

Akraino Edge Stack Overview

March 19th, 2019

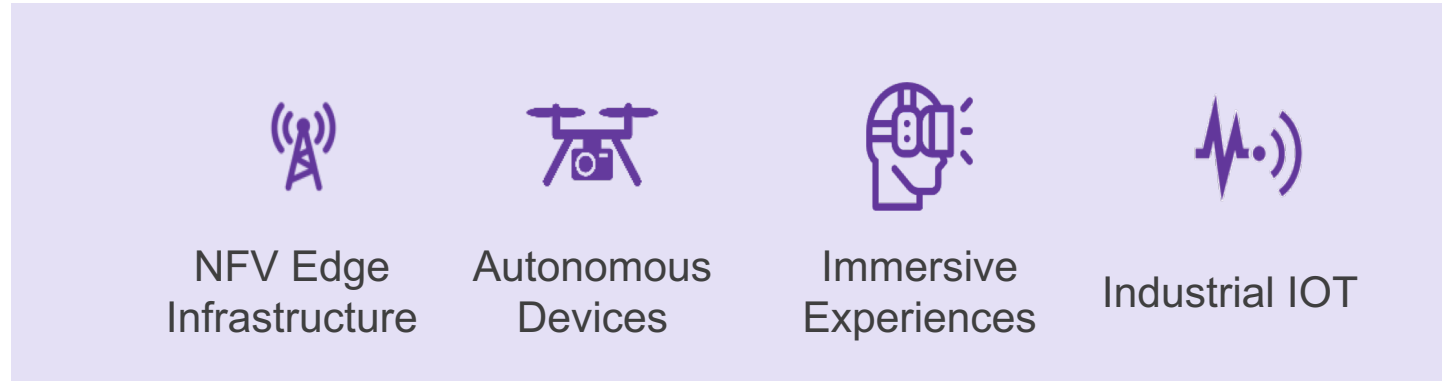
Kandan Kathirvel

TSC-Chair, Akraino Edge Stack



Why Edge Computing?

Emerging technologies are demanding lower latency and accelerated processing at the edge



