



Protect the datacenter with IoT

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Agenda

Introduction

IoT all the things
Achievement unlocked
Building the hack

Live Demo

Real-time alerts
Supported by
Pimoroni

Feedback

Q&A
Github repo

IoT all the things



dockercon 16

Achievement unlocked

Build a Pi cluster with Docker Swarm

Combine the power and resources of your Raspberry Pis by building a Swarm with Docker



Alex Ellis
is a professional developer who got inspired by Linux and the Raspberry Pi and has never looked back. He is always writing up tutorials, tinkering with robots, writing tutorials or simply writing code.

Docker is a framework and toolchain used to configure, build and deploy containers on Linux. Containers provide a means to package up an application and all its dependencies into a single unit. This makes them easy to share and ship anywhere, giving a lightweight and repeatable environment.

Each application runs in its own isolated space sharing the host's kernel and resources, in contrast to a virtual machine which needs to ship with a full operating system. A Docker container can be started or stopped within a second, and can scale to large numbers while having minimum overhead on the host's resources.

The Docker community has built out a clustering solution called Swarm which, as of version 1.0, is claimed to be "production ready". Our single Raspberry Pi has 1GB RAM and four cores, but given five boards we have 20 cores and 5GB RAM available. Swarm can help us distribute our load across them.

Get ready to install Arch Linux, compile Docker 1.8.1 from source, build some images and then start up your own swarm for the first time.

01 Install Arch Linux to an SD card

Go to Arch Linux ARM's landing page for the Pi2 and click the installation tab. [361y70y0yL5](#). You will need to carry out some manual steps on a Linux computer. Follow the instructions to first download the base system tar.gz archive, flash the card and create vfat (boot) and ext4 (root) filesystems. Then, expand the base system onto the card. Finally, unmount the partitions. This will take a while as the card finishes syncing.

02 Configure the users

Once the Pi has booted up you can log in with a keyboard as root/foot and then change the password. You may also want to remove the standard user account called "steam" and create your own. Here we've used "jul" as our account name:

```
# passwd root
# useradd jul -s /s /bin/bash -G wheel
# passwd jul
# userdel steam
```

