NFSv4 Extension
Paradigm: What’s Next?

David Noveck
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Contents:

• Where we are now:
  • Minor versioning vs. incremental addition
  • Existing versioning document
    • Possible document reconfiguration

• What should we do with pending extensions?
  • Discussion of pending extensions
  • Alternative ways of going forward with these.

• Working group charter issues

• Decisions that need to be made
Minor versioning vs. Incremental Addition
Choices to be made

• Seems like nobody likes minor versioning, but we still have it.
• It isn’t fully clear how to get rid of it.
• I’ve heard disagreement about how, why, state of the document, etc.
• But I’ve heard none on the basic issue of whether we actually want/need minor versioning.
• So we need to decide:
  • If we need to change?
    • We need to have the discussion and get to a clear consensus on this issue.
  • How and when?
    • Next eighteen slides and lots of subsequent discussion.
Minor versioning vs. Incremental Addition
When and how

• This is not multiple-choice but it is helpful to have some initial choices to choose from or add to

• How:
  • By convincing IESG we have a viable incremental extension path
  • By moving forward with specific extensions.
  • Any other ideas?

• When
  • Immediately, i.e. no more minor versions.
  • Minor versions only until incremental extensions approved.
  • Minor version indefinitely.
Existing WG document
Current status

• Draft-ietf-nfsv4-versioning-04 is current version
  • Marked as updating RFC5661 (wen approved)
• I’ve had some specific comments from Chuck and Mike Kupfer.
  • Have addressed all the pre-6/29 ones in current iteration
• Mike has some concerns about readability and the structure of the document.
  • Willing to address those but want to decide basic direction (issue in next slide) first.
• Bruce F started a review but did not complete it.
  • Not sure what to do about that.
  • Important to involve Bruce and others with pending extensions in decisions.
Existing WG document
Big issue to resolve

• Raised (by Bill S.) during extension-related conference call
• Should document be Informational?
  • Issue is whether we can tell future RFC writers what (and what not) to do?
    • Bill argues that we can’t.
  • Bill seems right in principle, but if not, then the existing extension rules (which implicitly restrict changes to new minor versions) can be ignored.
  • Interesting idea, but I can’t see the IESG agreeing that these rules aren’t really rules. Everybody, including the wg, has been treating them as rules
• Need to decide whether we need a standards-track document, an informational document, or both
Existing WG document
Possible One-document Resolutions

• Standards-track Document
  • Has had a lot of trouble progressing so far.
  • Some of the material does seem informational

• Informational Document
  • Problem is that there is a stds-track document on the subject (RFC56661) and it has some problems, from the wg point of view, as I understand it.
    • Doesn’t allow extensions outside minor versions
    • Allows almost anything in “infrastructural” features.
    • Doesn’t really address non-XDR changes.
    • Makes it very difficult to correct protocol bugs that require XDR changes
  • We can only change what is in a standards-track document in another standards-track document.
Existing WG document
Possible Two-document Resolutions

• Absolutely minimal Standards-track document.
  • “The existing minor versioning rules are wrong and are to be ignored” + whatever is necessary to pass IDNITS.
  • I can’t see the IESG accepting that either.

• Another approach to a small Standards-track document. For example,
  • Extract from the current draft the material necessary to address the issues we have with existing rules:
    • draft-dnoveck-nfsv4-extension-00 is a rough attempt at this.
    • If we decide to go ahead with this approach, a subsequent draft-ietf-nfs4-versioning could take this material out and become informational.

• Other variants are possible and can be considered.
draft-dnoveck-nfsv4-extension-00

• I-D (21 pages) with my version of what would be needed in a standards-track extension document
  • Idea of XDR extension
  • Rules for XDR extension
  • Can add extensions within an existing minor version
  • How client and server can work together even though they have been built with different XDR definitions.
  • Discussion of non-XDR changes
  • Non-XDR changes require a minor version number change
  • How to make XDR corrections to existing protocols
  • Rules for inter-version interactions
Pending Extensions
Introduction

• Pending WG documents for NFSv4 extensions:
  • draft-ietf-nfsv4-xattrs-02 is fairly far along and is basically waiting for resolution of the extension issue.
    • Authors appear to be waiting for extension issue to be resolved but I can see how they might be getting impatient.
  • draft-ietf-nfsv4-umask-00 is not as far along but it is a very simple extension.
    • It is also arguably a correction to NFSv4.0 that could be addressed by a simple document that updated RFC7530 and obsoleted RFC7531.
    • My impression is that authors seem to have decided on a go-it-alone approach.
Pending Extensions
Possible Approaches

• As we have been
  • Given current uncertainty, WGLC on a versioning document is at least six months off.
  • So a versioning RFC is at least a year from being published.
  • Then additional delays to get the extension RFC itself published

