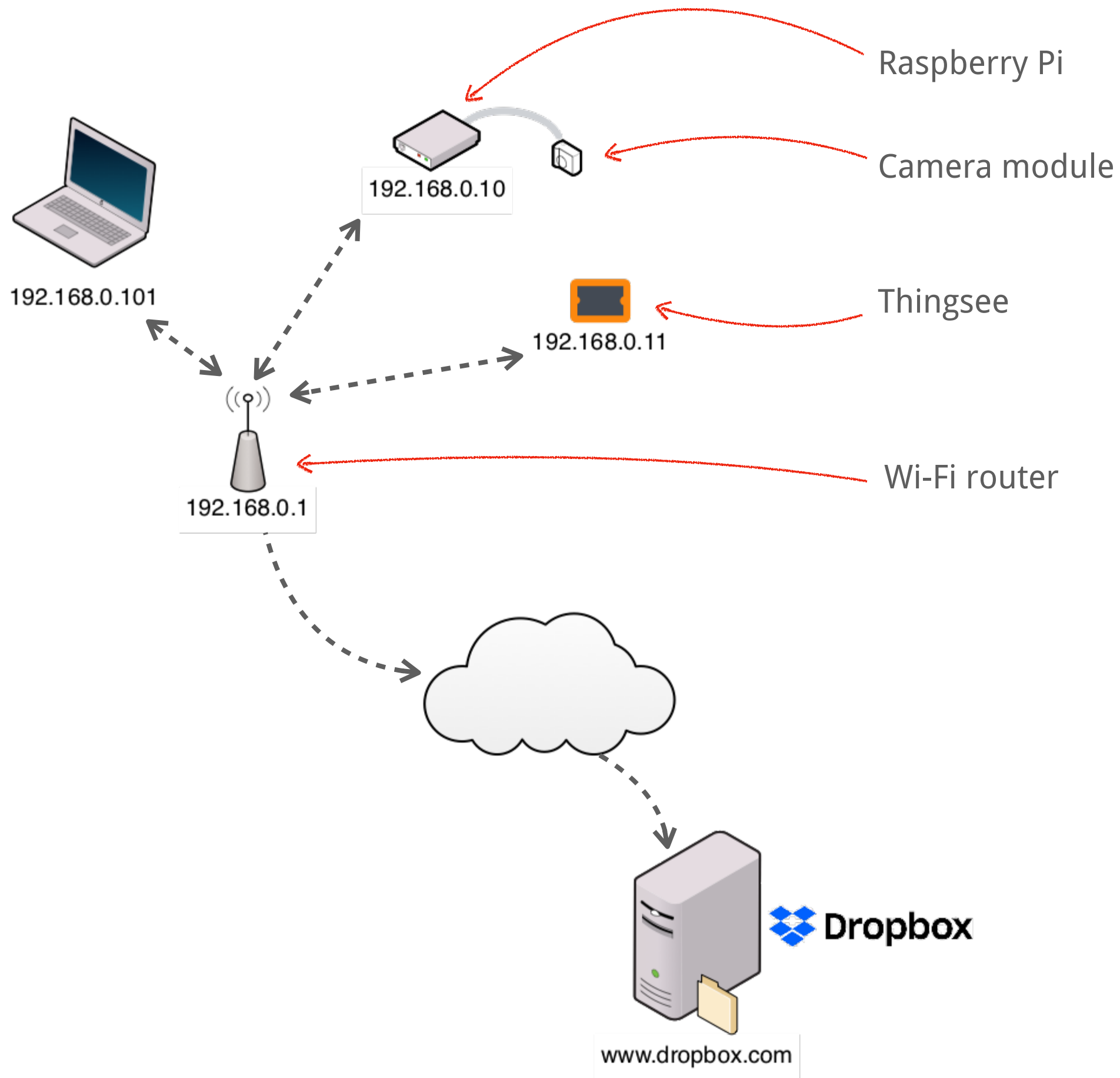
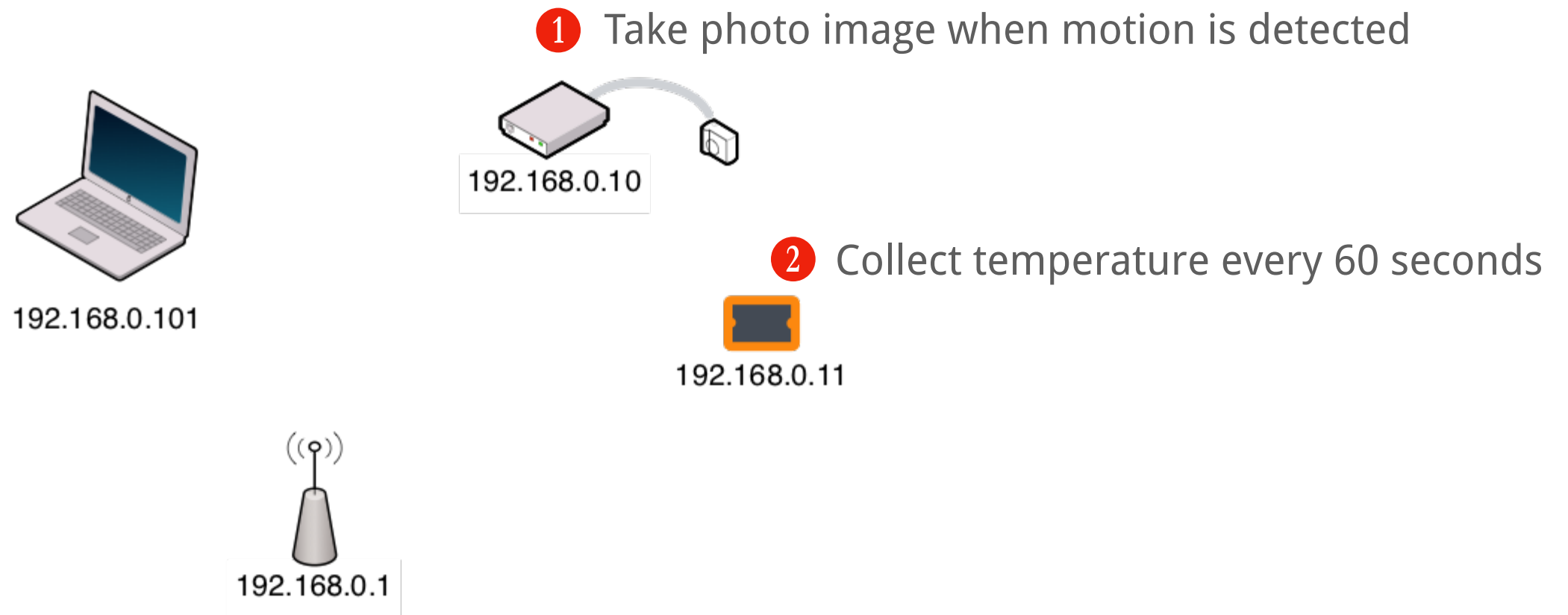


