

# THE EDGE DEVICE YOU FORGOT TO UPDATE. AND OTHER STORIES FROM FACTORIES!

CONNACK Munich - 7th of December 2023



# Let's start with some questions!



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# The Computer of the 21st Century



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**The most profound  
technologies are  
those that disappear.**

Mark Weiser

The Computer of the 21st Century

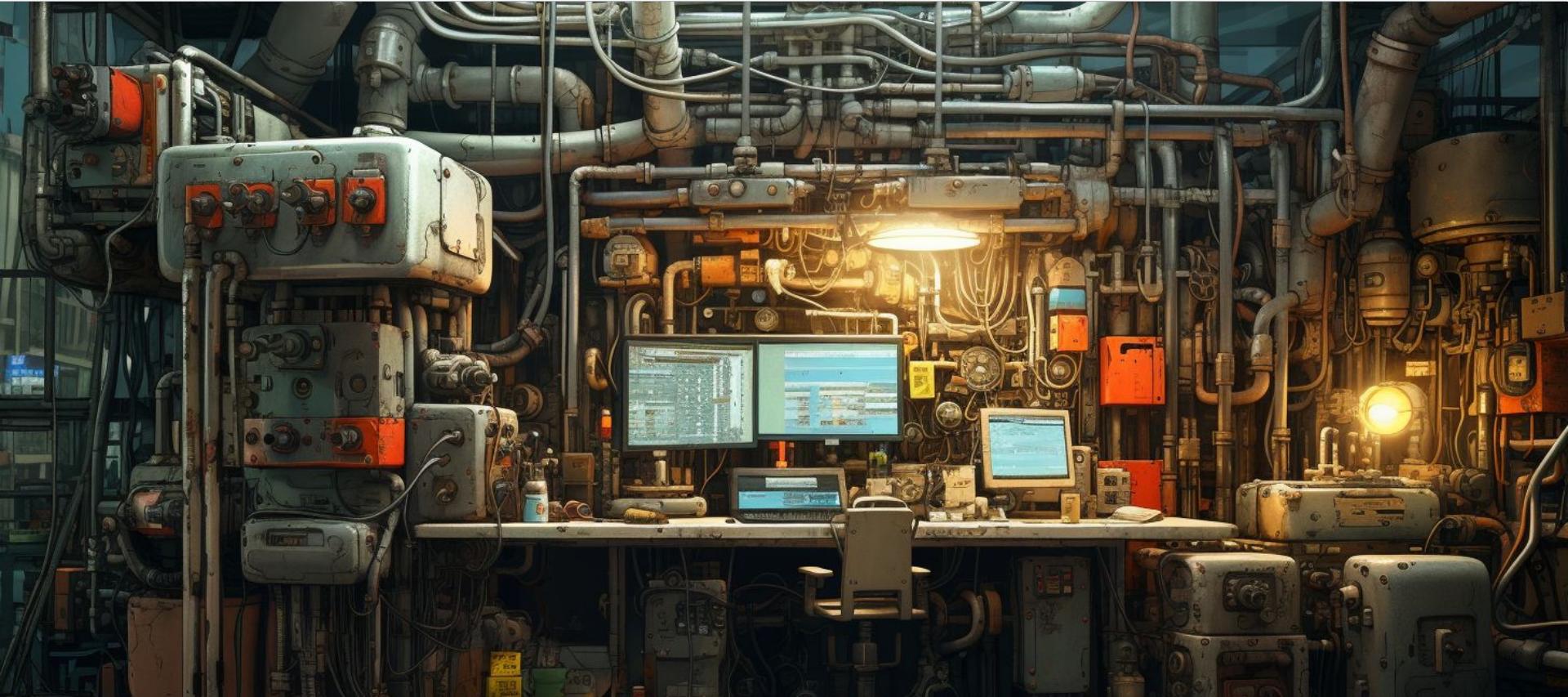
# IT and OT people are facing the same



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# How to achieve the goals?



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# How do you increase the availability of your system?



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# Story: Danish Energy Firewalls



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# Let me ask some more questions!



