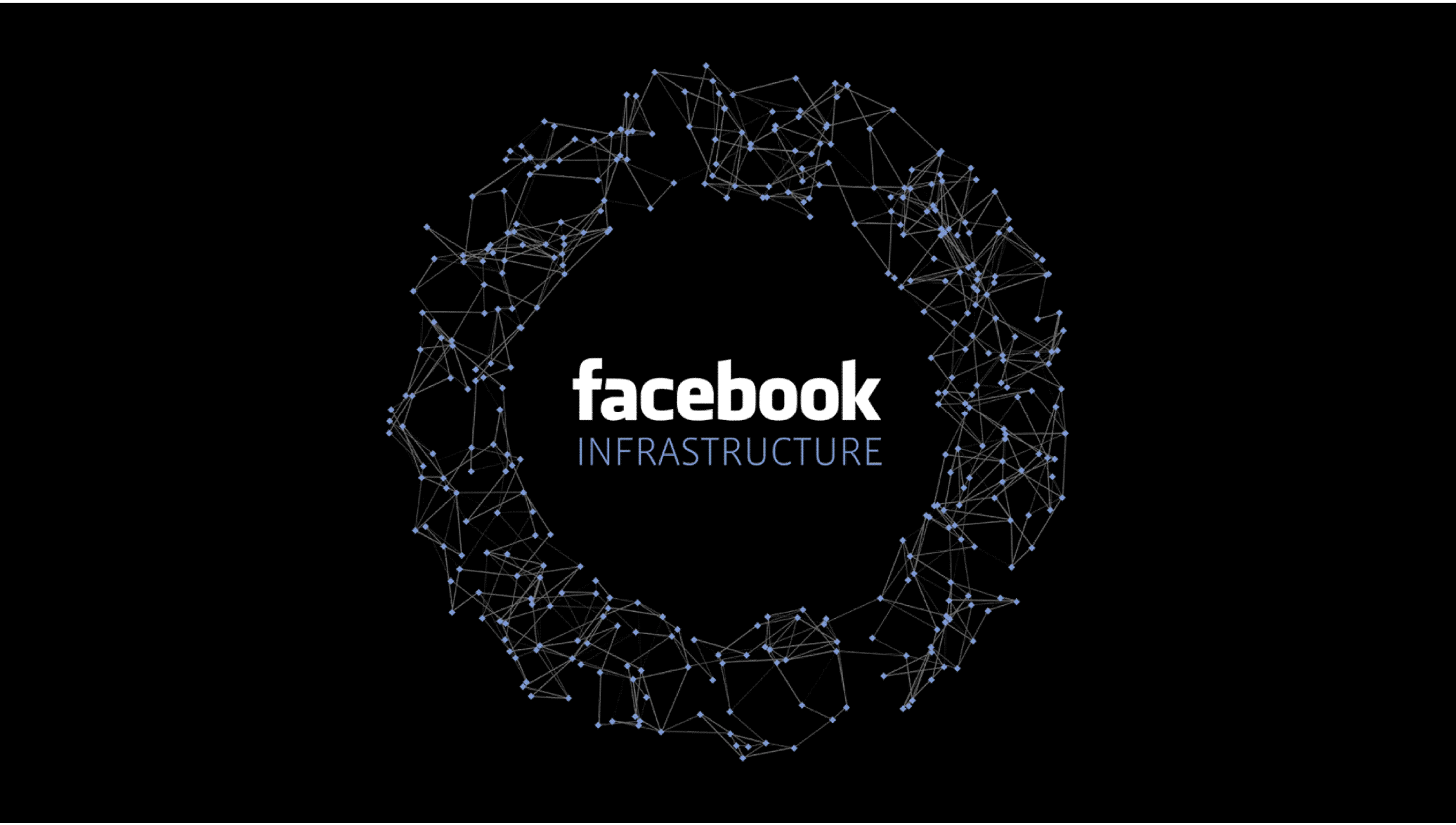
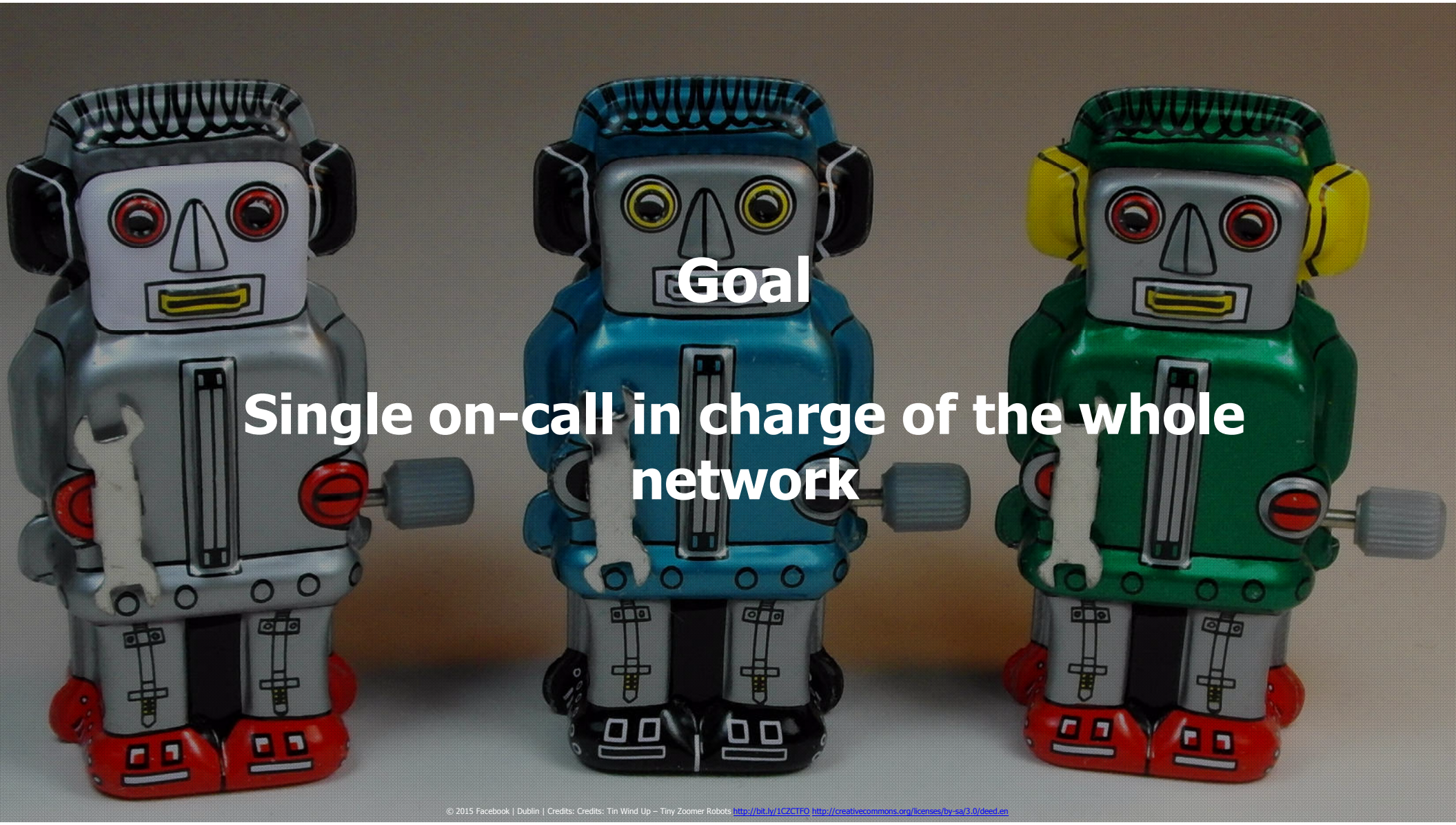

facebook
INFRASTRUCTURE



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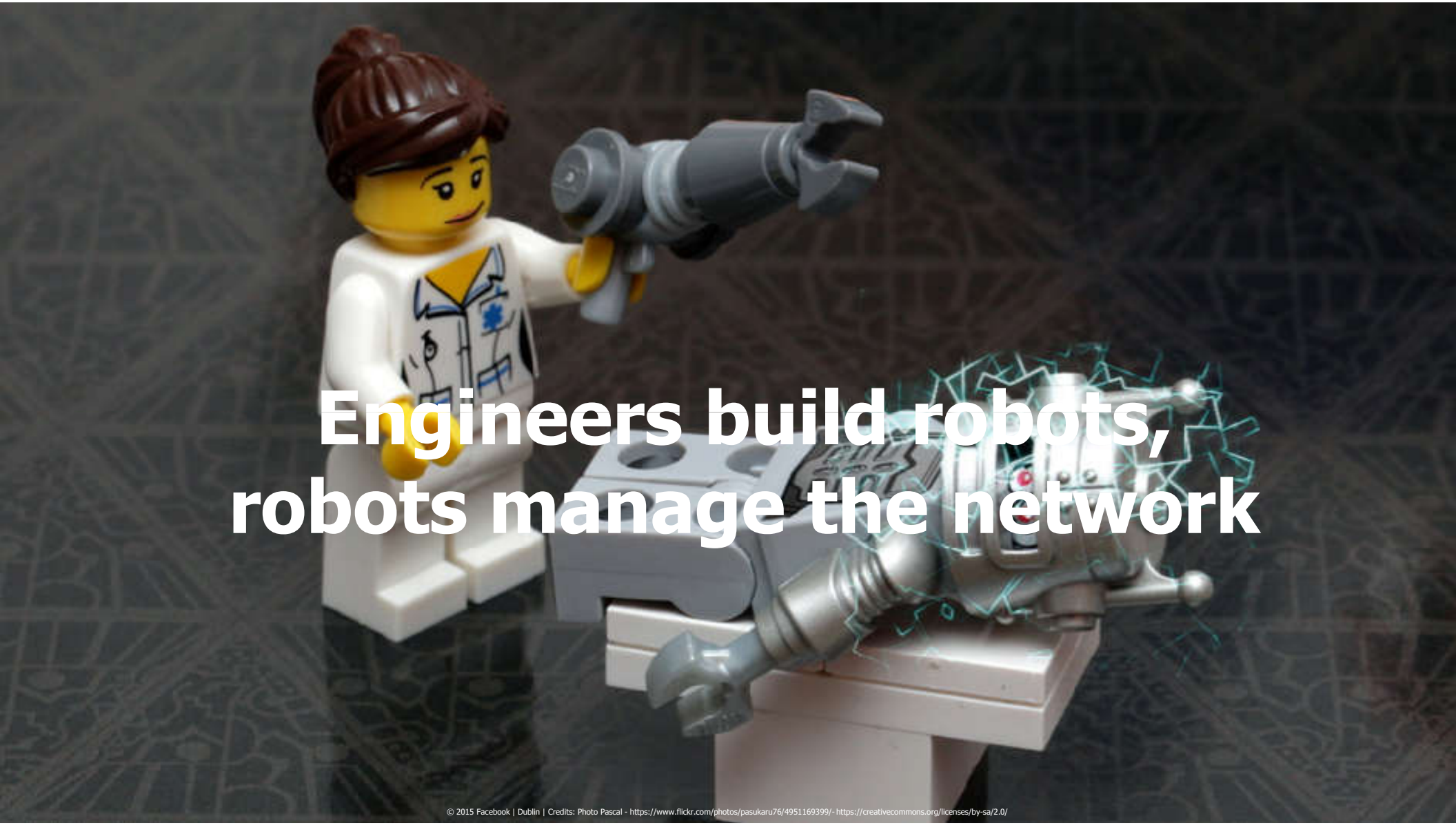
Non-Goal



