES67 compatibility. In addition, Calrec debuted a SMPTE 2022-6 video interface.

"We're drawing a line in the sand with these products," said Dave Letson, Calrec's vice president of sales. "We had held

back on publically stating Calrec's formal direction on AoIP until we had assessed the market and talked to our customers. We strongly feel that it is not the role of a manufacturer to dictate which route to take, but to facilitate the broadcasters' choices.

"Calrec's customers can now interface with multiple protocols at the same time. A signal can be received via AES67 and then sent out via SMPTE 2022, AVB, Ravenna, Dante, or AES67. Signal-processing takes place via modular cards or 1U boxes. "Each signal also benefits from the management facilities inherent in Hydra2. This benefit is especially powerful in remote environments where multiple

trucks are connected. It means that different units can operate across multiple formats in the field, and Calrec always has them covered."

Each element of Calrec's protocol range redundantly connects to Hydra2 and appears like any other I/O resource on the Hydra2 network. Hydra2's integral suite of management tools provides additional benefits to allow remote configuration patching, port protection, alias files, virtual patchbays, and access rights.

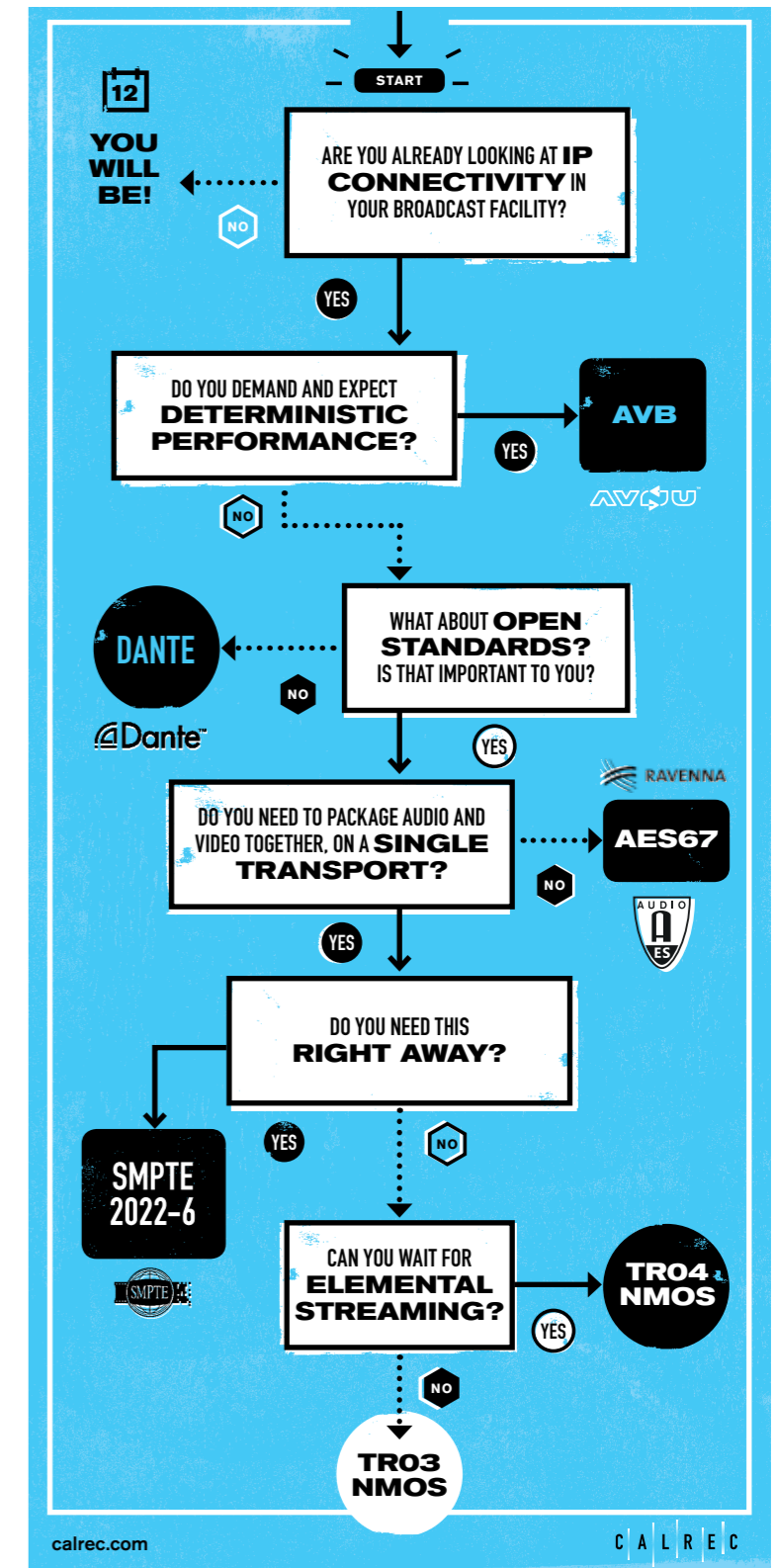
The AES67/Ravenna and AVB interfaces are a 1U box that can transport 256 channels of audio on a single connection. A second expansion card

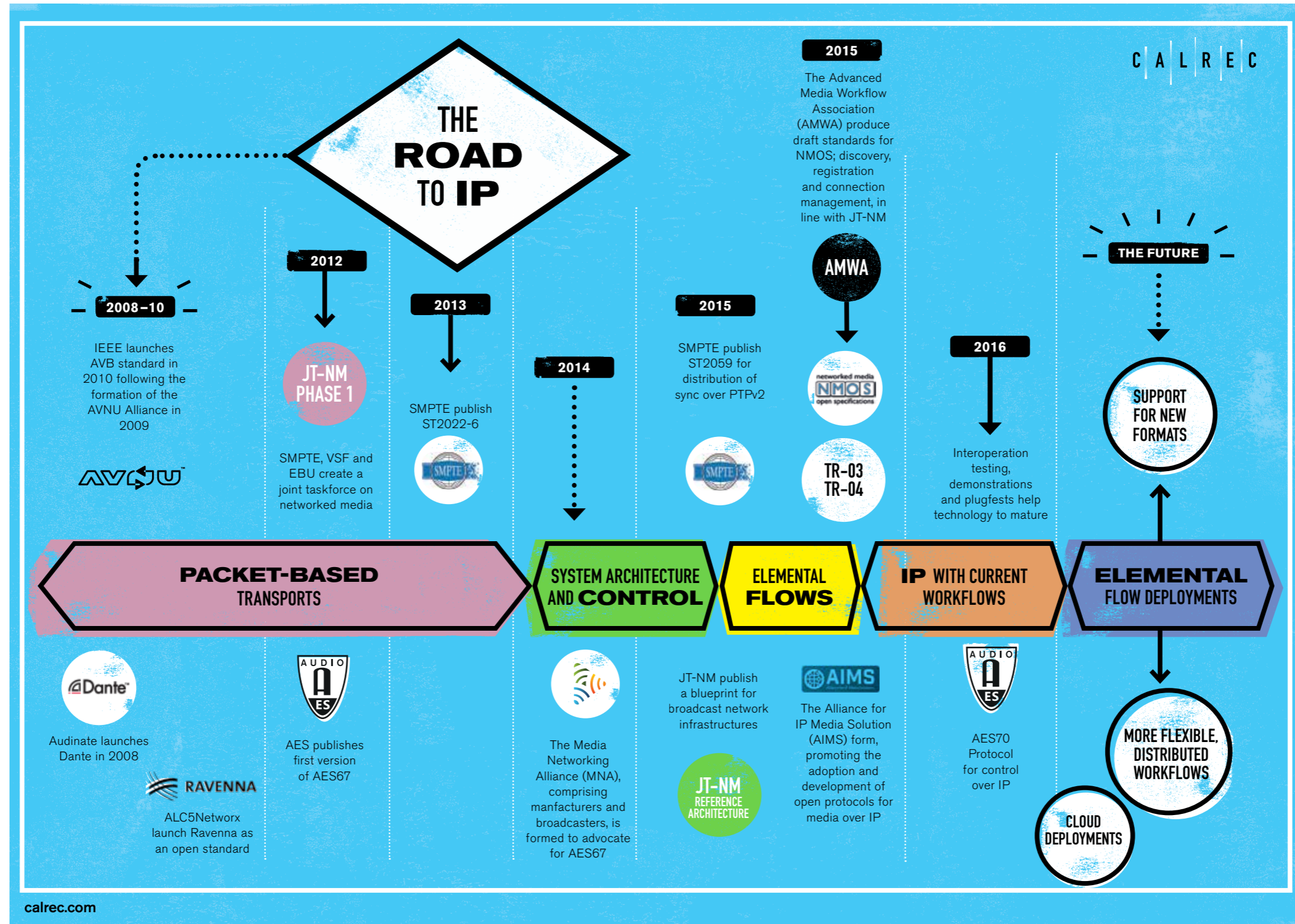
provides the unit with 512 channels of audio — one of the highest-bandwidth connections available for either protocol. The box is so versatile that it can even accommodate one of each card, allowing simultaneous operation of multiple formats.

The SMPTE 2022 modular I/O card has a 10GB port that can receive up to four SD, HD, or 3G video streams, de-embedding 16 audio channels from each. Each video stream may be retransmitted intact or with new embedded audio. A secondary 10GB port provides for hitless switching, as defined by SMPTE 2022-7.

Calrec's existing Dante modular I/O card, launched at IBC 2014, utilises Audinate's Brooklyn II card and now offers AES67 support as standard. This combination allows access to up to 64 bidirectional channels in either protocol.

Offering this range of interfaces reinforces Calrec's stance in the ongoing debate surrounding the future of audio transport protocols. Having a suite of solutions to choose from means broadcasters can be confident that they'll have Calrec's support no matter which combination of formats they use — both now and in the future.





Mizzou Athletics brings it “A” game

A brand-new Calrec Summa console is driving professional broadcast-quality sound for the University of Missouri Athletics department (Mizzou Athletics). The Summa anchors a major upgrade of the Mizzou Arena broadcast centre to support ESPN and SEC Network productions.

The Summa equips Mizzou Athletics to meet the audio requirements of linear television and the demands of network producers and directors. The desk is housed in a new stand-alone audio room that can handle full basketball productions for the TV networks and complete shows for the arena’s in-house video boards, all at the same time. Mizzou Athletics operators can call on an abundance of auxes and tracks to send signals wherever they need to go quickly and

easily, with just a couple of touches on the touch screen.

“As an audio engineer, I never want to tell a director or producer ‘Let me see if we can do that.’ All too often that was my answer with our old console. I had to navigate a confusing menu system with limited resources and hope I could find a way to make special requests work. But the Summa now gives us the resources to say ‘yes,’ even to unusual requests,” said Mike Coons, A1 broadcast audio engineer for Mizzou Athletics.

“The Summa touch screen makes our lives easier and turbo-charges our workflows. For instance, we can link channels to change compression settings on all shotgun FX mics at once, rather than having to configure one

and then copy and paste the settings to each of the others. And any A1 can set up the board quickly to suit his or her preferences simply by dragging channels to different faders on the touch screen.”

The Calrec Fader Assist® app for the iPad® is especially useful for managing two Mizzou Athletics sports broadcasts happening at once. Calrec Fader Assist allows one audio engineer to run the primary broadcast audio directly from the console, while another engineer can control the audio for the secondary broadcast remotely with an iPad.

“Beyond the Summa’s outstanding features and flexibility, it delivers a tremendous improvement in audio clarity over the old console. We switched from the old to the new in the middle of basketball season, and the difference was so profound that the director and producer commented about how much better the game sounded,” Coons said.

“The combination of price, ease of use, and the prominence of the Calrec name in the sports world led us to the Summa,” said Stan Silvey, assistant athletic director, broadcast



operations, Mizzou Athletics. “The improved audio quality definitely makes our live broadcasts stand out. But the Summa also plays a big role in helping us prepare our students for the workplace. Since we rely on many Mizzou students to help with live productions, they’re able to train on the Summa - and the experience working with Calrec boards gives them a distinct advantage when they graduate.”

“The Summa lets Mizzou Athletics control multiple channels and easily route signals anywhere they’re

“As an audio engineer, I never want to tell a director or producer ‘Let me see if we can do that’. The Summa now gives us the resources to say ‘yes’, even to unusual requests.”
Mike Coons

needed, empowering engineers to deliver whatever the situation calls for,” said Richard Phillips, regional sales manager for Calrec.

“The Mizzou Athletics installation proves how the Summa can help any school improve workflow and flexibility during live sports productions.”

In pole position at Le Mans with AMP Visual TV

Outside broadcasting giant AMP VISUAL TV has chosen the company's Apollo, Artemis, and Artemis Light audio consoles for its landmark new vehicle. The new truck, the Millenium Signature 12 (MS12), will be the standard-bearer in the AMP VISUAL TV fleet and will make its debut for coverage of the 24 Hours of Le Mans endurance automobile race in June.

AMP VISUAL TV maintains one of Europe's largest fleets of OB vans and offers complete, end-to-end services for live and on-location television productions. Boasting the world's

largest surface area - 76 square meters - MS12 includes two video studios, two audio studios, and 40 workstations with full 4K UHD TV production capabilities.

"With MS12, we had a unique opportunity to build the most versatile truck on the market. We wanted to be able to maximize the equipment for any size of international production. The flexibility and modularity of the Calrec desks made them a perfect fit for this vision. The consoles offer full redundancy to give us peace of mind for major events, and their plug-and-play operation simplifies

productions and gives us even more versatility," said Emmanuel Le Marquand, audio operating manager, AMP VISUAL TV.

"Calrec is renowned for technology excellence in OB deployments, and the presales support we received was fantastic. We know we've made a great choice with Calrec."

In a departure from its chosen audio-console vendor after more than 15 years, AMP VISUAL TV has turned to Calrec Audio for MS12. The truck includes a 56-fader Apollo console, a 24-fader Artemis Light console,

and a 16-fader Artemis sidecar that can be used to extend the other two. This offers AMP VISUAL TV the flexibility to use the audio equipment in a variety of different configurations both in and out of the truck.

For instance, the Artemis Light can be removed and used in another location, such as a flight control room, and the Apollo can be extended by the sidecar to provide a total of 72 faders. MS12 can operate fully equipped when needed and support two productions at once, or it can run at 50 percent for smaller events.

"AMP VISUAL TV is our biggest French customer to date, one of the biggest OB companies in France and a major player throughout Europe," said Florent Chaouby, international sales manager, Calrec Audio.

