



KubeOS: Container OS based on openEuler

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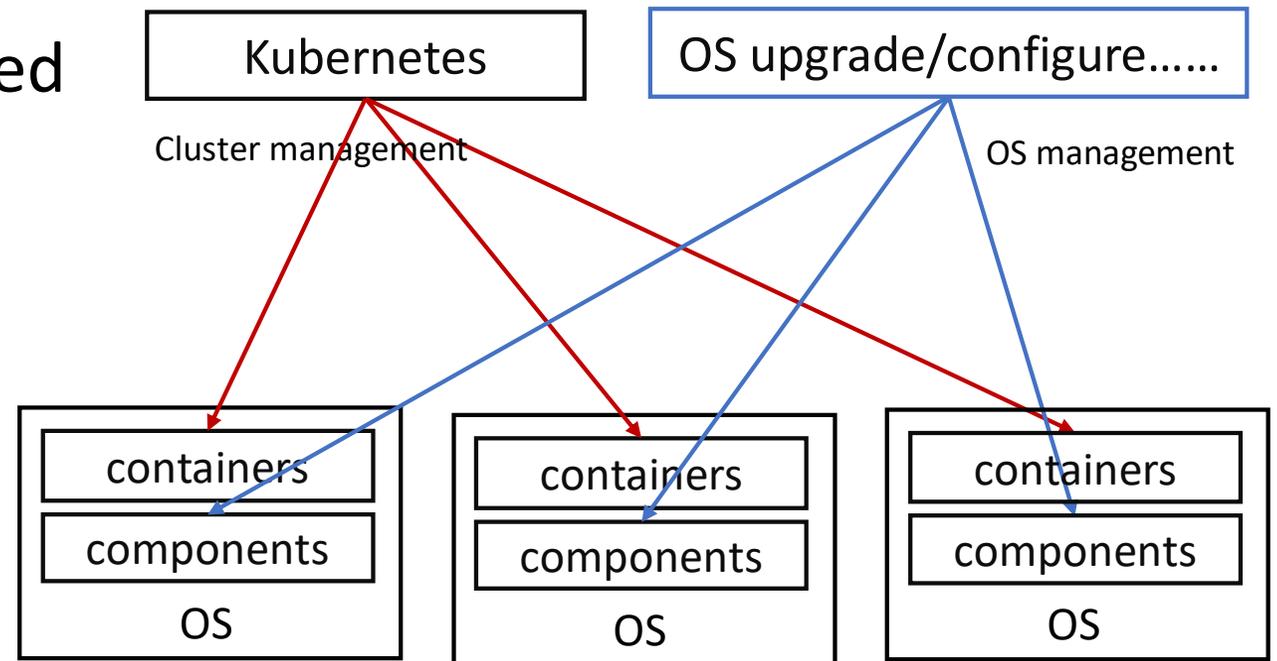
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Why Is KubeOS

General-purpose OS distributions usually face some problems in cloud-native environment :

❑ Kubernetes and OSs are managed independently

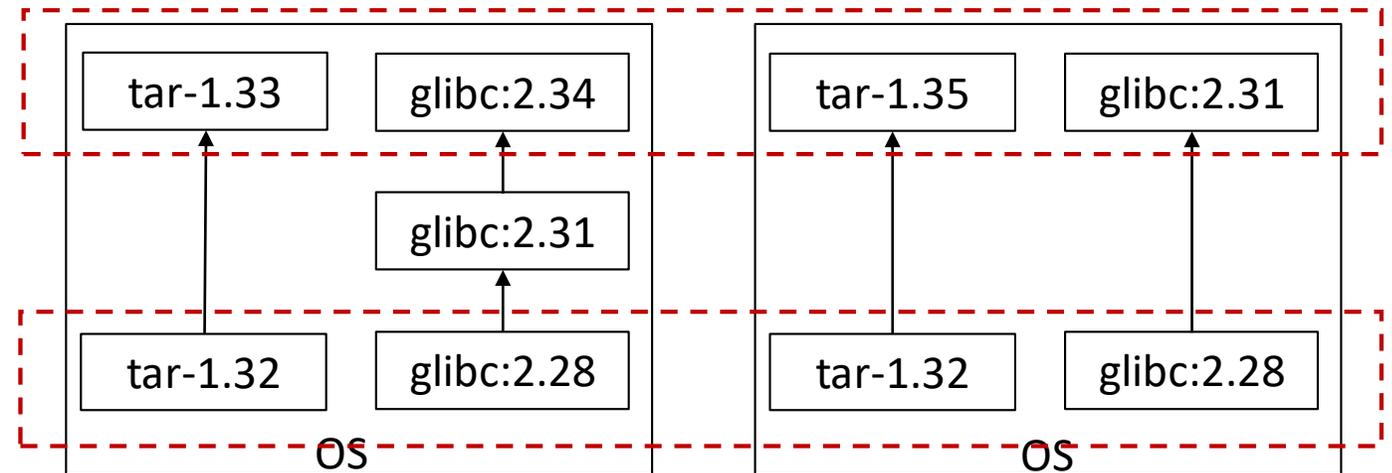
- Functional Redundancy
- Difficulty in coordination



