

wugh  
Internet-Draft  
Intended status: Informational  
Expires: June 20, 2019

A. Cooper  
Cisco  
P. Hoffman  
ICANN  
December 17, 2018

GitHub Configuration for IETF Working Groups  
draft-cooper-wugh-github-wg-configuration-02

Abstract

The use of GitHub in IETF working group processes is increasing. This document describes possible uses and conventions for working groups which are considering starting to use GitHub. It does not mandate any processes, and does not intend to change the processes used by current working groups.

Discussion of this document takes place on the `ietf-and-github` mailing list (`ietf-and-github@ietf.org`), which is archived at [https://mailarchive.ietf.org/arch/search?email\\_list=ietf-and-github](https://mailarchive.ietf.org/arch/search?email_list=ietf-and-github).

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on June 20, 2019.

Copyright Notice

Copyright (c) 2018 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of

publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

## Table of Contents

1. Introduction . . . . .	2
2. Administrative Process and Conventions . . . . .	3
2.1. Creation of GitHub Organizations . . . . .	3
2.2. Migration of an Existing Organization . . . . .	4
2.3. Personnel Changes . . . . .	4
2.4. Working Group Closing . . . . .	4
2.5. Creation of Document Repository . . . . .	4
3. Working Group Process . . . . .	5
3.1. Contributions . . . . .	5
3.2. Backing Up and Archiving GitHub Content . . . . .	5
4. Security Considerations . . . . .	6
5. IANA Considerations . . . . .	6
6. References . . . . .	6
6.1. Normative References . . . . .	6
6.2. Informative References . . . . .	6
Authors' Addresses . . . . .	6

## 1. Introduction

Many IETF working groups and participants make use of GitHub in different ways as part of their work on IETF documents. Some others are interested in having their working groups use GitHub to facilitate the development of working group documents, but they are unfamiliar with how to get started or they are unclear about which conventions to follow.

This document proposes a set of administrative processes and conventions for IETF working groups to use if they chose as a working group to use GitHub to facilitate their work. The proposals in this document are not directed at working groups or individuals that are already using GitHub to do IETF work. Practices vary among existing working groups and some of them are not consistent with the conventions proposed here: that is fine. The goal of the proposals in this document is not to require uniformity in current practice, but to help working groups to get started using GitHub in a uniform way if they want to.

The document is meant to spur discussion in the IETF community. If there proves to be rough consensus in the community in support of the

proposals in this document, the functional requirements would need to be discussed with the IETF Tools Team, and the IETF Secretariat who would need to support various pieces of what is proposed here.

## 2. Administrative Process and Conventions

This section specifies a proposal for an administrative process and conventions to support the creation and management of GitHub organizations for working groups and single-document repositories in a uniform way. The steps could be done manually by the IETF Secretariat or they could be automated. For example, see <https://github.com/richsalz/ietf-gh-scripts> and <https://github.com/martinthomson/i-d-template> for working examples of automation that is in use in some working groups.

In this document the question of whether processes should be manual or automated is deliberately left ambiguous since the first question that should be asked is whether this is functionality the community would want to have supported at all.

Most of the conventions below are drawn from [I-D.thomson-github-bcp].

### 2.1. Creation of GitHub Organizations

This document proposes that there be a facility in the IETF Datatracker (<https://datatracker.ietf.org/>) interface to allow an area director or working group chair to request the creation of a GitHub organization for a particular working group. Ideally, this facility would appear both as part of the working group chartering UI as well as the working group page UI.

When an area director or working group chair makes a request to create a GitHub organization, the following process would be initiated:

1. Create a GitHub organization for the working group.
2. Name the organization as `ietf-<wgname>-wg`
3. Initialize the organization by designating the IETF Secretariat and the area directors in the working group's area as owners. If the responsible AD for the working group is from another area, that AD will be an owner as well.
4. Initialize the organization with a team that has administrator access. This team will consist of the working group chairs and working group secretary, if one exists.

After the organization is created, the URL for the organization would be added to the working group's page in the datatracker.

Steps 3 and 4 above imply that the GitHub identities of the organization owners and administrators are known. Recording GitHub identities in the datatracker (see <https://trac.tools.ietf.org/tools/ietfdb/ticket/2548>) would facilitate this. The person requesting the organization would need to be notified if the GitHub identities of any of the people meant to be owners or administrators were not available.

