



NFS configuration to Ubuntu - TotD 2.0

1. Take a snapshot backup of your server from Pouta Dashboard.

2. Create a new host for NFS server setup to Pouta.

Create a new key pair for launching new Pouta Instance

Launch a new Instance for NFS server

Give local “dns” name for the nfs server

Create a new Security Group (Allow all internal traffic) in Pouta dashboard for the NFS server.

3. Configure the new host according to the general instructions for Pouta hosts.

Add user “jingjing” for myself(give sudo access)

Add instructors “sam22”

Delete the default user “ubuntu”

4. Install the required the NFS packages for the server.

On the **host** server, install the `nfs-kernel-server` package

On the **client** server, we need to install a package called `nfs-common`

5. Configure server to share a directory that contains the tips files.

enable and restart the NFS service

6. Configure the client host for accessing the directory from NFS server.

Creating Mount Points and Mounting Directories on the Client

Testing NFS Access

7. Modify the TotD script to access files from NFS server instead of local disk.

`totd 1.0`

totd 1.1 access from local host
Copy tip files to NFS share
Set the TIPS_REPO environment variable for all users on the system
Change the path to point to the NFS share
varify totd 2.0
git tag 2.0

8. Make sure the configuration(**NFS mount**) is permanent.

9. Boot both hosts to verify the configuration.

10. Update CMDB backup

11. NFS setup summary

12. Notes of error fixing

Host key verification failed
Symlinks are broken
ping is not working
Modified existing default rules

1. Take a snapshot backup of your server from Pouta Dashboard.



2. Create a new host for NFS server setup to Pouta.

Create a new key pair for launching new Pouta Instance

```
[jingjing@jingjing-serverb-2023:~$ cat .ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgQC8eJQ2ohpT5r+9UbxwE807tzydfcdh8wvbLKhQ1Z92ghdAZug8bsQ+sk2E7fVYHfmBBVfGnCFN3+S
SIUMrgGNdIr8FUJhXimgMqExot7IqA+GHUEHTDaRFsLd4xxULOrRGxkKxSGYGV5UFFDih8TxxGDSstuunYTNVy+YfpDum2otqVVlsGnUami4XED04TWh
ASKdB/Cbdunm90FcLED/+91Y1GhWMEeb8YCov9SM1C5WSx5rWdbSEWM3g/JF7gs88rpoNeBJoIvM16EqTSxfB0+ZwuknJVVBCH5WdjVp69zxxNKoau
B3A70jdRsNNvTxmjDny9ag7koW0LXgKLhCf+vGTEIPVbMqqAnaMHE7Pe1QudG/18qx5HCbLVipjT63W+6Iaizh1+jvidyAsSiRCulMT1+FPA1Q7s9za
uBbmVzG0cjN1T2ySUUK0JYLo/TM2EjLJbGGgDTGJv7+QcDDmovG4aNLD26TmlaJK5iM1DJuN6KBAqI5DW1nS2rlUq30= jingjing@jingjing-serv
erb-2023]
```

jingjing-serverB-2023-NFS setup

 Delete Key Pair

ID	989613
Name	jingjing-serverB-2023-NFS setup
Fingerprint	f8:37:9f:0a:05:44:55:22:20:3c:80:45:43:1a:b7:2b
Created	Apr 21, 2023 11:19:44 PM
User ID	jingjing
Public Key	ssh-rsa AAAAAB3NzaC1yc2EAAAQABAAQgQC8eJQ2ohpT5r+9 UbxwE8O7tzydfcdh8wvbLKhQ1Z92ghdAZug8bsQ+sk2E7fV YHfmBBVfGnCFN3+SSIUMrgGNdIrl8FUJhXimqMqEoxt7lqA+ GHUEHTDaRFsLd4xxULOrRGxkKxSGYGV5UFFDih8TxxGD StuunYTNVy+YFpDum2otqVVlsGnUami4XEDO4TWhASKdB/ Cbdunm90FcLEd/+91YIGhWMEeb8YCOv9SM1C5WSx5rWd bSEWM3g/JF7gs88rpoNeBjolvMI6EqTSxfB0+ZwuknJVBC SH5WdjVp69zxxNKoauB3A70jdRsNNvTxmjDny9ag7koW0LX gKLhCf+vGTEIPVbMqqAnaMHE7PeIQuDg/18qx5HCbLVipjT 63W+6laizhl+jvidyAsSiRCulMTI+FPA1Q7s9zauBbmVzG0cjNI T2ySUUK0JYLo/TM2EjLjbGGgDTGJv7+QcDDmovG4aNLD2 6TmlaJK5iMIDJuN6KBAql5DW1nS2rlUq30= jingjing@jingjing-serverb-2023

Launch a new Instance for NFS server

Launch Instance



Details *

Access & Security

Networking *

Network Ports

Post-Creation

Advanced Options

Availability Zone

nova

Instance Name *

jingjingyang-nfs

Flavour *

standard.tiny

Number of Instances *

1

Instance Boot Source *

Boot from image

Image Name

Ubuntu-22.04 (2.2 GB)

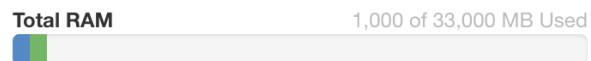
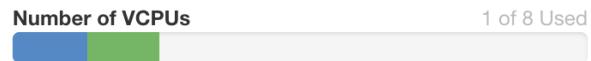
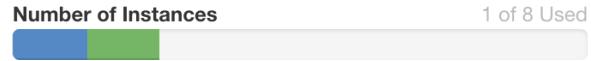
Specify the details for launching an instance.

The chart below shows the resources used by this project in relation to the project's quotas.

