

ELIOT – Edge Lightweight and IOT

Khemendra kumar, PTL and TSC member of Akraino

23rd Sep, 2020



Agenda

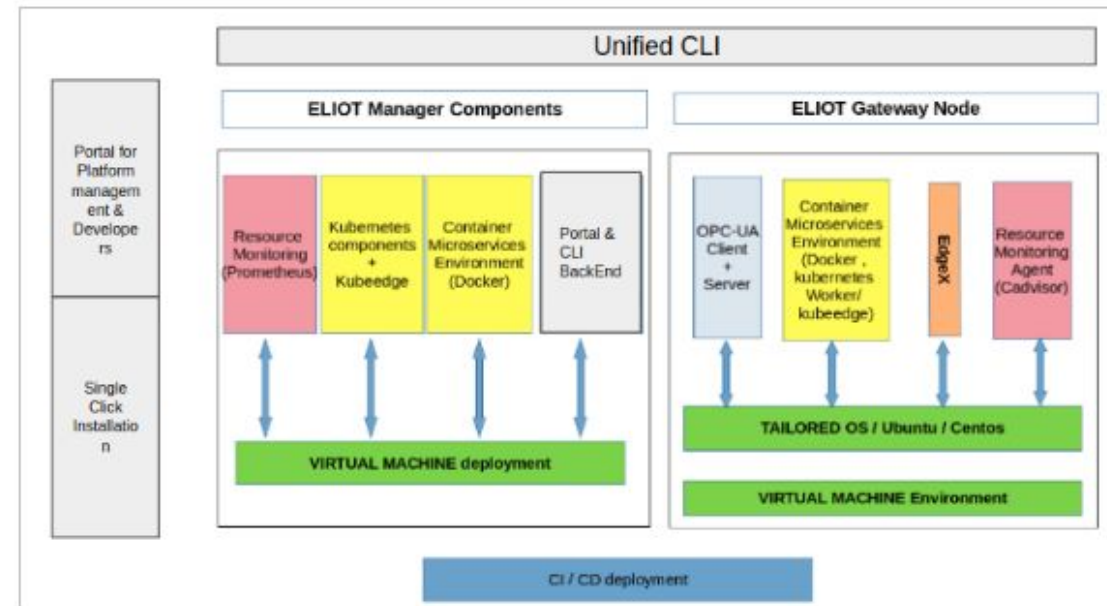
- ❖ ELIOT Overview
- ❖ Architecture overview
- ❖ Software stack overview
- ❖ ELIOT Use cases
- ❖ Features supported in Akraino release 1, 2 and 3.
- ❖ Upcoming features

ELIOT – Overview

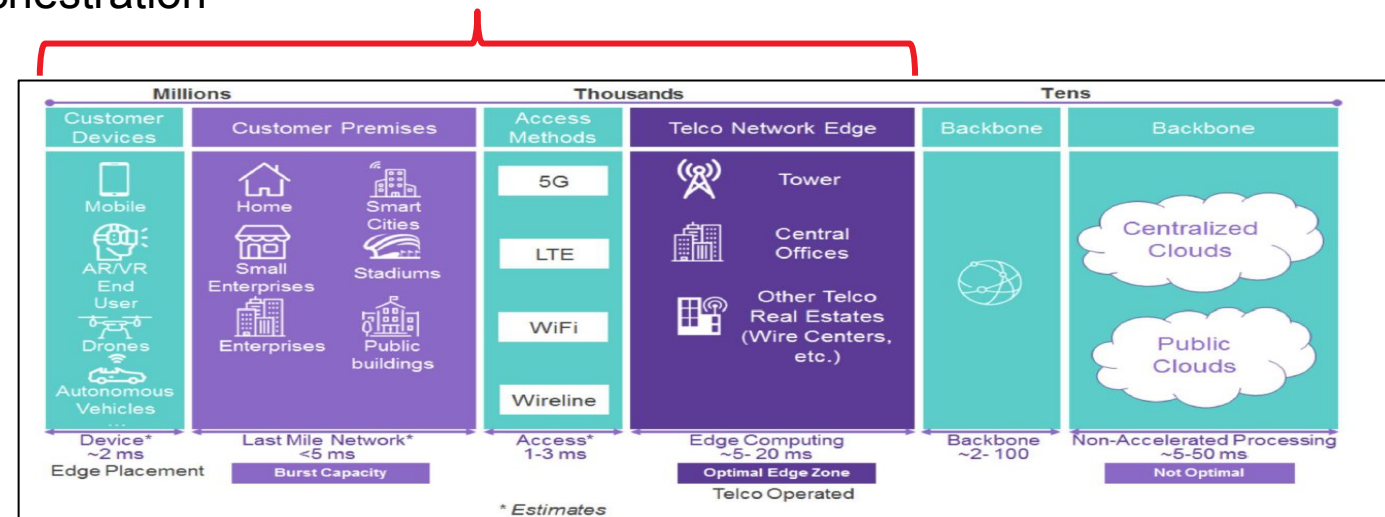
ELIOT is project under Akraino approved blueprint family. It intends to develop a fully integrated edge network infrastructure and running edge computing applications on lightweight Edge Nodes.

