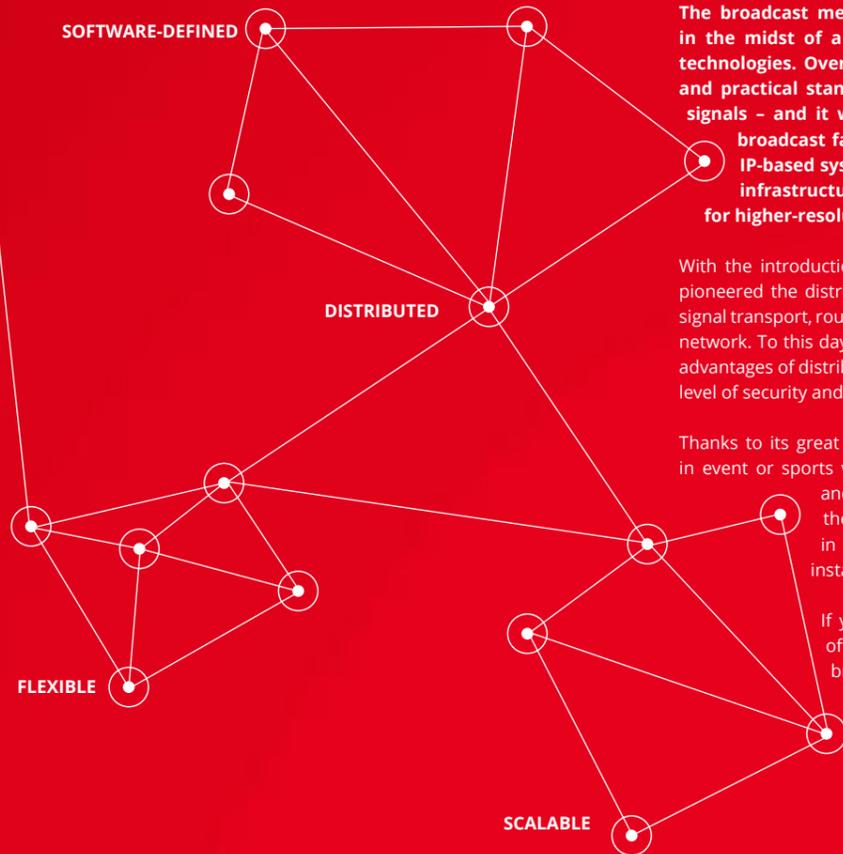


**THE MEDIORNET FAMILY**  
DISTRIBUTED VIDEO NETWORKS

# 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 futureproof modular structure and innovative app concept enable it to adapt easily to changes in the market: As the industry's standards and expectations evolve, MediorNet evolves with them.

Riedel's most recent answer to the challenges arising from the IP transformation is the all-new hybrid SDI-IP processing platform MediorNet Horizon. A complement to the intelligent SDI signal interfaces MicroN UHD, MicroN, Compact, and the MetroN core switch, this new node elegantly unites the SDI and IP worlds with its dense array of ST 2110 gateways, while providing powerful video processing capabilities.

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 the size of 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 just where you need them.

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 just the right partner to guide you through this challenging time, providing you with a perfect transition path from SDI to full IP, at your own pace and within your budget constraints.

## 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.



## MuoN Audio Routing App

Allowing to re-route and re-format IP audio flows, the MuoN Audio Routing App enables management of different IP audio stream schemes and mappings. It comes with an internal 2048x2048 audio router to send and receive up to 64x ST 2110-30/-31 audio flows with up to 32 audio channels each.

# 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 & MuoN 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.



## HorizoN & MuoN 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.



## 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.

# Distributed Multiviewing

Multiviewing remains one of the most important processing and monitoring features in any video system – and distributing multiviewer capacities may considerably streamline all associated processes and workflows. For one, the integration into a distributed MediorNet ecosystem enables efficient monitoring of any signal and flexible routing of multiviewer heads to any physical output. For another, the various MultiViewer Apps available for MicroN UHD and MicroN provide unmatched scalability, flexibility and density, as well as support for 3rd party interfaces like Ember+, NMOS, and TSL, making them just the right choice for any production.



