

NFSv4 Extension Paradigm: What's Next?

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- 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 be 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

Charter 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.