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Temporary RFC Series Project Manager

The "xml2rfc" version 3 Vocabulary as Implemented

Abstract

This document describes the "xml2rfc" version 3 vocabulary as implemented in xml2rfc tools at the time of publication.

Editorial Note

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

Discussion of this draft takes place on the rfc-interest@ietf.org mailing list, which has its home page at <<https://www.ietf.org/mailman/listinfo/rfc-interest>>.

Source code and issues list for this draft can be found at <<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented>>.

The changes in this draft are summarized in [Appendix E.5](#).

Status of This Memo

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1. Introduction

This document describes the updated version 3 ("v3") of the "xml2rfc" vocabulary as implemented in xml2rfc tools at the time of publication.

The v3 format is used as part of the new RFC Series format described in [[RFC6949](#)]. The new format is handled by existing tools for preparing the XML and converting it to other representations. Features of the tools are described in [Appendix B](#). That section defines some terms used throughout this document, such as "prep tool" and "formatter".

Note that the vocabulary contains certain constructs that might not be used when generating the final text; however, they can provide useful data for other uses (such as index generation, populating a keyword database, or syntax checks).

In this document, the term "format" is used when describing types of documents, primarily XML and HTML. The term "representation" is used when talking about a specific instantiation of a format, such as an XML document or an HTML document that was created by an XML document.

1.1. Differences from RFC 7991 in This Document

This is a (hopefully) complete list of all the technical changes between [[RFC7991](#)] and this document.

- *Allow `<blockquote>` as a child of `<aside>` and `<li>`.

- *Removed "It is an error to have both a "src" attribute and content in the `<artwork>` element." from [Section 3.6.6](#).

- *Added `<u>` element.

- *Changed the "hanging" attribute of `<dl>` to "newline".

- *Added the "indent" attribute to `<dl>`.

- *Added the "align" attribute to `<table>`. Made the table title centered under the table.

- *The `<name>` element now allows many more elements inside of it.

- *Redefined `<references>` to allow `<references>` within it. In the typical case, an outer `<references>` will be used to hold an inner `<references>` for normative references and an inner `<references>` to hold informative references.

- *Un-deprecated metadata attributes on the `<rfc>` element (with the intent to restore v2 semantics of `<seriesInfo>` as well).

- *Added `<contact>` element.

- *Allowed multiple `<email>` elements in `<address>`.

*Added "markers" attribute to <sourcecode> element.

*Added "brackets" attribute to <eref> element.

*Added <toc> element, added grammar to allow authors section at the end.

1.2. New Attributes for Existing Elements

*Add "sortRefs", "symRefs", "tocDepth", and "tocInclude" attributes to <[rfc](#)> to cover Processing Instructions (PIs) that were in v2 that are still needed in the grammar. Add "prepTime" to indicate the time that the XML went through a preparation step. Add "version" to indicate the version of xml2rfc vocabulary used in the document. Add "scripts" to indicate which scripts are needed to render the document. Add "expiresDate" when an Internet-Draft expires.

*Add "ascii" attributes to <[email](#)>, <[organization](#)>, <[street](#)>, <[city](#)>, <[region](#)>, <[country](#)>, and <[code](#)>. Also add "asciiFullname", "asciiInitials", and "asciiSurname" to <[author](#)>. This allows an author to specify their information in their native scripts as the primary entry and still allow the ASCII-equivalent values to appear in the processed documents.

*Add "anchor" attributes to many block elements to allow them to be linked with <[relref](#)> and <[xref](#)>.

*Add the "section", "relative", and "sectionFormat" attributes to <[xref](#)>.

*Add the "numbered" and "removeInRFC" attributes to <[section](#)>.

*Add the "removeInRFC" attribute to <[note](#)>.

*Add "pn" to <[artwork](#)>, <[aside](#)>, <[blockquote](#)>, <[boilerplate](#)>, <[dt](#)>, <[figure](#)>, <[iref](#)>, <[li](#)>, <[references](#)>, <[section](#)>, <[sourcecode](#)>, <[t](#)>, and <[table](#)> to hold automatically generated numbers for items in a section that don't have their own numbering (namely figures and tables).

*Add "display" to <[cref](#)> to indicate to tools whether or not to display the comment.

*Add "keepWithNext" and "keepWithPrevious" to <[t](#)> as a hint to tools that do pagination that they should try to keep the paragraph with the next/previous element.

*Add "indent" to <[t](#)> to allow for explicitly indented paragraphs.

1.3. Elements and Attributes Deprecated from Original v3

These elements were present in the original vocabulary for v3 but have been deprecated. They may be removed from tools in the future. Deprecated attributes are still listed in [Section 3](#), and deprecated elements are listed in [Section 4](#).

*Deprecate [<city>](#), [<cityarea>](#), [<code>](#), [<extaddr>](#), [<pobox>](#), [<region>](#), [<sortingcode>](#), and [<street>](#) in favor of [<postalLine>](#). These elements require an unsupported external library to format.

*Deprecate [<relref>](#), in favor of [<xref>](#).

1.4. Elements and Attributes Deprecated from v2

Deprecated elements and attributes are legacy vocabulary from v2 that are supported for input to v3 tools. They are likely to be removed from those tools in the future. Deprecated attributes are still listed in [Section 3](#), and deprecated elements are listed in [Section 4](#). See [Appendix B](#) for more information on tools and how they will handle deprecated features.

*Deprecate [<list>](#) in favor of [<dl>](#), [](#), and [](#).

*Deprecate [<spanx>](#); replace it with [](#), [](#), and [<tt>](#).

*Deprecate [<vspace>](#) because the major use for it, creating pseudo-paragraph-breaks in lists, is now handled properly.

*Deprecate [<texttable>](#), [<ttcol>](#), and [<c>](#); replace them with the new table elements ([<table>](#) and the elements that can be contained within it).

*Deprecate [<facsimile>](#) because it is rarely used.

*Deprecate [<format>](#) because it is not useful and has caused surprise for authors in the past. If the goal is to provide a single URI (Uniform Resource Identifier) for a reference, use the "target" attribute in [<reference>](#) instead.

*Deprecate [<preamble>](#) and [<postamble>](#) in favor of simply using [<t>](#) before or after the figure. This also deprecates the "align" attribute in [<figure>](#).

*Deprecate the "title" attribute in [<section>](#), [<note>](#), [<figure>](#), [<references>](#), and [<texttable>](#) in favor of the new [<name>](#).

*Deprecate the "alt" and "src" attributes in [<figure>](#) because they overlap with the attributes in [<artwork>](#).

*Deprecate the "xml:space" attribute in `<artwork>` because there was only one useful value. Deprecate the "height" and "width" attributes in both `<artwork>` and `<figure>` because they are not needed for the new output formats.

*Deprecate the "pageno" attribute in `<xref>` because it was unused in v2.

1.5. Additional Changes from v2

*Allow non-ASCII characters in the format; the characters that are actually allowed will be determined by the RFC Series Editor.

*Allow `<artwork>` and `<sourcecode>` to be used on their own in `<section>` (no longer confine them to a figure).

*Give more specifics of handling the "type" attribute in `<artwork>`.

*Allow `<strong>`, `<em>`, `<tt>`, `<eref>`, and `<xref>` in `<cref>`.

*Allow the sub-elements inside a `<reference>` to be in any order.

*Turn off the autogeneration of anchors in `<cref>` because there is no use case for them that cannot be achieved in other ways.

*Allow more than one `<artwork>`, or more than one `<sourcecode>`, in `<figure>`.

*In `<front>`, make `<date>` optional.

*In `<date>`, add restrictions to the "date" and "year" attributes when used in the `<front>` for the document's boilerplate text.

*In `<postal>`, allow the sub-elements to be in any order. Also allow the inclusion of the new `<postalLine>` instead of the older elements.

*In `<section>`, restrict the names of the anchors that can be used on some types of sections.

*Make `<seriesInfo>` a child of `<front>`, and deprecated it as a child of `<reference>`.

*`<t>` now only contains non-block elements, so it no longer contains `<figure>` elements.

*Do not generate the grammar from a DTD, but instead get it directly from the RELAX Next Generation (RNG) grammar [RNG].

2. Syntax Notation

The XML vocabulary here is defined in prose, based on the RELAX NG schema [[RNC](#)] contained in [Appendix C](#) (specified in RELAX NG Compact Notation (RNC)).

Note that the schema can be used for automated validity checks, but certain constraints are only described in prose (example: the conditionally required presence of the "abbrev" attribute).

3. Elements

The sections below describe all elements and their attributes.

Note that attributes not labeled "mandatory" are optional.

Many elements have an optional "anchor" attribute. In all cases, the value of the "anchor" attribute needs to be a valid XML "Name" ([Section 2.3](#) of [[XML](#)]), additionally constrained to US-ASCII characters [[USASCII](#)]. Thus, the character repertoire consists of "A-Z", "a-z", "0-9", "_", "-", ".", and ":", where "0-9", ".", and "-" are disallowed as start characters. Anchors are described in more detail in [Appendix B.2](#).

Tools interpreting the XML described here will collapse horizontal whitespace and line breaks to a single whitespace (except inside `<artwork>` and `<sourcecode>`) and will trim leading and trailing whitespace. Tab characters (U+0009) inside `<artwork>` and `<sourcecode>` are prohibited.

Some of the elements have attributes that are not described in this section because those attributes are specific to the prep tool. People writing tools to process this format should read all of the appendices for a complete description of these attributes.

Every element in the v3 vocabulary can have an "xml:lang" attribute, an "xml:base" attribute, or both. The xml:lang attribute specifies the language used in the element. This is sometimes useful for renderers that display different fonts for ideographic characters used in China and Japan. The xml:base attribute is sometimes added to an XML file when doing XML-to-XML conversion where the base file has XInclude attributes (see [Appendix B.1](#)).

3.1. `<abstract>`

Contains the Abstract of the document. See [[RFC7322](#)] for more information on restrictions for the Abstract.

This element appears as a child element of `<front>` ([Section 3.26](#)).

Content model:

In any order, but at least one of:

*<[dl](#)> elements ([Section 3.20](#))

*<[ol](#)> elements ([Section 3.34](#))

*<[t](#)> elements ([Section 3.51](#))

*<[ul](#)> elements ([Section 3.63](#))

3.1.1. "anchor" Attribute

Document-wide unique identifier for the Abstract.

3.2. <address>

Provides address information for the author.

This element appears as a child element of <[author](#)> ([Section 3.8](#)) and <[contact](#)> ([Section 3.14](#)).

Content model:

In this order:

1. One optional <[postal](#)> element ([Section 3.37](#))
2. One optional <[phone](#)> element ([Section 3.36](#))
3. One optional <[facsimile](#)> element ([Section 4.6](#))
4. Optional <[email](#)> elements ([Section 3.23](#))
5. One optional <[uri](#)> element ([Section 3.64](#))

3.3. <annotation>

Provides additional prose augmenting a bibliographic reference. This text is intended to be shown after the rest of the generated reference text.

This element appears as a child element of <[reference](#)> ([Section 3.40](#)).

Content model:

In any order:

- *Text
- *<[bcp14](#)> elements ([Section 3.10](#))
- *<[cref](#)> elements ([Section 3.16](#))
- *<[em](#)> elements ([Section 3.22](#))
- *<[eref](#)> elements ([Section 3.24](#))
- *<[iref](#)> elements ([Section 3.27](#))
- *<[relref](#)> elements ([Section 4.13](#))
- *<[spanx](#)> elements ([Section 4.15](#))
- *<[strong](#)> elements ([Section 3.48](#))
- *<[sub](#)> elements ([Section 3.49](#))
- *<[sup](#)> elements ([Section 3.50](#))
- *<[tt](#)> elements ([Section 3.61](#))
- *<[u](#)> elements ([Section 3.62](#))
- *<[xref](#)> elements ([Section 3.66](#))

3.4. <area>

Provides information about the IETF area to which this document relates (currently not used when generating documents).

The value ought to be either the full name or the abbreviation of one of the IETF areas as listed on <<http://www.ietf.org/iesg/area.html>>. A list of full names and abbreviations will be kept by the RFC Series Editor.

This element appears as a child element of <[front](#)> ([Section 3.26](#)).

Content model: only text content.

3.5. <artset>

This element allows for the support of alternative artwork formats. This will allow the renderer to pick the most appropriate <artwork> instance for its format from the alternatives present within an

<artset> element. Each of the <artwork> elements must have a "type" attribute.

If more than one <artwork> element is found within an <artset> element, with the same "type" attribute, the rendere could select the first one, or possibly choose between the alternative instances based on the output format and some quality of the alternative instances that made one more suitable than the other for that particular format, such as size, aspect ration, etc.

This element appears as a child element of <aside> ([Section 3.7](#)), <blockquote> ([Section 3.11](#)), <dd> ([Section 3.18](#)), <figure> ([Section 3.25](#)), ([Section 3.29](#)), <section> ([Section 3.44](#)), <td> ([Section 3.54](#)), and <th> ([Section 3.56](#)).

Content model:

One or more <artwork> elements ([Section 3.6](#))

3.5.1. "anchor" Attribute

Same as for the <artwork> element ([Section 3.6](#)).

3.6. <artwork>

This element allows the inclusion of "artwork" in the document. <artwork> provides full control of horizontal whitespace and line breaks; thus, it is used for a variety of things, such as diagrams ("line art") and protocol unit diagrams. Tab characters (U+0009) inside of this element are prohibited.

Alternatively, the "src" attribute allows referencing an external graphics file, such as a vector drawing in SVG or a bitmap graphic file, using a URI. In this case, the textual content acts as a fallback for output representations that do not support graphics; thus, it ought to contain either (1) a "line art" variant of the graphics or (2) prose that describes the included image in sufficient detail.

In [[RFC7749](#)], the <artwork> element was also used for source code and formal languages; in v3, this is now done with <sourcecode>.

There are at least five ways to include SVG in artwork in Internet-Drafts:

- *Inline, by including all of the SVG in the content of the element, such as: <artwork type="svg"><svg xmlns="http://www.w3.org/2000/svg...">

*Inline, but using XInclude (see [Appendix B.1](#)), such as: `<artwork type="svg"><xi:include href=...>`

*As a data: URI, such as: `<artwork type="svg" src="data:image/svg+xml,%3Csvg%20xmlns%3D%22http%3A%2F%2Fwww.w3...">`

*As a URI to an external entity, such as: `<artwork type="svg" src="http://www.example.com/...">`

*As a local file, such as: `<artwork type="svg" src="diagram12.svg">`

The use of SVG in Internet-Drafts and RFCs is covered in much more detail in [[RFC7996](#)].

The above methods for inclusion of SVG art can also be used for including text artwork, but using a data: URI is probably confusing for text artwork.

Formatters that do pagination should attempt to keep artwork on a single page. This is to prevent artwork that is split across pages from looking like two separate pieces of artwork.

See [Section 6](#) for a description of how to deal with issues of using "&" and "<" characters in artwork.

This element appears as a child element of `<artset>` ([Section 3.5](#)), `<aside>` ([Section 3.7](#)), `<blockquote>` ([Section 3.11](#)), `<dd>` ([Section 3.18](#)), `<figure>` ([Section 3.25](#)), `<li>` ([Section 3.29](#)), `<section>` ([Section 3.44](#)), `<td>` ([Section 3.54](#)), and `<th>` ([Section 3.56](#)).

Content model:

Either:

Text

Or:

`<svg>` elements ([Section 5](#))

3.6.1. "align" Attribute

Controls whether the artwork appears left justified (default), centered, or right justified. Artwork is aligned relative to the left margin of the document.

Allowed values:

*"left" (default)

*"center"

*"right"

3.6.2. "alt" Attribute

Alternative text description of the artwork (which is more than just a summary or caption). When the art comes from the "src" attribute and the format of that artwork supports alternate text, the alternative text comes from the text of the artwork itself, not from this attribute. The contents of this attribute are important to readers who are visually impaired, as well as those reading on devices that cannot show the artwork well, or at all.

3.6.3. "anchor" Attribute

Document-wide unique identifier for this artwork.

3.6.4. "height" Attribute

Deprecated.

3.6.5. "name" Attribute

A filename suitable for the contents (such as for extraction to a local file). This attribute can be helpful for other kinds of tools (such as automated syntax checkers, which work by extracting the artwork). Note that the "name" attribute does not need to be unique for <[artwork](#)> elements in a document. If multiple <[artwork](#)> elements have the same "name" attribute, a processing tool might assume that the elements are all fragments of a single file, and the tool can collect those fragments for later processing. See [Section 8](#) for a discussion of possible problems with the value of this attribute.

3.6.6. "src" Attribute

The URI reference of a graphics file [[RFC3986](#)], or the name of a file on the local disk. This can be a "data" URI [[RFC2397](#)] that contains the contents of the graphics file. Note that the inclusion of art with the "src" attribute depends on the capabilities of the processing tool reading the XML document. Tools need to be able to

handle the file: URI, and they should be able to handle http: and https: URIs as well. The prep tool will be able to handle reading the "src" attribute.

If no URI scheme is given in the attribute, the attribute is considered to be a local filename relative to the current directory. Processing tools must be careful to not accept dangerous values for the filename, particularly those that contain absolute references outside the current directory. Document creators should think hard before using relative URIs due to possible later problems if files move around on the disk. Also, documents should most likely use explicit URI schemes wherever possible.

In some cases, the prep tool may remove the "src" attribute after processing its value. See [[RFC7998](#)] for a description of this.

3.6.7. "type" Attribute

Specifies the type of the artwork. The value of this attribute is free text with certain values designated as preferred.

The preferred values for <artwork> types are:

*ascii-art

*binary-art

*call-flow

*hex-dump

*svg

The RFC Series Editor maintains a complete list of the preferred values on the RFC Editor web site, and that list is expected to be updated over time. Thus, a consumer of v3 XML should not cause a failure when it encounters an unexpected type or no type is specified. The table will also indicate which type of art can appear in plain-text output (for example, type="svg" cannot).

3.6.8. "width" Attribute

Deprecated.

3.6.9. "xml:space" Attribute

Deprecated.

3.7. <aside>

This element is a container for content that is semantically less important or tangential to the content that surrounds it.

This element appears as a child element of <dd> ([Section 3.18](#)), ([Section 3.29](#)), and <section> ([Section 3.44](#)).

Content model:

In any order:

- *<artset> elements ([Section 3.5](#))
- *<artwork> elements ([Section 3.6](#))
- *<blockquote> elements ([Section 3.11](#))
- *<dl> elements ([Section 3.20](#))
- *<figure> elements ([Section 3.25](#))
- *<ieref> elements ([Section 3.27](#))
- * elements ([Section 3.34](#))
- *<t> elements ([Section 3.51](#))
- *<table> elements ([Section 3.52](#))
- * elements ([Section 3.63](#))

3.7.1. "anchor" Attribute

Document-wide unique identifier for this aside.

3.8. <author>

Provides information about a document's author. This is used both for the document itself (at the beginning of the document) and for referenced documents.

The <author> elements contained within the document's <front> element are used to fill the boilerplate and also to generate the "Author's Address" section (see [[RFC7322](#)]).

Note that an "author" can also be just an organization (by not specifying any of the "name" attributes, but adding the [<organization>](#) child element).

Furthermore, the "role" attribute can be used to mark an author as "editor". This is reflected both on the front page and in the "Author's Address" section, as well as in bibliographic references. Note that this specification does not define a precise meaning for the term "editor".

This element appears as a child element of [<front>](#) ([Section 3.26](#)) and [<section>](#) ([Section 3.44](#)).

Content model:

In this order:

1. One optional [<organization>](#) element ([Section 3.35](#))
2. One optional [<address>](#) element ([Section 3.2](#))

3.8.1. "anchor" Attribute

Document-wide unique identifier for this `<author>` element.

3.8.2. "asciiFullname" Attribute

The ASCII equivalent of the author's full name.

3.8.3. "asciiInitials" Attribute

The ASCII equivalent of the author's initials, to be used in conjunction with the separately specified `asciiSurname`.

3.8.4. "asciiSurname" Attribute

The ASCII equivalent of the author's surname, to be used in conjunction with the separately specified `asciiInitials`.

3.8.5. "fullname" Attribute

The full name (used in the automatically generated "Author's Address" section). Although this attribute is optional, if one or more of the `"asciiFullname"`, `"asciiInitials"`, or `"asciiSurname"` attributes have values, the `"fullname"` attribute is required.

3.8.6. "initials" Attribute

An abbreviated variant of the given name(s), to be used in conjunction with the separately specified surname. It usually appears on the front page, in footers, and in references.

Some processors will post-process the value -- for instance, when it only contains a single letter (in which case they might add a trailing dot). Relying on this kind of post-processing can lead to results varying across formatters and thus ought to be avoided.

3.8.7. "role" Attribute

Specifies the role the author had in creating the document.

3.8.8. "surname" Attribute

The author's surname, to be used in conjunction with the separately specified initials. It usually appears on the front page, in footers, and in references.

3.9. <back>

Contains the "back" part of the document: the references and appendices. In <back>, <[section](#)> elements indicate appendices.

This element appears as a child element of <[rfc](#)> ([Section 3.43](#)).

Content model:

In this order:

1. Optional <[displayreference](#)> elements ([Section 3.19](#))
2. Optional <[references](#)> elements ([Section 3.42](#))
3. Optional <[section](#)> elements ([Section 3.44](#))

3.10. <bcp14>

Marks text that are phrases defined in [[BCP14](#)] such as "MUST", "SHOULD NOT", and so on. When shown in some of the output representations, the text in this element might be highlighted. The use of this element is optional.

This element is only to be used around the actual phrase from BCP 14, not the full definition of a requirement. For example, it is correct to say "The packet <bcp14>MUST</bcp14> be dropped.", but it is not correct to say "<bcp14>The packet MUST be dropped.</bcp14>".

This element appears as a child element of <[annotation](#)> ([Section 3.3](#)), <[blockquote](#)> ([Section 3.11](#)), <[dd](#)> ([Section 3.18](#)), <[dt](#)> ([Section 3.21](#)), <[em](#)> ([Section 3.22](#)), <[li](#)> ([Section 3.29](#)), <[name](#)> ([Section 3.32](#)), <[preamble](#)> ([Section 4.11](#)), <[refcontent](#)> ([Section 3.39](#)), <[strong](#)> ([Section 3.48](#)), <[sub](#)> ([Section 3.49](#)), <[sup](#)> ([Section 3.50](#)), <[t](#)> ([Section 3.51](#)), <[td](#)> ([Section 3.54](#)), <[th](#)> ([Section 3.56](#)), and <[tt](#)> ([Section 3.61](#)).

Content model: only text content.

3.11. <**blockquote**>

Specifies that a block of text is a quotation.

This element appears as a child element of <[aside](#)> ([Section 3.7](#)), <[dd](#)> ([Section 3.18](#)), <[li](#)> ([Section 3.29](#)), and <[section](#)> ([Section 3.44](#)).

