

WorkloadWisdom Workload Generators

WorkloadWisdom

Product Benefits

- Extreme Realism
- Highest Performance
- Deepest Protocol Depth



Intuitive and Customizable GUIs

Designed for all users, from novice to advanced, WorkloadWisdom offers GUIs for simplified workload modeling, workload generation, results analysis, and cross-team collaboration. Users also have access to pre-built, editable tests designed to greatly accelerate test development.



Broad Protocol Coverage

WorkloadWisdom offers detailed performance emulation of storage protocols, including NVMe, and provides rich, accurate emulations of workloads across File, Block, and Object/Cloud storage.



All-in-One Workload Generators

All-in-one workload generators can execute complex traffic emulation at extreme loads. (Currently available in the configurations listed.)



The most comprehensive storage performance validation platform for today's Enterprise IT and Technology Vendors.

Find performance and scale related bugs introduced by real workload behaviors. With the industry's deepest and broadest storage protocol emulations and command-bycommand control, WorkloadWisdom delivers the most accurate and efficient workload simulation.

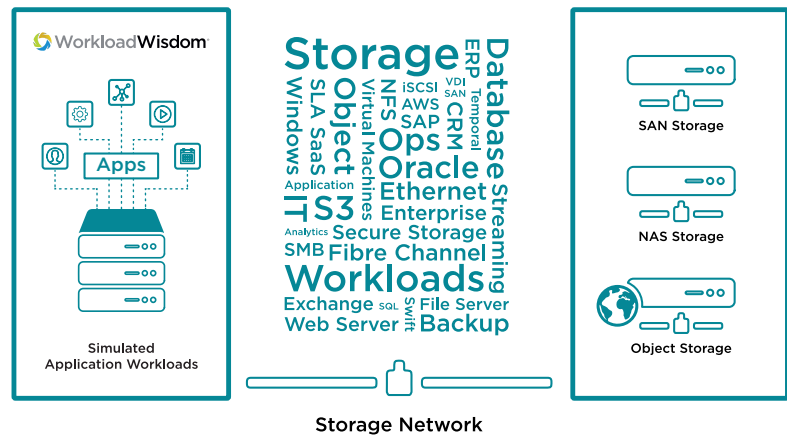



Figure 1: WorkloadWisdom unified File, Block, and Object storage validation solution.

Workload Generators for Storage and Network Technology Vendors

	Test Interfaces	Performance
 <ul style="list-style-type: none"> • Extremely flexible I/O access patterns • Richest metadata emulation • Parallel scenarios and asynchronous constructs • Canned and user-defined content generation options • Granular configuration of protocols for functional testing 	4 x 10GbE SFP+ 8 x 10GbE SFP+	8-Port: 17,720MB/s
	4 x 25GbE SFP28	4-Ports: 23,830MB/s
	2 x 40GbE QSFP 4 x 40GbE QSFP	2-Ports: 18,910MB/s 4-Ports: 37,400MB/s
	4 x 4/8/16GFC 8 x 4/8/16GFC	4-Port: 9300MB/s 8-Port: 16,110MB/s
	2 x 32GFC 4 x 32GFC	2-Ports: 12,810MB/s 4-Ports: 25,360MB/s
	2 x 10GbE + 2 x 4/8/16GFC 4 x 10GbE + 4 x 4/8/16GFC	2-Port 10GbE: 4780MB/s 2-Port FC: 6220MB/s 4-Port 10GbE: 9560MB/s 4-Port FC: 12,440MB/s

Workload generators work with the following software:

WorkloadWisdom Software

An intuitive web-based platform designed for cross-functional team collaboration. For example, QA engineers can create functional tests for developers prior to submitting code; team leads can create regression suites in a centralized repository for team members to execute and share results; and go-to-market teams can build workload models from customers' production data in order to verify solution acceptance. (Included in the WorkloadWisdom Platform, sold separately in 10G, 25G, 40G, 16GFC, 32GFC, and Unified Series appliance products.)

Test Development Environment (TDE)

A single user client application for designing and executing tests and validating test results. (Included in all Workload Generator products.)

Test Automation Framework (TAF)

A framework for using supported APIs for test configuration, execution and results validation. (Included in all Workload Generator products.)

