Raspberry Pi

Model B+
OS: RaspberryPi OS until it was full of crap undebugable - then ArclinuxARM ... but ArchARM guys removed armhf architecture, very MS®© style (clap) so back to PiOS Lite
Installed with Pi-Hole and unbound as recursive DNS on port 5335 Interface: http://192.168.1.10/admin pass in *bitwarden*
SSHKeys on root

Archlinux

Start fdisk to partition the SD card:

```
fdisk /dev/mmcb1k0
```

thank you systemD for shit naming ❗ Delete old partitions and create a new one:
Type o. to clear out any partitions
Type p to list & check partitions.
Type n for new, p for primary, 1 for the first partition , press ENTER to accept the default first sector, type **+200M** for the last sector.
Type t for type, type c to set the first partition to type W95 FAT32 (LBA).
Type n for new, p for primary, 2 for the second partition on the drive, and then press ENTER twice to accept the default first and last sector.
Write the partition table and exit by typing w.

```
cd /root
mkfs.vfat /dev/mmcb1k0p1
mkdir boot
mount /dev/mmcb1k0p1 boot

mkfs.ext4 /dev/mmcb1k0p2
mkdir root
mount /dev/mmcb1k0p2 root

curl -O http://os.archlinuxarm.org/os/ArchLinuxARM-rpi-latest.tar.gz
bsdtar -xpf ArchLinuxARM-rpi-latest.tar.gz -C root
sync

mv root/boot/* boot

umount boot root
```

First boot:

```
ssh alarm@IP #passwd alarm
```

```
su # pass root
pacman-key --init
pacman-key --populate archlinuxarm
passwd
```

Update&new toys

```
pacman -Syu
pacman -S htop ccze dfc zsh vim base-devel git go #go for yay
```

Extra-config

hostname

```
hostnamectl set-hostname dns
```

fixed IP

```
vi /etc/systemd/network/20-wired.network
```

```
[Match]
Name=eth0

[Network]
Address=192.168.1.10/24
Gateway=192.168.1.1
DNS=192.168.1.11
```

VIM über älles

```
 pacman -R vi
ln -s `which vim` /usr/bin/vi
```

AUR Helper

Let's install yay

```
su - alarm
mkdir /tmp/yay
curl https://aur.archlinux.org/cgit/aur.git/plain/PKGBUILD?h=yay >
/tmp/yay/PKGBUILD
cd /tmp/yay
```

```
makepkg
su
pacman -U yay*.xz
```

Pi-Hole

❗ as user **alarm** ❗

```
alarm@dns2 ~]$ yay -S pi-hole-server
:: Checking for conflicts...
:: Checking for inner conflicts...
[Repo:10]  libidn-1.38-1  bc-1.07.1-4  inetutils-2.2-1  logrotate-3.18.1-1
libmaxminddb-1.6.0-1  lmdb-0.9.29-1  python-3.9.9-1  python-ply-3.11-8
bind-9.16.23-1  lsof-4.94.0-1
[Repo Make:6]  hicolor-icon-theme-0.17-2  jsoncpp-1.9.4-1  libnsl-2.0.0-1
libuv-1.42.0-1  rhash-1.4.2-1  cmake-3.22.1-1
[Aur:2]  pi-hole-ftl-5.11-1  pi-hole-server-5.6-4

==> Remove make dependencies after install? [y/N]
  2 pi-hole-ftl                                (Build Files Exist)
  1 pi-hole-server                             (Build Files Exist)
==> Packages to cleanBuild?
==> [N]one [A]ll [Ab]ort [I]nstalled [No]tInstalled or (1 2 3, 1-3, ^4)
==> A
:: Deleting (1/2): /home/alarm/.cache/yay/pi-hole-ftl
:: Deleting (2/2): /home/alarm/.cache/yay/pi-hole-server
:: (1/2) Downloaded PKGBUILD: pi-hole-ftl
:: (2/2) Downloaded PKGBUILD: pi-hole-server
  2 pi-hole-ftl                                (Build Files Exist)
  1 pi-hole-server                             (Build Files Exist)
==> Diffs to show?
==> [N]one [A]ll [Ab]ort [I]nstalled [No]tInstalled or (1 2 3, 1-3, ^4)
==> N
```

