



Node-RED Con  
2021



# Continuous Delivery of Node-RED flows with balena

Marc Pous - Developer Advocate at balena

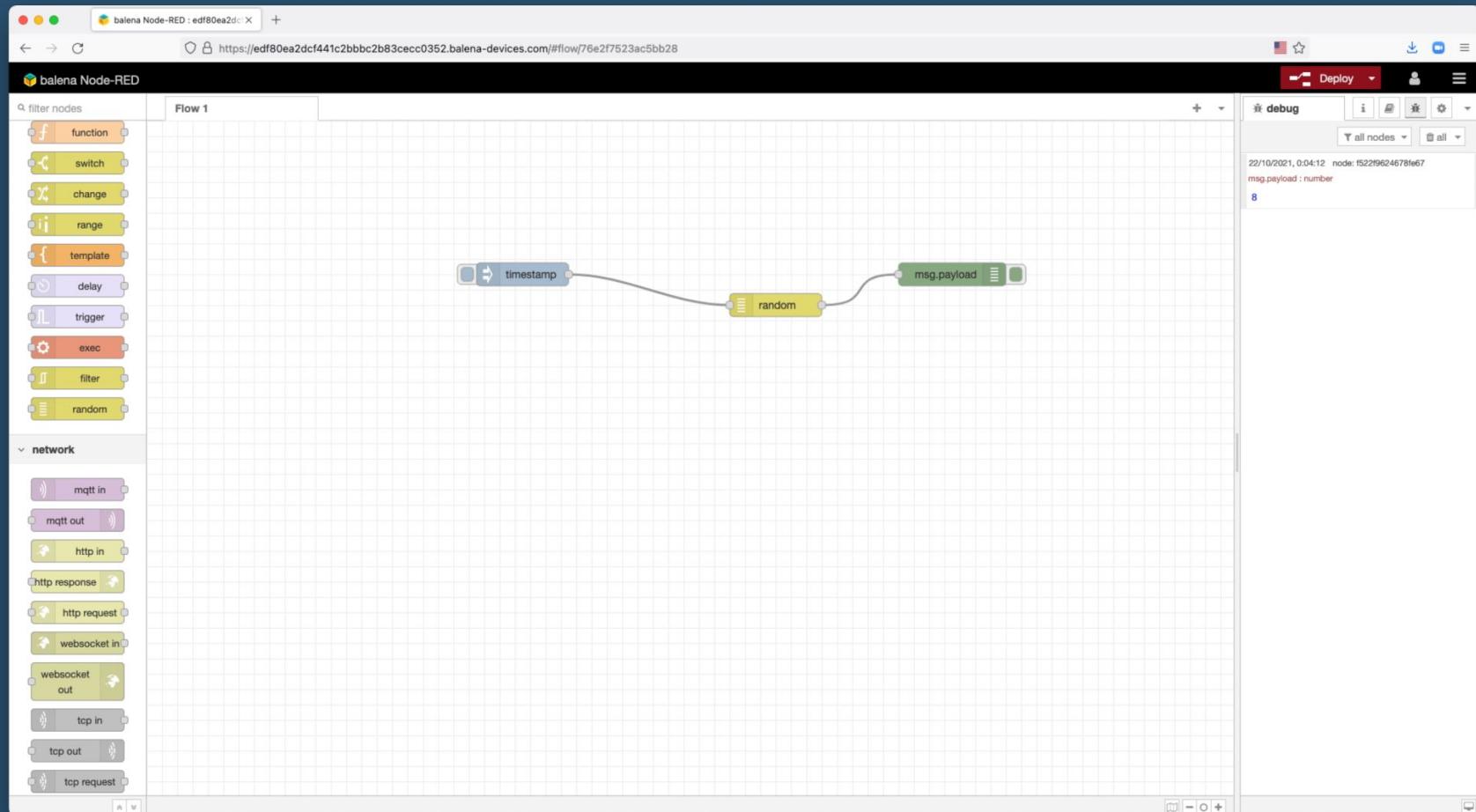
23rd October 2021

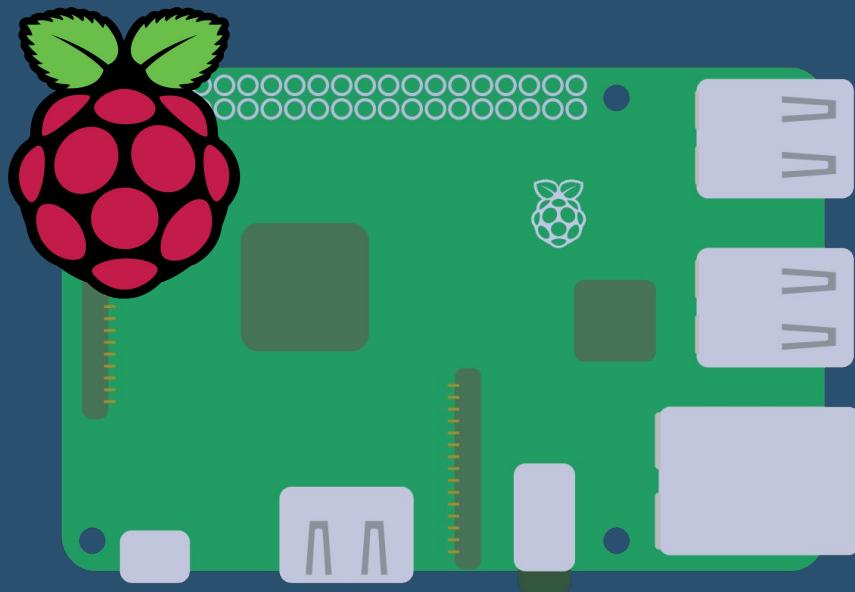


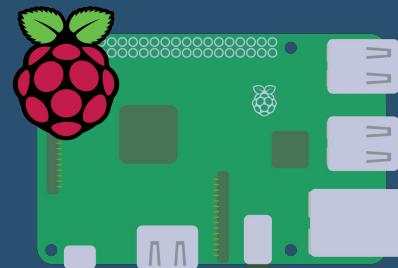
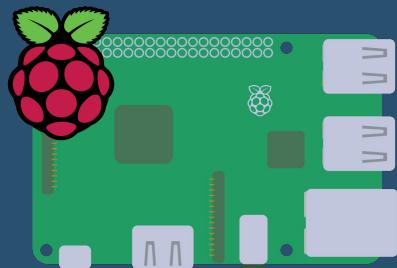
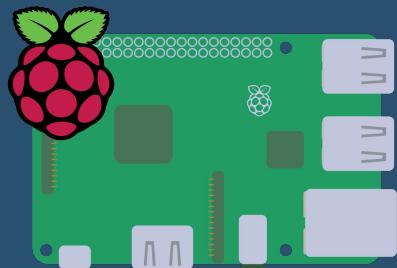
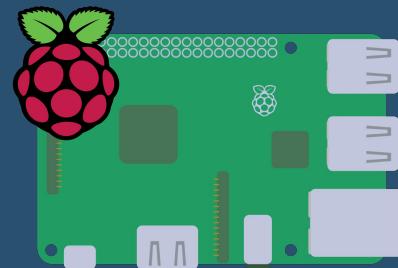
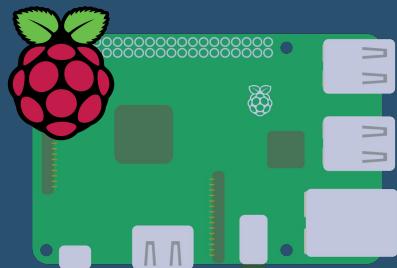
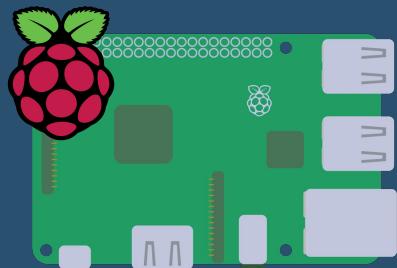
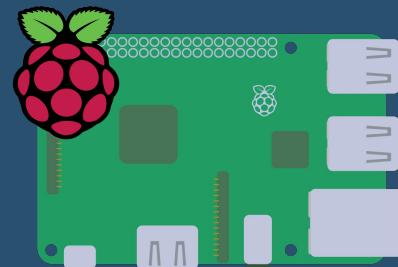
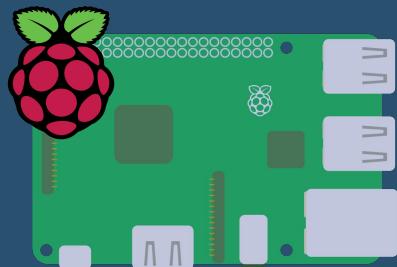
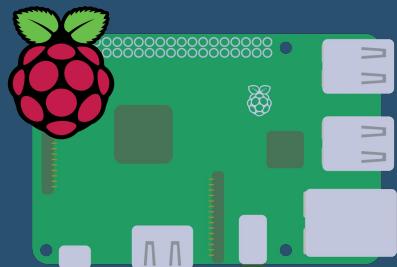
Node-RED Con  
2021

