

Debian v2

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Contents

1	Pre-Installation	6
1.1	Check Harddrive for bad sectors	6
1.1.1	Theory	6
1.1.2	Info gathering	6
1.1.3	Check for bad sectors	6
2	Flash USB	7
2.1	Flash ISO to USB	7
3	Post-Installation	8
3.1	Disable pcspkr	8
3.2	APT sources	8
3.3	Drivers	9
3.3.1	Network Drivers	9
4	GRUB	10
4.1	Configuration	10
4.2	Menu Colors	10
4.3	Update GRUB	11
5	Local Settings	12
5.1	Password	12
5.2	Privilege escalation	12
5.2.1	doas	12
5.2.2	Run GUI programs as root	12
5.3	Hostname	12
5.4	Time and Date	13
5.5	Locales and Keyboard	13
5.5.1	Locales	13
5.5.2	CLI Keyboard	13
6	Network	15
6.1	Rename Interface	15
6.2	Wireless	15
6.3	Disable IPv6 (???)	15
6.4	Disable unnecessary networking service	16
6.5	Disable interface autostart	16
6.6	DHCP client	16
6.6.1	Set Up DHCP client	16

CONTENTS

6.6.2	Usage	17
6.6.3	Remove DHCP lease info	17
6.7	DNS	17
6.8	Ethernet	17
6.8.1	Check carrier speed	17
6.9	WiFi	18
6.9.1	Check carrier speed	18
6.9.2	WLAN authentication	18
6.10	Connect to WiFi	19
7	Texteditor and Shell	20
7.1	Texteditor	20
7.1.1	vim	20
7.1.2	bvi	20
7.2	Shell	20
7.2.1	zsh	20
8	VIM as IDE	22
8.1	Plugins for Download	22
8.2	Download Neovim (???)	22
8.3	Download vim-nox	22
8.4	vim-plug (Plug-In Manager)	22
8.5	Plugins	23
8.5.1	hdimap/python-syntax	23
8.5.2	hdimap/python-syntax	23
9	Web Browser	25
9.1	Firefox	25
10	Audio	26
10.1	Audio Control	26
10.2	Microphone	26
11	X	27
11.1	Xorg	27
12	i3	28
12.1	i3 (do not install with i3-gaps)	28
12.2	i3-gaps (do not install with i3)	28
12.3	run i3 after Xorg	29
12.4	i3 config	29
13	i3 Programs	30
13.1	i3blocks	30
13.2	urxvt	30
13.3	Fonts	30
13.4	lxappearance (GTK)	31

CONTENTS

14 Nvidia + Intel GPU (Optimus)	32
14.1 Detection and Xorg conf	32
14.2 Intel	32
14.3 Nvidia	32
14.4 Steam	33
15 System Hardening	34
15.1 Networking	34
15.1.1 Disable Avahi	34
15.2 Usb Guard	34
15.3 ICMP Firewall	35
16 KVM - WiP	37
16.1 Scheme	37
16.2 Setup	37
16.3 Permissions	37
16.4 Start KVM/QEMU	38
16.5 VMs	38
16.6 Networking	38
17 Programs - System	39
18 Programs - WiP	40
18.1 List	40
18.2 System	40
18.2.1 apt-file	40
18.2.2 psmisc	41
18.2.3 htop	41
18.3 Devices	41
18.3.1 MTP	41
18.4 Security	41
18.4.1 KeePassXC	41
18.5 Download/Convert	42
18.5.1 youtube-dl	42
18.5.2 ocrmypdf	42
18.5.3 Images to PDF	42
18.6 Multimedia	42
18.6.1 Snip screenshot	42
18.6.2 Play Video	42
18.6.3 Edit Video	43
18.6.4 Record Video	43
18.7 Social	43
18.7.1 Lightcord	43
18.8 Flex	43
18.8.1 neofetch	43
18.8.2 vrms	43
18.8.3 Gomatrix	43

CONTENTS

19 Networking Programs	44
19.1 Serial Connection	44
19.1.1 Troubleshooting	44
19.2 SSH client	44

1. Pre-Installation

1.1 Check Harddrive for bad sectors

1.1.1 Theory

- **Block:** every file must occupy at least 1 block. 0b file occupy whole block.
 - **512b** = good for lot of small files. More blocks = more metadata.
 - **4096b** = good for larger files, less metadata. Waste if there are small files.

