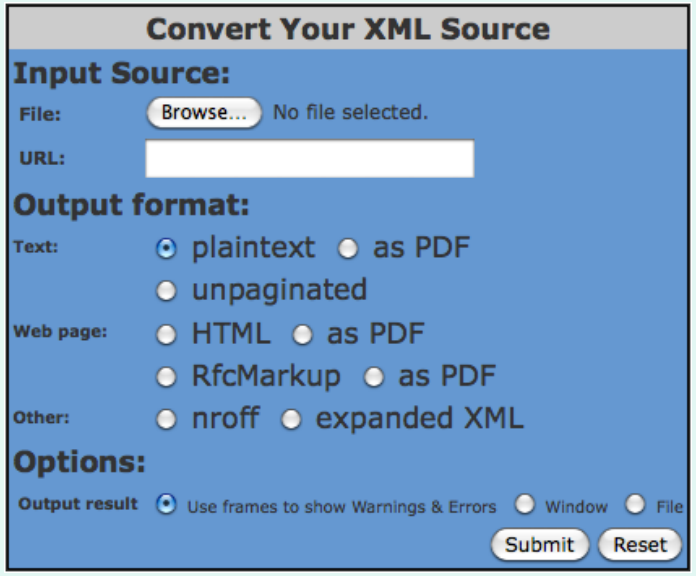
Tools for Creating Internet-Drafts



28 July 2013

Berlin

This tutorial

Goal: make it easier to create an I-D that you can upload to the I-D submission tool

