



Kubernetes in Practice

-> What is **minikube**?



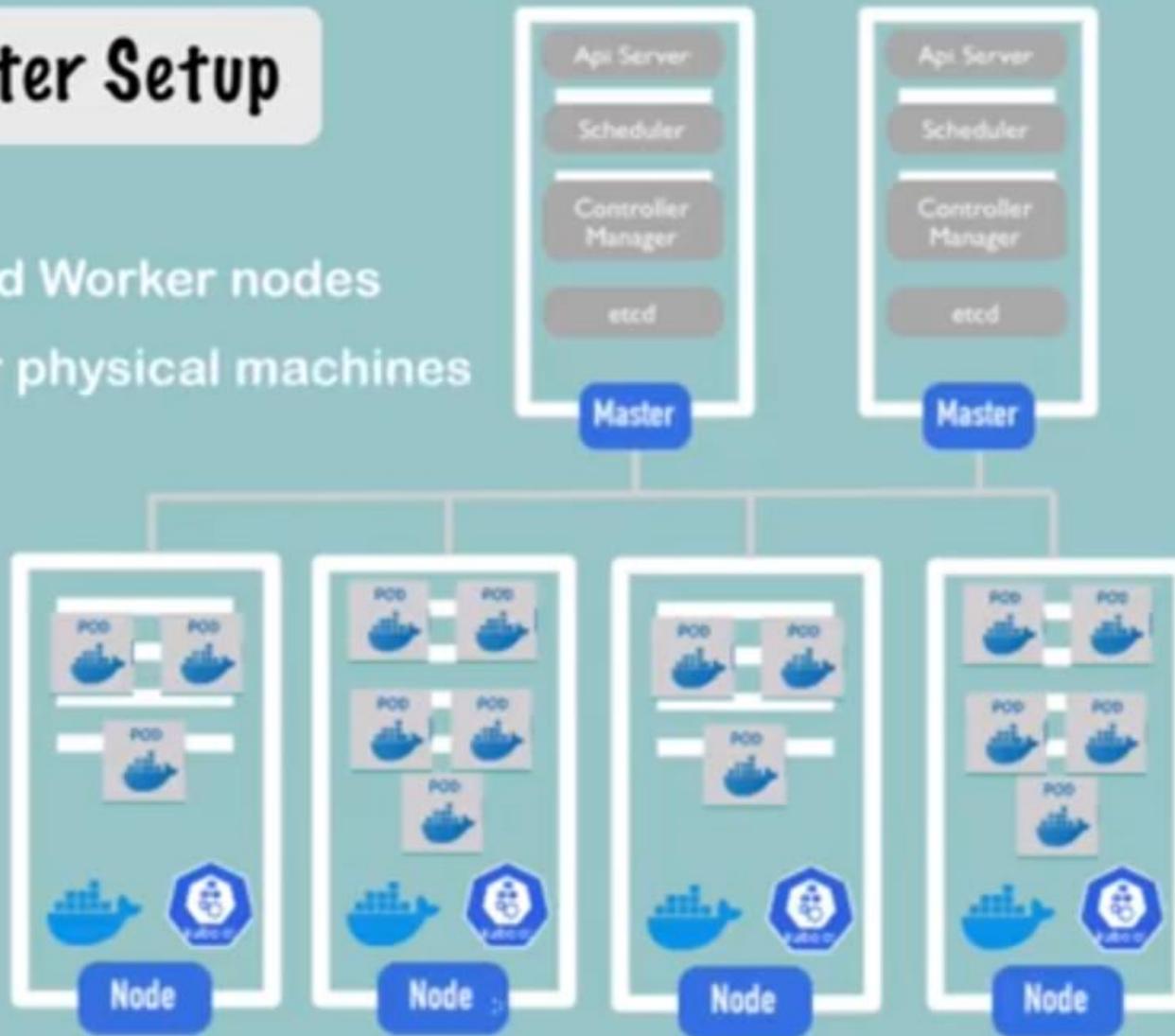
-> What is **kubectl**?

-> Set-up **Minikube cluster**

What is  minikube ?