Flavour Details

Name	standard.tiny
VCPUs	1
Root Disk	80 GB
Ephemeral Disk	0 GB
Total Disk	80 GB
RAM	1,000 MB

Project Limits



Cancel

Launch

Launch Instance

Details * Access & Security Networking * Network Ports Post-Creation Advanced Options

Key Pair ?
jingjing-serverB-2023-NFS setup

Security Groups ?
 default
 ssh-strict

Instance Name	Image Name	IP Address	Flavour	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
<input type="checkbox"/> jingjing-nfs-server	Ubuntu-22.04	192.168.1.13	standard.tiny	jingjing-serverB-2023-NFS setup	Active	nova	None	Running	0 minutes	<input type="button" value="Create Snapshot"/>

```
[jingjing@jingjing-serverb-2023:~$ ping 192.168.1.13
PING 192.168.1.13 (192.168.1.13) 56(84) bytes of data.
64 bytes from 192.168.1.13: icmp_seq=1 ttl=64 time=0.476 ms
64 bytes from 192.168.1.13: icmp_seq=2 ttl=64 time=0.509 ms
64 bytes from 192.168.1.13: icmp_seq=3 ttl=64 time=0.429 ms
64 bytes from 192.168.1.13: icmp_seq=4 ttl=64 time=0.381 ms
^C
--- 192.168.1.13 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3075ms
rtt min/avg/max/mdev = 0.381/0.448/0.509/0.048 ms
```

Give local “dns” name for the nfs server

```
jingjing@jingjing-serverb-2023:~$ sudo nano /etc/hosts
[sudo] password for jingjing:
jingjing@jingjing-serverb-2023:~$ cat /etc/hosts
[127.0.0.1 localhost
[192.168.1.13 jingjing-nfs-server
[# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
ff02::3 ip6-allhosts
jingjing@jingjing-serverb-2023:~$ ping jingjing-nfs-server
PING jingjing-nfs-server (192.168.1.13) 56(84) bytes of data.
64 bytes from jingjing-nfs-server (192.168.1.13): icmp_seq=1 ttl=64 time=0.421 ms
64 bytes from jingjing-nfs-server (192.168.1.13): icmp_seq=2 ttl=64 time=0.405 ms
64 bytes from jingjing-nfs-server (192.168.1.13): icmp_seq=3 ttl=64 time=0.424 ms
64 bytes from jingjing-nfs-server (192.168.1.13): icmp_seq=4 ttl=64 time=0.458 ms
^C
--- jingjing-nfs-server ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3051ms
rtt min/avg/max/mdev = 0.405/0.427/0.458/0.019 ms
```

Create a new Security Group (Allow all internal traffic) in Pouta dashboard for the NFS server.

Manage Security Group Rules: nfs-strict (14b20a4a-02e3-4c2f-b831-e8ea7fe63d8c)

Displaying 4 items							
<input type="checkbox"/>	Direction	Ether Type	IP Protocol	Port Range	Remote IP Prefix	Remote Security Group	Actions
<input type="checkbox"/>	Egress	IPv4	Any	Any	0.0.0.0/0	-	<button>Delete Rule</button>
<input type="checkbox"/>	Egress	IPv6	Any	Any	::/0	-	<button>Delete Rule</button>
<input type="checkbox"/>	Ingress	IPv4	ICMP	Any	192.168.1.18/32	-	<button>Delete Rule</button>
<input type="checkbox"/>	Ingress	IPv4	TCP	2049	0.0.0.0/0	-	<button>Delete Rule</button>

Port 2049 is the default port used by the Network File System (NFS) protocol for file sharing between computers on a network. It is used to allow clients to access files on a remote server as if they were local files.

3. Configure the new host according to the general instructions for Pouta hosts.

Add user “jingjing” for myself(give sudo access)

```
jingjing@jingjing-serverb-2023:~$ ssh ubuntu@jingjing-nfs-server
The authenticity of host 'jingjing-nfs-server (192.168.1.13)' can't be established.
ED25519 key fingerprint is SHA256:wUZa3G6XV5zpFvvEcB+dK57vCEgoalLk+0u0IZHxk6o.
[This host key is known by the following other names/addresses:
 ~/.ssh/known_hosts:6: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'jingjing-nfs-server' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-69-generic x86_64)

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

System information as of Sun Apr 23 11:39:03 UTC 2023

System load: 0.0          Processes:         91
Usage of /: 1.9% of 77.35GB Users logged in:      1
Memory usage: 20%          IPv4 address for ens3: 192.168.1.13
Swap usage:  0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Sun Apr 23 11:32:18 2023 from 192.168.1.18
```

```
jingjing@jingjing-serverb-2023:~$ id -a
uid=1400(jingjing) gid=1400(jingjing) groups=1400(jingjing)
```

```

ubuntu@jingjing-nfs-server:~$ sudo -i
[root@jingjing-nfs-server:~# useradd -m -u 1400 -s /bin/bash jingjing
[root@jingjing-nfs-server:~# cd /home/jingjing/
[root@jingjing-nfs-server:/home/jingjing# cp -p -r ~ubuntu/.ssh .
[root@jingjing-nfs-server:/home/jingjing# chown -R jingjing:jingjing .ssh
[root@jingjing-nfs-server:/home/jingjing# passwd jingjing
[New password:
[Retype new password:
[passwd: password updated successfully
[root@jingjing-nfs-server:/home/jingjing# cd /etc/sudoers.d/
[root@jingjing-nfs-server:/etc/sudoers.d# cp -p 90-cloud-init-users 91-stec-nfs
root@jingjing-nfs-server:/etc/sudoers.d# nano 91-stec-nfs
[root@jingjing-nfs-server:/etc/sudoers.d# cat 91-stec-nfs
[# Created by cloud-init v. 23.1.1-0ubuntu0~22.04.1 on Sun, 23 Apr 2023 11:28:28 +0000
[
# User rules for ubuntu
jingjing ALL=(ALL) ALL
root@jingjing-nfs-server:/etc/sudoers.d# exit
logout
ubuntu@jingjing-nfs-server:~$ exit
[logout
Connection to 192.168.1.13 closed.
[jingjing@jingjing-serverb-2023:~$ ssh -l jingjing jingjing-nfs-server
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-69-generic x86_64)

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

 System information as of Sun Apr 23 11:59:13 UTC 2023

 System load:  0.0          Processes:           89
 Usage of /:   1.9% of 77.35GB  Users logged in:      0
 Memory usage: 20%          IPv4 address for ens3: 192.168.1.13
 Swap usage:   0%

 Expanded Security Maintenance for Applications is not enabled.

 0 updates can be applied immediately.

 Enable ESM Apps to receive additional future security updates.
 See https://ubuntu.com/esm or run: sudo pro status

 The list of available updates is more than a week old.
 To check for new updates run: sudo apt update

 The programs included with the Ubuntu system are free software;
 the exact distribution terms for each program are described in the
 individual files in /usr/share/doc/*/*copyright.

 Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
 applicable law.

 jingjing@jingjing-nfs-server:~$ 

