

# PASSWORDLESS CONNECTION

## STEP 1: GENERATING RSA KEY

- ssh-keygen -t rsa -b 4096

```
Nov 16 15:12
msis@msis: ~
msis@client:~$ ssh-keygen -t rsa -b 4096
Generating public/private rsa key pair.
Enter file in which to save the key (/home/msis/.ssh/id_rsa):
/home/msis/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/msis/.ssh/id_rsa
Your public key has been saved in /home/msis/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:XZsmWtHch+nV3LnCmwVWRUX5wBq89Z1BwkWBFrjHzo0 msis@client
The key's randomart image is:
+---[RSA 4096]----+
|       .o+*0X|
|       +o=**+|
|       . BB++@|
|       . +=*.+=|
|      S + Bo+o |
|      o o E=. |
|      .   o   |
|           |
|           |
+---[SHA256]-----+
```

## STEP 2: COPY THE KEY TO AGENT NODE

- ssh-copy-id user@slave1

```
msis@client:~$ ssh-copy-id msis@172.18.181.68
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
msis@172.18.181.68's password:

Number of key(s) added: 1

Now try logging into the machine, with:  "ssh 'msis@172.18.181.68'"
and check to make sure that only the key(s) you wanted were added.
```

## STEP 3: ADDING PRIVATE KEY AGENT

-ssh-add ~/.ssh/id\_rsa

```
msis@client:~$ ssh-add ~/.ssh/id_rsa
Identity added: /home/msis/.ssh/id_rsa (msis@client)
msis@client:~$ chmod 600 ~/.ssh/id_rsa
msis@client:~$ chmod 644 ~/.ssh/id_rsa.pub
msis@client:~$ ssh msis@172.18.181.68
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-35-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.
```

## STEP 4: PERMISSION TO KEYS

- chmod 600 ~/.ssh/id\_rsa --> Private RSA key(Only accessible by owner)
- chmod 644 ~/.ssh/id\_rsa.pub --> Public RSA key(Shared to slaves ~/.ssh/authorized\_keys)

```
msis@client:~$ ssh-add ~/.ssh/id_rsa
Identity added: /home/msis/.ssh/id_rsa (msis@client)
msis@client:~$ chmod 600 ~/.ssh/id_rsa
msis@client:~$ chmod 644 ~/.ssh/id_rsa.pub
msis@client:~$ ssh msis@172.18.181.68
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-35-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.
```

## STEP 5: NOW CONNECT

- ssh -i msis@usernode

```
msis@client:~$ ssh msis@172.18.181.68
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-35-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.

11 updates can be applied immediately.
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: Thu Nov 13 12:04:53 2025 from 172.18.181.63
msis@msis:~$ 
```

## NFS setup

STEP 1: Install NFS Packages on all nodes (master and slaves)

```
sudo apt update  
sudo apt install nfs-kernel-server nfs-common -y  
nfs-kernel-server: Required only on the master (NFS server)  
nfs-common: Required on slaves (NFS clients)
```

```
msis@msis: ~$ sudo apt update  
[sudo] password for msis:  
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]  
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease  
Ign:3 https://repo.mongodb.org/apt/ubuntu noble/mongodb-org/7.0 InRelease  
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]  
Err:5 https://repo.mongodb.org/apt/ubuntu noble/mongodb-org/7.0 Release  
  404 Not Found [IP: 18.161.229.8 443]  
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]  
Get:7 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]  
Get:8 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]  
Get:9 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1,585 kB]  
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.3 kB]  
Get:11 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]  
Get:12 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]  
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]  
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1,499 kB]  
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/universe i386 Packages [988 kB]  
Get:16 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [378 kB]  
Get:17 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]  
Get:18 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7,140 B]  
Get:19 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]  
Get:20 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [11.0 kB]  
Get:21 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]  
Reading package lists... Done  
E: The repository 'https://repo.mongodb.org/apt/ubuntu noble/mongodb-org/7.0 Release' does not have a Release file.  
N: Updating from such a repository can't be done securely, and is therefore disabled by default.  
N: See apt-secure(8) manpage for repository creation and user configuration details.  
msis@msis: ~$ sudo apt install nfs-kernel-server nfs-common -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
nfs-common is already the newest version (1:2.6.4-3ubuntu5.1).  
The following NEW packages will be installed:  
  nfs-kernel-server  
0 upgraded, 1 newly installed, 0 to remove and 11 not upgraded.  
Need to get 169 kB of archives.  
After this operation, 606 kB of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 nfs-kernel-server amd64 1:2.6.4-3ubuntu5.1 [169 kB]  
Fetched 169 kB in 1s (156 kB/s)  
Selecting previously unselected package nfs-kernel-server.  
(Reading database ... 342188 files and directories currently installed.)  
Preparing to unpack .../nfs-kernel-server_1%3a2.6.4-3ubuntu5.1_amd64.deb ...
```

STEP:2.Create a Shared Directory on master

```
sudo mkdir -p /nfs/shared  
sudo chmod 777 /nfs/shared
```

```
Creating config file /etc/default/nfs-kernel-server with new version  
Processing triggers for man-db (2.12.0-4build2) ...  
msis@msis: ~$ nfs-kernel-server: Required only on the master (NFS server)  
bash: syntax error near unexpected token `('  
msis@msis: ~$ sudo mkdir -p /nfs/shared  
msis@msis: ~$ sudo chmod 777 /nfs/shared  
msis@msis: ~$
```

### STEP:3.Configure NFS Exports

Edit the NFS exports file on the master

```
sudo nano /etc(exports
```

Add the following lines

```
/nfs/shared 172.18.181.63(rw, sync, no_subtree_check)
```

```
/nfs/shared 172.18.181.82(rw, sync, no_subtree_check)
```

```
GNU nano 7.2                                     /etc/e>
# /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)
#
/nfs/shared 172.18.181.63(rw, sync, no_subtree_check)
/nfs/shared 172.18.181.82(rw, sync, no_subtree_check)
```

### STEP:4. Export the Shared Directory

Apply and verify the configuration

```
sudo exportfs -a
```

```
sudo systemctl restart nfs-kernel-server
```

```
sudo exportfs -v
```

```
msis@msis:~$ sudo nano /etc/exports
msis@msis:~$ sudo exportfs -a
msis@msis:~$ sudo systemctl restart nfs-kernel-server
msis@msis:~$ sudo exportfs -v
/nfs/shared      172.18.181.63(sync, wdelay, hide, no_subtree_check, sec=sys, rw, secure, root_squash
/nfs/shared      172.18.181.82(sync, wdelay, hide, no_subtree_check, sec=sys, rw, secure, root_squash

```

### STEP:5. Mount the NFS Share on Slave Nodes

On slave1

```
sudo mkdir -p /nfs/shared
```

```
sudo mount 172.18.181.65:/nfs/shared /nfs/shared
```

