



The Networking of Edge Computing and Edge Stack on Arm Platform

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Agenda

- What is Edge Computing
- Edge Computing Communities
 - Akraino
- Edge Reference Stack – Proposal
- Current Progress
- Next Steps

What is Edge Computing

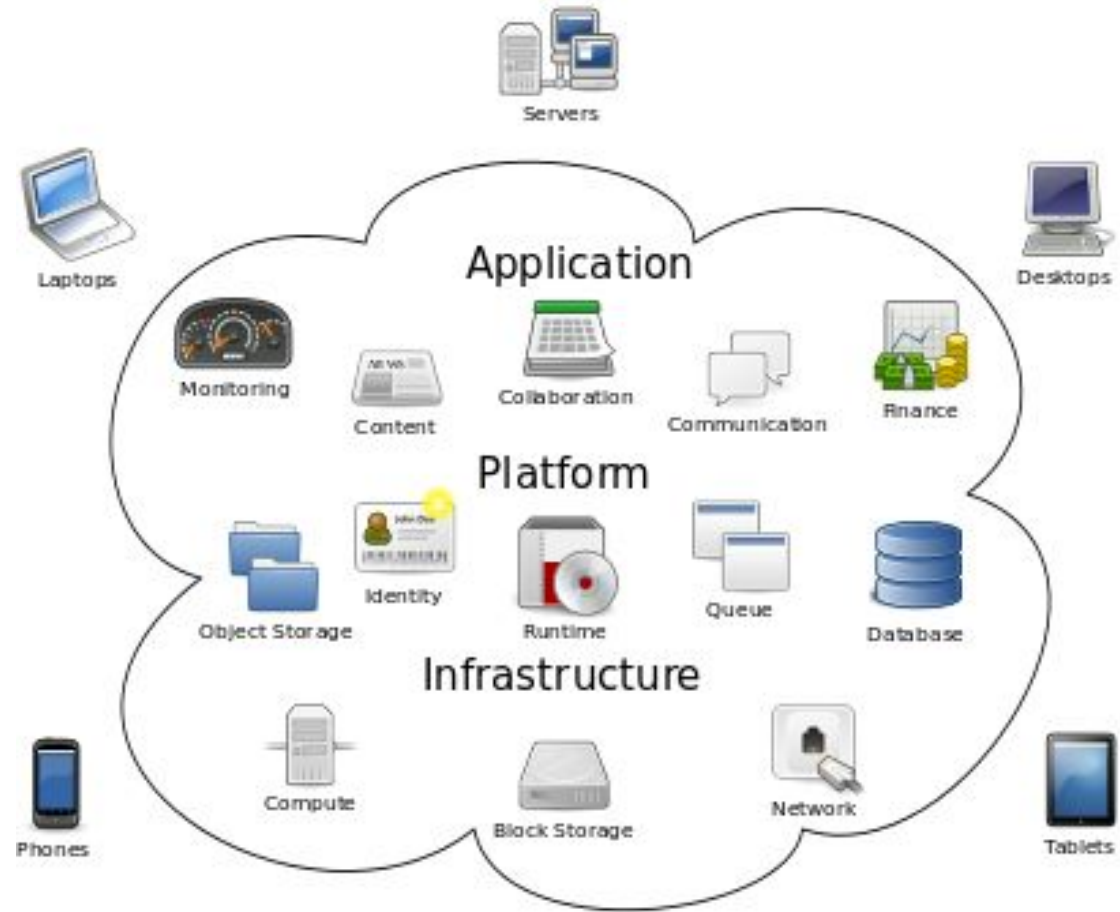
- Information processing and content collection and delivery are placed closer to the data sources and consumers.
- Computing and network resources along the path between data sources and cloud data centers



(A case of Edge Computing)

