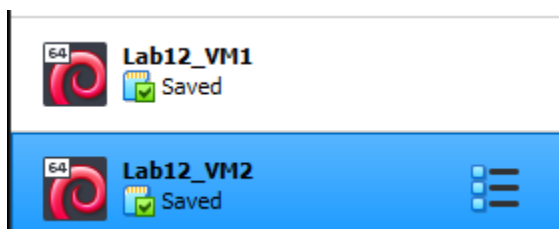
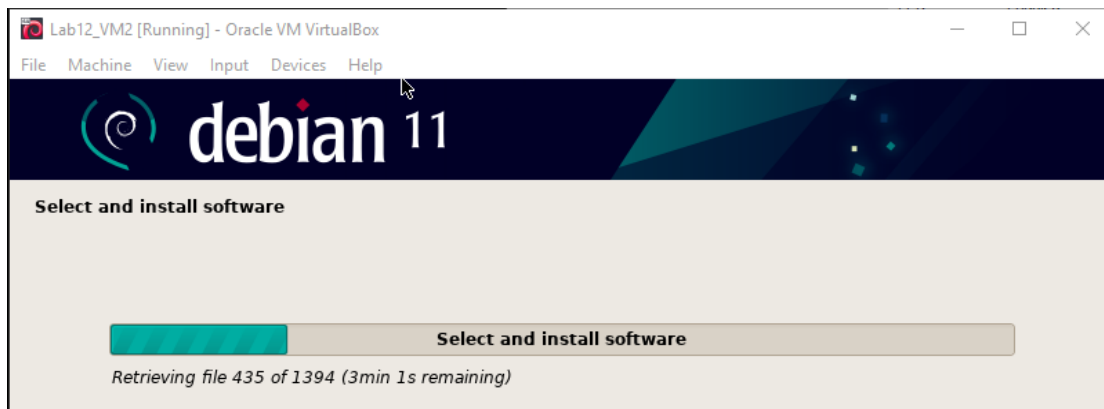
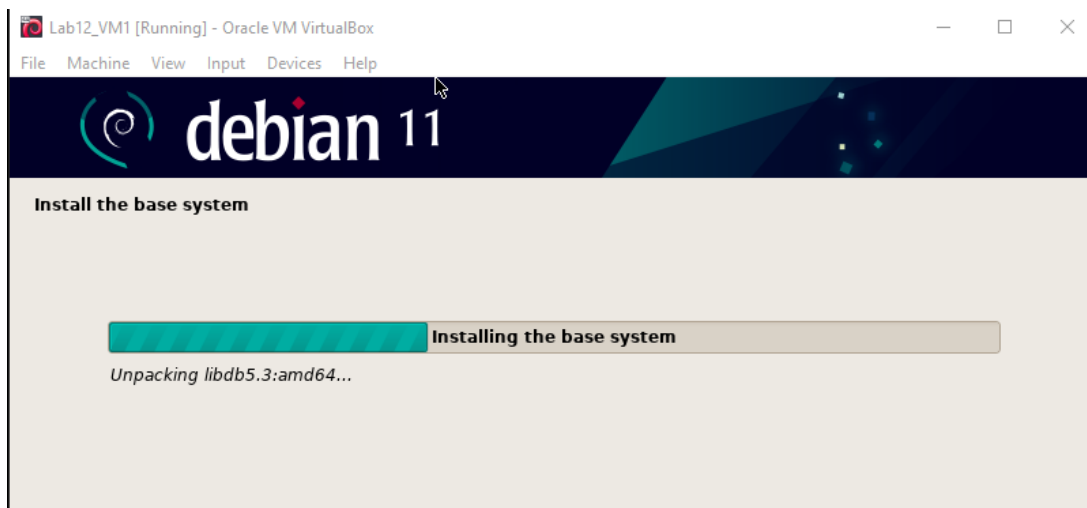
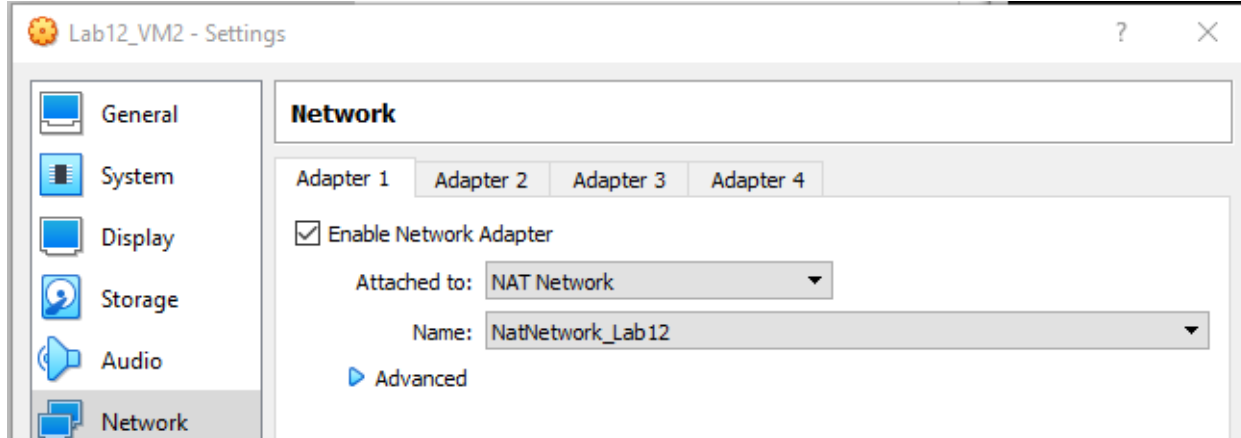
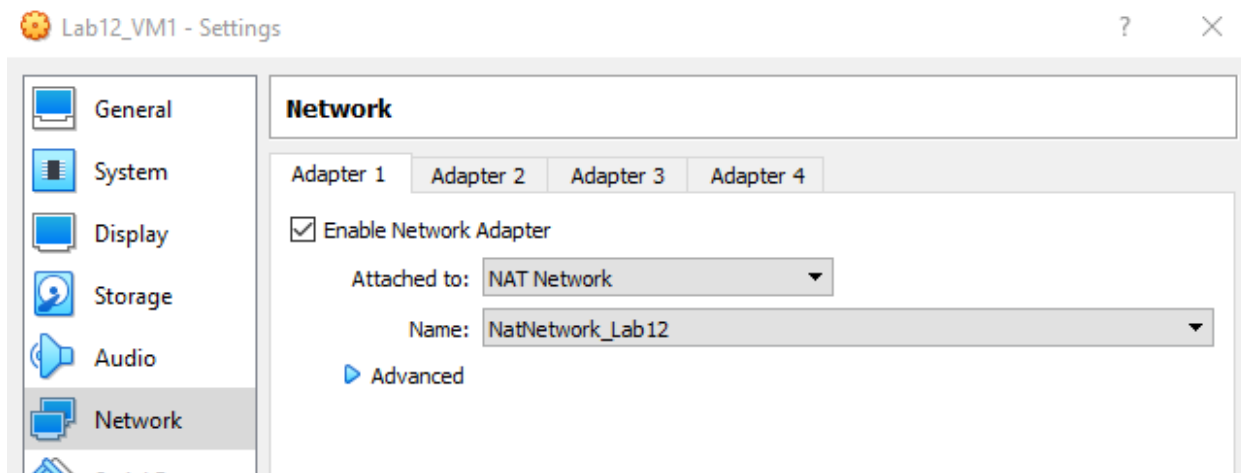
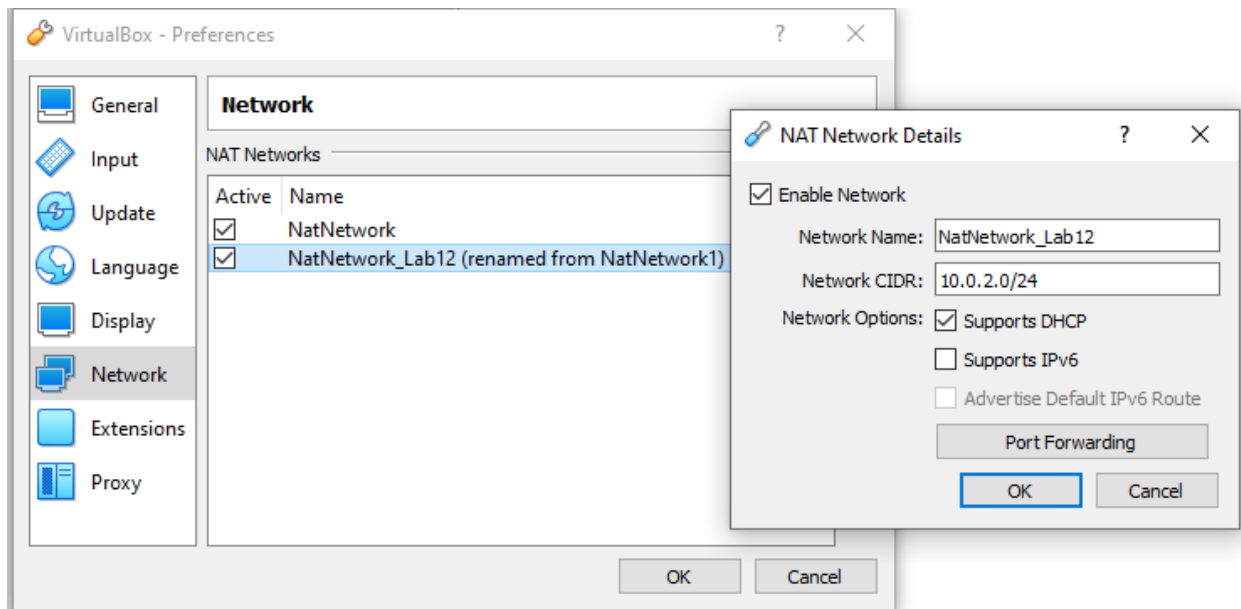


