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# FileServer TestSuites Overview and Demo 2023

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# Agenda

- FileServer TestSuite Overview
- What's New
- Demo
- Protocol Testing on Wireshark



# FileServer Protocol Test Suites Overview

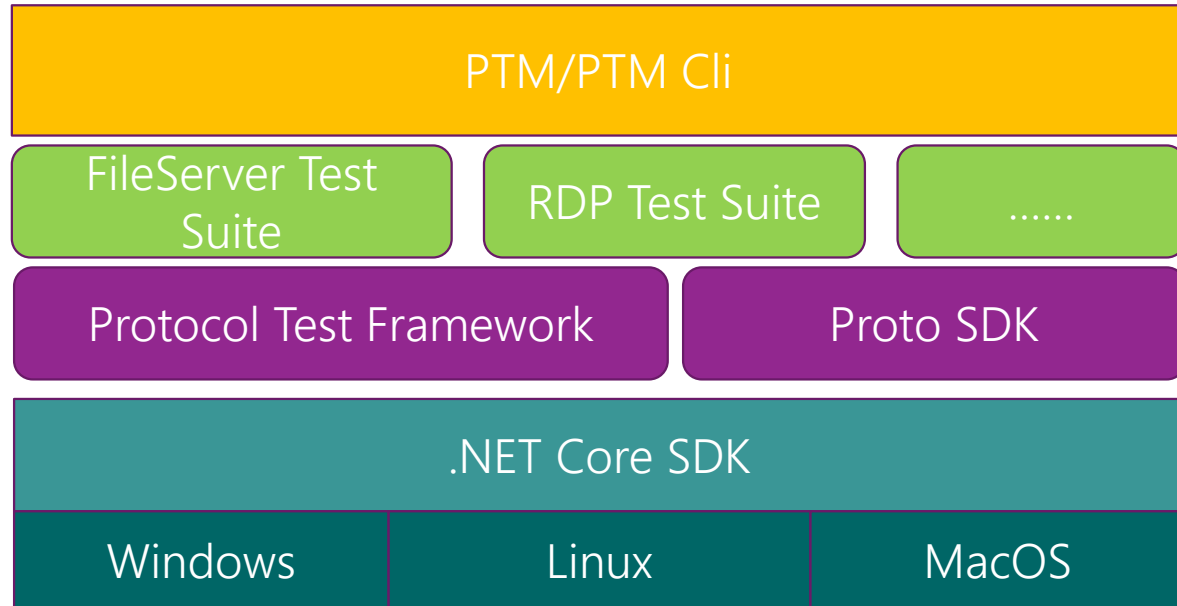
## What is a Windows Protocol Test Suite?

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



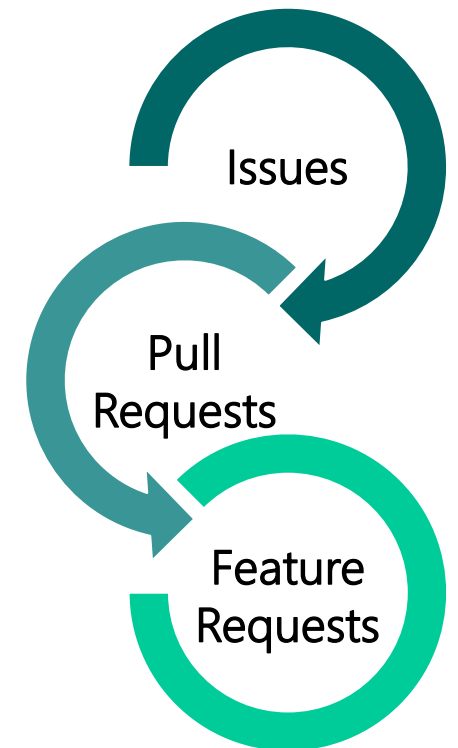
# Windows Protocol Test Suites Open Source