1. The options
2. NroffEdit – overview & demo
3. xml2rfc – overview & demo
4. lyx2rfc – brief intro
5. Questions

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

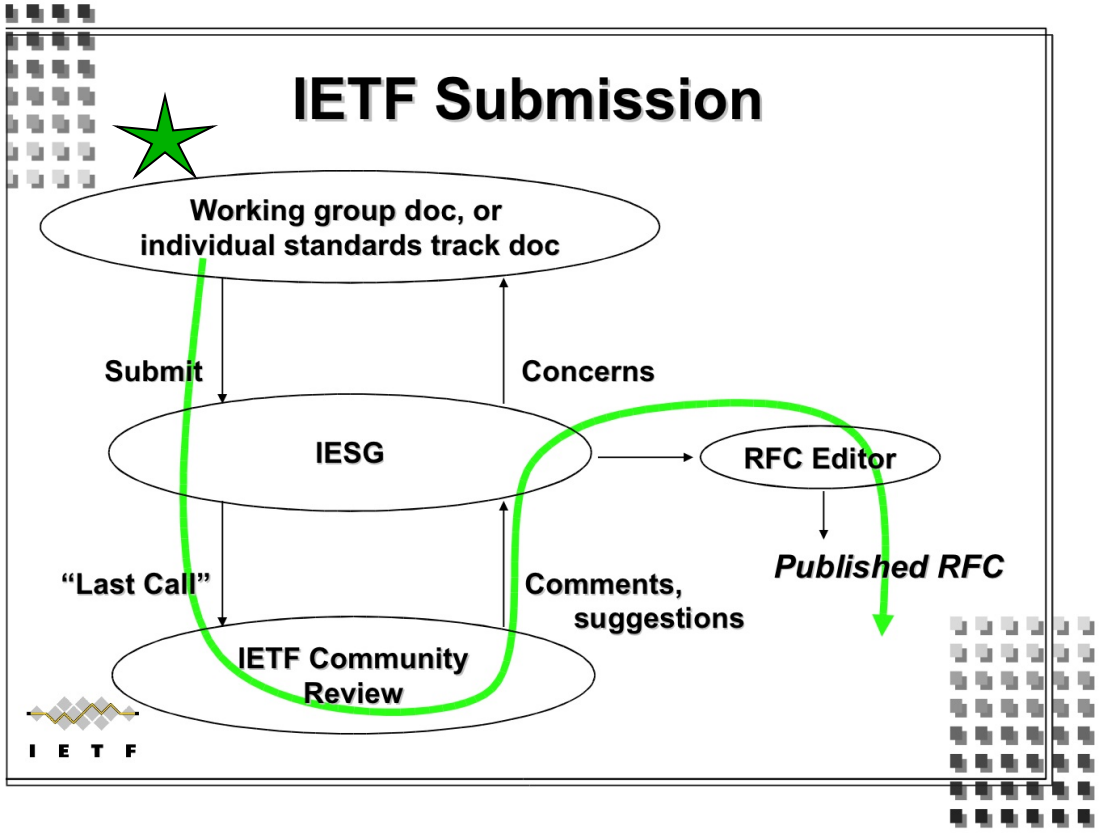


Diagram from Scott Bradner's Newcomer's Tutorial

The options

	NroffEdit	xml2rfc	Word template
Source file	**nroff**	**XML**	**.doc or .docx**
Documentation	**http://aaa-sec.com/nroffedit**	**http://xml.resource.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

	lyx2rfc	pandoc2rfc	Others
Source file	**.lyx**	**.mkd and .xml**	**Edit .txt directly, or another option of your choosing.** **Use I-D nits: http://www.ietf.org/tools/idnits**
Documentation	http://lyx2rfc.org/	https://github.com/miekg/pandoc2rfc draft-gieben-pandoc2rfc	
Run locally	**Yes or online**	**Yes**	
Template for I-D	**Yes**	**Yes**	
Easy reference creation	**Yes (same as xml2rfc)**	**Yes (same as xml2rfc)**	
Automatic TOC	**Yes**	**Yes**	
In brief	**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).**	

Future Development: RFC Format

The RFC Editor is responsible for RFC format and the format of I-Ds approved for publication, which are only a fraction of the I-Ds created.

For more information, see:

- RFC 6949: “RFC Series Format Requirements and Future Development”
- Announcement: “Direction of the RFC Format Development effort”
  http://www.rfc-editor.org/pipermail/rfc-interest/2013-May/005584.html
- Format FAQ: http://www.rfc-editor.org/rse/FormatFAQ.html

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:

- is straightfoward
- creates an Internet-Draft in the proper format
- has a pre-loaded template
- includes an auto-generated table of contents
- generates references for RFCs

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 ftp://ftp.rfc-editor.org/in-notes/rfc-ref.txt)

