1 Kubectl Kubernetes CheatSheet Cloud

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1.1 Common Commands

Name Command

Run curl test temporarily kubectl run --generator=run-pod/v1 --rm mytest --image=yauritux/busybox-cu Run wget test temporarily kubectl run --generator=run-pod/v1 --rm mytest --image=busybox -it wget Run nginx deployment with 2 replicas kubectl run my-nginx --image=nginx --replicas=2 --port=80

Run nginx pod and expose it kubectl run my-nginx --restart=Never --image=nginx --port=80 --expose

Run nginx deployment and expose it kubectl run my-nginx --image=nginx --port=80 --expose

List authenticated contexts kubectl config get-contexts, ~/.kube/config

Set namespace preference kubectl config set-context <context\_name> --namespace=<ns\_name>

List pods with nodes info kubectl get pod -o wide

List everything kubectl get all --all-namespaces

Get all services kubectl get service --all-namespaces

Get all deployments kubectl get deployments --all-namespaces

Show nodes with labels kubectl get nodes --show-labels

Get resources with json output kubectl get pods --all-namespaces -o json

Validate yaml file with dry run kubectl create --dry-run --validate -f pod-dummy.yaml

Start a temporary pod for testing kubectl run --rm -i -t --image=alpine test-$RANDOM -- sh

kubectl run shell command kubectl exec -it mytest -- ls -l /etc/hosts

Get system conf via configmap kubectl -n kube-system get cm kubeadm-config -o yaml

Get deployment yaml kubectl -n denny-websites get deployment mysql -o yaml

Explain resource kubectl explain pods, kubectl explain svc

Watch pods kubectl get pods -n wordpress --watch

Query healthcheck endpoint curl -L http://127.0.0.1:10250/healthz

Open a bash terminal in a pod kubectl exec -it storage sh

Check pod environment variables kubectl exec redis-master-ft9ex env

Enable kubectl shell autocompletion echo "source <(kubectl completion bash)" »~/.bashrc, and reload

Use minikube dockerd in your laptop eval $(minikube docker-env), No need to push docker hub any more

Kubectl apply a folder of yaml files kubectl apply -R -f .

Get services sorted by name kubectl get services –sort-by=.metadata.name

Get pods sorted by restart count kubectl get pods –sort-by=’.status.containerStatuses[0].restartCount’

List pods and images kubectl get pods -o=’custom-columns=PODS:.metadata.name,Images:.spec.containers[\* List all container images list-all-images.sh

kubeconfig skip tls verification skip-tls-verify.md

[Ubuntu install kubectl "deb](https://kubernetes.io/docs/tasks/tools/install-kubectl/) https://apt.kubernetes.io/ kubernetes-xenial main"

Reference [GitHub: kubernetes releases](https://github.com/kubernetes/kubernetes/tags)

Reference [minikube cheatsheet,](https://cheatsheet.dennyzhang.com/cheatsheet-minikube-A4) [docker cheatsheet,](https://cheatsheet.dennyzhang.com/cheatsheet-docker-A4) [OpenShift CheatSheet](https://cheatsheet.dennyzhang.com/cheatsheet-openshift-A4)

1.2 Check Performance

Name Command

Get node resource usage kubectl top node

Get pod resource usage kubectl top pod

Get resource usage for a given pod kubectl top <podname> --containers

List resource utilization for all containers kubectl top pod --all-namespaces --containers=true

1.3 Resources Deletion

Name Command

Delete pod kubectl delete pod/<pod-name> -n <my-namespace>

Delete pod by force kubectl delete pod/<pod-name> --grace-period=0 --force

Delete pods by labels kubectl delete pod -l env=test

Delete deployments by labels kubectl delete deployment -l app=wordpress

Delete all resources filtered by labels kubectl delete pods,services -l name=myLabel

Delete resources under a namespace kubectl -n my-ns delete po,svc --all

Delete persist volumes by labels kubectl delete pvc -l app=wordpress

Delete state fulset only (not pods) kubectl delete sts/<stateful\_set\_name> --cascade=false

1.4 Log & Conf Files

Name Comment

Config folder /etc/kubernetes/ Certificate files /etc/kubernetes/pki/ Credentials to API server /etc/kubernetes/kubelet.conf Superuser credentials /etc/kubernetes/admin.conf kubectl config file ~/.kube/config

Kubernets working dir /var/lib/kubelet/

Docker working dir /var/lib/docker/, /var/log/containers/

Etcd working dir /var/lib/etcd/

Network cni /etc/cni/net.d/

Log files /var/log/pods/

log in worker node /var/log/kubelet.log, /var/log/kube-proxy.log

log in master node kube-apiserver.log, kube-scheduler.log, kube-controller-manager.log

