SipRadius

WHITE PAPER

The practical solution to handling media anywhere

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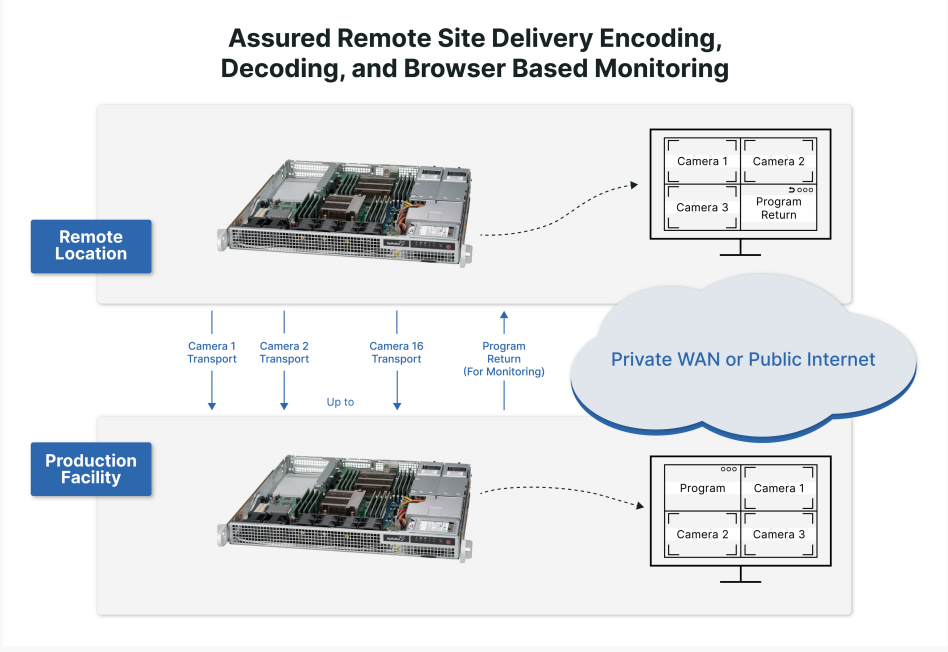
What you cannot do with SDI, though, is send it over long distances. The bandwidth requirements are very high – 1.5 Gb/s for basic HD – and it needs specialist cables and connections. Moving the signal from a remote event to the production centre needs dedicated leased lines or satellite links.

This is one of the key drivers in moving to IP connectivity for professional media. But where SDI is a single, clearly defined interface, “IP” just means moving the media in some sort of data format, over some sort of connection, which may or may not have any degree of control.

This is where a lot of the fear around IP has crept in. Broadcasters are faced with a whole alphabet soup of formats and codecs and protocols. They each have their different strengths, and there is no single one-size-fits-all solution.

But picking the right combination of tools to create a working system is a non-trivial matter. That means many are hesitating to seize he advantages of IP connectivity, for fear of creating a system that is sub-optimal at best, non-functional at worst.

IP workflows allow us the opportunity to think differently about the way we make and distribute television. But it depends upon an underlying platform that takes away the detailed decision making and allows you to move content to multiple destinations, or from multiple sources, quickly and reliably, without crashing the network.