Content model:

Either:

In any order, but at least one of:

- <[artset](#)> elements ([Section 3.5](#))
- <[artwork](#)> elements ([Section 3.6](#))
- <[dl](#)> elements ([Section 3.20](#))
- <[figure](#)> elements ([Section 3.25](#))
- <[ol](#)> elements ([Section 3.34](#))
- <[sourcecode](#)> elements ([Section 3.46](#))
- <[t](#)> elements ([Section 3.51](#))
- <[ul](#)> elements ([Section 3.63](#))

Or:

In any order, but at least one of:

- Text

-<[bcp14](#)> elements ([Section 3.10](#))

-<[br](#)> elements ([Section 3.13](#))

-<[cref](#)> elements ([Section 3.16](#))

-<[em](#)> elements ([Section 3.22](#))

-<[eref](#)> elements ([Section 3.24](#))

-<[iref](#)> elements ([Section 3.27](#))

-<[relref](#)> elements ([Section 4.13](#))

-<[strong](#)> elements ([Section 3.48](#))

-<[sub](#)> elements ([Section 3.49](#))

-<[sup](#)> elements ([Section 3.50](#))

-<[tt](#)> elements ([Section 3.61](#))

-<[u](#)> elements ([Section 3.62](#))

-<[xref](#)> elements ([Section 3.66](#))

3.11.1. "anchor" Attribute

Document-wide unique identifier for this quotation.

3.11.2. "cite" Attribute

The source of the citation. This must be a URI. If the "quotedFrom" attribute is given, this URI will be used by processing tools as the link for the text of that attribute.

3.11.3. "quotedFrom" Attribute

Name of person or document the text in this element is quoted from. A formatter should render this as visible text at the end of the quotation.

3.12. <boilerplate>

Holds the boilerplate text for the document. This element is filled in by the prep tool.

This element contains [<section>](#) elements. Every [<section>](#) element in this element must have the "numbered" attribute set to "false".

This element appears as a child element of [<front>](#) ([Section 3.26](#)).

Content model:

One or more [<section>](#) elements ([Section 3.44](#))

3.13. [
](#)

Forces a line break. Since the layout and column widths of a document vary from one rendering to another, authors should use this element sparingly and consider its effect in all of the likely renderings. In some cases a U+200B, ZERO WIDTH SPACE character as a hint as a place where a block of text might be broken is a better choice.

This element appears as a child element of [<blockquote>](#) ([Section 3.11](#)), [<cref>](#) ([Section 3.16](#)), [<dd>](#) ([Section 3.18](#)), [<dt>](#) ([Section 3.21](#)), [](#) ([Section 3.22](#)), [](#) ([Section 3.29](#)), [<name>](#) ([Section 3.32](#)), [](#) ([Section 3.48](#)), [<t>](#) ([Section 3.51](#)), [<td>](#) ([Section 3.54](#)), [<th>](#) ([Section 3.56](#)), [<title>](#) ([Section 3.58](#)), and [<tt>](#) ([Section 3.61](#)).

Content model: this element does not have any contents.

3.14. [<contact>](#)

Provides information about a contact, such as a contributor to be mentioned in an "Acknowledgements" section.

This element appears as a child element of [<section>](#) ([Section 3.44](#)) and [<t>](#) ([Section 3.51](#)).

Content model:

In this order:

1. One optional [<organization>](#) element ([Section 3.35](#))
2. One optional [<address>](#) element ([Section 3.2](#))

3.14.1. "anchor" Attribute

Document-wide unique identifier for this comment.

3.14.2. "asciiFullname" Attribute

See the corresponding attribute on `<author>` element ([Section 3.8.2](#)).

3.14.3. "asciiInitials" Attribute

See the corresponding attribute on `<author>` element ([Section 3.8.3](#)).

3.14.4. "asciiSurname" Attribute

See the corresponding attribute on `<author>` element ([Section 3.8.4](#)).

3.14.5. "fullname" Attribute

See the corresponding attribute on `<author>` element ([Section 3.8.5](#)).

3.14.6. "initials" Attribute

See the corresponding attribute on `<author>` element ([Section 3.8.6](#)).

3.14.7. "surname" Attribute

See the corresponding attribute on `<author>` element ([Section 3.8.8](#)).

3.15. <country>

Gives the country name or code in a postal address.

This element appears as a child element of `<postal>` ([Section 3.37](#)).

Content model: only text content.

3.15.1. "ascii" Attribute

The ASCII equivalent of the country name.

3.16. <cref>

Represents a comment.

Comments can be used in a document while it is work in progress. They might appear either inline and visually highlighted, at the end of the document, or not at all, depending on the formatting tool.

This element appears as a child element of `<annotation>` ([Section 3.3](#)), `<blockquote>` ([Section 3.11](#)), `<c>` ([Section 4.1](#)), `<dd>` ([Section 3.18](#)), `<dt>` ([Section 3.21](#)), `<em>` ([Section 3.22](#)), `<li>` ([Section 3.29](#)), `<name>` ([Section 3.32](#)), `<postamble>` ([Section 4.10](#)), `<preamble>` ([Section 4.11](#)), `<strong>` ([Section 3.48](#)), `<sub>` ([Section 3.49](#)), `<sup>` ([Section 3.50](#)), `<t>` ([Section 3.51](#)), `<td>` ([Section 3.54](#)), `<th>` ([Section 3.56](#)), `<tt>` ([Section 3.61](#)), and `<ttcol>` ([Section 4.18](#)).

Content model:

In any order:

- *Text
- *`<br>` elements ([Section 3.13](#))
- *`<em>` elements ([Section 3.22](#))
- *`<eref>` elements ([Section 3.24](#))
- *`<relref>` elements ([Section 4.13](#))
- *`<strong>` elements ([Section 3.48](#))
- *`<sub>` elements ([Section 3.49](#))
- *`<sup>` elements ([Section 3.50](#))
- *`<tt>` elements ([Section 3.61](#))
- *`<xref>` elements ([Section 3.66](#))

3.16.1. "anchor" Attribute

Document-wide unique identifier for this comment.

3.16.2. "display" Attribute

Suggests whether or not the comment should be displayed by formatting tools. This might be set to "false" if you want to keep a comment in a document after the contents of the comment have already been dealt with.

Cross-referencing ([Section 3.66](#)) a comment with "display" set to "false" is an error.

Allowed values:

*"true" (default)

*"false"

3.16.3. "source" Attribute

Holds the "source" of a comment, such as the name or the initials of the person who made the comment.

3.17. <date>

Provides information about the publication date. This element is used for two cases: the boilerplate of the document being produced, and inside bibliographic references that use the [<front>](#) element.

Boilerplate for Internet-Drafts and RFCs: This element defines the date of publication for the current document (Internet-Draft or RFC). When producing Internet-Drafts, the prep tool uses this date to compute the expiration date (see [\[IDGUIDE\]](#)). When one or more of "year", "month", or "day" are left out, the prep tool will attempt to use the current system date if the attributes that are present are consistent with that date.

In dates in [<rfc>](#) elements, the month must be a number or a month in English. The prep tool will silently change text month names to numbers. Similarly, the year must be a four-digit number.

When the prep tool is used to create Internet-Drafts, it will reject a submitted Internet-Draft that has a [<date>](#) element in the boilerplate for itself that is anything other than today. That is, the tool will not allow a submitter to specify a date other than the day of submission. To avoid this problem, authors might simply not include a [<date>](#) element in the boilerplate.

Bibliographic references: In dates in [<reference>](#) elements, the date information can have prose text for the month or year. For example, vague dates (year="ca. 2000"), date ranges (year="2012-2013"), non-specific months (month="Second quarter"), and so on are allowed.

This element appears as a child element of [<front>](#) ([Section 3.26](#)).

Content model: only text content.

3.17.1. "day" Attribute

The day of publication.

3.17.2. "month" Attribute

The month or months of publication.

3.17.3. "year" Attribute

The year or years of publication.

3.18. <dd>

The definition part of an entry in a definition list.

This element appears as a child element of [<dl>](#) ([Section 3.20](#)).

Content model:

Either:

In any order, but at least one of:

- <[artset](#)> elements ([Section 3.5](#))
- <[artwork](#)> elements ([Section 3.6](#))
- <[aside](#)> elements ([Section 3.7](#))
- <[blockquote](#)> elements ([Section 3.11](#))
- <[dl](#)> elements ([Section 3.20](#))
- <[figure](#)> elements ([Section 3.25](#))
- <[ol](#)> elements ([Section 3.34](#))
- <[sourcecode](#)> elements ([Section 3.46](#))
- <[t](#)> elements ([Section 3.51](#))
- <[table](#)> elements ([Section 3.52](#))
- <[ul](#)> elements ([Section 3.63](#))

Or:

In any order, but at least one of:

- Text
- <[bcp14](#)> elements ([Section 3.10](#))
- <[br](#)> elements ([Section 3.13](#))
- <[cref](#)> elements ([Section 3.16](#))
- <[em](#)> elements ([Section 3.22](#))
- <[eref](#)> elements ([Section 3.24](#))
- <[iref](#)> elements ([Section 3.27](#))
- <[relref](#)> elements ([Section 4.13](#))
- <[strong](#)> elements ([Section 3.48](#))
- <[sub](#)> elements ([Section 3.49](#))
- <[sup](#)> elements ([Section 3.50](#))
- <[tt](#)> elements ([Section 3.61](#))
- <[u](#)> elements ([Section 3.62](#))
- <[xref](#)> elements ([Section 3.66](#))

3.18.1. "anchor" Attribute

Document-wide unique identifier for this definition.

3.19. <displayreference>

This element gives a mapping between the anchor of a reference and a name that will be displayed instead. This allows authors to display more mnemonic anchor names for automatically included references. The mapping in this element only applies to <[xref](#)> elements whose format is "default". For example, if the reference uses the anchor "RFC6949", the following would cause that anchor in the body of displayed documents to be "RFC-dev":

```
<displayreference target="RFC6949" to="RFC-dev"/>
```

Figure 1

If a reference section is sorted, this element changes the sort order.

Prep tools add a "derivedAnchor" attribute to the corresponding [<reference>](#) element with the display anchor.

This element appears as a child element of [<back>](#) ([Section 3.9](#)).

Content model: this element does not have any contents.

3.19.1. "target" Attribute (*Mandatory*)

This attribute must be the name of an anchor in a [<reference>](#) or [<referencegroup>](#) element.

3.19.2. "to" Attribute (*Mandatory*)

This attribute is a name that will be displayed as the anchor instead of the anchor that is given in the [<reference>](#) element. The string given must start with one of the following characters: 0-9, a-z, or A-Z. The other characters in the string must be 0-9, a-z, A-Z, "-", ".", or "_".

3.20. <dl>

A definition list. Each entry has a pair of elements: a term ([<dt>](#)) and a definition ([<dd>](#)). (This is slightly different and simpler than the model used in HTML, which allows for multiple terms for a single definition.)

This element appears as a child element of [<abstract>](#) ([Section 3.1](#)), [<aside>](#) ([Section 3.7](#)), [<blockquote>](#) ([Section 3.11](#)), [<dd>](#) ([Section 3.18](#)), [](#) ([Section 3.29](#)), [<note>](#) ([Section 3.33](#)), [<section>](#) ([Section 3.44](#)), [<td>](#) ([Section 3.54](#)), and [<th>](#) ([Section 3.56](#)).

Content model:

One or more sequences of:

1. One [<dt>](#) element
2. One [<dd>](#) element

3.20.1. "anchor" Attribute

Document-wide unique identifier for the list.

3.20.2. "indent" Attribute

Default value: 3

Indicates the indentation to be used for the rendering of the second and following lines of the item (the first line starts with the term, and is not indented). The indentation amount is interpreted as characters when rendering plain-text documents, and en-space units when rendering in formats that have richer typographic support such as HTML or PDF. One en-space is assumed to be the length of 0.5 em-space in CSS units.

3.20.3. "newline" Attribute

The "newline" attribute defines whether or not the term appears on the same line as the definition. `newline="false"` indicates that the term is to the left of the definition, while `newline="true"` indicates that the term will be on a separate line.

Allowed values:

`*"false"` (default)

`*"true"`

3.20.4. "spacing" Attribute

Defines whether or not there is a blank line between entries. `spacing="normal"` indicates a single blank line, while `spacing="compact"` indicates no space between.

Allowed values:

`*"normal"` (default)

`*"compact"`

3.21. <dt>

The term being defined in a definition list.

This element appears as a child element of `<dl>` ([Section 3.20](#)).

Content model:

In any order:

`*Text`

*<[bcp14](#)> elements ([Section 3.10](#))

*<[br](#)> elements ([Section 3.13](#))

*<[cref](#)> elements ([Section 3.16](#))

*<[em](#)> elements ([Section 3.22](#))

*<[eref](#)> elements ([Section 3.24](#))

*<[iref](#)> elements ([Section 3.27](#))

*<[relref](#)> elements ([Section 4.13](#))

*<[strong](#)> elements ([Section 3.48](#))

*<[sub](#)> elements ([Section 3.49](#))

*<[sup](#)> elements ([Section 3.50](#))

*<[tt](#)> elements ([Section 3.61](#))

*<[xref](#)> elements ([Section 3.66](#))

3.21.1. "anchor" Attribute

Document-wide unique identifier for this term.

3.22.

Indicates text that is semantically emphasized. Text enclosed within this element will be displayed as italic after processing. This element can be combined with other character formatting elements, and the formatting will be additive.

This element appears as a child element of <[annotation](#)> ([Section 3.3](#)), <[blockquote](#)> ([Section 3.11](#)), <[cref](#)> ([Section 3.16](#)), <[dd](#)> ([Section 3.18](#)), <[dt](#)> ([Section 3.21](#)), <[li](#)> ([Section 3.29](#)), <[name](#)> ([Section 3.32](#)), <[preamble](#)> ([Section 4.11](#)), <[refcontent](#)> ([Section 3.39](#)), <[strong](#)> ([Section 3.48](#)), <[sub](#)> ([Section 3.49](#)), <[sup](#)> ([Section 3.50](#)), <[t](#)> ([Section 3.51](#)), <[td](#)> ([Section 3.54](#)), <[th](#)> ([Section 3.56](#)), <[tt](#)> ([Section 3.61](#)), and <[xref](#)> ([Section 3.66](#)).

Content model:

In any order:

*Text

- *<[bcp14](#)> elements ([Section 3.10](#))
- *<[br](#)> elements ([Section 3.13](#))
- *<[cref](#)> elements ([Section 3.16](#))
- *<[eref](#)> elements ([Section 3.24](#))
- *<[iref](#)> elements ([Section 3.27](#))
- *<[relref](#)> elements ([Section 4.13](#))
- *<[strong](#)> elements ([Section 3.48](#))
- *<[sub](#)> elements ([Section 3.49](#))
- *<[sup](#)> elements ([Section 3.50](#))
- *<[tt](#)> elements ([Section 3.61](#))
- *<[xref](#)> elements ([Section 3.66](#))

3.23. <email>

Provides an email address.

The value is expected to be the addr-spec defined in [Section 2](#) of [\[RFC6068\]](#).

This element appears as a child element of <[address](#)> ([Section 3.2](#)).

Content model: only text content.

3.23.1. "ascii" Attribute

The ASCII equivalent of the author's email address. This is only used if the email address has any internationalized components.

3.24. <eref>

Represents an "external" link (as specified in the "target" attribute). This is useful for embedding URIs in the body of a document.

If the <eref> element has non-empty text content, formatters should use the content as the displayed text that is linked. Otherwise, the formatter should use the value of the "target" attribute as the displayed text. Formatters will link the displayed text to the value

of the "target" attribute in a manner appropriate for the output format.

For example, with an input of:

This is described at

`<eref target="http://www.example.com/reports/r12.html"/>.`

An HTML formatter might generate:

This is described at

`
http://www.example.com/reports/r12.html.`

With an input of:

This is described

`<eref target="http://www.example.com/reports/r12.html">
in this interesting report</eref>.`

An HTML formatter might generate:

This is described

`
in this interesting report.`

This element appears as a child element of `<annotation>` ([Section 3.3](#)), `<blockquote>` ([Section 3.11](#)), `<c>` ([Section 4.1](#)), `<cref>` ([Section 3.16](#)), `<dd>` ([Section 3.18](#)), `<dt>` ([Section 3.21](#)), `<em>` ([Section 3.22](#)), `<li>` ([Section 3.29](#)), `<name>` ([Section 3.32](#)), `<postamble>` ([Section 4.10](#)), `<preamble>` ([Section 4.11](#)), `<strong>` ([Section 3.48](#)), `<sub>` ([Section 3.49](#)), `<sup>` ([Section 3.50](#)), `<t>` ([Section 3.51](#)), `<td>` ([Section 3.54](#)), `<th>` ([Section 3.56](#)), `<tt>` ([Section 3.61](#)), and `<ttcol>` ([Section 4.18](#)).

Content model: only text content.

3.24.1. "brackets" Attribute

Determines whether the formatter should automatically enclose the URI in angle brackets ("angle") or not (default of "none").

Allowed values:

*"none" (default)

*"angle"

3.24.2. "target" Attribute (*Mandatory*)

URI of the link target [[RFC3986](#)]. This must begin with a scheme name (such as "https://") and thus not be relative to the URL of the current document.

3.25. <figure>

Contains a figure with a caption with the figure number. If the element contains a <[name](#)> element, the caption will also show that name.

This element appears as a child element of <[aside](#)> ([Section 3.7](#)), <[blockquote](#)> ([Section 3.11](#)), <[dd](#)> ([Section 3.18](#)), <[li](#)> ([Section 3.29](#)), <[section](#)> ([Section 3.44](#)), <[td](#)> ([Section 3.54](#)), and <[th](#)> ([Section 3.56](#)).

Content model:

In this order:

1. One optional <[name](#)> element ([Section 3.32](#))
2. Optional <[iref](#)> elements ([Section 3.27](#))
3. One optional <[preamble](#)> element ([Section 4.11](#))
4. In any order, but at least one of:
 - *<[artset](#)> elements ([Section 3.5](#))
 - *<[artwork](#)> elements ([Section 3.6](#))
 - *<[sourcecode](#)> elements ([Section 3.46](#))
5. One optional <[postamble](#)> element ([Section 4.10](#))

3.25.1. "align" Attribute

Deprecated.

Note: does not affect title or <[artwork](#)> alignment.

Allowed values:

- *"left" (default)
- *"center"

*"right"

3.25.2. "alt" Attribute

Deprecated - use "alt" attribute on <[artwork](#)> element instead ([Section 3.6.2](#)).

3.25.3. "anchor" Attribute

Document-wide unique identifier for this figure.

3.25.4. "height" Attribute

Deprecated - use "height" attribute on <[artwork](#)> element instead ([Section 3.6.4](#)).

3.25.5. "src" Attribute

Deprecated - use "src" attribute on <[artwork](#)> element instead ([Section 3.6.6](#)).

3.25.6. "suppress-title" Attribute

Deprecated.

Allowed values:

*"true"

*"false" (default)

3.25.7. "title" Attribute

Deprecated. Use <[name](#)> instead.

3.25.8. "width" Attribute

Deprecated - use "width" attribute on <[artwork](#)> element instead ([Section 3.6.8](#)).

3.26. <front>

Represents the "front matter": metadata (such as author information), the Abstract, and additional notes.

This element appears as a child element of `<reference>` ([Section 3.40](#)) and `<rfc>` ([Section 3.43](#)).

Content model:

In this order:

1. One `<title>` element ([Section 3.58](#))
2. Optional `<seriesInfo>` elements ([Section 3.45](#))
3. One or more `<author>` elements ([Section 3.8](#))
4. One optional `<date>` element ([Section 3.17](#))
5. Optional `<area>` elements ([Section 3.4](#))
6. Optional `<workgroup>` elements ([Section 3.65](#))
7. Optional `<keyword>` elements ([Section 3.28](#))
8. One optional `<abstract>` element ([Section 3.1](#))
9. Optional `<note>` elements ([Section 3.33](#))
10. One optional `<boilerplate>` element ([Section 3.12](#))
11. One optional `<toc>` element ([Section 3.59](#))

3.27. `<ieref>`

Provides terms for the document's index.

Index entries can be either regular entries (when just the "item" attribute is given) or nested entries (by specifying "subitem" as well), grouped under a regular entry.

Index entries generally refer to the exact place where the `<ieref>` element occurred. An exception is the occurrence as a child element of `<section>`, in which case the whole section is considered to be relevant for that index entry. In some formats, index entries of this type might be displayed as ranges.

When the prep tool is creating index content, it preserves the case of each item and subitem. The index is sorted in conventional alphabetical order disregarding case.

This element appears as a child element of `<annotation>` ([Section 3.3](#)), `<aside>` ([Section 3.7](#)), `<blockquote>` ([Section 3.11](#)), `<c>` ([Section 4.1](#)), `<dd>` ([Section 3.18](#)), `<dt>` ([Section 3.21](#)), `<em>` ([Section 3.22](#)), `<figure>` ([Section 3.25](#)), `<li>` ([Section 3.29](#)), `<name>` ([Section 3.32](#)), `<postamble>` ([Section 4.10](#)), `<preamble>` ([Section 4.11](#)), `<section>` ([Section 3.44](#)), `<strong>` ([Section 3.48](#)), `<sub>` ([Section 3.49](#)), `<sup>` ([Section 3.50](#)), `<t>` ([Section 3.51](#)), `<table>` ([Section 3.52](#)), `<td>` ([Section 3.54](#)), `<th>` ([Section 3.56](#)), `<tt>` ([Section 3.61](#)), and `<ttcol>` ([Section 4.18](#)).

Content model: this element does not have any contents.

3.27.1. "item" Attribute (*Mandatory*)

The item to include.

3.27.2. "primary" Attribute

Setting this to "true" declares the occurrence as "primary", which might cause it to be highlighted in the index. There is no restriction on the number of occurrences that can be "primary".

Allowed values:

*"true"

*"false" (default)

3.27.3. "subitem" Attribute

The subitem to include.

3.28. `<keyword>`

Specifies a keyword applicable to the document.

Note that each element should only contain a single keyword; for multiple keywords, the element can simply be repeated.

Keywords are used both in the RFC Index and in the metadata of generated document representations.

This element appears as a child element of `<front>` ([Section 3.26](#)).

Content model: only text content.

3.29. `<li>`

A list element, used in `<ol>` and `<ul>`.

This element appears as a child element of `<ol>` ([Section 3.34](#)) and `<ul>` ([Section 3.63](#)).

