DocBook XML/SGML Processing Using OpenJade

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Revision History

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Added info about keeping JREs up−to−date forCocoon

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Fixed broken links to LDP XSL and other LDP XSL spefic filenames.

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Verified the instruction against docbook XSL 1.57.

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Fixed the broken links in the external resources section.

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Updated links to the new Demo Site. Added new links to the resources section.

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Added the suggestion made by users. Added new links to the resources section.

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This update fixes a few more typos, removes a couple of spaces that make the HTML rendering look odd.

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Fixed the URL to the Sample Files.

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Minor corrections to the Cocoon section.

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Minor corrections to the Cocoon section.

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Added the section on serving DocBook XML 4.1.2 content using Tomcat + Cocoon.

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Added the XML section and the sample XML file.

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Many valuable modifications/corrections suggested by Lloyd D Budd. Thanks Lloyd. :)

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Added the "Additional Resources" section.

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Added the section on converting HTML −> PDF using HTMLDOC. Thanks to Luc De Louw for the suggestion.

Revision v1.1	2002−07−19	Revised by: KET
Fixed grammatical errors, numbered processes.		
Revision v1.0	2002−06−29	Revised by: sa
Initial public release.		

This HOWTO explains setting up OpenJade to process SGML/XML DocBook documents.

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1. Introduction

Some Acronyms:

1. SGML – Standard Generalized Markup Language
2. XML – Extensible Markup Language
3. RTF – Rich Text Format
4. HTML – HyperText Markup Language
5. PDF – Portable Document Format

The objective of this document is to setup OpenJade to convert DocBook 3.2 and 4.2 Standard Generalized Markup Language (SGML) and Extensible Markup Language (XML) documents to HyperText Markup Language (HTML), Rich Text Format (RTF), and Portable Document Format (PDF).

1.1. Copyright and License

This document is Copyright 2001 by Saqib Ali. Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.1 or any later version published by the Free Software Foundation; with no Invariant Sections, with no Front–Cover Texts, and with no Back–Cover Texts. A copy of the license is available at http://www.gnu.org/copyleft/fdl.html.

1.2. Credits

All praise is due to ***Allah***, ***The Lord of the Worlds***. All credits go to ***Allah***. Any mistake in this document is my own fault.

Additionally, I would like to acknowledge the following people for their valuable contributions to this document:

1. Eric Safern <`esafern (at) lrn.com`> – For updates related to Cocoon and JRE. http://www.timebytes.com/
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5. Lloyd D Budd <`ldp (@) foolswisdom.org`> – For suggestions on improving most of the sections of the document.
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1.3. What is DocBook?

DocBook is a document type definition (DTD). A DTD defines the syntax of a document. DocBook describes the types of structure and formats to use in technical documents. It is commonly used because of its simplicity and completeness.

A DTD defines the syntax of a document – essentially it is a 'rule book' that describes the sets of tags and attributes that will be used to describe specific kinds of content. So DocBook is a "rule book" that is used for writing documents. Every tag that is used in writing the document, must be defined very specifically and formally in the DTD.

1.4. What is DSSSL?

A Document Style Semantics and Specification Language (DSSSL) defines how to convert an Standard Generalized Markup Language (SGML) document into a human–readable viewing format such as HTML, RTF and PDF.

1.5. What do we need?

The tools needed to set up OpenJade for converting SGML and XML are:

- OpenJade
- DocBook DTDs
- ISO Entities
- Norman Walsh's DSSSL
- LDP DSL
- HTMLDOC (optional)
- Norman Walsh's XSL (optional)
- LDP XSL (optional)

Note

All of these packages are free and available for download on the net. The next chapter explains how to download these packages.

1.6. Assumptions

This document assumes that you have the following already installed on your system.

- gzip – available from http://www.gnu.org/directory/
- gcc and GNU make – available from http://www.gnu.org/directory/
- unzip – available from http://www.info–zip.org/pub/infozip/
- Standard Unix utilities – tar, mkdir, mv ...

2. Requirements

You'll have to download and compile only one package (OpenJade). This HOWTO will explain the compilation process, but you should be familiar with installing from source code.

Most of the packages that we need are located at The Linux Documentation Project (TLDP) website.

2.1. Pre−requirements

Create a directory `/tmp/downloads`. We will use this directory to store the downloaded source code.

2.2. OpenJade

OpenJade will be used to process DocBook documents. OpenJade can be downloaded from: http://openjade.sourceforge.net/.

