

Deploying Rancher with RKE2

A Hands-On Approach

Objective

- ❖ The Expected Outcomes
- ❖ What is Rancher?
- ❖ Why Use Rancher?
- ❖ Installation Requirements
- ❖ Hardware & Networking Requirements
- ❖ Architecture
- ❖ Demo
- ❖ What's Next?
- ❖ References



The Expected Outcomes

- Understanding Rancher
- Set up RKE2 kubernetes Cluster
- Install Kubectl, Helm
- Install Rancher
- Accessing Rancher UI with domain name
- User Creation in Rancher
- Overview of Rancher

What is Rancher?

- ❑ Rancher is an open-source Kubernetes management platform.
- ❑ Simplifies deployment, management, and scaling of Kubernetes clusters.
- ❑ Key Features:
 - Centralized management for multiple Kubernetes clusters.
 - Built-in monitoring and alerting.
 - User access control and policy enforcement.

Why Use Rancher?

- ❑ Reduces Kubernetes operational complexity.
- ❑ Supports hybrid and multi-cloud environments.
- ❑ Ideal for managing multiple clusters at scale.

Installation Requirements

❖ Kubernetes Cluster:-

- RKE
- K3s
- RKE2
- Amazon EKS
- AKS
- GKE

❖ Ingress Controller (Can Skip for RKE, K3s, RKE2)

❖ CLI Tools:-

- kubectl
- helm

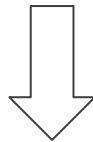
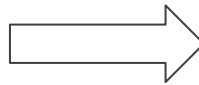
We are Using RKE2

Hardware & Networking Requirements

- ❖ RAM: 4GB Minimum
- ❖ CPU: 2 core Minimum

- ❖ Inbound Network Rules:
- ❖ CNI Specific Inbound

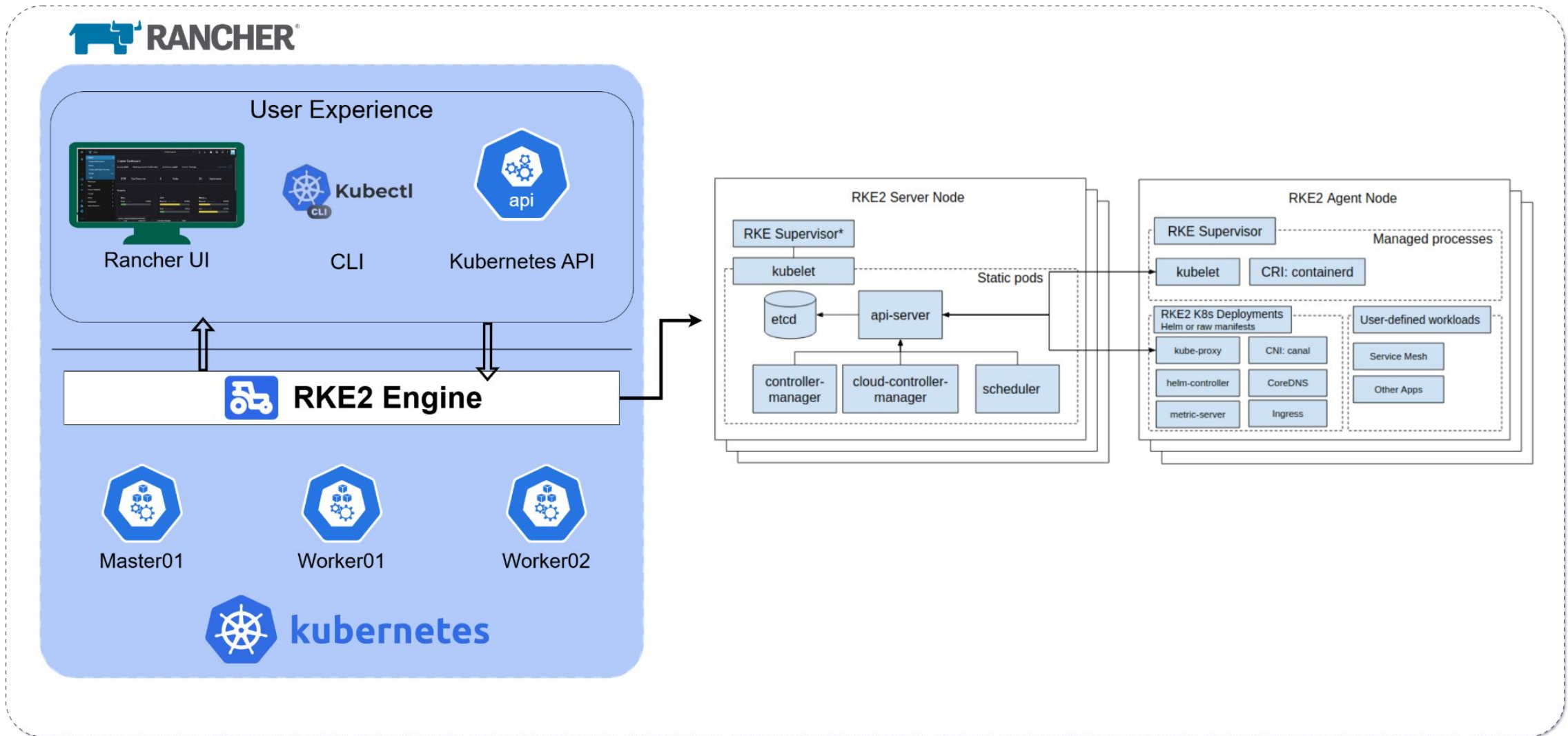
Network Rules:



