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YANG deVELpment PrOCess and maintenance (VELOCE)
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Abstract

This document describes a YANG deVELpment PrOCess and maintenance (VELOCE) that is more suitable for the development of YANG modules or YANG modules update within the IETF.

Discussion Venues

This note is to be removed before publishing as an RFC.

Source for this draft and an issue tracker can be found at <https://github.com/mjethanandani/veloce>.

Status of This Memo

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1. Introduction

IETF has used RFCs to publish its documents. However, RFCs, which are text documents, are not well-suited for iterative development of YANG modules that come in the form of source code.

This document proposes a new approach for documenting and publishing IETF YANG modules. While this document mainly focuses on the IETF modules, IANA modules that are included in drafts, and removed ultimately on publication, can follow a similar process during the development of the IANA module.

This document proposes that the publishing of a YANG module should be split into two parts: the text portion, hereby referred to as the prose, and the YANG module. The prose SHOULD continue to be used for describing the model, defining IANA Considerations, defining the Security Considerations, describing any Operational Considerations, capturing the Normative and the Informative References, etc. The YANG module, along with any related files such as YANG SID files, should be developed and maintained in a separate Source Code Mechanism (SCM) repository such as GitHub. The SCM SHOULD provide a stable link to the YANG module, which should then be included as a reference in the document.

There are several reasons to develop the YANG module in an SCM. SCM provides version control and improves traceability of changes. Modern SCM provides the ability for Continuous Integration/Continuous Development (CI/CD). YANG modules can be fully validated before they are published. Changes to the module can be submitted by providing changes to the affected portions of the source code instead of the entire module. Reviews and comments can be gathered on the changes being proposed. This iterative approach lends itself to faster development and fixing of issues in YANG modules.

Guidance for writing YANG modules is discussed in [RFC9907]. Guidelines related to code components (Section 3.2 of [RFC9907]) or citations to references listed in the YANG module do not apply to VELOCE.

1.1. Conventions and Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. VELOCE Procedure

The following practices should provide the necessary guidance on how a WG develops a new YANG module or updates an existing YANG module:

It is RECOMMENDED that IETF-hosted repositories be used. See Section 1.3 of Working Group GitHub Usage Guidance [RFC8874]. Integration using third-party hosted repositories MAY be used for experimentation purposes.

A new repository MUST be created by the WG Chairs following the procedure in Section 3.2 of Working Group GitHub Usage Guidance [RFC8874] to develop or maintain a YANG Module. For a new module, this SHOULD happen when the module is adopted as a WG item. It MAY happen for individual drafts, and that is left to the discretion of the chairs. However, once the document is adopted as a WG item, the repository SHOULD reside under the auspices of IETF controlled repository and managed by the WG. The name of the repository SHOULD reflect the name of the draft. In addition, the chairs MAY make sure that an appropriate CI/CD YANG validation is in place. It is RECOMMENDED that a containerized build environment be provided in the repository to enable local validation of YANG modules (e.g., via yanglint) independently of the CI/CD pipeline, and to ensure a consistent development environment across all contributors.

The procedure for managing WG documents (e.g., assign editors) applies for managing YANG modules (Section 6.1 of IETF Working Group Guidelines and Procedures [RFC2418]). For considerations related to granting editors write and administrators' right refer to Section 3.3 of Working Group GitHub Usage Guidance [RFC8874].

Other administrative policies as they relate to migration, personal change or the WG closing is defined in the Working Group GitHub Administration [RFC8875].

A release tagging mechanism should be defined to track the intermediate versions referenced by WG I-Ds and by the RFC, once published. This can come in the form of a 'git tag' or by having a branch that corresponds to the version of the draft.

Contribution methods for the YANG module are similar to those defined in Section 4 of Working Group GitHub Usage Guidance [RFC8874]. This includes the use of Issues to track open issues regarding the module. They, along with corresponding links to the Pull Request (PR), are a useful way to record decisions made by the WG.

PR allow for a user to request a change to the repository. A user does not need to have write access to the repository. A fork of the repository allows the user to make changes, validate them, and post the changes as a PR against the WG repository. Editors of the YANG module are encouraged not to accept changes into the "main" or "master" branch of the repository. Instead, they should be directed to a branch that is used for development. This allows the editors to review the changes and make sure that they are in line with the WG consensus before they are merged into the main branch. This also allows the editors to make sure that the changes are properly validated before they are merged into the main branch.