Why is Edge Computing

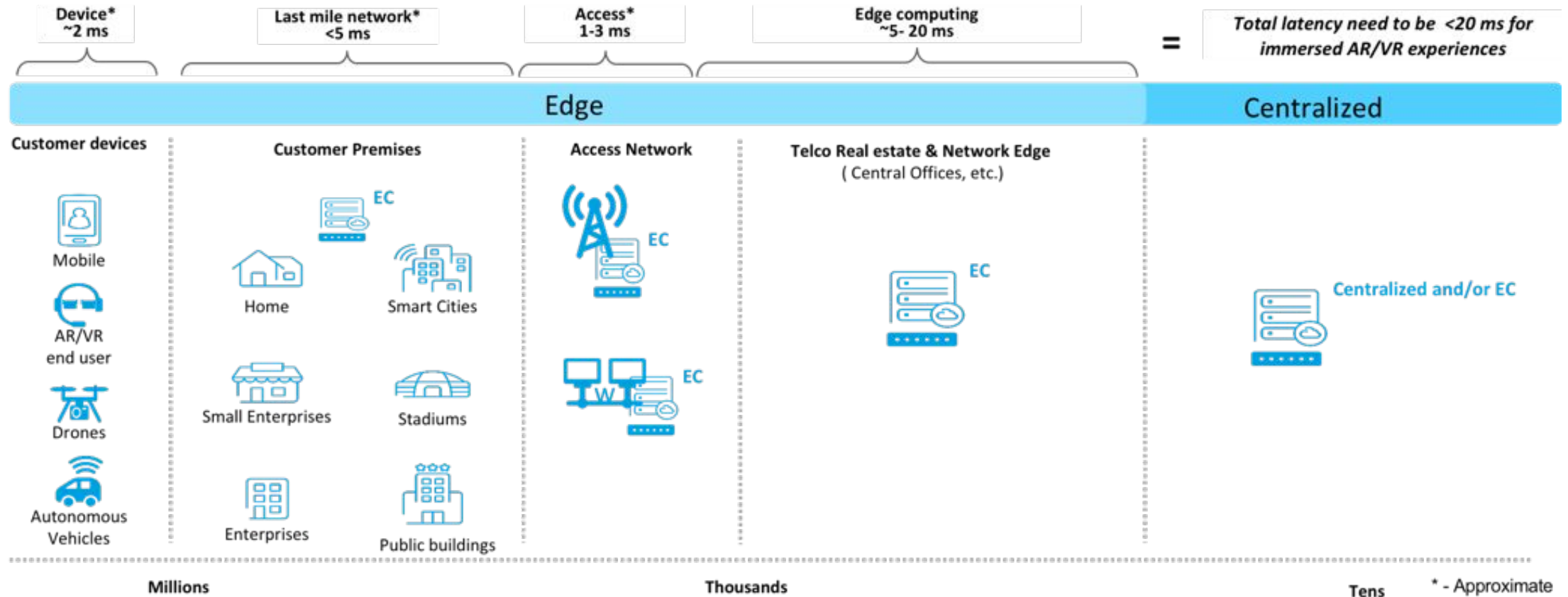
- Push from cloud services
 - Bandwidth
- Pull from IoT devices
 - Latency
- Cloud users: from data consumer to producer
 - Privacy



(A Centralized Cloud Data Center)

