

This tutorial

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

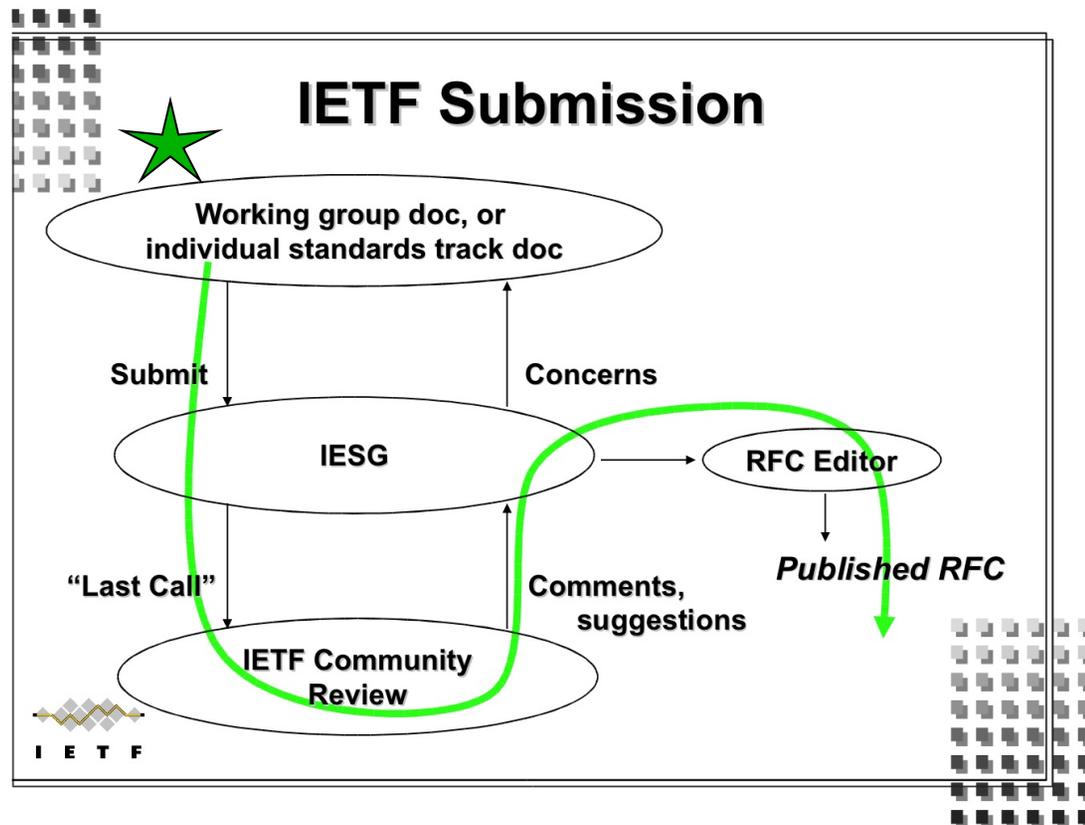


Diagram from Scott Bradner's Newcomer's Tutorial

The options

	NroffEdit	xml2rfc	Word template
Source file	nroff	XML	.doc or .docx
Web site / RFC	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)	2-Word- v2.0.template.dot
Automated reference creation	Yes (for RFCs)	Yes (for RFCs, I-Ds, and more)	No
Automatic TOC	Yes	Yes	Yes
Post-processing necessary	No	No (“expanded XML” option for a standalone file)	Yes (using Perl script)

More options

	lyx2rfc	pandoc2rfc
Source file	.lyx	.mkd and .xml
Web site / Document	http://lyx2rfc.d.porticor.net/	https://github.com/miekg/pandoc2rfc draft-gieben-pandoc2rfc
Run locally	Yes or online	Yes
Template for I-D	Yes	Yes
Automated reference creation	Yes (same as xml2rfc)	Yes (same as xml2rfc)
Automatic TOC	Yes	Yes
Post-processing necessary	No	No