Edge Cloud

Performs data processing at the edge of the network, near data sources

Low-Latency
< 20 ms

Optimal

High-Latency
~25-200 ms

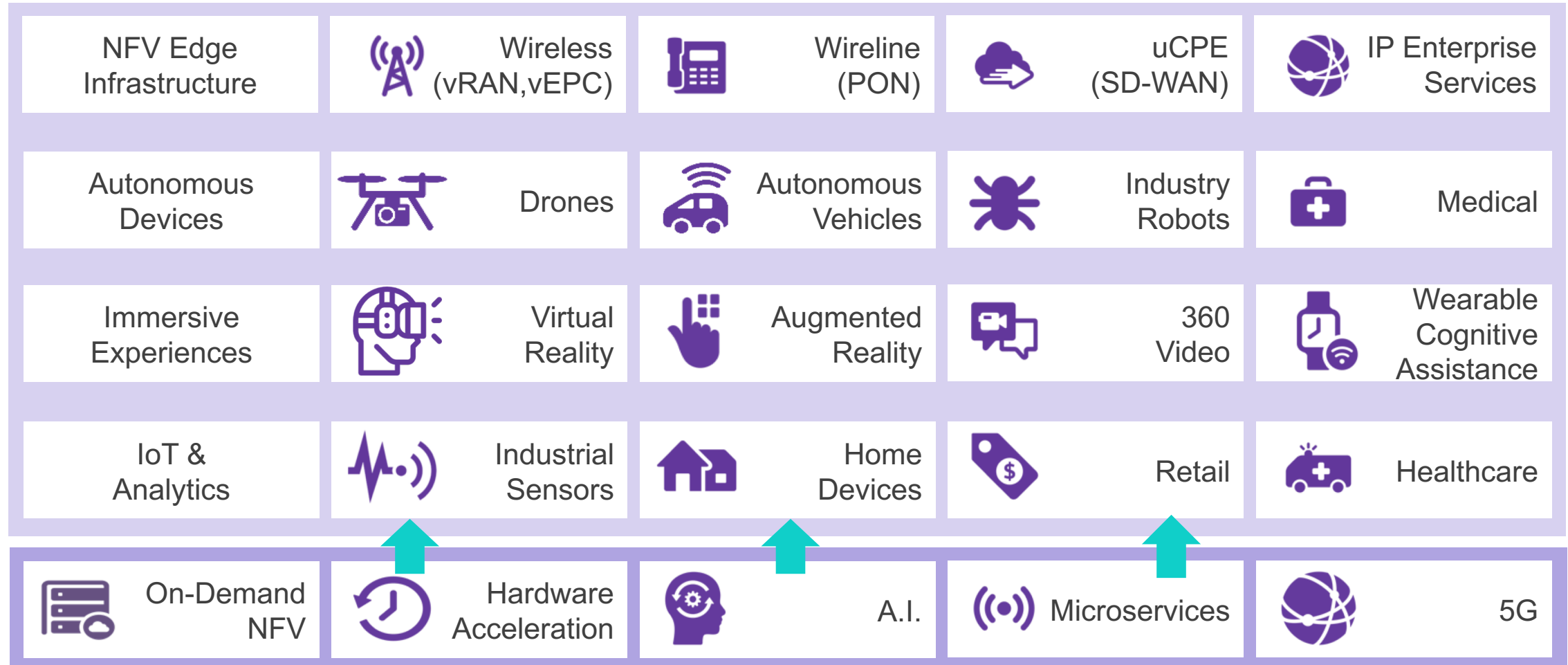
Not Optimal

Central Cloud

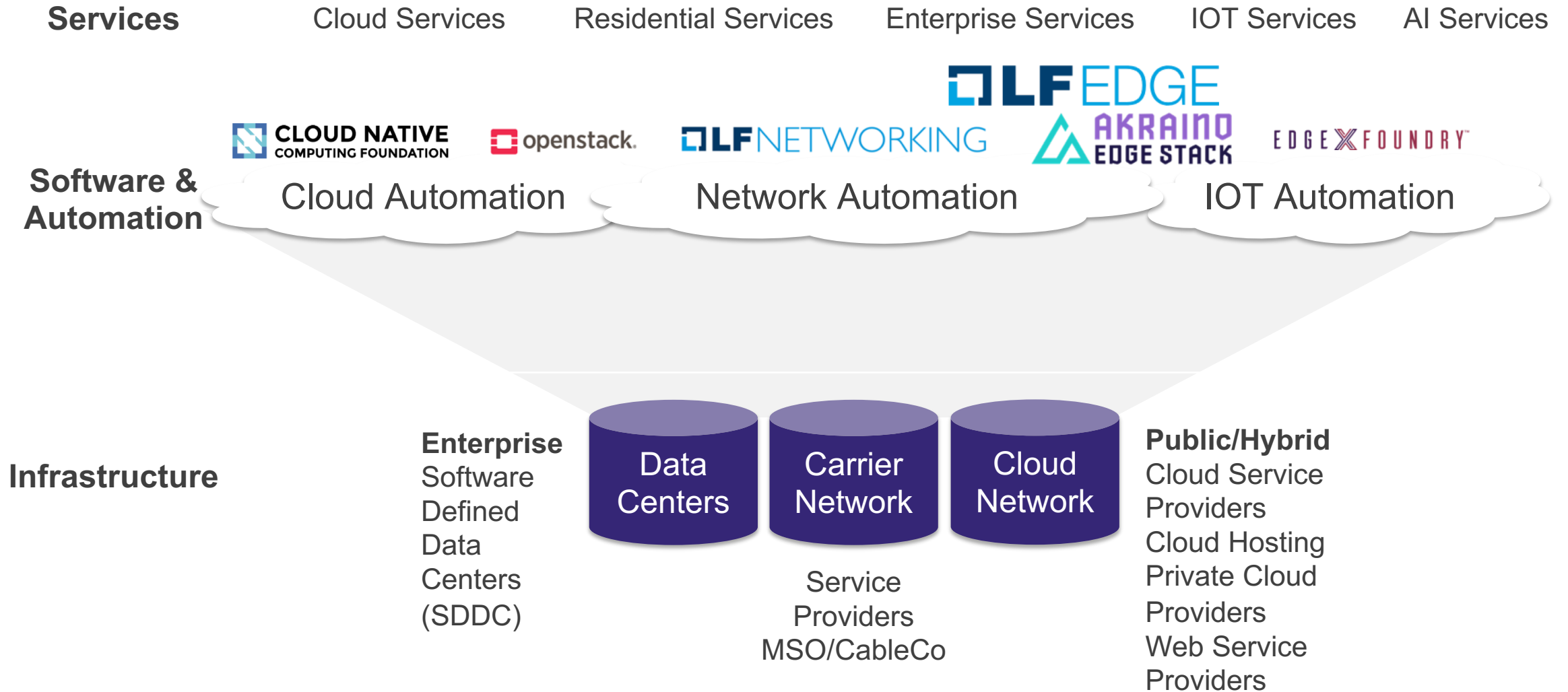
Highly centralized computing resources of cloud service providers