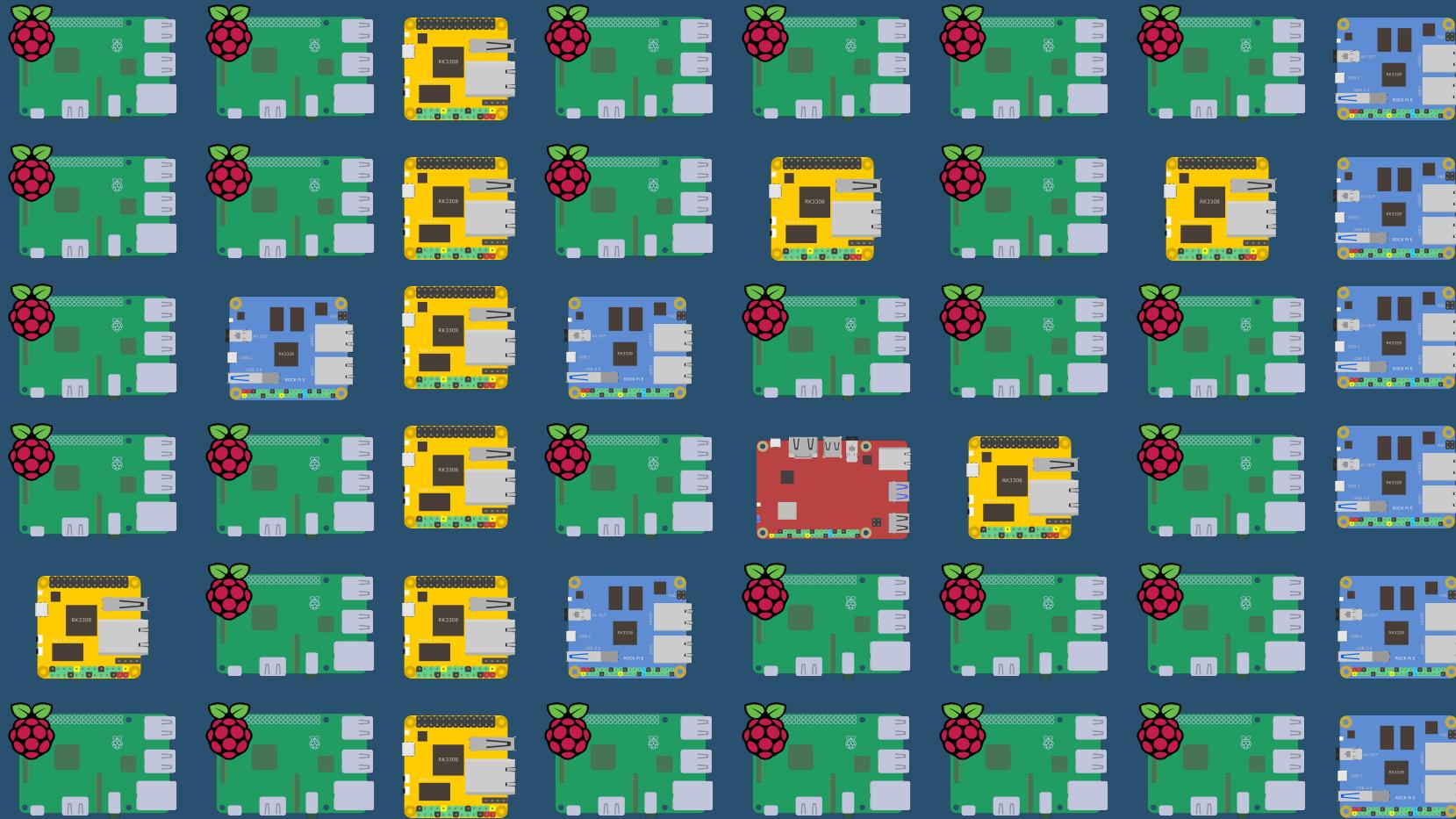
Let me tell you a  
story...

