**Rancher vs. OpenShift: Overview**

Rancher and OpenShift are both Kubernetes cluster managers. They are used to give a web console and CLI access to Kubernetes, making it easier to manage and use.

**Rancher Platform Overview**

Rancher is a tool for managing Kubernetes clusters. It can manage clusters it creates (using RKE), or imported clusters, like in-house Kubernetes, or EKS, GKE, or other cloud hosted clusters. It provides both a web UI and a CLI for automation. It adds user roles and permission that can be applied across clusters and projects. It runs on RKE, which is an easy to build Kubernetes cluster.

**OpenShift Platform Overview**

OpenShift is an actual Kubernetes distribution, downstream from the Kubernetes open-source project. It adds additional features, and relies heavily on Kubernetes operators to run. OpenShift is available on Amazon, Azure, and GCP as a managed service. There are two main variants, OpenShift Container Platform and OKD (also known as OpenShift Origin). OCP is the Red Hat Enterprise version, and OKD is the community version.

**Rancher vs. OpenShift: Software Comparison**

OpenShift comes with a full installer, that goes from an installation config file to provisioning and full deployment of control plane and worker nodes. It can be provisioned on many cloud providers such as AWS, Azure, and GCP, VMWare, bare metal, and others.

Rancher provides a web UI and a CLI tool to manage clusters. It can manage any cluster, and multiple clusters, not just Rancher created clusters.

**Rancher Software and Technologies**

A Rancher docker deploy uses k3s, and a full HA deployment uses RKE and a Helm chart. RKE is a Kubernetes distribution based entirely around containers. It can run on any system that has docker. Rancher can easily manage multiple clusters from a single console.

**OpenShift Software and Technologies**

OpenShift runs on RHEL (Fedora) CoreOS for the master nodes, and RHEL (or other compatible distribution) for the worker nodes. It integrates a lot of projects to add features from base Kubernetes, such as software-defined networking, Jenkins pipelines, and a private container registry.

**Modernizing IT Infrastructure for a Data-Driven World**

Rancher and OpenShift both provide paths to modernizing IT infrastructure. But there's A LOT more you need to know. In the webinar below, we discuss cloud considerations and so much more:

**OpenShift vs. Rancher: Feature Comparison**

OpenShift is a Kubernetes distribution, with extra features built-in, or easily added. It is a platform for developing and deploying containerized applications. As such, it adds a lot of tools for easily creating container images, such as creating CI/CD pipelines, operators, helm charts, and container images.

Rancher works in conjunction with RKE, Rancher Lab’s own Kubernetes distribution, to provide a full clustered environment, along with managing externally created clusters.

**Installation**

Installation of OpenShift is a lot more involved than Rancher. The controller nodes can only be installed on RHEL (Fedora) CoreOS. The installation creates a temporary instance that it has control over, creates a basic Kubernetes install on it, and uses it to bootstrap a cluster, then transfers control over to the new cluster, and deletes the instance. Some people have reported installation times of between 3 days and a couple weeks.

Rancher installation is a simple helm install to a small RKE cluster, which itself can be created with only one node and a simple config. It is easy to expand that cluster itself. Building a new cluster is easy with a few simple commands. All that is needed is a host, running any distribution, with docker.

**Upgrades**

Upgrades of OpenShift involve both the OpenShift software, along with the Kubernetes distribution it is based on. It depends on a custom operator that validates versions and orchestrates state changes of other operators to ensure the cluster gets updated in a controlled and correct manner. Since OpenShift controls the full machine, this also includes system updates and reboots.

Rancher is relatively easy to upgrade. The Rancher software itself is either a helm chart upgrade (or docker image upgrade). Upgrading fully managed clusters is done through the UI, as a rolling update across the nodes. RKE is easy to update due to its design of being fully container based. External clusters will require upgrading through their own separate procedures.

**Ecosystem and Maturity**

OpenShift has the full support of Red Hat. It is integrated well with their infrastructure. You can get a managed service, or run it yourself in cloud or on-premise environments. They provide a lot of add-ons to provide extra features, for example the Advanced Cluster Manager that lets you manage multiple clusters through a central console. It is very well geared toward development, with a lot of features to make building and deploying applications in containers easy.

Rancher has an application catalog with a lot of applications that can be deployed to your cluster, including monitoring, databases, and backups. You can also add your own repos with helm charts for deploying apps. Just like OpenShift, Rancher provides a command line tool for interfacing with Rancher, in addition to normal Kubernetes commands.

**Support**

OpenShift is backed by Red Hat, so you get good support through their engineers. Because you have to be a Red Hat customer already, you also get support for the OS.

