



## DATA SHEET

### BENEFITS

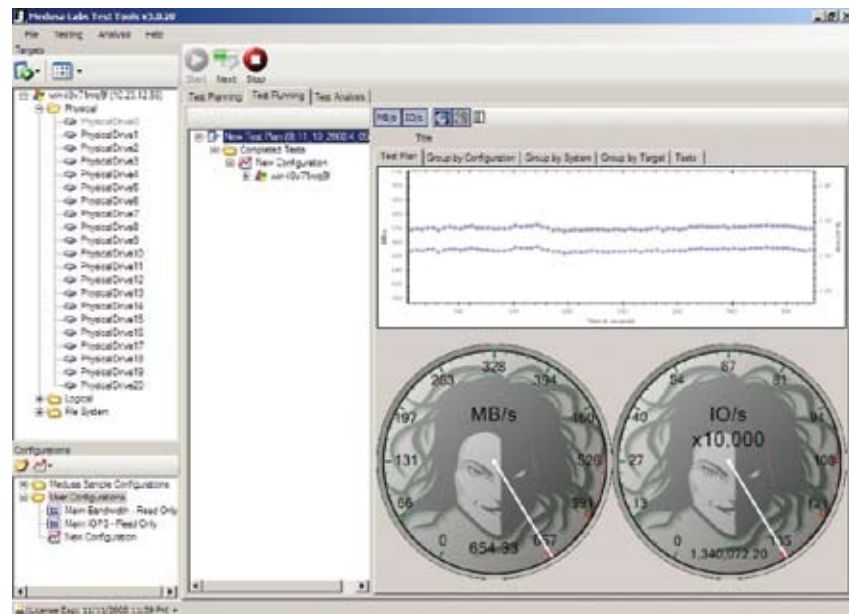
- ▶ Efficient and Complete Performance Analysis of Devices and Systems
- ▶ Accurate Bit-for-Bit Data Integrity Checking at Full Line Rate and Benchmark Speeds
- ▶ Complete I/O Control (Queue Depth, I/O Size, File Size, I/O Direction)
- ▶ Flexible Traffic Generation (read/write and sequential/random ratios)
- ▶ GUI-based Environment with Graphical Test Plan development for Increased Ease-of-Use
- ▶ Comprehensive Test Libraries to Uncover Hardware Weaknesses and Signal Integrity Issues
- ▶ Remote Test Execution, Verification, and Management
- ▶ Automation of Large-Scale Validation Testing
- ▶ Automatic Triggering of Protocol Analyzer when Anomalies Detected for Accelerated Root Cause Analysis

The Medusa Labs Test Tool Suite 3.0 is the industry's leading application-based data and signal integrity testing tool, enabling developers to identify, locate, and resolve even the most elusive errors through stress testing before products are released to market. Providing the most comprehensive testing solution for companies developing servers, switches, Host Bus Adaptors (HBA), and other storage equipment, its array of capabilities include:

- ▶ Complete I/O generation with full traffic flexibility and control
- ▶ Advanced data and signal verification
- ▶ Extensive stress testing libraries supporting a wide range of protocols
- ▶ Full-duplex performance benchmarking for accelerated analysis
- ▶ Easy-to-use Graphical Test Plan development
- ▶ Full remote management capabilities.

Finisar's Medusa Labs Test Tool Suite allows developers to uncover and eliminate data corruption errors, undesirable device and system data pattern sensitivities, I/O timeouts, I/O losses, and system lockup scenarios. Designed specifically for engineers working design validation, system bring-up, and Quality Assurance, the suite provides a comprehensive set of benchmarking, data integrity, and stress test tools that simplify and automate test and validation processes, resulting in higher quality products developed in less time and reaching market faster.

In addition to quickly and efficiently exposing device and system issues, developers also have access to a rich set of debugging and logging capabilities that facilitate rapid analysis for any detected issues. The Suite offers an advanced Graphical User Interface (GUI) which enables developers to perform cross-platform testing across multiple servers, operating systems, and devices, as well as automate the entire testing process from traffic generation to real-time trace capture to comprehensive error analysis.