Why Is KubeOS

General-purpose OS distributions usually face some problems in cloud-native environment :

- ❑ OS version management is difficult.
 - OS version splitting
 - OS and services are tightly coupled

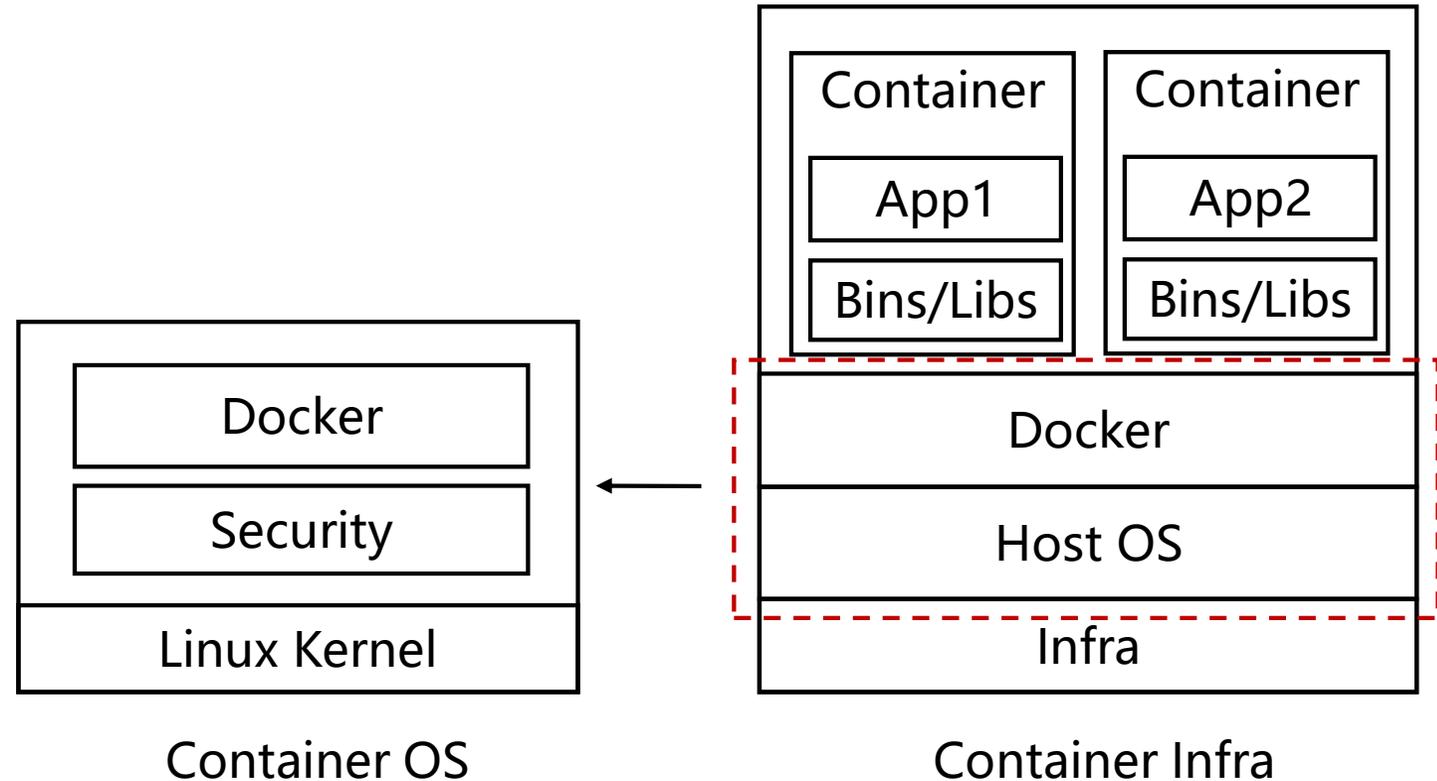


What Is a Container OS

Container OS: A lightweight linux distribution designed specifically for running containers