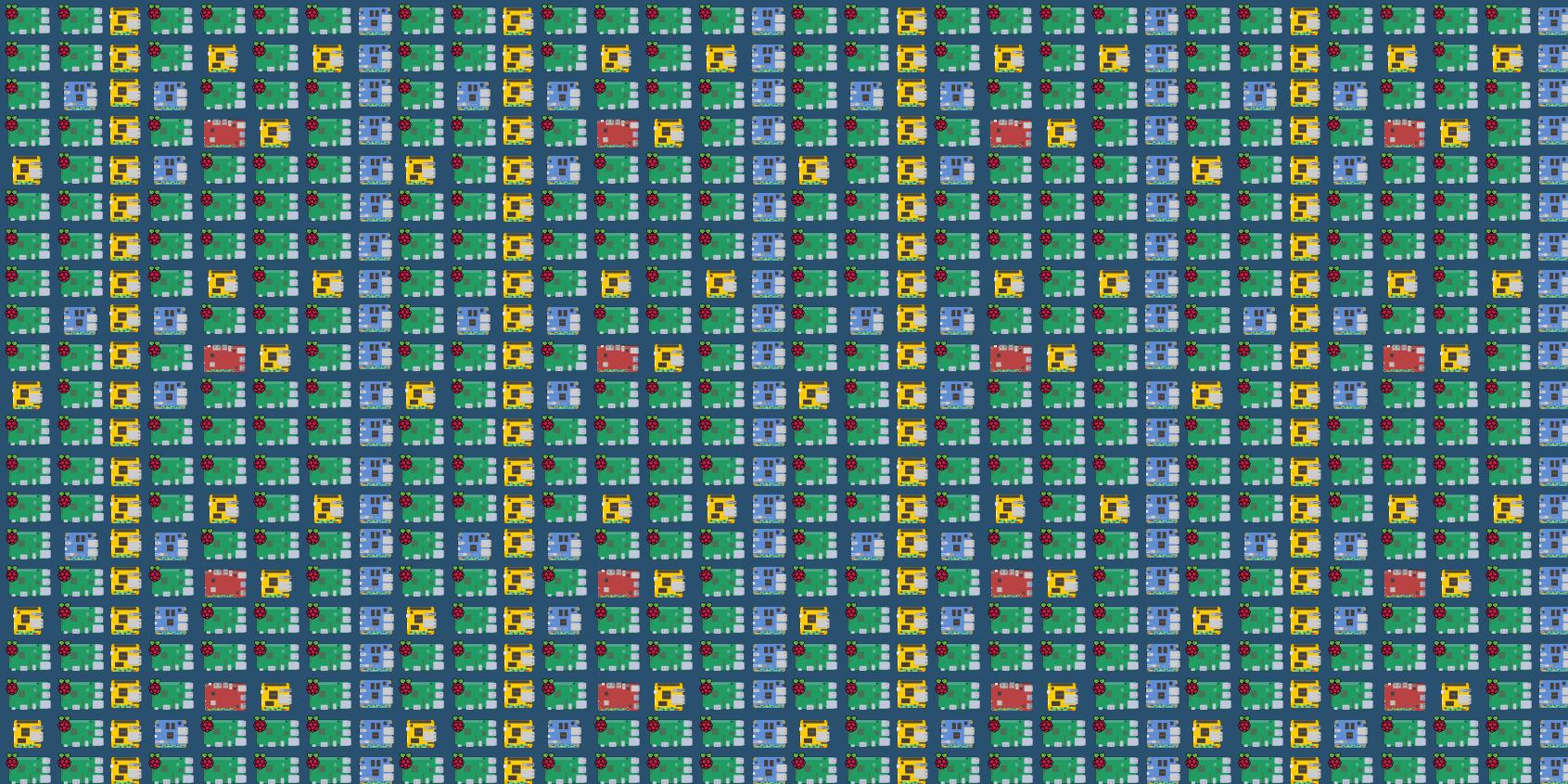


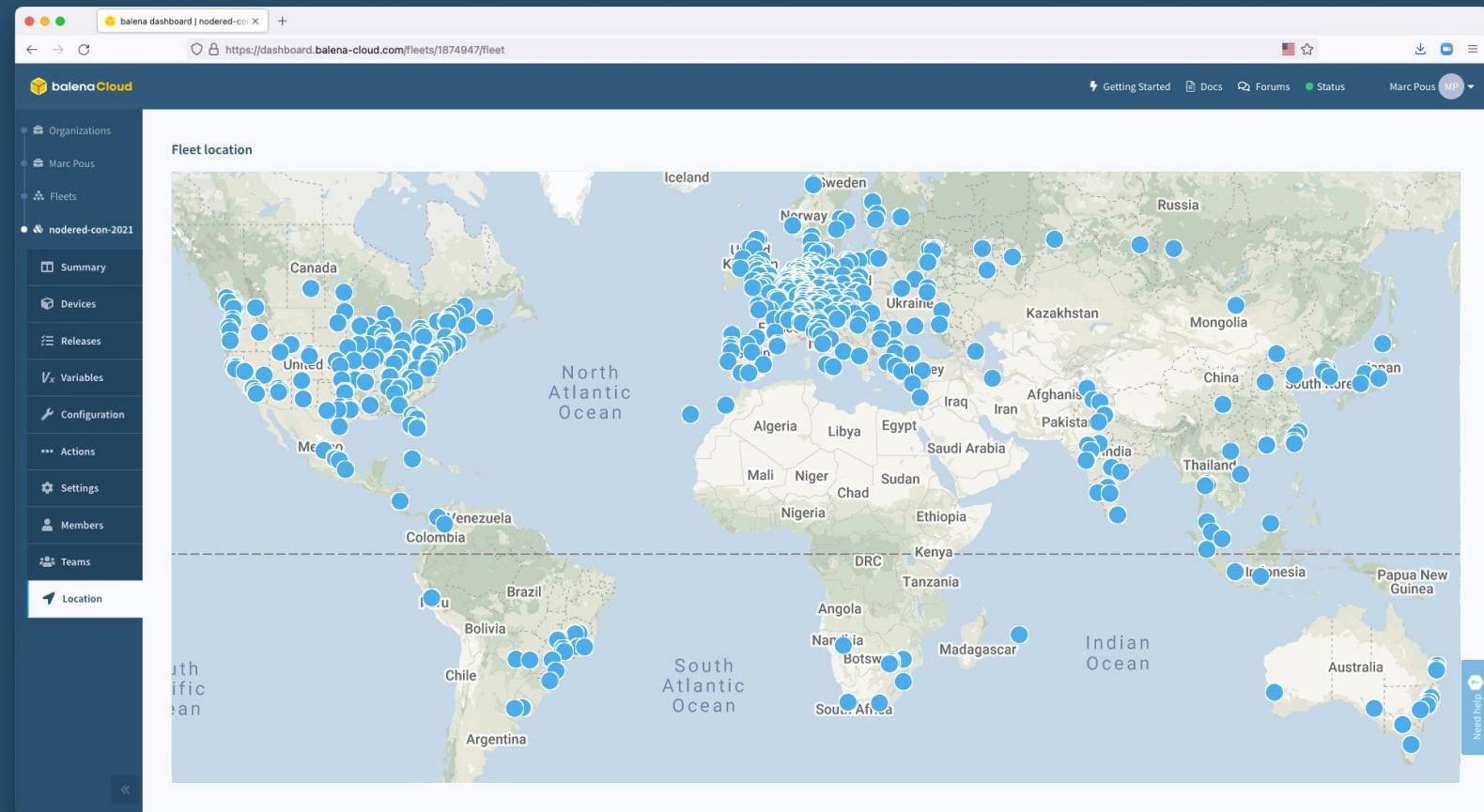


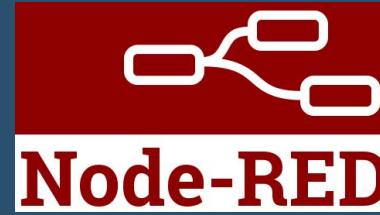
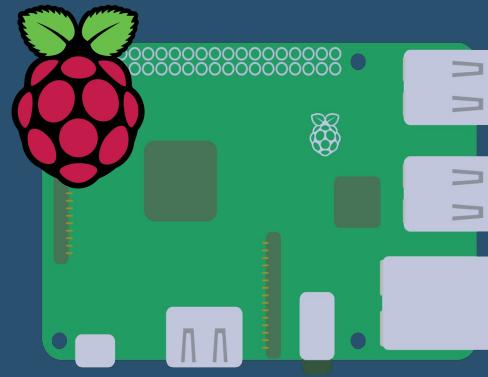


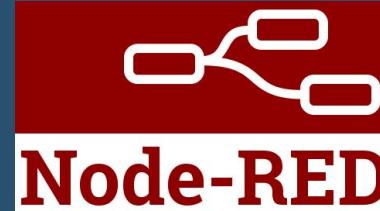
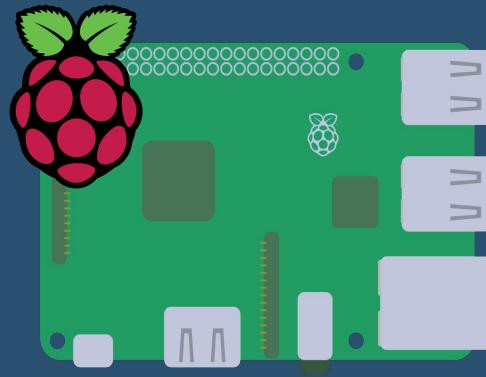