Env /etc/systemd/system/kubelet.service.d/10-kubeadm.conf

Env export KUBECONFIG=/etc/kubernetes/admin.conf

1.5 Pod

Name Command

List all pods kubectl get pods

List pods for all namespace kubectl get pods -all-namespaces

List all critical pods kubectl get -n kube-system pods -a

List pods with more info kubectl get pod -o wide, kubectl get pod/<pod-name> -o yaml

Get pod info kubectl describe pod/srv-mysql-server

List all pods with labels kubectl get pods --show-labels

[List all unhealthy pods kubectl](https://github.com/kubernetes/kubernetes/issues/49387) get pods –field-selector=status.phase!=Running –all-namespaces

List running pods kubectl get pods –field-selector=status.phase=Running

Get Pod initContainer status kubectl get pod --template ’{{.status.initContainerStatuses}}’ <pod-name>

kubectl run command kubectl exec -it -n "$ns" "$podname" – sh -c "echo $msg »/dev/err.log"

Watch pods kubectl get pods -n wordpress --watch

Get pod by selector kubectl get pods –selector="app=syslog" -o jsonpath=’{.items[\*].metadata.name}’

List pods and images kubectl get pods -o=’custom-columns=PODS:.metadata.name,Images:.spec.containers[\*].image’ List pods and containers -o=’custom-columns=PODS:.metadata.name,CONTAINERS:.spec.containers[\*].name’

Reference [Link: kubernetes yaml templates](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates)

1.6 Label & Annontation

Name Command

Filter pods by label kubectl get pods -l owner=denny

Manually add label to a pod kubectl label pods dummy-input owner=denny

Remove label kubectl label pods dummy-input owner-

Manually add annonation to a pod kubectl annotate pods dummy-input my-url=https://dennyzhang.com

1.7 Deployment & Scale

Name Command

Scale out kubectl scale --replicas=3 deployment/nginx-app

online rolling upgrade kubectl rollout app-v1 app-v2 --image=img:v2

Roll backup kubectl rollout app-v1 app-v2 --rollback

List rollout kubectl get rs

Check update status kubectl rollout status deployment/nginx-app

Check update history kubectl rollout history deployment/nginx-app

Pause/Resume kubectl rollout pause deployment/nginx-deployment, resume

Rollback to previous version kubectl rollout undo deployment/nginx-deployment

Reference [Link: kubernetes yaml templates,](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates) [Link: Pausing and Resuming a Deployment](https://kubernetes.io/docs/concepts/workloads/controllers/deployment/#pausing-and-resuming-a-deployment)

1.8 Quota & Limits & Resource

Name Command

List Resource Quota kubectl get resourcequota

List Limit Range kubectl get limitrange

Customize resource definition kubectl set resources deployment nginx -c=nginx --limits=cpu=200m

Customize resource definition kubectl set resources deployment nginx -c=nginx --limits=memory=512Mi

Reference [Link: kubernetes yaml templates](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates)

1.9 Service

Name Command

List all services kubectl get services

List service endpoints kubectl get endpoints

Get service detail kubectl get service nginx-service -o yaml

Get service cluster ip kubectl get service nginx-service -o go-template=’{{.spec.clusterIP}}’

Get service cluster port kubectl get service nginx-service -o go-template=’{{(index .spec.ports 0).port}}’ Expose deployment as lb service kubectl expose deployment/my-app --type=LoadBalancer --name=my-service Expose service as lb service kubectl expose service/wordpress-1-svc --type=LoadBalancer --name=ns1

Reference [Link: kubernetes yaml templates](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates)

1.10 Secrets

Name Command

List secrets kubectl get secrets --all-namespaces

Generate secret echo -n ’mypasswd’, then redirect to base64 --decode

Get secret kubectl get secret denny-cluster-kubeconfig

Get a specific field of a secret kubectl get secret denny-cluster-kubeconfig -o jsonpath="{.data.value}"

Create secret from cfg file kubectl create secret generic db-user-pass –from-file=./username.txt

Reference [Link: kubernetes yaml templates,](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates) [Link: Secrets](https://kubernetes.io/docs/concepts/configuration/secret/)

1.11 StatefulSet

Name Command

List statefulset kubectl get sts

Delete statefulset only (not pods) kubectl delete sts/<stateful\_set\_name> --cascade=false

Scale statefulset kubectl scale sts/<stateful\_set\_name> --replicas=5

Reference [Link: kubernetes yaml templates](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates)