Emerging Technologies in IOT and Networks

are demanding lower latency and accelerated processing at the edge



New Edge Requires End-to-End Automation & Interworking

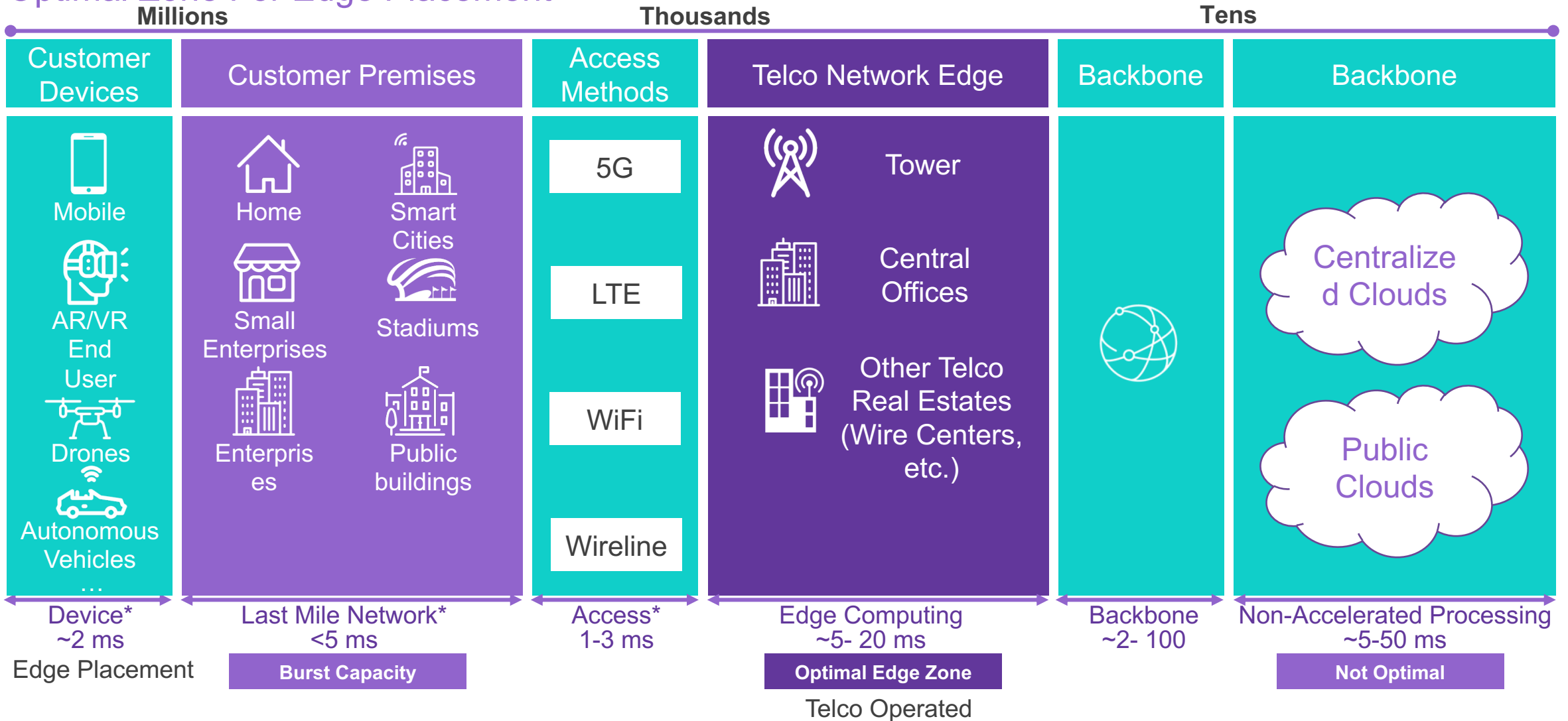


Edge Use Cases & Akraino Edge Stack in Context of Open Source Landscape



Use Case 1: Operator's Owned Network Edge

Optimal Zone For Edge Placement



* Estimates

Use Case 2: IOT Driving the New Edge for Enterprise Retail, Transportation, Healthcare...