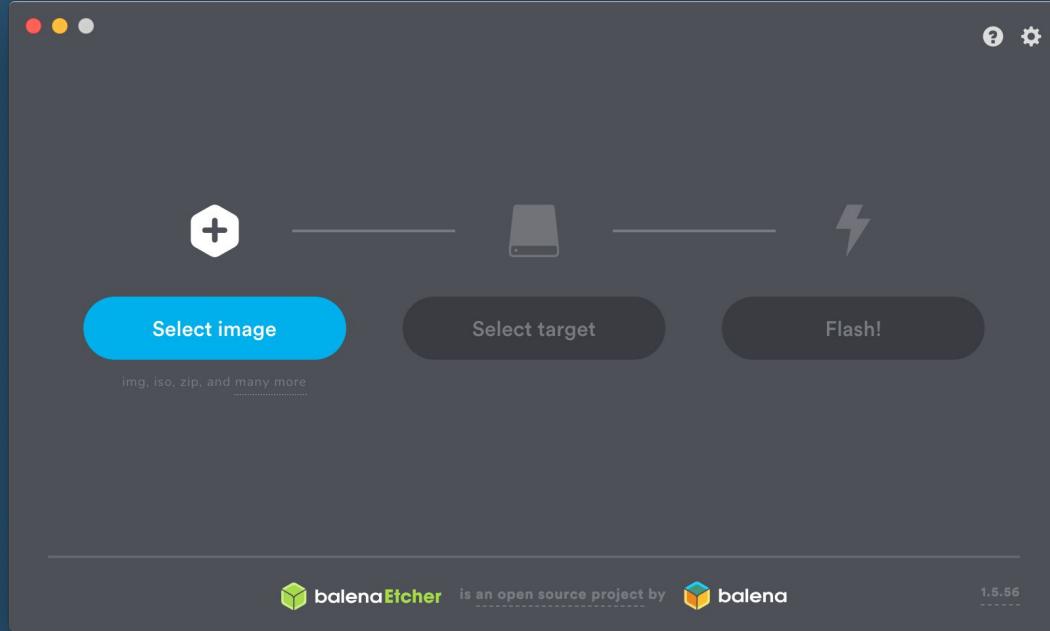


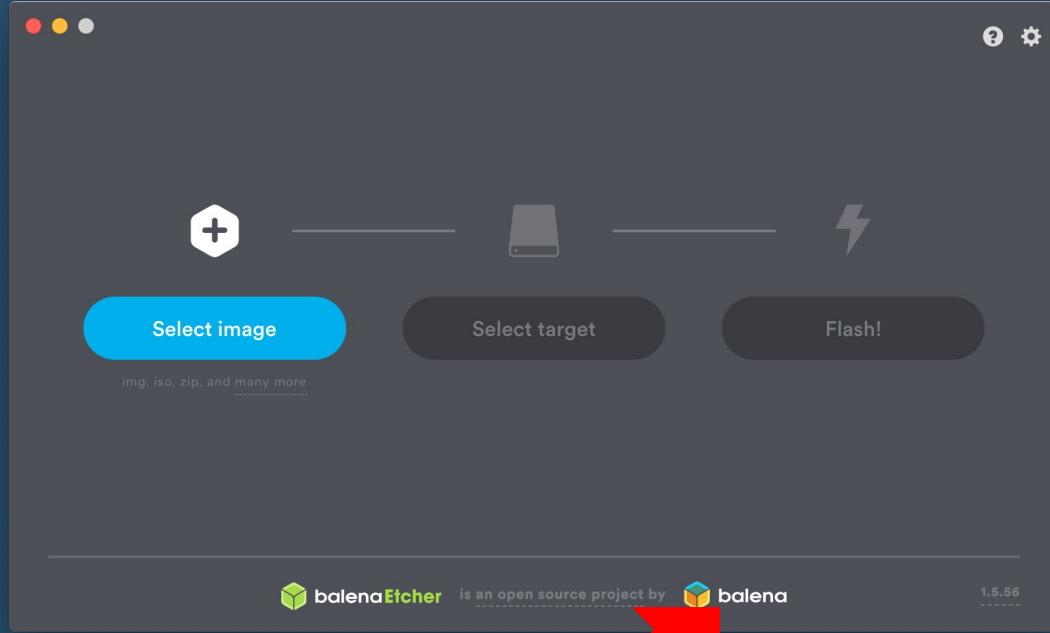
Try the DIE HARD method

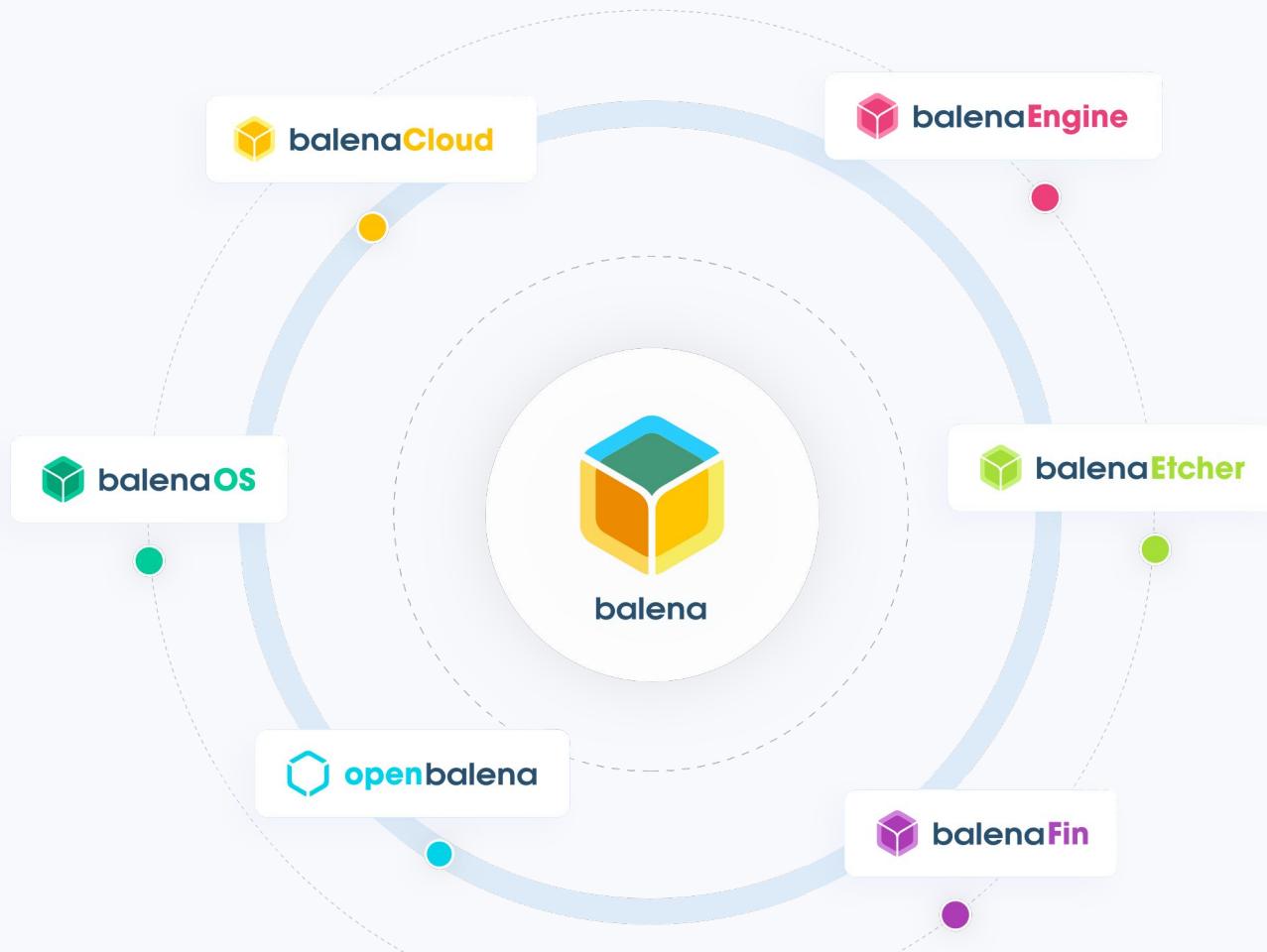


balena

# What is balena?





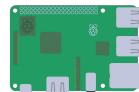
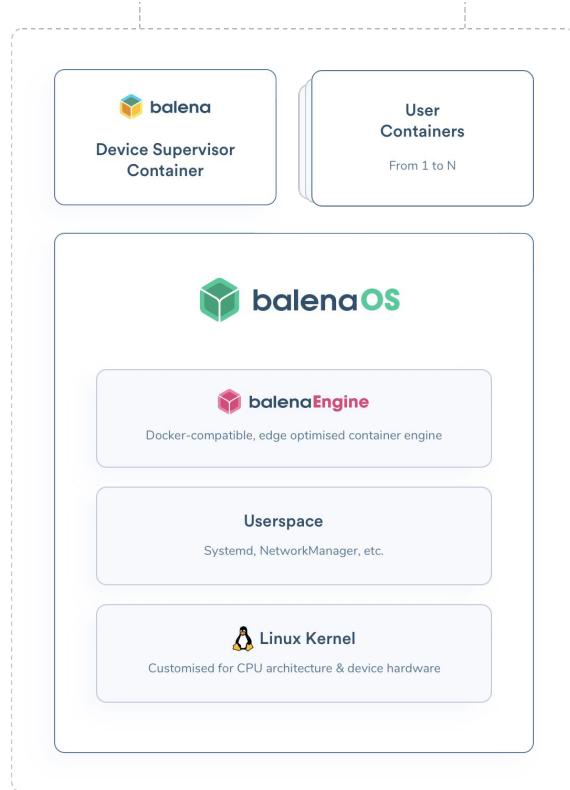




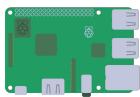
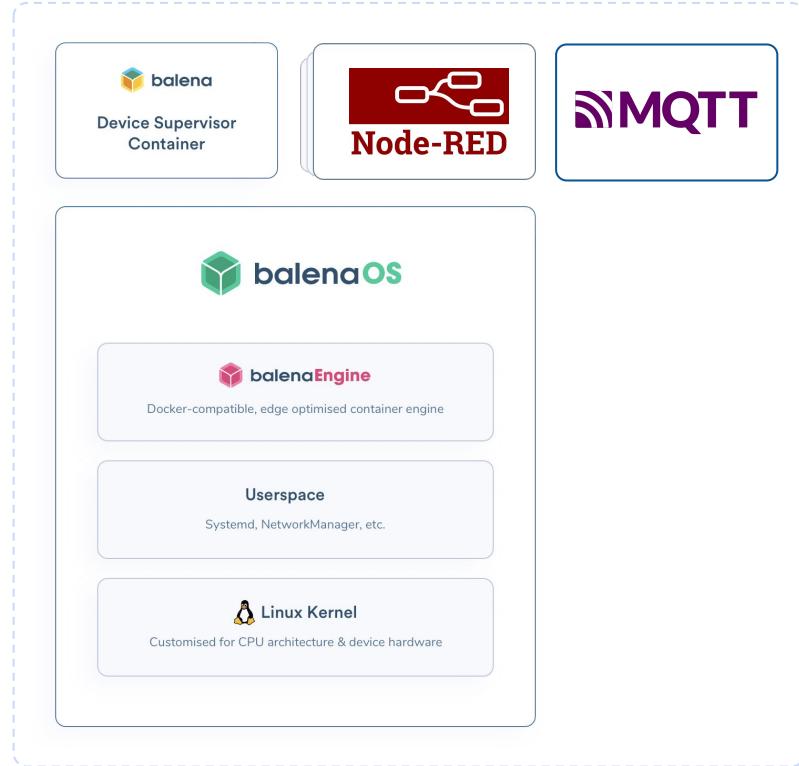
**balenaCloud**

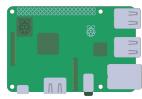


**openbalena**









# Let's build it!

Grab a Raspberry Pi + SD card and follow me :-)

balenaHub: an easier way to find... X +

https://hub.balena.io

Add your Project or Fleet before November 30th 2021 to enter the balenaHub Challenge for the chance of getting your project featured on Etcher and winning £2.5k in cash! Click to find out more

What is balenaHub? Contribute Community CHALLENGE

Fleets Projects Blocks

Publish a fleet Add filter

Search entries...

Views

balenaSound by balenaLabs

Build a single or multi-room streamer for an existing audio device using a Raspberry Pi! Supports Bluetooth, Airplay and Spotify Connect

WORKS WITH Fin, RPi, BeagleBoard, NANO, 1 more...

rosetta-at-home-arm by balenaLabs

Fold for Covid - Help fight the COVID-19 pandemic with your old laptop, Raspberry Pi, or other spare computer

WORKS WITH NANO

rosetta-at-home-amd64 by balenaLabs

Fold for Covid - Help fight the COVID-19 pandemic with your old laptop, Raspberry Pi, or other spare computer

WORKS WITH Intel NUC

balenaSense by balenaLabs

Take readings from a BME680 or similar sensors on a Raspberry Pi, store with InfluxDB and view with Grafana.