Templates

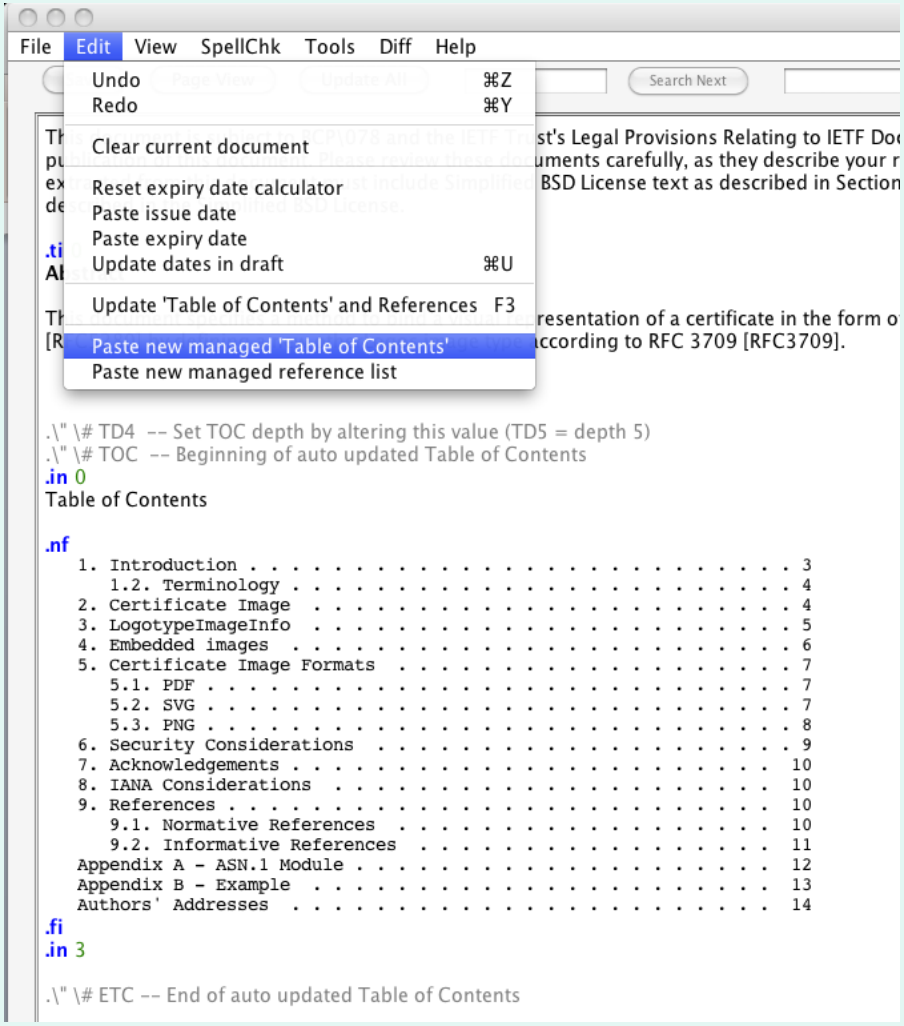
- Pre-loaded with a template, which is automatically updated. The latest version can be downloaded:
  - http://aaa-sec.com/pub/NroffEdit/empty.nroff
- Other template available from the RFC Editor:
  - http://www.rfc-editor.org/rfc-editor/3-nroff.template

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.

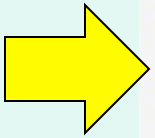
.\" \# [RFC]nnnn[;label], ... , [RFC]nnnn[;label]

.\" \# 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, template, and RFC citation library)

For more information:

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

Demo

1. Installation
2. nroff to text
3. 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://xml.resource.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

About xml2rfc v2

- The tool has been rewritten from scratch and is on the main page: http://xml.resource.org
- As noted there, it is stricter than v1
- 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 (however, the license for the personal edition is no longer free).

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://xml.resource.org/xml2rfc-wizard/

- As mentioned, lyx2rfc lets you use LyX to create an XML file

- As mentioned, pandoc2rfc lets you use wiki-style markdown 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
- Use < for < and & for &
- See “XML basics” for more details

<author initials=“J.” surname=“Joyce”>

http://xml.resource.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
  tas <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://xml.resource.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://xml.resource.org/public/rfc/bibxml/	rss 1.0	yes
Internet-Draft	zip or tgz	http://xml.resource.org/public/rfc/bibxml3/	rss 1.0	yes
W3C	zip or tgz	http://xml.resource.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://xml.resource.org/public/rfc/bibxml5/	rss 1.0	yes
Miscellaneous	zip or tgz	http://xml.resource.org/public/rfc/bibxml2/	no	yes

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:

➔ `[RFC2119]  Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.`

(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, March 1997.

<?rfc include="reference.I-D.ietf-roll-of0.xml"?>

➜ [I-D.ietf-roll-of0] Thubert, P., Ed., “RPL Objective Function Zero” draft-ietf-roll-of0-15 (work in progress), July 2011.

<?rfc include="reference.IEEE.802-11H.2003.xml"?>

➜ [IEEE.802-11H.2003] "Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications - Amendment 5: Spectrum and Transmit Power Management Extensions in the 5 GHz band in Europe", IEEE Standard 802.11h, Oct 2003, <http://standards.ieee.org/getieee802/download/802.11h-2003.pdf>.