Cloud Automation

Network Automation

Edge/ IOT
Automation



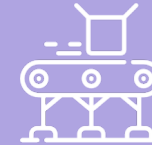
Retail



Hospitality



Healthcare



Manufacturing



Transportation
& Logistics



Enterprises



Enterprise
& Data
Centers



Public Buildings



"Southbound" Devices, Sensors and Actuators

Why Akraino Edge Stack?

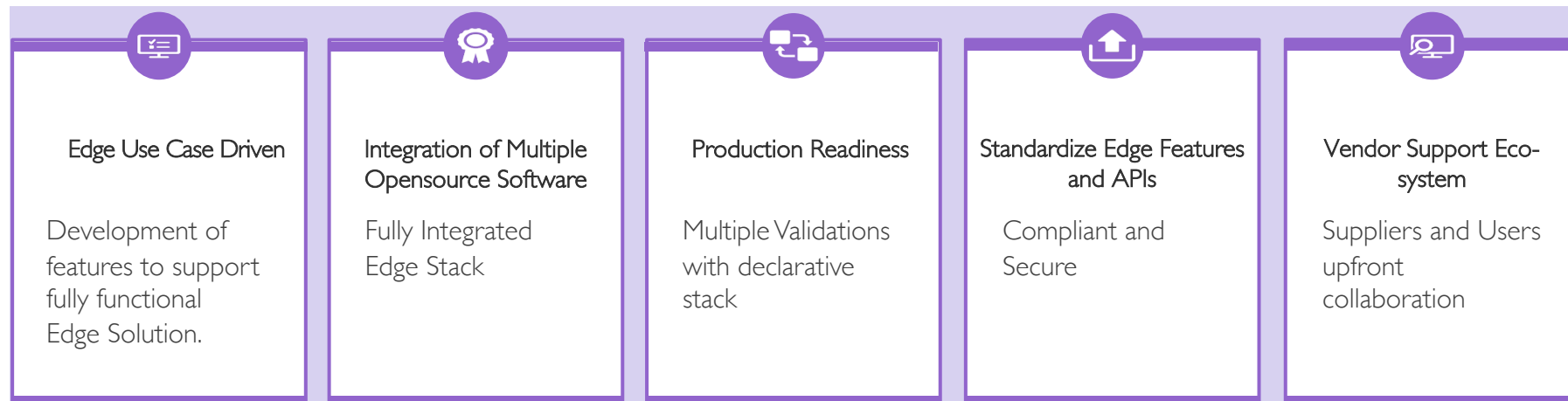
The Akraino Edge Stack community delivers fully integrated, “ready and proven” Edge Stacks

Multiple Opensource but no integrated solution to address Edge use cases

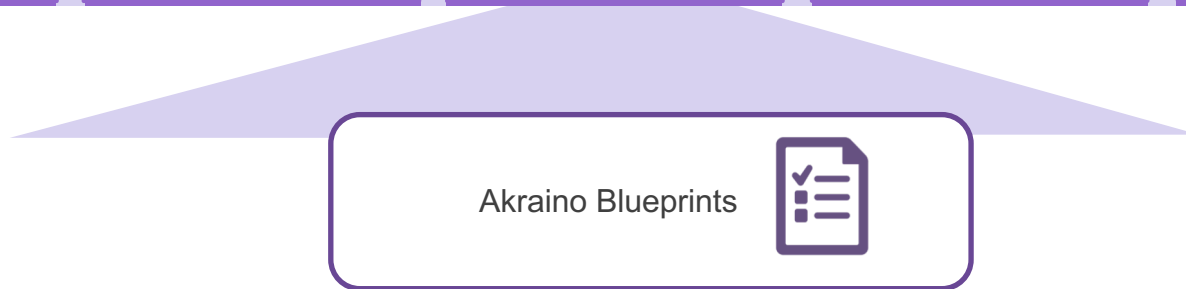


Before
Akraino Edge Stack

Real use case driven & Architecture Agnostic



After
Akraino Edge Stack



Where is the Akraino Community is Focused?

Akraino Release 1 Highlights



- 8+ Blueprint Families with 19+ Blueprints under development to support variety of Edge use cases.



- Community Development started in Jan'19 and 1st release targeted in 2Q2019



- Upcoming Conference:

The logo for the Open Networking Summit (ONS) North America. It features a network diagram with nodes and connections on the left. The text reads: "ons NORTH AMERICA OPEN NETWORKING // Enabling Collaborative Development & Innovation".

