

Writing Manual Pages

By Aaron St. John

Manual (man) pages served as some of the first forms of documentation available for Unix operating systems. They still are used as quick-reference guides on how to use certain computer programs that are installed on the system. The source code of a BSD operating system includes an unrivaled man page collection that accompanies the installed programs. Generally, man pages include an EXAMPLES section, a very useful tool, that includes common usage of the command or function. Creating or updating an existing man page is simple yet helpful for the entire open-source community. This article covers the basics for writing new or improving existing man pages for most BSD systems.

Writing a Manual Page Markup

Over the years several different renderers such as `groff(7)` and `mandoc(1)` have been used with man pages. FreeBSD has used `roff(7)`, `troff(1)`, and `man(7)` markup languages in the past. However, new man pages and most existing ones use `mdoc(7)`, a semantic markup language that uses macros. A line beginning with `'` is known as a "macro line." Following the `'` are two or three letters referred to as the macro name. Begin a macro name with a capital letter and lowercase for the remaining letters. Lines that do not begin with `'` are known as "text lines," providing free-form text to be printed. Common practice when writing multiple sentences is to begin a new line for each sentence which provides clarity to the reader. Comment lines begin with `.'`. Here is an example of properly formatted macros.

```
.Sh NAME
.Nm examplecommand
```

Manual Page Sections

The BSD manual pages are divided into sections. The extension of the file represents the section index for the man page. Manuals are sorted into different sections based on type. The nine manual page sections are shown in Table 1. Usually there are only one or two man pages for a particular command, `sycall`, or file.

Section	Description
1	General commands executed by users
2	System calls; functions that wrap operations performed by the kernel
3	Library functions
4	Kernel interfaces
5	File formats
6	Games
7	Miscellaneous information
8	System manager
9	Kernel developer

Table 1

Layout

Manual pages can be written many different ways. However, man pages usually contain specific sections to ensure consistency. First, the man page must contain a prologue with the macros `.Dd`, `.Dt`, and `.Os` in that order.

```
.Dd $Mdocdate$
.Dt PROGNAME section
.Os
```

The macro `.Dd` is the date macro. When making a change to an existing man page, the date must be updated. The date can be manually updated by typing the date after the macro in the format of *month day, year*. `.Dt` is the document title macro. This macro is followed by the name of the command or function and its section. Lastly, the `.Os` macro specifies the operating system in

use. The system can be manually specified. However, using **.Os** without any arguments is recommended. A list of frequently used macros is shown in Table 2.

Table 2

Macro	Description
.Dd	Document date: <i>month, day, year</i>
.Dt	Document title: <i>TITLE section</i>
.Os	Operating system version: [<i>system [version]</i>]
.Sh	Section header (one line)
.Nm	Command or function name
.Nd	Command or function description
.Op	Optional syntax arguments
.Ar	Command arguments
.Bl, .El	Begin list and end list
.It	List item
.Pp	Start a text paragraph
.An	Author name

The standardized sections that must be included in man pages are:

- NAME
Contains the name of the function or command and a concise one-line description of what it does.
- SYNOPSIS
If it is a command, write any options that can be used with the command. If it is a program function, write a list of parameters the function can use, and which header file contains the definition. Here is a correctly formatted portion of the SYNOPSIS section for `iocage(8)`:

```
.Sh SYNOPSIS
.Nm
.Op Fl -help | Ar SUBCOMMAND Fl -help
.Nm
.Op Fl v | -version
.Pp
.Nm
.Cm activate
.Ar ZPOOL |
```

- DESCRIPTION
The description contains a concise but complete write-up of the command or function.
- EXAMPLES
List of use cases describing what each case does. A robust EXAMPLES section contains at least one trivial, everyday, and inspirational use case.
Manual pages are not limited to these sections alone. In fact, most man pages have many more sections. Some sections that are commonly used are explained in Table 3.

Common Sections	Description
ENVIRONMENT	Environment settings that affect operation
EXIT STATUS	Error codes returned on exit
COMPATIBILITY	Compatibility with other implementations
SEE ALSO	Cross-reference to related manual pages
STANDARDS	Compatibility with standards like POSIX
HISTORY	History of implementation
BUGS	Known bugs
AUTHORS	People who created the command or wrote the manual page.

Table 3

Example

A trivial example might look like this:

```
.Dd January 22, 2019
.Dt examplecommand 1
.Os
.Sh NAME
.Nm examplecommand
.Nd This is an example command for an example man page.
.Sh SYNOPSIS
.Nm examplecommand
.Op Fl -help
.Op -l
.Op -o Ar file
.Sh DESCRIPTION
This is formal text describing this command.
This command does this and that.
It can be used for this and that.
.Pp
These options are available:
.Pp
.Bl -tag -width ".Cm activate"
.It Fl -help
List the help screen for the command.
.It Fl l
Does this and that.
.It Fl o Ar file
Opens a file.
.El
.Sh EXAMPLES
Open a file called helloworld.txt.
.Pp
.Dl $ examplecommand -o helloworld.txt
```

The output would be generated as:

```
examplecommand(1) FreeBSD General Commands Manual examplecommand(1)
```

NAME

examplecommand – This is an example command for an example man page.

SYNOPSIS

```
examplecommand [--help] [-l] [-o file]
```

DESCRIPTION

This is formal text describing this command. This command does this and that. It can be used for this and that.

These options are available:

--help List the help screen for the command.

-l Does this and that.

-o file Opens a file.

EXAMPLES

Open a file called helloworld.txt.

```
$ examplecommand -o helloworld.txt
```

```
FreeBSD 12.0-RELEASE January 22, 2019 FreeBSD 12.0-RELEASE  
(END)
```

For a more everyday example, here is a portion from the [ls\(1\)](#) man page:

```
.Dd December 1, 2015  
.Dt LS 1  
.Sh NAME  
.Nm ls  
.Nd list directory contents  
.Sh SYNOPSIS  
.Nm  
.Op Fl -libxo  
.Op Fl ABCFGHILPRSTUWZabcdefghijklmnpqrstuvwxyzl,  
.Op Fl D Ar format  
.Op Ar  
.Sh DESCRIPTION  
For each operand that names a  
.Ar file  
of a type other than  
directory,  
.Nm  
displays its name as well as any requested,  
associated information.  
For each operand that names a  
.Ar file
```

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of type directory,

.Nm

displays the names of files contained within that directory, as well as any requested, associated information.

When rendered with `man ls` it displays as:

```
LS(1)          FreeBSD General Commands Manual      LS(1)

NAME
  ls - list directory contents

SYNOPSIS
  ls [--libxo] [-ABCFGHILPRSTUWZabcdefghiklmnopqrstuvwxyz1,] [-D format]
  [file ...]

DESCRIPTION
  For each operand that names a file of a type other than directory, ls displays its name as well as any requested, associated information. For each operand that names a file of type directory, ls displays the names of files contained within that directory, as well as any requested, associated information.
```

Conclusion

At first, writing man pages from scratch might seem daunting. However, after a little research, the `mdoc(7)` markup language is easy to use. Manual pages are an essential part of a program and the EXAMPLES section is a tremendous help. •

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