

Part 1: MacBook 2019 as Frigate NVR with object detection

So, I got hands on a older MacBook and it seemed fit according to the [Recommended Hardware](#).

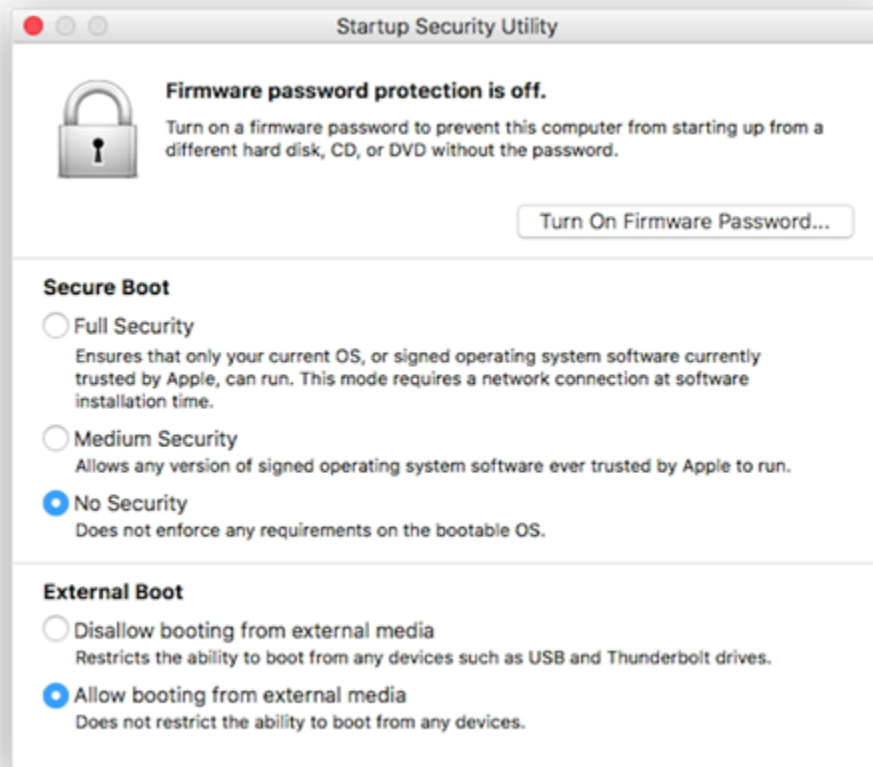
Also, I am equipped with 4 Reolink Cams and a [Coral stick](#), but I have not used any Reolink specifics from [Camera Specific Configuration](#).

And of cause, I have a Home Assistant installation running.

- [Preparing the MacBook Firmware/T2](#)
- [Installing Ubuntu](#)
- [Docker install](#)
- [Frigate NVR Install](#)
- [Coral Stick on Linux](#)

Preparing the MacBook Firmware/T2

I had some problems with removing the [activation lock](#) and even do an Internet recovery (that just failed with 1008F Error). but when the MACOS finally was cleanly installed, make sure to enable USB Boot, as this:



Installing Ubuntu

I had a lot of trouble actually getting the danm thing to boot, but on a stick with Ubuntu 22.04 (used [Balena Etcher](#)), it finally did.

But, the Mac Keyboard was not working, but I got hold of an eternal keyboard - and that worked.

I had a lot of problemes getting to use the disk, several times the installer just crashed and restarted, or stopped with "Installing grub on taget device failed"

But I finally got the installer to **remove all partitions** and install, with the "Use custom partitions" option - **make sure to whipe and erase all partitions on the disk**.

After the install the "df -h" command told me that only 100 GB of the disk was used - I have no clue why the installer sets it up this way..

But the fix was easy - first examine the LVM:

```
root@beetle:/home/bnp# vgdisplay
--- Volume group ---
VG Name ubuntu-vg
System ID
Format lvm2
Metadata Areas 1
Metadata Sequence No 2
VG Access read/write
VG Status resizable
MAX LV 0
Cur LV 1
Open LV 1
Max PV 0
Cur PV 1
Act PV 1
VG Size <462.87 GiB
PE Size 4.00 MiB
Total PE 118494
Alloc PE / Size 25600 / 100.00 GiB
Free PE / Size 92894 / <362.87 GiB
VG UUID Dd5nRh-qzsJ-z6rX-H1o1-JzMd-kXEI-7bWoEx
```

The import part being:

```
Free PE / Size 92894 / <362.87 GiB
```

So, 362 GB not used.

