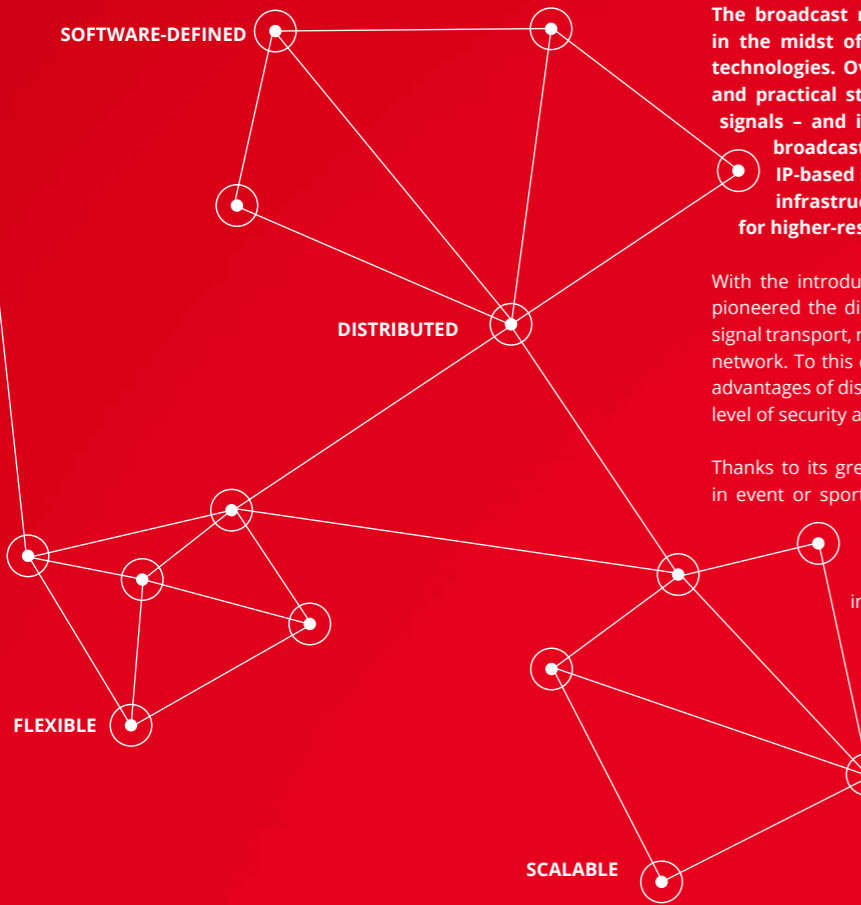


THE MEDIORNET FAMILY
DISTRIBUTED VIDEO NETWORKS

MEDIORNET

DISTRIBUTED VIDEO INFRASTRUCTURES FOR ROUTING, MULTIVIEWING & PROCESSING



The broadcast media and entertainment industries find themselves in the midst of a massive and disruptive transition from SDI to IP technologies. Over the past decades, SDI has proven to be a reliable and practical standard for the distribution of video, audio and data signals - and it will continue to be an important building block in broadcast facilities and production in the next years. However, IP-based systems have emerged to form a powerful and flexible infrastructure that can accommodate the increasing demands for higher-resolution video and better connectivity.

With the introduction of MediorNet more than a decade ago, Riedel has pioneered the distributed approach to video infrastructures by combining signal transport, routing, processing, and conversion in a redundant real-time network. To this day, MediorNet remains the only system that offers all the advantages of distributed, software-defined hardware with an unprecedented level of security and reliability for both SDI and IP infrastructures.

Thanks to its great versatility and flexibility, the distributed system excels in event or sports venues, broadcast centers or outside broadcast fleets, and corporate or governmental facilities. That's why today there are millions of MediorNet SDI and IP I/Os deployed in different verticals all around the globe - from small installations to large and complex infrastructures.

If you are standing at the SDI-IP crossroads... MediorNet offers another way. Our growing MediorNet family keeps breaking down the barriers between the worlds of SDI and IP, offering a graceful and pragmatic hybrid path towards IP - at the right time and right cost.