WORKS WITH Fin, RPi, BeagleBoard, NANO

balena-minecraft-server by AlexProgrammerDE

Build a Minecraft Server using a Raspberry Pi 4! Supports common Servers, SCP, RCON and WiFi Connect.

WORKS WITH NANO

octoprint by balenaLabs

Remotely control your 3D-printer with Octoprint and balena!

WORKS WITH Fin

bookstack by gh\_klutchell's Organization

BookStack is a simple and free, self-hosted, easy-to-use wiki platform for organising and storing information.

WORKS WITH Fin, RPi, BeagleBoard, NANO

balena-plant-saver by A Dawg's Plant Emporium

Use a Raspberry Pi, temperature, humidity, and moisture sensor to automatically water your plants.

WORKS WITH RPi

<https://hub.balena.io>



balenaHub: an easier way to find, build, and share your projects

Add your Project or Fleet before November 30th 2021 to enter the balenaHub Challenge for the chance of getting your project featured on Etcher and winning £2.5k in cash! Click to find out more

What is balenaHub? Contribute Community CHALLENGE

Fleets Projects Blocks

Submit a block Add filter

Search entries...

Views

fin-block by balenaBlocks

The 'fin block' is a balenaBlock that provides flashing utilities, status tagging, sleep control and firmata control functionality of the

WORKS WITH Fin

wake-on-lan by Alex Bucknall

Wake on LAN balenablock for controlling power state of local devices.

WORKS WITH

balena-node-red by balenaBlocks

Build a Node-RED application with balena-supervisor flow support that can be managed remotely via balena publicURL.

WORKS WITH Fin, RPI, RPI2, RPI3, 1 more...

netdatablock by gh\_0dyslam's Organization

Troubleshoot slowdowns and anomalies in your infrastructure with thousands of per-second metrics, meaningful visualizations, and insightful

WORKS WITH arm NANO TX1 TX2 4 more...

log2screen by balenaBlocks

Removes the balena logo and prints logging and device/app information to any attached HDMI display

WORKS WITH NANO, RPI, RPI2, RPI3, 2 more...

browsercontrol by Will Philson

A remote control for the balenablocks/browser block.

WORKS WITH Fin, RPI, RPI2, RPI3, 1 more...

multiroom by tmigone

Set up multiroom audio for your fleet of devices. Uses the Snapcast audio player.

WORKS WITH FIN, NANO, RPI, RPI2, 3 more...

connector by balenaBlocks

Intelligently connect data sources with data sinks.

WORKS WITH Fin, RPI, RPI2, RPI3, 1 more...

<https://hub.balena.io/blocks>



balenaHub: an easier way to fin... balenablocks/balena-node-red

https://github.com/balenablocks/balena-node-red

Search or jump to... Pull requests Issues Marketplace Explore

balenablocks / balena-node-red Public

Code Issues 8 Pull requests 2 Actions Projects Wiki Security Insights

master 9 branches 11 tags Go to file Add file Code

**balena-ci and VersionBot v2.3.1** 5ce5d15 4 hours ago 76 commits

.versionbot	v2.3.1	4 hours ago
node-red	make sure ssh workflow 4 projects works	4 hours ago
.gitignore	initial release	5 years ago
CHANGELOG.md	v2.3.1	4 hours ago
LICENCE	initial release	5 years ago
README.md	add documentation for encryption key	4 hours ago
VERSION	v2.3.1	4 hours ago
balena.yml	v2.3.1	4 hours ago
docker-compose.yml	make sure ssh workflow 4 projects works	4 hours ago
logo.png	Add files via upload	10 hours ago
repo.yml	Add versioning information and repo.yml	2 years ago

**README.md**

## balena-node-red

A Node-RED application with [balena-supervisor](#) flow support, can be managed remotely via balena [publicURL](#).

You can deploy this project to a new balenaCloud application in one click using the button below:

[Deploy with balena](#)

About

a node-red application with balena-supervisor support, can be managed remotely via balena publicURL

nodejs docker flow node  
remote-control containers  
supervisor nodes nodered  
balena

Readme Apache-2.0 License

Releases

11 tags Create a new release

Packages

No packages published Publish your first package

Contributors 16

+ 5 contributors

<https://github.com/balenablocks/balena-node-red>





Deploy with balena



balena dashboard | Fleets

https://dashboard.balena-cloud.com/fleets?0[0][n]=any&0[0][o]=full\_text\_search&0[0][v]=node

Getting Started Docs Forums Status Marc Pous MP

Fleets

Create fleet Add filter

Search entries...

Views Tags Actions

Save as view

Filters (1) Clear all

Any field contains node

Name Device

- nodeRED-mqtt Raspberry Pi 4
- nodered-32 Raspberry Pi 4
- nodeRed Banana Pi
- balena-nodered Raspberry Pi 4
- balena-nodered Raspberry Pi 4

Create and deploy to fleet

Use an existing fleet instead

Organization Marc Pous / Fleet balena-node-red

Default device type Raspberry Pi 4 (using 64bit OS)

Fleet type Starter

Advanced

Cancel Create and deploy

Configuring devices Updating devices Of

Configuring devices	Updating devices	Of
0	0	0
0	0	0
0	0	1
0	0	0
0	0	0

1 - 5 of 5 < >

Get help



balena dashboard | balena-node-red

https://dashboard.balena-cloud.com/fleets/1775767/summary

Getting Started Docs Forums Status Marc Pous MP

### balenaCloud

- Organizations
- Marc Pous
- Fleets
- balena-nodered

#### Summary

**balena-nodered**

Architecture arch64

Slug marc6/balena-nodered

Created Dec 21st 2020, 9:27 pm

Microservices

#### Devices

0

You don't have any devices yet.  
How about adding one?

+ Add device

#### Releases

1

Default Track latest

Build 3fd8322 in progress

balena-node-red Learn more

Create release

Devices

Releases

Variables

Configuration

Actions

Settings

Members

Teams

Location

Need help



balena dashboard | balena-node X +

https://dashboard.balena-cloud.com/fleets/1775767/summary

Getting Started Docs Forums Status Marc Pous MP ▾

Organizations Marc Pous Fleets balena-nodered

Summary Devices Releases Variables Configuration Actions Settings Members Teams Location

balena-nodered

Add new device

Select device type: Raspberry Pi 4

Select OS type: balenaOS ESR

Select version: v2021.07.1 (next, recommended)

Show outdated versions

Select edition:

- Development 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.
- Production  
Production images are ready for production deployments, but don't offer easy access for local development.

Network Connection:

- Ethernet only
- Wifi + Ethernet

+ Advanced

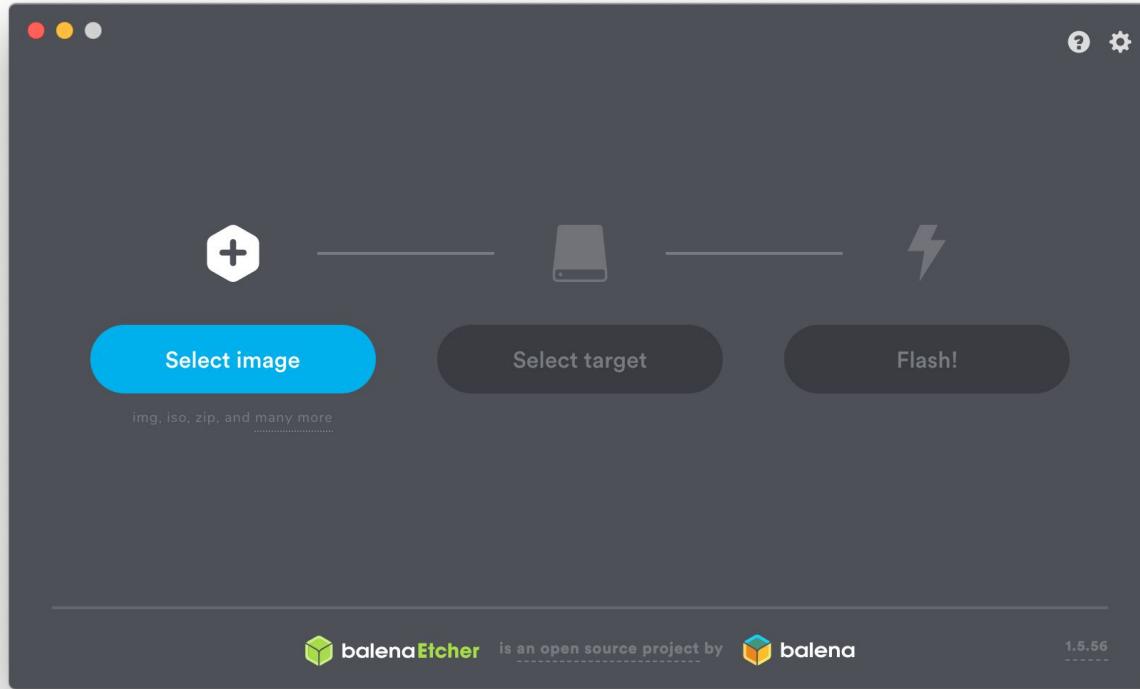
Download balenaOS

Instructions

- 1 Use the form on the left 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 fleet in the dashboard within a few minutes. Have fun!

