



Exercise 8.2: Creating a Persistent NFS Volume (PV)

We will first deploy an NFS server. Once tested we will create a persistent NFS volume for containers to claim.

1. Install the software on your cp node.

```
student@cp:~$ sudo apt-get update && sudo \
    apt-get install -y nfs-kernel-server
```

```
1 <output_omitted>
```

2. Make and populate a directory to be shared. Also give it similar permissions to /tmp/

```
student@cp:~$ sudo mkdir /opt/sfw

student@cp:~$ sudo chmod 1777 /opt/sfw/

student@cp:~$ sudo bash -c 'echo software > /opt/sfw/hello.txt'
```

3. Edit the NFS server file to share out the newly created directory. In this case we will share the directory with all. You can always **snoop** to see the inbound request in a later step and update the file to be more narrow.

```
student@cp:~$ sudo vim /etc/exports
```

```
1 /opt/sfw/ *(rw, sync, no_root_squash, subtree_check)
```

4. Cause /etc/exports to be re-read:

```
student@cp:~$ sudo exportfs -ra
```

5. Test by mounting the resource from your **second** node.

```
student@worker:~$ sudo apt-get -y install nfs-common
```

```
1 <output_omitted>
```

```
student@worker:~$ showmount -e k8scp
```

```
1 Export list for k8scp:
2 /opt/sfw *
```

```
student@worker:~$ sudo mount k8scp:/opt/sfw /mnt
```

```
student@worker:~$ ls -l /mnt
```

```
1 total 4
2 -rw-r--r-- 1 root root 9 Sep 28 17:55 hello.txt
```

6. Return to the cp node and create a YAML file for the object with kind, PersistentVolume. Use the hostname of the cp server and the directory you created in the previous step. Only syntax is checked, an incorrect name or directory will not generate an error, but a Pod using the resource will not start. Note that the accessModes do not currently affect actual access and are typically used as labels instead.

```
student@cp:~$ vim PVol.yaml
```



PVol.yaml

```

1  apiVersion: v1
2  kind: PersistentVolume
3  metadata:
4    name: pvvol-1
5  spec:
6    capacity:
7      storage: 1Gi
8    accessModes:
9      - ReadWriteMany
10   persistentVolumeReclaimPolicy: Retain
11   nfs:
12     path: /opt/sfw
13     server: k8scp #<-- Edit to match cp node
14   readOnly: false

```

7. Create the persistent volume, then verify its creation.

```
student@cp:~$ kubectl create -f PVol.yaml
```

```
1 persistentvolume/pvvol-1 created
```

```
student@cp:~$ kubectl get pv
```

```

1 NAME          CAPACITY  ACCESSMODES  RECLAIMPOLICY  STATUS
2 CLAIM         STORAGECLASS  REASON    AGE
3 pvvol-1       1Gi        RWX         Retain         Available  4s

```