On slave2

```
sudo mkdir -p /nfs/shared
```

```
sudo mount 172.18.181.65:/nfs/shared /nfs/shared
```

```
msis@msis:~$ ssh msis@172.18.181.63
msis@172.18.181.63's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-35-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
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: Thu Nov 13 12:39:46 2025 from 172.18.181.63
msis@client:~$ sudo mkdir -p /nfs/shared
[sudo] password for msis:
Sorry, try again.
[sudo] password for msis:
msis@client:~$ sudo mount 172.18.181.68:/nfs/shared /nfs/shared
msis@client:~$ cd /nfs/shared
```

```
msis@msis:~$ ssh msis@172.18.181.82
ssh: connect to host 172.18.181.82 port 22: No route to host
msis@msis:~$ ssh msis@172.18.181.82
ssh: connect to host 172.18.181.82 port 22: No route to host
msis@msis:~$ ssh msis@172.18.181.82
The authenticity of host '172.18.181.82 (172.18.181.82)' can't be established.
ED25519 key fingerprint is SHA256:dAnyUpf0UJX80dYTKMDRxcJTYebp0DbEJbNfrNRgw2s.
This host key is known by the following other names/addresses:
 ~/.ssh/known_hosts:8: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.18.181.82' (ED25519) to the list of known hosts.
msis@172.18.181.82's password:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.14.0-27-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.

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

3 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Last login: Sat Nov 15 16:23:27 2025 from 172.18.181.61
msis@master:~$ sudo mkdir -p /nfs/shared
[sudo] password for msis:
msis@master:~$ sudo mount 172.18.181.65:/nfs/shared /nfs/shared
mount.nfs: access denied by server while mounting 172.18.181.65:/nfs/shared
msis@master:~$ sudo mount 172.18.181.68:/nfs/shared /nfs/shared
msis@master:~$ df -h | grep nfs
172.18.181.68:/nfs/shared 937G 421G 469G 48% /nfs/shared
msis@master:~$ cd /nfs/shared
```

## STEP:6. Verify the Mount

Run on any slave

```
df -h | grep nfs
```

Output would be 172.18.181.68:/nfs/shared 100G 2G 98G 2% /nfs/shared

Test by creating a file from one slave and checking its visibility on others

```
cd /nfs/shared
```

```
touch testfile_from_slave1
```

Check if it appears in /nfs/shared on master or slave2.

```
msis@master:~$ df -h | grep nfs
172.18.181.68:/nfs/shared 937G 421G 469G 48% /nfs/shared
msis@master:~$ cd /nfs/shared
msis@master:/nfs/shared$ mkdir samplefile
msis@master:/nfs/shared$ ls
samplefile
msis@master:/nfs/shared$ 
```

```
sudo: syntax error: unexpected token ` '
msis@msis:~$ sudo mkdir -p /nfs/shared
msis@msis:~$ sudo chmod 777 /nfs/shared
msis@msis:~$ sudo nano /etc/exports
msis@msis:~$ sudo exportfs -a
msis@msis:~$ sudo systemctl restart nfs-kernel-server
msis@msis:~$ sudo exportfs -v
/nfs/shared    172.18.181.63(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,root_squash,no_all_squash)
/nfs/shared    172.18.181.82(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,root_squash,no_all_squash)
msis@msis:~$ cd /nfs/shared
msis@msis:/nfs/shared$ ls
samplefile
msis@msis:/nfs/shared$ 
```

```
See https://ubuntu.com/esm or run: sudo pro status

Last login: Thu Nov 13 12:39:46 2025 from 172.18.181.63
msis@client:~$ sudo mkdir -p /nfs/shared
[sudo] password for msis:
Sorry, try again.
[sudo] password for msis:
msis@client:~$ sudo mount 172.18.181.68:/nfs/shared /nfs/shared
msis@client:~$ cd /nfs/shared
msis@client:/nfs/shared$ ls
samplefile
msis@client:/nfs/shared$ 
```

