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THE LINUX FOUNDATION
OPEN SOURCE SUMMIT
NORTH AMERICA

LESSONS LEARNED SUPPORTING +200,000 IoT DEVICES

Marc Pous - Developer Advocate at balena.io

#ossummit





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IoT Giant

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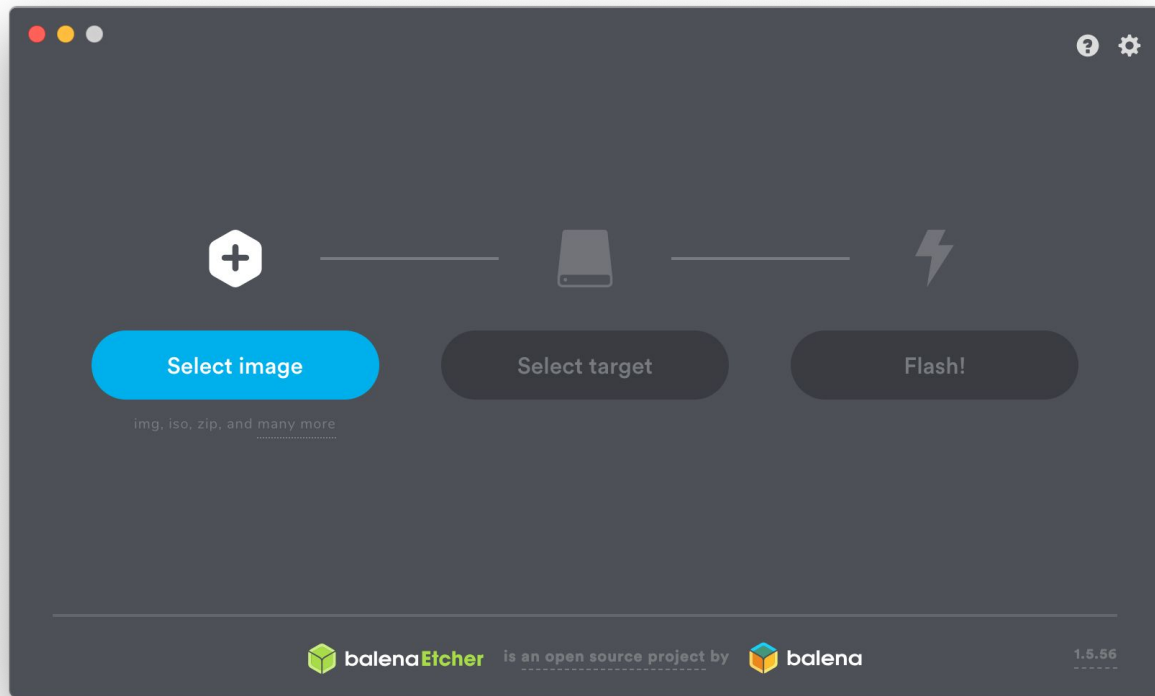
t: [@gy4nt](#) [@balena_io](#)

Who is balena?

