EASILY DEPLOY AND SCALE KUBERNETES WITH RANCHER®

WHY KUBERNETES?

Kubernetes is an open-source container orchestrator for deploying and managing containerized applications. Building on 15 years of experience running production workloads at Google, the orchestrator provides advantages inherent to containers, while enabling users to build container-ready development environments which are customized to their needs.

In production, applications typically span multiple containers across multiple server hosts, which are networked together to form a cluster. Kubernetes provides the orchestration and management capabilities required to deploy containers for these distributed workloads. It enables users to build application services that span multiple containers and schedule those containers across a cluster, as well as manage the health of the containers.

Because these operational tasks are automated, DevOps team can now do many of the same things that other application platforms allow them to do, but using containers. Its distributed architecture is comprised of loosely coupled components combined with a rich set of APIs, making Kubernetes well suited for running different application architectures; from monolithic web applications to highly distributed microservices applications, and even batch driven applications.

CONFIGURING AND DEPLOYING KUBERNETES CAN BE HARD

It's commonly believed that Kubernetes is the key to successfully operationalizing containers at scale. This may be true if you are running a single Kubernetes cluster in the cloud or have reasonably homogenous infrastructure. However, many organizations have a diverse application portfolio and user requirements, and therefore have more expansive and diverse needs. In these situations, setting up and configuring Kubernetes, as well as automating infrastructure deployment, gives rise to several challenges:

1. Creating a custom Kubernetes environment that works
2. Automating the deployment of multiple Kubernetes clusters
3. Managing the health of Kubernetes clusters (e.g. recovering from etcd node problems)
4. Automating the upgrade of Kubernetes clusters
5. Deploying multiple clusters, on premises and across disparate cloud providers
6. Enterprise readiness, including 24x7 support
7. Customizing and repeatedly deploying multiple combinations of infrastructure services (e.g. storage, load balancer)
8. Deploying and managing upgrades for Kubernetes add-ons such as Dashboard, Helm and Heapster

RANCHER® MAKES KUBERNETES EASY

Containers make software development easier by making code portable across development, test, and production environments. Once in production, many organizations look to Kubernetes to manage and scale their containerized applications and services. But setting up, customizing and running Kubernetes, as well as combining the orchestrator with a constantly changing set of technologies, can be challenging and require a steep learning curve.

Rancher® container management platform makes it easy for you to manage all aspects of running containers. You no longer need to develop the technical skills required to

integrate and maintain a complex set of open source technologies. Rancher is not a Docker orchestration tool—it is the most complete container management platform.

RANCHER INCLUDES EVERYTHING YOU NEED TO MAKE KUBERNETES WORK IN PRODUCTION ON ANY INFRASTRUCTURE, INCLUDING:
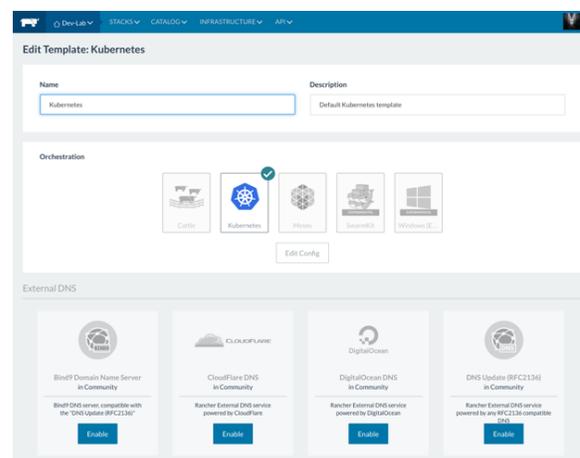
- A certified and supported Kubernetes distribution with simplified configuration options
- Infrastructure services including load balancers, cross-host networking, storage drivers, and security credentials management
- Automated deployment and upgrade of Kubernetes clusters
- Support for multiple clusters and clouds
- Enterprise-class features such as role-based access control and 24x7 support

CERTIFIED AND SUPPORTED KUBERNETES DISTRIBUTION

The certified and supported Kubernetes distribution included with Rancher makes it easy for you to take advantage of proven, stable Kubernetes features. To ensure a consistent experience across all public and private cloud environments, users can leverage Rancher software to manage underlying containers, execute commands, and fetch logs.

Depending on users' needs, Kubernetes clusters can be configured in several deployment modes, including standalone, resilient overlapping planes and resilient separated planes. In addition, they can

leverage the highly customizable Rancher load balancer services to route host network traffic to Kubernetes services and pods.