(2) The Long Way

Define an ENTITY inside the DOCTYPE reference at the top.

```
<!DOCTYPE rfc SYSTEM "rfc2629.dtd" [
<!ENTITY rfc2119 SYSTEM "http://xml.resource.org/public/rfc/bibxml/
        reference.RFC.2119.xml">
<!ENTITY roll-of0 SYSTEM “http://xml.resource.org/public/rfc/bibxml3/
        reference.I-D.ietf-roll-of0.xml”>
<!ENTITY 80211H SYSTEM "http://xml.resource.org/public/rfc/bibxml2/
        reference.IEEE.802-11H.2003.xml”>
]>
```

Then in the references section:

```
&rfc2119;
&roll-of0;
&80211H;
```

(3) The Really Long Way

Include the complete reference element.

```
<reference anchor='RFC2119'>
  <front>
    <title abbrev='RFC Key Words'>Key words for use in RFCs to Indicate Requirement Levels</title>
    <author initials='S.' surname='Bradner' fullname='Scott Bradner'>
      <organization>Harvard University</organization>
      <address> [snip] </address>
   </author>
    <date year='1997' month='March' />
    <area>General</area>
    <keyword>keyword</keyword>
    <abstract>
      [snip]
    </abstract>
  </front>

  <seriesInfo name='BCP' value='14' />
  <seriesInfo name='RFC' value='2119' />
  <format type='TXT' octets='4723' target='http://www.rfc-editor.org/rfc/rfc2119.txt' />
  <format type='HTML' octets='17491' target='http://xml.resource.org/public/rfc/html/rfc2119.html' />
  <format type='XML' octets='5777' target='http://xml.resource.org/public/rfc/xml/rfc2119.xml' />