## 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.

# 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 blurs the boundary between traditional SDI-based and ST 2110 infrastructures with its dense array of SDI-IP gateways and offers an incredible amount of video processing capabilities such as up/down/cross, 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. SFP-based baseband video I/O completes the package, making it an extremely versatile solution that can handle even the toughest challenges in a modern production environment.

- 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 In<sup>1</sup> & 8x 12G/3G/HD/SD SDI Out<sup>2</sup>
- 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

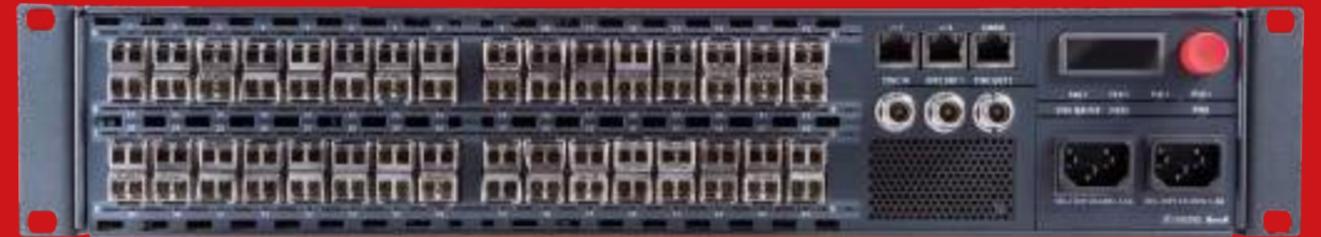
## MicroN



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 A10



MuoN B10



MuoN B25



MuoN SFPs are pluggable gateway and processing devices that can be used inside the VirtU-32 passive housing frame (MuoN B series) or inside VirtU-48-S top-of-rack switch (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, or even an audio router.

- 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, UDX, HDR Conversion, or Encode/Decode Apps with optional Frame Sync and Clean Switching Add-Ons
- Extremely compact, low weight, low power consumption
- Field upgradable

## FusioN

FusioN 3



FusioN 6



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.

- Miniature processing frame 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

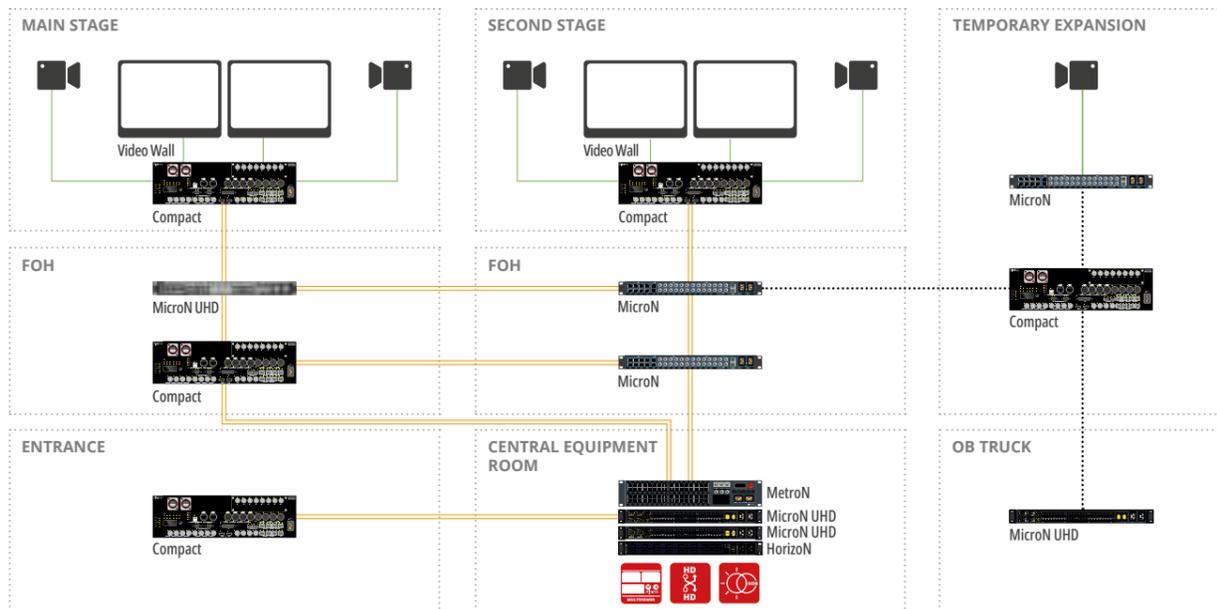
STADIA  
CORPORATIONS  
OUTSIDE BROADCAST  
STUDIOS