IP



HYBRID



SDI/TDM

MILLIONS OF VIDEO I/Os DEPLOYED
HUNDREDS OF IP VIDEO DEPLOYMENTS
JT-NM TESTED

MediorNet's future-proof modular structure and innovative app concept enable it to continuously adapt to changes in the market. As industry standards and production requirements evolve, MediorNet evolves with them.

Riedel's hybrid SDI-IP processing platform MediorNet HorizoN remains a cornerstone of this evolution. Complementing SDI Gateways such as MicroN UHD, MicroN, Compact, and the MetroN core switch, HorizoN elegantly unites the SDI and IP worlds with its dense array of ST 2110 gateways and powerful video processing capabilities. The latest milestone in this evolution is the introduction of the HorizoN ST 2110 MultiViewer App. Designed as a fully native ST 2110 device, it operates without TDM links and integrates seamlessly into modern IP infrastructures.

At the very heart of the MediorNet IP world lies our patented MuoN SFP processor technology. MuoN SFPs are powerful, software-defined gateway and processing devices - no longer than a thumb - that can be plugged into our MediorNet VirtU IP core platforms or COTS switches. The FusioN edge converters come in a similarly small form factor, offering standalone IP gateway or encode/decode functionalities exactly where it's needed.

Within the ever-growing MediorNet family, you'll find all the tools you need for your production - whether it's SDI-centric, IP-centric, or anything in between. Riedel is the right partner to guide you through this transformation, providing a flexible transition path from SDI to full IP - at your own pace.

OUR VISION

"Distributed video and audio infrastructures are going to shape the future of the media and entertainment industry. Riedel brings together decades of innovation, know-how and experience in this area. Our software defined hardware approach enables MediorNet to evolve with industry demands, making any MediorNet system a future-proof investment - no matter if SDI, hybrid or full IP."

Thomas Riedel
CEO and Founder



Distributed Routing

MediorNet provides versatile distributed routing and gateway capacities for any SDI, IP, or hybrid production environment. Instead of a central router, MediorNet infrastructures are based on an array of decentralized network devices and intelligent nodes. This distributed system intelligence allows the free placement of physical I/Os, which increases the flexibility of any installation while significantly reducing cabling and set-up time. With MediorNet, you get one unified SDI or IP backbone for all your signals. Because MediorNet is not just about video... even audio, intercom, serial data or ethernet can be transported and routed effortlessly to and from any conceivable point.



MicroN UHD & MicroN Standard App

The Standard App provides high-density signal interfaces into the distributed MediorNet TDM ecosystem and allows to build highly scalable audio and video routing solutions. It enables 24/48 SDI video signal port (up to 12G SDI) and 2 MADI audio interfaces and provides 80G/400G backbone connectivity. All audio and video ports come with standard processing features like frame synchronizers, embedders/de-embedders and many more...



HorizoN, MuoN & FusioN Encapsulation/Decapsulation Apps

Offering the highest density on the market, these Apps provide highly scalable and flexible audio and video gateways into distributed IP networks. The broad selection of conversion applications enables conversion of various baseband signals to ST 2110 and vice versa. The HorizoN, MuoN & FusioN video gateway applications come with full UHD support and frame synchronizers. The MuoN A also offer SDI from/to ST2022-6 conversion.

Distributed Signal Processing

Basic signal processing is integrated across all MediorNet gateway devices. These processing functions allow for seamless routing across the decentralized MediorNet network and across different formats. With a wide selection of apps, enhanced processing capabilities like up/down/cross conversion, color correction, or encoding/decoding, can be added to the system just where they are needed. As MediorNet solutions are software-defined and FPGA-based, you buy not only what the product is capable of today, but also what it will be capable of in the future.



MediorNet TDM Integrated Processing

With integrated processing features such as frame store/frame sync, embedders/de-embedders, test pattern generators and sample rate converters, MediorNet minimizes the need for external processing and glue equipment. Through these features, the system provides enormous efficiency gains in all production environments.



HorizoN Up/Down/Cross Conversion Apps

These converter apps enable high-quality conversion to/from any UHD/3G/HD content. They can be used for incoming feed signal normalization or to provide down-converted HD versions of UHD signals for easy monitoring inside the facility. The MediorNet UDX converters provide pristine image quality scaling and de-interlacing motion adaption and directional interpolation. This App also includes color space conversion between BT.709 and BT.2020 as well as a full color converter.



