

## Install NFS server on K8S cluster

OS: - Ubuntu

<https://www.tecmint.com/install-nfs-server-on-ubuntu/>

### On MASTER Install NFS SERVER

```
$ sudo apt install nfs-kernel-server
$ sudo mkdir -p /srv/nfs/kubedata
$ sudo chown -R nobody:nogroup /srv/nfs/kubedata
$ sudo chmod 777 /srv/nfs/kubedata
$ sudo vim /etc/exports
/srv/nfs/kubedata
*(rw,sync,no_subtree_check,no_root_squash,no_all_squash,insecure)
$ sudo exportfs -a
$ sudo systemctl restart nfs-kernel-server
```

```
root@DESKTOP-VIDGD8F:k8sCluster_kubeadm_terraform# ssh -i ~/.ssh/id_rsa ubuntu@15.206.243.22
The authenticity of host '15.206.243.22 (15.206.243.22)' can't be established.
ED25519 key fingerprint is SHA256:Zc50bSPmVMhBThXANnnCHsoDfNCskR8/YzZPmKYh+Lg.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '15.206.243.22' (ED25519) to the list of known hosts.
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1103-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

System information as of Tue Feb 27 05:37:43 UTC 2024

System load:  0.17           Users logged in:      0
Usage of /:   56.8% of 7.57GB IP address for eth0:  172.31.16.148
Memory usage: 22%           IP address for docker0: 172.17.0.1
Swap usage:   0%            IP address for tunl0:  10.107.205.128
Processes:    156

Expanded Security Maintenance for Infrastructure is not enabled.

10 updates can be applied immediately.
2 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

89 additional security updates can be applied with ESM Infra.
Learn more about enabling ESM Infra service for Ubuntu 18.04 at
https://ubuntu.com/18-04

New release '20.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-16-148:~$
```

```

ubuntu@ip-172-31-16-148:~$ sudo apt install nfs-kernel-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  keyutils libnfsidmap2 libtirpc1 nfs-common rpcbind
Suggested packages:
  watchdog
The following NEW packages will be installed:
  keyutils libnfsidmap2 libtirpc1 nfs-common nfs-kernel-server rpcbind
0 upgraded, 6 newly installed, 0 to remove and 9 not upgraded.
Need to get 492 kB of archives.
After this operation, 1709 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 keyutils amd64 1.5.9-9.2ubuntu2.1 [48.1 kB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libnfsidmap2 amd64 0.25-5.1 [27.2 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libtirpc1 amd64 0.2.5-1.2ubuntu0.1 [75.7 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 rpcbind amd64 0.2.3-0.6ubuntu0.18.04.4 [42.1 kB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 nfs-common amd64 1:1.3.4-2.1ubuntu5.5 [206 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 nfs-kernel-server amd64 1:1.3.4-2.1ubuntu5.5 [93.8 kB]
Fetched 492 kB in 1s (638 kB/s)
Selecting previously unselected package keyutils.
(Reading database ... 58614 files and directories currently installed.)
Preparing to unpack .../0-keyutils_1.5.9-9.2ubuntu2.1_amd64.deb ...
Unpacking keyutils (1.5.9-9.2ubuntu2.1) ...
Selecting previously unselected package libnfsidmap2:amd64.
Preparing to unpack .../1-libnfsidmap2_0.25-5.1_amd64.deb ...
Unpacking libnfsidmap2:amd64 (0.25-5.1) ...
Selecting previously unselected package libtirpc1:amd64.
Preparing to unpack .../2-libtirpc1_0.2.5-1.2ubuntu0.1_amd64.deb ...
Unpacking libtirpc1:amd64 (0.2.5-1.2ubuntu0.1) ...
Selecting previously unselected package rpcbind.
Preparing to unpack .../3-rpcbind_0.2.3-0.6ubuntu0.18.04.4_amd64.deb ...
Unpacking rpcbind (0.2.3-0.6ubuntu0.18.04.4) ...
Selecting previously unselected package nfs-common.
Preparing to unpack .../4-nfs-common_1%3a1.3.4-2.1ubuntu5.5_amd64.deb ...
Unpacking nfs-common (1:1.3.4-2.1ubuntu5.5) ...
Selecting previously unselected package nfs-kernel-server.
Preparing to unpack .../5-nfs-kernel-server_1%3a1.3.4-2.1ubuntu5.5_amd64.deb ...
Unpacking nfs-kernel-server (1:1.3.4-2.1ubuntu5.5) ...
Setting up libnfsidmap2:amd64 (0.25-5.1) ...
Setting up keyutils (1.5.9-9.2ubuntu2.1) ...

