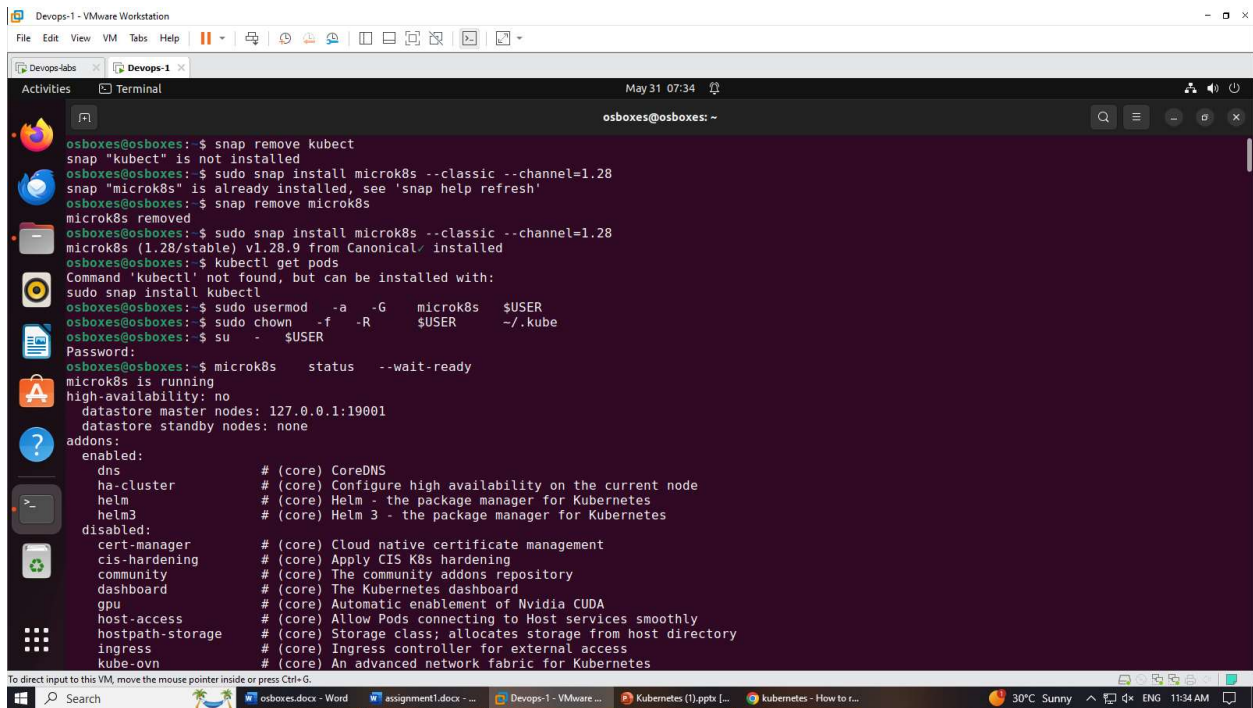


Kubernetes

- `microk8s status --wait-ready`
- `microk8s kubectl get nodes`
- `microk8s kubectl get services`
- alias `kubectl='microk8s kubectl'`
- `kubectl get nodes`
- `kubectl run my-nginx --image nginx`
- `kubectl get pods`



```
osboxes@osboxes:~$ snap remove kubectl
snap "kubectl" is not installed
osboxes@osboxes:~$ sudo snap install microk8s --classic --channel=1.28
snap "microk8s" is already installed, see 'snap help refresh'
osboxes@osboxes:~$ sudo snap remove microk8s
microk8s removed
osboxes@osboxes:~$ sudo snap install microk8s --classic --channel=1.28
microk8s (1.28/stable) v1.28.9 from Canonical/ installed
osboxes@osboxes:~$ kubectl get pods
Command 'kubectl' not found, but can be installed with:
sudo snap install kubectl
osboxes@osboxes:~$ sudo usermod -a -G microk8s $USER
osboxes@osboxes:~$ sudo chown -f -R $USER ~/.kube
osboxes@osboxes:~$ su - $USER
Password:
osboxes@osboxes:~$ microk8s status --wait-ready
microk8s is running
high-availability: no
datastore master nodes: 127.0.0.1:19001
datastore standby nodes: none
addons:
enabled:
  dns                # (core) CoreDNS
  ha-cluster          # (core) Configure high availability on the current node
  helm                # (core) Helm - the package manager for Kubernetes
  helm3               # (core) Helm 3 - the package manager for Kubernetes
disabled:
  cert-manager        # (core) Cloud native certificate management
  cis-hardening        # (core) Apply CIS K8s hardening
  community            # (core) The community addons repository
  dashboard            # (core) The Kubernetes dashboard
  gpu                  # (core) Automatic enablement of Nvidia CUDA
  host-access          # (core) Allow Pods connecting to Host services smoothly
  hostpath-storage     # (core) Storage class; allocates storage from host directory
  ingress              # (core) Ingress controller for external access
  kube-ovn             # (core) An advanced network fabric for Kubernetes
```

```
Devops-1 - VMware Workstation
File Edit View VM Tabs Help
Devops-labs Devops-1
Activities Terminal May 31 07:34
osboxes@osboxes: ~

rook-ceph # (core) Distributed Ceph storage using Rook
storage # (core) Alias to hostpath-storage add-on, deprecated
osboxes@osboxes:~$ microk8s kubectl get nodes
NAME STATUS ROLES AGE VERSION
osboxes Ready <none> 98s v1.28.9
osboxes@osboxes:~$ microk8s kubectl get services
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
kubernetes ClusterIP 10.152.183.1 <none> 443/TCP 110s
osboxes@osboxes:~$ alias kubectl='microk8s kubectl'
osboxes@osboxes:~$ kubectl get nodes
NAME STATUS ROLES AGE VERSION
osboxes Ready <none> 2m7s v1.28.9
osboxes@osboxes:~$ kubectl run my-nginx --image nginx
pod/my-nginx created
osboxes@osboxes:~$ kubectl get pods
osboxes@osboxes:~$ kubectl describe pod my-nginx
Name: my-nginx
Namespace: default
Priority: 0
Service Account: default
Node: osboxes/192.168.25.172
Start Time: Fri, 31 May 2024 07:25:27 -0400
Labels: run=my-nginx
