VIAVI

Xgig®1000 16 G Fibre Channel 10 G and 40 G Ethernet Portable Analysis and Test Platform

Comprehensive Multiprotocol Analysis, Load Testing, and Error Injection for all SAN/NAS Technologies

Xgig 1000 is a lightweight, portable, single-chassis analyzer that comprehensively tests multiple protocols and speeds. With advanced features and reconfigurable test ports, Xgig is the industry-leading solution for field deployments, enablement, and debugging.

Key Benefits/Features

- Automated testing accelerates SAN and network attached storage (NAS) installation and deployment
- Lightweight, smaller footprint simplifies handling in data-center environments
- Reduces downtime and saves SLA-management costs with an industry-proven, reliable analytical/troubleshooting solution
- Improves storage and network-services management with comprehensive IO-performance statistics

Protocols

- 4/8/16 G Fibre Channel
- 10/40 GE (including FCoE, iSCSI, iWARP, RoCE, and VXLAN)

Applications

- Analysis
- Error injection (jamming)
- Load testing

Comprehensive multiprotocol analysis, load testing, and error injection for all SAN/NAS technologies

The Viavi Solutions Xgig 1000 is the only integrated portable platform with reconfigurable ports that addresses 10 and 40 GE and 4/8/16 G Fibre Channel. With its uniquely portable chassis, the Xgig 1000 enables detailed protocol testing in manufacturer R&D labs and helps field installers deploy and troubleshoot SANs. It is also the only platform to perform inline, nonintrusive capture and analysis, inline jamming, and end-node emulation with generation and load testing at 16 G and Ethernet analysis up to 40 G. Xgig 1000 can be used with Expert View to obtain storage performance analysis information to quickly identify issues, uniquely correlated across your Fibre Channel and Ethernet network. Service and support professionals across the storage industry rely on the Xgig trace capture format.

Address Multiple Functions with One Chassis

Deploy fewer platforms in the lab or carry fewer in the field with ultimate multiprotocol, multispeed, multifunction flexibility. A single, portable Xgig 1000 tester with up to eight interchangeable 10 GE and 16 G FC ports and two optional 40 G ports can test everything in a hybrid storage network.

Optimize Deployment with High Port Density

With 2-, 4-, 8-, or 10-port density in a single, compact platform, Xgig 1000 can perform analyzer-jammer-analyzer and load tester-analyzer testing—in *one* platform.

Quickly Configurable for Analysis with Auto-Speed Detection

When using the interchangeable multifunction ports, the analyzer function automatically detects the speed of an attached link, synchronizing and collecting correct test results to save field engineers time when investigating port configurations.

Nonintrusive Monitoring

Xgig 1000 nonintrusively verifies and debugs data-integrity issues in a converged data center. It can be placed in both analog pass-through mode and in-line mode, providing truly-passive, high-impedance, and low-latency access to a tested link. With this probing method, users can directly obtain physical-layer signal performance from the Xgig 1000 TraceControl plug-in module such as TX/RX optical power levels, link errors, and CRC errors. Other plug-in options include attaching Xgig 1000 to TAP or network mirror ports.

Large Trace Buffer Ensures Capture of All Events

Xgig 1000 includes a built-in 32 GB trace memory (16 GB with a 4-port platform) where users can store captured traces to later offload to a remote client or directly to an external USB drive attached to the Xgig 1000. The USB 3.0 interface allows for fast data transfer to quickly offload large traces to an attached external drive, avoiding transfers across slow, unstable network connections.

Easily Access and Control Testing with Remote Management (Ethernet/USB)

Xgig 1000 can be remotely managed through 10/100/1000 Mbps Ethernet connections. Field engineers and IT administrators can also easily access Xgig 1000 in the field with a USB 2.0 Type B interface, letting the client PC connect directly to the unit to access platform status and update firmware and licenses.

API for Advanced Automation and Easy Integration with Existing Systems

The platform includes an API library (both C/C++ and TCL) and supports all functions. The API lets users script and automate sophisticated functions, empowering users at all levels to run complex tests with a few button clicks. Users become instant experts with the equipment and the protocols. The API integrates seamlessly with in-house and commercial management consoles that can control and manage equipment and directly retrieve test results. This provides the consoles with access to sophisticated SAN metrics and KPIs.