coffee time 🤣
the compilation used to break @ 33%

```
....
[ 31%] Built target api
[ 32%] Building C object src/database/CMakeFiles/sqlite3.dir/shell.c.o
[ 33%] Building C object src/database/CMakeFiles/sqlite3.dir/sqlite3.c.o
/home/alarm/.cache/yay/pi-hole-ftl/src/FTL-5.11/src/database/sqlite3.c: In
function 'dbpageUpdate':
/home/alarm/.cache/yay/pi-hole-
ftl/src/FTL-5.11/src/database/sqlite3.c:206560:31: warning: comparison of
integer expressions of different signedness: 'Pgno' {aka 'unsigned int'} and
'int' [-Wsign-compare]
206560 |   if( pgno<1 || pBt==0 || pgno>(int)sqlite3BtreeLastPage(pBt) ){
       |                               ^
```

```
^[[{standard input}: Assembler messages:{standard input}:480061: Warning:
end of file not at end of a line; newline inserted{standard input}: Error:
open CFI at the end of file; missing .cfi_endproc directive
cc: fatal error: Killed signal terminated program cc1
compilation terminated.make[2]: ***
[src/database/CMakeFiles/sqlite3.dir/build.make:90:
src/database/CMakeFiles/sqlite3.dir/sqlite3.c.o] Error 1make[1]: ***
[CMakeFiles/Makefile2:322: src/database/CMakeFiles/sqlite3.dir/all] Error
2make: *** [Makefile:136: all] Error 2==> ERROR: A failure occurred in
build().
```

Looks like the issue is the lack of memory to using https://docs.rackspace.com/support/how-to/create-a-linux-swap-file/ I added one GB of swap on /mnt

```
fallocate -l 1G /mnt/1GB.swap
dd if=/dev/zero of=/mnt/1GB.swap bs=1024 count=1048576
chmod 600 /mnt/1GB.swap
echo "vm.swappiness=10" > /etc/sysctl.conf
mkswap /mnt/1GB.swap
swapon /mnt/1GB.swap

echo "/mnt/1GB.swap  none  swap  sw 0  0" >>/etc/fstab
```

Once installed, start/enable pihole-FTL service

```
systemctl start pihole-FTL
```

It will fail silently thanks to SystemD and its systemd-resolved.service...

```
 vi /etc/systemd/resolved.conf
```

```
[Resolve]
DNSStubListener=no
```

Restart both...

```
 systemctl restart systemd-resolved pihole-FTL
```

Php

- Install

  ```
   yay -S php-sqlite
  ```

- /etc/php/php.ini

  ```
  [...]
  extension=pdo_sqlite
  [...]
  extension=sockets
  ```

```
[...]
extension=sqlite3
[...]
```

Lighttpd

```
 yay -S lighttpd php-cgi
cp /usr/share/pihole/configs/lighttpd.example.conf
/etc/lighttpd/lighttpd.conf
systemctl enable --now lighttpd
```

Hosts

```
 vi /etc/hosts
```

```
127.0.0.1               localhost
192.168.1.10   pi.hole dns
```