1.1.2 Info gathering

- Info about block devices:

```
user$ lsblk [-ap | -apf]
root# fdisk -l </dev/sdX>
root# blkid
```

- Get disk blocksize in bytes:

```
root# blockdev [-v] --getbsz </dev/sdX[Y]>
```

- Get disk size in bytes:

```
root# blockdev [-v] --getsize64 </dev/sdX[Y]>
```

- Check if device is readonly (1 = ro, 0 = rw):

```
root# blockdev [-v] --getro </dev/sdX[Y]>
```

1.1.3 Check for bad sectors

1. Unmount FS!
2. Check for bad blocks:

```
root# badblocks [-b 4096] [-w [-t 0xaa]] [-v] [-s] [-o <FILE>]
</dev/sdX[Y]>
```

2. Flash USB

2.1 Flash ISO to USB

1. Download ISO from: <https://www.debian.org/distrib/>
2. Unmount FS!
3. Flash:

```
root# dd if=</<PATH>/<ISO.iso>> of=</dev/sdX> [bs=4M | status=progress]
```

3. Post-Installation

3.1 Disable pcspkr

1. Turn off bell for CLI mode:

File: (`/etc/inputrc`):

```
set bell-style none
```

2. Blacklist pcspkr module:

File: (`/etc/modprobe.d/blacklist.conf`):

```
blacklist pcspkr
```

3. Update initramfs:

```
root# depmod -a
root# update-initramfs -u
root# reboot
```

3.2 APT sources

1. Avoid using *stable*, use *release-name* instead.

2. APT sources file:

File (`/etc/apt/sources.list`):

```
## deb http://deb.debian.org/debian testing main [contrib] [non-free]
## deb-src http://deb.debian.org/debian testing main [contrib] [non-free]
#
deb http://deb.debian.org/debian bullseye main contrib non-free
deb-src http://deb.debian.org/debian bullseye main contrib non-free
#
deb http://deb.debian.org/debian-security/ bullseye-security main \
contrib non-free
deb-src http://deb.debian.org/debian-security/ bullseye-security main \
contrib non-free
#
```


3. POST-INSTALLATION

```
deb http://deb.debian.org/debian bullseye-updates main contrib non-free
deb-src http://deb.debian.org/debian bullseye-updates main contrib non-free
```

3. Update system:

```
root# apt clean
root# apt update
root# apt full-upgrade [-y]
root# apt autoremove [-y]
root# apt autoclean [-y]
root# init 6
```

3.3 Drivers

3.3.1 Network Drivers

iwlwifi

1. Needs *contrib* and *non-free* packages!
2. Install driver:

```
root# apt install firmware-iwlwifi
```

4. GRUB

4.1 Configuration

1. Basic GRUB settings:
File (`/etc/default/grub`):

```
## do not rename net interfaces:
GRUB_CMDLINE_LINUX="net.ifnames=0 biosdevname=0"

## highlighted default entry:
GRUB_DEFAULT=0
## boot default entry in X seconds, 0=immediately, -1=never:
GRUB_TIMEOUT=1
## menu=timeout to select entry, hidden=timeout to show grub:
GRUB_TIMEOUT_STYLE=menu
## disable recovery menu entry:
GRUB_DISABLE_RECOVERY=true
## GRUB BG image (*.jpg or *.png) - gfxterm only:
#GRUB_BACKGROUND="/boot/grub/<image.png>"
## theme - gfxterm only:
#GRUB_THEME="/boot/grub/themes/<THEME>/theme.txt"
```

4.2 Menu Colors

Color BG	Color BG + FG
black	X
blue	light-blue
green	light-green
cyan	light-cyan
red	light-red
magenta	light-magenta
brown	yellow
light-gray	dark-gray

1. Edit customization file:
File (`/boot/grub/custom.cfg`):

```
## <foreground>/<background>  
set color_normal=white/black  
set color_highlight=black/white  
set menu_color_normal=white/black  
set menu_color_highlight=black/white
```

4.3 Update GRUB

1. Update GRUB:

```
root# grub-mkconfig -o /boot/grub/grub.cfg
```

5. Local Settings

5.1 Password

- User-change:

```
user$ passwd
```

- Root-change:

```
root# passwd root
```

5.2 Privilege escalation

5.2.1 doas

1. Dependencies:

```
root# apt install doas
```

2. Configuration:

File (`/etc/doas.conf`):

```
## <permit|deny> [nopass|persist] <USER>[:<GROUP>] [as <USER2>]  
[cmd <COMMAND> [args <ARGUMENTS>]  
permit nopass <USER>
```

