

Sky Italia selects Arista for innovative transition to SDI over IP networking while delivering broadcast grade performance and resiliency.

Highlights

Challenge

Sky Italia needed a large-scale routing system within its Milan facility to deliver mission critical SDI over IP network infrastructure.

Solutions

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

Results

- Speed and scalability benefits of IP technology with switching quality of a traditional baseband router
- FlexRoute technology scales to over a million IPv4 and IPv6 route prefixes in hardware
- Seamless compatibility with Imagine Communications' Platinum™ IP3 routers and Imagine Magellan™ SDN Orchestrators
- Enables use of industry-standard routing control protocols for broadcast equipment even when the source, destination, or both are within an IP domain

As an innovator in use of broadcast technology, Sky Italia has upgraded its facilities in Milan to create a large-scale routing system that uses SDI over IP to gain significant operational and cost efficiency without sacrificing reliability or performance. With technology from Arista Networks and Imagine Communications, Sky Italia is benefiting from an advanced infrastructure able to handle the most demanding mixed traffic loads including real-time, multicast, and storage traffic while still delivering the lowest latency and broadcast grade resiliency.



Project Background

Sky Italia is the largest pay-TV operator in Italy, operating across multiple broadcasting platforms with varying business models serving 4.73 million subscribers. Sky Italia is part of Sky Plc, Europe's leading entertainment company serving more than 21 million customers across Italy, Germany, Austria, the UK and Ireland.

Challenge

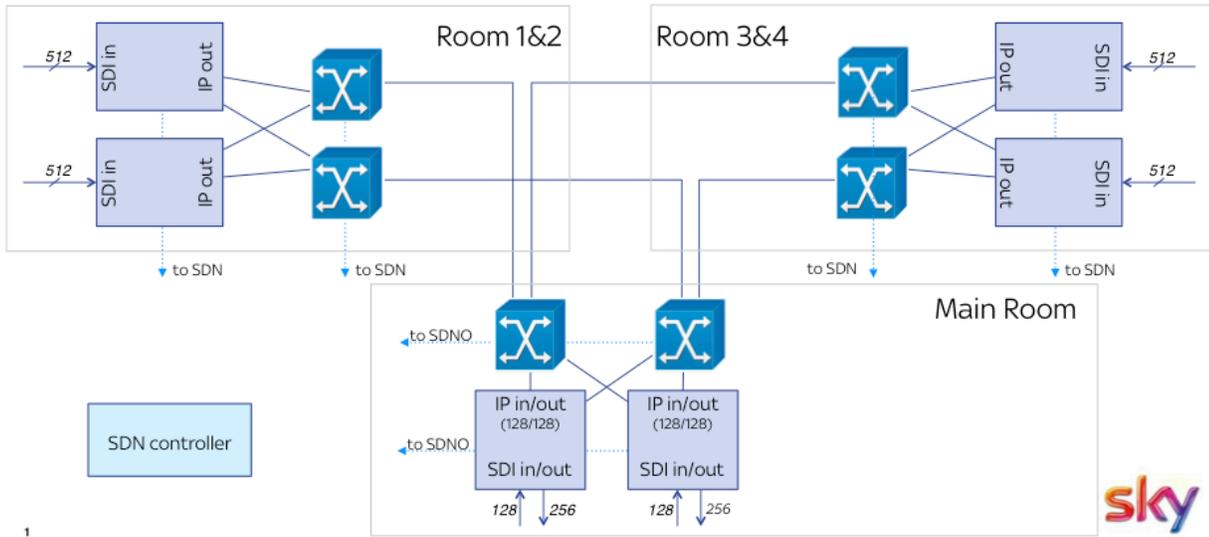
Sky Italia supports more than 150 of its own channels and following a reorganisation, the Italian operation would also handle all signal contribution for Sky Deutschland from operations centres in Milan and Rome. Sky Italia already transports individual feeds and multiplexed streams between the two locations but faced with the burden of handling signal contribution between Milan and Munich, Sky Italia needed to migrate to a large-scale routing system distributed across several floors within the Milan facility. To meet the future evolution towards an all IP based production and broadcast environment including IP-based disaster recovery, Sky Italia decided to design the system around an IP switching core using high capacity data centre switches. However, the new IP environment also needed to connect to legacy SDI systems within the Milan facility. The ultimate goal was to leverage the speed and scalability benefits of IP, while achieving the same level of switching quality as a traditional baseband router.