IoT tech demo documentation

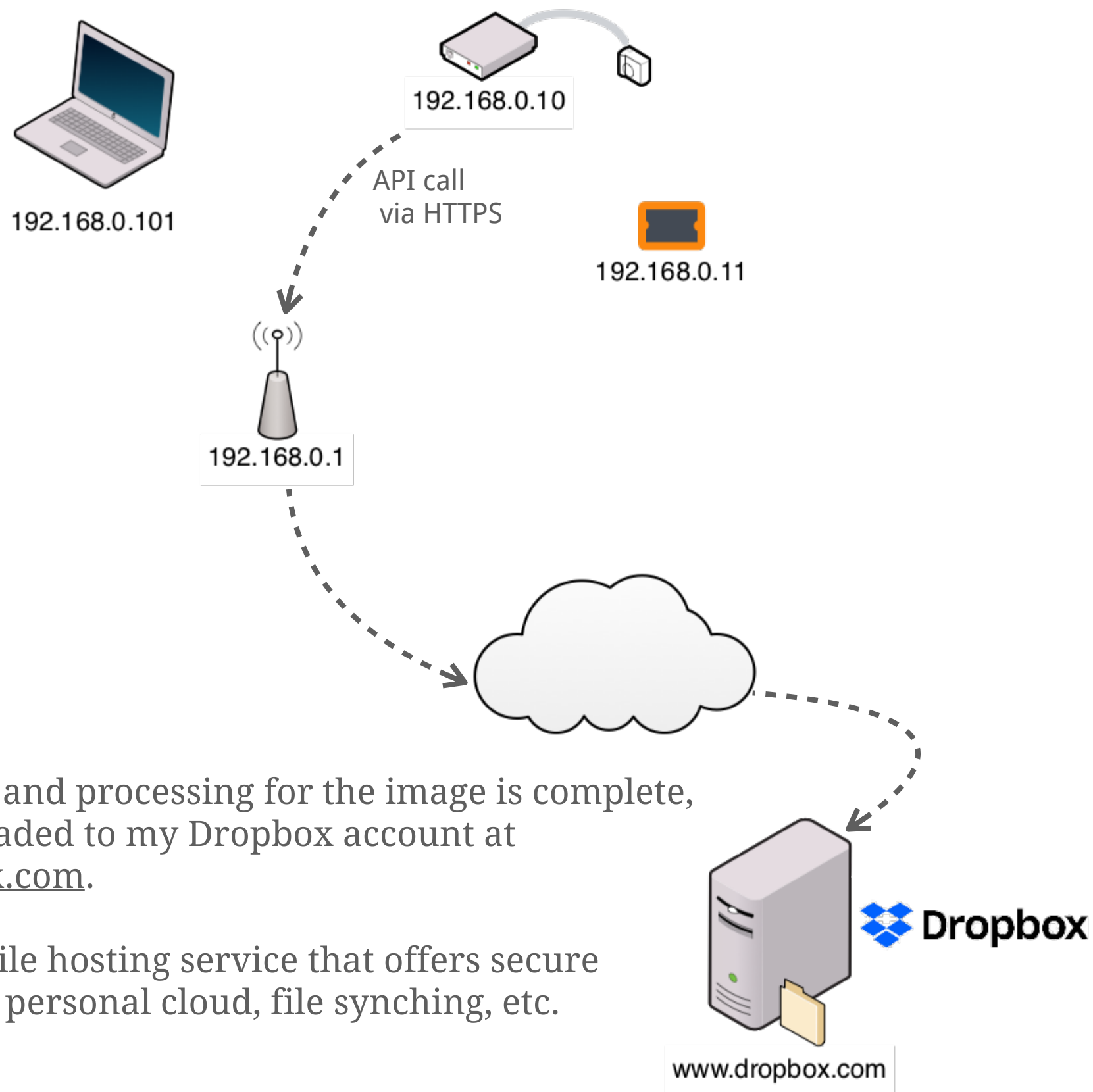
Arthur Kho Caayon





- 1 Motion detection is a Python 3 script that uses OpenCV (Computer Vision) module for the detection algorithm. The photo image is then passed through a threshold filter because we are only interested in the timestamp (of when the detection occurred) and the pixels of that detected motion event, not the actual photographic image.
- 2 I created a *Temperature Logger* “purpose” in Thingsee’s Creator app that collects temperature readings every 60 seconds and then sends that event to a custom cloud.

