Akraino Network Cloud & Tungsten Fabric

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Tungsten Fabric Architecture

Centralized Policy Definition

Distributed Policy Enforcement

ORCHESTRATOR / APPS

Logical View

Physical IP Fabric (no changes)

Distributed Policy Enforcement

Internet / WAN or Legacy Env.

Gateway

TOR

(Windows, Linux ...) on BMS

vRouter Host O/S

vRouter Host O/S

DC Computes

CPE Devices

Public Cloud VM
vRouter Deployment Models

**KERNEL VROUTER**
- vRouter runs as a user space process and uses DPDK for fast path Packet I/O.
- Full set of SDN Capabilities Supported
- Requires the VMs to have DPDK enabled for performance benefits

**DPDK VROUTER**
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**SRIOV/ VROUTER COEXISTENCE**
- Some workloads can directly SRIOV into the NIC, while others go through the vRouter
- Sometimes a VNF can have multiple interfaces some of which are SRIOV-ed to the NIC
- Interfaces that are SRIOV-ed into NIC don’t get the benefits / features of vRouter

**SMARTNIC VROUTER**
- vRouter forwarding plane runs within the NIC
- Workloads are SRIOV-connected to the NIC
Distributed Networking for VMs, PODs, & BMS

Neutron/CNI/DM/Fabric
SDN Controller
Edge/MC-GW

On-Prem:
- Core Site
- Core Distributed Site
- Edge Site

Basic Networking:
L2/L3 or L2/L3 Network
IPAM/DHCP, DNS, Multi-Tenancy

Advance Networking:
VLAN-ID, VRRP, VIP, LB, Routes Advertisement,
GW Function, Service Chaining,
Traffic Steering, Flow awareness,
QoS, SR-IOV/DPDK, BGP-VPN,
Inter Site Federation, Health Checks,
FW, IPSec/TLS Support

OpenStack
Neutron

BMS & Fabric
Manager

Kubernetes
CNI

Edge/POP Site

On-Prem: Core Site, Core Distributed Site, Edge Site

Basic Networking:
L2/L3 or L2/L3 Network
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OpenStack
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BMS & Fabric
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Edge/POP Site
Akraino Network Cloud Blueprint – with Tungsten Fabric

CICD (Community)
- Akraino GUI
- Akraino Workflow
  - Platform Workflows
- Edge Application and APIs
  - APIs
  - Applications & VNFs
- Edge Application and Orchestration
  - Lightweight Edge App Orchestration
- NFV Orchestration
  - NFV & Domain Specific Orchestrator
- Edge Platform Software Component
  - Infra Orchestration
    - Storage
    - Network Control Plane
    - Network Data Plane
    - Operation System
- Network Edge
  - Unicycle - Multinode Cluster
  - Rover – Single Server
- Network Edge Micro Service
- Customer Edge

Portal
Regional Controller
Edge APIs
Sample Edge App
Edge Cloud(s) Integration APIs
Community - TBD
ONAP Dublin
OpenStack (Rocky)
Kubernetes

TF as Single SDN
Kernel/DPDK/SR-IOV & CNI

Akraino Upper Cloud Lifecycle Tools
AirShip Under Cloud Lifecycle

AI Tools box
Additional Operations tools
CI Testing
Documentation

Color coding legend
- Akraiino R2
- Upstream
- Future release

Juniper Public
Akraino Network Cloud & TF Integration (Blueprint)

- Tungsten Fabric Integration with Airship for TF installation via TF-Helm
- Tungsten Fabric Integration with Airship for TF as CNI and OpenStack Neutron (Single SDN Controller)
Blueprint Architecture

Airship TreasureMap + OpenStack Helm

OpenStack (overcloud)

Kubernetes (undercloud)

Tungsten Fabric

CNI

Deploys

nova, neutron, heat plugins
Give it a try

- Kick the tires – try it, play with it....
- Here are the details -
  https://wiki.akraino.org/display/AK/Network+Cloud+with+Tungsten+Fabric
Thank you!