</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 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.

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 rfc2629.xslt for an alternative to xml2rfc's HTML output.

What is 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://xml.resource.org/authoring/draft-mrose-writing-rfcs.html
contains the DTD and descriptions of elements and attributes

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

xml2rfc FAQ: http://xml.resource.org/xml2rfcFAQ.html
xml2rfc mailing list: https://www.ietf.org/mailman/listinfo/xml2rfc

Demos

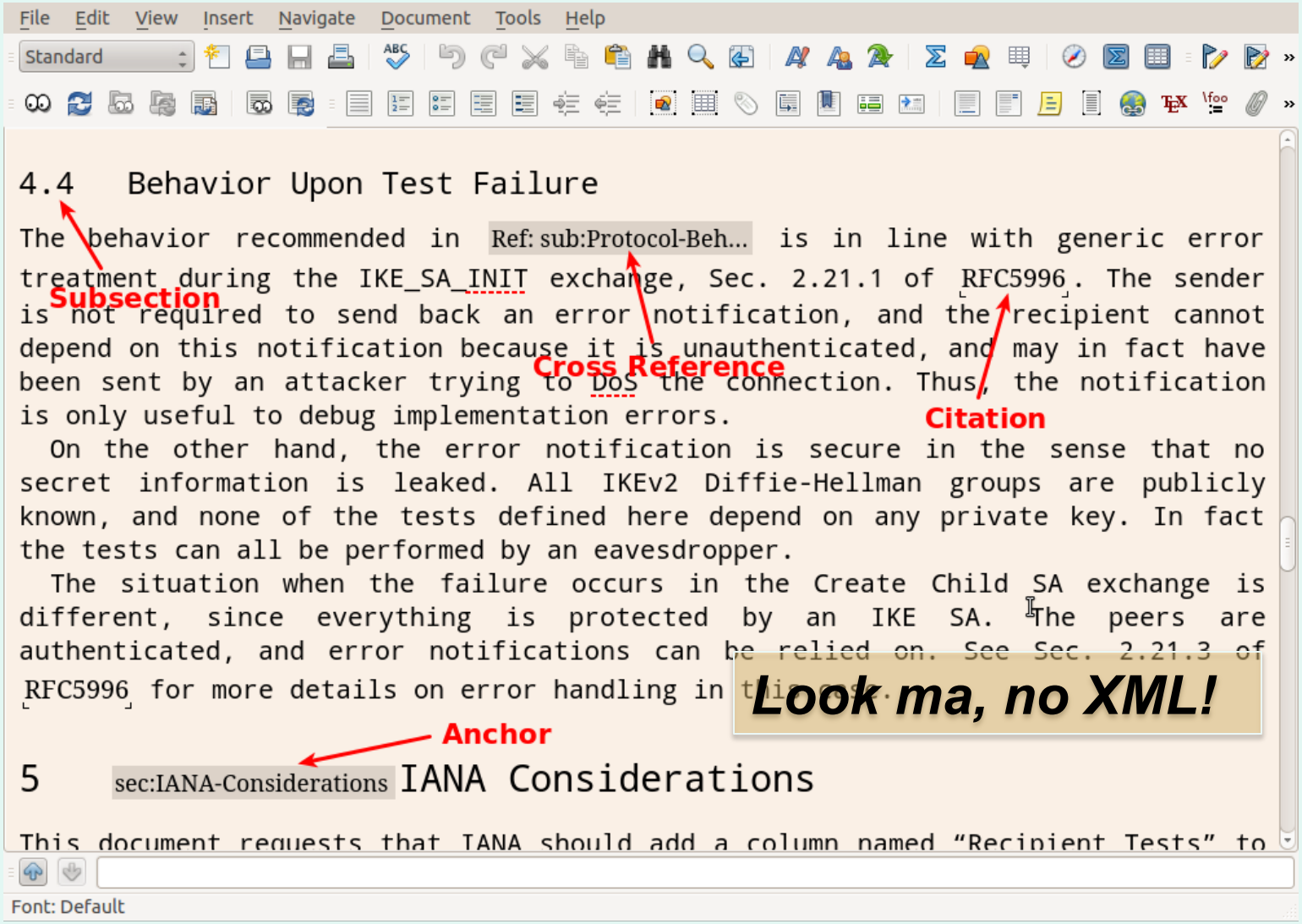
1. Classic: editing in your favorite editor and converting via the web page

2. I-D Creation Wizard

   http://xml.resource.org/xml2rfc-wizard/

3. rfc2629.xslt and Firefox

Lyx2RFC

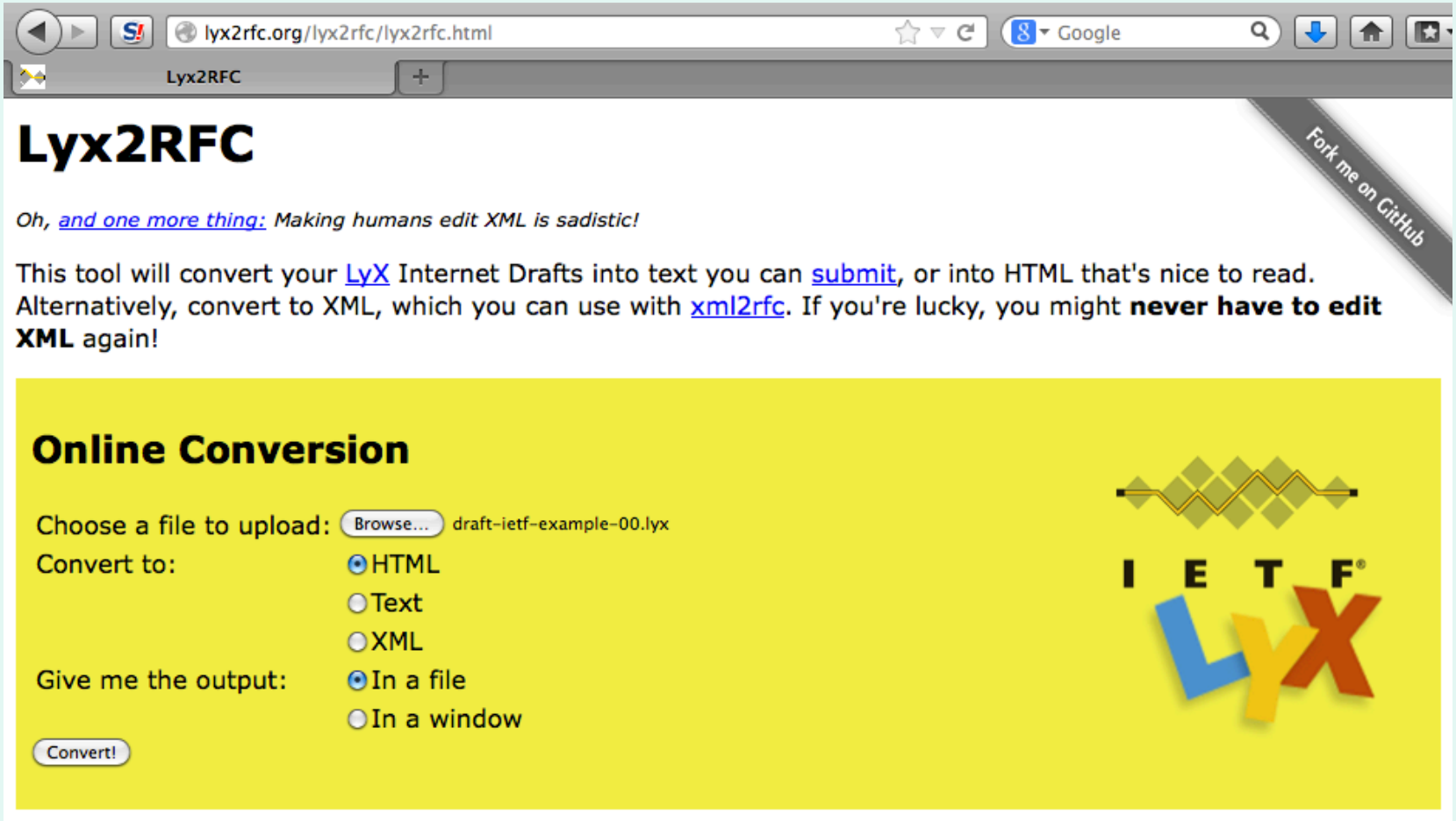

File Edit View Insert Navigate Document Tools Help
Standard
4.4 Behavior Upon Test Failure
The behavior recommended in Ref: sub:Protocol-Beh... is in line with generic error treatment during the IKE_SA_INIT exchange, Sec. 2.21.1 of RFC5996. The sender is not required to send back an error notification, and the recipient cannot depend on this notification because it is unauthenticated, and may in fact have been sent by an attacker trying to DoS the connection. Thus, the notification is only useful to debug implementation errors.
On the other hand, the error notification is secure in the sense that no secret information is leaked. All IKEv2 Diffie-Hellman groups are publicly known, and none of the tests defined here depend on any private key. In fact the tests can all be performed by an eavesdropper.
The situation when the failure occurs in the Create Child SA exchange is different, since everything is protected by an IKE SA. The peers are authenticated, and error notifications can be relied on. See Sec. 2.21.3 of RFC5996 for more details on error handling in this case.
Subsection
Cross Reference
Citation
Look ma, no XML!
Anchor
5 sec:IANA-Considerations IANA Considerations
This document requests that IANA should add a column named "Recipient Tests" to
Font: Default

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

Online Document Conversion

http://lyx2rfc.org



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

Prepare documents

- xml2rfc, NroffEdit, and more
- 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

Thanks

to the creators of the tools and the people who developed material for this tutorial. They include:

Elwyn Davies
Miek Gieben
Tony Hansen
Henrik Levkowetz
Julian Reschke
Marshall Rose
Stefan Santesson
Yaron Sheffer
Joe Touch
Nico Williams

Questions?

tools-discuss mailing list:

https://www.ietf.org/mailman/listinfo/tools-discuss

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

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