3 Upload the captured image to Dropbox

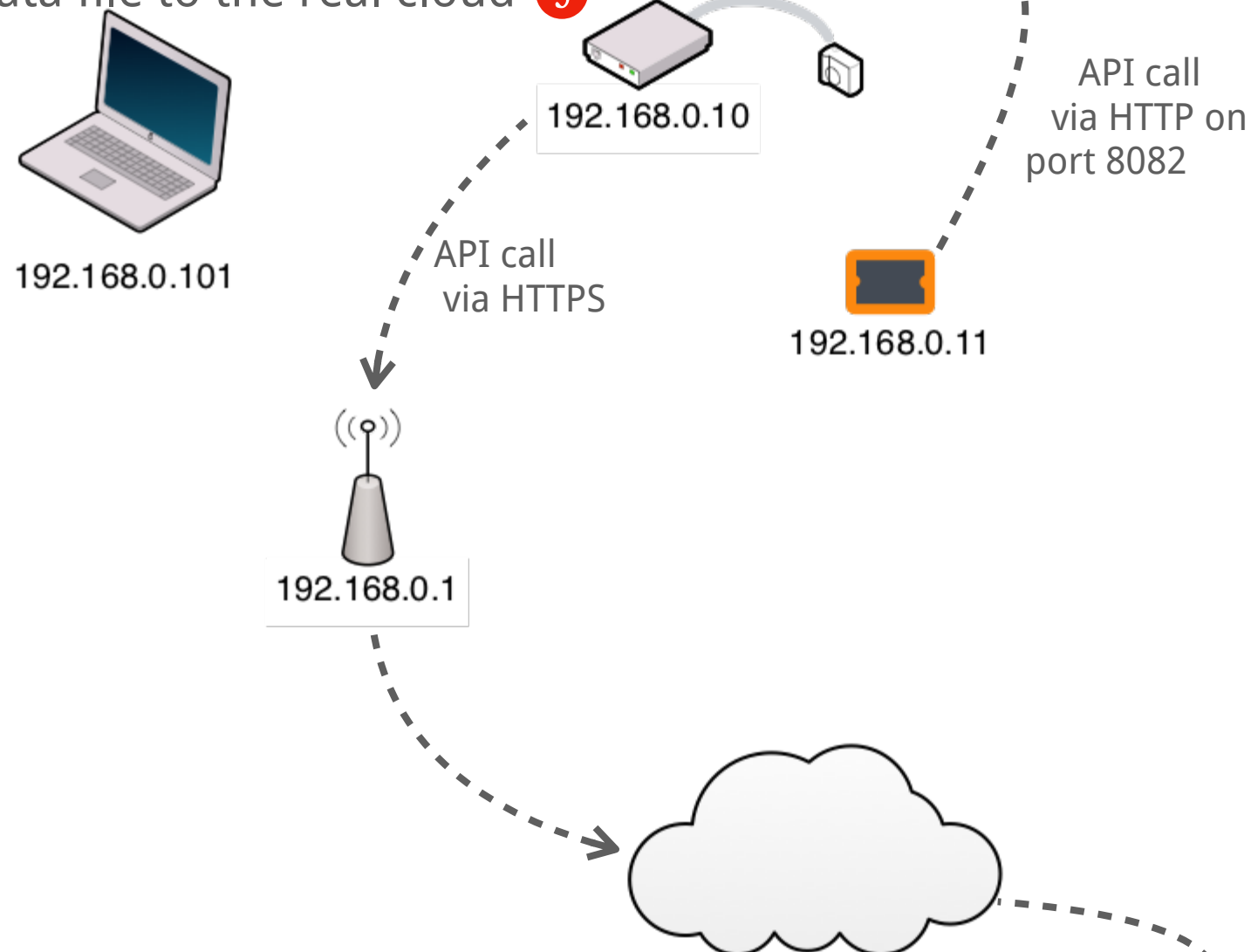


- 3 Once filtering and processing for the image is complete, it is then uploaded to my Dropbox account at www.dropbox.com.

Dropbox is a file hosting service that offers secure cloud storage, personal cloud, file synching, etc.

