

Total Time to Market

Accelerating PCIe® Development with
VIAVI Protocol Analyzer & Exerciser Tools

Introduction

Modern high-speed interfaces such as PCIe®, NVMe®, and CXL™ demand precision and speed. Meeting compliance and performance requirements isn't optional—it's mission-critical. Late-stage failures can derail schedules, inflate costs, and compromise product reliability.

VIAVI protocol analyzer and exerciser tools deliver deep insights, advanced validation capabilities, and intuitive software features that help engineers validate designs, ensure compliance, and troubleshoot issues quickly and effectively—accelerating time-to-market.

Deep Insights Ensure Products Perform to Spec Out of the Box

Compliance failures discovered late in the development cycle can lead to costly redesigns and missed deadlines. VIAVI tools provide comprehensive protocol-level visibility, enabling engineers to confirm compliance from day one.

With detailed transaction-level analysis, engineers can verify:

- Link training and lane negotiation
- Protocol handshakes and initialization sequences
- Performance metrics against specification

This proactive approach reduces risk and accelerates development.

Enables Insightful Troubleshooting When Issues Emerge

When problems arise, time is critical. Oscilloscopes show signal integrity, but they don't reveal protocol-level behavior.

Without deeper diagnostics, the odds of shipping components with undetected errors increases. Now the challenge is identifying the root cause of the problem using the same tools that missed the errors in the first place. The manual discovery and identification process that follows can take days or weeks, not to mention any modifications, redesigns and retesting.

VIAVI analyzers offer granular visibility into every transaction, allowing engineers to pinpoint root causes quickly.

Advanced features include:

- Triggering and filtering for precise event capture
- Error analysis tools for decoding complex failures
- Real-time trace views for immediate insight into link behavior

This transforms troubleshooting from guesswork into a data-driven process.

Intuitive Software Tools for Faster Analysis and Debugging

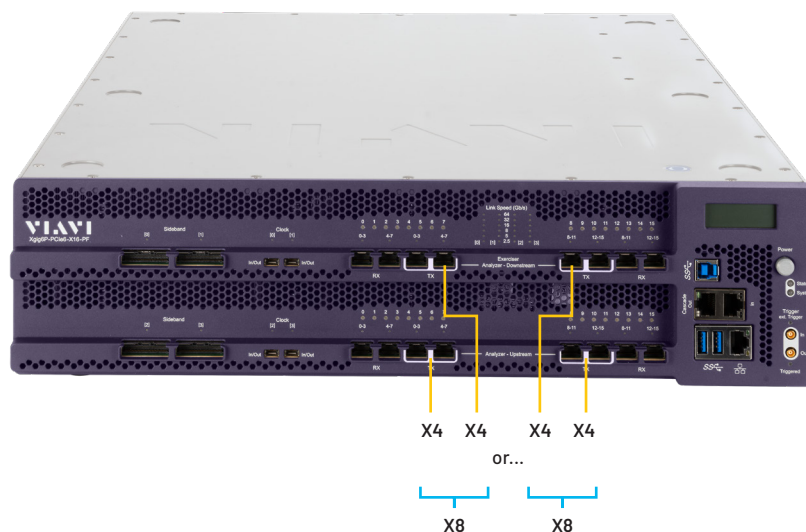
VIAVI software is designed for engineers who need speed and clarity. Key benefits include:

- Customizable views for targeted analysis
- Automated error detection and reporting
- Integrated compliance checks against protocol specifications
- Exportable reports for documentation and collaboration

These features streamline workflows, making complex analysis accessible and efficient.

Bifurcation: Testing Multi-Link and Redundant Systems

Enterprise systems increasingly rely on multi-link architectures for redundancy and failover. Testing these configurations requires simultaneous visibility across multiple links—something VIAVI enables through bifurcation.