5.2.2 Run GUI programs as root

1. Run GUI programs as root:

```
user$ xhost local:root
```

5.3 Hostname

1. Display hostname:

```
user$ hostname
```

2. Change hostname:
File (`/etc/hostname`):

```
<HOSTNAME>
```

- File (`/etc/hosts`):

```
...  
127.0.1.1 <HOSTNAME>  
...
```

5.4 Time and Date

1. Show current timezone:

```
user$ timedatectl -a
```

2. List available timezones:

```
user$ timedatectl list-timezones
```

3. Change timezone:

```
root# timedatectl set-timezone <UTC|Europe/Copenhagen>
```

5.5 Locales and Keyboard

5.5.1 Locales

1. Show current locales:

```
user$ locale
```

2. Change locales:
File: (`/etc/default/locale`):

```
LANG=en_US.UTF-8  
## First day in a week MON, not SUN:  
#LC_TIME="en_GB.UTF-8"  
## Default paper size:  
#LC_PAPER="en_GB.UTF-8"  
#LC_MEASUREMENT="en_GB.UTF-8"
```

5.5.2 CLI Keyboard

- Available keyboards: </usr/share/keymaps/i386/>

1. Set keyboard:
File (`/etc/default/keyboard`):

5. LOCAL SETTINGS

```
XKBMODEL="pc105"  
XKBLayout="us"  
XKBVARIANT=""  
XKBOPTIONS=""  
BACKSPACE="guess"
```

6. Network

6.1 Rename Interface

- Check GRUB settings in [4.3](#)
- Manually rename interfaces:
File: ([/etc/udev/rules.d/70-persistent-net.rules](#)):

```
## eth0:  
#SUBSYSTEM=="net", ACTION=="add", DRIVERS=="*", \br/>#<ATTR{address}=="<MAC-ADDRESS>" | ENV{ID_NET_NAME_PATH}=="<enp3s0>">, \br/>#ATTR{type}=="1", KERNEL=="eth*", NAME="<eth0>"  
## wireless:  
#SUBSYSTEM=="net", ACTION=="add", DRIVERS=="*", \br/>#<ATTR{address}=="<MAC-ADDRESS>" | ENV{ID_NET_NAME_PATH}=="<wlp0s20f3>">, \br/>#ATTR{type}=="1", KERNEL=="wlan*", NAME="<wlan0>"
```

6.2 Wireless

1. Dependencies:

```
root# apt install rfkill
```

2. List RF devices:

```
root# rfkill list
```

3. Block/unblock BT and WiFi:

```
root# rfkill <block|unblock> <bluetooth|wlan>
```

6.3 Disable IPv6 (???)

1. Disable IPv6 globally:
File: ([/etc/sysctl.conf](#)):

```
net.ipv6.conf.all.disable_ipv6 = 1
```

6.4 Disable unnecessary networking service

1. Disable unnecessary networking service.

```
root# systemctl disable networking.service
```

6.5 Disable interface autostart

1. Disable hotplug:
File: (`/etc/network/interfaces`):

```
###allow-hotplug eth0
###iface eth0 inet <manual|dhcp>
```

6.6 DHCP client

6.6.1 Set Up DHCP client

1. Dependencies:

```
root# apt install dhcpcd5
```

2. Do not run DHCP on startup:

```
root# systemctl disable dhcpcd.service
```

3. Configure DHCP client:
File: (`/etc/dhcpcd.conf`):

```
## Inform DHCP server of our hostname for DDNS.
###hostname
## Persist interface configuration when dhcpcd exits.
###persistent
## A list of options to request from the DHCP server.
###option domain_name_servers, domain_name, domain_search, host_name

## Rapid commit support.
option rapid_commit
## A list of options to request from the DHCP server.
option classless_static_routes
## Respect the network MTU. This is applied to DHCP routes.
option interface_mtu
## A ServerID is required by RFC2131.
require dhcp_server_identifier
```



```
## Generate SLAAC address using the Hardware Address of the interface
slaac hwaddr
## OR generate Stable Private IPv6 Addresses based from the DUID
###slaac private
```

