Kubernetes by Canonical

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CANONICAL · ubuntu

Kubernetes:
the new way to build and deliver software

5bn industry in 2022
30% growth in 5 years!

K8s is the new silver bullet

- Reduced IT costs
- Improved developer productivity
- Faster time-to-market
- Cross-environment workload portability
- Simpler operations

"What challenges are you facing using K8s?"

- Complex to set up, to operate, to migrate to
- Economics & Vendor lock-in
- Skills gap
- Workload portability
- Resource consumption
- Tool overwhelm
- Security

How about a unified way to operate infra and apps?

Work across all Kubernetes distributions

ubuntu

Amazon EKS   Azure AKS   Google GKE   VMware PKS   Charmed K8s   MicroK8s

Canonical

Multi-cloud Kubernetes with enterprise support

Charmed K8s

MicroK8s

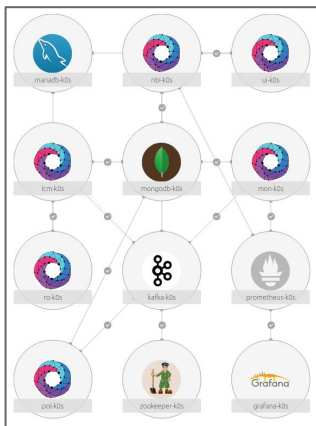Managed Kubernetes

Public cloud

Private cloud

Edge

ubuntu

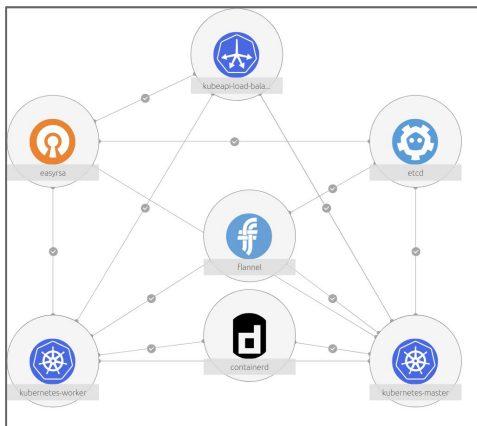"The Operator Pattern"

Use software to drive software.

Juju is a *universal operator lifecycle manager*.

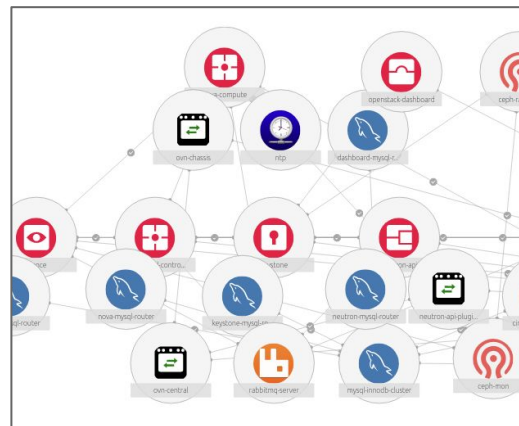# Universal Operators - VM, Cloud, Metal & CAAS

Operators for both new containerized and legacy estate

Kubernetes

VM / Cloud

Bare metal

A charm is an operator package

- Python Operator Framework
- Nothing hard-coded
- Primitives
- Reusability
- Operators beyond K8s
- Integrations across generations
- Open operator collection

K8s on rails   vs   Composable K8s

MicroK8s

Charmed Kubernetes

(snap-based)
Lightweight, zero-ops, opinionated

(charm-based)
Configurable, any cloud, lifecycle management

MicroK8s   vs   Charmed Kubernetes

- Pure upstream - NO vendor APIs
- Edge, IoT and appliances
- Zero-ops experience
- High availability
- Single package - 60 second setup
- Standalone or clustered
- Opinionated, "sensible defaults"
- Workstation edition on Windows, Mac
- Automatic updates & security patching
- Enterprise support

- Pure upstream - NO vendor APIs
- Model-driven, declarative ops
- Multi-cloud and hybrid-cloud
- High availability
- Pluggable CNI, CSI, CRI
- DPDK, CPU pinning, SR-IOV, Hugepages
- Fine-grained service placement
- GPU acceleration
- Third-party components and services
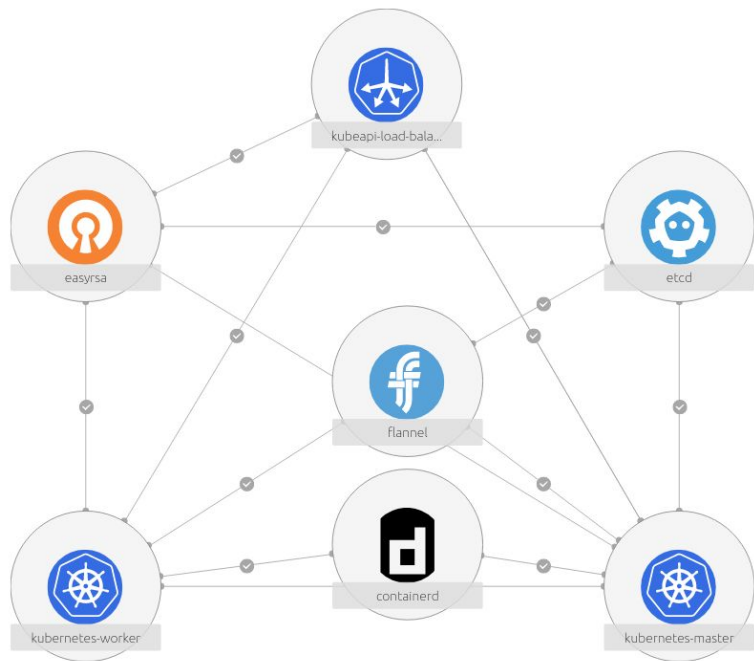- Enterprise support