# MEDUSA LABS TEST TOOL SUITE 3.0

Some developers rely upon shareware benchmarks or inefficient I/O generating tools incapable of triggering or recognizing the vast majority of potential bugs, resulting in marginal test coverage and validation at best. Without comprehensive stress testing that tests the limits of a device's performance and capabilities under controlled circumstances, these unresolved issues can manifest in customer environments, resulting in data corruption, costly system downtime, and customer dissatisfaction.

## WHAT'S NEW WITH VERSION 3.0

- ▶ Advanced I/O engine increasing testing efficiency and extending triggering capabilities
- ▶ Enhanced GUI for simplified ease-of-use with accessibility to all testing capabilities
- ▶ Remote automated management of networked systems
- ▶ Multiple test initiation and control from a single GUI
- ▶ Real-time test graphing, post-test graphing, and comparison capabilities
- ▶ Performance test scripts for determining optimal device performance
- ▶ Multi-trigger and custom trigger support to uncover even the most complex errors
- ▶ Generates FC8 jitter patterns, both JSPAT and JTSPAT
- ▶ Precise control of read/write, sequential/random bandwidth utilization
- ▶ Support for emerging standards, including FCoE and SSD
- ▶ Official Microsoft Vista and Windows 2008 support

## FINISAR'S MEDUSA LABS TEST TOOL SUITE LEADS THE INDUSTRY

With the Medusa Labs Test Tool Suite, Finisar has effectively condensed more than a decade of extensive development, testing, and engineering experience into a single, easy-to-use tool. The Suite simplifies the process of testing and validating even the most complex network technologies, including I/O virtualization, quad-core computing, and emerging standards such as Fibre Channel over Ethernet. In addition to compliance and interoperability testing, developers have access to a wide range of advanced testing capabilities:

### Fast, Efficient, and Comprehensive Stress Testing

An essential part of testing and validation is subjecting equipment to the variety of extreme operating conditions it may encounter in real-world networks. One of the most efficient ways to see if components exhibit certain failure types is to generate specific data patterns that stress hardware in a way that aggravates or catalyzes these failures, leading to faster error reproduction or system validation. Finisar, with its extensive troubleshooting experience, has developed a comprehensive battery of specific data patterns that have been proven to readily expose the potential vulnerabilities of devices and systems for a wide range of protocols such as Fibre Channel, FCoE, iSCSI, PCI, SAS, SATA, and Ethernet.

### High-Performance Benchmarking

Version 3.0 offers an enhanced I/O engine that extends powerful, performance capabilities as well as increases the efficiency of IOPS (I/O operations/second) performance testing. Full duplex testing enables benchmarking at twice the throughput compared to most benchmark tools available on the market today.

### Precise, Flexible Control

With complete control over traffic scenarios, including read/write and sequential/random ratios, developers can be sure of complete test coverage. For proprietary features, developers can create their own user-defined patterns which can be added to test plans just like any other test pattern.

### Configurable Application-Based Testing

Combined with Finisar's Xgig<sup>®</sup> protocol analyzer, developers have access to unparalleled debugging and analysis capabilities. With multi-trigger features and support for custom triggers, developers can uncover even the most difficult-to-identify bugs.

### Advanced Tracking Capabilities for First-Time Trace Capture

The Medusa Labs Test Tool Suite also generates unique data patterns to trigger analyzers when data anomalies are detected. In this way, developers are able to immediately determine and track the client and/or thread responsible, accelerating troubleshooting and root-cause analysis. Other testing systems require developers to first identify anomalies and then reproduce errors before an appropriate trace can be captured for debugging, increasing the complexity and time required to resolve issues.

### Targeted Testing

Many test tools are limited in that they can only be used to stress the aggregate system. The Medusa Labs Test Tool Suite 3.0 is easily configured to validate anything from a single device to the entire system.

### Advanced Remote Management and Testing

The Medusa Labs Test Tool Suite 3.0 is the industry's first tool to support remote test execution from a single GUI. In addition, extended scripting capabilities enable developers to automate the entire validation processing.