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 straightforward

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

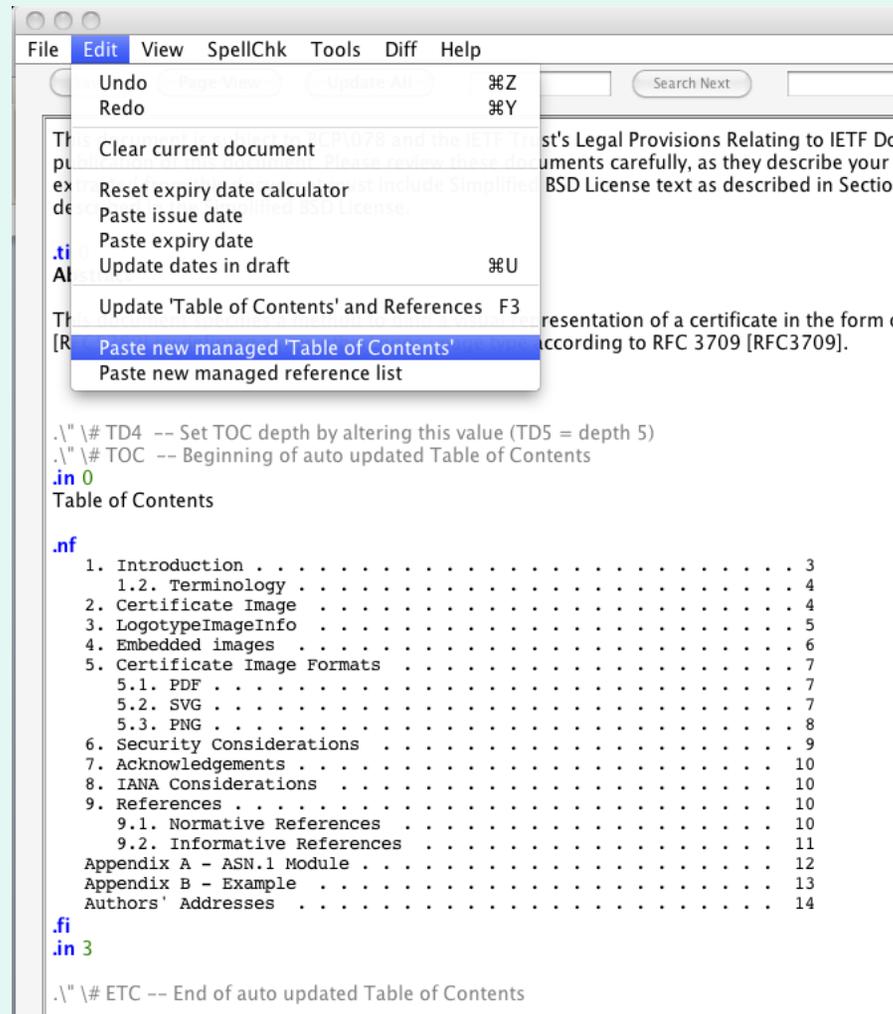
- Pre-loaded with a template, which is automatically updated. The latest version can be downloaded:
 - <http://aaa-sec.com/pub/NroffEdit/empty.nroff>
- Other template available from the RFC Editor:
 - <http://www.rfc-editor.org/rfc-editor/3-nroff.template>