For more details please refer to our [Getting Started Guide](#).





balena dashboard | blue-frog-pi3 X +

https://dashboard.balena-cloud.com/devices/8ea80db2ac939f9055fa7cffff3e41ba/summary

Getting Started Docs Forums Status Marc Pous MP ▾

### blue-frog-pi3

**STATUS** Online **UUID** 8ea80db ⓘ **TYPE** Raspberry Pi 3 (using 64bit OS)

**ONLINE FOR** 14 minutes **HOST OS VERSION** balenaOS 2.80.3+rev1 **SUPERVISOR VERSION** 12.7.0

**CURRENT RELEASE** Se7371a ⓘ **TARGET RELEASE** Se7371a

**LOCAL IP ADDRESS** 192.168.1.47 ⓘ **PUBLIC IP ADDRESS** 88.11.209.109 ⓘ **MAC ADDRESS** B8:27:EB:F8:7C:38 ⓘ B8:27:EB:AD:29:6D ⓘ

**PUBLIC DEVICE URL** **TAGS (0)** No tags configured yet **NOTES** Add device notes...

**SERVICES**

Service	Status	Release
node-red	Running	Se7371a

**CPU** ~3% **Temperature** ~56C **Memory** 404 MB/962 MB **Storage** 731 MB/13.8 GB

**Logs** UTC Timestamps

22.10.21 18:38:31 (+0200) node-red Welcome to Node-RED  
=====  
22.10.21 18:38:31 (+0200) node-red 22 Oct 16:38:31 - [info] Node-RED version: v2.1.1  
22.10.21 18:38:31 (+0200) node-red 22 Oct 16:38:31 - [info] Node.js version: v12.22.7  
22.10.21 18:38:31 (+0200) node-red 22 Oct 16:38:31 - [info] Linux 5.4.83-v8 arm LE  
22.10.21 18:38:34 (+0200) node-red 22 Oct 16:38:34 - [info] Loading palette nodes  
22.10.21 18:38:43 (+0200) node-red 22 Oct 16:38:43 - [warn] -----

**Terminal** Select a target ▾ Start terminal session



balena dashboard | blue-frog-pi X balena Node-RED : Bea80db2ac939f9055fa7cff1f3e41ba.balena-devices.com/#flow/b9679144edb4cd8f +

https://Bea80db2ac939f9055fa7cff1f3e41ba.balena-devices.com/#flow/b9679144edb4cd8f

balena Node-RED

Flow 1

Deploy

debug

all nodes all

filter nodes

csv

html

json

xml

yaml

storage

write file

read file

watch

balena

blink

device

ping

restart

reboot

shutdown

purge

lock

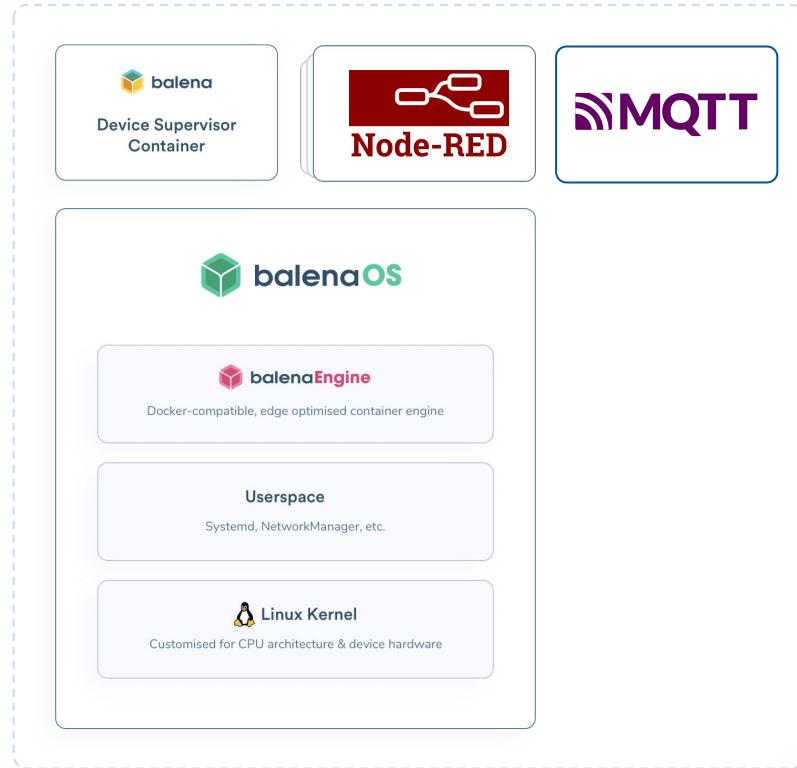
unlock

update

The screenshot shows the balena Node-RED interface running on a device. The sidebar on the left contains three sections: 'filter nodes' at the top, followed by 'storage' and 'balena'. Under 'storage', there are three nodes: 'write file', 'read file', and 'watch'. Under 'balena', there are nine nodes: 'blink', 'device', 'ping', 'restart', 'reboot', 'shutdown', 'purge', 'lock', and 'unlock'. The main canvas area is titled 'Flow 1' and currently contains no nodes. The top right corner of the interface includes a 'Deploy' button, a 'debug' panel, and a status bar with 'all nodes' and 'all' buttons.



# Remember?



balenaHub: an easier way to fin × +

https://hub.balena.io/projects?0%5B0%5D%5Bn%5D=any&0%5B0%5D%5Bo%5D=full\_text\_search&0%5B0%5D%5Bv%5D=node

Add your Project or Fleet before November 30th 2021 to enter the balenaHub Challenge for the chance of getting your project featured on Etcher and winning £2.5k in cash! Click to find out more

What is balenaHub? Contribute Community CHALLENGE

Fleets Projects Blocks

Publish a project Add filter

node Views Save as view

Filters (1) Clear all Any field contains node

**nodeRED-mqtt** by Marc Pous

Build a Node-RED application with MQTT mosquito along with the balena flow. Manage the Node-RED UI remotely via balena Public

WORKS WITH

balenaHub A project by balena.io

Twitter Facebook Instagram YouTube Terms of use

[https://hub.balena.io/projects?0%5B0%5D%5Bn%5D=any&0%5B0%5D%5Bo%5D=full\\_text\\_search&0%5B0%5D%5Bv%5D=node](https://hub.balena.io/projects?0%5B0%5D%5Bn%5D=any&0%5B0%5D%5Bo%5D=full_text_search&0%5B0%5D%5Bv%5D=node)



balenaHub: an easier way to fin × +

https://hub.balena.io/marc6/nodered-mqtt

Add your Project or Fleet before November 30th 2021 to enter the balenaHub Challenge for the chance of getting your project featured on Etcher and winning £2.5k in cash! Click to find out more

What is balenaHub? Contribute Community CHALLENGE

Fleets Projects Blocks

← Back to Projects

## nodeRED-mqtt

by Marc Pous

Description

Build a Node-RED application with MQTT mosquitto along with the balena flow. Manage the Node-RED UI remotely via balena Public Device URL.

Works With

Version - View code | last updated at: 23 Oct 2021

Share this Twitter LinkedIn

Fork this fleet Report issue

### Usage instructions

For running Node-RED, use the local IP address on port 80, if you are on the same network than your device. You also can use the Public Device URL by balena to access to the Node-RED UI. Use balena as Username and Password to access to the Node-RED UI. You can change this variables on the Device Variables. Find more instructions on the [Github repository](#).

### More from Marc Pous

#### basicstation-gateway-TTS

by Marc Pous

Deploys The Things Stack LoRaWAN gateway with Basics Station Packet Forward protocol on SX1301 or SX1302 LoRa concentrators.

WORKS WITH

helium-data-hotspot

by Marc Pous

Deploys the Helium Data Only Hotspot that doesn't mine any HNT

WORKS WITH

<https://hub.balena.io/marc6/nodered-mqtt>



Version - [View code](#) | last updated at: 23 Oct 2021

 [Fork this fleet](#)

[Report issue](#)

<https://hub.balena.io/marc6/nodered-mqtt>



mpous/balena-nodered-mqtt

https://github.com/mpous/balena-nodered-mqtt

Search or jump to... Pull requests Issues Marketplace Explore

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

master 1 branch 0 tags Go to file Add file Code

mpous tunned for the nodered con 2021 d643cf1 16 minutes ago 81 commits

.versionbot v2.3.1 5 hours ago

node-red Merge branch 'master' of github.com:balenablocks/balena-node-red 5 hours ago

.gitignore initial release 5 years ago

CHANGELOG.md v2.3.1 5 hours ago

LICENCE initial release 5 years ago

README.md tunned for the nodered con 2021 16 minutes ago

VERSION v2.3.1 5 hours ago

balena.yml v2.3.1 5 hours ago

docker-compose.yml tunned for the nodered con 2021 16 minutes ago

logo.png Add files via upload 11 hours ago

repo.yml Add versioning information and repo.yml 2 years ago

About No description, website, or topics provided.