4. Purge old DHCP client:

```
root# dpkg --purge <isc-dhcp-client isc-dhcp-common>
```

6.6.2 Usage

- Lease IP address:

```
root# dhcpcd <INTERFACE>
```

- Release IP address:

```
root# dhcpcd --release <INTERFACE>
```

6.6.3 Remove DHCP lease info

1. Remove previous lease info:

```
root# rm -f /var/lib/dhcpd/*
```

6.7 DNS

1. Set up custom DNS servers:

File: (`/etc/resolv.conf`) (0644):

```
## Uncensored DNS - Denmark - Unicast
nameserver 89.233.43.71
## CZ.NIC
nameserver 193.17.47.1
nameserver 185.43.135.1
## Quad9
nameserver 1.1.1.1
nameserver 1.0.0.1
```

6.8 Ethernet

6.8.1 Check carrier speed

1. Dependencies:

```
root# apt install ethtool
```

2. Check carrier speed:

```
user$ ethtool <eth0>
```

6.9 WiFi

6.9.1 Check carrier speed

1. Dependencies:

```
root# apt install wireless-tools
```

2. Check carrier speed:

```
user$ iwlist <wlan0> bitrate
```

6.9.2 WLAN authentication

1. Dependencies:

```
root# apt install wpa_supplicant
```

2. Configure authentication file:

File (`/etc/wpa_supplicant/wpa_supplicant.conf`):

```
# Basic settings and language for zones:
ctrl_interface=/run/wpa_supplicant
update_config=1
country=<2-LETTER-ISO-CODE>

# WPA-PSK protected:
network={
    ssid="<ESSID>"
    scan_ssid=1 # Find hidden network
    key_mgmt=WPA-PSK WPA-EAP
    #psk="<PLAINTEXT-PASSWD>"
    psk=<32byte-HEX-NUMBER>
    priority=1 # To which WiFi connect first
}

# WPA-EAP protected::
network={
    ssid="<ESSID>"
    scan_ssid=1
    key_mgmt=WPA-EAP
    #eap=PEAP
    identity="<USERNAME>@<DOMAIN>"
    #password="<PLAINTEXT-PASSWD>"
    psk=<32byte-HEX-NUMBER>
```

```
#ca_cert="/etc/cert/ca.pem"
#phase1="peaplabel=0"
phase2="auth=MSCHAPV2"
priority=2
}

# Unprotected:
network={
    ssid="<ESSID>"
    scan_ssid=1 # Find hidden network
    key_mgmt=NONE
    priority=3 # To which WiFi connect first
}
```

6.10 Connect to WiFi

- Anonymize interface:

```
root# ip l set <wlan0> down
root# ip a flush <wlan0>
root# rm -rf /var/lib/dhpcpd/*
root# rm -f /run/wpa_supplicant/<wlan0>
root# macchanger -A <wlan0>
```

1. Turn on Interface:

```
root# ip l set <wlan0> up
```

2. Remove previous active config file (if exists):

```
root# rm -f /run/wpa_supplicant/wlan0
```

3. Start wpa_supplicant service (WiFi only):

```
root# systemctl start wpa_supplicant.service
```

4. Start DHCP:

```
root# systemctl start dhcpcd.service
```

5. Apply wpa_supplicant settings (WiFi only):

```
root# wpa_supplicant -B -D wext -i <wlan0>
-c /etc/wpa_supplicant/wpa_supplicant.conf
```

6. Run DHCP on interface:

```
root# dhcpcd <wlan0>
```

7. Texteditor and Shell

7.1 Texteditor

7.1.1 vim

1. Dependencies:

```
root# apt install vim
```

2. Set as default text editor:

- (a) Show available editors:

```
root# update-alternatives --list editor
```

- (b) Change default editor:

```
root# update-alternatives --set editor /usr/bin/vim.basic
```

3. Configure:

File (`/.vimrc`):

<https://github.com/AISK11/debian/blob/main/dotfiles/.vimrc>

7.1.2 bvi

1. Dependencies:

```
root# apt install bvi
```

2. Configure:

File (`/.bvirc`):

```
"" Enable edit:
set memmove
```

7.2 Shell

7.2.1 zsh

1. Dependencies:

```
root# apt install zsh zsh-autosuggestions zsh-syntax-highlighting
```

2. Set as default shell:

- User change:

```
user$ chsh -s /bin/zsh
```

- Root change:

```
root# usermod -s /bin/zsh <USER>
```

3. Configure:

File (`/.zshrc`):

<https://github.com/AISK11/debian/blob/main/dotfiles/.zshrc>

8. VIM as IDE

8.1 Plugins for Download

<https://vimawesome.com/>

8.2 Download Neovim (???)

1. Dependencies:

```
root# apt install neovim
```

8.3 Download vim-nox

Compiled vim with python3 flag.

