



RESIN.(IO|OS)

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DOCKER & KUBERNETES MEETUP FEB 2018



WHO AM I?

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- IT
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OVERVIEW

- Introduction
- resin.io
- resinOS
- balena



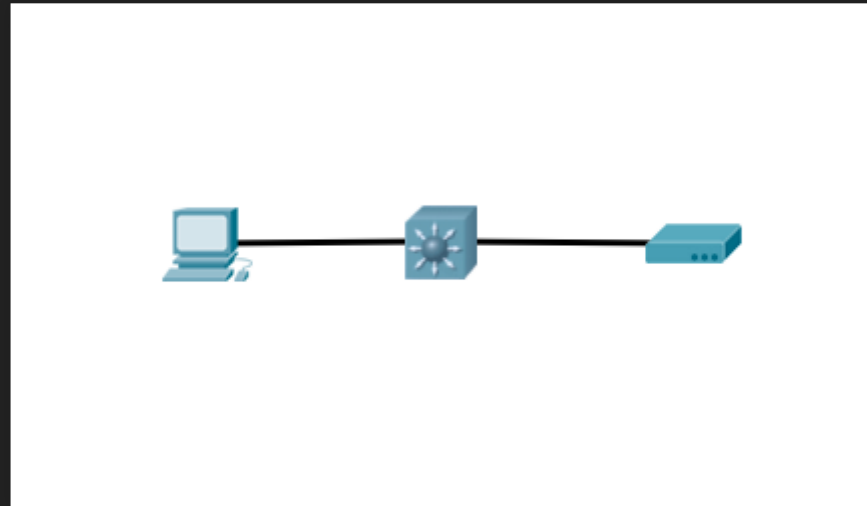
INTRO

IoT Devices - in the net

Imagine: Your small Linux IoT Device.

