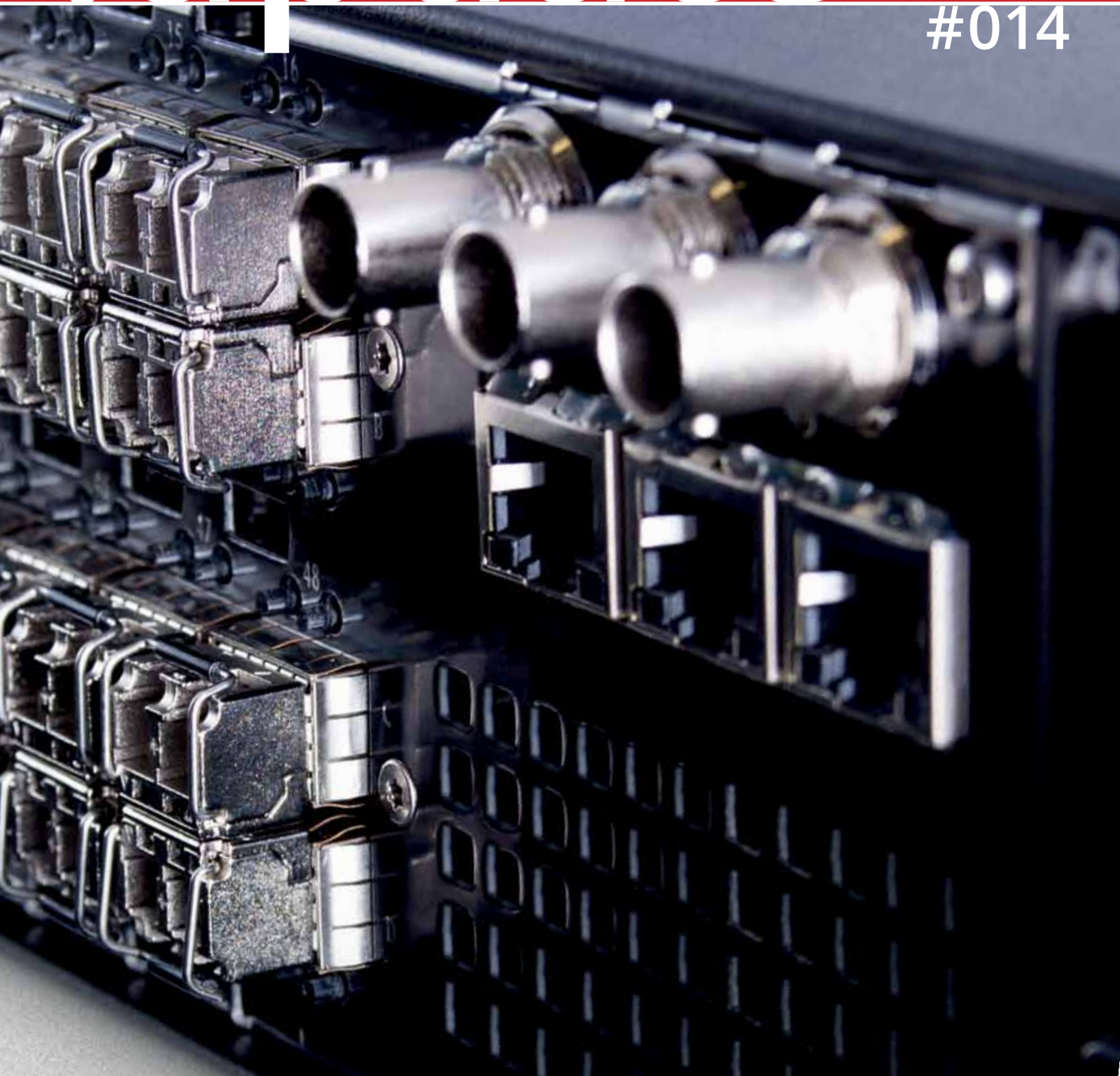


:update

#014



Live Sports Production: MediorNet for Endemol



Endemol, the world's largest independent television and digital production company, is using Riedel's MediorNet real-time media network and Artist digital matrix intercom system to establish fully redundant communications, A/V, and data link in the Netherlands. The system connects the Endemol Group headquarters in Amsterdam with the MCR facilities in Hilversum, hosting the distribution provider Ericsson and production provider DutchView. The system will be used for broadcasting the FOX "Eredivisie" Football channel.

