

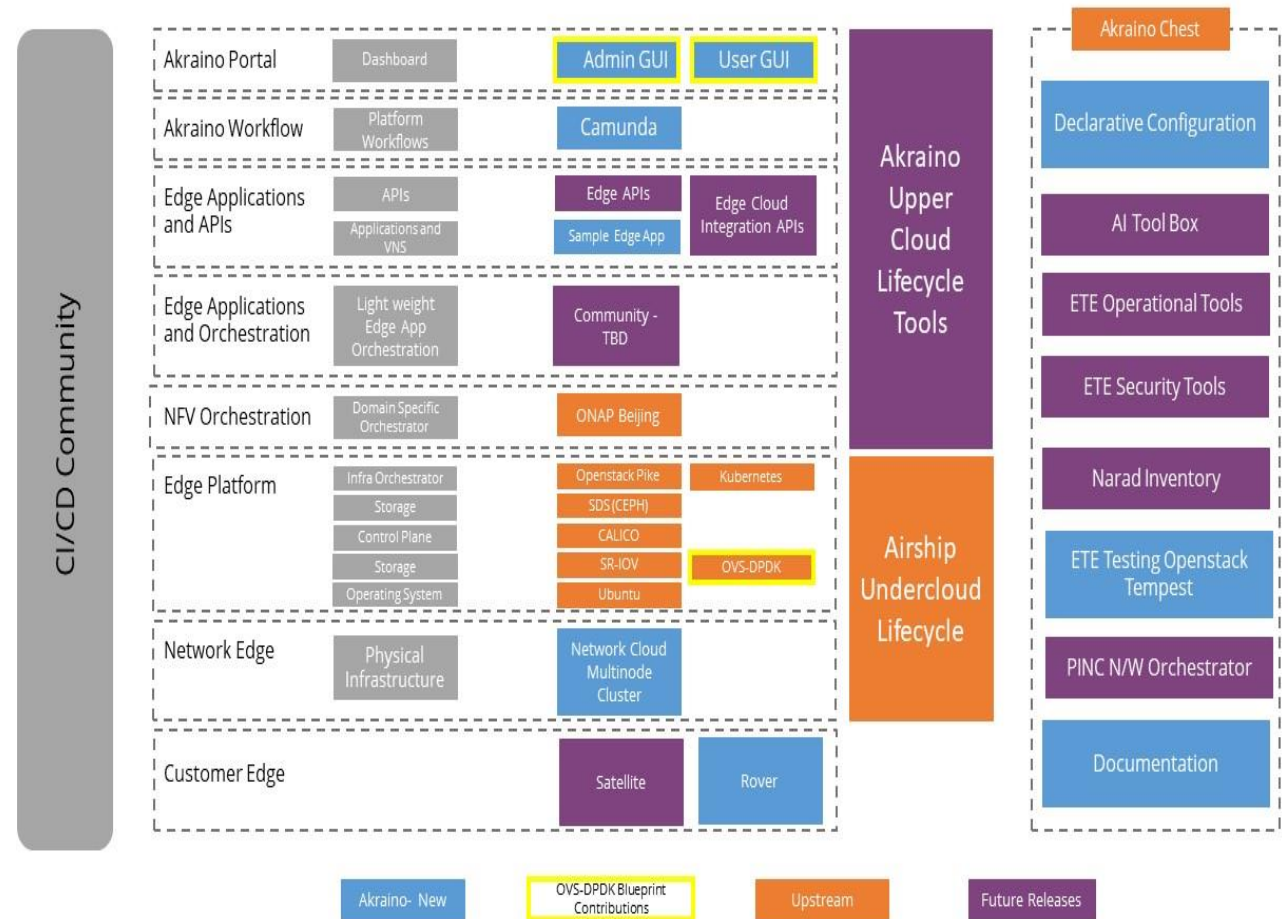
Network Cloud OVS-DPDK Blueprint and Feature Project

