k3d k3s in Docker

START HERE

`k3d cluster create <name>`
Make a cluster

`k3d image import <image> -c <name>`
Load a local image

`k3d cluster list`
List clusters

`k3d cluster create -p "8080:80@loadbalancer"`
Reach ingress from host

`k3d cluster stop <name>`
Pause, keep state

`k3d kubeconfig merge <name> --kubeconfig-switch-context`
Point kubectl at it

`k3d cluster delete <name>`
Remove a cluster

`k3d cluster create --config <file>`
Cluster from YAML

CONCEPTS

Docker host your machine
Cluster network k3d-<name>
Nodes serverlb, server-N, agent-N

One Docker network per cluster

> Every node is a Docker container named k3d-<cluster>-<role>-<n>. Host ports reach the cluster through the k3d-<cluster>-serverlb container, so map ports with @loadbalancer.

> Node filters pick targets: server:0, agent:*, agent:0,1, loadbalancer. Repeatable flags like -p, -v, -e and --k3s-arg accept them after an @.

CLUSTERS

`k3d cluster create <name>`
Create a cluster

`k3d cluster list`
List clusters and node counts

`k3d cluster delete <name>`
Delete a cluster

`k3d cluster delete --all`
Delete every cluster

`k3d cluster stop <name>`
Stop the cluster containers

`k3d cluster start <name>`
Start a stopped cluster

`k3d cluster create <name> -s <n> -a <n>`
Set server and agent count
Several servers switch k3s to embedded etcd HA.

`k3d cluster create <name> -i <image>`
Pick the k3s version via image
Example image: rancher/k3s:<tag>.

`k3d cluster list -o json`
Machine-readable list

`k3d cluster create --no-lb`
Skip the load balancer

`k3d cluster create --timeout <dur>`
Roll back if too slow

PORTS AND NETWORKING

`k3d cluster create -p "8080:80@loadbalancer"`
Map host port to ingress

PORTS AND NETWORKING (cont.)

`k3d cluster create -p "8082:30080@agent:0"`
Map a NodePort via an agent

`k3d cluster create --api-port 6550`
Fix the API server host port

`k3d node edit k3d-<name>-serverlb --port-add 8080:80`
Add a port to a live cluster
Experimental; k3d cluster edit --port-add does the same.

`k3d cluster create --network <net>`
Join an existing Docker network

KUBECONFIG

`k3d kubeconfig merge <name> --kubeconfig-switch-context`
Merge and switch context

`k3d kubeconfig get <name>`
Print a cluster's kubeconfig

`k3d kubeconfig merge <name> --kubeconfig-merge-default`
Merge into ~/.kube/config

`k3d kubeconfig merge <name> -o <file>`
Write to a separate file

`k3d cluster create --kubeconfig-update-default=false`
Leave default kubeconfig alone

`kubectl config use-context k3d-<name>`
Switch context by hand

> create already updates your default kubeconfig and switches to context k3d-<name>. Use merge for clusters made elsewhere.

NODES

`k3d node list`
List all nodes

`k3d node create <name> -c <cluster>`
Add an agent to a cluster

`k3d node create <name> --role server -c <cluster>`
Add a server node

`k3d node stop <node>`
Stop one node

`k3d node start <node>`
Start one node

`k3d node delete <node>`
Remove a node

IMAGES AND REGISTRIES

`k3d image import <image> -c <name>`
Copy a local image into nodes
Default cluster name is k3s-default.

`k3d image import <archive.tar> -c <name>`
Import from a tarball

`k3d image import <image> -m direct`
Skip the tools node

`k3d registry create <name> --port <port>`
Create a local registry
The container is named k3d-<name>.

`k3d registry list`
List registries

`k3d registry delete <name>`
Delete a registry

`k3d cluster create --registry-create <name>`
Make a registry with the cluster

`k3d cluster create --registry-use k3d-<name>:<port>`
Use an existing registry

`k3d registry create <name> --proxy-remote-url <url>`
Pull-through cache

MOUNTS, ENV AND K3S ARGS

`k3d cluster create -v <host>:<node>@<filter>`
Mount a host path

`k3d cluster create -e "KEY=val@server:0"`
Set a node env var

`k3d cluster create --k3s-arg "<arg>@server:*"`
Pass a flag to k3s

`k3d cluster create --k3s-node-label "k=v@agent:*"`
Label k3s nodes

`k3d cluster create --runtime-ulimit "nofile=1024:1024"`
Set a ulimit

CONFIG FILE

`k3d cluster create --config <file>`
Create from a config file

`k3d cluster create <name> -c <file>`
Flags override the file

CONFIG FILE (cont.)

`k3d cluster delete -c <file>`
Delete the file's cluster

`k3d config init`
Print a default config
Check k3d config init --help for output flags.

Common config keys

Key	Sets
`servers / agents`	Node counts
`image`	k3s image
`ports[].port + nodeFilters`	Port maps
`volumes[].volume`	Mounts
`registries.create / use`	Registry setup
`options.k3s.extraArgs`	k3s flags
`options.k3d.wait`	Wait for ready

> Only apiVersion and kind are required in the file. $VAR and ${VAR} are expanded before parsing. The format is still alpha (v1alpha5).

MAINTENANCE

`k3d version`
Show k3d and k3s versions

`k3d completion <shell>`
Generate shell completion

`k3d <cmd> --verbose`
Debug logging

`docker ps -f name=k3d-`
See the node containers

RECIPES

Dev cluster with ingress and registry

```
k3d registry create dev --port 5000
k3d cluster create dev -a 2 \
  -p "8080:80@loadbalancer" \
  --registry-use k3d-dev:5000
# push to localhost:5000, pull as k3d-dev:5000
```

Local image without a registry

```
docker build -t app:dev .
k3d image import app:dev -c dev
kubectl create deployment app --image=app:dev
kubectl set image deploy/app app=app:dev
```

Throw away and rebuild

```
k3d cluster delete dev
k3d cluster create --config dev.yaml
kubectl get nodes
```