"With features such as embedding and de-embedding, frame stores, on-screen display, and time code insertion all standard on MediorNet, and with the tremendous flexibility and audio quality of the Artist system, Riedel was able to provide us with a versatile yet cost-effective fiber-based communications and A/V transport solution," said Sjaak Vreeburg, CTO at Endemol. "The Riedel solution made production a lot easier for us. Going forward, the modular design of the company's equipment — and the ease with which a single engineer can configure, change, and control the connections and signals — will allow us to adapt or expand the system as our needs evolve."

As one of the world's largest independent distributors of formats and finished programming, Endemol launches more than 50 new formats each year on broadcast networks around the world and distributes more than 29,000 hours of content. The

company's creative teams around the world are continuously developing new ideas, which they share across the Endemol network. The newly built system will be used for producing the Endemol Football programme that will be aired as a pay TV channel offering live broadcasts of all games of the Dutch Eredivisie.

The two facilities are connected via a redundant MediorNet Compact Pro system using two dark fiber links between the locations. The 35 & 22 mile long connections transport up to 24 HD video signals between the MCR in Hilversum and the studio in Amsterdam with full optical redundancy. Along with the video signals, MADl audio, intercom, and data are transported over these links. The combination of MediorNet's TDM and FDM technology enables the transport of multiple signals over a single optical core.

Within the Hilversum MCR, six Artist nodes not only provide intercom signals for the local control room and studios, but also route MADl audio to two Artist frames at the Amsterdam facility via the MediorNet network. The four-wire intercom signals are extracted from the MADl signal to provide communications between the two facilities, and a separate MADl stream is connected to an audio mixer to enable staff in Amsterdam to listen remotely to all incoming audio sources. More than 70 Artist 1100 series OLED key panels are used for this application. While the Hilversum system uses a mix of an Artist 128 and Artist M systems, the installation in Amsterdam consists of two Artist 128 mainframes.

The MediorNet system also provides the Sync distribution from Hilversum to Amsterdam. It allows for soft take-over of the internal clock when switching from external to internal sync.



Artist Intercom for Mobile Devices

The new Intercom app turns Artist Intercom Systems into a global and mobile communications solution. Users can easily turn their smartphones and tablets into full-featured intercom panels for Artist intercom systems. The new app adds even greater flexibility to the already versatile intercom solution.



Operating the app's keys via the mobile device's touch screen interface, users enjoy the same signaling capabilities as they would on Riedel's 1100 Series wired control panel for Artist systems. Like all other control panels, the new key panel app can be configured via Riedel's Director software.

To facilitate mobile connectivity to the Artist system with the new app, a VOIP-108 G2 card at the Artist frame provides eight Artist matrix ports via IP

streams with compressed audio. To assure excellent audio quality at all times, users can choose between a high-quality mode with an HD-Voice codec and a low-bandwidth mode with a high compression audio codec and a low data rate. The VOIP-108 G2 client card then communicates with the virtual panels via wireless networks, effectively making it a portable intercom panel.

Riedel's key panel app for Artist intercom systems will be available through the respective app stores for iOS, OS X, and Android devices.

Daniel Huard Takes on Northeast American Sales Management

Daniel Huard, who previously served as the company's sales manager for Canada, has taken on a larger role that includes oversight of the Northeast United States. As the broadcast sales manager for Northeast America, Huard will work closely with key Riedel clients including broadcast networks and system integrators in the New York area, Montreal, and Toronto.

"Since he joined the company in 2013, Daniel has proved to be an excellent fit for our North American sales operations," said Christopher Street, General Manager for the Americas at Riedel Communications. "As we anticipated, he has been able to leverage

his experience, knowledge, and connections to strengthen our business in Canada, and we're confident that he will find the same success as he takes on key markets and clients in the Northeast United States."

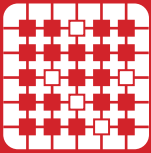
Prior to joining Riedel in 2013, Huard owned and operated DHH, an equipment sales agency for brands including Riedel, Sennheiser, Stagetec, L-Acoustics, Digigram, and Neumann. Huard's company also supplied equipment to Cirque du Soleil, Celine Dion, and various professional equipment rental houses.



