



Building a Docker Swarm on ARM

Dieter Reuter @quintus23m
Senior Consultant, SEAL Systems

Stefan Scherer @stefscherer
Software Engineer, SEAL Systems

Agenda

Hardware

Pi's
Switch
Power supply

Software

SD card image
flash
docker-machine

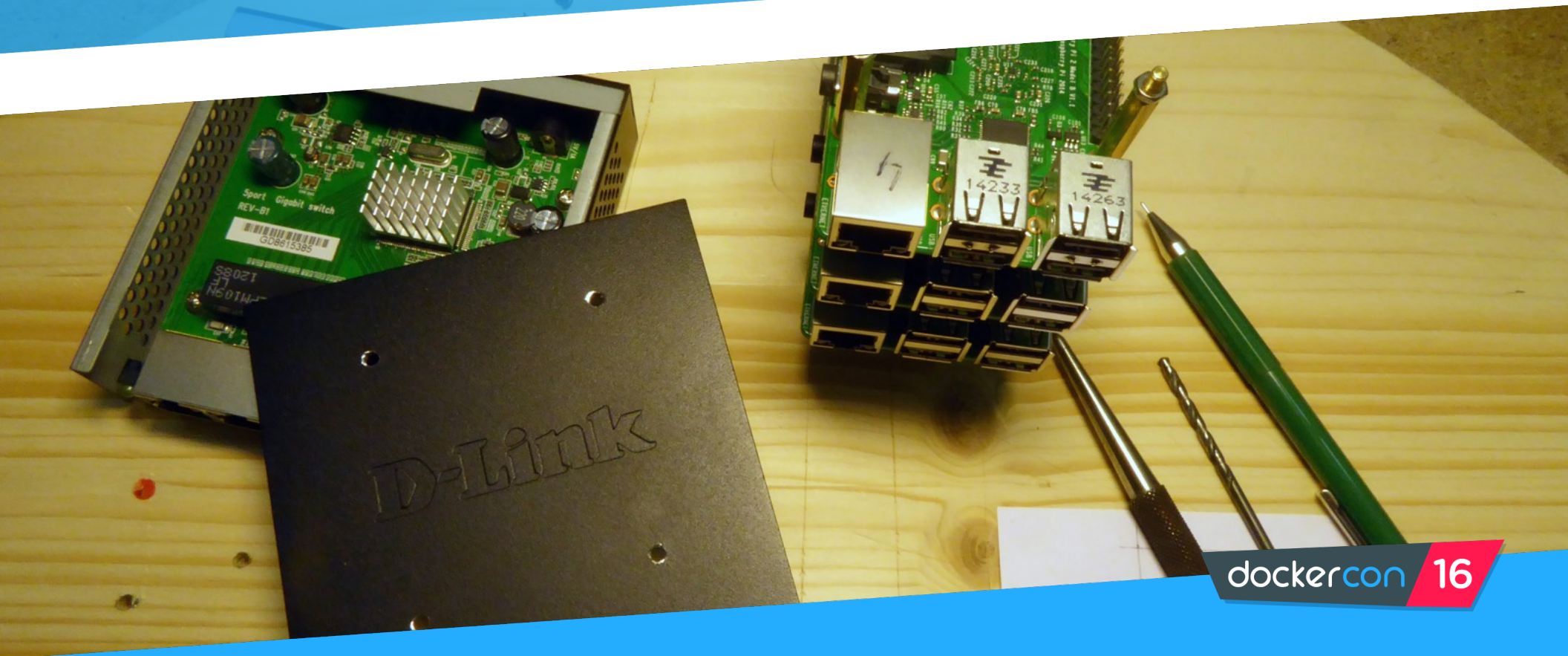
Demo

docker-compose

Why?

