

Documents about NFSv4.x Migration

Past, Present and Potential Future Documents

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Overview

- **Background:**
 - Multi-server features are harder than they look
 - Migration implementers and spec authors found that out
- **Work so far**
- **Latest Document**
- **Going Forward with migration work**
 - Spec update for v4.0
 - Informational document
 - Spec update for v4.1

Multi-server features: Needs

- One of the biggest changes in NFSv4, but ...
 - That wasn't really recognized
 - It didn't seem as big as *statefulness*, for example
 - Fundamental infrastructural needs were not promptly attended to:
 - Client instance definition
 - Server identification (only explicitly addressed in NFSv4.1)

NFSv4 Multi-server features: List

- **Migration**
- **Replication**
- **Referral**
 - **FedFS**
- **pNFS**
- **Server-to-server copy**

Migration Implementation: Situation to be Dealt With

- **Major symptoms**
 - Failure to properly free state (on client reboot)
 - Clientid4 proliferation, leading to
 - Situations not foreseen by protocol
 - Client complexity
- **Situation we had:**
 - Feature as specified could be prototyped
 - But wasn't ready for real use

Migration Implementation: Underlying Issues

- No merging of state bundles for different fsid's that are between same pair of client/server instances
 - Spec doesn't tell you to do that
 - And if it had, you wouldn't know how to do it:
 - Cannot tell if two state bundles belong to *same* client, since that information is hidden from servers
- That problem goes back to recommendation (in RFC3530) to use non-uniform client strings
 - At least it wasn't a RECOMMENDATION 😊

Previous Documents

- **Co-authored with those doing implementations**
 - Chuck Lever, Piyush Shivam, Bill Baker
- **Started with individual drafts**
 - Three iterations of draft-dnoveck-nfsv4-migration-issues
 - From August 2011 to January 2012
 - Biggest change was to move toward RECOMMENDING use of uniform client-string model for clients supporting migration.
- **Followed with informational WG document**
 - Three iterations of draft-ietf-nfsv4-migration-issues
 - From April 2012 to September 2012
 - Based on draft-dnoveck-nfsv4-migration-issues
 - Added discussion of NFSv4.1

Latest Document

- **Draft-ietf-nfsv4-rfc3530-migration-update**
 - **Standards-track document**
 - Intended to update RFC3530 (or its successor)
 - **Addresses NFSv4.0 only**
- **-00 done in November 2012**
- **-01 submitted three weeks ago**
 - **Adds discussion of owner sequence issues**
 - **We need to have a discussion of details of flavor-vs.-pseudo-flavor for CLID_INUSE**
 - **Any other issues?**
 - If so, best to discuss soon.

Possible Future Documents

- **RFC path for NFSv4.0 migration update**
- **Informational document on migration, if needed**
- **Documents for NFSv4.1 migration update**

NFSv4.0 Migration update

- **Need to turn this into an RFC**
 - Is there a consensus to that effect?
- **Substantive issues?**
 - Are there any not mentioned yet?
- **Procedural issues?**
 - Do we have to wait for rfc3530bis to become an RFC?
 - Is there a charter issue?
 - What add'l review is needed before WG last call?

Informational Document for v4 Migration

(If needed)

- **Issues:**
 - Spec update documents explain what to change
 - But they don't explain why we made the choices we did.
 - And if we added that, it would add confusion
 - Explaining possible alternatives may be inconsistent with “This has been chosen so do it that way.”
- **Choices:**
 - Just drop Informational Document
 - Renew it for a while
 - Turn into an Informational RFC as-is
 - Turn into an Informational RFC (with changes)
 - Pull out the stuff in (or to go into) standards-track documents
 - Add some more implementation advice/guidance.

NFSv4.1 Migration Update

- **Scope of changes:**
 - Smaller than v4.0 – No nfs_client_id4 issue
 - But still seems too big for errata
- **Other differences:**
 - No formal 5661bis effort under way
 - Prototyping for v4.1 migration likely to be delayed ☹️
- **Alternatives**
 - Just do as part of 5661bis
 - Proposed changes exist and could be put in an early draft
 - Could do a draft-ietf-nfsv4-rfc5661bis-migration-update