

VIAMI SOLUTIONS PROVIDES DATA MONITORING & TESTING WITH AMD VERSAL™ PREMIUM ADAPTIVE SoCs

CASE STUDY



VIAVI Solutions provides comprehensive testing, assurance, and security solutions to network operators, equipment manufacturers, enterprises, and other markets. Its advanced instruments enable large-scale telecom network monitoring as well as local compute, storage, and transport infrastructures worldwide, delivering actionable intelligence and insightful reporting. The company also helps protect the world's banknotes, enables 3D sensing for consumer electronics and automotive applications, and enhances the colors you see with its light management expertise and optical coatings.

VIAVI's offerings include Peripheral Component Interconnect Express (PCIe®) products used to connect processors to peripherals, memory, and other components. The sixth generation of PCIe provides separate links to each connected device using a point-to-point topology.

CHALLENGE

Viavi aimed to build a PCIe 6.0 analyzer/exerciser for capturing and simulating network traffic that could help users debug protocol communication problems. The device would need to offer SerDes capable of supporting 64Gbps PAM4 and a full range of legacy PCIe data rates, allowing for backward compatibility. The solution also had to offer high-bandwidth performance.

SOLUTION

VIAVI selected the AMD Versal™ Premium adaptive SoC for its PCIe Gen 6-based Xgig® 6P16 analyzer/exerciser. An Xgig exerciser transmits user-defined data packets to a device under test (DUT) and works with an analyzer that monitors responses. It can both send and respond to packets, enabling complex, repeatable tests for PCIe 6.0, CXL®, and NVMe® traffic. Supporting high-bandwidth applications like HPC and AI, it aids in debugging protocol issues with bit-level control.



Figure 1: Image of Xgig 6P16 analyzer/exerciser for PCI Express 6.0

Both exerciser and analyzer functions operate via a shared chassis and application-specific interposers.

INDUSTRY

Communications; Test & Measurement

CHALLENGES

VIAVI aimed to build PCIe 6.0 16-lane exerciser and analyzer products that offered high-bandwidth traffic generation, analysis, and capture performance.

SOLUTION

AMD Versal Premium adaptive SoC provides the reconfigurable, high-performance processing backbone for VIAVI's Xgig exerciser /analyzer solution, enabling precise, real-time packet generation and analysis for PCIe 6.0, CXL, and NVMe.

RESULTS

AMD Versal Premium adaptive SoCs deliver greater fabric and transceiver density to its PCIe® 6.0-based Xgig 6P16 analyzer/exerciser.

AMD TECHNOLOGY AT A GLANCE

AMD Versal Premium adaptive SoC

“The exerciser device enables our customers to test their products usually ahead of, or concurrent with, testing against other devices,” said Tarik Rostum, distinguished technical staff member at VIAVI Solutions. “The industry is very early in PCIe6 development, so there are very few devices out there to test against.”

“AMD provided a chip that had both the transceiver speed and fabric density we needed, along with the right amount of memory.”
-- Tarik Rostum, distinguished technical staff member at Viavi Solutions

“The VIAVI exerciser provides that other side of the link,” Rostum said. “We also fully capture information on both directions of the line, so customers can see bidirectional traffic, and they can debug any issues that come up in their IP. The exerciser implements the PCI-SIG® test suite. We are one of only a few companies that do PCI-SIG testing.”

The analyzer is a debug utility that identifies potential problems in captured traffic. Users can see their device bring-up alongside other devices. “We capture traffic in both directions on the line,” Rostum explained. “If a company is trying to bring up a device in their lab and having trouble, they can put our analyzer in between two devices to help identify the problem.”

“During debug with our analyzer, a user may see unterminated transactions or other anomalies on the line. Our product helps point to the device that may be causing the problem,” he said.

For AI environments, customers using PCIe as an interface will benefit from VIAVI’s product as well. “During bring up, if they are using PCIe 5.0 or 6.0 and they are migrating to PCIe 7.0 and developing newer chips, they will need faster PCIe links,” Rostum said. “As they bring them up in the lab, they will have problems interacting with other devices. As part of their debug process, they may use an analyzer like ours to figure out why the devices are not talking to each other. If there is a problem with their chip, the information may help them determine if they need to do a chip mod.”

“We’ve used AMD chips for quite a while,” Rostum said. “To do full PCIe6x16 we needed a chip with more fabric and transceiver density. That’s why we chose AMD and its Versal Premium devices.”

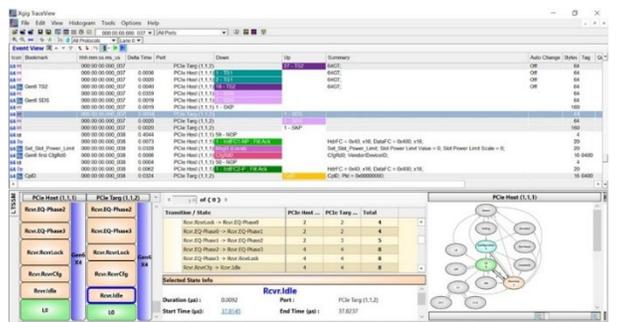


Figure 2: Xgig 6P16 Analyzer allows detailed view of traffic between a host and endpoint device.

RESULT

“We tend to be on the bleeding edge,” Rostum said “For us choosing the AMD Versal Premium adaptive SoC came down to the transceiver and logic density that we needed.”

Rostum added that VIAVI is happy with the AMD support, both on the technical and business front. The team expedited sample requests for multiple variants of the device to help select the most optimal devices for VIAVI’s upcoming product, the PCIe6x16.

“In the end, AMD provided a chip that had both the transceiver speed and fabric density we needed, along with the right amount of memory,” Rostum said.

<p>ABOUT VIAVI SOLUTIONS</p> <p>VIAVI Solutions is a global leader in communications test and measurement and optical technologies. Viavi enables customer innovation in industries ranging from communication networks, hyperscale and enterprise data centers to consumer electronics and mission-critical avionics, transportation, aerospace and anti-counterfeiting systems. Our industry-leading solutions power tomorrow’s network transformation – from fiber expansion and the wireless evolution to AI-powered zero-touch networks and cloud transformation that accelerate digitalization. For more information, please visit https://www.viavisolutions.com/en-us</p>	<p>ABOUT AMD</p> <p>For more than 50 years AMD has driven innovation in high-performance computing, graphics, and visualization technologies. Billions of people, leading Fortune 500 businesses, and cutting-edge scientific research institutions around the world rely on AMD technology daily to improve how they live, work and play. AMD employees are focused on building leadership high-performance and adaptive products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD website (NASDAQ: AMD), LinkedIn, and X pages.</p>
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