

# PROJECT URSA MAJOR

Next Generation High-Performance and Large-Scale Cloud Infrastructure Platform

Project Ursa Major aims to unify orchestration and management of various types of compute resources, such as VMs and Containers, and address scalability and performance challenges facing super large cloud infrastructure platforms.

## 100k+

Capable of managing 100k+ compute nodes in a single cluster

## Millions of Running workloads

Capable of scheduling, orchestrating and managing millions of running workloads

## Network Provisioning

Capable of provisioning networking resources for thousands of VMs and/or Containers per minute

## Millions of Ports/Network Endpoints

Capable of routing and managing communications between millions of ports/network endpoints

## ALKAID

Large scale compute cluster manager and orchestration platform based on Kubernetes architecture.

## ALCOR

Hyper scale cloud virtual networking system for both VMs and containers with high throughput and built in fast path networking provisioning.

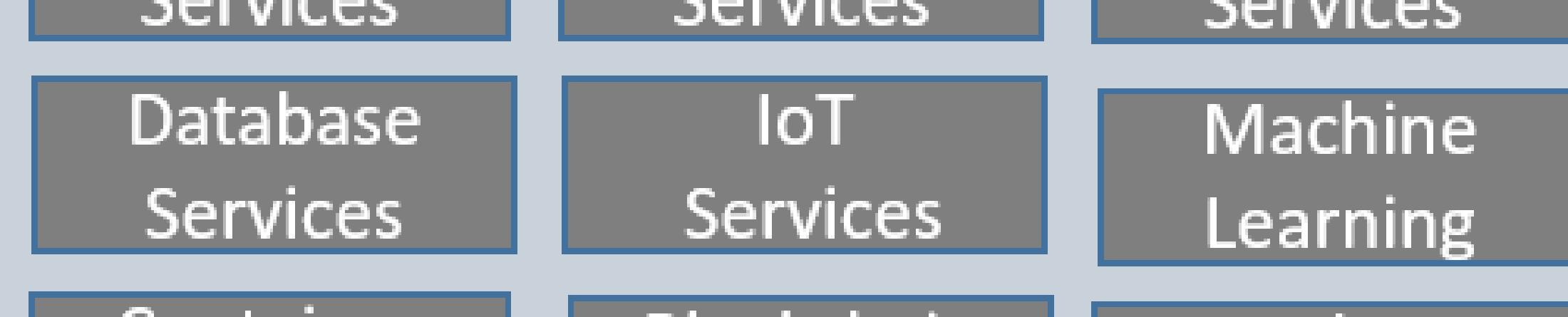
## MIZAR

High performance cloud network data plane technology based on XDP/eBPF and Geneve protocol to route and manage virtual endpoint communications and other network functions.

## ALKAID

Large-scale cloud compute cluster with high availability and consistency

### Cloud Applications & Services



Resources Requests & Application Deployments

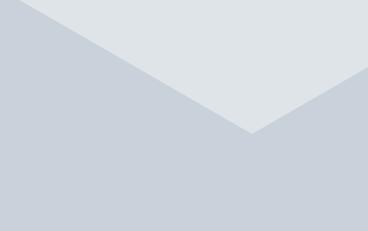


### Physical Resources



### HARD MULTI-TENANCY

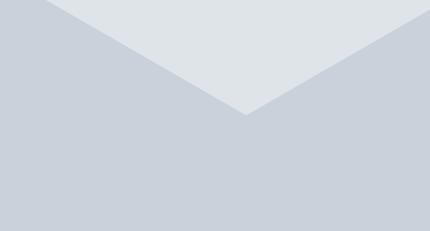
Built-in hard multi-tenancy model, providing a strong isolation among tenant resources.



### CLOUD SCALE

Designed to support 100k nodes per cluster.

Partitioned and replicated storage, scheduler and controllers.



### UNIFIED STACK

One single unified stack for containers, VMs, and bare metals, including API models, scheduling, runtime, etc.

Futurewei Technologies Inc.

