

Scaling IoT: From Prototype to Production



balena

On Today's Menu

We are going to learn a bit about what components go into a full course IoT-meal, and then have tasters of some of the courses today.

- Prototyping vs Production
- Let's cook
 - **Devices**
 - **Containers**
 - **Scaling**
- Things to try

Your Chefs Today:

David Tischler

Developer Advocate

t: @balena_io

e: david@balena.io

Anuj Deshpande

Hardware Engineer

t: @anujdeshpandey

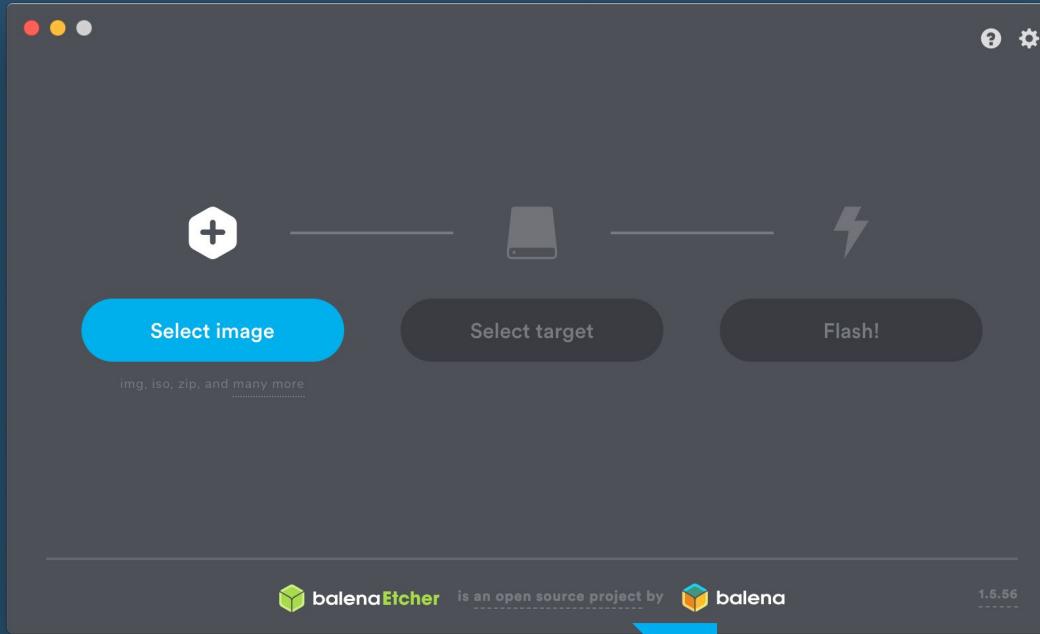
e: anuj@balena.io



balena

Let's cook!

Etcher, anyone?



balena

“Platform built to develop, deploy, and manage fleets of connected devices at scale.”

- balenaCloud
 - Web-based control of IoT devices, broken down by Applications, Devices, Workloads, and more
 - Terminal access to device, logs, container build info, and more.
- balenaOS
 - Based on Yocto Linux
- balenaEngine
 - Container runtime





balena**Cloud**



open**balena**



balena**OS**



balena**Engine**



balena**Etcher**

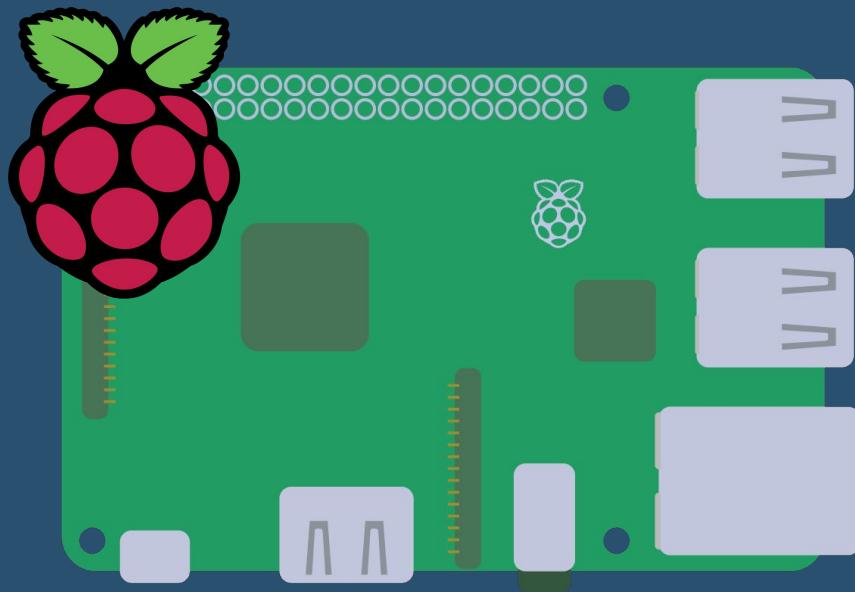


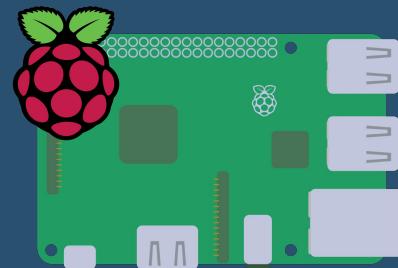
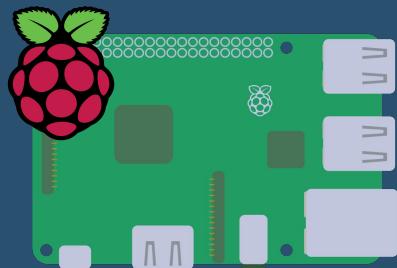
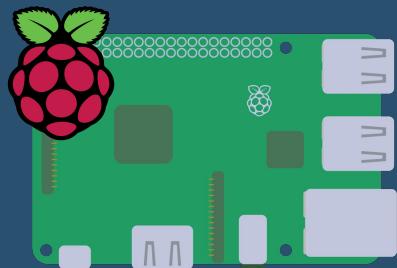
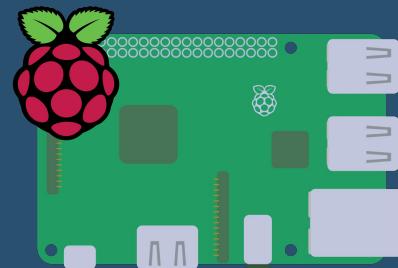
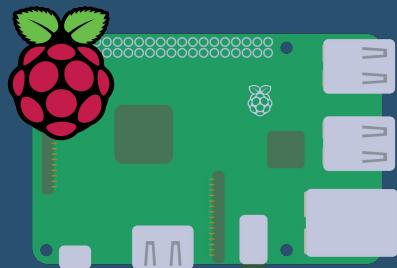
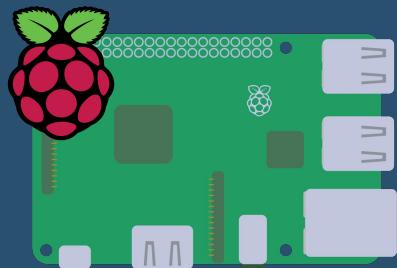
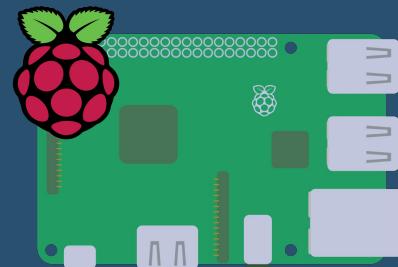
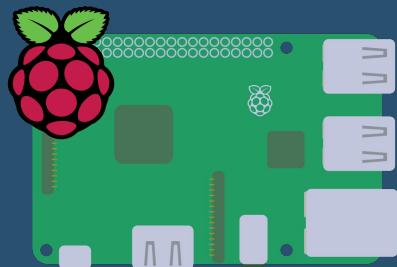
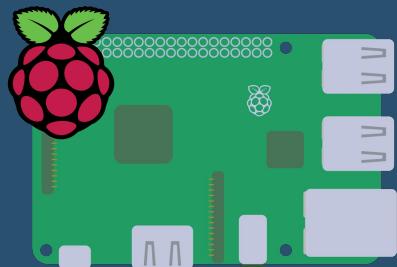
balena**Fin**