April 3 - 5, 2019
San Jose McEnery Convention Center
San Jose, California
#opennetsummit

LF Edge - Founding projects

Bringing several Edge verticals and domains under one umbrella

1. [Akraio Edge Stack](#) is creating an open source software stack that supports high-availability cloud services optimized for edge computing systems and applications;
2. [EdgeX Foundry](#) is focused on building a common open framework for IoT edge computing.
3. [Home Edge Project](#), seed code contributed by Samsung Electronics, is a new project that concentrates on driving and enabling a robust, reliable, and intelligent home edge computing framework, platform and ecosystem running on a variety of devices in our daily lives.
4. [Open Glossary of Edge Computing](#) provides a concise collection of terms related to the field of edge computing.
5. [Project EVE \(Edge Virtualization Engine\)](#), contributed by ZEDEDA, will create an open and agnostic standard edge architecture that accommodates complex and diverse on- and off-prem hardware, network and application selections.

Platinum Members:



60 + Members already

Akraino Blueprints - Incubation Projects

IOT & Far Edge Use Cases

NOKIA

Micro MEC
Can be installed on light poles, vehicles, etc...
Target Industry: Smart City, Far Edge Cloud



Edge Light & IoT
uCPE use cases, IoT appliances
Target Industry: Manufacturing & Customer Premise



Time Critical Edge Compute
IoT use cases, appliances
Target Industry: Manufacturing, IoT & Safety

arm

Integrated Edge Cloud
IoT use cases, appliances
Target Industry: Remote Edge Locations

Telco Use Cases



Radio Edge Cloud
Cloud appliance to address ORAN RIC requirements
Target Industry: Telco – Radio Edge



SDN Enabled Broadband Access
Virtual broadband access – higher bandwidth, symmetric version of GPON
Target Industry: Telco – Access



Network Cloud
Telco 5G use cases and beyond
Target Industry: Telco – 5G and generic use cases. Airship Based

JUNIPER NETWORKS

Tungsten Fabric Integration
Enhancement to NC blueprint to support Contrail Tungsten Fabric

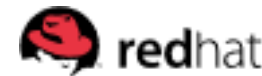
Other Use Cases



OVS-DPDK Integration
Enhancement to NC blueprint to support OVS-DPDK

arm

ARM Servers/Appliance
Enhancement to NC blueprint to support ARM Servers & Appliances



Kubernetes Native Infrastructure
Focused on Native Container workloads
Target Industry: Industrial Automation

WIND RIVER STARLINGX

StarlingX Edge Cloud
Addresses Industrial Edge Usecases
Target Industry: Far Edge Automation

Connected Car
Connected Car use case

Tencent 腾讯

Upcoming Talks

OpenStack Summit @ Denver

🕒 Mon 29, 2:00pm - 2:40pm

Akraino BoF Session - Bring your questions

Working Groups & BoF

PANEL



ONS Summit @ San Jose

Wednesday, April 3

5:10pm

Panel Discussion: Edge Open Source Synergy to Deliver Value-added End-to-end Services - Ramki Krishnan, VMware; Kandan Kathirvel, AT&T; Rolf Muralt, MobileEdgeX; Srinu Addepalli, Intel; and Tina Tsou, Arm (Description: akraino)

The Power of Open Source in a 5G World - Mazin Gilbert, AT&T (Description: akraino)

Thursday, April 4

11:10am

Arm at the New Edge - Shai Tsur, Arm (Description: akraino)

3:40pm

StarlingX - Driving Compute to the Edge - Project Overview - Ian Jolliffe, Wind River Systems (Description: akraino)

4:20pm

O-RAN & The Open Source Community - Hank Kafka & Oliver Spatscheck, AT&T; Don Fendrick, Nokia (Description: akraino)

End to End Broadband Access for Service Providers - Aaron Byrd, AT&T & Larry Peterson, Open Networking Foundation (Description: akraino)

5:00pm

Your Path to Edge Computing - Akraino Edge Stack - Tapio Tallgren, Nokia, Kandan Kathirvel, AT&T & Tina Tsou, Arm

Friday, April 5

11:50am

Securing the Smart Cities Edge with OP-TEE and Arm TrustZone - Tapio Tallgren, Nokia (Description: akraino)

Additional materials

1. <https://www.lfedge.org>
2. <https://www.lfedge.org/projects/akraino/>
3. <https://wiki.akraino.org/>

Akraino Community Calendar

<https://wiki.akraino.org/display/AK/Akraino+TSC+Group+Calendar>