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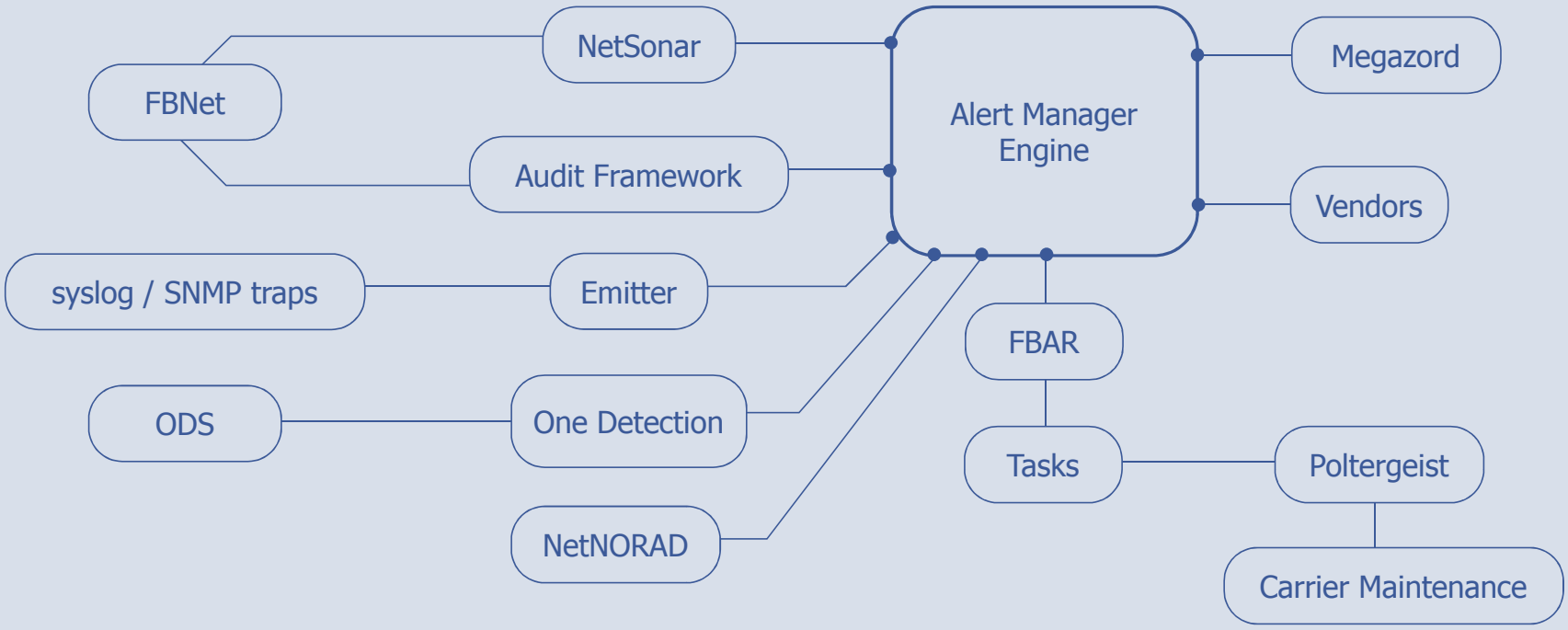
Programmability

Facebook Defined Networking



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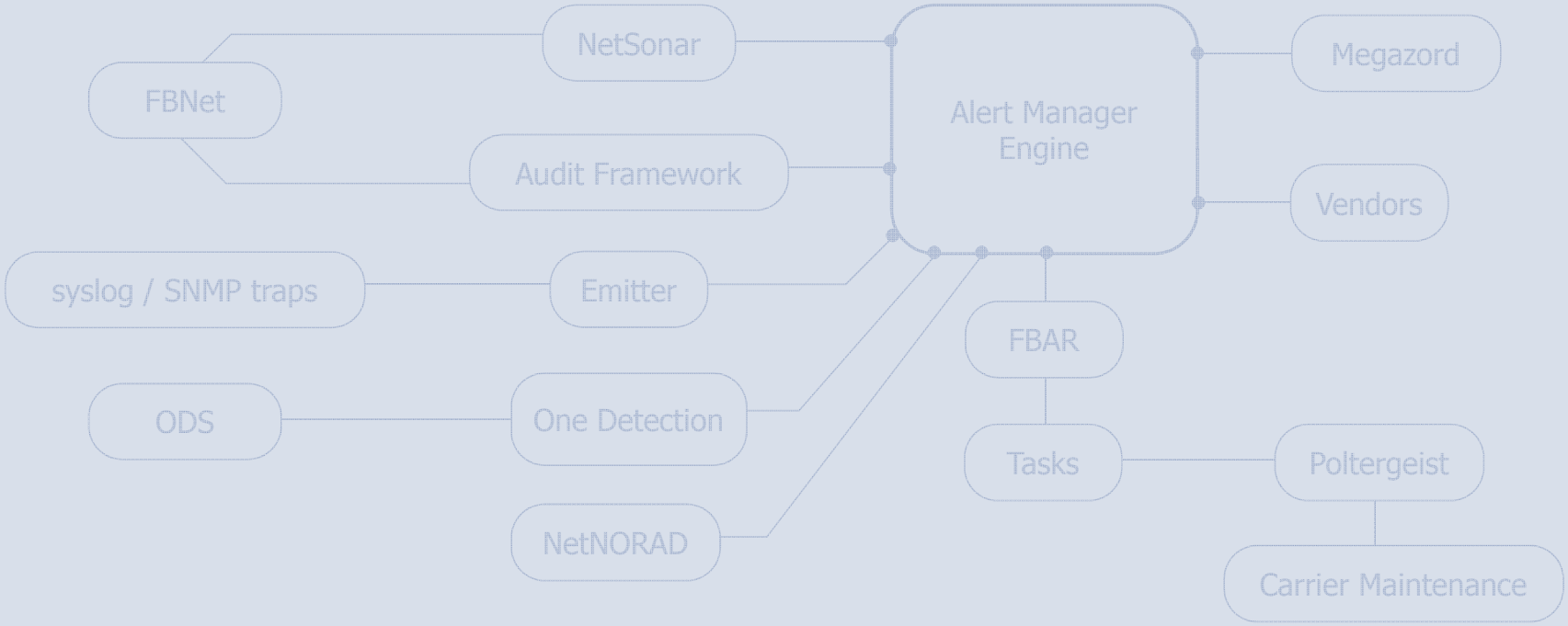
So, in 30 days...

all components in action



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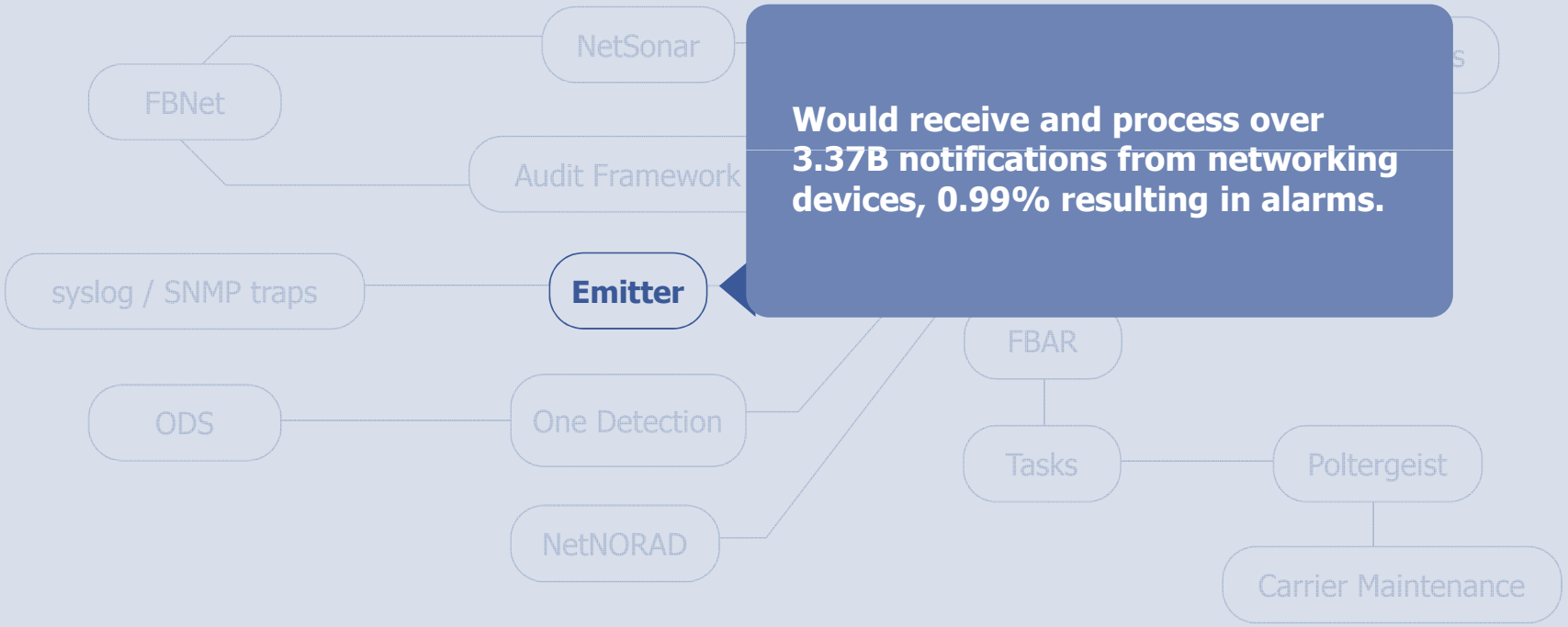