ELIOT targets on making the edge node a lightweight software stack which can be deployed on resource constraint edge nodes by leveraging lightweight OS, container running environment and container orchestration applications.

ELIOT BP family target 2 use case:
IoT gateway
SD-WAN, WAN edge, uCPE



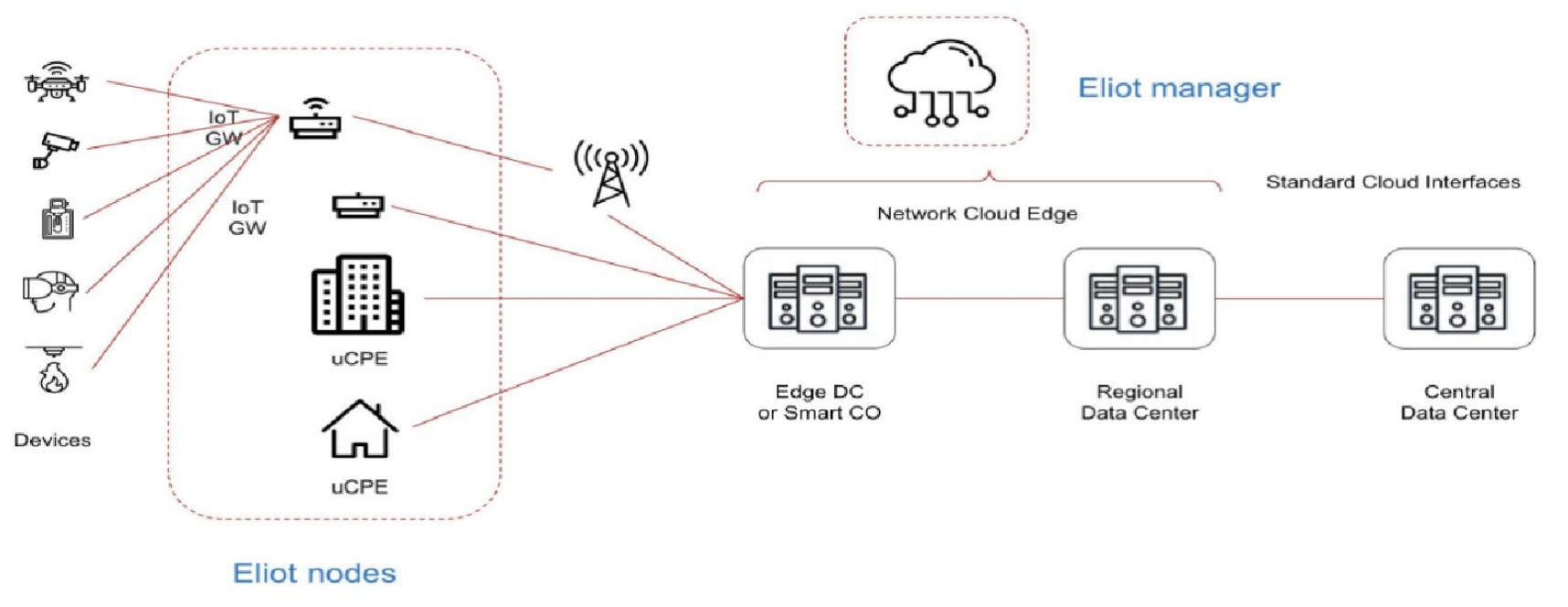
Edges