"The fact that AMP VISUAL TV has placed its confidence in Calrec is huge for our company. Not only is MS12 a showcase for leading-edge UHD TV broadcasting, but its built-in modularity is unprecedented for an OB truck of its size. This modularity is enabled in large part by the versatility of our Apollo and Artemis solutions."

"Calrec is renowned for technology excellence in OB deployments, and the presales support we received was fantastic. We know we've made a great choice with Calrec."

Emmanuel Le Marquand



In pole position at Le Mans with AMP Visual TV: Case Study with Audio Engineer Xavier Fontaine of AMP



Can you give us an overview of the audio topology at this year's Le Mans?

There are 70 mics covering the race, most of them placed directly on cameras. There are 27 around the track, 19 on the pitlane (on cameras or hidden in front of garages), and 14 "on board" in cars. The other mics are ambient mics used to catch crowd noise and "air" to fill the gaps in the general mix.

Depending on the focal length of each camera we use short or long shotgun microphones. The handheld cameras are equipped with M-S stereo mics and the garages with hidden lavalier mics heavily protected against rain and moisture.

We use 130 channels in total; some mics are patched to several different channels which are parts of different mixes. The pitlane is an independent signal

(with its own mix), which is integrated in the main signal when needed.

Can you describe the signal path from trackside to broadcast?

A monomode optical fibre mesh is shared by audio and video across the site. Most microphones are plugged into cameras, so their signal is embedded in the video from the



camera. As the OB van video router is fully processed, there is no need of external de-embedders.

Cameras can be either wired or wireless. In the first case, they are plugged into monomode fibre links; in the second, they are received by our RF MCR (with the use of remote antennas dispatched around the track, also using fibre links).

The garage mics are connected to local preamps and embedded in each covered garage. Preamps and embedders are located in an underground gallery which runs under the garages to allow the technicians access in case of problem.

Non-embedded audio and intercoms are routed through a Dante Network with I/O devices placed wherever signal transport is needed, or in one of our three Calrec Hydra2 stage boxes, all connected via monomode optical fibre links.

Motorsport is a fast-paced, high-energy sport. What techniques do you use to relay this to the viewer at home?

The most important thing is that audio always follows the picture, hence the choice of mics placed on cameras. They give depth to the picture by accentuating the distance between the car and the camera.

The on-board RF cameras and mics are very immersive and give the driver's point of view which can be very spectacular, especially in cases of accidents or a battle between two cars. They also allow the most passionate viewers to hear and recognise the sound of the engines running at high speed.

We also receive radio communications from 18 teams, as well as the race director's announcements which are pre-selected and replayed by a specific operator. They shed light on the race events and explain the main teams' strategies.

What challenges did you encounter and how did you overcome them?

Setup is huge in terms of quantities of signals, but there are three main challenges: the distances, the weather conditions and the duration of the event. This meant having to divide staff into different teams dedicated to one specific task, or to one local area of the circuit. Due to the rain and the duration, there was a real need for servicing (such as replacing a wet microphone or an intercom device's battery), and the distances meant having a

multiple local teams to solve any problems quickly.

It was also a big task for the RF team to operate so many RF links (cameras, microphones and intercom systems), over such a distance and in an overcrowded RF environment.

This was the first outing of the MS12 truck, the first AMP truck built with Calrec desks. Which features on the desks made your job easier?

As said before, the relationship between the picture and the sound is very important. As there

are a large number of sources, we needed to automate the mixing. We used the autofaders feature a lot, combined with the EMBER+ virtual GPIO. This last feature was very useful to avoid the need of a large number of GPO from the video router, and GPI in the console system.

The autofader interface is very user friendly. During the first qualification session we were able to easily fine tune levels and timing for each channel in order to guarantee smooth transitions.



Was this your first time mixing on a Calrec console? How did it compare with other audio consoles you have used?

The system is very powerful; the ability of merging two routers via a Hydra2 link brings power and convenience; it is very easy to set up and allows the sharing of physical resources between the OB's two consoles. In fact, the final user doesn't really need to know to which console core a resource is attached to. This feature is new for us, and it has really simplified the OB van's engineering.

The Apollo interface is extremely user friendly. I appreciate the ability to arrange the surface layout as I want. As there are lots of physical controls it is possible to have a layout where everything is in direct access which is very convenient. The Artemis is more compact, but the big TFT touchscreens bring added visibility.

We used the second console – the Artemis - to premix and monitor the commentary positions given to different broadcasters. This was mixed by a colleague who was not part of the engineering project and therefore didn't know the Calrec consoles at all. After a two hour explanation about the system

philosophy and the desk ergonomics, he was able to do his task; it shows that the console is easy to understand and operate.

Audio networking is prevalent in modern large scale sporting events. Have you utilised high-density signal transports?

Yes, we have used high density signal transport. Firstly, inside the OB van we have four MADI tie-lines (256 audios in and out) with the processed video router.

All the audio from and to video equipment (Mics on cameras, EVS and VTRs, embedded feeds etc.) pass through these tie lines. They are totally transparent for the user since we pilot the consoles and the video router with VSM.

All the tie lines between the console and the intercom matrix (transiting IFB's PGMs, Commentary position's "On Air" etc.) are made with a Dante network. There is also the Hydra2 link between the two consoles' cores.

Outside the OB Van, in the Le Mans setup, we have built a Dante network using part of the fiber mesh to transit the audio and intercom signals from

"The system is very powerful; the ability of merging two routers via a Hydra2 link brings power and convenience; it is very easy to set up and allows the sharing of physical resources between the OB's two consoles."

Xavier Fontaine

different points of the race circuit. This is managed by an audio MCR built aside the OB van, which was in charge of routing these signals to the proper destinations. The MS12, being part of this network, had a Dante link set up between the Apollo core and the MCR.

We also used three Calrec stage boxes on Calrec's Hydra2 transport, linked by monomode optical fiber to the Apollo core positioned in different locations in the pit lane.

When our video colleagues had to transmit or receive signals and were using their

video stageboxes (the video router is a Riedel Mediornet system). We added “Rocknet” I/O modules to avoid using a pure audio stagebox.

We received the audio from the RF and on-board cameras embedded in the video, so we exchanged a MADI link with the RF MCR in order to transit backup and ancillary audio.

[The race was over 24 hours \(as the name suggests\), how did you cover all of it?](#)

We were four audio people inside the OB van, two mixers, a guarantee and an intercom operator. In fact, we relayed at the consoles every two hours in order to stay focused. During the night, from 11 PM to 6 AM, a dedicated team came as reinforcement allowing us to sleep a little bit more than two hours.

[As viewers increasingly consume content in a variety of methods, combined with the clean feeds that are fed to other broadcasters, many more mixes are required. How do you manage to provide mixes for so many different outputs?](#)

The MS12 has two separate audio rooms allowing us to mix two different programs at the

same time, such as an international feed and a host broadcaster signal, for example.

Thanks to Calrec’s consoles’ ability of having two real monitoring sections on one desk it is possible to have two mix engineers on the same console; one using the speakers, and one equipped with headphones (with full monitoring capacity including PFLs). This is very useful in cases of a “Dirty” and a “Clean” feed with different EVS playouts or multilateral interviews.

Furthermore, the use of the “autofaders” and the “automix” works very well on commentary position’s functionalities, which allowed us to lighten some mixes.

In terms of resources, the number of groups and mains available is no longer the limitation it used to be on some older systems. It is now possible to build huge configurations which are very simple, without diverted routes.

[How has the truck been designed to withstand the ever changing demands put upon broadcast infrastructures? i.e. AoIP, immersive audio, interoperability etc](#)

The design principle for the truck was to be as modular as possible.

Its working areas have been designed to have multiple uses. For example, it is possible to use one area for video shading or as an EVS room, or as an audio editing room. The furniture, the cabling and the monitoring (audio and video), has been designed for different kinds of uses.

Technically, we use VSM to control all the equipment. It means that it is easy to modify the low level infrastructure by adding or changing equipment which will bring new resources or a new format of inputs and outputs. Provided all your equipment is connected together with a large amount of tie lines, VSM provides the ability to route a signal from one point to another without considering its full path.

For example, a signal can come embedded in a video, from the video router, pass through the console and be fed to the



intercom matrix for listening purposes with only one patching action on a VSM X-Y panel.

We also chose to use Dante for many audio links, such as the ancillary audio monitoring, inside the OB van which allows us to easily modify the infrastructure by adding or removing devices.

This monitoring can now be stretched by adding Dante monitors to extend possibilities in one area or add a new area outside the OB van.

“The Apollo interface is extremely user friendly. I appreciate the ability to arrange the surface layout as I want...it is possible to have a layout where everything is in direct access which is very convenient.”

Xavier Fontaine

NBC Olympics selects Calrec for the 2016 Olympic Games in Rio

NBC Olympics, a division of the NBC Sports Group, has selected Calrec to provide seven audio mixing consoles for its production of the Games of the XXXI Olympiad, which take place in Rio de Janeiro, Brazil Aug. 5-21. The announcement was made today by Karl Malone, Director, Sound Design, NBC Sports & Olympics and Dave Letson, Vice President of Sales, Calrec.

Calrec Audio has supplied four Artemis and three Summa audio mixing consoles to provide full audio mixes for the coverage. Three of the 40-fader Artemis consoles will be stationed at NBC fly-pack venues to provide coverage of basketball, cycling, triathlon, marathon, volleyball, and diving. The fourth will be based in Audio Control Room X in the Compound within the International Broadcast Center in Rio. This console will be in use with venues moving audio and video over IP. One 24+8 fader Summa console will provide the main output in Audio Control Room X, while the remaining two will act as back up consoles in Audio Control Rooms A and B.

“This year is the first time we are connecting with Dante on the Hydra2 network, and we are delighted to continue this strong innovative relationship as NBC Olympics continues to push the boundaries of sports audio,” said Letson.

“NBC Olympics is delighted to be working once again with Calrec, their consoles, and their support personnel for our coverage. We look forward to using the latest advancements in Calrec processor technologies, as well as newly updated interfaces, which have been developed based on our feedback and the feedback of many Calrec users worldwide,” said Malone.

In addition to the seven consoles, Calrec will supply 26 x I/O boxes, creating a comprehensive and fully redundant Hydra2 network, which will provide signal management and full control across MADI and Dante.

A division of the NBC Sports Group, NBC Olympics is responsible for producing, programming and promoting NBCUniversal’s Olympic coverage. It is renowned for its unsurpassed Olympic heritage, award-winning production, and ability to aggregate the largest audiences in U.S. television history.

“The latest advancements in Calrec processor technologies, as well as newly updated interfaces, have been developed based on our feedback and the feedback of the many Calrec users worldwide”

Karl Malone



Installations



Calrec had around 40 consoles covering the Games for a number of international broadcasters. The coverage included NBC Olympics' first ever live broadcast from the Games using Dolby Atmos, which mixed and broadcast through a Calrec console. Calrec has two Support Engineers on site in Rio throughout the Games, proving support to its many customers across multiple venues.

CALREC

8	26	103	77
B	R	I	O
Brio	Redundancy	Integration	Hydra2 Organiser



13	75	103	91	62	28	86	103	77
T	H	I	S	Is	Au	D	I	O
Trust	Hydra2	Integration	Salvos	Inserts	Automation	Dante	Integration	Hydra2 Organiser

Slogan created by:

Name: Tim Jacobs
Job title: Technical Director
Company: NBC Universal



See how these elements fit into our periodic table at calrec.com

Calrec and JAA.S form new partnership



Calrec Audio has announced JAA Systems Sdn Bhd (JAA.S) as its exclusive distributor for Malaysia, Singapore, and Indonesia. Headed by David Chan, JAA.S has a proven track record in audio-mixing consoles for broadcast and is very well-respected in the region. With more than a decade of experience in the industry, JAA.S is the ideal partner to spearhead sales and support from its headquarters in Kuala Lumpur.

“It is an honour to work with a manufacturer with the kind of heritage Calrec has. Calrec is at the forefront of technology and has enjoyed success in many regions around the globe,” said Chan, director at JAA.S. “We aim to make Calrec just as

successful in this territory too. “Historically Calrec has not been as well-known in Southeast Asia, but with the recent addition of the Brio console to its range, we aim to provide broadcasters with the same high-end feature sets and networking capabilities Calrec is renowned for at an affordable price point.”

“I am very excited about this new relationship,” said Anthony Harrison, international sales manager for Calrec. “David’s team of experienced engineers means broadcasters in the region can be confident they’ll get a level of support equal to the quality of their consoles.”

“Calrec is at the forefront of technology and has enjoyed success in many regions around the globe.”

David Chan

CALREC

Drop Ship Audio flies high

Los Angeles-based boutique rental house Drop Ship Audio has fitted their newest flypack with a Calrec Summa to cover auditions and callbacks for reality-TV dance competition “So You Think You Can Dance.”

“As a small rental house, it’s great to be able to offer a Calrec, not only because of the prestige behind the name, but also because Calrec desks are in the majority of OB trucks in the U.S., most of our rental customers already know how to use them. Calrec has done a great job of making sure the

user interface and operation are the same across all its desks, so it’s easy for any engineer to jump on the Summa and go,” said Sean Prickett, owner of Drop Ship Audio and A1 for the “So You Think You Can Dance” auditions.

“Calrec delivered and commissioned the desk right before we did the first show. For me to be able to just sit down at the Summa and build a show having never mixed on it before speaks volumes about the usability across the Calrec line.” The Summa’s flypack-sized

footprint and more accessible price point lets Drop Ship Audio offer customers the same reliability and power as Calrec’s larger Apollo and Artemis consoles. The touch-screen user interface gives operators the flexibility to access more advanced functionality more easily than they could on other desks of that size.

“With a Calrec I’m never left thinking, ‘I wish I could do that.’ Almost anything I want to do I can do on a Calrec desk, and the Summa is no exception,” Prickett said. “But one of the



biggest things that drew me to Calrec is that it uses the same I/O across all of the consoles, so I’m not limited to field boxes made only for the Summa.”

Thanks to Calrec’s Hydra2 network, Summa is scalable, connecting easily to other Calrec consoles and I/O. Adding I/O is as simple as renting an extra box and plugging it in, which is a benefit

from both a usability and rental standpoint.

“Drop Ship Audio might be small, but they’re doing big things. They have a lot of interesting work,” said Dave Lewty, regional sales manager for Calrec. “The Summa is a small but mighty addition to their rental lineup. We’re pleased to be a part of this company’s growth.”

“For me to be able to just sit down at a Summa and build a show having never mixed on it before speaks volumes.”