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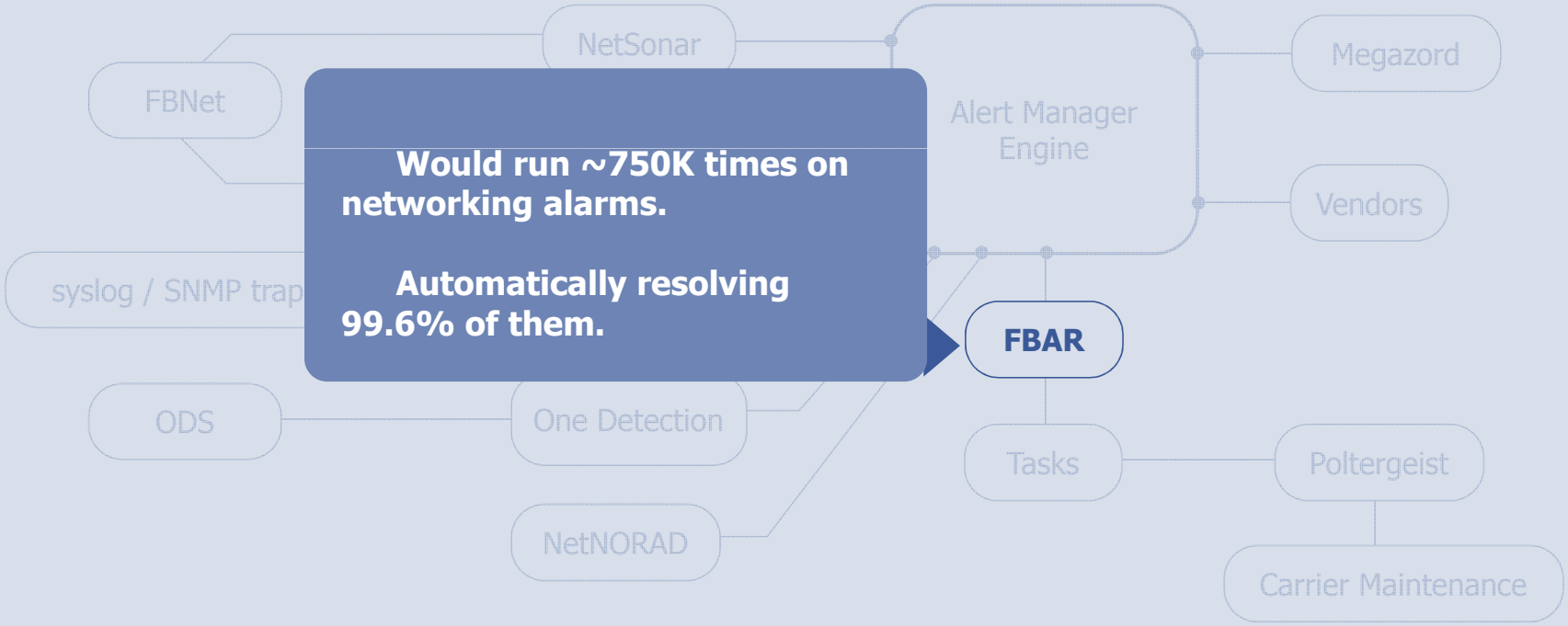

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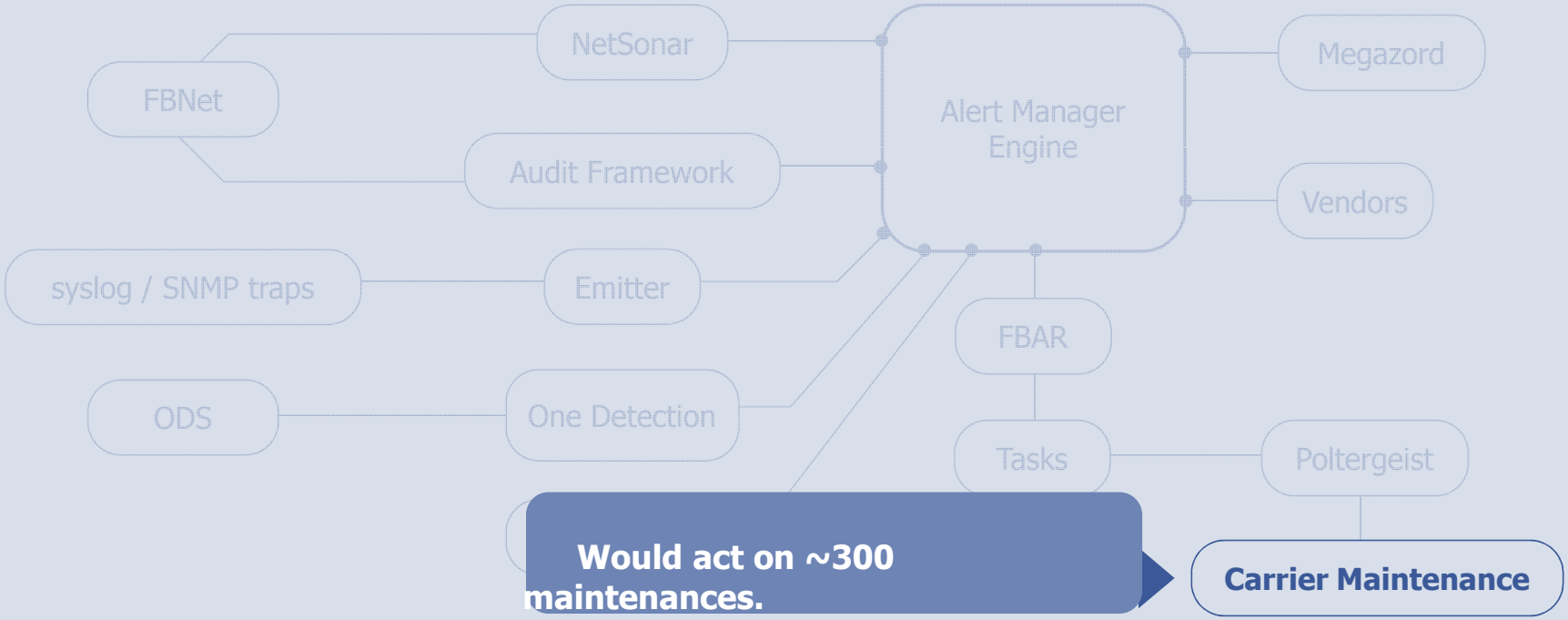
So, in 30 days...

all components in action



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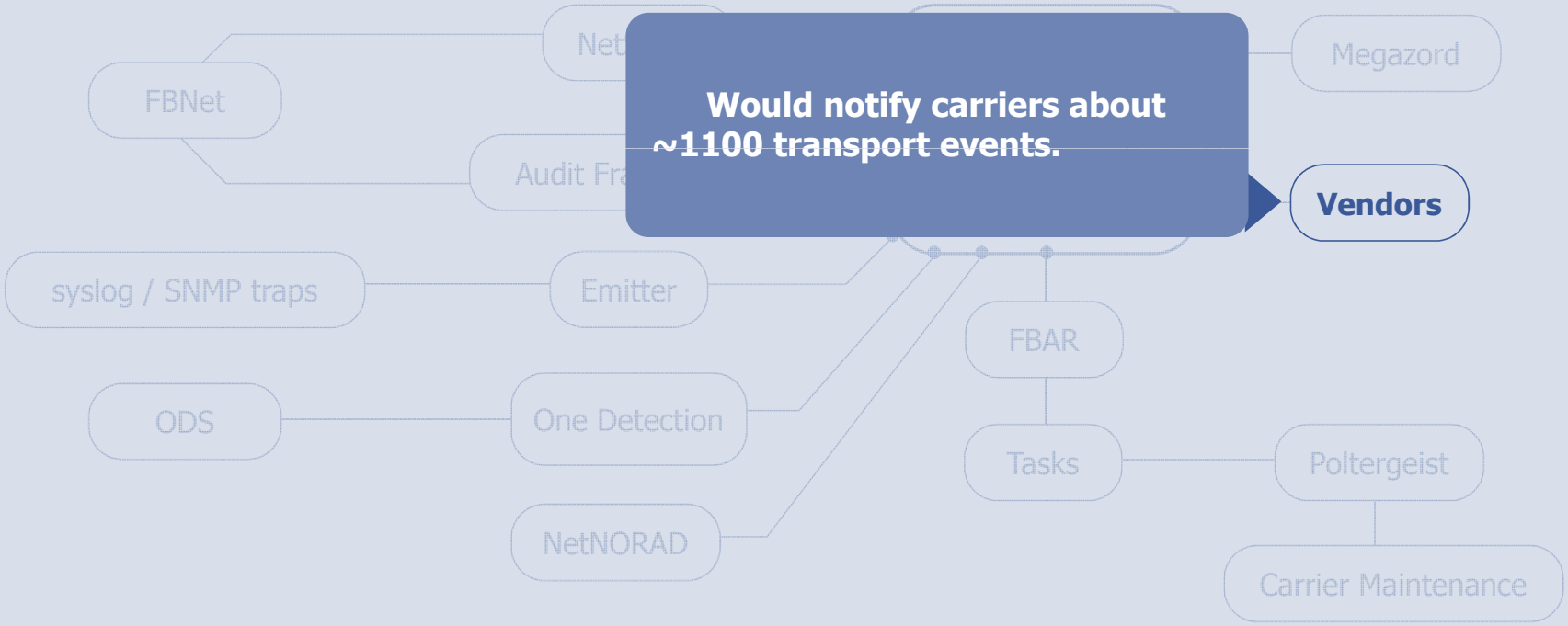
So, in 30 days...