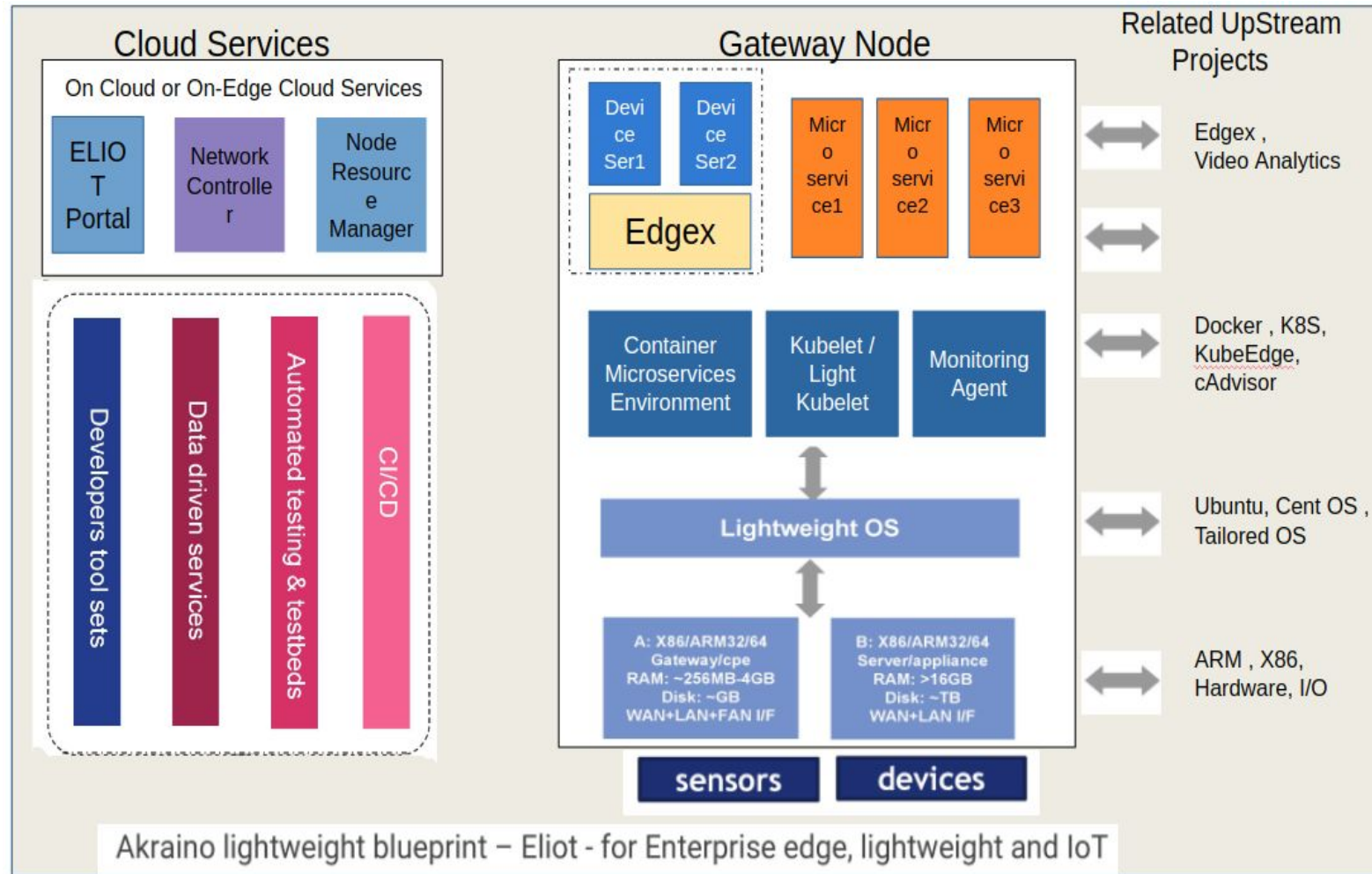
ELIOT target edge

ELIOT Architecture

- ❖ ELIOT Aim to deliver lightweight Edge solutions for IOT Gateway and SD-WAN scenarios
- ❖ It will be validated on different devices and provide a variety of reference application
- ❖ Cooperate with communities like KubeEdge, EdgeGallery, EdgeX and Eclipse.



