

3. Helm Chart Quick Intro

Install Helm v3 (tiller is deprecated)

Ref: <https://helm.sh/docs/intro/install/>

```
```bash
```

```
brew install helm
```

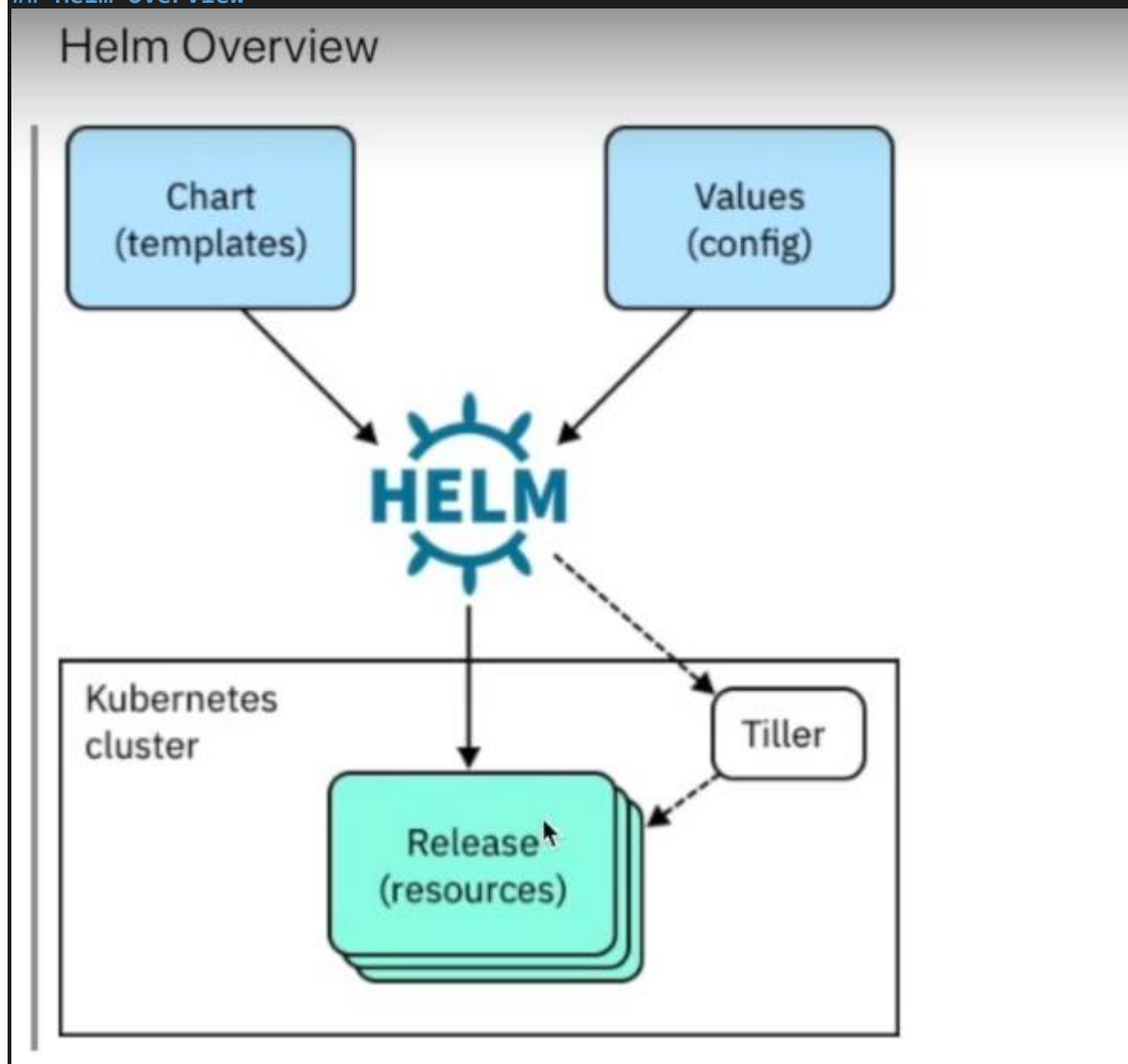
#### # Windows