SPORTS  
LIVE EVENTS  
CONFERENCE CENTERS  
CRUISE SHIPS



## SDI SOLUTIONS FOR LIVE EVENTS



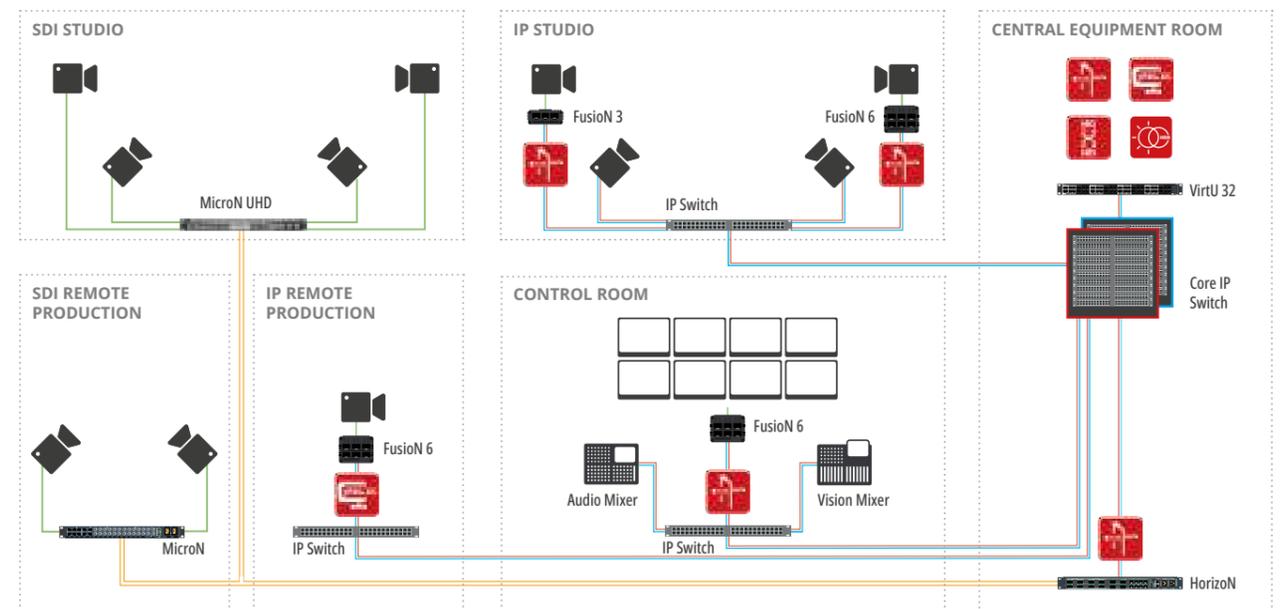
Riedel's robust MediorNet TDM devices are built for the rigors of live events. With its distributed, flexible topology and its innovative app concept, the system is highly adaptable to rapidly changing production needs. This is particularly useful in dynamic environments like festivals, where MediorNet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

Besides their open, standards-based and proven interoperability, all MediorNet products easily integrate with Ember+/ NMOS-based orchestration and control. Their flexible and scalable distributed architecture lets you swiftly add not just single devices but entire subsystems like backup glue.

So the options are varied and 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.



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