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# Ubuntu released 21 security issues for critical Linux kernel vulnerabilities last month



## [USN-6496-2: Linux kernel vulnerabilities ›](#)

30 November 2023

Several security issues were fixed in the Linux kernel.

[CVE-2023-31085](#), [CVE-2023-45871](#), [CVE-2023-25775](#)

Ubuntu 22.04 LTS Ubuntu 20.04 LTS

## [USN-6502-4: Linux kernel vulnerabilities ›](#)

30 November 2023

Several security issues were fixed in the Linux kernel.

[CVE-2023-45871](#), [CVE-2023-5090](#), [CVE-2023-5345](#), and 2 others

Ubuntu 23.04 Ubuntu 22.04 LTS

## [USN-6503-1: Linux kernel vulnerabilities ›](#)

21 November 2023

Several security issues were fixed in the Linux kernel.

[CVE-2023-5633](#), [CVE-2023-4244](#), [CVE-2023-5090](#), and 2 others

Ubuntu 23.10 Ubuntu 22.04 LTS

## [USN-6502-1: Linux kernel vulnerabilities ›](#)

21 November 2023

Several security issues were fixed in the Linux kernel.

[CVE-2023-31085](#), [CVE-2023-25775](#), [CVE-2023-5345](#), and 2 others

Ubuntu 23.04 Ubuntu 22.04 LTS

## [USN-6496-1: Linux kernel vulnerabilities ›](#)

21 November 2023

Several security issues were fixed in the Linux kernel.

[CVE-2023-25775](#), [CVE-2023-45871](#), [CVE-2023-31085](#)