```

```

ubuntu@ip-172-31-16-148:~$ sudo mkdir -p /srv/nfs/kubedata
ubuntu@ip-172-31-16-148:~$ sudo chown -R nobody:nogroup /srv/nfs/kubedata
ubuntu@ip-172-31-16-148:~$ sudo chmod 777 /srv/nfs/kubedata
ubuntu@ip-172-31-16-148:~$ sudo vim /etc/exports

```

```

ubuntu@ip-172-31-16-148:~$ sudo exportfs -a
exportfs: No host name given with *(rw,sync,no_subtree_check,no_root_squash,no_all_squash,insecure) (ro,sync,wdelay,hide,nocrossmnt,secure,root_squash,no_all_squash,no_subtree_check,secure_locks,acl,no_pnfs,anonuid=65534,sec=sys,ro,secure,root_squash,no_all_squash), suggest *(ro,sync,wdelay,hide,nocrossmnt,secure,root_squash,no_all_squash,no_subtree_check,secure_locks,acl,no_pnfs,anonuid=65534,sec=sys,ro,secure,root_squash,no_all_squash) to avoid warning
exportfs: No host name given with /srv/nfs/kubedata (ro,sync,wdelay,hide,nocrossmnt,secure,root_squash,no_all_squash,no_subtree_check,secure_locks,acl,no_pnfs,anonuid=65534,sec=sys,ro,secure,root_squash,no_all_squash), suggest *(ro,sync,wdelay,hide,nocrossmnt,secure,root_squash,no_all_squash,no_subtree_check,secure_locks,acl,no_pnfs,anonuid=65534,sec=sys,ro,secure,root_squash,no_all_squash) to avoid warning
ubuntu@ip-172-31-16-148:~$

```

```

ubuntu@ip-172-31-16-148:~$ sudo systemctl restart nfs-kernel-server
ubuntu@ip-172-31-16-148:~$ sudo systemctl status nfs-kernel-server
● nfs-server.service - NFS server and services
   Loaded: loaded (/lib/systemd/system/nfs-server.service; enabled; vendor preset: enabled)
   Active: active (exited) since Tue 2024-02-27 05:50:34 UTC; 27s ago
   Process: 17089 ExecStopPost=/usr/sbin/exportfs -f (code=exited, status=0/SUCCESS)
   Process: 17076 ExecStopPost=/usr/sbin/exportfs -au (code=exited, status=0/SUCCESS)
   Process: 17067 ExecStop=/usr/sbin/rpc.nfsd 0 (code=exited, status=0/SUCCESS)
   Process: 17110 ExecStart=/usr/sbin/rpc.nfsd $RPCNFSDARGS (code=exited, status=0/SUCCESS)
   Process: 17107 ExecStartPre=/usr/sbin/exportfs -r (code=exited, status=0/SUCCESS)
   Main PID: 17110 (code=exited, status=0/SUCCESS)

Feb 27 05:50:33 ip-172-31-16-148 systemd[1]: Starting NFS server and services...
Feb 27 05:50:34 ip-172-31-16-148 systemd[1]: Started NFS server and services.
ubuntu@ip-172-31-16-148:~$

```

ON BOTH WORKER NODES 01 & 02

```
$ sudo apt install nfs-common
$ sudo mkdir -p /mnt/nfs_clientshare
$ mount 172.31.15.140:/srv/nfs/kubedata /mnt/nfs_clientshare
(This is just to test NFS working)
$ umount /mnt/nfs_clientshare
```

