

INTERNET-DRAFT
Intended Status: Informational
Expires: May 2, 2013

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October 29, 2012

RFC Style Guide
draft-flanagan-style-00

Abstract

This document is a comprehensive summary of the style conventions and editorial policies that apply to the RFC document series. It captures the RFC Editor's fundamental requirements and offers guidance regarding the format and structure of an RFC. While in Internet-Draft format, it should be considered for discussion purposes only. Guidance in from this document will not be applied until published as an RFC. Please send your comments to rfc-interest@rfc-editor.org.

Status of this Memo

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1. Introduction

The ultimate goal of the RFC publication process is to produce documents that are readable, clear, consistent, and reasonably uniform. This document describes the fundamental and unique style conventions and editorial policies for the RFC document series [[RFC4844](#)]. It is intended as a stable, infrequently-updated reference for authors, editors, and reviewers. The RFC Editor also maintains a more fluid document providing guidelines about conventions and policies that are not as fundamental to the RFC document series, that are less stable, or that change more frequently [[StyleWebDRAFT](#)]; see [Appendix A](#) for more details.

Style rules referred to in this document are considered fundamental to the RFC series; the RFC Editor will work to ensure these are met before publication. For example, an RFC must have correctly formatted headers and footers, it must have the necessary boilerplate, and it must generally have the "appearance" of previous RFCs in the series. Where there is more flexibility, that information will be recorded on the RFC Editor website.

The basic format conventions for RFCs were established in the 1970s by the original RFC Editor, Jon Postel [Postel, [RFC2555](#)]. Postel's instructions to authors were quite simple: read a recent RFC and emulate its style. More recently, it has been found necessary to formalize and document the RFC style rules and give guidelines to authors.

The world of technical publishing has generally accepted rules for grammar, punctuation, capitalization, sentence length and complexity, parallelism, etc. The RFC Editor generally follows these accepted rules as defined by the Chicago Manual of Style (CMOS) [[CMOS](#)], with a few important exceptions to avoid ambiguity in complex technical prose and to handle mixtures of text and computer languages. This document presents these exceptions where they are required.

All RFCs begin as an Internet-Draft, and a well-written and properly constructed Internet-Draft [[IDGuide](#)] provides a strong basis for a good RFC. The RFC Editor accepts certain Internet-Drafts for publication [[RFC5741](#)] and during the publication process applies the rules and guidelines for the RFC document series.

2. RFC Editorial Philosophy

Authors may find it helpful to understand the RFC Editor's goals during the publication process, namely:

- Prepare the document to RFC style and format.
- Make the document as clear, consistent, and readable as possible.
- Look for larger content/clarity issues; flag any unclear passages for author review.
- Point out inconsistencies (e.g., terms that appear in various forms, text that appears multiple times, or inconsistent capitalization).

We strive for consistency within:

- a. the document,
- b. a set of documents, and
- c. the series of RFCs on the subject matter.

The publication process of the RFC Editor is not an additional technical review of the document. Where the RFC Editor may suggest changes in wording for clarity and readability, it is up to the author, working group, or stream manager such as the ISE, IESG, IRTF Chair, or IAB Chair to determine if that has an impact on the technical meaning in the document. If the original wording is a more accurate representation of the technical content being described in the document, it takes precedence over editorial conventions.

In the world at large, the activity of editing often creates a tension between author and editor. The RFC Editor attempts to minimize this conflict for RFC publication, while continually striving to produce a uniformly excellent document series. We refer to this fundamental tension as "editorial balance", and maintaining this balance is a continuing concern for the RFC Editor. There is a prime directive that must rule over grammatical conventions: do not change the intended meaning of the text.

3. RFC Style Conventions

3.1. Language

- * The RFC publication language is English. This may be either American or British as long as an individual document is internally consistent.