- Minimal
- Immutable
- Atomic Update

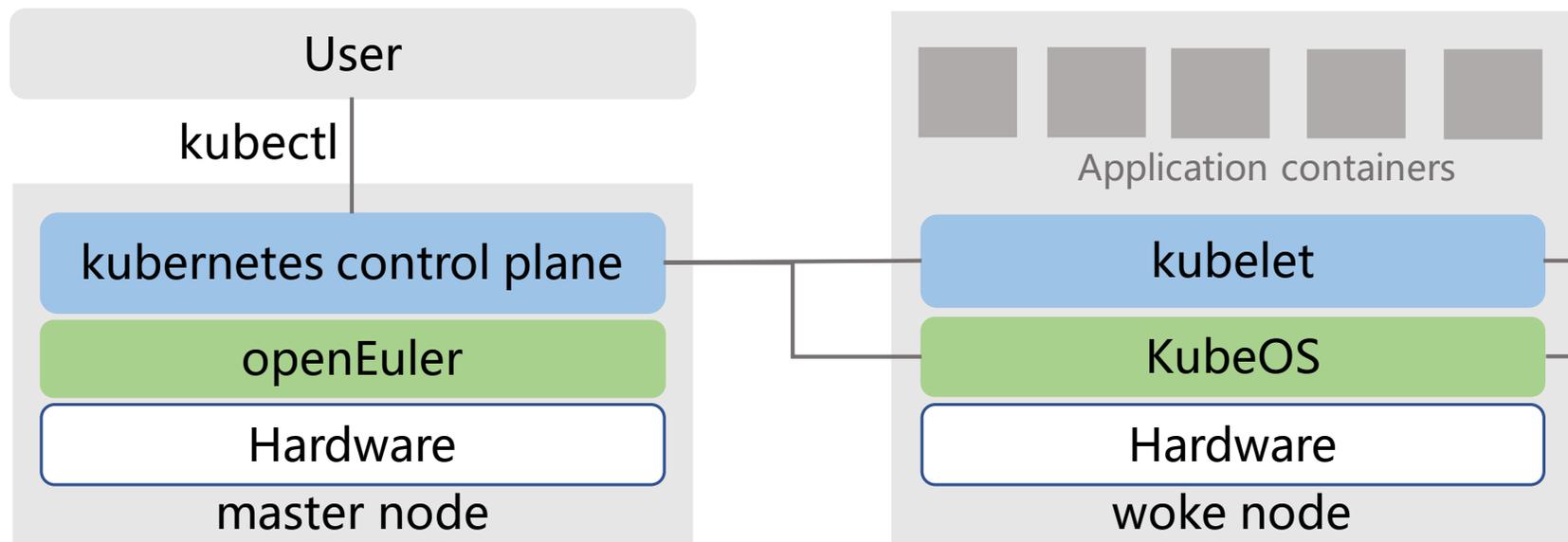
CoreOS/Bottlerocket/Flatcar/
Container-Optimized OS/...



KubeOS: Container OS based on openEuler



Ideas: OS becomes a component of Kubernetes. Kubernetes manages containers and OSs in a unified manner

