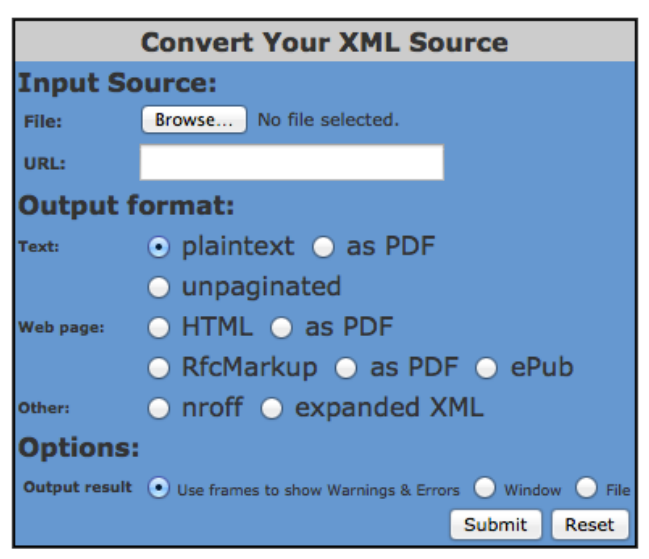
Tools for Creating Internet-Drafts



1 November 2015

Yokohama

This tutorial

1. The options
2. NroffEdit – overview & demo
3. xml2rfc – overview & demo
4. Brief intros to kramdown-rfc2629 and lyx2rfc
5. Questions