Lets extend and resize:

```
lvextend -l +100%FREE /dev/mapper/ubuntu--vg-ubuntu--lv
resize2fs /dev/mapper/ubuntu--vg-ubuntu--lv
```

Now, we can see "Free PE / Size 0 / 0"

```
root@beetle:/home/bnp# vgdisplay
--- Volume group ---
VG Name ubuntu-vg
System ID
Format lvm2
Metadata Areas 1
Metadata Sequence No 4
VG Access read/write
VG Status resizable
MAX LV 0
Cur LV 1
Open LV 1
Max PV 0
Cur PV 1
Act PV 1
VG Size <462.87 GiB
PE Size 4.00 MiB
Total PE 118494
Alloc PE / Size 118494 / <462.87 GiB
Free PE / Size 0 / 0
VG UUID Dd5nRh-qzsJ-z6rX-H1o1-JzMd-kXEI-7bWoEx
```

Ubuntu is installed and the complete SSD Disk is now utilized.

Docker install

Lets install docker.io:

```
apt install docker.io
```

Frigate NVR Install

Find information on Frigate [here](#)



First, I generally put all docker stuff in /opt - and I dont use docker-compose very much. Maybe one day...

Creating the needed Directory and the config file:

```
mkdir /opt/frigate
vi /opt/frigate/config
```

The config file can be huge and there are plenty of options, here is my **current**:

```
mqtt:
  host: 10.0.0.183
go2rtc:
  streams:
    frigate_front_door_cam_main:
      - "ffmpeg:http://10.0.0.151/flv?port=1935&app=bcs&stream=channel0_main.
bcs&user=*****&password=*****#video=copy#audio=copy#audio=opus"
    frigate_front_door_cam_sub:
      - "ffmpeg:http://10.0.0.151/flv?port=1935&app=bcs&stream=channel0_ext.bcs&user=*****&password=*****"
    frigate_behind_house_cam_main:
      - "ffmpeg:http://10.0.0.176/flv?port=1935&app=bcs&stream=channel0_main.
bcs&user=*****&password=*****#video=copy#audio=copy#audio=opus"
    frigate_behind_house_cam_sub:
      - "ffmpeg:http://10.0.0.176/flv?port=1935&app=bcs&stream=channel0_ext.bcs&user=*****&password=*****"
    frigate_carport_cam_main:
      - "ffmpeg:http://10.0.0.191/flv?port=1935&app=bcs&stream=channel0_main.
bcs&user=*****&password=*****#video=copy#audio=copy#audio=opus"
    frigate_carport_cam_sub:
      - "ffmpeg:http://10.0.0.191/flv?port=1935&app=bcs&stream=channel0_ext.bcs&user=*****&password=*****"
    frigate_big_shed_cam_main:
      - "ffmpeg:http://10.0.0.108/flv?port=1935&app=bcs&stream=channel0_main.
bcs&user=*****&password=*****#video=copy#audio=copy#audio=opus"
    frigate_big_shed_cam_sub:
      - "ffmpeg:http://10.0.0.108/flv?port=1935&app=bcs&stream=channel0_ext.bcs&user=*****&password=*****"
cameras:
  frigate_front_door_cam:
    ffmpeg:
      inputs:
        - path: rtsp://127.0.0.1:8554/frigate_front_door_cam_sub?video=copy
          input_args: preset-rtsp-restream
          roles:
            - detect
        - path: rtsp://127.0.0.1:8554/frigate_front_door_cam_main?video=copy&audio=aac