Content model:

Either:

In any order, but at least one of:

- `<artset>` elements ([Section 3.5](#))
- `<artwork>` elements ([Section 3.6](#))
- `<aside>` elements ([Section 3.7](#))
- `<blockquote>` elements ([Section 3.11](#))
- `<dl>` elements ([Section 3.20](#))
- `<figure>` elements ([Section 3.25](#))
- `<ol>` elements ([Section 3.34](#))
- `<sourcecode>` elements ([Section 3.46](#))
- `<t>` elements ([Section 3.51](#))
- `<table>` elements ([Section 3.52](#))
- `<ul>` elements ([Section 3.63](#))

Or:

In any order, but at least one of:

- Text
- `<bcp14>` elements ([Section 3.10](#))
- `<br>` elements ([Section 3.13](#))
- `<cref>` elements ([Section 3.16](#))
- `<em>` elements ([Section 3.22](#))
- `<eref>` elements ([Section 3.24](#))

-<[iref](#)> elements ([Section 3.27](#))

-<[relref](#)> elements ([Section 4.13](#))

-<[strong](#)> elements ([Section 3.48](#))

-<[sub](#)> elements ([Section 3.49](#))

-<[sup](#)> elements ([Section 3.50](#))

-<[tt](#)> elements ([Section 3.61](#))

-<[u](#)> elements ([Section 3.62](#))

-<[xref](#)> elements ([Section 3.66](#))

3.29.1. "anchor" Attribute

Document-wide unique identifier for this list item.

3.30. <link>

A link to an external document that is related to the RFC.

The following are the supported types of external documents that can be pointed to in a <link> element:

*The current International Standard Serial Number (ISSN) for the RFC Series. The value for the "rel" attribute is "item". The link should use the form "urn:issn:".

*The Digital Object Identifier (DOI) for this document. The value for the "rel" attribute is "describedBy". The link should use the form specified in [[RFC7669](#)]; this is expected to change in the future.

*The Internet-Draft that was submitted to the RFC Editor to become the published RFC. The value for the "rel" attribute is "convertedFrom". The link should be to an IETF-controlled web site that retains copies of Internet-Drafts.

*A representation of the document offered by the document author. The value for the "rel" attribute is "alternate". The link can be to a personally run web site.

In RFC production mode, the prep tool needs to check the values for <link> before an RFC is published. In draft production mode, the

prep tool might remove some <link> elements during the draft submission process.

This element appears as a child element of <rfc> ([Section 3.43](#)).

Content model: this element does not have any contents.

3.30.1. "href" Attribute (*Mandatory*)

The URI of the external document.

3.30.2. "rel" Attribute

The relationship of the external document to this one. The relationships are taken from the "Link Relations" registry maintained by IANA [[LINKRELATIONS](#)].

3.31. <middle>

Represents the main content of the document.

This element appears as a child element of <rfc> ([Section 3.43](#)).

Content model:

One or more <[section](#)> elements ([Section 3.44](#))

3.32. <name>

The name of the section, note, figure, or texttable. This name can indicate markup of flowing text (for example, including references or making some characters use a fixed-width font).

This element appears as a child element of <[figure](#)> ([Section 3.25](#)), <[note](#)> ([Section 3.33](#)), <[references](#)> ([Section 3.42](#)), <[section](#)> ([Section 3.44](#)), <[table](#)> ([Section 3.52](#)), and <[texttable](#)> ([Section 4.17](#)).

Content model:

In any order:

*Text

*<[bcp14](#)> elements ([Section 3.10](#))

*<[br](#)> elements ([Section 3.13](#))

*<[cref](#)> elements ([Section 3.16](#))

*<[em](#)> elements ([Section 3.22](#))

*<[eref](#)> elements ([Section 3.24](#))

*<[iref](#)> elements ([Section 3.27](#))

*<[relref](#)> elements ([Section 4.13](#))

*<[strong](#)> elements ([Section 3.48](#))

*<[sub](#)> elements ([Section 3.49](#))

*<[sup](#)> elements ([Section 3.50](#))

*<[tt](#)> elements ([Section 3.61](#))

*<[xref](#)> elements ([Section 3.66](#))

3.33. <note>

Creates an unnumbered, titled block of text that appears after the Abstract.

It is usually used for additional information to reviewers (Working Group information, mailing list, ...) or for additional publication information such as "IESG Notes".

This element appears as a child element of <[front](#)> ([Section 3.26](#)).

Content model:

In this order:

1. One optional <[name](#)> element ([Section 3.32](#))
2. In any order, but at least one of:

*<[dl](#)> elements ([Section 3.20](#))

*<[ol](#)> elements ([Section 3.34](#))

*<[t](#)> elements ([Section 3.51](#))

*<[ul](#)> elements ([Section 3.63](#))

3.33.1. "removeInRFC" Attribute

If set to "true", this note is marked in the prep tool with text indicating that it should be removed before the document is published as an RFC. That text will be "This note is to be removed before publishing as an RFC."

Allowed values:

*"true"

*"false" (default)

3.33.2. "title" Attribute

Deprecated. Use [<name>](#) instead.

3.34.

An ordered list. The labels on the items will be either a number or a letter, depending on the value of the type attribute.

This element appears as a child element of [<abstract>](#) ([Section 3.1](#)), [<aside>](#) ([Section 3.7](#)), [<blockquote>](#) ([Section 3.11](#)), [<dd>](#) ([Section 3.18](#)), [](#) ([Section 3.29](#)), [<note>](#) ([Section 3.33](#)), [<section>](#) ([Section 3.44](#)), [<td>](#) ([Section 3.54](#)), and [<th>](#) ([Section 3.56](#)).

Content model:

One or more [](#) elements ([Section 3.29](#))

3.34.1. "anchor" Attribute

Document-wide unique identifier for the list.

3.34.2. "group" Attribute

When the prep tool sees an `<ol>` element with a "group" attribute that has already been seen, it continues the numbering of the list from where the previous list with the same group name left off. If an `<ol>` element has both a "group" attribute and a "start" attribute, the group's numbering is reset to the given start value.

3.34.3. "indent" Attribute

The indentation of the list elements relative to the start of the list item number. With `indent='adaptive'`, the widest list item number determines the indentation. A numeric value is interpreted as

characters when rendering plain-text documents, and en-space units otherwise. Only non-negative integer indentation is allowed.

Allowed values:

*text

*"adaptive" (default)

Allowed values:

*"adaptive" (default)

3.34.4. "spacing" Attribute

Defines whether or not there is a blank line between entries. spacing="normal" indicates a single blank line, while spacing="compact" indicates no space between.

Allowed values:

*"normal" (default)

*"compact"

3.34.5. "start" Attribute

The ordinal value at which to start the list. This defaults to "1" and must be an integer of 0 or greater.

3.34.6. "type" Attribute

The type of the labels on list items. If the length of the type value is 1, the meaning is the same as it is for HTML:

a Lowercase letters (a, b, c, ...)

A Uppercase letters (A, B, C, ...)

1 Decimal numbers (1, 2, 3, ...)

i Lowercase Roman numerals (i, ii, iii, ...)

I Uppercase Roman numerals (I, II, III, ...)

For types "a" and "A", after the 26th entry, the numbering starts at "aa"/"AA", then "ab"/"AB", and so on.

If the length of the type value is greater than 1, the value must contain a percent-encoded indicator and other text. The value is a free-form text that allows counter values to be inserted using a "percent-letter" format. For instance, "[REQ%d]" generates labels of the form "[REQ1]", where "%d" inserts the item number as a decimal number.

The following formats are supported:

%c Lowercase letters (a, b, c, ...)

%C Uppercase letters (A, B, C, ...)

%d Decimal numbers (1, 2, 3, ...)

%i Lowercase Roman numerals (i, ii, iii, ...)

%I Uppercase Roman numerals (I, II, III, ...)

%% Represents a percent sign

Other formats are reserved for future use. Only one percent encoding other than "%%" is allowed in a type string.

It is an error for the type string to be empty. For bulleted lists, use the [](#) element. For lists that have neither bullets nor numbers, use the [](#) element with the 'empty="true"' attribute.

If no type attribute is given, the default type is the same as "type='%d.'".

3.35. **<organization>**

Specifies the affiliation [[RFC7322](#)] of an author.

This information appears both in the "Author's Address" section and on the front page (see [[RFC7322](#)] for more information). If the value is long, an abbreviated variant can be specified in the "abbrev" attribute.

This element appears as a child element of [<author>](#) ([Section 3.8](#)) and [<contact>](#) ([Section 3.14](#)).

Content model: only text content.

3.35.1. "abbrev" Attribute

Abbreviated variant.

3.35.2. "ascii" Attribute

The ASCII equivalent of the organization's name.

3.35.3. "asciiAbbrev" Attribute

To support abbreviated organization names in both ASCII and non-ASCII contexts.

3.35.4. "showOnFrontPage" Attribute

To support turning off listing organization with author name.

Allowed values:

*"true" (default)

*"false"

3.36. <phone>

Represents a phone number.

The value is expected to be the scheme-specific part of a "tel" URI (and so does not include the prefix "tel:"), using the "global-number-digits" syntax. See [Section 3](#) of [RFC3966] for details.

This element appears as a child element of <[address](#)> ([Section 3.2](#)).

Content model: only text content.

3.37. <postal>

Contains optional child elements providing postal information. A postal address can contain only an ordered set of <[postalLine](#)> elements, or only a set of <[street](#)>, <[city](#)>, <[region](#)>, <[code](#)>, and <[country](#)> elements, but not both.

The sub-elements other than <[postalLine](#)> and <[country](#)> have been deprecated and will likely be removed in a future version.

This element appears as a child element of <[address](#)> ([Section 3.2](#)).

Content model:

Either:

In any order:

- <[city](#)> elements ([Section 4.2](#))
- <[cityarea](#)> elements ([Section 4.3](#))
- <[code](#)> elements ([Section 4.4](#))
- <[country](#)> elements ([Section 3.15](#))
- <[extaddr](#)> elements ([Section 4.5](#))
- <[pobox](#)> elements ([Section 4.9](#))
- <[region](#)> elements ([Section 4.12](#))
- <[sortingcode](#)> elements ([Section 4.14](#))
- <[street](#)> elements ([Section 4.16](#))

Or:

One or more <[postalLine](#)> elements ([Section 3.38](#))

3.38. <postalLine>

Represents one line of a postal address. When more than one <postalLine> is given, the prep tool emits them in the order given.

This element appears as a child element of <[postal](#)> ([Section 3.37](#)).

Content model: only text content.

3.38.1. "ascii" Attribute

The ASCII equivalent of the text in the address line.

3.39. <refcontent>

Text that should appear between the title and the date of a reference. The purpose of this element is to prevent the need to abuse <[seriesInfo](#)> to get such text in a reference.

For example:

```

<reference anchor="April1">
  <front>
    <title>On Being A Fool</title>
    <author initials="K." surname="Phunny" fullname="Knot Phunny"/>
    <date year="2000" month="April"/>
  </front>
  <refcontent>Self-published pamphlet</refcontent>
</reference>

```

would render as:

[April1] Phunny, K., "On Being A Fool", Self-published pamphlet, April 2000.

This element appears as a child element of [reference](#) ([Section 3.40](#)).

Content model:

In any order:

- *Text
- *[bcp14](#) elements ([Section 3.10](#))
- *[em](#) elements ([Section 3.22](#))
- *[strong](#) elements ([Section 3.48](#))
- *[sub](#) elements ([Section 3.49](#))
- *[sup](#) elements ([Section 3.50](#))
- *[tt](#) elements ([Section 3.61](#))

3.40. [reference](#)

Represents a bibliographic reference.

This element appears as a child element of [referencegroup](#) ([Section 3.41](#)) and [references](#) ([Section 3.42](#)).

Content model:

In this order:

1. One optional [stream](#) element ([Section 3.47](#))
2. One [front](#) element ([Section 3.26](#))

3. In any order:

*[<annotation>](#) elements ([Section 3.3](#))

*[<format>](#) elements ([Section 4.7](#))

*[<refcontent>](#) elements ([Section 3.39](#))

*[<seriesInfo>](#) elements ([Section 3.45](#))

3.40.1. "anchor" Attribute (*Mandatory*)

Document-wide unique identifier for this reference. Usually, this will be used both to "label" the reference in the "References" section and as an identifier in links to this reference entry.

3.40.2. "quote-title" Attribute

Deprecated variant of the "quoteTitle" attribute. Prep tools turn this attribute into "quoteTitle".

Allowed values:

*"true"

*"false"

3.40.3. "quoteTitle" Attribute

Specifies whether or not the title in the reference should be quoted. This can be used to prevent quoting, such as on errata.

Allowed values:

*"true" (default)

*"false"

3.40.4. "target" Attribute

Holds the URI for the reference.

3.41. <referencegroup>

Represents a list of bibliographic references that will be represented as a single reference. This is most often used to

reference STDs and BCPs, where a single reference (such as "BCP 9") may encompass more than one RFC.

This element appears as a child element of `<references>` ([Section 3.42](#)).

Content model:

One or more `<reference>` elements ([Section 3.40](#))

3.41.1. "anchor" Attribute (*Mandatory*)

Document-wide unique identifier for this reference group. Usually, this will be used both to "label" the reference group in the "References" section and as an identifier in links to this reference entry.

3.41.2. "target" Attribute

Holds an URI for the reference group, analogous to the "target" attribute of `<reference>`. Typically used for a reference to a STD which consists of multiple RFCs with their own URLs, but also has its own unique URL.

3.42. `<references>`

Contains a set of bibliographic references.

In the early days of the RFC Series, there was only one "References" section per RFC. This convention was later changed to group references into two sets, "Normative" and "Informative", as described in [[RFC7322](#)]. This vocabulary supports the split with the `<name>` child element. In general, the title should be either "Normative References" or "Informative References".

This element appears as a child element of `<back>` ([Section 3.9](#)) and `<references>` ([Section 3.42](#)).

Content model:

In this order:

1. One optional `<name>` element ([Section 3.32](#))
2. Either:

One or more `<references>` elements ([Section 3.42](#))

Or:

In any order:

-<[reference](#)> elements ([Section 3.40](#))

-<[referencegroup](#)> elements ([Section 3.41](#))

3.42.1. "anchor" Attribute

An optional user-supplied identifier for this set of references.

3.42.2. "title" Attribute

Deprecated. Use <[name](#)> instead.

3.43. <rfc>

This is the root element of the xml2rfc vocabulary.

Processors distinguish between RFC mode ("number" attribute being present) and Internet-Draft mode ("docName" present and "number" absent): when both are present, "number" takes precedence. Setting neither "number" nor "docName" can be useful for producing other types of documents but is out of scope for this specification.

Content model:

In this order:

1. Optional <[link](#)> elements ([Section 3.30](#))
2. One <[front](#)> element ([Section 3.26](#))
3. One <[middle](#)> element ([Section 3.31](#))
4. One optional <[back](#)> element ([Section 3.9](#))

3.43.1. "category" Attribute

Document category (see [Appendix A.1](#)).

Allowed values:

*"std"

*"bcp"

*"exp"

*"info"

*"historic"

3.43.2. "consensus" Attribute

Affects the generated boilerplate. Note that the values of "no" and "yes" are deprecated and are replaced by "false" (the default) and "true".

See [[RFC7841](#)] and [Appendix A.4](#) for more information.

Allowed values:

*"no"

*"yes"

*"false" (default)

*"true"

3.43.3. "docName" Attribute

For Internet-Drafts, this specifies the draft name (which appears below the title).

If both the "docName" and "number" attributes are given, the latter takes precedence (and the draft name indicates the Internet-Draft from which the document was produced).

Note that the file extension is not part of the draft, so in general it should end with the current draft number ("- ", plus two digits).

Furthermore, it is good practice to disambiguate current editor copies from submitted drafts (for instance, by replacing the draft number with the string "latest").

See [Section 7](#) of [[IDGUIDE](#)] for further information.

3.43.4. "indexInclude" Attribute

Specifies whether or not a formatter is requested to include an index in generated files. If the source file has no [<iref>](#) elements, an index is never generated. This option is useful for generating

documents where the source document has [<ieref>](#) elements but the author no longer wants an index.

Allowed values:

*"true" (default)

*"false"

3.43.5. "ipr" Attribute

Represents the Intellectual Property status of the document. See [Appendix A.2](#) for details.

3.43.6. "iprExtract" Attribute

Identifies a single section within the document for which extraction "as is" is explicitly allowed (only relevant for historic values of the "ipr" attribute).

3.43.7. "number" Attribute

The number of the RFC to be produced.

3.43.8. "obsoletes" Attribute

A comma-separated list of RFC numbers or Internet-Draft names.

The prep tool will parse the attribute value so that incorrect references can be detected.

3.43.9. "prepTime" Attribute

The date that the XML was processed by a prep tool. This is included in the XML file just before it is saved to disk. The value is formatted using the "date-time" format defined in [Section 5.6](#) of [\[RFC3339\]](#). The "time-offset" should be "Z".

3.43.10. "seriesNo" Attribute

Number within a document series.

The document series is defined by the "category" attribute; "seriesNo" is only applicable to the values "info" ("FYI" series), "std" ("STD" series), and "bcp" ("BCP" series).

3.43.11. "sortRefs" Attribute

Specifies whether or not the prep tool will sort the references in each reference section.

Allowed values:

*"true"

*"false" (default)

3.43.12. "submissionType" Attribute

The document stream, as described in [[RFC7841](#)]. (The RFC Series Editor may change the list of allowed values in the future.)

Allowed values:

*"IETF" (default)

*"IAB"

*"IRTF"

*"independent"

3.43.13. "symRefs" Attribute

Specifies whether or not a formatter is requested to use symbolic references (such as "[RFC2119]"). If the value for this is "false", the references come out as numbers (such as "[3]").

Allowed values:

*"true" (default)

*"false"

3.43.14. "tocDepth" Attribute

Specifies the number of levels of headings that a formatter is requested to include in the table of contents; the default is "3".

3.43.15. "tocInclude" Attribute

Specifies whether or not a formatter is requested to include a table of contents in generated files.

Allowed values:

*"true" (default)

*"false"

3.43.16. "updates" Attribute

A comma-separated list of RFC numbers or Internet-Draft names.

The prep tool will parse the attribute value so that incorrect references can be detected.

3.43.17. "version" Attribute

Specifies the version of xml2rfc syntax used in this document. The only expected value (for now) is "3".

3.44. <section>

Represents a section (when inside a <middle> element) or an appendix (when inside a <back> element).

Subsections are created by nesting <section> elements inside <section> elements. Sections are allowed to be empty.

This element appears as a child element of <back> ([Section 3.9](#)), <boilerplate> ([Section 3.12](#)), <middle> ([Section 3.31](#)), <section> ([Section 3.44](#)), and <toc> ([Section 3.59](#)).

Content model:

In this order:

1. One optional <name> element ([Section 3.32](#))

2. In any order:

- *<artset> elements ([Section 3.5](#))

- *<artwork> elements ([Section 3.6](#))

- *<aside> elements ([Section 3.7](#))

- *<author> elements ([Section 3.8](#))

*<[blockquote](#)> elements ([Section 3.11](#))

*<[contact](#)> elements ([Section 3.14](#))

*<[dl](#)> elements ([Section 3.20](#))

*<[figure](#)> elements ([Section 3.25](#))

*<[href](#)> elements ([Section 3.27](#))

*<[ol](#)> elements ([Section 3.34](#))

*<[sourcecode](#)> elements ([Section 3.46](#))

*<[t](#)> elements ([Section 3.51](#))

*<[table](#)> elements ([Section 3.52](#))

*<[texttable](#)> elements ([Section 4.17](#))

*<[ul](#)> elements ([Section 3.63](#))

3. Optional <[section](#)> elements ([Section 3.44](#))

3.44.1. "anchor" Attribute

Document-wide unique identifier for this section.

3.44.2. "numbered" Attribute

If set to "false", the formatter is requested to not display a section number. The prep tool will verify that such a section is not followed by a numbered section in this part of the document and will verify that the section is a top-level section. Descendant sections of unnumbered sections are unnumbered by definition.

Allowed values:

*"true" (default)

*"false"

3.44.3. "removeInRFC" Attribute

If set to "true", this note is marked in the prep tool with text indicating that it should be removed before the document is published as an RFC. That text will be "This note is to be removed before publishing as an RFC."

Allowed values:

*"true"

*"false" (default)

3.44.4. "title" Attribute

Deprecated. Use [<name>](#) instead.

3.44.5. "toc" Attribute

Indicates to a formatter whether or not the section is to be included in a table of contents, if such a table of contents is produced. This only takes effect if the level of the section would have appeared in the table of contents based on the "tocDepth" attribute of the [<rfc>](#) element, and of course only if the table of contents is being created based on the "tocInclude" attribute of the [<rfc>](#) element. If this is set to "exclude", any section below this one will be excluded as well. The "default" value indicates inclusion of the section if it would be included by the tocDepth attribute of the [<rfc>](#) element.

Allowed values:

*"include"

*"exclude"

*"default" (default)

3.45. <seriesInfo>

Specifies the document series in which this document appears, and also specifies an identifier within that series.

This element appears as a child element of [<front>](#) ([Section 3.26](#)) and [<reference>](#) ([Section 3.40](#)).

Content model: this element does not have any contents.

3.45.1. "asciiName" Attribute

The ASCII equivalent of the name field.

3.45.2. "asciiValue" Attribute

The ASCII equivalent of the value field.

3.45.3. "name" Attribute (*Mandatory*)

Some series names might trigger specific processing (such as for autogenerating links, inserting descriptions such as "work in progress", or additional functionality like reference diagnostics). Examples for IETF-related series names are "BCP", "FYI", "Internet-Draft", "RFC", and "STD".

Some of the values for "name" interact as follows:

- *A [<front>](#) element that has a [<seriesInfo>](#) element that has the name "Internet-Draft" cannot also have a [<seriesInfo>](#) element that has the name "RFC".

- *The [<seriesInfo>](#) element can contain the DOI for the referenced document. This cannot be used when the [<seriesInfo>](#) element is an eventual child element of an [<rfc>](#) element -- only as an eventual child of a [<reference>](#) element. The "value" attribute should use the form specified in [[RFC7669](#)].

3.45.4. "status" Attribute

The status of this document. The currently known values are "standard", "informational", "experimental", "bcp", "fyi", and "full-standard". The RFC Series Editor may change this list in the future.

3.45.5. "stream" Attribute

The stream (as described in [[RFC7841](#)]) that originated the document. (The RFC Series Editor may change this list in the future.)

Allowed values:

- *"IETF"

- *"IAB"

- *"IRTF"

- *"independent"

3.45.6. "value" Attribute (*Mandatory*)

The identifier within the series specified by the "name" attribute.

For BCPs, FYIs, RFCs, and STDs, this is the number within the series. For Internet-Drafts, it is the full draft name (ending with the two-digit version number). For DOIs, the value is given, such as "10.17487/rfc1149", as described in [\[RFC7669\]](#).

The name in the value should be the document name without any file extension. For Internet-Drafts, the value for this attribute should be "draft-ietf-somewg-someprotocol-07", not "draft-ietf-somewg-someprotocol-07.txt".

3.46. <sourcecode>

This element allows the inclusion of source code into the document.

When rendered, source code is always shown in a monospace font. When <sourcecode> is a child of <[figure](#)> or <[section](#)>, it provides full control of horizontal whitespace and line breaks. When formatted, it is indented relative to the left margin of the enclosing element. It is thus useful for source code and formal languages (such as ABNF [\[RFC5234\]](#) or the RNC notation used in this document). (When <sourcecode> is a child of other elements, it flows with the text that surrounds it.) Tab characters (U+0009) inside of this element are prohibited.