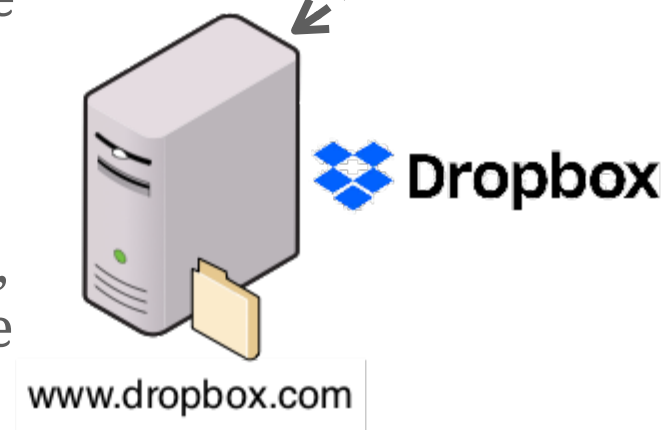
4 Upload the data file to the custom cloud

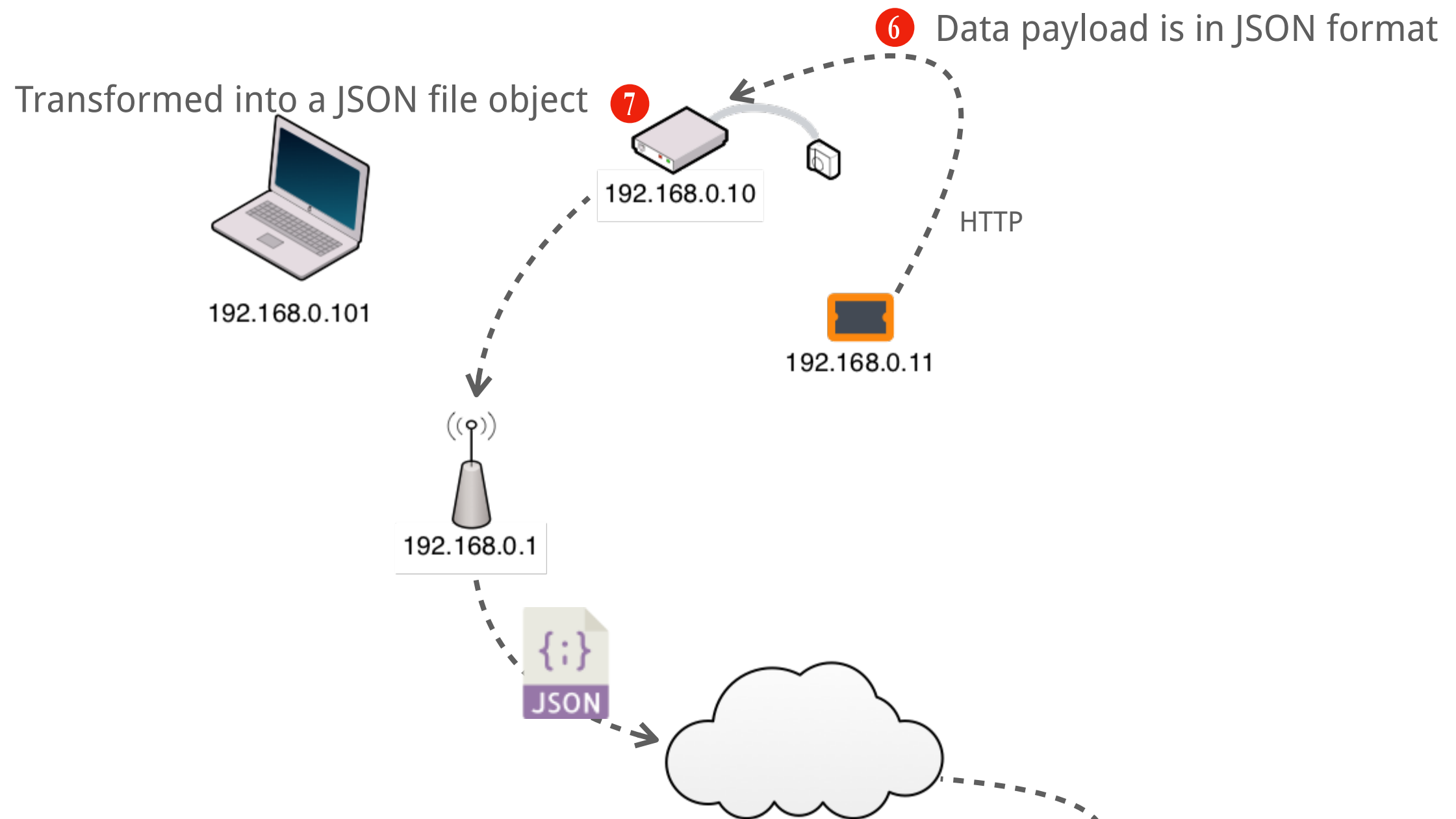
Forward the data file to the real cloud 5