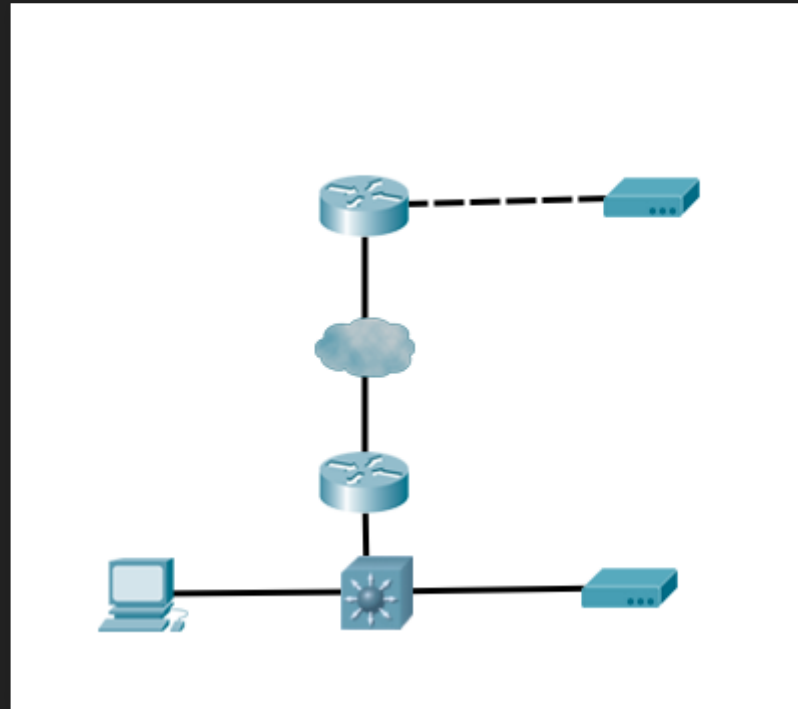


INTRO: DEFAULT LAN

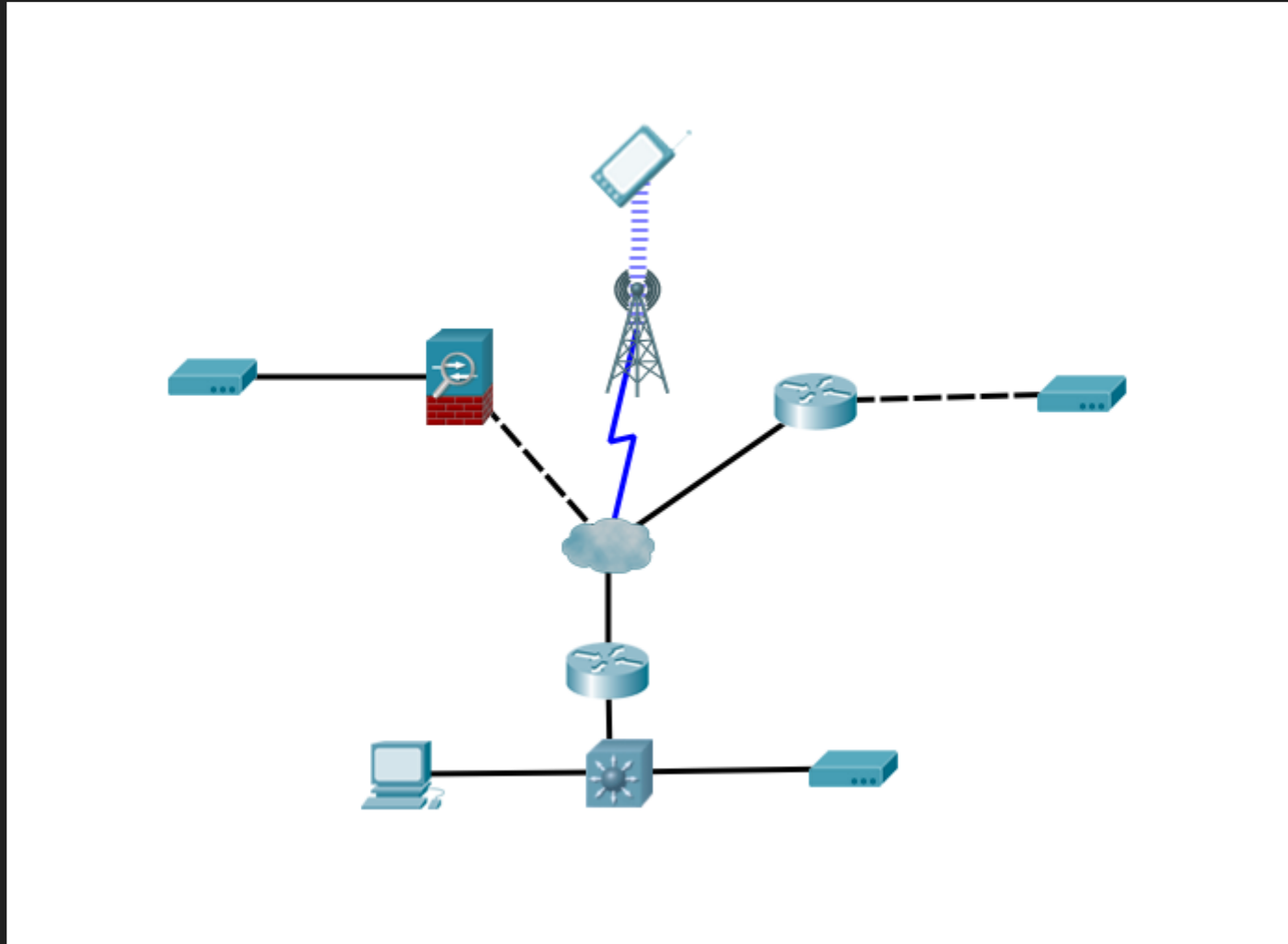




INTRO: DEFAULT WAN



INTRO: COMPLEX WAN





INTRO: HOW TO UPDATE?

- VPN tunnel
- reverse ssh
- wget
- via cronjob?
- Download of binary blob
- Checkout from Git Repo
- ...