```

Add instructors “sam22”

```
jingjing@jingjingyang-nfs:~$ sudo -i
[sudo] password for jingjing:
root@jingjingyang-nfs:~# useradd -m -u 2031 -s /bin/bash sam22
root@jingjingyang-nfs:~# cd ~sam22/
root@jingjingyang-nfs:/home/sam22# mkdir .ssh
root@jingjingyang-nfs:/home/sam22# chmod 700 .ssh
root@jingjingyang-nfs:/home/sam22# touch .ssh/authorized_keys
root@jingjingyang-nfs:/home/sam22# chown -R sam22:sam22 .ssh
root@jingjingyang-nfs:/home/sam22# chmod 600 .ssh/authorized_keys
root@jingjingyang-nfs:/home/sam22# nano .ssh/authorized_keys
root@jingjingyang-nfs:/home/sam22# cat .ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgQDOCZJ+D/sJS1iFchXqGfwfUOQeE1gd0
HYYr3u1plzMpRRc2pinOk2C3n/ut0ucG7j7tvQBNz05EE6ck157yAM1Pd3utuhJYvfzbk
OEoXcmwihqH+oxeMRA9i201XNRTmhNOTY9r9URa8YK6I5C04V/Od4wH7+zI19JWEkgJ5k
buqqT316zA4y8dmOpkfN/gDWTbMIHY+pj+RM9VH7PpbavL3XA/XP+8a60WKhh/T09vLfT
7xFsGfDAPsW4cLxcasVBUYTrnfGKM/eWgDTyUKwHCBI7XTizKnBcbYQkhW5sgoscu8QWh
pDdKvXFvqvKjR3UpK19RneU8zHDQn3a/6J93ihRuieJaSJdYCim9a3DeliLrSQLSx13jh
5Udrpb7EjhEtL2G5MmL9xNjKUHDhmS1m4Qc4c1WIMd8meInf/C0DHb6jYA6rhT7NecSR2
vDkNFFSxmUGXsf/guPvgJgCptjTGUmThfSVfILLQyWrQ2NoosYa3i/pMVWmgTfB1EOfM=
sam22@monitor1
```

Delete the default user “ubuntu”

```
root@jingjingyang-nfs:/home/sam22# userdel -r ubuntu
userdel: ubuntu mail spool (/var/mail/ubuntu) not found
root@jingjingyang-nfs:/home/sam22# ls /home/
jingjing sam22

root@jingjing-nfs-server:/etc/sudoers.d# cat 90-cloud-init-users
# Created by cloud-init v. 23.1.1-0ubuntu0~22.04.1 on Sun, 23 Apr 2023 11:28:28 +0000

# User rules for ubuntu
ubuntu ALL=(ALL) NOPASSWD:ALL
root@jingjing-nfs-server:/etc/sudoers.d# rm 90-cloud-init-users
root@jingjing-nfs-server:/etc/sudoers.d# ls
91-stec-nfs README
```

4. Install the required the NFS packages for the server.

On the host server, install the `nfs-kernel-server` package

```
[jingjing@jingjing-nfs-server:~$ sudo apt update; sudo apt install nfs-kernel-server
[[sudo] password for jingjing:
Hit:1 http://nova.clouds.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://nova.clouds.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:4 http://nova.clouds.archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB]
Get:5 http://nova.clouds.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://nova.clouds.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:7 http://nova.clouds.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
```

After this operation, 1973 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y

On the client server, we need to install a package called nfs-common

```
[jingjing@jingjing-serverb-2023:~$ sudo apt update;sudo apt install nfs-common
[[sudo] password for jingjing:
Hit:1 http://nova.clouds.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://nova.clouds.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:4 http://nova.clouds.archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB]
Hit:5 https://deb.nodesource.com/node_18.x jammy InRelease
Get:6 http://nova.clouds.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1031 kB]
Get:7 http://nova.clouds.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [902 kB]
Fetched 2270 kB in 2s (1359 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
5 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  keyutils libnfsidmap1 rpcbind
Suggested packages:
  watchdog
The following NEW packages will be installed:
  keyutils libnfsidmap1 nfs-common rpcbind
0 upgraded, 4 newly installed, 0 to remove and 5 not upgraded.
Need to get 381 kB of archives.
After this operation, 1447 kB of additional disk space will be used.
[Do you want to continue? [Y/n] Y
```

5. Configure server to share a directory that contains the tips files.

Create the directory to be shared on the Host

```
[jingjing@jingjing-nfs-server:~$ sudo mkdir -p /var/nfs/tips
[jingjing@jingjing-nfs-server:~$ sudo chown nobody:nogroup /var/nfs/tips
[jingjing@jingjing-nfs-server:~$ sudo chmod 777 /var/nfs/tips
[jingjing@jingjing-nfs-server:~$ sudo chmod +t /var/nfs/tips
```

