

Industrial Edge (IE) Blueprint

Overview

As member of [Akraino's Kubernetes-Native Infrastructure](#) family of blueprints, the Industrial Edge (IE) blueprint leverages the best-practices and tools from the Kubernetes community to declaratively manage edge computing stacks (i.e. all infrastructure, clusters, and services) at scale and with a consistent, uniform user experience.

The Industrial Edge blueprint addresses a common use case in manufacturing which is "predictive maintenance", the detection of anomalies in sensor data coming from production line servers to be able to schedule maintenance and avoid costly downtimes. Anomaly detection is based on machine learning inference on streaming sensor data.

The 3-node, highly-available factory edge clusters produced by this blueprint are manageable via a central management hub running [Open Cluster Management](#). The management hub cluster also hosts [OpenDataHub](#), which allows streaming data mirrored from factory edge clusters to be stored in a data lake for re-training of machine learning models and deploying updated models back to the factory sites. OpenDataHub includes Jupyter Notebooks for data scientists to analyse data and work on models.

Documentation

[User Documentation for KNI Blueprints](#)

[KNI IE Architecture](#)

[KNI IE Installation Guide](#)

[KNI IE Test document](#)

Project Team

Member	Company	Contact	Role	Photo & Bio
Frank Zdarsky	Red Hat	Frank Zdarsky	Committer	Edge Computing Team Lead, Emerging Technologies, Office of the CTO
Andrew Bays	Red Hat	Andrew Bays	Committer	
Yolanda Robla	Red Hat	Yolanda Robla Mota	Committer	Red Hat NFVPE - Edge, baremetal provisioning
Ricardo Noriega	Red Hat	Ricardo Noriega	PTL	Principal Software Engineer, Emerging Technologies, Office of the CTO
Abhinivesh Jain	Wipro	Abhinivesh Jain	Committer	Distinguished Member of Technical Staff, CTO office

Project Templates

Use Case Template

Attributes	Description	Informational
Type	New	
Industry Sector	Manufacturing, Energy	
Business Driver		
Business Use Cases		
Business Cost - Initial Build Cost Target Objective		
Business Cost – Target Operational Objective		
Security Need		
Regulations		
Other Restrictions		
Additional Details		

Blueprint Template

Attributes	Description	Informational
Type	New	
Blueprint Family - Proposed Name	Kubernetes-Native Infrastructure for Edge (KNI-Edge)	
Use Case	Industrial Edge (IE)	
Blueprint - Proposed Name	Industrial Edge (IE)	
Initial POD Cost (CAPEX)	(TBC)	
Scale & Type	3 servers to 1 rack; x86 servers (Xeon class)	
Applications	IoT Cloud Platform, Analytics/AI/ML, AR/VR, ultra-low latency control	
Power Restrictions	(TBC)	
Infrastructure orchestration	End-to-end Service Orchestration: n/a Middlewares: Knative (serverless), KubeFlow (AI/ML), EdgeX (IoT) App Lifecycle Management: Kubernetes Operators (mix of Helm and native) Cluster Lifecycle Management: Kubernetes Cluster API/Controller Cluster Monitoring: Prometheus Container Platform: Kubernetes (OKD 4.0) Container Runtime: CRI-O VM Runtime: KubeVirt OS: CoreOS, CentOS-rt	
SDN	OVN	
SDS	Ceph	
Workload Type	containers, VMs	
Additional Details		