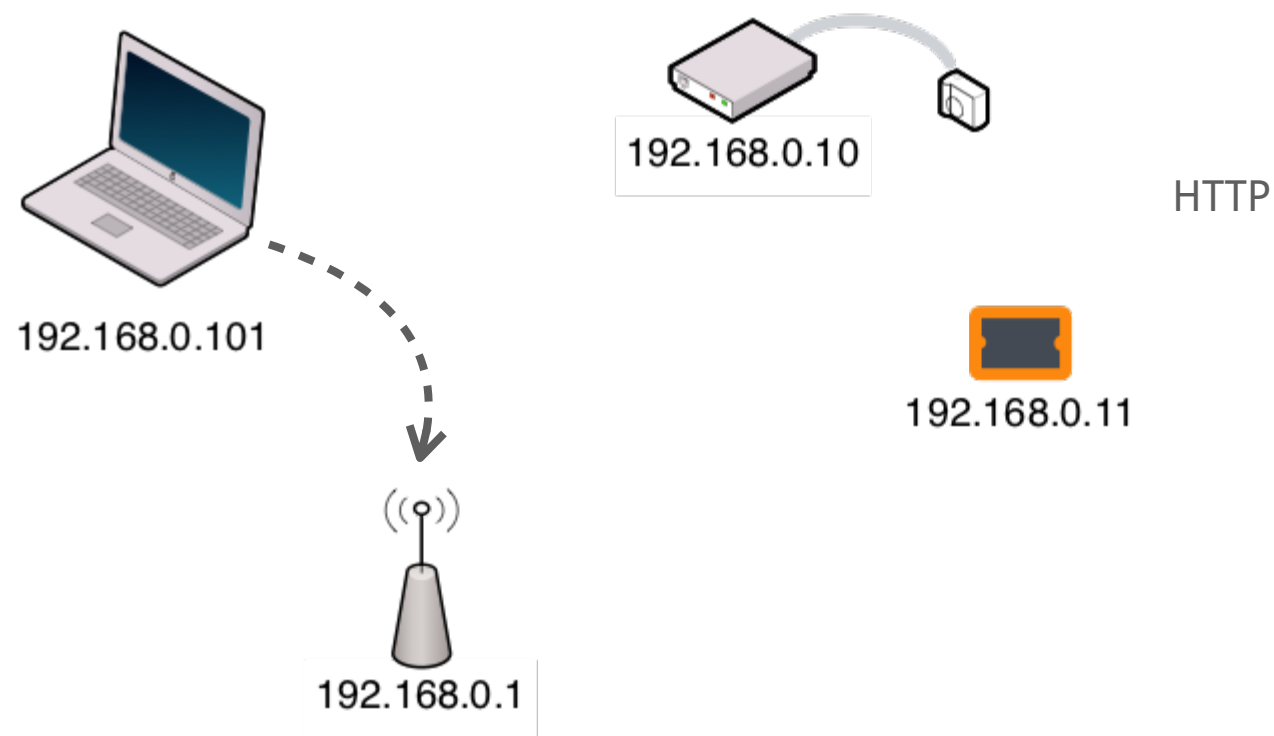
4 Since Thingsee has no HTTPS protocol support for custom cloud servers, I created a Python 3 web server whose specific purpose is to forward to Dropbox anything Thingsee sends it.

5 The forwarding server is hosted on the Raspberry Pi, and it supports only one request method: POST, since that's what Thingsee uses to send its data payload.



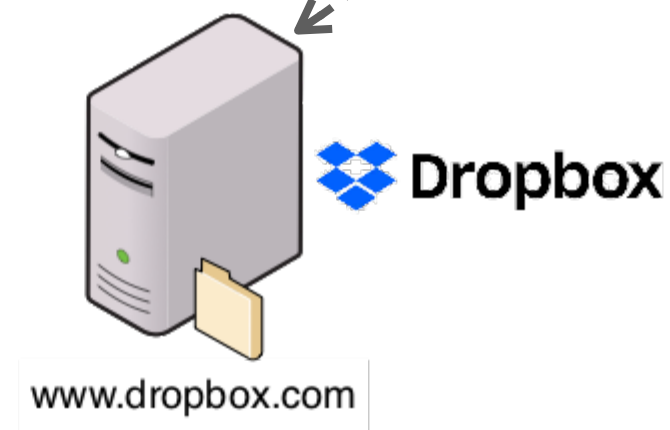


- 6 JSON-formatted payload is in the content body and is transmitted via a POST request.
- 7 The custom server converts it into a JSON object and sends it to the real cloud. The filename is a timestamp with the format: "ymmdd-HHMMSS.json" (e.g. "180531-125759.json")