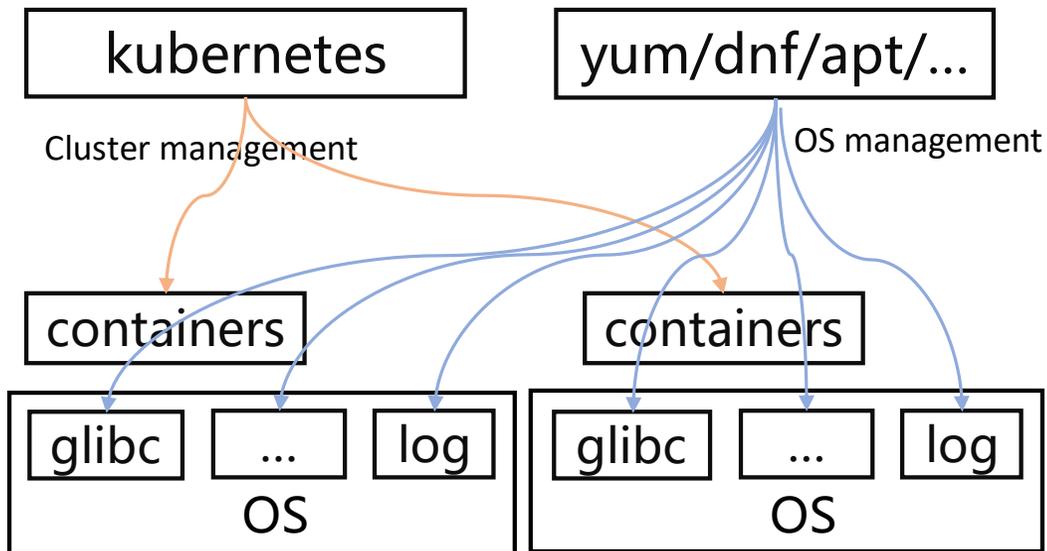


KubeOS: Manage OSs Using Kubernetes

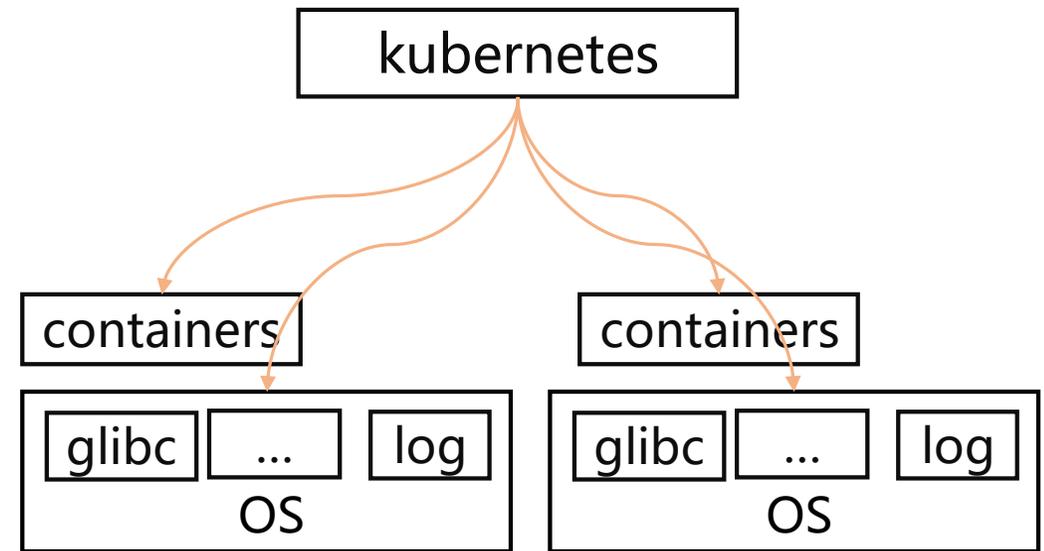


- Use Kubernetes APIs to manage OSs of cluster nodes
- Implement connecting OS to Kubernetes through CRD + Operator
- Manage OSs on the kubernetes control plane

