Load DynamiX

www.LoadDynamiX.com

SMB 3.0 Protocol Package

The industry's premiere validation system for SMB storage

Overview

The SMB 3.0 dialect extends SMB2 and is part of Microsoft Windows 8 and Windows Server 2012. The benefits of SMB 3.0 include lower CPU overhead in the compute tier with improved client caching, fault tolerance and reliability with features such as transparent failover, and high availability with scale-out and multichannel functionality.

While SMB 3.0 promises reliability and performance at par with SAN technologies, robust validation of the protocol must take place before it can be deployed in production environments. The Load DynamiX SMB 3.0 protocol package allows storage, development and QA engineers to build complex workloads that represent real product environments, emulating clients or servers acting as clients at high scale.

Equipment manufacturers can improve the robustness and performance of their SMB 3.0 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 SMB 3.0 protocol benefits.

Highlights

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

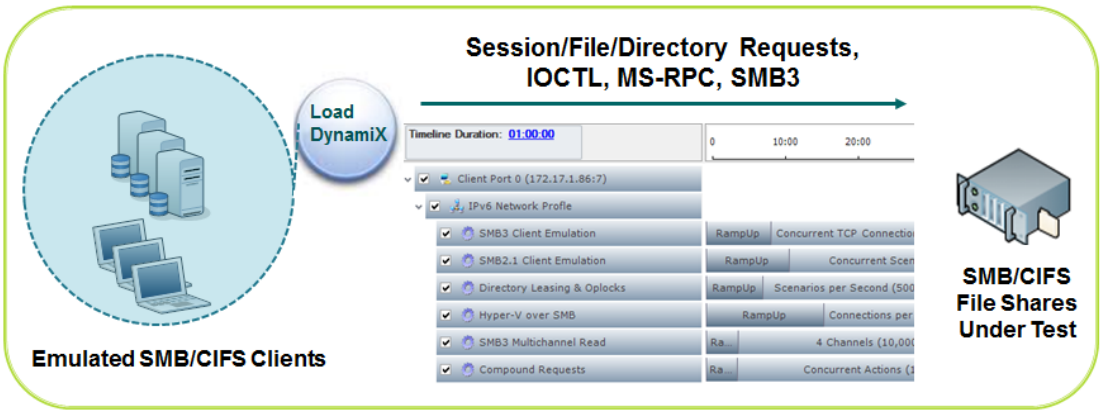

Illustration 1. The Load DynamiX SMB 3.0 client emulation.

Key Features

Client Emulation Realism	▪ Realistic emulation of SMB 3.0 clients with the ability to combine NAS/SAN protocols and versions from a single interface ▪ Supported CIFS/SMB dialects include 2.002, 2.1, and 3.0 ▪ Configurable network options supporting VLAN tagging, IPv4, IPv6 and MAC address assignment with increment schemes for emulation of millions of unique clients ▪ Key authentication mechanisms including NTLMv1/v2 and Kerberos ▪ SMB 3.0 Signing
Multichannel & Performance	▪ Ability to emulate multichannel scenarios to contrast performance gains when using different number of channels and mixed network interfaces speeds ▪ Use credit, compound request, thread block and async block constructs for validation of SMB multiplexing and asynchronous behavior
Failover	▪ Make use of application instance IDs to validate if SMB 3.0 file servers can maintain context when applications failover to different client nodes ▪ Configure persistent/durable handles to test transparent client recovery of SMB 3.0 under negative conditions such as network or server failures
Offload / Client Caching	▪ Server-side copy and copy offload commands to assess performance gains and traffic reduction improvements of these operations ▪ Configure emulated clients to use file/directory leasing with various oplocks to understand client caching synchronization behavior, assess increases in file server scalability and reduction in network bandwidth consumption
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
Commands	Low-level command sequencing control within scenarios to emulate any complex workload that represents hypervisor, OS, application and device behaviors. Commands supported across CIFS/SMB dialects include: ▪ **Session Requests:** Negotiate, Session Setup, Logoff, Tree Connect/Disconnect, Echo ▪ **File Requests:** Create, Close, Flush, Read, Write, Lock, Query/Set Info ▪ **Directory Requests:** Create, Change Notify, Query Directory ▪ **IOCTL/FSCTL Requests:** Get DFS Referral, Server Side Copy, Resume Key Request, Resiliency Request, Query Network Interface, Validate Negotiate Info, Offload Read/Write ▪ **Create Contexts:** Durable Connect V1 & V2, Lease Request V1 & V2, Application Instance ID, Query on Disk ID, Request Maximal Access Info ▪ **MS-RPC:** NetShareGetInfo, NetShareEnum, NetWkstaGetInfo, NetWkstaUserEnum

Statistics

Actions	Action counts or Actions/sec (average for all or individual Actions)
Commands	Command counts (attempts, successes, failures or aborts)
Details	Command transmission/receipt OK/Fail/Drop in packets/sec or kilobits/sec
Response Time	Command response time (average for all or individual commands)
Throughput	Packet or byte throughput on per command or total basis
Data Verification	Data verification operations attempts, successes, failures
Latency Time (server results only)	Server response latency average in seconds, micros or milliseconds

Supported Platforms

Load DynamiX 1G Series Appliances
Load DynamiX 10G Series Appliances