Edge Application Profile

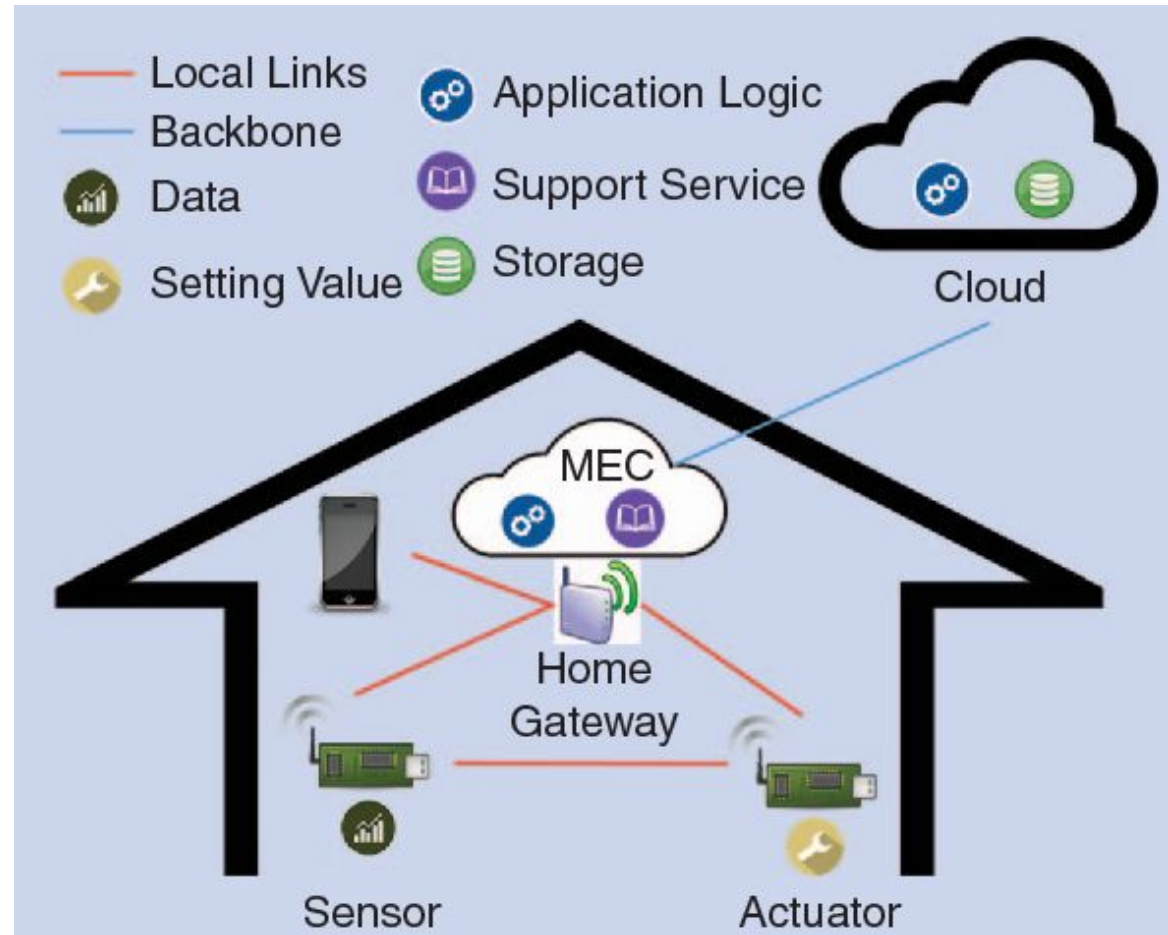
Placement varies depending upon the use case, latency, space availability, etc.,



(Ref: [Edge Automation through ONAP](#))

Edge Use Cases

- Cloud offloading
- Video analytics
- Smart home
- Smart city



(A Smart Home IoT system)

Edge Computing Communities

- [Akraino Edge Stack](#): Fully integrated edge stack
- [ONAP Edge Cloud](#): Edge Automation through ONAP
- [OPNFV Edge Cloud](#): Reference platform design for edge cloud in OPNFV
- [OPNFV Container4NFV](#): NFV Infrastructure of VNFs composed of containers
- [ETSI MEC](#): development of specifications, informative reports, white papers, SW implementation of the standardized APIs, testing and compliance framework

Akraino Edge Stack

- A Linux Foundation **open source** project
- Development of a **fully integrated edge infrastructure** solution