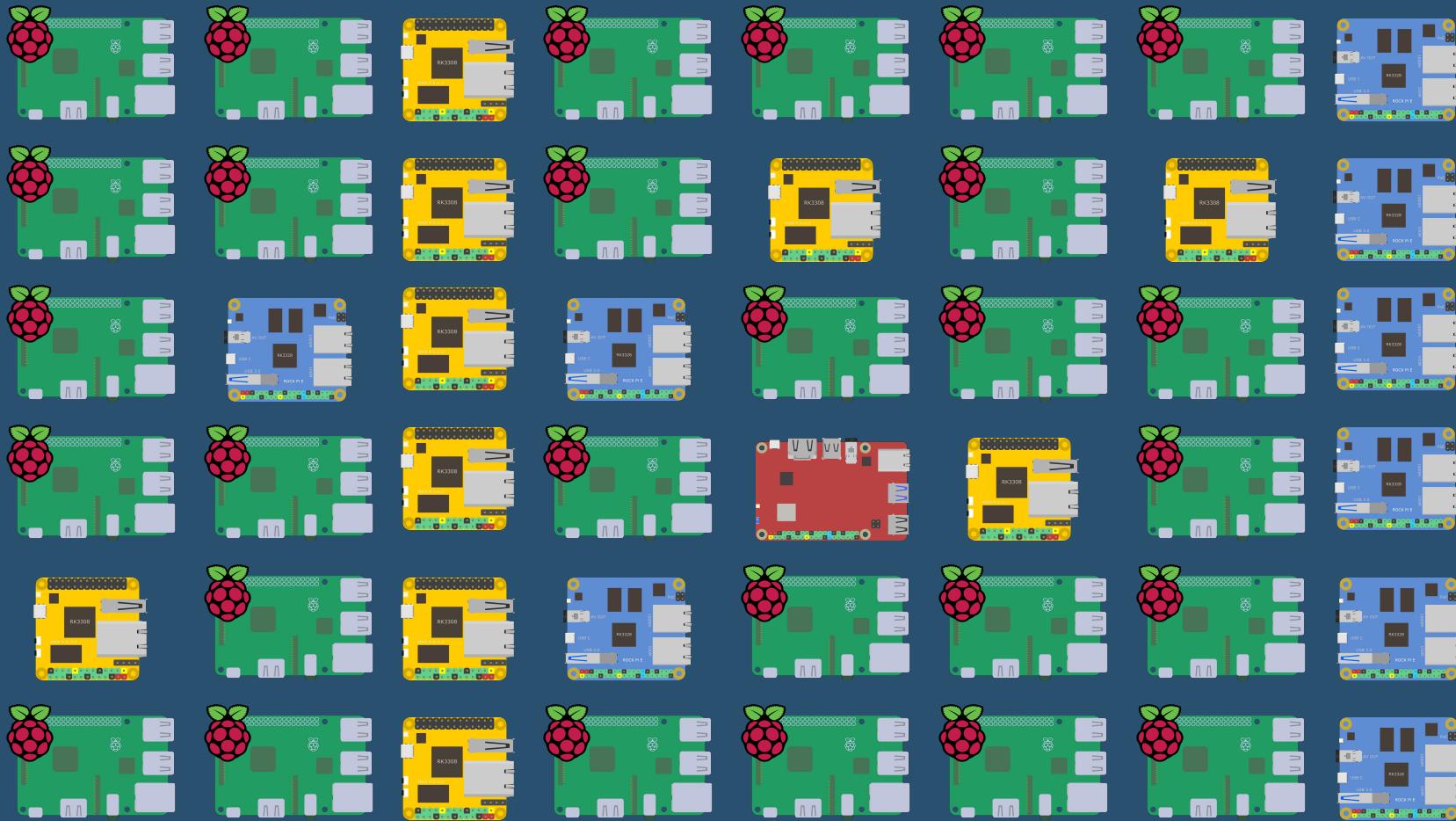


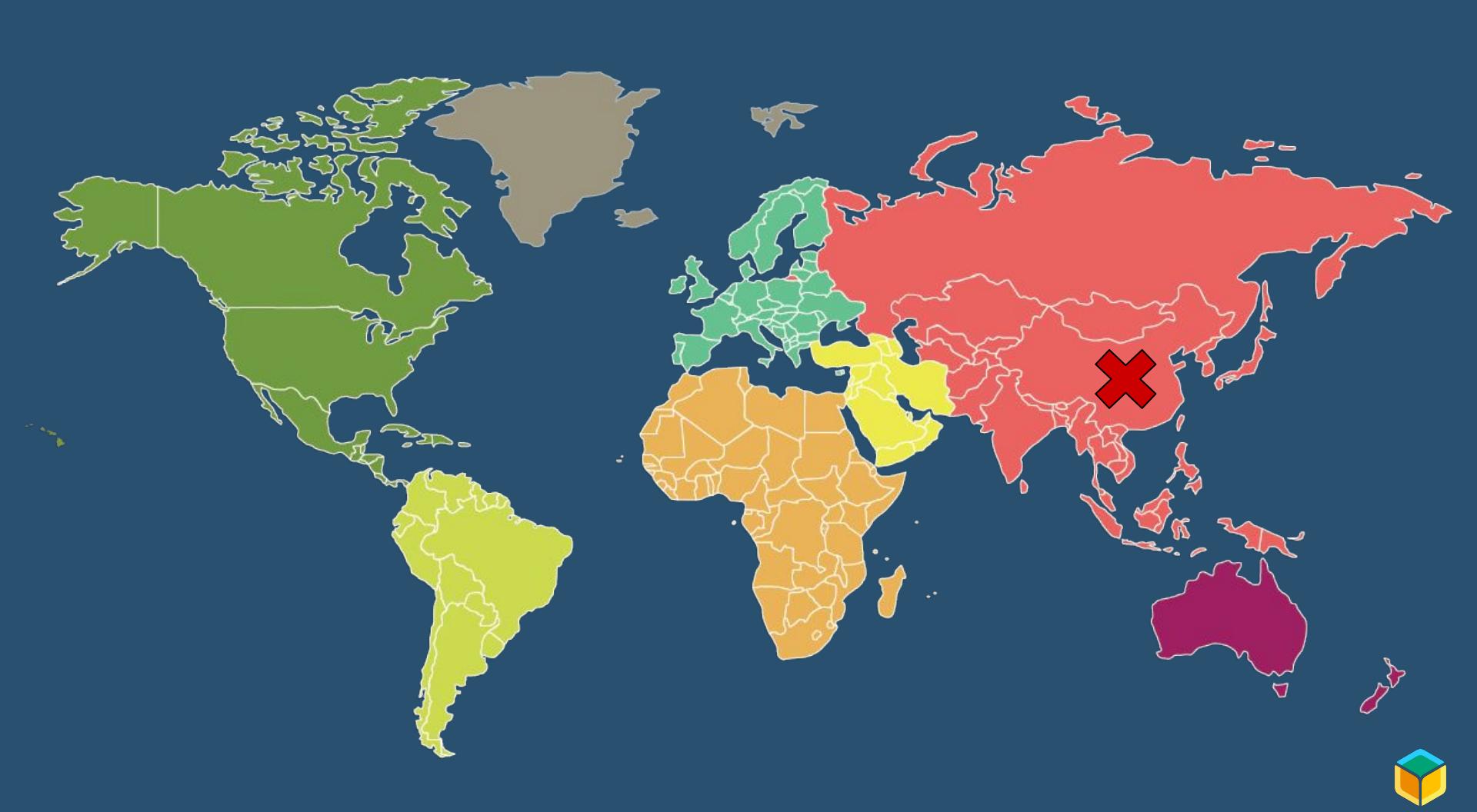
What do we mean by IoT
“Fleet Management”?