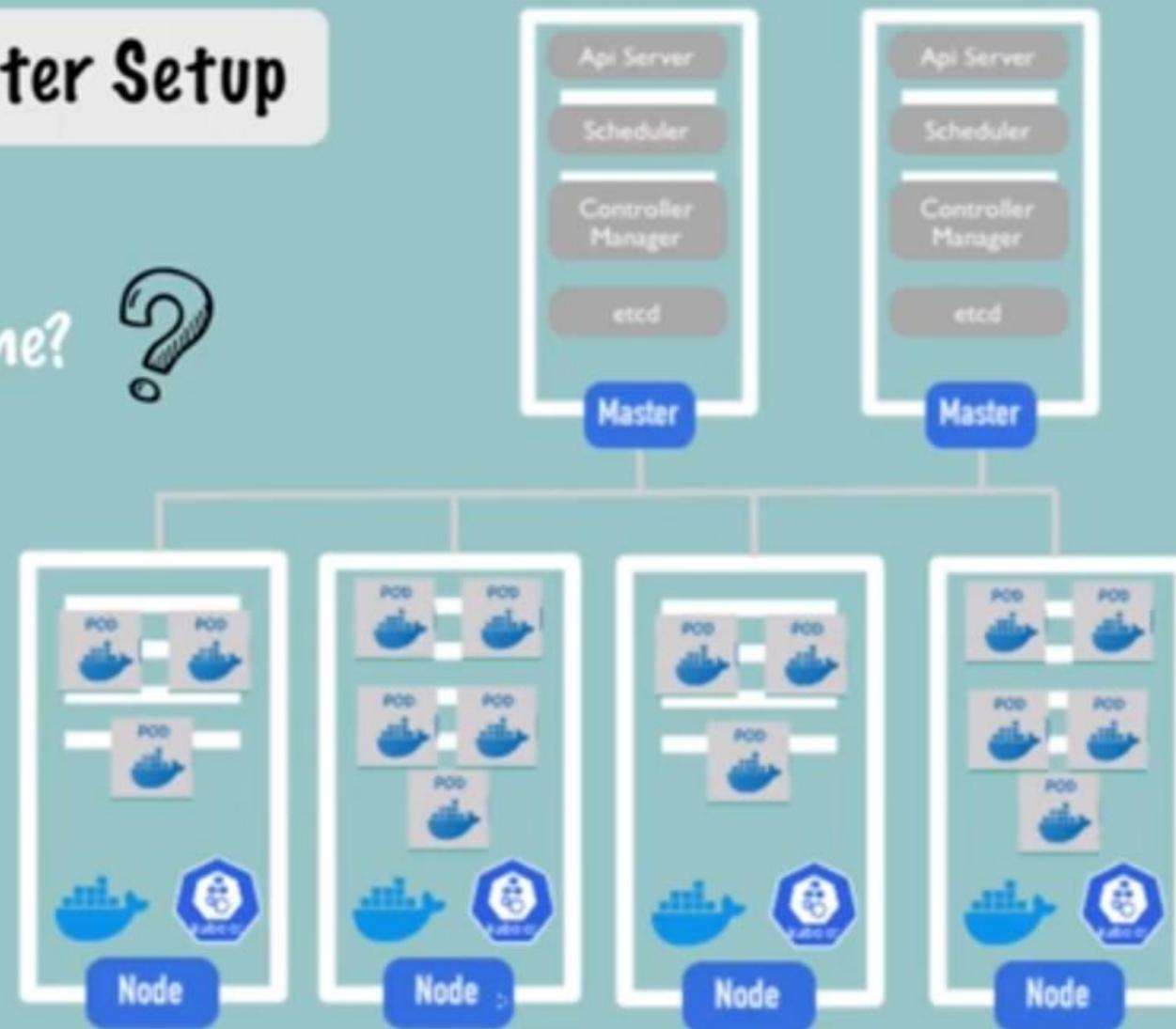
Production Cluster Setup

- Multiple Master and Worker nodes
- Separate virtual or physical machines



Production Cluster Setup

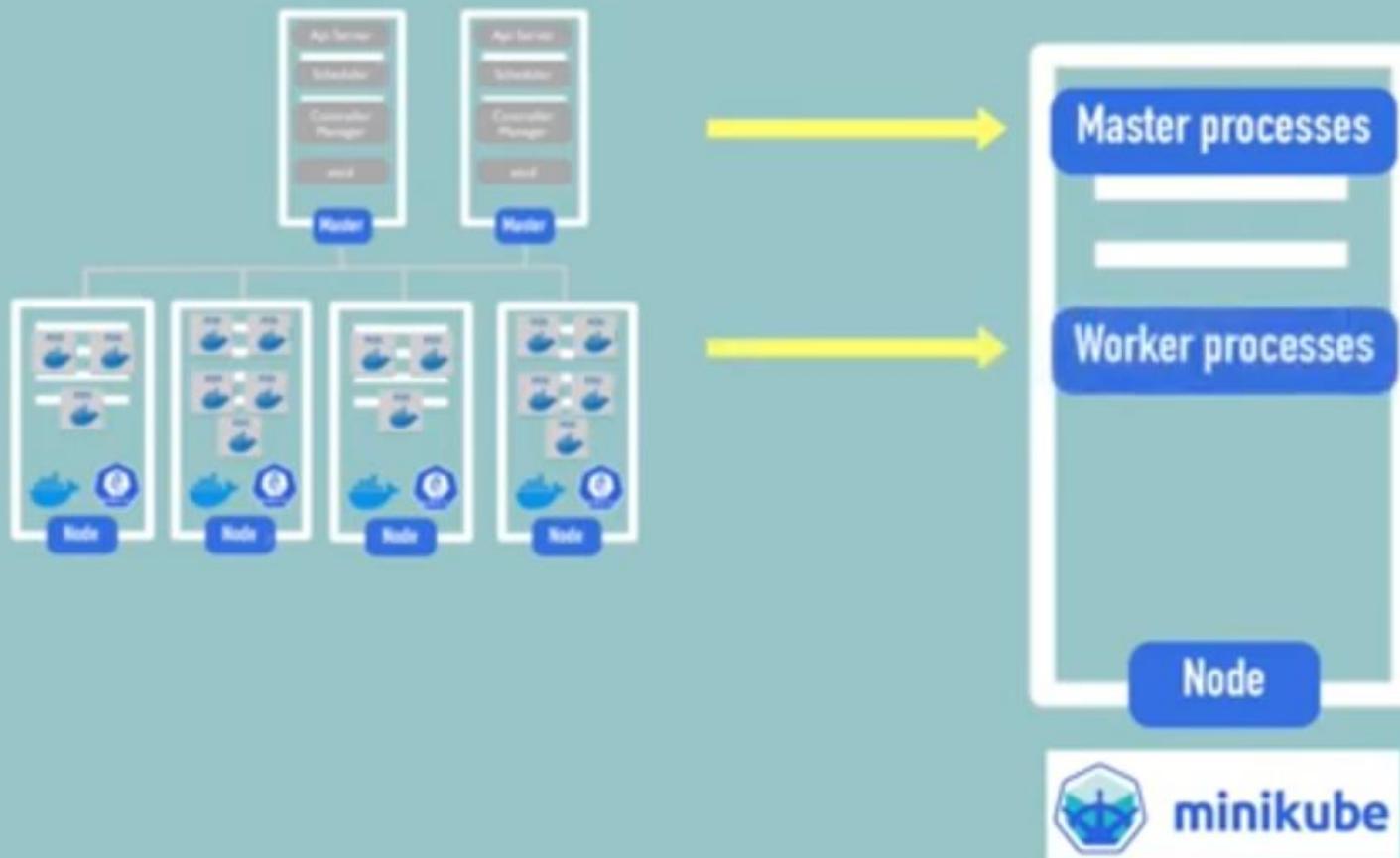
Test on local machine?





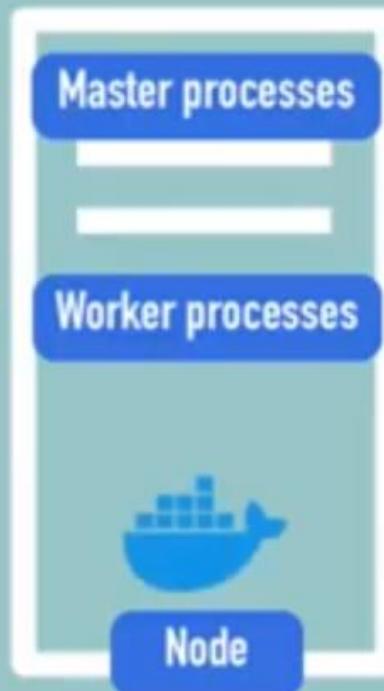
Test/Local Cluster Setup

Master and Node processes run on ONE machine





Test/Local Cluster Setup

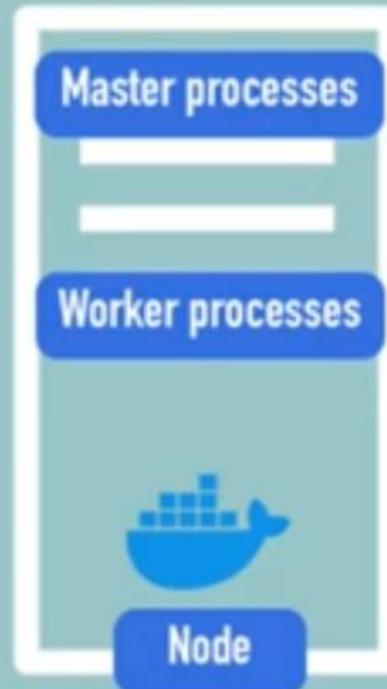
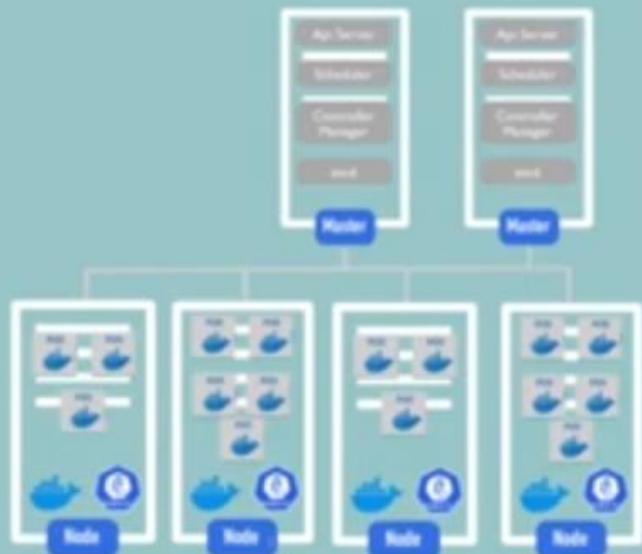


Docker pre-installed





Test/Local Cluster Setup



minikube



Virtual Box



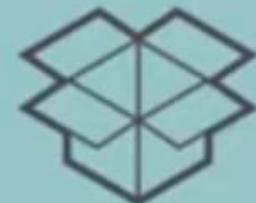
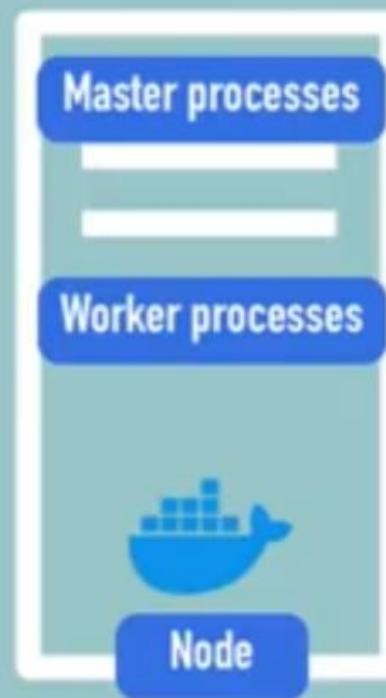


Test/Local Cluster Setup



minikube

- creates Virtual Box on your laptop
- Node runs in that Virtual Box
- 1 Node K8s cluster
- for testing purposes