Sean Prickett

Remote Broadcasting

At the 2016 NAB Show Calrec Audio unveiled a unique live-broadcast product that directly addresses an increasingly prevalent requirement for high-quality content from remote locations.

Remote production offers the ability to capture a broader range of live events, such as sports, news or regional music festivals. Broadcasters cannot always justify the time or expense of sending a dedicated outside broadcast truck and a team of skilled onsite operators for these niche events, but they must always ensure that the same high broadcast standards are met.

Calrec's new RP1 remote production engine is a 2U core that contains integrated, FPGA-based DSP, which enables a console surface at another facility to control all mixing functionality. The RP1 core manages all the processing for IFB routing and remote monitor mixes, and it does so locally with no latency. This level of integration and remote control makes it simple for any remote mix engineer to set up IFB mixes and eradicating any delay for remote listeners or presenters.

The RP1 core quickly embeds audio into existing video-transport mechanisms, while its modular I/O backbone accepts any of Calrec's I/O cards. This versatility means the RP1 can connect via analogue, AES, MADI, SDI, and the latest AoIP solutions from AES67, Ravenna, Dante, and SMPTE 2022.

"All these remote I/O resources appear to the main audio mixer like any other local I/O box which means there is no operator learning curve," said Dave Letson, Calrec's vice president of sales. "This is a high-end broadcast mixing system in a 2U rackmount box, with the control surface in a physically remote location.

"The RP1 core allows remote sources to be patched to studio-based consoles and controlled as if they were physically located at the facility; it's seamless!

"Remote broadcasting using the RP1 means fewer resources are needed on site. Controlling audio from a remote console saves money on setup time, crew, logistics, and equipment. It is simple to set up and very easy to use. It also enables broadcasters to cover a greater

number of specialised events, such as regional or college sports and smaller entertainment events, at significantly reduced cost, making it possible to maintain an increasingly wide range of content."

In addition, the RP1 core allows broadcasters to create very low-cost Hydra2 networks for all audio routing requirements. The RP1 provides connectivity to any Calrec Hydra2 I/O box, including Calrec's ultra-compact Fieldbox and H2Hub, providing a cost-effective way to adapt to the requirements of any situation. Such connectivity gives broadcasters access to Hydra2's inherent management features, such as port protection, alias files, and access rights.



The RP1 core allows remote sources to be patched to studio-based consoles and controlled as if they were physically located at the facility; it's seamless!

Calrec Craft Profile: Paul Special

(appeared in Mix Magazine July 2016)



Paul Special is a Freelance Broadcast Music Mixer who is regularly found mixing bands for ABC's Good Morning America at Times Square Studios in New York.

You mix high profile events like the New Year's Eve show and regularly mix for popular news/entertainment shows like Good Morning America. What career path did you take to end up where you are today?

I started at Record Plant Studios here in New York City where our main focus was rock and pop records. I was involved with recording the likes of Aerosmith, Paul Simon, Joan Jett and The Blackhearts, and The Smithereens to name a few. My journey into TV and live production came about because Record Plant had two remote trucks, and I started doing a lot of work on those trucks for live records and specials like Live Aid, Farm Aid, Woodstock 94 & 99 and the Rock and Roll

Hall of Fame Opening Concert. I learned a lot, not only about live recording, but also about TV production while working on those trucks.

Over time I began to work on less studio records and more live concerts, and live TV shows where music was an integral part of the show. Shows like American Idol and X Factor were gaining immense popularity. I worked on a number of similar shows, most notably was Nashville Star on NBC and

USA. The show had a great run and was on for 7 years and I mixed all the guest bands every week.

I got involved with Good Morning America around 2000. At that time, they did not have a mix room for the live bands, so they would hire remote trucks to do the bands. I worked on the trucks for many of those performances. When they decided to install a live mix room (Audio B) they asked me to get involved as I was familiar with the workflow for music performances on a live to air news show.

Currently we average about three music performances per week. The acts can vary wildly from day to day. One day we may have on a rock band like U2, the next day will be the cast of a Broadway musical like Jersey Boys and then the next day will be a pop act like Taylor Swift. It really keeps me on my toes bouncing from genre to genre!

Once I started working at GMA, I ran into Robert Agnello who is Director of Technical Services at Times Square Studios. Robert and I have known each other for over 30 years - our paths are constantly intertwining. We worked together at Record

Plant Studios, then a few years after that we were partners in a recording studio complex called This Way Productions in New York's SOHO district and when I came to work for ABC, he was already working there!

I'm still freelance and that leaves me open to pursue other stuff as well. I still do a lot of concert DVDs.

I recorded the last live CD and concert DVD for Motorhead, and I also recorded and mixed the live broadcast of LCD Sound System's last show from Madison Square Garden.

A big one for me was the DVD and CD of Jeff Beck's Rock 'N Roll Party, honouring Les Paul. This was seen on PBS. The Jeff Beck album was nominated for a GRAMMY in the "Best Rock Album" category. The Foo Fighters won that year, but I'm okay losing to them! It was an honour to be nominated.

I still occasionally do studio records mostly for up and coming artists like Tom Nieman, The Walking Tree and Robert Hill, to name a few.

But somehow I've always ended up coming back to the live element in some sort of video/TV aspect.

In that time, what are the biggest shifts that have changed the way you work, and affected the programming output?

The biggest shift I've seen is the move to digital. I used to have an analogue API in my room, a wonderful sounding desk but not bulletproof or flexible enough for the ins and outs of daily broadcast. As with all analogue boards you had to stay on top of the switches, knobs, buttons and components. Even though I loved the sound of the desk it was not a good platform for the rigours of every day broadcasting. Maintenance took more and more time and would sometimes get in the way of our already tight schedule.

That was when Robert (Agnello) said they were putting a dedicated broadcast desk in Audio B and they were leaning towards the Calrec Artemis. Truth be told, I wanted a Studer or a Lawo because I'd used them on the trucks that I work on. After seeing some Artemis demos my feelings were mixed, although I was warming to it, I thought. "Holy cow, this thing can do everything - there's nothing it can't do!"

At the same time I thought, "Holy cow this thing can do everything - it is a bit overwhelming!"

I realised I needed to listen to it as well as push the buttons and understand the theory of operation. Coming from a recording background, sound is very important to me, so I did some sonic evaluations of the EQs, compressors and the sound of the desk itself. I realised this was a board that I could be very happy with.

I was still a little overwhelmed with the breadth of customisability and the vastness of the IO; it's a lot of desk. Now that I've had it for a couple of years I can't imagine how I would work otherwise.

[There is a lot of buzz around various networking protocols at the moment including the Hydra2 solution Calrec offers. How important is audio networking? What networking elements are incorporated into your workflow?](#)

It's important as it's definitely where we're going. The more on-board you can get with that technology, the bigger shows you can have with more input and output capabilities. The biggest problem is there are

many different protocols and sometimes it can be a daunting task to choose one protocol and commit. There's a lot of players in the field such as Rocknet and Dante, and those platforms have real footholds.

Companies like Calrec are stepping up their game and realising it's not just an audio desk, it's a router. That's very much in line with what you'll find in any broadcast facility, the idea of being able to route signals from any point to any other point easily and efficiently is key. So far I've been really happy with the route-ability of my desk and I'm really looking forward to when our A room gets the Apollo in it and we're on one big Hydra2 network with full network control and more capabilities available to us.

The partnership with Calrec and DiGiCo is really exciting because over half of the music acts coming in will specify a DiGiCo desk for monitors. Other manufacturers desks are tied to their input/output structure (48 x 24 or 96 x 24) whereas the DiGiCo is more flexible with the amount of IO you can have on the system, you could have a desk that is 16 x 48 or 96 x 32 or 48 x 24 and many engineers prefer that flexibility as well as the sound of the DiGiCo's.

[Tell us a bit about your audio operation. What challenges do you face when mixing a news/entertainment show?](#)

The biggest challenge is the schedule - the 1am start is rough!

We deal with a lot of inputs. A typical act would be anywhere between 32-48 inputs, the super-groups may have 70-80. We do a one-day wonder; we walk in at 1am, set everything up, sound check it, do the show, tear everything out, and we're done by 11am. When you're dealing with an act with 80 inputs that's a lot of work to get done in a short amount of time.

Usually we don't have the studio available to us the whole time, we have a specific window of opportunity to do our sound check. Generally speaking I'm constantly against the wall with what time I get in, what time the band's gear shows up, what time their crew shows up, getting everything wired up, faxed out and checked before getting the band on stage, working out their monitors and getting them to actually play.

My workflow with the Artemis enables me to set up a few basic starting shows that cover most of my IO needs and

processing for about 90% of what I'm doing. I can recall that show, patch everything in and get working right away. One of the things that I'm very excited about is getting the preset libraries on the next software upgrade. That would really step it up.

With analogue desks every knob and button is reset by hand. Digital desks have instant recall so we can blow through a line check really fast and be ahead of the game that way. We've got much more efficient having that functionality. Also, hum and buzz issues have pretty much gone away since the Hydra mic preamps live near the stage and get to the desk via fibre.



[In terms of console technology, what can you do with today's consoles that would have been impossible to do when you first started?](#)

Today we can handle a huge amount of IO. Right now my rig has 96 mic pres, 64 channels of analogue IO, 96 channels of mic splitters, 6 MADI boxes both with 128 in/outs and 96 channels of AES IO. That's 100s of IO streams. I have a 128 track Protools rig as well. My previous analogue setup had 48 mic-pres with no effects returns and that would have been the amount of tracks I could record on Protools. The biggest thing is that limitations on IO have virtually gone away.

The kind of IO we have hooked up to the Artemis is staggering.

I like the replay function on the Artemis - it's a really easy way for me to do a sound check and then work on my mix; I typically only get 1 or 2 passes of the song with the bands at Soundcheck. So, many times I need to work on my mix a bit during the time the soundcheck finishes and we go live to air. I typically monitor the mic-pres on input 1 while recording the mic pre output directly into Protools using the routing available on the Hydra2 network. Then I can use the replay function to switch to input 2 which will be the output of Protools, again using the routing available on the Hydra2 network. I can then continue to manipulate my EQs, compressors and effects sends, and then easily go back to monitoring my mic-pres when I'm live on air. The replay function allows me to switch quickly and seamlessly between my mic-pres and playback and really dial my mix in so that I am happy and the bands are happy.

“Coming from a recording background, sound is very important to me, so I did some sonic evaluations of the EQs, compressors and the sound of the desk itself. I realised this was a board that I could be very happy with. Now that I’ve had it for a couple of years I can’t imagine how I would work otherwise.”

Paul Special

Has the way you mix changed to cater for an audience that now watches on mobile and hand-held (tablet) devices?

As a music mixer I usually send my mix to a production mixer who’ll then feather it into their mix. I still listen to what comes through the TV or device to hear how my mix translates to it.

There are some changes I wouldn’t normally do in a studio record mix. I’ll tend to push the low frequencies more for a broadcast mix to get a nice sense of air moving as people tend to be listening on smaller speakers and this will give a little more edge to the punch factor. Also I’ll minimise my

stereo spread so if someone is only hearing one channel it still makes musical sense.

Another thing is dealing with my surround situation regarding what I’m putting in different speakers. When you’re dealing with a production mix you have all your dialogue elements up the centre, music and FX to the left or right and maybe the audience reaction in the surrounds. In a music mix it’s difficult to put some things in the centre channel. It sounds great in surround but when that folds down to stereo or mono it can change the balance. What may potentially work for a dialogue element might not for a snare drum!

Words that you never hear coming out of the video control room from your director are “Oh my god, the host’s mic is so loud, turn that down!” If in the process of the downmix the host’s mic gets little louder nobody is going to complain but if the snare drum becomes four times louder in the stereo music mix, you’ll hear about that!

What is the most satisfying thing about using an Artemis to take on these challenging jobs? Are there any features you find especially useful?

The whole aspect of Hydra2 being able to port from one interface to another and not go through the board is great. A big part of my workflow involves the music inputs and performance microphones coming through my mic-pres, but I also send an ISO to the production mixers as they need that performance microphone for an interview, which will need to be gained and EQ’d differently. In the past I would have to take a port or direct out of a channel, go to a DA and either line trim up or down depending on what they need. Now I just take the mic pre and send it to my desk and then take the mic-pre and send it to their desk and we’re both happy. He can gain it how he wants with a trim and I’m still

dealing with the mic-pre and it works out great.

Another fabulous workflow for us is that we have 96 of the Hydra2 mic-pres in stage boxes, and we also have the mic-split option. This works out really well because not only do we have all the sources coming in for the music mix, but they can also be split out to go to a monitor desk, so the act can hear their performance. One thing that is exciting with DiGiCo and Calrec’s partnership is the idea that both platforms will be able to sit on the Hydra2 network. That will save a lot of analogue copper infrastructure that we have right now.

In my opinion the Hydra2 mic-pres are as good as any mic-pre I’ve heard. They are super clear, very transparent and the transient response is fantastic! Most people who come in to the room say, “Oh, but isn’t that a broadcast desk?” I tell them “Trust me it’s going to rock!”

At the end of the day, they all say, “It sounded great, it rocked, just like you said it would!” I have to say that Calrec have really outdone themselves with this design, so whatever it is that they did on the Artemis, keep doing it!

I think sometimes if a company focusses mostly on broadcast, functionality is sometimes higher on the list than sonic quality and the reverse may be true for a company that focuses on the music environment; functionality goes out the window. Where I am now with the Artemis, I am able to realise both of those worlds - great sound and great functionality.

What do you think the future holds for broadcast technology? Will we see a noticeable shift to centralised working via remote production?

It will happen. We will be able to do this from home, maybe not in our lifetime but the throughput with networks will mean you won’t physically have to be in the space to be able to do that production. The director will be in one city and the audio mixer in another.

Good Morning America is a good example of that. On any given day we’ll have anywhere from 10-12 different remotes from all over the world. While there’s still some delay, it will only get faster and faster. Think about where we were in 1975 to now - flash forward another 40 years I don’t see that as being an outlandish vision at all.

AoIP and audio networks based around routing capability over mixer-surface capability is definitely in the next 3-5 years, especially in the major networks. The idea of a centralised hub which all the IO, in the building comes into, and all those resources shared by the different control rooms in the building - or even the wider network outside of the building- is already happening.

For Good Morning America, ABC’s master control is on 66th street, and the Good Morning America studio is on 42nd street. The amount of resources that are shared between them is huge; half of the tape machine and playback devices and graphics are on 66th but are being streamed and put into the live-to-air show in Times Square. The whole show then goes back up to 66th street master control for the network feeds for satellite/cable distribution.