MEDIORNET

2.0





MEDIORNET 2.0

Having shaped the technological future by introducing the groundbreaking MediorNet a half decade ago, we can definitely be proud to have predicted the networked future. Up to now, more than 2000 MediorNet nodes have been installed worldwide, thanks to the customer's trust in our concept to integrate video, audio, and communications into a single, realtime network.

When comparing MediorNet to any other available system in the market, you will see that there is no equivalent system regarding bandwidth, topology, delay, connectivity, signal processing, routing, and ease of use.

The next generation of MediorNet provides higher bandwidth, with up to 10Gb/s net bit rate, robust video router functionality with switching delays of <40ms as well as high-speed re-routing that allows as many as 1,000 connections to be re-routed in less than a second. With the new MediorNet MetroN core router, the system offers up to 64 10G ports and non-blocking switching. You can build video routers with up to 384 HD-SDI signal inputs and an unlimited number of outputs. Router control can be done with MediorWorks software as well as with most 3rd party control systems using the Probel or Ember+ protocol.

Now it is time to introduce MediorNet 2.0 to you!
What is MediorNet 2.0?
It is the next step...

Up to now, MediorNet has been a network for local installations using dark fiber or optical muxing on shared fibers. With MediorNet 2.0 we can now connect MediorNet via Wide Area Networks (WAN). Now you can set up, monitor, and control not only one local MediorNet network in our MediorWorks software but multiple networks around the globe. For the conversion to IP signals and to compress the signals for more efficient use of bandwidth, we offer our new H.264 and JPEG2000 encoder and decoder as part of our MediorNet portfolio.

With our new Studer A-Link compatibility, the MediorNet 2.0 update enables the MediorNet Modular frame to act as a completely decentralized audio router with fully redundant interfaces. One MediorNet Modular frame equipped with A-Link interface cards thus becomes a cost efficient audio router with 4,608 inputs and outputs. Utilizing MediorNet's networking capabilities, the system becomes a decentralized solution with more than 25.000² cross points. At the same time, Ember+ is fully supported for integration with other common control systems, such as VSM and KSC Commander.



MEDIORNET Goes 10G

MediorNet MetroN

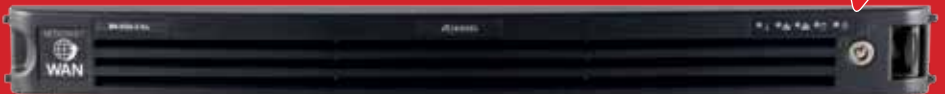


The MediorNet family of real-time networks has been expanded with the addition of the 2-RU large-scale MediorNet MetroN core router. In enabling Riedel's acclaimed networked approach to signal distribution and routing, the new MediorNet MetroN provides a real time routing capacity of 64 x 10G ports. The new frame can function within a larger MediorNet installation, interfacing with other MediorNet frames via fiber.

Using optical FDM (WDM or CWDM) on top of the electrical TDM, we can multiplex 18 high speed signals on one fiber providing a total capacity of 108 HD-SDI signals over a single fiber. This is likely the highest density of HD-SDI signals that you can find on a synchronous fiber network.



MEDIORNET AS A WAN SOLUTION



Riedel introduces its first WAN focused solution for MediorNet. The new MediorNet video decoders/encoders enable trunking of several local MediorNet systems over wide area networks. Splitting a system into different networks, handling local and remote fiber, and easy configuration with MediorWorks are just a few of the numerous benefits of the new MediorNet WAN-solution. There will be two different en- and decoders available offering either H.264 or JPEG2000 compression for applications with limited bandwidth as well as high quality content contribution.



During the games in Sochi, the need for fiber-based media transport systems was huge. Such systems were necessary not only for the broadcast part of the games, but also for ceremonies, sports presentations, timekeeping, and other critical elements. All of these applications required the distribution of audio, video, and data signals in real time, and all of these signals had to be synchronized. What's more, many of these applications demanded more than just point-to-point links and were variable, often changing with little notice. All of these factors were covered by a single solution, the MediorNet real-time network.