1. Dependencies:

```
root# apt install vim-nox
```

2. Check support for python3:

```
user$ vim --version | python
```

3. Set as default editor:

```
root# update-alternatives --set editor /usr/bin/vim-nox
```

8.4 vim-plug (Plug-In Manager)

Minimalistic plug-in manager.

<https://github.com/junegunn/vim-plug>

1. Download vim-plug:

- vim:

```
root# curl -fLo ~/.vim/autoload/plug.vim --create-dirs \
https://raw.githubusercontent.com/junegunn/vim-plug/master/plug.vim
```

- nvim:

```
root# sh -c 'curl -fLo \
"$XDG_DATA_HOME:-$HOME/.local/share"/nvim/site/autoload/plug.vim \
--create-dirs \
https://raw.githubusercontent.com/junegunn/vim-plug/master/plug.vim'
```

2. Add this piece of config code:

File: (`/.vimrc`):

```
" Plugins will be downloaded under the specified directory.
call plug#begin(has('nvim') ? stdpath('data') . '/plugged' : '~/.vim/plugged')

" Declare the list of plugins.
Plug 'hdima/python-syntax'
Plug 'Valloric/YouCompleteMe'

" List ends here. Plugins become visible to Vim after this call.
call plug#end()
```

3. Usage:

- Update vim-plug: **:PlugUpgrade**
- Check Status: **:PlugStatus**
- Install Plugin: **:PlugInstall**
- Update Installed Plugins: **:PlugUpdate**
- Clean unused Plugins: **:PlugClean**

8.5 Plugins

8.5.1 hdima/python-syntax

Highlight syntax for '.py' files.*

1. Config:

File (`/.vimrc`):

```
...
" highlight *.py file
let python_highlight_all = 1
```

8.5.2 hdima/python-syntax

1. Dependencies:

```
root# apt install build-essential cmake python3-dev
user$ cd ~/.vim/plugged/YouCompleteMe
user$ python3 install.py --all
```

2. Config:

File (`/.vimrc`):

```
...  
"" Make it work:  
let g:ycm_global_ycm_extra_conf = "$HOME/.vim/plugged/YouCompleteMe/.ycm_extra_c  
"" Set minimal amount of chars to apply autocompletion:  
let g:ycm_min_num_of_chars_for_completion = 1  
"" Disable Preview Windows (Scratch):  
let g:ycm_add_preview_to_completeopt = 0
```


9. Web Browser

9.1 Firefox

1. Dependencies:

```
root# apt install firefox-esr
```

2. Set as default browser:

- (a) Show available browsers:

```
root# update-alternatives --list x-www-browser
```

- (b) Change default browser:

```
root# update-alternatives --set x-www-browser /usr/bin/firefox-esr
```

10. Audio

10.1 Audio Control

1. Dependencies:

```
root# apt install alsa-utils
```

- Get Master/Capture audio:

```
user$ amixer get <Master/Capture>
```

- Set mute/unmute/toggle Master/Capture audio:

```
user$ amixer set <Master/Capture> <mute|unmute|toggle>
```

- Set volume Master/Capture audio:

- Specific value:

```
user$ amixer set <Master/Capture> <0-100>%
```

- Increase/decrease value:

```
user$ amixer set <Master/Capture> <0-100>%<+|->
```

10.2 Microphone

In case of mic problems, try to install pulseaudio.

1. Dependencies:

```
root# apt install pulseaudio
```

11. X

11.1 Xorg

1. Dependencies:

```
root# apt install xorg x11-xserver-utils xinit
```

2. Start X on tty1:

File (`~/.bash_profile`||`~/.bashrc`||`~/.zshrc`):

```
...
## Start Xorg on tty1:
if [[ -z $DISPLAY ]] && [[ $(tty) = /dev/tty1 ]]; then
    source /etc/profile
    startx
fi
...
```

3. xinit configuration:

File (`~/.xinitrc`):

```
## Disable screen saver:
xset s off
xset s noblank
xset -dpms

## Execute i3 WM after X is started:
xrandr -s 1920x1080
exec i3
```

12. i3

12.1 i3 (do not install with i3-gaps)

