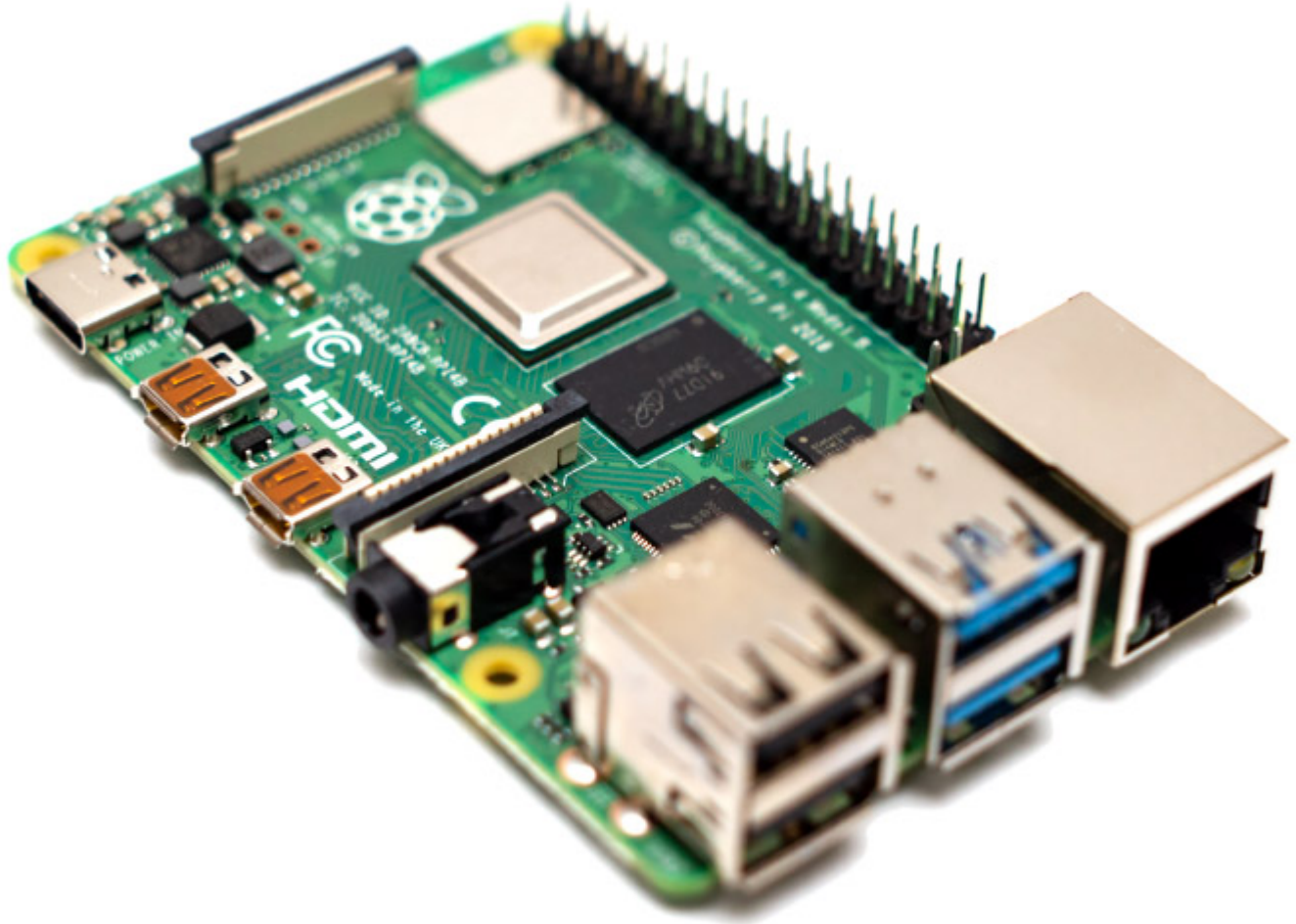


Table of Contents

- Raspberry PI 4 as Server** 1
- CPU bugs** 1
- GPIO** 1
- Basic Info** 1
 - SAMBA Performance 2
 - Encryption 2
- config.txt** 2
 - Overclock 2
- SSH on headless mode** 3
- Network** 3
- SD Card care** 3
 - Create folders in RAM 3
 - Remove fake hwclock 4
 - Trim SD Card 4
 - Disable smartd 4
- VCGENCMD** 4
 - Check Temperature 4
 - Check GPU Memory 4
 - Check Clock 4
 - Check Voltage 5
 - Other 5
- Check time status** 5
- SAMBA** 5
- ffmpeg h264** 5
- Power Save** 5
 - Turn off HDMI / Headless 6
- sysctl** 6
- HDD Care** 6
 - USB Autosuspend 1 hour 6
 - Change disk sleep 1 hour 6
 - Install hd-idle 6
 - Disable UASP for specific device 7
 - Hack to permanently wakeup disk 7
- Install general things** 7
- HostAP** 7
- Mount FS** 8
- Disable swap** 8
- Format external drive** 8
- How to format 8TB SMR Drive** 8
- Revert RPI-UPDATE** 8
- Bootloader configuration** 8
 - shutdown 9
 - disable HDMI for servers 9