Recipe

Let's get started

- 1 Create an account
- 2 Create an application
- 3 Add your device
- 4 Push your code



Let's get started

- 1 Create an account
- 2 **Create an application**
- 3 Add your device
- 4 Push your code



Let's get started

- 1 Create an account
- 2 Create an application
- 3 **Add your device**
- 4 Push your code



Let's get started

- 1 Create an account
- 2 Create an application
- 3 Add your device
- 4 **Push your code**



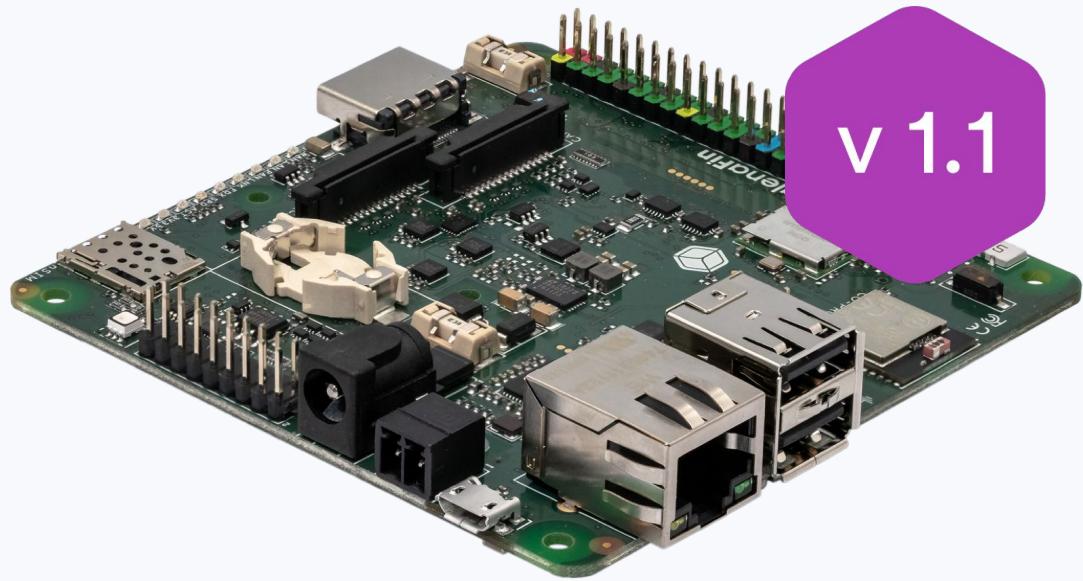
Ingredients

balena.io/fin

A robust Raspberry Pi







balenaOS

Built on Yocto Linux, Optimized for
Embedded Devices and IoT Usage

- Minimal by design (increased security)
- Less RAM / resource requirements
- Redundant RootFS partitions
- More tolerant of power loss
- Minimized SD Card writes



balenaEngine

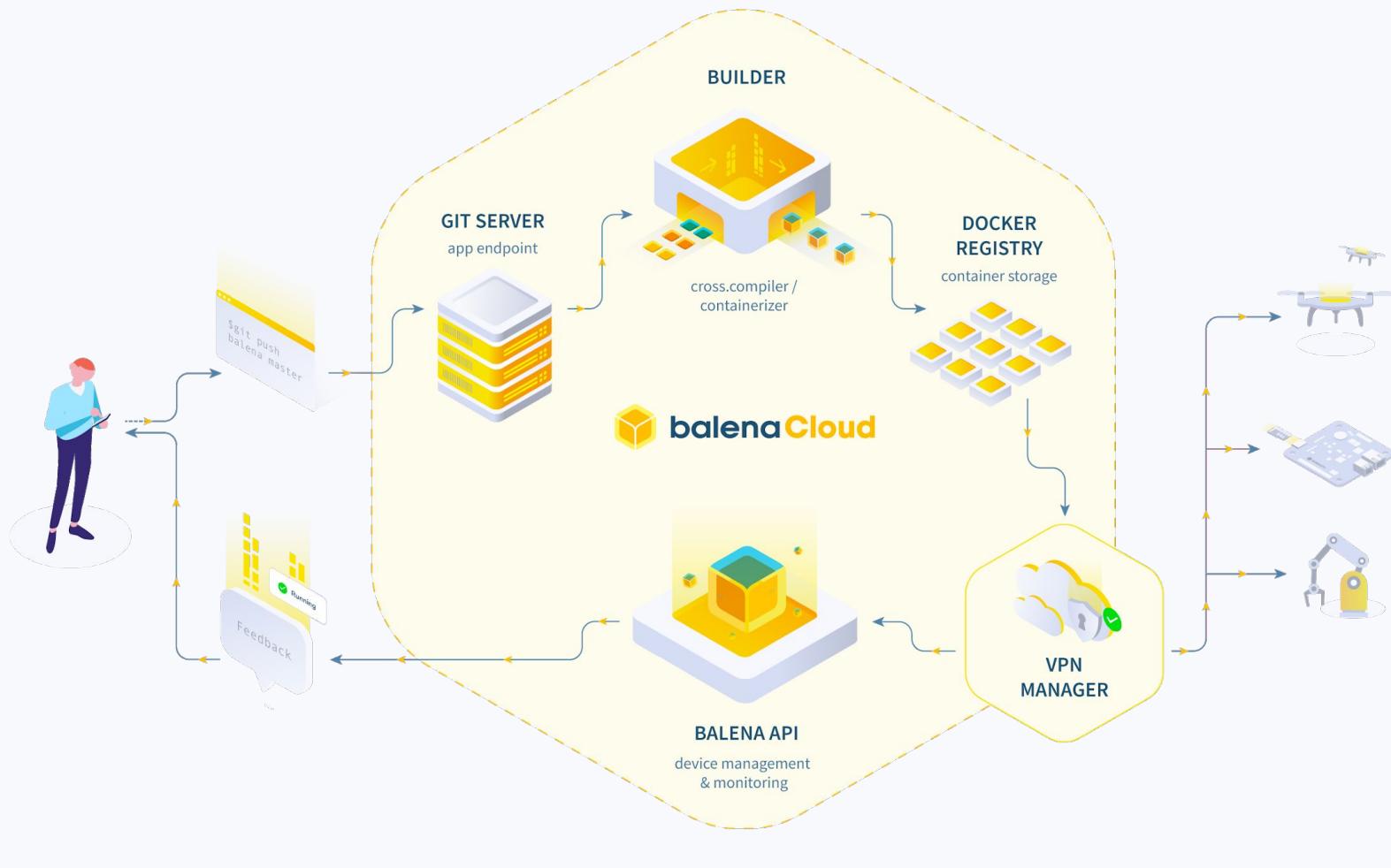
Container engine built for Embedded
and IoT use-cases, based on the Moby
Project from Docker

- Minimal by design
- Less RAM / resource requirements
- Deltas pulls to save bandwidth
- Fault tolerance on container pulls



balenaEngine





Bake

Quick Tour of GUI



balena - Home

https://www.balena.io

What is balena? balenaCloud More products Resources Pricing Customers About Login Sign up

Build your IoT project with balena

The infrastructure you need to develop, deploy, and manage fleets of connected devices at scale.

Learn more

Your first 10 devices are always free and full-featured.

Email

Get started

Balena is for fleet owners



balenaCloud | Signup

https://dashboard.balena-cloud.com/signup

Your first 10 devices are always free
Upgrade anytime. Hassle free.

 Sign up with Github  Sign up with Google

or sign up with

Email*

Password*

Send me the balena monthly newsletter
We send one newsletter a month, and do not share your e-mail with third parties

Sign up

Already have an account? [Log in](#)

By clicking "Sign up" I agree to balena's [Terms of Service](#)
As part of delivering this service, we collect certain account data from you. Please review our [Privacy Policy](#) for more information.

Need help?



A screenshot of the balenaCloud dashboard interface. The top navigation bar includes the balenaCloud logo, links for 'Getting Started', 'Docs', 'Forums', and 'Status', and a user profile for 'David Tischler'. Below the header is a main content area titled 'Applications' with a question mark icon. It features a 'Create application' button, an 'Add filter' button, a search bar, and a 'Views' dropdown menu. A central message states 'You don't have any applications yet.' followed by a suggestion 'How about creating one?'. At the bottom right of the content area is a blue button labeled 'Need help?' with a question mark icon. The overall design is clean and modern, using a white background with dark blue and grey accents.





dashboard.balena-cloud.com

balenaCloud Getting Started Docs Forums Status David Tischler DT

Add new device

Select device type

Raspberry Pi 4

Select OS version

v2.46.1+rev3 (recommended)

Select edition

Development Production

Recommended for first time users

Development images should be used when you are developing an application and want to use the fast local mode workflow. This variant should never be used in production.

Network Connection

Ethernet only Wifi + Ethernet

Wifi SSID

Wifi Passphrase

Advanced

Download balenaOS (~146 MB)

Instructions

- 1 Use the form on the left above to configure and download balenaOS for your new device.
- 2 Write the OS file you downloaded to your SD card. We recommend using Etcher.
- 3 Insert the freshly burnt SD card into the Raspberry Pi 4.
- 4 Connect your Raspberry Pi 4 to the internet, then power it up.
- 5 Your device should appear in your application dashboard within a few minutes. Have fun!

