NFS Standards Update
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2/25/14
Agenda

- Mechanics of working with IETF
- Recent documents
  - Published
  - Stuck waiting for 3530bis
- Active documents
- Rough documents
Mechanics of working with IETF
The NFSv4 WG

- In the Transport AD
- Meet physically every 4 months
- Can have interim meetings via phone
- Participate on WG alias
  - nfsv4@ietf.org
- Anyone can participate
WG Charter

- [link](http://datatracker.ietf.org/wg/nfsv4/charter/)

- Items that the WG must work on
  - Maintenance
    - RFC3530bis
  - RFC5664bis
  - NFSv4.2
  - NFSv4 Multi-Domain Access for FedFS
So how does the cooperation work?

- **Clients**
  - POSIX semantics
    - The usual suspects
  - non-POSIX semantics
    - Embedded NFS
- **The WG describes**
  - The semantics seen by the client
  - The transport protocol
How do Server Vendors compete?

- Cannot be their interpretation
- Feature sets
- Implementation
Recent Documents
FedFS

- RFC 6641: Using DNS SRV to Specify a Global File Namespace with NFS Version 4
- draft-ietf-nfsv4-federated-fs-admin-15: Administration Protocol for Federated Filesystems (431 days)
- draft-ietf-nfsv4-federated-fs-protocol-15: NSDB Protocol for Federated Filesystems (431 days)
- They reference 3530bis!
Labeled NFS

draft-ietf-nfsv4-labreqs-05: Requirements for Labeled NFS
- 19 days in the EDIT queue!
Active Documents
Close to going out

- draft-ietf-nfsv4-rfc3530bis-31: Network File System (NFS) Version 4 Protocol
  - Putting implementation experience back into the standard
3530bis

- This is the logjam for everything
- Rejected at IESG
  - i18n handling
  - Each server does it according to local filesystem
- 4 draft revisions in the last 4 months
- Next revision should go back to IESG
Lessons Learned

- Stay away from huge documents
- Address issues as they arise
  - Put the changes into a working copy
- Stay away from -bis documents
Migration and Objects-bis

- draft-ietf-nfsv4-migration-issues-04: NFSv4 migration: Implementation experience and spec issues to resolve
- draft-ietf-nfsv4-rfc3530-migration-update-03: NFSv4.0 migration: Specification Update
- draft-ietf-nfsv4-rfc5664bis-02: Object-Based Parallel NFS (pNFS) Operations
RPCSECGSSv3

- draft-ietf-nfsv4-rpcsec-gssv3-06: Remote Procedure Call (RPC) Security Version 3
  - Driving force is Andy Adamson
  - Is currently blocking NFSv4.2
    - Server-Side Copy
    - Labeled NFS
  - Andy is moving the needle on it
NFSv4.2

- **draft-ietf-nfsv4-minorversion2-20**: NFS Version 4 Minor Version 2
  - Really slowed down by completion of NFSv4.1
  - Starting to see prototypes
What is in it?

- Server-Side Copy
  - Vendor specific
  - NFSv4.2 as the copy engine
- I/O Advise
- Sparse files
- Space reservation
- Application Data Holes
- Labeled NFS
What is changing?

- Application Data Holes (ADH)
  - Probably more like WRITE_SAME
- Linux sparse file performance is shaky
Rough Documents
FedFS

- `draft-cel-nfsv4-federated-fs-nce-00`: A Simpler Mechanism For Organizing FedFS NSDBs
- `draft-cel-nfsv4-federated-fs-security-addendum-00`: Federated Filesystem Security Addendum
- `draft-adamson-nfsv4-multi-domain-federated-fs-reqs-03`: NFSv4 Multi-Domain FedFS Requirements
Data Integrity

- draft-cel-nfsv4-end2end-data-protection-01: End-to-end Data Integrity For NFSv4
  - From application -> client -> network -> server -> disk
New layout types

- **draft-faibish-nfsv4-pnfs-lustre-layout-06**: Parallel NFS (pNFS) Lustre Layout Operations
- **draft-bhalevy-nfsv4-flex-files-01**: Parallel NFS (pNFS) Flexible Files Layout
- **draft-mbenjamin-nfsv4-pnfs-metastripe-02**: pNFS Metadata Striping
Extended Attributes

- Marc Eshel, IBM
- No draft or slides @ IETF 88
  - Draft for IETF 89!
  - Presentation at Cthon’14