Raspberry PI 4 as Server



CPU bugs

[Spectre V1 & V2](#) and Variant 4 [Speculative Store Bypass](#)
CVE-2018-3640 CVE-2018-3639

GPIO

[RPI pinout](#)

Basic Info

2x USB2.0 connected to VL805 (wire savings - USB3 wires not connected)
2x USB3.1 Gen 1 5Gbit - VL805 connected via PCIe 2.0 1x (5Gbit)
1x Gigabit Ethernet connected via PCIe 1.0 1x (2Gbit)

VideoCore VI running on [ThreadX](#)

Power approx 3-8Watts

iperf3 944Mbit/s

SAMBA Performance

912 Mbit/s = 114 MB/s read and write

ASM1352R FW:B5_20_60 UASP and vl805_fw_0137ab.bin (raw read/write 358/159 MB/s)

[Raspbian Buster Lite](#)

Encryption

ChaCha20-Poly1305 is fastest so it can be preferred (approx. **323 MB/s** 2GHz)

AES-128-CBC max. 113 MB/s

```
ECDHE - ECDSA - CHACHA20 - POLY1305 : ECDHE - RSA - CHACHA20 - POLY1305
```

config.txt

```
# For more options and information see
# http://rpf.io/configtxt
# Some settings may impact device functionality. See link above for details

arm_freq=1200
arm_freq_min=266
disable_splash=1
gpu_freq=100
gpu_freq_min=100
v3d_freq=100
gpu_mem=64
over_voltage=-1
temp_limit=80
arm_64bit=1
```

Overclock

Add some fan!

```
arm_freq=1750
over_voltage=2
-- or --
arm_freq=2000
over_voltage=5
```

SSH on headless mode

Insert file named "ssh" in /boot dir

Network

```
ethtool -K eth0 rx on tx on gso on
```

SD Card care

Recommended SD card with MLC (Samsung Pro, SanDisk High Endurance, etc)

```
defaults,noatime,nodiratime,commit=1800
```

/etc/fstab (move most active locations to RAM)

```
tmpfs /tmp tmpfs defaults,noatime,nosuid,size=100m
0 0
tmpfs /var/tmp tmpfs defaults,noatime,nosuid,size=30m
0 0
tmpfs /var/log tmpfs
defaults,noatime,nosuid,mode=0755,size=100m 0 0
tmpfs /var/cache/minidlna tmpfs defaults,noatime,nosuid,size=100m
0 0
tmpfs /var/spool/mqueue tmpfs
defaults,noatime,nosuid,mode=0700,gid=12,size=30m 0 0
tmpfs /var/lib/logrotate tmpfs
defaults,noatime,nosuid,mode=0755,size=10m 0 0
tmpfs /var/lib/samba tmpfs
defaults,noatime,nosuid,mode=0755,size=10m 0 0
tmpfs /var/lib/nginx tmpfs
defaults,noatime,nosuid,mode=0755,size=100m 0 0
tmpfs /var/lib/php/sessions tmpfs
defaults,noatime,nosuid,mode=1733,size=10m 0 0
tmpfs /var/lib/systemd/timers tmpfs
defaults,noatime,nosuid,mode=0755,size=1m 0 0
tmpfs /var/lib/systemd/timesync tmpfs
defaults,noatime,nosuid,mode=0755,uid=100,gid=102,size=1m 0 0
```

Create folders in RAM

create file /usr/lib/tmpfiles.d/ramdisk.conf

```
d /var/log/samba 0755 - - -
```

```
d /var/log/exim4 0755 110 117 -  
d /var/lib/samba/private 0755 - - -  
d /var/lib/samba/usershares 1700 - - -  
d /var/log/nginx 0755 - - -  
d /var/log/mysql 0755 112 119 -
```

Remove fake hwclock

```
sudo apt-get remove fake-hwclock  
sudo rm /etc/cron.hourly/fake-hwclock  
sudo update-rc.d -f fake-hwclock remove  
sudo rm /etc/init.d/fake-hwclock  
sudo rm /etc/fake-hwclock.dat
```