For artwork such as character-based art, diagrams of message layouts, and so on, use the <[artwork](#)> element instead.

Output formatters that do pagination should attempt to keep source code on a single page. This is to prevent source code that is split across pages from looking like two separate pieces of code.

See [Section 6](#) for a description of how to deal with issues of using "&" and "<" characters in source code.

This element appears as a child element of <[blockquote](#)> ([Section 3.11](#)), <[dd](#)> ([Section 3.18](#)), <[figure](#)> ([Section 3.25](#)), <[li](#)> ([Section 3.29](#)), <[section](#)> ([Section 3.44](#)), <[td](#)> ([Section 3.54](#)), and <[th](#)> ([Section 3.56](#)).

Content model: only text content.

3.46.1. "anchor" Attribute

Document-wide unique identifier for this source code.

3.46.2. "markers" Attribute

Specifies whether or not the source code should be displayed between "<CODE BEGINS>"/"<CODE ENDS>" markers, as described in <<https://www.ietf.org/about/groups/iesg/statements/copyright-2009-09-08/>>. Note that adding markers is not needed for the languages listed under "Code Components" on <<https://trustee.ietf.org/trust-legal-provisions.html>>.

Additionally, if the "name" attribute is present, it will be displayed after "<CODE BEGINS>", as described in [Section 3.2](#) of [\[RFC8407\]](#).

Allowed values:

- *"true"

- *"false" (default)

3.46.3. "name" Attribute

A filename suitable for the contents (such as for extraction to a local file). This attribute can be helpful for other kinds of tools (such as automated syntax checkers, which work by extracting the source code). Note that the "name" attribute does not need to be unique for <[artwork](#)> elements in a document. If multiple <[sourcecode](#)> elements have the same "name" attribute, a formatter might assume that the elements are all fragments of a single file, and such a formatter can collect those fragments for later processing.

3.46.4. "src" Attribute

The URI reference of a source file [[RFC3986](#)].

It is an error to have both a "src" attribute and content in the <sourcecode> element.

3.46.5. "type" Attribute

Specifies the type of the source code. The value of this attribute is free text with certain values designated as preferred.

The preferred values for <sourcecode> types are:

- *abnf

- *asn.1

*bash

*c++

*c

*cbor

*dtd

*java

*javascript

*json

*mib

*perl

*pseudocode

*python

*rnc

*xml

*yang

The RFC Series Editor maintains a complete list of the preferred values on the RFC Editor web site, and that list is expected to be updated over time. Thus, a consumer of v3 XML should be prepared for an unexpected type or no type at all.

3.47. <stream>

The document stream, one of IETF, IAB, IRTF, independent, or editorial.

This element appears as a child element of <[reference](#)> ([Section 3.40](#)).

Text

This element appears as a child element of <[reference](#)> ([Section 3.40](#)).

Content model:

Missing template for optional.

3.48. ****

Indicates text that is semantically strong. Text enclosed within this element will be displayed as bold after processing. This element can be combined with other character formatting elements, and the formatting will be additive.

This element appears as a child element of [<annotation>](#) ([Section 3.3](#)), [<blockquote>](#) ([Section 3.11](#)), [<cref>](#) ([Section 3.16](#)), [<dd>](#) ([Section 3.18](#)), [<dt>](#) ([Section 3.21](#)), [](#) ([Section 3.22](#)), [](#) ([Section 3.29](#)), [<name>](#) ([Section 3.32](#)), [<preamble>](#) ([Section 4.11](#)), [<refcontent>](#) ([Section 3.39](#)), [<sub>](#) ([Section 3.49](#)), [<sup>](#) ([Section 3.50](#)), [<t>](#) ([Section 3.51](#)), [<td>](#) ([Section 3.54](#)), [<th>](#) ([Section 3.56](#)), [<tt>](#) ([Section 3.61](#)), and [<xref>](#) ([Section 3.66](#)).

Content model:

In any order:

- *Text
- *[<bcp14>](#) elements ([Section 3.10](#))
- *[
](#) elements ([Section 3.13](#))
- *[<cref>](#) elements ([Section 3.16](#))
- *[](#) elements ([Section 3.22](#))
- *[<eref>](#) elements ([Section 3.24](#))
- *[<ieref>](#) elements ([Section 3.27](#))
- *[<relref>](#) elements ([Section 4.13](#))
- *[<sub>](#) elements ([Section 3.49](#))
- *[<sup>](#) elements ([Section 3.50](#))
- *[<tt>](#) elements ([Section 3.61](#))
- *[<xref>](#) elements ([Section 3.66](#))

3.49. **<sub>**

Causes the text to be displayed as subscript, approximately half a letter-height lower than normal text. This element can be combined

with other character formatting elements, and the formatting will be additive.

This element appears as a child element of `<annotation>` ([Section 3.3](#)), `<blockquote>` ([Section 3.11](#)), `<cref>` ([Section 3.16](#)), `<dd>` ([Section 3.18](#)), `<dt>` ([Section 3.21](#)), `<em>` ([Section 3.22](#)), `<li>` ([Section 3.29](#)), `<name>` ([Section 3.32](#)), `<preamble>` ([Section 4.11](#)), `<refcontent>` ([Section 3.39](#)), `<strong>` ([Section 3.48](#)), `<sub>` ([Section 3.49](#)), `<sup>` ([Section 3.50](#)), `<t>` ([Section 3.51](#)), `<td>` ([Section 3.54](#)), `<th>` ([Section 3.56](#)), `<tt>` ([Section 3.61](#)), and `<xref>` ([Section 3.66](#)).

Content model:

In any order:

- *Text
- *`<bcp14>` elements ([Section 3.10](#))
- *`<cref>` elements ([Section 3.16](#))
- *`<em>` elements ([Section 3.22](#))
- *`<eref>` elements ([Section 3.24](#))
- *`<iref>` elements ([Section 3.27](#))
- *`<relref>` elements ([Section 4.13](#))
- *`<strong>` elements ([Section 3.48](#))
- *`<sub>` elements ([Section 3.49](#))
- *`<sup>` elements ([Section 3.50](#))
- *`<tt>` elements ([Section 3.61](#))
- *`<xref>` elements ([Section 3.66](#))

3.50. `<sup>`

Causes the text to be displayed as superscript, approximately half a letter-height higher than normal text. This element can be combined with other character formatting elements, and the formatting will be additive.

This element appears as a child element of `<annotation>` ([Section 3.3](#)), `<blockquote>` ([Section 3.11](#)), `<cref>` ([Section 3.16](#)), `<dd>`

([Section 3.18](#)), `<dt>` ([Section 3.21](#)), `<em>` ([Section 3.22](#)), `<li>` ([Section 3.29](#)), `<name>` ([Section 3.32](#)), `<preamble>` ([Section 4.11](#)), `<refcontent>` ([Section 3.39](#)), `<strong>` ([Section 3.48](#)), `<sub>` ([Section 3.49](#)), `<sup>` ([Section 3.50](#)), `<t>` ([Section 3.51](#)), `<td>` ([Section 3.54](#)), `<th>` ([Section 3.56](#)), `<tt>` ([Section 3.61](#)), and `<xref>` ([Section 3.66](#)).

Content model:

In any order:

- *Text
- *`<bcp14>` elements ([Section 3.10](#))
- *`<ceref>` elements ([Section 3.16](#))
- *`<em>` elements ([Section 3.22](#))
- *`<eref>` elements ([Section 3.24](#))
- *`<ieref>` elements ([Section 3.27](#))
- *`<relref>` elements ([Section 4.13](#))
- *`<strong>` elements ([Section 3.48](#))
- *`<sub>` elements ([Section 3.49](#))
- *`<sup>` elements ([Section 3.50](#))
- *`<tt>` elements ([Section 3.61](#))
- *`<xref>` elements ([Section 3.66](#))

3.51. `<t>`

Contains a paragraph of text.

This element appears as a child element of `<abstract>` ([Section 3.1](#)), `<aside>` ([Section 3.7](#)), `<blockquote>` ([Section 3.11](#)), `<dd>` ([Section 3.18](#)), `<li>` ([Section 3.29](#)), `<list>` ([Section 4.8](#)), `<note>` ([Section 3.33](#)), `<section>` ([Section 3.44](#)), `<td>` ([Section 3.54](#)), and `<th>` ([Section 3.56](#)).

Content model:

In any order:

- *Text

*[<bcp14>](#) elements ([Section 3.10](#))

*[
](#) elements ([Section 3.13](#))

*[<contact>](#) elements ([Section 3.14](#))

*[<cref>](#) elements ([Section 3.16](#))

*[](#) elements ([Section 3.22](#))

*[<eref>](#) elements ([Section 3.24](#))

*[<iref>](#) elements ([Section 3.27](#))

*[<relref>](#) elements ([Section 4.13](#))

*[<spanx>](#) elements ([Section 4.15](#))

*[](#) elements ([Section 3.48](#))

*[<sub>](#) elements ([Section 3.49](#))

*[<sup>](#) elements ([Section 3.50](#))

*[<tt>](#) elements ([Section 3.61](#))

*[<u>](#) elements ([Section 3.62](#))

*[<vspace>](#) elements ([Section 4.19](#))

*[<xref>](#) elements ([Section 3.66](#))

3.51.1. "anchor" Attribute

Document-wide unique identifier for this paragraph.

3.51.2. "hangText" Attribute

Deprecated. Instead, use [<dd>](#) inside of a definition list ([<dl>](#)).

3.51.3. "indent" Attribute

The indentation of the text element. A numeric value is interpreted as characters when rendering plain-text documents, and en-space units otherwise. Only non-negative integer indentation is allowed.

3.51.4. "keepWithNext" Attribute

Acts as a hint to the output formatters that do pagination to do a best-effort attempt to keep the paragraph with the next element, whatever that happens to be. For example, the HTML output @media print CSS ("CSS" refers to Cascading Style Sheets) might translate this to page-break-after: avoid. For PDF, the paginator could attempt to keep the paragraph with the next element. Note: this attribute is strictly a hint and not always actionable.

Allowed values:

*"false" (default)

*"true"

3.51.5. "keepWithPrevious" Attribute

Acts as a hint to the output formatters that do pagination to do a best-effort attempt to keep the paragraph with the previous element, whatever that happens to be. For example, the HTML output @media print CSS might translate this to page-break-before: avoid. For PDF, the paginator could attempt to keep the paragraph with the previous element. Note: this attribute is strictly a hint and not always actionable.

Allowed values:

*"false" (default)

*"true"

3.52. <table>

Contains a table with a caption with the table number. If the element contains a <[name](#)> element, the caption will also show that name.

Inside the <[table](#)> element is, optionally, a <[thead](#)> element to contain the rows that will be the table's heading and, optionally, a <[tfoot](#)> element to contain the rows of the table's footer. If the XML is converted to a representation that has page breaks (such as PDFs or printed HTML), the header and footer are meant to appear on each page.

This element appears as a child element of <[aside](#)> ([Section 3.7](#)), <[dd](#)> ([Section 3.18](#)), <[li](#)> ([Section 3.29](#)), and <[section](#)> ([Section 3.44](#)).

Content model:

In this order:

1. One optional `<name>` element ([Section 3.32](#))
2. Optional `<iref>` elements ([Section 3.27](#))
3. One optional `<thead>` element ([Section 3.57](#))
4. One or more `<tbody>` elements ([Section 3.53](#))
5. One optional `<tfoot>` element ([Section 3.55](#))

3.52.1. "align" Attribute

Controls whether the table appears left justified, centered (default), or right justified. The caption will be centered under the table, and the combined table and caption will be aligned according to the "align" attribute.

Allowed values:

`*"left"`

`*"center"` (default)

`*"right"`

3.52.2. "anchor" Attribute

Document-wide unique identifier for this table.

3.53. <tbody>

A container for a set of body rows for a table.

This element appears as a child element of `<table>` ([Section 3.52](#)).

Content model:

One or more `<tr>` elements ([Section 3.60](#))

3.53.1. "anchor" Attribute

Document-wide unique identifier for the tbody.

3.54. <td>

A cell in a table row.

This element appears as a child element of `<tr>` ([Section 3.60](#)).

Content model:

Either:

In any order, but at least one of:

- `<artset>` elements ([Section 3.5](#))
- `<artwork>` elements ([Section 3.6](#))
- `<dl>` elements ([Section 3.20](#))
- `<figure>` elements ([Section 3.25](#))
- `<ol>` elements ([Section 3.34](#))
- `<sourcecode>` elements ([Section 3.46](#))
- `<t>` elements ([Section 3.51](#))
- `<ul>` elements ([Section 3.63](#))

Or:

In any order:

- Text
- `<bcp14>` elements ([Section 3.10](#))
- `<br>` elements ([Section 3.13](#))
- `<cref>` elements ([Section 3.16](#))
- `<em>` elements ([Section 3.22](#))
- `<eref>` elements ([Section 3.24](#))
- `<iref>` elements ([Section 3.27](#))
- `<relref>` elements ([Section 4.13](#))
- `<strong>` elements ([Section 3.48](#))
- `<sub>` elements ([Section 3.49](#))
- `<sup>` elements ([Section 3.50](#))

-<[tt](#)> elements ([Section 3.61](#))

-<[u](#)> elements ([Section 3.62](#))

-<[xref](#)> elements ([Section 3.66](#))

3.54.1. "align" Attribute

Controls whether the content of the cell appears left justified (default), centered, or right justified. Note that "center" or "right" will probably only work well in cells with plain text; any other elements might make the contents render badly.

Allowed values:

*"left" (default)

*"center"

*"right"

3.54.2. "anchor" Attribute

Document-wide unique identifier for the cell.

3.54.3. "colspan" Attribute

The number of columns that the cell is to span. For example, setting "colspan='3'" indicates that the cell occupies the same horizontal space as three cells of a row without any "colspan" attributes.

3.54.4. "rowspan" Attribute

The number of rows that the cell is to span. For example, setting "rowspan='3'" indicates that the cell occupies the same vertical space as three rows.

3.55. <tfoot>

A container for a set of footer rows for a table.

This element appears as a child element of <[table](#)> ([Section 3.52](#)).

Content model:

One or more <[tr](#)> elements ([Section 3.60](#))

3.55.1. "anchor" Attribute

Document-wide unique identifier for the tfoot.

3.56. <th>

A cell in a table row. When rendered, this will normally come out in boldface; other than that, there is no difference between this and the <td> element.

This element appears as a child element of <tr> ([Section 3.60](#)).

Content model:

Either:

In any order, but at least one of:

- <[artset](#)> elements ([Section 3.5](#))
- <[artwork](#)> elements ([Section 3.6](#))
- <[dl](#)> elements ([Section 3.20](#))
- <[figure](#)> elements ([Section 3.25](#))
- <[ol](#)> elements ([Section 3.34](#))
- <[sourcecode](#)> elements ([Section 3.46](#))
- <[t](#)> elements ([Section 3.51](#))
- <[ul](#)> elements ([Section 3.63](#))

Or:

In any order:

- Text
- <[bcp14](#)> elements ([Section 3.10](#))
- <[br](#)> elements ([Section 3.13](#))
- <[cref](#)> elements ([Section 3.16](#))
- <[em](#)> elements ([Section 3.22](#))
- <[eref](#)> elements ([Section 3.24](#))

-<[i](#)ref> elements ([Section 3.27](#))

-<[rel](#)ref> elements ([Section 4.13](#))

-<[strong](#)> elements ([Section 3.48](#))

-<[sub](#)> elements ([Section 3.49](#))

-<[sup](#)> elements ([Section 3.50](#))

-<[tt](#)> elements ([Section 3.61](#))

-<[u](#)> elements ([Section 3.62](#))

-<[xref](#)> elements ([Section 3.66](#))

3.56.1. "align" Attribute

Controls whether the content of the cell appears left justified (default), centered, or right justified. Note that "center" or "right" will probably only work well in cells with plain text; any other elements might make the contents render badly.

Allowed values:

*"left" (default)

*"center"

*"right"

3.56.2. "anchor" Attribute

Document-wide unique identifier for the row.

3.56.3. "colspan" Attribute

The number of columns that the cell is to span. For example, setting "colspan='3'" indicates that the cell occupies the same horizontal space as three cells of a row without any "colspan" attributes.

3.56.4. "rowspan" Attribute

The number of rows that the cell is to span. For example, setting "rowspan='3'" indicates that the cell occupies the same vertical space as three rows.

3.57. <thead>

A container for a set of header rows for a table.

This element appears as a child element of <[table](#)> ([Section 3.52](#)).

Content model:

One or more <[tr](#)> elements ([Section 3.60](#))

3.57.1. "anchor" Attribute

Document-wide unique identifier for the thead.

3.58. <title>

Represents the document title.

When this element appears in the <front> element of the current document, the title might also appear in page headers or footers. If it is long (~40 characters), the "abbrev" attribute can be used to specify an abbreviated variant.

This element appears as a child element of <[front](#)> ([Section 3.26](#)).

Content model:

In any order:

*Text

*<[br](#)> elements ([Section 3.13](#))

3.58.1. "abbrev" Attribute

Specifies an abbreviated variant of the document title.

3.58.2. "ascii" Attribute

The ASCII equivalent of the title.

3.59. <toc>

This element contains the Table of Contents. It is created automatically by the preptool based on the "tocInclude" and

"tocDepth" attributes of the <rfc> element and the section headers. In prepared drafts, it has no effect on document rendering and contains no useful information. In prepared RFCs, it is used as the source for the table of contents.

Optional <[section](#)> elements ([Section 3.44](#))

This element appears as a child element of <[front](#)> ([Section 3.26](#)).

Content model:

Optional <[section](#)> elements ([Section 3.44](#))

3.60. <tr>

A row of a table.

This element appears as a child element of <[tbody](#)> ([Section 3.53](#)), <[tfoot](#)> ([Section 3.55](#)), and <[thead](#)> ([Section 3.57](#)).

Content model:

In any order, but at least one of:

*<[td](#)> elements ([Section 3.54](#))

*<[th](#)> elements ([Section 3.56](#))

3.60.1. "anchor" Attribute

Document-wide unique identifier for the row.

3.61. <tt>

Causes the text to be displayed in a constant-width font. This element can be combined with other character formatting elements, and the formatting will be additive.

This element appears as a child element of <[annotation](#)> ([Section 3.3](#)), <[blockquote](#)> ([Section 3.11](#)), <[cref](#)> ([Section 3.16](#)), <[dd](#)> ([Section 3.18](#)), <[dt](#)> ([Section 3.21](#)), <[em](#)> ([Section 3.22](#)), <[li](#)> ([Section 3.29](#)), <[name](#)> ([Section 3.32](#)), <[preamble](#)> ([Section 4.11](#)), <[refcontent](#)> ([Section 3.39](#)), <[strong](#)> ([Section 3.48](#)), <[sub](#)> ([Section 3.49](#)), <[sup](#)> ([Section 3.50](#)), <[t](#)> ([Section 3.51](#)), <[td](#)> ([Section 3.54](#)), <[th](#)> ([Section 3.56](#)), and <[xref](#)> ([Section 3.66](#)).

Content model:

In any order:

*Text

*<[bcp14](#)> elements ([Section 3.10](#))

*<[br](#)> elements ([Section 3.13](#))

*<[cref](#)> elements ([Section 3.16](#))

*<[em](#)> elements ([Section 3.22](#))

*<[eref](#)> elements ([Section 3.24](#))

*<[iref](#)> elements ([Section 3.27](#))

*<[relref](#)> elements ([Section 4.13](#))

*<[strong](#)> elements ([Section 3.48](#))

*<[sub](#)> elements ([Section 3.49](#))

*<[sup](#)> elements ([Section 3.50](#))

*<[xref](#)> elements ([Section 3.66](#))

3.62. <u>

In order to insert Unicode characters in contexts that don't explicitly allow Unicode, the Unicode string is enclosed within an <u> element. The element will be expanded inline based on the value of a "format" attribute. This provides a generalised means of generating the 6 methods of Unicode renderings listed in [\[RFC7997\]](#), Section 3.4, and also several others found in for instance the RFC Format Tools example rendering of RFC 7700.

This element appears as a child element of <[annotation](#)> ([Section 3.3](#)), <[blockquote](#)> ([Section 3.11](#)), <[dd](#)> ([Section 3.18](#)), <[li](#)> ([Section 3.29](#)), <[preamble](#)> ([Section 4.11](#)), <[t](#)> ([Section 3.51](#)), <[td](#)> ([Section 3.54](#)), and <[th](#)> ([Section 3.56](#)).

Content model: only text content.

3.62.1. "anchor" Attribute

Document-wide unique identifier for this <u> element.

3.62.2. "ascii" Attribute

The ASCII equivalent of the content, to be used if the "ascii" keyword is used in the "format" specification.

3.62.3. "format" Attribute

Default value: "lit-name-num"

The "format" attribute accepts either a simplified format specification, or a full format string with placeholders for the various possible Unicode expansions.

The simplified format consists of dash-separated keywords, where each keyword represents a possible expansion of the Unicode character or string; use for example "<u "lit-num-name">foo</u>" to expand the text to its literal value, code point values, and code point names.

A combination of up to 3 of the following keywords may be used, separated by dashes: "num", "lit", "name", "ascii", "char". The keywords are expanded as follows and combined, with the second and third enclosed in parentheses if present:

ascii

The value of the 'ascii' attribute on the <u> element

char

The literal element text, without quotes

lit

The literal element text, enclosed in quotes

name

The Unicode name(s) of the element text

num

The numeric value(s) of the element text, in U+1234 notation

In order to ensure that no specification mistakes can result for rendering methods that cannot render all Unicode code points, "num" MUST always be part of the specified format.

In order to provide for cases where the simplified format above is insufficient, without relinquishing the requirement that the number of a code point always must be rendered, the "format" attribute can also accept a full format string. This format uses placeholders which consist of any of the key words above enclosed in curly braces; outside of this, any ascii text is permissible. For example,

will be rendered as

As for the simplified format, "num" MUST always be part of the specified format in order to ensure that no specification mistakes can result for rendering methods that cannot render all Unicode code points,

3.63. `<ul>`

An unordered list. The labels on the items will be symbols picked by the formatter.

This element appears as a child element of `<abstract>` ([Section 3.1](#)), `<aside>` ([Section 3.7](#)), `<blockquote>` ([Section 3.11](#)), `<dd>` ([Section 3.18](#)), `<li>` ([Section 3.29](#)), `<note>` ([Section 3.33](#)), `<section>` ([Section 3.44](#)), `<td>` ([Section 3.54](#)), and `<th>` ([Section 3.56](#)).

Content model:

One or more `<li>` elements ([Section 3.29](#))

3.63.1. "anchor" Attribute

Document-wide unique identifier for the list.

3.63.2. "bare" Attribute

Can only be used with `empty="true"` (see below). This attribute controls whether the blank bullet has an horizontal extension or not. With `bare="false"`, the empty list bullet will still occupy the same space as for `empty="false"`. With `empty="true"`, there will be no bullet at all, i.e., the list items will have no indentation.