          input_args: preset-rtsp-restream
          roles:
            - record
  rtmp:
    enabled: False
  detect:
    width: 640
```

```
    height: 480
    fps: 5
  objects:
    track:
      - person
  snapshots:
    enabled: True
    timestamp: false
    bounding_box: True
    retain:
      default: 2
  record:
    enabled: True
    events:
      retain:
        default: 10
frigate_behind_house_cam:
  ffmpeg:
    inputs:
      - path: rtsp://127.0.0.1:8554/frigate_behind_house_cam_sub?video=copy
        input_args: preset-rtsp-restream
        roles:
          - detect
      - path: rtsp://127.0.0.1:8554/frigate_behind_house_cam_main?video=copy&audio=aac
        input_args: preset-rtsp-restream
        roles:
          - record
  rtmp:
    enabled: False
  detect:
    width: 640
    height: 480
    fps: 5
  objects:
    track:
      - person
  snapshots:
    enabled: True
    timestamp: false
    bounding_box: True
    retain:
      default: 2
  record:
    enabled: True
    events:
      retain:
        default: 10
frigate_carport_cam:
  ffmpeg:
    inputs:
      - path: rtsp://127.0.0.1:8554/frigate_carport_cam_sub?video=copy
        input_args: preset-rtsp-restream
        roles:
          - detect
      - path: rtsp://127.0.0.1:8554/frigate_carport_cam_main?video=copy&audio=aac
        input_args: preset-rtsp-restream
        roles:
          - record
  rtmp:
    enabled: False
  detect:
    width: 640
    height: 480
    fps: 5
  objects:
    track:
      - person
      - car
  snapshots:
    enabled: True
    timestamp: false
```

```

    bounding_box: True
    retain:
        default: 2
    record:
        enabled: True
        events:
            retain:
                default: 10
    frigate_big_shed_cam:
        ffmpeg:
            inputs:
                - path: rtsp://127.0.0.1:8554/frigate_big_shed_cam_sub?video=copy
                  input_args: preset-rtsp-restream
                  roles:
                    - detect
                - path: rtsp://127.0.0.1:8554/frigate_big_shed_cam_main?video=copy&audio=aac
                  input_args: preset-rtsp-restream
                  roles:
                    - record
    rtmp:
        enabled: False
    detect:
        width: 640
        height: 480
        fps: 5
    objects:
        track:
            - person
            - car
    snapshots:
        enabled: True
        timestamp: false
        bounding_box: True
        retain:
            default: 2
    record:
        enabled: True
        events:
            retain:
                default: 10
    detectors:
        coral:
            type: edgetpu
            device: usb
    birdseye:
        enabled: True
        mode: continuous

