

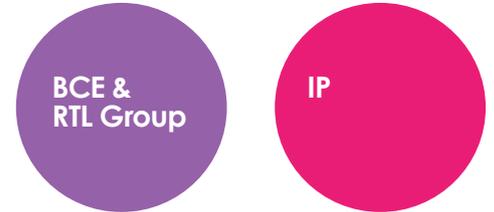
Building IP based production Systems



Snell
Advanced
Media

Case study

BCE Chooses SAM as primary partner for 'RTL City' Project.



Introduction to Broadcasting Center Europe

Located in Luxembourg, Broadcasting Center Europe (BCE) is a major European Broadcast, Telecom, ISP and IT service provider that offers technical services to more than 400 clients in, for example, TV, radio, telecommunications and IT, in more than 15 countries. BCE's parent company, the RTL Group, is the leading European entertainment network, with interests in 60 TV channels and 31 radio stations across 10 countries. A large number of well-known television channels have selected BCE as their technical partner for programme broadcasting, 24 hours a day, 7 days a week. Clients include RTL Télé Lëtzebuerg, Chamber TV (Luxembourg), RTL TVI, Club RTL, Plug TV (Belgium), RTL4, RTL5, RTL7, RTL8 (Netherlands), RTL9 and AB Groupe movie channels (France).

For production and post-production BCE has high definition (HD) outside broadcasting vans, SNG vehicles, fully equipped studios, post-production and quality check staff. For TV and radio transmissions with its six transmitter sites in the heart of Europe BCE has a unique and long experience in operating, planning and setting up transmitter infrastructures.

BCE is the systems integrator for the RTL Group's 'RTL City' project building relocation in Luxembourg that is set for completion in 2017.

The Opportunity

RTL Group is to consolidate all of its operations at its new headquarters: 'RTL City' in Luxembourg, including large television and radio studios. The development, dubbed 'RTL City', consists of seven buildings. The project to build new premises came around in 2013 when RTL Group needed to invest in more advanced technical equipment. RTL quickly realized that it would require a larger space in which to house the new technology. The building had to be future proof and it also had to be able to support customers and prospects alike for ten years post build, adapting to new workflow challenges as required.

The new building is one of the first pure IP broadcast centers in the world and deadlines were tight for completion of the project. In order to meet the project deadlines it was important for BCE and the RTL Group to find an IP production infrastructure partner that they could rely on to deliver on time and whom could meet their requirements, whilst adhering to open standards to ensure interoperability.

Evaluation Period

BCE first started looking at solutions for SDI replacement with IP technology in 2014 as part of an extensive evaluation process. However, IP technology wasn't mature and ready for real-world deployments at that time, and the solutions that were being introduced into the market were proprietary. The POC (Proof of Concept) that BCE tested as part of the original RFP process didn't provide the real-world reliability that was needed for mission-critical broadcast use.

BCE therefore decided to re-start the evaluation process again in late 2015 and, at this point, a broader number of industry players responded. The second round consisted of approximately six months of detailed technical testing. SAM started manufacturing its IP portfolio in August 2015, and had a roadmap for full product release at the end of Q2 2016.

As part of this process, SAM provided a small POC system comprising of its 2nd generation IQMIX modular cards, with dual 10GbE interfaces and up to 12 bidirectional SDI ports supporting IP-SDI and SDI-IP conversion. Plus a prototype control system with both software and hardware router panels, as well as a prototype software enabled IP multi-viewer running on a commercial off the shelf (COTS) server platform.



SAM was selected as the main IP technology supplier to provide an end-to-end IP routing system for the 'RTL City' Project.



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BCE were keen to evaluate the scale of vendor IP solutions as part of this process.

BCE started with 200 inputs x 200 output streams as a reasonable first step; whilst not being the final matrix size needed to achieve routing (nearly 900 video and over 500 audio end points). BCE wanted to see the same level of scalability, stability, propagation delays, synchronization and ultimately to see how vendors responded. It was critical that the IP solution would have the same quality of service and reliability that BCE was achieving with SDI.