## 2.2. Migration of an Existing Organization

If a working group already has an organization, it would be useful to be able to make it have the same management as one would get with going through the steps in Section 2.1. That is, it would be good to be able to run steps 3 and 4 from Section 2.1 so that the rest of the activities in this section such as personnel work the same for the organizations that were created on their own.

## 2.3. Personnel Changes

When there are personnel changes in the area or the working group, those changes would be reflected in the GitHub organization. There should likely be an API to specify that there were personnel changes. [[ Need to do a bit of research on how to do this through the API, if possible. ]]

## 2.4. Working Group Closing

When a working group is closed, the team with administrative access would be removed and the owner list would be returned to its initial composition. The organization summary and the repositories within the organization would be updated to indicate that they are no longer under development.

## 2.5. Creation of Document Repository

There are many different scenarios and configurations where it might be useful to have automation and/or established administrative conventions for repositories within WG organizations, such as:

- o Creating a new repository for an individual draft that is at the discretion of the WG chair
- o Creating a new repository for an already-adopted working group draft

- o Migrating an existing document repository into the WG organization
- o Creating a new repository that contains multiple drafts

As an incremental step, this document proposes that there be a facility in the Datatracker interface to allow an administrator of an ietf-`<wgname>-wg` organization to request the creation of a new repository within that organization for a single document. The document authors would be identified as collaborators. The repository name would be the draft name. Ideally, the repository would be configured with an skeleton draft file, default CONTRIBUTING, LICENSE, and README files, and continuous integration support, in the vein of `<https://github.com/martinthomson/i-d-template>`.

### 3. Working Group Process

[I-D.thomson-github-bcp] contains discussion of the different possible ways that a working group can use GitHub and the large number of decisions associated with doing so. This section proposes a basic set of administrative policies for working groups to follow and the administrative support needed to carry out those policies.

#### 3.1. Contributions

At a minimum, every repository created in a working group organization needs to incorporate into its CONTRIBUTING file the boilerplate text at `<https://trustee.ietf.org/license-for-open-source-repositories.html>` from the IETF license file for open source repositories. The CONTRIBUTING file can contain other information as well (see `<https://github.com/ietf/repo-files/tree/master/contributing-samples>` for examples).

It would be useful if the user data in the Datatracker could list (at a minimum) the GitHub account of the user so that their contributions could be tracked more easily.

#### 3.2. Backing Up and Archiving GitHub Content

IETF working group mailing lists are automatically backed up by the IETF Secretariat, and the archives are publicly available. All official interactions in a WG must be archived.

It would be good for working group GitHub content to also be backed up and publicly archived. This document proposes using the git protocol [git-protocol] itself for both of these tasks.

Every IETF working group repository on GitHub will have a mirror repository of the same name on a server maintained by the IETF Secretariat. Every hour, a service will use the "git fetch" command on every GitHub repository that is being tracked. The mirror repository will allow anyone to read the repository.

Note that this system will not back up GitHub issues or pull requests. It is very likely that these should be backed up as well. The GitHub API possibly allows this; if so, the IETF Secretariat should back up those at the same time as it is backing up the GitHub repositories.

[I-D.thomson-github-bcp] has more discussion of backing up and archiving.

#### 4. Security Considerations

An attacker who can change the contents of Internet Drafts, particularly late in a working group's process, can possibly cause unnoticed changes in protocols that are eventually adopted.

#### 5. IANA Considerations

This document has no IANA actions.

#### 6. References

##### 6.1. Normative References

[git-protocol]

"Git on the Server - The Protocols", n.d., <<https://git-scm.com/book/en/v2/Git-on-the-Server-The-Protocols#The-Git-Protocol>>.

##### 6.2. Informative References

[I-D.thomson-github-bcp]

Thomson, M. and A. Atlas, "Using GitHub at the IETF", draft-thomson-github-bcp-00 (work in progress), February 2017.

#### Authors' Addresses

Alissa Cooper  
Cisco

Email: [alcoop@cisco.com](mailto:alcoop@cisco.com)

Paul Hoffman  
ICANN

Email: [paul.hoffman@icann.org](mailto:paul.hoffman@icann.org)

Network  
Internet-Draft  
Intended status: Best Current Practice  
Expires: August 22, 2017

M. Thomson, Ed.  
Mozilla  
A. Atlas, Ed.  
Juniper Networks  
February 18, 2017

Using GitHub at the IETF  
draft-thomson-github-bcp-00

Abstract

This document describes best practices for working groups that use GitHub for their work.

