VIAVI

Medusa Labs Test Tool Suite 7.2

The Medusa Labs Test Tool (MLTT) Suite is the industry's leading application-based data- and signal-integrity testing solution for companies developing servers, switches, host bus adapters (HBAs), Ethernet network interface cards (NICs), converged network adapters (CNAs), solid-state storage (SSD), nonvolatile memory express (NVMe), all-flash-arrays (AFA), and other storage equipment for next-generation converged storage networks.

Facilitate design validation, accelerate system turn-up, and simplify quality assurance testing with the MLTT suite for the most comprehensive set of data integrity, benchmarking, and stress-test tools. The MLTT test tools can help uncover and identify data-corruption errors, undesirable device and system data-pattern sensitivities, input/output (I/O) timeouts, I/O losses, and system lockup scenarios. These MLTT capabilities enable you to develop higher-quality products quicker to reach the market faster. Its stable test environment and superior performance conserves maximum CPU overhead. Devices under test (DUT) can run at their optimal rates for complete and accurate visibility into a system's performance.

Offering advanced storage and TCP application tests, MLTT is a unique commercial analysis and benchmarking tool that supports unified storage area network (SAN) and local area network (LAN) applications. Flexible configuration control lets you create test cases that can simulate TCP applications such as file server, Exchange server, HTTP, Oracle, and SIP. MLTT is the ideal tool for combining LAN and SAN tests for next-generation converged-data-center networking.

Solid-State Device (SSD) and NVMe Enhanced Testing

SSD and NVMe devices can present special challenges to qualification and performance testing. Because SSDs tend to start out with a higher level of performance and level out over time, MLTT has a configurable "steady state" detection feature that ensures a stable level of performance prior to benchmark testing. MLTT also includes several erase methods for ATA-, SCSI-, and NVMe-attached devices that can return these devices to a known, factory-fresh state prior to testing.
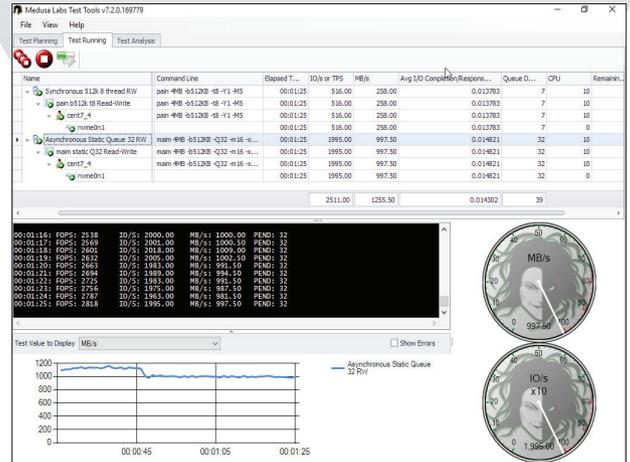
Key Benefits

- Provides precise storage I/O and TCP or UDP generation with full traffic flexibility and control

- Accelerates Xgig® root-cause analysis through automatic triggering and advanced tracking of anomalies and errors

- Enables auto-discovery of devices and automation of all remote testing and validation processes across complex network topologies

Applications

- Simplifies unified SAN and LAN testing for converged networks supporting server-to-storage, server-to-server, client-to-client, and server-to-client configurations

- Accelerates design validation, system turn-up, and quality-assurance testing of storage equipment including servers, switches, HBAs, and CNAs

- Supports SSD, NVMe, and other emerging standards for leading-edge equipment design

- Stress-tests systems to identify, locate, and resolve system impairments before releasing a product to market

- Helps develop higher-quality products to reach the market faster using comprehensive benchmarking, data integrity, and stress-test tools to uncover and eliminate a wide range of data corruption, lockup, and sensitivity issues

- Tests across hundreds of remote clients and servers from a single GUI

- Tests virtual machines to determine virtualization impact on server performance

Data Sheet

T10 Protection Information (T10-PI) Support

MLTT has the ability to issue Format Unit commands to support T10-PI types as well as the required SCSI command types:

- T10-PI type=0 (disabled)
- T10-PI type=1 read/write 10 or read/write 16
- T10-PI type=2 read/write 32
- T10-PI type=3 read/write 10 or read/write 16

Coordinated TCP Burst Mode to Induce "TCP Incast"

Coordinated burst mode coordinates I/O threads so all threads send their requests to their remote targets simultaneously. This can cause the remote peers to simultaneously send back a large amount of data causing a "TCP incast" condition requiring the switch to drop some incoming packets resulting in severe underutilization of actually-available bandwidth.