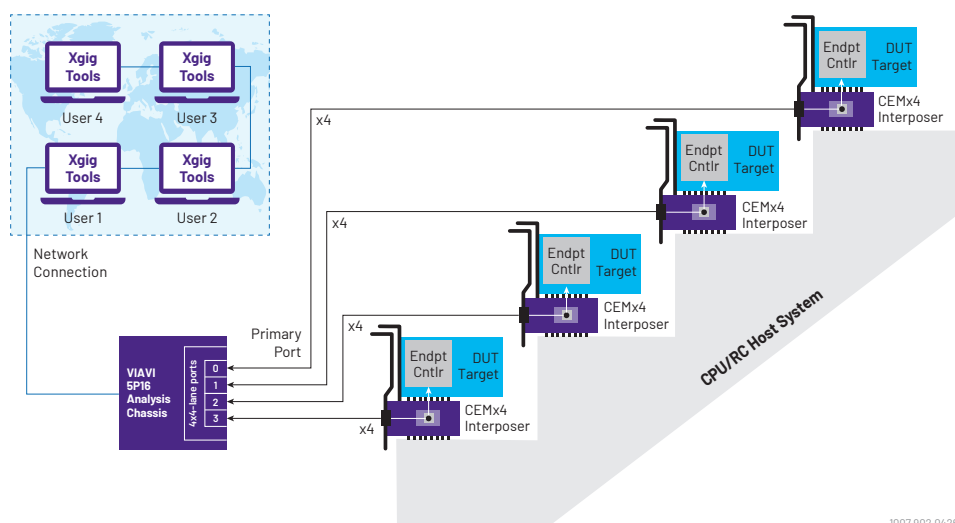
Bifurcation provides VIAVI 6P16 Chassis users with flexibility and enhanced functionality that helps speed time to market:

- Capture from multiple independent links simultaneously
- Recording traffic on multiple DUTs in parallel
- Multiple configuration windows within one GUI
- Shared access across multiple GUIs controlling the same system

Common Use Cases:

- Testing failover and redundancy in fault-tolerant server designs
- Evaluating PCIe retimers and packet switches with multiple link segments
- Analyzing interaction between two PCIe devices in one system

The diagram below shows four completely independent systems being tested by four independent and remote users from a bifurcated VIAVI 6P16 chassis. Each system can run different tests with each under control of a different user.



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Bifurcation capabilities in the Xgig platform reduce the need for duplicate hardware and accelerates validation cycles.

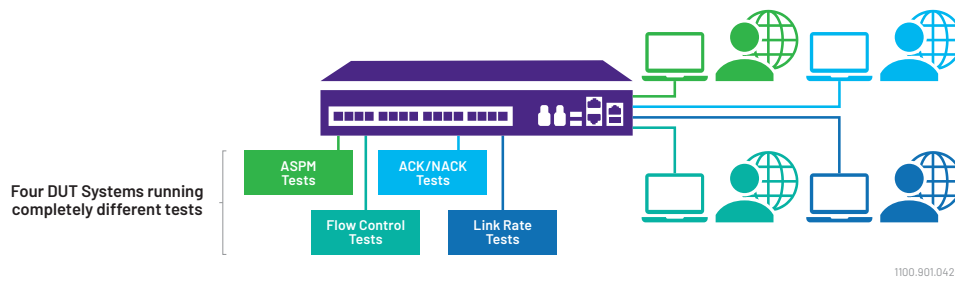
Multiuser Capabilities: Better TCO and flexibility

Traditional tools allow only one user per analyzer, forcing labs to purchase extra hardware or relocate equipment—an expensive and inefficient solution.

Viavi's multiuser functionality enables parallel testing by multiple engineers, eliminating bottlenecks and reducing capital costs.

Benefits include:

- Shared access across distributed teams
- Reduced hardware investment
- Faster turnaround for validation and debugging



Completely different tests can be controlled by one to four users over a period of time. This platform versatility helps streamline tool utilizations, increases equipment productivity and may reduce the amount of overall hardware necessary to order, manage and support.

Conclusion

Getting to market quickly with products that perform as advertised is critical given today's product demands. VIAVI has engineered craft-friendly features – like deep diagnostics, easy to use software tools, and the ability to bifurcate the chassis so independent tests can be conducted simultaneously – into its Xgig PCIe6 platform. All of these combine for a testing platform that provides the versatility engineers need to move forward quickly, accurately and cost-effectively with mission-critical designs.



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