Note to Readers

Discussion of this document takes place on the `GitHub@ietf` mailing list (`ietf-and-github@ietf.org`), which is archived at [https://mailarchive.ietf.org/arch/search/?email\\_list=ietf-and-GitHub](https://mailarchive.ietf.org/arch/search/?email_list=ietf-and-GitHub).

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on August 22, 2017.

Copyright Notice

Copyright (c) 2017 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents

carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

## Table of Contents

1.	Introduction . . . . .	3
1.1.	Integrated Tools: GitLab and Git . . . . .	3
1.2.	GitHub: Community Outreach . . . . .	4
1.3.	Notational Conventions . . . . .	4
2.	IETF Administrative Policies . . . . .	4
2.1.	Naming and Ownership of Organizations . . . . .	4
2.2.	Backup and Archiving of Working Group's Organization and Repositories . . . . .	5
2.3.	Communicating IETF Policies in GitHub or GitLab . . . . .	5
2.4.	Communicating GitHub or GitLab Use inside IETF . . . . .	6
3.	Deciding to Use GitHub . . . . .	6
3.1.	What to Use GitHub For . . . . .	6
3.2.	Working Group Policies . . . . .	7
3.3.	Repositories . . . . .	7
3.4.	Editors and Contributors . . . . .	8
3.5.	Document Formats . . . . .	8
4.	Contribution Methods . . . . .	8
4.1.	Issues . . . . .	9
4.1.1.	Issue Labelling . . . . .	9
4.1.2.	Closing Issues . . . . .	9
4.2.	Pull Requests . . . . .	9
4.2.1.	Discussion on Pull Requests . . . . .	10
4.2.2.	Merging Pull Requests . . . . .	10
4.3.	Monitoring Activity . . . . .	11
5.	Advice to Editors . . . . .	11
6.	Internet-Drafts . . . . .	12
7.	Assessing Consensus . . . . .	12
8.	Continuous Integration . . . . .	12
9.	GitHub Limitations . . . . .	13
10.	Security Considerations . . . . .	13
11.	IANA Considerations . . . . .	14
12.	References . . . . .	14
12.1.	Normative References . . . . .	14
12.2.	Informative References . . . . .	14
12.3.	URIs . . . . .	14
Appendix A.	Acknowledgments . . . . .	15
Authors' Addresses	. . . . .	15

## 1. Introduction

The IETF has an open and transparent process for developing standards; the use of GitHub, when used as part of this process as appropriate, can have several objectives. For some technology areas, it can broaden the community that is reviewing and improving the specifications. GitHub provides useful tools to speed up and manage a rapid iteration process for managing changes and tracking issues. Using tools that reduce the friction in rapidly improving documents and getting more relevant reviews can help improve the speed at which a Working Group completes its specifications.

This document describes how the IETF uses GitHub through the development of Internet-Drafts. This concentrates on the work that occurs within IETF working groups. Recommendations for working groups and their chairs are made for integrating these tools with their processes.

This document is meant as a companion to RFC 2418 [RFC2418]. It provides guidance to working group chairs and participants on how they can best use GitHub. The small number of rules in this document are there to ensure common usage patterns between working groups and to avoid issues that have been encountered in the past.

### 1.1. Integrated Tools: GitLab and Git

Different version control systems are a critical component of software engineering and are quite useful also for document editing. The IETF datatracker can currently provide a subversion repository for each Working Group for its version control system, but git is also possible.

Git is a distributed version control system and both GitLab and GitHub are based around git. Each instance of a repository contains a number of revisions. Each revision stores the complete state of a set of files. Users are able to create new revisions in their copy of a repository and share revisions between copies of repositories.

GitLab provides a simplified and integrated interface to not only git, but also provides basic user management, an issue tracker, associated wiki, project hosting, and more. GitLab is a commercial integrated software product that can be hosted and run by different organizations; a community version is also available.

## 1.2. GitHub: Community Outreach

GitHub is a service operated at <https://GitHub.com/> . GitHub provides a centralized store for git repositories. GitHub is freely accessible on the open Internet, albeit currently only via IPv4.

There are a large number of projects at GitHub and associated a very large community of contributors. One way in which some IETF Working Groups have seen benefit is in the increased reviews and associated issues and improvements that come from broader participation by facilitating those in this community to participate.