Charmed Kubernetes

Composable Kubernetes for your Enterprise

- Pure upstream - NO vendor APIs

- Model-driven

- Metal, VMware, OpenStack

- AWS, Azure, Google, Oracle etc

- Pluggable CNI, CSI, CRI

- Upgrades to new versions

- Latest versions, quickly

- Long term security fixes

certified

kubernetes

Charmed Kubernetes on any cloud

- Fine-grained service placement
- Third-party components and services
- GPU acceleration
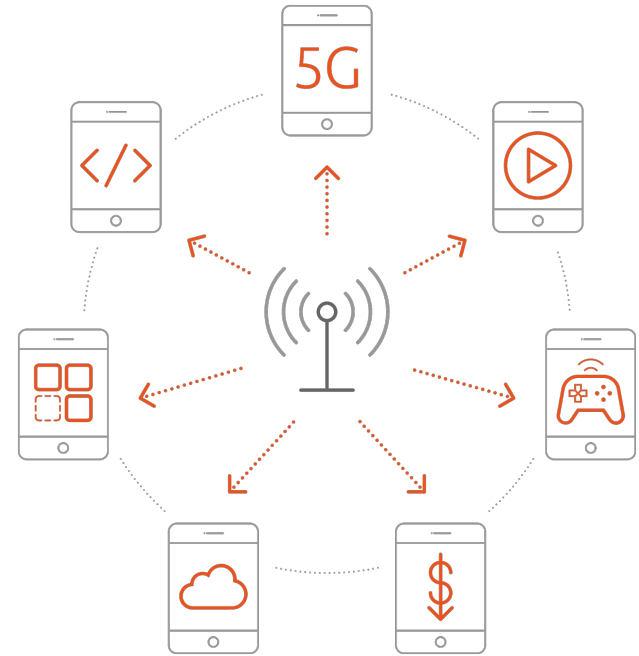- Multi-cloud and hybrid-cloud
- High availability

Comprehensive Kubernetes ecosystem

Telco carrier-grade extensions

- Fast networking

- Multi-NIC support with Multus CNI

- Network policies - Calico

- Network traffic management - Service Mesh

- IPv6 support

Fast networking

- 100 Gbps networking
- OVS hardware offloading
- SR-IOV
- DPDK
- CPU pinning
- NUMA topology
- Hugepages
- PCI passthrough
- GPU passthrough

Security and authentication

- Kubernetes RBAC

- LDAP

- Certificate Authority (CA)

- Encryption at rest

- TLS

- CIS harderning/compliance by default

MicroK8s

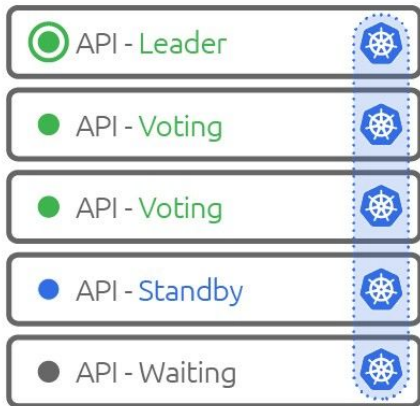# MicroK8s is lightweight Kubernetes done right

- Pure upstream - NO vendor APIs

- Single package

- 60 second setup and cluster

- Standalone or clustered

- Opinionated, "sensible defaults"

- Intel & Arm support

- Automatic updates

- Security patching

Kubernetes on rails from dev to the edge

MicroK8s

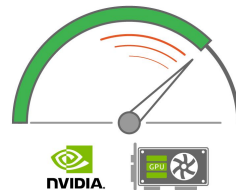|	
● API - Leader	
● API - Voting	
● API - Voting	
● API - Standby	
● API - Waiting	

- Developer workstations

- Edge, IoT and appliances

- Zero-ops experience

- Multi-cloud and hybrid-cloud

- High availability

- Enterprise support

- Predictable release cadence

certified
kubernetes

$ microk8s enable <features>

Enterprise Kubernetes offering

We only have one product for K8s

Ubuntu Advantage

Canonical Kubernetes services

Kubernetes Explorer

- 3-day workshop
- MicroK8s, Charmed K8s & Kubernetes fundamentals

Kubernetes Discoverer

- Reference architecture
- Public clouds, VMware, Openstack
- Storage & SDN options
- Logging, monitoring, alerting
- High Availability
- Support or Fully Managed

Kubernetes Discoverer Plus

- Custom architecture
- Public clouds, VMware, Openstack, Bare Metal
- Storage & SDN options
- Third-party integrations
- GPU Acceleration
- Private registry options
- High Availability
- Support or Fully Managed

Managed applications on Kubernetes

A comprehensive portfolio for vertical integration

JAAS Landscape   Management Layer

PostgreSQL influxdb mongoDB MySQL kafka graylog elasticsearch Grafana Prometheus Open Source MANO Kubeflow   Apps on K8s

Charmed K8s MicroK8s   Kubernetes

openstack®   Virtual Machines

ubuntu®   Operating system

MAAS   Bare metal provisioning

Thank you. Questions?

Support directly from Canonical

MicroK8s

- Instant install
- HA Cluster
- Minimal config
- Single-rack

Charmed kubernetes

- Choices of SDN
- Choices of storage
- Lifecycle automation
- Integration capabilities

kubeadm

- Existing Cluster support

Container devops life-cycle

Canonical for multi-/hybrid-cloud

Fully managed applications

that run on any platform* with Ubuntu OS

based on any infrastructure

Operator Framework on Kubernetes

Charms help ease applications full lifecycle operations by abstracting complexity in code.