Manage Kubernetes Clusters Everywhere
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Kubernetes everywhere delivers:

• Consistent API
• RBAC & Access Control
• Health Checks/HA
• Load Balancing
• Backup and Recovery
• Monitoring
• Service Discovery
• Overlay Networking

Benefits of unified operations:

• Consistently deliver a high level of reliability on any infrastructure
• Improve DevOps efficiency with standardized automation
• Ensure enforcement of security policies on any infrastructure
• Enable secure delivery across any environment

Kubernetes presents an opportunity to unify operations across infrastructure.
How to deliver Kubernetes-as-a-Service

Level 1

- Deliver a full-featured container management platform that integrates the cloud native technologies and ecosystem
How to deliver Kubernetes-as-a-Service

Level 2

• Introduce multi-cluster management

GKE, EKS, AKS, ACK, CCE, TKE…

Centralized policy management
• Centralized auth/RBAC
• Centralized image, network, pod, cluster security policy

Multi-cluster applications
• Global LB and DNS
• Multi-cluster networking: Submariner
• Multi-cluster storage: Longhorn
Level 3

• Expand Kubernetes footprint everywhere (cloud, data center, and edge)

Kubernetes at the edge
• K3s, K3OS, and fleet manager

Single app clusters
• Kubernetes as the new app server

Windows containers and VMs
K3s – a micro distribution of Kubernetes

- Lightweight certified Kubernetes distro
- Built for production operations
- 40MB binary, 250MB memory consumption
- Single process w/ integrated Kubernetes master, Kubelet, and containerd
- SQLite in addition to etcd
- Simultaneously released for x86_64, ARM64, and ARMv7
- Open source project
Understanding the Software Stack on a Single Kubernetes Host

- Workload Containers
- Kubernetes Control Plane
- Kubernetes Runtime (Kubelet)
- Container Runtime (ContainerD/Docker/Cri-o)
- Linux
Why build a Linux distribution for k3s

• Create a single integrated unit that included everything necessary to run Kubernetes
• Integrate Kubernetes, ContainerD and Linux Kernel patches into a single process managed by Kubernetes
• Control the footprint – just enough OS to run Kubernetes
• RancherOS wasn’t the right solution because it was Docker based
Understanding the Software Stack on a Single Kubernetes Host

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Introducing k3os

- Just enough Linux to run k3s
- Boots in less than 10 seconds
- Based on Ubuntu Kernel
- Integrated management with k3s
- Currently available on x86_64, ARM64, and ARMv7 coming soon
- Open source project
Demo

Unified Cluster Operations
- Fleet Mgmt
- Auth/RBAC
- Policy
- Security
- Capacity
- Cost

Self Service Kubernetes Environments
- User Interface
- Service Catalog
- Logging
- CI/CD
- Alerting

DevOps

Central IT

Cloud, Data Center, and Edge

K3s
RKE
EKS
GKE
AKS
Any