This document contains some content that is quite specific to GitHub. A working group that decides to adopt one of the several different alternative services can still benefit from the general guidance in this document.

## 1.3. Notational Conventions

The words "MUST", "MUST NOT", "SHOULD", and "MAY" are used in this document. It's not shouting; when they are capitalized, they have the special meaning defined in [RFC2119].

## 2. IETF Administrative Policies

The following administrative rules provide the necessary oversight and transparency. They apply whether GitHub or a publicly-available GitLab instance is used by the Working Group. Working Groups that do not decide to use GitHub or a publicly-available GitLab instance are not impacted.

### 2.1. Naming and Ownership of Organizations

Each Working Group SHOULD create a new organization for the working group. It SHOULD be named consistently so that it can be found. For instance, the name could be `ietf-<wgname>` or `ietf-<wgname>-wg`. A single organization SHOULD NOT be used for all IETF activity, or all activity within an area. Large organizations create too much overhead for general management tasks, particularly when there is a need to maintain membership.

Since an organization must have some owners, that should be done via a team that is given owner privileges. This team MUST include the Area Directors and/or delegates of the Area Directors. This team SHOULD include the Working Group Chairs. A team with administrator access SHOULD be created and MAY include the Working Group Chairs and WG Secretary. Administrator access is preferable, since this does

not also include the ability to push to all repositories and ownership does not grant any other significant privileges.

When an Area Director changes, the outgoing Area Director MUST be removed from the organization's ownership team. This can be done by the continuing AD, the outgoing AD or the WG Chairs. The incoming Area Director and/or delegate MUST be added to the organization's ownership team. When a WG Chair changes, the responsible Area Director or a delegate MUST remove the previous WG Chair from the organization's ownership or administrative team and SHOULD add the new WG Chair to that team.

When a Working Group is closed, the responsible Area Director is responsible for removing existing members from teams in the organization. Repositories MUST be updated along to indicate that they are no longer under development.

## 2.2. Backup and Archiving of Working Group's Organization and Repositories

When an IETF Working Group is closed and even when the associated mailing lists are closed, the associated mail archives and datatracker information are backed up and accessible. If a working group has used GitHub or GitLab, any repositories including issues and discussion SHOULD be backed up on IETF resources. It is desirable for those to be accessible via the Working Group's data-tracker page. For example, this might be via URLs listed in the More Info section on the WG Charter page.

The IETF MAY decide to backup information associated with a Working Group's organization periodically. This decision can be made differently per Working Group in consultation with the responsible Area Director.

## 2.3. Communicating IETF Policies in GitHub or GitLab

One important policy is the IETF IPR policy (see [RFC5378], [RFC3979], and [RFC4879]). Part of this policy requires making contributors aware of the policy.

The wording and details of how to do so are specified at <https://trustee.ietf.org/license-for-open-source-repositories.html>. The details are copied below, but the IETF web-site is authoritative.

The IETF Trust license file for open source repositories [3] MUST be included prominently in any document repository.

Including this information in the CONTRIBUTING file is sufficient.

In addition to the above boilerplate text there is a benefit to including pointers to other working group materials, the IETF datatracker, specific drafts, or websites. Adding such text is at the discretion of the working group chairs.

#### 2.4. Communicating GitHub or GitLab Use inside IETF

Each Working Group MAY set its own policy as to whether and how it uses GitHub or GitLab. It is important that occasional participants in the WG and others accustomed to IETF tools be able to determine this and easily find the policy and GitHub or GitLab organization.

A simple example of how to do this is to include a link to the GitHub organization on the WG Charter page in the Datatracker under More Info. Similarly, if there are multiple mailing list options, links to those mailing lists should be given. An example of this is at <https://datatracker.ietf.org/wg/quic/charter/>.

### 3. Deciding to Use GitHub

A Working Group Chairs are responsible for determining how to best accomplish the Charter in an open and transparent fashion. The WG Chairs are responsible for determining if there is interest in using GitHub or GitLab and making a consensus call to determine if a the proposed policy and use is acceptable. Chairs SHOULD involve area directors in this decision if they intend to use GitHub for anything more than managing of edits.

While a document editor can still use GitHub independently for documents that they edit, even if the working group does not expressly choose to use GitHub, any such public repository MUST follow the guidelines in Section 2.3. This recognizes that editors have traditionally chosen their own methods for managing the documents they edit but preserves the need for transparent contributions with awareness of IPR considerations.