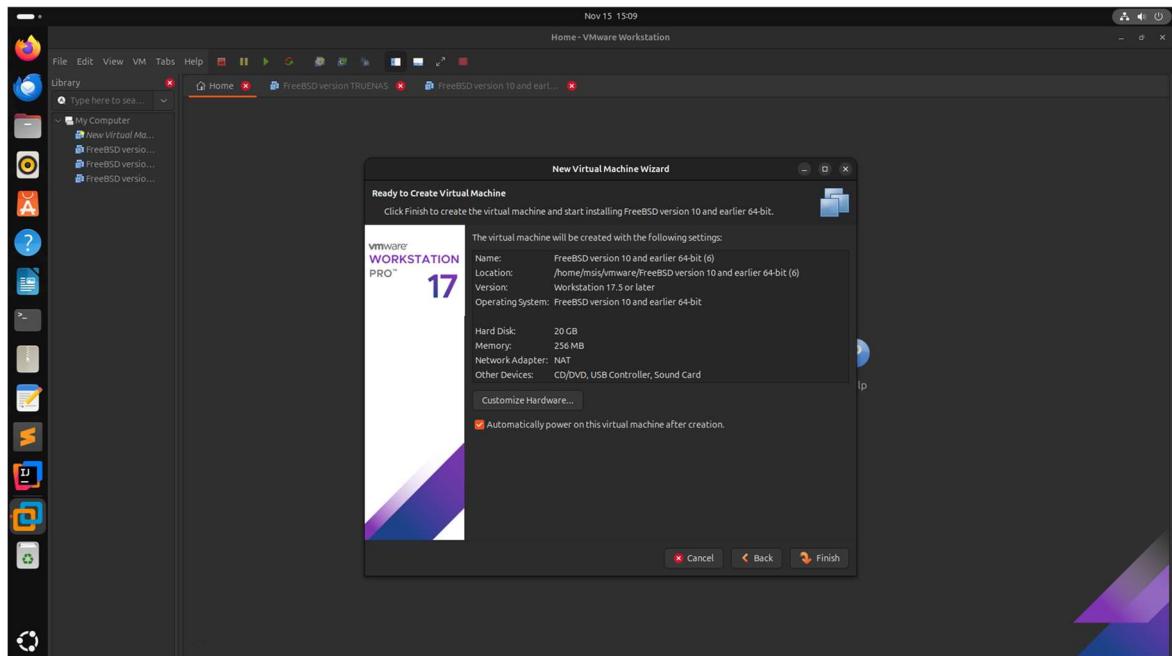
# TRUENAS INSTALLATION AND SETUP

## STEP 1: Creating a New Virtual Machine

- start VMware

1. Launch Vmware.
2. Click on New to create a new virtual machine.

Configure the VMware

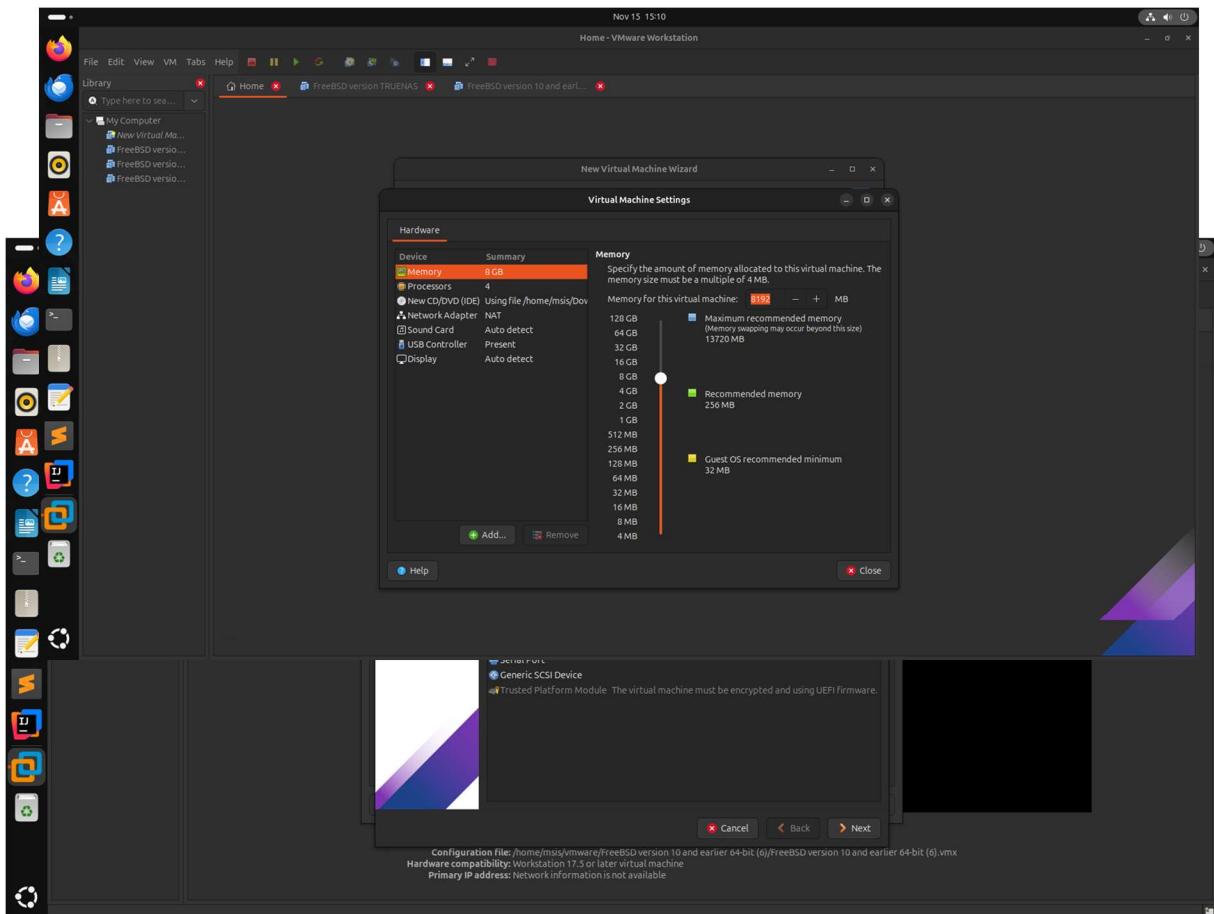


Select “Typical” installation mode and click Next.

4. Choose “Installer disc image (ISO)” and browse to the TrueNAS ISO file.
5. Click Next and set the guest OS type to “Other” or “FreeBSD” as suggested
6. Assign a Name (e.g., TrueNAS-VM)

## Allocate System Resources

Allocate 8GB of RAM and click Next and set processor to at least two cores for better performance.

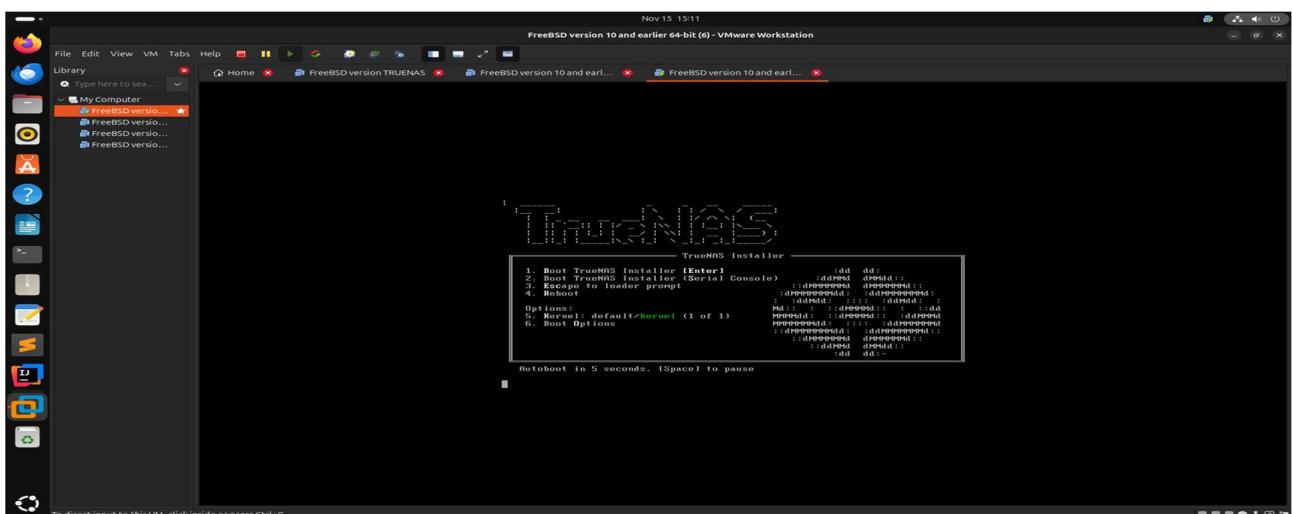


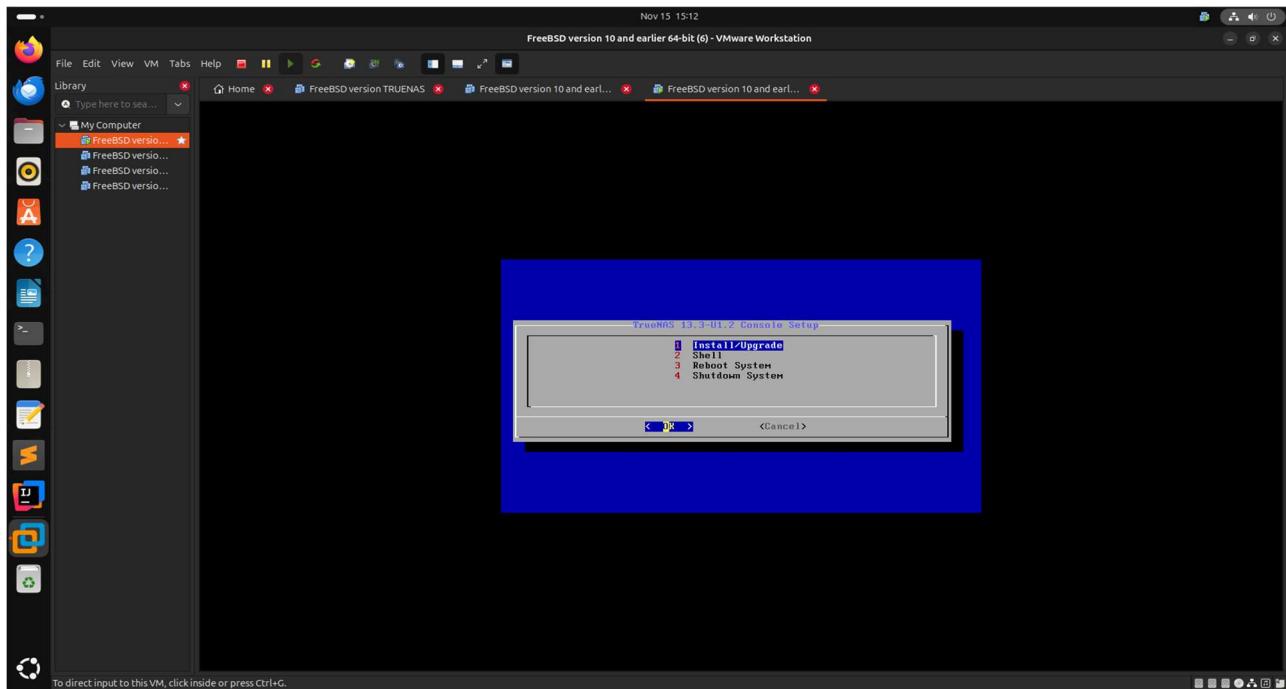
Create a virtual hard disk (recommended 20GB+).