A procedure for assessing consensus is discussed in Section 7 of Working Group GitHub Usage Guidance [RFC8874] and SHOULD be followed when accepting changes to the module.

The YANG module MUST NOT be inserted in the document; instead, a link to the above repository MUST be included in the document. The link MUST point to a specific tagged version of the YANG module (e.g., a git tag or commit hash), not to the HEAD of a branch, so that the module's contents at RFC publication time are permanently retrievable and verifiable.

YANG SID files [RFC9595], when applicable (e.g., for YANG/CBOR encoding), SHOULD reside in the SCM repository rather than in the document. The use of RFC 8792 folding for SID files in Internet-Drafts is discouraged, as it is not compatible with current YANG Doctor tooling.

A bis version of the initial RFC MAY be considered if a major change needs to be added in the document. Such a decision is left to the WG. WG may decide to update an adopted YANG module in the IETF repository and only update the RFC to change the reference to the YANG module.

3. Experimental Plan

Much like other experimental documents, this document tries to answer the following four questions as they relate to experimental documents.

3.1. What is the goal

The goal of the experiment is to determine how YANG modules can be developed outside of an RFC, while making sure that all IETF processes are followed, including WG involvement in the development of the module, and rough consensus of the WG and the IETF as a whole, before it is "published".

A key objective is to balance speed, quality, and community contribution. The experiment should demonstrate a faster path to delivering well-formed YANG modules, while not sacrificing the quality and the community involvement that the IETF process requires. In particular, the experiment aims to address the pain point of the -bis revision process, where re-publishing a large document just to update a small portion of the YANG module creates unnecessary delays due to review comments on otherwise unchanged sections.

3.2. How will the experiment be conducted

YANG modules developed in the IETF fall broadly into two categories. They can be new modules, or they can be a "bis" version of the module. The experiment will consist of two or more YANG modules, such that at least one of them is a new YANG module, and the other is a "bis" version of the YANG module. This is being done to make sure that the experiment covers all the IETF processes related to the development of YANG modules.

Participants in the experiment are encouraged to document their overall experience, including whether the SCM-based approach genuinely improved participation and velocity, or whether observed

speed gains were attributable to other factors such as low contention on a specific module. This qualitative feedback is as important to the experiment as the publication outcome itself.

3.3. How will success be determined

The primary "exit criteria" for the experiment will be successful publication of the YANG modules identified as part of the experiment, within the timelines defined in Section 3.4.

Beyond publication, success will also be evaluated based on whether the process improved community participation in YANG module development, and whether participants found the SCM- based workflow reduced friction compared to the traditional RFC-embedded approach. A report documenting the overall experience and outcomes of the experiment SHOULD be produced at the conclusion of the experiment.

3.4. What is the anticipated timeline

YANG modules have traditionally taken a long time to develop, sometimes taking over four years. However, for the purpose of this experiment, and since the idea is to demonstrate a faster way for a new YANG module to be developed, the timelines for the experiment are as follows:

- * A new YANG module should be published within two years of the start of the experiment.
- * A "bis" version of an existing YANG module, where the primary motivation is incremental updates rather than a ground-up redesign, should be published within one year.

If the experiment takes longer than these timelines, the experiment should be deemed to have failed. At that time, an analysis can be done as to why it failed and determine if the experiment should be repeated.

If the experiment succeeds, then this document can be classified as a BCP, and the process be followed for all YANG modules developed in IETF.

4. Operational Considerations

The separation of YANG modules from their companion documents has implications for the YANG review process. YANG Doctors SHOULD review the YANG module at the specific tagged version referenced by the document, using tooling that can retrieve and validate modules directly from the SCM repository.

Working Groups adopting VELOCE are encouraged to define milestone-based development targets for YANG modules. A phased approach, where an initial version covering core functionality is published within a defined timeframe, with subsequent updates published as needed, is preferable to indefinitely delaying publication while pursuing completeness.

5. Security Considerations

The security considerations discussed in Section 10 of [RFC8874] apply here.

6. IANA Considerations

This document has no IANA actions.

7. References

7.1. Normative References

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[RFC9907] Bierman, A., Boucadair, M., Ed., and Q. Wu, "Guidelines for Authors and Reviewers of Documents Containing YANG Data Models", BCP 216, RFC 9907, DOI 10.17487/RFC9907, March 2026, <<https://www.rfc-editor.org/info/rfc9907>>.

7.2. Informative References

Acknowledgments

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