MuoN & FusioN Encode/Decode App

The Encode/Decode Apps for MuoN and FusioN handle conversion to or from IP ST 2110 with JPEG-XS encoding and decoding, with FusioN also providing SDI for your inputs and outputs. When used with MediorNet VirtU devices, they boast the highest density in the market with 64 encode/decode channels within a single RU.



HorizoN HDR Conversion App

The HDR App provides compatibility between the multiple SDR or HDR signal formats inside a live production environment. The conversion happens in real time using 3D LUT (Look-up-table) color transformation files. The product comes with preloaded files from BBC and NBC, but users can add their own 17, 33 or 65 resolution cube files.

Distributed Multiviewing

Multiviewing remains one of the most critical monitoring functions in modern video infrastructures. Whether deployed in a distributed TDM environment or as part of a fully IP-based ST 2110 system, MediorNet Multiviewer solutions provide scalable, high-performance monitoring across any production workflow. Within the MediorNet ecosystem, multiviewer capabilities can be distributed across processing nodes, enabling efficient monitoring of any signal and flexible routing of multiviewer heads to any physical output. MediorNet also offers native ST 2110 multiviewing, allowing seamless integration into IP-centric infrastructures without reliance on TDM. With powerful widgets, scalable layouts, and support for open standards such as NMOS, Ember+, and TSL, MediorNet MultiViewer Apps deliver the flexibility required for both hybrid and fully IP-based productions.



MicroN UHD & MicroN MultiViewer App

With access to all distributed MediorNet signals, the MicroN UHD & MicroN MultiViewer Apps make these available on one of up to eight monitoring heads that can be routed to any given output. Both apps feature a rich set of widgets, as well as fully flexible scaling and positioning of elements on the screen. As MediorNet is distributed by nature, the MultiViewer Apps allow to use system-wide clocks, time codes and counters and easy configuration sharing. The MicroN UHD MultiViewer App includes all the powerful features of the MicroN MultiViewer App, while increasing the input channel amount to 36 PIPs.



HorizoN MultiViewer App

The HorizoN ST 2110 MultiViewer App extends MediorNet's distributed monitoring concept into fully native ST 2110 environments. Designed as a true ST 2110 device, HorizoN operates and integrates seamlessly into IP-based infrastructures. With support for up to 128 PIPs, configurable across 16 monitoring heads in 3G or 4 heads in UHD, HorizoN delivers high-density monitoring performance within a compact, software-defined architecture. The app provides the same functionality and operational capabilities as the established MicroN and MicroN UHD MultiViewer Apps. Configurations are fully compatible across platforms, allowing consistent workflows and simplified deployment across hybrid or pure ST 2110 systems.

Remote and Distributed I/O

There are ever-larger distances to be covered between the various parts of modern production chains, e.g. between venue and production truck, between buildings on a campus, or between facilities in different parts of the city. The MediorNet family is fully suited to all those needs: For IP networks, it features JPEG-XS encode/decode solutions and the compact FusioN devices, which can be installed right at the signal sources and destinations to transfer the signals directly. And for both SDI and IP environments, there are powerful and efficient stagebox solutions to be implemented with MediorNet Compact or FusioN, or the MicroN Point-to-Point App.



MicroN Point-to-Point App

The MicroN Point-to-Point App enables all hardware ports on the device, but limits network size to two devices in one net, making it a cost-efficient solution to connect two devices located in your main production site and your remote facility. The app also enables the hardware to operate standalone: This way, a single MicroN can act as a 12x12 router and audio embedder/de-embedder with MADI and sync delay, while also providing video frame sync and delay.



MuoN & FusioN Encode/Decode Apps

Signal compression is a key enabler to exchange feeds between remote sites through low bandwidth connectivity. The JPEG-XS Encode/Decode App can be installed on MuoN SFPs or FusioN devices to provide an extremely dense and cost-effective solution. In addition to providing SDI I/Os with encode or decode signals into JPEG-XS, the I/Os are also available as ST 2110. This solution is perfect for internal television station monitoring systems, signal contribution or remote production applications.



Compact Standard App

MediorNet Compact is a fiber-based stagebox providing enough capacity for bi-directional transport of 16 HD-SDI signals, dozens of MADI streams or GBit-Ethernet signals and hundreds of audio channels or intercom ports – ideal for streamlining the infrastructure of any mobile, studio or live event application.

