Commands

The following commands can be used for practice of code shared.

Note: errors as some are expected and are shown.

Pods

1. `kubectl get pods`
2. `cd src`
3. `kubectl create -f 1.1-basic_pod.yaml`
4. `kubectl get pods`
5. `kubectl describe pod mypod | more`
6. `kubectl delete pod mypod`
7. `kubectl create -f 1.2-port_pod.yaml`
8. `kubectl describe pod mypod | more`
9. `curl 192.168.###.###:80` (Replace `###.###` with the IP address octets from the `describe` output)
   # This command will time out (see the next lesson to understand why)
10. `kubectl describe pod mypod | more`
11. `kubectl delete pod mypod`
12. `kubectl create -f 1.4-resources_pod.yaml`
13. `kubectl describe pod mypod | more`

Note: `kubectl` will accept the singular or plural form of resource kinds. For example `kubectl get pods` and `kubectl get pod` are equivalent.

Services

1. `kubectl create -f 2.1-web_service.yaml`
2. `kubectl get services`
3. `kubectl describe service webserver`
4. `kubectl describe nodes | grep -i addresses -A 1`
5. `curl 10.0.0.100:3####` (replace `####` with the actual port digits)

Multi-Container Pods

1. `kubectl create -f 3.1-namespace.yaml`
2. `kubectl create -f 3.2-multi_container.yaml -n microservice`
3. `kubectl get -n microservice pod app`
4. `kubectl describe -n microservice pod app`
5. `kubectl logs -n microservice app counter --tail 10`
6. `kubectl logs -n microservice app poller -f`

Service Discovery

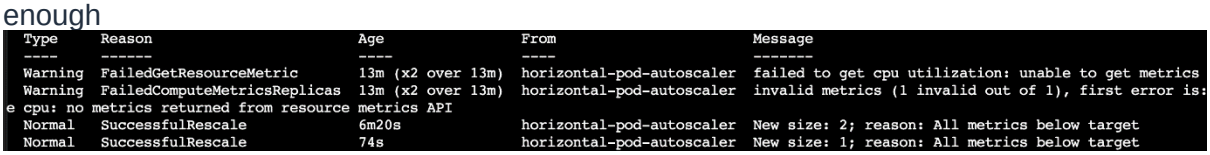
1. `kubectl create -f 4.1-namespace.yaml`
2. `kubectl create -f 4.2-data_tier.yaml -n service-discovery`
3. `kubectl get pod -n service-discovery`
4. `kubectl describe service -n service-discovery data-tier`
5. `kubectl create -f 4.3-app_tier.yaml -n service-discovery`
6. `kubectl create -f 4.4-support_tier.yaml -n service-discovery`
7. `kubectl get pods -n service-discovery`
8. `kubectl logs -n service-discovery support-tier poller -f`

Deployments

1. `kubectl create -f 5.1-namespace.yaml`
2. `kubectl create -n deployments -f 5.2-data_tier.yaml -f 5.3-app_tier.yaml -f 5.4-support_tier.yaml`
3. `kubectl get -n deployments deployments`
4. `kubectl -n deployments get pods`
5. `kubectl scale -n deployments deployment support-tier --replicas=5`
6. `kubectl -n deployments get pods`
7. `kubectl delete -n deployments pods support-tier-... support-tier-... --wait=false` (You can use tab completion to display the possible values to replace `...` with)
8. `watch -n 1 kubectl -n deployments get pods`
9. `kubectl scale -n deployments deployment app-tier --replicas=5`
10. `kubectl -n deployments get pods`
11. `kubectl describe -n deployments service app-tier`

Autoscaling

1. `# kubectl create -f metrics-server/ # metrics-server is pre-installed on the playground so you don't need to run this command`
2. `watch kubectl top pods -n deployments`
3. `kubectl create -f 6.1-app_tier_cpu_request.yaml -n deployments`
4. `kubectl apply -f 6.1-app_tier_cpu_request.yaml -n deployments`
5. `kubectl get -n deployments deployments app-tier`
6. `kubectl create -f 6.2-autoscale.yaml -n deployments`
7. `watch -n 1 kubectl get -n deployments deployments app-tier #` This can take up to 13 minutes to take effect. You may want to skip waiting. The image below shows the output of `kubectl describe -n deployments hpa` after waiting long enough



```
  Type     Reason                        Age                From                       Message
  ----     ------                        ----               ----                       -------
  Warning  FailedGetResourceMetric       13m (x2 over 13m)  horizontal-pod-autoscaler  failed to get cpu utilization: unable to get metrics
  Warning  FailedComputeMetricsReplicas  13m (x2 over 13m)  horizontal-pod-autoscaler  invalid metrics (1 invalid out of 1), first error is:
e cpu: no metrics returned from resource metrics API
  Normal   SuccessfulRescale             6m20s              horizontal-pod-autoscaler  New size: 2; reason: All metrics below target
  Normal   SuccessfulRescale             74s                horizontal-pod-autoscaler  New size: 1; reason: All metrics below target
```

8. `kubectl api-resources`
9. `kubectl describe -n deployments hpa`
10. `kubectl get -n deployments hpa`
11. `kubectl edit -n deployments hpa`
12. `watch -n 1 kubectl get -n deployments deployments app-tier`