Allowed values:

`*"true"`

`*"false"` (default)

3.63.3. "empty" Attribute

Defines whether or not the label is empty. `empty="true"` indicates that no label will be shown.

Allowed values:

`*"false"` (default)

`*"true"`

3.63.4. "indent" Attribute

The indentation of the list elements relative to the start of the bullet or bullet text. A numeric value is interpreted as characters when rendering plain-text documents, and en-space units otherwise. Only non-negative integer indentation is allowed.

3.63.5. "spacing" Attribute

Defines whether or not there is a blank line between entries. `spacing="normal"` indicates a single blank line, while `spacing="compact"` indicates no space between.

Allowed values:

`*"normal"` (default)

`*"compact"`

3.64. <uri>

Contains a web address associated with the author.

The contents should be a valid URI; this most likely will be an "http:" or "https:" URI.

This element appears as a child element of <[address](#)> ([Section 3.2](#)).

Content model: only text content.

3.65. <workgroup>

This element is used to specify the Working Group (IETF) or Research Group (IRTF) from which the document originates, if any. The recommended format is the official name of the Working Group (with some capitalization).

In Internet-Drafts, this is used in the upper left corner of the boilerplate, replacing the "Network Working Group" string. Formatting software can append the words "Working Group" or "Research Group", depending on the "submissionType" property of the <[rfc](#)> element ([Section 3.43.12](#)).

This element appears as a child element of <[front](#)> ([Section 3.26](#)).

Content model: only text content.

3.66. <xref>

A reference to an anchor in this document. Formatters that have links (such as HTML and PDF) are likely to render <xref> elements as internal hyperlinks. This element is useful for referring to references in the "References" section, to specific sections of this document, to specific figures, and so on. The "target" attribute is required.

This element appears as a child element of <annotation> ([Section 3.3](#)), <blockquote> ([Section 3.11](#)), <c> ([Section 4.1](#)), <cref> ([Section 3.16](#)), <dd> ([Section 3.18](#)), <dt> ([Section 3.21](#)), ([Section 3.22](#)), ([Section 3.29](#)), <name> ([Section 3.32](#)), <postamble> ([Section 4.10](#)), <preamble> ([Section 4.11](#)), ([Section 3.48](#)), <sub> ([Section 3.49](#)), <sup> ([Section 3.50](#)), <t> ([Section 3.51](#)), <td> ([Section 3.54](#)), <th> ([Section 3.56](#)), <tt> ([Section 3.61](#)), and <ttcol> ([Section 4.18](#)).

Content model:

In any order:

- *Text

- * elements ([Section 3.22](#))

- * elements ([Section 3.48](#))

- *<sub> elements ([Section 3.49](#))

- *<sup> elements ([Section 3.50](#))

- *<tt> elements ([Section 3.61](#))

3.66.1. "format" Attribute

This attribute signals to formatters what the desired format of the reference should be. Formatters for document types that have linking capability should wrap the displayed text in hyperlinks.

"counter"

The "derivedContent" attribute will contain just a counter. This is used for targets that are <section>, <figure>, <table>, or items in an ordered list. Using "format='counter'" where the target is any other type of element is an error.

For example, with an input of:

```
<section anchor="overview">Protocol Overview</section>
. . .
See Section <xref target="overview" format="counter"/>
for an overview.
```

An HTML formatter might generate:

```
See Section <a href="#overview">1.7</a> for an overview.
```

"default"

If the element has no content, the "derivedContent" attribute will contain a text fragment that describes the referenced part completely, such as "XML" for a target that is a [reference](#), or "Section 2" or "Table 4" for a target to a non-reference. (If the element has content, the "derivedContent" attribute is filled with the content.)

For example, with an input of:

```
<section anchor="overview">Protocol Overview</section>
. . .
See <xref target="overview"/> for an overview.
```

An HTML formatter might generate:

```
See <a href="#overview">Section 1.7</a> for an overview.
```

"none"

There will be no autogenerated text at all (this format only makes sense if the [xref](#) element has text content).

For example, with an input of:

```
<section anchor="overview">Protocol Overview</section>
. . .
See <xref target="overview" format="none">section above</xref>
for an overview.
```

An HTML formatter might generate:

```
See <a href="#overview">section above</a> for an overview.
```

"title"

If the target is a [reference](#) element, the "derivedContent" attribute will contain the name of the reference, extracted from the [title](#) child of the [front](#) child of the reference. Or, if the target element has a [name](#) child element, the "derivedContent" attribute will contain the text content of that [name](#) element concatenated with the text content of each descendant node of [name](#) (that is, stripping out all of the XML

markup, leaving only the text). Or, if the target element does not contain a [<name>](#) child element, the "derivedContent" attribute will contain the name of the "anchor" attribute of that element with no other adornment.

Allowed values:

*"default" (default)

*"title"

*"counter"

*"none"

3.66.2. "pageno" Attribute

Deprecated.

Allowed values:

*"true"

*"false" (default)

3.66.3. "relative" Attribute

Specifies a relative reference from the URI in the target reference. This value must include whatever leading character is needed to create the relative reference; typically "#" for HTML documents.

3.66.4. "section" Attribute

Specifies a section of the target reference. If the reference is not an RFC or Internet-Draft in the v3 format, and no "relative" attribute has been provided, it is an error.

3.66.5. "sectionFormat" Attribute

This attribute tells formatters the desired format of the external reference. Formatters for document types that have linking capability should wrap each part of the displayed text in hyperlinks. If there is content in the `<xref>` element, that content will be used when rendering the internal link part of the `<xref>` rendering, but will not affect the external link.

"of"

The <xref> element will be displayed as an external link followed by an internal link, separated by the word 'of'. The external link will have as its display text the word "Section" followed by a space and the contents of the "section" attribute. This will be followed by a space, the word "of", another space, and an internal link to the relevant <reference> entry, formatted based on the "format" attribute.

"comma"

The <xref> element will be displayed as an internal link followed by an external link, separated by a comma. The external link will have as its display text the word "Section" followed by a space and the contents of the "section" attribute. The internal link will point to the relevant <reference> entry, and will be rendered according to the "format" attribute.

"parens"

The <xref> element will be displayed as an internal link followed by an external link within parentheses. The external link will have as its display text the word "Section" followed by a space and the contents of the "section" attribute. The internal link will point to the relevant <reference> entry, and will be rendered according to the "format" attribute.

"bare"

The <xref> element will be displayed as an external link, possibly followed by the same link within parentheses. The first external link will have as its display text only contents of the "section" attribute; the second link will be present within parentheses only if the <xref> element has any text content, and will then have the text content as its display text.

This value for the "sectionFormat" attribute is useful when it is desired to express for instance "Sections 3.2 and 3.3 of [RFC7997]".

Allowed values:

*"of" (default)

*"comma"

*"parens"

*"bare"

3.66.6. "target" Attribute (*Mandatory*)

Identifies the document component being referenced. The value needs to match the value of the "anchor" attribute of an element in the document; otherwise, it is an error.

4. Elements from v2 and original v3 That Have Been Deprecated

This section lists the elements from v2 and the original version of v3 that have been deprecated. Note that some elements in v3 have attributes from v2 that are deprecated; those are not listed here.

4.1. <c>

Deprecated. Instead, use [<tr>](#), [<td>](#), and [<th>](#).

This element appears as a child element of [<texttable>](#) ([Section 4.17](#)).

Content model:

In any order:

- *Text

- *[<cref>](#) elements ([Section 3.16](#))

- *[<eref>](#) elements ([Section 3.24](#))

- *[<ieref>](#) elements ([Section 3.27](#))

- *[<spanx>](#) elements ([Section 4.15](#))

- *[<xref>](#) elements ([Section 3.66](#))

4.2. <city>

Deprecated, use [<postalLine>](#) instead.

This element appears as a child element of [<postal>](#) ([Section 3.37](#)).

Content model: only text content.

4.2.1. "ascii" Attribute

The ASCII equivalent of the city name.

4.3. <cityarea>

Deprecated, use [<postalLine>](#) instead.

This element appears as a child element of [<postal>](#) ([Section 3.37](#)).

Content model: only text content.

4.3.1. "ascii" Attribute

The ASCII equivalent of the city area name.

4.4. <code>

Deprecated, use [<postalLine>](#) instead.

This element appears as a child element of [<postal>](#) ([Section 3.37](#)).

Content model: only text content.

4.4.1. "ascii" Attribute

The ASCII equivalent of the postal code.

4.5. <extaddr>

Deprecated, use [<postalLine>](#) instead.

This element appears as a child element of [<postal>](#) ([Section 3.37](#)).

Content model: only text content.

4.5.1. "ascii" Attribute

ASCII equivalent for extaddr.

4.6. <facsimile>

Deprecated. The [<email>](#) element is a much more useful way to get in touch with authors.

This element appears as a child element of [<address>](#) ([Section 3.2](#)).

Content model: only text content.

4.7. <format>

Deprecated. If the goal is to provide a single URI for a reference, use the "target" attribute in [<reference>](#) instead.

This element appears as a child element of [<reference>](#) ([Section 3.40](#)).

Content model: this element does not have any contents.

4.7.1. "octets" Attribute

Deprecated.

4.7.2. "target" Attribute

Deprecated.

4.7.3. "type" Attribute (*Mandatory*)

Deprecated.

4.8. <list>

Deprecated. Instead, use [<dl>](#) for list/@style "hanging"; [](#) for list/@style "empty" or "symbols"; and [](#) for list/@style "letters", "numbers", "counter", or "format".

Content model:

One or more [<t>](#) elements ([Section 3.51](#))

4.8.1. "counter" Attribute

Deprecated. The functionality of this attribute has been replaced with [/@start](#).

4.8.2. "hangIndent" Attribute

Deprecated. Use [<dl>](#) instead.

4.8.3. "style" Attribute

Deprecated.

4.9. <pobox>

Deprecated, use <[postalLine](#)> instead.

This element appears as a child element of <[postal](#)> ([Section 3.37](#)).

Content model: only text content.

4.9.1. "ascii" Attribute

ASCII equivalent for pobox.

4.10. <postamble>

Deprecated. Instead, use a regular paragraph after the figure or table.

This element appears as a child element of <[figure](#)> ([Section 3.25](#)) and <[texttable](#)> ([Section 4.17](#)).

Content model:

In any order:

- *Text

- *<[cref](#)> elements ([Section 3.16](#))

- *<[eref](#)> elements ([Section 3.24](#))

- *<[iref](#)> elements ([Section 3.27](#))

- *<[spanx](#)> elements ([Section 4.15](#))

- *<[xref](#)> elements ([Section 3.66](#))

4.11. <preamble>

Deprecated. Instead, use a regular paragraph before the figure or table.

This element appears as a child element of <[figure](#)> ([Section 3.25](#)) and <[texttable](#)> ([Section 4.17](#)).

Content model:

In any order:

- *Text
- *<[bcp14](#)> elements ([Section 3.10](#))
- *<[cref](#)> elements ([Section 3.16](#))
- *<[em](#)> elements ([Section 3.22](#))
- *<[eref](#)> elements ([Section 3.24](#))
- *<[iref](#)> elements ([Section 3.27](#))
- *<[relref](#)> elements ([Section 4.13](#))
- *<[spanx](#)> elements ([Section 4.15](#))
- *<[strong](#)> elements ([Section 3.48](#))
- *<[sub](#)> elements ([Section 3.49](#))
- *<[sup](#)> elements ([Section 3.50](#))
- *<[tt](#)> elements ([Section 3.61](#))
- *<[u](#)> elements ([Section 3.62](#))
- *<[xref](#)> elements ([Section 3.66](#))

4.12. <region>

Deprecated, use <[postalLine](#)> instead.

This element appears as a child element of <[postal](#)> ([Section 3.37](#)).

Content model: only text content.

4.12.1. "ascii" Attribute

The ASCII equivalent of the region name.

4.13. <relref>

Deprecated, use <[xref](#)> instead.

Represents a link to a specific part of a document that appears in a <[reference](#)> element. Formatters that have links (such as HTML and

PDF) render <relref> elements as external hyperlinks to the specified part of the reference, creating the link target by combining the base URI from the <reference> element with the "relative" attribute from this element. The "target" attribute is required, and it must be the anchor of a <reference> element.

The "section" attribute is required, and the "relative" attribute is optional. If the reference is not an RFC or Internet-Draft that is in the v3 format, the element needs to have a "relative" attribute; in this case, the value of the "section" attribute is ignored.

An example of the <relref> element with text content might be:

See

```
<relref section="2.3" target="RFC9999" displayFormat="bare">
the protocol overview</relref>
for more information.
```

An HTML formatter might generate:

See

```
<a href="http://www.rfc-editor.org/rfc/rfc9999.html#s-2.3">
the protocol overview</a>
for more information.
```

This element appears as a child element of <annotation> ([Section 3.3](#)), <blockquote> ([Section 3.11](#)), <cref> ([Section 3.16](#)), <dd> ([Section 3.18](#)), <dt> ([Section 3.21](#)), ([Section 3.22](#)), ([Section 3.29](#)), <name> ([Section 3.32](#)), <preamble> ([Section 4.11](#)), ([Section 3.48](#)), <sub> ([Section 3.49](#)), <sup> ([Section 3.50](#)), <t> ([Section 3.51](#)), <td> ([Section 3.54](#)), <th> ([Section 3.56](#)), and <tt> ([Section 3.61](#)).

Content model: only text content.

4.13.1. "displayFormat" Attribute

This attribute is used to signal formatters what the desired format of the relative reference should be. Formatters for document types that have linking capability should wrap each part of the displayed text in hyperlinks. If there is content in the <relref> element, formatters will ignore the value of this attribute.

"of"

A formatter should display the relative reference as the word "Section" followed by a space, the contents of the "section" attribute followed by a space, the word "of", another space, and the value from the "target" attribute enclosed in square brackets.

For example, with an input of:

See

```
<relref section="2.3" target="RFC9999" displayFormat="of"/>
```

for an overview.

An HTML formatter might generate:

See

```
<a href="http://www.rfc-editor.org/info/rfc9999#s-2.3">
```

Section 2.3 of

```
[<a href="#RFC9999">RFC9999</a>]
```

for an overview.

Note that "displayFormat='of'" is the default for <relref>, so it does not need to be given in a <relref> element if that format is desired.

"comma"

A formatter should display the relative reference as the value from the "target" attribute enclosed in square brackets, a comma, a space, the word "Section" followed by a space, and the "section" attribute.

For example, with an input of:

See

```
<relref section="2.3" target="RFC9999" displayFormat="comma"/>
```

for an overview.

An HTML formatter might generate:

See

```
[<a href="#RFC9999">RFC9999</a>],
```

```
<a href="http://www.rfc-editor.org/info/rfc9999#s-2.3">
```

Section 2.3, for an overview.

"parens"

A formatter should display the relative reference as the value from the "target" attribute enclosed in square brackets, a space, a left parenthesis, the word "Section" followed by a space, the "section" attribute, and a right parenthesis.

For example, with an input of:

See

```
<relref section="2.3" target="RFC9999" displayFormat="parens"/>
```

for an overview.

An HTML formatter might generate:

See

```
[<a href="#RFC9999">RFC9999</a>]  
(<a href="http://www.rfc-editor.org/info/rfc9999#s-2.3">  
Section 2.3</a>)  
for an overview.
```

"bare"

A formatter should display the relative reference as the contents of the "section" attribute and nothing else. This is useful when there are multiple relative references to a single base reference.

For example:

```
See Sections  
<relref section="2.3" target="RFC9999" displayFormat="bare"/>  
and  
<relref section="2.4" target="RFC9999" displayFormat="of"/>  
for an overview.
```

An HTML formatter might generate:

```
See Sections  
<a href="http://www.rfc-editor.org/info/rfc9999#s-2.3">  
2.3</a>  
and  
<a href="http://www.rfc-editor.org/info/rfc9999#s-2.4">  
Section 2.4</a> of  
[<a href="#RFC9999">RFC9999</a>]  
for an overview.
```

Allowed values:

*"of" (default)

*"comma"

*"parens"

*"bare"

4.13.2. "relative" Attribute

Specifies a relative reference from the URI in the target reference. This value must include whatever leading character is needed to create the relative reference; typically, this is "#" for HTML documents.

4.13.3. "section" Attribute (*Mandatory*)

Specifies a section of the target reference. If the reference is not an RFC or Internet-Draft in the v3 format, it is an error.

4.13.4. "target" Attribute (*Mandatory*)

The anchor of the reference for this element. If this value is not an anchor to a [reference](#) or [referencegroup](#) element, it is an error. If the reference at the target has no URI, it is an error.

4.14. <sortingcode>

Deprecated, use [postalLine](#) instead.

This element appears as a child element of [postal](#) ([Section 3.37](#)).

Content model: only text content.

4.14.1. "ascii" Attribute

ASCII equivalent for sortingcode.

4.15. <spanx>

Deprecated.

This element appears as a child element of [annotation](#) ([Section 3.3](#)), [c](#) ([Section 4.1](#)), [postamble](#) ([Section 4.10](#)), [preamble](#) ([Section 4.11](#)), and [t](#) ([Section 3.51](#)).

Content model: only text content.

4.15.1. "style" Attribute

Deprecated. Instead of `<spanx style="em">`, use `<em>`; instead of `<spanx style="strong">`, use `<strong>`; instead of `<spanx style="verb">`, use `<tt>`.

4.15.2. "xml:space" Attribute

Deprecated.

Allowed values:

*"default"

*"preserve" (default)

4.16. <street>

Deprecated, use <[postalLine](#)> instead.

This element appears as a child element of <[postal](#)> ([Section 3.37](#)).

Content model: only text content.

4.16.1. "ascii" Attribute

The ASCII equivalent of the street address.

4.17. <texttable>

Deprecated. Use <[table](#)> instead.

This element appears as a child element of <[section](#)> ([Section 3.44](#)).

Content model:

In this order:

1. One optional <[name](#)> element ([Section 3.32](#))
2. One optional <[preamble](#)> element ([Section 4.11](#))
3. One or more <[ttcol](#)> elements ([Section 4.18](#))
4. Optional <[c](#)> elements ([Section 4.1](#))
5. One optional <[postamble](#)> element ([Section 4.10](#))

4.17.1. "align" Attribute

Deprecated.

Allowed values:

*"left"

*"center" (default)

*"right"

4.17.2. "anchor" Attribute

Deprecated.

4.17.3. "style" Attribute

Deprecated.

Allowed values:

*"all"

*"none"

*"headers"

*"full" (default)

4.17.4. "suppress-title" Attribute

Deprecated.

Allowed values:

*"true"

*"false" (default)

4.17.5. "title" Attribute

Deprecated.

4.18. <ttcol>

Deprecated. Instead, use [<tr>](#), [<td>](#), and [<th>](#).

This element appears as a child element of [<texttable>](#) ([Section 4.17](#)).

Content model:

In any order:

*[<cref>](#) elements ([Section 3.16](#))

*[<eref>](#) elements ([Section 3.24](#))

*[<ieref>](#) elements ([Section 3.27](#))

*[<xref>](#) elements ([Section 3.66](#))

*Text

4.18.1. "align" Attribute

Deprecated.

Allowed values:

*"left" (default)

*"center"

*"right"

4.18.2. "width" Attribute

Deprecated.

4.19. <vspace>

Deprecated. In earlier versions of this format, `<vspace>` was often used to get an extra blank line in a list element; in the v3 vocabulary, that can be done instead by using multiple `<t>` elements inside the `<li>` element. Other uses have no direct replacement.

This element appears as a child element of `<t>` ([Section 3.51](#)).

Content model: this element does not have any contents.

4.19.1. "blankLines" Attribute

Deprecated.

5. SVG

The discussion of the use of SVG can be found in [[RFC7996](#)]. This element is part of the namespace "http://www.w3.org/2000/svg".

6. Use of CDATA Structures and Escaping

A common problem authors have with `<artwork>` and `<sourcecode>` elements is that the XML processor returns errors if the text in the artwork contains either the "&" or "<" character, or the string "]]>". To avoid these problems, the "&" and "<" characters may be escaped using the strings "&" and "<", respectively; the "]]>" string can be represented as "]]>". Alternatively, they may be surrounded in a CDATA structure: "<![CDATA[]]>". For example:

Desired output:

```
allowed-chars = "." | "," | "&" | "<" | ">" | "|"
```

Using escaping:

```
<sourcecode>
  allowed-chars = "." | "," | "&" | "<" | ">" | "|"
</sourcecode>
```

Using CDATA:

```
<sourcecode>
<![CDATA[  allowed-chars = "." | "," | "&" | "<" | ">" | "|"]]>
</sourcecode>
```

Using CDATA is not a panacea, but it does help prevent having to use escapes in places where using escapes can cause other problems, such as difficulty of inclusion from other documents.

7. Internationalization Considerations

This format is based on [XML] and thus does not have any issues representing arbitrary Unicode [UNICODE] characters in text content. The RFC Series Editor may restrict some of the characters that can be used in a particular RFC; the rules for such restrictions are covered in [RFC7997].

8. Security Considerations

The "name" attribute of the `<artwork>` element (Section 3.6.5) can be used to derive a filename for saving to a local file system. Trusting this kind of information without pre-processing is a known security risk; see Section 4.3 of [RFC6266] for more information.

The "src" attribute of the `<artwork>` element can be used to read files from the local system. Processing tools must be careful to not accept dangerous values for the filename, particularly those that contain absolute references outside the current directory.

The "type" attribute of the `<artwork>` and `<sourcecode>` elements is meant to encourage formatters to automatically extract known types of content from an RFC or Internet-Draft. While extraction is probably safe, those tools might also think that they could further process the extracted content, such as by rendering artwork or executing code. Doing so without first sanity-checking the extracted content is clearly a terrible idea from a security perspective. More generally, a tool that is reading XML input needs to be suspicious of any content that it intends to post-process.

When there is an external reference to a URL, a processor or renderer should fetch the content into a sandbox and should have only a localized impact on the document processing and rendering.

All security considerations related to XML processing are relevant as well (see [Section 7](#) of [\[RFC3470\]](#)).

9. IANA Considerations

9.1. Internet Media Type Registration

IANA maintains the registry of Internet Media Types [\[RFC6838\]](#) at <https://www.iana.org/assignments/media-types>.

This document updates the specification for the Internet Media Type "application/rfc+xml" from the one in [\[RFC7749\]](#). The following has been registered with IANA.

Type name: application

Subtype name: rfc+xml

Required parameters: There are no required parameters.

Optional parameters: "charset": This parameter has identical semantics to the charset parameter of the "application/xml" Media Type specified in [Section 9.1](#) of [\[RFC7303\]](#).

Encoding considerations: Identical to those of "application/xml" as described in [Section 9.1](#) of [\[RFC7303\]](#).

Security considerations: As defined in [Section 8](#). In addition, as this Media Type uses the "+xml" convention, it inherits the security considerations described in [Section 10](#) of [\[RFC7303\]](#).

Interoperability considerations: Different implementations of this format have had interoperability issues. It is not expected that publication of this application will cause those implementations to be fixed.