## Prerequisites

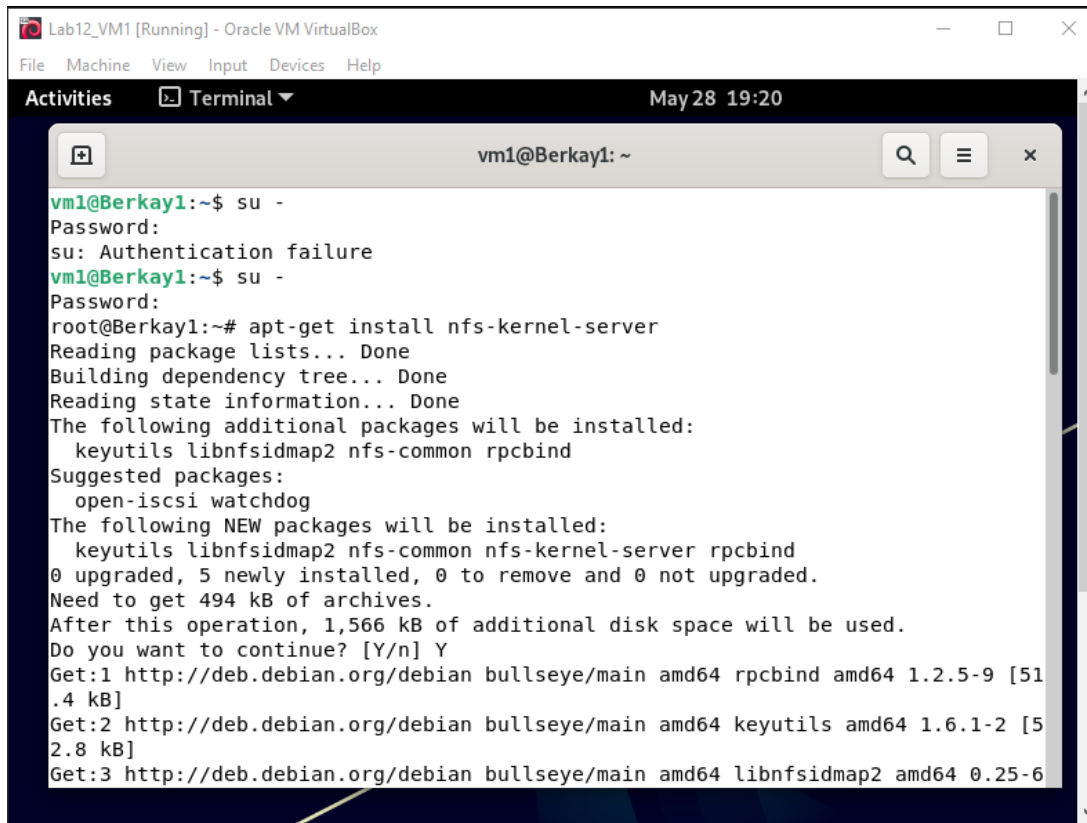
### 1) Creating new virtual machines with graphical user interface





