



tpc makes broadcast history with UHD1

Delivers first live sports event from SMPTE ST 2110
full-IP uncompressed UHD HDR OB truck



tpc is the leading broadcast service provider in Switzerland. An independent subsidiary of Swiss national public broadcaster SRG SSR, tpc is responsible for production and technology for SRF (Schweizer Radio und Fernsehen), managing live production for a broad range of major national and international events — from football and Alpine skiing to theater and opera.

AT A GLANCE

1ST
all-IP OB truck

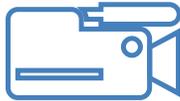


SMPTE

ST 2110

Production

48
Cameras



2160p
4K Ultra HD

100
GbE



1+1

Redundant Configuration

THE CHALLENGE

Build an outside broadcast (OB) truck capable of meeting today's cost efficiency and production quality requirements, including HDR UHD, and of evolving to accommodate future market demands. With additional plans to build a new, IP-based facility in Zurich, tpc also wanted to use the truck as a learning exercise on how to construct and operate IP infrastructure.

THE SOLUTION

- SDI-to-IP gateway and all-IP-capable signal processing platform [Selenio™ Network Processor](#)
- Hybrid IP, UHD-ready multiviewer [EPIC™ MV](#)
- Software control system for hybrid SDI and IP networks [Magellan™ SDN Orchestrator](#)
- IP switches [Arista DCS 7504R](#)

THE RESULT

When UHD1 hit the road in late 2018, tpc became the first media company to broadcast a live sports event from a SMPTE ST 2110, full-IP, uncompressed UHD HDR OB truck.

“I believe the real benefit of IP is its ability to accommodate future requirements. I think it’s the only option when it comes to being fully futureproof.”

— Andreas Lattmann, CTO of tpc



THE SOLUTION

A strong advocate of open standards, tpc chose to construct their new truck to support uncompressed UHD IP production using SMPTE ST 2110.

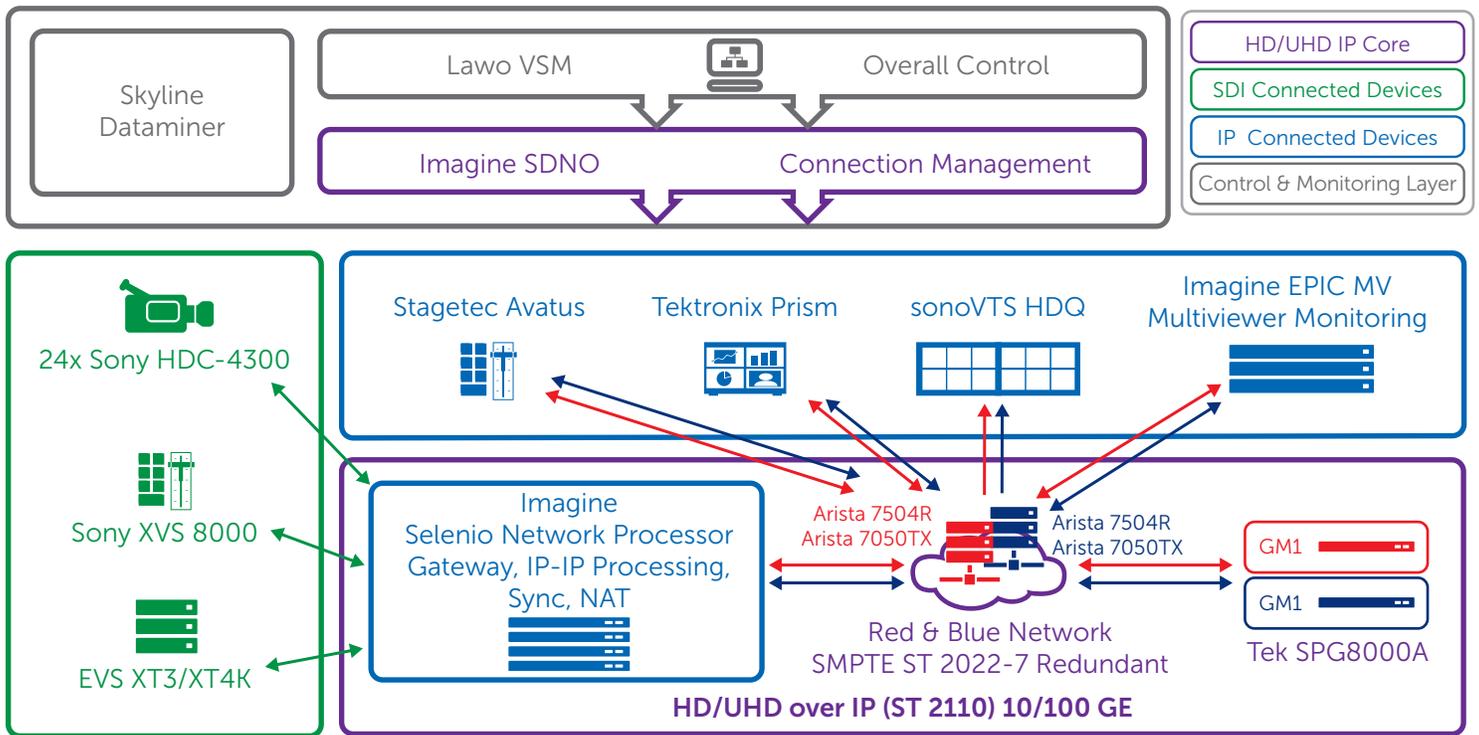
At the core of tpc's UHD1 is Imagine's Selenio™ Network Processor (SNP), which serves as both an SDI-to-IP gateway and low-latency, all-IP signal processing platform. It processes uncompressed UHD over IP using ST 2110, supports HD/UHD and SDR/HDR conversions, and assures optimal timing of IP signals for interoperability with all other compliant equipment in the truck. The SNP feeds into commercial off-the-shelf switches from Arista Networks using QSFP28 ports over 100GbE links.

