

USE CASE – Media and Broadcast



The Digital Revolution

The broadcast and media industry has undergone a transformative shift in recent years, driven primarily by digital innovation and changing consumer habits. Traditional television and radio have seen a decline as streaming services gain prominence, offering on-demand and personalized content.

Traditional broadcast methods are being replaced by IP-based systems, enabling more flexible and scalable content delivery. This technology change brings with it its own problems but the APS Networks P4 switches with our dedicated Precision Timing solution can help.

Technology in media and broadcasting has revolutionized the way content is created, distributed, and consumed. High-definition (HD), 4K and now 8K ultra-high-definition (UHD) cameras provide stunning visual clarity, while advanced audio equipment ensures superior sound quality.

Digital broadcasting and streaming services enable global access to content across multiple devices, from televisions to smartphones.



Programmable and Precision Time Enabled Technologies

In the dynamic landscape of media and broadcast networks, achieving seamless switching is paramount for delivering high-quality content without interruptions. This necessitates robust technologies capable of managing traffic efficiently and maintaining synchronization across distributed systems. Two key technologies, P4 (Programming Protocol-Independent Packet Processors) and PTP (Precision Time Protocol), emerge as essential tools in this endeavor, offering flexible programmability and precise timing synchronization.

P4 revolutionizes network programmability by enabling the customization of packet forwarding behavior in real-time. In media and broadcast networks, P4 allows operators to define tailored forwarding logic to adapt to diverse traffic patterns and application requirements. Through programmable data planes, P4 facilitates intelligent packet processing, enabling features like packet filtering, forwarding, and modification based on application-specific criteria. This agility empowers broadcasters to implement seamless switching strategies that prioritize critical content delivery while optimizing network resource utilization.

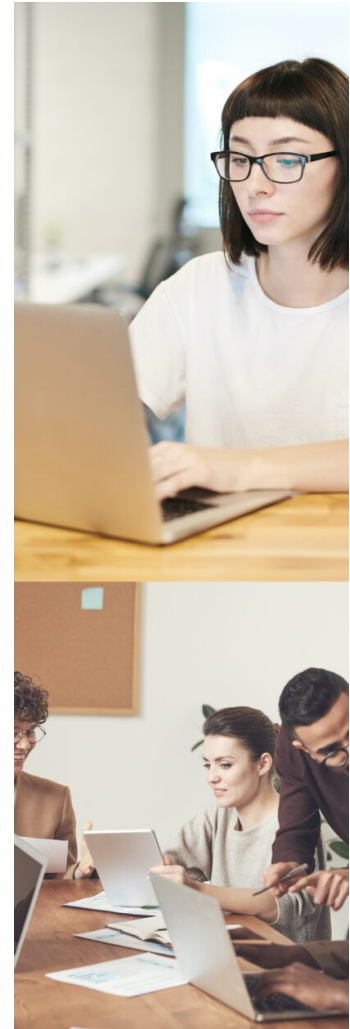




Complementing P4, Precision Time Protocol (PTP) ensures precise synchronization among networked devices, a fundamental requirement for seamless media switching. PTP achieves microsecond-level clock synchronization by exchanging timing information between network elements, facilitating coordinated actions across distributed systems. In media and broadcast networks, accurate timing synchronization is indispensable for maintaining lip synchronization in audiovisual content and orchestrating seamless transitions between sources. By aligning timestamps across network nodes, PTP mitigates jitter and drift, guaranteeing reliable timing for content processing and distribution.

The integration of P4 and PTP empowers media and broadcast networks with unprecedented flexibility and precision in traffic management and synchronization. Leveraging P4's programmability, operators can implement dynamic traffic steering and Quality of Service (QoS) policies tailored to media delivery requirements. Meanwhile, PTP ensures tight synchronization among networked devices, facilitating coordinated content delivery and seamless switching between sources. Together, these technologies lay the foundation for next-generation media networks capable of delivering immersive, uninterrupted content experiences to audiences worldwide.

The APS Networks programmable network switch combination of P4 and PTP offers a compelling solution for achieving seamless switching in media and broadcast networks. By harnessing the programmability of P4 and the precision of PTP, broadcasters can optimize resource utilization, ensure synchronization, and deliver uninterrupted content across diverse platforms and devices. This synergy enables the realization of innovative media delivery architectures that prioritize performance, reliability, and quality in the digital age.



Why APS Networks?

Security by Design

Our switches are designed based on the security by design principles. We have full control of our hardware supply chains and have Software Bill of Materials (SBoMs) in place for all software used. Further security features all for use of our products in Critical National Infrastructure (CNI).

Programmability with P4

The innovative technology of the Intel Tofino chipset offers unlimited open networking possibilities by the use of P4 programming language, featuring in-band telemetry and mega scale data center switching. P4 is easy to access, it enables hardware offloading of protocols, arbitrary tagging of packets, and controlling behavior based on individual data pattern matches. The switch has a non-blocking switching capacity of 2.0 Tb/s and is capable of complex protocol processing at wire speed.

Innovative Designs

Our technologies provide the ultimate, stable and supported platform for open network innovation. And our dedicated hardware solutions are built around enabling the latest open technologies to serve vertical industry needs. Open technology enables hardware and software diversity: reducing risk and lock-in to tardy vendor roadmaps.

Made in Europe

Our switches are produced in Europe, as the final manufacturing will be done in Belgium, and most of the components are provided by European suppliers. The printed circuit boards (PCBs) come from Austria and most of the design is done in The Netherlands.

We Deliver!

Modularity

All our new models can be upgraded with a daughter board, supporting a full range of Precision Timing Protocol (PTP) profiles. For the CPU you have the choice of AC or DC power supplies with front to back (port to power) and back to front (power to port) airflow. The PSUs are of Titanium-grade, to provide the highest possible power efficiency levels.

PTP Timing & Synchronization

Our advanced programmable switches are the first to deploy the Tofino chipset with a time synchronization function, which is an essential capacity in the field of telecommunications as well as in media and entertainment. This feature enables

Efficient Power Consumption

The switches are equipped with low-consumption CPUs and energy-efficient PSUs and Fans. The intelligent automatic control system recognizes and manages the operating mode to reduce the power consumption to an optimized minimum, in particular when not in use.

Certification/Traceability

APS Networks and its design partners have invested in simulation tools to augment our capabilities and our engineers have a high level of expertise in designing products that not only meet but exceed requirements in these areas and most importantly we have a track record of largely passing the first time. That saves time, avoids rework and ultimately cuts costs.

Contact our Design Experts to help you choose your switch: +31 35 689 1689