For more details please refer to our [getting started guide](#).



Flash SD Card with Etcher



balena.io

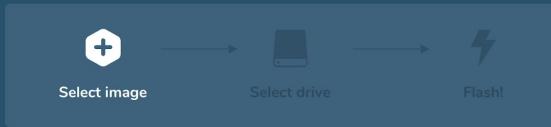
An open source project by  balena | More products ▾

 balenaEtcher

Forums Mailing list Changelog Etcher Pro

Flash. Flawless.

Flash OS images to SD cards & USB drives, safely and easily.



Select image → Select drive → Flash!

[Download for macOS](#)

v1.5.71 [See what's new](#)

 **Validated Flashing**
No more writing images on corrupted cards and wondering why your device

 **Hard Drive Friendly**
Makes drive selection obvious to avoid wiping your entire hard-drive

FEATURES

A better way to burn.





Select image

img, iso, zip, and many more

Select target

Flash!



balenaEtcher

is an open source project by



balena

1.5.56



Power Up!



dashboard.balena-cloud.com

David Tischler DT

Applications > DemoApplication

Release policy track latest

git remote add balena david_...

Devices

+ Add device ▾ Add filter Search entries... Views Actions Tags

Status	Name	Last Seen	UUID	OS Version	OS Variant	Supervisor Version	If
Online	bold-feather	Online (for a few seconds)	73ffa45	balenaOS 2.46.1+rev3	production	10.6.27	192.168.

1 - 1 of 1

Fleet Configuration

E(x) Environment Variables

S(x) Service Variables

Releases

Location

Members

Need help ?

The screenshot shows the balenaCloud dashboard interface. On the left is a sidebar with icons for Devices, Fleet Configuration, Environment Variables, Service Variables, Releases, Location, and Members. The main area shows a table of device entries. One entry is visible: 'bold-feather' (Status: Online, Last Seen: Online (for a few seconds), UUID: 73ffa45, OS Version: balenaOS 2.46.1+rev3, OS Variant: production, Supervisor Version: 10.6.27, IP: 192.168.). The top navigation bar includes links for Getting Started, Docs, Forums, Status, and user profile information (David Tischler, DT). A search bar at the top right contains the command 'git remote add balena david_...'. A 'Need help?' button is located in the bottom right corner of the main content area.



dashboard.balena-cloud.com

David Tischler DT

bold-feather

DEVICE

bold-feather

Status: Online (73ffa45)

Type: Raspberry Pi 4

Last online: Online (for a few seconds)

Host OS Version: balenaOS 2.46.1+rev3 (production)

Supervisor Version: 10.6.27

Current Release: Factory build

Target Release: Factory build

IP Address: 192.168.0.162

Tags: No tags configured yet

Public Device URL: [View](#)

NOTES

Add device notes...

Logs

UTC Timestamps

Logs

Search entries...

Views

22.01.20 14:41:36 (-0700) Supervisor starting

22.01.20 14:42:06 (-0700) Applying configuration change {"SUPERVISOR_POLL_INTERVAL":"900000","SUPERVISOR_DELTA_VERSION":"3"}

22.01.20 14:42:06 (-0700) Applied configuration change {"SUPERVISOR_POLL_INTERVAL":"900000","SUPERVISOR_DELTA_VERSION":"3"}

22.01.20 14:42:07 (-0700) Creating network 'default'

Terminal

Select a target

Start terminal session

Need help

Summary

Device Configuration

Device Variables

Device Service Variables

Location

Actions

Diagnostics Experimental



Let's Add a Container



1

Install balena-CLI

Windows, Mac, or Linux

Provides native tooling for:

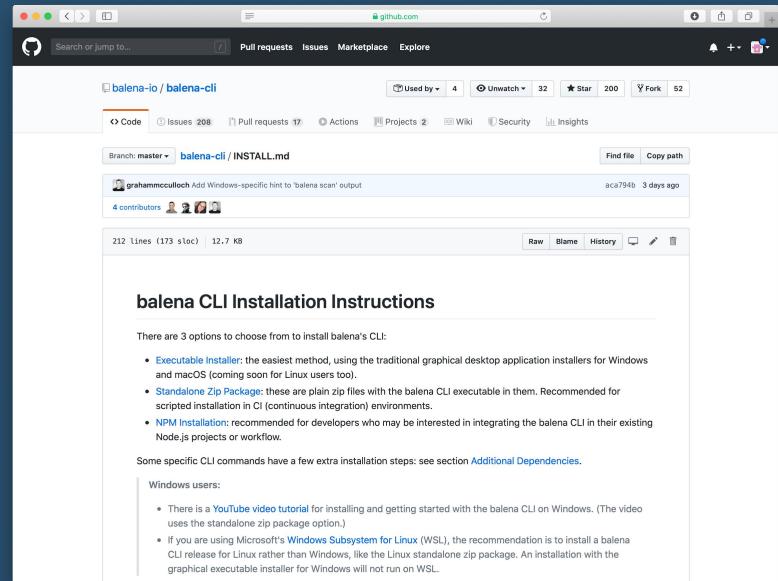
- Device and App Info
- Building, Pushing Containers
- SSH to Devices

Instructions:

<https://github.com/balena-io/balena-cli/blob/master/INSTALL.md>

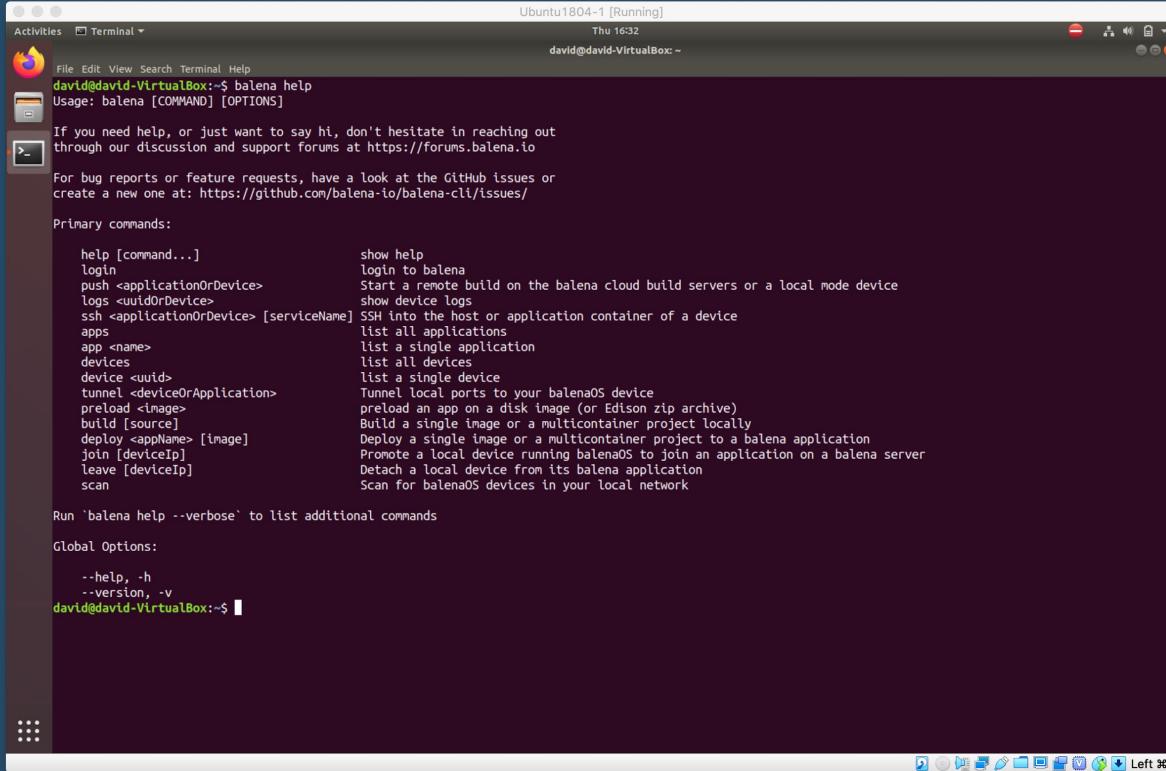
Download:

