Microsoft Interoperability Track

May 10-11, 2023
sambaXP Conference
Agenda

- FileServer TestSuite Overview
- What’s New
- Demo
- Protocol Testing on Wireshark
FileServer Protocol Test Suites Overview

What is a Windows Protocol Test Suite?

Evaluates whether a protocol implementation meets certain interoperability requirements.

- Originally developed for in-house testing of Microsoft Open Specifications.
- Used to test/verify Windows behavior.
- Also used to test 3rd-party implementations.

Do not cover every protocol requirement, and do not certify an implementation, but can be a useful indication of interoperability.
Windows Protocol Test Suites Cross Platform

PTM/PTM Cli

FileServer Test Suite  RDP Test Suite  ......  Protocol Test Framework  Proto SDK

.NET Core SDK

Windows  Linux  MacOS
Windows Protocol Test Suites Open Source

Open sourced on GitHub since 2016
https://github.com/Microsoft/WindowsProtocolTestSuites
https://github.com/Microsoft/ProtocolTestFramework

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<th>Category</th>
<th>Test Suite Name</th>
<th>Protocols</th>
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<td><strong>FileServer</strong></td>
<td>MS-SMB2, MS-FSRVP, MS-SWN, MS-DFSC, MS-RSVD, MS-SQOS, MS-FSA, MS-HVRS</td>
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<td>MS-SMB</td>
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<td><strong>BranchCache</strong></td>
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<td>Active Directory</td>
<td><strong>ADFamily</strong></td>
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<td>Remote Desktop</td>
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<td>BYOD</td>
<td><strong>MS-ADFSPIP</strong></td>
<td>MS-ADFSPIP</td>
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FileServer Test Suite Scope

**Protocols**
- [MS-SMB2]: Server Message Block (SMB) Protocol Versions 2 and 3
- [MS-FSA]: File System Algorithms
- [MS-FSA]: File System Algorithms
- [MS-SWM]: Service Witness Protocol
- [MS-RSV]: Remote Shared Virtual Disk Protocol
- [MS-DFSC]: File Server Remote VSS Protocol
- [MS-DFSC]: Distributed File System (DFS): Referral Protocol
- [MS-HVRS]: Hyper-V Remote Storage Profile

**Messages**
- Negotiate (Negotiate Contexts)
- Session Setup
- Tree Connect/Disconnect
- Create/Close (Create Contexts)
- IOCTL
- Query Directory
- Query Info/Set Info
- ...
FileServer Test Suite Features

- Negotiate
- Session Mgmt.
- Tree Mgmt.
- Create/Close
- IOCtl
- Credit Mgmt.
- Signing
- Leasing/Oplock
- Durable Handle
- Multi Channel
- Persistent Handle
- Replay
- App Instance Id
- Encryption
- Compression

Dialect
- 2.002
- 2.1
- 3.0
- 3.02
- 3.11
FileServer Test Suite Approach

• **Traditional Test**
  • Covers basic functionalities and scenarios

• **Model-based Test**
  • 2K+ test cases generated by 13 models
  • Better coverage on
    • Parameter combination
    • Message sequence
    • Negative tests
FileServer Test Suite Infrastructure

1. Configuration
2. Adapter
3. Logging
4. Network Capture

Synthetic Client (Driver Computer)
- Test Cases
- Protocol Adapter
- ProtoSDK

SUT Control Adapter
- Managed
- PowerShell
- Shell

Protocol Test Framework

Visual Studio Unit Test

SUT (System Under Test)

File Server

TCP
FileServer Test Suite Environment

FileServer Standard

FileServer Cluster
What’s New (Github Release 4.22.8.0)
Windows Protocol TestSuites Updates

Windows Protocol TestSuites Release v4.22.8
https://github.com/Microsoft/WindowsProtocolTestSuites/releases/tag/4.22.8.0

**FileServer Test Suites**
- New Tests
- Support QUIC tests on a Linux driver
- Bug fixes

**Protocol Test Manager Service**
- Fix auto-detect bug on Linux driver
- Other bug fixes
FileServer TestSuite New Tests

• Algorithm for Noting file has been accessed
File Modified LastAccessTime

Algorithm_NottingFileModified_File_LastAccessTime

- Tests algorithm for LastAccessTime on a given file system
  - Detailed description available in [MS-FSA]
    https://docs.microsoft.com/en-us/openspecs/windows_protocols/ms-fsa

- Verify that Server updates the LastAccessTime for a file after it is modified
**File Modified LastAccessTime**

**Algorithm_NotifyingFileAccessed_File_LastAccessTime**

- **Test Driver**
  - Establish connection with file server
  - Create file and write to it
  - Query FileBasicInformation and store LastAccessTime
  - Read file contents
  - Query FileBasicInformation and store LastAccessTime
  - Verify first LastAccessTime is earlier than second LastAccessTime

- **SUT**
Demo
Protocol Testing on Wireshark

Amalachukwu Offiah
Program Manager
Wireshark Survey
Microsoft Message Analyzer (MMA) was deprecated, and we are considering a replacement tool to continue supporting our partners and customers.

The feedback across various customer and partner engagements is a preference for Wireshark, and we are looking to learn more!
Why Wireshark?

- Open-source
- Cross-platform
- Industry popular
- Large community
Would you like to see Microsoft contributing to Wireshark?

Tell us more in the survey!

Would you like to join our industry user group? If so, please email us at interopdevevents@microsoft.com
Thank you!