



## Exercise 9.2: 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
```

```
<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
```

```
/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
```

```
<output_omitted>
```

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

```
Export list for cp:
/opt/sfw *
```

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

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

```
total 4
-rw-r--r-- 1 root root 23 Aug 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:~$ cp /home/student/LFS258/SOLUTIONS/s_09/PVol.yaml .
```

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

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: cp #<-- Edit to match cp node
14    readOnly: false
```

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

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

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

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

NAME	CAPACITY	ACCESS MODES	RECLAIM POLICY	STATUS	CLAIM	STORAGECLASS
↪ VOLUMEATTRIBUTESCLASS	REASON	AGE				
pvvol-1	1Gi	RWX	Retain	Available		<unset>
↪ 6s						