<https://github.com/balena-io/balena-cli/releases/latest>



1

Install balena-CLI



The screenshot shows a terminal window titled "Ubuntu1804-1 [Running]" with the command "balena help" entered. The output provides usage information and a list of primary commands.

```
Ubuntu1804-1 [Running]
Thu 16:32
david@david-VirtualBox:~$ balena help
Usage: balena [COMMAND] [OPTIONS]

If you need help, or just want to say hi, don't hesitate in reaching out
through our discussion and support forums at https://forums.balena.io

For bug reports or feature requests, have a look at the GitHub issues or
create a new one at: https://github.com/balena-io/balena-cli/issues/

Primary commands:

  help [command...]          show help
  login                        login to balena
  push <applicationOrDevice>  Start a remote build on the balena cloud build servers or a local mode device
  logs <uuidOrDevice>         show device logs
  ssh <applicationOrDevice> [serviceName] SSH into the host or application container of a device
  apps                          list all applications
  app <name>                   list a single application
  devices                      list all devices
  device <uuid>                list a single device
  tunnel <deviceOrApplication> Tunnel local ports to your balenaOS device
  preload <image>              preload an app on a disk image (or Edison zip archive)
  build [source]               Build a single image or a multicontainer project locally
  deploy <appName> [image]     Deploy a single image or a multicontainer project to a balena application
  join [deviceIp]              Promote a local device running balenaOS to join an application on a balena server
  leave [deviceIp]             Detach a local device from its balena application
  scan                         Scan for balenaOS devices in your local network

Run 'balena help --verbose' to list additional commands

Global Options:

  --help, -h
  --version, -v
david@david-VirtualBox:~$
```



2

Clone a Project

There are lots of sample projects to get started with, such as:

“It's a sign: build a remote controlled digital display with Screenly OSE and Raspberry Pi”

“Turn your old speakers or Hi-Fi into Bluetooth, Airplay and Spotify receivers.”

“Using Web Bluetooth to communicate with Bluetooth devices”

“Build a TTN LoRa Gateway with balenaFin and balenaCloud”

For now, let's go with **balenaSense**: “Build an air quality monitor with InfluxDB, Grafana, and Docker on a Raspberry Pi”

- <https://github.com/balenalabs/balena-sense>



2

Clone a Project



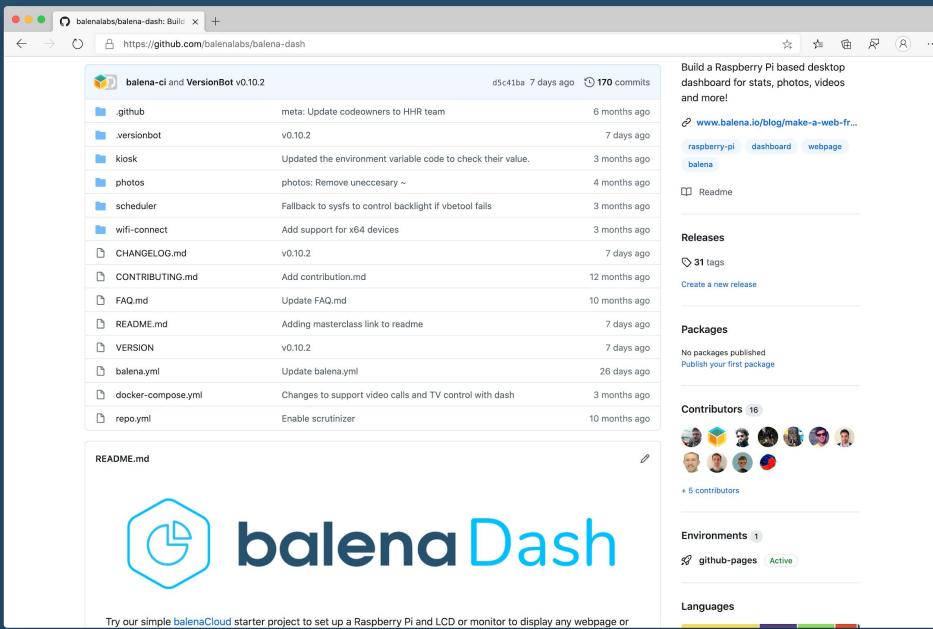
balenaDash



2

Clone a Project

git clone https://github.com/balenalabs/balena-dash.git



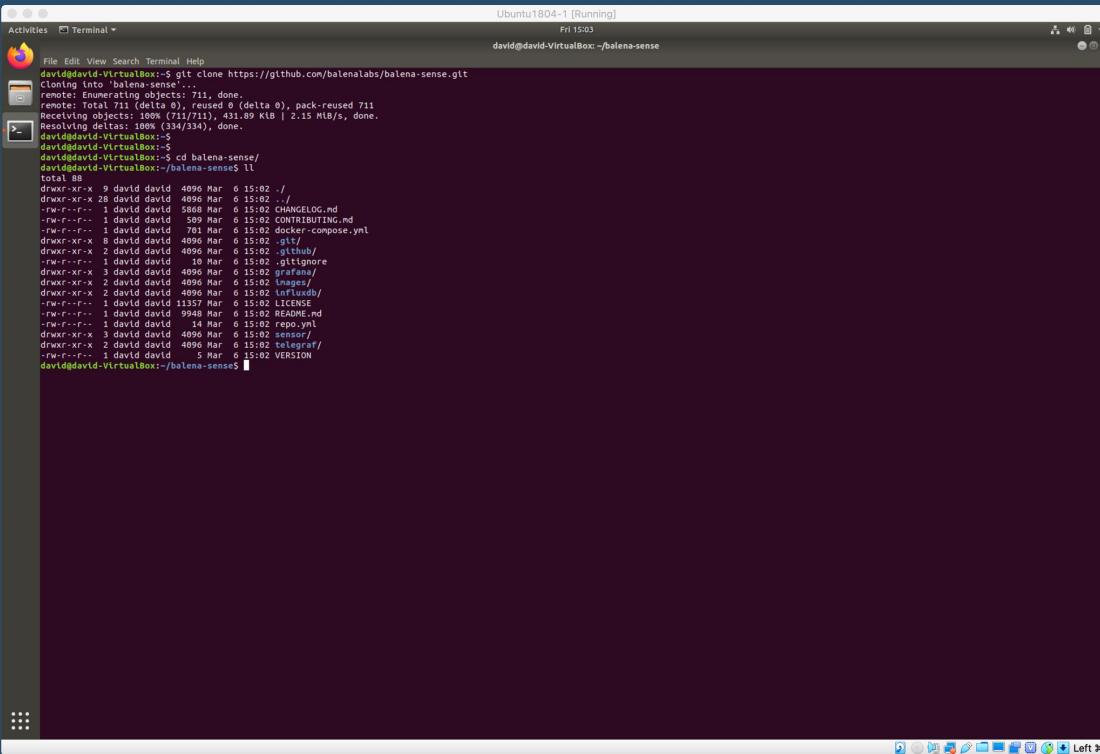
docker-compose.yml

```
(base) anuj@pop-os:~$ cat balena/balena-dash/docker-compose.yml
version: '2'
volumes:
  settings:
services:
  kiosk:
    restart: always
    build: ./kiosk
    privileged: true
    ports:
      - 8080:8080
    volumes:
      - 'settings:/usr/src/app/settings'
  scheduler:
    restart: always
    build: ./scheduler
    privileged: true
  wifi-connect:
    build: ./wifi-connect
    restart: always
    network_mode: host
    privileged: true
    labels:
      io.balena.features.dbus: '1'
      io.balena.features.firmware: '1'
  photos:
    privileged: true
    restart: always
    build: ./photos
    ports:
      - "8888:8888"
```