At the time of writing this document OpenJade 1.3.1 was available. Download the openjade−1.3.x.tar.gz file.

2.3. DocBook DTDs

All the DocBook DTDs are available from The Linux Documentation Project website at http://www.tldp.org/authors/index.html#resources

Please download DocBook SGML v4.1, DocBook SGML v3.1, and DocBook XML v4.1.2.

Note

Please download all the zip archives.

2.4. ISO Entities

The Linux Documentation Project has packaged all the Entities into one big tar file and placed it at http://www.tldp.org/authors/tools/entities.tar.gz for the convenience of the users. Thanks to TLDP for this.

2.5. Norman Walsh's DSSSL

Norman Walsh's DSSSL can be downloaded from the DocBook project website at http://sourceforge.net/project/showfiles.php?group_id=21935.

At the time of writing this document docbook−dsssl−1.7.6 was available.

2.6. LDP customized DSL stylesheets

LDP DSL is a customized style sheet used by The Linux Documentation Project (TLDP). It is an extension to Norman Walsh's DSSSL. It add things like background and Table of Contents. It can be downloaded from http://www.tldp.org/authors/tools/ldp.dsl.

ldp.dsl requires Normal Walsh's DSSSL

2.7. HTMLDOC (Optional)

HTMLDOC can be used for converting the HTML to PDF. If you would like to produce PDF documents, please download HTMLDOC from http://www.easysw.com/htmldoc/software.php

2.8. Norman Walsh's XSL (Optional)

This is not necessary. But if you would like to serve DocBook 4.1.2 XML content using Tomcat + Cocoon, you will need Norman Walsh's XML Style Sheets.

The Style Sheets are available for download at http://sourceforge.net/projects/docbook/.

Please download the package called docbook−xsl.

Note

Recently docbook−xsl ver. 1.57.0 was released. This document is verified with the latest version, and appropriate modifications have been made. If you still encounter any errors please email me @ `<saqib@seagate.com>`

2.9. LDP Customized XSL (Optional)

Also download the LDP Customized XSL from http://my.core.com/~dhorton/docbook/tldp−xsl/

3. Installing Processing Tools – OpenJade

In this section we will install all the tools in the appropriate directories. All the tools go in the `/usr/local/dbtools/` directory. Create this directory using the following command:

```
# mkdir /usr/local/dbtools
```

3.1. Installing OpenJade

This process is the easy part, but the most time consuming one too. Keep in mind that OpenJade take a long time to compile. To install OpenJade, complete the following steps:

1. Change directories to `/tmp/downloads`.
   ```
   # cd /tmp/downloads
   ```
2. Unzip the file.
   ```
   # gzip -d openjade-1.3.x.tar.gz
   ```
3. Untar the file.
   ```
   # tar -xvf openjade-1.3.x.tar
   ```
4. Change directories to `openjade-1.3`
   ```
   # cd openjade-1.3.x
   ```
5. Run the **./configure** command.
   ```
   # ./configure --prefix=/usr/local/dbtools/openjade
   ```
6. Run the **make** command.
   ```
   # make
   ```
7. Run the **make install** command. After this step the OpenJade binaries will be installed under `/usr/local/dbtools/openjade`.
   ```
   # make install
   ```
8. Copy the `dsssl` directory from `/tmp/downloads/openjade-1.3.x to /usr/local/dbtools/openjade`
   ```
   # cp -dpR dsssl /usr/local/dbtools/openjade/
   ```

3.2. Installing Norman Walsh's DSSSL

In this step we will install Norman Walsh's DSSSL in an appropriate place. The DSSSL does not have to be compiled.

1. Change directories to `/tmp/downloads`
   ```
   # cd /tmp/downloads
   ```
2. Unzip the file.
   ```
   # gzip -d docbook-dsssl-1.76.tar.gz
   ```

3. Untar the file.

```
# tar -xvf docbook-dsssl-1.76.tar
```

4. Move the file to the `/usr/local/dbtools/docbook-dsssl`.

```
# mv docbook-dsssl-1.76 /usr/local/dbtools/docbook-dsssl
```

3.3. Installing DocBook DTDs

In this section we will install the DocBook DTDs.