8. Complete the VM creation wizard and finish.

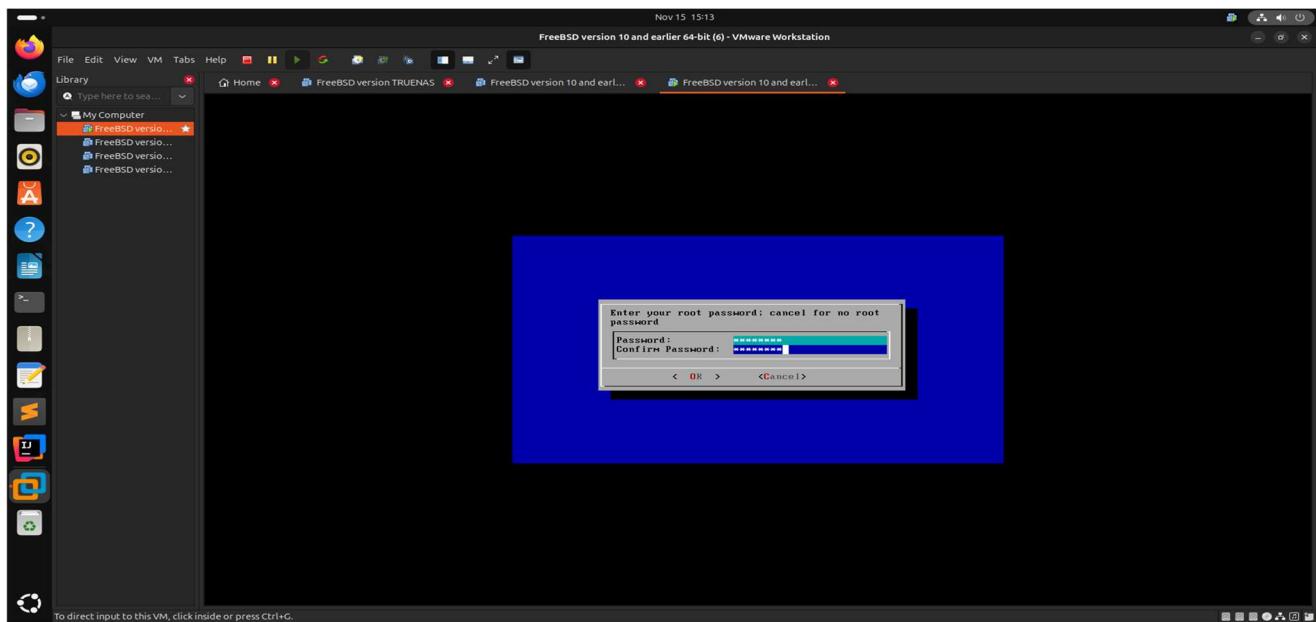
## STEP 2: Installing TrueNAS

1. Start the TRUENAS virtual machine.
2. When prompted, select Install/Upgrade to initiate the installation process





Set a password

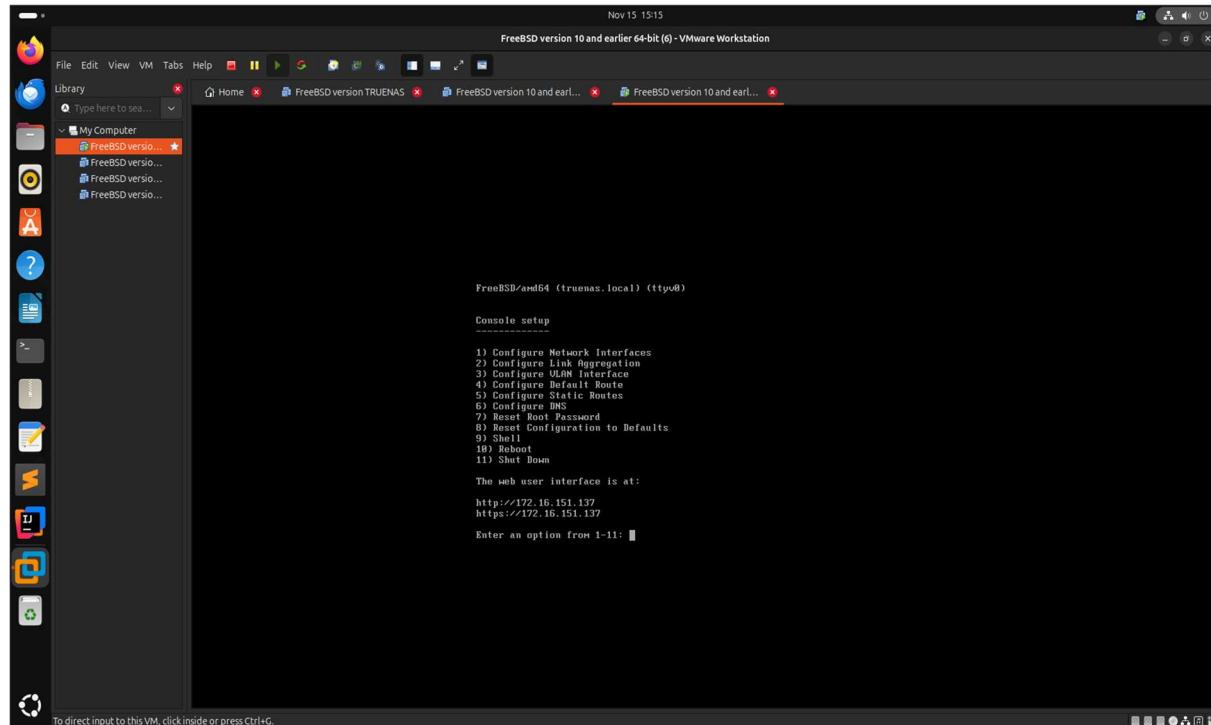
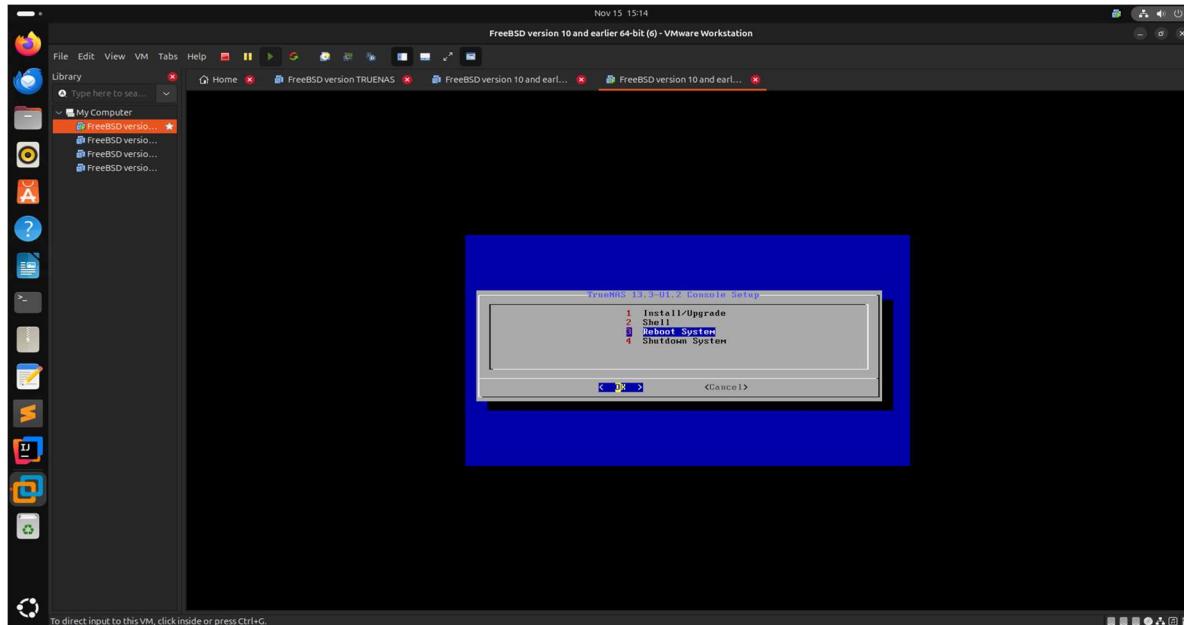


Installation is complete, reboot the VMware.