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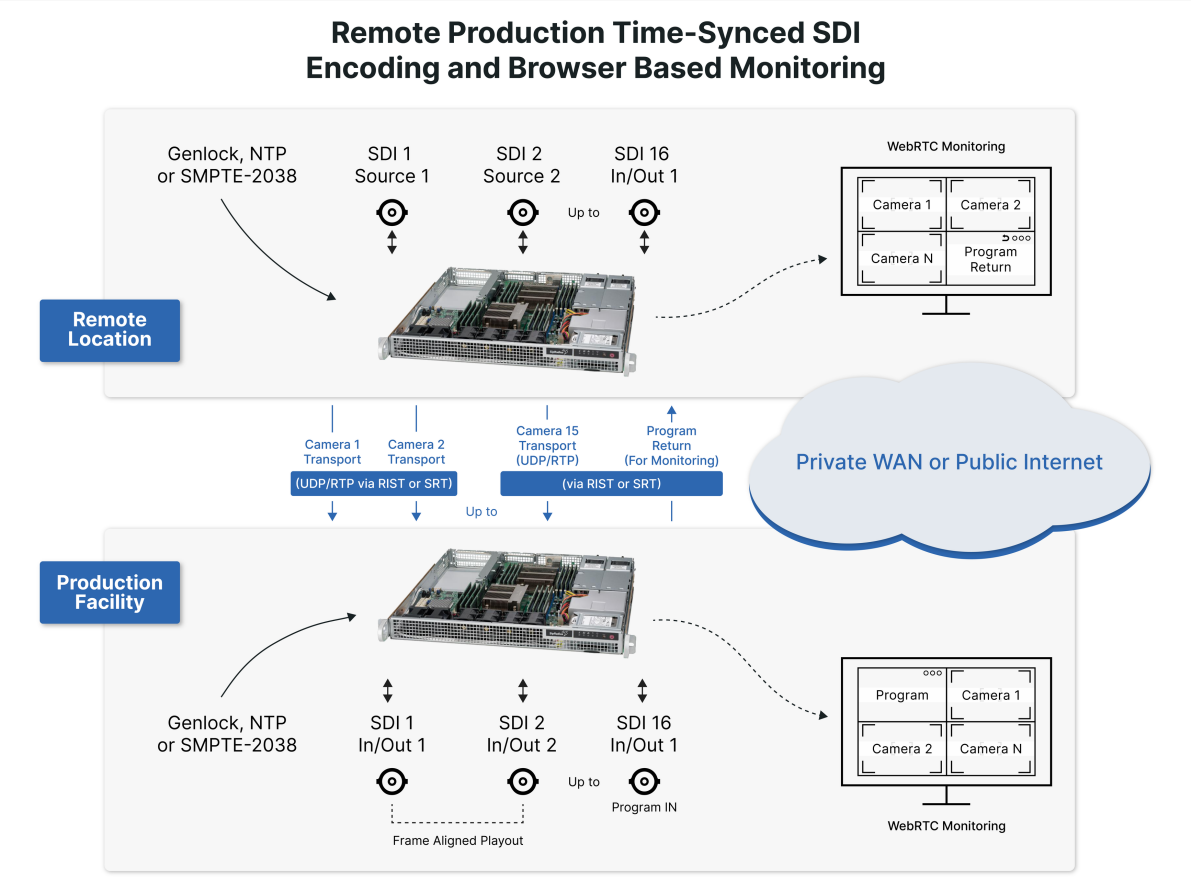
Software and hardware

SipRadius has developed a suite of tools which can be combined to build whatever connectivity you need. All that is required of the user is to set the top-level definition of requirements: what signals need to go where.

The essence of this solution depends, of course, on sophisticated software that can provide a means of integrating all the various formats and protocols into a coherent whole. But that software must have a hardware platform on which to run.

Today's CPUs and GPUs now have sufficient processing capabilities to power sophisticated solutions. AV1 is a remarkably powerful codec, for example, but it has been regarded as too processor intensive for day-to-day use. In fact, the massive parallel processing in today's GPU means that AV1 is now a practical proposition, and this is raising the quality of broadcast connectivity.

While the software runs on any modern bare metal, or in cloud processing, there are two common requirements which call for additional hardware. First is the need to bridge the SDI and IP worlds: bring in SDI sources (like cameras, say) and carry them over a network in a multiplexed data stream.



The second requirement is to maintain synchronisation between the signals. Again, we take for granted that signals will be synchronised in SDI, but we need to provide a timing layer within the data stream so that multiple sources arrive in the same precise temporal alignment at the destination.

For that reason, there will be occasions when dedicated media hardware is required. The SOAR-A from FOR-A is an excellent example. This allows you to connect SDI or IP inputs (NDI or SMPTE ST2110), plus reference time (genlock, NTP or SMPTE 2038 ancillary data), with the hardware doing the necessary encapsulation and time alignment, ready for distribution and delivery using SipRadius software.

RIST

Much of the value in long-haul IP connectivity comes in the ability to use the public internet as the foundation. It goes virtually everywhere and is readily and freely accessible, but it is inherently chaotic, which provides a major challenge for our time-critical media signals.

Sergio Ammirata, Ph.D., chief scientist at SipRadius, took a leading role in creating RIST, the Reliable Internet Stream Transport, to tackle these issues. RIST and its library of applications and interfaces is openly available to encourage widespread adoption.

The architecture of a SipRadius solution is to create nodes which collect or distribute feeds, provide remote monitoring, route signals, provide logging and more. These nodes can be any PC, or a dedicated appliance like SOAR-A, or a cloud instance.