Start of the Document Life Cycle: Time to Choose an Authoring Tool

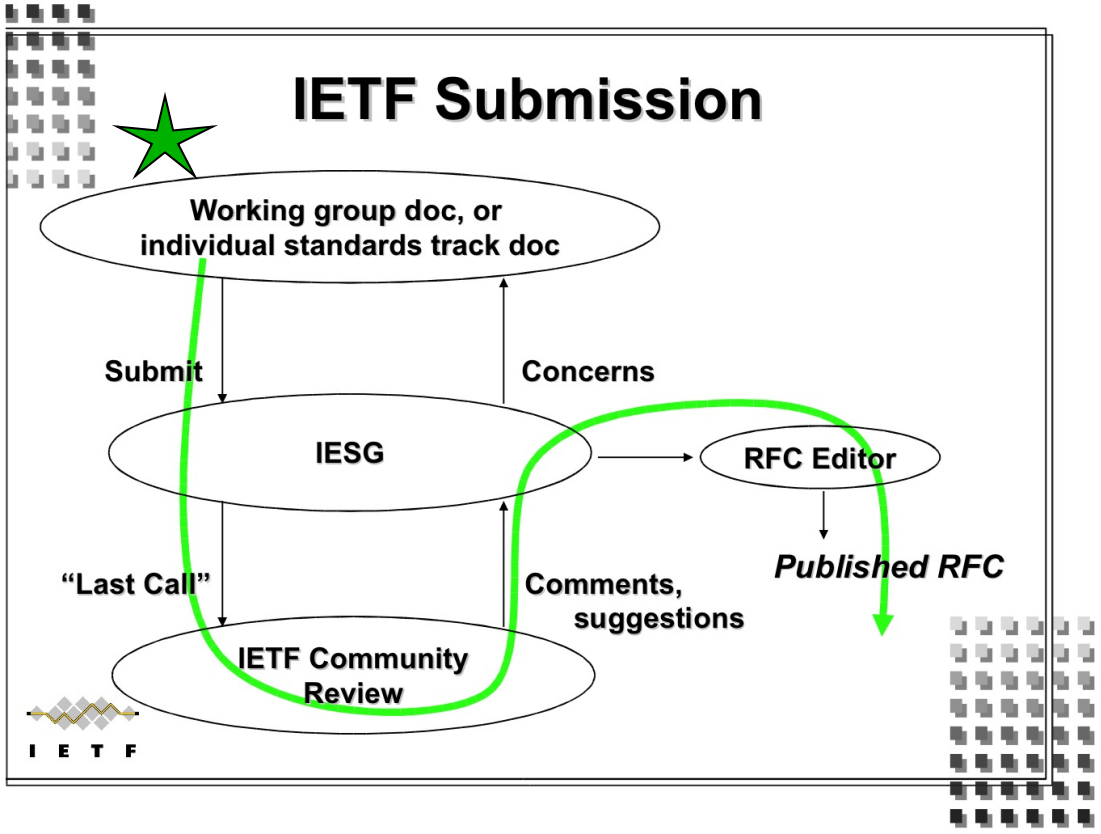


Diagram from Scott Bradner's Newcomer's Tutorial

The options

	NroffEdit	xml2rfc	Word template
Source file	**nroff**	**XML**	**.doc or .docx**
Documentation	**http://aaa-sec.com/nroffedit**	**http://xml2rfc.ietf.org**	**RFC 5385**
Run locally	**Yes**	**Yes or online**	**Yes**
Template for I-D	**Yes (auto updated)**	**Yes (multiple)**	**Yes**
Easy reference creation	**Yes (for RFCs)**	**Yes (for RFCs, I-Ds, and more)**	**No**
Automatic TOC	**Yes**	**Yes**	**Yes**
In brief	**Edit within this application.**	**Edit in your editor, then run this converter. (Note: the v2 GUI is a lightweight editor.)**	**Edit in Word with specific config and template, then run Perl script.**

More options

	kramdown-rfc2629	lyx2rfc	pandoc2rfc
Source file	**.mkd**	**.lyx**	**.mkd and .xml**
Documentation	https://github.com/cabo/kramdown-rfc2629 **see also: IETF 92 tutorial**	https://github.com/nicowilliams/lyx2rfc	https://github.com/miekg/pandoc2rfc **RFC 7328**
Run locally	**Yes**	**Yes**	**Yes**
Template for I-D	**Yes**	**Yes**	**Yes**
Easy reference creation	**Yes**	**Yes (same as xml2rfc)**	**Yes (same as xml2rfc)**
Automatic TOC	**Yes**	**Yes**	**Yes**
In brief	**Edit using markdown and YAML, then run this converter to get an XML file for input to xml2rfc.**	**Edit in LyX with specific config, then run this converter (which uses lyx, DocBook SGML, Saxon, and xml2rfc).**	**Edit in your editor, then run this converter (which uses pandoc, xsltproc, and xml2rfc).**

What is NroffEdit?

It's a WYSIWYG editor for writing and editing Internet-Drafts.

- Provides a side-by-side view of nroff source and text output.
- Is available for download http://aaa-sec.com/nroffedit/
- Includes various features such as spellcheck and a template when starting an I-D.

Why use NroffEdit?

This tool:

- creates an Internet-Draft in the proper format
- has a pre-loaded template
- includes an auto-generated table of contents
- generates references from rfc-ref.txt
- is straightfoward

You will have a source file that:

- the RFC Editor can edit

Quick-Start Guide

- Download and install the tool.
  (Latest version: 2.08)
- Select File > New Draft from Template.
- Build reference list (automatically pulls entries from https://rfc-editor.org/in-notes/rfc-ref.txt)

