

# HTTP/S Object Storage Protocol Suite

## Industry's premiere validation system for Object Storage, Web Service, and Application Delivery

### Overview

The HTTP/S protocol suite allows equipment manufacturers, service providers and enterprises to model complex RESTful transactions at scale simulating end users activities and cloud storage interfaces such as OpenStack Swift, OpenStack Cinder, Amazon S3 and SNIA CDMI. Bottlenecks in the service delivery chain that extend through security appliances and application delivery controllers can be pinpointed prior to deployment avoiding live data center outages. Client authentication emulation supports both Pre-emptive and Passive modes and schemes from Basic to the widely used NTLM/Kerberos to find the capacity limits of access management infrastructure. OpenStack Swift, OpenStack Cinder, Amazon S3, SNIA CDMI and proprietary Object storage server infrastructure can be validated against functional and performance acceptance criteria. A robust HTTP data verification capability helps users ensure that information sent through a variety of proxies and caching points passes through intact. Negative testing also helps users verify that data that should be scrubbed doesn't make it through gateway access points.

IT organizations and service providers can use these features and many others to do performance and capacity assessments to ensure clients and servers are configured and tuned optimally for maximum performance.

### Highlights

- Pre-built commands and dedicated stats for OpenStack Swift: OpenStack Cinder, Amazon S3, and SNIA CDMI APIs
- Broad authentication schemes
- Unique WorkloadWisdom HTTP Dynamic Parsing feature
- User defined certificate uploads
- Full support of all major SAN, NAS, and Object protocols

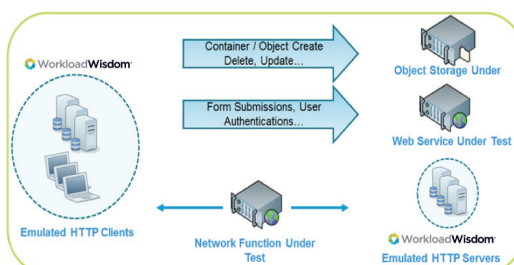


Figure 1: WorkloadWisdom HTTP client-only and client / server emulation

## Key Features

Client Emulation Realism	<ul style="list-style-type: none"><li>• HTTP(S) Redirect with DNS (TDE) allows for load balancing</li><li>• Realistic emulation of HTTP clients with the ability to emulate multiple scenarios from a single interface</li><li>• Advanced HTTP functionality including HTTP Redirect, HTTP Content Encoding and HTTP Transfer Encoding</li><li>• HTTPS support with user-defined certificates and configurable cipher advertisement (SSL 2.0/3.0, TLS 1.0/1.1/1.2)</li><li>• HTTP request header and message body content extraction/insertion for stateful RESTful API and Object storage validation</li><li>• Dynamic HTTP message bodies with content insertion can be used for form submissions and user authentication</li><li>• Configurable network options supporting VLAN tagging, IPv4, IPv6 and MAC address assignment with increment schemes for emulation of millions of unique clients</li></ul>
HTTP Authentication	<ul style="list-style-type: none"><li>• Test authentication mechanisms including Basic, Digest, NTLM, and Kerberos, leveraging both Passive and Pre-Emptive options</li><li>• Support for Openstack identify service Keystone</li></ul>
Test Modeling	<ul style="list-style-type: none"><li>• Flexible scenario modeling with looping constructs, user parameter files, and functions for unique parameter usage such as creating complex URI structures</li><li>• Set independent, iterative load profile objectives for each parallel scenario to assess scalability including: concurrent scenarios, new scenarios per second, concurrent actions, new actions per second, concurrent connections, new connections per second, and throughput</li></ul>
Content Creation / Data Verification	<ul style="list-style-type: none"><li>• Create complex container nesting with varying object sizes for object storage</li><li>• Support for reading and writing large files</li><li>• Data verification options to ensure the integrity of data written to target storage</li><li>• Innovative Data Compressibility and Deduplicability algorithm</li></ul>
Commands	<ul style="list-style-type: none"><li>• HTTP command sequencing control within scenarios to emulate any complex workload that represents browser, application and device behaviors. Supported commands include: HTTP 1.0/1.1: CONNECT, GET, PUT, POST, HEAD, DELETE, OPTIONS, TRACE</li></ul>
Object Storage Protocol APIs	<ul style="list-style-type: none"><li>• OpenStack Swift</li><li>• OpenStack Cinder</li><li>• SNIA CDMI</li><li>• Amazon S3</li></ul>
Client / Server Support	<ul style="list-style-type: none"><li>• End-to-end client and server emulation for validation of content-aware network functions including Firewalls, Unified Threat Management, Intrusion Detection/Prevention, Application Delivery Controllers and Content Switching</li></ul>
Automation	<ul style="list-style-type: none"><li>• Automate any task needed with the protocol commands supported using scripting languages: Perl, Python and C#</li></ul>

## Key Features Continued

HTTPS-Enabled Test Beds	<ul style="list-style-type: none"><li>• HTTP based test beds can enable HTTPS</li></ul>
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## Statistics

Commands	<ul style="list-style-type: none"><li>• HTTP Action counts or Actions/sec (average for all or individual Actions)</li></ul>
Details	<ul style="list-style-type: none"><li>• HTTP command transmission/receipt OK/Fail/Drop in packets/sec or kilobits/sec</li></ul>
Authentications	<ul style="list-style-type: none"><li>• HTTP Authentication Attempts (Passive, Preemptive), Ignored/Succeeds, Failures (Cred. Denied, Access Forbidden, Server Error, Reset by Server, Disabled by Client), Aborts</li></ul>
HTTP Latency	<ul style="list-style-type: none"><li>• HTTP command response time and completion time (average, minimum, maximum)</li></ul>
HTTP Throughput	<ul style="list-style-type: none"><li>• HTTP packet or byte throughput on per command or All basis</li></ul>
TCP Connection Time	<ul style="list-style-type: none"><li>• Connection Time (Avg. Duration, Time-to-1st-Byte, Closing Time)</li></ul>
TCP Connections	<ul style="list-style-type: none"><li>• Attempts, Opened, Closed, Failed, Reset, Timeout (Open, Data, Idle, ARP, SYN), SYN Rejected</li></ul>
TCP Throughput	<ul style="list-style-type: none"><li>• TCP packet throughput on per command or All basis</li></ul>
TCP Details	<ul style="list-style-type: none"><li>• Tx (OK, Retransmissions, Out-of-Sequence,), Rx (Ok, Length Error, Drop, Duplicate, Out-of-Sequence, Rejected, Invalid Destination)</li></ul>
Data Verification	<ul style="list-style-type: none"><li>• HTTP data verification operations attempts, successes, failures</li></ul>

## Supported Platforms

- WorkloadWisdom 1G Series Generators
- WorkloadWisdom 10G Series Generators
- WorkloadWisdom 40G Generator
- WorkloadWisdom Unified Series Generators
- WorkloadWisdom Series Generators
- WorkloadWisdom Virtual Series Generators



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