International Service Provider Invests in Multipurpose 100G Platform

Accolade Technology

SUMMARY

Large service provider advanced R&D team seeks a 2-port 100G adapter for multipurpose packet capture and monitoring platform

KEY CHALLENGES

- Initially available 100G adapters and related optical transceivers were power hungry and cost prohibitive
- Initially available 100G adapters/ NICs did not have necessary features (e.g. flow classification) to achieve development objectives

WHY ACCOLADE?

- Continuously improved 100G adapters over multiple generations to achieve customer requirements
- Provided key features needed to achieve R&D objectives

ANIC FEATURES USED

- Flow Classification
- Flow Shunting
- 100% packet capture at 100G
- Advanced Packet Filtering
- Nanosecond Precision Timestamping

In early 2016, the advanced R&D team of a large, international service provider began formulating a plan to internally develop a 100G, multipurpose packet capture and monitoring platform for use within their international network. The research team knew this was an ambitous project, particulary because it required robust 100G packet capture along with other advanced features. The first order of business was to survey the vendor community for a 2-port, 100G packet capture adapter/NIC. At the time, Accolade Techology was shipping its market leading, second generation 100G adapter (ANIC-200K4) so the service provider engaged in detailed due diligence with Accolade. The diligence focused on both the current hardware and software characterisitics of the ANIC-200K4 as well as planned roadmap items which would be of future interest.
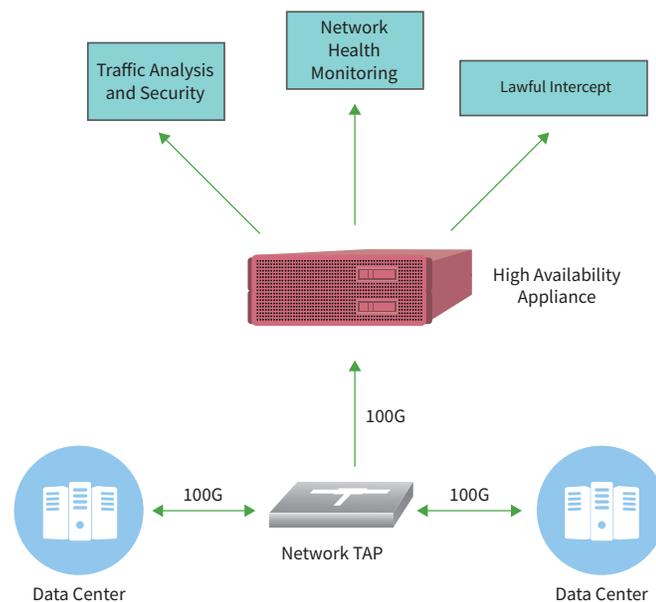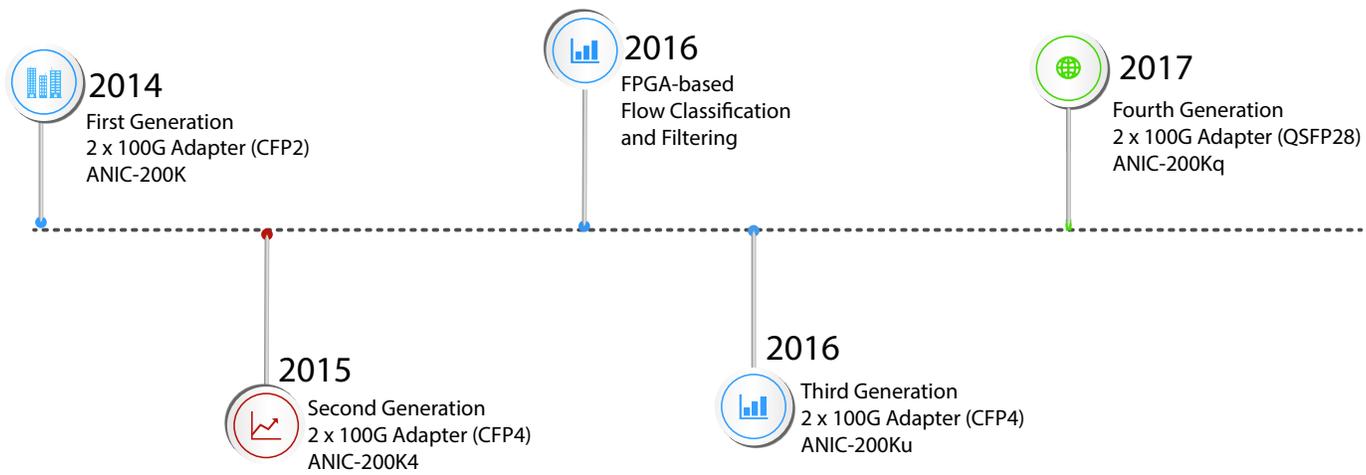