1.12 Volumes & Volume Claims

Name Command

List storage class kubectl get storageclass

Check the mounted volumes kubectl exec storage ls /data

Check persist volume kubectl describe pv/pv0001

Copy local file to pod kubectl cp /tmp/my <some-namespace>/<some-pod>:/tmp/server

Copy pod file to local kubectl cp <some-namespace>/<some-pod>:/tmp/server /tmp/my

Reference [Link: kubernetes yaml templates](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates)

1.13 Events & Metrics

Name Command

View all events kubectl get events --all-namespaces

List Events sorted by timestamp kubectl get events –sort-by=.metadata.creationTimestamp

1.14 Node Maintenance

Name Command

Mark node as unschedulable kubectl cordon $NDOE\_NAME Mark node as schedulable kubectl uncordon $NDOE\_NAME Drain node in preparation for maintenance kubectl drain $NODE\_NAME

1.15 Namespace & Security

Name Command

List authenticated contexts kubectl config get-contexts, ~/.kube/config

Set namespace preference kubectl config set-context <context\_name> --namespace=<ns\_name>

Switch context kubectl config use-context <cluster-name>

Load context from config file kubectl get cs --kubeconfig kube\_config.yml

Delete the specified context kubectl config delete-context <cluster-name>

List all namespaces defined kubectl get namespaces

List certificates kubectl get csr

[Check user privilege kubectl](https://kubernetes.io/docs/concepts/policy/pod-security-policy/) –as=system:serviceaccount:ns-denny:test-privileged-sa -n ns-denny auth can-i use pods/li

[Check user privilege kubectl](https://kubernetes.io/docs/concepts/policy/pod-security-policy/) auth can-i use pods/list

Reference [Link: kubernetes yaml templates](https://cheatsheet.dennyzhang.com/kubernetes-yaml-templates)

1.16 Network

Name Command

Temporarily add a port-forwarding kubectl port-forward redis-134 6379:6379

Add port-forwaring for deployment kubectl port-forward deployment/redis-master 6379:6379

Add port-forwaring for replicaset kubectl port-forward rs/redis-master 6379:6379

Add port-forwaring for service kubectl port-forward svc/redis-master 6379:6379

Get network policy kubectl get NetworkPolicy

1.17 Patch

Name Summary

Patch service to loadbalancer kubectl patch svc $svc\_name -p ’{"spec": {"type": "LoadBalancer"}}’

1.18 Extenstions

Name Summary

Enumerates the resource types available kubectl api-resources List api group kubectl api-versions List all CRD kubectl get crd

List storageclass kubectl get storageclass

1.19 Components & Services

1.19.1 Services on Master Nodes

Name Summary

[kube-apiserver exposes](https://github.com/kubernetes/kubernetes/tree/master/cmd/kube-apiserver) the Kubernetes API from master nodes [etcd reliable](https://coreos.com/etcd/) data store for all k8s cluster data

[kube-scheduler schedule](https://github.com/kubernetes/kubernetes/tree/master/cmd/kube-scheduler) pods to run on selected nodes

[kube-controller-manager node](https://github.com/kubernetes/kubernetes/tree/master/cmd/kube-controller-manager) controller, replication controller, endpoints controller, and service account & token controllers

1.19.2 Services on Worker Nodes

Name Summary

[kubelet makes](https://github.com/kubernetes/kubernetes/tree/master/cmd/kubelet) sure that containers are running in a pod [kube-proxy perform](https://github.com/kubernetes/kubernetes/tree/master/cmd/kube-proxy) connection forwarding

[Container Runtime Kubernetes](https://github.com/docker/engine) supported runtimes: Docker, rkt, runc and any [OCI runtime-spec implementation.](https://github.com/opencontainers/runtime-spec)

1.19.3 Addons: pods and services that implement cluster features

Name Summary

DNS serves DNS records for Kubernetes services

Web UI a general purpose, web-based UI for Kubernetes clusters

Container Resource Monitoring collect, store and serve container metrics

Cluster-level Logging save container logs to a central log store with search/browsing interface

1.19.4 Tools

Name Summary

[kubectl the](https://github.com/kubernetes/kubernetes/tree/master/cmd/kubectl) command line util to talk to k8s cluster [kubeadm the](https://github.com/kubernetes/kubernetes/tree/master/cmd/kubeadm) command to bootstrap the cluster

[kubefed the](https://kubernetes.io/docs/reference/setup-tools/kubefed/kubefed/) command line to control a Kubernetes Cluster Federation

Kubernetes Components [Link: Kubernetes Components](https://kubernetes.io/docs/concepts/overview/components/)

1.20 More Resources

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