all components in action



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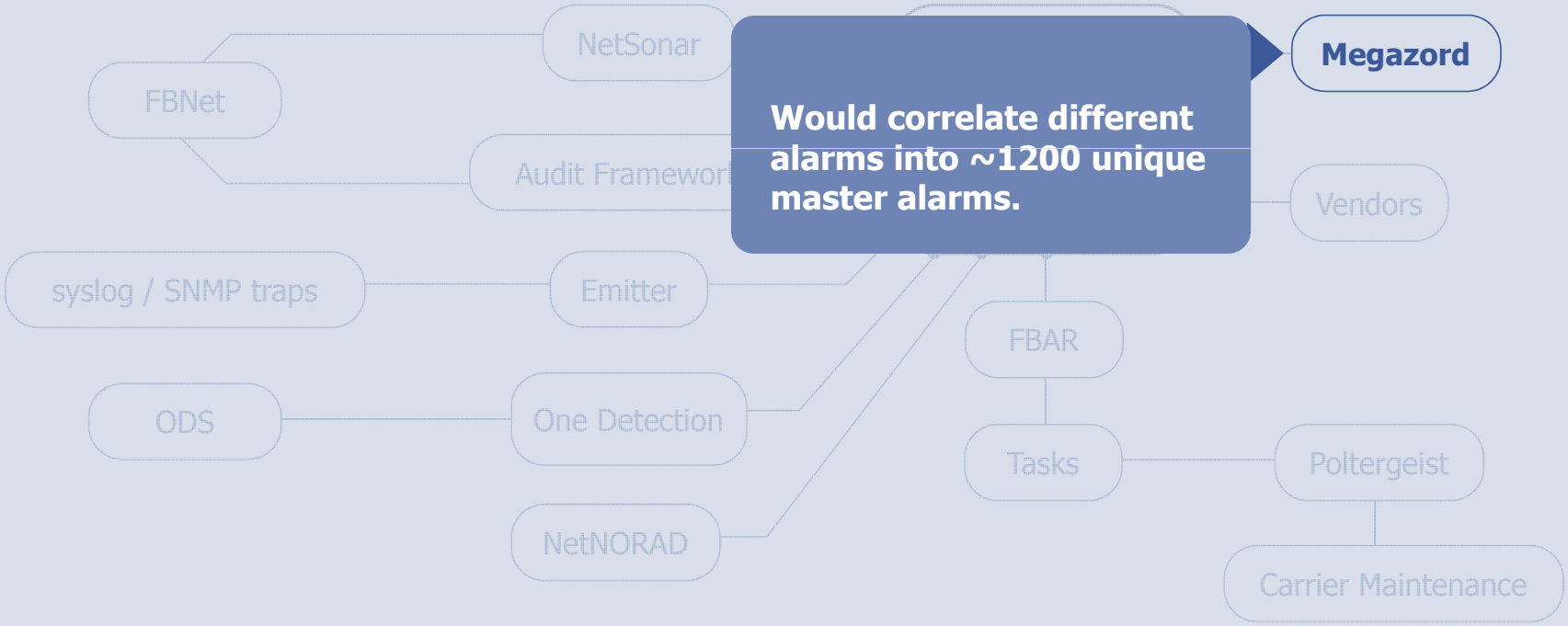
So, in 30 days...

all components in action



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USE CASE: The memory leak debacle

Free memory over time

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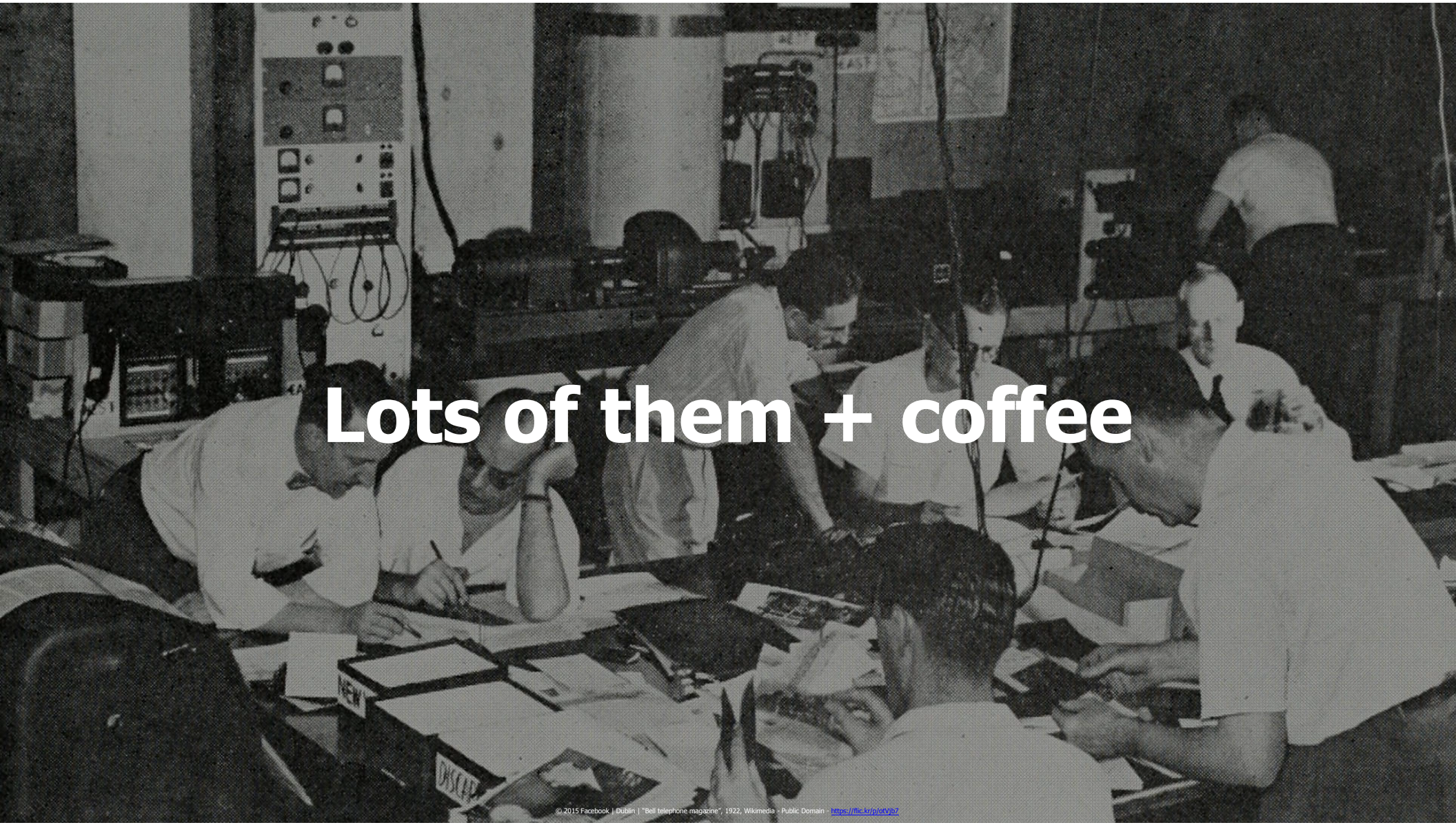

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How is it now?

ODS detector for free memory goes bellow threshold

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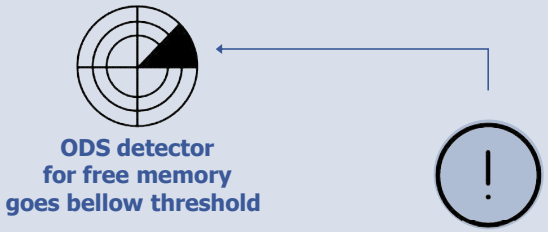

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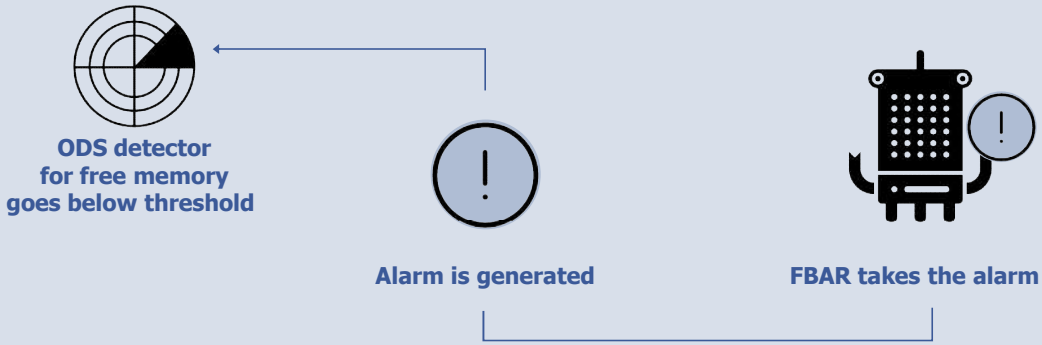

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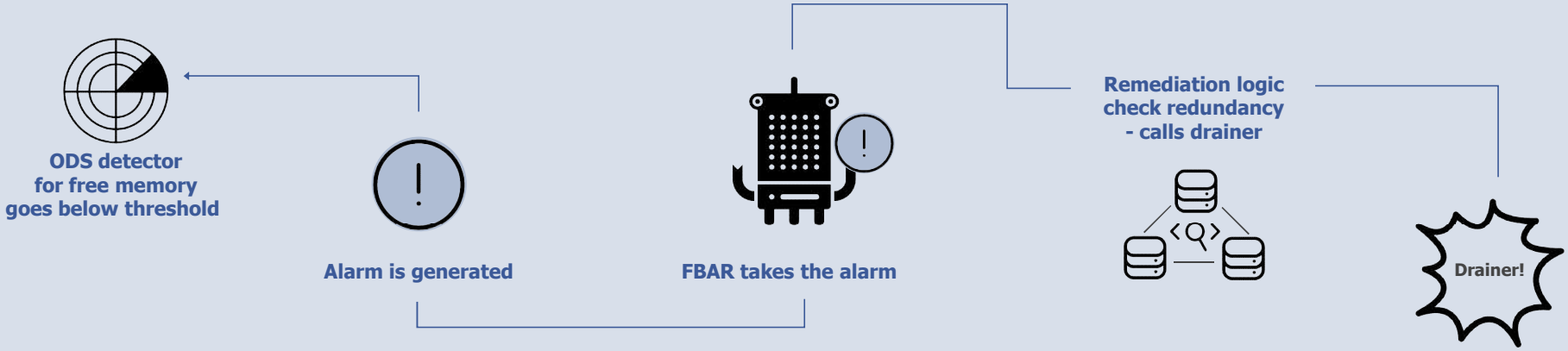