```



In short, the file sets up 4 cams - using:

- go2rtc as "proxy" - **this made a huge difference and improvement** (I started using RTSP streams directly into frigate, and the recorded videos lagged and was sometimes broken). See https://docs.frigate.video/guides/configuring_go2rtc
- The Lowres RTSP stream (sub) for the Detect role as generally recommended, as frigate only uses a 300x300 pixel image for object detection. See https://docs.frigate.video/frigate/camera_setup
- The highres RTSP stream (main) for the Recording Role as generally recommended.
- input_args: preset-rtsp-restream as recommended for Reolink (see https://docs.frigate.video/configuration/camera_specific)
- Recording event on object detection
- Take snapshots on event
- The tracking of persons and cars
- The use of a Coral stick for Object processing - instead of the CPU

Reference to the configuration file is [here](#).

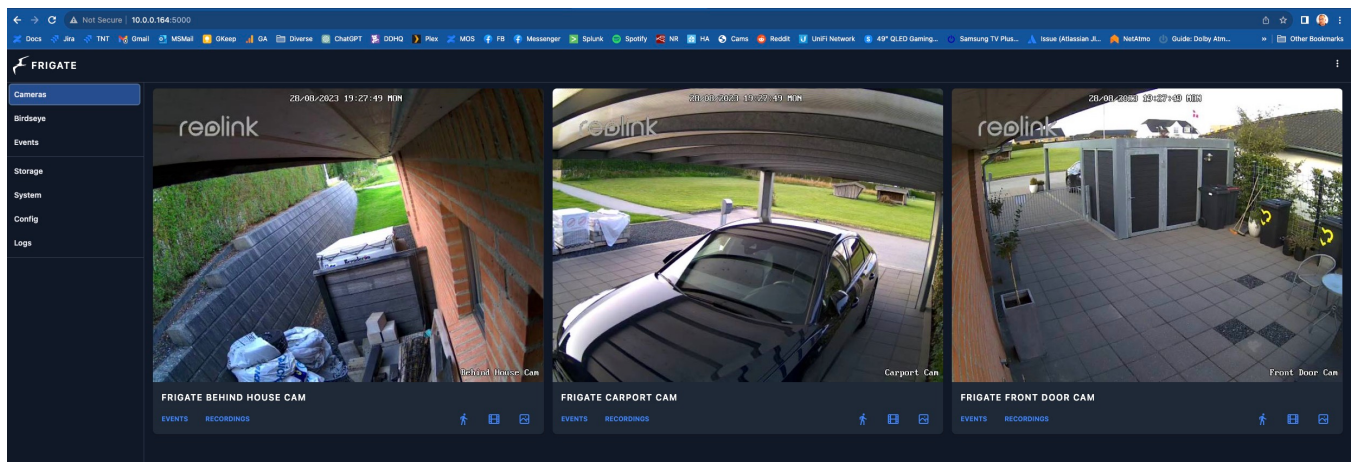
And the database file /opt/frigate/frigate.yml

```
codedatabase:
  path: /opt/frigate/frigate.db
```

Now we can start Frigate:

```
docker run -d \
  --name frigate \
  --restart always \
  --mount type=tmpfs,target=/tmp/cache,tmpfs-size=1000000000 \
  --device /dev/bus/usb:/dev/bus/usb \
  --shm-size=256m \
  -v /opt/frigate/media:/media/frigate \
  -v /opt/frigate/config.yml:/config/config.yml:ro \
  -v /etc/localtime:/etc/localtime:ro \
  -e FRIGATE_RTSP_PASSWORD='*****' \
  -p 5000:5000 \
  -p 1935:1935 \
  ghcr.io/blakeblackshear/frigate:stable
```

This should start Frigate and show it on <http://10.0.0.164:5000>:



If the interface **is not up**, troubleshoot the logs with:

```
docker logs --tail 50 --follow --timestamps "frigate"
```

Here's a view on object detection:

← → ↺

Not Secure | 10.0.0.164:5000/events

Docs Jira TNT Gmail MSMail GKeep GA Diverse ChatGPT DDHQ Plex MOS FB Messenger Splunk

FRIGATE

Cameras

Birdseye

Events

Storage

System

Config

Logs

Documentation


GitHub

EVENTS

Cameras

Labels

Zones




Person(75%)

🕒 28/08/2023, 19:42:05 - 33m ago (26s)

📷 Frigate Carport Cam

📍

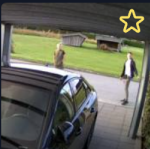


Person(71%)

🕒 28/08/2023, 19:42:01 - 33m ago (18s)

📷 Frigate Front Door Cam

📍

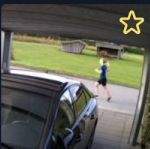


Person(77%)

🕒 28/08/2023, 19:41:50 - 33m ago (30s)

📷 Frigate Carport Cam

📍

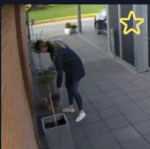


Person(73%)

🕒 28/08/2023, 19:41:00 - 34m ago (22s)