arm



AT&T

DELL EMC



ERICSSON



HUAWEI



JUNIPER
NETWORKS

NOKIA

Qualcomm

Radisys

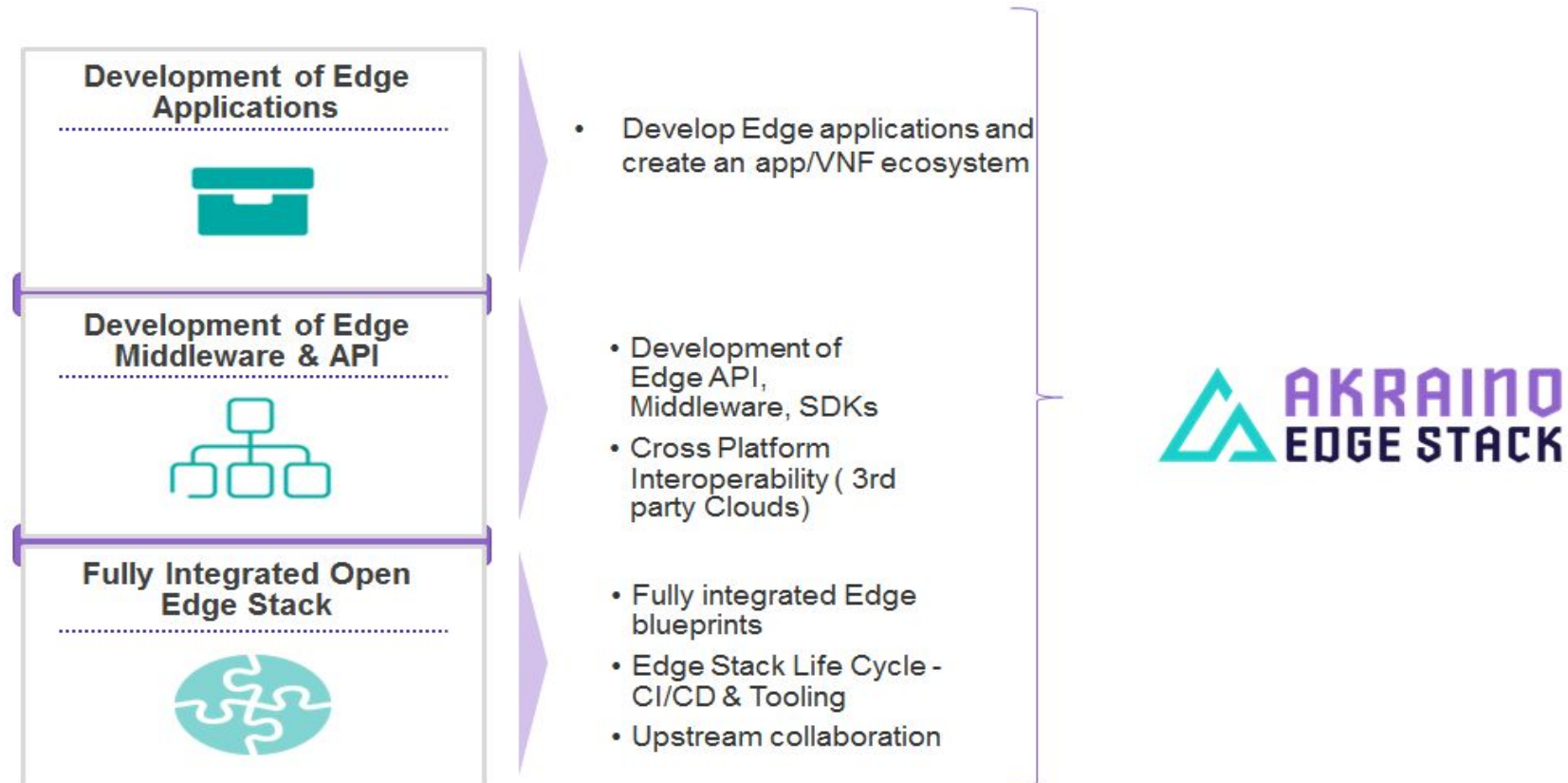


SEAGATE

WIND™