THE PRODUCT

The diagram above illustrates what the service provider was trying to build. The high availability appliance was to host at least three different applications from security to network health monitoring to lawful intercept with provisions for other applications in the future. The idea was to collect network traffic across the high-speed links that made up the backbone of the service provider network. These links were rapidly migrating to 100G so naturally the appliance would have to accomodate 100G interfaces as well as other advanced host CPU offload capabilities.

THE CHALLENGE

In early 2016 the advanced R&D team began surveying the landscape for a suitable 2-port 100G packet capture adapter for their ambitious 100G multipurpose platform. At the time, Accolade was shipping the second generation ANIC-200K4 adapter which had been released the previous year. The R&D team didn't think this adapter would fit their requirements, however, Accolade was actively developing its third generation ANIC-200Ku and shared the first near production ready card with the R&D team for lab testing. The third generation adapter had a CFP4 interface, which was not ideal, but the R&D team was willing to take a look largely because of the new flow classification capability which Accolade had in development. The R&D team was fundamentally skeptical

2014
First Generation
2 x 100G Adapter (CFP2)
ANIC-200K

2016
FPGA-based
Flow Classification
and Filtering

2017
Fourth Generation
2 x 100G Adapter (QSFP28)
ANIC-200Kq

2015
Second Generation
2 x 100G Adapter (CFP4)
ANIC-200K4

2016
Third Generation
2 x 100G Adapter (CFP4)
ANIC-200Ku

of the entire CFP MSA (multi-source agreement) for a variety of reasons. Early iterations (e.g. CFP2) were just physically too large and awkward. This meant it had very high power consumption, very low port density and extremely high cost. The CFP4 was smaller and thus the R&D team was willing to spend some resources examining its suitability. The main issue with CFP4 was still cost, but the R&D team was willing to overlook that for the moment because they were confident that cost would come down over time—particulary as the planned QSFP28 interface was introduced in the marketplace. The focus of the investigation shifted from the transceiver form factor to the feasibility of achieving the application goals of security, network monitoring and lawful intercept. The software R&D team realized that fully processing packets at 100G was not going to be possible with software so whichever 100G adapter they chose had to provide significant hardware assistance. This resulted in a detailed technical discussion with Accolade engineers to identify what type of processing the Accolade 100G adapter would have to perform in order to satisfy the R&D teams requirements. The discussion coalesced around hardware offload provided by flow classification and shunting features that Accolade would deliver on the ANIC-200Ku in October 2016. Recognizing the significant benefits of these hardware offloads at 100G speeds, the R&D team was confident they could achieve their performance goals for their target applications. The R&D team began platform and software development in late 2016 with the newly introduced ANIC-200Ku which in addition to flow classification had other required features such as advanced packet filtering and nanonsecond precision timestamping. While most of the development cycle was concentrated around the third generation ANIC-200Ku, the production multipurpose platform was delivered in 2018 using the fourth generation ANIC-200Kq (released in November 2017). This adapter had a lower cost QSFP28 interface in addition to all the required features and functions.

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