DevOps (CS457)

ASSIGNMENT 1: Task 1

Kubernetes Helm package installation,configuration and revision

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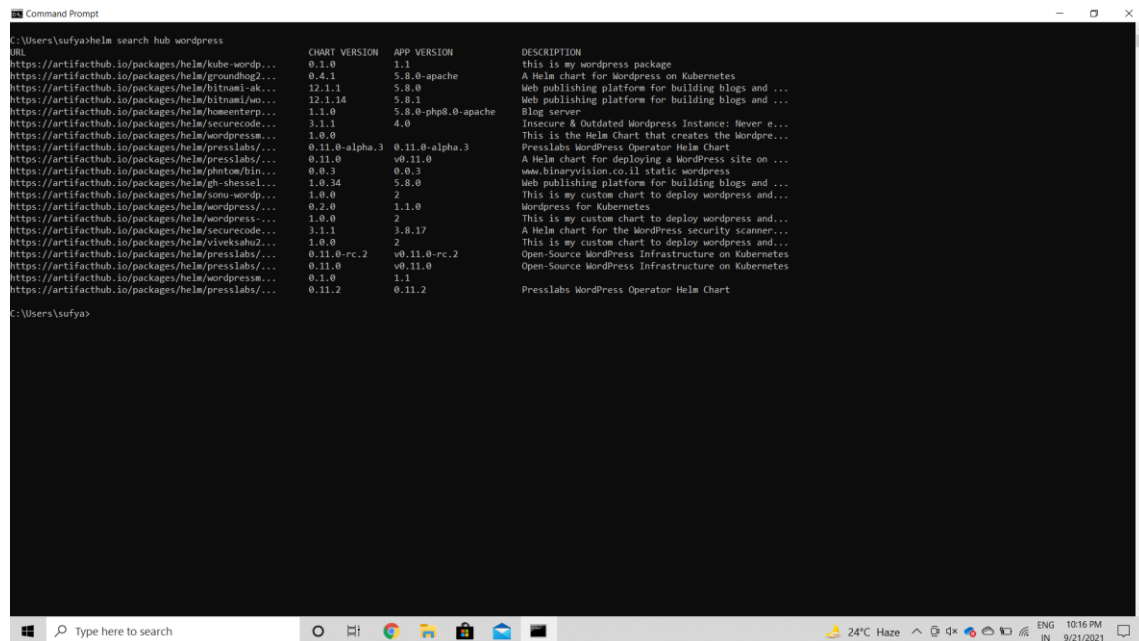
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Helm is a package manager for Kubernetes. Helm is the K8s equivalent of yum or apt. Helm deploys charts, which can be thought of as a packaged application.
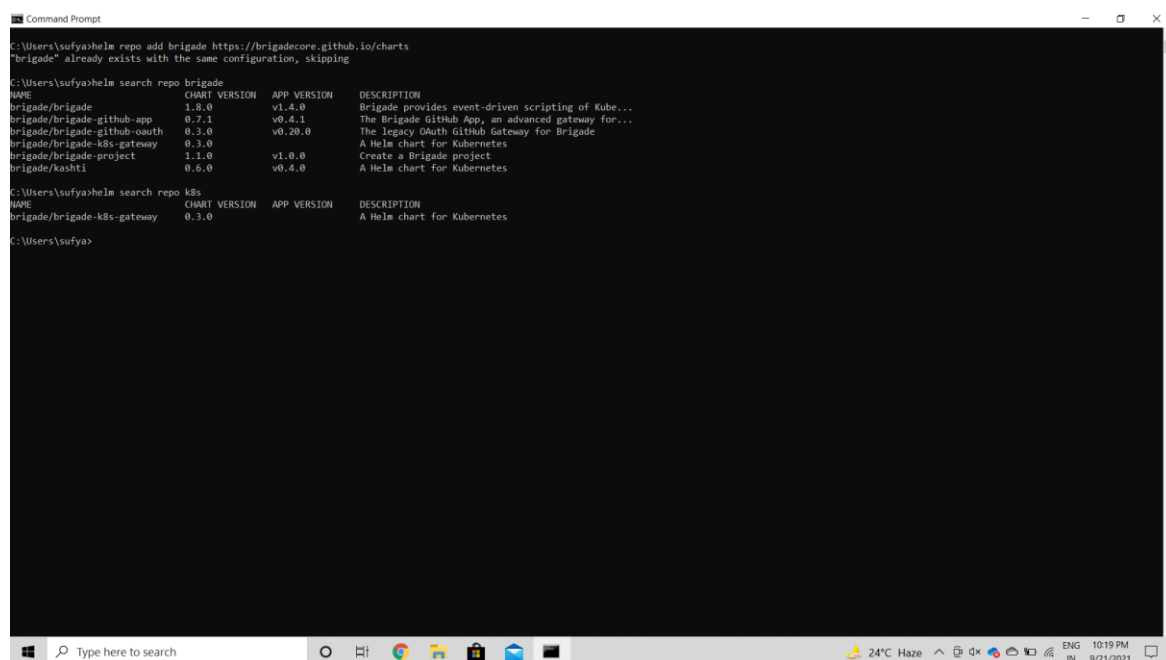
A chart is a Helm package. It contains all of the resource definitions necessary to run an application, tool, or service inside of a Kubernetes cluster. Helm enables authors to create and distribute their own applications using charts.

