Kubernetes

Day4
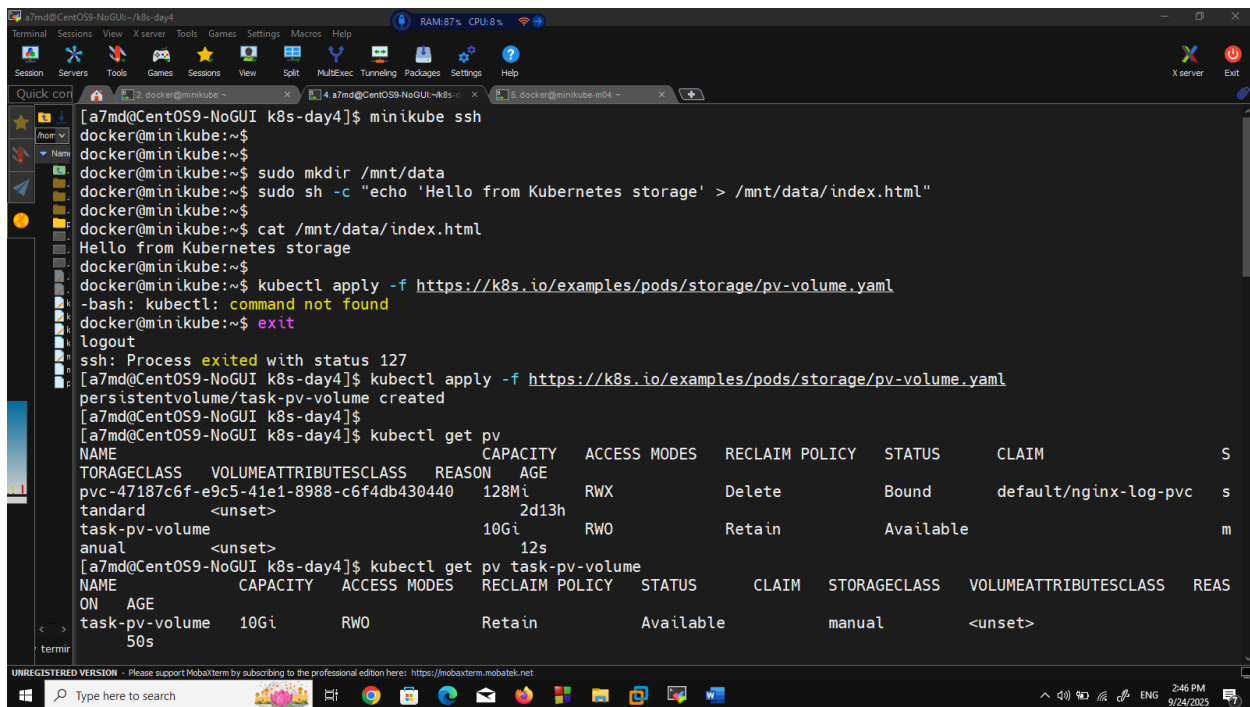
Lab2

Persistent Volumes

<mark>Steps</mark>:

https://kubernetes.io/docs/tasks/configure-pod-container/configure-persistent-volume-storage/

It's also required to work on a cluster with 1 node only !!

```
[a7md@CentOS9-NoGUI task2]$ wget https://k8s.io/examples/pods/storage/pv-volume.yaml
--2025-09-24 14:50:38--  https://k8s.io/examples/pods/storage/pv-volume.yaml
Resolving k8s.io (k8s.io)... 34.107.204.206, 2600:1901:0:26f3::
Connecting to k8s.io (k8s.io)|34.107.204.206|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://kubernetes.io/examples/pods/storage/pv-volume.yaml [following]
--2025-09-24 14:50:39--  https://kubernetes.io/examples/pods/storage/pv-volume.yaml
Resolving kubernetes.io (kubernetes.io)... 3.33.186.135, 15.197.167.90
Connecting to kubernetes.io (kubernetes.io)|3.33.186.135|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 229 [application/x-yaml]
Saving to: 'pv-volume.yaml'

pv-volume.yaml          100%[===================================================>]     229  --.-KB/s    in 0s

2025-09-24 14:50:39 (6.44 MB/s) - 'pv-volume.yaml' saved [229/229]

[a7md@CentOS9-NoGUI task2]$ vim pv-volume.yaml
[a7md@CentOS9-NoGUI task2]$
```

```yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: task-pv-volume
  labels:
    type: local
spec:
  storageClassName: manual
  capacity:
    storage: 10Gi
  accessModes:
    - ReadWriteOnce
  hostPath:
    path: "/mnt/data"
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"pv-volume.yaml" 14L, 229B                                                    1,1            All
```

```
[a7md@CentOS9-NoGUI task2]$ wget https://k8s.io/examples/pods/storage/pv-claim.yaml
--2025-09-24 14:53:17--  https://k8s.io/examples/pods/storage/pv-claim.yaml
Resolving k8s.io (k8s.io)... 34.107.204.206, 2600:1901:0:26f3::
Connecting to k8s.io (k8s.io)|34.107.204.206|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://kubernetes.io/examples/pods/storage/pv-claim.yaml [following]
--2025-09-24 14:53:18--  https://kubernetes.io/examples/pods/storage/pv-claim.yaml
Resolving kubernetes.io (kubernetes.io)... 15.197.167.90, 3.33.186.135
Connecting to kubernetes.io (kubernetes.io)|15.197.167.90|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 189 [application/x-yaml]
Saving to: 'pv-claim.yaml'

pv-claim.yaml                 100%[===================================================>]     189  --.-KB/s    in 0s

2025-09-24 14:53:18 (908 KB/s) - 'pv-claim.yaml' saved [189/189]

[a7md@CentOS9-NoGUI task2]$ vim pv-claim.yaml
[a7md@CentOS9-NoGUI task2]$
```