📷 Frigate Carport Cam

📍



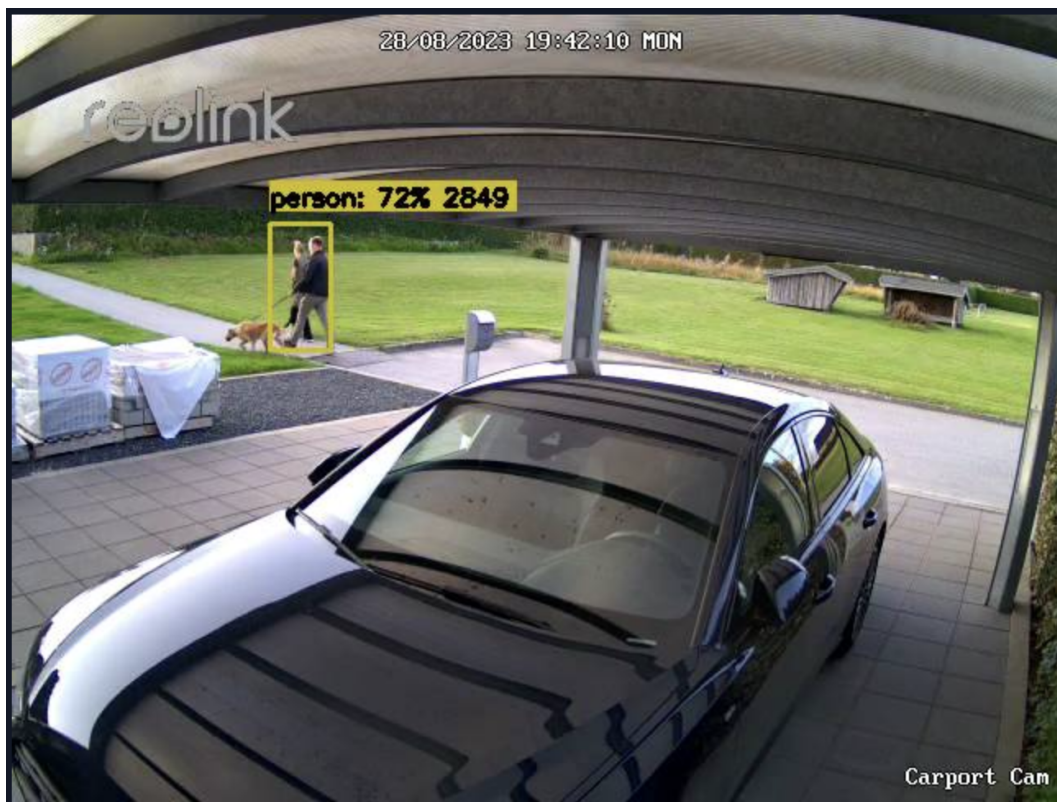
Person(84%)

🕒 28/08/2023, 19:34:36 - 40m ago (53s)

📷 Frigate Front Door Cam

📍

And a snapshot with an object detection (the yellow box is the bounding_box in the config file):



Coral Stick on Linux

I had some problems getting the [Coral stick](#) to work (the Frigate docker image has all needed for it), but it did not show up as an Device on the MacBook:

```
root@beetle:/home/bnp# lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 003: ID 05ac:1463 Apple, Inc. USB-C Digital AV Multiport Adapter
Bus 001 Device 002: ID 05ac:1017 Apple, Inc. USB2.0 Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 006 Device 002: ID 05ac:1018 Apple, Inc. USB3.1 Hub
Bus 006 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 005 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 002: ID 0bda:8153 Realtek Semiconductor Corp. RTL8153 Gigabit Ethernet Adapter
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

Loking at the links for the 2 versions - [USB](#) and [M2](#)

```
echo "deb https://packages.cloud.google.com/apt coral-edgetpu-stable main" | sudo tee /etc/apt/sources.list.d/coral-edgetpu.list
curl https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -
sudo apt-get update
sudo apt-get install gasket-dkms libedgetpu1-std
```

So it seems my stick is detected as a PCI Device. Theres some more info on what to use as docker parameter [here](#):

```
- /dev/bus/usb:/dev/bus/usb # passes the USB Coral, needs to be modified for other versions
- /dev/apex_0:/dev/apex_0 # passes a PCIe Coral, follow driver instructions here https://coral.ai/docs/m2/get-started/#2a-on-linux
- /dev/dri/renderD128 # for intel hwaccel, needs to be updated for your hardware
```


And now its visible:

```
root@beetle:/home/bnp# lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 003: ID 05ac:1463 Apple, Inc. USB-C Digital AV Multiport Adapter
Bus 001 Device 002: ID 05ac:1017 Apple, Inc. USB2.0 Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 006 Device 003: ID 1a6e:089a Global Unichip Corp.
Bus 006 Device 002: ID 05ac:1018 Apple, Inc. USB3.1 Hub
Bus 006 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 005 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 002: ID 0bda:8153 Realtek Semiconductor Corp. RTL8153 Gigabit Ethernet Adapter
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```