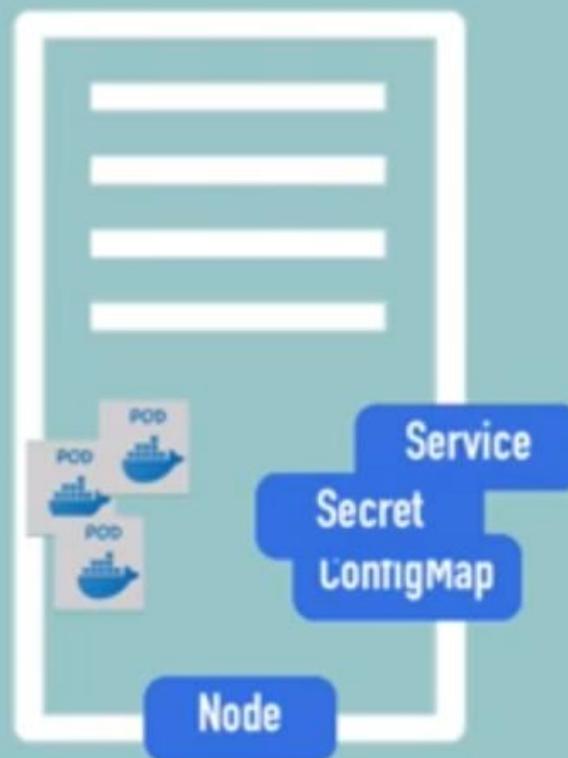
Virtual Box



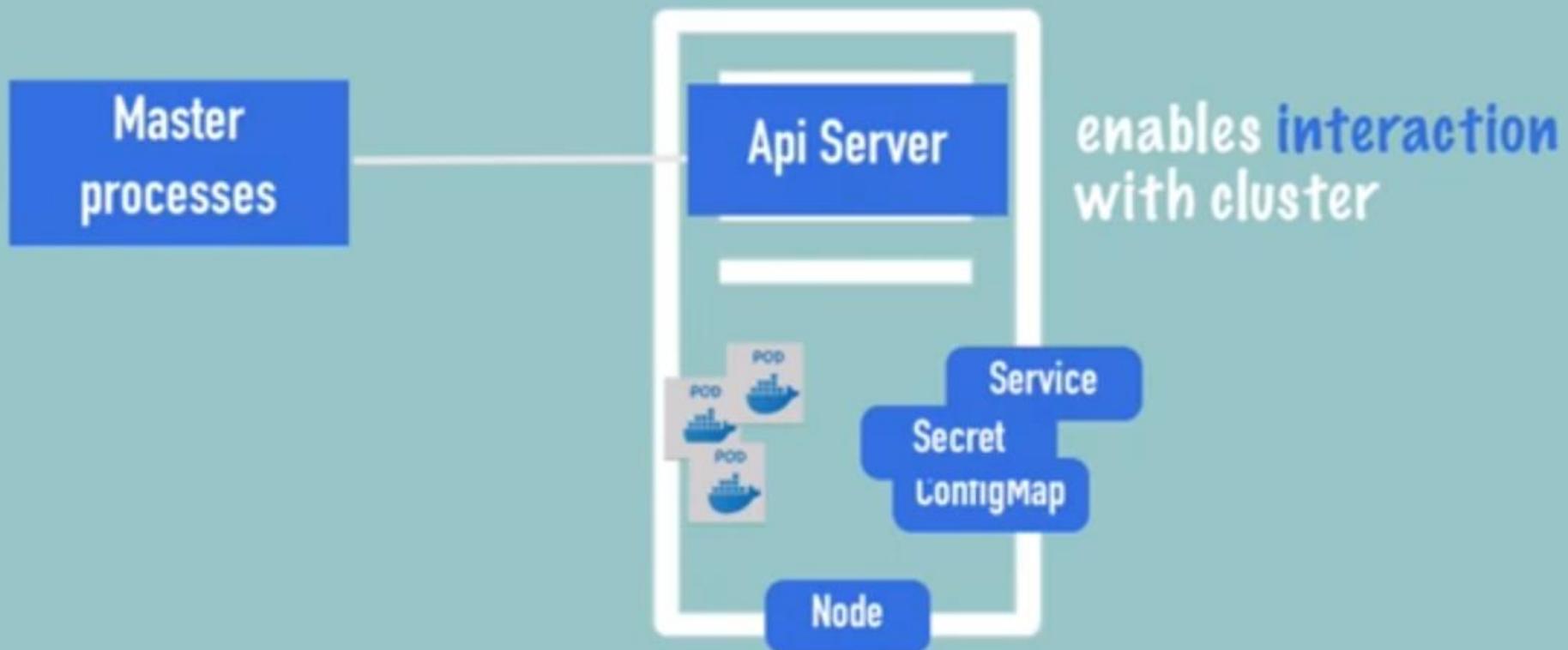
What is **kubectl** ?

What is kubectl?

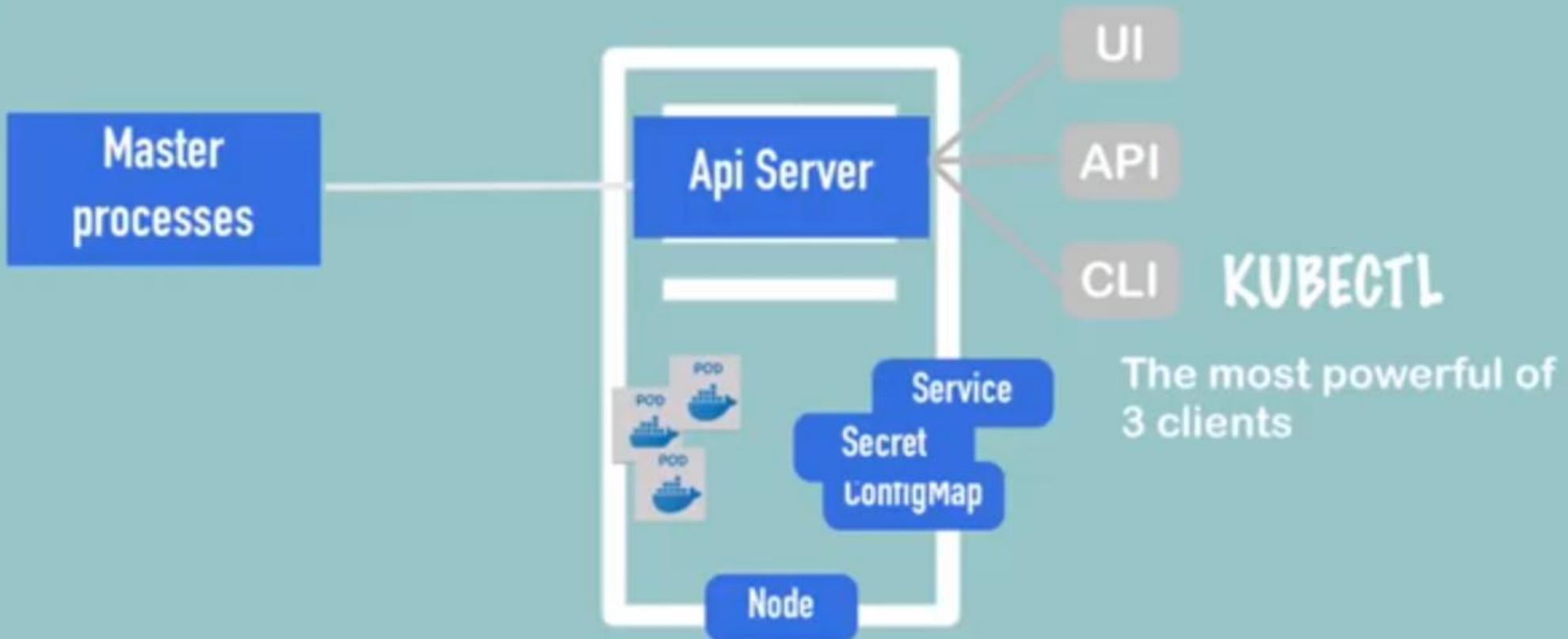
Command line tool for K8s cluster



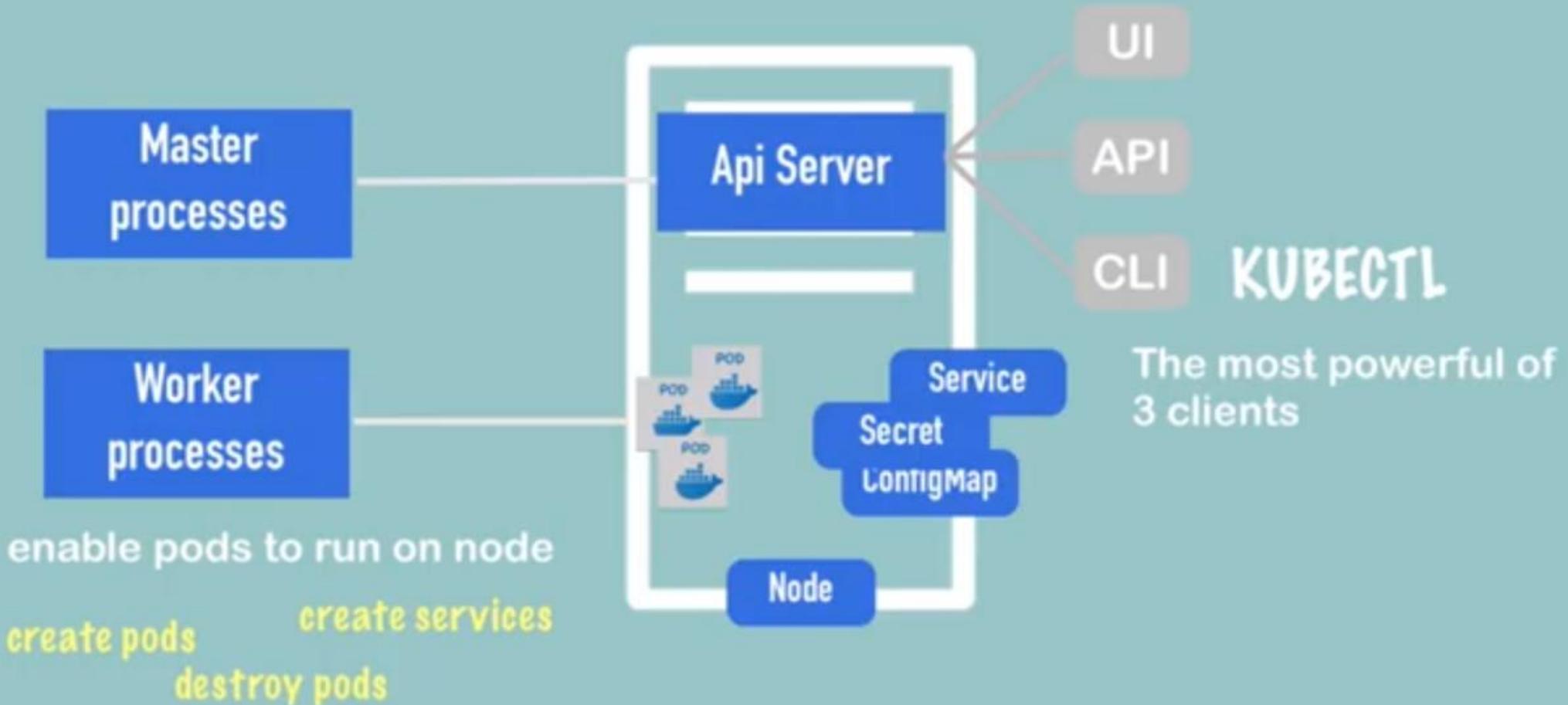
What is kubectl?