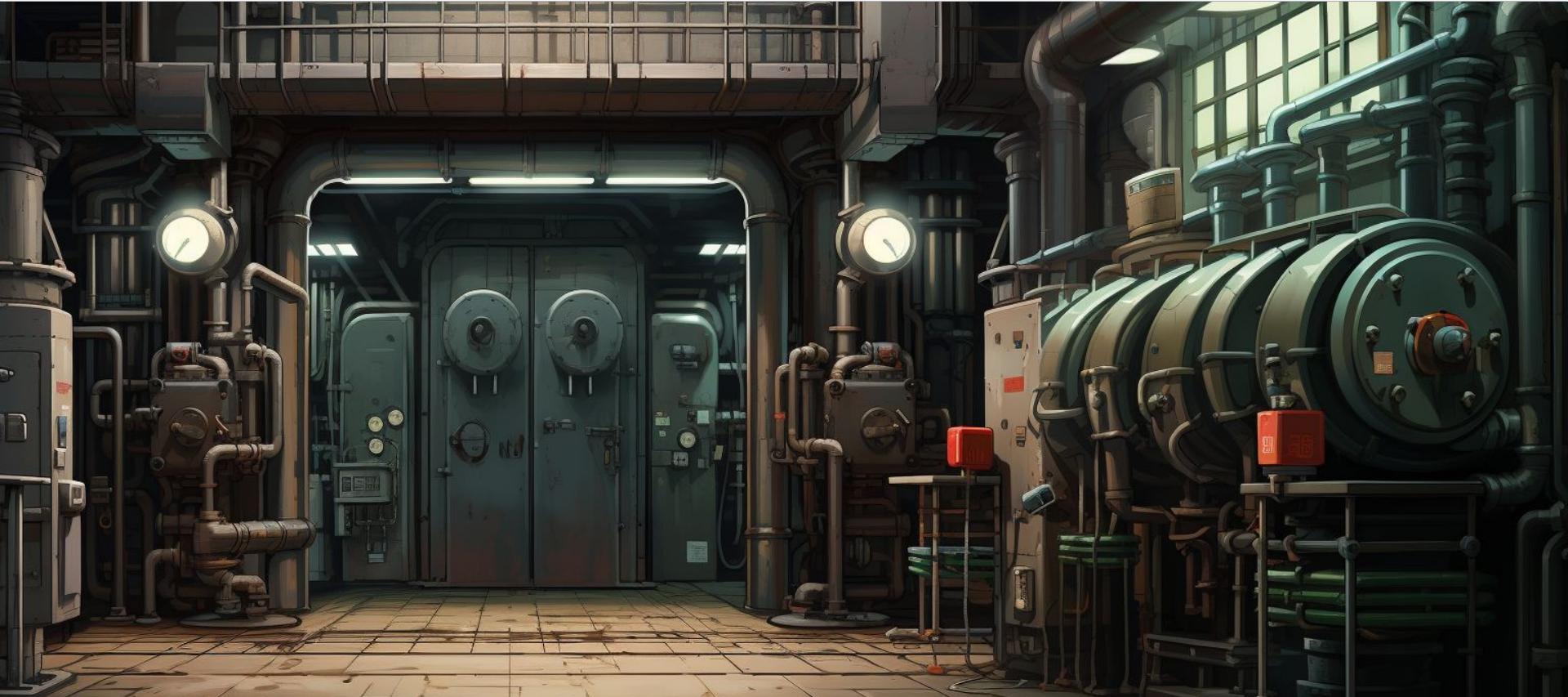
Ubuntu 22.04 LTS Ubuntu 20.04 LTS

<https://ubuntu.com/security/notices?order=newest&release=jammy&details=Linux+kernel+vulnerabilities>

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# Do you leave the door of your factory unlocked?



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# Story: Add new functionalities as this company did!



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# Not only update but also transform your edge devices



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# There is an elephant in the room!



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# And please avoid DIY



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# Continuous Improvement



# Continuous Improvement

- Enable Software and OS updates (CI/CD).
- Add new features into your devices.
- Manage your devices as a fleet.
- Avoid lock-ins.



# Continuous Improvement with Kudzai



industry4.0.tv



Kudzai Manditereza



Marc @gy4nt

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# The fleet management concept



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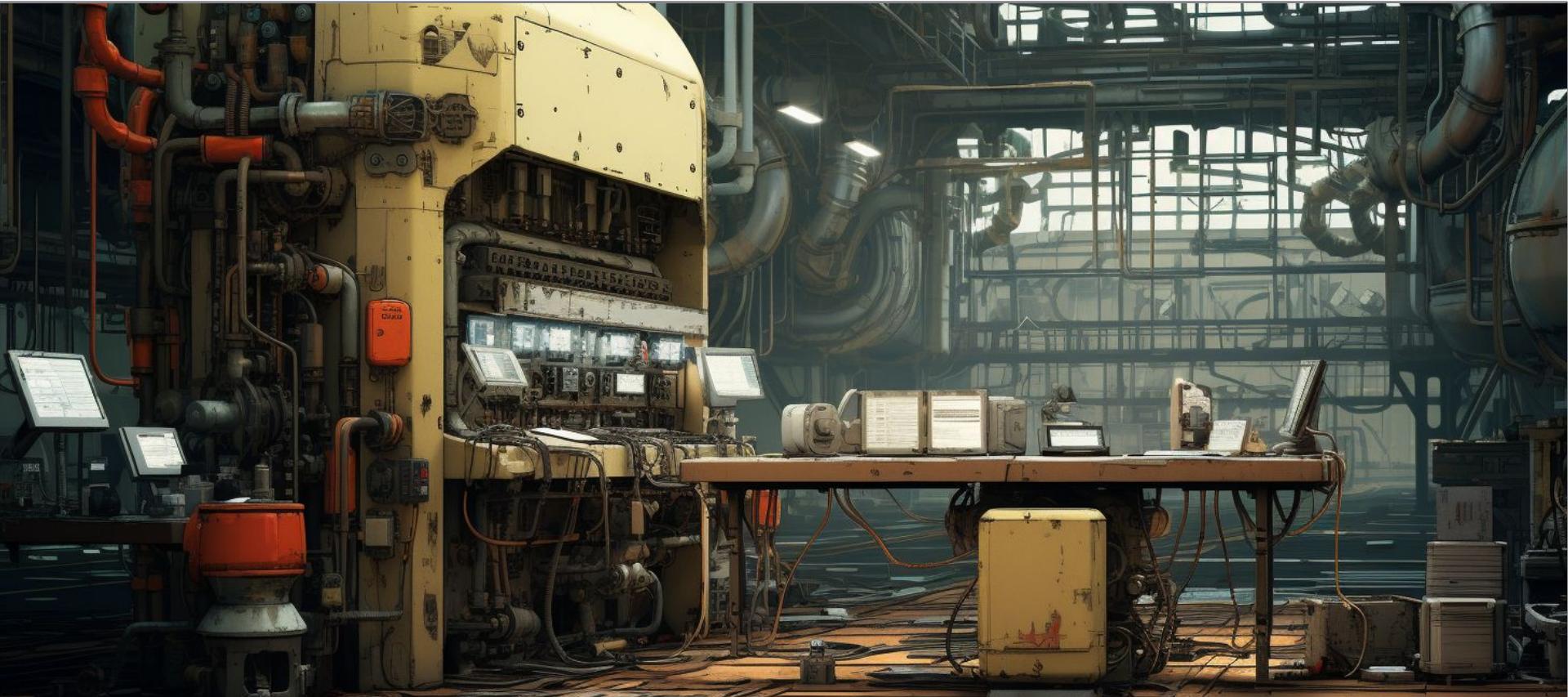
# In the meantime, I was trying to get war stories