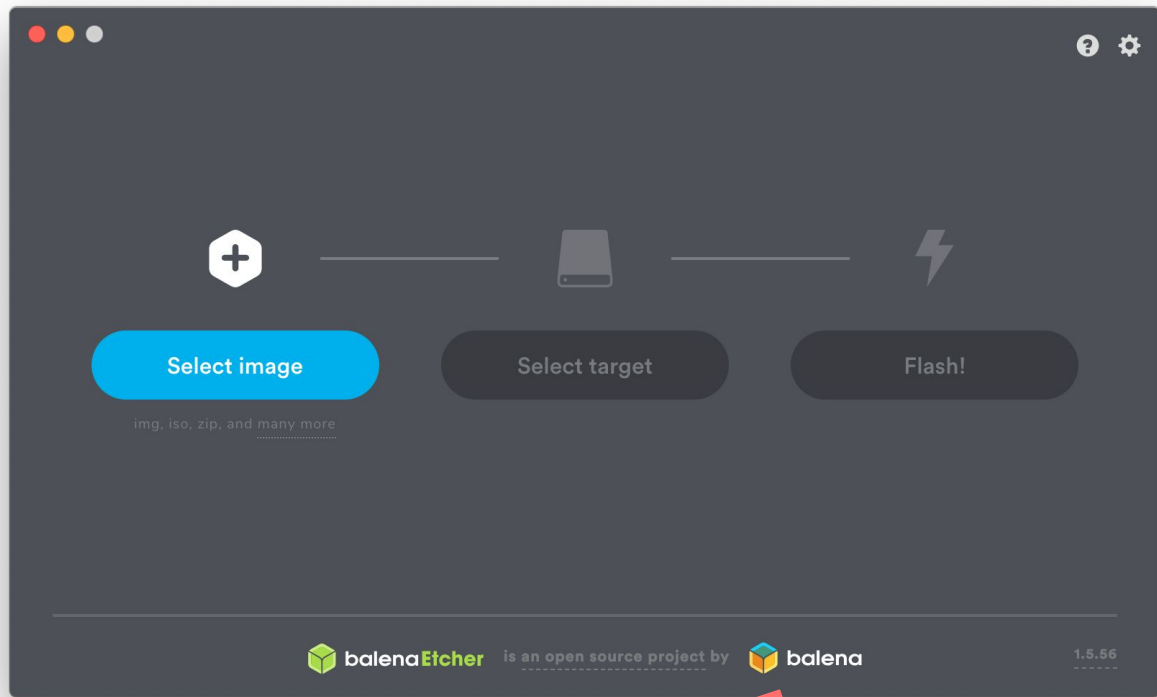


balena

Who is balena?