Sample Test Plans

The MLTT GUI provides sample test plans created so you can copy and paste for specific testing purposes.

Journal and Verify

MLTT can generate a log file of recent write-operation characteristics (for example, buffer size, thread count, queue depth, file size, and pattern used) that preserves the statuses of several previous write operations making it possible to re-verify successfully written data before losing power to an initiator or target device.

De-Duplication and Compression Testing

MLTT has added a new data pattern that lets you specify data payload compression and/or de-duplication. You can now control the data compressibility by specifying the entropy strength (noncompressible portions) of the data pattern and control the de-duplication percentage of data by modifying the number and size of duplicate blocks.

Iometer Integration

MLTT can import existing iometer test configurations and generate comparable test plans thus substantially reducing the learning curve. Test engineers can now use existing test configurations or create new configurations for MLTT using a familiar tool.

Improved Logging of I/O and Target Statistics

A configurable latency histogram feature provides deep insight into the performance characteristics of a particular configuration or device under test, helping you identify I/O response-time issues. You can now gather pertinent target information collected by SMART-enabled devices upon completion of each test.

High-Performance Benchmarking

MLTT benchmarks the highest-performance systems through its full-duplex capabilities and enhanced I/O engine. Other benchmarking tools often bottleneck systems and run far below line rate because of the load they place on the host CPU. The very-low overhead with MLTT ensures targets operate at their full potential and capabilities so benchmarks accurately reflect performance under real-world operating conditions.

MLTT can also test multicore performance by specifying the number of cores and providing the ability to define thread CPU affinity.

Converged Network Validation

Its advanced TCP-generation capabilities lets you validate converged SAN/LAN environments using a single test tool for simplified test-bench setup, execution, and cross-domain analysis.

MLTT includes a new test library for TCP-based application simulations. It can now simulate many types of data traffic including those from enterprise applications such as Oracle, Exchange, HTTP, and SIP Registration/Invite. The ability to simulate these types of workloads lets you test in simulated environments without the need to set up the complete application. Application simulations can be created for network and storage traffic. Bringing proven Viavi Solutions® algorithmic technology used for SAN applications to bear on LAN and SAN/LAN applications, lets you accelerate the design of SAN-only, LAN-only, and SAN/LAN-converged networks including server-to-storage, server-to-server, server-to-client, and client-to-client links.

Many analysis and validation tools are limited in that they can only be used to stress the aggregate system, inefficiently generate I/O, and do not recognize the vast majority of potential bugs. Without comprehensive stress testing to verify the limitations of a device's performance and capabilities under controlled circumstances, unresolved issues can manifest in customer environments, resulting in data loss, costly system downtime, and dissatisfied customers. MLTT includes a battery of proven application-based data patterns to induce signal stress and to help identify potential anomalies and errors. This powerful, protocol-specific testing solution also exposes potential vulnerabilities for a wide range of standards—including Fibre Channel, FCoE, iSCSI, PCIe, NVMe, SAS, SATA, SSD, and Ethernet—so you can identify, locate, and resolve even the most elusive errors through stress testing before releasing products to market.

MLTT integrates more than a decade of extensive development, testing, and engineering experience into a single, easy-to-use tool that simplifies testing and validating for even the most complex network technologies.