Unbound

Let's install a real recursive DNS

Install

```
yay -S unbound
```

Config

→ https://docs.pi-hole.net/guides/dns/unbound/
In /etc/unbound/unbound.conf

```
server:
    # If no logfile is specified, syslog is used
    # logfile: "/var/log/unbound/unbound.log"
    verbosity: 0

    interface: 127.0.0.1
    port: 5335
    do-ip4: yes
    do-udp: yes
    do-tcp: yes

    # May be set to yes if you have IPv6 connectivity
```

```
    do-ip6: no

    # You want to leave this to no unless you have *native* IPv6. With 6to4
and
    # Terredo tunnels your web browser should favor IPv4 for the same
reasons
    prefer-ip6: no

    # Use this only when you downloaded the list of primary root servers!
    # If you use the default dns-root-data package, unbound will find it
automatically
    root-hints: "/var/lib/unbound/root.hints"

    # Trust glue only if it is within the server's authority
    harden-glue: yes

    # Require DNSSEC data for trust-anchored zones, if such data is absent,
the zone becomes BOGUS
    harden-dnssec-stripped: yes

    # Don't use Capitalization randomization as it known to cause DNSSEC
issues sometimes
    # see
https://discourse.pi-hole.net/t/unbound-stubby-or-dnscrypt-proxy/9378 for
further details
    use-caps-for-id: no

    # Reduce EDNS reassembly buffer size.
    # Suggested by the unbound man page to reduce fragmentation reassembly
problems
    edns-buffer-size: 1472

    # Perform prefetching of close to expired message cache entries
    # This only applies to domains that have been frequently queried
    prefetch: yes
    msg-cache-size: 32m
    rrset-cache-size: 64m
    serve-expired: yes
    serve-expired-ttl: 3600
    cache-max-ttl: 86400
    cache-min-ttl: 300
    minimal-responses: yes

    # One thread should be sufficient, can be increased on beefy machines.
In reality for most users running on small networks or on a single machine,
it should be unnecessary to seek performance enhancement by increasing num-
threads above 1.
    num-threads: 1

    # Ensure kernel buffer is large enough to not lose messages in traffic
spikes
```

```
    so-rcvbuf: 4m

    # Ensure privacy of local IP ranges
    private-address: 192.168.0.0/16
    #private-address: 192.168.1.0/24
    private-address: 169.254.0.0/16
    private-address: 172.16.0.0/12
    private-address: 10.0.0.0/8
    #private-address: fd00::/8
    #private-address: fe80::/10

    # Aliases
    local-data: "srv0.fortier-family.com. IN CNAME kali2.fortier-
family.com."
```

```
curl -o /var/lib/unbound/root.hints
https://www.internic.net/domain/named.root
unbound-checkconf
systemctl enable unbound
```

Now just enter 127.0.0.1#5335 in Settings>DNS (upstream DNS) Custom 1, unchecking any upstream DNS previously setup.

Admin pass

```
 pihole -a -p
```

Fix Network

```
vi /etc/systemd/network/20-wired.network
```

```
[Match]
Name=eth0

[Network]
Address=192.168.1.10/24
Gateway=192.168.1.1
DNS=192.168.1.10
```

PiOS Lite

Put “SSH” file in root/boot folder so SSH is available

```
sudo apt update && apt dist-upgrade -y
sudo raspi-config # change/set timezone&locales
```

```
exit #reconnect
sudo apt install -y htop
sudo curl -sSL https://install.pi-hole.net | bash
pihole -a -p MyP4sw0rdIsFabul0us
rm ~/.bash_history
sudo apt install -y unbound
```

Unbound Config

→ https://docs.pi-hole.net/guides/dns/unbound/

```
 sudo mv /etc/unbound/unbound.conf /etc/unbound/unbound.conf.org
sudo vi /etc/unbound/unbound.conf
```

In /etc/unbound/unbound.conf

```
server:
    # If no logfile is specified, syslog is used
    # logfile: "/var/log/unbound/unbound.log"
    verbosity: 0

    interface: 127.0.0.1
    port: 5335
    do-ip4: yes
    do-udp: yes
    do-tcp: yes

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    # You want to leave this to no unless you have *native* IPv6. With 6to4
and
    # Terredo tunnels your web browser should favor IPv4 for the same
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    # Don't use Capitalization randomization as it known to cause DNSSEC
```

```
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    prefetch: yes

    # One thread should be sufficient, can be increased on beefy machines.
In reality for most users running on small networks or on a single machine,
it should be unnecessary to seek performance enhancement by increasing num-
threads above 1.
    num-threads: 1

    # Ensure kernel buffer is large enough to not lose messages in traffic
spikes
    so-rcvbuf: 1m

    # Ensure privacy of local IP ranges
    private-address: 192.168.0.0/16
    private-address: 169.254.0.0/16
    private-address: 172.16.0.0/12
    private-address: 10.0.0.0/8
    private-address: fd00::/8
    private-address: fe80::/10
```

```
sudo systemctl enable --now unbound
```

Now just enter 127.0.0.1#5335 in Settings>DNS (upstream DNS) Custom 1, unchecking any upstream DNS previously setup.

Update pi-hole

```
pihole -v
pihole -up
```

Reference

- https://www.youtube.com/watch?v=FnFtWsZ8IP0

- https://docs.rackspace.com/support/how-to/create-a-linux-swap-file/
- https://docs.pi-hole.net/guides/dns/unbound/
- https://wiki.archlinux.org/title/Pi-hole
- https://pi-hole.net/
- https://peppe8o.com/install-pi-hole-in-your-raspberry-pi-with-raspberry-pi-os-lite/

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