At the end of the evaluation period SAM was selected as the main IP technology supplier to provide an end-to-end IP routing system for the 'RTL City' Project. BCE chose SAM's:

1. IP video, audio and metadata routing system and core IP control and monitoring system
2. 3rd generation 40 GbE SDI-IP and 10 GbE MADI-IP gateway cards
3. 40 GbE IP-enabled Kahuna production switchers
4. IP-enabled SQ servers for recording, replay and editing workflows
5. IP Multiviewers
6. Audio XS audio processing and routing system
7. IQ-Edge video processing platform
8. IP routing fabric from Arista and Juniper

Jean Lampach, Chief Technology and Development Officer at BCE, comments: "Having undertaken extensive and highly competitive tests into the suppliers within the market, SAM's experience and product offering was truly unmatched. They quickly understood our business needs and challenges, and have technology that offers flexibility and scalability, making them the right partner to help undertake our IP deployment. They put the needs of our customers at the core, and as a result will ensure a smooth transition path that will enable us to continue to deliver exemplary service as we evolve."

Other 3rd party vendors in the project included: Grass Valley (cameras), Lawo (high level control system), Skyline (high level monitoring system) and Harmonic (servers & encoders). SAM was selected, as it was able to:

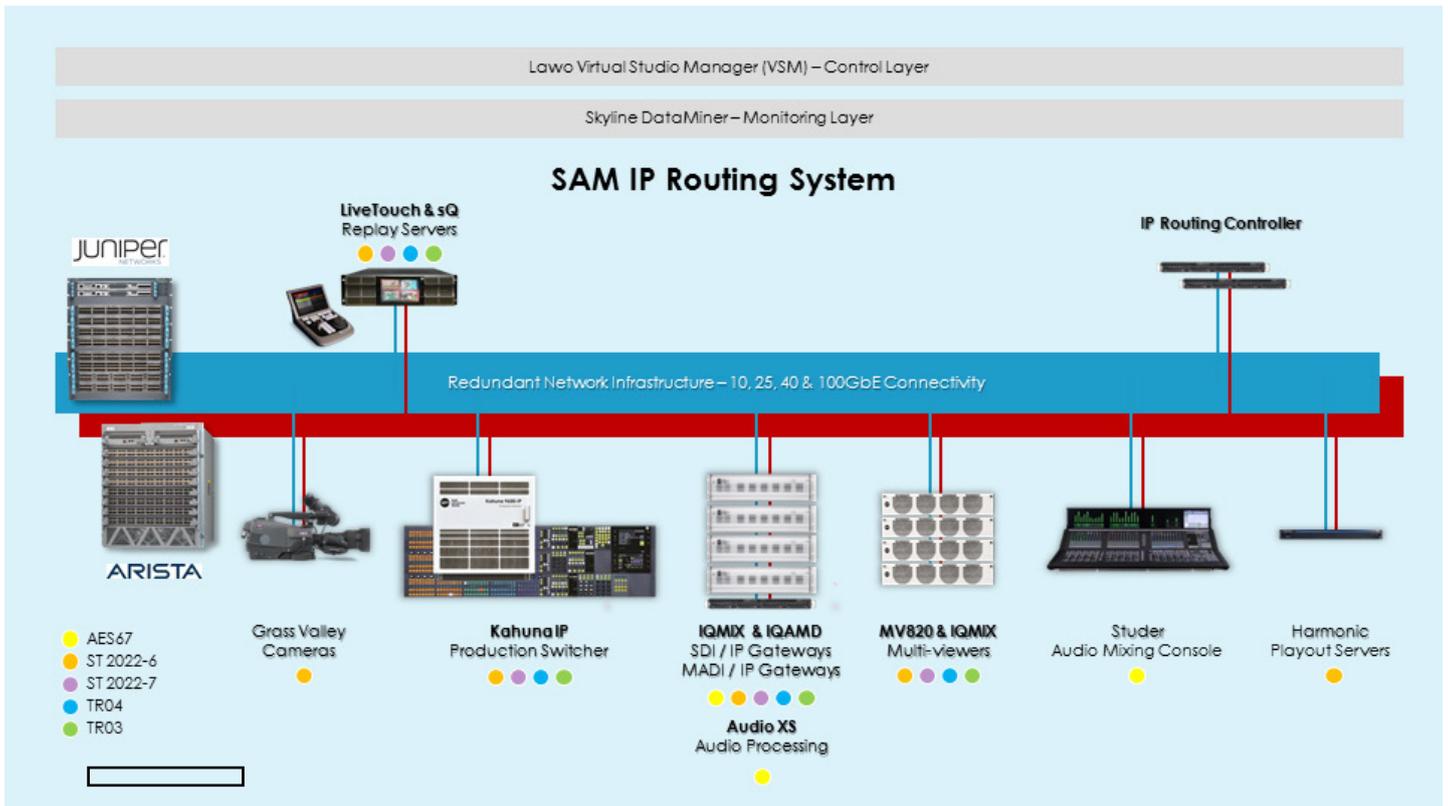
1. Demonstrate full "SMPTE ST 2022-7" redundant hitless operation, with seamless recovery from interruption to one IP link (e.g. disconnecting fibre, removing SFPs, rebooting or powering off, for example, the IP switches).
2. Full VSF TR-04 operation which allows medium-term interoperability with both legacy video devices supporting SMPTE ST 2022-6/7, (e.g. Grass Valley cameras), and audio devices supporting AES67 (e.g. Studer audio consoles).
3. SAM could demonstrate a clear on-air upgrade path from VSF TR-04 to TR-03/ST 2110.
4. Deliver 40GbE network technology, giving the highest density and future-proofing in the IT systems.
5. Demonstrate reliable fast SDI-level performance and clean switching, through COTS IP switches, with no SDN (software defined network) required.
6. Finally, in long-term reliability testing, both SAM's media flows and control system exhibited the best up-times, reliability and fast recovery from errors.