Rolling Updates and Rollbacks

1. `kubectl delete -n deployments hpa app-tier`
2. `kubectl edit -n deployments deployment app-tier`
3. `watch -n 1 kubectl get -n deployments deployments app-tier`
4. `kubectl edit -n deployments deployment app-tier`
5. `kubectl rollout -n deployments status deployment app-tier`
6. `tmux`
7. `kubectl edit -n deployments deployments app-tier` (left terminal)
8. `kubectl rollout -n deployments status deployment app-tier` (right terminal)
9. `kubectl rollout -n deployments pause deployment app-tier` (left terminal)
10. `kubectl get deployments -n deployments app-tier` (left terminal)
11. `kubectl rollout -n deployments resume deployment app-tier` (left terminal)

12. `kubectl rollout -n deployments undo deployment app-tier`
13. `kubectl scale -n deployments deployment app-tier --replicas=1`

Probes

1. `kubectl create -f 7.1-namespace.yaml`
2. `kubectl create -f 7.2-data_tier.yaml -n probes`
3. `kubectl get deployments -n probes -w`
4. `kubectl create -f 7.3-app_tier.yaml -n probes`
5. `kubectl get -n probes deployments app-tier -w`
6. `kubectl get -n probes pods`
7. `kubectl logs -n probes app-tier-... | cut -d' ' -f5,8-11` (You can use tab completion to display the possible values to replace `...` with)

Init Containers

1. `kubectl apply -f 8.1-app_tier.yaml -n probes`
2. `kubectl describe pod -n probes app-tier...` (You can use tab completion to display the possible values to replace `...` with)
3. `kubectl logs -n probes app-tier-... await-redis` (You can use tab completion to display the possible values to replace `...` with)

Volumes

1. `kubectl -n deployments logs support-tier-... poller --tail 1` (You can use tab completion to display the possible values to replace `...` with)
2. `kubectl exec -n deployments data-tier-... -it -- /bin/bash` (You can use tab completion to display the possible values to replace `...` with)
3. `kill 1`
4. `kubectl -n deployments get pods`
5. `kubectl -n deployments logs support-tier-... poller --tail 1` (You can use tab completion to display the possible values to replace `...` with)
   Note: It takes around a couple of minutes for the effects of the restart to settle. The poller will stop updating and report the last value before restarting until it can reach

the new data tier value. Try again after a minute if you don't see a relatively small value)

6. `kubectl create -f 9.1-namespace.yaml`
7. `aws ec2 describe-volumes --region=us-west-2 --filters="Name=tag:Type,Values=PV" --query="Volumes[0].VolumeId" --output=text`
8. `vol_id=$(aws ec2 describe-volumes --region=us-west-2 --filters="Name=tag:Type,Values=PV" --query="Volumes[0].VolumeId" --output=text)`
9. `sed -i "s/INSERT_VOLUME_ID/$vol_id/" 9.2-pv_data_tier.yaml`
10. `kubectl create -n volumes -f 9.2-pv_data_tier.yaml -f 9.3-app_tier.yaml -f 9.4-support_tier.yaml`
11. `kubectl describe -n volumes pvc`
12. `kubectl describe -n volumes pod data-tier-...` (You can use tab completion to display the possible values to replace `...` with)
13. `kubectl logs -n volumes support-tier-... poller --tail 1` (You can use tab completion to display the possible values to replace `...` with)
    Note: It takes a few minutes for all of the readiness checks to pass and for the counter to start incrementing. If you don't see a counter value output then try again after a minute or two.
14. `kubectl delete -n volumes deployments data-tier`
15. `kubectl get -n volumes pods`
16. `kubectl create -n volumes -f 9.2-pv_data_tier.yaml`
17. `kubectl logs -n volumes support-tier-... poller --tail 1` (You can use tab completion to display the possible values to replace `...` with)

ConfigMaps and Secrets

1. `kubectl create -f 10.1-namespace.yaml`
2. `kubectl create -n config -f 10.2-data_tier_config.yaml -f 10.3-data_tier.yaml`
3. `kubectl exec -n config data-tier-... -it -- /bin/bash` (You can use tab completion to display the possible values to replace `...` with)
4. `cat /etc/redis/redis.conf`
5. `redis-cli CONFIG GET tcp-keepalive`
6. `exit`
7. `kubectl edit -n config configmaps redis-config`

8. `kubectl exec -n config data-tier-... -- redis-cli CONFIG GET tcp-keepalive` (You can use tab completion to display the possible values to replace `...` with)
9. `kubectl rollout -n config restart deployment data-tier`
10. `kubectl exec -n config data-tier-... -- redis-cli CONFIG GET tcp-keepalive` (You can use tab completion to display the possible values to replace `...` with)
11. `kubectl create -f 10.4-app_tier_secret.yaml -n config`
12. `kubectl describe -n config secret app-tier-secret`
13. `kubectl edit -n config secrets app-tier-secret`
14. `kubectl create -f 10.5-app_tier.yaml -n config`
15. `kubectl exec -n config app-tier-... -- env` (You can use tab completion to display the possible values to replace `...` with)