## Initial Setup and Configuration

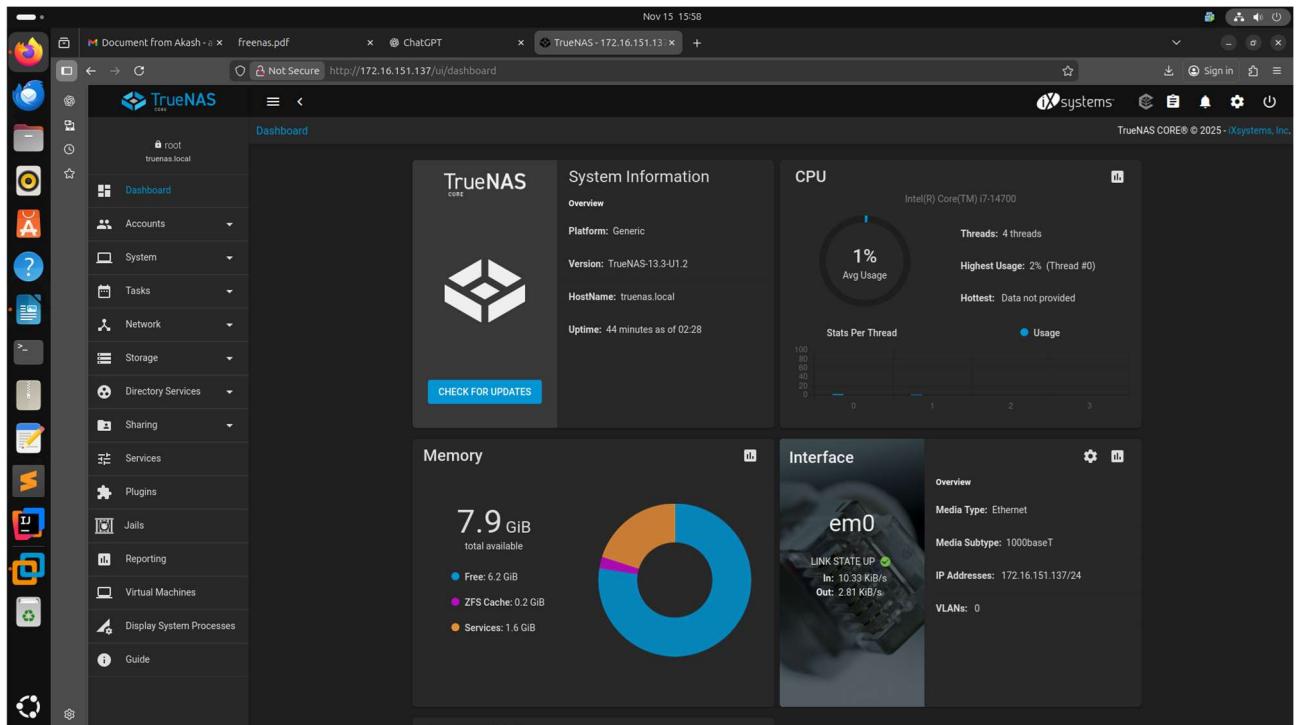
### Step 1: Accessing the Web Interface

1. After rebooting, note the displayed TRUENAS IP address.



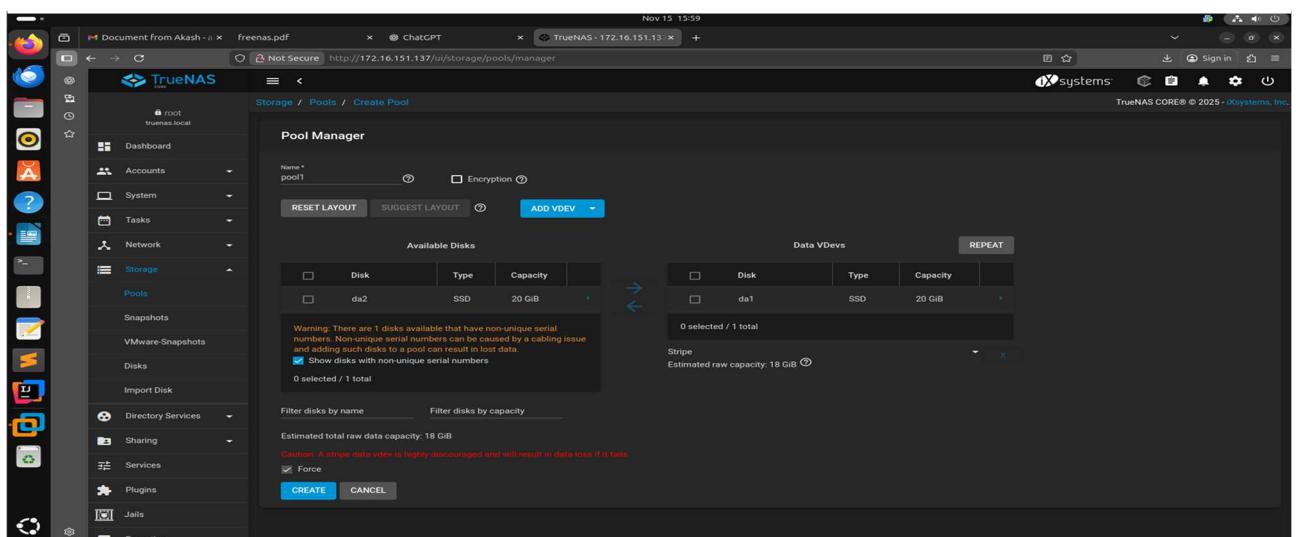
## STEP 3: Accessing TrueNAS Web Interface

1. Open a web browser and navigate to `http://<TRUENAS-IP-Address>`.
2. Log in with the username “root” and the password “msis@123”



## STEP 4: Creating Storage Pools

1. In the TRUENAS dashboard, navigate to Storage and select Pools.
2. Click Add to create a storage pool.
3. Select your virtual hard disk and configure the pool settings.