ELIOT Software stack



Designed For

Edge computing application

Lightweight software/tool warehouse

Lightweight edge computing PaaS

Lightweight operating system/virtualization

X86/ARM32/ARM64

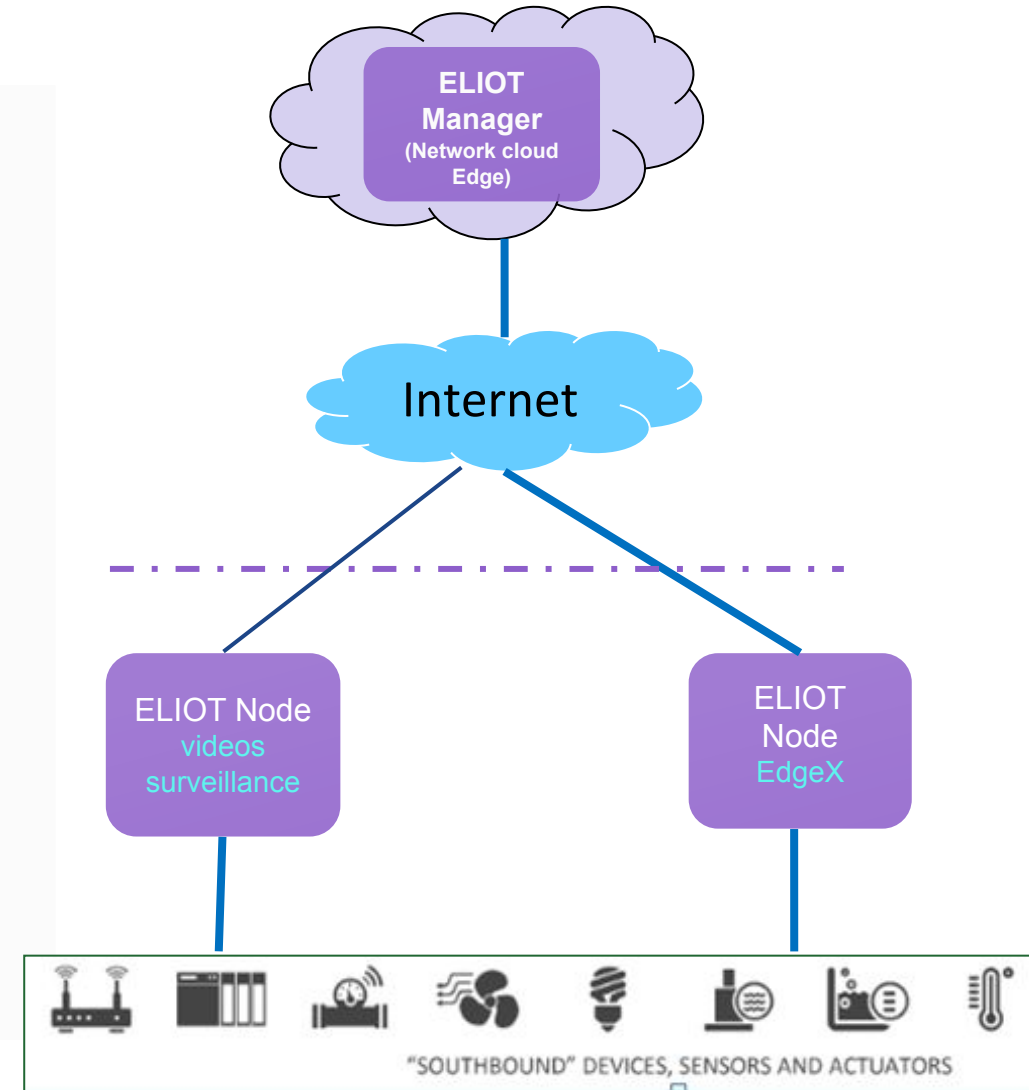
ELIOT Use cases

Diverse types of applications in various sectors, as below (but not limited to):

- Industrial IOT devices automation and enable IOT applications
- Video surveillance
- Smart cities, smart offices
- Smart data center
- Industrial park, Campus office
- Large Farms etc.
- WAN edge, uCPE etc.