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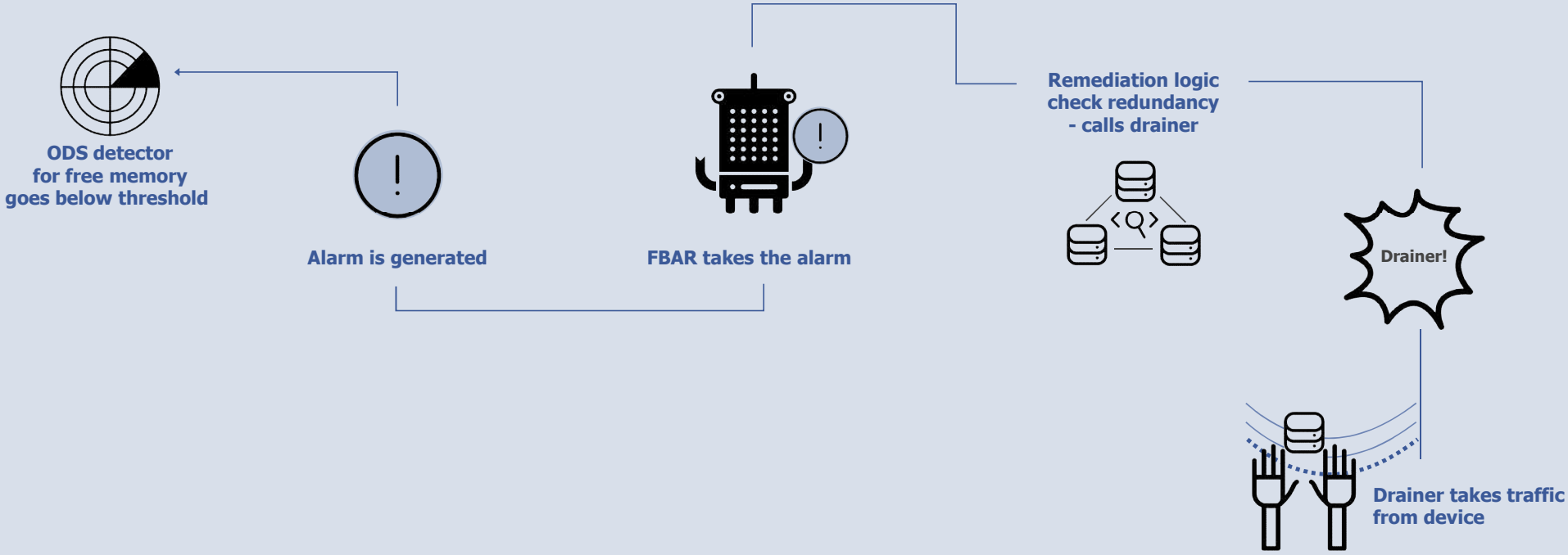

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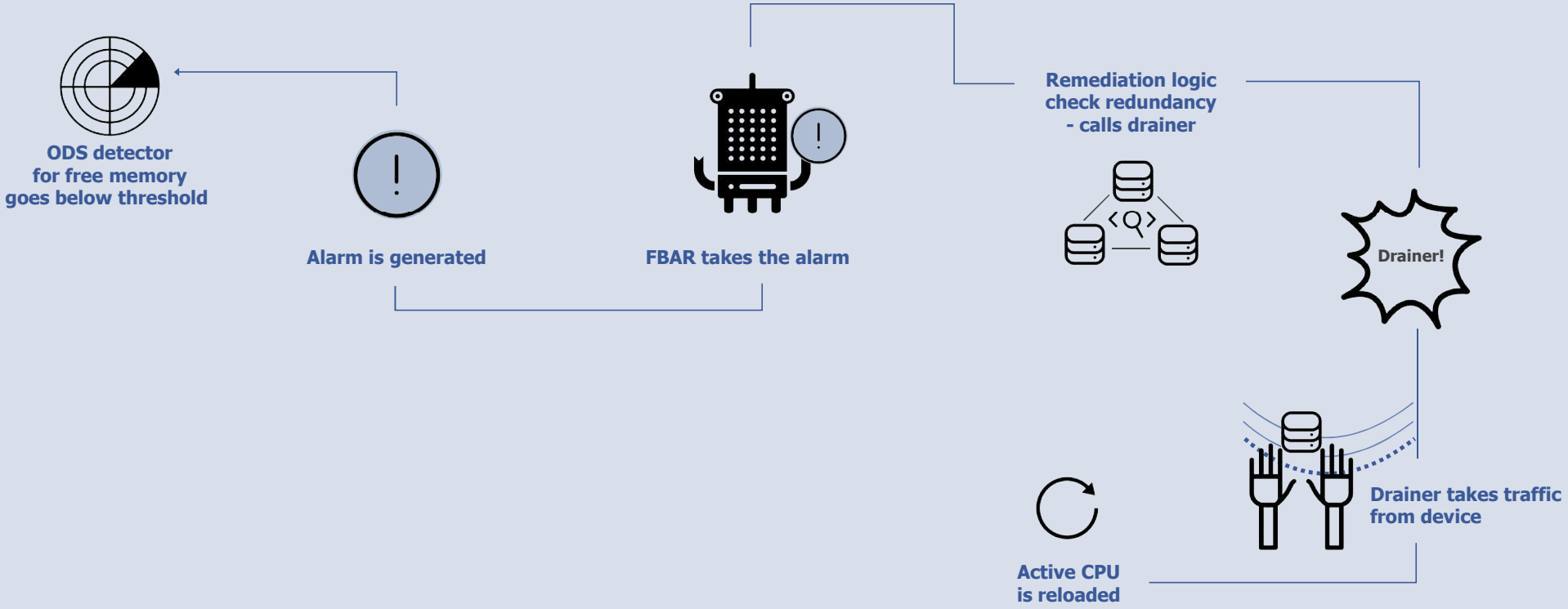

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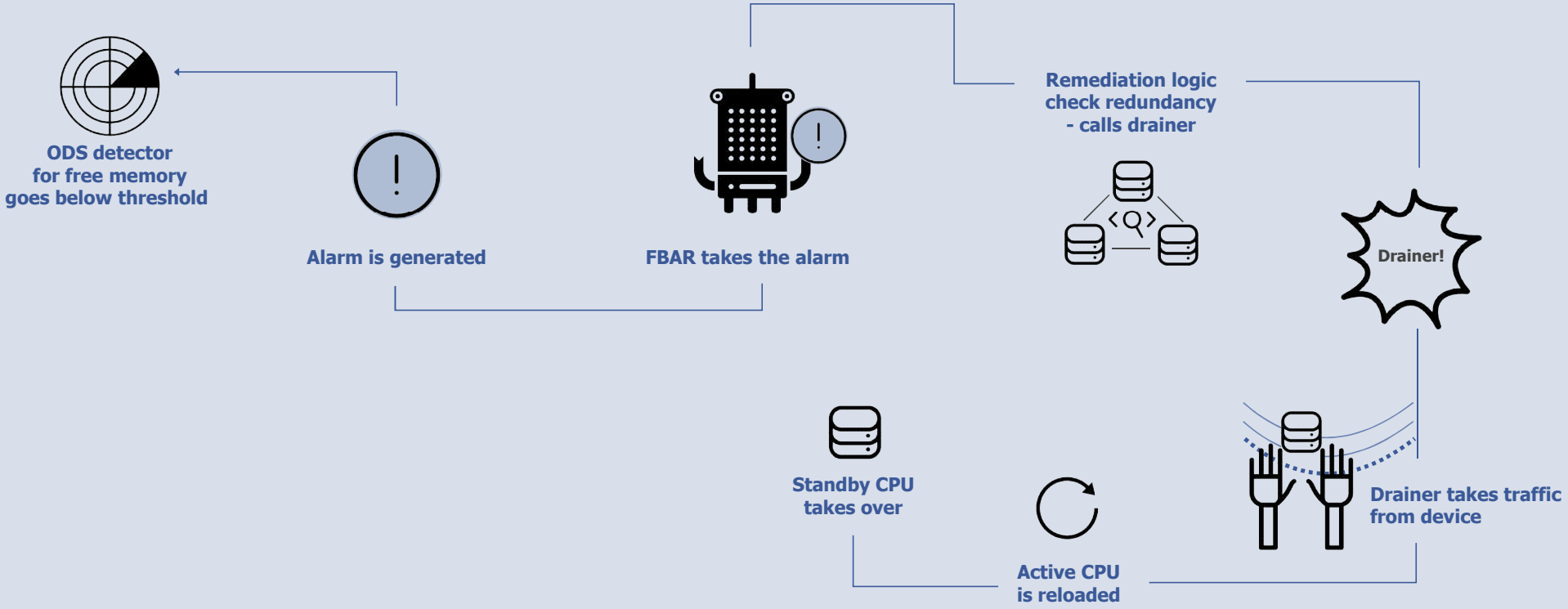