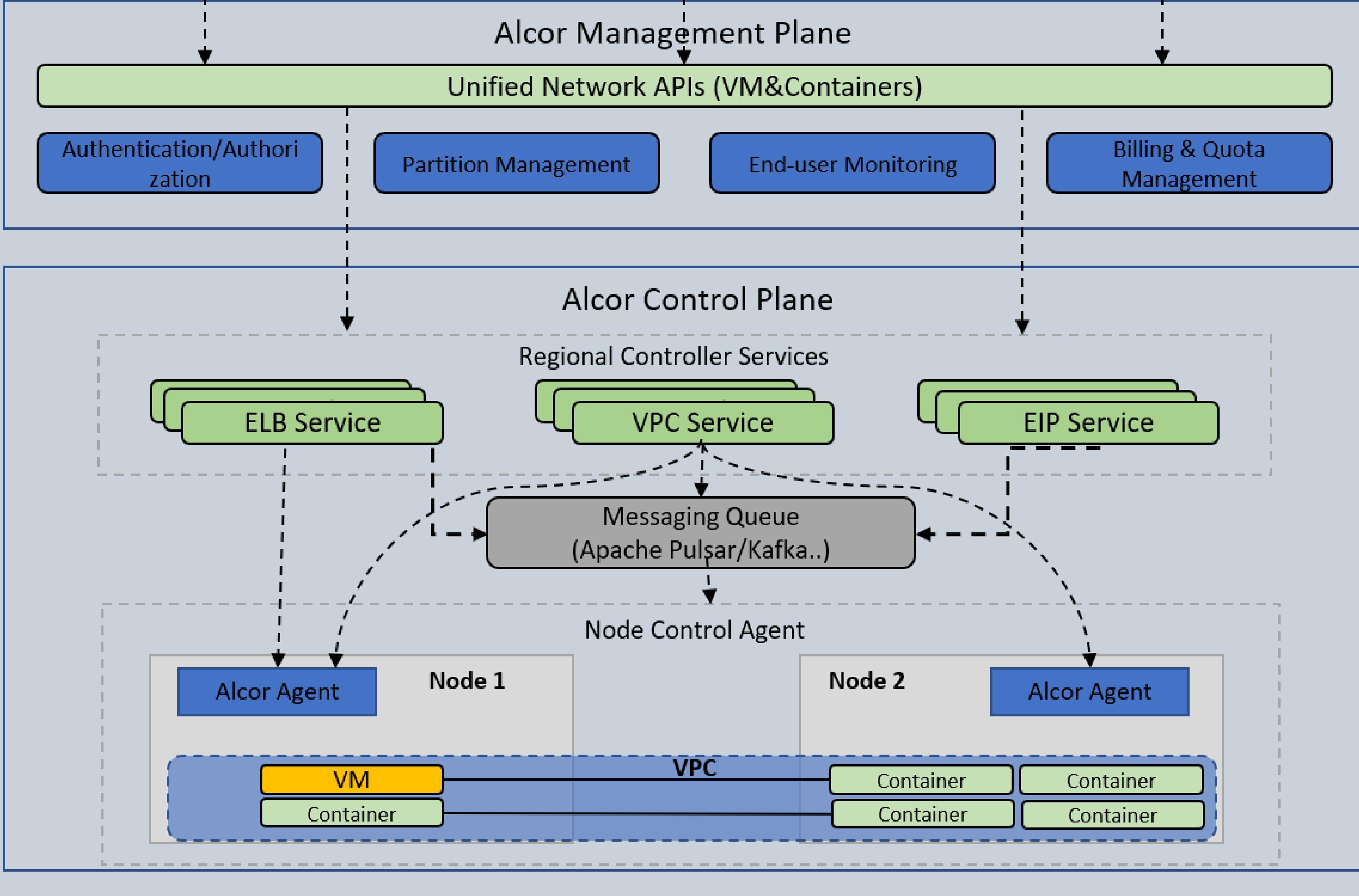
<https://github.com/futurewei-cloud/mizar>

# PROJECT URSA MAJOR

Next Generation High-Performance and Large-Scale Cloud Infrastructure Platform

## ALCOR

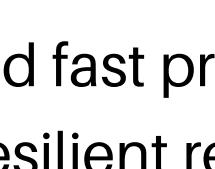
Large-scale virtual networking management plane with high resource provisioning rate



### THROUGHPUT-OPTIMAL DESIGN

Batch design on every system level including API, controller, controller-to-agent communication, and host to boost overall system throughput

and to support large VPC deployment.



### FAST AND RESILIENT NETWORK RESOURCE PROVISIONING

\*gRPC-based fast provisioning path

\*Highly resilient rescue path to enable remote resource

provisioning (in case of local agent crash)