What is kubectl?

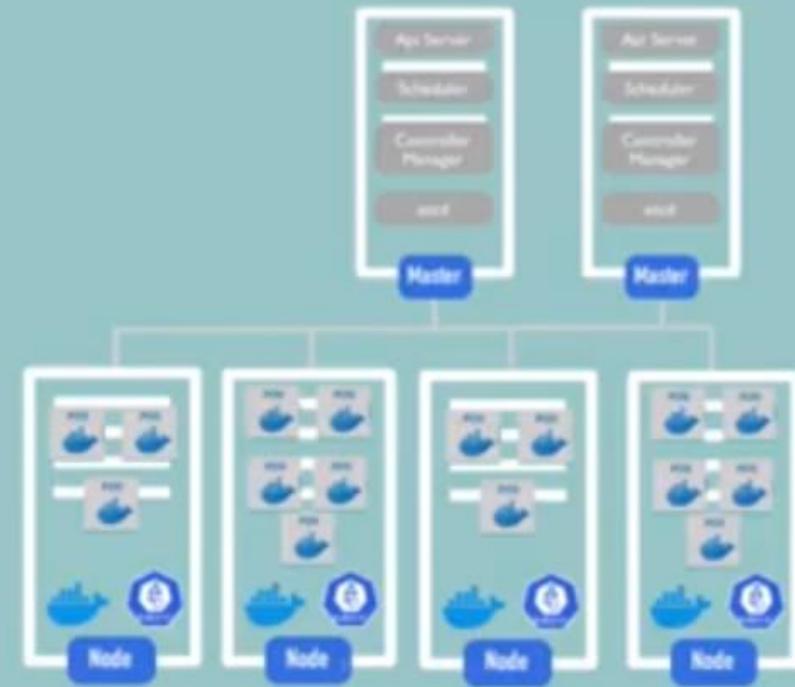


What is kubectl?





Minikube cluster



Cloud cluster

KUBECTL

Installation

and

create  **minikube** cluster



Installation

Step 1: Install Hypervisor

Installing minikube

Linux

macOS

Windows

Install kubectl

Make sure you have kubectl installed. You can install kubectl according to the instructions in [Install and Set Up kubectl](#).

Install a Hypervisor

If you do not already have a hypervisor installed, install one of these now:

- KVM, which also uses QEMU
- VirtualBox



Installation

Installation Guide Links
for your OS

<https://kubernetes.io/docs/tasks/tools/install-minikube/>

<https://kubernetes.io/docs/tasks/tools/install-kubectl/>



A screenshot of a web browser displaying the Kubernetes documentation page for installing Minikube. The URL in the address bar is `kubernetes.io/docs/tasks/tools/install-minikube/`. The page title is "Tasks". A sidebar on the left lists various Kubernetes tasks, with "Install Tools" expanded. Under "Install Tools", "Install Minikube" is highlighted with a blue background and white text. Other listed items include "Administer a Cluster", "Configure Pods and Containers", "Manage Kubernetes Objects", "Inject Data Into Applications", "Run Applications", "Run Jobs", "Access Applications in a Cluster", "Monitoring, Logging, and Debugging", "Extend Kubernetes", "TLS", "Federation", "Manage Cluster Daemons", "Install Service Catalog", and "Network". The main content area is titled "Install Minikube" and contains instructions for installing Minikube on a personal computer. It includes a bulleted list of steps: "Before you begin", "Confirm Installation", "Clean up local state", and "What's next". Below this, there are three tabs: "Linux" (selected), "macOS", and "Windows". A note below the tabs says: "To check if virtualization is supported on Linux, run the following command and verify that the output is non-empty." The top navigation bar includes links for Documentation, Blog, Partners, Community, Case Studies, English, and v1.17.

```
[~]$ brew update
Updated 3 taps (homebrew/core, homebrew/cask and caskroom/versions).
==> New Formulae
apollo-cli                                eureka
==> Updated Formulae
auditbeat       git-lfs          jetty        monolith      telegraf
borgmatic       h3              logstash     phpstan       terraform-docs
elasticsearch   hlint           metricbeat   serverless    traefik
exploitdb       hub             micronaut   skopeo
[~]$ brew install hyperkit
==> Downloading https://homebrew.bintray.com/bottles/hyperkit-0.20190802.mojave.bottle.tar.gz
Already downloaded: /Users/nanajanashia/Library/Caches/Homebrew/downloads/aa5d075eb83c262874438ed5d4eb4a76581a740e89feca7057add827cc7da153--hyperkit-0.20190802.mojave.bottle.tar.gz
==> Pouring hyperkit-0.20190802.mojave.bottle.tar.gz
🍺 /usr/local/Cellar/hyperkit/0.20190802: 5 files, 4.0MB
[~]$ brew install minikube
```

Minikube has kubectl as dependency

```
Updated 3 taps (homebrew/core, homebrew/cask and caskroom/versions).
==> New Formulae
apollo-cli                                eureka
==> Updated Formulae
auditbeat      git-lfs          jetty        monolith      telegraf
borgmatic       h3              logstash     phpstan       terraform-docs
elasticsearch   hlint           metricbeat   serverless    traefik
exploitdb       hub             micronaut   skopeo
[~]$ brew install hyperkit
==> Downloading https://homebrew.bintray.com/bottles/hyperkit-0.20190802.mojave.bottle.tar.gz
Already downloaded: /Users/nanajanashia/Library/Caches/Homebrew/downloads/aa5d075eb83c262874438ed5d4eb4a76581a740e89feca7057add827cc7da153--hyperkit-0.20190802.mojave.bottle.tar.gz
==> Pouring hyperkit-0.20190802.mojave.bottle.tar.gz
🍺 /usr/local/Cellar/hyperkit/0.20190802: 5 files, 4.0MB
[~]$ brew install minikube
Updating Homebrew...
==> Installing dependencies for minikube: kubernetes-cli
==> Installing minikube dependency: kubernetes-cli
==> Downloading https://homebrew.bintray.com/bottles/kubernetes-cli-1.17.1.mojave.bottle.tar.gz
Already downloaded: /Users/nana14832ef280f222da5a75d2980cb597e1a1dcde1le.ta
```

