minikube Local Kubernetes

START HERE

`minikube start`
Create or start the cluster

`minikube status`
Is it running?

`minikube kubectl -- get pods -A`
Run a matching kubectl

`minikube dashboard`
Open the web UI

`minikube service <name>`
Open a service

`minikube image load <image>`
Copy a local image in

`minikube stop`
Stop, keep the state

`minikube delete`
Remove the cluster

CONCEPTS

minikube runs a single-node cluster on your machine. With the docker driver the node is a container; with VM drivers it is a virtual machine.

Your machine minikube CLI + kubectl
- **Driver** docker, podman, kvm2, virtualbox
  - **minikube node** container or VM
    - **Kubernetes** control plane, pods

Every cluster is a profile (default: minikube). Pass -p <name> to any command to target another one.

Services of type LoadBalancer stay pending until minikube tunnel is running in a separate terminal.

minikube start also sets the kubectl context to the profile name, so plain kubectl works afterwards.

CLUSTER LIFECYCLE

`minikube start`
Create the cluster or start a stopped one

`minikube stop`
Stop the cluster, keep its state

`minikube delete`
Delete the cluster

`minikube status`
Show host, kubelet and API server state

`minikube pause`
Pause Kubernetes, keep the node running

`minikube unpause`
Resume a paused cluster

`minikube delete --all`
Delete every profile

`minikube delete --all --purge`
Also remove ~/.minikube

`minikube start --delete-on-failure`
Recreate the cluster if start fails

`minikube version`
Show the minikube version

`minikube update-check`
Compare with the latest release

START OPTIONS

`minikube start --driver <driver>`
Choose docker, podman, kvm2 or another

`minikube start --cpus <n> --memory <size>`
Size the node

`minikube start --kubernetes-version <vX.Y.Z>`
Pin the Kubernetes version

`minikube start --nodes <n>`
Create a multi-node cluster

`minikube start --container-runtime <name>`
docker, containerd or cri-o

`minikube start --addons <a,b>`
Enable addons at start

`minikube start --cni <name>`
Pick a network plugin, e.g. calico

`minikube start --disk-size <size>`
Set the node disk size

`minikube start --wait <components>`
Choose what to wait for

`minikube config set driver <driver>`
Make a driver the default

`minikube config view`
Show saved settings

cpus, memory and driver are fixed at creation. To change them, delete the profile and start again.

PROFILES AND NODES

`minikube start -p <name>`
Create or start a named cluster

`minikube profile list`
List clusters and their status

`minikube profile <name>`
Set the active profile

`minikube stop -p <name>`
Stop a named cluster

`minikube delete -p <name>`
Delete a named cluster

`minikube node add`
Add a worker node

`minikube node list`
List nodes

`minikube node stop <name>`
Stop one node

`minikube node delete <name>`
Remove a node

ADDONS

`minikube addons list`
Show all addons and their state

`minikube addons enable <addon>`
Turn an addon on

`minikube addons disable <addon>`
Turn an addon off

`minikube addons enable ingress`
Add an NGINX ingress controller

`minikube addons enable metrics-server`
Make kubectl top work

REACHING SERVICES

`minikube service <name>`
Open a service in the browser

`minikube service <name> --url`
Print the URL only

`minikube service <name> -n <namespace>`
Pick a namespace

`minikube service list`
List services and URLs

`minikube tunnel`
Give LoadBalancer services an IP

`minikube ip`
Print the node IP

`minikube dashboard`
Open the Kubernetes dashboard

`minikube dashboard --url`
Print the dashboard URL only

`kubectl port-forward svc/<name> <local>:<port>`
Forward a port without a tunnel

With the docker driver on macOS or Windows, minikube service keeps a terminal open; the node IP is not reachable directly.

IMAGES

`minikube image load <image>`
Copy a local image into the cluster

`minikube image build -t <tag> <dir>`
Build inside the cluster

`minikube image ls`
List images in the cluster

`eval $(minikube docker-env)`
Point docker at the node's engine

IMAGES (cont.)

`eval $(minikube docker-env -u)`
Switch docker back to the host

Images with the :latest tag trigger a pull. Use a versioned tag or imagePullPolicy: IfNotPresent for local images.

ACCESS AND DEBUGGING

`minikube kubectl -- <args>`
Run kubectl matching the cluster

`minikube ssh`
Open a shell on the node

`minikube ssh -- <command>`
Run a command on the node

`minikube logs`
Show cluster logs for debugging

`minikube mount <host-dir>:<node-dir>`
Mount a host folder into the node

`minikube cp <src> <node>:<dest>`
Copy a file into the node

`minikube update-context`
Fix kubeconfig after an IP change

minikube mount stays in the foreground and must keep running for the files to stay visible.

RECIPES

Fresh cluster with ingress

```
minikube start --driver docker --cpus 4 --memory 8g
minikube addons enable ingress
minikube addons enable metrics-server
kubectl get pods -A
```

Test a local image

```
eval $(minikube docker-env)
docker build -t myapp:dev .
kubectl create deployment myapp --image=myapp:dev
# or without docker-env:
minikube image build -t myapp:dev .
```

Expose a deployment

```
kubectl create deployment web --image=nginx
kubectl expose deployment web --type=NodePort --port=80
minikube service web --url
```

Separate cluster for a branch

```
minikube start -p feature-x --kubernetes-version <vX.Y.Z>
kubectl get nodes
minikube delete -p feature-x
```