Readme Apache-2.0 License

Releases No releases published Create a new release

Packages No packages published Publish your first package

Contributors 16 + 5 contributors

Languages JavaScript 95.2% Shell 4.8%

Node-RED and MQTT mosquitto running on balena

This is a project based on the [balena Node-RED block](#) which supports the Node-RED [balena flow](#). It can be managed remotely via [balena publicURL](#).

## Requirements

### Hardware

- Raspberry Pi 0/2/3/4 or [balenaFin](#)
- SD card in case of the RPI 3/4



balena dashboard | nodered-con-2021 +

https://dashboard.balena-cloud.com/fleets/1874947/summary

Getting Started Docs Forums Status Marc Pous MP ▾

Organizations Marc Pous Fleets nodered-con-2021 Summary Devices Releases Variables Configuration Actions Settings Members Teams Location

**nodered-con-2021**

 Architecture arch64  
Slug marc6/nodered-con-2021  
Created Oct 22nd 2021, 10:51 am  
Microservices

**Devices** 3

Online Config Updating Offline Post prov Inactive

Name	Status	Device type	Last seen	UUID	OS version	OS variant	Supervisor version	IP address	Public address	
blue-frog-pi3	✓ Online	Raspberry Pi 3 (using 64bit OS)	Online (for 2 hours)	8ea80db	balenaOS 2.80.3+rev1	Production	12.7.0	192.168.1.47	192.168.1.42	88.11.209.109
straight-from-India	✓ Online	Raspberry Pi 3 (using 64bit OS)	Online (for 3 hours)	3812cd9	balenaOS 2.80.3+rev1	Production	12.7.0	192.168.1.36		122.161.53.152
little-desert-pi4	✓ Online	Raspberry Pi 4 (using 64bit OS)	Online (for 14 hours)	edf80ea	balenaOS 2.85.2+rev3	Development	12.10.10	192.168.1.41		88.11.209.109

**Releases** 21

Default Track latest

 balena-node-red Learn more

Create release

Add device Tags Actions

Need help



balena dashboard | Fleets

https://dashboard.balena-cloud.com/fleets/1874947/fleet

Getting Started Docs Forums Status Marc Pous MP

Fleet location

Map Hybrid

The map displays the following geographical features and labels:

- North America: Canada, United States, Mexico.
- Europe: Greenland, Iceland, Norway, Sweden, Finland, United Kingdom, Ireland, Poland, Belorus, Germany, France, Spain, Portugal, Italy, Greece, Turkey, Morocco, Algeria, Libya, Egypt, Syria, Iraq, Iran, Afghanistan, Pakistan.
- Africa: Mauritania, Mali, Niger, Nigeria, Chad, Sudan, South Sudan, Ethiopia, Somalia, Kenya, Tanzania, DRC, Angola, Zambia, Mozambique, Namibia, Zimbabwe, Botswana, Madagascar.
- Asia: Russia, Mongolia, China, South Korea, Japan, India, Nepal, Myanmar (Burma), Thailand, Vietnam, Philippines, Malaysia, Indonesia, Papua New Guinea.
- Oceans and Seas: North Atlantic Ocean, South Atlantic Ocean, Indian Ocean, Arctic Ocean, Bering Sea, Sea of Okhotsk, Sea of Japan, East China Sea, South China Sea, Gulf of Thailand, Gulf of Aden, Arabian Sea, Laccadive Sea, Bay of Bengal, Coral Sea.

Google

Keyboard shortcuts Map data ©2021 Google, INEGI Terms of Use

Need help



balena dashboard | little-desert X +

https://dashboard.balena-cloud.com/devices/edf80ea2dcf441c2bbbc2b83cecc0352/summary

Getting Started Docs Forums Status Marc Pous MP ▾

### little-desert-pi4

**STATUS** Online **UUID** edf80ea ⓘ **TYPE** Raspberry Pi 4 (using 64bit OS)

**ONLINE FOR** 14 hours **HOST OS VERSION** balenaOS 2.85.2+rev3 **SUPERVISOR VERSION** 12.10.10

**CURRENT RELEASE** 117a68e ⓘ **TARGET RELEASE** 117a68e ⓘ

**LOCAL IP ADDRESS** 192.168.1.41 ⓘ **PUBLIC IP ADDRESS** 88.11.209.109 ⓘ **MAC ADDRESS** DC:A6:32:55:4B:34 ⓘ DC:A6:32:55:4B:35 ⓘ

**PUBLIC DEVICE URL** [Toggle](#) [Copy](#)

**TAGS (0)** [Edit](#)  
No tags configured yet

**NOTES**  
[Add device notes...](#)

**SERVICES**

Service	Status	Release	Actions
mqtt	Running	117a68e	<a href="#">Start</a> <a href="#">Stop</a> <a href="#">Restart</a> <a href="#">Logs</a>
node-red	Running	117a68e	<a href="#">Start</a> <a href="#">Stop</a> <a href="#">Restart</a> <a href="#">Logs</a>

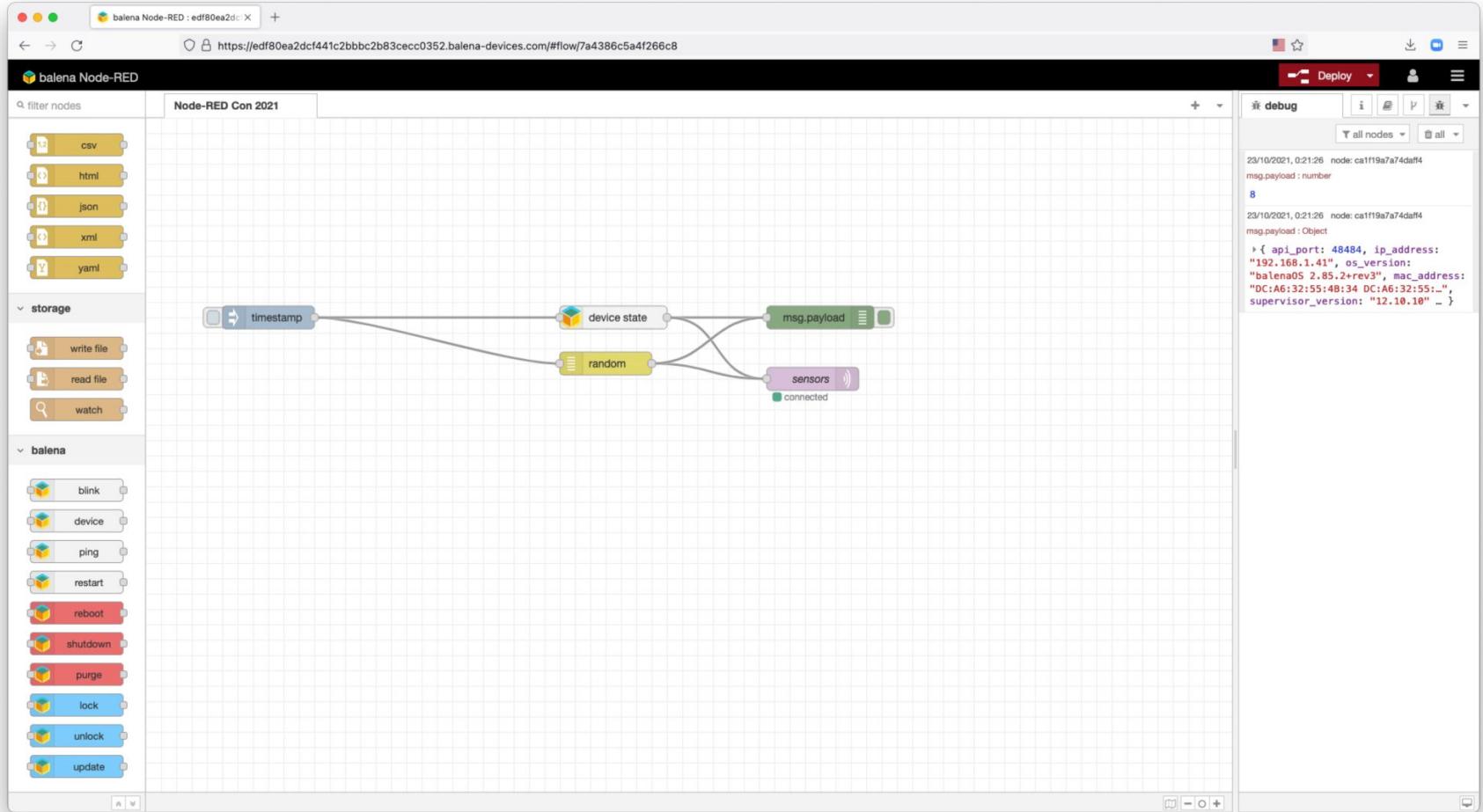
**CPU** ~2% **Temperature** ~55C **Memory** 500 MB/3.8 GB **Storage** /dev/mmcblk0p6 618 MB/13.5 GB