NO separate installation necessary

```
==> New Formulae
apollo-cli                                     eureka
==> Updated Formulae
auditbeat          git-lfs           jetty        monolith      telegraf
borgmatic          h3               logstash     phpstan       terraform-docs
elasticsearch      hlint            metricbeat   serverless    traefik
exploitdb          hub              micronaut   skopeo
[~]$ brew install hyperkit
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Already downloaded: /Users/nanajanashia/Library/Caches/Homebrew/downloads/aa5d075eb83c262874438ed5d4eb4a76581a740e89feca7057add827cc7da153--hyperkit-0.20190802.mojave.bottle.tar.gz
==> Pouring hyperkit-0.20190802.mojave.bottle.tar.gz
🍺 /usr/local/Cellar/hyperkit/0.20190802: 5 files, 4.0MB
[~]$ brew install minikube
Updating Homebrew...
==> Installing dependencies for minikube: kubernetes-cli
==> Installing minikube dependency: kubernetes-cli
==> Downloading https://homebrew.bintray.com/bottles/kubernetes-cli-1.17.1.mojave.bottle.tar.gz
Already downloaded: /Users/nanajanashia/Library/Caches/Homebrew/downloads/da86e6d5a7a1dcda14832ef280f222da5a75d2980cb597ed79a5975a0e35c4fd2--kubernetes-cli-1.17.1.mojave.bottle.tar.gz
==> Pouring kubernetes-cli-1.17.1.mojave.bottle.tar.gz
==> Caveats
```

```
0b9c1b95399403b931a899c243ef006d43a205b766a34a9f0--minikube-1.6.2.mojave.bottle.tar.gz
==> Pouring minikube-1.6.2.mojave.bottle.tar.gz
==> Caveats
Bash completion has been installed to:
  /usr/local/etc/bash_completion.d

zsh completions have been installed to:
  /usr/local/share/zsh/site-functions
==> Summary
  ⚡ /usr/local/Cellar/minikube/1.6.2: 8 files, 51.5MB
==> Caveats
==> kubernetes-cli
Bash completion has been installed to:
  /usr/local/etc/bash_completion.d

zsh completions have been installed to:
  /usr/local/share/zsh/site-functions
==> minikube
Bash completion has been installed to:
  /usr/local/etc/bash_completion.d

zsh completions have been installed to:
  /usr/local/share/zsh/site-functions
[~]$ kubectl
```

Use "kubectl <command> --help" for more information about a given command.
Use "kubectl options" for a list of global command-line options (applies to all commands).

[~]\$ minikube

Minikube is a CLI tool that provisions and manages single-node Kubernetes clusters optimized for development workflows.

Basic Commands:

start	Starts a local kubernetes cluster
status	Gets the status of a local kubernetes cluster
stop	Stops a running local kubernetes cluster
delete	Deletes a local kubernetes cluster
dashboard	Access the kubernetes dashboard running within the minikube cluster

Images Commands:

docker-env	Sets up docker env variables; similar to '\$(docker-machine env)'
cache	Add or delete an image from the local cache.

Configuration and Management Commands:

addons	Modify minikube's kubernetes addons
config	Modify minikube config
profile	Profile gets or sets the current minikube profile

```
Use "kubectl <command> --help" for more information about a given command.  
Use "kubectl options" for a list of global command-line options (applies to all  
commands).
```

```
[~]$ minikube
```

```
Minikube is a CLI tool that provisions and manages single-node Kubernetes  
clusters optimized for development workflows.
```

Basic Commands:

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Configuration and Management Commands:

addons	Modify minikube's kubernetes addons
config	Modify minikube config
profile	Profile gets or sets the current minikube profile

```
[~]$ minikube
```

Create and start the cluster

```
[~]$ minikube start --vm-driver=hyperkit■
```

```
[~]$ minikube start --vm-driver=hyperkit
😊 minikube v1.6.2 on Darwin 10.14.1
💡 Selecting 'hyperkit' driver from user configuration (alternates: [])
💡 Tip: Use 'minikube start -p <name>' to create a new cluster, or 'minikube delete' to
delete this one.
🕒 Starting existing hyperkit VM for "minikube" ...
⏳ Waiting for the host to be provisioned ...
🐳 Preparing Kubernetes v1.17.0 on Docker '19.03.5' ...
🚀 Launching Kubernetes ...
🎉 Done! kubectl is now configured to use "minikube"
[~]$ █
```

Docker is pre-installed!

```
[~]$ minikube start --vm-driver=hyperkit
😊 minikube v1.6.2 on Darwin 10.14.1
:+ Selecting 'hyperkit' driver from user configuration (alternates: [])
💡 Tip: Use 'minikube start -p <name>' to create a new cluster, or 'minikube delete' to
delete this one.
🌐 Starting existing hyperkit VM for "minikube" ...
🏃 Waiting for the host to be provisioned ...
💻 Preparing Kubernetes v1.17.0 on Docker '19.03.5' ...
🚀 Launching Kubernetes ...
🏁 Done! kubectl is now configured to use "minikube"
[~]$ kubectl get nodes
```

Get status of nodes

```
[~]$ minikube start --vm-driver=hyperkit
😊 minikube v1.6.2 on Darwin 10.14.1
:+ Selecting 'hyperkit' driver from user configuration (alternates: [])
💡 Tip: Use 'minikube start -p <name>' to create a new cluster, or 'minikube delete' to
delete this one.
🕒 Starting existing hyperkit VM for "minikube" ...
⌚ Waiting for the host to be provisioned ...
🌐 Preparing Kubernetes v1.17.0 on Docker '19.03.5' ...
🚀 Launching Kubernetes ...
🏁 Done! kubectl is now configured to use "minikube"
[~]$ kubectl get nodes
NAME      STATUS    ROLES      AGE      VERSION
minikube  Ready     master     21h      v1.17.0
[~]$ minikube status
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
[~]$ █
```

```
* Selecting 'hyperkit' driver from user configuration (alternates: [])
Tip: Use 'minikube start -p <name>' to create a new cluster, or 'minikube delete' to
delete this one.
Starting existing hyperkit VM for "minikube" ...
Waiting for the host to be provisioned ...
Preparing Kubernetes v1.17.0 on Docker '19.03.5' ...
Launch!
Done!
[~]$ kubectl
NAME
minikube
[~]$ minikube status
host: Running
kubelet: R
apiserver: R
kubeconfig
[~]$ kubectl
Client Version: version.Info{Major:"1", Minor:"17", GitVersion:"v1.17.0", GitCommit:"d224
476cd0730baca2b6e357d144171ed74192d6", GitTreeState:"clean", BuildDate:"2020-01-15T15:50:
25Z", GoVersion:"go1.13.6", Compiler:"gc", Platform:"darwin/amd64"}
Server Version: version.Info{Major:"1", Minor:"17", GitVersion:"v1.17.0", GitCommit:"7013
2b0f130acc0bed193d9ba59dd186f0e634cf", GitTreeState:"clean", BuildDate:"2019-12-07T21:12:
17Z", GoVersion:"go1.13.4", Compiler:"gc", Platform:"linux/amd64"}
[~]$
```

Kubectl CLI

...for configuring the Minikube cluster

Minikube CLI

...for start up/deleting the cluster

```
[~]$
```

Start the cluster in DEBUG MODE

```
[~]$ minikube delete
🔥 Deleting "minikube" in hyperkit ...
❤️ The "minikube" cluster has been deleted.
🔥 Successfully deleted profile "minikube"
[~]$ █
```

I

```
[~]$ minikube delete
🔥 Deleting "minikube" in hyperkit ...
❤️ The "minikube" cluster has been deleted.
🔥 Successfully deleted profile "minikube"
[~]$ minikube start --vm-driver=hyperkit --v=7 --alsologtostderr
```



Basic kubectl commands

CRUD commands

[Create deployment](#)

`kubectl create deployment [name]`

[Edit deployment](#)

`kubectl edit deployment [name]`

[Delete deployment](#)

`kubectl delete deployment [name]`

Status of different K8s components

`kubectl get nodes | pod | services | replicaset | deployment`

Debugging pods

[Log to console](#)

`kubectl logs [pod name]`

[Get Interactive Terminal](#)

`kubectl exec -it [pod name] -- bin/bash`

Create and debug Pods
in a minikube cluster



Get status of different components

Create and Edit a Pod

```
[~]$ kubectl get nodes
NAME      STATUS    ROLES      AGE      VERSION
minikube  Ready     master     25h      v1.17.0
[~]$
```

kubectl get nodes

```
[~]$ kubectl get pod  
No resources found in default namespace.  
[~]$
```

kubectl get pod

```
[~]$ kubectl get pod  
No resources found in default namespace.  
[~]$ kubectl get services  
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE  
kubernetes  ClusterIP  10.96.0.1    <none>        443/TCP    25h  
[~]$
```

kubectl get services

```
[~]$ kubectl get pod  
No resources found in default namespace.  
[~]$ kubectl get services  
NAME            TYPE      CLUSTER-IP    EXTERNAL-IP    PORT(S)        AGE  
kubernetes     ClusterIP  10.96.0.1    <none>        443/TCP       25h  
[~]$ kubectl create -h
```

kubectl create ..



Pod is the smallest unit

BUT, you are creating...