It’s not a stretch to say that in the next 3-5 years the audio IO will be spread out, not just processing a signal locally and shipping it off, but having the central core in one location and everyone pulling off from it. A lot of investment is happening now to make that happen at ABC and other places.

Calrec injects new zeal and vigour into 20-year partnership with TV New Zealand

For more than 50 years, Television New Zealand (TVNZ) has served up an outstanding array of programming to Kiwi viewers — and for almost half of that time, the national broadcaster has placed its trust in Calrec Audio. TVNZ has just installed its latest investment in Calrec, a brand-new Artemis Light audio console and a Concord processor upgrade on the network's existing Artemis Beam desk.

“We’ve enjoyed a long and successful partnership with Calrec, going back to 1996 when we brought in two analogue Calrec C2 consoles for our live television production studios,” said Paul Hedges, general manager, production services and facilities, at TVNZ. “When it came time to upgrade, we had no doubt the Artemis consoles would meet our needs.

“Calrec’s feature set, roadmap for the future, and fit for our productions continue to be very compelling. Plus, we really value the personal relationships we have established over the years with the sales, marketing, and support at Calrec and their distributor Synchronetech in Australia. They have always been quick to respond when we

have any support issues, and they’ve done an outstanding job of meeting our technical and budget needs.”

A government-owned national broadcaster, TVNZ serves viewers throughout New Zealand and other Pacific regions with daily news and current affairs programming as well as a broad range of live and recorded entertainment shows.

TVNZ brought in the Artemis Beam for its news studio in 2014 as a replacement for the Calrec analogue consoles, which had delivered almost two decades of reliable daily service. This was part of a strategic plan to expand production capabilities with a new Artemis Light console for a second studio. TVNZ installed the Artemis Light earlier this year for production of a wide variety of lifestyle programs, including

live-audience comedy shows and variety shows featuring interviews, product demonstrations, and live music performances.

The Calrec consoles have doubled the resources available to both studios, enabling TVNZ to handle a line-up that would have required hiring additional personnel or purchasing extra resources.

The upgrade to the increasingly popular Concord processor has brought newfound flexibility and power to the Calrec configuration, enabling TVNZ to handle highly complex programs with ease. The network produces an audience-based show that required stems and clean mic splits to be recorded to an external device. With Concord a complicated patch can be set up, tested, and saved for recall week after week,

“From our many years of experience with Calrec, we know we can count on absolute reliability for critical programming.”

Paul Hedges



and yet at a moment’s notice the production can revert back to a basic show mode.

“The Artemis Light is a perfect complement to our existing Artemis Beam console, bringing flexibility and agility to our operation,” Hedges said. “We can change quickly and easily from one production to another with zero downtime and zero patching errors, and the ability to share resources between the studios and save output configurations is invaluable.

“Plus, from our many years of experience with Calrec, we know we can count on absolute reliability for critical programming. Live news production forms a large part of the TV One schedule, and it’s vital we have a robust production audio console. Another example is our twice-weekly live lottery draw in the other studio. There’s always a lot of scrutiny when people have a chance to win big cash prizes, and a failure on air would be a huge issue — but we have complete confidence in Calrec.”

“We have worked hard for many years to earn TVNZ’s trust, and the new Artemis deployments there are just the latest examples of how our technology can evolve to serve a customer’s ever-changing needs,” said Anthony Harrison, international sales manager for Calrec. “We can’t wait to see what the next 20 years holds for our partnership with TVNZ. Whatever it is, we know it will be exciting.”

The Ultimate Broadcast Desk

Calrec Periodic Table of Broadcast Consoles

1 Ob Outside Broadcast													2 Cl Clear					
3 N Live News	4 St Stereo Console	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: yellow; padding: 5px;">Specialisms</div> <div style="background-color: green; padding: 5px;">World Firsts</div> <div style="background-color: white; padding: 5px; border: 1px solid black;">Broadcast Features</div> <div style="background-color: orange; padding: 5px;">Corporate</div> <div style="background-color: pink; padding: 5px;">Console Elements</div> <div style="background-color: blue; padding: 5px;">User Interface</div> <div style="background-color: cyan; padding: 5px;">Network</div> </div>										5 A Apollo	6 Ar Artemis	7 Sm Summa	8 B Brio	9 C Core	10 It Intuitive	
11 Ls Live Sports	12 Sf Surround Microphone											13 T Trust	14 Rc Routercore	15 Io IO	16 Rd Redundancy	17 Gp GPIO	18 Cr Colourful	
19 E Entertainment	20 Da Digital Assignable	21 Aq Audio Quality	22 V Versatility	23 Ai On Air Inhibit	24 Ps Presets	25 Fx Flexibility	26 R Redundancy	27 Os Mic Open System	28 Au Automation	29 Re Live Reconfiguration	30 U Unlimited VCA Groups	31 Co Cooperation	32 Fc Focus	33 Or Orange Box	34 Cu Cat5	35 Fe Fibre	36 Vf Visual Feedback	
37 W Houses of Worship	38 An Audio Network Management	39 Hp Hot Plugability	40 Fp Fader Pitch	41 Pa Path Interrogate	42 Bi Big Channels	43 Af Autofader	44 Pc Power Consumption	45 Mc Multi-Channel	46 P Power	47 Cm Compact Design	48 Mr Flexible Metering	49 In Innovation	50 Ma In-house Manufacturing	51 Rp Reputation	52 Vi Virtualisation	53 Sp Split Core	54 Ea Ease of Operation	
55 M Musical Performance	56 F FPGA	57 Lo Loudness	58 Ax Automixer	59 Dx Downmixer	60 Aa Assistive apps	61 Us Multiple Operation	62 Is Inserts	63 Cf Configurable	64 Cs CSCP	65 Rl Reliability	66 Df Dual Faders	67 Ld Market Leading	68 Ts Multiple Test Points	69 Rs Relationships	70 Su Support	71 Sc Sidecar	72 Er Ergonomic	
73 Rb Remote Broadcasting	74 Bf Bluefin2	75-102		103 I Integration	104 Mm Mix Minus	105 Cb Conference Bus	106 DI Delay	107 Eq EQ	108 Sq Sidechain EQ	109 Dy Dynamics	110 Ch Channel Facilities	111 G Next Gen Audio	112 Q Quality	113 Hi History	114 Ev Environment	115 Eg Engineering	116 Ao Networking	117 Ng Easy to Navigate

75 H Hydra2	76 Nm Network Manager	77 O Hydra2 Organiser	78 Ro Integral Router	79 He Network Heritage	80 Ff Fixed Format I/O	81 Md Modular I/O	82 L Low Latency	83 Tr Transparent Routing	84 Pp Plug and Play	85 Ag Network Agnostic	86 D Dante	87 Ae AES67 / Ravenna	88 Se SMPTE2022
89 Sw SW-P-08	90 Em Ember +	91 S Salvos	92 Hu H2Hub	93 Ip Input Port Protection	94 Op Output Port Protection	95 Nr Full Network Redundancy	96 Pf Port and Folder Management	97 Sb Scalable	98 Fd Fault Detection	99 Ac Access Rights	100 Pb Hydra Patch Bays	101 Al Alias Files	102 Hd High Headroom

Installations



Apollo at Fountain Studios, London, UK. This console is used to mix large Light Entertainment shows like "X Factor" and "Britains Got Talent" and is the first ever Apollo to be installed and used in a live broadcast.



Apollo in a Game Creek remote unit in the USA, covering the US Open Golf Tournament

"Calrec's people are experts who not only helped us specify the system but joined us in the field to help us set up the system to yield the best performance. That's why Game Creek Video is a repeat customer."

Pat Sullivan, President, Game Creek Video

Summa scores big with Russian hockey broadcasters

The opening of the dazzling VTB Ice Palace in Moscow last year gave ice hockey fans a lot to cheer about. Now, the facility's broadcast engineers are joining in, with the installation of a single Calrec Audio Hydra2 networking system linking two Calrec Summa audio consoles. Hydra2 provides original venue sound and enables routing of all audio signals to outside broadcast (OB) vans covering VTB Ice Palace events, including last month's broadcast coverage of the 2016 International Ice Hockey Federation (IIHF) Ice Hockey World Championship.

The VTB Ice Palace is the world's first multifunctional sports complex to feature two arenas under one roof. Systems integrator Live Sound Ltd. installed two Summa 128 audio consoles and a router core in the new facility to ensure professional, broadcast-quality sound for all VTB Ice Palace broadcasts.

More fundamentally, Calrec's Hydra2 audio networking system enables audio from one or both ice arenas to be routed to a centralised OB truck terminal, where MADI, analogue, and digital ports provide a convenient access point for visiting OB units.

Calrec's H2O software enables mic pre-amp gain to be controlled by visiting OB units regardless of the audio console in the truck.

"Until now we've operated separate sound systems for commentary, original venue sound, public address, and other applications based on the equipment of various vendors. But when we looked at the requirements for the VTB Ice Palace project, we realised that Calrec had the perfect solution for integrating all of these systems," said Andrey Mazurov, projects department head, Live Sound Ltd.

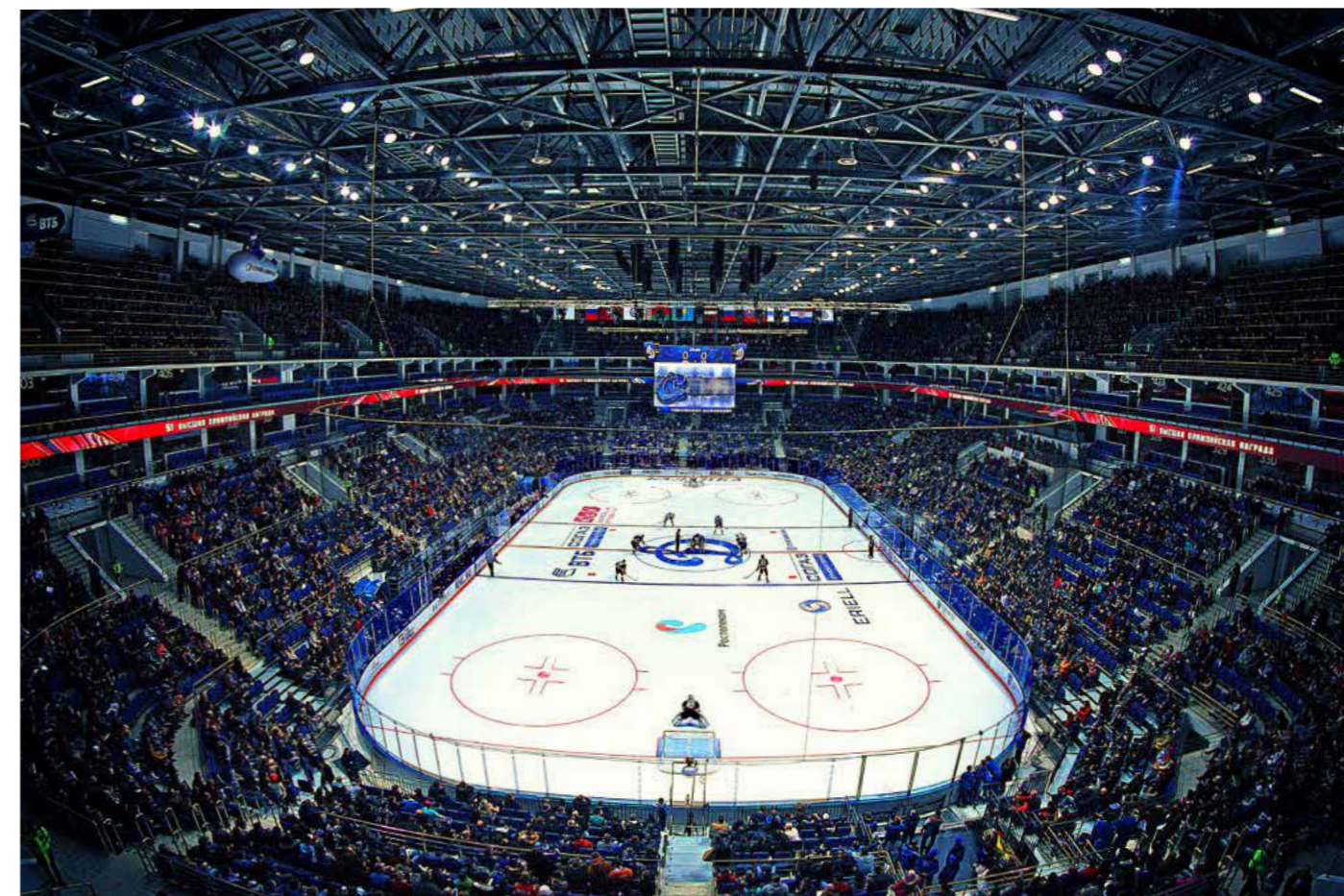
"Our customer was originally looking for two completely independent consoles and independent routing systems for each arena — but once they saw the



networking possibilities of Calrec's Hydra2, they were hooked."

Italian OB service provider Telerecord took advantage of this simple connectivity when it provided broadcast feeds for the IIHF Ice Hockey World Championship. Using the Hydra2 access point, Telerecord was able to route audio from both ice hockey arenas to a single centralised OB truck equipped with a Calrec Artemis console. This setup was more cost-effective because the I/O and connections at the OB truck terminal did not need to be duplicated.

In addition, Calrec's unique Ice Hockey Assist app for iPad® enabled audio engineers to mix the game with a few touches. Ice Hockey Assist is an assistive mixing tool that takes advantage



of Calrec Serial Control Protocol to simplify the complex task of tracking on-rink audio during an ice hockey game.

"A temple for ice sports fans everywhere, the VTB Ice Palace is a real masterpiece of design and a showcase of the latest technologies for live sports broadcasts," said Michael Reddick, international sales manager at Calrec. "I can't think of a more exciting project to mark Calrec's entry into the world of Russian ice hockey,

"Our customer was originally looking for two completely independent consoles and independent routing systems for each arena — but once they saw the networking possibilities of Hydra2, they were hooked."

Andrey Mazurov

and Live Sound was the ideal partner to take us there. We look forward to working with Live Sound on plenty more high-profile projects in Russia."

Brio has an early kick-off

Calrec Audio's all-new Brio, the most powerful and compact digital broadcast audio console in its class, is now shipping — but not before making its broadcast debut a whole week before its official launch. Video Europe needed an early delivery of the new console for its live coverage of the season-opening match between English Football League Championship clubs Nottingham Forest and Burton Albion.

“We were absolutely bowled over by Brio. It's a fantastic product; compact, yet very robust and intuitive,” said Video Europe Sound Supervisor Pete Leutner. “Brio fits perfectly into a medium-sized truck like OB5, where space is at a premium, but at the same time it delivers all of the functionality we need to handle very complex programs.”