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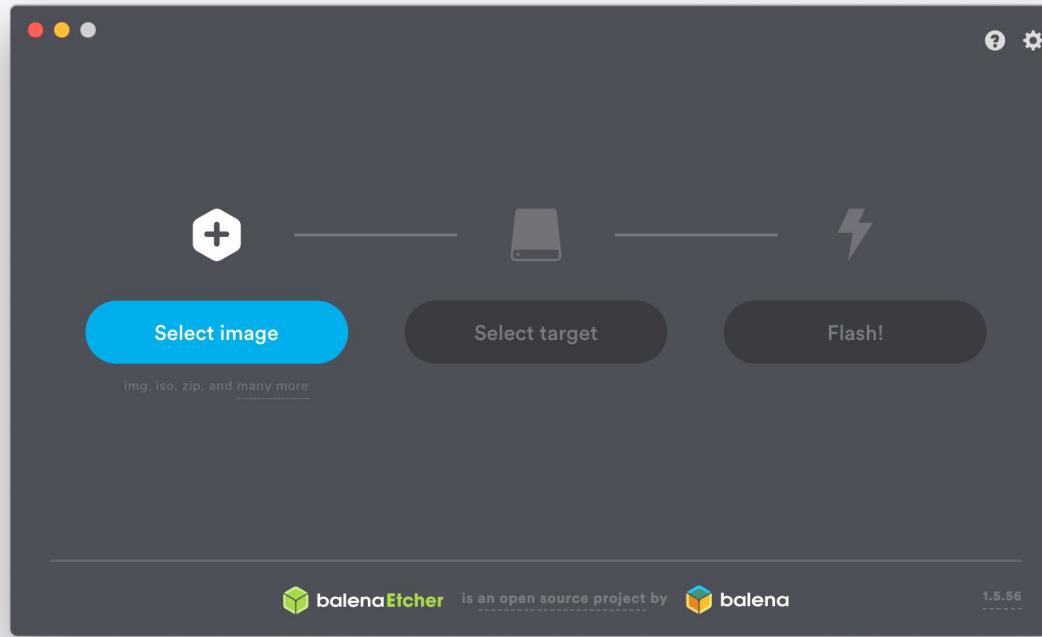
# Please update!