3.2. Punctuation

- * No Overstriking (or underlining) is allowed.
- * When a sentence ended by a period is immediately followed by another sentence, there should be two blank spaces after the period.
- * A comma is used before the last item of a series, e.g.,

```
"TCP service is reliable, ordered, and full-duplex"  
                                ^  
                                ^
```
- * When quoting literal text, punctuation is placed outside quotation marks, e.g.,

```
'Search for the string "Error Found".'
```

When quoting general text, such as general text from another RFC, punctuation may be included within the quotation marks, e.g.,

```
"Memos in the Requests for Comments (RFC) document series  
contain technical and organizational notes about the Internet."
```

- * Angle brackets are allowed around URIs [[RFC3986](#)], e.g.,

```
<http://example.com/>.
```

However, URIs must not be used in place of proper references.

- * The author's choice on hyphenation of compound words (e.g., "on-line" vs. "online") is generally followed, as long as it is consistent and the word does not appear in the dictionary [[WEBSTERS](#)] unhyphenated. The usage must be consistent within the document.

Do not use hyphenation at the right margin to split existing words. However, hyphenated word sequences (e.g., "Internet-Draft") may be split at the hyphen across successive lines.

[3.3.](#) Capitalization

- * Capitalization must be consistent within the document and should be consistent with related RFCs. Refer to the online "Table of decisions on consistent usage of terms in RFCs" [[PubProcess](#)].
- * The major words in RFC titles and section titles should be capitalized (this is sometimes called "title case"). Minor words such as articles or prepositions should be lower-cased (e.g.,

"and", "of"). Typically, all words in a title will be capitalized, except for internal articles, prepositions, and conjunctions.

- * Titles of figures may be in sentence form or use title case.

3.4. Citations

- * References and citations must match. That is, there must be a reference for each citation used, and vice versa.
- * Citations must be enclosed square brackets ("[\[CITE1\]](#)").
- * A citation/reference tag must not contain spaces or hyphens.

Example: "[\[RFC2119\]](#)", not "[\[RFC 2119\]](#)".

However, the proper textual naming of an RFC contains a space.

Example: "See [RFC 2119](#) [\[BCP14\]](#) for more information".

3.5. Abbreviation Rules

Abbreviations must be expanded in document titles and in the Abstract and upon first use in the body of the document. The exception is abbreviations that are so common that the readership of RFCs can be expected to recognize them immediately; examples include (but are not limited to) TCP, IP, SNMP, and FTP. The online list of abbreviations [\[ABBR\]](#) provides guidance. Some cases are marginal, and the RFC Editor will make the final judgment, weighing obscurity against complexity.

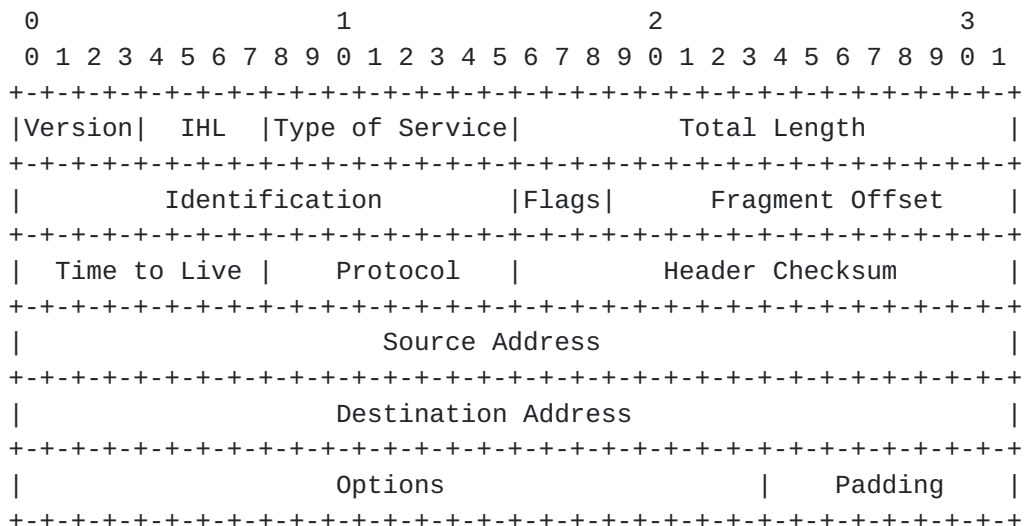
Note: The online list of abbreviations is not exhaustive or definitive. It is a list of abbreviations appearing in RFCs and sometimes reflects discussions with authors, WG chairs, and/or ADs. Note that some abbreviations have multiple expansions. Additionally, this list includes some terms that look like abbreviations but are actually fixed names for things, and hence cannot and should not be expanded. These are noted as "No expansion".