# NFS

## 1) Apt-get install nfs-kernel-server

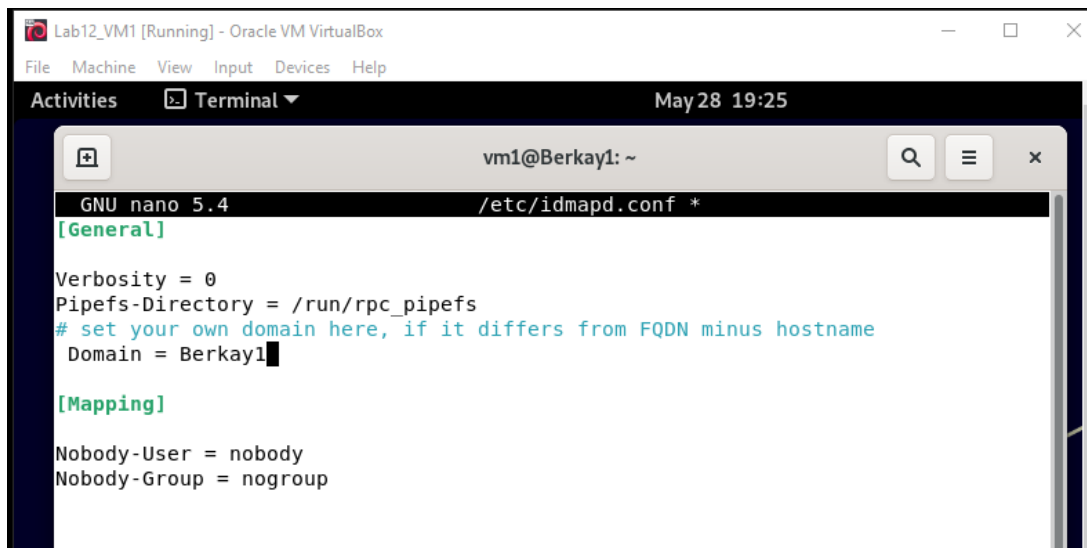


The screenshot shows a terminal window titled 'Lab12\_VM1 [Running] - Oracle VM VirtualBox'. The terminal prompt is 'vm1@Berkay1: ~'. The user enters 'su -' and provides a password. The root prompt is '# apt-get install nfs-kernel-server'. The terminal output shows the package lists, dependency tree, and state information. It lists the packages to be installed: keyutils, libnfsidmap2, nfs-common, rpcbind, and nfs-kernel-server. It also shows the disk space requirements and the confirmation to continue. The download progress for rpcbind, keyutils, and libnfsidmap2 is shown.

```
vm1@Berkay1:~$ su -
Password:
su: Authentication failure
vm1@Berkay1:~$ su -
Password:
root@Berkay1:~# apt-get install nfs-kernel-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  keyutils libnfsidmap2 nfs-common rpcbind
Suggested packages:
  open-iscsi watchdog
The following NEW packages will be installed:
  keyutils libnfsidmap2 nfs-common nfs-kernel-server rpcbind
0 upgraded, 5 newly installed, 0 to remove and 0 not upgraded.
Need to get 494 kB of archives.
After this operation, 1,566 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://deb.debian.org/debian bullseye/main amd64 rpcbind amd64 1.2.5-9 [51.4 kB]
Get:2 http://deb.debian.org/debian bullseye/main amd64 keyutils amd64 1.6.1-2 [52.8 kB]
Get:3 http://deb.debian.org/debian bullseye/main amd64 libnfsidmap2 amd64 0.25-6
```

## 2) Domain configuration

### Nano /etc/idmapd.conf



The screenshot shows a terminal window titled 'Lab12\_VM1 [Running] - Oracle VM VirtualBox'. The terminal prompt is 'vm1@Berkay1: ~'. The user enters 'nano /etc/idmapd.conf'. The nano editor shows the configuration file with the following content:

```
GNU nano 5.4 /etc/idmapd.conf *
[General]

Verbosity = 0
Pipefs-Directory = /run/rpc_pipefs
# set your own domain here, if it differs from FQDN minus hostname
Domain = Berkay1
[Mapping]

Nobody-User = nobody
Nobody-Group = nogroup
```

### 3) Create the following folders and file:

```
mkdir /nfs
```

```
mkdir /nfs/export
```

```
touch /nfs/export/file.txt
```

```
vm1@Berkay1:~$ su -
Password:
root@Berkay1:~# mkdir /nfs
root@Berkay1:~# mkdir /nfs/export
root@Berkay1:~# touch /nfs/export/file.txt
root@Berkay1:~#
```

### 4) NFS configuration:

```
Lab12_VM1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal May 28 19:33
vm1@Berkay1: ~
GNU nano 5.4 /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)
#
/nfs/export 10.0.2.0/24(rw,sync,fsid=0,no_root_squash,no_subtree_check)
```