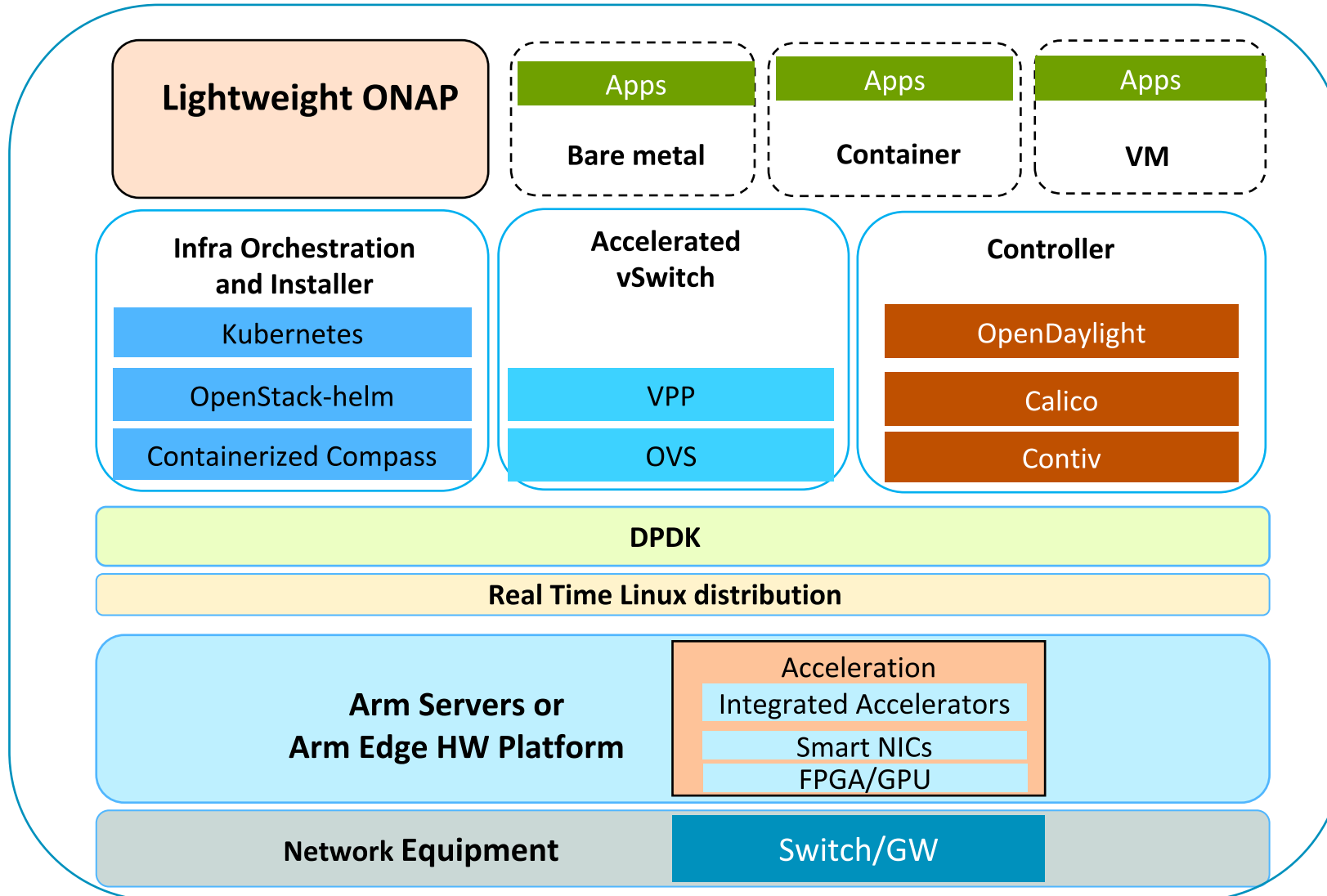
Akraino Scope

What is Akraino? Everything About Edge – Akraino is the Edge Project



(Ref: [Akraino Edge Stack](#))