3.6. Protocol Data Definitions

The RFC series adopted a diagrammatic approach to representing data structures such as protocol headers. Furthermore, the research community adopted the "big-endian" [\[IEN137\]](#) convention, in which the

bits and bytes are shown in network byte order, byte zero is the first byte shown, and bit zero is the most significant bit in a word or a field. This is also known as "network byte order".

For example, [RFC 791](#) [[RFC791](#)] contains the following definition of the IP header format.



Example Internet Datagram Header

3.7. Use of Definite Articles

The definite article "the" should precede a protocol name when written out and used as a noun, but omitted when written as an acronym and used as a noun.

Correct:

```

The Transmission Control Protocol is ...
The Transmission Control Protocol (TCP) is ...
TCP is ...

```

Incorrect:

```

Transmission Control Protocol is ...
Transmission Control Protocol (TCP) is ...
The TCP is ...

```

4. Structure of an RFC Document

A published RFC will contain the elements in the following list. Some of these sections are required, as noted. Those sections marked

with "*" will be supplied by the RFC Editor during the editorial process when necessary. The rules for each of these elements are described in more detail below.

First-page header	* [Required]
Title	[Required]
Abstract	[Required]
RFC Editor or Stream Manager Note	* [Upon request]
Status of this Memo	* [Required]
Copyright and License Notice	* [Required]
Table of Contents	[Required for docs with 10+ pgs]
Body of the Memo	[Required]
1. Introduction	[Required]
2. Requirement Words (RFC 2119)	
3. ...	
MAIN BODY OF THE TEXT	
6. ...	
7. IANA Considerations	[Required in I-D]
8. Security Considerations	[Required]
Appendix A .	
Appendix B .	
References	
Acknowledgments	
Contributors	
Author's Address	[Required]

Within the body of the memo, the order shown above is strongly recommended. Exceptions may be made by request of the authors and with the approval of the stream manager. Outside the body of the memo, the order above is required. The section numbers above are for illustrative purposes; they are not intended to correspond to required numbering in an RFC.

The body of the memo will normally have numbered sections; appendices may be numbered or labeled. However, if the author chooses to label appendices, subsequent sections should not be numbered. The elements preceding and following the body of the memo should be unnumbered.

[4.1. First-Page Header](#)

The first page contains no running header. The top of the first page has the following items left-justified:

Stream

Identifies the stream in which the document originated and appears on the first line [[RFC5741](#)]. Currently, it will be one of the

following:

IETF
IRTF
IAB
Independent Submission

"Request for Comments: nnnn"

Identifies this as an RFC and specifies the RFC number on the second line. The actual number is assigned and filled in just prior to publication by the RFC Editor.

"BCP: nn" or

"STD: nn"

One of these optional items indicates the sub-series number, if the RFC is a member of a sub-series [[RFC1818](#)] [[RFC1311](#)].

"Category: xxxxxxxxxxxx"

Required field specifying the category of this RFC. The category may be one of: "Standards Track", "Best Current Practice", "Informational", "Experimental", or "Historic". The category is determined by the stream manager and rules in [[RFC2026](#)] and [[RFC5741](#)].

The following information appears right-justified in the header:

Author/Editor

[To be removed upon publication] This section still under considerable discussion.

The determination of who should be listed as an author or editor on an RFC is dependent on Stream policy. The RFC Editor provides guidelines for number and format of the author-related components of an RFC.