**Logs** UTC Timestamps [Add filter](#) [Search entries...](#) Views

```
23.10.21 00:20:12 (+0200) mqtt 1634941212: Client nodered_da5b41b2ad4c44 disconnected.  
23.10.21 00:20:12 (+0200) node-red 22 Oct 22:28:12 - [info] Stopped flows  
23.10.21 00:20:12 (+0200) node-red 22 Oct 22:28:12 - [info] Starting flows  
23.10.21 00:20:12 (+0200) node-red 22 Oct 22:28:12 - [info] Started flows  
23.10.21 00:20:12 (+0200) mqtt 1634941212: New connection from 127.0.0.1:56706 on port 1883.  
23.10.21 00:20:12 (+0200) mqtt 1634941212: New client connected from 127.0.0.1:56706 as nodered_1f1367a01d9fe3b1 (p2, c1, k60).  
23.10.21 00:20:12 (+0200) node-red 22 Oct 22:28:12 - [info] [matt-broker:7f4136e95a83bf74] Connected to broker: matt://localhost:1883
```

**Terminal** Select a target [Start terminal session](#)





A screenshot of a GitHub repository page for "balena-nodered-mqtt" (Public). The URL in the address bar is <https://github.com/mpous/balena-nodered-mqtt/tree/master/node-red/app/flows>.

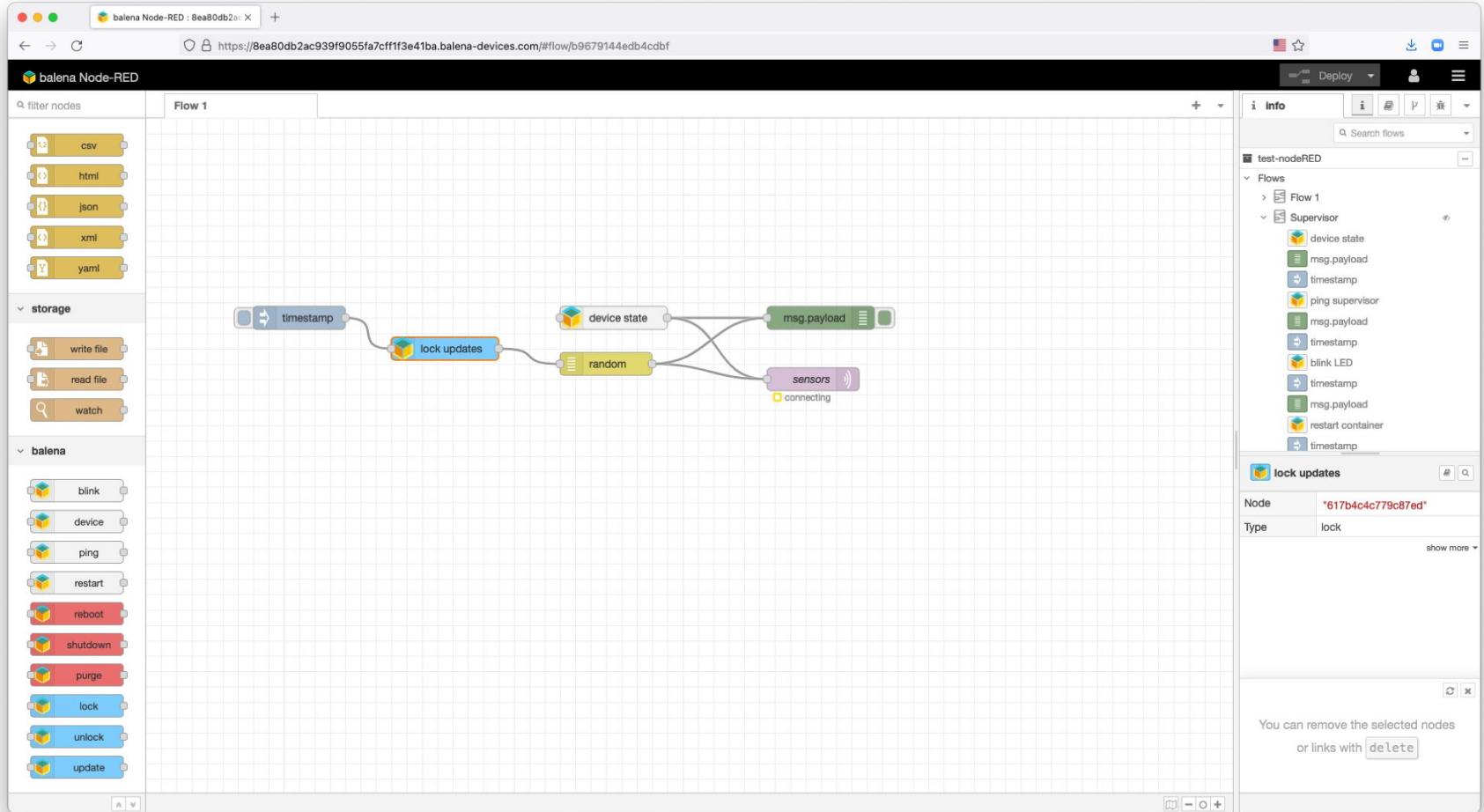
The repository navigation bar includes links for Pull requests, Issues, Marketplace, and Explore. The repository name "mpous / balena-nodered-mqtt" is shown, along with options to Unwatch (1), Star (0), or Fork (0).

The main content area shows the "Code" tab selected, displaying the "flows" directory under the "master" branch. A file tree shows "balena.json" and "nodered-con.json". The "balena.json" file was last modified by "mpous" 2 years ago, with the commit message "refactor to multicontainer and balena assets". The "nodered-con.json" file was last modified by "mpous" 2 hours ago, with the commit message "Last details README balenayml".

At the bottom of the page, there are links for GitHub's footer: © 2021 GitHub, Inc., Terms, Privacy, Security, Status, Docs, Contact GitHub, Pricing, API, Training, Blog, and About.

<https://github.com/mpous/balena-nodered-mqtt/tree/master/node-red/app/flows>





<https://github.com/balenalabs-incubator/node-red-contrib-balena>



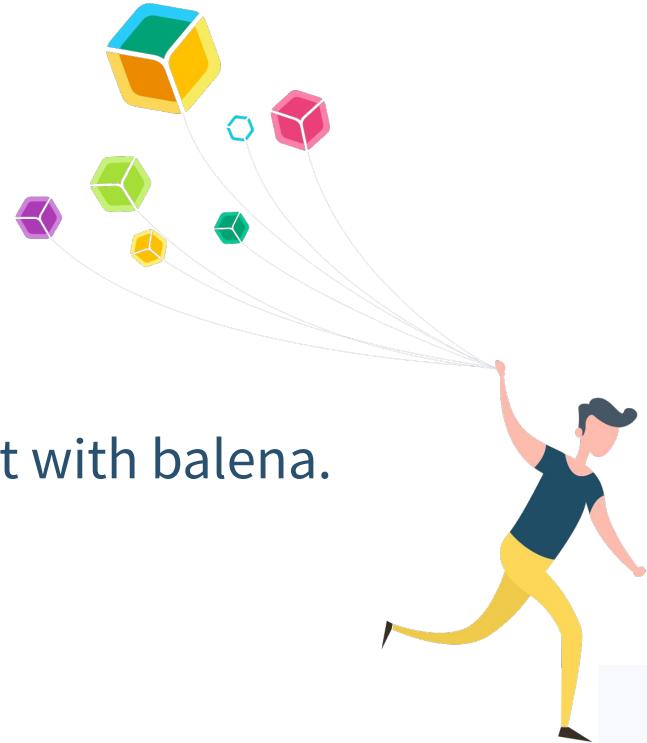
Ok! Let's wrap-up!

# Take Away

Deploy Node-RED on a Pi in just 1 click.

Alternatives to Node-RED Projects.

Add and maintain more services on your fleet with balena.





balena **Hub**

# CHALLENGE

Submit your IoT project now.

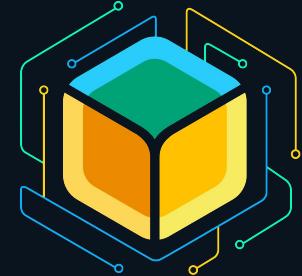


For your chance to be featured on balenaEtcher and win up to \$2,500

<https://hub.balena.io/challenge>



Node-RED Con  
2021



# Continuous Delivery of Node-RED flows with balena

Marc Pous - Developer Advocate at balena

23rd October 2021

 Node-RED Con  
2021