Optimize Resources with Multiuser Sharing

Uniquely flexible, the Xgig lets multiple users control different port pairs on one hardware blade to simultaneously conduct various tests thus increasing equipment efficiency and technician productivity. At any time, as many as 32 users can concurrently access locked ports to view test statuses or data.

Advanced Analysis

Four Xgig Analyzer test applications offer extensive network visibility to resolve even the most elusive errors and impairments.

- TraceControl uses a smart trigger condition set between any two end points to record all traffic (frames and order sets) or a specific event.

- TraceView reveals captured traces using the industry-standard trace-viewer format and adds navigation tools for deep-packet investigations.

- Expert automatic trace analysis accelerates debugging by displaying an issue summary of network topology and by reporting network performance statistics.

- PerfMon monitors link performance in real time with critical statistics to determine network health.
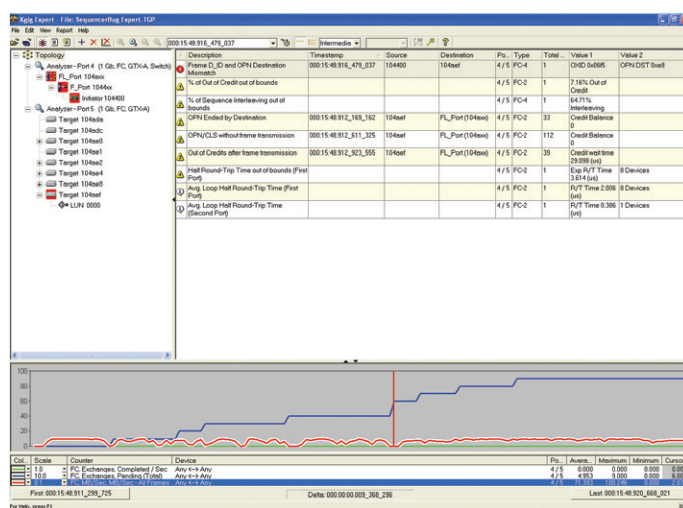
Xgig Expert

Analyzer Key Features

Extensive Xgig capabilities and flexibility provide unmatched network visibility to more easily identify and resolve problems, accelerate new product design, and speed time-to-market. Features include:

- Largest trace capture buffers — captures up to 4 GB of traffic per port—up to 32 GB per blade, giving developers enough trace data to resolve even the most elusive problems

- Performance measurements — graphically displays useful performance statistics for every active link

- Hidden nonrelevant data — preset filter order hides traffic-control primitives to display only data so developers can focus on specific frames or packets

- Adjustable payload size — reduces trace size to capture extra frame-header information by truncating payloads/frames

- Drag-and-drop filters — simplifies filter setup with predefined protocol templates

- Exchange view — summarizes trace by exchanges

- Traffic summary view — provides top-level event information in the trace buffer within seconds

- Protocol view — lets users focus on a specific protocol layer

- Customized filters — Filters template editor lets users create user-defined protocol templates for advanced filtering

- SCSI Exchange view — simplifies trace analysis by collapsing exchanges and associated behavioral information into a single event in the Data Inspector pane

- Protocol tree view — displays the tree structure of data when it is mapped to the current protocol

- Histogram view — lets users focus on small areas of a trace, change the appearance and scale of graphs, and show/hide traces

- DWORD view — provides a detailed view for each line of the TraceView Summary view

- Filter/search/hide tool — simplifies the display and lets users access specific events quicker than any tool available

Flexible Development Platform

With its blade architecture and configurable multifunctional capabilities, Xgig is the most flexible development platform for network tools available today.

Multiple Probing Methods	Xgig supports two flexible probing modes: digital retiming and analog pass-through.
Flexible Internal Trigger Modes	Five trigger modes help users capture trace data intelligently: • Stop capture with the stop button — no trigger • Stop capture after trigger • Arm-on-arm condition, stops capture after trigger condition when armed • Arm then stop after trigger, rollback on reset condition • Stop when memory full
External Trigger Support	Xgig can trigger or be triggered by an external device through BNC TTL or SMA ports.
Trace File Support	Correlate traffic within devices using traces captured by Wireshark®, Bus Doctor™ Analyzer, and I-Tech PowerFrames™ and analyze using Xgig TraceView and Xgig Expert.
Choice of Decode E ngine	Choose between the proprietary, Viavi-optimized Xgig decode engine or the Surveyor™ decode engine.

