napatech

Case study: Major defense contractor gains best-of-breed capture & playback solution

AXELLIO

Industry pain points

Identifying and mitigating network issues is a complex and resource-heavy task. As the density of systems and infrastructures is growing, so is the challenge of ensuring peak network performance.

Test engineers and network operators need complete end-to-end visibility to troubleshoot and remedy any infrastructure performance issues. But such visibility can only be attained if absolutely all network packets are captured and can be replayed with utmost precision.

Challenge

In facing this challenge, a major defense contractor approached Axellio Inc. for a high-performance capture and playback solution capable of 100 Gbps, +60-minute storage (above 44 Tb) and nanosecond-precision replay. These features were crucial for the customer to strengthen their test and measurement capabilities and ultimately enhance their network quality and productivity.

Solution

Axellio partnered with Napatech to develop a high-performance capture and playback solution. Building on their FabricXpress Platform, the solution combined the latest advances in NVMe solid-state storage technology and Napatech FPGA SmartNIC software and hardware to form a design fit for the most demanding environments.

"Napatech's feature-rich SmartNIC software and hardware easily integrated into our solution to meet the demanding performance requirements we have for throughput, latency, scalability and cost."

Bill Miller, CEO
Axellio Inc.

The result was a powerful multi-purpose solution capable of simultaneous packet capture and playback, even during the heaviest of traffic loads.

Challenge

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Solution

Axellio partnered with Napatech to develop a capture and playback solution, building on their FabricXpress Platform and integrating FPGA SmartNIC software and hardware from Napatech.

Benefits

The solution uniquely enabled the customer to:

- capture more than 60 minutes of 100 Gbps traffic to disk
- replay traffic at 100 Gbps
- add GPUs and other specialty PCIe cards for additional functions

Benefits

By tightly coupling the industry-leading technology from Axellio with Napatech SmartNICs, the solution uniquely enabled the customer to:

- capture more than 60 minutes of 100 Gbps traffic to disk in PCAP format
- replay traffic at 100 Gbps using the timestamp to reproduce inter-frame gaps exactly as they were captured
- add GPUs and other specialty PCIe cards for additional functions

Lossless capture

Napatech's FPGA SmartNICs are designed to ensure that no packets are lost under any conditions, and this was one of the key enablers for meeting the customer's needs. Packet loss can occur in various ways, e.g. due to a lack of capacity on the NIC, PCIe bus congestion, bad memory management, busy CPUs, etc. All these potential sources of packet loss have been taken into consideration, providing a highly reliable solution.

Nanosecond replay

Napatech's replay feature was another key enabler for meeting the customer's needs. This capability would enable them to recreate and explore any traffic scenarios that had caused network issues such as outages, breaches, Quality of Service (QoS) problems, etc., thus offering the best possible outset for improving and strengthening their infrastructure.

The traffic replay capability builds on an advanced Napatech feature which enables transmit on time stamp. As the transmit is controlled by the time stamp, the exact capture timing can be replayed with nanosecond precision.

Key replay specs

- Line rate transmit from application to network ports enables network simulation at 1, 10, 40 and 100 Gbps port speeds
- Network test and simulation up to 100 Gbps line rate for any packet size
- Replay of PCAP files
- Replay as captured based on time stamp
- Immediate frame transmission or according to nanosecond time stamp
- Configurable rate limiter for control of network load

Napatech

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We enhance open and standard virtualized servers to boost innovation and release valuable computing resources that improve services and increase revenue.

Our Reconfigurable Computing Platform™ is based on a broad set of FPGA software for leading IT compute, network and security applications that are supported on a wide array of FPGA hardware designs.

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