IEC Type 5 is an Akraino approved blueprint and part of Akraino Edge Stack. The project is focused on SmartNIC, which could accelerate network performance and provide more management convenience. In general, the architecture consists of two layers: IaaS(IEC), SmartNIC layer.

And IEC Type 5 is focused on SmartNIC function validation, which could accelerate network performance and provide more management convenience.

**Akraino Blueprint:** IEC Type 5 SmartNIC Blueprint

**Overview**

IEC Type 5 is focused on SmartNIC Datacenter Services across all clouds. While in R5, we have two simple layers: Host Layer, SmartNIC Layer where provide mutlil ports to connect all kinds of host and support protocol offload, Device pooling ready, Pull-n-play, maintenance, remote resource management and SR-IOV function at the same time. The System architecture based on SmartNIC is shown as below.
Use Case

1. In release 5, the SmartNIC has TCP/IP protocol processing capabilities and replace OVS-DPDK by PCIe protocol which can save more edge computing resources by delete OVS-DPDK and and offload TCP/IP protocol into NIC to accelerate network performance and reduce less workload of others such as CPU, memory.

2. SmartNIC support RDMA protocol. It will decrease latency and CPU workload by reduce external memory replication and context switching.

3. SmartNIC support SR-IOV function which general PF and more VFs with independent address space for hypervisor, It will reduce workload, latency and improve network I/O performance in hypervisor system.

4. SmartNIC provide plug-n-play, maintenance and remote resource management function, which will be easy to extend and manage cluster.

**Key features in R5:**
- Host layer: Bare metal machine
- SmartNIC layer:
  - OVS-DPDK TCP/IP offload in SmartNIC
  - RDMA support in SmartNIC
  - SR-IOV support in SmartNIC
Akraino R4 is now available! More details available here:
https://wiki.akraino.org/display/AK/Release+5+Planning

Akraino Edge Stack, an open source project under the LF Edge umbrella that aims to create edge software stacks that supports high-availability cloud services optimized for edge computing systems and applications. It offers users new levels of flexibility to scale edge cloud services quickly, to maximize the applications and functions supported at the edge, and to help ensure the reliability of systems that must be up at all times. The Akraino Edge Stack platform integrates multiple open source projects to supply a holistic Edge Platform, Edge Application, and Developer APIs ecosystem.
Akraino uses the “blueprint” concept to address specific Edge use cases to support an end-to-end solution.

A blueprint is a declarative configuration of the entire stack—i.e., edge platform that can support edge workloads and edge APIs.

To address specific use cases, a blueprint architecture is developed by the community and a declarative configuration is used to define all the components used within that architecture such as software, tools to manage the entire stack, and method of deployment (Blueprints are maintained using full CI/CD integration and testing by the community for ready download and install).


[SIDEBAR]

Akraino is part of the LF Edge umbrella organization that establishes an open, interoperable framework for edge computing independent of hardware, silicon, cloud, or operating system. By bringing together industry leaders, LF Edge creates a common framework for hardware and software standards and best practices critical to sustaining current and future generations of IoT and edge devices.

LF Edge Projects address the challenge of industry fragmentation, and collaborates with end users, vendors, and developers to transform all aspects of the edge and accelerate open source developments.

[Insert Logos for: Akraino, EdgeX Foundry, Glossary of Edge Computing Home Edge, Project EVE]

www.lfedge.org