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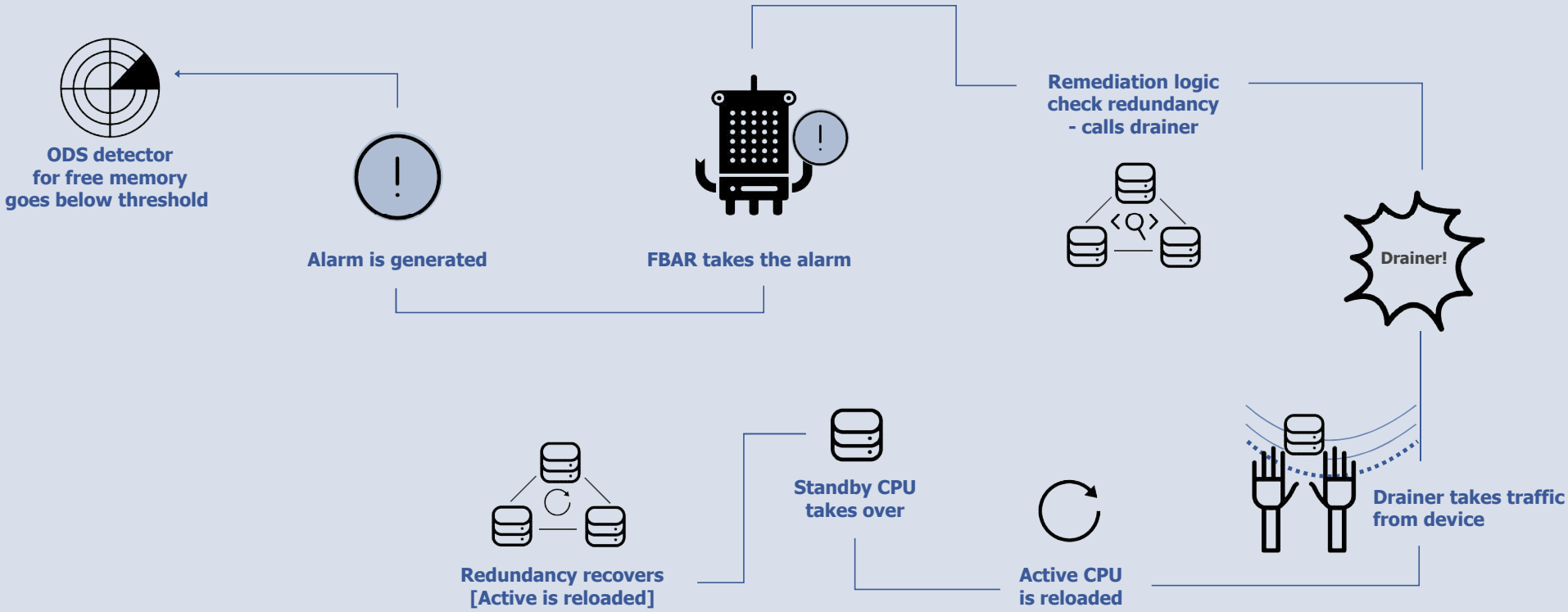

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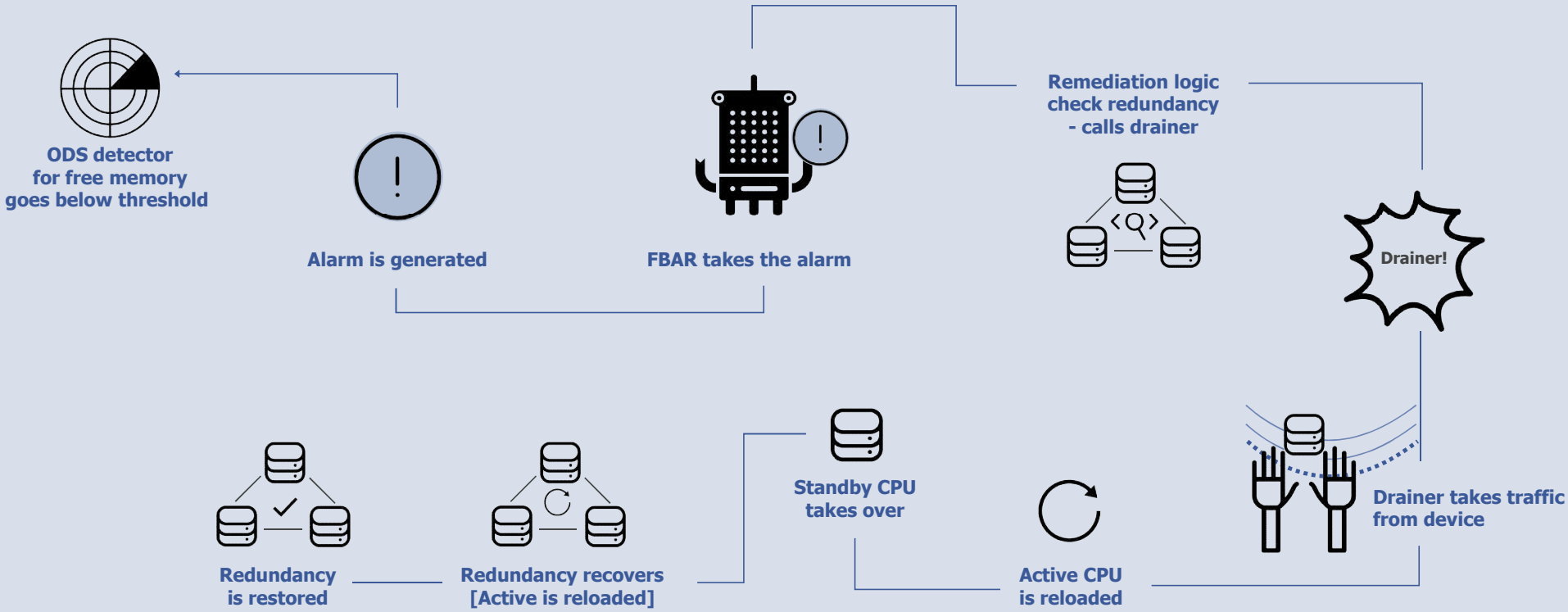

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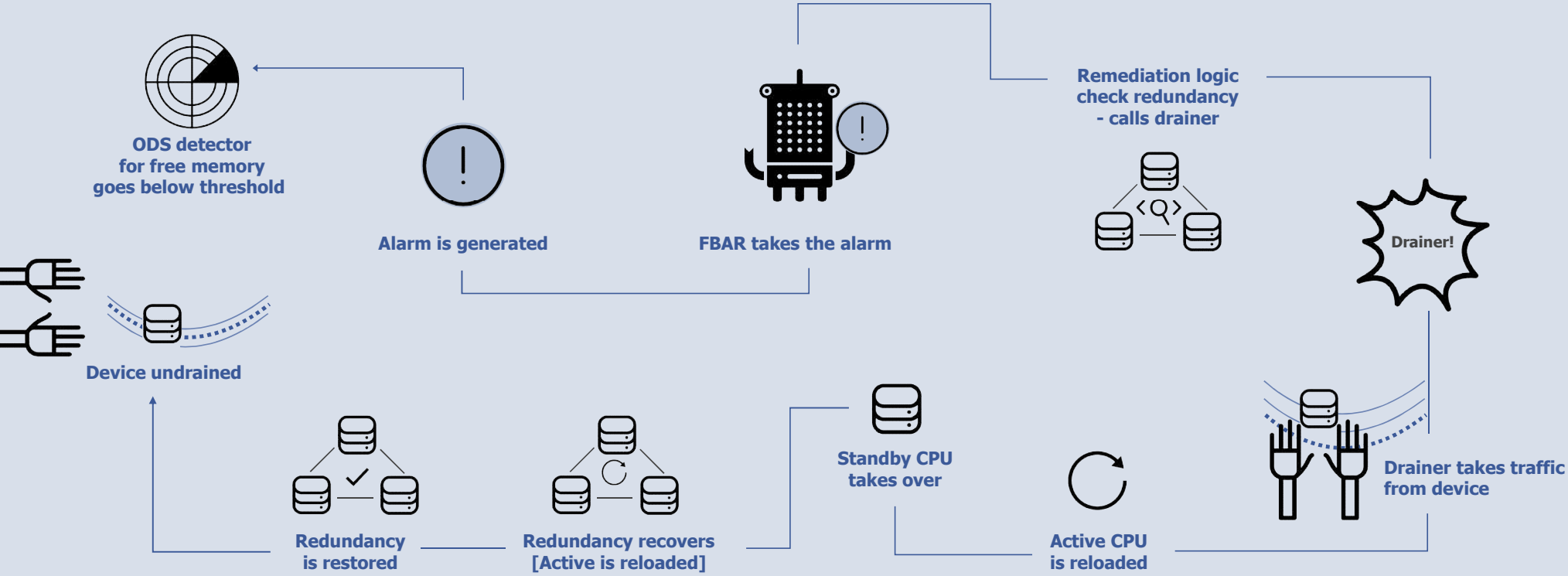

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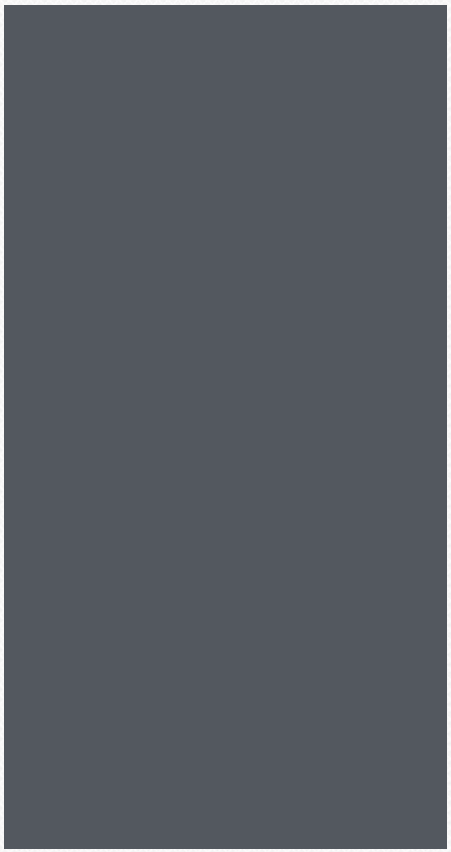
OCP Networking Project