Replace local directory with NFS mount to the linuxtips script

CLIENT

```
nples # vi/nano ~/scripts/linuxtips.sh
```

Configure NFS Exports on the Host Server

```
[jingjing@jingjing-nfs-server:~$ sudo nano /etc/exports
[jingjing@jingjing-nfs-server:~$ cat /etc/exports
# /etc/exports: the access control list for filesystems which may be exported
#           to NFS clients.  See exports(5).
#
# Example for NFSv2 and NFSv3:
# /srv/homes      hostname1(rw,sync,no_subtree_check) hostname2(ro,sync,no_subtree_check)
#
# Example for NFSv4:
# /srv/nfs4      gss/krb5i(rw,sync,fsid=0,crossmnt,no_subtree_check)
# /srv/nfs4/homes  gss/krb5i(rw,sync,no_subtree_check)
#
/var/nfs/tips    192.168.1.0/24(rw,sync,no_subtree_check)
```

```

jingjing@jingjing-nfs-server:~$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 30 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://nova.clouds.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 0s (686 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 64373 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...

Scanning linux images...
[ ]]

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
jingjing@jingjing-nfs-server:~$ sudo netstat -anp |grep "LISTEN "
tcp        0      0.0.0.0:111          0.0.0.0:*          LISTEN      1/init
tcp        0      0.0.0.0:43077        0.0.0.0:*          LISTEN      3263/rpc.mountd
tcp        0      0.0.0.0:45645        0.0.0.0:*          LISTEN      -
tcp        0      0.0.0.0:2049         0.0.0.0:*          LISTEN      -
tcp        0      0.0.0.0:22           0.0.0.0:*          LISTEN      748/sshd: /usr/sbin
tcp        0      0.0.0.0:41493        0.0.0.0:*          LISTEN      3263/rpc.mountd
tcp        0      0.127.0.0.53:53       0.0.0.0:*          LISTEN      541/systemd-resolve
tcp        0      0.0.0.0:56749        0.0.0.0:*          LISTEN      2876/rpc.statd
tcp        0      0.0.0.0:57779        0.0.0.0:*          LISTEN      3263/rpc.mountd
tcp6       0      ::1:111             ::*:              LISTEN      1/init
tcp6       0      ::1:42539           ::*:              LISTEN      -
tcp6       0      ::1:2049            ::*:              LISTEN      -
tcp6       0      ::1:22              ::*:              LISTEN      748/sshd: /usr/sbin
tcp6       0      ::1:58501           ::*:              LISTEN      3263/rpc.mountd
tcp6       0      ::1:48783           ::*:              LISTEN      3263/rpc.mountd
tcp6       0      ::1:59549           ::*:              LISTEN      3263/rpc.mountd
tcp6       0      ::1:46951           ::*:              LISTEN      2876/rpc.statd

```

Open access to NFS service in the host firewall

```
[jingjing@jingjing-nfs-server:~$ sudo ufw allow ssh
Rules updated
Rules updated (v6)
[jingjing@jingjing-nfs-server:~$ sudo ufw allow nfs
Rules updated
Rules updated (v6)
[jingjing@jingjing-nfs-server:~$ sudo ufw enable
[Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
[jingjing@jingjing-nfs-server:~$ sudo ufw status
Status: active

To                      Action      From
--                      ----
22/tcp                  ALLOW       Anywhere
2049                   ALLOW       Anywhere
22/tcp (v6)             ALLOW       Anywhere (v6)
2049 (v6)              ALLOW       Anywhere (v6)
```

enable and restart the NFS service

```
[jingjing@jingjing-nfs-server:~$ sudo systemctl restart nfs-kernel-server
[jingjing@jingjing-nfs-server:~$ sudo systemctl enable nfs-kernel-server
Synchronizing state of nfs-kernel-server.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable nfs-kernel-server
[jingjing@jingjing-nfs-server:~$ 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)
   Drop-In: /run/systemd/generator/nfs-server.service.d
             └─order-with-mounts.conf
     Active: active (exited) since Sun 2023-04-23 12:06:38 UTC; 17s ago
       Main PID: 3265 (code=exited, status=0/SUCCESS)
         CPU: 8ms

Apr 23 12:06:38 jingjing-nfs-server systemd[1]: Starting NFS server and services...
Apr 23 12:06:38 jingjing-nfs-server systemd[1]: Finished NFS server and services.
```

```
[jingjing@jingjing-nfs-server:~$ sudo systemctl restart nfs-kernel-server.service
[jingjing@jingjing-nfs-server:~$ sudo systemctl enable nfs-kernel-server.service
Synchronizing state of nfs-kernel-server.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable nfs-kernel-server
[jingjing@jingjing-nfs-server:~$ sudo systemctl status nfs-kernel-server.service
● nfs-server.service - NFS server and services
   Loaded: loaded (/lib/systemd/system/nfs-server.service; enabled; vendor preset: enabled)
   Drop-In: /run/systemd/generator/nfs-server.service.d
             └─order-with-mounts.conf
     Active: active (exited) since Sun 2023-04-23 12:10:24 UTC; 22s ago
       Main PID: 3753 (code=exited, status=0/SUCCESS)
         CPU: 8ms

Apr 23 12:10:24 jingjing-nfs-server systemd[1]: Starting NFS server and services...
Apr 23 12:10:24 jingjing-nfs-server systemd[1]: Finished NFS server and services.
```

```
[jingjing@jingjingyang-nfs:~$ sudo exportfs
[[sudo] password for jingjing:
/var/nfs/tips    192.168.1.0/24
```

6. Configure the client host for accessing the directory from NFS server.

Creating Mount Points and Mounting Directories on the Client

```
[jingjing@jingjing-serverb-2023:~$ sudo mkdir -p /nfs/tips
[jingjing@jingjing-serverb-2023:~$ mount -av
/                               : ignored
/boot/efi                      : already mounted
[jingjing@jingjing-serverb-2023:~$ sudo mount -v jingjing-nfs-server:/var/nfs/tips /nfs/tips
mount.nfs: timeout set for Sun Apr 23 12:14:27 2023
mount.nfs: trying text-based options 'vers=4.2,addr=192.168.1.13,clientaddr=192.168.1.18'
```

```
[jingjing@jingjing-serverb-2023:~$ sudo mount -v -t nfs jingjing-nfs-server:/var/nfs/tips /nfs/tips
mount.nfs: timeout set for Thu Apr 27 10:00:07 2023
mount.nfs: trying text-based options 'vers=4.2,addr=192.168.1.13,clientaddr=192.168.1.18'
[jingjing@jingjing-serverb-2023:~$ df -h
Filesystem            Size  Used  Avail Use% Mounted on
tmpfs                  95M  1.3M   94M   2% /run
/dev/vda1                78G  5.1G   73G   7% /
tmpfs                  473M     0  473M   0% /dev/shm
tmpfs                  5.0M     0  5.0M   0% /run/lock
/dev/vda15              105M  6.1M   99M   6% /boot/efi
tmpfs                  95M  4.0K   95M   1% /run/user/1400
jingjing-nfs-server:/var/nfs/tips  78G  2.1G   76G   3% /nfs/tips
tmpfs                  95M  4.0K   95M   1% /run/user/2031
```