Video Europe, a film and broadcast production company based in London, chose the Brio for an audio console upgrade on OB5, its eight-camera HD OB truck. Built by broadcast systems integrator and equipment supplier WTS, OB5 has the smaller footprint required for central London productions such as film

“Brio fits perfectly into a medium-sized truck where space is at a premium, but at the same time it delivers all of the functionality we need to handle very complex programs.”

Pete Leutner

premieres, as well as Championship football and Welsh Premier League rugby matches.

“The Brio console was replacing an older existing mixer so the close coordination with Calrec, plus the early delivery of the unit to WTS, was a huge benefit in allowing us to install and integrate it seamlessly in time for Video Europe's job,” said Andy Morris, Systems Supervisor at WTS. “The initial configuration of the console was simple due to the large touchscreen and intuitive and familiar user interface.

“We have always found Calrec products to be very reliable, with

features and options designed to make integration straightforward. Brio appears to have the same qualities, making it a great fit for future projects of this size.”

The Brio was pressed into service for the Nottingham Forest/Burton Albion match within a week of Video Europe's receiving the desk, and with only a few hours available for crew training. Even so, according to Leutner, the broadcast went off without a hitch.

“We've all had the experience of going into a new environment and having to get up to speed on equipment with little or no time for training,” Leutner



stated. “Brio has the same logic as Calrec's bigger Summa desk so it has a familiar feel which allowed us to get into our comfort zone quickly. Brio not only has the full functionality we've come to expect from Calrec, but it's extremely fast and easy to configure for routing, EQ, dynamics, and all of the other important sound functions we need.”

Since Brio's debut at the 2016 NAB Show in April, Calrec has sold the ground-breaking new console into Europe, the

Americas, Asia, and the Middle East — a reflection of its comprehensive broadcast feature set and appeal to a wider breadth of broadcasters.

“As the market calls for more and more audio mixes to support online content, smaller consoles that possess pure live-broadcast features are increasingly desirable. Products in this sector have traditionally had basic capabilities and are not ideally suited to broadcast environments,” said Calrec Vice President of Sales Dave Letson.

“Brio provides something unique in its category — a mixing console completely focused on the needs of broadcasters and broadcast infrastructures.

“Providing dedicated broadcast features at a very aggressive price point, Brio is the only application-specific alternative for broadcasters who operate in this environment. And of course, Brio is backed by the same market-leading levels of quality and customer support for which Calrec is renowned.”

Calrec's all-new Brio expands with Br.IO

Calrec Audio's all-new Brio, the most powerful and compact digital broadcast audio console in its class, now has a powerful new companion: Br.IO.

Having made its debut at IBC2016, Br.IO is a 4U rackmount box that doubles Brio's on-board IO.

Br.IO is an easy and affordable way to expand Brio's IO. Like other Calrec IO boxes, Br.IO offers both primary and secondary connections to a Hydra2 network for full redundancy. Users can connect either copper or fibre directly to the Hydra2 port on the rear of the console via the optional Hydra2 module. Combined with an H2Hub, which acts as a portable hub or switch point, multiple Br.IOs can be added to deliver greater flexibility quickly to support a variety of live productions.

Br.IO mirrors the IO available on the rear of the main Brio console and provides an extra 24 mic/line, 16 analogue out, eight AES3 digital in, and eight AES3 digital out.

"Brio offers a good combination of IO on its surface so you can be up and running immediately," said Dave Letson, Calrec's vice president of sales.



"We understand the need for expansion, so Br.IO now offers a quick, easy, and affordable way of doubling Brio's IO. Simply plug the Br.IO into the ports on the rear of the Brio for a fully redundant connection on an existing Hydra2 network, where the Br.IO will be instantly detected by the console and available to use straightaway."

"Br.IO uses a Hydra2 Light connection, which provides a redundant connection connectivity between Brio consoles and the Br.IO rack."

We understand the need for expansion, so Br.IO now offers a quick, easy, and affordable way of doubling Brio's IO.



8	26	103	77
B	R	I	O
Brio	Redundancy	Integration	Hydra2 Organiser

91	77	30	3	86	50	13	13	19	69
S	O	U	N	D	Ma	T	T	E	Rs
Salvos	Hydra2 Organiser	Unlimited VCA Groups	Live News	Dante	In-house Manufacturing	Trust	Trust	Entertainment	Relationships

Slogan created by:
 Name: Erica Basnicki
 Job title: Editor
 Company: 94dBA



See how these elements fit into our periodic table at calrec.com



Calrec Craft Profile: Marco Pelloni

(appeared in C&T Magazine May 2016)



Tell us a little about yourself and your career path to where you are now.

I am the senior audio director (studios) at Fox Sports in Sydney and I moved to Australia from the UK thirteen years ago.

I started in local radio in 1976 where I worked for Radio Victory in Portsmouth, UK, before joining Southern Sound Radio in Brighton and then LBC news radio in London. My aim was to get a job with one of the London television stations, and I joined LWT as a dubbing mixer three years later. LWT on London's Southbank was certainly the place to be as far as training goes, and I worked with and learnt from a first class

bunch of people, some of which are still there.

Within three years I was a senior sound supervisor at LWT working on current affairs and sport shows, and then L.E. and light drama. In 1992 I became Head of Sound at GMTV which was setting up operations in the same building (now The London Studios), and while I was still performing duties with The London Studios my main function was to get GMTV's audio up and running.

We inherited a desk when GMTV started and Calrec supplied a C2 console which immediately improved work flow and facilities. It made mixing live bands at seven o'clock in the

morning significantly easier! I always look to the heavens and thank the audio gods for that famous Calrec head room when a vocalist is belting it out!

After ten years at GMTV I left for Sydney and Fox Sports in 2003 and I was pleased to find Calrec consoles at Fox Sports. Fox Sports have never shied from acquiring the latest gear and we soon took delivery of two Zeta consoles for our dedicated sports news channel.

I must confess that having been used to the comfort of being in London for so many years where Calrec HQ was just up the road, getting product support for a U.K. produced sound desk from the other side of the world filled

me with dread, but Calrec have an excellent set-up in Australia with Syncrotech. Talking to my counterparts around the Asia Pacific region, they seem to be equally as happy with the service they receive.

When Fox Sports moved to its purpose built facility in 2013 my decision on which sound desks to install was a straight forward one and the Artemis console was chosen.

What changes are you seeing in the way TV sound is being captured, mixed and delivered to audiences?

I find that sports television offers some of the more challenging environments even when considering just the studio based part of a production. To a point, work flow or signal flow is very much the same thing when it comes to sports shows. Outwardly there are a number of studio-based presenters filling the gaps between OBs, and at home it all appears seamless, which is how it should be.

Inwardly however things get a little more complicated! One of the biggest shifts over the past few years has been the increase in signal paths to and from studio centres and OBs.

Embedded audio is a wonderful thing but you need a very flexible matrix to handle all of the potential signals, and whilst most professional desks can achieve what you need, the logical lay out and colour matching of the surface controls on the Artemis and Apollo desks makes the task so much easier and much faster.

We regularly pass various feeds from one of our OBs to another OB/network or customer. For example, clean FX or clean commentary is generally done via the Artemis if the OB is included as part of a studio show.

This removes the need for our master control to send embedded audio on to somewhere else directly, but it also means that the desk can end up doing so much more than just mixing a television show, with a number of pre fader signals being sent on to various parts of the world.

With a number of mission critical signals sitting on a "live desk" that might not be using some of those feeds or might be using different signals from the same source at the same time as someone else, a very clear presentation of "what is going where and how" is vital and this

is where the Artemis and Apollo excel.

How do you use the console to overcome some of the challenges of modern live broadcasting?

At Fox Sports, apart from one or two exceptions, we tend to have a single operator in the sound control room doing all the mixing. Even on a heavily sting or FX based audience show, we tend not to have a "gram op" so it is very much a one man band for the most part.

I tend to mix most of our shows very "bright" as far as EQ is concerned which includes audience reaction and applause. I think this is partly due to what I was used to hearing at ITV and partly due to what I call the "maximise and minimise" process.

Fox Sports' two main production studios are not particularly large, and so a studio audience is always going to be close to the presenters, which makes managing PA spill a constant challenge. Maximising the audience participation without going over the top, which instantly sounds nasty, and minimising or compensating for the highly reflective sets that modern

sports studios tend to have, involves some subtle gating and the use of the auto mix function on the desk.

The auto mix function on the Artemis is very quick and responsive without sounding artificial, and a Cedar noise reduction system across the main microphone groups tends to do the trick.

Breaking it down further, the sets in the studios look great but have hard reflective surfaces and large monitor walls that are reflective from a sound standpoint; they also house a great many cooling fans that vary in speed and pitch depending on how hard they are working.

Even the furniture and desks near the presenters tend to have a number of screens built into the front, which all add to the fan noise.

Reducing the noise from equipment fans and air conditioning is done by the Cedar DNS 8 across the presenter and audience microphone groups, and the reduction in noise levels is dramatic.

What are the biggest shifts that have changed the way you work?

We see constant advances in technology, but the big changes are in how we use existing systems. Remotely controlling outside broadcasts is starting to happen in Australia, which effectively means the studio control room becomes the outside broadcast truck.

Going into detail about how every individual feed gets back to the studio centre is probably for another article but suffice to say, we suddenly need a whole lot more channels and routing flexibility.

Working a studio control room like an OB truck means that patching often needs to be changed, and that's where the Artemis PC application and interface proves its worth.

When you have loads of set-up time you can afford to dig around a screen to find out what is what, but when you are mixing and patching on the fly you really appreciate a logical and well thought out interface. Freelancers who might not get a lot of time on the desk especially appreciate the logical patching screen and layout on the PC UI.

Are there any cultural differences in the way you approach your job since moving to Australia?

The main difference I find in working in the U.K. compared to Australia is the amount of production.

The U.K. makes thousands of hours of just about every type of programming and has very significant budgets to achieve this, particularly in drama production.

In Australia the focus is on sports production, and Fox Sports has been the leader in this type of coverage for twenty years. The way we capture sound has not changed a very great deal, although we have developed mic'ing techniques in OBs and in the studio, coupled with faster and harder compression techniques when required.

The complexity of signal routing and the different requirements for those signals, like multiple destinations and uses for the same signal, mean that the sound desk is not just a controller of levels and simple signal distribution (although in truth it was never really that simple!)



Modern desks have to be very efficient routing tools, and the operator needs to be able to interrogate the desk to find out what is going where in a fast and easy to understand way.

This to me is one of the deal-breaker selling points of the Artemis and Apollo, and to date I have not found another product that can show the whole picture as effectively.

"I always look to the heavens and thank the audio gods for that famous Calrec head room when a vocalist is belting it out!"

Marco Pelloni

Calrec gets top grades at Penn State's WPSU

PBS affiliate WPSU at Penn State University has gone live with a brand-new Summa digital mixing console. The installation is the realisation of several years of research and planning by WPSU Facilities Manager Kerry Trout (pictured), and the Summa is the latest link in WPSU's ongoing drive to upgrade and modernise its broadcasting facility.

"I became familiar with Calrec products 15 years ago, and I've always been impressed with the design, flexibility, and sheer power of Calrec consoles. But it's their fantastic sound quality that really puts them head and shoulders above anything else on the market," Trout said. "It was a great day when Calrec began working directly with

educational institutions, which allowed us to bring it into our operation."

Under license by Penn State University and based in University Park, Pennsylvania, WPSU is a PBS broadcast station that has a relationship with the Penn State College of Communications. WPSU broadcasts the full PBS programming lineup and also produces a rich array of original programming for internet distribution as well as to a wide terrestrial swath of central Pennsylvania communities.

Through its partnership with Penn State, WPSU also offers valuable hands-on experience for Penn State broadcast students, giving them active

roles in production and allowing them to work side-by-side with WPSU professionals in a live broadcast environment.

"One great thing about the Summa is that it gives us all of the power and sound of the bigger consoles but in a compact and modular footprint," Trout said. "Also, we know that the Calrec Summa will last at least twice as long as any other console, with the outstanding support we know we can expect from the Calrec team.

"Plus, the Summa is extremely intuitive and easy to use, which will give students a powerful tool for learning signal flow, processing, and audio design."

"I've always been impressed with the design, flexibility, and sheer power of Calrec consoles. But it's their fantastic sound quality that really puts them head and shoulders above anything else on the market."

Kerry Trout



WPSU went live in late May with the new Summa, which is linked into the network's five studio spaces and serves as the core mixing console for the full live production lineup. With the start of the fall term in September, students will have the opportunity to learn the Summa.

"At Calrec Audio, a big part of our mission is to help foster and encourage future broadcast professionals," said Calrec Sales Manager Helen Carr. "Therefore, it's an honour to provide a Summa console for WPSU, which is not only a premiere PBS affiliate but also a first-class training ground for Penn State broadcast students.

"Like public TV stations everywhere, WPSU is providing an outstanding lineup of original, local programming on a limited budget. It's precisely the type of environment for which we designed the Summa, a compact and affordable audio-mixing solution that packs all of the power of our larger desks."

Installations



Apollo at Sky's Harlequin HQ in London, UK, which houses one of the largest Hydra2 networks in the world. All live Premiership soccer matches are driven through this console.

"One of the design briefs of the Harlequin project was that any gallery would work with any floor, and Calrec's Hydra2 allows that flexibility."

Martin Black, Senior Sound Supervisor, Sky TV



Apollo at MBC in Seoul, South Korea. This is one of 14 consoles sold to Korea's National broadcaster MBC in Calrec's biggest ever single sale.

"The technical merit of the consoles was the reason MBC chose to buy mainly from Calrec."

Mr. Chang, President, Ingang Audio

HD Protek accelerates audio workflow Summa upgrade

Turkish OB company HD Protek has installed a Calrec Summa audio console as part of an upgrade to its HDP 04 outside broadcast (OB) unit.

“We have a busy and dynamic production schedule, and the Summa saves our sound engineer a lot of time and effort,” said Yucel Ozacar, general manager of HD Protek. “The Summa is flexible, reliable, and easy to operate, and its powerful features streamline the audio workflow.”

“Knowing that we can easily track the signal and that the console will work without question is a big comfort to us. Also, the Summa adds a powerful new audio-mixing option to our fleet, so we can handle more complex shows more easily.”

“The Summa makes it possible to configure the meters to whatever we want; we can put every track output, aux output, main, or loudness meter on the screens, in any layout, in order to follow the signal visually as it flows through the system.”