"…create a set of networking technologies that are

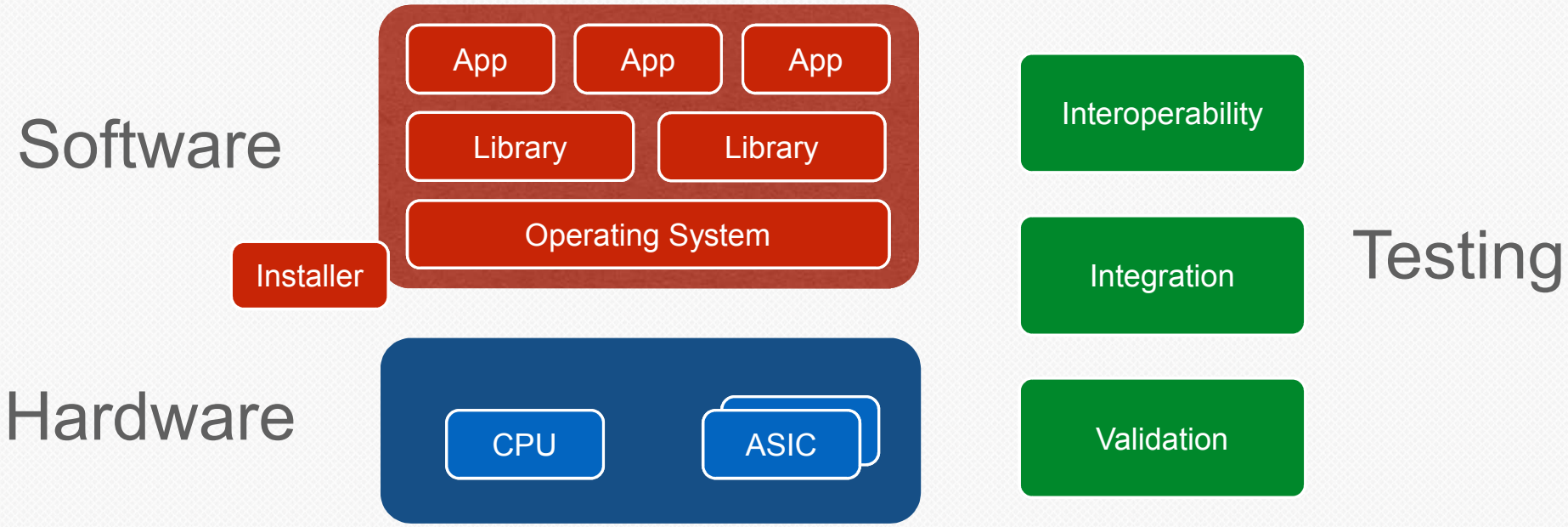
***disaggregated** and **fully open**,*

allowing for rapid innovation in the network space…"

founding charter, May 2013

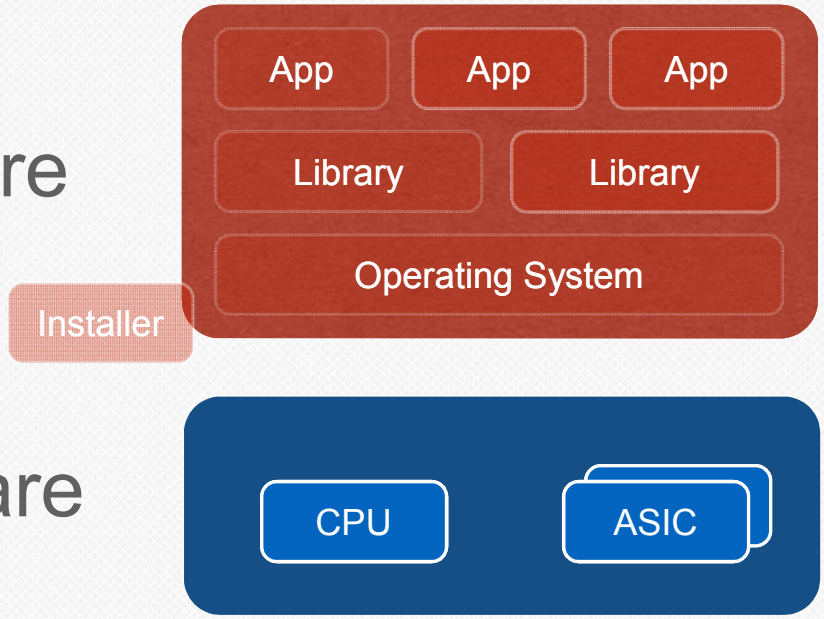


Network appliance disaggregation



Software

Hardware



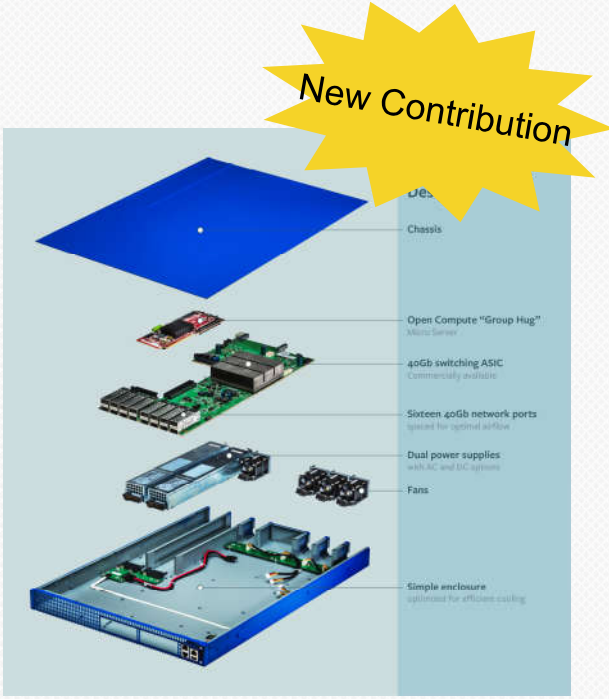
Testing

- Interoperability
- Integration
- Validation

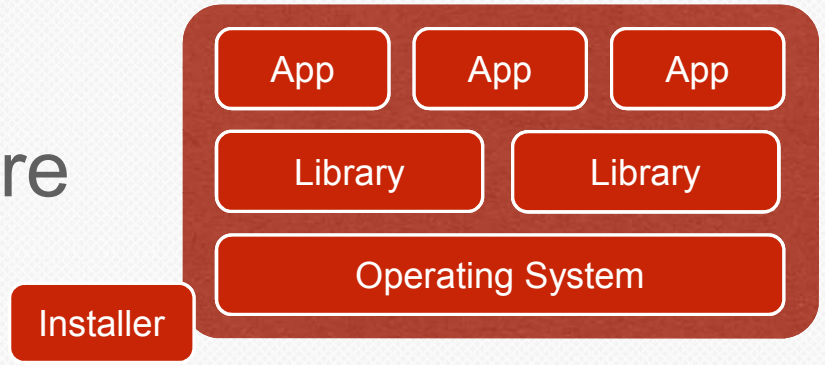
Facebook - “Wedge” switch

In production across FB data centers

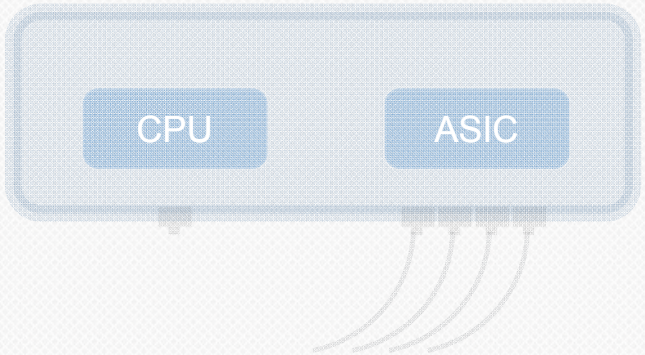
- Has OCP Microserver and BMC
- Server-like mgmt and sw development
- Building block for FB switches



Software



Hardware

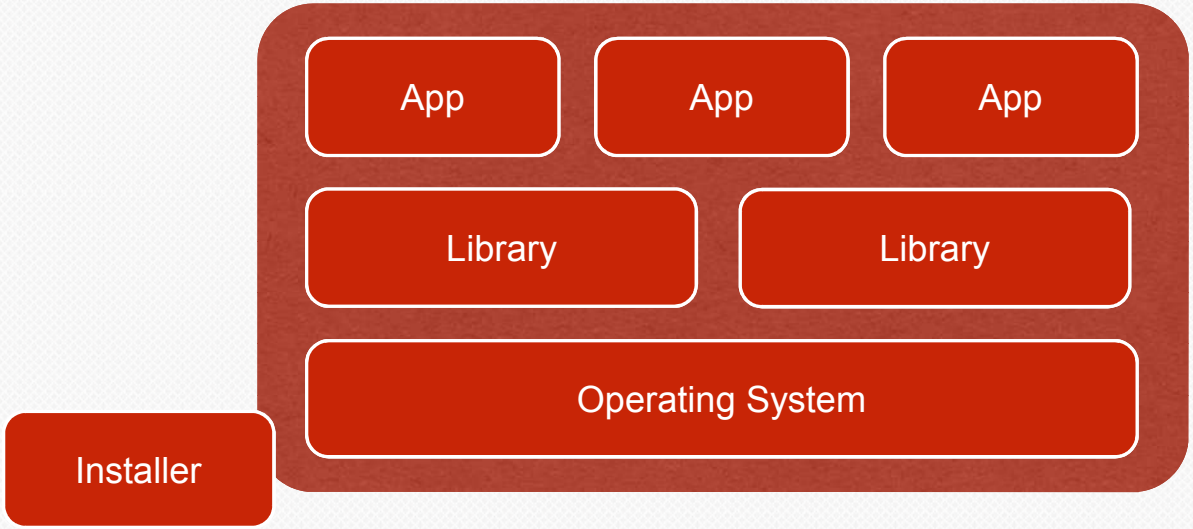


Testing

- Interoperability
- Integration
- Validation

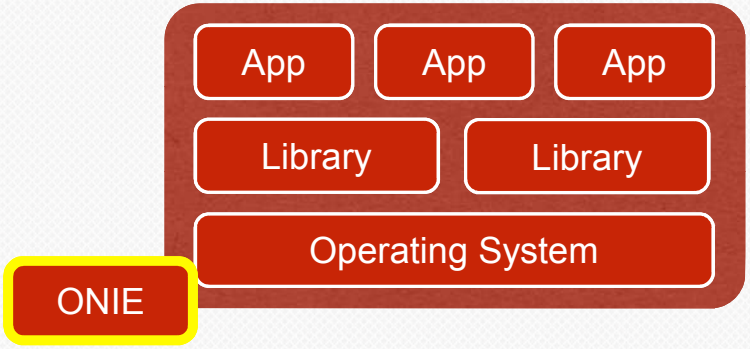
Active software projects

Providing building blocks



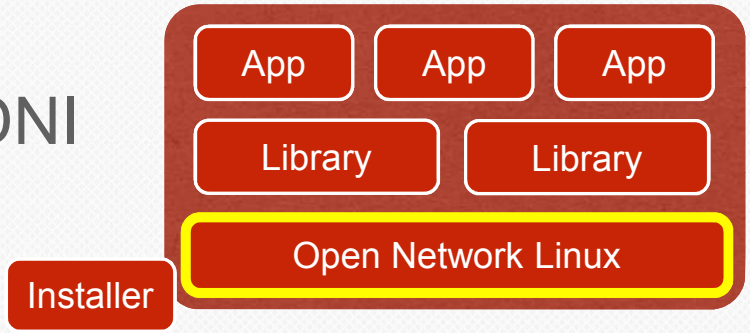
Open Network Install Environment (ONIE)