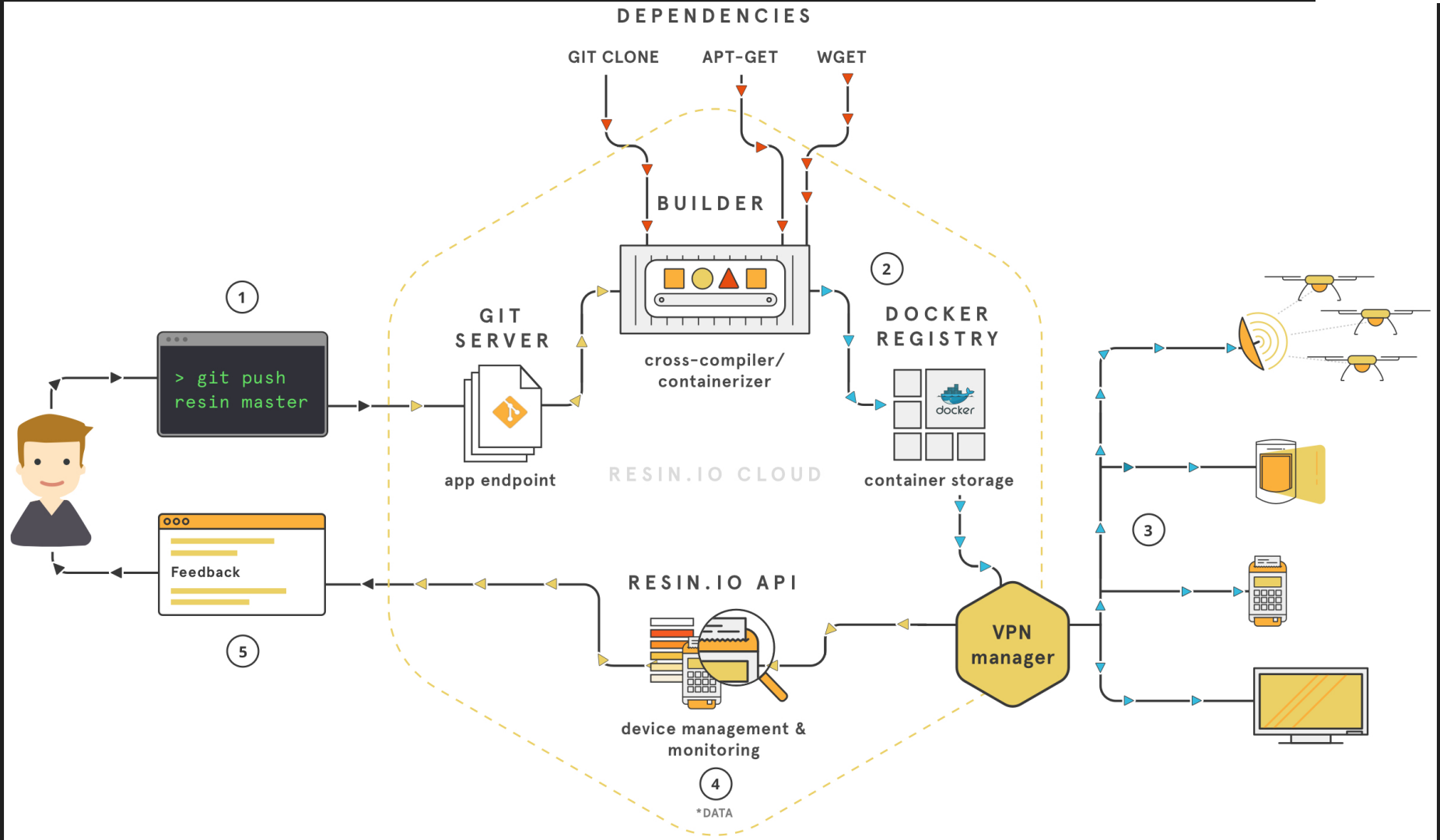
INTRO: PROBLEMS?