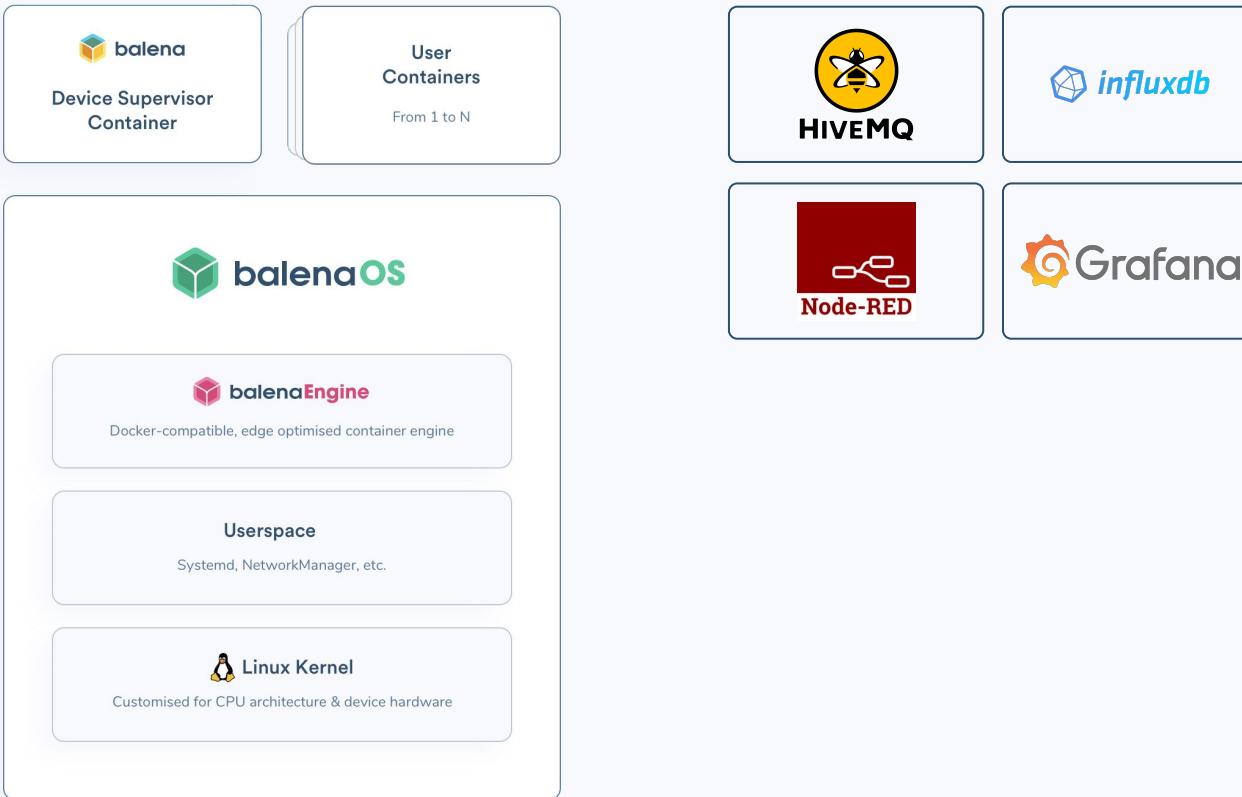
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# Demo time

# Anyone know this?



# We take advantage of the containers in the Edge



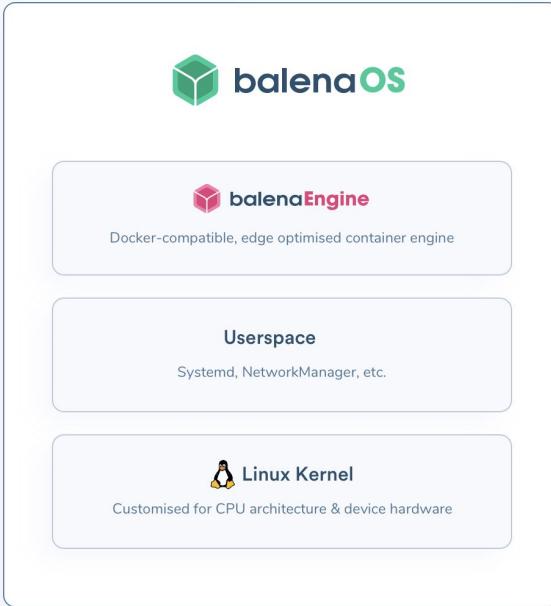
# We take advantage of the containers in the Edge