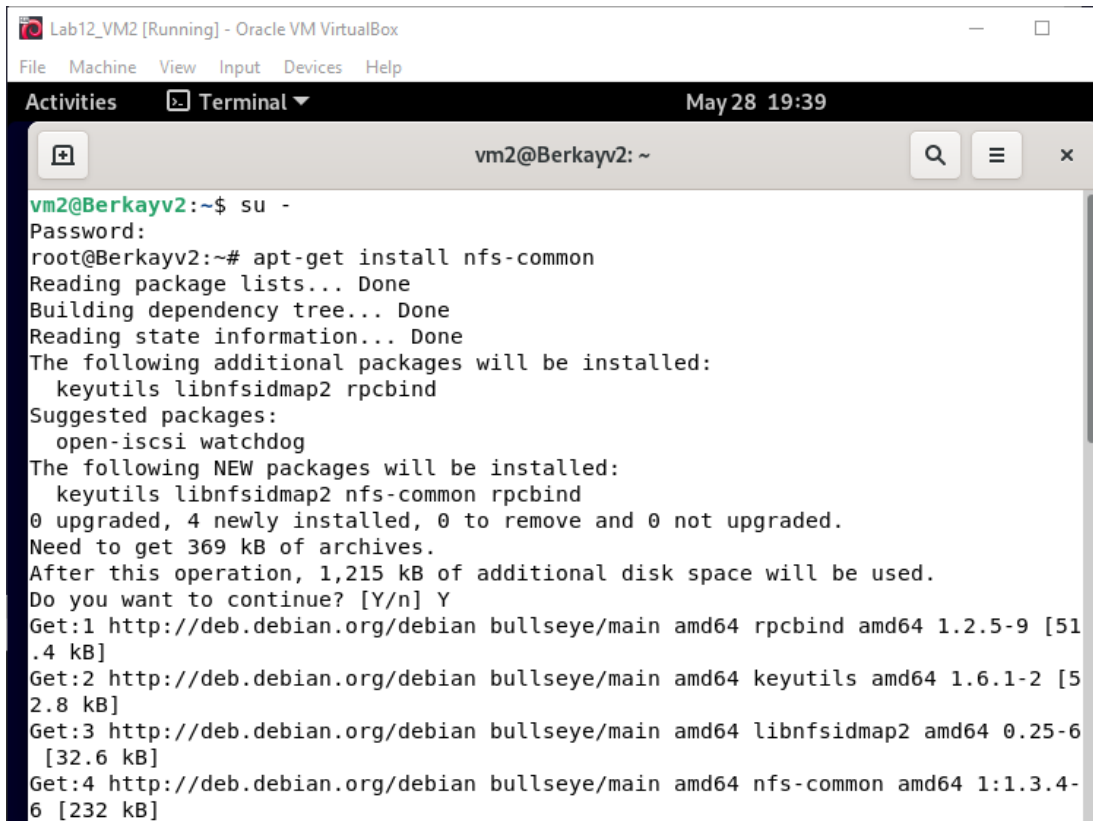
### 5) Restart the service:

```
root@Berkay1:~# systemctl restart nfs-server.service
root@Berkay1:~# systemctl status nfs-server.service
● nfs-server.service - NFS server and services
   Loaded: loaded (/lib/systemd/system/nfs-server.service; enabled; vendor preset: enabled)
   Active: active (exited) since Sat 2022-05-28 19:35:34 CEST; 7s ago
     Process: 3512 ExecStartPre=/usr/sbin/exportfs -r (code=exited, status=0/SUCCESS)
     Process: 3513 ExecStart=/usr/sbin/rpc.nfsd $RPCNFSDARGS (code=exited, status=0/SUCCESS)
    Main PID: 3513 (code=exited, status=0/SUCCESS)
       CPU: 5ms

May 28 19:35:33 Berkay1 systemd[1]: Starting NFS server and services...
May 28 19:35:34 Berkay1 systemd[1]: Finished NFS server and services.

root@Berkay1:~#
```

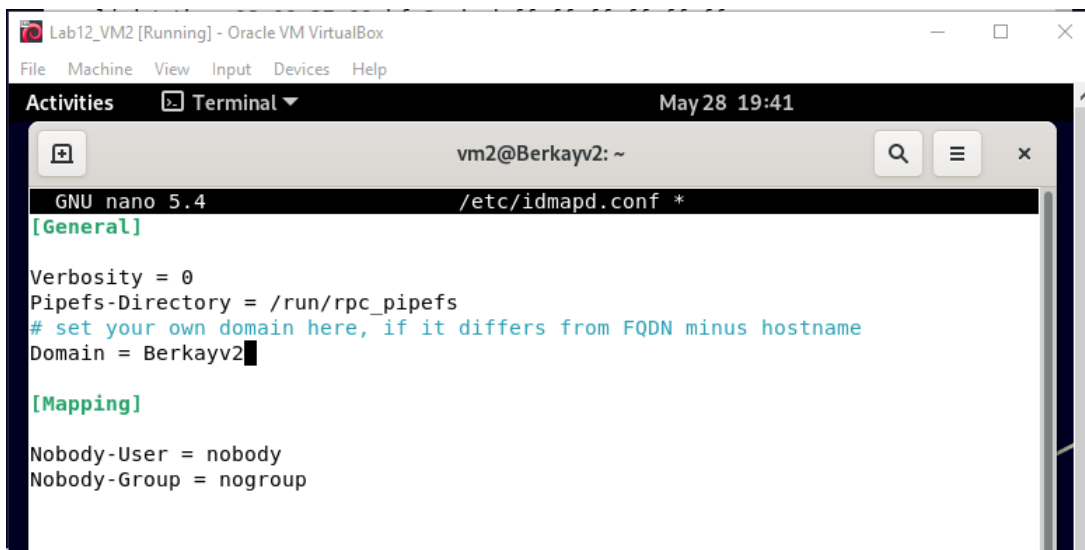
6) On VM2 install the required package: apt-get install nfs-common



The screenshot shows a terminal window titled "Lab12\_VM2 [Running] - Oracle VM VirtualBox". The terminal prompt is "vm2@Berkayv2: ~". The user has entered "su -" to become root. The root prompt is "root@Berkayv2:~#". The user has entered "apt-get install nfs-common". The terminal output shows the following:

```
root@Berkayv2:~# apt-get install nfs-common
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  keyutils libnfsidmap2 rpcbind
Suggested packages:
  open-iscsi watchdog
The following NEW packages will be installed:
  keyutils libnfsidmap2 nfs-common rpcbind
0 upgraded, 4 newly installed, 0 to remove and 0 not upgraded.
Need to get 369 kB of archives.
After this operation, 1,215 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://deb.debian.org/debian bullseye/main amd64 rpcbind amd64 1.2.5-9 [51.4 kB]
Get:2 http://deb.debian.org/debian bullseye/main amd64 keyutils amd64 1.6.1-2 [2.8 kB]
Get:3 http://deb.debian.org/debian bullseye/main amd64 libnfsidmap2 amd64 0.25-6 [32.6 kB]
Get:4 http://deb.debian.org/debian bullseye/main amd64 nfs-common amd64 1:1.3.4-6 [232 kB]
```

