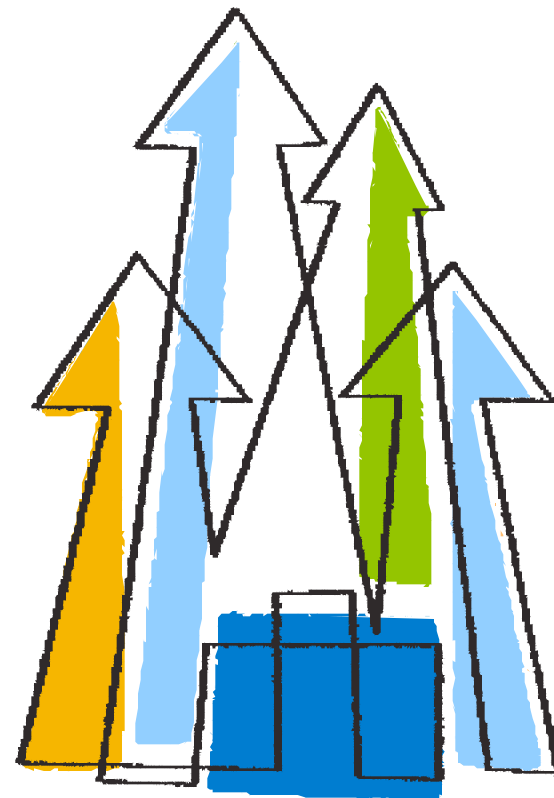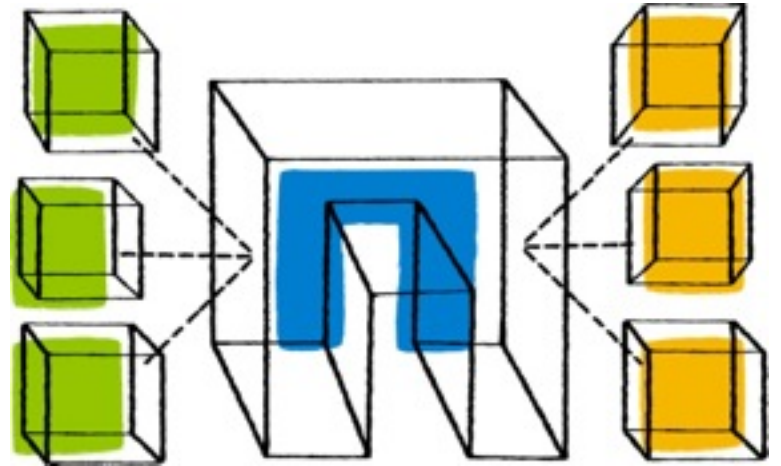# NFS Standards Update

Tom Haynes

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

- http://datatracker.ietf.org/wg/nfsv4/
- 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

- 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
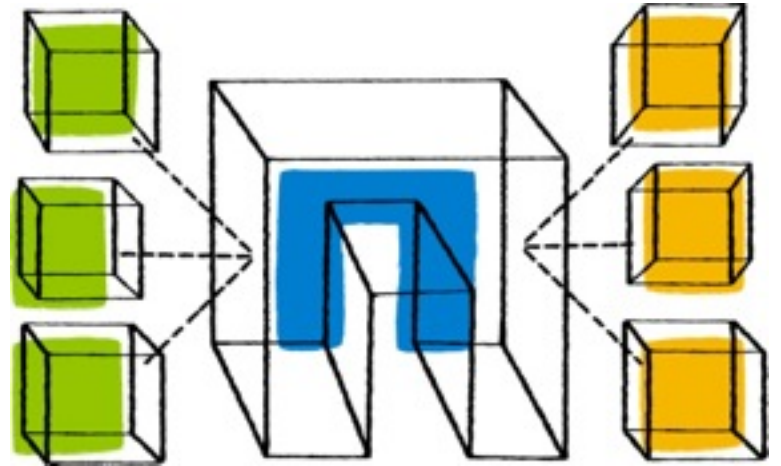 - The transport protocol

How do Server Vendors compete?