1. Change directories to `/usr/local/dbtools`.

```
# cd /usr/local/dbtools
```

2. Create three new directories called `dtd3.1`, `dtd4.1`, and `dtd4.1.2`.

```
# mkdir dtd3.1
# mkdir dtd4.1
# mkdir dtd4.1.2
```

3. Change directories to the `dtd3.1`.

```
# cd dtd3.1
```

4. Unzip the file DocBook SGML v3.1 in this directory.

```
# unzip /tmp/downloads/docbk31.zip
```

5. Change directories to the `dtd4.1`.

```
# cd ../dtd4.1
```

6. Unzip the file DocBook SGML v4.1 in this directory.

```
# unzip /tmp/downloads/docbk41.zip
```

7. Change directories to the `dtd4.1.2`.

```
# cd ../dtd4.1.2
```

8. Unzip the file DocBook XML v4.1.2 in this directory.

```
# unzip /tmp/downloads/docbk412.zip
```

3.4. Installing the ISO Entities

In this section we will install the ISO entities that we downloaded from the LDP website.

First we install the ISO Entities for the 3.1 SGML DTD.

1. Change directories to the `/usr/local/dbtools/dtd3.1` directory.

```
# cd /usr/local/dbtools/dtd3.1
```

2. Copy `/tmp/download/entities.tar.gz` to this directory.

```
# cp /tmp/download/entities.tar.gz .
```

3. Unzip the file.

```
# gzip -d entities.tar.gz
```

4. Untar the file.

```
# tar -xvf entities.tar
```

Next we install the ISO Entities for the 4.1 SGML DTD.

1. Change directories to the `/usr/local/dbtools/dtd4.1` directory.

```
# cd /usr/local/dbtools/dtd4.1
```

2. Copy `/tmp/download/entities.tar.gz` to this directory.

```
# cp /tmp/download/entities.tar.gz .
```

3. Unzip the file.

```
# gzip -d entities.tar.gz
```

4. Untar the file.

```
# tar -xvf entities.tar
```

3.5. Installing the LDP DSL

Finally we install the customised LDP stylesheet.

1. Change directories to the `/tmp/download` directory.

```
# cd /tmp/download
```

2. Copy the `ldp.dsl` file to the `/usr/local/dbtools/docbook-dsssl/print/ldp.dsl` directory.

```
# cp ldp.dsl /usr/local/dbtools/docbook-dsssl/print/ldp.dsl
```

3. Copy the `ldp.dsl` file to the `/usr/local/dbtools/docbook-dsssl/html/ldp.dsl` directory.

```
# cp ldp.dsl /usr/local/dbtools/docbook-dsssl/html/ldp.dsl
```

3.6. Installing HTMLDOC

This step is optional. It is only required if you want to produce PDF documents from HTML.

Change back to the downloads directory.

```
# Change to /tmp/download directory
```

Untar the source code for HTMLDOC.

```
# gzip -d htmldoc-1.8.xx-source.tar.gz
# tar -xvf htmldoc-1.8.xx-source.tar
# cd htmldoc-1.8.xx-1
```

Run configure to set the installation location.

```
# ./configure --prefix=/usr/local/dbtools/htmldoc
# make
```

At the time of writing this document HTMLDOC ver 1.8.20–1 was available. This version had a little problem in the fonts Makefile. It would complain while installing the fonts, because the correct fonts were not available on the system.

Here is the error you will get while running **make install**:

```
# make install
Making all in htmldoc...
Making all in doc...
Installing in fonts...
Installing font files in /usr/local/dbtools/htmldoc/share/htmldoc/fonts...
/bin/cp: cannot stat `ZapfChancery.afm': No such file or directory
/bin/cp: cannot stat `ZapfChancery.pfa': No such file or directory
/bin/cp: cannot stat `ZapfDingbats.afm': No such file or directory
/bin/cp: cannot stat `ZapfDingbats.pfa': No such file or directory
make[1]: *** [install] Error 1
```

To fix this installation issue, please edit `fonts/Makefile` and comment out the lines with references to ZapfChancery and ZapfDingbats fonts.

Then execute the install:

```
# make install
Making all in htmldoc...
Making all in doc...
Installing in fonts...
Installing font files in /usr/local/dbtools/htmldoc/share/htmldoc/fonts...
Installing in data...
Installing in doc...
Installing in htmldoc...
```

4. Using OpenJade

In this section we will use OpenJade to convert DocBook SGML/XML documents to HTML, RTF, and PDF.