Trim SD Card

```
sudo ionice -c 3 fstrim -v /
```

Disable smartd

If installed disable smartd

```
sudo systemctl disable smartd
```

Info about SD card

```
/sys/bus/mmc/devices/mmc0:0002
```

VCGENCMD

Check Temperature

```
/opt/vc/bin/vcgencmd measure_temp  
/opt/vc/bin/vcgencmd measure_temp | awk '{ print substr($1,6,length($1)-9)  
'}
```

Check GPU Memory

```
vcgencmd get_mem gpu
```

Check Clock

```
vcgencmd measure_clock xxx
```

xxx = **arm, core, h264, isp, v3d, uart, pwm, emmc, pixel, vec, hdmi, dpi**

Check Voltage

```
vcgencmd measure_volts xxx
```

xxx = **core, sdram_c, sdram_i, sdram_p**

Other

```
vcgencmd bootloader_version
```

```
vcgencmd get_config int
```

Check time status

```
timedatectl status
```

SAMBA

More on [SAMBA](#) article for CentOS / RedHat

ffmpeg h264

```
ffmpeg -vcodec h264_mmal -i input.mkv -s 1920x1080 -c:v h264_omx -b:v 6000k output.mkv
```

h264 accelerated decode and encode sample
hevc_v4l2m2m

Power Save

##turn on/off wifi

```
dtoverlay=disable-wifi
```

Turn off HDMI / Headless

```
/usr/bin/tvservice -o
```

Status

```
/usr/bin/tvservice -s
```

sysctl

```
fs.inotify.max_user_watches=524288
```

HDD Care

Best stable settings are

- autosuspend=-1
- hdparm
- wake script

USB Autosuspend 1 hour

Prevent external USB from 20s sleep by adding this into **/boot/cmdline.txt**

```
usbcore.autosuspend=3600
```

Change disk sleep 1 hour

```
sudo hdparm -S 241 /dev/sda
```

Install hd-idle

Download compiled deb package

```
https://janforman.org/files/Linux/hd-idle\_1.05\_armhf.deb
```

OR

```
sudo apt-get install build-essential fakeroot debhelper -y
wget https://janforman.org/files/Linux/hd-idle-1.05.tgz
tar -xvf hd-idle-1.05.tgz
cd hd-idle
```

```
dpkg-buildpackage -rfakeroot -uc -us  
sudo dpkg -i ../hd-idle_*.deb
```

```
sudo nano /etc/default/hd-idle
```

```
HD_IDLE_OPTS="-i 0 -a sda -i 3600 -a sdb -i 3600"
```

Disable UASP for specific device

Insert device ids into **/boot/cmdline.txt**

```
usb-storage.quirks=152d:8561:u
```

Hack to permanently wakeup disk

Run this in background

```
while [ 1 ]  
do  
hdparm -C /dev/sda >/dev/null  
sleep 120  
done
```

Install general things

```
sudo apt install mc samba minidlna ffmpeg hostapd bridge-utils smartmontools
```

HostAP

```
sudo nano /etc/hostapd/hostapd.conf
```

```
interface=wlan0  
driver=nl80211  
ssid=janforman.com  
hw_mode=a  
channel=40  
wmm_enabled=0  
macaddr_acl=0  
auth_algs=1  
ignore_broadcast_ssid=0  
wpa=2  
wpa_passphrase=AardvarkBadgerHedgehog  
wpa_key_mgmt=WPA-PSK  
wpa_pairwise=TKIP
```



```
rsn_pairwise=CCMP
```

Mount FS

```
sudo mount -t fs_type -o rw,lazytime,noatime,nodiratime,commit=600 device /path/to/dest/fs
```

Disable swap

```
sudo systemctl disable dphys-swapfile.service
```

Format external drive

```
mkfs.ext4 -b 4096 -i 131072 -I 128 /dev/sda1  
tune2fs -i0 -c -1 /dev/sda1  
tune2fs -o journal_data_writeback /dev/sda1  
tune2fs -m 0 /dev/sda1
```

How to format 8TB SMR Drive

```
mkfs.f2fs -s64 -o0 -t0 -a0 /dev/sda1  
mount -t f2fs -  
onoinline_data,noatime,flush_merge,no_heap,extent_cache,noacl,active_logs=2  
/dev/sda1 /mnt
```

Revert RPI-UPDATE

```
sudo apt-get update; sudo apt-get install --reinstall raspberrypi-bootloader  
raspberrypi-kernel
```

Bootloader configuration

show

```
rpi-eeeprom-config
```

edit

```
sudo -E rpi-eeeprom-config --edit
```

shutdown

POWER_OFF_ON_HALT=1

disable HDMI for servers

DISABLE_HDMI=1

From:

<https://wiki.janforman.com/> - **wiki.janforman.com**

Permanent link:

<https://wiki.janforman.com/raspberrypi>

Last update: **2021/03/25 11:39**