#### 3.1. What to Use GitHub For

Working group chairs have to decide what GitHub features the working group will rely upon. Section 4 contains a more thorough discussion on the different features that can be used.

Once a document is published in a repository on GitHub, many features like pull requests, issue tracking or the wiki can be individually disabled. If specific features are not used by the working group in the development of the document, disabling those features avoids creating confusion in the wider community about what can be used.

### 3.2. Working Group Policies

Working group chairs that decide to use GitHub MUST inform their working groups of their decision on the working group mailing list. An email detailing how the working group intends to use GitHub is sufficient, though it might be helpful to occasionally remind new contributors of these guidelines.

Working group chairs are responsible for ensuring that any policy they adopt is enforced and maintained.

Updating the README or CONTRIBUTING file in the repository with details of the process ensures that the process is recorded in a stable location other than the mailing list archive. This also makes any working group policies available to casual contributors who might only interact with the GitHub repository.

GitHub prominently links to the CONTRIBUTING on certain pages. This file SHOULD be used in preference to the README for information that new contributors need. A link to the CONTRIBUTING file from the README is advised.

### 3.3. Repositories

New repositories can be created within the working group organization at the discretion of the chairs. Chairs could decide to only create new repositories for adopted working group items, or they might create repositories for individual documents on request.

All repositories for working group documents MUST be public. Repositories for private documents MAY be kept private, but only where there is a specific reason for doing so. For instance, a document that details a security vulnerability might be kept private prior to its initial publication as an Internet-Draft. Once an Internet-Draft is published, repositories SHOULD be made public.

The adoption status of any document MUST be clear from the contents of the repository. This can be achieved by having the name of the document reflect status (that is, draft-ietf-`<wg>`-... indicates that the document was adopted), or through a prominent notice (such as in the README).

Experience has shown that maintaining separate repositories for independent documents is most manageable. This allows the work in that repository to be focused on a single item.

Closely related documents, such as those that together address a single milestone, might be placed in a single repository. This

allows editors to more easily manage changes and issues that affect multiple documents.

Maintaining multiple documents in the same repository can add overheads that negatively affect individual documents. For instance, issues might require additional markings to identify the document that they affect. Also, because editors all have write access to the repository, managing the set of people with write access to a larger repository is more difficult.

#### 3.4. Editors and Contributors

Working group chairs **MUST** give document editors write access to document repositories. This can be done by creating teams with write access and allocating editors to those teams, or by making editors collaborators on the repository.

Working group chairs **MAY** also grant other individuals write access for other reasons, such as maintaining supporting code or build configurations. Working group chairs, as administrators or owners of the organization might also have write access to repositories. Users other than document editors, including chairs, **SHOULD NOT** write to working group documents unless with prior coordination with document editors.

Working groups **MAY** create a team for regular contributors that is only given read access to a repository. This does not confer additional privileges on these contributors, it instead allows for issues and pull requests to be assigned to those people. This can be used to manage the assignment of editorial or review tasks to individuals outside of the editor team.

#### 3.5. Document Formats

In addition to the canonical XML format [RFC7991], document editors might choose to use a different input form for editing documents, such as markdown. The choice of input format is left to document editors.

#### 4. Contribution Methods

Contributions to documents come in many forms. GitHub provides a range of options in addition to email. Input on GitHub can take the form of new issues and pull requests, comments on issues and pull requests, and comments on commits.

#### 4.1. Issues

The GitHub issue tracker can be an effective way of managing the set of open issues on a document. The record of issues - both open and closed - can be a useful way of recording decisions made by a working group.

Issues can be given arbitrary labels, assigned to contributors, and assembled into milestones. The issue tracker is integrated into the repository; an issue can be closed using a special marker in a commit message.

Working group chairs **MUST** decide how the GitHub issue tracker are used. Use of the issue tracker could be limited to recording the existence of issues, or it might be used as the venue for substantial technical discussion between contributors.

##### 4.1.1. Issue Labelling

A system of labelling issues can be effective in managing issues. For instance, marking substantive issues separately from editorial can be helpful at guiding discussion. Using labels can also be helpful in identifying issues for which consensus has been achieved, but that require editors to integrate the changes into a document.

Labels can be used to identify particular categories of issues or to mark specific issues for discussion at an upcoming session.

If labels are a core part of working group process, chairs **MUST** communicate any process to the working group. This includes the semantics of labels, and who can apply and remove these labels.

