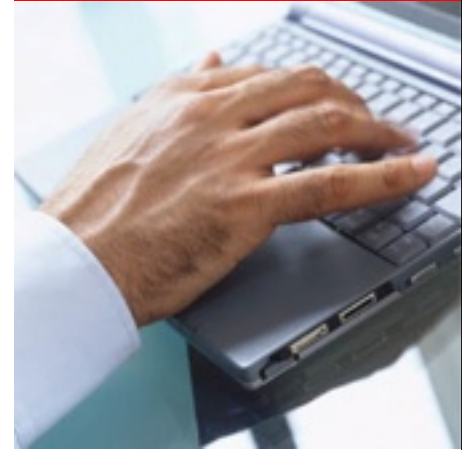# FedFS Standards and Implementation

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Consulting Member of Technical Staff

FedFS **Update**

- Standards progress

- FedFS in Fedora 18

- Upstream latest: fedfs-utils 0.9

- Next steps

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FedFS Standards Progress
Standards documents

- FedFS requirements

- DNS SRV
  - Domain root discovery

- NSDB Protocol
  - LDAP-based location database

- ADMIN Protocol
  - Remote junction management
  - NSDB certificate distribution

FedFS Standards Progress
Updates to NSDB protocol

- fedfsNceDN replaces fedfsNcePrefix
- Redefined NFS URL replaces FslHost, FslPort and NfsPath
- NsdbName and NsdbPort removed
- TTL moved from FSL to FSN
- Use conventional UUID types
- NfsMajorVer and NfsMinorVer attributes removed

FedFS Standards Progress
Changes during IESG review

- Correct use of RFC 2119 qualifiers
- Simplified ABNF for fedfsAnnotation attribute
- Glossary clean-up
- FedFS OID registry now closed on creation
- Change of authorship
- Security-related changes
  - Clarify TLS trust anchor management
  - Mandate specific security flavor support for ADMIN

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FedFS Standards Progress
Current status

- Requirements spelled out in RFC 5716

- DNS SRV specified by RFC 6641

- NSDB and ADMIN protocol documents:
  - Approved as Proposed Standards by IESG
  - IANA actions completed
  - In queue for RFC Editor, waiting for 3530bis to be completed

FedFS in Fedora 18
fedfs-utils 0.8 in an RPM

- Good news
  - Nfsref command and mountd plug-in
  - Flexible physical format for junctions
  - Wiki installation guide

- Bad news
  - Complies with last year's draft standards
  - Simple domain administration tools
  - ADMIN tools support only AUTH_NONE
  - NSDB tools support only FEDFS_SEC_NONE

Upstream FedFS for Linux
fedfs-utils 0.9

- Compliant with proposed standards
  - RFC 6641 and latest approved drafts

- Better NSDB administration tools
  - Still no GUI/BUI

- Security:
  - NSDB client and infrastructure now supports TLS
 - No RPCSEC for ADMIN tools yet

What's Next In 2013

- Standards documents become RFCs

- fedfs-utils 0.10
  - Completion of spec-required features (*eg*., RPCSEC)
  - rpc.fedfsd auditing
  - Improvements to build environment
  - Refined packaging and configuration tools

- NSDB set up is still too complicated
  - Provide an installation and configuration script

Standards Futures

- In progress
  - Multi-domain authentication and authorization
  - NSDB protocol support for SMB/CIFS

- Putative
  - Domain root discovery
  - Additional FEDFS_SEC modes
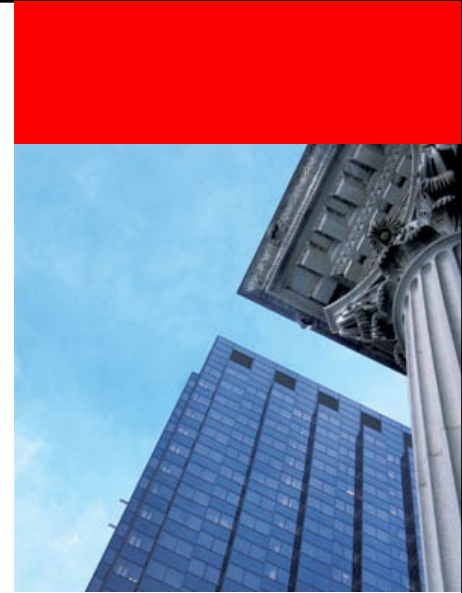 - NSDB certificate revocation
  - Expanding on FEDFS_CREATE_REPLICATION

Questions/Discussion
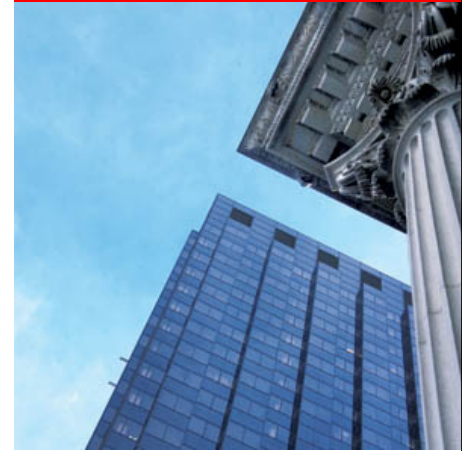
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Appendix

FedFS In A Nutshell
Legacy: /net with automounter

- NFS clients can mount a share by name simply by changing to a directory

- Very little client provisioning is required

- NFS server hostname and export path are exposed to applications

- All mounted shares are leaves

FedFS In A Nutshell
Microsoft DFS

- One share contains referrals to all public shares in a realm

- Referral target information stored in Active Directory

- Referred-to shares are leaves

FedFS In A Nutshell
FedFS

- Like /net, root of namespace is mounted by simply changing to a directory under /nfs4

- Like DFS, namespace root contains referrals to other shares

- Following referrals trigger automatic mount operations

- Referral target information can be stored locally on fileservers, or centrally in LDAP

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FedFS In A Nutshell
Advantages of FedFS

- No client provisioning

- Referrals can exist in any share, so mounted shares are not necessarily leaves

- No location information is exposed in FedFS pathnames

- FedFS pathnames look the same on all clients

FedFS In A Nutshell
FedFS in operation

- DNS SRV contains hostname of fileserver that shares domain root directory with a well-known export path

- NFS clients mount domain root directories under /nfs4

- Fileservers perform LDAP queries via NSDB protocol to retrieve referral target information for NFS clients

- ADMIN protocol creates referrals remotely or provisions LDAP server information on fileservers

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