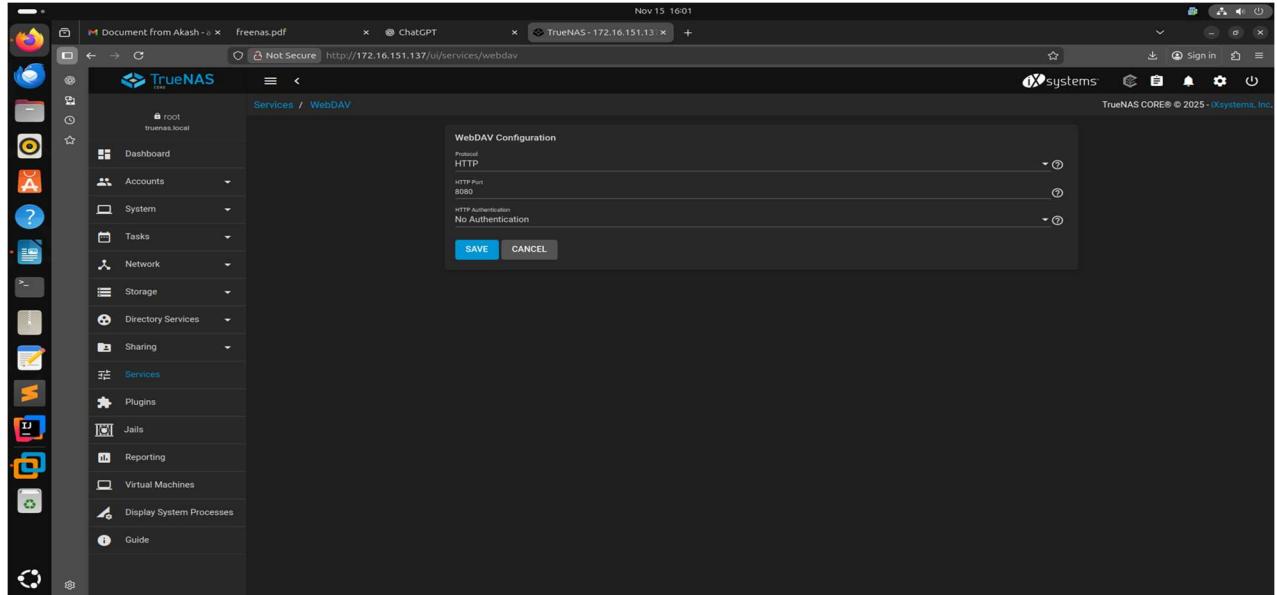
The screenshot shows the TrueNAS web interface. The left sidebar is open, showing options like Dashboard, Accounts, System, Storage, and Sharing. The main content area is titled "Storage / Pools". It lists two pools: "pool1 (System Dataset Pool)" and "pool2". Both pools are marked as "ONLINE" with green checkmarks. Pool1 has 7.2 MiB used and 16.95 GiB free. Pool2 has 444 KiB used and 16.95 GiB free. The interface includes a header bar with the date and time (Nov 15 16:00), a navigation bar with tabs for "Document from Akash", "freenas.pdf", "ChatGPT", and "TrueNAS - 172.16.151.13", and a footer bar with the TrueNAS logo and copyright information.

## STEP 5: Setting Up a WebDAV Share

1. Go to Sharing.
2. Choose WebDAV shares based on your environment.

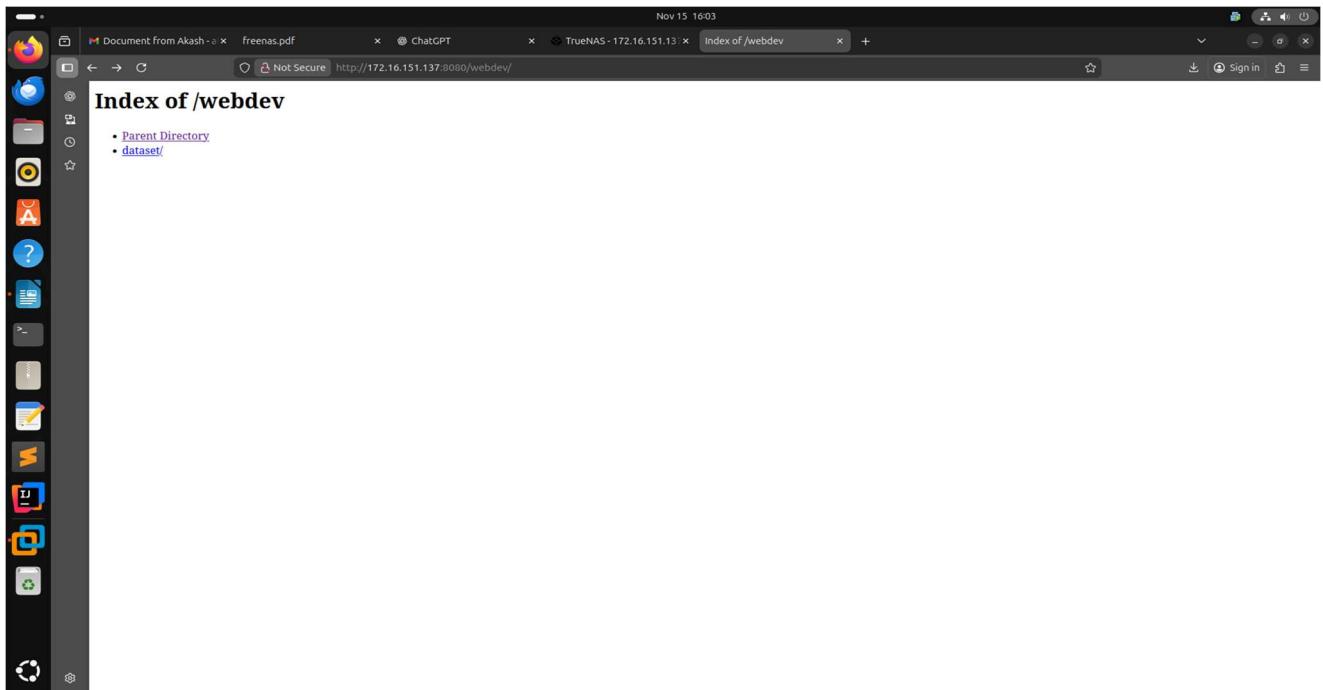
The screenshot shows the TrueNAS web interface under the "Sharing" section, specifically the "WebDAV" configuration page. A new share is being created with the name "webdev". The "Path" is set to "/mnt/pool1". The "Description" field also contains the path "/mnt/pool1". There are three checkboxes at the bottom: "Read Only", "Change User & Group Ownership", and "Enabled". The "Enabled" checkbox is checked. The "SUBMIT" button is at the bottom of the form. The left sidebar is visible with options like Accounts, System, Storage, and Sharing.

Select WebDAV from Sharing tab, and add name and select the pool1 path and click submit.



Enable WebDAV service and configure it from services tab:

Access it using the <IP>:port/name of WebDAV sharing here 172.16.151.137:8080/webdev



## STEP 6: Configuring NFS Share

1. Go to Sharing.
2. Choose NFS shares based on your environment.
3. Set network and permission options based on requirements.
4. Save and enable the NFS service.

The screenshot shows the 'Sharing / NFS / Add' configuration page. In the 'Paths' section, a path is selected as '/mnt/pool2'. The 'General Options' section contains a checkbox for 'Enabled' which is checked. At the bottom, there are three buttons: 'SUBMIT', 'CANCEL', and 'ADVANCED OPTIONS'.

The screenshot shows the 'Services / NFS' configuration page. It includes a 'General Options' section with 'Number of servers' set to 16, a 'Bind IP Addresses' dropdown, and an 'NFSv4' section where 'Enable NFSv4' is checked. Under 'Ports', it lists 'mountd(8) bind port', 'rpc.statd(8) bind port', and 'rpc.lockd(8) bind port'. In the 'Other Options' section, 'Allow non-root mount' is checked. At the bottom, there are 'SAVE' and 'CANCEL' buttons.

```
msis@msis:~$ cd /mnt/
msis@msis:/mnt$ cd nfs
msis@msis:/mnt/nfs$ cd ..
msis@msis:/mnt$ sudo mkdir nfs
[sudo] password for msis:
mkdir: cannot create directory 'nfs': File exists
msis@msis:/mnt$ sudo mount -t nfs -o nfsvers=4 172.16.151.137:/mnt/pool2/ /mnt/nfs
msis@msis:/mnt$ df -h
Filesystem           Size   Used  Avail Use% Mounted on
tmpfs                 1.6G   2.4M   1.6G   1% /run
/dev/nvme0n1p2        937G  412G  479G  47% /
tmpfs                 7.7G     0   7.7G   0% /dev/shm
tmpfs                 5.0M   8.0K   5.0M   1% /run/lock
efivarfs              246K  181K   61K  75% /sys/firmware/efi/efivars
/dev/nvme0n1p1         1.1G   6.2M   1.1G   1% /boot/efi
tmpfs                 1.6G  140K   1.6G   1% /run/user/1000
172.16.151.137:/mnt/pool2  17G  128K   17G   1% /mnt/nfs
msis@msis:/mnt$ cd nfs
msis@msis:/mnt/nfs$ ls
unix2
msis@msis:/mnt/nfs$ 
```