##### 4.1.2. Closing Issues

Editors have write access to repositories, which also allows them to close issues. The user that opens an issue is also able to close the issue. Chairs **MUST** determine who is permitted to close an issue and under what conditions.

#### 4.2. Pull Requests

Pull requests are the GitHub feature that allow users to request changes to a repository. A user does not need to have write access to a repository to create a pull request. A user can create a "fork", or copy, of any public repository. The user has write access to their own fork, allowing them to make local changes. A pull request asks the owner of a repository to merge a specific set of changes from a fork (or any branch) into their copy.

Editors SHOULD make pull requests for all substantial changes rather than committing directly to the "master" branch of the repository.

Pull requests have many of the same properties as issues, including the ability to host discussion and bear labels. Critically, using pull requests creates a record of actions taken.

For significant changes, leaving a pull request open until discussion of the issue within the working group concludes allows the pull request to track the discussion and properly capture the outcome of discussions.

Groups of editors could adopt a practice of having one editor create a pull request and another merge it. This ensures that changes are reviewed by editors. Editors are given discretion in how they manage changes.

#### 4.2.1. Discussion on Pull Requests

In addition to the features that pull requests share with issues, users can also review the changes in a pull request. This is a valuable feature, but it has some issues.

Comments in a review other than a summary are attached to specific lines of the proposed change. Such comments can be hard or impossible to find if changes are subsequently made to the pull request. This is problematic for contributors who don't track discussion closely.

For this reason, working group chairs SHOULD discourage the use of inline comments for substantial technical discussion of issues.

#### 4.2.2. Merging Pull Requests

Working groups MUST determine who is permitted to merge pull requests. Document editors SHOULD be permitted to merge pull requests at their discretion. This requires that editors exercise some judgment. Working group chairs MAY occasionally identify a pull request and request that editors withhold merging until working group consensus has been assessed.

Note that the copy of a document that is maintained on GitHub does not need to be a perfect reflection of working group consensus at every point in time. Document editors need some flexibility in how they manage a document.

#### 4.3. Monitoring Activity

Several working groups have created read-only mailing lists that subscribe to activity notifications on repositories. The volume of information on these lists can be too high to monitor actively, but access to an archive of actions can be useful.

A working group that uses GitHub SHOULD provide this facility. However, setting up this mailing list can be onerous and better solutions are still being sought.

#### 5. Advice to Editors

Document editors are primarily responsible for maintaining documents. Taking on a few additional tasks can greatly improve the process for the working group.

Using GitHub means that it is more likely that a contribution is made by users who aren't very familiar with the work. If a duplicate issue is raised, point the user to the existing issue before closing the issue. If a contributor seems rude in a comment, be courteous in response.

Pull requests from new contributors can contain errors or omissions. Some contributors won't natively speak English, so changes might have grammatical errors. If a change is generally sound, rather than rejecting the pull request or requesting changes, accept the change and then make any minor corrections yourself.

Never close a pull request or issue without first understanding why it was made and then explaining why you aren't accepting it. If you are uncertain, ask a chair for guidance.

If a contributor makes a comment that raises what you believe to be a new issue, create an issue for them. If the issue has an obvious solution, consider creating a pull request. It doesn't matter what venue the issue was raised in, email, issue discussion, a pull request review, capturing issues quickly ensures that problems become visible and can be tracked.

This takes a little more effort, but these simple steps can help encourage contributions, which will ultimately improve the quality of your document.

## 6. Internet-Drafts

During the development of a document, individual revisions of a document can be built and formally submitted as an Internet-Draft. This creates a stable snapshot and makes the content of the in-progress document available to a wider audience.

Editors SHOULD endeavour to create a new Internet-Draft submission two weeks prior to every session (see Section 7.1 of [RFC2418]). Participants in a session can't be expected to monitor changes to documents in real-time; an Internet-Draft ensures that there is a common, stable state that is known to all participants.

Working group chairs MAY request the creation of an Internet-Draft at any time, in consultation with document editors.

## 7. Assessing Consensus

The work that occurs on GitHub could be part of the consensus process, but the ultimate decision on consensus regarding a document is made by the chairs [RFC2026].

Monitoring activity on GitHub could require a greater time commitment than following a mailing list. This is because there is an increased volume of activity to follow. Participants who wish to limit this time commitment might follow GitHub activity selectively, either by following only specific issues or by occasionally reviewing the state of the document. Chairs are reminded that assessing consensus based on GitHub content alone MUST NOT be assumed to reach all interested participants.