Testing NFS Access

```
[jingjing@jingjing-serverb-2023:~$ hostname > /nfs/tips/test-jingjing.txt
[jingjing@jingjing-serverb-2023:~$ cat /nfs/tips/test-jingjing.txt
jingjing-serverb-2023
```

```
[jingjing@jingjing-nfs-server:~$ hostname > /nfs/tips/test-jingjing.txt
[jingjing@jingjing-nfs-server:~$ cat /nfs/tips/test-jingjing.txt
jingjing-nfs-server
```

7. Modify the TotD script to access files from NFS server instead of local disk.

totd 1.0

```

nothing to commit, working tree clean
[jingjing@jingjing-serverb-2023:/opt/totd$ git tag --list
1.0
[jingjing@jingjing-serverb-2023:/opt/totd$ ls
README.md  linuxtips.sh  tips
[jingjing@jingjing-serverb-2023:/opt/totd$ cat linuxtips.sh
#!/bin/bash

tty -s || exit # check if we have interactive shell

# Shows a new tip with every new terminal session
# Round robin for the tips: 1st, 2nd ... last, 1st ...
# Prompts for showing more tips

# Get the absolute path of the script in Bash
# scriptDir=$(dirname -- "$(readlink "$BASH_SOURCE")")
# SCRIPT_DIR=$( cd -P "$( dirname -- "${BASH_SOURCE[0]}" )" &> /dev/null && pwd )

# the path for script and tips, modify this if you have different ones!
scriptDir=~/tipScript
tipsDir=~/tipScript/tips

# if the totd functionality is not deactivated (~/.notips does not exist)
if [ ! -f ~/.notips ]; then

    if test -f $scriptDir/.curtip; then
        n=$(cat $scriptDir/.curtip) # get the current tip id if .curtip exists
    else
        echo 1 > $scriptDir/.curtip # create file .curtip to store initial tip id
        n=1
    fi

    # calculate total number of tips
    N=$(ls $tipsDir/*.txt | wc -l)

    date # display the current time
    # show that tip
    echo "           Tip of the Day!"

    next="y"

    # show more tips as user want
    while [ "$next" = "y" ]
    do
        # show the tip
        echo "-----Tip $n-----"
        cat $tipsDir/$n.txt
        echo "-----"

        # Prompt for skip this tip
        # read -p "Skip this tip permanently? (y/n) " skip

        # Prompt for showing another tip
        read -p "Show next tip? (y/n) " next

        # update the id for next tip
        n=$((n%N+1))
    done

    echo $n > $scriptDir/.curtip # store this tip id
fijingjing@jingjing-serverb-2023:/opt/totd$ 

```

totd 1.1 access from local host

```
[fijijingjing@jingjing-serverb-2023:/opt/totd$ nano linuxtips.sh
[jingjing@jingjing-serverb-2023:/opt/totd$ git tag 1.1
[jingjing@jingjing-serverb-2023:/opt/totd$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   linuxtips.sh

no changes added to commit (use "git add" and/or "git commit -a")
```

```

[jingjing@jingjing-serverb-2023:/opt/totd$ cat linuxtips.sh
#!/bin/bash

tty -s || exit # check if we have interactive shell

# Shows a new tip with every new terminal session
# Round robin for the tips: 1st, 2nd ... last, 1st ...
# Prompts for showing more tips

# Get the absolute path of the script in Bash
# scriptDir=$(dirname -- "$(readlink "$BASH_SOURCE")")
# SCRIPT_DIR=$( cd -P "$( dirname -- "${BASH_SOURCE[0]}" )" &> /dev/null && pwd )

# the path for script and tips, modify this if you have different ones!
scriptDir=/opt/totd
# access files from local disk
tipsDir=/opt/totd/tips
# access files from NFS server
#TIPS_REPO=

# if the totd functionality is not deactivated (~/.notips does not exist)
if [ ! -f ~/.notips ]; then

    if test -f $scriptDir/.curtip; then
        n=$(cat $scriptDir/.curtip) # get the current tip id if .curtip exists
    else
        echo 1 > $scriptDir/.curtip # create file .curtip to store initial tip id
        n=1
    fi

    # calculate total number of tips
    N=$(ls $tipsDir/*.txt | wc -l)

    date # display the current time
    # show that tip
    echo "          Tip of the Day!"

    next="y"

    # show more tips as user want
    while [ "$next" = "y" ]
    do
        # show the tip
        echo "-----Tip $n-----"
        cat $tipsDir/$n.txt
        echo "-----"

        # Prompt for skip this tip
        # read -p "Skip this tip permanently? (y/n) " skip

        # Prompt for showing another tip
        read -p "Show next tip? (y/n) " next

        # update the id for next tip
        n=$((n%N+1))
    done

    echo $n > $scriptDir/.curtip # store this tip id
fi

```

```

and the repository exists.
[jingjing@jingjing-serverb-2023:/opt/totd$ git push --tag
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
To ssh://gitlab.tamk.cloud:1022/server-tech-2023b-jingjing-yang/tip-of-the-day-1.0-bash-script.git
 * [new tag]          1.1 -> 1.1

no changes added to commit (use --all to commit all changes)
[jingjing@jingjing-serverb-2023:/opt/totd$ git add -A
[jingjing@jingjing-serverb-2023:/opt/totd$ git commit -m "access from local host"
[main 8a3e7fc] access from local host
 1 file changed, 6 insertions(+), 3 deletions(-)
[jingjing@jingjing-serverb-2023:/opt/totd$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 377 bytes | 377.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
To ssh://gitlab.tamk.cloud:1022/server-tech-2023b-jingjing-yang/tip-of-the-day-1.0-bash-script.git
 94fc880..8a3e7fc main -> main