The author's name (initials followed by family name) appears on the first line of the heading. Some variation, such as additional initials or capitalization of family name, is acceptable as long as the author maintains a consistent name format for all RFCs.

The total number of authors or editors on the first page is generally limited to five individuals and their affiliations. If there is a request for more than five authors, the stream manager needs to consider if one or two editors should have primary

responsibility for this document, with the other individuals listed in the Contributors or Acknowledgements section. There must be a direct correlation of authors and editors in the header and Authors' Address section. These are the individuals that must sign off on the document during the AUTH48 process and respond to inquiries, such as errata.

Organization

The author's organization, indicated on the line following the author's name.

For multiple authors, each author name appears on its own line, followed by that author's organization. When more than one author is affiliated with the same organization, the organization can be "factored out", appearing only once following the corresponding Author lines. However, such factoring is inappropriate when it would force an unacceptable reordering of author names.

If an author cannot or will not provide an affiliation for any reason, "Independent", "Retired", or some other term that appropriately describes the author's affiliation may be used. Alternatively, a blank line may be included in the document header when no affiliation is provided.

Date

The month and year of RFC publication appear on the line after the last organization.

[4.1.1. Updates and Obsoletes](#)

When an RFC obsoletes or updates a previously published RFC or RFCs, this information is in the header. For example:

"Updates: nnnn" or "Updates: nnnn, ..., nnnn"

"Obsoletes: nnnn" or "Obsoletes: nnnn, ... , nnnn"

If the document updates or obsoletes more than one document, numbers will be listed in ascending order.

Authors often also include a statement in the Introduction that reads similarly to the following:

This document obsoletes RFC XXXX.

This helps clarify the status of the document and its relation to the RFC it has updated or obsoleted.

4.2. Full Title

The title must be centered below the rest of the heading, preceded by two blank lines and followed by one blank line.

Choosing a good title for an RFC can be a challenge. A good title should fairly represent the scope and purpose of the document without being either too general or too specific and lengthy.

Abbreviations or acronyms in a title must generally be expanded when first encountered (see [Section 3.4](#)).

It is often helpful to follow the expansion with the parenthesized abbreviation, as in the following example:

Encoding Rules for the
Common Routing Encapsulation Extension Protocol (CREEP)

The RFC title may be subject to policy considerations in addition to the requirement that it provide a concise and technically sound summary of the document contents. For example, at various times in the history of the IETF, the word "Policies" as well as the phrase "The Directory" were banned from RFC titles, for various reasons.

An RFC that documents a particular company's private protocol should bear a title of the form "Foo's ... Protocol" (where Foo is a company name), to clearly differentiate it from a protocol of more general applicability.

4.3. Abstract

Every RFC must have an Abstract of a maximum of 20 lines.

The Abstract should provide a concise and comprehensive overview of the purpose and contents of the entire document, to give a technically knowledgeable reader a general overview of the function of the document.

Composing a useful Abstract generally requires thought and care. Usually an Abstract should begin with a phrase like "This memo ..." or "This document ...". A satisfactory Abstract can often be constructed in part from material within the Introduction section, but an effective Abstract may be shorter, less detailed, and perhaps

broader in scope than the Introduction. Simply copying and pasting the first few paragraphs of the Introduction is allowed, but it may result in an Abstract that is both incomplete and redundant. Note also that an Abstract is not a substitute for an Introduction; the RFC should be self-contained as if there were no Abstract.

Similarly, the Abstract should be complete in itself. It will appear in isolation in publication announcements and in the online index of RFCs. Therefore, the Abstract must not contain citations.

Abbreviations appearing in the Abstract should generally be expanded in parentheses, with the exceptions noted above (see [Section 3.4](#)). When in doubt, expand an abbreviation (refer to the online list of abbreviations [[ABBR](#)] for guidance).