• Possible go-it-alone approaches
  • Discussed in later slides
  • Possible difficulties:
    • Difficulties going forward
    • Difficulties once you get to the IESG

• Multi-pronged approach
  • Discussed in later slides
Go-it-alone Approach
In the World of Standards (one of two)

• Document would stand on its own as a standalone extension.
  • At least that’s my understanding of Bruce’s approach
• Not clear what is necessary to take this document to the IESG
• There needs to be a consensus, but it isn’t clear what the consensus has to be about.
  • Is it just as to the technical choices and the adequacy of the description?
  • Or is it to cover procedural choices as well, i.e. do we need a consensus about the choice of going to the IESG as well?
  • Hard to get consensus in the latter case. Personally, I think of this kind of thing as a choice for the authors.
• Also, I’m not sure about the role of the Spencers in all of this.
Go-it-alone Approach
In the World of Standards (two of two)

• This is my speculation about what is likely to happen, when it gets to the IESG
  • IESG won’t understand it and it will hang around a while.
  • When the versioning document does get to the IESG, I think they’ll insist that you refer to it normatively
  • Could be published with (i.e. in the same cluster) as the versioning document, although that might take a while.
Go-it-alone Approach
In the World of Running Code

• Will need to develop prototypes, even though they aren’t required
  • Once there is a Linux client implementation there will be multiple server implementations.
  • If implementation proceeds on the basis of a generally accepted document, the standards process becomes less important.
  • The implementations will be “prototypes” but if people are happy with them, that status will not matter
  • Eventually, probably after the versioning document is approved, the IESG will accept the extension, probably on an as-implemented basis
Multi-pronged Approach

Overall idea

• Idea is to be flexible on the goal of no more minor versions, in order to avoid waiting an unbounded time.

• Have extension documents focus on the substance of the feature and be ambiguous about the versioning question.
  • Don’t mention anything about minor version numbers.
  • Would be consistent with being incorporated in a subsequent v4.3
  • Could refer informatively to a standards-track versioning document.
Multi-pronged Approach
Process (one of two)

• Let extension documents go forward as far as they can while work proceeds on versioning documents.
  • During this period, implementation work can proceed.

• After (or as part of) WGLC, have two options:
  • If versioning is proceeding reasonably, can reference versioning document normatively
  • Otherwise, quickly assemble a small minor-version-three document
Multi-pronged Approach
Process (two of two)

• Minor-version-three document should be limited to:
  • Short introduction normatively referencing the extension documents
  • The sections necessary to pass IDNITS
  • The XDR of v4.3, which can obtained by:
    • Starting with the v4.2 XDR and
    • Making the XDR extensions specified in the referenced extension documents

• Once the versioning document is published
  • Future extensions will be done as individual extensions
    • No more feature batching
  • We could then tackle adding umask as a correction to v4.0
Chartar Issues
Introduction

• Charter does not cover what we are doing
  • It specifies “maintenance” but the definition is unduly restrictive.
    • Covers “editorial” corrections and “best practices” documents
    • No role for “technical” corrections
    • No role for new features, new pNFS mapping types, a new extension paradigm.
  • All of our current working group documents (beyond Cluster C283) fall outside the bounds of the current charter.
    • Rfc5666bis was within it when it started, but modified its mandate, for good reasons.

• Not sure what to do about this, when, and how
  • Discussion of some of the questions in next slide
  • There will probably be some ongoing discussion of this issue
Charter Issues
Timing Issues

• Why address this now?
  • This hasn’t been a problem so far.
  • Why not “Let sleeping dogs lie”?

• Maybe, but the rechartering issue is going to come up some time.
  • When it does, we should know what we want to be in a new charter.
  • Once we know that, we should decide whether to bring this up now or wait

• Another timing issue:
  • At the conference call, Spencer said we should decide on our extension approach first.
  • Reasonable enough, but I believe that once wg preference for incremental extension is well-established, we would want to proceed on that basis, even before all the details are worked out.
Charter Issues
Things that Should be in a New Charter

• Technical corrections
  • Like rfc5666bis, SCSI mapping type, rfc5667bis, migration-update, umask

• New Features
  • Like xattrs

• New Mapping Types
  • Like flex-files

• A More Complete Concept of Maintenance, including, at least
  • Adapting to (i.e. externalizing) new file system features
  • Responding to changes in technology like RDMA and higher-performance persistent memory
Decisions to be made

• Working group needs to decide:
  • If there is any doubt about our choice of incremental extension
    • May need to formalize this in some way.
  • How we want to convert to incremental extension.
    • For example, the document structure for this needs to be agreed upon

• Extension authors need to decide:
  • How they would like to proceed with their own extensions.

• Working group needs to decide:
  • Whether working group is OK with this being an individual author choice.
  • If not, we want to be sure we have a reasonable approach to offer.