**balena**  
Device Supervisor  
Container



User  
Containers  
From 1 to N



balena dashboard | mean-rainfall

https://dashboard.balena-cloud.com/devices/79274f1c47d09ad5888d3d092a01e049

Getting Started Docs Forums Status Marc Pous

**mean-rainfall**

**Actions**

**STATUS** Online **UUID** 79274f1 **TYPE** Balena Fin (CM3)

**ONLINE FOR** 5 days **HOST OS VERSION** balenaOS 2.83.21+rev1 **SUPERVISOR VERSION** 12.10.3

**CURRENT RELEASE** 4e72605 **TARGET RELEASE** 4e72605

**LOCAL IP ADDRESS** 10.136.218.127 **PUBLIC IP ADDRESS** 192.168.1.34 **MAC ADDRESS** B8:27:EB:1F:04:F09  
AC:3F:A4:EB:21:EC  
AC:3F:A4:EB:20:EC

**PUBLIC DEVICE URL** [Link](#)

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

**SERVICES**

Service	Status	Release	Actions
grafana	Running	4e72605	<a href="#">View</a> <a href="#">Logs</a> <a href="#">Terminal</a> <a href="#">Edit</a> <a href="#">Delete</a>
influxdb	Running	4e72605	<a href="#">View</a> <a href="#">Logs</a> <a href="#">Terminal</a> <a href="#">Edit</a> <a href="#">Delete</a>
mqtt	Running	4e72605	<a href="#">View</a> <a href="#">Logs</a> <a href="#">Terminal</a> <a href="#">Edit</a> <a href="#">Delete</a>
node-red	Running	4e72605	<a href="#">View</a> <a href="#">Logs</a> <a href="#">Terminal</a> <a href="#">Edit</a> <a href="#">Delete</a>
wifi-connect	Running	4e72605	<a href="#">View</a> <a href="#">Logs</a> <a href="#">Terminal</a> <a href="#">Edit</a> <a href="#">Delete</a>

Changelog v15.2.0

90% [Help](#) [Docs](#) [Forums](#) [Status](#) [Marc Pous](#)

**CPU** ~42% **Temperature** ~50C **Memory** 350 MB/970 MB **Storage** 1.0 GB/6.4 GB

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

Search entries...

```
07.10.22 02:35:02 (+0000) influxdb [httpd] 172.18.0.2 - - [07/Oct/2022:02:35:02 +0000] "GET /query?db=balena&q=show+field+keys HTTP/1.1" 200 70 "-" "Python-urllib/3.7" a549f3ed-45e8-11ed-8075-0242ac120003 1 159
07.10.22 02:35:02 (+0000) grafana Interim dashboard sync skipped: No schema found.
07.10.22 02:35:12 (+0000) influxdb [httpd] 172.18.0.2 - - [07/Oct/2022:02:35:12 +0000] "GET /query?db=balena&q=show+field+keys HTTP/1.1" 200 70 "-" "Python-urllib/3.7" ab42ab82-45e8-11ed-8076-0242ac120003 1 302
07.10.22 02:35:12 (+0000) grafana Interim dashboard sync skipped: No schema found.
07.10.22 02:35:22 (+0000) influxdb [httpd] 172.18.0.2 - - [07/Oct/2022:02:35:22 +0000] "GET /query?db=balena&q=show+field+keys HTTP/1.1" 200 70 "-" "Python-urllib/3.7" b13b454f-45e8-11ed-8077-0242ac120003 1 974
07.10.22 02:35:22 (+0000) grafana Interim dashboard sync skipped: No schema found.
```

**Terminal**

Select a target [Start terminal session](#)

Need help ?



square-pine | balena dashboard

dashboard.balena-cloud.com/devices/f2b4b46175e94bad080dd16af02e89ab

Getting Started Docs Roadmap Forums Status

Actualiza Marc Pous

balenaCloud IoT Dashboard

Your devices running balenaOS versions prior to v2.14.0 are no longer usable since August 1st due to OS deprecation and VPN Certificate expiration. Please check our [blogpost](#).

