Kubernetes Theory

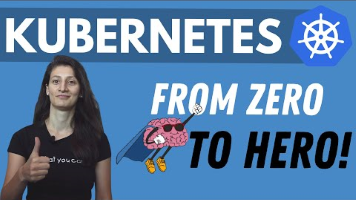
Wednesday, 16 March 2022

12:46 PM

[Kubernetes Tutorial for Beginners [FULL COURSE in 4 Hours]](https://www.youtube.com/watch?v=X48VuDVv0do)

Node - instance of comp on which Kubernetes run

Machine generated alternative text:
Kubernetes Vocab 
• 
• 
Node 
o Kubelet 
o Communicates with master 
o Runs pods 
Pod 
o Runs 1+ containers 
o Exists on a node 
Service 
o Handles requests 
o Usually a load balancer 
Deployment 
state - kubernetes handles the rest 



Testing on local :

1. Minicube - testing of multiclustre on local
2. Hypervisior - provides virtual env on local
3. Kubectl - command line

$minikube start --vm-driver = hyperkit

Minicube has docker runtime/demon pre-installed therefore can container inside.

Once u run above command , it will create a node for you and start it

To check node status :

$ kubectl get nodes >>> result : minikube node is ready with age n version

TO check kubectl version

$ kubectl version

Machine generated alternative text:
Kubernetes VI. 17.0 on Docker '19.03.5' 
Inc 
CLI 
Ibe 
...for configuring the Minikube cluster 
.nikube status 
tunning 
Minikube CLI 
'er: 
Ifi 
Ibe 
...for start up/deleting the cluster 
'30baca2b6e357d144171ed74192d6", GitTreeState: "clean" , BuildDate: 
GitCommit : " dl 
" 2020-01-15T15 : 

Machine generated alternative text:
Basic kubectl commands 
CRUP cohthtands 
Create ¯ 
deployment 
Edit 
Pelete 
kubectl create deployment [namel 
kubectl edit deployment [name] 
kubectl delete deployment [namel 
Pods 
Create 
and 
debug 
in a Minikube cluster 
Status of different K8s components 
kubectl get nodes I pod I services I replicaset I deployment 
Pebugging pods 
Log 
to console 
Interactive TerMinal 
kubectl logs [pod namel 
kubectl exec -it (pod name) -- bin/bash 

Machine generated alternative text:
pod 
deploy 
Usage: 
Ikubectl 
Pod is the smallest unit 
BUT, you are creating... 
Peployment - abstraction over Pods 
—image—image I—dry—run] [options] 
create deployment NAME 

Machine generated alternative text:
——image=[ ] : 
Image name to run. 
Output format. One of: jsonl yaml I name I go—template I 
—o, ——output=' ' : 
plate I templatefile I j sonpath I j sonpath—file. 
——save—config=false: If true, the configuration of current object will be saved in 
its annotation. Otherwise, the annotation will you 
want to perform kubectl apply on this object in Q Search content i 
Template string or path to temp 1 ate 1 e o use when —o=go—te 
——template=' : 
—o=go—template—file. The template format is gol 
/template/#pkg—overview] . 
——validate=true: If true, use a schema to 
Usage: 
kubectl create deployment NAME —image—image [ 
Use " kubectl options" for a list of global comma 
[N]$ kubectl create deployment nginx—depl 
Image 
Iidate the input before sending 
nginx 
NGMX 
Docker Official Images 
Official build of Nginx. 
=nginx 
plate, 
g/ text 
mands) 

Machine generated alternative text:
kubectl create deployment nginx-depl —image=nginx 
deploy 
for creating pods 
- blueprint 
- Most basic configuration 
for deployment 
(name and image to use) 
- rest defaults 

