Deploy Java-based applications using Helm Charts on Red Hat OpenShift 4

Sbusiso Mkhombe, Developer Advocate

Masa Abushamleh, Developer Advocate

IBM Developer

Get started here:

Let’s Get Started

Login/Sign Up for IBM Cloud

https://ibm.biz/BdfmLK

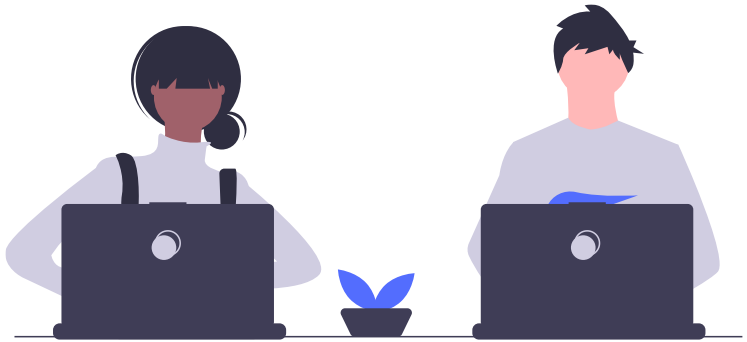
Tutorial

https://github.com/1154046/Using-Helm-Charts-on-RedHat-OpenShift

Survey Link

OpenShift Cluster:

URL: **https://helm-os.mybluemix.net/**
Key: oslab



Agenda

What is Red Hat OpenShift

- Platform for deploying cloud-native, microservices based applications.

- It can be hosted locally, or on a public cloud.

- Built on Kubernetes and deployed on Red Hat Enterprise Linux® CoreOS (RHCOS) and Red Hat Enterprise Linux (RHEL)

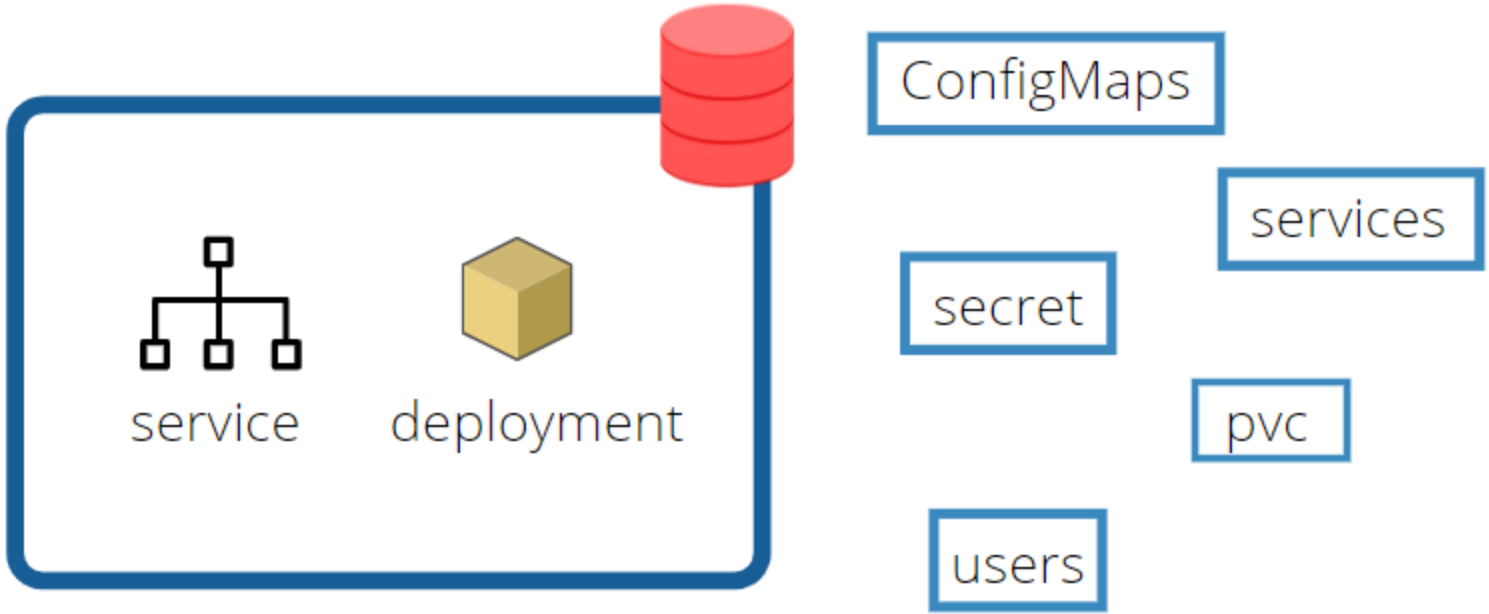
What is Helm?

"A *helmsman* or "helm" is a person who steers a ship, sailboat, submarine, other types of maritime vessel, or spacecraft." — Wikipedia

"Helm is a tool for managing Kubernetes packages called *charts*."— Helm.sh

A command-line interface (CLI) that installs charts into Kubernetes, creating a release for each installation

What is Helm?