Edge Reference Stack - Proposal

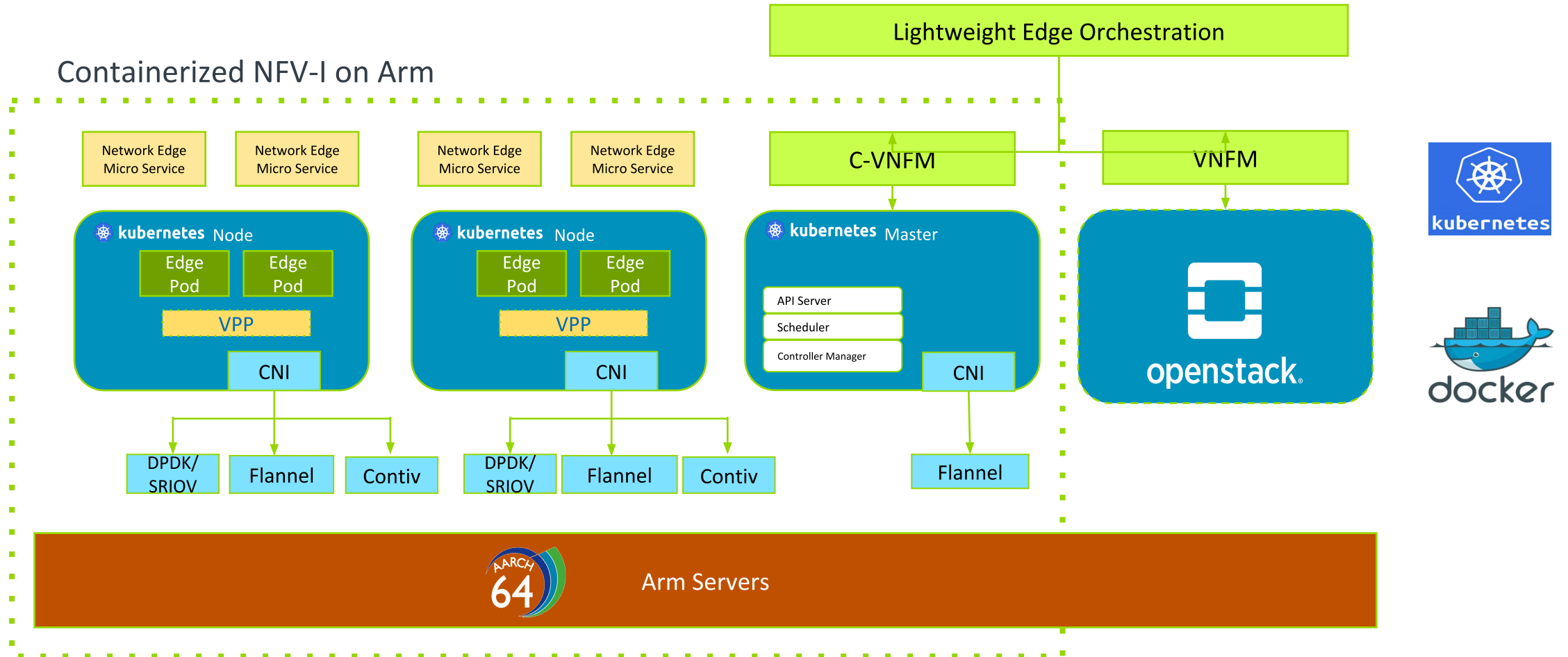


- **Heterogeneous Architecture**
 - VM, container, bare metal
 - Servers and customized Edge platforms
 - Virtualized NFs and Physical NFs
- **Resource constraints**
 - Lightweight Kubernetes
 - OpenStack deployment on K8s
 - Lightweight SDN Controller
- **HW Accelerations**
 - Integrated accelerators
 - Smart NICs