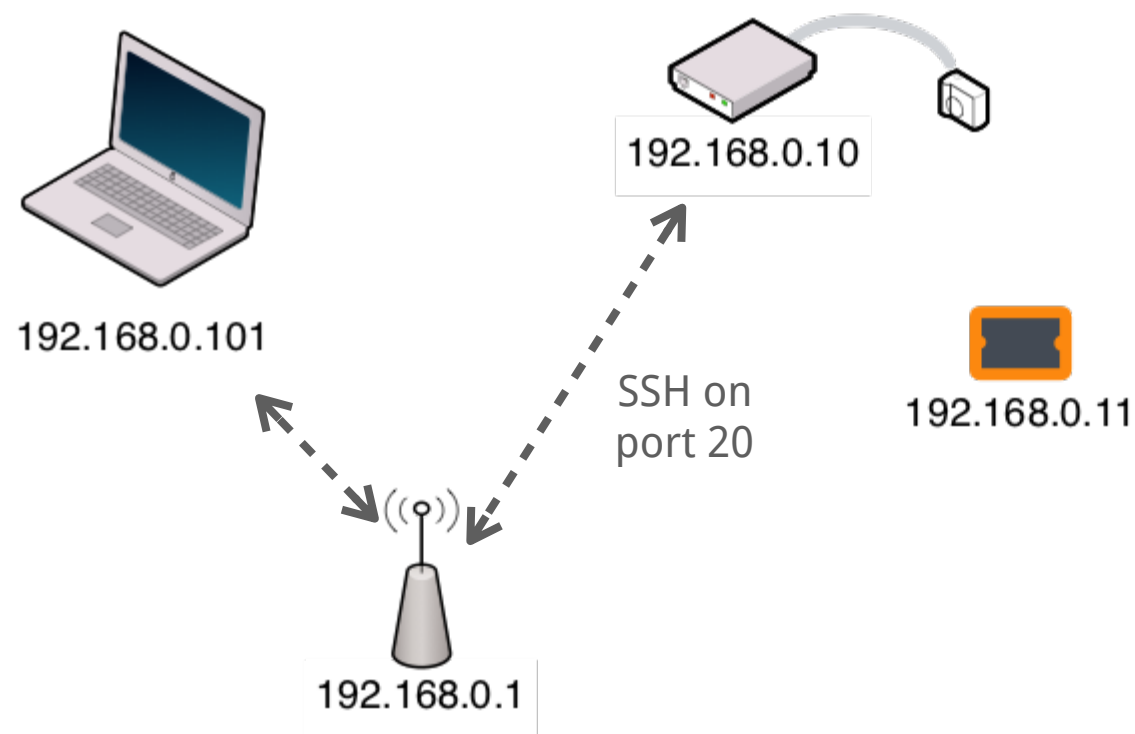


8 Files can be accessed anywhere

- 8 Since Dropbox is a cloud service provider the files can be accessed securely anywhere, in different platforms, and with fine-grained access control to files and folders.



9 Raspberry Pi access via SSH



- 9 Raspberry Pi is accessed on my MacBook through SSH. The project folder is also mounted as a drive using Apple's Netatalk protocol, in that way I can use my development tools on my MacBook even though the files reside in the Raspberry Pi.



PURPOSE [← BACK](#)

Temperature Logger

SAVE

SAVE AS...

SEND TO DEVICE

DOWNLOAD

ACTIONS

LOW ENERGY SENSES

ACCELERATION

TIME

POLLING SENSES

LOCATION

SPEED

ENVIRONMENT

ENERGY

ALPHA/PREVIEW

ORIENTATION (ALPHA)

LUMINANCE (ALPHA)