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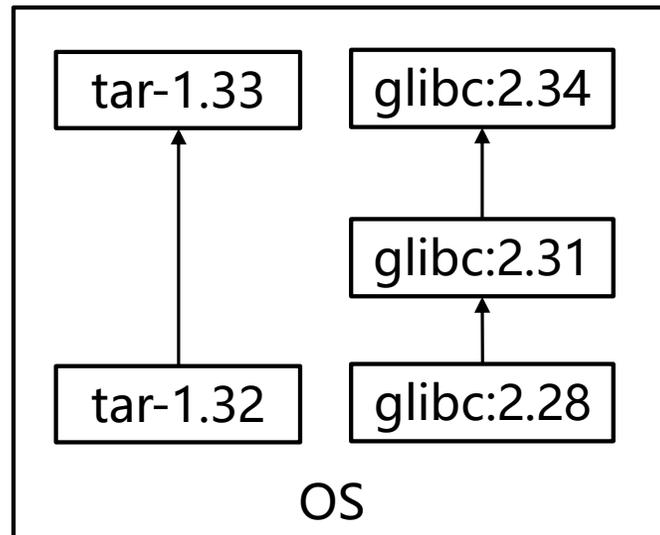
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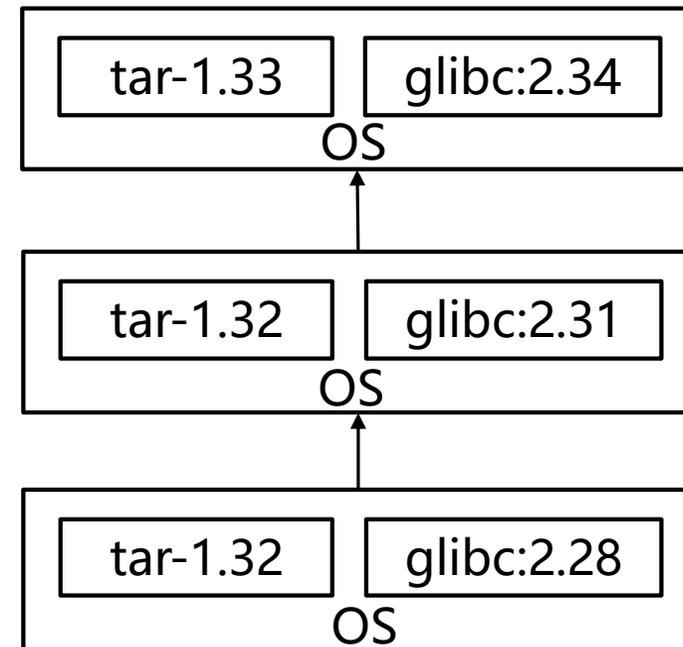
KubeOS: Manage OSs Atomically

- Atomic dual-partition upgrade
- No package manager, software package changes mean OS version changes
- Simplified OS, fast startup