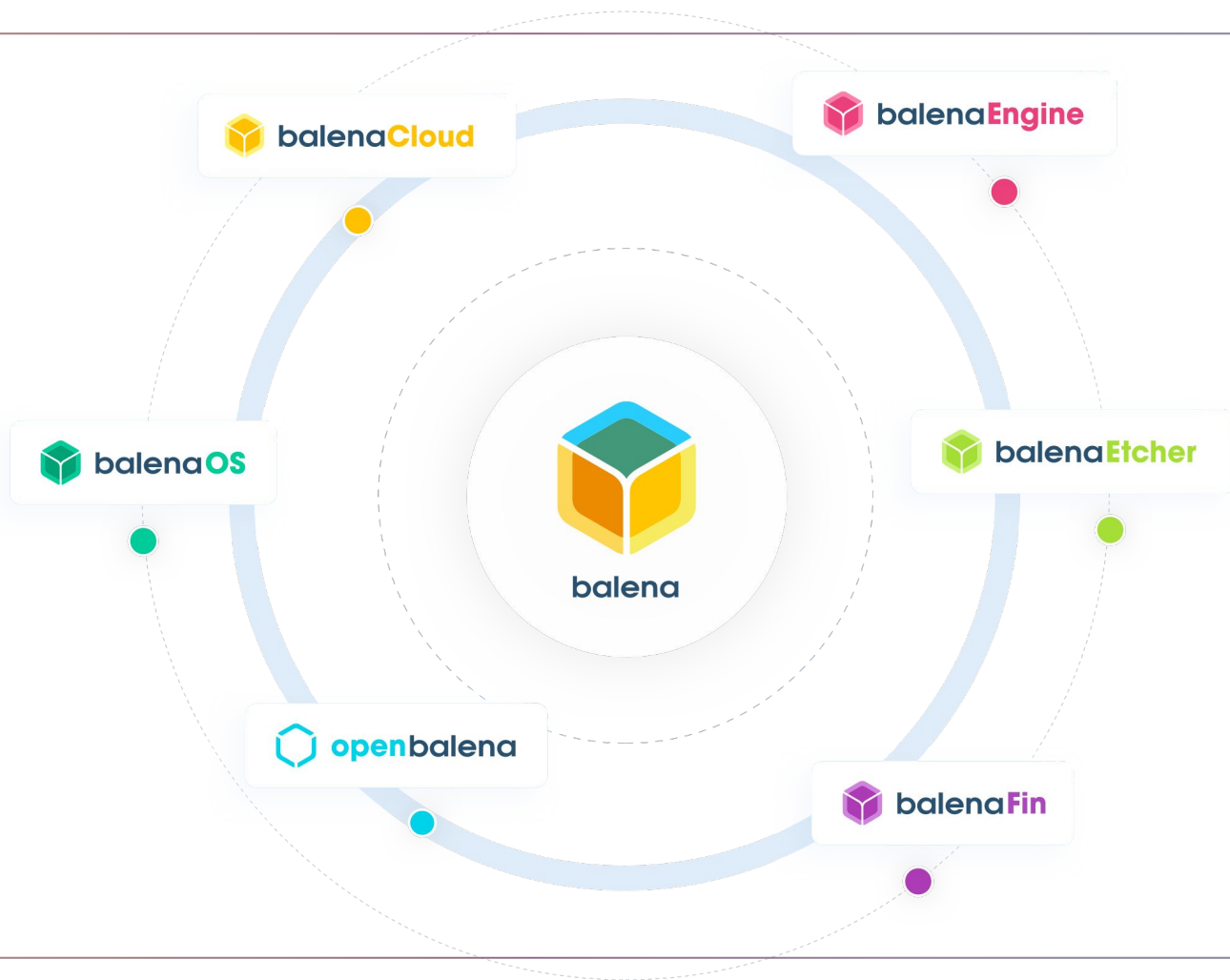


Who is balena?



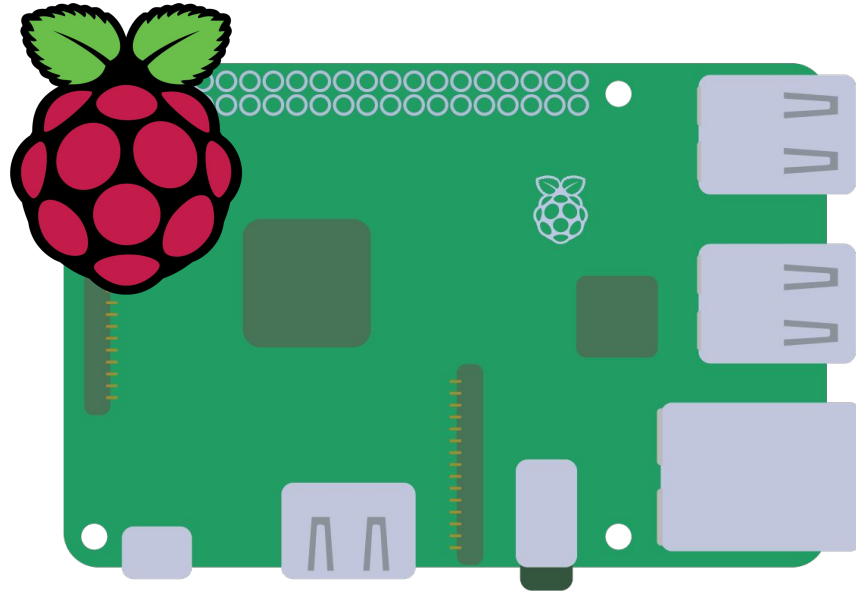


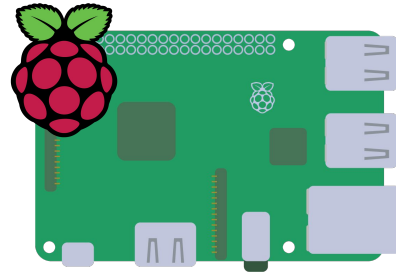
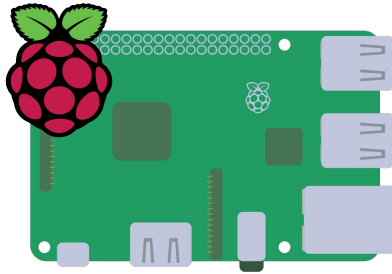
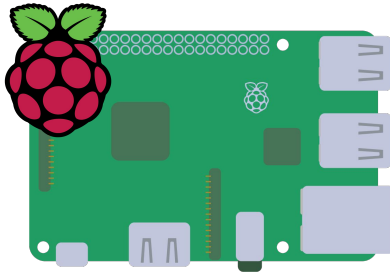
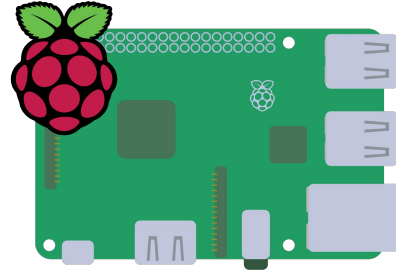