HDP 04 was upgraded by systems integrator Teratek, and its first live broadcast was “The Voice Turkey.” Especially useful to HD Protek is not having to identify I/O boxes before patching a signal on an empty fader. Using port lists, it is possible to group I/O ports logically, a feature that accelerates the workflow. The flexibility of the Hydra2 matrix system and the simplicity of operation make it easy for the sound engineer to reconfigure the console from one show to another, which happens daily with HD Protek’s full schedule and variety of events.

“We have enjoyed a productive relationship with HD Protek and are pleased that they are the first OB operator in Turkey to use a Summa,” said Anthony Harrison, international sales manager, Calrec Audio. “The Summa is a broadcast-grade console that is well-suited to the space, weight, and power limitations of an OB van.”



“The Summa is flexible, reliable, and easy to operate, and its powerful features streamline the audio workflow.”

Yucel Ozacar

Audiotonix appoints Group One Ltd as new Calrec Audio distributor in the U.S.

Calrec Audio announced the appointment of Group One as its distribution partner for the U.S. The partnership went into effect on 3 October.

This move will enable Calrec to expand its market breadth across the U.S. and continue to maintain high levels of service as business increases with an expanded product portfolio. Recently launched products include the Brio compact broadcast console and RP1 remote production engine.

The partnership with Group One will not affect Calrec's relationship with Studio Consultants Incorporated (SCI). SCI has worked with Calrec for many years and will continue to provide dedicated sales and support for East Coast customers in conjunction with Calrec and Group One.

In recent years, Calrec has delivered the highest levels of customer care and service in the U.S. through the operations of Calrec America. With the new partnership, the entire Calrec America team have been incorporated into Group One to provide for uninterrupted continuity of sales, service, and support to U.S. customers.

"Over the last few years the Calrec and DiGiCo sales teams have worked closely together in the U.S., collaborating to support customers that benefit from solutions from both brands," said Jack Kelly, president, Group One. "It seems a natural fit to formalize that cooperation, and to look to how we will continue to build our front-line team for Calrec and DiGiCo sales and support in the U.S. The new partnership with Audiotonix will allow us to build on the business and offer even more benefit to our clients in the future. It does mean I have to spend more time with those Brits!"

James Gordon, CEO, Audiotonix, confirmed, "Having worked with Jack for a number of years, we saw that it made perfect sense for Audiotonix to partner with Group One. Jack has always been a significant member of the DiGiCo team, but moving him to family status and having him now working with Calrec is the ultimate benefit for us and our clients."

Nigel Beaumont, Calrec's managing director, added, "Group One has an exemplary record over many years of supporting customers, both new and established, with effective and efficient solutions to their challenges. The Group One team have grown through working with customers and understanding their needs. They can be relied on to be there when they are needed, and that's always been the Calrec way too."



Dave Letson, sales director, Calrec, also commented, "Jack Kelly and his team have delivered continual sales growth and customer support for this market over a number of years. With a dedicated national support team and digital expertise in terms of both sales and service, they know this market and are best placed to become our partner. We are delighted to have them as part of the team."

"Jack has always been a significant member of the DiGiCo team, but moving him to family status and having him now working with Calrec is the ultimate for us and our clients."

James Gordon

JAA.S gets instant results with Brio at Malaysia's Astro Awani

JAA Systems Sdn Bhd (JAA.S) has sold the first-ever Calrec Audio console into Malaysia just one month after being appointed as Calrec's exclusive distributor in the region. The brand-new Brio console has already been installed and gone live at 24-hour news and information channel Astro Awani for use on news and chat shows.

"Although Brio occupies a small footprint and is easy on the budget, it is still a true broadcast mixer with the comprehensive feature set we need," said Rizal Ali, senior assistant Vice president, technical operation-management at Astro Awani. "We had just six hours of downtime to switch from our old mixer to the Brio console. With the help of JAA.S, we were able to integrate the new console into our facility and bring it online very quickly."

JAA.S, Calrec's distributor for Malaysia, Indonesia, and Singapore, provides sales and service including 24/7 phone support and other direct on-site support.

"Calrec's new Brio mixer is a compact and powerful mixer that easily copes with more than its price suggests," said David Chan, director at JAA.S. "Getting the first reference site in a new territory can be a challenge.

"With a broadcaster as respected as Astro Awani providing the benchmark, other broadcasters will gain awareness and confidence in the Calrec brand. I'm certain that further exposure to Brio and other Calrec consoles will drive rapid and meaningful growth throughout our territory."

"We were confident that David and the team at JAA.S would be successful in introducing Calrec technology to Malaysia, Singapore, and Indonesia," said Anthony Harrison, international sales manager for Calrec. "We're extremely pleased with how quickly and convincingly JAA.S was able to convey the value of Brio to potential customers and move forward with our first sale into Malaysia. With JAA.S on hand to provide local support, customers know they will also enjoy a high quality service that matches their console."

"Although Brio occupies a small footprint and is easy on the budget, it is still a true broadcast mixer with the comprehensive feature set we need."

Rizal Ali



Picture: The Astro and JAA.S teams at work with the Brio console. From left: David Chan, director at JAA.S; Azhar Latiff, technical director of JAA.S; Thevadas, engineer of Astro Awani; and Mohd Helmy Ibrahim, assistant vice president of Astro Awani

Summa packs a mighty punch in a small package for Jones Mobile Television

Arkansas-based Jones Mobile Television has taken a giant leap from analogue stereo to 5.1 surround production by replacing its original desk with a brand-new Summa digital mixing console. The upgrade is part of a major refit for Jones Mobile Television's VisionHD trailer.

"When our engineers first laid eyes on the Summa, they couldn't believe such a compact desk could be robust enough to support a high-powered live HD production. But one show was all it took to win them over," said Bob Derryberry, co-owner, Jones Mobile Television. "Space was always going to be an issue in VisionHD, but Calrec has given us the perfect solution with the Summa, a smaller-foot-print desk that offers huge power and functionality."

"The beauty of the Summa is that it can handle productions of virtually every complexity, in an impressively small form factor."

Chris Duty

"With its 5.1 capabilities, the Summa has opened up a new world of business for our company; in fact, a client looking to do 5.1 shows contracted us knowing that we would be installing the Summa in the early summer. It's just the first example of how we're now in the running for a much broader range of productions."

VisionHD is a 51-foot expando trailer used to produce and broadcast a wide range of national sports, corporate, and entertainment events. The Summa console was first used for coverage of the Copa America soccer semifinal and quarterfinal matches in Houston.

Delivering a heavyweight punch in a middleweight compact frame, Summa offers a smaller surface and an intuitive GUI with a short learning curve. The Summa's Hydra2 router core provides the same integral router capabilities as Calrec's Apollo and Artemis.

Chris Duty, engineer-in-charge at Jones Mobile Television, commented: "The Calrec Summa works beautifully and gives us many more capabilities than we had previously. The Hydra2 router allows us to interface directly with digital devices on the truck, and we can use our core video router side by side with the Summa for even greater power and more I/O. We're able to provide much more complex configurations of the truck's equipment, which we can now change per show. The console's analogue and digital interfaces, in particular MADI, have made it a lot easier to take advantage of all of Calrec's industrial-strength routing functionality."



"It's easy to see why Calrec is known as the gold standard for audio mixing in TV production trucks and studios. The beauty of the Summa is that it can handle productions of virtually every complexity, in an impressively small form factor."

The Summa supports 128 channels with full redundancy, and Calrec's exclusive Bluefin2 FPGA technology, designed at the outset for surround operation, gives Jones Mobile comprehensive 5.1 mixing capabilities.

"Summa is the ideal choice for regional broadcasters and OB providers in this sector of the truck market," said Richard Phillips, regional sales manager, Calrec Audio. "Jones Mobile is a great example of a leading-edge provider in this space that is taking its business to the next level with Calrec."

Training tutorials launch Brio users off the starting blocks

Calrec has launched a series of tutorial videos to demonstrate just how easy the all-new Brio console is to use, and to help Brio owners get up to speed quickly.

At under two minutes each, the films are designed to teach users how to perform fundamental operational tasks — for example, “Assigning Audio Paths to Faders” and “Connecting Inputs and Outputs.”

“Brio was launched to great acclaim at the NAB Show earlier this year, and we have already sold many units across the globe,” said Dave Letson, Calrec’s vice president of sales. “Brio’s target audience is wider than that of our larger products and spans broader markets.

“These videos address the need to provide widespread training to new and prospective customers and distributors alike.”

Each bite-sized tutorial can be easily accessed on a range of platforms. This allows users to watch them on the fly, such as on their phone whilst sitting at the console. The videos can be accessed here, or on the company’s YouTube channel playlist.

“No other console in this price range can do what Brio is capable of doing. You only have to watch the videos to see exactly what I mean!”

Dave Letson



France’s DV2 is latest Calrec distributor for Brio

Calrec Audio has appointed DV2 as its partner to distribute the all-new Brio console throughout France. DV2 will initially focus on selling Brio into specific markets, such as regional TV channels, local production companies, and broadcasters with small satellite newsgathering (SNG) operations. This approach will then be further expanded to reach all French broadcast customers. In addition to marketing and selling Brio, DV2 will provide local support for all other existing Calrec Audio installations in the country.

“We’re very excited about our new partnership with Calrec, which will give us access to a broad new market of professional broadcast operations,” said Guy Vignet,

managing director, DV2. “Many of our clients are looking for a compact and affordable broadcast audio console that’s fully featured, powerful, and purpose-built. Brio ticks all these boxes and allows us to give a strong technical response to our existing client base as well as develop a new universe of broadcast clients.”

Brio represents one of the first entries into the broadcast arena for DV2, well-known for its expertise in the live event production marketplace. Through the partnership DV2 will offer support for Brio and other Calrec products through a team of engineers qualified and trained on the solutions that Calrec provides. DV2 will also conduct local training events throughout the territory and will maintain a local inventory of Brio

consoles and spare parts to support French customers. Since launching Brio to great acclaim at the 2016 NAB Show, Calrec has sold the console to customers in the Middle East, Europe, the Americas, and Asia. Brio is powerful and compact digital broadcast audio console for its class, with a comprehensive broadcast feature set that appeals to broadcast operations of all sizes and complexity.

“DV2 is an outstanding partner to help us build Brio sales and expand our presence in key segments of the French marketplace,” said Florent Chaouby, international sales manager, Calrec Audio. “DV2 is a proven successful representative of our sister company, DiGiCo, for live-event production, and this partnership helps position them to attract broadcast customers looking for the compact power and price point that Brio uniquely provides.”

“Many of our clients are looking for a compact and affordable broadcast audio console that’s fully featured, powerful, and purpose built. Brio ticks all these boxes.”

Guy Vignet

DV2

CALREC

Calrec Craft Profile: Hugh Healy

(appeared in Pro Sound News July 2016)



Like most people who work in audio for TV, NEP's Hugh Healy began with music. With a background mixing some of "the worst garage bands on the planet", he realised that he had a talent for both mixing and engineering – and he found he enjoyed them both! He became Head of Sound at Disneyland in Anaheim, LA, and it was here where he started mixing for television.

So what happened after Disneyland?

There was something about the get in/get out mentality of television broadcast audio that appealed to me, plus the engineering input was extensive – a lot to learn, and I do enjoy a challenge! I joined Green Crowe and Company, who were then the premier entertainment video truck company. Some years later

they were bought by Unitel, and when Unitel went bankrupt in 2000 a small group of us engineers and sales folk set up Denali with the existing kit and client list. We made the transition and NEP came in with us so we were suddenly part of a very strong group which worked really well - our entertainment clients were very happy because nothing had changed for them, and we had

the support of a large organisation like NEP. This is how Denali, the entertainment division of NEP, was formed.

Do entertainment clients have different requirements?

They have very specific needs, and it's very important to understand those needs. There is a huge crossover between entertainment and sports in both expertise, equipment and communications, but entertainment clients need to feel that their requirements are recognised and are being fulfilled. Having a specialised entertainment division helps us to do this; everyone at Denali is focused on what our clients expect to see.

So how does the service differ between sports and entertainment?

Let's start with the people: of course we only want the best engineers and we've stolen a bunch of guys from NEP who we've liked, but these guys also have to have certain personality traits. We can't turn up at a broadcast and just do the job, we have to be involved – one of our engineers referred to the job as being a "Production Engineer" in the sense that although we are all

engineers our remit goes way beyond that. We are heavily invested in the people, the production and the progress of each show; we are involved with everyone from the talent to the production staff.

It's cultural. Our clients expect to be looked after and it's our job to make sure they feel that they are.

On the facilities side, there is an enormous amount of overlap with sports, but it's all the peripheral equipment which makes the difference. For example, the audio room is substantially bigger than in a typical sports truck – we have dual-trailer truck systems and we have single trailer trucks. In a single 53' trailer the audio room will typically have a room around 14' x 12', a dual-trailer system has an audio room around 17' x 15'. People are packed in there; there's an audio engineer, mixer, an audio playback person and often an audience "sweetener" to enhance the audience mix. These rooms are treated acoustically and we remove all the noisy equipment such as the audio router and the comms tray. The audio room is more like a recording studio.

Then there is the multitrack infrastructure. We support

multiple 192 track MADI workstations for recording and playback along with AES multitracks, and we have the ability to QC any MADI path without interrupting the signal.

Finally, many of our clients still want analogue outboard equipment, things like tube compressors on a music show, which we insert into the console, and we've recently started integrating plug-in servers too.

There are some extremely good sports engineers, but there is a culture and a method which we adhere to in entertainment. Our clients are really not concerned with the engineer's issues; their expectations are very specific and we pride ourselves on being able to provide this service.

Also, all our trucks have a bagel cart, which is located inside the door with lots of snacks. That's cultural too. You won't find that in most sports trucks!

Which features on the Calrec consoles do you find useful in the field?

There are so many things! Firstly, the number of inputs. For example, we do a show called Capital Concerts with a live orchestra, choirs, guest bands,

satellite stages, plus production elements, with over 300 live mic inputs which have to be working simultaneously. The show is similar to the way the BBC's "Later...with Jools Holland" works, swapping from band to band, but often several bands will all jam together so there are over 300 inputs that are hot – memory recalls won't work here so the desk needs a huge number of inputs and the capacity to control them all.

Multitracks are important, so the more busses the better, plus having a lot of Direct Outs. Recall capability has to be instant – we have other desks which have slower recall so you have to be careful when you do it, but the Calrec's are near instant. Things like multiple dynamics sections, significant routing capabilities, and Automix! Automix make our lives much easier especially when you have a lot of open lavalier mics – these things simplify everything and keep all our patching down.