Open sourced on GitHub since 2016

<https://github.com/Microsoft/WindowsProtocolTestSuites>

<https://github.com/Microsoft/ProtocolTestFramework>

Category	Test Suite Name	Protocols
File Sharing	<u><a href="#">FileServer</a></u>	MS-SMB2, MS-FSRVP, MS-SWN, MS-DFSC, MS-RSVD, MS-SQOS, MS-FSA, MS-HVRS
	<u><a href="#">MS-SMB</a></u>	MS-SMB
	<u><a href="#">MS-SMBD</a></u>	MS-SMBD
	<u><a href="#">BranchCache</a></u>	MS-PCCRC, MS-PCCRR, MS-PCCRTP, MS-PCHC, MS-CCROD
Security	<u><a href="#">Kerberos</a></u>	MS-KILE, MS-KKDCP, MS-PAC
	<u><a href="#">MS-AZOD</a></u>	MS-AZOD
Active Directory	<u><a href="#">ADFamily</a></u>	MS-ADTS-LDAP, MS-ADTS-PublishDC, MS-ADTS-Schema, MS-ADTS-Security, MS-APDS, MS-DRSR, MS-FRS2, MS-LSAD, MS-LSAT, MS-NRPC, MS-SAMR
	<u><a href="#">MS-ADOD</a></u>	MS-ADOD
Remote Desktop	<u><a href="#">RDP Client/RDP Server</a></u>	MS-RDPBCGR, MS-RDPEDISP, MS-RDPEDYC, MS-RDPEGFX, MS-RDPEGT, MS-RDPEI, MS-RDPEMT, MS-RDPEUDP, MS-RDPEUSB, MS-RDPEVOR, MS-RDPRFX, MS-RDPELE
BYOD	<u><a href="#">MS-ADFSPIP</a></u>	MS-ADFSPIP



# FileServer Test Suite Scope

## Protocols

[MS-SMB2]: Server Message Block (SMB) Protocol Versions 2 and 3

[MS-FSA]: File System Algorithms

[MS-SWN]: Service Witness Protocol

[MS-RSVD]: Remote Shared Virtual Disk Protocol

[MS-FSRVP]: File Server Remote VSS Protocol

[MS-SQOS]: Storage Quality of Service 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