Port	Protocol	Source	Destination	Description
6443	TCP	RKE2 agent nodes	RKE2 server nodes	Kubernetes API
9345	TCP	RKE2 agent nodes	RKE2 server nodes	RKE2 supervisor API
10250	TCP	All RKE2 nodes	All RKE2 nodes	kubelet metrics
2379	TCP	RKE2 server nodes	RKE2 server nodes	etcd client port
2380	TCP	RKE2 server nodes	RKE2 server nodes	etcd peer port
2381	TCP	RKE2 server nodes	RKE2 server nodes	etcd metrics port
30000-32767	TCP	All RKE2 nodes	All RKE2 nodes	NodePort port range

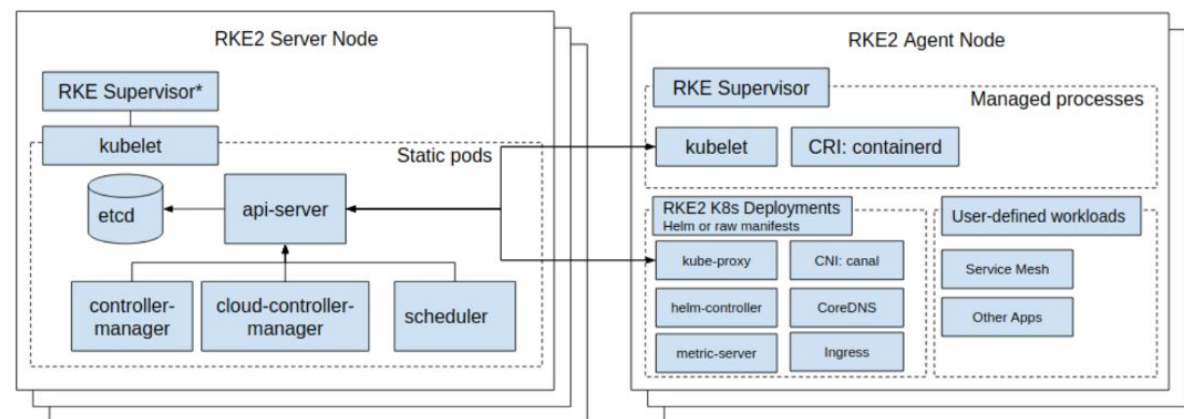
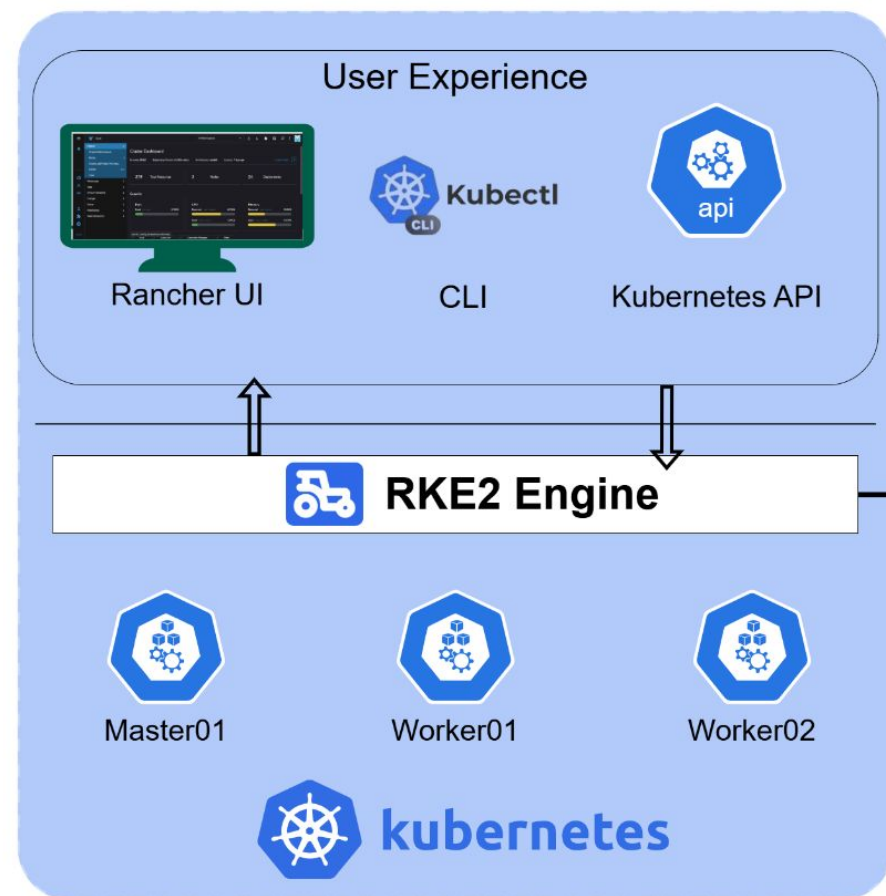
Port	Protocol	Source	Destination	Description
8472	UDP	All RKE2 nodes	All RKE2 nodes	Canal CNI with VXLAN
9099	TCP	All RKE2 nodes	All RKE2 nodes	Canal CNI health checks
51820	UDP	All RKE2 nodes	All RKE2 nodes	Canal CNI with WireGuard IPv4
51821	UDP	All RKE2 nodes	All RKE2 nodes	Canal CNI with WireGuard IPv6/dual-stack

Architecture



Let's Move on to Demo....!

Summary



- ✓ Deployed RKE2
- ✓ Installed kubectl & helm
- ✓ Installed Rancher
- ✓ Rancher Overview

What's Next??

❖ Enhancing the Setup:

- Integrate NGINX Plus Ingress Controller to manage Kubernetes traffic effectively.
- Add NGINX App Protect to implement Web Application Firewall (WAF) for robust security.
- Deploy a sample web application to test and validate WAF rules and traffic management.

● Key Benefits:

- Improved Traffic Management
- Enhanced Security
- Real-World Testing

References:

Official Documentations:-

- <https://docs.rke2.io/>
- <https://ranchermanager.docs.rancher.com/>

Thank you