Arqiva selects Arista for innovative transition to an All-IP communication infrastructure

Highlights

Challenge

Arqiva is transitioning to an all-IP infrastructure requiring an underlying software-defined IP network capable of providing high bandwidth, low latency and deterministic behaviour.

Arista Solutions

- Arista 7280SR Series Switches
- Arista 7508R Switches
- Arista EOS®

Results

- Increased capacity along with significant OPEX savings
- SDN based architecture allows easier integration with scheduling systems for optimised performance
- Highly scalable with deep support for multicast workflow for extended flexibility

As an innovator in communication infrastructure, Arqiva is transitioning its legacy co-axial SDI and ASI baseband architectures towards an All-IP architecture to support new commercial models and changing consumption habits. With technology from Arista Networks, Arqiva is benefiting from an advanced infrastructure able to handle the most demanding workloads while delivering significant OPEX savings along with an overall increase in available capacity to meet the expectations of the next generation of consumers.

arqiva

Project Background

Arqiva is a leading communications infrastructure company that is central to millions of vital connections across the UK. As the largest independent provider of telecom towers, and the only national provider of terrestrial television and radio broadcasting, Arqiva's 16,000 sites deliver media services to 98.5% of the UK population. Arqiva is also a leading provider of global satellite managed services, with five teleports, 80 earth stations and access to 30+ satellites.

Challenge

Although much of Arqiva's infrastructure is highly visible across the UK landscape, it is beneath the ground and in data centres around the country that Arqiva delivers much of its services.

Managed from its facilities in Winchester, Chalfont Grove and Paris, Arqiva delivers 1000+ TV channels across its fibre and satellite networks. Much of this content flows around Arqiva's sites on legacy co-axial SDI and ASI baseband architectures that have endured within the TV industry for many decades.

With the demand for more flexible infrastructure to support new commercial models and changing consumption habits, Arqiva has led the way in transitioning towards an All-IP architecture. Arqiva's next generation infrastructure is built upon core principles of software-defined COTS (Commercially Available Off the Shelf) hardware and automation.

However, switching from dedicated broadcast interfaces is no simple task. As Kenelm Deen, Arqiva's Senior Product Manager, Terrestrial Broadcast explains, "While inflexible, these interfaces provide deterministic low latency performance, essential for maintaining high-availability levels and picture quality. Ethernet interfaces from

10G to 100G provide sufficient bandwidth to transport uncompressed content from SD to UHD but require additional broadcast wrappers to do so."

"This includes the SMPTE standards, which have recently enabled uncompressed media transport over IP and, thereby, removed the last blocker to an all-IP platform. While still in their infancy, these new protocols, along with standards like AMWA NMOS, promise to reduce complexity in managing content distribution."

Solution

Building on the proven SMPTE ST 2022 standards, the recent ratification of the first SMPTE ST 2110 standards go beyond the replacement of SDI with IP, to enable greater flexibility. The broadcast industry's adoption of these standards and the availability of high-performance COTS infrastructure has been a catalyst for change. At the most intrinsic layer, for Arqiva this means developing an underlying software-defined IP network capable of providing the high bandwidth, low latency and deterministic behaviour that can, over time, replace its current SDI infrastructure.

Although a long-term transition, senior Technologists and Architects at Arqiva began evaluating several switching technologies including a deep dive proof of concept bake-off. Following this technical evaluation, Arqiva selected Arista as the core platform to support the project which would upgrade a large swath of its SDI infrastructure at its Winchester and Chalfont-Grove sites that currently support the bulk of its UK and global media distribution networks.

The selected Arista 7280R series used for the upgrade are a set of purpose-built 10/25/40/50/100GbE fixed configuration 1RU and 2RU systems designed for the highest performance environments such as IP Storage, Content Delivery Networks, Data Centre Interconnect and IP Peering. Wire speed L2 and L3 forwarding are combined with advanced features for network virtualization, open monitoring and network analysis, resiliency and architectural flexibility with deterministic performance. Deep packet buffers and large routing tables allow for Internet peering applications and the broad range of interfaces and density choice provides deployment flexibility. The 7280 series have successfully been deployed in similar SDI to IP environments including projects with Sky Italia and advanced IP capable OB trucks from NEP and Skyline.

Conclusion

A key advantage of the Arista platform was the Arista Extensible Operating System (EOS®) and the EAPI which allows Arqiva to use its advanced media distribution and scheduling software to orchestrate configuration changes within the switches to improve performance. This software defined network (SDN) capability is particularly useful in implementing dynamic changes in multicast workflows and allows for enhanced flexibility for a range of future use cases.

The SDI to IP migration project is still ongoing. However, the first phases have already proven the concept and the expected benefits include significant OPEX

savings along with an overall increase in available capacity that will help Arqiva meet the expectations for more UHD channels and additional IP centric OTT and catch-up services that are likely to grow over the next few years.

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