- Router/Firewall blocks access
- Connection drops
- Transfer errors
- Updatescript is corrupted during self-update
- Updatescript contains errors and does not connect
- App itself contains errors and blocks the device

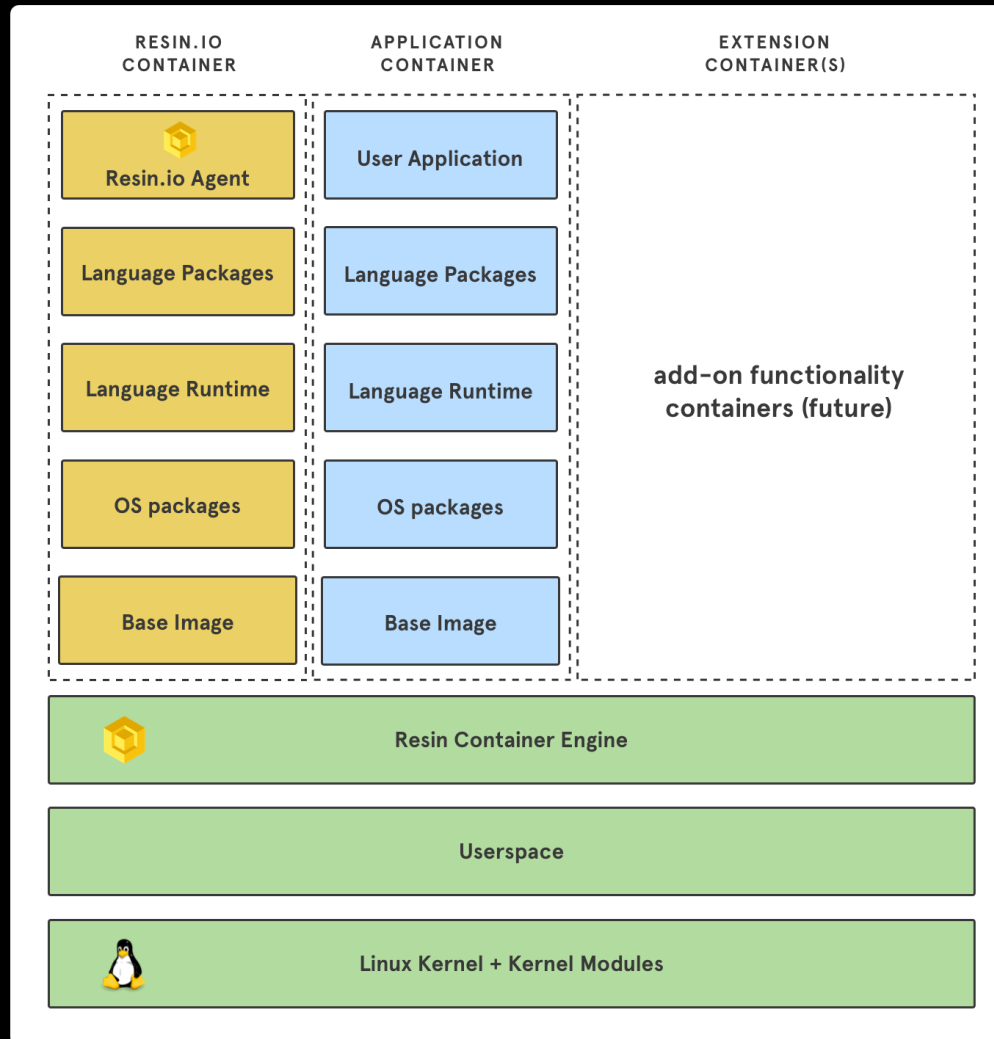


IoT| software deployment done right

RESIN.IO: SYSTEM OVERVIEW



RESIN.IO: OS OVERVIEW





RESIN.IO: HANDS-ON

Demotime!