2

Clone a Project



The image shows a screenshot of an Ubuntu 18.04 LTS desktop environment. A terminal window is open, titled "Terminal". The command "git clone https://github.com/balenalabs/balena-sense.git" has been run, and the output shows the cloning process completed successfully. The directory structure of the cloned repository is then listed using the "ls" command.

```
File Edit View Search Terminal Help
Activities Terminal Fri 15:03
david@david-VirtualBox:~/balena-sense
Cloning into 'balena-sense'...
remote: Enumerating objects: 711, done.
remote: Total 711 (delta 0), reused 0 (delta 0), pack-reused 711
remote: Compressing objects: 100% (341/341), 431.89 KB | 2.15 MB/s, done.
remote: Resolving deltas: 100% (334/334), done.
david@david-VirtualBox:~/balena-sense$ ls
total 88
drwxr-xr-x  9 david david 4096 Mar  6 15:02 .
drwxr-xr-x 28 david david 28672 Mar  6 15:02 .
drwxr-xr-x  1 david david 5688 Mar  6 15:02 CHANGELOG.md
drwxr-xr-x  1 david david 509 Mar  6 15:02 CONTRIBUTING.md
drwxr-xr-x  1 david david 781 Mar  6 15:02 docker-compose.yml
drwxr-xr-x  2 david david 4096 Mar  6 15:02 .github/
drwxr-xr-x  1 david david 10 Mar  6 15:02 .gitignore
drwxr-xr-x  3 david david 4096 Mar  6 15:02 grafana/
drwxr-xr-x  2 david david 4096 Mar  6 15:02 images/
drwxr-xr-x  2 david david 4096 Mar  6 15:02 nodejs/
drwxr-xr-x  1 david david 11357 Mar  6 15:02 LICENSE
drwxr-xr-x  1 david david 9948 Mar  6 15:02 README.md
drwxr-xr-x  3 david david 4096 Mar  6 15:02 repo.yml
drwxr-xr-x  2 david david 4096 Mar  6 15:02 rootfs/
drwxr-xr-x  1 david david  5 Mar  6 15:02 telegraf/
david@david-VirtualBox:~/balena-sense$
```



2

Clone a Project

Ubuntu1804-1 [Running]
Fri 15:06
Activities Terminal david@david-VirtualBox:~/balena-sense\$

```
File Edit View Search Terminal Help
david@david-VirtualBox:~/balena-sense$ cat grafana/Dockerfile.template
FROM balenalib/x86BALENA_MACHINE_NAME:buster
COPY ./grafana.in1 /usr/share/grafana/conf/custom.in1
COPY ./provisioning /usr/src/app/provisioning
COPY /*.sh /usr/src/app/
RUN chmod +x /usr/src/app/*.sh

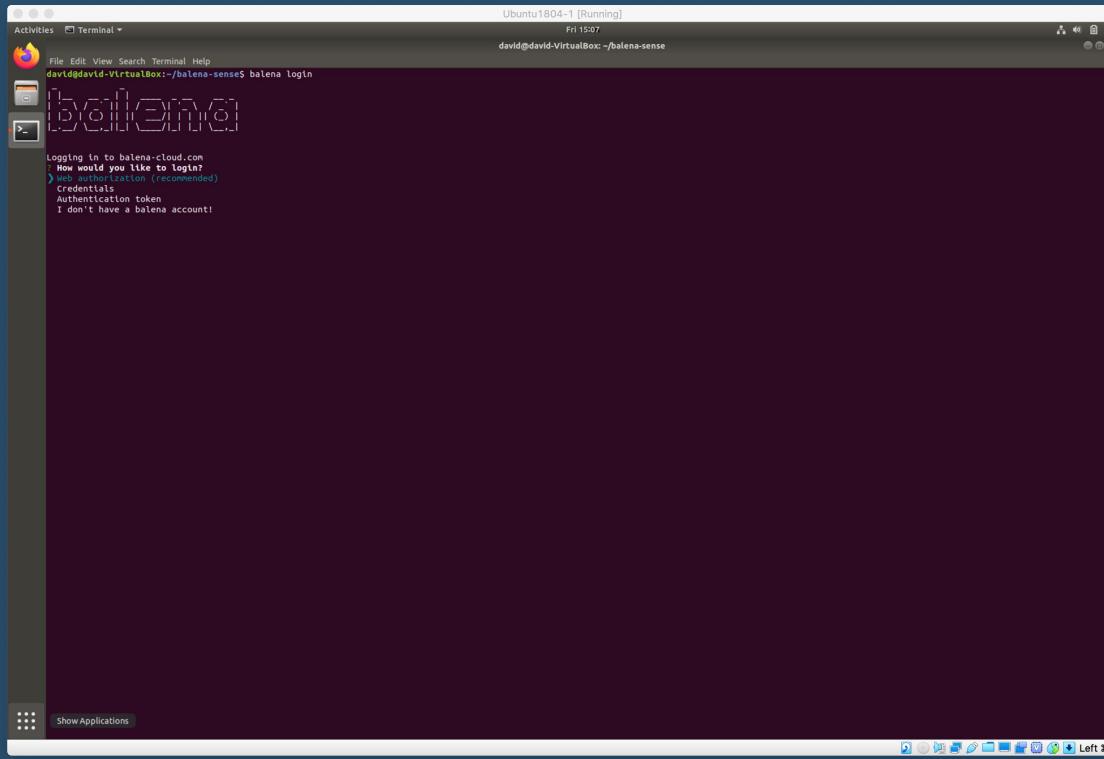
RUN install_packages \
    fontconfig-config \
    font-dejavu \
    libfontconfig1 \
    ucf \
    jq \
    wget

RUN /usr/src/app/download.sh "$X86BALENA_ARCH"
RUN dpkg -i /tmp/grafana.deb && rm /tmp/grafana.deb
CMD ["./bin/sh","./usr/src/app/entry.sh"]
david@david-VirtualBox:~/balena-sense$ cat influxdb/Dockerfile.template
FROM balenalib/x86BALENA_MACHINE_NAME:alpine
RUN apk add influxdb
RUN sed -i 's|/var/lib/influxdb|/data/influxdb|g' /etc/influxdb.conf
CMD ["influxd"]
david@david-VirtualBox:~/balena-sense$
```