Quick Resolution of Large-Scale Network Issues

Following traffic flow at each hop and locating a problematic point in a complicated network structure requires time synchronization and the correlation of captures from multiple links. Xgig 1000 includes multiple capabilities to give users unique, complete visibility into network problems.

- Cascade up to four Xgig 1000 chassis to form a time-synced test group of up to 16 links (4 links for 40 G Ethernet) to track data flow from host to target, traversing through various network hops to precisely locate a failure or performance degradation.

- Interleave various protocol traces by time stamp in a single view for an intuitive data flow view in a hybrid protocol network, such as an FCoE network that carries data over both FC and Ethernet.

- Use TraceView protocol-layer and exchange views to zoom in on exchange behaviors across multiple protocols and links.

- Use Expert, a unique cross-port and tunneling analysis capability, to analyze multihop network performance automatically to uniquely see issues typically unseen in a single link trace. Expert measures latency end-to-end and in each hop, counts end-to-end pending frames, and detects frame-drop, out-of-order, and truncation errors.
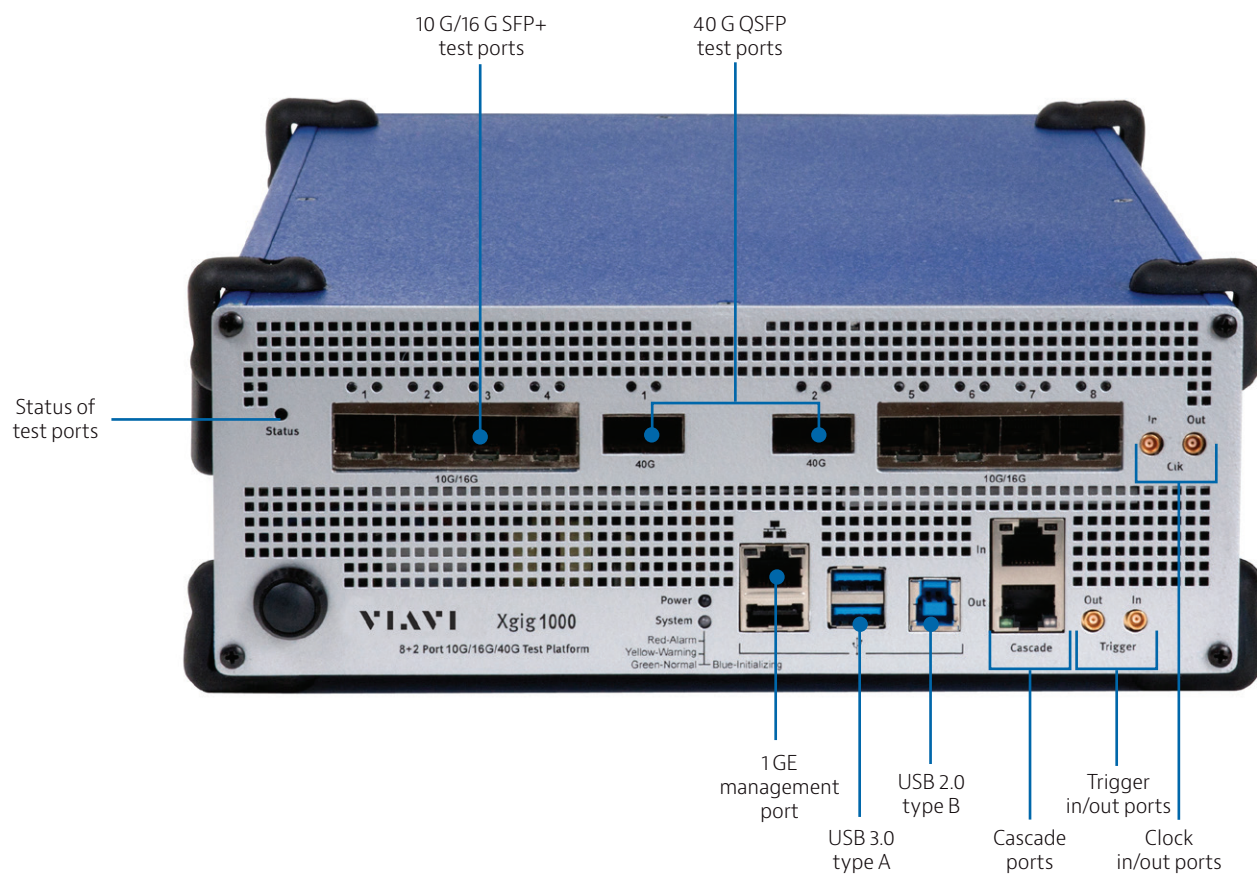
Error Injection/Jamming