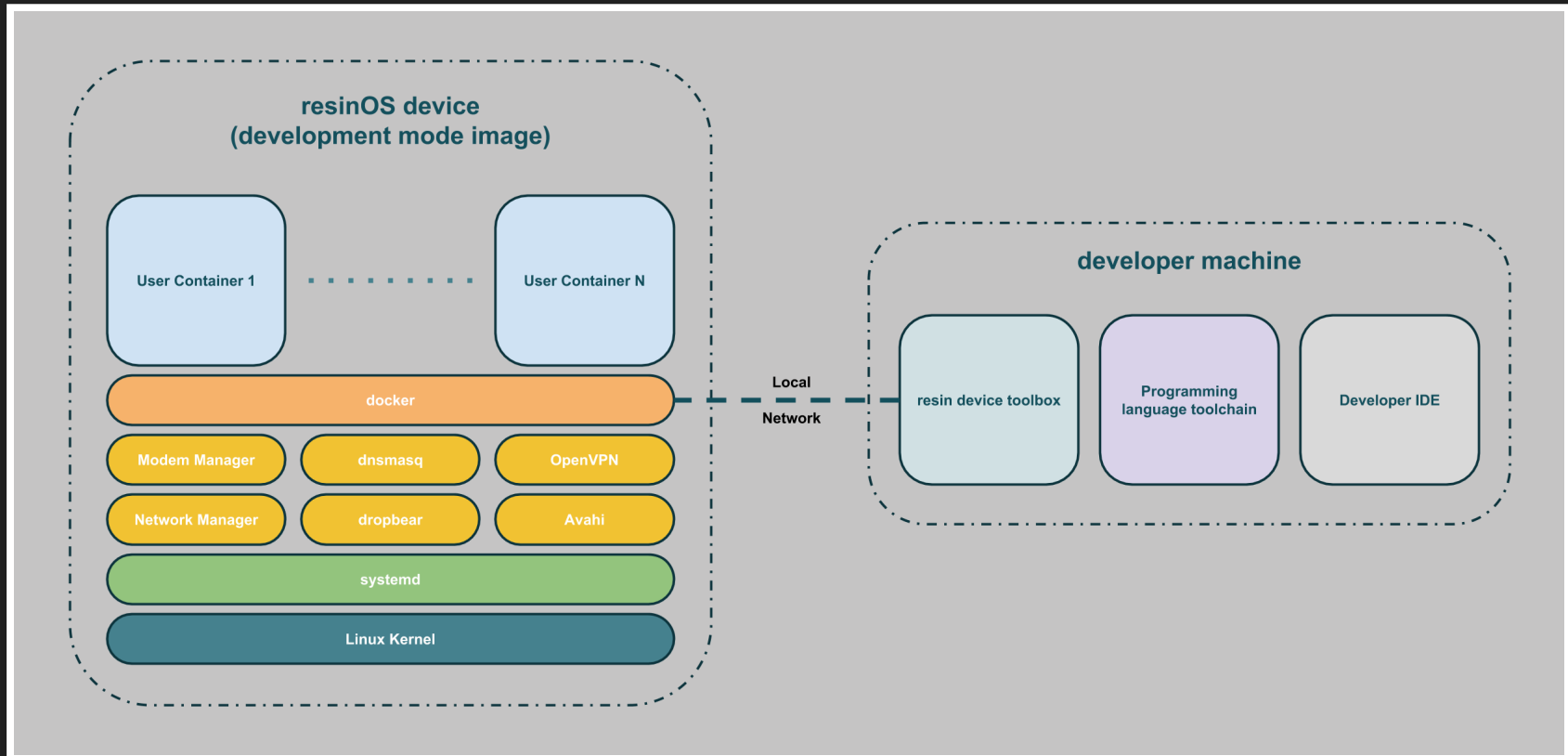
<https://github.com/resin-io-playground/ChristmasLights>