tpc uses Imagine's EPIC™ MV multiviewer with the SNP to monitor the signals of multiple screens, with inputs and monitor outputs all in IP. SNP makes a "proxy" signal from every UHD signal it touches, and EPIC MV uses these proxy signals — which are full-color, full-frame-rate, and typically HD resolution — rather than the UHD original, resulting in a significant reduction in overall system cost.

Connectivity of all Imagine and third-party devices, both SDI and IP, is managed by the Magellan™ SDN Orchestrator software control system, allowing tpc personnel to switch seamlessly between HD, Ultra HD and uncompressed real-time SMPTE ST 2110 streams.

"It is great to see our new UHD1 truck on the road, giving us both outstanding production quality and valuable experience in developing and operating IP networks. Most important, it does all this while looking and feeling like the trucks that our crews have been operating for years."

— Andreas Lattmann, CTO of tpc



THE RESULTS

tpc now has a future-proof OB truck that will remain on the cutting edge of mobile production for many years to come. The flexible IP architecture is agnostic to video formats and resolutions and able to seamlessly integrate the latest compression schemes and picture-quality enhancements.

The SMPTE ST 2110 specification enables tpc to break out video, audio and auxiliary data into separate, discrete streams — boosting efficiency and flexibility over SDI-based solutions. In addition, the pure-IP approach lessens the cabling and power consumption requirements of an SDI or hybrid SDI-IP environment.

UHD1 is IP at its core and optimized for UHD — using standard or high dynamic range — but is also still capable of handling SDI-based signals. By working with uncompressed and standards-based UHD signals, tpc is able to process video signals to meet all client preferences without requiring a mezzanine compression scheme, while at the same time maximizing video quality and minimizing latency.

Most importantly, the tpc crew was able to get up to speed quickly with the next-generation technology, as it delivers the same performance characteristics and operational look and feel as a traditional SDI system, but with all the benefits of IP connectivity and software flexibility.