### Large-Scale Testing for Lower Cost Manufacturing

Support across multiple remote testing systems means performance testing and benchmarking no longer require individual system management. Now a single technician can initiate, monitor, and analyze tests across hundreds of clients and servers from a single centralized location.

### Advanced GUI

New GUI features include remote management, multiple test initiation and control, real-time test graphing, post-test graphing and comparison, performance test scripts for determining optimal device performance, and simplified dialogues throughout. In addition, all testing capabilities are accessible from a single GUI and can be automated.

## Graphical Test Plan Development

Major enhancements in the GUI simplify the creation and management of extensive test cases and scripts, as well as full test plans, through the use of new Graphical Test Planning capabilities.

## Multiple OS Platform Support with Flexible Bypassing

The Medusa Labs Test Tool Suite 3.0 supports Windows 2000/2003/XP/2008/Vista, Linux, and Sun SPARC. New Linux I/O methods include full disk coverage and static queue depths. Developers may bypass all or specific layers of the OS that may inhibit stress testing, giving users complete flexibility and control to drill down to the layers they need to.

## TESTING TOOLS CHECK LIST

Do your current testing tools provide:

- ▶ Full bit-for-bit data integrity checking on 100% of traffic at full line-rate?
- ▶ Extensive application-based data pattern libraries that test against the specific and known vulnerabilities of Fibre Channel, FCoE, iSCSI, SAS, SATA, and Ethernet?
- ▶ Support for Windows, Linux, and Sun SPARC?
- ▶ Configurable I/O capabilities defining queue depth, block size, file size, read/write mix, and sequential/random ratio?
- ▶ Advanced debugging features, including multiple triggering capabilities, custom triggers, complete error logging, and memory dumps?
- ▶ Full scripting capabilities for easily automating the entire testing process, from setup to capture and analysis?
- ▶ Access to all test features through a single graphical user interface?
- ▶ Quick test configuration and set up?

- ▶ Remote testing of all clients and systems from a single location enabling large-scale validation?
- ▶ Performance validation with full duplex I/O?
- ▶ Complete test coverage detecting errors, data corruption, I/O halts, and I/O times outs?

## TEST TOOLS IN-DEPTH

The Medusa Labs Test Tool Suite is a collection of user-mode applications that run on a Windows- or Linux- based host system and are controlled either through a single graphical user interface or, for automated testing, by scripted test plans. Developers can configure the host system at the simplest level to act as an initiator to any storage device internal or external to the host system. Alternatively, developers have the flexibility and control to transform the host system into a precision traffic generator using real-world application data.