Deployment - abstraction over Pods

Usage:

```
kubectl create deployment NAME --image=image [--dry-run] [options]
```

```
--allow-missing-template-keys=true: If true, ignore any errors in templates when a field or map key is missing in the template. Only applies to golang and jsonpath output formats.
--dry-run=false: If true, only print the object that would be sent, without sending it.
--generator='': The name of the API generator to use.
--image=[]: Image name to run.
-o, --output='': Output format. One of: json|yaml|name|go-template|go-template-file|template|templatefile|jsonpath|jsonpath-file.
--save-config=false: If true, the configuration of a comment object will be saved in its annotation. Otherwise, the annotation will be removed. This is useful if you want to perform kubectl apply on this object in the future.
--template='': Template string or path to the template file. The template format is golang [tmpl.Text]. See https://kubernetes.io/docs/reference/generated/kubectl/kubectl-commands/#template for more information about the template language.
--validate=true: If true, use a schema to validate the object.
```

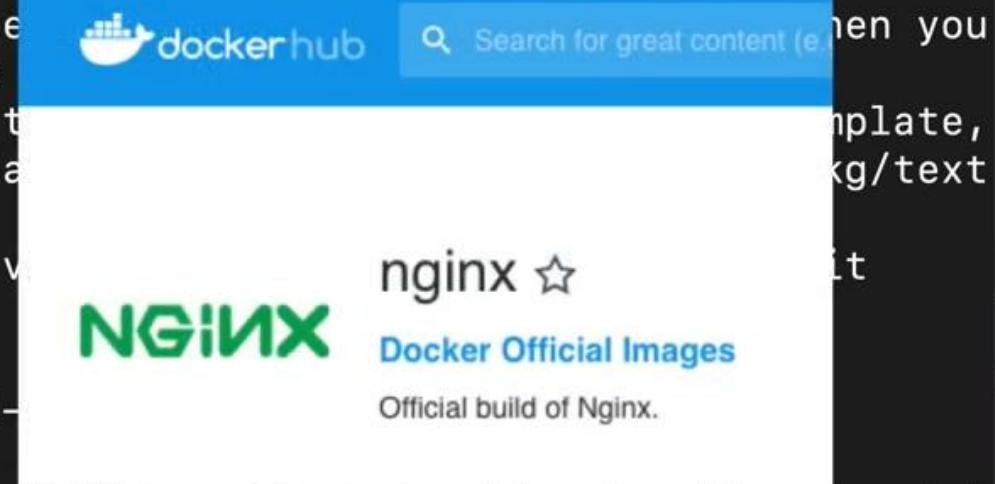
Usage:

```
kubectl create deployment NAME --image=image [-n NAMESPACE]
```

Use "kubectl options" for a list of global command-line options (applies to all commands)

.

```
[~]$ kubectl create deployment nginx-depl --image=nginx
```



```
--generator='': The name of the API generator to use.  
--image=[]: Image name to run.  
-o, --output='': Output format. One of: json|yaml|name|go-template|go-template-file|tem  
plate|templatefile|jsonpath|jsonpath-file.  
--save-config=false: If true, the configuration of current object will be saved in  
its annotation. Otherwise, the annotation will be unchanged. This flag is useful when you  
want to perform kubectl apply on this object in the future.  
--template='': Template string or path to template file to use when -o=go-template,  
-o=go-template-file. The template format is /pkg/text  
/template/#pkg-overview].  
--validate=true: If true, use a schema to validate the input before sending it
```

kubectl get deployment

Usage:

```
kubectl create deployment NAME --image=image [--dry-run] [options]
```

Use "kubectl options" for a list of global command-line options (applies to all commands)

.

```
[~]$ kubectl create deployment nginx-depl --image=nginx  
deployment.apps/nginx-depl created  
[~]$ kubectl get deployment  
NAME      READY   UP-TO-DATE   AVAILABLE   AGE  
nginx-depl  0/1     1           0           17s  
[~]$
```



```
kubectl create deployment nginx-depl --image=nginx
```

- blueprint for creating pods
- most basic configuration for deployment
(name and image to use)
- rest defaults

want to perform kubectl apply on this object in the future.

--template='': Template string or path to template file to use when -o=go-template -o=go-template-file. The template format is golang templates [<http://golang.org/pkg/text/template/#pkg-overview>].

--validate=true: If true, use a schema to validate the input before sending it

Usage:

```
kubectl create deployment NAME --image=image [--dry-run] [options]
```

Use "kubectl options" for a list of global commands

kubectl get replicaset

commands

.

```
[~]$ kubectl create deployment nginx-depl --image=nginx
deployment.apps/nginx-depl created
```

```
[~]$ kubectl get deployment
NAME      READY  UP-TO-DATE  AVAILABLE  AGE
nginx-depl  0/1    1          0          17s
```

```
[~]$ kubectl get pod
NAME                           READY  STATUS           RESTARTS  AGE
nginx-depl-7d9447675c-j9j8k  0/1    ContainerCreating  0         31s
```

```
[~]$ kubectl get pod
NAME                           READY  STATUS    RESTARTS  AGE
nginx-depl-7d9447675c-j9j8k  1/1    Running   0         54s
[~]$ kubectl get replicaset
```

```
/template/#pkg-overview].
```

```
--validate=true: If true, use a schema to validate the input before sending it
```

Usage:

```
kubectl create deployment NAME --image=image [--dry-run] [options]
```

Use "kubectl options" for a list of global command-line options (applies to all commands)

.

```
[~]$ kubectl create deployment nginx-depl --image=nginx
```

```
deployment.apps/nginx-depl created
```

```
[~]$ kubectl get deployment
```

NAME	READY	UP-TO-DATE	AVAILABLE
nginx-depl	0/1	1	0

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-depl-7d9447675c-j9j8k	0/1	ContainerCreating	0	31s

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-depl-7d9447675c-j9j8k	1/1	Running	0	54s

```
[~]$ kubectl get replicaset
```

NAME	DESIRED	CURRENT	READY	AGE
nginx-depl-7d9447675c	1	1	1	98s

```
[~]$
```

Replicaset is managing
the replicas of a Pod

Layers of Abstraction



Deployment manages a ..



ReplicaSet manages a ..



Pod is an abstraction of ..



Container

Layers of Abstraction

Everything **below Deployment** is handled by Kubernetes

Layers of Abstraction

So, let's make a change...

```
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl  1/1     1           1           12m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-depl-7d9447675c-j9j8k  1/1     Running   0          12m
[~]$ kubectl get replicaset
NAME        DESIRED   CURRENT   READY   AGE
nginx-depl-7d9447675c       1         1         1        12m
[~]$ kubectl edit deploy
```

kubectl edit deployment [name]

```
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl  1/1     1           1           12m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-depl-7d9447675c-j9j8k  1/1     Running   0          12m
[~]$ kubectl get replicaset
NAME        DESIRED   CURRENT   READY   AGE
nginx-depl-7d9447675c       1         1         1        12m
[~]$ kubectl edit deployment nginx-depl
```

```
# Please edit the object below. Lines beginning with a '#' will be ignored,  
# and an empty file will abort the edit. If an error occurs while saving this file will b  
e  
# reopened with the relevant failures.  
#  
apiVersion: apps/v1  
kind: Deployment  
metadata:  
  annotations:  
    deployment.kubernetes.io/revision: "1"  
  creationTimestamp: "2020-01-23T11:20:43Z"  
  generation: 3  
  labels:  
    app: nginx-depl  
  name: nginx-depl  
  namespace: default  
  resourceVersion: "55942"  
  selfLink: /apis/apps/v1/namespaces/default/deployments/nginx-depl  
  uid: e6bf6b5b-d56a-4a99-b85d-9c5a56c46113  
spec:  
  progressDeadlineSeconds: 600  
  replicas: 1  
  revisionHistoryLimit: 10  
"/var/folders/y3/bvgmrxg950x0f1z4zt3pby3c0000gn/T/kubectl-edit-808e9.yaml" 67L, 1866C
```