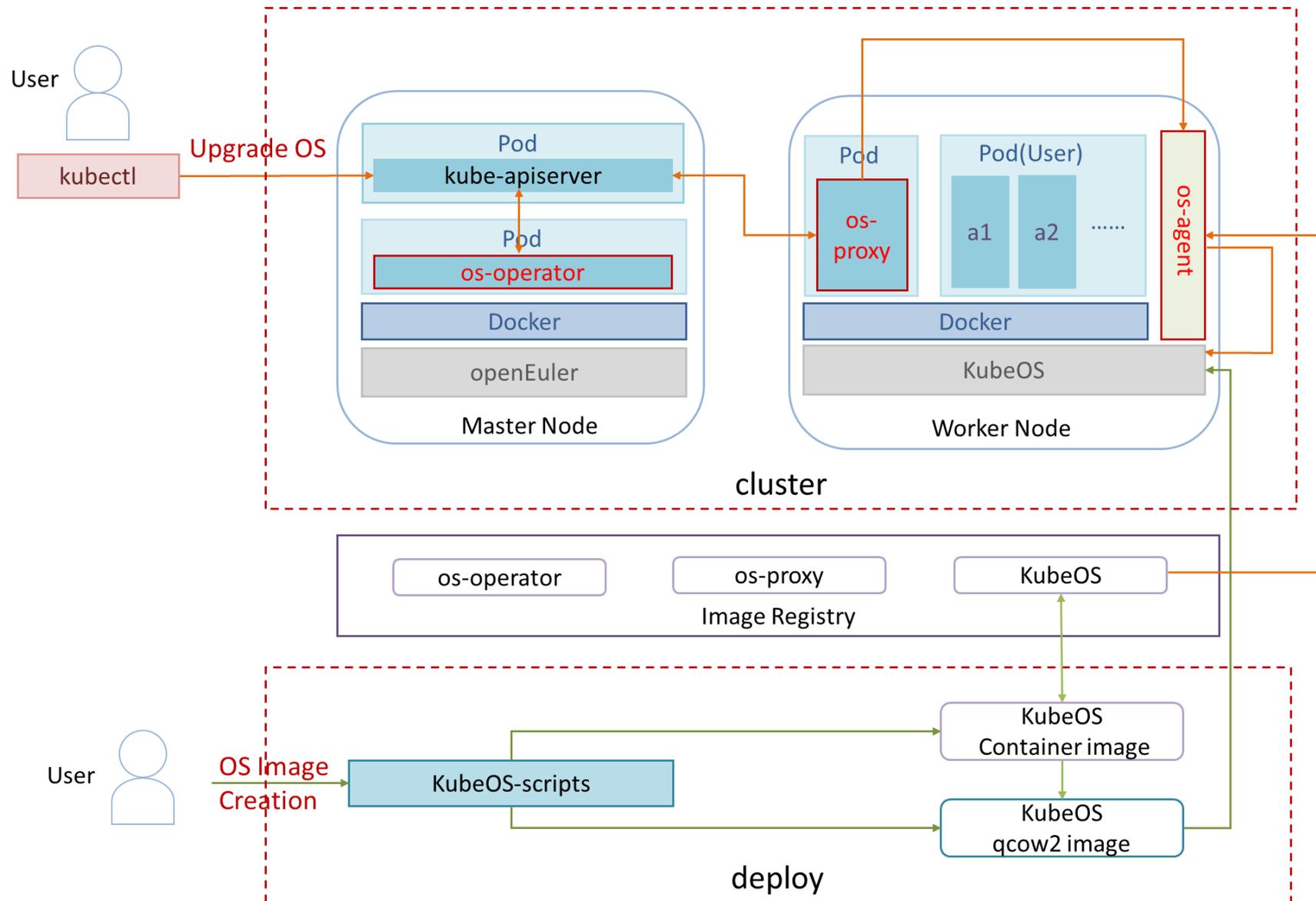
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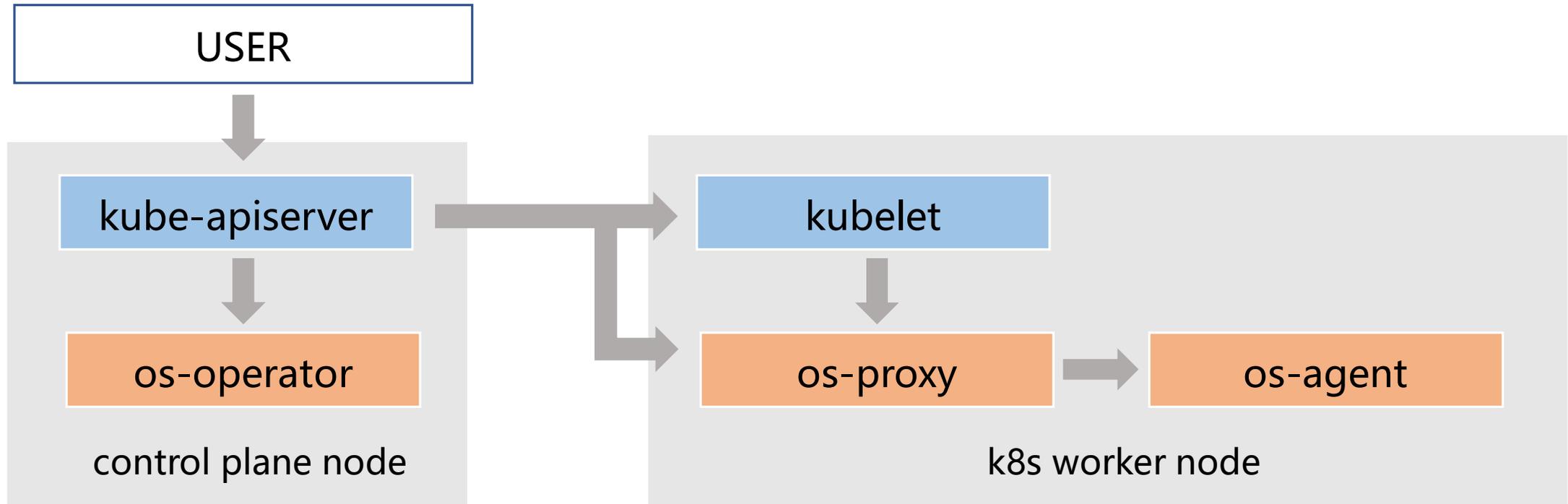
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KubeOS Architecture