[4.4.](#) RFC Editor or Stream Manager Notes

The RFC Editor or a stream manager such as the ISE, IESG, IRTF Chair, or IAB may request that an editorial note be added to an RFC. A note is generally added to explain anything unusual about the process that led to the document's publication or to note a correction.

Additionally, the RFC Editor may choose to include a note to highlight special circumstances surrounding an RFC.

[4.5.](#) Status of This Memo

The RFC Editor will supply an appropriate "Status of This Memo" section as defined in [RFC 5741](#) [[RFC5741](#)].

[4.6.](#) Copyright, Licenses, and IPR Boilerplate

The full copyright and license notices are available on the IETF Trust Legal Provisions Documents website. [[IETFTrust](#)]

[4.7.](#) Table of Contents

A Table of Contents (TOC) is required in RFCs longer than 10 pages and recommended for all RFCs. It must be positioned after the Abstract and before the Introduction section.

The TOC itself should not be too long or detailed, or it loses value. For example, if many successive TOC entries point to the same pages of the memo, the TOC granularity probably needs to be coarser.

[4.8.](#) Body of the Memo

Following the Table of Contents, if any, comes the body of the memo.

Each RFC must include an "Introduction" section that (among other things) explains the motivation for the RFC and (if appropriate) describes the applicability of the document, e.g., whether it specifies a protocol, provides a discussion of some problem, is simply of interest to the Internet community, or provides a status report on some activity. The body of the memo and the Abstract must be self-contained and separable. This may result in some duplication of text between the Abstract and the Introduction; this is acceptable.

- o Introduction

The Introduction section should always be the first section following the Table of Contents (except in the case of MIB module documents). While we recommend "Introduction", authors sometimes choose alternate titles such as "Overview" or "Background".

For MIB module documents, common practice has been for "The Internet-Standard Management Framework" [[MIBboiler](#)] text to appear as [Section 1](#).

- o Requirement Words ([RFC 2119](#))

Some documents use certain capitalized words ("MUST", "SHOULD", etc.) to specify precise requirement levels for technical features. [RFC 2119](#) [[BCP14](#)] defines a default interpretation of these capitalized words in IETF documents. If this interpretation is used, [RFC 2119](#) must be cited (as specified in [RFC 2119](#)) and included as a normative reference. Otherwise, the correct interpretation must be specified in the document.

This section must appear as part of the body of the text (as defined by this document). It must appear as part of, or subsequent to, the Introduction section.

Avoid abuse of requirement-level words. They are intended to provide guidance to implementers about specific technical features, generally governed by considerations of interoperability. [RFC 2119](#) says:

Imperatives of the type defined in this memo must be used with care and sparingly. In particular, they must only be used where it is actually required for interoperation or to limit behavior which has potential for causing harm (e.g., limiting retransmissions). For example, they must not be used to try to impose a particular method on implementers where the method is

not required for interoperability.

To simply specify a necessary logical relationship, the normal lowercase words should be used. On the other hand, if the capitalized words are used in a document, choose and use them carefully and consistently.

To forestall confusion between uppercase conformance terms and their lowercase equivalents, some authors use words and phrases such as "mandatory", "ought to", and "might" instead of "MUST", "SHOULD", and "MAY".

- o IANA Considerations Section

See "Guidelines for Writing an IANA Considerations Section in RFCs" [[BCP26](#)].

The RFC Editor will update text accordingly after the IANA assignments have been made. It is helpful for authors to clearly identify where text should be updated to reflect the newly assigned values. For example, we recommend the use of "TBD1", "TBD2", etc., in the IANA Considerations section and in the body of the document.

If the authors have provided values to be assigned by IANA, the RFC Editor will verify that the values inserted by the authors match those that have actually been registered on the IANA site. When writing a given value, consistent use of decimal or hexadecimal is recommended.

If any of the IANA-related information is not clear, the RFC Editor will work with IANA to send queries to the authors to ensure that assignments and values are properly inserted.

The RFC Editor will remove an IANA Considerations section that says there are no IANA considerations (although such a section is required in the Internet-Draft preceding the RFC).