7) Domain configuration a. nano /etc/idmapd.conf



The screenshot shows a terminal window titled "Lab12\_VM2 [Running] - Oracle VM VirtualBox". The terminal prompt is "vm2@Berkayv2: ~". The user has entered "nano /etc/idmapd.conf". The terminal output shows the following:

```
GNU nano 5.4 /etc/idmapd.conf *
[General]
Verbosity = 0
Pipefs-Directory = /run/rpc_pipefs
# set your own domain here, if it differs from FQDN minus hostname
Domain = Berkayv2
[Mapping]
Nobody-User = nobody
Nobody-Group = nogroup
```

8) Create following folders: a. `mkdir /nfs` b. `mkdir /nfs/import`

```
root@Berkayv2:~# mkdir /nfs
root@Berkayv2:~# mkdir /nfs/import
root@Berkayv2:~# █
```

9) Mount the export directory from VM1 on VM2 in the import directory (enter the correct ip):

*ip of the vm1: 10.0.2.4*

```
root@Berkay1:~# ip ad
1: lo: <LOOPBACK,UP,L
t qlen 1000
    link/loopback 00:
    inet 127.0.0.1/8
        valid_lft fore
    inet6 ::1/128 sco
        valid_lft fore
2: enp0s3: <BROADCAST
group default qlen 10
    link/ether 08:00:
    inet 10.0.2.4/24
        valid_lft 491s
    inet6 fe80::a00:2
        valid_lft fore
root@Berkay1:~# █
```

```
root@Berkayv2:~# mount -t nfs 10.0.2.4:/nfs/export /nfs/import
root@Berkayv2:~#
```

---

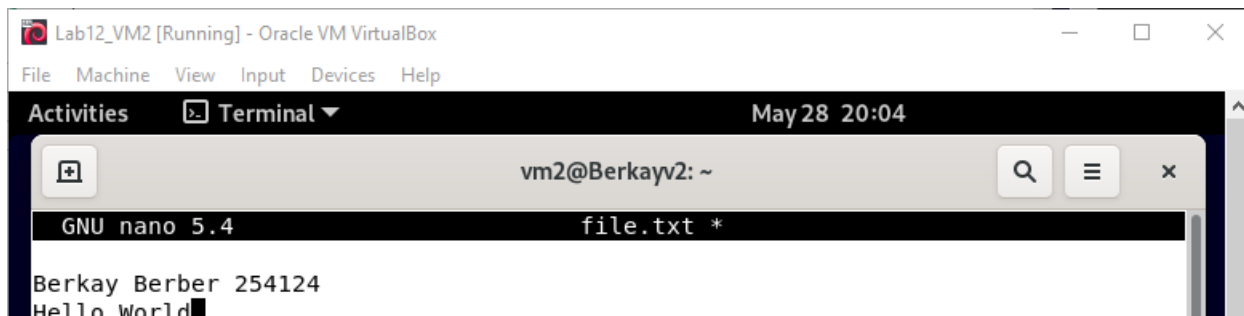
10) Check if the directory has been mounted: `df -h`

```
root@Berkayv2:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G   0    1.9G   0% /dev
tmpfs           392M  1.2M  391M   1% /run
/dev/sda2       6.4G  4.4G  1.7G  72% /
tmpfs           2.0G   0    2.0G   0% /dev/shm
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
/dev/sda1       511M  3.5M  508M   1% /boot/efi
tmpfs           392M  136K  392M   1% /run/user/1000
10.0.2.4:/nfs/export 30G  4.4G   25G  16% /nfs/import
root@Berkayv2:~# █
```

11)

```
root@Berkayv2:~# cd /nfs/import
root@Berkayv2:/nfs/import# ls
file.txt
root@Berkayv2:/nfs/import# ls -l
total 0
-rw-r--r-- 1 root root 0 May 28 19:29 file.txt
root@Berkayv2:/nfs/import#
```

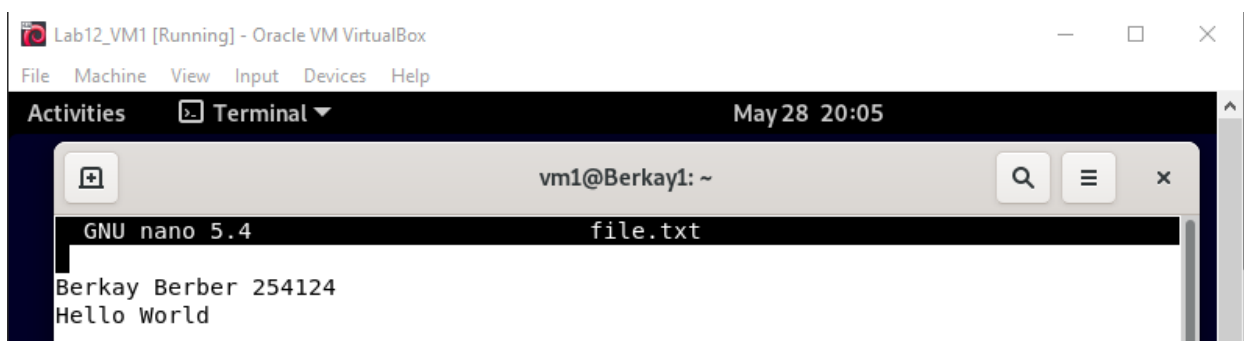
*Editing content of the file.txt file:*



The screenshot shows a terminal window titled "Lab12\_VM2 [Running] - Oracle VM VirtualBox". The terminal is running the nano text editor on file.txt. The prompt is "vm2@Berkayv2: ~". The editor shows the content of file.txt as "Berkay Berber 254124" followed by "Hello World" on the next line. The status bar at the bottom indicates "GNU nano 5.4" and "file.txt \*".

*Checking the edited content file.txt on vm1 if the same:*

```
root@Berkay1:~# ls
root@Berkay1:~# cd /nfs/export
root@Berkay1:/nfs/export# ls
file.txt
root@Berkay1:/nfs/export# nano file.txt
root@Berkay1:/nfs/export#
```



The screenshot shows a terminal window titled "Lab12\_VM1 [Running] - Oracle VM VirtualBox". The terminal is running the nano text editor on file.txt. The prompt is "vm1@Berkay1: ~". The editor shows the content of file.txt as "Berkay Berber 254124" followed by "Hello World" on the next line. The status bar at the bottom indicates "GNU nano 5.4" and "file.txt".