```
choco install kubernetes-helm
```

```
helm version
```

```
```
```

Helm Overview



- **__externalize values__** in k8s resources (pod, deployment, service) into ``values.yaml``

- package **__multiple k8s resource files__** into a single wrapper object called helm chart

- chart contains all the application specific K8s resources such as deployment, service, ingress, horizontalPodAutoscaler, service account, hence helm chart becomes a single deployable artifact instead of bunch of yaml files

Helm Chart Anatomy

```
```bash
```

```
$ tree
```

```
.
├── Chart.yaml
├── charts
├── templates
│ ├── NOTES.txt
│ ├── _helpers.tpl
│ ├── deployment.yaml
│ ├── hpa.yaml
│ ├── ingress.yaml
│ ├── service.yaml
│ ├── serviceaccount.yaml
│ └── tests
│ └── test-connection.yaml
└── values.yaml
```
```

Top-level `Chart.yaml` contains its chart's metadata

```
```yaml
```

```
apiVersion: v2
```

```
Helm Chart name
```

```
name: my-nginx
```

```
description: A Helm chart for Kubernetes
```

```
type: application
```

```
Helm Chart version
```

```
version: 0.1.0
```

```
Nginx version
```

```
appVersion: 1.16.0
```

```
```
```

Top-level `values.yaml` defines custom values to inject to k8s yamls

```
```yaml
```

```
replicaCount: 1
```

```
image:
```

```
 repository: nginx
```

```

pullPolicy: IfNotPresent
Overrides the image tag whose default is the chart appVersion.
tag: ""

service:
 type: ClusterIP
 port: 80

ingress:
 enabled: false
 annotations: {}
 # kubernetes.io/ingress.class: nginx
 # kubernetes.io/tls-acme: "true"
 hosts:
 - host: chart-example.local
 paths: []
 tls: []
 # - secretName: chart-example-tls
 # hosts:
 # - chart-example.local

autoscaling:
 enabled: false
 minReplicas: 1
 maxReplicas: 100
 targetCPUUtilizationPercentage: 80
 # targetMemoryUtilizationPercentage: 80
...

```

`/templates` contains K8s resource yamls with templated syntax

```

...
├── templates
│ ├── NOTES.txt
│ ├── _helpers.tpl
│ ├── deployment.yaml
│ ├── hpa.yaml
│ ├── ingress.yaml
│ ├── service.yaml
│ └── serviceaccount.yaml
...

```

### ## Helm Commands

Add some of popular Helm repo

```
```bash
```

```
# deprecated
```

```
# helm repo add stable https://kubernetes-charts.storage.googleapis.com/
```

```
# new chart link
```

```
https://charts.helm.sh/stable
```

Search charts in repo
```bash
helm search repo stable

# this is nginx for ingress controller
helm search repo nginx

# for standalone nginx, add bitnami repo
helm repo add bitnami https://charts.bitnami.com/bitnami
helm repo update

# search again
helm search repo nginx

# now bitnami/nginx shows up
helm search repo bitnami/nginx
```

Install
```bash
# USAGE: helm install RELEASE_NAME REPO_NAME
helm install nginx bitnami/nginx
```

Upgrade
```bash
# upgrade after changing values in yaml
helm upgrade nginx bitnami/nginx --dry-run

# upgrade using values in overrides.yaml
helm upgrade nginx bitnami/nginx -f overrides.yaml

# rollback
helm rollback nginx REVISION_NUMBER
```

Other commands
```bash
helm list
helm status nginx
helm history nginx

# get manifest and values from deployment
helm get manifest nginx
helm get values nginx
```

```
helm uninstall nginx  
^^^
```