

Getting Started

Overview

This page should contain the basic information needed to anyone starting out using a Linux server. Much of this information has been compiled from other guides, but I have rewritten and reformatted the content to be more readily available. Some of the content here was referenced from sources such as the Linux Filesystem Hierarchy Standard (Linux FHS).

Basics

We'll start with using the terminal for basic tasks we usually do with GUIs in full desktop environments.

Searching for packages

```
sudo apt search "Dell XPS 13 9300"
Sorting... Done
Full Text Search... Done
oem-somerville-factory-melisa-meta/unknown,unknown,now 20.04ubuntu12 all [installed]
  hardware support for Dell XPS 13 9300

oem-somerville-melisa-meta/unknown,unknown,now 20.04ubuntu12 all [installed]
  hardware support for Dell XPS 13 9300
```

Installing packages

```
sudo apt install oem-somerville-melisa-meta
```

Updating package registry and upgrading installed packages

```
sudo apt update && sudo apt upgrade
```

Updating package registry, upgrading packages, removing unused, fixing broken installed packages

```
sudo apt update -y && sudo apt upgrade -y && sudo apt upgrade --fix-broken --fix-missing --auto-remove
```

Checking system resources

```
htop
```

Checking Battery Consumption

```
sudo powertop
```

Connecting to WiFi

```
sudo nmcli device wifi list
```

IN-USE	BSSID	SSID	MODE	CHAN	RATE	SIGNAL	BARS	SECURITY
*	40:B8:9A:D7:EC:AF	FAKE WIFI-2G	Infra	1	195 Mbit/s	100		WPA2
	40:B8:9A:D7:EC:B0	FAKE WIFI-5G	Infra	149	405 Mbit/s	94		WPA2
	FA:8F:CA:95:43:9B	Living Room	Infra	6	65 Mbit/s	75		--
	FA:8F:CA:82:9D:D4	Family Room TV.b	Infra	6	65 Mbit/s	57		--
	14:ED:BB:1F:44:6D	Hi	Infra	8	130 Mbit/s	57		WPA2
	14:ED:BB:1F:44:76	ATT9eu7M6L	Infra	149	540 Mbit/s	44		WPA2
	4C:ED:FB:AD:D8:08	Fluffymarshmallow	Infra	1	540 Mbit/s	30		WPA2
	70:77:81:DE:43:59	WIFIDE4355	Infra	1	195 Mbit/s	24		WPA2
	70:5A:9E:6C:D4:29	TC8717T23	Infra	6	195 Mbit/s	19		WPA2
	A8:A7:95:E8:68:82	Wildflower-2G	Infra	1	195 Mbit/s	14		WPA2
	CC:2D:21:57:E0:71	Rudy	Infra	6	130 Mbit/s	14		WPA1 WPA2
	CE:A5:11:3C:E4:C2	Orbi_setup	Infra	9	130 Mbit/s	14		--
	A8:6B:AD:EB:B4:56	Gypsy-2	Infra	6	195 Mbit/s	12		WPA1 WPA2
	CE:A5:11:3C:EF:8E	Orbi_setup	Infra	9	130 Mbit/s	12		--

Now bring up a connection with the access point we want, and pass the `--ask` flag to enter a password for authentication.

```
sudo nmcli c up "FAKE WIFI-2G" --ask
```

Passwords or encryption keys are required to access the wireless network 'FAKE WIFI-2G'.

Password (802-11-wireless-security.psk):

Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/9)

Disable transmission devices with `rfctl`

```
sudo rfkill list
```

```
0: phy0: Wireless LAN
```

```
Soft blocked: no
```

```
Hard blocked: no
```

```
1: hci0: Bluetooth
    Soft blocked: yes
    Hard blocked: no
```

Block WiFi

```
sudo rfkill block wlan
```

Block Bluetooth

```
sudo rfkill block bluetooth
```

Creating a User

```
sudo adduser username
```

Granting sudo to a user

```
sudo usermod -G sudo username
```

Resetting a user's password

```
sudo passwd username
```

Logging out of our user session, where `kapper` is my username.

```
sudo pkill -KILL -u kapper
```

Rebooting

```
sudo reboot now
```

Man Pages

When encountering issues with Linux servers, its important to know how to gather specific information from credible resources quickly via tools given to us within our Bash terminal. One of these tools is known as the man pages - this set of documentation is not only well maintained and credible in its content but also readily available to us from any terminal.

Local Storage Location

These pages are usually stored locally within `/usr/share/man/` where they can be updated as new packages are released and documentation changed. These local files allow us to reference the man

pages offline should we disconnect from the internet, and also within `/usr/share/man/` you will see locale named directories - these are simply housing different language man pages should you need to reference them. See the example output below when we check the contents of `/usr/share/man`

```
ls /usr/share/man/

cs/  es/  hu/  ja/  man2/ man5/ man8/ pl/  ru/  sv/  zh_TW/
da/  fi/  id/  ko/  man3/ man6/ man9/ pt/  sl/  tr/
de/  fr/  it/  man1/ man4/ man7/ nl/  pt_BR/ sr/  zh_CN/
```