Below 2 Use cases has been performed on ELIOT in different events is

- Video surveillance
- Smart Data Center



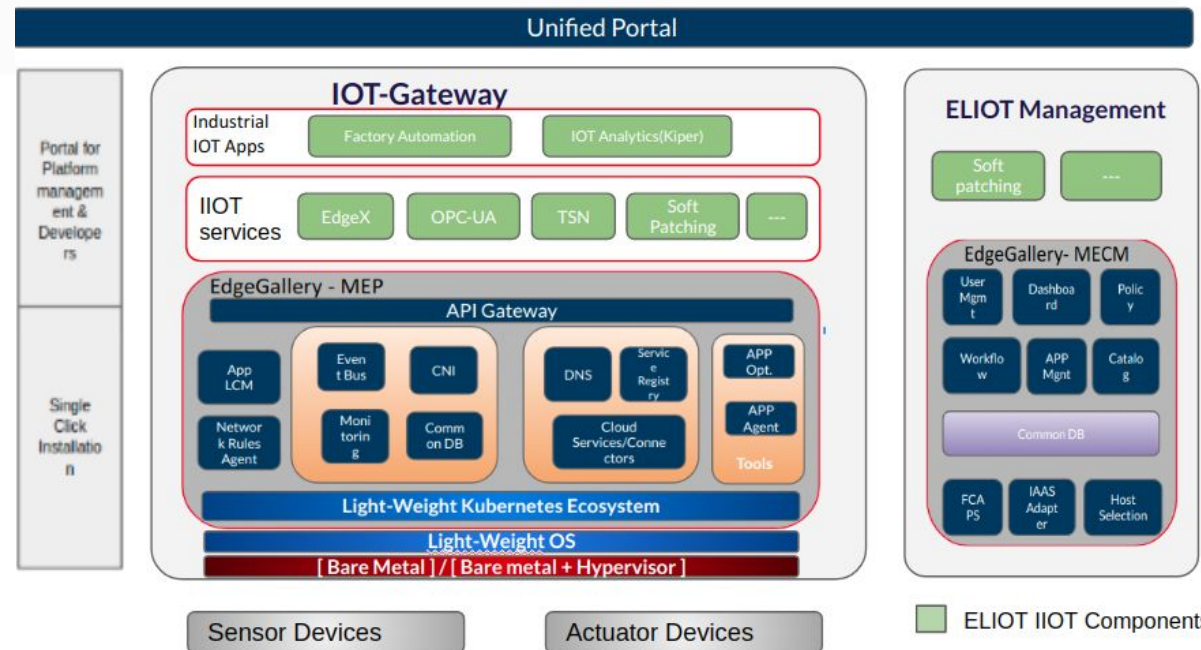
Release 3 Features highlights

- Support ELIOT Node Management and device management by **Kubernetes** and **KubeEdge** respectively.
- Resource monitoring of all edge nodes is done from ELIOT Manager using cAdvisor and Prometheus.
- Support multiplatform architecture x86 and aarch64
- Support Heterogeneous deployment over cloud and edge nodes
- Extended EdgeX framework with support OPC-UA protocol on ELIOT Platform for enable Industries IOT use cases.
- ELIOT support and verified on Tailored OS, Ubuntu and CentOS.
- Single click installation of ELIOT platform and CLI for ease of use.
- Portal for ELIOT platform with enabled features like application and platform management.



Upcoming Features:

- ❖ Support Industrial IOT ecosystem
 - Support OPC-UA Pub-sub in EdgeX
 - TSN enabling for Industrial IOT
- ❖ Collaborate with EdgeGallery upstream community for MEC specific services on ELIOT
- ❖ Collaborate with Eclipse upstream community for IOT services and IOT specific applications enable on ELIOT.
- ❖ Light-weight containers orchestrations K3s and lightweight container runtimes with Containerd, runc, CRI-O.
- ❖ Enhance ELIOT Portal for platform management and application management.
- ❖ Enhance IAAS for support firewall on edge, low touch deployment, software patching etc.



Welcome for contributions

ELIOT Code:

<https://gerrit.akraino.org/r/#/admin/projects/eliot>

ELIOT Jira:

<https://wiki.akraino.org/display/AK/ELIOT+Jira>

Architecture and installation guide:

<https://wiki.akraino.org/display/AK/ELIOT+IoT+Gateway+Blueprint+Documentation>

Weekly meeting on every Wednesday @6AM PST time.

<https://zoom.us/j/93687158158>

Khemendra.kumar@huawei.com



THANKS