Solution

Sky Italia selected a unified, open and standards-based approach consisting of Arista Networks' data centre switches and Imagine Communications' Platinum™ IP3 routers with the entire workflow managed via Imagine Magellan™ SDN Orchestrators.

The Arista Networks 7280SR and 7508R selected for the project provides the levels of performance, resources and reliability needed to carry large volumes of SDI over an IP transport layer with broadcast grade resilience. The 7280SR provides up to 48 wire-speed 10GbE and 6 wire-speed 100GbE ports delivering up to 10.24 terabits per second for the equivalent of 5.76 billion packets per second of throughput. Arista provides deterministic network performance that is critical in this real-time broadcast use case through the use of a virtual output queue (VOQ) architecture that eliminates head-of-line (HOL) blocking and virtually eliminates packet drops even in the most congested network scenarios. An advanced traffic scheduler fairly allocates bandwidth between all virtual output queues while accurately following queue disciplines including weighted fair queueing, fixed priority, or hybrid schemes. As a result, the Arista 7280SR can handle the most demanding data centre requirements with ease, including mixed traffic loads of real-time, multicast, and storage traffic while still delivering low latency.

Matrice IP Layout



Rooms 1, 2, 3 and 4 are 9 x 72805R-48C6 per room (total 36x) and main room are 2 x 7508R

In the main room, Sky Italia deployed two Arista 7508Rs benefiting from the innovative Universal Spine architecture and Arista's FlexRoute™ technology that scales to over a million IPv4 and IPv6 route prefixes in hardware. This enables Sky Italia to maintain large L3 routing tables with significant power consumption savings over existing ways that IP routing longest prefix match lookups are performed. This in turn enables higher port densities and performance with power and cooling advantages due to more efficient transistor count and activity factor reduction compared to alternatives.

"We looked at a number of options and only Arista's implementation of universal spine plus FlexRoute offers us the performance benefits of deploying a traditional routing platform with cost savings and flexibility of a switching architecture," says Gabriele Ubertini, Head of Technology Research and Engineering. "In terms of performance and reliability, the Arista solution has been faultless and integrated seamlessly with the other elements within our plant with enough density and headroom to allow us to scale to meet new business demands."

Conclusion

Sky Italia has deployed the Arista switches for the IP-encapsulated SDI streams and Imagine IP3 routers to switch the SDI signals in a fully redundant 1+1 configuration. The initial deployment of Sky Italia's new system can handle 640x640 IP streams in a main and backup network, connecting to a 128x128 SDI matrix in a non-blocking manner.

The Magellan SDN Orchestrator controls the Platinum IP3 routers to seamlessly manage SDI signal flows and mappings inside their IP network — providing the bandwidth management and Quality of Service (QoS) required achieving professional broadcast performance. This allows Sky Italia's operation team to manage both the baseband and Arista IP network through the same operational interfaces and processes across both networks. The seamless integration between the Arista platforms and Imagine routing and SDN systems allows Sky Italia's to retain its investment in automation, tally systems, multiviewers, and master control switchers that can continue to use existing industry-common routing control protocols, even when the source, destination, or both are actually in the IP domain.

The result is a network that leverages the high capacity and lossless fabric along with granular network telemetry at every layer of the market leading data centre switches to provide the same real-time quality performance that baseband systems deliver today. The new solution is successfully implemented and delivering real world benefits that are accelerating the transition to an all IP-based workflow to meet the needs of Europe's most advanced entertainment company.

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