```

Copy tip files to NFS share

```

[jingjing@jingjing-serverb-2023:~$ df -h
Filesystem              Size  Used Avail Use% Mounted on
tmpfs                  95M  1.2M  94M  2% /run
/dev/vda1                78G  5.2G  73G  7% /
tmpfs                  473M     0  473M  0% /dev/shm
tmpfs                  5.0M     0  5.0M  0% /run/lock
/dev/vda15               105M  6.1M  99M  6% /boot/efi
jingjing-nfs-server:/var/nfs/tips  78G  2.1G  76G  3% /nfs/tips
tmpfs                  95M  4.0K  95M  1% /run/user/1400
[jingjing@jingjing-serverb-2023:~$ cd /nfs/tips/
-----[jingjing@jingjing-serverb-2023:/nfs/tips$ cp /opt/totd/tips/* /nfs/tips/.
[jingjing@jingjing-serverb-2023:/nfs/tips$ ls
1.txt  2.txt  4.txt  6.txt  8.txt  test-jingjing.txt
10.txt 3.txt  5.txt  7.txt  9.txt
[jingjing@jingjing-serverb-2023:/nfs/tips$ rm test-jingjing.txt
-----[jingjing@jingjing-nfs-server:~$ sudo -i
[sudo] password for jingjing:
[root@jingjing-nfs-server:~# cd /var/nfs/tips/
[root@jingjing-nfs-server:/var/nfs/tips# ls
1.txt  10.txt  2.txt  3.txt  4.txt  5.txt  6.txt  7.txt  8.txt  9.txt

```

Set the TIPS_REPO environment variable for all users on the system

```
[root@jingjing-serverb-2023:~# cat /etc/environment
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/u
sr/local/games:/snap/bin"
TIPS_REPO=/nfs/tips

[jingjing@jingjing-serverb-2023:~$ printenv | grep "tips"
TIPS_REPO=/nfs/tips
[jingjing@jingjing-serverb-2023:~$ echo $TIPS_REPO
/nfs/tips
```

Change the path to point to the NFS share

```
[jingjing@jingjing-serverb-2023:/opt/totd$ nano linuxtips.sh
[jingjing@jingjing-serverb-2023:/opt/totd$ cat linuxtips.sh
#!/bin/bash

tty -s || exit # check if we have interactive shell

# Shows a new tip with every new terminal session
# Round robin for the tips: 1st, 2nd ... last, 1st ...
# Prompts for showing more tips

# Get the absolute path of the script in Bash
# scriptDir=$(dirname -- "${readlink "$BASH_SOURCE")")
# SCRIPT_DIR=$( cd -P "${ dirname -- "${{BASH_SOURCE[0]}"} }" &> /dev/null && pwd )

# the path for script and tips, modify this if you have different ones!
scriptDir=/opt/totd

if [ ! "$TIPS_REPO" ]; then
    # Default value, access tips from local disk
    tipsDir=/opt/totd/tips
else
    # access from NFS server
    # TIPS_REPO=/nfs/tips    (AN ENV VAR)
    tipsDir=$TIPS_REPO
fi

# if the totd functionality is not deactivated (~/.notips does not exist)
if [ ! -f ~/.notips ]; then

    if test -f $scriptDir/.curtip; then
        n=$(cat $scriptDir/.curtip) # get the current tip id if .curtip exists
    else
        echo 1 > $scriptDir/.curtip # create file .curtip to store initial tip id
        n=1
    fi

    # calculate total number of tips
    N=$(ls $tipsDir/*.txt | wc -l)

    date # display the current time
    # show that tip
    echo "          Tip of the Day!"

    next="y"

    # show more tips as user want
    while [ "$next" = "y" ]
    do
        # show the tip
        echo "-----Tip $n-----"
        cat $tipsDir/$n.txt
        echo "-----"

        # Prompt for skip this tip
        # read -p "Skip this tip permanently? (y/n) " skip

        # Prompt for showing another tip
        read -p "Show next tip? (y/n) " next

        # update the id for next tip
        n=$((n%N+1))
    done
    echo $n > $scriptDir/.curtip # store this tip id
fi
```

varify totd 2.0

```
[jingjing@jingjing-serverb-2023:~$ cd /nfs/tips/  
[jingjing@jingjing-serverb-2023:/nfs/tips$ nano 11.txt  
[jingjing@jingjing-serverb-2023:/nfs/tips$ ls  
1.txt 10.txt 11.txt 2.txt 3.txt 4.txt 5.txt 6.txt 7.txt 8.txt 9.txt  
[jingjing@jingjing-serverb-2023:/nfs/tips$ cat 11.txt  
totd 2.0
```

```
-----Tip 10-----  
'cut'  
-d (--delimiter)      to specify a delimiter to use instead of the default TAB delimiter.  
-f (--fields=LIST)    Select using a specified field, a field set, or a field range.  
$ cut -d ' ' -f 2 file.txt  
-b (--bytes=LIST)      -c (--characters=LIST)  
To extract the first five bytes from each input line:  
$ cut -b 5 file.txt  
-----  
Show next tip? (y/n) y  
-----Tip 11-----  
totd 2.0  
-----  
Show next tip? (y/n) y  
-----Tip 1-----  
'date'  
1)      displays the system date and time  
2)      print the time in different formats  
%D - Display date as mm/dd/yy  
%T - Display date as HH:MM:SS  
%A - Full weekday name (e.g., Friday)  
...  
3)      sets the system date and time  
4)      calculate future and past dates  
date --date="2 year ago"  
date --date="next monday"  
-----  
Show next tip? (y/n) █
```

```
[jingjing@jingjing-serverb-2023:/nfs/tips$ rm 11.txt  
[jingjing@jingjing-serverb-2023:/nfs/tips$ ls  
1.txt 10.txt 2.txt 3.txt 4.txt 5.txt 6.txt 7.txt 8.txt 9.txt
```

git tag 2.0

```
[jingjing@jingjing-serverb-2023:/opt/totd$ git tag 2.0
```

```
[jingjing@jingjing-serverb-2023:/opt/totd$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   .curtip
    modified:   linuxtips.sh

no changes added to commit (use "git add" and/or "git commit -a")
[jingjing@jingjing-serverb-2023:/opt/totd$ git add -A
[jingjing@jingjing-serverb-2023:/opt/totd$ git commit -m "totd 2.0 access files from nfs share"
[main 7c9d355] totd 2.0 access files from nfs share
 2 files changed, 10 insertions(+), 5 deletions(-)
[jingjing@jingjing-serverb-2023:/opt/totd$ git pull
Already up to date.
[jingjing@jingjing-serverb-2023:/opt/totd$ git push
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 551 bytes | 551.00 KiB/s, done.
Total 4 (delta 1), reused 0 (delta 0), pack-reused 0
To ssh://gitlab.tamk.cloud:1022/server-tech-2023b-jingjing-yang/tip-of-the-day-1.0-bash-script.git
 8a3e7fc..7c9d355  main -> main
```