4.1. Processing SGML

4.1.1. Setting the SGML_CATALOG_FILES Environmental Variable for SGML

The SGML_CATALOG_FILES variable must be set to point to appropriate catalog files. To set the variable, use the following command for the Bourne shell:

```
# export SGML_CATALOG_FILES=/usr/local/dbtools/openjade/dsssl/catalog:/usr/local/dbtools/dtd3.1/docbook.cat:/usr/local/dbtools/docbook-dsssl/catalog
```

Use the following command for the C shell:

```
# setenv SGML_CATALOG_FILES /usr/local/dbtools/openjade/dsssl/catalog:/usr/local/dbtools/dtd3.1/docbook.cat:/usr/local/dbtools/docbook-dsssl/catalog
```

4.1.2. SGML to HTML

To convert from SGML to HTML, use the following command:

```
# /usr/local/dbtools/openjade/bin/openjade -t sgml -d /usr/local/dbtools/docbook-dsssl/html/ldp.dsl#html DocBook-OpenJade-SGML-XML-HOWTO.sgml
```

To create a non−chunked (all in one) output:

```
# /usr/local/dbtools/openjade/bin/openjade -V nochunks -t sgml -d /usr/local/dbtools/docbook-dsssl/html/ldp.dsl#html DocBook-OpenJade-SGML-XML-HOWTO.sgml
```

4.1.3. SGML to RTF

To convert from SGML to RTF, use the following command:

```
# /usr/local/dbtools/openjade/bin/openjade -t rtf -d /usr/local/dbtools/docbook-dsssl/print/ldp.dsl#print DocBook-OpenJade-SGML-XML-HOWTO.sgml
```

4.2. Processing XML

You can download a sample DocBook 4.1.2 XML file from http://www.xml−dev.com:8080/cocoon/mount/docbook/openjade.xml

4.2.1. Setting the SGML_CATALOG_FILES Environmental Variable for XML

The SGML_CATALOG_FILES variable must be set to point to appropriate catalog files. To set the variable, use the following command for the Bourne shell:

```
# export SGML_CATALOG_FILES=/usr/local/dbtools/openjade/dsssl/catalog:/usr/local/dbtools/dtd4.1.2/docbook.cat:/usr/local/dbtools/docbook-dsssl/catalog
```

Use the following command for the C shell:

```
# setenv SGML_CATALOG_FILES /usr/local/dbtools/openjade/dsssl/catalog:/usr/local/dbtools/dtd4.1.2/docbook.cat:/usr/local/dbtools/docbook-dsssl/catalog
```

4.2.2. XML to HTML

To convert from XML to HTML, use the following command:

```
# /usr/local/dbtools/openjade/bin/openjade -t xml -d /usr/local/dbtools/docbook-dsssl/html/ldp.dsl#html /usr/local/dbtools/docbook-dsssl/dtds/decls/xml.dcl DocBook-OpenJade-SGML-XML-HOWTO.xml
```

4.2.3. XML to RTF

To convert from XML to HTML, use the following command:

```
# /usr/local/dbtools/openjade/bin/openjade -t rtf -d /usr/local/dbtools/docbook-dsssl/print/ldp.dsl#print /usr/local/dbtools/docbook-dsssl/dtds/decls/xml.dcl DocBook-OpenJade-SGML-XML-HOWTO.xml
```

4.3. HTML to PDF (optional)

To convert HTML to PDF we must use HTMLDOC. First create non−chunked HTML output of the SGML:

```
# /usr/local/dbtools/openjade/bin/openjade -V nochunks -t sgml -d /usr/local/dbtools/docbook-dsssl/html/ldp.dsl#html DocBook-OpenJade-SGML-XML-HOWTO.sgml
```

Then run HTMLDOC to produce PDF.

```
# /usr/local/dbtools/htmldoc/bin/htmldoc -f outfile.pdf input.html
```

5. Serving DocBook 4.1.2 XML

There are 3 ways to serve DocBook 4.1.2 XML from a web server:

- Command line Pre–processed Open Jade, XSLT
- Scripting – PHP, Perl, Python
- Application server – Tomcat + Cocoon

Using an application server like Cocoon is the best the option.

Cocoon in Action

To see an example of web server running Tomcat + Cocoon serving DocBook 4.1.2 XML content, please visit http://www.xml–dev.com:8080/cocoon/mount/docbook/

In this section we will see how to serve DocBook 4.1.2 XML content using Tomcat + Cocoon.