Annotations: cn1.projectcalico.org/containerID: ee313ca789f8e60f4e5b7cfe4c5264f0c74ad3e5b5ab27020361adcb13a6e6f4
cn1.projectcalico.org/podIP: 10.1.90.195/32
cn1.projectcalico.org/podIPs: 10.1.90.195/32
Status: Pending
IP: <none>
IPs: <none>
Containers:
  my-nginx:
    Container ID:
    Image: nginx
    Image ID:
    Port: <none>
    Host Port: <none>
```

```
Devops-1 - VMware Workstation
File Edit View VM Tabs Help
Devops-labs Devops-1
Activities Terminal May 31 07:34
osboxes@osboxes: ~

Normal Pulling 18s kubelet Pulling image "nginx"
osboxes@osboxes:~$ kubectl create deployment nginx-deployment --image=nginx
deployment.apps/nginx-deployment created
osboxes@osboxes:~$ kubectl get pods
NAME READY STATUS RESTARTS AGE
my-nginx 1/1 Running 0 52s
nginx-deployment-6d6565499c-vfvrh 0/1 ContainerCreating 0 8s
osboxes@osboxes:~$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 1/1 1 1 17s
osboxes@osboxes:~$ kubectl describe pods
Name: my-nginx
Namespace: default
Priority: 0
Service Account: default
Node: osboxes/192.168.25.172
Start Time: Fri, 31 May 2024 07:25:27 -0400
Labels: run=my-nginx
Annotations: cn1.projectcalico.org/containerID: ee313ca789f8e60f4e5b7cfe4c5264f0c74ad3e5b5ab27020361adcb13a6e6f4
cn1.projectcalico.org/podIP: 10.1.90.195/32
cn1.projectcalico.org/podIPs: 10.1.90.195/32
Status: Running
IP: 10.1.90.195
IPs: 10.1.90.195
Containers:
  my-nginx:
    Container ID: containerd://bd4e1169b65c21c9841b362a5beb0668f504a1e452ba28da02863646b03b79ac
    Image: nginx
    Image ID: docker.io/library/nginx@sha256:0f04e4f646a3f14bf31d8bc8d885b6c951fdcf42589d06845f64d18aec6a3c4d
    Port: <none>
    Host Port: <none>
    State: Running
      Started: Fri, 31 May 2024 07:26:08 -0400
    Ready: True
    Restart Count: 0
```

```
DevOps-1 - VMware Workstation
File Edit View VM Tabs Help
DevOps-labs DevOps-1
Activities Terminal May 31 07:34
osboxes@osboxes: ~
Normal Started 8s kubelet Started container nginx
osboxes@osboxes:~$ or kubectl describe deployment nginx-deployment
or: command not found
osboxes@osboxes:~$ kubectl describe deployment nginx-deployment
Name: nginx-deployment
Namespace: default
CreationTimestamp: Fri, 31 May 2024 07:26:11 -0400
Labels: app=nginx-deployment
Annotations: deployment.kubernetes.io/revision: 1
Selector: app=nginx-deployment
Replicas: 1 desired | 1 updated | 1 total | 1 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels: app=nginx-deployment
  Containers:
    nginx:
      Image: nginx
      Port: <none>
      Host Port: <none>
      Environment: <none>
      Mounts: <none>
      Volumes: <none>
  Conditions:
    Type Status Reason
    ----
    Available True MinimumReplicasAvailable
    Progressing True NewReplicaSetAvailable
  OldReplicaSets: <none>
  NewReplicaSet: nginx-deployment-6d6565499c (1/1 replicas created)
Events:
  Type Reason Age From Message
  ----
  Normal ScalingReplicaSet 44s deployment-controller Scaled up replica set nginx-deployment-6d6565499c to 1
osboxes@osboxes:~$ kubectl describe deployment nginx-deployment
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.