1. Dependencies:

```
root# apt install i3 --no-install-recommends
root# apt install i3-wm
```

12.2 i3-gaps (do not install with i3)

URL: (<https://github.com/Airblader/i3/wiki/Building-from-source>)

1. Dependencies:

```
root# apt install make meson git ninja-build
dh-autoreconf libxcb-keysyms1-dev
libxcb-util0-dev xcb libxcb1-dev libxcb-icccm4-dev libyajl-dev
libev-dev libxcb-xkb-dev libxcb-cursor-dev libxkbcommon-dev
libxcb-xinerama0-dev libxkbcommon-x11-dev libpango1.0-dev
libstartup-notification0-dev libxcb-randr0-dev libxcb-xrm0
libxcb-xrm-dev libxcb-shape0 libxcb-shape0-dev
```

2. Clone i3-haps:

```
user$ cd /etc/
root# git clone https://www.github.com/Airblader/i3 i3-gaps
user$ cd ./i3-gaps/
```

3. Compile:

```
root# mkdir -p build && cd build
root# meson --prefix /usr/local
root# ninja
root# ninja install
```

12.3 run i3 after Xorg

1. Run i3 on X init:
File (`~/.xinitrc`):

```
# Disable screen saver:
xset s off
xset s noblank
xset -dpms

# Execute i3 WM after X is started:
xrandr -s 1920x1080
exec i3
```

12.4 i3 config

1. i3 configuration:
File (`~/.config/i3/config`):
<https://github.com/AISK11/debian/blob/main/dotfiles/.config/i3/config>
2. i3 scripts:
<https://github.com/AISK11/debian/tree/main/dotfiles/.config/i3/scripts>

```
user$ chmod +x ~/.config/i3/scripts/*
```
3. i3 wallpaper and lock screen:
<https://github.com/AISK11/debian/tree/main/dotfiles/.config/i3/images>

13. i3 Programs

13.1 i3blocks

1. Dependencies:

```
root# apt install i3blocks i3lock numlockx rofi feh scrot light xclip
```

2. i3blocks config:

File (`/etc/i3blocks.conf`):

https://github.com/AISK11/debian/blob/main/config_files/i3blocks.conf

13.2 urxvt

1. Dependencies:

```
root# apt install rxvt-unicode-256color compton
```

2. Configuration:

File (`~/.Xresources`):

<https://github.com/AISK11/debian/blob/main/dotfiles/.Xresources>

3. Load changed config:

```
root# xrdp ~/.Xresources
```

4. Set as default CLI emulator:

```
root# update-alternatives --list x-terminal-emulator
```

```
root# update-alternatives --set x-terminal-emulator /usr/bin/urxvt
```

13.3 Fonts

1. Dependencies:

```
root# apt install imagemagick
```

2. List installed fonts:

```
user$ fc-list
```

3. Display specific font:

```
user$ display </PATH/TO/font.ttf>
```

4. Font Awesome:

Dir ([~/.fonts/](#)):

<https://github.com/AISK11/debian/tree/main/dotfiles/.fonts>

13.4 lxappearance (GTK)

1. Dependencies:

```
root# apt install lxappearance
```

2. Add themes and icons:

Dir ([~/.themes/](#)):

<https://github.com/AISK11/debian/blob/main/dotfiles/.themes.tar.bz2>

Dir ([~/.icons/](#)):

<https://github.com/AISK11/debian/blob/main/dotfiles/.icons.tar.bz2>

3. Change GTK theme and icons:

```
user$ lxappearance
```

14. Nvidia + Intel GPU (Optimus)

14.1 Detection and Xorg conf

1. Detect Video cards:

- Detect with lspci:

```
user$ egrep -i "vga|3d"
```

- Detect with xrandr:

```
user$ xrandr --listproviders
```

2. Xorg config:

File (`/etc/X11/xorg.conf`):

https://github.com/AISK11/debian/blob/main/config_files/xorg.conf

14.2 Intel

1. Dependencies:

```
root# apt install intel-gpu-tools
```

2. Checks:

- Check if intel module is present:

```
user$ modinfo i915
```

- Check intel GPU utilization:

```
root# intel_gpu_top [-s <MILLISECONDS>]
```

14.3 Nvidia

1. Dependencies:

```
root# apt install nvidia-detect nvidia-smi linux-headers-amd64 nvidia-driver  
firmware-misc-nonfree
```