## square-pine

FLEET

**square-pine**

**Actions**

**Summary**

Device Variables

Device Configuration

Actions

Settings

Diagnostics

Location

Organizations

Marc Pous

Fleets

hivemq-edge

Devices

square-pine

STATUS

Online

UUID

f2b4b46

TYPE

Raspberry Pi 4 (using 64bit OS)

HOST OS VERSION

balenaOS 4.0.26+rev1

OS VARIANT

development

SUPERVISOR VERSION

14.13.4

CURRENT RELEASE

0.0.0+rev18

TARGET RELEASE

0.0.0+rev18

SUPPORT ACCESS

Off

IS ACTIVE

Off

On

PUBLIC DEVICE URL

LOCAL IP ADDRESS

192.168.1.163

PUBLIC IP ADDRESS

181.41.128.238

MAC ADDRESS

D8:3A:00:2A:08:B6

D8:3A:DD:2A:08:B7

TAGS (0)

No tags configured yet

NOTES

Add device notes

Service

Status

Release

hivemq-edge

Running

0.0.0+rev18

CPU ~1% Temperature -39C Memory 613 MB/7.6 GB Storage 452 MB/28.3 GB (Used/Mounted/Free)

Logs

Search entries...

2023-12-05T11:25:00+01:00 hivemq-edge 2023-12-05 10:25:00,854 WARN - Unknown channel option 'SO\_REUSEADDR' for channel '[id: 0x8fc91da3]'

2023-12-05T11:25:00+01:00 hivemq-edge 2023-12-05 10:25:00,857 WARN - Unknown channel option 'SO\_BROADCAST' for channel '[id: 0x8fc91da3]'

2023-12-05T11:25:01+01:00 hivemq-edge 2023-12-05 10:25:01,046 INFO - Started MQTT TCP Listener on address 0.0.0.0 and on port 1883

2023-12-05T11:25:01+01:00 hivemq-edge 2023-12-05 10:25:01,048 INFO - Started MQTT-SN UDP Listener on address 0.0.0.0 and on port 2442

2023-12-05T11:25:05+01:00 hivemq-edge 2023-12-05 10:25:05,949 INFO - Started WebServer with protocol 'http' on port 8080 in 4857ms

2023-12-05T11:25:05+01:00 hivemq-edge 2023-12-05 10:25:05,951 INFO - Started HiveMQ Edge in 12959ms

Terminal

Select a target

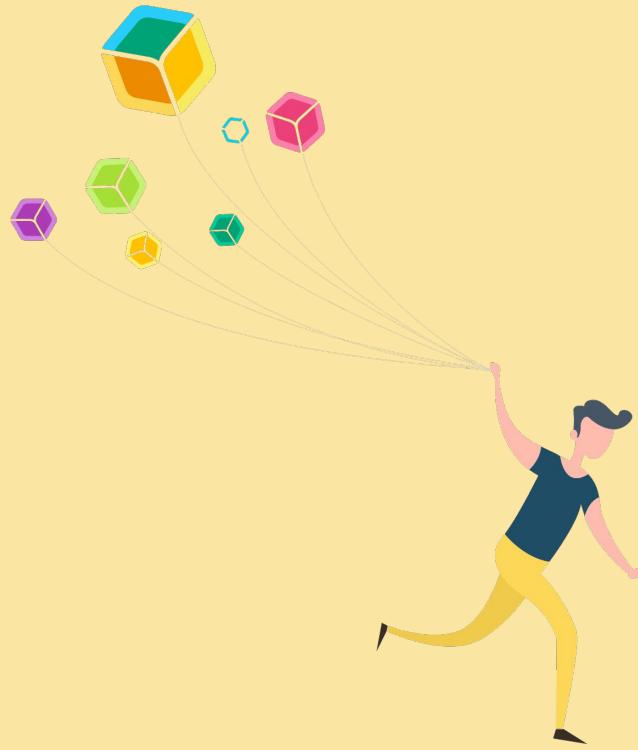
Start terminal session

Changelog v22.6.47

Need help

This screenshot shows the balenaCloud IoT Dashboard interface for a device named 'square-pine'. The left sidebar contains navigation links for Organizations, Marc Pous, Fleets, hivemq-edge, Devices, and the current device 'square-pine'. The main content area displays device details like status, UUID, type, and logs. The logs section shows recent system activity, including MQTT and WebServer startup messages. A terminal window is also present for interacting with the device.

