DocBook Installation on Ubuntu 16.04

Jeffrey Walton

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Introduction

This document is a guide to installing DocBook [https://docbook.org/whatis] on Ubuntu 16.04. The installation requires six components. A seventh component is optional. The optional component is `fop-hyphenate`.

The guide installs DockBook 4.5 and not version 5. If you want DockBook v5 then install `docbook5` and `docbook-xsl-ns` instead of `docbook` and `docbook-xsl`. You will also need to change some URI's to use version 5 paths.

Be careful when copying and pasting from this document. If you copy and paste commands from the document to the terminal then the dash used in commands may be translated into hyphens used in typesetting. They are not the same thing in the terminal, and it usually leads to obscure failures when installing packages.

Components

DocBook requires a DTD, XSLTPROC, and FOP. In addition, Apache's FOP requires a Java subsystem. The components are as follows:

1. DocBook DTD – DocBook entity definitions
2. DocBook XSL – DocBook stylesheets
3. XMLLINT – XML validator and formatter
4. XSLTPROC – XML processor which reads the XML source and produces Formatted Objects (FOs)
5. Java – Runtime environment for Apache FOP
6. FOP – Apache's Formatted Object Processor which transforms FOs to output file types such as HTML, PS, and PDF
7. FOP-HYPH – used by FOP to hyphenate words in a DocBook

DockBook DTD

The DockBook DTD provides entity definitions. It is provided by the `docbook` package. To install the package issue the following.

```
$ sudo apt-get install docbook
```

DockBook XSL

The DockBook XSL provides stylesheets. It is provided by the `docbook-xsl` and `docbook-xsl-doc-pdf` packages. To install the packages issue the following.

```
$ sudo apt-get install docbook-xsl docbook-xsl-doc-pdf
```

The stylesheets are installed in `/usr/share`.

```
$ ls /usr/share/xml/docbook/stylesheet/docbook-xsl/fo/
admon.xsl           division.xsl   info.xsl             refentry.xsl
annotations.xsl     docbook.xsl    inline.xsl           sections.xsl
autoidx-kimber.xsl  ebnf.xsl       keywords.xsl         spaces.xsl
autoidx-kosek.xsl   footnote.xsl   lists.xsl            synop.xsl
autoidx-ng.xsl      fop.xsl        math.xsl             table.xsl
...
```

XML lint

The XML lint provides validation and formatting. It is provided by the `libxml2-utils` package. To install the package issue the following.

```
$ sudo apt-get install libxml2-utils
```

XML processor

The XML processor translates XML source and produces Formatted Object (FO). It is provided by the `xsltproc` package. To install the package issue the following.

```
$ sudo apt-get install xsltproc
```

Java runtime

The Java runtime enviroment is needed by Apache FOP. It is provided by the `openjdk-8-jdk` package. To install the package issue the following.

```
$ sudo apt-get install openjdk-8-jdk
```

After installing the JRE you can export `JAVA_HOME` from your login script:

```
# User .bashrc or .bash_profile
$ export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64

$ source ~/.bash_profile
```

```
$ echo $JAVA_HOME
/usr/lib/jvm/java-8-openjdk-amd64
```

FO processor

The Formatted Object Processor (FOP) is provided by Apache. It is provided by the `fop` and `fop-doc` packages. To install the packages issue the following.

```
$ sudo apt-get install fop fop-doc
```

Alternatively, you can install the latest Apache FOP by downloading the binary from the Apache website. This can be useful if Ubuntu's version has trouble. To manually install FOP perform the following.

```
$ wget https://mirror.cogentco.com/pub/apache/xmlgraphics/
  fop/binaries/fop-2.2-bin.tar.gz
$ tar -xzf fop-2.2-bin.tar.gz
$ chmod +x fop-2.2/fop/fop
$ sudo mv fop-2.2 /usr/local/bin
```

Once `fop` is installed locally, add a wrapper script to execute it. In the `cat` below, both `JAVA_HOME` and `CLASSPATH` are a single line.

```
$ cat /usr/local/bin/fop
#!/usr/bin/env bash

JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
CLASSPATH=/usr/local/bin/fop-2.2:/usr/local/bin/fop-2.2/lib \
    /usr/local/bin/fop-2.2/fop/fop $*
```

After you manually install the new processor you should run `hash -r` to clear Bash's program cache.

FO hyphenate

You can add hyphenation to the book by installing FOP XML Hyphenation Patterns. Download the compiled binary for FOP XML Hyphenation Patterns from the Objects For Formatting Objects (OFFO) website [https://offo.sourceforge.net/]. Install `fop-hyph.jar` in FOP's `lib/` directory.

```
$ sudo cp fop-hyph.jar /usr/local/bin/fop-2.2/fop/lib/
$ ls /usr/local/bin/fop-2.2/fop/lib/*.jar
...
/usr/local/bin/fop-2.2/fop/lib/commons-io-1.3.1.jar
/usr/local/bin/fop-2.2/fop/lib/commons-logging-1.0.4.jar
/usr/local/bin/fop-2.2/fop/lib/fontbox-2.0.4.jar
/usr/local/bin/fop-2.2/fop/lib/fop-hyph.jar
/usr/local/bin/fop-2.2/fop/lib/serializer-2.7.2.jar
...
```

Testing

You should test the installation using `command -v`. The Posix command is the standard way to check availability of a program.

```
$ command -v xmllint
```

```
/usr/bin/xmllint
$ command -v xsltproc
/usr/bin/xsltproc
$ command -v fop
/usr/local/bin/fop
```

You should also verify the version of `fop`.

```
$ fop -version
FOP Version 2.2
```

If the version is unexpected then verify the shell script located in `/usr/local/bin/fop`, and ensure it is executable. If the script is correct then run `hash -r` to clear the Bash program cache.