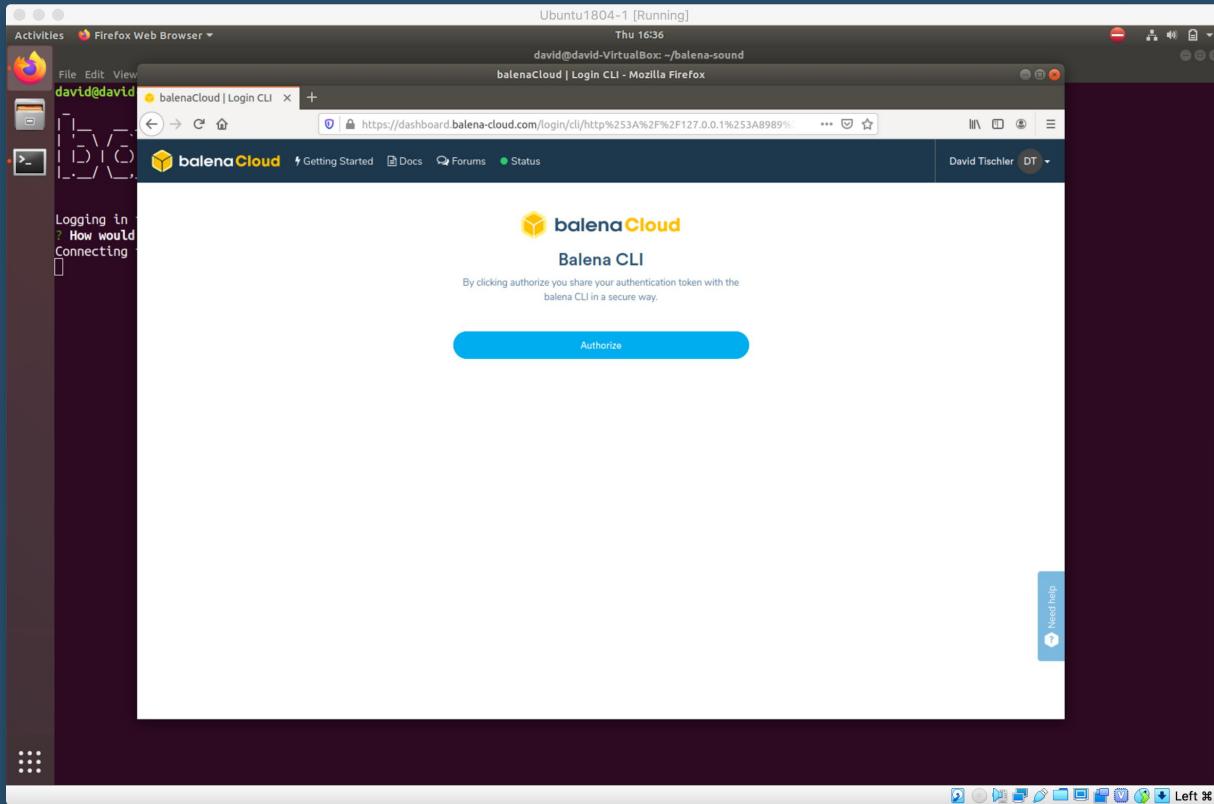
3

Push a Container



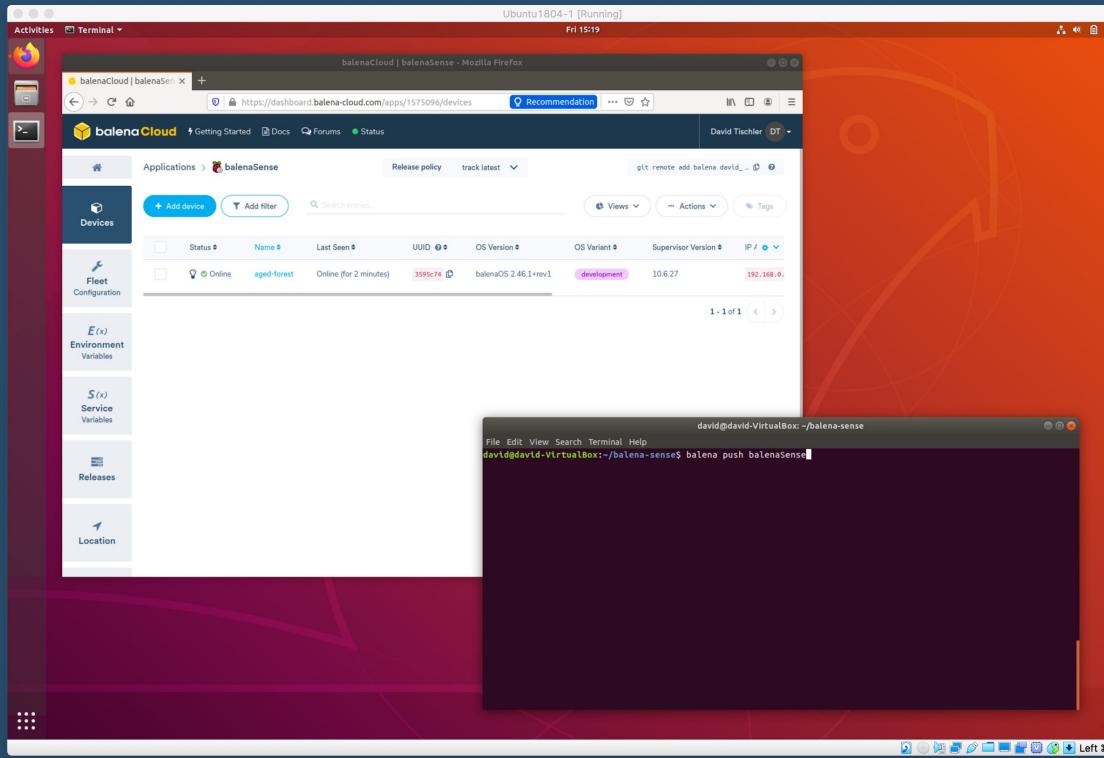
3

Push a Container



3

Push a Container



3

Push a Container

```
Ubuntu1804-1 [Running]
Activities Terminal david@david-VirtualBox:~/balena-sense

[telegraf] Step 2/2 : COPY ./*.sh /usr/src/app/
[sensor] Step 2/2 : COPY ./94acdef88ec5494a44e03f33cfa85ec /etc/influxdb
[InfluxDB] Step 2/2 : RUN apk add influxdb
[sensor]     ---- 9dbedd28de34
[InfluxDB]     ---- Running in 71df38313cf8
[sensor]       ---- 91563cdd42b2
[grafana] Step 3/3 : COPY ./provisioner /usr/src/app/provisioning
[sensor] Removing intermediate container 71df38313cf8
[sensor] Step 3/18 : RUN install_packages    unzlip
[sensor]     ---- Running in 5715e67587cf
[telegraf] Step 3/18 : COPY ./1112ebab19c /etc/influxdb
[telegraf]     ---- 5715e67587cf
[telegraf]     ---- Running in d90da8252ea3
[telegraf]     ---- b211e1c77f53
[grafana] Step 4/9 : COPY ./*.sh /usr/src/app/
[grafana] Executing /usr/bin/cp -r /tmp/debian-alpinelinux/armv7/alpine/v3.11/main/armv7/APKINDEX.tar.gz /tmp/debian-alpinelinux/armv7/APKINDEX.tar.gz
[InfluxDB] (1/1) Installing influxdb:1.7.7-r0
[InfluxDB] Executing /bin/sh -c /tmp/debian-alpinelinux/armv7/APKINDEX.tar.gz | /usr/bin/tar -xzf -
[InfluxDB] Ok, 194 MB in 73 packages
[grafana]     ---- a74fbaf8ef8d
[grafana] Step 5/9 : RUN sh x /usr/src/app/*.sh
[grafana]     ---- Running in c331fd0d67d2
[telegraf] Removing intermediate container d90da8252ea3
[telegraf]     ---- 391991ac1d8
[telegraf] Step 4/8 : RUN install_packages wget
[telegraf]     ---- Running in 10250509d5f3
[InfluxDB] Removing intermediate container 8e3bfc7dd5c
[InfluxDB]     ---- b74bf8f5f952
[InfluxDB] Step 3/4 : RUN sed -i 's@/var/lib/influxdb@/data/influxdb@g' /etc/influxdb.conf
[grafana] Removing intermediate container c312fd0d87d2
[grafana]     ---- c223473cfff
[grafana] Step 6/9 : RUN install_packages fontconfig-config fonts-dejavu-core libfontconfig ucf jq wget
[sensor] Reading package lists...
[InfluxDB] Removing intermediate container 5b42a8f5c9f7
[InfluxDB]     ---- 846ef3add1a
[telegraf]     ---- Running in 0ef1a84dd94
[InfluxDB]     ---- Running in 0ef1a84dd94
[sensor] Building dependency tree...
[sensor] Reading state information...
[sensor] Suggested packages:
[sensor]   libcurl3
[sensor] The following NEW packages will be installed:
[sensor]   unzip
[sensor] 0 upgraded, 1 newly installed, 0 to remove and 61 not upgraded.
[sensor] Need to get 158 kB of archives.
[sensor] After this operation, 428 kB of additional disk space will be used.
[sensor] Get:1 http://deb.debian.org/debian buster/main armhf unzip armhf 6.0-23+deb10u1 [158 kB]
[deconf] delaying package configuration, since apt-utils is not installed
[sensor] Fetched 158 kB in 0s (10.2 MB/s)
[sensor] Selecting previously unselected package unzip.
[deconf] (Reading database ... (Reading database ... 2017 files and directories currently installed.))
[sensor] Preparing to unpack .../unzip_6.0-23+deb10u1_armhf.deb ...
[sensor] Unpacking unzip (6.0-23+deb10u1) ...
[sensor] [=====] 100%
```



3

Charlie!

Ubuntu1804-1 [Running]
Fri 1525
david@david-VirtualBox:~/balena-sense

```
You should consider upgrading via the 'pip install --upgrade pip' command.

[sensor] Removing intermediate container 14b6818004e6
    ... c9cb2b5273ee
[sensor] Step 1/18 : RUN chmod +x /usr/src/app/entry.sh
    ... Running in 5eb0d3bdc0f9
[sensor] Removing intermediate container 3eb0d3bdc0f9
    ... ce9fb72ed7
[sensor] Step 2/18 : COPY ./scripts ./scripts
[sensor]    ... b56dec088e8
[sensor] Step 16/18 : COPY ./entry.sh /usr/src/app/
[sensor]    ... be304fe183b6
[sensor] Step 17/18 : RUN chmod +x /usr/src/app/entry.sh
    ... Running in 1217df8ba5f2
[sensor] Removing intermediate container 1217df8ba5f2
    ... 52d7bbad9487
[sensor] Step 18/18 : COPY ./entry.sh .
    ... Running in 1fc6c83f13f1
[sensor] Removing intermediate container 1fc6c83f13f1
    ... ff0cfcd288ef2
[sensor] Successfully built ff0cfcd288ef2
[Info] Uploading images...
[Success] Successfully uploaded images
[Info] Built on arm3
[Success] Release successfully created!
[Info] Release: 70e715743dafe0e0d7e54085403 (id: 1291187)
[Info]
[Info]   Service      Image Size Build Time
[Info]   influxdb     200.70 MB  17 seconds
[Info]   grafana      281.50 MB  46 seconds
[Info]   sensor        665.66 MB  1 minute, 22 seconds
[Info]   telegraf     231.97 MB  39 seconds
[Info]   mqtt          4.89 MB   4 seconds
[Info]
[Info] Build finished in 3 minutes, 38 seconds