2. Additional dependencies (**not needed!**):

```
root# apt install nvidia-cuda-dev nvidia-cuda-toolkit  
nvidia-opencl-common nvidia-opencl-icd
```


3. Purge problematic primus-nvidia (required only during Steam install):

```
root# apt purge primus-nvidia
```

4. Checks:

- Check if Nvidia module is installed:

```
user$ modinfo [-F version] nvidia-current
```

- Check suggested Nvidia packages:

```
user$ nvidia-detect
```

- Check Nvidia GPU utilization:

```
user$ nvidia-smi
```

5. Run program with Nvidia GPU:

- Linux programs:

```
user$ __NV_PRIME_RENDER_OFFLOAD=1 __GLX_VENDOR_LIBRARY_NAME=nvidia  
<APPLICATION>
```

- Steam Game (set in Game Properties):

■

14.4 Steam

1. Download: <https://store.steampowered.com/about/>

2. Dependencies:

```
root# apt install sudo
```

```
root# apt install </PATH/TO/steam_latest.deb>
```

```
user$ steam
```

3. Fix libGL.so.1 is missing:

```
root# apt install primus-nvidia
```

```
user$ steam
```

4. Purge primus-nvidia (causing problems):

```
root# apt purge primus-nvidia
```

5. Run Steam:

```
__NV_PRIME_RENDER_OFFLOAD=1 __GLX_VENDOR_LIBRARY_NAME=nvidia %command%
```

15. System Hardening

15.1 Networking

15.1.1 Disable Avahi

- Protocol: MDNS
 - Port: **UDP 5353**
1. Disable Avahi service:

```
root# systemctl disable avahi-daemon.socket
root# systemctl disable avahi-daemon.service
```

15.2 Usb Guard

1. Dependencies:

```
root# apt install usbguard
```

2. Start USB Guard on startup:

```
root# systemctl enable usbguard.service
```

3. List USBs:

```
user$ lsusb
user$ usbguard list-devices [--allowed|--blocked]
user$ usbguard list-rules [--allowed|--blocked]
```

4. Allow/Block USBs (permanently):

```
user$ usbguard <allow-device|block-device|reject-device>
<USB-ID> [-p]
```

5. Delete rule:

```
user$ usbguard remove-rule <RULE-ID>
```

15.3 ICMP Firewall

1. Dependencies:

```
root# apt install iptables-persistent
```

2. List FW rules:

```
root# iptables -L -n -v
```

3. LOG & DROP ICMP request, timestamp, mask and traceroute:

```
root# iptables -N LOG_AND_DROP
```

```
root# iptables -A LOG_AND_DROP -j LOG --log-prefix "iptables denied: "
--log-level <0-7>
```

```
root# iptables -A LOG_AND_DROP -j DROP
```

```
root# iptables -A INPUT -s 0.0.0.0/0 -p icmp --icmp-type 8 -j LOG_AND_DROP
```

```
root# iptables -A INPUT -s 0.0.0.0/0 -p icmp --icmp-type 13 -j LOG_AND_DROP
```

```
root# iptables -A INPUT -s 0.0.0.0/0 -p icmp --icmp-type 17 -j LOG_AND_DROP
```

```
root# iptables -A INPUT -s 0.0.0.0/0 -p icmp --icmp-type 30 -j LOG_AND_DROP
```

Log File: (`/var/log/syslog`).

4. Change log file:

- Create rsyslog rule:

```
root# touch /etc/rsyslog.d/iptables.conf
```

File (`/etc/rsyslog.d/iptables.conf`):

```
:msg, contains, "iptables denied: " -/var/log/iptables.log
& ~
```

- Create log rotate rule:

```
root# touch /etc/logrotate.d/iptables
```

File (`/etc/logrotate.d/iptables`):

```
/var/log/iptables.log
{
    missingok
    notifempty
    rotate 4
    daily
    create 0600 root root
    compress
    delaycompress
    copytruncate
    nomail
    shred
}
```

- Crontab (<https://crontab.guru/>) for log rotation:

```
root# crontab -e
@reboot systemctl restart logrotate.service && \
systemctl restart rsyslog.service
@daily systemctl restart logrotate.service && \
systemctl restart rsyslog.service
```

- Restart rsyslog:

```
root# systemctl restart logrotate.service &&
systemctl restart rsyslog.service
```

New (exclusive) log file: (`/var/log/iptables.log`).