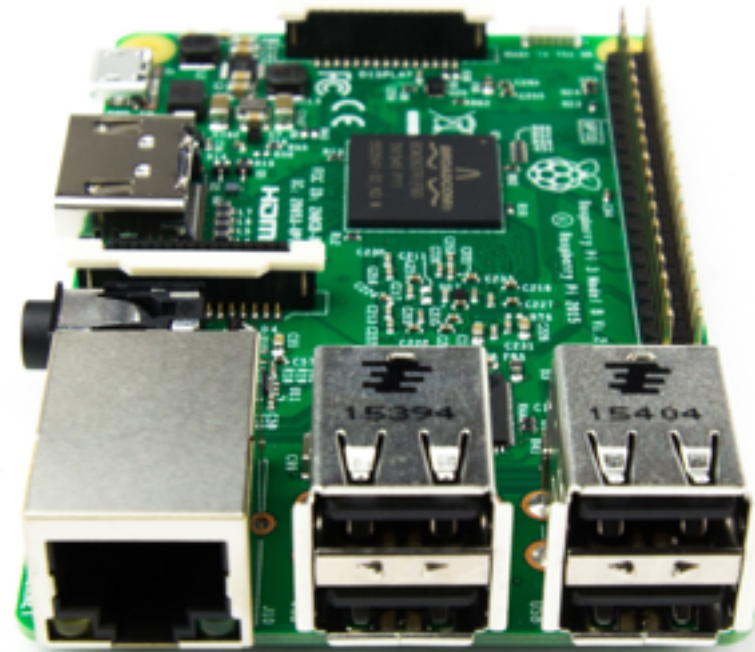


Building the hack

Picking the SoC

Pi Zero 5 USD micro-computer

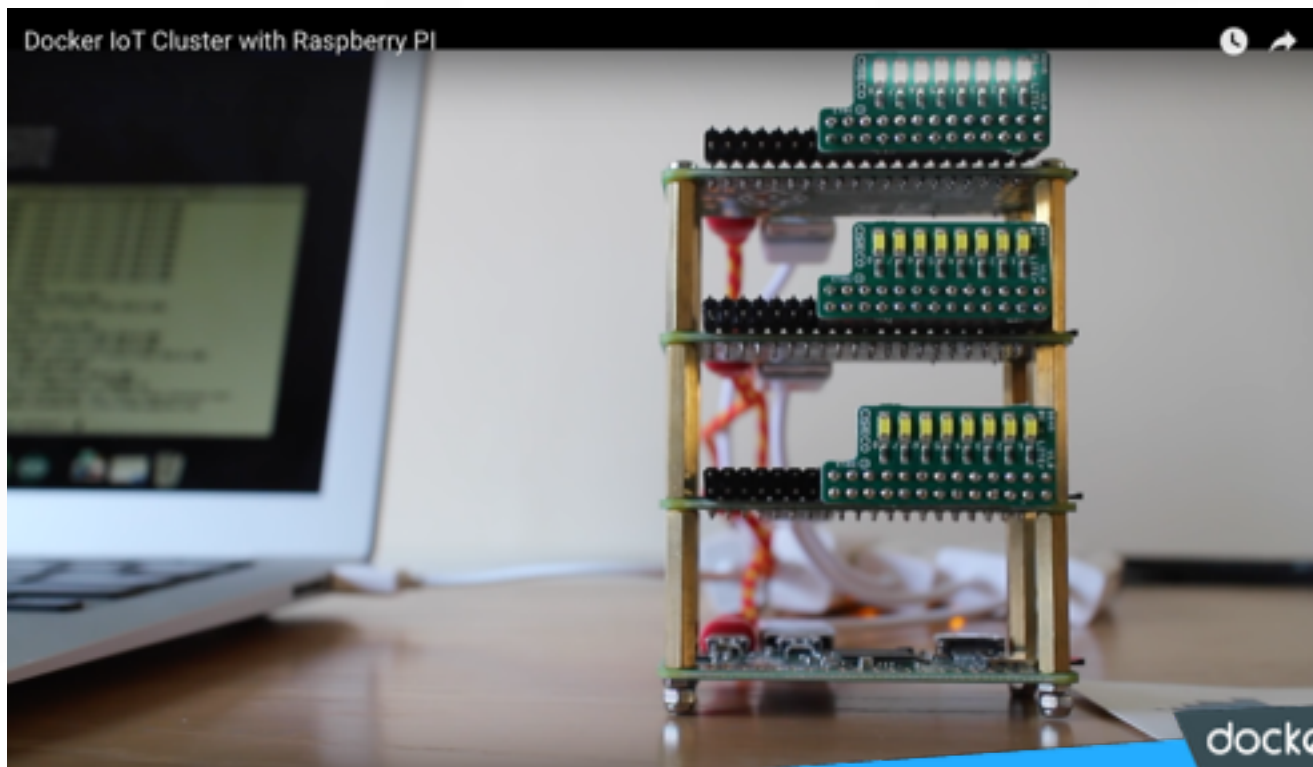
- **1GHz processor**
- **512MB RAM**



Pi 2/3 4-5x cost

- **4x 1.2GHz processor**
- **1GB RAM**

Attempt #1



Attempt #1



Solomon Hykes

@solomonstre



Following

@alexellisuk @Mythic_Beasts @docker that is
AWESOME :)

LIKE

1



2:02 AM - 17 May 2016



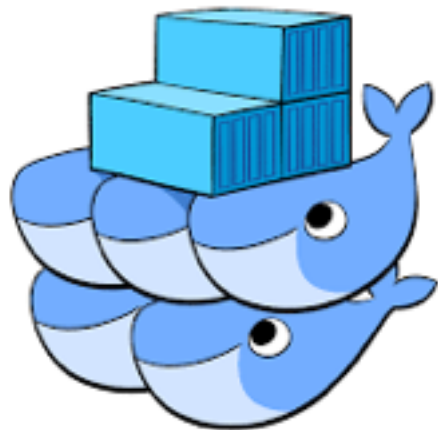
dockercon 16

Building a new hack

Software



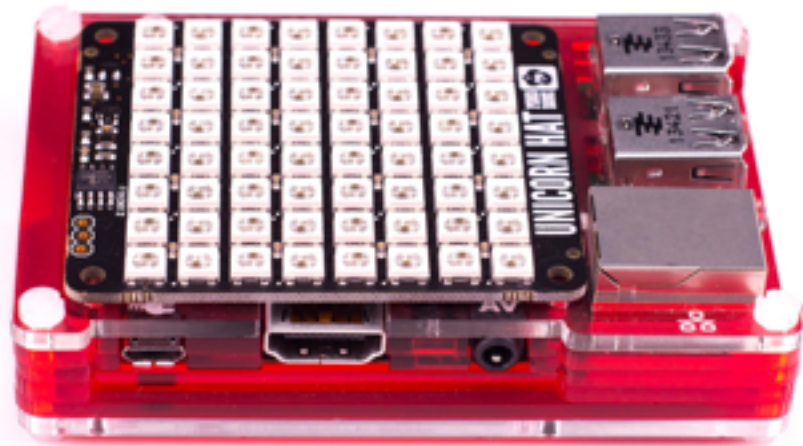
redis



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Building a new hack

HATs from Pimoroni



Demo



Q&A

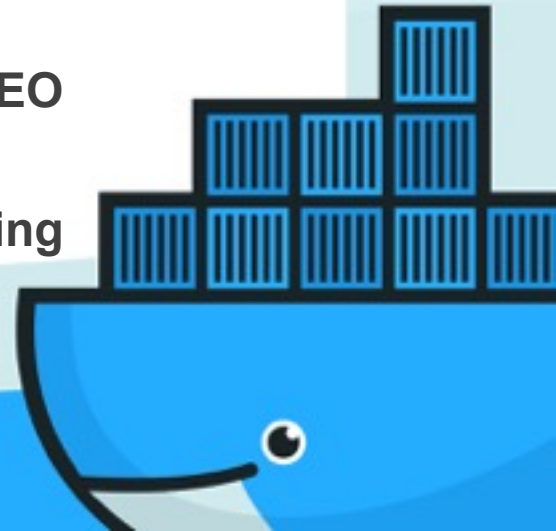
Source code on Github:

<https://github.com/alexellis/datacenter-sensor>

“We expected to sell a few thousand Raspberry Pis”

— Eben Upton, CEO

Raspberry Pi Trading



Thank you!