Testing Virtualization

Virtualization has been widely deployed in data centers and has become the necessary technology for cloud-computing infrastructure. The increased workload and complex architecture impose new demands for testing server performance in the virtual environment and for evaluating the impact of virtualization on resource performance. Whether for design or deployment purposes, measuring performance per virtual machine (VM) base, evaluating hypervisor OS impacts on VM performance, and characterizing resource capacity with VM scalability and migration is imperative. MLTT lets you:

- Benchmark virtual switch performance by stressing attached VMs with fully-meshed topology

- Illustrate VM association with the physical server/station and evaluate performance impact with VM migration

- Test individual VM performance with incremental VMs to evaluate VM scalability impact on resource capacity

- Measure VM-to-VM traffic-exchange performance with various topologies (on the same or different physical servers)
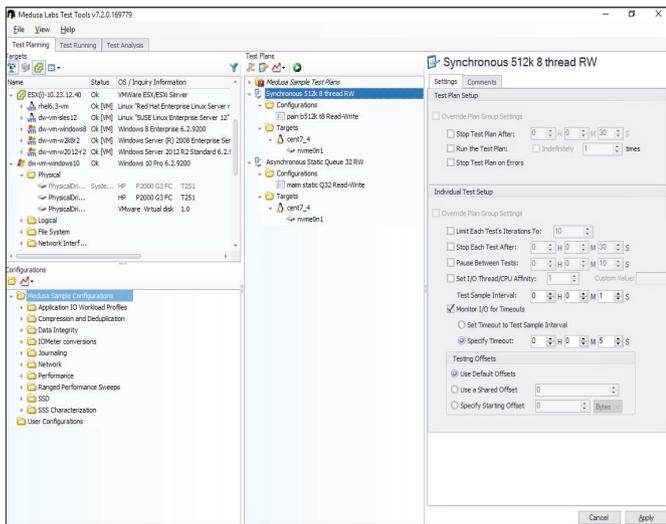
VM relation to the physical server

MLTT helps NEMs verify their virtualization design and help IT administrators plan resource capacity with VMs and measure/maintain SLAs in multitenant environments.

Advanced I/O Workloads

In test configurations, the Advanced I/O tab lets you specify a large list of I/O specifications to run under a single test instance. You can define the I/O size and percentage of bandwidth to run each load.

In addition to offering standard SCSI I/O sector sizes, MLTT includes the option to use SCSI passthrough modes to issue SCSI commands directly for write/read. This feature is critical for testing data integrity field (DIF) models and data integrity eXtensions (DIX)-aware SCSI passthrough interfaces that handle bigger sector sizes such as 520 bytes.

Advanced Tracking Capabilities for First-Time Trace Capture

You can configure MLTT to trigger a protocol analyzer with a unique data payload when first detecting data anomalies, enabling you to immediately determine the root-cause of even the most elusive bugs. Other testing systems require you to first identify anomalies and then reproduce errors before capturing an appropriate trace for debugging, increasing the complexity and time required to resolve issues.

Cross-Platform Support with Flexible Bypassing

MLTT supports Windows, Linux, Solaris, and HP-UX. Linux I/O methods include full disk coverage and static queue depths. Developers can perform cross-platform testing across multiple servers, operating systems, and devices, as well as bypass any OS layers that inhibit stress testing.

Advanced Graphical Test Planning Capabilities for Ease of Use

MLTT lets you create and manage extensive test cases and scripts and full test plans to configure and automate all MLTT features from a single GUI. These automated features include remote management, multiple test initiation and control, and performance profiling test scripts for determining optimal device performance. MLTT lets you plot recorded performance statistics to compare against other test results.
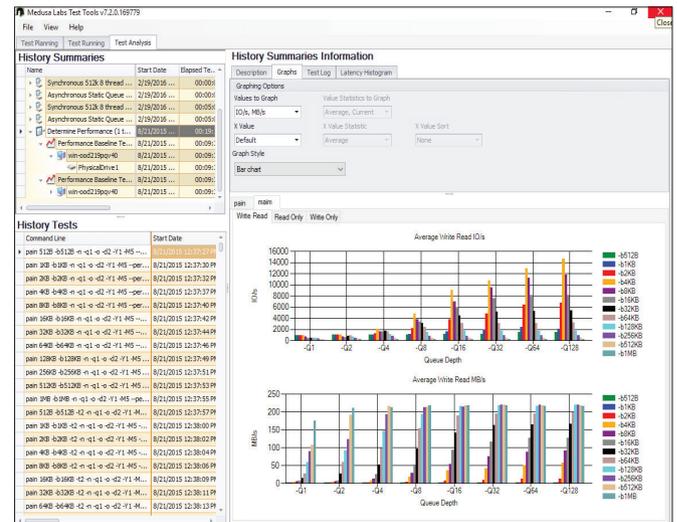
Performance test view