```

```
DevOps-1 - VMware Workstation
File Edit View VM Tabs Help
DevOps-labs DevOps-1
Activities Terminal May 31 07:35
osboxes@osboxes: ~
Type Reason Age From Message
Normal ScalingReplicaSet 44s deployment-controller Scaled up replica set nginx-deployment-6d6565499c to 1
osboxes@osboxes:~$ kubectl describe deployment nginx-deployment
Name: nginx-deployment
Namespace: default
CreationTimestamp: Fri, 31 May 2024 07:26:11 -0400
Labels: app=nginx-deployment
Annotations: deployment.kubernetes.io/revision: 1
Selector: app=nginx-deployment
Replicas: 1 desired | 1 updated | 1 total | 1 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels: app=nginx-deployment
  Containers:
    nginx:
      Image: nginx
      Port: <none>
      Host Port: <none>
      Environment: <none>
      Mounts: <none>
      Volumes: <none>
  Conditions:
    Type Status Reason
    ----
    Available True MinimumReplicasAvailable
    Progressing True NewReplicaSetAvailable
  OldReplicaSets: <none>
  NewReplicaSet: nginx-deployment-6d6565499c (1/1 replicas created)
Events:
  Type Reason Age From Message
  ----
  Normal ScalingReplicaSet 62s deployment-controller Scaled up replica set nginx-deployment-6d6565499c to 1
osboxes@osboxes:~$ kubectl get pods
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.
```

```
DevOps-1 - VMware Workstation
File Edit View VM Tabs Help
DevOps-labs DevOps-1
Activities Terminal May 31 07:35
osboxes@osboxes: ~

NAME READY STATUS RESTARTS AGE
my-nginx 1/1 Running 0 115s
nginx-deployment-6d6565499c-vfvnh 1/1 Running 0 71s
osboxes@osboxes:~$ kubectl scale deployment nginx-deployment --replicas=5
deployment.apps/nginx-deployment scaled
osboxes@osboxes:~$ kubectl get pods -o wide
NAME READY STATUS RESTARTS AGE IP NODE NOMINATED NODE READINESS GATES
nginx-deployment-6d6565499c-vfvnh 1/1 Running 0 95s 10.1.90.196 osboxes <none> <none>
my-nginx 1/1 Running 0 2m19s 10.1.90.195 osboxes <none> <none>
nginx-deployment-6d6565499c-wgzgg 0/1 ContainerCreating 0 10s <none> osboxes <none> <none>
nginx-deployment-6d6565499c-f2mrn 0/1 ContainerCreating 0 10s <none> osboxes <none> <none>
nginx-deployment-6d6565499c-dfm6f 0/1 ContainerCreating 0 10s <none> osboxes <none> <none>
nginx-deployment-6d6565499c-59vc2 0/1 ContainerCreating 0 10s <none> osboxes <none> <none>
osboxes@osboxes:~$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 5/5 5 5 104s
osboxes@osboxes:~$ kubectl describe deployment nginx-deployment
Name: nginx-deployment
Namespace: default
CreationTimestamp: Fri, 31 May 2024 07:26:11 -0400
Labels: app=nginx-deployment
Annotations: deployment.kubernetes.io/revision: 1
Selector: app=nginx-deployment
Replicas: 5 desired | 5 updated | 5 total | 5 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
Labels: app=nginx-deployment
Containers:
nginx:
Image: nginx
Port: <none>
Host Port: <none>
Environment: <none>
Mounts: <none>
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.