Nodes are interconnected, over the internet or using a private WAN. These connections generally use RIST to guarantee secure, low latency transfers.

Your signals, your way

The unique strength of the SipRadius solution is that it is not based on products which define the way you work. It is a software environment, built on a carefully tailored operating system, which allows you to drop in the tools you need to achieve your goals.

The software tools include creating low bandwidth proxies, which are used for WebRTC multiviewers, for instance, although there have been occasions when broadcasters have taken the proxy stream to air in an emergency.

The environment allows users to determine what codecs best suit their requirements. That includes the world's first software AV1 encoder, and JPEG-XS for very high-quality contribution circuits, as well as H.264, NDI, SDI, ST2110 and more.

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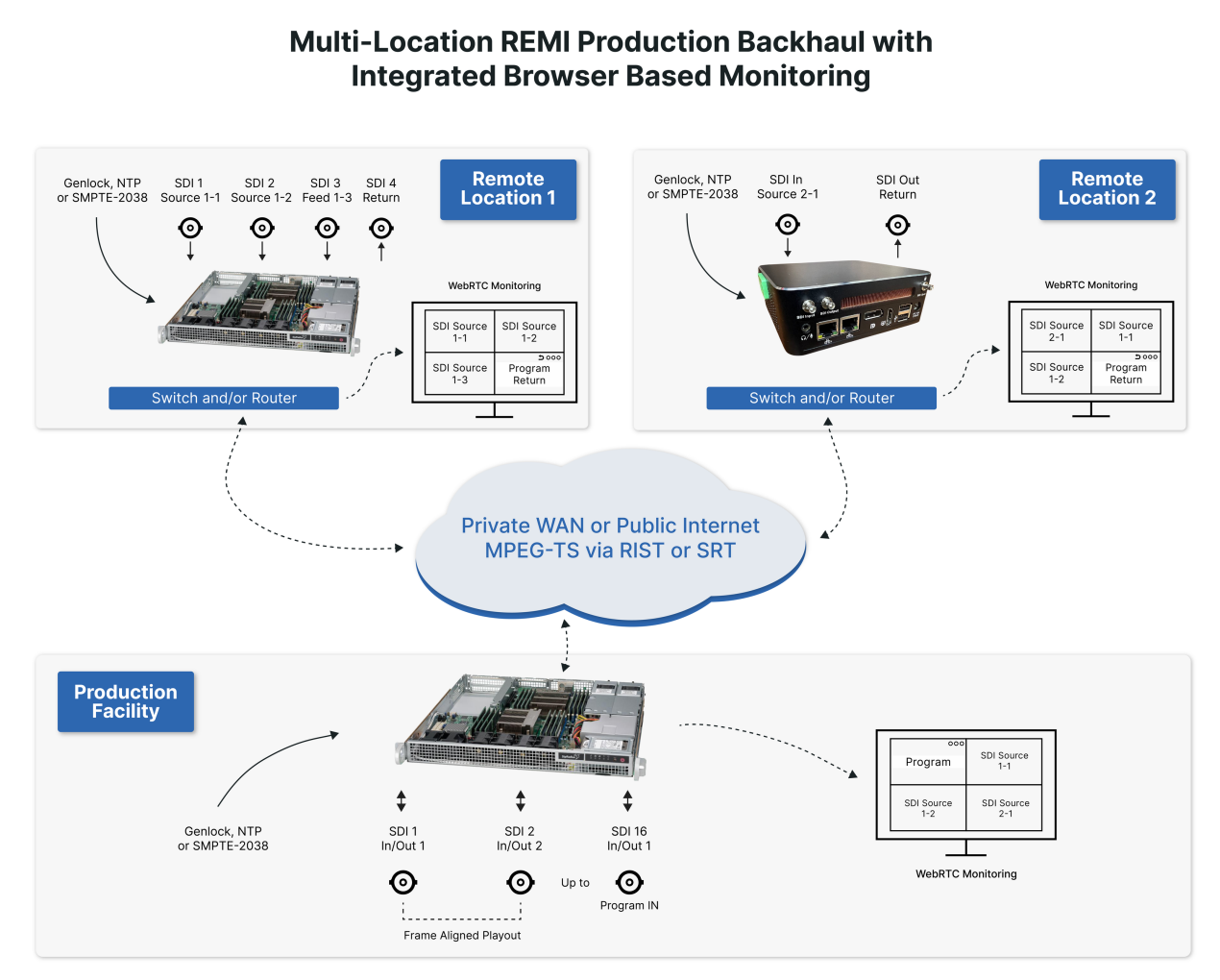
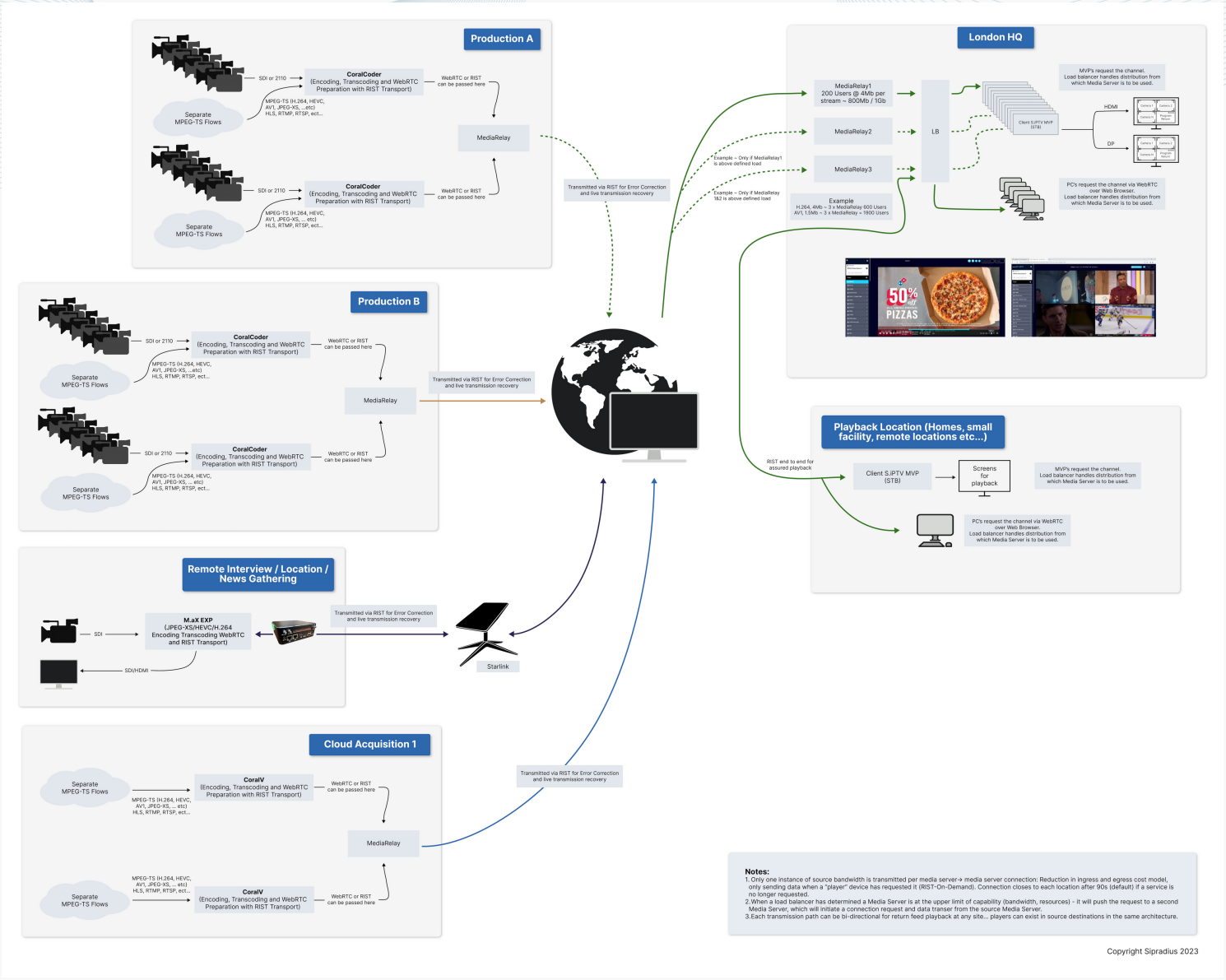
It is important that users should simply set up the signal paths they need without worrying about the underlying technology. A networked architecture will automatically balance loads across each carrier, spooling up additional streams if required to ensure the signals are securely delivered.



The SipRadius software environment is available in some turnkey configurations, including SOAR-A Powered by SipRadius. In general, though, the platform is best considered as a software environment which can be readily configured to do what you want.

SipRadius is the practical, pragmatic solution to establish broadcast quality connectivity over IP.



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