Fibre is very important to us, and it integrates so well into the Calrec. There is no translation layer, no separate application, you control it directly from the desk. The channel counts are so high and the set up times get smaller and smaller; this helps

us get up and running quickly.

Remix capabilities are very important to us, we multitrack so much, at some point we have to remix it. On the Alpha consoles we used the Remix Input Switching a lot, and were disappointed when the Apollo was launched without it, so it was good that Calrec listened and added it back in on later software versions.

And sound quality is paramount. The first Calrec I used was the Q2 series, and they were the best sounding desks I had ever used. The Alpha consoles were clean and tested well, but they sounded utilitarian. We used them because they were by far the most flexible.

When we installed our first Apollo seven years ago the feedback from every single mixer who came through was that the desk was every bit as good as the Q2. As an engineer I hate using this kind of phrase, but they are more musical, and they still have that same functionality. I've had half a dozen Golden Ears guys in front of the desk, and they agree – and that's really important to us because our clients can be very particular about sound quality. We simply cannot have their mixers picking up on a perceived lack of

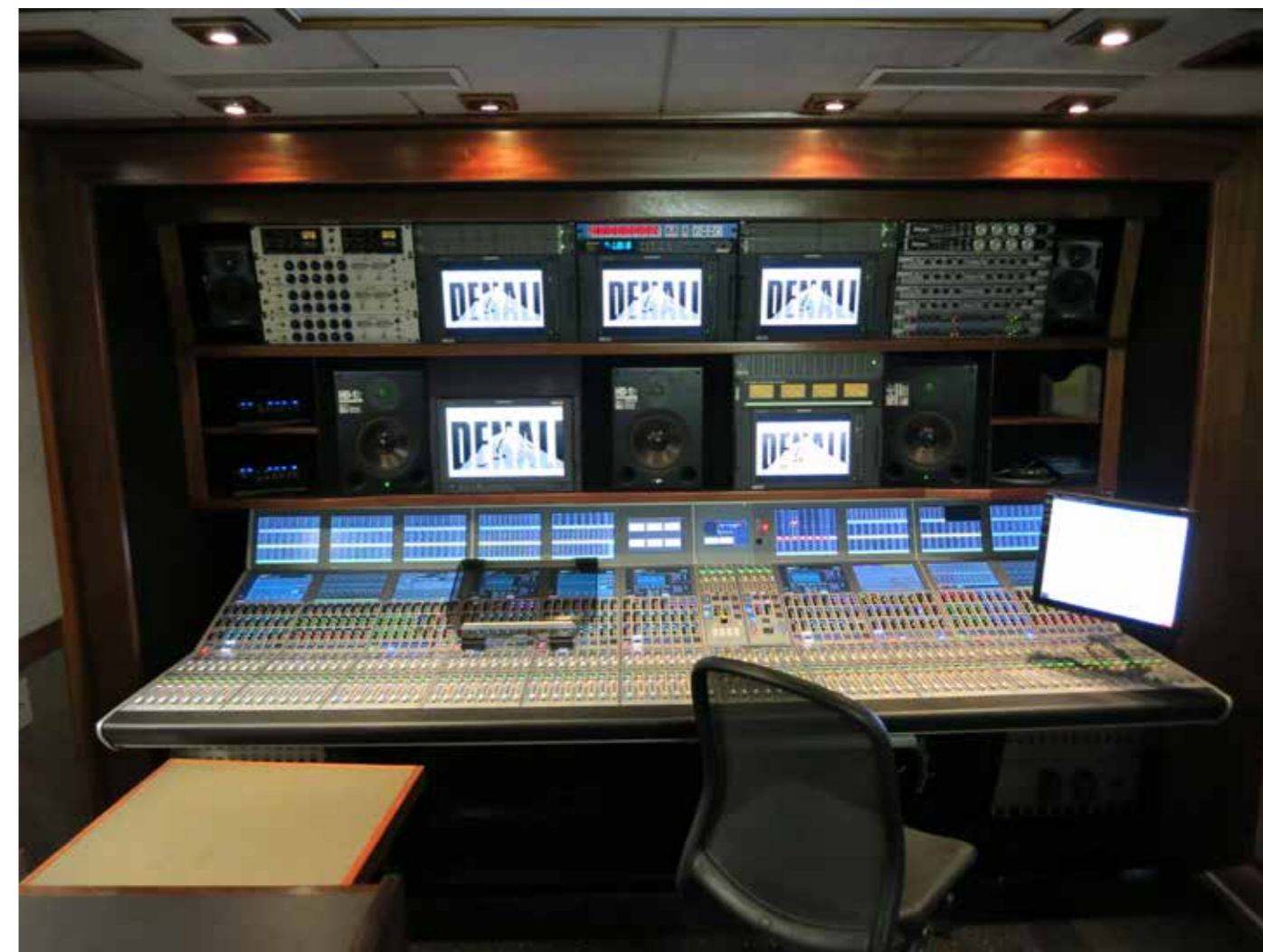
fidelity because that is a subjective statement, and therefore it's not debatable.

How quickly are you expected to be up and running? What is a typical set up time?

For large shows we may get a week but we start rehearsals very early. For example, for the Teen Choice Awards we'll start setting up in the morning and we will be on camera in the afternoon. On bigger music shows we will triage to get things done, but if you are under those time constraints and also have to rehearse a band with 60 inputs, you need people on top of their game – not only that, but people who are calm under pressure.

In the real world, stuff is going to break, although today it is less about things breaking and is often more about IP protocols not talking to one another. People have a tendency to panic and often these things take time to resolve. On a big job, an hour's delay is hundreds of thousands of overtime dollars that has to be accounted for.

The guys who do well in this business are the guys who can calmly deal with situations and either fix it before the client notices, or remain calm while



they are being screamed at! Competence is an underrated virtue which is absolutely essential in this job.

Do you think that TV viewers' audio expectations have increased over the last few years?

Or course. Viewers have gone from a three inch speaker to multi-channel sound systems

and it has consequently raised the bar of the minimum standard of audio – it is no longer acceptable for Producers to allow the broadcast of mediocre audio, and anything that doesn't sound good is chastised.

I ensure there are checks in place throughout the broadcast. For example, on a high-profile awards show I will monitor the high-end audio forums like

avsforum.com on a browser, and if they are talking about the fashions then we are doing a decent job! But if they're talking about the lousy audio then we need to look at what we are doing, and quite often that will be an issue downstream of us.

I also have a team of engineers around the country listening to the audio as it goes out. A good example of this: I had a guy in

Nantucket listening to an awards broadcast we were mixing. Nantucket's broadcast infrastructure is old, and he texted me to say that the audio at the podium sounded dull. Well, it sounded good to me, but I was watching the mix and the mixer was diverging the dialogue between the centre and the left and right.

I remembered that a lot of these old 5.1 distribution systems are using AES devices in their plant,

and AES receiver chips don't all clock identically, which means that you can feed the same signal to two AES inputs on a processing device and one may be one sample out compared to the other. If you have something across those multiple channels and your TV or set top box is doing the downmix, it creates a comb filter, but at only one sample it doesn't sound like a comb filter.

What you've actually got is a HF

roll-off that starts at about 2kHz, and by the time you get down to 20kHz it's down almost completely. So you have a severe high end roll off with a one sample delay between AES inputs. Once I realised this, we tightened up the dialogue divergence so it was 12db down on the left and right, and this fixed it.

This is what you have to care about so that the client feels like they are getting the service they

deserve. Because if it is happening in Nantucket, it's happening in other places. These are the things that our people deal with which make clients want us there.

So what does a Senior Audio Engineer do? Is it similar to an Audio Guarantee Engineer?

We test everything – we've already checked the signal paths with the networks, and so once the transmission starts I am listening to the network return, to a downmix and the individual legs, I am watching what the mixer is doing so I can dive in and help if there is an issue, and I'm listening to Production to ensure they are in the loop. I'm listening and monitoring everything to try and anticipate any potential problems.

I consider myself very fortunate to do this job; it encompasses so much stuff and I get a lot of satisfaction from knowing that the job is done right.

I am a part time hardware designer, I have designed boutique mic pre amps for various companies, I program firmware, I have a recording studio in my house, and I love to work with musicians on various projects. All these

projects give me pleasure in the audio world, and my television work is an extension of that. I enjoy the challenge of the engineering and finding new ways to do the job better.

What do you see as the biggest change to the way programmes are mixed in the next five years?

Obviously shows will continue to get larger, they never get smaller! I think we will find we are doing a lot of multi stream stuff, multiple mixes to different outlets, and a lot of Object Based Audio and everything that entails. People don't really know what to do with that, but the classic example I always cite is that if my mother had a button on her remote which made the dialogue louder, she would be really happy with that! Once people figure out what to do with Object Based Audio it will be a significant technology.

I think we will be sending a lot more stuff over the internet, and both AoIP and VoIP will be huge and not because they need to be but because that's the way the industry is going. And lots more remote production with the mixer sitting in a remote studio, which is already happening in sports.

“(The Apollos) are more musical. I’ve had half a dozen Golden Ears guys in front of the desk, and they agree – and that’s really important to us because our clients can be very particular about sound quality. We simply cannot have their mixers picking up on a perceived lack of fidelity because that is a subjective statement, and therefore it’s not debatable.”

Hugh Healy



Calrec signs BSS to distribute Brio in UAE, Bahrain, and Oman

Calrec has formed a new partnership with Broadcast and Studio Solutions (BSS) to be its exclusive distributor for Brio in the United Arab Emirates, Bahrain, and Oman. Since its debut at the 2016 NAB Show this year, Calrec's Brio has made waves as the most powerful and compact digital broadcast audio console in its class.

BSS will represent Brio, together with Calrec's companion Br.IO solution, exclusively across all three territories. BSS will also deliver local support and after-sale service to Brio customers through its network of regional offices spanning the Middle East.

"Throughout our region, there's strong market demand for a well-priced compact mixing console completely focused on the needs of broadcasters. Brio is the most powerful and compact digital audio console on the market today," said Tareq Eid, CEO, BSS.

"We're honoured to be associated with a company as well-respected as Calrec, and we're certain that Brio and Br.IO will make a huge impact in the region."

Since Brio's launch at the 2016 NAB Show in April, Calrec has sold the console to customers in the Middle East, Europe, the Americas, and Asia — a reflection of its comprehensive broadcast feature set and appeal to a

wider breadth of the market. Calrec Audio's all-new Br.IO, launched at IBC2016, provides an easy and affordable way to expand Brio's I/O, offering both primary and secondary connections for full redundancy.

"BSS is the ideal partner to help us expand the Brio footprint in the Middle East," said Calrec International Sales Manager Anthony Harrison.

"BSS has an excellent reputation for offering premier products and services. Their extensive network of regional contacts, together with their flagship showroom in Dubai, means that a Brio is always readily available and supported in the region."

"Throughout our region, there's strong market demand for a well-priced compact mixing console completely focused on the needs of broadcasters."

Tareq Eid

Noretron Broadcast to distribute full line of Calrec Audio consoles in Finland and Estonia

Calrec Audio has signed Noretron Broadcast as its exclusive distributor in Finland and Estonia for the full Calrec product line, including the all-new Brio — the most powerful and compact digital broadcast audio console in its class.

"The Calrec Audio brand is truly the gold standard in digital audio consoles, and Calrec is a powerful addition to our portfolio," said Timo Vilmi, owner, Noretron Broadcast. "We're particularly excited about Brio, which will help reach new customers that need a well-priced, compact mixing console completely designed around the needs of broadcasters."

Noretron Broadcast has a 25-year track record of providing sales, systems integration, and service to broadcasters and media organisations.

From its headquarters near Helsinki, the distributor will represent Calrec's solutions to broadcasters, live production operations, and related organisations in both Finland and Estonia, and will also provide local support and after-sale service.

"Noretron Broadcast provides the perfect blend of technology expertise and knowledge of the local market, including its customers' unique requirements," said Mike Reddick, international sales manager, Calrec Audio.

"Noretron is the perfect company to help us expand our presence in Finland and Estonia, and the new partnership gives us peace of mind that our customers there will have a local and knowledgeable source for our solutions."

"The Calrec Audio brand is truly the gold standard in digital audio consoles, and Calrec is a powerful addition to our portfolio."

Timo Vilmi

Romania's ProTV upgrades further with Calrec's Artemis Beam

Signalling Calrec Audio's growing momentum in the Romanian television marketplace, Pro TV has upgraded its extensive Calrec installation with a brand-new Artemis Beam audio console.

Pro TV is one of Romania's most popular private TV channels, reaching around 99 percent of the country's viewing population with a broad array of news and entertainment programming. The broadcaster's Pro TV News not only received an International Emmy Award in 2008 but is also considered to be one of the most popular newscasts in Romania.

"For years now, Calrec has been one of our trusted partners. We know we can count on the reliability, ease of use and high-quality sound output of Calrec audio desks," said Octavian Diac, Studios Coordinator, Pro TV. "The new Artemis Beam audio consoles are allowing us to achieve new levels of routing and processing capacity for the locally produced shows, which represent almost half of our programming lineup."

Based in Bucharest, the Pro TV operation relies on numerous previous-generation Calrec Audio consoles. The 340-channel Artemis Beam replaces a 10-year-old Calrec Sigma console that had been in use in the main studio and will now be reassigned for auxiliary studio use.

"We are pleased to be extending our ongoing partnership with Pro TV, one of Romania's most-watched and highly respected broadcasters," said Michael Reddick, International Sales Manager, Calrec Audio. "The fact that Pro TV is willing to re-deploy its 10-year-old Sigma rather than retire it speaks volumes about the reliability and high quality of our consoles."

Calrec also counts RDS/RCS, Digisport, and Romanian National Television among its growing installed base in Romania.

"For years now, Calrec has been one of our trusted partners. We know we can count on the reliability, ease of use and high-quality sound output of Calrec audio desks."

Octavian Diac



Cable TV Hong Kong expands Calrec Audio console portfolio for entire studio operation

Cable TV Hong Kong, a division of iCable Communications Ltd. and Hong Kong's largest provider of cable television services, has gone live with another Calrec Audio Artemis digital audio console. The 40-fader Artemis is installed in Cable TV's News Studio 3 and is the fifth Artemis in the network's audio desk lineup.

Jolly Pro Audio, a Hong Kong-based systems integrator, pro

audio specialist, and Calrec's regional distributor, has handled system installation and testing for Cable TV's entire Calrec deployment.