Directory	Content Category
<code>/usr/share/man/man1</code>	User programs
<code>/usr/share/man/man2</code>	System calls
<code>/usr/share/man/man3</code>	Library calls
<code>/usr/share/man/man4</code>	Special files
<code>/usr/share/man/man5</code>	File formats
<code>/usr/share/man/man6</code>	Games
<code>/usr/share/man/man7</code>	Miscellaneous
<code>/usr/share/man/man8</code>	System administration
<code>/usr/share/man/man9</code>	vmxnet.9.gz

Contents of these directories are optional depending on system and distribution

This may seem like besides-the-fact information - but it's good to know where these files are stored and to step through the locations yourself so you know what resources you have available to you. I would urge anyone interested to check out the contents of these locations from your own system, and then view the man pages associated with some of the topics that stand out to you. This should be relatively easy to do, but for completeness, the below is an example of checking a directory and then viewing the man page of topic I found within it. You will not see the man page in the example below, as it is ran within the active terminal.

```
ls /usr/share/man/man4

cciss.4.gz      initrd.4.gz    mem.4.gz      random.4.gz   vcs.4.gz
console_codes.4.gz  intro.4.gz    mouse.4.gz    rtc.4.gz      vcsa.4.gz
cpuid.4.gz      kmem.4.gz     msr.4.gz      sd.4.gz       veth.4.gz
dsp56k.4.gz     lirc.4.gz     null.4.gz     smartpqi.4.gz wavelan.4.gz
full.4.gz       loop-control.4.gz  port.4.gz    st.4.gz       zero.4.gz
fuse.4.gz       loop.4.gz     ptmx.4.gz    tty.4.gz
```

```
hd.4.gz      lp.4.gz      pts.4.gz    ttyS.4.gz
hpsa.4.gz    md.4.gz      ram.4.gz    urandom.4.gz
```

```
man console_codes
```

Indexing Pages

When viewing the manual pages, the amount of information can be overwhelming at times and it is easy to miss subtle things that could prove very useful in a situation where information on a topic is otherwise scarce. We should note that there can be sections to a manual entry for any given package, these sections are indexed according to the number of the corresponding category that the referenced package subtopic falls under. Its really useful and easy to understand once you work with it a bit. See the commands below, where we check for all man pages associated with `whatis intro`, and then look for the correspondence in the Local Man Page Storage table above.

```
whatis intro
```

```
intro (1)      - introduction to user commands
intro (2)      - introduction to system calls
intro (3)      - introduction to library functions
intro (4)      - introduction to special files
intro (5)      - introduction to file formats and filesystems
intro (6)      - introduction to games
intro (7)      - introduction to overview and miscellany section
intro (8)      - introduction to administration and privileged commands
```

```
find /usr/share/man/man* -name intro*
```

```
/usr/share/man/man1/intro.1.gz
/usr/share/man/man2/intro.2.gz
/usr/share/man/man3/intro.3.gz
/usr/share/man/man4/intro.4.gz
/usr/share/man/man5/intro.5.gz
/usr/share/man/man6/intro.6.gz
/usr/share/man/man7/intro.7.gz
/usr/share/man/man8/intro.8.gz
```

So, the intro manual pages proves to be a perfect example since its easy to relate this information to our table above. Below, we ask `whatis time`

```
whatis time
```

```
time (1)      - run programs and summarize system resource usage
time (7)      - overview of time and timers
time (3am)    - time functions for gawk
```

Then look into the results by running `man <PageID> time` where `<PageID>` corresponds with the page we'd like to view.

```
user@knoats:~$ man 3am time
```

We see that the information is organized as we expect, having researched the Local Man Page Storage above. The first section, `time (1)`, is a man page for the time command and how to use it when running user programs. The next section, `time (3am)`, The final section, `time (7)`, is a general overview of time and timers within Linux.

Text Editor

You will need to edit text when working in Linux, and a popular and powerful tool for doing so is vim. Vim can be a tricky program to use at first, but there are resources available to help teach vim to newcomers. There is even a commandline tutor that will walk you through vim from within the default viewport of a terminal using interactive text tutorials. to run this tutorial, simply run `vimtutor` from any Linux commandline. I would elaborate more on this topic, since it is such an important tool within Linux Server Administration - but there are plenty of tools and resources out there that offer much more information. Instead, I'll link to some good information here. Or, if you don't have immediate access to a terminal, check out a [quick google search](#) for some vim interactive tutorials and you're sure to find some games available to teach you within a web browser.

Plugins / Enhancements	
Syntax Checker for Vim	https://github.com/vim-syntastic/syntastic
Snippets	https://github.com/SirVer/ultisnips
Vim Solarized	https://github.com/altercation/vim-colors-solarized
Code Completion	https://github.com/ycm-core/YouCompleteMe
Git Plugin	https://github.com/tpope/vim-fugitive
Auto Configuration Tool	https://github.com/chxuan/vimplus
Community Vim Distribution	https://github.com/SpaceVim/SpaceVim
Everything Else	https://github.com/mhinz/vim-galore

Cheatsheets

<http://www.nathael.org/Data/vi-vim-cheat-sheet.svg>

<http://people.csail.mit.edu/vgod/vim/vim-cheat-sheet-en.png>

<https://cdn.shopify.com/s/files/1/0165/4168/files/preview.png>

<https://cdn.shopify.com/s/files/1/0165/4168/files/preview.png>

http://michael.peopleofhonoronly.com/vim/vim_cheat_sheet_for_programmers_screen.png

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