⇒ 2.0

- 7c9d355c · totd 2.0 access files from nfs share · 5 minutes ago
-

⇒ 1.1

- 8a3e7fc2 · access from local host · 1 hour ago
-

⇒ 1.0

- 94fc880c · clean code a bit · 3 weeks ago

8. Make sure the configuration(NFS mount) is permanent.

```
[jingjing@jingjing-serverb-2023:~$ sudo nano /etc/fstab
[jingjing@jingjing-serverb-2023:~$ cat /etc/fstab
LABEL=cloudimg-rootfs  /          ext4      discard,errors=remount-ro      0 1
LABEL=UEFI            /boot/efi    vfat      umask=0077      0 1

jingjing-nfs-server:/var/nfs/tips _/nfs/tips  nfs auto,nofail,noatime,nolock,intr,tcp,actimeo=1800 0 0
```

9. Boot both hosts to verify the configuration.

```
[jingjing@jingjing-nfs-server:~$ sudo reboot
[sudo] password for jingjing:
Connection to jingjing-nfs-server closed by remote host.
Connection to jingjing-nfs-server closed.
jingjing@jingjing-serverb-2023:~$ Connection to jingjing.ilab.fi closed by remote host.
Connection to jingjing.ilab.fi closed.
```

```

jingjing@jingjing-serverb-2023:~$ Connection to jingjing.ilab.fi closed by remote host.
Connection to jingjing.ilab.fi closed.
[jingjing@Ubuntu-MacBookPro:~$ ssh -i .ssh/id_rsa_stec23 jingjing@jingjing.ilab.fi
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-71-generic x86_64)

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

 System information as of Thu Apr 27 10:22:29 UTC 2023

 System load:          0.03271484375
 Usage of /:           6.5% of 77.35GB
 Memory usage:         31%
 Swap usage:           0%
 Processes:            116
 Users logged in:     2
 IPv4 address for br-8b959b60f93b: 172.18.0.1
 IPv4 address for docker0:   172.17.0.1
 IPv4 address for ens3:    192.168.1.18

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
 just raised the bar for easy, resilient and secure K8s cluster deployment.

 https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Thu Apr 27 10:19:09 2023 from 193.167.167.59
-bash: /home/jingjing/tipScript/.curtip: No such file or directory
ls: cannot access '/home/jingjing/tipScript/tips/*.txt': No such file or directory
Thu Apr 27 10:23:34 UTC 2023
      Tip of the Day!
-----Tip 1-----
cat: /home/jingjing/tipScript/tips/1.txt: No such file or directory
-----
|Show next tip? (y/n) n
-bash: 1%0+1: division by 0 (error token is "0+1")
[jingjing@jingjing-serverb-2023:~$ df -h
Filesystem              Size  Used  Avail Use% Mounted on
tmpfs                  95M  1.1M  94M   2% /run
/dev/vda1                78G  5.1G  73G   7% /
tmpfs                  473M  28K  473M   1% /dev/shm
tmpfs                  5.0M    0  5.0M   0% /run/lock
/dev/vda15              105M  6.1M  99M   6% /boot/efi
jingjing-nfs-server:/var/nfs/tips  78G  2.1G  76G   3% /nfs/tips
tmpfs                  95M  4.0K  95M   1% /run/user/1400
tmpfs                  95M  4.0K  95M   1% /run/user/2031

```

10. Update CMDB backup

```
[jingjing@jingjing-serverb-2023:/data/cmdb-server-tech-2023-jingjing-yang/jingjing-serverb-2023$ cp -p /etc/fstab etc/.
jingjing@jingjing-serverb-2023:/data/cmdb-server-tech-2023-jingjing-yang/jingjing-serverb-2023$ git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
  [   etc/fstab

nothing added to commit but untracked files present (use "git add" to track)
jingjing@jingjing-serverb-2023:/data/cmdb-server-tech-2023-jingjing-yang/jingjing-serverb-2023$ git add -A
jingjing@jingjing-serverb-2023:/data/cmdb-server-tech-2023-jingjing-yang/jingjing-serverb-2023$ git commit -m "nfs client setup add"
[main 848d39c] nfs client setup add
 1 file changed, 4 insertions(+)
  create mode 100644 jingjing-serverb-2023/etc/fstab
jingjing@jingjing-serverb-2023:/data/cmdb-server-tech-2023-jingjing-yang/jingjing-serverb-2023$ git pull origin main
[From ssh://gitlab.tamk.cloud:1022/server-tech-2023b-jingjing-yang/cmdb-server-tech-2023-jingjing-yang
 * branch      main       -> FETCH_HEAD
Already up to date.
jingjing@jingjing-serverb-2023:/data/cmdb-server-tech-2023-jingjing-yang/jingjing-serverb-2023$ git push
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 587 bytes | 587.00 KiB/s, done.
Total 5 (delta 2), reused 0 (delta 0), pack-reused 0
To ssh://gitlab.tamk.cloud:1022/server-tech-2023b-jingjing-yang/cmdb-server-tech-2023-jingjing-yang.git
 af559f6..848d39c  main -> main
```

11. NFS setup summary



To configure an NFS share, you can follow these general steps:

1. Install the necessary NFS packages on both the server and client machines.
2. Create a directory on the server that you want to share over NFS.
3. Edit the `/etc/exports` file on the server to specify which directories to share and which clients are allowed to access them.
4. Export the shared directory by running the "exportfs" command on the server.
5. On the client machine, create a mount point directory where the shared directory will be mounted. If the directory exists, make sure that it is empty.
6. Mount the shared directory on the client machine using the "mount" command.
7. Optionally, configure the NFS share to be mounted automatically at system boot time.