Customize Results Graphs

Enhanced graphing capabilities give you more flexibility in visually displaying test results by customizing and sorting the graph axis parameters.
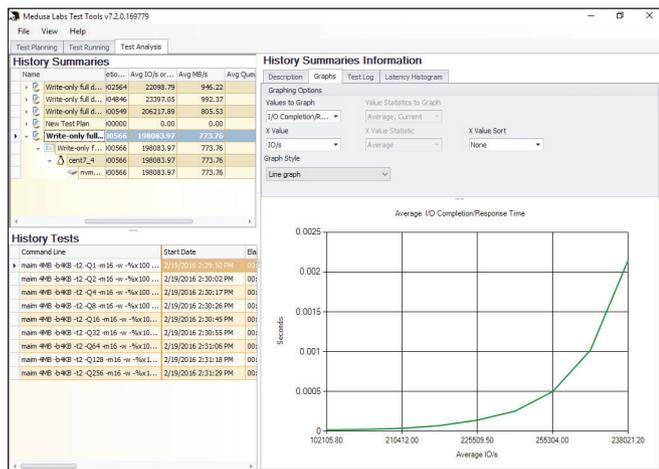
Advanced Remote Test Execution, Verification, and Management

Extended scripting capabilities automate the entire validation process including setup, traffic generation, capture, and comprehensive error and performance analysis. A single technician can initiate, monitor, and analyze large-scale testing across hundreds of remote clients and servers from a centralized GUI, thus lowering manufacturing costs. Auto-discovery of devices simplifies test configuration and performance testing results of remote systems are immediately available, letting you verify whether any errors occurred during testing or if performance dropped outside of user-defined boundaries.

MLTT now supports remote upgrades enabling you to upgrade several distributed systems through an easy-to-use GUI.

Unparalleled System Visibility

MLTT operates seamlessly with the powerful family of Viavi Xgig in-line protocol analyzers, load testers, and traffic jammers to detect a wide range of errors, impairments, and anomalies. Also, combining its triggering features with the Xgig Protocol Analyzer's 100 percent full-line-rate traffic capture capability in real time for analysis at the signal, protocol, encapsulated protocol, and application layers empowers you to resolve issues that would be difficult, if not impossible, to debug at the application level alone.

Specifications

System Requirements
MLTT uses system resources as efficiently as possible and can take full advantage of multiple processors when available. However, performance and stress testing is, by nature, resource-intensive and system requirements will vary with the specific architecture under test. For optimal performance and to achieve full-duplex, wirespeed throughput with data-integrity checking, Viavi recommends a 2 GHz processor, or better, with at least 1 GB RAM.

Platforms
x64 Windows 2003, 2008, 2012, 2016, 7, 8, 8.1, 10; Linux; Solaris
SPARC, x86 Sun Solaris
HP-UX
Windows and Linux for Itanium-based systems
Linux ARM

Interfaces
MLTT is protocol agnostic but includes protocol-specific patterns for application-based testing of Fibre Channel, FCoE, iSCSI, SATA, SAS, IDE, SCSI, RAID, USB, and Ethernet.

Licensing
Viavi offers flexible and scalable licensing on a per-seat subscription basis. The suite can be installed on any system with the license determining the number of systems that can be used concurrently. This lets you use the tools where and when you need to without being restricted to using particular test systems or lab setups.