The Riedel system combines optical FDM (Frequency Division Multiplex) via its CWDM modules and electrical TDM (Time Division Multiplex) all into one engine. This means that MediorNet can maximize the available bandwidth on each fiber. CWDM-only solutions waste a great deal of bandwidth, thus requiring much more fiber. The use of MediorNet across all venues in Sochi reduced the fiber requirements to the degree that only a single fiber pair was necessary. The use of a second fiber pair enabled the full optical redundancy that is essential for such an important event.

On top of the benefits offered by MediorNet's fiber networking features are the advantages gained from the solution's processing power and routing capabilities. Since the solution's routing can be changed within less than one video frame, the system can even replace the video router — offering all the flexibility needed for last-minutes changes or dynamic routing during competitions. The integrated frame synchronizers, embedders, and de-embedders, as well as the other glue features,

make MediorNet the best choice for fast-paced high-profile live sports events. That's why MediorNet was used at all Sochi venues, with hundreds of devices deployed to transport thousands of signals.

The resulting fiber network supported signal transport for events at the Olympic Park and nearby venues, as well as the snow and ice events held in Krasnaya Polyana, home to the Rosa Khutor alpine ski resort. The bulk of the fiber backbone itself was a temporary overlay by Riedel, which combined with existing fiber cables installed within each venue and special runs — such as the connectivity to the top of the ski jump — to create a complete network. In total, Riedel installed approximately 50 km of the company's Pure range of optical cables.

Delays in construction, with many of the venues being weeks or months behind schedule, presented significant challenges. In fact, Riedel gained access to the last pre-installed fiber cable just one day before competition began, and the company was unable to finish several cable routes prior to the

first event. Nevertheless, leveraging the remarkable versatility of the MediorNet system, the company completed an operational installation on time. Because MediorNet can run in ring, star, daisy chain or any combination of these cable topographies, Riedel was able to configure it to use the remaining available fiber routes.

Once the backbone was completed, the system functioned as originally designed and specified, thus assuring the redundancy required for events including the opening ceremonies. For the ceremonies at Sochi's Fisht Stadium, Riedel installed fiber in a redundant ring structure, with four strands on the main line and four strands on the backup line, all installed along different routes.

An audience of 40,000 attended the opening ceremony, which featured an estimated 2,000 performers. Throughout the spectacle of the ceremony, the MediorNet system supported production video monitoring, which was used not only to coordinate the extensive cast involved in the production, but also — and more importantly — to give team members virtual access and an eye on all areas of the site. This capability was critical because the dynamic production used all of the space within the stadium, not only filling the floor with moving images, but also moving numerous large objects — including a 213-foot-long Russian carriage and horses pulling a flaming sun — through the air.



A broad range of users took advantage of this system to perform their roles. The video network supported cast and stage management, show call, lighting, sound, machinery, health and safety, and additional applications. The video itself was routed from sources including rooftop cameras showing the FOP (field of play) from a birdseye perspective, as well as from rooftop machinery (numerous lifts) and other machinery such as moving platforms and ramps in the substage. Because the server system was set up to support 96 hours of recording, including host feed, users of the video network had a virtual view of everything that took place over this period and thus were prepared to respond in the event of any issues or incidents.

Flexible, fiber-based signal transport solutions have become the clear solution when reliable A/V transport and communications are a must. In demanding events such as the games in Sochi, Riedel's MediorNet demonstrated the versatility and performance that gives it a competitive edge in a live production environment.

New camera integration for MediorNet



At this year's NAB Sony introduces their new camera break-out box HDCE-200 which enables the user to network Sony HDC camera systems via MediorNet. The network's point-to-multipoint capability allows a camera video signal to be routed to several outputs. Ultimately, the Sony camera system becomes an integrated part of the MediorNet backbone solution for signal distribution streamlining production scenarios, sports broadcasting applications and fixed installations. Since MediorNet understands the signal from and to the Sony HDCE-200 interface, embedding and de-embedding audio as well as Intercom is possible. This follows Riedel's network approach of free assignment of cameras to any CCU within the network. The customer benefits from unparalleled flexibility in set-ups and eliminating the need for re-wiring when production configurations change.



NSA New Artist AVB Interface



The new network signal adapter converts AES3 to AVB and vice versa. The small unit provides one Cat 5 port to connect Artist Intercom panels in one- or two-channel mode to the Artist Digital Intercom Matrix.