*Creating newfile.txt file on vm2:*

```
root@Berkayv2:/nfs/import# touch newfile.txt
root@Berkayv2:/nfs/import# ls
file.txt  newfile.txt
root@Berkayv2:/nfs/import#
```

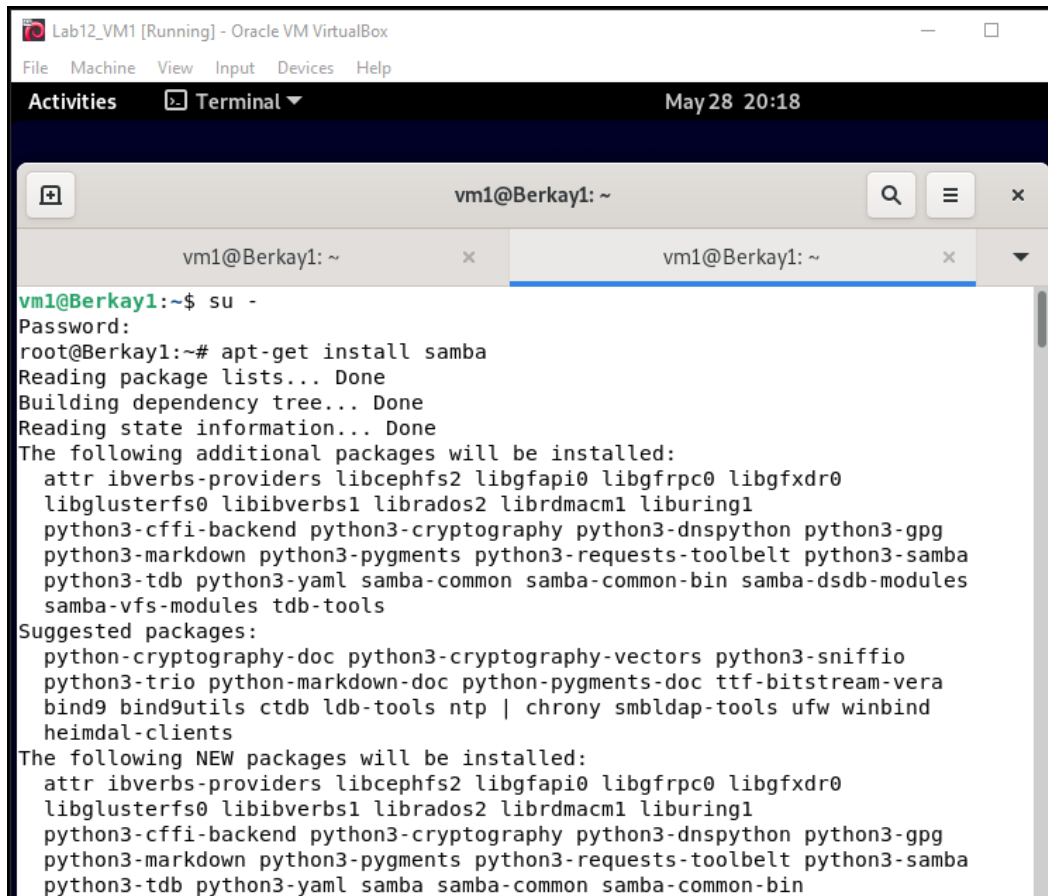
*And checking if the created file present in vm1:*

```
root@Berkay1:/nfs/export# ls
file.txt  newfile.txt
root@Berkay1:/nfs/export#
```

---

## **SAMBA**

- 1) Install the required package on the VM1: apt-get install samba



```
Lab12_VM1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal May 28 20:18

vm1@Berkay1: ~
vm1@Berkay1: ~
vm1@Berkay1: ~$ su -
Password:
root@Berkay1:~# apt-get install samba
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  attr ibverbs-providers libcephfs2 libgfs2 libgfrpc0 libgfsxdr0
  libglusterfs0 libibverbs1 librados2 librdmacm1 liburing1
  python3-cffi-backend python3-cryptography python3-dnspython python3-gpg
  python3-markdown python3-pygments python3-requests-toolbelt python3-samba
  python3-tdb python3-yaml samba-common samba-common-bin samba-dsdb-modules
  samba-vfs-modules tdb-tools
Suggested packages:
  python-cryptography-doc python3-cryptography-vectors python3-sniffio
  python3-trio python-markdown-doc python-pygments-doc ttf-bitstream-vera
  bind9 bind9utils ctdb ldb-tools ntp | chrony smbldap-tools ufw winbind
  heimdal-clients
The following NEW packages will be installed:
  attr ibverbs-providers libcephfs2 libgfs2 libgfrpc0 libgfsxdr0
  libglusterfs0 libibverbs1 librados2 librdmacm1 liburing1
  python3-cffi-backend python3-cryptography python3-dnspython python3-gpg
  python3-markdown python3-pygments python3-requests-toolbelt python3-samba
  python3-tdb python3-yaml samba samba-common samba-common-bin
```

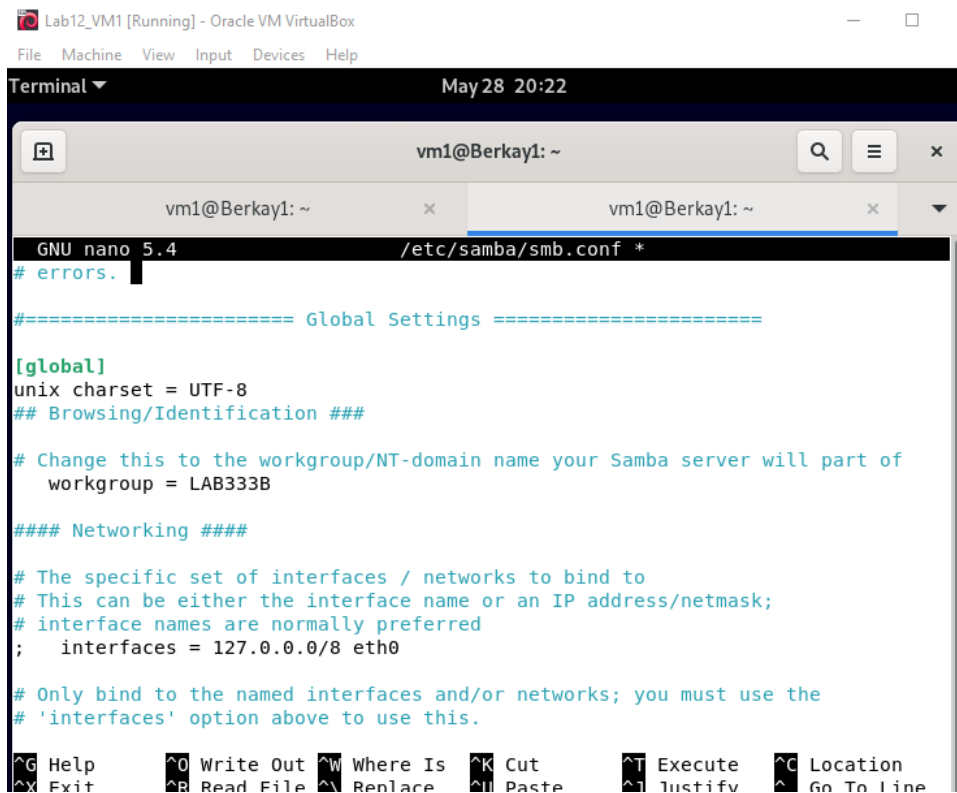
- 2) a. mkdir /samba b. chmod 777 /samba

```
root@Berkay1:~# mkdir /samba
root@Berkay1:~# chmod 777 /samba
root@Berkay1:~# nano /etc/samba/smb.conf
root@Berkay1:~#
```