Searching for charts in helm hub :

Adding charts to local repo and searching for it :

Installing an application using Helm chart :

Command Prompt

C:\Users\sufya>helm search repo mysql
NAME   CHART VERSION   APP VERSION   DESCRIPTION
bitnami/mysql   8.8.7   8.0.26   Chart to create a Highly available MySQL cluster
bitnami/phpmyadmin   8.2.12   5.1.1   phpMyAdmin is an mysql administration frontend
bitnami/mariadb   9.6.0   10.5.12   Fast, reliable, scalable, and easy to use open-...
bitnami/mariadb-cluster   1.0.2   10.2.14   DEPRECATED Chart to create a Highly available M...
bitnami/mariadb-galera   5.13.4   10.5.12   MariaDB Galera is a multi-master database clust...

C:\Users\sufya>helm install happy-team01 bitnami/mysql
NAME: happy-team01
LAST DEPLOYED: Wed Sep 22 10:34:04 2021
NAMESPACE: default
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
** Please be patient while the chart is being deployed **

Tip:

  Watch the deployment status using the command: kubectl get pods -w --namespace default

Services:

  echo Primary: happy-team01-mysql.default.svc.cluster.local:3306

Execute the following to get the administrator credentials:

  echo Username: root
  MYSQL_ROOT_PASSWORD=$(kubectl get secret --namespace default happy-team01-mysql -o jsonpath="{.data.mysql-root-password}" | base64 --decode)

To connect to your database:

  1. Run a pod that you can use as a client:

      kubectl run happy-team01-mysql-client --rm --tty -i --restart='Never' --image docker.io/bitnami/mysql:8.0.26-debian-10-r31 --namespace default --command -- bash

  2. To connect to primary service (read/write):

      mysql -h happy-team01-mysql.default.svc.cluster.local -uroot -p"$MYSQL_ROOT_PASSWORD"

To upgrade this helm chart:

  1. Obtain the password as described on the 'Administrator credentials' section and set the 'root.password' parameter as shown below:

      ROOT_PASSWORD=$(kubectl get secret --namespace default happy-team01-mysql -o jsonpath="{.data.mysql-root-password}" | base64 --decode)
      helm upgrade --namespace default happy-team01 bitnami/mysql --set auth.rootPassword=$ROOT_PASSWORD

Checking the status of applications :