Templates

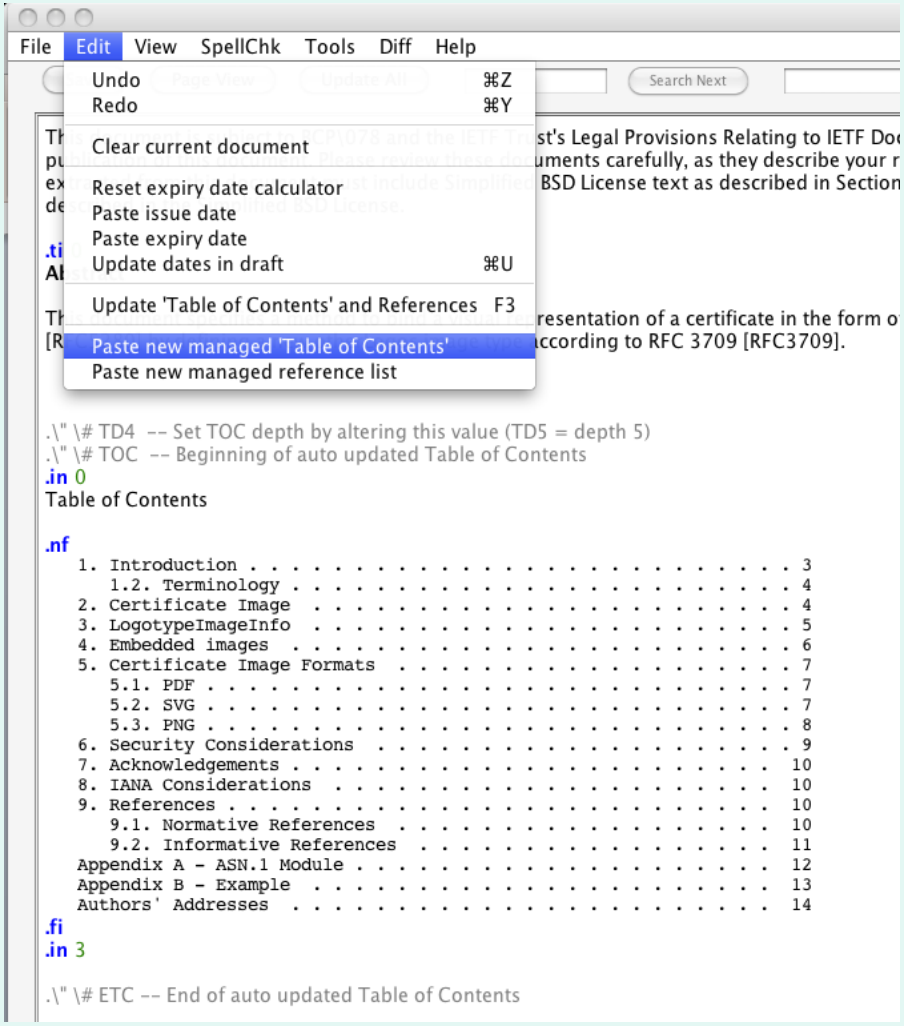
- Pre-loaded with a template, which is automatically updated. The latest version can be downloaded:
  - http://aaa-sec.com/pub/NroffEdit/empty.nroff
- Other template available from the RFC Editor:
  - https://www.rfc-editor.org/materials/3-nroff.template

nroff Basics

- Indentation
  - **.in x** - Set indent to x spaces from left column.
  - **.ti x** - Next line has a temporary indent of x spaces, then back to normal indent.
- Text Wrapping
  - **.fi** - Fill subsequent lines until page width.
  - **.nf** - No fill. Subsequent output lines are neither filled nor adjusted. Input text lines are copied directly to output lines without regard for the current line length.
  - **.br** - Line break.
- Page breaks
  - **.bp** - Break page.
  - **.ne x** - Keep next x lines on same page.

For more: go to Help > Supported Features and the template

Automated Table of Contents



Inserting References

For RFCs:

Select “Paste new managed reference list” from the Edit menu. Enter RFC numbers and optional labels.

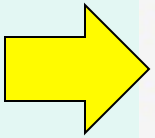
.\" \# [RFC]nnnn[;label], ... , [RFC]nnnn[;label]

.\" \# 2119;KEYWORDS, 5996;IKEv2

For I-Ds and other documents:

Copy & paste from other I-Ds, or type from scratch. Use **.ti 3** before each entry.

Managed reference list



```
.ti 0
5  References

.ti 0
5.1  Normative References

.in 14
.\" \# REF  -- Managed reference list. Syntax: [RFC]nnnn[;Label], ... ,[RFC]nnnn[;Label]
.\" \# 2119;KEYWORDS, 1776, 1924, RFC1925;TRUTHS, 1926, 1927
.ti 3
[KEYWORDS] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP
14, RFC 2119, March 1997.

.ti 3
[RFC1776]  Crocker, S., "The Address is the Message", RFC 1776, April 1 1995.

.ti 3
[RFC1924]  Elz, R., "A Compact Representation of IPv6 Addresses", RFC 1924, April 1 1996.

.ti 3
[TRUTHS]   Callon, R., "The Twelve Networking Truths", RFC 1925, April 1 1996.

.ti 3
[RFC1926]  Eriksson, J., "An Experimental Encapsulation of IP Datagrams on Top of ATM",
RFC 1926, April 1 1996.

.ti 3
[RFC1927]  Rogers, C., "Suggested Additional MIME Types for Associating Documents", RFC
1927, April 1 1996.
```

Editing an existing I-D

- Convert existing draft from text to nroff
- Update dates, author list, etc.
- Invoke managed table of contents
- Invoke managed reference lists
- Integration with IETF tools diff service to view changes made since previous draft
- Publish URL to diff for wider review

Automated diff generation

There's lots more functionality.