CUSTOMIZABLE INFRASTRUCTURE SERVICES

Rancher container management platform makes it easy to define and save different combinations of networking, storage and load balancer drivers as environments. This enables users to repeatedly deploy consistent implementations across any infrastructure, whether it is public cloud, private cloud, a virtualized cluster, or bare-metal servers.

The services integrated with Rancher include:

- Ingress controller with multiple load balancer implementations (HAproxy, traefik, etc.)
- Cross-host networking drivers for IPSEC and VXLAN
- Storage drivers
- Certificate and security credentials management
- Private registry credential management
- DNS service which is a drop-in replacement for SkyDNS
- Highly customizable load balancer

If you chose to deploy an ingress controller on native Kubernetes, each provider would have its own code base and set of configuration values. However, Rancher load balancer has a high level of customization to meet user needs. The Rancher ingress controller provides the flexibility to select your load balancer of choice—including HAproxy, Traefik, and nginx— while the configuration interface remains the same. Rancher also provides the ability to scale the load balancer, customize load balancer source ports, and schedule the load balancer on a specific set of hosts.

AUTOMATED DEPLOYMENT AND UPGRADES

Using Rancher, Kubernetes can be launched in a matter of minutes. You can easily stay up-to-date with a stable Kubernetes release as well as adopt upstream bug fixes in a timely manner, and should never again be stuck with old, outdated and proprietary technologies.

The Kubernetes Dashboard can be automatically started via Rancher, and made available for each Kubernetes environment. Helm is automatically made available for each Kubernetes environment as well, and a convenient Helm client is included in the out-of-the-box kubectl shell console.

MULTI-CLUSTER, MULTI-CLOUD DEPLOYMENTS

Rancher makes it possible to run multi-node, multi-cloud clusters, and even deploy stateful applications. With Rancher, Kubernetes clusters can span multiple resource pools and clouds. All hosts that are added using Docker Machine drivers or via manual agent registration will automatically be added to the Kubernetes cluster.

Users can create multiple Kubernetes clusters using pluggable infrastructure services, which are easily and repeatedly deployed as Rancher environments. Access rights to each of these environments are managed through role-based access control (RBAC). The Rancher user interface provides complete visibility into all hosts, the containers running in those hosts, and their overall status.

ENTERPRISE- AND PRODUCTION-READY

Rancher makes it easy to adopt open source Kubernetes while complying with corporate security and availability standards. It provides enterprise readiness via a secure, multi-tenant environment, isolating resources within clusters and ensuring separation of controls. A private registry can be configured, which is used by Kubernetes and is tightly coupled to the underlying cluster (e.g. Google Cloud Platform registry can be used only in a GCP cluster).

Features such as role-based access control, integration with LDAP and active directories, detailed audit logs, high-availability management server, metering (via Heapster), and encrypted networking are available out of the box. Enterprise-grade 24x7x365 support provides the confidence to deploy Kubernetes and Rancher in production at any scale.

BEYOND CONTAINER ORCHESTRATION

Kubernetes is maturing into a stable platform. It has strong adoption and ecosystem growth. However, it's important not to lose sight that the end goal for container adoption is to make it easier and more efficient for developers to create applications and for operations to manage them. Application deployment and management requires more than just orchestration. For example, services such as load balancers and DNS are required to run the applications.

Rancher is not a container orchestrator. It is a complete container management platform that includes everything you need to manage containers in production. You can quickly deploy and run multiple clusters across multiple clouds with a click of the button using Rancher or select from one of the integrated and supported container orchestrator distributions, including Kubernetes as well as Mesos and Docker Swarm. Pluggable services provide the basis for portability across infrastructure providers

Whether running containers on a single on-premises or multiple clusters running on Amazon AWS and other service providers, Rancher is quickly becoming the container management platform of choice for thousands of Kubernetes users.

GET STARTED WITH CONTAINERS, KUBERNETES, AND RANCHER TODAY!

For step-by-step instructions on how to get started with using Kubernetes with the Rancher container management platform, please refer to the Kubernetes eBook: info.rancher.com/deploying-scaling-kubernetes-ebook.

Ready to give Rancher and Kubernetes a try? Check out the Rancher Sandbox at try.rancher.com. Just sign in with GitHub, and add your private or public hosts to get started.