- Education
- Learning cloud principles
- Hands-on cluster

Build Hardware



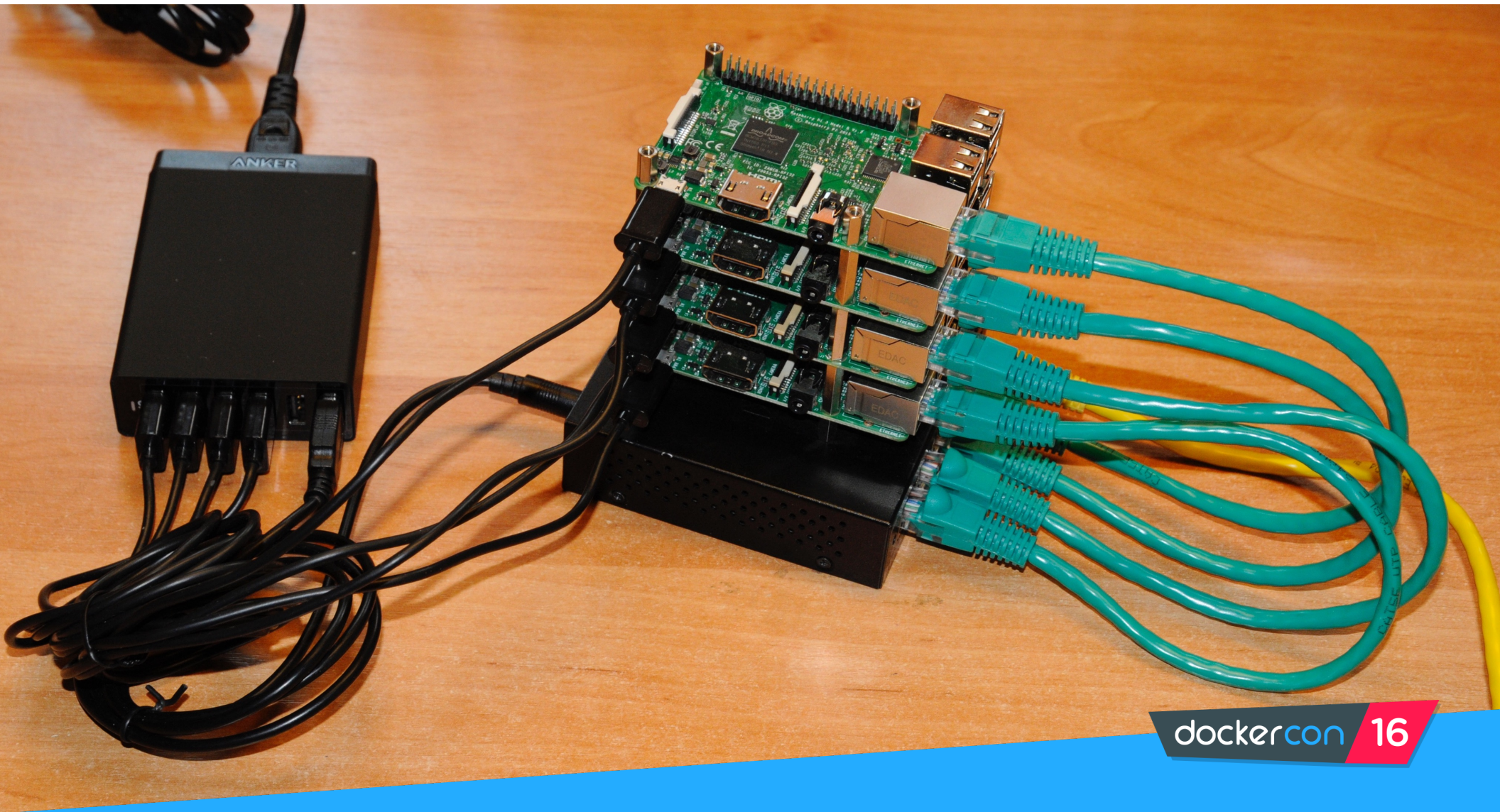
Build Hardware

Parts list

For a four node swarm.

- 4x Raspberry Pi 2/3
- 5 port switch with 5V
- 6x USB power supply
- Distant bolts 2.5mm
- 4x micro USB cable
- 1x 5.5mm barrel USB
- 4x flat patch cable
- 4x Micro SD cards





HypriotOS

Get started with Docker
in 5 minutes

Flash HypriotOS

For Linux and Mac

Small helper script to do all these in just one command:

- **Download the SD card image**
- **Uncompress it**
- **Set hostname for device**
- **Set WiFi**

Flash HypriotOS

```
$ flash \  
  --hostname swarm01 \  
  --ssid wifipsk \  
  --password wifipwd \  
  https://downloads.hypriot.com/hypriotos-rpi-v0.8.0.img.zip  
  
# repeat for swarm02..swarm04
```

Find your Pi

```
$ ping swarm01.local
```

Add your SSH key

```
$ ssh-keygen -R swarm01.local
```

```
$ ssh-copy-id pirate@swarm01.local
```

```
# repeat for swarm02..swarm04
```

... some plumbing code

```
$ export TOKEN=$(for i in $(seq 1 32); do echo -n $(echo \  
"obase=16; $((($RANDOM % 16))" | bc); done; echo) \  
$ function getip() { (traceroute $1 2>&1 | head -n 1 | \  
cut -d\  
-f 2 | cut -d\  
-f 1) }
```

Create Docker Swarm manager

```
$ docker-machine create -d generic \  
  --engine-storage-driver=overlay --swarm --swarm-master \  
  --swarm-image hypriot/rpi-swarm:latest \  
  --swarm-discovery="token://$TOKEN" \  
  --generic-ip-address=$(getip swarm01.local) \  
  swarm01
```

Create Docker Swarm nodes

```
$ docker-machine create -d generic \  
  --engine-storage-driver=overlay --swarm \  
  --swarm-image hypriot/rpi-swarm:latest \  
  --swarm-discovery="token://$TOKEN" \  
  --generic-ip-address=$(getip swarm02.local) \  
  swarm02
```

```
# repeat for swarm03..swarm04
```

Control your Docker Swarm

```
$ eval $(docker-machine env --swarm swarm01)
```

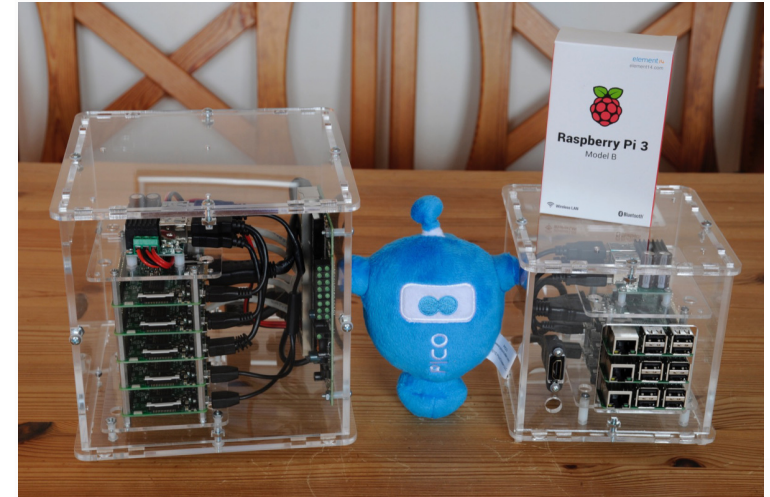
```
$ docker info
```

Demo Time

Examples

- Self made cluster
- Pico Cluster
- BitScope Blade

Your ideas?



Further Links

- <http://blog.hypriot.com>
- <http://picocluster.com>
- <http://bitscope.com/product/blade>

Thank you!

@quintus23m
@stefscherer

@HypriotTweets

