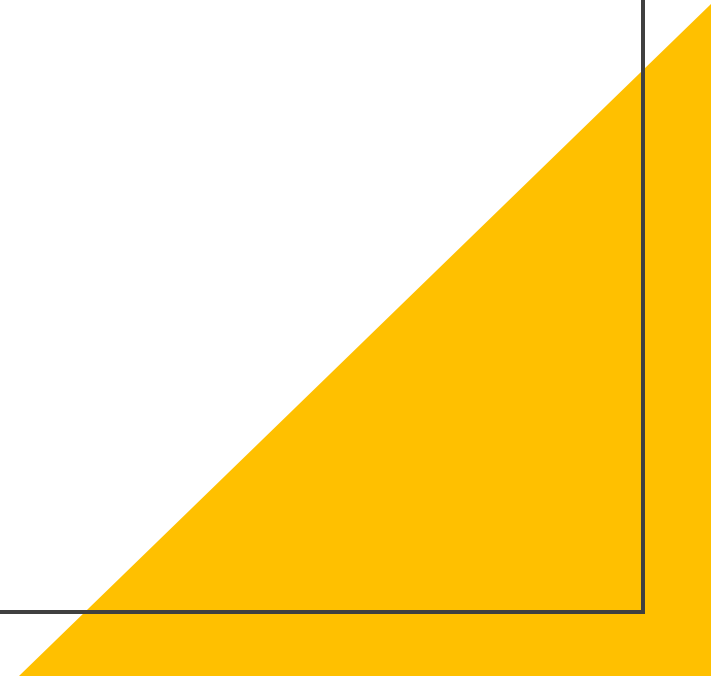


Kubernetes for IoT



What do I mean for IoT

Requirements:

4GB RAM

20GB ROM

2 core

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minikube



K3S



MicroK8s

And many more...

Why computing at the Edge?



The only reason to consider
new technologies should be that
it drives value and/or simplifies
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Why computing at the Edge?

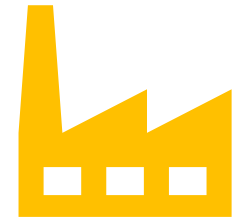
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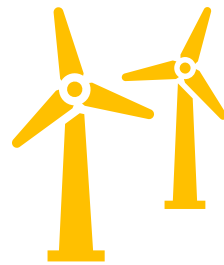
Vehicles



Smart Home



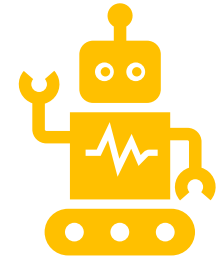
Industry



Renewables



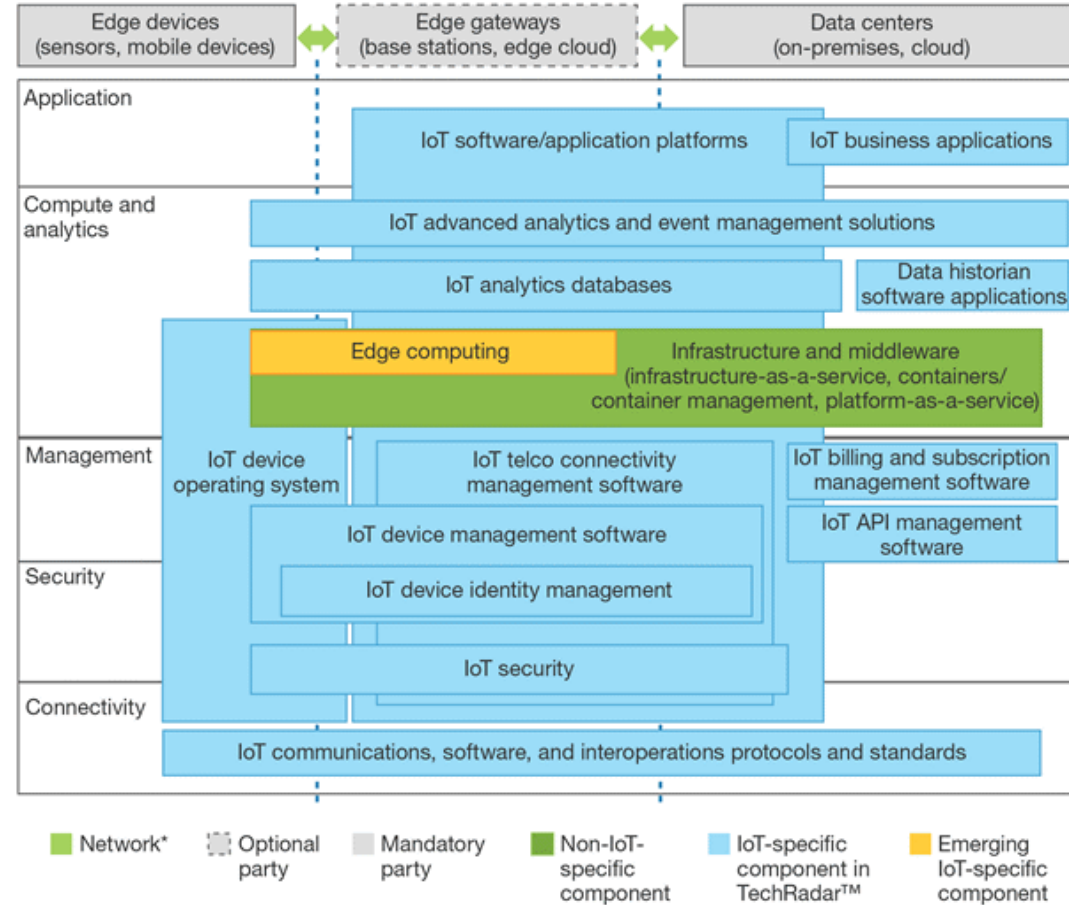
Appliances



Robotics

McKinsey has identified over 100 different use cases and potentially \$200 billion in hardware value being created over the next 5-7 years for edge computing

IoT infrastructure



Scalability

A thick yellow horizontal bar spans the width of the slide, with a vertical yellow bar extending downwards from its right end.

- Is a system's capacity to manage an increasing quantity of work efficiently by leveraging additional resources
- 
- A thin grey horizontal bar spans the width of the slide at the bottom.

Scalability

- Is a system's capacity to manage an increasing quantity of work efficiently by leveraging additional resources
- `microk8s kubectl scale ... --replicas=6`

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- `microk8s kubectl scale ... --replicas=6`
- Autoscaling vertical and horizontal



Load balancing

- A Kubernetes load balancer service directs client requests to the nodes that can process them fast and effectively. The load balancer redistributes its duty across the remaining nodes when one host fails. On the other side, the service begins automatically forwarding requests to PODs associated to new nodes when they join a cluster
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 - Kube-proxy:
 - Round Robin
 - Ring Hash
-

High availability

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- The ability to keep devices updated after deployment and connect them to external data sources is one of the primary factors behind the successful evolution of edge computing.
- But keeping a device always running exposes it to many attacks

Security

- Uses the whole containerization technology
- Authorization and authentication already implemented in various way:
 - Signed certificates
 - Tokens
 - ...
- *microk8s enable rbac*

Updates

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- In the past, there were far fewer devices deployed in the field, and they typically remained in a fixed state throughout their entire lifecycle
- Supports :
 - OTA updates
 - Rolling updates: strategy for updating applications or services without incurring downtime. It involves gradually updating instances of an application or service while ensuring that the overall system remains operational and accessible to users
 - Roll back on failure

Questions?

Please give feedbacks at

<https://bit.ly/kubernetes4iot>