Current Progress

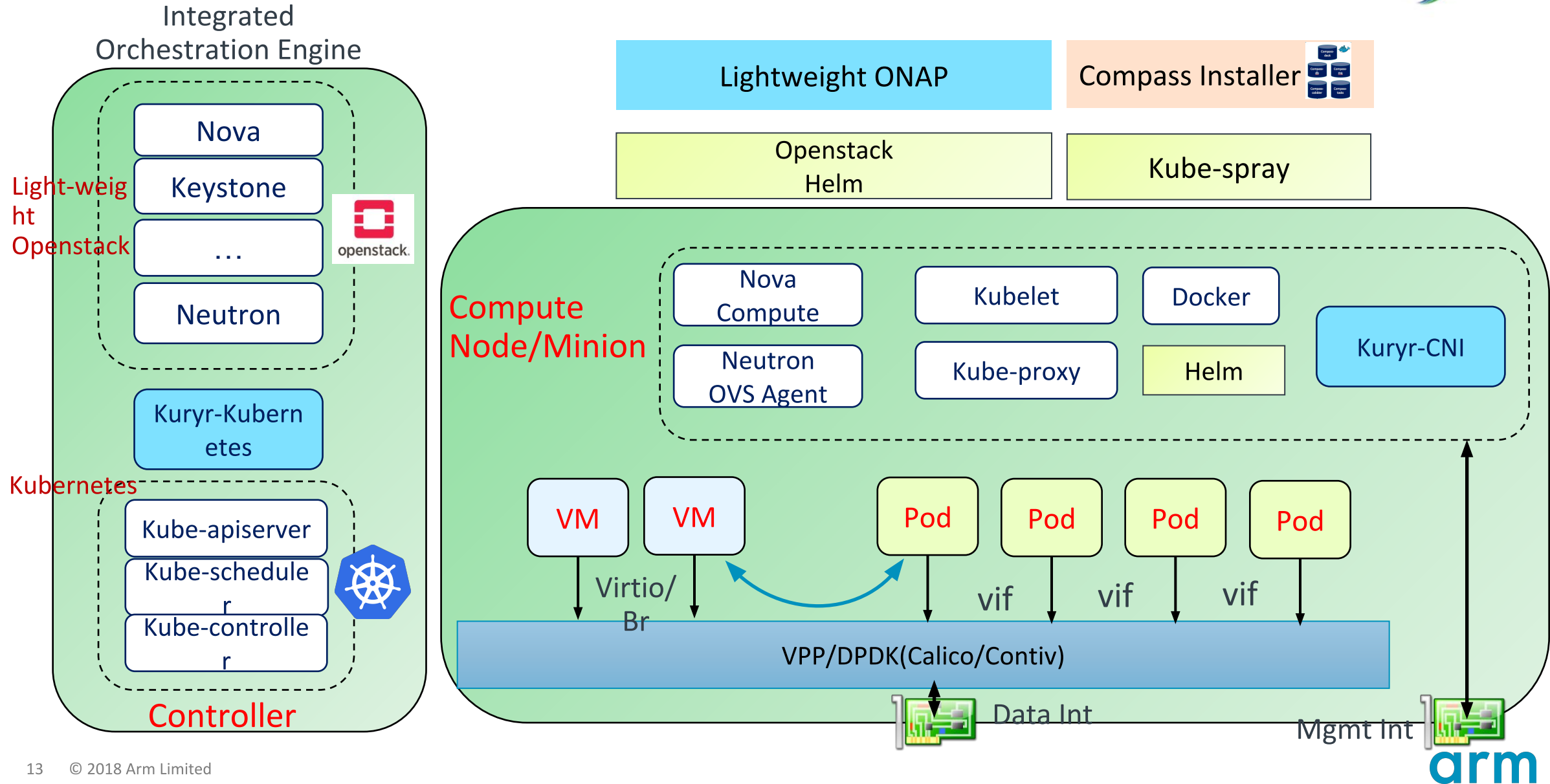
- Building containerized NFV-I on Arm architecture
 - Working in OPNFV Container4NFV, Auto and Edge Cloud
 - ONAP as the orchestration platform for VNF or PNF
 - Kubernetes as Virtual Infrastructure Manager
 - Data plane acceleration integration (SRIOV/DPDK, VPP)
- Participating in Akraino project
 - Edge reference stack proposal
 - Project blueprint

Container Networking for Edge Stack



(Ref: [Container4NFV Architecture](#))

Edge Software Architecture on Arm platform



Next Steps – Build Edge stack on Arm platform

- Edge Use Scenarios
 - Telco/enterprise Edge cloud – Edge data center for one region
 - Telco/enterprise remote Edge locations – Edge hardware platform with limited resources
- Hardware
 - Arm servers or customized Edge hardware platforms
 - Acceleration: SR-IOV/DPDK, SmartNICs ...
- Virtualization Layer
 - VMs + Containers
- Lightweight Orchestration & Management

Thank You

Danke

Merci

谢谢

ありがとう

Gracias

Kiitos

감사합니다

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