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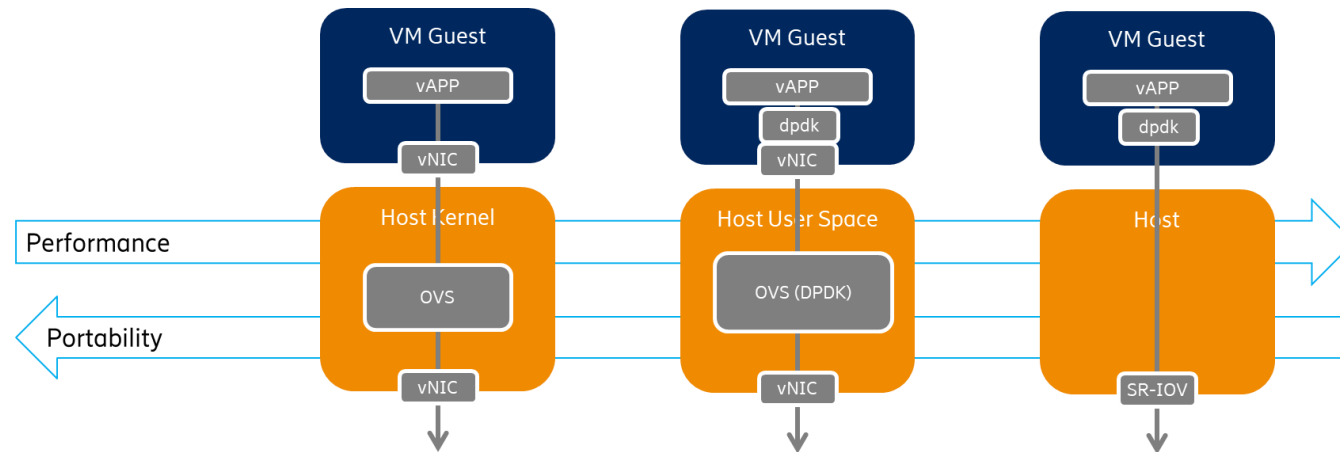


Network Cloud Unicycle Blueprint with OVS-DPDK

- > New SPECIES to add OVS-DPDK support into existing Network Cloud Unicycle Blueprint Family
- > Joint community effort by Ericsson and AT&T
- > Integration with feature project to add OVS-DPDK support to Airship distribution
- > Based on Dell PowerEdge R740XD Servers to deploy kubernetes (undercloud) and containerized Openstack platform (overcloud) using Airship
- > VNF Orchestration using ONAP