5.1. Tomcat + Cocoon

Tomcat is the Java Servlet Container. For more information please visit http://jakarta.apache.org/tomcat/index.html.

Apache Cocoon is an XML publishing framework. For more information please visit http://xml.apache.org/cocoon/index.html.

This HOWTO will not go into details of setting up Tomcat + Cocoon, since it is already explained in the document http://xml.apache.org/cocoon/installing/index.html. Setting up Tomcat + Cocoon is an easy process and should take less than five minutes.

Once you have the Cocoon + Tomcat setup and working, please follow the next the sections to server DocBook 4.1.2 XML content.

One important caveat: users in the field have experienced compatibility issues with the DocBook stylesheets and some versions of the Xalan XML parser. Xalan is the parser bundled with Sun's JRE, so that's what you're using by default.

At the very least, make sure you're using the latest JRE from Sun (at this writing, 1.4.2).

Also consider upgrading the Xalan parser to the latest release. At this writing, the latest Sun JRE, 1.4.2, is bundled with Xalan 2.4.1, while Xalan itself is up to version 2.5.1.

To check the version currently installed, type

```
# java org.apache.xalan.xslt.EnvironmentCheck
```

For more info, visit http://xml.apache.org/xalan–j/faq.html .

5.2. Installing Norman Walsh's XSL

In this step we will install the Norman Walsh's XSL under the `/usr/local/dbtools/` directory.

Change to the `/tmp/downloads` directory and untar the docbook–xsl file.

```
# cd /tmp/downloads/
```

```
# gzip -d docbook-xsl-1.53.0.tar.gz
```

```
# tar -xvf docbook-xsl-1.53.0.tar
```

To install the docbook–xsl please move the files to the `/usr/local/dbtools`.

```
# mv docbook-xsl-1.53.0 /usr/local/dbtool/docbook-xsl
```

Next install the LDP XSL.

5.3. Installing LDP XSL

Unzip the `tldp-xsl-xxxxx.tar.gz` and the copy all the files to the `/usr/local/dbtools/docbook-xsl/html` directory.

```
# cd /tmp/downloads
```

```
# gzip tldp-xsl-xxxxx.tar.gz
```

```
# gzip tldp-xsl-xxxxx.tar
```

```
# mv tldp-html*.xsl /usr/local/dbtools/docbook-xsl/html
```

5.4. Setting up sitemap.xmap

$COCOON_HOME points to the Cocoon Web Application Directory. This directory is typically `/usr/local/jakarta-tomcat-4.1.9/webapps/cocoon/`

Create a directory named `docbook` under the `$COCOON_HOME/mount`. This is where we will put all our DocBook XML 4.1.2 content.

```
# mkdir $COCOON_HOME/mount/docbook
```

Create a file name sitemap.xmap in the `$COCOON_HOME/mount/docbook` with the following content:

```
# cd $COCOON_HOME/mount/docbook
```

```
# vi sitemap.xmap
```

```
<map:sitemap xmlns:map="http://apache.org/cocoon/sitemap/1.0">
```

```
    <!-- use the standard components -->
    <map:components>
        <map:generators default="file"/>
        <map:transformers default="xslt"/>
        <map:readers default="resource"/>
        <map:serializers default="html"/>
        <map:selectors default="browser"/>
        <map:matchers default="wildcard"/>
        <map:transformers default="xslt"/>
    </map:components>

    <map:pipelines>
        <map:pipeline>

   <map:match pattern="">
    <map:generate src="samples.xml"/>
    <map:transform src="/usr/local/jakarta-tomcat-4.1.9/webapps/cocoon/mount/editor/stylesheets/simple-page2html.xsl"/>
    <map:serialize/>
   </map:match>

            <!-- respond to *.html requests with
                 our docs processed by .xsl -->
            <map:match pattern="*.html">
                <map:generate src="{1}.xml"/>
                <map:transform src="/usr/local/dbtools/docbook-xsl/html/tldp-html.xsl"/>
                <map:serialize type="html"/>
            </map:match>

            <!-- later, respond to *.pdf requests with
                 our docs processed by doc2pdf.xsl -->
            <map:match pattern="*.pdf">
                <map:generate src="{1}.xml"/>
                <map:transform src="/usr/local/dbtools/docbook-xsl/fo/docbook.xsl"/>
                <map:serialize type="fo2pdf"/>
            </map:match>

            <map:match pattern="*.xml">
                <map:generate src="{1}.xml"/>
                <map:serialize type="xml"/>
            </map:match>


        </map:pipeline>
    </map:pipelines>
</map:sitemap>
```

5.5. Accessing DocBook 4.1.2 XML Content from a Web Browser

Place a DocBook 4.1.2 XML file in the `$COCOON_HOME/mount/docbook/` directory.