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: task-pv-claim
spec:
  storageClassName: manual
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 3Gi
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"pv-claim.yaml" 11L, 189B                                                    1,1              All
```

```
[a7md@CentOS9-NoGUI task2]$ wget https://k8s.io/examples/pods/storage/pv-pod.yaml
--2025-09-24 15:02:35--  https://k8s.io/examples/pods/storage/pv-pod.yaml
Resolving k8s.io (k8s.io)... 34.107.204.206, 2600:1901:0:26f3::
Connecting to k8s.io (k8s.io)|34.107.204.206|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://kubernetes.io/examples/pods/storage/pv-pod.yaml [following]
--2025-09-24 15:02:36--  https://kubernetes.io/examples/pods/storage/pv-pod.yaml
Resolving kubernetes.io (kubernetes.io)... 15.197.167.90, 3.33.186.135
Connecting to kubernetes.io (kubernetes.io)|15.197.167.90|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 395 [application/x-yaml]
Saving to: 'pv-pod.yaml'

pv-pod.yaml              100%[===================================================>]     395  --.-KB/s    in 0s

2025-09-24 15:02:36 (8.14 MB/s) - 'pv-pod.yaml' saved [395/395]

[a7md@CentOS9-NoGUI task2]$ vim pv-pod.yaml
[a7md@CentOS9-NoGUI task2]$
```

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: task-pv-pod
spec:
  volumes:
    - name: task-pv-storage
      persistentVolumeClaim:
        claimName: task-pv-claim
  containers:
    - name: task-pv-container
      image: nginx
      ports:
        - containerPort: 80
          name: "http-server"
      volumeMounts:
        - mountPath: "/usr/share/nginx/html"
          name: task-pv-storage
```

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"pv-pod.yaml" 20L, 395B                                                          1,1            All
```

```
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl apply -f https://k8s.io/examples/pods/storage/pv-claim.yaml
persistentvolumeclaim/task-pv-claim created
[a7md@CentOS9-NoGUI k8s-day4]$
[a7md@CentOS9-NoGUI k8s-day4]$
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl get pvc task-pv-claim
NAME            STATUS   VOLUME          CAPACITY   ACCESS MODES   STORAGECLASS   VOLUMEATTRIBUTESCLASS   AGE
task-pv-claim   Bound    task-pv-volume  10Gi       RWO            manual         <unset>                 58s
[a7md@CentOS9-NoGUI k8s-day4]$
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl get pv task-pv-volume
NAME            CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM                  STORAGECLASS   VOLUMEATTRIBUTE
SCLASS   REASON   AGE
task-pv-volume  10Gi       RWO            Retain           Bound    default/task-pv-claim  manual         <unset>
                 2m45s
[a7md@CentOS9-NoGUI k8s-day4]$
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl apply -f https://k8s.io/examples/pods/storage/pv-pod.yaml
pod/task-pv-pod created
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl get pod
NAME                      READY   STATUS      RESTARTS   AGE
log-collector-29311896-rkrbf   0/1     Completed   0          6m50s
log-collector-29311899-grgj2   0/1     Completed   0          3m50s
log-collector-29311902-cl9gj   0/1     Completed   0          50s
task-pv-pod               1/1     Running     0          7s
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl get pod task-pv-pod
NAME          READY   STATUS    RESTARTS   AGE
task-pv-pod   1/1     Running   0          24s
[a7md@CentOS9-NoGUI k8s-day4]$ kubectl exec -it task-pv-pod -- /bin/bash
root@task-pv-pod:/#
```

```
root@task-pv-pod:/#
root@task-pv-pod:/#
root@task-pv-pod:/# apt update
Get:1 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:2 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:3 http://deb.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Get:4 http://deb.debian.org/debian bookworm/main amd64 Packages [8791 kB]
Get:5 http://deb.debian.org/debian bookworm-updates/main amd64 Packages [6924 B]
Get:6 http://deb.debian.org/debian-security bookworm-security/main amd64 Packages [279 kB]
Fetched 9332 kB in 14s (644 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
root@task-pv-pod:/#
root@task-pv-pod:/# apt install curl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
curl is already the newest version (7.88.1-10+deb12u14).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@task-pv-pod:/#
root@task-pv-pod:/#
root@task-pv-pod:/# curl http://localhost/
Hello from Kubernetes storage
root@task-pv-pod:/#
root@task-pv-pod:/#
root@task-pv-pod:/#
root@task-pv-pod:/#
```