Published specification:

This specification.

Applications that use this Media Type: Applications that transform xml2rfc to output representations such as plain text or HTML, plus additional analysis tools.

Fragment identifier considerations: The "anchor" attribute is used for assigning document-wide unique identifiers that can be used as shorthand pointers, as described in [[XPOINTER](#)].

Additional information:

Deprecated alias names for this type: None

Magic number(s): As specified for "application/xml" in [[RFC7303](#)].

File extension(s): .xml or .rfcxml when disambiguation from other XML files is needed

Macintosh file type code(s): TEXT

Person & email address to contact for further information: See the Author's Address section of RFC 7991.

Intended usage: COMMON

Restrictions on usage: None

Author: See the Author's Address section of RFC 7991.

Change controller: RFC Series Editor (rse@rfc-editor.org)

9.2. Link Relation Registration

IANA has registered "convertedFrom" in the "Link Relation Types" registry [[LINKRELATIONS](#)].

Relation Name: convertedFrom

Description: The document linked to was later converted to the document that contains this link relation. For example, an RFC can have a link to the Internet-Draft that became the RFC; in that case, the link relation would be "convertedFrom".

Reference: This document.

Notes: This relation is different than "predecessor-version" in that "predecessor-version" is for items in a version control system. It

is also different than "previous" in that this relation is used for converted resources, not those that are part of a sequence of resources.

Application Data: None

10. References

10.1. Normative References

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10.3. Editorial References

[IMPNOTES]

Levkowetz, H., "Implementation notes for RFC7991, "The 'xml2rfc' Version 3 Vocabulary"", Work in Progress, Internet-Draft, draft-levkowetz-xml2rfc-v3-implementation-notes-10, October 2019, <<https://datatracker.ietf.org/doc/html/draft-levkowetz-xml2rfc-v3-implementation-notes-10>>.

Appendix A. Front-Page ("Boilerplate") Generation

The values listed here will be defined by the RFC Series Editor. Those listed here are believed to be the current values in use.

A.1. The "category" Attribute

For RFCs, the "category" attribute ([Section 3.43.1](#)) determines the "maturity level" (see [Section 4](#) of [[RFC2026](#)]). The allowed values are "std" for "Standards Track", "bcp" for "BCP", "info" for "Informational", "exp" for "Experimental", and "historic" for "Historic".

For Internet-Drafts, the "category" attribute is not needed; when supplied, it will appear as "Intended Status". Supplying this information can be useful to reviewers.

A.2. The "ipr" Attribute

This attribute value can take a long list of values, each of which describes an IPR policy for the document ([Section 3.43.5](#)). The values are not the result of a grand design, but they remain simply for historic reasons. Of these values, only a few are currently in use; all others are supported by various tools for backwards compatibility with old source files.

Note: Some variations of the boilerplate are selected based on the document's date; therefore, it is important to specify the "year", "month", and "day" attributes of the `<date>` element when archiving the XML source of an Internet-Draft on the day of submission.

Disclaimer: THIS ONLY PROVIDES IMPLEMENTATION INFORMATION. IF YOU NEED LEGAL ADVICE, PLEASE CONTACT A LAWYER. For further information, refer to `<http://trustee.ietf.org/docs/IETF-Copyright-FAQ.pdf>`.

For the current "Copyright Notice" text, the `submissionType` attribute of the `<rfc>` element ([Section 3.43.12](#)) determines whether a statement about "Code Components" is inserted (which is the case for the value "IETF", which is the default). Other values, such as "independent", suppress this part of the text.

A.2.1. Current Values: "*trust200902"

The name for these values refers to version 2.0 of the IETF Trust's "Legal Provisions Relating to IETF Documents", sometimes simply called the "TLP", which went into effect on February 15, 2009 [[TLP2.0](#)]. Updates to the document were published on September 12, 2009 [[TLP3.0](#)] and on December 28, 2009 [[TLP4.0](#)], modifying the license for code components (see `<`

[info/](#)> for further information). The actual text is located in Section 6 ("Text to Be Included in IETF Documents") of these documents.

The prep tool automatically produces the "correct" text, depending on the document's date information (see above):

TLP	starting with publication date
[TLP3.0]	2009-11-01
[TLP4.0]	2010-04-01

Table 1

The TLP was again updated in March 2015 [[TLP5.0](#)], but the changes made in that version do not affect the boilerplate text.

A.2.1.1. trust200902

This value should be used unless one of the more specific "*trust200902" values is a better fit. It produces the text in Sections 6.a and 6.b of the TLP.

A.2.1.2. noModificationTrust200902

This produces the additional text from Section 6.c.i of the TLP:

This document may not be modified, and derivative works of it may not be created, except to format it for publication as an RFC or to translate it into languages other than English.

Note: this clause is incompatible with RFCs that are published on the Standards Track.

A.2.1.3. noDerivativesTrust200902

This produces the additional text from Section 6.c.ii of the TLP:

This document may not be modified, and derivative works of it may not be created, and it may not be published except as an Internet-Draft.

Note: this clause is incompatible with RFCs.

A.2.1.4. pre5378Trust200902

This produces the additional text from Section 6.c.iii of the TLP, frequently called the "pre-5378 escape clause" referring to changes introduced in [[RFC5378](#)]:

This document may contain material from IETF Documents or IETF Contributions published or made publicly available before November 10, 2008. The person(s) controlling the copyright in some of this material may not have granted the IETF Trust the right to allow modifications of such material outside the IETF Standards Process. Without obtaining an adequate license from the person(s) controlling the copyright in such materials, this document may not be modified outside the IETF Standards Process, and derivative works of it may not be created outside the IETF Standards Process, except to format it for publication as an RFC or to translate it into languages other than English.

See Section 4 of <<http://trustee.ietf.org/docs/IETF-Copyright-FAQ.pdf>> for further information about when to use this value.

Note: this text appears under "Copyright Notice", unless the document was published before November 2009, in which case it appears under "Status of This Memo".

A.2.2. Historic Values

A.2.2.1. Historic Values: `"*trust200811"`

The attribute values "trust200811", "noModificationTrust200811", and "noDerivativesTrust200811" are similar to their "trust200902" counterparts, except that they use text specified in [[TLP1.0](#)].

A.2.2.2. Historic Values: `"*3978"`

The attribute values "full3978", "noModification3978", and "noDerivatives3978" are similar to their counterparts above, except that they use text specified in [[RFC3978](#)].

A.2.2.3. Historic Values: `"*3667"`

The attribute values "full3667", "noModification3667", and "noDerivatives3667" are similar to their counterparts above, except that they use text specified in [[RFC3667](#)].

A.2.2.4. Historic Values: `"*2026"`

The attribute values "full2026" and "noDerivativeWorks2026" are similar to their counterparts above, except that they use text specified in Section 10 of [[RFC2026](#)].

The special value "none" was also used back then; it denied the IETF any rights beyond publication as an Internet-Draft.

A.3. The "submissionType" Attribute

The RFC Editor publishes documents from different "document streams", of which the "IETF stream" is the most prominent. Other streams are the "Independent Submissions stream" (used for things such as discussion of Internet-related technologies that are not part of the IETF agenda), the "IAB stream" (Internet Architecture Board), and the "IRTF stream" (Internet Research Task Force).

The values for the attribute are "IETF" (the default value), "independent", "IAB", and "IRTF".

Historically, this attribute did not affect the final appearance of RFCs, except for subtle differences in copyright notices. Nowadays (as of [\[RFC7841\]](#)), the stream name appears in the first line of the front page, and it also affects the text in the "Status of This Memo" section.

For current documents, setting the "submissionType" attribute will have the following effect:

- *For RFCs, the stream name appears in the upper left corner of the first page (in Internet-Drafts, this is either "Network Working Group" or the value of the [<workgroup>](#) element).

- *For RFCs, it affects the whole "Status of This Memo" section (see [Section 3.2](#) of [\[RFC7841\]](#)).

- *For all RFCs and Internet-Drafts, it determines whether the "Copyright Notice" section mentions the Copyright on Code Components (see Section 6 of the TLP ("Text to Be Included in IETF Documents")).

A.4. The "consensus" Attribute

For some of the publication streams (see [Appendix A.3](#)), the "Status of This Memo" section depends on whether there was a consensus to publish (again, see [Section 3.4](#) of [\[RFC7841\]](#)).

The consensus attribute can be used to supply this information. The acceptable values are "true" (the default) and "false"; "yes" and "no" from v2 are deprecated.

The effect of this value for the various streams is:

- *"independent": none.

*"IAB": mention that there was an IAB consensus.

*"IETF": mention that there was an IETF consensus.

*"IRTF": mention that there was a research group consensus (where the name of the research group is extracted from the <[workgroup](#)> element).

Appendix B. The v3 Format and Processing Tools

This section describes topics that are specific to v3 processing tools. Note that there is some discussion of tools in the main body of the document as well. For example, some elements have descriptions of how a processing tool might create output from the element.

The expected design of the tools that will be used with v3 documents includes:

*A "prep tool" that takes a v3 document, makes many checks, adds and changes many attribute values, and creates a file that is a "prepared document". The prepared document is a valid v3 document. The prep tool is described in [[RFC7998](#)].

The prep tool is expected to have many modes:

- RFC mode -- The mode used by the RFC Editor to process the input from one of the RFC streams and to process XML produced during the RFC editing process. The restrictions on the canonical XML for RFCs, as well as how the non-canonical formats will look, are described at <<https://www.rfc-editor.org/rse/wiki/doku.php?id=design:format-and-content-rfcs>>.
- Draft mode -- The mode used by the Internet-Draft submission tool. The restrictions for the XML from this mode will be described later.
- Diagnostic mode -- A mode that can be used by document authors to look for errors or warnings before they submit their documents for publication.
- Consolidation mode -- Produces output where no external resources are required to render the file output. This includes expanding the XInclude entities and DTD entities in place, and changing all elements that have "src" attributes with external links into either "data:" URI or content for the element, as specified in [[RFC7998](#)].

*Formatting tools that will create HTML, PDF, plain text, and possibly other output formats. These formatters will be created by the IETF, but others can create such tools as well. The IETF tools are expected to take prepared documents as input.

There may also be processing tools that are meant to run on the computers of authors. These tools may be used to produce interim versions of the non-canonical representations so that authors can see how their XML might later be rendered, to create documents in representations different than those supported by the RFC Editor, to possibly create documents that are not meant to be Internet-Drafts or RFCs, and to convert XML that has external information into XML that has that external information included.

The prep tool is expected to have clear error reporting, giving more context than just a line number. For example, the error messages should differentiate between errors in XML and those from the v3 format.

In v2, the grammar was specified as a DTD. In v3, the grammar is specified only as RELAX Next Generation (RNG). This means that tools need to work from the RNG, not from a DTD. Some of the features of the v3 grammar cannot be specified as a DTD.

B.1. Including External Text with XInclude

All tools for the v3 format are expected to support XInclude [[XInclude](#)]. XInclude specifies a processing model and syntax for general-purpose inclusion of information that is either on the Internet or local to the user's computer.

In the v3 syntax, XInclude is expressed as the `<xi:include>` element. To use this element, you need to include the "xi" namespace in the `<rfc>` element; that is, you need to specify

```
xmlns:xi="http://www.w3.org/2001/XInclude"
```

as one of the attributes in the `<rfc>` element.

The most common way to use `<xi:include>` is to pull in references that are already formed as XML. This can be done from bib.ietf.org. For example, if a document has three normative references, all RFCs, the document might contain:

```
<references>
  <xi:include href="http://bib.ietf.org/public/rfc/
    bibxml/reference.RFC.2119.xml"/>
  <xi:include href="http://bib.ietf.org/public/rfc/
    bibxml/reference.RFC.4869.xml"/>
  <xi:include href="http://bib.ietf.org/public/rfc/
    bibxml/reference.RFC.7169.xml"/>
</references>
```

(the line breaks in the example above have been added for readability and need to be removed in practice)

`<xi:include>` can be used anywhere an XML element could be used (but not where free text is used). For example, if three Internet-Drafts are all including a particular paragraph or section verbatim, that text can be kept either in a file or somewhere on the web and can be included with `<xi:include>`. An example of pulling something from the local disk would be:

```
<xi:include href="file:///home/chris/ietf/drafts/commontext.xml"/>
```

In general, XInclude should be used instead of ENTITY references and XML Processing Instructions (PIs) that allow external inclusions.

B.2. Anchors and IDs

People writing and reading Internet-Drafts and RFCs often want to make reference to specific locations in those documents. In the case of RFC authors, it is common to want to reference another part of their document, such as "see Section 3.2 of this document." Readers, on the other hand, want to reference parts of documents that they didn't write, such as "see Section 3.2 of RFC 6949." The XML vocabulary in this document attempts to support both sets of people.

Authors can leave anchors in a document that can later be used for references with the "anchor" attribute. Anchors can be included in the numerous elements. The author can then refer to that anchor in the "target" attribute of the `<xref>` element.

Readers can refer to any element that has an "anchor" attribute by that attribute. Note, however, that most of the time, elements won't have anchors. In the common case, the reader wants to refer to an element that does not have an "anchor" attribute, but that element has a "pn" attribute.

Processing tools add the "pn" attribute to many elements during processing. This attribute and its value are automatically generated by the tool if the attribute is not there; if the attribute is already there, the tool may replace the value.

B.2.1. Overlapping Values

In the HTML representation of this XML vocabulary, both anchors and "pn" attributes will be used in the "id" attributes of elements. Thus, there can be no overlap between the names entered in "anchor" attributes, in "slugifiedName" attributes, and those that are generated for the "pn" attributes. Also, there are some values for the "anchor" values that are reserved for sections, and those sections can only have those anchor values.

The following rules prevent this overlap:

*"pn" for regular sections always has the format "s-nnn", where "nnn" is the section number, or the appendix identifier (which starts with a letter). For example, this would be "s-2.1.3" for Section 2.1.3 and "s-a" for Appendix A. For the [abstract](#) element, it is always "s-abstract". For the [note](#) element, it is always "s-note-nnn", where "nnn" is a sequential value. For sections in the [boilerplate](#) element, it is always "s-boilerplate-nnn", where "nnn" is a sequential value.

*"pn" for [references](#) elements has the format "s-nnn". It is important to note that "nnn" is a number, not letters, even though the [references](#) appear in the back. It is the number that is one higher than the highest top-level section number in [middle](#). If there are two or more [references](#), "nnn" will include a dot as if the [references](#) are a subsection of a section that is numbered one higher than the highest top-level section number in [middle](#).

*"pn" for [figure](#) elements always has the format "f-nnn", where "nnn" is the figure number. For example, this would be "f-5" for Figure 5.

*"pn" for [iref](#) elements always has the format "i-ttt-nnn", where "ttt" is the slugified item (plus a hyphen and the slugified subitem if there is a subitem), and "nnn" is the instance of that item/subitem pair. For example, this would be "i-foo-1" for "<iref item='foo'>" and "i-foo-bar-1" for "<iref item='foo' subitem='bar'>".

*"pn" for [table](#) elements always has the format "t-nnn", where "nnn" is the table number. For example, this would be "t-5" for Table 5.

*"pn" for all elements not listed above always has the format "p-nnn-mmm", where "nnn" is the section number and "mmm" is the relative position in the section. For example, this would be "p-2.1.3-7" for the seventh part number in Section 2.1.3.

*"slugifiedName" always has the format "n-ttt", where "ttt" is the text of the name after slugification. For example, this would be "n-protocol-overview" for the name "Protocol Overview". The actual conversions done in slugification will be specified at a later time.

*Anchors must never overlap with any of the above. The easiest way to assure that is to not pick an anchor name that starts with a single letter followed by a hyphen. If an anchor does overlap with one of the types of names above, the processing tool will reject the document.

B.3. Attributes Controlled by the Prep Tool

Many elements in the v3 vocabulary have new attributes whose role is to hold values generated by the prep tool. These attributes can exist in documents that are input to the prep tool; however, any of these attributes might be added, removed, or changed by the prep tool. Thus, it is explicitly unsafe for a document author to include these attributes and expect that their values will survive processing by the prep tool.

The attributes that are controlled by the prep tool are:

*The "pn" attribute -- The number for this item within the section. The numbering is shared with other elements of a section. The "pn" attribute is added to these elements: `<abstract>`, `<artset>`, `<artwork>`, `<aside>`, `<blockquote>`, `<dd>`, `<dl>`, `<dt>`, `<figure>`, `<iref>`, `<li>`, `<list>`, `<note>`, `<ol>`, `<references>`, `<section>`, `<sourcecode>`, `<t>`, `<table>`, `<u>`, and `<ul>` .

*originalSrc -- This attribute is filled with the original value of the "src" attribute if that attribute is removed by the prep tool in `<artwork>`, `<figure>`, and `<sourcecode>`.

*<name> "slugifiedName" attribute -- This attribute is filled with a "slugified" version of the text in the element. This attribute can be used in the output formats for elements that have both names and numbers.

*"derivedLink" attribute -- This attribute is filled with the link that is derived from combining the URI from the reference and the relative part that is either a copy of the "relative" attribute or a section number derived from the "section" attribute. This attribute is added to `<relref>` and `<xref>`.

*<rfc> "expiresDate" attribute -- This attribute is filled with the date that an Internet-Draft expires. The date is in the format yyyy-mm-dd.

*<rfc> "mode" attribute -- This attribute is filled with a string that indicates what mode the prep tool was in when it processed the XML, such as whether it was processing a file to become an Internet-Draft or an RFC.

*"scripts" attribute -- This attribute in the <rfc> element is filled with a list of scripts needed to render this document. The list is comma-separated, with no spaces allowed. The order is unimportant. The names come from [UAX24]. For example, if the document has Chinese characters in it, the value might be "Common, Latin, Han".

*"derivedContent" attribute -- This attribute is filled in if there is no content in the <xref> or <relref> element. The value for this attribute is based on the value in the "displayFormat" attribute. Examples of how this value is filled can be found in [Section 3.66.1](#).

*"derivedAnchor" attribute -- This attribute in an <xref> element is filled in with the display anchor from the corresponding <displayreference> element. If there is no <displayreference>, this attribute is a copy of the "anchor" attribute.

*"derivedCounter" -- This attribute in a element in an ordered list is filled in with the item number in the list.

In addition, note that the contents of the <boilerplate> element are controlled by the prep tool.

Appendix C. RELAX NG Schema

The following is the RELAX NG schema for the v3 format.

```
namespace a = "http://relaxng.org/ns/compatibility/annotations/1.0"
```

```
# xml2rfc Version 3 grammar
```

```
rfc =
```

```
  element rfc {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute number { text }?,
    [ a:defaultValue = "" ] attribute obsoletes { text }?,
    [ a:defaultValue = "" ] attribute updates { text }?,
    attribute category {
      "std" | "bcp" | "exp" | "info" | "historic"
    }?,
    attribute mode { text }?,
    [ a:defaultValue = "false" ]
    attribute consensus { "no" | "yes" | "false" | "true" }?,
    attribute seriesNo { text }?,
    attribute ipr { text }?,
    attribute iprExtract { xsd:IDREF }?,
    [ a:defaultValue = "IETF" ]
    attribute submissionType {
      "IETF" | "IAB" | "IRTF" | "independent"
    }?,
    attribute docName { text }?,
    [ a:defaultValue = "false" ]
    attribute sortRefs { "true" | "false" }?,
    [ a:defaultValue = "true" ]
    attribute symRefs { "true" | "false" }?,
    [ a:defaultValue = "true" ]
    attribute tocInclude { "true" | "false" }?,
    [ a:defaultValue = "3" ] attribute tocDepth { text }?,
    attribute prepTime { text }?,
    [ a:defaultValue = "true" ]
    attribute indexInclude { "true" | "false" }?,
    attribute version { text }?,
    [ a:defaultValue = "Common, Latin" ] attribute scripts { text }?,
    attribute expiresDate { text }?,
    link*,
    front,
    middle,
    back?
  }
}
```

```
link =
```

```
  element link {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
```

```
    attribute href { text },
    attribute rel { text }?
}
```

front =

```
element front {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    title,
    seriesInfo*,
    author+,
    date?,
    area*,
    workgroup*,
    keyword*,
    abstract?,
    note*,
    boilerplate?,
    toc?
}
```

title =

```
element title {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute abbrev { text }?,
    attribute ascii { text }?,
    (text | br)*
}
```

author =

```
element author {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute initials { text }?,
    attribute asciiInitials { text }?,
    attribute surname { text }?,
    attribute asciiSurname { text }?,
    attribute fullname { text }?,
    attribute role { "editor" }?,
    attribute asciiFullname { text }?,
    organization?,
    address?
}
```

contact =

```
element contact {
    attribute xml:base { text }?,
```

```

    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute initials { text }?,
    attribute asciiInitials { text }?,
    attribute surname { text }?,
    attribute asciiSurname { text }?,
    attribute fullname { text }?,
    attribute asciiFullname { text }?,
    organization?,
    address?
}

```

organization =

```

element organization {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute abbrev { text }?,
    attribute ascii { text }?,
    attribute asciiAbbrev { text }?,
    [ a:defaultValue = "true" ]
    attribute showOnFrontPage { "true" | "false" }?,
    text
}

```

address =

```

element address {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    postal?,
    phone?,
    facsimile?,
    email*,
    uri?
}

```

postal =

```

element postal {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    ((city
    | cityarea
    | code
    | country
    | extaddr
    | pobox
    | region
    | sortingcode
    | street)*
    | postalLine+)
}

```

```
}
```

```
cityarea =
```

```
  element cityarea {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
extaddr =
```

```
  element extaddr {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
pobox =
```

```
  element pobox {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
sortingcode =
```

```
  element sortingcode {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
street =
```

```
  element street {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
city =
```

```
  element city {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
region =  
  element region {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
code =  
  element code {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
country =  
  element country {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
postallLine =  
  element postallLine {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
  }
```

```
phone =  
  element phone {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    text  
  }
```

```
facsimile =  
  element facsimile {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    text  
  }
```

```
email =  
  element email {
```

```
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute ascii { text }?,  
    text  
}
```

```
uri =  
    element uri {  
        attribute xml:base { text }?,  
        attribute xml:lang { text }?,  
        text  
    }
```

```
date =  
    element date {  
        attribute xml:base { text }?,  
        attribute xml:lang { text }?,  
        attribute day { text }?,  
        attribute month { text }?,  
        attribute year { text }?,  
        text  
    }
```

```
area =  
    element area {  
        attribute xml:base { text }?,  
        attribute xml:lang { text }?,  
        text  
    }
```

```
workgroup =  
    element workgroup {  
        attribute xml:base { text }?,  
        attribute xml:lang { text }?,  
        text  
    }
```

```
keyword =  
    element keyword {  
        attribute xml:base { text }?,  
        attribute xml:lang { text }?,  
        text  
    }
```

```
abstract =  
    element abstract {  
        attribute xml:base { text }?,  
        attribute xml:lang { text }?,  
        attribute anchor { xsd:ID }?,
```

```
    attribute pn { xsd:ID }?,  
    (dl | ol | t | ul)+  
}
```

note =

```
element note {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute title { text }?,  
    attribute pn { xsd:ID }?,  
    [ a:defaultValue = "false" ]  
    attribute removeInRFC { "true" | "false" }?,  
    name?,  
    (dl | ol | t | ul)+  
}
```

boilerplate =

```
element boilerplate {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    section+  
}
```

toc =

```
element toc {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    section*  
}
```

middle =

```
element middle {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    section+  
}
```

section =

```
element section {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    attribute anchor { xsd:ID }?,  
    attribute pn { xsd:ID }?,  
    attribute title { text }?,  
    [ a:defaultValue = "true" ]  
    attribute numbered { "true" | "false" }?,  
    [ a:defaultValue = "default" ]  
    attribute toc { "include" | "exclude" | "default" }?,  
    [ a:defaultValue = "false" ]
```

```

    attribute removeInRFC { "true" | "false" }?,
    name?,
    (artset
      | artwork
      | aside
      | author
      | blockquote
      | contact
      | dl
      | figure
      | iref
      | ol
      | sourcecode
      | t
      | table
      | texttable
      | ul)*,
    section*
  }

name =
  element name {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute slugifiedName { xsd:ID }?,
    (text
      | bcp14
      | br
      | cref
      | em
      | eref
      | iref
      | relref
      | strong
      | sub
      | sup
      | tt
      | xref)*
  }

br =
  element br {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    empty
  }

t =
  element t {