MEET THE MEDIORNET FAMILY

HorizoN



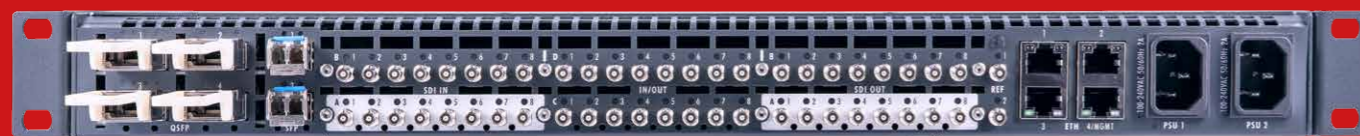
MediorNet HorizoN is a high-density, software-defined processing platform designed for modern hybrid and fully IP-based production infrastructures. With the HorizoN ST 2110 MultiViewer App, the platform delivers fully native ST 2110 multiviewing — operating without TDM links. Up to 128 PiPs, configurable across 16 heads in 3G or 4 heads in UHD are supported. At the same time, HorizoN provides a dense array of SDI-IP gateways and powerful video processing capabilities such as up/down/cross conversion, SDR-HDR conversion, and color correction.



Within a single rack unit, 16 independent and individually configurable processing engines allow up to 128 channels of SDI-ST 2110, up to 32 channels of SDR-HDR, or up to 16 up/down/cross conversions.

- Up to 16x processing engines, e.g. for UDX, SDR/HDR conversion, Color Correction and ST 2110 IP Gateways
- 4x 100G highspeed links
- 4x 100G IP Interfaces (2022-7)
- 8x 12G/3G/HD/SD – SDI In & 8x 12G/3G/HD/SD SDI Out
- Sync reference In / Out (BB, Tri-Level, WC)
- Integrated processing incl. sample rate conversion, frame sync, test pattern generator

MicroN UHD



MediorNet MicroN UHD adds more bandwidth, more I/O, higher resolutions, and more processing power to the MediorNet platform. The device provides 400G backbone connectivity for signal distribution over meshed architectures, includes 12G-SDI for native UHD (4k) workflows, and allows reliable operation due to link redundancy.



- 4x 100G highspeed links
- 8x 12G/3G/HD/SD – SDI In¹ & 8x 12G/3G/HD/SD SDI Out²
- 8x 3G/HD/SD-SDI In & 8x 3G/HD/SD-SDI Out
- 16x 3G/HD/SD-SDI In / Out (switchable)
- 2x SFP ports (for MADI)
- Sync reference In / Out (BB, Tri-Level, WC)
- Integrated processing incl. sample rate conversion, frame sync, test pattern generator

MicroN



MediorNet MicroN is software-enabled, app-based hardware that can either be a simple point-to-point link for up to 12 bi-directional 3G signals, or part of a large de-centralized router – but it can even serve as a distributed MultiViewer and provides a lot of glue functionality like frame synchronizers, test pattern generator, embedding, de-embedding and more.



- 8x 10G highspeed links
- 12x 3G/HD/SD-SDI In & 12x 3G/HD/SD-SDI Out
- 2x SFP ports (for MADI)
- Sync reference In / Out (BB, Tri-Level, WC)
- Software-defined hardware, 3 apps available
- Integrated processing incl. sample rate conversion, frame synchronizers, test pattern generator and more

MetroN



The MediorNet MetroN core router provides intense real-time signal-routing capacity (32x10G/32x4.25G ports) and offers non-blocking switching. The 2-RU device features 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.



- 64 auto-sensing ports (32x 10G / 32x 4.25G)
- 2 ethernet ports plus 1 config port
- 1 sync In / 2 sync Out
- Redundant power supplies and fan modules

Compact



MediorNet Compact is the cost-effective and easy-to-use entry to the world of MediorNet. With a network bandwidth of 50 Gbit/s, MediorNet Compact provides enough capacity for bi-directional transport of 16 HD-SDI signal, dozens of MADI streams or GBit-Ethernet signals and hundreds of audio channels or intercom ports.

