Network Performance Analytics Startup Relies on ATLAS-1000

Accolade Technology

SUMMARY

Startup deploys network performance sensor using ATLAS-1000.

KEY CHALLENGES

- Hardware offload of CPU intensive hash algorithm
- Small footprint appliance platform
- Both 10G and 40G network interfaces
- Ultra precise timing (OCXO)
- 100% lossless packet capture across all ports

WHY ACCOLADE?

- Developed ATLAS-1000 to meet precise customer requirements
- Developed customer specific hash algorithm processing logic

ATLAS-1000 FEATURES USED

- Custom hash algorithm processing
- Timestamping with OCXO
- 10G and 40G network interfaces
- Packet filtering
- 100% packet capture

This startup is an emerging high-precision, network performance analysis company focused on the telecom market. The startup's offering is a big data solution providing real-time and precise network intelligence, by aggregating, analyzing and visualizing millisecond-precision performance statistics from across a service provider network. With this precise and granular approach, performance bottlenecks arising from misconfigured equipment to faulty links can be pinpointed in real-time; ensuring the provider greater up time and reliability.
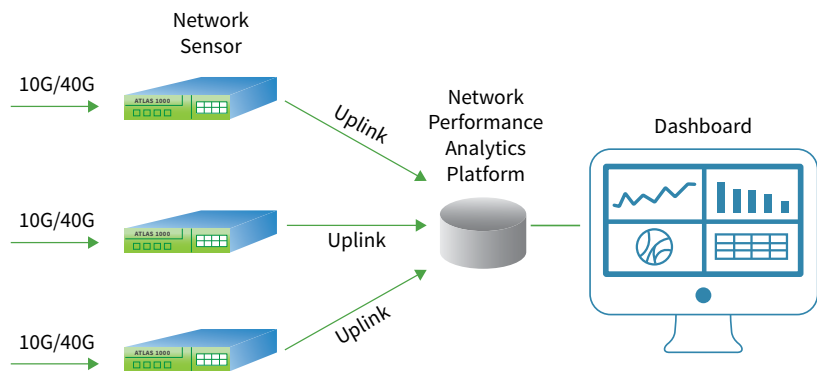
TECHNICAL CHALLENGE

This venture capital funded startup had to be laser focused in terms of quickly demonstrating to potential customers the overwhelming business value of their product. Their development team had a deep technical software pedigree as well as expertise in precise timing and how it can be used to pinpoint network performance bottlenecks. The development team however lacked precise hardware timestamping expertise. To their credit, senior management recognized this deficiency and brought in Accolade to help formulate a hardware strategy. After months of interaction between the startup and Accolade engineers a few key, actionable recommendations emerged. The first was for Accolade designers to offload the startup's software from the burden of a highly repetitive and proprietary hash algorithm calculation that was central to the company's value proposition. Since this hash algorithm was taking up to 70% of all CPU cycles, offloading the burden to an FPGA was absolutely critical. The second recommendation was for Accolade to design a new integrated hardware platform that met the startup's specific requirements. This was the birth of the Accolade ATLAS-1000 platform.

THE SOLUTION

The startup's senior management decided they needed a custom hardware platform to deploy as a network sensor or probe in their telecom customer's networks. After an exhaustive search, Accolade was chosen to design this new platform and the result was the ATLAS-1000, which was designed and built within 6 months after initial agreement. The graphic below details the platform's architecture.

Like all commercial platforms the ATLAS-1000 provides a multi-core Intel CPU, memory and storage. There are however many unique features such as the Advanced Packet Processor (APP) in the form of an FPGA on the motherboard. The APP contains Accolade developed FPGA firmware to perform a variety of different offload and acceleration functions. Specifically for this startup, Accolade implemented a proprietary hash algorithm calculation in the FPGA, resulting in an eye-popping 70% savings in CPU cycles. This particular custom feature resulted in significant performance improvement and was one of the driving forces behind selecting Accolade for this time sensitive project.

The table below details some of the main requirements for this new hardware platform and the reasons why those requirements were so crucial to the startup's success.
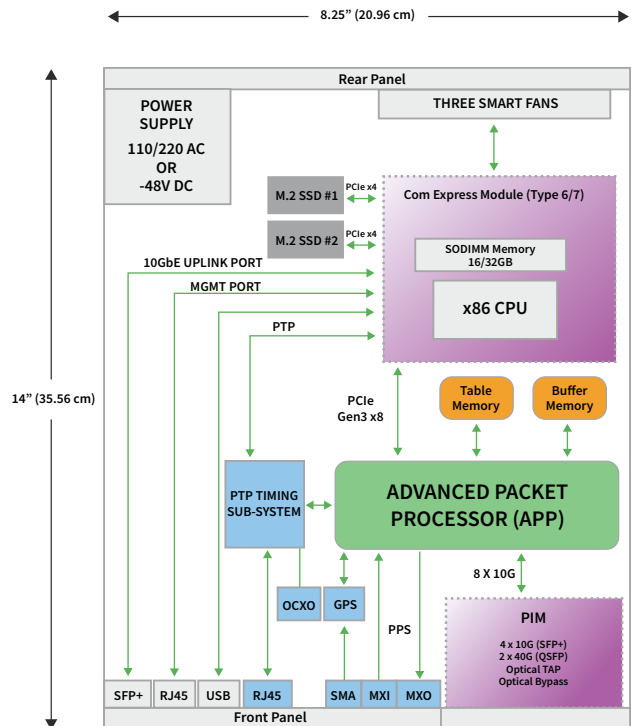
CRITERION	REQUIREMENT	ACCOLADE FIT
Custom Hardware Design	The vendor must create a hardware design that meets very specific customer requirements for physical size, network ports, timing interfaces and FPGA functionallity	With direct customer collaboration Accolade designed the ATLAS-1000 platform for the startup.
10G/40G Network Interfaces	Because the startup serves the telecom market both 10G and 40G network interfaces where required	ATLAS-1000 has a pluggable interface module (PIM) which can accommodate either 4 x 10G or 2 x 40G interfaces
Physical Size	Due to space and cooling constraints in telecom wiring closets the solution had to provide high port density	Two 1U, ATLAS-1000 appliances can fit side-by-side in a standard 19 inch telco rack
Ultra-precise timing	The startup had very exacting standards with respect to the oscillator which provided timing synchronization	Accolade designed an OCXO (Oven-Controlled Crystal Oscillator) into the ATLAS-1000
Cost Effective	The selected solution must meet specific budgetary requirements	The ATLAS-1000 met critical cost targets despite the custom requirements
Hash Algorithm Processing	An alternate method was required to execute proprietary hash algorithm calculations which were taking up to 70% of all CPU resources	Accolade developed custom FPGA firmware to execute the hash algorithm calculation in hardware

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