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The Solution

The SAM IP routing system combines SAM’s Kahuna IP production switchers, IP modular SDI to IP and MADI to IP gateways, IQ-Edge IP processing systems, IP routing control systems and IP multiviewers providing BCE with a flexible and resilient IP architecture for the future. The initial deployment is based around VSF TR-04 using SMPTE ST 2022-6/7 & AES67 redundant IP streams with a seamless migration to VSF TR-03.

The core system supports over 2,400 video flows and the IP routing system consists of the following equipment:

1. Redundant COTS IP switches supplied by SAM: Arista 7508R and Juniper QFX10008, supporting both 10Gbe and 40GbE connectivity.
2. SAM IP routing control system with full redundancy, including a direct interface to the Lawo VSM (Virtual Studio Manager) control layer.
3. SAM monitoring system, collecting data from the IP sub-system, with a direct interface to the Skyline DataMiner monitoring layer.
4. SAM Edge devices with VSF TR-04 and “ST 2022-7” redundancy support.
5. IQMIX cards for IP-SDI conversion, and IQAMD cards for IP-MADI conversion.
6. Audio XS software audio stream processors & IQ Edge video stream processors.

7. Kahuna-IP production switchers & SQ-IP video servers.
8. MV-820 IP multiviewers.
9. SAM Interfacing to 3rd party edge devices for IP streams input and output control:
 - Grass Valley “LDX 86” IP studio cameras.
 - Studer audio mixing consoles.
 - Harmonic “Electra X2” IP playout servers and encoders.

On the COTS switch side, BCE didn’t want to be vulnerable to any common software problem affecting both main and back up IP switches at the same time. Since SAM doesn’t utilize SDN control it ensures that it can operate seamlessly with multiple IP switch vendors within the same IP system – allowing BCE to reduce any technical risks by having two independent IP switch vendors for their main and backup core IP infrastructure.

SAM demonstrated comprehensive and user intuitive router control, transparent to the operator whether in SDI, IP or hybrid operation, on both traditional software and hardware router panels, including multi-level routing support with VSF TR-04 for audio breakaways. SAM made it very easy for third-party control systems (Lawo) to control the routing in the system via the SAM router controllers.

BCE were keen to ensure that all of the vendors selected for the ‘RTL City’ project should work collaboratively together in order to meet the tight project deadlines and strict technical requirements; they didn’t want to install equipment based on one single vendor. “We wanted companies to collaborate to ensure the interoperability and reliability of the system,” says Andreas Fleuter, Manager Special Projects, BCE. “And we have been truly amazed with the responsiveness and collaboration of the various vendors. It has given us the confidence that the project would be a success.”

Key Learnings & Take Aways

“SAM worked in partnership with BCE to solve issues that arose during the project phases, demonstrating a high level of engineering and management responsiveness,” explains Costas Columbus, Manager Special Projects, BCE. “We have learnt the importance of testing what we’re doing and testing it again as well as the importance of training people.”

According to Fleuter: “We have the opportunity to grow channels and to be more responsive. Today it takes you two months to set up a channel and in the future this could be done in a matter of days, and probably hours. IP technology gives us this flexibility. It’s an exciting time for BCE and our Group!”