CHECK LIST:

```
[jingjing@jingjing-nfs-server:~$ ping 192.168.1.18
PING 192.168.1.18 (192.168.1.18) 56(84) bytes of data.
64 bytes from 192.168.1.18: icmp_seq=1 ttl=64 time=0.414 ms
64 bytes from 192.168.1.18: icmp_seq=2 ttl=64 time=0.438 ms
64 bytes from 192.168.1.18: icmp_seq=3 ttl=64 time=0.447 ms
64 bytes from 192.168.1.18: icmp_seq=4 ttl=64 time=0.584 ms
^C
--- 192.168.1.18 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3068ms
rtt min/avg/max/mdev = 0.414/0.470/0.584/0.066 ms
jingjing@jingjing-nfs-server:~$ ]
```



jingjingyang — jingjing@jingjing-serverb-2023: ~

```
[jingjing@jingjing-serverb-2023:~$ ping 192.168.1.13
PING 192.168.1.13 (192.168.1.13) 56(84) bytes of data.
64 bytes from 192.168.1.13: icmp_seq=1 ttl=64 time=0.435 ms
64 bytes from 192.168.1.13: icmp_seq=2 ttl=64 time=0.438 ms
64 bytes from 192.168.1.13: icmp_seq=3 ttl=64 time=0.438 ms
^C
--- 192.168.1.13 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2046ms
rtt min/avg/max/mdev = 0.435/0.437/0.438/0.001 ms
```

```
[jingjing@jingjing-nfs-server:~$ sudo ufw status
Status: active
```

To	Action	From
--	-----	-----
22/tcp	ALLOW	Anywhere
2049	ALLOW	Anywhere
22/tcp (v6)	ALLOW	Anywhere (v6)
2049 (v6)	ALLOW	Anywhere (v6)

```
jingjing@jingjing-serverb-2023:~$ dpkg -l | grep nfs-common
ii  nfs-common
    1:2.6.1-1ubuntu1.2          amd64      NFS support files common to client and server
```

```
[jingjing@jingjing-nfs-server:~$ sudo apt list --installed | grep nfs-kernel-server
WARNING: apt does not have a stable CLI interface. Use with caution in scripts.
nfs-kernel-server/jammy-updates,now 1:2.6.1-1ubuntu1.2 amd64 [installed]
```

```
[jingjing@jingjing-nfs-server:~$ sudo cat /etc/exports
# /etc/exports: the access control list for filesystems which may be exported
#           to NFS clients.  See exports(5).
#
# Example for NFSv2 and NFSv3:
# /srv/homes      hostname1(rw,sync,no_subtree_check) hostname2(ro,sync,no_subtree_check)
#
# Example for NFSv4:
# /srv/nfs4      gss/krb5i(rw,sync,fsid=0,crossmnt,no_subtree_check)
# /srv/nfs4/homes  gss/krb5i(rw,sync,no_subtree_check)
#
/var/nfs/tips    192.168.1.0/24(rw,sync,no_subtree_check)
```

```
[jingjing@jingjing-serverb-2023:~$ ls /nfs/tips/
jingjing@jingjing-serverb-2023:~$ ]
```

```
[jingjing@jingjing-serverb-2023:~$ lsb_release -a
No LSB modules are available.
[Distributor ID: Ubuntu
Description:    Ubuntu 22.04.2 LTS
Release:        22.04
Codename:       jammy
jingjing@jingjing-serverb-2023:~$ ssh -l jingjing jingjing-nfs-server
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-69-generic x86_64)
[

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

System information as of Sun Apr 23 12:33:57 UTC 2023

System load:  0.0          Processes:           106
Usage of /:   2.1% of 77.35GB  Users logged in:  0
Memory usage: 20%          IPv4 address for ens3: 192.168.1.13
Swap usage:   0%


* Introducing Expanded Security Maintenance for Applications.
  Receive updates to over 25,000 software packages with your
  Ubuntu Pro subscription. Free for personal use.

  https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

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

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun Apr 23 12:22:23 2023 from 192.168.1.18
jingjing@jingjing-nfs-server:~$ lsb_release -a
No LSB modules are available.
[Distributor ID: Ubuntu
Description:    Ubuntu 22.04.2 LTS
Release:        22.04
Codename:       jammy
```

12. Notes of error fixing

Host key verification failed

<https://bcg.biostat.wisc.edu/linux-login-servers/how-to-fix-host-key-verification-failed-ssh-error/>

This error occurs when the target server you are trying to SSH into has been rebuilt or had its RSA key changed since the last time you connected to it.

Resolve this issue: removing old key manually

Symlinks are broken

Symlinks do not follow the files to which they point. If you have `link_file` -> `original_file` and you do `rm original_file`, the `link_file` will be broken. If you recreate original filename, the symlink will work again.

a2ensite, a2dissite - enable or disable an apache2 site / virtual host

a2ensite is a script that enables the specified site (which contains a <VirtualHost> block) within the apache2 configuration. It does this by creating symlinks within /etc/apache2/sites-enabled.

Likewise, `a2dissite` disables a site by removing those symlinks. It is not an error to enable a site which is already enabled, or to disable one which is already disabled.

<https://manpages.ubuntu.com/manpages/bionic/man8/a2ensite.8.html>

ping is not working

Method: configure cloud firewalls to enable ICMP rule to allow pings.

Modified existing default rules

You should not change the rules regarding the default group.

If you do that by accident, you can reset rules like below to restore the default settings.

Add Rule

Rule *

Custom TCP Rule

Direction

Ingress

Open Port *

All ports

Remote * ⓘ

Security Group

Security Group

default (current)

Ether Type

IPv4

