

Outside broadcast specialist Timeline Television selects Arista as core switching technology for Europe's first OB truck to support fully uncompressed 4K/UHD, IP and High Dynamic Range workflows.

Highlights

Challenge

Building Europe's most advanced outside broadcasting truck required a high performance and technically advanced switching architecture.

Solutions

- Arista 7504R Switches
- Arista EOS®

Results

- Massive 4608 x 4608 video matrix able to support 32 Sony UHD cameras and 14 video servers
- Flawless reliability delivering sub 4 microsecond latency to ensure real time operation
- Small form factor with ability to flexibly deploy 10, 25 and 100G interfaces to meet every deployment scenario and future evolution

With growing demand for OB (outside broadcasting) capability offering a full 4K/UHD and IP workflow, Timeline Television decided to build Europe's first purpose build truck around the newly ratified SMPTE 2110 standard. Alongside a range of specialist broadcast suppliers, Timeline Television selected Arista Networks as the core switching platform to deliver the performance, scale and reliability needed to power a truly state-of-the-art vehicle that is already being used at major sporting events across the UK.

Broadcast Anywhere
Timeline TV

Project Background

Two of the biggest trends in broadcasting are moves towards higher definition formats such as UHD/4K and the switch to IP to accommodate both new resolutions, but also wider requirements for more efficient IP based workflows across content creation, processing and distribution. OBs are no different and are challenged further by the need to ensure absolute reliability of live feeds from high profile sporting and other live events.

One of the pioneers in the field of OB is UK based Timeline Television, a highly regarded provider of technical and creative facilities for programmes as diverse as live music and awards shows, political conferences, global and domestic sporting competitions, light entertainment and current affairs. Uniquely in the industry, Timeline Television has the ability to provide facilities for production from concept to completion, including: OB, post production and an exhaustive knowledge of tapeless solutions. With two large post production facilities in London and a third in MediaCityUK, Timeline Television provide state-of-the-art facilities to major broadcasters including BBC, BskyB, ITV and many others.

Challenge

With the recognition that more OBs would require UHD capability along with a fully IP end-to-end workflow, in 2016, Timeline Television began examining the possibility of building a state-of-the-art, triple expanding OB truck to support fully uncompressed 4K/UHD, IP and High Dynamic Range workflows.

The truck would be based around the SMPTE 2110 and SMPTE 2022 standards that define transport and timing protocols for audio, video and metadata over an IP network. The design would use a number of elements from broadcast technology supplier SAM but when it came to core IP switching, the choices were limited as Dan McDonnell, Managing Director and Founder of Timeline Television explains. "We needed a high density switch with 100G ports and support for 4 lanes of 25G with non-blocking architecture as unlike a data network, we can't drop any packets. If you look at the market, that rules out the vast majority of vendors and in our test the Arista 7504R was able to handle everything we threw at it"



Solution

The Arista 7500R Series modular systems are high performance data centre switches, available in a compact 7RU (4-slot) or 11RU (8-slot) that combine scalable L2 and L3 forwarding and traffic management with advanced features for network monitoring, precision timing, and network virtualization to deliver deterministic network performance for mission critical data centres, cloud computing, enterprise and HPC environments. The 7504R has 36 x 100G Interfaces per linecard with a switching capacity of 15Tbps plus an industry leading latency of sub 4 microseconds.

With the Arista switch at the heart of the system, the OB truck has an effective maximum matrix size of 4608 x 4608 which allows it to run 32-cabled Sony 4300 cameras plus 14 UHD capable video servers along with full audio up to Dolby Atmos levels.

Conclusion

The truck which took 5 months to build is widely regarded as the most advanced unit of its kind in Europe and as McDonnell says, "As an industry first, there was a bit of a learning curve, but we had no issues with the Arista switch. One of the things we were concerned about was unlike a data center where a switch is always on, we have to deploy on a new site for every job and switching equipment on and off needs to be predictable and have reasonably quick startup - in this respect, the Arista switch is up and running in under 8 minutes which is faster than some of the other elements within the truck."

The new UHD truck has already been put through its paces at a number of high profile events including the recent IAAF World Championships and World Para Athletics Championships in London. Next the truck will make its way to Amsterdam for the International Broadcast Conference 2017 where it will showcase the state of the art in terms of outside broadcasting technology.

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