- Spell check
- Expiration calculator
- Page View
- Selectable fonts
- Styled output and warning if lines exceed 72 characters
- Automated check for updates (NroffEdit, the template, and the RFC citation library)

For more information:

http://aaa-sec.com/nroffedit/nroffedit/faqbugs.html

Demo

1. nroff to text
2. text to nroff

What is xml2rfc?

A tool that:

- Converts an XML source file into a text, HTML, nroff, unpaginated text, or expanded XML file.
- Creates a document in the format of an Internet-Draft (or RFC).
- Is available from http://xml2rfc.ietf.org as a web-based service or for download.

Why use xml2rfc?

This tool:

- creates an Internet-Draft in the proper format
- inserts boilerplate text
- formats reference entries
- outputs various formats including HTML and PDF

You will have a source file that:

- can be used to exchange comments with coauthors
- can be used for metadata extraction
- the RFC Editor can edit

There will be xml2rfc v3 in the future!

see draft-hoffman-xmlrfc and the Future Format FAQ
https://www.rfc-editor.org/rse/format-faq/

About xml2rfc v2

- The tool has been rewritten from scratch and is on the main page: http://xml2rfc.ietf.org
- It is stricter than v1 (more on this later)
- Start with a template
- Send questions to xml2rfc@ietf.org
- Report bugs on http://trac.tools.ietf.org/tools/xml2rfc/trac/

Initial Setup: Choices

- Use the tool on the web or install it locally.
- Use the citation libraries online or maintain a local copy.
- Edit in your favorite editor or use an XML editor such as XMLmind.

Quick-Start Guide

- Use the tool online.
- Use the citation libraries online.
- Use your favorite text editor and edit raw XML.
- Start with a template.

Templates

- Available here: http://tools.ietf.org/tools/templates
- Recommend starting with:
  - For a generic draft:

    draft-davies-template-bare.xml
  - For a draft containing a MIB:

    mib-doc-template-xml.txt

Other Options for Creating an XML File

- xml2rfc I-D Creation Wizard

http://xml2rfc.ietf.org/xml2rfc-wizard/

- As mentioned, kramdown-rfc2629 or pandoc2rfc lets you use markdown to create an XML file
- As mentioned, lyx2rfc lets you use LyX to create an XML file

XML Basics

```
<outer>
  ...
  <inner>
    ...
  </inner>
  ...
</outer>
```

- Elements are nested
- Matching start and end tags
  (or simply an empty tag, e.g., <organization />)
- Attributes have quoted values
- Case-sensitive

<author initials="J." surname="Joyce">

- Use < for < and & for &
- See "XML basics" for more details

http://xml2rfc.ietf.org/authoring/draft-mrose-writing-rfcs.html#xml_basics

Overall Document Structure

<rfc>
- front
  - author
  - abstract
- middle
  - section
    - t, list, figure
- back
  - references

</rfc>

See the DTD for details!

Creating an Internet-Draft

- Make an author element for yourself
- <t> tags around paragraphs
- <figure><artwork> around figures
- Enter references as

  <xref target="RFCXXXX" />
- Use citation libraries for references

Setting the ipr attribute

The transition to the current copyright (http://trustee.ietf.org/license-info/) led to additional options for the ipr attribute.