A working group chair SHOULD consult the working group mailing list for any issue that is potentially contentious. Relying on input provided through GitHub alone might result in gaining input from a narrower set of participants. This includes important milestones like working group last-call, where review from the widest possible audience ensures a higher quality document. Managing input from multiple sources in assessing consensus is similar to what is needed when balancing mailing list discussion versus in-person meeting discussion.

## 8. Continuous Integration

Various third-party services offer the ability to run tests and other computation when changes are made to a document.

One common practice is to use these continuous integration services to build a text or HTML version of a document. This is then

published to GitHub Pages, which allows users to view a version of the most recent revision of a document.

Continuous integration can also validate pull requests and other changes for errors. The most basic check is whether the source file can be transformed successfully into a valid Internet-Draft. For example, this might include checking that XML source is syntactically correct.

For documents that use formal languages a part of specifications, such as schema or source code, a continuous integration system might also be used to validate any formal language that the document contains. Tests for any source code that the document contains might be run, or examples might be checked for correctness.

## 9. GitHub Limitations

At the time of writing, GitHub.com is not reachable using IPv6. This is an affront to all that the IETF stands for and a slap in the face to all the people who worked so hard to design and deploy the latest version of the Internet Protocol. While we can collectively be ashamed and disappointed that this is the situation, that doesn't necessarily make the service any less useful.

## 10. Security Considerations

Continuity of operations is always a consideration when taking a dependency on an external service. If GitHub were to fail in some way, anyone relying upon its services would be seriously affected.

Consistent use of git reduces the exposure to a system failure because the primary repository is replicated in multiple locations. This extends to web pages that are hosted because the content of the page is saved in the main repository. Maintaining a mirror of a repository that is hosted on GitHub is relatively simple and might be considered as a way to provide a backup for the primary repository.

However, other information maintained on GitHub is more vulnerable to loss. This includes issues and discussion on those issues, discussion and reviews of commits and pull requests, and any content hosted on the wiki. Tools exist for extracting this information for backup.

Malicious actions by compromised or malcontent editors, chairs and area directors are relevant in maintaining the integrity of the content that GitHub hosts. Backups allow for recovery of content, and regular submissions as Internet-Drafts ensure that work is not lost completely.

## 11. IANA Considerations

This document has no IANA actions.

## 12. References

### 12.1. Normative References

- [RFC2026] Bradner, S., "The Internet Standards Process -- Revision 3", BCP 9, RFC 2026, DOI 10.17487/RFC2026, October 1996, <<http://www.rfc-editor.org/info/rfc2026>>.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.
- [RFC3979] Bradner, S., Ed., "Intellectual Property Rights in IETF Technology", BCP 79, RFC 3979, DOI 10.17487/RFC3979, March 2005, <<http://www.rfc-editor.org/info/rfc3979>>.
- [RFC4879] Narten, T., "Clarification of the Third Party Disclosure Procedure in RFC 3979", BCP 79, RFC 4879, DOI 10.17487/RFC4879, April 2007, <<http://www.rfc-editor.org/info/rfc4879>>.
- [RFC5378] Bradner, S., Ed. and J. Contreras, Ed., "Rights Contributors Provide to the IETF Trust", BCP 78, RFC 5378, DOI 10.17487/RFC5378, November 2008, <<http://www.rfc-editor.org/info/rfc5378>>.

### 12.2. Informative References

- [RFC2418] Bradner, S., "IETF Working Group Guidelines and Procedures", BCP 25, RFC 2418, DOI 10.17487/RFC2418, September 1998, <<http://www.rfc-editor.org/info/rfc2418>>.
- [RFC7991] Hoffman, P., "The "xml2rfc" Version 3 Vocabulary", RFC 7991, DOI 10.17487/RFC7991, December 2016, <<http://www.rfc-editor.org/info/rfc7991>>.

### 12.3. URIs

- [2] <https://trustee.ietf.org/license-for-open-source-repositories.html>

Appendix A. Acknowledgments

This work wouldn't have been possible without the hard work of those people who have trialed use of GitHub at the IETF.

Authors' Addresses

Martin Thomson (editor)  
Mozilla

Email: martin.thomson@gmail.com

Alia Atlas (editor)  
Juniper Networks

Email: akatlas@gmail.com