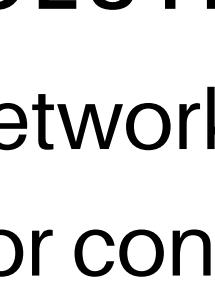
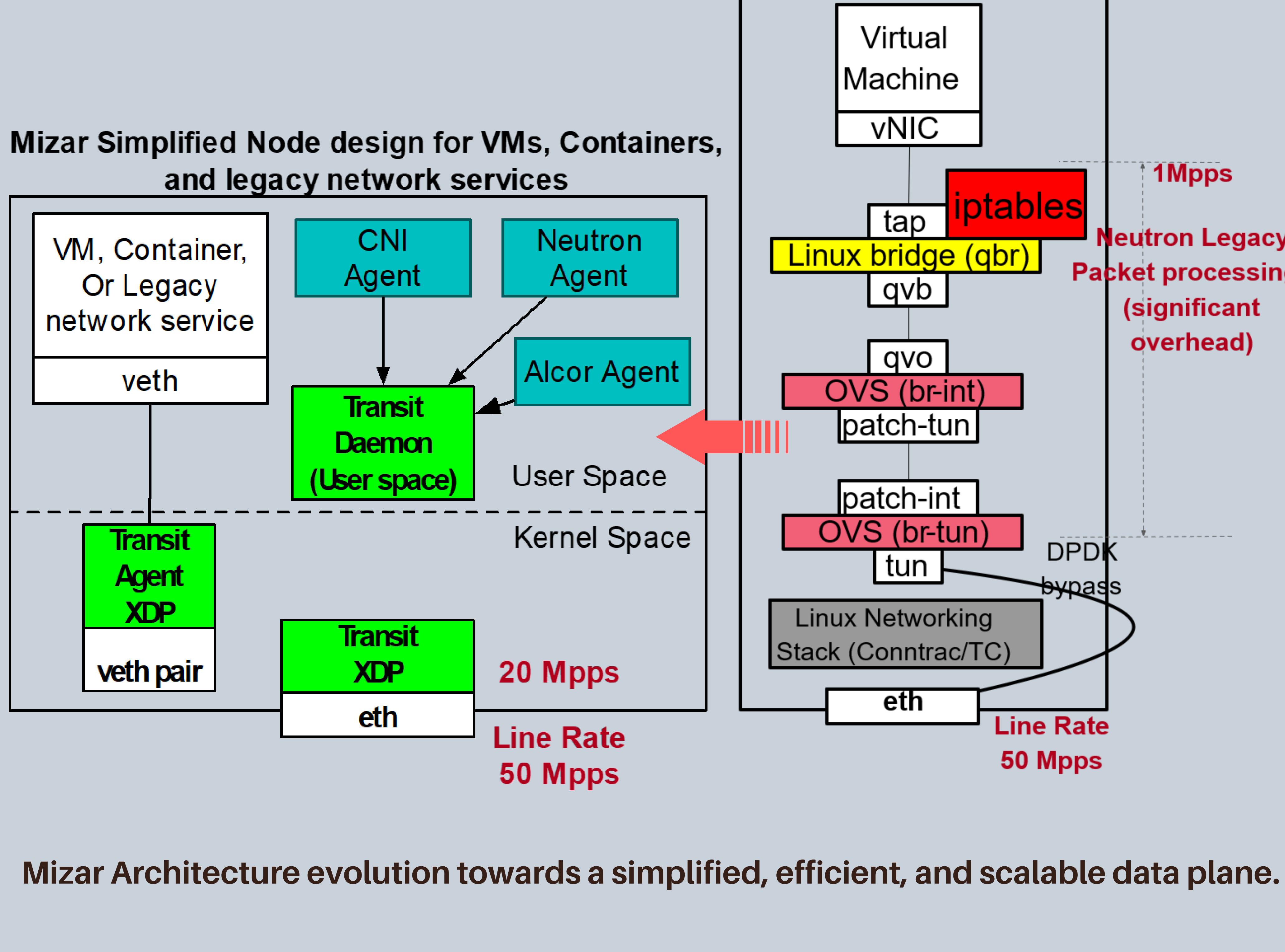
### HIGH SCALABILITY

Container-based micro-service architecture designed for

horizontal scaling regional services

## MIZAR

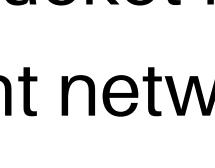
High-performance and highly scalable cloud-network data-plane



### UNIFIED NETWORKING SOLUTIONS

Unified networking routing platform for containers, VMs,

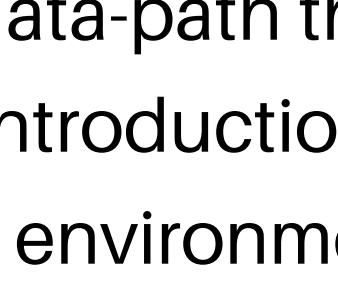
and other compute resources.



### EXTENSIBLE PACKET PROCESSING

Extensible Packet Processing for Multi-tenant networks without

compromising security, performance, manageability, and simplicity.



### HIGHLY ADAPTABLE

Compatible architecture with neutron data-path that ensures a

smooth introduction to existing

cloud environments with extensible features.

# Futurewei Technologies Inc.

<https://github.com/futurewei-cloud/mizar>