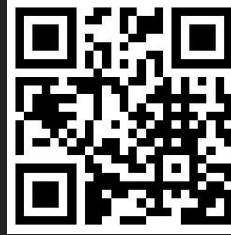


Docker containers on embedded devices

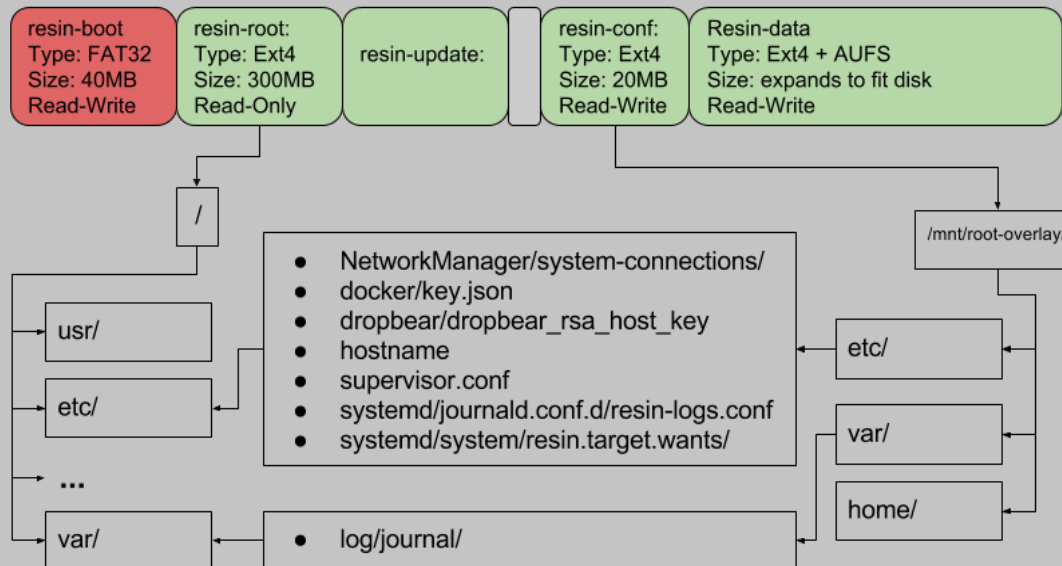


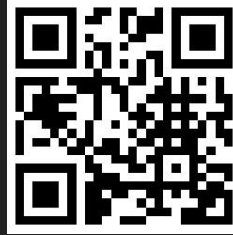
RESINOS: OS OVERVIEW



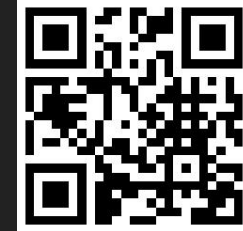


RESINOS: FS OVERVIEW





A Moby-based container engine for IoT



OVERVIEW

- 3.5x smaller than Docker CE, single binary
- Multi-arch support / IoT devices
- Bandwidth-efficient updates with binary diffs, 10-70x smaller than pulling layers
- Minimal wear-and-tear / extract layers at receive to prevent excessive writing to disk
- Atomic and durable image pulls defend against partial container pulls in the event of power failure
- Conservative memory use



COOL - AND WHAT ABOUT IT? ;)

Default container engine in resinOS and resin.io.

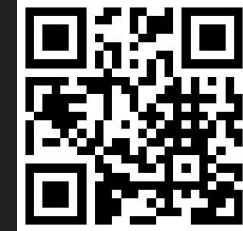


IMAGE DELTAS?

```
balena image pull resin/raspberrypi3-node:6
```

```
balena image pull resin/raspberrypi3-node:7
```

```
balena image delta resin/raspberrypi3-node:6  
resin/raspberrypi3-node:7
```

```
balena image tag resin/raspberrypi3-node:delta-6-7
```

```
balena image push resin/raspberrypi3-node:delta-6-7
```



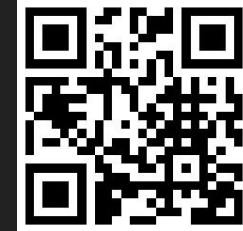
OK, DONE...

And now?



CLEANUP!

```
balena rmi -f resin/raspberrypi3-node:delta-6-7  
      resin/raspberrypi3-node:7  
      resin/raspberrypi3-node:6 stays on rpi :)
```



DELTA UPGRADE!

```
balena image pull resin/raspberrypi3-node:delta-6-7
```

balena automatically upgrades the image

another pull of node:7 ...

```
balena image pull resin/raspberrypi3-node:7
```

won't download anything :)



AVAILABLE ON...

aarch64, armv5, armv6, arvm7...

and i386 as well as x86_64 :)

Install with `curl -sfL https://balena.io/install.sh | sh`



WRAP-UP TIME

- resin.io
- resinOS
- balena



QUESTIONS?

Thank you for your attention :)

www.resin.io

www.resinos.io

www.balena.io

www.nico-maas.de