Since the NSA converts to and from standard AES3 it can of course be used as a small stand-alone converter unit between any AES3 stream and AVB, effectively turning any AES3 capable device into an AVB entity. Adding the possibility to use two NSA devices connected to each other via AVB makes this small box a very versatile tool.

AVB allows for transporting AES3/EBU audio in real-time with guaranteed bandwidth and reliability via Ethernet-based Local Area Networks (LAN). Riedel's AVB product line provides a communication solution fulfilling the demands of professional intercom users.





AVB VS. MediorNet

...a question for...
Karsten Schragmann

1. MediorNet and AVB - not a contradiction? How do these two go together?

You have to be careful when comparing these two terms, it's like comparing apples and oranges. MediorNet is Riedel's versatile and future-proof system solution. AVB however is an industry standard for transmitting Audio/Video over Ethernet networks. MediorNet uses a proprietary technology on the back end side when interconnecting to other MediorNet nodes. On the front end, Riedel supports several standards such as SDI, AES, Ethernet and, in future, AVB to offer the market even more flexibility and connectivity. You see, there's no contradiction, MediorNet and AVB are optimally matched.

3. But isn't the time over for proprietary solutions?

As mentioned at the beginning, MediorNet is only proprietary on the backend side for the node to node connections. But we are prepared to meet any requirement related to future standards. The core of any MediorNet consists of FPGA (Field Programmable Gate Array) that can be easily adapted to future standards. This guarantees that an investment in MediorNet is particularly forward-looking and safe.

"You see,
there's no
contradiction,
MediorNet and AVB
are optimally
matched."

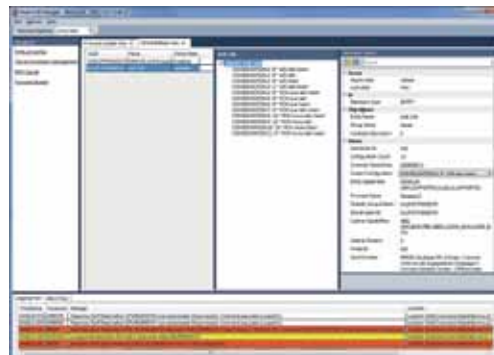
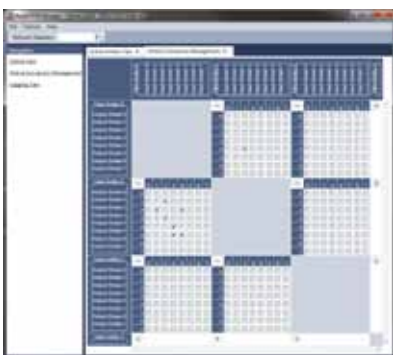
2. But I also could build up an AV network with AVB. Where is the difference?

Yes, you could, but you have to consider that an AVB network only covers one part of the system solution. MediorNet additionally offers signal processing, video router functionality, WAN connectivity, and numerous other features - all in one system.

Software



AVB Manager



Riedel's AVB manager is a manufacturer-independent software solution that provides generic AVB control for any and all IEEE 1722.1-compliant AVB devices. Providing a global overview of AVB infrastructures, this solution automatically detects and enumerates available AVB devices, supporting straightforward connection management via an intuitive graphical user interface and is free of charge.



RiFace Option Card for AVB

The RiFace G2 is an universal radio interface that links wired intercoms with two way radio systems. Originally introduced in 1992, Riedel's RiFace established itself as the standard for the integration of 2-way radios into wired comms.



The new RFX-AVB option card fits into the expansion slot of any RiFace G2 and enables the unit to work within an AVB audio network. Instead of connecting the unit with up to four analog lines plus GPIO's, the connection is reduced to just one Ethernet cable. This not only makes the integration much easier and provides digital audio quality, but also allows users to remote the RiFace units without the limitations of analog cabling. Using the AVB standard makes RiFace compatible with any AVB compliant system.

Broadcast Production

The Red Bull Air Race World Championship is back in the skies ... with Riedel

The return of the world's fastest motorsport series started in Abu Dhabi on 28 February and Riedel is again the supplier for all communications and media signal backbones including intercom, radio systems, on board camera and RF systems, IT infrastructure, accreditation, and the audio and video networks.