- o Security Considerations Section

All RFCs must contain a section that discusses the security considerations relevant to the specification; see [[BCP72](#)] for more information.

- o Appendices

Many RFC documents have Appendices, which may be extensive. In

non-RFC documents, authors often position Appendices at the very end, after the references. However, RFCs that have large and dense technical Appendix sections make it difficult for a reader to find references that precede the Appendices. In such cases, putting the references later is advisable.

o References

[To be removed upon publication] This section is still under considerable discussion.

The RFC style uses one of the many variants on reference styles. See the examples in this document, and note the ordering for multiple authors: the last author listed is treated differently when referencing RFCs and I-Ds.

The RFC Editor ensures that references to other RFCs refer to the most current RFC available on that topic (unless provided with reason not to do so). It is acceptable for an obsoleted document to be listed as long as the most recent document is referenced also.

A reference to an RFC that has been assigned an STD [[RFC1311](#)], BCP [[RFC1818](#)], or FYI [[FYI90](#)] sub-series number must include the sub-series number of the document. Note: the FYI series was ended by [RFC 6360](#). RFCs that were published with an FYI sub-series number and still maintain the FYI number must include the sub-series number in the reference.

Reference lists must indicate whether each reference is normative or informative, where normative references are essential to implementing or understanding the content of the RFC, and informative references provide additional information. For example, the reference section might be split into two subsections:

s. References

s.1. Normative References

XXX
XXX

s.2. Informative References

XXX
XXX

References will generally appear in alphanumeric order by citation tag.

Normative references to Internet-Drafts will cause publication of the RFC to be suspended until the referenced draft is also ready for publication; the RFC Editor will then replace the reference by an RFC reference and publish both documents simultaneously.

URLs and DNS Names in RFCs

The use of URLs in references is acceptable as long as the URL is the most stable and direct reference possible. The URL will be verified as valid during the RFC editorial process. Personal web pages are not considered stable and will not be accepted as a reference.

DNS names, whether or not in URLs, that are used as generic examples in RFCs should use the particular examples defined in [RFC 2606](#) [[RFC2606](#)], "Reserved Top-Level DNS Names", to avoid accidental conflicts.

If a dated URL is available for a referenced webpage, its use is required.

Referencing RFCs

The following format is required for citing RFCs.

For 1 Author:

[RFCXXXX] Last name, First initial., "RFC Title",
BCP/FYI/STD ## (if applicable), RFC ####,
Date of Publication.

Example:

[RFC3080] Rose, M., "The Blocks Extensible Exchange
Protocol Core", [RFC 3080](#), March 2001.

For 2 Authors:

[RFCXXXX] Last name, First initial. and First initial,
Last name, "RFC Title", BCP/FYI/STD ##
(if applicable), RFC ####, Date of Publication.

Example:

[RFC6323] Renker, G. and G. Fairhurst, "Sender RTT

Estimate Option for the Datagram Congestion Control Protocol (DCCP)", [RFC 6323](#), July 2011.

For 3 Authors or More:

[RFCXXXX] Last name, First initial., Last name, First initial., and First initial. Last name, "RFC Title", BCP/FYI/STD ## (if applicable), RFC #####, Date of Publication.

Example:

[RFC6429] Bashyam, M., Jethanandani, M., and A. Ramaiah, "TCP Sender Clarification for Persistent Condition", [RFC 6429](#), December 2011.

Referencing Internet-Drafts

References to Internet-Drafts can only appear as Informative references. Given that several revisions of an I-D may be produced in a short time frame, references must include exact publication date, the full Internet-Draft file name, and the use the phrase "Work in Progress". If the I-D referenced has a version published as an RFC, references must also include the RFC.

Example:

[RFC-STYLE] Flanagan, H., "RFC Style Guide", Work in Progress, [draft-flanagan-style-02](#), 01 March 2012.