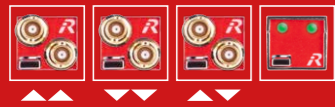


- Wide array of I/Os, capacity for 16 HD-SDI signals, dozens of MADI streams or GBit-Ethernet signals and hundreds of audio channels or intercom ports
- Powerful integrated processing functions including sample rate conversion, frame synchronizers, test pattern generator and more

MEET THE MEDIORNET FAMILY



MuoN



MuoN SFPs are pluggable gateway and processing devices that can be used inside the VirtU-32 passive housing frame (MuoN B series) or inside top-of-rack switches (MuoN A series). The software-defined hardware is available with a range of different input and output configurations, including BNC, fiber, or HDMI. MuoN SFPs can be configured with a wide range of different apps: A simple change of the software license turns the device into an up/down/cross or HDR converter, a JPEG-XS encoder or decoder.

- Software-defined platform with up to 3 app spaces per Muon SFP
- Available with different I/O port configs or as an IP-to-IP SFP without external connectors
- Powerful processing apps, including Gateway or Encode/Decode Apps with optional Frame Sync and Clean Switching Add-Ons
- Extremely compact, low weight, low power consumption
- Field upgradable

FusioN



The FusioN series of compact standalone I/O and processing devices can be configured with a range of software apps to act as IP gateway or encoders/decoders. Due to their small form factor and low power consumption, the devices can be placed close to signal sources or destinations, creating powerful efficiencies in any production environment.

The FusioN Series also offers preconfigured models designed to provide the best fit for IP-to-HDMI® and IP-to-SDI monitoring applications.

- Miniature processing frames with 3 or 6 SFP slots supporting 2x fiber links for ST2022-7 hitless redundancy
- Flexible I/O configuration with support of SDI, HDMI and fiber through SFP plug-in modules
- Auto-sensing for HD and UHD formats
- Mountable to the back of a standard monitor or installed into 2RU bracket housing up to 9/18 frames
- Powerful processing apps, including Gateway or Encode/Decode Apps with optional UHD, Frame Sync, and Clean Switching Add-Ons

VirtU

VirtU 32



The VirtU IP infrastructure platform can host an extremely dense array of Riedel MuoN B SFP processors in just 1RU. The frame can be used as a bulk gateway, as a very dense processing unit or for any combination of gateway and processing. This modular platform allows users to gradually build their key advanced gateway and processing power as their needs grow!



- 8 independent clusters of 4x MuoN B SFPs connecting to a dual set of 40G/100G uplinks for ST2022-7 hitless redundancy
- Allows any mix of MuoN B SFPs (per cluster host data rate must be the same)
- Very high reliability: fully passive signal path from QSFPs to SFPs, redundant power supply



THE WORLD OF MEDIORNET



MediorNet is all about the perfect production environment. Whether in broadcast centers, OB vans, convention centers, houses of worship, cruise ships, concert halls or stadia, MediorNet provides the necessary flexibility and efficiency for you to realize the best possible productions. Its highly modular concept of distributed video infrastructures and software-defined hardware allows us to offer a solution that not only reflects our customers' current needs, but a steady stream of advances to meet their future expectations.

Below you will find two typical setups. While live events still mostly rely on SDI infrastructures and broadcast urges towards IP technology, both technologies are, of course, very suitable to either production. Whatever your application and your legacy equipment, MediorNet can be tailored to meet your requirements, resulting in relieved operators, happy clients, and satisfied investors.



„MediorNet's decentralized approach provides massive benefits including redundancy, flexibility, and the ability to scale the system as our needs dictate. For those reasons, MediorNet was the perfect choice to meet our complex media distribution and communications requirements.“
Christian Castelli, Audiovisual System Engineer,
French National Assembly



„Riedel technology allows us to future-proof our IP investments and streamline costs while reducing our footprint and energy consumption. Their uniquely dense SFP solutions enable us to optimize space, consume less energy, curtail equipment purchases and facilitate integration into large-scale systems.“
Francois Legrand, Senior Director, Core Systems Engineering,
CBC/Radio-Canada