```

```
DevOps-1 - VMware Workstation
File Edit View VM Tabs Help
DevOps-labs DevOps-1
Activities Terminal May 31 07:35
osboxes@osboxes: ~

Events:
Type Reason Age From Message
----
Normal ScalingReplicaSet 2m5s deployment-controller Scaled up replica set nginx-deployment-6d6565499c to 1
Normal ScalingReplicaSet 40s deployment-controller Scaled up replica set nginx-deployment-6d6565499c to 5 from 1
osboxes@osboxes:~$ kubectl scale deployment nginx-deployment --replicas=3
deployment.apps/nginx-deployment scaled
osboxes@osboxes:~$ kubectl get pods
NAME READY STATUS RESTARTS AGE
nginx-deployment-6d6565499c-vfvnh 1/1 Running 0 2m23s
my-nginx 1/1 Running 0 3m7s
nginx-deployment-6d6565499c-dfm6f 1/1 Running 0 58s
nginx-deployment-6d6565499c-f2mrn 1/1 Running 0 58s
osboxes@osboxes:~$ kubectl get pods -o wide
NAME READY STATUS RESTARTS AGE IP NODE NOMINATED NODE READINESS GATES
nginx-deployment-6d6565499c-vfvnh 1/1 Running 0 2m31s 10.1.90.196 osboxes <none> <none>
my-nginx 1/1 Running 0 3m15s 10.1.90.195 osboxes <none> <none>
nginx-deployment-6d6565499c-dfm6f 1/1 Running 0 66s 10.1.90.199 osboxes <none> <none>
nginx-deployment-6d6565499c-f2mrn 1/1 Running 0 66s 10.1.90.198 osboxes <none> <none>
osboxes@osboxes:~$ kubectl get deployments
NAME READY UP-TO-DATE AVAILABLE AGE
nginx-deployment 3/3 3 3 2m39s
osboxes@osboxes:~$ kubectl describe deployment nginx-deployment
Name: nginx-deployment
Namespace: default
CreationTimestamp: Fri, 31 May 2024 07:26:11 -0400
Labels: app=nginx-deployment
Annotations: deployment.kubernetes.io/revision: 1
Selector: app=nginx-deployment
Replicas: 3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
Labels: app=nginx-deployment
Containers:
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.
```



```
Devops-1 - VMware Workstation
File Edit View VM Tabs Help
Devops-labs Devops-1
Activities Terminal May 31 07:35
osboxes@osboxes: ~
nginx-deployment-6d6565499c-dfm6f 1/1 Running 0 93s 10.1.90.199 osboxes <none> <none>
nginx-deployment-6d6565499c-f2mrn 1/1 Running 0 93s 10.1.90.198 osboxes <none> <none>
osboxes@osboxes:~$ kubectl expose deployment nginx-deployment --port=8080 --target-port=80
service/nginx-deployment exposed
osboxes@osboxes:~$ kubectl get services
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
kubernetes ClusterIP 10.152.183.1 <none> 443/TCP 7m27s
nginx-deployment ClusterIP 10.152.183.23 <none> 8080/TCP 7s
osboxes@osboxes:~$ kubectl port-forward service/nginx-deployment 7777:8080
Command 'curl' not found, but can be installed with:
sudo snap install curl # version 8.1.2, or
sudo apt install curl # version 7.81.0-1ubuntu1.14
See 'snap info curl' for additional versions.
osboxes@osboxes:~$ sudo snap install curl
Command 'udo' not found, but can be installed with:
sudo apt install udo
osboxes@osboxes:~$ sudo snap install curl
curl 8.1.2 from Wouter van Bommel (woutervb) installed
osboxes@osboxes:~$ curl localhost:7777
curl: (7) Failed to connect to localhost port 7777 after 0 ms: Couldn't connect to server
osboxes@osboxes:~$ kubectl describe service nginx-deployment
Name: nginx-deployment
Namespace: default
Labels: app=nginx-deployment
Annotations: <none>
Selector: app=nginx-deployment
Type: ClusterIP
IP Family Policy: SingleStack
IP Families: IPv4
IP: 10.152.183.23
IPs: 10.152.183.23
Port: <unset> 8080/TCP
TargetPort: 80/TCP
Endpoints: 10.1.90.196:80,10.1.90.198:80,10.1.90.199:80
Session Affinity: None
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.
```

```
Devops-1 - VMware Workstation
File Edit View VM Tabs Help
Devops-labs Devops-1
Activities Terminal May 31 07:35
osboxes@osboxes: ~
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
osboxes@osboxes:~$ curl 10.1.90.195
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
osboxes@osboxes:~$
```