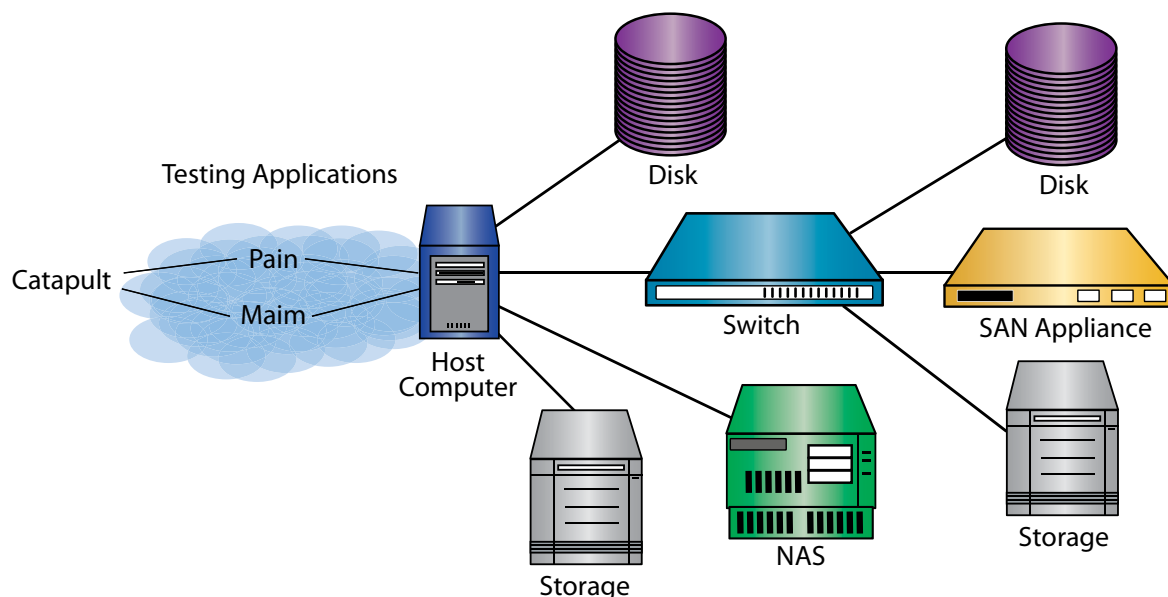
### I/O GENERATION

The Medusa Labs Test Tool Suite is comprised of two primary I/O generation tools:

- ▶ Pain: For synchronous testing, this tool issues a single pending I/O per worker thread.
- ▶ Maim: For asynchronous testing, this tool uses a single worker thread to issue multiple I/Os at one time.

### Automation

The Catapult target discovery tool not only simplifies test configuration through auto-discovery of devices available to the host system, it automatically provides this information to other tools during I/O testing. Developers have the option of automating their testing through Catapult's functionality or through a Windows-based GUI.



## Remote Test Execution, Verification, and Management

Initiating tests, whether to a single system or thousands of clients couldn't be easier. After the GUI or Catapult automatically seeks out all networked systems that have the test tools installed, developers have the power and control to start and end tests on remote systems with test results immediately available to the host system. In addition, developers can verify whether any errors occurred during testing or if performance dropped outside of user-defined boundaries at any time.

## Unparalleled System Visibility

There are multiple levels of operation within a network, ranging from raw analog signals to numerous protocol and encapsulated protocol layers and extending all the way to the applications in use. As different errors, impairments, and deficiencies can occur at each of these levels, it is critical that developers test systems across the various operational layers of the system to detect any anomalies which may not necessarily be visible at the application level

The Medusa Labs Test Tool Suite 3.0 not only identifies conditions and issues as accurately as possible at the application level, it works seamlessly with Finisar's powerful Xgig family of in-line protocol analyzers, load testers, and traffic jammers. Xgig Analyzers provide essential access to traffic in real-time, as well as accurately capture 100% of traffic at full line-rate. Complete system visibility allows the detection of a wide range of anomalies, such as I/O fragmentation and recoverable errors that would otherwise be invisible to developers.

The Medusa Labs Test Tool Suite also offers the unique and powerful ability to send an I/O transaction with a special value for triggering the Xgig Analyzer. This empowers developers to resolve issues that would be difficult, if not impossible, to debug at the application level. For example, when a fault condition occurs, the relevant traffic can be captured in a real-time trace buffer and then analyzed in detail to quickly determine the root-cause.

## TECHNICAL SPECIFICATIONS

<b>SYSTEM REQUIREMENTS</b>	The Medusa Labs Test Tool Suite utilizes 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 the best performance and to achieve full duplex, wire-speed throughput with data integrity checking, Finisar recommends using an enterprise-class system. Minimum system requirements are a 2 GHz or better processor with at least 1 GB RAM.
<b>PLATFORMS</b>	Windows® 2000/2003/XP/2008/Vista systems, Linux, Sun SPARC platforms.
<b>INTERFACES</b>	The Medusa Labs Test Tool Suite is protocol agnostic but includes specific patterns for application-based testing of Fibre Channel, FCoE, iSCSI, SATA, SAS, IDE, SCSI, RAID, USB, iSCSI, and Ethernet.
<b>LICENSING</b>	Finisar 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 allows developers to use the tools where and when they are needed, without being restricted to using particular test systems or lab setups.

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