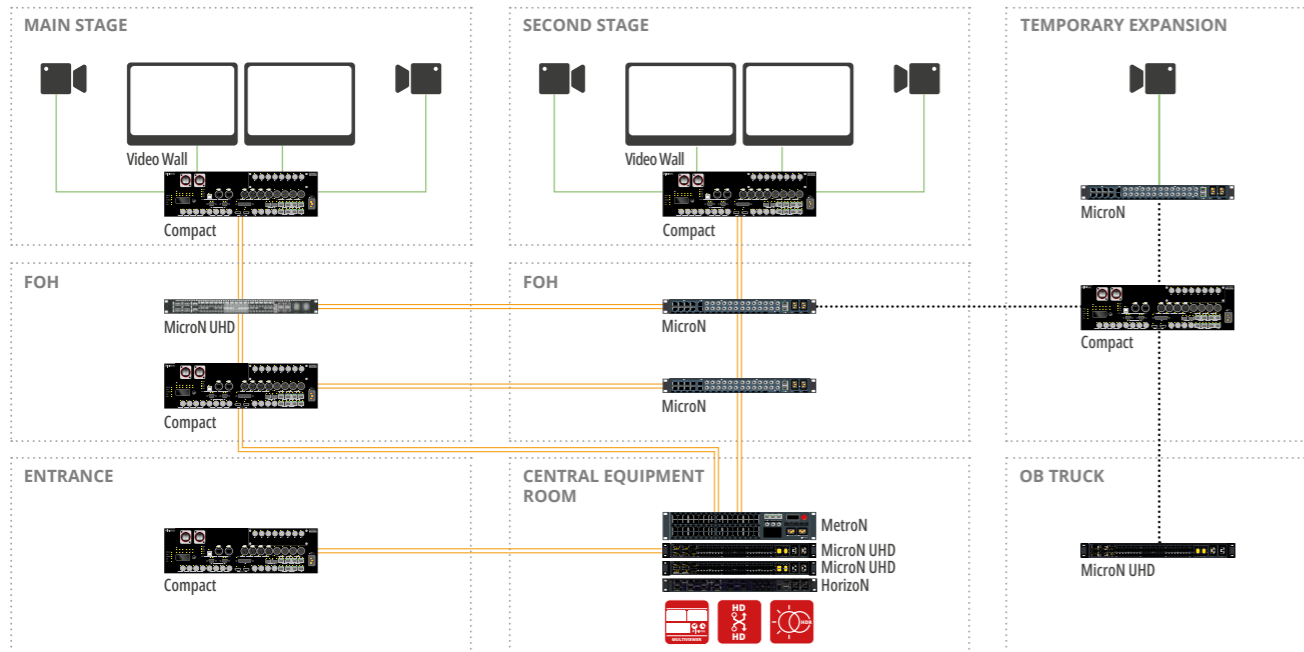
STADIA
CORPORATIONS
OUTSIDE BROADCAST
STUDIOS