Used in conjunction with one or more Xgig Analyzers, Xgig Jammer manipulates network traffic to simulate errors in real time so users can verify the responsiveness and robustness of error-recovery processes. Errors can be precisely defined and timed to thoroughly test networks and automate the testing process.

FC/FCoE Load Testing

Fibre Channel and FCoE networks must withstand sustained bursts of traffic without losing data. The Load Tester function of the Xgig 1000 capacity planning lets you perform link budgeting and load balancing of Fiber Channel and FCoE networks.

Xgig Platform and Peripherals

10 G/16 G SFP+
test ports

40 G QSFP
test ports

Status of
test ports

1 GE
management
port

USB 3.0
type A

USB 2.0
type B

Cascade
ports

Trigger
in/out ports

Clock
in/out ports

Chassis and Hardware Specifications

Hardware Option	2 QSFP+ 10/40 GE	4 SFP+ 10 GE, 16 G FC	8 SFP+ 10 GE, 16 G FC	8 SFP+ 10 GE/16 G FC, 2 QSFP+ 10/40 GE
Functions/Protocol	10/40 GE: analyzer and load tester	4/8/16 G FC: analyzer, jammer, load tester 10 GE: analyzer and load tester	4/8/16 G FC: analyzer, jammer, load tester 10 GE: analyzer and load tester	4/8/16 G FC: analyzer, jammer, load tester 10/40 GE: analyzer and load tester
Licensing	2 ports	4 ports	8 ports	10 ports
Trace Buffer	16 GB		32 GB	
Mechanical	**Dimensions**			
	H: 8.9 cm (3.5 in) W: 24 cm (9.5 in) D: 38.7 cm (15.25 in) Weight: 5.9 kg (13 lb)		H: 8.9 cm (3.5 in) W: 24 cm (9.5 in) D: 38.7 cm (15.25 in) Weight: 6.8 kg (15 lb)	
Power Specifications	**Input Voltage Range**			
	100–240 VAC, 35 A, 50–60 Hz			
Environment	**Temperature**			
	Operational: 10 to +40°C (50 to +104°F) Nonoperational: −40 to +70°C (−40 to +158°F)			
	Humidity			
	Operational: up to 90% humidity (noncondensing) at +40°C Nonoperational: up to 95% humidity at +65°C			
	Vibration			
	Operational: random vibration 1 to 200 Hz, 30 minutes per axis, 2.41 g (rms) Nonoperational: random vibration 1 to 200 Hz, 30 minutes per axis, 0.3 g (rms) resonant search, 5 to 500 Hz swept sine, 1 octave/min sweep rate, 0.75 g, 5-minute resonant dwell at 4 resonances/axis			
	Electromagnetic Compliance			
	FCC Class A, CE Compatibility			
	Safety			
	UL			
Power Specifications	**Input Voltage Range**			
	100–240 VAC, 35 A, 50–60 Hz			
Minimum System Requirements	**Operating systems**			
	Windows 2000, XP, 2003			
	Small Configuration (sync group of up to 16 ports)			
	Pentium III 800 MHz; 512 MB RAM min, 1 GB preferred; 40 GB min. disk space; 100/1000 Mbps Ethernet			
	Large Configuration (sync group of over 16 ports)			
	Pentium 4 with 2 GHz or faster processor; min. 1 GB RAM; 80 GB disk space; 1000 Mbps Ethernet			

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