A MediorNet network consisting of 24 nodes, comprised of both Modular and Compact frames, connect all areas of the event including race control, the OB-truck, master control, on-board control, RF system receive points, the airport, and the media and VIP areas. The system is used to distribute audio, video, ASI signals and all intercom panels for the broadcast production. In addition, radio and security systems and all the IT infrastructure are connected by MediorNet. The big screens and PA systems also get their video and audio signals in real time and the RF receive points ship their ASI and serial control signals on the network.

For more audio IO, and to connect the live audio mixing console, Rocknet cards and IO units expand MediorNet to a provide a perfect solution.

The capability to combine different fiber topologies like star, ring or daisy chain allows a massive reduction in the amount of cabling. The redundant fiber connections give the system the reliability needed for such a high profile event.

Parts of the MediorNet and Artist intercom system are owned by TVN, the TV production company doing the live broadcast production. Parts of the Rocknet units are owned by the audio company, other parts are owned by Riedel and rented to Red Bull for the project. Due to the high level of integration between the various Riedel systems, merging all the units to only one system just takes some fiber connections and are, essential, "plug & play".

Come and see this spectacular event at one of the upcoming events this year. Contact your sales contact at Riedel for a "behind the scenes" tour and find more information at www.redbullairrace.com



IMPRINT

Published by Riedel Communications GmbH & Co. KG
Uellendahler Str. 353
42109 Wuppertal
Germany
www.riedel.net
Editorial Director: Christian Bockkopf
Contact: update@riedel.net

© 2014 Riedel Communications GmbH & Co. KG.
All rights reserved. Windows is a registered trademark of Microsoft Corporation. All trademarks are the property of their respective owners. Product specifications are subject to change without notice. This material is provided for information purposes only; Riedel assumes no liability related to its use. April 2014.

Recent Installations (selected)

**FRANCE,
Paris**
France Télévisions
(Outside Broadcast)
AR

**IRELAND,
Derry-Londonderry**
Production House
(Live Event Production)
RN

**UK,
London**
BBC
(Broadcast Studios)
AR

**UK,
London**
London Live
(Broadcast Studios)
AR

**CANADA,
Toronto**
RVA/Global TV
(Broadcast Studios)
AR

**USA,
Santa Monica**
Red Bull
(E-gaming Studios)
AR MN

**USA,
Los Angeles**
CBS Television Studios
(Broadcast Studios)
AR

**MEXICO,
México City**
ESPN México
(Broadcast Studios)
AC AR

**SPAIN,
Bilbao**
ETB
(Broadcast Studios)
AR

**SPAIN,
Madrid**
RTVE
(Broadcast Studios)
MN

**BRAZIL,
Cuiabá**
TV Centro América
(Broadcast Studios)
AC AR MN RN

**CHILE,
Santiago de Chile**
CdF
(Broadcast Studios)
AC PF MN

**BRAZIL,
São Luís**
TV Mirante
(Broadcast Studios)
AR MN

**SOUTH AFRICA,
Johannesburg**
CNBC
(Broadcast Studios)
AR



- Acrobat AC
- Performer PF
- Artist AR
- MediorNet MN
- RockNet RN

**BELGIEN,
Vilvorde**
Vlaamse Media
Maatschappij
(Broadcast Studios)

**NETHERLANDS,
Amsterdam**
Endemol
(Broadcast Studios)

**GERMANY,
Hannover**
TVN
(Outside Broadcast)

**AUSTRIA,
Vienna**
ProSiebenSat.1 PULS 4
(Broadcast Studios)

**RUSSIA,
Sochi**
Wintergames
(Live Event Production)

**ITALY,
Roma**
Di.Bi. Technology
(Outside Broadcast)

**SAUDI ARABIA,
Riyadh**
Saudi TV Channel 2
(Broadcast Studios)

**CHINA,
Chongqing**
Chongqing TV
(Broadcast Studios)

**TAIWAN,
Taipei**
China Television
(Broadcast Studios)

**AUSTRALIA,
Manly**
Channel Ten
(Broadcast Studios)

**AUSTRALIA,
Sydney**
Global Television
(Outside Broadcast)

**EGYPT,
Cairo**
CBC
(Broadcast Studios)

**QATAR,
Doha**
Al Kass
(Facility Installation)

**AUSTRALIA,
Adelaide**
Adelaide Oval
(Broadcast Studios)

**AUSTRALIA,
Melbourne**
Mediatec Asia Pacific
(Broadcast Studios)