Dialect  
2.1

Dialect  
3.0

Dialect  
3.02

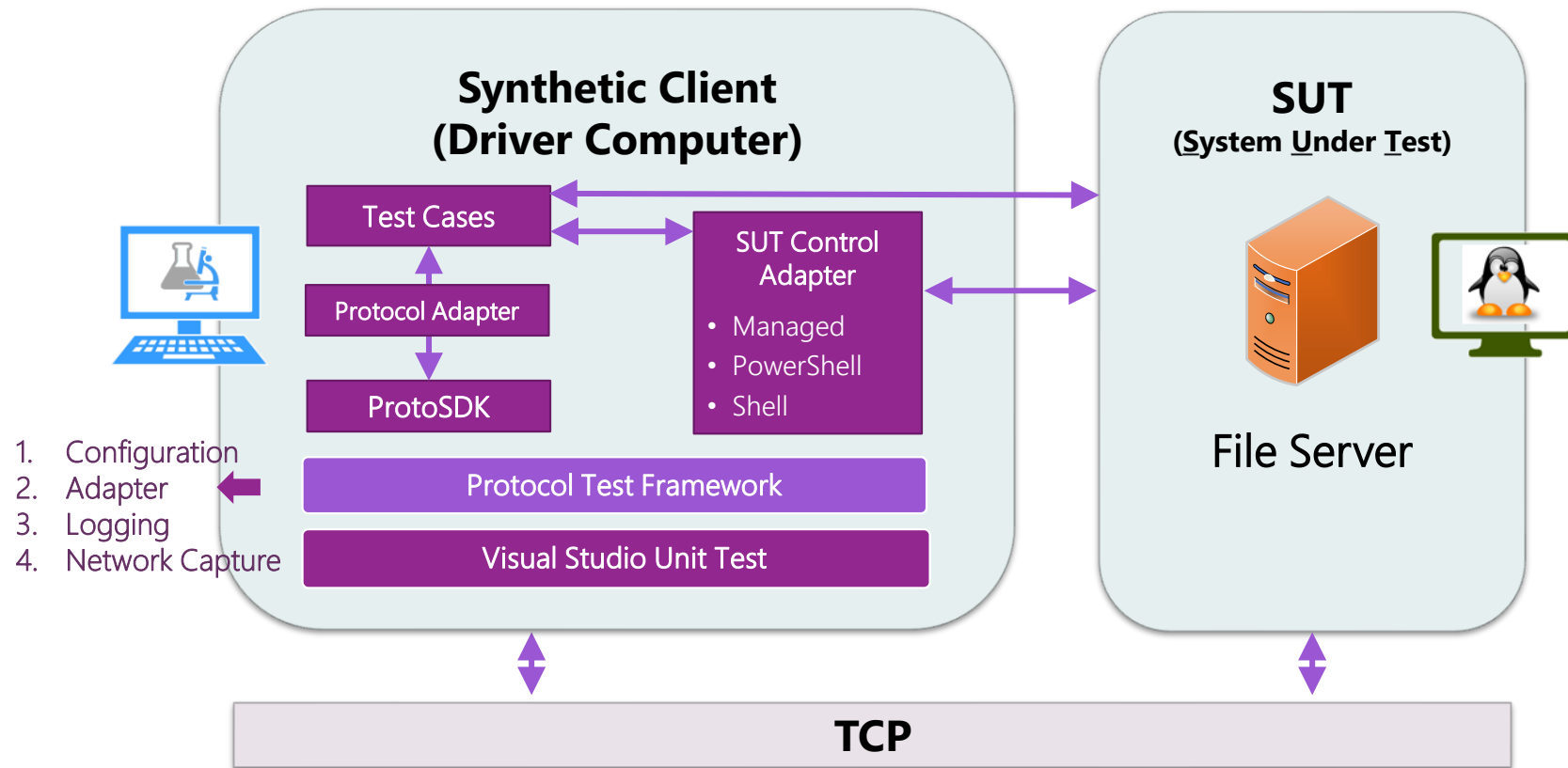
Dialect  
3.11



# FileServer Test Suite Approach

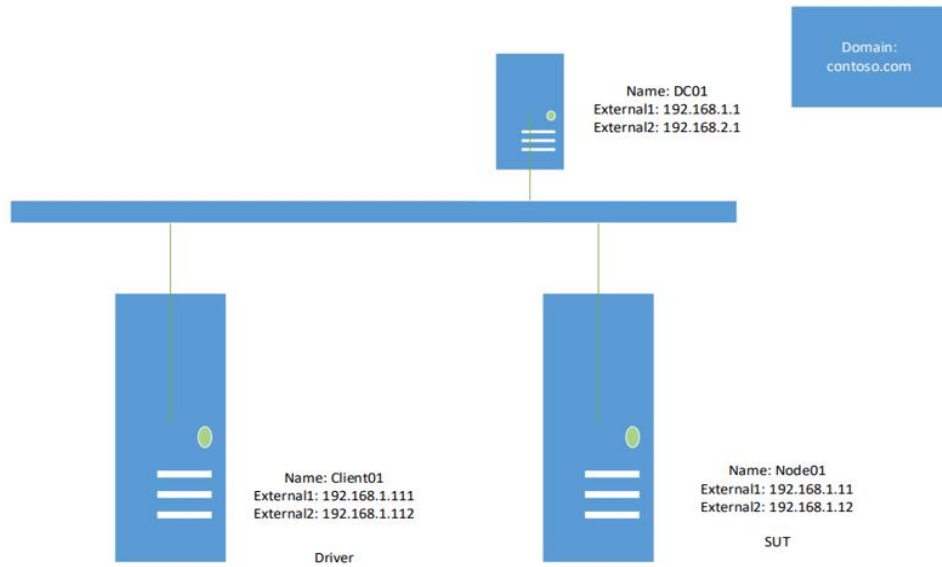
- **Traditional Test**
  - Covers basic functionalities and scenarios
- **Model-based Test**
  - 2K+ test cases generated by 13 models
  - Better coverage on
    - Parameter combination
    - Message sequence
    - Negative tests

