Semantic versioning, structure for IETF specs, and evolving IETF outputs

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OPSAWG IETF 99
Data Modeling-driven Management (YANG, NETCONF, RESTCONF, etc...) in the Industry and the IETF. Observations and next steps for the IETF!

Benoît, IESG Retreat

May 19th 2017
IETF: YANG Models Growth

IETF YANG Modules: Compilation Results

# YANG Modules

- TOTAL
- PASSED
- WARNING

02 Jan '15 to 20 Jun '17
YANG Tsunami in the Industry
SDOs Alignment and Trajectory

Network Service YANG data models
- VPWS
- L2VPN
- VPLS
- L2VPN
- L3VPN

Network Element YANG data models
- MPLS
- BGP
- IPv4 & IPv6
- Ethernet
Numbers

• IETF YANG modules
  – Total from RFC: 43
  – Total in drafts: 208
    • Correctly validates: 154

• Number of YANG data models in my VM
  – Total : 6908
  – Duplicates removed: 2128
  – Operational removed: 1999
  – Vendors removed: 736

• This is not an IETF problem any longer
Success?

- Data modeling driven management => YES
- Protocol (NETCONF/RESTCONF) => YES
- Encoding (XML, JSON) => YES
- Data Models => Still need some industry coordination

Automation is as good as your data models, your toolchain, and the data model metadata.
Tools Development During Hackathon

- Validation
- YANG DB Search
- Dependency
- Impact Analysis
- Regex Validation
- GUI
- API Generation

Yangcatalog.org

Ask for github for “others”, but what about the IETF?
YANG Model Development in the IETF

• The way we deal with YANG models in the IETF is ...

• Select from:
  – Inappropriate?
  – Not efficient?
  – Old fashion?
  – Stupid?

Select your answer(s)
Some Thoughts

• Should the IETF adapt? Yes
  – Github based
  – Semantic versioning (semver.org)
  – Still produce RFCs at key points

• More like openconfig

• "game changer for the IETF. Each day you don't do it, you're closer to the grave": quoting an operator

• NETMOD/NETCONF (kind of) working with github

• Ex: L3SM RFC 8049 YANG Data Model for L3VPN Service Delivery
  – Working on the RFC8049bis: update the YANG model only
Semantic Versioning and Structure for IETF Specifications

• draft-claise-semver-00
• Internet-Drafts are a poor fit for working groups that want to produce structured specifications (ex: YANG)
• This document outlines recommendations for how working groups can provide semantic versioning for, and work directly on, structured documents while still fitting within established IETF processes.
The Idea

• The IETF will maintain a Github organization for tracking YANG modules /structured specification

• One repository per document

• Structure for semantic version: MAJOR.MINOR.PATCH
  • MAJOR is incremented when the new version of the specification is incompatible with previous versions. = OBSOLETE
  • MINOR is incremented when new functionality is added in a manner that is backward-compatible with previous versions. = UPDATES
  • PATCH is incremented when bug fixes are made in a backward-compatible manner. = RFC ERRATA
The Idea

• It can be useful to mark certain versions of a work in progress as checkpoints, e.g., for reference at a hackathon.

• These checkpoints should follow their own version sequence, much like Internet drafts:
  • LABEL-VERSION
  • o LABEL is a string that identifies the feature branch
  • o VERSION is incremented whenever a new revision is tagged
Some Feedback Received Already

• Now, the default path for MINOR follows that of MAJOR, unless the AD approves a WG consensus-only minor version increment.

• The AD has no say if there are substantive changes to the security considerations or additional IANA actions. In those cases, a new I-D must be proposed.

• This new text is in GH, but has not made it into another published draft.
Example

* e3091df (tag:v1.0.0, tag:draft-ietf-wg- proto-02, tag:RFCXXX1) Responses to IESG comments

* 7494725 (tag:draft-ietf-wg- proto-01) Responses to IETF LC comments

* 8e2be54 (tag:proto-2, tag:draft-ietf-wg- proto-00) Responses to WGLC comments

* 9703a60 (tag:proto-1) Responses to comments at IETF meeting

* 2b83977 Responses to J. Smith comments

* 8b75e1e (tag:proto-0) Responses to BoF comments

* 1991498 Initial submission
... a5f3214 (tag:v1.2.0) Merge branch 'v1.2'

/ 8fb9cb6 Responses to WGLC comments on feature Y
| * 39322e9 (tag:featureY-1) Responses to WG comments; ready for WGLC
| * 39322e9 Add feature Y
/
* d1d201d (tag:v1.1.1) Fix validation errors

* 6571483 (tag:v1.1.0, tag:draft-ietf-wg-proto-feature-04, tag:RFCXXX2) Merge branch 'v1.1'

/ * abc3f5e (tag:draft-ietf-wg-proto-feature-03) Resolution of DISCUSSes from Security AD

* 3ab54f3 (tag:draft-ietf-wg-proto-feature-02) Resolution of DISCUSSes from Internet and Transport ADs

* cabb1f6 (tag:draft-ietf-wg-proto-feature-01) Responses to WGLC and IETF LC comments on feature X

* fbfab6 (tag:featureX-0, tag:draft-ietf-wg-proto-feature-00) Responses to comments on feature X

* 0630638 Add feature X
/
* e3091df (tag:v1.0.0, tag:draft-ietf-wg-proto-02, tag:RFCXXX1) Responses to IESG comments

...
Next Steps

• NETCONF/NETMOD experiment
  • Discussed with the chairs => positive feedback.

• Would require some tooling,
  • Create drafts out of models

• Could create the models metadata (for the catalog) directly in github
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