Rancher is backed by Rancher Labs, which is part of SUSE. The Rancher software was created in 2014, with the current 2.x series from 2018.

**When to Use OpenShift**

If you are part of the Red Hat ecosystem already, OpenShift is a good choice. It is designed to integrate with RHEL and the Red Hat infrastructure. It comes with features that aid in development of containerized applications.

**When to Use Rancher**

Rancher is a good tool to use when you have multiple clusters you want to manage through a single interface. It is also good when you have users across the multiple clusters that you want to manage permissions centrally. It is easy to use, can manage multiple (and multiple types) of clusters, and can be installed on any system that runs docker. This makes it a good choice if you are using different distributions than RHEL, or need to manage many clusters centrally.

**Final Thoughts**

Choosing between Rancher and OpenShift largely comes down to a decision between ecosystems. Do you want to work within the Red Hat ecosystem (for better or worse)? Then OpenShift is a good option. If you're RHEL-averse, or want to manage many clusters centrally, then Rancher is the way to go.

**OpenShift Pros**

* **Better container image management.**The Image Stream feature on OpenShift makes it easy to upload and manage a container image without dealing with the registry.
* **Extensive security features.**Because of its strict security policies, OpenShift can identify vulnerabilities and easily redress them.
* **Excellent user experience.**OpenShift offers excellent support to its users in terms of user experience, making it ideal for beginners.

**OpenShift Cons**

* **Not flexible.**You can only install OpenShift on a handful of operating systems, including Red Hat Enterprise Linux Atomic Host (RHELAH), CentOS, Fedora, and Red Hat Enterprise Linux (RHEL).
* **Relatively small community.**OpenShift has a small community of developers, mostly from Red Hat. As a result, support for this product is limited.
* **Relatively hard-to-understand logs.**Because cluster logs on OpenShift are hard to understand, they are also challenging to manage.

**Rancher Pros**

* **Flexible.**You can install Kubernetes on numerous operating systems, including AWS and Azure.
* **Extensive community support.**Kubernetes has a large community of developers and experts who work constantly to refine the platform. The platform also offers tons of support for different projects and languages.
* **Compatible with simple apps.**Because of its lenient security policies, you can efficiently run simple apps on Kubernetes.

**Rancher Cons**

* **Poor container image management.**Unlike OpenShift, Kubernetes is not built for optimal management of container images.
* **Hard to learn and use.**Due to the complex nature of its user interface, you may find it challenging to understand and manage containers using Kubernetes.

### Advantages of Choosing OpenShift

OpenShift is a great option that comes with a ton of features, including Image Stream, which is massively useful in creating and managing container apps. Besides, it is relatively easy to use.

For designing and testing applications, OpenShift remains one of the industry’s best platforms.

### Advantages of Choosing Rancher

The advantages of Rancher, on the other hand, include its affordability, support, and productivity. This project is cheaper than most containerization solutions on the market.

Rancher also has the backing of all major cloud vendors and community developers. As a result, its ecosystem benefits greatly from the frequent releases and updates it receives.

### Functionality of OpenShift:

Red Hat OpenShift offers core security capabilities like **access controls, networking, and enterprise registry with built-in scanner**. Red Hat Advanced Cluster Security for Kubernetes enhances this with security capabilities like runtime threat detection, full life cycle vulnerability management, and risk profiling.

OpenShift **helps you to develop, deploy, and manage container-based applications**. It provides you with a self-service platform to create, modify, and deploy applications on demand, thus enabling faster development and release life cycles.

### Functionality of Rancher:

Rancher lets you **streamline cluster deployment on bare metal, private clouds, public clouds or vSphere and secure them using global security policies**. Use Helm or our App Catalog to deploy and manage applications across any or all these environments, ensuring multi-cluster consistency with a single deployment.

Rancher is an open-source software platform that **enables organizations to run containers in production**. With Rancher, organizations no longer have to build a container services platform from scratch using a distinct set of open-source technologies.

### Administrative level of OpenShift:

An IT professional who is a Red Hat Certified Specialist in OpenShift Administration is able to: **Manage OpenShift Container Platform**. **Manage users and policies**. **Control access to resources**. **Configure networking components**.

### Administrative level of Rancher:

### Rancher contains a variety of tools that aren’t included in Kubernetes to assist in your DevOps operations. Rancher can integrate with external services to help your clusters run more efficiently.

Rancher is **a complete software stack for teams adopting containers**. It addresses the operational and security challenges of managing multiple Kubernetes clusters, while providing DevOps teams with integrated tools for running containerized workloads.