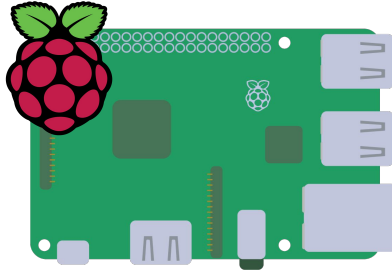
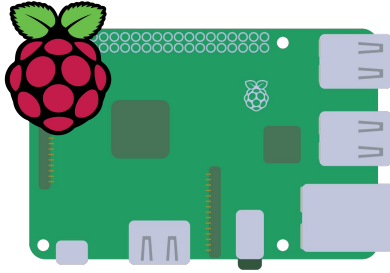
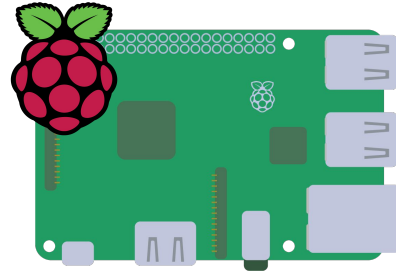
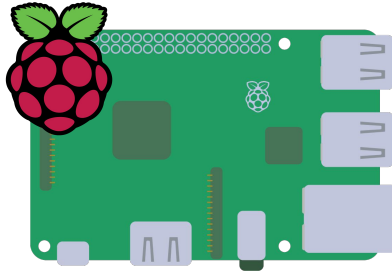
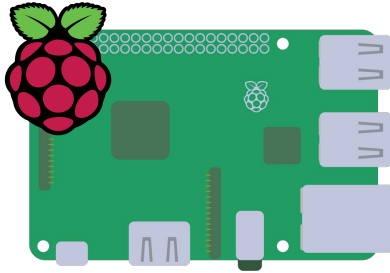
Platform built to develop,
deploy and manage fleets
of connected devices at
scale.