<rfc category="info" docName="draft-example-00" ipr="trust200902">

- **trust200902** **commonly used*
- noModificationTrust200902
- noDerivativesTrust200902
- **pre5378Trust200902** ***used to add 6.c.iii paragraph***

See the IETF Trust Copyright FAQ for further information:
http://trustee.ietf.org/docs/Copyright-FAQ-2010-6-22.pdf

Author Info

Template for author info block:

```
<author initials="" surname=”” fullname="" role="" >
    <organization></organization>
      <address>
        <postal>
          <street></street>
          <city></city>
          <country></country>
        </postal>
        <phone></phone>
        <email></email>
        <uri></uri>
      </address>
 </author>
```

Using Lists

Use the style attribute of the list element:

- style="empty": simply indents list items. (default)
- style="numbers": 1., 2., 3.
- style="letters": a., b., c.
- style="symbols": bulleted with o, o, o
  - nested lists are bulleted with *, then +
  - You can control this with PI <?rfc text-list-symbols="o*+-"?>
- style="hanging": for text idented under a term
  - (using hangText attribute of <t> tag)
- style="format %d": for customized lists

Customized Lists

(1)
(2) is <list style="format (%d)">
(3)

(a)
(b) is <list style="format (%c)">
(c)

REQ1:
REQ2: is <list style="format REQ%d:">
REQ3:

What is CDATA for?

A CDATA block is left alone by xml2rfc. It does not try to parse XML inside of a CDATA block. (For example, if a figure contains "<", you don't have to use <) It is useful for including XML examples in the document.

```
<figure><artwork><![CDATA[
    Here is a figure that mentions XML elements such
    as <xref>.
]]></artwork></figure>
```

Citing References

All are cited textually in the same way: using xref elements with the target set to the anchor of the reference element, e.g.,

XML	text
<xref target="RFC2119" />	[RFC2119]
<xref target="I-D.ietf-roll-of0"/>	[I-D.ietf-roll-of0]
<xref target="IEEE.802-11H.2003"/>	[IEEE.802-11H.2003]

Inserting References

Use the citation libraries!

(available from http://xml2rfc.ietf.org)

citation library	retrieve entire directory as a file	retrieve entire directory using wget -r -l 1 -A .xml -nd -nc ...	rss feed	rsync
RFC	zip or tgz	http://www.rfc-editor.org/refs/bibxml/ or http://xml2rfc.ietf.org/public/rfc/bibxml/	rss 1.0	yes
Internet-Draft	zip or tgz	http://xml2rfc.ietf.org/public/rfc/bibxml3/	rss 1.0	yes
W3C	zip or tgz	http://xml2rfc.ietf.org/public/rfc/bibxml4/	rss 1.0	yes
JSF	zip or tgz	http://www.xmpp.org/extensions/refs/	rss 0.92	no
3GPP	zip or tgz	http://xml2rfc.ietf.org/public/rfc/bibxml5/	rss 1.0	yes
Miscellaneous	zip or tgz	http://xml2rfc.ietf.org/public/rfc/bibxml2/	no	yes

New! IEEE in http://xml2rfc.ietf.org/public/rfc/bibxml6

Inserting References

3 ways to use the citation libraries

(details to follow)

1. The Short Way
   Use a PI in the references section: <?rfc include="reference.RFC.2119.xml"?>

2. The Long Way
   Define an ENTITY at the top and use &rfc2119; in the references section.

3. The Really Long Way
   Include the complete reference element.

ALL yield the same text output.

(1) The Short Way

Use a PI in the references section.

<?rfc include="reference.RFC.2119.xml"?>

```
➜ [RFC2119]  Bradner, S., "Key words for use in RFCs to Indicate
             Requirement Levels", BCP 14, RFC 2119,
             DOI 10.17487/RFC2119, March 1997
             <http://www.rfc-editor.org/info/rfc2119>.
```

<?rfc include="reference.I-D.ietf-rtcweb-overview.xml"?>

```
➜ [I-D.ietf-rtcweb-overview]
            Alvestrand, H., "Overview: Real Time Protocols for Browser-based
            Applications", draft-ietf-rtcweb-overview-14 (work in progress),
            June 2015.
```

<?rfc include="reference.IEEE.802.1Q_2012.xml"?>

```
➜ [IEEE.802.1Q_2012]
            IEEE, "IEEE Standard for Local and metropolitan area networks--
            Media Access Control (MAC) Bridges and Virtual Bridges", IEEE
            802.1Q-2012, DOI 10.1109/ieeestd.2012.6606799, September 2013,
             <http://ieeexplore.ieee.org/servlet/opac?punumber=6606797>.
```