Product Features and Specifications

<p>Extreme Realism</p>		<ul style="list-style-type: none"> • Extremely flexible I/O access patterns • Richest metadata emulation to evaluate real-world performance • Parallel scenarios and asynchronous constructs to model hypervisor, application and OS behavior using multiple protocols • Canned and user-defined content generation options to validate caching, tiering and deduplication functions • Granular configuration of protocols for functional testing • Powerful WorkloadWisdom User Parameter files to create highly scalable run-time patterns for folder structures, authentication credentials, connections, addresses, and more • Client leasing/delegation to validate local caching operations • Threading, Async, and Compound Action support for selected protocols
<p>Application Workload Models</p>		<ul style="list-style-type: none"> • Constant Workloads: standard general purpose Workload Models with easy to use sliders / bins to specify Access Patterns, R/W vs Metadata operations, Block Sizes, fixed / sequential / random data payload, load profiles, and more. • Hot Spot Workloads: Constant Workload Models with the additional ability to specify IO region intensity and drift over time. Available for FC and iSCSI. • Temporal Workloads: designed to be paired with the powerful Workload Data Importer engine. Workload Models that can vary the IO characteristics (such as Access Patterns and Load Profiles) over time, to match the production workload's temporality characteristics • Composite Workloads: a framework that joins multiple Workload Models together. Each sub-Workload carries its own IO profiles and configurability, to simulate complex applications such as databases where multiple processes carry different IO characteristics • Application Workload Examples: Constant Workload Models with predefined IO profiles based on commonly observed IO characteristics from popular applications (included) • Application Workloads: purpose-built workloads that provide parameters specific to the application (e.g., Number of VMs for VDI applications) instead of protocol parameters such as Read Block Size
<p>Storage Protocols</p>	<p>File</p>	<ul style="list-style-type: none"> • Client: SMB, SMB 2.x, SMB 3.x, NFSv2, NFSv3, NFSv4, NFSv4.1, NLM/NSM • Server: CIFS/SMB, SMB 2.x, NFSv3
	<p>Block</p>	<ul style="list-style-type: none"> • Initiator: iSCSI, FC-SCSI, FC-NVMe • Target: iSCSI
	<p>Object</p>	<ul style="list-style-type: none"> • Client: HTTP, HTTPS, OpenStack Swift, SNIA CDMI, Amazon S3, OpenStack Cinder • Server: HTTP, HTTPS
<p>Network</p>		<ul style="list-style-type: none"> • MAC, VLAN, DCB, IPv4, IPv6, TCP • FC, NPIV

Product Features and Specifications (continued)

<p>Load Profiles</p>	<ul style="list-style-type: none"> • Specify the number of concurrent users, new users per second, actions per second, network bandwidth or TCP throughput • Timeline load parameterization to simulate network I/O patterns • Run multiple realistic user workloads simultaneously
<p>Measurements and Reporting</p>	<ul style="list-style-type: none"> • Data verification to validate data integrity with error logs • Detail statistics including per-command response time and errors • CSV result export • PCAP capture • Built-in Reporting Tool
<p>Authentication</p>	<ul style="list-style-type: none"> • NTLM, Kerberos, CHAP, Keystone
<p>Automation</p>	<ul style="list-style-type: none"> • Test parameters can be specified at run-time • Statistics reported dynamically during the test • Test Execution Rules triggered by test statistics
<p>Hardware: 10G, 16GFC and Unified Series 32GFC/25G/40G Series</p>	<ul style="list-style-type: none"> • 2RU Enclosure (17.2" x 3.5" x 28.5") • 1000W redundant power supply • AC Input: 100-240V, 9.8-5A, 50-60Hz • Operating temperature range: 50-95F/10-35C • Operating humidity range: 8-90% (non-condensing) • Weight: 85lbs / 38.6kg
<p>WorkloadWisdom Platform Appliance</p>	<ul style="list-style-type: none"> • 2 RU enclosure (17.2" x 3.5" x 28.5") • 1280W redundant power supply • AC Input: 100-240V, 9-3.5A, 50-60 Hz • Operating temperature range: 50 – 95°F / 10-35°C • Operating humidity range: 8-90% (non-condensing) • Weight: 85lbs / 38.6kg



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