The Purpose of Helm

- Create new charts from scratch
- Package charts into chart archive (tgz) files
- Interact with chart repositories where charts are stored
- Install and uninstall charts into an existing Kubernetes cluster
- Manage the release cycle of charts that have been installed with Helm

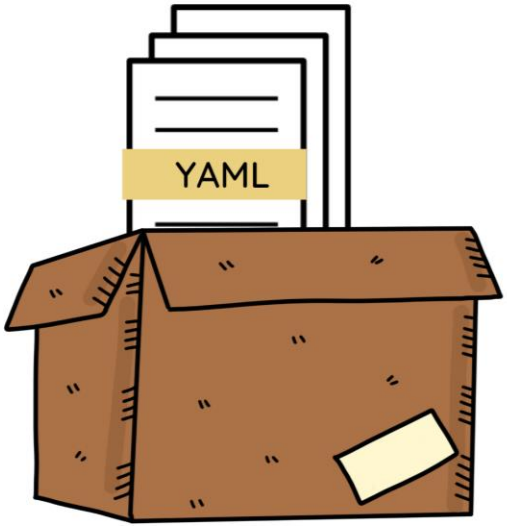
Photo by qi bin, Unsplash

Helm Chart

A chart is a package of pre-configured Kubernetes resources.

Contains templates for a set of resources that are necessary to run an application, tool, or service inside of a Kubernetes cluster.

A template uses variables that are substituted with values when the manifest is created. The chart includes a values file that describes how to configure the resources.



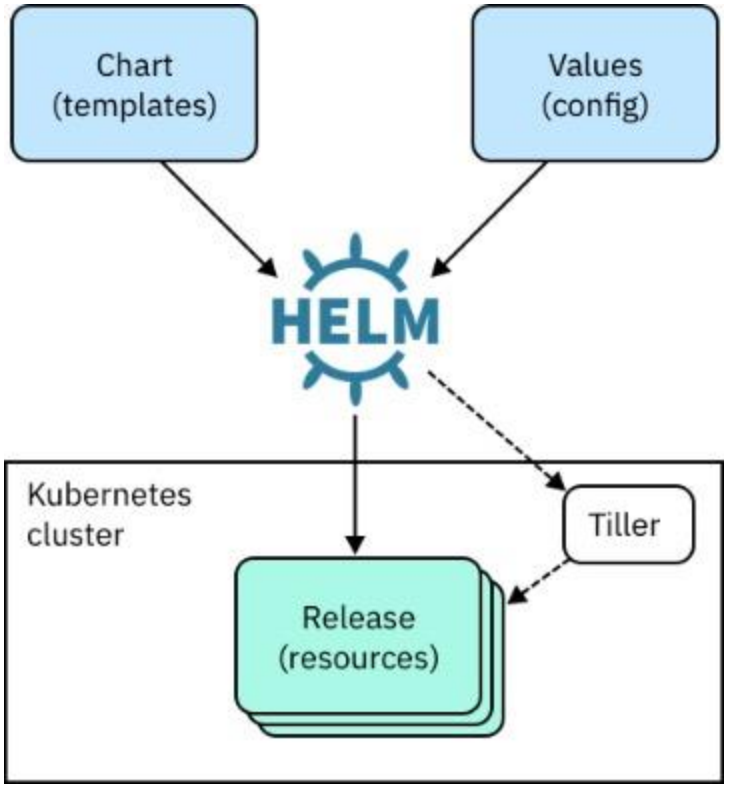
Helm components and terminology

Elements:

- Client (Helm)
- Server (Tiller)