## STEP 7: Configuring SMB Share

1. Click “Add”.
2. Choose the dataset path from your pool.

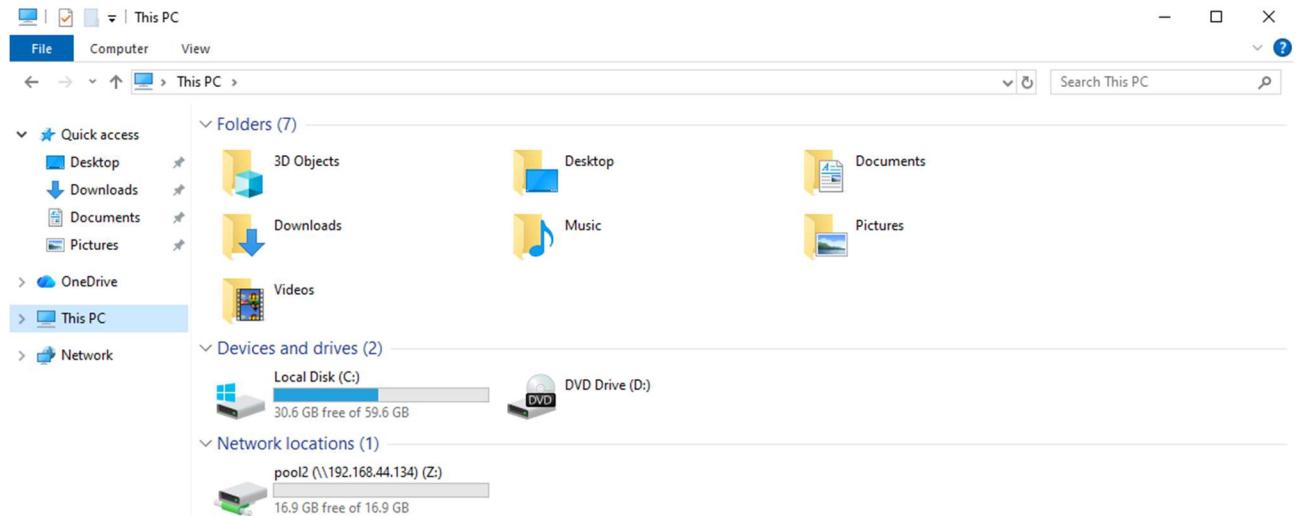
The screenshot shows the 'Sharing / SMB / Add' configuration screen. In the 'Basic' tab, the 'Path' is set to '/mnt/pool2'. The 'Name' is 'pool2'. Under 'Access', 'Enabled' is checked. 'Browsable to Network Clients' is also checked. Other options like 'Enable Shadow Copies' and 'Enable SMB2/3 Durable Handles' are checked. The 'Path Suffix' field is empty.

3. In Users click add give a name winusers and submit.

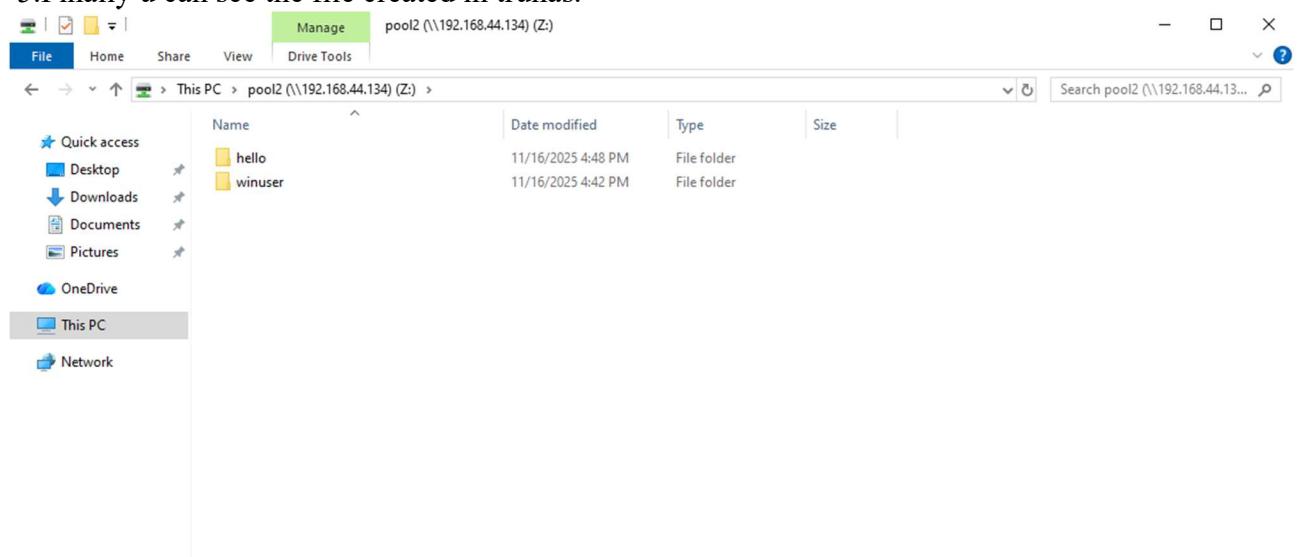
The screenshot shows the 'Accounts / Users / Add' configuration screen. In the 'Identification' tab, 'Full Name' is 'winuser' and 'Username' is 'winuser'. In the 'User ID and Groups' tab, 'User ID' is 1000 and 'New Primary Group' is checked. In the 'Directories and Permissions' tab, the 'Home Directory' is '/noinexistent' and 'Home Directory Permissions' show checkboxes for User, Group, and Other with all three checked. In the 'Authentication' tab, 'SSH Public Key' is empty, 'Disable Password' is set to 'No', 'Shell' is 'sh', 'Lock User' is unchecked, and 'Permit Sudo' is unchecked.

4. select this pc and right click

- Select network option
- And add the ip address of truenas
- Enter credentials



5. Finally you can see the file created in truenas.







# WEBSERVICES

## STEP 1: Open IntelliJ IDEA Ultimate

Launch **IntelliJ IDEA Ultimate** from your system.

