APS Networks

Enhancing Network Visibility and Security

A Network Packet Broker (NPB) is a device that aggregates, processes, and distributes network traffic to monitoring, security, and analytics tools. Using the Programming Protocol-independent Packet Processors (P4) language to implement an NPB provides a high degree of flexibility and control over packet processing.

P4 is a high-level language designed to define the behavior of the packet forwarding planes in network devices. It allows network operators to specify how packets are processed, making it ideal for configuring and customizing NPBs.

P4 development

How an NPB Works Using P4

- **Packet Ingestion**: The NPB captures packets from various network segments. Using P4, the device can be programmed to ingest packets from multiple sources, such as network taps or span ports, ensuring all relevant traffic is collected.
- **Header Parsing**: Once packets are ingested, the P4 program parses their headers. P4's flexible parsing capabilities allow the NPB to understand and manipulate various protocol headers, from Ethernet and IP to higher-layer protocols.
- **Packet Classification**: With P4, the NPB classifies packets based on predefined rules. These rules can be as simple as matching IP addresses or as complex as deep packet inspection for specific application data. This classification determines how packets are handled.
- **Traffic Aggregation and Filtering**: The P4 language enables the NPB to aggregate traffic from multiple sources and filter out unnecessary data. For example, it can be programmed to drop packets that are not relevant to security analysis or to only forward packets that match specific criteria.
- **Packet Modification**: P4 allows the NPB to modify packet headers and payloads. This can include tasks like anonymizing sensitive data, adding metadata, or modifying headers for compatibility with monitoring tools.
- **Load Balancing and Distribution**: The NPB, programmed with P4, can distribute the processed packets to multiple tools. It can balance the load across various devices, ensuring that no single tool is overwhelmed with traffic.
- **Advanced Features**: P4's programmability enables advanced features like deduplication (removing duplicate packets), time-stamping, and generating flow statistics. These capabilities enhance the efficiency and effectiveness of network monitoring and security operations.

The APS Networks Ethernet Switches, in conjunction with P4 to program a NPB, provide unprecedented flexibility in packet processing. It allows for detailed parsing, precise classification, intelligent filtering, and efficient distribution of network traffic, optimizing the performance and functionality of network monitoring and security infrastructures.

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 frond (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