Command Prompt

C:\Users\sufya>helm list
NAME   NAMESPACE   REVISION   UPDATED   STATUS   CHART   APP VERSION
happy-team01   default   1   2021-09-22 10:34:04.469541 +0530 IST deployed   mysql-8.8.7   8.0.26
team-01   default   1   2021-09-21 22:30:21.7993953 +0530 IST deployed   brigade-k8s-gateway-0.3.0
team-1   default   1   2021-09-21 22:34:45.5800149 +0530 IST deployed   brigade-project-1.1.0   v1.0.0
team01-release   default   1   2021-09-21 22:52:38.7836121 +0530 IST deployed   mysql-8.8.7   8.0.26

C:\Users\sufya>helm status team01-release
NAME: team01-release
LAST DEPLOYED: Tue Sep 21 22:52:38 2021
NAMESPACE: default
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
** Please be patient while the chart is being deployed **

Tip:

  Watch the deployment status using the command: kubectl get pods -w --namespace default

Services:

  echo Primary: team01-release-mysql.default.svc.cluster.local:3306

Execute the following to get the administrator credentials:

  echo Username: root
  MYSQL_ROOT_PASSWORD=$(kubectl get secret --namespace default team01-release-mysql -o jsonpath="{.data.mysql-root-password}" | base64 --decode)

To connect to your database:

  1. Run a pod that you can use as a client:

      kubectl run team01-release-mysql-client --rm --tty -i --restart='Never' --image docker.io/bitnami/mysql:8.0.26-debian-10-r31 --namespace default --command -- bash

  2. To connect to primary service (read/write):

      mysql -h team01-release-mysql.default.svc.cluster.local -uroot -p"$MYSQL_ROOT_PASSWORD"

To upgrade this helm chart:

  1. Obtain the password as described on the 'Administrator credentials' section and set the 'root.password' parameter as shown below:

      ROOT_PASSWORD=$(kubectl get secret --namespace default team01-release-mysql -o jsonpath="{.data.mysql-root-password}" | base64 --decode)
      helm upgrade --namespace default team01-release bitnami/mysql --set auth.rootPassword=$ROOT_PASSWORD

C:\Users\sufya>

Pulling latest updates to the charts and uninstalling one of the applications by maintaining history :


```
C:\Users\sufya>helm list
NAME            NAMESPACE   REVISION    UPDATED                                 STATUS      CHART                       APP VERSION
happy-team01    default     1           2021-09-22 10:34:04.469541 +0530 IST    deployed    mysql-8.8.7                 8.0.26
team-01         default     1           2021-09-21 22:30:21.7993953 +0530 IST   deployed    brigade-k8s-gateway-0.3.0
team-1          default     1           2021-09-21 22:34:45.5800149 +0530 IST   deployed    brigade-project-1.1.0       v1.0.0
team01-release  default     1           2021-09-22 10:49:12.0213232 +0530 IST   deployed    mysql-8.8.7                 8.0.26

C:\Users\sufya>helm uninstall team01-release --keep-history
release "team01-release" uninstalled

C:\Users\sufya>helm list --all
NAME            NAMESPACE   REVISION    UPDATED                                 STATUS      CHART                       APP VERSION
happy-team01    default     1           2021-09-22 10:34:04.469541 +0530 IST    deployed    mysql-8.8.7                 8.0.26
team-01         default     1           2021-09-21 22:30:21.7993953 +0530 IST   deployed    brigade-k8s-gateway-0.3.0
team-1          default     1           2021-09-21 22:34:45.5800149 +0530 IST   deployed    brigade-project-1.1.0       v1.0.0
team01-release  default     1           2021-09-22 10:49:12.0213232 +0530 IST   uninstalled mysql-8.8.7                 8.0.26

C:\Users\sufya>helm repo update
Hang tight while we grab the latest from your chart repositories...
...Unable to get an update from the "bitnami" chart repository (https://charts.bitnami.com/bitnami):
        Get "https://charts.bitnami.com/bitnami/index.yaml": dial tcp: lookup charts.bitnami.com: no such host
...Unable to get an update from the "brigade" chart repository (https://brigadecore.github.io/charts):
        Get "https://brigadecore.github.io/charts/index.yaml": dial tcp: lookup brigadecore.github.io: no such host
Update Complete. ⎈Happy Helming!⎈

C:\Users\sufya>helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "brigade" chart repository
...Successfully got an update from the "bitnami" chart repository
Update Complete. ⎈Happy Helming!⎈

C:\Users\sufya>helm list
NAME            NAMESPACE   REVISION    UPDATED                                 STATUS      CHART                       APP VERSION
happy-team01    default     1           2021-09-22 10:34:04.469541 +0530 IST    deployed    mysql-8.8.7                 8.0.26
team-01         default     1           2021-09-21 22:30:21.7993953 +0530 IST   deployed    brigade-k8s-gateway-0.3.0
team-1          default     1           2021-09-21 22:34:45.5800149 +0530 IST   deployed    brigade-project-1.1.0       v1.0.0

C:\Users\sufya>helm list --all
NAME            NAMESPACE   REVISION    UPDATED                                 STATUS      CHART                       APP VERSION
happy-team01    default     1           2021-09-22 10:34:04.469541 +0530 IST    deployed    mysql-8.8.7                 8.0.26
team-01         default     1           2021-09-21 22:30:21.7993953 +0530 IST   deployed    brigade-k8s-gateway-0.3.0
team-1          default     1           2021-09-21 22:34:45.5800149 +0530 IST   deployed    brigade-project-1.1.0       v1.0.0
team01-release  default     1           2021-09-22 10:49:12.0213232 +0530 IST   uninstalled mysql-8.8.7                 8.0.26

C:\Users\sufya>
```