**Auto-generated configuration file
with default values**

```
creationTimestamp: null
labels:
  app: nginx-depl
spec:
  containers:
  - image: nginx
    imagePullPolicy: Always
    name: nginx
    resources: {}
    terminationMessagePath: /dev/termination-log
    terminationMessagePolicy: File
  dnsPolicy: ClusterFirst
  restartPolicy: Always
  schedulerName: default-scheduler
  securityContext: {}
  terminationGracePeriodSeconds: 30
status:
  availableReplicas: 1
  conditions:
  - lastTransitionTime: "2020-01-23T11:20:43Z"
    lastUpdateTime: "2020-01-23T11:21:17Z"
    message: ReplicaSet "nginx-depl-7d9447675c" has successfully progressed.
    reason: NewReplicaSetAvailable
-- INSERT --
```

```
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl  1/1     1           1           12m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-depl-7d9447675c-j9j8k  1/1     Running   0          12m
[~]$ kubectl get replicaset
NAME            DESIRED   CURRENT   READY   AGE
nginx-depl-7d9447675c       1         1         1       12m
[~]$ kubectl edit deployment nginx-depl
deployment.apps/nginx-depl edited
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl  1/1     1           1           15m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-depl-66859c8f65-vfjjk  1/1     Running   0          25s
nginx-depl-7d9447675c-j9j8k  0/1     Terminating   0          15m
[~]$
```

```
[~]$ kubectl get deployment
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl   1/1     1           1           12m
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-depl-7d9447675c-j9j8k     1/1     Running   0          12m
[~]$ kubectl get replicaset
NAME          DESIRED   CURRENT   READY   AGE
nginx-depl-7d9447675c      1         1         1       12m
[~]$ kubectl edit deployment nginx-depl
deployment.apps/nginx-depl edited
[~]$ kubectl get deployment
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl   1/1     1           1           15m
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-depl-66859c8f65-vfjjk     1/1     Running   0          25s
nginx-depl-7d9447675c-j9j8k     0/1     Terminating   0          15m
[~]$ kubectl get pod
NAME          READY   STATUS    RESTARTS   AGE
nginx-depl-66859c8f65-vfjjk     1/1     Running   0          41s
[~]$ █
```

```
nginx-depl 1/1 1 12m
[~]$ kubectl get pod
NAME READY STATUS RESTARTS AGE
nginx-depl-7d9447675c-j9j8k 1/1 Running 0 12m
[~]$ kubectl get replicaset
NAME DESIRED CURRENT READY AGE
nginx-depl-7d9447675c 1 1 1 12m
[~]$ kubectl edit deployment nginx-depl
deployment.apps/nginx-depl edited
[~]$ kubectl get deployment
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-depl 1/1 1 1 15m
[~]$ kubectl get pod
NAME READY STATUS RESTARTS AGE
nginx-depl-66859c8f65-vfjjk 1/1 Running 0 25s
nginx-depl-7d9447675c-j9j8k 0/1 Terminating 0 15m
[~]$ kubectl get pod
NAME READY STATUS RESTARTS AGE
nginx-depl-66859c8f65-vfjjk 1/1 Running 0 41s
[~]$ kubectl get replicaset
NAME DESIRED CURRENT READY AGE
nginx-depl-66859c8f65 1 1 1 59s
nginx-depl-7d9447675c 0 0 0 15m
[~]$
```



Debugging pods

• [View on GitHub](#) • [View on NPM](#) • [View on Yarn](#) • [View on NPM Registry](#)

• [View on NPM](#) • [View on Yarn](#) • [View on NPM Registry](#)

```
[~]$ kubectl get deployment
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-depl   1/1     1           1           21m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-depl-66859c8f65-vfjjk  1/1     Running   0          6m29s
[~]$ kubectl get replicaset
NAME            DESIRED   CURRENT   READY   AGE
nginx-depl-66859c8f65      1         1         1       6m32s
nginx-depl-7d9447675c      0         0         0       21m
[~]$ kubectl logs nginx-depl-66859c8f65-vfjjk
[~]$
```

kubectl logs [pod name]

```
NAME      READY  UP-TO-DATE  AVAILABLE  AGE
nginx-depl  1/1    1          1          21m
[~]$ kubectl get pod
NAME                  READY  STATUS        RESTARTS  AGE
nginx-depl-66859c8f65-vfjjk  1/1   Running     0          6m29s
[~]$ kubectl get replicaset
NAME            DESIRED  CURRENT  READY  AGE
nginx-depl-66859c8f65  1        1        1      6m32s
nginx-depl-7d9447675c  0        0        0      21m
[~]$ kubectl logs nginx-depl-66859c8f65-vfjjk
[~]$ kubectl create deployment mongo-depl --image=mongo
deployment.apps/mongo-depl created
[~]$ kubectl get pod
NAME                  READY  STATUS        RESTARTS  AGE
mongo-depl-67f895857c-fkspm  0/1   ContainerCreating  0          6s
nginx-depl-66859c8f65-vfjjk  1/1   Running     0          8m16s
[~]$ kubectl logs mongo-depl-67f895857c-fkspm
Error from server (BadRequest): container "mongo" in pod "mongo-depl-67f895857c-fkspm" is
waiting to start: ContainerCreating
[~]$ kubectl get pod
NAME                  READY  STATUS        RESTARTS  AGE
mongo-depl-67f895857c-fkspm  0/1   ContainerCreating  0          35s
nginx-depl-66859c8f65-vfjjk  1/1   Running     0          8m45s
[~]$
```

```
NAME          DESIRED  CURRENT  READY  AGE
nginx-depl-66859c8f65  1        1        1      6m32s
nginx-depl-7d9447675c  0        0        0      21m
```

```
[~]$ kubectl logs nginx-depl-66859c8f65-vfjjk
```

```
[~]$ kubectl create deployment mongo-depl --image=mongo
deployment.apps/mongo-depl created
```

```
[~]$ kubectl get pod
```

NAME	READY	CONTAINER STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	0/1	ContainerCreating	0	35s
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	8m16s

kubectl describe pod [pod name]

```
[~]$ kubectl logs mongo-depl-67f895857c-fkspm
```

```
Error from server (BadRequest): container "mongo" in pod "mongo-depl-67f895857c-fkspm" is
waiting to start: ContainerCreating
```

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	0/1	ContainerCreating	0	35s
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	8m45s

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	0/1	ContainerCreating	0	76s
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	9m26s

```
[~]$ kubectl describe mongo-depl-67f895857c-fkspm
```

```
error: the server doesn't have a resource type "mongo-depl-67f895857c-fkspm"
```

```
[~]$ kubectl describe mongo-depl-67f895857c-fkspm
```

```
Type          Status
Initialized   True
Ready        True
ContainersReady  True
PodScheduled  True

Volumes:
default-token-z2jgc:
  Type:      Secret (a volume populated by a Secret)
  SecretName: default-token-z2jgc
  Optional:  false
QoS Class:  BestEffort
Node-Selectors: <none>
Tolerations: node.kubernetes.io/not-ready:NoExecute for 300s
               node.kubernetes.io/unreachable:NoExecute for 300s

Events:
Type  Reason  Age   From            Message
----  -----  ---  ----            -----
Normal Scheduled <unknown>  default-scheduler  Successfully assigned default/mongo-de
pl-67f895857c-fkspm to minikube
Normal Pulling   105s  kubelet, minikube  Pulling image "mongo"
Normal Pulled    13s   kubelet, minikube  Successfully pulled image "mongo"
Normal Created   13s   kubelet, minikube  Created container mongo
Normal Started   13s   kubelet, minikube  Started container mongo
[~]$
```

```
Volumes:  
  default-token-z2jgc:  
    Type:           Secret (a volume populated by a Secret)  
    SecretName:    default-token-z2jgc  
    Optional:      false  
QoS Class:        BestEffort  
Node-Selectors:   <none>  
Tolerations:     node.kubernetes.io/not-ready:NoExecute for 300s  
                  node.kubernetes.io/unreachable:NoExecute for 300s  
  
Events:  
  Type  Reason  Age   From            Message  
  ----  -----  ---  ----  
  Normal  Scheduled  <unknown>  default-scheduler  Successfully assigned default/mongo-depl-67f895857c-fkspm to minikube  
  Normal  Pulling   105s    kubelet, minikube  Pulling image "mongo"  
  Normal  Pulled    13s    kubelet, minikube  Successfully pulled image "mongo"  
  Normal  Created   13s    kubelet, minikube  Created container mongo  
  Normal  Started   13s    kubelet, minikube  Started container mongo  
[~]$ kubectl get pod  
NAME                      READY  STATUS    RESTARTS  AGE  
mongo-depl-67f895857c-fkspm  1/1   Running   0         2m12s  
nginx-depl-66859c8f65-vfjjk  1/1   Running   0         10m  
[~]$ kubectl logs mongo-depl-67f895857c-fkspm
```

```
[~]$ kubectl get pod  
NAME                  READY   STATUS    RESTARTS   AGE  
mongo-depl-67f895857c-fkspm   1/1     Running   0          3m5s  
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          11m  
[~]$ kubectl exec -it mongo-depl-67f895857c-fkspm
```