When

Temperature sensor has any value

Then

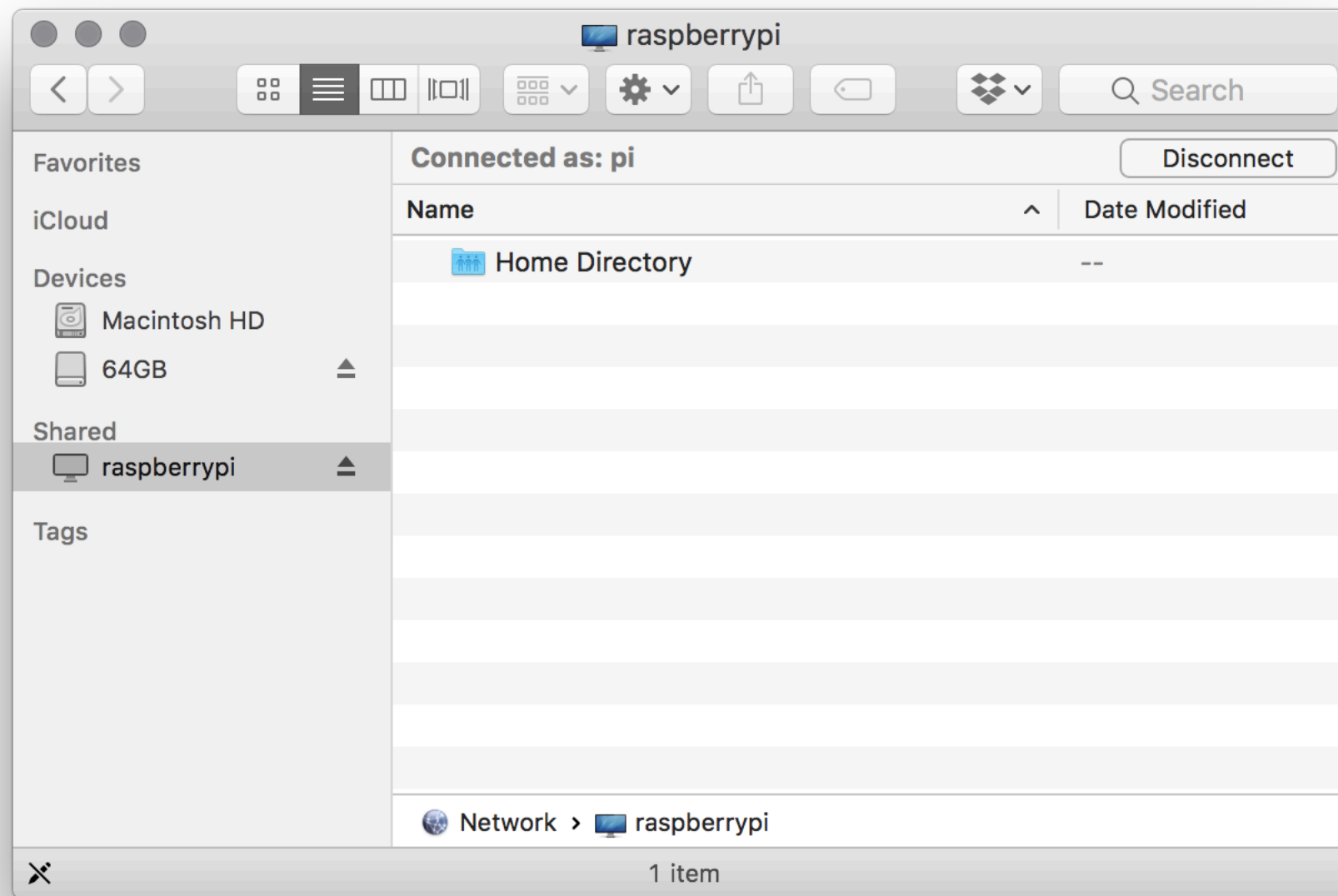
Change active state to: No change

☐ Send saved logs to cloud

☒ Send event to cloud

☒ Custom cloud URL

☐ Send event as push notification

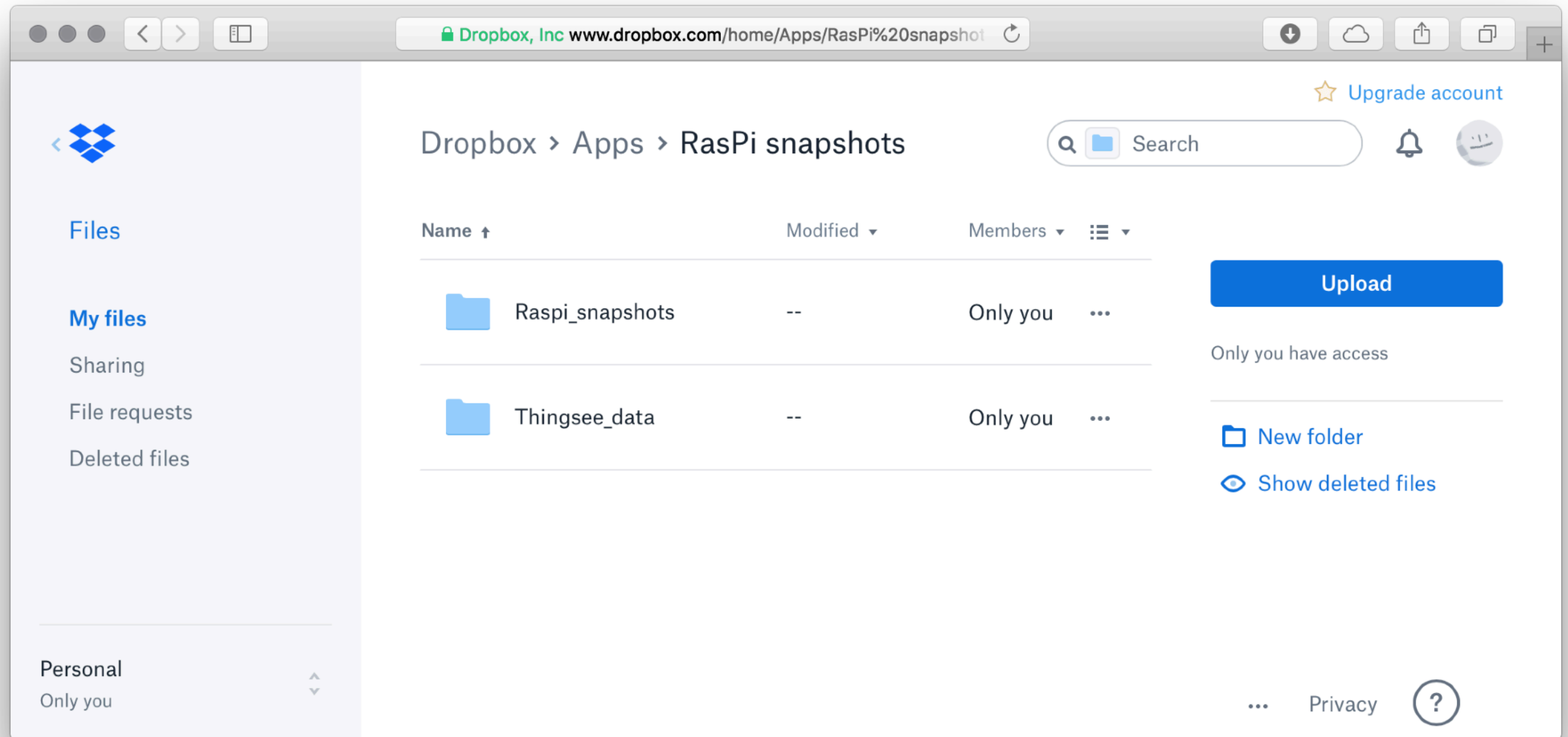


```
➔ ~ ssh pi@192.168.1.122
pi@192.168.1.122's password:
Linux raspberrypi 4.14.34-v7+ #1110 SMP Mon Apr 16 15:18:51 BST 2018 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

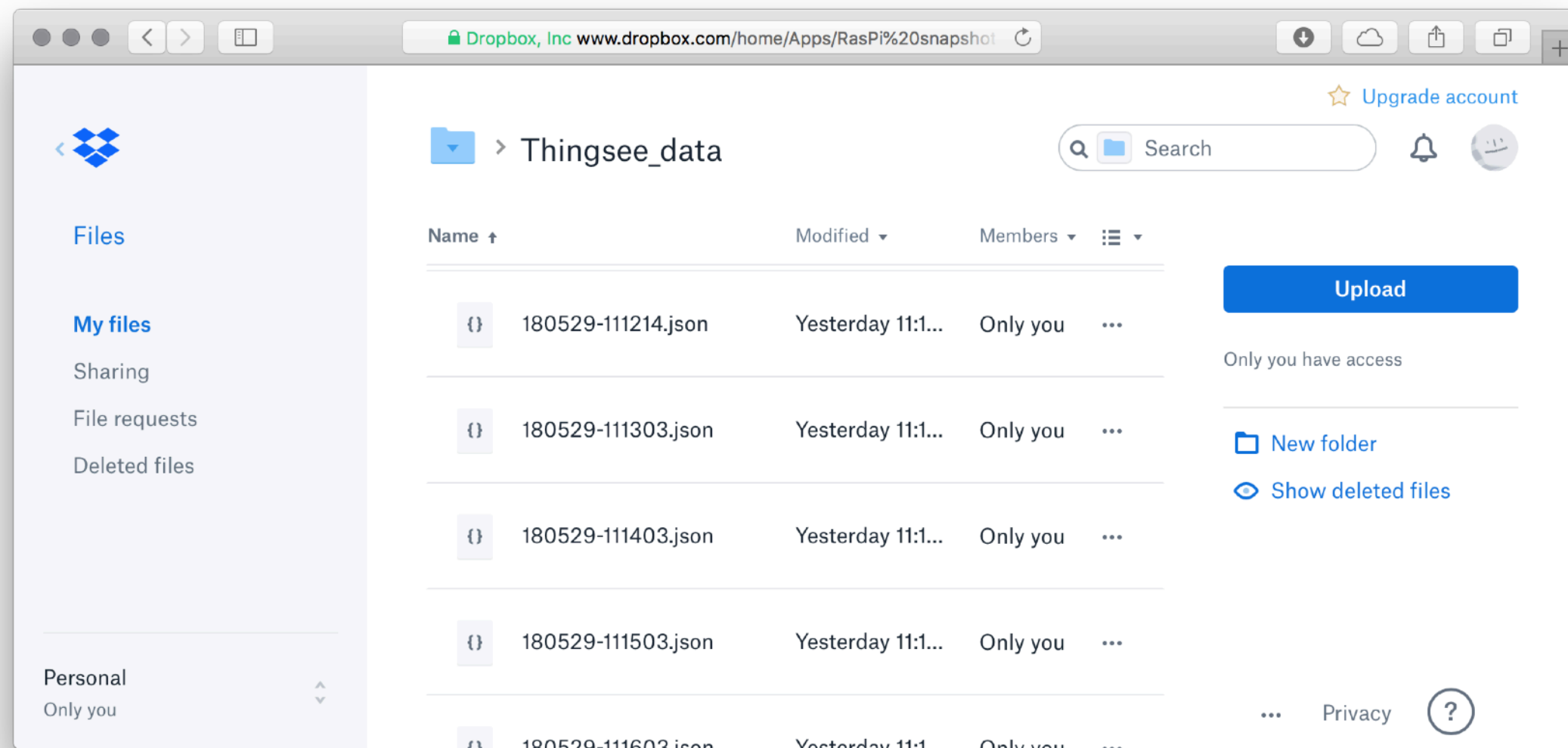
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed May 30 14:47:09 2018
pi@raspberrypi:~ $ _
```