---



Modify file /etc/samba/smb.conf in the following way:



```
Lab12_VM1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Terminal May 28 20:22
vm1@Berkay1: ~
GNU nano 5.4 /etc/samba/smb.conf *
# errors.

#===== Global Settings =====

[global]
unix charset = UTF-8
## Browsing/Identification ###

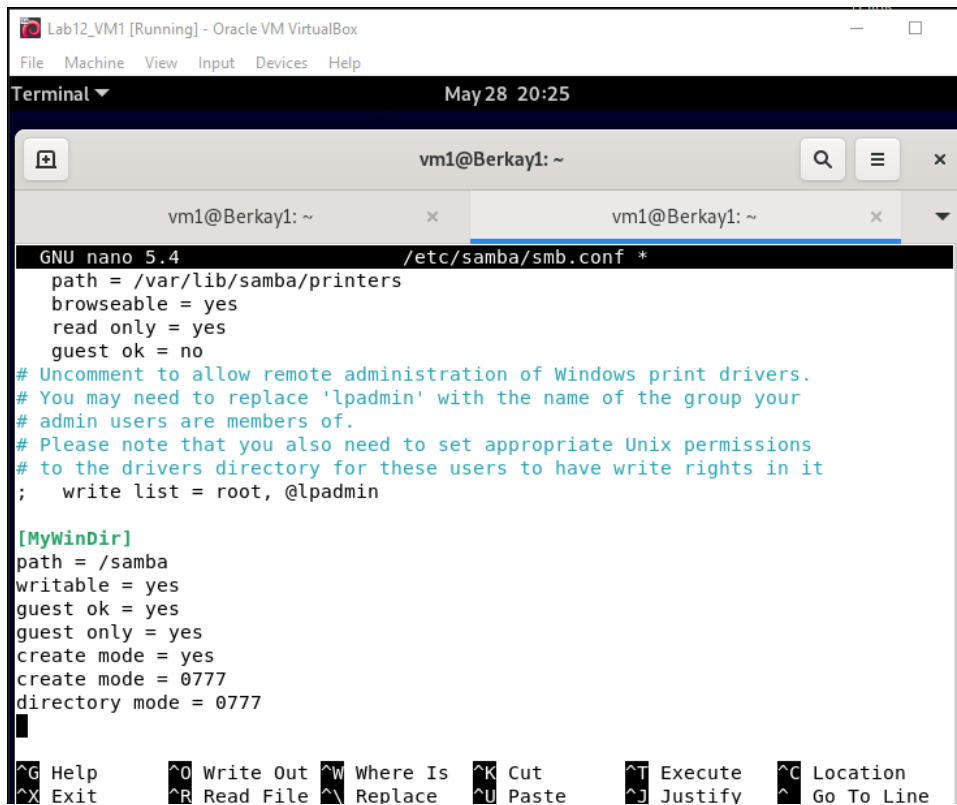
# Change this to the workgroup/NT-domain name your Samba server will part of
workgroup = LAB333B

#### Networking ####

# The specific set of interfaces / networks to bind to
# This can be either the interface name or an IP address/netmask;
# interface names are normally preferred
; interfaces = 127.0.0.0/8 eth0

# Only bind to the named interfaces and/or networks; you must use the
# 'interfaces' option above to use this.

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^N Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

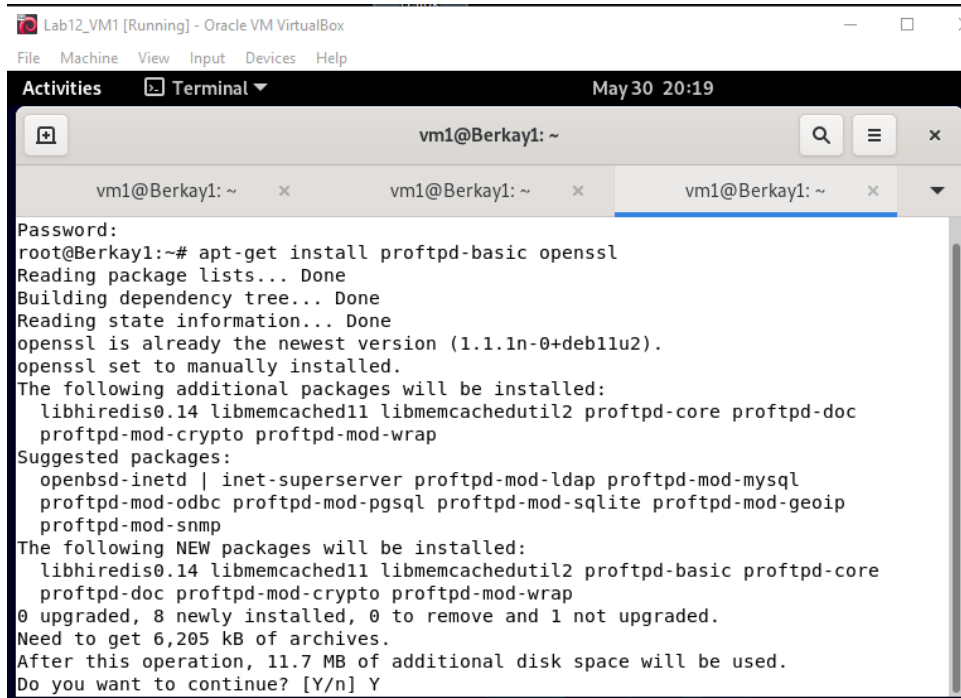