```

david@david-VirtualBox:~/balena-sense\$



3

Push a Container

The screenshot shows the balenaCloud dashboard interface. On the left, a sidebar navigation includes: Summary, Device Configuration, D (x) Device Variables, S (x) Device Service Variables, Location, Actions, and Diagnostics Experimental. The main content area displays the device details for 'aged-forest':

- DEVICE**:
 - NAME: aged-forest
 - UUID: 3595c74
 - TYPE: Raspberry Pi 3
 - LAST ONLINE: Online (for a minute)
 - HOST OS VERSION: balenaOS 2.46.1+rev1 (development)
 - SUPERVISOR VERSION: 10.6.27
 - CURRENT RELEASE: e88b1b7
 - TARGET RELEASE: 78bc713
 - IP ADDRESS: 192.168.6.141
 - PUBLIC DEVICE URL: <https://dashboards.balena-cloud.com/devices/3595c7497d1e5d2512ca526391a78db/summary>
 - TAGS: No tags configured yet
 - NOTES: Add device notes...
- SERVICES**:
 - grafana: Status: Running → Downloading 9% (Release: 78bc713)
 - influxdb: Status: Running → Downloading 13% (Release: 78bc713)
 - nginx: Status: Running → Downloaded (Release: 78bc713)
 - sensor: Status: Running → Downloading 0% (Release: 78bc713)

Logs section shows log entries:

```
06.03.20 15:29:00 (-0700) [Influxdb] 172.17.0.5 - - [06/Mar/2020:22:29:00 +0000] "POST /v1/write?db=balena-sense HTTP/1.1" 204 0 "-" "Telegraf/1.12.2" ec02ac10803-0242ac110802 8272
06.03.20 15:29:00 (-0700) [sensor] 172.17.0.5 - - [06/Mar/2020:22:29:00] "GET / HTTP/1.1" 200 -
06.03.20 15:29:00 (-0700) [telegraf] 172.17.0.5 - - [06/Mar/2020:22:29:00] "POST /v1/agent/push?token=751c34d0f0fc0b07020bc1874ec060994c94836" 0
06.03.20 15:29:10 (-0700) [Influxdb] 172.17.0.5 - - [06/Mar/2020:22:29:10 +0000] "POST /v1/write?db=balena-sense HTTP/1.1" 204 0 "-" "Telegraf/1.12.2" ec02ac110802 13411
06.03.20 15:29:10 (-0700) [sensor] 172.17.0.5 - - [06/Mar/2020:22:29:10] "GET / HTTP/1.1" 200 -
06.03.20 15:29:20 (-0700) [sensor] 172.17.0.5 - - [06/Mar/2020:22:29:20] "GET / HTTP/1.1" 200 -
06.03.20 15:29:21 (-0700) [telegraf] 2020-03-06T22:29:21Z E! [outputs.influxdb] when writing to (http://172.17.0.5:8086): Post http://172.17.0.5:8086/write/db=balena-sense.net/http: request canceled (connTimeout exceeded while awaiting headers)
06.03.20 15:29:21 (-0700) [telegraf] 2020-03-06T22:29:21Z E! [agent] Error writing to outputs.influxdb: could not write any address
06.03.20 15:29:21 (-0700) [Influxdb] 172.17.0.5 - - [06/Mar/2020:22:29:20 +0000] "POST /v1/write?db=balena-sense HTTP/1.1" 204 0 "-" "Telegraf/1.12.2" ec02ac110802 19688 0
```

Terminal section shows a terminal session with a target selected as 'aged-forest'.



Scaling and a Global Fleet



dashboard.balena-cloud.com

David Tischler DT

Applications > DemoApplication

Fleet Location

The map displays the global distribution of devices in the 'DemoApplication' fleet. Device locations are marked with orange dots. Key locations include the United States, Canada, Mexico, Brazil, Argentina, Chile, Peru, Colombia, Venezuela, Spain, France, Germany, Italy, United Kingdom, Poland, Russia, China, India, Thailand, Saudi Arabia, Iraq, Iran, Pakistan, Turkey, Egypt, Libya, Algeria, Mali, Niger, Chad, Nigeria, DRC, Kenya, Tanzania, Angola, Namibia, Botswana, Madagascar, South Africa, Australia, New Zealand, and Papua New Guinea. The map also shows the North Pacific, South Pacific, North Atlantic, South Atlantic, Indian, and Southern Oceans.

Map data ©2020 Terms of Use

Google

Need help

- Home
- Devices
- Fleet Configuration
- E(x) Environment Variables
- S(x) Service Variables
- Releases
- Location
- Members



Dashboard URL: <https://dashboard.balena-cloud.com>

User: David Tischler DT

Applications > DemoApplication

Release policy: track latest

git remote add balena david... ↗

Views Actions Tags

Devices

+ Add device Add filter Search entries...

	Status	Device Type	Name	Last Seen	UUID	OS Version	OS Variant	Supervisor Version	IP Address	Current Release	Target Release	Release Policy	Latitude	Longitude	All Tags
	💡 Online Raspberry Pi 4	chrisys	Online (for 3 hours)	c90f6eb ⓘ	balenaOS 2.46.1+rev3	development	10.6.27	10.19.0.56 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	50.8243	-4.5413	
	💡 Online Raspberry Pi 4	garethtdavies	Online (for a day)	3a628fc ⓘ	balenaOS 2.44.0+rev3	development	10.3.7	192.168.86.43 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	48.4808	-123.3165	development
	💡 Online Raspberry Pi 4	dame-time	Online (for 3 hours)	4cef398 ⓘ	balenaOS 2.44.0+rev3	development	10.3.7	192.168.30.197 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	-12.0464	-77.0428	
	💡 Online Raspberry Pi 4	iamsolankiamit	Online (for an hour)	38627e9 ⓘ	balenaOS 2.46.1+rev3	production	10.6.27	192.168.1.105 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	19.0748	72.8856	
	💡 Online Raspberry Pi 4	nghiant2710	Online (for 14 minutes)	8b42d1e ⓘ	balenaOS 2.46.1+rev3	production	10.6.27	192.168.100.18 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	21.0313	105.8516	
	💡 Online Raspberry Pi 3 (using 64bit OS) (BETA)	aftzek	Online (for 2 hours)	e3361ee ⓘ	balenaOS 2.46.1+rev1	development	10.6.27	192.168.1.65 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	48.2006	16.3672	
	💡 Offline Raspberry Pi 3 (using 64bit OS) (BETA)	tmgone	15 minutes ago	adeb979 ⓘ	balenaOS 2.46.1+rev1	development	10.6.27	192.168.88.196 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	-34.5106	-58.4964	
	💡 Online Nvidia Jetson Nano (BETA)	dtschler	Online (for an hour)	6a8f0f8 ⓘ	balenaOS 2.45.1+rev3	development	10.3.7	192.168.0.186 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	33.6613	-112.0398	
	💡 Online Nvidia Jetson Nano (BETA)	go-blazers-pdx	Online (for 40 minutes)	aa46441 ⓘ	balenaOS 2.45.1+rev3	development	10.3.7	192.168.1.121 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	45.3894	-122.586	
	💡 Online Nvidia Jetson Nano (BETA)	steamed-hams	Online (for an hour)	a2819a9 ⓘ	balenaOS 2.45.1+rev3	production	10.3.7	10.19.0.198 ⓘ	717c66f ⓘ	717c66f ⓘ	717c66f ⓘ	Default	50.8243	-4.5413	

1 - 10 of 10 ⏪ ⏩ Need help ?



Things to try

Similar to balenaDash, we create awesome open-source projects that you can make with easily available hardware.

- balenaSound
 - boombeastic
- balenaSense
- balenaCam
- OpenDataCam (Jetson Nano)
- LoRa Gateway (TTN)

.... and more



Additional Resources

balena Blog: <https://www.balena.io/blog/>

balena Forums: <https://forums.balena.io/>

balena Labs GitHub: <https://github.com/balenalabs>





Happy **HOUR**

Weekly IoT hangout & freeform chat

Fridays | 4 PM UTC



Questions / Q&A

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balena