5. Save to persistent iptables:

```
root# iptables-save > /etc/iptables/rules.v4
root# ip6tables-save > /etc/iptables/rules.v6
```


3. Configure for system mode:

```
root# cp -r /etc/libvirt/ ~/.config/libvirt/  
root# chown <USER> ~/.config/libvirt/libvirt.conf/
```

File (`/.config/libvirt/libvirt.conf`):

```
# Uri default system/user:  
uri_default = "qemu:///system"
```

4. Check if user can list VMs (system mode):

```
user$ virsh list --all
```

16.4 Start KVM/QEMU

1.

```
root# systemctl start libvirtd.service
```

```
user$ virt-manager
```

16.5 VMs

- Files:
 - ISO dir (move here ISOs):

```
root# mkdir /var/lib/libvirt/iso/
```
 - VM images: (`/var/lib/libvirt/images/`).
 - VM config: (`/etc/libvirt/qemu/`).
- Copy Paste:
 - Linux:

```
root# apt install spice-vdagent
```
 - Windows:
<http://spice-space.org/>

16.6 Networking

17. Programs - System

18. Programs - WiP

18.1 List

System:

- apt-file
- psmisc
- htop
- parted

Network:

- nmap
- hping3
- arping
- nbtscan
- macchanger

18.2 System

18.2.1 apt-file

Needed for: **apt-file**

1. Dependencies:

```
root apt install apt-file
```

2. Initialize:

```
root apt-file update
```

3. Usage:

```
root apt-file search -x <FILE>
```


18.2.2 psmisc

Needed for: **killall**

1. Dependencies:

```
root apt install psmisc
```

18.2.3 htop

Needed for: **htop**

1. Dependencies:

```
root apt install htop
```

2. Usage:

```
root htop
```

18.3 Devices

18.3.1 MTP

Note: use original cable, some cables may not work.

1. Dependencies:

```
root apt install mtp-tools jmtvfs
```

2. Check if MTP device is detected:

```
user$ mtp-detect
```

3. Mount MTP device:

```
root# mkdir /mnt/mtp/
```

```
root# chmod 0777 /mnt/mtp/
```

```
root# jmtvfs /mnt/mtp/
```

4. Unmount MTP device:

```
root# fusermount -u /mnt/mtp/
```

18.4 Security

18.4.1 KeePassXC

1. Dependencies:

```
root# apt install keepassxc
```

2. Usage:

```
user$ keepassxc
```

18.5 Download/Convert

18.5.1 youtube-dl

1. Dependencies:

```
root# apt install youtube-dl
```

2. Usage:

```
root# youtube-dl -x --no-playlist --audio-format "mp3" --audio-quality 0  
--console-title "<URL>"
```

18.5.2 ocrmypdf

PDF to OCR PDF.

1. Dependencies:

```
root# apt install ocrmypdf
```

2. Usage:

```
user$ ocrmypdf <INPUT.pdf> <OUTPUT.pdf>
```

18.5.3 Images to PDF

1. Dependencies:

```
root# apt install imagemagick
```

2. Fix Error *"convert-im6.q16: attempt to perform an operation not allowed by the security policy 'PDF' @ error/constitute.c/IsCoderAuthorized/421."*:
File (/etc/ImageMagick-6/policy.xml):

```
<!-- Add read/write rights -->  
<policy domain="coder" rights="read|write" pattern="PDF" />
```

3. Convert images to PDF:

```
user$ convert <IMAGES> <OUTPUT>.pdf
```

18.6 Multimedia

18.6.1 Snip screenshot

1. Dependencies: ksnip

18.6.2 Play Video

1. Dependencies: mpv

18.6.3 Edit Video

1. Dependencies: openshot-qt

18.6.4 Record Video

1. Dependencies: obs-studio

18.7 Social

18.7.1 Lightcord

18.8 Flex

18.8.1 neofetch

18.8.2 vrms

18.8.3 Gomatrix

19. Networking Programs

19.1 Serial Connection

1. Dependencies:

```
root# apt install putty
```

2. Select Serial Interface

- Cable: RS232 = device `/dev/ttyS0`
- Cable: USB console = device `/dev/ttyUSB0`

19.1.1 Troubleshooting

1. USBguard is causing problems for USB console.

19.2 SSH client

```
ssh <USER>@<HOST> -c <3des-cbc> -oKexAlgorithms=+diffie-hellman-group1-sha1>
```