(2) The Long Way

Define an ENTITY inside the DOCTYPE reference at the top.

```
<!DOCTYPE rfc SYSTEM "rfc2629.dtd" [
<!ENTITY rfc2119 SYSTEM "http://xml2rfc.ietf.org/public/rfc/bibxml/
        reference.RFC.2119.xml">
<!ENTITY overview SYSTEM “http://xml2rfc.ietf.org/public/rfc/bibxml3/
        reference.I-D.ietf-rtcweb-overview.xml”>
<!ENTITY 8021Q SYSTEM "http://xml2rfc.ietf.org/public/rfc/bibxml6/
        reference.IEEE.802.1Q_2012.xml>
]>
```

Then in the references section:

```
&rfc2119;
&overview;
&8021Q;
```

(3) The Really Long Way

Include the complete reference element.

```
<reference anchor='RFC2119'>
  <front>
    <title>Key words for use in RFCs to Indicate Requirement Levels</title>
    <author initials='S.' surname='Bradner' fullname='Scott Bradner'>
      <organization />
    </author>
    <date year='1997' month='March' />
    <abstract>
      [snip]
    </abstract>
  </front>
  <seriesInfo name='BCP' value='14' />
  <seriesInfo name='RFC' value='2119' />
  <seriesInfo name=’DOI' value=‘10.17487/RFC2119' />
</reference>
```

A Reference from Scratch

```
<reference anchor="" target="">
    <front>
        <title></title>
        <author initials="" surname="" fullname="">
            <organization />
        </author>
        <date month="" year="" />
    </front>
    <seriesInfo name="" value="" />
</reference>
```

Note: It's preferable that you use the citation libraries esp. for RFCs and Internet-Drafts.

Reference Tags

- How to get numbered refs instead of symbolic (e.g., [1] instead of [RFC2119]):
  Use the PI <?rfc symrefs="no" ?>
  (Note: "yes" is the default.)

- How to get names instead of RFC numbers (e.g, [IKEv2] instead of [RFC5996]):
  Insert the complete reference element and change the anchor attribute.
  <reference anchor="IKEv2">
  Also, update any corresponding xref targets.

Inserting a table

The texttable element contains ttcol elements to define the columns and c elements to hold the contents of each cell.

```
<texttable anchor="table_ex" title="IETF Meetings in 2005">
   <ttcol align="center">IETF #</ttcol>
   <ttcol align="center">City</ttcol>
   <ttcol align="center"># of Attendees</ttcol>
   <c>62</c><c>Minneapolis</c><c>1133</c>
   <c>63</c><c>Paris</c><c>1450</c>
   <c>64</c><c>Vancouver</c><c>1240</c>
   <postamble>Data from http://www.ietf.org/meeting/past.html</postamble>
</texttable>
```

yields:

IETF #	City	# of Attendees
62	Minneapolis	1133
63	Paris	1450
64	Vancouver	1240

Data from http://www.ietf.org/meeting/past.html

Table 1: IETF Meetings in 2005

(figure/artwork elements are another option.)

Dos and Don'ts

- Do use xref for references.
- Do use xref for section cross-references.
- Do use list elements for lists.
- Don't hard-code your references.
- Don't hard-code a section number (to refer within a document).
- Don't insert a list as a figure.

Common errors when using xml2rfc v2

Error	Solution
<list> is not nested in <t> Message: Element section content does not follow the DTD, expecting ((t | figure | texttable | iref)* , section*), got (t t list t t)	**Add <t> around each <list>** (or simply leave the preceding <t> open before a <list> and add a <t> after the <list>)
Ampersand encountered. Message: xmlParseEntityRef: no name	**Replace & with &**

Put your XML file to work

- Share comments/edits with your coauthors.
- Upload it to the I-D Submission Tool when you post your draft
  https://datatracker.ietf.org/submit/
- Send it to the RFC Editor if your draft is approved for publication as an RFC. (They will already have it if you uploaded it.)
- Create and read the HTML version. Check out Julian Reschke's XSLT for an alternative to xml2rfc's HTML output.