```

```

attribute xml:base { text }?,
attribute xml:lang { text }?,
attribute anchor { xsd:ID }?,
attribute pn { xsd:ID }?,
attribute hangText { text }?,
[ a:defaultValue = "0" ] attribute indent { text }?,
[ a:defaultValue = "false" ]
attribute keepWithNext { "false" | "true" }?,
[ a:defaultValue = "false" ]
attribute keepWithPrevious { "false" | "true" }?,
(text
| bcp14
| br
| contact
| cref
| em
| eref
| iref
| relref
| spanx
| strong
| sub
| sup
| tt
| u
| vspace
| xref)*
}

```

```

aside =
element aside {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute anchor { xsd:ID }?,
  attribute pn { xsd:ID }?,
  (artset
  | artwork
  | blockquote
  | dl
  | figure
  | iref
  | ol
  | t
  | table
  | ul)*
}

```

```

blockquote =
element blockquote {

```

```

    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute pn { xsd:ID }?,
    attribute cite { text }?,
    attribute quotedFrom { text }?,
    ((artset | artwork | dl | figure | ol | sourcecode | t | ul)+
    | (text
        | bcp14
        | br
        | cref
        | em
        | eref
        | iref
        | relref
        | strong
        | sub
        | sup
        | tt
        | u
        | xref)+)
}

\list =
    element list {
        attribute xml:base { text }?,
        attribute xml:lang { text }?,
        [ a:defaultValue = "empty" ] attribute style { text }?,
        attribute hangIndent { text }?,
        attribute counter { text }?,
        attribute pn { xsd:ID }?,
        t+
    }

ol =
    element ol {
        attribute xml:base { text }?,
        attribute xml:lang { text }?,
        attribute anchor { xsd:ID }?,
        [ a:defaultValue = "1" ] attribute type { text }?,
        [ a:defaultValue = "1" ] attribute start { text }?,
        attribute group { text }?,
        [ a:defaultValue = "normal" ]
        attribute spacing { "normal" | "compact" }?,
        [ a:defaultValue = "adaptive" ]
        attribute indent { text | "adaptive" }?,
        attribute pn { xsd:ID }?,
        li+
    }

```

```

ul =
  element ul {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    [ a:defaultValue = "normal" ]
    attribute spacing { "normal" | "compact" }?,
    ([ a:defaultValue = "false" ]
    attribute empty { "false" | "true" },
    [ a:defaultValue = "false" ]
    attribute bare { "true" | "false" }?)?,
    [ a:defaultValue = "3" ] attribute indent { text }?,
    attribute pn { xsd:ID }?,
    li+
  }

```

```

li =
  element li {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute derivedCounter { text }?,
    attribute pn { xsd:ID }?,
    ((artset
      | artwork
      | aside
      | blockquote
      | dl
      | figure
      | ol
      | sourcecode
      | t
      | table
      | ul)+
    | (text
      | bcp14
      | br
      | cref
      | em
      | eref
      | iref
      | relref
      | strong
      | sub
      | sup
      | tt
      | u
      | xref)+)
  }

```

```
}
```

```
dl =
```

```
element dl {  
  attribute xml:base { text }?,  
  attribute xml:lang { text }?,  
  attribute anchor { xsd:ID }?,  
  [ a:defaultValue = "normal" ]  
  attribute spacing { "normal" | "compact" }?,  
  [ a:defaultValue = "false" ]  
  attribute newline { "false" | "true" }?,  
  [ a:defaultValue = "3" ] attribute indent { text }?,  
  attribute pn { xsd:ID }?,  
  (dt, dd)+  
}
```

```
dt =
```

```
element dt {  
  attribute xml:base { text }?,  
  attribute xml:lang { text }?,  
  attribute anchor { xsd:ID }?,  
  attribute pn { xsd:ID }?,  
  (text  
  | bcp14  
  | br  
  | cref  
  | em  
  | eref  
  | iref  
  | relref  
  | strong  
  | sub  
  | sup  
  | tt  
  | xref)*  
}
```

```
dd =
```

```
element dd {  
  attribute xml:base { text }?,  
  attribute xml:lang { text }?,  
  attribute anchor { xsd:ID }?,  
  attribute pn { xsd:ID }?,  
  ((artset  
  | artwork  
  | aside  
  | blockquote  
  | dl  
  | figure
```

```

| ol
| sourcecode
| t
| table
| ul)+
| (text
  | bcp14
  | br
  | cref
  | em
  | eref
  | iref
  | relref
  | strong
  | sub
  | sup
  | tt
  | u
  | xref)+)
}

```

xref =

```

element xref {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute target { xsd:IDREF },
  [ a:defaultValue = "false" ]
  attribute pageno { "true" | "false" }?,
  [ a:defaultValue = "default" ]
  attribute format { "default" | "title" | "counter" | "none" }?,
  attribute derivedContent { text }?,
  [ a:defaultValue = "of" ]
  attribute sectionFormat { "of" | "comma" | "parens" | "bare" }?,
  attribute section { text }?,
  attribute relative { text }?,
  attribute derivedLink { text }?,
  (text | em | strong | sub | sup | tt)*
}

```

relref =

```

element relref {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute target { xsd:IDREF },
  [ a:defaultValue = "of" ]
  attribute displayFormat { "of" | "comma" | "parens" | "bare" }?,
  attribute derivedContent { text }?,
  attribute section { text },
  attribute relative { text }?,

```

```

        attribute derivedLink { text }?,
        text
    }

eref =
    element eref {
        attribute xml:base { text }?,
        attribute xml:lang { text }?,
        [ a:defaultValue = "none" ]
        attribute brackets { "none" | "angle" }?,
        attribute target { text },
        text
    }

iref =
    element iref {
        attribute xml:base { text }?,
        attribute xml:lang { text }?,
        attribute item { text },
        [ a:defaultValue = "" ] attribute subitem { text }?,
        [ a:defaultValue = "false" ]
        attribute primary { "true" | "false" }?,
        attribute pn { xsd:ID }?,
        empty
    }

cref =
    element cref {
        attribute xml:base { text }?,
        attribute xml:lang { text }?,
        attribute anchor { xsd:ID }?,
        attribute source { text }?,
        [ a:defaultValue = "true" ]
        attribute display { "true" | "false" }?,
        (text
        | br
        | em
        | eref
        | relref
        | strong
        | sub
        | sup
        | tt
        | xref)*
    }

tt =
    element tt {
        attribute xml:base { text }?,

```

```
    attribute xml:lang { text }?,  
    (text  
      | bcp14  
      | br  
      | cref  
      | em  
      | eref  
      | iref  
      | relref  
      | strong  
      | sub  
      | sup  
      | xref)*  
  }
```

```
strong =  
  element strong {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    (text  
      | bcp14  
      | br  
      | cref  
      | em  
      | eref  
      | iref  
      | relref  
      | sub  
      | sup  
      | tt  
      | xref)*  
  }
```

```
em =  
  element em {  
    attribute xml:base { text }?,  
    attribute xml:lang { text }?,  
    (text  
      | bcp14  
      | br  
      | cref  
      | eref  
      | iref  
      | relref  
      | strong  
      | sub  
      | sup  
      | tt  
      | xref)*  
  }
```

```
}
```

```
sub =
```

```
element sub {  
  attribute xml:base { text }?,  
  attribute xml:lang { text }?,  
  (text  
    | bcp14  
    | cref  
    | em  
    | eref  
    | iref  
    | relref  
    | strong  
    | sub  
    | sup  
    | tt  
    | xref)*  
}
```

```
sup =
```

```
element sup {  
  attribute xml:base { text }?,  
  attribute xml:lang { text }?,  
  (text  
    | bcp14  
    | cref  
    | em  
    | eref  
    | iref  
    | relref  
    | strong  
    | sub  
    | sup  
    | tt  
    | xref)*  
}
```

```
spanx =
```

```
element spanx {  
  attribute xml:base { text }?,  
  attribute xml:lang { text }?,  
  [ a:defaultValue = "preserve" ]  
  attribute xml:space { "default" | "preserve" }?,  
  [ a:defaultValue = "emph" ] attribute style { text }?,  
  text  
}
```

```
vspace =
```

```

element vspace {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  [ a:defaultValue = "0" ] attribute blankLines { text }?,
  empty
}

```

```

figure =
  element figure {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute pn { xsd:ID }?,
    [ a:defaultValue = "" ] attribute title { text }?,
    [ a:defaultValue = "false" ]
    attribute suppress-title { "true" | "false" }?,
    attribute src { text }?,
    attribute originalSrc { text }?,
    [ a:defaultValue = "left" ]
    attribute align { "left" | "center" | "right" }?,
    [ a:defaultValue = "" ] attribute alt { text }?,
    [ a:defaultValue = "" ] attribute width { text }?,
    [ a:defaultValue = "" ] attribute height { text }?,
    name?,
    iref*,
    preamble?,
    (artset | artwork | sourcecode)+,
    postamble?
  }

```

```

table =
  element table {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    [ a:defaultValue = "center" ]
    attribute align { "left" | "center" | "right" }?,
    attribute anchor { xsd:ID }?,
    attribute pn { xsd:ID }?,
    name?,
    iref*,
    thead?,
    tbody+,
    tfoot?
  }

```

```

preamble =
  element preamble {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,

```

```

    (text
    | bcp14
    | cref
    | em
    | eref
    | iref
    | relref
    | spanx
    | strong
    | sub
    | sup
    | tt
    | u
    | xref)*
}

artset =
element artset {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute pn { xsd:ID }?,
    artwork+
}

artwork =
element artwork {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute pn { xsd:ID }?,
    attribute xml:space { text }?,
    [ a:defaultValue = "" ] attribute name { text }?,
    [ a:defaultValue = "" ] attribute type { text }?,
    attribute src { text }?,
    [ a:defaultValue = "left" ]
    attribute align { "left" | "center" | "right" }?,
    [ a:defaultValue = "" ] attribute alt { text }?,
    [ a:defaultValue = "" ] attribute width { text }?,
    [ a:defaultValue = "" ] attribute height { text }?,
    attribute originalSrc { text }?,
    (text* | svg)
}

a:documentation [ "svg element: see Appendix A of [RFC7996]." ]
include "SVG-1.2-RFC.rnc"

sourcecode =
element sourcecode {
    attribute xml:base { text }?,

```

```

    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    attribute pn { xsd:ID }?,
    [ a:defaultValue = "" ] attribute name { text }?,
    [ a:defaultValue = "" ] attribute type { text }?,
    [ a:defaultValue = "false" ]
    attribute markers { "true" | "false" }?,
    attribute src { text }?,
    attribute originalSrc { text }?,
    text
}

```

thead =

```

element thead {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    tr+
}

```

tbody =

```

element tbody {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    tr+
}

```

tfoot =

```

element tfoot {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    tr+
}

```

tr =

```

element tr {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    (td | th)+
}

```

td =

```

element td {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,

```

```

[ a:defaultValue = "1" ] attribute colspan { text }?,
[ a:defaultValue = "1" ] attribute rowspan { text }?,
[ a:defaultValue = "left" ]
attribute align { "left" | "center" | "right" }?,
((artset | artwork | dl | figure | ol | sourcecode | t | ul)+
 | (text
   | bcp14
   | br
   | cref
   | em
   | eref
   | iref
   | relref
   | strong
   | sub
   | sup
   | tt
   | u
   | xref)*)
}

th =
element th {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute anchor { xsd:ID }?,
  [ a:defaultValue = "1" ] attribute colspan { text }?,
  [ a:defaultValue = "1" ] attribute rowspan { text }?,
  [ a:defaultValue = "left" ]
  attribute align { "left" | "center" | "right" }?,
  ((artset | artwork | dl | figure | ol | sourcecode | t | ul)+
   | (text
     | bcp14
     | br
     | cref
     | em
     | eref
     | iref
     | relref
     | strong
     | sub
     | sup
     | tt
     | u
     | xref)*)
}

postamble =
element postamble {

```

```

    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    (text | cref | eref | iref | spanx | xref)*
}

```

texttable =

```

element texttable {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
    [ a:defaultValue = "" ] attribute title { text }?,
    [ a:defaultValue = "false" ]
    attribute suppress-title { "true" | "false" }?,
    [ a:defaultValue = "center" ]
    attribute align { "left" | "center" | "right" }?,
    [ a:defaultValue = "full" ]
    attribute style { "all" | "none" | "headers" | "full" }?,
    name?,
    preamble?,
    ttcol+,
    c*,
    postamble?
}

```

ttcol =

```

element ttcol {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute width { text }?,
    [ a:defaultValue = "left" ]
    attribute align { "left" | "center" | "right" }?,
    (cref | eref | iref | xref | text)*
}

```

c =

```

element c {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    (text | cref | eref | iref | spanx | xref)*
}

```

bcp14 =

```

element bcp14 {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    text
}

```

back =

```

element back {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  displayreference*,
  references*,
  section*
}

```

displayreference =

```

element displayreference {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute target { xsd:IDREF },
  attribute to { text }
}

```

references =

```

element references {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute pn { xsd:ID }?,
  attribute anchor { xsd:ID }?,
  attribute title { text }?,
  name?,
  (references+ | (reference | referencegroup)*)
}

```

reference =

```

element reference {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,
  attribute anchor { xsd:ID },
  attribute derivedAnchor { text }?,
  attribute target { text }?,
  [ a:defaultValue = "true" ]
  attribute quoteTitle { "true" | "false" }?,
  attribute quote-title { "true" | "false" }?,
  stream?,
  front,
  (annotation | format | refcontent | seriesInfo)*
}

```

stream =

```

element stream { ("IETF" | "IAB" | "IRTF" | "independent")? }

```

referencegroup =

```

element referencegroup {
  attribute xml:base { text }?,
  attribute xml:lang { text }?,

```

```

    attribute anchor { xsd:ID },
    attribute derivedAnchor { text }?,
    attribute target { text }?,
    reference+
}

seriesInfo =
  element seriesInfo {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute name { text },
    attribute value { text },
    attribute asciiName { text }?,
    attribute asciiValue { text }?,
    attribute status { text }?,
    attribute stream { "IETF" | "IAB" | "IRTF" | "independent" }?,
    empty
  }

format =
  element format {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    attribute target { text }?,
    attribute type { text },
    attribute octets { text }?,
    empty
  }

annotation =
  element annotation {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    (text
      | bcp14
      | cref
      | em
      | eref
      | iref
      | relref
      | spanx
      | strong
      | sub
      | sup
      | tt
      | u
      | xref)*
  }

```

```
refcontent =
  element refcontent {
    attribute xml:base { text }?,
    attribute xml:lang { text }?,
    (text | bcp14 | em | strong | sub | sup | tt)*
  }

u =
  element u {
    attribute anchor { xsd:ID }?,
    attribute ascii { text }?,
    [ a:defaultValue = "lit-name-num" ] attribute format { text }?,
    attribute pn { xsd:ID }?,
    text
  }
start |= rfc
```

Appendix D. Schema Differences from v2

The following is a non-normative comparison of the v3 format to the v2 format. A "-" indicates lines removed from the v2 schema, and a "+" indicates lines added to the v3 schema.

```

namespace a =
"http://relaxng.org/ns/compatibility/annotations/1.0"

+ # xml2rfc Version 3 grammar
rfc =
  element rfc {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
    attribute number { text }?,
    [ a:defaultValue = "" ] attribute obsoletes { text }?,
    [ a:defaultValue = "" ] attribute updates { text }?,
-   attribute category { "std" | "bcp" | "info" | "exp" |
- "historic" }?,
-   attribute consensus { "no" | "yes" }?,
-   attribute seriesNo { text }?,
-   attribute ipr {
-     "full2026"
-     | "noDerivativeWorks2026"
-     | "none"
-     | "full3667"
-     | "noModification3667"
-     | "noDerivatives3667"
-     | "full3978"
-     | "noModification3978"
-     | "noDerivatives3978"
-     | "trust200811"
-     | "noModificationTrust200811"
-     | "noDerivativesTrust200811"
-     | "trust200902"
-     | "noModificationTrust200902"
-     | "noDerivativesTrust200902"
-     | "pre5378Trust200902"
+   attribute category {
+     "std" | "bcp" | "exp" | "info" | "historic"
    }?,
+   attribute mode { text }?,
+   [ a:defaultValue = "false" ]
+   attribute consensus { "no" | "yes" | "false" | "true" }?,
+   attribute seriesNo { text }?,
+   attribute ipr { text }?,
    attribute iprExtract { xsd:IDREF }?,
    [ a:defaultValue = "IETF" ]
    attribute submissionType {
      "IETF" | "IAB" | "IRTF" | "independent"
    }?,
    attribute docName { text }?,
-   [ a:defaultValue = "en" ] attribute xml:lang { text }?,
+   [ a:defaultValue = "false" ]

```

```

+     attribute sortRefs { "true" | "false" }?,
+     [ a:defaultValue = "true" ]
+     attribute symRefs { "true" | "false" }?,
+     [ a:defaultValue = "true" ]
+     attribute tocInclude { "true" | "false" }?,
+     [ a:defaultValue = "3" ] attribute tocDepth { text }?,
+     attribute prepTime { text }?,
+     [ a:defaultValue = "true" ]
+     attribute indexInclude { "true" | "false" }?,
+     attribute version { text }?,
+     [ a:defaultValue = "Common, Latin" ] attribute scripts { text
+ }?,
+     attribute expiresDate { text }?,
+     link*,
+     front,
+     middle,
+     back?
+   }
+ link =
+   element link {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute href { text },
+     attribute rel { text }?
+   }
+ front =
+   element front {
-     title, author+, date, area*, workgroup*, keyword*, abstract?,
- note*
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     title,
+     seriesInfo*,
+     author+,
+     date?,
+     area*,
+     workgroup*,
+     keyword*,
+     abstract?,
+     note*,
+     boilerplate?,
+     toc?
+   }
+ title =
+   element title {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute abbrev { text }?,
-     text

```

```

+     attribute ascii { text }?,
+     (text | br)*
+   }
author =
  element author {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute anchor { xsd:ID }?,
+   attribute initials { text }?,
+   attribute asciiInitials { text }?,
+   attribute surname { text }?,
+   attribute asciiSurname { text }?,
+   attribute fullname { text }?,
+   attribute role { "editor" }?,
+   attribute asciiFullname { text }?,
+   organization?,
+   address?
+ }
+ contact =
+   element contact {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute anchor { xsd:ID }?,
+   attribute initials { text }?,
+   attribute asciiInitials { text }?,
+   attribute surname { text }?,
+   attribute asciiSurname { text }?,
+   attribute fullname { text }?,
+   attribute asciiFullname { text }?,
+   organization?,
+   address?
+   }
organization =
  element organization {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute abbrev { text }?,
+   attribute ascii { text }?,
+   attribute asciiAbbrev { text }?,
+   [ a:defaultValue = "true" ]
+   attribute showOnFrontPage { "true" | "false" }?,
+   text
+ }
+ address =
+   element address {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   postal?,
+   phone?,

```

```

+     facsimile?,
+     email*,
+     uri?
+ }
+ postal =
+   element postal {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     ((city
+       | cityarea
+       | code
+       | country
+       | extaddr
+       | pobox
+       | region
+       | sortingcode
+       | street)*
+     | postalLine+)
+   }
+ cityarea =
+   element cityarea {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ extaddr =
+   element extaddr {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ pobox =
+   element pobox {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ sortingcode =
+   element sortingcode {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ street =
+   element street {

```

```

+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ city =
+   element city {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ region =
+   element region {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ code =
+   element code {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ country =
+   element country {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ postalline =
+   element postalline {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ phone =
+   element phone {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     text
+   }
+ facsimile =
+   element facsimile {
+     attribute xml:base { text }?,

```

```

+     attribute xml:lang { text }?,
+     text
+ }
+ email =
+   element email {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute ascii { text }?,
+     text
+   }
+ uri =
+   element uri {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     text
+   }
- address = element address { postal?, phone?, facsimile?, email?,
- uri? }
- postal = element postal { street+, (city | region | code |
- country)* }
- street = element street { text }
- city = element city { text }
- region = element region { text }
- code = element code { text }
- country = element country { text }
- phone = element phone { text }
- facsimile = element facsimile { text }
- email = element email { text }
- uri = element uri { text }
date =
  element date {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute day { text }?,
+   attribute month { text }?,
+   attribute year { text }?,
-   empty
+   text
+ }
+ area =
+   element area {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     text
+   }
+ workgroup =
+   element workgroup {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,

```

```

+     text
+   }
+ keyword =
+   element keyword {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     text
+   }
+ abstract =
+   element abstract {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     attribute pn { xsd:ID }?,
+     (dl | ol | t | ul)+
+   }
- area = element area { text }
- workgroup = element workgroup { text }
- keyword = element keyword { text }
- abstract = element abstract { t+ }
note =
  element note {
-   attribute title { text },
-   t+
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute title { text }?,
+   attribute pn { xsd:ID }?,
+   [ a:defaultValue = "false" ]
+   attribute removeInRFC { "true" | "false" }?,
+   name?,
+   (dl | ol | t | ul)+
+ }
+ boilerplate =
+   element boilerplate {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     section+
+   }
+ toc =
+   element toc {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     section*
+   }
+ middle =
+   element middle {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,