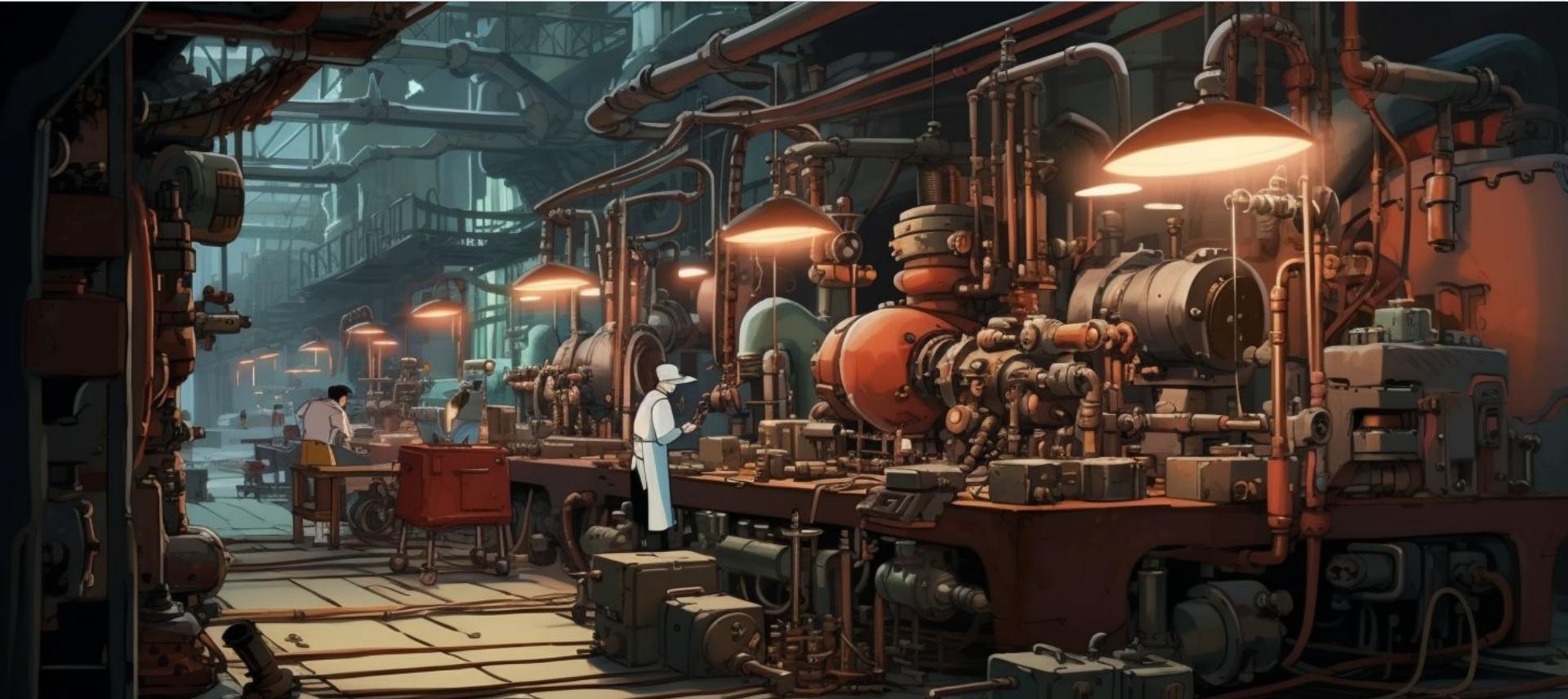




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# Story: Why do I need OTAs on my edge device?



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