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K8S HELM
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-> We deployed our apps in Kubernetes cluster using

Manifest files -> Manifest files we can write in 2 ways

1) JSON
2) YML (more demand)

-> It is difficult to write manifest files for our

applications -> Helm is a package manager for

k8s applications

-> Helm allows you to install or deploy applications on kubernetes cluster in a similar manner to yum/apt for linux distributions.

-> Helm lets you fetch, deploy and manage the lifecycle of applications both 3rd party apps and your

own applications Ex: promethus, graphana, nginx-ingress are third party apps

-> Helm introduces several familiar concepts such as

- Helm Chart (package contains k8s manifests - templates)
- Helm Repositories which holds helm charts/packages
- A CLI with install/upgrade/remove commands

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Why to use Helm?

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-> Deploying application on K8S cluster is little difficult

-> As part of app deployment we need to create below k8s objects

- Deployment
- Service
- ConfigMaps/Secrets
- Volumes
- Ingress Rules
- HPA

-> Helm greatly simplifies the process of creating, deploying and managing applications on k8s cluster

-> Heml also maintains a versioned history of very chart (application) installation. If something goes wrong , you can simply call 'helm rollback'

-> Setting up a single application can involve creating multiple independent k8s resources and each resource requires a manifest file.

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What is Helm Chart
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-> HELM chart is a basically just a collection of manifest files organized in a specific directory structure that describe a related K8S resource.

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-> There are two main components in HELM chart

1. template
2. value

-> Templates and values renders a manifest which can understand by k8s

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-> Helm uses charts to pack all the required k8s components (manifests) for an application to deploy,run and scale.

-> charts are very similar to RPM and DEB packages for Linux.

Ex: yum install git

Note: it will interact with repo and it will download git

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HELM Concepts
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> Helm packages are called charts, and they consist of a few YML configuration files and some templates that are rendered into K8S manifest files. Here is the basic directory structure of a chart.

charts: dependent charts will be added here
templates: contains all template files
values: It contains values which are required for templates

##################
HELM Architecture
##################
what-the-helm
Chart.yaml
charts
templates

- NOTES.txt
- helpers.tpl
- deployment.yaml
- ingress.yaml
- service.yaml

tests

- test-connection.yaml

values.yaml

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Helm Installation
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$ curl -fsSL -o get_helm.sh https://raw.githubusercontent.com/helm/helm/main/scripts/get-helm-3

$ chmod 700 get_helm.sh

$ ./get_helm.sh

$ helm

-> check do we have metrics server on the cluster

$ kubectl top pods

$ kubectl top nodes

check helm repos

$ chmod 700 get_helm.sh

$ helm repo Is

Before you can install the chart you will need to add the metrics-server repo to

$ helm repo add metrics-server https://kubernetes-sigs.github.io/metrics-server/

#Install the chart

$ helm upgrade --install metrics-server metrics-server/metrics-server

$ helm list

$ kubectl top pods

$ kubectl top nodes

$ helm **delete** <release-name>