```
Lab12_VM1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Terminal May 28 20:25
vm1@Berkay1: ~
GNU nano 5.4 /etc/samba/smb.conf *
path = /var/lib/samba/printers
browseable = yes
read only = yes
guest ok = no
# Uncomment to allow remote administration of Windows print drivers.
# You may need to replace 'lpadmin' with the name of the group your
# admin users are members of.
# Please note that you also need to set appropriate Unix permissions
# to the drivers directory for these users to have write rights in it
; write list = root, @lpadmin

[MyWinDir]
path = /samba
writable = yes
guest ok = yes
guest only = yes
create mode = yes
create mode = 0777
directory mode = 0777
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^N Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

### 3) Configuration test and service restart:

*ftp*



Lab12\_VM1 [Running] - Oracle VM VirtualBox

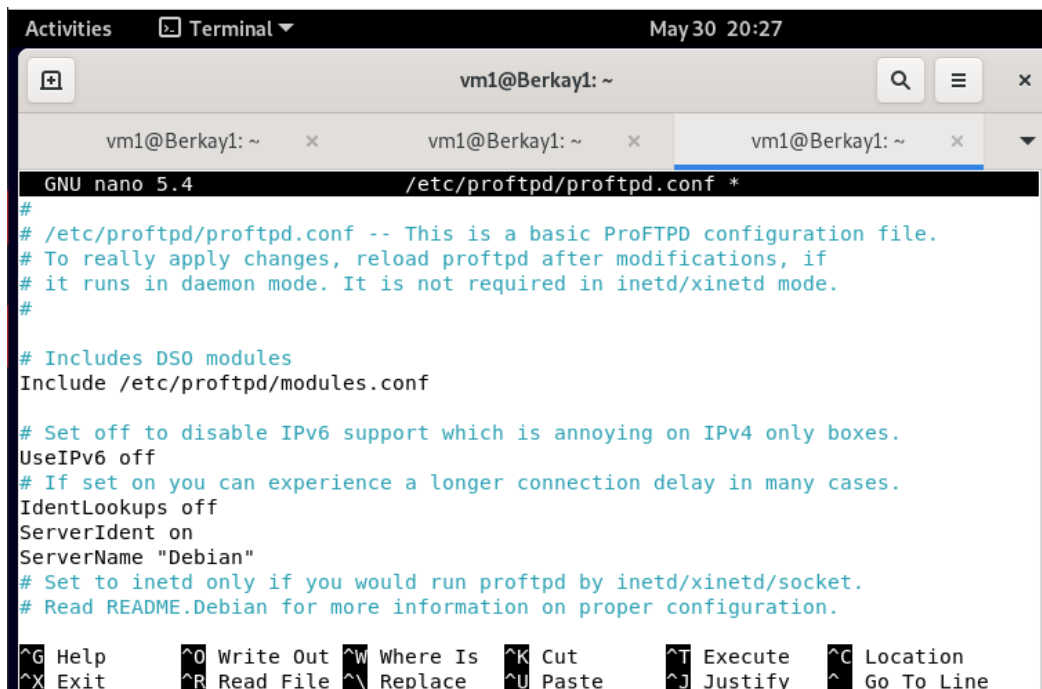
File Machine View Input Devices Help

Activities Terminal May 30 20:19

vm1@Berkay1: ~

vm1@Berkay1: ~ x vm1@Berkay1: ~ x vm1@Berkay1: ~ x

```
Password:
root@Berkay1:~# apt-get install proftpd-basic openssl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
openssl is already the newest version (1.1.1n-0+deb11u2).
openssl set to manually installed.
The following additional packages will be installed:
  libhiredis0.14 libmemcached11 libmemcachedutil2 proftpd-core proftpd-doc
  proftpd-mod-crypto proftpd-mod-wrap
Suggested packages:
  openbsd-inetd | inet-superserver proftpd-mod-ldap proftpd-mod-mysql
  proftpd-mod-odbc proftpd-mod-pgsql proftpd-mod-sqlite proftpd-mod-geoip
  proftpd-mod-snmpp
The following NEW packages will be installed:
  libhiredis0.14 libmemcached11 libmemcachedutil2 proftpd-basic proftpd-core
  proftpd-doc proftpd-mod-crypto proftpd-mod-wrap
0 upgraded, 8 newly installed, 0 to remove and 1 not upgraded.
Need to get 6,205 kB of archives.
After this operation, 11.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```



Activities Terminal May 30 20:27

vm1@Berkay1: ~

vm1@Berkay1: ~ x vm1@Berkay1: ~ x vm1@Berkay1: ~ x

```
GNU nano 5.4 /etc/proftpd/proftpd.conf *
#
# /etc/proftpd/proftpd.conf -- This is a basic ProFTPD configuration file.
# To really apply changes, reload proftpd after modifications, if
# it runs in daemon mode. It is not required in inetd/xinetd mode.
#
# Includes DSO modules
Include /etc/proftpd/modules.conf

# Set off to disable IPv6 support which is annoying on IPv4 only boxes.
UseIPv6 off
# If set on you can experience a longer connection delay in many cases.
IdentLookups off
ServerIdent on
ServerName "Debian"
# Set to inetd only if you would run proftpd by inetd/xinetd/socket.
# Read README.Debian for more information on proper configuration.

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute  ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify  ^_ Go To Line
```

Activities Terminal May 30 20:26

vm1@Berkay1: ~

vm1@Berkay1: ~ x vm1@Berkay1: ~ x vm1@Berkay1: ~ x

```
GNU nano 5.4 /etc/proftpd/proftpd.conf *
# MultilineRFC2228on
DefaultServer on
ShowSymlinks on

TimeoutNoTransfer 600
TimeoutStalled 600
TimeoutIdle 1200

DisplayLogin welcome.msg
DisplayChdir .message true
ListOptions "-l"

DenyFilter \*.*

# Use this to jail all users in their homes
DefaultRoot~
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location  
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^\_ Go To Line