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]
```

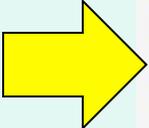
```
.\# 2119;KEYWORDS, 5996;IKEv2
```

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

The screenshot displays a web browser window with a diff tool. The browser title is "Diff: draft-ietf-pkix-certimage-11.txt - temp.txt". The address bar shows the URL: http://tools.ietf.org/rfcdiff?url1=http://tools.ietf.org/id/draft-ietf-pkix-certimage-11.txt&url2=http://aaa-sec.com/_te. The diff tool compares two versions of a document: "<draft-ietf-pkix-certimage-11.txt" and "temp.txt".

The diff shows the following changes:

- Expires:** Changed from "August 19, 2011" to "September 18, 2011".
- Draft Title:** Changed from "<draft-ietf-pkix-certimage-11>" to "<draft-ietf-pkix-certimage-12>".

The document content includes sections like "Internet X.509 Public Key Infrastructure - Certificate Image" and "Status of this Memo". A menu is open over the "Tools" menu, showing options: "Browse published Draft", "Temporary Diff" (highlighted), "Temporary Diff settings", "Publish Diff", and "FTP settings for Diff publication".

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.
- With XMLmind, you can use Bill Fenner's add-on that provides a WYSIKN (What You See Is Kinda Neat) interface
<http://code.google.com/p/xml2rfc-xxe/>

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 `<author initials="J." surname="Joyce">`
- Use < for < and & for &
- See “XML basics” for more details

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

Inserting References

Use the citation libraries!

(available from <http://xml.resource.org>)

citation library	retrieve entire directory as a file	retrieve entire directory using <code>wget -r -l 1 -A .xml -nd -nc ...</code>	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.xmlpp.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 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

(figure/artwork elements are another option.)

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

Table 1: IETF Meetings in 2005

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 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://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

The screenshot shows the Lyx2RFC application window. The menu bar includes File, Edit, View, Insert, Navigate, Document, Tools, and Help. The toolbar contains various icons for file operations, editing, and navigation. The main text area displays the following content:

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`.

5 `sec:IANA-Considerations` IANA Considerations

This document requests that IANA should add a column named "Recipient Tests" to

Annotations in the image include:

- Subsection**: A red arrow pointing to the section number '4.4'.
- Cross Reference**: A red arrow pointing to the code reference `Ref:sub:Protocol-Beh...`.
- Citation**: A red arrow pointing to the code reference `RFC5996`.
- Anchor**: A red arrow pointing to the code reference `sec:IANA-Considerations`.

A yellow callout box with the text **Look ma, no XML!** is positioned over the text "in this case".

At the bottom of the window, the font is set to "Default".

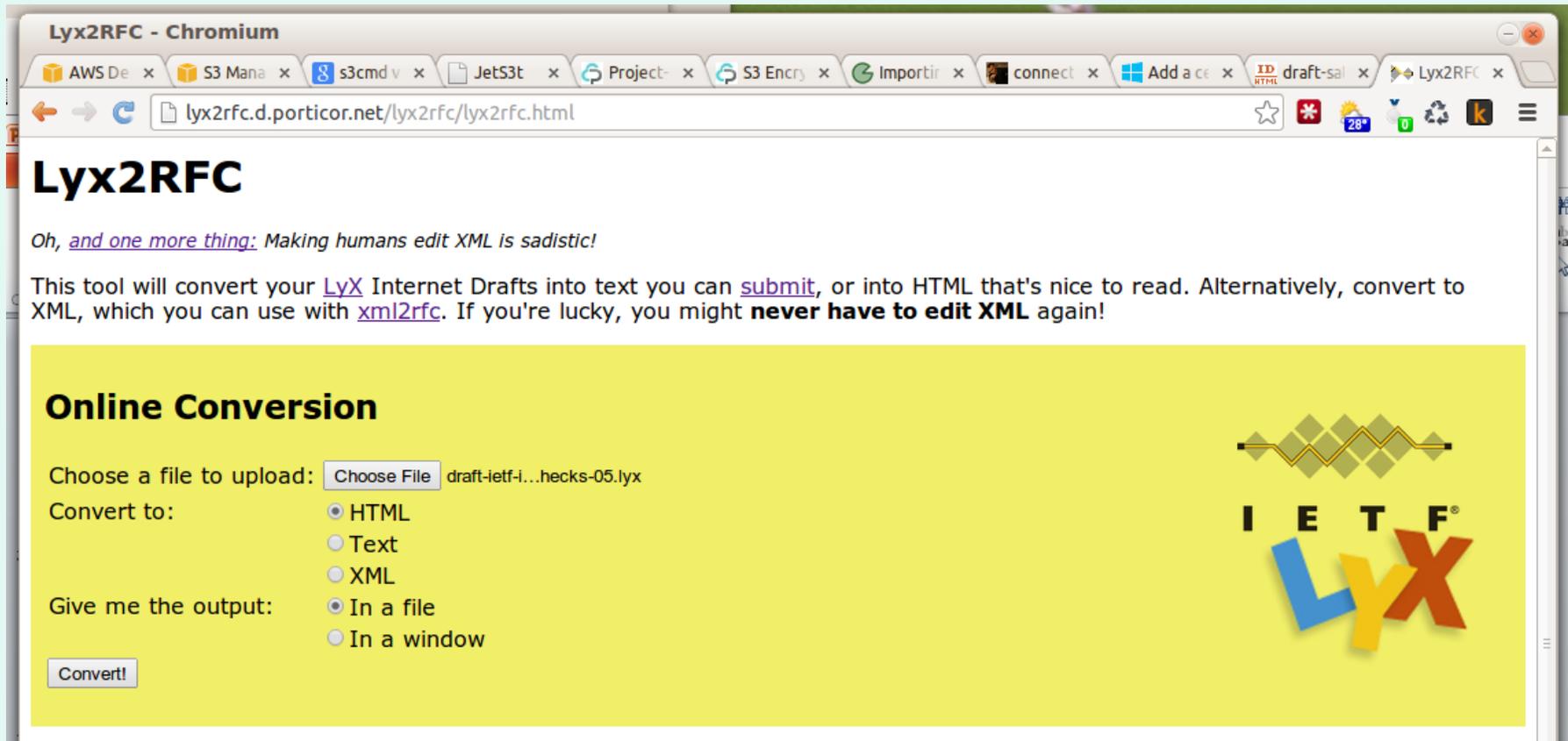
Tool credit: **Nico Williams**

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

Online Document Conversion

➔ <http://lyx2rfc.d.porticor.net>



The screenshot shows a Chromium browser window titled "Lyx2RFC - Chromium". The address bar displays the URL "lyx2rfc.d.porticor.net/lyx2rfc/lyx2rfc.html". The page content includes the title "Lyx2RFC" and a tagline: "Oh, *and one more thing*: Making humans edit XML is sadistic!". Below this, a paragraph explains the tool's function: "This tool will convert your [LyX](#) Internet Drafts into text you can [submit](#), or into HTML that's nice to read. Alternatively, convert to XML, which you can use with [xml2rfc](#). If you're lucky, you might **never have to edit XML** again!".

The main section is titled "Online Conversion" and features a file upload area with a "Choose File" button and the filename "draft-ietf-l...hecks-05.lyx". Under "Convert to:", there are radio buttons for "HTML" (selected), "Text", and "XML". Under "Give me the output:", there are radio buttons for "In a file" (selected) and "In a window". A "Convert!" button is located at the bottom left of the form area.

On the right side of the form area, there is a logo for IETF LyX, featuring a stylized waveform above the letters "I E T F" and "L Y X" in large, colorful, overlapping characters.

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?

NroffEdit:

Stefan Santesson, sts@aaa-sec.com

xml2rfc mailing list:

<https://www.ietf.org/mailman/listinfo/xml2rfc>

RFC Editor:

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