"As Hong Kong's most-watched pay-TV service, Cable TV is committed to building one of the world's most advanced facilities for covering sports, entertainment, and news," said Andy Leung, executive director, Jolly Pro Audio. "After rigorous

evaluation and testing, they chose the Artemis because it offers the reliability and usability they require to achieve that goal. The Cable TV team also reports that, of the audio networks they've worked with, the Hydra2 network is by far the most powerful, flexible, and easiest to expand after initial installation."



Cable TV offers subscribers a broad schedule of news, sports, and entertainment programming through more than 100 channels, 54 of which offer the network's own locally produced shows. Cable TV installed its first Calrec console, a 40-fader Artemis for sports programming, in June 2012. In addition to the latest installation for News Studio 3, Cable TV has also deployed a 48-fader Artemis in its main news studio, ST1, and 40-fader Artemis consoles in both its ST2 (news) and ST9 (entertainment) studios.

Central to the Cable TV Hydra2 network is a 16-port Calrec router core. Hydra2 provides extensive control of, and access to, all of Cable TV's networked audio resources. A Waves Sound Grid interface module provides a direct connection between Hydra 2 and Cable TV's Waves Sound Grid network, giving the audio mixers full control over Waves software applications from the integrated touch display on the Artemis surface.



"We are honoured that Cable TV has become such a loyal customer, and the faith they have placed in Calrec for their entire studio operation is a great testament to the excellence of our consoles and networking solutions," said Anthony Harrison, international sales manager, Calrec Audio. "We look forward to supporting them far into the future."

"Thanks to customers like Cable TV and the outstanding support we've received from Jolly Pro Audio, Calrec is now the premier provider of audio consoles to the Hong Kong broadcast market."

"After rigorous evaluation and testing, they chose the Artemis because it offers the reliability and usability they require to achieve their goal."

Andy Leung

Sample Broadcasts 2016

UK

Sky Cricket
BT Sport Champions League
Aviva Premiership Rugby
Wimbledon
The Open Golf
Ryder Cup
Match of the Day
Final Score
BBC Olympics
Soccer AM
Love Island
Big Brother
Good Morning Britain
Graham Norton Show
QI
Have I Got News For You
Duck Quacks Don't Echo
Countdown
8 out of 10 Cats does
Countdown
Blue Peter
Jeremy Kyle
Judge Rinder
Justin's House
Furchester Hotel
Sports Personality of the Year
The Voice
Channel 4 News
Newsnight
Hard Talk
Formula E
Touring Cars
UFC
WWE
Ant and Dec's Saturday Night
Take Away
Loose Women
Lorraine
The National Lottery

Let it Shine
The World Cup
The European Championship
Question of Sport
Room 101
The Chase
Alan Carr Chatty Man
This Morning
The Big Fat Quiz
The Cube
Would I Lie to You
A League of their Own
Still Open all Hours
Citizen Khan

USA

The Voice
American Idol
NBC News Los Angeles
CBS News Los Angeles
The Superbowl
The Grammys
Lets Make a Deal
Dancing with the Stars
NFL Football
Major League Baseball
CBS News San Francisco
Pac 12 Sports
Super Bowl
NBA Basketball Playoffs
College Football
College Basketball
Nascar Racing
NBA Basketball
PGA Tour Golf
Auto Racing

NHL Hockey
Home Shopping Network
CBS 4 News
WTVT News
FIFA Soccer
Boxing
CMT Awards
CMA Music Awards
Mega TV
WWL News
Louisiana Public Broadcast
WPBT - PBS

Japan

Japan Grand Sumo
Nippon Professional Baseball (NPB)
All Japan Judo Championship
Tokyo Marathon
J-League Soccer
NHK Symphony Orchestra

New Zealand

News: Seven Sharp, Breakfast, Q+A
20/20
Tagata Pasifika
Marae
Sunday
Lotto
Cafe (For TV3)
Media Take
Best Bits New Zealand
5 Star family reunion (BBC)

Australia

The Footy Fix
The Project
Have You been Paying Attention
International Moto GP
Studio 10 morning show
The Living Room
RPM
The Loop
Formula 1
Rugby Union
Ten Eyewitness News
Best Bits Australia
Insight
English Premier League
A-League
UCL
Game day
Talking Footy
Get On
That's Racing
NYE Fireworks
Saturday Arvo horse racing
Davis Cup Tennis
Federation Cup Tennis
Wimbledon Tennis
Australian Open Tennis
Today Show
Morning Show (Today Extra)
Sports Sunday
Musical Specials
Telethons

Croatia

After 20 Years
What's Happening Doctor
Gossip
La Maruta

Eastern Europe

Ukraine March of Independence/President's speech (Ukraine)
Evening with Ivan Ivanovic (Serbia)

France

Le Mans 24h
French National Day - 14th July
UEFA Euro 2016 in 4K
Téléthon
Remembrance Day - 11th Nov
La France a un Incroyable Talent
Jean-Michel Jarre concert
Vendée Globe departure
Qatar Prix de l'Arc de Triomphe

Russia

The Reflection ("Otrazhenie")
The Truth ("Prav?Da!")
Real Things (Za Delo)
The Russian Parliament Election
2016 debates show
The Big Country
Calendar

Kazakhstan

Astana Piano Passion
Evening with Alexander Zatsepin
Annual president's letter to the people of Kazakhstan
Eurasian Media Forum
VII Astana Economic Forum
UEFA Europa League Soccer
UEFA Champions League Soccer
Army International Games 2016
Ceremony of inauguration of the President of the Republic of Kazakhstan Nursultan Nazarbayev
Military Parade Devoted to the Defender of the Fatherland Day and the 70 anniversary of the Victory in the Great Patriotic War
V Congress of Leaders of World and Traditional Religions



Surface

- 100mm faders with mechanical PFL overpress
- 12 A/B Layers, providing 24 possible assignments for each fader or control
- Colour-changing rotary knobs to indicate function
- Touch screens controlling i/o, monitoring and routing

Processing

- 1020 channel processing paths
- Up to 16 x stereo or 5.1 surround main outputs*
- Up to 48 x mono, stereo or 5.1 surround audio groups*
- 96 x multi-track Buses for IFB or recording
- 4 x track sends per path
- 48 x auxiliary Buses
- Up to 4 x Direct Outputs/Mix Minus sends per path
- Direct outputs can be pre-EQ, pre-fader or post-fader

- 3 x independent user sections with independent monitoring
- All channels and groups have 6-band parametric EQ
- All channels, groups and mains have full EQ and dynamics at all times
- Side Chain EQ/Filters
- 256 x Inserts
- Up to 2.73s per Output from a pool of 256 channels
- Up to 2.73s per Input from a pool of 256 channels
- All paths have 2.73s delay in addition to in and out delay
- 12 fader layers, each with its own A and B paths
- 8 x AutoMixers, each controlling an unlimited number of paths
- Advanced AutoFader (AFV) functionality on all faders

* from a Mains/Group pool of 128 resources

Networking

- Integral 8192² router
- 16/32 Router ports
- All I/O provided over Hydra2 network via a comprehensive range of Hydra2 I/O boxes
- Cat5e or fibre connectivity

Resilience

- Highly resilient – all modules are hot-pluggable with automatic redundant PSU, DSP, Control processor, Router module, I/O Expansion module
- Independent DSP operation ensures audio continuity in the event of a PC or control reset
- Low power consumption and heat generation



Surface

- 100mm faders with mechanical PFL overpress
- 12 A/B Layers, providing 24 possible assignments for each fader or control
- Colour-changing rotary knobs to indicate function
- Touch screens controlling i/o, monitoring and routing

Processing

- Up to 680 channel processing paths
- Up to 16 x stereo or 5.1 surround main outputs*
- Up to 48 x mono, stereo or 5.1 surround audio groups*
- Up to 64 x multi-track Buses for IFB or recording
- 4 x track sends per path
- Up to 32 x auxiliary Buses
- Up to 4 x Direct Outputs/Mix Minus sends per path
- Direct outputs can be pre-EQ, pre-fader or post-fader

- 3 x independent user sections with independent monitoring
- EQ 1-4 have 4-band parametric, EQ 5-6 have 2-band parametric EQ
- All channels, groups and mains have full EQ and dynamics at all times
- Side Chain EQ/Filters
- Up to 256 x Inserts
- Up to 2.73s per Output from a pool of 256 channels
- Up to 2.73s per Input from a pool of 256 channels
- All paths have 2.73s delay in addition to in and out delay
- 12 fader layers, each with its own A and B paths
- 8 x AutoMixers, each controlling an unlimited number of paths
- Advanced AutoFader (AFV) functionality on all faders

* from a Mains/Group pool of 128 resources

Networking

- Integral 8192² router (4096² on Artemis Light)
- All I/O provided over Hydra2 network via a comprehensive range of Hydra2 I/O boxes
- Cat5e or fibre connectivity

Resilience

- Highly resilient – all modules are hot-pluggable with automatic redundant PSU, DSP, Control processor, Router module, I/O Expansion module
- Independent DSP operation ensures audio continuity in the event of a PC or control reset
- Low power consumption and heat generation



Surface

- 100mm faders with PFL overpress
- Six surface layers
- Built-in Talkback Microphone
- Stereo Headphone Output

Processing

- A pool of 180 or 128 Channel processing paths
- 4 x Main Outputs (mono, stereo or 5.1)
- 8 x Audio Sub-Groups (mono, stereo or 5.1)
- 32 x Track Outputs (mono or stereo)
- 16 x Auxiliary Outputs (mono or stereo)
- 1 x Direct Output per Channel* (Pre EQ, Pre Fader or Post Fader)
- 1 x Mix Minus Output per Channel* (can be fed from Auto Minus, Auxes, Tracks or Off Air Conference Bus)
- 1 x Auto Minus Bus
- 1 x Off Air Conference Bus
- 1 x Insert on every Channel, Group, Main and Console
- Monitor Output

- 152 x External Monitor and Meter Inputs
- 4 x AutoMixers, each controlling an unlimited number of paths
- Unlimited VCA groups
- 6-band parametric EQ on every Channel, Group, Main
- Dynamics processing on every Channel, Main, Group,
- Aux and Track (2 x Compressor/Limiter, Expander, Gate,
- Side Chain EQ/Filters)
- 2.73s of delay within every Channel, Group, Main, Aux and Track
- An additional pool of 128 blocks of assignable Input Delay (2.73s each)
- An additional pool of 128 blocks of assignable Output Delay (2.73s each)
- 5.1 Console Monitor Output (with dedicated small
- LS and PFL/RTB outputs)
- 3 x 5.1 Studio Monitor Outputs
- Advanced AutoFader (AFV) functionality on all faders

- * from a pool of 188 mono resources shared between direct outputs and mix minus outputs.

Networking

- Integral 4096x4096 router
- 8 redundant router connections for networking consoles and connecting I/O boxes
- All I/O provided over Hydra2 network via a wide range of I/O formats
- Cat5e or fiber connectivity

Resilience

- Highly resilient. PSU, DSP, Control Processor and Router Modules are hot-swappable and have automatic redundancy
- Independent DSP operation ensures audio continuity in the event of a surface reset
- Low power consumption and heat generation



Surface

- 36 x dual layer faders - 100mm, motorised, with PFL overpress
- 1 x assignable user rotary control per strip
- 2 x assignable user buttons per strip
- 12 x assignable global user buttons
- Compact 892mm x 892mm control surface

DSP

- Freely configurable on the fly, operates at 44.1, 48, 88.2 and 96kHz
- 64 legs assignable as mono, stereo, or 5.1 Input Channels
- 36 legs assignable as mono, stereo, or 5.1 Mains and Groups (maximum of 4 Mains and 8 Groups)
- 24 legs assignable as mono or stereo Auxes
- 64 legs assignable as Insert sends and returns
- 64 legs assignable as Direct, or Mix-Minus Outputs
- Automatic Mix-Minus
- Off-Air Conference for Mix-Minus

EQ

- 6 band EQ available on every Input Channel, Group, Aux and Main path:

- 4 band full PEQ
- 2 band LF/HF filters, 12 or 24dB/octave

Dynamics

- Every Input Channel and Group path: Expander/Gate/Ducker, with key input and sidechain EQ
- Compressor with key input and sidechain EQ
- Multiband Compressor
- Every Aux: Expander/Gate
- Compressor
- Every Main: Single Band Compressor
- Multiband Compressor
- 2 x Automixers available to all mono Input Channels and Groups

Delay

- Delay available on every path
- Additional 64 legs assignable as output delay
- 64 legs assignable as input delay of up to 5s

Monitoring/Metering

- 3 x Monitor outputs
- Surround capable metering within each strip

- Configurable meter screen output (DVI)
- Loudness meters

Multiple Sample Rates

- Functions at 44.1, 48, 88.2 and 96kHz
- All DSP facilities are available at all sample rates

Remote/Automated Control

- 8 x GPI and 8 x GPO built in
- AutoFaders for Audio Follows Video style control
- CSCP mixer control protocol interfaces with a variety of video switchers and production automation systems
- SW-P-08 'Pro-Bel' router control protocol
- EMBER

I/O

- 24 x Mic/Line inputs
- 16 x Analogue outputs
- 8 x AES3 digital inputs
- 8 x AES3 digital outputs
- 3 x Expansion slots to increase standard built in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc.
- Optional Hydra 2 Module allows for further I/O to be connected, and to network audio with other consoles

Br.IO



- 4 x Mic/Line inputs
- 16 x Analogue outputs
- 8 x AES3 digital inputs
- 8 x AES3 digital outputs
- 3 x Expansion slots to increase standard built in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc.
- Optional Hydra 2 Module allows for further I/O to be connected, and to network audio with other consoles

RP1



- 4 x Mic/Line inputs
- 16 x Analogue outputs
- 8 x AES3 digital inputs
- 8 x AES3 digital outputs
- 3 x Expansion slots to increase standard built in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc.
- Optional Hydra 2 Module allows for further I/O to be connected, and to network audio with other consoles

AoIP



- 4 x Mic/Line inputs
- 16 x Analogue outputs
- 8 x AES3 digital inputs
- 8 x AES3 digital outputs
- 3 x Expansion slots to increase standard built in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc.
- Optional Hydra 2 Module allows for further I/O to be connected, and to network audio with other consoles

8	26	103	77
B	R	I	O
Brio	Redundancy	Integration	Hydra2 Organiser

calrec.com/brio

5	85	103	64	55	5	86	19	79	29
M	Ag	I	Cs	M	A	D	E	He	Re
Musical Performance	Network Agnostic	Integration	CSCP	Musical Performance	Apollo	Dante	Entertainment	Network Heritage	Line Reconfiguration

Slogan created by: Name: Jane Scutt Job title: Gram op Company: Castor Sound Ltd



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