- Broadly used



Open Network Linux

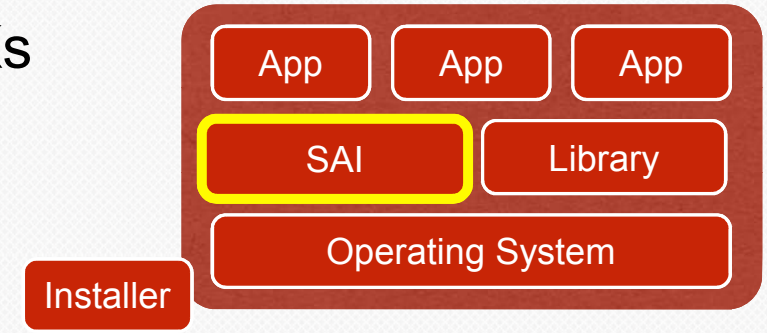
- Accepted Jan 2015
- Big Switch, Pica8, Accton, Quanta, DNI
- Basis for Network Operating System
- Takes care of platform “stuff”



Switch Abstraction Interface (SAI)

Open, multi-company effort

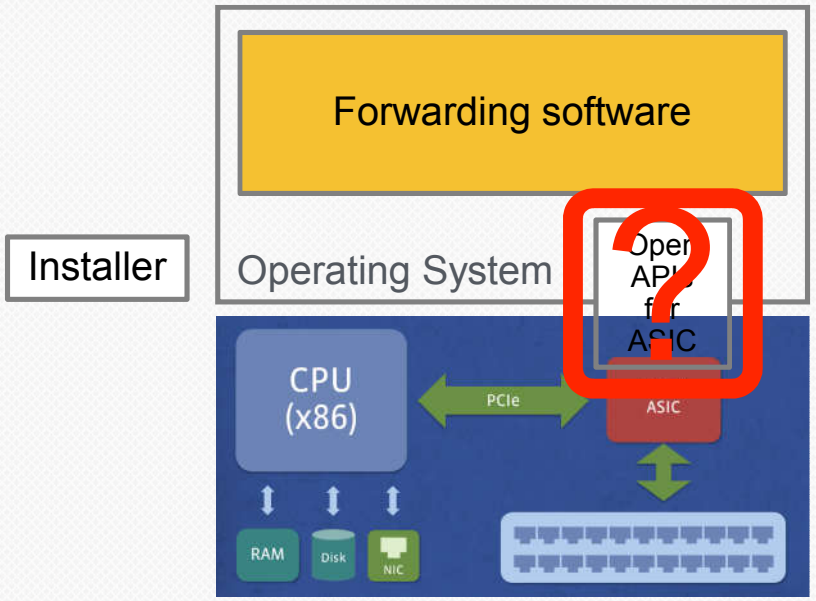
- An abstract interface above switch SDKs
- Very active open-source collaboration
- Multi-system demo, implementations



Broadcom - OpenNSL

Open Network Switch Library

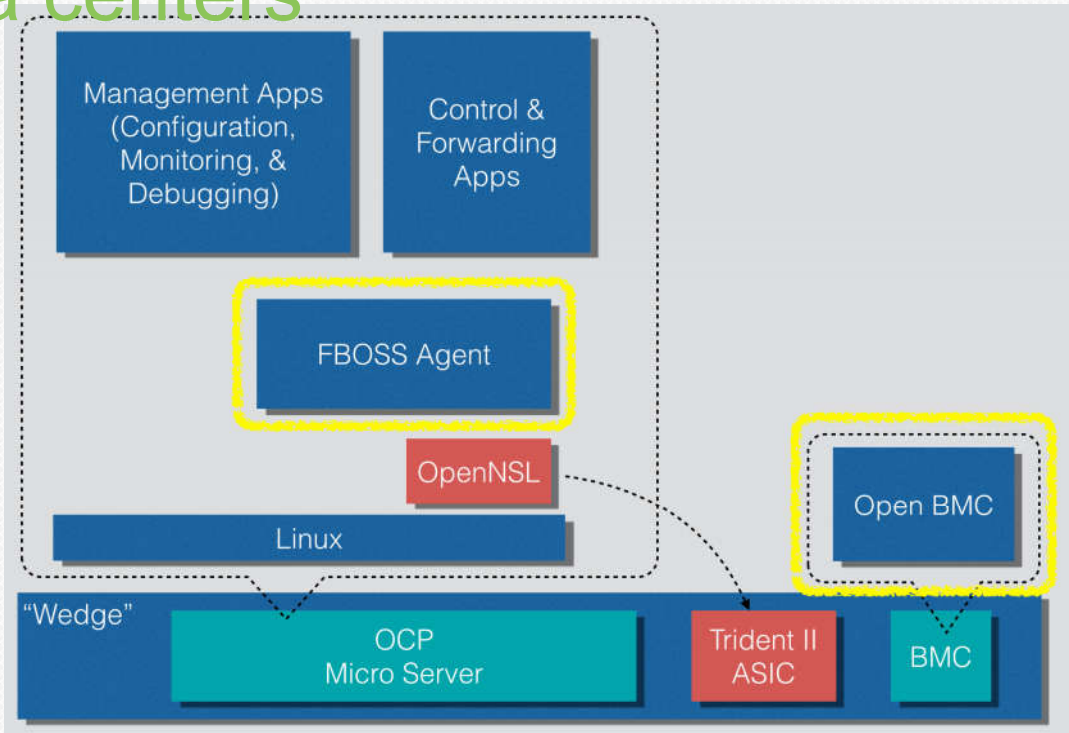
- Opening the APIs to the switch ASIC
- Enables open-source development
  - Network operating systems
  - Applications
- Enables OEMs to provide access



Facebook - FBOSS Agent & OpenBMC

In production in FB data centers

- FBOSS Agent
  - Core library to switch ASIC
  - Thrift interfaces
- OpenBMC
  - Low-level system management of board



Continue innovation, drive adoption

Software

An open SW ecosystem

A complete open-source stack?

Hardware

Beyond TOR

100G+ optics?

Testing

Test plans & software

Seals & certifications

Solutions for specific use cases?

Appendix

Open networking hardware is reality!

First OCP networking switch accepted in 4Q2014

- Accton TOR switch - 48 x 10G + 6 x 40G
  - Full design package - an industry first
- Accton Open Rack Switch Adapter
  - Allows 19” switch in 21” Open Rack

More nearing the finish line

ALPHA Networks	▪ 48 x 10G switch and 32 x 40G switch (w/ Juniper) ▪ Reviewed w/ OCP IC, design pkgs submitted
BROADCOM.	▪ Leaf/Spine switch - in final review/licensing
Mellanox TECHNOLOGIES	▪ MSX 1400 OCP - initial review

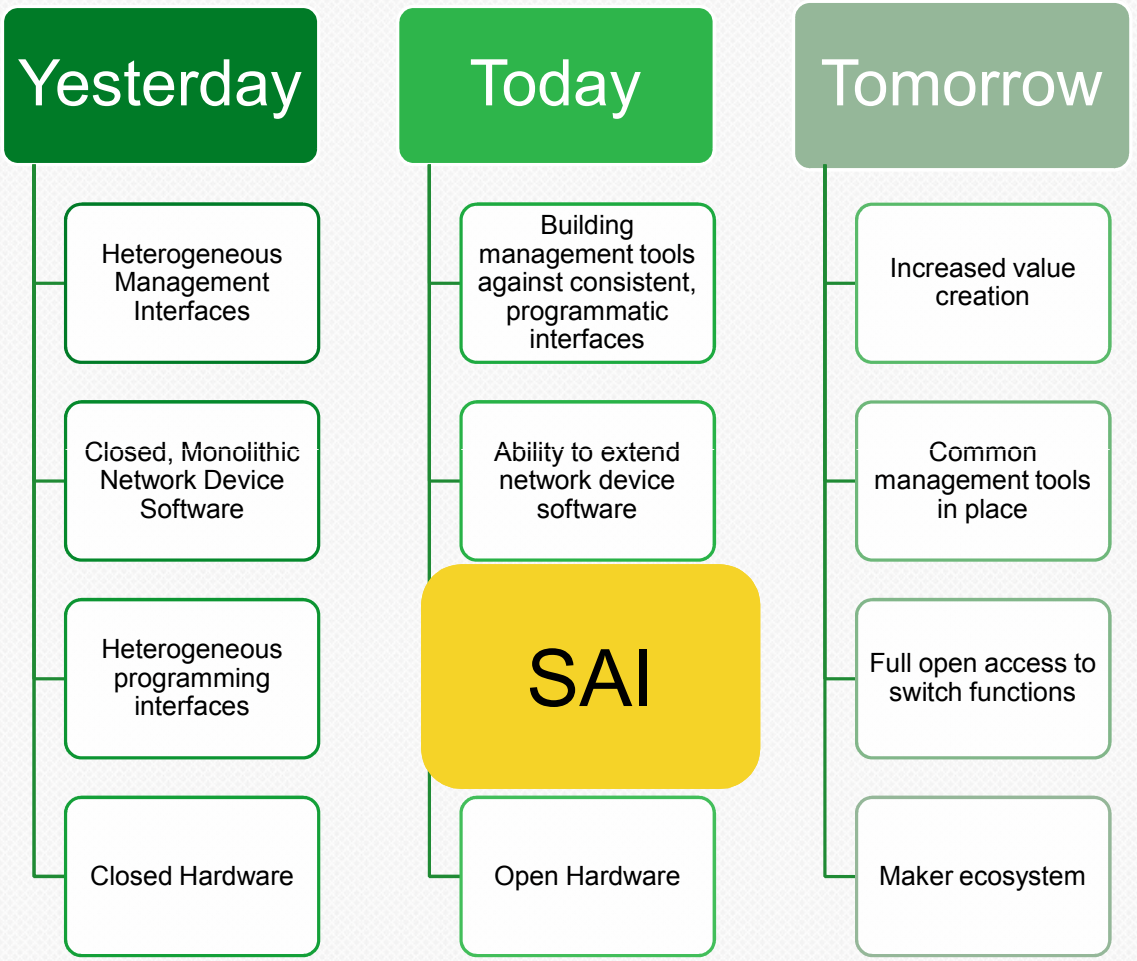
More spec contributions…

Accton

- 32 x 40G switch and a ***32 x 100G*** switch

1.5M simultaneous Netflix movies!

SAI Evolution



SAI Advantages for Microsoft (and others!)