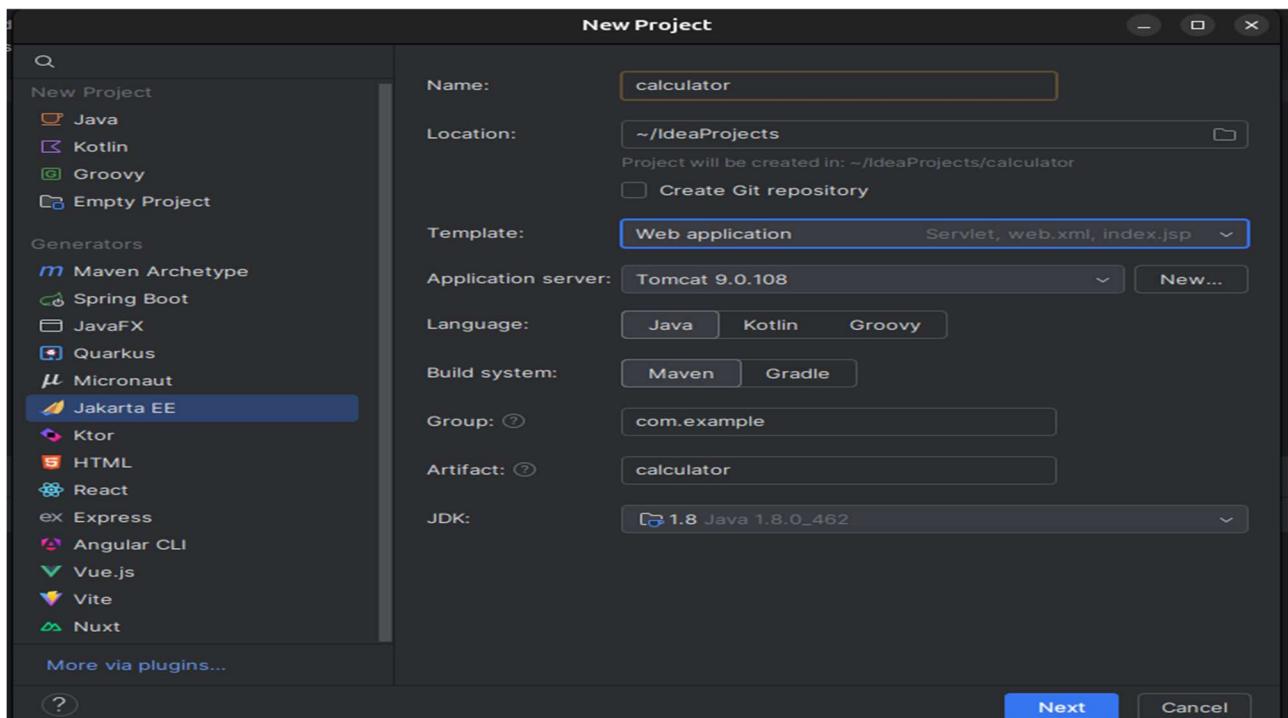
## STEP 2: Create a New Web Application Project.

-**Name:** calculator.

-**Template:** select web application

-**Project name:** calculator.

-**App server:** Tomcat.



## STEP 3: Create OperatorService Class

-Inside calculator→src→main→java→com.example.calculator

-Create new java class named OperatorService

-Add below code

```

Project <calculator> ~/IdeaProjects/calculator
  > .idea
  > .mvn
  > src
    > main
      > java
        > com.example.calculator
          > HelloServlet
          > OperatorPublisher
          > OperatorService
    > resources
    > webapp
  > test
  > target
    > .gitignore
    > mvnw
    > mvnw.cmd
    pom.xml
  > External Libraries
  > Scratches and Consoles

pom.xml (calculator)  HelloServlet.java  index.jsp  OperatorService.java  OperatorPublisher.java

1 package com.example.calculator;
2
3 import java.util.List;
4 import javax.jws.WebMethod;
5 import javax.jws.WebService;
6
7 @WebService 1 usage
8 public class OperatorService {
9
10     @WebMethod
11     public int add(int a, int b) { return a + b; }
12
13     @WebMethod no usages
14     public int sub(int a, int b) { return a - b; }
15
16     @WebMethod no usages
17     public int mul(int a, int b) { return a * b; }
18
19     @WebMethod no usages
20     public int div(int a, int b) { return a / b; }
21
22 }

```

## STEP 4: Create OperatorPublisher Class

- Inside calculator→src→main→java→com.example.calculator
- Create new java class named OperatorPublisher
- Add below code

```

Project <calculator> ~/IdeaProjects/calculator
  > .idea
  > .mvn
  > src
    > main
      > java
        > com.example.calculator
          > HelloServlet
          > OperatorPublisher
          > OperatorService
    > resources
    > webapp
  > test
  > target
    > .gitignore
    > mvnw
    > mvnw.cmd
    pom.xml
  > External Libraries
  > Scratches and Consoles

pom.xml (calculator)  HelloServlet.java  index.jsp  OperatorService.java  OperatorPublisher.java

1 package com.example.calculator;
2
3 import javax.xml.ws.Endpoint;
4
5 public class OperatorPublisher {
6     public static void main(String[] args) {
7         String url = "http://localhost:8085/calculator";
8         Endpoint.publish(url, new OperatorService());
9         System.out.println("Service started at: " + url + "?wsdl");
10    }
11 }

```

## STEP 5: Configure Project Settings Properly

- In the File->Project Structure,
- Click modules (on left side), under sources->language level it should be 8 - Lambdas, type annotations, etc. and under dependencies, Module SDK Should be Project SDK 1.8

-In File->Settings->Build, Execution, Deployment -> compiler-> Java compiler, in Per-module bytecode version, select your module (for e.g calculator) and Target byte code should be 8

-In File->Settings->Build, Execution, Deployment -> compiler-> Java compiler, under Build Tools-> Maven-> Runner, JRE should be Java 1.8

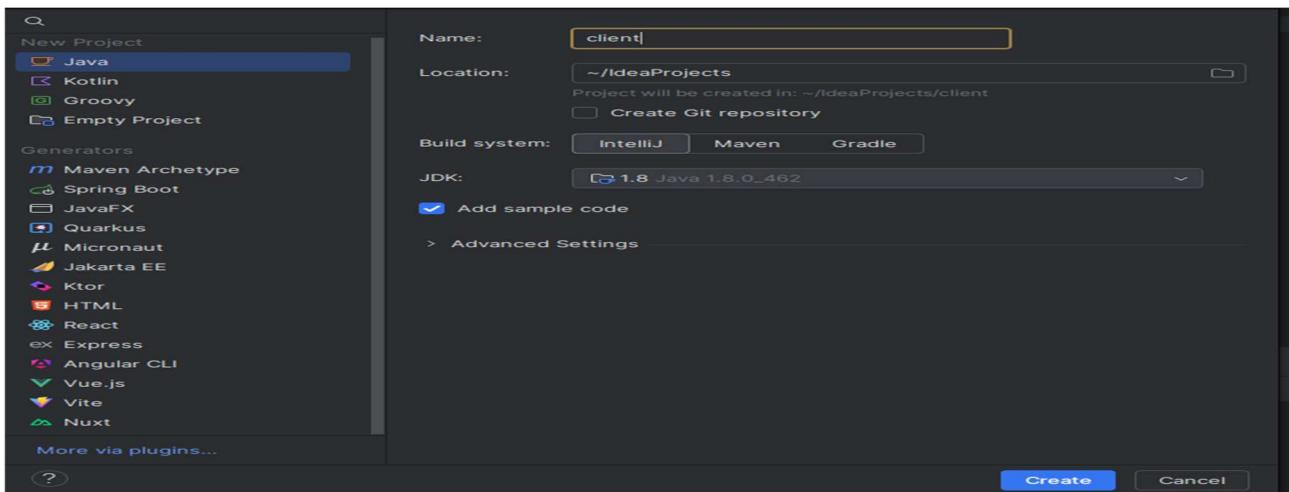
- In pom.xml target as maven compiler target 1.8 →

- In Jakarta version as 4.0.4

-HelloServlet.java is showing errors, make jarkata to javax in that file.

-Run operatorPublisher, u can access at port:8085

## STEP 6: Create Client



## STEP 7: Run Client to See Output

- Code it as written below.

- Run the current file to see O/P.

```
import com.example.client.OperatorService;
import com.example.client.OperatorServiceService;

public class TestOperatorClient {
    public static void main(String[] args) {
        OperatorServiceService service = new OperatorServiceService();
        OperatorService port = service.getOperatorServicePort();

        System.out.println("Add: " + port.add(10, 5));
        System.out.println("Sub: " + port.sub(10, 5));
        System.out.println("Mul: " + port.mul(10, 5));
        System.out.println("Div: " + port.div(10, 5));
    }
}
```