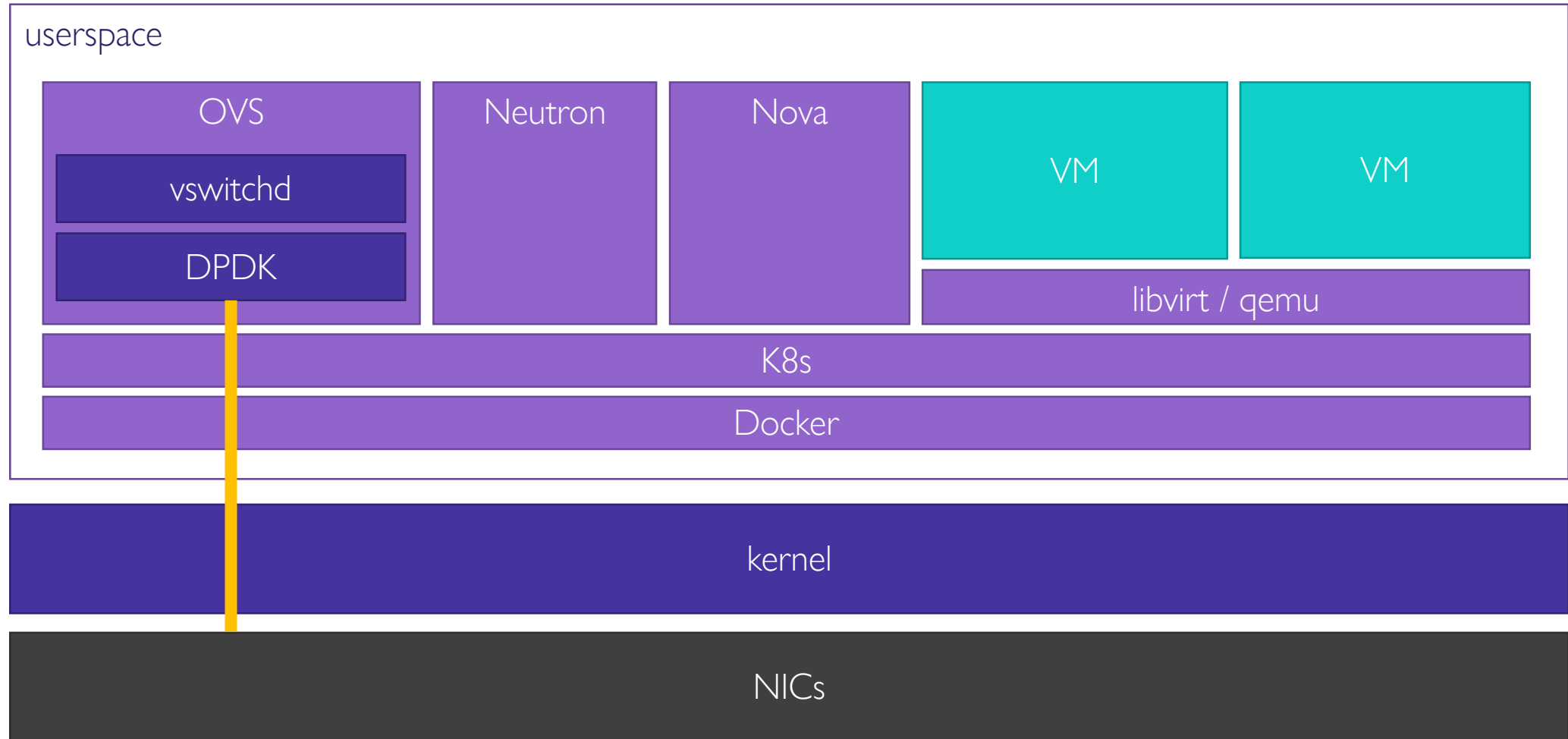


Packet Processing Options



Interface from application	To vNIC via sockets (Linux kernel)	Direct to vNIC using DPDK	To physical NIC via virtual function (e.g., SR-IOV)
Comments	+ High portability - Poor performance	+ Good portability + Good performance for most use cases + Functionality in open source, outside the VM	+ Good performance for most use cases - HW dependency and vendor lock-in - Functionality pushed to VM

OVS-DPDK Software Stack



OVS-DPDK Core Components

openvswitch-vswitchd

openvswitch-db

neutron-ovs-agent

“other Neutron components”

- › OpenVswitch
 - › Functionality split in two pods
- › openvswitch-db
 - › OVSDB server and database
- › openvswitch-vswitchd
 - › DPDK-enabled userspace switch

- › Neutron
 - › Functionality spread across 10+ pods
- › neutron-ovs-agent
 - › Performs configuration of OVS
 - › DPDK specific operations
 - › Loading of kernel modules
 - › Binding of NICs to DPDK
 - › Creation of DPDK-enabled bridges
 - › Adding of DPDK ports (NICs) to bridges
 - › Configuration of IPs for overlay tunneling

DPDK Configuration for OpenStack-Helm

openvswitch-vswitchd

openvswitch-db

neutron-ovs-agent

“other Neutron components”

› New configuration parameters

Hugepage configuration

```
resources:
  enabled: false
  ovs:
    vswitchd:
      requests:
        memory: "128Mi"
        cpu: "100m"
      limits:
        memory: "1024Mi"
        cpu: "2000m"
        hugepages-1Gi: "1Gi"
        # hugepages-2Mi: "512Mi"
```

DPDK configuration

```
dpdk:
  enabled: false
  socket_memory: 1024
  hugepages_mountpath: /dev/hugepages
  mem_channels: 4
  lcore_mask: 0x1
  pmd_cpu_mask: 0x4
```

› New configuration parameters

OVS agent configuration

```
ovs_dpdk:
  enabled: false
  driver: uio_pci_generic
  nics:
    - name: dpdk0
      pci_id: '0000:05:00.0'
      bridge: br-phy
      migrate_ip: true
      n_rxq: 2
      pmd_rxq_affinity: "0:3,1:27"
      ofport_request: 1
  bridges:
    - name: br-phy
```

Integration in Network Cloud Blueprint

- › Extension of the Network Cloud blueprint
 - › Additional DPDK-specific configuration
 - › New set of templates to render DPDK configuration for Airship
- › Open and ongoing items
 - › Support for advanced features
 - › NIC bonding, jumbo frames, queue sizes
 - › Troubleshooting and configuration guide

References

- › Project wiki

- › <https://wiki.akraino.org/display/AK/Support+of+OVS-DPDK+in+Airship>

- › Airship

- › <https://www.airshipit.org/>

- › OpenStack-Helm

- › <https://github.com/openstack/openstack-helm>