KubeOS Architecture

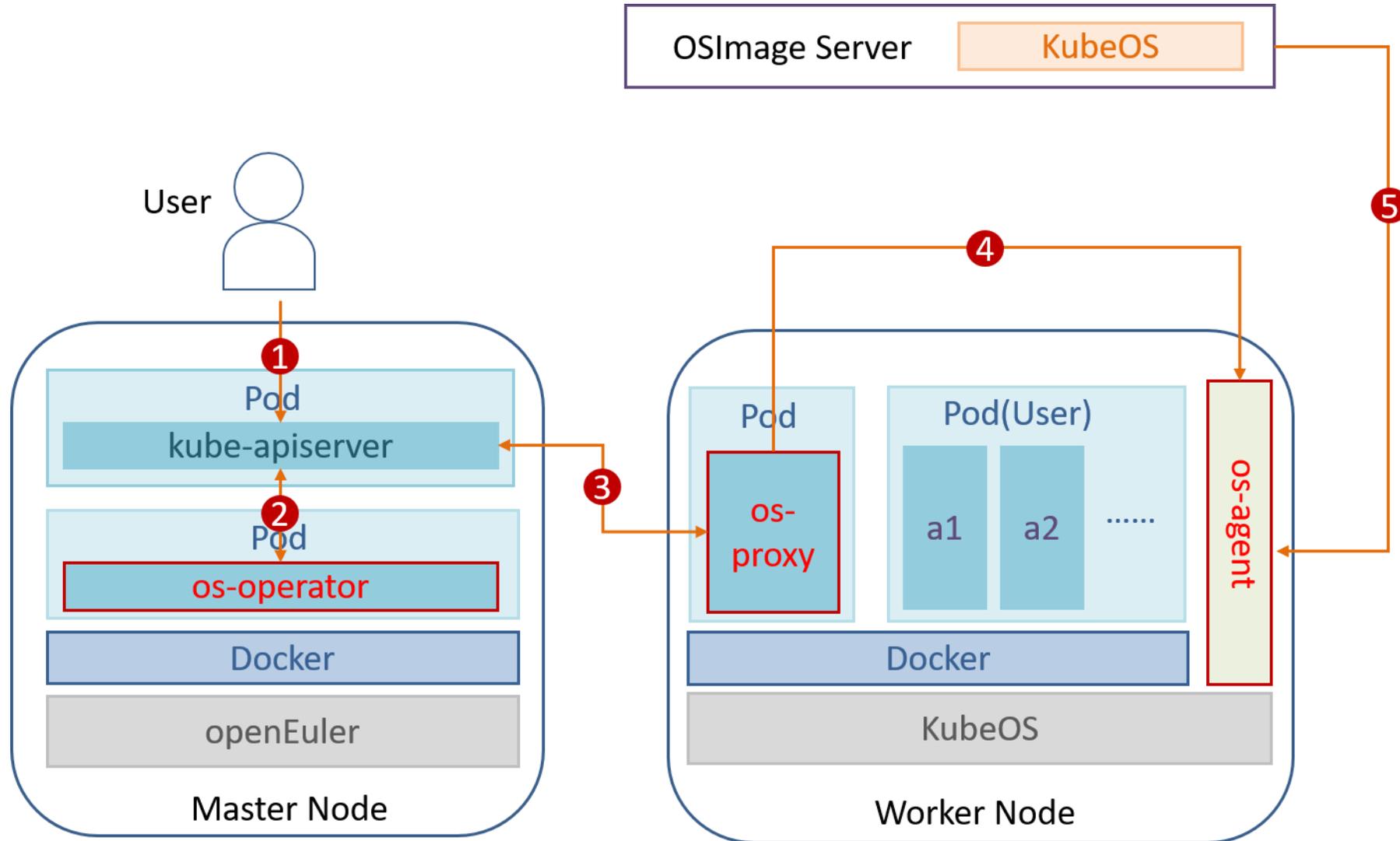


os-operator: monitors OS instances on all nodes , delivers tasks to each node in the cluster