A sample file is available from http://www.xml–dev.com:8080/cocoon/mount/docbook/openjade.xml.

Now you can access the document using a browser at http://localhost:8080/cocoon/mount/sample.html (HTML) or http://localhost:8080/cocoon/mount/sample.pdf (PDF).

6. Further Information

This section has some pointers to related resources on the Internet.

If you would like to suggest additional resources for this section, please email me at `<saqib@seagate.com>`. Thanks.

6.1. News groups

Some of the news groups of interest are:

1. comp.text.sgml (easily accessible from Google! Groups)
2. comp.text.xml (easily accessible from Google! Groups)
3. htmldoc.general (server − news.easysw.com)

6.2. Mailing Lists

Here are some relevant mailing lists.

1. DocBook mailing list @ OASIS. Visit http://www.oasis−open.org/committees/docbook/mailinglist/index.shtml for more info.
2. DocBook mailing list @ TLDP. Visit http://www.tldp.org/mailinfo.html for more info.
3. xml−doc @ Yahoo Groups. Visit http://groups.yahoo.com/group/xml−doc/ for more info.

6.3. IRC

1. DocBook IRC Channel. #docbook on irc://irc.openprojects.net

6.4. Web Sites

1. http://www.oasis−open.org/ OASIS maintains various DocBook DTDs
2. http://www.xml−dev.com/blog/ XML / XHTML WebLog
3. http://docbook.org/wiki/moin.cgi/ The DocBook Wiki
4. http://www.docbook.org/tdg/en/ Online version of DocBook: The Definitive Guide
5. http://www.bureau−cornavin.com/opensource/crash−course/index.html Writing Documentation Using DocBook: A Crash Course
6. http://www−106.ibm.com/developerworks/library/l−docbk.html A gentle guide to DocBook (very good introduction).
7. http://www.tldp.org/LDP/LDP−Author−Guide/index.html The Linux Documentation Project (TLDP) Author Guide
8. http://www.tldp.org/authors/index.html#resources DocBook resources provided by TLDP
9. http://www.tldp.org/HOWTO/DocBook−Demystification−HOWTO/ Eric Raymond's DocBook Demystification HOWTO
10. http://www.xml−dev.com:8080/cocoon/mount/docbook/Tomcat + Cocoon + DocBook Setup Sample Site

6.5. XML Authoring / Modeling Applications

Note

A comprehensive list of XML editors can be found at http://www.xml−dev.com/blog/#19

1. eXchaNGeR − The XML Browser (and XML Editor)http://xngr.org/
2. XERLIN − XML Modeling Applicationhttp://www.xerlin.org/
3. DocPro by Command Prompt, INC. http://www.commandprompt.com/entry.lxp?lxpe=2
4. YAWC Pro by XML Workshop LTD. http://www.yawcpro.com/. Can be used for converting MS Word to Simple DocBook XML.
5. Logictran RTF Converter. http://www.logictran.com/. Word/RTF to HTML/XML.
6. MajiX − Word to XML converter. http://tetrasys.dhs.org/
7. XMETAL by SoftQuad http://www.softquad.com/
8. Tagless Editor by i4i (DocBook DTD not supported) http://www.i4i.com/
9. XML Editor by XMLmind http://www.xmlmind.com/xmleditor/
10. upCast and downCast by Inifinity Loop http://www.infinity−loop.de/en/products.html
11. W2XML by DocSofthttp://www.docsoft.com/w2xmlv2.htm
12. XMLWrite by Wattle Softwarehttp://xmlwriter.net/
13. oXygen XML Editor − Java Basedhttp://www.oxygenxml.com/
14. Xeena by IBMhttp://www.alphaworks.ibm.com/tech/xeena
15. Excosoft XML Clienthttp://www.excosoft.se/eweb/site/exc_pd.html
16. Timelux Xpresshttp://www.timelux.lu/html/Xpress2001.html
17. Morphonhttp://www.morphon.com/
18. Conglomeratehttp://conglomerate.org/