Replset is automatically managed by Kubernates

Machine generated alternative text:
kubectl create deployment nginx—depl —image=nginx 
leployment. apps/nginx—depl created 
kubectl get deployment 
AME 
ginx—depl 
READY UP-TO-DATE AVAILABLE 
0/1 
1 
AGE 
17s 
kubectl get pod 
AME 
ginx—dep1—7d9447675c—j9j8k 
kubectl get pod 
AME 
ginx-dep1-7d9447675c-j9j8k1 
kubectl get replicaset 
READY 
0/1 
READY 
1/1 
STATUS 
ContainerCreating 
RESTARTS 
AGE 
54s 
AGE 
31s 
STATUS 
Running 
RESTARTS 
98s 
ain Kubectl Commands - K8s CLI 

Machine generated alternative text:
deploy 
pod 
Layers of Abstraction 
Peploywtent 
manages a .. 
ReplicaSet 
Manages a .. 
Pod 
is an abstraction of .. 
Container 
50:06 / 3:36:54 • Main Kubectl Commands - K8s CLI > 

Even if you change pod configuration , it will terminate the existing pod and a new pod will be created

Debugging :

Machine generated alternative text:
[N]$ kubectl 
NAME 
nginx—depl 
[N]$ kubectl 
NAME 
get deployment 
READY UP-TO-DATE 
1/1 
1 
get pod 
AVAILABLE 
1 
READY 
AGE 
21m 
RESTARTS 
k 1/1 
[N]$ kubectl get replicaset 
STATUS 
Running 
AGE 
6m29s 
NAME 
DESIRED CURRENT 
nginx—depI—66859c8f65 1 
nginx—dep1—7d9447675c 
1 
READY 
1 
AGE 
6m32s 
21m 
[N]$ kubectl logs nginx—dep1—66859c8f65—vfjjk 
1 
kubectl logs [pod name] 

Machine generated alternative text:
ng1nx—dep1—7d9447675c 
21m 
[N]$ kubectl logs nginx—dep1—66859c8f65—vfjjk 
[N]$ kubectl create deployment mongo—depl 
Image=mongo 
deployment. apps/mongo—depl created 
[N]$ kubectl get pod 
NAME 
READY 
STATUS 
ContainerCreating 
Running 
RESTARTS 
mongo—depl—67f895857c—fkspm 0/1 
k 1/1 
kubectl logs 
AGE 
8m16s 

Get inside pod :

Machine generated alternative text:
• kubectl get pod 
IAME 
READY 
1/1 
1/1 
STATUS 
Running 
Running 
RESTARTS 
AGE 
3m5s 
11m 
• kubectl exec —it mongo—depl 
-67f895857c-fkspm 
root@mongo—dep1—67f895857c—fkspm:/# Is 
Jin 
dev 
)00t docker—entrypoint—initdb.d 
lata etc 
bin/bash 
home 
Iib64 
opt 
proc 
root 
run 
sbin 
srv 
sys 
usr 
var 
j s—yaml. js 
media 
lib 
mnt 

Machine generated alternative text:
KLUer 
A quick recap 
Master 
Replication 
Controller 
Replication 
Controller 
Node / Kubelet 
od 
Node ! Kubelet 
od 
od 
Contai ner 
od 
Container 
Node / Kubelet 
od 
Container 
Node / Kubelet 
od 
Container 
od 
Contairer 

Deployment file can be :

1. JSON
2. YAML

but people normally go with yaml bcz very human readable (instead of bracket , has indentation )

It creates the desired state you want to run. For eg : if you want 3 copies of nginx verion 1.7.9 running on port 80 within your cluster :

This one is of deployment

Machine generated alternative text:
Deployment Yaml 
apiVersion: apps/vlbetal # for versions before 1.6.0 use extensions/vlbetal 
kind: Deployment 
metadata: 
name: nginx-deployment 
spec: 
replicas: 3 
template: 
metadata: 
labels: 
app: nginx 
spec: 
containers: 
- name: ngnx 
image: nginx:1.7.9 
ports: 
- contai erPort: 80 
0 17:37/ 55:07 
•o 

Kubernetes do some cool stuff like auto rebooting of pods if it breaks somewhere

No downtime even if version is changed , as it takes care of taking down version 1 only when version 2 totally up

[Introduction to Microservices, Docker, and Kubernetes](https://www.youtube.com/watch?v=1xo-0gCVhTU) at 18:24