What is Julian's rfc2629.xslt?

A set of XSLT transformations that can be used to transform RFC2629-compliant XML to various output formats, such as HTML and PDF.

Documentation:

http://greenbytes.de/tech/webdav/rfc2629xslt/rfc2629xslt.html

No conversion required - just open the XML file in the browser.

If submitting your XML file to the RFC Editor

- If you used multiple files, consolidate your XML source into one file.
  (For example, if you used a local citation library, insert the files.)
- Run the file using xml2rfc as available online. Make sure it creates a text file.
- If using PIs that are local or specific to alternate XML converters, please note they will be ignored by xml2rfc.

How do I control whitespace?

(a.k.a. How do I get blank lines between list items?)

Use the PIs compact and subcompact. We recommend compact="yes" and subcompact="no".

- compact="yes" will not start each main section on a new page.
- subcompact="no" will put one blank line between list items.
- This should minimize the need for vspace.

There's lots more functionality. For more information:

DOWNLOAD version 2:
http://svn.tools.ietf.org/svn/tools/xml2rfc

HOW TO (a.k.a. unofficial successor to RFC 2629):
http://xml2rfc.ietf.org/authoring/draft-mrose-writing-rfcs.html
contains the DTD and descriptions of elements and attributes

README: http://xml2rfc.ietf.org/authoring/README.html
contains full list of processing instructions (PIs)

xml2rfc FAQ: http://xml2rfc.ietf.org/xml2rfcFAQ.html

xml2rfc Demos

1. Classic: editing in your favorite editor and converting via the web page

2. I-D Creation Wizard

   http://xml2rfc.ietf.org/xml2rfc-wizard/

3. rfc2629.xslt and Firefox

kramdown-rfc2629

Write your I-D in markdown and a bit of YAML, then convert it to XML. Then run xml2rfc on that XML.

```
kramdown-rfc2629 mydraft.mkd > mydraft.xml
xml2rfc mydraft.xml
```

Why kramdown-rfc2629

- As Carsten wrote: distraction-free writing so you can focus on the content
- More info: tutorial from IETF 92

  http://slides.rfc.space

Quick-Start Guide

```
gem install kramdown-rfc2629
pip install xml2rfc
```

Use your favorite editor or a markdown editor such as MacDown or MarkdownPad

kramdown basics

```
# section head
## subsection head
### subsubsection head

* bulleted list item

1. ordered list item

| colA   | colB   |
| cellA1 | cellB1 |