- Cannot be their interpretation
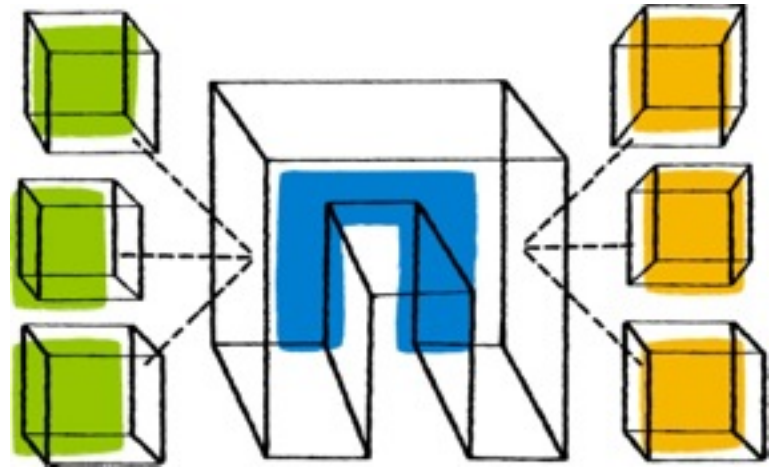- Feature sets
- Implementation

Recent Documents

FedFS

- <u>RFC 6641</u>: Using DNS SRV to Specify a Global File Namespace with NFS Version 4

- <u>draft-ietf-nfsv4-federated-fs-admin-15</u>: Administration Protocol for Federated Filesystems (431 days)

- <u>draft-ietf-nfsv4-federated-fs-protocol-15</u>: 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

- <u>draft-ietf-nfsv4-rfc3530bis-31</u>: 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

- <u>draft-ietf-nfsv4-rpcsec-gssv3-06</u>: 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

- <u>draft-ietf-nfsv4-minorversion2-20</u>: NFS Version 4 Minor Version 2

  – Really slowed down by completion of NFSv4.1
  – Starting to see prototypes
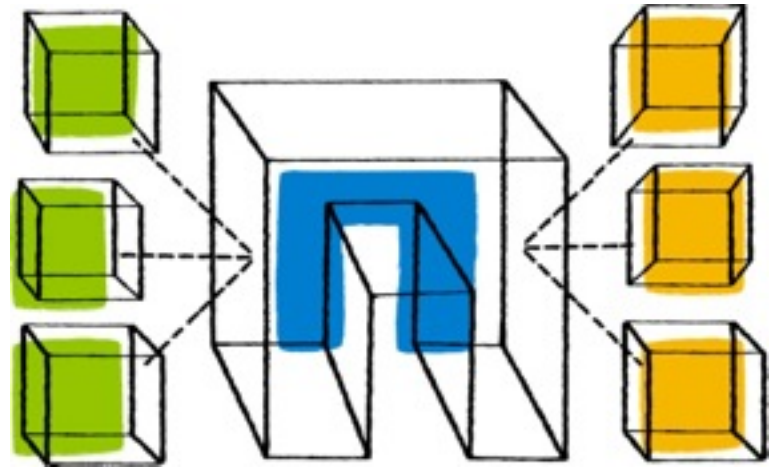
What is in it?

- 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

- <u>draft-cel-nfsv4-federated-fs-nce-00</u>: A Simpler Mechanism For Organizing FedFS NSDBs

- <u>draft-cel-nfsv4-federated-fs-security-addendum-00</u>: Federated Filesystem Security Addendum

- <u>draft-adamson-nfsv4-multi-domain-federated-fs-reqs-03</u>: 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

- <u>draft-faibish-nfsv4-pnfs-lustre-layout-06</u>: Parallel NFS (pNFS) Lustre Layout Operations

- <u>draft-bhalevy-nfsv4-flex-files-01</u>: Parallel NFS (pNFS) Flexible Files Layout

- <u>draft-mbenjamin-nfsv4-pnfs-metastripe-02</u>: pNFS Metadata Striping

Extended Attributes

- Marc Eshel, IBM

- No draft or slides @ IETF 88

  - Draft for IETF 89!

  - Presentation at Cthon'14