SPORTS
LIVE EVENTS
CONFERENCE CENTERS
CRUISE SHIPS



SDI SOLUTIONS FOR LIVE EVENTS



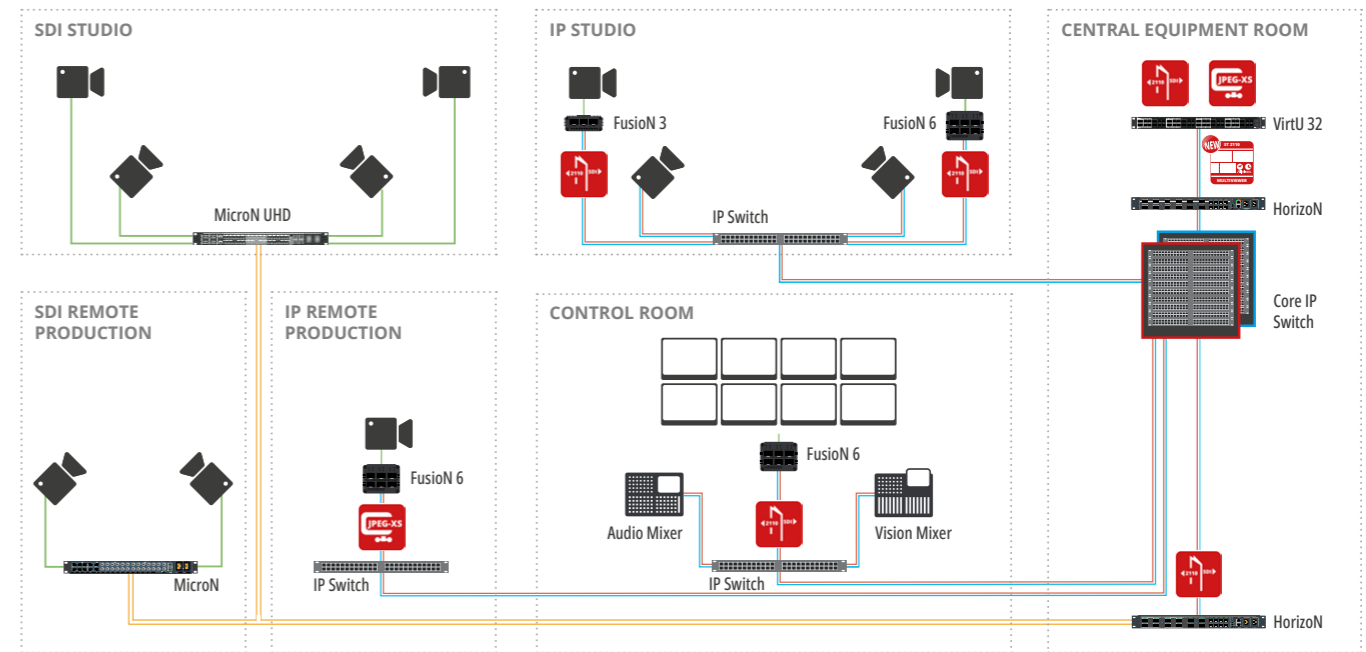
Riedel's robust MediorNet TDM devices are built for the rigors of live events. With its distributed, flexible topology and its innovative app concept, the system is highly adaptable to rapidly changing production needs. This is particularly useful in dynamic environments like festivals, where MediorNet allows to add more devices and apps on the fly and with minimal effort. Need additional video capacity at side stage 2? Just add a MicroN or Compact Pro node, connect it to the network and off you go!

In any live event scenario, MediorNet shines as a legitimate plug & play solution with very short setup times, fast and intuitive configuration, as well as integrated processing and multiviewing capabilities. And whenever you need even more processing power, MediorNet HorizoN with its UDX/SDR-HDR conversion or color correction is available just where it is needed.

As an all-round event backbone, MediorNet incorporates various infrastructures in one network and provides an ethernet tunnel for systems including CCTV, internet access, weather monitoring, cashless payment, lighting control and of course intercom.

Not only suitable for large festivals, MediorNet offers a host of advantages to smaller events and venues. These benefit from devices like MediorNet Compact Pro, MicroN and HorizoN providing integrated signal processing at the cost of simple multiplexing point-to-point products.

IP & HYBRID SOLUTIONS FOR TV STUDIOS



Planning to go full IP in your TV studios? Or are you looking to make a first step towards IP but don't want to abandon all your trusted SDI equipment? Our flexible systems allow for hybrid solutions that combine the best of both worlds and support a smooth, incremental transition to IP workflows. The MediorNet IP bridge creates high-speed IP pipes between your SDI infrastructure and your IP network, while the MediorNet IP MuoN and HorizoN allow you to gradually grow your IP-based routing, and processing capabilities.

Boasting 64 (UHD) gateway and processing channels per rack unit, MediorNet VirtU provides the highest density and power efficiency on the market. The FusioN standalone converters complement the solution by converting signals at the edge, significantly reducing cabling and space requirements. To easily connect SDI infrastructure islands to your IP system, MediorNet HorizoN

integrates core processing, routing, and SDI-IP conversion capabilities in a single RU, creating interconnectivity between all products and sites of any signal types. HorizoN extends the platform into native IP-based monitoring. With the ST 2110 MultiViewer App, operators can deploy multiviewing directly within the IP domain — as part of the same software-defined processing environment. This makes HorizoN equally suited for hybrid facilities and for fully IP-based studio infrastructures.

Besides their open, standards-based and proven interoperability, all MediorNet products easily integrate with Ember+/NMOS-based orchestration and control. So the options are broad and highly versatile. Thanks to its great versatility and flexibility, the distributed system excels in live events, sports venues, broadcast centers, outside broadcast fleets, corporations and governmental facilities.



Riedel Communications GmbH
Uellendahler Str. 353 | 42109 Wuppertal | Germany
Phone +49 (0) 202 292-90 | info@riedel.net | www.riedel.net