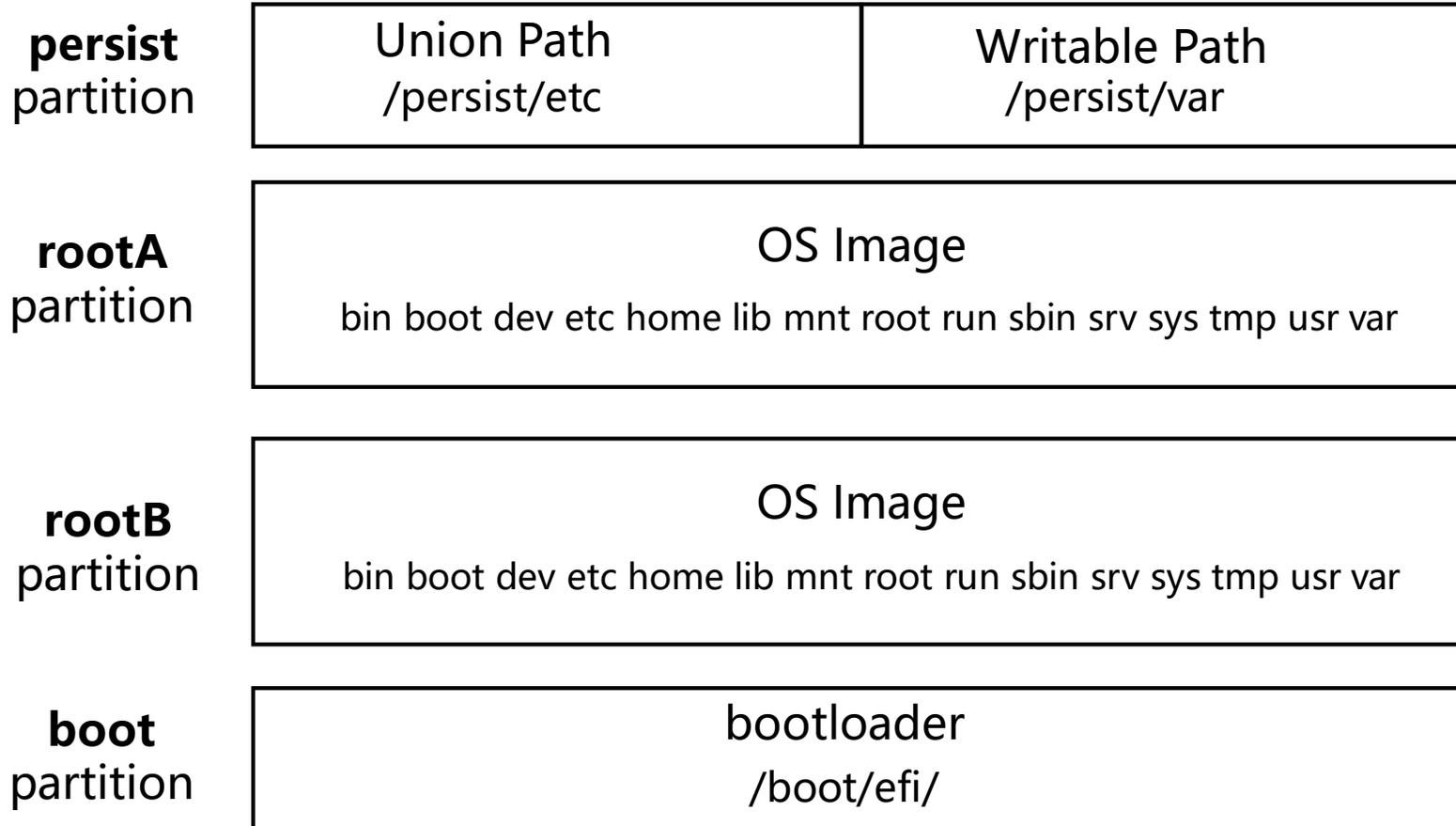
os-proxy: monitors OS instances on a single node , sends OS information to os-agent

os-agent: acts as the real executor of OS management

KubeOS Upgrade Process



KubeOS File System



root partition

Two read-only partitions for the dual-partition upgrade.

persist partition

Stores persistent user data

- Union Path: overlay mount
- Writable path: bind mount

boot partition

Store the boot loader files

Future Work

More Functions

- Configuration
 - Deliver OS system settings to each node in the cluster using Kubernetes
 - Configuration during KubeOS image building
- Upgrade
 - Customized upgrade policies, such as based on labels

Better to use

- Display
- Easy to use