~~~~
code block (or just indent by ≥ 4)
~~~~

How to cite ABNF {{RFC5234}}
```

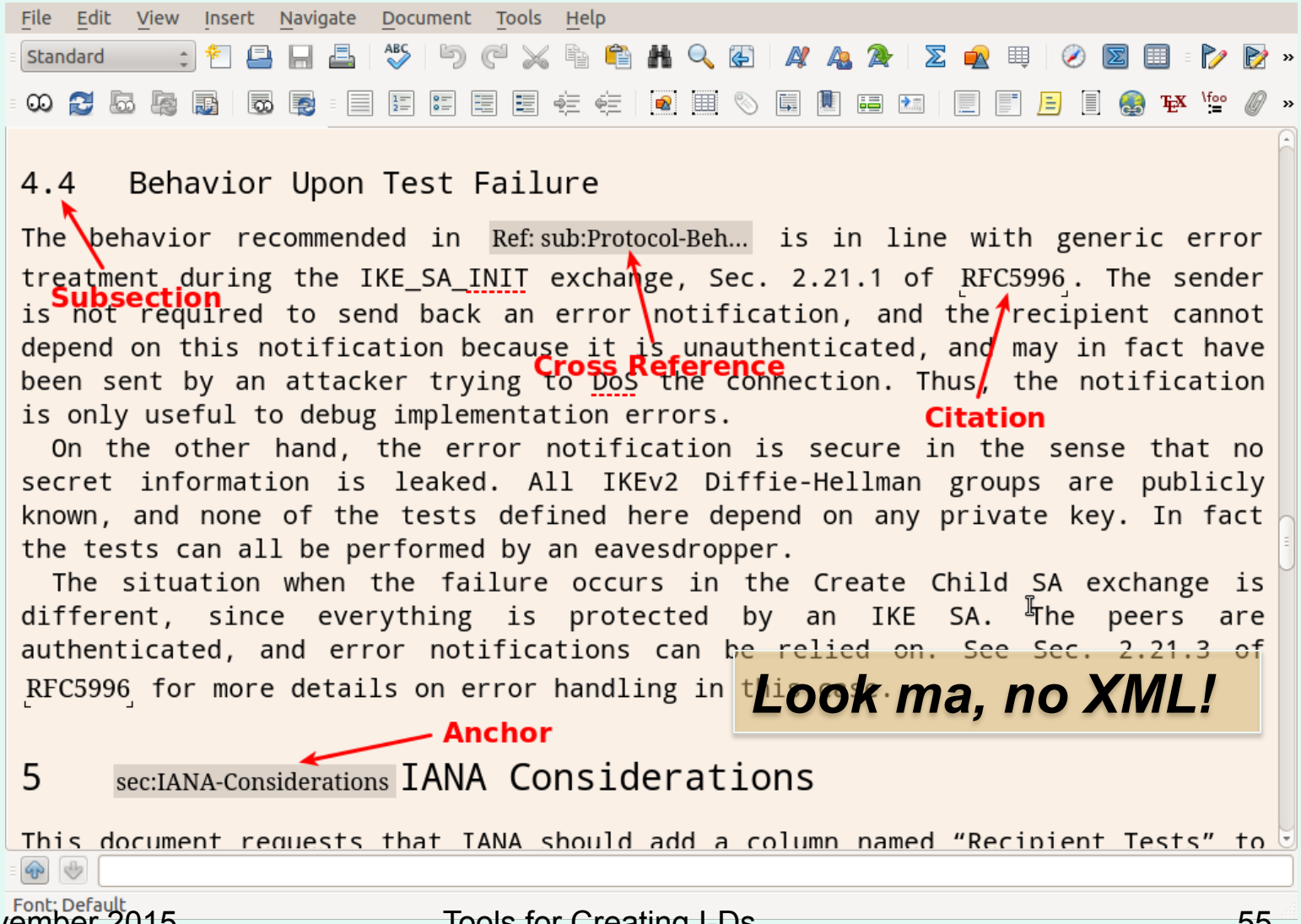
References & more

- References are in YAML

```
normative:
   RFC5234:
```

- See https://github.com/cabo/kramdown-rfc2629 or the tutorial slides
- In progress: a web-accessible side-by-side converter https://github.com/draftr-js/draftr-js.github.io

Lyx2RFC



Tool credit: **Nico Williams**

Why Lyx2RFC

- LyX is a popular wysiwyg editor, available on Windows, Mac, and Linux
  - Mostly used in academia
  - Free, stable, easy to use
- A complete I-D can be written with no XML
  - Native section numbers, native bullets, native references, native tables and more
  - No XML for I-D and RFC references, can embed XML references for other documents
- Generates HTML, plain text, and XML for xml2rfc
- Includes a sample draft and a User's Guide
- Both local and online conversion

Beyond creating I-Ds, lots of useful links on tools.ietf.org

Prepare documents

- xml2rfc, NroffEdit, Word template
- I-D nits

Search and view documents

- HTMLized documents
- Retrieve from search bar (IETF Doc Fetch)
- Diff tool options

Be aware and communicate

- Daily Dose
- WG wikis
- Email aliases

Find Atom and RSS feeds

http://trac.tools.ietf.org/group/tools/trac/wiki/AtomFeeds

Follow an IETF meeting

- Agendas
- Apps
- Tarballs of WG drafts

Check formal languages

- Where to find ABNF parsers, MIB review tools

Questions or suggestions?

xml2rfc mailing list:
https://www.ietf.org/mailman/listinfo/xml2rfc

RFC Editor:
rfc-editor@rfc-editor.org or stop by the desk this week

Please complete a short survey about this tutorial:

https://www.surveymonkey.com/r/94tools