OpenAFS on Windows: A Status Report

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Status of Win7 Netbios Name Lookup Bug

- 2011 EuroAFS:
  - Microsoft has officially declared the bug "WONT_FIX"
  - The IFS is the only fix that OpenAFS can provide to the community
- Microsoft IFS PlugFest (Feb 2012) the root cause was identified
  - Not Netbios related!!!!

SMB 1.x GSS SPNEGO authentication error

- The SMB specification permits the server to save a round trip in the GSS SPNEGO negotiation by sending an initial security blob.
- Windows 7 / Server 2008 R2 SMB 1.x redirector ignores the blob after initial connection.
- SMB 1.x reuses the original authentication context.
- Workaround:
  - The SMB 1.x server sends no security blob in the SMB_COM_NEGOTIATE response.
  - Force the client to send an initial GSS init_sec_context blob.
- The Deadlock:
  - After a SMB disconnect, reconnections appear to fail due to SMB connection resets.
  - The SMB 1.x redirector will retry indefinitely
  - All threads with outstanding requests to \\AFS will block
  - Reboot required

1.6.1

- Workaround for Win7 SMB 1.x Reconnect Bug
  - GSS SPNEGO optimization error
- Microsoft is working on a patch
  - Does anyone care?

1.6.1 – other changes

- VBUSY failover
- Improved idle dead time handling
- NAT ping constraints (one rx conn)
- Restrict processor affinity to 2
- Microsoft Advanced Firewall support

1.6.2

- VNOSERVICE processing
  - Indicates that file server did not process the RPC request
  - Triggered by file server idle dead timeout
  - Safe for client to retry

1.7 News

- 1.7.17 is current
  - 16 releases since DESY conference
- All 1.6.x improvements
- Windows 8 and Server 2012 support
- Explorer Shell integration
- Short Name generation
- Integrated Logon changes

Windows Short Names

- Short names are optional as of Windows 7
- 1.7 does not generate short names on Windows 8 and above
- Anti-virus vendors are thrilled
  - Reduced memory and CPU utilization
- Faster path evaluation
- Short names can be disabled on Windows 7 in 1.7
  - "ShortNames" TransarcAFSDaemon Parameter

1.6 -> 1.7 Upgrades

- 1.7 and beyond will no longer provide:
  - Windows 2000 support
  - afscreds.exe
  - afs_config.exe
  - SMB Submount functionality
  - NSIS (EXE) installers for 32-bit Windows
- Drive letter mappings to "Microsoft Network" must be deleted
- Integrated Logon changes for LOCALHOST
  - Long delays when mis-configured

Integrated Logon: Four Logon Domain Types

- Local Machine Account
  - (LOCALHOST domain)
- Domain or Forest Account
- Domain or Forest Account NETBIOS-compatible name
- Kerberos Principal mapped to a local or domain or forest account

Integrated Logon: Per Domain configuration

- Obtain AFS Tokens?
- Alternate Kerberos realm?
  - Required for LOCALHOST
- Tokens for additional cells?
- Error handling?
- Per user configuration
  - Name mapping?
  - All other options

Integrated Logon: Registry Hierarchy

- HKLM\SYSTEM\CurrentControlSet\Services\TransarcAFSDaemon\NetworkProvider\Domain key.
- For example:
  - …\Domain\LOCALHOST\
  - …\Domain\LOCALHOST\Administrator\
  - …\Domain\AD\
  - …\Domain\AD.EXAMPLE.ORG\
- Full domain name and the NETBIOS-name are separate entities.

Known Issues

- 10 second Extent processing stalls
  - Race between kernel and service
- Object Information / File Control Block dependency race
- Kernel memory pressure when large numbers of directory entries are evaluated

Blue Screens of Death

- BSOD reports are almost always triggered by Anti-virus or other filter driver interactions

- Some sites experience none

- Others experience weekly crashes

Have a bug, send a report

- Do not assume that someone else has reported your bug
- BSODs are frequently triggered by environmental factors
- Ability to reproduce locally is limited
  - openafs-bugs@openafs.org
  - http://www.openafs.org/support.html

Money, money, money

- Total cost so far for 1.7 is approaching $1.6 million
- End user organizations are asked to spend $20 per in use copy

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