The folders in Dropbox where the data are separately uploaded to



```
(cv) pi@raspberrypi:~/projects/minimal-web-server $ ./web-server.py 8082
Starting httpd...
192.168.1.146 - - [29/May/2018 11:10:04] "POST / HTTP/1.1" 200 -
192.168.1.146 - - [29/May/2018 11:10:04] "POST / HTTP/1.1" 200 -
[UPLOAD] 180529-111004.json
192.168.1.146 - - [29/May/2018 11:11:04] "POST / HTTP/1.1" 200 -
192.168.1.146 - - [29/May/2018 11:11:04] "POST / HTTP/1.1" 200 -
[UPLOAD] 180529-111104.json
^@192.168.1.146 - - [29/May/2018 11:12:14] "POST / HTTP/1.1" 200 -
192.168.1.146 - - [29/May/2018 11:12:14] "POST / HTTP/1.1" 200 -
[UPLOAD] 180529-111214.json
192.168.1.146 - - [29/May/2018 11:13:03] "POST / HTTP/1.1" 200 -
192.168.1.146 - - [29/May/2018 11:13:03] "POST / HTTP/1.1" 200 -
[UPLOAD] 180529-111303.json
^@192.168.1.146 - - [29/May/2018 11:14:03] "POST / HTTP/1.1" 200 -
192.168.1.146 - - [29/May/2018 11:14:03] "POST / HTTP/1.1" 200 -
[UPLOAD] 180529-111403.json
```

The custom server, logging the forwarding of data payloads from Thingsee to Dropbox



The contents of the temperature data file



Dropbox, Inc

www.dropbox.com/home/Apps/RasPi%20snapshot

Files

My files

Sharing

File requests

Deleted files

Personal

Only you

Raspi_snapshots

Search

Upgrade account

Name ↑

Modified ▾

Members ▾

⋮ ▾

180529-121629.jpg

Yesterday 12:1...

Only you

⋮

180529-121636.jpg

Yesterday 12:1...

Only you

⋮

180529-121641.jpg

Yesterday 12:1...

Only you

⋮

180529-121645.jpg

Yesterday 12:1...

Only you

⋮

Upload

Only you have access

New folder

Show deleted files

⋮

Privacy

?

The contents of the motion detection file