kubectl exec -it [pod name] -- bin/bash

- Delete deployment
- Apply configuration file

```
[~]$ kubectl get pod
NAME                      READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm   1/1     Running   0          3m5s
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          11m
[~]$ kubectl exec -it mongo-depl-67f895857c-fkspm -- bin/bash
root@mongo-depl-67f895857c-fkspm:/# ls
bin  dev          home      lib64  opt   run   sys  var
boot docker-entrypoint-initdb.d js-yaml.js media proc sbin tmp
data etc          lib       mnt   root  srv  usr
root@mongo-depl-67f895857c-fkspm:/# exit
exit
[~]$ kubectl get deployment
error: the server doesn't have a resource type "deployoment"
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
mongo-depl   1/1      1           1           5m55s
nginx-depl   1/1      1           1           28m
[~]$ kubectl get pod
NAME                      READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm   1/1     Running   0          6m
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          14m
[~]$
```

```
[~]$ kubectl get pod
NAME                      READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm   1/1     Running   0          3m5s
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          11m
[~]$ kubectl exec -it mongo-depl-67f895857c-fkspm -- bin/bash
root@mongo-depl-67f895857c-fkspm:/# ls
bin  dev          home      lib64  opt  run  sys  var
boot docker-entrypoint-initdb.d  js-y
data etc          lib       lib
[~]$ kubectl delete deployment [name]
root@mongo-depl-67f895857c-fkspm:/# exit
exit
[~]$ kubectl get deplyoment
error: the server doesn't have a resource type "deplyoment"
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
mongo-depl  1/1     1           1           5m55s
nginx-depl  1/1     1           1           28m
[~]$ kubectl get pod
NAME                      READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm   1/1     Running   0          6m
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          14m
[~]$ kubectl delete
```

```
[~]$ kubectl get pod
NAME                      READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm   1/1     Running   0          3m5s
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          11m
[~]$ kubectl exec -it mongo-depl-67f895857c-fkspm -- bin/bash
root@mongo-depl-67f895857c-fkspm:/# ls
bin  dev           home        lib64      opt       run       sys  var
boot docker-entrypoint-initdb.d js-yaml.js  media     proc     sbin     tmp
data etc           lib         mnt       root     srv     usr
root@mongo-depl-67f895857c-fkspm:/# exit
exit
[~]$ kubectl get deployment
error: the server doesn't have a resource type "deployment"
[~]$ kubectl get deployment
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
mongo-depl 1/1      1           1           5m55s
nginx-depl 1/1      1           1           28m
[~]$ kubectl get pod
NAME                      READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm   1/1     Running   0          6m
nginx-depl-66859c8f65-vfjjk   1/1     Running   0          14m
[~]$ kubectl delete deployment mongo-depl
```

```
error: the server doesn't have a resource type "deployoment"
[~]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
mongo-depl  1/1     1           1           5m55s
nginx-depl  1/1     1           1           28m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm  1/1     Running   0          6m29s
nginx-depl-66859c8f65-vfjjk  1/1     Running   0          14m
[~]$ kubectl delete deployment mongo-depl
deployment.apps "mongo-depl" deleted
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm  0/1     Terminating   0          6m29s
nginx-depl-66859c8f65-vfjjk  1/1     Running   0          14m
[~]$ kubectl get replicaset
NAME        DESIRED   CURRENT   READY   AGE
nginx-depl-66859c8f65      1         1         1       14m
nginx-depl-7d9447675c      0         0         0       29m
[~]$ kubectl delete deployment nginx-depl
deployment.apps "nginx-depl" deleted
[~]$ kubectl get replicaset
No resources found in default namespace.
[~]$ kubectl apply
```

kubectl apply -f [file name]

```
error: the server doesn't have a resource type "deployoment"
```

```
[~]$ kubectl get deployment
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
mongo-depl	1/1	1	1	5m55s
nginx-depl	1/1	1	1	28m

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	1/1	Running	0	6m
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	14m

```
[~]$ kubectl delete deployment mongo-depl
```

```
deployment.apps "mongo-depl" deleted
```

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	0/1	Terminating	0	6m29s
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	14m

```
[~]$ kubectl get replicaset
```

NAME	DESIRED	CURRENT	READY	AGE
nginx-depl-66859c8f65	1	1	1	14m
nginx-depl-7d9447675c	0	0	0	29m

```
[~]$ kubectl delete deployment nginx-depl
```

```
deployment.apps "nginx-depl" deleted
```

```
[~]$ kubectl get replicaset
```

```
No resources found in default namespace.
```

```
[~]$ kubectl apply -f config-file.yaml
```

```
error: the server doesn't have a resource type "deployment"
```

```
[~]$ kubectl get deployment
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
mongo-depl	1/1	1	1	5m55s
nginx-depl	1/1	1	1	28m

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	1/1	Running	0	6m
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	14m

```
[~]$ kubectl delete deployment mongo-depl
```

```
deployment.apps "mongo-depl" deleted
```

```
[~]$ kubectl get pod
```

NAME	READY	STATUS	RESTARTS	AGE
mongo-depl-67f895857c-fkspm	0/1	Terminating	0	6m29s
nginx-depl-66859c8f65-vfjjk	1/1	Running	0	14m

```
[~]$ kubectl get replicaset
```

NAME	DESIRED	CURRENT	READY	AGE
nginx-depl-66859c8f65	1	1	1	14m
nginx-depl-7d9447675c	0	0	0	29m

```
[~]$ kubectl delete deployment nginx-depl
```

```
deployment.apps "nginx-depl" deleted
```

```
[~]$ kubectl get replicaset
```

```
No resources found in default namespace.
```

```
[~]$ kubectl apply -f nginx-deployment.yaml
```

```
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
mongo-depl 1/1     1           1           5m55s
nginx-depl 1/1     1           1           28m
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
mongo-depl-67f895857c-fkspm  1/1     Running   0          6m
nginx-depl-66859c8f65-vfjjk  1/1     Running   0          14m
[~]$ kubectl delete deployment mongo-depl
deployment.apps "mongo-depl" deleted
[~]$ kubectl get pod
NAME                           READY   STATUS        RESTARTS   AGE
mongo-depl-67f895857c-fkspm  0/1     Terminating   0          6m29s
nginx-depl-66859c8f65-vfjjk  1/1     Running       0          14m
[~]$ kubectl get replicaset
NAME            DESIRED   CURRENT   READY   AGE
nginx-depl-66859c8f65  1         1         1       14m
nginx-depl-7d9447675c  0         0         0       29m
[~]$ kubectl delete deployment nginx-depl
deployment.apps "nginx-depl" deleted
[~]$ kubectl get replicaset
No resources found in default namespace.
[~]$ #kubectl apply -f nginx-deployment.yaml
[~]$ touch nginx-deployment.yaml
[~]$ vim nginx-deployment.yaml
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
  labels:
    app: nginx
spec:
  replicas: 1
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.16
          ports:
            - containerPort: 80
~  
~  
-- INSERT --
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
  labels:
    app: nginx
spec:I          -> for deployment
  replicas: 1
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.16
          ports:
            - containerPort: 80
~  
~  
-- INSERT --
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
  labels:
    app: nginx
spec:
  replicas: 1
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec: I -> for pods
      containers:
        - name: nginx
          image: nginx:1.16
          ports:
            - containerPort: 80
~  
~  
-- INSERT --
```

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$
```

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-pq5dx   1/1     Running   0          7s
[~]$
```

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-pq5dx   1/1     Running   0          7s
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   1/1       1           1          52s
[~]$ vim ngi
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
  labels:
    app: nginx
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.16
          ports:
            - containerPort: 80
```

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$ kubectl get pod
NAME                           READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-pq5dx   1/1     Running   0          7s
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   1/1       1           1          52s
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment configured
[~]$
```

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-pq5dx  1/1     Running   0          7s
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment 1/1      1           1           52s
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment configured
[~]$
```

K8s knows when to create or update deployment

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-pq5dx   1/1     Running   0          7s
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   1/1      1           1          52s
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment configured
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   2/2      2           2          115s
[~]$
```

```
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-pq5dx   1/1     Running   0          7s
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   1/1       1           1          52s
[~]$ vim nginx-deployment.yaml
[~]$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment configured
[~]$ kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   2/2       2           2          115s
[~]$ kubectl get pod
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-594cc45b78-ncs97   1/1     Running   0          39s
nginx-deployment-594cc45b78-pq5dx   1/1     Running   0          2m5s
[~]$
```

CRUD commands

[Create deployment](#)

`kubectl create deployment [name]`

[Edit deployment](#)

`kubectl edit deployment [name]`

[Delete deployment](#)

`kubectl delete deployment [name]`

Status of different K8s components

`kubectl get nodes | pod | services | replicaset | deployment`

Debugging pods

[Log to console](#)

`kubectl logs [pod name]`

[Get Interactive Terminal](#)

`kubectl exec -it [pod name] -- bin/bash`

Debugging pods

[Log to console](#)

`kubectl logs [pod name]`

[Get Interactive Terminal](#)

`kubectl exec -it [pod name] -- bin/bash`

[Get info about pod](#)

`kubectl describe pod [pod name]`

Use configuration file for CRUD

[Apply a configuration file](#)

`kubectl apply -f [file name]`

[Delete with configuration file](#)

`kubectl delete -f [file name]`