

NFSv4 Version Management

David Noveck

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Talk Overview

- Documents to be discussed:
 - draft-ietf-nfsv4-versioning-00
 - draft-dnoveck-nfs-extension-02
- Why are we where we are?
- How did we get there?
- How can we move forward in this area?
 - Need to understand work that's been done.
 - Come to agreement on direction we want to go

draft-ietf-nfsv4-versioning-00

- Working group document
 - Want to turn it into an RFC, ASAP
 - But no sooner :-)
 - On some issues we need to build consensus first :-)
- Has four major elements (details addressed later):
 - Concept of XDR Extension is the basis
 - Feature de-batching through extensible versions
 - Addresses the issue of correcting protocol XDR
 - Since we can make mistakes :-)
 - Definitive list of minor versioning rules
 - Based on those in RFC5661

draft-dnoveck-nfs-extension-02

- Based on the expired -01 (from a year ago)
 - NFS Protocol Extension: Retrospect and Prospect
- Reflects changes over the last year
 - Many needed changes are now in WG document
 - Need to focus on putting those into an RFC
- Also, one big discovery about NFSv4.1
 - Non-XDR-based changes
 - Version management has to address them, somehow
 - A matter the working group needs to decide

Why are we are where we are?

Current best-guess

- We needed a protocol that could grow
 - We knew major versioning wouldn't work
 - Someone came up with XDR extension idea
 - Was overshadowed by “minor versioning”
- Never put adequate effort into version mgmt.
- Making NFSv4 better seemed more important
- Issue of spec size was not on our radar
 - And it should have been

How Did We Get Here?

- RFC3530 was 300 pages.
 - Was a major version, so stayed with one big doc
- RFC5661 was 600 pages
 - But the protocol was separate (and presumed) better
 - “is considered a separate protocol”
 - “NFS minor version 1 is deemed superior to NFS minor version 0”
 - Then decided minor versions had to be smaller
- V4.2 spec was under 100 pages
 - And it *still* took around four years
 - Had to take version management more seriously

Concept of XDR Extension

- Core idea of the original minor version rules
 - Allowed incremental protocol extension
- Extension tied to creation of minor versions
 - And production of large documents
- Now in the long process of digging out.
- Idea of NFSv4 Version Management RFC:
 - Retain the XDR extension concept
 - Untie it from minor version creation and large documents

Address Batching of Features

- Created concept of extensible versions
- To address minor versions like NFSv4.2 more expeditiously
 - Make Specs even shorter
 - Ten 10-page feature specs vs. one 100-page mv spec
 - Prevent premature decisions as to content
 - Make decisions only after
 - Feature has a clear design
 - Sufficient implementation work has been done

Protocol Correction Issues

- Fixing protocol bugs is hard.
 - Need to accommodate old and new clients and servers
 - To do that:
 - Can make old and new server behaviors alternative features
 - Client can test for presence of support
 - Good fit for XDR extension model
 - If you are willing to extend the XDR

Minor Versioning Rules

- Currently based on those in RFC 5661
- Some lingering issues of detail
 - Confusion about RECOMMENDED/recommended features
 - Uncertainty about “infrastructural” features
 - Feature maturation model never realized
- Structural issues:
 - Features vs. change elements
 - Deal with minor versions only
 - Rules need to deal with non-XDR-based changes.

Basic Decision to be Made

- NFSv4.2 is our model for routine minor versions
 - Want to do the same sorts of things
 - Only better and quicker
- NFSv4.1 is the “100-year flood” of minor versions
- Where do we want to draw the line?
 - Need to discuss and come to consensus.
 - Prohibition of respecifying entire protocol
 - It's needed but are additional restrictions necessary as well?

Individual Decisions to be Made

- Look at things done in 4.1 and not in 4.2
 - Introduced required features
 - Changed feature statuses, including making features mandatory to not implement.
 - Non-XDR-based changes
- For each of the above, can
 - Disallow
 - Allow
 - Allow with restrictions

New Versioning Rules

- Need major re-organization of rules:
 - To reflect the changes already made in the existing version management document.
 - To reflect the consensus of the working group about the proper limits of minor versioning
- One possible re-organization is set forth in draft-dnoveck-nfs-extension-02.
 - Need working group comments and suggestions.