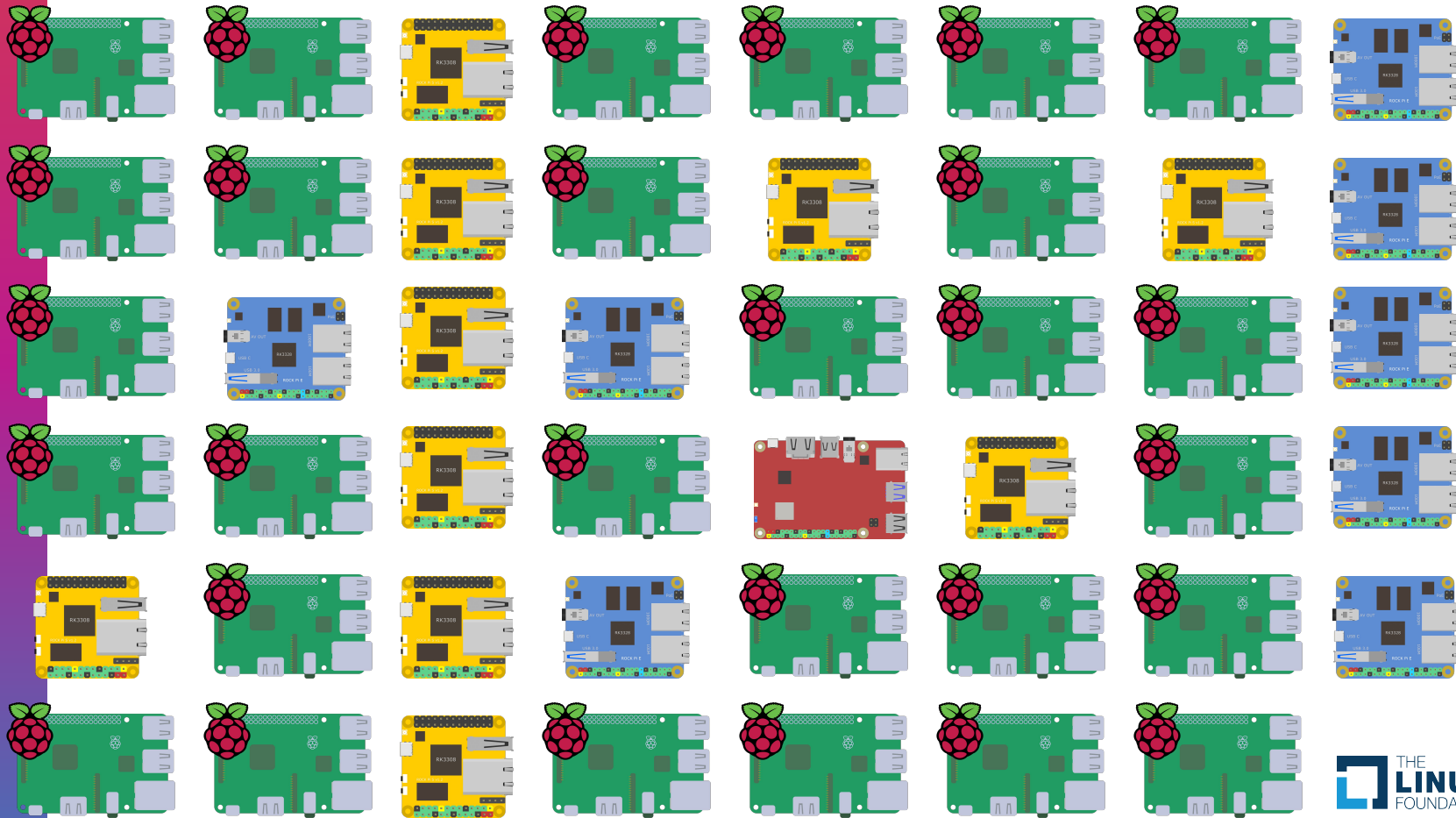




What do we mean by “Fleet Management”?







**Now, how do you
manage 500 or 50,000
or 500,000 of these?**





Deploy with balena

and relax...

Lessons Learned



Source: <https://nightfall.ai/pets-vs-cattle>



The pets versus cattle analogy

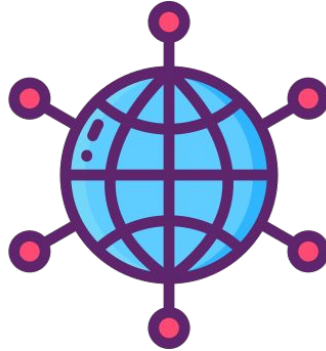
HARDWARE



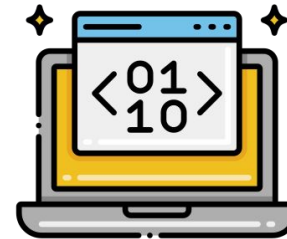
MEMORY



CONNECTIVITY



SOFTWARE





Hardware



Hardware

- What are your constraints?
(environment? power? vibration? size? price?)



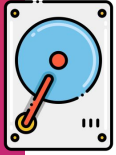
Hardware

- What are your constraints?
(environment? power? vibration? size? price?)
- Physical access to the hardware?

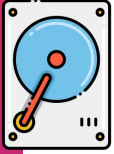


Hardware

- What are your constraints?
(environment? power? vibration? size? price?)
- Physical access to the hardware?
- Chip Shortage creates more multi-device types fleets.



Memory



Memory

- Try to avoid SD Cards, when possible.



Memory

- Try to avoid SD Cards, when possible.
- Instead use expensive SD Cards (e.g. SanDisk ExtremePro) or devices with eMMC.



Connectivity



Connectivity

- How is the device connected? Do you have enough bandwidth?



Connectivity

- How is the device connected? Do you have enough bandwidth?
- Do you have a backup connectivity?



Connectivity

- How is the device connected? Do you have enough bandwidth?
- Do you have a backup connectivity?
- Do you have more devices connected to the same network?



Software



Software

- Do you have remote access to your devices?



Software

- Do you have remote access to your devices?
- Can you run Diagnostics remotely?



Software

- Do you have remote access to your devices?
- Can you run Diagnostics remotely?
- Can you deploy remote updates?
(applications, OS and others)



Software

- Do you have remote access to your devices?
- Can you run Diagnostics remotely?
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(applications, OS and others)
- Do you have test environments? CI / CD?



Software

- Do you have remote access to your devices?
- Can you run Diagnostics remotely?
- Can you deploy remote updates?
(applications, OS and others)
- Do you have test environments? CI / CD?
- Can you pre-schedule updates?

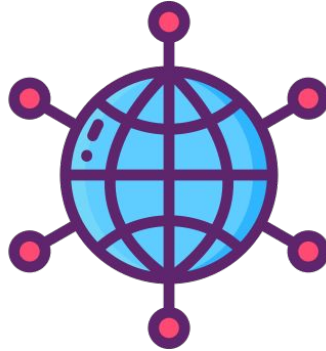
HARDWARE



MEMORY



CONNECTIVITY



SOFTWARE



Let's wrap-up

Let's wrap-up

- Don't reinvent the wheel.
- Work with great partners and production grade hardware.
- Get a B-plan embracing open source.

Questions?



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