Referencing Errata

The following format is recommended when a reference to an errata report is necessary:

[Err1912] RFC Errata, Errata ID 1912, [RFC 2978](#), <http://www.rfc-editor.org>.

o Acknowledgments Section

This optional section may be used instead of, or in addition to, a Contributors section. It is often used by authors to publicly thank those who have provided feedback regarding a document and to note any documents from which text was borrowed.

- o Contributors Section

This optional section lists those contributors who deserve significant credit for the document. When a long author list is represented by a subset in the document header, the displaced authors can be properly and fully acknowledged in the Contributors section.

In a similar fashion to the Author/Editor section, the RFC Editor does not make the determination as to who should be listed as a contributor to an RFC. The determination of who should be listed as a contributor on an RFC is determined by stream policy.

The Contributors section may include brief statements about the nature of particular contributions ("Sam contributed [Section 3](#)"), and it may also include affiliations of listed contributors. At the discretion of the author(s), contact addresses may also be included in the Contributors section, for those contributors whose knowledge makes them useful future contacts for information about the RFC. Any contact information should be formatted similar to how the information is formatted in the Author's Address section.

[4.9.](#) "Author's Address" Section

This required section gives contact information for the author(s) listed in the first-page header.

Contact information must include at least one, and ideally would include all, of a postal address including the ISO 3166 country code, a telephone number, and a long-lived email address [[IS03166](#)]. The purpose of this section is to (1) unambiguously define author/contributor identity (e.g., the John Smith who works for FooBar Systems) and to (2) provide contact information for future readers who have questions or comments. Note that some professional societies offer long-lived email addresses for their members. Use of these long-lived addresses is recommended.

The practice of munged addresses (i.e., altering an email address to make it less readable to bots and web crawlers to avoid spam) is not appropriate in an archival document series. Author contact information is provided so that readers can easily contact the author with questions and/or comments. The practice of address munging makes it more difficult to contact the authors of a document and has not proven advantageous in deterring spam. Therefore, address munging is not allowed in RFCs.

[4.10.](#) Running Headers and Footers

RFCs always include running headers and footers (except that the first page has no running header). These are generally extracted from the standard header for the stream.

- o Running Headers

The running header in one line (on page 2 and all subsequent pages) has the RFC number on the left (RFC nnnn), the title (possibly an abbreviated title) in the center, and the publication date (Month Year) on the right.

- o Running Footers

All pages contain a one-line running footer, with the author's last name on the left, the category centered, and the page number on the right as "[Page nn]".

If there is one author, the author's last name appears as "name". If there are two authors, the form "name & name" may be used; for more than two authors, use the form "name, et al."

The headers and footers must be separated from the body by at least one and preferably two blank lines.

5. IANA Considerations

No IANA actions required

6. Security Considerations

No security considerations.

Appendix A. Related Procedures

The following procedures are related to the application and updating of the RFC Style Guide.

A.1. Dispute Resolution

At times, an author may have a disagreement with the RFC Editor over the application of the style guide conventions. In such a case, the RFC Series Editor will, with input from the appropriate stream manager, make a final determination. If further resolution is required, the dispute resolution process as described in [[RFC6635](#)] will be followed.

A.2. Returning an I-D to the Stream Manager

For a given document, if the RFC Editor determines that it cannot be edited without serious risk of altering the meaning of the technical content or if the RFC Editor does not have the resources to provide the level of editing it needs, it may be sent back to the stream manager with a request to improve the clarity, consistency, and/or readability of the document. This is not to be considered a dispute with the author.

A.3. Revising This Document and Associated Web Pages

The RFC Series is continually evolving as a document series. This document focuses on the fundamental and stable requirements that must be met by an RFC. From time to time, the RFC Editor may offer less formal recommendations that authors may apply at their discretion; these recommendations may be found on the RFC Editor website "Guidelines for RFC Style" [[StyleWebDRAFT](#)].

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Acknowledgements

This document refers heavily to [RFC 2223](#) and RFC 2223bis, and as such we are grateful to the authors of that document for their time and effort in to the RFC Series.

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