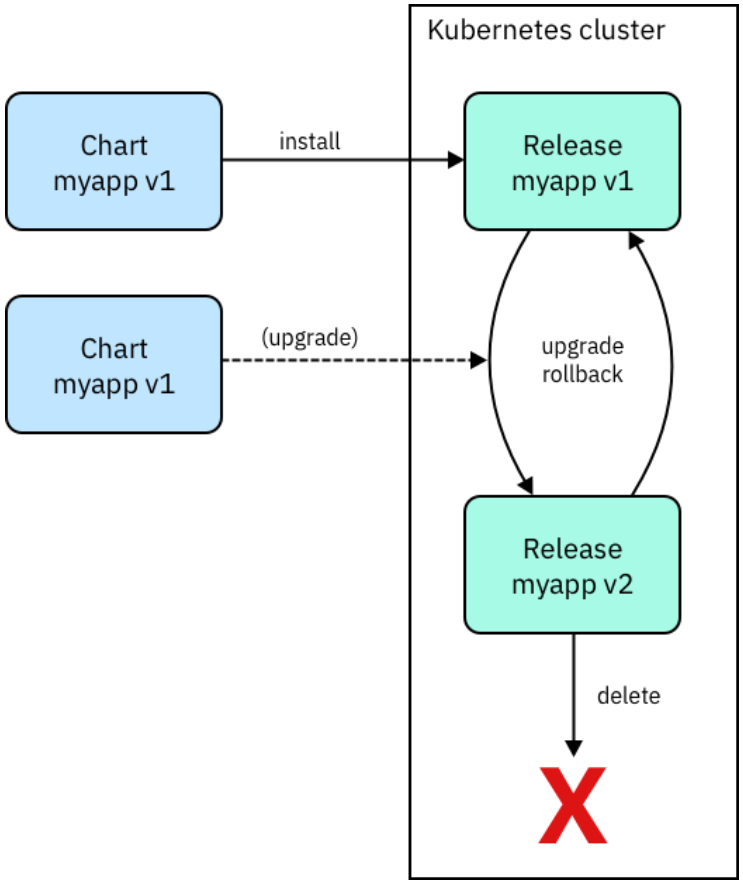
Terminology

- Helm
- Chart
- Repository
- Release
- Tiller



Why Use Helm?

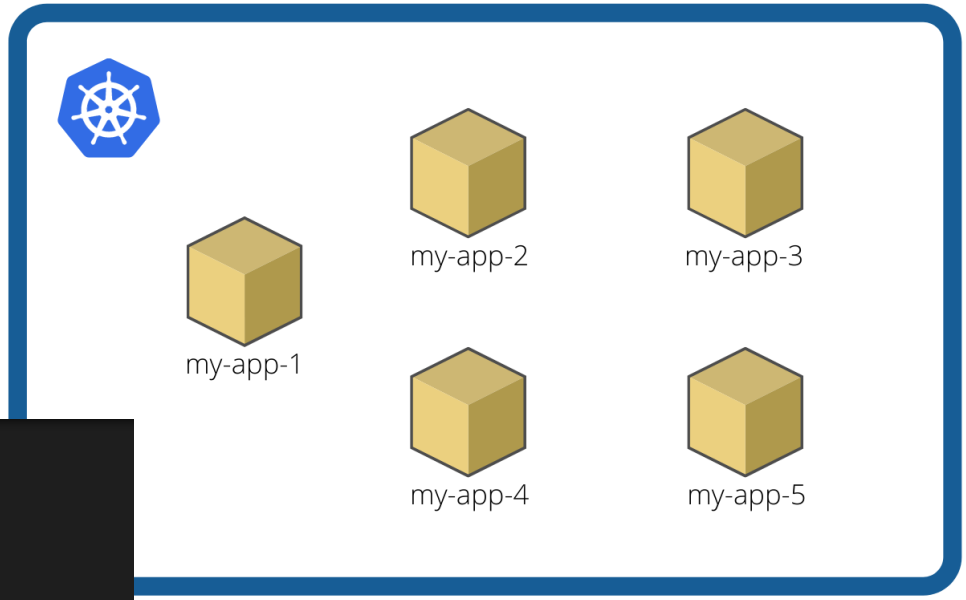
- **Easy and repeatable** deployments using
  helm install <chart>
- **Separate** Config settings from manifest formats
- **Edit** configuration values
- **Update** runtime parameters in the values.yaml file for each instance differently
- **Use single commands** for installing, upgrading and deleting releases



Helm: Templating Engine

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: {{ .Values.name }}
spec:
  containers:
  - name: {{ .Values.container.name }}
    image: {{ .Values.container.image }}
    port: {{ .Values.container.port }}
```

values.yaml




```yaml
apiVersion: v1
kind: Pod
metadata:
  name: my-app
spec:
  containers:
  - name: my-app-1
    image: my-app-image
    port: 8080
```

my-app-1.yaml

Helm Architecture

- **Security**: Helm makes sure that the package comes from a trusted source and the security of the network it is pulled from, etc.

- **Reusability**: We can install the same thing again and again into the cluster or namespace in a cluster. We can do it repeatedly and predictably.

Configurability: We can externalize the configuration and pass it while installing the repository into the cluster. Even though Helm is not a configuration management tool but still provides some configuration.

Helm commands

Install Tiller:

$ helm init

Create a chart:

$ helm create <chart>

List the repositories:

$ helm repo list

Search for a chart:

$ helm search <keyword>

Get information about a chart:

$ helm inspect <chart>

Deploy a chart (creates a release):

$ helm install <chart>

List all releases:

$ helm list –all

Get the status of a release:

$ helm status <release>

Get the details about a release:

$ helm get <release>

Upgrade a release:

$ helm upgrade <release> <chart>

Roll back a release:

$ helm rollback <release> <revision>

Delete a release:

$ helm delete <release>

Resources

https://github.com/quarkusio/quarkus-quickstarts

https://www.ibm.com/cloud/architecture/content/course/helm-fundamentals/

https://github.com/bitnami/charts

Thank You!

Sbusiso Mkhombe

Developer Advocate

—

Sbusiso.Mkhombe@ibm.com

ibm.com

Masa Abushamleh

Developer Advocate

—

Masa.Abushamleh@ibm.com

ibm.com