Checking status of uninstalled application (In case we want to rollback) :


```
C:\Users\sufya>helm list --all
NAME            NAMESPACE   REVISION    UPDATED                                 STATUS      CHART                       APP VERSION
happy-team01    default     1           2021-09-22 10:34:04.469541 +0530 IST    deployed    mysql-8.8.7                 8.0.26
team-01         default     1           2021-09-21 22:30:21.7993953 +0530 IST   deployed    brigade-k8s-gateway-0.3.0
team-1          default     1           2021-09-21 22:34:45.5800149 +0530 IST   deployed    brigade-project-1.1.0       v1.0.0
team01-release  default     1           2021-09-22 10:49:12.0213232 +0530 IST   uninstalled mysql-8.8.7                 8.0.26

C:\Users\sufya>helm status team01-release
NAME: team01-release
LAST DEPLOYED: Wed Sep 22 10:49:12 2021
NAMESPACE: default
STATUS: uninstalled
REVISION: 1
TEST SUITE: None
NOTES:
** Please be patient while the chart is being deployed **

Tip:

  Watch the deployment status using the command: kubectl get pods -w --namespace default

Services:

  echo Primary: team01-release-mysql.default.svc.cluster.local:3306

Execute the following to get the administrator credentials:

  echo Username: root
  MYSQL_ROOT_PASSWORD=$(kubectl get secret --namespace default team01-release-mysql -o jsonpath="{.data.mysql-root-password}" | base64 --decode)

To connect to your database:

  1. Run a pod that you can use as a client:

      kubectl run team01-release-mysql-client --rm --tty -i --restart='Never' --image  docker.io/bitnami/mysql:8.0.26-debian-10-r31 --namespace default --command -- bash

  2. To connect to primary service (read/write):

      mysql -h team01-release-mysql.default.svc.cluster.local -uroot -p"$MYSQL_ROOT_PASSWORD"

To upgrade this helm chart:

  1. Obtain the password as described on the 'Administrator credentials' section and set the 'root.password' parameter as shown below:

      ROOT_PASSWORD=$(kubectl get secret --namespace default team01-release-mysql -o jsonpath="{.data.mysql-root-password}" | base64 --decode)
      helm upgrade --namespace default team01-release bitnami/mysql --set auth.rootPassword=$ROOT_PASSWORD

C:\Users\sufya>
```

Rollback to previous release and maintaining new revision of the application :

REFERENCES :

- https://www.mirantis.com/blog/install-kubernetes-apps-helm/
- https://docs.bitnami.com/tutorials/create-your-first-helm-chart/