# FileServer Test Suite Infrastructure

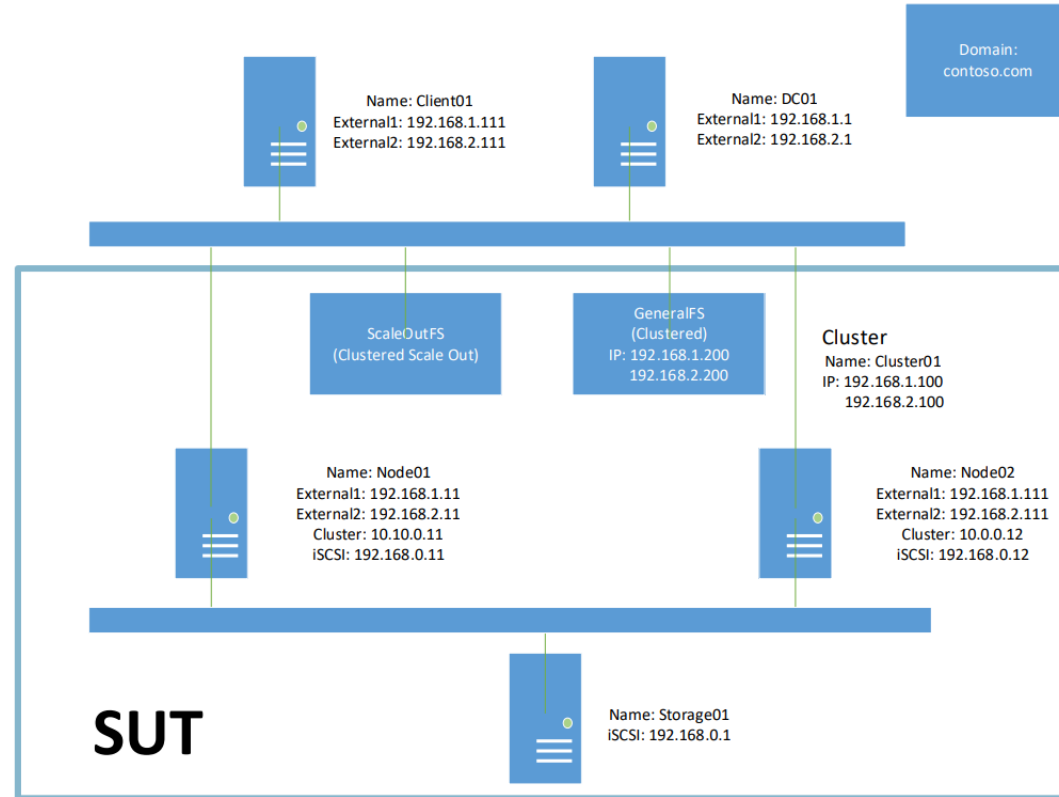


# FileServer Test Suite Environment

## 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

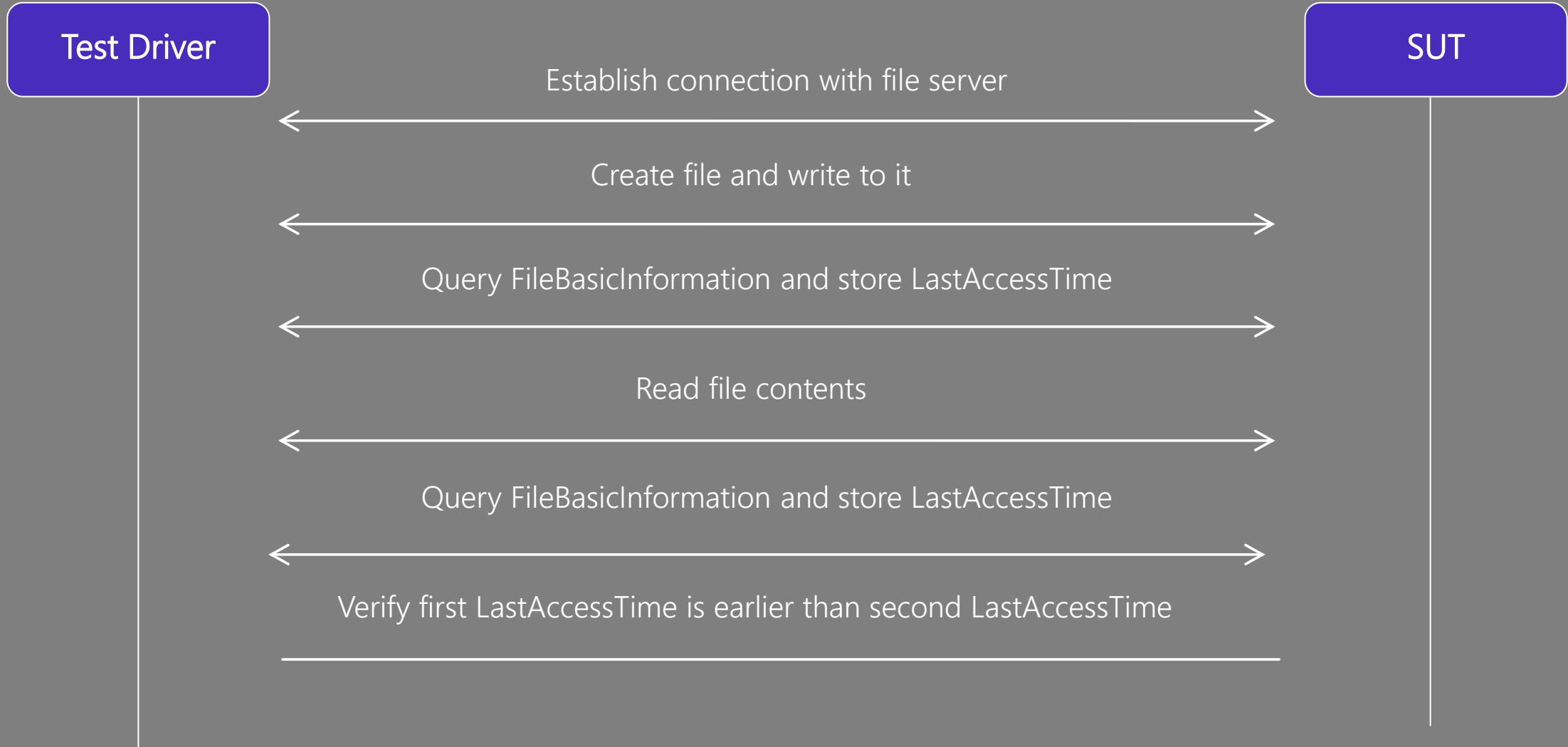
## Algorithm\_NotingFileModified\_File\_LastAccessTime

- 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](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\_NotingFileAccessed\_File\_LastAccessTime







# Demo



# Protocol Testing on Wireshark

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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](mailto:interopdevevents@microsoft.com)*

Thank you!