## WORKER NODES 01

```
root@DESKTOP-VIDGD8F:k8sCluster_kubeadm_terraform# ssh -i ~/.ssh/id_rsa ubuntu@3.110.157.139
The authenticity of host '3.110.157.139 (3.110.157.139)' can't be established.
ED25519 key fingerprint is SHA256:DqCI3FCxKSsn5x099j2lJQ6juJPUS86iKomXN81BDps.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '3.110.157.139' (ED25519) to the list of known hosts.
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1103-aws x86_64)

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 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Tue Feb 27 06:16:38 UTC 2024

System load:  0.0           Users logged in:      0
Usage of /:   44.6% of 7.57GB IP address for eth0:   172.31.17.197
Memory usage: 21%          IP address for docker0: 172.17.0.1
Swap usage:   0%           IP address for tunl0:  10.108.43.0
Processes:    119

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https://ubuntu.com/18-04

New release '20.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-17-197:~$
```

```
ubuntu@ip-172-31-17-197:~$ sudo mkdir -p /mnt/nfs_clientshare
ubuntu@ip-172-31-17-197:~$ sudo su
root@ip-172-31-17-197:/home/ubuntu# mount 172-31-16-148:/srv/nfs/kubedata /mnt/nfs_clientshare
```

## ON SYSTEM CREATE THREE FOLLOWING FILES

pv.yaml  
pvc.yaml  
Deployment.yaml

```
root@DESKTOP-VIDGD8F:task3# ll
total 4
drwxrwxrwx 1 saniya saniya 512 Feb 27 12:08 .
drwxrwxrwx 1 saniya saniya 512 Feb 27 11:59 ..
-rwxrwxrwx 1 saniya saniya 615 Feb 27 12:06 deployment.yaml
-rwxrwxrwx 1 saniya saniya 357 Feb 27 12:08 pv.yaml
-rwxrwxrwx 1 saniya saniya 254 Feb 27 12:07 pvc.yaml
```

```
root@DESKTOP-VIDGD8F:task3# cat pv.yaml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: redis-pv
  labels:
    type: nfs
spec:
  capacity:
    storage: 100Mi
  volumeMode: Filesystem
  accessModes:
    - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  storageClassName: slow
  mountOptions:
    - hard
    - nfsvers=4.1
  nfs:
    path: /mnt/sharedfolder
    server: 15.206.243.22
root@DESKTOP-VIDGD8F:task3#
```

```
root@DESKTOP-VIDGD8F:task3# cat pvc.yaml
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: redis-pvc
spec:
  accessModes:
    - ReadWriteOnce
  volumeMode: Filesystem
  resources:
    requests:
      storage: 100Mi
  storageClassName: slow
  selector:
    matchLabels:
      type: nfs

root@DESKTOP-VIDGD8F:task3#
```

```
root@DESKTOP-VIDGD8F:task3# cat deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: redis-master
  labels:
    app: redis
spec:
  selector:
    matchLabels:
      app: redis
      role: master
      tier: backend
  replicas: 1
  template:
    metadata:
      labels:
        app: redis
        role: master
        tier: backend
    spec:
      containers:
      - name: master
        image: redis
        resources:
          requests:
            cpu: 100m
            memory: 100Mi
        volumeMounts:
        - name: data
          mountPath: "/redis/data"
        ports:
        - containerPort: 6379
      volumes:
      - name: data
```

```
root@DESKTOP-VIDGD8F:task3#
```

```
root@DESKTOP-VIDGD8F:task3# kubectl apply -f .
deployment.apps/redis-master created
persistentvolume/redis-pv created
persistentvolumeclaim/redis-pvc created
```

```
root@DESKTOP-VIDGD8F:task3# kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
redis-master-78cc8db4df-6rntf      1/1     Running   0           99s
root@DESKTOP-VIDGD8F:task3# kubectl get pv
NAME      CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM                STORAGECLASS   REASON   AGE
redis-pv  100Mi      RWO            Retain           Bound    default/redis-pvc    slow                  2m9s
root@DESKTOP-VIDGD8F:task3# kubectl get pvc
NAME      STATUS   VOLUME      CAPACITY   ACCESS MODES   STORAGECLASS   AGE
redis-pvc Bound    redis-pv    100Mi      RWO            slow           2m12s
root@DESKTOP-VIDGD8F:task3#
```