```

```

+   section+
+ }
- middle = element middle { section+ }
section =
  element section {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute anchor { xsd:ID }?,
-   attribute title { text },
+   attribute pn { xsd:ID }?,
+   attribute title { text }?,
+   [ a:defaultValue = "true" ]
+   attribute numbered { "true" | "false" }?,
+   [ a:defaultValue = "default" ]
+   attribute toc { "include" | "exclude" | "default" }?,
-   (t | figure | texttable | iref)*,
+   [ a:defaultValue = "false" ]
+   attribute removeInRFC { "true" | "false" }?,
+   name?,
+   (artset
+   | artwork
+   | aside
+   | author
+   | blockquote
+   | contact
+   | dl
+   | figure
+   | iref
+   | ol
+   | sourcecode
+   | t
+   | table
+   | texttable
+   | ul)*,
+   section*
+ }
+ name =
+   element name {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   attribute slugifiedName { xsd:ID }?,
+   (text
+   | bcp14
+   | br
+   | cref
+   | em
+   | eref
+   | iref
+   | relref

```

```

+      | strong
+      | sub
+      | sup
+      | tt
+      | xref)*
+    }
+  br =
+    element br {
+      attribute xml:base { text }?,
+      attribute xml:lang { text }?,
+      empty
+    }
+  t =
+    element t {
+      attribute xml:base { text }?,
+      attribute xml:lang { text }?,
+      attribute anchor { xsd:ID }?,
+      attribute pn { xsd:ID }?,
+      attribute hangText { text }?,
+      [ a:defaultValue = "0" ] attribute indent { text }?,
+      [ a:defaultValue = "false" ]
+      attribute keepWithNext { "false" | "true" }?,
+      [ a:defaultValue = "false" ]
+      attribute keepWithPrevious { "false" | "true" }?,
+      (text
+      -      | \list
+      -      | figure
+      -      | xref
+      +      | bcp14
+      +      | br
+      +      | contact
+      +      | cref
+      +      | em
+      +      | eref
+      +      | iref
+      -      | cref
+      +      | relref
+      +      | spanx
+      -      | vspace)*
+      | strong
+      | sub
+      | sup
+      | tt
+      | u
+      | vspace
+      | xref)*
+    }
+  aside =
+    element aside {

```

```

+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     attribute pn { xsd:ID }?,
+     (artset
+       | artwork
+       | blockquote
+       | dl
+       | figure
+       | iref
+       | ol
+       | t
+       | table
+       | ul)*
+   }
+ blockquote =
+   element blockquote {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     attribute pn { xsd:ID }?,
+     attribute cite { text }?,
+     attribute quotedFrom { text }?,
+     ((artset | artwork | dl | figure | ol | sourcecode | t | ul)+
+       | (text
+         | bcp14
+         | br
+         | cref
+         | em
+         | eref
+         | iref
+         | relref
+         | strong
+         | sub
+         | sup
+         | tt
+         | u
+         | xref)+)
+   }
+ \list =
+   element list {
+ -     attribute style { text }?,
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     [ a:defaultValue = "empty" ] attribute style { text }?,
+     attribute hangIndent { text }?,
+     attribute counter { text }?,
+     attribute pn { xsd:ID }?,
+     t+

```

```

    }
+ ol =
+   element ol {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     [ a:defaultValue = "1" ] attribute type { text }?,
+     [ a:defaultValue = "1" ] attribute start { text }?,
+     attribute group { text }?,
+     [ a:defaultValue = "normal" ]
+     attribute spacing { "normal" | "compact" }?,
+     [ a:defaultValue = "adaptive" ]
+     attribute indent { text | "adaptive" }?,
+     attribute pn { xsd:ID }?,
+     li+
+   }
+ ul =
+   element ul {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     [ a:defaultValue = "normal" ]
+     attribute spacing { "normal" | "compact" }?,
+     ([ a:defaultValue = "false" ]
+     attribute empty { "false" | "true" },
+     [ a:defaultValue = "false" ]
+     attribute bare { "true" | "false" }?)?,
+     [ a:defaultValue = "3" ] attribute indent { text }?,
+     attribute pn { xsd:ID }?,
+     li+
+   }
+ li =
+   element li {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     attribute derivedCounter { text }?,
+     attribute pn { xsd:ID }?,
+     ((artset
+       | artwork
+       | aside
+       | blockquote
+       | dl
+       | figure
+       | ol
+       | sourcecode
+       | t
+       | table
+       | ul)+

```

```

+      | (text
+        | bcp14
+        | br
+        | cref
+        | em
+        | eref
+        | iref
+        | relref
+        | strong
+        | sub
+        | sup
+        | tt
+        | u
+        | xref)+)
+    }
+ dl =
+   element dl {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     [ a:defaultValue = "normal" ]
+     attribute spacing { "normal" | "compact" }?,
+     [ a:defaultValue = "false" ]
+     attribute newline { "false" | "true" }?,
+     [ a:defaultValue = "3" ] attribute indent { text }?,
+     attribute pn { xsd:ID }?,
+     (dt, dd)+
+   }
+ dt =
+   element dt {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     attribute pn { xsd:ID }?,
+     (text
+       | bcp14
+       | br
+       | cref
+       | em
+       | eref
+       | iref
+       | relref
+       | strong
+       | sub
+       | sup
+       | tt
+       | xref)*
+   }
+ dd =

```

```

+   element dd {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       attribute anchor { xsd:ID }?,
+       attribute pn { xsd:ID }?,
+       ((artset
+         | artwork
+         | aside
+         | blockquote
+         | dl
+         | figure
+         | ol
+         | sourcecode
+         | t
+         | table
+         | ul)+
+       | (text
+         | bcp14
+         | br
+         | cref
+         | em
+         | eref
+         | iref
+         | relref
+         | strong
+         | sub
+         | sup
+         | tt
+         | u
+         | xref)+)
+   }
  xref =
    element xref {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       attribute target { xsd:IDREF },
-       [ a:defaultValue = "false" ] attribute pageno { "true" |
- "false" }?,
+       [ a:defaultValue = "false" ]
+       attribute pageno { "true" | "false" }?,
+       [ a:defaultValue = "default" ]
-       attribute format { "counter" | "title" | "none" | "default"
+       attribute format { "default" | "title" | "counter" | "none"
+     }?,
+     attribute derivedContent { text }?,
+     [ a:defaultValue = "of" ]
+     attribute sectionFormat { "of" | "comma" | "parens" | "bare"
+   }?,
+   attribute section { text }?,

```

```

+     attribute relative { text }?,
+     attribute derivedLink { text }?,
+     (text | em | strong | sub | sup | tt)*
+   }
+ relref =
+   element relref {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute target { xsd:IDREF },
+     [ a:defaultValue = "of" ]
+     attribute displayFormat { "of" | "comma" | "parens" | "bare"
+   }?,
+     attribute derivedContent { text }?,
+     attribute section { text },
+     attribute relative { text }?,
+     attribute derivedLink { text }?,
+     text
+   }
+   eref =
+     element eref {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       [ a:defaultValue = "none" ]
+       attribute brackets { "none" | "angle" }?,
+       attribute target { text },
+       text
+     }
+   iref =
+     element iref {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       attribute item { text },
+       [ a:defaultValue = "" ] attribute subitem { text }?,
+       [ a:defaultValue = "false" ]
+       attribute primary { "true" | "false" }?,
+       attribute pn { xsd:ID }?,
+       empty
+     }
+   cref =
+     element cref {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       attribute anchor { xsd:ID }?,
+       attribute source { text }?,
+       - text
+       + [ a:defaultValue = "true" ]
+       attribute display { "true" | "false" }?,
+       (text
+       +   | br

```

```

+      | em
+      | eref
+      | relref
+      | strong
+      | sub
+      | sup
+      | tt
+      | xref)*
+    }
+ tt =
+   element tt {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     (text
+      | bcp14
+      | br
+      | cref
+      | em
+      | eref
+      | iref
+      | relref
+      | strong
+      | sub
+      | sup
+      | xref)*
+   }
+ strong =
+   element strong {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     (text
+      | bcp14
+      | br
+      | cref
+      | em
+      | eref
+      | iref
+      | relref
+      | sub
+      | sup
+      | tt
+      | xref)*
+   }
+ em =
+   element em {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     (text
+      | bcp14

```

```

+      | br
+      | cref
+      | eref
+      | iref
+      | relref
+      | strong
+      | sub
+      | sup
+      | tt
+      | xref)*
+  }
+ sub =
+   element sub {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     (text
+      | bcp14
+      | cref
+      | em
+      | eref
+      | iref
+      | relref
+      | strong
+      | sub
+      | sup
+      | tt
+      | xref)*
+   )
+ sup =
+   element sup {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     (text
+      | bcp14
+      | cref
+      | em
+      | eref
+      | iref
+      | relref
+      | strong
+      | sub
+      | sup
+      | tt
+      | xref)*
+   )
+ spanx =
+   element spanx {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,

```

```

    [ a:defaultValue = "preserve" ]
    attribute xml:space { "default" | "preserve" }?,
    [ a:defaultValue = "emph" ] attribute style { text }?,
    text
  }
vspace =
  element vspace {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
    [ a:defaultValue = "0" ] attribute blankLines { text }?,
    empty
  }
figure =
  element figure {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
    attribute anchor { xsd:ID }?,
+   attribute pn { xsd:ID }?,
    [ a:defaultValue = "" ] attribute title { text }?,
    [ a:defaultValue = "false" ]
    attribute suppress-title { "true" | "false" }?,
    attribute src { text }?,
+   attribute originalSrc { text }?,
    [ a:defaultValue = "left" ]
    attribute align { "left" | "center" | "right" }?,
    [ a:defaultValue = "" ] attribute alt { text }?,
    [ a:defaultValue = "" ] attribute width { text }?,
    [ a:defaultValue = "" ] attribute height { text }?,
+   name?,
    iref*,
    preamble?,
-   artwork,
+   (artset | artwork | sourcecode)+,
    postamble?
  }
+ table =
+   element table {
+   attribute xml:base { text }?,
+   attribute xml:lang { text }?,
+   [ a:defaultValue = "center" ]
+   attribute align { "left" | "center" | "right" }?,
+   attribute anchor { xsd:ID }?,
+   attribute pn { xsd:ID }?,
+   name?,
+   iref*,
+   tthead?,
+   ttbody+,
+   ttfoot?
+   }

```

```

preamble =
-   element preamble { (text | xref | eref | iref | cref | spanx)* }
+   element preamble {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       (text
+         | bcp14
+         | cref
+         | em
+         | eref
+         | iref
+         | relref
+         | spanx
+         | strong
+         | sub
+         | sup
+         | tt
+         | u
+         | xref)*
+   }
+ artset =
+   element artset {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       attribute anchor { xsd:ID }?,
+       attribute pn { xsd:ID }?,
+       artwork+
+   }
+ artwork =
+   element artwork {
-       [ a:defaultValue = "preserve" ]
-       attribute xml:space { "default" | "preserve" }?,
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       attribute anchor { xsd:ID }?,
+       attribute pn { xsd:ID }?,
+       attribute xml:space { text }?,
+       [ a:defaultValue = "" ] attribute name { text }?,
+       [ a:defaultValue = "" ] attribute type { text }?,
+       attribute src { text }?,
+       [ a:defaultValue = "left" ]
+       attribute align { "left" | "center" | "right" }?,
+       [ a:defaultValue = "" ] attribute alt { text }?,
+       [ a:defaultValue = "" ] attribute width { text }?,
+       [ a:defaultValue = "" ] attribute height { text }?,
-       text*
+       attribute originalSrc { text }?,
+       (text* | svg)
+   }

```

```

+ a:documentation [ "svg element: see Appendix A of [RFC7996]." ]
+ include "SVG-1.2-RFC.rnc"
+ sourcecode =
+   element sourcecode {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     attribute pn { xsd:ID }?,
+     [ a:defaultValue = "" ] attribute name { text }?,
+     [ a:defaultValue = "" ] attribute type { text }?,
+     [ a:defaultValue = "false" ]
+     attribute markers { "true" | "false" }?,
+     attribute src { text }?,
+     attribute originalSrc { text }?,
+     text
+   }
+ thead =
+   element thead {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     tr+
+   }
+ tbody =
+   element tbody {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     tr+
+   }
+ tfoot =
+   element tfoot {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     tr+
+   }
+ tr =
+   element tr {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     (td | th)+
+   }
+ td =
+   element td {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,

```

```

+     [ a:defaultValue = "1" ] attribute colspan { text }?,
+     [ a:defaultValue = "1" ] attribute rowspan { text }?,
+     [ a:defaultValue = "left" ]
+     attribute align { "left" | "center" | "right" }?,
+     ((artset | artwork | dl | figure | ol | sourcecode | t | ul)+
+     | (text
+       | bcp14
+       | br
+       | cref
+       | em
+       | eref
+       | iref
+       | relref
+       | strong
+       | sub
+       | sup
+       | tt
+       | u
+       | xref)*)
+   }
+ th =
+   element th {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     [ a:defaultValue = "1" ] attribute colspan { text }?,
+     [ a:defaultValue = "1" ] attribute rowspan { text }?,
+     [ a:defaultValue = "left" ]
+     attribute align { "left" | "center" | "right" }?,
+     ((artset | artwork | dl | figure | ol | sourcecode | t | ul)+
+     | (text
+       | bcp14
+       | br
+       | cref
+       | em
+       | eref
+       | iref
+       | relref
+       | strong
+       | sub
+       | sup
+       | tt
+       | u
+       | xref)*)
+   }
+   postamble =
+   - element postamble { (text | xref | eref | iref | cref | spanx)*
+   + element postamble {
+     attribute xml:base { text }?,

```

```

+   attribute xml:lang { text }?,
+   (text | cref | eref | iref | spanx | xref)*
+ }
+ texttable =
+   element texttable {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID }?,
+     [ a:defaultValue = "" ] attribute title { text }?,
+     [ a:defaultValue = "false" ]
+     attribute suppress-title { "true" | "false" }?,
+     [ a:defaultValue = "center" ]
+     attribute align { "left" | "center" | "right" }?,
+     [ a:defaultValue = "full" ]
+     attribute style { "all" | "none" | "headers" | "full" }?,
+     name?,
+     preamble?,
+     ttcol+,
+     c*,
+     postamble?
+   }
+ ttcol =
+   element ttcol {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute width { text }?,
+     [ a:defaultValue = "left" ]
+     attribute align { "left" | "center" | "right" }?,
+     (cref | eref | iref | xref | text)*
+   }
+ c =
+   element c {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     (text | cref | eref | iref | spanx | xref)*
+   }
+ bcp14 =
+   element bcp14 {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     text
+   }
- c = element c { (text | xref | eref | iref | cref | spanx)* }
- back = element back { references*, section* }
+ back =
+   element back {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     displayreference*,

```

```

+     references*,
+     section*
+ }
+ displayreference =
+   element displayreference {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute target { xsd:IDREF },
+     attribute to { text }
+   }
+ references =
+   element references {
-     [ a:defaultValue = "References" ] attribute title { text }?,
-     reference+
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute pn { xsd:ID }?,
+     attribute anchor { xsd:ID }?,
+     attribute title { text }?,
+     name?,
+     (references+ | (reference | referencegroup)*)
+   }
+ reference =
+   element reference {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID },
+     attribute derivedAnchor { text }?,
+     attribute target { text }?,
+     [ a:defaultValue = "true" ]
+     attribute quoteTitle { "true" | "false" }?,
+     attribute quote-title { "true" | "false" }?,
+     stream?,
+     front,
-     seriesInfo*,
-     format*,
-     annotation*
+     (annotation | format | refcontent | seriesInfo)*
+   }
+ stream =
+   element stream { ("IETF" | "IAB" | "IRTF" | "independent")? }
+ referencegroup =
+   element referencegroup {
+     attribute xml:base { text }?,
+     attribute xml:lang { text }?,
+     attribute anchor { xsd:ID },
+     attribute derivedAnchor { text }?,
+     attribute target { text }?,
+     reference+

```

```

    }
    seriesInfo =
        element seriesInfo {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
        attribute name { text },
        attribute value { text },
+       attribute asciiName { text }?,
+       attribute asciiValue { text }?,
+       attribute status { text }?,
+       attribute stream { "IETF" | "IAB" | "IRTF" | "independent" }?,
        empty
    }
    format =
        element format {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
        attribute target { text }?,
        attribute type { text },
        attribute octets { text }?,
        empty
    }
    annotation =
-   element annotation { (text | xref | eref | iref | cref |
-   spanx)* }
-   start = rfc
+   element annotation {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       (text
+       | bcp14
+       | cref
+       | em
+       | eref
+       | iref
+       | relref
+       | spanx
+       | strong
+       | sub
+       | sup
+       | tt
+       | u
+       | xref)*
+   }
+   refcontent =
+       element refcontent {
+       attribute xml:base { text }?,
+       attribute xml:lang { text }?,
+       (text | bcp14 | em | strong | sub | sup | tt)*

```

```
+   }
+ u =
+   element u {
+     attribute anchor { xsd:ID }?,
+     attribute ascii { text }?,
+     [ a:defaultValue = "lit-name-num" ] attribute format { text
+   }?,
+     attribute pn { xsd:ID }?,
+     text
+   }
+ start |= rfc
```

Appendix E. Change Log

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

The entries for -01 and -02 try to summarize the changes until the end of 2019; changes that ought to be reviewed are labeled this way: see

E.1. Since draft-iab-rfc7991bis-00

- *Allow both "src" attribute and content on `<artwork>` again ([#34](#), [PR50](#))
- *Allow `<blockquote>` in `<li>` ([#35](#), [PR51](#))
- *Remove `<br>` element ([#37](#), [PR56](#), [Section 3.1.5](#) of [\[IMPNOTES\]](#))
- *Replace "hanging" attribute on `<dl>` by "newline" ([#38](#), [PR62](#), [Section 3.1.6](#) of [\[IMPNOTES\]](#))
- *Add "indent" attribute to `<dl>` [#39](#), [PR63](#), [Section 3.1.7](#) of [\[IMPNOTES\]](#))
- *Revise `<table>` and caption alignment ([#9](#) and [#40](#), [PR68](#), [Section 3.1.8](#) of [\[IMPNOTES\]](#))

E.2. Since draft-iab-rfc7991bis-01

- *Extend the list of allowed child elements of `<name>` ([#32](#) and [#40](#), [PR69](#), [Section 3.1.11](#) of [\[IMPNOTES\]](#))
- *Allow `<references>` elements to be nested ([#47](#), [PR70](#), [Section 3.1.6](#) of [\[IMPNOTES\]](#)) see [#135](#)
- *Added `<artset>` ([#76](#), [PR89](#), [Section 3.1.1](#) of [\[IMPNOTES\]](#)) see [#136](#)
- *Remove `<list>` from `<aside>`, add `<table>` to `<blockquote>` ([#47](#), [PR69](#), [Section 3.1.4](#) of [\[IMPNOTES\]](#))
- *Remove `<iref>` from `<table>` ([PR92](#), [Section 3.1.9](#) of [\[IMPNOTES\]](#)) see [#94](#)
- *Add attributes "asciiAbbrev" and "showOnFrontPage" to `<organization>` ([PR93](#), [Section 3.1.12](#) of [\[IMPNOTES\]](#))
- *Rename "quoteTitle" attribute to "quote-title" ([PR95](#), [Section 3.1.14](#) of [\[IMPNOTES\]](#)) see [#48](#)
- *Add target attribute to `<referencegroup>` ([PR96](#), [Section 3.1.15](#) of [\[IMPNOTES\]](#))

- *Introduce new child elements of `<postal>` ([PR97](#), [Section 3.1.13](#) of [\[IMPNOTES\]](#)) see [#137](#)
- *Undeprecate `<seriesInfo>` inside `<reference>`, and remove special cases related to it appearing inside `<front>` ([PR108](#), [Section 3.1.21.3](#) of [\[IMPNOTES\]](#))
- *State that descendants of unnumbered sections are unnumbered by default ([PR108](#))
- *Restore original definition of name attribute on `<seriesInfo>` ([PR108](#), [Section 3.1.21.2](#) of [\[IMPNOTES\]](#))
- *Regenerate [Section 4](#) based on current grammar ([#111](#))
- *Author is now John Levine.

E.3. Since draft-iab-rfc7991bis-02

- *Update Acknowledgements.

E.4. Since draft-iab-rfc7991bis-03

- *Allow multiple `<email>` elements inside `<address>` ([\(<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/4>\)](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/4))
- *Add "markers" attribute to `<sourcecode>` element ([\(<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/8>\)](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/8))
- *Add missing include directive for SVG grammar ([\(<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/11>\)](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/11))
- *Remove incorrect text about deprecation of "alt" attribute on `<artwork>`, add more prose for several other deprecations on this element ([\(<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/12>\)](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/12))
- *Undeprecate `<xref>` format "none" ([\(<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/17>\)](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/17))
- *Editorial fixes in [Appendix B.1](#) ([\(<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/18>\)](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/18))

- *State that xrefing a hidden `<ref>` is an error (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/74>)
- *Fix prose and default value for `<dl>` element's "newline" attribute (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/77>)
- *Add `<contact>` as a block-level element for styling contributor information (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/81>)
- *Allow `<blockquote>` inside `<aside>` (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/84>)
- *In `<rfc>`'s description of the "consensus" attribute, link to [Appendix A.4](https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/88) (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/88>)
- *Undeprecate metadata attributes on `<rfc>` (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/122>)
- *Add "brackets" attribute on `<eref>` (<https://github.com/interim-rfc-series-project-manager/draft-ir-se-xml2rfcv3-implemented/issues/146>)
- *Add `<stream>` subelement
- *Add `<u>` element
- *Add `<br>` element
- *Add `<toc>` element
- *Add `<anchor>` element to `<author>`
- *Add `<anchor>` element to `<contact>`
- *Add `<seriesInfo>` element to `<referencegroup>`
- *Clarify `<iref>` preserves case in entries, but sorts in normal alphabetical order.
- *Allow text in `<date>` elements.
- *Allow `<author>` in `<section>` elements.
- *Deprecate most subelements of `<postal>`.

- *Deprecate `<relref>`.
- *Add "indent" attribute to `<t>` and `<ol>`.
- *Allow `<contact>` in multiple places.
- *Remove `<table>` from children of `<blockquote>`.
- *Add "empty", "bare", and "indent" attributes to `<li>`.
- *Add `<table>` to children of `<ul>`.
- *Add "bare" and "indent" attributes to `<ul>`.
- *Allow `<aside>` and `<table>` in `<dd>` elements.
- *Add "section", "sectionFormat", and "relative" attributes to `<xref>`. Allow formatting elements as well as text as children.
- *Allow nested `<sub>` and `<sup>`.
- *Allow `<iref>` as child of `<table>`.
- *Change default "colspan" and "rowspan" from 0 to 1 in `<th>` and `<td>`.
- *In `<back>` allow zero or more `<references>` optional.
- *Update description of prep tool generated attributes.
- *Turn quote-title back into quoteTitle
- *Remove deprecated `<list>` from `<t>`.
- *Clarify that `<artwork>` in `<artset>` must have "type" attribute.
- *Move discussion to rfc-i

E.5. Since draft-iab-rfc7991bis-04

- *add editorial stream
- *clarify `<toc>`
- *new name of draft, remove -bis stuff

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