VIRTUAL INSTRUMENTS

DATASHEET

NFSv4.1 Protocol Package

Industry's premiere validation system for NFS storage

Overview

NFSv4.1 adds significant improvements over NFSv4. One critical enhancement is the addition of parallel NFS (pNFS) which provides for scalable, parallel access to files distributed among multiple servers in clustered server deployments. NFSv4.1 builds a session layer on top of the transport layer to improve the overall reliability of the protocol.

The Load DynamiX NFSv4.1 protocol package allows storage, development and QA engineers to build complex workloads that represent real product environments, emulating clients or applications servers at high scale.

Equipment manufacturers can improve the robustness and performance of their NFSv4.1 server implementations.

IT organizations and service providers can perform capacity assessments of the storage tiers and ensure clients and servers are configured and tuned properly to take advantage of the NFSv4.1 protocol benefits.

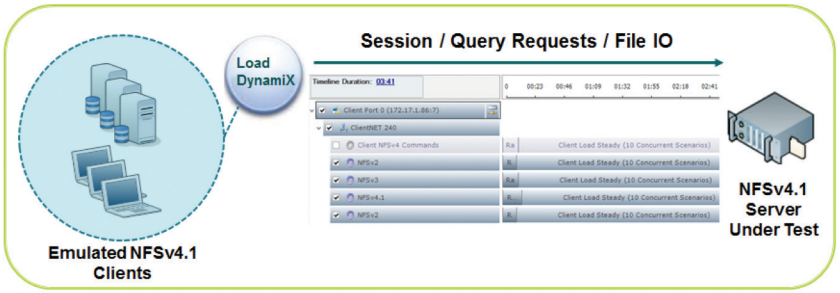

Figure 1: Load DynamiX NFSv4.1 client / server emulation.

Highlights

- Industry's most advanced NFS validation system
- Control and schedule metadata operations together with data read / writes for the highest degree of realism
- Create highly nested NFS files and mounts structure
- Stress the NFS infrastructure using asynchronous operations with NFS threading
- Gain full support of all major SAN, NAS and Object protocols

Key Features

Client Emulation Realism	• Realistic emulation of NFSv4.1 clients with the ability to combine NAS/SAN protocols and versions from a single interface • Granular control of metadata operations in conjunction with read / write data operations • NFS Threading supports asynchronous operations that provide realistic stressful load on the file server • Configurable network options supporting VLAN tagging, IPv4, IPv6 and MAC address assignment with increment schemes for emulation of millions of unique clients
Client-side Caching/Locking	• Use share reservation locks to understand potential for performance degradation • Verify NFSv4.1 Byte Range Locking implementation
Failover/Availability	• Reconnect feature that allows emulated clients to resume I/O operations after network failures or logical interface changes to test failover and measure convergence times. Operates with petabyte file sizes resuming I/O from the point of failure.
Test Modeling	• Flexible scenario modeling with looping constructs, user parameter files, and functions for unique parameter usage • 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
File System Creation /Data Verification	• Create complex file system structures with varying file sizes and directory levels • Support for reading and writing large files • Data verification options to ensure the integrity of data written to target storage • Innovative Data Compressibility and Deduplicability algorithm
Commands	• Low-level command sequencing control within scenarios to emulate any complex workload that represents hypervisor, OS, application and device behaviors. Supported commands include: - **Session:** Exchange ID, Create Session - **File Requests:** Create, Close, Open, Open Confirm Read, Write, Commit, Remove, Rename - **Query Requests:** Get Attributes, Access, Lookup, Lookup Parent Directory, Set Public Filehandle, Set Root Filehandle
Automation	• Automate any task needed with the protocol commands supported using scripting languages: Perl, Ruby and Python

Key Features Continued

HTTPS-Enabled Test Beds	• HTTP based test beds can enable HTTPS

Statistics

Commands	• NFSv4.1 Action counts or Actions/sec (average for all or individual Actions)
Details	• NFS command transmission/receipt OK/Fail/Drop in packets/sec or kilobits/sec
RPC Commands	• RPC command counts (attempts, successes, failures or aborts)
RPC Response Time	• RPC command response time (average, minimum, maximum)
RPC Throughput	• RPC packet or byte throughput on per command or All basis
Data Verification	• NFSv4.1 data verification operations attempts, successes, failures

Supported Platforms

Load DynamiX 1G Series Appliances

- Load DynamiX 10G Series Appliances
- Load DynamiX Unified Series Appliances
- Load DynamiX Enterprise Series Appliances
- Load DynamiX Virtual Series Appliances

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